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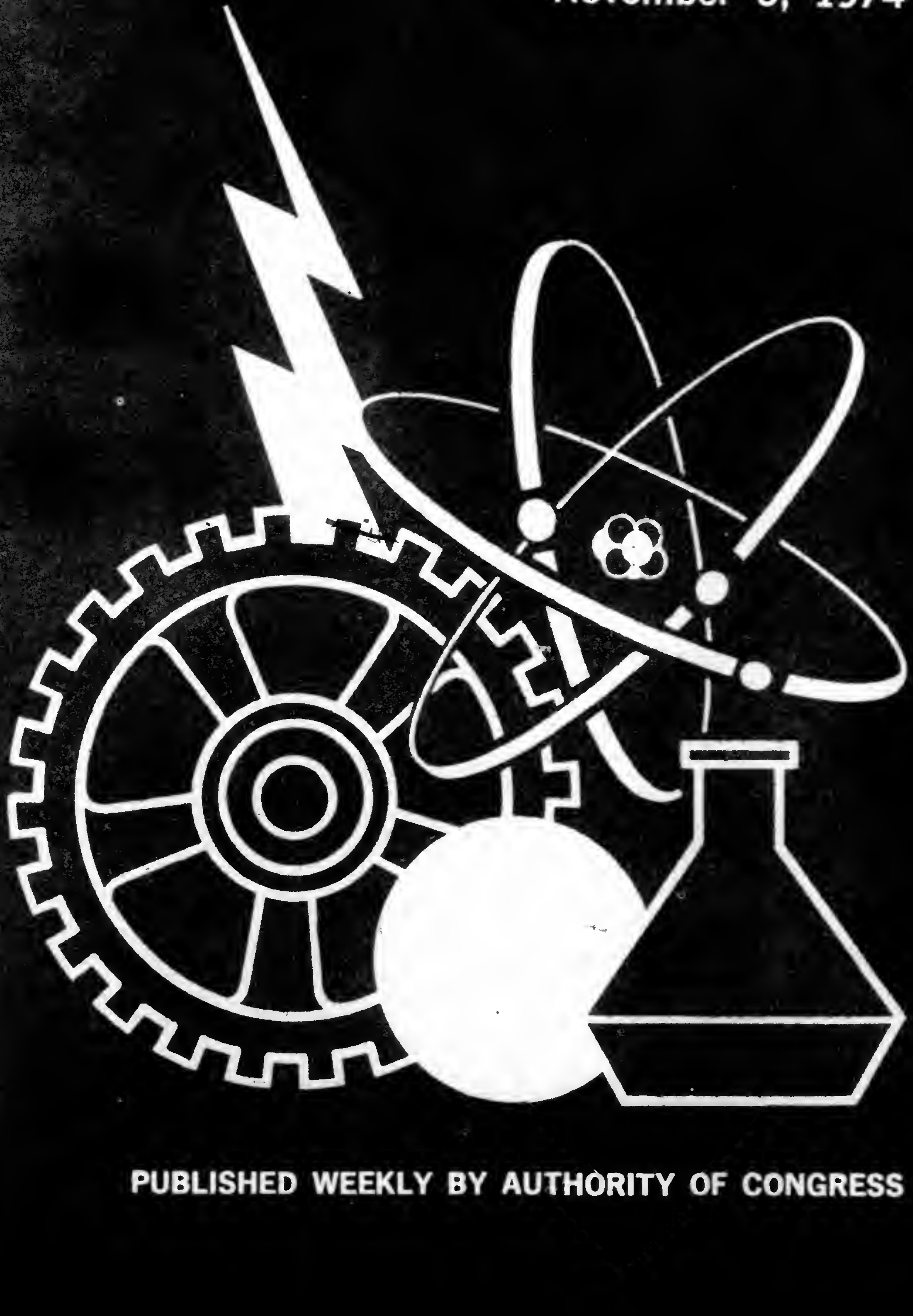
PATENTS

November 5, 1974



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OF COMMERCE

Patent
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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE
November 5, 1974 Volume 928 Number 1

CONTENTS

Page

Patent and Trademark Notices

- Board of Appeals Decisions Rendered in the Month of September 1974 . . 2
- Time for Filing Opposition to Marks Published in the September 10 and 17, 1974, Issues of the Official Gazette 2
- Patent Suits 2

Patent Notices

- Disclaimer 4
- Disclaimer and Dedication 4
- Certificates of Correction for the Week of November 5, 1974 4

Condition of Patent Applications 5

Defensive Publications (T928,001) 6

Reissue Patents Granted (28,221) 9

Plant Patents Granted (3,644) 14

Patents Granted

- General and Mechanical (3,845,504) 15
- Chemical (3,846,069) 201
- Electrical (3,846,574) 330

Design Patents Granted (233,489) 420

Index of Patentees . . . . PI 1

Indices of Applicants of Defensive Publications, Reissues, Plants and Designs . . . . PI 43

Classification of

- Patents (Including Reissues) . . . . PI 47
- Designs, Plants and Defensive Publications . . . . PI 49

Geographical Index of Residence of Inventors

- Patents (Including Reissues) . . . . PI 50
- Designs, Plants and Applicants of Defensive Publications . . . . PI 52

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PATENT OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of September 1974

Examiner affirmed	201
Examiner affirmed in part	26
Examiner reversed	79
Total	306

Time for Filing Opposition to Marks Published in the September 10 and 17, 1974, Issues of the Official Gazette

It has come to the attention of the Patent Office that there was a delay at the Government Printing Office in mailing the Trademark Section of the OFFICIAL GAZETTE for September 10, 1974 and for September 17, 1974 to a large number of subscribers. The Patent Office was further informed by the Superintendent of Documents, Government Printing Office, that the September 10, 1974 and September 17, 1974 issues were eventually mailed to all subscribers.

In view of the delay in mailing, the marks published for opposition in the issues of the Trademark Section of the OFFICIAL GAZETTE for September 10, 1974 and September 17, 1974 are hereby republished by reference to those issues. Accordingly, the date of publication of those marks under Sec. 12(a) of the Trademark Act of 1946 for the purpose of opposition is deemed to be November 5, 1974, the date of this issue. The opposition period for the marks in those issues will end on December 5, 1974. Oppositions filed before November 5, 1974 will also be acceptable in view of the first publication of the marks on September 10 and on September 17.

RENE D. TEGTMEYER,
Oct. 15, 1974. *Assistant Commissioner for Trademarks.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,463,280, Kaehni and Kaehni, SPECTROSCOPE GRATING HAVING SPACED ZONES OF DIFFRACTION LINES, **filed** Apr. 23, 1969, D.C. Md. (Baltimore), Doc. 70–381–N, *Frank J. Kaehni and Marie Kaehni* v. *Edmund Scientific Co. and Norman W. Edmund.* Final order of judgment dismissing complaint and entering judgment in favor of the defendants against the plaintiffs, May 24, 1974. **Same, filed** July 25, 1969, D.C. Md. (Baltimore), Doc. 70–382–N, *Frank J. Kaehni and Marie Kaehni* v. *The May Company.* Order of Court dismissing with prejudice the complaint, May 16, 1974. **Same, filed** July 25, 1969, D.C. Md. (Baltimore), Doc. 70–383–N, *Frank J. Kaehni and Marie Kaehni* v. *W. T. Grant Company.* Order of Court dismissing with prejudice the complaint, May 16, 1974. **Same, filed** July 25, 1969, D.C. Md. (Baltimore), Doc. 70–384–N, *Frank J. Kaehni and Marie Kaehni* v. *The Higbee Company.* Complaint dismissed with prejudice and judgment entered on behalf of defendant against the plaintiffs and Edward I. Stillman, May 16, 1974. **Same, filed** July 25, 1969, D.C. Md. (Baltimore), Doc. 70–385–N, *Frank J. Kaehni and Marie Kaehni* v. *S. S. Kresge Company.* Complaint dismissed with prejudice, May 15, 1974. **Same, filed** July 25, 1969, D.C. Md. (Baltimore), Doc. 70–386–N, *Frank J. Kaehni and Marie Kaehni* v. *F. W. Woolworth Co.* Order of Court dismissing with prejudice the complaint, May 16, 1974. **Same, filed** Apr. 23, 1969, D.C., Md. (Baltimore), Doc. 20691–N, *Frank J. Kaehni and Marie Kaehni* v. *Jewelarama, Inc.* Final order of judgment dismissing the complaint and entering judgment against plaintiff, June 4, 1974. **Same, filed** Apr. 23, 1969, D.C. Md. (Baltimore), Doc. 20692–N, *Frank J. Kaehni and Marie Kaehni* v. *Jeri, Inc.* Final order of judgment dismissing the complaint and entering judgment against the plaintiff, June 4, 1974.

2,685,536, Ransburg and Starkey, METHOD FOR ELECTROSTATICALLY COATING ARTICLES; **2,794,417**, same, APPARATUS FOR ELECTROSTATICALLY COATING ARTICLES; **2,893,893**, W. W. Crouse, METHOD AND APPARATUS FOR ELECTROSTATIC COATING; **2,893,894**, E. M. Ransburg, METHOD AND APPARATUS FOR ELECTROSTATICALLY COATING, **filed** Mar. 27, 1974, D.C.N.J. (Newark), Doc. C–74–435, *Ransburg Corporation* v. *Ducane Heating Corporation.* **Same, filed** Mar. 27, 1974, D.C.N.J. (Newark), Doc. C–74–436, *Ransburg Corporation* v. *Baylis Industries, Inc.* **Same, filed** Mar. 19, 1974, D.C., E.D. Pa. (Philadelphia), Doc. 74–665, *Ransburg Corporation* v. *Progress Manufacturing Company.*

2,702,829, M. F. Chapel, STORAGE BATTERY CELL PLATE INTEGRATOR, **filed** Jan. 24, 1974, D.C., C.D. Calif. (Los Angeles), Doc. 74–189–F, *Milton F. Chapel* v. *Gould Incorporated.* Filed plaintiff's notice of dismissal entered May 17, 1974.

2,777,926, M. E. Bourns, VARIABLE RESISTOR, **filed** May 21, 1974, D.C., N.D. Ind. (South Bend), Doc. S74–111, *Bourns, Inc. and Marlan E. Bourns* v. *CTS Corporation.*

2,794,417. (See 2,685,536.)

2,802,760, Derick and Frosch, OXIDATION OF SEMICONDUCTIVE SURFACES FOR CONTROLLED DIFFUSION; **2,986,610**, J. Maurushat Jr., ALARM AND TEST EQUIPMENT FOR CARRIER SYSTEMS; **3,006,067**, Anderson and Christensen, THERMO-COMPRESSION BONDING OF METAL TO SEMICONDUCTORS AND THE LIKE; **3,066,052**, B. T. Howard, VAPOR-SOLID DIFFUSION OF SEMICONDUCTIVE MATERIAL; **3,087,239**, R. P. Clagett, METHOD OF BONDING LEADS TO SEMICONDUCTIVE DEVICES; **3,102,230**, D. Kahng, ELECTRIC FIELD CONTROLLED SEMICONDUCTOR DEVICE; **3,138,670**, Maurushat and Newell, AUTOMATIC TEST EQUIPMENT FOR MULTITERMINAL COMMUNICATION SYSTEMS; **3,206,670**, M. M. Atalla, SEMICONDUCTOR DEVICES HAVING DIELECTRIC COATINGS; **3,242,006**, D. Gerstenberg, TANTALUM NITRIDE FILM RESISTOR, **filed** May 15, 1974, D.C., N.D. Tex. (Dallas), Doc. CA3 74–444–D, *Western Electric Company, Incorporated* v. *Rockwell International.*

2,893,893. (See 2,685,536.)

2,893,894. (See 2,685,536.)

2,986,610. (See 2,802,760.)

3,006,067. (See 2,802,760.)

3,066,052. (See 2,802,760.)

3,087,239. (See 2,802,760.)

3,102,230. (See 2,802,760.)

3,138,670. (See 2,802,760.)

3,173,990, R. P. Lamons, FOAM-DIELECTRIC COAXIAL CABLE WITH TEMPERATURE-INDEPENDENT RELATIVE CONDUCTOR LENGTH, **filed** May 23, 1974, D.C. Conn. (New Haven), Doc. N–74–124, *Andrew Corporation* v. *Cable Wave Systems, Inc. et al.*

3,206,670. (See 2,802,760.)

3,219,261, N. Laing, CROSS-FLOW FAN ROTOR SUPPORT MEANS; **3,305,665**, same, FORCED CIRCULATION ELECTRIC HEATER EMPLOYING CROSS-FLOW TYPE FAN; **3,308,268**, same, PORTABLE HAIR DRYERS; **Re. 25,365**, B. Eck, FANS, **filed** Mar. 1, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c582, *Illinois Fan Corporation* v. *Sperry Rand Corporation.*

3,242,006. (See 2,802,760.)

3,287,063, A. S. Nicholas, RETRACTOR HOUSING, **filed** May 30, 1974, D.C., N.D. Ill. (Chicago), Doc. 75c1486, *U.S. Industries, Inc.* v. *Gateway Industries.*

3,305,189, Butler, Jr. and Pierce, WEB SUPPLY APPARATUS, **filed** May 22, 1974, D.C., N.D. Ill. (Freeport), Doc. 74c35, *Butler Automatic, Inc.* v. *Martin Automatic, Inc.*

3,305,665. (See 3,219,261.)

3,308,268. (See 3,219,261.)

3,428,333, V. E. Nelson, TOW-TYPE SECTIONAL AUTOMATICALLY FOLDABLE HARROW CART, **filed** Apr. 26, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1158, *Gladys Nelson Howen* v. *Clark Equipment Company.*

3,672,969, Nobel and Ostrow, ELECTRO-DEPOSITION OF GOLD AND GOLD ALLOYS, **filed** Apr. 3, 1973, D.C.N.J. (Newark), Doc. C–450–73, *Auric Corporation, Auric of N.J. and Fidelity Electronic Plating, Inc.* v. *Lea-Ronal, Inc.* Stipulation and order of dismissal of action, May 15, 1974.

Re. 25,365. (See 3,219,261.)

Re. 27,999, Korpiun and Steeg, ELECTROPLATING BATH FOR DEPOSITING BRIGHT ZINC PLATES, **filed** May 23, 1974, D.C., N.D. Ind. (South Bend), Doc. S74–117, *Dr.-Ing. Max Schloetter, Fabrik fur Galvanotechnik and Lea-Ronal, Inc.* v. *Railoc of Indiana, Inc.*

D. 198,858, L. E. Greenberg, SLED, **filed** Mar. 3, 1970, D.C., S.D.N.Y., Doc. 70–C–859, *Coleco Industries Inc.* v. *Empire Plastic Corp.* Filed consent judgment—defendants jointly and severally are enjoined—plaintiff's claims for unfair competition are dismissed with prejudice, entered Feb. 20, 1974.

D. 219,118, Baker and Plecia, BOAT, **filed** Feb. 15, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–343–LTL, *Sidewinder Marine, Inc.* v. *Wriedt, Inc., doing business as Wriedt Custom Boats.*

Disclaimer

3,332,880.—*Adriaan Kessler*, Cincinnati, and *Phillip F. Pflaumer*, Colerain Township, Hamilton County, Ohio. DETERGENT COMPOSITION. Patent dated July 25, 1967. Disclaimer filed June 10, 1974, by the assignee, *The Procter & Gamble Company*.

Hereby enters this disclaimer to all of the claims of said patent.

Disclaimer and Dedication

3,605,178.—*Edwin E. Hoffmann*, St. Paul, Minn. LION PULLING KNIFE. Patent dated Sept. 20, 1971. Disclaimer and dedication filed May 7, 1974, by the inventor.

Hereby disclaims and dedicates to the Public all claims of said patent.

Certificates of Correction for the Week of Nov. 5, 1974

P.P. 3,553
P.P. 3,554
Re. 27,967
Re. 28,140
D. 231,350
3,443,668
3,467,631
3,510,946
3,569,894
3,576,528
3,590,088
3,591,861
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3,634,428
3,636,297
3,637,699
3,638,903
3,642,720
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3,680,935
3,681,502
3,684,582
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3,697,564
3,701,619
3,713,975
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3,715,024
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3,716,022
3,719,433
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3,723,121
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3,728,149
3,732,360
3,734,851
3,735,805
3,737,397
3,738,480
3,739,958
3,741,808
3,741,930
3,742,367
3,746,338
3,746,881
3,749,928
3,750,821
3,751,377
3,752,744
3,753,353
3,754,932
3,755,226
3,755,298
3,755,446
3,755,482
3,756,298
3,758,646
3,759,871
3,761,883
3,762,637
3,763,100
3,763,102
3,763,838
3,765,889
3,765,900
3,766,290
3,767,271
3,767,618
3,767,624
3,768,162
3,769,521
3,769,722
3,771,239
3,772,323
3,774,575
3,774,922
3,775,050
3,775,265
3,775,507
3,776,631
3,777,132
3,777,549
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3,780,061
3,781,116
3,781,313
3,781,785
3,782,640
3,783,100
3,783,108
3,783,149
3,783,487
3,784,521
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3,795,645
3,795,663
3,795,745
3,796,017
3,796,266
3,796,590
3,796,672
3,796,678
3,796,744
3,796,798
3,797,591
3,797,593
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3,798,230
3,798,236
3,798,247
3,798,427
3,799,247
3,799,771
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3,800,098
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3,801,346
3,801,582
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3,801,932
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3,810,519
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3,811,064
3,811,175
3,811,386
3,811,480
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3,811,864
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3,814,844
3,814,915
3,815,101
3,815,318
3,815,478
3,815,484
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3,815,720
3,815,872
3,815,881
3,816,016
3,816,042
3,816,074
3,816,092
3,816,158
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3,816,399
3,816,409
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3,816,517
3,816,632
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3,817,215
3,817,505
3,817,723
3,817,726
3,817,737
3,817,931
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3,818,341
3,818,559
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3,819,334
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3,819,739
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3,819,980
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3,820,146
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3,820,213
3,820,343
3,820,374
3,820,484
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3,821,116
3,821,121
3,821,222
3,821,257
3,821,320
3,821,352
3,821,405
3,821,605
3,821,846
3,821,897
3,822,159
3,822,241
3,822,286
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3,832,172
3,832,213
3,832,220
3,832,297
3,832,334
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3,833,107
3,833,177
3,833,251
3,833,579
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3,834,046
3,834,113
3,834,144
3,834,302
3,834,444
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3,835,385
3,835,769
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3,836,574

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 12, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions: Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-10-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-10-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-13-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-17-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-7-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	3-6-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	4-2-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-3-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	1-2-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-13-73
DESIGNS, GROUP 290—C D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	6-4-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-19-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	1-2-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-28-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-29-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	3-11-74

Expiration of patents: The patents within the range of numbers indicated below expire during September 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,807,804 to 2,811,721, inclusive
Plant Patents	Numbers 1,646 to 1,655, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED NOVEMBER 5, 1974

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T928,001
PROCESS FOR IMPARTING FLAME RETARDANCE TO POLYESTER FIBERS

Samuel E. Blackwell, 3624 Montclair Road, Kingsport, Tenn. 37664
Filed Feb. 9, 1973, Ser. No. 330,936
Int. Cl. D06p *5/00*
U.S. Cl. 8—17
No Drawing. 6 Pages Specification

Disclosed is a process for producing a dyed, flame retardant fabric by first contacting the fabric with a composition comprising a halogen substituted aliphatic hydrocarbon, a dye and an organic bromine-containing flame retarder, and then contacting the fabric with a superheated vapor of a halogen substituted aliphatic hydrocarbon.

T928,002
PROCESS FOR PRODUCING CRYSTALLINE ANHYDROUS SODIUM CARBONATE

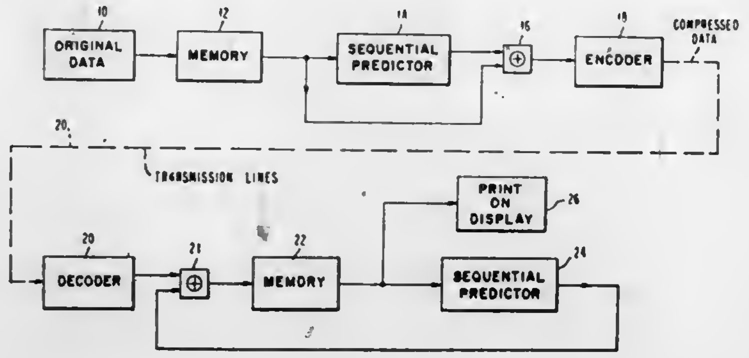
David R. Delling, Green River, Wyo., and James V. Wiseman, Lafayette, Calif., assignors to Stauffer Chemical Company, New York, N.Y.
Filed June 8, 1973, Ser. No. 368,404
Int. Cl. B01d *9/02;* C01d *7/00*
U.S. Cl. 23—302
No Drawing. 16 Pages Specification

A process for producing crystalline anhydrous sodium carbonate having a very high bulk density up to 95 lbs./ft.^{3} by crystallizing anhydrous sodium carbonate from a crystallizer source material of a solution of sodium carbonate or a slurry of less than 50 percent by weight of sodium carbonate monohydrate in an aqueous solution of sodium carbonate by heating at a temperature above 228° F. in the presence of sufficient Ca^{++} so that Ca^{++} is found in the crystallized anhydrous sodium carbonate, preferably about 25 to 400 p.p.m. Ca^{++} (as calcium on a soda ash basis), including a process for the producing crystalline anhydrous sodium carbonate by converting the sodium carbonate monohydrate of a slurry of less than 50 percent by weight of, sodium carbonate monohydrate in an aqueous solution of sodium carbonate by heating at a temperature above 228° F., and (2) then separating the crystals of anhydrous sodium carbonate from the crystallizer source material preferably while they are at a concentration of less than 50 percent by weight.

T928,003
SEQUENTIAL LEARNING PREDICTOR FOR AN IMAGE COMPRESSION SYSTEM

Lalit R. Bahl, Yorktown Heights, N.Y., Daniel I. Barnea, Tel Aviv, Israel, and Hisashi Kobayashi, Mohegan Lake, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of abandoned application Ser. No. 365,335, May 30, 1973. This application July 23, 1973, Ser. No. 381,950
Int. Cl. H04n *7/12*
U.S. Cl. 235—154
10 Sheets Drawing. 26 Pages Specification

A system is disclosed for compacting digital image data by means of predictive coding. The prediction decision rule is developed by a heuristic sequential learning process from a sample image data set.

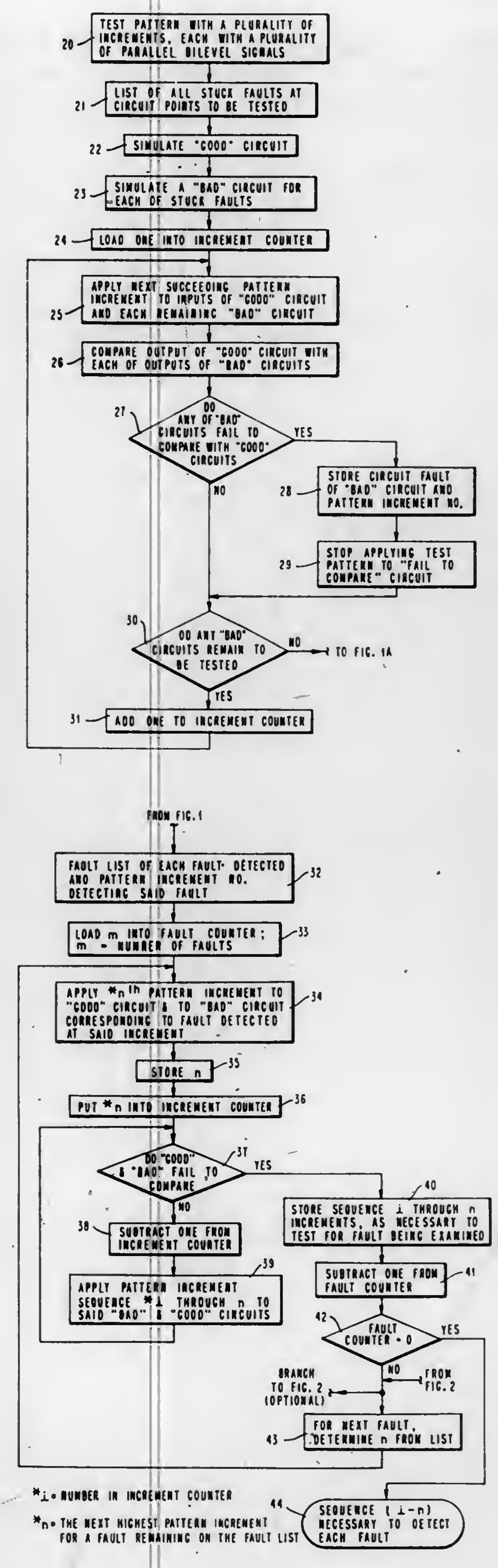


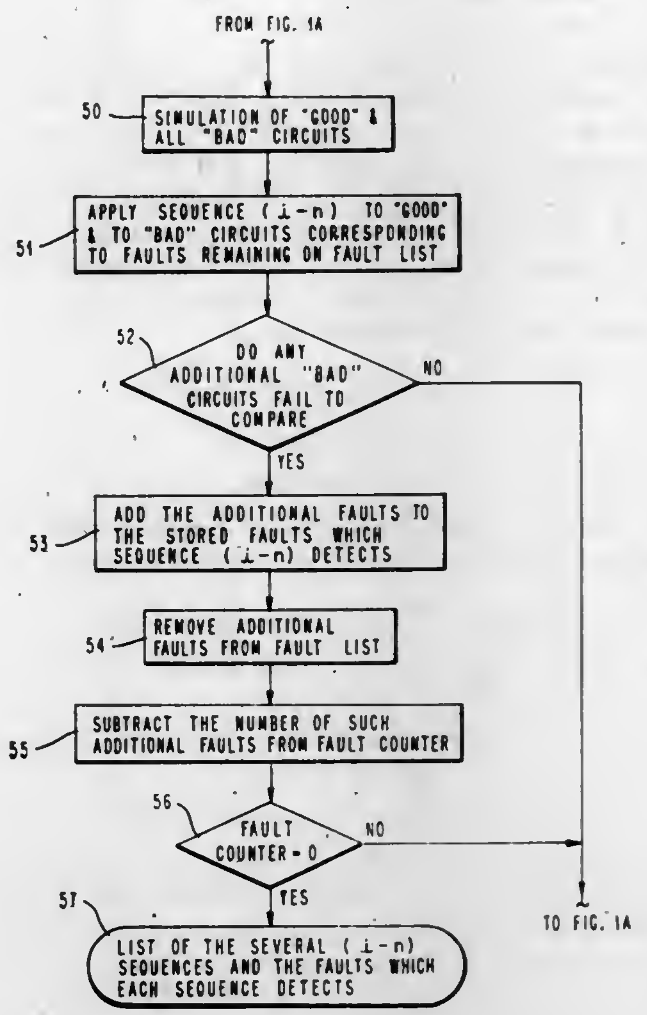
A large set of two dimensional image points represented in binary form is processed in order to generate a prediction decision tree structure. The decision tree is stored within the predictor memory, then, each image point taken from a set of data that is to be compressed, is predicted in accordance with the stored prediction tree structure. The predicted value is then added, modulo-two, to the actual binary value of the image point. The resulting output of the modulo-two addition is then compressed by conventional means into data that is transmitted to a receiving unit. The receiving unit contains both a decoder for expanding the data, and an inverse predictor for creating a data pattern representative of the image that was transmitted.

T928,004
SYSTEM FOR REDUCING THE NUMBER OF INCREMENTS IN A BILEVEL ELECTRICAL SIGNAL TEST PATTERN FOR NON-LINEAR CIRCUITS

Robert G. Carpenter and Eric Lindbloom, Poughkeepsie, and Maurice T. McMahon, Jr., Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of abandoned application Ser. No. 235,485, Mar. 17, 1972. This application Oct. 24, 1973, Ser. No. 409,123
Int. Cl. G06f *11/00*
U.S. Cl. 235—151.3
5 Sheets Drawing. 21 Pages Specification

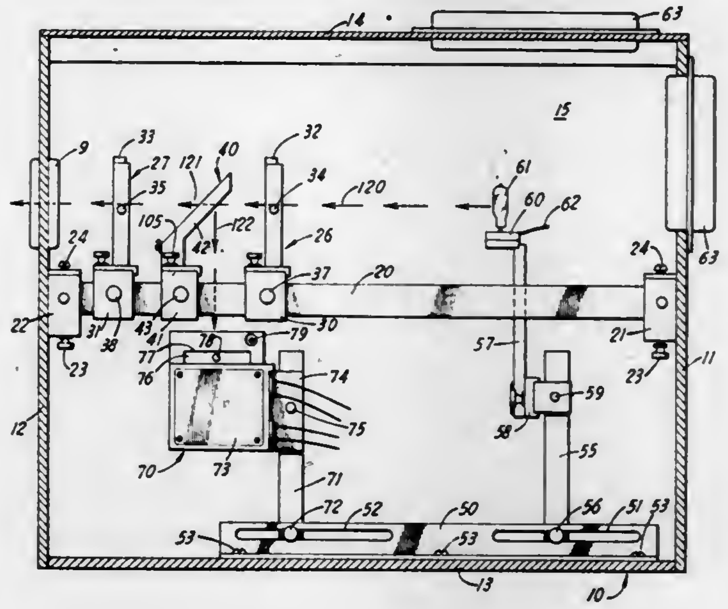
A system involving the use of fault simulation for reducing the number of increments in a bilevel electrical signal test pattern for a non-linear integrated circuit. First, for each "stuck" fault to be detected by the reduced pattern, the number of the pattern increment on which said fault is detected in the original pattern is determined. Then, for each stuck fault, the pattern increment on which the fault was detected in the original test pattern is applied to a "good" circuit computer simulation and a "bad" circuit computer simulation representative of said fault. If there is a "fail to compare," the applied pattern alone is sufficient to detect the fault. However, if the outputs from both simulations compare, an increment sequence consisting of the increment next preceding the previously applied increment followed by the applied increment is reapplied to the good and bad simulations, and the procedure is repeated, each time adding the next preceding increment to the sequence until a fail to compare is achieved. Such a sequence is determined for each stuck fault.


20
TEST PATTERN WITH A PLURALITY OF INCREMENTS, EACH WITH A PLURALITY OF PARALLEL BILEVEL SIGNALS
21
LIST OF ALL STUCK FAULTS AT CIRCUIT POINTS TO BE TESTED
22
SIMULATE "GOOD" CIRCUIT
23
SIMULATE A "BAD" CIRCUIT FOR EACH OF STUCK FAULTS
24
LOAD ONE INTO INCREMENT COUNTER
25
APPLY NEXT SUCCEEDING PATTERN INCREMENT TO INPUTS OF "GOOD" CIRCUIT AND EACH REMAINING "BAD" CIRCUIT
26
COMPARE OUTPUT OF "GOOD" CIRCUIT WITH EACH OF OUTPUTS OF "BAD" CIRCUITS
27
DO ANY OF "BAD" CIRCUITS FAIL TO COMPARE WITH "GOOD" CIRCUITS
YES
NO
28
STORE CIRCUIT FAULT OF "BAD" CIRCUIT AND PATTERN INCREMENT NO.
29
STOP APPLYING TEST PATTERN TO "FAIL TO COMPARE" CIRCUIT
30
DO ANY "BAD" CIRCUITS REMAIN TO BE TESTED
NO
TO FIG. 1A
YES
31
ADD ONE TO INCREMENT COUNTER
FROM FIG. 1
32
FAULT LIST OF EACH FAULT DETECTED AND PATTERN INCREMENT NO. DETECTING SAID FAULT
33
LOAD m INTO FAULT COUNTER; m = NUMBER OF FAULTS
34
APPLY *n th PATTERN INCREMENT TO "GOOD" CIRCUIT & TO "BAD" CIRCUIT CORRESPONDING TO FAULT DETECTED AT SAID INCREMENT
35
STORE n
36
PUT *n INTO INCREMENT COUNTER
37
DO "GOOD" & "BAD" FAIL TO COMPARE
YES
NO
38
SUBTRACT ONE FROM INCREMENT COUNTER
39
APPLY PATTERN INCREMENT SEQUENCE *i THROUGH n TO SAID "BAD" & "GOOD" CIRCUITS
40
STORE SEQUENCE i THROUGH n INCREMENTS, AS NECESSARY TO TEST FOR FAULT BEING EXAMINED
41
SUBTRACT ONE FROM FAULT COUNTER
42
FAULT COUNTER = 0
YES
NO
BRANCH TO FIG. 2 (OPTIONAL)
FROM FIG. 2
43
FOR NEXT FAULT, DETERMINE n FROM LIST
*i = NUMBER IN INCREMENT COUNTER
*n = THE NEXT HIGHEST PATTERN INCREMENT FOR A FAULT REMAINING ON THE FAULT LIST
44
SEQUENCE (i-n) NECESSARY TO DETECT EACH FAULT


FROM FIG. 1A
50
SIMULATION OF "GOOD" & ALL "BAD" CIRCUITS
51
APPLY SEQUENCE (i-n) TO "GOOD" & TO "BAD" CIRCUITS CORRESPONDING TO FAULTS REMAINING ON FAULT LIST
52
DO ANY ADDITIONAL "BAD" CIRCUITS FAIL TO COMPARE
NO
YES
53
ADD THE ADDITIONAL FAULTS TO THE STORED FAULTS WHICH SEQUENCE (i-n) DETECTS
54
REMOVE ADDITIONAL FAULTS FROM FAULT LIST
55
SUBTRACT THE NUMBER OF SUCH ADDITIONAL FAULTS FROM FAULT COUNTER
56
FAULT COUNTER = 0
NO
YES
57
LIST OF THE SEVERAL (i-n) SEQUENCES AND THE FAULTS WHICH EACH SEQUENCE DETECTS
TO FIG. 1A

T928,005
OPTICAL BENCH FOR A STABLE SOURCE OF RADIATION

Dale K. Cabbiness and George J. Hanggi, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
Filed Nov. 30, 1973, Ser. No. 420,745
Int. Cl. G01m *11/00*
U.S. Cl. 356—256
2 Sheets Drawing. 6 Pages Specification



An optical bench for a stable source of radiation useful in spectrophotometry comprising a box formed of sides, a back, and a top and having a dovetail bar attached between the vertical sidewalls of the box. An opening is positioned in one of the sidewalls above the dovetail bar. A first and second lens mount is adjustably and slideably mounted on the dovetail bar. A beam splitting apparatus is likewise adjustably and slideably mounted on the dovetail bar between the first and second lens mounts. A light source is mounted on a separate mount but positioned in line with the first and second lens mounts, the beam splitter, and the opening in the box sidewall. Electronic circuitry sensitive to the light split off from the main beam is also adjustably mounted to the bottom of the box. The above unit forms a compact light source for spectrophotometry uses.

T928,006

SILENCERS

Victor Jeffrey Leslie, Potters Bar, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 17, 1973, Ser. No. 425,276

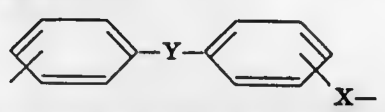
Claims priority, application Great Britain, Jan. 26, 1973, 4,125/73

Int. Cl. B44d *1/36*

U.S. Cl. 117—97

No Drawing. 6 Pages Specification

Silencers or mufflers for internal combustion engines are disclosed having at least one surface and preferably both the internal and external surfaces, coated with a polyarylene polyether containing aromatic ether or thioether groups in the polymer chain *ortho* or *para* to at least one —SO₂— or —CO— group. Thermoplastic polyarylene polyethers useful herein generally have at least some units of the structure:



in which *y* is oxygen or sulfur or the residue of an aromatic diol such as 4,4′-bisphenol. These polymers are resistant to road salt, slush and road water and protect the underlying metal substrate even at temperatures above 200° C.

The polyarylene polyether coating is preferably applied to the silencer or muffler after the article is fabricated as welding operations destroy the integrity of the polymer coating. The polymer is applied using conventional dipping, spraying, brushing or powder coating techniques and are preferably contained in a solvent solution.

Suitable solutions for coating polyarylene polyether contain 5 to 25 g. by weight of polymer in 100 ml. of solution (i.e. 5 to 25% w./v.) preferably 10–15% w./v. Suitable solvents include alkyl and aryl sulphones and sulphoxides, amides such as for example dimethylformamide, ketones such as for example cyclohexanone. The solvent or mixture of solvents used will depend on various factors such as solution pot-life required, ventilation and solvent evaporation facility available. A particularly preferred solvent mixture for optimum shelf life of the coating solution consists of cyclohexanone (15 to 20 parts by volume preferably about 18 parts), methyl ethyl ketone (4 to 7 parts preferably 5 parts) and dimethyl sulphoxide (1 to 3 parts preferably 2 parts). A preferred curing procedure for vaporization of solvent after coating requires heating at 100° C.±20° C. for 45 to 90 minutes followed by heating at 160° C.±20° C. for 90 to 180 minutes.

REISSUES

NOVEMBER 5, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,221

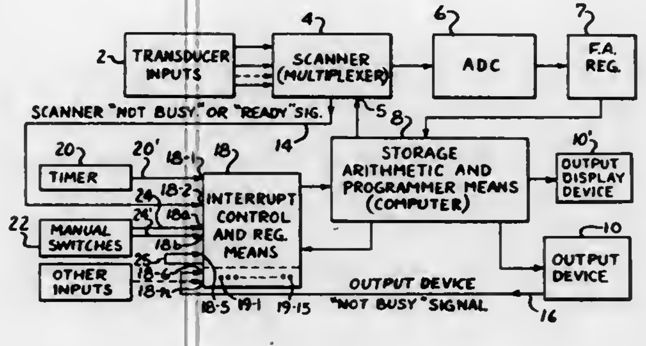
PRIORITY INTERRUPT MONITORING SYSTEM

Ralph Benghiat, Pacific Palisades, Calif., assignor to The Riley Co.

Original No. 3,221,309, dated Nov. 30, 1965, Ser. No. 130,615, Aug. 10, 1961. Application for reissue Sept. 13, 1973, Ser. No. 396,826

Int. Cl. G06f *9/00, 9/18*

U.S. Cl. 340—172.5 **14 Claims**



1. In a monitoring system including program means for providing different program routines each of which, by various basic steps effective in sequence, carries out a different function, the improvement in a priority interrupt system for automatically operating said routines in accordance with predetermined priority levels assigned to the respective routines, said priority interrupt system comprising: respective signaling means for generating interrupt demand signals which call for operation of said program routines; interrupt register means having for each priority level **[and]** *an* A bit storage means for storing a marker indicating the present or absence of an interrupt demand signal for the level involved and an R bit storage means for storing a marker indicating the current activity or inactivity of a program routine having the priority level involved; means for setting an R bit marker in the R bit storage means of a given priority level when the program routine of the priority level has been activated and for removing the R bit marker when the routine is completed, means responsive to the presence of an interrupt demand signal for a priority level and the absence of corresponding A and R bit markers in said interrupt register means for setting an A bit marker in the A bit storage means of the priority level involved; means responsive to the absence of an interrupt demand signal and the presence of an R bit marker for a given priority level for removing the corresponding A bit marker once the routine involved is activated; priority status scanning means for sequentially examining the information in said A and R bit storage means of said interrupt register means in the order of highest priority first, said priority status scanning means including means responsive to the presence of an A bit marker and the absence of an R bit marker for interrupting the program routine in progress, means for storing information on the point in the interrupted routine at which the interruption took place and initiating operation of the higher priority level routine, and means operative after completion of the higher priority level routine for resuming the interrupted program at the point of interruption thereof.

28,222

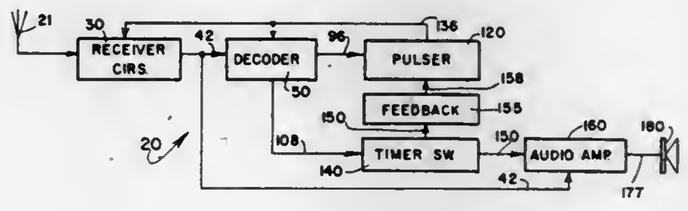
COMMUNICATION RECEIVER INCORPORATING TONE OPERATED PULSER CIRCUIT AND ELECTRONIC SWITCH

Keith H. Wycoff, 1205 N. Tyler St., Lexington, Nebr. 68850

Original No. 3,651,413, dated Mar. 21, 1972, Ser. No. 861,719, Sept. 29, 1969. Application for reissue June 6, 1973, Ser. No. 367,580

Int. Cl. H04b *1/06*

U.S. Cl. 325—492 **26 Claims**



1. A communication receiver for receiving carrier signals modulated by at least one control tone, said receiver comprising a processing circuit for receiving the modulated carrier signals and detecting the control tone therein, a pulser circuit coupled to said processing circuit and operative to produce a series of pulses for intermittently rendering said processing circuit operative, a decoder circuit coupled to said processing circuit and having first and second outputs, said decoder circuit producing at said first output a first control signal commencing with the initiation of the control tone and producing at said second output a second control signal commencing a predetermined time after initiation of the control tone, said pulser circuit having an input coupled to the first output of said decoder circuit and responsive to the application thereto of said first control signal to furnish a continuous supply voltage for said processing circuit for an interval substantially longer than the duration of each pulse in said series of pulses, an electronic switch circuit coupled to the second output of said decoder circuit and responsive to said second control signal to provide an enabling signal, a utilization circuit having an input coupled to said switch circuit and responsive to the enabling signal to provide an output signal, and an annunciator coupled to said utilization circuit for converting the output signal into usable form.

28,223

ELECTRON BEAM DEFLECTION APPARATUS

Conrad J. Odenthal, Beaverton, and George K. Hashizume, Portland, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

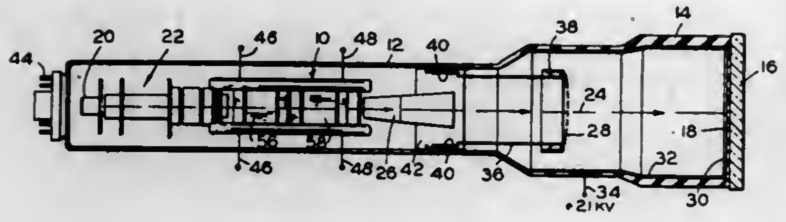
Original No. 3,694,689, dated Sept. 26, 1972, Ser. No. 118,293, Feb. 24, 1971. Application for reissue Oct. 27, 1972, Ser. No. 301,631

Int. Cl. H01j *25/36, 29/70;* **H03h** *7/30*

U.S. Cl. 315—3 **22 Claims**

1. An electron beam deflection tube in which the improvement comprises:

deflection means for deflecting an electron beam in said tube, including a pair of helical deflector members supported in spaced relationship on opposite sides of said beam, each of said helical members having a plurality of spaced turns positioned successively along the path of said beam with each turn including a pair of side portions separated by a deflector portion; and



compensation means for forming transmission lines of substantially uniform characteristics with said helical members, including a plurality of compensator plates supported in spaced relationship on opposite sides of the helical members so that said compensator plates each extend across both helical members adjacent said side portions outside of said helical members.

28,224

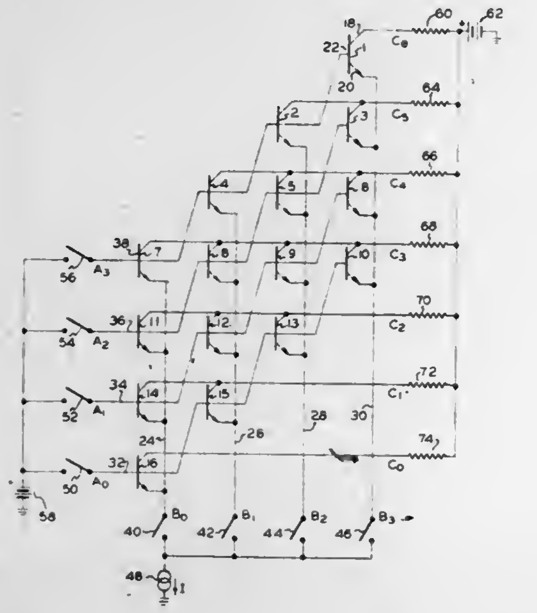
TRANSISTOR MATRIX

Michael H. Metcalf, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Original No. 3,587,052, dated June 22, 1971, Ser. No. 770,910, Oct. 28, 1968. Application for reissue Apr. 9, 1973, Ser. No. 349,094

Int. Cl. H01h *63/33*

U.S. Cl. 340—166 R **9 Claims**



14. A transistor matrix comprising:

a plurality of transistors in a monolithic integrated circuit structure, each transistor having a collector portion, a base portion, and an emitter portion, and input terminals separately connected to said emitter portions and base portions respectively, each transistor providing a collector output when both input terminals thereof receive a predetermined input.

plural adjacent collector regions in said monolithic integrated circuit structure, said collector regions being provided by adjacent isolation regions in a semiconductor layer of said monolithic integrated circuit structure, wherein collector portions of ones of said transistors form a part of the same collector region, while collector portions of other ones of said transistors form a part of other collector regions,

ones of said base portions being disposed along said isolation regions to provide one or more transistors along each such isolation region wherein a base portion separates an emitter portion from the corresponding collector region,

means interconnecting the emitter input terminals of said transistors in first groups corresponding respectively to first input values, said means interconnecting aid emitter input terminals comprising first conductors insulatably crossing said isolation regions and making connection only with emitter input terminals of transistors in the corresponding groups, wherein each first conductor connects emitter input terminals of not more than one transistor per isolation region,

and means interconnecting the base input terminals of said transistors in second groups corresponding respectively to second input values, each transistor being identified by a unique combination of input connections with respect to said first and second groups,

said means for interconnecting said base terminals in second groups comprising second conductors disposed in between said first conductors and connecting a base input terminal disposed in one isolation region with a base input terminal in the next adjacent isolation region of a transistor the emitter of which is connected in a different first group by a different first conductor, at least ones of said base portions being provided with a pair of base terminals, one on each side of an emitter portion, and to which said second conductors are connected in order that said second conductors may be located in between first conductors without crossing first conductors.

28,225

PHOTOBLEACHABLE DYE COMPOSITIONS

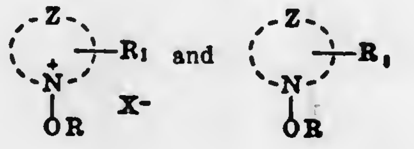
Donald W. Heseltine, Philip W. Jenkins and John D. Mee, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original No. 3,615,432, dated Oct. 26, 1971, Ser. No. 766,307, Oct. 9, 1968. Application for reissue Apr. 30, 1973, Ser. No. 356,674

Int. Cl. G03c *1/72, 5/04*

U.S. Cl. 96—27 R **34 Claims**

1. An image-forming composition comprising [an energy-sensitive compound] *a film-forming binder and a photobleachable dye* having a formula selected from the group consisting of:



wherein:

R_1 is a methine terminated by a 5 to 6 membered heterocyclic nucleus, *containing carbon atoms and at least one heteroatom chosen from the class consisting of oxygen, sulfur, nitrogen, and selenium atoms;*

R_8 is selected from the group consisting of:

a. a methine linkage terminated by a heterocyclic nucleus of the type contained in merocyanine dyes *containing carbon atoms and at least one heteroatom chosen from the class consisting of oxygen, sulfur, nitrogen, and selenium atoms and*

b. an allylidene radical;

R is selected from the group consisting of:

a. an alkyl radical and

b. an acyl radical;

X is an acid anion; and

Z represents the atoms necessary to complete a 5- [to] *or* 6-membered heterocyclic nucleus *including the substituted nitrogen atom, carbon atoms and up to one or more other heteroatoms chosen from the group consisting of nitrogen, oxygen, sulfur and selenium atoms.*

28,226

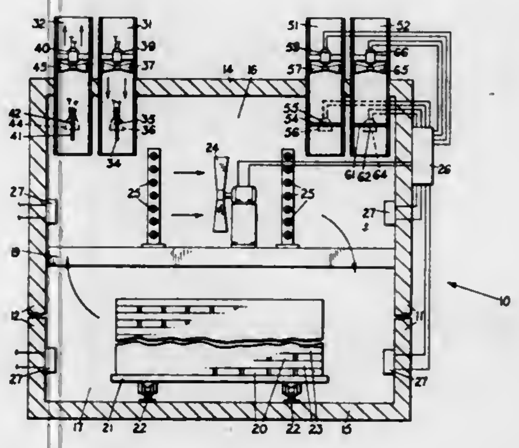
CIRCULATING AIR DRYER

Franklin W. Cook, Portland, Oreg., assignor to F. W. Cook & Associates, Inc., Portland, Oreg.

Original No. 3,659,352, dated May 2, 1972, Ser. No. 38,451, May 18, 1970. Application for reissue Nov. 26, 1973, Ser. No. 419,134

Int. Cl. F26b *21/06*

U.S. Cl. 34—191 **5 Claims**



10. A circulating air dryer including a chamber having a space for holding materials to be dried,

a reversible power-operated air mover for selectively circulating air through said space in either of opposite directions with such air moving from the exhaust side of the mover into and through said space and thence to a negative pressure area on the suction side of the mover,

one exhaust port connecting with the atmosphere and communicating with said chamber at one region which is on the suction side of the mover and at negative pressure with the mover circulating air in one direction through said space, and another exhaust port also connecting with the atmosphere and communicating with said chamber at another region which is on the suction side of said air mover and at negative pressure with the mover circulating air in the opposite direction through said space,

selectively operable power-operated fan means for producing an exhaust flow of air from said one region of the chamber to said atmosphere through said one exhaust port when said one region is at negative pressure and movement of air is in said one direction and for producing an exhaust flow of aid from said other region of the chamber to said atmosphere through said other exhaust port when said other region is at negative pressure and movement of air is in said other direction, and

means for introducing makeup air and means for introducing heat to the circulating air after such circulating air passes the region where exhaust flow is taking place and before such air enters into said space with air being circulated in either of opposite directions through said space.

28,227

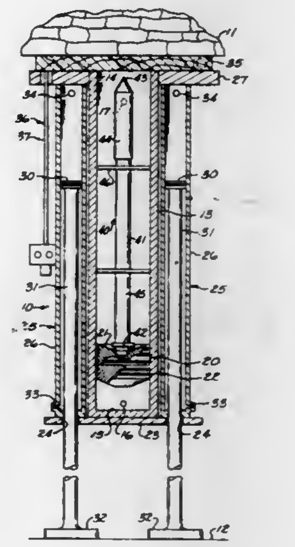
MINE ROOF PINS AND APPARATUS FOR SETTING THE SAME

Gerald W. Elders, Aspen, Colo., assignor to Lee-Norse Company, Charleroi, Pa.

Original No. 3,643,542, dated Feb. 22, 1972, Ser. No. 110, Jan. 2, 1970, which is a continuation-in-part of application Ser. No. 846,795, Aug. 1, 1969. Application for reissue Apr. 18, 1973, Ser. No. 352,278

Int. Cl. F16b *15/00*

U.S. Cl. 85—10 R **9 Claims**



1. A roof pin adapted to be pressed into a mine roof, comprising:

- (a) elongate shank means having a head at one end and a pointed tip at the other end, a first portion of the shank means being of greater peripheral dimension than a second portion to provide a contact surface engageable with the roof material when the pin is pressed into the mine roof, the area of the contact surface being preselected to control the amount of surface pressure and skin friction and thereby predetermine the force required for insertion.
- (b) the first shank portion, that is of greater peripheral dimension and provides the preselected contact surface area, is located ahead of the relatively reduced second shank portion in the direction of the pointed tip to provide a passage in the roof strata that is larger than the reduced shank portion.

28,228

BOOSTER CAP ASSEMBLY

Donald P. Graham, South Bend, Ind., assignor to Hercules, Inc., Wilmington, Del.

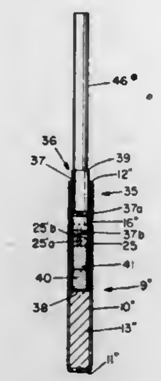
Original No. 3,640,222, dated Feb. 8, 1972, Ser. No. 787,413, Dec. 27, 1968. Application for reissue Dec. 3, 1973, Ser. No. 421,299

Int. Cl. F42b *3/10*

U.S. Cl. 102—24 R **14 Claims**

1. A booster assembly [comprising] *having* a booster unit slipped onto [a] *an elongated* cap-, or fuse-type primary initiator, comprising, as said booster unit, an elongated shell open at one end and closed at the other end, *and* from 1 to 6 grams secondary high explosive within and completely filling, a closed end section of said shell [, and the remaining section of said shell being open and unobstructed]; said primary initiator having

an external transverse cross section sufficiently less than, and correlated with, the internal transverse cross section of [said] *an* open end shell section *of said booster unit* so as to permit at least an *initiating* end portion of said *primary* initiator to be coaxially disposed within said open end shell section in [force fit] *substantially* closing relationship with said shell along substantially the entire external primary initiator surface within said *open end* shell *section and in initiating relationship with said secondary high explosive; indentation means extending into said open end shell section from the external wall thereof; and* said booster unit [, at its] *having said* open end [,] *shell section* [coaxially] slipped [in said force fit] on to at least [an] *said initiating* end portion of said primary initiator *in force fit relationship of said indentation means with said primary initiator and* with said secondary high explosive in detonating relationship with said primary initiator [; and crimp means on the external wall of said open end shell section extending into supporting contact with said initiator therein].



28,229
β-ALKOXY-TRIFLUOROMETHYLPHENALKYLAMINES

John A. Faust, Solvang, and Melville Sahyun, Santa Barbara, Calif.; said Faust assignor to said Sahyun, doing business as Sahyun Laboratories, Santa Barbara, Calif.

No Drawing. Original No. 3,459,803, dated Aug. 5, 1969, Ser. No. 666,457, Sept. 8, 1967, which is a continuation-in-part of Ser. No. 467,759, June 28, 1965. Application for reissue July 28, 1970, Ser. No. 59,042, now reissue Patent No. 27,551, dated Jan. 16, 1973. Divided and this application for reissue Oct. 12, 1972, Ser. No. 297,100

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 **1 Claim**

1. The process of reducing appetite which comprises administering to animals in need thereof an appetite reducing amount of N-benzyl-β-methoxy-β-(3-trifluoromethyl)phenethylamine or a pharmaceutically acceptable acid addition salt thereof.

28,230
METHOD OF MAKING A MINIATURE METALIZED CAPACITOR

Charles C. Rayburn, Glenview, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Original No. 3,715,784, dated Feb. 13, 1973, Ser. No. 104,887, Jan. 8, 1971, which is a division of application Ser. No. 4,386, Jan. 20, 1970, now Patent No. 3,576,481. Application for reissue Aug. 29, 1973, Ser. No. 385,112

Int. Cl. H01g *13/00*

U.S. Cl. 29—25.42 **5 Claims**

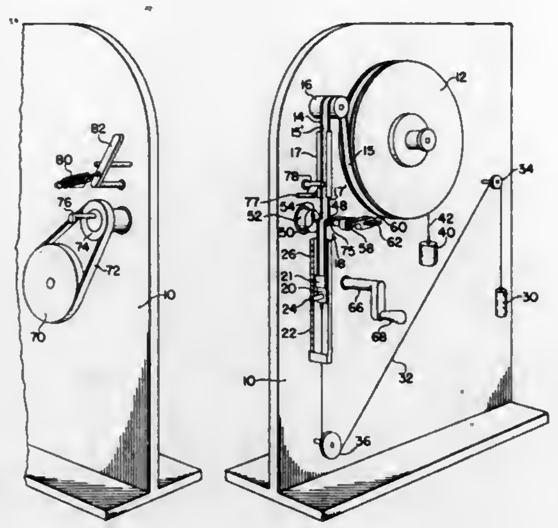
1. A method of winding a capacitor from a single strip of dielectric with a metalized coating on each of its sides comprising the steps of:

doubling back a central portion of said strip upon itself;

winding said doubled back portion around at least portions of each of first and second lead wire members which are separated from each other by at least three layers of said strip;

winding the remainder of said strip including its two ends about said doubled back portion, and

sealing said ends of said strip to the previously wound portions thereof.



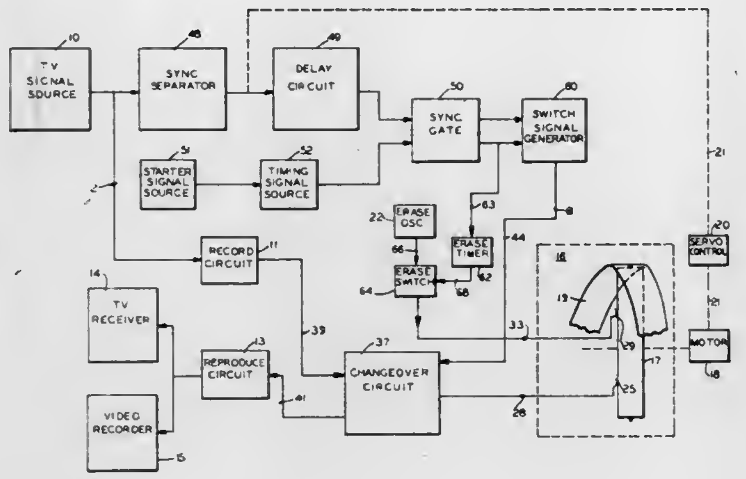
28,231
SINGLE PICTURE SELECTOR SYSTEM

Arturo E. Stosberg, Otelsinger, Switzerland, and Donald A. Horstkorta, Menlo Park, Calif., assignors to Kurt R. Machein, Palo Alto, Calif.

Original No. 3,397,283, dated Aug. 13, 1968, Ser. No. 417,677, Dec. 11, 1964. Application for reissue Feb. 2, 1970, Ser. No. 15,334

Int. Cl. H04m *5/78*

U.S. Cl. 360—35 **15 Claims**



1. An electronic system wherein a single composite television signal is recorded and reproduced and which is selected from a multiple composite television signal having vertical sync signals, said electronic system comprising: a sync pulse supply means to receive the multiple television signal and develop delayed vertical sync pulses from the vertical sync signals to occur during the blanking intervals and after the equalizing pulses thereof; a timing signal source to provide a selector signal initiated at any selected time; a sync gate connected to said sync pulses supply means and to said timing signal source to

provide a first pulse signal including the delayed sync pulses from said sync pulse supply means occurring during the selector signal, and to provide a second pulse signal including all the other delayed sync pulses from sync pulse supply means; a switch signal generator connected to said sync gate for developing a switch operating signal initiated by the first delayed sync pulse of said first pulse signal during said selector signal and terminated by the next occurring delayed sync pulse of said second pulse signal; a storage device for recording and reproducing signal composite television pictures and including a record circuit, a reproduce circuit, and transducer means, said storage device having a rotatable drum being responsive to the vertical sync signals of the multiple television signal to be rotated in synchronization therewith; and an electronic changeover circuit connected to said switch signal generator and to said storage device and including a record switch connected between the record circuit and the transducer means to allow the passage therebetween only during the switch operating signal, and including a reproduce switch connected between the reproduce circuit and the transducer means to allow the passage therebetween at all other times.

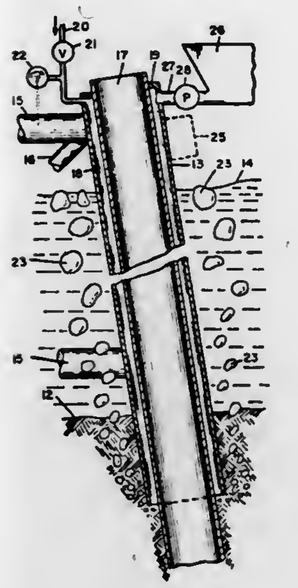
28,232
METHODS OF GROUTING OFFSHORE STRUCTURES

Max Bassett, Houston, Tex., and Horace W. Olsen, deceased, late of Houston, Tex., by Magdalene M. Olsen, executrix, Houston, Tex., assignors to C. Nelson Shields, Jr., trustee

Original No. 3,601,999, dated Aug. 31, 1971, Ser. No. 858,951, Sept. 18, 1969. Application for reissue July 11, 1973, Ser. No. 378,196

Int. Cl. E02b *17/00;* **E02d** *5/24*

U.S. Cl. 61—46 **15 Claims**



1. A method of grouting an offshore structure having at least one supporting leg including a tubular jacket extending downwardly from above the waterline to the seabed and a piling driven through said jacket into the seabed with an annular space existing between the inside of the jacket and said piling; said method comprising the steps of

a. sealing the upper end of said jacket to said piling so as to close said annular space at the upper end of the jacket;

b. introducing compressed air into said annular space at a point adjacent the upper end of the jacket and above the waterline so as to expel water from said space through the lower end of the jacket;

c. introducing fluid grouting material into said annular space at a point adjacent the upper end of the jacket and above the waterline after water has been expelled from said space as aforesaid;

d. simultaneously maintaining static air pressure in said annular space sufficient to prevent ingress of water through the lower end of said jacket while the grouting material is being introduced into said space; and

e. permitting the grouting material to set.

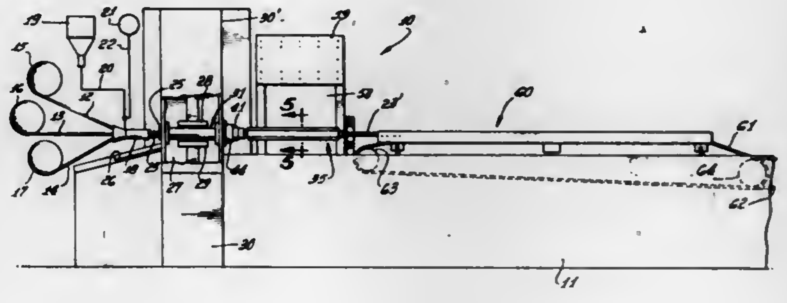
28,233
AUGMENTED CURING OF REINFORCED PLASTIC STOCK

William Brandt Goldsworthy, Palos Verdes Estates, Calif., assignor to Glastrusions, Inc., Torrance, Calif.

Original No. 3,674,601, dated July 4, 1972, Ser. No. 61,934, Aug. 7, 1970, which is a continuation-in-part of application Ser. No. 648,347, June 23, 1967, now Patent No. 3,556,888. Application for reissue July 13, 1973, Ser. No. 378,813

Int. Cl. B29c *19/02;* **B29h** *9/00*

U.S. Cl. 156—380 **9 Claims**



1. An augmented curing former comprising
a frame,
a composing die,
material supplies for said composing die, including fiber strands, thermosetting resin and hardener forming a continuous strand of impregnated stock,
a primary heating station including a pathway for said stock and comprising an electrically shielded chamber and a set of high frequency electrodes in said chamber adjacent said pathway,
a secondary hardening station comprising a finish die having a passage therethrough in alignment with said pathway, said finish die being out of the influence of said electrodes and having [a mating] *an* end in [liquid-tight] *downstream* relationship with said heating station at an exit end of said pathway,
and pull means adjacent the downstream end of said finish die adapted to engage said stock and to pull said stock from the finish die.

28,234
N-NITROSO-4,4′-BIS(2-PHENYLISOPROPYL)-DIPHENYLAMINE

Guy Bertrand, Choisy-le-Roi, and Jean Marc Maison, Paris, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Original No. 3,668,253, dated June 6, 1972, Ser. No. 70,724, Sept. 9, 1970, which is a division of application Ser. No. 757,757, Sept. 5, 1968, now Patent No. 3,573,252. Application for reissue Jan. 31, 1973, Ser. No. 328,264

Claims priority, application France, Sept. 20, 1967, 121,670

Int. Cl. C07c *87/28*

U.S. Cl. 260—570 R **1 Claim**

1. N-nitroso-4,4′-bis(2-phenylisopropyl)-diphenylamine.

REISSUE 28,235
WITHDRAWN

PLANT PATENTS

GRANTED NOVEMBER 5, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,644
FLOWERING CRABAPPLE TREE

Henry A. Ross, Strongsville, Ohio, assignor to Cole Nursery Company, Inc., Circleville, Ohio
Filed Aug. 8, 1973, Ser. No. 386,555
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of flowering crabapple tree, *Malus cultivar*, having a distinct pendulous habit, with rounded, umbrella-like top and arching branches, an abundance of small white flower clusters during the blooming period, and an abundance of small, glossy, lemon yellow to greenish yellow fruits.

3,645
KALANCHOE PLANT

Grady Howard, Jr., Amarillo, Tex., assignor of a fractional part interest to J and L Plants, Incorporated, doing business as Howard Greenhouses, Canyon, Tex.
Filed Oct. 16, 1973, Ser. No. 406,916
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of kalanchoe plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a branching and medium tall habit of growth, attractive Fern Green foliage of medium size, a uniform blooming date and fast photo-periodic response, production of a profusion of relatively large flowers which are borne moderately close to the foliage, a distinctive and attractive Crimson flower color, long-lasting qualities, and the ability to be brought into flower all year round, even under high night temperatures of summer.

3,646
KALANCHOE PLANT

James T. Irwin, Canyon, Tex., assignor to J and L Plants, Incorporated, Canyon, Tex.
Filed Oct. 11, 1973, Ser. No. 405,493
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of kalanchoe plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a highly self-branching, sturdy and compact habit of growth, but being more upright and less spreading and looser or more open than the habit of "Jean," dense, compact and attractive foliage, a larger individual flower size, with a compact flower tendency, a distinctive and attractive light pink flower color, a uniform blooming response and uniform blooming height ranging from about 10 to 12 inches, the ability to respond to photo-periodic changes, with consequent ability to be brought into bloom all year around, the ability to initiate and develop flower buds under high night temperatures when other varieties stall, and the ability to withstand northern winters better than most hybrid kalanchoe varieties.

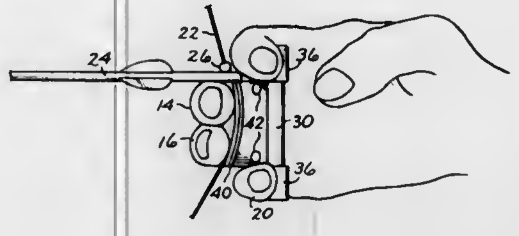
PATENTS

GRANTED NOVEMBER 5, 1974

GENERAL AND MECHANICAL

3,845,504
ARCHER'S FINGER TAB

Gerald I. Killian, 12350 S.E. Stevens Rd., Portland, Oreg. 97266
Filed Mar. 1, 1973, Ser. No. 337,125
Int. Cl. A41d *13/00*
U.S. Cl. 2—21 **8 Claims**

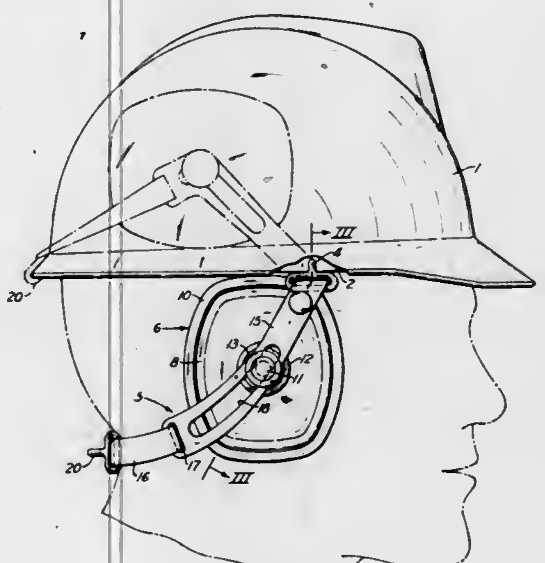


1. An archer's finger tab for use with an archery bow string, comprising

- a. an elongated base member, and
- b. a flexible string-engaging tab member extending forwardly from the base member intermediate the ends of the latter,
- c. the tab member having a string-engaging width dimensioned to span substantially only the two middle fingers of an archer's hand,
- d. the end portions of the base member projecting from opposite sides of the tab member being arranged for engagement by the index and little fingers, respectively, of the archer's hand.

3,845,505
ADJUSTABLE EAR COVER ASSEMBLY FOR SAFETY HATS

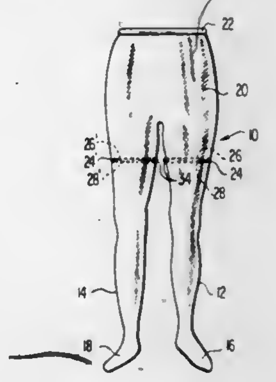
Ellison L. Davison, Gibsonia, and Robert F. Menold, Monroeville, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed June 28, 1973, Ser. No. 374,528
Int. Cl. A42b *1/24*
U.S. Cl. 2—209 **1 Claim**



1. The combination with a safety hat provided with a brim, a pair of protective ear covers having inner sides shaped to receive a man's ears and engage the side of his head around the ears, a headed boss projecting centrally from the outer side of each ear cover, a supporting device for said ear covers comprising three straps connected end to end and forming a closed path when attached to the hat, means located on the opposite ends of said supporting device for securing it to the bottom of the hat, the two end straps being flexible and nonelastic, the third strap being elastic and adapted to extend around the nape of the neck in engagement therewith, each of said end straps extending across the outer side of one of said ear covers and provided with a longitudinal slot receiving the adjoining headed boss, whereby the ear covers are adjustable lengthwise of the straps, and C-shaped hook means slidably mounted on said elastic strap for gripping the brim of the hat when the elastic strap and said ear covers are in a stored position above the brim.

3,845,506
PANTY HOSE STOCKING

Della Harris, 89 Kingswood St., Morgantown, W. Va. 26503
Filed Mar. 8, 1973, Ser. No. 339,139
Int. Cl. A41b *9/04*
U.S. Cl. 2—224 R **5 Claims**



1. In a knitted panty hose stocking unit having two leg portions, corresponding foot portions, and a trunk portion integral with said leg portions, the upper extremity of said trunk portion terminating in a supporting waist band, the improvement comprising:

an integral, continuous circumferential band at the midthigh region of each of said leg portions, each of said bands including at least one interwoven course of nonravelling lock stitches disposed adjacent the lower extremity of the upper thigh portion of said unit for preventing the ravelling thereof when the leg portion therebelow is separated from said unit;

means carried by said bands for selectively disconnecting the leg portion therebelow from said unit, said means including a pair of abutting but not interwoven continuous circumferential courses of knitted loops and at least one waste thread connecting said loops and extending circumferentially through said band so that when said thread is removed from said band the leg portion of said unit therebelow is disconnected from said unit, said interwoven course of lock stitches preventing ravelling of the remaining upper thigh portion thereof; and a pull tab affixed to said waste thread.

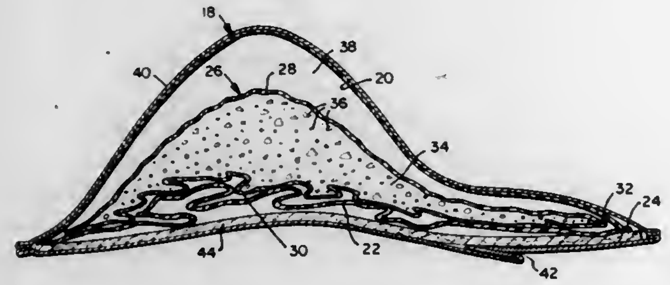
3,845,507
BRASSIERE WORN BREAST PROSTHESIS

John Ashley Kirby, and Louis J. Colonnese, both of Fairfield, Conn., assignors to George C. Batcheller Co., Inc., Bridgeport, Conn.

Filed Dec. 14, 1972, Ser. No. 315,003

Int. Cl. A41c *3/10*

U.S. Cl. 3—36 **30 Claims**



1. A breast prosthesis adapted to be worn in the bust cup of a brassiere comprising, in combination:

A. an outer air impervious bag, the front surface of which is substantially the same size and shape as the bust cup within which it is to be worn;

B. an inner air and liquid impervious bag within said outer bag containing a liquid;

C. a valve for admitting or releasing air to or from said outer bag; and

D. means joining said inner and outer bags to each other along the top peripheries thereof.

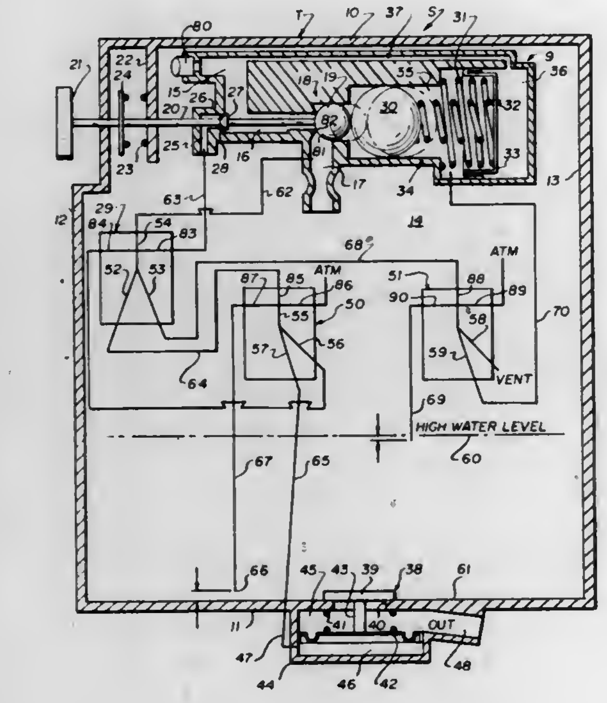
3,845,508
WATER CLOSET CONTROL SYSTEM

Cecil D. Oglesby, Manchester, Mo., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 30, 1973, Ser. No. 346,398

Int. Cl E03d *3/00*

U.S. Cl. 4—41 **6 Claims**



1. A system for controlling admission of fluid to a container and discharge of fluid therefrom including:

a source of fluid under pressure;

passage means arranged for conducting fluid from said source to said container;

a normally closed inlet valve having a movable closure member disposed in said passage means, said closure member including a face arranged for exerting an opening force on said closure member in response to pressure fluid in said passage means, having a lesser effective area exposed to said pressure fluid in a seated condition and a greater effective area exposed to said pressure fluid in an unseated condition;

biasing means arranged for exerting a closing force on said closure member, including a first fluid motor;

a control member arranged and disposed for transmitting an unseating force to said closure member;

a normally closed reset valve disposed in said passage means, said reset valve being opened in response to actuation of said control member;

a normally closed discharge valve arranged for controlling discharge of fluid from said container including a second fluid motor arranged for opening said discharge valve and;

a fluid logic circuit connected to said passage means including fluidic switching gates arranged for supplying pressure fluid to said second fluid motor in response to actuation of said control member, and thereafter sequentially switching pressure fluid to said container in response to a preselected low fluid level therein, and switching pressure fluid to said first fluid motor in response to a preselected high fluid level in said container.

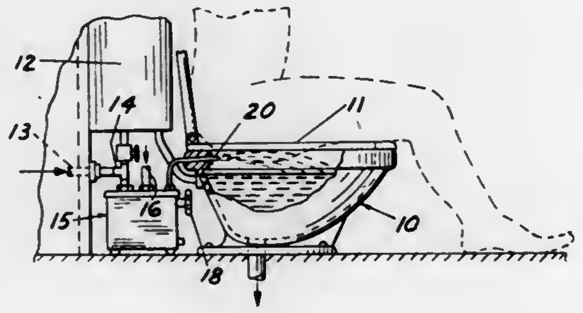
3,845,509
BIDET-COMMODES

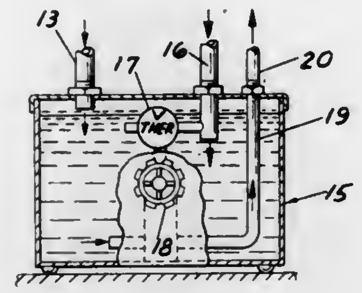
Samuel L. Lieber, Shreveport, La.

Filed Nov. 3, 1972, Ser. No. 303,487

Int. Cl. A47k *3/22, 11/08*

U.S. Cl. 4—7 **1 Claim**





1. In a bidet-commode having a water storage tank, a commode bowl and associated means for flushing water into a sanitary sewer system the improvement comprising:

a generally closed mixing chamber operably disposed adjacent said storage tank and commode bowl, said mixing chamber including a bottom member, side walls integrally connected to and upstanding from said bottom member and a cover member connected to said side walls and enclosing said mixing chamber;

a relatively cold water conduit means extending through said cover member for delivering relatively cold water into the interior of said mixing chamber, said cold water conduit being postured to issue cold water toward said bottom member;

a relatively hot water conduit means extending through said cover member for delivering relatively hot water into the interior of said mixing chamber, said hot water conduit being postured to issue hot water toward said bottom member;

said cold and hot water conduits, directed toward said bottom member, serving to issue pressurized streams of fluid through said mixing chamber to facilitate complete mixing of the cold and hot fluids within the mixing chamber;

thermostat controlled valve means positioned within the interior of said generally closed mixing chamber and being connected to the outlet of said hot water conduit within said generally closed mixing chamber for controlling the temperature of the fluid within said generally closed mixing chamber;

a water carrying service tube having;

a first end extending into said generally closed mixing chamber and terminating adjacent said bottom member of said mixing chamber in a posture remote from said relatively cold and hot conduit means extending into said generally closed mixing chamber through said cover member to facilitate complete mixing of the cold and hot fluids within the mixing chamber prior to entry of of the fluid into said first end of said water carrying service tube, said service tube further having,

a second end extending through an integrally formed opening within an upper rim portion of said commode bowl, said second end extending through the rim in a posture located above the normal working water level of said commode bowl and being angled slightly upwardly to permit a jet of water issuing therefrom under pressure to be directed toward the posterior of an operator sitting in a normal position on said commode bowl; and

valve means interposed within said water carrying service tube for selectively regulating the pressure and volume of water issuing through said water carrying service tube wherein an operator may selectively adjust the intensity and volume of warm water issuing into said bidet-commode.

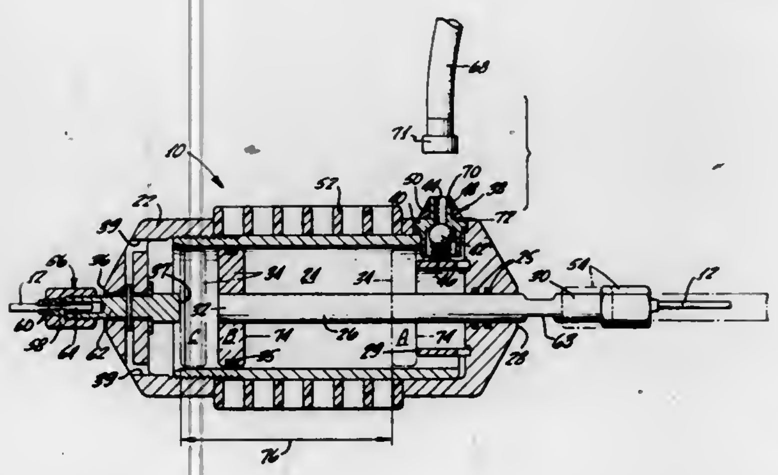
3,845,510
SWIMMING POOL RACING LINE TAKE-UP FLOAT ASSEMBLY

William O. Baker, Corona Del Mar, and Charles S. Johnson, Laguna Niguel, both of Calif., assignors to Baker Hydro Inc., Irvine, Calif.

Filed Dec. 21, 1973, Ser. No. 427,090

Int. Cl. E04h *3/16, 3/18*

U.S. Cl. 4—172 **11 Claims**



1. A swimming pool racing line take-up device comprising:

a hollow casing;

a movable member mounted within said casing, one end of said member extending through one end of said casing,, said one end of said member connected to said racing line; the other end of said casing being connected to a side of said swimming pool;

means located on said casing for allowing fluid communication between the interior of said hollow casing and an outside fluid supply; and

means attached to said movable member and responsive to said fluid communication for moving said movable member and induce strain in said racing line.

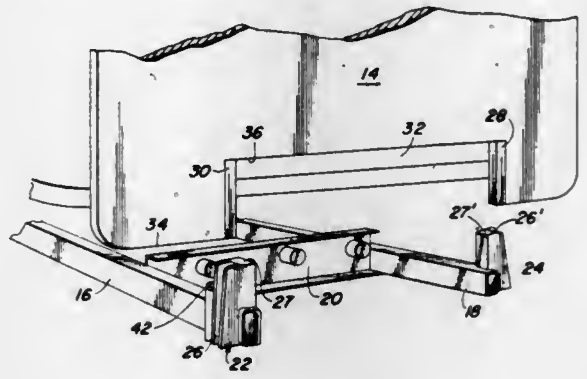
3,845,511
UNIVERSAL HEADBOARD CONSTRUCTION

Roland A. Benoit, Danielson, and Richard H. Duprey, Dayville, both of Conn., assignors to Interroyal Corporation, New York, N.Y.

Filed Aug. 10, 1972, Ser. No. 279,434

Int. Cl. A61g *7/10*

U.S. Cl. 5—53 R **8 Claims**



1. A headboard mounting, comprising a bed frame having means defining upright receiving channel means opening outwardly in respective opposite directions, and a headboard having a bottom with an upwardly extending recess with a marginal wall edge on each side of the recess engageable in the respective receiving channels.

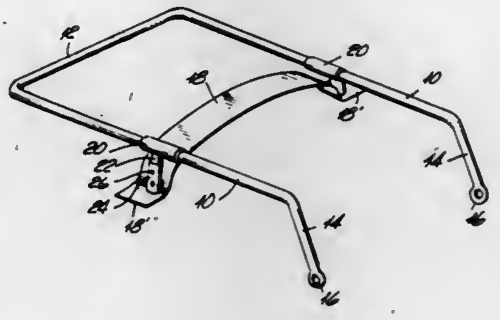
3,845,512
INFANT BED FOR USE ON HORSEBACK

Donald E. Cobb, Belvidere, Kans., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed May 9, 1973, Ser. No. 358,592

Int. Cl. A61g *1/00*

U.S. Cl. 5—82 **2 Claims**



1. A bed for infants adapted to be secured to the back cinching of a saddle when the saddle is secured to a horse, said bed comprising:

a U-shaped tubular frame disposed horizontally with parallel legs, each leg having at its free end an extension disposed inclinedly downwards and terminating in a grommet;

lace means detachably securing said grommets to said cinch ring;

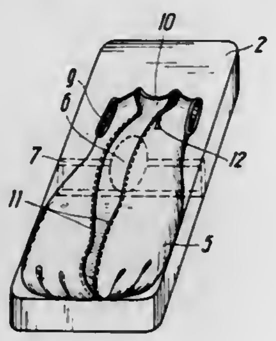
a curved band extending transversely between the legs in a position intermediate the ends thereof, each end of the band having a flattened portion disposed below the corresponding leg;

first and second vertical sleeves, each sleeve being secured at its bottom end to a corresponding flattened portion and

extending upward towards the corresponding leg;
first and second horizontal sleeves, each having a vertically downwardly extending stub, each horizontal sleeve slidingly engaging the corresponding leg with its corresponding stub extending into and engaging the top end of the corresponding vertical sleeve; and
bedding disposed over the frame and band.

3,845,513
SAFETY SLEEPING BAG FOR INFANTS AND BABIES

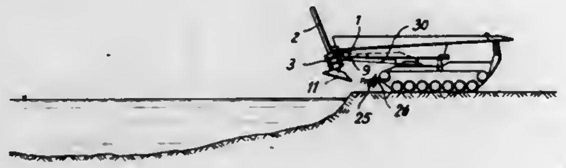
Heidegund Hubner, Kreuzackerstrasse 2, D-7157 Sulzbach-/Murr, Germany
Filed May 11, 1973, Ser. No. 359,602
Claims priority, application Germany, Mar. 18, 1972, 7218455
Int. Cl. A47g *9/00*
U.S. Cl. 5—336 **5 Claims**



1. A safety sleeping bag for infants adapted to be detachably connected to the mattress of the crib comprising a stretchable bedlinen sheet, a closeable blanket of stretchable terrycloth, having a bodice-like upper portion with a square neck and a bag-like lower portion, sewn jointly with a soft, absorbant filler, to the sheet at an elliptically shaped surface portion of a back area of the blanket, a tension band, attached to the opposite side of the sheet in the area of the surface portion and adapted to securely surround the crib mattress, a divisible zipper, extending from the top of the bodice-like upper portion to the base of the bag-like lower portion, the slide of which is located in the bag-like lower portion when the zipper is closed, and a retainer for a disposable diaper, secured to a back portion of the blanket below the elliptically shaped surface portion.

3,845,514
MOVABLE BRIDGE LAYING DEVICE

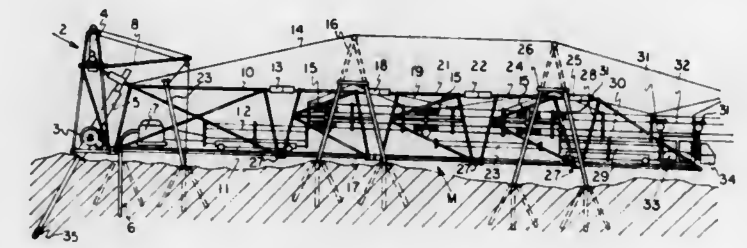
Gerhard Wagner, Mainz-Lerchenberg, Germany, assignor to Klockner-Humboldt Deutz Aktiengesellschaft, Koln-Deutz, Germany
Filed Nov. 10, 1972, Ser. No. 305,345
Claims priority, application Germany, Nov. 12, 1971, 2156249
Int. Cl. E01d *1/00*
U.S. Cl. 14—1 **20 Claims**



1. A bridge laying device which comprises: a vehicle, a bridge having a plurality of bridge sections, a laying device by means of which the bridge can be advanced and deposited into its position of use, said bridge having its front end provided with supports which are adapted to be placed on the ground of the obstacle to be bridged, bridge beams forming roadways, said supports being mounted at the front end of said bridge on the outside adjacent said bridge beams, and a transverse beam operatively connected for supporting additional bridge sections independently of said bridge, said transverse beam being linked to the front end of said bridge below said roadways, said supports being operatively mounted on said transverse beam, said supports together with said transverse beam forming a structural unit detachably connected to said bridge.

3,845,515
SELF-PROGRESSING CONSTRUCTION SYSTEM

Egon Gelhard, Mehlemer Strasse 28, 5, 51, Cologne, and H. Rudolf Gunkel, E. Gerlander Strasse 5A, 6390 Usingen, both of Germany
Filed Aug. 14, 1972, Ser. No. 280,180
Claims priority, application Germany, Aug. 14, 1971, 2140797
Int. Cl. E01d *19/02*
U.S. Cl. 14—77 **5 Claims**

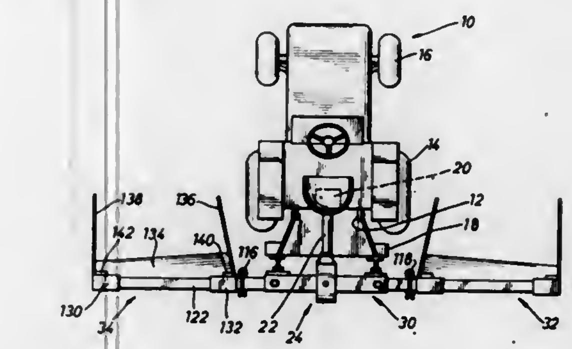


1. A method for the self-progressing construction of a pipe railroad comprising the steps of:
a. providing an initial section of the pipe railroad, said railroad having a plurality of interconnected supports with pipe suspended therefrom, said pipe containing a vehicle trackway therein to form the pipe railroad and exterior vehicle trackways along opposite sides thereof;
b. transporting forward new pipe sections having construction supplies loaded therein from a supply depot by a rail vehicle movable along one of said exterior trackways;
c. providing a self-advancing assembly structure movable along and adjacent the forward end of said initial section of the railroad, said assembly structure having a rear receiving section and a forward erecting section;
d. transferring said loaded pipe from the rail vehicle to the receiving section of said assembly structure and unloading said construction materials therefrom;
e. utilizing said assembly structure and supplies to erect supports in advance of the initial section;
f. suspending said now empty pipe from said erected supports and securing the pipe end to end to the initial section of the pipe railroad; and
g. returning the rail vehicle along the other of said exterior trackways to the supply depot.

3,845,516
LITTER REMOVAL MECHANISM FOR POULTRY HOUSES AND THE LIKE

Bennie J. Abbott, Centerville, Tex., and Jeff A. Stroud, Rt. 2, Box 25, Madisonville, Tex. 77864
Filed Nov. 29, 1972, Ser. No. 310,219
Int. Cl. A01k *31/04*
U.S. Cl. 15—93 B **13 Claims**

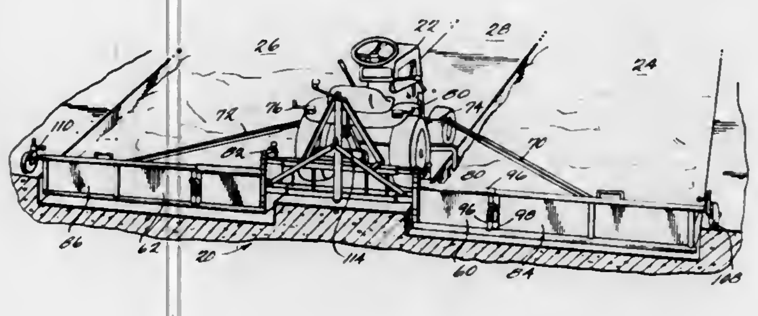
1. A litter removal mechanism for poultry houses and the like comprising:
a vehicle mechanism provided with front and rear wheels, having a rear bumper assembly and having an implement lift;
a support framework being movably retained by said bumper assembly and being operatively connected to said lift;
a pair of scraper blades being pivotally supported one at either extremity of said support framework, said scraper blades being pivotally movable by ground resistance force applied to said scraper blades during scraping movement of said vehicle mechanism from an operative laterally extended position of said blades where said blades are substantially co-extensive with said support framework, to a collapsed position by inertia developed upon movement of said vehicle in an opposing direction where said blades are disposed in angulated relation with said support framework and the effective width of the scraper blades and support framework assembly is reduced;



an adjustment yoke being supported in immovable relation with said implement lift;
jack screw means being threadedly received by said adjustment element and being connected to said support framework, said jack screw means being rotatable to impart vertical movement to said support framework relative to said implement lift.

3,845,517
SCRAPER ATTACHMENT

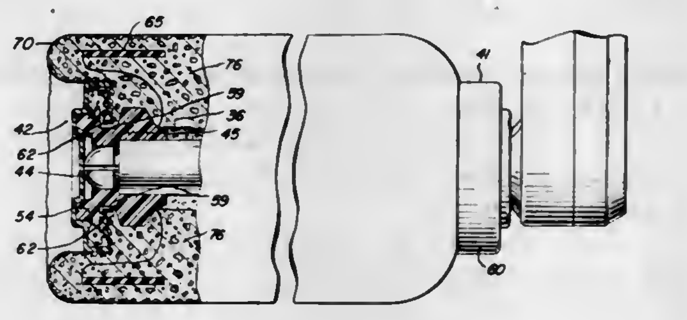
James Leslie Harris, P.O. Box 74436, Sulphur, Okla. 73086
Filed Jan. 10, 1973, Ser. No. 322,545
Int. Cl. A01k *31/04*
U.S. Cl. 15—93 B **15 Claims**



1. A scraper attachment for a vehicle comprising:
a frame for attachment to said vehicle including at least a single horizontally extending, hollow tubular member,
at least a single scraper blade member,
means for mounting said scraper blade member on said frame for movement in a horizontal direction toward and away from said frame, and pivotably about a substantially vertical axis, said means for mounting including a further member mounted for sliding movement within said hollow member, and a bearing member attached to said further member and defining a vertical pivoting axis, and means mounted on said frame and connected to said mounting means for causing said scraper blade member to move in said horizontal direction toward and away from said frame including
a screw member,
means for mounting said screw member on said frame for rotation about a vertical axis,
crank handle means for manually rotating said screw member,
means engaging the threads of said screw member for vertical movement as said crank handle means rotates said screw means, and
strut means connecting said further means to said thread engaging means for causing said further member to move horizontally as said thread engaging means moves vertically.

3,845,518
MOP HEAD

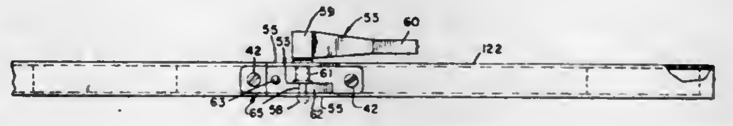
Samuel J. Popeil, Chicago, and David V. Shaw, Villa Park, both of Ill., assignors to Popeil Brothers, Inc., Chicago, Ill.
Filed Aug. 8, 1973, Ser. No. 386,568
Int. Cl. A47l *13/142, 13/16*
U.S. Cl. 15—228 **8 Claims**



1. A mop head for use with a wringer mop having a mop head support shaft, one end of which is rotatable while the other is fixed, each shaft end having means to engage a wringer spool and anchor spool, and a mop handle generally perpendicualr to the shaft comprising,
a sponge block having a rectangular cross section and having four faces and four edges and a length exceeding the mop head support shaft,
an anchor spool secured to one end of said block,
a wringer spool secured to the other end of said block,
a wringer end sleeve portion formed by a cut out in the wringer end of said sponge block,
said wringer spool lying within and secured to the end of said sleeve portion,
whereby securing said mop head to the support shaft including pressing the wringer spool inwardly reversely folds the sleeve portion, the outer reaches of said sleeve portion extending beyond the wringer spool for direct contact with corner areas when mopping.

3,845,519
WINDSHIELD WIPER ASSEMBLY

William J. Quinlan, 935 N. Taffee Dr., and Lawrence L. Huver, 1111 N. Boltwood St., both of Hastings, Mich.
Division of Ser. No. 267,620, June 29, 1972, Pat. No. 3,780,394, Division of Ser. No. 90,987, Nov. 19, 1970, Pat. No. 3,717,900. This application Sept. 11, 1973, Ser. No. 396,134
Int. Cl. B60s *1/40*
U.S. Cl. 15—250.32 **4 Claims**



1. A windshield wiper blade assembly for connection to a wiper arm having a laterally extending mounting pin, said wiper blade assembly comprising a wiper blade body having a crown portion and a wiper portion integrally connected to the base of said crown portion, and a wiper arm connector secured on the crown portion of the blade body, said connector including a base portion overlying said crown portion approximate the center of the crown portion, and a pair of transversely spaced upstanding side walls extending from said

connector base, aligned apertures provided in said side walls for receiving a wiper arm mounting pin, a bushing secured to one side wall in register with the aperture therein and extending from said one side wall toward the other side wall but separated from said other side wall, and spring locking means secured to said base and movable in the region between said bushing and the other side wall for engaging the laterally extending mounting pin of a wiper arm when it is received in the apertures of said side walls and locking the mounting pin in position within said apertures.

3,845,520
APPARATUS FOR PRESSING ABSORBENT COTTON ARTICLES, PARTICULARLY TAMPONS FOR FEMININE HYGIENE

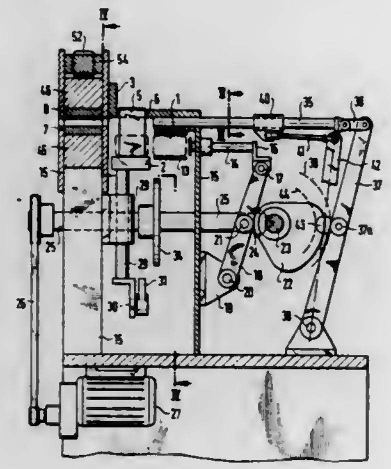
Stefan Simon, Modling, Austria, assignor to Dr. Carl Hahn GmbH, Dusseldorf, Germany

Filed Mar. 17, 1972, Ser. No. 235,770

Claims priority, application Germany, Mar. 25, 1971, 2114530

Int. Cl. A61l *15/00*

U.S. Cl. 19—144.5 **10 Claims**



1. An apparatus for pressing absorbent cotton articles, particularly tampons, for feminine hygiene which comprises at least one pair of first shaping means disposed in the direction of passage of the workpiece, in serial relationship therewith, said apparatus having a workpiece carrying means and a pair of pressing jaws, said workpiece carrying means located upstream of said pair of pressing jaws, said first shaping means comprising a pair of shaping jaws comprising an upper shaping jaw and a lower shaping jaw, one of which is positioned over the other in facing relationship therewith, means for moving said lower shaping jaw upwardly and downwardly, said apparatus further having at least one pressing means disposed in said direction of passage downstream of said first shaping means having at least one pair of pressing jaws comprising an upper presser jaw and a lower presser jaw having working faces, each of said working faces having a generally L-shaped configuration, the edge of the shorter leg adapted to abut the end of the longer leg of the other L-shaped working face, the working face of the shorter leg of the L-shaped member having a recess therein that faces the working face of the opposed shorter leg having a like recess in the working face thereof to define a cavity when said jaws are in closed position, said lower shaping jaw disposed at its lower most extreme in alignment with said workpiece carrying means.

3,845,521
RESILIENT DEVICES FOR TEMPORARILY BINDING AND GRIPPING THE EDGE OF MATERIALS

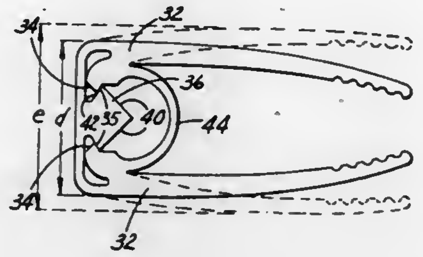
David H. McNichol, 1325 S. Belvoir Blvd., Euclid, Ohio 44121

Filed June 12, 1972, Ser. No. 261,953

Int. Cl. B42f *1/10*

U.S. Cl. 24—67.9 **10 Claims**

1. A device for securing, binding, or gripping sheet materials at a marginal edge of said materials, comprising a continuous section of resilient material having a pair of legs and connecting means joining said legs at one end portion of said legs, said legs extending from said connecting means and terminating in cooperating material engaging end portions adapted to clampingly secure the materials therebetween, said connecting means including a loop-shaped web member interconnecting said legs and disposed therebetween, said device being formed with surface means at the end thereof remote from the material engaging end portions of the legs including



a pair of opposed separable surfaces at the ends of the legs, said surface means being normally in mutual engagement and disposed to provide pivotal movement of each of the legs, and to generate a gripping force between said legs in reaction to separating movement of said legs at their material-gripping end portions, said loop-shaped web member being disposed between said surfaces and said material engaging end portions of said legs.

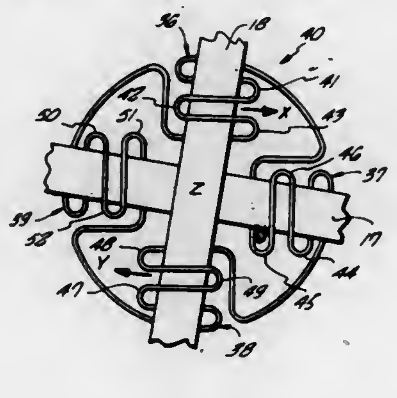
3,845,522
SAFE PERSONAL EFFECTS POUCHES AND STRAP MEANS FOR UNDER ARM OR SHOULDER WEAR

John E. Soukeras, 440 Heliotrope St., Corona Del Mar, Calif. 92625

Division of Ser. No. 116,530, Feb. 18, 1971, Pat. No. 3,739,961. This application Apr. 12, 1973, Ser. No. 350,409

Int. Cl. A44b *11/00;* **A45c** *13/26*

U.S. Cl. 24—74 A **3 Claims**



1. A cross-over clip for assembling straps in a criss-cross configuration removably:

said clip comprising an array of bent loops disposed on each of four quadrant lines, loops on opposite ends of said clip being oppositely directed to form receiving guides for straps to be inserted therin in a twisting motion.

3,845,523
CABLE CLAMP

Mickey Lee Mayberry, Pfafftown, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed June 11, 1973, Ser. No. 369,032

Int. Cl. F16g *11/03, 11/04*

U.S. Cl. 24—134 P **1 Claim**

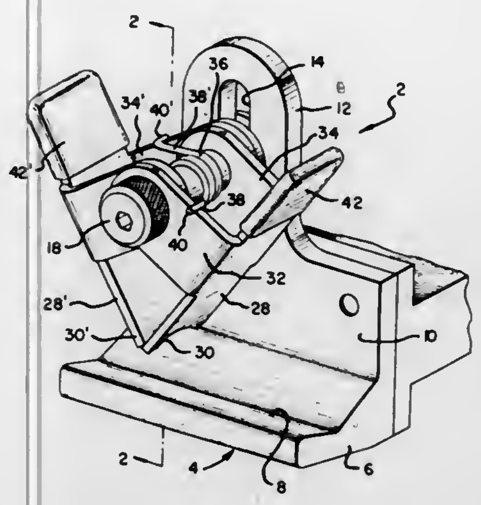
1. A clamp for clamping cables intermediate their ends, said clamp comprising:

a clamping plate having a supporting surface for supporting said cable,

a single supporting arm extending from one side edge of said plate normally of said surface,

a pivot pin adjustably mounted on said arm, said pin extending parallel to, and being spaced from, said surface and being adjustable towards and away from said surface,

a pair of clamping arms, each of said arms comprising a plate-like member having a pair of aligned mounting ears extending from its side edges intermediate its ends, said clamping arms being spaced from said pivot pin on opposite sides thereof said ears extending towards, and being pivotally mounted on, said pivot pin, said clamping arms having clamping ends which are adjacent to said surface, and



spring means on said pivot pin biasing said clamping ends in opposite directions such that saaid clamping ends are biased towards each other whereby,

upon swinging said arms in opposite rotary directions against the biasing force of said spring means so that said clamping ends move away from each other, said cable can be placed on said surface, and upon movement of said clamping ends towards each other, said ends clamp said cable against said surface.

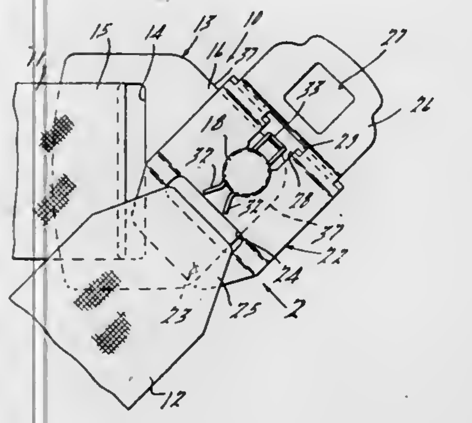
3,845,524
COUPLING DEVICE FOR SEAT BELTS

Neil A. Hull, Birmingham, and Richard E. Peel, Farmington Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 4, 1974, Ser. No. 430,810

Int. Cl. A44b *17/00, 11/25*

U.S. Cl. 24—222 R **5 Claims**



1. A coupling device for connecting a shoulder harness to a lap belt,

the coupling device includes a plate adapted to be connected to one end of a shoulder harness,

the plate having a substantially triangular end portion with an upstanding post at the apex of the triangle,

the post having an enlarged head,

and a tongue adapted to be connected to one end of a lap belt segment,

the tongue having a retention slot intermediate its ends having interlocking engagement with the post,

wherein the improvement comprises:

a rotation limiting device having retention means substantially paralleling the plate and engaged with the post,

and an angularly related leg portion,

the leg portion projecting through the slot in the tongue,

the leg portion being relatively movable around the plate triangular end portion for engagement with the side edges of the latter to limit the rotatability about the post of the plate relative to the tongue.

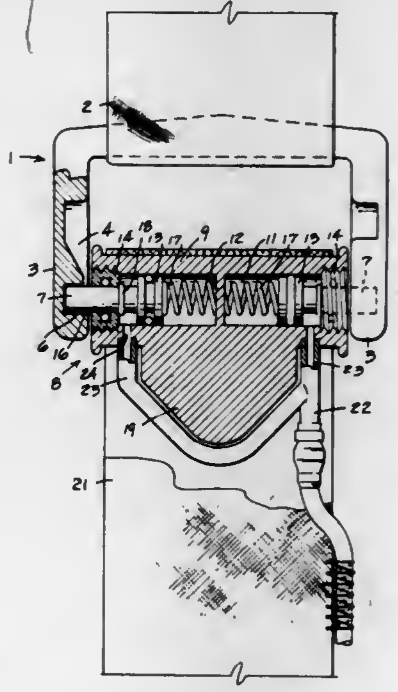
3,845,525
SURVIVAL KIT CONNECTION TO HARNESS

John A. Gaylord, San Diego, Calif., assignor to H. Koch & Sons, Inc., Costa Madera, Marin County, Calif.

Filed Jan. 22, 1974, Ser. No. 435,595

Int. Cl. A44c *5/18;* **A44b** *17/00*

U.S. Cl. 24—201 A **3 Claims**



1. Connecting means for harness webbing comprising

a male connector member,

locking pins reciprocably extended in opposite directions from said male connecting member,

a piston on each locking pin reciprocable in said male connector member,

resilient means to normally urge said piston outwardly so as to project said locking pins outward from said male connecting member,

and means to limit the outward travel of each piston thereby to form a chamber for gas under pressure,

a female connector member,

elements on said female connector member being adapted to straddle said male connector member,

there being a socket in each of said straddling elements registerable with the respective locking pins,

and means to conduct gas under pressure into said chambers simultaneously for forcing said pistons against said resilient means thereby to withdraw said locking pins from the respective sockets.

3,845,526

ZIP FASTENER CHAIN FOR TROUSER FLIES

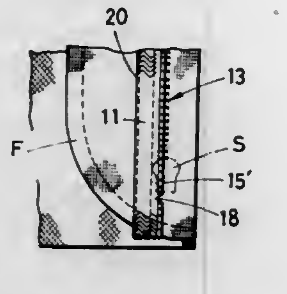
Koichi Kawakami, Toyama, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 10, 1972, Ser. No. 270,196

Claims priority, application Japan, July 15, 1971, 46-62200

Int. Cl. A44b *19/00*

U.S. Cl. 24—205 R **1 Claim**



1. A slide fastener chain for attachment to a trouser fly or the like comprising a pair of opposed stringer tapes of continuous length and a pair of rows of inter-engaging fastener elements mounted along a pair of adjacent corresponding longitudinal edges of said stringer tapes, each of said elements having a coupling head, arms extending therefrom and a base portion connecting between adjacent arms, both of said stringer tapes having at predetermined intervals a slider threading region including fastener elements devoid of said coupling heads, and said slider threading region on one of said stringer tapes having a recess in the longitudinal edge thereof and extending in a transverse direction thereof and slightly beyond said base portion of said element.

3,845,527

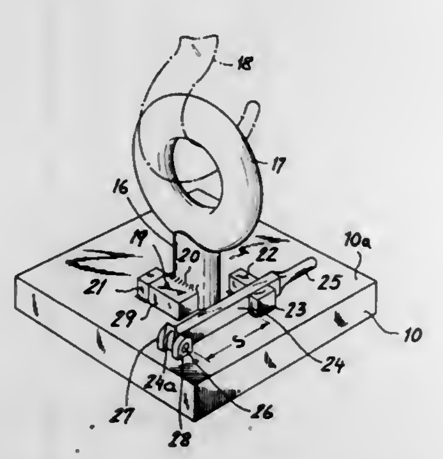
HOIST LOCK FOR CONTAINERIZED CARGO AND THE LIKE

Salvatore Lombardi, 10 Strong Pl., Brooklyn, N.Y. 11231

Filed May 23, 1973, Ser. No. 363,116

Int. Cl. B66c *1/66*

U.S. Cl. 24—221 R **6 Claims**



1. A hoist lock for a container having a wall provided with a slot, said lock comprising a plate adapted to overlie said wall and formed on its underside with a boss receivable in said slot; a T-member rotatable in said plate about an axis extending generally transversely thereto, said T-member being formed on the underside of said plate with a crossbar angularly displaceable about said axis from a position of alignment with said boss into a position in which said crossbar underlies said wall along opposite flanks of said slot, a shank extending through said plate and connected to said crossbar, and a formation on said shank along the upper surface of said plate for engagement with said hoist; and a latch bar pivotally mounted on said upper surface of said plate and engageable with a flank of said shank for preventing rotation thereof at least upon disalignment of said crossbar and said boss, said shank being formed with a flat linearly extending surface parallel to said axis, and said bar being provided with a latch surface confronting said shank surface in a locked condition of said shank, said surface of said shank being formed by at least one block rigid with said shank and having a length at least equal to the radius of said shank, said plate being provided with supporting members spaced apart along said bar and preventing lateral displacement thereof upon angular stressing of said T-member in a locking position of said bar, one of said supporting members comprising a pair of trunions, said bar being pivotally mounted in said trunions for swinging movement about an axis parallel to said upper surface and transverse to the bar, the other supporting member being formed as an abutment spaced from said trunions and lying along a flank of said bar opposite that which confronts said shank.

3,845,528

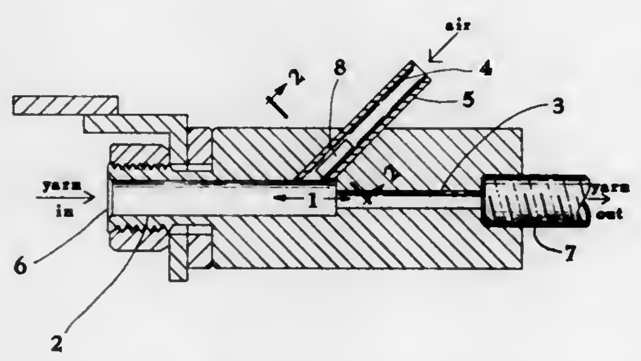
NONCIRCULAR AIR ORIFICE IN COMMINGLING JETS FOR MULTIFILAMENT YARN

Dick Charles Vermeer, Chester, Va., and Joseph Pontrelli, Newark, Del., assignors to Allied Chemical corporation, New York, N.Y.

Filed Mar. 22, 1973, Ser. No. 343,999

Int. Cl. D02g *1/16*

U.S. Cl. 28—1.4 **2 Claims**



1. In an apparatus for commingling individual filaments in a multifilament yarn comprising a body having a yarn passageway and a gas passageway intersecting with said yarn passageway the improvement comprising

said gas passageway having a noncircular orifice near said intersection with said yarn passageway, said noncircular orifice having a V-shaped cross-section with an arc opposite the apex,

so that gas issues from said noncircular orifice to impinge on any yarn present in said yarn passageway.

3,845,529

APPARATUS AND PROCESS FOR TACKING FABRICS

George S. Van Deusen, Charlotte, N.C., and Richard K. Teed, Greenwood, S.C., assignors to Riegel Textile Corporation, Ware Shoals, S.C.

Filed Aug. 31, 1972, Ser. No. 285,253

Int. Cl. D04h *18/00*

U.S. Cl. 28—4 R **19 Claims**

1. A tacking apparatus for preliminarily securing at least a first fabric portion to a base fabric in juxtaposed face to face relation in preparation for a final needling operation in which the fabrics are relatively finally secured together which comprises:

a. a frame;

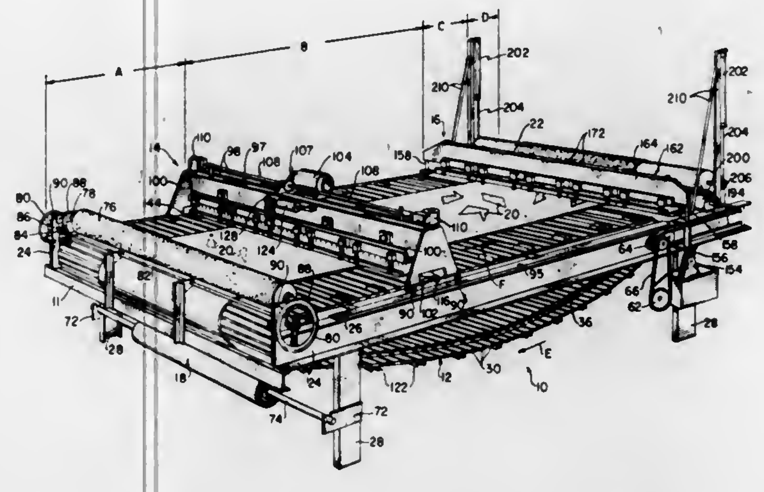
b. a fabric input end for feeding fabrics in juxtaposed face-to-face relation in pre-selected relative positions with respect to each other;

c. a fabric output end;

d. conveyor means for carrying the fabrics from said input end to said output end while in said pre-selected relative positions;

e. means for preliminarily tacking at least a first fabric to said base fabric with needle means adapted to penetrate the fabric layers and cause certain of the fibers of at least a first fabric to penetrate at least a second fabric and intermingle with fibers thereof to secure the fabrics in face-to-face relation sufficiently to maintain their relative positions in preparation for further tacking;

f. means for activating said fabric conveyor means to convey said preliminarily tacked fabrics toward the output end of the apparatus for said further tacking; and



g. means positioned at the output end for further tacking said preliminarily tacked fabrics including needle means adapted to additionally penetrate said preliminarily tacked fabrics, said needle means being configured to cause certain of the fibers of at least a first fabric to penetrate a second fabric and intermingle with fibers thereof, said preliminary tacking thereby partially securing said fabrics together while in said pre-selected relative positions, and said further tacking additionally securing said fabrics in said relative positions for final needling whereby said fabrics are relatively permanently secured together.

3,845,530

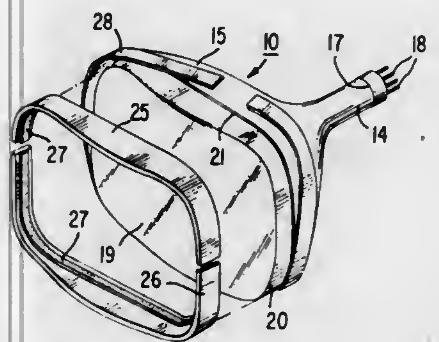
METHOD FOR RENDERING CATHODE-RAY TUBE MORE RESISTANT TO IMPLOSION AND PRODUCT THEREOF

Richard Bibby Platt, Midland, Ontario, Canada, assignor to RCA Corporation, New York, N.Y.

Filed Oct. 10, 1972, Ser. No. 295,853

Int. Cl. H01j *9/18, 29/06;* **C09j** *5/00*

U.S. Cl. 29—25.13 **4 Claims**



1. A method for rendering a cathode-ray tube more resistant to implosion, said tube comprising an evacuated envelope including a glass faceplate panel, said method comprising

a. providing a reinforcing structure including two metal rim plates contoured to encircle said panel, the inner surface of said rim plates carrying a nontacky coating of an adhesive material that can be made tacky by applying thereto an organic solvent therefor,

b. tackifying said coating by applying thereto a controlled amount of an organic solvent therefor,

c. positioning said reinforcing structure around said panel with said tacky coating against the outer surface thereof,

d. positioning a metal band around said rim plates and said panel,

e. fixing said positioned band to itself,

f. and then drying said coating to adhere said reinforcing structure to said panel.

3,845,531

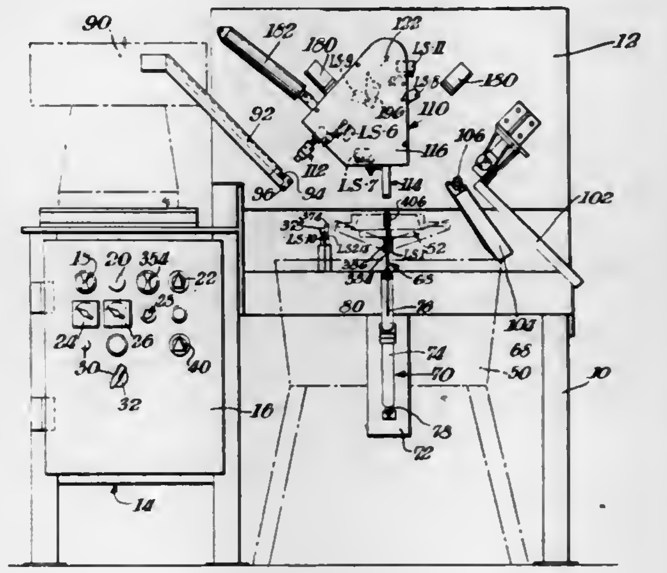
COMPOSITE CASTING APPARATUS

Andrew R. Halko, Newark, and Allan B. Hughes, Wilmington, both of Del., assignors to Halko Manufacturing Company, Inc., New Castle, Del.

Filed Oct. 23, 1973, Ser. No. 408,746

Int. Cl. B22d *31/00, 45/00*

U.S. Cl. 29—33 C **23 Claims**



1. In an apparatus effecting composite die castings having a mold with cooperating movable die members, actuating means for operating said members between open and closed mold positions, a container for molten metal communicating with said mold, pump means for transferring said molten metal into said mold to form said castings including a sprue, a supply magazine for continuously supplying clips to a delivery position, the combination comprising:

a severing means for separating the sprue from said die casting, and

a pivotal transfer means including angularly spaced clip and weight pick-up means for sequentially transferring said clips from said supply magazine to said mold to form said composite casting and then transferring said composite casting from said mold to said severing means for removal of said sprue.

3,845,532

TURRET LATHE

William R. Smith, Springfield, Vt., assignor to Textron, Inc., Providence, R.I.

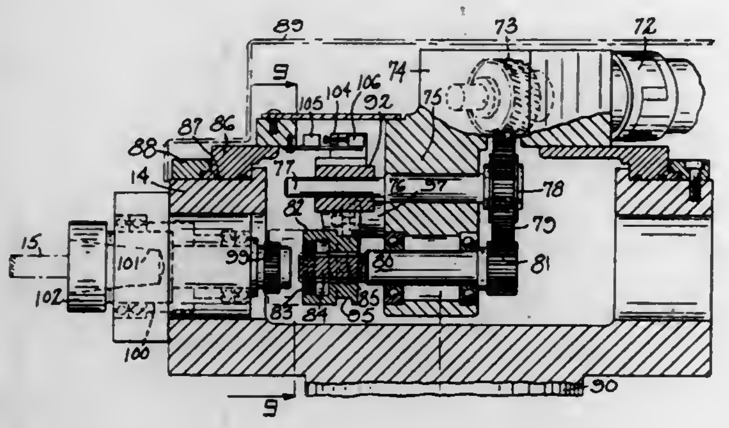
Division of Ser. No. 125,162, March 17, 1971, Pat. No. 3,750,244. This application Apr. 19, 1973, Ser. No. 352,671

Int. Cl. B23b *3/18, 39/20*

U.S. Cl. 29—40 **5 Claims**

1. In a machine tool having a turret adapted to present one of a plurality of tools to a working position, a plurality of angularly disposed tool receiving spindles carried in said turret, said spindles having axes residing in a common plane, means rotatably mounting said turret with respect to said drive means, a support means extending vertically into said turret from the top thereof, a spindle drive shaft rotatably mounted in said support means and carrying coupling means thereon movable into and out of driving engagement with a spindle in

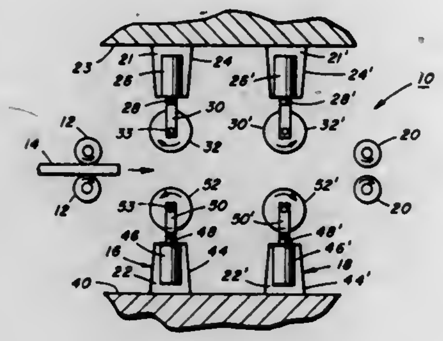
the working position, means for moving said coupling means into and out of driving engagement with a spindle in the working position, spindle drive means, and means on said support means connecting said drive means to said drive shaft.



3,845,533

METHOD OF AND APPARATUS FOR CONDITIONING THE SURFACES OF THIN MATERIALS

Lionel Tinfow, 24 Oak Pl., North Caldwell, N.J., and Sidney V. Winton, 57 Arlington Ave., New York, N.Y. 12603
Continuation of Ser. No. 96,323, Dec. 9, 1970, abandoned. This application Apr. 9, 1973, Ser. No. 349,312
Int. Cl. 51 *87 R;* **B21c** *37/30, 43/00*
U.S. Cl. 29—90 R **6 Claims**

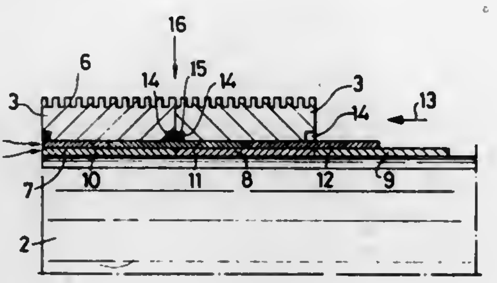


1. A method for simultaneously buffing opposite sides of axially elongated, relatively rigid, thin, discontinuous strips of material comprising,
   - a. moving the said strip axially into a buffing zone defined by at least two spaced-apart pairs of spaced-apart, opposed rotary buffing means, the strip being supported against engagement with the opposed buffing means by feed support means displaced rearwardly of the buffing zone with respect to the direction of movement of the strip,
   - b. simultaneously engaging the opposed buffing means to opposite sides of the strip when the free, leading end thereof reaches the end of the buffing zone distal to said feed support means,
   - c. rotating the respective pairs of opposed buffing means in directions sufficient to generate a net tensil stress in the strip in the buffing zone, and
   - d. simultaneously disengaging the respective pairs of opposed buffing means from the strip as the free trailing end thereof reaches the end of the buffing zone proximal to the said feed support means, and
   - e. withdrawing the strip from the buffing zone.

3,845,534

GROOVED ROLLER AND METHOD OF MAKING SAME

Eduard Kusters, Finkenweg 18, 415 Krefeld-Forstwald, and Valentin Appenzeller, Kempen/Ndrh., both of Germany, assignors to said Kusters, by said Appenzeller
Filed May 31, 1973, Ser. No. 365,611
Claims priority, application Germany, June 6, 1972, 2227356
Int. Cl. B21b *31/08*
U.S. Cl. 29—130 **16 Claims**

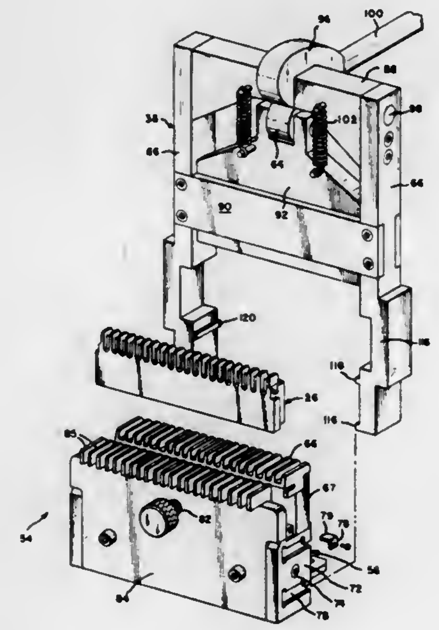


1. A roller for use in the manufacture of paper, cardboard or the like, said roller having a working surface of a corrosion-free metal, comprising:
- a metal cylindrical core;
- a plurality of axially adjacent sleeves of a corrosion-free metal on the core; and
- at least one intermediate layer formed by a plurality of thin sleeves between said corrosion-free sleeves and said core, the edges of said thin sleeves and the edges of said corrosion-free sleeves being axially displaced from each other.

3,845,535

APPARATUS FOR CONNECTING CONDUCTORS TO CONTACT TERMINALS IN AN ELECTRICAL CONNECTOR

William Roderick Over, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Apr. 4, 1973, Ser. No. 347,965
Int. Cl. H05k *3/32, 13/04*
U.S. Cl. 29—203 MW **9 Claims**

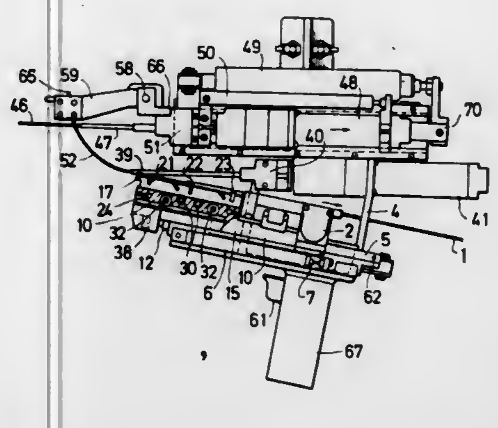


1. Apparatus for inserting each of a plurality of conductors into each of a plurality of conductor-receiving slots in electrical contact terminals which are contained in a housing, said apparatus comprising:
- a base frame member having a free end,
- first jig means in said base frame member for holding said housing in a predetermined position with said slots directed towards said free end,
- second jig means in said base frame member for locating said conductors on said free end and in alignment with said slots,
- an insertion tool removably mounted on said base frame member, said insertion tool having an insertion slide, said slide being normally spaced from said free end and being reciprocable towards and away from said free end, said slide having means for engaging said conductors and moving said conductors from said second jig means into said slots of said terminals whereby, said conductors can be positioned in said second jig means when said insertion tool is removed from said base member, and upon assembly of said insertion tool to said base frame member and actuation of said insertion slide, said conductors are inserted into said slots and thereby connected to said terminals, and upon subsequent removal of said tool from said base frame member, said connector with said conductors connected to said terminals can be removed from said base frame member.

3,845,536

COVERED WIRE WRAPPING APPARATUS

Takashi Kobayashi, Fujisawa; Masaaki Aida, Yokohama; Tooru Mita, Yokohama, and Takayuki Nishi, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 15, 1973, Ser. No. 388,556
Claims priority, application Japan, Aug. 18, 1972, 47-82175; Sept. 22, 1972, 47-94551; Sept. 22, 1972, 47-94352
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 DT **8 Claims**



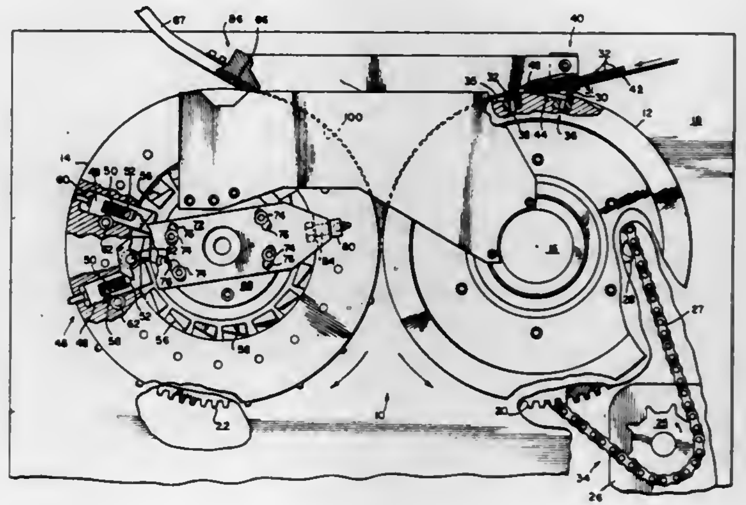
1. A covered wire wrapping apparatus comprising, in combination, a cutting and stripping tool for cutting an elongated covered wire into severed covered wires of a predetermined length and stripping a cover from the end portion of said severed covered wire to expose a conductor at the end portion of said severed covered wire, a wrapping tool comprising a bit adapted to wrap the conductor at the end portion of said severed covered wire about one terminal of an electrical component, and guide means for guiding said severed covered wire to lead to said bit of said wrapping tool from said cutting and stripping tool.

3,845,537

ASSEMBLY APPARATUS

Clifton E. Ayers, New Whiteland, and Walter G. Herreman, Indianapolis, both of Ind., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Filed Oct. 19, 1973, Ser. No. 407,927
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 F **7 Claims**

1. An assembly apparatus, comprising:
- a. a housing;
- b. a first rotating drum journaled for rotation in said housing;
- c. a first plurality of nests in an outer periphery of said first rotating drum;
- d. a first loading means for loading each of said first nests with a component of assembly;
- e. first retention means carried by said first rotating drum for retaining said first components of assembly in said first nests;
- f. a second drum journalled in said housing and rotating in close proximity to and in an opposite direction to said first drum and about an axis substantially parallel to the rotational axis of said first rotation drum;
- g. a second plurality of nests in an outer periphery of said second rotating drum;

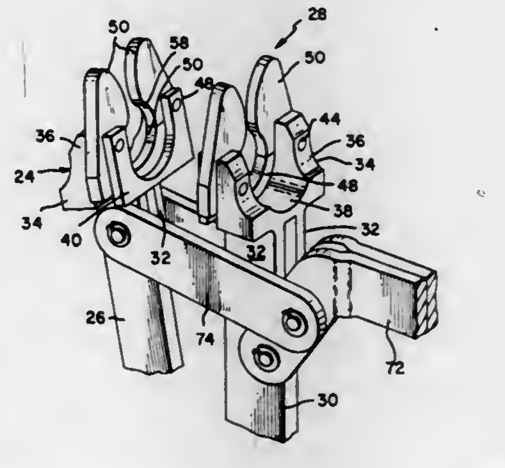


- h. second loading means for loading each of said second nests with a second component of assembly;
- i. second retention means for retaining said second components of assembly in said second nests;
- j. ejection means for urging a second assembly component from a nest in said second drum into assembly with a first assembly component retained in a nest in said first rotating drum; and
- k. a drive means connected to and rotating said first and second rotating drums.

3,845,538

HAND TOOL

Henry William Demler, Sr., Lebanon, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Continuation of Ser. No. 313,711, June 26, 1973, abandoned. This application Apr. 3, 1974, Ser. No. 457,668
Int. Cl. B23p *19/04*
U.S. Cl. 29—234 **7 Claims**



1. A hand tool for use in pulling together flanged tubular members, which comprises:
- a. a first handle having a jaw end and a holding end;
- b. a second handle having a jaw end and a pivoting end, said pivoting end being pivotally connected to the first handle

adjacent its holding end and its jaw-receiving end adjacent the jaw-receiving end on the first handle;

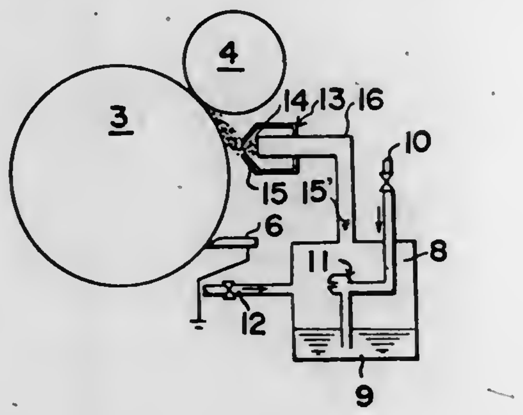
c. actuating means linked to the first and second handles for moving the handles so that the jaw ends move toward or away from each other;
d. jaw members attached to each jaw end and each having a tubular member-receiving channel and an upstanding rib positioned transversely in the channel; and
e. a pair of inserts on each jaw member, said inserts pivotally mounted on either side of the channel and in alignment with the rib and movable in a plane normal to the axis of the jaw members, said inserts adapted to be pivoted laterally outwardly to admit the tubular member and to be pivoted laterally inwardly to abut, in cooperation with the rib, a side of the flange on the tubular member.

3,845,539

APPARATUS FOR MANUFACTURING STEEL SHEETS WITH LAYERS OF PROTECTIVE METAL

Hidehisa Yamagishi, and Fumitoshi Yokoi, both of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Kanagawa-Ken, Japan

Division of Ser. No. 259,287, June 2, 1972, Pat. No. 3,781,968.
This application July 31, 1973, Ser. No. 384,384
Claims priority, application Japan, June 16, 1971, 46-42498
Int. Cl. B22f ; B21b *45/02, 27/06*
U.S. Cl. 29—420 9 Claims



1. Apparatus for manufacturing a steel sheet coated with a layer of protective metal comprising a rolling mill including: cooperating rolls between which a steel sheet coated with a powder of the protective metal is passed,

means for electrostatically applying a small quantity of oil onto the surfaces of said rolls, said means for electrostatically applying said oil comprising means for atomizing said oil by means of primary and secondary pressurized air, a nozzle for electrostatically ejecting the atomized oil towards said mill rolls, means for varying the quantity of oil applied onto said rolls by adjusting the primary and secondary pressurized air, and means for conveying the atomized oil ejected from said nozzle towards said rolls of said rolling mill by the action of an electrostatic field, and equalizing rolls cooperating with said rolls of said rolling mill for forming thin films of said oil on the surfaces of said rolls of said rolling mill.

3,845,540

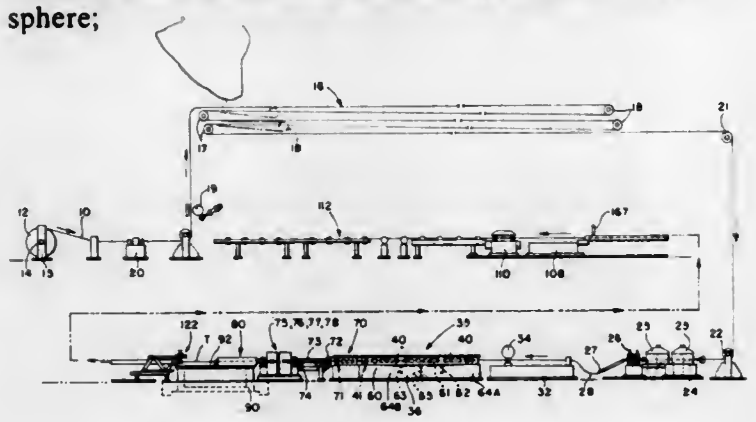
HOT GALVANIZING PROCESS AND APPARATUS

Joseph R. Rossi, Cortland; Frederick J. Griffiths, Warren, both of Ohio; James L. Griffin, Jackson Center, Pa., and Gormen C. Palleson, Naperville, Ill., assignors to Maneely-Illinois Inc., Chicago, Ill.

Filed Apr. 28, 1972, Ser. No. 248,739
Int. Cl. B23p *11/00*
U.S. Cl. 29—430 8 Claims

1. A method of continuously forming and galvanizing tubing comprising the steps of:

a. continuously feeding strip stock to a tube forming mill including the step of cleaning, degreasing and preparing at least the surface of the stock thus fed that is to form the outer surface of the tubing,
b. forming the stock so that the lateral edges thereof are in abutment;
c. welding the edges together to form the tubing;
d. spraying an acid solution against the entire outer periphery of the tubing in a direction countercurrent to the direction of tube movement;
e. wiping the tubing to remove excess acid;
f. rinsing the tubing to remove acid on the surface thereof by directing a rinse solution against the tubing in a direction countercurrent to tube movement;
g. wiping the tubing to remove the rinse solution;
h. preheating the tubing to a temperature between 300° and 1,300°F while maintaining the tubing in an inert atmosphere;



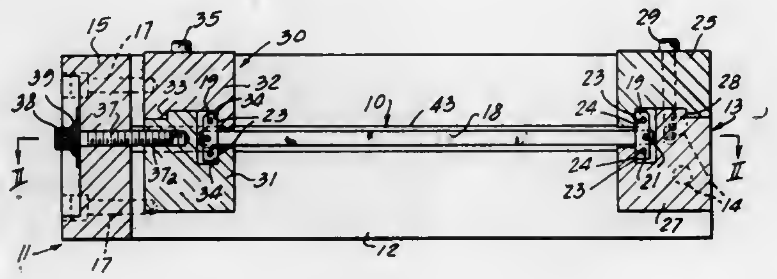
i. applying molten zinc to the tubing by passage of the tubing through a chamber substantially completely filled with molten zinc;
j. wiping the tubing to redistribute the zinc on the tubing surface, to remove excess zinc, and to develop uniformity in coating thickness;
k. quenching the tubing to form a hardened zinc coating by immersing the tubing in water having a continuously maintained, controlled decreasing temperature gradient from tubing entry to the quench to tubing exit from the quench including the steps of sensing the temperature at the tubing entry and controlling the temperature of the water at tubing entry to a preselected range; and
l. cutting the continuous tubing into preselected lengths.

3,845,541

SELF-CONTAINED MULTI-BLADE PACKAGE AND METHOD OF MAKING SAME

Louis F. Ranieri, 8423 N. Clifton St., Niles, Ill. 60648

Filed Sept. 4, 1973, Ser. No. 394,398
Int. Cl. B26d *1/00;* **B23p** *11/00*
U.S. Cl. 29—432 10 Claims



1. A self-contained, preassembled, multi-blade package for mounting in a blade head assembly of a wafering machine having square tensioning shoulders and wherein opposite end portions of the blades are clamped for unison tensioning of the blades by said shoulders, comprising:

a plurality of substantially coextensive elongated thin flat strip blades in side-by-side assembly and having opposite end portions each of which has a hole therein aligned with the holes in the remaining blades;

elongated rectangular spacer plates between the end portions of the blades and having therein holes aligned with one another and with the holes in the blades and offset from the longitudinal center line of the plate toward the adjacent ends of the blades;

elongated rectangular end plates generally coextensive with and aligned with the spacer plates at the opposite sides of the blade package and having aligned holes aligned with the holes of the spacer plates;

said plates extending substantially above and below the longitudinal edges of the blades;

aligned holes in the upper and lower portions of the plates spaced from the edges of the blades and offset both upwardly and downwardly and laterally relative to the holes of the plates which are aligned with the holes in the blades; and

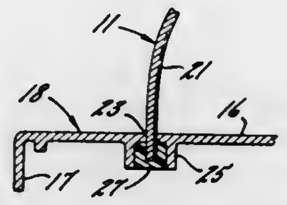
respective bolt rods extending through the aligned holes in the plates above and below the blades and through the aligned holes in the plates and the blades and securing the blades and plates in fixed package unit assembly.

3,845,542

METHOD OF ATTACHING A ROPE HANDLE TO A THIN-WALLED BATTERY

Anthony Sabatino, St. Paul, Minn., assignor to Gould Inc., Mendota Heights, Minn.

Continuation-in-part of Ser. No. 295;299, Oct. 5, 1972, abandoned. This application Mar. 25, 1974, Ser. No. 454,260
Int. Cl. B29d *31/00*
U.S. Cl. 29—458 4 Claims



1. The method for attaching a rope handle to a battery having a relatively thin container wall comprising the steps of forming on only one side of said wall a thin projecting rib having substantially the same thickness as said wall so as to define a fluid containing pocket, pouring settable plastic into said pocket, causing said plastic to set so that the wall, rib and plastic define a solid block, then forming an opening through one of said thin container wall and thin projecting rib and extending into said plastic, said opening having a smaller cross sectional area than the cross sectional area of said pocket in alignment therewith, and securing the rope end of a handle in said solid block with said rope projecting out through said opening.

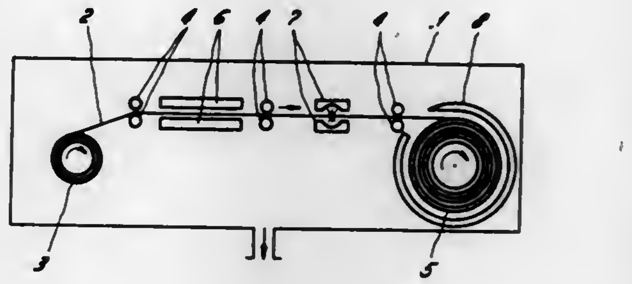
3,845,543

METHOD OF PRODUCING A VACUUM SWITCH CONTACT

Adrian W. Roth, Aarau, and Joachim Amsler, Seon, both of Switzerland, assignors to Sprecher & Schuh AG, Aarau, Switzerland

Filed Feb. 22, 1973, Ser. No. 334,889
Claims priority, application Switzerland, Mar. 17, 1972, 4036/72
Int. Cl. B23k *31/02*
U.S. Cl. 29—472.3 3 Claims

1. A method of producing a vacuum switch contact constituted by a support material having a low vapor pressure and a further material having a high vapor pressure deposited on the support material by evaporation in vacuo, said method comprising placing a supply of the support material in sheet form having a thickness of 0.05 to 0.5 mm in a vacuum chamber at a vacuum pressure of at least 10^{-3} Torr, heating successive sections of said supply of support material in said chamber to a temperature above 600°C to degas the material, subsequently vapor-coating in said chamber said successive sections of the support material with said further material of high vapor pressure, reforming in said chamber the now



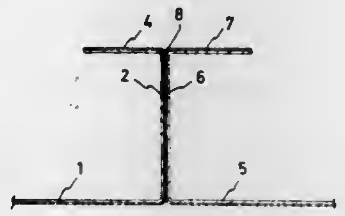
coated support material into its original supply form, subjecting the supply of coated support material in said vacuum chamber to a compressive force at a temperature above the melting point of said further material to effect diffusion of the two materials and joinder thereof, and then cooling and removing the now formed contact from the vacuum chamber.

3,845,544

METHOD OF PRODUCING A LIGHT ROOM ELEMENT

Matti Pekka Nurminen, Lamminranta, and Paavo Henrikki Hammar, Urheilukentankatu 5 D 69, both of 30100 Forssa, Finland

Filed Sept. 20, 1972, Ser. No. 290,583
Int. Cl. B23p *3/00, 25/00*
U.S. Cl. 29—458 3 Claims



1. A method of producing a light room element, e.g., a bathroom element, including equipment and rising mains, out of steel cassettes with a U-formed section, characterized in

coating steel sheets constituting the material of the steel cassettes on one side with a plastics layer;

bending the steel sheets into a desired U-form that the plastics layer also appears on the seam surfaces between the cassettes; and

joining the cassettes by heating the seam portions of the cassettes by means of the induction method such that the plastics layers thereon are momentarily molten and wedged together in a water-tight manner.

3,845,545

METHOD FOR MAKING REGENERATIVE HEAT-EXCHANGER SEALS

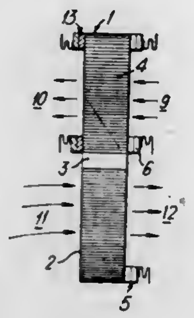
Alan John Surrall, Studley, and Peter Philip Candlin, Solihull, both of England, assignors to British Leyland Truck and Bus Division Limited, Lancashire, England

Filed Aug. 14, 1972, Ser. No. 280,556
Claims priority, application Great Britain, Sept. 21, 1971, 43916/71
Int. Cl. B23k *31/02*
U.S. Cl. 29—494 5 Claims

1. A method of manufacturing a counterface hot-side seal for a rotary disc-type matrix of a regenerative heat-exchanger

for use in a gas turbine engine, which method comprises:

a. providing a ferritic support member;
b. forming a counterface element from a metal oxide in compacted block form;
c. reducing a surface of said metal oxide element to its metal;
d. heat treating the said surface;
e. applying a paste of brazing powder and flux to said surface and to a surface of said ferritic support member;



f. bringing said two surfaces together and raising the assembly so formed to a brazing temperature in an inert atmosphere and thereby brazing the counterface element to the support member; and
g. lapping a surface of said counterface element opposite to said first mentioned surface to a requisite flatness for it to serve as a counterface seal.

3,845,546

TOOL CHANGE MECHANISM

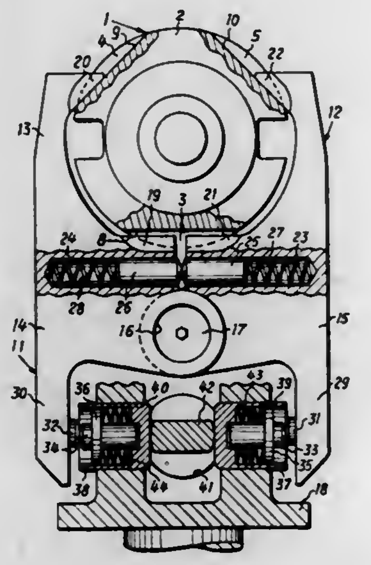
Arno Rutschke, Zurich, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed Sept. 18, 1972, Ser. No. 289,800

Claims priority, application Switzerland, Oct. 1, 1971, 14324/71

Int. Cl. B23q *3/00*

U.S. Cl. 29—568 **8 Claims**



1. A tool change mechanism comprising an axially extending tool holder, a clamp with arms for gripping the tool holder, said tool holder possessing a flange equipped with three recesses at its periphery, said recesses being formed by grooves lying in a plane substantially perpendicular to the axis of the tool holder, each arm engaging in two grooves of the flange, substantially linear extending webs at the inside of the arms, the length of said webs being smaller than one-half of the length of each of the grooves and the cross-section of said webs being accommodated to the cross-section of the grooves, a pivot bolt about which the arms of the clamp are pivotably arranged, aligned blind hole bores provided at the arms, bolts bearing against one another arranged in said aligned blind hole bores, spring means for loading said bolts, the clamp further possessing rearwardly directed arms with respect to the axis of rotation defined by said pivot bolt, bolts guided at substantially pot-shaped sleeves against which bear said rearwardly directed arms, a rotatable pin having a substantially rectangular-shaped cross-section against which bear said pot-shaped sleeves.

3,845,547

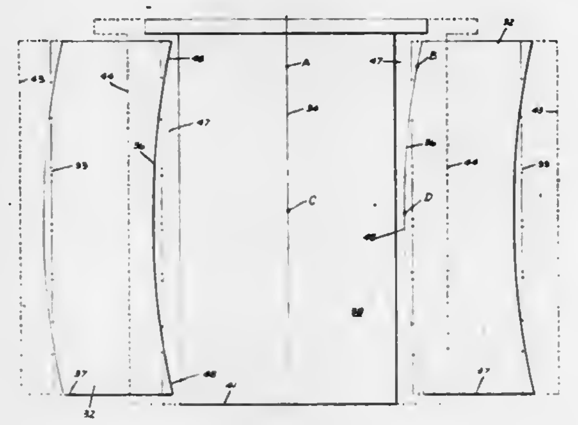
METHOD OF MANUFACTURING A LAMINATED ASSEMBLY

Hugh B. Reynolds, Rome City, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed May 12, 1971, Ser. No. 142,594

Int. Cl. H02k *15/00*

U.S. Cl. 29—596 **13 Claims**



1. A method of manufacturing an assembly for a dynamoelectric machine including a core formed of a plurality of laminations of ferro-magnetic material and having a plurality of teeth with edges of the extremities of the teeth defining a bore, the method including: axially aligning the magnetizable laminations in stacked relation and forming the assembly with edges of the lamination teeth defining circumferentially spaced apart bore surfaces of the core; positioning a member formed of a material selected to have a coefficient of thermal expansion different than the coefficient of thermal expansion of the material forming selected portions of the assembly, in close proximity to such selected portions of the assembly while the member and the selected portions of the assembly are in a first thermal state; initially transferring heat relative to the member and the assembly, to cause a first dimensional change in the member and assembly, and to force the selected portions to conform to the configuration of the portion of the member proximate thereto; subsequently transferring heat relative to the member and assembly to cause a second dimensional change in the member and material forming selected portions of the assembly thereby to return the member to the first thermal state and preselected physical configuration thereof, and to establish the preselected dimensional relationships between selected surface portions of the assembly; and separating the member and assembly the assembly including a winding having at least one group of end turns, the member including a portion for disposition proximate to the at least one group of end turns; and wherein initially and subsequently transferring heat to the member and assembly cause the portion of the member to shape the at least one group of end turns into conformity with the surface configuration of such portion.

3,845,548

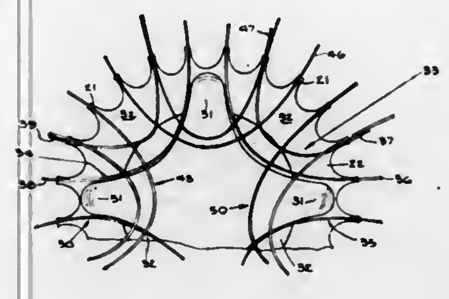
APPARATUS AND METHOD FOR INSERTING DYNAMOELECTRIC MACHINE COILS

Richard B. Arnold, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Oct. 25, 1973, Ser. No. 409,575

Int. Cl. H02k *15/00*

U.S. Cl. 29—596 **11 Claims**



1. A method of inserting at least two winding coils, each comprising at least one winding turn, one of which overlies the other, into axially extending slots of a dynamoelectric machine core; said method including placing portions of at least one turn of at least one first coil in turn-receiving gaps of coil insertion equipment; placing portions of at least one turn of at least one other coil in gaps of the coil insertion equipment and in overlying relationship to at least part of at least one turn of the at least one first coil; moving turn advancing means comprising turn feeding members into engagement with selected portions of at least one turn of the at least one first coil so as to apply force directly thereto, while nesting the end turn portion of at least one turn of the at least one first coil in a pocket defined by the turn advancing means, and while engaging at least one end turn portion of the at least one first coil and of the at least one other coil directly with the turn advancing means, whereby coil inserting forces are applied directly to an end turn portion of at least one turn of the at least one first coil and to an end turn portion of at least one turn of the at least one other coil while the at least one first coil and at least one other coil are moved along gaps of the coil injection equipment.

3,845,549

APPARATUS AND PROCESS FOR THE CONTINUOUS MANUFACTURE OF A WAVEGUIDE FORMED BY A CYLINDRICAL HELIX

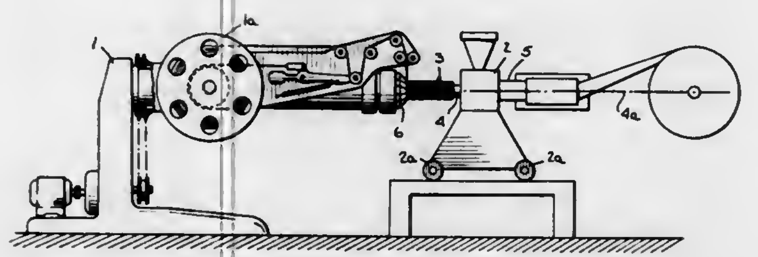
Antonio Ferrentino, Monza, Italy, assignor to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed Feb. 20, 1973, Ser. No. 334,012

Claims priority, application Italy, Mar. 14, 1972, 21796/72

Int. Cl. H01p *11/00*

U.S. Cl. 29—600 **7 Claims**



1. Apparatus for the manufacture of a waveguide comprising a conductor wound in the form of a helix and a sheath of extruded material thereover, said apparatus comprising a mandrel, forming means for forming said conductor into a helix around said mandrel, means for advancing said helix in the direction of its axis and away from said forming means as the helix is formed, extrusion means for extruding said material over said helix, said extrusion means being spaced from said forming means and being disposed to receive said helix as it is advanced and to extrude said material thereover, and moving means connected to one of said forming and extrusion means for moving said one means toward the other of said forming and extrusion means at a predetermined rate dependent upon the rate of relative movement between said helix and said extrusion means, said moving means comprising power operated means connected to said one means for displacing the latter in the direction of said axis and control means connected to said power operated means for controlling the displacement of said one means, said control means comprising constant speed means, relative movement means responsive to the speed of advance of said helix relative to said extrusion means, comparison means connected to said constant speed means and said relative movement means and responsive to the difference between the speed of said constant speed means and the speed of relative movement between said helix and said extrusion means, and actuation means connected to said comparison means and to said power operated means for controlling the operation of the latter.

3,845,550

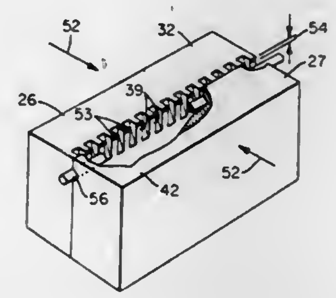
METHOD OF MANUFACTURING A MAGNETIC HEAD

Beverley R. Gooch, Sunnyvale, and Edward Schiller, San Jose, both of Calif., assignors to Ampex Corporation, Redwood, Calif.

Division of Ser. No. 265,939, June 23, 1972, , which is a continuation-in-part of Ser. No. 67,784, Aug. 28, 1970, abandoned. This application Oct. 1, 1973, Ser. No. 402,298

Int. Cl. G11b *5/42*

U.S. Cl. 29—603 **12 Claims**



1. A method of constructing a magnetic transducer having a functional non-magnetic gap formed between a pair of complementary magnetic core halves, the steps comprising:

forming a plurality of spaced parallel notches extending into a block of magnetic material only between intersecting surfaces thereof to define a plurality of outwardly facing lands, one of said surfaces being planar;

forming an elongate groove in a plane surface of another block of magnetic material;

holding said blocks in confronting spaced apart relationship with said planar surfaces in opposition so that a portion of said elongate groove confronts a portion of each of said notches at said lands to form communicating free space regions between the confronting blocks in said notches, in said groove and between the planar surfaces;

filling the free space regions between said confronting planar surfaces, in said notches and in at least a part of said groove with glass, said glass forming an integral structural unit bonded to said planar surfaces and the walls of said notches and groove; and

slicing said blocks along planes parallel to and substantially bisecting each of said spaced parallel notches to form a plurality of individual transducers each having a pair of magnetic core halves with a nonmagnetic glass gap therebetween and having glass pockets on the side of the glass gap, said glass pockets and the glass between said core halves, including said glass gap, forming an integral structural unit.

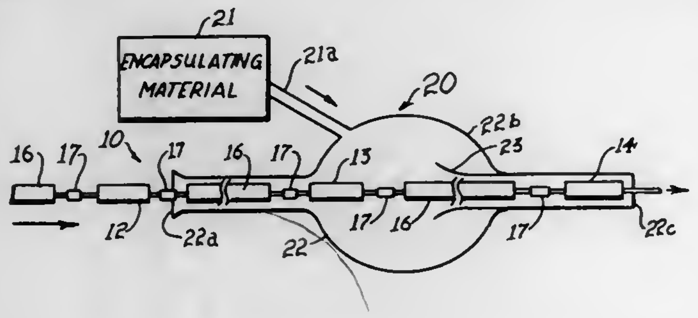
3,845,551
HIGH STRENGTH HIGH CONDUCTIVITY ALUMINUM ALLOY WINDINGS IN LARGE CORE FORM TRANSFORMERS

Laurence D. Kunsman, Trafford, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Division of Ser. No. 168,770, Aug. 3, 1971, abandoned. This application Aug. 17, 1973, Ser. No. 389,421
Int. Cl. C21d *9/52;* **C22c** *21/04;* **C22f** *1/04*
U.S. Cl. 29—605 **2 Claims**

1. In the method of forming a coil for use in a core form transformer, the steps comprising solution heat treating at a temperature within the range between 800°F and 950°F an age hardenable aluminum base alloy having a composition of between about 0.35 and 0.8 percent Mg, 0.3 and 0.7 percent silicon, 0.5 percent maximum iron and the balance aluminum in the form of wire, over-aging the wire to effect a temper equivalent to about one-quarter hard, winding the wire into coil configuration and assembling the coil into a core form transformer.

3,845,552
METHOD OF MAKING AN ENCAPSULATED ASSEMBLY

Douglas G. Waltz, Richardson, Tex., assignor to Varo Semiconductor, Inc., Garland, Tex.
Division of Ser. No. 231,311, March 2, 1972. This application Apr. 23, 1973, Ser. No. 353,572
Int. Cl. H01r *43/00*
U.S. Cl. 29—628 **9 Claims**

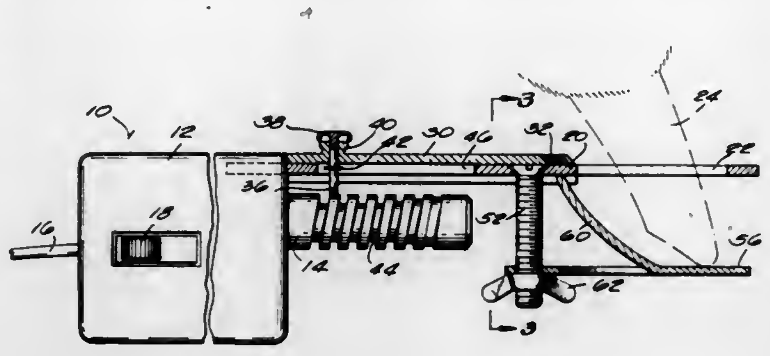


1. A method of making encapsulated electronic components comprising the steps of: selecting an electronic component including a central body of given, uniform cross-sectional size and shape and a pair of lead wires respectively extending axially from the opposite ends of said body; selecting interconnecting wire members having a cross-sectional size and shape closely corresponding to the cross-sectional size and shape of said central body; joining a said interconnecting wire member substantially end-to-end with each of said lead wires closely adjacent the central body corresponding respectively therewith to produce a serially connected assembly of substantially uniform, cross-sectional size and shape; temporarily locating said assembly in an encapsulation die having a central body portion of substantially uniform internal corss-section; and, during the residence of said assembly in said die, forming a quantity of encapsulating material of substantially uniform thickness over the exterior of said assembly in intimate contact therewith, whereby to provide an encapsulated electronic unit of substantially uniform cross-sectional size throughout its length.

3,845,553
CLAW CLIPPER

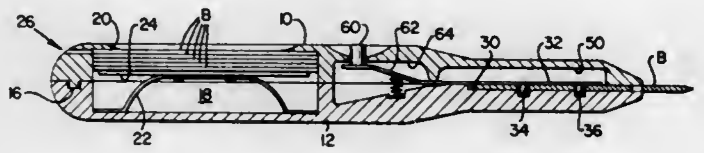
Harold E. Fields, 905-A W. Maple St., Milwaukee, Wis. 53204
Filed Mar. 5, 1973, Ser. No. 338,006
Int. Cl. B26b *15/00;* **B24b** *23/02;* **F16h** *25/12*
U.S. Cl. 30—29 **7 Claims**

1. A clipper comprising an anvil plate having an opening therein for receiving the end of a workpiece to be clipped, a cutting plate slideably mounted in face contact with said anvil plate and having a cutting edge which faces the opening in said anvil plate, said cutting plate being reciprocably slideable with respect to said anvil plate to move said cutting edge across said opening in a cutting stroke to clip the end of said workpiece and then to move said cutting edge in a return stroke to a position in which it is spaced from said opening, an electric motor mounted in a housing, said anvil plate and siad cutting plate being attached to said motor housing, and reciprocal drive means between said electric motor and said cutting plate for reciprocally sliding the same including single-stroke clutch means for engaging and disengaging said reciprocal drive means, and means to return said cutting plate to its starting position automatically immediately upon disengagement of said single stroke clutch means.



3,845,554
KNIFE BLADE AND HANDLE

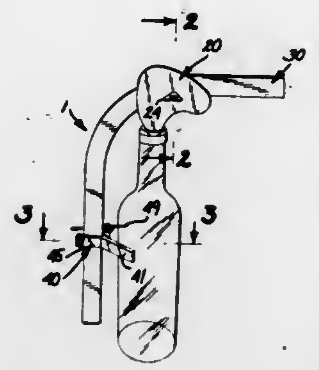
Norman R. Joanis, 22 Westwood Dr., and Raymond R. Lavole, 28 Westwood Dr., both of Wethersfield, Conn. 06604
Filed Apr. 19, 1973, Ser. No. 352,407
Int. Cl. B26b *5/00;* **B25g** *1/08*
U.S. Cl. 30—125 **8 Claims**



1. A holder for a knife blade or the like and comprising in combination;
- a. a pair of mating handle parts,
- b. one of said parts having an internal blade clamping compartment for receiving a substantial portion of the blade,
- c. a leaf spring with a blade engaging portion adapted to overlie a substantial portion of a blade located in said compartment when said spring is in a blade clamping position,
- d. said other handle part having an internal spring receptacle for receiving said blade engaging spring portion when the latter is in a blade release position,
- e. said spring having an inner portion opposite said blade engaging portion, and an intermediate portion of said spring abutting said one handle part to define a fulcrum for said leaf spring, and
- f. a button projecting through an opening in said other handle part for moving said inner spring portion toward said one handle part and thereby moving said blade engaging portion into said spring receptacle of said other handle part and away from the blade to permit removal of the blade.

3,845,555
BOTTLE CUTTER

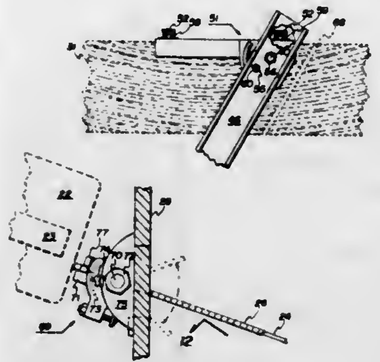
James E. Hanson, Anoka, Minn., assignor to Hanson Design, Inc., Anoka, Minn.
Filed Apr. 26, 1973, Ser. No. 354,650
Int. Cl. B26d *3/08*
U.S. Cl. 30—164.9 **5 Claims**



1. A bottle cutter for circumferentially cutting any area of a glass bottle, comprising:
- a. support means for carrying guide means and cutting means in a fixed, spacially separated relationship;
- b. a disc-like guide element carried by said support means, said guide element being movably clamped to said support means and having at least two exterior lobes of unequal size and one interior lobe for selective engagement with the mouth of a bottle to thereby assist in guiding the cutting means for movement along a desired path;
- c. means for cutting the exterior surface of the glass bottle, said cutting means carried by and movable along said support means;
- d. said cutting means including a tapered, nonrotary glass-cutting tip which can cut the glass surface when oriented at substantially any angle thereto; and
- e. said glass-cutting tip rigidly mounted on said cutting means and movable thereon toward and away from the bottle surface to facilitate stable positioning of said cutting means against various sized bottles.

3,845,556
CUT CONTROL ATTACHMENT FOR CHAIN SAWS

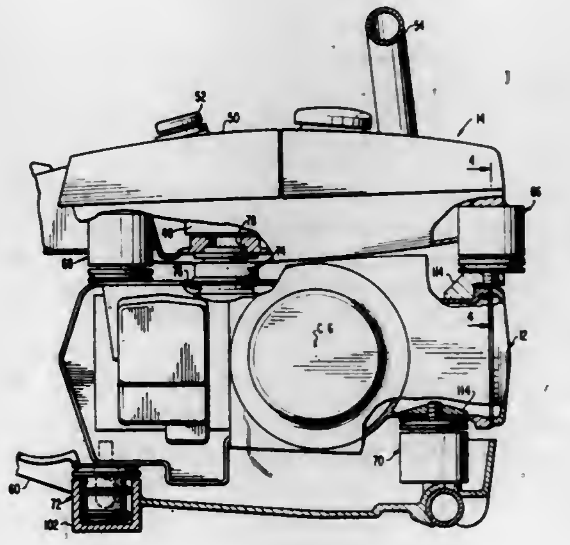
Tillson H. Edmunson, 9232 Dunbarton Rd., Santee, Calif. 92071
Filed May 23, 1973, Ser. No. 363,301
Int. Cl. B27b *17/06*
U.S. Cl. 30—381 **4 Claims**



1. A cut control attachment for chain saws comprising:
- a chain saw guide bar;
- a sole plate having a plurality of apertures and slots therein;
- an angularly adjustable guide bar yoke bracket adjustably carried by said sole plate and operable for adjusting a cutting angle of a chain saw in a first plane; and
- an adjustable bracket bolt rotatably coupled to said guide bar yoke bracket and said chain saw guide bar for angularly adjusting the chain saw in a second plane substantially ninety degrees removed from said first plane.

3,845,557
CHAIN SAW ANTI-VIBRATION SYSTEM

Jay Richard Bailey, Chatsworth, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.
Filed June 28, 1973, Ser. No. 374,490
Int. Cl. B27b *17/02;* **F16f** *7/12*
U.S. Cl. 30—381 **10 Claims**



1. In a chain saw having
- a vibration generating assembly including engine means; cutter chain means, drivingly connected with said engine; and
- a supporting assembly including
  - handle means; and
- a plurality of vibration isolation means interconnecting said vibration generating assembly and said supporting assembly;

wherein the improvement comprises:

each of said vibration isolation means including,
- a first cup means mounted upon one of said vibration generating assembly and said supporting assembly;
- a post mounted upon the other of said vibration generating assembly and said supporting assembly and being diametrically dimensioned to be freely coaxially inserted within said first cup; and
- a second cup means composed of an elastomeric material and being dimensioned to contiguously fit within the interior of said first cup, said second cup having at least one circumferential inwardly projecting ring, said one ring being dimensioned to engage under hoop tension at least a portion of the exterior surface of said post whereby relative vibration between said post and said first cup will be attenuated by said elastomeric second cup;

said first and second cup means and said post of each of said plurality of vibration isolation means each have generally cylindrical side walls; and
- another elastomeric circumferential ring, inwardly projecting within said second cup, said ring being axially displaced with respect to said one circumferential ring and being dimensioned to concentrically surround said cylindrical post in a posture normally spaced from said cylindrical post coaxially within said first and second cup means.

3,845,558

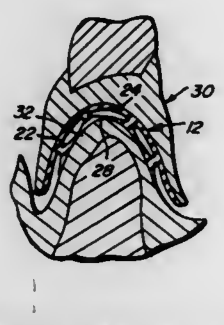
DENTURE LINER

Daniel E. Kelly, 2727 N.W. 167th St., Miami, Fla. 33169; Robert W. Theed, 9010 S.W. 77th Ave., South Miami, Fla. 33156, and Martin Beckerman, 2734 N.W. 183rd St., North Miami Beach, Fla. 33169

Filed Aug. 6, 1973, Ser. No. 385,799

Int. Cl. B61c *13/24*

U.S. Cl. 32—3 **17 Claims**



1. In combination with a denture plate including one side adapted to oppose gum tissues against which the plate is to be seated, a denture liner including a plurality of panel portions, each panel portion including a generally smooth outer side for opposing and direct contact with a wetted gum tissue area and an opposite side opposing said one side of said plate, each panel portion including a centrally disposed integral stem portion projecting outwardly from said opposite side thereof and anchored, at its end remote from said panel portion, to said one side of said plate, said panel portions and said stems being integrally formed of a soft, flexible and resilient material, said outer sides of said panel portions being of a contour for sustantially full light surface-to-surface contact with opposing wetted gum tissue surfaces to the exclusion of substantially all air from between said gum tissue surfaces and said outer sides and independent of negative pressures being formed between said outer sides and said gum tissue surfaces.

3,845,559

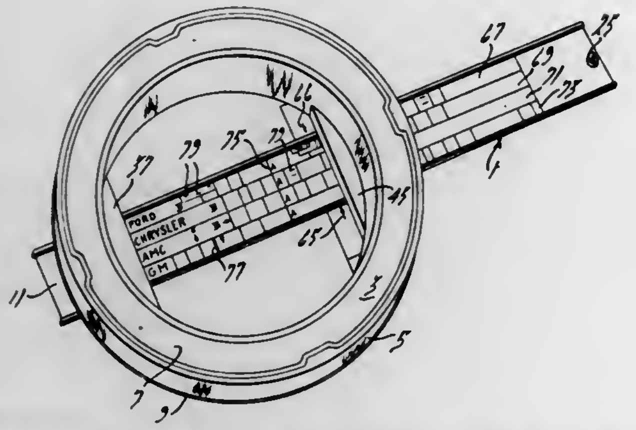
FILTER ELEMENT SELECTOR

Robert J. Offer, Racine, Wis., assignor to Tenneco Inc., Racine, Wis.

Filed Aug. 7, 1972, Ser. No. 278,609

Int. Cl. G01b *5/00*

U.S. Cl. 33—143 M **9 Claims**



1. A selector device for measuring first, second, and third dimensions of an element and for indicating the model number of said element in accordance with the measurement of said dimensions comprising measuring means for respectively and separately measuring each of said first, second, and third dimensions of said element, pointer means operated by said measuring means for indicating the magnitude of a measurement, and scale means containing rows of model numbers, said scale means comprising first, second, and third divisions of model numbers in said rows, said first division containing all of said model numbers and the positions of said model numbers on the first division of said scale means being in accordance with the magnitude of the first dimension of an element as determined by the measuring means, said second division containing each model number of element that has a dimension in common with another model number and the positions of said model numbers on the second division of said scale means being in accordance with the magnitude of the second dimension of an element as determined by the measuring means, said third division containing each model number of element that has two dimensions in common with another model number and the positions of said model numbers on the third division of said scale means being in accordance with the magnitude of the third dimension of an element as determined by the measuring means, said pointer means and the positions of the model numbers in said rows being arranged and cooperating to indicate the model numbers having the dimensions measured by the measuring means.

3,845,560

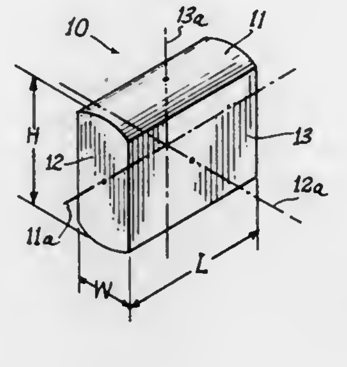
GAGE BLOCK

Peter J. Sommer, Elmhurst, Ill., assignor to American Gage & Machine Company, Elgin, Ill.

Filed July 18, 1973, Ser. No. 380,383

Int. Cl. G01b *3/30*

U.S. Cl. 33—168 R **1 Claim**



1. A gage block,
comprising a block having first, second and third pairs of diametrically opposite gaging surfaces extending precisely parallel to first, second and third rectangularly related axes,
said first pair of surfaces being cylindrically curved and constituting uninterrupted segments of a cylindrical surface centered about said first axis,
said second pair of surfaces being in the form of uninterrupted, precisely parallel and flat plane gaging surfaces extending perpendicular to said first axis,
said third pair of surfaces being in the form of uninterrupted precisely parallel and flat plane gaging surfaces which are rectangularly related to said second pair of surfaces,
said surfaces of said third pair being symmetrically disposed on opposite sides of said first axis and precisely parallel thereto.

3,845,561

MEASURING HEAD SYSTEM

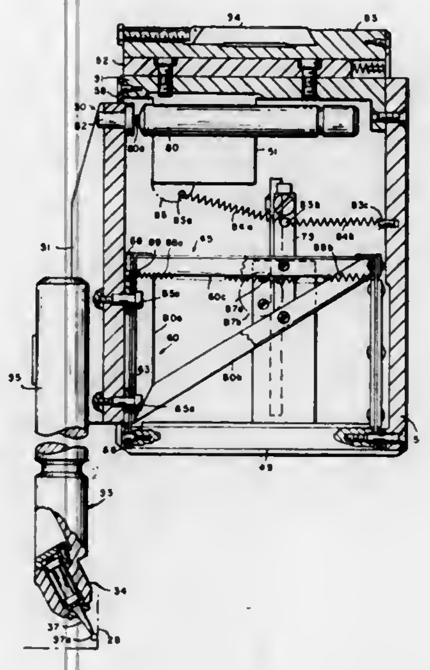
Waldemar J. Elsdoerfer, 235 Love Ln., Warwick, R.I. 02886

Filed June 5, 1972, Ser. No. 259,734

Int. Cl. G01b *5/04*

U.S. Cl. 33—169 R **1 Claim**

1. In a measuring head apparatus for the inspection of machine parts which includes a sensing assembly having a probe for engaging a workpiece to be measured by moving relative thereto, a base, a parallelogram assembly including a leaf spring system which is supported by the base, and a plurality of support members coupled to the spring system, said support members supporting the sensing assembly therefrom, the improvement comprising fluidic damping means which includes a reservoir supported by the base means, a restrictor supported by the parallelogram assembly support members and which has a portion thereof which extends into the reservoir and moves therein as a paddle with the motion of the parallelogram assembly and the probe, said reservoir containing fluid and said restrictor extending below the level of said fluid, and adjustable means coupling the restrictor to said parallelogram assembly to adjust the extent to which the restrictor extends into the fluid in the reservoir.



3,845,562

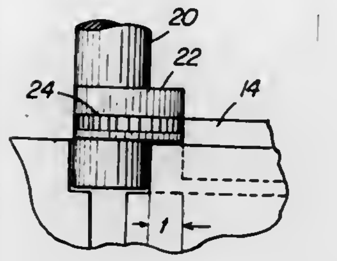
METHOD AND APPARATUS FOR DETERMINING THE THICKNESS OF A GAP BETWEEN ELEMENTS

Charles G. Dallas, Westville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 16, 1973, Ser. No. 388,877

Int. Cl. G01b *5/14*

U.S. Cl. 33—169 R **1 Claim**



1. A method for determining the thickness of a gap between the end of the side seal and its corresponding cylindrical corner seal positioned in the rotor of a rotary engine which comprises,

a. setting one end of a side seal against its corresponding cylindrical corner seal,
b. setting the cylindrical end of a micrometer gauge provided with a graduating circular cam spaced apart from said cylindrical end thereof in a cylindrical aperture in said rotor for said cylindrical corner seal at the opposite end of said side seal,
c. rotating said micrometer gauge in said cylindrical aperture until the surface of said graduating cam engages the end of said side seal and
d. reading directly from said graduating cam the thickness of the gap between said cylindrical aperture and the end of said side seal.

3,845,563

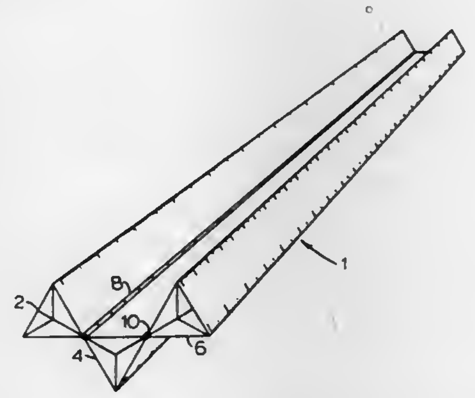
ENGINEERS

Umeyuki Taniquchi, 45-1040 D Wailele Rd., Kaneohe, Hawaii 96744

Filed Oct. 2, 1972, Ser. No. 294,388

Int. Cl. G01b *3/06*

U.S. Cl. 33—107 **7 Claims**



1. An engineer-architect's scale apparatus comprising first and second elongated scales having a plurality of longitudinal edges and having generally equilateral triangular cross-sections, unique related linear scale markings along the longitudinal edges and hinge means connected to longitudinal edges of the first and second scales, further comprising a third elongated scale coextensive with the first and second scales having a plurality of longitudinal edges having a equilateral triangular cross section and having unique scale markings along the longitudinal edges, and second hinge means connected to corresponding longitudinal edges of the first and third scales, thereby joining the first, second and third scales in a single foldable and reorientable unit.

3,845,564

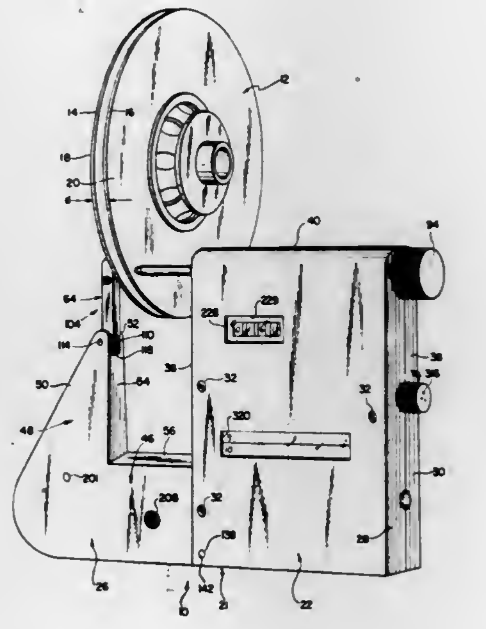
MICROMETER WITH MOVABLE ANVIL

Paul A. Morgan, Chicago, Ill., assignor to Century Wheels, Inc., Lake Bluff, Ill.

Continuation-in-part of Ser. No. 238,340, March 27, 1972. This application Oct. 5, 1972, Ser. No. 295,225

Int. Cl. G01b *3/18, 5/00*

U.S. Cl. 33—164 R **27 Claims**



1. A micrometer for measuring a workpiece comprising:

a. a frame having an anvil mounting section and a spindle mounting section, the anvil mounting section being connected to the spindle mounting section for relative movement thereto;
b. a spindle mounted in said spindle mounting section for axial movement;

c. an anvil means mounted to said anvil mounting section and movable relative to said spindle and anvil mounting sections from a non-measuring position to a measuring position upon the creation of a gauging pressure by a workpiece that is being measured between the anvil means and the spindle;

d. indicating means responsive to the relative movement of the anvil means for indicating movement of said anvil means to the measuring position;

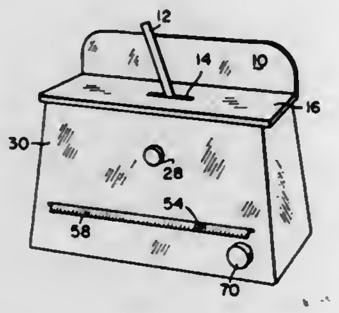
e. a first biasing means for biasing said anvil means for movement relative to said mounting sections and for maintaining the same amount of gauging pressure at said measuring position for each measurement that the micrometer makes; and

f. a second biasing means connecting said mounting section and spindle mounting section for controlling the relative movement of the anvil mounting section to the spindle mounting section and absorbing gauging pressure in excess of that which can be absorbed by said first biasing means.

3,845,565
ANGLE MEASURING DEVICE

Paul S. Newswanger, 1401 Vermont Ave., Lancaster, Pa. 71200

Filed Aug. 20, 1971, Ser. No. 173,597
Int. Cl. G01b *5/24, 3/56*
U.S. Cl. 33—174 R **6 Claims**



1. A device for measuring and setting angles comprising

A. a frame including a fixed support;

B. a horizontally disposed scale of rectilinear shape affixed to the frame below the fixed support;

C. an arm connected by a pivot pin to the fixed support, said arm having a longitudinal axis and being pivotable from a first position which is vertical to a second position, which is angularly offset from the vertical, through an angle to be measured,

D. an indicating means mounted for movement adjacent the scale,

  1. the indicating means comprising a sliding member mounted for sliding movement, a pointer connected to the sliding member and overlying the scale, and an interconnecting pin being fixedly connected to the sliding member;

E. interconnection means for connecting said indicating means to said arm, said interconnection means comprising,

  1. a longitudinally extending slot in said arm,
    a. said slot being tapered in a direction away from the pivot pin,

  2. the interconnecting pin extending into said slot,
    a. the portion of said interconnecting pin which extends into the slot having opposed edges that engage opposed longitudinally extending walls of the slot throughout the entire movement of the arm from the first position to the second position,

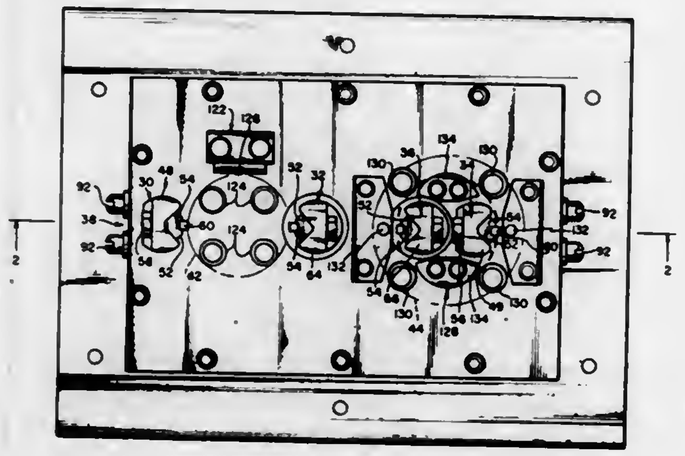
F. angle setting means for pivoting said arm both clockwise and counterclockwise,

  1. said angle setting means comprising a chain and a pair of spaced, freely rotatable sprockets mounted on said frame, said chain being disposed in a loop about the sprockets,
    a. said chain having opposed ends, connecting means for fastening said opposed ends to opposite sides of the slide member, and means connected to the sprockets for rotating said chain in a clockwise and a counterclockwise direction for traversing the slide in opposite directions to thereby pivot the swinging arm in both clockwise and counterclockwise directions from said first position.

3,845,566
DIFFERENTIAL GAGING INSTRUMENT

William W. Rameson, Santa Monica, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Mar. 30, 1972, Ser. No. 239,558
Int. Cl. B23f *23/08*
U.S. Cl. 33—174 L **4 Claims**



1. A gaging instrument for comparing selected dimensions of two work parts, comprising:

a mounting base having a top plate;

first and second carriages mounted on said base below said top plate for independent movement relative to one another and to said base along direction lines parallel to one another and to said plate;

each carriage including a jaw mounting plate, said carriage plates being located one over the other below said top plate with the second carriage plate located between said top plate and first carriage plate;

a first pair of gaging jaws including a stationary jaw fixed to and rising from said top plate and a movable jaw fixed to said first carriage plate and rising from said first carriage through openings in said second carriage plate and top plate for movement of said movable jaw toward and away from said stationary jaw by movement of said first carriage along its direction line of movement;

a second pair of gaging jaws including a stationary jaw fixed to and rising from said top plate and a movable jaw fixed to said second carriage plate and rising from said second carriage through an opening is said top plate for movement of said latter movable jaw toward and away from said latter stationary jaws by movement of said second carriage along its direction line of movement;

the upper ends of said jaws projecting above said plate and having work engaging surfaces;

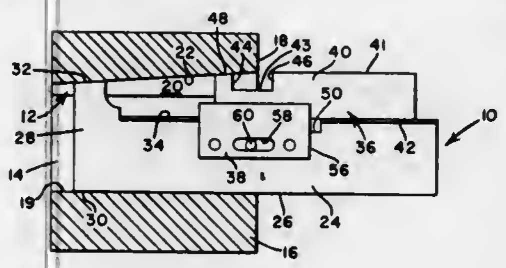
means on said top plate for supporting said parts in gaging relation to said jaw pairs, respectively; and

transducer means including relatively movable members on said carriages, respectively, for generating an electrical signal representing the relative positions of said members parallel to said direction lines.

3,845,567
TAPERED KEYWAY CHECKING GAUGE

Robert Allen Johnson, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Dec. 3, 1973, Ser. No. 421,343
Int. Cl. G01b *5/24, 3/46, 3/56*
U.S. Cl. 33—174 E **10 Claims**

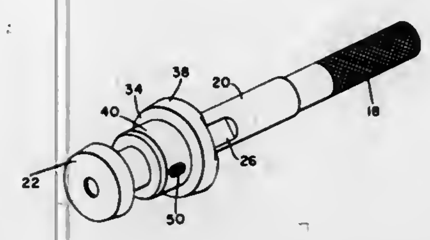


1. A gauge for checking a tapered keyway along a bore in a member having a surface adjacent the keyway opening, the keyway having a tapered wall inclined relative to the sidewall of the bore opposite the keyway, said gauge comprising: an elongated body insertable lengthwise into the bore and engageable with the sidewall of the bore opposite the keyway; a first gauge element connected to the body and having a first surface engageable with said bore sidewall opposite the keyway and a second surface opposite the first surface and engageable with the tapered wall of the keyway to establish a set position of the body in the bore and keyway; a second gauge element mounted on the body for limited shifting thereon in a longitudinal direction parallel to the axis of the bore and including a gauging surface engageable with the tapered wall of the keyway in response to longitudinal shifting of the second gauge element on the body when the body is in said set position, the second gauge element having first and second longitudinally spaced indicator means adjacent the surface of said member and respectively defining the opposite acceptable positions of the second gauge element relative to said surface to indicate the acceptable keyway heights adjacent said surface, the second gauge element having an indicator element and the body having third and fourth indicator means adjacent said indicator element respectively defining the opposite limits of acceptable longitudinal positions of the second gauge element relative to the body to indicate the limits of the angle of the tapered wall of the keyway.

3,845,568
TAPERED BORE CHECKING GAUGE

Robert Allen Johnson, and Wesley Paul Raisbeck, both of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Dec. 3, 1973, Ser. No. 421,344
Int. Cl. G01b *5/24, 3/46, 3/56*
U.S. Cl. 33—174 E **10 Claims**

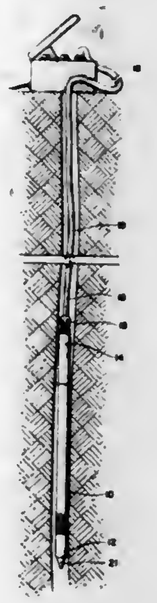


1. A gauge for checking the internal taper on a bore whose axis extends at right angles from a flat surface and comprising: an elongated body including a generally cylindrical central portion having a lesser diameter than the diameter of the bore and insertable therein; a first gauge element attached to the body adjacent to said portion and having contact surfaces lying in a circular array and forming an outer surface engageable with the bore to hold the body in a set axial position relative to the bore; an annular second gauge element coaxially mounted on said central portion and axially shiftable thereon to a limited degree, said second gauge element having contact surfaces lying in a circular array and forming an outer surface engageable with the bore adjacent said flat surface when the body is in said set position by axially shifting the second gauge element on the central portion, said second gauge element including first and second axially spaced indicator means on the outer surface adjacent to said flat surface, the location of the flat surface between said first and second indicator means when the second gauge element engages the bore indicating an acceptable bore base plane position, said second gauge element having a radial end surface and the central portion having third and fourth axially spaced indicator means adjacent said end surface, said end surface being disposed between said third and fourth indicator means when the second gauge element is within acceptable axial positions relative to the central portion, the said axial position of the second gauge element relative to the central portion being responsive to the angle of bore taper.

3,845,569
BORE HOLE LOGGING DEVICE

Hubert Josef Otte, and Gosta Roosman, both of Toronto, Ontario, Canada, assignors to Selco Mining Corporation Limited

Filed Feb. 9, 1972, Ser. No. 224,861
Int. Cl. G01c *19/28, 9/06, 9/16*
U.S. Cl. 33—312 **16 Claims**



1. A bore hole logging device of the type which is intended to be introduced into a bore hole, and passed therealong to determine the attitude of the bore hole at spaced intervals, without repeatedly withdrawing the device from the bore hole to obtain readings at each station therealong, said device comprising:

casing means adapted to be attached to means such as a cable, drill rods or the like, said casing defining a longitudinal axis;

mounting means movably located within said casing, and being rotatable about said longitudinal axis of said casing freely and independently of movement of said casing, said mounting means being constructed and weighted to define a centre of gravity thereof offset with respect to said longitudinal axis, whereby to bias said mounting means into a predetermined orientation with respect thereof when said longitudinal axis is appreciably inclined relative to the vertical;

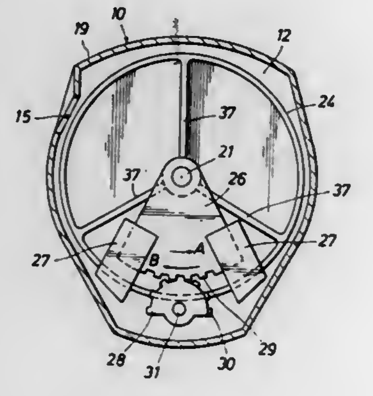
inclination pendulum means mounted on said mounting means, said pendulum means being swingable about a swing axis transverse to said longitudinal axis of said device, and so located that said swing axis of said pendulum is normally located horizontal when said mounting means is located in said predetermined orientation;

sensing means associated with said inclination pendulumfor sensing the inclination thereof relative to said mounting means, thereby to determine the inclination of said logging device within a bore hole;

secondary reference pendulum means mounted on said mounting means, and swingable about a swing axis coincident with the longitudinal axis of said device, and sensing means for sensing the position thereof with reference to said mounting means, thereby to provide a check on the rotational position of said mounting means.

3,845,570
INCLINOMETER

Wilbur Green, 116 Ruby Ln., McAllen, Tex. 78501
Filed Oct. 1, 1973, Ser. No. 402,307
Int. Cl. G06k *9/12*
U.S. Cl. 33—401 **9 Claims**

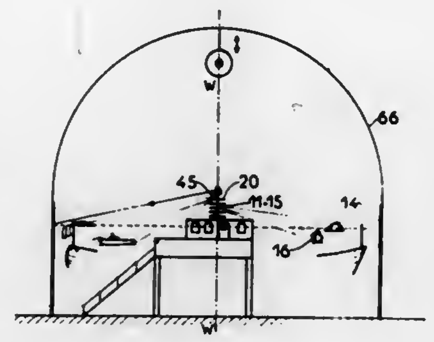


1. An inclinometer, comprising
- a housing having a pair of spaced apertures,
- a pair of meter wheels mounted for rotation about a first axis within said housing and having a series of numerals imprinted about the rims of said wheels and observable through respective ones of said housing apertures as said meter wheels rotate,
- a gravity actuated gear mounted for rotation about said first axis and adapted to rotate in opposite directions with respect to said housing in response to inclination of said housing either upwardly or downwardly,
- a pair of spaced axle gears mounted for rotation about a second axis within said housing, one of said axle gears adapted for engaging said gravity actuated gear only when said gravity actuated gear rotates in one direction, the other of said axle gears adapted for engaging said gravity actuated gear only when said gravity actuated gear rotates in the opposite direction,
- a pair of spaced drive gears mounted for rotation about said second axis and each attached to one of said axle gears for rotation therewith, and
- a pair of spaced meter wheel gears each attached to one of said meter wheels and rotatable therewith about said first axis, each of said meter wheel gears engaging one of said drive gears for rotating one of said meter wheels in response to rotation of said gravity actuated gear for indicating the degree of inclination of said housing.

3,845,571
SIMULATOR FOR SHIP NAVIGATION

Rene Hervieu, 20, rue du Calvaire, 44000 Nantes, France
Filed Apr. 16, 1973, Ser. No. 351,470
Claims priority, application France, Apr. 21, 1972, 72.14754
Int. Cl. G09b *9/06*
U.S. Cl. 35—10.2 **12 Claims**

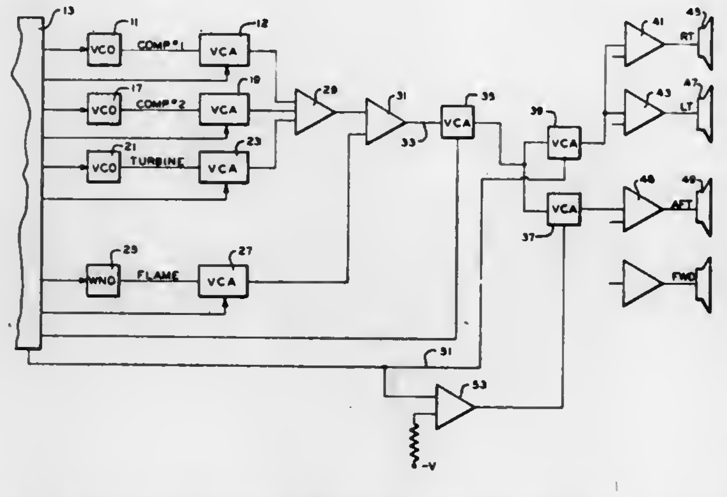
1. A device for simulating navigation, said device comprising:
- a. a cylindrical screen for projecting images thereon, said images simulating the position of observed objects relative to an observer,
- b. a rotatable support plate,
- c. a plurality of image means connected to said support plate and rotatable therewith,
- d. image projecting means mounted on said support plate and rotatable therewith, said image projecting means comprising:
  1. a light source connected to said support plate,
  2. an adjustable focal line objective lens positioned for alignment with said light source, said objective lens supported by said support plate,



- e. means for rotating said support plate for projecting images at various angles about the rotation axis of said rotatable support plate,
- f. means for adjusting the magnification of said focal line objective lens thereby providing projected images of a variable size, and
- g. means for successively positioning different ones of said plurality of image means for projection by said aligned light source and objective lens, whereby different projected images may be displayed simulating different orientations of the observed object relative to the observer.

3,845,572
MODULAR VEHICLE TRAINER SOUND SYSTEM HAVING A PLURALITY OF SEPARATELY CONTROLLABLE SOUND GENERATORS AND A POLYPHONIC SPEAKER ARRAY

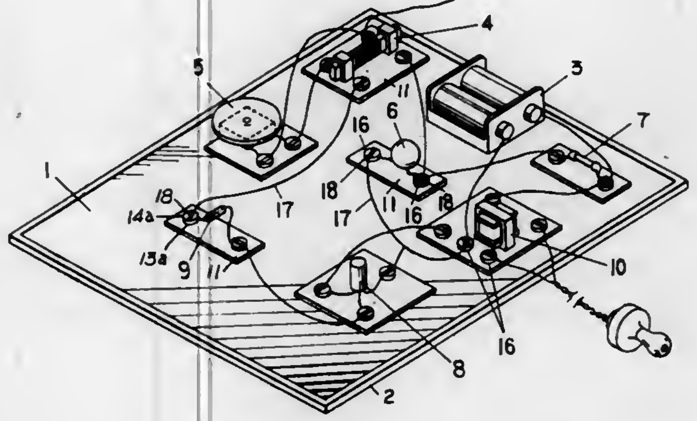
Neil R. McCanney, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.
Filed Aug. 2, 1972, Ser. No. 277,395
Int. Cl. G09b *9/02*
U.S. Cl. 35—11 **12 Claims**



1. A sound system for use with a vehicle simulator for providing a plurality of identifiable sounds associated with mechanical devices of the simulated vehicle comprising:
- a plurality of amplitude controllable signal generator means, each of said signal generator means providing signals representative of an identifiable sound associated with a mechanical device of a vehicle to be simulated;
- summing means responsive to each of said signals provided by said plurality of amplitude controllable signal generator means for providing a first composite signal representative of the sum of said identifiable sounds;
- apportioning means responsive to first control signal inputs for receiving said first composite signal and for providing a plurality of second composite signals similar to said first composite signal, the magnitude of said second composite signals being selectively apportioned in accordance with said control signal inputs;
- a trainee station representative of the control station or cockpit of the vehicle being simulated, said trainee station including a plurality of electro-acoustic devices equal in number to said plurality of second composite signals and spaced around said trainee station, each electro-acoustic device connected for generating sounds in response to one of said second composite signals; mathematical model means to provide a sound profile of the simulated vehicle and to control a plurality of amplitude controllable signal generator means; and
- control means for providing said first control signal inputs to said apportioning means, said control signal inputs being generated in response to signals representative of the operation of the vehicle simulator and in accordance with said mathematical model means such that at least one of said identifiable sounds provided by at least two of said electro-acoustic devices has the semblance of originating from a particular location around the trainee station different from the location of any of said electro-acoustic devices.

3,845,573
APPARATUS FOR ASSEMBLING ELECTRICAL CIRCUITS FOR EXPERIMENTATION

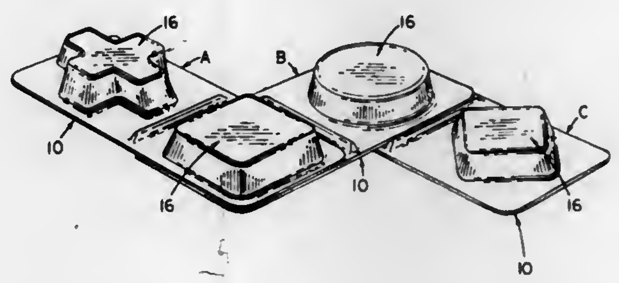
Takuo Kasamatsu, No. 4, 78 Mikazura, Wakayama, Japan
Filed Nov. 19, 1973, Ser. No. 417,405
Claims priority, application Japan, Nov. 17, 1972, 47-132910
Int. Cl. G09b *23/18*
U.S. Cl. 35—19 A **7 Claims**



1. An apparatus for assembling electrical circuits for experimentation; comprising, in combination: an electrically insulating base plate for supporting on one of its surfaces discrete electronic parts which constitute the electrical circuits; each of said parts having at least two wires connected thereto and extending therefrom; small metal pieces constituting terminals for said parts at the ends of said wires; a metal plate substantially coextensive with and adjoining said base plate; block-shaped metal pieces corresponding in number to that of said terminals; jumper leads having at least two metal terminals of a small size, adapted to fit unto said metal pieces, for electrically interconnecting at least two of said terminals; and magnet means constituted by at least one of said metal plate and said block-shaped pieces, for holding together by magnetic attraction said metal pieces, said metal plate, said block-shaped pieces and said jumper terminals when said parts are positioned on said base plate, and thereby constituting the electrical circuits; said metal pieces, said jumper terminals, as well as the remaining ones of said metal plate and said block-shaped pieces being of a material responding to magnetic attraction by said magnet means.

3,845,574
EDUCATIONAL GAME TYPE TOY

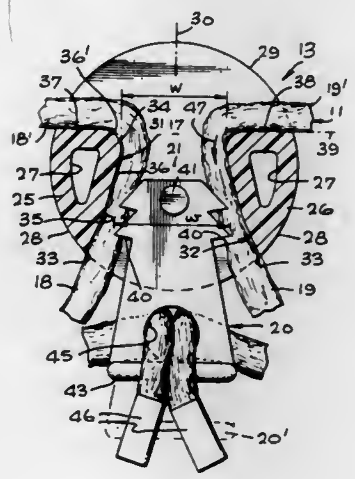
Eugene J. Majewski, 121 N. Elmore Ave., Park Ridge, Ill. 60068
Filed July 26, 1973, Ser. No. 382,775
Int. Cl. G09b *1/36*
U.S. Cl. 35—72 **8 Claims**



1. In an educational game type toy for teaching the recognition of elementary configurations such as geometric designs, letters, numbers, and the like, a plurality of interlocking members, each comprising:
- a. a relatively thin, flat, oblong base plate having a pair of opposed, integral end sections;
- b. each of said end sections including a hollow, raised element having a particular configuration selected from a set of related configurations having a common theme;
- c. the hollow raised elements of the end sections of each member having configurations different from each other;
- d. the raised elements on the end sections of the members each being contoured so as to nest only with another raised element of identical configuration to provide an overlapping, interlocking fit between matching end sections of related members.

3,845,575
CORD LOCKING ASSEMBLY

Ogden W. Boden, 1580 Gaywood Dr., Altadena, Calif. 91001
Filed May 7, 1973, Ser. No. 357,851
Int. Cl. A43b *11/00;* **F16g** *11/04*
U.S. Cl. 36—50 **9 Claims**



1. A cord fastener comprising a body containing a passage through which a pair of cords are to extend and having a first end facing in a first direction and a second end facing in a

second essentially opposite direction, said passage having two opposite side walls forming a locking restriction, a relatively movable locking unit received at least partially within said passage and adapted to be received between said cords and to clamp them outwardly against said opposite side walls of said passage in a relation locking said cords against longitudinal movement in said first direction, said body being constructed to pass said two cords laterally from said first end of said passage in two opposite lateral directions respectively, said body having surfaces facing generally in said first direction for engaging said cords respectively as they extend laterally from said first end of the passage to take forces exerted longitudinally on said cords, said body having shoulders which are also positioned to engage said cords as they extend laterally from said first end of said passage and which project in said first direction beyond said last mentioned surfaces and at locations to be pressed by said cords toward an adjacent structure and thereby hold said body essentially flat thereagainst.

3,845,576

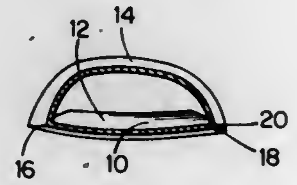
PROTECTIVE DEVICE FOR SAFETY SHOES

Raymond J. Howland, Jr., Windham, N.H., assignor to Safety, Inc., Boston, Mass.

Filed Jan. 17, 1974, Ser. No. 434,267

Int. Cl. A43c *13/14*

U.S. Cl. 36—77 R **14 Claims**



1. A protective device for insertion and use in safety footwear, which device comprises in combination:

a unitary one piece of hard stiff sheet material comprising a sole-protecting portion and a toe-protecting portion,

- i. the toe-protecting portion characterized by open front and rear ends, and comprising at least one integrally joined extending element along one edge of the sole-protecting portion, the toe-protecting element having at least one foot-contoured outer edge adjacent to an outer foot-contoured edge of the sole-protecting portion, and formed into an integral toe-protecting arch extending across the sole-protecting portion,
- ii. the sole-protecting portion having at least one complimentary shaped outer edge with the said outer edge of the toe-protecting element, and
- iii. means to join the outer edge of the toe-protecting element to the complimentary outer edge of the sole-protecting portion, thereby forming a protective device having a unitary sole-protecting portion and a unitary toe-protecting portion characterized by open front and rear ends.

3,845,577

LIGHTWEIGHT SNOWPLOW FOR QUICK ATTACHMENT TO SMALL VEHICLE

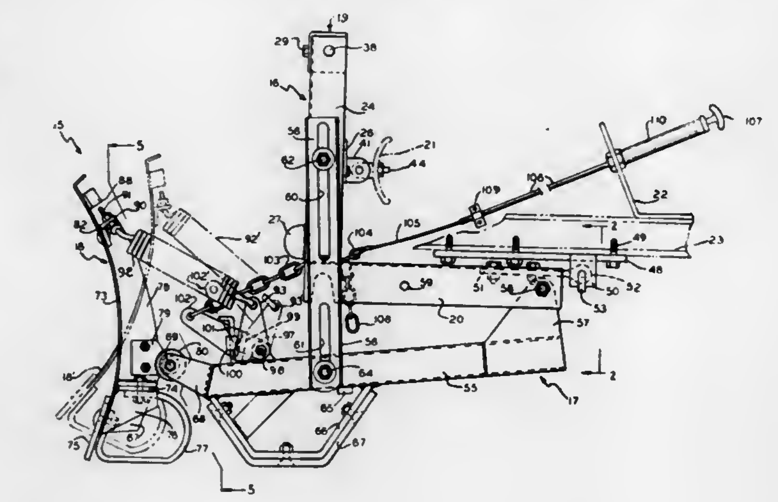
Michael M. Naymik, 300 Beattie St., Syracuse, N.Y. 13224

Filed Nov. 23, 1973, Ser. No. 418,445

Int. Cl. E01h *5/04*

U.S. Cl. 37—42 VL **14 Claims**

1. A lightweight snowplow for small vehicles having a front bumper and parallel longitudinally extending frame members, comprising: a plow support frame, the frame hving an upright generally rectangular portion secured to the vehicle bumper and an integral horizontal trailing arm at each side secured to a vehicle frame member, a like forwardly extending pusher bar at each side pivotally secured for up and down movement to the frame arm, a substantially vertical slide member at each side having an upper slot and an aligned lower slot pivotally secured by bolt means extending transversely from the frame rectangular portion through the upper slot for slidingly securing the slide member to the support frame, the pusher bar at each side having bolt means extending transversely therethrough and through the slide member lower slot for slidingly securing the pusher bar to the slide member, each pusher bar having a depending skid attached thereto adjacent its forward end, a substantially transversely extending lightweight plow blade in advance of the pusher bars, a depending skid secured to the blade adjacent each end, the blade having a substantially vertically extending and rearwardly projecting reinforcing rib secured thereto at each side of its center and aligned with a respective pusher bar, the pusher bar and rib having a pivotal connection arranged for pivotal movement of the blade about a horizontal axis, a coil spring having one end connected to the blade adjacent each rib, an upstanding spring bracket secured to each pusher bar, the spring other end being secured to the bracket, the pivotal connection between blade and pusher bar being in the lower third of the heighth of the blade and the connection betwen blade and spring being in the upper third of the heighth of the blade, whereby the springs are elongated under tension when the blade is tripped by meeting an obstruction in the roadway and the blade is movable vertically with respect to the support frame by movement of the bolt means in the slots of the slide member.



3,845,578

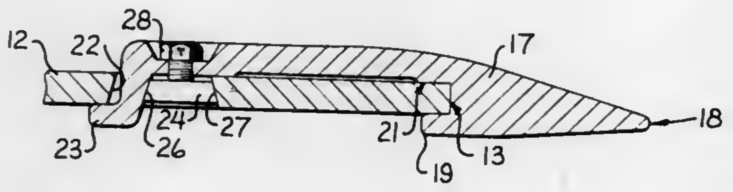
REPLACEABLE CUTTING EDGE WITH PLURAL TANGS

William L. Holmstrom, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 15, 1973, Ser. No. 370,203

Int. Cl. E02f *9/28*

U.S. Cl. 37—141 R **4 Claims**



1. A replaceable cutting member for a material handling implement including plate means forming a forwardly facing leading edge for the implement, a plurality of openings being formed in the plate means rearwardly of the leading edge, the cutting member forming an elongated cutting edge and a slot facing away from the cutting edge to receive the leading edge of the plate means, the cutting member having downwardly and rearwardly extending tangs for penetrating the respective openings in the plates means, tapered means engaging the plate means and cutting member to urge the leading edge of the plate means into the slot and to simultaneously urge the tangs rearwardly into locking engagement with the holes of the plate means.

3,845,579

SELECTIVE INDEX DEVICE

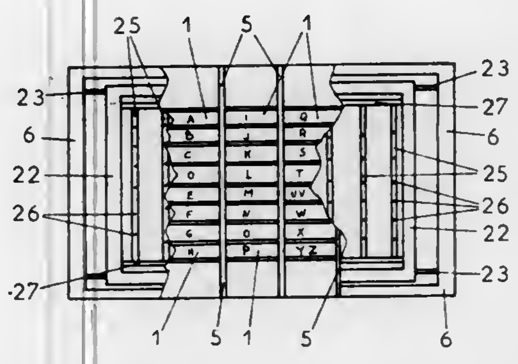
Michel Schimmerling, 30 rue de La Liberta, Lingolsheim, France

Filed Nov. 3, 1972, Ser. No. 303,428

Claims priority, application France, Nov. 10, 1971, 71.41224

Int. Cl. G09f *11/30*

U.S. Cl. 40—78 **6 Claims**



1. A selective display device, comprising a first fixed rectangular frame disposed in a vertical plane, means whereby a plurality of equally spaced and substantially elongated rectangular flaps are pivotably, disposed in a vertically aligned series in said first frame in a common plane parallel to the plane of said first frame, said flaps having recesses therein at least some of which recesses occupy different positions among the various flaps, said recesses being disposed in the same side of each flap, a second rectangular frame smaller than said first frame and having means for sliding horizontally between the opposed edges of said first frame in a plane parallel to the plane of said first frame, and a third frame having means whereby it is carried by and slidable vertically between the opposite edges of said second frame in a plane parallel to the plane of said first frame and having a said plurality of equispaced projections thereon that are adapted to selectively contact a portion of at least one of said flaps along said side and adjacent said recesses while passing through a recess of at least another of said flaps so that upon vertical actuation of said third frame the projections contact and thereby pivot said at least one flap while leaving said at least another flap stationary thereby selectively pivoting said flaps according to the location of said recesses on said flaps.

3,845,580

CALENDAR

Karl Hermann Ritter, Sachsenstrasse 5, and Johannes Andreas Ritter, Thuringerstrasse 5, both of 61 Darmstadt-Eberstadt, Germany

Filed Apr. 9, 1973, Ser. No. 349,000

Claims priority, application Germany, Apr. 12, 1972, 2217510

Int. Cl. G09d *3/04*

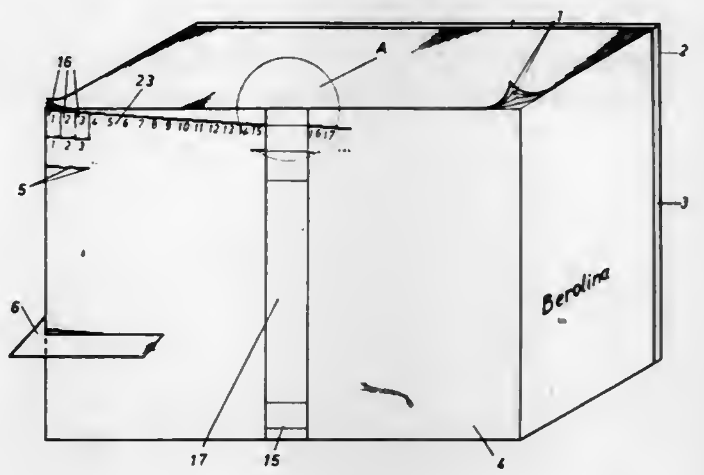
U.S. Cl. 40—121 **4 Claims**

1. A combination note pad and calendar, comprising

a stack of horizontal coextensive superposed paper sheets having a height at least equal to a major edge dimension of the sheets and formed with a vertical cut surface extending along said major dimension;

adhesive means extending along another vertical cut surface of the stack to connect said sheets thereto such that successively uppermost sheets can be successively torn from said stack to expose the next lower sheet and thereby diminish the height of the first mentioned surface; and

calendar indicia for a plurality of months printed on said first mentioned surface and extending substantially over the entire area thereof, said calendar indicia including rows of day numerals representing calendar weeks and vertically and horizontally staggered on said surface whereby successive removal of the sheets will progressively eliminate earlier weeks of a month from the calendar indicia of said first surface.



3,845,581

FIREARMS

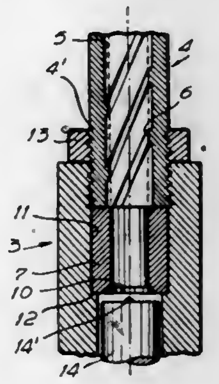
Osvaldo Cesar Infantino, Buenos Aires, Argentina, assignor to Direccion General de Investigacion y Desarrollo (DIGID), Ministerio de Defensa de la Republica Argentina, Buenos Aires, Argentina

Filed July 6, 1972, Ser. No. 269,325

Claims priority, application Argentina, July 6, 1971, 236638

Int. Cl. F41c *21/12*

U.S. Cl. 42—76 R **4 Claims**



1. A firearm comprising a barrel including a bore having helical grooves and lands between said grooves, and a detachable chamber comprising a tubular body having an inner diameter equal to the diameter of said bore across the lands defined by the helical grooves, one end of said tubular body abutting against the base of said barrel, and the other end having an annular recess adapted to receive and retain a peripheral flange at the rear end of a projectile adapted to be fired from said firearm.

3,845,582

CONTROL DEVICE FOR GAS BURNER

Marcel Capy, Olivet, France, assignor to Compagnie Europeene Pour L'Equipment Menager CEPEM, Paris, France

Filed Mar. 2, 1973, Ser. No. 337,500

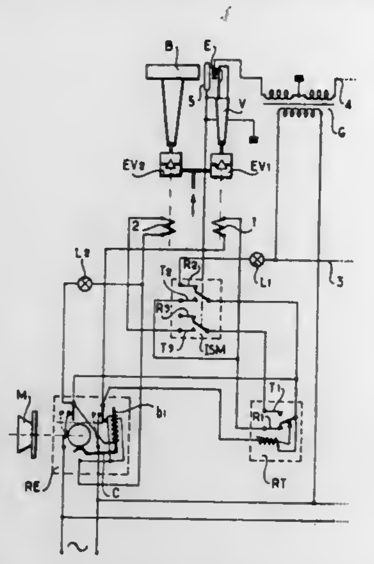
Claims priority, application France, Mar. 3, 1972, 72.07474; June 20, 1972, 72.22118

Int. Cl. F23c *3/02*

U.S. Cl. 43—1 **7 Claims**

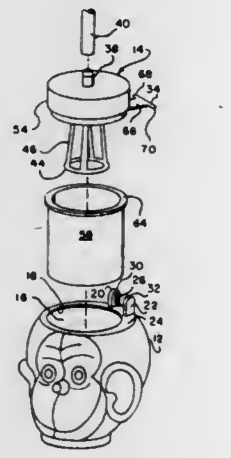
1. In a gas burner system including a main burner and a pilot burner for lighting said main burner, a safety device for controlling said main burner comprising:

a first gas inlet electro-valve for supplying gas to said main burner,
a safety invertor including switch means and heat responsive means in close proximity to said pilot burner for operating said switch means in response to a pilot flame,
a time delay switch, and
energy regulator means connected to energize said first gas inlet electro-valve through said time delay switch and said safety invertor switch means, said energy regulator means including electrically heated bi-metallic switch means for intermittently opening and closing the circuit to said first gas inlet electro-valve, thereby adjusting the heating rate of said main burner by alternately lighting and extinguishing said main burner in a cyclic manner, said time delay switch being continuously energized through said energy regulator means when it is turned on.



3,845,583
BUBBLE BLOWING DEVICE

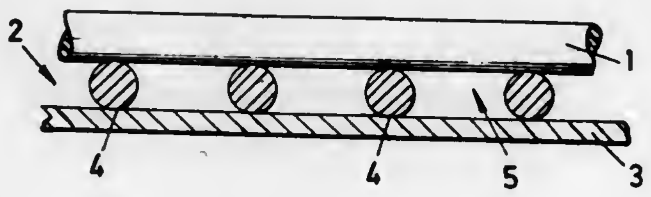
Louis J. Ziff, Philadelphia, Pa., assignor to Larami Corporation, Philadelphia, Pa.
Filed May 21, 1973, Ser. No. 362,528
Int. Cl. A63h *33/28*
U.S. Cl. 46—7 **7 Claims**



1. In a bubble blowing device, the combination of
- A. holder of generally hollow configuration to receive soap solution,
  - 1. said holder being provided with a top opening and a top surface surrounding the opening;
- B. a pair of opposed first and second hinge members projecting upwardly from the holder,
  - 1. said hinge members being each provided with an elongated vertical recess, the said vertical recesses having open fronts and closed backs,
    - a. the said open fronts and closed backs facing each other;
- C. a cap pivotally connected to the holder and movable from a closed position to an open position,
  - 1. said cap closing the said top opening of the holder when in the closed position,
  - 2. said cap carrying an outwardly extending strap,
  - 3. said strap terminating outwardly in a pair of opposed, transverse, first and second pin members,
    - a. said pin members being integral with the strap and having opposed ends,
    - b. each said pin member inserting into one said vertical recess to permit the cap to pivot relative to the holder,
    - c. the distance between the ends of the pin members being greater than the clear distance between the hinge members and being substantially equal to the distance between the closed backs of the vertical recesses;
- D. bubble blowing means to produce bubbles from the soap solution,
  - 1. said bubble blowing means including a ring which is spaced from the cap and which extends into the holder when the cap is in the closed position,
  - 2. said cap being provided with an opening to direct air through the ring for bubble blowing purposes when the cap is pivoted to the open position.

3,845,584
GROWING OF GRASSES

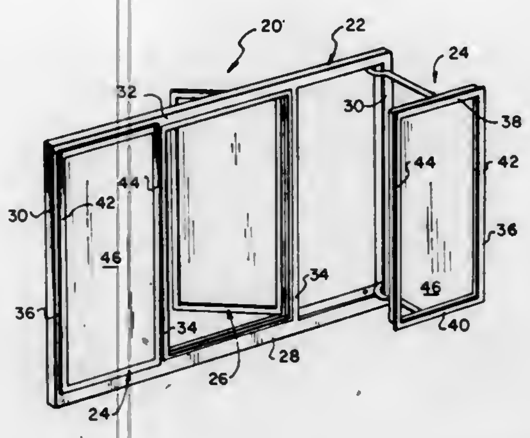
Frank Brian Mercer, Blackburn, England, assignor to F. B. Mercer, Limited, Blackburn, England
Filed May 2, 1973, Ser. No. 356,426
Claims priority, application Great Britain, May 4, 1972, 20739/72
Int. Cl. A01g *1/00*
U.S. Cl. 47—56 **3 Claims**



1. A method of producing a grass-bearing lamina comprising providing a laminated structure having a first sheet of flexible reticulate material prebonded or prelaminated to a second sheet or film of flexible, substantially water and root impermeable material, said first sheet comprising a first set of parallel strands and a second set of parallel strands extending transversely thereof and bonded thereto, the space between the second sheet and said second set of strands being sufficient to permit root growth therein, distributing over the surface of said flexible reticulate sheet a layer of rooting medium and an adequate quantity of grass seed and subjecting the lamina to correct conditions of light, heat and moisture to promote germination whereby the conducting roots from each seed grow through the layer of rooting medium and through the meshes of said reticulate material so that the root system so produced bonds the rooting medium and the reticulate material sheet into a coherent unit of flexible laminate structure having at one surface growing grass blades and at the other surface (after removal from the impermeable surface) a root structure, wherein the flexible reticulate sheet material is pre-bonded or pre-laminated to the sheet or flim of flexible impermeable material at a plurality of spaced localized points, areas or lines of adhesion whereby the reticulate sheet material is maintained in close or intimate contact with the adjacent surface of the impermeable sheet material while allowing access to the grass roots to find their way between the two sheets between the localized adhesion points, areas or lines, said second sheet being separable from said first sheet following a predetermined growth period.

3,845,585
CASEMENT WINDOW

Florence A. Cecil, 7309 W. Hampden, Denver, Colo.
Filed Dec. 18, 1972, Ser. No. 316,082
Int. Cl. E05f *15/12*
U.S. Cl. 49—139 **4 Claims**

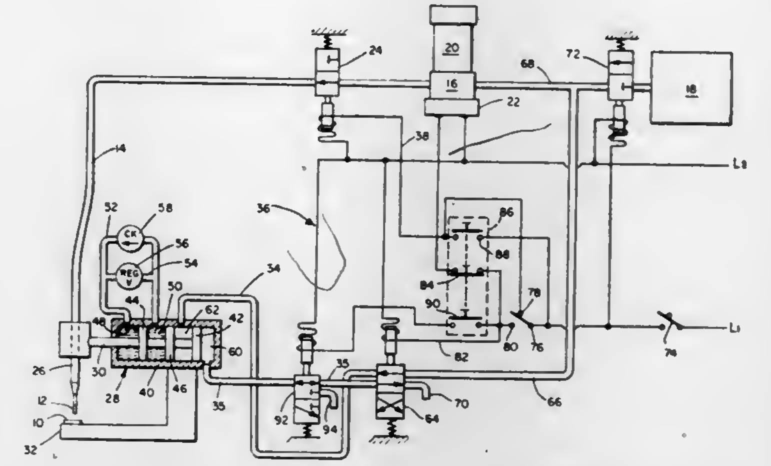


1. In a window assembly including a rectangular window sash in which a pane of glass is retained, a hollow window frame member along one side of the window sash, the window sash being pivotally mounted along one side to the hollow frame member, the improvement comprising an elongated pivot shaft disposed longitudinally in said hollow frame member, said pivot shaft being journalled in the window frame for pivotal movement about its longitudinal axis, a pair of axially spaced flat hinge members fixedly secured to and concentric with the pivot shaft adjacent opposite ends of the window sash for unitary pivotal movement with the pivot shaft, said hinge members having a substantially semi-circular portion, a lever portion rigidly interconnecting one end of the semi-circular portion with the pivot shaft, and an attachment extension extending radially away from the other end of the semi-circular portion so as to lie closely adjacent and parallel to the said opposite ends of the window sash, slots in the hollow frame member through which the semi-circular portion of the hinge member protrude so that the attachment extension lies wholly outside the hollow frame member, pivotal connection means for pivotally connecting the end of the attachment extension furthest removed from the semi-circular portion of the hinge member to an intermediate portion of the associated end of the window sash so that the window sash is pivotal about an axis passing through the pivotal connection means, ball-detent mechanisms operatively interconnecting the attachment extension portion of the hinge members to the associated ends of the window sash at locations between said pivotal connection means and the semi-circular portion of the hinge members, and drive means in operative engagement with the pivot shaft to effect pivotal movement of the pivot shaft whereby the window is moved between open and closed positions.

3,845,586
ABRADING APPARATUS

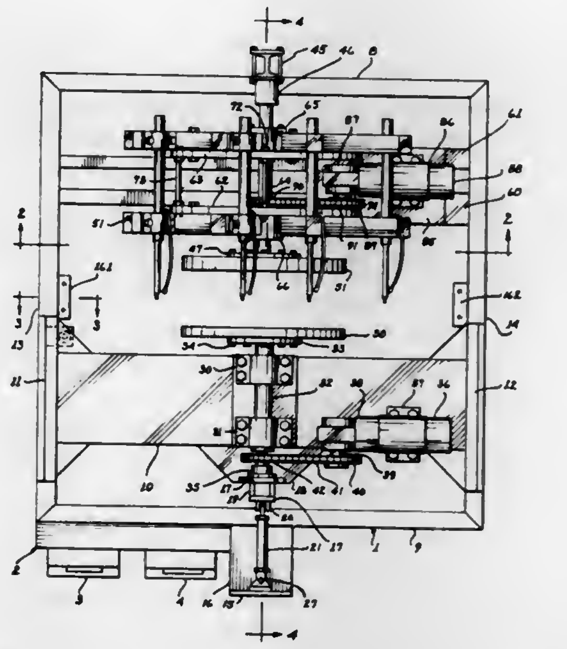
John William Callahan, Lanoka Harbor, N.J., and Martin John Capdeville, Staten Island, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed May 15, 1973, Ser. No. 360,496
Int. Cl. B24c *3/04, 3/32*
U.S. Cl. 51—12 **9 Claims**

1. In apparatus for adjusting the electrical value of an electrical element by abrasion, including a pressurized air supply, an abrasive powder supply, a device connected to said air supply and said powder supply for mixing pressurized air and abrasive powder to provide a stream of airborne abrasive powder, a nozzle for directing said stream at an electrical element undergoing adjustment of its electrical value, a tube connecting said nozzle to said device for delivering said stream to said nozzle, a traversing mechanism including an air motor powered by pressurized air for moving said nozzle along said electrical element first in one direction during adjustment of electrical value and then in reverse direction to start position after adjustment of electrical value, and a first control for controlling the flow of pressurized air to said air motor for effecting movement of said nozzle in one direction and in reverse direction, that improvement comprising a second control for interrupting the flow of pressurized air to said air motor during movement of said nozzle in one direction.



3,845,587
RADIAL SURFACE FINISHING APPARATUS

Harold R. Klievonelt, 31 S. 40 Pl., Phoenix, Ariz. 85034
Filed Dec. 1, 1972, Ser. No. 311,233
Int. Cl. B24b *7/16, 5/00*
U.S. Cl. 51—118 **7 Claims**



1. Apparatus mounted upon a frame for grinding parallel surfaces on a workpiece, said apparatus comprising:
- A. a first grinding wheel, said first grinding wheel being axially non-displaceable and configured to present a first non-deformable rigid planar surface perpendicular to its axis of rotation;
- B. a second grinding wheel, said second grinding wheel being essentially parallel to and axially aligned with said first grinding wheel and configured to present a second

non-deformable rigid planar surface substantially perpendicular to its axis of rotation;

C. positioning means for axially displacing said second grinding wheel with respect to said first grinding wheel;

D. mounting means for rotatably supporting a workpiece intermediate said first and second grinding wheels, said mounting means comprising:

1. a shaft, said shaft being essentially adjacent the periphery of said first grinding wheel;
2. arm means for supporting said shafts in general alignment with the axis of rotation of said first and second grinding wheels, said shafts being radially removed from the periphery of said first and second grinding wheels; and

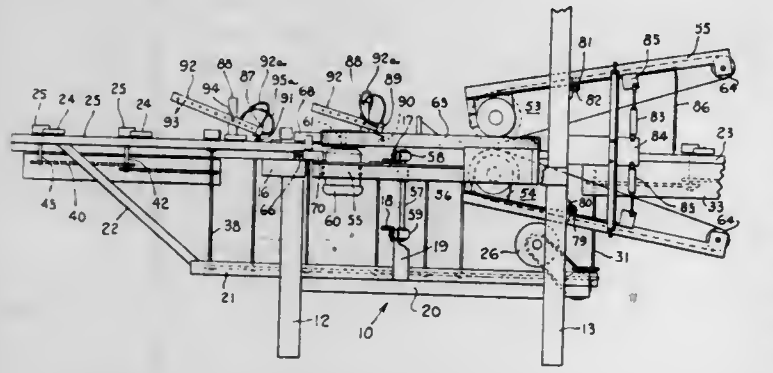
E. motive means for individually rotating each of said first and second grinding wheels; whereby, said first and second grinding wheels, rotating in a first direction, contact the respective sides of said workpiece and the friction between said first and second grinding wheels causes said workpiece to rotate in a second direction to produce a curved radial grind on said workpiece.

3,845,588
ARTICLE FINISHING MACHINE

Coy L. Huffman, Jr., 107 Brookside Way, Greenville, S.C. 29605

Filed Dec. 3, 1973, Ser. No. 421,346
Int. Cl. B24b *21*

U.S. Cl. 51—139 **5 Claims**



1. An apparatus for automatically finishing selected areas of an elongated picker stick while leaving a serrated portion of said stick unfinished, said picker stick having opposed sides joined by an upper and lower surface, said apparatus comprising:

a supporting frame;

conveyor means for moving said elongated picker stick in a straight path over said supporting frame;

a first elongated sanding machine carried by said frame on one side of said path for engaging and finishing one side of said picker stick as said picker stick is moved therepass by said conveyor means;

a second elongated sanding machine pivotally supported on said frame for being shifted into and out of engagement with the other side of said picker stick;

a source of pressurized air;

a double acting pneumatic cylinder carried by said frame having a piston rod extending out one end thereof coupled to said second sanding machine;

valve means coupled between said pressurized source of air and said cylinder capable of assuming a first state wherein air is coupled therethrough to said cylinder extending said piston and a second state wherein air is coupled therethrough to said cylinder retracting said piston;

a first switch means carried in the path of said picker picker stick for supplying a signal to said valve means upon engaging said picker stick being moved by said conveyor means;

a second switch means carried in said path of said picker stick and being spaced a predetermined distance from said first switch means for supplying a signal to said valve means upon engaging said picker stick being moved by said conveyor means; and

said valve means selectively supplying air to said cylinder for causing said second sanding machine to shift between a sanding position and a non-sanding position responsive to said signals from said first and second switch means;

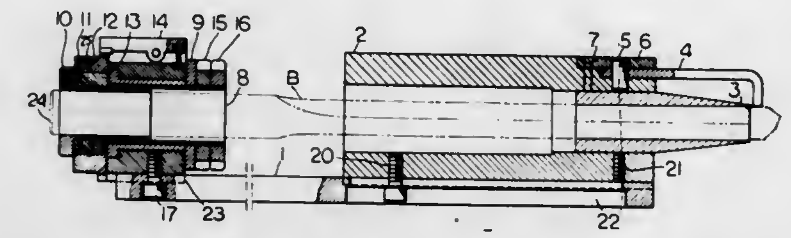
whereby said second sanding machine sands a portion of said other side of said picker stick adjacent the leading edge of said stick, omits said serrated portion and sands a portion adjacent said trailing edge.

3,845,589
GUN DRILL AND BORE GRINDING FIXTURE

George Mai, Jr., 1270 Fairview Blvd., Windsor, Ontario, Canada

Filed Nov. 12, 1973, Ser. No. 414,698
Int. Cl. B24b *3/24*

U.S. Cl. 51—219 R **1 Claim**



1. A fixture for use in conjunction with grinding machines for grinding gun drills, gun bores, reamers and other similar tools comprising in combination a rectangular bar, the front end of which is provided with a recessed elongated slot, and the rear end of which is provided with a recessed set screw hole; a front head, the external shape of which fits into the holder of the grinding machine, and the underside of which is provided with a line up groove for slidably adjusting for the length of the tool to be held therein and securing the said head to the slot in the said rectangular bar; an interchangeable drill bushing of various internal diameters which is inserted into the forward end of the front head and held therein by means of a set screw, for the purpose of holding the front end of the drill therein; a finger, swivably attached to the front head, located above the drill bushing and and extending slightly beyond it, for initially positioning the tool to the proper center line for grinding; a rear head which is attached to the rear end of said rectangular bar by means of a set screw passing through said recessed set screw hole, said rear head being able to contain the shank of the tool to be ground, to hold the tool fixed against forward or backward movement, and to allow cylindrical and indexed rotation of said tool; all by means of a bushing located within the body of said rear head; a sleeve which is fitted inside said bushing, which is free to rotate therein, and which is held within said bushing by a thrust washer and locking rings; an interchangeable cam which is indexed with grooves which is attached to the outside of said sleeve by a plurality of set screws; a spring loaded locating rocker mounted on top of the rear head body which engages the various indexing grooves of said cam; a tool shank adapter to fit individual tool shanks, attached to the end of said tool shank, and a main locking screw for clamping the tool and its adapter after insertion into said sleeve of the fixture.

3,845,590
TELEPHONE BOOTHS

Edward S. Ertl, McHenry, Ill., assignor to Acoustics Development Corporation, Northbrook, Ill.

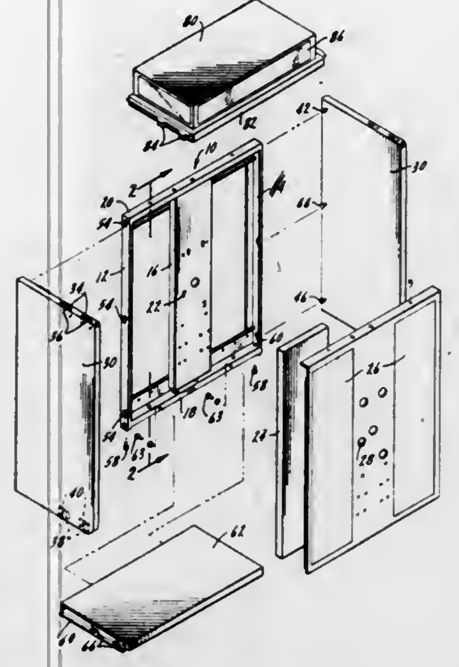
Filed July 16, 1973, Ser. No. 379,651
Int. Cl. E04h *1/14*

U.S. Cl. 52—36 **11 Claims**

1. A telephone booth assembly including a back, a pair of side panels and a shelf,

said back including spaced side frame members, a plurality of openings in each side frame member facing toward the side panels, each side panel having fastening members extending through said openings to attach the side panels to the back, one of said fastening members for each side panel including a plurality of threaded openings, and locking means for each side panel extending through said back and into locking engagement with one of the fastening members for each side panel, said locking means having a threaded portion for engagement with one of the threaded openings in the fastening members,

and interlocking means for mounting said shelf to said side panels.

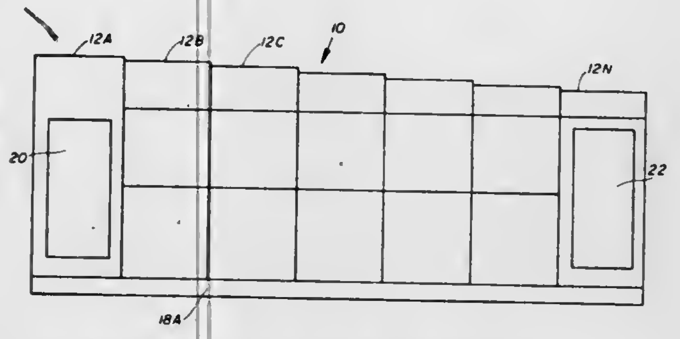


3,845,591
EXPANDABLE COVER SYSTEM

John L. Stine, Rt. 4, Box 300, Muskogee, Okla. 74401

Filed June 11, 1973, Ser. No. 368,885
Int. Cl. E04b *7/16*

U.S. Cl. 52—67 **7 Claims**



1. An expandable cargo cover comprising:

a. a base;

b. a plurality of inverted U-shaped frames mounted on said base, and skin means to cover said frames;

c. a first of said frames fixed to said base;

d. the remainder of said frames of successively smaller size so that they nest one within the other;

e. a plurality of horizontal rollers mounted on said base in two parallel lines extending in the same direction from the two legs of said first frame, the remainder of said frames having their legs resting on said rollers, thus permitting said frames to be traversed along the lines of rollers;

f. a plurality of parallel guide means, to laterally guide the legs of said frames as they are traversed along said lines of rollers;

g. at least two traversing means parallel to each of said lines of rollers to traverse the smallest frame along said lines of rollers, one said means connected to each leg of said smallest frame; and

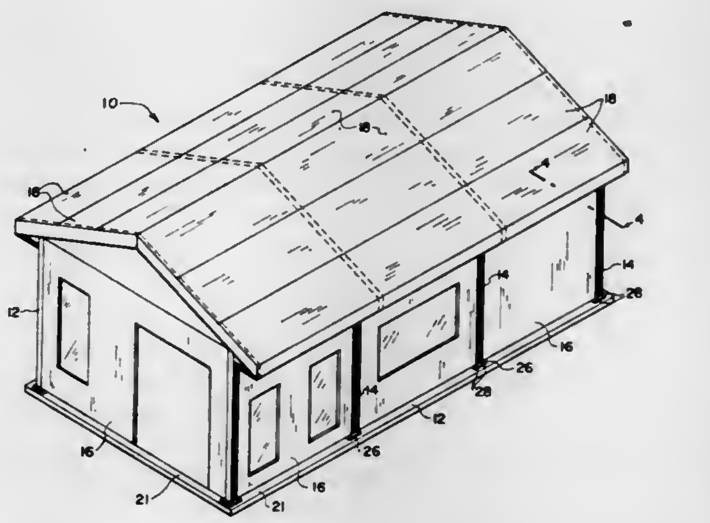
h. stop means attached to each of said frames to limit the motion of the adjacent frames to move from a first position where they are substantially superimposed to a second position where they are end-to-end.

3,845,592
SYSTEM FOR MODULAR CONSTRUCTION

Jaime Patena, 417 S. Shasta, Stockton, Calif. 95205

Filed July 25, 1973, Ser. No. 382,372
Int. Cl. E04b *1/24*

U.S. Cl. 52—93 **15 Claims**

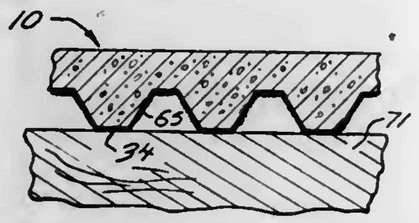


1. In a system for modular construction, a series of elongate outwardly facing bottom angle members forming an integral part of the foundation of a building structure, said angle members having upright portions coincident with a periphery of said foundation, upright post members attached to said bottom angle members along at least two opposite sides of said building structure, said post members being spaced outwardly and at a predetermined horizontal distance from the upright portions of said angle members, said post members having upstanding attachment means at their tops, a series of prefabricated truss members supported by pairs of said post members positioned on said opposite sides of the building structure and held in place by said attachment means, each of said truss members spanning the horizontal distance between a supporting pair of said post members, elongate outwardly facing top angle members interconnecting said post members at a spaced vertical distance above the bottom angle members on said two sides of the building structure, said top angle members having upright portions spaced inwardly at substantially said predetermined horizontal distance from said upright post members, a plurality of prefabricated wall panels positioned with respect to said upright post members so that top portions of said panels are held between said top angle members and said post members and bottom portions of said wall panels are held between said bottom angle members and said post members, and a plurality of prefabricated roof panels attached to and supported by said truss members, said upright post members, truss members, wall panels, and roof panels combining to form an essentially complete building structure.

3,845,593
LIGHTWEIGHT CONCRETE PANEL

Giovanni Zen, 1275 Chartwell, West Vancouver, British Columbia, Canada

Filed Sept. 12, 1972, Ser. No. 288,362
Int. Cl. E04b *1/86*
U.S. Cl. 52—144 **6 Claims**



1. In a building having a structural framework with spaced frame members, a lightweight concrete structural panel comprising:

a. a reinforced rectangular panel of lightweight low-density concrete having a smooth planar upper surface and a peripheral frame,

b. a continuous metal reinforcing grid embedded in the concrete,

c. the lower surfaces of the peripheral frame being coplanar and the side edges thereof presenting a concrete surface which is shaped to interfit a matching surface of an adjoining panel,

d. the peripheral frame including an embedded and enlarged grid member disposed adjacent to the frame exterior surfaces and integral with the reinforcing grid so that rigidity and strength are imparted thereto,

e. the lower surface of the panel having successive, narrow, continuous and parallel longitudinally extending crests and troughs extending between the peripheral frame,

f. the troughs extending inwardly approximately one-half the thickness of the panel, and the crest surfaces being flat and coplanar with the lower surfaces of the frame,

g. the crests and troughs being approximately the same lateral dimension and having a width approximately equal to the thickness of the panel,

h. a thin continuous coating of acoustical composition which is applied to the lower surface of the panel, including troughs, crests, and frame, to provide an integral resilient, mounting therefor between the panel and the frame members, and

i. the low density concrete composition of the panel including hydraulic cementitious material including lightweight aggregate and sufficient density reducing means for enabling nails to readily pass therethrough.

3,845,594
STEEL JOIST OR COMPOSITE STEEL AND CONCRETE CONSTRUCTION

Ernest O. Butts, and John S. Hall, both of Ottawa, Canada, assignors to Hambro Structural Systems Limited, Ottawa, Ontario, Canada

Continuation-in-part of Ser. No. 872,017, Oct. 29, 1969, abandoned, and a continuation-in-part of Ser. No. 145,758, May 21, 1971. This application Jan. 25, 1972, Ser. No. 220,627

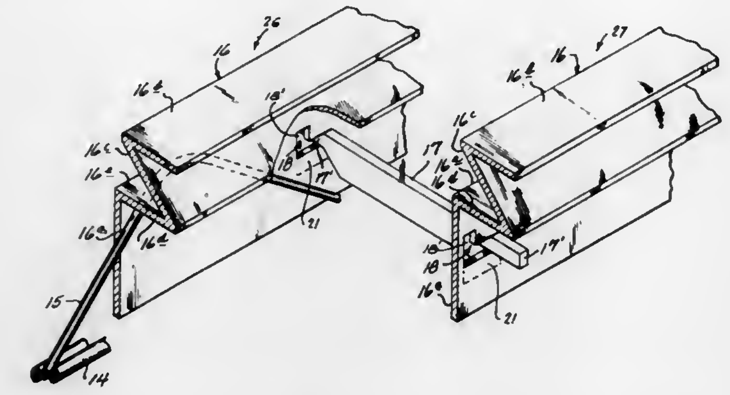
Claims priority, application Canada, Nov. 4, 1968, 034293
Int. Cl. E04c *3/16, 3/293*
U.S. Cl. 52—98 **20 Claims**

1. In a steel joist having top and bottom steel chords vertically spaced by a joining web, the improvement in said top chord comprising:

a flat top element having two legs integrally extending downwardly from its opposite sides,

each said leg having a first portion extending downwardly and the inwardly to form a ledge and a second portion extending from said ledge downwardly and being turned outwardly and upwardly again to form a channel for receiving notched spanner bars,

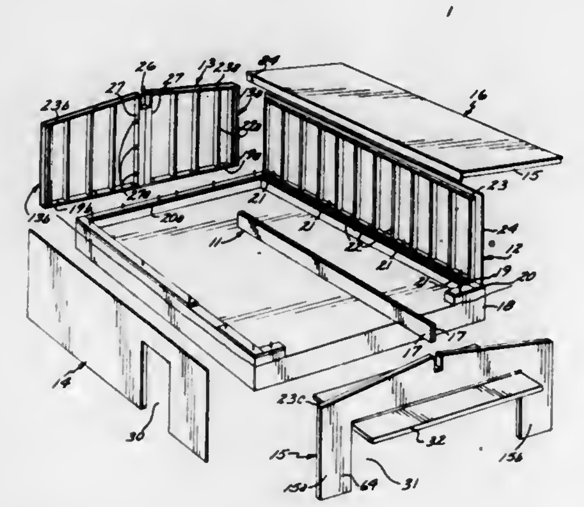
wherein said upward turn of said channels is notched at spaced horizontal positions for aiding in the insertion and removal of said notched spanner bars, and wherein there are right angle pieces secured to the upper apices of said web with their arms being uppermost and extending horizontally outwardly from said apices and resting on said ledges respectively.



3,845,595
PORTABLE BUILDINGS

Victor Joseph Abrams, deceased, late of 356 Turquoise Dr., Perris, Calif. 92370 (by Eileen Marie Abrams, administratrix)

Filed Mar. 19, 1973, Ser. No. 342,645
Int. Cl. E04b *1/02, 7/02*
U.S. Cl. 52—93 **3 Claims**



1. A multi-element portable building comprising:

a ridge beam core;

a prefabricated front wall;

a prefabricated rear wall;

a prefabricated right wall;

a prefabricated left wall;

a right roof section;

a left roof section; and

fastening means for joining adjacent sections, whereby said elements of said building may be transported to, and assembled at, a desired location;

said right roof section and said left roof section each comprising a stringer capable of being assembled flush with a respectively associated side of said ridge beam; and

means for clamping said stringers and ridge beam core together;

said front wall and said end wall being notched at opposed points on their upper edges to receive said ridge beam core and said stringers;

at least one of said front wall and said end wall being divided into separable sections each ending in an upright which abuts against the back of the other when said sections are assembled;

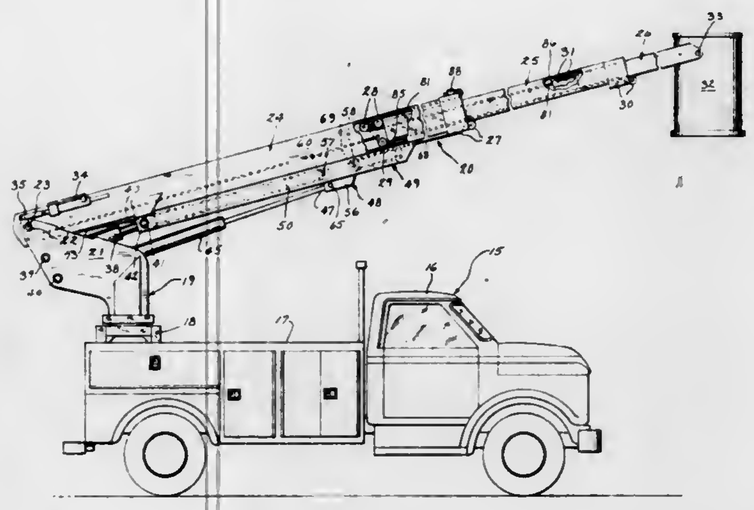
said fastening means comprising a bolt set one end of which is fixed to one of said sections and the other of which is fixed to the other of said sections;

each of said sections comprising a tie beam secured to said section and extending in a direction toward said upright, said fastening means further comprising a metal strap of generally "V" shape having its apex extending toward said upright and its arms bolted to said tie beam, the head of said bolts being secured in the apex of the clamp of one of said sections and the nut of said bolt sets being disposed at the apex of the "V" shaped strap of the other of said sections.

3,845,596
DRIVE SYSTEM FOR A TELESCOPIC BOOM

David K. Veenstra, Bloomington, Minn., assignor to Highway Manufacturing Company, Edgerton, Wis.

Filed May 17, 1973, Ser. No. 361,130
Int. Cl. E04h *12/34*
U.S. Cl. 52—118 **7 Claims**



1. In an extensible boom having a plurality of boom sections including a base boom section which is rotatably connected to a turret for pivotal motion in a vertical plane about a pivot axis, and an elevation cylinder connected to said turret and said base boom section to control the elevation of said boom, the improvement comprising:

an extension cylinder having one end connected to said turret at a point which is laterally spaced a substantial distance from said pivot axis;

a trolley slidably connected to said base boom section for motion along the lengthwise dimension thereof and connected to the other end of said extension cylinder;

a second boom section slidably mounted to the base boom section for telescopic motion between a retracted position in which the boom reach is minimal and an extended position in which the boom reach is at a maximum; and extension drive means connecting said trolley with said second boom section to alter the reach of said boom by sliding said second boom section with respect to said base boom section in response to the sliding motion of said trolley.

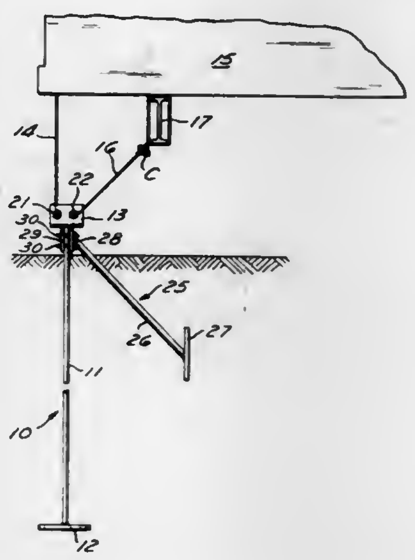
3,845,597
GROUND ANCHOR TIE-DOWN APPARATUS

Howard F. Foster, 4500 Cavendish Cir., Ft. Lauderdale, Fla 33309

Filed Aug. 20, 1973, Ser. No. 389,449
Int. Cl. E02d *5/80*
U.S. Cl. 52—166 **11 Claims**

1. In a tie-down apparatus for a mobile home or the like comprising a first ground anchor extending substantially vertically down into the ground, a first, flexible, above-ground tensioning element attached at its upper end to the mobile home and extending downward therefrom substantially vertically, a tensioning head connected to the upper end of said ground anchor and operatively coupled to said first flexible tensioning element to apply a selected tension thereon, and a second, flexible aboveground tensioning element operatively coupled to said head and extending diagonally upward therefrom inboard of the mobile home and attached at its upper end to a support beam at the bottom of the mobile home, the improvement which comprises:

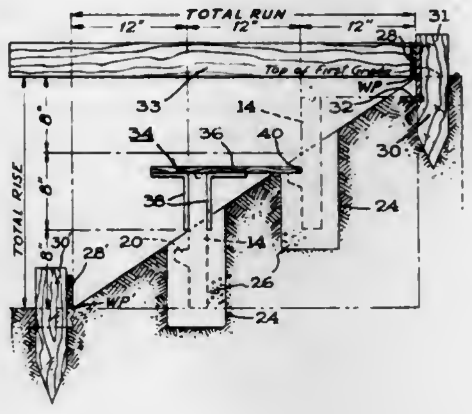
a second ground anchor having an elongated rigid rod operatively connected at its upper end to said tensioning head and extending diagonally downward therefrom inboard of the mobile home, and a transverse ground plate on said rod.



3,845,598
METHOD AND SYSTEM OF FORMING PRECAST GARDEN STEPS

John F. P. Tate, 2819 W. Hampton Ave. S.W., Roanoke, Va. 24015

Division of Ser. No. 382,657, July 26, 1973, Pat. No. 3,813,831. This application Feb. 15, 1974, Ser. No. 443,029
Int. Cl. E04f *11/00*
U.S. Cl. 52—173 **9 Claims**



1. A method of installing a stair on inclined terrain from a plurality of precast tread and riser elements of which the riser element is of an overall height between top and bottom edges approximately twice the height of the assembled step rise, and is provided with integrally formed tread-supporting means projecting transversally from said riser; said method including the steps of

a. establishing working points at a proposed top and bottom of said stair; and determining the number of tread and riser elements required, and the run distances and disposition between successive riser elements

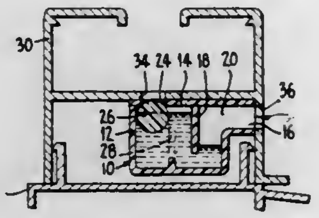
b. excavating the terrain at the respective positions of riser disposition on the inclined terrain, so as to form narrow trenches in which to embed the substantial lower body portions of the respective riser elements

c. placing the riser elements with the lower body portion in said excavations and refilling around the lower body portions of said riser elements so as to stably embed and properly position the risers in predetermined succession; and

d. assembling said tread elements in relation to said riser elements, so that forward portions of said tread elements rest respectively on top edges of said riser elements, and rearward portions of said tread elements rest on said tread-supporting means of said riser elements.

3,845,599
WINDOW DRAIN VALVE

Clarence Harold Jolly, New South Wales, Australia, assignor to Comalco Limited (formerly K/a Comalco Industries Pty. Limited), Melbourne, Australia
Continuation of Ser. No. 64,671, Aug. 18, 1970, abandoned. This application July 17, 1972, Ser. No. 272,336
Claims priority, application Australia, Aug. 18, 1969, 59641/69
Int. Cl. E04f *17/00;* E06b *7/14*
U.S. Cl. 52—209 **4 Claims**



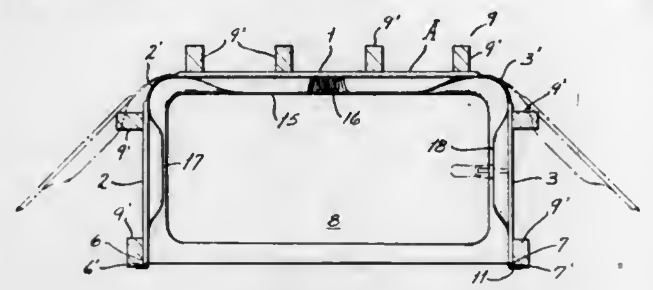
1. A window drain valve in combination with a horizontal window sill having a water drain aperture in its lower surface and an aperture in its external face, said window drain valve having a body section disposed below said sill and also having a cover with an inlet slot formed therein being in communication with a liquid-containing inflow compartment formed in said body section, said inlet slot also being aligned with said drain aperture, said window drain valve having an overflow outlet aperture in communication with a liquid-containing outflow compartment formed in said body section, said overflow outlet facing horizontally and disposed at a level below said drain aperture while being aligned with said aperture in the external face,

wherein a downwardly projecting web from said cover divides said body section into said inflow and outflow compartments, said compartments being in liquid communication with each other, said compartments having upright walls extending from a bottom wall to said cover, wherein a float valve member is provided in said inflow compartment and is arranged so that an increase in external air pressure against said outlet reduces the level of liquid in said outflow compartment and correspondingly raises the level of liquid in said inflow compartment to move said float valve member toward a position in which it closes said inlet,

said downwardly extending web being of sufficient length to ensure that said float valve member will reach its closed position before the liquid in said outflow compartment has dropped to the lower extremity of said web, and said overflow outlet being at a level such that liquid entering through the inlet passes under the web and out the inlet without raising the float valve member to a closed position.

3,845,600
BIASED WALL PANEL FOR USE WITH A THREE-SIDED ALCOVE

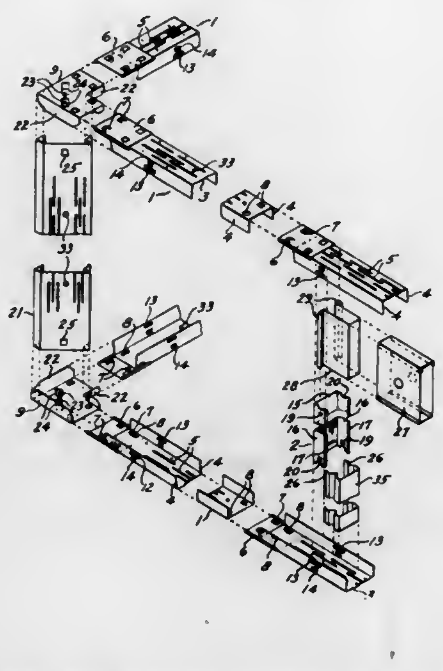
John W. Moore, St. Louis County, Mo., assignor to Swan Corporation, St. Louis, Mo.
Filed June 6, 1973, Ser. No. 367,457
Int. Cl. E04c *2/20*
U.S. Cl. 52—222 **1 Claim**



1. For use with a three-sided alcove having a back wall and adjoining side walls, the planes of the latter being perpendicular to the plane of the back wall, a finishing wall panel for disposition within said alcove comprising a unitary panel integrally molded of durable material having limited flexibility, said panel having a forward or outer face and a rearward face for presentation against said alcove walls, said panel further having a central portion and a pair of side portions, said side portions being normally biased into non-planar aligned relationship with said central portion extending forwardly therefrom with the planes of said side portions being at an angle of less than 180° and more than 90° to said central portion, the zones between said central portion and said side portions being forwardly concave, said zones defining zones of flexure whereby said side portions may be urged into substantially mutually planar parallel relationship against their normal bias so that when the panel is placed within the alcove the side portions will be urged through their normal bias rearwardly into snug surface abutment against the side walls of said alcove for stabilizing and maintaining said panel in covering relationship therein with said central portion presented against said alcove back wall.

3,845,601
METAL WALL FRAMING SYSTEM

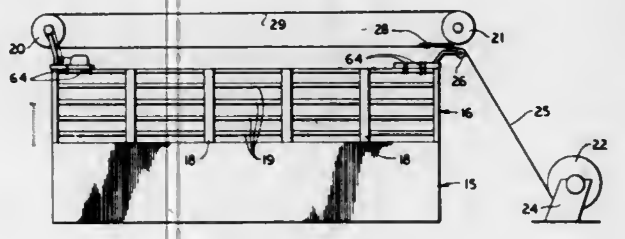
James F. Kostecky, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.
Filed Oct. 17, 1973, Ser. No. 407,376
Int. Cl. E04c *2/38*
U.S. Cl. 52—290 **6 Claims**



1. A metal wall framing system for buildings or the like comprising a substantially channel shaped track member having a web portion and a pair of opposed flanges, a substantially channel-shaped stud member having a web portion and a pair of opposed side walls which are adapted to fit between said flanges of said track member, each of said flanges of said track member having an inwardly projecting lug and an inwardly and upwardly projecting tab, each of said sidewalls of said stud member having a slot and a notch formed therein adjacent to one end of said stud and designed to cooperate with said lugs and said tabs whereby as the end of said stud member is inserted between said flanges of said track member, said projecting lugs will engage said slots and said tabs will engage said notches and thereby lock the end of said stud member to said track member.

3,845,602
METHOD FOR APPLYING BANDS TO A ROOF

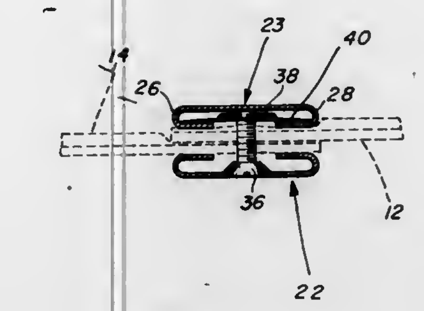
Robert Joe Alderman, Rt. 4, Lawrenceville, Ga.
Filed June 29, 1973, Ser. No. 375,043
Int. Cl. E04b *1/00;* E04g *21/00*
U.S. Cl. 52—741 **4 Claims**



1. In a method of installing roof bands in a roof structure, the steps of connecting the leading end of band material from a supply to a carrier on one side of the roof, moving the leading end of the band material with the carrier to the other side of the roof thereby extending a length of band material from the supply across the roof, creating a second connection of the band material to the carrier at the one side of the roof, disconnecting the leading end of the band material from the carrier, severing the band material ahead of its second connection to the carrier and fixing the ends of the severed length to the roof structure.

3,845,603
BATTEN ASSEMBLY TO HOLD ENCLOSURE SHEETS

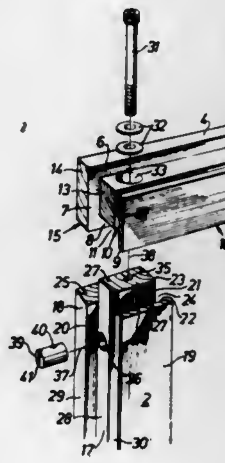
Alan Eckel, 155 Fawcett St., Westford, Mass. 02138
Filed Mar. 30, 1972, Ser. No. 239,500
Int. Cl. F16b *5/02*
U.S. Cl. 52—753 J **2 Claims**



1. In a battened joint between a pair of curtains, in combination, a first curtain and a second curtain positioned in side-by-side relationship, each curtain comprising a sheet of resilient material and a sheet of non-resilient material facially united to each other, each curtain having an edge, a proximate side and a distal side, the edges of the curtains being substantially parallel to each other, the resilient sheet of each curtain being on its distal side, the adjacent edges of the curtains being overlapped with their overlapped portions being in facial contacting relation; a first batten and a second batten, each batten having a main body and two looped portions extending inwardly from said main body at opposite sides thereof, said looped portions contacting the respective outer faces of said curtains, said first batten extending along and in continuous contact with only the distal side of the overlapped portion of said first curtain and said second batten extending along and in continuous contact with only the proximate side of the overlapped portion of said second curtain and fastening means holding said battens and said overlapped portions of said curtains firmly together, whereby said resilient material is compressed against said non-resilient material and open spaces between said overlapped portions of said curtains are eliminated.

3,845,604
CORNER JOINT FOR FRAME STRUCTURES

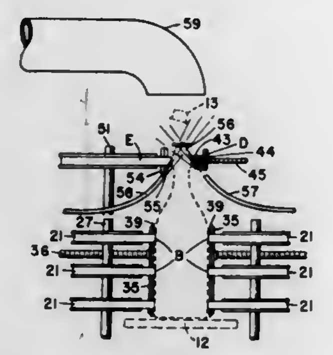
Par Axel Rune Ottosson, 38200, Linneavagen 6, Sweden
Filed Oct. 18, 1971, Ser. No. 190,166
Claims priority, application Sweden, Oct. 22, 1970, 14278/70
Int. Cl. F16b *7/18*
U.S. Cl. 52—758 H **7 Claims**



1. A window or door construction comprising a rectangular frame defined by frame members of identical cross sectional shape, each of said frame members comprising a central bar portion sandwiched between two side bar portions, said side bar portions extending inwardly of said frame beyond said central bar portion so as to form a longitudinally extending inwardly opening channel defined by the inner surface of said central bar portion and the opposed inner surfaces of said side bar portions, at least two said frame members being joined at right angles to one another at the corner of said frame, a first one of said joining members having end portions of said side bar portions recessed from the end of said central bar portion a distance equal to the depth of said channel, the end portion of said central bar portion of said first member thereby projecting beyond the ends of said recessed side bar portions as a tongue which is received with a close fit in said channel of the second of said two joining members, end surfaces of said central bar portion and side bar portions of said second member being flush with outer surfaces of the respective bar portions of said first member and end surfaces of said side bar portions of said first member abutting inner edges of respective side bar portions of said second member, said tongue portion of said first member having a longitudinally extending hole therein and an end portion of said central bar portion of said second portion having a transverse hole aligned therewith, a panel having marginal edge portions received in said channels of said frame members, and fastening means in said aligned holes releasably securing said frame members together at the corners of said frame and thereby removably holding said panel in said frame.

3,845,605
REMOVING BOTTLE CAPS

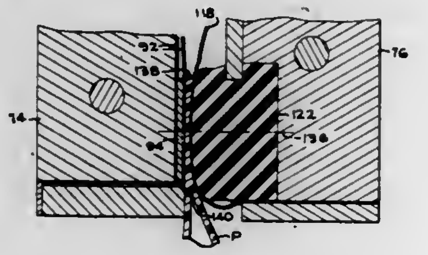
Thomas P. Hartness, 305 Bridgewater Dr., Greenville, S.C.
Filed Nov. 3, 1972, Ser. No. 303,650
Int. Cl. B65b *43/40*
U.S. Cl. 53—3 **5 Claims**



1. An apparatus for removing a threaded cap having a top and side wall from a bottle comprising: conveyor means for supporting and moving said bottle in a forward direction; a pair of laterally spaced elongated gripping surfaces engaging opposite sides of said bottle restraining said bottle against rotation as said bottle is moved forward on said conveyor; means for moving said gripping surfaces in a forward direction at substantially the same rate of speed; an elongated stationary member carried above said gripping surfaces positioned for engaging a side wall of a cap on said bottle as said bottle is moved forward on said conveyor; an elongated belt carried on the opposite side of said bottle from said stationary member engaging the other side of said side wall of said cap; means for moving said elongated belt in a forward direction at a higher rate of speed than said gripping surfaces are being moved for rotating said cap relative to said bottle; whereby said cap is rotated off said bottle as said bottle is restrained from rotating by said pair of elongated gripping surfaces.

3,845,606
PACKAGE SEALING IN STEAM ATMOSPHERE

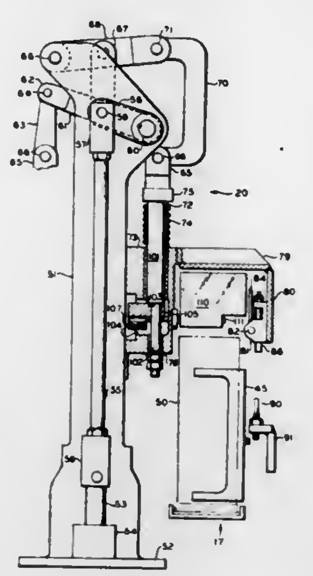
Donald C. Wilson, 6879 Dartmoor Way, San Jose, Calif. 95129
Division of Ser. No. 304,707, Nov. 8, 1972. This application Feb. 27, 1974, Ser. No. 446,251
Int. Cl. B65b *51/30, 7/06*
U.S. Cl. 53—21 FC **7 Claims**



1. A process of heat sealing flexible container pouches within a steam atmosphere, each pouch having confronting sealing surfaces of which at least one is formed by a thermoplastic material; said process comprising the steps of surrounding said sealing surfaces with a steam atmosphere; bringing the sealing surfaces together along a common contact line; pressing the sealing surfaces together in intimate contact under a gripping pressure beginning at the contact line and moving progressively outward in a lateral direction therefrom to expel foreign matter from between the sealing surfaces; simultaneously preheating the sealing surfaces as they are pressed together to a temperature higher than the temperature of the steam atmosphere and lower than the sealing temperature of the thermoplastic material; maintaining said temperature until liquid droplets between the sealing surfaces are varporized and the temperature differential between the temperature of the thermoplastic material and the sealing temperature thereof is substantially reduced; momentarily heating the sealing surfaces to the sealing temperature of the thermoplastic material while maintaining the gripping pressure on the sealing surfaces; reducing the temperature of the sealing surfaces to a temperature lower than the sealing temperature while maintaining the gripping pressure thereon; and releasing the gripping pressure on the sealing surfaces.

3,845,607
SCORE BREAKING MECHANISM FOR GABLE TOP CARTON

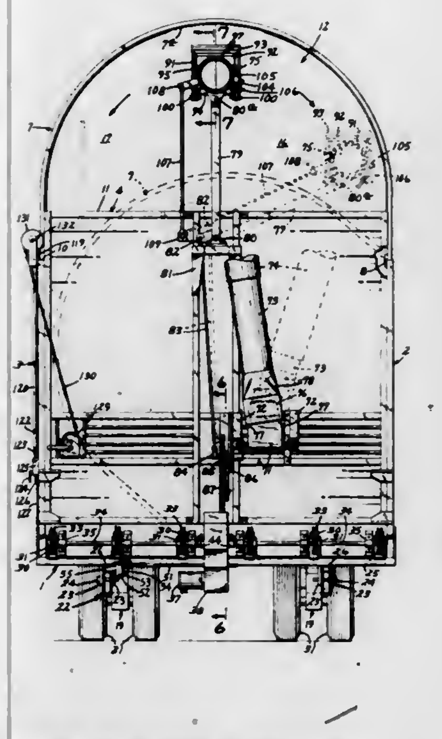
Silvio T. Farfaglia, Fulton, N.Y., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Sept. 7, 1973, Ser. No. 395,026
Int. Cl. B65b *7/18*
U.S. Cl. 53—378 **8 Claims**



1. Apparatus for breaking score lines in the upper portion of an open top tubular carton having first and second opposing roof panels joined by first and second opposing gable panels to form a gable top structure, each of said gable panels comprising a central triangular panel joined to one of said roof panels by a first triangular fold back panel and to the other of said roof panels by a second triangular fold back panel, comprising a carriage; means for effecting reciprocal movement of said carriage between a retracted position and a carton engaging position located over a score breaking station; support means for guiding said carriage during the reciprocal motion of said carriage; first, second, third and fourth shafts mounted in said carriage, with said first and second shafts being parallel to each other, and said third and fourth shafts being parallel to each other and perpendicular to said first and second shafts; first and second triangular gable wings mounted on said first and second shafts, respectively, for arcuate movement about the axis of the respective shaft; first and second roof panel wings mounted on said third and fourth shafts for arcuate movement about the axis of the respective shaft; actuating means responsive to said means for effecting reciprocal movement of said carriage to effect the arcuate movement of said first and second gable wings about the respective axis of the first and second shafts into contact with the first and second opposing gable panels, respectively, of a carton in said score breaking station to fold said first and second opposing gable panels inwardly toward each other during the movement of said carriage from said retracted position toward said carton engaging position, to subsequently effect the arcuate movement of said first and second roof panel wings about the respective axis of said third and fourth shafts into contact with the first and second opposing roof panels of said carton in said score breaking station to fold said first and second opposing roof panels inwardly toward each other over the enfolded first and second opposing gable panels, to thereby break score lines forming the first and second opposing roof panels and the first and second opposing gable panels, to thereafter effect the arcuate movement of said first and second roof panel wings about the respective axis of said third and fourth shafts away from said first and second opposing roof panels of said carton in said score breaking station, and then during the movement of said carriage from said carton engaging position toward said retracted position to effect the arcuate movement of said first and second gable wings about the respective axis of said first and second shafts away from said first and second opposing gable panels of said carton in said score breaking station to clear said carton.

3,845,608
CONTINUOUS LOOSE HAY STACKING MACHINE

Deldon Lueshen, Wisner, Nebr., assignor to Farmhand, Inc., Hopkins, Minn.
Continuation-in-part of Ser. No. 243,222, April 12, 1972, abandoned. This application Apr. 25, 1973, Ser. No. 354,254
Int. Cl. A01d *87/10*
U.S. Cl. 56—13.3 **18 Claims**

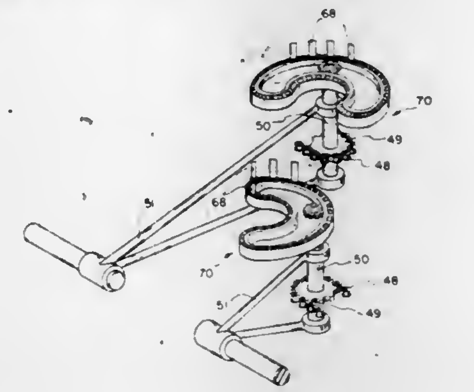


1. A stack forming machine comprising:

a. mobile wall structure forming a container including top and bottom walls, generally vertical side walls disposed in spaced apart generally parallel relationship longitudinally of the direction of travel of the machine, and front and rear walls;
b. said wall structure defining an opening through said front wall adjacent the top wall;
c. means for loading the container with crop material and including an impeller mechanism and conduit means extending from the impeller mechanism to said opening;
d. said conduit means including a movable delivery section disposed to direct material through said opening toward said rear wall on an axis extending parallel to said side walls;
e. and support means mounting said delivery section for movements generally transversely of the container and for holding said delivery section in a substantially constant attitude relative to the container in all positions of transverse movement of said delivery section, whereby said material is discharged into the container in directions parallel to the planes of said side walls.

3,845,609
TOBACCO PRIMER

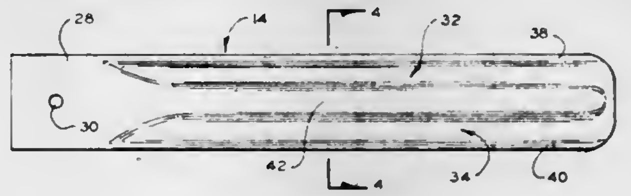
Andrew Whitley, Rt. 2, Box 72, Zebulon, N.C.
Filed Oct. 6, 1972, Ser. No. 295,711
Int. Cl. A01d *45/16*
U.S. Cl. 56—27.5 **6 Claims**



1. A leaf removing and cutter head assembly for removing leaves from the stalk of tobacco type plants comprising: a housing plate means; a plurality of wall means forming a channel extending endlessly about the periphery of said plate means; an endless cutter support means carried within said channel; at least one cutter means attached to said support means; and means to drive said support means in an endless path whereby leaves coming into contact with said cutter means will be severed from said stalk.

3,845,610
BLADE CONSTRUCTION FOR FRUIT HARVESTING MACHINE

James G. Sharp, and David E. Sharp, both of Rt. 104, North Rose, N.Y. 14516
Continuation-in-part of Ser. No. 235,524, March 17, 1972, Pat. No. 3,777,462. This application Sept. 10, 1973, Ser. No. 395,652
Int. Cl. A01d *51/00*
U.S. Cl. 56—328 R **7 Claims**



1. A blade construction for a fruit harvesting machine comprising a flexible blade having a base section for attachment to a rotary portion of the harvester, and tip portion at the end remote from said base portion for movement into lifting contact with fruit lying on the ground, said blade having a width several times its thickness and a length several times its width, said base section comprising a relatively small portion of the overall length of said blade, and at least one elongated depression in one surface of said blade extending substantially the entire length thereof from said base section to said tip parallel to the longitudinal axis of said blade.

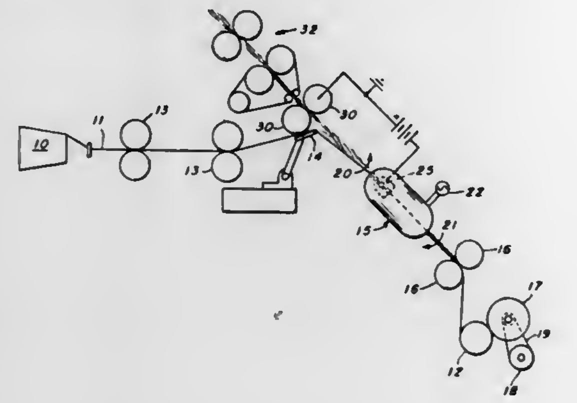
3,845,611
METHOD AND APPARATUS FOR PRODUCING COMPOSITE YARN

Necdet Senturk, Norwood, and Frank A. Aschenbrenner, Framingham, both of Mass., assignors to Electrospin Corporation, Columbus, Ohio
Filed May 3, 1972, Ser. No. 250,024
Int. Cl. D01h *1/12*
U.S. Cl. 57—5 **8 Claims**

1. A process for producing a composite yarn having an inner continuous core yarn and an outer layer of staple fibers

wrapped tightly and uniformly along the length of the core, said process comprising:

- a. continuously feeding core yarn from a source of supply to a point of collection,
- b. twisting the yarn at a site located between the source of supply and the point of collection so that twists of opposite directions are created in the yarn,



- c. subjecting at least a portion of the length of core yarn located between the source and the site of twisting to an electrostatic field created between opposite electrodes, and
- d. feeding staple fibers into the electrostatic field with the field conveying the fibers into contact with the core between said source and said twisting site for twisting thereabout.

3,845,612
SPINNING APPARATUS

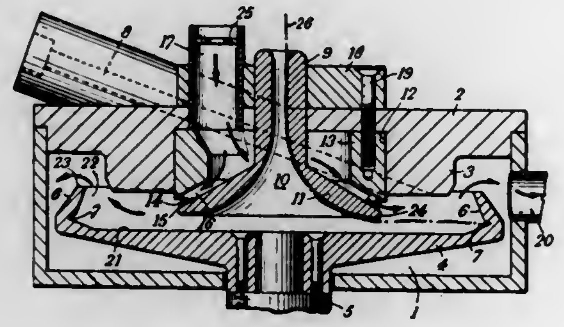
Andrew Alexander Chisholm, Clitheroe, and Christopher John Copple, Blackburn, both of England, assignors to Platt International Limited, Helmshore, Rossendale, England

Filed Feb. 23, 1973, Ser. No. 335,097

Claims priority, application Great Britain, Feb. 23, 1972, 8384/72

Int. Cl. D01h *11/00*

U.S. Cl. 57—56 9 Claims



1. Apparatus for the open end spinning of textile yarns comprising,

- a spinning rotor which is open at one end,
- a fibre collecting surface within the spinning rotor,
- a cover member adjacent said open end of the spinning rotor,
- a fibre feed duct for conveying fibres to said fibre collecting surface,
- a yarn delivery duct through which spun yarn is removed from the spinning rotor, and
- an air passage extending through the cover for continuously withdrawing air from the interior of the spinning rotor during the spinning operation, whereby air passes through the interior of the spinning rotor to remove debris therefrom.

3,845,613
FALSE-TWIST DEVICE

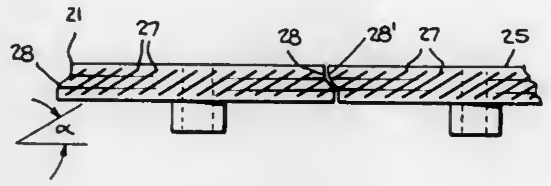
Gustav Knebel, Dubendorf, Switzerland, assignor to Heberlein & Co. AG, Wattwil, Switzerland

Filed Apr. 4, 1973, Ser. No. 347,673

Claims priority, application Switzerland, Apr. 11, 1972, 5395/72

Int. Cl. D01h *7/92;* D02g *1/08*

U.S. Cl. 57—77.4 9 Claims



1. False-twist device for textile yarn with circular discs arranged on parallel rotatable shafts, characterized in that four such shafts (6,7,8,9) are provided the axes of which are at the corners of an imaginary square, and in that on the shafts (6,8; 7,9) situated diagonally opposite each other, the discs (19,20,23,24; 21,22,25,26) are arranged on the same level, the disc rims being provided with configurations (27) extending at an ascending angle α with respect to the disc surfaces and with profiles (40,40′; 41,41′; 42,42′) and that the disc rim profiles of discs arranged on the same level are complimentary.

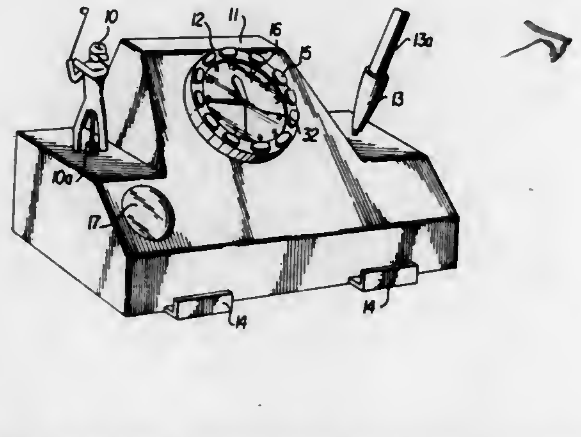
3,845,614
DESK CLOCK WITH VISUAL ALARM INDICATOR

Leon L. Christ, 14038 95th Ave. N., Seminole, Fla. 33542

Filed Aug. 20, 1973, Ser. No. 389,583

Int. Cl. G04c *21/16*

U.S. Cl. 58—19 A 9 Claims



1. A desk clock with a visual alarm indicator comprising:

- a casing including a clock face and a visual alarm means;
- a clock mechanism mounted in said casing having an hour-hand shaft;
- a conductive metal pointer mounted on said shaft to rotate therewith;
- a plurality of manually rotatable switches spaced around the periphery of said clock face corresponding to the displayed increments of time, each of said switches including a manually engageable portion exposed exteriorly of said casing, a shaft passing through said casing, and a terminal contact portion extending laterally from said shaft whereby each of said switches may be rotated about said shaft from an open position out of the path of movement of said pointer to a preset position wherein said contact portion lies in said path; and
- means electrically interconnecting said pointer, said visual alarm means, a power source, and said switches such that when said pointer is driven by said clock mechanism into engagement with the contact portion of a preset switch, the visual alarm means will be activated.

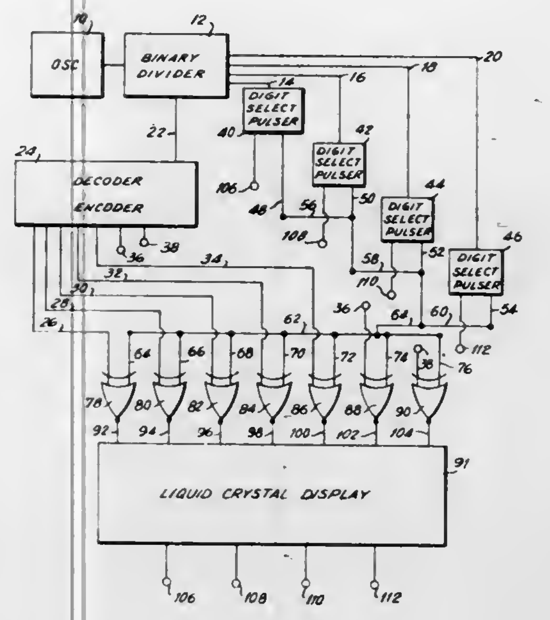
3,845,615
MULTIPLEXED LIQUID CRYSTAL DISPLAY

Arthur F. Cake, Smithtown, N.Y., assignor to Uranus Electronics Inc., New Rochelle, N.Y.

Filed July 5, 1973, Ser. No. 376,413

Int. Cl. G04b *19/30*

U.S. Cl. 58—50 R 9 Claims



1. An electronic timepiece comprising:

- a solid state display for displaying time which includes a plurality of liquid crystal means having segment means to generate an electrical field within the display for changing molecular, positional and orientational order of the liquid crystal whereby hours and minutes may be made to appear;
- an electrically operated circuit for providing an alternating current field for said liquid crystal means, said circuit having one part including a plurality of interconnected pulsers to sequentially produce signals representative of hours and minutes information for respective segment means of said liquid crystal means with one lead form each said pulsers being connected to said liquid crystal means, said circuit being completed by decoder-encoder means driving exclusive OR gates whose other inputs are connected to a common output lead of said pulsers, said exclusive OR gates being connected by leads to said segment means; and
- a frequency source for said electrically operated circuit to provide constant frequency signals thereto.

3,845,616
LEVER ESCAPEMENT FOR A TIMEPIECE MOVEMENT

Pierre Jeanmairet, Nidau, and Andre Paroz, Brugg, both of Switzerland, assignors to Marc Favre & Cie S.A., Canton of Berne, Switzerland

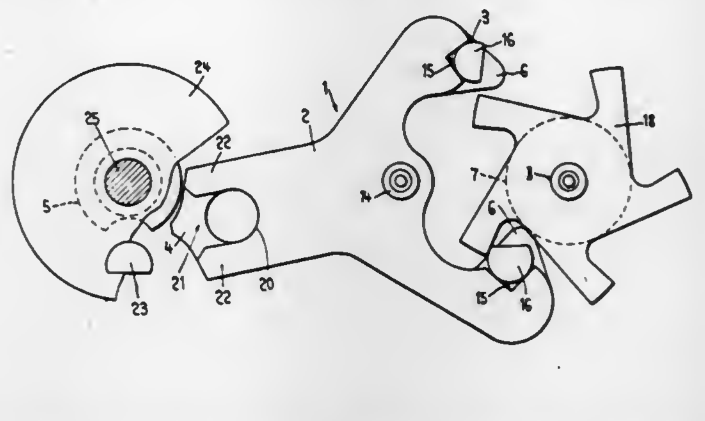
Filed Oct. 4, 1973, Ser. No. 403,658

Claims priority, application Switzerland, Oct. 12, 1972, 14916/72

Int. Cl. G04b *15/08;* B23p *13/00*

U.S. Cl. 58—121 R 7 Claims

1. A lever escapement for a time piece movement, comprising a lever mounted for oscillating motion and including a first and a second portion assembled together after forming thereof, said first portion having pallet guides and spaced horns defining a lever notch therebetween, said second portion including integrally a dart and banking members, and pallets on said banking members and engaged with said guides.



3,845,617
PENDULUM CLOCK

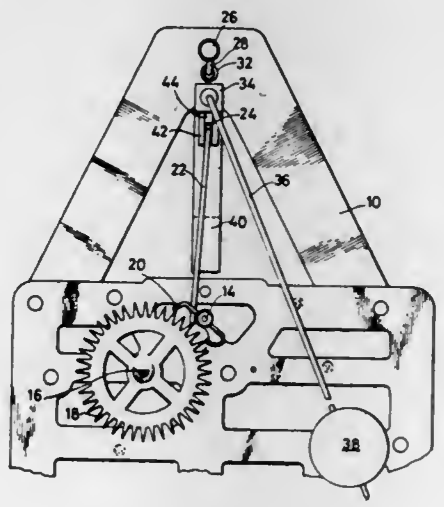
Karl Holzmann, Furtwangen, Germany, assignor to Badische Uhrenfabrik GmbH, Furtwangen, Germany

Filed Dec. 7, 1973, Ser. No. 422,924

Claims priority, application Germany, Feb. 13, 1973, 7305345

Int. Cl. G04b *17/02;* G04c *3/02*

U.S. Cl. 58—129 5 Claims



1. In a pendulum clock having a weighted oscillating pendulum supported on a stationary frame; an escapement shaft; and a lever connected to said escapement shaft, said lever having a segment engaged in a slot in a portion of the pendulum extending in parallel with said escapement shaft so as to form a connection with said pendulum, the improvement comprising; said lever being a pendulum-type wire, said wire having a bent end portion remote from said escapement shaft and extending parallel therewith, said end portion being engaged in the pendulum slot; ear means being formed on the upper surface of said pendulum base; and support means on the upper end of said frame, said support means being engaged by said ears for pivotable suspension thereon of said pendulum.

3,845,618
BRACELET CONSTRUCTION

Stanley Meyerson, 1111 Ocean Ave., New York, N.Y. 11230

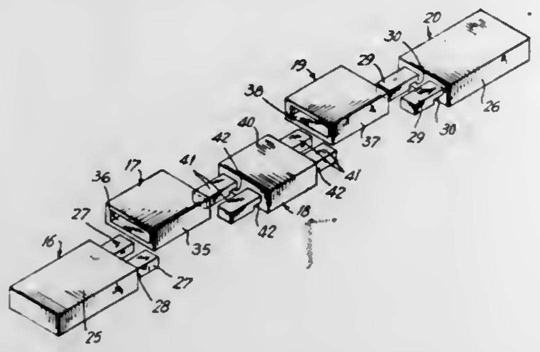
Filed Sept. 24, 1973, Ser. No. 400,212

Int. Cl. F16g *15/12*

U.S. Cl. 59—80 9 Claims

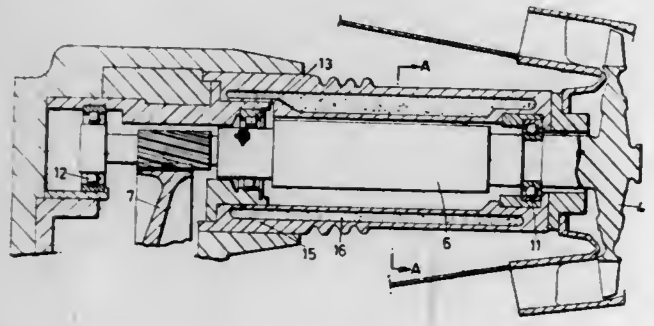
1. In a bracelet construction, the combination comprising a plurality of longitudinally extending rows of elements, the

rows being in side-by-side relation with each other, a pair of laterally inward projections on each element of each outer row, the elements of each row adjacent to an outer row having openings in their outer sides for receiving said projections,



said adjacent row elements each being located to receive projections of a pair of outer row elements, and retaining means retaining said projections in said openings, whereby said element are all interconnected.

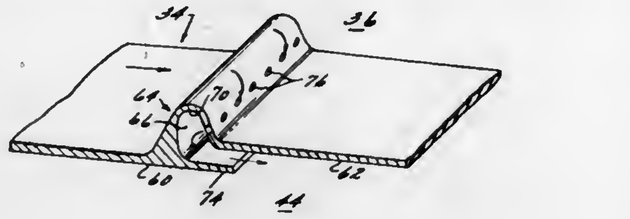
3,845,619
COMPOSITE HEAT-CONDUCTING MEANS
John Sidney O'Neill, Alcester, England, assignor to British Leyland Truck and Bus Division Limited, Leyland, England
Filed July 18, 1973, Ser. No. 380,336
Claims priority, application Great Britain, July 25, 1972, 34624/72
Int. Cl. F02c *7/10*
U.S. Cl. 60—39.51 H **3 Claims**



1. A gas turbine engine comprising:
a. a turbine;
b. a shaft on which the turbine is mounted,
c. bearing means supporting the shaft along its length; and
d. a hollow housing around the shaft which supports the bearing means and contains a compacted copper powder substantially 20% of said powder having a 300 mesh particle size, while the remainder has a particle size of substantially 100–150 mesh in order to render said powder more highly thermally conductive.

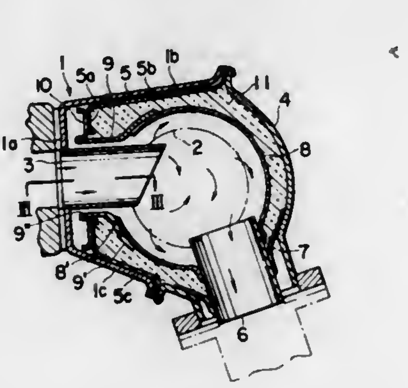
3,845,620
COOLING FILM PROMOTER FOR COMBUSTION CHAMBERS
Milton J. Kenworthy, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio
Filed Feb. 12, 1973, Ser. No. 331,519
Int. Cl. F02c *7/18*
U.S. Cl. 60—39.65 **11 Claims**

1. A cooling film promoter for passing, from a plenum containing cooling fluid flowing in a predetermined direction, a portion of the cooling fluid in a protective film upon a liner partially defining a hot gas passage, the promoter comprising:
a first liner segment partially defining the plenum;
a second liner segment partially defining the hot gas passage, the first and second liner segments cooperating to form a pocket, said second liner segment having a downstream end portion spaced from said first liner segment to form an exit from said pocket for directing cooling air along said first liner segment,
aperture means in said first liner segment for providing communication between the pocket and the plenum, wherein said aperture is open to the direction generally



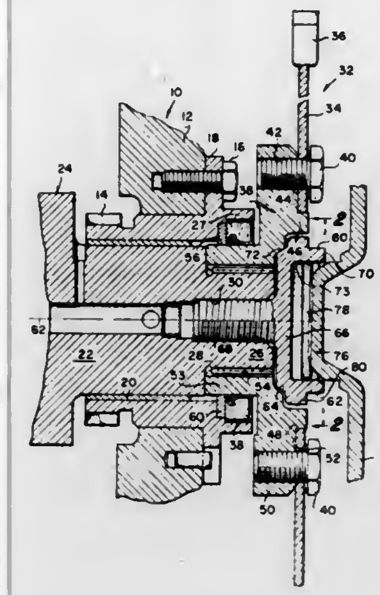
opposite said predetermined direction within the plenum, whereby the cooling fluid entering the pocket is partially directed upstream with respect to the fluid flow in the plenum; and
means for diffusing the cooling fluid flow within the pocket prior to the passing of the cooling fluid from said exit.

3,845,621
MANIFOLD REACTOR
Kenji Goto, and Michiya Nakamura, both of Shizuoka-ken, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan
Filed July 23, 1973, Ser. No. 381,422
Claims priority, application Japan, Aug. 22, 1972, 47-83322
Int. Cl. F01n *3/10*
U.S. Cl. 60—282 **7 Claims**



1. A manifold reactor comprising an inlet pipe arranged to be connected to an engine exhaust port, an outlet pipe arranged to be connected to an exhaust pipe, a first half shell segment secured to and laterally enclosing said inlet pipe, a second half shell segment joined to said first half shell segment and said shell segments forming an outer closure for the manifold reactor, an outer wall secured within the joint between said first and second half shell segments and extending therefrom inwardly within said first half shell segment, a tubular inner wall located within said first and second half shell segments so that a core of gases received from an engine through said inlet pipe is formed within said inner wall, said inner wall spaced inwardly from said outer wall and said second half shell segment, a heat-insulating material filled into the space between said inner wall and said outer wall and said second half shell segment, said inner wall having an opening extending about and spaced outwardly from said inlet pipe, a connecting pipe section secured to said inner wall about the opening therein with said connecting pipe extending around and spaced outwardly from said inlet pipe, said connecting pipe section spaced inwardly from said outer wall, an annular plate secured to the end of said connecting pipe section spaced from its connection to said inner wall and extending outwardly therefrom into sliding contact with the opposite end of said outer wall from the end connected to the joint between said half shell segments.

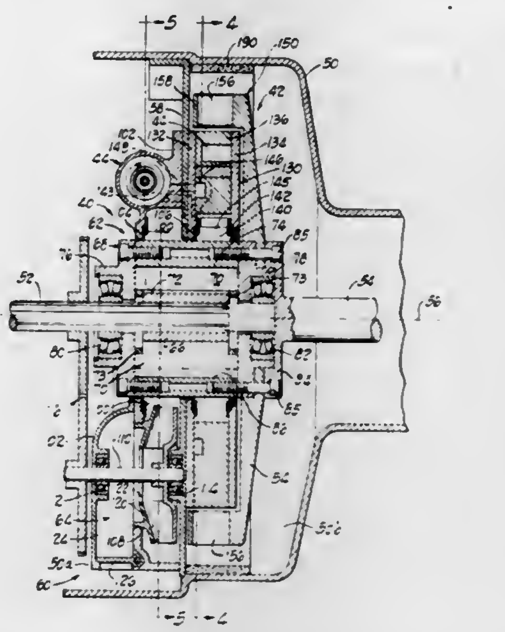
3,845,622
FASTENING MEANS ESTABLISHING CONCENTRICITY BETWEEN A VEHICLE FLYWHEEL, A FLUID CONVERTER AND AN ENGINE CRANKSHAFT
Gibson O. Hufstader, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 28, 1973, Ser. No. 419,902
Int. Cl. F16d *33/00*
U.S. Cl. 60—330 **3 Claims**



1. Fastening means establishing concentricity between a vehicle flywheel, a fluid converter and engine crankshaft comprising in combination: a crankshaft, an end of the crankshaft having a tapped hole therein; a splined surface on the exterior of said crankshaft adjacent said end; a flywheel having a centrally located aperture therein defined by an axially extending sleeve; said sleeve having an internal splined surface mating with and receiving the splined surface on said crankshaft providing a driving connection therebetween; an annular outwardly facing tapered retaining and piloting surface on said flywheel; a pilot and retaining bolt; a threaded shank on said bolt for engagement with the tapped hole in said crankshaft end, an enlarged head on said bolt, an annular tapered retaining and piloting surface on said bolt for engagement with said tapered surface on said flywheel, said tapered surfaces frictionally engaging and locking said bolt to said flywheel when said bolt is tightened thereagainst, said bolt head having a relatively large cavity in said enlarged head facing a direction axially opposite to that of said threaded shank; a fluid converter, centering means secured to and projecting outwardly from said fluid converter, said centering means having a size slightly less than that of the cavity in said enlarged bolt head, and a plurality of flat wrench surfaces on said bolt head whereby tightening of said bolt shank in the tapped hole in said crankshaft end draws mating tapered retaining and piloting surfaces into engagement frictionally locking and securing said flywheel to said crankshaft while simultaneously piloting the flywheel relative thereto and receipt of said fluid converter centering means within the cavity in said enlarged bolt head piloting said fluid converter relative to said crankshaft thereby establishing concentricity between the engaged crankshaft, flywheel and fluid converter.

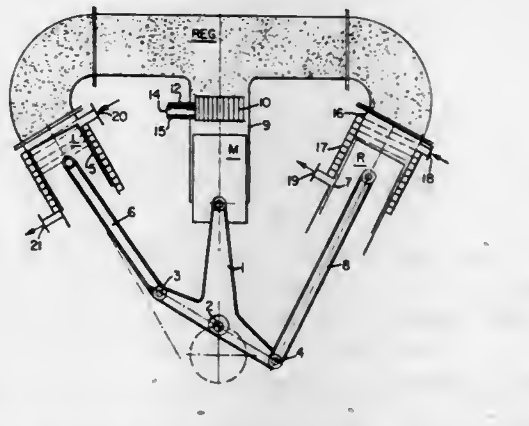
3,845,623
DRIVE TRANSMISSION
Warren H. DeLancey, 1580 Prospect Ave., Apt. H4, Elyria, Ohio 44035
Filed Apr. 6, 1973, Ser. No. 348,756
Int. Cl. F15b *11/16*
U.S. Cl. 60—425 **35 Claims**

1. A drive transmission comprising:
a. rotatable input shaft means;
b. rotatable output shaft means;
c. positive displacement pump means connected between said input and output shaft means, said pump means defining a fluid inlet and fluid discharge and effective to pump fluid from said inlet through said discharge in response to relative rotation between said input and output shaft means;
d. fluid motor means drivingly connected to said output shaft means and communicable with said fluid discharge of said pump means, said fluid motor means driven by fluid discharged from said pump means to transmit torque



to said output shaft means in response to relative rotation between said input and output shaft means; and,
e. control valve means communicating with said discharge of said pump means for governing the flow of fluid through said pump discharge to said motor means, said valve means comprising a valving means positionable as a function of speed of rotation of said input shaft means and as a function of torque applied to said pump means so that said valve means governs the flow of pump discharge fluid to said motor means in relation to input shaft means speed and torque applied to said input shaft means.

3,845,624
STERLING PROCESS ENGINES
Willem Cornelis Roos, 318 Rena Dr., Bellerose, N.Y. 70501
Filed May 21, 1970, Ser. No. 37,749
Int. Cl. F02g *1/04*
U.S. Cl. 60—517 **1 Claim**



1. A hot-gas reciprocating engine having a closed thermodynamic cycle, comprising a first cylinder enclosing a hot space, said hot space receiving heat from a first source of external heat, a second cylinder enclosing a cold space, means connecting said hot and cold spaces, a regenerator interposed in

said connecting means, a third cylinder with a displacer piston therein, a second source of external heat supplying heat to the space above said displacer piston, means connecting said space above the displacer piston to the regenerator whereby heat from the second external source of heat is intermittently supplied to the regenerator, said aforementioned three pistons having their center lines converging to a substantially single point wherein said three pistons are operatively connected to a common connecting arm means.

3,845,625
HEAT ACCUMULATOR

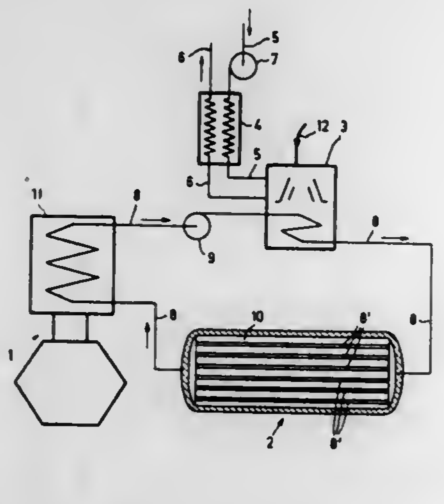
Johann Schroder, Aachen, Germany, assignor to U. S. Philips Corporation, New York, N.Y.

Division of Ser. No. 174,357, Aug. 24, 1971, Pat. No. 3,709,209. This application Sept. 28, 1972, Ser. No. 293,120

Claims priority, application Netherlands, Aug. 29, 1970, 7012830; June 23, 1971, 7108625

Int. Cl. F02g *1/00*

U.S. Cl. 60—524 **8 Claims**



1. In combination a heat accumulator comprising a reservoir which contains an inorganic material having a melting point of less than 850° and wherein the inorganic material consists mainly of a eutectic mixture of lithium fluoride and at least one fluoride selected from the group consisting of sodium fluoride, potassium fluoride, calcium fluoride and magnesium fluoride, potassium fluoride or calcium fluoride being present only in the presence of both sodium fluoride and lithium fluoride or both magnesium fluoride and lithium fluoride, the maximum quantity of potassium fluoride being less than 30 mol percent and the maximum quantity of calcium fluoride being less than 40 mol percent, a hot gas engine having a heater which receives thermal energy from said material, a burner in which is burned fuel in combustion gas to produce thermal energy, duct means for flowing said material (a) through said burner for receiving thermal energy therefrom, (b) to and through said heat accumulator, (c) to and through said heater, and back to said burner, and pump means for urging said material to flow through said duct means.

3,845,626
HOT GAS STIRLING CYCLE ENGINE WITH IN-LINE CYLINDERS

John Osvald Berntell, and Sven Rolf Bertil Hellmen, both of Malmo, Sweden, assignors to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmo, Sweden

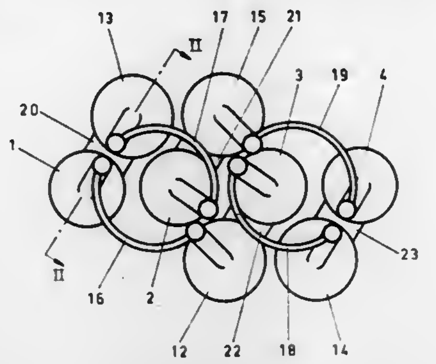
Filed Dec. 15, 1972, Ser. No. 315,475

Claims priority, application Great Britain, Dec. 18, 1971, 58907/71

Int. Cl. F02g *1/04*

U.S. Cl. 60—525 **4 Claims**

1. A Stirling cycle engine comprising in combination an even number of cylinders all of which are disposed in-line, a regenerator-cooler unit for each cylinder, and heater pipe systems connected from each cylinder to a corresponding regenerator unit arranged with heater pipes disposed in an arc with the pipes from two adjacent cylinders disposed in a cylindrical arrangement comprising a combustion chamber, cold gas connecting ducts of the same length connected from each regenerator-cooler unit thereby being disposed to lead from said in-line cylinders to said regenerator units disposed on opposite sides thereof.



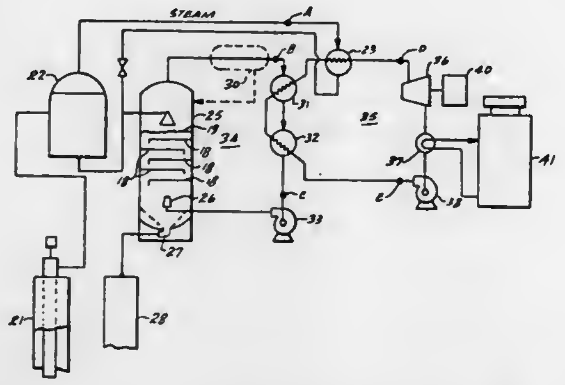
3,845,627
POWER GENERATION FROM HOT BRINES

Arthur J. L. Hutchinson, Pasadena, Calif., assignor to Geothermal Investment Co., Pasadena, Calif.

Continuation-in-part of Ser. No. 301,057, Oct. 26, 1972, abandoned. This application Dec. 10, 1973, Ser. No. 423,192

Int. Cl. F03g *7/00;* **F01k** *25/00*

U.S. Cl. 60—641 **20 Claims**



1. A method of recovering heat from the liquid portion of a geothermal fluid which may contain salts and other dissolved minerals comprising the steps of:

passing the geothermal liquid in heat exchange relationship in a direct contact heat exchanger with a first fluid functioning as a heat transfer fluid to heat the first fluid;

passing the heated first fluid in heat exchange relationship with a second fluid to cause the second fluid to be in a gaseous state; and

expanding the gaseous second fluid in a power extracting gas expansion device.

3,845,628
HEAT TRANSFER APPARATUS

Lucien Yehuda Bronicki, and Amnon Yogev, both of Rehovoth, Israel, assignors to Ormot Turbines (1965) Ltd., Yavne, Israel

Filed Aug. 29, 1973, Ser. No. 390,981

Claims priority, application Israel, Sept. 20, 1972, 40390

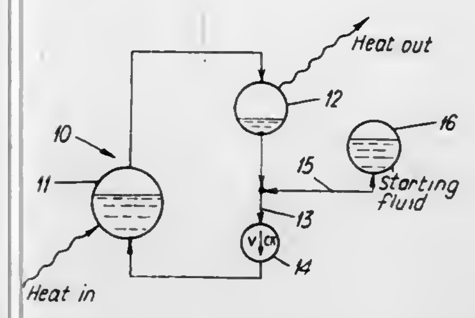
Int. Cl. F01b *7/00*

U.S. Cl. 60—656 **15 Claims**

1. Heat transfer apparatus comprising:

a. a pair of heat exchangers connected in a closed system;

b. a heat transfer fluid contained within the system and made up of a mixture of at least two fluids termed the starting and the operating fluids, the starting fluid having a lower boiling point than the operating fluid, and a freezing point lower than the freezing point of the operating fluid whereby the application of heat to the first of the heat exchangers converts liquid fluid therein to vapor which flows into the second heat exchanger from which heat is extracted for converting the vapor therein to a liquid at a temperature and pressure lower than in the first heat exchanger;



c. means to feed liquid from the second heat exchanger into the first heat exchanger; and

d. means for trapping liquid starting fluid as it is produced by the second heat exchanger during the initial application of heat to the first heat exchanger and for preventing the return of the trapped liquid starting fluid to the first heat exchanger as long as sufficient heat is applied thereto whereby the operating fluid circulates around the system after the starting fluid is trapped.

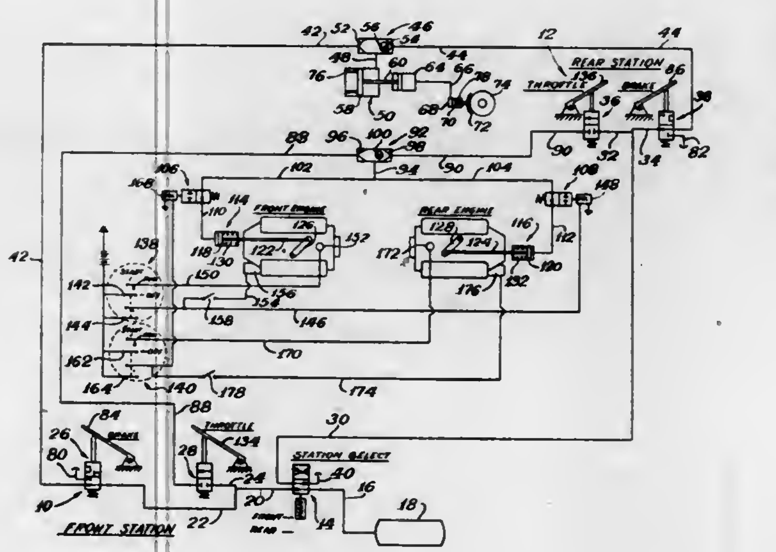
3,845,629
DUAL STATION THROTTLE AND SERVICE BRAKE CONTROL MEANS

Robert G. Luft, Wildwood, Ill., assignor to International Harvester Company, Chicago, Ill.

Division of Ser. No. 224,700, Feb. 9, 1972, Pat. No. 3,743,064, which is a continuation-in-part of Ser. No. 52,221, July 6, 1970, abandoned. This application Mar. 26, 1973, Ser. No. 345,046

Int. Cl. F01b *21/02*

U.S. Cl. 60—719 **3 Claims**



1. Control means for a vehicle having a pair of engines, each engine including a speed and power operator means, an ignition system and a starter motor, and a first operator station; the control means comprising:

a throttle valve means in the first station;

conduit means connecting the throttle valve means with said operator means on both engines;

a pair of solenoid valve means interposed in the conduit means between the throttle valve means and operator means and when energized blocking communication therebetween;

a first electrical switch capable of energizing the starter motor and the ignition system of one engine while simultaneously energizing the solenoid valve means on the other engine, and a second electrical switch capable of energizing the starter motor and ignition system of said other engine while simultaneously energizing the solenoid valve means on said one engine.

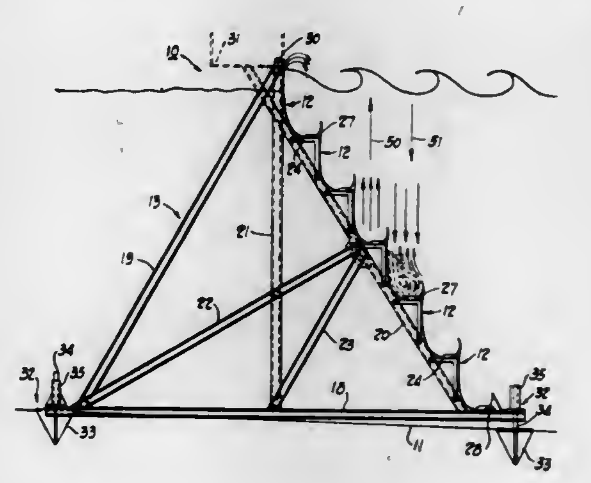
3,845,630
MECHANICAL REEF

Joseph Karnas, 127 Miller Rd., Avon Lake, Ohio 44012

Filed July 25, 1973, Ser. No. 382,304

Int. Cl. E02b *3/04*

U.S. Cl. 61—4 **11 Claims**



1. A mechanical reef for attenuating waves in water comprising a plurality of deflector panels, each of said panels having an arcuate configuration and presenting an upwardly concave surface which defines a channel, and frame means supporting said panels in a stepwise arrangement so that the channels defined by said panels are positioned to intercept the downwardly moving water in waves, whereby the downwardly moving water enters the channels and whirls in a turbulent manner to dissipate its kinetic energy.

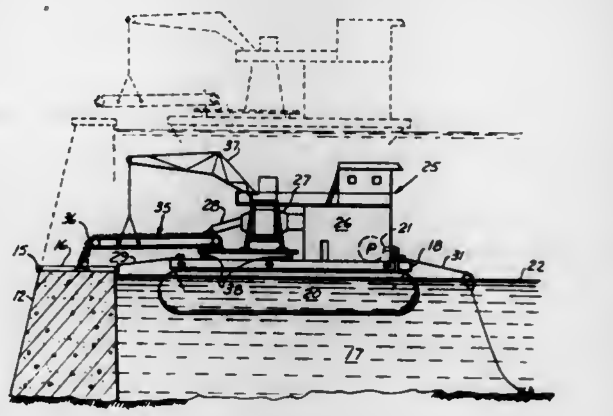
3,845,631
DAM BUILDING SYSTEM

George L. Malan, 560 E. Rowland Apt. G-3, Covina, Calif. 91722

Continuation-in-part of Ser. No. 66,980, Aug. 26, 1970, abandoned. This application Sept. 15, 1972, Ser. No. 289,535

Int. Cl. E02b *7/04*

U.S. Cl. 61—30 **21 Claims**



1. A process for building a dam at a damsite across a stream of water comprising: forming a pool upstream of the damsite and adjacent thereto; placing water in the pool; floating a floating platform in said pool, said floating platform bearing a concrete mixing plant and a concrete conveyor means for the concrete mixed by the mixing plant; discharging concrete

from said concrete conveyor means at a placement site on the damsite so as to build the dam and progressively increase its height, permitting the elevation of the surface of the pool to rise as the dam's height increases, but maintaining the said height so that the surface of the pool is lower than the top of the dam and placing the floating platform in the pool so that the top of the dam is within the reach of the concrete conveyor means, whereby the concrete is mixed at a location relatively close to the placement site, and moving the platform from side to side in the pool so as to keep to a minimum the distance by which the concrete must be transported relative to the face of the dam.

3,845,632

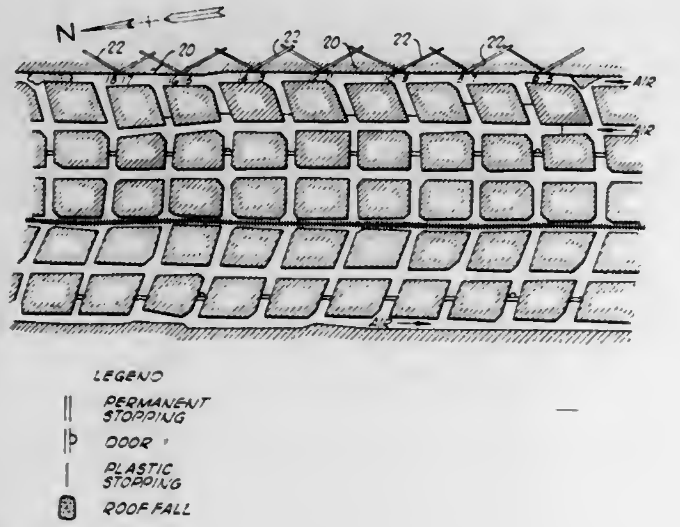
METHOD OF SEALING COAL AGAINST METHANE EMISSION

Robert L. Slobod, and Emil J. Burcik, both of c/o 26 Mineral Industries Bldg., University Park, Pa.

Filed May 21, 1973, Ser. No. 362,280

Int. Cl. E02d *3/14;* **E21f** *15/00*

U.S. Cl. 61—36 R **16 Claims**



1. A process for reducing gas emission at an exposed face in a coal seam during subterranean mining of the seam by blocking and diverting the gas to a non-worked location in the mine comprising injecting into the seam at multiple locations to enter cracks and fissures at the bedding planes in the coal seam at locations spaced inwardly in the seam from the exposed face, a pumpable silicic acid colloidal dispersion capable of setting up to a semi-solid gel in said cracks at the bedding planes and thereby sealing said cracks and fissures against gas movement, said colloidal dispersion being characterized in having a viscosity, when injected, of less than 6 centipoises, a pH of from about 2.0 to about 12.0 and an SiO_2 concentration of at least 0.25 weight percent.

3,845,633

INTERCEPTOR FOR PREVENTING SHIP COLLISIONS WITH OFFSHORE POWER STATIONS AND THE LIKE

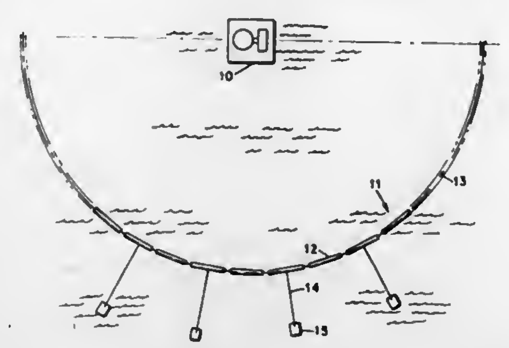
Roland P. Hammond, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Dec. 13, 1973, Ser. No. 424,256

Int. Cl. E02b *3/20*

U.S. Cl. 61—46.5 **1 Claim**

1. A floating barrier to protect a fixed offshore installation in a body of water from collision with a ship comprising a tension-resisting, high-strength steel cable encased with a water-proof cover, said cable encircling said installation; a plurality of crushable float elements spaced along and supporting said cable to maintain said cable near the surface, each of said float elements being a hollow log, said encased cable being threaded through all of said float elements, each of said hollow log floats comprising alternate layers of sheet metal and foamed plastic; and a plurality of anchors equal in number to said float elements with each anchor connected to a respective float element and disposed radially outward from said installation and cable, to maintain said cable generally in circular configuration surrounding said installation, the connection between each float element and its associated anchor being at least four times as long as the water depth under the respective float element to prevent lifting the anchor from the sea floor, each of said anchors being provided with at least two flukes projecting downward from the anchor into the floor of the body of water to provide a fixed retarding force upon said cable to oppose any force by a colliding ship directed against said cable radially inward toward said installation such that the combined retarding force effected by the affected anchors will prevent collision of said ship with said installation.



3,845,634

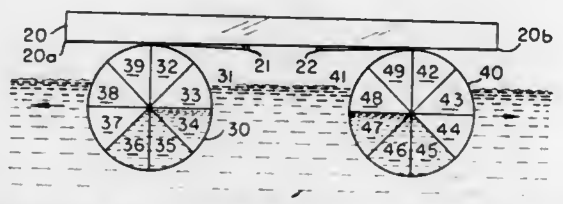
DUAL HYDRO WINCH LIFT MECHANISM

Edgar N. Rosenberg, and Stephen F. Moran, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 2, 1973, Ser. No. 412,380

Int. Cl. B63c *1/06;* **B63b** *35/00*

U.S. Cl. 61—46.5 **8 Claims**



1. A method for deploying an elongate undersea structure comprising:

arranging at least two buoyant compartmented cylinders in a spaced parallel relationship;

wrapping at least one cable about each buoyant compartmented cylinder;

placing the elongate structure to rest on the top of each buoyant compartmented cylinder;

securing opposite ends of each cable to a buoyant compartmented cylinder and the elongate undersea structure;

rotating each buoyant compartmented cylinder to position each buoyant compartmented cylinder outside the downward projection of the elongate undersea structure; and lowering the elongate undersea structure to the bottom by continued rotation of each buoyant compartmented cylinder.

3,845,635

PHASE-SEPARATING SPRAY HEADER

Warren Edwin Perkins, Wyckoff, N.J., and Michael Anthony Marchese, Elmsford, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

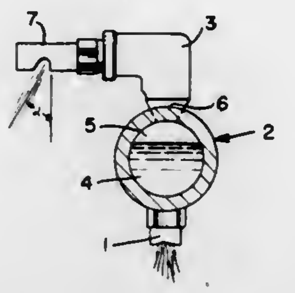
Filed Oct. 24, 1972, Ser. No. 299,734

Int. Cl. F17c *7/02*

U.S. Cl. 62—51 **4 Claims**

1. Apparatus for selectively dispensing liquid phase cryogen from a two-phase cryogenic fluid onto products to be refrigerated passing beneath said apparatus, comprising in combination:

1. at least one liquid spray nozzle having an inlet port and a discharge rate-controlling orifice for directing a spray of liquid cryogen upon the products to be refrigerated,
2. manifold means for conveying said two-phase cryogenic fluid to said spray nozzle, said manifold means being connected to a source of cryogenic fluid and having an upper and a lower section, said inlet port of said liquid spray nozzle being located in the lower section of said manifold means, and



3. at least one vapor venting nozzle for continuously directing substantially all of the vapor phase cryogen into the surrounding atmosphere, said vapor venting nozzle having an inlet port located in the upper section of said manifold means, and a discharge rate controlling orifice communicating with the surrounding atmosphere, the equivalent cross-sectional area of the discharge orifice of said vapor venting nozzle being from about 1/3 – 2/3 of the equivalent cross-sectional area of the discharge orifice of said liquid spray nozzle.

3,845,636

CONTROL DEVICE FOR MAINTAINING THE LEVEL OF A LIQUIFIED GAS IN A CONTAINER BETWEEN TWO DIFFERENT LIMITS

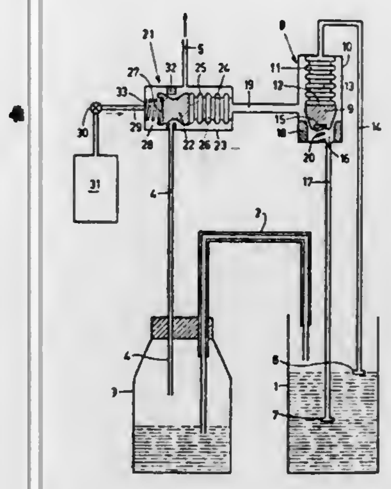
Harmannus Hinderikus Van Mal; Andries Mijnheer; Hendrik Jan Rauwerdink, and Johannes Adrianus De Wit, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 153,244, June 15, 1971,. This application Aug. 17, 1972, Ser. No. 281,342

Claims priority, application Netherlands, June 26, 1970, 7009420

Int. Cl. F17c *7/02*

U.S. Cl. 62—55 **7 Claims**



1. A control device for maintaining the level of a liquefied gas in a container between two different limits, the container communicating via a siphon, with the liquid space of a storage container, the vapour space of which can be made to communicate with a vapour outlet, said control device comprising a first vapour pressure bulb arranged at the higher limit and a second vapour pressure bulb arranged at the lower limit, the bulbs containing a medium under pressure which condenses at the temperature of the liquefied gas, the medium pressures being capable of actuating first and second control valves in such a manner that the communication of the vapour space of the storage container with the vapour outlet is interrupted by the said valves when the level of the liquefied gas in the container drops below the lower limit, and is released when the level exceeds the higher limit, characterized in that the first control valve is constituted by a first piston-like member which is incorporated in a first housing and can reciprocate therein in the axial direction and which constitutes with its one end face a wall of a first space which is in open communication with the first vapour pressure bulb and is otherwise closed, and constitutes with its other end face also the boundary of a second space which is in open communication with the second vapour pressure bulb, the second space furthermore comprising a communication which, when the first piston-like member reciprocates, is alternately closed and released by said member, the second control valve being constituted by a second piston-like member which is accommodated in a second housing with some amount of play and can reciprocate therein in the axial direction, and which constitutes with its one end face a wall of a third space which communicates with the communication with the second space and is otherwise closed and with its other end face also constitutes the boundary of a fourth space which communicates with an auxiliary vessel containing a pressure medium, the second piston-like member upon reciprocation being capable of communicating the vapour space of the storage container alternately with the fourth space and the vapour outlet, the medium pressures in the vapour pressure bulbs, the pressure medium pressure in the auxiliary vessel, and the surface areas of the end faces of the piston-like members being furthermore chosen to be so that, when the level of the liquefied gas in the container lies below the second vapour pressure bulb, the resulting force on the first piston-like member causes said member to assume a position in which the second space is in open communication with the third space and the resulting force on the second piston-like member causes the said member to assume a position in which the vapour space of the storage container is in open communication with the fourth space, in which, when the said level rises due to siphoning action, when the second vapour pressure bulb is reached the resulting force on the first piston-like member causes said member to interrupt the communication between the second and the third space with a remaining medium pressure in the third space, in which the second piston-like member maintains the open communication between the vapour space and the fourth space, in which, when the said level reaches the first vapour pressure bulb, the resulting force on the first piston-like member causes said member to assume a position in which the open communication between the second and the third space is restored, and, as a result of the falling medium pressure in the third space, the second piston-like member interrupts the communication between the vapour space and the fourth space and produces an open communication between the vapour space and the vapour outlet.

3,845,637

DEFROST CYCLE INITIATION SYSTEM

Glen C. Shepherd, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

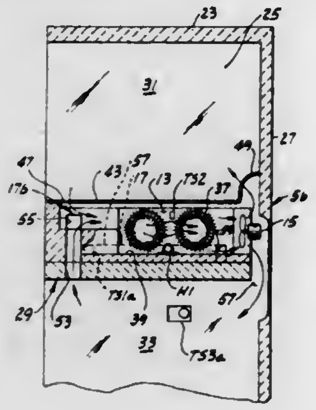
Filed Sept. 6, 1973, Ser. No. 394,947

Int. Cl. F25d *21/06*

U.S. Cl. 62—155 **13 Claims**

1. A defrost cycle initiation system for refrigeration apparatus having cooling means for absorbing heat from a refrigerated zone, said cooling means being subject to frost build-up, said refrigeration apparatus having a main flow path for the intake of air from said refrigerated zone, for passage of the air over said cooling means to chill the air and for the discharge of the chilled air into the refrigerated zone, and a blower for forcing the air through said main flow path; said system com-

prising an auxiliary flow path providing communication between said main flow path and said refrigerated zone, air normally flowing in said auxiliary flow path from said refrigerated zone to said main flow path when said refrigeration apparatus is in its normal mode of operation, means for sensing the temperature of air flowing through said auxiliary flow path adapted to initiate a defrost cycle upon sensing a predetermined initiation temperature of air, and means for effecting a



reversal of flow of air in said auxiliary path in response to build-up of frost on said cooling means there-by to direct air having a temperature less than said predetermined initiation temperature through said auxiliary flow path to lower the temperature of the air sensed by the sensing means below said predetermined initiation temperature and for reestablishing the flow of air in said auxiliary flow path from said refrigerated zone to said main flow path upon clearing the cooling means of frost.

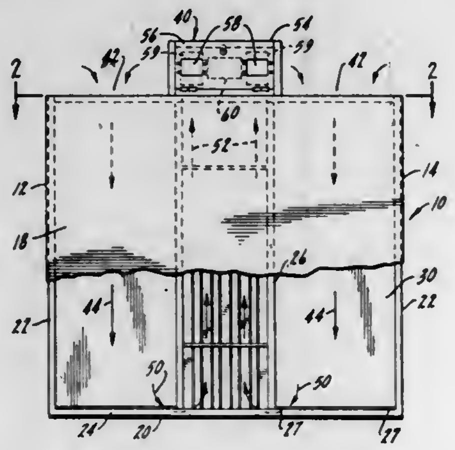
3,845,638
PLATE REFRIGERATION AIR SYSTEM

Joseph P. Apple, Jr., Arlington Heights, and William E. Lauterbach, Evanston, both of Ill., assignors to Dole Refrigerating Company, Chicago, Ill.

No Drawing. Filed June 26, 1973, Ser. No. 373,669

Int. Cl. F25d *17/06*

U.S. Cl. 62—426 **13 Claims**



1. In a vehicle eutectic plate refrigeration system, a cover, at least one eutectic plate positioned within said cover, said cover being closed on the bottom, sides, front and rear, an air inlet and an air discharge adjacent the upper end of said cover, power means positioned to force air out of said air discharge, and air passage means within said cover and associated with said plate defining air passages which extend from said air inlet adjacent the top of said cover, down along a portion of the plate to the bottom of the plate and then upwardly along a different portion of the plate to the air discharge, said air passage means being substantially coextensive with said plate whereby substantially all of the plate surface is wiped by air moving in said air passage means and the moving air is in contact with said plate through substantially its entire path from said air inlet to said discharge.

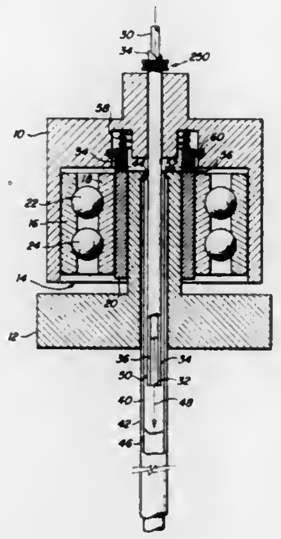
3,845,639
RELATIVELY ROTATABLE CRYOGENIC TRANSFER SYSTEM

Joseph L. Smith, Jr., Concord, and Philip Thullen, Dover, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 30, 1972, Ser. No. 257,640

Int. Cl. F25b *31/12*

U.S. Cl. 62—505 **4 Claims**



1. A relatively rotatable cryogenic transfer apparatus for transferring fluid between two relatively rotatable devices which are rotatable relative to each other at significant speeds said apparatus comprising:

a housing;

a first unit fixed to said housing and including a first relatively long, stiff, thin, low thermal conductivity conduit and a second relatively long, stiff, thin, low thermal conductivity conduit spaced from and surrounding said first conduit to form a vacuum insulating space therebetween; a second unit including a third relatively long, stiff, thin, low thermal conductivity conduit surrounding and spaced from said first unit to provide a first relatively long, narrow relative motion gap that provides a relatively stagnant environment in which convection currents are minimized and vapor from the fluid acts as an insulator, said second unit further including a fourth relatively long, stiff, thin, low thermal conductivity conduit surrounding and spaced from said third conduit to provide a vacuum insulating space therebetween;

first means for relatively rotatably interconnecting said housing and said second unit for maintaining said housing and second unit in uniform spaced alignment and having its heat-producing relative motion contacting parts disposed in a first ambient temperature portion of said apparatus proximate the area where said first unit is fixed to said housing remote from the supercooled portions of the apparatus, including an alignment bearing with two relatively rotatable parts one fastened to said housing the other to said second unit;

second means for relatively rotatably interconnecting said housing and said second unit disposed in a second ambient temperature portion of said apparatus spaced from said first ambient temperature portion and remote from the cooler portions of said apparatus, including an alignment bearing with two relatively rotatable parts one fastened to said housing the other to said second unit;

first port means in said housing between said first and second ambient temperature portions;

said fourth conduit being spaced from said housing to provide a second relatively long, narrow, relative motion gap extending from said first port means to said first ambient temperature portion and a third relatively long, narrow, relative motion gap extending from said first port means to said second ambient temperature portion, each of said second and third relative motion gaps providing a relatively stagnant environment in which convection currents are minimized and vapor from the fluid acts as an insulator;

first sealing means between said housing and second unit in said first ambient temperature portion for sealing the ambient temperature end of said first relative motion gap and of said second relative motion gap including a first sliding seal engaging one of said housing and said second unit and a second seal engaging the first seal and the other of said housing and said second unit; and

second sealing means between said housing and said second unit in said second ambient temperature portion for sealing the ambient temperature end of said third relative motion gap, including a first sliding seal engaging one of said housing and said second unit and a second seal engaging the first seal and the other of said housing and said second unit.

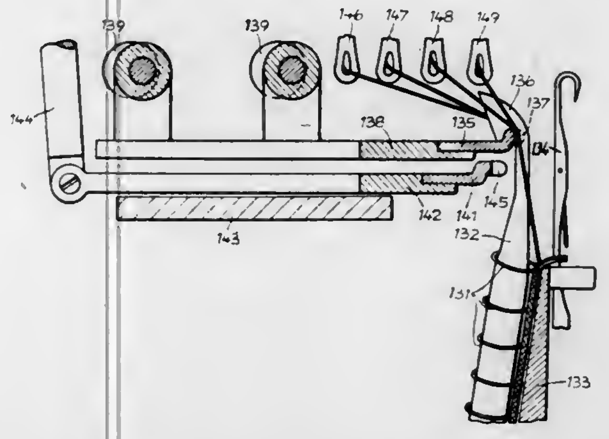
3,845,640
METHOD AND APPARATUS FOR PRODUCING A KNITTED FABRIC WITH PROJECTING BARBS

Norbert Waller, Weil im Schoenbuch, Germany

Continuation of Ser. No. 159,036, July 7, 1971. This application Sept. 4, 1973, Ser. No. 394,307

Int. Cl. D04b *35/00*

U.S. Cl. 66—91 **1 Claim**



1. In a warp knitting machine for producing a one-face fabric having a base fabric and relatively long-drawn plush loops of monofilament threads of a thermoplastic material knitted into said base fabric and projecting substantially vertically therefrom and being set by a heat treatment and fixed in said vertical position by being dressed with a sizing material, and each of said loops then being opened at one lateral side so as to form a barb with a narrow head, means for holding each of said loops for a sufficient length of time for being set by said heat treatment before it is fixed and cut open to form said barb, wherein said knitting machine has a single needle bar, and in which said loops are formed by winding said thread around the upper ends of said loop holding means, said means comprising a plurality of lancets each being held by said loops so as to extend parallel to the row of needles of said needle bar within the space between two adjacent needles, and upper and lower lancet holding means disposed substantially vertically above each other and extending in a direction substantially vertical to said lancets and said row of needles and adapted to reciprocate alternately to each other in said direction so that one of said lancet holding means engages with said lancets when the other lancet holding means disengages from said lancets, said upper lancet holding means being adapted to engage with said lancets at the upper ends thereof for holding them in their longitudinal and lateral directions while the old loops of the base fabric are knocked over, said lower lancet holding means being adapted to engage with said lancets so as to hold them laterally when said upper lancet holding means are retracted from said lancets, said lancets having such a length that, when said loops slide successively downwardly along each of said lancets during the alternating reciprocating movements of said upper and lower lancet holding means, said loops remain for a sufficient length of time on said lancets so as to be set.

3,845,641
METHOD AND APPARATUS FOR PRODUCING A KNITTED FABRIC WITH PROJECTING BARBS

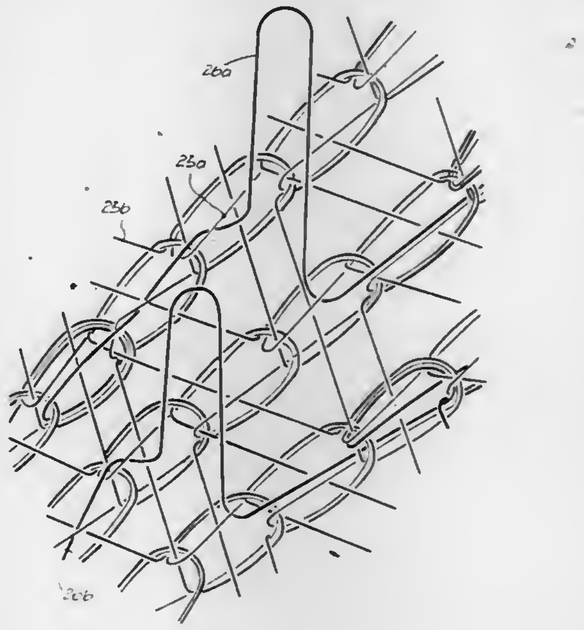
Norbert Waller, Weil im Schoenbuch, Germany, assignor to Binder Gottlieb, Holzgerlinger, Germany

Division of Ser. No. 852,295, Aug. 22, 1969, Pat. No. 3,654,054. This application July 1, 1971, Ser. No. 159,036

Claims priority, application Austria, Aug. 26, 1968, 8315/68

Int. Cl. D04b *23/08*, *23/10*

U.S. Cl. 66—192 **13 Claims**



1. A method of producing a knitted one face fabric having courses and wales and on the back face of said fabric upstanding fastener elements being formed by projecting end parts of a multiplicity of cut monofilament threads of a thermoplastic material comprising the steps of knitting a base fabric, knitting at least one monofilament thread of a thermoplastic material into said base fabric so as to form loops on the back side of said base fabric and in said base fabric at least one stitch between each two loops, each of said loops having a pair of foot portions and a head portion, said pairs of foot portions entering into said base fabric in the same course and in two adjacent wales, stretching, heatsetting, and erecting said loops to an erected position so as to form long drawn loops, then dressing said knitted fabric with a sizing material to fix said long drawn loops in said erected position, and then severing at least a part of said long drawn loops to form said fastener elements.

3,845,642
WASHING MACHINE TRANSMISSION SYSTEM

J. Richard Cochran, Ripon, Wis., assignor to McGraw-Edison Company, Ripon, Wis.

Filed Jan. 15, 1973, Ser. No. 323,761

Int. Cl. D06f *23/04*

U.S. Cl. 68—23.7 **8 Claims**

1. A drive mechanism for a laundry machine having a vertical spin tub and an agitator therein, said agitator having a generally conical shaped base, said mechanism comprising:

a reversible motor operatively connected to a pulley that is adapted to be driven in either direction,

means for rotatively driving said spin tub upon rotation of said pulley in one direction,

means for braking said spin tub against rotation during rotation of said pulley in a second direction, agitator transmission means being substantially contained within the area defined by said conical shaped base and comprising,

a rotatable input shaft, means for rotating said input shaft in response to rotation of said pulley in the second direction,

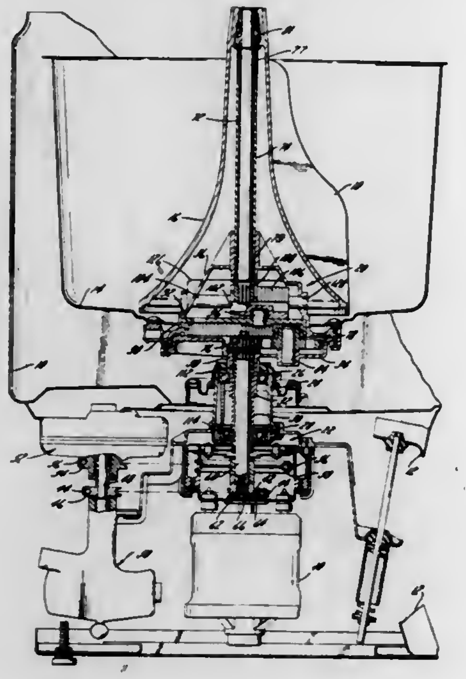
an output shaft connected to said agitator,

a generally conical shaped, substantially fluid tight housing, said housing being attached to the lower center portion of said spin tub;

said rotatable input shaft having a pinion gear at its upper end,

a reducer having a pair of concentric gears, one of which is larger and adapted to mesh with said pinion gear;

a rotatable internal gear, the outer circular periphery of which is substantially smooth to slidingly contact the cooperating inner surface of said housing, the internal teeth of which engage the other gear of said reducer, the upper surface of said internal gear supporting an eccentrically positioned pin,



a rack carriage having a straight toothed bar and a horizontal slideway positioned generally perpendicular to said toothed bar, said rack having a slider adapted to overlie said pin supported by said internal gear, said slider being slidable within said slideway,

means for guiding said rack carriage to limit movement thereof to only reciprocating along a path parallel to said toothed bar and

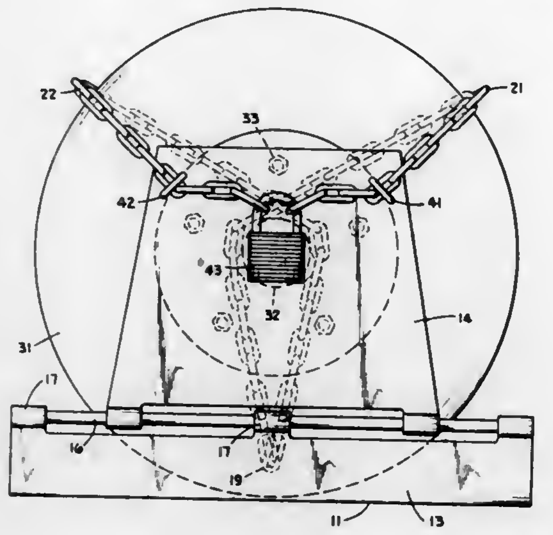
said output shaft including a pinion gear meshing with said toothed bar,

so that rotation of said drive shaft rotates said reducer and internal gear, said internal gear moving said slider in an orbital path to thereby reciprocate the rack carriage along said path, the reciprocating toothed bar of said rack carriage causing rotational oscillation of said shaft pinion gear and agitator.

3,845,643
WHEEL LOCKING DEVICE

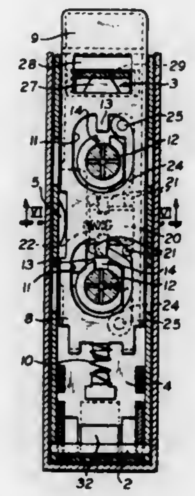
Robert M. Barrett, 4439 W. 34th St., Indianapolis, Ind. 46222
Filed Nov. 9, 1973, Ser. No. 414,285
Int. Cl. E05b *73/00;* **B60t** *3/00*
U.S. Cl. 70—18 **5 Claims**

1. An apparatus for immobilizing an axle-supported wheeled vehicle, said apparatus comprising a drive-on tray having upwardly flanged side margins and adapted to underlie a vehicle wheel received between said margins, a shielding flap hinged to the outer flanged margin of the tray and adapted to be moved to extend outwardly and sidewardly while a vehicle wheel is entering said tray and to pivot upwardly to a generally vertical position when the vehicle wheel is in place on the tray thereby masking the wheel lug bolts or the like attaching the wheel to the vehicle, an elongated flexible member wrapped about the vehicle axle, and a releasable locking member tightly joining said flexible member to said shielding flap when the flap is in its said generally vertical position.



3,845,644
PERMUTATION LOCK

Gisela Lindner, P.O. Box Friedrichstrasse 47, 586 Iserlohn, Germany
Filed Aug. 21, 1972, Ser. No. 282,569
Claims priority, application Germany, Aug. 21, 1971, 2142065
Int. Cl. E05b *65/52*
U.S. Cl. 70—74 **3 Claims**



1. A permutation lock with a permutation set-over device, comprising

a setting handle carrying marks being rotatably mounted relative to an annular-shaped locking disc,

said locking disc having a feed-in opening for entering of a lock tongue of a sliding bolt at a correctly set permutation,

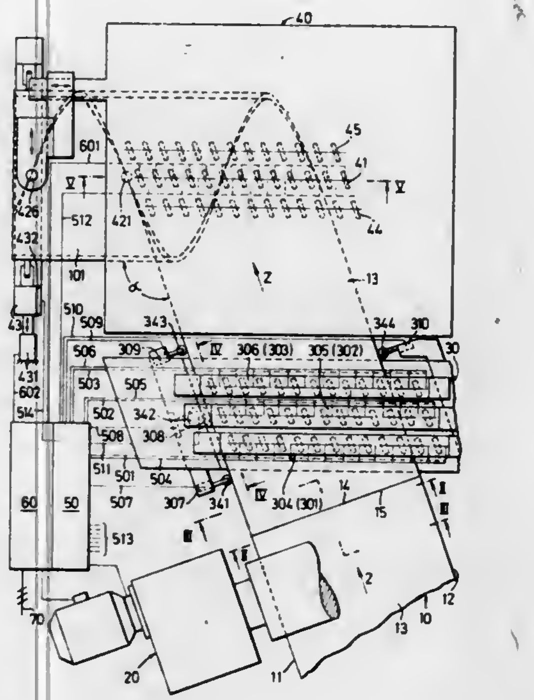
said sliding bolt being blocked against any longitudinal displacement upon false set permutation,

a locking slide means for blocking said sliding bolt, and

a control lever operatively connected to said locking slide and cooperating together with a peripheral face of said locking disc such, that said locking slide means enters into a position releasing said sliding bolt by said correctly set permutation.

3,845,645
METHOD AND APPARATUS FOR THE PRODUCTION OF HELICAL SEAM PIPE

Hans Gebauer, Dortmund-Herne, Germany, assignor to Hoesch Maschinenfabrik Deutschland Aktiengesellschaft, Dortmund, Germany
Filed Oct. 25, 1973, Ser. No. 409,719
Claims priority, application Germany, Oct. 28, 1972, 2253025
Int. Cl. B21c *37/083*
U.S. Cl. 72—12 **9 Claims**



1. A method for producing helical seam pipe from an endlessly welded metal strip, said metal strip being shaped into a generally cylindrical pipe in a pipe forming mechanism including a triad of bending rollers wherein one of said rollers is positioned on one side of said strip and two of said rollers are positioned on the opposite side of said strip, with pipe guide means arranged to engage said formed pipe to adjust the angular position thereof relative to said pipe forming mechanism, said method comprising the steps of feeding said strip to said pipe forming mechanism, measuring said strip prior to its entry into said pipe forming mechanism, deriving control signals from the measured values of said strip, applying said derived signals to control the operating positions of both said pipe forming mechanism and said pipe guide means, and delaying said application of said control signals for preselected periods corresponding to the time required for portions of said strip at which said measured values are taken to travel from said measuring location to said pipe forming mechanism and said pipe guide means, respectively.

3,845,646
DIAGONAL ROLLING MILL

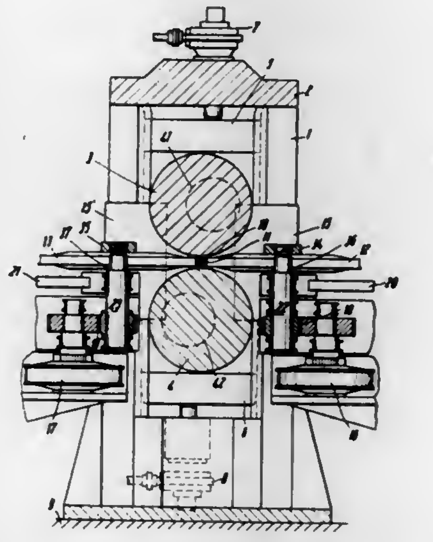
Manfred Bellmann, Breitscheid, and Gerd Pfeiffer, Mulheim, both of Germany, assignors to Mannesmannrohren-Werke Aktiengesellschaft, Dusseldorf, Germany
Filed Nov. 9, 1972, Ser. No. 305,087
Claims priority, application Germany, Nov. 11, 1971, 2156595
Int. Cl. B21d *37/12*
U.S. Cl. 72—100 **5 Claims**

1. In a diagonal rolling mill having a stand on a mill floor and a pair of rolls in a housing, the rolls being inclined to the axis of rolling in the pass as well as to each other, the improvement comprising:

the rolls of the pair arranged one above the other relative to the mill floor, the roll housing having lateral access openings for access to the pass from opposite sides;

a pair of guide disks each having an axis disposed in vertical orientation;

two pivot arms respectively for journalling the guide disks and being pivotably connected to the housing, one on each side of the pass for pivoting on vertical axes and for displacing the disks in horizontal direction in the level of and laterally with respect to the pass, towards and away therefrom upon pivoting of the arms in one or the opposite direction, so that the disks respectively reach into the pass through said openings for engaging a billet when worked in the pass by the rolls or are removed from such engagement;



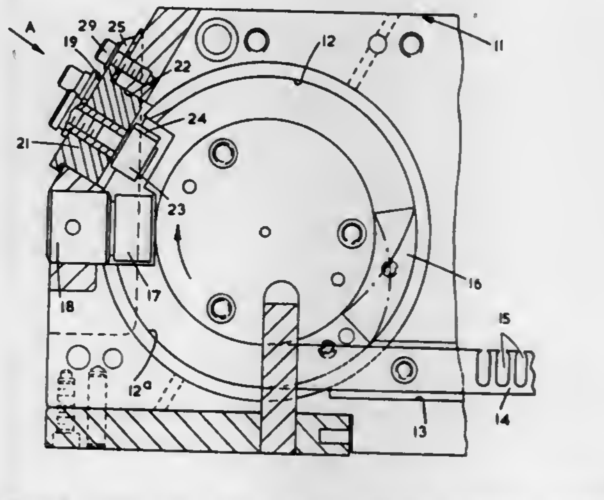
means for pivotally adjusting the arms for adjustment of the disks as to engagement with the billet and for holding the arms in an adjusted disposition, wherein the disks engage the billet;

means for releasably locking the arms in an adjusted disposition, the arms upon being released being permitted to swing the disks out of engagement with the billet; and

drive means on the arms for driving the disks.

3,845,647
STATOR ASSEMBLIES FOR DYNAMO ELECTRIC MACHINES

Robert Cockin, Quarry Bank, near Brierley Hill, England, assignor to Joseph Lucas (Electrical) Limited, Birmingham, England
Filed Oct. 10, 1972, Ser. No. 296,158
Claims priority, application Great Britain, Oct. 8, 1971, 46851/71
Int. Cl. B21f *35/02*
U.S. Cl. 72—137 **7 Claims**



1. A method of forming a stator assembly for a dynamo electric machine, of the kind including a laminated member in

the form of a helically coiled metal strip, comprising, driving a metal strip into a former which coils the strip helically, and, imparting to the strip as it is coiled a set such that the convolutions of the coiled strip produced are biassed towards one another in an axial direction into facial contact with one another by their own inherent resilience, so that the helical coil of metal strip is produced in a collapsed condition, the set being imparted to the strip by deflecting the strip relative to its initial plane during passage through the former.

3,845,648
CANTILEVER BENDING HEAD OF A TUBE BENDING MACHINE

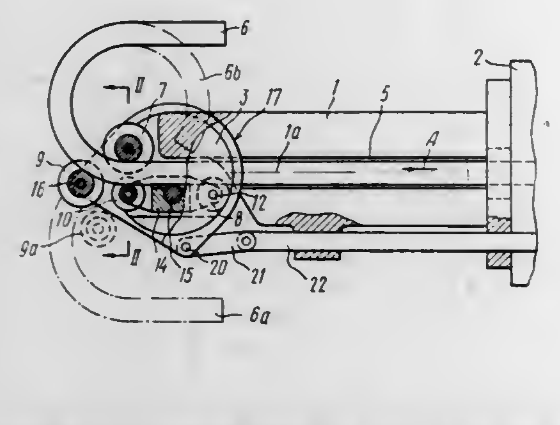
Vladimir Nikolaevich Shubin, Pervomaiskaya ulitsa, 1, kv. 103; Viktor Sergeevich Silantiev, Kastanaevskaya ulitsa, 57, korpus 1, kv. 58; Alexandr Sergeevich Khlyntsev, Kolenchataya ulitsa, 4-a, kv. 8, and Antonina Petrovna Barsova, Sheremetievskaya ulitsa, 67, korpus 2, kv. 5, all of Moscow, U.S.S.R.

Filed Nov. 14, 1973, Ser. No. 415,660

Claims priority, application U.S.S.R., Nov. 30, 1972, 1851659

Int. Cl. B21d *7/08*

U.S. Cl. 72—173 **2 Claims**



1. A cantilever bending head for tube bending machines having drive means, comprising: a casing with lateral walls and an axial, longitudinal passway for the tubes; two coaxial discs secured in a cantilever fashion to said walls by their inner faces so that the axis of said discs is perpendicular to the axis of said casing; bending means including a backup roll secured immovably between said discs on one side of said casing axis, for bending the tubes around it; a supporting roll between said discs on the other side of said casing axis, to assume a reaction force developing in the course of bending; a turnable lever adjusted to turn in a bending plane, kinematically coupled with said drive means and having two parallel cheeks which have two coaxial through holes whose diameter is equal to that of said discs, and by which holes said cheeks are set on respective ones of said discs to be flush with both of said faces; and a bending roll secured between said cheeks of the lever.

3,845,649
TUBE PRODUCTION

Josef Gerretz, Viersen; Paul Joeres, Monchengladbach, and Fritz Zeunert, Rheydt, all of Germany, assignors to Wean United, Inc., Pittsburgh, Pa.

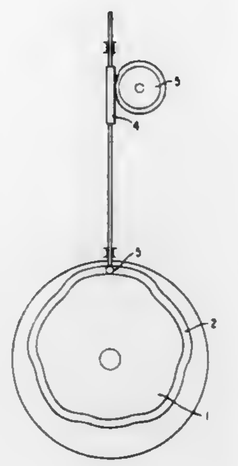
Filed July 5, 1973, Ser. No. 376,838

Int. Cl. B21b *21/06, 17/00*

U.S. Cl. 72—189 **5 Claims**

1. A method of producing tubes from tube billets by cold reduction by a cooperative pair of roll dies of a pilger mill, the steps of:

intermittently rotating the tubes about their major axis and fro through a predetermined angle, said first rotation being one or more times in one direction and thereafter the rotation being one or more times in the opposite direction and wherein said rotation takes place during the periods of the cold reduction operation when the tubes are free of said roll dies.



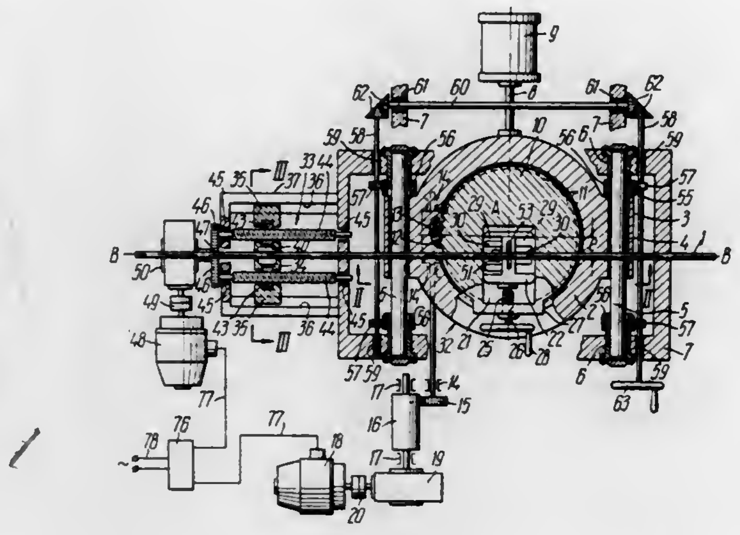
3,845,650
MACHINE FOR MANUFACTURING A COIL OF A PIPE BY BENDING IT

Boris Mikhailovich Romanov, Universitetsky prospekt 5, kv. 11; Evgeny Nikolaevich Moshnin, ul. Akademika Pavlova 50, kv. 5; Stanislav Ivanovich Yanov, ul. I. Susanina 6, korpus 1, kv. 12; Vladimir Zakharovich Gurevich, Yasny proezd 4, korpus 1, kv. 20, all of Moscow, and Viktor Ivanovich Ryabokobylenko, ul. Popova, 18, kv. 37, Belgorod, all of U.S.S.R.

Filed Jan. 19, 1973, Ser. No. 325,196

Int. Cl. B21d *11/07*

U.S. Cl. 72—310 **13 Claims**



1. A machine for manufacturing a coiled pipe by bending the latter, comprising: a turntable rotating alternately clockwise and anticlockwise under the action of said pipe and adapted to effect additional movement at right angles to the longitudinal axis of said pipe; means for imparting said additional movement to sai turntable in two mutually opposite directions; at least two clamps having jaws being provided on said turntable and mounted so that a gap formed by a pair of jaws in one said clamp is in coaxial alignment with a similar gap of the other clamp while the machine is inoperative, said clamps being adapted to alternately engage said pipe after each rotation of said turntable; means in each of said clamps for raising and lowering movable parts thereof carrying the

jaws; means for braking the rotational speed of said turntable, said last-mentioned means together with said turntable, said means for moving the turntable at right angles to the longitudinal axis of the pipe, and said clamps, forming a bending mechanism; heating means mounted on a stationary base between said clamps and adapted to heat said pipe in the zones of formation of the U-bends of the coil; a guiding sleeve mounted on said stationary base adjacent said heating means and adapted to facilitate passing there-through of said pipe toward said heating means while concurrently absorbing reaction forces produced by the bending of said pipe; means for moving said pipe along its longitudinal axis toward said bending mechanism and interacting with said means for braking the rotations of said turntable in response to the action of said means for axially moving said pipe, the latter means imparting motion to said turntable through the medium of said pipe due to the latter being fixed in one of said clamps; said pipe being bent in response to successively fixing said pipe in one of said clamps on said turntable, heating said pipe in the zone of formation of the future U-bend, moving said pipe along its longitudinal axis by said means for its axial movement and braking said turntable by said braking means as this table rotates under the action of said means for moving said pipe along its longitudinal axis, said turntable being rotated through the medium of this pipe and the braking of the table being necessary in order to build up the required axial compression of said pipe so as to prevent or reduce the thinning of its walls in the zone of formation of said U-bend; after completing the formation of this U-bend and releasing said pipe from said clamp, shifting said turntable at right angles to the longitudinal axis of said pipe and then advancing the latter toward said bending mechanism and fixing it in the other clamp, whereupon all said operations are resumed in the above-described succession.

3,845,651
METHOD AND DEVICE FOR THE PRECISION SHAPING OF A METAL PART

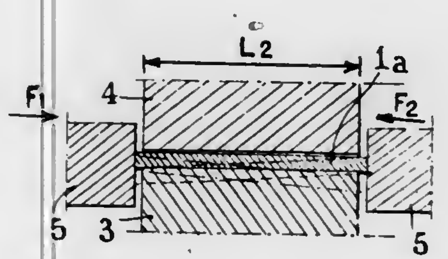
Jean-Baptiste Paul Vau, 7 Avenue Berthet, 95 Sannois, France

Filed Dec. 13, 1972, Ser. No. 314,677

Claims priority, application France, Dec. 13, 1971, 71.44681

Int. Cl. B21j *5/02*

U.S. Cl. 72—332 **2 Claims**



1. A method of forming and stress-relieving a sheet-metal blank comprising the steps of:

a. pressing a sheet-metal blank, having a length between 1 and 10 percent greater than that of the finished article to be produced, in a die cavity between a pair of dies relatively movable transversely to said blank to bend said blank and apply bending stress thereto, while confining said blank in a die cavity having a width and thickness corresponding to that of said article and slightly exceeding at all points those of said blank by causing said dies to engage respective abutments, at least one edge of said blank projecting laterally from said cavity; and
b. pressing a tool into said edge to upset said blank and cause the material thereof to fill said cavity by swelling, thereby relieving said bending stress.

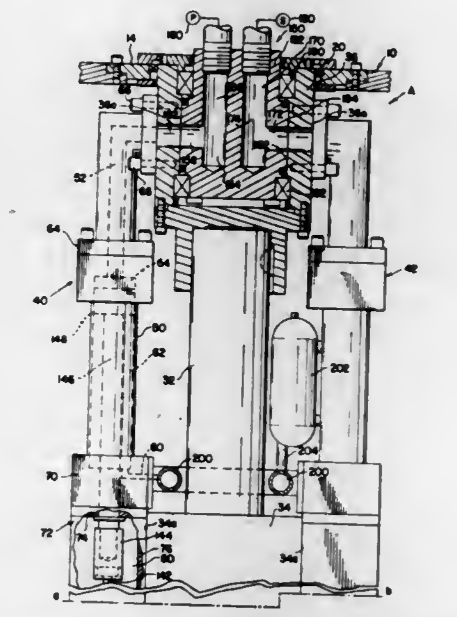
3,845,652
ROTARY HYDRAULIC PRESS

Anatol Michelson, Media, and Clifford Pace, Chester, both of Pa., assignors to Gulf & Western Manufacturing Company, Hastings, Mich.

Filed Oct. 2, 1973, Ser. No. 402,847

Int. Cl. B21d *22/28*

U.S. Cl. 72—349 **9 Claims**



1. A rotary hydraulic press comprising, in combination: a support shaft; means for rotating said shaft about its axis; a plurality of work stations circumferentially spaced around said axis and mounted to rotate with said shaft; each of said stations comprising a cylinder with an internal power piston, a first chamber on one side of said piston and a second chamber on the other side of said piston, a first port means communicated with said first chamber, a second port means communicated with said second chamber, means for supporting a first tool on said cylinder; means for supporting a second tool on said piston and between said cylinder and said means for supporting said first tool, and means for drivingly connecting said cylinder onto said shaft; and valve means for selectively connecting said first port with a source of fluid under pressure, said valve means including a generally stationary element having a two ended port with one end connected with said source and means for rotating said first port means into and out of communication with said other end of said two ended port whereby said second tool is driven toward said first tool.

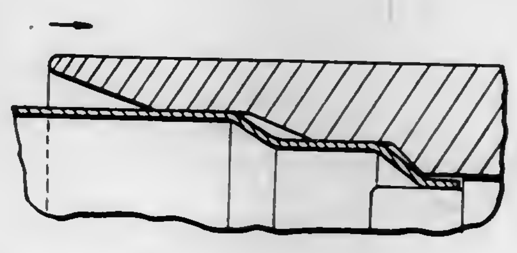
3,845,653
DOUBLE STAGE NECKING

John T. Hilgenbrink, Oak Lawn, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 126,681, March 22, 1971, Pat. No. 3,786,957. This application Jan. 5, 1973, Ser. No. 321,224

Int. Cl. B21d *19/02*

U.S. Cl. 72—354 **1 Claim**



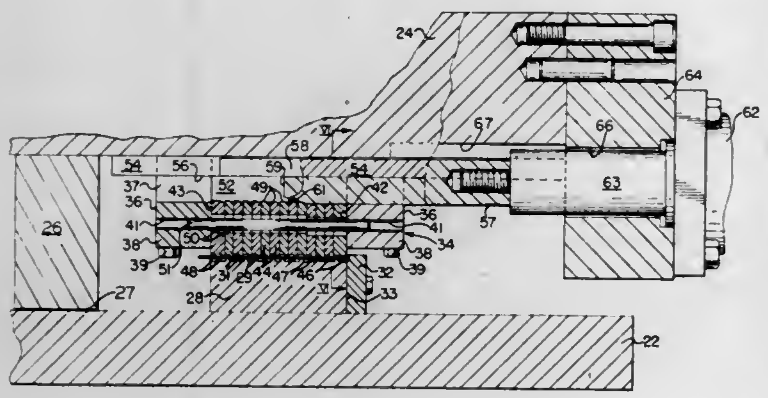
1. A method of necking-in thin wall can bodies to a degree heretofore impossible comprising the steps of necking-in an elongated end portion of a can body to a degree materially less than the desired degree of necking-in and then in a separate operation utilizing only an external die and a plug die further necking-in said previously necked-in portion to the desired degree, said further necking-in step being performed on a free

end portion only of said necked-in elongated end portion said necked-in end portion includes an elongated cylindrical part, and said can body is supported adjacent said necked-in end portion during the further necking-in step and said necked-in end portion cylindrical part is separately supported during said further necking-in step adjacent that part of said necked-in portion being further necked-in.

3,845,654
DIE FORMING APPARATUS

Francis W. Fuller, Peoria; Samuel L. Melvin, Morton, and Paul H. Merritt, East Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed July 13, 1973, Ser. No. 379,402
Int. Cl. B21d *5/02*
U.S. Cl. 72—381 18 Claims



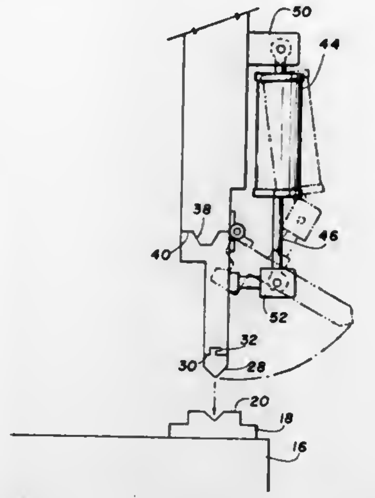
1. A die forming apparatus for forming a multiplicity of corrugations in a workpiece of substantially flat sheet material, comprising;
  a stationary die;
  a movable die disposed in opposing relation to said stationary die and movable toward and away from said stationary die between a workpiece loading and unloading position and a forming position, said movable die having a plurality of die members disposed for individual movement toward said stationary die when said movable die is in said forming position and for unitary movement to said loading and unloading position; and
  powered means operatively associated with said movable die for powerably moving said die members individually sucessively toward said other die so that each of such corrugations is positively and fully formed in each area of engagement by each of said die members progressively from one end of the workpiece to the other unformed end to permit substantially unrestrained gathering of the workpiece from the unformed end with all of the corrugations formed in the workpiece in a single cycle of said powered means.

3,845,655
PRESS BRAKES

Adrian H. Krieg, Yorktown, N.Y., assignor to Widder Corporation, Mamaroneck, N.Y.

Filed Sept. 18, 1972, Ser. No. 290,096
Int. Cl. B21j *13/02*
U.S. Cl. 72—389 4 Claims

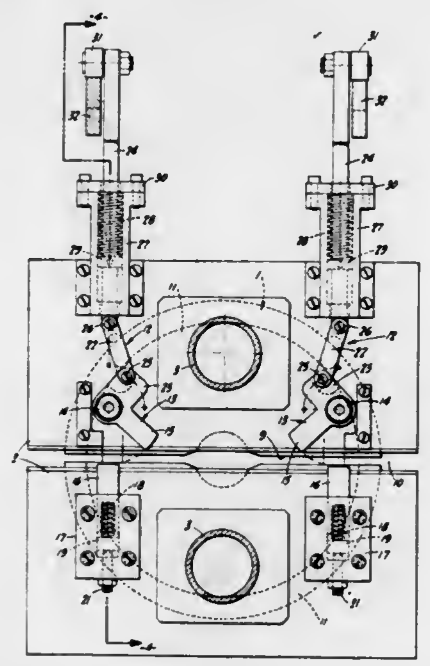
1. A brake press comprising a frame, an elongated top beam and a bottom beam, said top beam being mounted in said frame to have a bottom edge movable in a vertical plane toward and away from said bottom beam, a tool having an upper edge substantially coextensive with the bottom edge of said top beam for engaging a workpiece, hinge means attached to the upper edge of said tool and the lower edge of said top beam pivotally connected to said tool and top beam for conjoint movement therewith and for swinging movement relative thereto and means for moving said tool about said hinge into and out of the plan of said top beam movement.



3,845,656
DIE-STABILIZING MECHANISM FOR A SPLIT FLANGING DIE UNIT

Harry C. Spaan, Stockton, Calif., assignor to Carando Machine Works, Stockton, Calif.

Filed Jan. 2, 1974, Ser. No. 430,034
Int. Cl. B21d *41/02*
U.S. Cl. 72—392 10 Claims

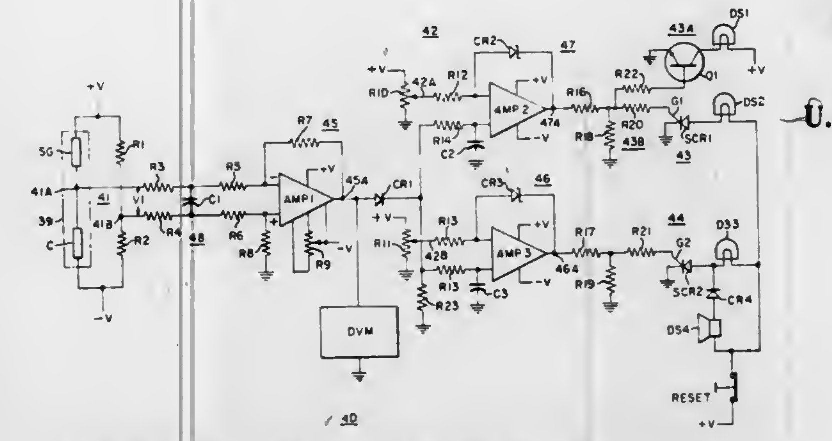


1. A die-stabilizing mechanism for a flanging die unit power-movable between a lowered position with a cylindrical sheet metal body pre-positioned in alinement thereabove and a raised position engaging in the adjacent end of said body to form an out-turned flange thereon, the die unit embodying die halves which together define a horizontal slot through the die unit, and there being power-advanced body-engaging pusher fingers which pass through the slot when the die unit is in lowered position but are clear of the slot when the die unit is in raised position; the die-stabilizing mechanism including a stop mounted in connection with the die unit to one side of the slot, a blocking member mounted in connection with the die unit to the other side of the slot, said blocking member being movable between a non-working position clear of the slot when the die unit is in lowered position and a working position spanning the slot below the die halves and engaging the slot whereby to then block said die halves against deflection toward each other when the die unit is in raised position, and means associated with the die unit operative to cause movement of said blocking member from its non-working position to its working position in response to movement of said die unit from its lowered position to its raised position.

3,845,657
SURVEILLANCE SYSTEM INCLUDING MEANS FOR DETECTING IMPENDING FAILURE IN HIGH PRESSURE, HIGH TEMPERATURE FLUID CONDUCTING PIPES

William G. Hall, and Paul F. Pittman, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 4, 1972, Ser. No. 223,562
Int. Cl. G01b *7/18*
U.S. Cl. 73—88.5 R 8 Claims

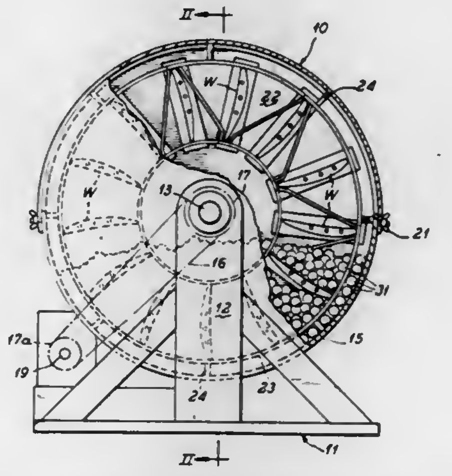


1. A monitoring system for predicting structural failure in a member subject to stress by sensing strain, comprising sensing means for sensing strain disposed proximate to said member in a region of potential strain, said sensing means having an output terminal, said sensing means providing a voltage signal at said output terminal in relation to the amount of strain sensed in said member, a high level signal detector and a low level signal detector each comprising a differential operational amplifier, each said operational amplifier having an input terminal which is connected to said output terminal of said sensing means, each said high level signal detector and said low level signal detector not being interconnected, warning means, said warning means comprising a high level warning means and a low level warning means connected to the output of said high level operational amplifier and said low level operational amplifier respectively, said output voltage signal from said sensing means being provided to said high level operational amplifier and said low level operational amplifier substantially simultaneously, said low level operational amplifier actuating said low level warning means when said strain in said member is of a first predetermined value, said high level operational amplifier actuating said high level warning means when said strain in said member is of a second relatively larger predetermined value, said input terminal of said high level operational amplifier being maintainable at an adjustable voltage potential relative to a fixed voltage potential to generally fix said second relatively larger predetermined value of strain in said member at which said high level warning means is actuated, said input terminal of said low level operational amplifier being maintainable at an adjustable voltage potential relative to a fixed voltage potential to generally fix said first predetermined value of strain in said member at which said low level warning means is actuated, said low level warning means comprising first and second low level warning sections, said first low level warning section comprising a first low level warning section electrical valve and a first low level warning section illuminating means with power supply means, wherein said latter two means are interconnected electrically, wherein output electrical current from said low level operational amplifier actuates said last mentioned valve to cause said last mentioned illuminating means to visually indicate the presence of said first predetermined value of the strain in said member, said second low level warning section comprising a reset means, a second low level warning section electrical valve, and a second low level warning section illuminating means with power supply means, wherein said latter two means are interconnected electrically, wherein output electrical current from said low level operational amplifier actuates said last mentioned valve to cause said last mentioned illuminating means to visually indicate the presence of said first predetermined value of said strain in said member and to continue to indicate the presence of said first predetermined value of said strain in said member until reset by said reset means.

3,845,658
METHOD OF DETECTING FLAWS IN THE EXTERIOR SURFACES OF HOLLOW WORKPIECES

Edward F. Conway, Arlington Heights, and Kenneth F. Conner, Lombard, both of Ill., assignors to Magnaflux Corporation, Chicago, Ill.

Filed June 22, 1973, Ser. No. 372,659
Int. Cl. G01n *19/08*
U.S. Cl. 73—104 9 Claims



1. In a liquid penetrant method of detecting flaws in the external surface of a hollow workpiece; the improvement whereby said liquid penetrant is substantially prevented from entering into the hollow of said workpiece, said improvement comprising
  coating relatively large sized particles with an amount of said liquid penetrant insufficient to cause free-flowing of said penetrant coating off of said particles,
  effecting surface contact and relative movement between said coated particles and said workpiece to transfer a portion of said coating to said external surface sufficient to give an indication of flaws therein if present,
  the smallest of said particles being too large to enter into the hollow of said workpiece, and
  testing said coated external surface for said flaws.

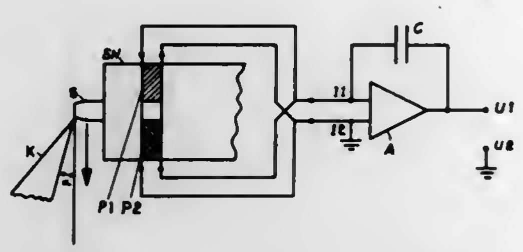
3,845,659
MICROTOME HAVING ELECTRO-MECHANICAL KNIFE CONTROLLING MEANS

Per Wikefeldt, and Eskil Rautio, both of Spanga, Sweden, assignors to LKB Produkter AB, Bromma, Sweden

Filed June 16, 1972, Ser. No. 263,653
Claims priority, application Sweden, June 30, 1971, 8447/71
Int. Cl. G01l *5/00*
U.S. Cl. 73—133 R 4 Claims

1. In a microtome means of the type comprising two assemblies, and means for moving one of said assemblies with respect to the other of said two assemblies, one of said assemblies including support means for a specimen to be sectioned, the other of the assemblies including support means for a knife for sectioning said specimen, one of said support means in-

cluding two piezoelectric crystals, one of the crystals being mounted to absorb compressive force during said relative movement, the other of said crystals being mounted to absorb tractive force during said relative movement, electrical current integrating means and circuit means connecting said piezoelectric crystals with said integrating means in electrical opposition to each other, said integrating means generating a signal indicating the total charge generated by said crystals resulting from said relative movement while sectioning a specimen.



3,845,660

DETECTION OF VELOCITIES OF FLUIDS IN CONDUITS

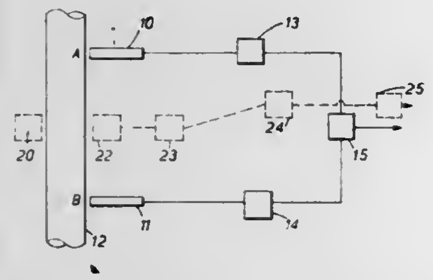
Neil Patrick Hugh McDonnell, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jan. 25, 1972, Ser. No. 220,655

Claims priority, application Great Britain, Feb. 5, 1971, 4035/71; Apr. 5, 1971, 8658/71; Oct. 20, 1971, 48714/71

Int. Cl. G01f *1/00*

U.S. Cl. 73—194 E **2 Claims**



1. Apparatus for detecting the velocity of a fluid in a conduit which comprises two directional sonic detectors directed toward the conduit at two points spaced apart along the conduit but of which the sound sensitive elements are spaced away from the conduit and means for matching signals received from the two points at different time lags between them to determine the time lag which gives the best match.

3,845,661

DEVICE FOR SECURING A TEMPERATURE SENSOR TO A VESSEL WALL

Walter Hollweck; Wilhelm Schnee; Karlheinz Eberl, and Kurt Wagner, all of Nurnberg, Germany, assignors to Inter Control Herman Kohler Elektrik GmbH & Co. KG, Nurnberg, Germany

Filed July 20, 1973, Ser. No. 381,249

Claims priority, application Germany, July 20, 1972, 2235676

Int. Cl. G01k *1/14*

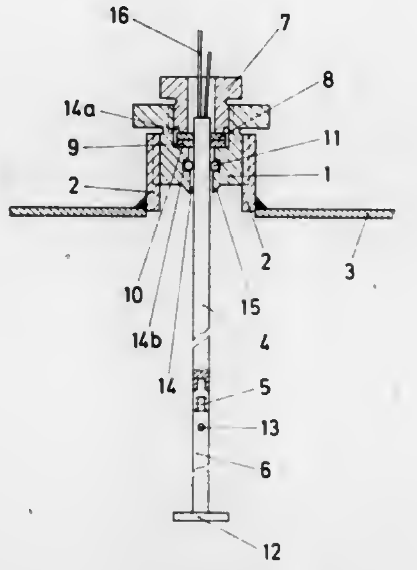
U.S. Cl. 73—343 R **19 Claims**

1. A device for securing a temperature sensor to a vessel wall, wherein the temperature sensor projects through an opening in the wall into the vessel to be surrounded and directly contacted by a medium contained in the vessel, comprising in combination:

a. holding means supported by said vessel wall for positioning and carrying said temperature sensor in an operative position thereof;

b. sealing means disposed in said holding means for surrounding and engaging said temperature sensor in the operative position of the latter to provide a fluid tight seal between the inside and the outside of said vessel, said temperature sensor and said sealing means being arranged for a removal of said temperature sensor from its said operative position by sliding through and out of said sealing means;

c. a plug member secured to and carried by said temperature sensor, said plug member being in an inoperative position within said vessel spaced from said sealing means as long as said temperature sensor is in its operative position, said plug member being arranged for movement into an operative position by said temperature sensor upon withdrawal of the latter from said sealing means, at least one part of said sealing means surrounding and engaging said plug member in the operative position of the latter to provide a fluid tight seal between the inside and the outside of said vessel; and



d. disconnectable means for releasably securing said temperature sensor to said plug member, whereby said temperature sensor is separable from said plug member for entirely disconnecting said temperature sensor from said vessel while leaving said plug member in its operative position.

3,845,662

METHOD OF AND MEANS FOR DETERMINING THE THRESHOLD OF SURFACE TEMPERATURES OF HEATED ELEMENTS OF MACHINES, ARTICLES AND OTHER EQUIPMENT

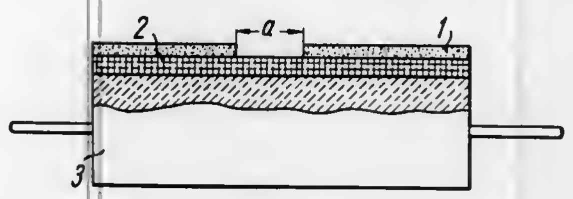
Ninel Leonidovna Surgina, ulitsa Bolotnaya, 11, kv. 77, Leningrad; Ljudmila Ivanovna Gurevich, ploschad Lenina, 8/8, kv. 22, Leningrad; Larisa Nikolaevna Yanchenko, naberezhnaya reki Karpovki, 21, kv. 8, Leningrad; Tamara Alexandrovna Bei, ulitsaltd Shmidta, 8, kv. 29, Gatchina, and Valentin Nikolaevich Baikov, V.O. Bolshoi prospekt, 33, kv. 10, Leningrad, all of U.S.S.R.

Filed Mar. 24, 1970, Ser. No. 22,401

Int. Cl. G01k *11/06*

U.S. Cl. 73—358 **4 Claims**

1. A method for determining the threshold of the surface temperature of an object which comprises applying to the surface of the object a thermosensitive coating composition consisting essentially of a 15–25 percent suspension of stearic acid and iron stearate in alcohol, taken in the proportion of 1:1, said composition capable of melting when heated to 68°–72° C. as a result of which the color of the object upon which said coating is applied appears, and the appearance of this color is indicative that the surface of said object has attained a temperature not lower than 68°–72° C.



ERRATUM

For Class 73—359 see:
Patent No. 3,845,706

3,845,663

BICYCLE EXERCISER WITH WORK INDICATOR STRUCTURE

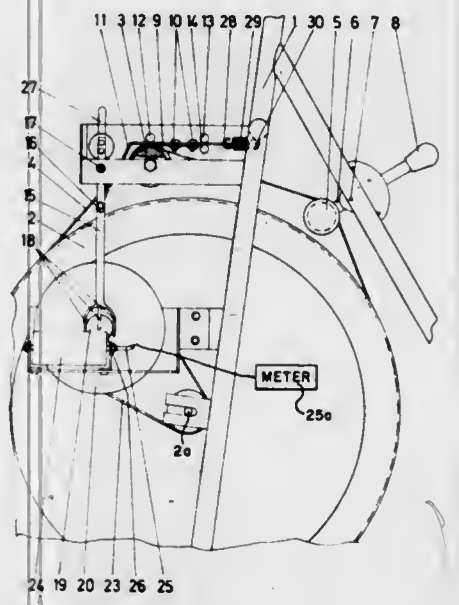
Folke Ivar Blomberg, Lidingo, and Marten Engerstam, Huddinge, both of Sweden, assignors to Monark-Crescent AB, Varberg, Sweden

Filed Nov. 6, 1972, Ser. No. 303,948

Claims priority, application Sweden, Nov. 11, 1971, 14411/71

Int. Cl. G01l *5/02*

U.S. Cl. 73—379 **4 Claims**



1. A bicycle exerciser or ergometer comprising an input disc-shaped member rotated by pedaling, an output rotatable cylindrical member, ball means disposed between and in frictional contact with said disc-shaped member and said cylindrical member, said cylindrical member being parallel to the surface of said disc-shaped member which is contacted by said ball means, means for braking the rotation of said disc-shaped member, means responsive to said braking means to move said ball means toward or away from the axis of rotation of said disc-shaped member while maintaining said ball means in frictional contact with said disc-shaped member and with said cylindrical member to rotate said cylindrical member, and means responsive to rotation of said cylindrical member to indicate the work performed to rotate said disc-shaped member against the operation of said braking means, said moving means comprising a pendulum arm mounted for vertical swinging movement about a horizontal axis, means responsive to said braking means to swing said pendulum arm, said pendulum arm having claws at the lower end thereof clasping said ball means but leaving said ball means free to rotate.

3,845,664

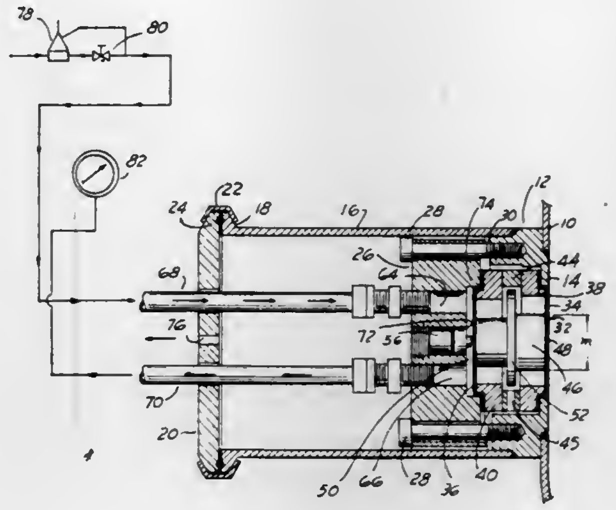
PRESSURE TRANSDUCER

Joseph A. Perry, Jr., 1815 Eleanor Ave., Saint Paul, Minn. 55116

Filed Dec. 26, 1972, Ser. No. 318,249

Int. Cl. G01l *7/08*

U.S. Cl. 73—406 **3 Claims**

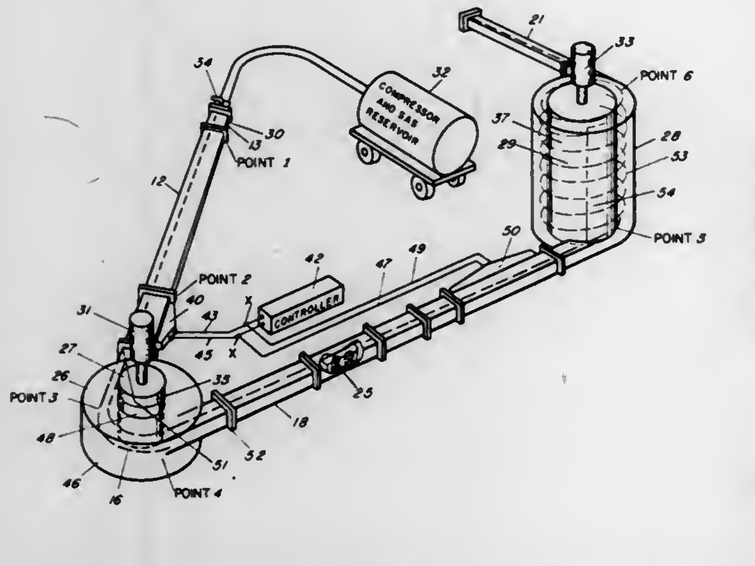


1. A pressure transducer for measuring the pressure of a fluid product confined in a receptacle such as a tank, pipe, or the like, said transducer comprising a mounting member for affixing the transducer to said receptacle, said member having a circular opening therein to provide for contact between the product in said receptacle and the transducer, a main body member removably affixed to said mounting member and defining a space therebetween, a pressure range capsule positioned in said space and removably held in place when said main body member is affixed to said mounting member, said capsule being replaceable by first removing said main body member from said mounting member, said capsule including a first thin, flexible and stretchable diaphragm having a first side exposed to said fluid product and against which first side the pressure of said fluid product is exerted, said capsule having a first annular projection thereon defining an opening over which said first diaphragm is stretched, the difference between the diameter of the circular opening in said mounting member and the outer diameter of said annular projection being less than the thickness of said first diaphragm, the said capsule also including a second thin, flexible and stretchable diaphragm spaced from said first diaphragm and having a first side facing the direction opposite and away from the first side of said first diaphragm, said capsule having a second annular projection defining an opening over which said second diaphragm is stretched, a force button positioned between the first and second diaphragms and having a first force area engaged with said first diaphragm and a second force area engaged with said second diaphragm, said first and second force areas of said force button being less than the areas of the respective openings over which said first and second diaphragms are stretched, said force button cooperating with said diaphragms to provide effective areas against which fluid forces can act which effective areas are determined by the size of the force areas of said force button, said second diaphragm sealingly engaging said main body member to define an enclosed space with the first side of said second diaphragm defining a portion of said space, a nozzle in said main body member having an exhaust passageway communicating with said enclosed space with one end of said exhaust passageway terminating in said enclosed space adjacent the first side of said second diaphragm, inlet means extending through said main body member and communicating with said enclosed space for supplying an applied fluid under controlled pressure against the first side of said second diaphragm, outlet means extending through said main body member and communicating with said enclosed space for exhausting the applied fluid from said enclosed space, said second diaphragm being inter-

mittently engageable with said nozzle to close off the exhaust passageway of said nozzle whenever said second diaphragm is in engagement with said nozzle, and said capsule being replaceable in said transducer by removing said main body member from said mounting member.

3,845,665
TESTING METHOD AND APPARATUS FOR SIMULATING ACCELERATION FUNCTIONS

Joseph G. Cappetta, Dover, and Steven H. Langdo, Newton, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Continuation-in-part of Ser. No. 247,380, April 25, 1972, abandoned. This application Nov. 9, 1973, Ser. No. 414,563
Int. Cl. G01m *9/00*
U.S. Cl. 73—432 SD **8 Claims**

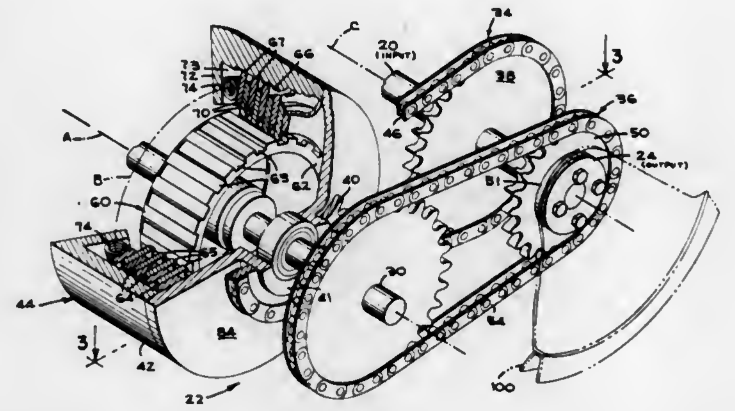


1. A testing method for simulating on a test piece acceleration environments characterized by the rapid turn on and off of a plurality of acceleration pulses which comprises:
  - mounting said test piece in a test fixture so that its normal flight axis is perpendicular to the direction of travel of said fixture;
  - propelling said fixture along a first linear path from a stationary position to a predetermined speed at the end of said path;
  - guiding said fixture having said speed into an arcuate path;
  - maintaining the speed of said test piece constant while said test piece is in said arcuate path so that said test piece has a constant radial acceleration;
  - guiding said test piece along a second linear path which forms a continuation of said arcuate path;
  - synchronizing the speed of said test piece with said predetermined speed at the ends of said first and second linear paths;
  - guiding said test piece into a circular helical path;
  - maintaining the speed of said test piece constant while said test piece is in said helical path for a number of revolutions depending upon a duration of constant radial acceleration simulation desired.

3,845,666
MULTI-SPEED MOTION TRANSMITTING MECHANISM

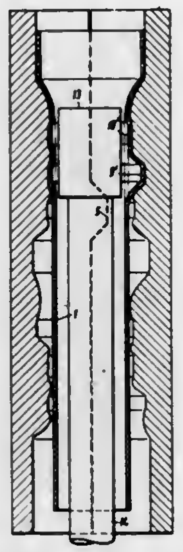
Stellios Antony Avramidis, Greenfield, Ind., assignor to FMC Corporation, San Jose, Calif.
Filed Oct. 2, 1972, Ser. No. 294,410
Int. Cl. F16h *5/46;* **F16d** *43/08;* **F01p** *7/04*
U.S. Cl. 74—336 **2 Claims**

1. A multi-speed motion transmitting mechanism comprising in combination: an input member mounted on an axis, an output member mounted on said axis, an auxiliary member, a normally engaged centrifugal clutch mounted on said auxiliary member, a first endless flexible motion transmitting member mounted between said input member and said centrifugal clutch to establish a driving connection between said input member and said auxiliary member when the speed of said input member is below a predetermined speed, a second endless flexible motion transmitting member mounted between said auxiliary member and said output member to establish a driving connection between said auxiliary member and said output member when said input member is below a predetermined speed, and an overrunning clutch on said axis between said input member and said output member to connect said output member directly to said input member for rotation at the same speed when said centrifugal clutch disengages as said input member reaches a predetermined speed.



3,845,667
FABRICATED TUBE CONTROL CAM SHAFTS

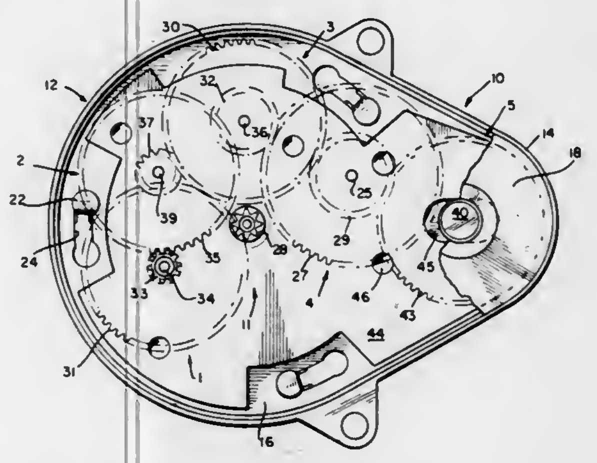
Kurt Honrath, Hoffnungsthal, and Wilhelm Naumann, Cologne Mulheim, both of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne-Deutz, Germany
Division of Ser. No. 274,746, July 24, 1972, which is a continuation of Ser. No. 15,781, March 2, 1970, abandoned. This application Dec. 11, 1972, Ser. No. 313,945
Claims priority, application Germany, Mar. 1, 1969, 1910517
Int. Cl. F16h *53/02*
U.S. Cl. 74—567 **2 Claims**



1. A hollow shaft entirely of uniform thickness with cam means thereon, especially a cam shaft for internal combustion engines, which comprises in combination a tubular member including cam means forming a single integral piece with and pressed out of said tubular member, integral bearing means pressed out of said tubular member having entirely uniform thickness continuously therewith, said cam means having inclined side flanks gradually merging integrally with adjacent areas of said cam means, said bearing means having lateral flanks gradually merging integrally with adjacent areas of said bearing means, said cam means having inclined side flanks gradually merging integrally with adjacent circumferential areas of said hollow shaft, said bearing areas having lateral flanks gradually merging integrally with adjacent circumferential areas of said hollow shaft, said cam means being pressed out with entirely uniform thickness as to the hollow shaft subjected to electromagnetic force as internal pressure thereby resulting in external-die-conforming deformation to assure uniform thickness of said cam means compared with the entire hollow shaft to assure strength for force transmittal by said cam means rather than weakening thereof which would occur with thinning in the area of the cam means now precluded from occurring to avoid disadvantages of brittleness and lack of strength.

3,845,668
CLUTCH AND GEAR TRAIN UTILIZING SAME

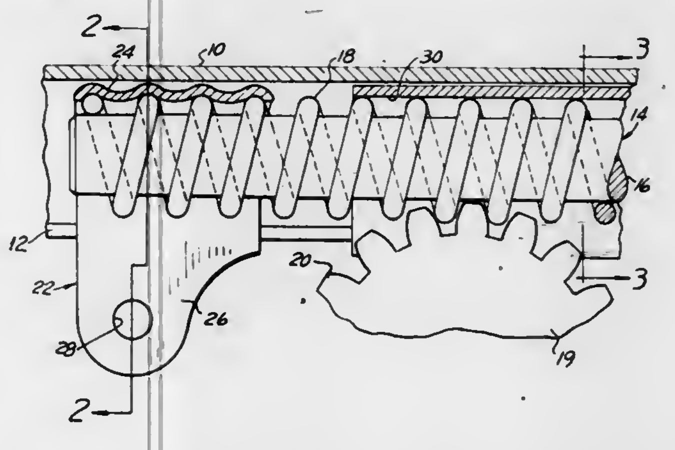
David W. Underwood, Clayton, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed Feb. 20, 1973, Ser. No. 333,620
Int. Cl. F16h *1/02;* **F16d** *11/00;* **G05g** *1/00*
U.S. Cl. 74—412 **16 Claims**



1. A gear train comprising:
   - a. an input gear,
   - b. an output, and
   - c. coupling means coupling said input to said output comprising a series of gears including a series of plastic gears and a series of metal gears, and a plastic gear and a metal gear carried on a common shaft, said plastic gear engaging a gear of said series of plastic gears and said metal gear engaging a metal gear of said series of metal gears.

3,845,669
ROTARY TO LINEAR MOTION CONVERTER

Joseph Pickles, Birmingham, Mich., assignor to Ferro Manufacturing Corporation, Detroit, Mich.
Filed Oct. 3, 1973, Ser. No. 403,215
Int. Cl. F16h *1/04, 55/04*
U.S. Cl. 74—422 **10 Claims**

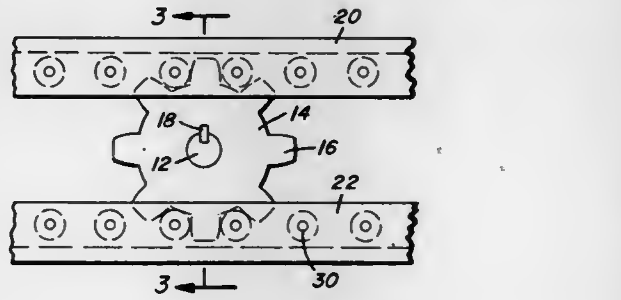


1. A rotary to linear motion converter comprising a relatively stiff but bendable elongated guide member of generally tubular configuration but having a narrow elongated slit extending longitudinally at one side thereof, a flexible generally cylindrical elongated core movable longitudinally within said guide member, said core having an elongated element helically wound on said core and forming a series of teeth along one side thereof and providing with said core a flexible rack constrained to move longitudinally within said guide member to follow bends and curvature thereof, a coupler comprising a plate shaped to extend around and attached to a portion of said flexible rack, and having a laterally extending arm movable longitudinally in and extending beyond said slit to connect to a device to be moved longitudinally of said guide member, said guide member having an internal diameter exceeding the external diameter of said helically wound elongated element by an amount slightly exceeding twice the thickness of said coupler to provide for free movement of said coupler longitudinally within said guide member, and a flexible sleeve surrounding the remainder of said flexible rack, said sleeve having a thickness approximately equal to that of the plate from which the coupler is formed so as to provide for free movement of the flexible rack and sleeve within said guide member and at the same time preventing bending or bowing of the flexible rack relative to said guide member.

3,845,670
TWIN DRIVE SYSTEM

Leonard W. Grayson, P.O. Box 965, Hamilton, Mont. 59840
Filed Sept. 24, 1973, Ser. No. 399,718
Int. Cl. F16h *55/06, 1/06*
U.S. Cl. 74—465 **9 Claims**

1. In combination, driven rotary shaft means journaled for rotation about a first axis, a pair of driven rings journaled for rotation about second and third parallel axes, said rings being axially spaced apart and including circumferentially spaced tooth defining rollers journaled therefrom, and drive transmission means including toothed drive wheel means drivingly connecting said rotary shaft means to said driven rings.

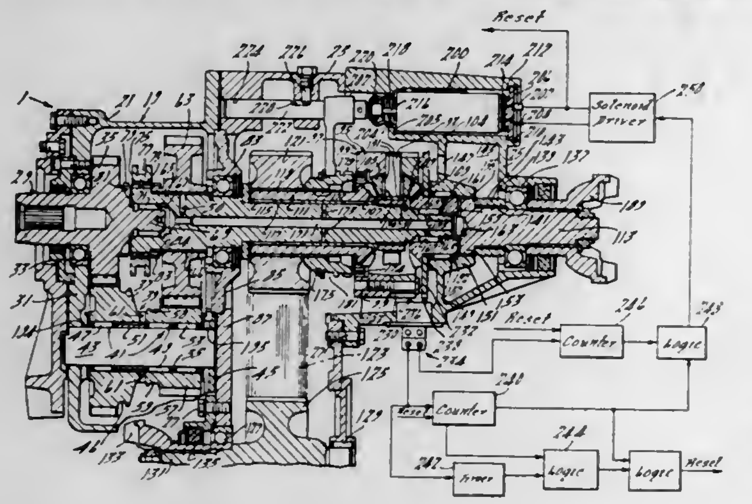


3,845,671
FULL TIME SLIP CONTROLLED FOUR WHEEL DRIVE

Ellis Alvin Sharp, New Orleans, La., and Courtney F. Dolan, Syracuse, N.Y., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Feb. 12, 1973, Ser. No. 331,456
Int. Cl. F16h *1/44*
U.S. Cl. 74—710.5 **4 Claims**

1. In a transfer case for power drive systems having a housing, an input shaft, a rear wheel output shaft and a front wheel output shaft rotatably mounted in said housing, a differential carrier, means connecting said input shaft to said differential carrier in a driving relationship, a pinion carried by said differential carrier, first and second side gears in mesh with said pinion on opposite sides thereof to permit rotation of said side gears at different speeds, said means for connecting said input shaft to said differential carrier includes a first drive gear connected to said input shaft, a gear cluster having a second drive gear in constant mesh with said first drive gear and a third drive gear, a fourth drive gear, an intermediate shaft mounting said fourth drive gear for rotation relative thereto,

said third drive gear being in constant mesh with said fourth drive gear, means connecting said intermediate shaft to said differential carrier, clutch means movable to three positions in one of which said first drive gear is coupled directly to said intermediate shaft, in a second of which said fourth drive gear is coupled to said intermediate shaft and in a third of which said input shaft is not drivingly connected to said intermediate shaft, bearing means rotatably supporting said input shaft in said intermediate shaft, and lubricating means on said cluster gear for supplying lubricant to said bearing means when said clutch means is in said second and third positions, means drivingly connecting said first side gear to said front wheel output shaft, said second side gear being connected to said rear wheel output shaft, locking means drivingly connected to one of said side gears adapted to be moved between a first position out of engagement with said differential carrier and in which said differential carrier may rotate relative to said side gears and a second position in engagement with said differential carrier for locking it to said one side gear for locking said differential carrier, pinions and side gears together, an input sensor coupled to said input shaft and responsive to the rotation thereof for generating a plurality of electrical signals, an input counter responsive to said electrical signals from said input sensor for developing a sampling signal at a predetermined count, an output sensor coupled to said output shaft and responsive to the rotation thereof for generating a plurality of electrical signals, an output counter responsive to said electrical signals from output sensor for developing a range signal between a pair of predetermined count values, a logic comparison network comprising a plurality of interconnected NAND gates for comparing said sampling signal and said range signal and generating a control signal when said sampling signal occurs in the absence of said range signal, and a solenoid connected to said locking means and responsive to said control signal to move said locking means to said second position.



3,845,672
DIFFERENTIAL DRIVE MECHANISM

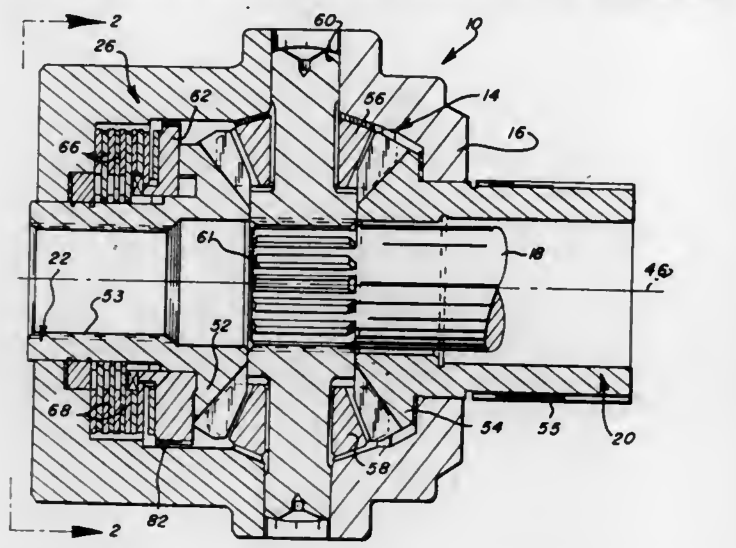
Edward J. Goscenski, Jr., Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 8, 1973, Ser. No. 413,936

Int. Cl. F16d *43/08;* **F16h** *1/44*

U.S. Cl. 74—711 **19 Claims**

1. A drive mechanism for interconnecting rotatable driving and driven members, said drive mechanism comprising gear means for transmitting drive forces between the driving and driven members and for enabling relative rotation to occur between the driving and driven members, rotatable carrier means connected with said gear means, said carrier means being rotatable about a first axis during the transmission of drive forces between the driving and driven members, clutch means operable between an engaged condition in which said clutch means is effective to retard relative rotation between said driving and driven members and a disengaged condition, and actuator means for effecting operation of said clutch means from the disengaged condition to the engaged condition in response to a predetermined rate of relative rotation between the driving and driven members, said actuator means being rotatable with said carrier means about said first axis and including a rotatable first flyweight, drive means for rotating said first flyweight about a second axis at a speed which varies as a function of variations in the speed of relative rotation between the driving and driven members, means for effecting operation of said clutch means from the disengaged condition to the engaged condition upon outward movement of said first flyweight away from said second axis, and means for preventing outward movement of said first flyweight away from said second axis under the influence of centrifugal force resulting from rotation of said first flyweight about said first axis with said carrier means and for enabling said first flyweight to move outwardly away from said second axis under the influence of centrifugal force resulting from rotation of said first flyweight about said second axis.



3,845,673
NUT RUNNER WITH PRESSURE MEANS TO HOLD TORQUE CLUTCH MEMBER DISENGAGED

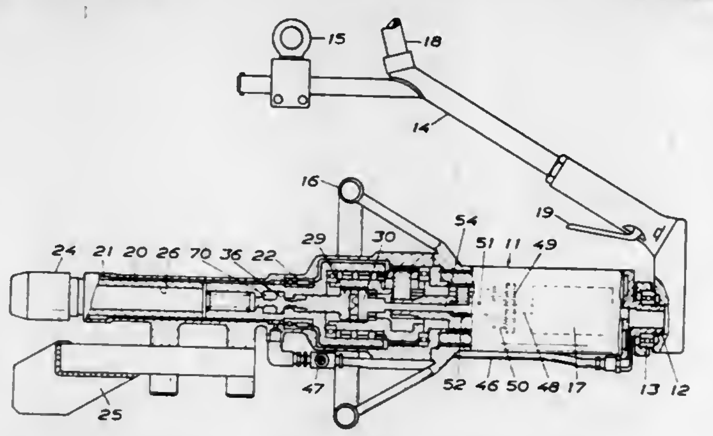
Karl Gosta Karden, Nacka; Sven Peter Johas Westerberg, Saltsjo-Boo, and Klas Johan Astrom, Danderyd, all of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Mar. 29, 1973, Ser. No. 346,109

Claims priority, application Sweden, Apr. 4, 1972, 4308/72

Int. Cl. F16h *3/74;* **F16d** *43/286;* **B25b** *23/14*

U.S. Cl. 74—751 **11 Claims**



1. A torque controlled nut runner comprising:
a fluid motor;
a driving shaft coupled to said fluid motor;
an output shaft connected to be rotated by said fluid motor on the one hand through a low torque clutch of the kind that disengages when the torque transmitted therethrough reaches a pre-determined value and on the other hand through a gearing and a one-way clutch that automatically takes over the transmission of torque when the low torque clutch disengages;
said low torque clutch including a driving clutch member connected to co-rotate with said driving shaft and a driven clutch member connected to co-rotate with said output shaft, one of said clutch members being axially movable relative to its associated shaft between a position in which it is engaged with the other of said clutch members and s disengaged position;
a cylinder formed within the shaft that is associated with said movable clutch member;
a piston axially movably mounted within said shaft cylinder and defining a cylinder chamber with said cylinder, said piston being coupled to said movable clutch member so as to positively hold said movable clutch member disengaged when said cylinder chamber is pressurized; and
means coupled to said cylinder chamber for pressurizing said cylinder chamber in response to a disengaging movement of said movable clutch member in response to the torque reaching said pre-determined value.

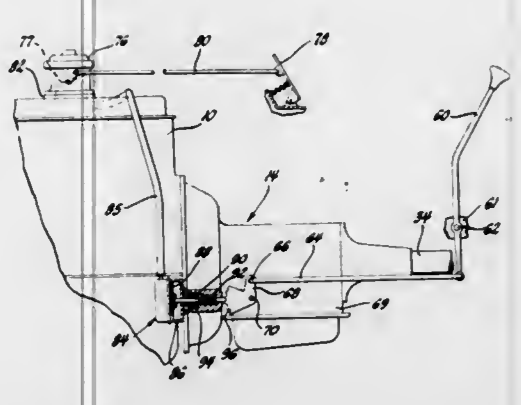
3,845,674
TRANSMISSION CONTROLS FOR LOW TORQUE SHIFTING

Gilbert K. Hause, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detriot, Mich.

Filed Nov. 24, 1972, Ser. No. 309,140

Int. Cl. F16h *57/06*

U.S. Cl. 74—878 **3 Claims**



1. In combination an internal combustion engine, a carburetor, said carburetor having throttle valve means movable between closed and wide open valve positions to control the output torque of said engine by controlling the fuel air mixture fed to said engine, a variable vacuum source provided by said engine controlled by said throttle valve means, control means for said throttle valve means movable between first and second positions corresponding respectively to the closed and wide open positions of said throttle valve means, a change speed transmission, torque transmitting fluid unit means operatively connecting said engine to said transmission for continuously transmitting engine torque to said engine for all positions of said throttle valve means, manually operated shift lever means operatively connected to said transmission, pivot means mounting said lever means for turning movement to different predetermined positions to change the speed ratios of said transmission, a transmission selector detent plate, means operatively connecting said detent plate to said shift lever means, shiftable locking plunger means supported adjacent to said detent plate for engaging said detent plate, spring means for urging said locking plunger means into locking engagement with said detent plate to prevent movement of said detent plate and said shift lever means, and pneumatic diaphragm means directly and continuously operatively connected to said vacuum source and directly connected to said locking plunger means for shifting said locking plunger means from locking engagement with said detent plate in response to movement of said throttle valve control means to said first position corresponding to the closed position of said throttle valve to permit said shift lever means to be subsequently moved to one of said predetermined positions to change the speed ratio of said transmission.

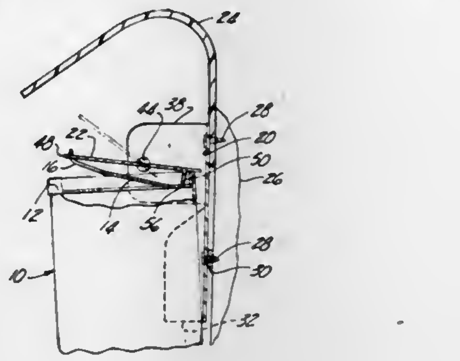
3,845,675
TAB TOP CAN OPENER

Wallace H. Cook, 5279 Carrigan Rd., North Street, Mich. 48049

Filed Nov. 14, 1973, Ser. No. 415,664

Int. Cl. B67b *7/36*

U.S. Cl. 81—3.3 R **9 Claims**



1. A device for opening a tab container having a tab which has a self-contained lifting ring, said device comprising:
a base;
means on said base for positioning the tab container vertically along its longitudinal axis;
a movable member;
means on said base for pivotably supporting said movable member;
means on said movable member for intercepting the self-contained lifting ring of the tab;
means on said movable member for engaging the top of the tab container on the opposite side of the tab container top from the self-contained lifting ring; and
means on said movable member for rotating said movable member about an axis transverse to the longitudinal axis of the positioned tab container whereby when said movable member is rotated, the self-contained lifting ring of the tab is pushed up while simultaneously the tab container is pushed down and the tab is disengaged from the tab container.

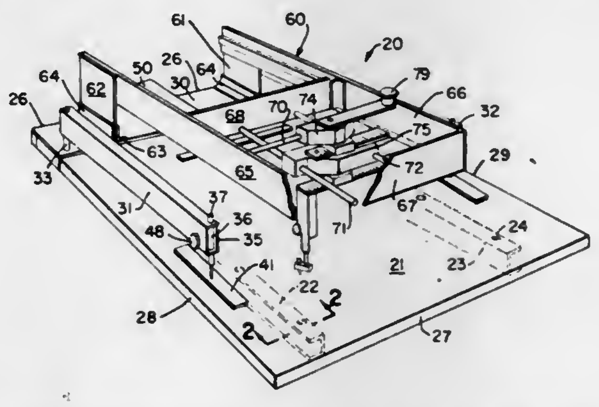
3,845,676
DEVICE FOR CUTTING OVALS IN MATS OR GLASS SHEETS

Donald Cameron Pierce, 59 Reposa Vista, Novato, Calif. 94947

Filed June 5, 1973, Ser. No. 367,131

Int. Cl. B23b *41/04*

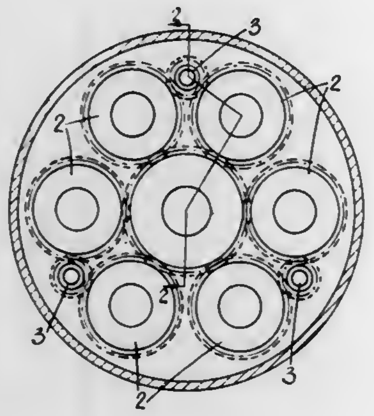
U.S. Cl. 82—1.3 **17 Claims**



1. A device for cutting ovals or circles in sheet material, including in combination:
a baseboard,
a separate base plate adjacent to a first end of said baseboard,
hold-down means swivel mounted to said base plate and having a swivel-mounted hold-down pad,
a tee bar having a scaled flat shank portion slidably mounted centrally to said base plate for movement over said baseboard toward a second end thereof and having a crossbar with a center index line,

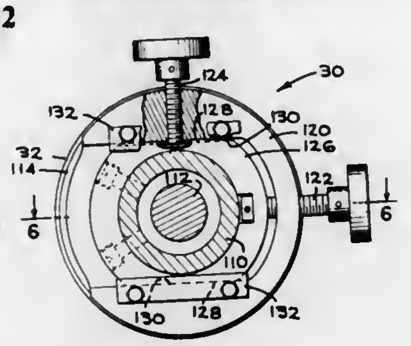
upright frame support means rigidly secured to said said base plate,
a horizontal frame having parallel side members and parallel cross members,
first horizontal shaft means rigidly secured to said side members and extending across them,
second horizontal shaft means rigidly secured to said cross members and bridging them in a direction perpendicular to a vertical plane through said first shaft means and at a different level,
a first slide block for said first shaft means and a second slide block for said second shaft means,
an upper bar holder in between said upper and lower slide blocks,
a lower bar holder below the lower of said slide blocks,
two vertical shafts offset from each other, a first said vertical shaft being rigidly secured to said upper bar holder and journaled through the upper of said slide blocks and having a lever arm and handle secured to its upper end, a second said vertical shaft being rigidly secured to both said slide blocks and rotatably journaled through said lower slide block,
a horizontal cutter holder bar mounted slidably in said lower bar holder and having means for setting the minor diameter of the oval to be cut and having cutting means, and
a horizontal eccentricity-setting bar mounted slidably in said upper bar holder and having means for setting the eccentricity, i.e., the amount by which the major diameter of the oval exceeds the minor diameter.

3,845,677
MULTI-SPINDLE AUTOMATIC LATHES
Harold James Gilbert, 121 Lavender Ave., Coventry, England
Filed Aug. 5, 1970, Ser. No. 61,171
Int. Cl. B23b *19/02*
U.S. Cl. 82—29 R **3 Claims**



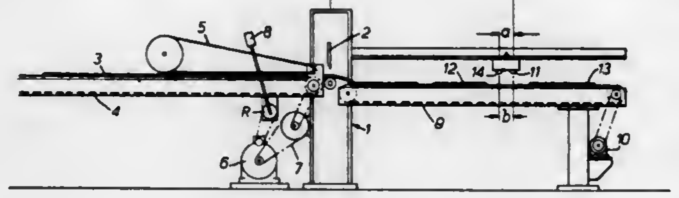
1. A multi-spindle automatic lathe comprising a housing, a driving shaft, a spindle drum indexable in said housing, a plurality of work spindles carried by the spindle drum, and a plurality of layshafts, the axes of said layshafts being radially offset with respect to the axis of said driving shaft, first and second gears mounted on each work spindle for rotation relative thereto, first and second gears mounted on each layshaft for rotation therewith, said first and second layshaft gears meshing with said first and second work spindle gears, a single driving gear carried by the driving shaft meshing with said first gears of the work spindle, and clutch means mounted on each work spindle for selective engagement with said first and second gears on the work spindle for drivingly connecting said driving shaft to the work spindle to effect rotation of the work spindle at one of the alternative work spindle speeds irrespective of the speed of the other work spindles.

3,845,678
UNWIND STAND
Ralph H. Eggert, Watergate Condominium No. 224, Kings Hyw., Rt. 41, Maple Shade, N.J., and Quentin T. Woods, 952 Yarmouth, San Jose, Calif.
Division of Ser. No. 149,302, June 2, 1971, abandoned. This application June 18, 1973, Ser. No. 371,205
Int. Cl. B23b *5/14*
U.S. Cl. 82—92 **4 Claims**



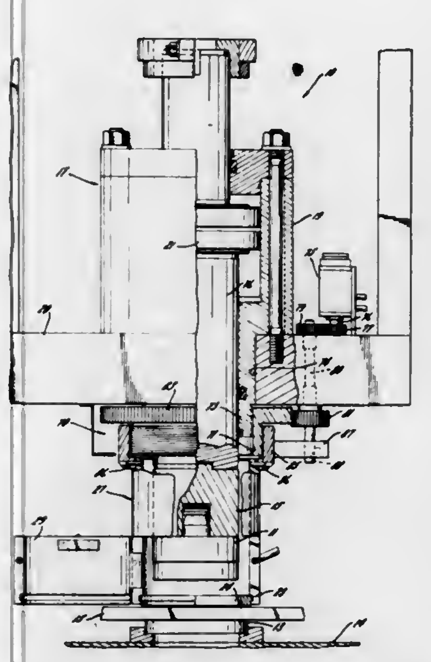
1. Apparatus for severing a selected portion of a full mill roll from the remainder of the roll, said apparatus being of the type comprising an unwind stand for rotatably supporting the roll, an arm pivoted on said unwind stand and having a tubular hub, a shaft rotatable in said hub, a disc like cutter wheel mounted on one end of said shaft for severing said selected roll portion, and a depth gauge roller mounted on said hub on an axis of rotation that is parallel to that of said cutter wheel; the improvement wherein means are provided for adjustably shifting said depth gauge roller relative to said cutter wheel in a direction that is substantially normal to the mill roll surface while maintaining the axis of rotation of said depth gauge roller parallel to the axis of said cutter wheel, said adjusting means comprising a hub for said depth gauge roller that surrounds and clears said cutter shaft hub, shifting means acting between said cutter shaft hub and said depth gauge roller hub, and means for securing said depth gauge roller in its adjusted position.

3,845,679
APPARATUS FOR CUTTING VENEER OR OTHER STRIP MATERIAL
Bernhard Rhotert, Hagen, Germany, assignor to Keller Spezialtechnik GmbH, Laggenbeck, Germany
Filed Oct. 9, 1973, Ser. No. 404,797
Claims priority, application Germany, Oct. 9, 1972, 2249467
Int. Cl. B27l *5/08*
U.S. Cl. 83—110 **3 Claims**



1. In apparatus for cutting strip materal,
a material infeed conveyor,
cutter means downstream of the infeed conveyor,
a removal conveyor downstream of the cutter means, the removal conveyor being drivable at a higher speed than the infeed conveyor, and
control means operative to selectively actuate the cutter means, the cutter means also being actuable independently of the control means, said control means comprising
first and second sensor means spaced along the path of movement of the removal conveyor and operative to sense material moving along the removal conveyor, and timer means responsive to the sensor means to determine the speed of movement of the material moving along the removal conveyor such that the cutter means is actuated if the said speed is less than a predetermined speed.

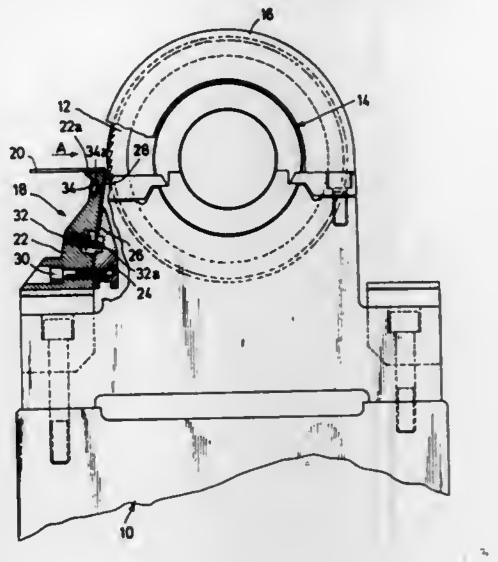
3,845,680
HYDRAULIC PUNCH PRESS WITH MECHANISM FOR ADJUSTING STRIPPER
William B. Scott, Steward, and Roger V. Sawvell, New Milford, both of Ill., assignors to W. A. Whitney Corp., Rockford, Ill.
Division of Ser. No. 274,391, July 24, 1972, Pat. No. 3,805,658. This application Feb. 13, 1974, Ser. No. 442,089
Int. Cl. B26d *7/06;* **B27f** *1/02*
U.S. Cl. 83—146 **3 Claims**



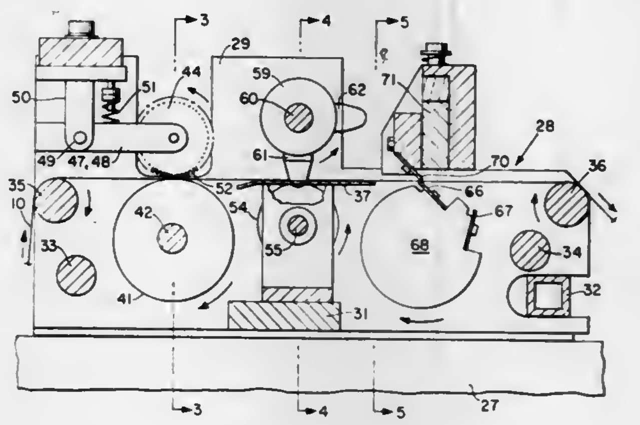
1. A punch press having a vertically reciprocable punch adapted to coact with an underlying die to punch a hole in an intervening workpiece, said press comprising a generally horizontal support plate, a cylinder mounted on the upper side of said support plate and having a depending nose projecting downwardly through a hole in the support plate, a piston slidable upwardly and downwardly within said cylinder, a ram projecting downwardly from said piston and through said nose and guided for up and down sliding by said nose, said punch being carried on the lower end of said ram, a stripper plate overlying said die and formed with a hole through which said punch reciprocates, and means mounting said stripper plate for vertical adjustment toward and away from said die, said means comprising a first ring having internal threads of one hand threaded onto said nose whereby the ring moves vertically on the nose in response to being rotated, a second ring connected to said stripper plate and having internal threads of the opposite hand threaded onto said first ring, and mechanism extending between said support plate and said second ring for preventing rotation of the second ring while allowing the latter to move vertically in the same direction as said first ring when the first ring is rotated.

3,845,681
GRANULATOR FOR GRANULATING PLASTIC STRANDS
Rudolf Paul Fritsch, Stuttgart, Germany, assignor to Firma C. F. Scheer & Cie, Baden-Wurttemberg, Germany
Filed Apr. 17, 1973, Ser. No. 351,865
Claims priority, application Germany, Apr. 22, 1972, 2219784
Int. Cl. B23d *23/00;* **B29b** *1/02*
U.S. Cl. 83—356.3 **6 Claims**

1. A granulator for granulating plastic strands comprising a knife cylinder having a plurality of axially extending closely spaced knife edges disposed around the periphery of the cylinder and generally saw-toothed in radial section, a support for a plurality of incoming plastic strands to be granulated, said support including a flexible metal strip and a retaining means for adjustably holding said metal strip disposed in a plane generally tangential to an arc defined by said knife edges and with the upper edge of the metal strip disposed in coacting relationship with successive knife edges to successively shear the ends of the incoming plastic strands, said retaining means including means for deforming individual sections of the upper portion of the metal strip in a direction radially of the knife cylinder to compensate for longitudinally uneven wear of the knife edges.



3,845,682
WEB PERFORATING APPARATUS
William Junior Willhite, Green Township, Hamilton County, and Herbert Eugene Strube, Colerain Twp., Hamilton County, both of Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio
Division of Ser. No. 363,937, May 25, 1973. This application Apr. 19, 1974, Ser. No. 462,280
Int. Cl. B26d *3/00*
U.S. Cl. 83—431 **4 Claims**

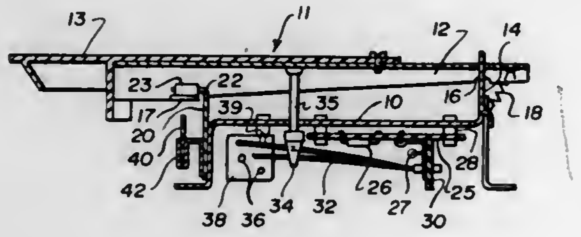


1. A cammed slitter mechanism for forming a longitudinal slit in a moving web comprising:
a. a deadplate for supporting said web during movement thereof, said deadplate having at least one opening therein,
b. slitting means mounted beneath said opening in said deadplate, and
c. means for periodically pushing said web through said opening and causing it to momentarily contact said slitting means to form an elongated longitudinal slit in said web.

3,845,683
KEYBOARD FOR ELECTRONIC MUSICAL INSTRUMENT
Alfred H. Lehmann, Clemson, S.C., assignor to Pratt-Read Corporation, Ivoryton, Conn.
Continuation of Ser. No. 301,895, Oct. 30, 1972, abandoned. This application Sept. 10, 1973, Ser. No. 396,057
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.01 **12 Claims**

1. In a keyboard for a musical instrument including a frame structure and a plurality of elongated keys pivotally mounted on said frame structure, the combination including:

- a first circuit board secured to the frame structure and extending generally parallel to the plane of the keys, said first circuit board having first and second ends and including circuit components and conductors thereon,
- a second circuit board secured to said first circuit board adjacent said first end thereof and extending at substantially a right angle thereto, said second circuit board including circuit components thereon and conductors thereon connected to said conductors on said first circuit board,
- elongated resilient conductor means individually associated with the keys supported on said second circuit board and extending therefrom in the direction from said first end to said second end of said first circuit board and generally parallel to the keys and having a portion extending beyond said second end of said first circuit board, said resilient conductor means being connected to said conductors on said second circuit board,



- actuator means individually secured to the keys and extending perpendicular therefrom, said actuator means being coupled to said extending portion of said resilient conductor means for moving the same in response to movement of the keys, and
- fixed contact means secured to the frame structure and positioned to be selectively engaged by said resilient conductor means in accordance with the movement of said actuator means, whereby actuation of one of the keys provides a connection from a circuit on said first circuit board through said second circuit board and said resilient conductor means to said fixed contact means.

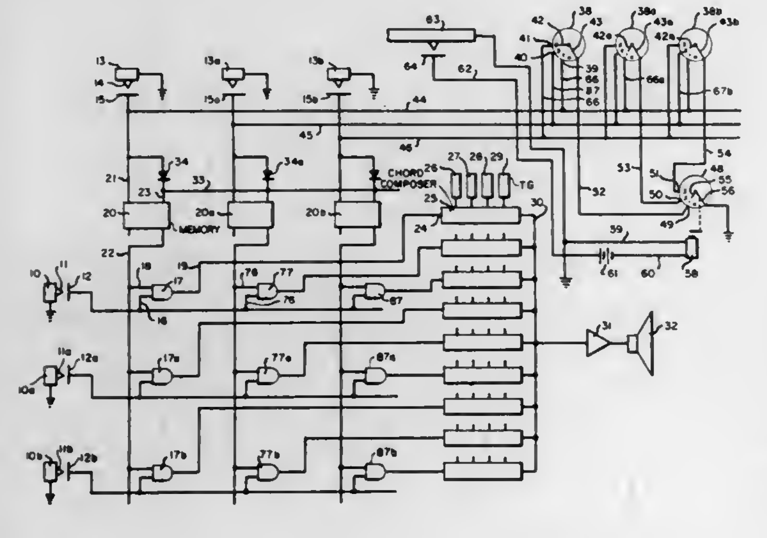
3,845,684
ELECTRONIC AUTOMATIC RESET SWITCH CIRCUIT AND ELECTRONIC KEYBOARD MUSICAL INSTRUMENT INCORPORATING IT

Ernest A. Herr, 1850 Rominger Rd., Winston-Salem, N.C. 27107

Continuation-in-part of Ser. No. 349,233, April 9, 1973, abandoned. This application Nov. 14, 1973, Ser. No. 415,732

Int. Cl. G10h *1/00, 5/00*

U.S. Cl. 84—1.01 **11 Claims**



1. Apparatus comprising a plurality of reset-set flip-flops, an on-off switch connected between ground and the set input of each flip-flop, a reset bus bar connecting the reset inputs of all the flip-flops, and a diode connected between the set and reset inputs of each flip-flop with its positive terminal connected to the reset input, the on-off switch being a key operated chord switch, a plurality of key-operated melody note on-off switches, a plurality of two-input gates equal to the product of the plurality of melody notes by the plurality of chords, each gate being adjusted to produce a positive output when both input signals are of the same character, means connecting each melody note switch between a signal source and one input of a plurality of the two-input gates equal to the number of chords, means connecting the output of each reset-set flip-flop having the same character as the signal source with the other input of the plurality of the two-input gates equal to the number of melody notes, a plurality of multi-input chord composers equal to the plurality of two-input gates, each chord composer being connected to the output of a single two-input gate and activated by the output from that gate to connect the chord composer's inputs with its output, a plurality of tone generators connected to the inputs of the chord composers, and means connecting the outputs of the chord composers with a sound-producing device.

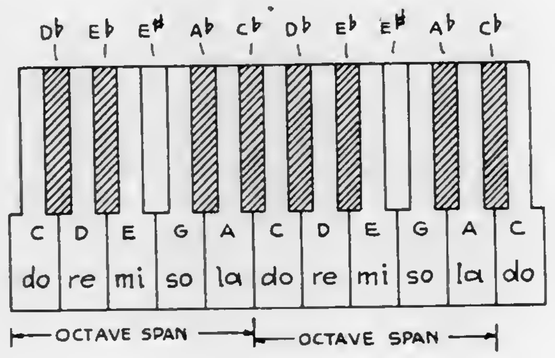
3,845,685
MUSICAL INSTRUMENTS

Donald K. Coles, 2505 Capitol Ave., Fort Wayne, Ind. 46806

Filed Sept. 7, 1973, Ser. No. 395,002

Int. Cl. G10c *3/12*

U.S. Cl. 84—451 **11 Claims**



1. A musical instrument having a plurality of tone generators which produce a sequence of pitches proceeding from low to high in an approximately equitempered scale, wherein the improvement comprises:

- a keyboard having five lower digitals per octave span and not more than five upper digitals per octave span, each of said upper digitals being disposed between two adjacent ones of said lower digitals,
- said lower digitals being consecutively numbered from left to right, starting with lower digital number one on the left of said keyboard, said lower digital number one controlling a predetermined lowest pitch generated by one of said tone generators,
- each of said lower digitals with a number *N* greater than five controlling a pitch one octave higher than the pitch controlled by that lower digital which has a number equal to *N*-5.

3,845,686
INTONATION GUIDE FOR PLAYER OF STRING INSTRUMENT

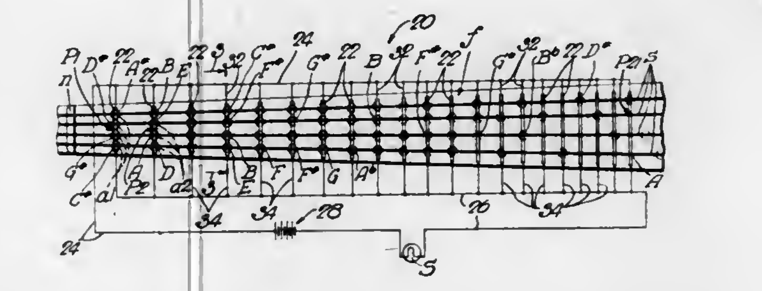
Andrew D. Salvo, 10 Gloria Pl., East Haven, Conn. 06512

Filed Aug. 1, 1973, Ser. No. 384,587

Int. Cl. G10b *15/00*

U.S. Cl. 84—485 **8 Claims**

1. A pitch intonation guide for a player of a string instrument with a fingerboard and a nut thereon, for playing on the strings groups of notes in associated series of finger positions on the fingerboard at different spacing, respectively, from the nut, providing first and second signal means within signal perception by the player of the instrument; first and second electrical circuitry for the respective first and second signal means, including a plurality of normally open first and second switches of which each first and each second switch is closable to close the respective first and second circuitry for signal emission from the respective first and second signal means, and first and second tabs associated with said first and second switches, respectively, with each tab being mounted on the fingerboard underneath the strings thereon and operative to close the associated switch by the player's finger pressure against said tab in fingering any of said strings, said tabs being arranged in pairs, of which each pair provides a first and second tab at one of said series of finger positions and so spaced from each other that both tabs are within pressure reach of the player's finger for playing any note of the associated group at the correct pitch, but only either one of the tabs is within pressure reach of the player's finger for playing the same note at off-pitch.



3,845,687
APPARATUS FOR A FIRING WEAPON MOUNTED AT A LIGHT VEHICLE

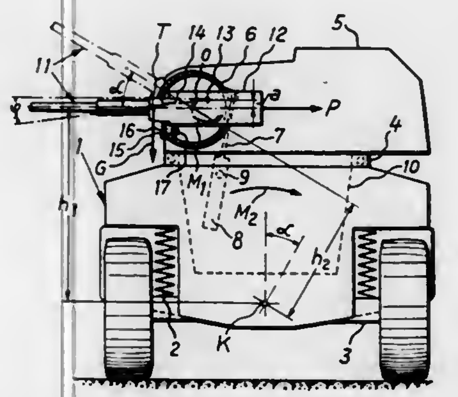
Vladimir Waeber, Geneve, Switzerland, assignor to Werkzeug-Maschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed Aug. 10, 1972, Ser. No. 279,705

Claims priority, application Switzerland, Aug. 20, 1971, 012256/71

Int. Cl. F41f *23/06*

U.S. Cl. 89—37 K **3 Claims**



1. A mounting apparatus for a weapon for mounting the same at a light vehicle, said weapon having a weapon axis and said vehicle having a tilt axis, said vehicle being pivotable about said tilt axis due to the recoil force of the weapon, said weapon having a cradle, an elevating mechanism rotatable about an axis of rotation, said weapon being mounted via said cradle at said elevating mechanism, pivot pin means for the cradle about which is pivotably mounted the cradle at said elevating mechanism, said pivot pin means being arranged above the weapon axis, said weapon being pivotable about said pivot pin means due to its recoil force and opposite the tilting motion of the vehicle, a prestressed spring bearing at one end at the cradle and at the other end at the elevating mechanism, said elevating mechanism being provided with a stop against which there is pressed the cradle under the action of the force of said pre-stressed spring.

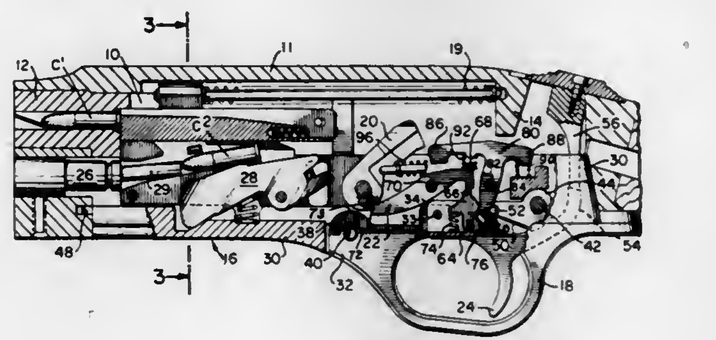
3,845,688
SEAR-DISCONNECTOR FOR FIREARMS

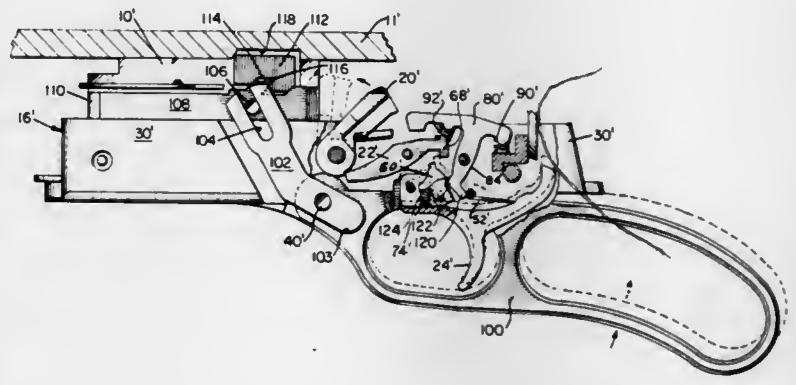
Louis W. Seecamp, New Haven, Conn., assignor to O.F. Mossberg & Sons, Inc., North Haven, Conn.

Continuation of Ser. No. 220,063, Jan. 24, 1972, abandoned. This application Aug. 14, 1973, Ser. No. 388,195

Int. Cl. F41d *11/02*

U.S. Cl. 89—146 **9 Claims**





1. In a firing mechanism for a repeating firearm having a frame, a breech-bolt supported for reciprocal movement into and out of a breech-closing position, a spring-loaded firing member adapted and arranged to be moved into and beyond a cocked position by said breech-bolt on retraction thereof, a sear resiliently urged into cocking engagement with said firing member, and a trigger for moving said sear out of such cocking engagement, a sear-disconnecting device comprising in combination therewith

- a disconnector mounted on said trigger for movement therewith upon retraction and release of said trigger and for movement with respect to said trigger between a sear-actuating position and an inoperative position in which said sear is free to move into its cocking position independently of the action of said trigger,
- said disconnector in its sear-actuating position being disposable so as to move said sear out of cocking engagement upon retraction of said trigger in order to discharge the firearm,
- means for resiliently urging said disconnector into its sear-actuating position, and
- a disconnector-actuator mounted on said frame for movement into and out of an actuating position and having a disconnector-engaging surface for positioning said disconnector in its inoperative position when said disconnector-actuator is in its actuating position and a bolt-actuated portion disposed for engagement with and movement by said firing member into said actuating position when said firing member is moved beyond its cocked position, thereby preventing inadvertent discharge of the firearm.

3,845,689

BREECH-BLOCK FOR AUTOMATIC GUNS, MORE PARTICULARLY AUTOMATIC SHOTGUNS

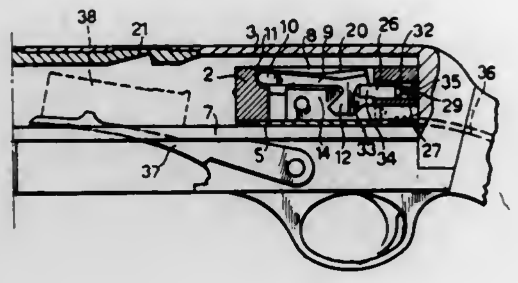
Ernesto Zanoni, Brescia, Italy, assignor to S.p.A. Luigi Franchi, Brescia, Italy

Filed May 21, 1973, Ser. No. 362,125

Claims priority, application Italy, May 19, 1972, 024572/70

Int. Cl. F41d *3/00*

U.S. Cl. 89—181 **1 Claim**



1. A breech-block for automatic guns, more particularly for automatic shotguns, comprising a substantially rectangular body disposed with the larger axis in alignment with the axis of the barrel of the gun, a seating in said body, a pivoted lock mounted in an oscillating manner about one of its ends in said seating, a carriage for supporting said body and displacing the breech-block, cam means integral with the carriage and removably connected to the pivoted lock in said seating, intended for engagement and disengagement of the pivoted lock in and from a cavity provided in the top of the receiver of the gun in which said breech-block is displaced, said breech-block being characterized in that it comprises a member which engages with the pivoted lock after its release from the cavity by way of said cam means, and means for disengaging said member from the pivoted lock before it reengages in the cavity provided in the top of the receiver, said means for disengaging said member from the pivoted lock comprises a raised part laterally defined by the hollow cylinder and projecting outside the groove and the side of the body facing towards the ejector, said projecting part interfering with the ejector during the return course of the breech-block and determining, in contrast to the spring means, the disengagement of the cylinder from the notch of the pivoted lock.

3,845,690

DIGITAL FLUIDIC CIRCUIT WITH ADJUSTABLE TIME DELAY MEANS FOR OUTPUT CONTROL

William H. Ziegler, Waterford, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 16, 1973, Ser. No. 341,801

Int. Cl. F15b *21/02*

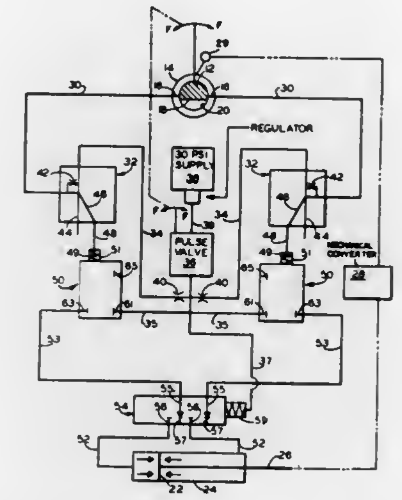
U.S. Cl. 91—35 **7 Claims**

1. In a mechanical system having first movable means responsive to an external force thereon, second movable means initially disposed in zero relationship with said first means, and piston means responsive to the movement of said first means for actuating said second means to restore said zero relationship thereof with said first means, the improvement of a fluidic digital feedback circuit for actuating said piston means, comprising,

a pulse valve responsive to the initial movement of said first means for supplying an output flow of fluid over a predetermined interval at least equal to the period of time required to restore said zero relationship between said first and second means,

a pair of sensing orifices spaced in said second means in position to be blocked by said first means against the flow of fluid therethrough when said first and second means are in said zero relationship, said orifices being also positioned so that movement of said first means out of said zero relationship with said second means unblocks one of said orifices for the flow of fluid therethrough while continuing to block the other of said orifices,

a pair of interface valves in fluid communication with said pulse valve and in respective fluid communication with the opposite ends of said piston means,



a pair of OR/NOR logic elements disposed in respective fluid communication with said pulse valve, said sensing orifices and said interface valves, and

means in each of said logic elements responsive to the unblocking of the one of said sensing orifices in communication therewith for actuating said corresponding interface valve to exhaust the fluid supplied to one end of said piston means while the other of said interface valves continues to supply fluid from said pulse valve against the other end of said piston means to create a differential pressure thereon for imparting linear movement thereto.

3,845,691

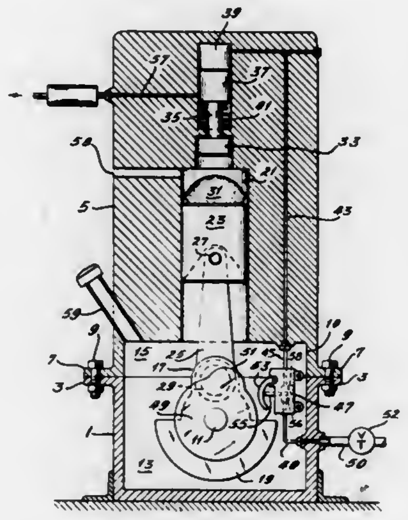
ENGINE WITH RESILIENT PISTON

Larry J. Howard, 5367 Gilson, St. Louis, Mo. 63116

Filed May 15, 1973, Ser. No. 360,413

Int. Cl. F16j *1/10;* **F01l** *31/00, 21/02*

U.S. Cl. 91—325 **6 Claims**



1. An engine comprising guide means, a crankshaft extending transversely of said guide means, a piston mounted for movement lengthwise of said guide means, a rod connecting said piston and said crankshaft, and an impactor having a portion intermittently engageable with an end portion of said piston for initiating axial movement of the latter by engagement therewith, one of said portions being a resilient mass of elastomeric material substantially unconfined transversely of the piston axis whereby movement of said piston as a result of engagement of said impactor and piston is aided by the compression and consequent expansion of the resilient portion in a direction axial of said piston, and means for imparting oscillatory movement to said impactor in a direction axial of said guide means.

3,845,692

VACUUM SUSPENDED TYPE SERVO-MOTOR

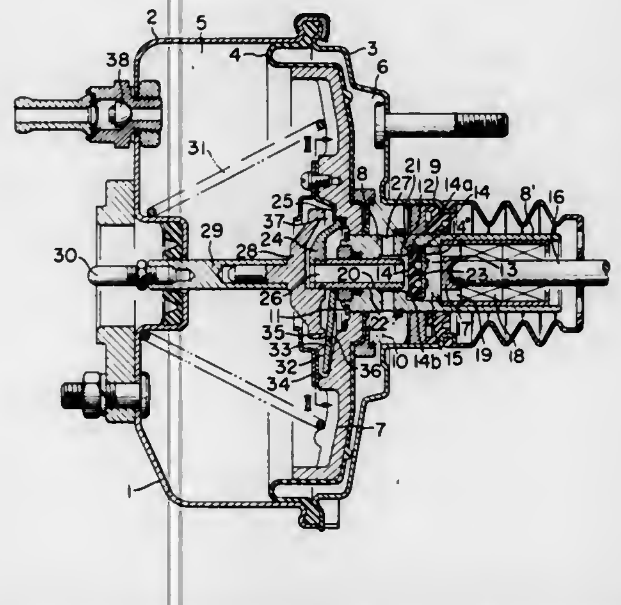
Hiroo Takeuchi, Nagano-ken, Japan, assignor to Nisshin Kogyo Kabushiki Kaisha, Ueda-shi, Nagano-ken, Japan

Filed Mar. 30, 1973, Ser. No. 346,659

Claims priority, application Japan, Apr. 7, 1972, 47-34928

Int. Cl. F15b *9/10*

U.S. Cl. 91—369 B **3 Claims**



1. A vacuum-suspended type servo-motor comprising: a casing; a movable wall arranged in said casing to divide the interior space thereof into two compartments, including a first power chamber continuously communicating with a source of vacuum and a second power chamber normally communicating with said first power chamber, said movable wall being displaceable by pressure difference between said first and second power chambers; an input member slidably fitted in said movable wall; an output member; reaction means operably connecting said output member with said input member and said movable wall; and control valve means normally holding said second power chamber in communication with said first power chamber and operable upon forward movement of said input member to close off the communication between said first and second power chambers and subsequently to place said second power chamber in communication with the external atmosphere; said reaction means including rocker levers each extending between said input member and said movable wall and held intermediate the ends thereof in engagement with said output member whereby, when said output member is loaded by forward movement of said input member, the load reaction is partially transmitted to said input member through said rocker levers, said control valve means being provided with a valve chamber within said input member and communicating with the external atmosphere, a first valve port formed in said input member and communicating with said valve chamber and said second power chamber, said control valve means comprising a communicating tube having opposite ends, a plurality of support arms radially extending from one end of said communicating tube to mount said tube on said movable wall, said tube being slidably fitted in said input member axially thereof, said communicating tube defining at the other end thereof a second valve port which opens coaxially with said first valve port, said tube communicating at said one end with said first power chamber, and a valve element accommodated in said valve chamber and normally biased toward said first and second valve ports; said output member including an output transmitting flange at the rear end thereof for engagement with said rocker levers intermediate the ends thereof, said rocker levers being each rockably arranged between two adjacent support arms of said communicating tube which prevent circumferential displacement and between said communicating tube and a projection formed on the front side of said movable wall which prevent radial displacement.

3,845,693

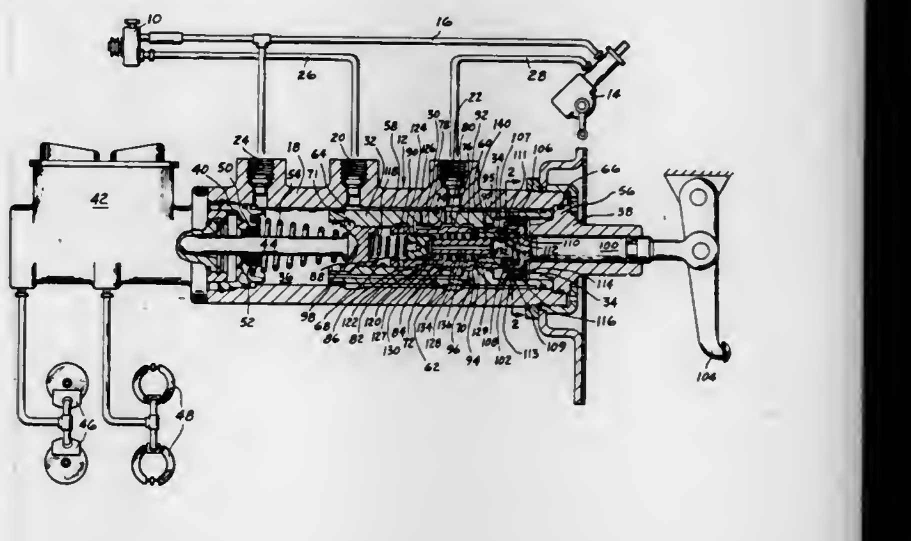
POWER BRAKE BOOST MECHANISM WITH PRESSURE REGULATING DEVICE

Robert E. Meyers, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Apr. 23, 1973, Ser. No. 353,825

Int. Cl. F15b *9/10*

U.S. Cl. 91—371 **6 Claims**



1. In a hydraulic power boost mechanism for a vehicle braking system having a housing with a piston reciprocally positioned therein dividing the housing into an exhaust chamber and a pressure chamber, said piston being provided with a longitudinal bore and control valve means in the bore including a spool valve having a released position in which the pressure chamber is communicated to the exhaust chamber and an applied position in which the pressure chamber is connected by a central passage to a hydraulic fluid pressure source for developing a boost pressure in the pressure chamber for driving the piston, the improvement which comprises: a pressure limiting device having a seat in the central passage of the spool valve, and a hollow plunger in the central passage normally unseated from the seat to allow communication with the pressure chamber, said plunger having opposed stepped ends of smaller and larger diameters exposed to the pressure chamber and responsive to the boost pressure in the chamber at a predetermined value for urging the plunger against the seat to inhibit further rise in boost pressure so that the pressure attained in the braking system is held within prescribed limits.

3,845,694

END OF STROKE IMPACT REDUCING MEANS FOR LINEAR FLUID MOTORS

Lawrance F. Berg, Lockport, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 15, 1973, Ser. No. 332,702

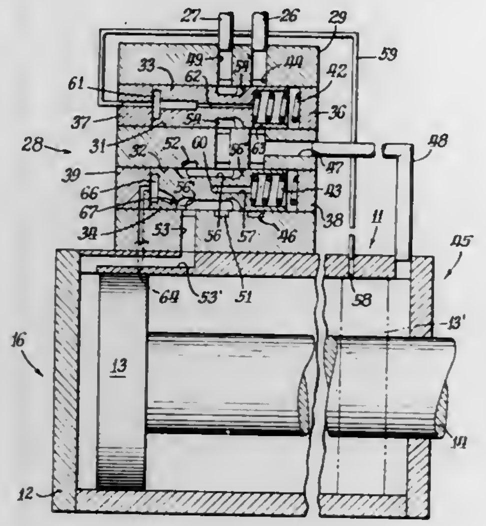
Int. Cl. F15b *15/22*

U.S. Cl. 91—402 **5 Claims**

1. Mechanism for reducing impact of the piston of a linear fluid motor against the end structure of the cylinder thereof, wherein first and second conduits communicate with first and second ends of said cylinder to transmit pressurized fluid to a

selected one of said ends while transmitting discharge fluid away from the other of said ends, wherein piston movement towards said second end tends to occur at greater velocity than does piston movement towards said first end, comprising: valve body means situated between said conduits and said cylinder and having a first internal passage for communicating said first conduit with said first end of said cylinder and having a second internal passage for communicating said second conduit with said second end of said cylinder,

a first valve member movable within said valve body means to communicate said first and second passages in response to application of a first predetermined fluid pressure differential to said first valve member to provide for impact reduction through a bypass action as said piston approaches said first end of said cylinder,



means for applying said first predetermined fluid pressure differential to said first valve member only as said piston approaches said first end of said cylinder to bypass driving fluid from said first passage to said second passage of said valve body means,

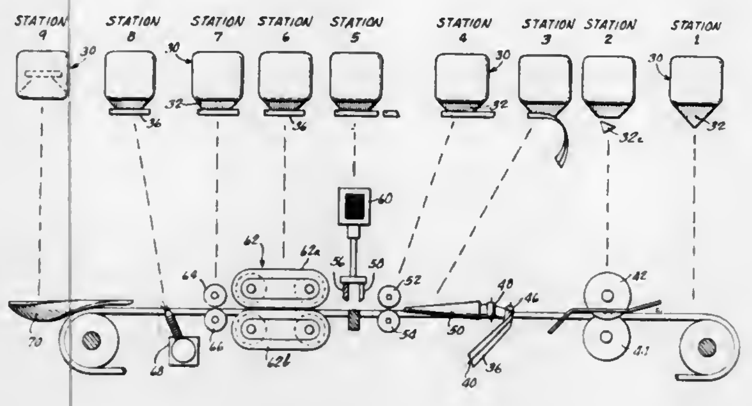
a second valve member movable within said valve body means in response to a second predetermined fluid pressure differential to communicate said first and second passages while simultaneously restricting fluid discharge from said second end of said cylinder to provide for impact reduction through both a bypass action and a cushioning effect as said piston approaches said second end of said cylinder, and

means for applying said second predetermined fluid pressure differential to said second valve member only as said piston approaches said second end of said cylinder.

3,845,695
METHOD AND APPARATUS FOR MAKING A BAG WITH A SEALED POURING SPOUT

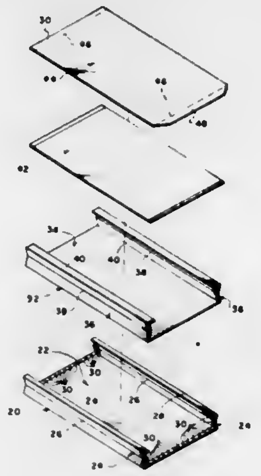
Anthony J. Randazzo, Chalmette, La., assignor to Amstar Corporation, New York, N.Y.
Division of Ser. No. 185,680, Oct. 1, 1971, abandoned. This application Aug. 21, 1973, Ser. No. 390,192
Int. Cl. B31b *1/90*
U.S. Cl. 93—1 TS **12 Claims**

1. In a method of making a bag of flexible material, including the steps of forming closure flaps at an end of the bag to be subsequently folded in overlapping relation and secured together to seal said bag end, the overlapping one of the closure flaps being generally triangular in shape and composed of a plurality of sheets of material, the improvement comprising severing said overlapping closure flap near the apex thereof to provide a pouring spout upon the separating of said sheets of material, said pouring spout communicating with the interior of the bag and having an outer open end formed by said severing through which the contents of the bag may be dispensed, securing a sealing tape to said pouring spout to close off and seal said open spout end, and folding said closure flaps in overlapping relation and securing them together to seal said bag end.



3,845,696
METHOD OF MANUFACTURING A SHIPPING BAG

Donald V. Long; Norwin Cedric Derby, and Peter P. Chorak, all of Dallas, Tex., assignors to The Dalpak Corporation, Dallas, Tex.
Division of Ser. No. 185,708, Oct. 1, 1971, Pat. No. 3,770,189. This application July 9, 1973, Ser. No. 377,317
Int. Cl. B31b *49/04*
U.S. Cl. 93—35 R **9 Claims**



1. A method of forming a bag including the steps of:

forming inwardly projecting gusset folds along the opposite edges of a back wall;

adhesively securing a front wall of longer length than the back wall to the edges of the gusset folds remote from the back wall with the front wall projecting beyond at least one end of the back wall and the gusset folds to form an endwise projecting lip;

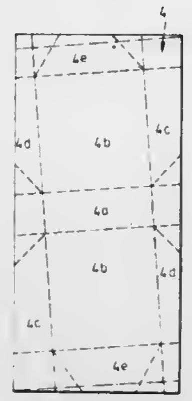
adhesively securing the endwise projecting lip of the front wall to the outer surface of the back wall to form a bag having one closed end and one open end; and

folding and securing the corners of the closed end of the bag into the gusset folds.

3,845,697
METHOD OF MAKING AN ENVELOPE FOR A CIGARETTE BLOCK

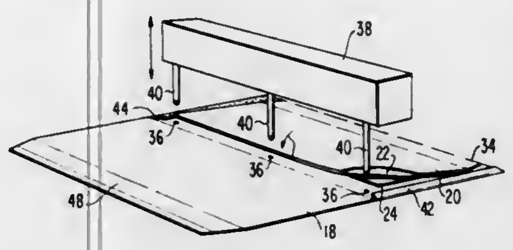
Otto Niepmann, Gevelsberg, Germany, assignor to Maschinenfabrik Fr. Niepmann & Co., Gevelsberg, Germany
Filed Aug. 21, 1972, Ser. No. 282,611
Claims priority, application Germany, Dec. 28, 1971, 2164925
Int. Cl. B31b *1/08*
U.S. Cl. 93—35 SB **1 Claim**

1. A method of making an outer wrapping around a cigarette block in a cigarette wrapping machine using a foil blank of more narrow width than conventional size to save foil blank material, which includes in combination the steps of: preparing a one piece rectangular foil blank having a longitudinal central portion comprising a bottom section and a front section and a rear section collectively to contain a predetermined number of cigarettes, said rectangular foil also being provided with irregularly tapered sections arranged on opposite sides of said central portion, the lateral section at one side of said central portion decreasing in width from one end each of said foil blank to the opposite end of said foil blank and the lateral section on the other side of said central portion correspondingly increasing in width from said one end of said foil blank to said opposite end of said foil blank, and inclining said foil blank placed into the cigarette wrapping machine at an inclined position purposely so that the confining longitudinal edges of said central portion which also form the folding lines for said irregularly tapered lateral sections extend substantially parallel to the direction in which the wrapping machine feeds said foil blank though when folding is completed there results a rectangular outer wrapping for the cigarette block having minimum overlap of the irregularly tapered lateral sections.



3,845,698
METHOD OF MAKING AN ENVELOPE CONTAINING A SEPARATE ENCLOSURE SHEET

George L. Scholle, Branford, Conn., assignor to Compucolor, Incorporated, Statford, Conn.
Filed June 28, 1973, Ser. No. 374,438
Int. Cl. B31b *49/04*
U.S. Cl. 93—61 R **4 Claims**

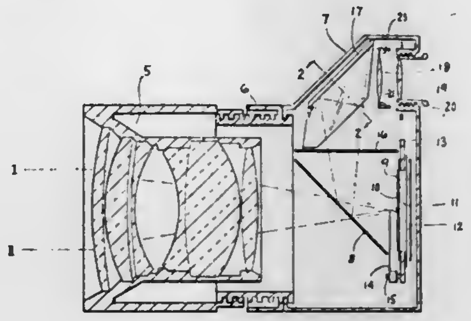


1. A process for producing an envelope containing a separate enclosure sheet from a combined enclosure sheet-integral envelope in which said combined enclosure sheet-integral envelope comprises a first sheet and a second sheet jointed thereto along a first transverse line, the opposite longitudinal edges of said first sheet being positioned inside those of said second sheet, said second sheet having a second transverse line defining top and bottom panels and a third transverse line in said top panel defining an envelope flap thereon, said process comprising;

a. applying fugitive glue means to one of said first and second sheets,
b. folding said first sheet along said first transverse line to secure said first sheet and said second sheet together by said fugitive glue means,
c. separating said first sheet from said second sheet along said first transverse line prior to folding said second sheet along said second transverse line about said first sheet and,
d. folding said second sheet along said second transverse line about said first sheet and sealing the edge portions of said second sheet together to form said second sheet into an envelope containing said first sheet.

3,845,699
COMPACT SINGLE LENS REFLEX VIEWING SYSTEM FOR CAMERAS

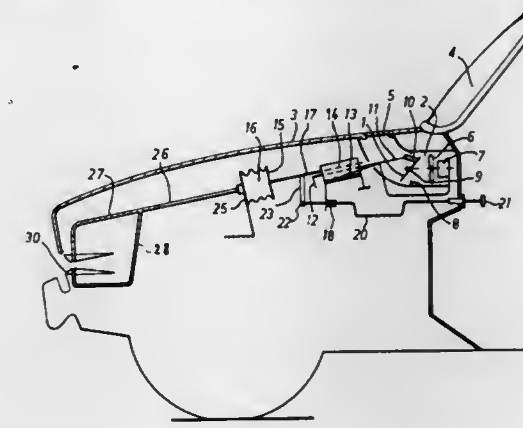
Chung Liao Feng, 16 Seven Springs Rd., Radnor, Pa. 19087
Filed May 1, 1972, Ser. No. 249,070
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **4 Claims**



1. A camera with compact viewing system comprising a camera body with objective lens, a one way reflector behind said lens, a shutter curtain with reflecting surface behind said reflector, a 90° corner reflector to receive light reflected by said curtain and first reflector, and an ocular.

3,845,700
VENTILATION SHUTTER CONTROL OF MOTOR VEHICLE

Andre Lefeuvre, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France
Filed July 5, 1972, Ser. No. 269,075
Claims priority, application France, Aug. 9, 1971, 71.29045
Int. Cl. B60h *1/12*
U.S. Cl. 98—2 **7 Claims**



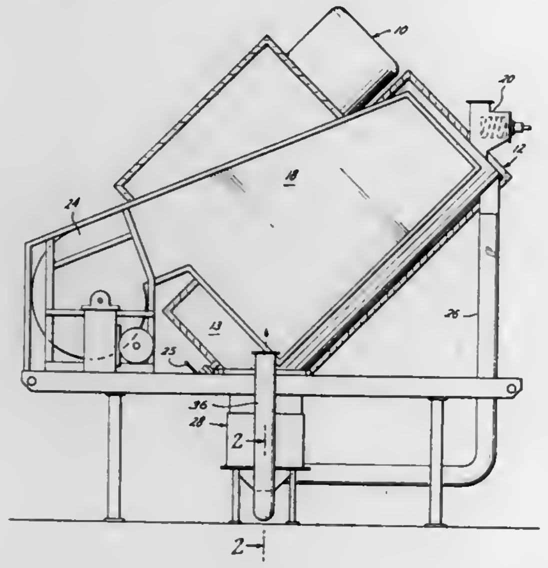
1. Automatic control device for the air-intake shutter of a ventilation system for a motor vehicle comprising

a fan driven by an electric motor,
an air-intake shutter,
movable electrical control member interposed in the power circuit of said electric motor,
means adapted to engage said shutter with said movable electrical control member to rotate said shutter,
a Venturi choke having its air inlet fed with the relative wind created by the vehicle motion,

a vacuum chamber having a movable end wall,
means communicating said vacuum chamber with the depression zone of said Venturi choke,
rigid means connecting said movable end-wall of said vacuum chamber with said movable electrical control member, and
said movable electrical control member being rigid with a tapped socket engaged by the screw-threaded portion of a control rod adapted, by rotating a control knob associated therewith, to preset the distance between said movable member and said vacuum chamber.

3,845,701
MATERIAL TREATING APPARATUS

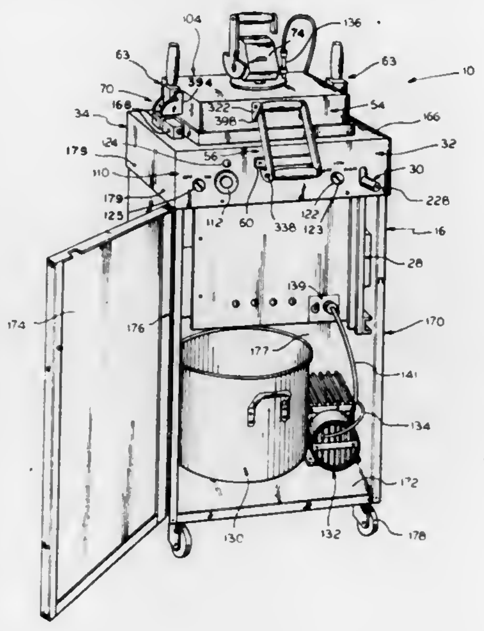
Norman H. Sachnik, 6027 Warm Springs, Houston, Tex.
Filed Apr. 11, 1973, Ser. No. 350,182
Int. Cl. A23l *1/18*; F26b *17/30*
U.S. Cl. 99—323.5 **13 Claims**



1. A treating apparatus comprising:
a housing with a treating chamber therein,
means for circulating a treating gas through treating chamber,
a plurality of trays within the treating chamber spaced helically along and mounted for rotation about an axis that is inclined from the vertical sufficiently for gravity to cause movement of the material down the face of the tray,
each tray having rims for confining and lifting the material as the tray rotates about the inclined axis,
a transfer means between adjacent trays for transferring material from an upper tray to the outer section of a lower tray,
outlet means on each tray located in the tray section adjacent the axis of rotation for discharging material from each tray onto a lower transfer means,
means for rotating the trays,
material inlet means in the treating chamber located to deposit material on the uppermost tray between the outlet means and the periphery of the uppermost tray, and
means for conducting material from the treating chamber after it has been discharged from the lowermost tray

3,845,702
APPARATUS FOR COOKING CHICKEN

Carl P. Mies, Louisville, Ky., assignor to Mies Filter Products, Incorporated, West Bend, Wis.
Division of Ser. No. 24,517, April 1, 1970, abandoned. This application July 17, 1972, Ser. No. 272,180
July 17, 1972, Ser. No. 272,180
Int. Cl. A47j *37/12*
U.S. Cl. 99—408 **4 Claims**

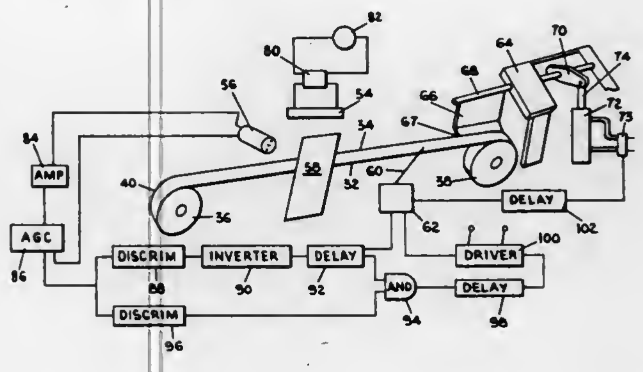


1. A deep fat fryer comprising:
a vessel defining a smoothed walled chamber proportioned to receive cooking oil and chicken serving pieces to be cooked in the approximate ratio of two to one,
a drain opening at the bottom of said vessel,
valve means for opening and closing said drain opening,
a removable cover for closing off the top of said vessel,
means for clamping said cover in closed relation to the vessel for cooking the chicken serving pieces under pressurized conditions,
heater means about said vessel and spaced at a level above the level of the bottom of said vessel for heating cooking oil received in the chamber to a temperature range for cooking chicken serving pieces received in the oil when the oil is in the chamber,
said heater means being exterior of said chamber,
and filter means within said chamber and between the level of said heater means and the level of said vessel bottom for filtering cooking oil drained from said vessel before it passes through said valve means, and disposed to permit solids in the oil collect on its upper side,
said filter means comprising a filter unit extending across said chamber and including filter paper through which the cooking oil is to pass on opening of said valve means to filter the cooking oil,
and means for applying a differential pressure on the cooking oil when said valve means is opened for inducing cooking oil flow through said filter paper,
said heater means being positioned in the spaced relation relative to said filter means to avoid charring of the solids collecting on the filter means when the oil is heated to said temperature range and yet drive off moisture from said paper to permit said filtering of the oil through said paper on opening of said valve means and application of the differential pressure to the cooking oil.

3,845,703
CONTROLLING ARTICLE TOPPING AND ORIENTATION DETECTING

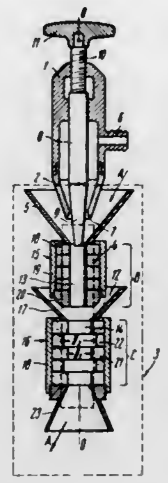
Robert M. Gillespie, Grand Rapids, Mich., assignor to Sortex Company of North America, Inc., Lowell, Mich.
Filed Oct. 24, 1972, Ser. No. 300,428
Int. Cl. B26d *4/00*
U.S. Cl. 99—491 **7 Claims**

1. An apparatus for cutting the ends off articles having a first color profile in one oriented condition and a second color profile in a second oriented condition, said apparatus including a cutter means operable to cut an end off an article responsive to the presence of the article at the cutter means, and means for feeding said articles seriatim to said cutter means, the improvement which comprises:
means for detecting the color profile of said article on said feeding means; and
means for actuating said cutter means to cut an end off said article responsive only to the detection of said first color profile by said detecting means.



3,845,704
AIR-BLAST GRAIN HULLER

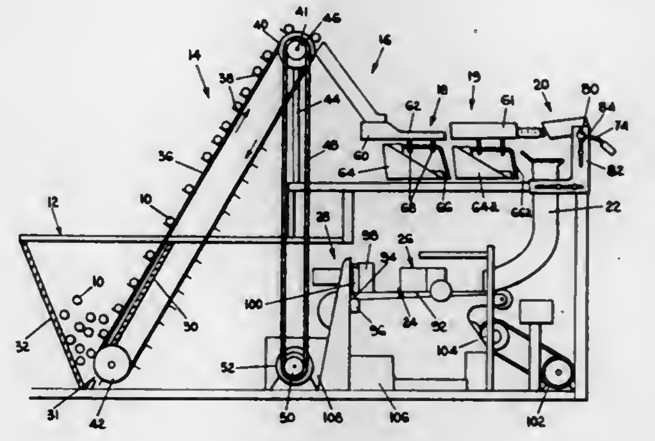
Yakov Moiseevich Zhislin, 13 proezd Mariinoi Roschi, 44/46, kv. 35; Alexandr Eliseevich Krikunov, prospekt Mira, 7, kv. 20; Alexandr Yakovlevich Sokolov, ulitsa Panfilova, 18a, kv. 30; Alexei Ivanovich Ivanoz, Veernaya ulitsa, 3, korpus 6, kv. 77; Albert Yakovlevich Leikin, Trifonovskaya ulitsa, 54, kv. 193; Efim Naumovich Grinberg, proezd Nansena, 6, korpus 2, kv. 77; Vyacheslav Dmitrievich Vinogradov, ulitsa admirala Makarova, 21, kv. 58; Zinaida Solomonovna Yanovskaya, ulitsa Garibaldi, 27, korpus 1, kv. 67, and Valery Andreevich Bykov, Krasnogvardeisky bulvar, 7, kv. 11, all of Moscow, U.S.S.R.
Filed Feb. 24, 1972, Ser. No. 229,028
Int. Cl. 45e *39/00*
U.S. Cl. 99—519 **1 Claim**



1. An air-blast grain huller, comprising: a chamber with means for supplying compressed air into said chamber; a nozzle communicating with said chamber and having an orifice for discharging air from said chamber and creating a stream of air for hulling grain; a mixing tube for hulling grain by said stream of air discharged from said nozzle, said tube being arranged substantially vertically under said chamber and having a channel with several sections of circular cross-sections arranged one above another, the diameter of a section below a higher section being greater than the diameter of said higher section; ports in said tube and located in the places of transition from one section of the channel to another for passing additional injected air into said channel; a funnel-shaped member in said mixing tube for feeding grain into said channel, said funnel-shaped member containing said nozzle; a stem arranged in the orifice of said nozzle and coaxial with the axis of said nozzle, one end of said stem being held in said chamber, and the other end of said stem projecting in said funnel-shaped member; each section of said channel being formed by a separate auxiliary tube with outlet hole mounted so that the outlet hole of the preceding tube is located within the following one, said ports for passing additional injected air into said channel being formed partially by the lower parts of the auxiliary tubes; each auxiliary tube comprising a series of sleeves enclosed in a casing; said sleeves being made of abrasive material; said sleeves of each auxiliary tube, starting from the second one, having holes of two different diameters and being installed alternately so that the diameter of the channel section jointly formed by them alternately grows and decreases stepwise in a downward direction.

3,845,705
VEGETABLE ORIENTING AND CROWNING

Robert R. Chapman, Lowell, Mich., assignor to Sortex Company of North America, Inc., Lowell, Mich.
Filed Oct. 24, 1972, Ser. No. 299,925
Int. Cl. A23n *15/04*
U.S. Cl. 99—643 **12 Claims**



1. An apparatus for orienting and crowning elongated articles, such as carrots and the like, such articles having a larger end and a smaller end, said apparatus comprising:
an inclined planar surface means proportioned to permit said articles to roll transversely down the same a given distance, whereby said larger end of said articles will roll farther down than said smaller end in any given length of time;
a straightening means positioned to receive said articles as they pass from the end of said planar surface means, said straightening means having means for guiding said articles to a position whereby the longitudinal axis of said articles are aligned with the direction of movement of said articles within said straightening means;
means for feeding said articles transversely to the upper portion of said inclined planar means with the longitudinal axis of said articles transverse to the incline of said planar surface means;
whereby said articles roll from said planar surface means with said larger end first, and thereafter are guided by said straightening means to orient said larger end as said leading end of said article in said straightening means; and
means for severing portions of said heavy end of said elongated article.

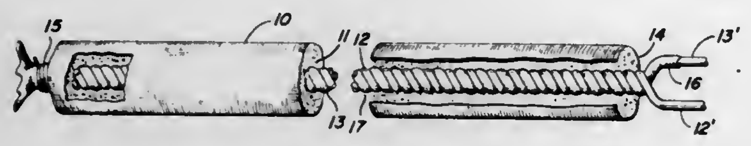
3,845,706
APPARATUS FOR CONTINUOUSLY MEASURING TEMPERATURE IN A FURNACE

Robert A. Strimple, Hellertown; George L. McCall, and Robert L. Walker, both of Harrisburg, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 237,164, March 22, 1972, abandoned. This application Jan. 15, 1973, Ser. No. 323,688

Int. Cl. G01k *7/04*

U.S. Cl. 73—359 10 Claims



1. A device for continuously monitoring the temperature of the hot face of a refractory lining in a metallurgical furnace, comprising:

a. holding means,

b. temperature sensing means comprising a pair of dissimilar wires physically joined at one end contained within said holding means and connected to an external recording device; one of said dissimilar wires being encased in a glass insulator sleeve, and

c. at least one powdered refractory material taken from the group consisting of chrome ore and chrome oxide, packed within said holding means to separate said holding means from said temperature sensing means.

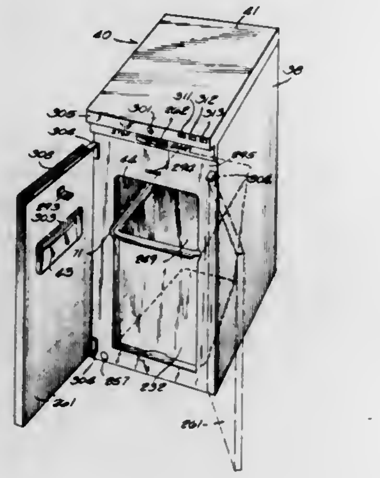
3,845,707
COMPACTOR

James H. Enright, and Charles A. Wicke, both of Racine, Wis., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 21, 1972, Ser. No. 317,344

Int. Cl. B30b *15/14*

U.S. Cl. 100—53 11 Claims



1. A trash compactor having a basket seat, a basket in said seat, a ram movable toward and away from the basket, a motor for the ram, a motor control including a motor switch engaged by the basket when it is fully seated, and means including said ram for disengaging the basket and switch when the ram jams in the basket, whereby to stop the motor, said means comprising means for moving said basket in its seat during a jam, thus to disengage the basket from the switch, said seat and basket having corresponding tapered sides, movement of the basket separating the basket sides from the seat sides to facilitate such movement.

3,845,708
MACHINE FOR COMPACTING, PELLETIZING AND/OR BRIQUETTING

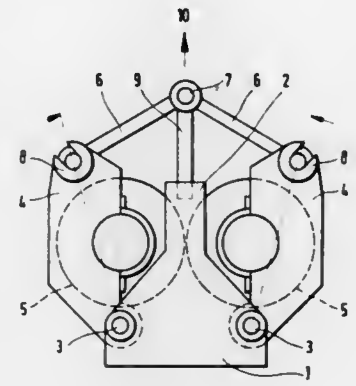
Horst Liebert, Reisbergstrasse 14, 7101 Obergruppenbach, Germany

Filed May 4, 1973, Ser. No. 357,482

Claims priority, application Germany, May 4, 1972, 2221785

Int. Cl. B30b *3/00, 3/04*

U.S. Cl. 100—155 8 Claims



1. A compression pressure machine for compacting, pelletizing and briquetting pulverant, fine-grained or structurally voluminous products, comprising a machine frame, lever cradles articulated pivotably at one end thereof to the machine frame, a pair of horizontally juxtaposed compacting rollers supported by said lever cradles, and a compression device including means for transmitting force along a vertical central axis located between the ends of the shafts of the compacting rollers, means for reciprocally operating said force transmitting means, a pair of traction bars pivotally connected to the opposite ends of the lever cradles, said force transmitting means being connected to said traction bars whereby application of said force pivots said lever cradles and thereby determines the gap between said compacting rollers and the pressure applied by the rollers.

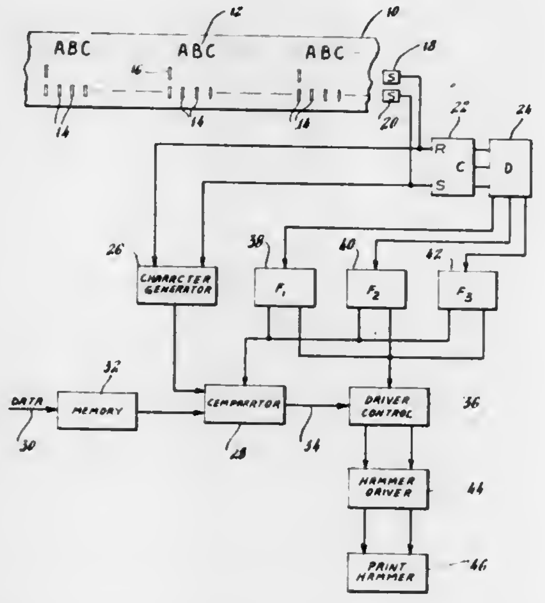
3,845,709
MULTIFONT SELECTION

Derek J. Gardiner, Sudbury, Mass., assignor to Iomec Corporation, Southboro, Mass.

Filed Feb. 26, 1973, Ser. No. 335,862

Int. Cl. B41j *5/10*

U.S. Cl. 101—93 C 1 Claim



1. A print timing apparatus for use in font belt printing for printing in accordance with the timing of any of a plurality of fonts having a different number of characters per set, each different font carried on a font belt, said font belt including a plurality of primary indicia and a plurality of secondary indicia, said primary indicia corresponding to each font on said belt and said secondary indicia corresponding to each character on a font, said first and second indicia positioned on said belt relative to each other in accordance with the size characteristic of each said font, said apparatus comprising a plurality of timing means for controlling the speed actuation of said printer in accordance with the size font on said font belt, a first sensor for sensing said primary indicia, a second sensor for sensing said secondary indicia, a counter coupled to said second sensor and responsive to each secondary indicia for accumulating a count corresponding to said sensed secondary indicia, said counter having a reset input further coupled to said first sensor and responsive thereto to be reset by each sensed primary indicia, the total count thus accumulated in said counter corresponding to a font size, decoding means coupled to said counter and responsive to each total level count accumulated in said counter for providing a unique output, and means coupling each unique output of said decoder to a corresponding one of said plurality of timing means for selecting one of said timing means of said printer.

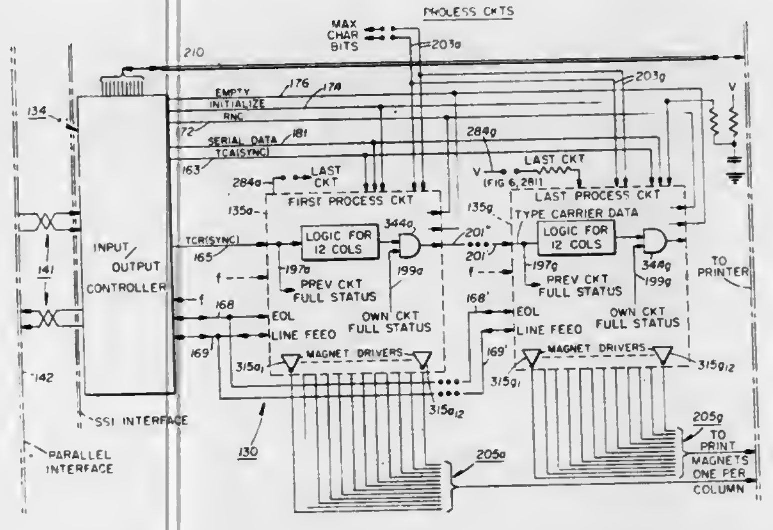
3,845,710
PRINT CONTROL LOGIC CIRCUITRY FOR ON-THE-FLY PRINTERS

Detlef A. Brodrueck, Northbrook, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Oct. 2, 1973, Ser. No. 402,864

Int. Cl. B41j *7/08*

U.S. Cl. 101—93.14 30 Claims



1. A print control logic circuit for use in high speed on-the-fly printers, for selectively actuating one or more out of a plurality of character print-inducing members whenever selective type characters forming a part of a continuously moving font of type characters are momentarily brought into respectively aligned and juxtaposed relationship with said print-inducing members so as to effect sequential printing of type character images along each successive line on a medium, but with the character images ultimately being positioned in the serial order in which the input data characters to be printed were received, said logic control circuit comprising:

sub-dividable memory means for storing input binary encoded data representative of the characters to be printed at particular positions along a given print line, said memory means having at least two logic controlled and operationally distinct storage areas, and including means for selectively storing input character data in and reading said data out of said storage areas in a manner that allows incoming data intended for printing on one line to be stored in one of said distinct storage areas while any previously received data is still being read out of the other storage area, processed and printed in the preceding line,

means for generating type character font data in multiple phase sequences during each print cycle, said data being representative of and identifying the particular ones of said moving font type characters that are respectively brought into registry with associated ones of said character print-inducing members at any particular point in time during each phase sequence, and

means for processing any stored character data for printing after having been read out of said memory means, by comparing said stored data with said generated type character data, and for generating a distinct print signal, in response to each valid equal signal comparison, for use in actuating at the proper time the particular one of an associated character print-inducing member that will effect the printing of a character image representative of the compared type character at the proper position along a given print line.

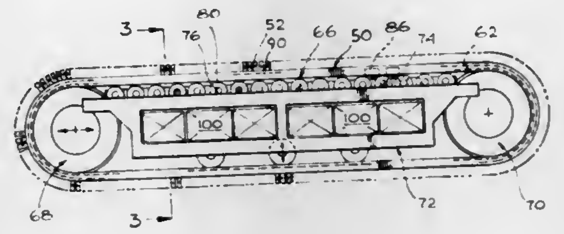
3,845,711
BELT PRINTER

Clifford J. Helms, Calabasas Park, Calif., assignor to Data Products Corporation, Woodland Hills, Calif.

Filed Dec. 13, 1972, Ser. No. 314,693

Int. Cl. B41j *9/08*

U.S. Cl. 101—111 12 Claims



1. A printing apparatus comprising:

hammer assembly means including a plurality of hammers mounted with the impact faces thereof defining a common elongated plane and means for individually actuating each hammer to propel the impact face thereof in a first direction substantially perpendicular to said plane;

means for transporting a web material to be printed upon along a path past said common plane of impact faces; and type assembly means for successively presenting type characters to each of said hammer impact faces, said type assembly means including:

an endless band having inner and outer peripheral surfaces and characterized by being relatively flexible about an axis in the plane of said band perpendicular to its length and relatively rigid about an axis in the plane of said band parallel to its length;

a plurality of elongated slugs each having a type character area on at least one end face thereof, each slug having a mass on the order of five times or more the mass of one of said hammers;

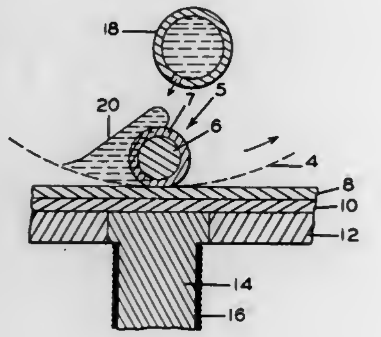
means fixing said slugs to the outer surface of said band with the length of said slugs extending across the width of said band and with said type character areas lying in a substantially common plane;

low friction bearing means engaging said band inner surface and supporting said band with said plane of type character areas oriented substantially parallel to said plane of impact faces with said web material path disposed therebetween; and

means for driving said endless band around said low friction bearing means.

3,845,712
SCREEN PRINTING METHOD

Valter J. Lewicki, Jr., Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
Continuation-in-part of Ser. No. 93,183, Nov. 27, 1970, abandoned. This application Sept. 17, 1973, Ser. No. 397,676
Int. Cl. B41m *1/12;* **B41l** *13/06*
U.S. Cl. 101—129 **1 Claim**



1. The method of printing a design on a porous substrate by applying liquid ink through a screen having openings arranged in the desired design pattern which comprises:

arranging in superposed relationship the afore-said substrate and screen and arranging in superposed relationship to the screen a rotatable cylindrical squeegee surrounded by a peripheral porous resilient compressible layer at least one-fourth inch in thickness made of reticulated open cell foam:

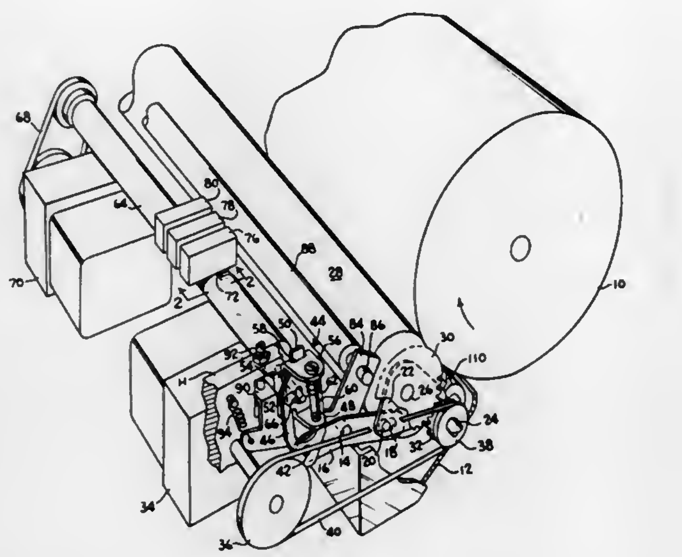
rotating the screen on the substrate while rotating the squeegee in contact with the upper surface of the screen and simultaneously applying compressive force between the squeegee and the screen so as to compress the peripheral porous layer against the upper surface of the screen to thereby compress the porous layer to between approximately one-third and two-thirds of its normal thickness and to increase the area of contact and to at least partially compress the pores in the area of contact; and

providing a supply of liquid ink at and adjacent in advance to the area of engagement between the screen and squeegee whereby the peripheral porous layer envelops a portion of the liquid ink so that in a continuous manner a portion of the liquid ink is first absorbed and as it enters the area of compressed contact with the screen it is then expelled from the open pores to thereby force the liquid ink under pressure through the openings in the screen and into the substrate substantially throughout the area of contact between the screen and squeegee.

3,845,713
AUTOMATIC ETCHER FOR OFFSET MASTER

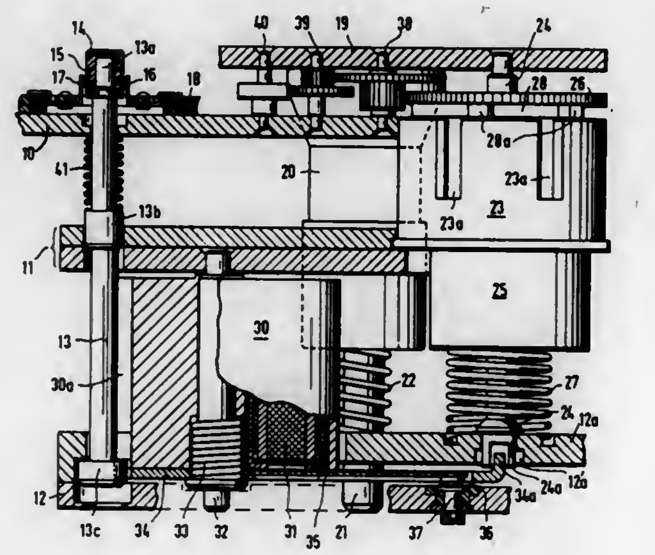
William A. Ross, Darien; Roderick N. Schmaling, Norwalk, and Warren E. Olson, New Canaan, all of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Filed Jan. 29, 1973, Ser. No. 327,509
Int. Cl. B41l *23/00*
U.S. Cl. 101—148 **9 Claims**

1. Apparatus for automatically applying an etching solution to an offset master which comprises: a rotatable master cylinder for supporting the offset master; means for rotating the master cylinder; an elongated reservoir for etching solution; said reservoir extending substantially parallel to said master cylinder; a rotatable feed roller extending substantially parallel to said master cylinder; means for rotating said feed roller partially immersed in etching solution in said reservoir; squeegee means engageable with said feed roller; and automatic control means for sequentially positioning said feed roller in three discrete positions including a make ready position wherein said rotating feed roller is disposed in engagement with said squeegee means but out of engagement with said master cylinder; then in an etching solution application position wherein said rotating feed roller is disposed in engagement with both said squeegee means and said rotating master cylinder and then in a rest position wherein said feed roller is disposed out of engagement with both said squeegee means and said master cylinder.



3,845,714
ELECTRIC DETONATOR SYSTEM FOR PROJECTILES

Hans Kaiser, Konigsfeld, Germany, assignor to Gebruder Junghans G.m.b.H., 723 Schramberg, Germany
Filed Jan. 15, 1973, Ser. No. 323,417
Claims priority, application Germany, Jan. 24, 1972, 2203216
Int. Cl. F42c *11/00, 15/24, 9/02*
U.S. Cl. 102—70.2 R **4 Claims**



1. In an electric detonator assembly for a projectile, said assembly comprising a primer means; electrically actuable primer-detonating means; a detonator circuit connectable between a power source and said primer-detonating means; an impact-responsive switch having a movable element for closing a first portion of said detonator circuit, said impact switch element being normally disposed in a circuit-open position and being mounted so as to be urged toward a circuit-closing position in response to impact of said projectile after launching; a movable arm, said arm having means for closing a second portion of said detonator circuit; means for urging said arm from a safety position in which said second circuit portion is open toward a priming position in which said second circuit portion is closed; safety means for restraining movement of said arm toward its priming position prior to launching of the projectile and for releasing said arm for movement toward its priming position subsequent to launching of the projectile; the improvement wherein:

said impact switch element is disposed adjacent said arm; and

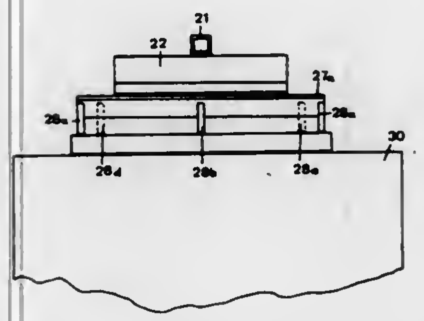
mechanical locking means being operably connected to said arm and being shiftable in response to movement of said arm for:

  retaining said impact switch element in its circuit-open position when said arm is disposed in its safety position, and

  releasing said impact switch element when said arm is disposed in its priming position such that said impact switch element is capable of movement to a circuit-closing position in response to impact of the launched projectile.

3,845,715
SYSTEM FOR POSITIONING A VEHICLE

Rolf Hochstrasser, Aarau, Switzerland, assignor to Oehler-, Wyhlen-Lagertechnik A.G., Aarau, Switzerland
Filed Aug. 24, 1972, Ser. No. 283,371
Claims priority, application Switzerland, July 27, 1972, 12732/72
Int. Cl. H01h *35/00*
U.S. Cl. 104—1 R **1 Claim**



1. In a system for automatically positioning a vehicle along a path interrupted by stops in its movement at predetermined locations along said path and for sensing the location of said vehicle coming to a stop at each location by means of inductively functioning reading heads located on said vehicle, coded stop identification means at a side of said path which produce an output in response to the positioning of said reading head adjacent said coded stop identification means, control means to cause the vehicle to move to a coded stop identification means and to stop at said identification means in response to a comparison signal between the output signal read at said stop and a reference signal which determines the ultimate distination at the end of said path that improvement in construction and organization of the stop identification means at a predetermined location and of the inductively functioning reading heads on said vehicle comprising:

a frame member at each predetermined stop position located along said vehicle path adjacent the movement and stopping position of the vehicle under the control of the output signal of the inductively functioning reading heads on the vehicle;

coded stop identification means mounted on said frame member formed of a coded plurality of mutually parallel metallic angle sections detachably supported on said frame member;

a first reading head on said vehicle consisting of an inductance means which, in proximity to said stop identification means produces an output which identifies the specific predetermined stopping position corresponding to said coded stop identification means;

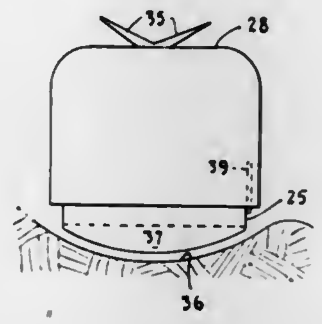
a second reading head spaced from said first reading head by a distance equal to the length of said coded plurality of angle sections which is mounted on said vehicle on the same side as said first reading head to provide a band having ends between which the adjacent stop identification means can be positioned, thereby providing a termination position of said vehicle corresponding to the inductive output signal having a maximum at this precise stop position;

said first and second reading heads having slots to receive said angle sections;

third and fourth reading heads on said vehicle located between said first and second reading heads spaced apart a distance less than the spacing of the first and second heads whereby proximity to said stop identification means produces an output of said third and fourth heads which allows limited movement.

3,845,716
SURFACE EFFECT VEHICLES AND GUIDEWAYS THEREFOR

William R. Bertelsen, 2720 31st Ave, Rock Island, Ill. 61201
Continuation-in-part of Ser. No. 871,765, July 31, 1970, Pat. No. 3,712,406, which is a continuation-in-part of Ser. No. 633,357, April 21, 1967, which is a continuation-in-part of Ser. No. 731,001, April 25, 1958, abandoned. This application Jan. 8, 1973, Ser. No. 321,948
Int. Cl. B61b *13/08*
U.S. Cl. 104—23 FS **9 Claims**



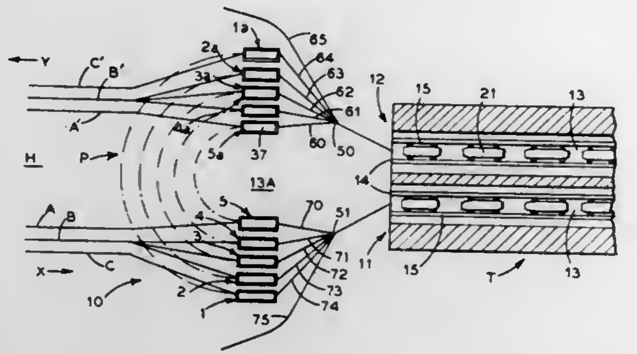
1. A combination road and guideway system for air cushion vehicles, said system comprising a roadway having a substantial longitudinal extent and comprising at least one individual track forming portion which includes a vehicle supporting surface portion, at least one lateral guiding surface portion, and a transition surface portion joining said supporting and guiding surfaces to form a composite track surface of generally curvilinear configuration in front elevation, which track surface forms a combination guideway and reactant surface for said air cushion vehicles whereby a vehicle having a bottom surface substantially the entire portion of which has a contour generally complementary to said track cross section, disposed in said track and sustained on an air cushion will be free to move within said track and will tend to position itself within said track in response to applied forces including sustaining forces applied to said track by said vehicle and in response to gravitational, acceleration, and extrinsic control forces acting upon said vehicle.

3,845,717
VEHICLE TRAFFIC HANDLING SYSTEM

Mihai Alimanestianu, 4 Locust Dr., Upper Nyack, N.Y. 10960
Continuation-in-part of Ser. No. 767,898, Sept. 12, 1968, abandoned, which is a continuation-in-part of Ser. No. 546,317, April 29, 1966, abandoned. This application Nov. 18, 1971, Ser. No. 200,094
Int. Cl. B61b *1/00*
U.S. Cl. 104—26 **11 Claims**

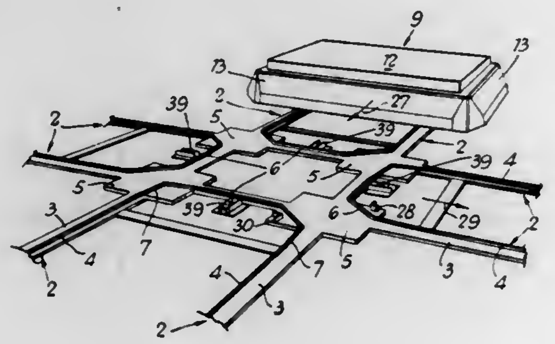
1. In a vehicle handling system for vehicles traveling in a pair of lanes in respectively opposite directions, carrier means for respectively carrying said vehicles arranged for serial movement in each lane, a pair of station means located at terminal points at one end of said lanes and a second pair of station means located at terminal points at the other end of said lanes, one of each pair of station means being arranged for unloading carrier means from one of said lanes, the other

of each pair of station means being arranged for loading carrier means for the other of said lanes, means for propelling the carrier means in each lane, means for guiding the propelled serially related carrier means on one of said lanes in a plurality of divergent paths from said one lane towards said station



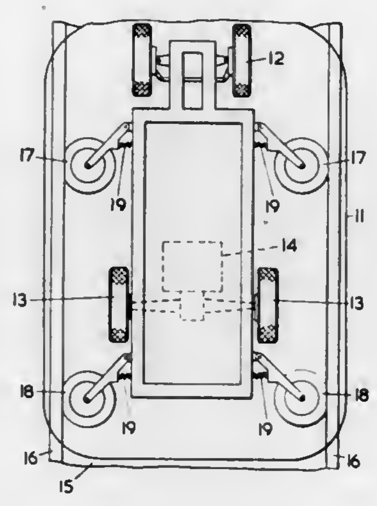
means therein, thereafter in a plurality of laterally related paths from said last mentioned station means to the station means in the other of said lanes, and thereafter in a plurality of convergent paths from said last mentioned station means toward said other lane.

3,845,718
TRANSPORTER SYSTEMS
Peter C. Rogers, Hemel Hempstead; Frank B. Harrison, Berkhamsted; Richard C. Hipkiss, Sussex; Joseph Sunasky, Caddington, and Nigel G. Shapcott, Studham, all of England, assignors to Dexion-Comino International Limited, Middlesex, England
Filed Feb. 16, 1973, Ser. No. 333,102
Int. Cl. E01b *25/06*
U.S. Cl. 104—130 **9 Claims**



1. A transporter system comprising in combination:
a. track means,
b. a car supported upon a plurality of wheels, each wheel being mounted so that it can swivel about an upright axis,
c. a power unit carried upon the car and drivingly connected to at least one of the said wheels, and
d. automatic steering means including
1. passive control means provided in said track means,
2. devices carried upon the car and operable in response to the passive control means for imparting to the said wheels swivelling movement in relation to the car to thereby cause the car to selectively follow a predetermined course along said track means while maintaining its orientation in relation to the system.

3,845,719
GUIDANCE APPARATUS FOR TRACK FOLLOWING VEHICLES
Michael Guy Langdon, Farnham, England, assignor to British Secretary of State for Environment, London, England
Filed May 18, 1972, Ser. No. 254,778
Claims priority, application Great Britain, May 21, 1971, 16183/71
Int. Cl. E01b *25/26*
U.S. Cl. 104—130 **6 Claims**

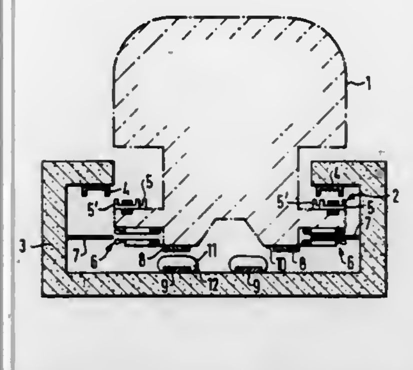


1. Guidance apparatus for a track-following vehicle normally guided along a track by a guidance abutment at each side of the track, the track having a fork junction dividing it into a left hand track and a right hand track and there being at the fork junction discontinuities in the guidance abutments corresponding to the right hand guidance abutment of the left hand track and the left hand guidance abutment of the right hand track; comprising a left hand guide means and a right hand guide means supported for motion on the vehicle and each movable by selector means comprising a push pull cable in a housing control link connected to each of said guide means and connected to a control lever pivotally supported on the vehicle, movement of the control lever to the left being operative to move said left and right hand guide means clockwise about left and right hand fore and aft vehicle axes respectively into positions where said left hand guide means engage a left hand secondary guidance abutment leading into said left hand track and said right hand guide means are disengaged, and movement of the control lever to the right being operative to move said left and right hand guide means counterclockwise about said fore and aft vehicle axes into positions where said right hand guide means engage a right hand secondary guidance abutment leading into said right hand track and said left hand guide means are disengaged, engagement of a guide means with a secondary guidance abutment acting as a stop to prevent return of that guide means to disengage position throughout passage of the fork junction.

3,845,720
MAGNETIC-LEVITATION VEHICLE WITH AUXILIARY MAGNETIC SUPPORT AT TRACK-BRANCH LOCATIONS
Gerhard Bohn; Gunther Winkle, and Helmut Wende, all of Munich, Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Germany
Filed Jan. 17, 1973, Ser. No. 324,350
Claims priority, application Germany, Jan. 20, 1972, 2202655; Apr. 27, 1972, 2220735
Int. Cl. B60l *13/00*
U.S. Cl. 104—148 MS **27 Claims**

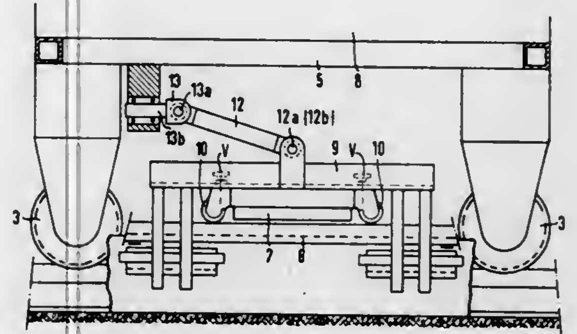
1. In a magnetic-suspension vehicle system comprising a track having at least one branch region at which one track portion diverges from another track portion, and a vehicle magnetically suspended on said track and selectively directable onto said track portion, the improvement which comprises, in combination:

respective suspension electromagnets extending along opposite sides of said vehicle and cooperating with respective armature rails formed along said track, said rows of suspension electromagnets describing intersecting traces at said branch region, said armature rails being disposed at the sides of the vehicle so that a gap is formed in at least one of the rails at the branch region to permit the vehicle to selectively traverse said portions; and



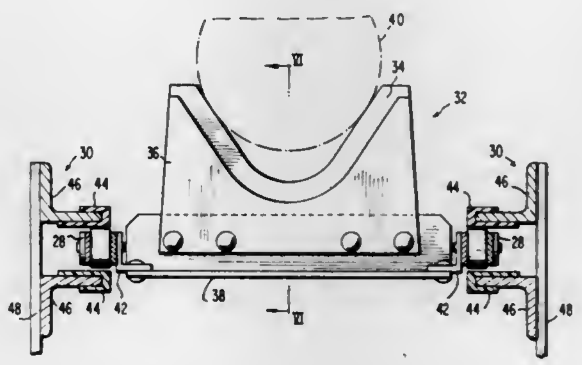
cooperating means on said vehicle and said track, at least in said region, and effective to provide a magnetic supporting force for a side of said vehicle through said region at which the corresponding row of suspension electromagnets is ineffective.

3,845,721
LINEAR MOTOR ASSEMBLY FOR DRIVING A VEHICLE OF A CONVEYING SYSTEM
Jakob Wagner, Weisendorf, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany
Filed Sept. 25, 1972, Ser. No. 291,936
Claims priority, application Germany, Sept. 30, 1971, 2148824
Int. Cl. B60l *13/00*
U.S. Cl. 104—148 LM **2 Claims**



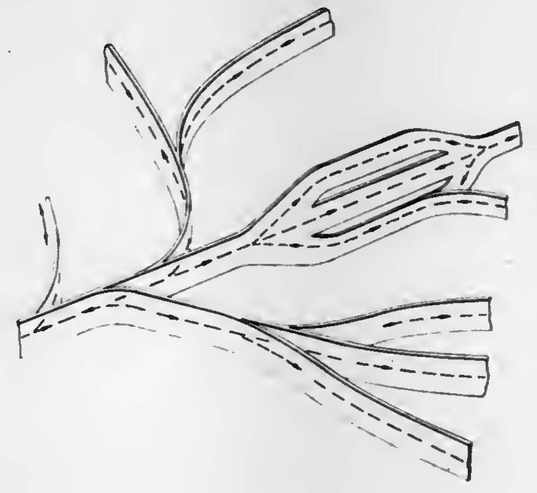
1. In a conveying system having a vehicle with a chassis propelled by a linear motor assembly along a guide structure defining a travel axis, the linear motor assembly comprising a motor truck, a winding carrier mounted on said motor truck, a rail-like return member arranged on the guide structure in operative proximity to said winding carrier, and a guidance arrangement for connecting said motor truck to the vehicle chassis, said guidance arrangement including:
force transition means comprising a fork connected to said motor truck for holding the same so as to be disposed in a direction corresponding to the travel axis, for transmitting pulling and pushing forces from said motor truck to the vehicle, a plurality of movable joints for connecting said force transmission means between said motor truck and the vehicle so as to cause said motor truck to be movable in elevation independent of the vehicle, and articulated joint means comprising a rotatable joint, one of said movable joints and said rotatable joint cojointly defining an articulated joint for connecting said fork to the chassis of the vehicle, and for causing said motor truck to be also movable about and transverse to the travel axis independent of the vehicle, and ancillary linkage means for connecting said motor truck to the chassis of the vehicle in the direction transverse to the travel axis.

3,845,722
CHAIN-DRIVEN INCLINE
William D. Peppard, Chico, Calif., assignor to Rexnord Inc., Milwaukee, Wis.
Continuation-in-part of Ser. No. 318,980, Dec. 27, 1972, abandoned. This application Feb. 28, 1973, Ser. No. 336,592
Int. Cl. B61b *13/12*
U.S. Cl. 104—165 **9 Claims**



1. In a friction-powered unit carrier system having a plurality of cars which are normally driven over a trackway by the interaction of cylindrical, longitudinally extending reaction members mounted on said cars and powered propulsion wheels mounted adjacent to said trackway, a device for transmitting relatively large amounts of power to said cars comprising:
A bracket having a saddle therein adapted to releasably engage said reaction members, said bracket being U-shaped
means for moving said bracket along said trackway, whereby a car on which is mounted a reaction member releasably engaged by said bracket may be pulled forward by said bracket.

3,845,723
HIGHLY IMPROVED TRANSPORTATION SYSTEM
Justin M. Jacobs, Jr., 1245 Jones St., San Francisco, Calif. 94109, and Neil S. Stafford, Rt. 3, Box 355, San Jose, Calif. 95121
Division of Ser. No. 212,906, Dec. 28, 1971, Pat. No. 3,760,740. This application Aug. 13, 1973, Ser. No. 388,215
Int. Cl. B61b *13/04*
U.S. Cl. 105—147 **12 Claims**



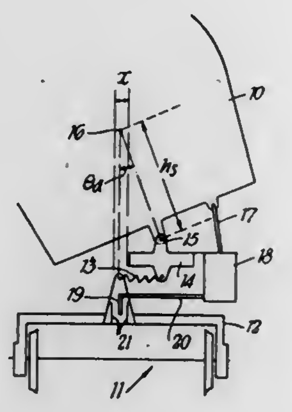
1. Apparatus for use in cantilever fashion on a guidebeam having an inwardly facing vertical upper guide running sur-

face, an outwardly facing vertical lower guide running surface and a substantially horizintal support running surface comprising a frame, at least two horizontally spaced apart upper guide wheels rotatably mounted on normally vertical axles of said frame and adapted to move on the inwardly facing vertical upper guide running surface, at least two horizontally spaced apart lower guide wheels rotatably mounted on normally vertical axles of said frame and adapted to move on the outwardly facing vertical lower guide running surface, at least a pair of horizontally spaced apart support wheels rotatably mounted on normally horizontal axles of said frame and adapted to move on the support running surface and self-contained means carried on said frame for moving said upper and lower guide wheels transversely on said guidebeam between at least two vertically spaced apart positions on the vertical running surfaces of the guidebeam.

3,845,724
RAILWAY CAR CENTRIFUGAL FORCE STABILIZING DEVICE

David Boocock; Alan J. Bing, and Kevin S. Preston, all of London, England, assignors to British Railways Board, London, England

Filed Jan. 10, 1972, Ser. No. 216,504
Int. Cl. B61f *3/12, 5/10, 5/24*
U.S. Cl. 105—164 **5 Claims**

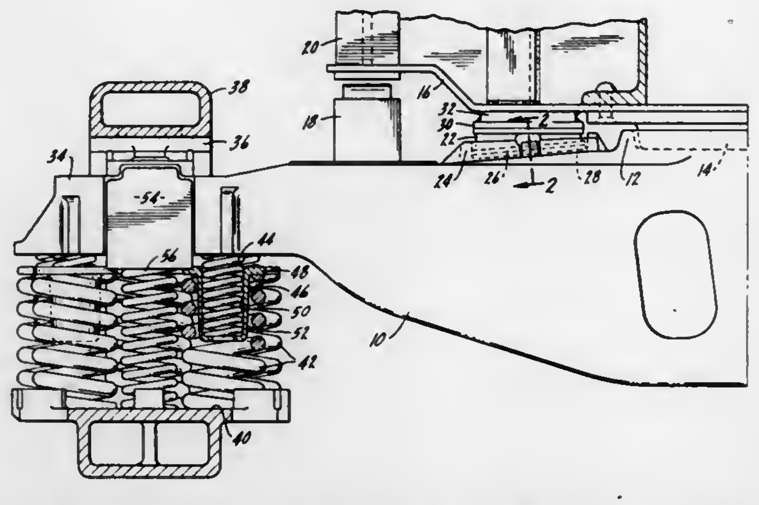


1. In a tracked vehicle of the known type wherein a vehicle body is pivotally connected to a support member which is supported on at least one track follower, operative to guide said vehicle for restrained lateral motion along a track, through a lateral suspension permitting the support member to move laterally of the track follower against a predetermined stiffness of the lateral suspension, and wherein the support member is constrained to move laterally with the vehicle body under centrifugal force by an amount related to the stiffness of said lateral suspension while permitting lateral tilting of said body relative to said support member, means being provided to tilt said vehicle body relatively to said support member through an angle related to the centrifugal force simultaneously with the lateral displacement thereof so that the effective tilt axis of said body lies in the central longitudinal plane of the vehicle body perpendicular to the floor of the vehicle body, the improvement comprising at least two bump stop members mounted for movement relative to one another and operative upon engagement with one another to limit lateral suspension movements in response to transient forces, one of said bump stop members being mounted at a fixed position relative to said track follower, and the other of said bump stop members being mounted for movement relative to said fixed one of said members, said other of said bump stop members being affixed to a mechanical linkage connected to said vehicle body and comprising control means responsive to the angle of tilt of the vehicle body relative to the support member for causing lateral movement of said movable one of said bump stop members relative to said fixed one of said bump stop members by a distance equal and in a direction opposite to the lateral movement experienced by the lateral suspension due to unbalanced centrifugal forces.

3,845,725
SNUBBED RAILWAY TRUCK

Robert W. Gierlach, Downers Grove, Ill., assignor to Standard Car Truck Company, Chicago, Ill.

Filed May 4, 1973, Ser. No. 357,505
Int. Cl. B61f *5/06, 5/12, 5/14*
U.S. Cl. 105—197 DB **5 Claims**

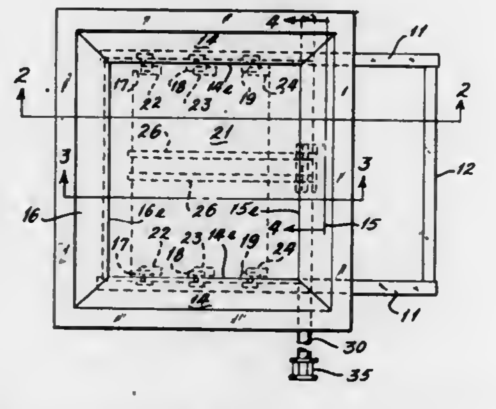


1. In combination in a railroad car, a car bolster and a truck supporting said bolster, said truck including a bolster pivotally attached to the car bolster, a pocket positioned on the upper side of the truck bolster on opposite sides of the pivotal attachment between the bolsters, each pocket having an elastomeric cushion, said cushions retarding relative pivotal movement between the car and truck bolsters, said truck having side frames and spring means supporting said bolster on said side frames, snubbing means dampering the action of said truck bolster with respect to said said side frames, said spring means including a plurality of first springs and a plurality of second springs, a cup positioned within each of said first springs, each cup having an outwardly-extending flange adjacent one end thereof for supporting each cup at the upper end of its respective first spring, each of said second springs being bottomed in its respective cup and extending upwardly in supportive contact with said bolster, each of said first springs having less deflection per pound of load than said second springs, whereby said bolster is supported by said first and second springs when the car is lightly loaded or unloaded and the bolster is supported by said first springs when heavily loaded.

3,845,726
RACK AND PINION HOPPER GATE ACTUATING MECHANISM

Oliver C. Fuller, Woodstock, Ill., assignor to Evans Products Company Transportation Systems Division, Des Plaines, Ill.

Filed Jan. 11, 1974, Ser. No. 432,595
Int. Cl. B61d *7/20, 7/22, 7/26*
U.S. Cl. 105—282 P **9 Claims**

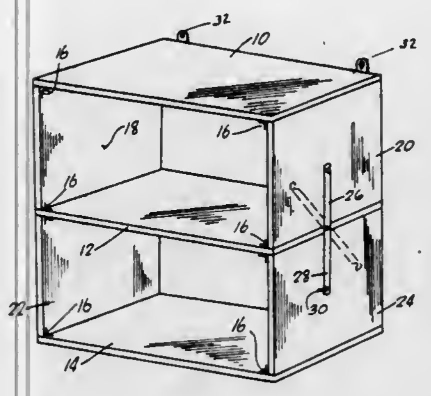


1. A hopper structure including a support frame, an outlet chute carried thereby and having a downwardly facing rim and a gate therefor slidable along said frame between an outlet-open to an outlet-closing position, said gate being vertically spaced below said outlet rim while open and partially closed, elements on said frame and gate and interengaging to lift the entire gate uniformly throughout its area toward engagement with said rim as it approaches full outlet-closing position, a rack secured to the bottom of said gate, a pinion journaled on said support frame below said gate, said rack having square cut teeth and said pinion having cylindrical teeth in meshed relation with said rack teeth, the shapes of said rack and pinion teeth ensuring constant full engagement of said rack and pinion irrespective of vertical movements of said gate.

3,845,727
FOLDING SHELVING

Herbert S. Chase, Woodmere, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Mar. 21, 1973, Ser. No. 343,514
Int. Cl. A47b *43/00*
U.S. Cl. 108—111 **2 Claims**



1. Folded shelving comprising:

first, second and third shelves of like length and width;

first, second, third and fourth like panels with pins thereon, also of said width;

means hingedly securing each end of each first and second panel to a corresponding end of a corresponding one of the first and second shelves and hingedly securing each end of each third and fourth panels to a corresponding end of a corresponding one of the second and third shelves; and

manually operable locking means secured at each end of the second shelf to engage said pins on said panels to lock the structure in upright position, each locking means including an elongated bar secured pivotally at its midpoint to a midpoint of an end of the second shelf, each bar always extending at right angles to the longitudinal direction of extension of the shelf.

3,845,728
FOLDING TABLE

Giancarlo Piretti, Bologna, Italy, assignor to Anonima Castelli S.A.S. di Cesare Castelli & Co., Bologna, Italy

Filed Sept. 14, 1972, Ser. No. 289,137
Int. Cl. A47b *3/08*
U.S. Cl. 108—131 **1 Claim**

1. A folding table comprising

a substantially planar table top having a tubular longitudinal side bar extending along opposed edges thereof,

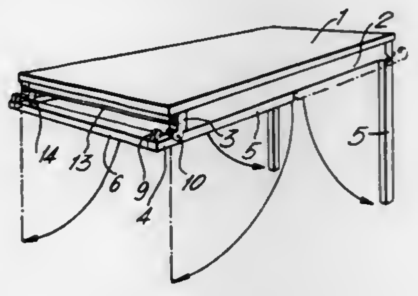
two opposed pairs of legs for supporting said table top, each pair of legs being securely braced together by a transverse beam and pivotally connected as a unit to said table top so as to fold to a stored position beneath the table top,

a housing inserted into the ends of said tubular longitudinal side bars,

each leg of a unit pair of legs being pivotally connected to a housing inserted in an end of one of said side bars by coaxial pins, and

first locking means stored within each housing cooperating with second locking means on the upper ends of each of said legs for preventing said leg units from pivoting about said coaxial pins so as to lock said leg units in an upright position to support said table top, said first locking means including

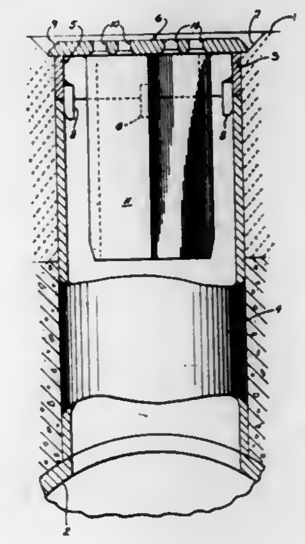
a hook arranged at the end of an arm of a lever pivoted intermediate its length about a pin in the housing having its axis parallel to the pivot axis of an adjacent unit pair of legs, the other arm of said lever being connected to a strong spring which is so positioned to maintain said hooked arm in engagement with said second locking means which includes a cooperating hook end provided at the upper portion of the adjacent leg, and means for rotating said levers against the bias of the associated springs so as to cause the mutual disengagement of the hooks on said first and second locking means in order to allow each unit pair of legs to be turned until they abut against the lower surface of the table top.



3,845,729
AIR JET HEAD ASSEMBLY FOR PIT TYPE INCINERATORS

Max von Berlichingen, P.O. Box 901, Green Bay, Wis. 54301

Filed Dec. 10, 1973, Ser. No. 424,350
Int. Cl. F23c *7/00*
U.S. Cl. 110—72 R **3 Claims**



1. In an incinerator of the class described having a refractory floor of substantial thickness with a plurality of vertical openings therethrough adapted to supply under-fire air to aid in combustion of the material in the incinerator, a jet head assembly and mounting comprising a generally cylindrical sleeve fixed in an opening and extending upwardly from a source of air to a top position below that generally allowable for wear of the surface of the floor, a jet head plate disposed generally at the level of the upper surface of the floor, and means to support said plate upon said sleeve selectively at a plurality of adjusted levels above the top of the sleeve and consonant with different levels for the top surface of the floor as the latter wears down in service.

3,845,730
AGRICULTURAL APPARATUS

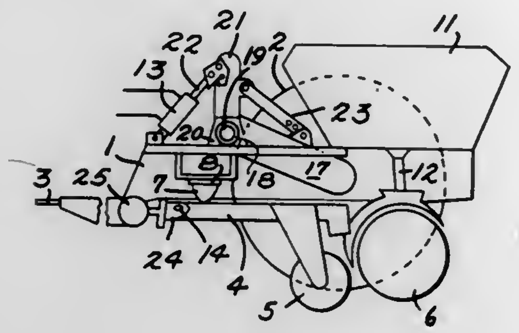
Paul Koronka, Upwaltham, and Richard John Hirst, Billingshurst, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 210,057, Dec. 20, 1971, abandoned, which is a continuation-in-part of Ser. No. 874,909, Nov. 7, 1969, abandoned. This application Dec. 7, 1973, Ser. No. 422,785

Claims priority, application Great Britain, Nov. 28, 1968, 56473/68

Int. Cl. A01c *5/06*

U.S. Cl. 111—88 **4 Claims**



1. A seed drill comprising a frame mounted upon ground wheels, said frame having mounted thereon a seed hopper to which conduit means for conveying seed from the hopper to the ground is attached, said frame also supporting a plurality of drag bars bearing soilworking members, said drag bars being pivotally mounted on said frame, a conically shaped rubber spring having an apex and a base, said base of said rubber spring being fixed on said frame with said apex of said rubber spring being disposed to transmit a portion of the weight of said frame to a said drag bar, a said rubber spring being provided on said frame for each of said drag bars, the remainder of the weight of said frame being born by said ground wheels and frame-mounted means for moving said ground wheels vertically with respect to said frame for varying the portion of the weight of said frame born by said drag bars and thereby controlling the depth to which said soilworking members are urged into said soil, said frame-mounted moving means comprising at least a first member to one end of which at least one of said ground wheels is mounted, the other end of said first member being pivotally mounted at its other end to said frame, a lug member also pivotally mounted to said frame and connected to said first member by connecting means and a hydraulic cylinder mounted to said frame and having a piston attached to said lug member for rotating said lug member and therefore said first member

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3,845,731
RECORD CONTROLLED SEWING MACHINE

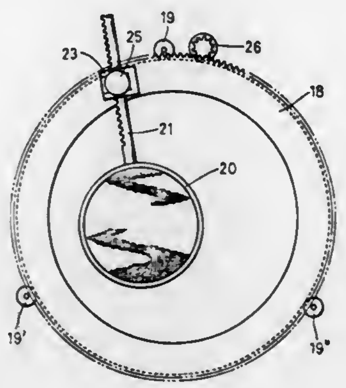
Isamu Sakamoto, Nishinomiya, Japan, assignor to Kokau Camera Laboratory Company Limited, Kobe City, Hyogo Prefecture, Japan

Division of Ser. No. 36,111, May 11, 1970, Pat. No. 3,750,186. This application July 3, 1973, Ser. No. 376,167

Int. Cl. D05c *3/02*

U.S. Cl. 112—102 **4 Claims**

1. Work supporting means for a record controlled automatic sewing machine operable to directly and controllably vary the lateral swing of its needle, and operated and controlled by the recorded pulse outputs of a magnetically inscribed record carrier bearing discrete X-, Y-, and rotational tracks, comprising, a frame adapted to support fabric to be embroidered, a carriage, first means supporting said frame on said carriage for rotation about an axis normal to the plane determined by mutually-normal X-, and Y-axes, second means supporting said carriage for guided translation parallel with said X-axis, third means supporting said second means, carriage and frame for guided translation as a unit, parallel with said Y-axis, first, second and third pulse motors connected to rotate said frame, and to translate said carriage and said second means, respectively, as aforesaid, electric telemetric circuit means connected between said record carrier and said first, second and third pulse motors for controlling the actuation of the latter by and in response to the time-rate of pulses produced by the respective tracks of said carrier, and a fourth pulse motor energizable and operating to controllably vary the lateral swing of the needle, as aforesaid, said record carrier bearing a discrete fourth track effecting control through said circuit means, of said fourth pulse motor, to vary the swing of the needle in timed relation with actuation of said first, second and third pulse motors.



3,845,732
METHOD OF FORMING BRAIDED ELONGATED OPENINGS

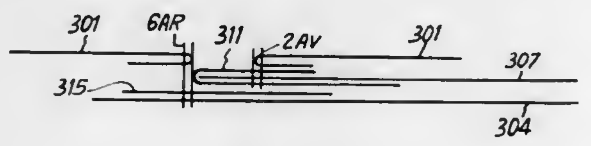
Jean Guichard, Yerres, France, assignor to Centre d'Etudes Techniques des Industries de l'Habillement, Paris, France

Filed Apr. 7, 1972, Ser. No. 241,972

Claims priority, application France, Apr. 9, 1971, 71.12657

Int. Cl. D05b *3/00*

U.S. Cl. 112—264 **10 Claims**



1. The method of making a piped opening in a garment portion, comprising the steps of:

- a. pre-forming a rectangular opening with turned-in edges in a bottom piece of material having a front face which will be exposed in the completed garment portion, and a back face opposite to said front face,
- b. folding a piping on itself,
- c. placing said piping and an auxiliary piece of material against said back face of said bottom piece with the edge of said piping parallel to the lengthwise edge of said opening in said bottom piece,
- d. placing a line of stitching adjacent one short end of said opening to secure said piping and the auxiliary piece to said bottom piece,
- e. continuing said line of stitching along one lengthwise edge of said opening,
- f. continuing said line of stitching along the other short end of said opening, all of said aforerecited lines of stitching securing said piping and said auxiliary piece along three sides of said opening in said bottom piece so that said piping cannot be pushed through the opening in said bottom piece, and
- g. placing a line of stitching along the other lengthwise edge of said opening to secure together said bottom piece to an auxiliary piece, all said afore-recited lines of stitching being placed while said bottom piece is permanently maintained in one and the same position, said auxiliary piece being either the aforesaid auxiliary piece, whereby a button-hole with a single braid is obtained, or a further and other auxiliary piece, whereby a pocket opening with a single braid is obtained.

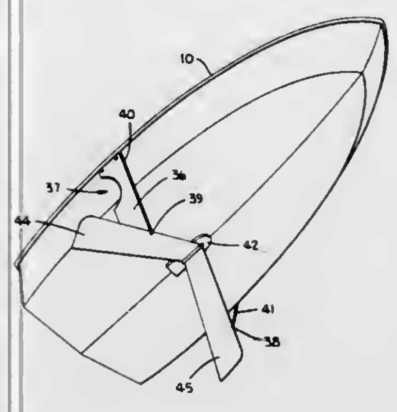
3,845,733
BOAT PROPULSION MEANS

Richard L. Jackman, 2509 S. Main St., New Castle, Ind. 47362

Continuation-in-part of Ser. No. 320,109, Jan. 2, 1973, abandoned, which is a continuation of Ser. No. 91,076, Nov. 19, 1970, abandoned. This application June 11, 1973, Ser. No. 364,802

Int. Cl. B63h *1/32*

U.S. Cl. 115—28 R **1 Claim**



1. A craft propelled by an operator by rocking from side to side which comprises:

- a. a buoyant portion being of sufficient buoyancy to keep itself and an operator afloat and
- b. a fin fixed to the buoyant portion and having
  1. a rigid leading edge,
  2. arms extending away from said leading edge near each of its ends,
  3. webbing material attached to said arms and generally between them,
  4. a support member positioned along the trailing edge of said fin and generally between said arms and
  5. an elastic band stretched between said arms along the trailing edge of said fin.

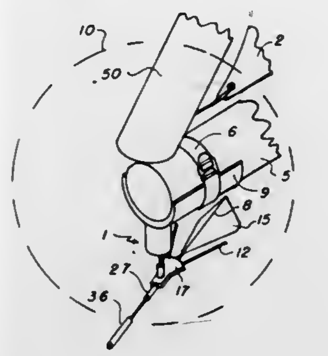
3,845,734
APPARENT WIND INDICATOR ADAPTED TO ESTABLISH OPTIMUM WIND DIRECTION RELATIVE TO THE SAIL OF A SAILBOAT

Peter T. Demos, 49 Orchard St., Belmont, Mass. 02178

Filed Nov. 28, 1972, Ser. No. 310,027

Int. Cl. G01d *21/00*

U.S. Cl. 116—114 R **16 Claims**



1. An apparent-wind indicator for establishing optimum apparent-wind direction relative to the sail of a sailboat, that comprises: a wind vane, mounting means secured to a sail fixture, the wind vane being rotatably attached to the mounting means, said mounting means being exposed to the apparent wind to permit orientation of the vane in the wind direction, said sail fixture being one that pivots with the sail, and means for visually establishing by direct observation of the wind vane an optimum apparent-wind angle between the vane and the sail.

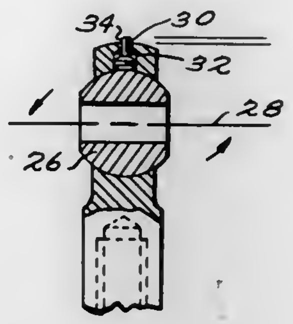
3,845,735
APPARATUS FOR MEASURING WEAR OF ROD END BEARINGS

Robert B. Bossler, Jr., Bloomfield, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed June 22, 1973, Ser. No. 372,666

Int. Cl. G01d *21/00*

U.S. Cl. 116—114 Q **5 Claims**



1. In combination:

a bearing member having an inner bearing surface bounding a journal means receiving space and an outer surface, a raceway adjacent and opening onto said inner surface and a bore extending between said raceway and said outer surface;

journal means mounted within said journal receiving space of said bearing and bounded by said inner bearing surface; and

an indicator pin having a portion extending in said raceway from one end of said portion which contacts said journal means to a shoulder for holding said pin in said raceway and preventing said portion moving into said bore and an indicator end extending from said shoulder through said bore to a position with respect to said outer surface of said bearing member indicating wear when said seat is in contact with said journal means.

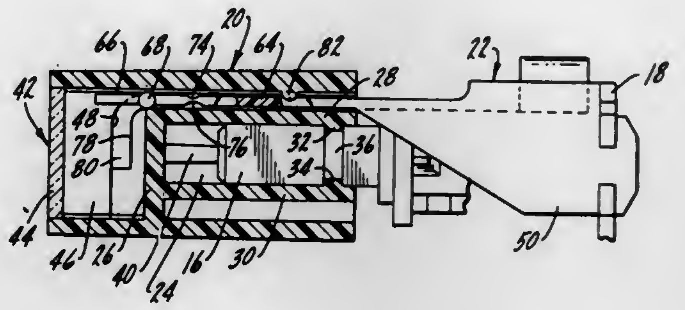
3,845,736
PUSHBUTTON SWITCH WITH POSITION INDICATOR

Bernard J. Golbeck, Crystal Lake, and Raymond F. Lewandowski, Mt. Prospect, both of Ill., assignors to Oak Industries Inc., Crystal Lake, Ill.

Filed Nov. 20, 1972, Ser. No. 308,252

Int. Cl. G09f *9/00*

U.S. Cl. 116—124 R **13 Claims**

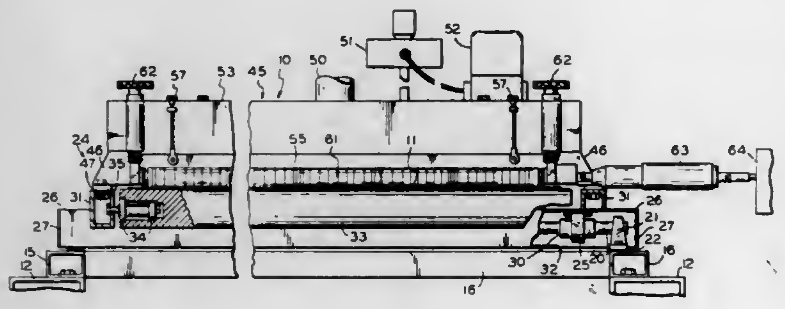


1. Pushbutton switch means including a switch device having a stationary member and a plunger positioned adjacent

and reciprocal relative thereto, an indicator housing fixed to said plunger, lens means in said housing, pivotally movable indicating means attached to said stationary member and including an indicia area positioned within said housing, means in said housing defining a path of movement for said indicia area including housing portions defining a track, guide means on said indicating means movable in said track, movement of said housing and plunger toward said stationary member causing said indicating means to pivotally move within said housing to a position adjacent said lens means.

3,845,737
ENDLESS BELT PROCESSING APPARATUS

William C. Heussy, Shedd, Oreg.; Earl L. Vetor, Anderson, Ind.; Keith P. Delaney, Philomath, and Paul E. Hyde, Corvallis, both of Oreg., assignors to Evans Products Company, Portland, Oreg.
Filed Sept. 15, 1972, Ser. No. 289,556
Int. Cl. B05d *5/02*; B05c *11/10*
U.S. Cl. 118—8 **10 Claims**

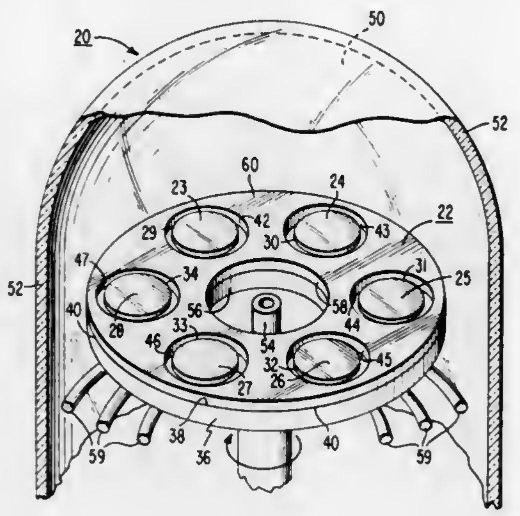


1. An apparatus for controlling the deposition of powder and like materials on an endless moving belt, comprising
- base means;
- carriage means mounted on said base means beneath the endless moving belt at a location at which deposition of the materials on said belt is desired, said carriage means being transversely slideable with respect to said base means;
- belt follower means comprising a pair of cam followers mounted one on each side of said carriage means, each of said cam followers being adapted to contact a side edge of said belt for moving said carriage means transversely of said belt in either transverse direction to correspond with transverse movement of said belt; and
- deposition means mounted on said carriage means above said belt for depositing powder and like materials on said belt,
- said deposition means thereby achieving a transverse travel corresponding to transverse movement of said belt and consequent constant alignment therewith.

3,845,738
VAPOR DEPOSITION APPARATUS WITH PYROLYTIC GRAPHITE HEAT SHIELD

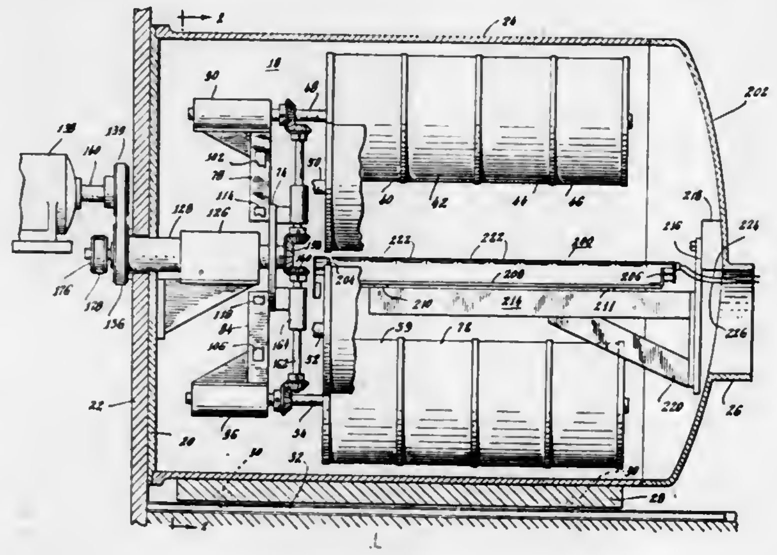
Samuel Berkman, Florham Park, and Ural Roundtree, Jr., Westfield, both of N.J., assignors to RCA Corporation, New York, N.Y.
Filed Sept. 12, 1973, Ser. No. 396,564
Int. Cl. C23c *13/08*
U.S. Cl. 118—49 **3 Claims**

1. In apparatus of the type wherein a substrate is heated in a chamber, and wherein a substance is deposited onto a surface of the heated substrate from a vapor, the improvement comprising:
- an inducation heater operatively associated with said chamber,
- a susceptor, comprising conventional graphite, disposed within said chamber,
- said substrate is a wafer of silicon and disposed on said susceptor,
- said substance is silicon epitaxially deposited on said surface, and said heat shield being supported on said susceptor and comprising a planar member of pyrolytic graphite having a C-axis transversely disposed with respect to said surface of said substrate and said shield having an opening there-through within which is disposed said substrate.



3,845,739
SYSTEM FOR VAPOR DEPOSITION OF THIN FILMS

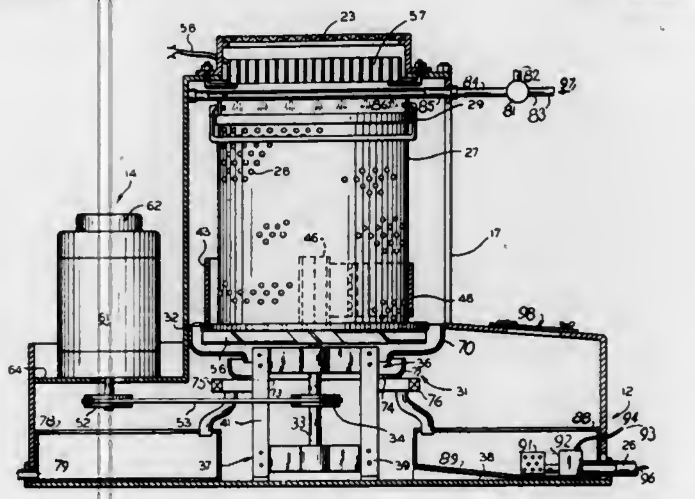
Francis J. Erhart, Webster, and Harold H. Schroeder, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 244,374, April 17, 1972, abandoned. This application Sept. 25, 1973, Ser. No. 400,593
Int. Cl. C23c *13/08*
U.S. Cl. 118—49.1 **3 Claims**



1. Apparatus for the vapor deposition of a layer of material on substrate bodies comprising:
- a generally vertically oriented support table adapted for rotation about a horizontal axis;
- means for rotating said support table;
- a plurality of elongated horizontally oriented mandrels rotatably supported in an annular array on said support table;
- means for rotating each of said mandrels about a longitudinal axis thereof;
- each of said mandrels adapted for receiving, supporting, and rotating therewith a plurality of substrate bodies;
- means for vaporizing a predetermined quantity of material which is to be deposited upon said substrate bodies;
- heating means including an electrode mounted and adjustably positioned adjacent the annular path of travel of said mandrels and extending substantially coextensively with the elongated mandrels, means for applying an electric potential between said electrode and said substrate support bodies for establishing a glow discharge between said electrode and said substrate support bodies for forming an interface barrier layer on said support bodies; and
- means providing an evacuated enclosure for said heating means, mandrels, and the substrate bodies supported thereon.

3,845,740
CENTRIFUGAL MEANS FOR DRYING AND APPLYING LIQUIDS TO ARTICLES

Achille K. Ferrara, 1030 Kendall Trail, Addison, Ill. 60101
Division of Ser. No. 91,798, Nov. 23, 1970, Pat. No. 3,688,906. This application Feb. 25, 1972, Ser. No. 229,605
Int. Cl. B05c *5/00, 11/12*
U.S. Cl. 118—52 **3 Claims**

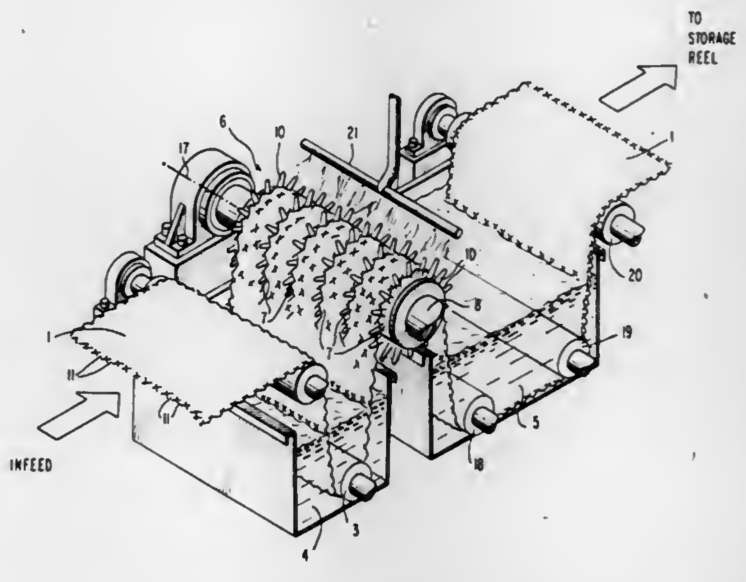


1. A centrifugal dryer for spinning machine parts at a high rotational velocity to remove ambient fluids and dry the machine parts,
- said dryer comprising a base section,
- said base section supporting a cabinet section rising from said base section,
- access opening means in the side wall of said cabinet section for mounting and dismounting said basket on said spinner platform means,
- a separate removable perforated basket means for holding said machine parts for transporting and for drying,
- spinner platform means located within said cabinet for spinning said basket,
- motor means mounted on said base section for supplying power necessary to spin said spinner platform means,
- clamping means having locked and unlocked position for locking said basket to said spinner platform means when in the locked position and enabling horizontal movement of said basket when in the unlocked position, whereby said basket can be mounted and dismounted,
- control means for selectively starting or stopping said motor means,
- coupling means for coupling said motor to said spinner platform means,
- means for selectively showering additive fluids on said parts while said spinner assembly is operating, and
- said showering means comprising valve means for selectively directing a flow of additive fluids through said dryer.

3,845,741
APPARATUS FOR REMOVING EXCESS COATING MATERIAL FROM CHAIN LINK FABRIC

Keith E. Roberts, P.O. Box 485, Huntsville, Ala.
Filed Feb. 6, 1973, Ser. No. 330,118
Int. Cl. B05c *11/12*
U.S. Cl. 118—57 **10 Claims**

1. An arrangement for removing excess molten coating material from chain link fabric of the type having a plurality of openings formed between intersecting fabric members; said arrangement comprising:
- coating means for coating said fabric and cooling means for cooling said fabric after it has been coated,
- at least one sprocket member having a plurality of outwardly projecting sprocket teeth,
- and means for movably guiding chain length fabric over a predetermined portion of the circumference of said at least one sprocket member such that portions of said teeth extend through respective openings in said fabric during movement of said fabric over said at least one sprocket member,
- wherein said teeth are configured and positioned with respect to said openings such that said teeth cause vibration of said fabric when said fabric is moved from a position with said portions of said teeth extending through said openings to a position with said portions of said teeth removed from said openings,
- wherein at least some of said teeth have a plurality of notches arranged along the longitudinal extent of said teeth, said notches being engageable with the fabric members around the respective openings to cause said vibration of said fabric,
- and wherein said at least one sprocket member is disposed in the path of said fabric between said coating means and said cooling means, whereby excess coating material supplied to said fabric by said coating means is removed from said fabric before cooling of said fabric by said cooling means.

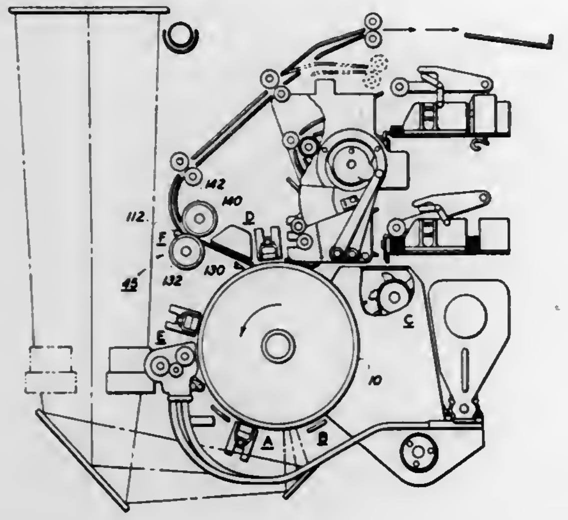


3,845,742
FUSER ROLL CONSTRUCTION

Raghulinga R. Thettu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed May 17, 1973, Ser. No. 361,113
Int. Cl. G03g *13/08*
U.S. Cl. 118—60 **5 Claims**

1. In an electrostatic reproduction machine in which the fusing device for fusing powder images to copy sheets is accomplished by passing the powder images on the sheets through the nip of compressible rotatable members which apply heat and pressure, an improved fuser roll comprising;
- a rigid core member;
- a layer of elastomeric material overlying said core member; said elastomeric layer being formed with at least one undulation in the surface thereof,
- said undulation being sufficiently wide and deep and conforming to the powder image surface under operating conditions to impart sheet rigidity to facilitate release of the sheet from the roll surface,

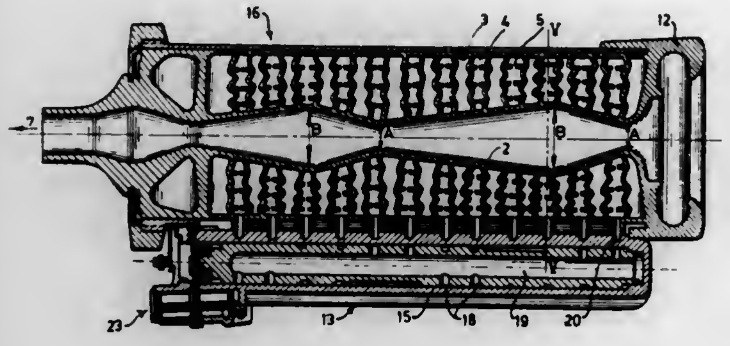
wherein each undulation has a depth ranging from about 0.0015 inches to about 0.005 inches,



wherein each undulation has a width ranging from about 0.050 inches to about 0.500 inches.

3,845,743
ELASTICALLY DEFORMABLE HOSE AND A TEAT CUP PROVIDED WITH A LINING IN CONFORMITY WITH THIS HOSE

Nicolaas Arie Van Staveren, Maasdijk 82, Nederhemert-Noord, Netherlands
Filed June 28, 1973, Ser. No. 374,344
Claims priority, application Netherlands, June 30, 1972, 7209111
Int. Cl. A01j *05/12*
U.S. Cl. 119—14.31 **6 Claims**



1. A hose of elastically deformable material with force exerting members arranged all round the hose and axially spaced for achieving a longitudinally progressive contraction followed by a spaced and longitudinally progressive expansion, the force exerting members consisting of bellows connected with the hose, and regulating means progressively communicating said bellows with a source of vacuum and with the atmosphere.

3,845,744
ANIMAL SELF FEEDER

Hugh G. Carr, Kansas City, and William L. Steffen, Liberty, both of Mo., assignors to The Starr Corporation, Kansas City, Kans.
Filed July 16, 1973, Ser. No. 379,622
Int. Cl. A01k *05/02*
U.S. Cl. 119—51.13 **7 Claims**

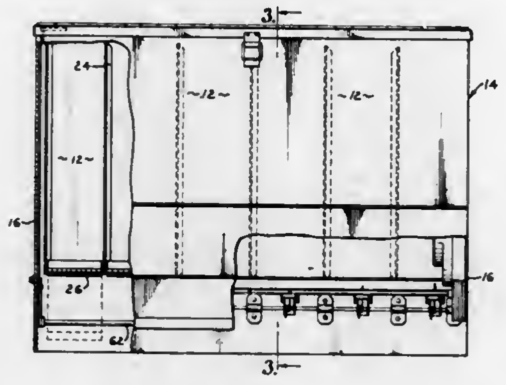
1. Apparatus for delivering a measured quantity of feed to an animal at multiple predetermined spaced apart time intervals, said appartus comprising:

a plurality of side-by-side feed compartments, each compartment containing a measured quantity of feed separate and apart from the feed in the other compartments, each of said compartments being characterized by a hingedly coupled delivery door disposed for gravitating to an open position to accommodate gravitation of feed from the compartment;

catch means for holding each of said doors in a normally closed position;

common activator means for all of said catch means for selectively releasing each catch means at a predetermined time interval to open a compartment door;

timing means coupled with said activator means for periodically operating the latter at said predetermined time intervals;



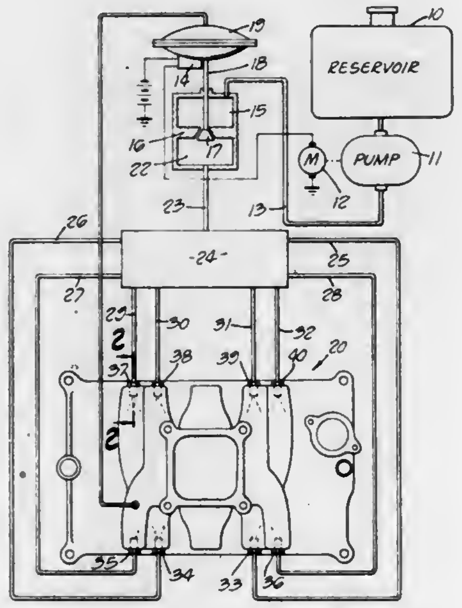
door closure means for returning said doors to their closed positions simultaneously after one or more of the doors has been opened;

a common lid for all of said compartments hingedly coupled therewith for movement from a closed to an open position to thereby accommodate filling of the compartments with feed; and

linkage means coupling said door closure means with said lid for moving said door closure means to its door closing position when said lid is opened.

3,845,745
WATER INJECTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Charles R. Dunlap, and Harris D. Himes, both of 1746 Yorba Dr., Pomona, Calif. 91768
Filed July 3, 1972, Ser. No. 268,474
Int. Cl. F02b *47/02;* **F02d** *19/00, 19/12*
U.S. Cl. 123—25 L **3 Claims**



1. Water injection system for an internal combustion engine having a plurality of combustion chambers and a manifold via which a fuel-air mixture is conduited to said combustion chambers, comprising:

a reservoir of distilled water;

an electrically powered pump for providing pressurized water from said reservoir;

a poppet valve having an inlet connected to receive the pressurized water from said pump and an outlet, said valve being actuatable to pass selectively variable amounts of pressurized water to its outlet;

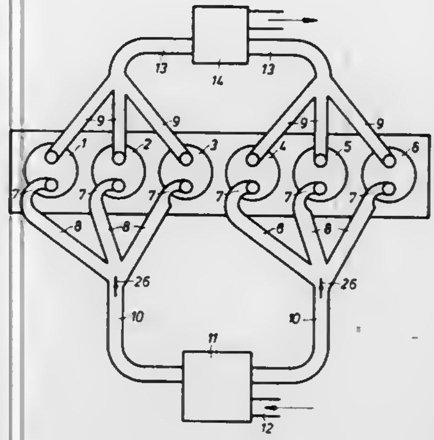
a plurality of pintle valve and nozzle means each located in the manifold closely adjacent an individual combustion chamber;

individual feed line means interconnecting the poppet valve outlet and the pintle valve and nozzle means; and

means responsive to manifold pressure for interconnecting electric power to said pump and for actuating said poppet valve on manifold pressure exceeding a predetermined threshold amount, said means responsive to manifold pressure including a diaphragm pressure regulator, rod means connected with said regulator and positioned in correspondence with the manifold pressure, and switch means operated by said rod interconnecting electric power to said pump.

3,845,746
METHOD OF AND ARRANGEMENT FOR CONTROLLING THE SWIRLING AIR LAYERS IN THE CYLINDERS AND COMBUSTION CHAMBERS OF AN AIR-COMPRESSING MULTI-CYLINDER RECIPROCABLE PISTON INTERNAL COMBUSTION ENGINE

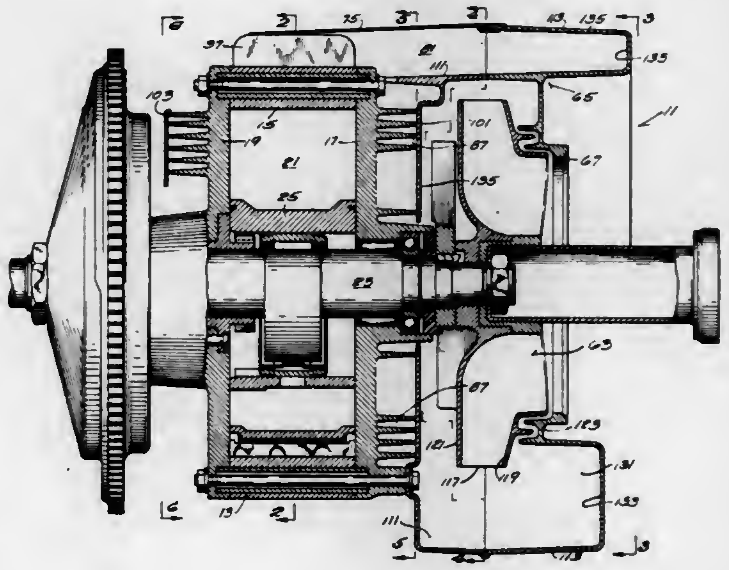
Ludwig Elsbett, Industriestrasse 14, 8551 Hilpoltstein, Germany
Filed Dec. 9, 1971, Ser. No. 206,373
Claims priority, application Germany, Dec. 12, 1970, 2060740
Int. Cl. F02b *19/10, 3/00*
U.S. Cl. 123—30 C **10 Claims**



1. A method for controlling the swirling air layers in the cylinder and combustion chamber of an air-compressing multi-cylinder reciprocating internal combustion engine having a combustion chamber in the shape of a body of revolution provided in each piston and means associated with each intake valve to induce a swirling motion of inducted air in the cylinder; said engine also having an induction system composed of connected groups of two or more individual cylinder intake pipes whose intake strokes do not overlap with the said connected groups being themselves connected to a single common intake, the said induction system being so proportioned that the pressure prevailing at the individual intake valves is at a sub-atmospheric level during the first of the intake stroke but rises to a pressure above atmospheric shortly before the end of the intake stroke and thus acting as a positive pressure on the cylinder, the method of operation including the steps of (1) opening the inlet valve on the inlet stroke only after the closure of the exhaust valve and after the pressure in the associated cylinder is equal to the pressure in the associated intake pipe (2) building an increased pressure differential across the engine cylinder shortly before the end of the intake stroke by the positive pressure produced by the induction system (3) reopening the exhaust valve shortly before the end of the intake stroke upon development of said pressure differential and (4) closing the exhaust valve at the same time the intake valve is closed at the end of the intake stroke.

3,845,747
ROTARY COMBUSTION AIR COOLING ARRANGEMENT

James A. Donohue, Milwaukee; John H. Winston, Menomonee Falls, and Harry M. Ward, III, Waukegan, all of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed Jan. 8, 1973, Ser. No. 321,694
Int. Cl. F02b *55/12*
U.S. Cl. 123—8.01 **15 Claims**



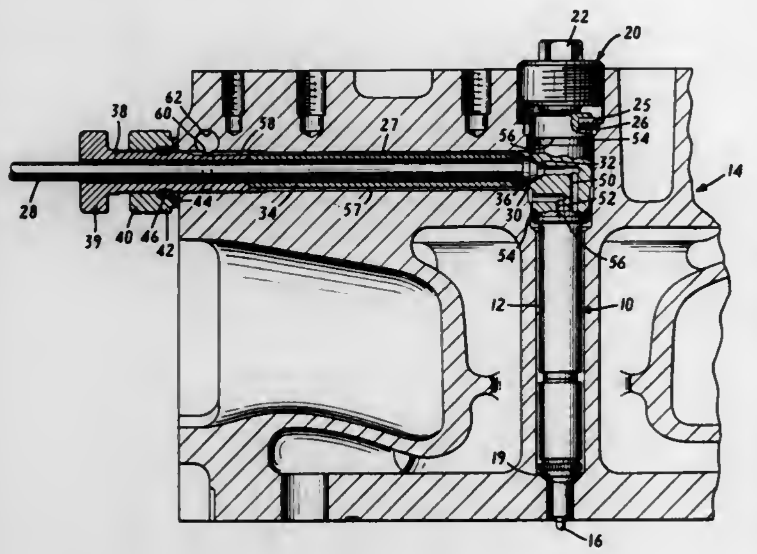
1. A rotary combustion engine comprising a hollow housing, a pair of spaced end walls interconnected with said hollow housing to form a cavity, a rotor shaft extending in said cavity and rotatably journaled by said end walls, fuel intake means communicating with said cavity, exhaust discharge means communicating with said cavity, a combustion zone in said cavity between said intake means and said exhaust discharge means, whereby said housing includes a sector which extends between said intake means and said exhaust discharge means and which is relatively hotter than the remaining portions of said housing, a plurality of cooling fins extending radially outwardly from said housing sector in generally parallel relation to said rotor shaft, a centrifugal fan driven by said rotor shaft and having a circumferentially extending radially open outlet, a shroud defined by first wall means enclosing said fan and extending radially outwardly from said fan outlet, said shroud communicating with said radially open circumferentially extending fan outlet and including a shroud discharge outlet, and second wall means including a first portion engaging the radially outer ends of said cooling fins to provide a plurality of cooling passages extending axially of said housing, and a second portion extending from said first portion and cooperating with said shroud to define a duct extending from said shroud discharge outlet to said plurality of cooling passages.

3,845,748
FUEL INJECTION NOZZLE HOLDER INSTALLATION

Eugene Eisenberg, Hagerstown, Md., assignor to Mack Trucks, Inc., Allentown, Pa.
Filed Sept. 29, 1972, Ser. No. 293,336
Int. Cl. F02m *51/00*
U.S. Cl. 123—32 R **16 Claims**

1. A fuel line installation for a fuel injection nozzle holder used in an internal combustion engine having at least one

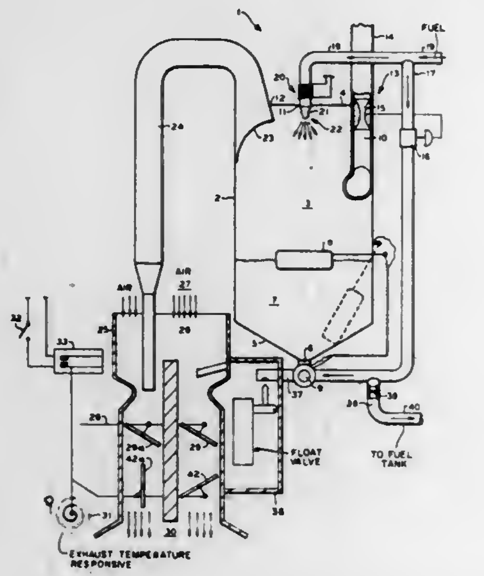
cylinder head comprising a first bore formed in the cylinder head for receiving the nozzle holder, a second bore formed in the cylinder head communicating with the first bore, and a tube received within the second bore and adapted to communicate with the nozzle holder for delivering fuel thereto, an annular passage being afforded between the tube and the surface of the second bore for conducting return fuel away from the nozzle holder.



3,845,749
AUXILIARY FUEL VAPORIZER SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Henry E. Alquist; Lyle W. Pollock, and Glenn H. Dale, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 30, 1972, Ser. No. 268,788
Int. Cl. F02m *17/18*
U.S. Cl. 123—133 8 Claims

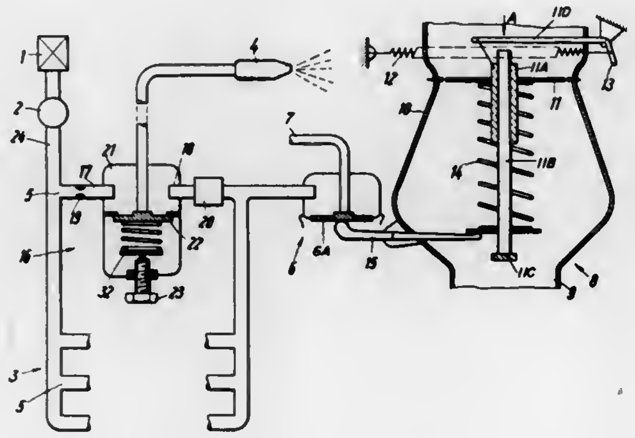


1. Apparatus to supply fuel-air mixtures to an internal combustion engine comprising:
a carburetor having first and second sections, each adapted to convey fuel and air to the engine;
a first valve in said first section and a second valve in said second section;
first fuel supply means connected to said first section to deliver liquid fuel thereto from a fuel tank;
an evaporation vessel having a first outlet in the upper region thereof and a second outlet in the lower region thereof;
second fuel supply means connected to said vessel to deliver liquid fuel thereto from the fuel tank;
inlet means in said vessel to permit introduction of air into said vessel;
conduit means extending between said first outlet and the second section of said carburetor to convey vaporized fuel and air from said vessel to said second section;
a temperature sensing means adapted to sense the temperature of exhaust gases from the engine; and
means responsive to said temperature sensing means to control said valves to open said first valve and close said second valve when the measured temperature reaches a predetermined value.

3,845,750
FUEL PROPORTIONING SYSTEM FOR A COMBUSTION ENGINE

Horst Harings, deceased, late of 289 Nordenham, Germany (by Willi Enge, administrator)

Filed Dec. 26, 1972, Ser. No. 318,400
Claims priority, application Germany, Dec. 24, 1971, 2164523
Int. Cl. F02m *51/00*
U.S. Cl. 123—139 AW 4 Claims



1. A fuel proportioning system for a combustion engine comprising a supply of fuel at constant pressure; a proportioning and pulsing valve connected to the fuel supply and having a delivery outlet for connection to injection apparatus in an inlet manifold of the engine, and a return outlet; an adjustable throttle valve connected between the return outlet and a return conduit to the supply, and controlling the rate of fuel returned to the supply; and means responsive to the throughput of combustion air for controlling the throttle valve and hence the fuel pressure in the proportioning valve; the proportioning and pulsing valve comprising a spring-loaded pressure responsive valve controlling the flow of fuel to the delivery outlet being spring urged toward closed position and being urged open by fuel pressure, said valve oscillating open and closed to pulse the fuel to the delivery outlet and means in the connection to the fuel supply to prevent instantaneous pressure equalisation in the valve on opening of the delivery outlet.

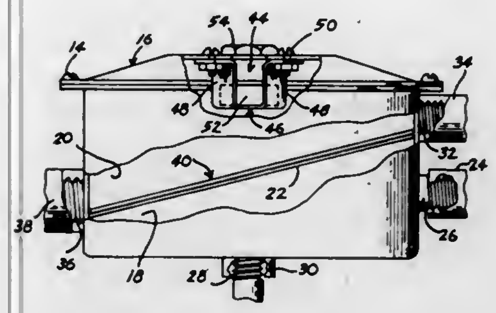
3,845,751
OIL PURIFYING MEANS EMPLOYED IN CONNECTION WITH INTERNAL COMBUSTION ENGINES

Roy H. Runstetler, 650 Redland Dr., Grants Pass, Oreg. 97526

Filed Aug. 30, 1973, Ser. No. 392,972
Int. Cl. F01m *1/06*
U.S. Cl. 123—196 A 3 Claims

1. An oil purifying unit for incorporation in an internal combustion engine, which engine has an exhaust line for discharging hot exhaust gases produced as an incident of its operation, and contaminates with water and fuel the lubricating oil employed by it, said unit comprising, when so incorporated, a prismatic box-like structure which is divided into

a. an upper engine oil transmitting and purifying, water and fuel evaporating chamber, interposed in an oil return line of the engine and having a high oil intake port at an oil intake end, a low oil discharge port at the opposite or oil discharge end, and a vapor discharge port for disposing of vapors produced in said chamber, through which chamber the engine oil may be caused to travel in a broad, thin layer by gravity from end to end under flow conditions which are essentially identical from side to side of the chamber, and
b. a lower hot-exhaust-gas-transmitting, heat supplying chamber interposed in an exhaust bypass line of the engine said heat supplying chamber having widely separated intake and discharge ports for the hot exhaust gases located, respectively, in an upstanding wall and in the floor, of the chamber, the crosssection of said lower heat supplying chamber being larger than the cross-section of the intake and discharge ports,



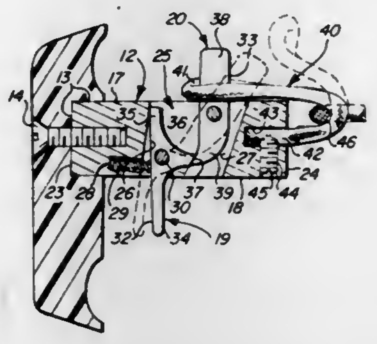
c. the division of the box-like structure into upper and lower chambers being effected by a thin, generally flat, imperforate, metallic dividing wall which forms a heat transmitting floor for heating the upper chamber and a roof for the lower chamber, and which extends evenly from side to side of the box-like structure throughout its length, but slopes downward continuously and uniformly from the oil intake end of the upper chamber to a level at the oil discharge end thereof, not substantially below the lower extremity of the oil discharge port,
the unit being further characterized by the fact that oil-spreading, damming means are provided at intervals along the upper surface of the sloping dividing wall for prolonging the transmission of the oil through the upper chamber, for collecting the oil in a succession of shallow pools, and for promoting uniformity of oil distribution throughout the width of the upper chamber, each of which damming means extends at an even and uniform height throughout the width of the upper chamber.

3,845,752
COMBINED BOWSTRING DRAW AND TRIGGER RELEASE MECHANISM FOR USE IN ARCHERY

Roland K. Barner, Box 1035, Bozeman, Mont. 59715

Filed Feb. 21, 1974, Ser. No. 444,526
Int. Cl. F41b *5/00*
U.S. Cl. 124—35 8 Claims

1. A bowstring holding and release device comprising in combination:
a handle member adapted to be gripped by the human hand, holding and release means mounted on said handle for releasably engaging a bowstring,
said holding and release means comprising a pivotally mounted holding member for movement between first and second positions for holding and releasing the string respectively,
trigger means engaging a first end portion of said holding member to retain said holding member in said first position when said trigger means is in a first pivoted position, said trigger means being pivotable to a second position out of engagement with said portion to permit said holding member to pivot to its second position for releasing the string,
said holding member when manually moved to said first position being engaged by said trigger means,
locking means for selectively holding said trigger means in said first pivoted position for retaining said holding member in said first position,
said locking means including biasing means for automatically rotating the triggering means back to its locking position after pivoting of said trigger means from said first position to said second position, and

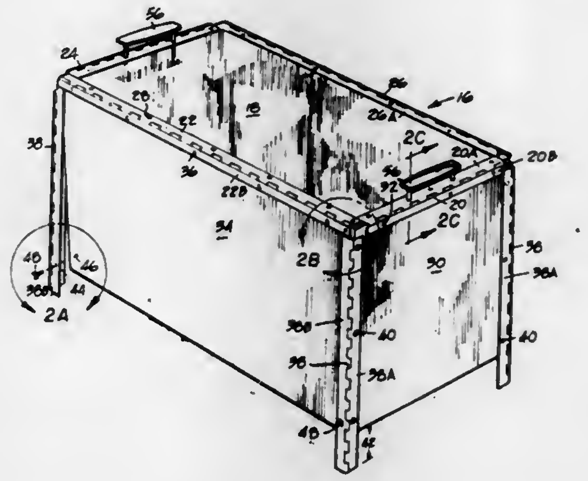


flexible cord means connected to said holding and release means and looped around the bowstring and over a second end portion of said holding member,
whereby said locking means holds said holding member and said cord means around said second end portion of said holding member when said trigger means is in said first position and said bowstring is tensed, and when said trigger means moves to said second position said cord means slips off of said second end portion of said holding member and from around the bowstring as the bowstring moves to its released position.

3,845,753
OVEN ENCLOSURE FOR A GRILL

William B. Jackson, 1256 Laurel Hill Dr., San Mateo, Calif. 94402

Filed May 9, 1974, Ser. No. 468,227
Int. Cl. F24c *1/16*; A47j *37/01*; F24b *3/00*
U.S. Cl. 126—9 R 6 Claims

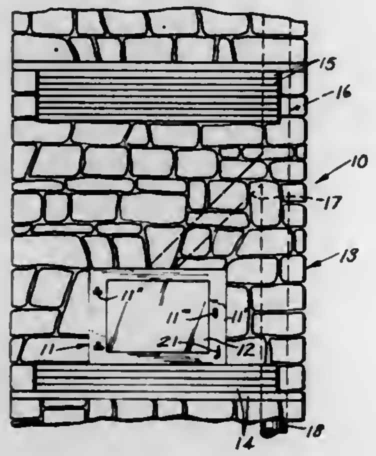


1. A foldable oven enclosure for a grill of the type having a fire pan and a perforated viands support rack overlying the fire pan, said enclosure comprising a rectangular substantially rigid impervious top panel having a length and width exceeding that of the grill, means secured to the peripheral margin of said top panel for stiffening said top panel, said stiffening means including four continuous horizontal hinges having lengths corresponding to respective peripheral margins of said top panel, each said hinge having a first plate and a second plate connected to said first plate for pivotal movement rela-

tive thereto, means for securing the first plate of each said hinge along a respective peripheral margin of said top panel, four rectangular substantially rigid impervious side panels each having vertical dimension no greater than the width of said top panel, said side panels each having a horizontal dimension corresponding to respective peripheral margins of said top panel, means for securing the upper horizontal margin of said side panels to said second plates of respective said hinges so that said side panels are movable between a folded position into surface contact with said top panel and an operative position at which said side panels depend perpendicularly from said top panel to define a right parallelepiped chamber and in which the vertical edges or adjacent said side panels are disposed in parallel juxtaposition to form corner regions of said chamber, means for stiffening said side panels and for sealing said corner regions, last said means including four equi-length continuous vertical hinges having a length exceeding the vertical dimension of said side panels, said vertical hinges each having a first leaf and a second leaf connected to said first leaf for pivotal movement relative thereto, means for securing the first leaf of each said vertical hinge to a respective vertical edge of two opposite side panels so that said two opposite side panels are stiffened by said vertical hinges, and means for removably connecting the second leaves to vertical edge margins of the other two side panels, the excessive length of the vertical hinges acting to space the lower edges of said side panels above the lower extremities of said vertical hinges to define an inlet for combustion air to said fire pan.

3,845,754
FIREPLACE HOME HEATER

Albert L. Wilkening, Walker, Minn. 56484
Filed Mar. 9, 1973, Ser. No. 339,827
Int. Cl. F24b *7/00*
U.S. Cl. 126—121 **2 Claims**

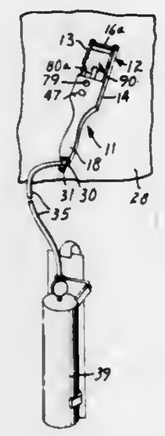


1. A fireplace heater for a dwelling comprising in combination:

a. a closed firebox for the combustion of solid fuel, including an air-tight door to provide access thereto for insertion of said fuel;
b. an enclosure for receiving said firebox having an opening through which said door is accesssible, and having inlet louver means below the level of said door and outlet louver means above the level of said door to define a heating gas path around said firebox;
c. an air intake pipe extending through said enclosure for conducting combustion air to said firebox;
d. a flue pipe extending from said firebox through said enclosure to conduct gaseous combustion products therethrough, a portion of said flue pipe extending downwardly into the interior of said firebox with the peripheral wall of said flue pipe portion containing an opening, said interior flue pipe portion serving to baffle and slow the flow of heated gaseous combustion products through the firebox thereby increasing the fireplace heat output; and
e. said air intake pipe and said flue pipe defining a combustion gas path through said firebox which is independent from said heating gas path so that no combustion products are discharged into the dwelling through said outlet louver means and no air from within said dwelling is discharged through said flue pipe.

3,845,755
T-MANIFOLD ASSEMBLY FOR GAS HEATED TOOL

Leonard E. Aske, 5508 Park Ave., Minneapolis, Minn. 55417
Filed Dec. 7, 1972, Ser. No. 312,824
Int. Cl. F24j *3/00*
U.S. Cl. 126—401 **2 Claims**

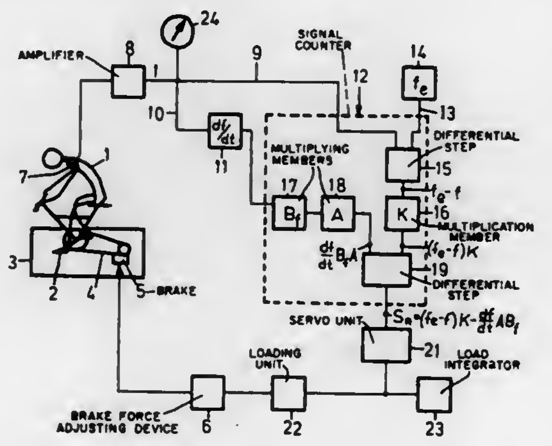


1. Apparatus for producing a broad flame front from a supply of combustible gas comprising:

a. a T-manifold assembly having a longitudinal portion and a transverse portion;
b. said transverse manifold portion containing a plurality of flame outlet openings positioned therealong in a generally linear, spatially separated relationship;
c. conduit means connected to said longitudinal manifold portion and connectable to a source of combustible gas; and
d. said manifold assembly including further means adjacent said outlet openings to modify the flow of combustible gas issuing from said outlet openings to establish and retain combustion closely adjacent said transverse portion.

3,845,756
ERGOMETER DEVICE

Sven-Gunnar Sigvard Olsson, Solluntuna, Sweden, assignor to Siemens Aktiengesellschaft, Munich, Germany
Continuation-in-part of Ser. No. 184,391, Sept. 29, 1971, abandoned. This application June 28, 1972, Ser. No. 266,891
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 R **4 Claims**



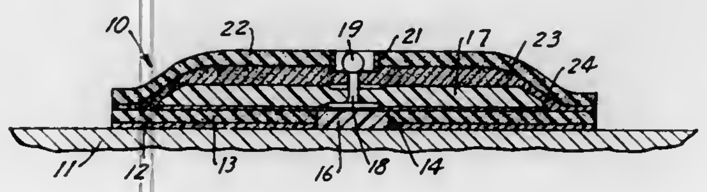
1. An ergometer comprising, in combination, force exerting means adapted to be operated by a subject, braking means controlling the force to be exerted upon the force exerting means, and control means for determining the amount of braking force to be applied, a heart frequency measuring means enclosing electrodes connectable to the subject for producing an electrical signal corresponding to the real heart frequency f of the subject, an ideal heart frequency generating means for setting an ideal heart frequency f_e and producing an electrical signal corresponding to this ideal heart frequency f_e, a differentiator connected to the output of the heart frequency measuring means for producing the first derivative df/dt of the real heart frequency signal, and further comprising an electronic control signal calculator means connected to the outputs of said heart frequency measuring means, said ideal heart frequency generating means and said differentiator for calculating from the outgoing signals of said heart frequency measuring instrument, said ideal heart frequency generator and said differentiator a control signal S_R pursuant to the equation

$$S_R = (f_e - f) \cdot K - (df/dt) \cdot A \cdot B_f ,$$

where K and A are constants and B_f is a variable proportionality factor, said calculator means including means to provide said proportionality factor as a function of both the real heart frequency f and the polarity of the real heart frequency alteration df/dt, which factor B_f in the presence of a positive polarity of the heart frequency alteration ($df/dt > 0$) increases with higher real heart frequencies, remains constant in the presence of negative polarity ($df/dt < 0$), said control signal S_R is connected to the input of said brake control means for controlling said brake control means to produce a higher amount of braking force when the strength of the control signal increases, and a lower amount of braking force when the strength of the control signal decreases.

3,845,757
BIOMEDICAL MONITORING ELECTRODE

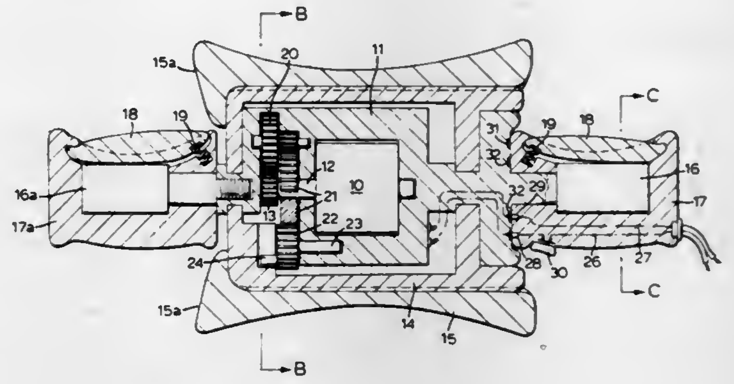
James H. Weyer, Stillwater, Minn., assignor to Minnesota Mining & Manufacturing Company, Saint Paul, Minn.
Filed July 12, 1972, Ser. No. 270,954
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.1 E **5 Claims**



1. A medical monitoring electrode for attachment to external monitoring means, said electrode comprising a soft resilient layer having an aperture therethrough, said layer having on one side thereof a coating of hypoallergenic adhesive for securing said electrode to a patient's skin and having within said aperture a spongy, open-celled foam filled with a conductive electrolyte, a rigid plastic disc adhered to said layer opposite said adhesive coating and overlying said aperture, said open-celled foam being adhesively retained within said aperture, and an electrically conductive snap carried by said plastic disc and extending above the top face thereof for connection with an external monitoring means and being in electrical contact with said electrolyte at the opposite face of said disc.

3,845,758
ROTARY MASSAGER

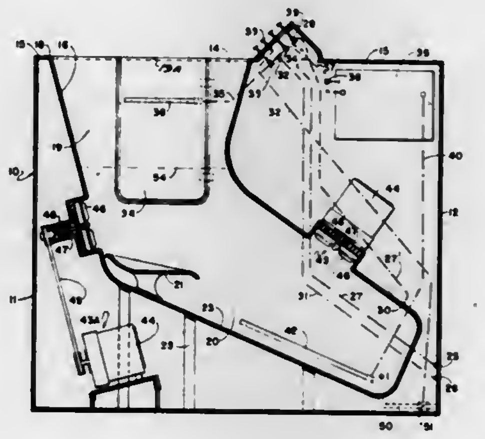
Stanley R. Anderson, 61 E. Willow Gate, West Hill, Ontario, Canada (M1C 2M7)
Filed Sept. 10, 1973, Ser. No. 395,420
Int. Cl. A61h *7/00*
U.S. Cl. 128—56 **18 Claims**



1. A rotary massager comprising first and second coaxially mounted components adapted to rotate relative to each other about a common longitudinal axis of rotation, said axis being the axis of rotation of said rotary massager, handle means rotatably mounted on said first component such that said handle means and said first component are rotatable relative to each other about said common longitudinal axis of rotation, brake means associated with said handle means and coacting with said first component to apply a variable braking force thereto to inhibit rotation of said first component about said common longitudinal axis of rotation relative to said handle means, and means for rotating said second component back and forth about said common longitudinal axis of rotation and simultaneously rotating said first component back and forth about said common longitudinal axis of rotation and relative to said handle means when said brake means is in a position such that it does not entirely prevent rotation of said first component relative to said handle means, said second component having a surface that moves with said second component and that is adapted to contact the skin of a person desiring a massage.

3,845,759
WHIRLPOOL BATH

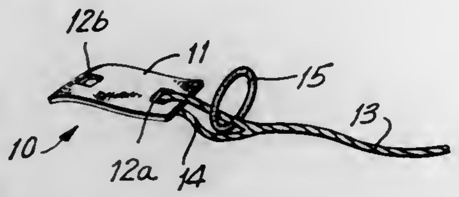
John Miklovic, 95 Willow Point Rd., Winnipeg, Manitoba, Canada
Filed Aug. 24, 1973, Ser. No. 391,308
Int. Cl. A61m *9/00*
U.S. Cl. 128—66 **8 Claims**



1. A whirlpool bath comprising in combination a cabinet, a waterproof plastic shell in said cabinet defining an enclosure within which an occupant may be seated, a seat in said enclosure for said occupant, a hot water supply line communicating

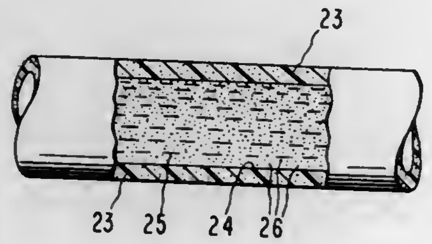
with said enclosure, a cold water supply line communicating with said enclosure, a steam generator in said cabinet and a steam supply line extending from said generator to said enclosure, and at least one agitator propeller assembly for supplying whirlpool action to the water in said enclosure and a source of power for said propeller assembly.

3,845,760
LOOP FOR ERECTING A MALE MEMBER
Joao Birman, Rua Aurora 817 4.°Andar, Sao Paulo, Brazil
Filed Sept. 5, 1973, Ser. No. 394,595
Int. Cl. A61f *5/00*
U.S. Cl. 128—79 **4 Claims**



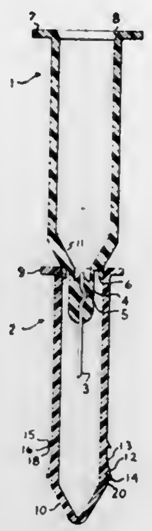
1. A loop for erecting a male member comprising a band, at least one aperture in said band proximate one end thereof, a cord secured to said band proximate an opposite end thereof, and an elastic ring carried by said cord adjacent said band.

3,845,761
INTRAUTERINE CONTRACEPTIVE ANTI-FERTILITY DEVICE FOR THE MANAGEMENT OF REPRODUCTION
Alejandro Zaffaroni, Atherton, Calif., assignor to Alza Corporation, Palo Alto, Calif.
Continuation-in-part of Ser. No. 185,208, Sept. 9, 1971, which is a continuation-in-part of Ser. No. 42,786, June 2, 1970. This application Aug. 17, 1972, Ser. No. 281,445
Int. Cl. A61f *5/46*
U.S. Cl. 128—130 **14 Claims**



1. A method of interfering with the reproductive process of a female mammal by continuously administering a contraceptive agent within the uterine cavity of said female over a prolonged period of time by the steps of: (a) inserting into the uterine cavity an intrauterine device comprising a reservoir containing dissolved agent and undissolved replacement agent in a liquid core material permeable to the passage of the agent, the undissolved replacement agent being present in an amount in excess of its solubility in the core and sufficient to maintain the dissolved agent during the prolonged period substantially equal to the amount of dissolved agent originally present in the core, the reservoir confined within an enveloping shape membrane substantially in the shape of a T comprised of a biologically acceptable material insoluble in mammalian body fluid, and formed at least in part of a material permeable by diffusion to passage of said agent at a rate which is lower than the rate of permeability of said agent through said core, (b) releasing said agent from said reservoir into the uterine cavity at a controlled, continuous, contraceptively effective rate by diffusional passage through said shaped membrane, and (c) continuously replacing the dissolved agent released from the reservoir by continuously dissolving said undissolved replacement agent in the core so as to substantially maintain the amount of dissolved drug at its originally present amount.

3,845,762
SYRINGE
Harold S. Cloyd, Erie, Pa., assignor to Nesco Plastics Incorporated, Erie, Pa.
Filed Sept. 24, 1970, Ser. No. 75,121
Int. Cl. A61m *5/22*
U.S. Cl. 128—218 P **6 Claims**



1. A syringe consisting essentially of first and second units which may be assembled end to end in either of two modes, namely, a first mode to protect the needle or a second mode as an operative syringe,

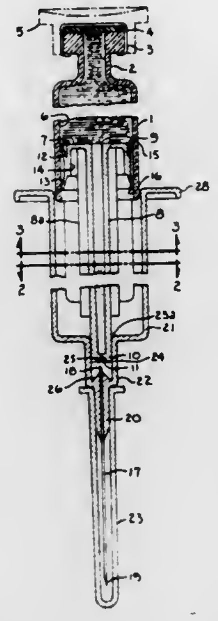
the first unit comprising a barrel and needle assembly in which the barrel is open at one end and closed at the other end by a needle hub fixed to the barrel and in which the needle has one end fixed to the hub and communicating with the bore of the barrel and has the other end projecting from the hub for presentation to an injection site,

the second unit comprising a combined needle protector, piston and piston rod having a body which is closed at one end and has a needle receiving recess entering the other end of the body, the closed end of the body having structure acting as a piston making sealing engagement with the bore of the barrel when the closed end of the body is inserted in the barrel, the other end of the body having means for releasably coupling it to the closed end of the barrel with the needle received in said recess, and

in said first mode of assembly the body serving as a needle protector when coupled to the closed end of the barrel, in said second mode of assembly the closed end of the body being a piston making sealing engagement with the bore of the barrel when the closed end of the body is inserted in the barrel with the other end of the body remote from the closed end of the barrel and the body then being a piston rod for reciprocating the piston.

3,845,763
SYRINGE WITH PUNCTURABLE STEM
Harold S. Cloyd, Erie, Pa., assignor to Nasco Plastics, Incorporated, Erie, Pa.
Filed Feb. 28, 1973, Ser. No. 336,534
Int. Cl. A61m *5/24*
U.S. Cl. 128—218 DA **4 Claims**

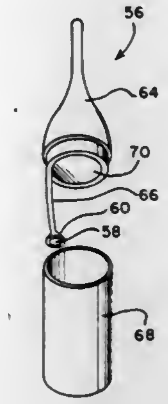
1. A syringe comprising
1. a barrel for holding a fluid to be dispensed having a bore closed at one end and open at the other end,
2. a piston having a head slidably received in the open end of the bore and movable in one direction to expel fluid from the barrel and provided with an annular flange flaring outward in said one direction at an acute angle from the head of the piston to the inner barrel wall, the flange in its unstressed condition having its outermost edge thick and non-feathered and of outside diameter greater than the diameter of the bore so the flange is deflected by engagement with the inner barrel wall and the thickness of the flange being great enough, about 0.020 to 0.075 inch, so such mere deflection develops fluid tight sealing pressure under conditions of shock, vibration and temperature encountered during shipment and storage, said piston having a hollow stem of smaller diameter than the head extending from the head out the bore with the end of the stem adjacent the head within and continuously open to the fluid contents of the bore and with the end of the stem remote from the head closed by a puncturable section, the piston being of flexible synthetic thermoplastic resin indifferent to said fluid,



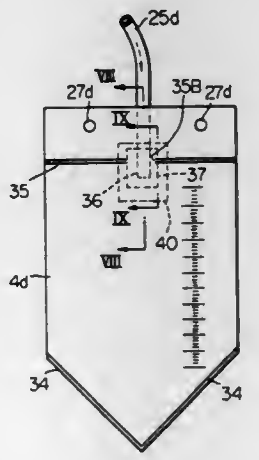
3. a needle holder having a hub, a double ended hollow needle fixed in and extending through the hub with one end presented to the puncturable section and the other end open for feeding an injection site, a sleeve integral with the hub slidably received on the end of said stem remote from the head permitting movement of the hub to puncture said section by said one end of the needle, the hub of the needle holder and the end of the stem remote from the head having sealing means interengaging as the needle punctures said section to prevent leakage around the outside of the needle.

3,845,764
DEVICE FOR APPLYING MATERIAL TO THE AREA OF THE EYE
Robert K. Windsor, P.O. 417 Spruce St., Philadelphia, Pa. 19106
Division of Ser. No. 262,384, June 13, 1972, Pat. No. 3,779,245. This application Aug. 3, 1973, Ser. No. 385,615
Int. Cl. A61m *1/00*
U.S. Cl. 128—233 **5 Claims**

1. A device to be used for applying materials to the area of the eye comprising an elongated member, gripping means including a container, a mirror, said mirror being supported by said gripping means in spaced relation from said member, said elongated member being supported at one end by said gripping means and having an applying tool at its other end, said applying tool being a suction cup surrounded by a hollow annulus, said annulus having a plurality of apertures therein to permit a liquid to be dispensed therefrom, and conduit means providing communication between said container and said annulus.



3,845,765
DRAINAGE FLUID REMOVING DEVICE
Yukio Ikeda, Tokyo, Japan, assignor to Plus Ika Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Mar. 28, 1973, Ser. No. 345,756
Claims priority, application Japan, Mar. 30, 1972, 47-31987
Int. Cl. A61m *1/00*
U.S. Cl. 128—277 **5 Claims**

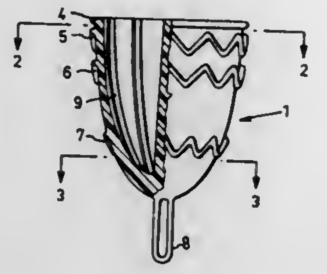


1. In a drainage fluid removing device having a rigid outer vessel, an inner flexible bag with an opening, means for suspending said flexible bag within said outer vessel, a drainage fluid suction tube inserted at one end thereof into said bag, and vacuum-creating means for evacuating the interior of said outer vessel thereby to cause the pressure within the bag to be negative and to draw drainage fluid through said suction tube into the bag: an improvement wherein said bag comprises seal line means fluid-tightly closing said opening of the bag and traversing said one end of said suction tube, a flat bag-shaped net member enclosing said one end of the suction tube, and a flexible flat bag-shaped cover member enclosing said net member and said one end of the suction tube and having an opening providing communication between the interiors of the cover member and the bag, said cover member being fluid-tightly secured to said one end of the tube and to said bag by said seal line means except at an unsealed part around said one end of the tube, whereby the interior of the bag is in communication with the interior of said outer vessel through said unsealed part.

3,845,766

CUP-SHAPED DEVICE FOR THE COLLECTION OF MENSTRUAL FLUIDS AND INTENDED FOR INTERNAL USE

Henry Zoller, Vastra Frolunda, Sweden, assignor to Molnlycke AB, Goteborg, Sweden
Filed June 11, 1973, Ser. No. 368,837
Claims priority, application Sweden, June 9, 1972, 7659/72
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 **6 Claims**

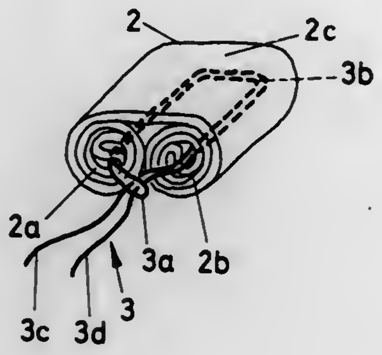


1. A menstrual device intended for internal use and made of a liquid-proof, soft, elastomeric material and which is generally cup-shaped and provided on the outside thereof with annular ribs extending peripherally around the wall of said cup, which ribs are intended to sealingly abut the wall of a vaginal canal when the device is in use to hold said device in position in said canal, characterized in that at least one of the annular ribs extending around the periphery of the wall of the cup has a wave-shape and is spaced from the other said ribs.

3,845,767

TAMPON FOR FEMININE HYGIENE

Axel Friese, Wuppertal, Germany, and Stefan Simon, Modling, Austria, assignors to Dr. Carl Hahn GmbH, Dusseldorf, Germany
Filed Aug. 9, 1973, Ser. No. 387,078
Claims priority, application Germany, Aug. 18, 1972, 2240753
Int. Cl. A61f *13/20;* **A61l** *15/00*
U.S. Cl. 128—285 **38 Claims**

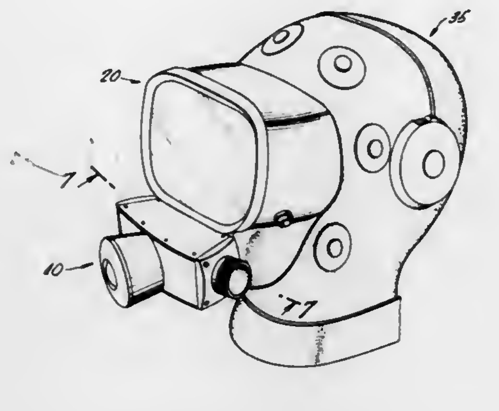


1. A tampon for feminine hygiene which comprises a plurality of rolled members of a unitary continuous absorbent sheet material, said rolled members positioned in juxtaposition side by side to one another and each member having open ends providing means for passing a withdrawl tape axially into and out of each said rolled members, said plurality of rolled members existing together in radially pressed final form shape.

3,845,768

FORM FIT VERTICAL FLOW DIVING HEAD GEAR

Richard Garrahan, 2664 Russmar Dr., San Diego, Calif. 92123
Continuation-in-part of Ser. No. 274,150, July 24, 1974, abandoned, which is a continuation of Ser. No. 99,945, Dec. 21, 1970, abandoned. This application Feb. 12, 1973, Ser. No. 332,046
Int. Cl. A62d *7/00*
U.S. Cl. 128—142.7 **8 Claims**



1. A custom fitted head gear worn to seal its interior from an ambient medium comprising:

a mask assembly having a rigid peripheral strip configured to continuously conform to the bony contours outlining the facial area and including a first curved portion adapted to conform to an area of the contours of the forehead, second and third curved portions interconnected to said first curved portion adapted to conform to areas of the contours of the regions of the temples, and a fourth curved portion interconnected to said second and third curved portions adapted to conform to an area of the outwardly facing contours of the mandible, all the curved portions are shaped having a width in excess of a plural integral multiple of the thickness of said rigid peripheral strip to present conforming areas of sufficient breadth to ensure the comfortable wearing of said face mask for prolonged periods of time, and a shell portion integrally extending from and reaching across said peripheral strip to define said interior and including a section permitting vision therethrough;

means for allowing a selective exchange of gas to and from said interior mounted on said mask assembly; and

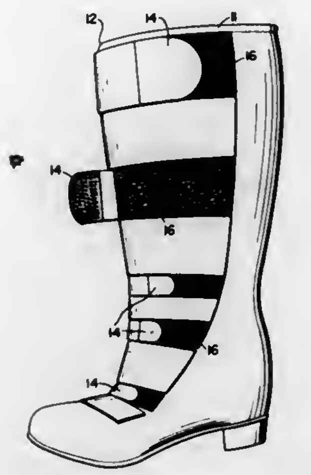
means for elastically pulling said peripheral strip against said bony contours to seat said peripheral stip thereon, sealing said interior from said medium and ensuring said comfortable wearing of said face mask for prolonged periods of time.

3,845,769

THERAPEUTIC BOOT

Frank D. Shaw, 18 Oak Wood Ln., Rumson, N.J. 07760
Filed Oct. 11, 1972, Ser. No. 296,529
Int. Cl. A61f *13/00*
U.S. Cl. 128—165 **9 Claims**

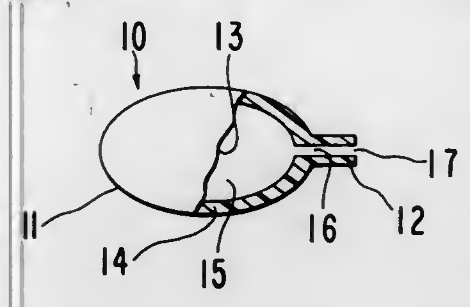
1. A compressive therapeutic limb-encircling device comprising a split sleeve of unyielding flexible material shaped to fit the contour of the limb, a plurality of adjacent bands of mating interlocking fabric material in abutting, nonoverlapping contact with each other and in tensionable relation with the sleeve on opposite sides of the split, said bands being spaced along the length thereof, whereby said sleeve may be compressed and held in unyielding position by the interlocking of the nap and hook surfaces of the interlocking fabric material.



3,845,770

OSMATIC DISPENSING DEVICE FOR RELEASING BENEFICIAL AGENT

Felix Theeuwes, Los Altos, Calif., and Takeru Higuchi, Lawrence, Kans., assignors to Alza Corporation, Palo Alto, Calif.
Filed June 5, 1972, Ser. No. 259,469
Int. Cl. A61m *31/00*
U.S. Cl. 128—260 **15 Claims**



1. An osmotic device for the continuous dispensing of an active agent, said device comprising:

a. a shaped wall formed of a substantially imperforate, semipermeable material that maintains its integrity during the dispensing period and which is characterized by being permeable to the passage of an external fluid in the environment of use and essentially impermeable to the passage of agent with the wall surrounding and forming;

b. a compartment containing an active agent that is soluble in the external fluid, and which agent exhibits an osmotic pressure gradient across the wall against the external fluid to internally pressurize the compartment in the environment of use;

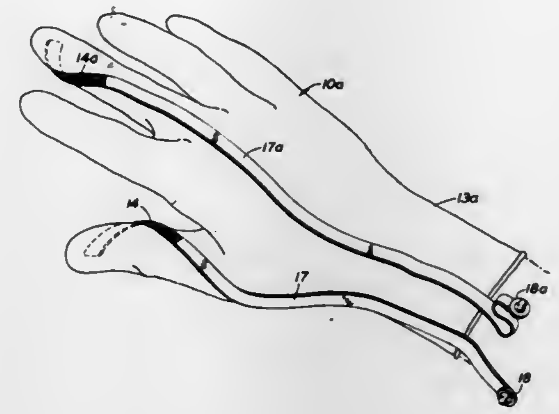
c. an osmotic passageway positioned in the imperforate wall and extending therethrough with the passageway communicating with the compartment and the exterior of the device, said passageway designed and sized for osmotically pumping the agent through the passageway from the device; and

d. wherein in operation with the device in the environment of use, the external fluid from such environment is continuously imbibed through the wall into the compartment in tendency towards osmotic equilibrium at a rate determined by the permeability of the wall and the osmotic pressure gradient across the wall thereby continuously dissolving the agent which in turn is then pumped under pressure from the device through the passageway at a controlled rate over a prolonged period of time.

3,845,771

ELECTROSURGICAL GLOVE

William Michael Vise, 3440 Olentangy River Rd., Columbus, Ohio 43210
Filed Apr. 24, 1973, Ser. No. 353,977
Int. Cl. A61n *3/00*
U.S. Cl. 128—303.13 **2 Claims**

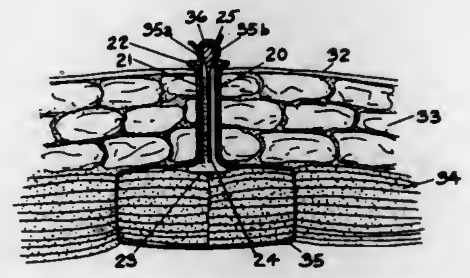


1. An electrosurgical glove comprising a thin, fluid impervious sheath of flexible, dielectric material formed with integral hand and plural digit - receiving portions; a flexible electrode unitarily secured on at least one of the digit-receiving portions of said sheath in a position to normally make electrical contact with a surgical instrument grasped by the digits of a human hand occupying said sheath, said electrode including a thin, substantially flat strip of a readily flexible, electrically conductive material, having an outer coating of a flexible, electrically conductive adhesive; and a flexible, electrically insulated lead adhesively secured to said sheath and electrically joined at one end thereof with said electrode and having an opposite end disposed in remote relation to said electrode and arranged for connection with a source of electrical energy.

3,845,772

RETENTION SUTURE DEVICE AND METHOD

Dean B. Smith, 20 S. Park St., Madison, Wis. 53715
Filed Sept. 17, 1973, Ser. No. 397,878
Int. Cl. A61b *17/04*
U.S. Cl. 128—335 **9 Claims**



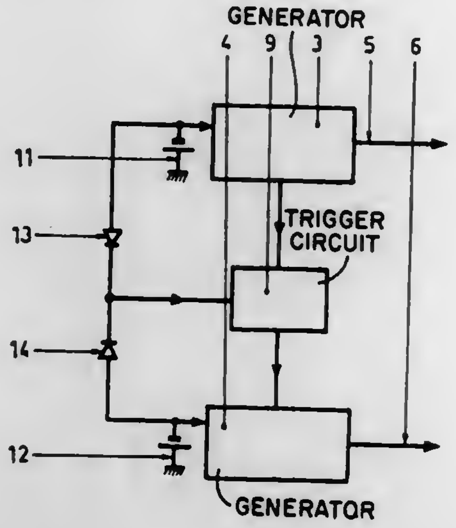
1. A device insertable in a surgical incision for use with a rentention suture which is looped around an incision in a deep tissue layer comprising:

a. an elongate hollow tube adapted to be inserted into said surgical incision above said deep tissue layer, said tube having a bottom end and a top end, the bore of said tube being sufficiently large to receive the two end portions of said suture therethrough; and

b. means at the top end of said tube for retaining said end portions of said suture and preventing same from being retracted through said tube.

3,845,773
CARDIAC STIMULATORS

Guy Hugues Fontaine, and Alain Ribot, both of Paris, France, assignors to Association de Recherche et D'Entraide Cardiologiques et Angelologiques, Paris, France
Filed July 7, 1972, Ser. No. 269,724
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 P **3 Claims**



1. A cardiac stimulator for a muscle comprising:
a single source of electrical energy;
a single generator connected to said source operable to produce electrical impulses of a frequency equal to the cardiac rate to be stimulated;
a pair of electrodes adapted to be in contact with the muscle to be stimulated;
switching means connected to said electrodes and to said single generator operable to send said impulses alternatively to each of said electrodes;
and,
resistive means connected between said switching means and one electrode of said pair of electrodes to reduce amplitude of an impulse on said one electrode while not changing said frequency.

3,845,774
PROCESS FOR CURING TOBACCO

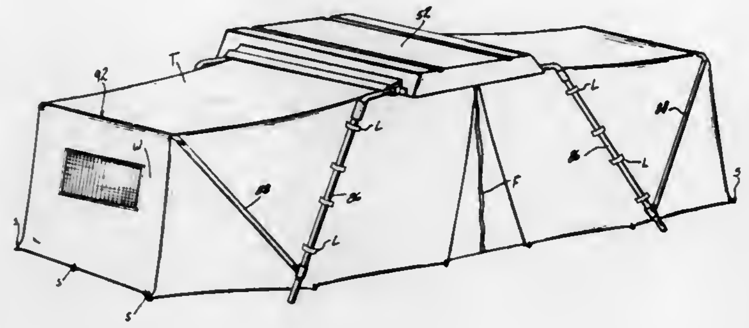
Tien C. Tso, 4306 Yates Rd., Beltsville, Md. 20705; Richie H. Lowe, Rt. 4, Box 277, Nicholasville, Ky. 40356, and Donald W. Dejong, 1901 Hillock Dr., Raleigh, N.C. 27612
Continuation-in-part of Ser. No. 166,963, July 28, 1971, abandoned. This application Jan. 31, 1973, Ser. No. 328,204
Int. Cl. A24b *15/00*
U.S. Cl. 131—140 C **7 Claims**

1. A process for curing tobacco comprising the steps of:
a. providing uncured tobacco leaves;
b. homogenizing the leaves in the presence of a 7.0 percent aqueous ethanol solution;
c. incubating the homogenized leaves for up to about 168 hours at a temperature of from 25°C. to 80°C; and
d. drying the incubated homogenate.

3,845,775
CAR TOP TENT

Paul R. Norris, Stone Mountain; Frank Van Haltern, Jr., Atlanta, and David K. Walz, Stone Mountain, all of Ga., assignors to Olin Corporation, New Haven, Conn.
Filed June 7, 1973, Ser. No. 367,907
Int. Cl. A45f *1/16*
U.S. Cl. 135—1 A **12 Claims**

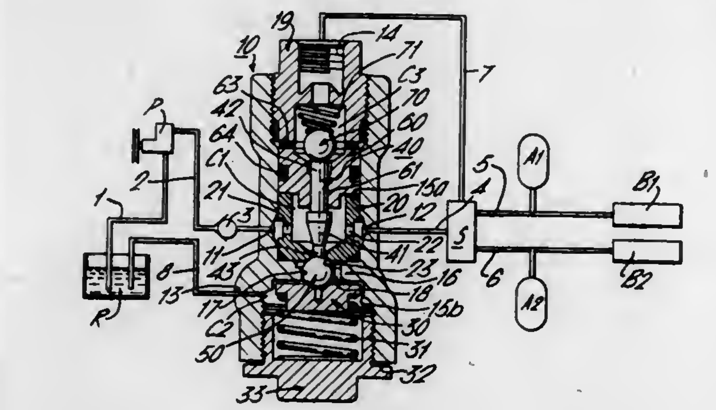
1. A tent structure comprising:
a. a first rigid portion for supporting tent fabric to form at least a portion of a roof of the tent;
b. a plurality of first poles hingedly connected to said rigid portion, said first poles being hinged for movement between a storage position adjacent said rigid portion and an erected position wherein said first poles are operative to support said rigid portion above the ground; and



c. a plurality of second poles having hinge means connected to said first poles whereby said second poles are mounted on said first poles for movement between a storage position adjacent said first poles and an erected position wherein said second poles extend laterally from said first poles and upwardly from said hinge means.

3,845,776
UNLOADER VALVE

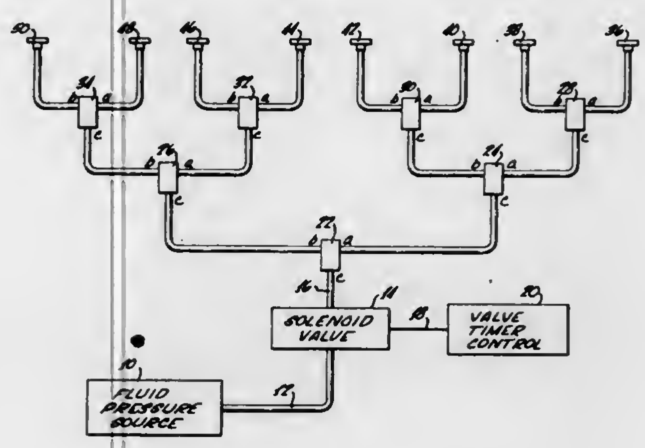
Atsumi Ueda, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed Dec. 20, 1972, Ser. No. 316,819
Claims priority, application Japan, Dec. 24, 1972, 47-3524; Sept. 22, 1972, 47-95394
Int. Cl. G05d *16/10*
U.S. Cl. 137—116 **9 Claims**



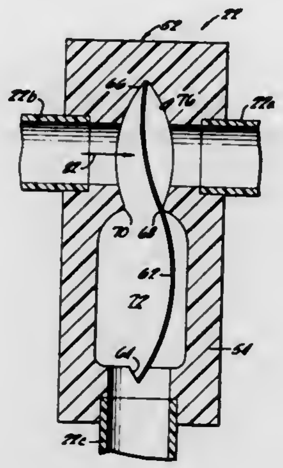
1. In an unloader valve for hydraulically controlled systems having a hydraulic circuit connecting a hydraulic pressure source with an accumulator for an actuator, comprising
a housing provided therein with a first pressure chamber interposed between said pressure source and said accumulator and a second pressure chamber connected with a reservoir;
a ball valve for opening and closing the communication between said first and second pressure chambers;
a support member hermetically inserted within the interior of said housing and forming said first pressure chamber at one side thereof and a third pressure chamber at the other side thereof, said third pressure chamber being connected with said accumulator;
a valve spool for controlling the open-and-close operation of said ball valve and including a small diameter portion axially slidably engaged within the said support member and a large diameter portion exposed in said first pressure chamber, said small diameter portion extending integrally from said large diameter portion, being larger in diameter than a valve seat of said ball valve, and being exposed in said third chamber at its one end;
a ball housed within said third pressure chamber and biased toward said end of said small diameter portion of said valve spool by pressure accumulated within said accumulator; and
a ball receiver for receiving said ball thereon and formed at the end face of said support member within said third pressure chamber, the improvement comprising said ball receiver having a larger diameter than that of said small diameter portion of said valve spool, whereby the valve spool is swiftly operated to effect pressure accumulating operation.

3,845,777
BISTABLE FLOW CONTROL VALVE

Paul R. Gilson, 10012 Highcliff Dr., Santa Ana, Calif. 92705
Filed May 25, 1973, Ser. No. 364,038
Int. Cl. F16k *11/00*
U.S. Cl. 137—119 **7 Claims**



1. A bistable fluid valve, comprising:
a housing having an inlet and first and second outlets;
a flexible reed mounted within said housing and biased axially to bow within said housing in either of first and second directions;

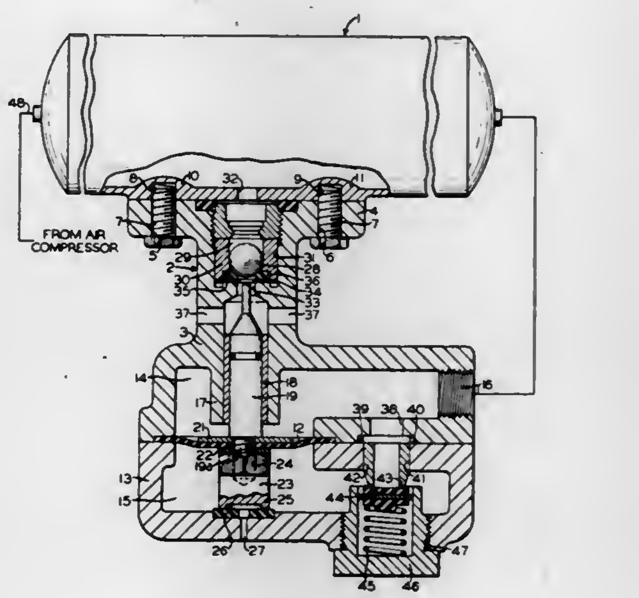


means responsive to fluid pressure at said inlet for changing the direction of bow of said reed; and
means responsive to said reed for closing said first or second outlet in response to said reed being bowed in said first or second direction, respectively.

3,845,778
AUTOMATIC DRAIN VALVE

Robert J. Bridigum, Pittsburgh, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed Dec. 13, 1973, Ser. No. 424,412
Int. Cl. F16t *1/14*
U.S. Cl. 137—204 **7 Claims**

1. An automatically operative drain valve device for expelling contaminants from a fluid pressure storage reservoir to atmosphere, said drain valve device comprising:
a. a casing having a passageway extending therethrough via which contaminants may be expelled from the interior of the reservoir to atmosphere,
b. a cover member secured to said casing,
c. a movable abutment having its outer periphery disposed between said casing and said cover member, said abutment cooperating with said casing and said cover member to form a pair of chambers disposed on the respective opposite sides of said abutment, one of said chambers being constantly in communication with the interior of the storage reservoir,
d. a biased one-way flow valve means providing for flow of fluid under pressure from said one chamber to the other of said chambers,
e. a restricted communication between said other chamber and atmosphere,



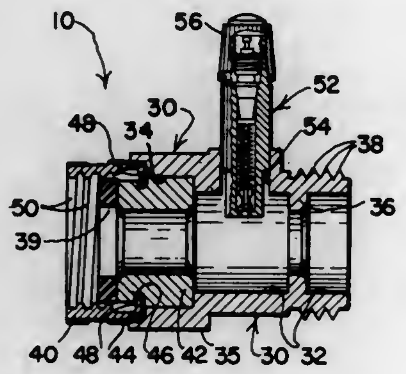
f. a first valve means operable by said abutment to control flow of contaminants from the storage reservoir to atmosphere via said passageway in said casing, and
g. a second valve means operable by said abutment to control flow of fluid under pressure from said other chamber to atmosphere via said restricted communication,
h. said abutment being responsive to a chosen reduction of the pressure in said one chamber below that in said other chamber to simultaneously operate said first and second valve means to respectively cause expulsion of contaminants from said storage reservoir to atmosphere via said pasageway and release of fluid under pressure from said other chamber to atmosphere via said restricted communication until the pressure in said other chamber is less than that in said one chamber whereupon said abutment is rendered effective to cause said first valve means to terminate said expulsion of contaminants and said second valve means to terminate the release of fluid under pressure from said other chamber.

3,845,779
GARDEN HOSE EVACUATING DEVICE

Henry E. Greene, Jr., Wilmette, Ill., assignor to Waldon Devices, Inc., Wilmette, Ill.
Filed May 10, 1973, Ser. No. 359,117
Int. Cl. F16k *51/00*
U.S. Cl. 137—209 **5 Claims**

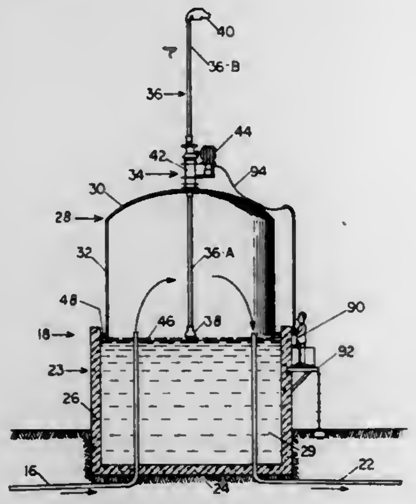
1. A pneumatic fire hose attachment for pressurizing the interior of a section of fire hose to rigidify the same to the end that the rigidified section may be projected endwise over a sheet of surface ice for rescue purposes, said attachment comprising a tubular body having a front end and a rear end, and a longitudinal bore therein, a transverse partition wall

extending across the bore and thus defining a first internal chamber having an open rim at one end of the body and a second internal chamber having an open end at the other end of the body, a series of threads on each end of the body and designed for threaded engagement with the adjacent end of a fire hose section, said body being provided with a pair of radial bores, one on each side of said partition wall, and in communication with said first and second chambers respectively, and a check valve for supplying air under pressure to each of said chambers for conduction through the open rim thereof to the adjacent fire hose section, each check valve including an air inlet tube sealingly disposed within the associated radial bore and having its outer end designed for reception thereof of an air injection fitting associated with a source of compressed air.



3,845,780
PRESSURE REGULATING MEANS FOR GAS STORAGE TANKS INCLUDED IN SEWERAGE SYSTEMS

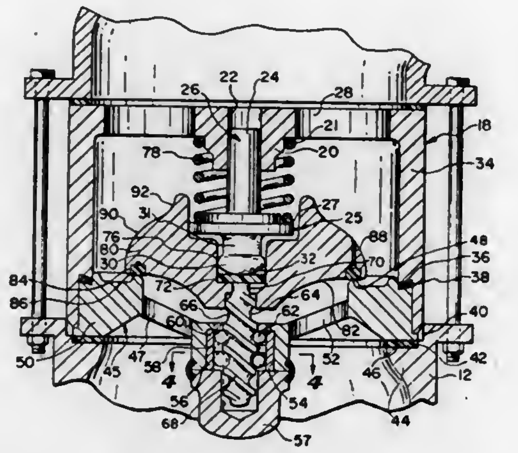
Octavian Cardas, 1001 Pine St., San Francisco, Calif. 94109
Filed Apr. 25, 1974, Ser. No. 463,893
Int. Cl. F16k *17/12*
U.S. Cl. 137—251 **9 Claims**



1. A gas pressure regulator for use with a gas storage tank of the type which includes a dome formed with a roof floating in a liquid filled container at a level dependent upon the pressure of gas therewithin, said pressure regulator including, a vent pipe extending through the roof of the dome and having a downwardly extending lower portion inside the dome and an upwardly extending upper portion outside the dome,
- means forming a gas outlet at the upper pipe portion,
- means forming a gas inlet at the lower portion of the vent pipe submerged in the liquid of the liquid-filled container in a lowered dome position and open to the dome gas in a raised dome position, and
- power operated actuating means for raising and lowering the gas inlet means at the lower portion of the vent pipe to control the dome height above which venting is effected.

3,845,781
CHECK VALVE FOR PULSATING FLOWS

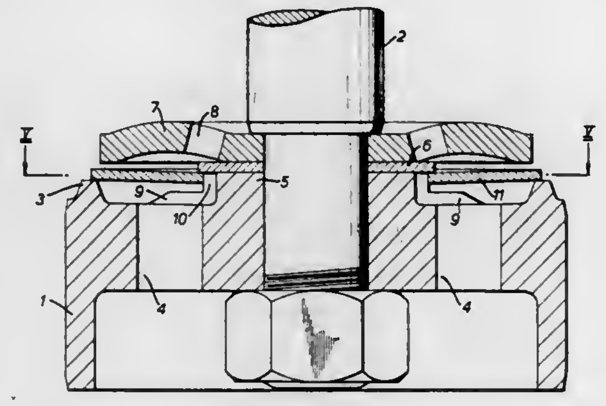
Charles C. Hansen, Hinsdale, and John D. Nilles, Roselle, both of Ill., assignors to Refrigerating Specialties Co., Broadview, Ill.
Filed Mar. 22, 1972, Ser. No. 236,932
Int. Cl. F16k *29/00, 15/06*
U.S. Cl. 137—331 **17 Claims**



1. A reciprocable valve for conduits conducting a pulsating fluid under pressure the combination of,
- a housing member including a planar downstream valve seat defining a port,
- a valve member opening and closing said port,
- means for directing opening and closing movements of said valve member with respect to said port having rolling contact with a curvilinear path having lineal and rotational components throughout its length and a helix angle greater than 30° within an approximate range of 15° above said 30°,
- said valve member having a natural frequency with a reversing rotational motion along said path of less than one-half the natural frequency of its lineal movement frequency without the rotational motion, and
- resilient means urging said valve member along said path to its closed position in a direction opposite to the flow of said fluid through the valve.

3,845,782
FLOW CONTROL VALVE FOR HYDRAULIC DAMPER AND THE LIKE

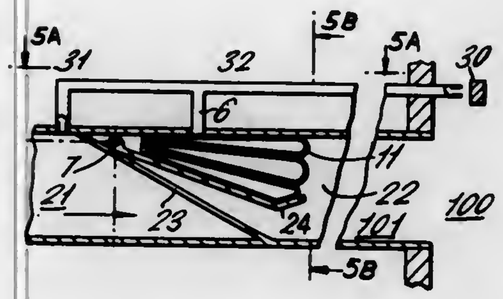
Lawrence George Nicholls, and David William Gee, both of Tyseley, England, assignors to Girling Limited, Birmingham, England
Continuation of Ser. No. 206,641, Dec. 10, 1971, abandoned. This application July 23, 1973, Ser. No. 381,540
Claims priority, application Great Britain, Dec. 14, 1970, 59376/70
Int. Cl. F16k *15/08*
U.S. Cl. 137—493 **8 Claims**

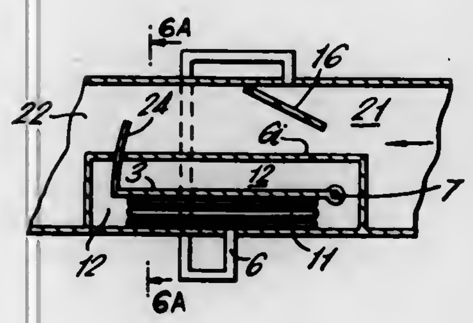


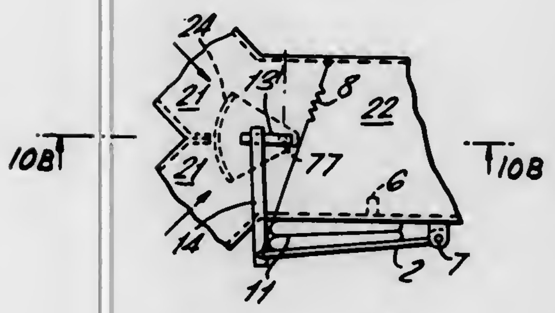
1. A fluid flow control valve comprising a pair of oppositely directed annular valve seats, a flexible annular valve having an inner periphery normally engaged with one said valve seat and an outer periphery normally engaged with the second said valve seat, said valve member being capable of flexing to lift off one or the other of said valve seats according to the direction of an axially applied pressure; a central guide member extending through said annular valve member, said guide member having means defining axially extending recesses in its outer periphery to form flow passages for the flow of fluid through said valve when said valve member is displaced from said one valve seat, and wherein each of said passages has a cross-sectional area at least as great as the area of the radial entrance thereto at the upstream side of said valve in all operational positions of said valve member, and an outwardly projecting annular flange spaced from said one valve seat to form a stop for said inner periphery of said valve member in a fully open condition thereof, said flange having recesses formed therein as a continuation of said passages and having an axial extent at least as great as the maximum axial travel of said inner periphery of said valve member.

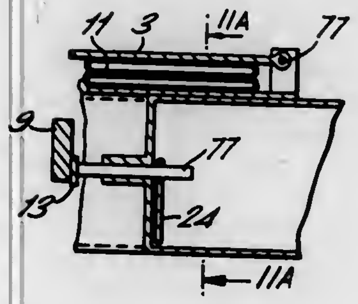
3,845,783
BAG DIAPHRAGMS AND BAG DIAPHRAGM OPERATED AIR DAMPERS

Guido A. De Lepeleire, Heverlee, Belgium, assignor to Danfoss A/S, Nordborg, Denmark
Division of Ser. No. 166,954, July 28, 1971, Pat. No. 3,804,364. This application May 10, 1973, Ser. No. 359,073
Int. Cl. F15d *1/02;* **F24f** *13/10;* **F16k** *21/04;* **G05d** *7/01*
U.S. Cl. 137—504 **11 Claims**





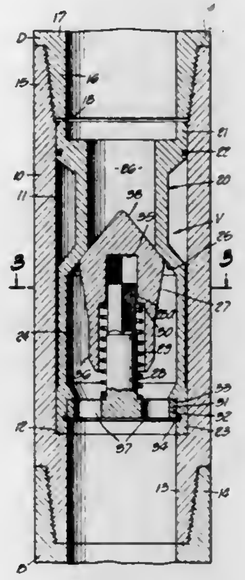




1. A pneumatically operated valve assembly comprising first and second rigid plate members mounted for movement relative to each other and being in oppositely facing relation to each other, conduit means surrounding said plate members, guide means for guiding the movement of one of said members relative to the other of said members, bag means sandwiched between said plate members, said bag means having first portions thereof fixedly secured to said plate members and second portions thereof extending between said plate members, said second portions being characterized by the absence of any significant bending resistance, and aperture means in said first plate member for admitting and exhausting air to and from said bag means to adjust the position of said second plate member relative to the position of said first plate member, said second plate member being pivotally mounted relative to said conduit means, air passage means extending externally of said conduit means from the upstream side of said plate members to said aperture means, said second plate member being movable to control the flow of air through said conduit means.

3,845,784
FLOAT VALVE FOR DRILL STRINGS

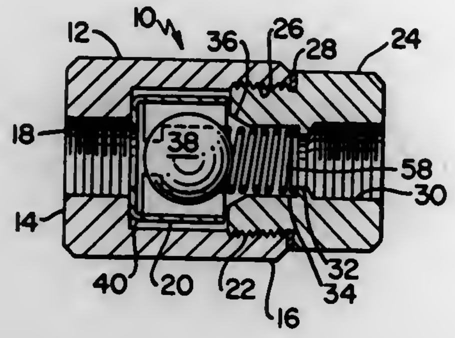
Wayne N. Sullivan, Houston, Tex., assignor to Byron Jackson Inc., Long Beach, Calif.
Continuation of Ser. No. 818,261, April 22, 1969, abandoned. This application Mar. 30, 1971, Ser. No. 129,592
Int. Cl. F16k *15/02*
U.S. Cl. 137—515 **7 Claims**



1. In a drill pipe float valve assembly having a valve body provided with portions adapted to be engaged in the bore of a drill dollar sub, an upwardly tapered valve seat in said body, a flow passage circumscribed by said seat, a valve head below said seat and having an axial cavity in one end and a valve surface on the other end complementally engageable with said valve seat, said valve head being reciprocable in said body between a closed position whereat said surface is engaged with said seat and an open position displaced downwardly from said seat, a valve stem extending into said cavity and supporting said head for slidable reciprocation thereon, a spring disposed about said stem and acting on said head to bias the same into said closed position, and a spider supported in said body and retained in place therein, said spider mounting said valve stem, said valve head being movable from said closed position to said open position in response to downward flow of drilling fluid through said flow passage, the improvement wherein said stem and said cavity are of corresponding noncircular cross-section to prevent spinning of said valve head on said valve stem when said valve head is moved to said open position in response to downward flow of drilling fluid through said flow passage.

3,845,785
SPRING BIASED SAFETY VALVE

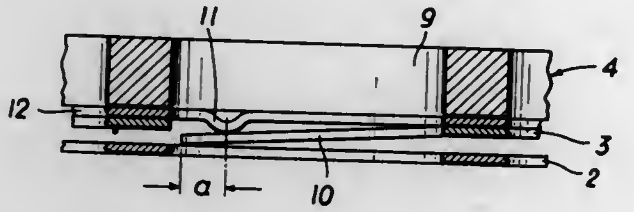
Jack A. McMath, Fort Thomas, Ky., assignor to Dover Corporation, New York, N.Y.
Division of Ser. No. 137,171, April 26, 1971, Pat. No. 3,734,115. This application May 10, 1973, Ser. No. 358,834
Int. Cl. F16k *17/30*
U.S. Cl. 137—517 **1 Claim**



1. A safety valve normally biased in the open condition in the absence of a predetermined pressure differential condition and operational to a closed condition in response to the predetermined condition, the valve comprising in combination: a housing having an inlet and an outlet and a bore therethrough connecting the inlet and outlet, a guide mounted in said bore, said guide having parallel arms extending downstream from said inlet to define a raceway and being connected at one end by an end plate in substantially U-shaped manner, said raceway having an open end downstream of said inlet, said end plate having an aperture therethrough and being aligned with said inlet, a closure ball mounted for axial movement along said raceway, ball engaging shoulders projecting from said parallel arms adjacent the end plate to prevent said ball from obstructing the end plate aperture in the open condition, a valve seat surface formed upstream of said outlet and in close proximity to the open end of said guide, said valve seat surface receiving said closure ball in sealing engagement in the valve closed condition to stop flow therethrough, a spring axially mounted in said bore between said ball and said outlet, said spring acting against said ball to urge said ball upstream along said raceway and out of engagement with said valve seat surface in the open condition wherein flow occurs therethrough and whereby said ball is urged downstream to overcome the force of said spring and engage said valve seat surface in response to a predetermined pressure differential condition occurring between said inlet and said outlet.

3,845,786
DISC OR PLATE VALVE FOR PISTON-TYPE COMPRESSORS

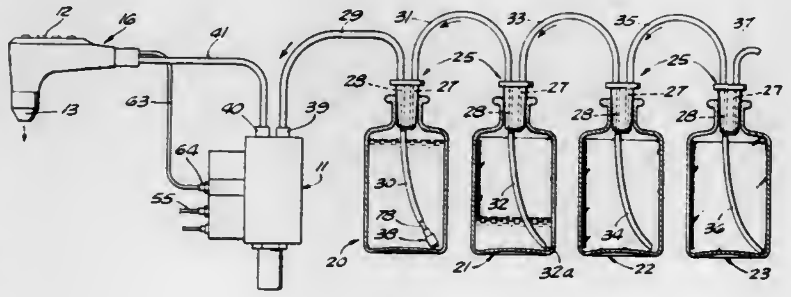
Joseph Papst, deceased, late of Vienna, Austria (by Stephanie Papst), and Brigitte Brockmuller, nee Papst, Kirkland, Montreal, Canada (sole beneficiaries), assignors to Hoerbiger Ventilwerke Aktiengesellschaft, Vienna XI, Austria
Filed June 22, 1973, Ser. No. 372,585
Int. Cl. F16k *15/08*
U.S. Cl. 137—535 **6 Claims**



1. A disc or plate valve for piston-type compressors having a valve seat, a valve stop spaced from the valve seat, a closing member mounted for movement between the valve seat and the valve stop, a spring plate mounted between the closing member and the valve stop and having at least one spring tongue bent out of the plane of the spring plate for urging the closing member into sealing engagement with the valve seat, and abutment means disposed between the valve stop and the spring plate, the abutment means being adapted to meet a corresponding spring tongue at a point spaced from the free end of the tongue when the valve is in a partly open position, thereby preventing the spring tongue from being bent back into the plate of the spring plate, and increasing the stiffness of the spring tongue when meeting with the corresponding abutment means.

3,845,787
LIQUOR SUPPLY FOR AN AUTOMATED LIQUOR DISPENSING SYSTEM

William E. Slagle, Barrington, Ill., assignor to Lincoln Hall Research Co., Lincolnwood, Ill.
Continuation of Ser. No. 193,137, Oct. 27, 1971, abandoned. This application May 17, 1973, Ser. No. 361,342
Int. Cl. B65d *47/00, 51/16*
U.S. Cl. 137—571 **1 Claim**



1. In a liquid storage system including a plurality of bottles intercoupled in an airtight series between an inlet that is open to atmosphere and an outlet coupled to a dispensing pump, a stopper assembly comprising:

a stopper formed of hard material having a body with an elongated frusto-conical configuration, a circumferential flange on the relatively wide end of said body, inlet and outlet openings extending lengthwise through said body, a fitting for a suction tube on the relatively narrow end of said body and communicating with the inlet end of said outlet opening, and a pair of fittings at the wide end of said body and communicating with respective ones of said openings;

and an adapter formed of relatively resilient material and having a frusto-conical sleeve configuration, said adapter being of such size as to fit over said stopper body with the wide end of said adapter engaging said flange;

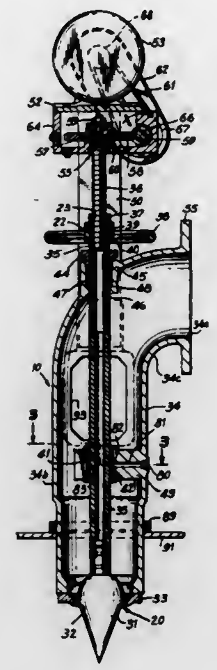
said body also having a lateral protusion at its relatively narrow end for retaining said adapter in place;

whereby said stopper assembly can be fitted in airtight relationship into the mouth of any one of various sized bottles;

wherein said stopper includes a disc-shaped member secured to the flanged end of said body, said pair of fittings being formed integrally with the outer surface of said member and each being radially spaced from the axial center of said member, the associated openings extending from their respective fittings through said disc-shaped member and then radially inward towards each other, the openings in said body being parallel to each other and aligned with the inner ends of the openings in said disc-shaped member.

3,845,788
MOTOR CONTROLLED VALVE FOR CONTINUOUSLY FEEDING VISCOUS LIQUIDS

Thomas R. Laven, Hamilton, Ohio, assignor to The Western States Machine Company, Hamilton, Ohio
Filed Oct. 3, 1973, Ser. No. 403,071
Int. Cl. F16k *19/00*
U.S. Cl. 137—604 **8 Claims**



1. A valve for controlling the delivery of a stream of viscous material, comprising:

an elongated valve body having an inlet at one end and a circular outlet orifice at the other end;

a conical needle means supported on an elongated valve stem means, said needle means being disposed in said orifice and movable axially relative thereto to close the orifice or to define an annular gap for outflow of a stream of said viscous material;

threaded drive nut means fixedly associated with said valve stem means;

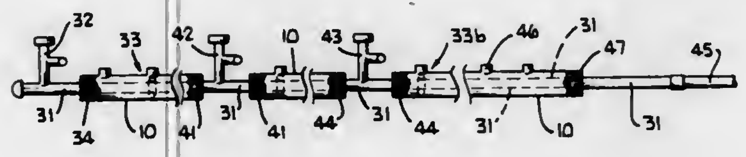
rotatable lead screw means in threaded engagement with said drive nut means;

drive transmission means for rotating said lead screw means to move said valve stem means axially of said valve body; and

maually operable means for rotating said drive nut means relative to said lead screw means independently of said transmission means.

3,845,789
SUB-SURFACE GAS MAIN REPLACEMENT METHOD

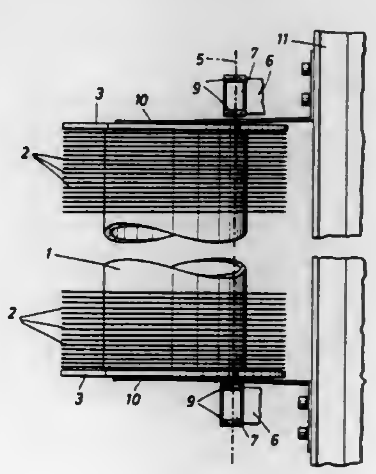
Carl H. Rohrer, 1501 Hale Ave., Ft. Wayne, Ind. 46804
Filed Oct. 30, 1972, Ser. No. 302,053
Int. Cl. F16l *55/12*
U.S. Cl. 138—97 **4 Claims**



1. A minimum service shut-down method for replacing sub-surface gas mains of the type having service lines connected at spaced locations along the gas mains, said method including: initially obtaining access to each end of predetermined length section of the main having a plurality of service lines connected to it, providing said section with a gas supply independent of its junction with adjoining portions of the main, subsequently isolating said section from adjoining portions of the main, then inserting within said main section a generally coextensive section of smaller-diameter replacement tube and connecting said tube to a source of pressurized gas supply, subsequently disconnecting less than all of said plurality of service lines from said main section and reconnecting them to said replacement tube with said reconnected service lines being supplied with gas from said replacement tube and the remainder of said service lines being supplied with gas from said main section, subsequently disconnecting said remaining service lines from said main section and reconnecting them to said tube, and finally removing said gas supply from said main section leaving all of said service lines supplied with gas by said replacement tube.

3,845,790
FILLING THREAD TENSIONING MEANS

Walther Filter, Langenhagen, and Claus Filter, Rethem/Aller, both of Germany, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Vienna, Austria and Establissement Wanderfield & Co., Schaan, Liechtenstein
Filed Sept. 7, 1973, Ser. No. 395,293
Claims priority, application Austria, Sept. 15, 1972, 7914/72
Int. Cl. D03c *47/00*
U.S. Cl. 139—194 **9 Claims**



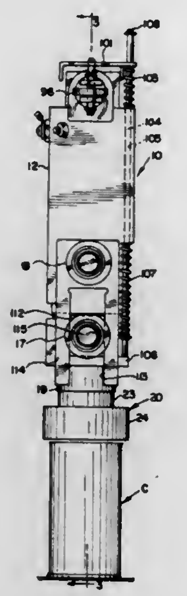
1. In a flat weaving machine which is operable to form a shed terminating at a fell of a cloth, to enter a filling thread into said shed along a predetermined line, to cut off said filling thread, and to beat up said filling thread against said fell, said machine comprising an intermittently rotatable reed roller consisting of a reed shaft and a multiplicity of discs corotationally mounted on said reed shaft and formed with thread-engaging edge portions which are adpated thus to beat up successive filling threads against said fell as said reed roller is intermittently rotated in a predetermined direction, the provision of tensioning means for maintaining the tension of said filling thread as it is beaten up, said tensioning means comprising

two stationary spring tongues, which are disposed at opposite ends of said reed roller and bear on the outer end faces of those of said discs which are disposed at said opposite ends of said reed roller, said tongues being adapted to clamp opposite end portions of said filling thread against said outer end faces when said filling thread has been cut off, and

two thread tensioners disposed adjacent to opposite ends of said reed roller and comprising backing means disposed adjacent to said predetermined line, said tensioners being pneumatically operable to force said filling thread against said backing means when, and only when, said filling thread has thus been entered into said shed.

3,845,791
UNIVERSAL FILLING HEAD

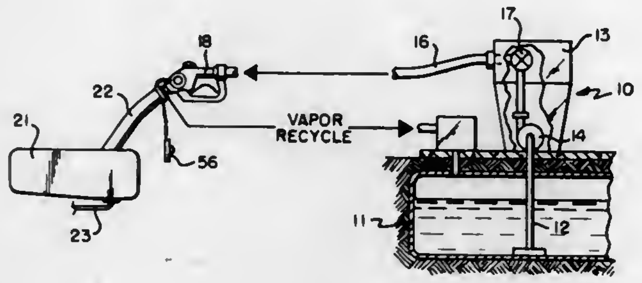
Kenneth Francis Montague Friendship, Hinsdale, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 80,895, Oct. 15, 1970, Pat. No. 3,720,242. This application Mar. 12, 1973, Ser. No. 340,625
Int. Cl. B67c *3/06*
U.S. Cl. 141—6 **18 Claims**



1. In a container filling machine, a filling head which comprises:
- a hollow cylindrical housing having a downwardly opening, upper housing member and a lower housing member in sliding telescoped relation within the upper housing member;
- a sealing bell mounted on the lower end of said lower housing member which is adapted to be brought into sealing engagement with the mouth of a container positioned in vertical alignment beneath the same when the housing member is lowered;
- a hollow liquid product distributor mounted in said lower housing member which has a passageway connecting with a product inlet port for directing a liquid product through said lower housing member and into said container;
- a fluid product supply line connected to said product inlet port, a device in said supply line immediately adjacent said inlet port for creating extreme turbulence and high pressure drop;
- a product feed valve assembly having a body member mounted in said product distributor for axial movement between valve opening and closing positions so as to control the entry of the product into said container;
- a piston having an upper and a lower surface and mounted for axial sliding movement in said lower housing member and connected to said feed valve body member;
- resilient means biased to normally hold said feed valve body member in valve closing position;
- means for supplying counterpressure to the lower surface of said piston which is operative to pressurize said container and to move said product feed valve to open position;
- piston operating means for conducting a fluid from a control pressure supply means to a space above said piston to press against the upper surface of said piston;
- a control valve for said piston operating means; and
- means actuated upon the filling of the container to a predetermined level to operate the control valve for said piston operating fluid means whereby said product feed valve is moved to closed position.

3,845,792
FUEL-DISPENSING NOZZLE SEAL

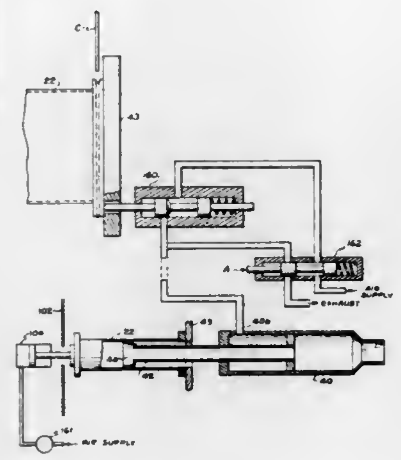
Everett M. Johnson, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.
Filed Oct. 24, 1972, Ser. No. 300,076
Int. Cl. B65b *31/06;* **B67d** *5/372*
U.S. Cl. 141—46 **6 Claims**



1. A dispensing nozzle for transferring a volatile liquid from a pressurized source thereof, to a tank having a filling spout, said nozzle including a discharge tube defining an internal flow passage having an outlet at one end thereof, said tube being adapted to be removably registered within said filling spout, and manually operable valve means actuable to regulate liquid flow between the pressurized liquid source and said tank, the improvement therein of;
- a resilient walled inflatable member carried on the outer surface of said nozzle discharge tube to be radially expanded into engagement with contiguous wall of said filling spout to form a substantially fluid-tight annular seal therewith,
- a transfer conduit communicating said inflatable member with said nozzle discharge tube at a junction point, for directing a stream of said volatile liquid into said inflatable member when said valve means is actuated to the open position, whereby to initiate liquid flow through said discharge tube, and
- means communicating with said tank to receive vapors from the latter when liquid is urged thereinto.

3,845,793
MACHINE FOR FILLING LUNCHEON DOUGH INTO MOLD CANS

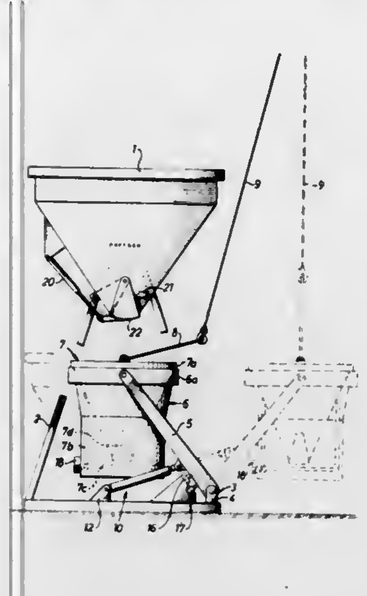
Paul F. Good, Lutherville, Md.
Division of Ser. No. 40,135, May 28, 1970, Pat. No. 3,688,682. This application May 3, 1972, Ser. No. 240,599
Int. Cl. B65b *3/14*
U.S. Cl. 141—67 **3 Claims**



1. A stuffing horn for filling a mold with food comprising an outer tube and an inner tube to form a telescopic horn for passage of food under pressure said inner tube extending beyond one end of said outer tube, said inner tube being spaced inwardly from said outer tube, sealing ring means mounted on said inner tube at its end within said outer tube slidably engaging the inner surface of said outer tube, and bearing means at the end of the outer tube surrounding said inner tube to slidably support said inner tube, whereby said inner tube may be telescopically extended into a mold to be filled and retracted from said mold as the food passes through the stuffing horn into said mold under pressure.

3,845,794
FILLING SYSTEMS

Erik Rune Folde, Forshagagatan 14, 123 48 Farsta, Sweden
Filed Feb. 17, 1972, Ser. No. 227,101
Claims priority, application Sweden, Feb. 19, 1971, 2172/71
Int. Cl. B65b *1/30, 3/26*
U.S. Cl. 141—83 **19 Claims**

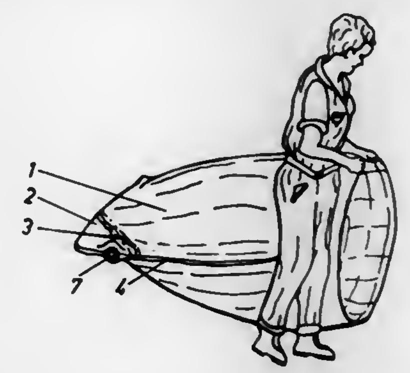


1. A filling system for automatically filling a transport container with material from a storage container having a support frame, the transport container being placed in a holder located in a first position substantially externally of the support frame of the storage container, drive means for moving the holder and the transport container both from said first position to a second position located substantially within said support frame and beneath a discharge opening in the storage container and from said second position to said first position, means responsive to the positioning of said holder in said second position for actuating the opening and closing of the discharge opening of the storage container to cause the transport container to be filled with a predetermined amount of said material, load sensing means responsive to filling the transport container for causing said drive means to return the filled container and the holder to its first position, the holder being supported on one end of at least one arm, the other end of said arm being pivotally connected to said frame of said storage container, the drive means being connected to the arm and said frame to drive said arm between the first and the second position and vice versa.

3,845,795
DEVICE FOR PRESSING AIR INTO INFLATABLE ARTICLES

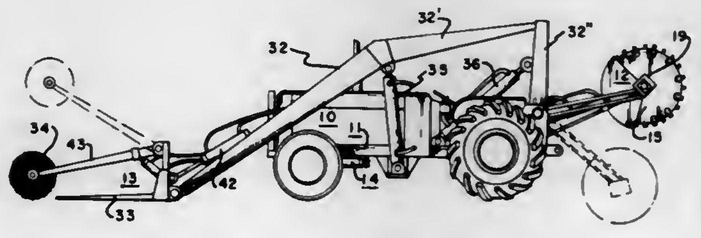
Bror Elis Andreasson, Bangatan 21, S-462 00 Vanersborg, Sweden
Filed Nov. 8, 1972, Ser. No. 304,655
Claims priority, application Sweden, Nov. 23, 1971, 14962/71; Oct. 17, 1972, 13349/72
Int. Cl. B65b *3/14, 3/16, 3/17*
U.S. Cl. 141—313 **14 Claims**

1. An improved device for pressing air into inflatable articles, said device comprising a larger air container having resilient walls and means defining an opening therein receptive of air for filling same; and a smaller air container having resilient walls and compressible during use to discharge air therefrom, a valve housing connected to said larger air container and said smaller air container means defining a chamber in said valve housing for passage therethrough of pressurized air, means defining an outlet port in said valve housing for said pressurized air, a first valve in said valve housing positioned between the larger air container and said valve chamber, and a second valve in said valve housing positioned between said valve chamber and said outlet port, both said valves being non-return valves opening only in the direction towards said outlet and said smaller air container being connected to said chamber between said valves.



3,845,796
ROOT CUTTER

Calvin K. Moore, RT. 1, Boise, Idaho 83702
Filed June 14, 1973, Ser. No. 370,061
Int. Cl. B27c *9/00*
U.S. Cl. 144—1 R **2 Claims**



1. A root cutter to be carried on a stump clearing vehicle, comprising:
- an upstandingly disposed circular blade mounted at its center to and driven by a gear box;
- a multiplicity of cutting bits fastened radially on each side of and projecting from the outer circumferential edge of said blade;
- cutter carrying arms fastened at one of their terminal ends to said gear box and at their ends opposite pivotally to said vehicle chassis, said carrying arms being pivotally mounted to articulate vertically and sidewardly and having hydraulic cylinders fastened between said vehicle chassis and said carrying arms to accomplish said articulation;
- means for providing mechanical power to said gear box to rotate said blade; and
- a sweeper lift assembly including a pair of lift arms pivotally fastened at each of the terminal sides of and distally from the rearwardmost terminal end of said vehicle chassis, said lift arms having means for selectively lifting said arms, and lift forks including an upstanding, transversely disposed wall fastened to the forwardmost terminal ends of said lift arms and a plurality of rectilinearly horizontally parallel tine bars fastened to said upstanding wall and a detachable panel slidably engageable with said lift arms.

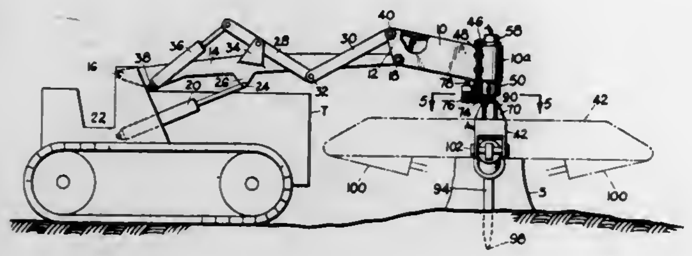
3,845,797
STUMP SPLITTER

Raymond H. Bartlett, 604 N. Overlook Dr., Vancouver, Wash. 98665

Continuation-in-part of Ser. No. 333,968, Feb. 20, 1973, abandoned. This application Aug. 9, 1973, Ser. No. 387,178

Int. Cl. B27c *9/00*

U.S. Cl. 144—2 N **11 Claims**



1. A stump splitter comprising
a. an elongated supporting frame having a substantially full length straight line configuration and having opposite ends,
b. means arranged to support said frame on a supporting vehicle,
c. a pair of arms pivotally supported in suspended relation on said frame,
d. said arms having opposed splitting blade edges with substantially the full length of the edges being disposed in a plane below the lowest point of the supporting frame,
e. and operating means for pivoting said arms,
f. said operating means being arranged to pivot said arms apart so that the latter can straddle a stump and also being arranged to pivot said arms forcefully together to split the stump.

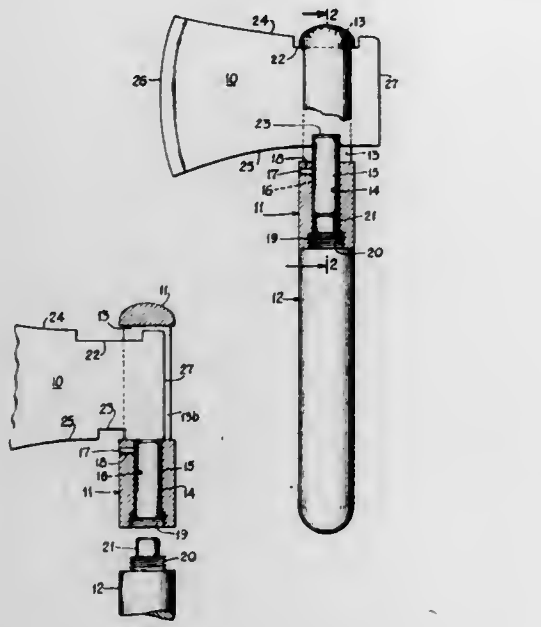
3,845,798
DISASSEMBLABLE HATCHET

Salvatore Palumbo, 160 Glascoe Ave., Staten Island, N.Y. 10314

Filed Sept. 10, 1973, Ser. No. 395,979

Int. Cl. B26b *23/00*

U.S. Cl. 145—2 R **8 Claims**



1. A disassemblable hatchet comprising:
a hatchet head having a blade edge, a blunt end, and top and bottom edges, said top and bottom edges each having a notch formed therein intermediate said blade edge and said blunt end and in alignment with each other;
an upper handle part having an axial slot in the upper portion thereof and an annular, axial chamber in the lower portion thereof, said slot and said chamber communicating with each other;
a cylindrical lock pin slideably seated in said annular chamber;
means to maintain said lock pin within said chamber; a lower handle part; and,
means for securing said upper handle part and said lower handle part to each other such that said lock pin engages and becomes seated in the notch in said lower handle part, is slid upwardly thereby in the lower edge of said hatchet head in firmly and securely locking said hatchet head to said upper handle part.

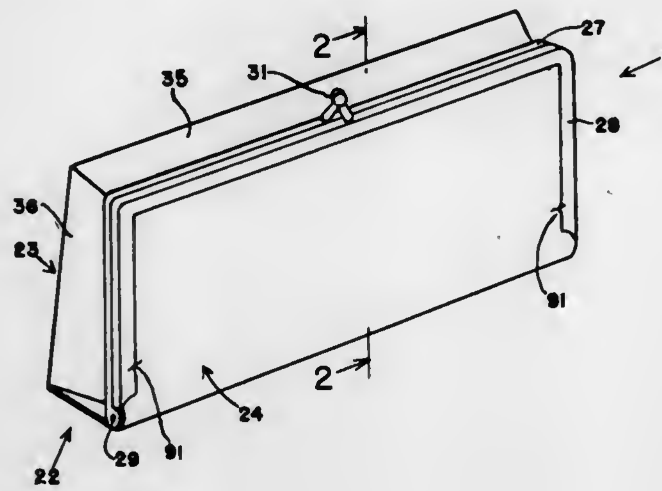
3,845,799
SPECTACLE CASE

Peter Mittell, 262 Main St., Milford, Mass. 01757

Filed Sept. 28, 1972, Ser. No. 293,112

Int. Cl. A45c *11/04, 13/04, 13/06*

U.S. Cl. 150—29 **16 Claims**



1. A case for small objects comprising:
receptacle means for receiving the object and including a unitary rigid board member having cut therein a hinge score to facilitate relative movement between a base portion and a cover portion, said base portion defining a bottom wall, a front wall, a pair of sidewalls and a rear wall joined to said cover portion by said hinge score, said side and front walls having scores adjacent outer peripheries that define outwardly folded tabs; and
a frame comprising a pair of U-shaped channels, hinges joining the ends of said channels; and closure means for releasably securing together said channels, said channels facing inwardly and receiving said tabs and the peripheral edges of said cover portion whereby said base portion is secured to one of said channels and said cover portion is secured to the other one of said channels.

3,845,800
MULTI-COMPARTMENT WALLET

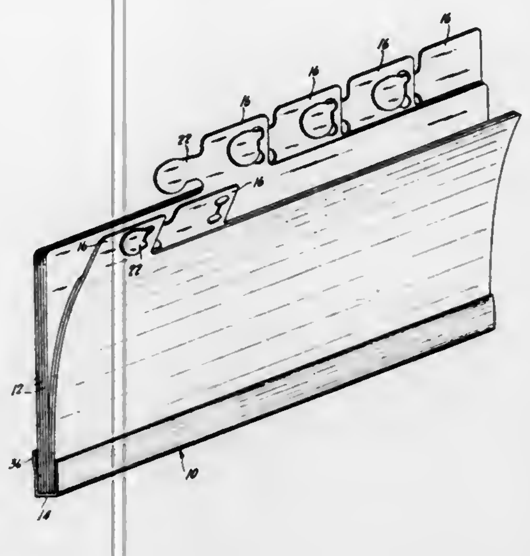
Gordon D. Lookatch, 6200 N. Sunny Point Rd., Glendale, Wis. 53217

Filed June 7, 1973, Ser. No. 367,772

Int. Cl. A45c *11/18*

U.S. Cl. 150—39 **9 Claims**

1. A multi-compartment wallet comprising a plurality of aligned, abutting rectangular sheets of flexible materials, said sheets being joined along one of the longer edges to form a plurality of compartments for receiving thin objects; and a plurality of adjacent interlocking tabs, one such tab being mounted on the other longer edge of each of said sheets in a serial arrangement, said tabs having a slot along one edge thereof and a projection along an opposing edge for insertion in the slot of an adjacent tab, said projection being arcuately downwardly disposed to locate the end of the projection in alignment with the lower portions of the slot, said projection having an upper lobe and a lower lobe on the outer end thereof having a radial width approximating the length of said slot, said serial arrangement being such that substantially only the projection of each tab overlies a portion of the adjacent tab.



ERRATUM

For Class 152—244 see:
Patent No. 3,845,802

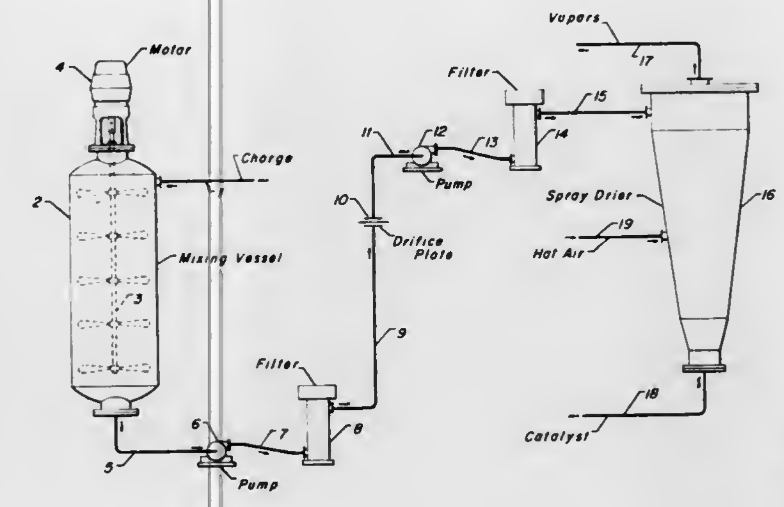
3,845,801
HOMOGENIZED PARTICULATE MATTER FOR SPRAY DRYING

Paul J. Kuchar, Hinsdale, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 23, 1973, Ser. No. 344,293

Int. Cl. B01d *1/16*; **F26b** *3/12*; **C01f** *7/34*; **C22b** *13/00*; **C02b**

U.S. Cl. 159—48 R **9 Claims**



1. A method for spray drying an aqueous slurry or suspension of a refractory inorganic oxide which comprises passing said slurry or suspension through an orifice at a pressure drop in the range of about 300 psig. to about 700 psig., increasing the pressure of the resulting homogenized slurry or suspension, and introducing the same into a spray drier at the elevated pressure.

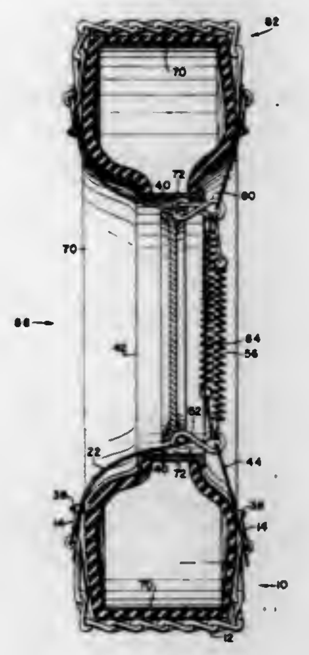
3,845,802
EMERGENCY TRACTION DEVICE FOR A VEHICLE WHEEL

Sergios Tsipilis, 83 Ashland Ave., West Orange, N.J.

Filed Mar. 6, 1972, Ser. No. 214,612

Int. Cl. B60c *27/62*

U.S. Cl. 152—233 **2 Claims**



1. An emergency traction device attachable to a vehicle wheel including hook receiving means, comprising:
a pair of chain-like traction members,
a first stiff, metal cross bar secured to one end of said traction members,
a second stiff, metal cross bar secured to the other end of said traction members.
a first elongated deformable stiff metal connecting strap adjustably secured at one end thereof to said first cross bar,
a rigid metal hook member having a hook at one end interlocked at the other end thereof directly to said second cross bar,
hook receiving means disposed in the other end of said connecting strap for receiving said hook member one end,
said traction members, first and second cross bar, connecting strap, and said hook member solely forming a traction loop exhibiting negligible strain when stressed below the yield point thereof and a loose closed loop about said wheel when said hook is engaged with said hook receiving means in said connecting strap, and resilient means secured to said rigid hook member and including a wheel hook for engaging said wheel hook receiving means, said resilient means drawing said hook member, said connecting strap, said cross bars and said traction members taut about said wheel when said device is attached to said wheel to remove any slack otherwise present in said traction loop.

3,845,803
SLAT-TYPE VENETIAN BLIND APPARATUS

Wilfried Horst; Emil Schuppler, and Horst Santen, all of Oldenburg, Germany, assignors to Firma Justin Huppe, Oldenberg, Germany

Filed Jan. 15, 1973, Ser. No. 323,740

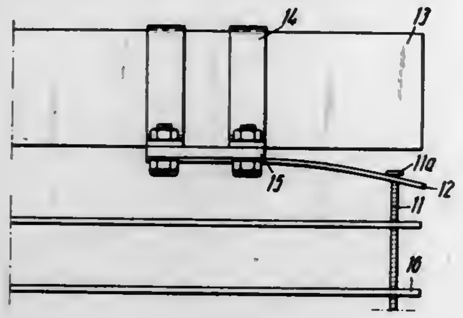
Claims priority, application Germany, Jan. 14, 1972, 7201376

Int. Cl. E06b *9/26*

U.S. Cl. 160—166 **3 Claims**

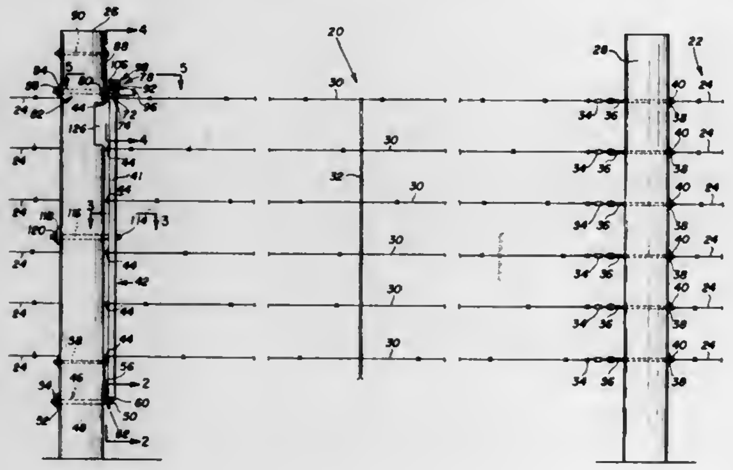
1. A venetian blind construction having a plurality of slats adapted to be spaced in parallel relation across a window or the like comprising an elongated flexible guide member passing through said slats across said window or the like to position

said slats in desired position, means anchoring said elongated flexible member at one end, and spring means anchoring said elongated flexible member at the other end with said elongated flexible member under resilient tension, said spring means comprising a leaf spring having a free end portion substantially at right angles to said elongated flexible member and to which said elongated flexible member is secured.



3,845,804
TRACTION GATE WITH CAMMING BAR

Felix B. Romberg, P.O. Box 218, Holland, Tex. 75218
Filed Aug. 2, 1973, Ser. No. 385,048
Int. Cl. E05c *5/00;* E01f *13/00*
U.S. Cl. 160—328 **18 Claims**



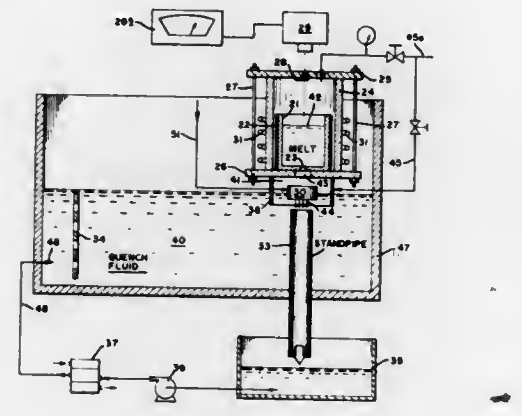
1. Apparatus for securing a wire gate in traction, comprising:
- a gate post;
- a standard positionable adjacent said gate post to support one end of a tensionable wire gate barrier;
- means for making a pivotal connection between the lower end of said standard and said post;
- a roller rotatably mounted at the upper end of said standard; and
- a traction block stationary on said gate post and defining a longitudinally convex camming edge for said roller extending between a point of beginning and a location for holding said roller to retain the wire gate in traction;
- said camming edge being longitudinally substantially perpendicular relative to said wire gate barrier at said holding location and being increasingly inclined towards said wire barrier outward from said location.

ERRATUM

For Class 164—1 see:
Patent No. 3,845,715

3,845,805
LIQUID QUENCHING OF FREE JET SPUN METAL FILAMENTS

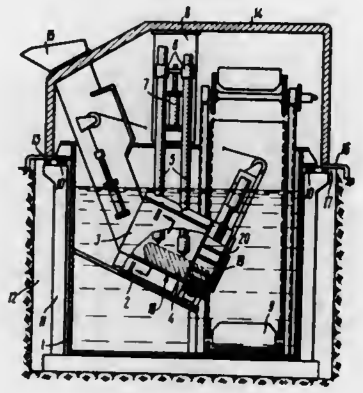
Sheldon Kavesh, Whippany, N.J., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Nov. 14, 1972, Ser. No. 306,472
Int. Cl. B22d *11/12*
U.S. Cl. 164—89 **11 Claims**



1. A method of making filaments from normally solid metal which comprises the steps of:
- a. melting said metal;
- b. extruding a molten filament of the molten metal;
- c. passing said molten filament in sequence (1) through a controlled gaseous interface zone and (2) into a liquid quench zone, said quench zone comprising a liquid medium which is flowing cocurrently with and essentially at the same velocity as the filament introduced therein; and
- d. recovering the solidified filament.

3,845,806
HIGH-VOLTAGE DISCHARGE ARRANGEMENT FOR STRIPPING FOUNDRY MOULDS OFF CASTINGS

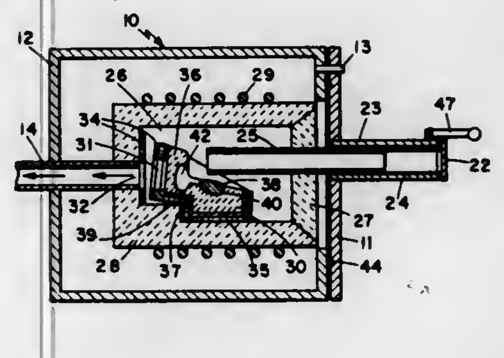
Vladimir Ivanovich Schekin, ulitsa Sennaja, 53, kv. 5, and Vasily Nikolaevich Stepanov, ulitsa Karpenko, 65, kv. 9, both of Nikolaev, U.S.S.R.
Filed May 16, 1973, Ser. No. 360,947
Int. Cl. B22d *29/00*
U.S. Cl. 164—250 **8 Claims**



1. An arrangement for stripping foundry moulds off castings by using high-voltage electrical discharges in fluid comprising: a fluid bath tank; a container for castings to be separated from foundry moulds, said container being mounted in said bath tank with its bearing surface being inclined to a horizontal plane; a plurality of electrodes secured above said container and adapted to ensure a high-voltage electrical discharge in fluid; a gear for traversing said electrodes in relation to said container; a means for charging the castings into said container and discharging them from it; a slide gate set up at the outlet of said container, secured on it to be able to turn and linked mechanically with said charging and discharging means to enable time correlation of the charging and discharging operations; said container is made up of a casing ensuring the orientation of the castings being treated in relation to said electrodes to create the requisite conditions for high-voltage electrical discharges, and of a tilter which can be brought into engagement with the castings being treated and turn them with respect to the longitudinal axis of the container to ensure exposure of the entire surface of the casting being treated successively to the effect of the high-voltage electrical discharges; a transporting means for the removal of the treated castings together with the separated foundry moulds from the arrangement.

3,845,807
VACUUM CASTING FURNACE

Howard T. Koon, 21922 Ottawa Rd., No. 36, Apple Valley, Calif. 92307
Continuation-in-part of Ser. No. 24,618, April 1, 1970, abandoned. This application Mar. 31, 1972, Ser. No. 240,212
Int. Cl. B22d *17/14; 27/08*
U.S. Cl. 164—255 **4 Claims**

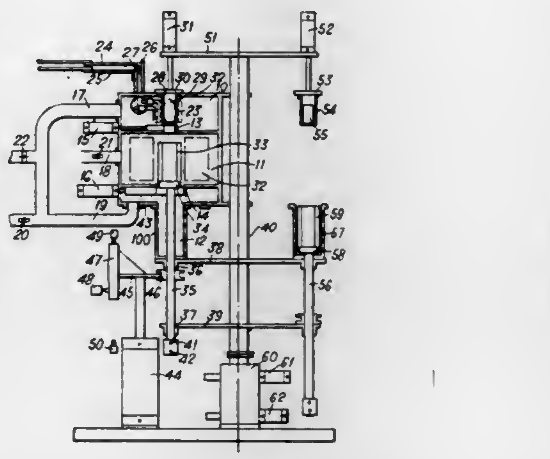


1. A furnace for working high temperature melting point materials, comprising:
- a casing having a removable end portion;
- a heated muffle in said casing, enclosing a chamber;
- a mold assembly mounted in said chamber, said assembly including a porous mold having a pattern cavity therein, and a molten material holding well communicating with said cavity;
- said mold assembly is pivotally mounted for tilting said mold assembly to deposit molten material from said well into said cavity;
- vacuum means for applying a vacuum to said chamber through the porous material of said mold to draw the molten material into the cavity,
- means including a gas inlet for admitting gas to said chamber opposite to the vacuum means,
- and said inlet being positioned to direct incoming gas against the mold assembly for tilting the assembly.

3,845,808
APPARATUS FOR CASTING DIRECTIONALLY SOLIDIFIED ARTICLES

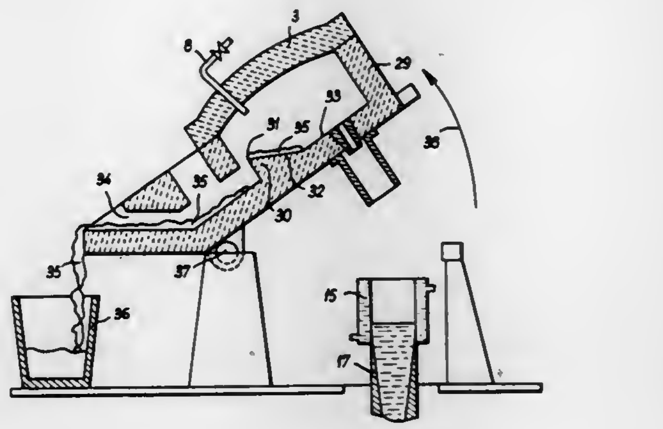
Gordon John Spencer Higginbotham, Darley Abbey, and Kenneth Cuckson, Allestree, both of England, assignors to Rolls-Royce (1971) Limited, London, England
Filed Nov. 30, 1972, Ser. No. 310,966
Claims priority, application Great Britain, Dec. 4, 1971, 56395/71
Int. Cl. B22d *27/16*
U.S. Cl. 164—258 **9 Claims**

1. Apparatus for casting comprising first, second and third adjacent chambers each of which may be sealed and evacuated, the chambers being mounted one above another with the first chamber uppermost, first and second valve means dividing said first chamber from said second chamber and said second chamber from said third chamber respectively, a charge melting arrangement in said first chamber adapted to melt metal and discharge the molten metal through said first valve means into a mould supported within saidsecond chamber during said discharge, a mould heating furnace in said second chamber adapted to heat said mould, and a movable chill support adapted to carry a chill and said mould between said second and said third chambers wherein said mould is introduced into said heating furnace and removed when charged from said second to said third chamber so that a directional grain structure may be formed in the casting.



3,845,809
MEANS FOR THE CONTINUOUS CASTING OF STEEL

Jacques Pomey, Billancourt, France, assignor to Societe des Aciers Fins de L'Est, Billancourt, France
Continuation of Ser. No. 813,102, April 3, 1969, abandoned. This application Oct. 20, 1971, Ser. No. 191,107
Claims priority, application France, Apr. 3, 1968, 68.146863; June 27, 1968, 68.156841
Int. Cl. B22d *11/10*
U.S. Cl. 164—259 **4 Claims**

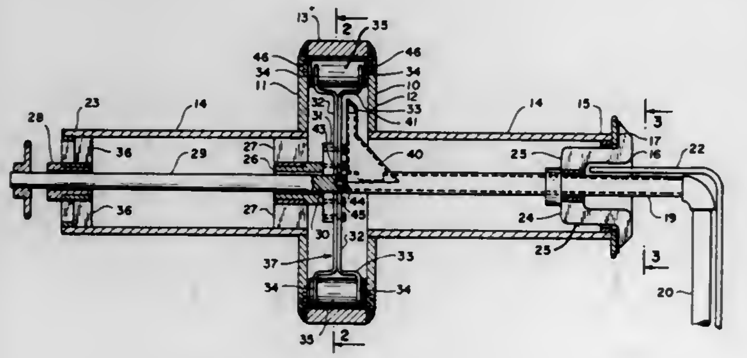


1. Equipment for the continuous casting of steel which comprises a steelwork ladle having a jet of molten steel feeding an intermediate pool of the so-called "tundish" type covered by a vault, said intermediate pool comprising a main chamber provided in its lower portion with at least one discharge nozzle adapted to be stopped, said nozzle being formed with a first extension including a substantially vertical refractory tubular duct of sintered vitreous silica adapted to feed at least one tubular ingot mould equipped with cooling means, the lower end of said tubular duct being immersed in themetal fillingsaid ingot mould during the casting operation, means to replace air in said main chamber by a suitable atmosphere supplied thereto via a gas pipe opening into said intermediate pool, said intermediate pool having at least one passage for introducing a suitable addition into said main chamber, said passage opening into the vicinity of the zone where the jet of molten steel delivered by the steelwork ladle is incorporated into the molten steel already contained in said pool, said intermediate pool further comprising a second lateral horizontal extension of said main chamber formed at its upper portion

with an aperture for receiving the steel jet from said steelwork ladle, said addition introduction passage also formed in said second lateral extension, so that the addition is mixed in the liquid steel in the vicinity of the steel jet arrival, said intermediate pool further comprising at least one first refractory partition wall extending through said main chamber and interposed in the bottom of said pool downstream of the steel jet arrival and upstream of said nozzle, the upper edge of said first partition wall being disposed beneath the minimum level contemplated for the molten steel contained in said pool, and at least one second partition wall interposed in the top of said pool between said first partition wall and tubular duct, the bottom edge of said second partition wall being disposed beneath said minimum level, said first and second walls constituting a baffle for the passage of molten metal and causing homogenization of the metal before arrival at said discharge nozzle.

3,845,810
STRIP CASTING APPARATUS

Charles Christian Gerding, Pittsburgh, Pa., assignor to Jones Laughlin Steel Corporation, Pittsburgh, Pa.
Division of Ser. No. 188,049, Oct. 12, 1971, Pat. No. 3,712,366. This application Oct. 6, 1972, Ser. No. 295,621
Int. Cl. B22d *11/06*
U.S. Cl. 164-276 **10 Claims**



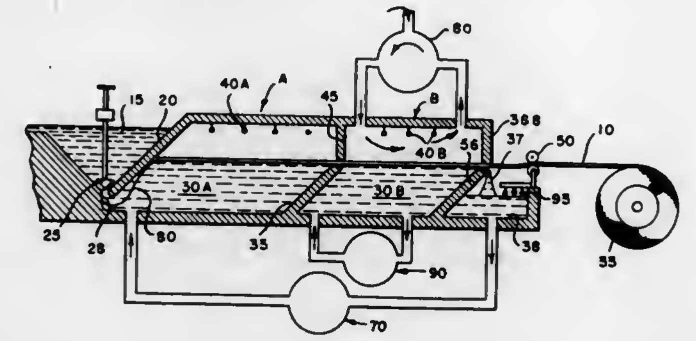
1. Apparatus for continuously solidifying molten metal in the form of strip comprising a hollow cylindrical drum open to the atmosphere and positioned with its axis horizontal, means for introducing cooling liquid into the drum through an end thereof, means for rotating the drum at a speed below that to which cooling liquid is thrown against the inside surface of the drum by centrifugal force, means extending radially into the drum for withdrawing cooling liquid therefrom through an end thereof, and means for improving heat transfer from drum surface to cooling liquid comprising spider means rotatable inside the drum coaxially therewith, a plurality of drum surface contacting elements for breaking up incipient vapor and carried by the spider means and rotatable therewith, radial slot means for mounting the surface contacting elements in the spider means adapted and adjusted to permit radial displacement of the drum surface contacting elements from contact with the drum surface to a position spaced from the drum surface and means for rotating the spider means at a speed above that at which cooling liquid is thrown against the inside surface of the drum by centrifugal force.

3,845,811
APPARATUS FOR FLOAT CONTINUOUS CASTING OF METAL

Hubert Martin, Richmond, Va., assignor to Terrell Corporation, Richmond, Va.
Filed Aug. 2, 1972, Ser. No. 277,224
Int. Cl. B22d *11/12*
U.S. Cl. 164—281 **5 Claims**

1. Apparatus for continuously casting a metal material comprising, a feed vessel for containing the metal material in molten state with outlet means for metering said material into the apparatus for processing,

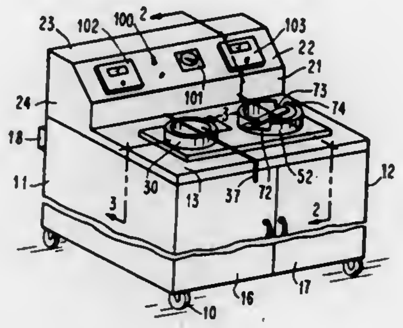
a first chamber comprising a first vessel for containing a heated liquid carrier material, inlet and outlet means on opposite ends of said first vessel for delivering and casting said metal material on said carrier liquid, and permitting passage thereof out of said first vessel while still residing on said carrier liquid,



a second chamber adjacent said first chamber comprising a second vessel adapted to contain a cooler carrier liquid, said second vessel positioned with respect to said first vessel to receive said cast metal material but limiting the flow of carrier material from the first to second vessels, and means for causing said metal material to sequentially travel through said apparatus over said heated carrier material and cooler carrier material.

3,845,812
APPARATUS FOR MANUFACTURING SHEET-CUTTING FEMALE DIES

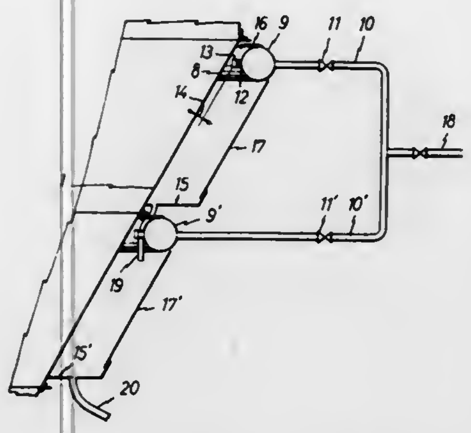
Winston L. Shelton, Jeffersontown, and Joseph L. Newman, Louisville, both of Ky., assignors to Quik Die, Inc., Jeffersontown, Ky.
Division of Ser. No. 133,853, April 14, 1971, Pat. No. 3,756,308. This application May 10, 1973, Ser. No. 359,138
Int. Cl. B22d *41/04*
U.S. Cl. 164—335 **3 Claims**



1. Apparatus for casting female cutting dies comprising, a compact cabinet having an apertured interior shelf providing a horizontal supporting surface, a stationary open-top casting pot supported on said surface and having its bottom exposed to a cooling space within said cabinet above the aperture in said shelf, a conduit communicating said space with the exterior of said cabinet, a blower mounted in said cabinet below said shelf for forcing air through the aperture in said shelf into said space and thence into said conduit, a motor for driving said blower, an open-top melting pot detachably mounted on said shelf surface adjacent said casting pot and adapted to be manually moved for pouring its contents into said casting pot, heat-insulation surrounding the side walls of each of said pots, a stationary heat-insulated apertured cover sheet for said cabinet disposed above said shelf and with the upper ends of each of said pots extending above said cover sheet whereby melt material may be poured from the melting pot into the casting pot and the cast die may be removed from the casting pot without disturbing the positioning of the casting pot, an electrical heating means for said casting pot, an electrical heating means for said melting pot and electrical circuit means housed in said cabinet for controlling the operation of said motor, said heating means for said melting pot, and said heating means for said casting pot.

3,845,813
WATER COOLING OF WALL SURFACES

Georges Bougard, Rue de la Station, 31, Obourg, Belgium
Filed May 29, 1973, Ser. No. 364,722
Claims priority, application Belgium, Jan. 10, 1973, 126261
Int. Cl. F28d *3/04*
U.S. Cl. 165—47 **4 Claims**



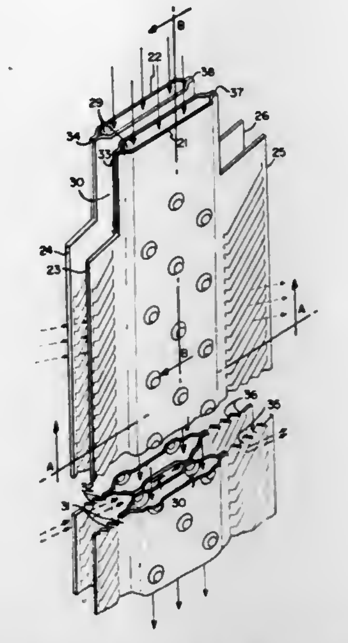
1. An apparatus for cooling the outer surface of a conical wall of a cyclone separator, the wall having an upper edge, comprising

1. a supply container of cooling water mounted adjacent the upper wall edge and laterally spaced therefrom,
2. means for regulating the pressure of the cooling water supplied to the supply container,
3. an overflow pipe mounted on top of the supply container,
(4) an array of sprinkling nozzles oriented towards the wall surface and mounted to deliver the water from the supply container under a constant pressure through nozzle outlets in a series of water jets to the wall surface, the water pressure at the level of the sprinkling nozzles being determined by the height of the water column between said level and the level of the overflow pipe,
5. means for adjusting the distance of the nozzle outlets from the wall surface, and
6. means downwardly spaced from the array of nozzles adjacent the wall surface for collecting the water, and for removing the collected water.

3,845,814
FINNED PRIMARY SURFACE HEAT EXCHANGER

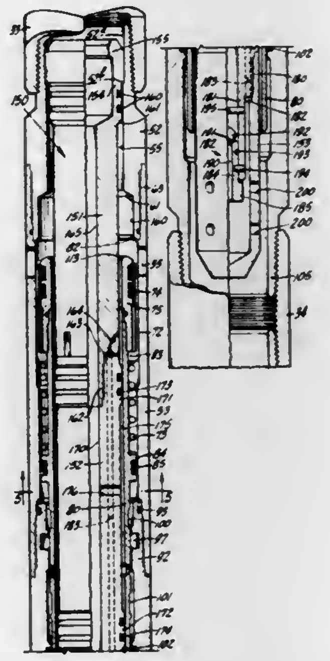
Leslie C. Kun, Williamsville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed July 10, 1972, Ser. No. 270,259
Int. Cl. F28b *1/14*
U.S. Cl. 165—148 **10 Claims**

1. A heat exchanger comprising at least one flat primary-surface heat exchange channel element formed and bound by at least one thermally conductive walled material with a maximum dimension width line and a longitudinal length line, said element having an entrance opening and an exit opening, the improvement which comprises the addition of at least one secondary-surface heat exchange slotted fin of width greater than 0.1 inch and less than 0.6 inch disposed substantially along at least one longitudinal section of the channel element, said fin having a multitude of slatted apertures arranged in a louver configuration with adjacent slats separated by slot-shaped apertures, having the fin angle γ between about 0° and about 60° wherein γ is the angle formed between the plane of the fin and a plane containing the maximum dimension width line and longitudinal length line of said channel element, slat width of at least 0.02 inch and less than 0.10 inch, the slat angle β is between about 15° and about 90° wherein β is the angle formed between the plane of the fin and the plane of the slats and the slot angle α is between about 0° and about 180° wherein α is the angle formed between the longitudinal length line of the channel and the longitudinal length line of the slots.



3,845,815
WELL TOOLS

Turner G. Garwood, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Aug. 6, 1973, Ser. No. 386,054
Int. Cl. E21b *43/12*
U.S. Cl. 166—154 **22 Claims**



1. A well tool for controlling circulation with a tubing string in a well bore comprising: housing means adapted for connection in said tubing string and having port means for communicating the interior of said tubing string with the exterior thereof; tubular valve means longitudinally movable within said housing means between first and second positions for opening and closing said port means; and seal means for sealing between said housing means and said valve means defining first and second oppositely facing surfaces on said valve means, one of said surfaces being and defining a second area on said valve means responsive to pressure applied to said tool through said tubing string for closing said valve means.

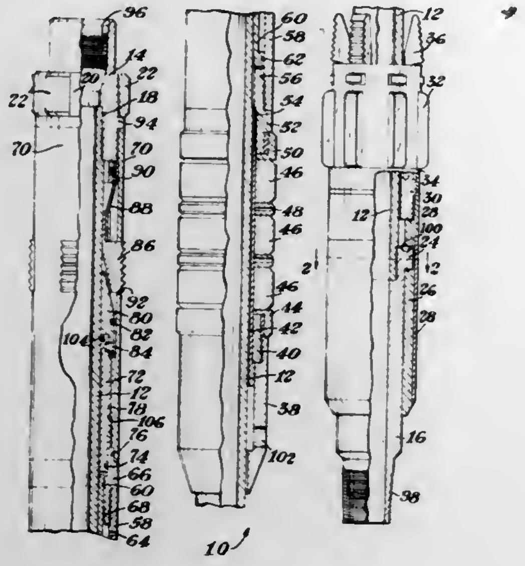
3,845,816
COMPRESSION PACKER

Charles A. Pitts, Wichita Falls, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 23, 1973, Ser. No. 381,647

Int. Cl. E21b *23/06*

U.S. Cl. 166—120 5 Claims



1. Compression packer apparatus comprising an elongated tubular inner mandrel having upper connector means at one end and lower connector means at the lower end thereof, a slip element and compression packer element assembly including packer elements, drag blocks and a lower slip cone carried around the lower part of said mandrel assembly, means for mechanically compressing said packer elements and for advancing said lower slip cone under said slip elements, an upper slip array having a tapered under side disposed above said packer elements and surrounding said mandrel, a slidable upper slip cone disposed around said mandrel adjacent to said tapered underside of said slip array, hydraulic piston drive means coupled to said upper slip cone and disposed around said mandrel, channel means for applying pressurized fluid from below said packer elements to said piston drive means, and vacuum actuated upper slip cone retraction means coupled to said piston drive means.

3,845,817
TERTIARY OIL RECOVERY METHOD

Donald L. Hoyt, Houston, Tex., and Anthony Francis Altamira, Dhahran, Saudi Arabia, assignors to Texaco Inc., New York, N.Y.

Filed Oct. 17, 1973, Ser. No. 407,116

Int. Cl. E21b *43/00, 43/16*

U.S. Cl. 166—245 3 Claims

1. At the conclusion of a secondary recovery operation in a method of producing formation fluids including hydrocarbons from a subterranean hydrocarbon-bearing formation by a direct line drive which comprises penetrating said formation with a plurality of wells disposed in a linear pattern and comprising a series of a pair of production wells and an intermediate injection well, injecting an extraneous fluid into said formation via said intermediate injection well to displace formation fluids including hydrocarbons in said formation toward said production wells, producing said formation fluids including hydrocarbons from said formation via said production wells till breakthrough of said extraneous fluid thereat, thereupon initiating a tertiary recovery operation by imposing a new set of flow gradients comprising the steps of shutting in the intermediate injection wells in alternate series and shutting in the production wells in the series adjacent thereto, and thereupon injecting said extraneous fluid via the remainder of the intermediate injection wells of said series and producing formation fluids via the remainder of said production wells.

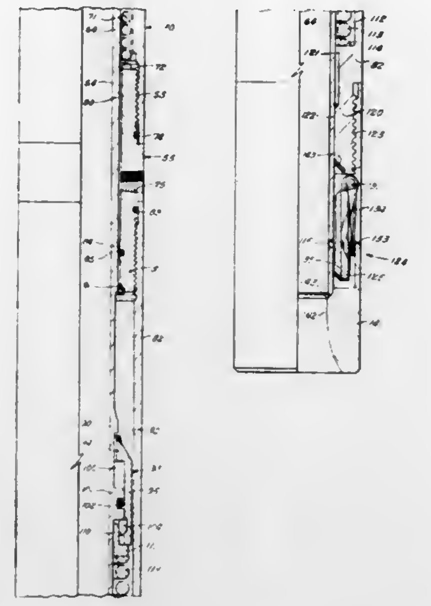
3,845,818
WELL TOOLS

Thomas M. Deaton, Dallas, Tex., assignor to Otis Engineering Company, Dallas, Tex.

Filed Aug. 10, 1973, Ser. No. 387,348

Int. Cl. E21b *43/12;* **F16k** *11/14*

U.S. Cl. 166—224 S 8 Claims



1. A well tool for controlling fluid flow in a tubing string in a well bore comprising: a housing having a longitudinal bore therethrough for flow of fluids; a valve secured at the lower end of said housing for movement between open and closed positions for controlling the flow of fluids into said bore of said housing; a valve operator tube supported for longitudinal movement in said housing, a lower end of said operator tube being engageable with said valve for moving said valve from a closed to an open position responsive to downward movement of said operator tube; means associated with said operator tube for biasing said tube upwardly to an upper position at which said valve is closed; means for selectively urging said operator tube downwardly to a lower position for opening and holding said valve open; and means associated with said operator tube in said housing for equalizing the pressure across said valve when said valve is closed to reduce the force required for opening said valve including first and second equalizing valve means, said first and second equalizing valve means being opened and closed in a sequence adapted to prevent flow cutting of said first equalizing valve means.

3,845,819
CABLE TOOL FOR SETTING LINERS

Jean Mourlevat, Cazeres, France, assignor to Entreprise de Recherches et d'Activities Petrolieres (ELF), Paris, France

Filed Apr. 25, 1973, Ser. No. 354,253

Claims priority, application France, Apr. 27, 1972, 72.15018

Int. Cl. E21b *23/00*

U.S. Cl. 166—239 6 Claims

1. A tool for laying a production liner by cable, said tool comprising:

a non-recoverable connector (1) having an internal diameter substantially as great as that of said liner, said connector being formed with an internal circular groove (3);

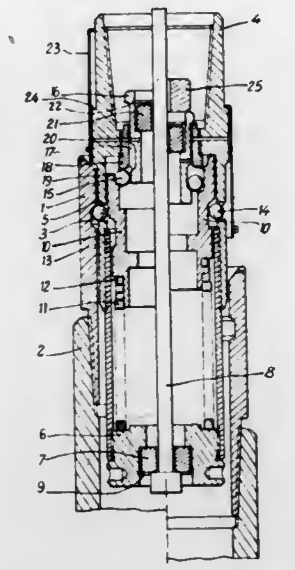
a recoverable tool component (4) and cable means slidably supporting said recoverable component within said connector, said component having at least one aperture facing the groove in said connector when said tool is fastened to said connector;

means for attaching said tool component to the non-recoverable connector comprising locking means (14) which project from the apertures in the tool component into said groove when in locking position; and

a main sleeve (10) for moving said locking means into and out of said groove by sliding inside the component between a locking position in which said sleeve holds said locking means in said groove to connect said component to said connector and a release position in which said sleeve permits said locking means to depart from said groove, thus releasing said connector, said main sleeve being supported by and removable with said tool component;

a releasable stop (20) holding said sleeve in its locking position; and

means (25) for releasing said stop.



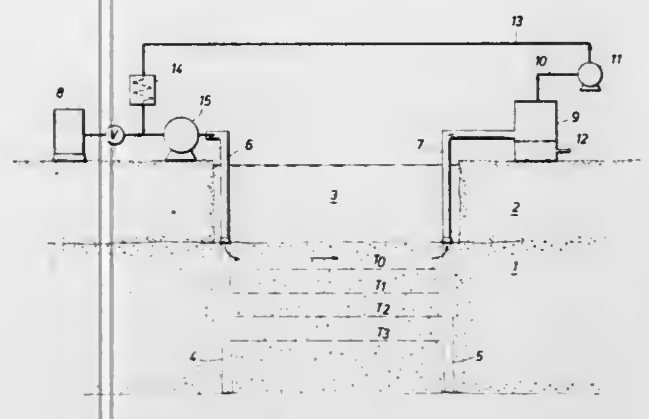
3,845,820
SOLUTION MINING TECHNIQUE FOR TAR SAND DEPOSITS

Joseph C. Allen, Bellaire, and Jack F. Tate, Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed May 4, 1973, Ser. No. 357,413

Int. Cl. E21b *43/28*

U.S. Cl. 166—266 16 Claims



1. A solution-mining method for recovering bitumen from a bitumen-containing tar sand deposit comprising:

a. removing the overburden above at least a portion of the tar sand deposit;

b. establishing injection means and production means within the tar sand deposits;

c. injecting into the top of the tar sand deposit a solvent for bitumen, said solvent having a density greater than the density of water, said solvent moving essentially horizontally across the tar sand deposit;

d. filling the cavity created by removal of the overburden with water above the solvent; and

e. removing the mixture of solvent and bitumen from the tar sand deposit from the production means.

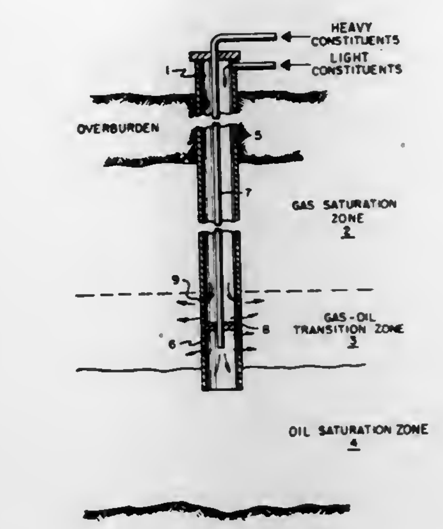
3,845,821
RECOVERY OF OIL BY A VERTICAL MISCIBLE FLOOD

Joseph C. Allen, Bellaire, and William B. Braden, Jr., Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 21, 1972, Ser. No. 291,122

Int. Cl. E21b *43/16*

U.S. Cl. 166—269 14 Claims



1. A method for the recovery of liquid hydrocarbons from a subterranean reservoir containing same and penetrated by an injection well and a production well, comprising the steps of:

a. injecting via said injection well into said subterranean reservoir adjacent the uppermost region of said liquid hydrocarbons in said reservoir a first light hydrocarbon fluid and separately and simultaneously, and below said first hydrocarbon fluid, a second heavier hydrocarbon fluid,

b. continuing said injection for a time sufficient to establish in-situ and adjacent said uppermost region a slug consisting of a mixture of said first fluid and said second fluid,

c. injecting into said reservoir a driving fluid thereby displacing said slug and said reservoir hydrocarbons thru said reservoir toward said production well,

d. producing said hydrocarbons via said production well.

3,845,822
PLUGGING OR SEALING FRACTURES IN FORMATIONS

Richard L. Clampitt, and James E. Hessert, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 224,956, Feb. 9, 1972, abandoned. This application June 21, 1973, Ser. No. 372,242

Int. Cl. E21b *33/138, 43/27*

U.S. Cl. 166—281 30 Claims

1. A method for plugging a fracture in a formation, which method comprises:

introducing into said fracture a fluid comprising an aqueous gel, said gel comprising water to which there has been added a water-thickening amount of a water-soluble cellulose ether, a sensible amount of a water-soluble compound of a polyvalent metal wherein the metal present is capable of being reduced to a lower polyvalent valence state and which is sufficient to gel said water when the valence of at least a portion of said metal is reduced to said lower valence state, and an amount of a water-soluble reducing agent which is effective to reduce at least a portion of said metal to said lower valence state; and

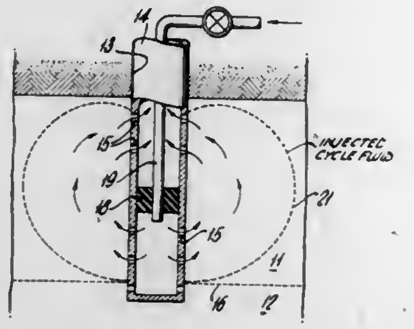
maintaining said gel in said fracture in a quiescent state for a period of time sufficient for said gel to develop sufficient gel strength to remain in place in said fracture.

3,845,823

METHOD FOR PREVENTING BOTTOM WATER CONING IN OIL WELLS

Joseph C. Allen, Bellaire, Tex., assignor to Texaco, Inc., New York, N.Y.

Filed Mar. 14, 1973, Ser. No. 340,994
Int. Cl. E21b *43/24, 43/16*
U.S. Cl. 166—303 **3 Claims**



1. A method of producing petroleum hydrocarbons and inhibiting water coning during the production of petroleum hydrocarbons from a well bore which penetrates a subsurface petroleum hydrocarbon-producing formation which is in contact with and overlays an adjacent water-producing formation which comprises:

a. injecting into the lower portion of the formation a slug of liquid hydrocarbon having a material selected from the group consisting of carbon dioxide and flue gases dissolved therein in amounts up to the saturation value at the injection pressure,

b. injecting via said well bore a liquid hydrocarbon at a temperature of about 200° to about 500° F into the lower part of said hydrocarbon-producing formation,

c. withdrawing via said well bore the injected liquid hydrocarbon from the upper portion of the hydrocarbon-producing formation, and

d. continuously injecting and withdrawing said liquid hydrocarbon while at the same time producing via said well bore petroleum hydrocarbons from the upper portion of the said hydrocarbon-bearing formation, the volume of the liquid hydrocarbon injected being less than the volume of the withdrawn hydrocarbon plus the volume of the produced petroleum hydrocarbons, the volumes being expressed in reservoir or formation volumes.

3,845,824

FRACTURING SUBTERRANEAN FORMATIONS WITHOUT DAMAGING THE FORMATION

John M. Tinsley, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed June 25, 1973, Ser. No. 373,579
Int. Cl. E21b *43/26*
U.S. Cl. 166—308 **5 Claims**

1. A method of fracturing a subterranean formation; comprising the steps of:

contacting the subterranean formation with an aqueous liquid containing low molecular weight anionic polyelectrolytes;

applying sufficient pressure to said aqueous liquid to fracture said formation;

maintaining said pressure while injecting said aqueous fluid into said fracture; and

maintaining said pressure while injecting an aqueous fracturing fluid containing an organic polymer gelling agent into said fracture to extend said fracture into said formation;

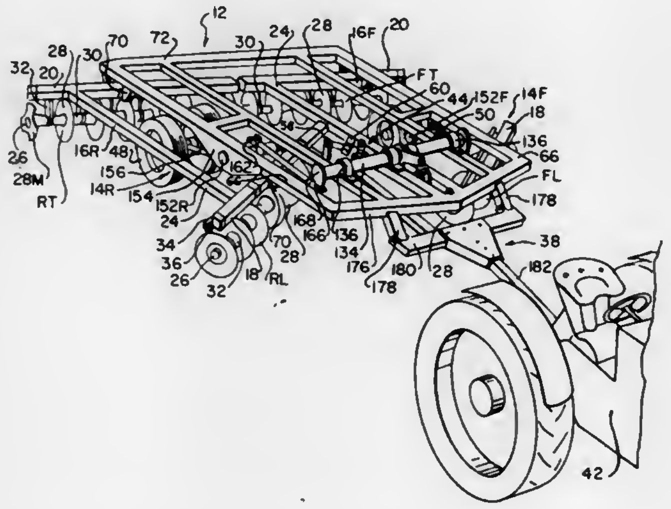
said low molecular weight anionic polyelectrolytes having molecular weights significantly lower than the molecular weights of said organic polymer gelling agents and adsorbing to the organic polymer attracting sites in the subterranean formation adjacent to the faces of said fracture extending into the subterranean formation.

3,845,825

MULTIPLE-GANG DISC-TYPE GROUND TILLAGE IMPLEMENT

James A. Boone, Quinter; Harold G. Walker, Wakeeney, and Galen R. Huffman, Quinter, all of Kans., assignors to Ideal Industries Incorporated, Quinter, Kans.

Filed Jan. 15, 1973, Ser. No. 323,839
Int. Cl. A01b *5/06*
U.S. Cl. 172—158 **17 Claims**



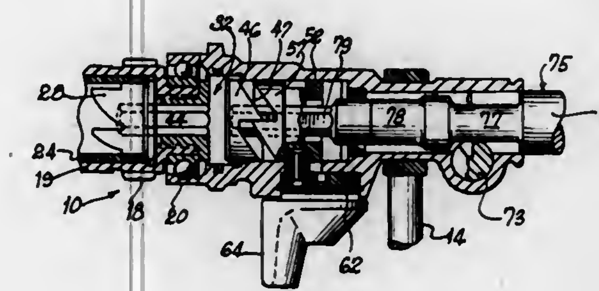
1. In a disc-type ground tillage implement: a vertically adjustable wheeled carriage including a frame, attachment means on the front end of the frame for detachably connecting same to a towing vehicle, wheel-mounting means depending from the underside of the frame in transversely spaced relation behind the attachment means for movement relative thereto between a lowered and a raised position, and ground-engaging wheels journalled for rotation on the wheel-mounting means about transversely extending axes, said wheels and the mounting means therefor cooperating to define an undercarriage movable between a retracted position and an extended position; front and rear disc subassemblies hingedly attached to the underside of the carriage frame in rearwardly offset side-by-side relation to one another for independent tiltable movement into substantially coplanar relation with one another about transversely spaced parallel forwardly extending axes located intermediate their respective side margins, each of said disc subassemblies overlying one of the wheels in the extended position of said undercarriage and including a subframe having an opening therein located to accommodate movement of the wheel-mounting means associated with said wheel upon movement of said undercarriage between its retracted and extended positions, both of said subassemblies having a lead disc gang and a trailing disc gang supported therebeneath arranged in substantially coplanar divergent relation to one another and in oppositely inclined angular relation to the direction of carriage travel, the gangs of the two disc subassemblies being so located relative to one another and to their respective subframes that the trailing gangs are aligned and the lead gangs are disposed in rearwardly offset parallel relation to one another whenever said subassemblies lie in coplanar relation; and, rigid link means interposed between adjacent points on the subframes pivotally interconnecting said front and rear disc-subassemblies together for coordinated movement, said link means being operative in response to a force tending to tilt one of the disc subassemblies in one direction to tilt the other of said disc subassemblies in the opposite direction.

3,845,826

ROTARY DISCONNECT FOR A ROTARY HAMMER TOOL

Hanspeter E. Beisch, Buffalo Grove, Ill., assignor to Skil Corporation, Chicago, Ill.

Filed Feb. 23, 1973, Ser. No. 334,988
Int. Cl. B25d *9/04, 9/06*
U.S. Cl. 173—48 **5 Claims**



1. In a rotary hammer power tool of the type having an output member in the form of a tappet which is adapted to be subjected to rotation and to axial hammering blows simultaneously, the improvement comprising:

a. said tappet having a first set of clutch teeth and oppositely extending, centrally disposed, first and second hammering formations;

b. a rotary tool bit driver and wall means mounting the same for rotation coaxially with said tappet, said wall means also permitting axial reciprocal movement of said driver, which driver has a centrally disposed, axial, through bore and a second set of clutch teeth adapted for engagement with said first set of clutch teeth thereby to permit said tappet to transfer rotation to said driver;

c. a tool element having a shank received in said bore of said driver with the distal end thereof in abutting engagement with said first hammering formation thereby permitting the tappet to impart hammering blows to the tool element;

d. connection means on said driver and said shank for transferring rotation of the former to the latter and permitting axial reciprocal movement of said driver relative to said tool element and vice versa;

e. selection means engaged with said driver for reciprocating the same axially thereby to engage and disengage said first and second sets of clutch teeth for selectively imparting rotation to said driver and to the tool element therein;

f. said power tool having a reciprocal hammering element arranged to engage said second hammering formation thereby to impart hammering blows to said tappet;

g. other wall means rotatably mounting said tappet and including an abutment surface; and

h. said tappet having an abutment element arranged to abut said abutment surface thereby to establish the forwardmost position of said tappet, which tappet is out of the range of the movement of said hammering element when the former is in said forwardmost position thereof, said tappet being moved inwardly and into the range of movement of said hammering element by the engagement of the distal end of said shank with said first hammering formation.

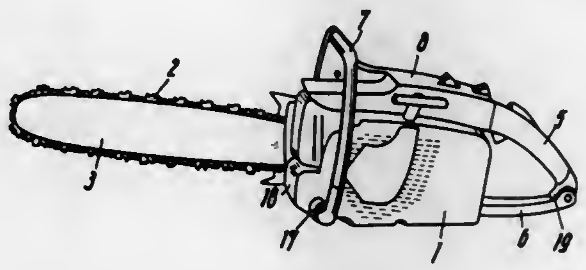
3,845,827

PORTABLE IMPLEMENT, ESPECIALLY MOTOR CHAIN SAW

Gotthilf Schulin, Fellbach, Germany, assignor to Andreas Stihl Maschinenfabrik, Neustadt, Germany

Filed Aug. 2, 1972, Ser. No. 277,339
Int. Cl. B27b *17/00*
U.S. Cl. 173—162 **26 Claims**

1. A portable tool, especially motor chain saw, comprising handle means having a mass inertia that is low relative to the mass of the tool, which includes: spring elastic connecting means, said handle means being connected to said tool through the intervention of said spring elastic connecting means, and compensator means comprising a compensator mass and spring elastic supporting means and being connected to said handle means so as to be oscillatable relative thereto,



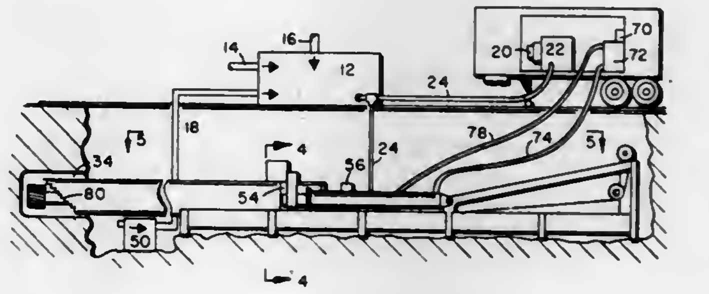
the handle means including a handle frame, and in which said compensator means is so arranged in said handle frame that the longitudinal axis of said compensator means extends in a direction transverse to the longitudinal axis of said handle frame, said handle frame including a handle pipe, said compensator means being arranged within said handle pipe.

3,845,828

MACHINE FOR ORIGINAL BORING DESCRIBED AND CLAIMED THEREIN

A. C. Taylor, 615 W. Civic Center Dr., Suite 215, and Robert W. Clarke, both of Orange County, Calif. 92701

Filed Nov. 12, 1971, Ser. No. 198,244
Int. Cl. E21b *7/10*
U.S. Cl. 175—73 **3 Claims**



1. A horizontal boring machine comprising:

hollow drill pipe capable of being moved linearly;

a drill coupled to and rotated by the drill pipe;

pumping means to pump mud to the forward end of the drill;

movable power-sub means coupled to rotate the drill pipe; means to control pressure inside the bore near the drill; casing;

casing clamp means;

a spider;

means to longitudinally move the casing via the casing clamp means;

a shoe coupled to the forward portion of the casing;

means to rotate the casing and shoe in either direction around the drill pipe;

wherein the forward edge of the shoe is cut back from a front tip at about 45°;

teeth on the forward edge of the shoe;

two rams which move the spider; and

hydraulic power means.

3,845,829

DRILL, ESPECIALLY STONE DRILL

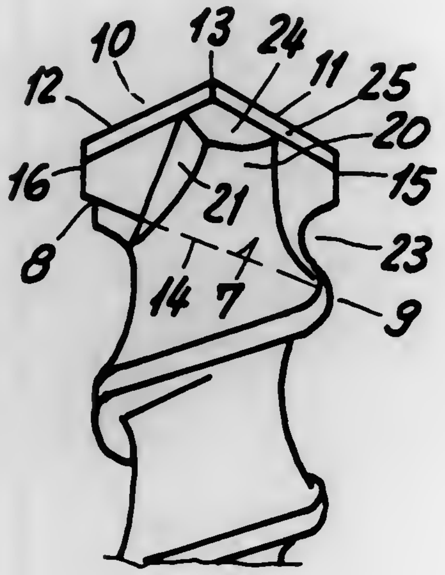
Dietrich Schaumann, Weingarten, Germany, assignor to Hawera Probst KG. Hartmetall Werkzeufabrik Ravensburg, Ravensburg, Germany

Filed Mar. 12, 1973, Ser. No. 340,278

Claims priority, application Germany, Mar. 10, 1972, 2211532

Int. Cl. E21c *13/08*

U.S. Cl. 175—395 **2 Claims**



1. A drill, especially a stone or masonry drill, comprising; a rod-like shank having at least one helical groove extending therealong from one end, said shank having a helical rib separating adjacent convolutions of said groove, a transverse slot in said one end of said shank and a hard wear resistant blade in said slot and forming a cutting element, said cutting element having a principal cutting edge on the front facing axially away from said shank and extending transversely to the axis of said shank, said cutting element also having substantially parallel faces and having side edges and having a back edge, the maximum diameter of said shank at said one end falling within the cylindrical envelope of said shank, said spiral groove extending to near said cutting element and that portion thereof adjacent said cutting element forming a passage which receives material taken by said drill, said rib extending to one of the said faces of the cutting insert and being notched adjacent the leading side of the insert, said shank having an inclined surface formed thereon leading from the said notch in said rib to the end of the shank nearest the cutting edge of the insert.

3,845,830

METHOD FOR MAKING HIGH PENETRATION RATE DRILL BITS AND TWO BITS MADE THEREBY

Joe R. Fowler, and John L. Bryan, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Feb. 22, 1973, Ser. No. 334,828

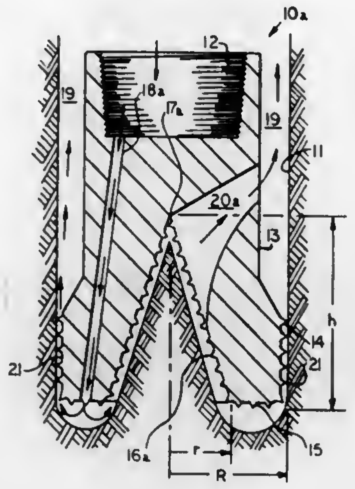
Int. Cl. E21b *9/16*

U.S. Cl. 175—404 **13 Claims**

1. A method for forming a high penetration rate drill bit wherein the drill bit has a bottom cutting surface comprising the steps of,

a. forming a recess in the bottom cutting surface of the drill bit, the recess having a height and a circular base with a radius,

b. shaping the bottom cutting surface recess to a continuous non-cylindrical surface of revolution having a height to radius ratio of substantially three-to-one, and



c. shaping the drill bit bottom non-cylindrical surface of revolution into a paraboloidal shape.

3,845,831

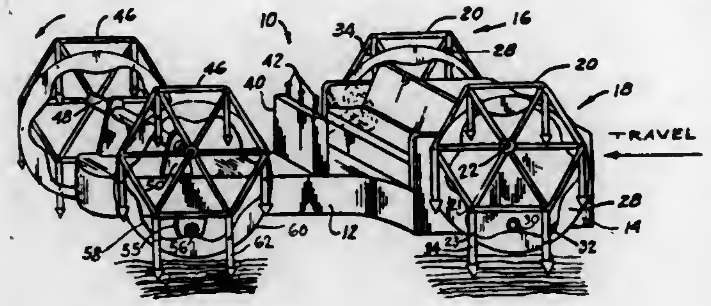
VEHICLE FOR ROUGH AND MUDDY TERRAIN

Jesse C. James, Huntsville, Ala., assignor to Charles D. Martin, Wharton County, Tex.

Continuation-in-part of Ser. No. 62,821, Aug. 11, 1970, abandoned. This application Oct. 16, 1972, Ser. No. 297,740

Int. Cl. B62d *57/02*

U.S. Cl. 180—8 F **4 Claims**



1. A vehicle for traversing soft terrain comprising a vehicle body having a plurality of leg carrying mechanisms movable supported thereon, each leg carrying mechanism comprising a first wheel being rotatably secured to said vehicle, a second wheel being disposed adjacent to said first wheel, a plurality of legs, supported by each of said leg carrying mechanisms and being movable substantially vertically upwardly and downwardly and simultaneously revolving with said leg carrying mechanisms, said legs serially engaging the terrain over which said vehicle is moving said propelling said vehicle across said terrain, said legs being connected at different points thereon to each of said wheels, whereby said second wheel is rotatable about an axis that is spaced from the axis of said first wheel, at least one roller member rotatably supported by said vehicle, and roller engaging surface means formed on said second wheel and roller member engagement with said roller engagement surface means causing said second wheel to support the weight of said vehicle, and roller member-surface means engagememt cooperating with said legs to achieve smooth traversing of said vehicle over the terrain, each leg providing a spread foot comprising a pair of curved sheet spring members secured to leg lower extremity and joined downwardly along a line of contact, said spring members bending upon entering said soft terrain to spread to a substantially broad foot for adequate support of said vehicle, and spring members collapsing upon withdrawal of said foot from said soft terrain to allow easy removal of said foot from said terrain, said second wheel roller engagement surface means comprising the inner rim surface of said second wheel for roller member cooperation.

3,845,832

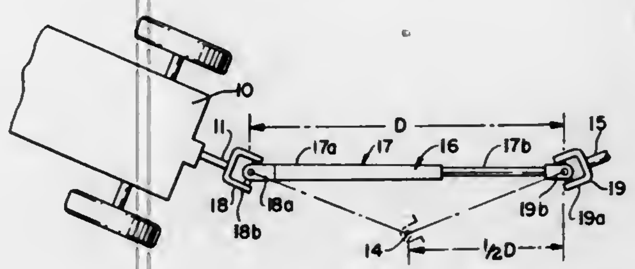
POWER TAKE-OFF CONNECTION

John W. Glover, Raleigh, N.C., assignor to Darf Corporation, Edenton, N.C.

Filed Dec. 6, 1971, Ser. No. 205,193

Int. Cl. B60d *1/00*

U.S. Cl. 180—14 R **5 Claims**



1. The combination of a tractor having a rearwardly projecting power take-off shaft, a power-driven implement drawn by said tractor and having a driven shaft, a pivotal hitch connecting said implement to the tractor, and a universally jointed telescopic drive line connecting said driven shaft of the implement to the power take-off shaft of the tractor, said drive line including a telescopic shaft unit and a pair of universal joints at the ends of said shaft unit, the combination being further characterized in that the pivot of said hitch is located at a point substantially midway between said universal joints, said drive line also including an over-running clutch embodied in said telescopic shaft unit, said universal joints having yokes disposed in a common plane at the ends of said telescopic shaft unit, and said over-running clutch having at least one but no more than two diametrically opposite driving positions whereby the universal joint yokes are always coplanar when the clutch is engaged.

3,845,833

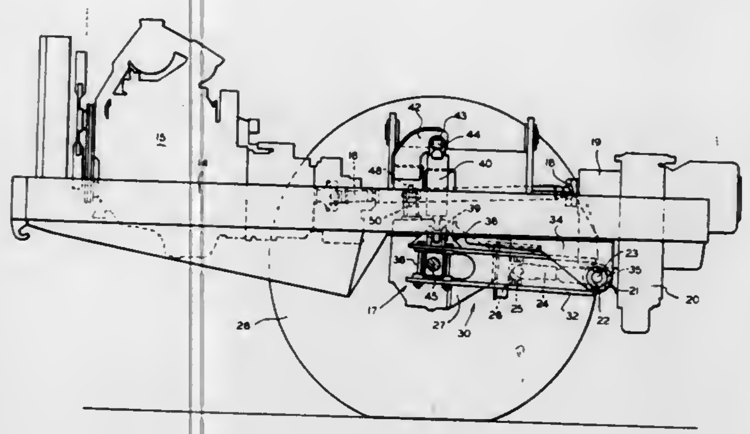
TRACTOR SUSPENSION

William A. Bice, Lubbock, Tex., assignor to Clark Equipment Company, Buchanan, Mich.

Continuation of Ser. No. 304,433, Nov. 7, 1972, abandoned. This application Nov. 9, 1973, Ser. No. 441,696

Int. Cl. B60g *9/02*

U.S. Cl. 180—29 **10 Claims**



1. A suspension for a two-wheeled tractor having a frame, a pair of spaced apart, longitudinally extending frame side rails, a drive axle extending transversely of the frame side rails, said suspension connected between the drive axle and vehicle frame and comprising a pair of brackets depending from the frame side rails behind the drive axle, a pair of suspension arms pivotally connected to said brackets and extending forwardly therefrom beneath the respective frame side rails, a pair of arm brackets solidly mounted on the suspension arms at the front supporting opposite ends of said drive axle, each having a laterally extending portion inboard of the frame side rails, a pair of frame brackets solidly mounted on a portion of the frame extending above the frame side rails and having an upper end portion located substantially directly above the lateral end portions of said arm brackets, a pair of ride cylinders pivotally mounted between the bracket portions such that the lower ends of each ride cylinder are pivotally mounted substantially directly above the drive axle adjacent the frame side rails and extend upwardly above the frame side rails whereby the drive axle, suspension arms and frame side rails are in a more compact relation.

3,845,834

MOTOR CYCLE CONSTRUCTION

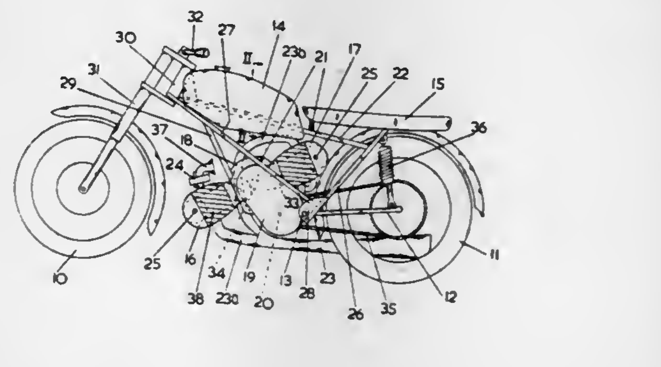
Francis Ernest Sheppard, Milton Gardens, Oadby, England

Filed Sept. 15, 1971, Ser. No. 180,766

Claims priority, application Great Britain, Sept. 17, 1970, 44371/70

Int. Cl. B62d *61/02;* **B60k** *11/00*

U.S. Cl. 180—33 A **3 Claims**



1. In a motor cycle, the combination comprising a frame having laterally spaced frame members including laterally spaced and downwardly and rearwardly sloped upper longitudinal frame members and laterally spaced lower frame members sloped at a steeper angle than said upper longitudinal frame members and joined forwardly to the forward ends thereof, a saddle mounting at the upper rear part of the said frame, a fuel tank mounted on said laterally spaced upper frame members forwardly of said saddle mounting and having an upwardly recessed bottom wall straddling said upper frame members to present around them a downwardly and rearwardly sloped inverted channel shaped air deflecting duct, an air cooled opposed cylinder internal combustion engine mounted between parts of said frame below and forwardly of said saddle mounting, said engine having its cylinders extending lengthwise of the frame and at a substantial angle to the horizontal with the rear cylinder at a higher level than the front cylinder and at a position lower than and adjacent to the rearward end of said air deflecting duct whereby to receive therefrom a stream of cooling air during forward motion of the motor cycle, and with the front cylinder projecting downwardly and forwardly beyond the said sloped lower frame members.

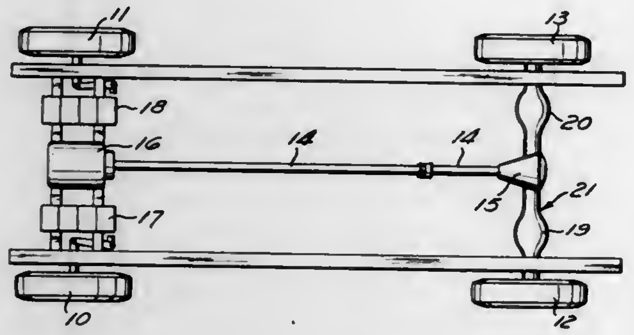
ERRATUM

For Class 180—54 see:
Patent No. 3,845,841

3,845,835
ELECTRIC POWER PLANT FOR LAND VEHICLES

Earl W. Petit, 2713 N.E. 21st. Ave., Fort Lauderdale, Fla. 33306

Filed Mar. 14, 1973, Ser. No. 341,030
Int. Cl. B60k *1/00*
U.S. Cl. 180—65 R **4 Claims**



1. In a vehicle having vehicle-propelling wheels, drive axle means for driving said wheels, an electric drive motor for driving said drive axle means, two sets of batteries for energizing the motor alternately, two voltage generating machines mounted on said drive axle means to be driven therewith for alternately charging said sets of batteries through a regulator, and selective means for connecting the set of batteries which is not being charged to the motor for energizing the motor while disconnecting from the motor the other set of batteries and connecting the said other set to the regulator to be charged, the improvement comprising:

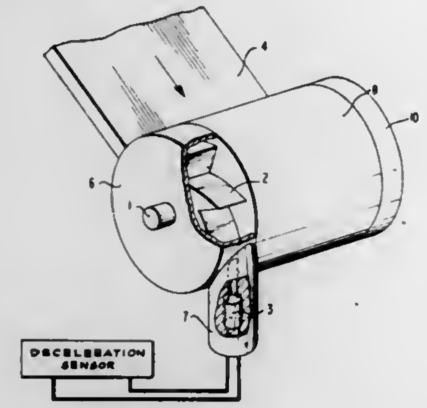
first relay means for selectively coupling one said voltage generating machine or the other to the regulator for charging the selected battery, and

operating circuit means for operating said relay means and said selective means.

3,845,836
SAFETY DEVICE FOR VEHICLES

Hellmut Bendler, Erlangen-Spardorf, and Gunther Marondel, Erlangen, both of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

Filed May 1, 1972, Ser. No. 249,150
Claims priority, application Germany, Apr. 29, 1971, 2121101
Int. Cl. B60k *27/00*; B60m ; B60r
U.S. Cl. 180—82 C **7 Claims**

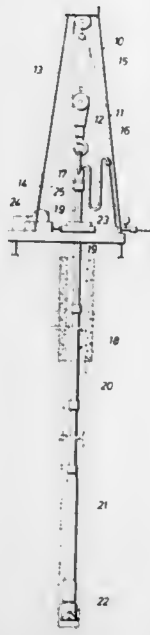


1. Safety belt arrangement for vehicles, especially automotive vehicles, comprising a belt securable at one end to the vehicle and securable at the other end to tensioning means for tensioning said belt, sensor means for detecting a predetermined value of deceleration, and actuator means for operating said tensioning means to tension said belt in response to detection of said predetermined value of deceleration by said sensor means, said tensioning means including an impeller wheel having a plurality of blades disposed for rotation on an axle within a housing, said axle also being connected to said other end of said belt so as to wind said belt upon rotation thereof, said actuator means including compressed gas means mounted on said housing for directing compressed gas against the blades of said impeller wheel to effect rotation of said axle.

3,845,837
GRAVITY FORCE OPERATED APPARATUSES FOR GENERATION OF LONGITUDINAL PULSE DATA FROM THE BOTTOM OF A WELL

William R. McEvers, Jr., Bellaire; Percy T. Cox, and Albert P. Richter, Jr., both of Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,319
Int. Cl. E21b *47/12*
U.S. Cl. 181—.5 AG **15 Claims**



1. A system for transmission of data from the lower end of a drilling assembly in a wellbore to the surface comprising,

a. a drilling assembly having a drill string,

b. data measuring means on the lower end of said drill string,

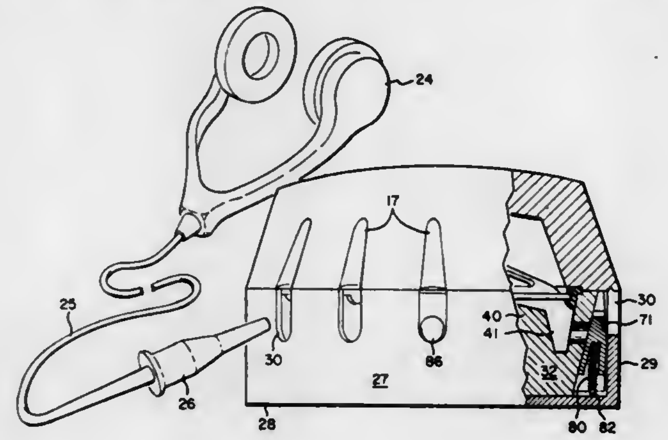
c. gravity force means for generating acoustical signal pulses in the lower end of the drill string, and

d. means for monitoring the gravity force generated acoustical signal pulses in the drill string at the surface.

3,845,838
ACOUSTIC DISTRIBUTOR

Gerald E. Malmrose, Chatsworth, and Ulf R. Helgesson, Woodland Hills, both of Calif., assignors to Acoustifone Corporation, Chatsworth, Calif.

Filed June 25, 1973, Ser. No. 372,798
Int. Cl. G10k *13/00*; H04r *1/28*; A61b *7/02*
U.S. Cl. 181—31 R **10 Claims**



1. In an acoustic distributor for use in classrooms and the like for transmitting sound waves from a single electro-acoustic transducer to a plurality of listeners without disturbing other nearby persons:

a substantially cylindrical thick-walled enclosure formed of sound absorbing polymeric material and having an interior-to-exterior attenuation characteristic for audio frequency acoustic waves of the order of about 60 decibels; a loudspeaker mounted within said enclosure and adapted to be electrically connected to a source of audio frequency signals for producing high intensity acoustic waves within said enclosure;

a plurality of angularly spaced substantially cylindrical apertures extending radially outward through the walls of said enclosure in a single horizontal plane spaced in front of said loudspeaker whereby sound waves of substantially equal intensity are propagated toward all said apertures; a plurality of acoustic headsets, each including an elongated listening tube having at its input end a semi-rigid probe adapted to be inserted into any one of said apertures, for conducting sound waves from said one aperture to the person using the particular headset;

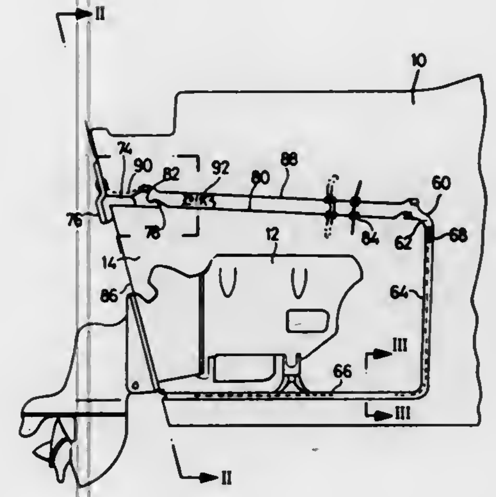
a plurality of valve mechanisms mounted exteriorly of said thick-walled enclosure, respectively adjacent the outer ends of different ones of said apertures;

with each valve mechanism being operable, in a direction substantially normal to the longitudinal axis of the adjacent aperture, from its closed position to its open position upon, and as a direct consequence of, the insertion of a listening tube probe into the associated aperture and being operative to exert a retaining force on the inserted probe whereby the probability of inadvertent disconnection of the headset listening tube from the enclosure is substantially reduced.

3,845,839
NOISE DAMPING DEVICE FOR MOTOR BOATS

Henning Emanuel Eriksson, Furumostigen 10, 95200 Kalix, Sweden

Filed Mar. 7, 1973, Ser. No. 339,021
Claims priority, application Sweden, Mar. 10, 1972, 3029/72
Int. Cl. F01n *7/00*; B63h *5/06*; F02b *77/00*
U.S. Cl. 181—33 K **11 Claims**

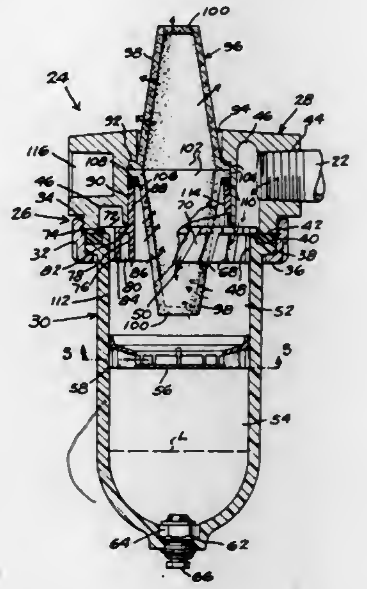


1. In a motor boat having a body and a motor, a device for damping the noise produced by said motor, said device having a receptacle carrying said motor, said receptacle being a box retractably mounted in a cavity arranged in said body, a space being formed between the box and said body and a noise damping material at least partly filling said space.

3,845,840
SILENCER AND LUBRICANT TRAP FOR AIR TOOL EXHAUST

George E. Thrasher, Pontiac, Mich., assignor to Master Pneumatic-Detroit, Inc., Sterling Heights, Mich.

Filed June 4, 1973, Ser. No. 366,449
Int. Cl. F01n *3/06*
U.S. Cl. 181—36 R **16 Claims**



1. A silencer and lubricant trap for air exhausting from pneumatically powered tools which comprises,

means forming a body having an inlet adapted to receive air exhausted from a pneumatic tool,

said body defining an expansion chamber having a wall, a passageway between said inlet and chamber, a lubricant sump below said chamber, and an outlet downstream of said chamber,

baffle means in said passageway effective to direct air flowing therethrough into lubricant-depositing impingement against the expansion chamber wall,

muffler means effective to muffle the sound of air passing through said outlet,

there being surface portions within said body along which air flows toward said outlet,

and at least one gap between certain of said surface portions surrounding the path of said air flow,

said gap being so dimensioned and positioned as to intercept lubricant propelled toward said outlet along those of said surface portions upstream of said gap,

said baffle means comprising a circumferentially arranged series of alternate webs and passages dimensioned and positioned to so divert air flowing through said passages, said baffle means, said certain surface portions, and said gap comprising elements of an assembly,

said webs and passages being disposed around the periphery of said assembly,

said assembly having a partition which interconnects said webs, forms inner surfaces of said passages, and forms an outer side of said gap,

said assembly having a skirt which is spaced from said partition and forms the inner side of said gap.

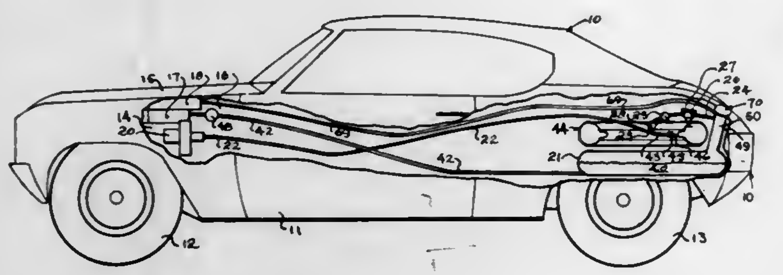
3,845,841
AUXILIARY FUEL FEEDING SYSTEM FOR A VEHICLE

Earl W. Kloefkorn, Manchester, Okla. 73758

Filed Dec. 16, 1969, Ser. No. 885,465
Int. Cl. B60k *15/02*
U.S. Cl. 180—54 R **14 Claims**

1. In a vehicle, engine means, air compressor means, liquid fuel tank means, fuel feed line means connected to said engine means for conducting fuel thereto from said fuel tank means, fuel pump means connected into said fuel feed line means, and

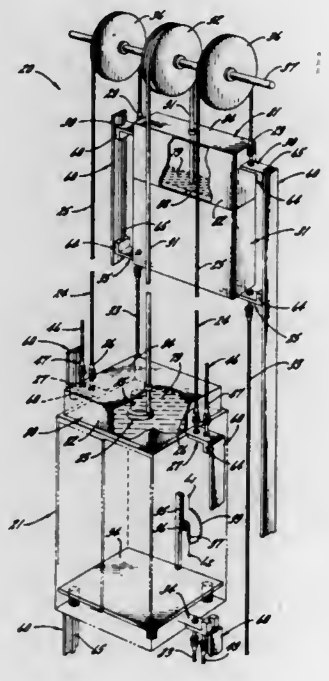
spare tire and wheel assembly means functioning as an accumulator and connected to said air compressor means for receiving and storing compressed air therefrom, and said fuel tank means being connected to said air compressor means and



said spare tire and wheel assembly means for receiving compressed air therefrom that forces liquid fuel from said fuel tank means to said engine means when said fuel pump means is not in operation.

3,845,842
ELEVATOR SYSTEM

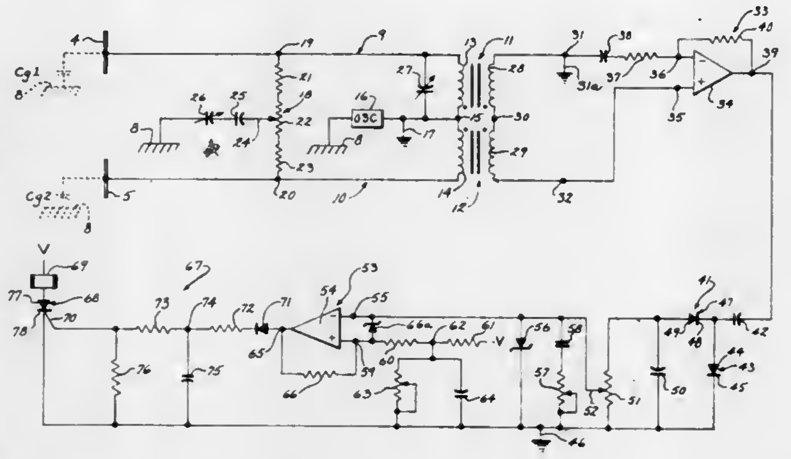
Wallace H. Johnson, 1461 Monticello Ln., Rockford, Ill. 61107
Filed June 13, 1973, Ser. No. 369,513
Int. Cl. B66b *17/12*
U.S. Cl. 187—15 **9 Claims**



1. An elevator system for use within a vertical shaft in a multiple story building including, a car of predetermined unloaded weight suspended within the shaft to transport a load between floors within the building, a counterweight suspended within the shaft and spaced laterally from said car to offset the unloaded weight of the car, a set of upper and lower wheels rotatably mounted adjacent the upper and lower ends of the shaft, respectively, a flexible support line trained around said upper and lower wheels, said car and said counterweight being fastened to opposite sides of said line between said upper and lower wheels, a small motor operable to power rotate one of said wheels in said set to drive said line around said wheels to move the car and said counterweight vertically within said shaft, a weight medium movable between said counterweight and said car to vary the weight of the counterweight in relation to changes in the weight of the load in the car, means mounted within said car and operable to produce a signal in response to changes in the load, and means operable in response to said signal to move said weight medium between said counterweight and said car in an amount equal to half the change in the weight of the load to keep the weight of the medium in the counterweight substantially equal to the weight of the load plus the weight of the medium in the car prior to movement of said car whereby the system is kept balanced to reduce the power required of said small motor to move the car between floors.

3,845,843
VEHICLE DOOR PROXIMITY DETECTOR SYSTEM

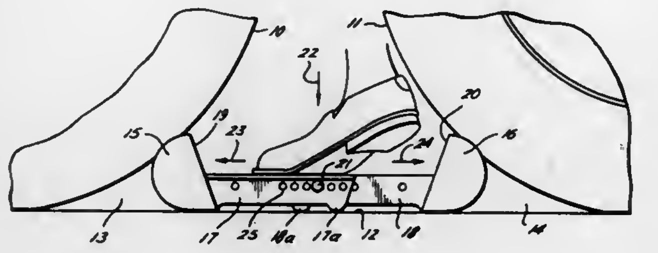
David J. Cohen, Skokie, Ill., assignor to A. O. Smith Corporation, Milwaukee, Wis.
Filed June 4, 1973, Ser. No. 366,754
Int. Cl. B66b *13/26*
U.S. Cl. 187—29 R **12 Claims**



1. In a system providing a load transporting vehicle having a door, door-operating means connected for opening and closing said door, and a proximity detector connected to said door and to said door-operating means for selectively modifying the operation of said door, said detector comprising: a capacitance means including a sensing means secured to said door and responsive to the presence of load adjacent to the edge of said door; a transformer means having an input winding means including circuit means connected with said capacitance means to form a pair of parallel connected electrical paths for supplying first and second signals, each of said paths including a different portion of said capacitance means and a different portion of said transformer means; a source of periodic voltage electrically connected to said circuit means for energizing said parallel paths; said transformer means having an output winding means coupled to the different portions of said input winding means for establishing an output including a pair of oppositely polarized signals and varying according to the variance between said first and second signals in said pair of parallel paths, and a control circuit connected to said output winding means and to said door-operating means for selectively modifying the operation of said door in response to the sensed presence of load adjacent to the edge of said door.

3,845,844
WHEEL CHOCKS FOR TANDEM WHEELS

Joseph F. Woerner, 2102-Chamber of Commerce Building, Houston, Tex.
Filed Mar. 19, 1973, Ser. No. 342,765
Int. Cl. B60t *3/00*
U.S. Cl. 188—32 **10 Claims**

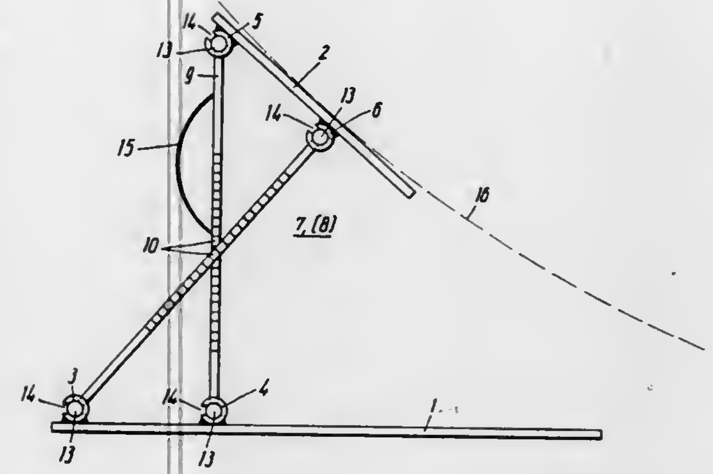


1. A chock assembly for placing between two tandem wheels to prevent them from turning comprising,

an identical pair of wheel chocks for positioning between the two tandem wheels,
an identical pair of rigid arms, one each extending from each of the wheel chocks toward each other,
the rigid arms having inner facing sides in a plane generally through the transverse center of the wheel chocks, and
means pivotally connecting the arms together at a point along the arm so that the arms extend upwardly from a surface supporting the tandem wheels when the chock assembly is in nonlocking position between the tandem wheels,
depressing the arms to a generally horizontal position causing engagement of the chocks with the tandem wheels and the surface thereby preventing the wheels from turning.

3,845,845
WHEEL CHOCK FOR VEHICLES

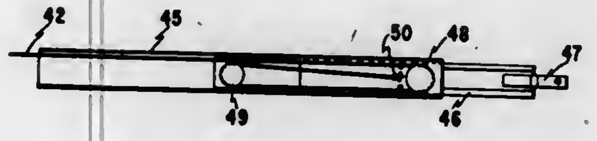
Hubert Geisthoff, Lohmar, Germany, assignor to Jean Walterscheid GmbH, Lohmar/Rheinland, Germany
Filed Oct. 5, 1973, Ser. No. 403,892
Claims priority, application Germany, Oct. 7, 1972, 2249211
Int. Cl. B60t *3/00*
U.S. Cl. 188—32 **9 Claims**



1. A wheel chock for vehicles comprising a base plate, a wheel supporting chock plate, first and second pivot means on each of said base and chock plates and equally spaced behind each other thereon transversely of the pivot axis, and a plurality of mutually crossing struts pivotally connecting corresponding pivot means on said base and chock plates such that said chock plate is pivotable from an assembled position in the same plane as said base plate to a position above the base plate for engaging the periphery of a vehicle wheel.

3,845,846
TELESCOPING TONGUE MEANS USABLE FOR SETTING BRAKES ON A FARM WAGON

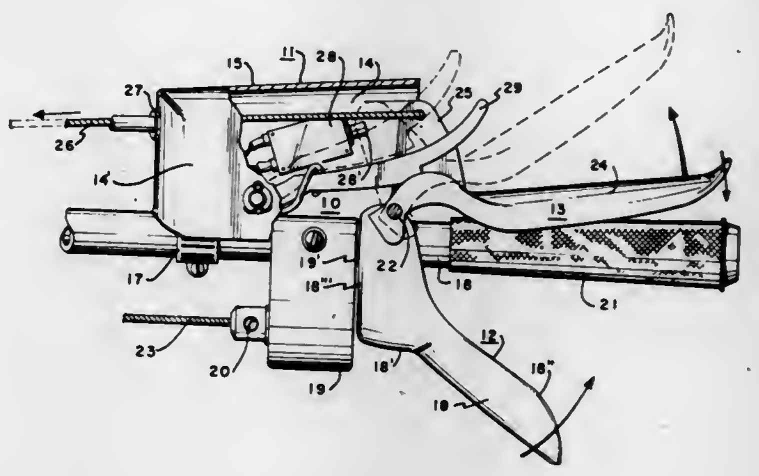
Henry L. Sundermann, Rt. 4, Box 79, Sioux Falls, S. Dak. 57101
Division of Ser. No. 211,907, Dec. 27, 1971. This application June 26, 1973, Ser. No. 373,887
Int. Cl. B60t *7/20*
U.S. Cl. 188—112 **3 Claims**



1. Tongue means for a wagon having brakes operated by a flexible member comprising an outer member, an inner member telescopically slidable within said outer member, pulley means on said members, said flexible means being arranged over said pulley means so that collapse of said telescoping members will cause said flexible member to be pulled into the tongue to actuate said brakes, and stop means including a spring loaded lever means mounted on said outer means, said outer means being formed with an opening therein, a part of said lever means extending through said opening to provide heavy frictional engagement between said lever means and said inner means.

3,845,847
THROTTLE, IGNITION AND BRAKE CONTROLS

Richard H. Camp, P.O. Box 62, Haines, Oreg. 97833
Filed Aug. 20, 1973, Ser. No. 389,939
Int. Cl. B60k *29/00*
U.S. Cl. 192—3 S **10 Claims**



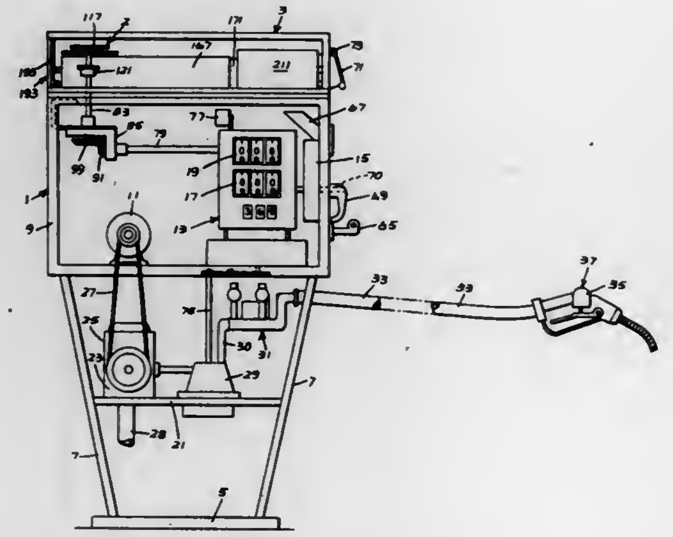
1. A systems shut-down handle for motorized apparatus having a throttle cable, a brake operator, and an electrical circuit controlling ignition, comprising:
A housing mounted to handlebars of said apparatus;
A throttle assembly including a pivotally mounted lever juxtapositioned over the grip of said handlebar to said housing, and being connected to its end adjacent said housing to the apparatus throttle cable; and
A shut-down assembly having a brake lever connected to the brake operator pivotally mounted over said handlebar grip opposite and opposingly to said throttle lever and being provided with means for actuating a cutoff switch having means to brake the electrical circuit controlling ignition in the apparatus engine when said brake lever is released.

3,845,848
BILL ACCEPTING MOTOR FUEL DISPENSING APPARATUS

Elmer A. Robbins, Fort Wayne, Ind., assignor to Tokheim Corporation, Fort Wayne, Ind.
Continuation-in-part of Ser. No. 84,320, Oct. 27, 1970, abandoned. This application Feb. 15, 1972, Ser. No. 226,406
Int. Cl. G07f *13/02*
U.S. Cl. 194—13 **52 Claims**

1. A system for dispensing a quantity of liquid having a predetermined total value, consisting of a predetermined number of small monetary units of value, in response to the collection of a valid bill of equal total value, said system comprising:
a. a bill acceptor which includes means to receive a deposited bill, means to determine its validity and value, means to collect a valid bill of proper value and means to thereupon produce a first signal,
b. a dispensing apparatus having a manually operable nozzle valve, means for supplying a flow of liquid to said valve,

said latter means being actuable between flow and stop flow conditions,
c. said dispensing apparatus also having means for measuring the amount of liquid dispensed, a resettable value register, computing means connected to be driven by said measuring means and connected to drive register in accordance with the value of the liquid dispensed and means for resetting said register to zero,
d. first control means having normal and first conditions, means operable after the resetting of said register for establishing said first control means in said first condition, and manually operable means for restoring said first control means to said normal condition,
e. second control means having normal and first conditions, and means for establishing said second control means in said first condition in response to said first signal,
f. means responsive to said first and second control means in said normal and first conditions, respectively, to permit operation of said register resetting means,
g. means responsive to said first and second control means in said first conditions for actuating said flow supplying means to said flow condition,



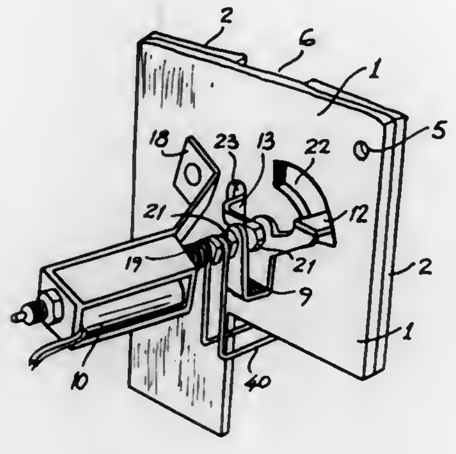
h. means operable in time with said value register to produce a second signal upon the complete delivery of the amount of liquid represented by each unit of value,
i. means for transmitting said second signal, including transmission timing means mounted for movement between initial and signal transmitting conditions, first driving means connected to be driven by said register and connected to drive said timing means so as to reach said signal transmitting condition after the beginning of, but before the completion of the delivery of the last unit of said total value, and
j. signal responsive means having normal and activated conditions, and connected to be activated in response to said transmitted second signal, means responsive to the activation of said signal responsive means, for restoring said second control means to said normal condition, and means for thereupon restoring said flow supplying means to said stop flow condition.

3,845,849
COIN TESTING DEVICE

Per Ake Andersson, Palmerstown, Ireland, assignor to International Cybernetics Machines Limited, Dublin, Ireland
Filed Jan. 17, 1973, Ser. No. 324,435
Claims priority, application Ireland, Jan. 17, 1972, 63/72
Int. Cl. G07f *3/02*
U.S. Cl. 194—97 R **19 Claims**

1. A coin acceptor/rejector for separating spurious coins from authentic coins of pre-selected denomination comprising:

1. spaced apart walls defining a coin entry chute for edgewise travel of coins therethrough;
2. spaced apart walls defining a coin accept chute for edgewise travel of coins therethrough from the coin entry chute;
3. a coin exit sensing device mounted in the coin accept chute;
4. spaced apart walls defining a coin reject chute for edgewise travel of spurious coins therethrough from the coin entry chute;
5. a cradle pivotally mounted relative to the coin entry chute, the cradle having two spaced apart coin receiving surfaces which extend into the coin entry chute to intercept coins exceeding a preselected diameter and to pivot under the weight of such coins towards the coin accept chute;
6. solenoid means for moving the cradle relative to the coin entry chute to withdraw the coin receiving surfaces of the cradle out of the coin entry chute the solenoid means having a core with an extension and the cradle being pivotally mounted on the extension;

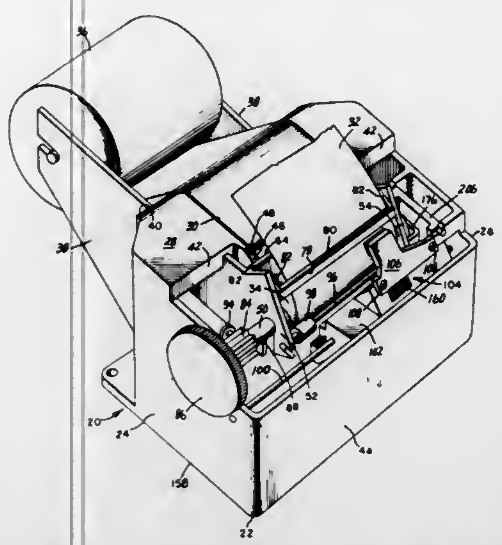


7. a coin entry sensing device mounted in the coin entry chute and operatively connected to the solenoid means for moving the cradle, whereby the solenoid means causes the coin receiving surfaces of the cradle to be withdrawn a preset time interval after the coin entry sensing device has been activated; and
8. an alarm system operatively connected to the coin entry sensing device for activation and operation after a preset time and to the coin exit sensing device for de-activation, the preset time being greater than the time taken for an authentic coin to pass the coin exit sensing device and hence de-activate the alarm.

3,845,850
THERMAL PRINTER

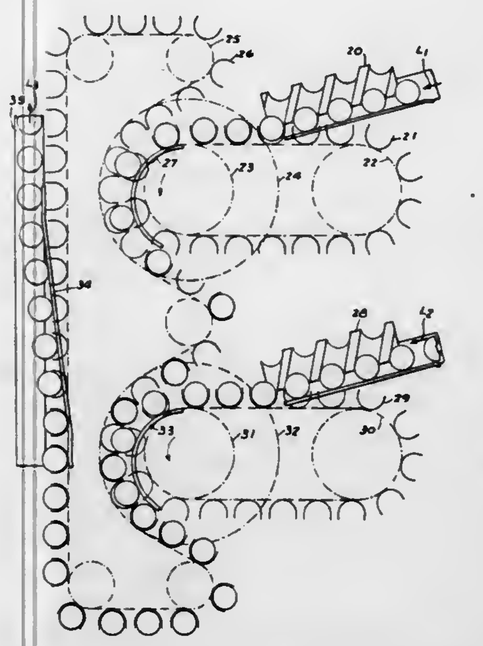
Robert W. Herr; Edward D. Sigl, and Marion W. Aksamit, all of Fort Wayne, Ind., assignors to Bowmar Instrument Corporation, Fort Wayne, Ind.
Filed Feb. 22, 1973, Ser. No. 334,668
Int. Cl. G01d *15/10*
U.S. Cl. 197—1 R **20 Claims**

1. An apparatus for electrically recording successive lines of characters on a sheet of recording medium for visual display including a supporting frame, means mounted to said frame for holding said sheet in predetermined position to present a recording area upon which a line of characters are to be recorded, a recording head having a plurality of recording elements thereon which upon engagement with said recording area and selective energization form a character and visually record the same on said recording area, and means for supporting said recording head with said elements facing said recording area: means for mounting said supporting means on said frame for linear movement laterally with respect to said recording area and between first and second spaced end positions, said mounting means also mounting said supporting means for movement between a recording position with said elements engaging said recording area and an inactive position with said elements spaced therfrom, means coupled between said frame and said supporting means for incrementally moving said supporting means on said mounting means between a plurality of discrete positions between said first and second end positions, said discrete positions including in sequence said first end position, an intermediate at-rest position and an initial printing position, means coupled between said supporting means and said frame for moving said supporting means on said mounting means to said inactive position in response to linear movement of said supporting means by said incremental moving means from said initial recording position to said at-rest position in a direction toward said first end position and for maintaining said supporting means in said inactive position in all linear positions thereof between said at-rest position and said first end position, and means coupled between said frame and said supporting means for maintaining said supporting means in said recording position in all said discrete positions thereof between said initial recording position and said second end position.



3,845,851
ARTICLE HANDLING APPARATUS

Alfred S. Decker; John R. Duff, both of Toledo, and Robert J. Heier, Whitehouse, all of Ohio, assignors to Owens-Illinois Inc., Toledo, Ohio
Continuation of Ser. No. 819,556, May 8, 1969, abandoned. This application Sept. 9, 1971, Ser. No. 179,180
Int. Cl. B65g *47/00*
U.S. Cl. 198—22 R **6 Claims**

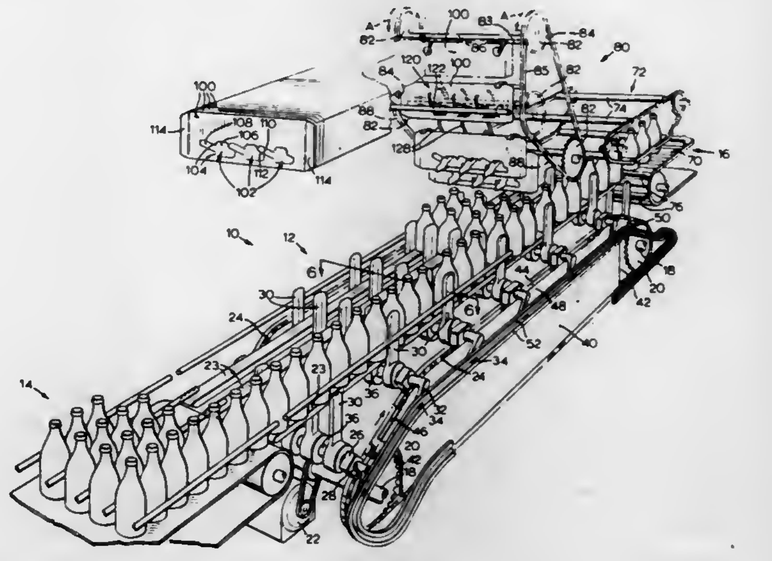


1. In an article handling system, the combination comprising

a first conveyor having longitudinally spaced article engaging means thereon,
a second conveyor having longitudinally spaced article engaging means thereon,
the longitudinal spacing of said article engaging means on said first conveyor differing from the longitudinal spacing of said article engaging means on said second conveyor, means for guiding said first conveyor through a first arcuate path,
means for guiding said second conveyor in a second arcuate path having a different radius than said first arcuate path, portions of said arcuate path being parallel to one another whereby some of the article engaging means on one of said conveyors are radially aligned with some of the article engaging means on the other of said conveyors,
guide rail means defining a guide surface extending between the conveyors at said arcuate path portions for engaging and forcing articles radially between the article engaging means of one of said conveyors and the article engaging means of the other of said conveyors at their said arcuate path portions,
support means beneath the articles for supporting them during transfer between said first and second conveyors, said means for guiding said first and second conveyors about arcuate paths comprising a pair of rotary members rotatably mounted about a common axis,
one of said rotary members having a different diameter than the other,
said conveyors each being trained over one of the rotary members of said pair of members,
and one of said rotary members providing said support means beneath the articles for supporting them as they are being transferred between the first and second conveyors,
said article engaging means comprising generally C-shaped members,
said article engaging means of said first conveyor and said second conveyor having their open ends extending toward one another in said arcuate portions,
said means for guiding articles from one conveyor to the other comprising a guide rail positioned for forcing articles laterally from the article engaging means of one conveyor to the article engaging means of the other conveyor.

3,845,852
CARTON LOADER

Marinus J. M. Langen, 21 Chilcot Ave., and Jacobus J. Langen, 10 Ringway Crescent, both of Rexdale, Ontario, Canada
Filed Mar. 22, 1973, Ser. No. 343,724
Int. Cl. B65g *47/26*
U.S. Cl. 198—34 R **9 Claims**



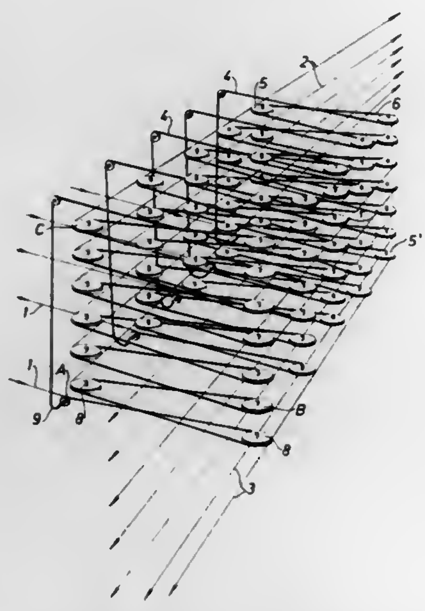
1. A spacer device for use in arranging containers which are continually travelling in a predetermined path through a

spacer station into space apart groups of containers comprising

- a. guide track means having a first forwardly inclined extent which continues in a second longitudinal extent which in turn continues in a third inclined extent which projects from the longitudinal extent on the same side of the plane of the longitudinal extent as said first inclined portion,
- b. fence means mounted at spaced intervals on said guide track means for movement along said guide track means, said fence means projecting in a plane which is substantially normal to the plane of the longitudinal extent when travelling along said first, second and third extents of said guide track,
- c. drive means for driving said fence means along said track at a uniform speed relative to said track whereby the fences are moved towards the plane of the longitudinal extent in travelling along said first angularly inclined portion into engagement with containers at linear speed in a direction of the longitudinal plane equal to the speed of travel of the containers, said fences being accelerated linearly as said fences pass onto the longitudinal extent of said track so as to move the containers engaged thereby forwardly of the preceding containers to space the containers on the longitudinal extent and thereafter moving said fence means along said third extent part of the path of travel of said containers to withdraw said fences from engagement with said container, and
- d. discharge means for engaging containers which have been spaced forwardly by said fences prior to withdrawal of said fences to discharge said container at a longitudinal speed sufficient to maintain a required space between the container being discharged and the next following containers.

3,845,853
SYSTEM FOR INTERCONNECTING CONTINUOUSLY OPERATING CONVEYOR PATHS

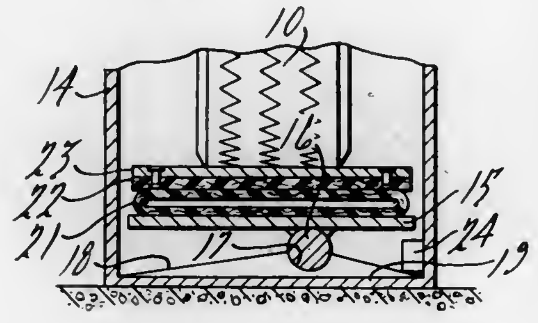
Janne Ragnvald Ejvin Wahren, Mastargrand 4, 592 00 Vadstena, Sweden
Filed June 14, 1972, Ser. No. 262,764
Claims priority, application Sweden, July 23, 1971, 9547/71
Int. Cl. B65g *37/00*
U.S. Cl. 198—78 **6 Claims**



1. A conveyor system comprising a first group of incoming continuously operating conveyor belts a second group of outgoing continuously operating conveyor belts at least two endless connecting loops extending between said groups and each loop comprising a continuously operating conveyor belt guided over direction rollers so as to include a helical section having opposed curved first portions extending over said direction rollers and generally straight second portions extending between said curved portions, and a downwardly extending portion from top to bottom of said helical section, and coupling means for selectively connecting and disconnecting the connecting loop to and from the incoming and outgoing conveyor belts.

3,845,854
WHEEL CONVEYOR SYSTEM

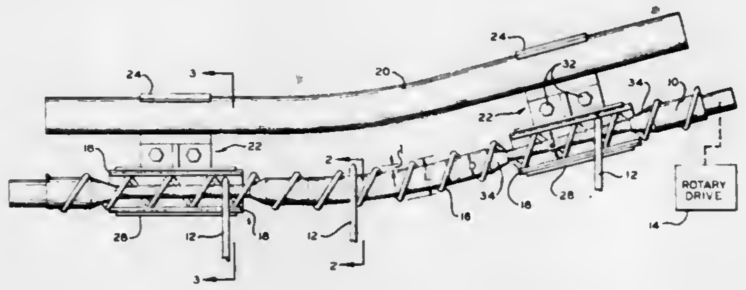
Ced F. Brown, E. Rosebud Rd., R.R. No. 5, Mt. Pleasant, Mich.
Filed Nov. 24, 1972, Ser. No. 309,608
Int. Cl. B65g *15/00*
U.S. Cl. 198—184 **9 Claims**



1. In a structure having a path on which the wheels of an automobile are advanced, trough means provided on one side of the path, a false bottom for said path on which the tires on one side of the automobile are advanced, means for advancing said wheels along said path, and means on the underside of the false bottom for supporting said false bottom and which permits the false bottom to tilt about a pivot point on said false bottom support means as the wheels pass thereover.

3,845,855
HELICAL SCREW-TYPE CONVEYOR

Karl E. Schwarz, Horseheads, and Donald E. Yeman, Elmira Heights, both of N.Y., assignors to BMT Manufacturing Corporation, Elmira, N.Y.
Filed Jan. 12, 1973, Ser. No. 322,970
Int. Cl. B65g *33/00*
U.S. Cl. 198—213 **4 Claims**

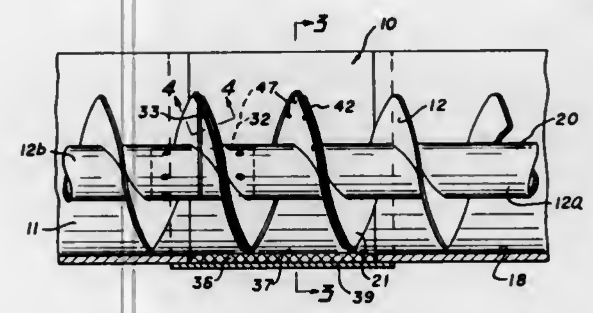


1. A helical screw-type conveyor rotatable to advance items suspended therefrom, said conveyor comprising in combination:

- a. a central rod of first diameter over the major part of its length and having a portion of second diameter, substantially smaller than said first diameter, for a predetermined distance along its length;
- b. said rod having tapered portions at each end of said second diameter portion, whereby the diameter changes gradually between said first and second diameters;
- c. a helical element surrounding said rod and rotatable therewith;
- d. bearing support members contacting said helical element on both the top and bottom thereof, at least the portion of said support members contacting the top of said helical element being arranged adjacent said second diameter rod portion and having a length not exceeding said predetermined distance.

3,845,856
SCREW CONVEYOR FOR PARTICULATE MATERIAL

Alister C. Hume, Hudson Bay, Canada, assignor to MacMillan Bloedel Research Limited, Vancouver, British Columbia, Canada
Filed Dec. 27, 1972, Ser. No. 318,839
Claims priority, application Canada, Nov. 24, 1972, 157384
Int. Cl. B65g *33/00*
U.S. Cl. 198—213 **4 Claims**

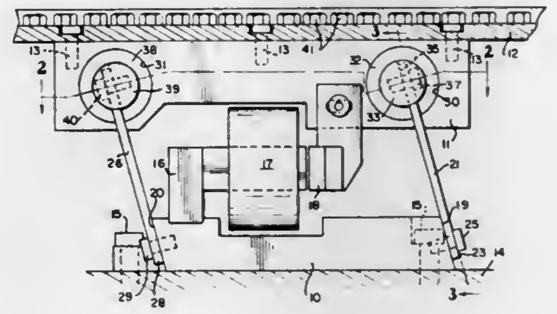


1. A screw conveyor for particulate material, comprising a trough having a transversely curved inner surface along which particulate material is to be moved, a plurality of transversely curved wear plates in the trough and spaced apart longitudinally thereof, each plate having an inner surface spaced radially inwardly a little of the inner surface of the trough, a spiral conveyor in and extending longitudinally of the trough, said conveyor comprising a centre shaft and a spiral flight wound around and secured to the shaft, said flight having a spiral edge adjacent the inner surface of the trough, and a plurality of wear strips mounted on and extending along the spiral edge of the flight, said wear strips being longitudinally spaced apart and mounted on different portions of the spiral conveyor and there being one wear strip for and in sliding contact with each wear plate, said wear strips resting on the wear plates maintaining the spiral edge of the conveyor clear of the trough inner wall and forming the sole support for the conveyor within the trough; each of said wear strips comprising a flange secured to the spiral edge of said conveyor flight and extending transversely in the axial direction of the conveyor, and a wear strip removably secured to said flange, each wear strip comprising a wide flat band having opposite flat sides between edges thereof, and each wear strip being mounted with a flat side on the flange and a flat side facing radially outwardly of the conveyor to contact the adjacent wear plate; whereby the spiral conveyor can move the particulate material through the trough without obstruction and with very little deterioration of said particulate material.

3,845,857
SPRING MOUNT FOR VIBRATORY FEEDER

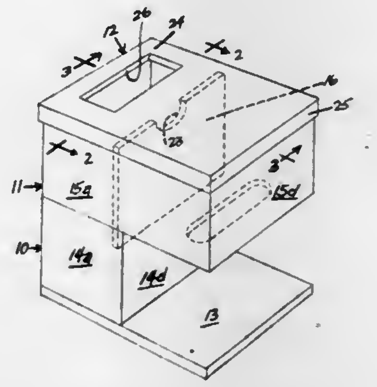
Myron L. Doty, New Palestine, Ind., assignor to Moorfeed Corporation, Indianapolis, Ind.
Filed Oct. 19, 1972, Ser. No. 299,005
Int. Cl. B65g *27/00*
U.S. Cl. 198—220 CA **8 Claims**

1. In a vibratory feeder including a stationary base member, a rail member, spring means supporting said rail member from said base member, a track secured to move with said rail member, and power-driven vibrator means comprising an element fixed relative to said base member and an element fixed relative to said rail member, one of said elements being the driver and the other being the driven element of said vibrator means, the invention in which said spring means comprises at least two bar-type springs spaced longitudinally relative to said members upon axes substantially equally inclined in a common direction from the vertical in the line of movement of said driven element, each of said springs having one end adjacent one of said members and its other end adjacent the other of said members, means for fixedly securing said one end to said one member, means for connecting said other end to said other member for relative resiliently yieldably resisted oscillation about a substantially horizontal axis transverse to the line of movement of said driven element, said other member providing socket means and said connection means between said other end of each spring and said other member comprising rubberoid bushing means substantially nonrotatably received in said socket means, and a spindle penetrating said bushing means, said other end of each spring being fixedly secured to its associated spindle, said spindle including means for preventing rotation and gripping of said bushing means.



3,845,858
PACKAGE FOR DISPOSAL OF CHEWING GUM

Garry W. Jenkins, 1701 S. Ditmar St., Oceanside, Calif. 92054
Filed May 16, 1973, Ser. No. 360,809
Int. Cl. A45c *11/00;* **B65f** *1/00*
U.S. Cl. 206—233 **10 Claims**



1. A package for holding tissue in which gum is to be wrapped and also holding gum which has been wrapped in the tissue, which comprises a lower casing having a bottom wall, side walls and an open top, said lower casing serving as a storage repeptacle for gum which has been wrapped in tissue, a middle casing having side walls and also a transverse vertical partition dividing the middle casing interior into a rearward section and a forward section, and a top plate which covers the entire middle casing and has an opening therein disposed over said rearward section, said rearward section being open at its top and at its bottom to serve as a passageway from said opening down to said lower casing, said forward section serving as a compartment for receiving a package of tissues and retaining it therein, and said forward section having an access opening for withdrawal of tissue therethrough.

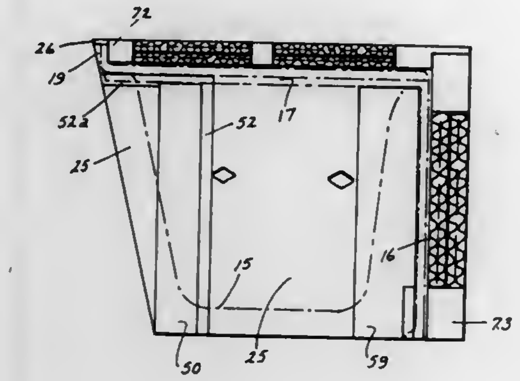
3,845,859
SHIPPER PACKAGE

Ross J. Dornbush, 736 E. Grand Blanc Rd., Grand Blanc, Mich. 48439

Filed July 17, 1972, Ser. No. 272,359

Int. Cl. B65d *85/54, 5/32*

U.S. Cl. 206—320 **1 Claim**



1. In a package for protecting and supporting a bath tub which package has right and left end caps and a sleeve-type wrapper, the improvement wherein said end caps are each formed from a one-piece blank and each have

A. an end panel (**25**);

B. a re-inforced upper edge walls (**72**) extending at 90° to panel (**25**) formed from a plurality of hinged panels folded to provide a multi-ply wall and adapted to overly the front top surface of a tub and function as a cushion layer to protect the vitreous enamel thereof;

C. re-inforced front edge walls (**73**) extending at 90° from panel (**25**) formed from a plurality of hinged panels folded to provide a multi-ply wall and adapted to overly the front skirt (**16**) of a tub and function to space front panel (**22**) of wrapper (**12**) from contact with the vitreous enamel on said front skirt;

D. re-inforced end support walls (**50** and **59**) connected to panel (**25**) by hinge panels (**45** and **46**) overlying end spacers (**52** and **61**) adjacent the rear and front respectively, of said end panel (**25**) and spaced from said upper edge wall to provide supports for suspending a tub (**15**);

E. said end spacers (**52** and **61**) being hinged at lateral edges of said support walls (**50** and **59**) and folded between said end panel (**25**) and said support walls;

F. said right end cap being a mirror image of said left end cap.

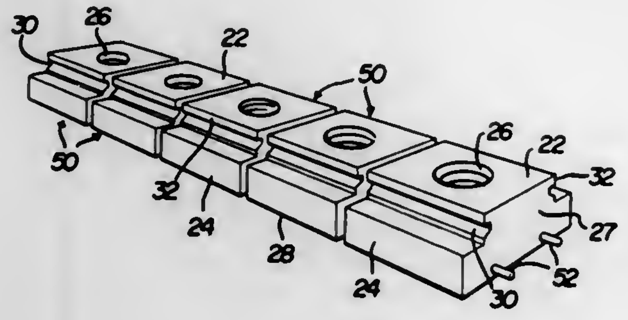
3,845,860
FASTENER STRIP

Harold A. Ladouceur, Livonia, and John H. Matthews, Royal Oak, both of Mich., assignors to Multifastener Corporation, Detroit, Mich.

Division of Ser. No. 130,335, April 1, 1971, Pat. No. 3,711,931. This application Nov. 24, 1972, Ser. No. 309,545

Int. Cl. B23p *17/00;* **B65d** *79/00, 85/20*

U.S. Cl. 206—338 **21 Claims**



1. A continuous strip of nuts, comprising, in combination, a plurality of generally aligned nuts, each nut having a bore therethrough generally perpendicular to the axis of said strip, and an end face perpendicular to the axis of said bore and a pair of generally linear grooves in said nut end face, on either side of said bore and generally parallel to the axis of said strip, and a continuous frangible element disposed in each of said grooves, bridging adjacent nuts, and said nut end face including a portion deformed over each of said frangible elements to retain said nuts on said frangible elements in a continuous strip.

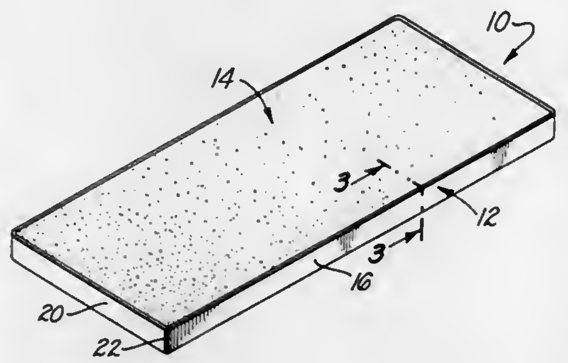
3,845,861
BOX END STRUCTURE

Anthony J. Fieri, Rolling Hills Estates, Calif., assignor to American Forest Products Corporation, San Francisco, Calif.

Filed June 28, 1972, Ser. No. 267,059

Int. Cl. B65d *81/04, 85/34*

U.S. Cl. 206—523 **4 Claims**



1. A box end structure to be utilized in boxes in which two of said end structures are secured together so as to be spaced from and located parallel to one another by at least two box sides and a box bottom, in which the improvement comprises: said end structure including an integrally formed, structurally rigid housing and a solid, porous, lightweight filling,

said housing being formed of a high impact strength styrene polymer and having parallel top and bottom strips located so as to be spaced from and parallel to one another and having two side strips connecting the ends of said top and bottom strips at corners into a frame structure in which the edges of all of said strips are located in two parallel planes, said housing also having wall means located within the perimeter of said frame structure connecting all of said strips to reinforce and hold said frame structure into a structural unit, said wall means including a web-like cross wall extending between said strips, and internal wall means connected to said web-like cross wall and said strips,

said filling being formed of an expanded styrene polymer composition and located within the interior of said housing in contact with all of said strips and said wall means so as to completely engage and fill the interior of said frame structure so that said filling is held within said housing, said filling serving to provide flat front and rear surfaces at the sides of said frame structure in said planes.

3,845,862
CONCENTRATION OF OXIDE COPPER ORES BY FLOTATION SEPARATION

Stephen E. McGuire; Carl D. Kennedy, and John C. Stauter, all of Ponca City, Okla., assignors to Continental Oil company, Ponca City, Okla.

Filed Jan. 4, 1973, Ser. No. 321,087

Int. Cl. B03d *1/02*

U.S. Cl. 209—166 **8 Claims**

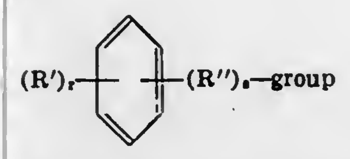
1. In a flotation separation process wherein oxide copper ores in subdivided form are concentrated by slurrying said ores in an aqueous solution of a flotation reagent followed by

generating gas bubbles in the slurry to float the oxide copper and recovering the concentrated oxide copper from the surface of the slurry, the improvement therein which comprises employing a quaternary salt as a flotation reagent, said quaternary salt being defined by

$$(R)_4\,Y^+\,X^-$$

wherein Y is a nitrogen or phosphorus atom; X is a bromine, chlorine, or iodine atom; and

each R is, independently, an alkyl radical having one to 30 carbon atoms; or

a 

wherein "*r*" is an integer of 1 or 2; "*s*" is 0 or 1;

R′ is hydrogen or an alkyl radical having 1 to 30 carbon atoms; and

R″ is an alkylene radical having one to 15 carbon atoms; provided that the total number of carbon atoms of $(R)_4\,Y^+\,X^-$ is in the range of 10 to 45.

3,845,863
PULP SIFTER WITH CLEANING MEANS

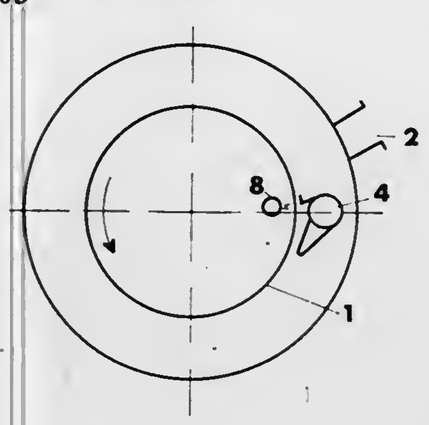
Risto Martti Juhani Savia, Inkeroinen, Finland, assignor to Oy Tampella Ab, Tampere, Finland

Filed Mar. 21, 1972, Ser. No. 236,709

Claims priority, application Finland, Mar. 25, 1971, 862/71

Int. Cl. B07b *1/52*

U.S. Cl. 209—303 **9 Claims**



1. An improved sifting device for pulp and the like having a chamber with inlet means for the pulp; in the chamber and rotatably journalled thereto a cylindrical sieve plate defining an accept collecting space and having outlet means for the accept; means for rotating the cylindrical sieve plate about a vertical axis; and sieve cleansing means fixedly attached to the chamber across the outer sieve plate surface, said sieve cleansing means comprising a pipe having an opening at the side towards the sieve plate surface for removing reject therefrom, the improvement comprising: reject detaching means adjacent said sieve plate and positioned at the front longitudinal edge of the pipe, and in communication with said opening blocking means at the rear longitudinal edge of the pipe for substantially preventing the pulp feed from moving other than in the rotational direction of said sieve plate, said blocking means being adjacent said sieve plate, said detaching and blocking means positioned wholly at opposite sides of the pipe opening and in spaced relation to said sieve plate.

3,845,864
DISPLAY SHELVING

Wilhelm Heinrich, D-3441, Oberhone, Germany

Filed July 5, 1973, Ser. No. 376,621

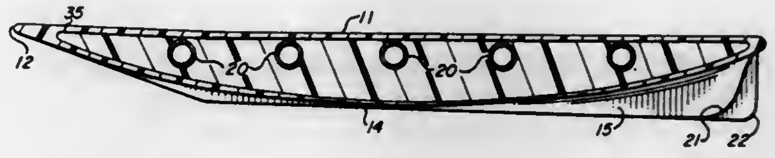
Int. Cl. A47f *5/00*

U.S. Cl. 211—153 **11 Claims**

1. A unitary molded display shelf formed from plastic material comprising:

an elongated solid support member having a substantially flat top surface and a convex bottom surface forming relatively thin front and rear edges,

each end of said member being provided with a flange integral with and extending laterally from said top surface



and provided with a slot extending along its free edge laterally of the longitudinal axis of said member for receiving a supporting bracket therein, and

a plurality of spaced reinforcing means embedded in said member and arranged to extend longitudinally thereof.

3,845,865
MARINE CARGO HANDLING CRANE

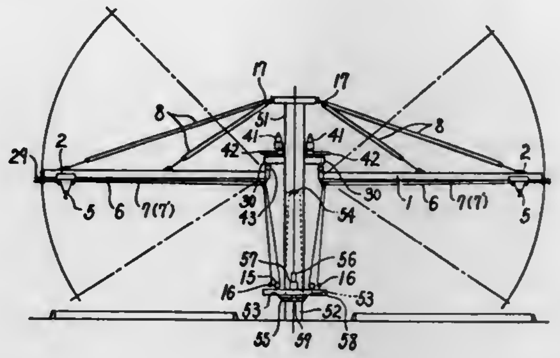
George Thomas Richardson Campbell, and Toshishige Kasuga, both of Tokyo, Japan, assignors to Algoship International Limited, Nassau, Bahamas

Division of Ser. No. 883,002, Dec. 8, 1969, Pat. No. 3,658,787. This application Mar. 7, 1972, Ser. No. 232,644

Claims priority, application Japan, Dec. 27, 1968, 43-96323; Apr. 10, 1969, 44-27949; Aug. 26, 1969, 44-81151

Int. Cl. B66c *21/06, 23/52*

U.S. Cl. 212—57 **9 Claims**

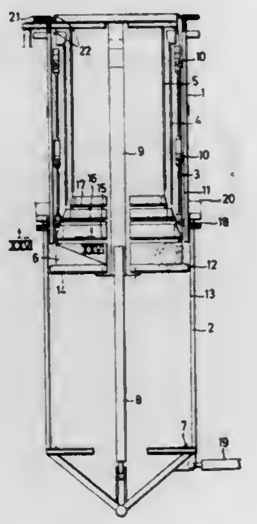


1. A cargo handling crane comprising a main two section post, a first section of which is fixed and a second section of which is mounted on a turntable rotatable about said first section of the post, a main outrigger on said second section of the post, said main outrigger extending on opposite sides of the post in a plane normal to the axis of the post, a pair of booms mounted one at each end of the said main outrigger, means to pivot each of said booms (a) for slewing of the booms and (b) for topping the booms, a hoisting trolley on each of said booms, the said trolleys adapted for travel along the length of their respective booms, means for separately slewing each boom, individual rope means for separately topping each boom, for transversing each of said hoisting trolleys on its respective boom and for hoisting loads via said hoisting trolleys winch means on the said turntable for individually paying-in and paying-out said rope means,

said slewing means on each boom comprising a slewing rope means passing over pulleys mounted on a further outrigger extending from said post on either side of the said main outrigger, a boom outrigger extending at right angles on either side of the centerline of the boom and to which one end of the pairs of slewing ropes are secured, an adjusting arm pivotally mounted on opposite ends of the said further outrigger on said second section of the post, each of said adjusting arms including a pair of sheaves mounted at each end thereof, stop means on each of said adjusting arms limiting the movement of the arms in the direction of said second section of the post, the said slewing ropes being laid about said sheaves, the said adjusting arms taking up a position during paying-out and paying-in to automatically take up slack in the slewing ropes.

3,845,866
TELESCOPIC CRANE JIB

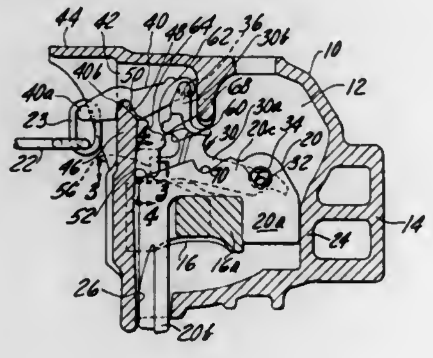
Harry Eucken, Hochdahl-Millrath, Germany, assignor to Leo Gottwald KG, Dusseldorf-Holthausen, Germany
Filed Sept. 25, 1973, Ser. No. 400,652
Claims priority, application Germany, Sept. 28, 1972, 2247491; Oct. 7, 1972, 2249309
Int. Cl. B66c *23/02*
U.S. Cl. 212—64 **31 Claims**



1. In a telescopic crane jib including a plurality of individual telescopic parts, means for extending and retracting said parts when the longitudinal axis of said jib is at least substantially vertical, locking means for locking said parts positively together when said parts are extended, and a jib housing surrounding said telescopic parts when said parts are retracted, the improvement wherein said means for extending and retracting said telescopic parts is a fluid pressure operated cylinder mounted for vertical movement within said housing and there is means associated with the lower end of said cylinder below the lowest of said telescopic parts for guiding said cylinder vertically in a lower portion of said housing, and said locking means are situated at the ends of said telescopic parts and include means for locking said parts together end to end.

3,845,867
CAR COUPLER

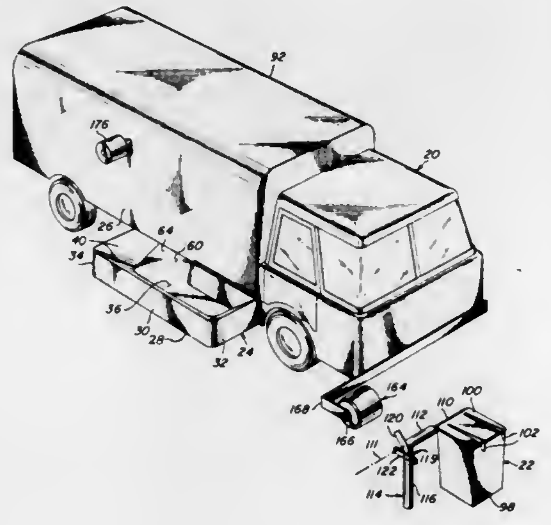
Karl J. Jwuc, North Royalton, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed Apr. 16, 1973, Ser. No. 351,166
Int. Cl. B61g *3/06*
U.S. Cl. 213—121 **7 Claims**



1. A car coupler having a chambered head, a knuckle pivoted to said head for movement from closed position to open position, a lock in said head for locking said knuckle in closed position, a lever in said head operatively connected to said lock for raising said lock out of locking position and link means for actuating said lever, said head having a shelf underlying an end of said lever for supporting the lever when said lock is in locking position, said lever having a fulcrum bearing to permit vertical pivoting of said lever upon actuation of the lever to raise said lock, a socket in said head in spaced opposed relation to said bearing, and a projection in said head having a convex surface adjacent said socket, said surface being in spaced opposed relation to said bearing, said lever upon actuation by said link means being initially movable transversely of the coupler into position in which said bearing engages said convex surface and is cammed into said socket, after which said lever is caused to pivot relative to said socket to raise said lock out of locking position.

3,845,868
NONSTOP REFUSE COLLECTION SYSTEM

Glenn R. Myers, 729 W. Vernan, Phoenix, Ariz. 85007
Continuation of Ser. No. 87,445, Nov. 6, 1970, abandoned. This application Apr. 19, 1972, Ser. No. 245,679
Int. Cl. B65f *3/02*
U.S. Cl. 214—42 R **9 Claims**



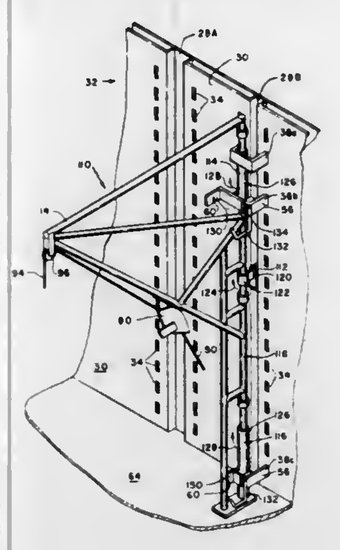
1. In a nonstop refuse collection system,

a. a nonstop collection vehicle movable along a collection path, said vehicle adapted for receiving refuse therein;
b. at least one refuse container positioned along the collection path, said container having a refuse receiving state and a refuse dumping state;
c. a refuse storage enclosure movable with said vehicle;
d. a refuse receiving tray mounted on said vehicle and exposed to extend laterally therefrom;
e. emptying means positioned in said vehicle and in said tray for removing refuse from said tray;
f. transfer means in said vehicle for receiving refuse from said emptying means and transferring the refuse to said storage enclosure, and
g. actuation means on said vehicle for activating said container from the refuse receiving state to the refuse dumping state when said vehicle is adjacent to said container.

3,845,869
LOADING AND UNLOADING DEVICE

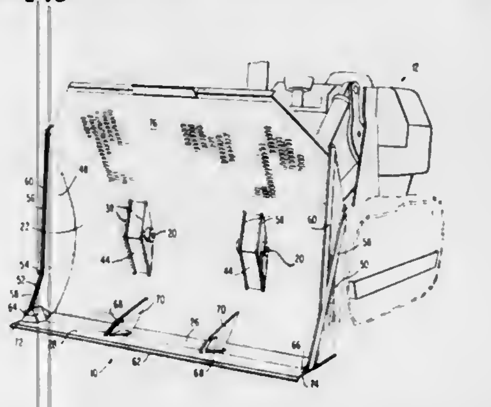
Blaine E. Sowers, Grabill, and Vaughn E. Hunnicutt, Fort Wayne, both of Ind., assignors to North American Van Lines, Inc., Ft. Wayne, Ind.
Continuation-in-part of Ser. No. 224,094, Feb. 7, 1972, Pat. No. 3,774,788. This application Apr. 30, 1973, Ser. No. 355,311
Int. Cl. B66c *23/02*
U.S. Cl. 212—65 **17 Claims**

1. A loading and unloading device comprising a boom, means pivotally connected to said boom for securing the same to the sidewall of a cargo compartment, said means including a first portion to be received in a complementary shaped recess adjacent to a row of vertically spaced perforations in said sidewall and a second portion including a plurality of first hook elements for latching to said sidewall remote from an access opening thereto and holding said first portion in said recess, and a second hook element extending in a direction opposite said first hook element for latching to said sidewall adjacent an access opening and holding said first portion in said recess, said first and second hook elements each including a portion adapted to be laterally, slidably received in predetermined ones of said perforations and to vertically, slidably engage a portion of said sidewall, said boom being pivotally swingable in relation to said securing means about an axis which is generally vertical when said boom is latched to said sidewall, said securing means maintaining said axis in said generally vertical position.



3,845,870
LANDFILL BUCKET

Willard E. Balderson, and Billy D. Birk, both of Wamego, Kans., assignors to Balderson Inc., Wamego, Kans.
Filed Mar. 27, 1972, Ser. No. 238,209
Int. Cl. E02f *3/70*
U.S. Cl. 214—145 **17 Claims**

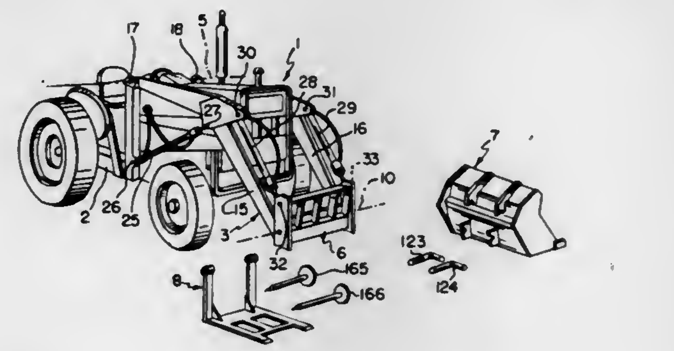


1. A landfill bucket for mounting on lift arms and tilt linkages of a loader comprising:

- a pair of spaced hinge plates having means for being pivotally connected to loader lift arms and tilt linkages;
- a floor member which has a substantially planar area including a length in the direction of forward movement of the loader and extending across the width of the bucket;
- means connecting a rearward portion of said floor member to said hinge plates;
- a substantially flat plate having an upper surface in substantial alignment with the upper surface of said floor member and extending across the width of said bucket, said flat plate having a forward cutting edge and a rear surface held in abutting relationship with a forward edge of said floor member;
- a bucket wrapper member having a generally cylindrical surface with a horizontal axis, the lower end of said curved surface intersecting with said floor member at an angle along a line which is spaced from both said rearward portion and said forward edge of the floor member and being welded to the floor member along said line; and
- a pair of substantially identical side plates on opposite sides of said bucket, said plates having their upper portions secured to an upper portion of said bucket and their lower edges secured along opposite sides of said floor member and said flat plate, said side plates having a lower portion leading edge that extends upwardly at an oblique angle relative to the upper surface of said flat plate and an upper portion leading edge that extends substantially perpendicular to the upper surface of said flat plate to thereby form a recess at a junction between said lower and upper portions, the upper surface of said flat plate extending in a forward direction beyond the leading edges of the lower portions of said side plates.

3,845,871
EXCAVATING APPARATUS

Franklin M. DiLillo, 4405 Ardmore Rd., and Michael A. DiLillo, 4293 Ardmore Rd., both of South Euclid, Ohio 44121
Filed Jan. 15, 1973, Ser. No. 323,961
Int. Cl. E02f *3/70*
U.S. Cl. 214—145 **10 Claims**



1. An excavating apparatus comprising,

- a lift assembly mounted on said chassis,
- a load moving member mounted on said lift assembly,
- a coupling assembly between the lift assembly and the load-moving member for mounting said load moving member on said lift assembly,
- said coupling assembly includes a locating coupling and a locking coupling for detachably mounting said load moving member in interlocked relation on said lift assembly, said locating coupling includes interfitting locating elements engageable with one another to enable alignment of said locking coupling in its locking position,
- said locking coupling includes interfitting locking elements engageable with one another in the locked position to maintain said locating elements in their interfitted engaged position for maintaining said load moving member in the interlocked mounted position on said lift assembly and disengageable from one another to enable said locating elements to be released from their interlocked relation and to enable detachment of said load moving member from said lift assembly,
- said load moving member is an excavating bucket,
- said locating elements include a locating bar on said lift assembly and locating hooks mounted in laterally spaced relation on said bucket and including downwardly opening slots therein for receiving said locating bar therein,
- said locking elements include a pair of yokes on said bucket and locking projections on said lift assembly, and
- said locking yokes are disposed downwardly from said locating hooks and in laterially spaced relation on said bucket each having a rearwardly opening recess for re-

ceiving a respective one of said locking projections therein, and

a pair of locking pins each supported on a respective one of said locking yokes and extending across said recesses for interlockingly retaining said projections in said recesses and retain said locating bar within the slots in said locating hooks to prevent disengagement of said load moving member from said lift assembly.

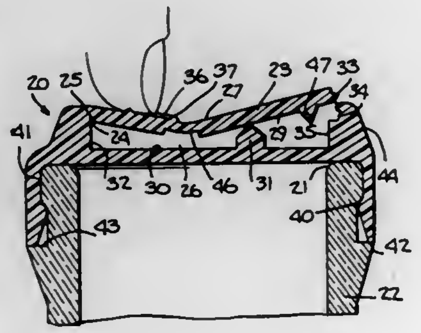
3,845,872
CONTAINERS AND SAFETY CLOSURE THEREFOR

Edward Johnson Towns, Normandy Heights Rd., Convent Station, N.J. 07961, and Anthony Thomas Brindisi, 4 Charles Dr., Fairfield, N.J. 07006

Continuation-in-part of Ser. No. 262,419, April 9, 1973, abandoned. This application Apr. 9, 1973, Ser. No. 349,302

Int. Cl. A61j *1/00;* **B65d** *55/02*

U.S. Cl. 215—9 **19 Claims**



1. In a safety closure made of plastic for a container of the type having a closure member with an integral pull tab mounted within a recess in the top surface of the member and swingable about a hinged connection at one end to an open, grapsing position, the improvement wherein:

all edges of the tab are in close fitting abutment to the edges of the recess when the tab is shut;

tongue and groove interengagement means between the tab and at least one surface forming said recess are provided to hold the tab shut;

at least a portion of the recess is deeper than the thickness of the tab; and

a fulcrum means is located adjacent said deeper portion for supporting the tab,

the dimensions of said tab, said recess and said fulcrum means being so proportioned in respect of the material from which said closure is made that an inward force on the tab at a point overlying said deeper portion of at least about four pounds is required to cause the tab to deflect inward at that point and thus pivot about the fulcrum means thereby raising an edge of the tab on the other side of the fulcrum means above the top surface of the closure to permit swinging the tab to the open, grasping position.

3,845,873
VACUUM INSULATED CONTAINER

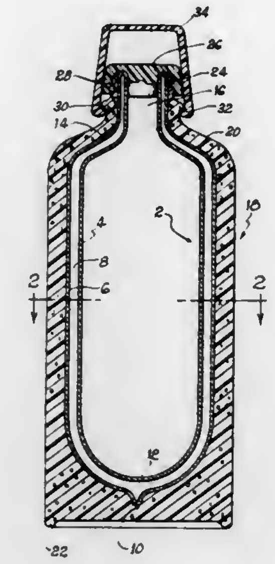
John A. Bridges, Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.

Filed Feb. 9, 1973, Ser. No. 331,026

Int. Cl. A47j *41/02*

U.S. Cl. 215—13 R **2 Claims**

1. A vacuum insulated container comprising: a double-walled filler with the space between the walls substantially evacuated so as to provide a vacuum insulating space therebetween and having a closed bottom at one end and an open throat leading to an opening at the other end for filling and pouring, a jacket of substantially greater thickness than the walls of the filler formed solely from a foamed plastic material having a relatively impervious outer skin encompassing and engaging the outer wall of the filler at its bottom and sides, said jacket is provided with first holding elements formed on the outer surface thereof adjacent said opening to hold a stopper in said opening, and second holding means formed on the outer surface of said jacket below said first holding means whereby a cup may be inverted and placed on the container to cover a stopper and be retained on said jacket.



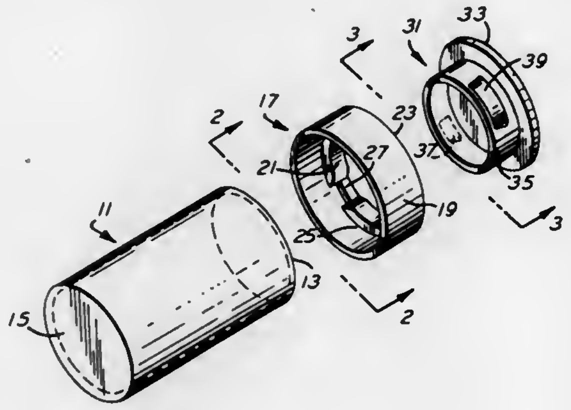
3,845,874
SAFETY VIAL AND CAP THEREFOR

Douglas R. Robbins, 37 West Minster, and Samuel B. Robbins, Jr., 19 Beechview, both of Jamestown, N.Y.

Filed Nov. 8, 1973, Ser. No. 413,922

Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*

U.S. Cl. 215—214 **9 Claims**



1. A safety vial and cap therefor, comprising in combination:

a generally cylindrical container having uniform wall thickness, said container being closed at the bottom and open at the top;

a double ring shaped member having an outer depending ring shaped portion, the inner diameter of which is equal to or slightly less than the outer diameter of said cylindrical container and an inner depending ring shaped portion, the outer diameter of which is equal to or slightly greater than the inner diameter of said cylindrical container with said inner depending ring shaped portion having a slot therein, said outer depending ring portion and said inner depending ring shaped portion being joined at the top to thereby form a generally cylindrical slot therebetween adapted to have inserted therein the top of said cylindrical container;

means for inserting the open end of said generally cylindrical container in and affixing the same to the cylindrical slot in said double ring shaped member;

a plug type cap comprising a top portion having a diameter approximately equal to the outer diameter of the outer depending ring shaped portion of said double ring shaped member and a cylindrical portion open at the bottom depending from said top portion and having an outer diameter approximately equal to the inner diameter of the inner depending ring shaped portion of said double ring shaped member, further including first and second protuberances on opposite sides of the bottom of the cylindrical sector of said plug type cap, a first one of said protuberances having an angular dimension approximately equal to the dimension of the slot in the inner depending ring shaped portion of the double ring shaped member.

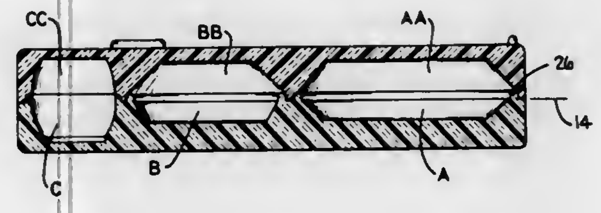
3,845,875
FOOD SERVICE TRAY

Carl L. Douglas, 1220 Fox Hills Dr., Indianapolis, Ind. 46208; William J. Evans, Indianapolis, Ind.; Ronald J. Kiess, Greenfield, Ind., and Robert A. Sutton, 5030 E. Pleasant Run Pky., Indianapolis, Ind. 46201, assignors to Said Carl L. Douglas, by said Evans and Kiess and said Robert A. Sutton, by said Evans and Keiss, both of Indianapolis, Ind., part interest to each

Filed July 13, 1972, Ser. No. 271,546

Int. Cl. B65d *1/24, 21/02*

U.S. Cl. 220—20 **2 Claims**



1. A food service tray assembly comprising:

a. a base, said base comprising a urethane foam shape of a polyurethane rigid closed cell foam, said shape having at least one coating all over the exterior of the foam;

b. a cover different from said base and mounted on top of said base; said cover comprising a urethane foam shape of a polyurethane rigid closed cell foam, said shape having at least one coating all over the exterior of the foam; c. said base having a plurality of cavities therein, said cavities being of a size and shape to accommodate conventional sizes and shapes of permanent and disposable dishware;

d. said cover having a plurality of cavities therein;

e. each of said cavities of said cover being in registry with one of said cavities in said base to form a food storage compartment;

f. said cover and base having mating perimetrical thermal barriers around certain of said registering cavities, to inhibit lateral heat transfer between adjacent cavities;

g. said coaver having means to inhibit vertical heat release from said food storage compartments;

h. the overall height of said assembly being less for a distance along at least one margin thereof than elsewhere to provide, in a stack of assemblies, finger receiving spaces between each assembly and the assembly next below it, and to facilitate reception of said cover and said base separately in the dish rack of an institutional dishwasher machine; and

i. wherein one side of said assembly is irregular with respect to the others to facilitate identification of correct registry of said cover with said base in assembly thereof;

said cover having lug means projecting upward therefrom, and said base having upwardly extending recess means therein,

whereby said assembly is securely stackable with like assemblies, the lug means of said cover projecting into the recess means of the base of the assembly next above it, and the recess means of said base receiving the projecting lug means of the cover below it;

one of said cavities in said cover having a corner therein disposed in vertical projection with a corner in said one lug, whereby a plurality of covers like said cover is stackable, with the upwardly projecting one lug of each received in the corner of a cavity of the cover next adjacent thereto.

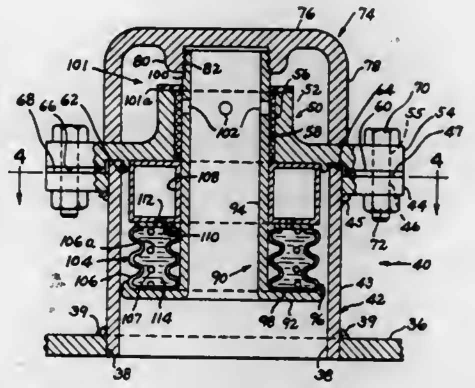
3,845,876
PRESSURE TANK SAFETY VENT SYSTEM

Robert F. Needham, and Dwaine G. Souchek, both of Saint Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Oct. 1, 1973, Ser. No. 402,523

Int. Cl. B65d *51/16*

U.S. Cl. 220—203 **43 Claims**



1. A pressure tank safety vent system comprising:

a hollow housing adapted to be in communication with an opening in said pressure tank;

a vent member mounted within the hollow portion of said housing; said vent member having a vent opening therein in communication with the opening in said housing, and having at least one port in communication with said vent opening;

said vent member being movable within said hollow portion between first and second positions, in said first position said housing preventing said port from venting said pressure tank and a second position wherein said port is adapted to vent said pressure tank;

said housing further having mounted therein a resilient assembly comprising:

resilient means biased into an extended position; first and second chambers at least one of which contains a vent controlling fluid, said chambers being in fluid communication by means of at least one vent controlling channel;

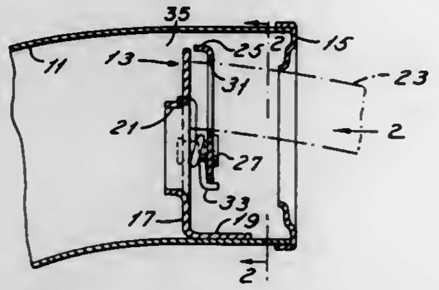
said resilient assembly being in mechanical engagement with at least a portion of said housing;

whereby during a pressure build-up in said pressure tank, the tank pressure is applied to said resilient assembly and said vent controlling fluid will pass through said vent controlling channel, and in the event the pressure build-up continues for a time sufficient to transfer a substantial portion of said fluid from said first channel to said second channel, said vent member will move into said second position and vent said pressure tank.

3,845,877
INLET INSERT

Lawrence E. Arnett, Wayne, and Earl M. Wiggins, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 6, 1972, Ser. No. 241,620
Int. Cl. B67c *3/00;* **F16l** *33/00*
U.S. Cl. 220—86 R **5 Claims**

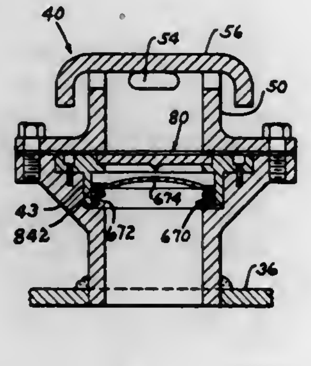


1. A tank inlet pipe insert assembly to selectively accept and reject pump nozzle spouts on the basis of outer diameter magnitude, said insert assembly comprising:
a first member secured to the inlet pipe and forming a partial closure thereof, said first member including a portion substantially perpendicular to the axis of said inlet pipe and having an opening formed therein
a second member including a portion substantially parallel to said portion of said first member,
means connecting said second member to said first member to pivot about an axis eccentric to the axis of said inlet pipe,
a portion of said second member being positioned at least in part over said first opening,
a second opening formed in said second member of a diameter of a magnitude to accept a nozzle spout of a first predetermined diameter and reject a nozzle spout of a second larger predetermined magnitude,
spring means biasing said second member toward a normal position at least partially obstructing said first opening, said second member being displaceable from said normal position to a position in which said second opening is aligned with said first opening,
said second member having dimensions less than the interior diameter of said inlet pipe to permit displacement of said second member relative to said inlet pipe.

3,845,878
SAFETY VENT SYSTEM FOR TANKS

Edwin S. Carlson, Saint Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Nov. 3, 1972, Ser. No. 303,350
Int. Cl. B65d *25/00;* **F16k** *17/14*
U.S. Cl. 220—89 A **21 Claims**

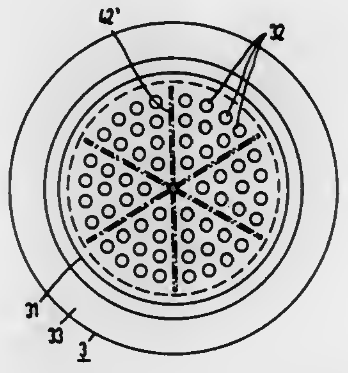


1. A safety vent system for use in a tank for transporting chemicals comprising:
at least one hollow member mounted in communication with an opening in said tank;
a member rupturable at designed pressure mounted in at least one of said hollow members; and
resilient means comprising a bellows mounted in cooperation with said rupturable member to absorb energy resulting from surge pressures occurring in said tank.

3,845,879
SAFETY FITTING

Berthold Dernbach; Ewald Jurisch, both of Erlangen, and Helmut Landgraf, Tennenlohe, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 26, 1973, Ser. No. 344,581
Claims priority, application Germany, Apr. 6, 1972, 2216615
Int. Cl. F16k *17/16;* **B65d** *47/36*
U.S. Cl. 220—89 A **10 Claims**

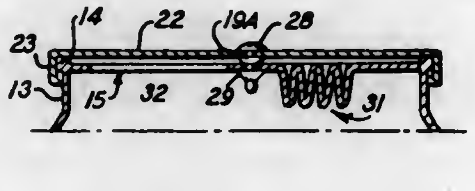


1. A safety fitting for use in pipe lines and the like comprising:
a. a substantially flat rupture disc containing a plurality of radial grooves extending from the center to a predetermined distance from the rim of the disc thereby leaving annular area of undiminished cross section near the rim;
b. a support member having a plurality of holes therein patterned so as to provide solid areas corresponding to the location of the grooves in said rupture disc; and
c. means to support said rupture disc and said support member within a pipe line with said rupture disc resting against said support member with its grooves aligned with the solid areas of said support member, and facing the side of said pipe line in which a normally higher pressure is expected, whereby a higher pressure on said normal side of said line will press said rupture disc against said support member and prevent flow through the safety fitting but a higher pressure on the support member side of said safety fitting will cause said disc to rupture along said grooves and permit a flow through said safety fitting.

3,845,880
CAN FOR LIQUID

Mark F. Cole, Jr., 2167 Roland Way, Eugene, Oreg. 97401

Filed May 17, 1973, Ser. No. 361,177
Int. Cl. B65d *17/00*
U.S. Cl. 220—258 **9 Claims**

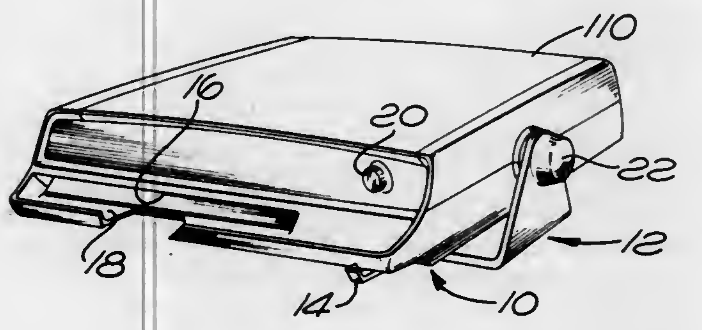


1. In a can
a. a cylindrical body presenting upper and lower ends,
b. an inner top affixed to said upper end and having a scored area defined by a pair of spaced arcuate lines and an end line that are weakened, and a plurality of spaced radial lines in said scored area that are weakened,
c. an outer top rotatably mounted on said body above said inner top and having a scored area defined by a pair of spaced curved lines that extend in substantially the same direction as the arcuate lines on the inner top and an end line that are weakened,
d. means for securing together the scored area portion at substantially the end line of the inner top with the scored area portion at substantially the end line of the outer top
e. a bottom closing the lower end of said body.

3,845,881
LIGHTED-CIGARETTE DISPENSING MACHINE

William R. Sachko, 348 Sienega Dr., Fullerton, Calif. 92635

Filed July 18, 1973, Ser. No. 380,324
Int. Cl. B65d *83/00*
U.S. Cl. 221—144 **5 Claims**



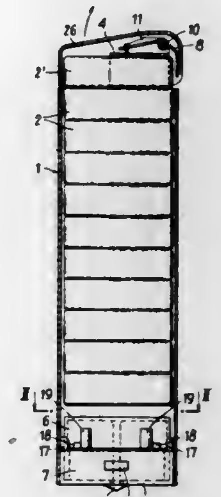
1. A lighted-cigarette dispenser comprising:
a magazine means including a rotatable member defining a plurality of slots for receiving a plurality of cigarettes for containing a plurality of cigarettes at separate locations;
a ciagarette carriage means mounted for reciprocalmotion strokes along a path aligned with the axis of a received cigarette carried thereon;
a lighter means for igniting a cigarette;
an actuating means including, a power arm to move said carriage in an initial stroke of reciprocal motion to receive a carried cigarette from said magazine means, and a dash pot mechanism for moving said carriage in a return stroke of reciprocal motion to abut said lighting means then discharge said carried cigarette;
means connecting said actuating means to control energization of said lighting means; and
means connecting said dash pot mechanism to provide an air current to ignite said carried cigarette.

3,845,882
SPRING CAGE FOR USE IN A TABLET DISPENSING RECEPTACLE

Eduard Hass, 1010 Wein, Parkring 10, Vienna, Austria

Filed Oct. 25, 1972, Ser. No. 300,486
Claims priority, application Austria, Nov. 9, 1971, 9678/71
Int. Cl. B65h *1/08*
U.S. Cl. 221—279 **5 Claims**

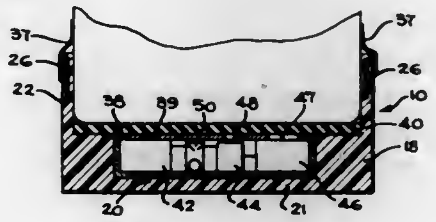
1. A spring cage in combination with a receptacle for receiving and sequentially dispensing individual shaped bodies from a stack of like ones of said shaped bodies received in the receptacle, the receptacle comprising a housing having a dispensing end, and the spring cage comprising a structural unit consisting of a spring abutment having an aperture, a support bottom for carrying the stack of shaped bodies, a compression spring held between the abutment and support bottom, and a hook having a head releasably engageable with the aperture of the abutment and a stem extending from the hook head through the aperture to the support bottom for releasably interlocking the abutment and support bottom for insertion as a unit into the receptacle housing, the hook being deformable to disengage the hook head from the aperture and the compression spring pressing the stack of shaped bodies towards the dispensing end to place sequential uppermost one of the shaped bodies of the stack into a dispensing position when the unit has been inserted and the interlocking of the abutment and support bottom has been released by disengagement of the hook head from the aperture, and a click stop fixedly holding the spring cage in the receptacle housing.



3,845,883
MEASURING APPARATUS

Edward P. Johnson, 1579 Bucklin Ave., and Ross E. Waite, 1675 Argyle Ave., both of La Salle, Ill. 61301

Continuation-in-part of Ser. No. 11,097, Feb. 13, 1970, abandoned. This application Jan. 6, 1972, Ser. No. 215,874
Int. Cl. B67d *5/22*
U.S. Cl. 222—30 **2 Claims**

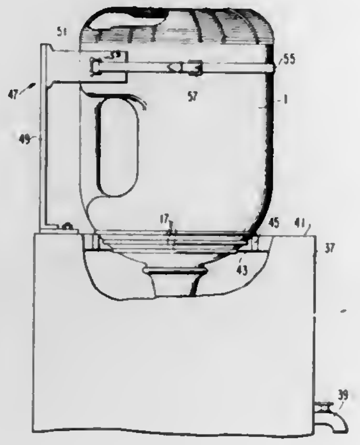


1. An apparatus for indicating the amount of flowable material dispensed from a container having an outlet in the upper portion thereof when the container is held in a pouring position comprising:
a housing secured to the container;
timing means within said housing comprising a mechanical watch mechanism having a rotationally oscillating escapement fly wheel, said timing means for timing incremental time periods, each said incremental time period corresponding to a unit of volume of the flowable material flowing from the outlet per incremental time period when the container is held in the pouring position;
position responsive activating means within said housing comprising a roller ball positioned adjacent said fly wheel so that said roller ball will contact said fly wheel to prevent rotational oscillation of said fly wheel when the container is in a non-pouring position and will roll away from said fly wheel to permit rotational oscillation of said fly wheel when the container is in a pouring position;
recording means within said housing for recording the total number of incremental time periods timed by said timing means;
visual indicating means within said housing for providing externally viewable numerical representations of the total number of incremental time periods recorded by said recording means, said visual indicating means comprising

an indicator hand rotated by said watch mechanism and a watch face divided into increments of volume so that when said indicator hand is rotated by said watch mechanism the total volume of flowable material flowing from the container is visually indicated.

3,845,884
BOTTLE WITH AN INVERTED PORTION SUPPORT AND SEALING RING

Hall and Myers, 613 Richard Rd., Wayne, Pa. 19087
Filed June 5, 1973, Ser. No. 367,270
Int. Cl. B67d *5/64*
U.S. Cl. 222—173 **8 Claims**



1. A bottle adapted to provide liquid for a liquid dispensing apparatus, said liquid dispensing apparatus comprising an upper surface having therein an orifice whose inner surface is bounded by a sealing ring which forms a primary vertical support for the bottle,

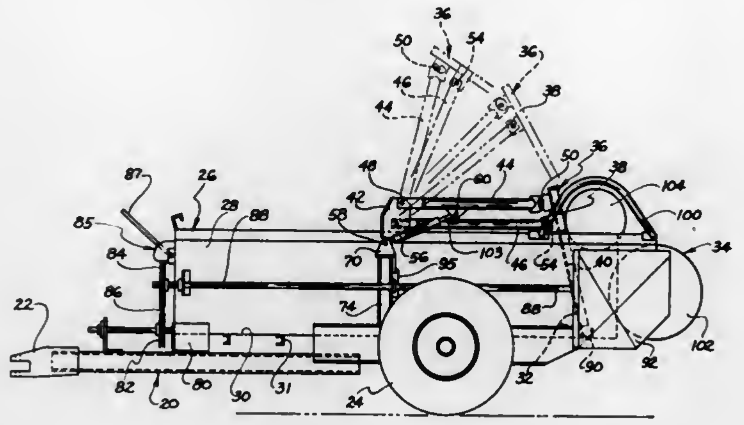
said bottle comprising a neck section, a taper section, and a body section, wherein the body section is of a substantially larger cross-section than said neck section, said taper section having two ends, one end joining to said neck section and the other end joining to said body section thereby to locate said taper section between the neck and body sections,

said taper section being provided with at least one annular ridge located a substantial distance from the end of said taper section which joins to the neck section, said ridge extending around the entire periphery of said taper section, said ridge being an integral part of the outer wall of said taper section and being of a dimension sufficient such that when said bottle is inverted for dispensing a liquid by insertion of the neck section through said orifice of said dispensing apparatus, said annular ridge bears upon said sealing ring and said sealing ring supports the weight of the bottle, thereby forming a seal to prevent impurities from entering said apparatus through said orifice.

3,845,885
MANURE SPREADER

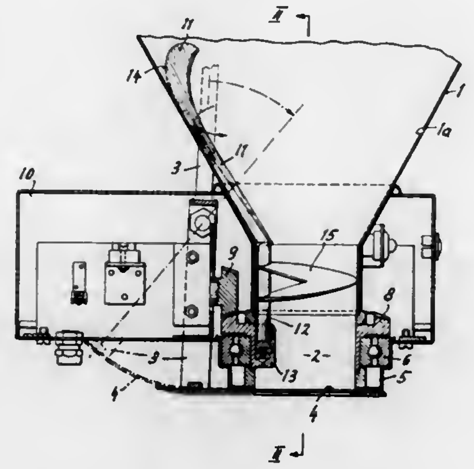
Edward A. Reed, Galion, Ohio, assignor to Harsco Corporation, Camp Hill, Pa.
Filed Dec. 22, 1972, Ser. No. 317,386
Int. Cl. A01c *15/12*
U.S. Cl. 222—176 **1 Claim**

1. A manure spreader comprising, in combination, a wheeled frame, body means on said frame and including side walls, a bottom wall, and a rear dispensing opening, beater means on said frame means rearwardly of said dispensing opening for discharging loaded material from said dispensing opening, arm mounting bracket means extending upwardly to a level above said side walls, an improved gate mechanism for said dispensing opening comprising arm means including a lower arm member provided with a lower forward arm member pivot means on said bracket means and a rear lower arm member pivot means, an upper arm member including a forward upper arm member pivot means on said bracket means and a rear upper arm member pivot means, said upper arm member being shorter in length between its pivot means than the length of said lower arm member between its pivot means, a gate including an upper gate portion pivoted on said last mentioned lower and upper arm member pivot means, respectively, and a lower gate portion normally disposed in sealed engagement with said bottom wall at said dispensing opening, and power means pivoting said arm means to open and close said dispensing opening, said arm members and pivot means forming a linkage for moving said gate rearwardly and upwardly so as to free said gate from the loaded material, both of said arm members being normally positioned at a level above said side walls when said gate is in a closed position.



3,845,886
DEVICE FOR METERING FLOWABLE SOLIDS FROM A CONTAINER

Theodor Kokeisl, Zurlindenstrasse 21, 5000 Aarau, Switzerland
Filed Nov. 17, 1972, Ser. No. 307,569
Int. Cl. G01f *11/20*
U.S. Cl. 222—241 **2 Claims**



1. A device for metering flowable materials, comprising:

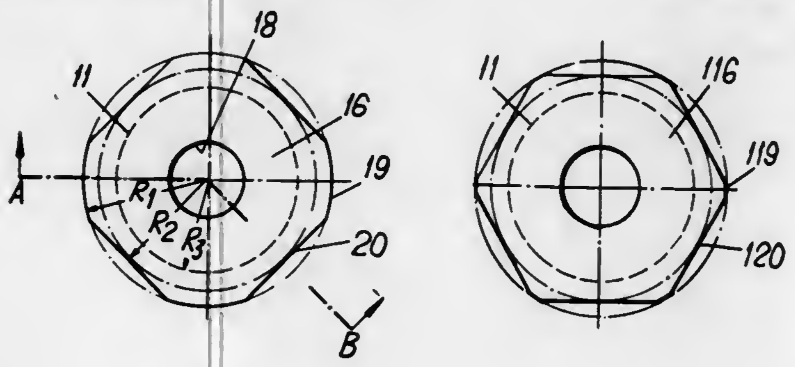
a container having a frustoconical downwardly converging bottom portion;

a body rotatable in said bottom portion and formed with an upwardly and outwardly extending generally straight elongated scraper lying along the inner surface of said bottom portion and formed with an edge effective to scrape material therefrom, said scraper having an upper end curved rearwardly in a direction opposite to the direction of rotation of said body; and

means for rotating said body to orbit said scraper along said surface in said direction, said upper end applying force to material within said bottom portion in opposition to the gravitational pressure of the material to loosen same, said scraper having the configuration of a spatula with a sharpened leading edge in the direction of rotation and bearing elastically against said surface, said edge of said scraper being inclined to said surface at a substantially constant angle over substantially its entire length, said scraper having the configuration of a piece cut from a conical casing and extending substantially to the bottom of said frustoconical portion.

3,845,887
PRESSURIZED AEROSOL DISPENSER VALVE AND GASKET

Herbert Meuresch, Falkenstein, Taunus, and Franz Zimmerhackel, Hattersheim, Main, both of Germany, assignors to Precision Valve Corporation, Yonkers, N.Y.
Filed Dec. 13, 1972, Ser. No. 314,604
Claims priority, application Germany, Dec. 17, 1971, 2162762
Int. Cl. B05b *1/10*
U.S. Cl. 222—402.16 **6 Claims**

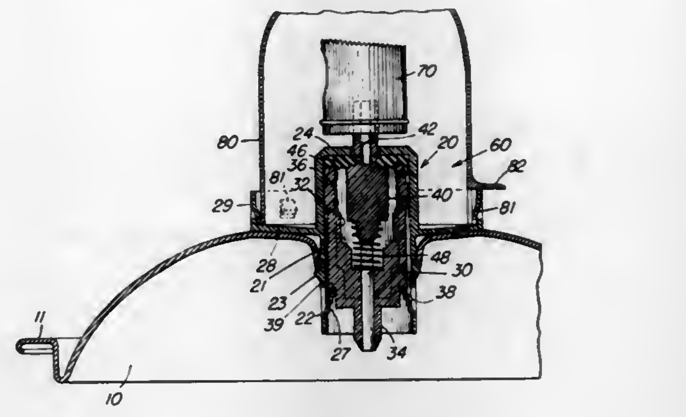


1. A pressurized dispenser carrying a valve capable of normal use as a discharge valve and of additional use as a propellant charging valve, said valve comprising a valve housing having an upper rim, a valve body within said valve housing and having a valve stem, and an apertured sealing gasket which surrounds the valve stem which gasket is clamped and forms a seal between the upper rim of the valve housing and an adjacent part of the dispenser in which the valve is mounted, said gasket having a non-circular periphery which everywhere extends radially beyond the upper rim of the valve housing to provide one or more marginal zones having reduced sealing engagement with said adjacent part of the dispenser such that when charging the dispenser with propellant each of said marginal zones is deformed and removed from its sealing relation with the said adjacent part of the dispenser to provide a propellant inlet passage leading to the dispenser externally of the valve housing.

3,845,888
SNAP-IN VALVE

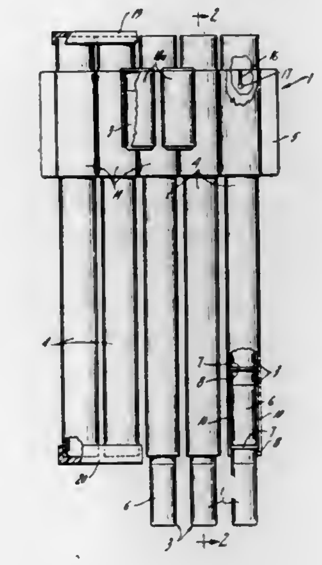
John Richard Focht, Yonkers, N.Y., assignor to Precision Valve Corporation, Yonkers, N.Y.
Filed May 7, 1971, Ser. No. 141,207
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.24 **4 Claims**

1. The combination of a metal end closure for a pressurized dispenser container, a valve unit and a plastic retainer for mounting the valve unit, the end closure including a central aperture defined by an axially inwardly projecting flange, the retainer including a cylindrical skirt portion for receiving a valve unit, the retainer including a resilient radial flange abutting the exterior surface of the end closure, the cylindrical skirt portion extending through the end closure aperture and including an annular shoulder against which the edge of the end closure flange bears to lock the retainer in place in the aperture, the end closure including a conical inward depression circumscribing the aperture whereby the radial flange of the retainer is deflected into conforming abuttment with said conical depression, the cylindrical skirt portion of the retainer also including a plurality of tabs integral with a lower portion of the skirt and extending inwardly, the free ends of the tabs bearing axially against the valve unit.



3,845,889
SHOTGUN SHELL HOLDER

Raymond M. Hurd, 2548 S. 78th St., Milwaukee, Wis. 53219
Filed May 1, 1972, Ser. No. 249,273
Int. Cl. F42b *39/00*
U.S. Cl. 224—16 **4 Claims**



1. A shotgun shell holder for releasably supporting a plurality of shotgun shells having tubular bodies with end closures defining shell lips projecting radially outwardly of the bodies, comprising

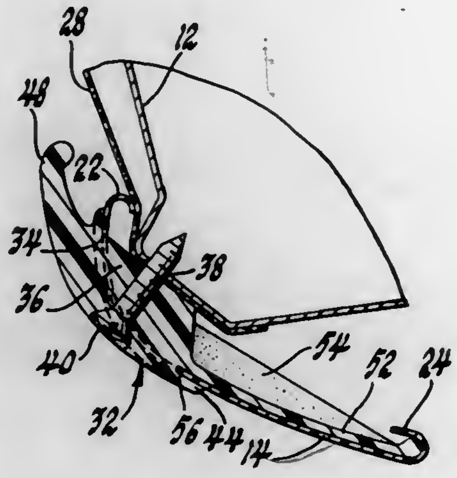
a plurality of substantially rigid tubes connected to each other, each tube being of a length equal to a substantial multiple of the shell length and having an inner diameter essentially corresponding to the diameter of the end closure to accommodate a plurality of said shells in coaxial stacked relation with each other and said tube, each tube including a lower end portion having an inner tube lip projecting inwardly to restrict the bottom opening in accordance with the diameter of the tubular body which supports the shell depending from the tube with the shell lip engaging the tube lip, said lower end portion of the member being resiliently flexible and permitting manual removal of the exposed shell from the lower end with the next succeeding shell dropping downwardly into the exposed retained position, and

mounting means including a base support plate having means for attachment to the waist of the operator and a plurality of side-by-side tubular supports which are substantially shorter than said tubes, said tubes being releasably mounted in each of said supports for releasably attaching said tubes to the body of a shooter with the lower end of the tubular member located below the waist line for convenient grasping of the exposed shell by the hand of the operator.

3,845,890
GARMENT HOOK AND GARNISH MOLDING RETAINER

Harold W. Johns, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1973, Ser. No. 418,399
Int. Cl. B60r *11/00*
U.S. Cl. 224—42.1 C **3 Claims**

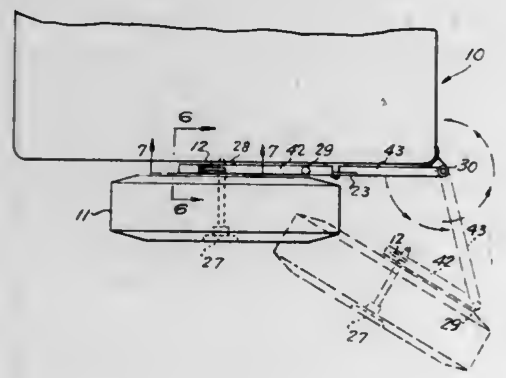


1. In combination with a vehicle body having a garnish molding with an opening therein, a garment hook comprising: a body portion adapted to be received in the opening in the garnish molding and having a central aperture for receiving means to fasten the body portion to the vehicle body, a hook portion integral with the body portion and extending generally upwardly in spaced relation from the vehicle body to be engageable by a garment, an elongated leg portion integral with the body portion extending substantially perpendicular to the longitudinal axis of the fastener means when the fastener means is inserted through said aperture and depending downwardly therefrom within the garnish molding, and means on the leg portion cooperating with means on the garnish molding to retain the garnish molding on the vehicle body.

3,845,891
SIDE AND REAR MOUNT TIRE CARRIER

Steven J. Becher, P.O. Box 783, Dolores, Colo. 81323

Filed Sept. 22, 1972, Ser. No. 291,253
Int. Cl. B62d *43/02*
U.S. Cl. 224—42.21 **6 Claims**



1. A carrier for selectively mounting an article on either of two adjacent intersecting body surfaces of a vehicle, comprising:

a. an arm having a first section and a second section pivotally connected with respect to each other;

b. means for pivotally mounting the end of said first section, remote from said second section, for rotation about a vertical axis at the intersection of said surfaces;

c. means for securing said article to said second section;

d. first latching means for securing said carrier to the first of said adjacent surfaces; and

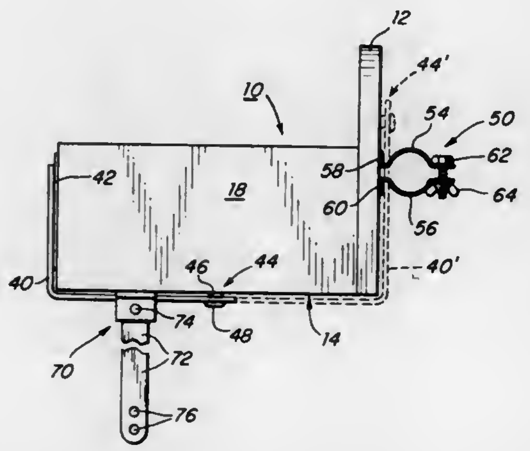
e. second latching means for securing said carrier to the second of said adjacent surfaces after said carrier has been pivoted about said intersection;

f. whereby said carrier is secured to the second surface in a folded position and to the first surface in an extended position.

3,845,892
BICYCLE SAFETY SEAT FOR CHILD

William F. Bernhardt, Jr., 7 Strang Rd., Tewksbury, Mass. 01876

Filed May 15, 1972, Ser. No. 253,062
Int. Cl. B62j *7/06*
U.S. Cl. 224—36 **4 Claims**



1. A child safety seat for mounting on a bicycle comprising a raised back portion, a seat portion connected to said raised back portion, two side arm portions connected to both said back and seat portions, a monolithic leg stock front piece having separate leg apertures and being releasably engagable with said seat portion and arm portions, means for slidably engaging said leg stock front piece with said arm and seat portions, means for securing said leg stock front piece in position relative to said arm and seat portions including a strap fixed to said leg stock front piece and extending beneath said seat portion and being releasably attachable to at least one of said seat and back portions; a pair of clamps fastened to said back portion in spaced relation to each other for securing said seat to the handlebars of the bicycle, a pair of spaced pivot supports mounted on the bottom of said seat portion and a pair of struts pivotally attached to said pivot supports at one end and adapted at the other end for engagement with the front axle of the bicycle, said leg stock front piece being movable upon release of said strap to permit a child to be installed in or removed from said seat.

3,845,893
METHODS FOR CUTTING AND RAISING SUBMERGED MASSES

Mark P. Banjavich, New Orleans, La., assignor to Taylor Diving & Salvage Co., Inc., Bell Chasse, Plaquemines Parish, La.

Filed Apr. 10, 1973, Ser. No. 349,748
Int. Cl. B26f *3/00*
U.S. Cl. 225—1 **8 Claims**

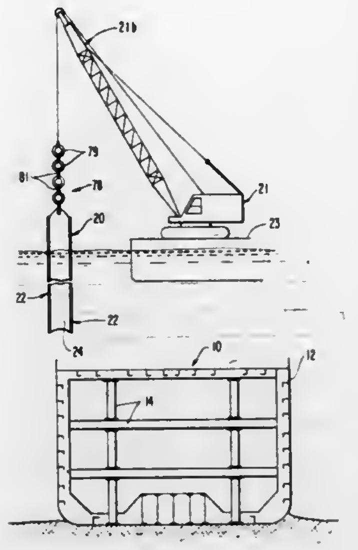
1. A method for cutting a mass which is submerged within a body of water, said method comprising the steps of:

positioning a chopping tool over said submerged mass;

releasing the chopping tool for downward movement toward said mass;

impacting said chopping tool against said mass to penetrate and cut said mass;

raising said tool by means of a hoisting mechanism connected to said tool; and

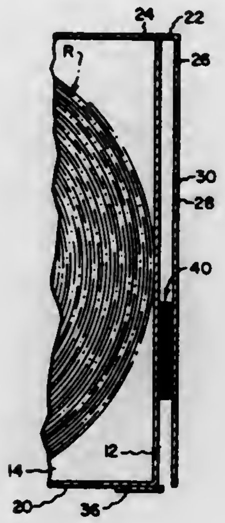


repeating said steps of positioning, releasing, impacting, and raising until the mass is in a desired cut condition.

3,845,894
FILM RETAINING DISPENSER ATTACHMENT

David G. Merlin, 333 MacArthur Dr., Williamsville, N.Y. 14221

Filed Mar. 7, 1973, Ser. No. 338,855
Int. Cl. B26f *3/02*
U.S. Cl. 225—25 **16 Claims**

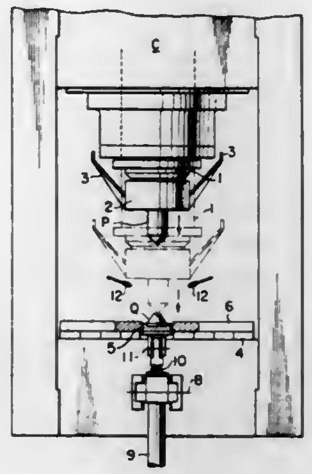


1. A container for dispensing film and including a trailing wall, a leading wall joined to said trailing wall, cutting means arranged along the outer juncture of said leading and trailing walls, a tear strip, and means removably securing said tear strip to the outer side of said leading wall prior to feeding the lead of the film over said outer side of said leading wall and beyond said trailing wall for severing such lead by said cutting means, wherein the improvement comprises: separable laminated film retaining attachment means arranged between said tear strip and said leading wall, and including an inner substrate secured to the outer side of said leading wall and having a pressure sensitive adhesive outer surface, and an outer substrate secured to the inner side of said tear strip and having an adhesive resistant inner surface contacting and forming an interface with said adhesive outer surface, whereby upon removal of said tear strip said inner and outer substrates separate along said interface to expose said pressure sensitive adhesive outer surface for releasably retaining the remaining portion of the severed lead for subsequent feeding and severing operations.

3,845,895
APPARATUS FOR CRACKING CASTINGS

Yositaka Nakahara, Nagoya, Japan, assignor to Nagoya Metal Co., Ltd., Nakagawa-Ku, Nagoya, Japan

Filed Feb. 28, 1974, Ser. No. 447,021
Int. Cl. B26f *3/00*
U.S. Cl. 225—93.5 **1 Claim**

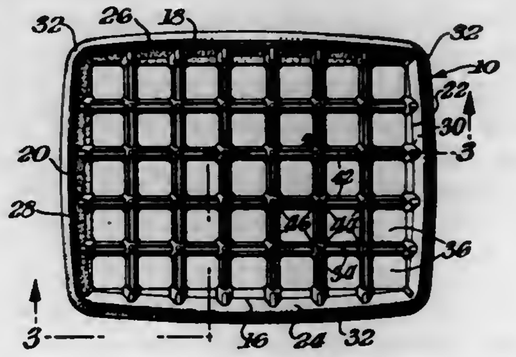


1. An apparatus for cracking castings characterized in that; a piece to be cracked, placed on a crackingtool receiving member fixedly mounted on a bedplate is given a pressure progressively by a cracking tool, said cracking tool being located above said piece and adapted to be vertically moved by means of hydraulic pressure so as to lodge its point in said piece by the co-operation of said cracking-tool receiving member; and, when an abrupt temperature rise occurs in a press-and-slide portion on a lodged face in said piece on which portion the cracking tool is slidingly pressed, cooling water is injected on to said press-and-slide portion, with the continuing downward motion of said cracking tool for exerting pressure thereon, whereby physical and chemical actions are concurrently caused, thereby instantaneously producing a cracking force of several times as high as a power possessed by said cracking tool itself.

3,845,896
OPEN BOTTOM TRAY WITH MULTIPLE PEDESTAL DISPLAY PLATFORM

Kenneth L. Crabtree, Fairfield, Maine, assignor to Keyes Fibre Company, Waterville, Maine

Filed Jan. 31, 1973, Ser. No. 328,426
Int. Cl. B65d *1/34, 25/54, 65/16*
U.S. Cl. 229—2.5 **9 Claims**



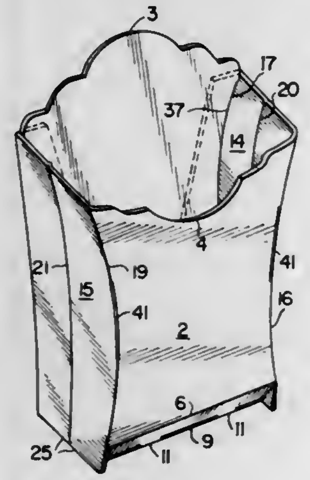
1. An open top tray for packaging products, such as moist pieces of meat, fish or poultry in conjunction with a transparent wrapping enclosing both the tray and the product packaged thereon, molded to final shape from generally opaque material which in the empty condition is capable of being

nestably stacked with other like trays for shipment and storage, the tray comprising at least two opposed beam portions defining the overall shape of the tray, the bottom of the tray being formed by a plurality of downwardly opening channel shaped ribs spaced from each other to provide a plurality of open viewing windows and integrally joined to the beam portions to maintain them in properly spaced relationship, a plurality of hollow pedestals projecting upwardly from the ribs, the pedestals tapering to narrow crown portions which are substantially thicker than the average thickness of the generally opaque material from which the remainder of the tray is molded, the upper surfaces of the crown portions being slightly rounded and of sufficient area that they define a display platform for supporting the product packaged thereon without puncturing the surface of the product.

3,845,897
SNAP-ERECTED CONTAINER

Kenneth T. Buttery, and Thomas Vander Lugt, Jr., both of Kalamazoo, Mich., assignors to Brown Company, Kalamazoo, Mich.

Filed Nov. 28, 1972, Ser. No. 310,124
Int. Cl. B65d *5/00, 5/36*
U.S. Cl. 229—16 R **11 Claims**



1. A carton comprising a front wall panel, a rear wall panel, and a pair of end wall panels hingedly connected together at arcuate score lines defining complementary convex and concave side edges of adjacent panels, said end wall panels having bisecting folding score lines provided therein permitting said carton to be folded flat, an open top, and a bottom panel hingedly connected to the lower edges of said front and rear wall panels, but unconnected to the lower edges of said end wall panels, wherein the side edges of said end wall panels are arcuately convex and the side edges of said front and rear wall panels are arcuately concave, whereby said carton may be snapped from flat folded position into open position by squeezing the end wall panels thereof with the fingers of one hand and whereby said carton remains in said open position with said end wall panels curved arcuately concave outwardly, the bottom of said carton bulging downwardly and having a bottom plane not lower than the lower edges of said end wall panels so as to provide stability of said carton upon standing.

3,845,898
COLLAPSIBLE COMPARTMENTED BOX

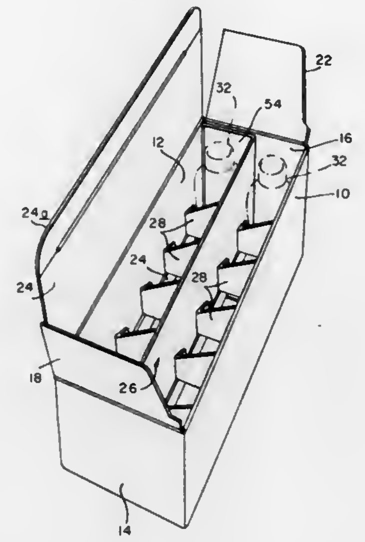
Robert A. Hackenberg, East Lyme, Conn., assignor to Robertson Paper Box Co., Inc., Montville, Conn.

Filed Jan. 29, 1973, Ser. No. 327,652
Int. Cl. B65d *5/48*
U.S. Cl. 229—28 R **3 Claims**

1. A blank for forming a collapsible compartmented box comprising

A. an aligned series of four contiguous panels for forming the front, rear and side walls of the box,

B. two additional panels aligned with the series of panels, the width of one additional panel being approximately one-half the width of the panels forming the side walls of the box, the other additional panel being substantially as long as the panels forming the front and rear walls of the box, and

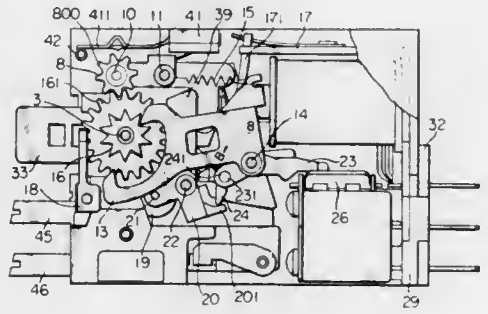


C. a pair of identical divider panels hinged to corresponding long edges of the second additional panel and one of the panels for forming the front and rear walls of the box, each divider panel having a plurality of diagonal cuts centered on its longitudinal axis.

3,845,899
ELECTROMAGNETIC COUNTER

Tatsuhiko Irie; Kazuhiko Hara, and Akihiro Kuroyanagi, all of Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Oct. 10, 1973, Ser. No. 405,164
Claims priority, application Japan, Oct. 14, 1972, 47-102978
Int. Cl. G06m *1/30*
U.S. Cl. 235—92 C **13 Claims**



1. An electromagnetic counter comrising in combination

a. a counting means including
  a plurality of digit wheels corresponding in number to desired number of units of a figure to be counted and being supported rotatably on a common shaft,
  said digit wheels having respectively a heart cam at a side surface, and
  a plurality of pinions supported on a common shaft and respectively associated with said digit wheels for raising the unit of counting figure;

b. a drive means for driving said counting means including an electromagnetic device performing attraction of an associated armature in response to an input for counting, and
  means for rotating one of the digit wheels at the lowest unit position in response to the attracted motion of said armature;

c. a reset means for resetting the digit wheels including
  a resetting button slidably mounted,
  means responsive to a sliding of said resetting button for engaging said heart cam of the respective digit wheels to reset the digit wheels to their original positions, and means cooperative with said engaging means for releasing said association of the pinions with the digit wheels and controlling the released position of the pinions to be constant and their rotation to be restricted;

d. a frame member for integrally supporting and assembling said respective means therein;

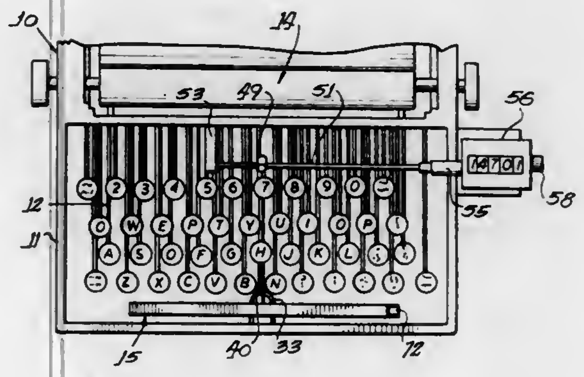
e. a housing for accommodating said frame member; and

f. a key means for enabling said reset means to be operable;
  said resetting button comprising at least two split members, one of said split members being a reset actuating member and the other being a guide member;
  said frame member including a detachable stopper means for locking said guide member; and
  said housing having a clearance provided around said resetting button for allowing the key means to be inserted, so that said actuating will be operated directly by the key means inserted without through the guide member, thereby the reset means is enabled to operate.

3,845,900
AUTOMATIC WORD COUNTING APPARATUS FOR A TYPEWRITER

Sergio A. Anchia, 3283 N.W. 16st, Miami, Fla. 33125

Filed Oct. 29, 1973, Ser. No. 410,528
Int. Cl. B41j *9/24*
U.S. Cl. 235—102 **4 Claims**

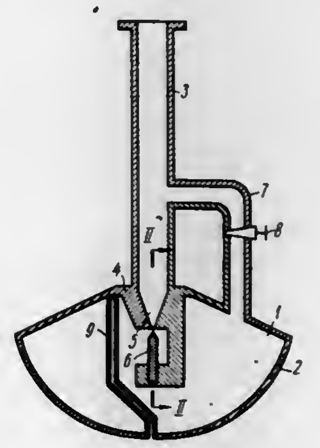


1. An automatic word counting apparatus for counting the words typed on a standard typewriting machine having conventional letter, number, and punctuation keys and a normal spacer bar, the apparatus comprising a bracket mounted to the typewriter frame in a position beneath the spacer bar and projecting inwardly of the typewriter frame therefrom, a rocker arm having a point pivotally connected to the bracket for rocking movement about the pivot point and dividing the rocker arm into a first end section disposed beneath the spacer bar and spaced downwardly therefrom, and a second rocker arm section disposed on the opposite side of the pivot point and projecting away from the first rocker arm section, pivotable linkage means having one end operatively connected to the end of the second section of the rocker arm, a rod extending substantially normal to the axis of the rocker arm, support means mounted to the typewriter frame adapted to rotatably support the rod for rotation about the axis of the rod, the opposite end of the linkage means fixedly connected to the rod to effect the rotation thereof about its axis upon operation of the rocker arm, a one-stage ratchet operated counting mechanism having a drive shaft extending outwardly therefrom and operatively connected to the rod for rotative driving thereby upon actuation of the rocker arm, the counter mechanism including a reset knob projecting from the housing of the counter mechanism and adapted for resetting the counter to zero at the desires of the individual operating the typewriting machine, and means selectably interconnecting the end of the rocker arm disposed beneath the spacer bar to the spacer bar, and an actuating mechanism adapted to selectively engage and disengage the rocker arm from movement with the spacer bar to effect the engagement and disengagement of the counter mechanism from counting the number of words being typed on the typewriting machine, and a switch device operatively associated with the actuating mechanism and movable between an on and off position whereby in the on position the actuating device interconnects the rocker arm to the spacer bar for movement therewith to count the words being typed, and when the switch device is in the off position the actuating device disengages the spacer bar from the rocker arm thus de-activating the counter mechanism.

3,845,901
DEVICE FOR SPRAYING LIQUID PRODUCTS AND MELTS

Petr Stepanovich Voloshin, prospekt Lenina, 47, kv. 2, Dzerzhinsk; Mark Efremovich Ivanov, Stremyanny pereulok, 16/18, Moscow; Boris Alexeevich Klopovsky, ulitsa I. Susanina, 6, korpus 4, kv. 39, Moscow; Viktor Mikhailovich Lindin, ulitsa Polbina, 62, korpus 1, kv. 107, Moscow; Boris Georgievich Novitsky, Dubinskaya ulitsa, 45, kv. 30, Moscow; Viktor Markovich Olevsky, Leningradsky prospekt, 75 a, kv. 91, Moscow, and Viktor Mironovich Fridman, Karetny ryad, 5/10, kv. 180, Moscow, all of U.S.S.R.

Filed July 24, 1973, Ser. No. 382,181
Int. Cl. B05b *3/14*
U.S. Cl. 239—102 **8 Claims**



1. A device for spraying a liquid product, comprising a chamber, a perforated bottom for said chamber, a branch pipe for introducing pressurized product to be sprayed into said chamber, a nozzle on said branch pipe and adapted to supply the liquid product into said chamber, an elastic member mounted in said chamber opposite the nozzle to undergo oscillatory motion under the effect of the flow of liquid product from said nozzle, said elastic member imparting acoustic oscillation to the liquid product, said elastic member comprising a cylindrical sleeve including a wall with longitudinal grooves therein, said nozzle comprising an annular member embracing said cylindrical sleeve with a jet opening therein facing said sleeve so that liquid flow from said jet opening is directed substantially perpendicularly towards said wall of said cylindrical sleeve.

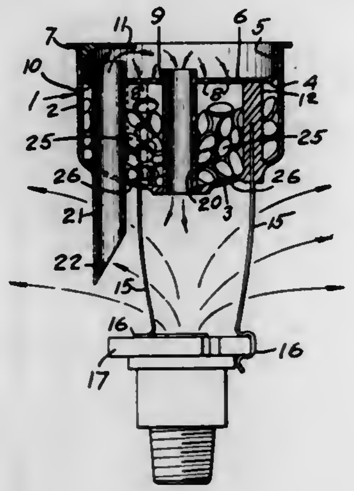
3,845,902
SPRINKLER FEEDER FOR LAWN FOOD

William B. Delamater, 9114 Valley View, Whittier, Calif. 90603

Filed Feb. 11, 1972, Ser. No. 215,979
Int. Cl. A01c *15/00*
U.S. Cl. 239—314 **5 Claims**

1. A sprinkler feeder for agricultural fertilizing chemicals for use with sprinkler heads and nozzles for spraying water

over a given area: comprising, a body for holding fertilizing chemicals, a lid for said body for maintaining the fertilizing chemicals within the body, means for supporting the body above a sprinkler head, means for directing a portion of the spray from said sprinkler head to said lid for passage through the lid into the body to dissolve the fertilizer, and means extending between the lid and the body for directing fertilizer received within the lid into the path of spray from said sprinkler head.



3,845,903

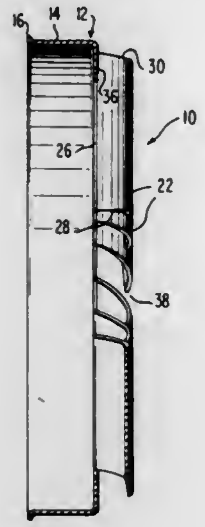
ONE PIECE RADIAL VANE DIFFUSER AND METHOD OF MANUFACTURING THE SAME

Frederick L. Runninger, Harrisonburg, Va., assignor to Dunham-Bush, Inc., Harrisonburg, Va.

Filed Aug. 15, 1973, Ser. No. 388,669

Int. Cl. B05b *7/06;* **B21k** *3/04*

U.S. Cl. 239—406 **10 Claims**



1. A one piece radial vane diffuser comprising: a circular metal sheet including an annular rim, a plurality of circumferentially spaced radial vanes partially struck from said sheet and being joined to said rim at their radially outermost ends by hinges integral with said rim, said vanes being of a width so as to overlap at their side edges, and said vanes being similarly twisted at said hinges, about a radial axis extending through said hinges to form air passages therebetween.

3,845,904

VARIABLE FLOW TWO STAGE NOZZLE

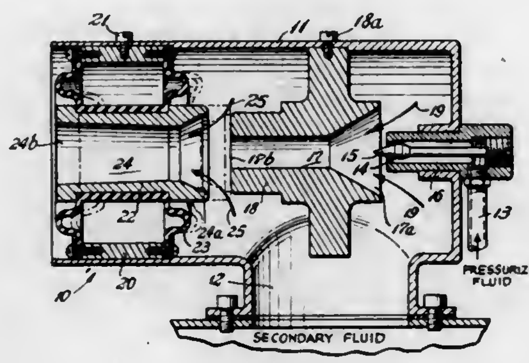
Zenon R. Mocarski, Easton, Conn., assignor to S.R.C. Laboratories, Inc., Fairfield, Conn.

Filed Dec. 7, 1973, Ser. No. 422,880

Int. Cl. B05b *7/12*

U.S. Cl. 239—410 **17 Claims**

1. A variable flow two stage nozzle comprising a first nozzle means having a first passageway formed with an exit, means connectible to a source of pressurized fluid for directing a flow of pressurized fluid into the first passageway and means for communicating the passageway with a source of secondary fluid whereby flow of pressurized fluid in the first passageway induces flow of secondary fluid therein to have both fluids be ejected from the exit; a second nozzle means having a second passageway formed with an exit, means for directing the flow from the first nozzle means into the second passageway and means for communicating the second passageway to another source of secondary fluid whereby the flow of the fluid from the first passageway into the second passageway induces the flow of secondary fluid in the second passageway to have the fluids discharged from the second passageway exit and means responsive to a selected value of pressure differential existing between adjacent the exit of the second passageway and the another source of secondary fluid for closing the communicating means between the second passageway and the another source of secondary fluid.



3,845,905

METHOD AND DEVICE FOR PREPARING GRAVEL

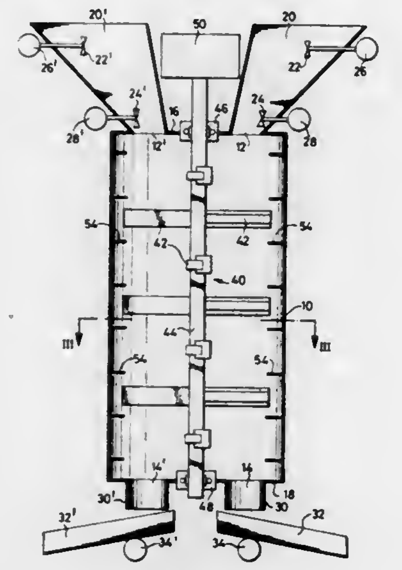
Josef Haslberger, Landshuter Strasse 30, D 805 Freising, Germany

Filed Mar. 5, 1973, Ser. No. 337,959

Claims priority, application Germany, Mar. 14, 1972, 2212251

Int. Cl. B02c *17/16*

U.S. Cl. 241—26 **12 Claims**



1. In a method for preparing raw gravel for screening or washing of extraneous material therefrom the improvement comprising mechanically comminuting said extraneous lump material by crushing the lump material with stones of the gravel prior to screening or washing, said comminuting step comprising stirring said raw gravel with a stirrer in a vertical container, moving the material from the top to the bottom of the container, and holding said raw gravel in the range of action of said stirrer in said container for a selected time.

3,845,906

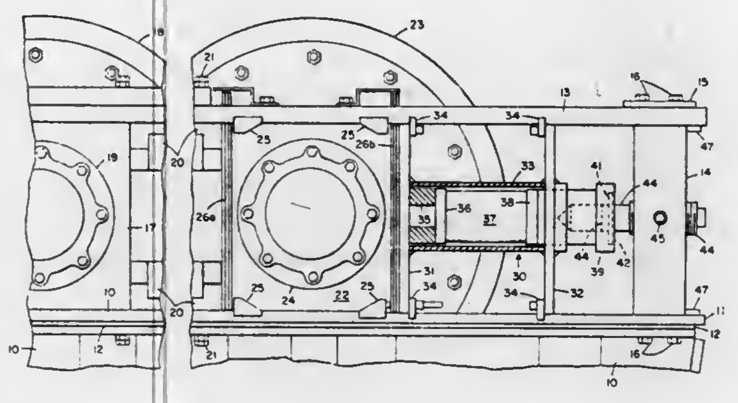
MECHANICAL ACCUMULATORS FOR ROLL CRUSHERS

Floyd A. Lillig, and Edward O. Spangler, both of Cedar Rapids, Iowa, assignors to Iowa Manufacturing Company, Cedar Rapids, Iowa

Filed Apr. 21, 1972, Ser. No. 245,958

Int. Cl. B02c *4/32;* **B03c** *23/04*

U.S. Cl. 241—32 **8 Claims**



1. In a roll type crusher having a frame and a pair of spaced crushing rolls journaled at each of their axial ends for rotation on the frame adapted to crush material therebetween by rotation of the rolls with respect to each other, at least one of the rolls being movable with respect to the other in order to adjust the spacing therebetween, the improvement in combination therewith of a pair of mechanical accumulators for substantially maintaining a predetermined spacing between the rolls during their crushing operation up to a predetermined load, the accumulators accomodating an overload by increasing the predetermined spacing until the overload has terminated and thereafter restoring the predetermined spacing, each of the accumulators comprising: a housing having opposite ends and a peripheral wall extending lengthwise of the housing; a block of material in the housing having opposite ends and a peripheral wall extending lengthwise of the block and the housing; the block ends being associated with respective ones of the housing ends, and the peripheral wall of the block being in spaced relation to the periphal wall of the housing; the housing and block being disposed between a portion of the frame and one of the movable journals and operatively associated with both so that thrust between the rolls is communicated to the block ends and resisted by the body of the block lengthwise thereof, the block being constituted of a material effective to substantially maintain the predetermined roll spacing up to the predetermined load and upon a first overload to compress lengthwise and expand peripherally towards the housing wall in order to increase the predetermined roll spacing but upon termination of the first overload to expand lengthwise and contract peripherally effective to restore the predetermined roll spacing; and adjusting means operative between one of the block ends and one of the movable journals and frame portion to permit adjustment of the predetermined roll spacing independently of operation of the accumulator.

3,845,907

APPARATUS FOR COMMINUTING TRASH

Werner Schwarz, Bochumer Strasse 20, Seeheim A.D.B., Germany

Continuation-in-part of Ser. No. 180,687, Sept. 15, 1971, abandoned. This application Oct. 1, 1973, Ser. No. 402,590

Claims priority, application Germany, Oct. 22, 1970, 2051756; Apr. 10, 1971, 2117519

Int. Cl. B02 *18/06*

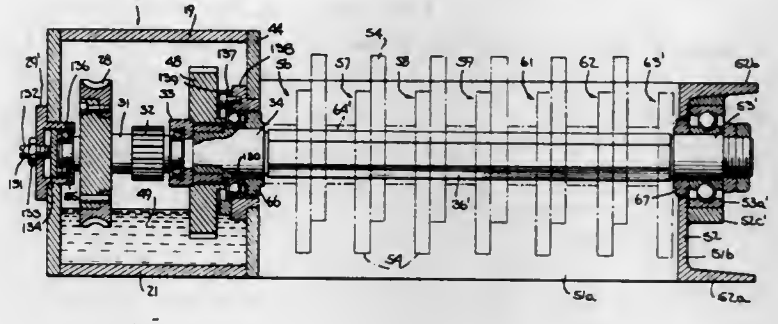
U.S. Cl. 241—36 **22 Claims**

1. Apparatus for comminuting trash comprising:

a. a motor;

b. at least two parallel shafts driven at least indirectly by said motor;

c. a plurality of disc-shaped blades disposed on each of said shafts and secured thereto for rotation therewith, each of said blades having at least one tongue extending into the direction of rotation and at least some of the blades on each of said shafts being spaced from adjacent blades on the same shaft, with the blades on one shaft extending into the spaces between blades on the opposite shaft;



d. means for rotatably supporting one of said shafts so as to have at least a predetermined degree of axial play parallel to said shaft associated therewith;

e. means for rotatably supporting the other of said shafts so as to have substantially no axial play associated therewith relative to the one shaft, and

f. the blades on one shaft extending into said spaces on the other shaft with a clearance equal to said predetermined degree of axial play.

3,845,908

CONVEYOR MACHINE FOR SUSPENSIONS AND VISCOUS MATERIALS HAVING A CAGE-LIKE HOUSING

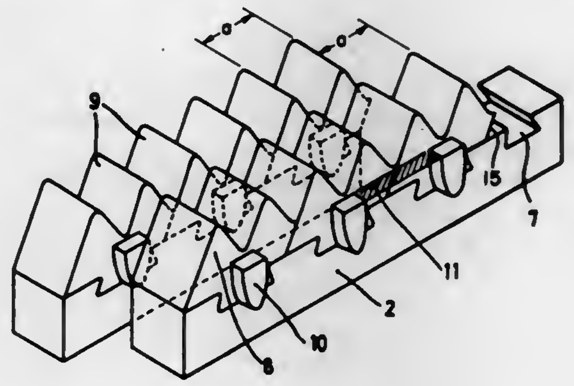
Heinrich Friedenreich, Limburgerhof; Bernhard Suck, Luwigshafen, and Juergen Reitsch, Bochum, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Oct. 16, 1972, Ser. No. 297,633

Claims priority, application Germany, Oct. 22, 1971, 2152704; Apr. 15, 1972, 7214292

Int. Cl. B02c *13/10*

U.S. Cl. 241—46.11 **5 Claims**



1. In a comminuting conveyor machine for suspensions, viscous materials and free-flowing solids having an internal conveying rotor and a peripheral cage-like housing stator comprising a plurality of axially extending bar and annular elements fitted together, the improvement of a plurality of tooth-shaped abrasion-resistant members replaceably retained by tongue and groove engagement on the inner surface of each of said plurality of axially extending bar to form a corresponding plurality of profiled toothed racks pointing inwardly from the periphery of the stator toward the axis of rotation, to form a shear and impact zone between themselves and the conveying rotor, each of said tooth-shaped members having an integral, abrasion-resistant projection on its side surface

which bears against the side of an adjacent tooth-shaped member on the next adjacent bar, the projections along each profiled toothed rack thereby providing axially spaced annular openings between adjacent bars for the passage of the material being treated.

3,845,909

GRINDING APPARATUS FOR VEGETABLE MATERIALS

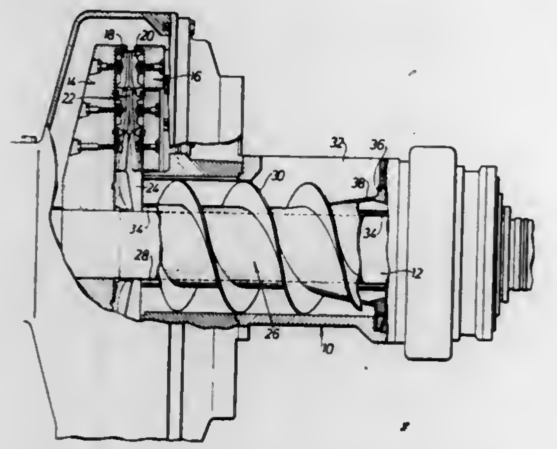
Inge J. G. Johansson, Falkvagen 61, 183 50 Taby, Sweden

Filed May 3, 1973, Ser. No. 357,010

Claims priority, application Sweden, May 10, 1972, 6254/72

Int. Cl. B02c *7/06*

U.S. Cl. 241—65 **3 Claims**



1. In a grinding apparatus, for vegetable materials, of the type comprising two grinding discs mounted rotatably in relation to one another within a stationary frame, at least one of said grinding discs being carried by a rotatable shaft surrounded concentrically and freely by a screw conveyor for feeding material to be ground from an inlet opening in the frame to the grinding surfaces of the discs, and driven at a lesser number of revolutions per minute than said shaft; the improvement which comprises a stuffing box disposed between the shaft and the conveyor laterally of the inlet opening, said stuffing box being supplied with water under pressure through channels formed in the conveyor which channels in turn communicate with a stationary feeding channel from an external pressure water source over a second stuffing box located between said frame and said conveyor screw.

3,845,910

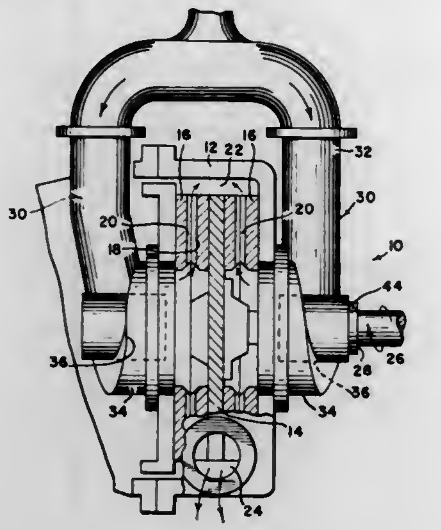
INLETS FOR A DOUBLE DISC REFINER

William Richard Cledaniel, Andover, Mass., assignor to Bolton-Emerson, Inc., Lawrence, Mass.

Filed Oct. 10, 1972, Ser. No. 296,130

Int. Cl. B02c *7/06, 23/02*

U.S. Cl. 241—245 **7 Claims**



1. In a double disc paper stock refiner having refining plates with an inner circumference mounted on the discs, the improvement wherein the stock supply means includes two flow-conditioning stock inlet means, each said stock inlet means being arranged to discharge stock in the same rotational direction and comprising:

an inlet conduit tangentially arranged with respect to a flow-conditioning chamber, said chamber having an inner, and an outer, circumferential wall;

a helically-shaped wall forming the back wall of said chamber and forming means to impart circular and axial velocity to the stock coming into said chamber through said tangentially arranged conduit, said helically-shaped wall extending to the outer circumferential wall of said flow-conditioning chamber from

the said inner circumferential wall of a centrally located plug member mounted axially in said flow-conditioning chamber, and

an annular opening from said chamber into said paper stock refiner, said opening adapted to discharge paper stock proximate the said inner circumference of said refining plates.

3,845,911

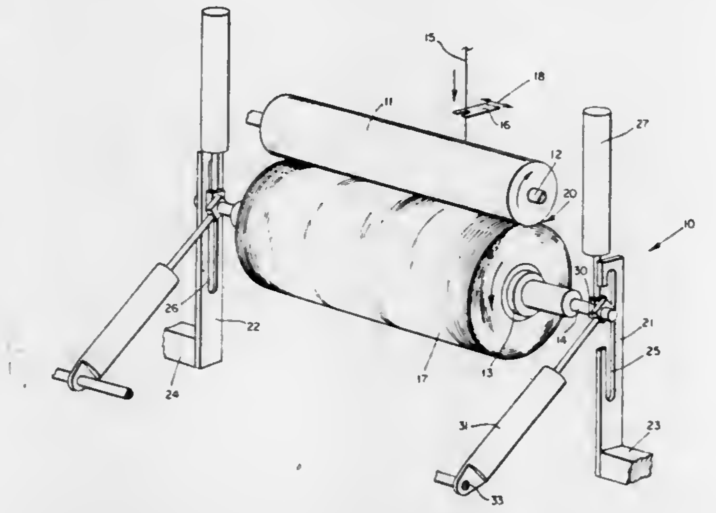
WINDER

William Kirk Wyatt, Lansdale, Pa., assignor to Turbo Machine Company, Lansdale, Pa.

Filed Oct. 31, 1972, Ser. No. 302,555

Int. Cl. B65h *54/20, 54/52*

U.S. Cl. 242—18 DD **20 Claims**



1. A winder for wind-up of continuous strand material or the like into a package comprising, a drive roll for rotationally driving against the surface of a package of ever-increasing diameter that is disposed as an idler roll, an idler roll adapted for receiving strand material or the like fed thereto in wound relation thereabout for package formation thereon, means for continuously guiding strand material to the idler roll, said idler roll being mounted for rotation about an axis, path means providing a predetermined path of continuous displacement of the axis of the idler roll as the package thereon increases in diameter, said path being of other than horizontal disposition, and variable force exerting means in engaged relation with the idler roll for applying forces to the idler roll in the direction of said path that vary continuously as long as the diameter of the package on the idler roll increases, wherein said force exerting means comprises first constant force application means operative for applying substantially constant force to the idler roll in the direction of the path of displacement of the axis of the idler roll, and a second constant force application means operative for applying a substantially constant force to the idler roll in an angular direction relative to the path of displacement of the axis of the idler roll that continuously approaches an angular direction more greatly transverse to the path of displacement of the axis of the idler roll as the size of the package increases from its initial to its final diameter.

3,845,912

PROCESS AND DEVICES FOR THE WINDING OF CONTINUOUS FIBERS-PARTICULARLY GLASS FIBERS—IN THE FORM OF BOBBINS

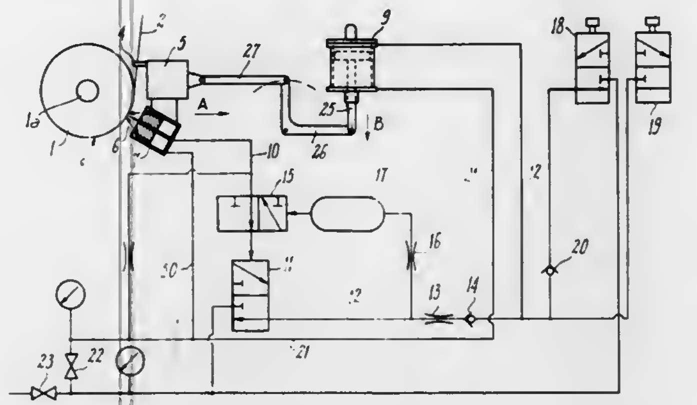
Winfried Paul Eichmanns, Rheydt; Hans-Joachim Finken, Nizzaallee, and Guenther Winand Mager, Stolberg, all of Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Apr. 27, 1973, Ser. No. 355,267

Claims priority, application France, Apr. 28, 1972, 72.15343

Int. Cl. B65h *54/02, 54/28*

U.S. Cl. 242—18 R **10 Claims**



1. Apparatus for winding continuous fibers, especially glass fibers, on a rotating sleeve, comprising a thread guide having a support and means providing for traverse motion of the guide in a direction parallel to the axis of the sleeve, the guide support being mounted for motion in a direction toward and away from the surface of the winding being applied to the sleeve, and mechanism for effecting such motion of the support and thus of the thread guide toward and away from the surface of the winding including a fluid pressure operable device, a fluid pressure gauge mounted to move with the support and having means for directing a fluid jet against the surface of the winding of the sleeve and means for sensing jet fluid reflected from the surface of the winding, and fluid pressure means responsive to reflected jet fluid as sensed by said gauge for delivering actuating fluid to said device to effect motion of the fiber guide support.

3,845,913

METHOD AND APPARATUS FOR WINDING WIRE

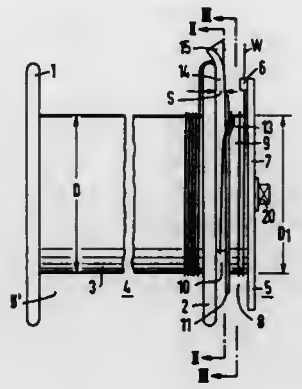
Werner Hagen, Penzendorf, Germany, assignor to Maschinenfabrik Niehoff-Kommanditgesellschaft, Schwabachfurtherstr, Germany

Filed Nov. 10, 1972, Ser. No. 305,493

Claims priority, application Germany, Dec. 31, 1971, 2165798

Int. Cl. B65h *54/00*

U.S. Cl. 242—25 R **11 Claims**



1. Apparatus for transferring wire or the like from one spool to another comprising a main spool and an auxiliary spool coaxially arranged therewith about a central spindle said main spool having a core and a flange at each end, loop forming and storage means mounted about said spindle between said main and auxiliary spools, said loop forming and storage means comprising a first member having an arcuate peripheral edge over which said wire is adapted to move and a second member having an extending portion for guiding said wire over the adjacent flange, said peripheral edge having a radius smaller than the core of said main spool, and said extending portion protruding radially beyond said flange, and means for feeding a predetermined length of wire to said auxiliary spool to be wound thereabout, said wire being subsequently fed to said loop forming and storage device and thereafter wound about said main spool.

3,845,914

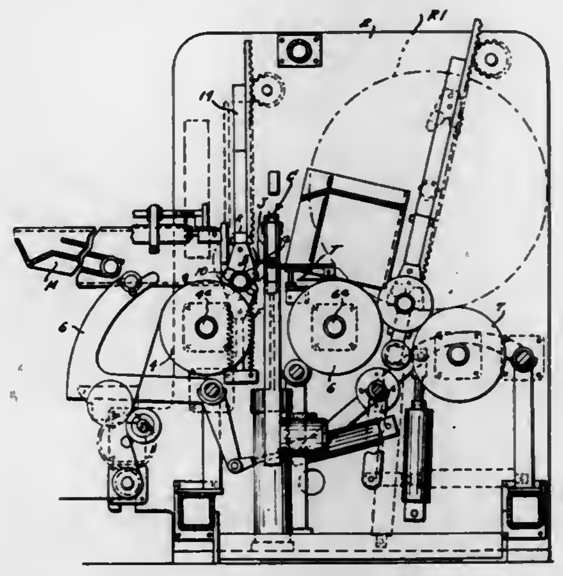
METHOD AND APPARATUS FOR CUTTING A WEB OF MATERIAL IN A WEB WINDING MACHINE AND AIR LAPPING A CUT END OF THE MATERIAL ABOUT A WINDING CORE IN THE MACHINE

John E. Straujups, Lexington, Mass., assignor to Birch Brothers, Inc., Somerville, Mass.

Filed Sept. 18, 1973, Ser. No. 398,411

Int. Cl. B65h *19/20*

U.S. Cl. 242—56 R **5 Claims**



1. A web winding machine for winding a web of material onto a roll and cutting a stretched span of the web when the roll attains a desired size, said winding machine comprising a frame having jaws and a vertically adjustable core supported in the jaws, a rear driving roll for supporting and winding a partially formed roll of the material wound around the core, a forward driving roll located in the frame in substantially horizontally spaced relation to the rear driving roll for receiving a partially wound roll while supporting a stretched span of the web extending between itself and the rear driving roll, means for transferring the partially wound roll onto the forward driving roll at a predetermined point, core feeding apparatus for moving a replacement core onto the said jaws after the partially finished roll has been moved onto the forward driving roll, a vertically reciprocating web cutter mechanism mounted in the frame at points between the rear driving roll and the forward driving roll, said cutter mechanism being movable into contact with the underside of the said stretched span of material when the partially formed roll reaches a desired size, said web cutting mechanism including an elongated gate structure having spaced apart sides and cutter means mounted between the sides, means for vertically moving the gate and engaging the cutter means with the said span to sever the web and provide a trailing end and a free cut end of material, and air lapping means located in the gate structure below the cutter means and movable therewith for supplying

travelling jets of compressed air arranged to be laterally directed against the first driving roll and which are mounted for progressive movement upwardly beneath said stretched span as said cutter means moves into a cutting position, and said travelling jets of compressed air being guided in a path of travel for movement against said cut end as cutting occurs to turn the cut end over onto the said winding core into overlapping relationship.

3,845,915
WINDING MACHINE

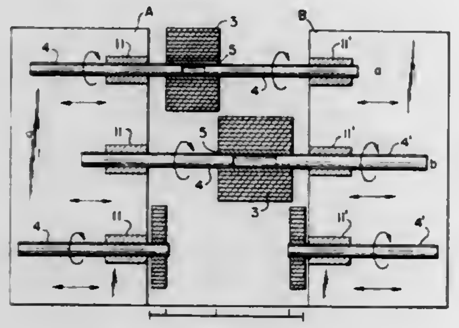
Willi Johann Schmidt, Hahn/Taunus, and Hugo Lumb, Heidesheim, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Continuation-in-part of Ser. No. 166,941, July 28, 1971, abandoned. This application July 5, 1973, Ser. No. 376,716

Claims priority, application Germany, July 29, 1970, 2037624

Int. Cl. B65h *19/00*

U.S. Cl. 242—68.4 **9 Claims**



1. An apparatus for performing winding operations comprising opposed rotatable winding shaft means supported at one end only by supporting means, and means for axially displacing at least one of said winding shaft means in said supporting means into various positions in a predetermined winding area, said winding shaft means when displaced being adapted to support winding core means for a winding roll.

3,845,916
CARTRIDGE FOR ELONGATED RECORD MEDIUM

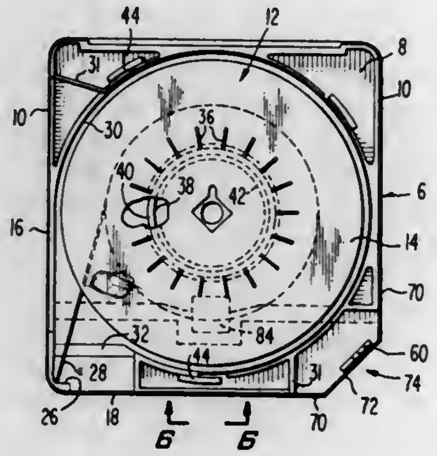
Daniel K. Livingston, Maple Shade; Bjorn Fritjof Floden, Palmyra; Harry Gilbert Wright, Haddonfield, and Wei Hwa Tsien, Cherry Hill, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 19, 1973, Ser. No. 417,387

Claims priority, application Great Britain, Mar. 23, 1973, 14240/73

Int. Cl. G03b *1/04;* **G11b** *15/32, 23/04*

U.S. Cl. 242—197 **12 Claims**



1. A cartridge for enclosing a flanged reel for an elongated record web, comprising: first and second members each having an end wall portion substantially parallel to a flange of said reel and further side wall portions aligned to define with said end wall portions a hollow enclosure for said reel, a plurality of latching means for demountably securing said first and second members together to form said enclosure, an elongated aperture formed in a first of said side walls to provide access for moving said web, a further aperture in a side wall adjacent said first side wall to provide entry and exit of said web, one of said end wall portions including a third aperture for providing driving access to said reel, first keying means in one of said end walls for proper disposition of said reel in said cartridge, and further keying means establishing proper disposition of said cartridge in a cartridge holding means.

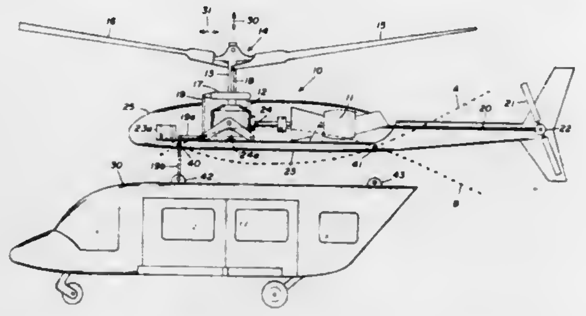
3,845,917
HELICOPTER VIBRATION ISOLATION

Jan M. Drees, Dallas, Tex., assignor to Textron Inc., Providence, R.I.

Continuation-in-part of Ser. No. 189,945, Oct. 18, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 331,614

Int. Cl. B64c *27/00*

U.S. Cl. 244—17.27 **26 Claims**



1. A helicopter having a load supporting structure which comprises:

a. a lift module including a pylon, main rotor, and controls therefor in which main rotor induced vibration at a predominant frequency becomes more intense as forward speed increases, and

b. a load carrying structure directly supported from said lift module only at nodal points on said lift module for the isolation of said vibration from said load carrying structure.

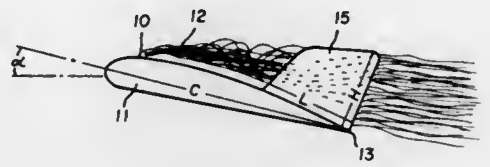
3,845,918
VORTEX DISSIPATOR

Richard P. White, Jr., Pittsford, N.Y., assignor to Rochester Applied Science Associates, Inc., Rochester, N.Y.

Filed Dec. 7, 1972, Ser. No. 313,099

Int. Cl. B64c *5/06*

U.S. Cl. 244—41 **10 Claims**



1. A dissipator for the vortex formed by a three-dimensional lifting surface, said dissipator comprising:

a. a fixed plate secured to the tip of said lifting surface;

b. said plate being aligned with the free stream flow over said lifting surface;

c. said plate extending forward from the trailing edge of said tip;

d. the length of said plate at said tip in said free stream direction being about 0.3 to 0.6 times the chord of said tip in said free stream direction;

e. said plate extending outward from the suction side of said lifting surface far enough to reach the maximum rotational velocity region of the vortex formed along said tip in any practical angle of attack of said lifting surface; and

f. said plate being arranged relative to the geometry of said lifting surface so that the resultant of the velocity of said free stream flow and the rotational velocity of said vortex produces a stall angle of attack relative to said plate to produce turbulence downstream of said plate sufficient to dissipate a substantial portion of the strength of said vortex.

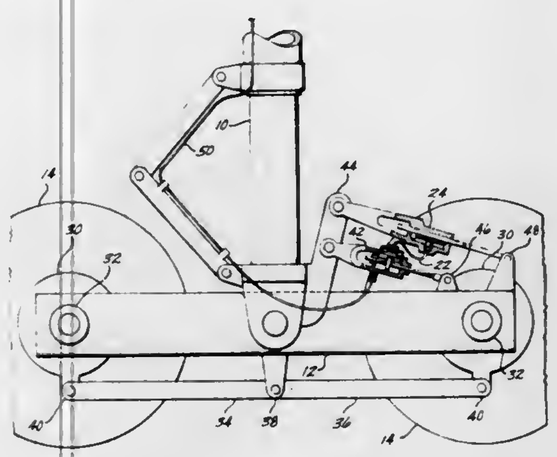
3,845,919
LANDING GEAR TRUCK PITCH DAMPING

Robert W. Jenny, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jan. 7, 1974, Ser. No. 431,189

Int. Cl. B64c *25/36*

U.S. Cl. 244—103 R **14 Claims**



1. A frictional damping device for use with a bogie or truck-type aircraft landing gear having a vertically extending strut, a horizontally extending axle beam pivoted about the lower end of said strut, and wheels rotatably mounted on axles located on said axle beam; comprising in combination:

sensing means for sensing relative angular motion between said vertical strut and horizontal axle beam; and

frictional damping means responsive to said sensing means to damp the relative angular motion by use of frictional force.

3,845,920
INFLATABLE EVACUATION RAMP

Robert S. Satterfield, Pleasant Hill, and Joseph Chacko, Corte Madera, both of Calif., assignors to Sargent Industries, Inc., Los Angeles, Calif.

Filed Jan. 14, 1972, Ser. No. 217,783

Int. Cl. B64d *25/14*

U.S. Cl. 244—137 P **30 Claims**

1. An inflatable device for use in evacuating aircraft passengers departing from an exit over the wing of the aircraft comprising

an elongated structure forming a base member and defined by

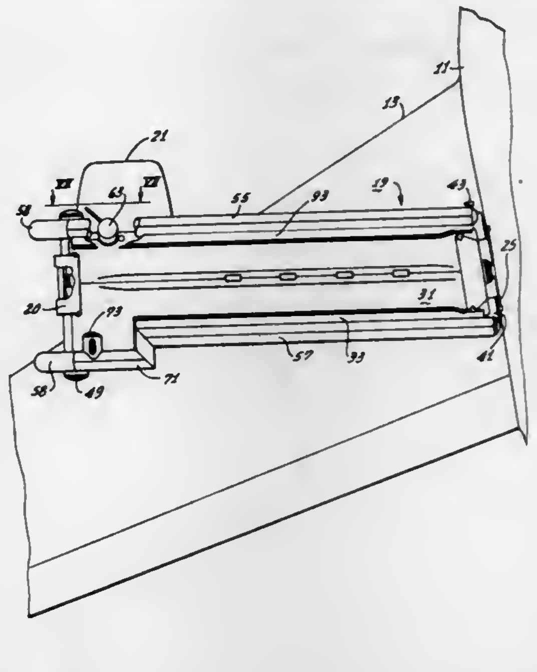
a first pair of elongated tubular members,

a second pair of relatively short tubular members extending between said first pair of tubular members near the ends thereof and in fluid communication therewith,

means near a first end of said base member adjacent the wing of the aircraft for receiving inflation injecting fluid for introduction into said base member, and

handrail means extending along and supported by said first pair of tubular members and in fluid communication with said base member only near the end thereof distal from the location for injection of air by said inflation means and

control means disposed in the path of fluid communication between said handrail means and said base member for providing for the inflation of said handrail means only after an inflation of said base member to extend the first pair of elongated tubular members to their elongated position.



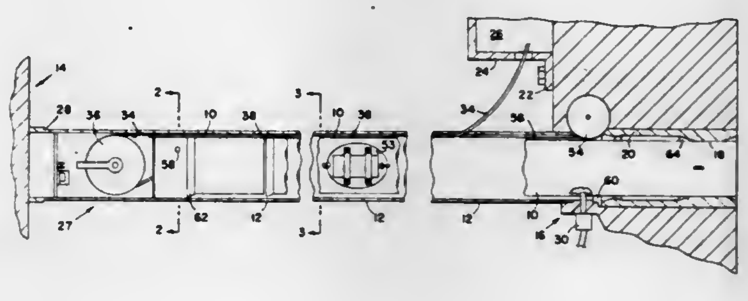
3,845,921
TELESCOPING BOOM

Thomas R. Thompson, Palos Verdes Peninsula, and Leslie A. Hromas, Rolling Hills, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 10, 1973, Ser. No. 405,228

Int. Cl. B64g *1/10*

U.S. Cl. 244—158 **6 Claims**



1. A telescoping boom comprising:

a. boom support means;

b. a guide member secured to said boom support means;

c. a boom carried in said guide member in telescoping relation therewith;

d. releasable locking means for securing said boom in a nonextended position and for release thereof for movement to an extended position;

e. means for extending said boom out of said guide member and said support means;

f. locking means for securing said boom in the extended position; and;

g. an instrument package carried in said boom support means having electric cables connected thereto and to said instruments, cable tension mechanism carried in said boom guide to prevent entanglement of said cables responsive to boom deployment, and, means for guiding said electric cable from said instrument package to said cable tension mechanism including adjacent longitudinally extending lands provided in said boom and said guide member.

3,845,922
SABOT PROJECTILE

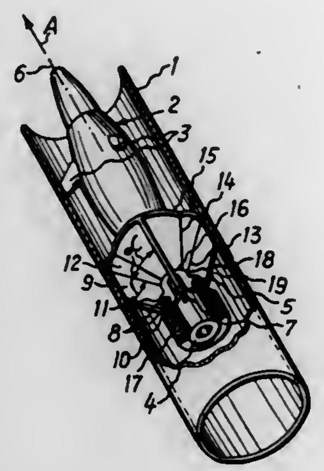
Cornelius Mayer, Fallanden, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed May 7, 1973, Ser. No. 358,141

Claims priority, application Switzerland, May 10, 1972, 6924/72

Int. Cl. F42b *13/32, 13/16*

U.S. Cl. 244—3.28 **7 Claims**



1. A sabot projectile comprising a propellant charge provided for the sabot projectile for producing a gas pressure, support means, vanes pivotably secured to said support means, said vanes in a first position forming a substantially pyramid-shaped sabot and after pivoting about an axis into a second position forming a substantially resistance-free guide mechanism, the pyramid-shaped sabot having a tip which, viewed in the direction of flight of the sabot, is directed towards the rear, said vanes having lateral boundary surfaces which in the first position of said vanes tightly bear against one another under the action of the gas pressure of the propellant charge, said vanes being constructed as a T-guide mechanism and the pivot axes of the vanes being directed perpendicular to the axis of the projectile.

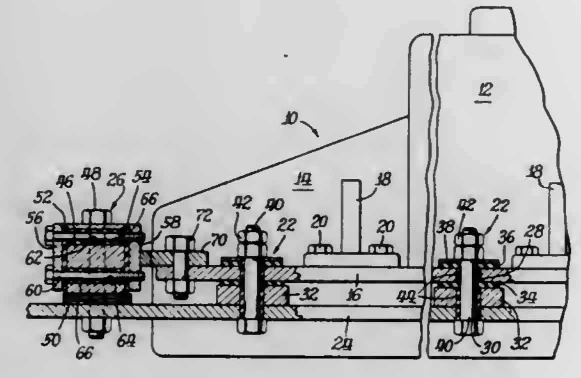
3,845,923
VIBRATION-ISOLATING MOUNTING FOR ENGINES

David William Atkinson, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 24, 1972, Ser. No. 309,240

Int. Cl. F16m *5/00;* **F16f** *15/00*

U.S. Cl. 248—3 **5 Claims**



1. A vibration-isolating mounting assembly for a marine engine and drive gear, said assembly comprising in combination:

an engine operatively connected in a drive arrangement to transmit and receive torque forces about its axis and thrust forces along said axis;

a pair of support rails extending parallel to the axis of said engine, one on each side thereof secured directly to said engine, said rails having forward and rearward ends corresponding in proximity to the forward and rearward ends of said engine;

a stationary support member extending beneath each of said support rails;

means including resilient pads, a plurality of aligned holes, each lined with a resilient sleeve in each of said rail and support members, and a bolt extending through each of said aligned holes, securing each of said rails to said support members to support said engine; and

thrust restraining means including resilient means secured between each said rail and said support member at the rearward end of said rail substantially in the plane of and substantially in alignment therewith and operative to restrain said rail against horizontal forces acting on said engine, said thrust restraining means comprising a reaction block secured to and extending upward from said support member, a pair of face plates having plane surfaces disposed on opposite sides of said reaction block and at right angles to the axis of said engine, a resilient sound absorbing pad disposed between each of said face plates and said reaction block, a flange securing one of said face plates to said rail, and

means for securing said pair of face plates together and for forcing said resilient pads into contact with said reaction block.

3,845,924
CUSHIONING AND VIBRATION DAMPING SUPPORTS

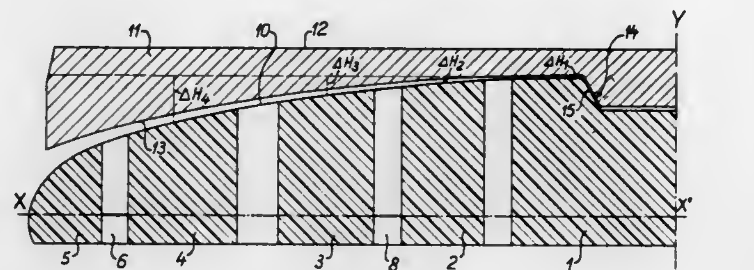
Jean Andre Taviere, and Pascal Xavier Taviere, both of Paris, France, assignors to Caoutchouc Industriel De Rochassieux S.A., La Bridoire, France

Filed Nov. 27, 1972, Ser. No. 309,682

Claims priority, application France, Nov. 30, 1971, 71.42963

Int. Cl. B60g *11/18;* **F04h** *9/02;* **F16f** *3/00*

U.S. Cl. 248—22 **16 Claims**



1. A cushioning and vibration damping support, including a plurality of independent elements comprising an elastic material, said elements being disposed about a common central axis and each having a planar base portion defining a common base plane perpendicular to said central axis and a load-supporting surface, the load-supporting surfaces of said elements approximately defining a paraboloid coaxial with said central axis wherein the distance of said load supporting surfaces from said common base plane decreases as the radial distance from said central axis increases.

3,845,925
LIGHTER SOCKET AND SCREW THREADS MOUNTING

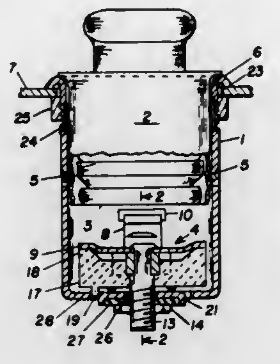
Jones Burnett Edwards, 1216-A Euclid Ave., Charlotte, N.C. 28203

Division of Ser. No. 51,454, July 1, 1970, Pat. No. 3,697,025. This application Apr. 27, 1972, Ser. No. 248,209

Int. Cl. G12b *9/02;* **F23q** *7/22*

U.S. Cl. 248—27 **1 Claim**

1. An electric cigarette lighter socket usable with a thermostatic latch, and adapted to be mounted on a panel said socket comprising a tubular member having an open top end and a closed bottom end, springy fingers lanced substantially in the upper portion of the sidewall of said tubular member, an integral flange at said top end of said tubular member for bearing against the face of a panel on which said socket is mounted, short axially elongated narrow outward indentations at intervals in the sidewall of said tubular member, beginning near said top end of said tubular member and extending rearward of said flange, cut screw threads on the outside of said indentations, narrow threaded collar means encircling said tubular member and engageable with said cut screws threads on said indentations for clamping said socket to the panel, including radially elongated axially shallow openings substantially in the lower half of the sidewall of said tubular member opposite the upper tips of the thermostatic latch, the upper edges of said openings being substantially above said upper tips, said openings dimensionally proportioned to provide only positive clearance between the sidewall of said tubular member and the upper tips of the thermostatic latch under all conditions when in use, so as to minimize the area of each said opening.



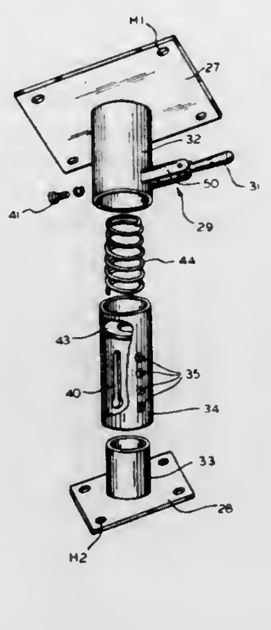
3,845,926
SEAT PEDESTAL WITH VERTICAL AND SWIVEL ADJUSTMENTS

Robert A. Wahls, Evanston, Ill., assignor to Freedman Seating Company, Evanston, Ill.

Filed Apr. 2, 1973, Ser. No. 347,214

Int. Cl. F16m *11/30*

U.S. Cl. 248—162 **11 Claims**



1. A pedestal comprising a double telescoping vertical tube including at least a rotary-free tube, a unitary double acting locking means secured to an outer one of said telescoping tubes, means in an intermediate one of said tubes for receiving said locking means to fix the telescoping length and therefore the vertical height of said pedestal, and means associated with said locking means acting in one way for selectively releasing or restraining the rotation of said tubes with respect to each other so that they may or may not rotate with respect to each other depending upon the operated condition of said locking means and associated with said locking means acting in another way for releasing said tubes so that they may telescope.

3,845,927
FASTENING DEVICE FOR USE ON A WALL OR CEILING SURFACE

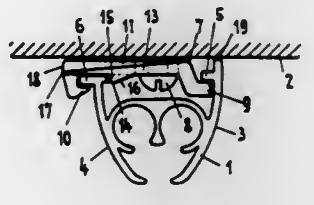
Konrad Bratschi, Muri near Bern, Switzerland, assignor to Firm K. Bratschi, Silent Gliss, Muri, Switzerland

Filed June 15, 1973, Ser. No. 370,536

Claims priority, application Switzerland, June 16, 1972, 9090/72

Int. Cl. F16m *13/00*

U.S. Cl. 248—223 **6 Claims**



1. A fastening device for fixing a body on a wall or ceiling surface, comprising at least one fastening member mountable on said holding surface, said member having two spaced engaging means which are interconnected and transversely project in the same direction, and at least one pawl extending from the one engaging mean transversely thereto towards the other engaging mean in substantially opposite direction to said direction of the projection of said engaging means, said pawl being resiliently movable transversely to its extending direction and having a nose projecting in the direction of the spring tension, and on the body to be fixed by means of said member two spaced elongated flanges transversely projecting in the extending direction of said pawl, whereby in fixed position of said body said flanges being engaged by said engaging means and said body being locked by said nose of said pawl.

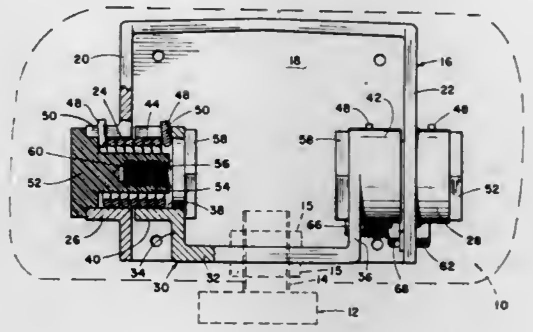
3,845,928
SPRING LOADED TRANSDUCER BRACKET

Burton M. Barrett, and James A. De Voe, both of Tulsa, Okla., assignors to Lowrance Electronics, Inc., Tulsa, Okla.

Filed July 30, 1973, Ser. No. 383,593

Int. Cl. F16m *13/00*

U.S. Cl. 248—291 **4 Claims**



1. An apparatus for pivotally supporting a transducer or other device to a boat transom, comprising:

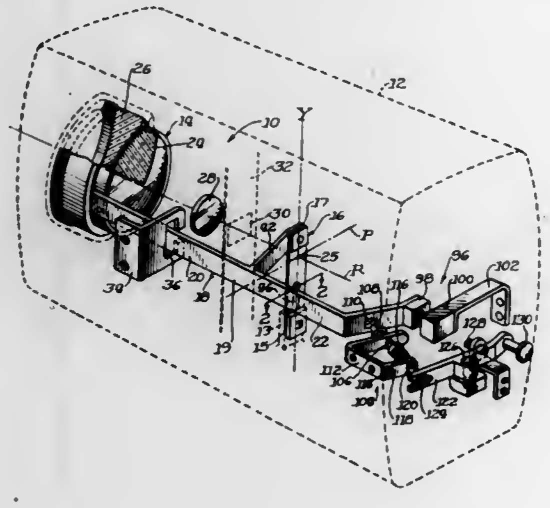
a mounting bracket including a base portion for attachment to a boat transom, the mounting bracket having integral left and right wing portions extending from opposite sides thereof, the wing portions being parallel to and spaced from each other and each having an aligned opening therein spaced from the base portion and including an integral tubular collar around each opening;

a pivot bracket including a base portion to which a transducer or the like may be attached, the base portion having integral left and right wing portions extending from opposite sides thereof, the wing portions being parallel to and spaced from each other and each having an aligned opening therein spaced from the base portion and including an integral tubular collar around each opening, the internal diameter of the pivot bracket collars being substantially equal to the internal diameter of the mounting bracket tubular collars, the pivot bracket being positioned within said mounting bracket with the tubular collars in alignment; and

a pair of coiled springs, one positioned within the left tubular collars of the pivot and mounting brackets and the other positioned in the right tubular collars of the pivot and mounting brackets, the external diameter of the coiled springs being slightly less than the internal diameter of the collars whereby the springs serve as axles for the rotation of said pivot bracket relative to the mounting bracket, one end of each spring being affixed to the mounting bracket and the other end being affixed to the pivot bracket, said spring providing resilient biasing force tending to pivot the pivotal bracket relative to the mounting bracket towards a rest position.

3,845,929
STABILIZING MECHANISM

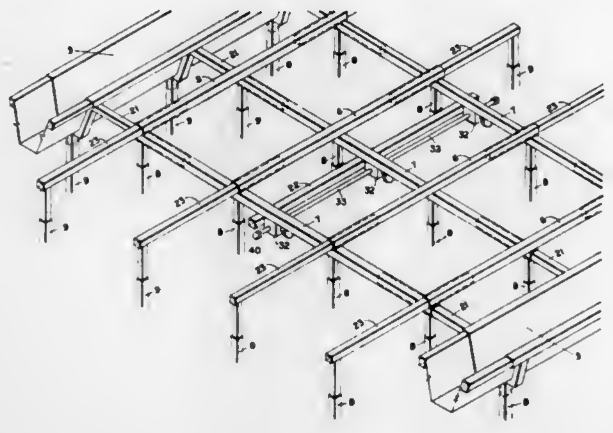
James Reekie, Arcadia, Calif., and Marvin F. Royston, Skokie, Ill., assignors to Bell & Howell Company, Chicago, Ill.
Continuation of Ser. No. 831,974, June 10, 1969, abandoned. This application Nov. 4, 1971, Ser. No. 195,879
Int. Cl. G02b *23/02*
U.S. Cl. 248—358 R **11 Claims**



1. A stabilized mass system comprising:
a frame member;
a mass;
elastic means mounting said mass to said frame member for vibration about an axis at an inherent vibratory frequency;
said mounted mass having a rest position relative to said frame member and said elastic means applying a return torque to said mounted mass to return said mounted mass to said rest position when said mounted mass is displaced from said rest position, said return torque being substantially zero when said mounted mass is at said rest position and increasing in magnitude as said mounted mass is displaced from said rest position; and
means for applying a torque to said mounted mass in opposition to said return torque, said opposing torque being substantially zero when said mounted mass is at said rest position and increasing in magnitude as said mounted mass moves away from said rest position during said vibratory motion about said rest position, thereby reducing said inherent vibratory frequency of said mounted mass.

3,845,930
TELESCOPIC SUPPORTS FOR ADJUSTABLE ROOF AND BEAM FORM

Charles E. Metrailer, 3613 Government St., Baton Rouge, La. 70806
Division of Ser. No. 203,273, Nov. 30, 1971, Pat. No. 3,744,945. This application Nov. 7, 1972, Ser. No. 304,549
Int. Cl. E04g *11/40*
U.S. Cl. 249—29 **6 Claims**

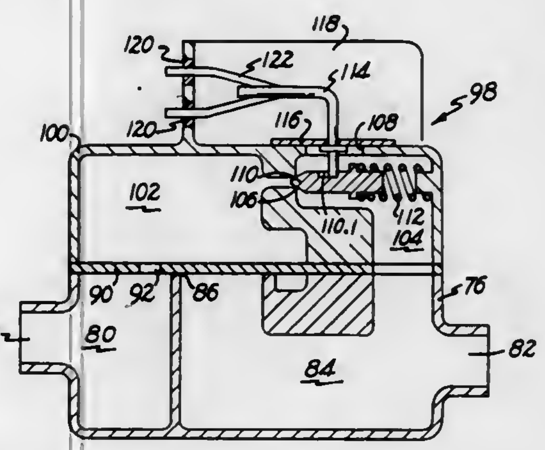


1. A concrete form for detachably mounting upon a transporting carriage comprising
a frame assembly wherein is included
a plurality of vertically oriented telescoping posts, and braces suitable for maintaining the vertical alignment of said posts,
jacks located on the lower extremities of said vertical posts, which terminate on a common plane, said jacks permitting minor adjustment of the height of the vertical posts, means located on the lower extremity of said frame assembly for attachment to a means of transport,
a concrete pour form, provided with a central span which ranges in shape from flat to highly contoured, mounted atop said telescoping posts,
locking means whereby the telescoping posts can be raised, lowered and locked to support the concrete form at a desired elevation,
beam forms, trough-like in shape and opening upwardly, mounted on the sides of said central span of said concrete pour form, carried by laterally oppositely disposed horizontally oriented telescoping tubular members mounted within the top portion of the frame assembly,
a plurality of gear boxes mounted on the upper part of said frame assembly operatively geared one to another and to a rotatable shaft,
gear means associated with said horizontally oriented telescoping tubular members which gear said members to said gear boxes and to said rotatable shaft such that rotation of said rotatable shaft in one direction will cause said telescoping tubular members to telescope outwardly and extend the beam forms, and rotation of said shaft in the other direction will cause said telescoping tubular members to telescope inwardly and retract the beam forms.

3,845,931
VALVE

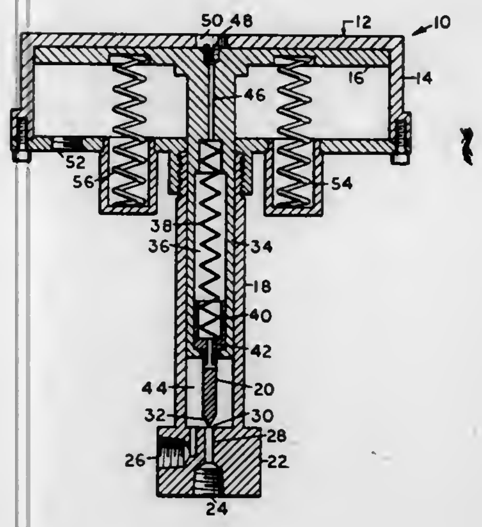
Daniel R. Pimentel, Seekonk, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed June 11, 1973, Ser. No. 368,923
Int. Cl. F03g *7/06;* **F16k** *31/40*
U.S. Cl. 251—11 **4 Claims**

1. A valve device comprising body means having an inlet passage and an outlet passage, having valve seat means between said passages, and having an aperture communicating with at least one of said passages, valve member means mounted on said body for movement between an open valve position spaced from said valve seat means and a closed valve position engaging said valve seat means, said valve member means having a first portion extending outside said body means through said aperture, flexible diaphragm means secured in sealing relation to said first portion of said valve member means and to said body means around said aperture, spring means biasing said valve member means to said closed valve position with selected force, actuator means of a selected metal alloy secured outside said body means between said first portion of said valve member means and said body means to be deformed from an original configuration to a second configuration as said valve member means is moved to said closed valve position with said selected force while said metal alloy displays a relatively low modulus of elasticity below a transition temperature and to abruptly return to said original configuration and to display a relatively higher modulus of elasticity to move said valve member means to said open valve position against said selected force when said metal alloy is heated above said transition temperature, and means selectively directing electrical current through said actuator means for selectively self-heating said actuator alloy above said transition temperature.



3,845,932
VALVE-BRAKE

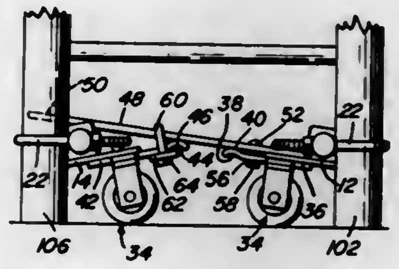
John G. Fontaine, Fort Lauderdale, Fla., assignor to Fail Safe Brake Corporation, Ft. Lauderdale, Fla.
Filed Mar. 30, 1973, Ser. No. 346,686
Int. Cl. F16k *31/143*
U.S. Cl. 251—63.4 **4 Claims**



1. In a valve comprising, a housing for containing fluid, a valve seat in the housing, a valve stem in the housing movable to engage and disengage from the valve seat, a chamber in said housing, a piston in said chamber for operating the valve stem by a change of fluid pressure acting on the piston, and a connector connecting the piston to the valve stem in a manner allowing relative movement between the connector and the valve stem, the improvement wherein:
said connector and said piston have a hollow space therein capable of containing hydraulic fluid and a passage extending through said connector and said piston communicating between said space and said chamber,
plug means removably closing said passage at said piston for permitting escape of air to said chamber upon filling of said hollow space with hydraulic fluid and for sealing said passage thereafter,
a vent opening between a portion of said chamber and the atmosphere providing access to said plug means,
and an inlet leading to another portion of said chamber for applying a change of fluid pressure to said piston.

3,845,933
CHAIR LIFT

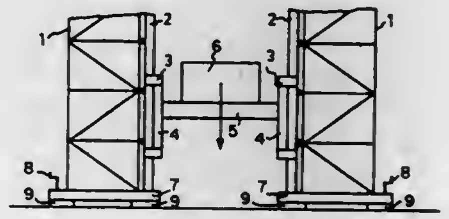
Marshall B. Heizer, Jr., Rt. 1, Box 12, Rawlings, Va. 23876
Filed Mar. 2, 1973, Ser. No. 337,305
Int. Cl. B60p *1/48*
U.S. Cl. 254—8 R **17 Claims**



1. A lift device for raising the legs of a chair off the floor comprising:
a. roller means for supporting said chair when the legs are raised off the floor;
b. support means for supporting said roller means from opposite pairs of adjacent legs for limited vertical shifting of said roller means between upper and lower positions relative to said legs, said support means comprising first and second mounting means from which said roller means depend;
c. attaching means for pivotably attaching said mounting means to the legs of the chair, said attaching means including a housing on said mounting means and clamping means having one end journaled in said housing and the other end engaging the legs of the chair; and
d. said support means including an operator adapted for movement between first and second positions and operatively connected to said roller means for shifting the latter between their upper and lower positions in response to movement of said operator between its first and second positions.

3,845,934
CLIMBING POLE FOR CLIMBING JACKS

Bengt Valfrid Andersson, Vasteras, Sweden, assignor to Paul Anderson Industrier AB, Vasteras, Sweden
Filed May 26, 1972, Ser. No. 257,350
Claims priority, application Sweden, May 28, 1971, 6936/71
Int. Cl. B66f *1/00*
U.S. Cl. 254—105 **5 Claims**



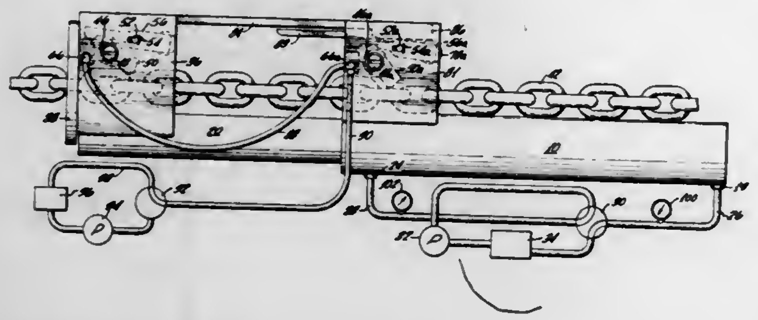
1. A hoisting device comprising climbing poles vertically mounted on a base surface and held in position by staying masts, climbing jacks mounted on said climbing poles, said

climbing jacks having means for climbing upwards along said climbing poles, said climbing jacks having means for supporting a load thereon, said climbing pole having a continuous profile along its entire length, two free opposite continuous surfaces cooperating with the climbing jacks, vertically spaced guiding projections extending from one side of the pole from between said free faces towards the staying mast, guiding portions on said projections having a larger extension longitudinally than transversely of the pole for nonrotatably guiding the pole relative to said mast, said mast including a guiding member, and means cooperating with said guiding member on the mast said projections for guiding parallel displacement of the pole relative to the mast along a longitudinal axis of the mast.

3,845,935
CHAIN JACK WITH MECHANICALLY AND HYDRAULICALLY OPERATED PAWLS

Henry B. Chambers, Santa Inez, Calif., assignor to Hydranautics, Goleta, Calif.

Filed Apr. 11, 1973, Ser. No. 349,992
Int. Cl. B66f *1/00*
U.S. Cl. 254—110 **4 Claims**



1. A chain jack having a chain, a ram attached to a piston in a hydraulic cylinder for actuation therof, a pawl attached to the head of said ram, and a pawl attached to said hydraulic cylinder, said pawls engaging links of said chain successively and repetitively as the piston in said hydraulic cylinder extends and retracts said ram; in which the improvement comprises:

a. springs biasing said pawls toward links of said chain;
b. catches selectively locking said pawls out of engagement with links of said chain and releasing said pawls for engagement with links of said chain;
c. hydraulic cylinders for maintaining said catches released from said pawls during operation in a mode to move the chain and the ram actuating cylinder in one direction with respect to each other; and
d. a cam attached to said ram actuating hydraulic cylinder and a cam attached to said ram head to selectively engage each of said catches to cause selective engagement of and release of said pawls from the links of said chain during operation in a mode to move the chain and the ram actuating cylinder in the other direction with respect to each other.

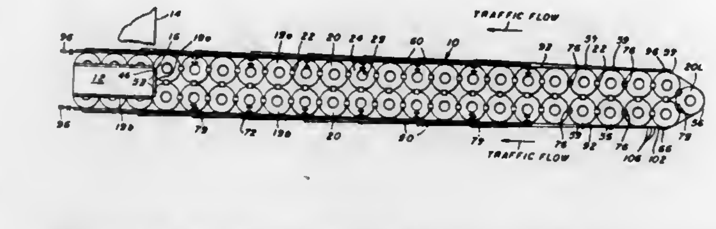
3,845,936
MODULAR CRASH CUSHION

Kenneth J. Boedecker, Jr., Jupiter Island, Fla., and Charles I. Gibson, Lebanon Township, Allegheny County, Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 364,192, May 25, 1973, abandoned, Continuation of Ser. No. 203,805, Dec. 1, 1971, abandoned. This application July 16, 1973, Ser. No. 379,688
Int. Cl. E04h *17/00*
U.S. Cl. 256—1 **20 Claims**

1. For a rigid roadside obstacle located beside or on a highway and having a contact surface facing the vehicular traffic, a modular crash cushion having:

a. a first line of drums extending forward from one side of said contact surface;
b. a second line of drums extending forward from the other side of said contact surface and adjacent said first line of drums;
c. spacer means for connecting together adjacent drums in said first line of drums and in said second line of drums in spaced relation;
d. said first line of drums and said second line of drums being connected at one end to said rigid roadside obstacle;
e. skid means between said first line of drums and said highway and said second line of drums and said highway to permit the other end of said first line of drums and said second line of drums to move on impact with a vehicle; and
f. a pair of adjacent drums in one line of said first line of drums and said second line of drums each having a drum body and a drum head and a chime defined by the ends of said drum body and said drum head and said spacer means has:

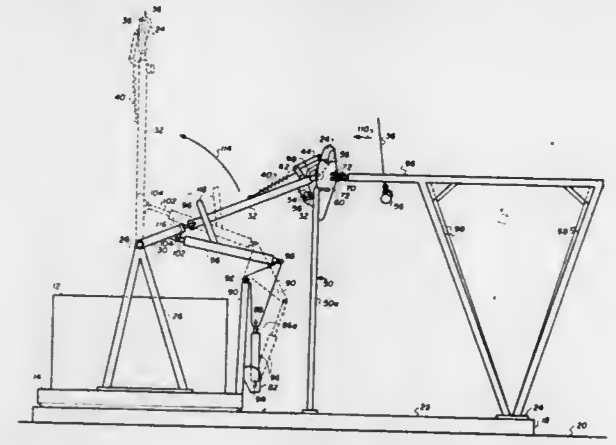


1. a mounting member connected to one drum of said first drum and said second drum;
2. a channel slidable in said mounting member, projecting from said mounting member and connected at its projecting end to the other drum of said first drum and said second drum; and
3. fastener means for securing said channel to said mounting member;
4. said channel having a track, a nut disposed in said track, biasing means engaging said nut to maintain said nut in said track, and said fastener means extending through said mounting member into said nut.

3,845,937
HELICOPTER CARGO LIFTING SYSTEM

Walker P. Johnson; Charles C. Cotton; David R. Bon, and Trules L. Peterson, all of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 14, 1973, Ser. No. 425,059
Int. Cl. B64d *1/00*
U.S. Cl. 258—1.8 **15 Claims**



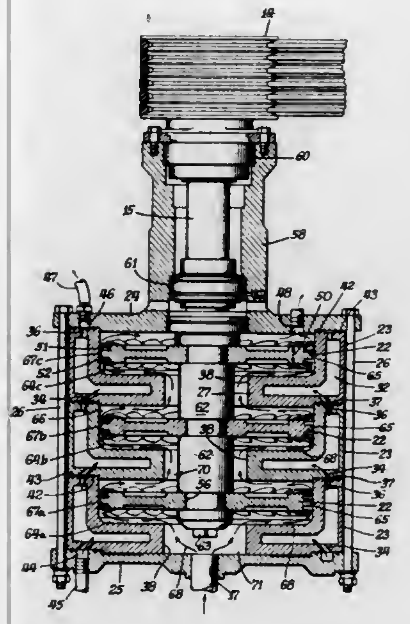
1. Cargo handling apparatus for effecting coupling to, and uncoupling from, a hoist cable having a first coupling member on the end thereof, said apparatus comprising:

frame means for supporting said cargo;
a boom having one end pivotally connected to said frame means for movement about an axis disposed above the center of gravity of said frame means and said cargo, said boom being movable about said axis between a lowered resting position and a raised, substantially vertical position;
a second coupling member mounted on the other end of said boom, said second coupling member being engageable by said first coupling member and cooperable therewith to effect a lifting connection between said cable and said boom;
spring means, connected between said boom and said frame, for urging said boom from said vertical position toward an intermediate position wherein gravity urges said boom toward said resting position; and
check means, connected between said boom and said frame means, for retarding movement of said boom from said intermediate position to said resting position under the influence of gravity, wereby said first coupling member may be lowered from engagement with said second coupling member before said boom moves to its resting position.

3,845,938
APPARATUS FOR DISPERSING FINELY DIVIDED SOLID PARTICLES IN A LIQUID VEHICLE

George R. Schold, 7909 2nd St. N., St. Petersburg, Fla. 33702

Filed Sept. 27, 1972, Ser. No. 292,801
Int. Cl. B01f *7/26*
U.S. Cl. 259—8 **9 Claims**



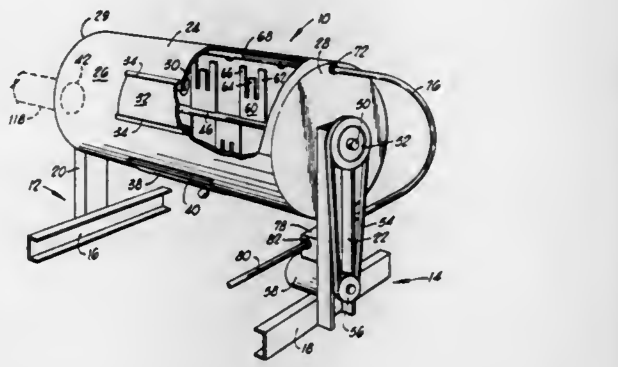
1. Apparatus for dispersing solid particles held in agglomerated form and carried in suspension by a liquid vehicle as a fluid mixture comprising:

a mixing vessel having a fluid inlet at one end thereof and a fluid outlet at the other end thereof, said inlet being adapted to be operatively connected to means for introducing a fluid mixture into said inlet under pressure and moving said fluid mixture through said mixing vessel to said outlet;
said vessel comprising a plurality of annular dish-shaped elements having a substantially U-shaped cross section and stacked one upon the other, and closure means associated with said dish-shaped elements enclosing said vessel at both ends, each of said dish-shaped elements comprising a laterally extending base portion and an axially extending wall portion connected to said base portion;
releasable means holding said dish-shaped elements and said closure means in assembled relationship;
said dish-shaped elements in their assembled relationship defining circumferentially extending chamber means therebetween;
means defining internal fluid cavities in each of said dish-shaped elements for conducting temperature control fluid therethrough;
communicating passage means in said dish-shaped elements connecting the internal cavities of each of said dish-shaped elements with each other;
a rotatable shaft extending into said vessel through said dish-shaped elements and adapted to be driven from a power source; and
agitator disc means mounted on said shaft and projecting radially into said chamber means.

3,845,939
COMPOSTING APPARATUS

David B. Waldenville, Oklahoma City, Okla., assignor to Waste-Treat, Inc., Oklahoma City, Okla.

Filed Dec. 6, 1972, Ser. No. 312,573
Int. Cl. B01f *7/04*
U.S. Cl. 259—10 **6 Claims**



1. Composting apparatus comprising:

enclosure means of generally elongated shape and including side walls and end walls defining a generally cylindrical internal space, said enclosure means having at least one closeable access aperture;
agitation means consisting of a shaft and a plurality of plates secured to extend perpendicularly from said shaft, said shaft being journally supported by said enclosure means end walls axially through said cylindrical internal space;
wetting means including a water delivery pipe having a plurality of spray nozzles attached in communication therewith, said pipe being secured across the upper extremity of said cylindrical internal space;
a water supply connected to said wetting means;
rotary drive means connected to said agitation means shaft; an a-c source;
a solenoid valve connected in said water supply to control flow therefrom;
electrical relay means connected to said a-c source and being energizable to provide output electrical energization to said solenoid valve means and said rotary drive means; and
temperature sensor means in communication with said enclosure means internal space and energizable upon sensing of less than a pre-determined temperature to cause energization of said electrical relay means.

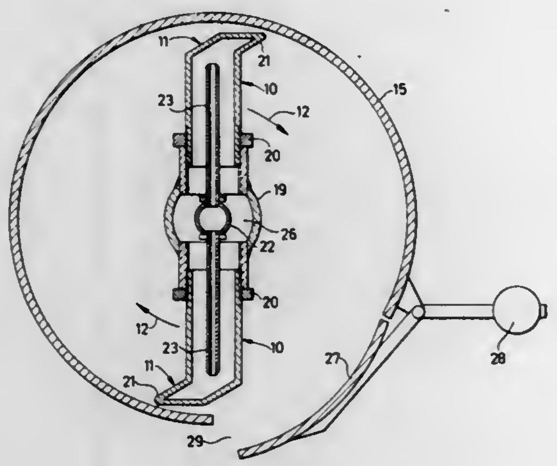
3,845,940
MIXING TOOL FOR MACHINES FOR APPLYING GLUE TO SHAVINGS

Wilhelm Lodige, Elsener Strasse 9c; Fritz Lodige, Leuschner Strasse 12, and Josef Lucke, Im Lohfeld 13, all of 479 Paderborn, Germany

Filed Aug. 8, 1973, Ser. No. 386,781
Claims priority, application Germany, Aug. 12, 1972, 2239852
Int. Cl. B01f *7/20*
U.S. Cl. 259—107 **10 Claims**

1. A mixing tool for a machine for applying glue or the like to particulate material such as wood shavings in a vertical

drum-shaped mixing container having a shaft rotatable on the axis thereof, said tool being fixed to the shaft and extending radially therefrom to near the peripheral wall of the container, said tool comprising; a head section on the radially outer end, a body having the radially inner end adapted for fixed connection to said shaft and the radially outer end being connected



to said head, said head and body tapering inwardly toward one another adjacent the juncture thereof and forming surfaces on the tool which are inclined radially inwardly and radially outwardly respectively, said tool when viewed in the direction of the axis of rotation thereof presenting substantially the same maximum cross sectional dimension as when viewed at right angles to the said axis.

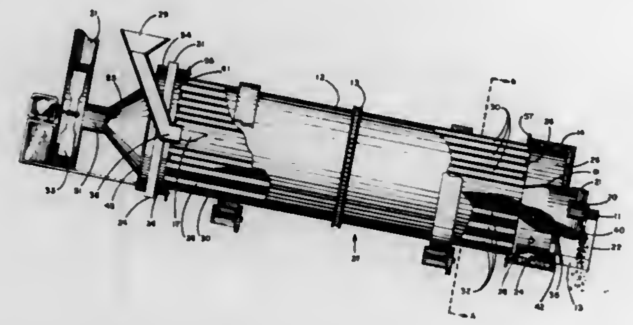
3,845,941
APPARATUS FOR PRODUCING ASPHALT-AGGREGATE COMPOSITIONS

Robert L. Mendenhall, 1770 Industrial Rd., Las Vegas, Nev. 89102

Continuation-in-part of Ser. No. 286,613, Sept. 5, 1972. This application May 15, 1973, Ser. No. 360,464

Int. Cl. B28c *5/06*

U.S. Cl. 259—157 **8 Claims**



1. Apparatus for producing asphalt-aggregate compositions comprising:

an elongated rotatable cylindrical drum having a cavity therein and a wall at each end thereof;

a plurality of spaced hollow pipes extending along the interior of the cavity between the walls, the interior of the tubes communicating exteriorily of said walls;

means for introducing asphalt and aggregate through one of the walls at an input end of the drum and means for removing composition through the wall at the opposite end;

means for venting moisture from the drum cavity;

a heating chamber at the opposite drum end communicating with the pipe interiors and burner means for supplying heat within the chamber; and

means for venting at least a portion of gaseous mixtures from within the drum cavity to the heating chamber.

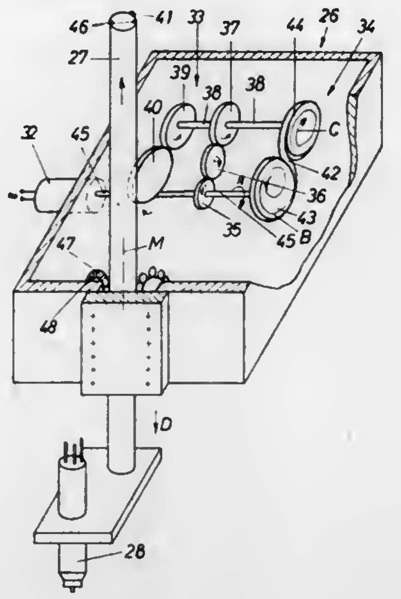
3,845,942
TORCH CUTTING MACHINE

Georg Roeder, Frankfurt/Main, Germany, assignor to Messer Griesheim GmbH, Frankfurt, Germany

Filed Oct. 17, 1972, Ser. No. 298,350

Int. Cl. B23k *7/10*

U.S. Cl. 266—23 K **9 Claims**



1. A torch cutting machine including at least one cutting torch, a vertically arranged bearing bar, said torch mounted to said bearing bar, a drive system operatively connected to said bearing bar for moving said bearing bar and said torch suspended therefrom up and down, said drive system including a drive shaft, said drive system further including transmission means between said bearing bar and said drive shaft whereby the weight of said bearing bar and said torch exerts a torque direction to said drive shaft, said transmission means including a gearing system associated with said bearing bar, a weight compensation device for counter balancing said torque, said weight compensation device including a work roller fixedly mounted on said drive shaft whereby said torque direction is also urged to said work roller, a storage roller mounted generally aligned with said work roller, a spring band wound under tension on said work roller counter to said torque direction, and the end of said spring band remote from said work roller being wound on said storage roller.

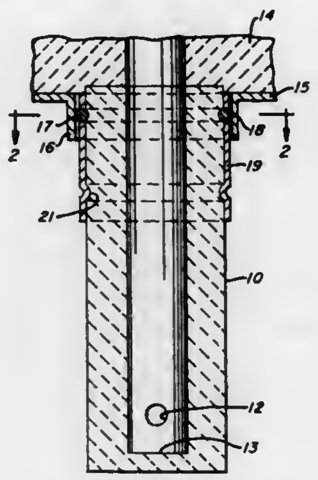
3,845,943
REFRACTORY POURING TUBE

James T. Shapland, Wilkins Township, Allegheny County, Pa.

Filed Oct. 26, 1973, Ser. No. 409,835

Int. Cl. F27d *3/14*

U.S. Cl. 266—38 **5 Claims**



1. In a combination which includes a holder, a pouring tube, and means attaching said tube to said holder,

said holder comprising a refractory block, a metal frame around at least a portion of said block, and a skirt depending from said frame;

said tube being formed of refractory, the upper end portion of which is received in said skirt;

said attaching means comprising clip means extending through said skirt and engaging said tube;

the improvement comprising:

a metal band encircling the refractory of said tube and having opposed slots receiving said clip means; and

means fixing said band to said refractory.

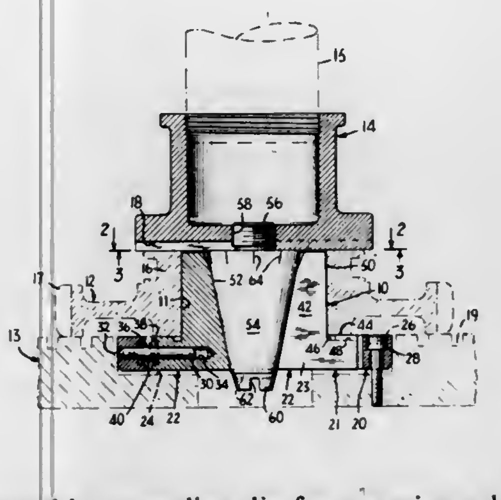
3,845,944
ADJUSTABLE EXPANDING DIE

Robert T. Miller, and Elias M. Murin, both of Hagerstown, Md., assignors to Mack Trucks, Inc., Allentown, Pa.

Filed Nov. 6, 1972, Ser. No. 304,215

Int. Cl. B23b *31/40;* **B23q** *3/14*

U.S. Cl. 269—48.1 **9 Claims**



1. An adjustable expanding die for engaging a bore in an object held between a pair of opposed clamping members, one of the clamping members being adapted for movement toward and away from the other clamping member, comprising a unitary outer annular member, a variable diameter inner annular member including a plurality of radially movable arcuate segments, spring means for coupling each arcuate segment to the outer annular member and for biasing the arcuate segments radially inwardly, and a plug movable axially into the inner annular member to engage the arcuate segments, each arcuate segment having a bore engaging exterior surface and an interior surface adapted to cooperate with a surface of the plug such that moving the plug axially into the inner annular member into engagement with the arcuate segments effects an increase in an outer diameter of the inner annular member, the plug being adapted threadedly to engage one of the clamping members for selective and rotational adjustment of its axial position relative to that clampig member, thereby selectively to adjust the final outer diameter attained by the inner annular member when movement of the movable clamping member toward the other clamping member and corresponding movement of the plug into the inner annular member are halted by engagement of both clamping members with the object.

3,845,945
OBSTETRICAL EXAMINING CHAIR AND EXAMINATION METHOD

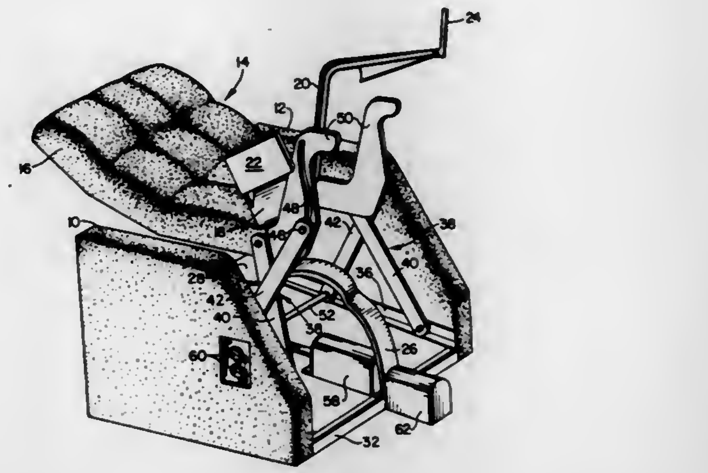
Wraymon Randle Lawley, 5601 Williamstown Rd., Dallas, Tex. 75230, and Tommy Joe Lawley, 1503 Wilshire Blvd., Arlington, Tex. 76012

Filed Nov. 6, 1972, Ser. No. 303,874

Int. Cl. A61g *13/00*

U.S. Cl. 269—323 **20 Claims**

1. A support structure for medical examination purposes in the form of a reclining chair, comprising: a base having stationary arm rest devices fixed on either side thereof; a reclining chair body support including integral back and buttocks support portions, leg support means for movement unitarily with said integral back and buttocks support portions to and from a reclining attitude and a seat rest portion disposed between said buttocks support portions when said chair body support is in an upright, chair-like position; means connecting said chair body support to said base enabling relative unitary reclining movement thereof, said leg support portions comprising a pair of laterally swingable, integral thigh and calf support member adapted to be moved to properly expose a patient's perineum for medical examination thereof; and means for moving said reclining chair body support from said upright, chair-like position to a reclined, medical examination attitude, said seat rest portion being positioned other than between said buttocks support portions as said reclining chair body support is moved to said reclined, medical examination attitude to further expose a patient's perineum for medical examination.



3,845,946
MEDICAL DEVICE WITH HYDRAULICALLY MOVABLE PARTS

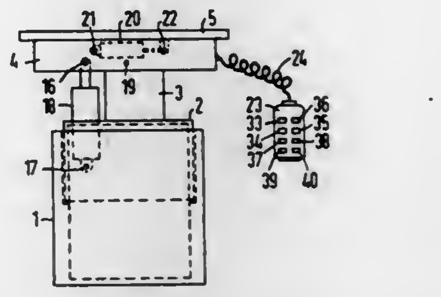
Hans Erik Warden, Upplands Vasby; Frank Kindvall, Danderyd; Carls Olof Berg, Stocksund, and Bengt Sedell, Nacka, all of Sweden, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed June 26, 1973, Ser. No. 373,814

Claims priority, application Germany, July 3, 1972, 2232553

Int. Cl. A61g *13/00*

U.S. Cl. 269—323 **9 Claims**



1. A medical device, comprising a plate for the patient, a casing, a frame pivotally connected with said casing and supporting said plate, at least one hydraulic member connected with said frame for swinging said frame, another hydraulic member connected with said casing for vertically moving at least a part of said casing, at least one third hydraulic member connected with said plate for longitudinally moving said plate, a plurality of instrumental valves, means operatively connecting one of said instrumental valves with the first-mentioned hydraulic member, means operatively connecting another one of said instrumental valves with the second-mentioned hydraulic member, means operatively connecting a third one of

said instrumental valves with the third-mentioned hydraulic member, a central steering device comprising a plurality of interconnected steering members, and separate pressure keys connected with separate steering members; a compressed air container connected with all steering members, means operatively connecting one of said steering members with the first-mentioned instrumental valve, means operatively connecting another one of said steering members with the second-mentioned instrumental valve, means operatively connecting a third one of said steering members with the third-mentioned instrumental valve, whereby said instrumental valves are actuated by gas from said compressed air container, a plurality of positioning valves connected to a steering member, a separate positioning valve being connected in parallel with a separate instrumental valve, and a plurality of lugs, a separate lug being connected with each positioning valve for operating that valve, said lugs switching off said positioning valves in a predetermined position of said plate.

3,845,947
SURGICAL OPERATION TABLES

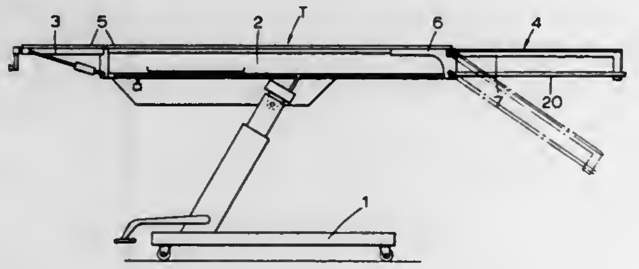
Norman John Lee, Three Colts Ln., Bethnal Green, London E.2, England

Filed May 31, 1973, Ser. No. 365,467

Claims priority, application Great Britain, June 7, 1972, 26535/72

Int. Cl. A61g *13/00*

U.S. Cl. 269—324 **3 Claims**



1. A surgical examination or operation table comprising a patient-supporting table top including a main section and an extension section, the extension section being slidable lengthwise of the table top between an extended position lengthwise of the table top and a retracted position below the main section, means for releasably locking the extension section in its extended position, the extension section including a carriage portion provided with slide members, complementary slide channels beneath the main section within which the slides are engaged, a swinging portion pivotally mounted on the carriage portion, clamping means for selectively maintaining the swinging portion in a horizontal position or an angular position with respect to the carriage portion, and means at each side of the table top comprising a locking plate pivotally mounted on the extension section and having a locking recess with a lead-in opening facing the direction of movement of the extension section, a co-operating locking pin mounted on the main section in position engageable in the locking recess when the extension section is fully extended, and a spring-loaded push-rod extending lengthwise of the table and being axially moveable against the loading of the spring, whereby to pivot the locking plate and release it from engagement with the locking pin for movement of the extension section selectively into the retracted position or any intermediate position.

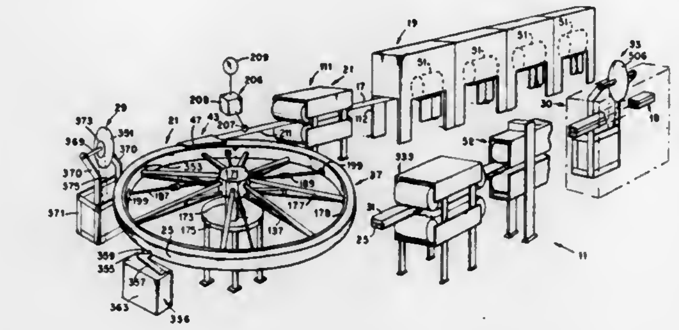
3,845,948
METHOD OF AND APPARATUS FOR PRODUCING STACKS OF FOLDED SHEET MATERIAL

Warren R. Furbeck, and Charles A. Lee, both of Knoxville, Tenn., assignors to International Paper Company, New York, N.Y.

Filed July 17, 1972, Ser. No. 272,413

Int. Cl. B41l *1/30*

U.S. Cl. 270—40 **32 Claims**



1. A method of producing individual stacks of folded sheets from a plurality of webs of stretchable sheet material, said method comprising the steps of:
continuously, longitudinally folding each of a series of webs of sheet material while the webs travel along a feed path, traveling the folded webs about a closed path about a vertical axis, lifting the traveling webs as they make a revolution about said closed path and traveling the incoming webs therebeneath, and accumulating a multiple series of the folded webs in a vertically stacked condition constituting an endless log at an accumulating station, and severing the endless log at predetermined and spaced locations to form a plurality of individual stacks of folded sheets.

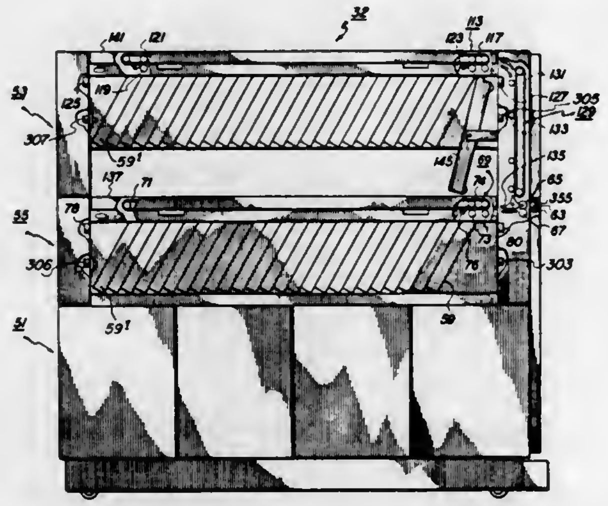
3,845,949
SORTER CONTROL TO PREVENT OVER-STACKING IN THE SORTER TRAYS

Thomas Acquaviva, Penfield, and William P. Kukucka, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 4, 1972, Ser. No. 312,251

Int. Cl. B65h *29/58*

U.S. Cl. 271—64 **2 Claims**



1. In a reproduction system the combination of:
a processor for making copies of a plurality of original documents in succession;
a sorter for sorting said copies into desired orientation, said sorter having a procession of copy receiving trays; and,
control means responsive to the individual copy capacity of said sorter trays to automatically switch to the next succeeding sorter tray when the number of copies produced of one of said original documents exceeds the storage capacity of one or more individual sorter trays, said control means being adapted to control the operation of the sorter to automatically deliver copies of the succeeding document into the next succeeding empty sorter tray at the commencement of stacking of the copies of said succeeding document.

3,845,950
MATERIAL HANDLING APPARATUS

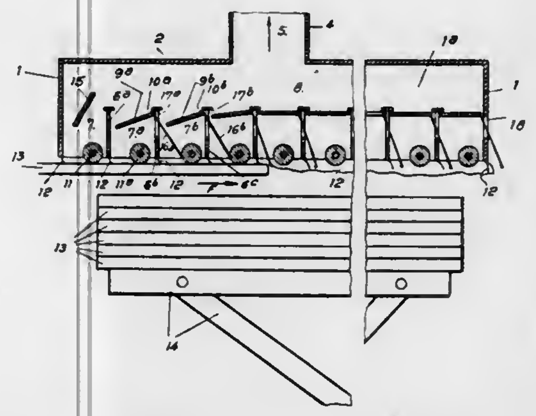
Bernard Kuzniak, Place J.B. Moulin, Lezoux (Puy-de-Dome), France

Continuation-in-part of Ser. No. 876,344, Nov. 13, 1969, abandoned. This application Aug. 25, 1971, Ser. No. 174,612

Claims priority, application France, Nov. 22, 1968, 68.174897; Apr. 18, 1969, 69.6912139

Int. Cl. B65h *29/32*

U.S. Cl. 271—194 **23 Claims**



1. Material handling apparatus comprising, in combination: a suction enclosure including a first portion adjacent the material to be handled and a second portion;
means for dividing the first portion of the suction enclosure into a series of adjacent compartments, each of said compartments communicating with the second portion of the enclosure and having an opening facing said material;
a plurality of obturators, one for each of the compartments, interposed between the compartments and the second portion of the suction enclosure, each of said obturators being movable between an open position and a substantially closed position in response to changes in the pressure differential between its compartment and said second enclosure portion;
means for applying suction to the second portion of the suction enclosure to hold said obturators in their substantially closed positions; and
means for locating said material and said suction enclosure in contact with each other such that the material blocks the opening of at least one of said compartments, the suction applying means thereupon reducing the pressure within the blocked compartment to enable movement of the corresponding obturator to its open position and thereby apply suction to said material.

3,845,951
FORAMINOUS SHEET REGISTRATION SYSTEM

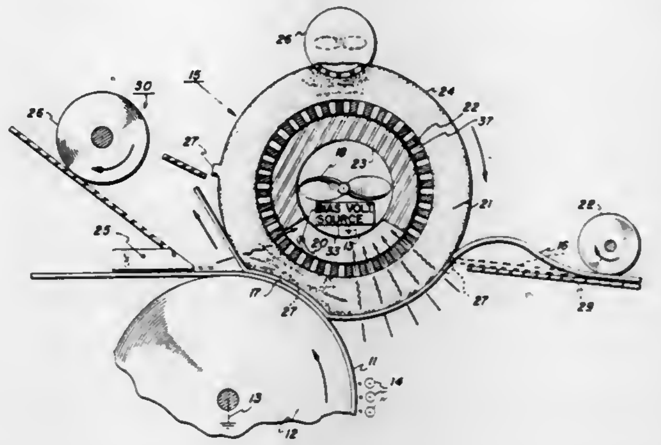
Ralph A. Hamaker, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 5, 1973, Ser. No. 367,280

Int. Cl. B65h *9/06*

U.S. Cl. 271—243 **7 Claims**

1. A sheet registration system comprising:
a sheet feeding roller having a thick layer of compressible foraminous material and a generally smooth outer sheet feeding surface;
at least one sheet registration lip comprising a sheet edge detaining discontinuity in said outer surface of said roller; an opposing sheet feeding surface against which said foraminous material layer is compressed with moderate pressure to provide a sheet feeding nip therebetween; and drive means providing sheet feeding movement of said outer surface of said roller and said registration lip through said nip,
said registration lip being temporarily resiliently suppressed by compression into said foraminous material layer smoothly and evenly with said outer surface of said roller in passing through said nip, and
said roller providing continuous even contact between said outer surface thereof, including said registration lip, and said opposing surface in said nip,
wherein said registration lip is monolithically formed from said same foraminous material.



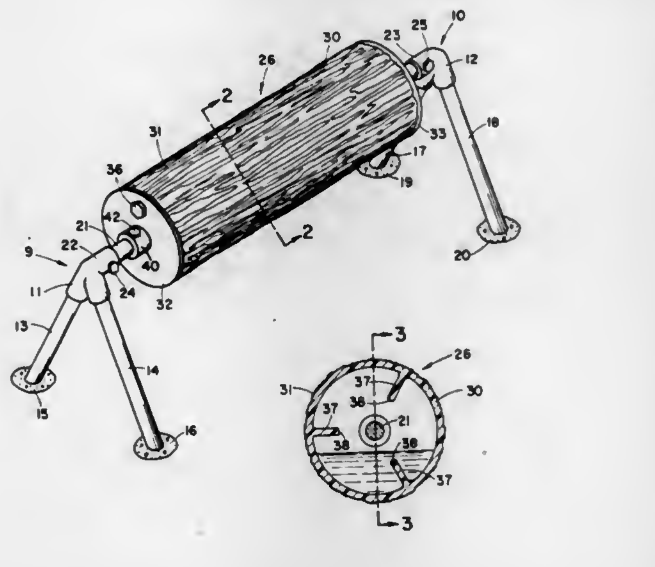
3,845,952
SIMULATED LOG-ROLLING DEVICE WITH INWARDLY EXTENDING BAFFLE MEMBERS

Daniel F. McKinney, 1653 20th Ave., Moline, Ill. 61265

Filed Feb. 21, 1973, Ser. No. 334,478

Int. Cl. A63b *23/06*

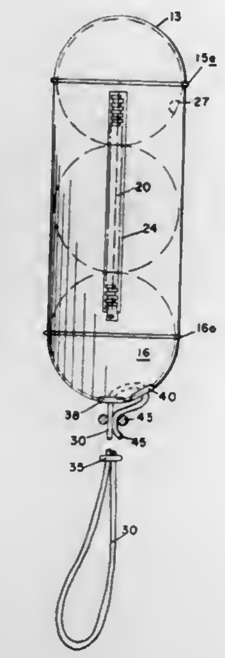
U.S. Cl. 272—1 E **8 Claims**



1. A simulated log-rolling device for use out of water comprising: a pair of spaced apart and ground-borne upright supports; an elongated horizontal liquid-carrying rigid tank structure supported on the supports and including a horizontal elongated rigid tank supported to rotate about a substantially horizontal axis and sealed at opposite ends; a detachable plug on the tank for passing liquid to and from the tank; and rigid baffles fixed to and extending lengthwise of the tank and extending radially inwardly with respect to the inner surface of the tank toward inner ends falling a substantial distance short of said axis of rotation so that water may freely flow around said inner ends as the tank rotates.

3,845,953
TENNIS SERVE TRAINING DEVICE

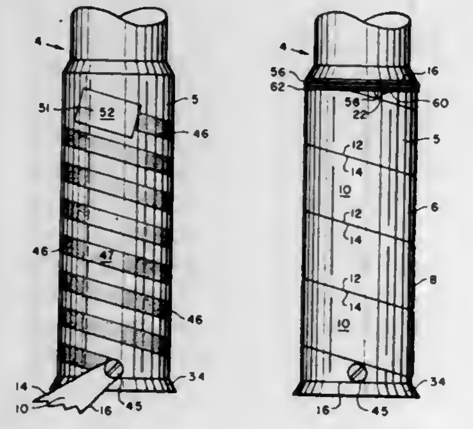
Farouk S. Malhas, 3520 West Pl. N.W., Washington, D.C. 20007
Filed Sept. 28, 1972, Ser. No. 292,907
Int. Cl. A63b *69/38*
U.S. Cl. 273—29 A **9 Claims**



1. A tennis serve training device comprising an elongated closed end hollow container transversely dimensioned for holding only a single row of alined tennis balls to effect a predetermined weight, a single tether secured to an end of said container extending axially thereof for swinging said weighted container in an arc to simulate the movement of a tennis racquet in a serving movement wherein centrifugal force effects a longitudinal tension in said container; said container having a longitudinal side opening for inserting and removing tennis balls and a closure means for said opening extending longitudinally therealong to retain tennis balls in said container and being thus disposed to preclude tension due to centrifugal force from acting in a direction tending to open said closure means.

3,845,954
RACKET WITH DISPOSABLE HAND GRIP

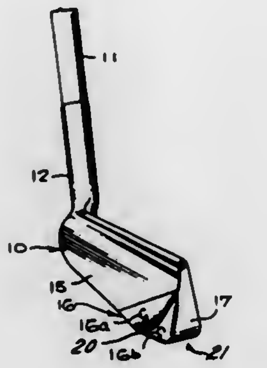
George S. Case, 1815 Palmer Ave., Larchmont, N.Y. 10538
Continuation of Ser. No. 276,915, Aug. 1, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 427,533
Int. Cl. A63b *49/08*
U.S. Cl. 273—75 **3 Claims**



1. A sporting racket comprising a generally cylindrically shaped handle shaft and in combination with said racket a disposable hand grip assembly spirally wound on said handle shaft comprising a first strip of relatively bulky moisture-absorbent textile material, one longitudinal edge only of said first strip having attached thereto and running parallel to said edge a second strip of relatively thin non-bulky material having a width less than the width of said first strip and forming a leading edge of said first strip, reusable anchor means securing said first strip to the base of said handle shaft, said first strip being wound in a spiral upwardly about said handle from the base of said handle in a manner such that a portion of each succeeding spiral overlaps the preceding thin leading edge thereby forming a smooth gripping surface, and elastic lanyard means securing the upper end of said spiralled first strip from unwinding from said handle shaft, said lanyard being detachably secured at each end thereof to the upper end of said spiralled first strip, said hand grip assembly further comprising a tape strip having one side only thereof coated with a pressure-sensitive glutinous composition, said anchor means for anchoring said first strip at the base of said handle also securing one end of said tape to the base of said handle under said first strip, said tape being spirally wound about said handle upwardly from said base with the glutinous side of said tape outward and under said first spiralled strip, to thereby additionally secure said first textile strip to said shaft and prevent shifting thereof, and means for securing the other end of said tape adhesively to said handle.

3,845,955
GOLD CLUB INDICIA

Karsten Solheim, 10412 N. 37th St., Phoenix, Ariz. 85028
Filed Oct. 4, 1972, Ser. No. 294,775
Int. Cl. A63b *53/04*
U.S. Cl. 273—77 A **5 Claims**

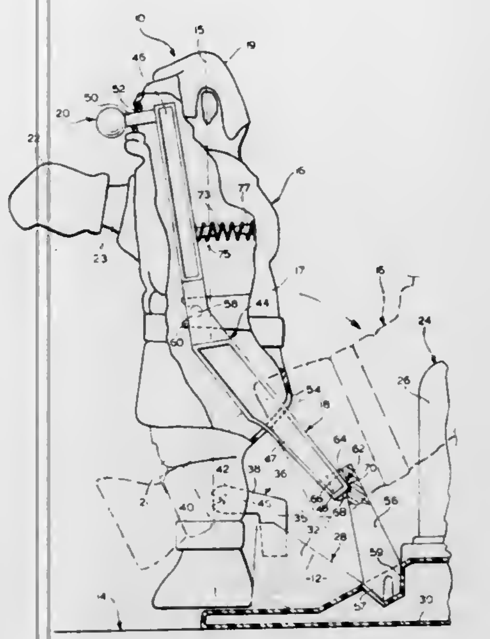


1. A set of at least two golf clubs, each golf club being comprised of a head having a toe and a heel, said heel being connected to a shaft, said head having a striking face between said toe and heel with a rounded lower corner at said toe, and a sole extending from said heel to said toe around said rounded corner at said toe, said striking face extending upwardly from said sole between said toe and heel at a unique and acute loft angle, and said head having a backside between said toe and heel extending upwardly from said sole, a portion of said backside having first and second surfaces sloping away from said striking face and toward each other to form a ridge about said rounded corner from a point near the bottom of said rounded corner and adjacent said sole to a point near the top of said rounded corner and adjacent said toe, said ridge extending further away from said striking face at the center of said rounded corner than any other portion of said backside, said first surface being of such sloping configuration and of such rearward extent, and with the club head being so configured, that said first surface may be seen by a person holding said club at the end thereof remote from said head and viewing said golf club head along a line substantially parallel to said shaft, said second surface being connected to said sole and being of such sloping configuration relative to the configurations of said first surface, said sole, and said club head that said second surface may be viewed by a person facing said club head from a direction generally opposite to the direction

said shaft extends from said head, and indicia on at least said one of said first and second surfaces indicative of the magnitude of said unique loft angle.

3,845,956
KNOCK-DOWN BOXING FIGURE TOYS

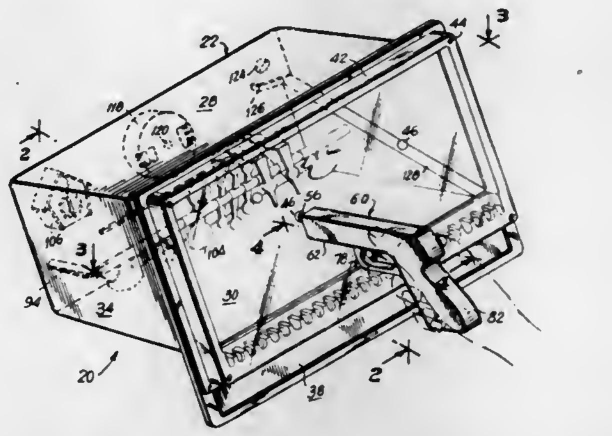
Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Dr., Encino, Calif. 91316
Filed Feb. 21, 1973, Ser. No. 334,435
Int. Cl. A63f *9/14;* **A63h** *13/06*
U.S. Cl. 273—85 F **13 Claims**



1. Toy apparatus for playing a competitive boxing game, said apparatus comprising a pair of individual and separate boxing-figure toys, each of said boxing-figure toys comprising:
a. a positionable base,
  b. means defining a fanciful boxing figure,
  c. means between said figure and said base for pivotally supporting said figure on said base for pivotal rearward movement between a normal upright position and a knocked-down position,
  d. means between said figure and said base for releasibly maintaining said figure in said upright position, said maintaining means including a movable target member on said figure operative to release said maintaining means when said target member is struck and moved,
  e. a pair of fist members on said figure extendable forwardly therefrom to engage the target member on the other figure, and
  f. manually operable control means comprising a pair of control handles mounted on the base for being gripped and used to effect movement of the figure toy, each of said control handles being separately and selectively operable to effect the forward extension of one of said fist members, each of said handles comprising a compressible bulb portion, each of said bulb portions being connected to a hydraulic piston-cylinder arrangement mounted within the figure and with the piston of said arrangement directly connected to one of said forwardly extendable fist members.

3,845,957
SHOOTING GALLERY APPARATUS INCLUDING IMPACT TRANSMITTING PROJECTOR

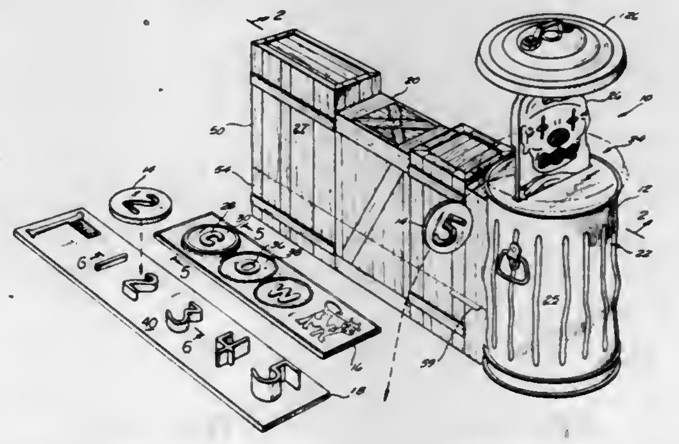
Raymond J. Lohr; Martin Condry, both of Erie; Mahlon E. Hirsch, Fairview; Richard N. Carver, and Maxmillian P. Rogers, both of Erie, all of Pa., assignors to Louis Marx & Co., Inc., Stamford, Conn.
Filed May 29, 1973, Ser. No. 364,579
Int. Cl. A63f *9/02*
U.S. Cl. 273—101 **13 Claims**



1. In a shooting gallery game, a transparent, non-magnetic wall, a magnetic projectile situated next to said wall on one side thereof, a target situated on the same side of said wall as said projectile at a substantial distance from said wall, a permanent magnet adapted to be situated by the operator on the other side of said wall from said projectile to act magnetically on said projectile for moving the latter along said wall and locating said projectile at a selected location on said one side of said wall, and manually operable impact means located next to said permanent magnet for movement with respect thereto into impact engagement therewith to transmit an impact through said permanent magnet and wall to said projectile for projecting the latter toward said target.

3,845,958
LETTERS AND NUMBERS GAME

Tormod K. Reinertsen, East Northport, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.
Filed Feb. 8, 1973, Ser. No. 330,834
Int. Cl. A63f *3/00*
U.S. Cl. 273—135 D **17 Claims**



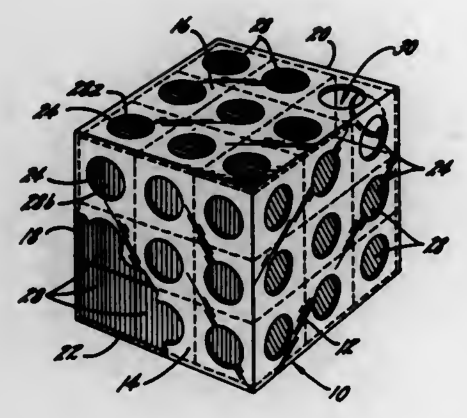
1. A toy comprising a plurality of chips having distinguishing characteristics and a dispenser for said chips comprising, a frame having a chip storage station and a chip dispensing station, means at said storage station for supporting a plurality of individual chips in an aligned stack; means at said dispensing station for removing individual chips from said stack and discharging them from said frame, and at least one cooperating tray having distinguishing characteristics which are complementary to the distinguishing characteristics of said chips,

whereby said chips are adapted to be randomly placed in said storage station and dispensed therefrom by said removing means for placement in preselected locations on said tray; said tray comprising a number tray having a plurality of raised numbers formed thereon, said chips having apertures formed therein defining numbers adapted to receive corresponding raised numbers on said tray, said raised numbers having different heights, with each raised number having a height corresponding to the thickness of the number of chips it represents.

3,845,959

THREE-DIMENSIONAL BLOCK PUZZLE

Daniel Kosarek, 36 Forest Blvd., Park Forest, Ill. 60466
Continuation of Ser. No. 217,532, Jan. 13, 1972, abandoned. This application Nov. 14, 1973, Ser. No. 416,903
Int. Cl. A63f *9/08*
U.S. Cl. 273—153 S **10 Claims**



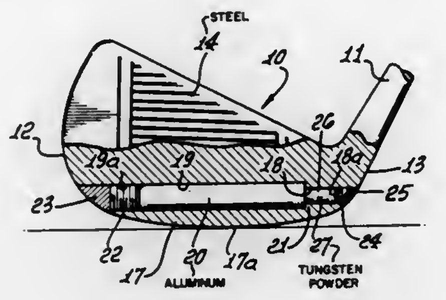
1. A puzzle comprising
a closed outer housing having six rectangular sides,
a multi-surfaced central block interior to and having the same exterior shape as said outer housing, said central block being smaller than said housing and so positioned within said housing that each surface of said central block is spaced from the corresponding side of the outer housing by an equal distance to define a volume between said sides and said surfaces,
a plurality of movable blocks within said defined volume, each having the same shape as said outer housing and having one or more surfaces having indicia distinguishable from that of said central block, the number of said blocks being one less than the number required to completely fill said defined volume so that a void is defined equal in volume to the volume of one of said movable blocks, and
a plurality of access ports in the sides of said outer housing to allow said movable blocks to be moved within said defined volume by selective displacement with said void, whereby said blocks may be placed in a plurality of spatial relationships with respect to each other in solving the puzzle, each solution presenting a different combination of surface indicia visible through the sides of said outer housing.

3,845,960

WEIGHT-BALANCED GOLFING IRON

Stanely C. Thompson, 7851 Talbert St. Apt. No. 1, Playa Del Rey, Calif. 90271
Filed June 11, 1973, Ser. No. 368,641
Int. Cl. A63b *53/04*
U.S. Cl. 273—171 **7 Claims**

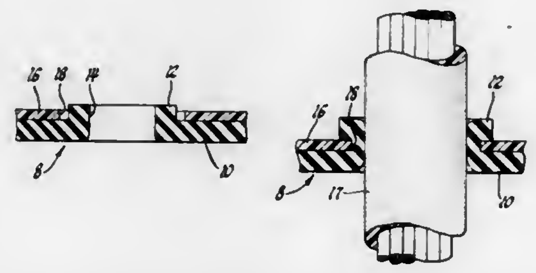
1. In a golf iron,
a. a metallic club head having a toe and heel, a front face to strike a golf ball, a rear side, the head having an elongated base portion extending between the toe and heel,
b. there being an elongated through opening extending within the base portion between the heel and toe,
c. an elongated balancing plug extending within the opening, and
d. a relatively short plug extending within the opening and spaced from the elongated plug for reception therebetween of a selected amount of weighting material in the form of metal particles having a density substantially greater than the density of the head metal, said elongated plug consisting of a metal substantially less dense than the head metal,
e. said opening defined by bore means one portion of which receives the short plug at the heel end of the head, and the elongated plug retained in another portion of the bore means.



3,845,961

SELF-LOCKING SEAL FOR GENERATOR LEADS

Walter C. Byrd, III, Kettering, Ohio, assignor to General Motors Corp., Detroit, Mich.
Filed Sept. 17, 1973, Ser. No. 398,002
Int. Cl. F16j *15/10;* **F16l** *5/02;* **H01b** *17/30*
U.S. Cl. 277—212 F **1 Claim**

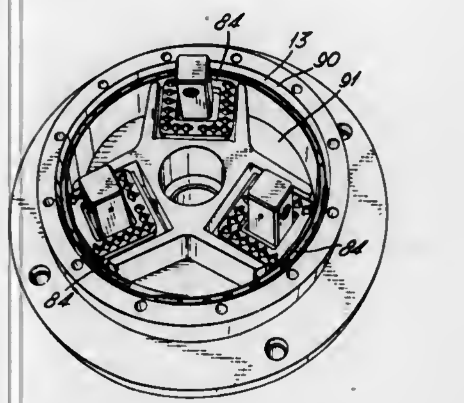


1. A self-locking sealing arrangement comprising:
a wall having first and second opposed surfaces and an aperture having an edge;
a seal member having a normal state and an assembled deformed state, said seal member in its normal state including a generally flat resilient base member having first and second opposed surfaces, and a resilient circular flange integrally connected to and extending from the first surface of the base member for insertion through the aperture in wall, the flange having an outer surface with a radius equal to the radius of the aperture in the wall minus the thickness of the wall, the base member and the flange having an aperture therethrough concentric with the flange; and
a cylindrical member having a radius less than the radius of the aperture in the wall and greater than the radius of the aperture in the wall minus the thickness of the base member, said cylindrical member being positioned through the seal member and the aperture in the wall to place the seal member in its assembled deformed state with the outer surface of the flange sealingly engaging the first surface of the wall, the first surface of the base member sealingly engaging the second surface of the wall and the edge of the aperture in the wall, and the second surface of the base member sealingly engaging the cylindrical member, a portion of the base member being compressed between the cylindrical member and the edge of the aperture in the wall, whereby the wall, seal member and cylindrical member form a self-locking sealing arrangement.

3,845,962

FLOATING WORK DRIVER CHUCK

Vallard B. Molin, 3855 Thomas Ave. North, Minneapolis, Minn. 55412
Filed Feb. 9, 1973, Ser. No. 331,051
Int. Cl. B23b *31/16*
U.S. Cl. 279—1 J **3 Claims**

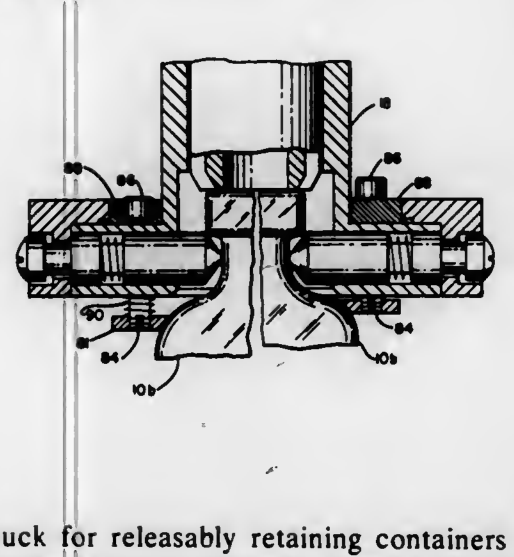


1. A chuck assembly comprising a housing adapted to be fixedly attached to a rotatable driving member of a machine tool for rotation therewith about an axis, said housing having an axial central bore, a work piece supporting center, said supporting center being coaxial with said housing and extending through said bore, a jaw frame disposed in said housing in spaced and surrounding relation to said workpiece supporting center and being transversely movable relative to said axis, said jaw frame having a plurality of at least three radially extending guide slots, work engaging jaw carriers slidably mounted in said guide slots, spring means biasing said carriers in radial directions, a split and overlapping sealing ring engaging said carriers and forming an expansible chamber with said housing, air inlet passage means in said housing having fluid communication with said chamber, said ring being pneumatically biasable into engagement with said carriers for biasing said carriers in opposite radial directions from said radial directions to effect the gripping of a workpiece.

3,845,963

ADJUSTABLE CHUCK FOR CONTAINERS OR VIALS

Richard W. Price, West Simsbury, Conn., assignor to Emhart Corporation, Bloomfield, Conn.
Continuation-in-part of Ser. No. 206,270, Dec. 8, 1971, abandoned. This application Feb. 20, 1973, Ser. No. 333,455
Int. Cl. B23b *31/10*
U.S. Cl. 279—89 **25 Claims**

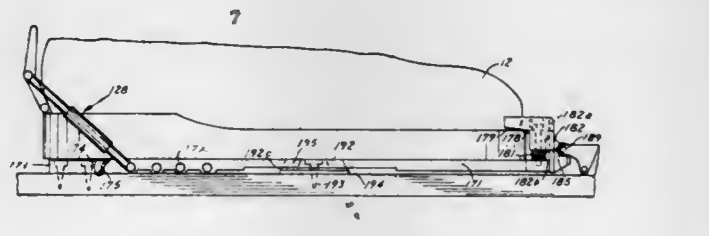


1. A chuck for releasably retaining containers of various size comprising a body portion with a central axial opening for receiving one end of the larger size container to be accommodated and having a plurality of radially extending openings communicating with said central opening, plungers slidably received in said radially extending openings, biasing means for urging said plungers radially inwardly, a container ejecting plug slidably mounted in said central body opening for movement between a normal axial position wherein said plungers engage first side abutment surfaces of said plug and a position axially spaced from said normal position, said plug being mounted for limited angular rotation in said central body opening for movement between first and second angular positions, said plug having second side abutment surfaces for stopping said plungers when said plug is in said normal axial position and in said second angular position whereby said plungers are stopped in first and second plunger positions defined by engagement with said first and second side abutment plug surface.

3,845,964

SKI BINDING APPARATUS

Ralph S. Johnson, 907 Frontier Park Ave., Cheyenne, Wyo. 82001
Filed July 27, 1972, Ser. No. 275,538
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 K **35 Claims**



1. In ski binding apparatus for releasably securing a ski boot to a ski, the combination comprising:
a binding at one end of the ski boot, said binding being yieldable to permit movement of the ski boot along the ski,
intermediate lateral movement restraining means for the ski boot establishing a pivot between the toe and heel of the ski boot about which the ski boot will turn and supporting said ski boot for controlled longitudinal sliding movement relative to the ski, and
lateral movement restraining means at the end of the ski boot opposite to said binding including cam surfaces, there being bearing surfaces opposite said cam surfaces associated with and movable with the movement of the ski boot while maintaining engagement with said cam surfaces, said cam surfaces being arranged along the ski and inclined at an angle to the length of the ski to direct the ski boot to move along and laterally outwardly upon the application of a lateral twist to the ski boot, the bearing surfaces being movable laterally past the extremities of the cam surfaces to release the ski boot laterally upon the application of a preselected amount of lateral twist to the ski boot.

3,845,965

LOW FRICTION SOLE PAD FOR SKI BINDINGS

Gordon C. Lipe, West Lake Rd., Skaneateles, N.Y. 13152
Filed Nov. 13, 1972, Ser. No. 305,836
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 C **3 Claims**

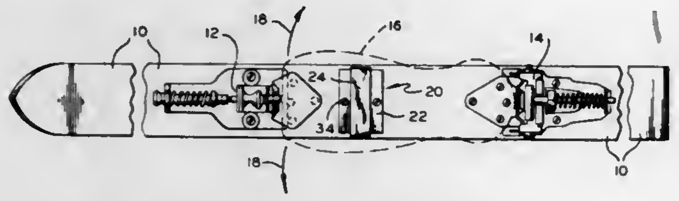
1. An anti-friction device for use with a releasable ski binding mounted on a ski having a running surface and an upper surface, comprising:
a support member adapted to be mounted on the upper surface of the ski adjacent the binding and having an engagement surface;
an endless band mounted on said support member for unrestricted transverse movement relative to the ski and having an inside surface with a portion thereof always con-

fronting said engagement surface of said support member,

said band being of a flexible and deformable material and having on its inside surface a high density of shallow lubricant-receiving recesses with cumulative volume when the band is undeformed at least sufficient to provide a substantially continuous layer of lubricant between said band and said engagement surface, and

said band having an undeformed state when minimal force is applied to urge said band into contact with said surface wherein said cumulative volume is maximum and having a deformed state when greater force is so applied wherein said band is deformed and said cumulative volume of said recesses is reduced; and

a lubricant carried in said recesses for providing said layer of lubricant between said band and said engagement surface, said lubricant being expelled from said recesses to provide said layer of lubricant when forces are applied to place said band in said deformed state and being drawn back into said recesses when said forces are reduced.



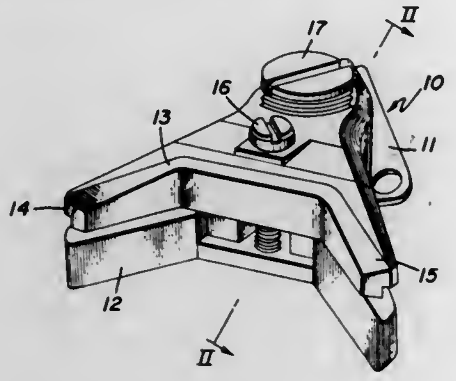
3,845,966
SKI BINDING

Konrad A. Ulbrich, Wellesley, Mass., assignor to Dovre Ski Binding, Inc., West Concord, Mass.

Continuation of Ser. No. 161,188, July 9, 1971, abandoned. This application Mar. 22, 1973, Ser. No. 343,976

Int. Cl. A63c *9/08*

U.S. Cl. 280—11.35 T **5 Claims**



1. A ski binding, comprising

a. a base adapted to be fastened to the upper surface of a ski,

b. a pivot shaft extending vertically from the base,

c. a main body pivotally mounted on the shaft and having a rearwardly-directed lug adapted in an operative position to engage the sole of a ski boot, the shaft extending through and rotatable in a bore in the main body, a counterbore extending downwardly from the top of the main body, a screw member fitting snugly into the counterbore and threadedly engaged with the upper end of the shaft, and a coil spring lying in the counterbore concentrically of the shaft and compressed between the screw member and the bottom of the counterbore, and

d. an elongated V-shaped cam and a cam contact area opposing the cam, disposed between the base and the main body and extending radially of the pivot shaft, the contact area including a V-shaped groove whose cross-section is complemental to that of the cam, the V-shapes subtending an acute angle, and a planar surface perpendicular to the shaft, the groove and the surface of the contact area being positioned with respect to the shaft, so that, as the body is rotated with respect to the base, the cam at times engages the groove with planar contact and at other times engages the surface of the contact area, the cam and groove constituting the only release mechanism of the binding.

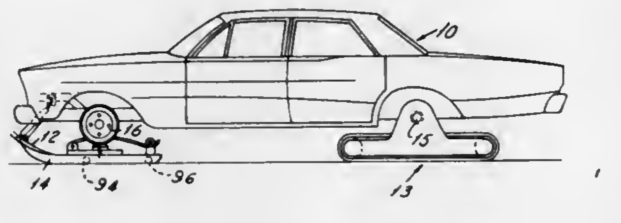
3,845,967
SKI CONSTRUCTION FOR VEHICLES

Roy E. O'Brien, 17834 Millar Rd., Mt. Clemens, Mich. 48043; Donald J. Leslie, 1310 N. Washington, Apt. No. 11, Royal Oak, Mich. 48067, and Michael R. Leslie, 1947 Robina Ave., Berkley, Mich. 48072

Filed Jan. 16, 1973, Ser. No. 324,205

Int. Cl. B62b *19/04*

U.S. Cl. 280—14 **8 Claims**



1. A ski construction for a vehicle comprising a ground engageable ski element fabricated of flexible sheet material, said ski element including means for attachment to an axle hub of a vehicle comprising a leaf spring structure connected to the ski element, means for securing said leaf spring structure directly to a peripheral portion of a wheel rim, said wheel rim being directly connectable to an axle hub of a vehicle in conventional manner, said ski element including an upturned forward nose portion, resilient means secured at one end to said nose portion, and means for securing the other end of said resilient means to structure of a vehicle at a position above the ski element to apply a vertical force to said nose portion to maintain said nose portion in an upwardly directed attitude and also to inhibit the turning radius of the vehicle steering system.

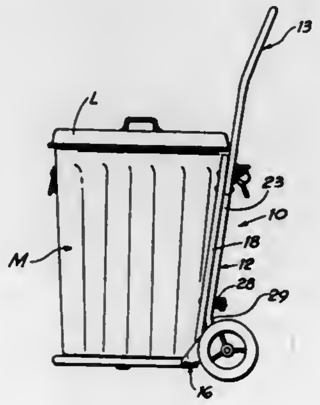
3,845,968
WHEELED CARRIER FOR REFUSE CONTAINERS

Mary E. Larson, P.O. Box 458, Key Largo, Fla. 33037

Filed Jan. 2, 1974, Ser. No. 429,709

Int. Cl. B62b *1/06*

U.S. Cl. 280—36 C **10 Claims**



1. A wheeled carrier for refuse containers comprising, in combination, a base frame member, a pair of spaced, parallel, upstanding side members, hinge means hinging said base

frame member at one end to the lower ends of said upstanding side members, said hinge means comprising mechanism limiting pivotal movement of said base frame member between a collapsed position upwardly in face-to-face relation against said upstanding side member and an outwardly swung position defining an angle of approximately 90° with respect to said upstanding side members, a wheel frame assembly, said wheel frame assembly comprising a pair of spaced, parallel, elongate wheel support frame members, means for removably securing said wheel support frame members in co-extensive, abutting relation, respectively, with one each of said upstanding side members, lower end portions of said wheel support frame members each comprising at their lower ends, parallel, outwardly-extending curved portions, an axle extending transversely through aligned openings in the outer ends of said curved portions, a pair of wheels journalled one each upon outer end portions of said axle, a handle member of U-shaped configuration defining a pair of spaced parallel leg portions, means interconnecting terminal end portions of said handle leg portions with upper end portions of said upstanding side members, a first cross bar, means for removably securing said cross bar between said upstanding side members and said wheel support frame members near the lower ends thereof, a second cross bar, means for adjustably securing said second cross bar between said handle legs, a container handle attachment means centrally disposed along said second cross bar, said attachment means comprising toggle mechanism interconnectable with a bail handle of a trash container supported on said base support assembly.

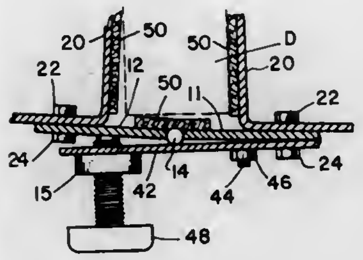
3,845,969
DOOR DOLLY

James H. Nadeau, 271 Zion St., Hartford, Conn. 06106

Filed July 31, 1973, Ser. No. 384,257

Int. Cl. B62b *1/12*

U.S. Cl. 280—47.13 **3 Claims**



1. A dolly for transporting large flat objects comprising;

a. a butt hinge having two horizontally extending leaves pivotally connected to one another by a hinge pin,

b. two L-shaped brackets, each of which has a base leg attached to the upper face of one of said hinge leaves, and said bracket having upstanding legs for receiving an object edgewise therebetween,

c. a clamping cross arm one end of which is attached to the lower face of one of said hinge leaves, and the other end of which defines a threaded opening oriented normally to the lower face of the other of said hinge leaves,

d. a clamping screw threadably received in said cross arm opening for engaging said other hinge leaf to urge said upstanding legs toward one another, and

e. stub shafts extending horizontally outwardly from said base legs, and said shafts rotatably supporting wheels thereon.

3,845,970
SHOCK ABSORPTION SYSTEM FOR A MOTOR VEHICLE

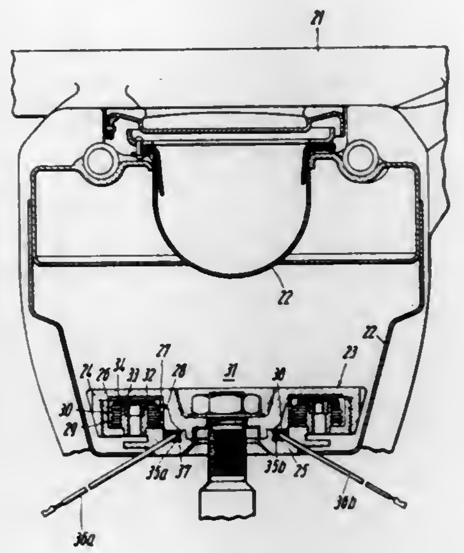
Gunter Herrmann, Ottobrun, Germany, assignor to Bayern-Chemie Gesellschaft Fur Flugchemische Antriebe Mit Beschrankter Haftung, Oschau, Germany

Filed Oct. 4, 1972, Ser. No. 294,908

Claims priority, application Germany, Oct. 9, 1971, 2150463

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **10 Claims**



1. A shock absorption system for use in motor vehicles for minimizing the danger of injury to occupants of the vehicle in the event of an accident, including an inflatable bag, a device for supplying gas for inflating said bag, and means for initiating the inflating process, wherein the improvement comprises that said device for supplying gas includes means forming an enclosed reaction chamber, said reaction chamber having openings communicating with said inflatable bag, means for forming a closure across the openings between said reaction chamber and the inflatable bag, a solid charge positioned within said reaction chamber for generating gas, said means forming an enclosed reaction chamber comprises an axially symmetrical housing comprising a lower housing part and an upper housing part threadedly secured to said lower housing part, said lower and upper housing parts combining to provide the reaction chamber with an annular configuration, a perforated cylinder positioned within the reaction chamber and concentrically of the axis of symmetry of said housing and extending between said upper and lower housing parts and forming an annular-shaped antechamber in communication with the remainder of said annular-shaped reaction chamber, and said means for initiating the inflation process located within said antechamber, so that said means for initiating the inflation process within said antechamber initiates the generation of gas from said solid charge within the remainder of said reaction chamber for the passage of the gas from said reaction chamber into said inflatable bag with said closure means displaced due to the initiation of the generation of gas.

3,845,971
RESTRAINT METAL CHIP COOLANT AND SEPARATOR

Brian K. Hamilton, Utica, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

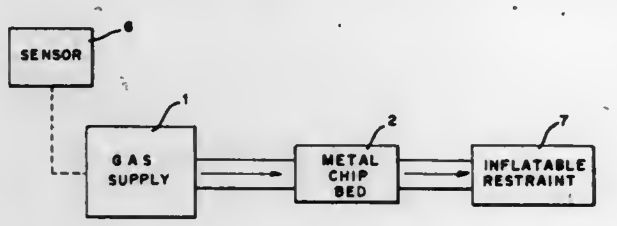
Filed Dec. 15, 1972, Ser. No. 315,700

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **4 Claims**

1. In an improved inflatable restraint system comprising a gas supply system, an inflatable restraint, and means connecting said gas supply system and said restraint for conveying gas therebetween for inflating said restraint, the improvement comprising a porous coolant and separator bed comprising metal chips maintained in said connecting means between the

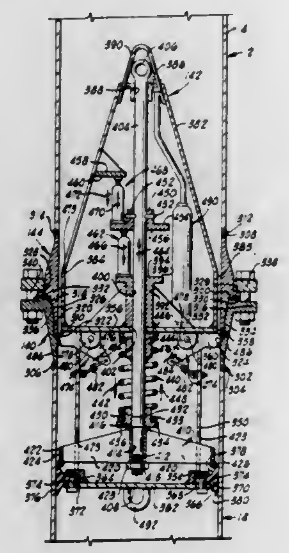
gas supply system and the inflatable restraint through which at least a portion of the gas passes, at least a substantial portion



of the metal chips being generally flat and lying in a first plane and having a portion thereof in a second plane extending from and distinct from the first plane.

3,845,972
APPARATUS FOR CONNECTING UNDERWATER PIPELINES

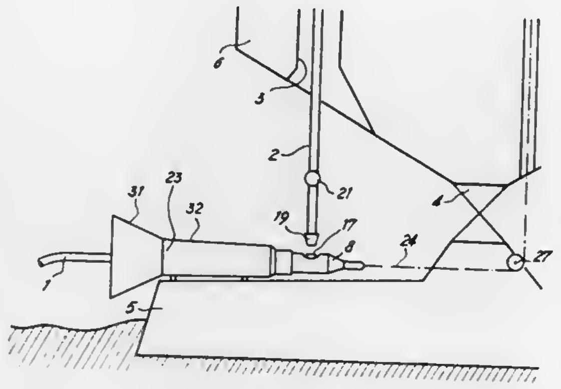
Billy L. O'Brien, 1400 Pine St., and Heber P. O'Brien, 730 E. 14th St., both of Ada, Okla. 74820
Continuation-in-part of Ser. No. 121,788, March 8, 1971, Pat. No. 3,717,002. This application Nov. 24, 1972, Ser. No. 309,160
Int. Cl. F16l *35/00*
U.S. Cl. 285—24 **15 Claims**



1. Apparatus for positioning one end of a first pipeline and one end of a second pipeline in an interconnecting relationship underwater, comprising:
a guide coupling assembly, comprising:
a support base, having an upper end portion and a lower end portion;
a jaw member pivotally connected to a portion of the support base, a portion of the jaw member extending from the support base and engageable with a portion of the second pipeline limiting the movement of the support base in one direction for positioning the guide coupling in one direction in the second pipeline in one position of the jaw member;
guide means connected to the upper end portion of the support base, having an upper end, a lower end and a portion forming a guide surface engageable with a portion of one end of the first pipeline for guiding the first pipeline into an interconnecting relationship with one end of the second pipeline; and
means, having one portion connected to the jaw member and one portion connected to the support base, positioning the jaw member in the position engaging a portion of the second pipeline while permitting movement of the support base through a portion of the first pipeline in a direction generally opposed to the direction of movement limited via the engagement between the jaw member and the second pipeline.

3,845,973
APPARATUS FOR CONNECTING TWO PIPE ENDS BY REMOTE CONTROL

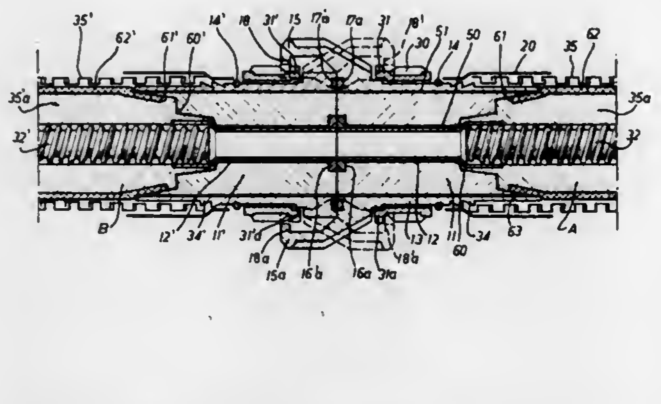
Jean Jacques Houot, Maisons-Lafitte, France, assignor to Entreprise de Recherches et d'Activites Petrolieres (ELF), Paris, France
Filed Sept. 4, 1973, Ser. No. 393,976
Claims priority, application France, Sept. 5, 1972, 72.31426
Int. Cl. F16l *35/00*
U.S. Cl. 285—26 **10 Claims**



1. In apparatus for the connection of the ends of two pipes by remote control, said apparatus comprising a funnel member having a flared portion and a narrow portion, together with a cable extending through said funnel, the improvement which comprises
an end member attached to said cable so that said cable can pull said end member through said flared portion into said narrow portion of said funnel, and means for rotatably attaching said end member to one end of one of said pipes,
cooperating means in the narrow portion of said funnel and on said end member for positioning said end member in a precise longitudinal and radial position relative to said funnel as it is pulled thereinto by said cable,
means for holding one end of the other pipe in a precise position at an angle to the axis of said funnel, and
union means projecting radially from said end member and adapted to cooperate with mating union means on said one end of said other pipe.

3,845,974
COUPLING DEVICE FOR A TRANSFER CONDUIT FOR A CRYOGENIC LIQUID

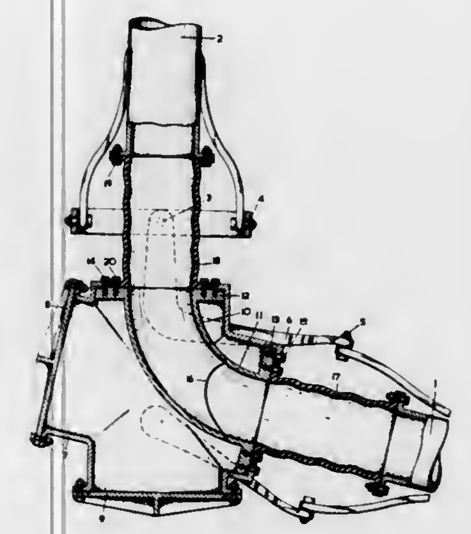
Pierre Pelloux-Gervais, Grenoble, France, assignor to L'Air Liquids, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France
Filed Jan. 18, 1973, Ser. No. 324,865
Claims priority, application France, Jan. 27, 1972, 72.2696
Int. Cl. F16l *11/12*
U.S. Cl. 285—47 **6 Claims**



1. A coupling device for a transfer conduit conveying cryogenic liquids, said device comprising two connectable coupling bodies, one said body comprising at least one locking means actuated by rotation so as to engage with anchorage means rigidly fixed on the other said body, heat insulation means incorporated in each said body and acting in the radial direction, said insulation means comprising an annular block of insulating material with internal and external walls enclosed by a casing on which are fixed said locking and anchorage means, each annular block having a substantially flat radial wall, at least two coaxial fluid-tight joints projecting towards the exterior beyond said radial wall, in the vicinity of the internal wall of said annular block in which is engaged an axial pipe connected to said transfer conduit which is also fixed on the internal wall of said annular block and also in the vicinity of the external wall of said annular block, whereby in the assembled position said joints are respectively applied one against the other by the effect of said locking means.

3,845,975
HINGED PIPE JOINT

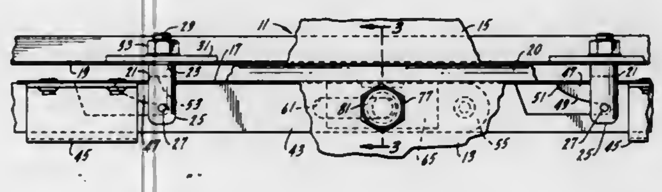
Willem Jan Van Heijst, Monte Carlo, Monaco, assignor to N.V. Industrieele Handelscombinatie Holland, Rotterdam, Netherlands
Filed Mar. 9, 1973, Ser. No. 339,555
Claims priority, application Netherlands, Mar. 10, 1972, 7203232
Int. Cl. F16l *25/00*
U.S. Cl. 285—283 **5 Claims**



1. In a hinged pipe joint comprising a pair of rigid pipes, at least one flexible sleeve between the rigid pipes, and hinge structure interconnecting the rigid pipes and surrounding the flexible sleeve; the improvement comprising a housing, a flange secured in said housing, one end of said flexible sleeve being secured to said flange, said hinge structure being secured to said housing, at least one door through said housing in line with the axis of said flange, and a removable cover closing said opening.

3,845,976
CASKET LOCKING MECHANISM

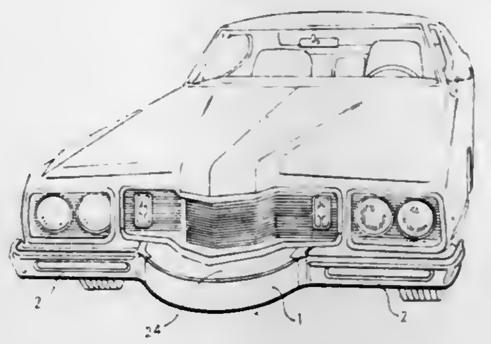
Raymond E. Peterson, 918 Jackson Ave., River Forest, Ill. 60305
Filed Aug. 6, 1973, Ser. No. 385,979
Int. Cl. A61g *17/04*
U.S. Cl. 292—158 **6 Claims**



1. A locking mechanism for a casket including:
a locking bar slideably mounted in said casket,
an elongated link pivotally connected at one end to said locking bar,
a crank arm pivotally connected to said link and rigidly connected to a shaft, and
means formed at one end of said shaft for rotating said shaft, said link including a portion extending beyond its pivotal connection to said crank arm with said extending portion having one edge which engages stop means to limit rotation of said shaft in both clockwise and counterclockwise directions.

3,845,977
PNEUMATIC SHOCK ABSORBING TIRE BUMPER SYSTEM

Cheston Lee Eshelman, 621 N.E. 30th Ter., Miami, Fla. 33137
Filed Jan. 22, 1973, Ser. No. 325,822
Int. Cl. B60r *19/10*; **B61f** *19/04*; **B61g** *11/12*
U.S. Cl. 293—19 **7 Claims**



1. In a motor vehicle, an energy absorbing bumper system comprising in combination, a wheel mounted pneumatic tire positioned horizontally on the forward end of the vehicle so as to extend forwardly of most vehicular elements, said wheel and tire being carried by structural means on the vehicle which is constructed and arranged to accommodate limited movement of the wheel and tire rearwardly of the vehicle upon striking an obstruction forwardly of the vehicle, and a pair of movable bumper bars extending horizontally and transversely of the vehicle, one bar on each side of said wheel and tire with a bar end in contact with the tire, and fulcrum-hinge means for each bumper bar for connecting it to an adjacent part of the vehicle so that said bumper bar will be thrust forcibly against the tire when the bumper bar strikes an obstruction before it.

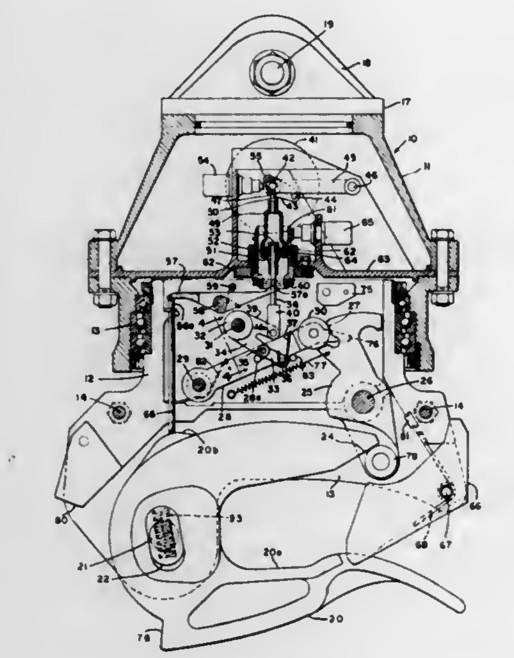
3,845,978
SWIVELLED CARGO RELEASE DEVICE

John Richard Huber, Holicong, Pa., assignor to Eastern Rotorcraft Corporation, Doylestown, Pa.
Filed Dec. 4, 1972, Ser. No. 311,446
Int. Cl. B66c *1/38*
U.S. Cl. 294—83 R **13 Claims**

1. A cargo release device including:
1. a housing assembly having:
  a. an upper housing section
  b. a lower housing section, and
  c. swivel mounting means interconnecting the upper and lower housing sections;
2. the lower housing section including a downwardly depending supporting structure;
3. a load carrying beam pivotally supported on said supporting structure,
  a. the beam pivot being positioned on an axis below the plane of the housing swivel and parallel thereto;
4. a beam latch pivotally supported on said lower housing and adapted to hold the beam in load carrying position when closed and to release the beam when open;
5. latch actuating mechanism positioned in the lower housing and linked to a connecting rod that extends between

the upper and lower housings on an axis generally aligned with the housing swivel axis;

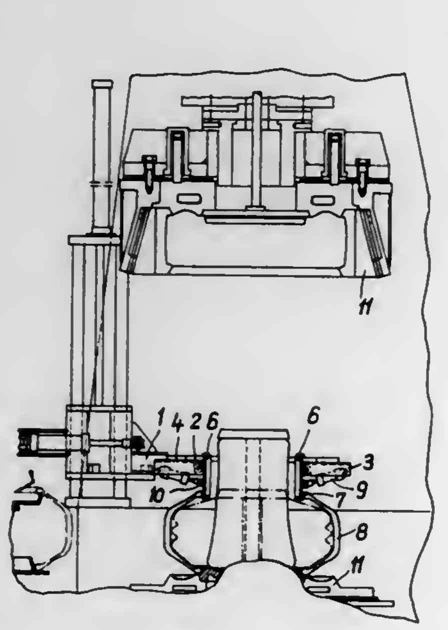
6. said connecting rod being mounted for up and down movement along a generally vertical axis, and



7. means within the upper housing for imparting up and down movement to the connecting rod, said means being linked to an upper portion of the connecting rod through a swivel mechanism whose swivel axis is concentric with the housing swivel axis when the beam is in closed load carrying position.

3,845,979
CHARGING DEVICE

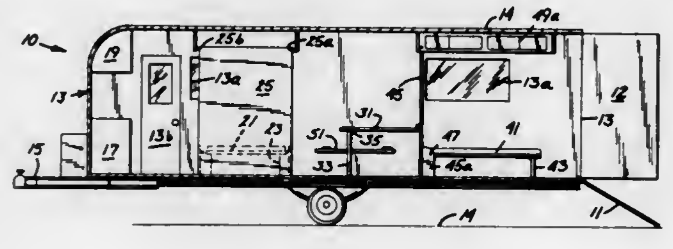
Oskar Schatz, Harburg-Neu Leversen, and Uwe Dieckmann, Hamburg, both of Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed Apr. 5, 1973, Ser. No. 348,211
Claims priority, application Germany, Apr. 12, 1972, 2217589
Int. Cl. B66c *1/54*
U.S. Cl. 294—88 **7 Claims**



1. In a device for handling tire carcasses, especially for handling tire carcasses in horizontal position in connection with a tire press; a frame, a plurality of gripper fingers moveably mounted in said frame in circumferentially distributed relation therein and depending therefrom, and drive means in said frame disposed radially outside said fingers and connected to the radially outer sides of said fingers for moving said fingers radially for gripping a tire carcass by engagement of a bead region thereof from the inside, said frame being in the form of a horizontally disposed substantially "C" shaped plate, the central aperture in said plate being at least as large in diameter as the tire carcass bead to be gripped, support members secured to the underside of said plate, said fingers and the said drive means therefor being connected to and supported by said support members, each finger having a respective drive means and each finger and the drive means therefor being carried by a respective support member, each support member being radially adjustable on said "C" shaped plate.

3,845,980
MOBILE TRAILER GARAGE WITH CONVERTIBLE FURNISHINGS

Edwin F. Grabast, Rt. 2, Box 61, Bozeman, Mont. 59715
Filed Feb. 12, 1973, Ser. No. 331,831
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 R **10 Claims**



1. In a mobile trailer having an outer shell defining therewithin a space enclosed by a ceiling, side walls, and a floor,

a bed-table combination storable under and suspended from said ceiling and convertible from a folded storage position under said ceiling to an unfolded utility position, said bed-table combination comprising:

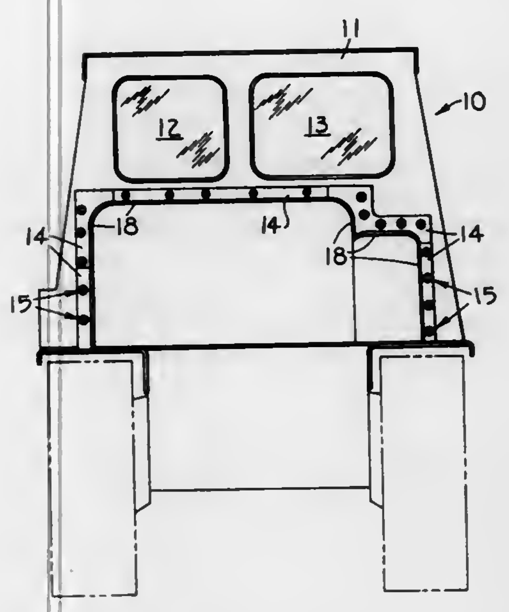
- a. a bed-table suspending means attached to said ceiling, said suspending means including pivotal mounting means for permitting said bed-table combination to move from either of said positions to the other position,
- b. a generally rectangular planar support member having a first end, pivotally attached to said suspending means, and a second, moveable end opposite to said first end; said first end being relatively stationary compared to said second moveable end; one face and the sides adjacent said moveable end of said support member defining a headboard for the bed of said bed-table combination,
- c. a generally flat, planar folding bed means pivotally attached at its head end to said face of said support member,
- d. a table top member pivotally attached to the face opposite the face to which said folding bed means is attached.

3,845,981
MULTI-DIRECTIONAL PANEL ADJUSTMENT MEANS

Joseph A. Whitfield, Peoria, Ill., assignor to Caterpiller Tractor Co., Peoria, Ill.
Filed Oct. 19, 1972, Ser. No. 299,085
Int. Cl. B62d *27/00*
U.S. Cl. 296—28 C **8 Claims**

1. Multi-directional panel adjustment means in combination with a pair of overlying first and second panels attached together by releasable fastening means extending therethrough, said panel adjustment means comprising

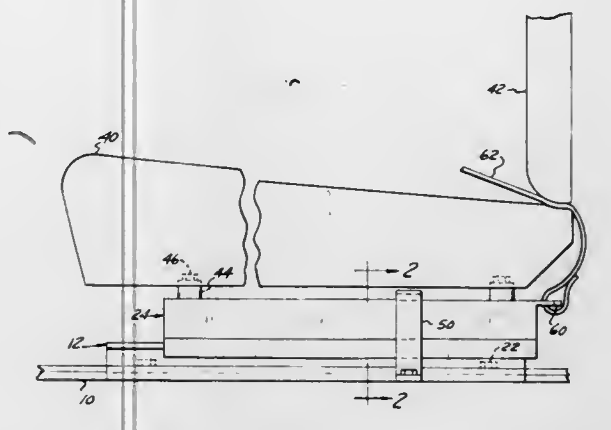
an adjustment member comprising a flat, U-shaped disc having an elongated slot, open at only one end, formed therethrough, said disc mounted on said fastening means to fully abut said first panel and rotatably mounted in said second panel for permitting multi-directional adjustment of said second panel relative to said first panel, and



an elastomeric sealing gasket attached to a free edge of said second panel and compressed into sealing contact with a transversely disposed structural member of a vehicle.

3,845,982
SAFETY SEAT TRACK CONSTRUCTION

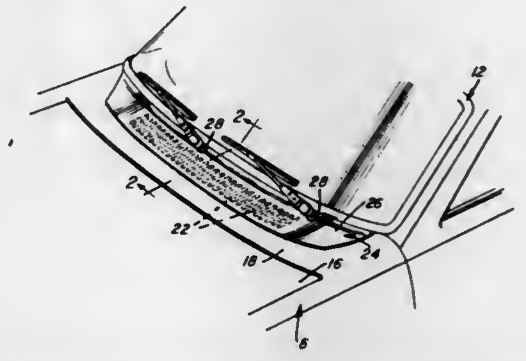
Joseph Pickles, Birmingham, Mich., assignor to Ferro Manufacturing Corporation, Detroit, Mich.
Filed June 29, 1973, Ser. No. 374,896
Int. Cl. B60n *1/08*
U.S. Cl. 296—65 A **2 Claims**



1. A simplified safety seat construction for two-way adjustment comprising a longitudinally extending track fixedly secured to the floor of a vehicle, said track having laterally outwardly extending flanges spaced above the vehicle floor, an elongated seat supporting slide movable longitudinally along said track, seat belts secured to said slide adjacent the rear thereof, said slide being of inverted channel shape having a top wall and depending side walls terminating at the bottom edges thereof in inwardly facing confronting flange receiving channels, low friction slide bearings in said channels surrounding the outer edges of said flanges, a seat, detachable fasteners fixing said seat to said slide adjacent the front and rear ends thereof carried by said slide, and a safety strap of inverted channel-shape fixedly secured to the floor of the vehicle adjacent the rear end of said track and extending transversely over said slide, said strap having a top section spaced slightly above the top wall of said slide intermediate said fasteners, and effective to limit upward movement of said slide from forces transmitted to said slide in the event of collision and to prevent bending of said flanges and the bottom walls of the channels at the lower edges of the side walls of said slide and thus to prevent separation of said slide from said track.

3,845,983
REMOVABLE COWLING COVER FOR VEHICLES

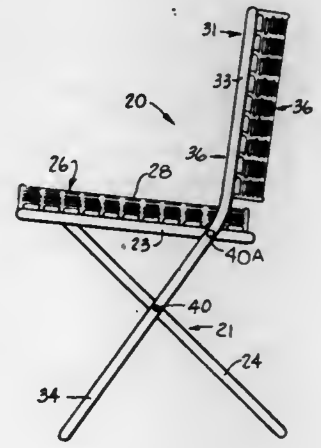
Richard D. Heintz, 38305 56th St., Des Moines, Iowa 50310
Filed June 26, 1973, Ser. No. 373,622
Int. Cl. B60j *1/20*
U.S. Cl. 296—84 **5 Claims**



1. In combination with a vehicle of the type including a windsheild assembly, a cowl body portion extending transversely of said vehicle forwardly of the lower marginal edge of the windshield assembly and a hood disposed immediately forwardly of said cowl body portion, said cowl body portion having ventilation air intake openings formed therein, a removable stiff and shape retentive cover for said air intake openings to prevent the precipitation of dust and other foreign airborne particles through said openings when the vehicle is stationary in a dusty atmosphere or being driven through a dusty region said said cover being panel-like in configuration and of a plan size and shape to completely cover at least the area of said cowl in which said intake openings are formed and to be devoid of portions thereof covering any portions of said hood and windshield assembly, said panel-like cover also being contoured to conform to and closely overlie the outer surface of said cowl area, said cover and cowl including coacting means removably securing said cover in position over said cowl area said cowl including a pair of upwardly projecting motor oscillatable windshield wiper arm support shafts, said cover including a rear marginal edge portion having a pair of edgewise outwardly opening notches formed therein through which said shafts project.

3,845,984
FOLDING CHAIR

David L. Rowland, 8 E. 62nd St., New York, N.Y. 10021
Continuation-in-part of Ser. No. 268,870, July 3, 1972, which is a division of Ser. No. 126,808, March 22, 1971, Pat. No. 3,720,568, Continuation-in-part of Ser. No. 268,907, July 3, 1972, which is a division of Ser. No. 126,563, March 22, 1971.
This application Sept. 7, 1973, Ser. No. 395,365
Int. Cl. A47c *4/42*
U.S. Cl. 297—56 **24 Claims**



1. A folding seating apparatus, including in combination:

- a. a first frame having at least two spaced-apart rigid frame portions,

b. a seat assembly having

a series of arcuate, continuous, sinuous wires, each having two ends, each said wire closely approaching each of its immediately adjacent said wires at frequent intervals, and

a thin sleevelike plastic coating surrounding said wires, following the sinuosity of said wires and joining said wires together where they closely approach each other, said approaches being close enough for effective bridging between them by said coating,

whereby said wires and plastic coating comprise a unitary assembly defining a cylindrical arc,

c. first mounting means for securing said seat assembly to said rigid frame portions of said first frame across a space that flattens said arc to a flatter arc and places said seat assembly in tension along the flatter cylindrical arc, which is convex upwardly,

d. a second frame having at least two spaced-apart rigid frame portions,

e. a back assembly having the structure recited for element (b) above,

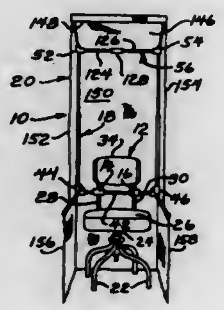
f. second mounting means for securing said back assembly to said rigid frame portions of said second frame across a space that flattens said arc to a flatter arc which is convex rearwardly, and

g. pivot means connecting said first and second frames together for enabling folding,

said seat assembly when said seating apparatus is folded nesting within said back assembly, with part of the lower surface of said seat assembly lying within the chord across said back assembly.

3,845,985
DRAFT SHIELD

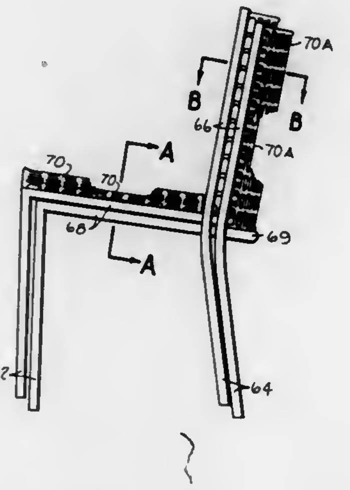
Gerda A. Behrend, 10351 Dickens St., Westchester, Ill. 60153, and Fritz H. Pahlow, Hillside, Ill., assignors to said Behrend, by said Pahlow
Filed Mar. 6, 1973, Ser. No. 338,460
Int. Cl. A47c *7/10, 29/00*
U.S. Cl. 297—184 **1 Claim**



1. A draft shield of the character described mounted on an office chair and supported thereby comprising, a clamp releasably secured to an office chair, a clamp rod secured to the clamp, a lower bracket joint mounted on each of the opposed ends of the clamp rod, a post connected to each of the lower bracket joints, each post being selectively positionable to an attitude either substantially perpendicular to or substantially parallel to the clamp rod, an upper bracket connected to the upper end of each of the posts, an upper rod connected to the upper brackets, a front rod connected to the upper brackets and being spaced from and substantially parallel to the upper rod, and a curtain connected to the upper rod and the front rod, said curtain having a panel and a pair of side panels extending downward to protect from drafts an occupant of the office chair, a roof rod connected to each of the upper brackets and extendible outwardly therefrom, the front rod having each end connected to one of the roof rods, said front rod being separable to facilitate storage, and said upper rod being separable to facilitate storage, each of the posts includes a pair of telescoping members to facilitate storage of the draft shield, each lower bracket joint includes an end block secured to its respective end of the clamp rod, a double rod bracket pivotedly mounted on its respective end block, each double rod bracket having one end of its respective post secured therein, and a lock for selectively and releasably locking each double rod bracket to its repsective end block, including a side rod pivotedly connected to each of the double rod brackets for selectively positioning the side rod either substantially parallel to its respective post or in an attitude substantially perpendicular to said post, a side curtain supportable on the side rod for further protecting the occupant of the office chair, each of the posts including a pair of telescoping members to facilitate storage of the draft shield, and a roof rod connected to each of the upper brackets and being selectively positionable in an attitude either substantially parallel to its respective post or extending outward from its respective post, the front rod having each end connected to one of the roof rods, said front rod being separable to have portions positionable in an attitude substantially parallel to the respective roof rods, and said curtain being transparent.

3,845,986
STACKABLE SEATING UNITS

David L. Rowland, 8 E. 62nd St., New York, N.Y. 10021
Continuation-in-part of Ser. No. 268,870, July 3, 1972, which is a division of Ser. No. 126,808, March 22, 1971, Pat. No. 3,720,568, Continuation-in-part of Ser. No. 268,907, July 3, 1972, which is a division of Ser. No. 126,563, March 22, 1971. This application Sept. 7, 1973, Ser. No. 395,266
Int. Cl. A47c *3/04*
U.S. Cl. 297—239 **15 Claims**



1. A stacking chair, including in combination:

a. a frame having at least two spaced-apart rigid side frame portions, two front legs, two rear legs, and two spaced-apart rigid back frame portions, said front legs and said rear legs being spaced apart at different distances and being operatively connected with their respective frame portions to enable compact stacking,

b. a seat assembly and a back assembly, each having

a series of arcuate, continuous, sinuous wires, each having two ends, each said wire closely approaching each of its immediately adjacent said wires at frequent intervals, and

a thin sleevelike stretchable plastic coating surrounding said wires, following the sinuosity of said wires and joining said wires together where they closely approach each other, said approaches being close enough for effective bridging between them by said coating,

whereby said wires and plastic coating comprise a unitary assembly defining a cylindrical arc,

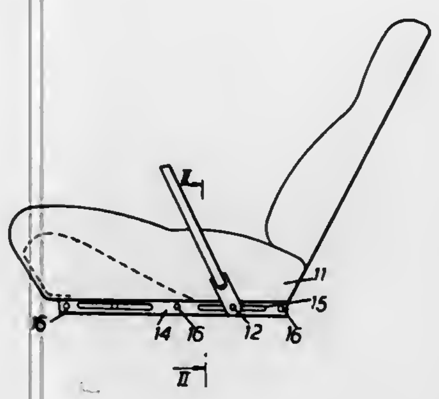
c. first mounting means for securing said seat assembly to said rigid side frame portions across a space that flattens said arc to a flatter arc and places said seat assembly in tension along the flatter cylindrical arc, which is convex upwardly, and

d. second mounting means for securing said back assembly to said rigid back frame portions across a space that flattens said arc to a flatter arc which is convex rearwardly,

each said seat assembly, when a plurality of said chairs are stacked, nesting over said seat assembly of the chair below, with part of the lower surface of each lower seat assembly lying within the chord across the seat assembly of said chair immediately above, the back assemblies being similarly nested.

3,845,987
VEHICLE SEATING

Gordon Dennis Bashford, Balsall Common, Nr. Coventry, England, assignor to The Rover Company Limited, Warwickshire, England
Filed July 16, 1973, Ser. No. 379,827
Claims priority, application Great Britain, Aug. 19, 1972, 38797/72
Int. Cl. A62b *35/00*
U.S. Cl. 297—385 **6 Claims**



1. A vehicle having a seat mounted on a runner including a channel portion and receiver means, said runner being attached to said vehicle, said vehicle comprising:

i. a frame structure for said seat;

ii. a rigid member mounted on the frame structure;

iii. a seat belt anchorage attached to the rigid member; and

iv. a slider mounted on the rigid member for slidable engagement with the runner; the slider including a deformable component adapted, when a load in excess of a predetermined load is applied to the anchorage, to deform so that the rigid member is deflected, relative to the channel portion sufficiently to cause engagement between the rigid member and the receiver portion, thereby limiting further deflection of the rigid member relative to the channel portion.

3,845,988
EASY-TO-ASSEMBLE STRUCTURE

William F. Fleisch, 126 Campbell Ave., Williston Park, N.Y. 11596, and Walter Pousche, 5805 Metropolitan Ave., Brooklyn, N.Y. 11237
Filed June 19, 1972, Ser. No. 264,207
Int. Cl. A47c *4/02*
U.S. Cl. 297—440 **26 Claims**

1. An assembled structure comprising:

a rigid and self-standing supporting device including at least one hollowed post that contains therein wall means defining at least an elongated slot, and having a generally vertical supporting surface and also having a different supporting surface in angular relation with the vertical supporting surface;

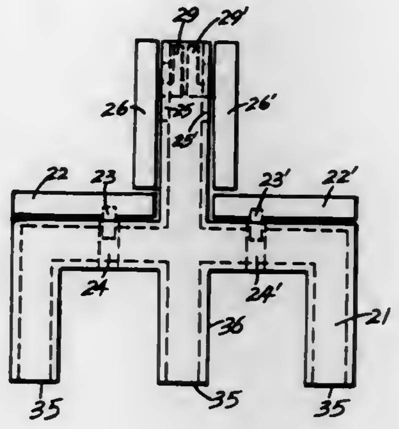
a first structural member having an upper surface and a lower surface with the lower surface resting in bearing engagement with the different supporting surface;

a second structural member having a front major surface and a rear major surface with at least a portion of the rear major surface bearing against the vertical supporting surface so as to have a prescribed spatial relation relative to the first member, the second member also having a lower edge resting in weight-supporting, bearing contact with the top surface of a selected portion of the first member placed thereunder; and

locking means for securing the second member in countergravity locking engagement with the vertical supporting surface; the weight of the second member tending to cause the second member to slip out of the locking engagement but being prevented from doing so by the selected portion placed underneath the second member;

said locking means comprising hook means attached to the second member and having an arm projecting rearwardly from the rear major surface, the arm turning upwardly and terminating into a generally vertical portion, the arm and the vertical portion having a total height less than the height of the slot so as to allow their insertion into the hollowed post through the slot to achieve the locking engagement,

the height of the slot being greater than the thickness of the selected portion with the positive difference therebetween being less than the total height whereby the second member is movable against gravity to allow placing the first member thereunder for instantly completing the assembly of the structure but once so placed, the first member through the selected portion thereof prevents the second member from moving sufficiently downward to allow the hook means to be disengaged from the slot; and whereby the assembled structure can be disassembled by first elevating the second member sufficiently to allow removing the first member from underneath the second member thereby permitting the second member to be lowered before the hook means can be disengaged from the slot.



3,845,989
EXCAVATING APPARATUS

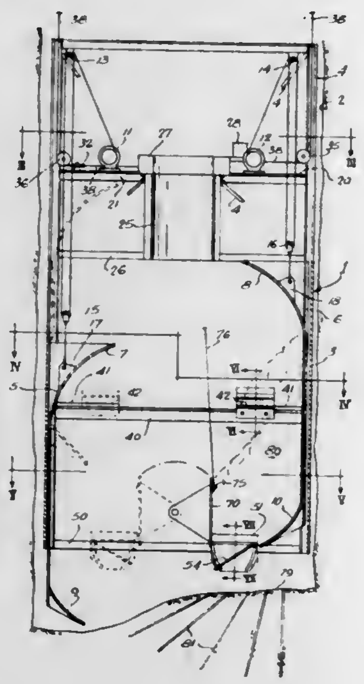
George Ylonen, Lac Du Bonnet, Manitoba, Canada
Filed May 9, 1973, Ser. No. 358,501
Claims priority, application Canada, Jan. 31, 1973, 162493
Int. Cl. E21d *1/08*
U.S. Cl. 299—13 **18 Claims**

1. Excavation apparatus, comprising:

a. a frame capable of being disposed in a shaft to be further excavated:

b. first and second deflector means carried inside said frame on opposite sides thereof and each capable of being raised and lowered; and

c. movable bulkhead means carried by said frame and capable of being disposed between said first and second deflector means in a first position in which said bulkhead means cooperates with the first deflector means in a raised position to form a first muck entrapment container, and a second position in which said bulkhead means cooperates with the second deflector means in a raised position to provide a second muck entrapment container; the arrangement being such that on blasting a bench forming the base of the shaft on the side of said first deflector means, muck is deflected upwardly and laterally by the second deflector means in a lowered position into the first muck entrapment container for subsequent removal from the shaft, the operation thereafter being repeatable for successive benches on alternate sides of the shaft by successive reversal of the positions of the first and second deflector means and movement of said bulkhead means to form said second and first muck entrapment containers.



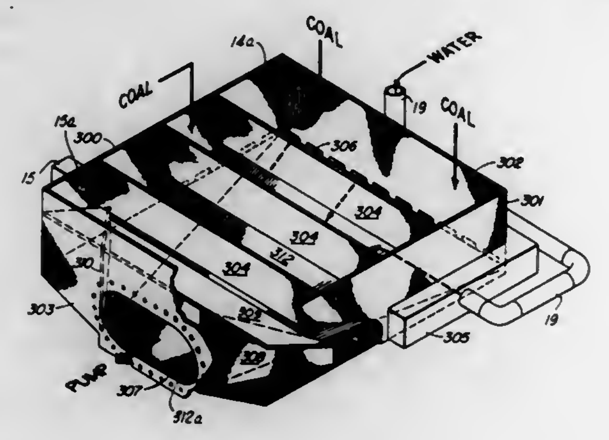
3,845,990
SLURRY HOPPER SYSTEM

David L. McCain, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation of Ser. No. 298,118, Oct. 16, 1972. This application Aug. 21, 1973, Ser. No. 389,272

Int. Cl. B65g *53/30*

U.S. Cl. 302—15 **9 Claims**



1. A hopper assembly for forming a slurry of a granular solid product and water in restricted spaces for transportation by a slurry pump, comprising:

an open-topped tank having horizontal dimensions greater than vertical dimensions and having interconnected end walls and side walls and a bottom tapered downwardly toward one end wall;

means for feeding water into the tank adjacent the higher end of the bottom;

means for feeding the granular solid into the tank adjacent the higher end of the bottom;

means adjacent the lower end of the tank bottom forming an outlet for the slurry to the pump;

means in the tank limiting the flow of water through the upper portion of the tank to minimize turbulence; and

means for maintaining the water at a predetermined level in the tank.

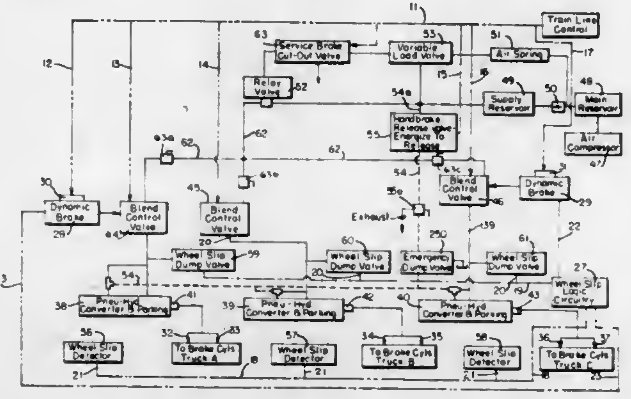
3,845,991
BRAKE SYSTEM FOR A LIGHT RAIL VEHICLE

Thomas Engle, Cape Vincent, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Aug. 31, 1973, Ser. No. 393,529

Int. Cl. B60t *13/74*

U.S. Cl. 303—3 **16 Claims**



1. A brake system for light rail vehicles comprising

a. a dynamic brake for said vehicle, said brake including means for generating variable electric current upon application of the dynamic brake, said means including an impedance to receive at least a portion of the variable current generated by said dynamic brake,

b. fluid operated friction brakes for said vehicle, said brakes including means responsive to variations in fluid pressure for actuating said friction brakes,

c. electrical control means for energizing said dynamic brake and said fluid operated friction brakes to effect braking of the vehicle,

d. fluid pressure control means for providing variations in the fluid pressures applied to said friction brake means, said control means including

   1. blending means for adjusting the fluid pressure applied to said friction brakes, said blending means including an electropneumatic transducer which responds to variations in both the electrical current received by said impedance and an electrical current produced by said electric control means, to vary the fluid pressure supplied to said friction brakes,
   2. variable load valve means for controlling the fluid pressure supplied to said blending means, said means including an air spring and proportional valve, said valve being responsive to pressure variations in said air spring to vary the fluid pressures supplied to said blending means, and

e. a skid controller including detector means for detecting skid condition and a release valve actuated by said controller for venting the fluid pressure supplied to said friction brakes, when said detector means detects a skid condition.

3,845,992
HYDRAULIC PRESSURE CONTROL APPARATUS

Katsuki Takayama, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi Prefecture, Japan

Filed Mar. 6, 1973, Ser. No. 338,542

Claims priority, application Japan, Mar. 14, 1972, 47-25922

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 F **4 Claims**

1. An apparatus for controlling the hydraulic pressure in a control system for controlling a vehicle comprising

a first source of fluid under pressure responsive to the operation of a pedal,

a second source of fluid under pressure,

an actuator means responsive to fluid pressure for controlling the vehicle,

an electrically operated signal means responsive to the rotational state of a vehicle wheel for varying the fluid pressure on said actuator means,

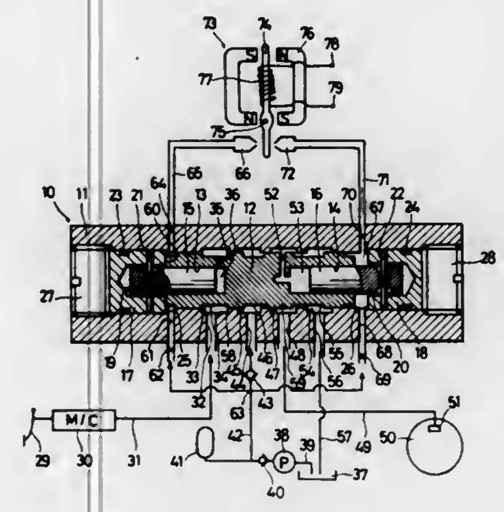
and a servo valve, said servo valve comprising,

a cylinder housing having closed end walls,

a piston slidably fitted within said cylinder housing and having an opposed opening at each end thereof,

a pair of longitudinal members, one end of each member being mounted in each opposed opening in said piston, and the other ends of said members being affixed to the closed ends of said cylinder housing, the inner ends of said longitudinal members being spaced from the inner ends of the opposed openings in said piston to form two compartments,

a first passageway for connecting one of the compartments to said first source of fluid under pressure,



a second passageway for connecting the other compartment to said actuator means,

a third passageway for connecting the other compartment to a drain, said third passageway being closed to the drain when fluid pressure is applied from said first source through said first passageway to move said piston and to open said second passageway to actuate said actuator means by fluid pressure,

a fourth passageway for connecting the other compartment to said second source of fluid under pressure,

the opposed outer ends of said piston being spaced from the closed ends of said cylinder housing to form opposed chambers, said chambers being connected to said second source of fluid pressure and to said electrically operated signal means,

said signal means including means to vary the fluid pressure in said chambers in accordance with the state of rotation of the wheel of the vehicle to increase or decrease the fluid pressure in the other compartment by varying the movement of said piston and thus vary the pressure applied to said actuator means.

3,845,993
RECIRCULATING BALL FLAT WAY BEARING ASSEMBLY

Frederick S. Schiler, Stow, Ohio, assignor to Portage Machine Company, Akron, Ohio

Filed Aug. 31, 1973, Ser. No. 393,422

Int. Cl. F16c *31/04*

U.S. Cl. 308—6 **5 Claims**

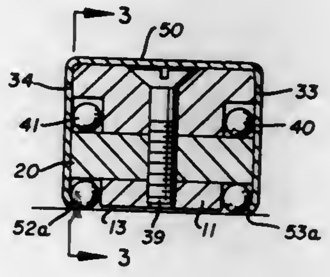
1. A recirculating bearing assembly comprising;

A. a base plate having opposed partial ball runs therein;

B. a guide member secured to said base plate;

C. a body portion
   1. secured to said base plate and said guide member and
   2. having opposed partial ball runs which cooperate with said guide member and said partial ball runs of said base plate to form opposed endless ball runs;

D. a plurality of ball bearings received in said endless ball runs; and



E. a cover plate
   1. telescopically received over said body portion, said guide member, and said base plate, and
   2. including means for retaining said balls in place for at least a portion of the length of said endless ball runs.

3,845,994
PLAIN BEARING WITH HIGH LOAD CAPACITY, PARTICULARLY FOR BORING TOOLS WITH CUTTING WHEELS

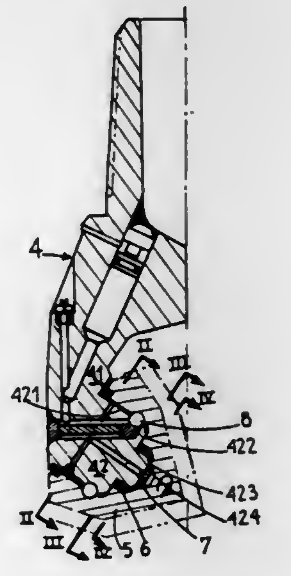
Roger Trey, Tarbes, France, assignor to Creusot-Loire, Paris, France

Filed Apr. 9, 1973, Ser. No. 349,045

Claims priority, application France, Apr. 25, 1972, 72.14609

Int. Cl. F16c *33/66*

U.S. Cl. 308—8.2 **3 Claims**



1. Plain bearing with high load capacity, for boring tool with cutting wheels including:

a tool body which can be connected to a string of rods,

at least one spindle rigidly attached to the body and provided with at least one bearing surface,

at least one rotary cutting wheel mounted on a spindle provided internally with at least one rubbing surface,

a lubricant reservoir supplying grease to the rubbing surfaces,

at least one ball-type bearing for immobilizing a cutting wheel on its spindle,

the grease containing fine particles of at least one frictional material which is soft relative to the hard materials of the rubbing organs and has good resistance to seizing by insolubility relative to at least one of the said materials, at least one of the cutting wheels having grooves around the whole of at least one rubbing surface, the rear sides of said grooves considered in the direction of rotation of the said organ being substantially perpendicular to the rubbing surface.

3,845,995
MAGNETICALLY MOUNTED ROTOR

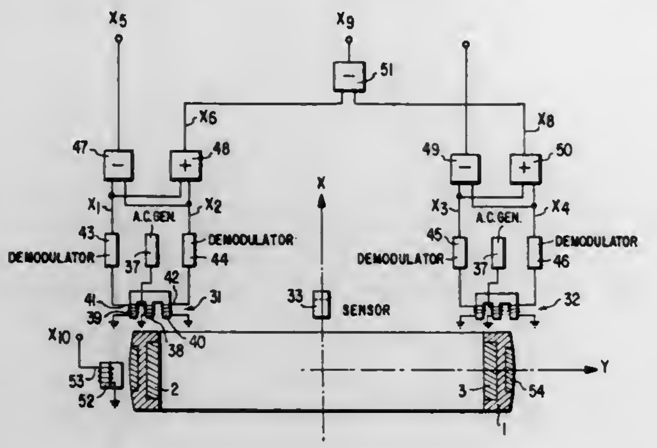
Heinz Wehde, Rothenberg, Germany, assignor to Teldix GmbH, Heidelberg, Germany

Filed Feb. 27, 1973, Ser. No. 336,215

Claims priority, application Germany, Mar. 8, 1972, 2210995

Int. Cl. F16c *39/06*

U.S. Cl. 308—10 **5 Claims**



1. A magnetic device comprising, in combination:
- a stator;
- a rotor disposed for rotation relative to said stator;
- a plurality of permanent magnets mounted on, and spaced around the circumference of, said rotor to be in the form of a ring with the magnets alternating in polarity around said rotor circumference in a manner such that the magnetic field lines extend substantially parallel to a surface of said rotor between said rotor and said stator in regions between adjacent magnets and extend substantially perpendicular to such rotor surface in the region of each magnet;
- a plurality of windings disposed on said stator and composed of first and second conductor groups distributed around the circumference of said stator to intersect said field lines, with the conductors of said first group being transverse to the conductors of said second group, the conductors of both said groups being substantially parallel to such rotor surface, the conductors of said first group being oriented transverse to the field lines in regions between adjacent magnets, and the conductors of said second group being oriented transverse to the field lines in the region of each magnet; and
- current generating means connected to said windings for providing currents in said windings which create forces acting on the rotor in the axial, radial and tangential directions, relative to the direction of rotor rotation, for driving and positioning said rotor with respect to said stator.

3,845,996
BEARING SYSTEMS

Werner Geweke, Rodenberg, Germany, assignor to Padana AG, Zug, Switzerland

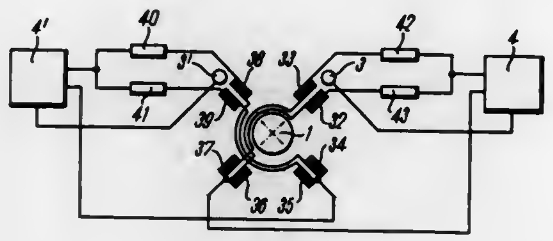
Filed Mar. 16, 1973, Ser. No. 342,149

Claims priority, application Germany, Mar. 20, 1972, 2213513

Int. Cl. F16c *39/06*

U.S. Cl. 308—10 **11 Claims**

1. In a D.C. controlled magnetic bearing system for a body having electromagnetic means comprising magnetizing coil means for exerting magnetic forces on said body, sensor means for producing error signals responsive to displacement of said body from a predetermined position and regulating means for producing corrective signals for said magnetizing coil means responsively to said error signals: the improvement comprising circuitry having two branches each disposed to conduct said corrective signals from said regulating means to said magnetizing coil means, one of said branches comprising capacitor means and the other of said branches comprising at least one of resistor and inductor means.



3,845,997
MAGNETIC BEARING ASSEMBLY FOR JOURNALLING A ROTOR IN A STALOR

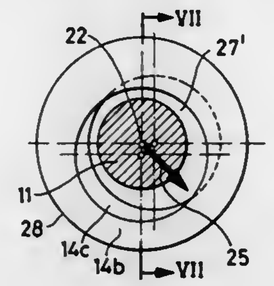
Karl Boden, Oberteuringen; Werner Geweke, Rodenberg, and Dietrich Scheffer, Friedrichshafen, all of Germany, assignors to Padana AG, Zug, Switzerland

Filed Mar. 19, 1973, Ser. No. 342,893

Claims priority, application Germany, Mar. 20, 1972, 2213522; Mar. 20, 1972, 2213465

Int. Cl. F16c *39/06*

U.S. Cl. 308—10 **30 Claims**



1. A magnetic bearing assembly for journalling in a stator a rotor subject to a steady force in a direction transverse to its rotational axis and having ferromagnetic portions comprising radial bearing means cooperating with said ferromagnetic portions for holding the rotor on a desired axis of rotation, means for controlling said radial bearing means, an annular air gap being defined between said rotor and said bearing means, and magnetic means for generating a magnetic field within said air gap, said magnetic means having a first magnetic field component which is constant in radial directions around the periphery of the air gap, and a second magnetic field component superimposed on said first magnetic field component, said second magnetic field component varying in radial directions around the periphery of the air gap and generating a constant force acting in opposition to the steady transverse forces acting on the rotor.

3,845,998
WINDSHIELD WIPER LINKAGE BUSHING

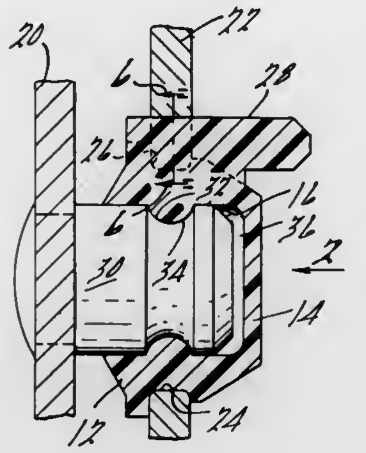
Warren W. McElhinney, Birmingham, Mich., and James C. Beaudette, Essex, Ontario, Canada, assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 22, 1972, Ser. No. 317,855

Int. Cl. F16c *33/74, 27/00*

U.S. Cl. 308—36.1 **3 Claims**

1. In a windshield wiper system employing motion transmitting linkage interconnected by journaling a stud of one linkage member within a bushing carried by a second linkage member, an improved linkage coupling arrangement for accommodating canting and rotational movement as between the interconnected linkage members, said linkage coupling arrangement comprising a first linkage member having an aperture therethrough, a resilient one-piece bushing having a body portion with oppositely disposed first and second end portions and an annular groove extending transversely about the outer surface of said body intermediate said bushing end portions, said bushing being located in the aperture of said first linkage member and retained therein by engagement of said first linkage member in said bushing groove, a bore in said bushing body extending through the first end portion and terminating adjacent the second end portion such that said second end portion defines an integrally formed cap of said bore, a stud projecting from the second of the linkages being interconnected and journaled in the bore of said bushing, and a seal surface in the first end portion of said bushing, said seal being formed by varying the diameter of said bore to provide a tapered surface capable of making sealing contact with said stud.



3,845,999
BEARING ASSEMBLY

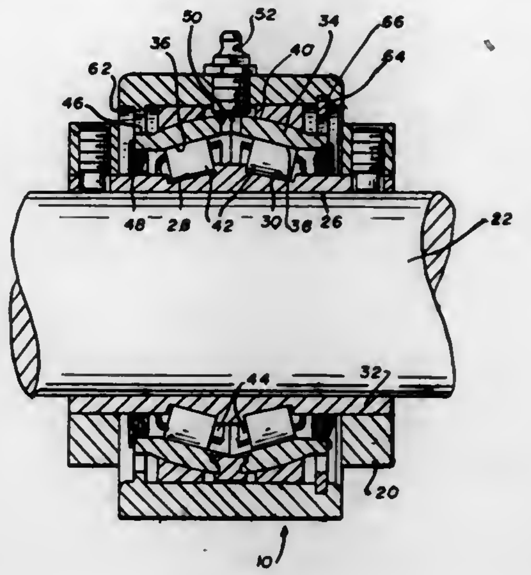
George A. Zimmer, Ithaca, N.Y., and Hilarius S. Struttmann, St. Charles, Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 278,139, Aug. 4, 1972. This application Aug. 30, 1973, Ser. No. 393,113

Int. Cl. F16c *23/00, 33/00*

U.S. Cl. 308—194 **3 Claims**

1. A self-aligning bearing comprising:
- a housing having a generally cylindrically surfaced opening therethrough, said housing being adapted to be fixed to a support.
- a bearing assembly received in said opening, said bearing assembly comprising:
- an inner race having a central cylindrical opening for receiving a shaft and outer spaced frusto-conical raceways; an outer race having an outer spherical surface and inner spaced frusto-conical raceways; and
- sets of rollers, each set being between opposed inner and outer raceways and in rolling contact therewith;
- ring means comprising a pair of annular ring members each having a continuous annular inner spherical surface and a continuous outer cylindrical surface said ring members being located between the outer spherical surface of said outer race and said cylindrical surface of said housing with one ring member being opposite one set of rollers and the other being opposite the other set of rollers, said annular ring members permitting pivotable movement of said bearing assembly with respect to said housing in response to shaft misalignment relative to said support, means for retaining said ring members in said housing permitting lateral movement of said bearing assembly relative to said housing, said retaining means comprising a groove in said housing, a snap ring in said groove and a spring washer between a ring means and a snap ring.



3,846,000
WIPER BEARING FOR A WINDSHIELD WIPER FOR MOTOR VEHICLES

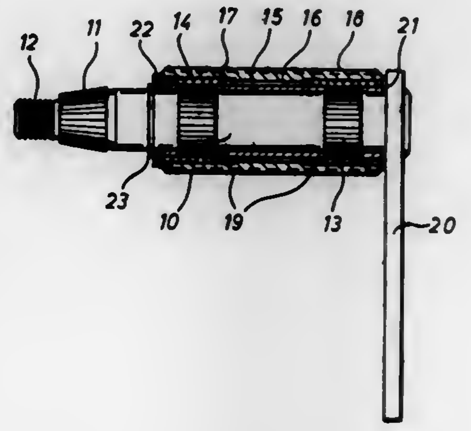
Alfred Kohler, Bietighein, Wurttemberg, Germany, assignor to SWF Spezialfabrik Fur Autozubehor Gustav Rau GMBH Bietighein, Germany

Filed Sept. 7, 1971, Ser. No. 178,140

Claims priority, application Germany, Mar. 11, 1971, G 71 09 168.4

Int. Cl. F16c *33/20*

U.S. Cl. 308-238 **7 Claims**

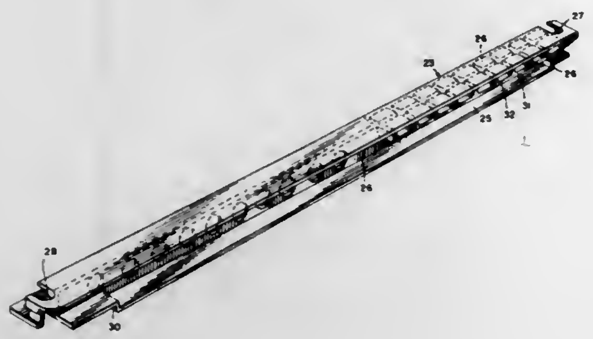


1. Wiper drive for a windshield wiper for motor vehicles, comprising a bearing bush have a bore with two intermediate plastic sleeve therein, a wiper shaft for a wiper arm having a drive crank and being rotatably mounted in said plastic sleeve within said bearing bush, said wiper shaft having a plastic coat non-rotatably secured thereto at least in the range of said sleeve of said bearing bush said two plastic intermediate sleeves being arranged in axially spaced relationship to each other, the inner bore of the bearing bush having recesses at each end in which said sleeves are respectively engaged said plastic coat and said bearing bush extending between the end faces of said sleeves, and a lubricating chamber formed between said sleeves.

3,846,001
PLASTIC GUIDE FOR DRAWER

Edward L. Kaplan, Northbrook, and Gerhard Cless, Skokie, both of Ill., assignors to Kenneth H. Gutner, Highland Park, Ill.

Filed June 21, 1973, Ser. No. 372,228
Int. Cl. F16c *21/00*
U.S. Cl. 308—3.6 **3 Claims**

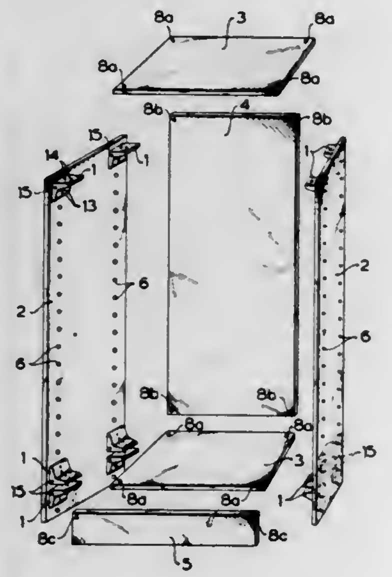


1. A drawer guide adapted to be mounted on a furniture piece to guide the movement of a drawer positioned over the front and rear parting rails of said furniture piece and equipped with a channel shaped slide comprising
   a unitary elongated plastic element having upper and lower integral horizontally extending flanges integrated by a vertically extending web to define a generally I-shape and transverse section and equipped with an aperture adjacent each end for receiving a fastener to secure the element to said parting rails,
   said element further including an integral reinforcement on the underside of said top flange, said top flange and reinforcement being integrated at said front end, at least one of the upper walls of said flange and lower wall of said reinforcement being tapered to facilitate engagement of said slide with said guide.

3,846,002
BUILDING UNIT FOR FURNITURE

Reinhard-Heinrich Floetotto, Brackweder Strasse 52, D483-Gutersloh, Germany

Filed Mar. 9, 1973, Ser. No. 339,525
Claims priority, application Germany, Mar. 10, 1972, 2211733
Int. Cl. A47b *77/00*
U.S. Cl. 312—107 **6 Claims**

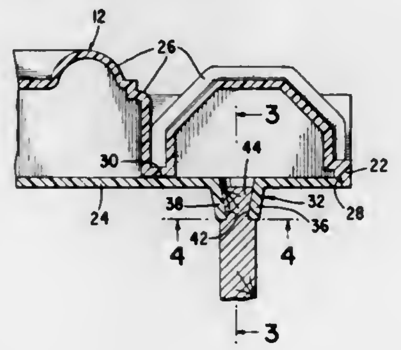


1. In a building unit for furniture comprising sidewall pieces, intermediate pieces and apertured connecting pieces; said sidewall and intermediate pieces being provided with preformed holes, the improvement comprising said sidewall and intermediate pieces being connected by means of connecting pieces having mounting surfaces for said sidewall and intermediate pieces and apertures extending through said pieces for receiving fastening elements, said connecting pieces comprising two integral portions having two mutually perpendicular main mounting surfaces through which extend first and second apertures, said connecting pieces further comprising auxiliary mounting surfaces formed on both sides of said connecting piece portions perpendicular to said main mounting surfaces with a third aperture perependicular to said first and second apertures extending through the juncture region of said portions and through said auxiliary mounting surfaces.

3,846,003
DRAWER CONSTRUCTION

Jerry E. Rockwell, Sanford, N.C., assignor to The Singer Company, New York, N.Y.

Filed Dec. 18, 1972, Ser. No. 316,204
Int. Cl. A47b *88/00*
U.S. Cl. 312—204 **4 Claims**



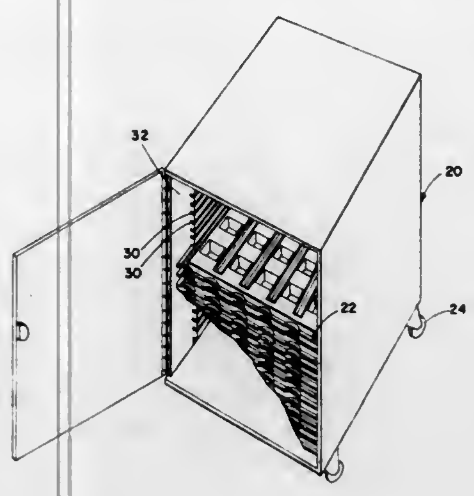
1. In a drawer comprising a bottom, a pair of opposed sides connected to opposite sides of the bottom, a rear wall connected to the rear of the bottom and the sides, and a synthetic plastic front comprising a front panel and a back panel, the front surface of the front panel having a decorative undulating contour, means for securing the front panel to the back panel with portions of the front panel abutting the back panel and portions of the front panel spaced from the back panel to define hollows therebetween, a tenon formed on the front of each of said sides, and means defining a pair of mortise prominent of the rear surface of the back panel for receiving said tenons to form interlocking joints between the front and the sides, each mortise comprising a pair of spaced converging ribs integrally formed on the back panel and an integral cross rib connecting the tops of the spaced ribs.

3,846,004
PHARMACEUTICAL CABINET

Kenneth D. Relyea, Grove City, Ohio, assignor to Drustar Unit Dose Systems, Inc., Grove City, Ohio

Filed Oct. 30, 1972, Ser. No. 302,257
Int. Cl. A47b *81/00, 91/00*
U.S. Cl. 312—209 **3 Claims**

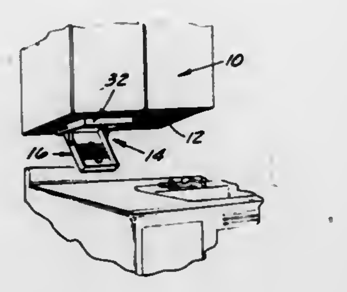
1. An apparatus for the storage and distribution of individual unit dose containers of pharmaceuticals comprising, in combination a portable housing means including at least one side wall opening having a closure means and a plurality of parallel, vertically spaced tracks on opposite sides of said opening and (b) a plurality of unitary trays for receipt of said containers removably and slidably mounted to said tracks in vertically spaced relationship each of said trays including a plurality of container-receiving recesses spaced from one another in substantially parallel rows and provided with slot means recessed below the top surface of said tray and disposed adjacent and parallel to each of said rows of recesses, each of said slot means arranged parallel to said tracks and adapted to removably receive a plurality of card-like strips extending upwardly above the top surface of said tray and provided with predetermined indicia, said trays being vertically spaced from one another and retained in said housing in a spaced relationship which defines a vertical clearance between the top surface of a tray and the bottom surface of the tray recesses in the upper adjacent tray which is substantially less than the depth of a unit dose container adapted to be received in said tray recesses, each of said trays having a downwardly opening corridor formed beneath its slot means and above the slot means of the next lower adjacent tray to permit said trays having said strips mounted therein to be partially nested but allowing individual trays to be slideably withdrawn without interference.



3,846,005
UTENSIL STORAGE UNIT

Marie R. Harper, 13947 Whiterock, La Mirada, Calif. 90638, and Maxine R. Blea, 12906 Longworth, Norwalk, Calif. 90650

Continuation-in-part of Ser. No. 296,716, July 7, 1972, abandoned. This application Sept. 4, 1973, Ser. No. 394,299
Int. Cl. A47b *61/02;* **A47f** *5/08*
U.S. Cl. 312—248 **2 Claims**

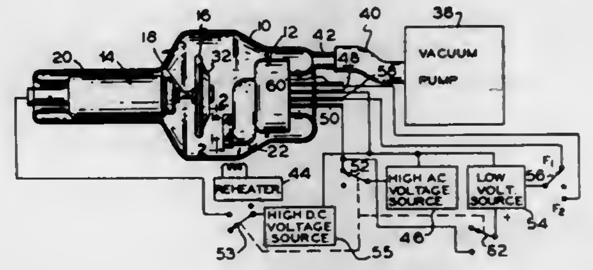


1. A utensil storage unit operably attached to the bottom of a kitchen cabinet shelf, wherein knives and the like are removably stored, said unit comprising:
   a box-like housing having
      a front wall,
      a rear wall,
      a pair of side walls interconnected to said front and rear walls, and
      a bottom wall;
   a hinging means secured to one end of said housing, whereby said housing can be rotated in a downward, angular, open position, and wherein said hinge means comprises:
      a stationary arm member fixedly secured to said cabinet,
         a second arm member secured to said housing,
      a pivot pin interconnecting both of said arm members, whereby said second arm rotates thereon with respect to said stationary arm member;
      a biasing spring supported by said stationary arm member, and wherein said spring includes:
         a depending leg biased against said stationary arm member,
         an upstanding biased leg, and
         a roller mounted to the upstanding leg, whereby direct latching contact is made with said second arm member when said housing is moved to a closed position;
   a latching means positioned on said unit to hold said housing in a closed position; and
   a utensil-mounting block removably disposed within said housing, said block having a plurality of diagonal, transverse slots for reception of said utensils, said hinge means is combined with said latching means, and wherein said roller engages an outer, cammed edge surface of said second leg to hold said housing in a closed, latched position; the bottom wall of said housing includes an elongated rib member formed as an integral part thereof to protrude upwardly therefrom, and wherein said utensil-mounting block is provided with a transverse keyway for reception of said rib member, thereby allowing said block to be removably positioned along said rib member.

3,846,006
METHOD OF MANUFACTURING OF X-RAY TUBE HAVING THORIATED TUNGSTEN FILAMENT

Zed J. Atlee, Oak Brook, and Robert M. Gager, Elmhurst, both of Ill., assignors to Picker Corporation, Cleveland, Ohio

Filed Feb. 24, 1972, Ser. No. 228,951
Int. Cl. H01j *9/00*
U.S. Cl. 316—26 **15 Claims**



1. A method of manufacture of an x-ray tube having an activated tungsten filament cathode, including the steps of:
   assembling an unactivated filament of tungsten and a rare earth metal oxide, a focusing electrode, and a target anode within an envelope;
   evacuating gas from the envelope;
   applying a sufficiently high voltage between the unactivated filament and the focusing electrode adjacent thereto during said evacuation to cause field emission discharges between said filament and said focusing electrode thereby to effect localized heating and vaporization of irregularities on their discharge surfaces, and maintaining said high voltage until the surfaces of said filament and focusing electrode are made smoother to prevent further field emission discharges at said voltage;
   thereafter heating the unactivated filament during said evacuation above the temperature necessary to convert said metal oxide to an electron emissive metal having a lower thermionic work function than tungsten and to cause a layer of said emissive metal to form on the surface of said filament and provide an activated filament;
   bombarding the target anode with electrons while continuing said evacuation; and
   thereafter terminating said evacuation and sealing said tube envelope.

3,846,007

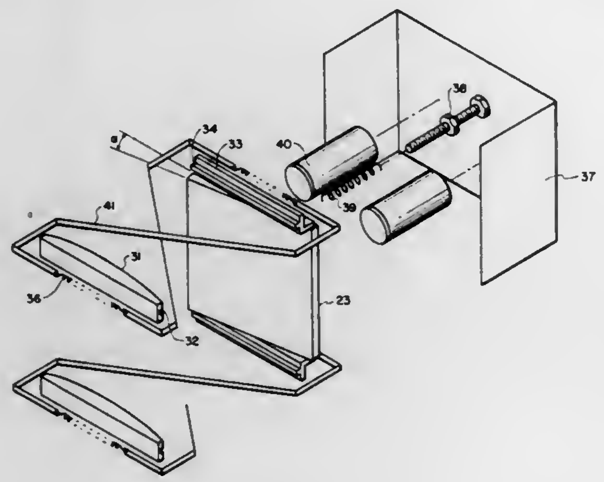
METHOD AND APPARATUS FOR DEFOCUS COMPENSATION OF A CONVERGENT BEAM SCANNER

William S. Flogaus, Alexandria, and Mitsumasa Masutani, Ft. Belvoir, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 23, 1973, Ser. No. 408,904

Int. Cl. G02b ***17/00***

U.S. Cl. 350—6 4 Claims



1. In an optical scanning system, wherein a linear array of electro-optical elements is optically coupled to a lens system by a variable reflector having at least one planar scanning mirror, the improvement which comprises:

a drive means interconnecting said array and said mirror to provide relative rotation therebetween only about an axis in the plane of the reflecting surface on said mirror parallel to said linear array and to provide relative translation therebetween only normal to said linear array the rotation and translation being interrelated such that said reflecting surface maintains a tangential relationship with a right circularly cylindrical reference surface having an axis in fixed parallel relationship to said linear array.

3,846,008

MEASUREMENT MICROSCOPE

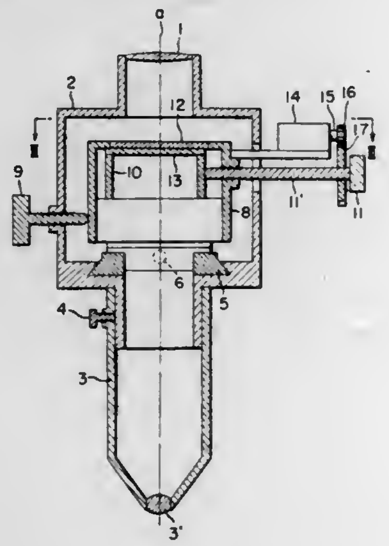
Masaru Sobajima, and Jinichi Kato, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sept. 26, 1973, Ser. No. 401,077

Claims priority, application Japan, Sept. 30, 1972, 47-98184

Int. Cl. G02b ***27/36***

U.S. Cl. 350—10 2 Claims



1. A measurement microscope comprising:

an eyepiece assembly including an eyepiece; and

a microscope body tube including an objective optically aligned with said eyepiece, said eyepiece assembly being rotatable relative to said microscope body tube;

said eyepiece assembly comprising:

an outer frame member having said eyepiece secured therewithin;

a movable member mounted in said outer frame member for slidable movement relative to and within said outer frame member in a first direction perpendicular to the optical axis of said eyepiece;

an intermediate frame member mounted on said movable member for movement relative to said movable member in a second direction perpendicular to said optical axis and said first direction;

an inner frame member mounted on said intermediate frame member for movement relative to said intermediate frame member in said second direction; and

two transparent scale plates secured to said intermediate frame member and said inner frame member, respectively, said scale plates bearing scale marks so as to register with an image plane in which the image of a sample is formed by said objective, said scale marks of said two scale plates being arranged in two orthogonal directions forming an angle of 45° with said first and second directions;

said movable member, said intermediate and said inner frame member being extraneously adjustable and movable.

3,846,009

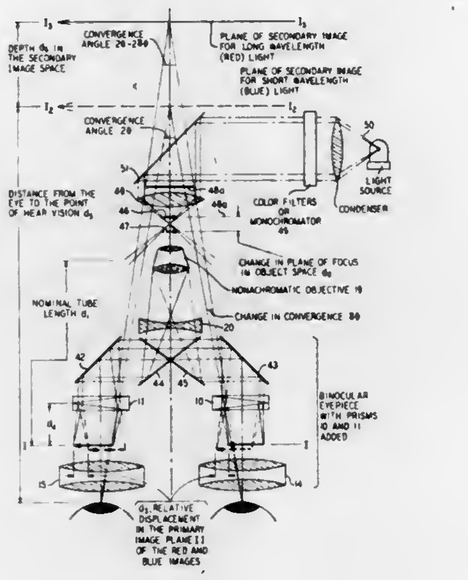
APPARATUS FOR ENHANCED DEPTH OF FIELD VIEWING

Jeofry Stuart Courtney-Pratt, Locust, N.J., and Richard Langton Gregory, Gloucestershire, England, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 10, 1973, Ser. No. 395,398

Int. Cl. G02b ***21/06***

U.S. Cl. 350—87 13 Claims


I3
CONVERGENCE ANGLE 28-28θ
PLANE OF SECONDARY IMAGE FOR LONG WAVELENGTH (RED) LIGHT
DEPTH d6 IN THE SECONDARY IMAGE SPACE
PLANE OF SECONDARY IMAGE FOR SHORT WAVELENGTH (BLUE) LIGHT
I2
CONVERGENCE ANGLE 28
50
51
LIGHT SOURCE
DISTANCE FROM THE EYE TO THE POINT OF NEAR VISION d5
48
48a
46
47
COLOR FILTERS OR MONOCHROMATOR 49
CONDENSER
CHANGE IN PLANE OF FOCUS IN OBJECT SPACE d8
MONACHROMATIC OBJECTIVE 19
NOMINAL TUBE LENGTH d1
CHANGE IN CONVERGENCE 8θ
20
42
43
44
45
11
10
d4
BINOCULAR EYEPIECE WITH PRISMS 10 AND 11 ADDED
I
15
14
d3 RELATIVE DISPLACEMENT IN THE PRIMARY IMAGE PLANE I1 OF THE RED AND BLUE IMAGES

1. Apparatus for microscopically viewing a specimen over a large field depth, comprising:

a microscope objective admitting light over a substantial portion of the visible spectrum and including means for bringing to focus in the same primary image plane at least two specific and different light wavelengths, each emanating from a different object plane within the field depth,

means for mounting a specimen within a zone traversed by said different object planes, and

means for illuminating said specimen with light including at least wavelengths of said two specific and different wavelengths.

3,846,010

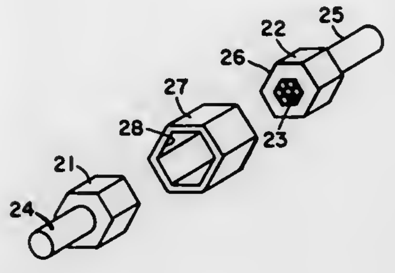
OPTICAL WAVEGUIDE CONNECTOR

Roy E. Love, Corning, and Rex L. Smith, Horseheads, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed July 5, 1973, Ser. No. 376,577

Int. Cl. G02b ***5/16***

U.S. Cl. 350—96 WG 10 Claims



1. An in-line connector for joining first and second bundles having equal numbers of optical waveguide fibers of substantially equal diameters, said coupler comprising

means forming a first aperture which is adapted to retain the fibers of said first bundle in a close packed array wherein the ends of said first bundle of fibers lie in a first plane that is substantially perpendicular to the axes thereof, the centers of the ends of any three contiguous fibers of said first bundle being disposed at the vertices of an equilateral triangle, said first aperture being adapted to confine the fibers of said first bundle to the smallest possible cross-sectional area in which they can be disposed,

means forming a second aperture which is adapted to retain said second bundle of fibers in a close packed array wherein the ends of said fibers of said second bundle lie in a second plane that is substantially perpendicular to the axes thereof, the cross-sectional shape of said second aperture being a mirror image of that of said first aperture, and

means for aligning said first and second aperture forming means so that the peripheries of said first and second apertures are contiguous.

3,846,011

CHALKBOARD USABLE AS A REAR PROJECTION SCREEN

Edward H. Stein, Wexford, Pa., assignor to Hamilton of Indiana, Inc., Vincennes, Ind.

Continuation of Ser. Nos. 209,387, Dec. 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 11,295, Feb. 13, 1970, abandoned. This application June 14, 1973, Ser. No. 370,093

Int. Cl. G03b ***21/56***

U.S. Cl. 350—117 4 Claims

1. A combination chalkboard-rear projection screen comprising:

a. a glass panel having a ceramic enamel frit coating fused to one side thereof, said coating having a thickness in the range of 0.00060 to 0.00085 inches; said combination chalkboard-rear projection screen having the following surface roughness and optional properties:

1. a surface roughness of 75 to 95 micro-inches as a center line average index,
2. a gloss as determined by A.S.T.M. D-523-53T of from 3 to 14 units,
3. a total luminous transmittance of at least 39 percent, and
4. a total luminous reflectance of below 20 percent.

3,846,012

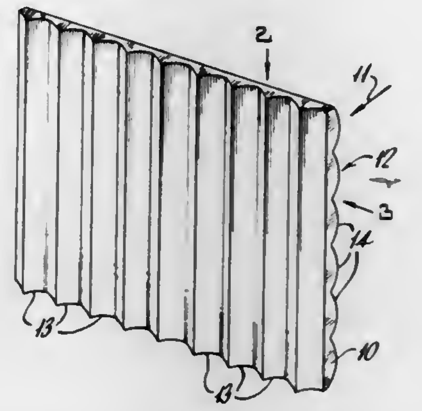
TRANSPARENT FRONT PROJECTION SCREEN HAVING CONCAVE RIDGES THEREON

John W. Brown, Flemington, N.J., assignor to Qantix Corporation, Flemington, N.J.

Filed Nov. 14, 1973, Ser. No. 415,686

Int. Cl. G03b ***21/60***

U.S. Cl. 350—128 7 Claims



1. A front projection screen made from a sheet of light transmitting material having a predetermined critical angle of internal reflection less than 45°; said sheet having a front surface and a back surface; said screen being characterized by:

said back surface having formed thereon a plurality of parallel ridges; each of said ridges having curved sides terminating at a peak; said curved sides extending away from said sheet at an angle of approximately 45° immediately adjacent to said sheet; the angle between a line tangent to said sides and said sheet continuously increasing as said curved sides extend towards said peak.

3,846,013

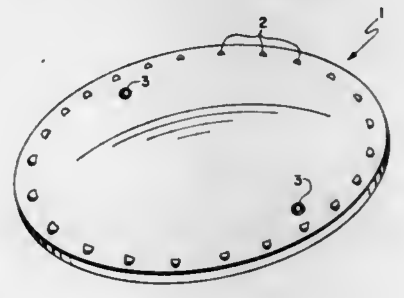
LIGHT-POLARIZING ELEMENT

Fredric S. Cohen, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 249,550, May 2, 1972, abandoned. This application Dec. 7, 1972, Ser. No. 312,909

Int. Cl. G02b ***5/30***

U.S. Cl. 350—147 8 Claims



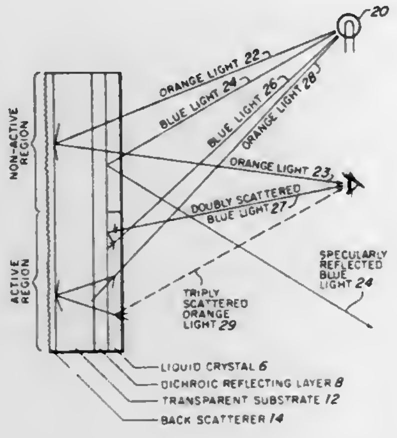
1. A light-polarizing lens element having a first surface, a second surface, and projections from at least one of said surfaces outside the anticipated viewing area of the ultimate composite lens comprising said element, said projection being integral with and formed by deformation of said surface and being capable of maintaining a predetermined distance between the surface of said element from which said projections are raised and a mold element in contact with said raised projections.

3,846,014

LIQUID CRYSTAL DISPLAY CONTAINING AN ADDITIONAL BROAD ANGLE BACK SCATTERING MATERIAL

Ralph E. Aldrich, Acton, Mass., and William A. Simmons, Jr., Nashua, N.H., assignors to Itek Corporation, Lexington, Mass.

Filed July 2, 1973, Ser. No. 375,979
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 LC 9 Claims



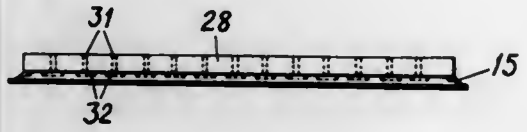
1. A display which is illuminated by an external source of front lighting, comprising:
   a. a layer of liquid crystal material which exhibits dynamic scattering upon application of an electric field thereacross, said layer being positioned between a front transparent electrode and a back transparent electrode;
   b. means to selectively apply an electric field across discrete areas of said layer of liquid crystal material;
   c. a scattering reflector which scatters reflected light over a wide angle, said reflector being positioned behind said back transparent electrode; and,
   d. a dichroic reflecting layer positioned between said scattering reflector and said liquid crystal material, said dichroic reflecting layer having the characteristic of reflecting one range of visible wavelengths from said external source of front lighting and transmitting a second range of visible wavelengths from said external source of front lighting.

3,846,015

LIQUID CRYSTAL DISPLAY DEVICE

Manfred Edvin Moi, Kristiansand, Norway, assignor to Norstron Electro-Optic Systems, Ltd., Kristiansand, Norway

Filed Mar. 6, 1973, Ser. No. 338,517
Claims priority, application Norway, Mar. 7, 1972, 713/72
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 LC 4 Claims



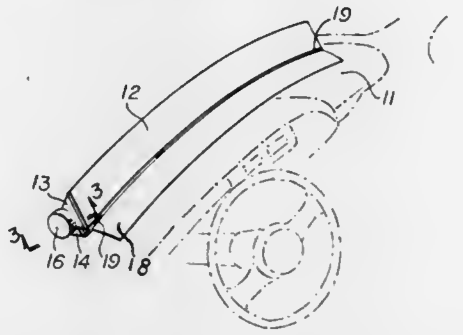
1. In a liquid crystal display device, comprising a liquid crystal layer enclosed between a pair of parallel transparent plates by means of a seal along the plate edges with the plate surfaces facing the liquid crystal layer being provided with respective electrode configurations in the form of a number of elements electrically connected to external leads for selectively applying an electric voltage so that corresponding parts of the liquid crystal are activated for display of symbols, the seal comprises inner and outer portions which are joined by way of a flexible transition portion and are hermetically secured to the border areas of the respective plates, the size of the respective plates corresponding essentially to the size of the adjacent inner and outer portion of the seal, and at least one transparent plate defines a plurality of holes provided for the external leads which holes are sealed by means of electrically conducting wafers placed between the plates over the respective holes.

3,846,016

PERIPHERAL REAR VIEW MIRRORS FOR AUTOMOBILES

Harold S. Firstenberg, P.O. Box 3132, Redwood City, Calif. 94119

Filed May 1, 1973, Ser. No. 356,156
Int. Cl. G02b *5/08*
U.S. Cl. 350—302 3 Claims



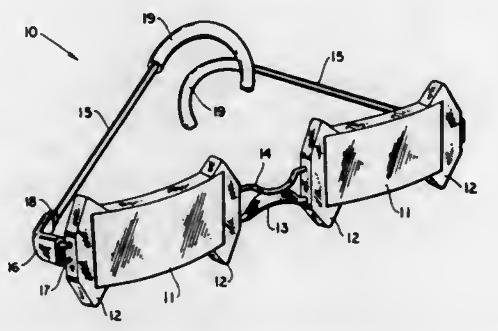
1. A rear-view mirror for vehicles having a ledge extending across the width of the windshield immediately behind the windshield comprising a dashboard mirror having a length approximately the width of said ledge and a relatively short height, mounting means fixed on each end of said dashboard mirror having attachment means for fastening said mounting means to said ledge, each said mounting means having a pivot to permit tilting of said dashboard mirror for adjustment of the line of sight of the driver of the vehicle, a top mirror on the exterior of the vehicle extending substantially across the width of the vehicle, second mounting means fixed to each end of said top mirror to position said mirror forward to the top of the windshield of the vehicle, said second mounting means including pivots to adjust the line of sight of the driver to the dashboard mirror, up through the windshield to the top mirror and thence to the rear and sides of the vehicle, said second mounting means including gripping means engageable with opposed rain gutters on the roof of the vehicle to secure said top mirror to the roof by means of the rain gutters.

3,846,017

EYEGLASSES

Blount Ferrell, Garden City, Utah 84028

Filed June 8, 1973, Ser. No. 368,344
Int. Cl. G02c *5/16*, *5/02*, *5/22*
U.S. Cl. 351—106 2 Claims



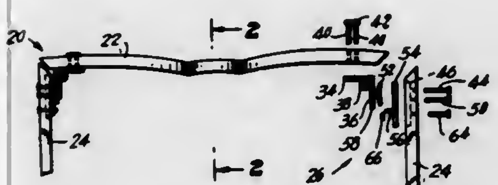
1. Eyeglasses comprising, in combination, a pair of substantially rimless lenses of a generally rectangular configuration, each of said lenses having top, bottom, nasal, and temple edges, a pair of end caps secured to each lens of said pair of lenses, one of said pair of end caps secured on the nasal side of each of said lenses and the other of said pair of end caps secured to the temple side of each of said lenses, each of said end caps having a recessed substantially c-shaped portion for receiving a respective nasal and temporal edge of one of said pair of lenses and extending over a portion of the top and bottom edges of said pair of lenses, wherein the distance between the top and bottom portions of said end caps in an unassembled state is slightly smaller than the top to bottom distance of each of the pair of lenses whereby to hold said lenses within said recessed portion of said end caps in a vise-like manner, a nose bridge connection between the lenses to hold same in spaced apart relationship, said nose bridge connection comprising a nose bridge piece and a brace, each of which extends into the two nasal oriented caps, a pair of L-shaped connecting members, each one of said L-shaped members secured to a respective temple end cap, a pair of flexible tubular hinge members, each one of said hinge members secured to a respective one of said L-shaped members and a pair of temple members, each one of said temple members secured to a respective one of said tubular hinge members, said flexible tube member and the connections between said temple members and said flexible tubular hinge members being such as to allow adjustment of the length of said temple members with relative ease.

3,846,018

EYEGLASSES WITH SELECTIVELY TILTABLE FRAMES

Lawrence Gordon Gerson, 410 W. 24th St., New York, N.Y.

Filed June 14, 1973, Ser. No. 369,996
Int. Cl. G02c *5/14*, *5/22*
U.S. Cl. 351—120 4 Claims



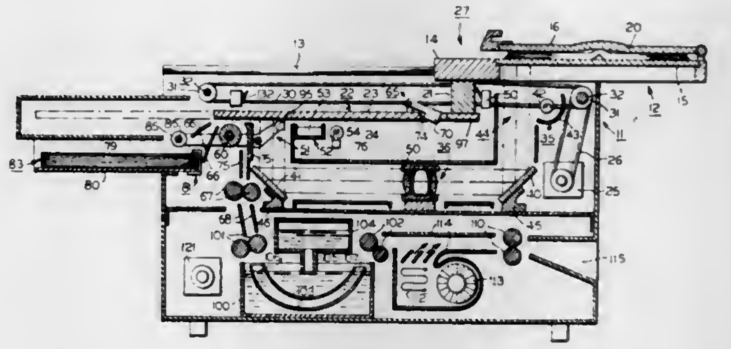
1. Eyeglasses comprising, in combination, a frame front, a pair of temple bars and a pair of user adjustable hinge units for hingedly connecting said temple bars with the opposite ends of said frame front, to enable tilting movement of said frame front relative said temple bars and for enabling folding of said temple bars against said frame front, each of said user adjustable hinge units comprising, in turn, a first and second hinge leaf, means joining said hinge leaves of each said pair for pivotal movement about a hinge axis, means for fixedly securing each of said first hinge leaves with opposite end portions of said frame front with said hinge axes generally parallel to one another and perpendicular to the longitudinal axis of said frame front, means for movably securing each of said second hinge leaves with an end portion of one of said temple bars with said hinge axes generally perpendicular to the longitudinal axis of said temple bar and enabling pivotal movement thereof about a pivotal axis generally perpendicular to the axes of said temple bar and resilient holding means operative between each of said second of said hinge leaves and the respective one of said temple bars for self-supportingly holding said second of said hinge leaves against inadvertant or unintentional pivotal movement about said pivotal axis while enabling user adjustement of the angular orientation of said frame front relative to said temple bars so that such user may adjust such frame front for viewing through different lens portions, to maintain said frame front generally parallel to a viewed plane, for reducing distortion for tilting the lower rim of said frame front from the optical path, for enabling the temple bars to lie adjacent the frame front when folded, wherein said pivotal means comprises a pin member extending through aligned apertures extending through said temple bar and said other of said hinge leaves together with means to positively define at least two angular positions of said frame front relative said temple bars, wherein said defining means comprises a pin-like projection extending generally perpendicular to each of said temple bars in generally parallel relationship and a generally arcuate slot in each of said second of said hinge leaves about said pin-members, said pin-like projection extending into said slot to limit the pivotal movement about said pin-member, and wherein said resilient holding means comprises bowed leaf spring acting between each of said second of said hinge leaves and the associated one of said temple bars.

3,846,019

ELECTROPHOTOGRAPHIC COPYING APPARATUS

Isao Yamaguchi, Moriguchi, and Hitoshi Katayama, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sept. 24, 1971, Ser. No. 183,479
Claims priority, application Japan, Sept. 26, 1970, 45-84225
Int. Cl. G03g *15/00*, *15/18*
U.S. Cl. 355—3 R 9 Claims



1. A copying apparatus for producing a visible image of an original on a copy sheet which has a conductive base and a dielectric surface, said apparatus comprising:
   a. a housing;
   b. first means structurally associated with said housing and including a mounting table which has a flat mounting surface for supporting the original in a flat condition and a photoconductive plate which has a conductive backing plate and a photoconductive surface, and which is secured to said mounting table with said photoconductive surface parallel with said mounting surface;
   c. charging means in said housing adjacent said photoconductive plate, said photoconductive plate and said charging means being movable relative to each other, said charging means imposing a uniform electrostatic charge on said photoconductive surface during the relative movement of said photoconductive plate, and said charging means;
   d. an optical assembly between said mounting table and said photoconductive plate for forming an electrostatic latent image of said original on said photoconductive surface after said photoconductive surface is electrostatically charged, said optical assembly being composed of illumination means for illuminating said original on said mounting surface, a lens unit and mirrors for focusing a mirror image of the illuminated original upon said photoconductive surface, an illuminated original upon said photoconductive surface, and an elongated slit defining a path of reflected light from the mounting table to the lens unit and from the lens unit to the photoconductive surface for projection of a partial image of said original onto said photoconductive surface, one of said first means and said optical assembly being movable relative to the other in a direction parallel with the mounting surface;

e. drive means coupled to the movable one of said first means and said optical assembly for moving said movable one in a first direction, and sequentially in a second direction opposite to said first direction so that said optical assembly scans said original and continuously projects a partial image of said original onto said photoconductive surface during said relative movement in the first direction;

f. control means coupled to said drive means for controlling said drive means;

g. sheet feed means adjacent said photoconductive plate copy sheets one by one from a source of copy sheets with the dielectric surface of each copy sheet facing said photoconductive surface having the electrostatic latent image formed thereon;

h. charge transfer means adjacent said photoconductive plate for transferring said latent image from said photoconductive surface to said dielectric surface and including means for pressing said dielectric surface against said photoconductive surface and means for separating said copy sheet from said photoconductive plate;

i. guide means adjacent said charge transfer means for receiving and guiding said copy sheet in a predetermined path after said copy sheet is separated from said photoconductive surface; and

j. developing means adjacent said guide means for converting said electrostatic latent image on said dielectric surface to a visible image.

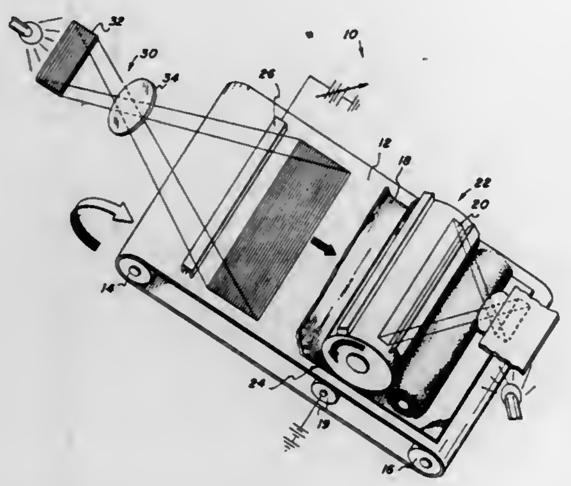
3,846,020
ELECTROSTATIC SHEET TRANSPORT SYSTEM

Gerald M. Fletcher, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 3, 1973, Ser. No. 421,179

Int. Cl. B65h *17/28;* **G03g** *15/00*

U.S. Cl. 355—3 R **6 Claims**



1. In an electrostatographic copying system in which an image is formed on an imaging surface and transferred at a transfer station to a copy sheet, the improvement comprising: copy sheet transport means including a copy sheet supporting surface,

said supporting surface being photoconductively electrically dischargable;

support means for said transport means for moving said supporting surface intimately past said imaging surface;

charging means for electrically charging said supporting surface, and

optical means for optically imaging a fine light pattern of closely alternating adjacent light and dark areas on said supporting surface, subsequent to said electrical charging thereof by said charging means, for photoconductively discharging said supporting surface into a fine charge pattern of alternating closely adjacent charged and discharged areas on said supporting surface providing copy sheet retaining electrical fringe fields.

3,846,021
REPRODUCTION APPARATUS USING AN ENDLESS IMAGE-BEARING BELT

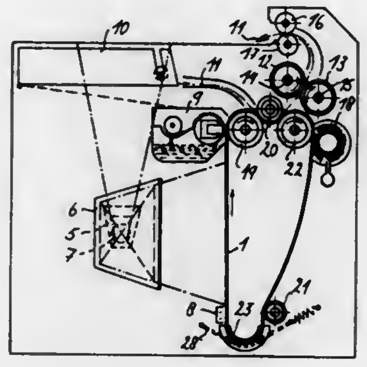
Mathias J. J. M. Vola, Sittard, Netherlands, assignor to Oce'-van der Grinten, N.V., Venlo, Netherlands

Continuation-in-part of Ser. No. 298,783, Oct. 18, 1972, abandoned. This application Jan. 14, 1974, Ser. No. 433,052

Claims priority, application Netherlands, Oct. 26, 1971, 7114725

Int. Cl. G03g *15/22*

U.S. Cl. 355—16 **19 Claims**



1. In reproduction apparatus including an endless belt, means positioning said belt for movement thereof through a processing path and thence through a region for return to said path and means respectively for forming an image on and transferring the image from a portion of the belt in said path, the combination which comprises means for driving the belt engaging said belt at a location downstream from said path between said path and said return region, a slide surface engaged by said belt at a location upstream from said path and over which the belt slides as it is moved by said driving means, means for pressing said belt against said slide surface with a force whereby tension is created in the length of the belt extending between said surface and said driving means so as to hold the belt taut in said path, the portion of the belt in said return region being longer than the shortest distance provided for belt travel therein and thus being substantially tensionless therein, and edge guides at the opposite side edges of a tensionless portion of said belt approaching said slide surface for guiding the belt constantly over a selected portion of said surface.

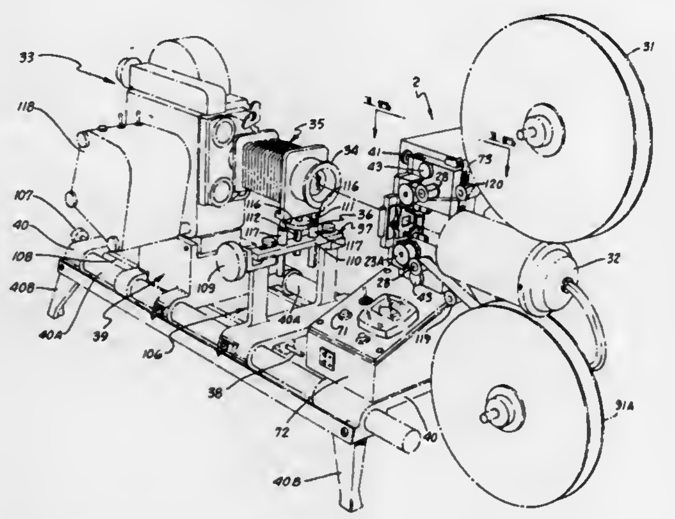
3,846,022
OPTICAL PRINTER

Jaakko Kurhi, 3908 High St., Oakland, Calif. 94619

Continuation-in-part of Ser. No. 285,372, Aug. 31, 1972, abandoned. This application Mar. 5, 1973, Ser. No. 337,889

Int. Cl. G03b *27/42*

U.S. Cl. 355—53 **11 Claims**



1. An optical printer for printing from a length of film having individual picture frames thereon and formed with a plurality of registration openings formed longitudinally along one edge comprising:

a. a projection module member;

b. a first sprocket mounted for rotation on said module member having circumferential pins for registration with said registration openings;

c. a second sprocket mounted for rotation on said module member having circumferential pins for registration with said registration openings and being laterally spaced from said first sprocket;

d. a step motor operably connected to said first and second sprockets for conjoint intermittent rotation of said sprockets;

e. a pair of laterally spaced registration pins operably connected to said motor and mounted between said sprockets on said projection module and mounted for intermittent movement into and out of the registration openings in said film, said pins being inserted through said openings when said film is motionless and retracted therefrom when said film is being moved by said sprockets; and

f. first and second tension pins mounted on said projection module operably connected to said motor and mounted respectively between said registration pins and said sprockets and mounted for movement against said film to tension said film when it is moving and for movement out of tensioning contact with said film when said film is at rest to permit some movement of said film by said registration pins when they are inserted into said registration openings.

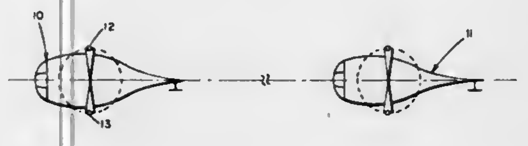
3,846,023
RANGE RETICLE IN A NIGHT VISION DEVICE

Michael J. Wilkin, West Long Branch, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 5, 1973, Ser. No. 337,795

Int. Cl. G01c *3/00, 3/16*

U.S. Cl. 356—21 **6 Claims**



1. A ranging system for maintaining the spacing between helicopters, comprising:

means associated with one of said helicopters for providing a rotatable incandescent lamp means positioned on the rotor tips of said helicopters for generating a circular light pattern thus providing an invariant diametric dimension from any viewing angle at a fixed distance therefrom; and optical means for viewing said pattern from a second helicopter, said optical means having reticle markings spaced apart a distance corresponding to said invariant dimension viewed at a predetermined distance, whereby, said spacing between helicopters is maintained when the invariant dimension matches the spacing of the reticle markings.

3,846,024
OPTICAL ALIGNMENT SYSTEM FOR OPTICAL SPECTROMETERS

Arthur Turner, Carlisle, Mass., assignor to Baird-Atomic, Inc., Bedford, Mass.

Continuation of Ser. No. 262,090, June 12, 1972, abandoned. This application Feb. 14, 1974, Ser. No. 442,361

Int. Cl. G01j *3/02, 3/18*

U.S. Cl. 356—80 **12 Claims**

1. A spectroscopic apparatus comprising:

a. first means for exciting a chemical sample to emit characteristic radiation;

b. second means for directing said characteristic radiation along a first optical path;

c. third means for diffracting said characteristic radiation from said first optical path into a spectrum;

d. fourth means for reading said spectrum;

e. a pair of solid state light sources mounted on a circuit board, said solid state light sources spatially separated with respect to each other, said solid state light sources having alternatively bright regions when subjected to an alternating voltage for emitting monitor radiation, said solid state light sources energized sequentially on alternate half cycles of said alternating voltage;

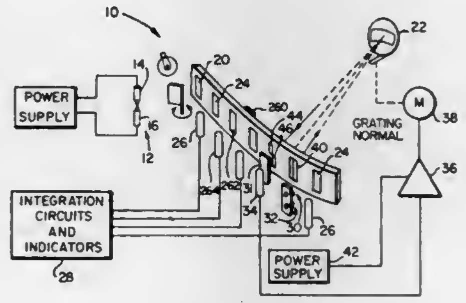
f. an entrance slit in registration with said pair of light sources for directing said monitor radiation from each said source along a second optical path toward said third means, said monitor radiation diffracted at angles falling outside the spectral range normally utilized by the spectroscopic apparatus;

g. an offset exit slit for said monitor radiation diffracted by said third means;

h. photo detector means in registration with said exit slit for receiving said monitor radiation from said exit slit in order to produce signals of a character that depends upon the orientation of said third means with respect to said entrance and exit slits;

i. filter means interposed between said exit slit and photo detector means for optically separating said diffracted characteristic radiation from said monitor radiation; and

j. fifth means responsive to said signals produced by said photo detector means for controlling the relative orientations of said third means with respect to said entrance and exit slits.



3,846,025
FREQUENCY SENSITIVE LASER ROTARY MOTION SENSOR

Scott A. Wilber, 1512 Garfield Ave., Apt. 1, Louisville, Colo. 80027

Filed Apr. 2, 1973, Ser. No. 346,985

Int. Cl. G01b *9/02*

U.S. Cl. 356—106 LR **6 Claims**

1. A rotary motion sensor comprising the combination of:

a closed polygonal optical loop;

reference optical beam generating means;

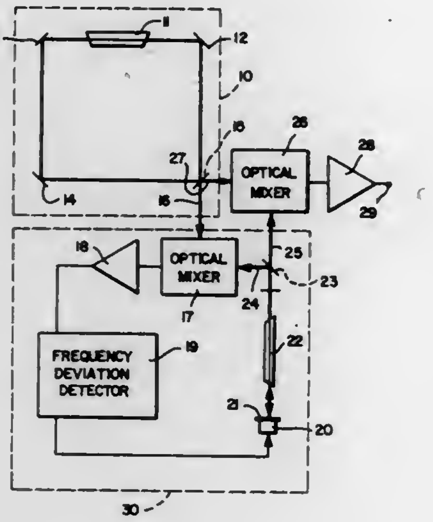
means for stimulating and maintaining bimodal coherent radiation circulating in said loop;

means for coupling radiation in one mode only from said loop to said reference beam generating means;

means responsive to the radiation coupled out of said loop for controlling the reference beam frequency at a frequency which differs from said one mode by a constant amount;

means for coupling radiation in said other mode out of said loop;

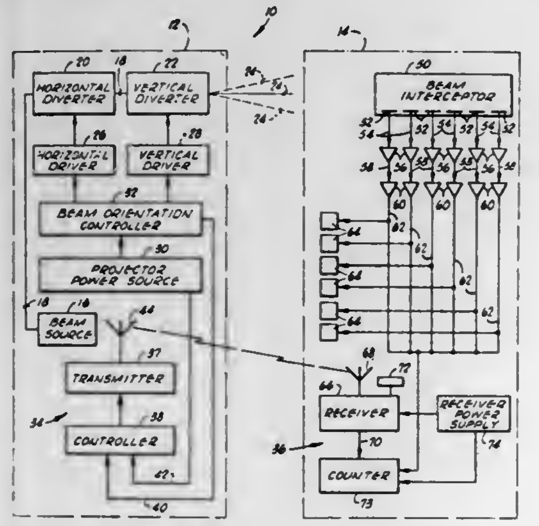
means for comparing the characteristics of the reference beam and said other mode beam; and



means for producing an output signal proportional to the difference between said reference beam and said other mode beam.

3,846,026
ROTATING BEAM SURVEYING METHOD AND APPARATUS

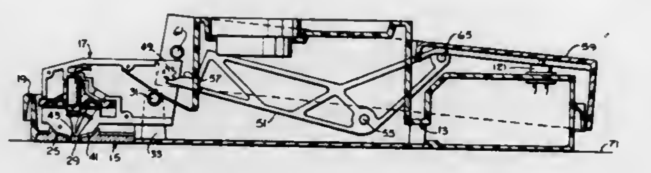
Kenneth H. Waters, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
Filed Nov. 1, 1971, Ser. No. 194,397
Int. Cl. G01b *11/26;* **G01c** *3/08*
U.S. Cl. 356—152 **19 Claims**



1. A surveying apparatus comprising:
beam projector means for generating an energy beam and projecting the energy beam therefrom, comprising:
beam source means generating the energy beam;
a horizontal diverter rotating the energy beam in a horizontal datum plane in a driven position thereof;
a horizontal driver connected to the horizontal diverter driving the horizontal diverter rotating the energy beam in a horizontal datum plane;
a vertical diverter connected to a portion of the horizontal diverter and rotated in a rotated position of the horizontal diverter, the vertical diverter diverting the energy beam to predetermined angular positions in a vertical datum plane in a driven position thereof; and
a vertical driver connected to the vertical diverter driving the vertical diverter positioning the energy beam in controlled, predetermined angular positions in a vertical datum plane during the rotation of the energy beam in a horizontal datum plane;
beam receiver means intercepting the projected energy beam in one angular position thereof in a horizontal and a vertical datum plane and providing an output signal responsive to the intercepted, projected energy beam; and
means receiving the output signal responsive to the intercepted, projected energy beam and identifying the angular position of the intercepted, projected energy beam in a horizontal and a vertical datum plane.

3,846,027
REFLECTION DENSITOMETER

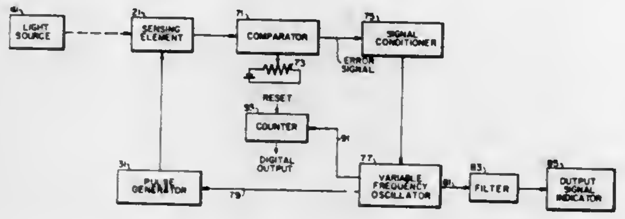
Maxwell Hyman, El Toro, and Donald C. De Puy, Orange, both of Calif., assignors to Align-O-Tron Corporation, Orange, Calif.
Filed Aug. 3, 1972, Ser. No. 277,491
Int. Cl. G01j *3/48;* **G01n** *21/48*
U.S. Cl. 356—188 **17 Claims**



1. An instrument for providing an indication of the intensity of the light reflected from a test region, comprising:
a supporting structure;
a target carried by the supporting structure, said target having a preselected location which is adapted to be placed over said test region, said preselected location of said target being capable of passing light;
a head including means for providing a beam of light and means for transmitting reflected light;
means for mounting said head on said supporting structure for movement between a retracted position in which said head leaves said preselected location uncovered whereby said preselected location of said target can be placed over said test region and an operative position in which said head overlies said preselected location so that it can direct said beam of light therethrough and said light transmitting means communicates with said preselected location of said target to receive and transmit light reflected from said test region; and
means responsive to a characteristic of the light reflected into said light transmitting means for providing an indication of the intensity of the light reflected from the test region.

3,846,028
ENERGY CONVERSION APPARATUS

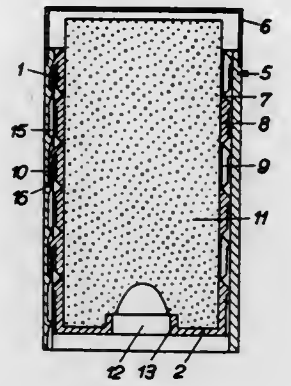
William F. List, Linthicum, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 20, 1971, Ser. No. 173,488
Int. Cl. G01j *1/42*
U.S. Cl. 356—218 **7 Claims**



1. Light measuring apparatus including at least one transistor having an emitter, a collector and a base, means for subjecting the surface of said transistor to light from a region, means connected to said emitter and collector for impressing in circuit with said emitter and collector a periodic electrical potential, means responsive to the magnitude of the current transmitted by said collector and emitter as a result of said potential while said transistor is subject to said light, for varying the periodicity of said potential, and means for deriving a measurement of light intensity impinging on the surface of said transistor from said varied periodicity.

3,846,029
DISPENSER ASSEMBLY FOR WAX SUBSTANCES

Edgar Benn, Altstatten; Benno Buchel, Widnau, and Manfred Ender, Wolfhalden, all of Switzerland, assignors to Briag AG, Altstatten, Germany
Filed July 26, 1973, Ser. No. 383,301
Claims priority, application Switzerland, Aug. 10, 1972, 11873/72
Int. Cl. B65d *35/42*
U.S. Cl. 401—96 **7 Claims**

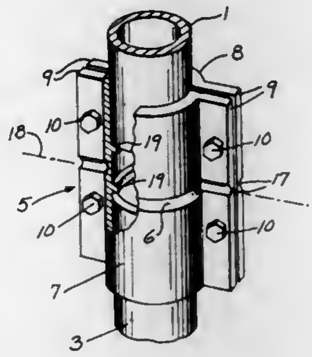


1. A dispenser assembly particularly suitable for packaging wax substances and for dispensing such substances in discrete quantities, said assembly comprising, in combination, an inner generally cylindrical sleeve having said substance contained therein, said inner sleeve including at one end thereof a bottom wall and means extending through said bottom wall to define a filling aperture directed interiorly of said inner sleeve through which said wax substance in a liquid state may be introduced into said inner sleeve, a removable cover member tightly closing the end of said inner sleeve opposite said bottom wall, an outer generally cylindrical sleeve surrounding said inner sleeve with said inner sleeve being axially removable therefrom, said inner sleeve being formed with a first plurality of severable joints extending circumferentially about said inner sleeve and spaced axially therealong to define therebetween annular sleeve sections, said second plurality of severable joints extending axially between a pair of said first plurality of severable joints across said inner sleeve sections, tab means affixed to each of said annular sections at a location immediately adjacent to each of said second plurality of severable joints to enable severance of said annular sections individually from said inner sleeve, and detent means interposed between said inner and outer sleeves to prevent reinsertion of said inner sleeve within said outer sleeve.

3,846,030
POST

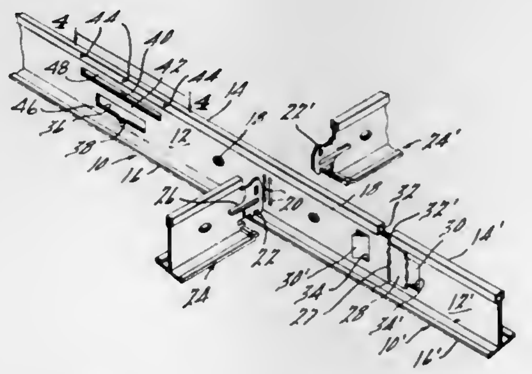
Herbert L. Katt, 4107 Pennington Ln., Racine, Wis. 53403
Filed Aug. 10, 1972, Ser. No. 279,296
Int. Cl. F16b *7/00*
U.S. Cl. 403—2 **1 Claim**

1. A post for highway signs and the like comprising two aligned post sections, one adapted to extend downwardly into the ground and the other adapted to extend upwardly to support a sign or other object, a two piece clamp of complementary flanged U-shaped members bridging the parting line between the two post sections and enveloping the adjacent ends of the sections to secure the same together with said clamp constituting the sole support for said upper post section upon said lower post section, and bolts extending through the flanges to secure the clamp members together and upon the post sections, characterized by a portion of reduced cross-sections on each clamp member in the general plane of the parting line between the post sections to provide a preferential breakage of the clamp members in the event of a severe impact upon the upper post, and spaced shoulder means integral with and projecting internally of at least one of the clamp members above and below said weakened portion of the clamp members serving to space the ends of said post sections and to center the same with respect to said weakend clamp portion.



3,846,031
CEILING GRID SYSTEM EXPANSION JOINT

George C. Adams, Ann Arbor, Mich., assignor to Rollform Incorporated, Ann Arbor, Mich.
Filed Apr. 4, 1972, Ser. No. 240,921
Int. Cl. E04c *2/42;* **E04b** *5/52*
U.S. Cl. 403—28 **12 Claims**



1. A controlled expansion beam for use in a ceiling grid system comprising:
a longitudinally elongated web having a lower flange adapted to support the marginal edge portion of a ceiling panel and an upper continuous bulb portion; and
means formed in said web intermediate the ends of said beam providing a controlled localized expansion relief section for said beam, said means including upper and lower longitudinally elongated apertures formed solely in said web one above the other and disposed in spaced relationship between said flange and said bulb portion, said apertures defining longitudinally extending upper and lower continuous marginal strips in the web along and adjacent to said bulb portion and said flange, said marginal strip located adjacent to said flange being of substantially uniform width and provided intermediate the ends thereof with only a single medianly disposed notch means which extends downwardly from said lower aperture and terminates short of said flange for controlled downward buckling of said flange in response to longitudinal compressive forces applied to said beam.

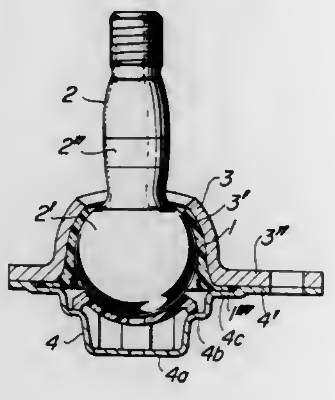
3,846,032
BALL JOINT DEVICE
Isao Harada, Hekinan, and Fumitaka Ryuka, Nishio, both of Japan, assignors to Hojitsu Kogyo Co., Ltd., Nishio-shi, Japan

Filed June 8, 1973, Ser. No. 368,459

Claims priority, application Japan, June 17, 1972, 47-72028; June 17, 1972, 47-72029

Int. Cl. F16c *11/06*

U.S. Cl. 403—140 **4 Claims**



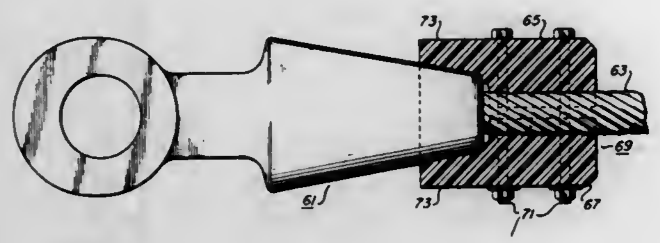
1. A ball joint device comprising a substantially semispherical hollow ball joint seat (1) having a flange portion (1''') extending radially outwardly from the outer periphery of a lower end opening (1*b*) thereof, a ballheaded stud (2) received at its ball-shaped head portion (2') in said ball joint seat (1), a housing (3) having a flange portion (3''), and a cap (4) having a stepped rim portion (4*c*) terminating in a flange portion (4'), said stepped rim portion (4*c*) being disposed adjacent to said flange portion (3'') of said housing (3) to define a space (a) therebetween, said space (a) being of slightly less thickness than that of flange portion (1''') of said ball joint seat (1), said ball joint seat (1) being disposed between said housing (3) and said cap (4) in such a manner that said flange portion (1''') thereof is received and firmly held under compression within said space (a) between said flange portion (3'') of said housing (3) and said stepped rim portion (4*c*) of said cap (4) thereby ensuring intimate gas-tight engagement between said flange portion (3'') of said housing (3) and said flange portion (4') of said cap (4), and means for holding said housing (3) and said cap (4) together in compression.

3,846,033
VIBRATION DAMPED FITTING
Carl W. Smollinger, Williamsport, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 889,381, Dec. 31, 1969, Pat. No. 3,705,445. This application Sept. 12, 1972, Ser. No. 288,474

Int. Cl. F16b *7/00*

U.S. Cl. 403—220 **1 Claim**



1. A vibration damping arrangement for wire cable to damp destructive vibrations in the cable, which vibrations are mechanically induced by shocks and changing tensions in the cable, as the vibrations approach an end fitting on the cable comprising:

a. a metallic end fitting secured to the end of said wire cable, said end fitting having an exteriorly tapered section in which the cable is secured and an attachment section with means to attach the fitting to external structures, the said exteriorly tapered section of said fitting having a decreasing taper, i.e. a decreasing cross sectional area, extending from the attachment section of the fitting to substantially the area of first contact of the fitting with the cable,

b. an elongated plastic-damper body preformed in separate sections, said elongated damper body having an internal tapered opening having substantially the same internal dimensions, shape and contour as the external dimensions, shape and contour of the tapered section of the end fitting, said plastic damper body being mounted over at least a portion of the tapered end of the said end fitting with the interior tapered surfaces of said damper body in substantial contact with the exterior surface of the tapered end section of said end fitting,

c. the plastic damper body having an orifice extending longitudinally therethrough, the interior surfaces of said orifice being in intimate surface contact with the outer surfaces of the outer wires of the wire cable, adjacent to the smaller end of the tapered portions of the end fitting, d. mechanical compression means to firmly secure the plastic damper body sections about the end of said end fitting and said cable, and

e. wherein the plastic of the plastic damper body has a Durometer A hardness of 90 to 95.

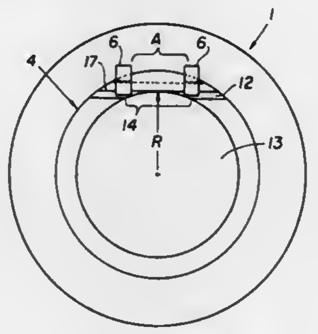
3,846,034
SYSTEM FOR SECURING A BEARING ABOUT A SHAFT
Leonhard Halliger, and Horst Schroder, both of Schweinfurt, Germany, assignors to SKF Industrial Trading and Development Company B.V., Amsterdam, Netherlands

Filed Oct. 3, 1973, Ser. No. 403,331

Claims priority, application Germany, Oct. 12, 1972, 2249906

Int. Cl. F16c *35/06*

U.S. Cl. 403—351 **8 Claims**



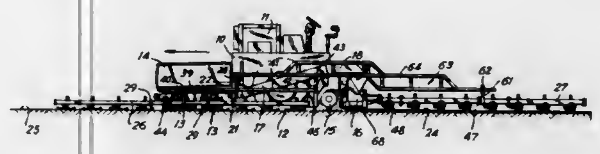
1. A system for securing the inner ring of an anti-friction bearing or the like on a shaft comprising, a groove on the outer surface of said inner ring adjacent one end thereof and a slit on the inner surface of said inner ring in opposition to said groove, said slit extending axially from the end of said inner ring and tangentially to the radius of the inner ring and shaft so as to intersect said shaft, and a clip having one end radially engaged in said groove and the other end extending axially within said slit, said clip being slidable within said groove and slit to removably wedge between said inner ring and said shaft.

3,846,035
REFERENCE BEAM GRADE CONTROL FOR ASPHALT PAVERS
Donald R. Davin, Shelbyville, Ill., assignor to Blaw-Knox Construction Equipment, Inc., Mattoon, Ill.

Filed Mar. 26, 1973, Ser. No. 345,115

Int. Cl. E01c *19/00*

U.S. Cl. 404—84 **17 Claims**



1. A dual reference beam grade control system for use in combination with an asphalt paver of the type having a transversely disposed material distributing auger, a floating screed positioned behind the auger, tow arms extending forwardly from the screed and connected to the paver frame, and tow arm suspension means for vertically adjusting the tow point connections of said tow arms to effect changes in the attitude angle of the screed, said grade control system comprising

a. a beam-like first reference member towed by the paver frame and extending longitudinally along one side thereof,

b. said first reference member being disposed entirely forward of the auger,

c. a plurality of independently movable supports for said first reference member spaced along its length and supporting said reference member at an averaged position above a base grade surface,

d. a first reference arm pivotally connected to the first reference member in its central region and extending rearwardly toward and being pivotally connected to one tow arm,

e. a second reference member towed by the paver frame and being disposed entirely behind the screed,

f. support means for supporting said second reference member above an asphalt mat grade surface,

g. a second reference arm connected to the second reference member and extending forwardly toward and being pivotally connected to said one tow arm and/or said first reference arm, and

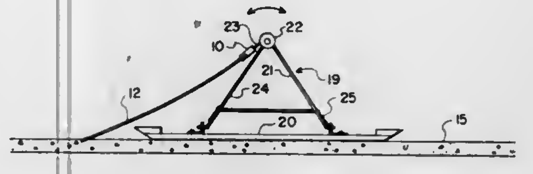
h. tow arm height reference control means associated with each of said reference arms and operatively associated with said tow arm suspension means for raising and lowering the tow point of said one tow arm relative to the paver frame in response to relative movements of one or both of said reference arms in relation to said one tow arm.

3,846,036
APPARATUS AND METHOD FOR STRIATING CONCRETE
Billy Z. Baker, Abilene, Tex., assignor to Roberts Supply, Inc., Abilene, Tex.

Filed Apr. 11, 1973, Ser. No. 349,935

Int. Cl. E01c *7/35*

U.S. Cl. 404—75 **10 Claims**



1. Apparatus for striating freshly placed concrete comprising:

an elongated head having a bristle holding slot therein extending lengthwise of said head;

and a single course of bristles having their ends fixed in side-by-side abutting relationship in said slot,

said bristles having diameters approximately twice the depth of the striations desired to be formed in the concrete, of a length sufficient to present a substantial surface to the concrete when said head is held at an acute angle to said concrete, said bristles protruding from said head a distance such that their ends establish a substantially straight line, but with the protrusion distance varying between adjacent bristles from about one-fourth to about one-eighth inch.

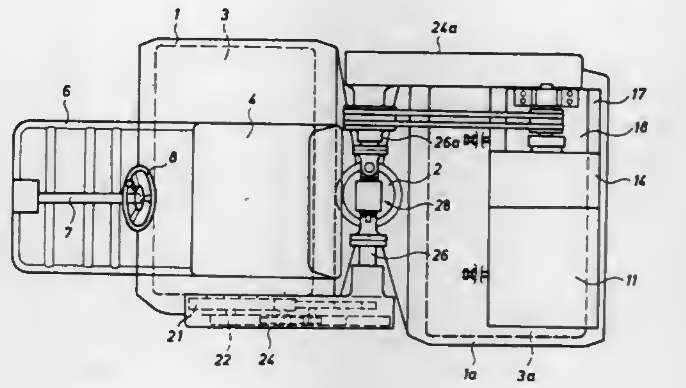
3,846,037
VIBRATORY COMPACTION VEHICLE
Joachim Mozdzanowski, Denkendorf, Germany, assignor to Delmag Maschinenfabrik, Rheinhold Dornfeld, Esslingen am Neckar, Germany

Filed Jan. 24, 1973, Ser. No. 326,234

Claims priority, application Germany, Jan. 27, 1972, 2203785

Int. Cl. E01c *19/38*

U.S. Cl. 404—117 **10 Claims**



1. A vibratory compaction vehicle comprising:

a first frame part;

a second frame part;

joint means coupling said first and second frame parts together for pivotal movement about a vertical axis;

a first ground contacting member rotatably coupled to said first frame part about a first horizontal axis;

a second ground contacting member rotatably coupled to said second frame part about a second horizontal axis;

a first gear train coupled to said first frame part and extending, on a first side of the vehicle, from a position above said joint means to a position adjacent said first axis;

a second gear train coupled to said second frame part and extending, on a second side of the vehicle, from a position above said joint means to a position adjacent said second axis;

first eccentric weight means, coupled to said first member and said first gear train, for providing vibration to said first member when said first eccentric weight means is rotated;

second eccentric weight means, coupled to said second member and second gear train, for providing vibration to said second member when said second eccentric weight means is rotated;

said first and second eccentric weight means being 180° out of phase relative to each other;

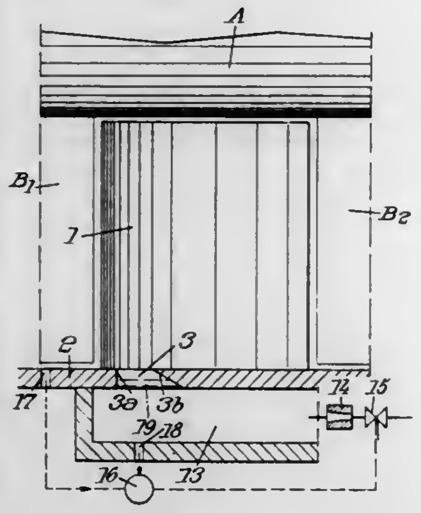
cardan shaft means, located directly above said joint means, rotatably coupled to one of said frame parts, and coupled to said first and second gear trains, for transmitting rotation provided thereto to said first and second gear trains to thereby rotate said first and second eccentric weight means synchronously;

power means, located on one of said frame parts, for providing rotation to said cardan shaft means; and means coupled to one of said frame parts for rotating said first and second ground contacting members.

3,846,038
FIXED BLADING OF AXIAL COMPRESSORS

Pierre P. Carriere, Paris; Jacky R. Leynaert, Igny; Georges D. Meauze, Paris, and Jean-Jacques Thibert, Verrieres-le-Buisson, all of France, assignors to Office National D'Etudes et de Recherches Aerospatiales (par abreviation : O.N.E.R.A.) France

Filed Dec. 14, 1972, Ser. No. 314,965
Claims priority, application France, Dec. 27, 1971, 71.46854
Int. Cl. F04d *29/68, 27/02*
U.S. Cl. 415—1 **17 Claims**

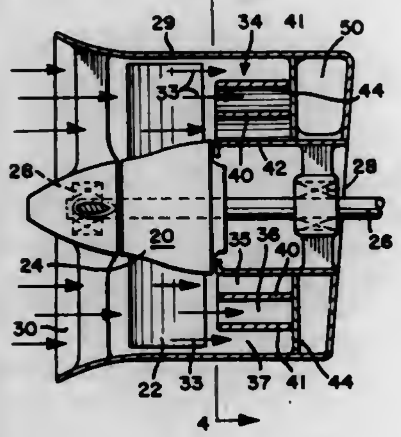


1. Fixed blading for an axial compressor constituted by a succession of blades fixed on at least one annular wall, each passage between two adjacent blades being provided with a suction opening, suction means associated with said suction opening for aspiring fluid through the suction opening, said suction means including means for maintaining the pressure in the suction opening substantially equal to the flow static pressure in the said passage.

3,846,039
AXIAL FLOW COMPRESSOR

Edward A. Stalker, Bay City, Mich., assignor to The Stalker Corporation, Essexville, Mich.

Filed Oct. 23, 1973, Ser. No. 408,476
Int. Cl. F01d *9/00;* **F03b** *3/16*
U.S. Cl. 415—206 **7 Claims**

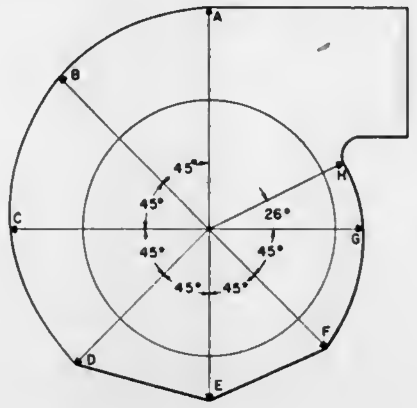


1. In an axial flow compressor having a bladed rotor, the improvement comprising an annular compartment positioned in downstream relation to the rotor and adapted to receive the flow from the compressor blades, said compartment being defined by a back wall and axial wall means extending from said back wall toward the compressor blades dividing said compartment effectively into a plurality of radially spaced subcompartments, a collector positioned, axially downstream from said compartment, said compartment back wall forming a partition between said compartment and said collector, and means in said back wall defining a plurality of angularaly spaced inlets leading from said compartment into said collector, said inlets being inclined to direct the flow from said compartment into the collector substantially along the surface of said back wall.

3,846,040
BLOWER HOUSING

Donald I. Dennis, Rt. 2, Jacksonville, Tex. 75766

Filed June 16, 1972, Ser. No. 263,714
Int. Cl. F04d *29/42*
U.S. Cl. 415—219 C **4 Claims**

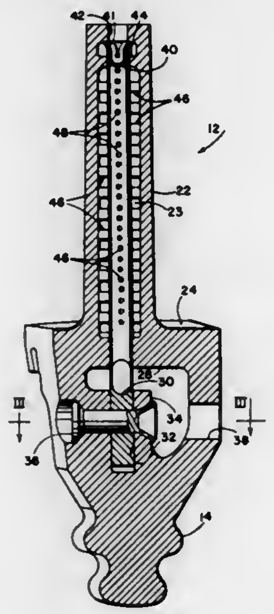


1. Housing apparatus for a blower wheel having a radial periphery generally defining a curved scroll expanding at a linear expansion angle from the cut-off and having a first flat wall segment within the first 200° from the cut-off and a second flat wall segment adjacent said first flat wall segment.

3,846,041
IMPINGEMENT COOLED TURBINE BLADES AND METHOD OF MAKING SAME

Peter E. Albani, Hamden, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Oct. 31, 1972, Ser. No. 302,421
Int. Cl. F01d *5/18*
U.S. Cl. 416—97 **7 Claims**



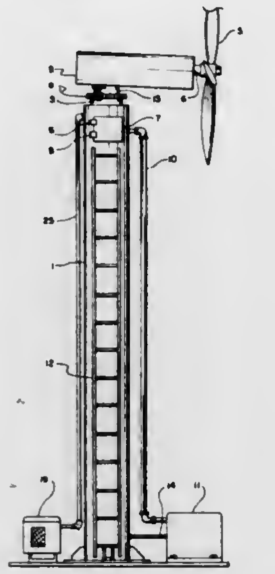
1. A turbine blade comprising:
an integral airfoil and tang at the inner end thereof,

said airfoil having thin walls defining a chamber extending from its tip end to said inner end,
an insert disposed in said chamber in spaced relation to the walls thereof and extending into said tang, said insert forming a plenum sealed from the airfoil chamber and having a substantial thickness in the innermost end thereof,
said tang having a passageway from one exterior end face thereof through its upper portion to the insert, said insert having an opening registered with said passageway,
a pin extending through said tang and the inner end of said insert in a direction generally normal to the side faces of the tang for mechanically locking the inner end of said insert to said tang,
said insert having a plurality of orifices directed toward the chamber wall for impingement thereof of cooling air from said plenum, and
means for discharging cooling air from said chamber.

3,846,042
PEDESTAL MOUNTED WIND GENERATOR

Charles I. Keene, Fontana, Calif., assignor to Herman P. Smith, Holtville, Calif.

Filed Sept. 7, 1973, Ser. No. 394,966
Int. Cl. B64c *27/12*
U.S. Cl. 416—110 **5 Claims**

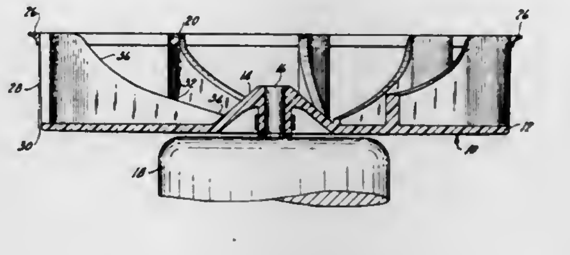


1. A wind generator for generating a flow of air in and about crops, said wind generator comprising in combination:
a. a hollow vertically aligned pedestal mounted upon the ground, said pedestal including a sealed lower compartment and a sealed upper compartment;
b. a support assembly rotatably mounted on top of said pedestal;
c. a platform mounted on said support assembly, said platform being non-perpendicularly oriented with the vertical axis of said pedestal;
d. a shaft carrying a fan, said shaft being journaled on said platform parallel to said platform, whereby the flow of air induced by said fan will be essentially aligned with said platform;
e. motive means disposed within said upper compartment for producing power to rotate said fan, said motive means including:
  1. a mounting plate for securing said motive means within said upper compartment;
  2. a vertically oriented output shaft parallel to the axis of said pedestal; and
  3. control means for regulating the operation of said motive means in response to the output of a ground based control unit;
f. a power train disposed intermediate said motive means and said fan, said power train including:
  1. a gear box mounted on said platform and having an input shaft extending downwardly perpendicular to said platform and at least one output shaft, each said output shaft being parallel to said platform;
  2. a drive shaft intermediate said output shaft of said motive means and said input shaft of said gear box, said drive shaft including universal joints to accommodate the misalignment between said output shaft of said motive means and said input shaft of said gear box;
  3. a flexible coupling interconnecting said shaft of said fan and one of said output shafts of said gear box to accommodate inadvertent misalignment therebetween;
g. a housing secured to said platform for protecting said gear box and said shaft of said fan; and
h. control means for rotating said support assembly as a function of the rate of rotation of said drive shaft; whereby, energization of said motive means actuates said fan to produce a flow of air in alignment with said platform and toward the ground to destratify the air around said pedestal while said platform rotates about the axis of said pedestal.

3,846,043
BLOWER WHEEL

David W. Wolbrink, and Robert W. Busch, both of Hartford, Wis., assignors to Broan Manufacturing Co., Inc., Hartford, Wis.

Filed Mar. 12, 1973, Ser. No. 339,629
Int. Cl. F01d *5/04*
U.S. Cl. 416—183 **5 Claims**



1. A motor driven, rotary blower wheel comprising:
a flat circular base lying in a plane perpendicular to the axis of rotation and to a stream of inlet air;
a plurality of uniformly spaced fan blades mounted on the perimeter of said base normal to its plane, said fan blades being forward curved with respect to the direction of rotation of said blower wheel for exhausting a peripheral stream of outlet air;
a conical hub mounted in the center of said base, said hub being of a size sufficient to form, with said base, a means for diverting the stream of air through the blower wheel; and
a plurality of backward curved feeder vanes mounted on said base normal to its plane, said vanes extending between said hub and said blades along portions of non-diametrical chords of said base and having ends joined to said hub in a generally tangential manner, said vanes further having ramplike inner portions for providing an initial spin to the air stream while avoiding torque loading of the motor and flaring portions joining said blades.

3,846,044
TURBOMACHINE ASSEMBLY

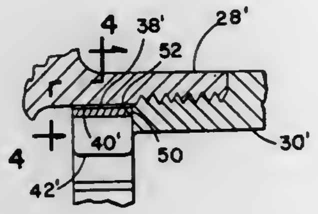
Wayne C. Shank, Tucson, Ark., assignor to Avco Corporation, Williamsport, Pa.

Filed Sept. 14, 1973, Ser. No. 397,319
Int. Cl. F01d *5/06*
U.S. Cl. 416—199 **5 Claims**

1. A turbomachine rotor assembly comprising:
first and second bladed rotor elements;

an outer sleeve coaxial with and extending from one of said rotor elements;

an inner sleeve coaxial with the other of said rotor elements and received in said outer sleeve, said inner and outer sleeves having concentric pilot surfaces for maintaining the sleeves coaxial with respect to one another, a suitable fit being maintained between said pilot surfaces to permit ease of assembly and disassembly of said sleeves;



means for axially securing said sleeves relative to one another; and

an integral flange at the end of said inner sleeve, said flange extending from the inner periphery of said sleeve, said flange having a plurality of radial notches extending from the inner diameter of said flange to provide flexibility in the pilot surface of said inner sleeve, thereby permitting it to expand radially outward in response to centrifugal force acting on the flange for maintaining the inner and outer sleeves coaxial.

3,846,045
PUMP IMPELLERS FOR COOLING SYSTEMS OF I.C.E.

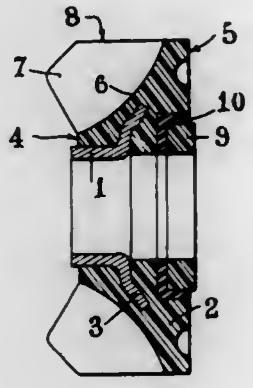
Antonio Mincuzzi, Milan, Italy, assignor to Societe Internationale de Mecanique Industrielle S.A., Luxembourg, Luxembourg

Filed Apr. 9, 1973, Ser. No. 349,029

Claims priority, application France, Apr. 17, 1972, 72.13408

Int. Cl. F04d *7/02*

U.S. Cl. 416—230 **5 Claims**



1. Pump impeller for cooling systems of internal combustion engines, comprising a metal hub adapted to be force fitted to an engine shaft and having an outflaring portion at its outer end, a sleeve molded from thermosetting resin having a low hot-water absorption coefficient and a thickness increasing from its inner face to its outer face anchored to the outflaring hub portion, a rubber ring fitted into the rear face of said sleeve, a packing ring securing said rubber ring to the rear face of said sleeve, and impeller blades having their outer edges inscribed in a cylinder concentric to the impeller axis and formed integrally with said sleeve.

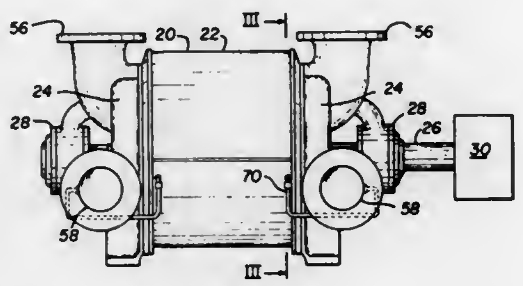
3,846,046
LIQUID RING PUMP LOBE PURGE

Kenneth W. Roe, Winfield, Ill.; Ernest E. Studwell, E. Norwalk, and Robert E. Cooke, W. Redding, both of Conn., assignors to Nash Engineering Company, Norwalk, Conn.

Continuation of Ser. No. 120,421, March 3, 1971, abandoned. This application Jan. 8, 1973, Ser. No. 321,602

Int. Cl. F04c *19/00*

U.S. Cl. 417—54 **8 Claims**



1. A method of reducing wear in liquid ring pumps which would result from abrasive action of contaminants carried in the liquid of the ring which method comprises forming conduit means opening to the interior of the ring chamber at a region where, but for that opening, excessive wear would occur and during operation of the pump purging a portion of the ring liquid and a substantial part of the contaminants of the ring through said conduit means.

3,846,047
FOLDABLE HAIR DRYER

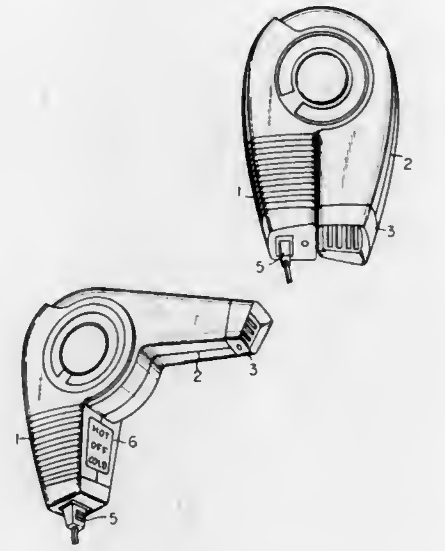
Yukio Wada, Hikone, and Hideo Okutu, Yokaichi, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Feb. 28, 1973, Ser. No. 336,498

Claims priority, application Japan, Feb. 28, 1972, 47-24482; Feb. 28, 1972, 47-24484; Feb. 28, 1972, 47-24486; June 30, 1972, 47-78142; Feb. 29, 1972, 47-20870

Int. Cl. F03b *11/02;* **H05b** *1/00;* **A45d** *20/12*

U.S. Cl. 417—234 **11 Claims**



1. A hair dryer comprising, in combination, a hollow handle assembly made up of a cylindrical portion and a tangentially extending handle, a hollow nozzle assembly made up of a cylindrical portion and a tangentially extending nozzle, one of the cylindrical portions having a cylindrical sidewall and the other being open-sided for the nested fitting together of the two cylindrical portions in coaxial relationship, a motor and fan assembly mounted within the cylindrical sidewall for discharge of air through the nozzle, the two assemblies being generally symmetrical and coaxially pivoted together for relative scissoring movement between an operating condition in which the handle and nozzle are in "L" configuration and a collapsed condition in which the handle and nozzle lie compactly side by side.

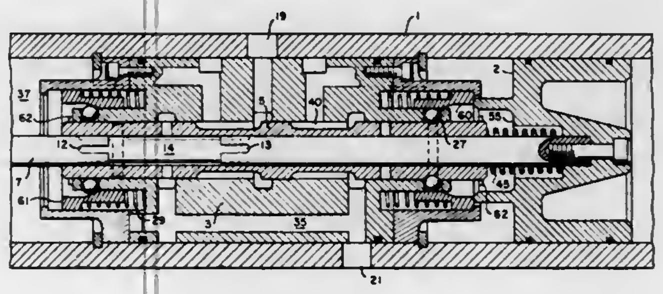
3,846,048
FREE PISTON PUMP

Roland W. Robbins, Jr., Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 250,302, May 2, 1972, abandoned. This application Nov. 26, 1973, Ser. No. 419,013

Int. Cl. F04b *17/00*

U.S. Cl. 417—393 **1 Claim**



1. A fail safe free piston pump, comprising:

a cylindrical housing with a first and second end;

an inlet and an exhaust check valve at each of said first and second ends to admit and expell the fluid to be pumped into and out of the housing;

valve means located within said housing between said ends of said cylinder forming a first and second chamber within said housing, said valve comprising an axially slidable shuttle valve which directs a pressurized driving fluid from an external source alternatively to said first and second chamber as said shuttle valve reciprocates axially; first and second pistons slidably mounted within said housing on opposite sides of said valve means said pistons being driven by pressurized fluid;

a rod means interconnecting said pistons and slidably and concentrically mounted within said shuttle valve;

shuttle valve engaging and release means associated with each piston to releasibly hold said shuttle valve in a first and second position comprising a pair of retaining balls, a concave detent on the surface of said shuttle valve to receive said balls, a sliding collar means to selectively fix said balls within said detent to hold the shuttle valve in a fixed position;

a spring attached to each of said pistons to bias the shuttle valve during a portion of the stroke of the piston; and

a ring integral with each of said pistons which engages said sliding collar to move it axially and free said detent balls.

3,846,049
INTENSIFIER PUMP WITH HALF WAVE MODULATOR

James K. Douglas, Shorewood, Wis., assignor to The Oilgear Company, Milwaukee, Wis.

Filed Sept. 24, 1973, Ser. No. 400,318

Int. Cl. F04b *35/00*

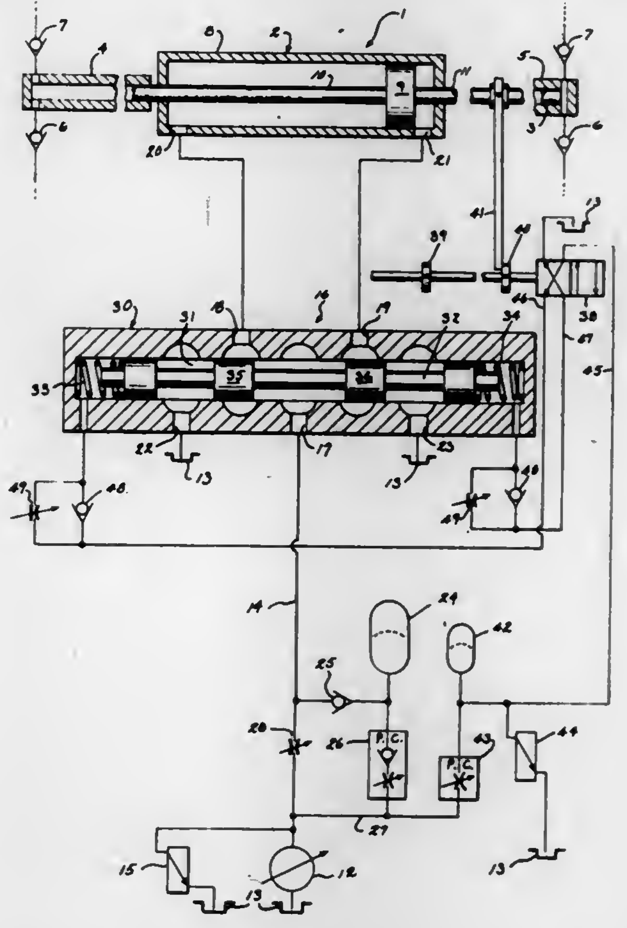
U.S. Cl. 417—404 **2 Claims**

1. In a reciprocating intensifier pumping system having two pumping pistons to alternately pump intensifier fluid at a predetermined pressure and at a constant flow rate, a power cylinder having a double ended and double acting working piston connected in line with said pumping pistons, said power cylinder having cylinder ports at opposite ends thereof, a supply pump to deliver hydraulic fluid at a constant rate, a reversing valve operable at each predetermined stroke of the working piston to reverse the connections of said cylinder ports across said pump and conduct hydraulic fluid therebetween,

said reversing valve having an inlet port at an open center in said valve between a pair of outlet ports closely connected respectively to said cylinder ports, said inlet port connected to a delivery line from said supply pump, a pair of return ports next adjacent said outlet ports and connected to a return to said supply pump, a valve member having a pair of spaced apart lands defining said open center and biased to a normally inoperative center position in which said lands open said outlet ports to each other through said valve center while blocking said outlet ports to said return,

said valve member having two operating fluid directing control positions, in one of said operating positions of said valve member said valve connects said inlet port to a first of said outlet ports and connects a second of said outlet ports to said return, in the other of said operating positions of said valve member said valve connects said inlet port to said second outlet port and connects said first outlet port to said return,

said valve member in moving from said one operating position to said other operating position sequentially provides: blocking of said return to flow from said second outlet port, opening of said second outlet port to said valve center and to flow from said first outlet port, blocking of said first outlet port to said valve center and to flow from said second outlet port, and opening of said first outlet port to said return,

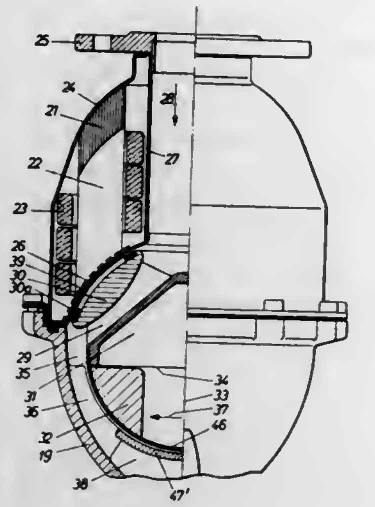


said working piston at the end of a stroke in said power cylinder defines large and small volume ends respectively on opposite sides of the working piston,

and means timing the rate of movement of said valve member in shifting from one operating position to the other operating position so that while said valve member is in transit between said operating positions the valve conducts a very high velocity fluid surge generated by expansion of compressed fluid in said large volume end of the power cylinder to the small volume end thereof and at the time of the peak value of said surge said valve member closes said large volume end to any return of said surge and opens said large volume end to pump return, whereby the momentum of said surge to said low volume end of the power cylinder is effective to initiate a reverse stroke of the working piston.

3,846,050
CENTRIFUGAL PUMPS HAVING ROTATABLE POLE RINGS SUPPORTED IN CONTACTLESS BEARINGS

Nikolaus Laing, Hofener Weg 35-37, 7141 Aldingen bei Stuttgart, Germany
Division of Ser. No. 97,771, Dec. 14, 1970, Pat. No. 3,732,445. This application Mar. 29, 1973, Ser. No. 346,114
Int. Cl. F04b *17/00*
U.S. Cl. 417—420 **8 Claims**

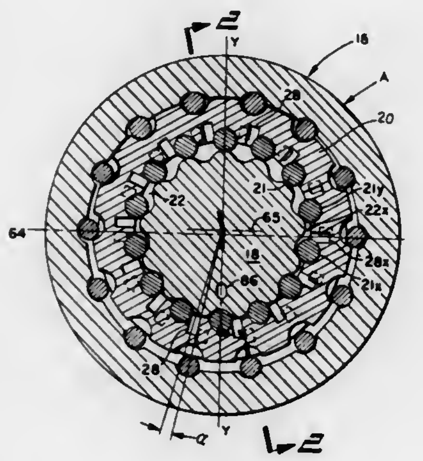


1. A centrifugal pump having:
a. a first pole ring for producing a rotating magnetic field where said first pole ring includes a plurality of poles distributed over a first surface thereof part of which is inclined with respect to a major axis of said pump;
b. a second rotatable pole ring having the same plurality of poles as said first pole ring distributed over a second surface thereof part of which is inclined with respect to a major axis of said pump and to the same degree of inclination as said first surface, said first and second surfaces being spaced from each other to form a gap therebetween and the gap effecting a closure of magnetic circuits between adjacent poles;
c. a separating wall in said gap for hermetically sealing said first pole ring from said second pole ring;
d. means for introducing a fluid under pressure between said separating wall and said second pole ring to form a fluid bearing film to support the second pole ring axially with respect to said first pole ring; and
e. impeller blading operatively connected to said second pole ring for imparting a force on a fluid to be pumped by said pump.

3,846,051
VALVING ARRANGEMENT IN A HYDRAULIC DEVICE

Hugh L. McDermott, Edina, Minn., assignor to Eaton Corporation, Cleveland, Ohio
Filed Jan. 3, 1973, Ser. No. 320,791
Int. Cl. F01c *1/02;* **F03c** *3/00;* **F04c** *1/02*
U.S. Cl. 418—61 B **3 Claims**

1. A pulley motor of the gerotor type comprising:
a one-piece shaft having an externally-toothed member extending over a central portion thereof, said shaft having tubular portions at its opposite ends to define a fluid inlet and a fluid outlet for said motor;
a first hollowed cylindrical casing section disposed around said shaft at one side of said externally toothed member and journalling said shaft therein;
a second hollowed cylindrical casing section disposed at the other side of said externally toothed member and journalling said shaft therein;
a cylindrical ring casing member interposed and secured to said first and second casing sections to define a housing;
an internally-toothed member having more teeth than said externally toothed member and being eccentrically disposed for movement relative to said externally toothed member, the teeth of said members interenmeshing to define contracting and expanding volume chambers during relative movement therebetween;
said internally toothed member being disposed within said ring casing member;
drive means co-acting between said ring casing member and said internally toothed member and operable to rotate said ring casing member in response to hypocycloidal movement of said internally toothed member about said externally toothed member; and
valve means operable between said inlet at one end of said shaft and said outlet at the other end of said shaft to connect said inlet to the expanding volume chambers and said outlet to contracting volume chambers to cause said internally toothed member to hypocycloidally move about said externally toothed member;

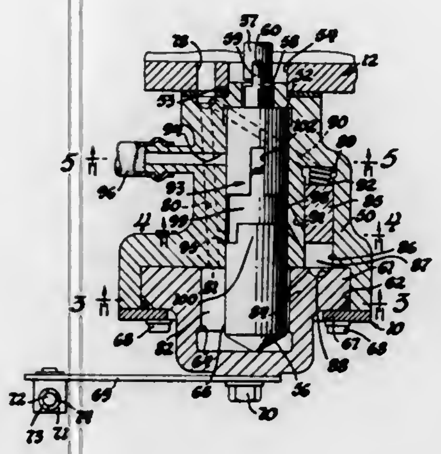


said valve means including first and second valve members mounted in said housing for rotation therewith adjacent opposite ends of said internally toothed member,
said valve members each having a plurality of flow passages therein, the number of flow passages in each member being equal to the number of volume chambers, a particular one of said flow passages in each member being associated with a particular one of said volume chambers, and,
said internally toothed member having a like plurality of flow recesses in each axial end surface thereof, the arrangement of said recesses being such as to provide a fluid flow path between the expanding chambers and their associated passages in said first valve member and between the contracting chambers and their associated passages in said second valve member through said recesses during movement of said internally toothed member relative to said externally toothed member.

3,846,052
METERING PUMP

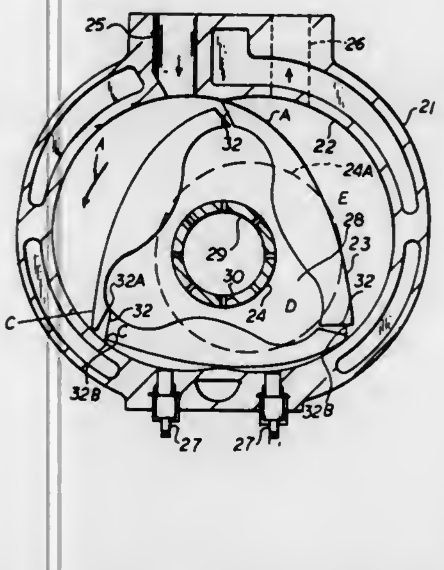
Elias W. Scheibe, Grand Rapids, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 8, 1973, Ser. No. 386,603
Int. Cl. F01c *21/04*
U.S. Cl. 418—84 **4 Claims**

1. An oil metering pump for metering oil to lubricate an engine's seals comprising a pump inlet port, a pump outlet port, pumping means for pumping oil from said pump inlet port to said pump outlet port at a rate that increases with increasing engine load, a pressure controlled delivery port, pressure control valve means oppositely biased by oil pressure from said pump inlet port and from said pump outlet port for providing controlled connection of said pump outlet port to said pressure controlled delivery port so that the oil pressure in said pressure controlled delivery port is dependent on the pressure developed by said pumping means and is independent of varying pressure at said pump inlet port, a pump discharge port for delivering oil from said pump to lubricate the engine's seals; a bypass port connected to said pump inlet port, and discharge-bypass valve means driven at a speed proportional to engine speed for connecting said pressure controlled delivery port alternately to said pump discharge port and said bypass port so that oil from said pressure controlled delivery port is intermittently delivered back to said pump inlet port to effect substantially uniform oil flow through said pressure controlled delivery port at substantially constant engine loads to maintain substantially uniform oil flow for seal lubrication at substantially constant engine loads.



3,846,053
ROTARY INTERNAL COMBUSTION ENGINE HAVING DYNAMIC FLUID SEALS

Stanley Roberts, 36 Skyline Ter., Spring Valley, N.Y. 10977
Filed July 16, 1973, Ser. No. 379,739
Int. Cl. F01c *19/00;* **F04c** *27/00*
U.S. Cl. 418—94 **9 Claims**



1. A rotary internal combustion engine comprising:
a housing,
a rotor rotatably journalled within said housing,
and a fluid dynamic sealing means forming a fluid seal between said housing and said rotor,
said fluid sealing means comprising a nozzle formed in said rotor,
and means for directing a fluid through said nozzle at supersonic speed.

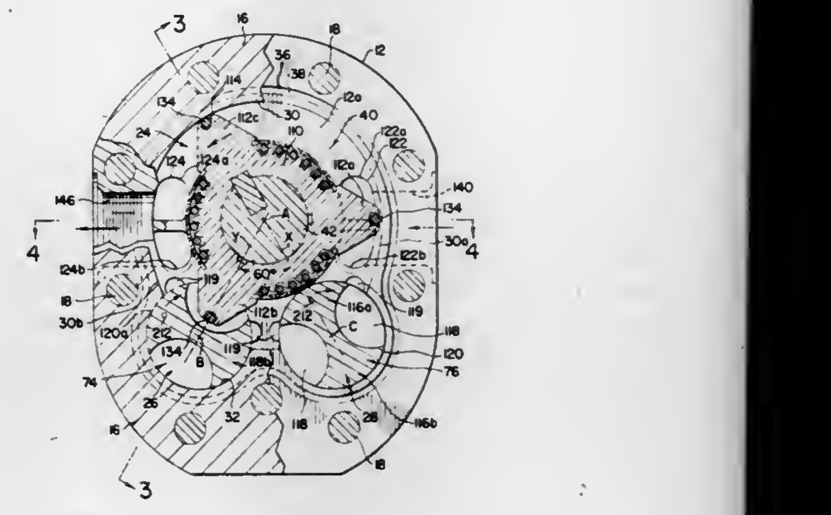
3,846,054
APPARATUS FOR FABRICATING DOUBLE-SKIN FOAM CORE CONSTRUCTION PANELS

Bernard H. Davis, Stoney Creek, Ontario, Canada, assignor to H. H. Robertson Company, Pittsburgh, Pa.
Filed Sept. 5, 1973, Ser. No. 394,411
Int. Cl. B32b *5/20*
U.S. Cl. 425—110 **10 Claims**

1. In apparatus for assembling a succession of foam filled construction panels each comprising a liner sheet, a facing sheet, and a foamed-in-place foam core, the two sheets having central webs, first edges and second edges, the combination comprising sequential zones including
A. a sheet assembly zone having
applicator means for applying a resilient strip connector to the first edge of the liner sheet; and
engager means for engaging the first edge of the facing sheet with said resilient strip connector, thereby to provide a resilient strip connection between the first edges of the two sheets, the two sheets being positioned with the central webs thereof in confronting relation;
B. a sheet diverging zone having
means for diverging the thus joined sheets along second edges thereof remote from said resilient strip connector, thereby to provide an opening therebetween;
C. a foaming zone having
distributing means extending through said opening between the two sheets for distributing foamable foam forming ingredients along the length and across the width of the liner sheet;
D. a sheet converging zone having
means for converging the two sheets along the second edges thereof to position the central webs thereof in confronting relation, and with the actively foaming foam forming ingredients between the thus aligned sheets; and conveyor means for supporting and moving the two sheets through said sequential zones.

3,846,055
ABUTMENT ROTARY HYDRAULIC MOTOR OR PUMP

Robert Wesley Brundage, 2809 Wakonda Dr., St. Louis, Mo. 63121
Filed July 31, 1972, Ser. No. 276,662
Int. Cl. F01c *1/08, 19/00;* **F03c** *3/00*
U.S. Cl. 418—124 **18 Claims**



1. A positive displacement device for fluids comprising housing means having rotor and abutment valve chambers,

said rotor chamber including an arcuate wall and said abutment valve chamber including a circular wall intersecting said rotor chamber wall, cooperable rotatable rotor and abutment valve members disposed respectively in said rotor and abutment valve chambers, fluid inlet and outlet ports at spaced locations about said rotor chamber wall and opening axially into said rotor chamber, said rotor comprising a hub and at least one lobe projecting radially outwardly from said hub, said lobe having an outer end provided with a longitudinally extending recess opening radially outwardly of said end, a sealing pin in said recess, said recess opening having a circumferential width less than the diameter of said pin, said outer end of said lobe and said rotor chamber wall being radially spaced such that said recess communicates with said rotor chamber when said pin engages said rotor chamber wall for fluid under pressure to enter said recess from said rotor chamber, said outlet port having an end disposed in the path of movement of said recess for communicating said outlet port with said recess to reduce the fluid pressure behind said rotor lobe prior to movement of said rotor lobe past said end of said outlet port.

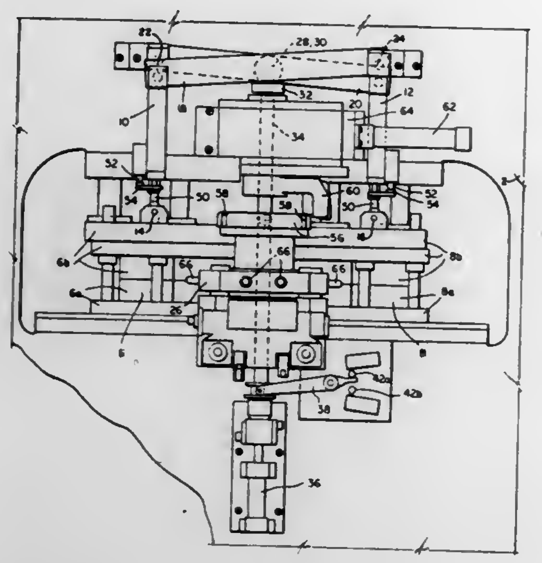
ERRATUM

For Class 425—110 see:
Patent No. 3,846,054

3,846,056

TURRET LOWERING MECHANISM

Joseph C. Flynn, Bridgeton, N.J., assignor to Wheaton Industries, Millville, N.J.
Division of Ser. No. 189,978, Oct. 18, 1971, abandoned. This application Feb. 26, 1973, Ser. No. 335,696
Int. Cl. B29c *1/16*
U.S. Cl. 425—154 **4 Claims**



1. In a machine having a turret and a plurality of independent mold sets disposed radially of said turret each of said mold sets having a stationary mold half and a movable mold half, said movable mold half including means for moving said movable mold half in a path parallel to the axis of said turret toward and away from said stationary mold half to close and to open, respectively, said mold set, the improvement comprising a mechanism for moving said turret along its axis in conjunction with the movement of said movable mold halves in the closing direction thereof only, said mechanism comprising

a. biasing means for urging said turret along its axis in a direction parallel that of said movable mold members when moving away from said stationary mold members,

b. connecting members extending from each of said movable mold halves in a path generally coincident with the direction of movement of said respective movable mold half during the movement thereof away from said respective stationary mold halves,

c. lever members extending from each of said connecting members, at the end thereof opposite that at which it is connected to said respective movable mold half, to fixed points spaced therefrom in a direction lying in a plane perpendicular to the axis of said turret,

d. all of the connections between said movable mold halves, said connecting members, said lever members and said fixed points being such as to permit movement of said connecting members and said lever members in conjunction with the movement of said movable mold halves,

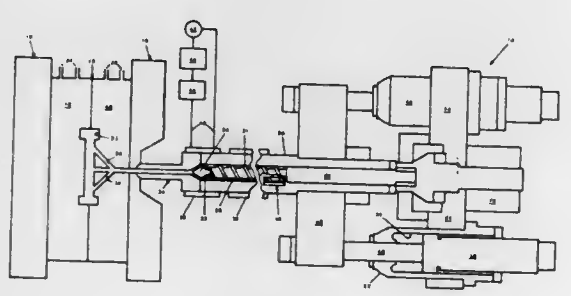
e. each of said lever members having, at a point thereon intermediate its ends at which it is connected to said respective connecting member and said respective fixed point, a cam,

f. said turret including a cam receiving member for engaging all of the cams of said respective lever members on the peripheral portions thereof disposed in a direction from the centers thereof opposite that in which said turret is urged by said biasing means, said improved machine having two mold sets, the lever member associated with each of which being connected to a fixed point lying in a plane perpendicular to the axis of said turret and including said lever member when said movable mold connected to said lever member is at the end of its movement away from said stationary mold half, wherein said cams are positioned on each of said lever members at a point midway between the points at which said respective lever member is connected to said respective connecting member and to said respective fixed point, wherein said machine is an injection blow molding machine having a twin plate press frame, said fixed points being mounted on said frame, wherein said biasing means comprises a hydraulic cylinder for applying a constant force to said turret along the axis thereof, wherein said connecting member includes means for sensing excessive resistance force encountered in the axial movement of said turret in the direction parallel that of said movable mold halves during the movement thereof toward said stationary mold halves.

3,846,057

APPARATUS FOR INJECTION MOLDING OF RUBBER

John D. Counceller, Mount Gilead; Robert T. De Capite, Worthington Hills; John Samuel Burpulis, and Robert David Soufie, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del., by said Counceller & De Capite
Filed Mar. 13, 1972, Ser. No. 233,889
Int. Cl. B29f *1/08*
U.S. Cl. 425—207 **1 Claim**



1. In a cyclically operable reciprocating screw injection molding machine for molding a succession of articles of an elastomeric material, said machine including

a reciprocable, rotatably driven screw disposed within a barrel having an outlet adjacent its front end and an inlet displaced rearwardly from said outlet,

mold means operably connected to said barrel outlet,

means for rotating said screw for masticating and heating said material while feeding it toward said front end of the barrel and while said rotating screw is recprocated toward the rear of said barrel,

means for causing forward reciprocation of said screw to inject said heated material through said barrel outlet into said mold means, and

means for heating said mold means to effect at least substantial curing of said elastomeric material,

the improvement comprising:

means for causing the screw to rotate during an initial part of the rearward reciprocation of the screw in each cycle at a first speed sufficient to elevate the temperature of said elastomeric material to a first level;

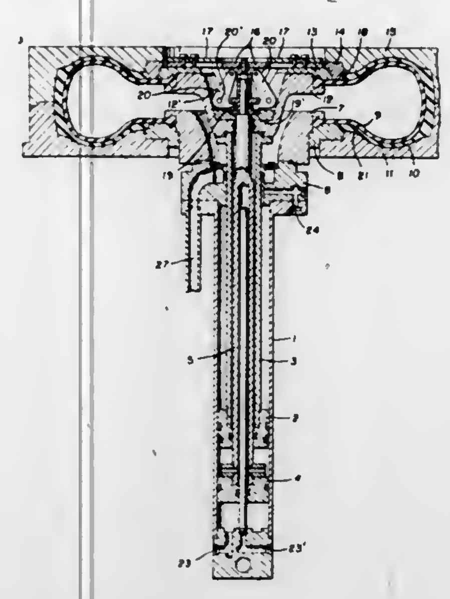
means for causing increased rotational speed of the screw during the remaining part of said rearward reciprocation of the screw in each cycle to elevate the temperature of said elastomeric material accumulated in rearward portions of the barrel to a level close to the temperature of the elastomeric material near said outlet; and

means for feeding elastomeric material into said barrel inlet at rates determined by the demand of the screw for new material at any speed of rotation of said screw.

3,846,058

APPARATUS FOR WITHDRAWAL OF CURED TIRES FROM A PRESS FOR SHAPING AND CURING TIRES

Shoushi Yoshida; Atsuaki Iwama; Takashi Okada, and Tetuo Suda, all of Kobe, Japan, assignors to Kobe Steel, Ltd., Kobe, Japan
Division of Ser. No. 78,020, Oct. 5, 1970, Pat. No. 3,714,321. This application Aug. 7, 1972, Ser. No. 278,606
Claims priority, application Japan, Oct. 6, 1969, 44-80070
Int. Cl. B29h *5/02*
U.S. Cl. 425—38 **4 Claims**

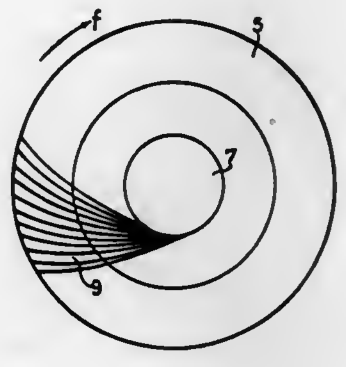


1. In a press for shaping and curing tires having upper and lower mold sections and a collapsible bladder having upper and lower beads, a center mechanism for removing a cured tire from the mold sections comprising, means for clamping the upper bead of the bladder, a plurality of segment plate means positioned exteriorly of the bladder and above the upper bead of the tire on said means for clamping the upper bead of the bladder, means for lowering said means for clamping the upper bead of the bladder to separate the bladder from the tire and to lower said segment plate means to a position below the upper bead of the tire, cam means selectively expanding said segment plate means to a diameter exceeding the diameter of the upper bead of the cured tire, and means below the lower mold section to actuate said cam means whereby said segment plate means engages the upper bead of the cured tire upon movement relative thereto.

3,846,059

PLATE EXTRUDER

Claude Julien Rene Wagner, 50 Avenue du General Leclerc, Pont-a-Mousson, France
Continuation of Ser. No. 878,523, Nov. 20, 1969, abandoned. This application July 19, 1973, Ser. No. 380,742
Claims priority, application France, Nov. 28, 1968, 68.175655
Int. Cl. B29f *3/02*
U.S. Cl. 425—381.2 **15 Claims**

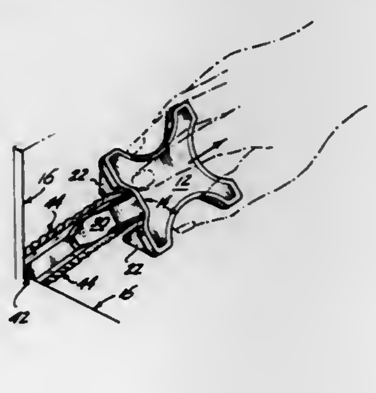


1. A disc plate extruder for plastic material having a rotor and stator in the form of disc plates with their facing surfaces in spaced parallel relation to provide a gap in between, means for rotating the rotor relative the stator about its axis, a die opening through the axial portion of the stator through which the plastic material is extruded, and means for introducing material to be extruded into the gap between the disc plates, the improvement comprising projections extending from the facing surfaces of the stator and rotor into the gap, each having a height which, when added together, is less than the width of the gap to provide a clearance between the crests of the projections during rotational movement of the rotor, said projections extending from about the axial portions to about the peripheral portions of the stator and rotor, with the cross sectional shape of the rotor projections comprising a leading portion in the form of a wall facing forwardly in the direction of rotational movement of the rotor and which extends substantially perpendicularly from the surface of the rotor to a crest and a trailing portion which tapers rearwardly downwardly from the crest to the surface of the rotor for mergence therewith in spaced relation from the next projection to provide a flat surface portion of the rotor therebetween, and with projections in the stator corresponding in shape with the projections in the rotor, but facing in the opposite direction.

3,846,060

TROWELLING TOOL

George A. Otis, 715 E. Los Angeles Dr., Vista, Calif. 92083
Filed May 29, 1973, Ser. No. 364,373
Int. Cl. E04f *21/32*
U.S. Cl. 425—458 **10 Claims**



1. A trowelling tool for mastic caulking compounds disposed bead-like at the juncture of a pair of right angularly arranged surfaces, comprising:

- a body member to span between said surfaces in spaced-apart relation to caulking at said juncture;
- said body member having a bearing surface on each side to be aligned with and be guided by one of said angularly arranged surfaces, said bearing surfaces lying in planes at right angles to each other and at a 45° angle to a plane bisecting said juncture;
- a trowelling finger trailing from said body member and extending angularly toward and into trowelling relation with caulking at said juncture;
- said finger, having a terminal edge to pack and trowel caulking between the surfaces at said juncture to form a bead, said finger having, contiguous with each end of said terminal edge, scraper means operable to bear on and be guided by the surfaces adjacent said juncture and to displace excess caulking laterally in spaced apart relation to said bead.

3,846,061
FLAME-DETECTION CIRCUITS

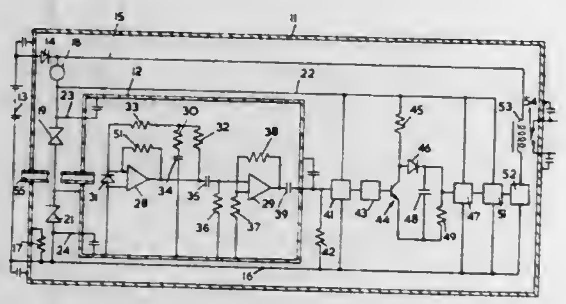
Maurice James Wright, Birmingham, and Charles Peter Cockshott, Coventry, both of England, assignors to Lucas Aerospace Limited, Birmingham, England

Filed Mar. 22, 1973, Ser. No. 344,031

Claims priority, application Great Britain, Mar. 25, 1972, 14116/72

Int. Cl. F23n *5/08*

U.S. Cl. 431—79 **7 Claims**



1. A flame-out detection circuit for use with gas turbine engines, comprising a photo-voltaic source for monitoring the flame, a control network which when energised initiates ignition, and an a.c. amplifier coupling said source to the control network, the flicker of the flame producing in said source an a.c. signal which is amplified and used to hold the control network de-energised.

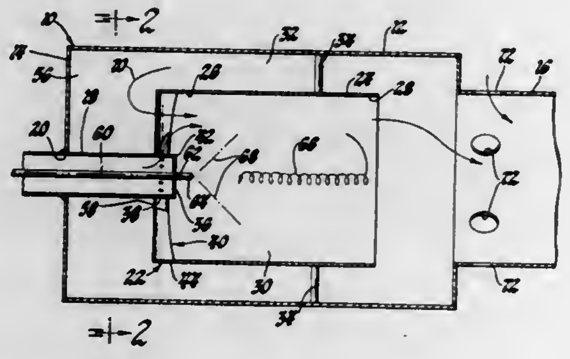
3,846,062
EXTERNAL RECIRCULATION BURNER

Ronald E. Quinn, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 5, 1973, Ser. No. 412,750

Int. Cl. F23l

U.S. Cl. 431—116 **5 Claims**



1. A combustor assembly having an outer casing including an inlet dome on one end thereof, a tubular combustion chamber liner located within said outer casing having an inlet end and an outlet end, said linear being spaced inwardly of said outer casing to define an outer recirculation passage, means directed through said outer dome for directing primary inlet air and fuel to said combustion chamber, a plurality of swirler blades located in the inlet of said combustion chamber liner for producing a swirl induced recirculation of flow from the outlet end of the combustion chamber to the inlet end thereof during the combustion process, each of said swirler blades having a hollow duct portion and including an inlet opening at the base thereof for directing primary air into the interior of the blades, each of said blades further including a jet nozzle slot on the surface thereof for producing a jet flow across said vanes to induce recirculation flow through said combustion chamber from the inlet to the outlet thereof thence through said recirculation passage between said combustion chamber liner and said outer casing for enhancing recirculation of heated gas from the combustion chamber to the fuel supply means for producing improved prevaporization of fuel particles prior to combustion thereof within the combustion chamber defined by said liner.

3,846,063
LIGHTER EMPLOYING ELECTRIC SPARK IGNITION

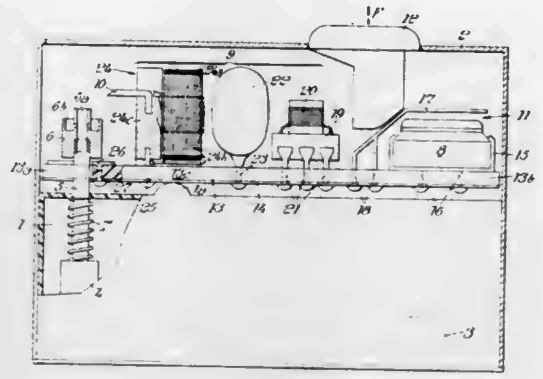
Henri Edouard Francois Marie Courier-de-Mere, Paris, France, assignor to Bicosa Societe de Recherches, Clichy, France

Filed Mar. 19, 1974, Ser. No. 452,999

Claims priority, application France, Apr. 10, 1973, 73.12865

Int. Cl. F23q *2/16*

U.S. Cl. 431—255 **19 Claims**



1. A lighter employing electric spark ignition, which lighter comprises:

- a body including a reservoir for gas, said body having two fixed structures defining a space therebetween;
- a burner supported within said body;
- a gas outlet valve arranged between said burner and the reservoir of said body for controlling the supply of gas from the reservoir to said burner;
- a supporting plate movably mounted in the space between said two fixed structures of said body and having a portion operatively engaged with said gas outlet valve for opening said valve on movement of said supporting plate;
- an electric cell disposed on said supporting plate;
- a voltage-raising circuit disposed on said supporting plate;
- a switch disposed on said supporting plate for electrically connecting said electric cell to said voltage-raising circuit;
- an ignition electrode disposed on said supporting plate and adjacent said burner; and
- a control member supported by said body and operable to move said supporting plate and close said switch.

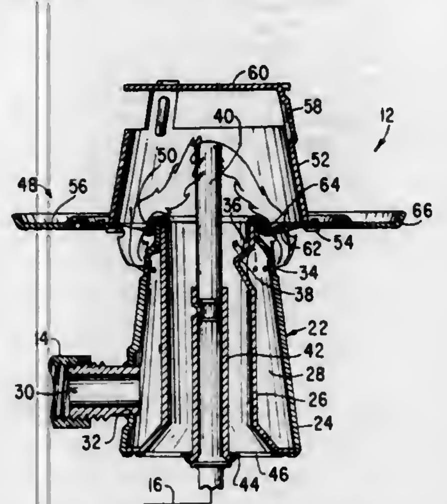
3,846,064
FLAME SPREADER WITH STRESS RELIEF FOR A BURNER

Jay R. Katchka, Cypress, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Sept. 28, 1973, Ser. No. 401,785

Int. Cl. F23g *9/00*

U.S. Cl. 431—285 **8 Claims**



1. A flame spreader for a burner comprising

- mounting means including a plurality of radially extending supporting struts,
- an annular flame spreader portion, and
- a stress relief portion joining one of the plurality of struts to the annular flame spreader portion.

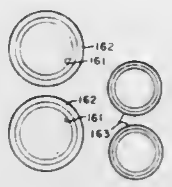
3,846,065
VAPOR GENERATORS WITH LOW POLLUTANT EMISSION

William P. Lear, Verdi, Nev., assignor to Lear Motors Corporation, Reno, Nev.

Continuation-in-part of Ser. No. 261,158, June 2, 1972,. This application June 12, 1972, Ser. No. 261,691

Int. Cl. F23d *13/12*

U.S. Cl. 431—347 **6 Claims**



1. A combustor comprising a firewall containing a combustion chamber, means for presenting fuel into the combustion zone of said chamber constituting its primary zone, means for injecting air into said primary combustion zone and the successive secondary combustion zone of said chamber, means associated with said firewall for directing major portions of the injected air generally counter to the flow direction of the combusted gases from said primary to the secondary zones and outwardly of said chamber, said air injecting means including apertures in the firewall that admit the air into said chamber as tubular streams, and baffle means arranged within the firewall adjacent its apertures, said baffle means being shaped to effect said counter direction of the injected air.

3,846,066
FUEL BURNER APPARATUS

Harold O. Ebeling, and Russell D. Smith, both of Houston, Tex., assignors to Black, Sivalls, & Bryson, Inc., Houston, Tex.

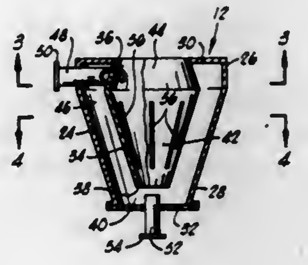
Filed May 24, 1973, Ser. No. 363,575

Int. Cl. F23d *15/00*

U.S. Cl. 431—351 **9 Claims**

3. An improved fuel burner apparatus which comprises:

- a hollow outer shell having a forward end and a rearward end;
- a front wall secured to the forward end of the outer shell thereby closing the forward end;
- a rear wall secured to the rearward end of the outer shell thereby closing the rearward end;
- a hollow inner liner having a forward end and a rearward end supported within the outer shell so that an air passageway is formed between the outer shell and the inner liner, the forward end of the inner liner extending through the front wall and the rearward end of the inner liner being spaced a predetermined distance from the rear wall, the inner liner including one or more openings therein positioned intermediate to the ends thereof so that a portion of combustion air flowing through said air passageway is caused to flow through said openings into the interior of the inner liner;
- an air inlet formed in the outer shell adjacent the forward end thereof for admitting combustion air into said air passageway; and
- a fuel inlet attached through said rear wall for injecting fuel into the outer shell at a position between the rear wall and the rearward end of the inner liner.



3,846,067
ROTARY FURNACE

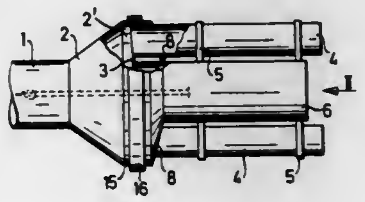
Manfred Durr, Oelde, Germany, assignor to Polysius AG, Neubeckum, Germany

Filed Aug. 14, 1973, Ser. No. 388,197

Claims priority, application Germany, Aug. 22, 1972, 2241120 7

Int. Cl. F28d *11/08*

U.S. Cl. 432—80 **4 Claims**



1. A rotary furnace comprising a discharge tube having an outlet end, a coaxial frustoconical extension fixedly mounted on the outlet end of said discharge tube and having a large diameter end of a diameter in excess of the diameter of said discharge tube, an integral cylindrical extension mounted upon the large diameter end of said frustoconical extension and projecting coaxially therefrom by a distance substantially less than the axial dimension of said frustoconical extension, a plurality of cooling tubes having inlet ends projecting into said cylindrical extension and fixedly suppported therefrom at symmetrically spaced positions around the axis of said cylindrical extension with the axes of said cooling tubes extending parallel to the cylindrical extension axis, support means cooperatively supporting said cooling tubes in the aforementioned relationship to each other, and an annular bearing ring

mounted upon the outer periphery of said cylindrical extension.

3,846,068
REFRACTORY STRUCTURE, PARTICULARLY FOR A METALLURGICAL SHAFT FURNACE

Jacobus Van Laar, Santpoort, Netherlands, assignor to Koninklijke Nederlandsche Hoogovens En Staalfabrieken N.V.

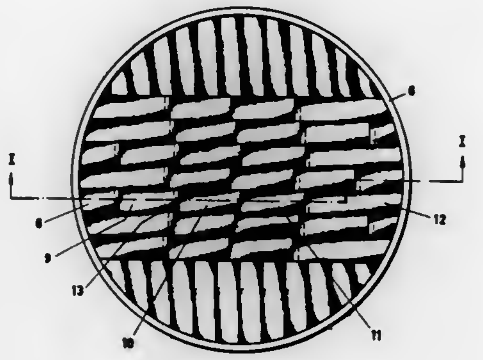
Filed Mar. 13, 1972, Ser. No. 234,138

Claims priority, application Netherlands, Mar. 15, 1971, 7103442

Int. Cl. F27d *1/00*

U.S. Cl. 432—251 **5 Claims**

1. A refractory bottom structure for a metallurgical shaft furnace comprising a plurality of horizontal layers of separate refractory block elements, wherein at least the upper layers thereof have at least part of the refractory block elements arranged one to the side of the other with open expansion joints horizontally spaced between them, the width of said joints when the block elements are in cold condition corresponding to the thermal expansion of the bordering refractory block elements in the direction towards said joints over a temperature range up to about 50° to 200° C below the operating temperature of said elements.



CHEMICAL

3,846,069
SUBLIMATION TRANSFER DYEING WITH STYRYL DYES

Hans-Joerg Angliker and Richard Peter, Basel, and Klaus Artz, Muttenz, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

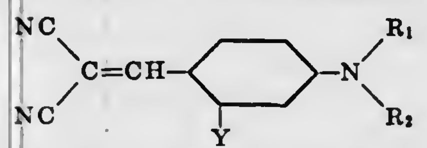
No Drawing. Continuation of abandoned application Ser. No. 843,184, July 18, 1969. This application May 15, 1972, Ser. No. 253,612

Claims priority, application Switzerland, July 26, 1968, 11,235/68

Int. Cl. D06p *5/00*

U.S. Cl. 8—2.5 **6 Claims**

1. In the process of sublimation transfer printing for coloring textile materials containing acrylic fiber, polyester fiber, or mixtures thereof, the improvement of using a styryl dyestuff which sublimes within a period of 60 seconds at 180 to 200° C. and which has the formula



wherein R_1 and R_2 each is hydrogen, an unsubstituted alkyl group of 1 to 8 carbon atoms, or an alkyl group of 1 to 8 carbon atoms substituted with halogen, phenyl, cyano, alkoxy, hydroxy, acyloxy, alkylsulphonyl, alkylcarbamoyloxy, phenylcarbamoyloxy, or alkyloxycarbonyloxy, and Y is hydrogen or methyl.

3,846,070
PROCESS FOR THE DYEING OF POLYESTER TEXTILE MATERIALS

Werner Langmann and Robert Kuth, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 23, 1971, Ser. No. 211,727

Claims priority, application Germany, Dec. 23, 1970, P 20 63 330.1

Int. Cl. D06p *5/06*

U.S. Cl. 8—172 **11 Claims**

1. Process for dyeing polyester textile material comprising the steps of

- (1) immersing the polyester textile material in a non-aqueous dyebath consisting essentially of
  - (a) water-immiscible organic solvent having a boiling point of 40° C.–150° C.;
  - (b) disperse dyestuff;
  - (c) water-soluble aromatic polysulphonic acid anionic dispersing agent; and
  - (d) cationic dispersing agent, non-ionic dispersing agent or mixture thereof; and
- (2) leaving the dyeing in said dyebath until the desired depth of color has been obtained.

3,846,071
PROCESS OF INHIBITING CORROSION BY TREATMENT WITH PHOSPHATE-CYCLIC AMIDINE SALTS

Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.

No Drawing. Original application Feb. 12, 1969, Ser. No. 798,789. Divided and this application Jan. 21, 1972, Ser. No. 219,832

Int. Cl. C23f *11/14, 11/16*

U.S. Cl. 21—2.7 A **10 Claims**

1. A process of inhibiting corrosion which comprises treating a corrosion system with an imidazoline salt where the salt moiety is an acidic phosphate ester of an oxyalkylated alcohol employed alone or in conjunction with a carboxylic acid.

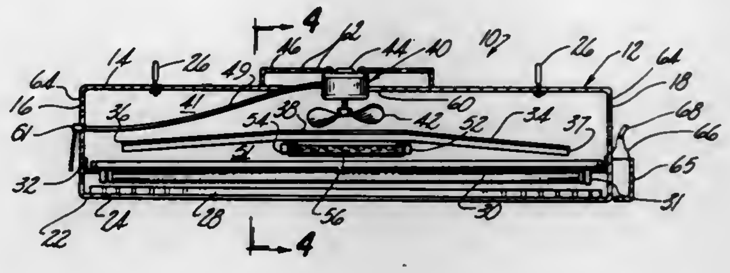
3,846,072
ULTRAVIOLET LAMP FIXTURE

Lawrence Patterson, 5272 Doherty Drive, West Bloomfield, Mich. 48033

Filed June 28, 1973, Ser. No. 374,576

Int. Cl. A61l *9/00;* **H05b** *33/02*

U.S. Cl. 21—74 R **8 Claims**



1. An ultraviolet lamp fixture for purifying the air within a room, said fixture comprising a housing having means for suspending said fixture from the ceiling of said room, the bottom wall of said housing having a longitudinally extending opening defining an air inlet through which the air in said room is communicated to the interior of said fixture; an elongated ultraviolet ray tube mounted in said housing above said air inlet; a longitudinally disposed air deflector wall mounted in said housing above said tube, the opposite longitudinal ends of said deflector wall being longitudinally spaced from the end walls of said housing, said deflector wall being inclined upwardly from the said longitudinal ends of said deflector wall and terminating in an intake opening; a motorized fan supported by the top wall of said fixture housing and disposed immediately above said deflector wall intake opening for positively moving air from said room into said housing at said air inlet end and through said longitudinal wall intake openng to the space behind said deflector wall, said housing having a plurality of apertures on said opposite longitudinal end walls and said top wall for exhausting air from said space to said room, a portion of said air flowing through said space passing between said end walls and said oposite ends of said deflector wall for recirculation through said intake opening, whereby all of the air entering said housing through said air inlet is passed over said tube and the stream of air entering said housing and exhausted back to said room is purified by the radiation emitted by said tube.

3,846,073
PROCESS AND APPARATUS FOR MEASURING THE COMPOSITION OF FLUID PLASTICS

Henry T. Baum, Mattoon, and Claude J. Stiles, Tuscola, Ill., assignors to National Distillers and Chemical Corporation, New York, N.Y.

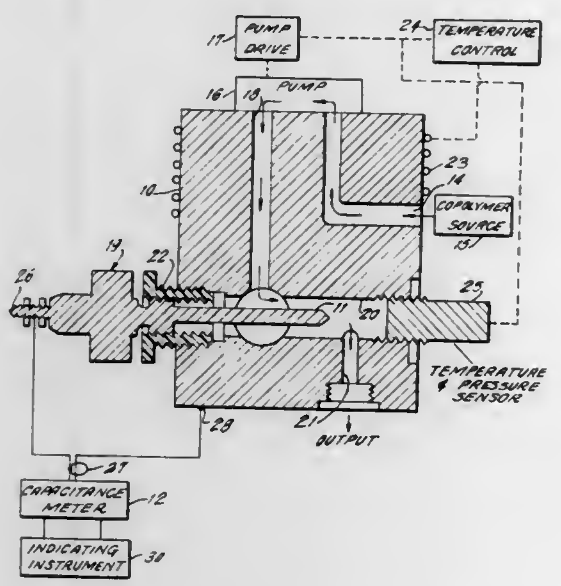
Continuation-in-part of abandoned application Ser. No. 13,256, Feb. 20, 1970. This application Apr. 8, 1971, Ser. No. 132,844

Int. Cl. C08f *15/04;* **G01n** *27/22;* **G01r** *27/26*

U.S. Cl. 23—230 A **4 Claims**

1. A process for determining the proportion of monomers in a copolymer, wherein the monomers have dif-

ferent dielectric constants, said process comprising contacting a capacitive detector responsive to the dielectric constant of fluids with a fluid stream of said copolymer in a zone of relatively constant temperature and pressure,

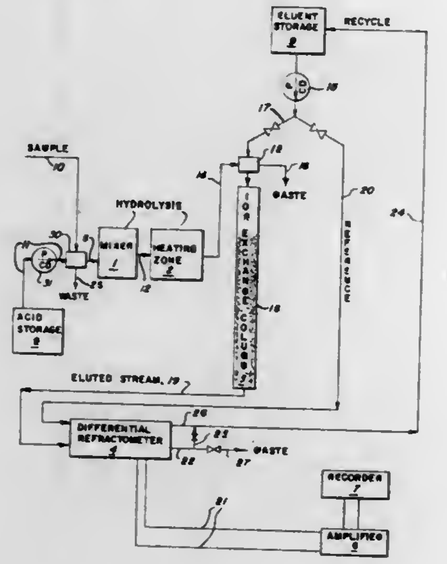


measuring the capacitance of the capacitive detector while in contact with the fluid stream and comparing the value of the capacitance so measured with a predetermined reference value.

3,846,074
DETERMINATION OF P_2O_5

Angelo Tulumello, Lansing, and Sixt Frederick Kapff, Homewood, Ill., assignors to Standard Oil Company, Chicago, Ill.

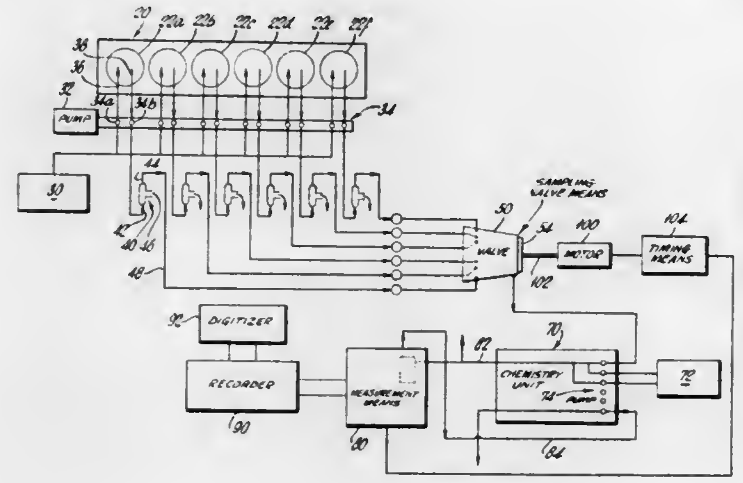
Filed Mar. 22, 1972, Ser. No. 237,094
Int. Cl. G01n *21/46, 31/04*
U.S. Cl. 23—230 R **24 Claims**



1. A process for obtaining a representation of the total phosphate content of a sample containing phosphate and at least one other anion, comprising:
(1) hydrolyzing the sample with a dilute acid of sufficient strength and in sufficient quantity to convert substantially all of the phosphates to the orthophosphate form;
(2) separating the phosphate ions from other anions by ion-exchange chromatography, whereby an eluted stream containing a chromatographic distribution of the different anions is obtained;
(3) obtaining an indication of the refractive index of the phosphate-containing portion of said eluted stream; and
(4) converting said indication to a representation of the phosphate content.

3,846,075
APPARATUS FOR SIMULTANEOUS ANALYSIS OF FLUID

Francis J. Cioffi, Somerville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed Sept. 25, 1972, Ser. No. 292,237
Int. Cl. G01n *1/10, 1/14*
U.S. Cl. 23—253 R **12 Claims**

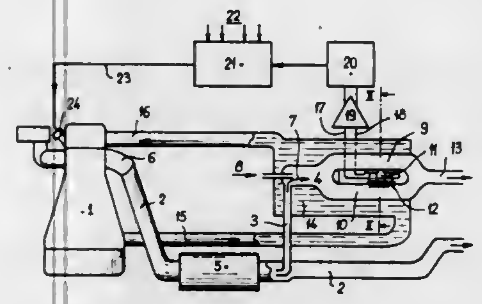


1. Apparatus for the simultaneous analysis of fluid from a multiplicity of fluid supply cells comprising:
(a) means to remove a constant flow of fluid from said supply cells and deliver a constant supply of fluid to a sampling valve means;
(b) sampling valve means adapted for automatic selective sampling of the delivered fluid samples, said valve means comprising a hollow truncated conical barrel as an outer member and a truncated conical plug as an inner member contiguously received in said outer member, means to rotate one of said members relative to the other about a common axis, at least two conduits for the transmission of fluid to said valve connected to said barrel, all said conduits connected at points in a single plane perpendicular to said common axis, the plug including a peripheral channel, the contact between said inner and outer members forming a closure for said channel, a discharge passage in fluid communication with one of said members and said channel, said channel comprises a first section generally lying in the same plane as said conduits and being of a length less than the distance between two consecutive conduits, a second section in fluid communication with, and at an angle to, said first section, a third section in fluid communication with said second section and said discharge passage, said channel adapted to register with, and pass fluid from, said conduits to said discharge passage;
(c) assay means to measure the selected fluid samples in fluid communication with said sampling valve means; and
(d) timing means interconnecting said sampling valve means and said assay means to activate and control said assay means.

3,846,076
ANTI-POLLUTION CONTROL DEVICES FOR INTERNAL COMBUSTION ENGINES

Claude Henault, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, and Automobiles Peugeot, Paris, France
Filed June 19, 1972, Ser. No. 264,333
Claims priority, application France, June 22, 1971, 7122690
Int. Cl. G01n *31/10;* **H01v** *1/32*
U.S. Cl. 23—254 E **7 Claims**

1. A quantitative detection device adapted to detect a component of a motor exhaust gas which comprises a housing which encloses a chamber, entrance means for flow of a sample of exhaust gas tangentially into the chamber, discharge means spaced from the said entrance means for the gas to flow as one stream from the chamber, and intermediate the entrance means and discharge means a thermo-electric element disposed in the chamber which divides the chamber into two symmetrical sections, said thermo-electric element having a hot surface exposed to one section and a cold surface exposed to the other section, said hot surface having a catalytic coating which initiates an exothermic reaction in the exhaust gases whereby an electric current is produced by the thermo-electric element.

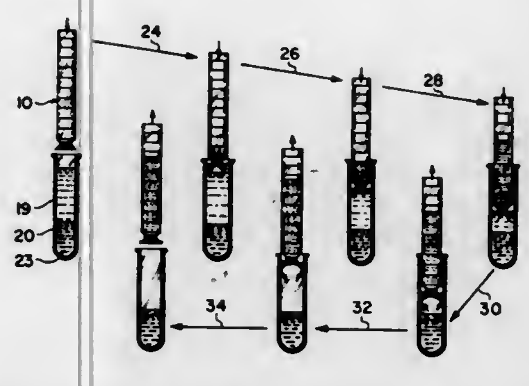


3,846,077
LIQUID SAMPLE COLLECTION TUBE

Philip Ohringer, 3 Winthrop Drive, Melville, N.Y. 11746

Filed Sept. 18, 1972, Ser. No. 290,039

Int. Cl. B01d *33/00;* **G01n** *1/12*
U.S. Cl. 23—259 **12 Claims**

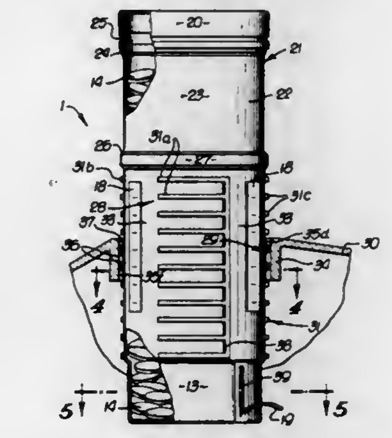


1. A collection container for isolating a liquid sample from a specimen container comprising:
an elongated cylindrical tube having an outside diameter smaller than the specimen container, and including an aperture at one end communicative with said tube;
circular disc means formed radially at said aperture end of said tube for slidably engaging the internal cylindrical walls of the specimen container;
abutment means formed on said tube adjacent to said circular disc means for engaging and supporting at least a portion of said circular disc means; and
fluid resistance means disposed in said aperture to limit the fluid flow from said tube so that when said tube is inserted into the specimen container, said circular disc means will contact and be supported by said abutment means to form a seal against the internal specimen container walls and when said tube is removed from the specimen container, said circular disc means will separate from said abutment means to release the seal from the container walls.

3,846,078
DISPENSING CONTAINER APPARATUS

James E. Brett, Huntington Beach, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.

Continuation of abandoned application Ser. No. 87,082, Nov. 5, 1970. This application May 31, 1973, Ser. No. 365,579
Int. Cl. B01d *11/02*
U.S. Cl. 23—267 A **1 Claim**



1. Container for dispensing water soluble solid treating agent and adapted to be partly immersed in water to be treated, said container comprising a cylindrical wall having an immersible reduced diameter lower portion including plural circularly spaced port means having knockout closures to pass water into said container, a plurality of annularly segmented ribs arranged to engage structure receiving and supporting the container in lower portion immersed condition, said ribs lying in vertically spaced radial planes with their corresponding segments in vertically alined and in spaced relation to define incremental immersion adjustments for said container lower portion in the water plural vertically extended and circularly distributed spaces which upon bodily rotation of the container pass and permit relative vertical movement of the ribbed and lower portions of the container wall at said structure, and a stop rib formed integrally with said segmented ribs and extending parallel with the container axis to be engaged by the supporting structure to arrest rotation of the container.

3,846,079
VERTICAL REACTION VESSEL FOR EFFECTING REACTION OF LIQUID AND GASEOUS REACTANTS BY LIQUID-GAS CONTACT

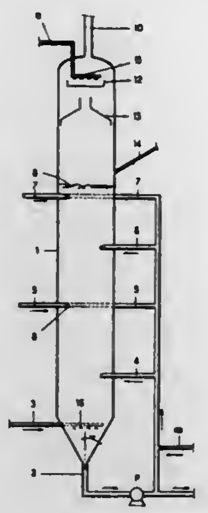
Jacob Alagy, La Celle St. Cloud, Bernard Cha, Chatou, and Cornelis Koen, Mareil Marly, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil Malmaison, France

Continuation of abandoned application Ser. No. 38,729, May 19, 1970, which is a division of application Ser. No. 649,191, June 27, 1967, now Patent No. 3,609,176. This application June 13, 1972, Ser. No. 262,257

Int. Cl. C07f *5/04*
U.S. Cl. 23—283 **9 Claims**

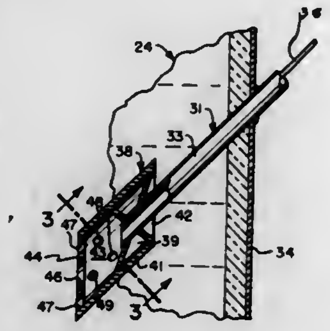
1. An apparatus for effecting reaction of liquid and gaseous reactants by liquid-gas contact, which comprises a substantially vertical reaction vessel having a curvilinear wall, said vessel containing at least one liquid reactant at a predetermined liquid level therein; gas inlet means for introducing gaseous reactant into a zone of the liquid reactant in said vessel below the liquid level; an outlet duct for drawing out gas from said vessel above the liquid level; a liquid outlet duct for effecting withdrawal of the liquid reactant containing the resulting reaction products from the lower portion of the vessel below the zone of

introduction of said gaseous reactant; conduit means in communication with said liquid outlet duct, provided with pump means, for recycling a portion of the liquid reactant containing the reaction products to at least one contact zone above said gas inlet means within the liquid phase in said vessel; and at least one stirring duct means connected to said conduit means for injecting the recycle liquid into the contact zone in a tangential direction to impart to the liquid in the vessel a rotational movement in a single direction, each of said duct means including an injection nozzle extending horizontally and tangentially adjacent to the curvilinear wall of the vessel whereby said wall is continuously washed by the recycled liquid to prevent deposits of said reaction products thereon.



3,846,080
SHIELDED TIP ACCESS TUBE FOR A REACTOR PROBE

John P. MacLean and Henry B. Jones, Houston, Tex., assignors to Texaco Inc., New York, N.Y.
Filed Jan. 26, 1972, Ser. No. 220,753
Int. Cl. B01j *9/20, 11/04;* **G01k** *1/08*
U.S. Cl. 23—288 S **3 Claims**



1. In a regenerator for a fluidized catalyst wherein the particulated catalyst material is circulated within a regeneration compartment having vertical walls, in a turbulent flow by a carrier gas to form a fluidized bed, and wherein the condition of said fluidized bed is regulated to maintain predetermined operating conditions therein, the improvement for continuously monitoring the pressure within said fluidized bed comprising,

a conduit extending into said regenerator compartment and having an open end disposed in said fluidized catalyst bed, the other end of said conduit communicated with a source of a purge gas,

a pressure sensing element connected to said conduit, and in communication with said regeneration compartment,

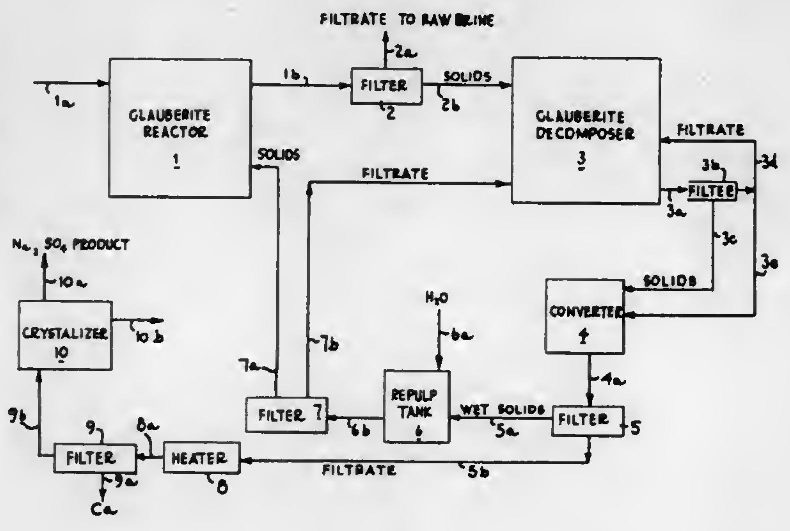
a shield disposed about said conduit open end defining a chamber in communication with said fluidized bed whereby to receive the fluidized catalyst as well as purge gas at the conduit open end,

said shield including a cylindrical element having a perforated wall spaced from said conduit open end, thereby defining an annulus about the conduit, and a substantially flat perforated face plate at the end of said cylindrical shield element to define a partial closure to the latter adjacent to said conduit open end,

said face plate being disposed in a plane substantially parallel to the vertical walls of said regeneration compartment.

3,846,081
PROCESS FOR SEPARATING SODIUM SULFATE FROM BRINES

Warren E. Dean and John J. Posego, New Martinsville, W. Va., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Mar. 8, 1972, Ser. No. 232,770
Int. Cl. B01d *9/00;* **C01c** *5/16;* **C01f** *11/46*
U.S. Cl. 23—297 **11 Claims**



1. A process for recovering sodium sulfate from glauberite, which comprises hydrolyzing an aqueous slurry of glauberite at temperatures between 15° C. and 30° C. to form a slurry of insoluble sodium sulfate decahydrate and gypsum, raising the temperature of a slurry of the sodium sulfate decahydrate to between 33° C. and 100° C. to form a soluble sodium sulfate phase, and separating the soluble sodium sulfate phase from the insoluble gypsum.

3,846,082
PRODUCTION OF CRYSTALLINE BODIES OF COMPLEX GEOMETRIES

Harold E. Labelle, Jr., Quincy, Abraham I. Mlavsky, Lincoln, and Charles J. Cronan, Taunton, Mass., assignors to Tyco Laboratories, Inc., Waltham, Mass.
Filed Nov. 8, 1971, Ser. No. 196,449
Int. Cl. B01j *17/00*
U.S. Cl. 23—301 SP **13 Claims**

1. Method of growing from a melt of a selected crystalline material an essentially monocrystalline body of complex shape having a predetermined cross-sectional configuration and a predetermined curvilinear transformation of said cross-sectional configuration lengthwise of said body, said method comprising:

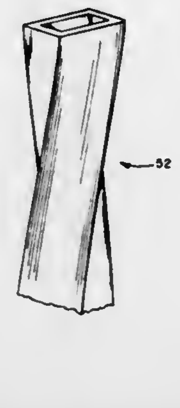
establishing a thin liquid film of said selected material on and substantially fully covering a nonliquid substantially horizontal surface that terminates in sharp edges and has an edge configuration conforming to said predetermined cross-sectional configuration, the surface tension of said film being such as to prevent said film from overrunning said sharp edges;

controlling the temperature of said film so that it has a temperature gradient along its depth with the film being hottest at said surface;

growing and pulling an essentially monocrystalline body from the cooler side of said film at a selected rate with growth occurring by successive accretions of solid at all points along the horizontal expanse of the interface of said body and said film;

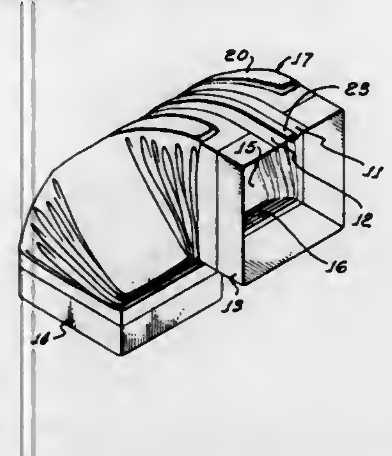
simultaneously rotating said body at a rate at which adherence of said film to said body and growth of said body can subsist about a predetermined axis which is located so that successive accretions of solid cause said body to acquire a complex shape that is characterized by said predetermined cross-sectional configuration and a curvilinear transformation of said predetermined cross-sectional configuration lengthwise of said body; and

simultaneously supplying an additional quantity of said selected material in liquid form to said surface via at least one opening in said surface to replace the liquid consumed in growing said body from said film.



3,846,083
FLUID CONDUIT ARRANGEMENT

John F. Kramer, Fullerton, Calif. (2235 W. Broadway, Suite H–102, Anaheim, Calif. 92804)
Application Apr. 29, 1971, Ser. No. 138,685, now Patent No. 3,726,322, which is a continuation-in-part of abandoned application Ser. No. 826,358, May 21, 1969. Divided and this application Apr. 9, 1973, Ser. No. 349,028
Int. Cl. B21d *53/00*
U.S. Cl. 29—157 R **9 Claims**



1. The method of providing a fluid conduit comprising the steps of

arranging a plurality of elongated members so as to define a substantially rectangular pattern having open spaces therein,

positioning a substantially flat and rigid strip at either end of said pattern to form a part thereof,

holding said elongated members and said strips together in said pattern,

superimposing a flexible sheet on said elongated members to cover said open spaces,

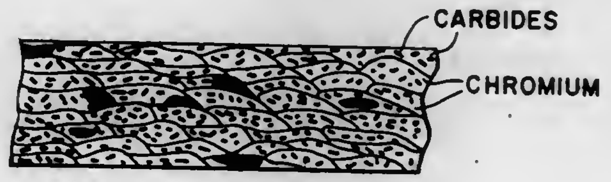
then bending said elongated members, said sheet and said strips in a direction generally transverse to said strips so as to cause said strips and elongated members to be given a permanent set such that opposite edge portions of said pattern are brought into adjacency and said sheet, said strips and said elongated members define a passageway collectively therethrough and said strips extend around the ends of said passageway,

and attaching together said edge portions of said pattern when so bent,

thereby providing a fluid conduit.

3,846,084
CHROMIUM-CHROMIUM CARBIDE POWDER AND ARTICLE MADE THEREFROM

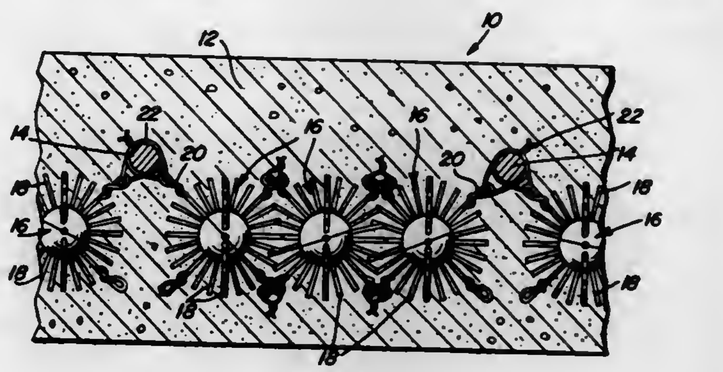
John Franklin Pelton, Yorktown Heights, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed Aug. 15, 1973, Ser. No. 388,433
Int. Cl. B23p *3/00*
U.S. Cl. 29—191.2 **12 Claims**



1. A powder containing from about 0.2 wt. percent to about 5.4 wt. percent carbon and wherein substantially every particle of said powder consists essentially of chromium and at least one chromium carbide taken from the class consisting of $Cr_{23}C_6$; Cr_7C_3 and Cr_3C_2.

3,846,085
FERROUS AGGREGATE FOR CONCRETE

Edward D. Dunn, Jr., Albany, Ga., assignor to Versatile Structures, Incorporated, Leary, Ga.
Filed Jan. 27, 1972, Ser. No. 221,232
Int. Cl. B21c *37/00*
U.S. Cl. 29—191.6 **11 Claims**



1. An aggregate for concrete, comprising a plurality of longitudinally extending members emanating from a carrier, said carrier being a longitudinally extending strip wrapped around a conventional concrete reinforcing rod, and said members extending radially therefrom.

3,846,086
IGNITABLE FUEL PACKAGE

Conrad J. Balch, R.R. 2, Box 208, and Armand W. Gendreau, 532 Main St., both of Sandpoint, Idaho 83864
No Drawing. Filed Sept. 10, 1970, Ser. No. 71,266
Int. Cl. C10l *11/00*
U.S. Cl. 44—40 **6 Claims**

1. An ignitable fuel package comprising in combination finely divided particles comprising cellulose, finely

divided carbon particles, at least 90 weight percent of said carbon particles having a major particle dimension below ¼ inch, a normally liquid fuel and an impervious combustible plastic envelope, said particles comprising cellulose and said carbon particles being substantially saturated with said normally liquid fuel and being sealed in said envelope, said normally liquid fuel being present in an amount of 24 to 60 weight percent based on the contents of said package and being selected from normally liquid hydrocarbons and normally liquid oxygenated hydrocarbons, said normally liquid hydrocarbons substantially comprising paraffins.

3,846,087

METHOD OF REDUCING THE VISCOSITY OF CARBON-CONTAINING OILS

Roger M. Dille, La Habra, and Ronald W. Chapman, La Mirada, Calif., assignors to Texaco Inc., New York, N.Y.

No Drawing. Original application Sept. 22, 1971, Ser. No. 840,236, now abandoned. Divided and this application Sept. 22, 1971, Ser. No. 182,825

Int. Cl. C10l *1/32*

U.S. Cl. 44—51 **3 Claims**

1. In a method for recovering carbon from a carbon-water dispersion by contacting said dispersion with an oil blend to form a carbon oil slurry, the improvement consisting of using an oil blend of 4 to 60 weight percent of asphaltic residual oil boiling above 1000° F., said amount being sufficient to satisfy the oil absorption number of said carbon and the remainder of said blend comprising a light, liquid, non-asphaltic containing hydrocarbon boiling below about 1000° F., from the group of kerosene, gas oil, diesel fuel, shale fuel oil, deasphalted oil and decanted oil from a fuel catalytic cracking unit whereby the resulting carbon-oil slurry remains pumpable even when containing up to 20 weight percent of carbon.

3,846,088

PROCESS OF DRYING ETHERS

Ronald W. Brown and Ronald W. Reynolds, Wilmington, Del., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Dec. 22, 1971, Ser. No. 210,910

Int. Cl. C10l *1/02*

U.S. Cl. 44—56 **8 Claims**

1. A process comprising reacting a tertiary olefin containing from 4 to 6 carbon atoms with an alcohol containing from 1 to 3 carbon atoms to form an ether having the structure R—O—R′ wherein R is a tertiary alkyl group containing from 4 to 6 carbon atoms and R′ is an alkyl group containing 1 to 3 carbon atoms, washing the product mix containing said ether with water to remove unreacted alcohol whereby an ether product containing from 0.5 to 2.0 volume percent water is produced, blending said ether product with a composition consisting essentially of one or more paraffins containing from 5 to 10 carbon atoms to form a blend consisting principally of the ether and the paraffin which blend contains from 20 to 90 volume percent ether, maintaining said blend at from 30 to 150° F., permitting said blend to form two separate phases one of which consists essentially of water and the other which consists essentially of ether and paraffin from the water and recovering a blend of said ether and said paraffin containing a reduced amount of water which blend is then further blended with gasoline to form a gasoline containing up to about 10 volume percent of the ether.

3,846,089

MOTOR FUEL COMPOSITION

Warren H. Machleder, Bluebell, and Robert Kuhn, Lansdale, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 279,891, Aug. 11, 1972, now Patent No. 3,782,912. This application May 2, 1973, Ser. No. 356,655

Int. Cl. C10l *1/22*

U.S. Cl. 44—58 **29 Claims**

1. A multi-functional additive composition suitable for addition to distillate hydrocarbon fuels having a major proportion of a hydrocarbon base fuel distilling within the gasoline distillation range, the additive composition comprising a mixture of

(1) about 20 to about 250 parts by weight of a tertiary alkyl primary amine having a branched backbone and a total of 6 to 24 carbon atoms;

(2) about 5 to 100 parts by weight of a surface active alkyl ammonium carboxylate salt-ethoxylated alkyl phenol ester of a trimer or dimer acid;

(3) about 100 to 650 parts by weight of a polyester prepared from the reaction of a dimer or trimer acid and a mixture of an aliphatic alcohol having from about 1 to 24 carbon atoms and an alkoxylted alkyl phenol, said dimer and trimer acid having been produced by the polymerization of an unsaturated aliphatic monocarboxylic acid having between 16 and 18 carbon atoms.

3,846,090

CONTROL OF LIQUID DISSEMINATION

Desmond Wilfrid John Osmond, Windsor, and Norman Douglas Patrick Smith and Frederick Andrew Waite, Farnham, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 12, 1972, Ser. No. 252,755

Int. Cl. C10l *1/18*

U.S. Cl. 44—62 **8 Claims**

1. A liquid hydrocarbon fuel of flash point at least 90° F. and suitable for use in gas turbined engined aircraft, having a reduced tendency to particulate dissemination on being subjected to shock the fuel containing dissolved therein polymer of molecular weight greater than 10^6 (viscosity average) or of intrinsic viscosity greater than 2.5 dls./gm. in a concentration such that there is molecular overlap of the polymer molecules in the liquid the polymer being an addition homopolymer of an alkyl styrene or an addition copolymer of an alkyl styrene with one or more ethylenically unsaturated non-polar monomers copolymerizable with said alkyl styrene.

3,846,091

POLYMER SOLUTION

Desmond Wilfrid John Osmond, Windsor, and Norman Douglas Patrick Smith and Frederick Andrew Waite, Farnham Common, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 12, 1972, Ser. No. 252,726

Claims priority, application Great Britain, May 13, 1971, 14,642/71

Int. Cl. C10l *1/18*

U.S. Cl. 44—62 **6 Claims**

1. A liquid hydrocarbon fuel of flash point at least 90° F. suitable for use in gas turbine engined aircraft, and having a reduced tendency to particulate dissemination on being subjected to shock, the fuel containing therein polymer of molecular weight greater than 10^6 (viscosity average) or of intrinsic viscosity greater than 2.5 dls./gm. in a concentration such that there is molecular overlap of the polymer molecules in the liquid, the dissolved polymer containing polar groups which form inter-molecular associative bonds arising from electrostatic attraction between polar and/or dipolar charges in the polar groups, the bonds being hydrogen or electrovalent bonds, the polymer being an addition copolymer of an alkyl styrene, the alkyl group in which contains from 3 to 20 carbon atoms.

3,846,092

CRUDE OILS AND FUEL OILS OF IMPROVED POUR POINT DEPRESSANT AND FLOWABILITY PROPERTIES

Peter G. Pappas, Downers Grove, Walter C. Edmisten, Olympia Fields, and Hobe Schroeder von Levern, Downers Grove, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Mar. 21, 1973, Ser. No. 343,286

Int. Cl. C10l *1/16*

U.S. Cl. 44—62 **8 Claims**

1. Petroleum crude oil and fuel oil compositions having improved pour and flowability characteristics at low temperatures, comprising a petroleum oil of the group consisting of a crude oil and a fuel oil normally having undesirable pour and flowability characteristics at low temperatures, and from about 0.001% to about 5% of a hydrolyzed copolymer of ethylene and a vinyl ester of a lower alkyl fatty acid having up to about five carbon atoms, said copolymer having an average molecular weight of from about 500 to about 30,000, and containing about 10–90% ethylene and about 90–10% of said vinyl ester, said copolymer being hydrolyzed to the extent of hydrolyzing from about 10% to about 90% of the ester units of said copolymer.

3,846,093

MIDDLE DISTILLATE FUEL CONTAINING ADDITIVE COMBINATION PROVIDING IMPROVED FILTERABILITY

Nicholas Feldman, Woodbridge, N.J., assignor to Exxon Research and Engineering Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 157,615, June 28, 1971, which is a continuation-in-part of application Ser. No. 807,953, Mar. 17, 1969, now Patent No. 3,660,058. This application June 4, 1973, Ser. No. 366,538

Int. Cl. C10l *1/22*

U.S. Cl. 44—62 **10 Claims**

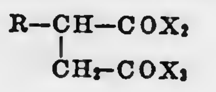
1. A petroleum distillate fuel having a boiling range within the limits of about 250° F. and about 700° F. which has been improved with respect to its low temperature flow properties by adding thereto:

(a) about 0.05 to 2.5 wt. percent of an essentially saturated amorphous normally solid petroleum hydrocarbon fraction having a melting point in the range of about 80° to 140° F. and a number average molecular weight within the range of about 475 to 3000, said hydrocarbon fraction being substantially free of normal paraffin hydrocarbons, and

(b) about 0.005 to 0.5 wt. percent of a fuel-soluble additive component selected from the group consisting of:

  (i) a halogenated ethylene-containing polymer having a halogen content of from 1 to 40 wt. percent, and

  (ii) a hydrocarbyl succinamic acid material of the formula:



$$\begin{array}{l}\mathrm{R{-}CH{-}COX_2}\\ \quad\;|\\ \quad\mathrm{CH_2{-}COX_3}\end{array}$$

wherein R is a straight chain aliphatic hydrocarbon having from 0 to 1 site of olefinic unsaturation of from 14 to 40 carbon atoms and attached at a secondary carbon atom to the succinyl group; one of X^2 and X^3 is $—NYY^1$, wherein Y and Y^1 are aliphatic hydrocarbyl groups of from 14 to 40 carbon atoms, the other of X^2 and X_3 is of the formula:

$$—OH(NHY^2Y^3)_n$$

wherein *n* varies from 0 to 1, Y^2 and Y^3 are hydrogen, aliphatic hydrocarbon of from 1 to 30 carbon atoms or oxyaliphatic hydrocarbon of from 1 to 30 carbon atoms, and may be taken together with the nitrogen to which they are attached to form a heterocyclic ring of from 5 to 7 annular members.

3,846,094

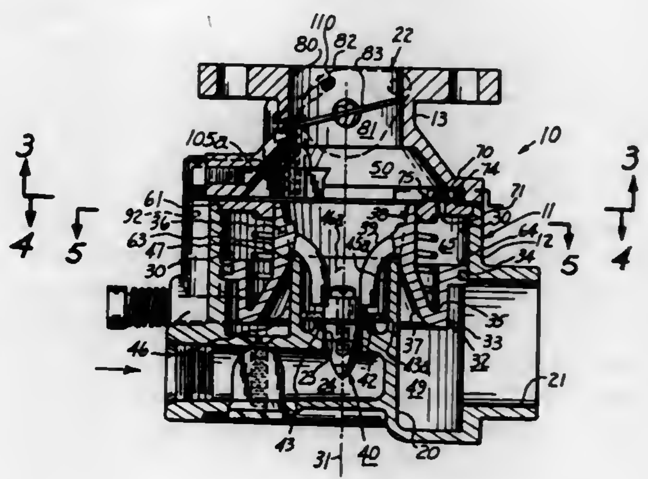
AIR-GAS MIXING DEVICE

Richard Baverstock, Long Beach, Calif., assignor to Impco Carburetion, Inc., Cerritos, Calif.

Filed July 25, 1972, Ser. No. 274,846

Int. Cl. F02m *21/00*

U.S. Cl. 48—180 C **17 Claims**



1. An air-gas mixing device comprising: a body having an internal cavity, an air inlet port, a mixture outlet port and a gas inlet port, said ports opening into said cavity; a gas supply conduit in communication with the gas inlet port; a cylindrical wall having a central axis and bounding a portion of said cavity; a piston having a pair of faces and making a fluid-sealing sliding fit with said cylindrical wall, and reciprocably movable therein; a metering sleeve; a metering surface on said metering sleeve, and a metering surface on said piston, said metering surfaces being so disposed and arranged relative to one another as to form a variable air orifice between them, the least clearance of which exists at a first piston position, the clearance increasing as the piston moves axially away from said first piston position, said cavity being divided at the said air orifice into an upstream air chamber and a downstretam mixture chamber, the gas inlet port opening into the said metering sleeve; a gas valve inlet seat surrounding said gas inlet port inside said metering sleeve, and lying in a plane normal to the axis of the cylindrical wall, and a gas valve inlet seal carried by the piston so disposed and arranged as to close the gas valve when the piston is in the said first position, and to open the gas valve when the piston is moved away from the said first position, the gas supply conduit discharging through the gas valve seat into the said metering sleeve and thence into the mixture chamber, the air inlet port opening into the air chamber, and the mixture outlet port opening into the mixture chamber; bias means forcing the piston toward its said first position; an actuator chamber wall member extending across the cavity and facing one face of said pair of faces, said one face closer to the mixture chamber, the actuator chamber wall member having an opening therethrough; a sliding closure surface carried by the piston making a sliding fit in said opening, whereby the said closure surface, actuator chamber wall member, part of said cylindrical wall, and the said one face of the piston define in said cavity an actuator chamber which lies between the air chamber and the mixture chamber, the piston facing the actuator chamber at said one face, and the air chamber at the other face of said piston, the device having an actuator passage interconnecting the actuator chamber with the mixture chamber, the actuator chamber wall member shielding the said one face of the piston which faces toward the actuator chamber wall member from the direct blast of backfiring gases which may enter the mixture outlet port.

3,846,095

REDUCING GAS GENERATION

William B. Crouch, Whittier, Calif., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Apr. 30, 1973, Ser. No. 355,993

Int. Cl. C10j *1/00*

U.S. Cl. 48—196 R **16 Claims**

1. In a process for producing gaseous mixtures comprising principally hydrogen and carbon monoxide and containing a small amount of impurities selected from the group consisting of H_2O, CO_2, CH_4, A, N_2, H_2S, COS, particulate carbon, and mixtures thereof, by the partial oxidation of a hydrocarbonaceous fuel with a free-oxygen containing gas in the reaction zone of a free-flow gas generator at a temperature in the range of about 1500 to 3500° F. and a pressure in the range of about 1–350 atmospheres in the presence of a temperature moderator, the improvement comprising introducing into said reaction zone along with said reactants supplemental NH_3 as said temperature moderator in an amount in the range of about 0.01 to 1.5 lbs. of NH_3 per lb. of hydrocarbonaceous fuel, and wherein substantially no supplemental H_2O is introduced into said reaction zone other than that produced therein and that which may be initially present in the reactants as an impurity; wherein the gas stream leaving said reaction zone has a reducing ratio, i.e. mole ratio $(H_2+CO)/(H_2O+CO_2)$ of at least 10.0.

3,846,096

GASIFICATION OF CARBONACEOUS SOLIDS

George M. Mallan, Los Angeles, and Leslie E. Compton, Santa Barbara, Calif., assignors to Occidental Petroleum Corporation, Los Angeles, Calif.

Continuation-in-part of abandoned application Ser. No. 153,358, June 15, 1971. This application Oct. 19, 1972, Ser. No. 299,157

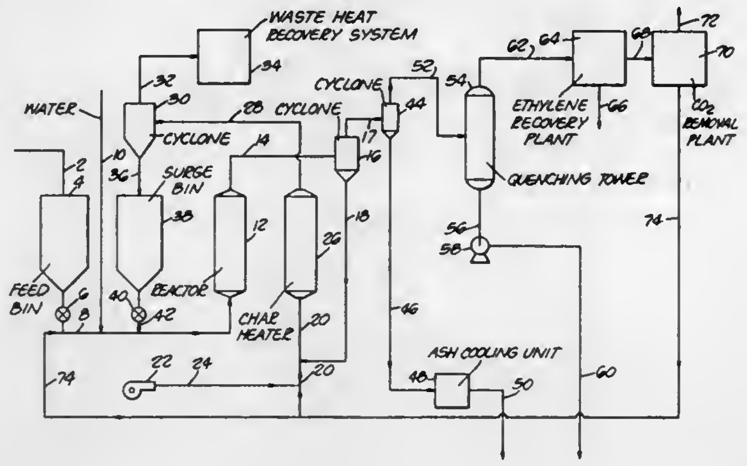
Int. Cl. C10j *3/16, 3/46*

U.S. Cl. 48—209 **16 Claims**

1. A process for producing gaseous hydrocarbons having from 1 to 7 carbon atoms from solid carbonaceous material comprising:

a. Forming a turbulent gaseous stream composed of carrier gas, water, char, and particulate carbonaceous solids, said solids having an individual maximum particle dimension of less than 1.0 inch, such that the solids and water are intimately admixed and entrained within the gaseous portion of the stream; said water being present in said stream in an amount which is at least 2.0 weight percent based upon the amount of carbonaceous solids in said stream; said carrier gas containing less than 1% by volume of oxygen;

b. Heating the components of said stream to a temperature ranging from between about 1200° F. and about 2500° F. in a pyrolysis zone for a predetermined residence time so that at least a portion of said carbonaceous solids are converted to gaseous hydrocarbons, containing from 1 to 7 carbon atoms, ethylene comprising at least 20% by volume of said gaseous hydrocarbons;



c. Removing the product stream from the pyrolysis zone;

d. Recovering the gaseous hydrocarbon products.

3,846,097

METHOD FOR PROCESSING GLASS AND FORMING FIBERS THEREFROM

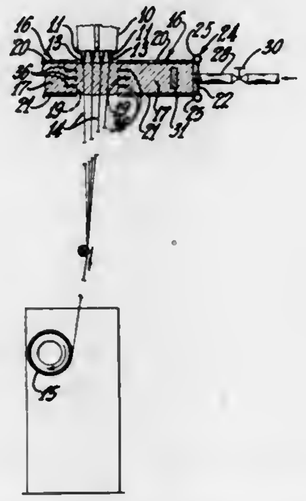
Robert G. Russell, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation

Filed July 24, 1972, Ser. No. 274,782

The term of this patent subsequent to July 11, 1989, has been disclaimed

Int. Cl. C03c *25/02*

U.S. Cl. 65—2 **13 Claims**



1. A method of forming glass fibers comprising:

feeding streams of heat-softened glass from a wall of a stream feeder;

forming the glass streams into fibers;

supplying to a region adjacent the wall a foam comprising a liquid phase and a gaseous phase; and

supplying a gas from the foam effective to establish an environment at the surface of the wall promoting separation of the molten glass from the surface to minimize wetting of such surface by the molten glass.

3,846,098

MANUFACTURE OF A WHITE PORCELAIN BODY OF HIGH TRANSLUCENCY AND HIGH STRENGTH

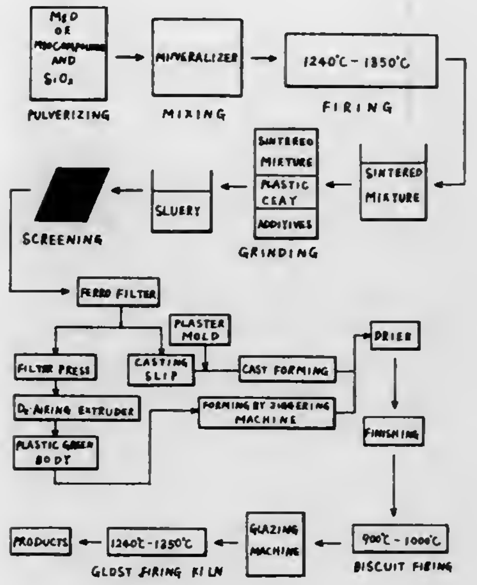
Tsuyoshi Nakashima, Nagoya, and Tsutomu Shibata, Hashima, Japan, assignors to Nippon Toki Kabushiki Kaisha, Nagoya, Japan

Continuation-in-part of abandoned application Ser. No. 16,969, Mar. 5, 1970. This application Mar. 10, 1972, Ser. No. 233,440

Claims priority, application Japan, Mar. 10, 1969, 44/18,214

Int. Cl. C03b *23/20, 29/00*

U.S. Cl. 65—18 **4 Claims**



1. In a method for manufacturing a hard porcelain article of high white translucency and high strength which comprises:

forming a plastic green body, firing to form a biscuit, glazing and glost firing said biscuit, the improvement which comprises forming said biscuit by:

a. pulverizing MgO or an Mg compound and SiO_2 so that more than 80% of the resultant mixture has a grain size of under 10μ, the ratio of MgO or Mg compound to SiO_2 being 40 parts by weight, as MgO, to 60 parts by weight SiO_2,

b. mixing the mixture of step a with 2 to 3% of Li_2CO_3, $BaCO_3$ or petalite as a mineralizer,

c. forming a sintered mixture of protoenstatite, clinoenstatite, forsterite and SiO_2 by sintering the mixture of step b at 1240° to 1350° C.,

d. mixing
   (1) 10 to 18 wt. percent Gaerome clay
   (2) 6 to 12 wt. percent Kaolin
   (3) 0 to 3 wt. percent Feldspar
   (4) 8 to 10 wt. percent Murakami clay
   (5) 0 to 6 wt. percent Alumina
   (6) 54 to 67 wt. percent of the sintered mixture of step c,

e. forming a slurry with the mixture of step d and water and milling said slurry to pulverize said mixture so that more than 80% of the particles thereof are under 10μ,

f. forming a plastic green body and drying said body to remove water therefrom, and

g. firing said body at 900–1000° C. to produce said biscuit.

3,846,099

GLASS-CERAMIC AND PROCESS THEREFOR

George A. Simmons, Toledo, Ohio, assignor to Owens-Illinois, Inc.

No Drawing. Original application June 17, 1966, Ser. No. 558,238, now abandoned. Divided and this application May 17, 1971, Ser. No. 144,316

The term of this patent subsequent to Mar. 3, 1989, has been disclaimed

Int. Cl. C03b *29/00;* **C03c** *21/00*

U.S. Cl. 65—30 **4 Claims**

1. A process of making an article having a main body portion of glass-ceramic and an integral surface layer of glass-ceramic and having a lower coefficient of linear expansion than that of the main body portion which comprises:

(1) forming an article from a thermally crystallizable glass containing lithia, alumina and silica in an overall composition, including nucleant, being capable of undergoing bulk crystallization to form upon bulk crystallize the glass to a glass-ceramic wherein β-β-spodumene as the predominant crystalline phase, and

(2) heat treating the glass article to thermally in situ crystallize the glass to a glass-ceramic wherein β-spodumene is the predominant crystalline phase,

(3) heating the surface layer of the glass-ceramic to an elevated temperature sufficiently high to convert the glass-ceramic of the surface layer of the article back to thermally crystallizable glass while maintaining the main body of the article as glass-ceramic, and

(4) heat treating the article to convert the glass of the surface layer to glass-ceramic containing β-eucryptite as the predominant crystalline phase and which have a lower expansion coefficient relative to the glass-ceramic of the main body portion,

whereby the article formed has a flexural strength greater than the initial article of glass-ceramic.

3,846,100

METHOD OF MAKING AN INDEX GRADIENT LIGHT-CONDUCTING GLASS STRUCTURE

Hiroyoshi Matsumura, Osaka, and Seiichi Ono, Itami, Japan, assignors to Nippon Selfoc Kabushiki Kaisha (also known as Nippon Selfoc Co. Ltd.), Tokyo-to, Japan

Original application Sept. 26, 1969, Ser. No. 861,247, now abandoned. Divided and this application July 6, 1971, Ser. No. 160,200

Claims priority, application Japan, Sept. 28, 1968, 43/70,467

Int. Cl. C03c *15/00, 25/02;* **G02b** *5/14*

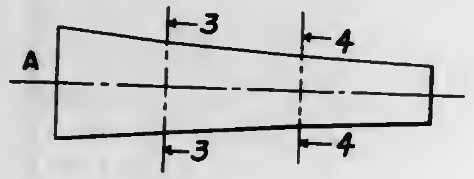
U.S. Cl. 65—30 **10 Claims**

1. A method for producing an elongated light-conducting glass structure having a predetermined refractive index and focusing effect and composed of an elongated glass body having a center axis and entrance and exit end surfaces for light, both transverse to said center axis, and a side surface encompassing said center axis, said glass body having a refractive index gradient wherein said refractive index gradient produces said focusing effect and is substantially expressed, at least in the vicinity of said center

axis in each planar cross-section perpendicular to said center axis, by the following equation

$$n = n_0[1 - a(z)r^2] \quad (1)$$

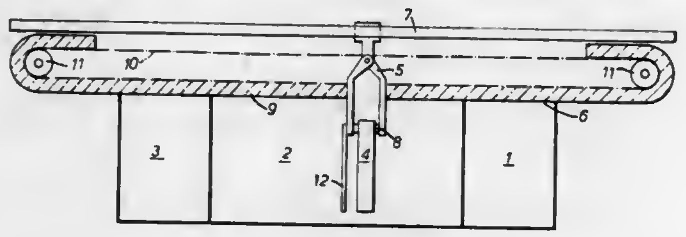
wherein n_0 represents the refractive index at said center axis, n represents the refractive index at a distance r from said center axis, and $a(z)$ is a positive constant at the planar cross-section, said positive constant being such that the value thereof increases gradually from at least one of said entrance and exit end surfaces toward an intermediate axial portion of the glass body along said center axis, which comprises: providing an elongated glass body composed of a glass having a uniform high refractive index containing first ions which are uniformly distributed throughout the glass body and are highly contributable to the refractive index of the glass body, said glass body having a circular cross-section of equal radius along the direction of its length; contacting said glass body at all side surfaces with an ion source containing second ions which are less contributable to the refractive index of said glass body than said first ions and which are mutually ion-exchangeable with said first ions in said glass body; maintaining said glass body in contact with said ion source at an elevated temperature and for a time period sufficient to effect diffusion of said first ions from said glass body to said ion source and diffusion of said second ions from said ion source to said glass body to thereby alter the uniform distribution in said glass body of said first ions such that the refractive index decreases from the original refractive index of said glass body to a greater extent at the portion of said glass body nearer the surface of the glass body than at the center whereby said glass body has a refractive index gradient substantially expressed, at least in the vicinity of said center axis in each planar cross-section perpendicular to said center axis, by the following equation



$$n' = n_0'[1 - a'r^2] \quad (2)$$

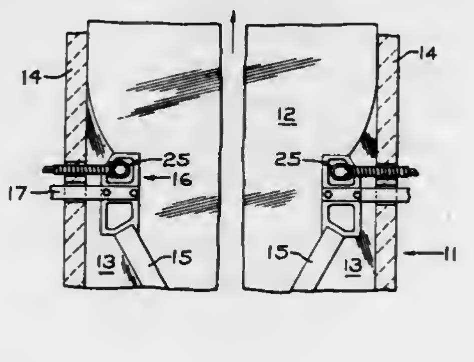
wherein n_0' represents the refractive index at said center axis, n' represents the refractive index at a distance r from said center axis, and a' is a positive constant at the planar cross-section, said positive constant a' and the refractive index n'_0 at said center axis being constant respectively along the center axis of said glass body; and stretching the glass body in the direction of the center axis of said glass body while heating same in such a manner that the rate of stretching is lower in the vicinity of at least one of said entrance and exit end surfaces than at an intermediate axial portion of the glass body along said center axis so that the refractive index at both the center axis and the side surface of the glass body after stretching remains substantially the same as the refractive index before stretching; whereby the glass body after stretching has a cross-sectional radius which decreases gradually from at least one of said entrance and exit end surfaces toward the intermediate axial portion of the glass body along said center axis and said glass body has a refractive index gradient after stretching as shown by the aforesaid equation (1) and wherein said at least one of said entrance and exit end surfaces which has the largest cross-sectional radius of the glass body after stretching has the minimum value of $a(z)$

3,846,101
THERMALLY CRYSTALLIZING AN ARTICLE WHILE SUPPORTED IN VERTICAL ATTITUDE
Philip Hedley Gaskell, Preston, James Peter Loftus, Wigan, and Jane Greengrass, Ormskirk, England, assignors to Pilkington Brothers Limited, St. Helens, Lancashire, England
Filed Aug. 1, 1973, Ser. No. 384,471
Claims priority, application Great Britain, Aug. 10, 1972, 37,428/72
Int. Cl. C03b *29/00*
U.S. Cl. 65—33 **10 Claims**



1. In a method of manufacturing a fine-grained glass ceramic article from a thermally-crystallizable vitreous material, wherein the vitreous material is shaped to form a shaped article, the article is initially heated to a temperature in the range T_g to $T_g + 100°$ C. where T_g is the transformation temperature of the vitreous material, to condition the material, by generating therein a uniform dispersion of embryonic centers of incipient crystal growth, for subsequent crystallization, and the article is rapidly heated at a rate of at least 30° C. per minute to a predetermined crystallization temperature to effect fine-grained crystal growth on those embryonic centers, the improvement wherein the article is shaped into an article having a major axis or plane about which the article is symmetrical and the article is heated to said crystallisation temperature while the article is suspend ingly supported with said major axis or plan of symmetry, extending downwardly and disposed in a substantially vertical attitude, without support of the glass against deformation, the glass being sufficient fluid so that crystallisation takes place with stress relief.

3,846,102
APPARATUS AND METHOD FOR THE MANUFACTURE OF FLOAT GLASS HAVING A THICKNESS GREATER THAN EQUILIBRIUM THICKNESS
Robert B. Heithoff, Cumberland, Md., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Apr. 17, 1973, Ser. No. 351,946
Int. Cl. C03b *18/02*
U.S. Cl. 65—65 A **4 Claims**

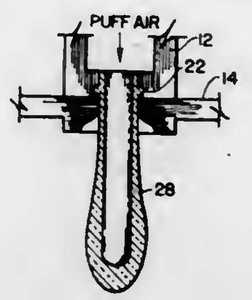


1. In an apparatus for manufacturing flat glass by the float method comprising an enclosed chamber defined by a bottom, roof and walls, said chamber having a bottom portion containing a bath of molten metal and an upper portion for enclosing an inert atmosphere over said molten metal; having an upstream end for receiving molten glass

onto said molten metal; having a downstream end containing means for removing a continuous ribbon of glass from said molten metal and having means therein for cooling and attenuating said molten glass to form said ribbon of glass while floating on said molten metal; wherein at its upstream end there is disposed a pair of restrictors in spaced relation, each extending downstream from the upstream end of said chamber, said pair, in combination, providing space for receiving said molten glass between them and for confining it between them on said molten metal while cooling it and drawing it along the surface of said molten metal; the improvement comprising, at the end of each restrictor, an extension tile comprising:

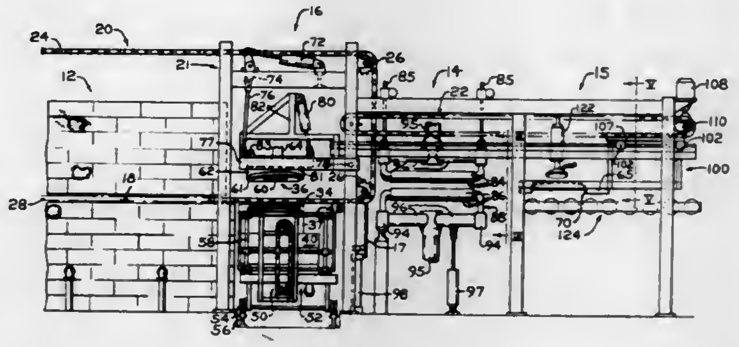
- (a) a hollow body extending downstream from each of said restrictors a distance such that molten glass flowing from between said tiles is sufficiently fluid to spread, partially submerged in said molten metal; said body having a first substantially vertical face aligned substantially parallel to the axis of general glass movement through said chamber and a second substantially vertical face forming a corner of said body and extending substantially perpendicular to said first face; said body having at least one cavity therein with an upwardly facing open portion;
- (b) fluid ballast at least partially filling said cavity; and
- (c) means for extracting heat from said fluid ballast.

3,846,103
METHOD FOR MAKING GLASSWARE BY A PRESS AND BLOW TECHNIQUE
George E. Rowe, Wethersfield, Conn., assignor to Embhart Corporation, Bloomfield, Conn.
Original application Apr. 2, 1971, Ser. No. 130,732, now Patent No. 3,765,862. Divided and this application May 11, 1973, Ser. No. 359,481
Int. Cl. C03b *9/14*
U.S. Cl. 65—79 **4 Claims**



1. A method for forming a parison for narrow neck glassware with an upright body mold defining a relatively wide open top cavity and a neck mold defining a relatively narrow opening for determining the finish of the parison and for supporting it, said method comprising the steps of depositing a gob of molten glass in the body mold cavity, supporting the neck and body molds with their opening and cavity in vertically spaced alignment while closing an intermediate mold to define an opening between and matching the bottom of the neck mold opening and the top of the body mold cavity, thrusting a plunger through the neck and intermediate mold openings into the cavity to press molten glass upwardly into both said openings to provide an initial form for the parison, stripping the plunger and body mold from the parison by relative vertical movement upwardly and downwardly, respectively, permitting the parison to reheat while suspended from the neck mold and thus to stretch downwardly, and removing the intermediate mold at a selected point in time during reheat.

3,846,104
HANDLING GLASS SHEETS FOR SHAPING AND COOLING
Samuel L. Seymour, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Jan. 10, 1973, Ser. No. 322,580
Int. Cl. C03b *23/02*
U.S. Cl. 65—104 **16 Claims**



1. In a method of handling a glass sheet comprising
- (a) supporting said glass sheet while said sheet is at its deformation temperature between a lower shaping mold and an upper shaping mold having complementary shaping surfaces conforming to the shape desired for said glass sheet,
- (b) lifting said lower shaping mold to engage said heated glass sheet along its lower surface until said engaged glass sheet is sandwiched between said lower shaping mold and said upper shaping mold, and
- (c) supporting said glass sheet by vacuum against said upper shaping mold.

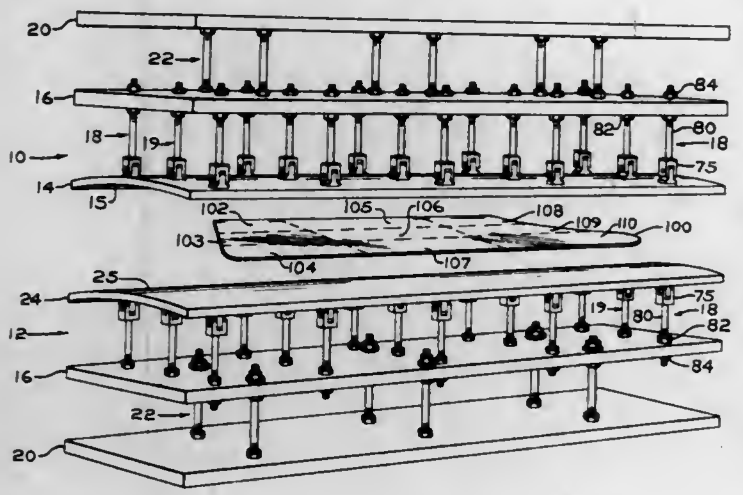
the improvement comprising
- (1) retracting said lower shaping mold from said upper shaping mold while supporting said glass sheet by vacuum against said upper shaping mold,
- (2) introducing means to support said glass sheet adjacent its marginal edge *only* to a position aligned immediately adjacent to and below said upper mold and above said lower mold,
- (3) releasing said glass sheet from said upper mold with said glass sheet support means disposed therebeneath to deposit said glass sheet onto said glass sheet support means,
- (4) transferring said glass sheet while on said glass sheet support means to a cooling station,
- (5) immediately cooling said glass sheet with tempering medium while supported on said glass sheet support means at a rapid enough rate to impart at least a partial temper to the glass sheet, and
- (6) removing said glass sheet from said glass sheet support means after said cooling.

3,846,105
METHOD OF CONTROLLING THE SHAPE OF THERMOPLASTIC, PRESS BENT SHEETS
Joseph R. Petrella, Irwin, John N. Shaw, Arnold, and Jacob R. Peternel, Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed May 9, 1973, Ser. No. 358,760
Int. Cl. C03b *23/02*
U.S. Cl. 65—106 **13 Claims**

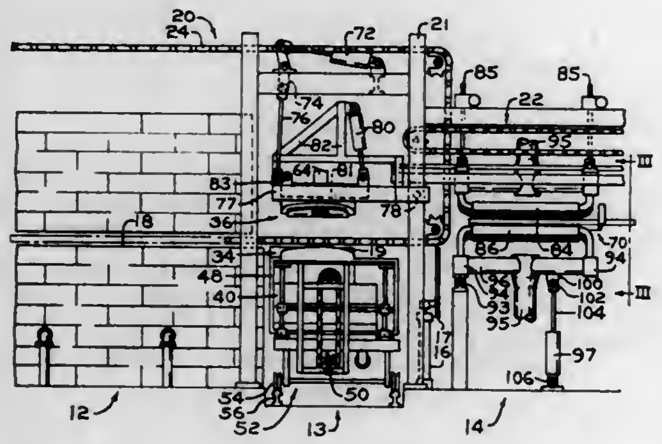
1. A method of controlling to within a desired tolerance the contour of a thermoplastic sheet shaped while heat-softened by press bending apparatus, comprising the steps of:

determining a radius of curvature for preselected regions of a shaped sheet from the coordinates of at least three points associated with at least one of said preselected regions,

establishing a reference radius of curvature for corresponding preselected regions and points associated with a reference surface;
comparing each said radius of curvature determined for said preselected regions with the radius of curvature established for corresponding regions of said reference surface,
selecting a region of said sheet whose radius of curvature so determined differs from the radius of curvature established for its corresponding region of said reference surface sufficiently to make adjustment of the radius of curvature of said selected region desirable,
determining an adjustment to said press being apparatus which reduces the difference in radius of curvature for said selected region from that established for said corresponding region while simultaneously maintaining the contour of other regions of said sheet to within said desired tolerance,
adjusting said press bending apparatus according to said determination, and
shaping subsequent sheets by said adjusted press bending apparatus.

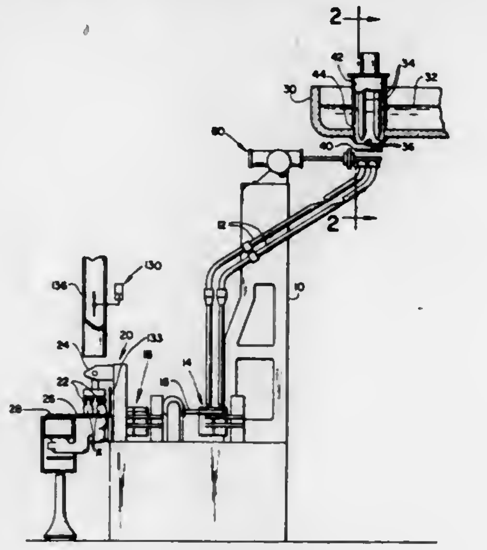


3,846,106
TEMPERING GLASS SHEETS
Samuel L. Seymour, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 322,580, Jan. 10, 1973. This application Mar. 8, 1974, Ser. No. 449,298
Int. Cl. C03b *27/00*
U.S. Cl. 65—114 **7 Claims**



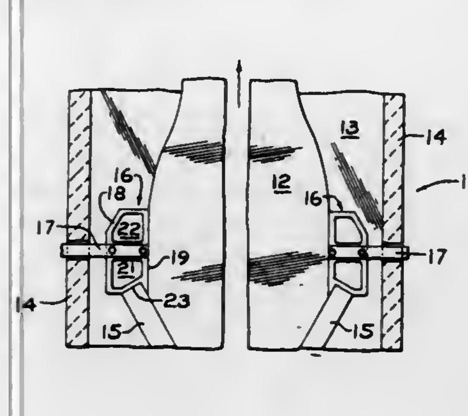
1. In apparatus for tempering glass sheets comprising means for supporting a heated glass sheet in a substantially horizontal disposition at a location in a cooling station, first means located above said location for delivering tempering medium under pressure toward the upper surface of said heated glass sheet, and second means located below said location for delivering tempering medium under pressure toward the lower surface of said heated glass sheet, the improvement comprising means for pivotally supporting said second tempering medium delivering means and means operatively connected to said second tempering medium delivering means to pivot said second tempering medium delivering means between a first position wherein the upper surface of said second tempering medium delivering means occupies a substantially horizontal orientation for delivering tempering medium against the lower surface of said heated glass sheet and a second position wherein said latter upper surface occupies an oblique orientation for removing glass fragments when a glass sheet is broken during the delivery of said tempering medium thereagainst.

3,846,107
MEANS FOR AUTOMATICALLY REGULATING WEIGHT OF ARTICLES IN GLASSWARE FORMING MACHINE
Thomas Vincent Foster, Duncaster, England, and Eginhard Jaeger, Oetwil an der Limmat, Switzerland, assignors to Emhart Corporation, Bloomfield, Conn.
Filed July 26, 1972, Ser. No. 275,364
Int. Cl. C03b *5/26*
U.S. Cl. 65—164 **6 Claims**



1. In a glassware forming machine wherein gobs of molten glass are fed from a feeder into the upwardly open blank molds, and wherein the glassware articles are removed from the final forming station by a take-out mechanism for deposit on a cooled deadplate where they momentarily remain stationary prior to being swept off the deadplate onto a take-away conveyor, the improvement comprising, said feeder including a bowl with a lower outlet portion defined by an annular curb, and said feeder also including a refractory tube with its lower end located in spaced relation to the curb, and means for adjustably positioning said tube toward and away from said annular curb, said cooled deadplate having a plenum chamber therebelow which chamber normally communicates with a source of cooling air, valve means for selectively isolating said chamber from said source of cooling air, weighing means associated with said deadplate and including a perforated platform coextensive with said deadplate, said weighing means including a weigh cell for producing an output which is proportional to the weight of an article on said platform, controller means for said tube positioning means to raise the tube when said weigh cell output falls below a preset minimum and for lowering the tube when said output exceeds a preset minimum, and means for synchronizing said valve means to isolate said chamber and to operate said weigh cell only when an article is positioned on said platform.

3,846,108
FLOAT GLASS BATH HAVING SUBMERGED EXTENSION TILES
Randal M. Smith, La Vale, Md., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Apr. 17, 1973, Ser. No. 351,927
Int. Cl. C03b *18/02*
U.S. Cl. 65—182 R **4 Claims**

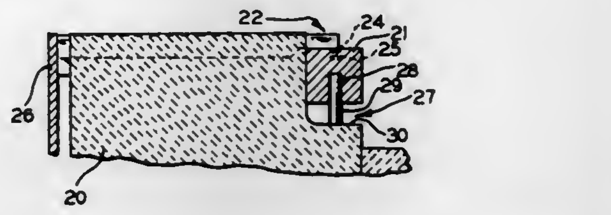


1. In an apparatus for manufacturing flat glass by the float method comprising an enclosed chamber defined by a bottom, roof and walls, said chamber having a bottom portion containing a bath of molten metal and an upper portion for enclosing an inert atmosphere over said molten metal; having an upstream end for receiving molten glass onto said molten metal; having a downstream end containing means for removing a continuous ribbon of glass from said molten metal and having means therein for cooling and attenuating said molten glass to form said ribbon of glass while floating on said molten metal; wherein at its upstream end there is disposed a pair of restrictors in spaced relation, each extending downstream from the upstream end of said chamber, said pair, in combination, providing space for receiving said molten glass between them and for confining it between them on said molten metal while cooling it and drawing it along the surface of said molten metal; the improvement comprising, at the end of each restrictor, an extension tile comprising:

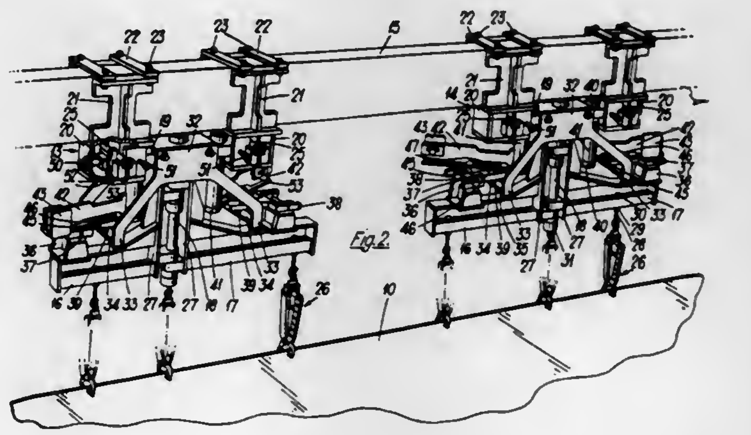
(a) a hollow body comprising a material which is buoyant in said molten metal and having a bottom and side walls; a portion of said side walls having a restrictor engaging shape and a portion of said side walls having a glass facing surface, said bottom and side walls forming at least one cavity, and said side walls terminating at the top of said extension tile so as to provide an opening for access to each said cavity for the introduction and removal of a ballast material so as to provide sufficient ballast to partially submerge said body in said molten metal, and
(b) a retaining means for holding said hollow body in engaging relationship to said restrictor with its glass facing surface in at least partial facing relationship to that of the other hollow body of said pair.

3,846,109
FLOAT GLASS BATH FENDER SUPPORTS
Eldwin C. Montgomery, Modesto, Calif., and Donald E. Shamp, Millbury, and Francis L. Swillinger, Perrysburg, Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio
Filed Aug. 21, 1972, Ser. No. 282,453
Int. Cl. C03b *18/02*
U.S. Cl. 65—182 R **5 Claims**

1. In an elongated float glass bath for containing a body of molten metal upon which molten glass is deposited and formed into a continuous ribbon of glass, including a floor, longitudinally extending side walls, an independent fender unit to which glass will not stick extending along the inner face of at least a portion of one of said walls and spaced above said floor, and a hold-down bracket engaging said fender unit and restraining said fender unit against upward and lateral movement, the improvement comprising a frangible support member directly beneath said fender unit separate and independent from said fender unit and extending upwardly into engagement therewith, said support member providing auxiliary support for said fender unit for holding said fender unit upwardly in engagement with said hold down bracket in the absence of buoyant support by said body of molten metal.



3,846,110
UNITS FOR SUSPENDING GLASS BETWEEN OPPOSED BENDING DIES
Patrick Burns, Cheylesmore, England, assignor to Triplex Safety Glass Company Limited, London, England
Filed Aug. 3, 1972, Ser. No. 277,524
Claims priority, application Great Britain, Aug. 11, 1971, 37,741/71
Int. Cl. C03b *23/02*
U.S. Cl. 65—273 **14 Claims**



1. A suspension unit for suspending a hot glass sheet during bending of the glass sheet between a pair horizontally acting bending dies, comprising a plurality of generally horizontal tong carrying arms each pivoted about a fixed vertical axis and a tong set carried by each arm at a point thereon spaced from the associated pivot axis, each arm being independently movable about its axis from an initial position of the glass sheet to a final bent position of the glass sheet between which positions said arms are swept through selected arcs, and a drive means for swinging each tong carrying arm about its associated pivot axis in response to movement of the bending dies as the bending dies bend the glass sheet, each said drive means engaging its associated tong carrying arm at a predetermined distance from said associated pivot axis to swing the arm through that arc necessary to maintain the tong set carried by such tong carrying arm above the upper edge of the glass sheet at it is bent.

3,846,111

ORGANIC FERTILIZER FOR PLANTS

**Carlos Molini Mejia, Ext. Alhambra A-B 9,
Ponce, Puerto Rico**

No Drawing. Filed Dec. 1, 1972, Ser. No. 311,269

Int. Cl. C05c *9/00*

U.S. Cl. 71—28 **1 Claim**

1. An organic fertilizer composition comprising a mixture of the following ingredients in the specified proportions:

6 ounces of Low Biuret Urea
3 ounces of Vegetable Oil
6 ounces of Acetone
5 gallons of Water

3,846,112

PLANT GROWTH REGULATORS

Llewellyn W. Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Apr. 2, 1970, Ser. No. 25,296, now Patent No. 3,701,799. Divided and this application May 15, 1972, Ser. No. 253,092

Int. Cl. A01n *9/20*

U.S. Cl. 71—76 **7 Claims**

1. A plant growth regulatory composition comprising an effective amount of 2 - (N,N,N - Trimethylamino) ethyl-chrysanthemumate chloride and an inert carrier.

3,846,113

HERBICIDE

Adolf Fischer, Mutterstadt, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Original application Mar. 11, 1970, Ser. No. 18,713. Divided and this application July 13, 1972, Ser. No. 271,358

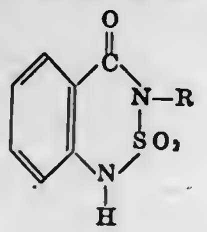
Claims priority, application Germany, Mar. 19, 1969, P 19 13 850.2

Int. Cl. A01n *9/22*

U.S. Cl. 71—91 **6 Claims**

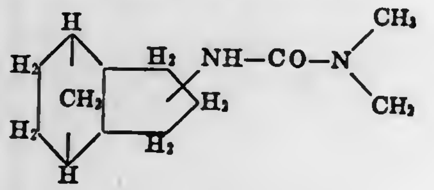
1. A herbicide consisting essentially of a herbicidally effective amount of a mixture of

(a) a compound having the formula



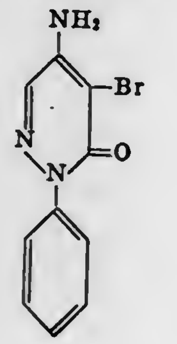
R denoting an isopropyl, ethyl or methyl radical or a salt thereof, and

(b) a compound having the formula



and

(c) a compound having the formula



in a weight ratio of a:b and a:c of 4:1 to 1:3, said mixture being dispersed in a carrier.

3,846,114

METHOD FOR KILLING MOSS

Werner Perkow, Hamburg, Germany, assignor to Norddeutsche Affinerie, Hamburg, and C. F. Spiess & Sohn, Kleinkarlbach, Germany

No Drawing. Filed Mar. 9, 1970, Ser. No. 17,914

Int. Cl. A01n *9/20*

U.S. Cl. 71—97 **3 Claims**

1. The method of killing mosses and the prevention of the growth of mosses in any given area comprising applying a biocidal composition to the area containing the mosses, said biocidal composition comprising a carrier and a biocidally effective amount of a compound selected from the group consisting of copper-ethylenediamine-pentachlorophenol complex, nickel-ethylenediamine-pentachlorophenol complex, zinc - ethylenediamine - pentachlorophenol complex, zinc-diethylenetriamine-pentachlorophenol complex, and mixtures of the foregoing.

3,846,115

HERBICIDAL COMPOSITION

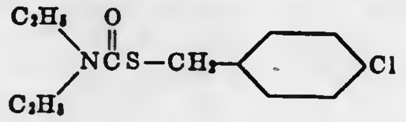
Makoto Konnai, Hiroshi Kamata, and Masaru Kado, Shizuoka Prefecture, Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

**No Drawing. Original application Mar. 19, 1970, Ser. No. 19,546, now Patent No. 3,582,314. Divided and this application Mar. 12, 1971, Ser. No. 123,881
The term of this patent subsequent to June 1, 1988, has been disclaimed**

Int. Cl. A01n *9/12*

U.S. Cl. 71—100 **1 Claim**

1. A herbicidal composition comprising a herbicidally effective amount of a thiocarbamate of the formula:



and one or both of an agronomically acceptable carrier and a surfactant.

3,846,116

METHOD FOR TREATING A PEANUT CROP

Melton T. Pearson, Fulton, Tex., assignor to Standard Spray and Chemical Company, Lakeland, Fla.

No Drawing. Continuation of application Ser. No. 801,855, Feb. 24, 1969, which is a continuation-in-part of application Ser. No. 748,217, July 29, 1968, both now abandoned. This application May 29, 1973, Ser. No. 364,586

Int. Cl. A01n *5/00, 11/02*

U.S. Cl. 71—65 **31 Claims**

1. In the method of treating a peanut plant by applying to the soil at the point of pegging, a layer of a calcium-containing compound, the improvement which comprises, the separate and additional application, but to the foliage of said peanut plant, of a composition consisting of, as an active ingredient, a calcium-containing compound having a particle size less than about 20 microns such that, upon the application of said active ingredient to the surfaces of the foliage of the peanut plant, said active ingredient is introduced into the structure of said plant, the combined application both to the soil and to the surfaces of the foliage of the peanut plant being in an amount and at a rate per acre of said crop sufficient to reduce the formation of peanut pops and unsound kernels in the peanuts yielded by said crop.

3,846,117

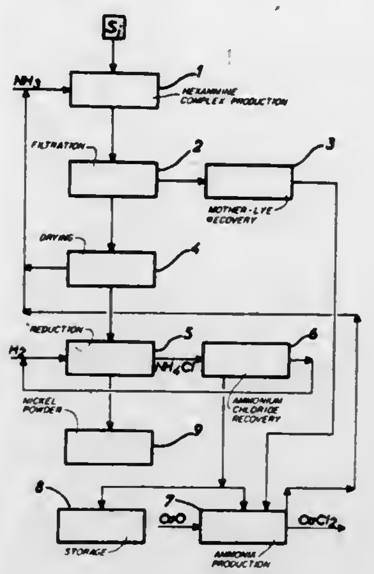
METHOD FOR PRODUCING HIGH-PURITY NICKEL POWDER WITH PREDETERMINED PHYSICAL CHARACTERISTICS

Louis Gandon and Serge Solar, Le Havre, France, assignors to Le Nickel, Paris, France

Filed Sept. 13, 1972, Ser. No. 288,882

Int. Cl. C22b *23/04*

U.S. Cl. 75—.5 AA **11 Claims**



1. A method for the production of high purity nickel powder having predetermined physical properties comprising reacting ammonia at a temperature between about 20 and 40° C. with nickel chloride in an aqueous solution containing at least 50 g./l. of nickel, separating the resulting precipitate of hexammine complex of nickel chloride, drying said precipitate at a temperature above 100° C. in order to at least partially convert it into a diammine complex of nickel chloride and to release ammonia, and reducing said diammine complex with hydrogen at a temperature between about 450 and 1,000° C.

3,846,118

PROCESS FOR MAKING SMALL PARTICLES

John E. Ehrreich, Wayland, and Adrian R. Reti, Cambridge, Mass., assignors to Graham Magnetics, Inc., Graham, Tex.

No Drawing. Original application Mar. 24, 1971, Ser. No. 127,850, now Patent No. 3,725,036. Divided and this application Mar. 21, 1973, Ser. No. 343,290

Int. Cl. B22f *9/00;* **H01f** *1/09, 1/10*

U.S. Cl. 75—.5 AA **6 Claims**

1. As a composition of matter, a mass of sub-micron particles of a normally pyrophoric metal having bonded to the surface thereof, a quantity of a silane passivating agent of a molecular weight below about 500 effective to reduce the pyrophoricity of said metal powder.

3,846,119

METHOD OF MELTING METALS WITH FLAMES

Frank S. Death and Andrew G. Szekely, Scotch Plains, N.J., assignors to Union Carbide Corporation, New York, N.Y.

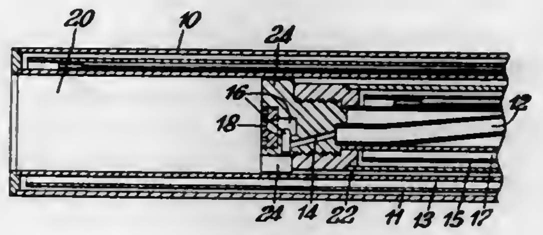
Continuation of abandoned application Ser. No. 784,334, Dec. 17, 1968. This application May 26, 1971, Ser. No. 147,227

Int. Cl. C21b *1/00*

U.S. Cl. 75—43 **10 Claims**

1. In a method of melting metal with an oxy-fuel flame, the improvement comprising increasing the melting rate of the metal while simultaneously preventing excessive oxidation of the metal by the steps of:

(1) providing a mixture of a liquid fuel and a solid powdered additive selected from the group consisting of lime, calcium carbide and mixtures thereof;
(2) feeding said fuel-additive mixture into a confined zone of a fluid-cooled burner under fluid pressure and providing it therein with a swirling motion;
(3) discharging the fuel-additive mixture from said confined zone into an enlarged confined combustion zone of said burner through an atomizing orifice;
(4) combusting said fuel-additive mixture with oxygen in said combustion zone thereby causing a flame;



and

(5) impinging said flame containing the additive against the surface of the metal thereby melting the metal while simultaneously preventing excessive oxidation thereof.

3,846,120

TREATMENT OF MOLTEN METAL

Reginald Mayorcas, Chester, and David Alec Hawkes, Guisborough, England, assignors to British Steel Corporation, and Spray Steelmaking Ltd., both of London, England

Filed Dec. 6, 1971, Ser. No. 205,254

Int. Cl. C21c *5/28*

U.S. Cl. 75—59 **12 Claims**

1. In a process for treating molten metallic material comprising the steps of:

(a) feeding untreated molten material at a predetermined flow rate to a reaction vessel as a freely-falling stream therein,
(b) determining the rate at which constituents to be removed from the molten material enter the reaction vessel as impurity contained in the untreated material,
(c) directing towards the freely-falling stream a gaseous flow which comprises an aggregation of a gas capable of reacting chemically with said impurity content of the untreated material in a quantity sufficient to remove said impurity content from said untreated material and an additional gas which is less chemically-reactive than the first-mentioned gas, at an aggregate flow rate which produces an energy transfer to the freely-falling stream sufficient to shatter said stream into a spray of particles having a predetermined particle size, and
(d) causing the reactive gas to mix intimately with said particles and to react chemically with said impurity content of said material to remove said impurity from said material,

the improvement which comprises the step of

(e) controlling the reactive potential of said gaseous flow by varying the proportion of reactive gas contained therein in accordance with said impurity content of the untreated molten material, while maintaining the aggregate gas flow at a rate which shatters the stream into particles having said predetermined median particle size.

3,846,121

METHOD FOR PREPARING SCANDIUM METAL

Frederick A. Schmidt and Oscar N. Carlson, Ames, Iowa, assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Continuation-in-part of abandoned application Ser. No. 323,184, Jan. 12, 1973. This application Apr. 10, 1974, Ser. No. 459,825

Int. Cl. C22b *61/00*

U.S. Cl. 75—62 **7 Claims**

1. A process for preparing high-purity scandium metal from scandium oxide comprising:

(a) firing the scandium oxide at 850 to 950° C. in air for about 4 to 6 hours, thereby driving off any residual volatile materials and any carbon present in said oxide;

(b) heating the fired oxide to 650 to 750° C.;

(c) passing phosgene gas over the heated oxide, thereby chlorinating the oxide in a reducing atmosphere containing no free carbon to scandium chloride;

(d) mixing the scandium chloride with a member selected from the group consisting of magnesium, calcium and mixtures thereof to form a charge;

(e) heating the charge under reduced pressure to from about 800 to 1000° C., whereby the scandium chloride is reduced to scandium metal; and

(f) recovering the high-purity scandium metal.

3,846,122

ALUMINUM PURIFICATION PROCESS

Alex R. Valdo, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Continuation-in-part of abandoned application Ser. No. 26,751, Apr. 8, 1970. This application Aug. 2, 1971, Ser. No. 168,363

Int. Cl. C22b *21/06*

U.S. Cl. 75—68 C **2 Claims**

1. A process for preparing a purified aluminum, which process comprises the steps of:

decomposing an aluminum alkyl to deposit solid particles of metallic aluminum containing a significant amount of aluminum carbide, compacting those particles along with particles of solid flux into pellets for melting, the flux being an aluminum-treating flux that when molten is less dense than the molten aluminum but more dense than or about equal in density to the aluminum carbide contained in the molten aluminum,

melting the pellets to form a body of molten aluminum covered by a layer of molten flux,

bubbling a chlorine-containing gas through the body of molten aluminum to help remove the aluminum carbide from the aluminum and carry that carbide to the flux layer,

removing some of the purified aluminum and some of the carbide-containing flux thus produced, and using the remaining purified aluminum and remaining flux as a heel for the melting of additional pellets.

3,846,123

ALUMINUM RECOVERY FROM SCRAP MATERIALS

Bernard J. Racunas, New Kensington, and Noel Jarrett, Lower Burrell, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sept. 28, 1972, Ser. No. 293,016

Int. Cl. C22b *7/00, 21/00*

U.S. Cl. 75—68 R **4 Claims**

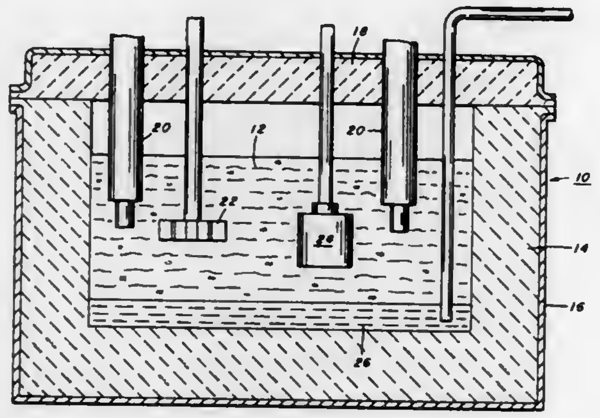
1. A method of recovering aluminum values from aluminum material fed to a pool of molten salt, the method comprising the steps of

(1) feeding aluminum materials into said pool,

(2) contacting the aluminum materials with said molten salt, the salt being effective to separate non-metallic solids from the aluminum material, and thereby release molten aluminum,

(3) removing molten aluminum from said pool of salt thereby substantially depleting the same of aluminum values while leaving it enriched with a suspension of non-metallic solids,

(4) circulating the salt enriched with non-metallic solids to maintain suspension of the same in said salt and to direct the suspension and salt to a device capable of collecting and thereby removing solids from said salt to substantially deplete the salt of said solids while the salt depleted of said solids is returned directly to the circulating salt from the device, and



(5) correlating the feeding of said aluminum materials with the removal of said non-metallic solids to maintain in said pool a solids content not exceeding 25 percent by weight of the salt therein.

3,846,124

METHOD OF INCREASING THE CYANIDATION RECOVERABILITY OF GOLD FROM ORGANIC CARBON-CONTAINING GOLD-BEARING ORES

Wilbur J. Guay, Newtown, Conn., assignor to Newmont Exploration Limited, Danbury, Conn.

No Drawing. Filed Oct. 3, 1969, Ser. No. 863,692

Int. Cl. C22b *11/08*

U.S. Cl. 75—112 **3 Claims**

1. The method of treating sedimentary gold-bearing ore containing indigenous organic carbonaceous material so as to increase the recoverability of its gold content by standard cyanidation extraction which comprises slurrying the ore with water in the absence of extraneous alkaline material, adjusting the temperature of the slurry to about 70° to 85° F., and dispersing chlorine gas throughout the slurry at a rate and for a period of time such as the slurry will continue to absorb the chlorine with evolution of carbon dioxide, nitrogen and oxygen as the chlorine reacts with the organic carbonaceous components of the ore and only until a significant amount of chlorine gas is liberated from the chlorinated slurry, and maintaining the temperature of the thus-chlorinated slurry within the range of about 70° to 85° F. for a period of about 6 to 12 hours with the resulting production of a slurry-solids content in which the gold component is amenable to at least 75 wt. percent extraction by standard cyanidation practice.

3,846,125

GOLD ALLOY COMPOSITION

Franklyn Stevens, Jr., Westport, Conn., assignor to Sigmund Cohn Corp., Mount Vernon, N.Y.

No Drawing. Filed July 21, 1972, Ser. No. 273,927

Int. Cl. C22c *5/00*

U.S. Cl. 75—165 **5 Claims**

1. An alloy composition consisting essentially of on a weight percentage basis: 7 to 8% vanadium, 5% iron and the balance of said composition being gold.

3,846,126

POWDER METALLURGY PRODUCTION OF HIGH PERFORMANCE ALLOYS

Edward M. Foley, Russiaville, and Dennis G. Dreyer and Herbert E. Rogers, Jr., Kokomo, Ind., assignors to Cabot Corporation

No Drawing. Filed Jan. 15, 1973, Ser. No. 323,502

Int. Cl. B22f *1/00*

U.S. Cl. 75—211 **12 Claims**

1. The process of making a coherent green compact which holds its shape during sintering from pre-alloyed comminuted powder of a high performance metal alloy which cannot be pressure compacted under pressures up to 70 tons per square inch unless its average particle size is not greater than about 5 microns, comprising processing the alloy powder to an average particle size between about 9 and about 30 microns, mixing the alloy powder with a dry, finely divided organic binder in amounts not greater than about 5% by weight of the alloy powder so as to obtain a uniform dispersion of binder in the alloy powder, then adding a solvent for the binder in amount sufficient to form a plastic mixture with the alloy powder and binder, then consolidating the plastic mixture to a bulk density intermediate that of the powder and that of the cast alloy, then drying the consolidated mixture to evaporate the solvent, then crushing the consolidated mixture to discrete agglomerates of pre-alloyed powder particles to provide a substantial fraction of −100 mesh particles at least about half of the −100 mesh fraction of which are −325 mesh, then filling a die of the desired shape with those agglomerates, then compacting the agglomerates in the die under pressure to at least about 50% of the cast density of the alloy so as to produce a coherent green compact, and then removing the compact from the die.

3,846,127

IMAGING SYSTEM

Gedeminas J. Reinis, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1972, Ser. No. 284,817

Int. Cl. G03c *5/10*

U.S. Cl. 96—1 M **23 Claims**

1. In an imaging method wherein a cohesively weak photoresponsive imaging layer comprising electrically photosensitive particles dispersed in an insulating binder is sandwiched between two sheets, then exposed to a pattern of actinic electromagnetic radiation and an electric field thereby providing upon separation of the sheets a positive image on one sheet and a negative image on the other, the improvement comprising:

treating the electrically photosensitive particles with from about 20% to about 200% by weight of said particles of a material selected from the group consisting of polyisobutenylsuccinic anhydride and polyisobutenylsuccinic anhydride derivatives prior to formation of said images.

3,846,128

PHOTOSENSITIVE ELEMENTS HAVING IMPROVED PROCESSING TEMPERATURE LATITUDE

Leo J. Thomas, Pittsford, and Robert J. Tuite, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 204,340, Dec. 2, 1971. This application Sept. 21, 1972, Ser. No. 291,114

Int. Cl. C03c *7/00, 5/54, 1/76, 3/00, 1/48, 1/40*

U.S. Cl. 96—3 **43 Claims**

1. A photosensitive element comprising a support having thereon at least one photosensitive, image-recording, silver halide emulsion layer, said element containing an opposite-working silver halide emulsion layer for producing in direct proportion to its development, a diffusible development inhibitor to inhibit further development in said image-recording layer when both layers are developed simultaneously, said opposite-working silver halide emulsion layer and at least one of said image-recording silver halide emulsion layers having substantially the same sensitivity to actinic radiation within a particular spectral region.

3,846,129

DYE DIFFUSION TRANSFER COMPOSITIONS, ELEMENTS AND PROCESSES

Arthur D. Kuh, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 25, 1972, Ser. No. 292,009

Int. Cl. G03c *1/40, 5/30, 5/54, 7/00*

U.S. Cl. 96—3 **10 Claims**

1. A color developing composition comprising an aqueous alkaline solution of (1) a phenylenediamine color developing agent, (2) a competing black and white developing agent, (3) a xylenediol, and (4) a thickening agent to impart a viscosity of about 100 to 200,000 cps. to said composition.

3,846,130

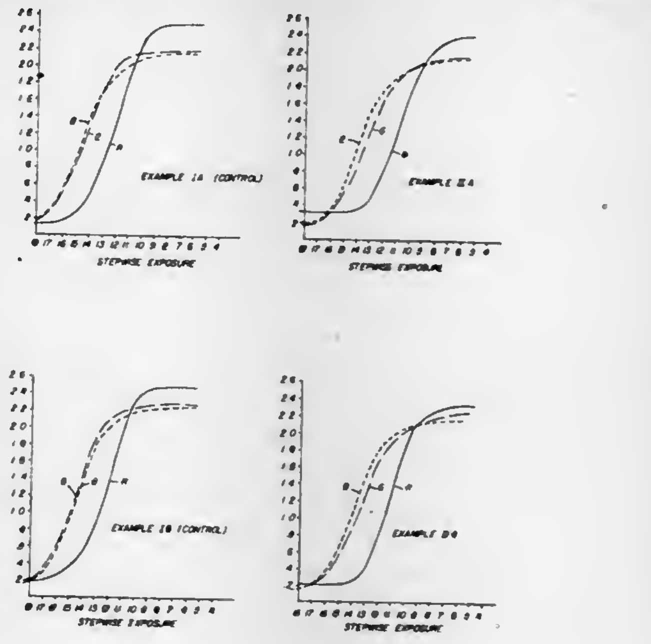
PROCESS FOR DEVELOPING PHOTOGRAPHIC ELEMENTS

Michael Dennis Purol and Richard Joseph Malloy, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 21, 1973, Ser. No. 361,925

Int. Cl. G03c *1/40, 7/00*

U.S. Cl. 96—22 **16 Claims**



1. In a process of developing an imagewise-exposed photographic element comprising a support and at least one image dye-providing layer unit thereon which contains a light-sensitive silver halide emulsion having associated therewith a color coupler, which process includes (1) development of the imagewise-exposed silver halide emulsion to provide an imagewise distribution of metallic silver and inhibition of a color-developing agent in said photographic element, and then (2) contacting said photographic element with an amplifier composition which represses substantially additional net silver development, said amplifier solution containing a cobalt(III) metal complex having a coordination number of 6, and said amplifier solution being maintained in contact with said photographic element under conditions which reduce said cobalt(III) to cobalt(II) and in turn oxidize said color-developing agent to provide an increase in dye density with dye produced from said coupler in the areas corresponding to the imagewise distribution of said metallic silver, the improvement comprising including in said amplifier composition an Fe(III) chelate of an aminocarboxylic acid.

3,846,131

RECORDING MATERIAL CONTAINING A POLYHALOGENATED HYDROCARBON PHOTOACTIVATOR AND A DYE FORMING COMBINATION OF AN INDOLIZINE DERIVATIVE AND AN ALDEHYDE AND THE USE THEREOF

Joachim Werner Lohmann, Wilrijk, Hugo Karel Peeters, Mortsel, Renaat Andreas Ceulemans, Deurne, and Felix Jan Moelants, Wilrijk, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed Oct. 19, 1972, Ser. No. 298,830

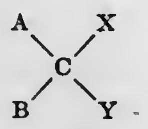
Claims priority, application Great Britain, Oct. 20, 1971, 48,804/71

Int. Cl. G03c *1/52, 5/24*

U.S. Cl. 96—48 R **22 Claims**

1. A photographic process for forming a visible image in a recording material which comprises in intimate admixture:

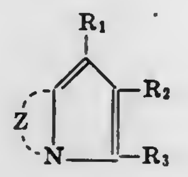
(1) at least one organic polyhalogen compound corresponding to the following general formula:



wherein:

each of A, B, X and Y is chlorine, bromine and iodine, or one of A, B, X or Y represents an alkyl group, an aryl group or an aroyl group and the others represent chlorine, bromine or iodine, or at least two of A, B, X or Y represent an aromatic acyl group and the others represent chlorine, bromine or iodine, and

(2) at least one indolizine derivative corresponding to the following general formula:



wherein:

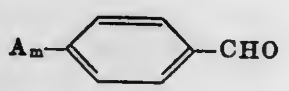
Z represents the necessary atoms to close an adjacent pyridyl nucleus,

R_1 represents hydrogen or nitro,

each of R_2 and R_3 represents hydrogen, an alkyl group, an aralkyl group, an alkenyl group, an acyl group, a nitro group or a phenyl group, at least one of R_1 or R_3 being hydrogen, and

(3) at least one aldehyde compound of one of the following general formulae:

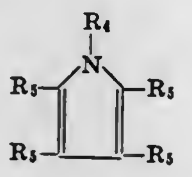
(a)



wherein:

Am represents a primary, secondary, or tertiary amino group,

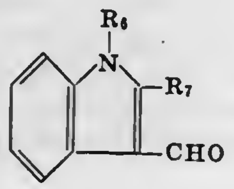
(b)



wherein:

one R_5 group is —CHO and each remaining R_5 and R_4 is hydrogen, an alkyl group, or a phenyl group,

(c)



wherein:

R_6 is an alkyl group and

R_7 is an alkyl group or a phenyl group,

(d) $ZO—(CH=CH)_n—Ald$

wherein:

Z is hydrogen, a metallic atom or an alkyl group,

n is an integer of at least one, and

Ald is —CHO or $—CH(OR_8)_2$ where R_8 is an alkyl group,

said visible image being formed by the steps of:

imagewise exposing the recording material to active electromagnetic radiation of a dose being sufficient to bring about a directly visible image, or by the steps of:

imagewise exposing the recording material to active electromagnetic radiation of a dose sufficient to create therein an at most barely visible image which has a spectral sensitivity in a wavelength range outside the inherent sensitivity range of the organic polyhalogen compound, and overall exposing the imagewise exposed recording material to heat or light within the wavelength range to which the initially exposed portions were made more sensitive than the initially non-exposed portions, to thereby increase the visibility of said image, or by the steps of:

overall exposing the recording material to electromagnetic radiation of a dose sufficient to bring about in the recording material an increase in spectral sensitivity in a wavelength range outside the inherent sensitivity range of the polyhalogen compound, and imagewise exposing the overall exposed recording material within the wavelength range for which the overall exposed recording material was made more sensitive in order to form a visible image corresponding with said imagewise exposed portions.

3,846,132

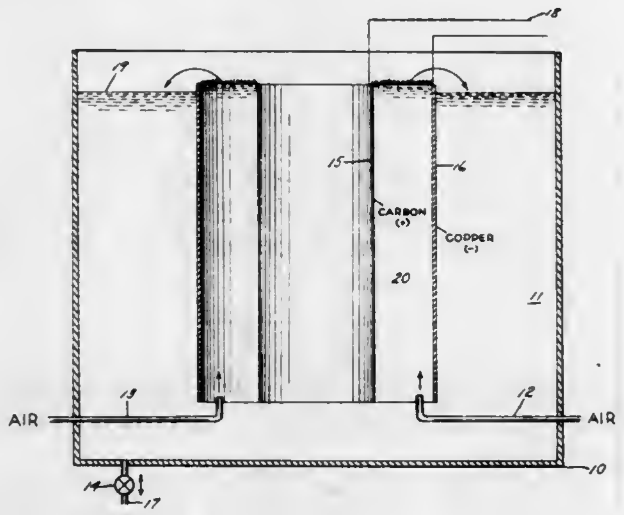
BLEACH SYSTEM

Edward Palmonka, Elmont, N.Y., assignor to EBR Development Corp., New York, N.Y.

Filed Oct. 27, 1972, Ser. No. 301,281

Int. Cl. B01k *1/00;* **G03c** *5/32*

U.S. Cl. 96—60 R **5 Claims**



1. In an electrolytic process for regenerating a spent photographic bleach solution containing ferrocyanide to be converted to ferricyanide, the improvement which comprises establishing an annular zone between an inner positively charged electrode and an outer negatively charged electrode positioned within a reservoir of spent bleach solution, introducing sufficient air upwardly through said annular zone so as to create a circulation of spent solution undergoing regeneration between the electrodes and to dilute evolved hydrogen so as to safeguard against explosion.

3,846,133

MULTILAYERED COLOR PHOTOGRAPHIC MATERIAL WITH IMPROVED STABILITY UNDER TROPICAL CONDITIONS

Hugo Zorn, Munich-Lochhausen, Helmut Broll, Munich, and Erich Reckziegel, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 4, 1972, Ser. No. 294,955

Claims priority, application Germany, Oct. 6, 1971, P 21 49 837.3

Int. Cl. G03c *1/76, 3/00*

U.S. Cl. 96—74 **3 Claims**

1. A color-photographic multilayer material having compounds that produce a negative image by imagewise exposure followed by developing treatment or reversal treatment producing positive image comprising at least one red-sensitized silver halide emulsion layer containing a cyan-forming coupler, at least one green-sensitized silver halide emulsion layer containing a magenta-forming coupler and at least one blue-sensitive silver halide emulsion layer containing a yellow-forming coupler, wherein the improvement comprises at least one of the emulsion layers of the group consisting of green-sensitized and red-sensitized emulsion layers comprises in the same phase a binder, a silver iodobromide colloidal silver and the color coupler.

3,846,134

PHOTOGRAPHIC MATERIALS WITH REMOVABLE ANTIHALATION LAYERS

August Jean Van Paesschen, Antwerp, and Joseph Antoine Herbots, Edegem, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed Oct. 19, 1971, Ser. No. 190,647

Claims priority, application Great Britain, Oct. 20, 1970, 49,791/70

The term of this patent subsequent to Apr. 10, 1990, has been disclaimed

Int. Cl. G03c *1/84*

U.S. Cl. 96—84 R **4 Claims**

1. A photographic material comprising a hydrophobic film support, at least one light-sensitive silver halide emulsion layer, and at the side of the support opposite to said light-sensitive emulsion layer or layers an antihalation layer consisting of a dye or finely divided pigment dispersed in a water-insoluble, alkali-soluble polymer, characterized in that between said hydrophobic film support and said antihalation layer an intermediate layer is applied, which is formed from a mixture of 1 to 3 parts by weight of cellulose diacetate or triacetate and 3 to 1 parts by weight of an alkali-soluble polymer.

3,846,135

LIGHT-SENSITIVE PHOTOGRAPHIC MATERIAL WITH INCREASED SENSITIVITY TO LIGHT

Erhard Hellmig, Leverkusen, Franz Moll, Cologne-Stammheim, August Randolph, Leverkusen, and Wilhelm Saleck, Schildgen, Bergische-Gladbach, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

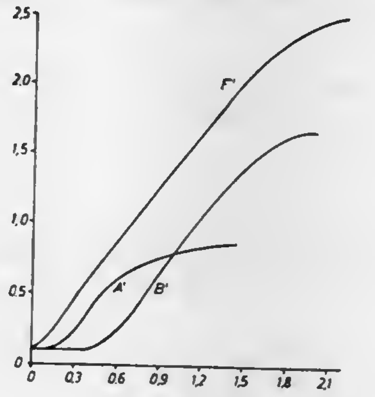
Continuation-in-part of abandoned application Ser. No. 634,507, Apr. 28, 1967. This application Apr. 2, 1971, Ser. No. 130,617

Claims priority, application Germany, May 12, 1966, A 52,455

Int. Cl. G03c *1/02, 1/08, 1/46*

U.S. Cl. 96—68 **3 Claims**

1. A light sensitive photographic material of improved speed and granularity essentially consisting of a support and in superposed relationship a first silver halide emulsion of silver bromide or silver bromo-iodide closer to the support and a second silver halide emulsion of silver bromide or silver bromo-iodide superposed over the first emulsion wherein the improvement comprises the second emulsion is in a layer having a thickness of at least 2μ and the first emulsion is in a layer having a thickness of between 5 and 15μ and is greater in thickness, the first emulsion has a sensitivity about 0.1 to 0.4 log *I.t* units less than the sensitivity of the second emulsion as measured by the points on the characteristic curves which



are above the exposure required to produce visible density, and which improvement results in the first emulsion giving a density of at least 1.5, the second emulsion giving a density of not over 0.9 and the slower emulsion having the threshold of its characteristic curve coinciding in log *I.t* units with the shoulder of the characteristic curve of the faster emulsion and whereby the overall sensitivity in log *I.t* units of said light sensitive material is greater than the sensitivity of the more sensitive second emulsion measured by the points on the characteristic curve above the exposure required to produce visible density.

3,846,136

CERTAIN ACTIVATOR-TONERS IN PHOTOSENSITIVE AND THERMOSENSITIVE ELEMENTS, COMPOSITIONS AND PROCESSES

Michael F. Sullivan, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed May 1, 1970, Ser. No. 33,965

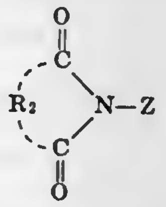
Int. Cl. G03c *1/02, 1/76*

U.S. Cl. 96—114.1 **22 Claims**

1. In a photothermographic element comprising a support, an oxidation-reduction image forming combination comprising a silver salt oxidizing agent with a reducing agent, photosensitive silver salt, a binder and an activator-toner agent, the improvement wherein said activator-toner agent is

(a) a 2-pyrazolin-5-one,

(b) a cyclic imide of the formula



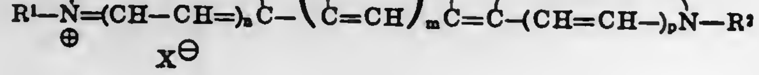
wherein R_2 represents atoms completing a succinimido, 4-cyclohexane - 1,2 - dicarboximido, glutarimido or 2,4-thiazolidinedione nucleus; Z is hydrogen, hydroxy, silver mercury, potassium, sodium, lithium or gold, or

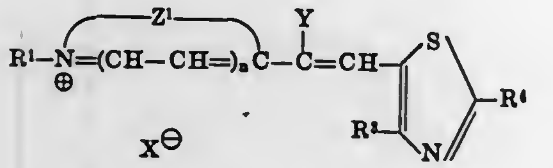
(c) a quinazolinone.

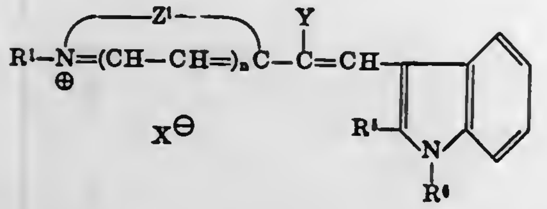
3,846,137
SPECTRALLY SENSITIZED DIRECT POSITIVE EMULSION

Oskar Riester, Leverkusen, and Hans Ohlschlager and Heinrich Odenwalder, Cologne, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Aug. 23, 1972, Ser. No. 282,968
Claims priority, application Germany, Aug. 27, 1971, P 21 42 967.4
Int. Cl. G03c *1/16, 1/18*
U.S. Cl. 96—130 **3 Claims**

1. A light sensitive photographic material comprising at least one direct positive fogged silver halide emulsion layer, which is spectrally sensitized with a polymethine sensitizing dye of one of the following formulae:


I


II


III

wherein

Y=a cyano, nitro, acyl group or hydrogen, at least one of Y represents a cyano, nitro or acyl group;

R^1, R^2=a saturated or unsaturated aliphatic group or aryl;

R^3=hydrogen, a saturated or unsaturated aliphatic group or aryl;

R^4=SR^7 or NR^8R^9;

R^5=a phenyl group;

R^6=hydrogen, a saturated or unsaturated aliphatic group, aryl or alkoxy;

R^7, R^8, R^9=a saturated or unsaturated aliphatic group or phenyl;

n, p=0 or 1;

m=0, 1, 2 or 3;

X^-=any anion and

Z^1, Z^2 represent the ring members required for completing one of the following rings: thiazole, benzothiazole, oxazole, benzoxazole, thiazoline, indolenine, pyrimidone, thiopyrimidone, quinoline, benzselenazole, oxadiazole, 1,8-naphthindole and imidazoquinoxaline.

3,846,138
ELECTROLESS COPPER PLATING

Michael Gulla, Newton, Mass., assignor to The Webline Corporation, Charlotte, N.C.
No Drawing. Filed Aug. 2, 1973, Ser. No. 385,186
Int. Cl. C23c *3/02*
U.S. Cl. 106—1 **8 Claims**

1. In an electroless copper plating solution comprising a source of cupric ions, a reducing agent therefor, a complexing agent for said cupric ions and a pH adjustor to provide a minimum pH of at least 10, the improvement comprising a stabilizer for said solution selected from the group of iodobenzoic acid, amino methane sulfonic acid and mixtures thereof, said stabilizer being present in an amount sufficient to improve the stability of said copper plating solution.

3,846,139
TARNISH PREVENTIVE AGENT

Paul F. Warner, Borger, Tex., assignor to Phillips Petroleum Company
No Drawing. Continuation-in-part of application Ser. No. 156,121, June 23, 1971, which is a continuation-in-part of application Ser. No. 723,287, Apr. 22, 1968, which in turn is a continuation-in-part of application Ser. No. 662,280, Aug. 22, 1967, all now abandoned. This application Nov. 22, 1971, Ser. No. 201,118
Int. Cl. C08h; C09d; C09g
U.S. Cl. 106—3 **21 Claims**

1. A silver and copper tarnish preventive and polishing composition comprising:

(a) at least one compound of the formula

$$HS—R—S—R'$$

wherein R is an alkylene group and R' is selected from alkyl, cycloaliphatic and alkaryl groups with the further proviso that the compound can have up to and including 35 carbon atoms, said compound being present in an amount from 1 to 50 percent by weight;

(b) an abrasive present in an amount from 5 to 98 percent by weight;

(c) a diluent present in an amount from 1 to 90 percent by weight;

(d) an odorizer present in an amount from 0 to 5 percent by weight; and

(e) a suspending agent in an amount from 0 to 1 percent by weight.

3,846,140
ELECTRICAL RESISTOR INKS

Karl J. Youtsey, Chicago, William C. Holt, Jr., Prospect Heights, and Robert D. Carnahan, Barrington, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Aug. 18, 1972, Ser. No. 281,880
Int. Cl. B44d *1/18;* **C09d** *11/00, 11/02, 11/16*
U.S. Cl. 106—20 **12 Claims**

1. In an electrical resistor ink comprising a resistive component dispersed in a liquid vehicle containing a binder of synthetic or natural resin and an oil, solvent or mixture thereof, the improvement which comprises utilizing as a resistive component therefor from about 10% to about 95% by weight of the composition of at least one pyropolymeric semi-conducting material present in particulate form and comprising a refractory inorganic oxide having a surface area of from 1 to about 500 square meters per gram with a monolayer of carbonaceous pyropolymer formed on the surface thereof, said pyropolymeric semi-conducting material being of a particle size of less than 20μ and having a resistivity at room temperature of from about 10° to 10^8 ohm-centimeters.

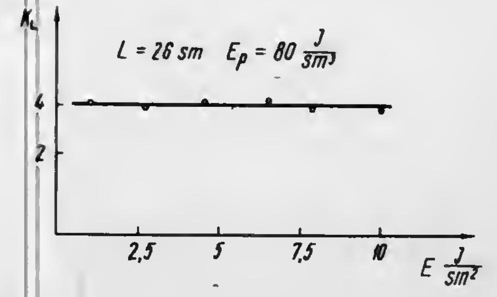
3,846,141
JET PRINTING INK COMPOSITION

Dale G. Ostergren, Evanston, and Daniel M. Zabiak, River Grove, Ill., assignors to A. B. Dick Company, Niles, Ill.
No Drawing. Continuation of abandoned application Ser. No. 95,953, Dec. 7, 1970. This application July 27, 1972, Ser. No. 275,572
Int. Cl. C09d *11/00*
U.S. Cl. 106—22 **11 Claims**

1. An ink composition consisting essentially of an aqueous solution of 0.5 to 7.0% by weight of a water-soluble direct dye and 5 to 40% by weight of a humectant system formed of a mixture of a lower alkoxy triglycol and at least one compound selected from the group consisting of a polyethylene glycol having an average molecular weight up to about 600, polypropylene glycol having an average molecular weight up to about 425, a lower alkyl ether of ethylene glycol and diethylene glycol, propylene glycol and glycerol, with the weight ratio of the alkoxy triglycol to said compound being within the range of 0.1 to 3.0, the ink composition having a viscosity within the range of 1.0 to 10 centipoise at 25° C. and a specific resistivity less than 150 ohm-cm.

3,846,142
Nd AND Yb CONTAINING PHOSPHATE GLASSES FOR LASER USE

Igor Mikhailovich Buzhinsky, Pervomaiskaya ulitsa 5, kv. 46, Lytkarino Moskovskoi oblasti, U.S.S.R.; Valentin Pavlovich Gapontsev, ulitsa Godovikova 1, kv. 110; and Mark Efremovich Zhabotinsky, Pogodinskaya ulitsa 2/3, kv. 53, both of Moscow, U.S.S.R.; Anatoly Andreevich Izyneev, Vokzalnaya ulitsa 19, kv. 18, Fryazino Moskovskoi oblasti, U.S.S.R.; Elizaveta Ivanovna Koryagina, Oktyabraskaya ulitsa 15, kv. 31, Lytharino Moskovskoi oblasti, U.S.S.R.; Valery Borisovich Kravchenko, ulitsa Lenina 14, kv. 47, Fryazino Moskovskoi oblasti, U.S.S.R.; Jury Petrovich Rudnitsky, ulitsa Ostrovityanova 31, kv. 298; Evgeny Ivanovich Sverchkov, ulitsa Butyrsky val 32, kv. 61; and Nikolai Efimovich Alexeev, ulitsa Gorkogo 8, korpus 1, kv. 21, all of Moscow, U.S.S.R.; and Boris Leonidovich Davydov, ulitsa Nakhimova 17, kv. 63, Fryazino Moskovskoi Oblasti, U.S.S.R.
No Drawing. Filed Sept. 18, 1972, Ser. No. 290,146
Int. Cl. C03c *3/16, 3/30;* **C09k** *1/36*
U.S. Cl. 106—47 R **8 Claims**



1. A glass for laser use comprising the following components, in percent by weight: 40–90% of metaphosphates selected from the group consisting of Li, Na, K, Zn, Cd, Ba, Pb, Mg, Ca, and Sr; 5–50% of phosphates of elements selected from the group consisting of Al, Zr, B, and Ce; 1–7% of trivalent neodymium Nd^{3+}; and 0.3–5% of trivalent ytterbium Yb^{3+}, said glass having a thermal expansion coefficient in the range of $50–160\times10^{-7}$ 1/degree, a microhardness in the range of 300–450 kg./mm.^{2}, a quantum efficiency of transmission of $Nd^{3+}\rightarrow Yb^{3+}$ higher than 0.7, the section of stimulated emission of ytterbium at λ=1060 nm. being equal to about $2.5–5\times10^{-21}$ cm.^{2}, and a maximum inversion at electric energy of pumping of 80 joules/cm.^{3} is 1.5 to 2×10^{19} 1/cm.^{2}.

3,846,143
SOURCE COMPOSITION FOR ALKALI METAL OXIDES AND ALUMINUM OXIDE

William A. Mod and Donald L. Caldwell, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Continuation-in-part of abandoned application Ser. No. 724,621, Apr. 26, 1968. This application Mar. 25, 1971, Ser. No. 128,126
Int. Cl. C03b *1/00;* **C03c** *3/04*
U.S. Cl. 106—52 **7 Claims**

1. A method of making a glass batch to produce a glass product which comprises:

(a) preparing an aluminum-alkali metal complex as a source of the aluminum oxide and as at least a 50 percent source of the alkali metal oxide in the final glass product by reacting a mixture of an aluminum oxide source for glass making and an aqueous alkali metal hydroxide solution at a temperature at which the alkali metal hydroxide is liquid for a time sufficient to react essentially all of the aluminum oxide source to form an aluminum-alkali metal complex;

(b) drying said complex;

(c) admixing said complex with at least one glass former selected from the group consisting of silica and boric oxide sources and with an alkaline earth metal oxide source, the admixture having essentially no sodium sulfate added thereto, thereby obtaining a glass batch to be introduced into the glass melting furnace.

3,846,144
GUNABLE REFRACTORY COMPOSITION

Joseph R. Parsons, Park Forest, and Harold L. Rechter, Chicago, Ill., assignors to Chicago Fire Brick Company, Chicago, Ill.
No Drawing. Filed Oct. 25, 1973, Ser. No. 409,624
Int. Cl. C04b *35/52*
U.S. Cl. 106—56 **5 Claims**

1. A gunable refractory composition comprising the following materials in parts by weight:

Graphite or calcined coal	40–60
Bauxite	20–40
Silicon	8–20
Calcium aluminate	6–16
Calcium silicate	3–8

3,846,145
REFRACTORY ARTICLES FOR METAL POURING TUBES AND THE LIKE

Ned Wright Roudabush, Cincinnati, Ohio, assignor to The Chas. Taylor's Sons Company, Cincinnati, Ohio
No Drawing. Filed Sept. 17, 1973, Ser. No. 398,141
Int. Cl. C04b *35/16*
U.S. Cl. 106—57 **3 Claims**

1. Refractory composition useful for making metal pouring tubes and the like consisting essentially of from 45% to 75% of a fusion product, from 10% to 30% kyanite, from 3% to 15% zircon, from 3% to 12% calcined alumina and from 0.5% to 10% chromic oxide, said fusion product being a fused aggregate of substantially 0.5 to 1.5 parts of zircon for each part of alumina, said composition also containing in addition from 1% to 7% silica.

3,846,146
TRANSPARENT ARTICLES OF ALUMINUM OXIDE AND METHOD OF MANUFACTURING SAID ARTICLES

Bernardus Jacobus Hunting and Gerardus Alfonsus Jeunink, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 23, 1973, Ser. No. 344,266
Claims priority, application Netherlands, Apr. 7, 1972, 7204638
Int. Cl. C04b *35/10*
U.S. Cl. 106—62 **6 Claims**

1. In a formed article consisting of magnesium oxide-containing and another metal oxide-containing transparent densely sintered polycrystalline aluminum oxide, the improvement comprising that the other metal oxide is calcium oxide and that the content of calcium oxide is 0.001–0.02% by weight.

3,846,147
STABLE SUSPENSIONS OF CALCINED CLAYS

Michael Tapper, Sandersville, Ga., assignor to Burgess Pigment Company, Sandersville, Ga.
No Drawing. Filed June 5, 1972, Ser. No. 259,978
Int. Cl. C09c *1/42;* **C08h** *17/06*
U.S. Cl. 106—288 B **14 Claims**

1. A calcined clay pigment suspension comprising at least 40% by weight of calcined clay in an aqueous medium and further comprising sufficient alkalizing agent both to impart a pH of at least 8 to said suspension and to stabilize said suspension and render it free of ap-

preciable settling of pigment, said alkalizing agent further providing said suspension with a pH sufficiently high to render such suspension pumpable.

3,846,148

NOVEL COMPOSITE PIGMENTS

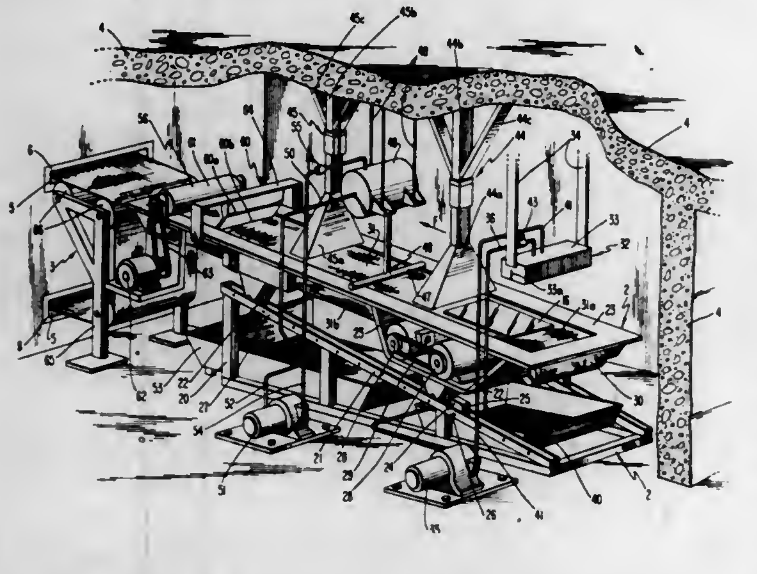
John S. Nordyke, Pittsburgh, and William C. Spangenberg, Mount Lebanon, Pa., assignors to Hammond Lead Products, Inc., Hammond, Ind.
No Drawing. Continuation-in-part of abandoned application Ser. No. 182,241, Sept. 20, 1971. This application Aug. 31, 1972, Ser. No. 285,323
Int. Cl. C09c *1/28*
U.S. Cl. 106—308 B **23 Claims**

1. A composite pigment comprising finely divided particles of a silicate mineral pigment carrying on the surface thereof as a true coating at least one hydrous additive material in a substantially amorphous state, selected from the group consisting of a metal phosphate, phosphite, borate, borophosphate, borophosphite and chromate.

3,846,149

METHODS, MEANS AND COMPOSITIONS FOR PAINTING OBJECTS

Jean-Paul Meunier, Asnieres, France, assignor to Conservatome, Courbevoie, France
Filed June 12, 1970, Ser. No. 45,865
Claims priority, application France, June 13, 1969, 6919790; June 4, 1970, 7020492
Int. Cl. B44d *1/50*
U.S. Cl. 117—6 **16 Claims**



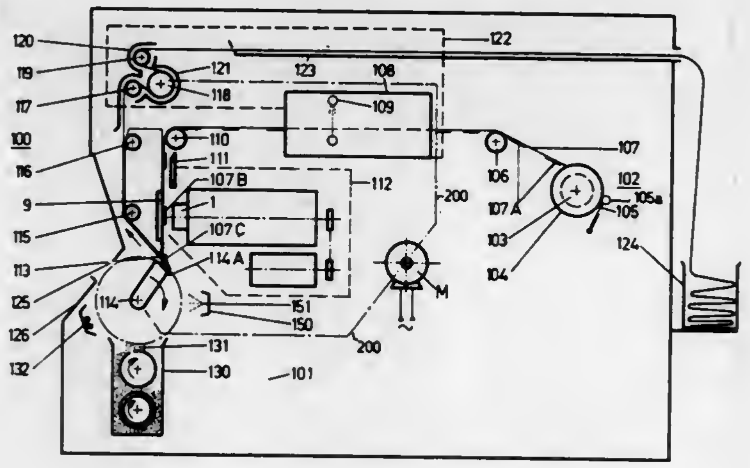
1. A method of painting an object which comprises applying thereto a fluid coating composition having a hardenable vehicle, solidifying the coating composition by exposing the coated object to ionizing radiation of solidifying duration and intensity, applying a liquid film transparent to ionizing radiation and impermeable to oxidizing gases to the coating composition, and applying ionizing radiation of hardening intensity through the said film to the coating composition until it is hardened.

3,846,150

METHOD FOR PRODUCING PRINTED MATTER CONTAINING IMAGES AND ALPHA-NUMERICAL CHARACTERS

Gabor Forgo, Erwin Meyer, and Karl Moser, Zurich, Switzerland, assignors to Zellweger AG, Uster, Switzerland
Filed July 14, 1972, Ser. No. 272,063
Claims priority, application Switzerland, Aug. 16, 1971, 12,107/71
Int. Cl. C03g *13/08, 13/22, 15/08, 15/22*
U.S. Cl. 117—17.5 **8 Claims**

1. A method of producing printed matter containing at least one coded image and at least one alpha-numerical character, comprising the steps of employing a carrier for the reception of latent electrostatic charge images, feeding such carrier in a predetermined direction of travel, forming on the carrier a latent electrostatic charge image corresponding to said coded image by applying voltage to predetermined individual electrodes of an electrode arrangement to produce an electrical discharge from said electrode arrangement to the carrier in order to form a latent electrostatic charge image characterizing at least part of said coded image and corresponding in structure to the electrodes impinged with voltage, and during at least part of the time when said latent electrostatic charge image characterizing at least part of said coded image is produced carrying out a change in the spacing between the electrode arrangement and the carrier in order to thereby improve the quality of the electrostatically printed coded image, and during at least part of the time when the latent electrostatic charge image characterizing at least part of said coded image is produced carrying out a relative alternate movement between the electrode arrangement and the carrier in a direction substantially parallel to the plane of the carrier so as to produce the electrostatic charge image characterizing at least part of the coded image and having a size larger than the size of the end surfaces of the energized individual electrodes confronting the carrier from which said last-mentioned electrostatic charge image is produced, feeding the carrier bearing said latent electrostatic coded image past writing electrodes of an electrostatic writing mechanism, forming a latent electrostatic charge image corresponding to the desired alpha-numerical character on said carrier, and thereafter developing both of the formed latent electrostatic charge images with toner particles.



3,846,151

FIXING DEVICE

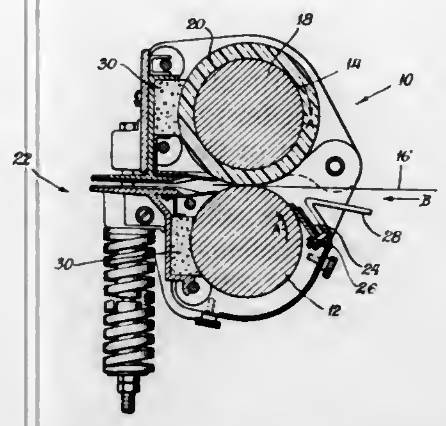
Jerome Roteman and Joseph K. Gogola, Solon, Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio
Filed Sept. 5, 1972, Ser. No. 285,981
Int. Cl. B44d *1/094;* **G03g** *13/20, 15/20*
U.S. Cl. 117—21 **8 Claims**

1. A method for reducing the tendency of a single sheet of a predetermined length of copy material having at least a residual high voltage charge thereon and of toner powder on said sheet of copy material to adhere to the surface of one of two rollers in pressure engagement at ambient temperature in a fixing device in a copy making apparatus for pressure fixing an image of an original formed of said toner powder comprising the steps of

passing said sheet of copy material into the nip of said two rollers to pressure fix said toner powder,

applying a release agent to the surface of a first one of said two rollers, and

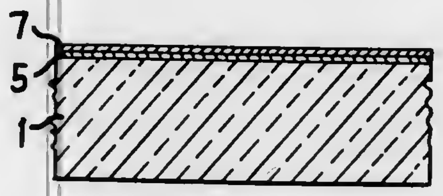
applying an anti-static agent to the surface of a second one of said two rollers.



3,846,152

SELECTIVE REFLECTING METAL/METAL OXIDE COATINGS

Helmut Franz, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed May 12, 1972, Ser. No. 252,803
Int. Cl. C03c *17/00;* **G02b** *5/20*
U.S. Cl. 117—33.3 **5 Claims**



1. A transparent article of manufacture for the selective reflectance of radiation over an extended spectral range comprising, in combination:

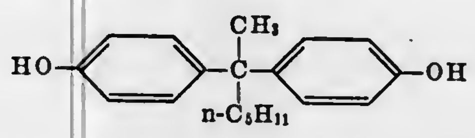
(a) a glass substrate; and
(b) at least two coating layers affixed to at least one side of said glass substrate:
  (1) a transparent metal coating layer consisting essentially of nickel substantially in its reduced metallic state affixed to a surface of said glass substrate; and
  (2) a transparent metal oxide coating layer having a thickness of from about 50 to about 1500 angstroms consisting essentially of copper oxide affixed to said metal coating layer.

3,846,153

HEAT SENSITIVE COMPOSITION AND THERMAL RECORDING SHEET CONTAINING THE SAME

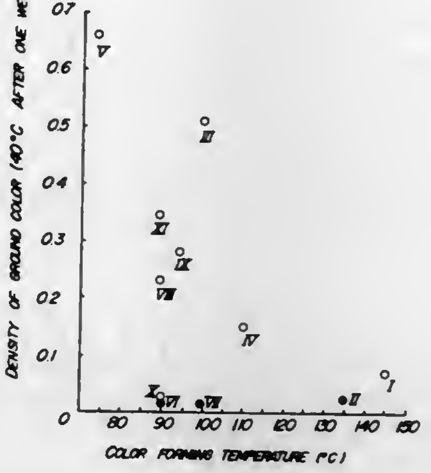
Kiyoshi Futaki, Isao Kohmura, and Kozo Haino, Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan
Filed July 24, 1972, Ser. No. 274,618
Claims priority, application Japan, Aug. 5, 1971, 46/59,143
Int. Cl. B41m *5/18*
U.S. Cl. 117—36.9 **5 Claims**

1. A thermal recording sheet which contains the phenol compound having the formula:



$$HO-C_6H_4-C(CH_3)(n\text{-}C_5H_{11})-C_6H_4-OH$$

at least one ordinarily colorless or light-colored lactone compound capable of reacting with said phenol compound upon heating to form a color, and a binder, the proportions of phenol compound, lactone compound and binder being 1–30% by weight of the lactone compound, 45–94% by weight of the phenol compound and 4–40% by weight of a binder, expressed by dry weight percentage.



3,846,154

PRODUCTION OF NUCLEAR FUEL

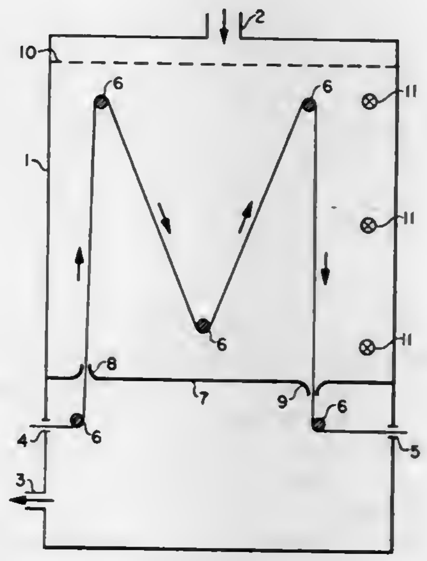
Raymond Léon René Lefevre, Broadstone England, assignor to United Kingdom Atomic Energy Authority, London, England
No Drawing. Filed Dec. 7, 1971, Ser. No. 205,733
Claims priority, application Great Britain, Dec. 23, 1970, 61,266/70
Int. Cl. C23c *11/10*
U.S. Cl. 117—46 CG **8 Claims**

1. A method of preparing nuclear fuel particles having kernels of oxide fuel, comprising the steps of pyrolytically depositing first, second and third coatings of carbon onto the oxide fuel kernels from hydrocarbon gas, the first coating being relatively thin and the second and third coatings relatively thick, the first and third coatings being of relatively high density and the second coating being of relatively low density and porous, the first coating being substantially impermeable to gases during the application of the second and third coatings.

3,846,155

FLAME RETARDANT PROCESS FOR CELLULOSICS

George M. Wagner, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.
Filed Apr. 17, 1972 Ser. No. 244,574
Int. Cl. B44d *1/44*
U.S. Cl. 117—62.2 **6 Claims**



1. A process for imparting flame retardant character to cellulose containing material which comprises

(1) impregnating a cellulose-containing material with an aqueous solution having a pH of from about 7 to about 9 and containing from about 10 to about 40 percent by weight of tetrakis(hydroxymethyl) phosphonium hydroxide compound;

(2) drying the thus impregnated material to about 0 to about 8 percent moisture retention, and

(3) exposing said dried material to an atmosphere containing at least about 50 percent by volume of gaseous ammonia in an enclosed chamber for a period of from about 5 to less than about 45 seconds to polymerize the phosphonium hydroxide compound in and on the cellulose containing material.

3,846,156

PROCESS FOR PRODUCING A SOFT, DRAPABLE ARTIFICIAL LEATHER

Gerhard Seibert, Aachen-Bildchen, and Hans-Jurgen Pitowski, Miltenberg, Germany, assignors to Akzo N.V., Arnhem, Netherlands
No Drawing. Filed May 3, 1972, Ser. No. 249,765
Claims priority, application Germany, May 11, 1971, P 21 23 198.1
Int. Cl. B44d *1/44*
U.S. Cl. 117—63 **12 Claims**

1. In a process for producing an artificial leather by applying a polyurethane polymer solution in an organic solvent as a coating layer onto a textile substrate, bathing the coated layer with a nonsolvent for the polymer until the layer has coagulated and then washing and drying to obtain a porous elastomeric layer, the improvement which comprises:

carrying out said coating application with a solution of said polyurethane containing 10 to 30 parts by weight of polyurethane and 300 to 1500% by weight, with reference to the polyurethane, of sodium sulfate in 90 to 70 parts by weight of an organic solvent which is miscible with water and which is a nonsolvent for sodium sulfate, the viscosity of said solution being at least 20 poises, measured at 20° C.; and

subsequently washing out said solvent and said sodium sulfate from the coagulated layer and drying to form an elastomeric coating uniformly permeated with both micropores and macropores.

3,846,157

PROCESS FOR PRODUCING PEWTER EFFECTS

Ernst Halberstadt, Sunset Island, Onset, Mass. 02558
No Drawing. Filed May 8, 1972, Ser. No. 251,049
Int. Cl. B44c *1/20;* **B44d** *1/44*
U.S. Cl. 117—64 R **1 Claim**

1. The process of imparting a pewter-like surface to a base material which comprises mixing a coating of clear liquid lacquer-like binder with powdered graphite in proportions in the range of 13 to 26 parts by weight of binder to one part of graphite and in a relationship to produce free graphite in the coating when dried, applying the coating to the base material, drying the coating to leave free graphite therein, and polishing the coated material using the free graphite in the coating as a buffer.

3,846,158

FLUSHABLE, PRE-MOISTENED WIPERS

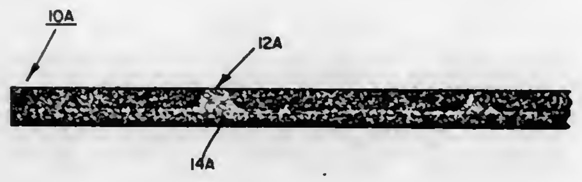
Kosta O. Vasilyadis, Newark, Del., assignor to Scott Paper Company
Filed June 15, 1972, Ser. No. 263,145
Int. Cl. B05c *9/04*
U.S. Cl. 117—68.5 **11 Claims**

1. A flushable, pre-moistened wiper capable of being packaged in a wet condition for a long period of time without disintegrating, said wiper comprising:

A. a web of soft, flexible, absorbent fibrous material having opposed major surfaces, said web including a fiber weight of at least 50% of short cellulosic fibers of a papermaking length less than ¼ inch;

B. two water-insoluble adhesive distributions associated with said web;

(1) one water-insoluble adhesive distribution being distributed over one major surface of the web in a pattern of discrete islands separated by corridor regions, said islands covering more than 50 percent of the surface area of said web and extending at least partially through the thickness of the web for enhancing the wet-tensile strength of said web to permit use of said web in a wet condition without mechanical disintegration and for aiding in stabilizing surface fibers of said web, said web mechanically disintegrating substantially in said corridor regions when flushed within the vortex of a conventional household toilet system; and



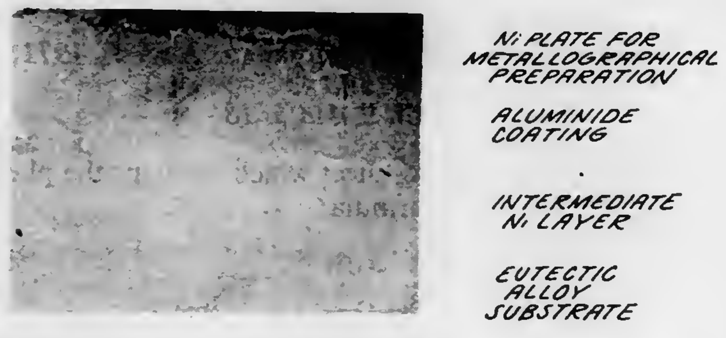
(2) the other water-insoluble adhesive distribution disposed uniformly over the planar extent of the web and associated with at least the other major surface of said web which is opposed to said one major surface, said other water-insoluble distribution extending at least partially through the thickness of said web and having a solids weight of no more than 5% based on the dry weight of the fibers in said web; whereby said other adhesive distribution aids in providing structural integrity to said web during use, permits mechanical distintegration of the web once said web is subjected to mechanical agitation of the type encountered in conventional household toilet systems, and stabilizes the fibers on at least said other major surface of said web to enhance the abrasion resistance of said other major surface; and

C. a moisture content in said web of from between about 100% and about 350% by weight based on the dry weight of the finished web.

3,846,159

EUTECTIC ALLOY COATING

Norman S. Bornstein, West Hartford, and Edwin H. Kraft, Hebron, Conn., assignors to United Aircraft Corporation East Hartford, Conn.
Filed Aug. 18, 1972, Ser. No. 281,868
Int. Cl. C23c *9/00, 17/00*
U.S. Cl. 117—71 M **16 Claims**



1. A method for depositing an oxidation erosion resistant coating on a nickel base directionally solidified eutectic type alloy comprising, in sequence, the steps of:

depositing an intermediate coating layer of nickel, cobalt or nickel-cobalt alloy on said substrate;

diffusion heat treating the intermediate metal layer either separately or as part of the subsequent chromizing step to diffuse the intermediate metal into the eutectic alloy substrate;

chromizing the surface of the intermediate coating layer;

diffusion heat treating either separately or as part of the subsequent aluminizing step to establish a concentration gradient across the intermediate layer with the initial chromium content at the intermediate metal-eutectic interface not exceeding the maximum solubility of chromium in the eutectic phases;

aluminizing the surface of the chromium modified intermediate metal layer including a diffusion heat treatment at a temperature and for a time sufficient to effect an alloying reaction to form on an outer portion of said intermediate layer an outer layer of NiAl or CoAl substantially saturated with chromium and having any excess chromium precipitated therein.

3,846,160

PROCESS FOR ENHANCING THE ADHESION BETWEEN STEEL CORD AND A RUBBER COMPOUND

Hiroshi Hirakawa and Toshiyuki Sakai, Kanagawa-ken, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
No Drawing. Filed June 23, 1972, Ser. No. 265,752
Int. Cl. B32b *15/06;* **B44d** *1/42*
U.S. Cl. 117—79 **5 Claims**

1. A process for manufacturing steel cord reinforced rubber compirsing:

coating steel cord with a solution comprising a mineral oil and an organic acid salt of a higher aliphatic amine, said salt being present in an amount effective to promote adhesion between the steel cord and rubber;

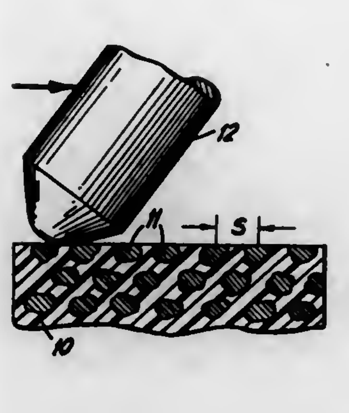
forming a composite body of said coated steel cord and rubber; and

vulcanizing said composite.

3,846,161

METHOD OF PRODUCING HARD TRANSPARENT SHEET-LIKE MATERIAL OR COATING

Alvin M. Marks, 100 Blair Road E., Oyster Bay Cove, N.Y. 11771
Original application Oct. 4, 1967, Ser. No. 672,903, now abandoned. Divided and this application July 14, 1971, Ser. No. 162,382
Int. Cl. C08f *3/30, 3/64;* **B44d** *5/00*
U.S. Cl. 117—93 **20 Claims**



1. In a method of producing a film, sheet or article of polymeric material having uniformly dispersed particles of hard material comprising the steps of

providing a fluid suspension of a polymeric material and hard particles corresponding to about 1 to 50% by volume of the suspension on the dry basis,

disposing said suspension in a predetermined configuration,

the improvement comprising rendering said film, sheet or article transparent by the steps of selecting hard particles having a hardness of at least 6 on the Moh's scale,

selecting said particles having a diameter ranging from 0.001 to 0.1 micron,

hardening said fluid suspension to form said transparent film, sheet or article,

whereby the average center to center distance between said particles is such that the ratio of the distance to the average diameter of the particles is over 1 and does not exceed 20.

3,846,162

METAL CARBONITRIDE COATINGS

John Allison Bloom, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
No Drawing. Filed Oct. 21, 1968, Ser. No. 769,385
Int. Cl. C23c *11/14, 13/00*
U.S. Cl. 117—106 R **4 Claims**

1. A process for coating a substrate with a solid solution carbonitride of a metal selected from silicon, boron, and the transition metals in Groups IVB, VB and VIB of the Periodic Table comprising:

heating said substrate to a temperature of 400° to 1200° C.; and

contacting the heated substrate, in the absence of halogen, with a vaporous organic compound having the generic formula $[(R)_2N]_nMe$ wherein Me is one of said metals, *n* is a valence of Me, and R is selected from hydrogen and hydrocarbon radicals having from 1 to about 18 carbon atoms, provided at least one R group is at least one of said hydrocarbon radicals.

3,846,163

METHOD OF MAKING ELASTOMER-BASED PRESSURE SENSITIVE ADHESIVE COATED ARTICLE

Donald O. Kest, 6258 Fairhaven Road, Mayfield Heights, Ohio 44124
No Drawing. Application May 17, 1971, Ser. No. 144,293, now Patent No. 3,743,616, which is a continuation-in-part of abandoned application Ser. No. 843,793, July 22, 1969. Divided and this application May 4, 1973, Ser. No. 357,082
Int. Cl. C09j *3/14, 3/16, 3/26*
U.S. Cl. 117—122 PA **22 Claims**

1. A process for making an elastomer-based, pressure sensitive adhesive coated article having an improved balance of physical and chemical properties including improved peel adhesion, tack and creep resistance together with the capability to selectively vary said characteristics, which comprises reacting

a reactive component having reactive functionality and which includes

a liquid diene telechelic polymer material having an average of at least about 1.6 essentially terminal, reactive functional groups per polymer molecule,

each of said essentially terminal functional groups being attached to one of the last three carbon atoms at an end of the polymer molecule with

a coreactive component having coreactive functionality capable of reacting with said reactive functionality and which includes

an organic coreactant material capable of coreacting with said reactive functional groups of said diene telechelic polymer material,

said coreactant material having an average number of coreactive functional groups greater than one,

said coreactive functional groups being reactive with with the reactive functional groups of the diene telechelic polymer material to increase the average molecular weight and modify the molecular structure of the diene telechelic polymer material,

the ratio of coreactive functional groups to reactive functional groups being in the range from about .75 to 1 to about 1.2 to 1,

in the presence of

a tackifying resin material,

to form an elastomer base material in the presence of said tackifying resin material,

said tackifying resin material being present in the amount of at least about 75 parts by weight of tackifying resin material per 100 parts by weight of said elastomer base material,

said tackifying resin material being sufficiently compatible with said elastomer base material that said tackifying resin material is soluble in said reactive component at 25° C.,

'so that said tackifying resin renders said elastomer base material tacky,

the reacting of said reactive component with said coreactive component in the presence of said tackifying resin including the steps of mixing said reactive component with said coreactive component in the presence of said tackifying resin material to form a mixture, applying said mixture to a substrate, and then curing said mixture by heat in situ on said substrate.

3,846,164

METHODS OF MANUFACTURING POLYESTER RESINS IMPREGNATED FIBROUS COMPOSITIONS

Michel Lagache, Claude Ranson, and Nicole Tillon, Billancourt, France, assignors to Regie Nationale des Usines Renault, and Rhone Progil, both of Paris, France

Filed Apr. 20, 1972, Ser. No. 245,825

Claims priority, application France, Apr. 30, 1971, 7115551

Int. Cl. B32b *17/04;* **C08f** *21/00*

U.S. Cl. 117—126 GB **8 Claims**

1. A method of manufacturing fibrous compositions impregnated with synthetic resins comprising the steps of:

(a) impregnating from 10–70 parts by weight of reinforcing fibers with from 90–30 parts by weight of a polymerizable composition which has been prepared by

(b) mixing in parts by weight 100 parts of a polymerizable unsaturated polyester of a carboxylic acid, 0.5 to 2 parts of an initiator for the polymerization of said polyester, 0.5 to 4 parts of one or more alkaline earth metal oxides, 1 to 10 parts of a mineral or a compound comprising in its chemical structure water of crystallization and adapted to release the water of crystallization in the composition when the composition is heated; and

(c) heating the resulting impregnated product at a temperature of 50° to 100° C. for a period of 2–20 minutes.

3,846,165

METHOD OF APPLYING AN ANTI-REFLECTIVE COATING ON A SEMICONDUCTOR LASER

Michael Ettenberg, Freehold, N.J., and Stephen Lee Gilbert, Newtown, Pa., assignors to RCA Corporation

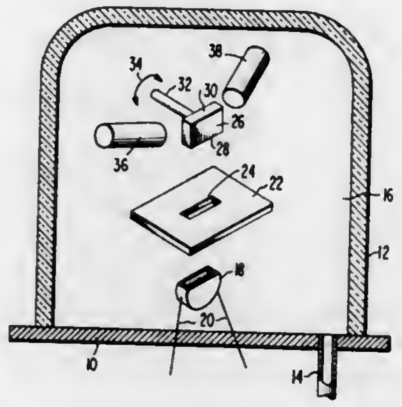
Filed Aug. 21, 1972, Ser. No. 282,273

Int. Cl. H01l *7/00*

U.S. Cl. 117—201 **8 Claims**

1. In a method of applying an anti-reflective coating wherein the improvement comprises the steps of

coating an end surface of a semiconductor laser with an anti-reflective material in a manner so as to progressively increase the thickness of the layer of the material,



measuring the radiant energy output of the laser during the coating as the thickness of the coating increases, and

stopping the coating when a desired output is achieved.

3,846,166

METHOD OF PRODUCING MULTILAYER WIRING STRUCTURE OF INTEGRATED CIRCUIT

Atsushi Saiki, Tokyo, Takaaki Mori, Ome, Seiki Harada, Hachioji and Kikuji Sato, Kokubunji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 25, 1972, Ser. No. 291,570

Claims priority, application Japan, Sept. 25, 1971, 46/74,851

Int. Cl. B44d *1/18*

U.S. Cl. 117—212 **19 Claims**

1. A method of producing a multilayer wiring structure for an integrated circuit, comprising the steps of:

(a) forming a first wiring conductor layer of a predetermined pattern on the surface of a substrate;

(b) forming a resin layer on the resulting entire exposed area of said substrate and on said wiring conductor layer formed on said substrate;

(c) forming, on said resin layer, a metallic film which is selectively etched to form openings of a predetermined shape at predetermined positions for connection between the wiring conductor layers;

(d) providing openings at predetermined positions in said resin layer using said metallic film as a mask by physically etching said resin layer with a plasma discharge atmosphere, said openings reaching said wiring conductor layer located beneath said resin layer;

(e) removing said metallic film formed by the step (c) with an etchant; and

(f) forming a second wiring conductor layer of a predetermined pattern, which is electrically and mechanically connected with the exposed parts of said first wiring conductor layer partially exposed through the step (d) and which extends on said resin layer formed by the step (b).

3,846,167

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

Hisayuki Higuchi, Kodaira, and Michiyoshi Maki, Kokubunji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 30, 1971, Ser. No. 203,384

Claims priority, application Japan, Dec. 4, 1970, 45/106,832

Int. Cl. B44d *1/14, 1/18*

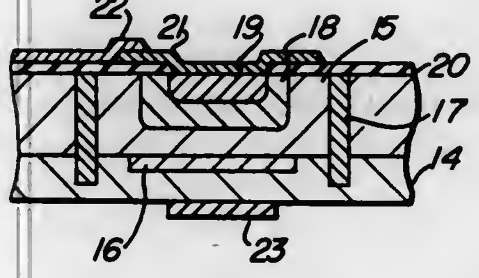
U.S. Cl. 117—212 **14 Claims**

1. A method of manufacturing a semiconductor device comprising the steps of

(a) providing a semiconductor substrate comprising at least one NPN transistor and an insulating layer having apertures for exposing part of the emitter region and base region of said transistor, respectively, said insulating layer covering said transistor,

(b) forming a metal layer on said exposed emitter region and on said exposed base region, respectively, and on at least a portion of said insulating layer adjacent said exposed regions, said metal layers being capable of being etched electrolytically,

(c) immersing said substrate and an electrode apart from each other in a solution capable of electrolytically etching said metal layer, and applying a predetermined magnitude of voltage between the collector of said transistor and said electrode for a predetermined period of time in such a direction as to maintain said collector positive with respect to said electrode, thereby accomplishing an electrolytic etching process, said voltage being relatively high but sufficiently low to apply to the PN junction between said collector and said base a voltage not exceeding the rated reverse breakdown voltage of said PN junction, said period of time being so long that said metal layers are electrolytically etched by a current which flows when said PN junction is ruptured by said applied voltage; whereby the metal layers on the emitter and the regions are retained or removed depending on whether said PN junction is capable of enduring said applied voltage.



(d) and forming on said insulating layer wiring conductor layers having a portion extending to a point where said wiring conductor layers are capable of connecting with the retained metal layers respectively on the base and emitter regions whereby the conductor layers are connected only with the base and emitter regions of the transistor whose PN junction between said collector and base regions is capable of enduring said rated reverse breakdown voltage.

3,846,168

METHOD OF FORMING BONDABLE SUBSTRATE SURFACES

Glenn V. Elmore, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed July 2, 1973, Ser. No. 376,105

Int. Cl. B44d *1/20;* **C23b** *5/62;* **C23f** *1/00*

U.S. Cl. 117—213 **11 Claims**

1. A method for preparing a printed circuit board with improved adhesion between the conductor metal and a nonconductive substrate comprising the steps of:

(a) precleaning a sheet of aluminum foil in a sodium hydroxide (NaOH) solution,

(b) rinsing the aluminum foil in water,

(c) treating the aluminum foil in a 50% solution of nitric acid (HNO_3),

(d) rinsing the aluminum foil in water,

(e) treating the aluminum foil in a solution of zinc oxide (ZnO), cupric oxide (CuO), and sodium hydroxide (NaOH),

(f) rinse in de-ionized water,

(g) dry the aluminum foil,

(h) laminate the treated aluminum foil to a dielectric substrate material,

(i) remove zinc and aluminum from the substrate by immersion in an etching bath,

(j) catalyze the substrate for electroless metal deposition, and

(k) electroless plate the catalyzed substrate with conductive metal to the desired thickness.

3,846,169

METHOD OF TREATING SEMICONDUCTOR MATERIALS CONSISTING OF III–V COMPOUNDS

Daniel Diguet and Loic Henry, Herouville-St.-Clair, France, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed Aug. 14, 1972, Ser. No. 280,423

Claims priority, application France, Aug. 18, 1971, 7130095

Int. Cl. C23b *5/62*

U.S. Cl. 117—213 **6 Claims**

1. In a method for making ohmic contact to the surface of a *p*-type III–V-compound semiconductor crystal wherein a contact metal is vapor-deposited onto the said surface to form a solid contact, the improvement comprising before vapor depositing the solid contact the said surface is brought into contact with liquid metal selected from the group consisting of gallium and mercury at a relatively lower temperature, next any liquid metal residue present is removed from the said surface, and thereafter the said solid contact metal is deposited on the said surface.

3,846,170

METHOD OF FORMING ELECTRICALLY INSULATING CHEMICAL CONVERSION COATING ON ALUMINUM WIRES

Kazuo Isawa, Masatsugu Maejima, Kuninosuke Kiuchi, Ken Yokota, and Masaru Ogawa, Tokyo, Japan, assignors to The Fujikura Cable Works, Ltd., Tokyo, Japan

No Drawing. Filed Sept. 11 1972, Ser. No. 288,173

Claims priority, application Japan, July 7, 1972, 47/68,065

Int. Cl. B44d *1/18;* **C23f** *7/26*

U.S. Cl. 117—218 **7 Claims**

1. A method of forming an electrically insulating coating of alumina and chromium oxide on the surfaces of aluminum or aluminum alloy wires which comprises passing the wires of aluminum or an aluminum alloy through a chemical conversion treating solution held at 80 to 110° C. containing sodium carbonate and sodium chromate in a concentration of 20 to 200 grams per liter of water and in which the weight ratio of sodium carbonate to sodium chromate ranges from 10:5 to 10:10 to form an electrically insulating coating of alumina and chromium oxide on the wires.

3,846,171

GASEOUS DISCHARGE DEVICE

Bernard W. Byrum, Jr., Toledo, and Roger E. Ernsthausen, Luckey, Ohio, assignors to Owens-Illinois, Inc.

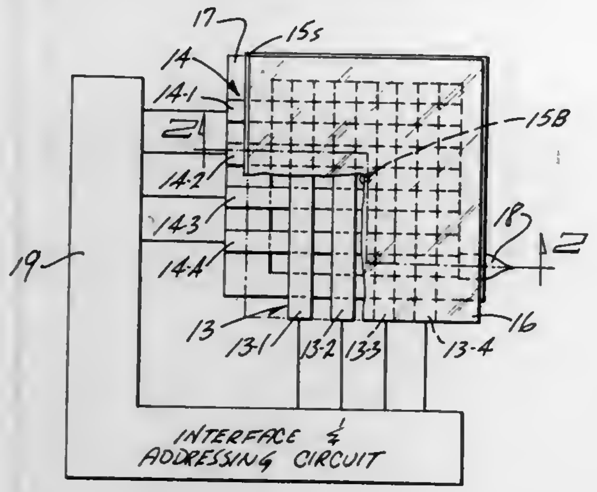
Continuation-in-part of abandoned application Ser. No. 76,229, Sept. 28, 1970. This application Oct. 26, 1972, Ser. No. 301,104

Int. Cl. H01j *17/04, 61/06*

U.S. Cl. 117—223 **21 Claims**

1. In a gaseous discharge display/memory device comprising an ionizable gaseous medium and at least one dielectric charge storage member in contact with the gaseous medium and at least one electrode insulated from the gaseous medium by a dielectric member, the improvement

wherein the portion of the dielectric member contacting the gaseous medium consists of at least one oxide of Be,



Ca, Sr, Ba, or Ra, in an amount sufficient to increase the uniformity of the operating voltages of the device.

3,846,172

ONE STEP METHOD FOR REMOVING WATER-INSOLUBLE COATINGS APPLIED TO A SUBSTRATE

Charles G. Fossati, 1175 Grayton, Grosse Pointe Park, Mich. 48224

No Drawing. Continuation-in-part of abandoned application Ser. No. 228,380, Feb. 22, 1972. This application Apr. 12, 1973, Ser. No. 350,401

Int. Cl. B08b *7/00*

U.S. Cl. 134—4 **37 Claims**

1. A method for removing a water insoluble coating from a substrate to which the coating is normally adherent which comprises:
- (a) depositing on said substrate a barrier coating of a water soluble material;
- (b) effecting the accumulation on said barrier coating of said water-insoluble coating;
- (c) effecting the removal of said water-insoluble coating by subjecting said coated substrate to the action of an aqueous solution containing a water soluble barrier coating material which solution, upon subsequent drying, redeposits said water soluble barrier coating on said substrate, the temperature of said solution being in the range of about 170°–205° F. and the period of time of subjecting said substrate to said action being a time sufficient for the temperature of said substrate to approach that of said solution; and
- (d) drying said substrate to effect said redeposition.

3,846,173

PROCESS FOR CLEANING OF OIL-LADEN METAL WASTE TO RECOVER THE METAL AND TO RECLAIM THE OIL

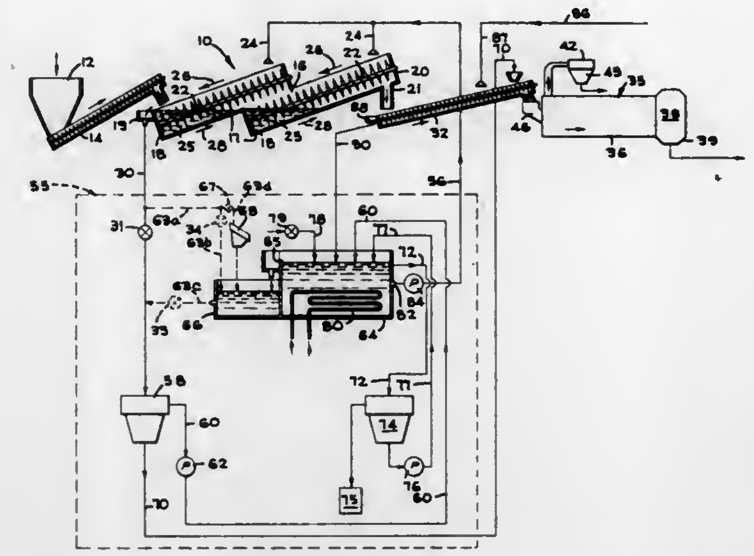
John Kenneth Ihrig, Glenwood, Ill., assignor to FMC Corporation, San Jose, Calif.

Filed Mar. 16, 1973, Ser. No. 342,014

Int. Cl. B08b *3/08, 3/10;* **C23g** *1/36*

U.S. Cl. 134—10 **22 Claims**

1. A continuous non-batch process for cleaning oil-laden metal waste to recover the metal and to reclaim the oil carried by the metal waste, comprising the steps of:
- (a) washing the metal waste with detergent, and effecting relative movement between the waste and the detergent to create a counter-current therebetween;
- (b) separating oil and detergent from the wash residue to leave a sludge containing moisure and dirt particles;



- (c) mixing the sludge with the washed metal waste; and
- (d) drying the mixture of sludge and metal waste.

3,846,174

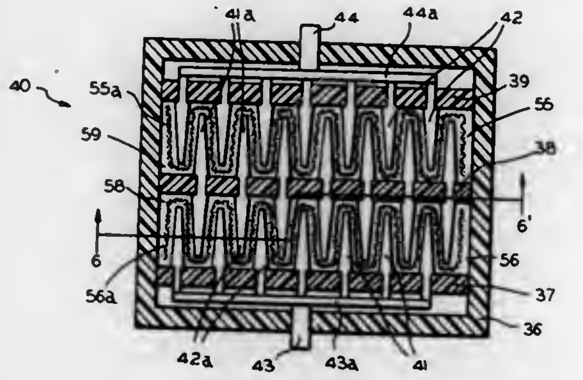
PROPORTIONED CURRENT BATTERY

Edward L. Barrett, 506 Malden Ave., La Grange Park, Ill. 60525

Filed Apr. 11, 1973, Ser. No. 350,009

Int. Cl. H01m *35/04*

U.S. Cl. 136—6 R **8 Claims**



1. An electrical battery comprising at least one cell including a plurality of positive plates interleaved one-for-one with a plurality of negative plates, with all plates immersed in an electrolyte, each plate having a current collection element at one end of the plate, and each plate being tapered in thickness from a thick portion adjacent the current collection element of the plate to a thin portion at the opposite end of the plate, the thin portion of each plate being aligned opposite the thick portion of each adjacent plate with the surface of each plate approximately parallel to the surface of each adjacent plate.

3,846,175

STORAGE BATTERY

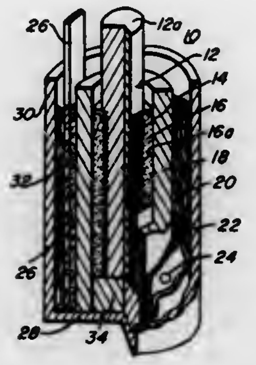
Ramesh R. Desai, New Providence, N.J., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Jan. 18, 1968, Ser. No. 698,782

Int. Cl. H01m *35/04*

U.S. Cl. 136—14 **9 Claims**

1. A substantially gas-tight maintenance-free cell comprising a sealed housing, a substantially cylindrical positive support disposed within said housing, said support having undulations in the surface thereof to increase the surface area, porous positive active material formed as a cylinder surrounding said support and filling the undulations thereof, cylindrical porous separator material surrounding said positive material and having communicating interstices therein, a perforate, lead, substantially cylindrical negative support, porous negative active material on the surfaces of said negative support, said negative support and negative material surrounding said separator, said negative active material having electrical capacity substantially in excess of the electrical capacity of said positive active material, electrolyte substantially filling the interstices in said separator material and said active materials, the radial thickness of said positive active material being sufficient to provide a layer of unoxidized material completely covering said positive support, irrespective of the state of charge of said battery, and spaced electrical terminals externally disposed in said housing and electrically communicating with said positive and negative supports, respectively.



3,846,176

FUEL CELL ENCASED IN MOLDED PLASTIC MATERIAL

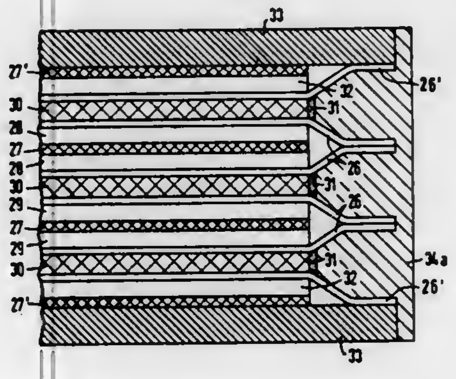
Dieter Kühl, Bubenreuth, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Jan. 19, 1970, Ser. No. 3,794

Claims priority, application Germany, Jan. 18, 1969, P 19 02 392.8

Int. Cl. H01m *27/00, 27/02*

U.S. Cl. 136—86 R **12 Claims**



1. Fuel cell comprising a substantially planar support frame forming a chamber for receiving liquid electrolyte therein and, superposed on each side of said support frame, a substantially planar diaphragm member, a substantially planar electrode, a substantially planar cover plate member, and a substantially planar spacer sandwiched between and completely covered by one of said diaphragm members and said cover plate member, said substantially planar spacer having voids therein thereby forming with said electrode and cover plate a chamber for receiving reactant gas therein, said diaphragm member having edges extending beyond the edges of the electrode and the spacer, a bonding agent cementing the edges of each of said diaphragm members to each other so as to enclose at least one of the chambers therewithin, a layer of additional bonding agent disposed across the edges of at least one of the other of said chambers for sealing the same, and a casing of molded plastic material surrounding the superposed components.

3,846,177

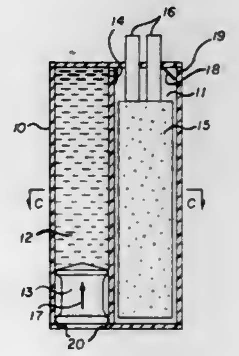
DEFERRED ACTION BATTERIES

Robert E. Mauch and Robert I. Sarbacher, Santa Monica, Calif., assignors to John C. Bogue, Santa Monica, Calif.

Continuation of application Ser. No. 257,643, May 30, 1972. This application Feb. 27, 1974, Ser. No. 446,481

Int. Cl. H01m *21/10*

U.S. Cl. 136—114 **15 Claims**

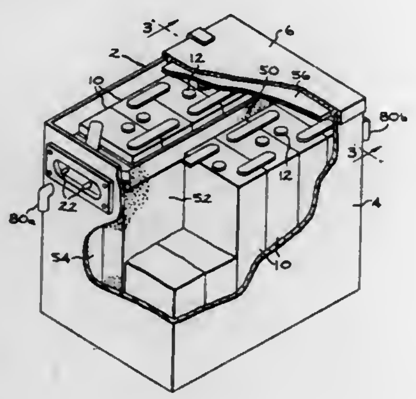


1. A reserve battery that remains in an inactive state until activated comprising:
- (a) a battery case having an electrode compartment;
- (b) battery electrodes housed in said electrode compartment;
- (c) an electrolyte container;
- (d) an electrolyte stored in said electrolyte container;
- (e) means to attach said electrolyte container to said battery case;
- (f) means to isolate said electrolyte from said electrodes when said electrolyte container is attached to said battery case to keep said reserve battery in said inactive state until activated;
- (g) a first battery terminal formed by said battery case;
- (h) a second battery terminal comprising a hollow member passing through one end of said battery case;
- (i) means to insulate said hollow member from said battery case;
- (j) a gas vent valve located in said battery case; and
- (k) means for transferring said electrolyte, under pressure, from said electrolyte container to said electrode compartment when said electrolyte container is attached to said battery case to thereby activate said battery, said electrolyte is stored in a frangible envelope inside said electrolyte container and wherein said means to attach said electrolyte container to said battery case includes means for removably attaching said electrolyte container to said battery case, said means for removably attaching said battery case comprises a hollow channel member extending from one end of said electrolyte container, said hollow channel member having a hollow tube passing therethrough and being so designed that said hollow channel member can be removably secured inside said hollow member of said battery case, said hollow tube extending into said battery case when said hollow channel member of said electrolyte container is secured inside said hollow member of said battery case.

3,846,178

SYSTEM FOR ABSORPTION OF EXPLOSIVE ENERGY BY PRESSURE MITIGATION

John M. Evjen, Gainesville, and Jerry Herrin, Alachua, Fla., assignors to General Electric Company
Filed May 30, 1972, Ser. No. 257,694
Int. Cl. H01m *1/04*
U.S. Cl. 136—166 **10 Claims**



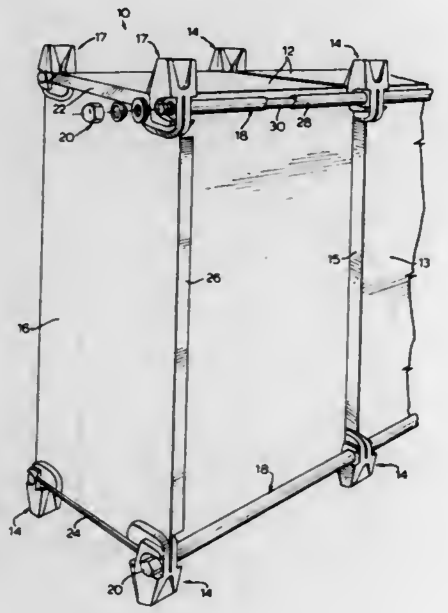
1. A system for absorbing excessive pressures resulting from explosive forces generated by exploding material comprising.

(a) a container;
(b) a housing disposed in said container and occupying a first volume;
(c) a source of explosive material disposed in said housing;
(d) a second unfilled volume within said container and exclusive of said first volume;
(e) a compressible closed-cell material occupying a third volume within said container and exclusive of said first and second volumes, said third volume being interfaced with said second volume;
(f) venting means in said housing for permitting transmission of said explosive material from first volume to said second volume.

3,846,179

BATTERY CELL SPACER

Frank Donald Shaw, Toronto, Ontario, Canada, assignor to Saft Batteries Limited, Toronto, Ontario, Canada
Filed Sept. 11, 1972, Ser. No. 287,696
Claims priority, application Canada, Aug. 16, 1972, 149,520
Int. Cl. H01m *1/04*
U.S. Cl. 136—171 **7 Claims**



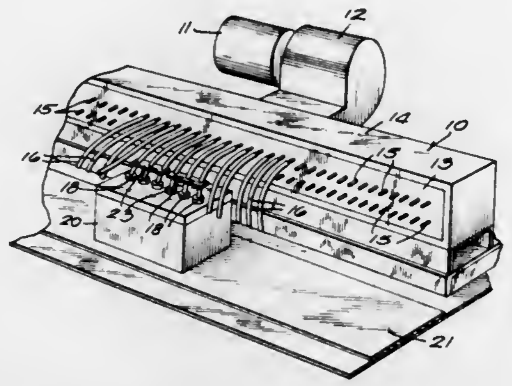
1. For use in an assembly of spaced apart voltaic cells, each of said cells having vertically disposed front and side walls, where said front walls are substantially aligned relative to one another; a spacer comprising:

first and second body portions disposed along a longitudinal axis of said spacer;
two vertically disposed and parallel sides of said first body portion being substantially perpendicular to a first surface of said second body portion;
a second surface of said second body portion carrying at least one inclined raised surface extending towards said first body portion and ending before said first body portion in at least one third surface which is substantially perpendicular to said first surface and to said sides, and which extends beyond at least one side of said first body portion; and
a hole located outwardly of said first surface and passing through said first body portion substantially perpendicular to said sides.

3,846,180

PROCESS FOR REDUCTION OF PRESSURE BUILD-UP IN BATTERIES

Warren Ladd Towle, Milwaukee, Edward Norman Mrotek, Greendale, and Robert Roland Wiethaup, Milwaukee, Wis., assignors to Globe-Union Inc., Milwaukee, Wis.
Filed June 14, 1972, Ser. No. 262,769
Int. Cl. H01m *1/08*
U.S. Cl. 136—176 **7 Claims**



1. A method of reducing pressure build-up in a fully charged battery capable of being activated by the addition of electrolyte which comprises a container having at least one cell compartment and at least one battery element composed of a plurality of positive and negative plates with separators disposed therebetween comprising installing said battery elements into said cell compartment, adding forming acid electrolyte to said cell compartment, forming said battery element, removing from about 70 to about 97 weight percent of said forming electrolyte based on the total weight of the forming electrolyte in said battery after completion of the forming step, contacting said plates with a determined quantity of oxygen by forcing air into said cell compartment to cause said oxygen to react with the active material of the negative plate in an amount sufficient to cause neutralization of a substantial portion of the forming acid electrolyte and installing sealing means into said battery to prevent the further ingress of air into said cell compartment.

3,846,181

SEMICONDUCTOR WAFER STABILIZATION PROCESS AND STABILIZATION SOLUTION THEREFOR

Dervin L. Flowers, Scottsdale, Ariz., assignor to Motorola, Inc., Chicago, Ill.
No Drawing. Filed Oct. 23, 1973, Ser. No. 408,776
Int. Cl. H01l *7/34*
U.S. Cl. 148—1.5 **5 Claims**

1. In a process of manufacturing semiconductor devices which includes the steps of forming P-N junctions

in a surface of a semiconductor substrate which junctions extend to the surface of said substrate and covering said junctions with a passivation layer on the surface of said wafer, the improvement which comprises the step of coating the semiconductor device with a complex silicate solution containing 1 to 30 grams per liter phosphorous pentoxide, 1 to 60 grams per liter boric anhydride, .005 to 5.0 grams per liter vanadium oxide, 0.01 to 50 milliliters per liter tetraethylorthosilicate and the balance an organic solvent.

3,846,182

METHOD OF FORMING A HYDROPHILIC COATING OVER AN ALUMINUM SURFACE

John C. Huff, Detroit, Frank A. Ludwig, Farmington, and Arthur G. Smith, Livonia, Mich., assignors to Ford Motor Company, Dearborn, Mich.
No Drawing. Filed July 5, 1973, Ser. No. 376,763
Int. Cl. C23f *7/26*
U.S. Cl. 148—6.2 **6 Claims**

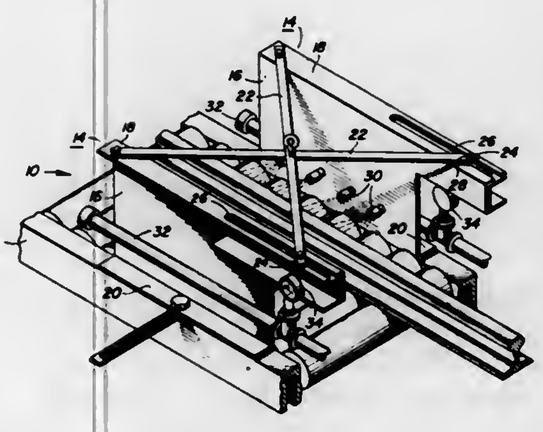
1. A method of forming a continuous, rough, porous and hydrophilic coating over a generally clean aluminum surface which comprises the steps of:

coating the aluminum surface by immersing it for a period of from 5 to 20 minutes in a first solution containing both an alkali metal carbonate and an alkali metal chromate or dichromate;
maintain said first solution at a temperature in the range of 170° F. to 210° F.;
maintaining the chromium to carbonate ratio of said first solution in a range from 0.05 to 0.5 during the treatment of said surface;
coating the aluminum surface treated by said first solution by immersing it for a period of 2 to 20 minutes in a second solution containing both an alkali metal oxide and silicon dioxide;
maintaining said second solution at a temperature in the range of from 160° F. to 210° F.; and
maintaining an alkali metal oxide to silicon dioxide ratio in said second solution in a range from 1:1.5 to 2:1 during treatment of said surface.

3,846,183

METHOD OF TREATING STEEL RAIL

Robert J. Henry, Bethlehem, Pa., assignor to Bethlehem Steel Corporation
Filed May 2, 1973, Ser. No. 356,535
Int. Cl. C21d *9/04*
U.S. Cl. 148—12 **9 Claims**

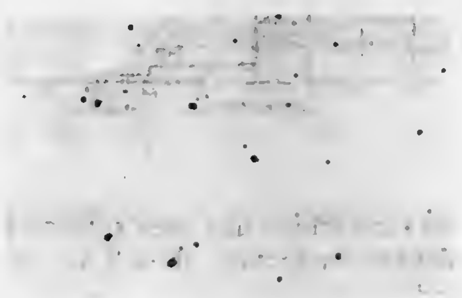


1. A method of treating a rolled steel railroad rail to improve its shelling resistance, comprising the steps of forming the said rail from a steel whose composition, by weight, comprises carbon between about 0.64 to 0.82%, manganese up to about 1.50%, phosphorus up to about 0.04%, sulfur up to about 0.05%, silicon up to about 1.25%, chromium up to about 2.5%, balance essentially iron, at a temperature above about 2000° F. and rapidly cooling said rail from a temperature above 1800° F. to at least a temperature between about 700 to 1000° F. at a rate sufficient to produce a fully pearlitic microstructure and an average pearlite spacing of less than about 1500 A.

3,846,184

WEAR RESISTANT STEEL

George F. Melloy, John Y. Riedel, and Paul P. Podgursky, Bethlehem, Pa., assignors to Bethlehem Steel Corporation
Continuation-in-part of application Ser. No. 753,167, Aug. 6, 1968, which is a continuation-in-part of application Ser. No. 628,887, Apr. 6, 1967, now abandoned. This application July 10, 1972, Ser. No. 270,389
Int. Cl. C04b *35/70;* **C22c** *39/14*
U.S. Cl. 148—36 **3 Claims**



1. A quenched and tempered ferrous die having improved wear resistance, as exemplified by a high resistance to scoring, checking and pick-up of the steel sheet and strip formed within said die, where said improved wear resistance is imparted by the presence of nitrides of titanium, columbium and/or zirconium, said die comprising a quenched and tempered ferrous alloy consisting essentially of, by weight, carbon between about 0.40 to 1.30%, manganese between about 0.10 to 3.00%, nitrogen between about 0.007 to 0.050%, about 0.02 to .25% total of at least one element selected from the group consisting of titanium, columbium and zirconium, with the balance essentially iron.

3,846,185

METHOD OF PRODUCING SEMI-HARD MAGNETIC Ni-Cu-Fe ALLOYS AND THE RESULTING PRODUCT

Yozo Nakajima and Shobei Ohtani, Sagamihara, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of abandoned application Ser. No. 855,117, Sept. 4, 1969. This application May 22, 1972, Ser. No. 255,723
Claims priority, application Japan, Sept. 11, 1968, 43/65,438
Int. Cl. H01f *1/00*
U.S. Cl. 148—120 **4 Claims**

1. A method of producing a semi-hard magnetic iron base alloy article comprising: providing an alloy body free of aluminum and titanium and consisting essentially of from 12 to 25% by weight of nickel, 3 to 20% by weight of copper and the remainder iron and small amounts of incidental impurities; annealing said alloy body at a temperature of from 500° to 650° C. for a time duration of from ½ to 6 hours; and cold working the annealed alloy body in a given direction sufficiently to reduce the area thereof from 10 to 80% to increase the residual magnetic flux density in said given direction of the cold-worked alloy body to at least about 10.5 kilogausses and establish therein a substantially rectangular hysteresis loop characteristic and impart thereto a coercive force of from 20 to 80 oersteds, and hardness not greater than 400 on the Vickers hardness scale.

3,846,186

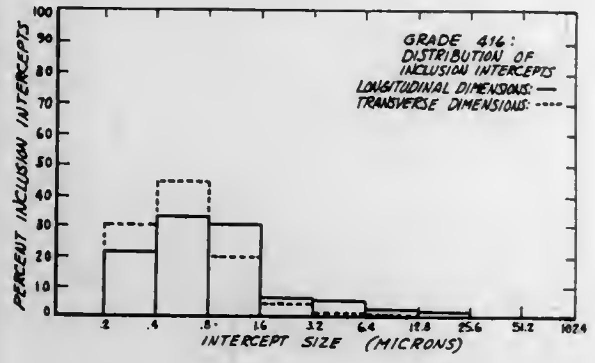
STAINLESS STEEL HAVING IMPROVED MACHINABILITY

Vijayakumar A. Tipnis, Parma, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Continuation of abandoned application Ser. No. 26,009, Apr. 6, 1970. This application Sept. 18, 1972, Ser. No. 289,589

Int. Cl. C22c *39/14, 39/26*

U.S. Cl. 148—37 **7 Claims**



1. Stainless steel which has been subjected to hot working to a thickness reduction of at least about 50% and which has improved machinability, said steel consisting essentially of: 0.01 to 1.2% carbon; 10 to27% Cr, 0 to 22% Ni, 0.3 to 10% Mn; 0.15 to 0.7% S and a total of 0.03 to 0.1% of element or elements selected from the class consisting of selenium and tellurium; balance iron and incidental impurities; said steel being characterized by absence of aluminum oxide above 0.002% of said oxide; and said steel being characterized by globular inclusions which are distributed throughout the steel in total quantity of 0.2 4% by volume and which are predominantly provided by and collectively contain Mn, S and said selected element or elements, the content of Mn in the steel being at least equal to 2.5 times the content of S, and the total of said selected element or elements being equal to at least 10% of the content of S.

3,846,187

SLAB AND PLATE COOLING METHOD FOR PRODUCING GRAIN ORIENTED ELECTRICAL STEEL

Akira Sakakura, Fumio Matsumoto, Kiyoshi Ueno, Kunihide Takashima, and Katuro Kuroki, Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Oct. 20, 1972, Ser. No. 299,308

Claims priority, application Japan, Oct. 22, 1971, 46/83,736

Int. Cl. H01f *1/04*

U.S. Cl. 148—112 **4 Claims**

1. In a method for producing a high magnetic flux density, grain oriented electric steel sheet or strip of the type wherein a steel ingot produced by conventional methods is broken down into a slab, the slab is hot rolled to form a plate, the plate is cold rolled in at least one step including a final cold rolling at a reduction rate between 65 to 95% to form a sheet and the sheet is decarbonized and finally annealed at a temperature above 800° C., the improvement wherein the steel into consists essentially of not more than 4.0% Si, not more than 0.085% carbon, 0.010 to 0.065% acid soluble Al, and not more than 0.012% N, the slab is heated to above 1200° C. to dissolve the AlN and then hot rolled such that the slab is cooled to a temperature between 1000 to 1250° C. in less than 200 seconds from the time the slab is removed from the heating step, and the resulting plate is cooled from 1000–1250° C. to 600° C. in less than 200 seconds.

3,846,188

METHOD FOR STABILIZING TITANIUM ALLOYS AGAINST HYDROGEN PICKUP AND STABILIZED TITANIUM ALLOY PRODUCED THEREBY

Robert G. Werkema, St. Louis County, and Robert E. Newcomer, St. Louis, Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

No Drawing. Filed June 9, 1972, Ser. No. 261,504

Int. Cl. C22f *1/18;* **C23f** *1/04*

U.S. Cl. 148—133 **4 Claims**

1. A titanium alloy capable of being chemically processed in a solution containing hydrogen ions without picking up an excessive quantity of hydrogen, said alloy consisting essentially of titanium, aluminum, vanadium and tin and being known as Ti-6Al-6V-2Sn, said alloy being in the beta or alpha-beta phases, said alloy having relatively low strength and high ductility as a result of having been annealed by heating to at least about 1300° F. but less than the solution treating temperature and by thereafter cooling relatively slowly, said alloy thereafter having been maintained between about 800° F. and about 1000° F. for at least approximately one hour to stabilize it against hydrogen pickup.

3,846,189

STAINLESS STEEL HAVING IMPROVED MACHINABILITY

Vijayakumar A. Tipnis, 10260 Pleasant Lake Blvd., Parma, Ohio 44130

Original application Apr. 6, 1970, Ser. No. 26,009, now abandoned. Divided and this application Sept. 18, 1972, Ser. No. 289,591

Int. Cl. C22c *37/00, 41/00*

U.S. Cl. 148—135 **6 Claims**

1. A method of making stainless steel of a martensitic grade to have improved machinability, comprising establishing a solidified stainless steel which is compositionally capable of transformation to martensite and which contains globular inclusions that are distributed therein and that comprise Mn, S and element or elements selected from the class consisting of selenium and tellurium, converting said steel to a shaped object, and thereafter treating said shaped object to characterize the steel thereof as capable of yielding short-breaking chips on machining, by heating the object to a temperature between the lower and upper critical points of the steel, for a period of at least one hour, and thereupon cooling the object.

3,846,190

METHOD AND APPARATUS FOR THE HIGH TEMPERATURE ANNEALING OF METALLIC COILS

Francis O. Raabe, Butler Township, and Frank A. Yossa, Butler, Pa., assignors to Armco Steel Corporation, Middletown, Ohio

Filed Apr. 9, 1973, Ser. No. 349,559

Int. Cl. C21d *1/00*

U.S. Cl. 148—1[illegible]5 **2 Claims**

1. A process for the high temperature annealing of silicon-iron strip having been processed to make cube-on-face silicon iron including the steps of providing said metallic strip with an alumina annealing separator, coiling said metallic strip, mounting said coil with its axis horizontally oriented within an annealing furnace and upon support means extending within the eye of said coil, said coil contacting only said support means within its eye and subjecting said coil to said high temperature anneal at a temperature of from about 1900° F. to about 2300° F. whereby to achieve said cube-on-face orientation.

3,846,191

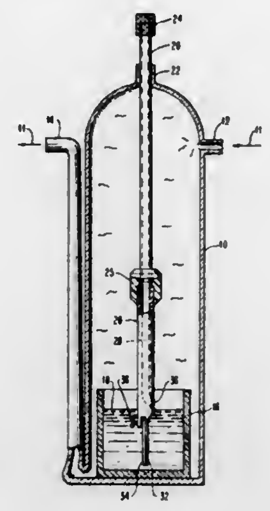
LIQUID PHASE EPITAXY OF $Al_xGa_{1-x}As$

Joseph M. Blum, Yorktown Heights, and Kwang K. Shih, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1971, Ser. No. 129,734

Int. Cl. H01l *7/38*

U.S. Cl. 148—172 **6 Claims**



1. In a method for controlling the composition of a single crystalline ternary compound such as $Al_xGa_{1-x}As$ during liquid phase epitaxial growth comprising the steps of:

providing an equilibrium liquid solution at an elevated temperature consisting of the components of

$$Al_xGa_{1-x}As$$

with an n-type dopant therein;

providing a single crystalline solid substrate in said liquid in equilibrium with said liquid at said temperature;

cooling the system of said liquid and said solid at a uniform rate to a predetermined temperature to grow by liquid phase epitaxy a layer of said n-type conductivity;

heating said solution to a temperature sufficiently above said predetermined temperature and maintaining such elevated temperature for sufficient time so as to perform a remelting of a thin surface layer of the epitaxial overgrowth, and

uniformly cooling said melt to the vicinity of said predetermined temperature to regrow another thin layer of epitaxial overgrowth over that layer obtained during said heating step, whereby such regrowth layer is of the order of a fraction to five microns thick.

3,846,192

METHOD OF PRODUCING SCHOTTKY DIODES

Helmuth Murrmann, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Erlangen, and Berlin, Germany

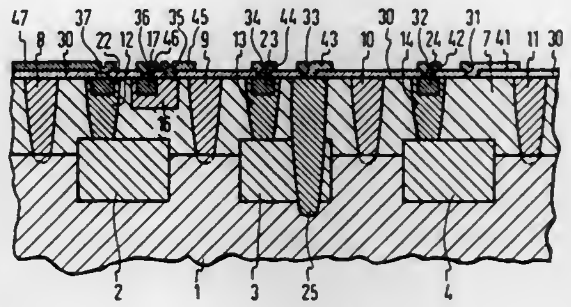
Filed Sept. 9, 1971, Ser. No. 178,964

Claims priority, application Germany, Sept. 10, 1970, P 20 44 863.9

Int. Cl. H01l *7/36, 29/48*

U.S. Cl. 148—175 **3 Claims**

1. A method for producing high and low threshold Schottky diodes in an integrated circuit, comprising diffusing a plurality of n-conducting zones highly doped with one of the group including arsenic or antimony into a p-conductive semiconductor substrate, diffusing a phosphorous doped region into one of the zones, epitaxially precipitating a n-conducting semiconductor layer over the surface of the substrate into which the n-conducting zones have been diffused, diffusing the phosphorus doped region into the layer up to the surface of the layer and arranging a metal contact on the surface of the layer in contact with the phosphorous dopant in the layer diffusing through the layer a second phosphorus doped region down to said one zone and a third phosphorus doped region down to a second of the zones, diffusing respective highly doped n-conductive regions into each of the second and third phosphorous doped regions, arranging respective metal contacts on the layer in contact with each of the n-conductive regions and arranging a metal contact on the layer above the second zone, the layer and the metal contacts arranged thereabove forming high and low threshold Schottky diodes and the metal contacts in contact with the n-conductive regions forming the other electrical connections of the respective Schottky diodes.



3,846,193

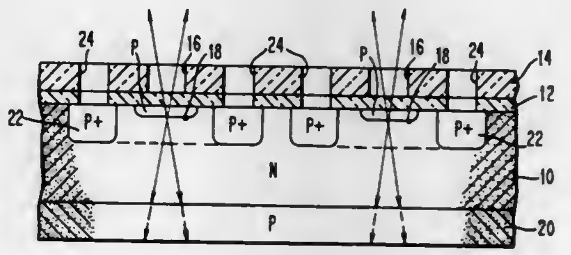
MINIMIZING CROSS-TALK IN L.E.D. ARRAYS

William N. Jacobus, Jr., Essex Junction, Vt., and San-Mei Ku, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 22, 1972, Ser. No. 265,122

Int. Cl. H01l *7/44*

U.S. Cl. 148—187 **13 Claims**



1. A process for the forming of an array of closely spaced light emitting devices comprising the steps of:

providing a semiconductor substrate having two major surfaces and selected from the group consisting of III–V elements doped with an impurity of n-conductivity type;

depositing a first layer of a first material on a first major surface of said substrate, said material adhering well to the said first surface of said substrate, said material being substantially transparent to the diffusion of an impurity of a p-conductivity type;

depositing a second layer of a second material on said first layer, said material being substantially impervious to the diffusion of an impurity of the p-conductivity type;

forming windows in said second layer;
diffusing an impurity of the p-conductivity type through said windows in said second layer and through said first layer; and
forming a light absorbing background by diffusing an impurity of said p-conductivity type into the second surface of said substrate.

3,846,194

PROCESS FOR PRODUCING LIGHTLY DOPED P AND N-TYPE REGIONS OF SILICON ON AN INSULATING SUBSTRATE

David Joseph Dumin, Ringoes, N.J., assignor to Inselek Inc., Princeton, N.J.

Filed Jan. 5, 1973, Ser. No. 323,339

Int. Cl. H01l *7/36*

U.S. Cl. 148—188 **12 Claims**

1. A method of producing lightly doped P and N-type regions of silicon on and insulating substrate comprising forming a layer of first type silicon on an insulating substrate, masking a portion of the surface of said layer, forming a layer of second type silicon containing a controlled amount of counterdopant on at least the unmasked portions of said layer of first type silicon, and heating the silicon layers to a temperature and for a time sufficient to drive a portion of the counterdopant into the unmasked region of the layer of first type silicon whereby a wafer is produced which has lightly doped regions of P conductivity and N conductivity and it can be used to make complementary types of PMOS and NMOS transistors.

3,846,195

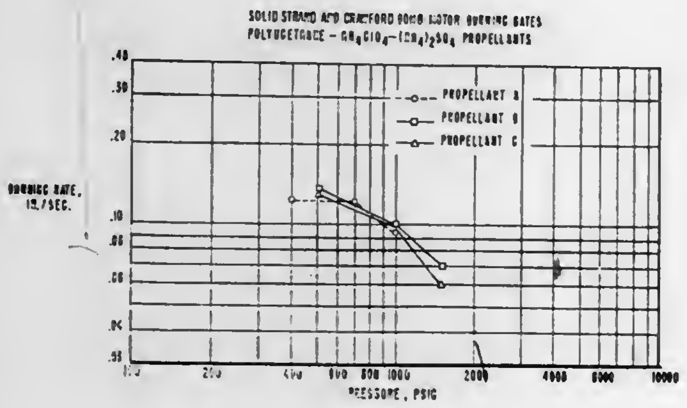
COMPOSITE POLYURETHANE PROPELLANTS WITH NEGATIVE PRESSURE EXPONENT OF AMMONIUM SULFATE

Gilbert A. Zimmerman, Sacramento, and Marshall L. Sherman, Fair Oaks, Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed Mar. 14, 1970, Ser. No. 25,606

Int. Cl. C06d *5/06;* **F02k** *9/06*

U.S. Cl. 149—19.4 **8 Claims**



1. A novel solid rocket propellant formulation comprising a cross-linked polyether or polyester polyurethane binder and ammonium perchlorate oxidizer; the improvement comprising the addition thereto of an effective negative pressure exponent producing amount of ammonium sulfate.

3,846,196

TECHNIQUE FOR SELECTIVE ETCHING OF GOLD AND ETCHANT THEREFOR

Donald Morley MacArthur, Berkeley Heights, and Peter Kenny Skurkiss, Bloomfield, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

No Drawing. Original application Sept. 1, 1972, Ser. No. 285,875, now Patent No. 3,816,317. Divided and this application Mar. 14, 1974, Ser. No. 451,014

Int. Cl. C23f *1/02*

U.S. Cl. 156—8 **4 Claims**

1. A technique for the selective etching of gold in the presence of palladium which comprises immersing a structure including gold and palladium patterned with a resist in an etchant solution having a pH greater than 10 comprising a ferricyanide solution having a molarity within the range of 0.01 to 1 and a cyanide solution in a strong base having a molarity within the range of 0.01 to 0.5.

3,846,197

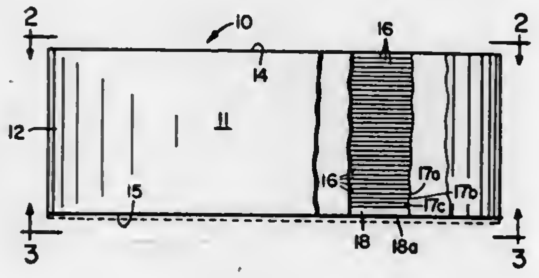
EXTRUSION DIE AND METHOD OF MAKING SAME

Robert F. Wiley, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 14, 1972, Ser. No. 280,508

Int. Cl. C03c *15/00*

U.S. Cl. 156—11 **5 Claims**



1. The method of making an extrusion die for extrusion forming of a material into a cellular member or body to be subsequently used as a core member for a catalytic converter or the like, such method comprising:
(A) providing a multiplicity of relatively thin plates or disks of a selected size and of a glassy material, each such plate having planar opposite surfaces;
(B) selectively etching almost through one of said plates in the direction normal to said planar surfaces thereof and from one of such surfaces towards the other while leaving adjacent to and beneath such other planar surface a continuous substantially thin and planar support layer of the plate material and thereby providing, in such plate and extending in planes parallel with said planar surfaces, a relatively narrow curved channel preferably concentric and parallel with the outer perimeter of the plate and spaced therefrom a selected distance and a repetitive pattern of relatively narrow and short straight-line interconnecting and non-linearly continuous or coextensive channels, some of which connect with said curved channel and groups of six of which channels intersect each other at substantially equal angles on the order of about sixty degrees and provide a common center axis of intersection of the center lines of the six channels of each said group of six channels with each such center axis being spaced substantially the same distance from the corresponding center axis of each of the similar adjoining groups of six channels, the walls of said pattern of channels being defined by the sidewalls of a multitude of closely and correspondingly spaced-apart columns having, where possible, corresponding planar cross-sectional geometric configurations generally those of rhombuses with acute oblique angles on the order of about sixty degrees;
(C) selectively etching completely through each of a succession of said multiplicity of plates and in the direction normal to said planar surfaces thereof a multiplicity of radiate passages having planar geometrically similar radiate configurations separated from each other and each having six radials with the center axes of such passages in each of such succession of plates being equally spaced from the center axes of each of the adjoining passages in such plate a distance corresponding to the distance between said center axes of said adjoining groups of six channels in said one etched plate, and with said radiate passages in each succeeding one of said succession of plates being geometrically similar to such passages in any immediately preceding one of such succession of plates but having smaller dimensions in the direction of the planes of said planar surfaces of the plates;
(D) selectively etching completely through a plurality of remaining ones of said multiplicity of plates and in the direction normal to said planar surfaces thereof of a multiplicity of circular passages each having a diameter substantially corresponding to the distance between the ends a pair of opposite ones of the radials of the largest ones of said radiate passages etched through said succession of plates and with the center axes of the circular passages through each of such plurality of plates equally spaced from the center axis of each of the adjoining passages in such plate a distance corresponding to the distance between said center axes of said adjoining radiate passages etched in said succession of plates;
(E) making a stack of said etched plates with the planar surfaces thereof abutting and with said center axes of the passages and channels etched therein generally axially aligned with each other, such stack comprising:
  (I) said succession of plates in its successive order with the plate having the largest dimensional passages therethrough at a first end of such succession and the plate having the smallest dimensional passages therethrough at the second end of the succession;
  (II) said plurality of plates with the planar surface of one of the end plates of such plurality remaining exposed and the planar surface of the other end plate of such plurality abutting against the planar surface of said plate at said first end of said succession of plates, and
  (III) said one plate with said one etched planar surface thereof abutting against the planar surface of said plate at the second end of said succession of plates and said other planar surface of such one plate remaining exposed;
(F) heating said stack of plates to fuse all of the plates of such stack into a homogeneous unitary body and then permitting such body to cool; and
(G) grinding or abraiding said other planar surface of said one plate and through said continuous planar support layer adjacent to and beneath such other planar surface to remove such layer and expose said etched channels provided in such one plate and thereby complete the making of said extrusion die.

3,846,198

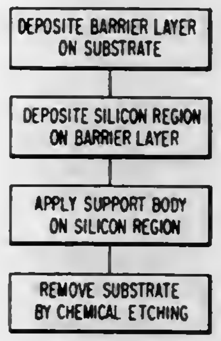
METHOD OF MAKING SEMICONDUCTOR DEVICES HAVING THIN ACTIVE REGIONS OF THE SEMICONDUCTOR MATERIAL

Cheng Paul Wen and Yuen-Sheng Chiang, Trenton, N.J., assignors to RCA Corporation, New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 293,804, Oct. 2, 1972. This application May 2, 1973, Ser. No. 356,322

Int. Cl. H01l *7/50*

U.S. Cl. 156—17 **9 Claims**


DEPOSITE BARRIER LAYER ON SUBSTRATE
DEPOSITE SILICON REGION ON BARRIER LAYER
APPLY SUPPORT BODY ON SILICON REGION
REMOVE SUBSTRATE BY CHEMICAL ETCHING

1. A method of making a semiconductor device comprising the steps of:
(a) forming on a surface of a substrate of single crystalline silicon a thin barrier layer of single crystalline P type conductivity silicon with the free carrier concentration being greater than 5×10^{19} cm.$^{-3}$,
(b) forming on said barrier layer a region of single crystalline silicon, said region being of a conductivity type or types required by the semiconductor device being formed, and
(c) removing said substrate by etching with a solution of potassium hydroxide and 1-propanol.

3,846,199

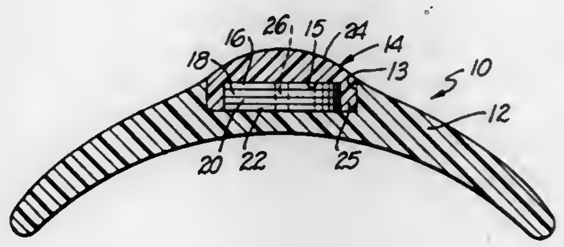
ARTIFICIAL EYE AND METHOD OF CONSTRUCTION

Quido A. Cappelli, Bronx, Calif., assignor to Danker & Wohlk, Inc., Uniondale, N.Y.

Original application June 3, 1971, Ser. No. 149,535, now abandoned. Divided and this application Oct. 25, 1972, Ser. No. 300,570

Int. Cl. B44d *5/06*

U.S. Cl. 156—61 **1 Claim**



1. A method of forming an artificial eye to match in color, configuration and depth effect a good eye of a patient comprising:
viewing the patient's good eye;
selecting from a group of transparent plastic discs a plurality of discs each having a top surface prepainted with a different color and design corresponding to colors and designs commonly found in the iris of the human eye, it being believed that an overlay combination of such selected discs will closely match the iris of the good eye in color, design configuration and depth effect;
covering said top surface of each selected disc with a liquid having an index of refraction substantially

corresponding to the plastic material forming said disc;

stacking said discs one atop the other and viewing said stack of discs through the top of a transparent plastic dome to check the appearance of the iris formed by an overlay combination of said selected discs so that one or more of said discs may be replaced if necessary to produce the desired effect prior to a fusing of said discs;

simultaneously subjecting said discs to heat and pressure to fuse them together in and to a cavity in a bottom of a transparent plastic dome to simulate the cornea and iris of an eye; and

casting said dome in the top of a sclera-shaped plastic base.

3,846,200

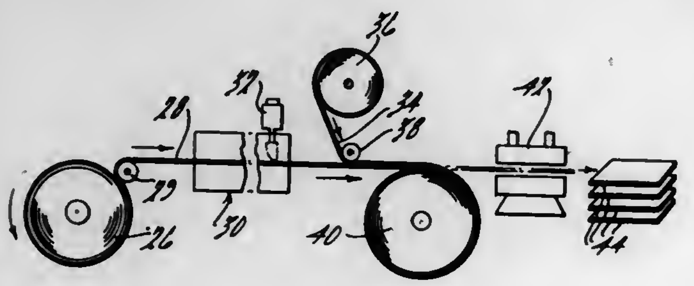
DECORATIVE COVERING AND METHOD FOR APPLYING DECORATIVE COVERING TO VEHICLE PANELS

Ralph G. Doerfling, Walled Lake, and Charles J. Motycka, Detroit, Mich., assignors to Detroit Gasket and Manufacturing Company, Oak Park, Mich.

Filed May 22, 1972, Ser. No. 255,797

Int. Cl. B29c *3/00*

U.S. Cl. 156—85 **7 Claims**



1. A process for applying a decorative plastic sheet on convex exterior vehicle panels comprising the steps of applying a heat-activatable adhesive film over substantially the entire undersurface of a heat-softenable decorative sheet, affixing strips of fastening means along at least a portion of the edges of said sheet to facilitate a securing of the terminal edge portions thereof against movement relative to a vehicle panel, heating said sheet to an elevated temperature at which said sheet is plastically deformable, stretching the heated said sheet to impart a contour therein of a magnitude in excess of the panel over which said sheet is applied, cooling the stretched said sheet to a temperature below the heat softening range thereof and in a manner to retain at least a portion of the excess of said contour therein and a memory of the original non-stretched configuration thereof, placing the contoured said sheet with said adhesive film positioned in overlying relationship against the surface of a vehicle panel, securing the terminal edge portions of said sheet against movement relative to said panel, heating said sheet to effect a heat softening and a contraction of said sheet in response to its memory into smooth and taut overlying relationship on said panel, continuing the heating of said sheet to effect an activation of said adhesive film and a bonding of said sheet to said panel, and thereafter cooling said sheet and said film.

3,846,201

ASSEMBLY AND METHOD FOR BONDING TREAD MATERIAL TO A TIRE BODY

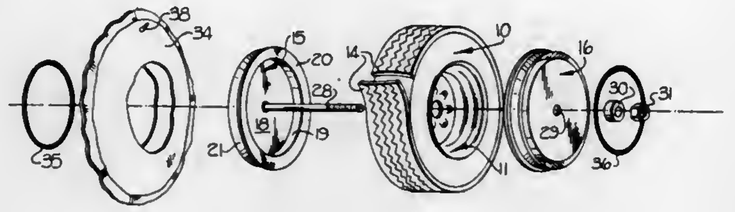
Homer L. Huskins, Salisbury, N.C., assignor to Brad Ragan, Inc., Spruce Pine, N.C.

Filed Nov. 2, 1972, Ser. No. 303,228

Int. Cl. B29h *5/04, 11/00, 17/36*

U.S. Cl. 156—96 **11 Claims**

1. A method of bonding previously cured elastomeric tread material to a previously cured elastomeric tire body which is particularly adapted for solid tires permanently mounted on wheels, the method comprising the steps of buffing the tread face of the previously cured tire body, encircling the buffed tread face with a bonding layer of uncured rubber, encircling the uncured rubber with a previously cured tread material, interposing the tire body between a pair of sealing discs each having a circular sealing lip, sealingly engaging the side walls of the tire bod with the lips of the discs, encircling the tire body and tread material with a flexible fluid impervious envelope which extends outside the sealing discs, sealingly engaging said lips of said discs with said envelope by exerting radially directed forces on portions of the envelope and pressing the envelope portions into engagement with said discs, and then adhering the tread material to the tire body by curing the interposed rubber while retaining the tread material and tire body in assembled relation with the envelope.



3,846,202

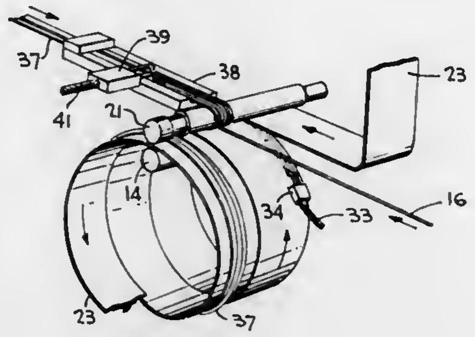
METHOD FOR MAKING REINFORCED FLEXIBLE TUBING

Robert H. Clarke, Warsaw, Ind., assignor to American Brattice Cloth Corporation, Winona Lake, Ind.

Filed May 30, 1972, Ser. No. 257,878

Int. Cl. B31c *13/00*

U.S. Cl. 156—143 **6 Claims**



1. A method of making reinforced flexible tubing comprising the steps of:

feeding an elongated tape about a tube forming guide to form a series of spirally wound tape convolutions having overlapping side portions;

adhesively securing together said overlapping side portions after the first one of said convolutions is first formed;

continuously feeding an elongated reinforced wire on to the outer surface of said tape inwardly of the opposite overlapping side portions thereof after said first tape convolution is so formed;

continuously feeding an elongated wearstrip in place over said reinforcing wire; and adhesively securing said wearstrip on to said outer surface of said tape.

3,846,203

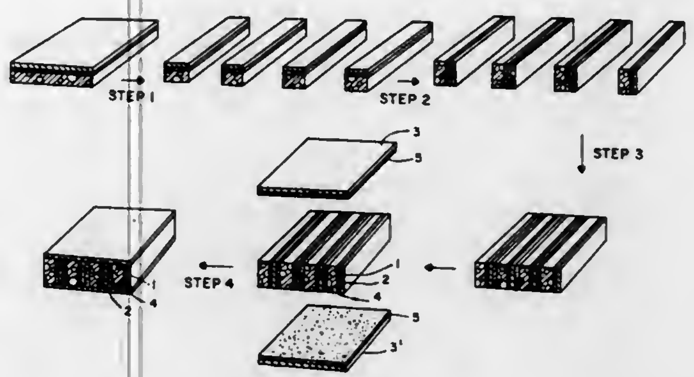
METHOD OF MAKING A SANDWICH PANEL CONSTRUCTION

Peter A. Immethun, Southfield, Mich., assignor to Ethyl Corporation, Richmond, Va.

Original application June 21, 1971, Ser. No. 155,101, now Patent No. 3,708,385. Divided and this application Aug. 23, 1972, Ser. No. 282,961

Int. Cl. B32b *31/00*

U.S. Cl. 156—265 **2 Claims**



1. A method of manufacturing improved sandwich panel construction which comprises (a) cutting aluminum foam slab, having a metal sheet bonded to at least one side, into pieces of substantially equal dimensions, said cutting being in a unidirection plane passing through said metal sheet, (b) preparing a laminate of said pieces by bonding said pieces with a thermoset adhesive, so that said metal sheet bonded sides are substantially parallel, and (c) preparing a sandwich panel construction by bonding two outer metal layers to opposite sides of said laminate such that said layers are substantially normal to said metal sheet sides and said metal sheet sides extend fully between said outer layers.

3,846,204

HEATING METHODS

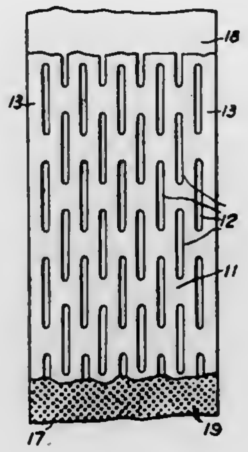
Paul Eisler, 56 Exeter Road, London, N.W. 2, England

Continuation-in-part of application Ser. No. 711,416, Mar. 7, 1968, now Patent No. 3,523,542, which is a continuation-in-part of application Ser. No. 293,953, July 10, 1963, now Patent No. 3,372,487, which in turn is a continuation-in-part of application Ser. No. 783,609, Dec. 29, 1958, now Patent No. 3,099,540. This application June 1, 1970, Ser. No. 42,084

Claims priority, application Great Britain, Jan. 7, 1958, 582/58

Int. Cl. B29c *19/06;* **B44d** *1/48*

U.S. Cl. 156—275 **4 Claims**



1. The method of heat processing at a temperature within a predetermined range a critical material to change its physical state between fluid and solid form without a sudden undesirable transition of state caused by temperatures outside said range, comprising the steps of providing a layer of said material, bringing into thermal contact with said layer a heating film occupied by an electrically conductive surface pattern uniformly distributed to provide a substantially constant temperature throughout the heating film, and passing an electric current through said surface pattern of such intensity to provide a temperature within said range in said layer of said material wherein the material is a liquid material requiring solidification produced by chemical reaction, including the step wherein the layer of material is provided on a durable carrier structure wherein the material is a layer of fluid paint containing a fluid medium and a solid film forming substance covering at least parts of said durable structure, and including the steps of covering the major part of the area of said heating film with said conductive surface pattern, and providing said current at a first intensity to raise the temperature at any point on the surface pattern in a range without the maximum at any point on the surface pattern reaching the boiling temperature of the fluid paint and subsequently at sufficient intensity to raise its temperature in a range without maximum at any point on the surface pattern reaching the temperaure of sudden hardening of the paint.

3,846,205

METHOD FOR PRODUCING LAMINATED MATERIALS OF FIBERS

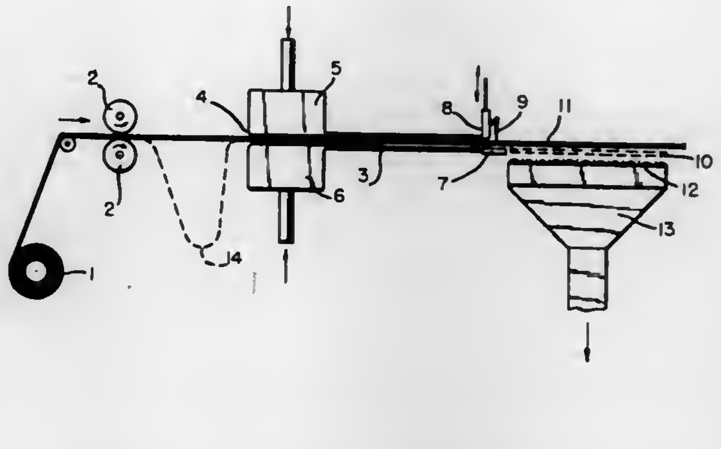
Masahide Yazawa, Tokyo, Japan, assignor to Polymer Processing Research Institute Ltd., Tokyo, Japan

Continuation-in-part of abandoned application Ser. No. 686,938, Nov. 30, 1967. This application Oct. 9, 1970, Ser. No. 79,707

Claims priority, application Japan, June 5, 1967, 42/35,819

Int. Cl. B32b *7/14*

U.S. Cl. 156—291 **14 Claims**



1. A method for producing a flexible gas permeable nonwoven material consisting of at least one web of split fibers which comprises arranging side by side the split fibers of at least one web of split fibers having a network structure, elongated lengthwise without substantial slacking and substantially parallel to each other; laying on the said web of split fibers a preformed solid shaped pattern of adhesive binder polymer which covers the surface of the said web of split fibers only locally those portions of said web which underly said shaped pattern of adhesive and; thereafter pressure adhering the resulting assembly to bind said adhesive and said web so as to leave loose and unfixed parts amid firmly fixed fiber parts, said shaped adhesive binder having a softening temperature range lower than the heat resisting temperature of said web said pressure-adhering being effected by heating said materials at a temperature lower than the heat resisting temperature of the said web but within the softening temperature range of the said adhesive binder.

3,846,206

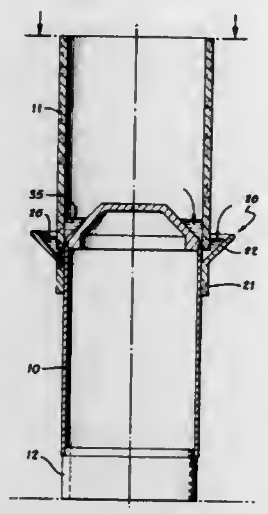
METHOD FOR BONDING CONCENTRIC TUBULAR ELEMENTS TO ONE ANOTHER

John H. Busma, Jr., Mountain View, and Curtis M. Romander, Los Altos Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed June 28, 1972, Ser. No. 267,220

Int. Cl. B32b *31/12*

U.S. Cl. 156—294 **3 Claims**



1. A method for bonding inner and outer tubular elements to one another in a concentric position, said method comprising providing a reservoir of viscous bonding material above the inner tubular element for application to the inner wall of the outer tubular element as the same is set into place above the inner element and is lowered thereover, said reservoir being supported by a cap set upon the inner tubular element, and with said inner wall acting to confine the material present in the reservoir; supporting a peripheral reservoir of the bonding material about the outer wall of said inner element by means of a slidably mounted collar for application of the bonding material to said wall as the collar is moved downwardly therealong, said outer wall serving to confine the bonding material present in the peripheral reservoir; and moving the collar downwardly along the inner element by pressing the same with the descending outer element, thereby simultaneously coating the adjacent walls to be joined as the respective inner and outer elements are brought into concentric registry along their full length.

3,846,207

APPARATUS FOR MAKING PLASTIC BUCKETS

Gene MacDaniel, Lithonia, and Howell T. McElvy, Decatur, Ga., assignors to Sweetheart Plastics, Inc., Wilmington, Del.

Original application Feb. 2, 1970, Ser. No. 7,955, now Patent No. 3,673,033. Divided and this application Apr. 17, 1972, Ser. No. 244,985

Int. Cl. B31b *3/02, 3/60*

U.S. Cl. 156—443 **9 Claims**

1. A container forming machine comprising a frame, a turret mounted for rotation on the frame,

a plurality of forms having side wall and bottom wall surfaces mounted on the turret and each adapted to receive a side wall blank about its side wall surface,

a first station on the frame adjacent the turret and means in that station for applying a blank to each form as each form enters said station,

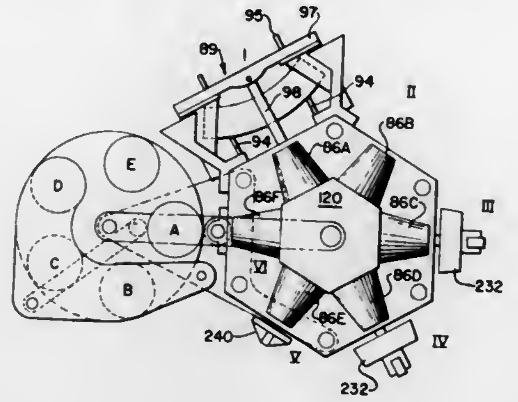
a magazine mounted on the frame in the first station for holding a side wall blank above the form in that station,

means for removing a blank from said magazine,

said means in the first station including said removing means and forming means for partially forming each blank into a cone and thereafter placing the partially formed conical side wall blank on the form in that station,

stop means mounted on each form for registering the blanks on them in the desired position,

heating and clamping means mounted on the frame in association with each form for heating the sides of the blank by positioning a radiant heater between facing surfaces of the blank to heat said facing surfaces to be lapped and thereafter clamping said facing surfaces together in lapped relation to form a lapped side seam for the container blank,



a second station on the frame disposed adjacent the first station in which station a bottom blank may be applied to the forms as they enter said station with the bottom including a peripheral flange lying in face to face contact with the inner surface of the side wall blank on the form over at least a portion of the axial extent of the flange when both side wall and bottom blanks are in place on the forms,

a heater mounted on the frame in a third station adjacent the turret and movable to engage at least the side wall blank on the turret to make it molten at the region where it engages the bottom as each form is in that station,

a forming tool mounted in a fourth station on the frame adjacent the turret for shaping and sealing the molten portion of at least the side wall while on the form and immediately after it is heated to precisely shape the union between the bottom and side wall,

and a fifth station adjacent the frame through which each form passes for removing the container on each form.

3,846,208

COMBINATION PIPE FUSION UNIT

Arthur H. McElroy, 2789 E. 45th Place, Tulsa, Okla. 74105

Continuation-in-part of application Ser. No. 121,791, Mar. 8, 1971, now Patent No. 3,729,360. This application May 15, 1972, Ser. No. 253,179

Int. Cl. B32b *35/00*

U.S. Cl. 156—499 **12 Claims**

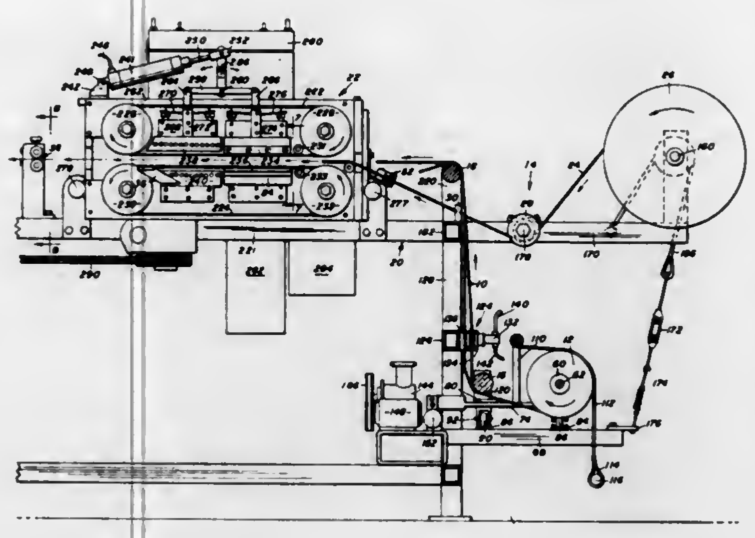
1. Pipe fusion apparatus for joining plastic pipe either coaxially in-line or at a selected angle to each other, comprising:

(a) frame means having a longitudinal axis;

(b) first pipe clamp means with its axis parallel to said longitudinal axis, said clamp fastened to said frame near a first end thereof;

(c) second pipe clamp means fixed near a second end of said frame for rigidly holding one pipe so that its axis is at a selected angle to and in a plane passing through the axis of said first clamp;

(d) third movable pipe clamp means slidably mounted on said frame between said first and second clamps thereof, said third clamp to retain another pipe at all times coaxial with said first clamp;



(e) means to longitudinally traverse said third clamp relative to said first clamp to provide said coaxial in-line pipe joints, and relative to said second pipe clamp to provide said angle type joints; and

(f) means positionable co-axial to said third clamp to heat the opposed pipe surfaces.

3,846,209

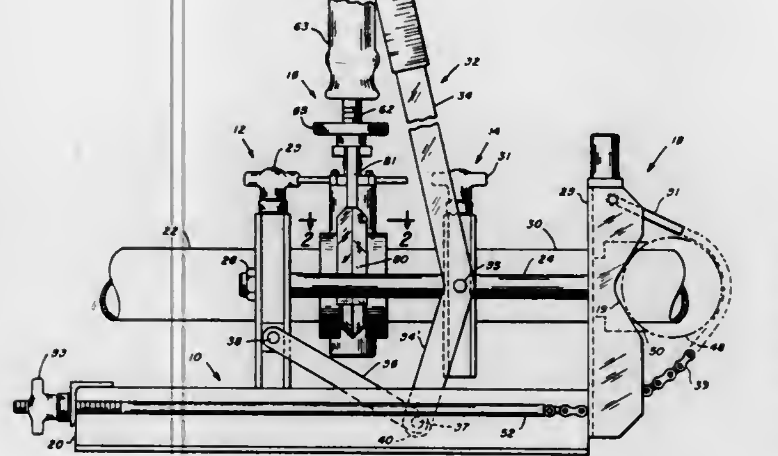
APPARATUS FOR APPLYING CLOSURE STRIPS TO PLASTIC FILM

H. Keith Howard, P.O. Box 649 or 939, N. College, Ulysses, Kans. 67880

Filed Aug. 11, 1972, Ser. No. 279,905

Int. Cl. B31f *5/00*

U.S. Cl. 156—502 **25 Claims**



1. In an apparatus for continuously sealing the longitudinal edges of a strip of heat-weldable material to the corresponding longitudinal edges of two contiguous plies of heat-weldable material as said strip and said plies are drawn continuously along a sealing path;

a first heat sealing station located along said path;

means for supplying said two contiguous plies of material to said first heat sealing station;

means for supplying said strip to said first heat sealing station;

means for aligning a first edge of said strip with said first heat sealing station;

means for aligning the edge of only one of said plies with said first heat sealing station;

means for continuously feeding said strip and said one of said plies through said first heat sealing station;

means for guiding the other of said plies away from said one of said plies to bypass said first heat sealing station;

a second heat sealing station loacted along said path and spaced from said first heat sealing station;

means for guiding said two plies and said strip along said sealing path from said first heat sealing station to said second heat sealing station;

means for aligning the second edge of said strip with said second heat sealing station;

means for aligning the edge of the other of said plies with said second heat sealing station; and

means for continuously feeding said strip and said other of said plies through said second heat sealing station, whereby said strip and said plies are continuously drawn along said path first through said first heat sealing station and subsequently through said second heat sealing station for sealing said strip first to said one of said plies and subsequently to said other of said plies.

3,846,210

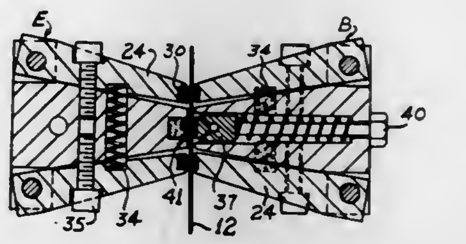
APPARATUS FOR HEAT SEALING THERMOPLASTIC FILMS

Fergus M. Groundwater, 194 Betourney, St. Lambert, Quebec, Canada

Original application Feb. 17, 1971, Ser. No. 115,971, now abandoned. Divided and this application Sept. 11, 1972, Ser. No. 287,717

Int. Cl. B30b *15/34*

U.S. Cl. 156—583 **7 Claims**



1. An apparatus for sealing thermoplastic films, comprising a pair of opposed jaws having heat sealing faces adapted to be pressed together, clamping bars pivotally mounted on each jaw on each side of the heat sealing face, the clamping bars on each jaw having film holding faces adjacent the heat sealing face and pivotal mountings remote from the heat sealing face such that the bars converge toward the heat sealing face and spring means tending to force the bars apart against abutments, whereby as the jaws move toward each other the film is clamped and held between the heat sealing faces as well as between the clamping bar holding faces and as pressure is increased between the jaws, the holding faces on each jaw converge toward the heat sealing face and thus move the film toward the sealing faces.

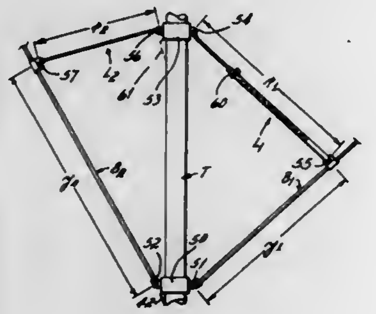
3,846,211
FURNITURE ELEMENT
Marcel Begin, Camille Morrissette, Pierre Beaumier, and Charles Tupinier, Victoriaville, Quebec, Canada, assignors to Victoriaville Furniture Limited, Victoriaville, Quebec, Canada
Filed Apr. 10, 1973, Ser. No. 349,705
Int. Cl. D04d *7/06*
U.S. Cl. 161—7 **6 Claims**

1. A structural and ornamental element for furniture or the like comprising
   an elongated backing support comprising a wood member and a reinforcing member extending at least along portions of said wood member of reduced cross-section and
   a facing of structurally weak material of ornamental configuration adhered to said support.

3,846,212
METHOD AND MACHINE FOR THE MANUFACTURE OF WREATHS, POMPONS, ROSETTES, AND THE LIKE
Gerd Rodermund, 24 In der Breite, 763 Lahr, Germany, and Helmut Kappus, Lahr, Germany; said Kappus assignor to said Rodermund
Original application Feb. 9, 1968, Ser. No. 704,462, now Patent No. 3,780,514. Divided and this application Oct. 10, 1973, Ser. No. 404,937
Int. Cl. A47g *33/06*
U.S. Cl. 161—15 **8 Claims**

1. A wreath characterized by its structure consisting of two intertwined wires, between which at least one strip, shoved together in its longitudinal direction, preferably to 1/5 to 1/50 of its origial length, is bound.

3,846,213
FOLDABLE ARTIFICIAL CHRISTMAS TREE
Norbert Thiemann, 544 Claymore Terrace,
Cincinnati, Ohio 45238
Filed July 24, 1972, Ser. No. 274,456
Int. Cl. A47g *33/06*
U.S. Cl. 161—17 **4 Claims**

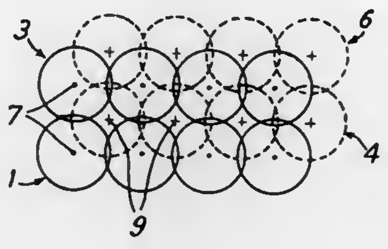


1. A foldable artificial tree having a trunk and a plurality of tiers of branches of different lengths, the length of the branches in upper tiers being less than the length of branches in lower tiers, and means mounting said branches to said trunk for folding the branches of each tier inwardly toward said trunk, the mounting means comprising:
   a link for each branch in said tree, each link being pivoted at one end to an intermediate point on its respective branch, the links within a tier being of different lengths so that when the tree is in erect condition the links hold the branches in a given tier at angles which differ from branch to branch,
   each tier having associated with it a first means on the trunk pivotally mounting the inner ends of the links of the respective tier,
   each tier also having associated with it a second means on the trunk pivotally mounting the lower ends of the branches of the respective tier,
   one of said first and second means being slidable along said trunk with respect to the other of said first and second means,
   the sum of the length of a link and the distance between the lower end of the respective branch and the intermediate point to which the link is attached being a constant for all branches and links in a given tier.

3,846,214
ORNAMENTAL PLAQUE
Julius Rosenzweig, 2501 Nostrand Ave. 11210, and Rhoda Altenhaus, 1230 Avenue Y 11235, both of Brooklyn, N.Y.
Filed May 23, 1973, Ser. No. 363,250
Int. Cl. B44f *9/00*
U.S. Cl. 161—19 **23 Claims**

1. An ornamental plaque, comprising a generally planar sheet of pierceable material having two opposite major surfaces; a plurality of bead-like elements arranged on one of said major surfaces to form a decorative design pattern; and pin means associated with each bead-like element, each pin means piercing and penetrating said sheet of material for maintaining an associated bead-like element mounted on said sheet of material, whereby said bead-like elements are maintained arranged in said decorative design pattern by the retaining action of said pin means.

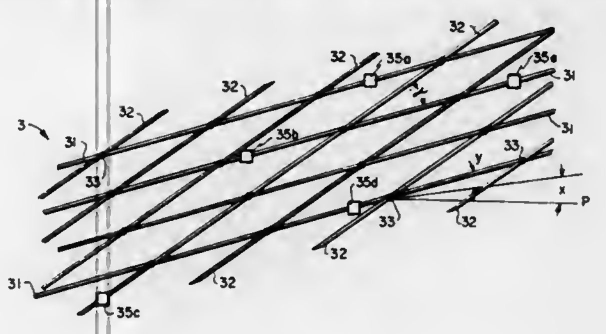
3,846,215
THREE DIMENSIONAL REINFORCING COIL STRUCTURE AND METHOD OF FORMING SAME
Michel Antoine Jules Maistre, Bordeaux-Cauderan, France, assignor to Societe Europeenne de Propulsion, Puteaux, France
Filed Mar. 1, 1972, Ser. No. 230,900
Claims priority, application France, Mar. 5, 1971, 7107794
Int. Cl. B31c *31/00;* **B65h** *54/00*
U.S. Cl. 161—47 **12 Claims**



1. A three-dimensional reinforcing structure comprising a plurality of superimposed layers of helical coils of filaments, the coils all having substantially the same diameter and pitch and parallel axes lying on a network of polygonal mesh, each coil of one coil layer being interthreaded with the adjacent coils of the same layer and with the adjacent coils of the adjacent layers.

3,846,216
REINFORCEMENT MAT FOR TIRE
Daniel D. Streeter, Jr., 4201 51st Ave. NE.,
Seattle, Wash. 98105
Original application Oct. 20, 1970, Ser. No. 82,423, now Patent No. 3,712,361. Divided and this application Sept. 21, 1972, Ser. No. 291,054
Int. Cl. B32b *7/04, 5/12*
U.S. Cl. 161—49 **14 Claims**

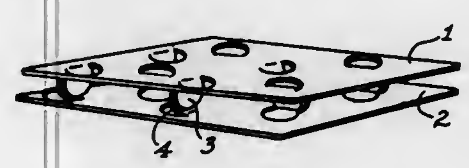
1. A mat structure comprising a plurality of fiber layers, each fiber layer comprising at least two sets of parallel fibers, one set being disposed angularly with respect to the other, the two sets defining a mean angular disposition for the layer, each successive layer being disposed angularly with respect to the adjacent layer with alternate layers also being angularly disposed with each other, each set of parallel fibers within each layer being attached to one another at a plurality of points of intersection, each layer being attached to the adjacent layers at a plurality of node points, said node points being spaced from said fiber intersection points within each layer whereby when the mat is compressed or stressed by external forces on the mat, the fibers of each layer will tend to mesh with fibers of adjacent layers.



3,846,217
POSTFORMABLE THERMOSET RESIN CONTAINING FIBROUS LAMINATE AND PROCESS OF POSTFORMING THE SAME
Gene Edward Grosheim, Cincinnati, Ohio, assignor to Formica Corporation, Cincinnati, Ohio
No Drawing. Continuation of abandoned application Ser. No. 609,756, Jan. 17, 1967. This application June 2, 1972, Ser. No. 259,162
Int. Cl. D06g *1/00*
U.S. Cl. 161—88 **12 Claims**

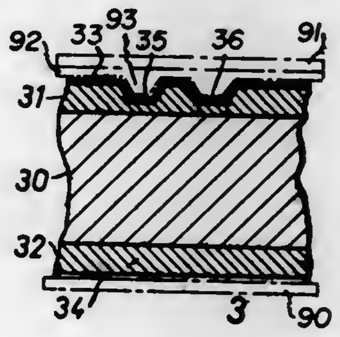
1. A decorative laminate comprising a plurality of fibrous core sheets and a fibrous decorative sheet which are impregnated with a thermoset resin and which have been heat and pressure consolidated into a unitary structure, said laminate having coated on at least one of its broad surfaces, whereat postforming is to be effected, a substantially uniformly thick coating consisting essentially of a substantially strain-resistant, slip-resistant, nonextensible dry adhesive material which retards laminate surface stretch during deforming, has a reinforcing layer embedded therein and is readily removable from said surface, wherein said coating covers said laminate substantially from edge to edge in at least one direction, said laminate being capable of being postformed through a radius of between about 0″ and 1″ in the area of said coating without displaying any signs of crazing or cracking upon removal of said coating therefrom.

3,846,218
FIBER OR PAPER BOARD STRUCTURE
William A. Wootten, 425 Via Costa,
Palos Verdes Estates, Calif. 90274
Filed Aug. 9, 1971, Ser. No. 170,120
Int. Cl. B32b *3/10*
U.S. Cl. 161—111 **13 Claims**



1. A structural product comprising: two flat paper board or fiber board panels disposed in spaced parallel planar relation to one another, each of said panels having a plurality of partial perforations therein defining flat tabs each of which is bent about a hinge line constituting the uncut portion of its associated partial perforation, each tab extending in a direction substantially perpendicular to the plane of its panel toward the other of said panels across substantially the entire space between said panels,
   each of the flat tabs extending from one of said panels being disposed in planar contact with and substantially completely overlapping planar relation to a corresponding tab extending from the other of said panels,
   said overlapping contacting tabs being attached to one another by adhesive or mechanical interlock to form intermediary members each of which has a thickness at least equal to the combined thicknesses of said two panels, said intermediary members extending at right angles to the planes of each of said panels to retain said parallel panels in fixed position relative to one another.

3,846,219
WOOD-CHIP BOARDS
Albrecht Kunz, Gschwend, Germany, assignor to Uniboard AG, Zug, Switzerland
Original application May 7, 1971, Ser. No. 141,301, now Patent No. 3,793,125. Divided and this application Aug. 7, 1972, Ser. No. 279,052
Claims priority, application Germany, June 24, 1970, P 20 31 296.3
Int. Cl. B29j *5/02;* **B32b** *21/02*
U.S. Cl. 161—119 **1 Claim**

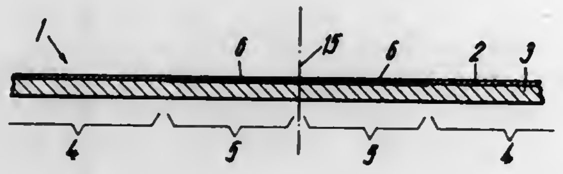


1. A wood-chip board comprising a coarse chip innermost layer containing coarse wood chips having a lateral length of up to 10 mm., and two external fine chip layers overlaying said coarse layer containing wooden fibers with a diameter of less than 0.1 mm. and exhibiting a fineness ratio of at least 1:50, the coarse chips and wooden fibers being glued with a curable resinous material, each external layer being overlaid with a decorative paper sheet impregnated with curable resinous material, and at least one of said decorative sheets and neighboring portions of the adjacent fine chip layer are together embossed and cured to yield a relief-like pattern, the depth of the relief extending into the adjacent fine chip layer to an extent which is greater than the thickness of the decorative layer.

3,846,220
MULTI-LAYER WEB OF PACKAGING MATERIAL
Norbert Buchner, Beutelsbach, Wurttemberg, Germany, assignor to Fr. Hesser Maschinenfabrik AG., Stutgart-Bad Cannstatt, Germany
Filed June 23, 1972, Ser. No. 265,784
Claims priority, application Germany, June 24, 1971, P 21 31 322.4
Int. Cl. B32b *3/00, 7/14, 31/12;* **B65d** *7/12*
U.S. Cl. 161—145 **6 Claims**

1. A multi-layer web of packaging material for forming the walls of a packaging container, comprising:
   a substrate layer;
   a covering layer of thermoplastic material placed on and in juxtaposition with said substrate layer;
   the covering layer having at least two zones extending substantially parallel to each other and substantially continuous in the direction of the length of the web;
   one of said zones being permanently secured to said substrate;

the other of said two zones constituting a heat seal responsive seam zone releasably secured to said substrate;

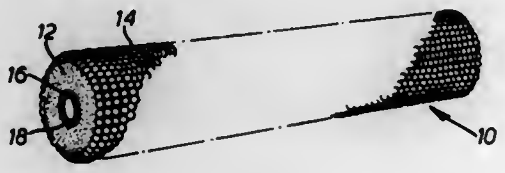


and a separating agent between said seam zone and said substrate.

3,846,221

LABELLING DEVICES

Josef W. Golec, Boston, England, assignor to Norprint Limited, Boston Lincolnshire, England
Filed June 25, 1973, Ser. No. 373,038
Claims priority, application Great Britain, June 30, 1972, 30,660/72
Int. Cl. B32b *5/16, 5/18*
U.S. Cl. 161—159 **10 Claims**



1. A pressure-applying member comprising

resilient substrate means and a contact surface of the substrate means for applying the required pressure to an article, and

a plurality balls adhered to the contact surface by an adhesive which remains permanently flexible.

3,846,222

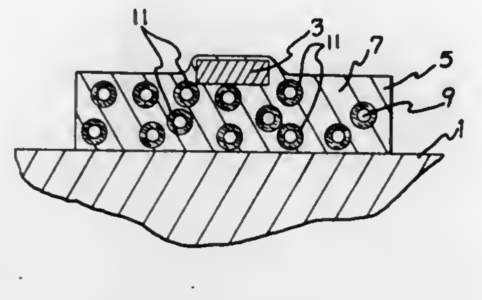
MULTILAYER DIELECTRIC

Raymond Louis Dietz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Original application June 5, 1970, Ser. No. 43,910, now Patent No. 3,673,092. Divided and this application May 8, 1972, Ser. No. 251,501
Int. Cl. B32b *5/16*
U.S. Cl. 161—162 **10 Claims**

1. A dielectric lamina formed from a dielectric composition, said composition comprising:

(a) about 60–40% by weight of alead barium borosilicate glass binder having an average particle size of about 1.0–9.0 microns which is useful as a dielectric binder material in microelectronic devices and which is capable of being substantially saturated by a ceramic powder; and

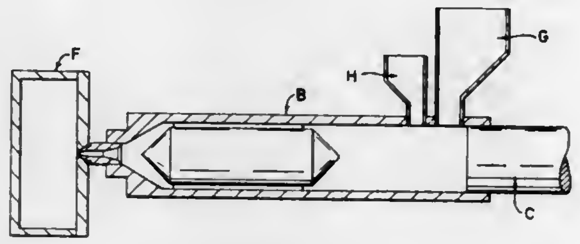
(b) about 60–40% by weight of a ceramic powder selected from the group consisting of ZrO_2, Al_2O_3, TiO_2, the zirconium silicates, and devitrified glass particles, and having an average particle size of about 1–10 microns; the amount and particle size of said glass binder and ceramic powder being correlated such that the ceramic powder substantially saturates the glass binder in that insufficient glass binder remains in unsaturated form to wet the surfaces of a solderable conductor when said conductor is heat-sealed thereto at about at least the temperature at which the dielectric composition is fired and the dielectric lamina formed from said composition is substantially free from pinholes and cracks, said dielectric lamina exhibiting a dielectric constant of about 4–7 at a 2 mil thickness, and a dielectric strength of greater than about 1000 volts/mil, when said lamina is formed by firing it at a temperature of 800–1000° C. for about 5–15 minutes.



3,846,223

CONDUCTIVE PLASTIC ARTICLE AND METHOD FOR MAKING SAME

Burton E. Lederman, Swarthmore, Pa., and Jack D. Boudrie, Grand Rapids, Mich., assignors to Gulf + Western Industrial Products Company, Salem, Ohio
Filed Aug. 30, 1972, Ser. No. 284,943
Int. Cl. B32b *5/16*
U.S. Cl. 161—162 **11 Claims**



1. An article of substantially non-conductive synthetic plastic material having an outer surface with conductive particles molded into and at least partially imbedded within a portion of said outer surface,

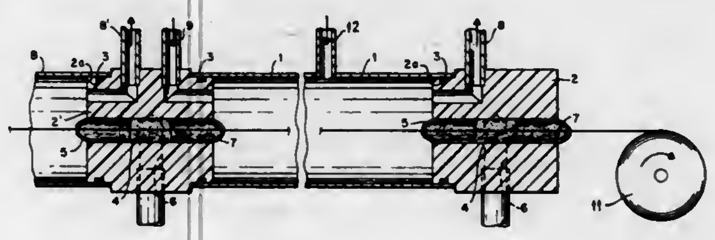
said article being obtained by feeding a first quantity of non-conductive synthetic plastic material and a second, substantially lesser quantity of synthetic plastic material through a molding apparatus including a mold cavity, so that said first and second quantities simultaneously enter said mold cavity,

said second quantity of material containing said conductive particles distribution therein and having a lower viscosity and lesser density at the time of being fed into said cavity than said first quantity of material, so that said synthetic plastic material containing conductive particles coats parts of said apparatus and thereby is distributed on the outer surface of said non-conductive synthetic plastic material in said mold cavity, and molding said materials into said article which has thereby an outer surface with said conductive particles being present in at least sufficient quantities to render said outer surface sufficiently conductive to serve as an electrical ground.

3,846,224

BORON FILAMENTS WITH A BORON CARBIDE ANTIDIFFUSION COATING, AND METAL MATRIX MADE THEREFROM

Marius Leclercq, Lagny, Daniel Louis Morin and Michael Henri Damien, Corbeil Essonnes, and Monique Andree Andreani, Villeneuve-le-Roi, France, assignors to Societe Nationale des Pondres et Explosifs, Paris, France
Filed May 4, 1972, Ser. No. 250,287
Claims priority, application France, May 11, 1971, 7116885
Int. Cl. C23c *1/08, 11/08*
U.S. Cl. 161—170 **6 Claims**



1. A boron filament having a boron carbide coating thereon of a coating thickness of no more than 15 microns.

3,846,225

HIGH TEMPERATURE INSULATION-BINDER COMPOSITIONS

Joseph P. Stalego, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation
No Drawing. Continuation of abandoned application Ser. No. 431,196, Feb. 8, 1965. This application Aug. 28, 1970, Ser. No. 68,017
Int. Cl. D02g *3/00*
U.S. Cl. 161—175 **6 Claims**

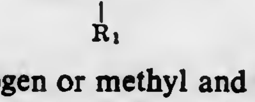
1. An article of manufacture comprising intermeshed glass fibers which have been initially bonded together with an organic binder selected from the group consisting of phenol-aldehyde, phenol-amino-aldehyde, and amino-aldehyde resins and subsequently saturated and bonded with from 30 percent to 200 percent, based upon the weight of the glass fibers, of an inorganic binder-saturant consisting essentially of boric acid and bentonite, said bentonite being in the hydrogen form.

3,846,226

HIGH LUSTER, ANTISOILING ACRYLIC FIBERS

Walter A. Smithey, Santa Rosa, Fla., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed May 9, 1973, Ser. No. 358,744
Int. Cl. D02g *3/00, 3/22*
U.S. Cl. 161—178 **5 Claims**

1. A low-density, lustrous acrylic fiber of reduced soiling tendencies comprising a fiber-forming first acrylonitrile polymer containing at least 70 weight percent acrylonitrile and the balance of one or more vinyl monomers and, as small discontinuous elongated segments within said first polymer separated therefrom by void space, from about 1 to 10 weight percent, based on the total weight of the fiber, of a second acrylonitrile copolymer incompatible with said first polymer and containing from 50 to 95 weight percent acrylonitrile and from 5 to 50 weight percent of a monomer of the formula



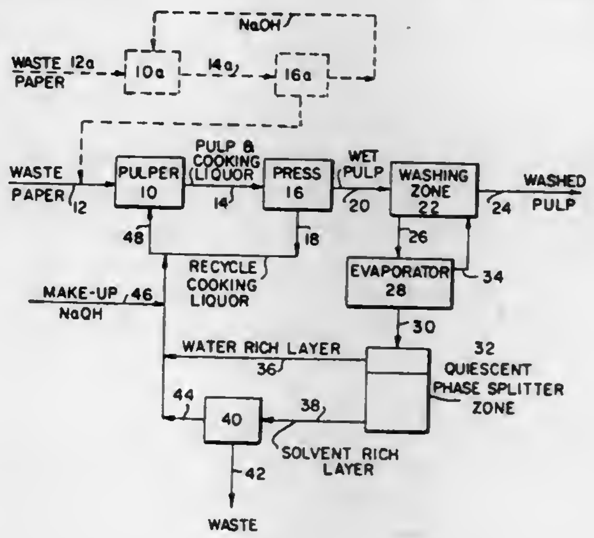
$$CH_2{=}\underset{\displaystyle R_1}{\underset{|}{C}}{-}COOR_2$$

wherein R_1 is hydrogen or methyl and R_2 is selected from hydrogen, hydroxyalkyl of 2 to 4 carbon atoms and $\{CH_2CH_2O\}_nR_3$ wherein *n* is an integer of about 1 to 50 and R_3 is selected from hydrogen, alkyl of 1 to 4 carbon atoms, and aryl of monocyclic structure having less than about 10 carbon atoms.

3,846,227

DEINKING OF WASTE PAPER WITH AN AQUEOUS SOLUTION CONTAINING AN N-ALKYLLACTAM SOLVENT

Thomas S. Mestetsky, Belvidere, N.J., and Bruce G. Webster, Cincinnati, Ohio, assignors to GAF Corporation, New York, N.Y.
Filed Nov. 1, 1972, Ser. No. 302,657
Int. Cl. D21c *5/02*
U.S. Cl. 162—5 **36 Claims**

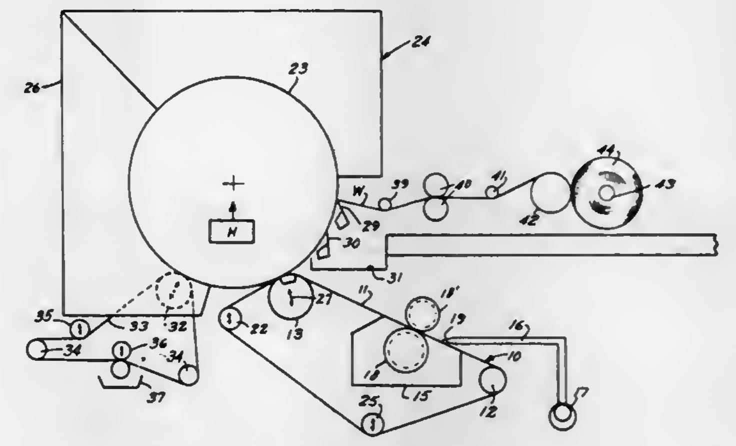


1. A process for the deinking of waste paper comprising contacting the waste paper to be deinked with an aqueous treating composition containing an N-alkyllactam solvent having from 1 to 16 carbon atoms in the alkyl group at a temperature of from about 110° F. to 210° F., said solvent being present in an amount within the range of from about 0.5% to about 99.5% by weight based on the total weight of said aqueous treating composition, whereby the waste paper is effectively deinked, said N-alkyllactam solvent being recoverable for use in the treatment of additional quantities of waste paper, said process being of particular advantage in the treatment of coated or otherwise difficult-to-deink grade waste paper.

3,846,228

FORMING TISSUE PAPER BY PRESSING THE WEB WHILE ON AN UPRUNNING FORMING WIRE AND TRANSFERRING THE WEB DIRECTLY TO A YANKEE DRYER

Donald A. Ely, Roscoe, Ill., and Thomas G. McKie, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.
Filed Nov. 13, 1972, Ser. No. 306,020
Int. Cl. D21f *1/00, 2/00, 9/02*
U.S. Cl. 162—206 **6 Claims**



1. In a machine for making fibrous webs such as tissue and the like,

an endless traveling plastic forming wire having an uprunning forming run having an incoming end and a longitudinally spaced outgoing end, a Yankee dryer including a heated drum at the outgoing end of the forming run of the wire and having a polished peripheral surface,

a stock inlet adjacent the incoming end of the forming run of the wire laying stock in the form of tangled fibers in aqueous suspension on the top surface of the forming run of the wire at substantially the speed of travel of the forming run,

means downstream of said stock inlet removing water from the web and a save-all for catching the water pressed from the web and falling through the wire,

said water removing means including grooved press rolls on opposing sides of the wire for pressing water from the web on the wire,

a suction couch roll defining the outgoing end of the forming run of the wire, and removing sufficient moisture from the wire to paste the web to said heated drum,

a contact roll training the wire from said couch roll tangentially of said heated drum and cooperating with said couch roll to lay the newly formed web on the heated drum,

a doctor spaced about said heated drum at least 270° from the point of tangency of the wire to said heated drum and transferring the formed web for coiling.

3,846,229

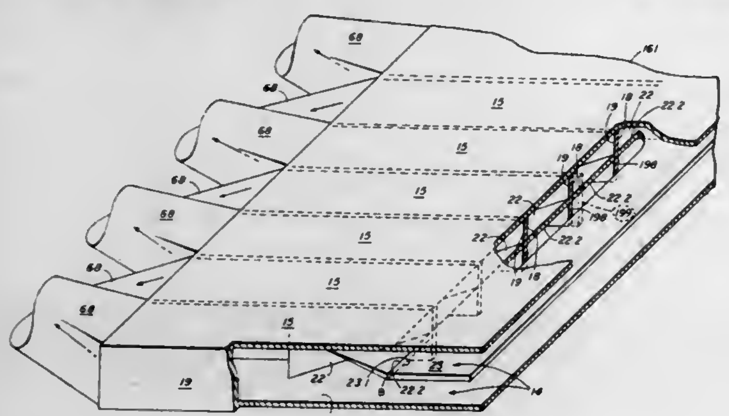
FLOW SYSTEMS FOR INDUCING FINE-SCALE TURBULENCE

Otto Julius Kallmes, Marblehead, Mass., assignor to Lodding Engineering Corporation, Auburn, Mass.

Filed Jan. 28, 1972, Ser. No. 221,555

Int. Cl. D21f *1/06;* F15d *1/02*

U.S. Cl. 162—216 29 Claims



1. A method of supplying stock to a paper making machine comprising the steps of establishing a flow of stock in a plurality of parallel flow paths, directing the stock in each flow path to change its cross-sectional shape alternately between quadrangular and triangular without substantially changing its cross-sectional area while flowing therein so as to produce fine-scale turbulence in the stock flowing in each path, and discharging the stock from all of said paths into a common slice nozzle.

3,846,230

FIBROUS SHEET FORMER WHEREIN CONCENTRATED STOCK IS PASSED THROUGH SEPARATE CHANNELS INTO A DEFLECTION CHAMBER AND OUT THROUGH AN OUTLET CHANNEL

Douglas Wahren, Taby, Bo Norman, Stockholm, and Karl-Johan Grundstrom, Solna, Sweden, assignors to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

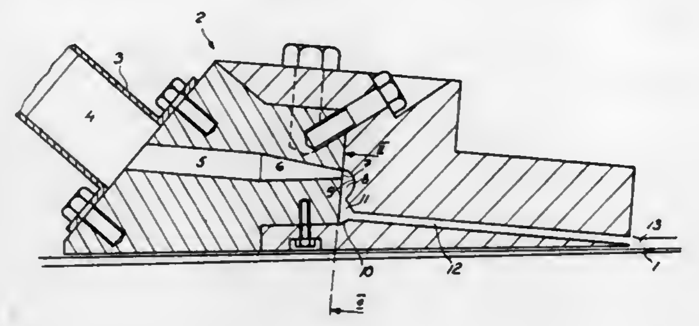
Filed Apr. 19, 1973, Ser. No. 352,565

Claims priority, application Sweden, Apr. 21, 1972, 5,255/72

Int. Cl. D21f *1/02, 1/06*

U.S. Cl. 162—216 11 Claims

1. Method for forming a continuous material web of fibrous particles starting from a suspension of fibrous particles with a fibre concentration of about 1% to about 6% by weight, comprising in combination the following steps: the highly concentrated suspension is divided over and sprayed through several parallel-coupled apertures; after which the suspension jets are accelerated and sprayed at high velocity into at least one chamber in which the jets are reunited and deflected; then the suspension flow is accelerated and deflected anew; and finally the turbulence is allowed to decay in order to form a consolidated three-dimensional net structure of fibrous particles before they are deposited.



3,846,231

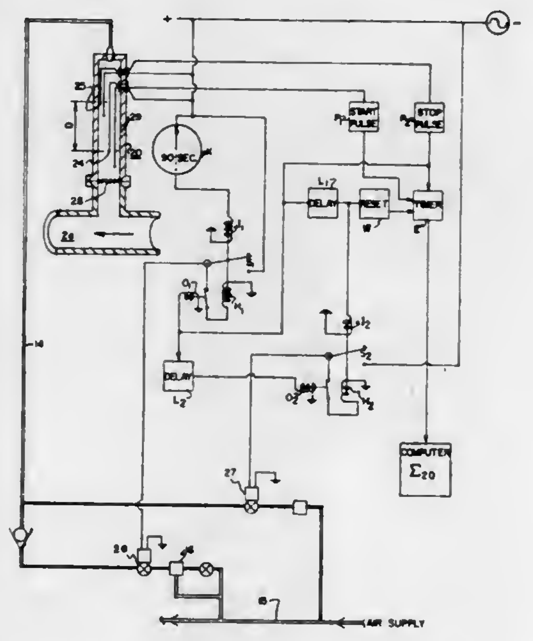
APPARATUS FOR DETERMINATION OF THE MAGNITUDE OF TOTAL SPECIFIC ENERGY ABSORBED BY A SAMPLE OF PULP STOCK

William E. Crosby, Hanahan, and Hong H. Lee, Charleston Heights, S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed July 25, 1972, Ser. No. 274,967

Int.. Cl. D21d *1/20*

U.S. Cl. 162—263 3 Claims



1. An apparatus for the determination of the magnitude of refining energy absorbed by a sample of pulp stock, said apparatus comprising:

(A) stock sample chamber means separated from a stock reservoir by a perforated partition means adapted to pass the water vehicle of said stock but substantially obstruct passage of the stock fiber;

(B) chamber pressure control means for regulation of pressure within said chamber relative to the pressure of said stock reservoir to selectively admit and expel said water vehicle;

(C) at least two liquid level sensing means positionally separated within said chamber to delineate a prescribed volume therebetween;

(D) chronometer measuring means started by water vehicle actuation of one said sensing means and stopped by water vehicle actuation of the other said sensing means, said chronometer means emitting a first signal representative of an elapsed time interim between said starting and stopping; and

(E) signal processing means having data storage means disposed therewith, said data storage means being disposed and provided with data to relate such elapsed time interims to the magnitude of total specific energy absorbed by a stock sample representative of said stock sample, said signal processing means receiving and relating said first signal to said storage means data and deriving said corresponding total specific energy as a signal.

3,846,232

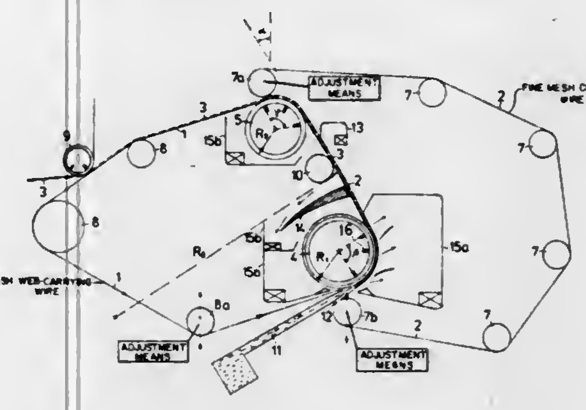
TWIN-WIRE PAPER FORMING WITH WIRES WRAPPING AROUND A SUCTION WEB-FORMING BREAST ROLL AND THEN FOLLOWING A CURVED PATH TO A SUCTION COUCH ROLL

Matti Kankaanpaa, Tapiola, Finland, assignor to Valmet Oy, Helsinki, Finland

Filed Mar. 23, 1973, Ser. No. 344,260

Int. Cl. D21f *1/00, 1/36, 1/60*

U.S. Cl. 162—301 3 Claims



1. Improvement in a two-wire former in a paper machine, comprising in combination, a web-carrying wire and a covering wire; two rolls with foraminous mantle surfaces within the loop of said carrying wire, wherein the one which is first in the direction of travel of the web is a web-forming roll and the second is a couch roll; dewatering compartments within the mantle of said rolls, at least one in each; said carrying wire and covering wire running along a common curved path starting at said web-forming roll and up to said couch roll, this path forming a convex part of the loop of said carrying wire, the course of said curved path being determined by the positions of at least one wire-guiding means and furthermore at least one dewatering means placed within the loop of said carrying wire, and furthermore the carrying wire and covering wire both being conducted onto said web-forming roll each over its individual first and second wire-guiding roll to thereafter form a throat therebetween, means for adjusting the position of each of said first and second wire-guiding rolls; furthermore a headbox, which supplies pulp into said throat; the whole combination being such that the bulk of the dewatering of the web takes place at said web-forming roll on the sector, having a size of 90 to 150 degrees of arc, lapped by said wires, primarily by effect of the pressure developed in the pulp suspension between said wires the expressed water being removed on effect of the centrifugal force outwards and partly in the opposite direaction into said web-forming roll.

3,846,233

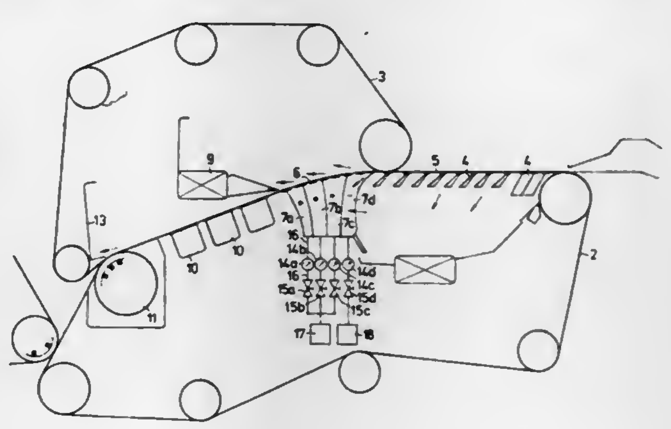
PAPERMAKING MACHINE HAVING A SINGLE WIRE RUN AND A DOUBLE WIRE RUN OVER A DOWNWARDLY CURVING DEWATERING BOX

Matti Kankaanpaa, Tapiola, Finland, assignor to Valmet Oy, Helsinki, Finland

Filed Sept. 11, 1972, Ser. No. 288,217

Int. Cl. D21f *1/00*

U.S. Cl. 162—312 2 Claims



1. In a paper machine, a wire section having a first wire forming a single-wire initial portion with first dewatering means, by the aid of which water is removed from the pulp web, and which wire section after said initial portion comprises a second wire creating a two-wire portion, second dewatering means guiding said two-wire portion to be curved downwardly at least at its initial end, characterized in that said single-wire initial portion of the wire section has a length such that when dewatering of the pulp web is cautiously performed in said single-wire initial portion, the pulp web achieves before the two-wire portion a degree of felting such that the fibres in the pulp web are no longer able to move appreciably with reference to each other, and that said two-wire portion is guided by said second dewatering means to curve downwardly so that water is removed in connection with said second dewatering means mainly by effect of centrifugal force through the upper wire of the two-wire portion and in a direction opposite to that in the single-wire initial portion, the object being to reduce the escape of additives of the pulp web, such as fillers, and of fine constituents of the pulp web, and to increase the splitting strength of the paper that is being manufactured, wherein said second dewatering means comprises a dewatering box which has means for forming several consecutive chambers, means for adjusting the pressures in said chambers in order to achieve a symmetrical fibre structure of the pulp web, of which chambers in the one which is first in the direction if travel of the pulp web or in those which are first in said direction a vacuum has been arranged to act, and in the subsequent chamber or chambers, a positive pressure has been arranged to act.

3,846,234

STACKED AND TILTABLE COMPARTMENTS FORMING A NUCLEAR FUEL ASSEMBLY

Gottfried Class, Blankenloch, and Berend Eggers, Karlsruhe, Germany, assignors to Gesellschaft fur Kernforschung, Karlsruhe, Germany

Filed Mar. 8, 1971, Ser. No. 122,076

Claims priority, application Germany, Mar. 20, 1970, P 20 10 927.7

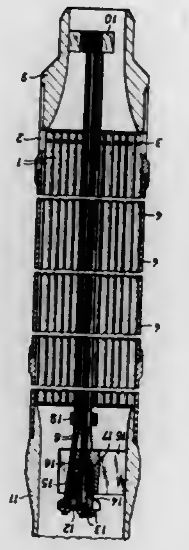
Int. Cl. G21c *3/30*

U.S. Cl. 176—78 8 Claims

1. A fuel assembly for a nuclear reactor with fast neutron flux, comprising:

(A) a plurality of tubular compartments each having a longitudinal axis, said compartments being arranged and assembled in an axially aligned series to form an elongated tubular fuel element box having a longitudinal axis; the longitudinal axes of said tubular compartments being generally in alignment with the longitudinal axis of said fuel element box;

(B) a plurality of fuel elements or pins disposed longitudinally in said fuel element box and forming a fuel pin bundle having a longitudinal axis;



(C) means for interconnecting the adjoining compartments with one another; the adjoining compartments having overlapping and engaging end portions providing a radial clearance therebetween; said means for interconnecting the adjoining compartments and said clearance permitting a relative tilting movement between any two adjoining compartments such that the longitudinal axis of at least one of said two adjoining compartments tilts with respect to the longitudinal axis of said fuel element box in response to forces generated by heat expansion; and

(D) tension means extending under tension substantially along the longitudinal axis of said fuel element box for holding said assembled compartments together, said tension means being capable of undergoing a variation in its length upon said relative tilting movement between any two of said compartments.

3,846,235

FAILURE INDICATOR FOR NUCLEAR REACTOR FUEL ELEMENT

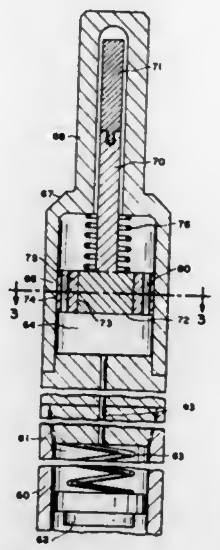
Cecil R. Jones, Orange, Conn., Arthur J. Goldman, White Plains, N.Y., and D. Garth Rowe, San Jose, Calif., assignors to Transfer Systems, Incorporated, North Haven, Conn.

Filed Nov. 3, 1972, Ser. No. 303,548

Int. Cl. G21c *3/18, 17/06*

U.S. Cl. 176—80 **12 Claims**

1. A fuel element for a nuclear reactor comprising an elongated sealed enclosure containing nuclear fuel, said enclosure including at one end a pressure-tight non-magnetic extension, an indicator pin within the enclosure and having a portion comprising ferromagetic material extending within the said extension, said indicator pin being movable in the elongated direction of the enclosure from a first position to a second position, resilient means connected to the indicator pin for biasing the indicator pin for movement toward the second position, pressure differential means within the enclosure for maintaining the indicator pin in its first position against the force exerted by the resilient means, said pressure differential means being disabled from maintaining the indicator pin in its first position when an opening in the enclosure causes a pressure loss within the enclosure whereby the resilient means displaces the indicator pin to its second position indicative of failed fuel, the pressure-tight extension having a reduced width compared with that of the enclosure portion containing the nuclear fuel, and the ferromagnetic material portion being located entirely within the reduced-width extension at both the first and second positions.



3,846,236

METHOD AND APPARATUS FOR DIALYSIS

Stuart J. Updike, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Oct. 22, 1971, Ser. No. 191,720

Int. Cl. A61n *1/03*

U.S. Cl. 195—1.8 **10 Claims**

1. The method of oxygenation of a liquid by dialysis with a liquid containing hydrogen peroxide comprising the steps of separating the liquid to be oxygenated from the hydrogen peroxide solution with a semi-permeable membrane which is wettable by the liquids and which embodies a catalytic agent which converts H_2O_2 to H_2O and O_2 during passage of the H_2O_2 therethrough, whereby oxygen is released at the surface of the membrane in contact with the liquid to be oxygenated.

3,846,237

PROCESS FOR PRODUCTION OF CORRINOID COMPOUNDS CONTAINING NO METAL

John I. Toohey, Kingston, Ontario, Canada (870 Hilgard Ave., Los Angeles, Calif. 90024)

No Drawing. Continuation-in-part of abandoned application Ser. No. 538,893, Mar. 21, 1966, and a division of application Ser. No. 684,640, Nov. 21, 1967, now Patent No. 3,505,311, dated Apr. 7, 1970. This application Sept. 8, 1969, Ser. No. 871,056

The term of this patent subsequent to July 5, 1989, has been disclaimed

Int. Cl. C12d *13/02*

U.S. Cl. 195—28 R **1 Claim**

1. The process for preparing metal-free corrinoid compounds which comprises cultivating at least one metal-free corrin-producing photosynthetic bacterium and extracting and isolating said compounds from the cells of said bacterium.

3,846,238

FERMENTATION PROCESS FOR CONVERTING HYDROCARBONS TO PROTEINACEOUS MATERIALS

Gordon Homer Evans, Kingswood, England, and Jean Lindsay Shennan, Falkirk, Scotland, assignors to The British Petroleum Company Limited, London, England

No Drawing. Filed Sept. 15, 1972, Ser. No. 289,228

Claims priority, application Great Britain, Sept. 17, 1971, 43,421/71

Int. Cl. C12b *1/00*

U.S. Cl. 195—28 R **3 Claims**

1. A process for the conversion of a hydrocarbon into a proteinaceous material which comprises continuously cultivating *Candida lipolytica* strain C.B.S. number 6331

in the presence of a straight chain hydrocarbon having at least 10 carbon atoms per molecule, an aqueous nutrient medium and a gas containing free oxygen.

3,846,239

PROCESS FOR THE PREPARATION OF HEAT-RESISTANT α-GALACTOSIDASE ENZYME

Jacques J. Delente, University City, and Richard J. O'Connor and Mau-Jung Kuo, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed July 24, 1972, Ser. No. 274,523

Int. Cl. C07g *7/02*

U.S. Cl. 195—66 R **8 Claims**

1. A process for the preparation of α-galactosidase enzyme which comprises cultivating in an aqueous nutrient fermentation medium the organism *Bacillus stearothermophilus* NRRLB–5407 and in which α-galactosidase enzyme is recovered from the fermentation medium.

3,846,240

PREPARATION OF A DUSTLESS POWDERY PROTEASE-CONTAINING COMPOSITION

Yoshio Nakao, Osaka, Kiyoshi Nara, Kyoto, Kazuyoshi Katamoto, Osaka, and Kikuo Ito and Sakashi Ikeda, Yamaguchi, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Mar. 21, 1973, Ser. No. 343,474

Claims priority, application Japan, Mar. 25, 1972, 47/30,112

Int. Cl. C07g *7/02*

U.S. Cl. 195—68 **5 Claims**

1. Process for producing a dustless powdery composition containing a protease from protease-containing wet precipitates prepared from a culture broth of a protease-producing micro-organism, which comprises the steps of:

(a) bringing the wet precipitates into contact with a hydrophilic organic solvent of a water content of about 15 to 30% selected from the group consisting of methanol, ethanol, propanol, isopropanol, acetone, methylethyl ketone, dioxane and tetrahydrofuran;
(b) drying the resulting solvent-substituted wet precipitates until the content of the solvent in the total precipitates becomes below 10%;
(c) pulverizing the dried mass of precipitates into powder, and
(d) admixing the powder with 0.1 to 10% of a liquid or oily non-volatile wetting agent relative to the weight of the powder.

3,846,241

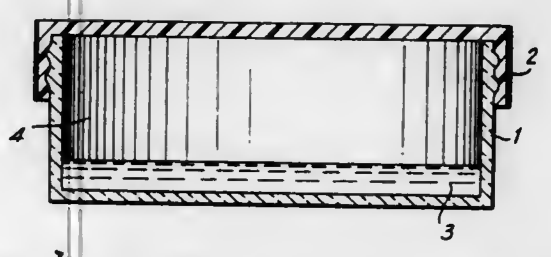
MEDIUM FOR NEISSERIA AND METHOD OF CULTIVATING NEISSERIA

Yvonne Constance Faur, 2385 Grand Ave., Bronx, N.Y. 10468; Martin Harold Weisburd, 82—40 Austin St., Kew Gardens, N.Y. 11415; Marion Evans Wilson, 155 W. 68th St., New York, N.Y. 10023; and Paul S. May, 23 Fairview Lane, Orangeburg, N.Y. 10962

Filed Oct. 10, 1972, Ser. No. 296,253

Int. Cl. C12k *1/10*

U.S. Cl. 195—100 **17 Claims**



1. The mediums contain a filtered or autoclaved yeast dialysate as a source of essential factors that promote rapid and luxuriant growth of pathogenic Neisseria, including the most fastidious strains that fail to grow on other available media. The filtered yeast dialysate in the medium composition may be used either in open containers or closed containers with the open containers incubated under outside CO_2 tension. On the other hand, the autoclaved yeast dialysate can only be used where the incubation is carried out under outside increased CO_2 tension.

3,846,242

BIOLOGICAL STERILITY INDICATOR AND METHOD FOR USING SAME

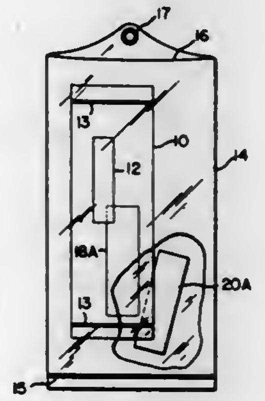
Robert R. Ernst, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Application July 14, 1967, Ser. No. 653,414, now Patent No. 3,585,112, which is a division of application Ser. No. 503,987, Oct. 23, 1965, now Patent No. 3,346,464, which in turn is a continuation-in-part of abandoned application Ser. No. 272,035, Apr. 10, 1963. Divided and this application Dec. 28, 1970, Ser. No. 101,760

The term of this patent subsequent to Oct. 10, 1984, has been disclaimed

Int. Cl. G01n *33/00*

U.S. Cl. 195—103.5 **12 Claims**



1. A sterility indicator comprising:
(a) an envelope, being permeable to a selected gaseous sterilizing media but being impermeable to a selected suitable test organism and to bacteria;
(b) a selected quantity of test organisms being resistant to the selected gaseous sterilizing media, being in an unincubated state, and being sealed within said envelope; and
(c) a selected quantity of a selected growth media in an unincubated state sealed within said envelope.

3,846,243

AUTOMATED ANALYSIS OF OXIDATIVE METABOLITES

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Raymond L. Furner, Birmingham, Ala.

Filed Aug. 18, 1972, Ser. No. 281,908

Int. Cl. C12k *1/00*

U.S. Cl. 195—103.5 R **6 Claims**

1. A method for the continuous-flow analysis of oxidative metabolites of aromatic amines and of compounds which produce formaldehyde on oxidative dealkylation consisting essentially of the steps of:

(1) combining a fluid stream comprising a substrate-cofactor in a phosphate buffer with a rat liver homogenate comprising oxidative microsomal enzymes,
(2) dividing the resulting mixture into a first stream for determining the quantity of protein and into a second stream for metabolizing the substrate and for determining the quantity of metabolite generated during such metabolism,
(3) diluting said first stream with phosphate buffer,
(4) aerating said diluted first stream,
(5) reacting said aerated first stream with a color forming reagent for protein,
(6) colorimetrically determining the amount of protein,

(7) intermittently adding small aliquots of 100% oxygen to said second stream,
(8) incubating said oxygenated second stream at a controlled temperature to promote the formation of metabolite by enzyme action on said substrate,
(9) dialyzing said second stream against phosphate buffer, and
(10) colorimetrically determining the concentration of metabolite after reacting the dialysate with a color forming reagent for said metabolite.

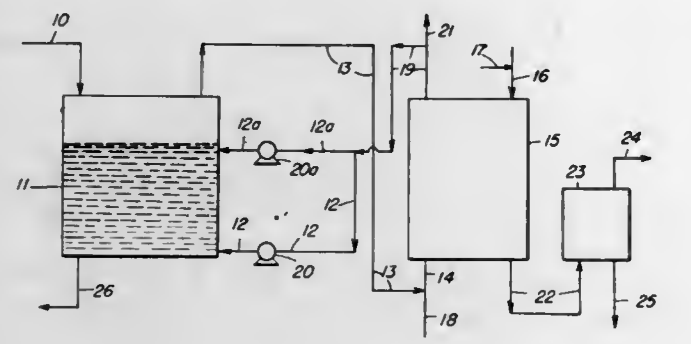
3,846,244
MICROORGANISM RECOVERY PROCESS

John N. Dew, Lyndon D. Boyer, and Len J. Gawel, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
No Drawing. Continuation-in-part of abandoned application Ser. No. 131,389, Apr. 5, 1971. This application Oct. 10, 1972, Ser. No. 296,357
Int. Cl. C12b *1/00*
U.S. Cl. 195—104 **6 Claims**

1. In the process for recovering bacteria from fermentation liquids containing said bacteria by filtration, the improvement comprising precoating the filter with a yeast having an average cell diameter of at least 1.25 times the average cell diameter of the bacteria being recovered.

3,846,245
PROCESS FOR GROWING MICROORGANISMS WITH LOW PRESSURE AIR

Edward F. Kondis and John W. Payne, Woodbury, N.J., assignors to Mobil Oil Corporation
Continuation-in-part of abandoned application Ser. No. 859,940, Sept. 22, 1969. This application Dec. 14, 1971, Ser. No. 207,788
Int. Cl. C12b *1/00*
U.S. Cl. 195—109 **15 Claims**



1. A recycle process for growing an aerobic, hydrocarbon-utilizing microorganism comprising:
(a) incubating said microorganism in a culture medium comprising an aqueous mineral nutrient solution and a liquid hydrocarbon as a source of carbon for energy and growth of said microorganism, the amount of said liquid hydrocarbon comprising between 35 and 90 percent by volume of said culture medium,
(b) agitating said culture medium and providing oxygen for the growth of said microorganisms by injecting a minor portion of an oxygen-containing gas into said culture medium at a lower portion thereof at a pressure at least sufficient to overcome the hydrostatic pressure of said culture medium at said point of injection and evaporatively cooling said culture medium by injecting a major portion of an oxygen-containing gas into the upper portion of said culture medium at a pressure sufficient to overcome the hydrostatic pressure of said culture medium at said point of injection,
(c) growing cells of said microorganism over a period of time,
(d) removing oxygen-containing gas and gases formed in step (b),
(e) contacting said oxygen-containing gas and gases of step (d) countercurrently to water at a substantially lower temperature than said gas and gases, and
(f) recycling said oxygen-containing gas to step (b).

3,846,246
CULTIVATION PROCESS FOR MICRO-ORGANISMS

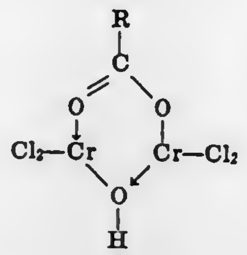
Yoshinori Midorikawa, Yokohama, and Tsuneo Sasanami, Chigasaki, Japan, assignors to Dainippon Ink and Chemicals, Inc., and Japan Gasoline Co., Ltd., both of Tokyo, Japan
Filed Jan. 9, 1974, Ser. No. 431,917
Int. Cl. C12b *1/14*
U.S. Cl. 195—109 **2 Claims**

1. In a process for cultivating microorganisms in which air is blown into the bottom of a bubble column fermentor containing a cultivation medium seeded with the microorganism being grown, to agitate the contents of the column and to improve growth of the microorganism, the improvement which comprises continuously blowing the air into the column so that the superficial gas velocity of the air flowing upwardly through the column is in the range of 14 to 32 cm./sec. during the entirety of the cultivation process, to reduce foaming in the column.

3,846,247
MOISTURE BARRIER

Donald P. Kronish, Rockaway, Lee S. Zuriff, Parsippany, William D. Young, Montclair, and Paul R. Lewandowski, Parsippany, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
No Drawing. Filed Sept. 27, 1972, Ser. No. 292,701
Int. Cl. C12k *1/00*
U.S. Cl. 195—127 **3 Claims**

1. In a strip of bibulous material, capable of absorbing fluid by capillary action, said strip being divided into several zones which may be impregnated with various materials, the improvement of which comprises said strip having at least one moisture barrier zone area formed by having impregnated therein a chrome complex coordination compound of



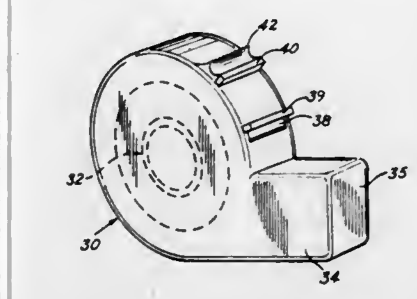
wherein R represents a C_{13} to C_{18} fatty acid radial and having further impregnated over and extending over either side of the same area ethyl methacrylate-methyl acrylate copolymer.

3,846,248
METHOD AND APPARATUS FOR TAKING AND TRANSFERRING BACTERIA SAMPLES

J. Sterling Rose, Denver, Colo., assignor to Birko Chemical Corporation, Denver, Colo.
Continuation of abandoned application Ser. No. 207,110, Dec. 13, 1971, which is a division of application Ser. No. 5,702, Jan. 26, 1970, now Patent No. 3,661,718. This application Oct. 26, 1973, Ser. No. 409,916
Int. Cl. C12k *1/10*
U.S. Cl. 195—127 **6 Claims**

1. An apparatus for gathering bacteria samples from selected surface areas and transferring said samples to a culture, said apparatus comprising:
(a) a roll of adhesive tape, said tape having a non-drying adhesive substance to one side thereof;
(b) housing means surrounding and rotatably supporting said roll of adhesive tape whereby the tape may be selectively unwound from said tape roll through

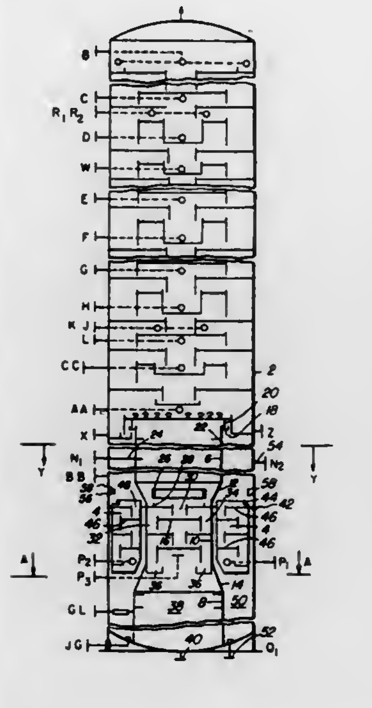
a slot provided in the periphery of said housing, said housing being enclosed to seal the tape from extraneous bacteria and said slot being narrow to permit close passage of said tape;



(c) projecting mandrel means extending outwardly a substantial distance from said housing adjacent said slot, said mandrel at its outer end including a flat, fully exposed surface, said surface having a width slightly less than the width of the tape and a length the same as the width of the tape to provide a substantially square surface area over which said tape may be wrapped with its adhesive side exposed for pressing said adhesive side against said selected surface area for gathering a bacteria sample and thereafter, pressing the same area of the tape against a culture medium for transferring the bacteria thereto, and
(d) means arranged on the outer surface of said housing adjacent to said slot for severing used portions of the tape from said roll.

3,846,249
METHOD AND APPARATUS FOR SIMULTANEOUSLY FRACTIONATING A PLURALITY OF CRUDE OILS

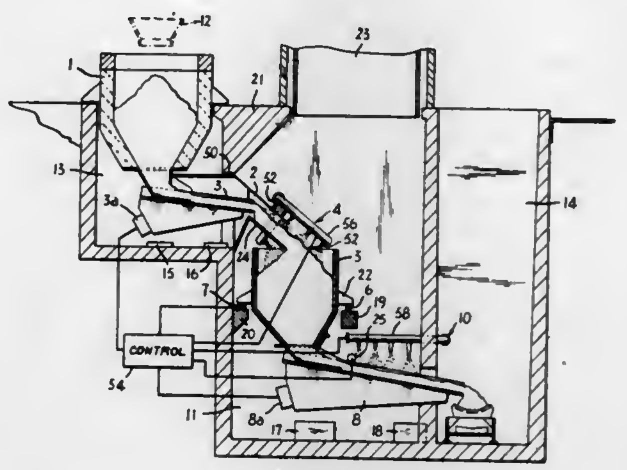
Horace B. Merriman, South Ascot, England, assignor to Mobil Oil Corporation
Filed Nov. 16, 1973, Ser. No. 416,423
Claims priority, application Great Britain, Nov. 30, 1972, 55,292/72
Int. Cl. B01d *3/30*
U.S. Cl. 196—111 **10 Claims**



1. A fractionating tower for separating at least two different crude oil charge materials simultaneously comprising in combination:
a cylindrical distillation chamber separate from a plurality of adjacent separate distillation cartridge means positioned in the lower portion of the tower,
an elongated rectification section above said distillation means and containing a plurality of vertically spaced apart fractionating trays,
each of said distillation means provided with a plurality of vertically spaced apart distillation trays,
the upper end of each of said distillation means being in open communication with the bottom portion of said rectification chamber and separate therefrom by tray means arranged to channel liquid collected thereon into said cartridge distillation means,
feed inlet means to an upper inner flash zone portion of said cylindrical distillation chamber and feed inlet means to an annular section of said tower above said cartridge distillation means,
spaced apart liquid withdrawal and inlet means throughout the vertical height of said rectification section,
and means for withdrawing residual product from the bottom of said cylindrical distillation chamber separately from the bottom of said annular section.

3,846,250
COKE QUENCHING METHOD AND DEVICE

Johannes Knappstein, Helmut Fritzsche, and Josef Stratmann, Recklinghausen, Germany, assignors to Firma Carl Still Recklinghausen, Recklinghausen, Germany
Continuation of application Ser. No. 174,645, Aug. 25, 1971. This application May 2, 1973, Ser. No. 356,299
Claims priority, application Germany, Sept. 18, 1970, P 20 46 117.0
Int. Cl. C10b *39/08, 39/12*
U.S. Cl. 201—39 **14 Claims**



1. A device for continuously quenching glowing coke, comprising a housing defining a quenching chamber having a chimney, a large size and deep quenching tank in said quenching chamber capable of containing a substantial vertical column of coke, a coke charging device connected to said tank for charging it with coke including a first conveyor along which a layer of coke is moved to said tank, a first water quenching spray located over said tank and also over said conveyer for spray quenching the coke first as it is moved to said tank and thereafter as it is delivered to and also after it is deposited in said quenching tank, a second conveyor connected to the lower end of said quenching tank and extending outwardly of said chamber, a second water quenching spray located over said second conveyor for spray quenching the coke along said conveyor as it leaves said tank and is moved outwardly of said chamber and drive means connected to said first and second conveyors for moving the coke and controlling the speed thereof in accordance with the quantity of coke in said tank.

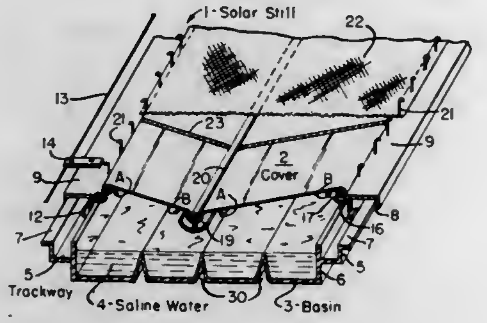
3,846,251

APPARATUS FOR SOLAR DISTILLATION

Harold R. Hay, Menlo Park, Calif.
(2424 Wilshire Blvd., Los Angeles, Calif. 90057)

Filed Mar. 2, 1971, Ser. No. 120,183

Int. Cl. B01d *3/00*
U.S. Cl. 202—234 **15 Claims**



1. An apparatus for the distillation of a liquid comprising a solar still having in combination one or more distilland-retaining components, a cover capable of transmitting radiant energy to convert distilland in said distilland-retaining component to vapor which is condensed to distillance which is collected, and the improvement which comprises:

(a) a rigid cover-supporting transport member which at least in part is adapted for moving said cover as a whole, and

(b) at least one rigid trackway associated with a distilland-retaining component said trackway engaging said transport member in a manner which permits said member to be moved from a first position in which said cover overlies at least a portion of said distilland-retaining component to a second position exposing said portion to ambient overlying air and permitting the return of said member and said cover to said first position and

(c) means for removing from said solar still the liquid condensate so as to maintain in a relatively water-free condition a direct downward bearing relationship between the rigid cover-supporting means and the rigid trackway.

3,846,252

COKE DISCHARGING SYSTEM

William D. Edgar, Allison Park, John D. Sustarsic, McKees Rocks, and Raymond C. Kinzler, Carnegie, Pa., assignors to Koppers Company, Inc.

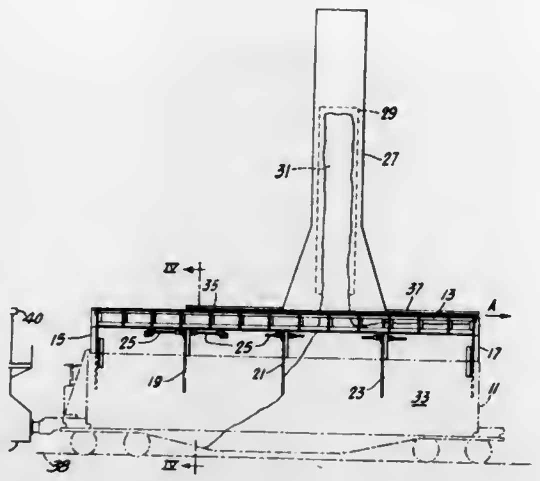
Original application Dec. 27, 1971, Ser. No. 212,570, now Patent No. 3,788,236. Divided and this application Oct. 26, 1973, Ser. No. 409,948

Int. Cl. B61d *3/16;* **C10b** *39/14*
U.S. Cl. 202—262 **1 Claim**

1. In a system for guiding coke through a coke guide and a quenching car that is adapted for movement by a locomotive for receiving the coke, the improvement comprising:

(a) a plurality of cantilevered baffles installed to one side of and within and extending transversely of said quenching car, with the top edge of said baffles being above the top of said locomotive, said baffles dividing said quenching car into a plurality of coke carrying spaces and being spaced apart from the bottom and from the other side of said car;

(b) means connected to said one of the sides and to each baffle supporting it in a transverse position in said car; and



(c) a cover on said coke guide that extends over at least two of said coke carrying spaces as coke is being received in said quenching car

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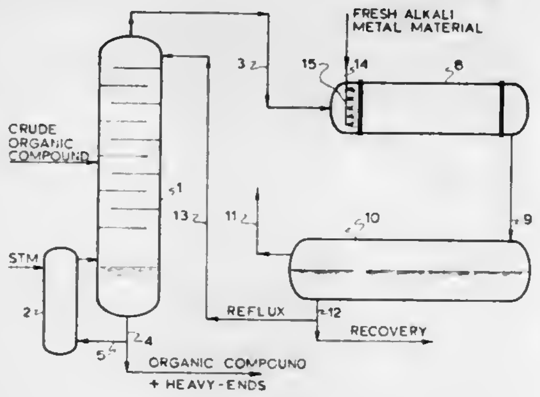
3,846,253

DISTILLATION OF CHLORINATED HYDROCARBONS WITH ALKALI METAL MATERIAL ADDITION

Robert Paul Obrecht, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Dec. 6, 1971, Ser. No. 208,029

Int. Cl. C07c *19/00, 17/38*
U.S. Cl. 203—7 **14 Claims**



1. In a process for the purification of a chlorinated hydrocarbon containing 2 to 10 carbon atoms wherein the crude chlorinated hydrocarbon is passed to a light-ends fractional distillation zone to fractionally distill the crude chlorinated hydrocarbon and separate an overhead fraction containing low-boiling chlorinated hydrocarbon impurities and water, and a bottoms fraction containing the chlorinated hydrocarbon and a small amount of high boiling impurities, the overhead fraction is passed to a light-ends recovery zone comprising a condensation zone and a light-ends accumulation zone in communication with and following the condensation zone, and wherein the low-boiling chlorinated hydrocarbon impurities are condensed, accumulated, and separated from the water, and recovered, the improvement comprising, feeding an effective amount of an alkali metal material selected from the group consisting of NaOH, KOH, LiOH, Na_2CO_3, K_2CO_3, Li_2CO_3, $NaHCO_3$, $KHCO_3$, $LiHCO_3$, and mixtures thereof in solution to the overhead fraction at a point between the light-ends fractional distillation zone and the light-ends recovery zone.

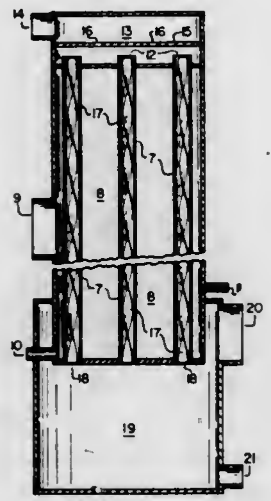
3,846,254

INTERFACE ENHANCEMENT APPLIED TO EVAPORATION OF LIQUIDS

Hugo H. Sephton, 120 York Ave.,
Kensington, Calif. 94708

Continuation-in-part of applications Ser. No. 845,311, July 28, 1969, now Patent No. 3,648,754, Ser. No. 845,312, July 28, 1969, Ser. No. 845,313, July 28, 1969, Ser. No. 17,559, Mar. 9, 1970, and Ser. No. 52,658, July 6, 1970 all now abandoned. This application Jan. 31, 1972, Ser. No. 222,358

Int. Cl. B01d *1/22, 3/00, 3/08;* **F25j** *3/02*
U.S. Cl. 203—11 **12 Claims**



1. A method for increasing the interfacial surface between a liquid phase and a vapor phase, and the rate of evaporation of said liquid phase, to enhance heat and mass transfer therebetween, comprising: selecting a liquid to be evaporated; incorporating a surfactant into said liquid, wherein said surfactant, having within the molecule a lyophilic and lyophobic grouping is a member selected from the group comprising synthetic anionic, cationic and nonionic surfactants consisting of sulphonated ethoxylated linear alcohols, quaternary ammonium compounds, and polyvinyl alcohols; passing said surfactant-containing liquid substantially as a single phase into a flow channel while simultaneously reducing the pressure on said liquid by an amount sufficient to thereby convert a portion of said surfactant-containing liquid to a foamy mixture consisting substantially of liquid phase and vapor phase; partially vaporizing said liquid phase while flowing said liquid and vapor phases through said flow channel; and thereafter separating and condensing said partially vaporized liquid phase.

ERRATUM

For Class 203—15 see:
Patent No. 3,846,488

3,846,255

SEPARATING PHENOL FROM PHENOL-WATER SUBAZEOTROPE BY TREATMENT WITH BRINE

Francis J. Sisk, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 4, 1972, Ser. No. 240,917

Int. Cl. C07c *29/26*
U.S. Cl. 203—18 **17 Claims**

1. An apparatus for separating phenol from a composition containing up to about 8% of a salt and a subazeotropic mixture of phenol and water comprising:

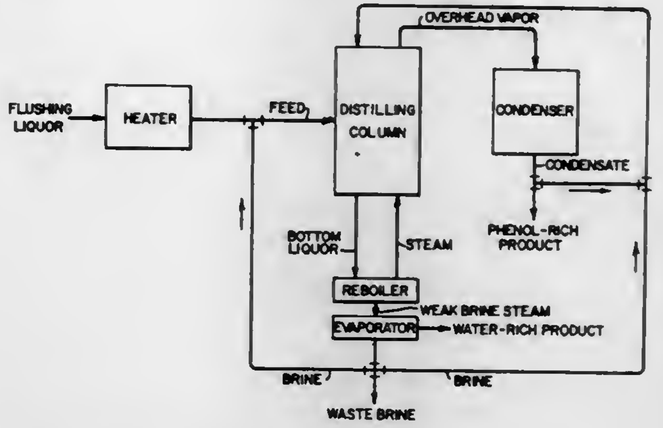
(A) a distilling column for producing an overhead vapor and a bottom liquor;

(B) a condenser for condensing said overhead vapor to form a condensate;

(C) a heater for heating said composition;

(D) a reboiler for boiling a portion of said bottom liquor to produce steam;

(E) an evaporator for evaporating a portion of said bottom liquor to produce brine and a water-rich product; and



(F) connecting means to
  (1) mix a first portion of said brine with said composition;
  (2) admit said mixed first portion and composition to said distilling column at a point where the phenol-water ratio of said mixture is about equal to the phenol-water ratio of the liquid in said column;
  (3) mix a second portion of said brine with at least a portion of said condensate;
  (4) admit said mixed second portion and condensate to the top of said distilling column; and
  (5) admit at least a portion of said steam from said reboiler to the bottom of said distilling column.

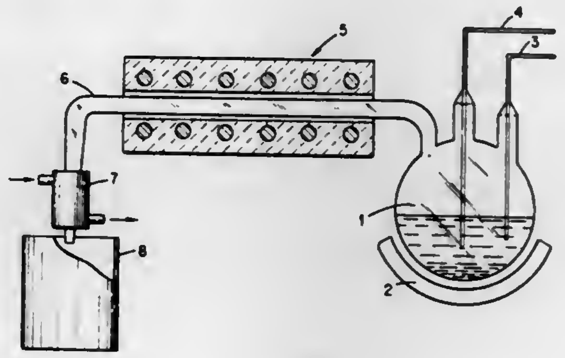
3,846,256

CHEMICAL TRAP

William C. Dietrich, Knoxville, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 17, 1973, Ser. No. 398,265

Int. Cl. B01d *3/00, 3/34;* **C01b** *9/08*
U.S. Cl. 203—33 **8 Claims**



1. A method for purifying contaminated nitric acid containing fluoride impurities comprising the steps of:

preparing a solution containing said contaminated acid, aluminum ions and calcium ions;

boiling said solution to give off nitric acid vapor and to react said aluminum with said fluoride impurities to form a non-distillable aluminum fluoride complex; and

condensing said vapor as purified nitric acid.

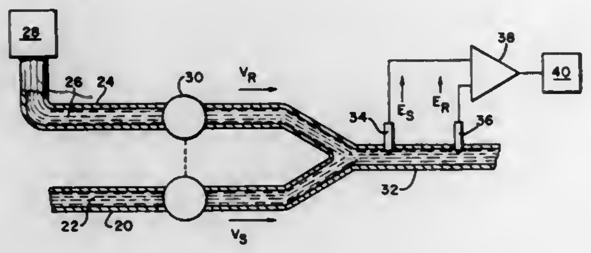
3,846,257

ELECTROCHEMICAL MONITORING

John H. Riseman, Cambridge, and Martin Frant, Newton, Mass., assignors to Orion Research Incorporated, Cambridge, Mass.

Original application Jan. 19, 1972, Ser. No. 218,881. Divided and this application Feb. 1, 1974, Ser. No. 438,783

Int. Cl. G01n *27/46*
U.S. Cl. 204—1 T **8 Claims**



1. A method for continuous electrochemical monitoring of a first liquid flow stream for the presence of an ionic species of interest by a first electrode capable of providing an electrical signal responsively to the activity of said ionic species, said method comprising the steps of

mixing intimately with said first stream at a point upstream from said first electrode, a second liquid flow stream containing a mixture of said ionic species of interest and a second noninterfering ion species in a substantially fixed ratio to one another so that said first electrode provides a first electrical signal responsively to the activity of said species of interest in the mixed flow stream;

generating a second electrical signal with a second electrode responsively to the activity of said second species in the mixed flow stream; and

determining a difference signal between the electrical signals from said electrodes.

3,846,258

PROCESS FOR SOLDER COATING SILICON SOLAR CELLS

Robert Walther Rostron, Washington, D.C., and Peter Ferenc Varadi, Rockville, Md., assignors to Communications Satellite Corporation, Washington, D.C.

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,451

Int. Cl. C23b *5/32, 5/48*
U.S. Cl. 204—15 **5 Claims**

1. In a process for manufacturing silicon semiconductor devices the improvement comprising electroplating a solder coating directly onto the electrical contact surfaces of said silicon devices, said electrical contact surfaces being metal layers having a top surface selected from the group consisting of gold, silver and nickel.

3,846,259

SEMICONDUCTOR FABRICATION METHOD FOR ACCOMMODATING REDUNDANCY

Bernard F. Duncan, Fishkill, and David K. Seto, La Grangeville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

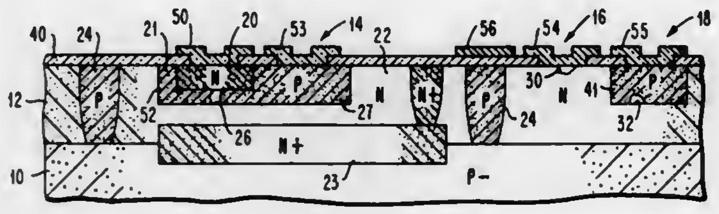
Filed Oct. 18, 1973, Ser. No. 407,732

Int. Cl. C23b *5/48,* **H01l** *7/00*
U.S. Cl. 204—15 **11 Claims**

1. An integrated circuit semiconductor device fabrication method for utilizing semiconductor substrates that potentially embody defective active and passive devices and isolation structure defects, said substrate including a plurality of transistor devices, an overlying insulating layer, and contact openings through the layer exposing regions defined by a PN junction, the method comprising

depositing a blanket layer of an anodizable metal selected from the group consisting of niobium, zirconium, tungsten, tantalum, and aluminum, over said insulating layer,

forming said layer of metal into discrete areas over said contact openings, and areas of the insulating layer,



immersing at least the surface of the substrate embodying the insulating layer and metal layer to an electrolyte solution,

impressing a voltage across the semiconductor substrate and said solution to make the substrate an anode, said voltage applied to back-bias the PN junctions in said substrate in electrical contact with said metal areas,

removing the body from the electrolyte solution,

removing the un-anodized metal layer areas, and

forming an interconnection metallurgy pattern on the surface of said substrate over any remaining anodized metal areas, said anodized areas preventing electrical contact from being formed between said interconnection metallurgy layer and the defective devices and structure in said substrate.

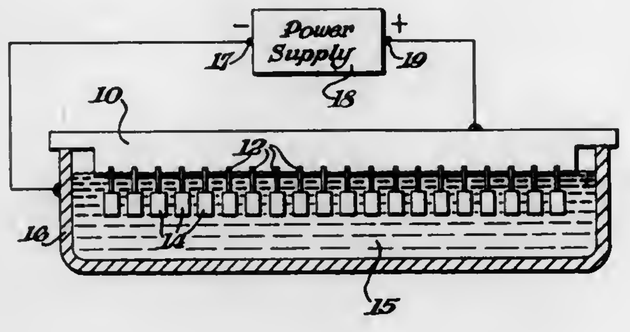
3,846,260

TANTALUM PELLET SYSTEM AND METHODS OF MAKING AND USING THE SAME

Walter J. Bernard, Willamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed May 18, 1973, Ser. No. 361,688

Int. Cl. B23k *31/02;* **C23b** *5/56, 5/68*
U.S. Cl. 204—25 **7 Claims**



1. A tantalum pellet system comprising a bar of composite material consisting essentially of aluminum and from two to fifteen percent alumina by volume; and a plurality of sintered tantalum pellets, each said pellet having a tantalum wire lead extending therefrom, each said lead being welded to said bar, each said lead lying essentially at right angles to the major axis of said bar, all said leads lying essentially in one plane, and the closest separation between each said pellet and said bar being ⅜ inch or less.

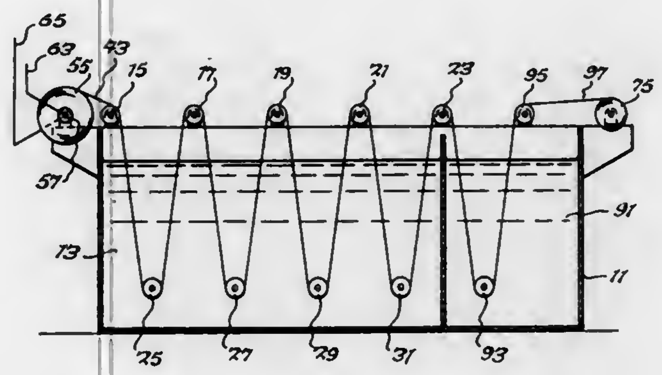
3,846,261

ANODIZING OF METALS

Karl Moeglich, Williamsville, N.Y., assignor to D. A. Hughes Affiliates, Inc., Buffalo, N.Y.

Filed Sept. 6, 1972, Ser. No. 286,766

Int. Cl. C23b *9/02, 11/02;* **C23f** *23/00*
U.S. Cl. 204—56 R **23 Claims**



1. A method of anodizing a metal which comprises passing an electric current through such metal while it is an electrode in an electrolyte and reversing the direction of such current flow from 10 to 130 times per minute.

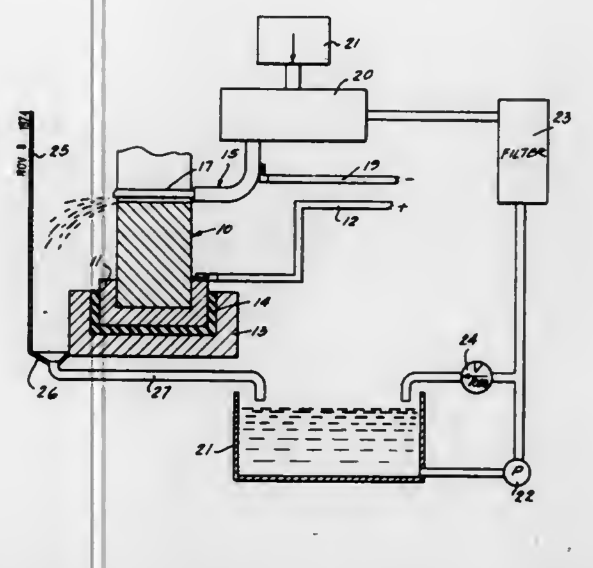
3,846,262

ELECTROCHEMICAL MACHINING CUTOFF

James D. Andrews, Birmingham, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed July 5, 1973, Ser. No. 376,529

Int. Cl. B23p *1/02;* **C01b** *13/04;* **C23b** *5/76*
U.S. Cl. 204—129.6 **6 Claims**



1. An electrode for electromechanical cutting comprising a tube made of electrically conductive metal, and a flatted cylindrical rod of electrically conductive metal fitted within said tube and projecting therefrom, at one end, the flattened portion of said rod projection constituting a cutting surface, said rod having its flat surface providing a path for electrolyte between said flat surface and the inner wall of said tube, the other end of said tube constituting means for introducing electrolyte to said path.

3,846,263

METHOD OF FORMING GRADUATIONS AND OTHER MARKINGS ON A SURFACE-COATED METAL ARTICLE

Edmund Day, Woodhouse 9WP, Sheffield, England

No Drawing. Continuation-in-part of application Ser. No. 200,628, Nov. 19, 1971, which is a continuation of application Ser. No. 831,757, June 9, 1969, both now abandoned. This application Oct. 26, 1973, Ser. No. 410,023

Claims priority, application Great Britain, June 13, 1968, 28,227/68

Int. Cl. C23b *3/04*
U.S. Cl. 204—129.65 **4 Claims**

1. A method of manufacturing a surface-coated metal article having at its surface a desired pattern of visible graduations and other markings, comprising the steps of:

(a) providing a metal blank with a protective metal plating over the entire surface which is to be graduated and marked;

(b) applying an adherent masking compound to the plating surface so as to leave that surface exposed at selected areas in the form of the desired pattern of graduations and other markings, but in which lines defining that pattern are narrower than corresponding lines to be produced in the desired finished pattern;

(c) electrolytically stripping the exposed metal plating at the said pattern lines so as to expose the metal blank therebeneath;

(d) chemically etching the metal blank exposed at the said pattern lines so as to produce a pattern of graduations and markings in a colour contrasting with the colour of the metal plating;

(e) chemically etching away, from the rear, parts of the masked plating which are left overhanging the etched areas of the blank as a result of the preceding etching step; and

(f) removing the masking compound to reveal the plated article bearing the finished pattern of graduations and other markings as defined by pattern lines of desired width.

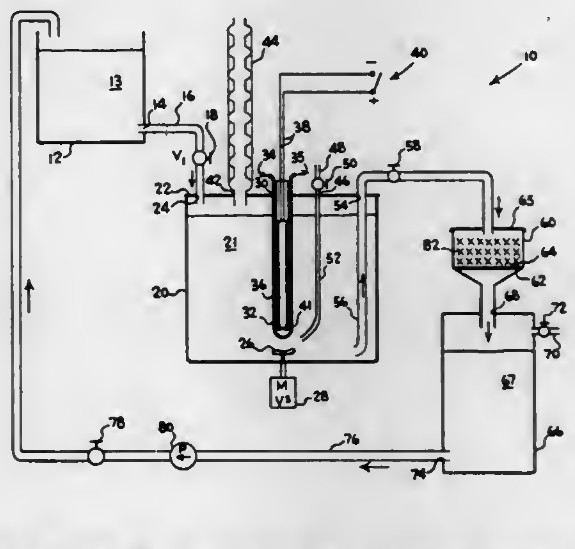
3,846,264

METHOD FOR SYNTHESIZING DICARBAZOLYL CYCLOBUTANE

Jean-Pierre Montillier, Trumbull, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Dec. 7, 1973, Ser. No. 422,755

Int. Cl. B01j *1/10*
U.S. Cl. 204—158 R **17 Claims**



1. In a process for synthesizing 1,2-dicarbazolyl cyclobutane, the steps comprising: preparing a 0.5 to 2.5 molar solution of mono vinylcarbazole in a solvent selected from the group consisting of acetone, ethyl acetate and meth-

anol, feeding the solution to a reactor container, agitating the contained solution, exposing the contained solution to a source of ultraviolet light, removing the solution from the container, passing the solution through a filter, collecting the solids and supplying the filtrate back to the reactor container.

3,846,265

PRODUCTION OF SHAPED STRUCTURES

Yasuju Yamaguchi and Yujiro Nakayama, Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company, Limited, Tokyo-to, Japan
No Drawing. Filed Dec. 14, 1970, Ser. No. 98,091
Claims priority, application Japan, Dec. 24, 1969, 44/103,451
Int. Cl. C08f *29/50;* **C08b** *21/08;* **B29f** *1/08*
U.S. Cl. 204—159.12 **11 Claims**

1. A process for producing shaped structures which comprises impregnating a loose particulate, cellulosic high-polymer substance of a size larger than 10 mesh, Tyler standard sieve, with 2 to 70% by weight based on said cellulosic high-polymer substance of at least one vinyl monomer, subjecting the resulting loose particular mass consisting essentially of said particulate, cellulosic high-polymer substance impregnated with said vinyl monomer to radiation induced graft polymerization thereby to cause said vinyl monomer to graft-copolymerize onto the particulate, cellulosic high-polymer substance, and then subjecting the resulting reaction product which is still substantially loose and particulate to compression molding under heat and pressure sufficient to fuse the particulate reaction product into a coherent mass whereby the reaction product is formed into a shaped structure.

3,846,266

PROCESS FOR THE PREPARATION OF HYDROPEROXIDE DERIVATIVES OF POLYMERS

Eduard F. J. Duynstee, Sittard, and Maria E. H. A. Mevis, Brunssum, Netherlands, assignors to Stamicarbon N.V., Seerlen, Netherlands
No Drawing. Filed Dec. 13, 1971, Ser. No. 207,641
Claims priority, application Netherlands, Dec. 16, 1970, 7018306
Int. Cl. C08f *27/22*
U.S. Cl. 204—159.2 **17 Claims**

1. A photooxidation process for the preparation of hydroperoxide derivatives of polymers having a saturated polymer backbone composed only of carbon atoms and having C=C unsaturation located in pendant groups, said polymers derived from at least one mono-olefin and at least one non-conjugated diolefin monomer, said process comprising photooxidizing, without substantially autooxidizing said polymers by irradiating said polymers with light capable of catalyzing said reaction and of a wavelength of 3000 to 8000 angstroms in the presence of at least a stoichiometric amount of oxygen and a sensitizing amount of a photosensitizer, wherein the carbon atoms of said C=C bonds either (a) carry two vicinal cis hydrocarbon groups which do not form part of one and the same cyclic system, or else (b) carry at least three hydrocarbon groups, and wherein triplet oxygen is converted to singlet oxygen.

3,846,267

METHOD FOR CROSS-LINKING COPOLYMER OF TETRAFLUOROETHYLENE AND PROPYLENE BY IONIZING RADIATION

Yoneho Tabata and Gen Kojima, Tokyo, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan
No Drawing. Filed Dec. 27, 1971, Ser. No. 212,660
Claims priority, application Japan, Dec. 30, 1970, 46/122,663, 46/122,664, 46/122,665
Int. Cl. B01j *1/00;* **C08d** *1/00;* **C08f** *1/16*
U.S. Cl. 204—159.17 **6 Claims**

1. A method for cross-linking a copolymer of tetrafluoroethylene-propylene which comprises subjecting said copolymer of tetrafluoroethylene-propylene, wherein the ratio of tetrafluoroethylene to propylene in said copolymer is in the range of 90/10 to 20/80 to high energy ionizing radiation in the range of 10^3–10^8 rads in the presence of 0.1 to 20 parts by weight per 100 parts by weight of the copolymer, of a cross-linking accelerator selected from the group consisting of di-allyl amine, di-allyl ether, di-allyl melamine, di-allyl succinate, di-allyl phthalate, di-allyl maleate, tri-allyl amine, tri-allyl cyanurate, tri-allyl phosphate, and tri-allyl isocyanurate.

3,846,268

PROCESS FOR PREPARING 1,1,1-TRICHLOROETHANE

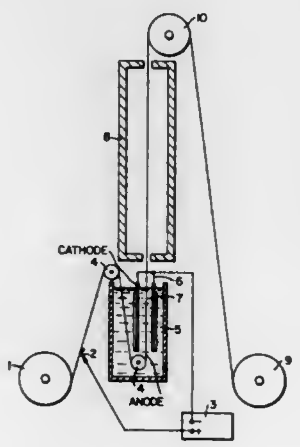
Jindrich Zahalka, Emil Plander, and Zdenek Grac, Prague, Czechoslovakia, assignors to Ustav pro vyzkum, vyrobu a vyuziti radioisotopu, Prague, Czechoslovakia
No Drawing. Filed Mar. 15, 1971, Ser. No. 124,506
Claims priority, application Czechoslovakia, Mar. 26, 1970, 2,006/70
Int. Cl. B01j *1/10;* **C07c** *17/06*
U.S. Cl. 204—163 HE **7 Claims**

1. A process for preparing 1,1,1-trichloroethane comprising irradiating with high energy ionizing radiation and initiating a chain reaction in a mixture consisting essentially of 1,1-dichloroethane and chlorine with absence of a solvent therefor, at a molar ratio of from about 1:1.5 to about 1:3.5 at a temperature in a range of from about minus 10° C. to about 80° C., under pressure in a range of 0.1 kg./sq. in. to about 15 kg./sq. in. to cause chlorination and without thermal dissociation of said 1,1-dichloroethane and consequent formation of elemental carbon, the ionizing radiation having an energy in a range of from about 0.5 Mev. to about 20 Mev. at a dosing speed in a range of from about 0.5 rad./sec. to about 0.1 Mrad./sec. until chlorination is substantially complete and recovering approximately 90% 1,1,1-trichloroethane.

3,846,269

METHOD FOR CONTINUOUS COATING OF POLYIMIDE BY ELECTRODEPOSITION

Norman E. Martello, Turtle Creek, and David C. Phillips, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 19, 1972, Ser. No. 245,455
Int. Cl. B01k *5/02;* **C23b** *13/00*
U.S. Cl. 204—181 **20 Claims**



1. A method of coating a metallic electrical conductor comprising the steps of:

(A) continuously passing positively charged electrical conductor near a negatively charged electrode in a bath of a conducting non-aqueous polyamic acid colloidal electrodeposition composition, said colloidal electrodeposition composition comprising acid salt within a solvent mixture, said acid salt being the reaction product of a polyamic acid and a basic organic nitrogen containing compound, said colloidal electrodeposition composition comprising about 1 part by weight polyamic acid, about 0.8 to about 1.2 parts by weight basic organic nitrogen containing compound, about 29 to about 37 parts by weight non-aqueous, organic solvent for the acid and about 50 to about 150 parts by weight non-aqueous, organic, non-solvent for the salt, wherein the current density between the conductor and negative electrode is sufficient to electrodeposit a coating on the conductor, and

(B) curing the coating to form a polyimide film on the conductor.

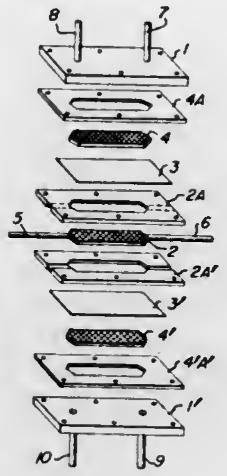
ERRATUM

For Class 204—192 see:
Patent No. 3,846,294

3,846,270

DETECTOR CELL FOR COULOMETRIC ANALYSIS

Giichi Muto, Tokyo, Yoshinori Takata, Hitachi, and Yoshimasa Hamano, Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of abandoned application Ser. No. 37,677, May 15, 1970. This application Oct. 30, 1972, Ser. No. 301,735
Claims priority, application Japan, May 16, 1969, 44/37,393
Int. Cl. G01n *27/28, 27/42*
U.S. Cl. 204—195 T **11 Claims**

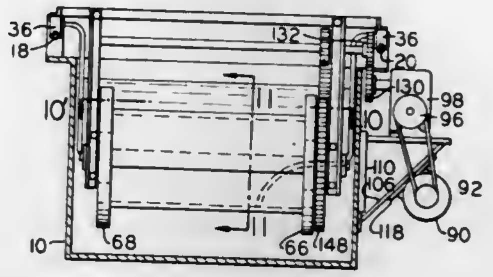


1. A detector cell for coulometric analysis of a sample liquid flowing therethrough using controlled potential coulometry, said cell comprising a vessel to be filled with an electrolyte solution, a working electrode arranged in said vessel, said working electrode being porous to allow passage of a sample liquid therethrough and having a plate-like shape, a pair of counterelectrodes each disposed in said vessel on each side of said working electrode, ion exchange membranes for preventing passage of said sample liquid and for allowing passage of ions from said electrolyte solution interposed between each of said counterelectrodes and said working electrode, said counterelectrodes also being porous to allow passage of said electrolyte solution therethrough and each of said ion exchange membranes being in contact with said working electrode and one of said counterelectrodes in such a way that there is substantially no space left between said electrodes and said membrane, sample inlet and outlet means provided in said vessel for leading the sample liquid to and away from said working electrode, electrolyte solution inlet and outlet means disposed in said vessel so that said electrolyte solution is passed through said counterelectrodes and means electrically connected to said counterelectrodes and to said working electrode for applying a constant voltage between said working electrode and said pair of counterelectrodes thereby electrolyzing said sample liquid, and means for measuring through said working electrode and said counterelectrodes the quantity of electricity caused by the electrolyzation of said sample liquid.

3,846,271

PLATING BARREL WITH SPIRAL SIDES

Albert Singleton, 7360 Brookside Parkway, Middleburg Heights, Ohio 43336
Continuation-in-part of application Ser. No. 91,394, Nov. 20, 1970, now Patent No. 3,668,103, which is a continuation-in-part of abandoned application Ser. No. 86,523, Nov. 3, 1970. This application Jan. 27, 1972, Ser. No. 221,340
The term of this patent subsequent to June 6, 1989, has been disclaimed.
Int. Cl. C23b *5/78*
U.S. Cl. 204—213 **17 Claims**



1. In the combination of a barrel assembly for finishing parts adapted for use in electroplating in combination with electrodes, said barrel member being mounted for rotation about its longitudinal axis;

hanger members supporting said barrel and extending downwardly from a horizontally extending frame adapted to rest on a plating tank;
means for rotating said barrel comprising a shaft member rotatably supported from said frame and having a first gear member carried thereon;
a second gear carried from one of said hangers and engaging said first gear, said second gear including a flat side in constant direct contact with a flat surface on one of said hangers of a size at least equal to the size of the gear;
a third gear connected to said drum and engaging said second gear;
said shaft having at least one end extending outwardly from said gear for engagement with drive means;
means on the end of said frame for locating said assembly on a plating tank; the improvement comprising:
the barrel having a pair of spaced apart barrel end defining members;
a mounting means supporting said end defining members for selective rotation in first and second directions about a common axis extending therebetween; and
a plurality of side panel members positioned about said axis and radially outwardly thereof, said panel members extending between said end defining members to enclose a working space, each said side panel member having generally axially extending terminal side edge portions with the side edge portions of circumferentially adjacent panels being radially spaced and

circumferentially overlapping to provide a plurality of circumferentially spaced openings.

3,846,272

CATHODIC PLUG

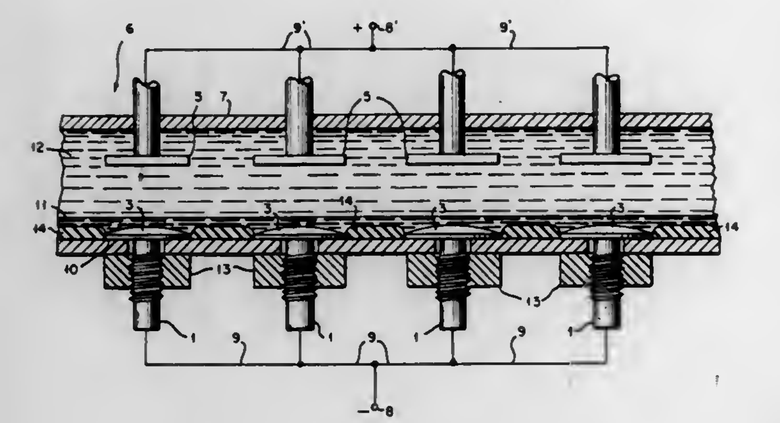
Herman H. Tiedemann, Linden, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Aug. 3, 1972, Ser. No. 277,653

Claims priority, application Germany, Sept. 11, 1971, P 21 45 507.2

Int. Cl. C22d *1/04*

U.S. Cl. 204—219 **3 Claims**



1. An improved electrolytic cell including: a cell adapted to accept a series of anode members and corresponding cathodes provided with cathode members; and an insulating medium disposed at the lower portion of such cell; said cathode member being provided with a spherical portion having a flat contact surface for directly contacting the interior wall of the cell and a threaded shank portion depending therefrom, extending through the cell wall to the exterior of said cell; fastening means engaging said threaded shank to fixedly position said cathode member with respect to said cell in a manner enabling said cathode member to co-act with a layer of mercury disposed at the lower portion of said cell to thereby form a mercury cathode.

3,846,273

METHOD OF PRODUCING VALVE METAL ELECTRODE WITH VALVE METAL OXIDE SEMICONDUCTIVE COATING HAVING A CHLORINE DISCHARGE CATALYST IN SAID COATING

Giuseppe Bianchi, Milan, Italy, Vittorio de Nora, Nassau, Bahama Islands, and Patrizio Gallone and Antonio Nidola, Milan, Italy, assignors to Electronor Corporation, Panama City, Panama

No Drawing. Continuation-in-part of applications Ser. No. 690,407, Dec. 14, 1967, and Ser. No. 771,665, Oct. 29, 1968. This application May 10, 1971, Ser. No. 141,946

Int. Cl. B01k *3/04*

U.S. Cl. 204—290 F **15 Claims**

1. The method of producing an electrode of a valve metal base from the group consisting of titanium and tantalum which comprises applying a coating mixture in liquid form to said valve metal base, which on heating forms an oxide layer on said base, 39.2% to 78% of which comprises an oxide of titanium, 6.4% to 47.5% of which comprises an oxide of a platinum group metal and 1% to 17.7% of which forms an oxide of a doping metal from the group consisting of tin, vanadium, lanthanum, cobalt, and mixtures thereof, the said percentages being based upon the weight of the metals in said oxides, applying said coating in several separate layers and heating the coating on the valve metal base between the application of each layer.

3,846,274

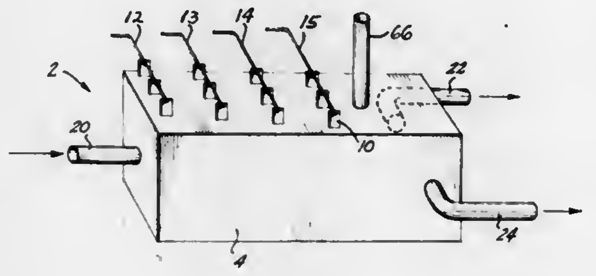
ELECTROPERISTALTIC ION PUMP

John F. Gifford, P.O. Box 117, Corrales, N. Mex. 80748

Filed Apr. 10, 1972, Ser. No. 242,348

Int. Cl. B01k *5/00;* **C02b** *1/82*

U.S. Cl. 204—299 **27 Claims**



1. In a fluid flow cell defining a fluid flow passage having a series of spaced electrodes disposed therein, forming a series of successively interconnected flow regions therebetween, electrical pulse generating means connected to apply a series of successively timed electrical pulses across the series of flow regions, between the individual electrodes of pairs of electrodes whose respective electrodes lie on opposite sides of successive regions in one transverse direction of the series of electrodes, means operative between the successive time phases of the pulses, to neutralize the polarity of the relatively forward electrode of the pair of electrodes on the opposite sides of one flow region, in the aforesaid transverse direction of the series of electrodes, while establishing a polarity in the relatively forward electrode of the pair of electrodes on the opposite sides of the next successive flow region, which is identical to the polarity which characterized the aforesaid relatively forward electrode of the aforesaid one flow region, during the last preceding pulse, and means for passing the fluid into the passage and recovering a portion thereof, adjacent opposite ends of the flow regions.

3,846,275

COAL LIQUEFACTION PROCESS

Peter Urban, Northbrook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Sept. 15, 1972, Ser. No. 289,502

Int. Cl. C10g *1/06*

U.S. Cl. 208—10 **13 Claims**

1. A process for the liquefaction of coal which comprises contacting the coal, at a temperature of from about 150° C. to about 375° C. and a pressure of from about 10 to about 300 atmospheres for a contact time corresponding to from 1 to 600 minutes or a liquid hourly spaced velocity of about 0.16 to about 1.0, with from about 100 wt. percent to about 1,000 wt. percent of water, a reducing gas selected from the group consisting of hydrogen, carbon monoxide and mixtures thereof in an amount of from about 0.5 to about 175 scf. per pound of carbon in the coal, and from about 0.01 wt. percent to about 1,000 wt. percent of a catalyst consisting essentially of a catalytic sulfur compound selected from the group consisting of alkali metal and ammonium sulfides, sulfites and thiosulfates.

3,846,276

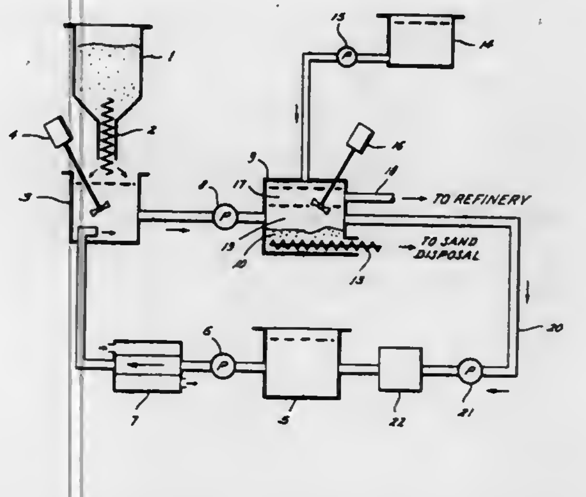
PROCESS FOR SEPARATING BITUMEN FROM TAR SAND RECOVERED FROM DEPOSITS BY MINING

Clarence O. Walker, Richmond, Tex., assignor to Texaco Inc., New York, N.Y.

Filed June 18, 1973, Ser. No. 371,203

Int. Cl. C10g *1/04*

U.S. Cl. 208—11 **20 Claims**



1. A process for separating bitumen and sand from tar sand material recovered from subterranean deposits by mining comprising:

contacting the tar sand material with an aqueous solution comprising an inorganic polyphosphate substance plus an alkalinity agent, the temperature of said solution being greater than 100° F.

3,846,277

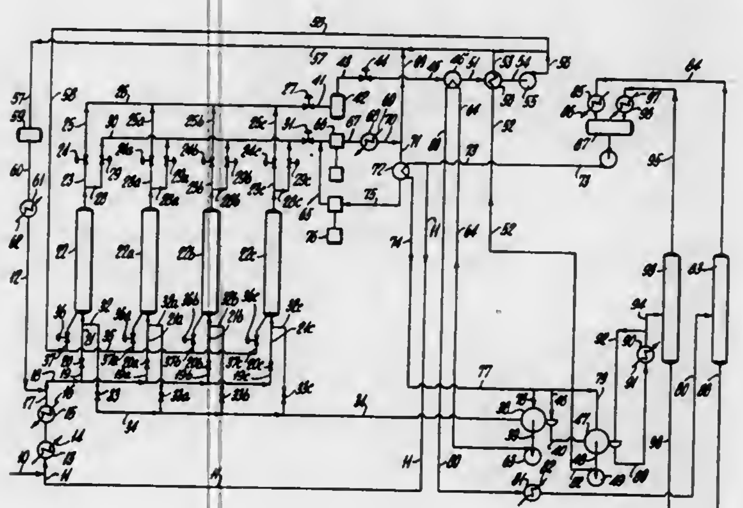
DEWAXING OF OILS

Herbert A. McIntosh, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Sept. 1, 1972, Ser. No. 285,784

Int. Cl. C10g *43/08*

U.S. Cl. 208—31 **9 Claims**



1. The method of separating wax from a wax-bearing oil which comprises:

- (a) mixing said wax-bearing oil with a dewaxing solvent and a liquid refrigerant at an initial pressure at least sufficient to maintain said refrigerant in liquid phase;
- (b) reducing the pressure on the resulting oil-solvent-refrigerant mixture in a chilling operation effecting evaporation of said refrigerant and concomitant cooling of said mixture to a temperature at which wax crystallizes forming a first slurry of wax in remaining oil-solvent mixture and a volatilized high pressure refrigerant vapor;
- (c) further reducing the pressure on said resulting oil-solvent-refrigerant mixture effecting further evaporation of a second portion of said refrigerant at a low pressure and concomitant further cooling of said mixture to a temperature at which additional wax crystallizes in said first slurry forming a volatilized low pressure refrigerant vapor;
- (d) filtering said first slurry from step (c) thereby forming (i) a first filter cake of slack wax containing wax crystals and occluded oil-solvent mixture and (ii) a first filtrate containing dewaxed oil and solvent;
- (e) cooling said volatilized high pressure refrigerant vapor, at a pressure no higher than the pressure of its evaporation, in indirect heat exchange against said first filtrate thereby forming a cooled high pressure refrigerant;
- (f) condensing said cooled high pressure refrigerant thereby forming a liquid high pressure refrigerant;
- (g) passing said liquid high pressure refrigerant to said mixing step;
- (h) separating dewaxed oil from said first filter cake; and
- (i) separating deoiled wax from said first filter cake.

3,846,278

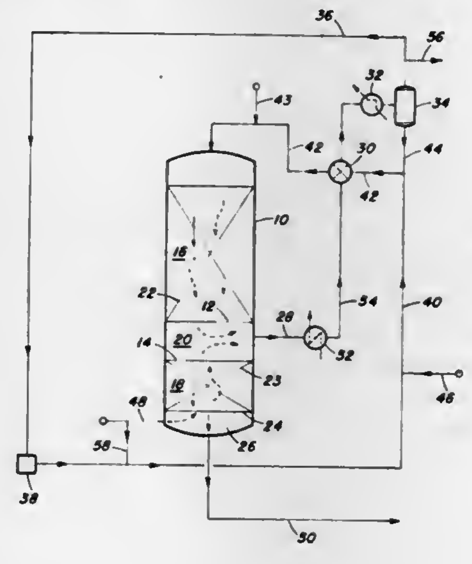
PRODUCTION OF JET FUEL

Morgan C. Sze, Upper Montclair, and James W. Reilly, Westfield, N.J., assignors to The Lummus Company, Bloomfield, N.J.

Continuation-in-part of application Ser. No. 177,362, Sept. 2, 1971, now Patent No. 3,767,562. This application July 12, 1973, Ser. No. 378,617

Int. Cl. C10g *23/04, 23/16*

U.S. Cl. 208—57 **20 Claims**



1. A process for producing jet fuels by the two-stage hydrogenation of a hydrocarbon feed having a boiling range within the temperature range of about 135° F. to about 550° F. and substantially free of sulfur-containing impurities, comprising the steps of:

- (a) passing the feed in cocurrent contact with a hydrogen-rich gas through a first hydrogenation zone operated at a temperature of from about 250° F. to about 575° F. and at elevated pressure in contact with a catalyst comprising a platinum group metal to at least partially hydrogenate the feed;
- (b) removing from the first hydrogenation zone a gas phase effluent comprising hydrogen and vaporized

liquid materials, and a partially hydrogenated liquid hydrocarbon effluent;

(c) further hydrogenating the liquid hydrocarbon effluent in a second hydrogenation zone operated at a temperature of from about 200° F. to about 500° F. at elevated pressure by passing a hydrogen-rich gas into the second hydrogenation zone counter-currently to the liquid hydrocarbon effluent, in contact with a catalyst comprising nickel; and

(d) drawing off from the second hydrogenation zone a gas phase effluent comprising hydrogen and vaporized liquid material and a liquid phase effluent comprising jet fuel.

3,846,279

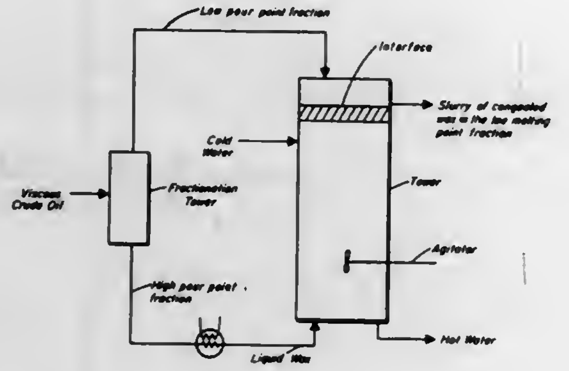
METHOD FOR MAKING AND SLURRYING WAX BEADS

Lavaun S. Merrill, Jr., Englewood, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Sept. 18, 1972, Ser. No. 289,918

Int. Cl. F17d *1/16*

U.S. Cl. 208—93 **40 Claims**



1. A process for transporting a hydrocarbon mixture as a slurry, the process comprising:

(1) fractionating the hydrocarbon mixture into at least a relatively low pour point fraction and a relatively high pour point fraction,

(2) introducing at least a portion of the relatively high pour point fraction into the bottom of a tower having a continuous stream of water flowing countercurrent to the introduction of the relatively high pour point fraction and wherein the water enters the top portion of the tower a temperature at least about 5° F. below the congelation temperature of the relatively high pour point fraction,

(3) imparting sufficient turbulence to the high pour point fraction to cause it to be dispersed into the water phase within the tower and permitting the dispersed particles of the fraction to stay in contact with the water for sufficient time to substantially congeal the fraction,

(4) permitting the resulting congealed particles to move upwardly through the tower and pass through an interface in the tower, the interface being the junction between the relatively low pour point fraction being introduced into the top of the tower and the water within the tower,

(5) withdrawing at least a portion of the resulting slurry of the congealed particles in the low pour point fraction at about the interface and thereafter transporting the slurry at a temperature below about the solution temperature of the congealed particles in the low pour point fraction.

3,846,280

METHOD OF IMPROVING A DENSE FLUID BED CATALYST REGENERATOR USED IN CONJUNCTION WITH A RISER HYDROCARBON CONVERSION OPERATION

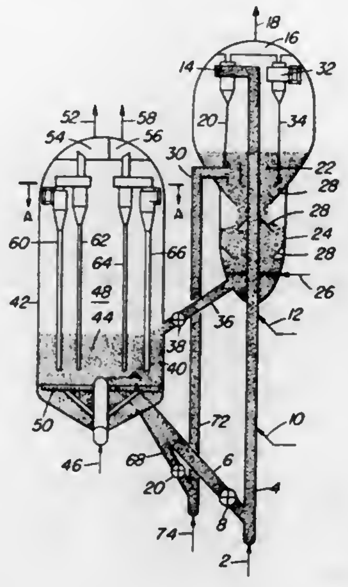
Hartley Owen, Belle Mead, and Edward J. Demmel, Pitman, N.J., assignors to Mobil Oil Corporation

Filed Sept. 10, 1973, Ser. No. 395,815

Int. Cl. B01j *11/68;* **C10g** *11/18*

U.S. Cl. 208—120 **8 Claims**

1. In a process system for converting hydrocarbons by cracking with a fluidizable catalyst comprising crystalline zeolite material wherein the catalyst becomes deactivated with carbonaceous deposits and the catalyst is reactivated by burning of carbonaceous deposits in a regeneration zone thereby heating the catalyst to an elevated hydrocarbon conversion temperature, the method of improving the operation for converting hydrocarbon feed materials comprising sulfur which comprises,



(a) passing a sulfur containing hydrocarbon feed with suspended freshly regenerated catalyst therein upwardly through an elongated riser conversion zone under hydrocarbon conversion conditions,

(b) cyclonically separating hydrocarbon vapors from suspended catalyst after traversing said riser conversion zone,

(c) combining sufficient freshly regenerated catalyst with catalyst separated from said riser conversion zone to form a mixed bed of catalyst at a temperature of at least 1050° F.,

(d) stripping the mixed bed of hot catalyst with stripping gas at said temperature of at least 1100° F. whereby sulfur compounds are separated from the catalyst and stripped products containing sulfur and stripping gas are combined with cyclonically separated hydrocarbon vapors,

(e) passing catalyst containing deactivating carbonaceous deposits from said stripping zone to an adjacent catalyst regeneration zone containing a dense fluid bed of swirling catalyst, said catalyst introduced to an upper portion of said bed of catalyst and tangentially thereto to influence swirl to said bed of catalyst,

(f) passing oxygen containing regeneration gas upwardly through said bed of catalyst in said regeneration zone,

(g) said regeneration zone provided with a plurality of separate cyclonic separation zones arranged within the upper periphery thereof with at least the first three cyclonic separation zones above said tangentially introduced catalyst and downstream therefrom in the direction of catalyst swirl being connected together for a separate recovery of regeneration flue gases from the remaining flue gas cyclonic separation and recovery zones, separately recovering flue gases as above provided,

and passing regenerated catalyst from said regeneration zone to each of said riser conversion zone and said stripping zone.

3,846,281

PLATINUM-MAGNESIUM REFORMING CATALYST

Joseph K. Mertzweiller, Baton Rouge, La., assignor to Exxon Research and Engineering Company

No Drawing. Filed Apr. 3, 1972, Ser. No. 240,835

Int. Cl. C10g *35/08*

U.S. Cl. 208—139 **10 Claims**

1. A process for improving the octane quality of naphthas comprising contacting the said naphtha at reforming conditions with a catalyst composite comprising porous inorganic oxide support, from about 0.3 to about 3.0 wt. percent halogen, and from about 0.01 to about 5.0 wt. percent of a hydrogenation-dehydrogenation component comprising a Group VIII noble metal and from about 0.1 to about 5.0 wt. percent of a Group IIA metal halide which is added as an additional component to the composite.

3,846,282

TRIMETALLIC CATALYTIC COMPOSITE AND USES THEREOF

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Sept. 13, 1972, Ser. No. 288,864

Int. Cl. C10g *35/06*

U.S. Cl. 208—139 **9 Claims**

1. A process for reforming a gasoline fraction which comprises contacting the gasoline fraction, at a temperature of about 800 to about 1100° F., a pressure of about 0 to about 1000 p.s.i.g., a liquid hourly space velocity of about 0.1 to about 10 $hr.^{-1}$, and a mole ratio of hydrogen to hydrocarbon of about 1:1 to 20:1, with a catalytic composite of a halogen component, a platinum or palladium component, an iridium component and a nickel component on a porous carrier material, said composite containing, on an elemental basis, about 0.1 to about 3.5 wt. percent halogen, about 0.01 to about 2 wt. percent platinum or palladium, about 0.01 to about 2 wt. percent iridium and about 0.01 to about 5 wt. percent nickel.

3,846,283

BIMETALLIC CATALYTIC REFORMING WITH HALOGEN ADDITION

Richard E. Rausch, Mundelein, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 201,576, Nov. 23, 1971, which is a continuation-in-part of application Ser. No. 807,910, Mar. 17, 1969, now Patent No. 3,740,328. This application July 5, 1973, Ser. No. 376,841

The term of this patent subsequent to July 10, 1990, has been disclaimed

Int. Cl. C10g *35/08*

U.S. Cl. 208—139 **18 Claims**

1. A process for catalytically reforming a gasoline fraction, which process comprises continuously introducing the gasoline fraction, a hydrogen stream and a halogen additive said halogen additive being added in an amount corresponding to about 0.1 to about 100 wt. p.p.m. of said gasoline fraction into a reforming zone and therein contacting the resulting mixture at reforming conditions with a catalytic composite comprising a combination of a platinum group component, a tin component and a halogen component with a porous carrier material, wherein the components are present in amounts sufficient to result in the composite, containing on an elemental basis, about 0.01 to about 2 wt. percent platinum, group metal, about 0.01 to about 5 wt. percent tin and about 0.1 to about 3.5 wt. percent halogen, wherein the tin component is uniformly dispersed throughout the porous carrier material in a particle size which is less than 100 Angstroms in maximum dimension, wherein substantially all of the platinum group component is present as an elemental metal and wherein substantially all of the tin component is present in an oxidation state above that of the elemental metal.

3,846,284

HYDROCONVERSION PROCESS

Joseph Jaffe, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Dec. 1, 1972, Ser. No. 311,083

Int. Cl. C10g *23/02*

U.S. Cl. 208—216 **5 Claims**

1. A hydrodesulfurization process which comprises contacting a hydrocarbon feedstock in a reaction zone at a temperature between 500 and 900° F., a pressure between 100 and 3,000 p.s.i.g. and in the presence of hydrogen gas, with a catalyst prepared by steps comprising chemically coprecipitating Group VI and VIII metals and alumina from a solution of aluminum hydroxy-chloride as the alumina precursor, said precipitation being effected by adding ammonia to said solution.

3,846,285

REGENERATIVE PROCESS FOR THE SELECTIVE HYDRODESULFURIZATION OF PETROLEUM RESIDUALS UNDER MILD CONDITIONS

Harold Beuther, Gibsonia, Sun W. Chun, Murrysville, and Angelo A. Montagna, Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Feb. 21, 1973, Ser. No. 334,476

Int. Cl. C10g *23/02*

U.S. Cl. 208—216 **11 Claims**

1. A process for hydrodesulfurizing a feed residual oil comprising contacting the feed oil and hydrogen with a hydrosulfurization catalyst at a temperature of about 600 to about 1,000° F., a liquid hourly space velocity of from about 0.1 to about 10 volumes of feed oil per volume of catalyst per hour and a hydrogen feed rate of from about 500 to about 10,000 standard cubic feet of hydrogen per barrel of feed oil, said catalyst comprising a minor amount of Group VI and Group VIII metals with a major amount of an alumina carrier containing less than 1 weight percent silica, said alumina carrier composited of a first alumina obtained by drying and calcining a crystalline alumina trihydrate and a second alumina obtained by drying and calcining a crystalline alumina hydrate containing from 1.2 to 2.6 mols of water of hydration per mol of Al_2O_3, the alumina trihydrate comprising an amount from about 2 to about 35 weight percent of the total of said hydrates which increases the specific hydrodesulfurization activity of said catalyst.

3,846,286

HYDRODESULFURIZATION CATALYST

John Joseph Phillipson, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation of abandoned application Ser. No. 22,046, Mar. 23, 1970. This application Apr. 4, 1973, Ser. No. 347,726

Claims priority, application Great Britain, Apr. 10, 1969, 18,387/69

Int. Cl. B01j *11/06, 11/22;* **C10g** *23/02*

U.S. Cl. 208—216 **8 Claims**

1. A catalyst precursor composition which consists essentially of at least 50% by weight alumina at least partly

in the form of sheets of fine crystallites, said sheets being of the order of 20–30 Angstrom units in thickness and up to 60 Angstrom units in length in the plane of the sheets, 1–20% by weight of a metal oxide from Group VIB of the Periodic Table, 0.5–15% by weight of a base metal oxide from Group VIII of the Periodic Table, and 1–10% of a Group II–A metal oxide, said composition being further characterised by being in the form of compressed shapes having a density under 1.2 and a mean crushing strength of at least 280 p.s.i.

3,846,287

HYDRODESULFURIZATION

Joseph Jaffe and Echol M. Reed, Jr., Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed July 23, 1973, Ser. No. 382,085

Int. Cl. C10g *23/02*

U.S. Cl. 208—216 **6 Claims**

1. A process for hydrodesulfurizing a heavy oil feedstock which comprises contacting the heavy oil, under hydrodesulfurization reaction conditions, with a hydrodesulfurization catalyst comprising a Group VIb metal or metal compound and a Group VIII metal or metal compound, and an amorphous alumina carrier containing 50 to 2000 p.p.m. calcium, wherein the carrier is prepared by mixing a calcium compound with hydrated alumina and water, thereby forming a paste; extruding the paste; and calcining the resulting extrudate.

3,846,288

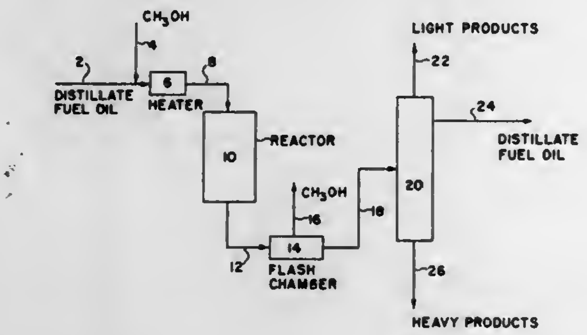
ACID NUMBER REDUCTION OF HYDROCARBON FRACTIONS USING A SOLID CATALYST AND METHANOL

Sun W. Chun, Murrysville, and Angelo A. Montagna, Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed July 5, 1973 Ser. No. 376,566

Int. Cl. C10g *17/00*

U.S. Cl. 208—263 **15 Claims**



1. A process for treating a hydrocarbon fraction having a carboxylic acid content as measured by an acid number in excess of 0.1 to produce a product having a reduced carboxylic acid content as measured by an acid number of less than 0.1 which comprises:

contacting said petroleum fraction and a lower alcohol having the formula: ROH where R is a lower alkyl group having from 1 to 3 carbon atoms and wherein the amount of said lower alcohol is at least that amount stoichiometrically required to reduce the acid number of the hydrocarbon fraction from in excess of 0.1 to less than 0.1;

at a temperature from 200° F. to the thermal cracking temperature of said petroleum fraction; and

with a solid catalyst having a surface area greater than 15 m.^{2}/g. comprising an oxide of a metal selected from the group consisting of the metals from Group IVB; aluminum; germanium; tin; lead; zinc; and cadmium.

3,846,289

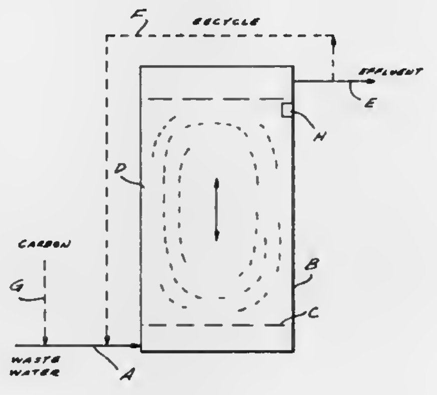
WASTE TREATMENT PROCESS

John S. Jeris, Yonkers, and Carl Beer, Sand Lake, N.Y., and James A. Mueller, Teaneck, N.J., assignors to Ecolotrol, Inc., Bethpage, N.Y.

Filed June 19, 1972, Ser. No. 264,346

Int. Cl. C02c *1/04*

U.S. Cl. 210—8 **6 Claims**



1. Process for denitrifying waste water containing nitrified waste passing the waste water through a bed of microorganisms, said bed adapted to pass suspended solids present in said waste therethrough, comprising:

(a) generating an upflow fluidized bed of denitrifying biota, said biota attached to a solid particulate carrier, said carrier having a particle size from about 0.2 to 3 millimeters and a specific gravity of at least about 1.1, by passing waste water upwardly through said bed at a flow rate of at least about 6 gallons per minute per square foot of bed to buoy the particles to overcome the influence of gravity and to impart to said bed particles movement within the bed;

(b) providing sufficient amounts of a carbon source in said waste water to allow said nitrified wastes to be converted to nitrogen by said biota;

(c) maintaining said bed at a temperature sufficient to permit biota activity; and

(d) removing excess biota growth formed on said carrier during said process such that significant quantities and generally greater than about 90% by weight of said nitrified waste is reduced from a volume of waste water treated in said bed in about 10 minutes or less and floc produced by removal of excess growth is carried from the process without interference with the efficient operation thereof.

3,846,290

RECLAMATION OF HYDROCARBON CONTAMINATED GROUND WATERS

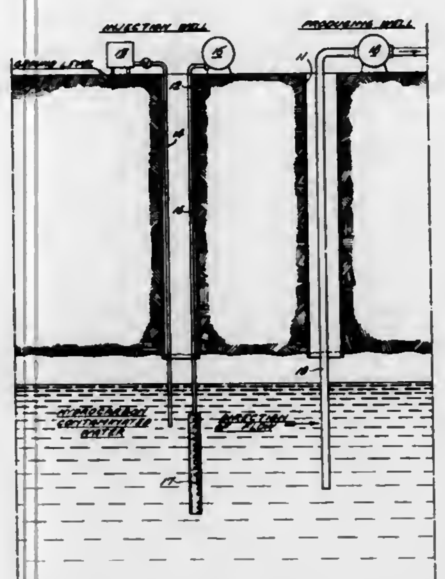
Richard L. Raymond, Wilmington, Del., assignor to Sun Research and Development Co., Philadelphia, Pa.

Filed Sept. 29, 1972, Ser. No. 293,621

Int. Cl. C02c *5/10*

U.S. Cl. 210—11 **7 Claims**

1. A process for purifying an underground water supply containing hydrocarbon contaminants by biodegrading said hydrocarbon contaminants in said underground water supply without the addition of microorganisms which comprises providing oxygen and nutrients comprised of nitrogen, phosphorus and potassium for hydrocarbon-consuming microorganisms normally present in said underground waters, said nutrients and oxygen being introduced through wells in the area of said contaminated supply, and removing water from a well located within said contaminated area until hydrocarbons are reduced to an acceptable level.



3,846,291

PROCESS OF AND INSTALLATION FOR PURIFYING SEWAGE

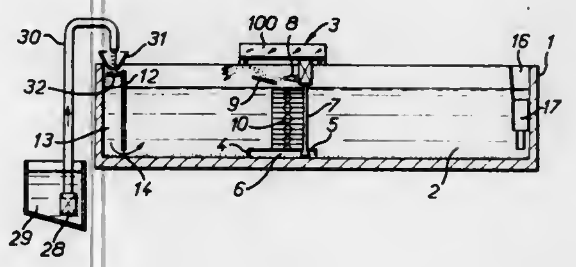
Christian Brucker, Vico, Yvelines, France

Filed Aug. 7, 1972, Ser. No. 278,228

Claims priority, application France, Aug. 9, 1971, 7129033

Int. Cl. C02c *1/08*

U.S. Cl. 210—14 **19 Claims**



1. A sewage treatment plant comprising a basin having an upstream end and a downstream end in which there is a flow of progressively treated sludge toward the downstream end, a sewage intake located at the upstream end, a treated water outlet located at the downstream end, a travelling bridge mounted for reciprocating movement along the basin between the upstream and downstream ends, sludge aerating and recycling means mounted on the travelling bridge forming a sludge circuit including a suction intake located adjacent to the bottom of the basin, suction pump means for drawing said sludge from the bottom of the basin through the suction intake, and nozzle means constructed and arranged for receiving said sludge from said pump means and aerating it by spraying it into the air, the effective direction of the sprayed sludge being toward the upstream end of the basin whereby the sludge is continually recycled in an upstream direction counter to the downstream flow of the progressively treated sewage.

3,846,292

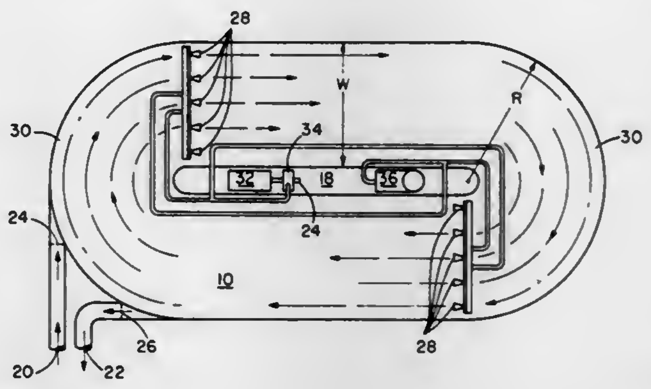
EJECTOR AERATED OXIDATION DITCH FOR WASTE TREATMENT

Archie R. Lecompte, Jr., Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of application Ser. No. 138,906, Apr. 30, 1971, which is a continuation-in-part of application Ser. No. 75,620, Sept. 25, 1970, both now abandoned. This application Oct. 5, 1973, Ser. No. 403,904

Int. Cl. C02c *1/06*

U.S. Cl. 210—14 **5 Claims**



1. A system for treating waste liquid containing settleable solids and B.O.D. comprising,

an oxidation ditch for confining and retaining the waste liquid and defining a continuous, substantially closed flow path through which the confined liquid is moved and providing for a liquid depth of at least about 10 feet,

a plurality of ejectors for aerating the waste liquid in the ditch to reduce the B.O.D. thereof and for simultaneously moving the waste liquid through the flow path, the ejectors being constructed and arranged so that they are solely capable of circulating the waste liquid throughout the ditch at a velocity of at least 0.3 foot per second to maintain the settleable solids in suspension,

said ejectors each comprising a housing having a waste liquid inlet for receiving a stream of pressurized waste liquid, a high velocity waste liquid nozzle in communication with said waste liquid inlet, an air inlet for receiving air, a mixing chamber in communication with said waste liquid nozzle and said air inlet and a discharge outlet for discharging a high velocity waste liquid-air jet,

said ejectors being arranged to discharge the waste liquid-air jets at least about 9 feet below the surface of the waste liquid in the oxidation ditch and in the direction of movement thereof.

3,846,293

LIQUID WASTE TREATMENT

Sylvester J. Campbell, 9317 Alton St., Philadelphia, Pa. 19115

Filed Feb. 22, 1972, Ser. No. 228,103

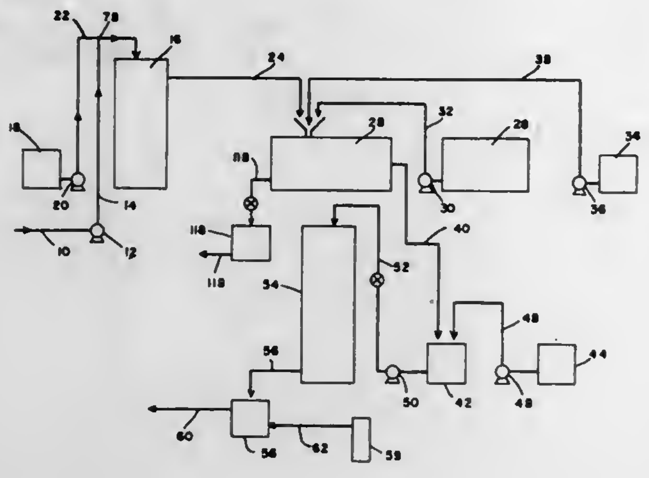
Int. Cl. C02b *1/20;* **C02c** *1/40*

U.S. Cl. 210—18 **20 Claims**

1. A process for purifying a liquid aqueous waste containing suspended particles and dissolved solids and impurities having a biochemical oxygen demand and chemical oxygen demand comprising the sequential steps of

adding a first charge-density reducing agent, ferric chloride, to the liquid waste in an amount sufficient to reduce the charge-density of particles contained therein to about −6 mv. to about 0 mv.;

adding a second charge-density reducing agent, lime, to the liquid waste in an amount sufficient to impart thereto a charge-density of about —2 mv. to about +5 mv. and thereby effect flocculation of particles therein; and



separating the flocculated particles from the liquid waste thereby removing impurities from the liquid waste;

wherein prior to the addition of said lime to said waste, sufficient time is allowed to pass for particles in said waste to coagulate into denser particles through the action of said ferric chloride, and wherein substantially all of the particles in the waste are suspended in said waste when said lime is added thereto, and wherein said waste containing said ferric chloride and prior to the addition thereto of said lime is acidic.

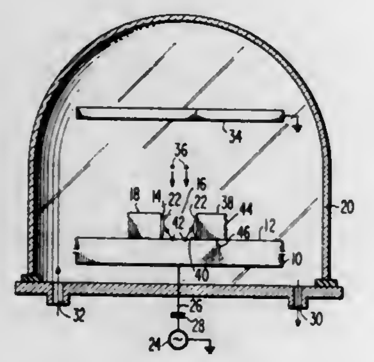
3,846,294
METHOD OF COATING THE INTERIOR WALLS OF THROUGH-HOLES

John Louis Vossen, Somerville, N.J., assignor to RCA Corporation

Filed Jan. 11, 1974, Ser. No. 432,457

Int. Cl. C23c *15/00*

U.S. Cl. 204—192 **4 Claims**



1. A method for selectively coating interior walls of through-holes in a substrate with a thin film of a material by sputtering, comprising:

(a) providing a target with a surface comprised of said material to be sputtered,

(b) disposing against said surface of said target a substrate in which the through-holes to be coated are formed,

(c) including a glow discharge in an ionizable gas plasma, and

(d) sputtering said material from said target surface onto said through-hole walls.

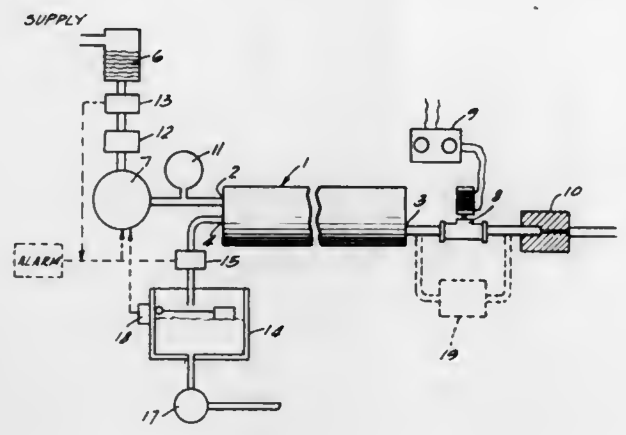
3,846,295
METHOD AND APPARATUS FOR USE IN WATER PURIFICATION BY REVERSE OSMOSIS

Erich L. Gibbs, Wilmette, Ill., assignor to Ultrascience Incorporated, Skokie, Ill.

Filed Apr. 6, 1972, Ser. No. 241,731

Int. Cl. B01d *13/00, 31/00*

U.S. Cl. 210—23 **20 Claims**



1. A method of solvent purification from an impure solvent by reverse osmosis, comprising the steps of supplying impure solvent at one side of a membrane, applying a pressure to said impure solvent sufficiently greater than the osmotic pressure thereof to produce a reverse osmotic flow through said membrane, and withdrawing concentrate forming at the input side of the membrane in a predetermined cyclic pulsed flow whereby the solvent flow across the input face of said membrane is likewise pulsed, restricting flow during periods of maximum flow to a predetermined amount which will not materially impair flow through the membrane, but which is operative to provide flow turbulence over the membrane surface with sufficient flushing thereof adequate for prevention of excessive boundary layer formation at said membrane and suspension of particulate material in said concentrate, and intermediate periods of at least a lesser concentrate flow, any flow during said intermediate periods being substantially uniform and materially less than that necessary to provide such a flow turbulence and flushing action, and said intermediate periods having a predetermined duration such that any boundary layer formation and particulate disassociation during such intermediate periods is materially countered by the maximum flow and period duration of the maximum flow period.

3,846,296
WASTE WATER PURIFICATION SYSTEM

William C. Hay, 941 Jefferson Ave., East Point, Ga. 30344

Filed Dec. 9, 1971, Ser. No. 206,444

Int. Cl. B01d *15/06*

U.S. Cl. 210—27 **14 Claims**

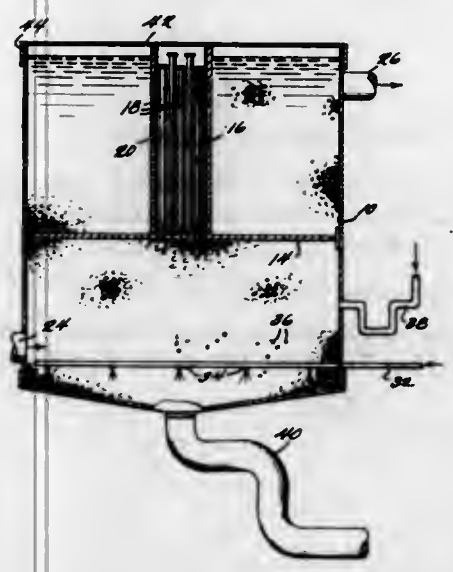
1. A method of treating liquid organic waste effluent comprising the steps of:

(a) removing by filtration a major portion of solid waste materials from the effluent,

(b) passing the filtered effluent through a bed of activated carbon which causes the organic waste material to be absorbed by said bed,

(c) continuously exposing the bed of activated carbon to gamma radiation to continuously induce oxidation of said organic waste material, and

(d) continuously passing a gaseous medium containing oxygen through said bed of activated carbon to provide oxygen for combination with said organic waste to continuously regenerate said bed.



3,846,297
CHROMATOGRAPHY

Wallace Malcolm Thaw, 30 Woodside Drive, Moraga, Calif. 90065

No Drawing. Filed Oct. 12, 1972, Ser. No. 297,014

Int. Cl. B01d *15/08*

U.S. Cl. 210—31 C **10 Claims**

1. A method of fractionating liquid or dissolved high molecular weight organic compounds on an industrial scale comprising, in a liquid-solid chromatographic column wherein there is provided in a non-aqueous fluid phase, a solid adsorbent of silica gel having a mesh size of less than about 100 mesh, a pore volume of more than 0.40 cc./gram, an average pore diameter of more than 22 angstroms and of durable composition; wetting the silica gel with a mild desorber to regenerate and prevent channeling in the gel; contacting said silica gel with said organic compounds in a pressure range of atmospheric to 1000 p.s.i.g.; adding solvents in sequence to the column to wash said silica gel and desorb the separated higher molecular weight compounds therefrom.

3,846,298
METHOD OF TREATING (REGENERATING) USED UP ION EXCHANGE PARTICLES

Georg Plura, Bergneustadt, Germany, assignor to L. & C. Steinmuller G.m.b.H., Gummersbach, Germany

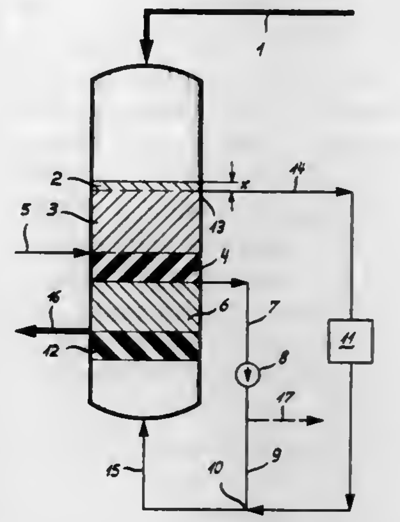
Filed Dec. 18, 1972, Ser. No. 316,360

Claims priority, application Germany, Dec. 21, 1971, P 21 63 346.5

Int. Cl. B01d *15/06*

U.S. Cl. 210—33 **3 Claims**

1. A method of continuously treating used up ion exchange particles according to which the ion exchange particles to be treated form a bed having nearly constant volume and comprising at least a first bed section, a second bed section, and a third bed section, a fourth bed section, and a fifth bed section, said bed sections being consecutively arranged upon each other, which includes the steps of: supplying used up ion exchange particles to said fifth bed section for preliminary regeneration; adding regenerating medium to said bed at the boundary zone between said second second and third bed sections for regenerating used up ion exchange particles; adding wash fluid to said first bed section for washing out regenerated ion exchange particles; withdrawing from the boundary zone between said third and fourth bed sections a fluid stream comprising ion exchange particles, regenerating medium, and wash fluid; adding used up ion exchange particles to said fluid stream; supplying said fluid stream and said added used up ion exchange particles to said fifth bed section; withdrawing spent regenerating medium and wash fluid from the boundary zone between said fourth and fifth bed sections; and withdrawing regenerated ion exchange particles from between said first and second bed sections with a partial stream of said wash fluid, the above steps creating a pressure differential between said fourth and fifth bed sections and said first, second, and third bed sections, thereby causing said bed in its entirety to move counter to the direction of flow of said wash fluid.



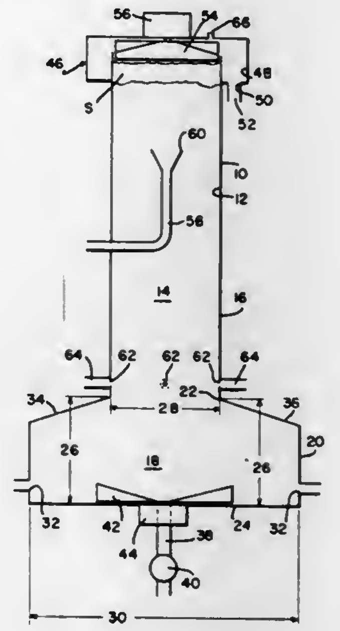
3,846,299
CLARIFYING APPARATUS AND METHOD FOR INFLUENT WATERS

Eugene L. Krasnoff, Princeton, N.J., assignor to Improved Machinery Inc., Nashua, N.H.

Filed Dec. 13, 1972, Ser. No. 314,796

Int. Cl. B03d *1/00*

U.S. Cl. 210—44 **17 Claims**



1. Apparatus for clarifying an influent water, comprising a vessel containing a clarifying chamber including a first portion and a second portion adjacent the lower end of said first portion, said chamber second portion communicating with such lower end of said chamber first portion and said chamber second portion in at least one transverse direction being of greater dimension than such lower end and projecting laterally outwardly of at least one side of such lower end, influent water supply means operatively associated with said chamber first portion for

supplying an influent water thereto at a location spaced above such lower end thereof, solid material discharge means operatively associated with said chamber first portion for discharging solid material from adjacent the upper end thereof, liquid discharge means operatively associated with said chamber second portion for discharging liquid from said chamber second portion at a location spaced outwardly of at least said one side of such lower end of said chamber first portion whereby liquid passing downwardly through such lower end flows outwardly in said chamber second portion to said liquid discharge means, the area of at least a section of said chamber second portion intermediate such lower end and said liquid discharge means, cross-wise to the flow of liquid outwardly through said chamber second portion to said liquid discharge means, being dimensioned relative to the area of such lower end to cause the velocity of the outwardly flowing liquid to be substantially reduced, gas supply means operatively associated with said clarifying chamber for supplying gaseous bubbles thereto at a location spaced vertically between said influent water supply means and said liquid discharge means, whereby such gaseous bubbles rise in said clarifying chamber to effect flotation of solid material to said solid material discharge means, and wall means overlying said chamber second portion laterally outwardly of such lower end of said chamber first portion for directing rising gaseous bubbles and buoyant solid material in said chamber second portion towards said chamber first portion for such flotation, said wall means causing said chamber second portion to progressively downwardly increase in dimension in said one transverse direction.

3,846,300

WATER PURIFICATION

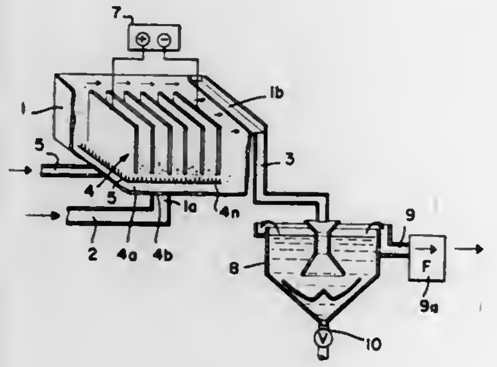
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Inc., Yokohama, Japan

Filed Jan. 10, 1972, Ser. No. 216,423

Claims priority, application Japan, Jan. 11, 1971, 46/425; Feb. 24, 1971, 46/9,544

Int. Cl. C02c *5/12*

U.S. Cl. 210—47 **7 Claims**



1. A method of treating impure water containing agglomeratable solids, comprising the steps of introducing into the water at least one flocculating agent by galvanically autosolubilizing a metal forming said agent from a porous body disposed in contact with the water to produce a flocculant, said body consisting at least 70% by weight of aluminum, the balance being predominantly a component selected from the group which consists of magnesium, calcium, sodium, lithium, potassium, titanium, iron, silicon, carbon and combinations thereof; separating said flocculant from the water, said body being cast from a melt having a thermally decomposable hydride incorporated therein, the hydride being thermally decomposed to form voids in the body and the body being permitted to cool to retain the voids therein, said body being disposed in contact with the water between a pair of electrodes; and applying an electric current across said electrodes to promote solubilization of said body in said water.

3,846,301

TREATMENT OF SEWAGE

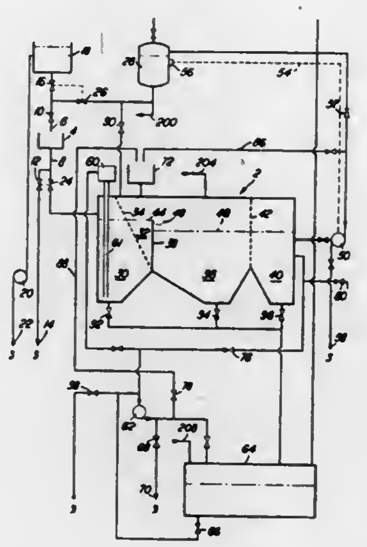
John H. Stokes, Caterham, England, and Alexander G. Cousins, Glasgow, Scotland, assignors to The Sanitas Company Limited, London, England

Filed Aug. 7, 1972, Ser. No. 278,251

Claims priority, application Great Britain, Aug. 10, 1971, 37,514/71; May 10, 1972, 21,883/72

Int. Cl. C02b *1/36*

U.S. Cl. 210—60 **11 Claims**



1. A method of treating sewage comprising the steps of:

(a) flushing sewage from a plurality of receivers by means of flushing liquid, thus forming a mixture of flushing liquid, and sewage,

(b) separating the mixture into a first part which has a high content of solid matter and a low content of liquid and into a second part which has a high content of liquid,

(c) after step (b) separating, at a separation zone, said second part into a solid matter portion and a liquid portion,

(d) maintaining a caustic alkali chemical composition in said liquid portion at a concentraton not exceeding one percent such that said liquid portion is disinfectant and deodorant,

(e) maintaining a bleaching action in said liquid portion so as to have a decolorising effect,

(f) using said liquid portion as said flushing liquid for repetition of step (a),

(g) after step (b) conveying the first part away from said separation zone to a comminution zone remote from said separation zone and subjecting said first part to mechanical reduction of the size of the pieces of the solid matter thereof,

(h) providing a storage zone remote from said separation zone for storage of the solid matter;

(i) after step (g), conveying the first part high in solid content from said comminuting zone to said storage zone whereby substantially all of the solid matter of said first part is subjected to the chemical content of the liquid content thereof and is thereby broken down, dispersed, sterilised and deodorised; and

(j) transferring said solid matter portion separated from said second part to said storage zone.

3,846,302

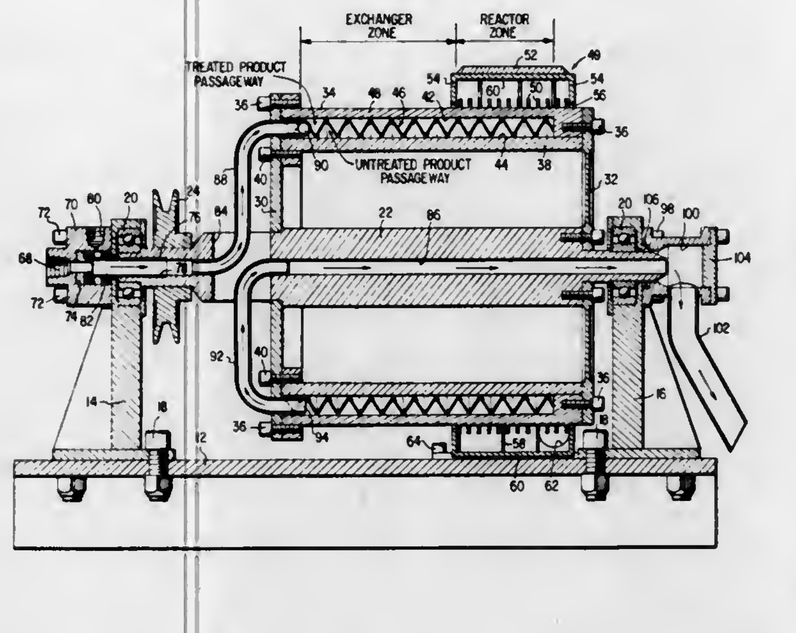
APPARATUS FOR HEAT TREATING LIQUID OR SEMI-LIQUID MATERIAL

Roy E. Crocker, Kailua, Hawaii

Filed Aug. 2, 1972, Ser. No. 277,279

Int. Cl. B01d *35/18*

U.S. Cl. 210—71 **14 Claims**



1. An apparatus for heat treating raw material comprising:

(a) a support,

(b) shaft means rotatably mounted on said support,

(c) spaced-apart concentric cylinder means mounted on said shaft means,

(d) reactor means for supplying heat to said cylinder means,

(e) coil means located between said cylinder means, said coil means having an inlet means for introducing said raw material to said coil means and an outlet means for removing treated material from said coil means, said coil means being so constructed that said treated material preheats said raw material before said treated material is removed at said outlet means, and

(f) means for rotating said cylinder means and said coil means to create a centrifugal force on said raw material and said treated material.

3,846,303

METHOD AND APPARATUS FOR CONTROLLING FLOW TO A BATTERY OF FILTERS

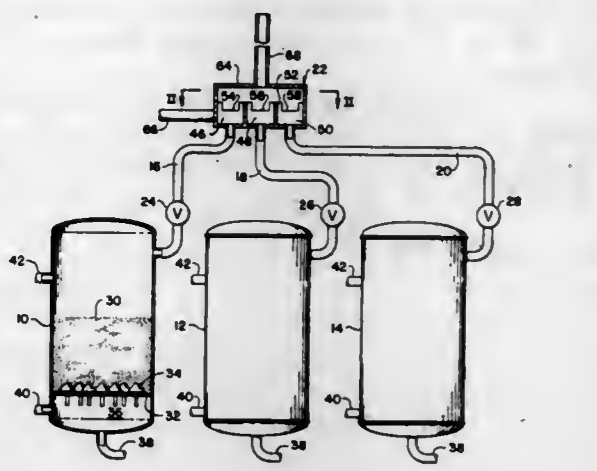
Joseph H. Duff, Basking Ridge, N.J., assignor to Gulf Degremont, Inc., Liberty Corner, N.J.

Filed Oct. 15, 1973, Ser. No. 406,306

Int. Cl. B01d *23/20*

U.S. Cl. 210—73 **6 Claims**

1. Apparatus for control of flow of liquid through a battery of filters connected in parallel and having filter media therein comprising a splitter box located above the filters, said splitter box having an inlet compartment and a plurality of outlet compartments, means for delivery of liquid to be filtered into the inlet compartment, a plurality of weirs within the splitter box, said weirs being constructed and arranged whereby there is a weir between the inlet compartment and each of the outlet compartments, a separate liquid feed line connecting each of the filters in the battery with one of the outlet compartments whereby liquid in an outlet compartment flows to a single filter, vent means opening from the upper end of the splitter box constructed and arranged to allow the level of the liquid to rise a height above the weirs at least one-half the height of the weirs above the filter media.



3,846,304

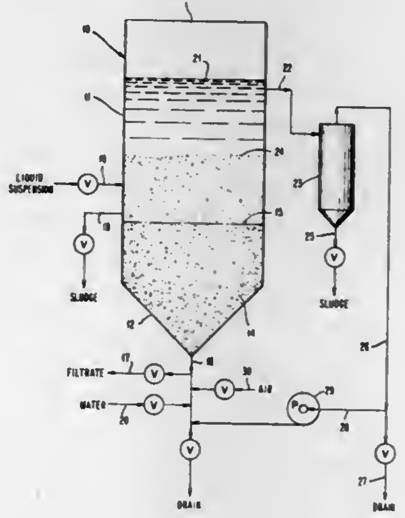
METHOD FOR CLEANING LIQUID FILTER BEDS

Paul W. Garbo, 48 Lester Ave., Freeport, N.Y. 11520

Filed Jan. 20, 1972, Ser. No. 219,268

Int. Cl. B01d *23/24*

U.S. Cl. 210—80 **7 Claims**



1. In the method of cleaning by backwashing a liquid filter bed formed of solid hard particles having a specific gravity appreciably greater than that of the matter removed from the liquid filtered through said bed, the improvement which comprises initially recycling the liquid to be filtered upwardly through said bed as back washing liquid while passing a gas upwardly through said bed, the combined flow of said liquid and said gas being controlled to cause at least 25% expansion of the settled volume of said bed and vigorous random movement of said solid particles without entrainment of said solid particles in said liquid thereby effecting suspension and entrainment in said liquid of matter previously deposited in said bed, said recycling of said liquid together with suspended and entrained matter being conducted by pumping said liquid from above said bed into the bottom of said bed, partially removing said suspended and entrained matter from said liquid while said liquid is being passed by said pumping from above said bed into the bottom of said bed, and then discarding said liquid in which the remainder of said matter is suspended and entrained prior to resuming the use of said bed for filtration.

3,846,305

APPARATUS FOR THE FILTRATION AND BIOLOGICAL PURIFICATION OF CONTAMINATED WATER

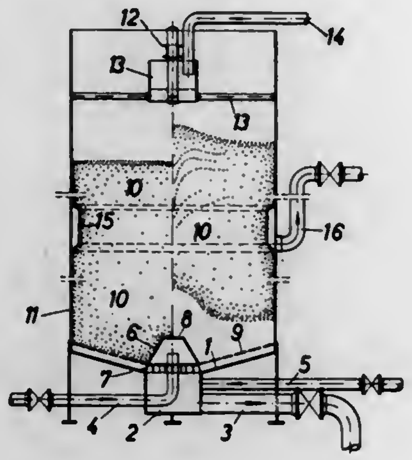
August Schreiber, Erhard Schreiber, and Berthold Schreiber, all of 45 Bahnhofstr., 3001 Hannover-Vinnhorst, Germany

Filed Mar. 31, 1972, Ser. No. 240,024

Claims priority, application Germany, Apr. 1, 1971, P 21 16 000.9; July 1, 1971, P 21 32 728.6; Oct. 8, 1971, P 21 50 345.7

Int. Cl. B01d *35/00*

U.S. Cl. 210—150 **16 Claims**



1. Trickling filter for the filtration and biological purification of contaminated water comprising, at least one water-tight tank containing filler material consisting of wear-resisting material having a specific gravity of not greater than 1, and being in the form of small elements each having a grain size of less than 6 mm., said tank being provided with storage distributor devices near the top thereof for distributing contaminated water over said filler material, and said tank having a bottom wall sloping toward a discharge chamber provided therebelow into which the water purified after having trickled through said filler material is diverted, aeration means near the bottom of said tank for aerating said filler material upwardly therethrough while the contaminated water trickles through said filler material, means near the bottom of said tank for filling said tank with rinsing water upwardly therethrough for cleansing said filler material of any sludge or microorganisms covering said elements, the incoming rinsing water effectively buoying up said filler material in said tank, means on said tank for circulating said filler material with the rinsing water and contaminated water within said tank, means on the side wall of said tank for the removal of the sludge and microorganisms covering said elements, grid means located above said bottom wall for preventing said filler material from discharging into said chamber, and further grid means in said tank adjacent said removal means for preventing said filler material from being removed therethrough.

3,846,306

BONDING OF ENZYMES, ENZYME DERIVATIVES AND OTHER BIOLOGICALLY ACTIVE MOLECULES TO POLYMERIC MATERIALS

Sidney Alan Barker and Charles John Gray, Birmingham, England, assignors to Koch-Light Laboratories Limited, Buckinghamshire, England

No Drawing. Filed Dec. 10, 1971, Ser. No. 206,855

Claims priority, application Great Britain, Dec. 11, 1970, 59,145/70

Int. Cl. B01d *15/08;* **C07g** *7/02*

U.S. Cl. 210—198 C **13 Claims**

1. In a hydrophilic water-insoluble polymer having attached thereto biologically-active molecules along its molecular chains the improvement which comprises repeating disulphide, thiol or thiolactone side groupings on said molecular chain wherein the biologically-active molecules are reacted with said side groupings to attach said biologically-active molecules to the polymer, said improved polymer characterized by being regenerable or readily activated.

3,846,307

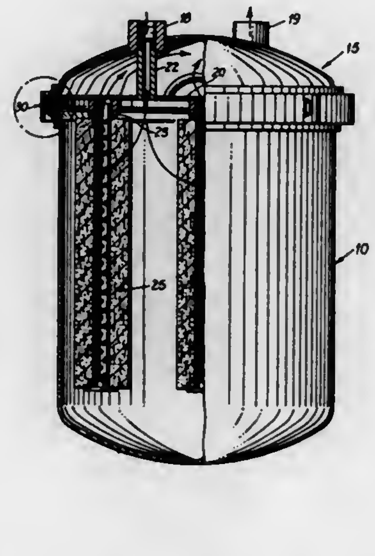
FILTER HOUSING WITH REMOVABLE DIAPHRAGM AND SEAL MEANS THEREFOR

Raymond M. Petrucci, Middlebury, and Arthur W. Schnick, Meriden, Conn., assignors to AMF Incorporated

Filed June 25, 1973, Ser. No. 373,251

Int. Cl. B01d *29/24*

U.S. Cl. 210—323 **7 Claims**



1. In a filter, the novel combination comprising:

a cover member and a sump member forming a housing for the filter, each of said members having an open end;

a rigid diaphragm supported on the open end of said sump member dividing the space within the formed housing into two separate chambers;

annular seal means encircling said diaphragm and when placed under compression holding said diaphragm against movement and simultaneously sealing against leakage from said housing between said members and from one of said chambers to the other between said housing and diaphragm; and

clamp means releasably connecting the open ends of said members together and placing said annular seal means under compression between said members when connected together by said clamp means.

3,846,308

SKIP BRIDGE VALVE

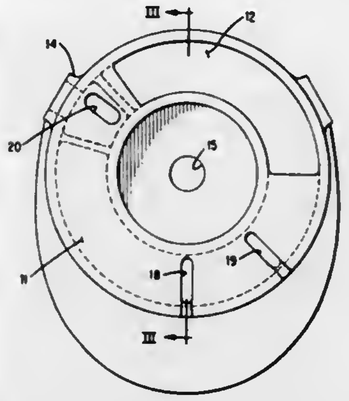
Harry Richard Ahlquist, Star Route Box 219, Rabbitt, Minn. 55706

Continuation-in-part of application Ser. No. 110,003, Jan. 27, 1971, now Patent No. 3,724,668. This application Mar. 28, 1973, Ser. No. 345,612

Int. Cl. B01d *33/26*

U.S. Cl. 210—331 **10 Claims**

1. In a vacuum filter apparatus having at least one multiported valve head in communication with vacuum lines and compressed air lines, said valve head having a vacuum valving mechanism comprising at least a wear plate and stationary bridge plate having a drying port said wear plate being affixed to a plurality of tubes disposed within a hollow shaft member and rotatable therewith in sliding engagement with said stationary bridge plate said filter apparatus also having removal means for removing a collected filter cake; the improvement wherein said stationary bridge plate has, in addition to said drying port, at least one skip bridge port, said skip bridge port comprising means forming an aperture through said bridge plate directly connecting the wear plate and a vacuum reservoir, and means associated with said skip bridge port to control the degree of vacuum pressure exerted through said aperture means.



3,846,309

ROTARY CONICAL STRAINER DRUM

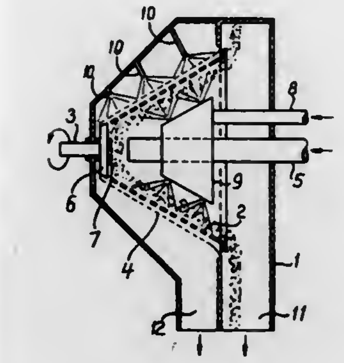
Lars Karl Johan Ehnstrom, Tullinge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Mar. 15, 1972, Ser. No. 234,824

Claims priority, application Sweden, Mar. 23, 1971, 3,723/71

Int. Cl. B01d *21/26*

U.S. Cl. 210—370 **4 Claims**



1. The combination of a cone-shaped strainer drum made of perforated sheet material and mounted for rotation about the axis of said cone, means for supplying a liquid to be strained to the interior of said drum, said drum having a relatively wide end for discharging solids strained from said liquid, a conical outer strainer concentrically surrounding said drum and rotatable therewith, said conical outer strainer widening in the same direction as said conical drum and having a less rigid envelope surface and a smaller hole size than said drum, and nozzles positioned to spray liquid against the outside of said outer strainer, said nozzles being positioned to spray said outer strainer along a generatrix of its envelope surface and thereby vibrate the outer strainer during rotation of said drum and outer strainer said drum being sufficiently sturdy to receive, carry and transmit a sludge quantity of substantial weight, said outer strainer being capable of straining off smaller particles than said drum.

ERRATA

For Classes 210—471 and 210—512 see:
Patents Nos. 3,846,320 and 3,846,321

3,846,310

HYDRAULIC FRACTURING METHOD USING GELLED HYDROCARBONS

Robert J. Blackwell and Donald M. Kehn, Houston, Tex., and Thomas A. Whitney, Linden, N.J., assignors to Esso Production Research Company

Filed Mar. 3, 1972, Ser. No. 231,525

Int. Cl. E21b *43/26*

U.S. Cl. 252—8.55 R **16 Claims**

1. A method for the hydraulic fracturing of a subterranean formation penetrated by a well which comprises injecting into said formation at a pressure sufficient to open a fracture therein a liquid hydrocarbon containing (a) a gelling agent which includes first alkoxide having the general formula MOR and a second alkoxide having the general formula $M'(OR')_3$ wherein M is selected from the group consisting of Group IA metals, M' is selected from the group consisting of Group IIIA elements, and R and R' are independently selected from the group consisting of C_1 to C_{25} hydrocarbyl radicals, said gelling agent being present in a concentration sufficient to substantially increase the viscosity of said liquid hydrocarbon; and (b) a drying agent selected from the group consisting of calcium chloride, zinc chloride, calcium oxide, barium oxide, phosphorus pentoxide, calcium sulfate, sodium sulfate, magnesium sulfate, sodium hydroxide, potassium hydroxide and boric anhydride in an amount sufficient to prevent premature decomposition of said gelling agent.

3,846,311

METHOD FOR REMOVING ELEMENTAL SULFUR FROM WELLS AND FLOWLINES

Shelby P. Sharp and Lamar F. Sudduth, Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

No Drawing. Continuation-in-part of abandoned application Ser. No. 178,435, Sept. 7, 1971. This application Mar. 26, 1973, Ser. No. 345,051

Int. Cl. C23g *5/02;* **E21b** *43/00*

U.S. Cl. 252—8.55 B **9 Claims**

1. A method for improving the solvent power of a liquid dialkyl disulfide for elemental sulfur which comprises reacting a normally liquid saturated unsubstituted aliphatic amine with said disulfide, said amine being employed in an amount not in excess of about 10 weight per cent based on the weight of said disulfide, said reaction being effected in the substantial absence of free sulfur under one of the following conditions:

(1) permitting the amine-disulfide mixture to stand at a temperature of about 75° F. for a period of from about 30 to about 90 days,

(2) subjecting said mixture to a temperature of from 75° to about 100° F. for a period of from about 10 to about 25 days.

3,846,312

GREASE THICKENED WITH COATED FIBROUS ASBESTOS

Edward A. Cross, Houston, Tex., and Richard L. Frye, Baton Rouge, La., assignors to Texaco Inc., New York, N.Y.

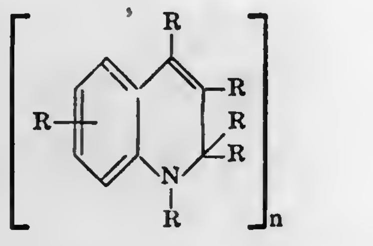
No Drawing. Continuation-in-part of application Ser. No. 740,084, June 26, 1968. This application Apr. 30, 1970, Ser. No. 33,534

Int. Cl. C10m *5/02, 5/20*

U.S. Cl. 252—13 **7 Claims**

1. A grease composition having superior shear stability, water-resistance and extreme pressure properties, comprising from about 65 to 90 weight percent of lubricating mineral oil from about 35 to 10 weight percent of a

thickening system made up of 25 to 9 weight percent of fibrous asbestos and about 10 to 1 weight percent of polymeric coating agent having recurring units included within the structures:



wherein *n* the average degree of polymerization ranges from 2 to about 20, and R is selected from the group consisting of hydrogen, alkyl radicals and hydroxylated alkyl radicals, said alkyl radicals containing from 1 to 6 carbon atoms.

3,846,313

LUBRICANT COMPOSITION CONTAINING DISPERSED ALKALI METAL BORATE

Marc J. Sims, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Aug. 31, 1972, Ser. No. 285,158

Int. Cl. C10m *1/10*

U.S. Cl. 252—18 **17 Claims**

1. A composition comprising an oil of lubricating viscosity having dispersed therein from 1 to 60 weight percent based on the weight of the composition of particulate hydrated alkali metal borate and from 0.3 to 2 weight percent of a C_{16} to C_{20} aliphatic hydrocarbon alcohol.

3,846,314

GREASE THICKENED WITH UREIDO COMPOUND AND ALKALINE EARTH METAL ALIPHATIC CARBOXYLATE

John L. Dreher, El Cerrito, and Crawford F. Carter, Pleasant Hill, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 244,864, Apr. 17, 1972. This application May 23, 1973, Ser. No. 363,210

Int. Cl. C10m *5/02, 5/16, 5/20*

U.S. Cl. 252—18 **19 Claims**

1. A grease composition comprising a major part of a lubricating oil containing (1) from 0.5 to 10 weight percent of a mono or polyurea compound or mixture of mono or polyurea compounds having from 1 to 8 ureido groups and having a molecular weight between about 375 and 2,500 and (2) from 3 to 30 weight percent of an alkaline earth metal aliphatic monocarboxylate having from 1 to 3 carbons, wherein the weight ratio of alkaline earth metal carboxylate to mono and polyurea compounds is from 1 to 15.

3,846,315

GREASE THICKENED WITH POLYUREA METAL SALTS AND ALKALINE EARTH METAL ALIPHATIC MONOCARBOXYLATE

Garth M. Stanton, San Anselmo, and John L. Dreher, El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed June 27, 1973, Ser. No. 374,212

Int. Cl. C10m *5/20, 5/22, 7/30*

U.S. Cl. 252—18 **15 Claims**

1. A grease composition comprising a major portion of a lubricating oil and minor grease thickening portions of (1) an alkali or alkaline earth metal salt of a polyurea sulfonate or carboxylate compound having at least 2 ureido groups and having a molecular weight between about 250 and 2500 and (2) an alkaline earth metal aliphatic monocarboxylate having from 1 to 3 carbons.

3,846,316

LUBRICANTS CONTAINING REACTION PRODUCTS OF PETROLEUM SULFONIC ACIDS AND ORGANIC NITROGEN POLYMERS

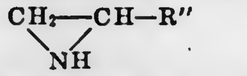
Sidney Schiff and Gerald R. Kahle, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Original application Dec. 3, 1968, Ser. No. 780,887, now abandoned. Divided and this application Apr. 30, 1971, Ser. No. 139,176

Int. Cl. C10m *1/40, 3/34*

U.S. Cl. 252—33 **10 Claims**

1. A lubricating oil composition comprising a major proportion of a lubricating oil containing a small but effective amount, sufficient to impart increased detergency to said lubricating oil, of an additive which is a reaction product formed by reacting a petroleum sulfonic acid reactant and a polymer reactant selected from the group consisting of (a) a polymer of an ethylenically substituted heterocyclic nitrogen base, (b) a polymer of a 1,2-alkylene imine characterized by the formula



wherein R″ is hydrogen or an alkyl radical containing up to 14 carbon atoms, and having a degree of polymerization within the range of 5 to 2,000, and (c) mixtures of said polymers (a) and (b), said reacting being carried out under reaction conditions and at reactant ratios such that said reaction product is formed.

3,846,317

LUBRICANT COMPOSITIONS CONTAINING PHOSPHORAMIDATE DERIVATIVES

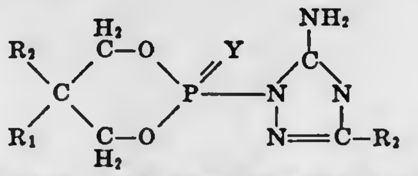
Vincent G. Lintzenich, Collinsville, Ill., assignor to Shell Oil Company

No Drawing. Continuation-in-part of application Ser. No. 115,868, Feb. 16, 1971, which is a continuation-in-part of application Ser. No. 803,078, Feb. 27, 1969, and a continuation-in-part of application Ser. No. 200,217, Nov. 18, 1971, which is a continuation-in-part of application Ser. No. 66,606, Aug. 24, 1970, all now abandoned. This application May 9, 1972, Ser. No. 251,624

Int. Cl. C10m *1/46, 1/48*

U.S. Cl. 252—46.7 **8 Claims**

1. A lubricant composition consisting essentially of a major amount of lubricating oil and a minor amount, from 0.01% to about 3% by weight, of a compound having the formula



wherein R_1 and R_2 are each selected from the group consisting of hydrogen and C_{1-20} alkyl groups, R_3 is selected from the group consisting of hydrogen, alkyl, aryl and alkaryl, said [hydrocarbyl] alkyl, aryl and alkaryl groups having from 1 to 12 carbon atoms, and Y is selected from the group consisting of oxygen and sulfur.

3,846,318

ANTIOXIDANT AND EXTREME PRESSURE LUBRICATING OIL ADDITIVE

Warren Lowe, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Apr. 11, 1973, Ser. No. 350,223

Int. Cl. C10m *1/38*

U.S. Cl. 252—47.5 **3 Claims**

1. A composition comprising a major amount of an oil of lubricating viscosity and from 0.02 to 5 percent by weight of the product of the process which comprises contacting an alkylphenol, mercaptobenzothiazole and an aldehyde in the mole ratio of about 1–2:1:1–2 at a temperature of from about 250° to about 300° F. for a period of 2–20 hours followed by the addition of sulfur monochloride in the amount of 0.25–2 moles per mole of mercaptobenzothiazole at 100–200° F.

3,846,319

DIOXAN-CONTAINING ALUMINUM LUBRICANT

Bruce W. Hotten, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 27, 1973, Ser. No. 345,400

Int. Cl. C10m *1/20;* **C10m** *3/14*

U.S. Cl. 252—49.5 **10 Claims**

1. A process for lubricating aluminum or aluminum alloys which comprises applying to the surface of the aluminum or aluminum alloys a lubricant comprising a major portion of a carrier fluid selected from the group consisting of water, aqueous emulsions, halogenated hydrocarbons and oxygenated hydrocarbons and from 0.1 to 15 volume percent of a C_{10}–C_{30} hydrocarbyl-1,3-dioxan.

3,846,320

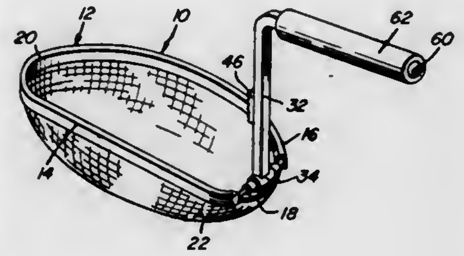
APPARATUS FOR REMOVING GREASE FROM POT LIQUIDS

Elizabeth G. Edwards, 1024 Fairwin Ave., Nashville, Tenn. 37216

Filed May 25, 1973, Ser. No. 363,813

Int. Cl. B01d *35/28*

U.S. Cl. 210—471 **3 Claims**



1. An apparatus for skimming grease from pot liquids, said apparatus comprising a generally planar open frame including a first generally straight side and a second arcuate side opening toward said first side, one pair of convergent ends of said sides being joined together and the other pair of ends of said sides being spaced apart and joined by means of a generally straight segment of the periphery of said frame extending therebetween, said straight segment comprising, at least in part, a pivot shaft portion, a shallow cup-shaped mesh secured across said frame and opening outwardly to one side thereof, an L-shaped handle including first and second generally right angled elongated members interconnected at one pair of corresponding ends, said L-shaped handle being disposed in a plane at generally right angles relative to the medial plane of said frame and having the free end of one of said elongated members pivotally supported from said pivot shaft portion for oscillation relative thereto about an axis extending longitudinally through said pivot shaft portion and disposed generally normal to the plane of said handle and transverse to said one elongated member, said one elongated member and said pivot shaft portion including releasable coacting latch means operative to retain said one elongated member in a first position disposed generally normal to the medial plane of said frame and with said one elongated member projecting outwardly of said one side of said frame, the other elongated member projecting outwardly of the free end of said one elongated member in a direction extending away from said one pair of ends of said sides.

3,846,321

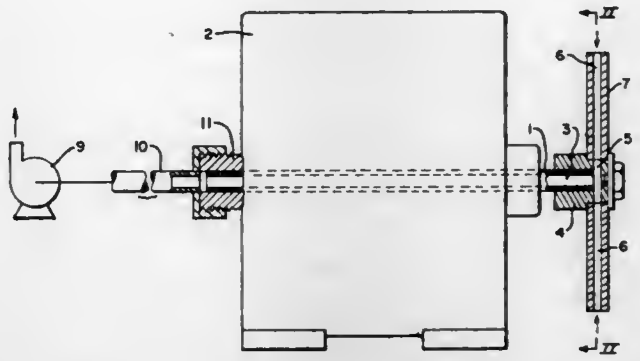
CENTRIFUGAL FILTERING APPARATUS

John P. Strange, Murrysville, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed May 30, 1973, Ser. No. 365,120

Int. Cl. B01d *21/26*

U.S. Cl. 210—512 **7 Claims**



1. Apparatus for separating foreign particles from a fluid, comprising separating means rotatable on an axis and provided with a plurality of radial passages open at their outer ends, means for rotating said separating means at a substantially constant speed, and means communicating with the inner ends of the passages for continuously drawing fluid inwardly through them at a rate insufficient to overcome the centrifugal force acting on foreign particles carried into the passages by the fluid, whereby the fluid leaving the inner ends of said passages will be free of said particles.

3,846,322

METHOD OF PRODUCING LARGE SINGLE CRYSTALS OF MIXED FERRITES

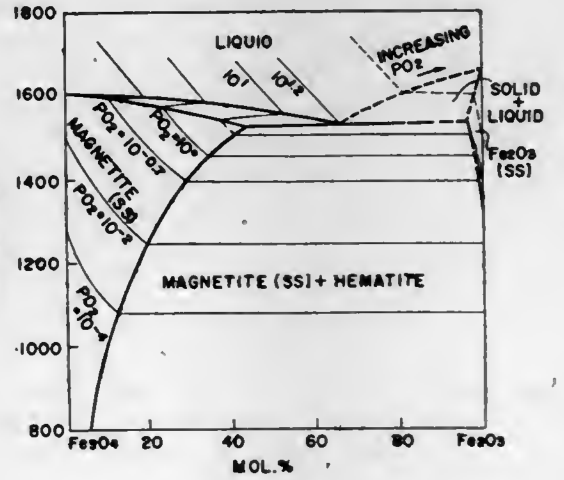
Mitsuo Sugimoto, No. 77, 3-chome Nakamachi, Nerima-ku, Tokyo, and Hiroshi Watanabe, 211, Tsuchidoi, Sendai-shi, Miyagi-ken, Sendai, both of Japan

Continuation of Ser. No. 816,889, April 17, 1969, abandoned, which is a continuation-in-part of Ser. No. 456,666, May 18, 1965, abandoned. This application June 11, 1970, Ser. No. 48,848

Claims priority, application Japan, May 23, 1964, 39-28833; May 23, 1964, 39-28834

Int. Cl. C04b *35/30, 35/38*

U.S. Cl. 252—62.62 **3 Claims**



1. A method for producing a large single crystal of a mixed ferrite which is a member selected from the group consisting of manganese-zinc ferrite and nickel-zinc ferrite with a spinel structure, containing zinc oxide in the amount of between 2 and 30 mole per cent, which comprises melting raw materials for the ferrite in a heating zone at a temperature above 1,600°

to 1,800°C in an atmosphere consisting essentially of oxygen having a partial pressure of oxygen of from 1.5 to 20 atmospheres to reduce the content of ferrous ion in the molten ferrite to less than 7 wt. percent of the total amount of iron and subsequently cooling the molten ferrite at the rate of 2° – 8°C/hour by slowly moving said molten ferrite relative to and out of said heating zone in an atmosphere consisting essentially of oxygen having a partial pressure of oxygen of from 1.5 to 20 atmospheres to carry out the crystal growth, whereby a single crystal having the dimension of at least about 20 mm in diameter and at least about 30 mm in length is produced.

3,846,323

PROCESS FOR MAKING A PERMANENT MAGNET MATERIAL

Friedrich Josef Esper, Leonberg, and Gerhard Kaiser, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 25, 1972, Ser. No. 283,702

Claims priority, application Germany, Sept. 1, 1971, 2143718

Int. Cl. C04b *35/00*

U.S. Cl. 252—62.63 **5 Claims**

1. A process of making a permanent magnet material, comprising the steps of forming a particulate mixture including a substance selected from the group consisting of the oxides and oxide furnishing compounds of Fe, a substance selected from the group consisting of the oxides and oxide furnishing compounds of Ba, Sr and Pb, and a substance selected from the group consisting of the oxides and oxide furnishing compounds of Sb, As and P; sintering said mixture in air so as to effect reaction of said substances and form a first product of the formula $MO\cdot(Fe_2O_3)_6$wherin Fe^{+3} ions in said first product are replaced by the ions of at least one of said Sb, As and P to such an extent as to cause a lowering of the temperature coefficient of the reversible temperature change of the magnetic saturation moment from that of $MO\cdot(Fe_2O_3)_6$ wherein no replacement of the Fe^{+3} ions is effected, said ions of said Sb, As and P having a valence in excess of +3, and said M of said $MO\cdot(Fe_2O_3)_6$ being at least one of said Ba, Sr and Pb; heat treating said first product within a temperature range of 1,200° to 1,350°C so as to cause evolution of part of the oxygen of said first product and so as to convert said ions of Sb, As and P to their trivalent state thereby forming a second product; comminuting said second product to single domain size; and tempering the comminuted second product in a non-oxidizing atmosphere within a temperature range of 750° to 1,200°C.

3,846,324

DETERGENTS

Frank Lohmann, Arlesheim, Switzerland; Claude Eckhardt, Mulhouse, France, and Karl Kleiber, Arlesheim, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

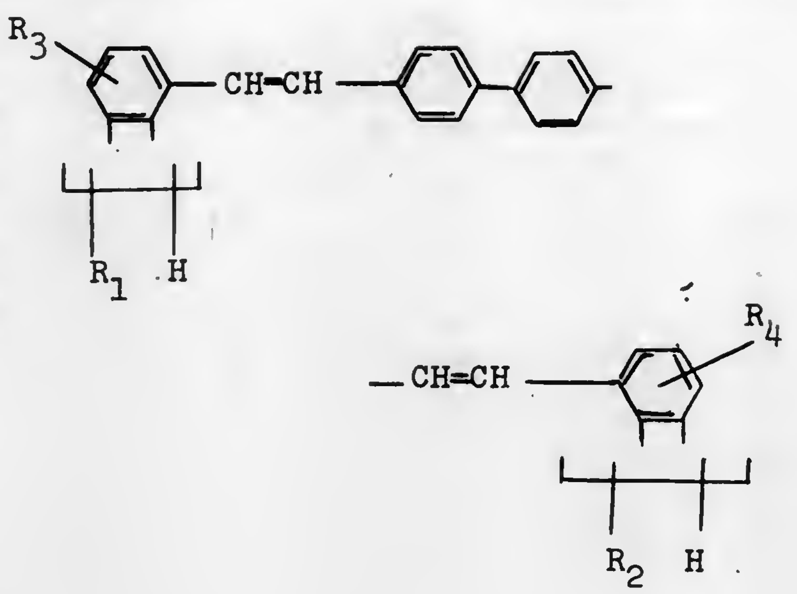
Filed June 19, 1972, Ser. No. 263,901

Claims priority, application Switzerland, June 25, 1971, 9353/71

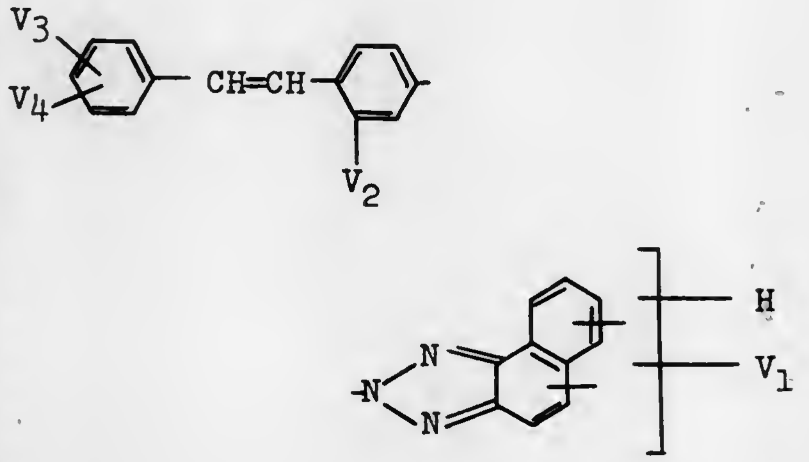
Int. Cl. C11d *7/54*

U.S. Cl. 252—95 **10 Claims**

1. Dry, free-flowing detergent compositions consisting essentially of a surfactant, a chlorine donor which releases hypochlorite ions on contact with water and a fluorescent whitener selected from the group consisting of a distyryldiphenyl whitener of the formula



wherein R_1 represents a sulpho group or the salts thereof, R_2 represents hydrogen, chlorine, methyl, methoxy or a sulpho group or the salts thereof, R_3 and R_4 independently represent hydrogen, chlorine, methyl or methoxy and a stilbylnaphthotriazole whitener of the formula



wherein V_1 represents hydrogen or a sulpho group, or the salts thereof, V_2 represents hydrogen, chlorine, a cyano group, a carboxyl group, or a sulpho group or the salts thereof, V_3 represents hydrogen, methoxy or a sulpho group or the salts thereof, and V_4 represents hydrogen or chlorine, with at least one of the substituents V_1 to V_4 standing for a sulpho group or the salts thereof, the particles of which are encased by a watersoluble organic coating agent, the weight ratio between said fluorescent whitener and said water-soluble organic protecting agent being between 9:1 and 1:99.

3,846,325

ANTI-POLLUTION AND DETERGENT COMPOSITION

Francis Gerard Flynn, Toronto, and Philip Harrhy Jones, Aurora, Ontario, both of Canada, assignors to Torau Company, Aurora, Ontario, Canada

Continuation-in-part of Ser. No. 16,942, March 5, 1970, abandoned. This application June 21, 1972, Ser. No. 264,736

Int. Cl. C11d *7/56*

U.S. Cl. 252—99 **9 Claims**

1. An anti-pollution and detergent composition consisting essentially of from about 5 to 35 percent by weight of a biodegradable surface active agent selected from the group consisting of a linear alkyl aryl sulphonate, lauryl alcohol sulphate, a coconut oil fatty acid amine condensate wherein the fatty acid constituent has a molecular weight ranging from 144 to 284, an iso-octyl phenoxy polyethoxy ethanol having from 5 to 10 moles of ethoxy groups, a nonyl phenoxy polyethoxy ethanol having from 5 to 10 moles of ethoxy groups, polysaccharide-based surface active agents, and mixtures thereof; from about 5 to 60 percent by weight of a biodegradable alkaline water softening agent selected from the group consisting of trisodium nitrilo triacetate, sodium citrate, trisodium hydroxyethyliminodiacetate, tetrasodium ethylenediaminetetraacetate, and mixtures thereof; from about 5 to 15 percent by weight of a biodegradable anti-redeposition agent being sodium carboxymethyl cellulose having a degree of acyl substitution of from 0.7 to 2.5; and from about 5 to 35 percent by weight of an inorganic buffering alkali agent selected from the group consisting of sodium metasilicate, sodium orthosilicate, sodium sequisilicate, sodium carbonate, borax, and mixtures thereof; said composition being essentially free of phosphates.

3,846,326

BACTERIOSTAT SOAP, SHAMPOO AND SHAVE LOTION FORMULATIONS

Donald L. Wright, New York, N.Y., and John W. Frankenfeld, Highlands, N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Apr. 23, 1971, Ser. No. 137,075

Int. Cl. C11d *9/50*

U.S. Cl. 252—107 **3 Claims**

1. A bacteriostat soap consisting essentially of a sodium salt of a fatty acid having 10 to 22 carbon atoms in the molecule and from about 0.05 percent to 5 percent by weight of an additive selected from the group consisting of normal alkyl 1,3-diols having 6 to 15 carbon atoms in the molecule and monesters of normal alkyl 1,3-diols having 4 to 15 carbon atoms in the molecule with normal alkyl monocarboxylic acids having from 2 to 18 carbon atoms in the molecule.

3,846,327

AZEOTROPIC COMPOSITION

John A. Schofield, Riverside, Conn., assignor to Union Carbide Corporation, New York, N.Y.

Filed May 30, 1972, Ser. No. 257,681

Int. Cl. C11d *3/44*

U.S. Cl. 252—170 **4 Claims**

1. A constant boiling azeotropic composition consisting essentially of 1,1,2-trichloro-1,2,2-trifluoroethane and tertiary butanol and boiling at 46°C at about 760 mm. Hg.

3,846,328

METHOD FOR SEPARATING SULFIDE PHOSPHOR PARTICLES FROM MIXTURES

Bernard Beverly McCue, Christian Island, Ontario, Canada, assignor to RCA Corporation, New York, N.Y.

Filed July 20, 1973, Ser. No. 381,174

Int. Cl. C09k *1/12;* **C0gk** *1/14;* **C09k** *1/44*

U.S. Cl. 252—301.6 S **7 Claims**

1. A method for separating oxidizable metal sulfide phosphor particles from a mixture with relatively nonoxidizable phosphor particles comprising

a. producing an aqueous slurry containing said mixture of phosphor particles
b. adding sufficient mineral acid to said slurry to provide a concentration of about 1 to 10 weight percent mineral acid in said slurry,
c. adding sufficient alkali nitrite to said slurry to provide a concentration of 1 to 5 weight-percent alkali nitrite in said slurry, said nitrite being capable of forming nitrous acid in said slurry,
d. permitting said acid and nitrite to react with said oxidizable phosphor particles whereby said oxidizable phosphor particles rise and float on the surface of said slurry,
e. and then removing said floated phosphor particles from said slurry.

3,846,329

ANTIFOAM COMPOSITION

Kermit W. Householder, Tonawanda, N.Y., and Van I. Doesburg, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 114,264, May 17, 1971, Pat. No. 3,785,935. This application Apr. 9, 1973, Ser. No. 349,606

Int. Cl. B01d *19/04*

U.S. Cl. 252—358 **4 Claims**

1. An antifoam composition which consists essentially of
1. 5 to 50 percent by weight of a silicone-glycol copolymer having the general formula $(CH_3)_3SiO[(CH_3)_2SiO]_x[(CH_3)GSiO]_ySi(CH_3)_3$ wherein
   x has an average value from 6 to 420,
   y has an average value from 3 to 30, and
   G is a radical of the structure $-D(OR)_zA$ wherein
      D is an alkylene radical containing from 1 to 30 carbon atoms,
      R is composed of ethylene radicals and radicals selected from the group consisting of propylene and butylene radicals, the amount of ethylene radicals relative to the other alkylene radicals being such that the ratio of carbon atoms to oxygen atoms in the total OR block ranges from 2.3:1 to 2.8:1,
   z has an average value from 10 to 100, and
   A is a capping group selected from the group consisting of hydroxy, acyl, ether and carbonate ester capping groups; 2. 5 to 50 percent by weight of polypropylene glycol having an average molecular weight in the range of 1000 to 2000, 3. 5 to 50 percent by weight of a glycol copolymer having the general formula $CH_2{=}CH{-}D'_m{-}(OC_2H_4)_a(OC_3H_6)_bR'$, wherein a and b each are integers greater than zero and each has an average value such that the copolymer has an average molecular weight in the range of 2000 to 3000, D′ is an alkylene radical containing from 1 to 16 carbon atoms, m is zero or one, and R′ is a capping group, selected from the group consisting of hydroxy, acyl, ether and carbonate ester capping groups; and 4. 40 to 85 percent by weight of water.

3,846,330

APPARATUS

Walter Luttrell Graf, Nashville, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

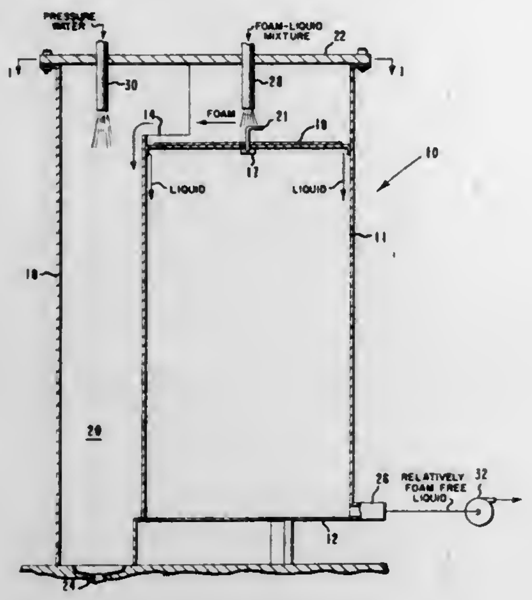
Filed Aug. 16, 1973, Ser. No. 388,836

Int. Cl. B01d *19/00*

U.S. Cl. 252—361 **2 Claims**

1. An apparatus for separating and removing foam from a foam-liquid mixture flowing from a source, said apparatus comprising: a base; a peripherally continuous upstanding wall

attached to the base forming an open top tank, a portion of said wall being removed at the top of the tank forming a weir in said wall; a plate positioned in said tank normal to said wall, said plate having an area slightly smaller than the cross-sectional area of the tank and being located just below said weir to form a free annular space between plate & wall to permit liquid to flow into said tank; a second upstanding wall joined to and sealingly terminating at opposed locations on said continuous wall to form a chamber adjacent said weir in said tank to trap overflow foam from said weir; a cover sealing the top of said tank and said chamber; a drain in communication with the bottom of said chamber for removal of overflow foam, said tank having an outlet near the bottom portion thereof for removal of foam free liquid; and an inlet pipe through said cover having one end positioned above said plate in said tank with the other end connected to said source of foam-liquid mixture.



3,846,331
SOLVENT COMPOSITION FOR DYES FOR USE IN PRESSURE-SENSITIVE COPYING PAPER

Akio Konishi; Masaaki Takahashi; Fumihiko Kimura, and Takehisa Toguchi, all of Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 4, 1972, Ser. No. 277,864

Claims priority, application Japan, Aug. 4, 1971, 46-58363

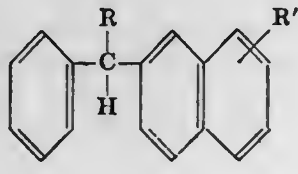
Int. Cl. B01f *1/00*

U.S. Cl. 252—364 **7 Claims**

1. A dye solvent composition for use in pressure-sensitive copying paper comprising:

100 parts by weight of an aromatic hydrocarbon dye solvent selected from the group consisting of diaryl methanes, alkyl naphthalenes, triaryl dimethanes, alkyl diphenyls, and mixtures thereof, and;

10–100 parts by weight of one or more of a compound having the general formula:



wherein R and R' represent hydrogen or a methyl group.

3,846,332
AZEOTROPES OF 1-CHLORO-2,2,2-TRIFLUOROETHYL DIFLUOROMETHYL ETHER WITH ACETONE, METHYL ETHYLKETONE AND TETRAHYDROFURAN

Louise S. Croix, Summit, N.J., assignor to Airco, Inc., New York, N.Y.

Division of Ser. No. 168,399, Aug. 2, 1971, Pat. No. 3,720,587. This application Sept. 18, 1972, Ser. No. 289,914

Int. Cl. B01f *3/00;* **B01d** *3/36*

U.S. Cl. 252—364 **3 Claims**

1. An azeotrope of 1-chloro-2,2,2-trifluoroethyl difluoromethyl ether and acetone having a boiling point of about 66°C. and containing about 1.2 moles of acetone per mole of 1-chloro-2,2,2-trifluoroethyl difluoromethyl ether.

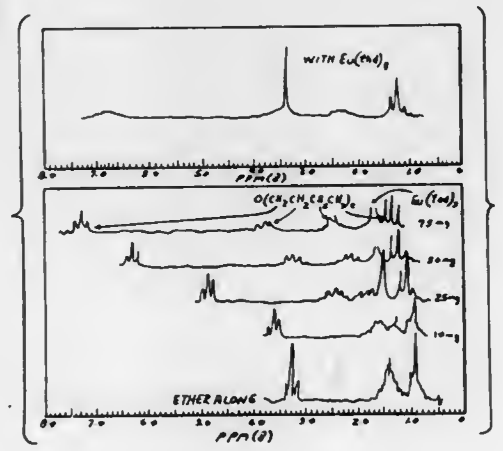
3,846,333
RARE EARTH COMPLEXES AS NUCLEAR MAGNETIC RESONANCE SHIFT REAGENTS

Robert E. Sievers, 2628 N. Emerald Dr., Fairborn, Ohio 45324

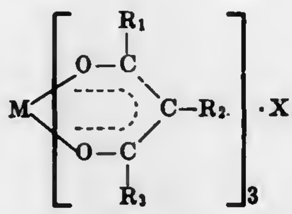
Division of Ser. No. 183,488, Sept. 24, 1971, Pat. No. 3,700,410. This application July 18, 1972, Ser. No. 273,003

Int. Cl. G01p *31/08*

U.S. Cl. 252—408 **3 Claims**



1. An adduct of an organic compound having a donor group and a lanthanide chelate of a fluorinated ligand having the following structural formula:



wherein M is a paramagnetic trivalent rare earth ion; R_1 and R_2 together are d-camphor and R_3 is fluoroalkyl containing 1 to 10, inclusive, carbon atoms; X is an organic compound containing a donor group or water; and *a* is a number from 0 to 4, inclusive, the mol ratio of chelate to organic compound being sufficient to cause a spectral shift when the adduct is subjected to spectral analysis by nuclear magnetic resonance.

3,846,334
REACTIVATION OF ALUMINUM TRICHLORIDE-HYDROCARBON CATALYTIC COMPLEXES USED IN THE ALKYLATION OF AROMATIC COMPOUNDS

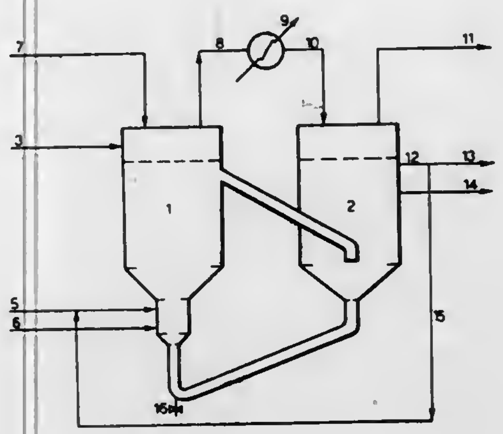
Lucio Di Fiore, and Benedetto Calcagno, both of Milan, Italy, assignors to Societa Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Sept. 5, 1972, Ser. No. 286,400

Claims priority, application Italy, Nov. 17, 1971, 31200/71

Int. Cl. B01j *11/02, 11/80;* **C07c** *3/56*

U.S. Cl. 252—414 **4 Claims**



1. A continuous process for the reactivation of catalytic complexes of aluminium trichloride and hydrocarbons which have become deactivated following their use in reactions for the alkylation of aromatic compounds with chloroalkylic alkylating agents, characterized in that:

in an activation zone, the deactivated aluminium trichloride-hydrocarbon catalytic complex, metallic aluminium in powder form and gaseous hydrogen chloride are brought into contact in a reaction medium constituted by benzene which is maintained in a boiling condition, and wherein said metallic aluminum in powder form is added in a quantity to form from 5 to 25% by weight of aluminum trichloride with respect to said deactivated complex; the reagent mixture is continuously transferred from the said activation zone to a separation zone maintained at a temperature not exceeding 80°C, in which an upper light stratum is formed which consists essentially of benzene, an intermediate stratum which consists essentially of the activated aluminium trichloride and hydrocarbon complex and a bottom heavier stratum consisting essentially of the catalytic complex which contains unaltered metallic aluminium in suspension;

the stratum of benzene is continuously discharged, the said benzene being recycled to the activation zone;

the stratum of activated aluminium trichloridehydrocarbon catalytic complex is continuously discharged from the said separation zone;

the heavy stratum containing the catalytic complex and the aluminium suspended therein is continuously recycled from the separation zone to the activation zone.

3,846,335
COMPOSITION FOR RECOVERING OIL FROM WATER

Clinton O. Bunn, Denver, Colo., assignor to Cal-Ment Corporation, Butte, Mont.

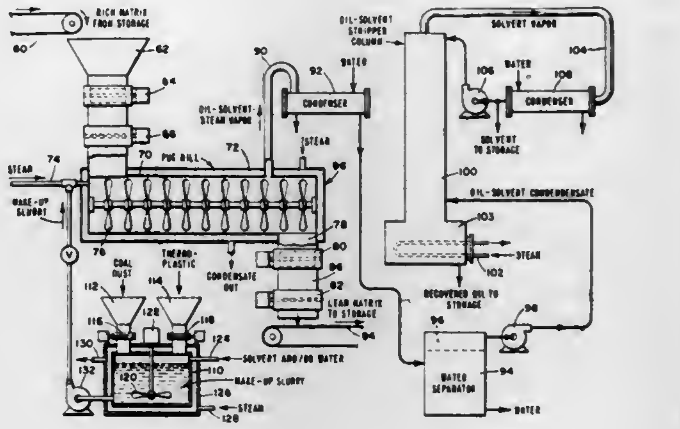
Division of Ser. No. 121,000, March 4, 1971, Pat. No. 3,783,129. This application June 6, 1973, Ser. No. 367,481

Int. Cl. B01d *39/14*

U.S. Cl. 252—428 **1 Claim**

1. A composition prepared by the method consisting of the following steps:

a. mixing finely divided coal −200 mesh or finer in size and powdered polyethylene in the presence of a liquid in sufficient amount to effect intimate mixing of said coal and polyethylene to form a matrix slurry or paste, said coal comprising at least 65 percent by weight of said mixture,



b. heating said matrix slurry to at least a temperature at which said polyethylene is in a softened state, and

c. cooling said polyethylene to ambient temperature to adhesively bind the finely divided coal in relatively spaced relation thereby to provide a porous, light weight matrix material which has a high affinity for oil, is combustible and is sufficiently light to float on water.

3,846,336
NOVEL CATALYST FOR CONVERSION OF OLEFINS TO UNSATURATED ALDEHYDES AND ACIDS

Leon B. Levy, Nueces, Tex., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 124,939, March 16, 1971, Pat. No. 3,703,551. This application Aug. 10, 1972, Ser. No. 279,585

Int. Cl. B01j *11/82*

U.S. Cl. 252—435 **4 Claims**

1. A catalyst composition consisting essentially of rhenium on an inert support, impregnated with tellurium dioxide and phosphomolybdic acid, containing about 0.1 to 3.0 percent by weight of rhenium and tellurium dioxide/phosphomolybdic acid in a ratio of 1:100 to 10:100 parts by weight.

3,846,337
PHOSPHATE-SILICA-ALUMINOSILICATE COMPOSITIONS OF IMPROVED CRUSHING STRENGTH AND METHODS OF PREPARING THE SAME

Dean Arthur Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed July 20, 1972, Ser. No. 273,418

Int. Cl. B01j *11/82*

U.S. Cl. 252—437 **7 Claims**

1. The method of forming structurally stable silica bonded aggregates of particulate silicates comprising the steps of

intimately mixing said silicate with a colloidal hydrous silica sol in the presence of water at a temperature of at least about 40°F and for a period of at least about 10 minutes sufficient to react said silica sol with said silicate, reacting with the resultant combination about 1 to about 30 weight percent determined as P_2O_5 of at least one polyphosphate or polyphosphate precursor convertible to a polyphosphate at temperatures above about 180°F and selected from the group consisting of phosphoric acids, ammonium salts of phosphoric acids, and hydrogen and ammonium phosphates of polyvalent metal cations having ionic radii less than about 1 angstrom, forming aggregates of said silicate particles, and heating the resultant aggregates at a temperature of at least 180°F for at least about 30 minutes wherein said silicate constitutes at least about 2 weight percent of said aggregate on a dry weight basis and is selected from the group consisting of silica gels, physical mixtures and cogels of silica and another refractory oxide, an crystalline aluminosilicate zeolites comprising at least about 50 weight percent silica on a dry weight basis, and said silica sol constitutes about 5 weight percent of said aggregate on a dry weight basis and has a average particle diameter below about 1 micron.

3,846,338

METHOD FOR PRODUCING PHOSPHATE CATALYST

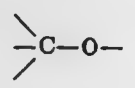
Revekka Vulfovna Kachlova, ulitsa Krylenko, 5, kv. 194; Mark Semenovich Nemtsov, ulitsa Gagarina, 21, kv. 8; Galina Fedorovna Balkhanova, ulitsa Telmana, 48, korpus 3, kv. 60; Ljudmila Nikolaevna Bychkovskaya, 11 Krasnoarmeiskaya ulitsa, 6, kv. 10; Vera Mikhailovna Mescherskaya, kanal Griboedova, 111, kv. 1, and Sofya Petrovna Rabinovich, Bolshoi prospekt, 12, kv. 9, all of Leningrad, U.S.S.R.

Filed July 21, 1972, Ser. No. 273,958

Int. Cl. B01j *11/82*

U.S. Cl. 252—437 **6 Claims**

1. A method for producing an improved Group II metal phosphate catalyst for rupturing of



bonds in organic compounds, in particular, for splitting 4,4-dimethyl -1,3-dioxane into isoprene, and for dehydration of alcohols, which consists essentially of subjecting an initial Group II metal phosphate to thermal passivation at a temperature in the range of from 550° to 700°C., said temperature being achieved by passing through said phosphate a gaseous heat carrier selected from the group consisting of superheated steam and mixtures thereof with air or with an inert gas.

3,846,339

CATALYST FOR THE SPONTANEOUS DECOMPOSITION OF MONOPROPELLANT HYDRAZINE

Jack L. Blumenthal, Los Angeles, and Eugene D. Guth, Palos Verdes Estates, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 698,846, Jan. 18, 1968, Pat. No. 3,732,694. This application Apr. 13, 1970, Ser. No. 32,486

Int. Cl. B01j *11/08, 11/22*

U.S. Cl. 252—438 **3 Claims**

1. A composition for the spontaneous decomposition of hydrazine propellant fuels consisting essentially of a low temperature oxidizer-starter selected from the group consisting of iodine pentoxide, ammonium dichromate, silver nitrate, chromic trioxide, potassium per-manganate, and sodium cobaltinitrite and rhenium coated on a high surface area support.

3,846,340

CATALYTIC COMPOSITION FOR TREATMENT OF EXHAUST GASES AND A METHOD OF PRODUCTION THEREOF

Toshiki Okuyama; Hiroko Iwabuchi, both of Fujisawa City; Mitsuyoshi Sano, Miura City; Shinichi Manabe, Yokosuka; Junichi Mine, and Mikiko Sato, both of Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Oct. 20, 1972, Ser. No. 299,332

Claims priority, application Japan, Oct. 25, 1971, 46-83897

Int. Cl. B01j *11/22*

U.S. Cl. 252—455 R **21 Claims**

1. A catalytic composition for treating exhaust gases containing hydrocarbons, carbon monoxide and oxides of nitrogen, consisting of a carrier and nickel oxide and chromium oxide in a total metal component amount of 0.2 to 3.1 moles and zirconium oxide of which metal component is in a molar ratio of 1/50 to 1/5 of the total metal component amount of said nickel oxide and chromium oxide per 1 liter of said carrier.

3,846,341

PROCESS FOR MANUFACTURING IRON MOLYBDATE CATALYSTS OF HIGH STRENGTH AND THE USE OF THE RESULTING CATALYSTS IN THE CATALYTIC OXIDATION OF ALCOHOLS TO ALDEHYDES

Philippe Courty, Nanterre, (Hauts de Seine), France, assignor to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueit Malmaison, France

Filed Mar. 8, 1971, Ser. No. 122,075

Claims priority, application France, Mar. 16, 1970, 70.09373

Int. Cl. B01j *11/22, 11/34, 11/36*

U.S. Cl. 252—462 **20 Claims**

1. In a process for manufacturing a catalyst containing catalytic quantities of iron and molybdenum from a catalyst precursor, said iron and molybdenum being the predominant catalytic metallic elements in said catalyst and in said precursor, the improvement comprising:

a. employing, as the said catalyst precursor, a homogeneous substance containing molybdate and ferric ions in an atomic ratio Mo/Fe of 1.5–5, water in an amount lower than 10% by weight, and ions of an ammonium salt in an amount expressed as the weight of said ammonium salt, of 10–50% of the dry weight of said homogeneous substance; and

b. heating said homogeneous substance at 150–250°C for a time sufficient to eliminate substantially all the water and a portion of the ammonium salt contained therein, thereafter mixing the product resulting from said heating with water or a chemically inert solvent capable of dissolving not more than said ammonium salt, shaping said mixture, and heating resultant shaped mixture to 150–250°C to dry same and to result in an unactivated catalyst of improved mechanical strength, said unactivated catalyst being thereafter calcinable by heating at 300–500°C to result in an activated catalyst of improved mechanical strength.

3,846,342

CATALYST CONTAINING AN OXIDE OF TECHNETIUM AS A PROMOTER

Albert L. Hensley, Jr., Munster, and Thomas D. Nevitt, Valparaiso, both of Ind., assignors to Standard Oil Company, Chicago, Ill.

Continuation of Ser. No. 127,808, March 24, 1971, abandoned. This application Aug. 31, 1972, Ser. No. 285,302

Int. Cl. B01j *11/08*

U.S. Cl. 252—465 **6 Claims**

1. A catalytic composition for the reforming of a petroleum hydrocarbon stream, which catalytic composition comprises as a component having hydrogenation-dehydrogenation activity and dehydrocyclization activity an oxide of chromium, a suitable support comprising catalytically active alumina, and as a promoter a small amount of an oxide of technetium.

3,846,343

PROCESS FOR PREPARING A PLATINUM-RHENIUM CATALYST ON AN ALUMINA SUPPORT

Henry Erickson, 400 E. Sibley Blvd., Harvey, Ill. 60426; Saul G. Hindin, 497 Delancy St., Newark, N.J. 07105; Carl D. Keith, 497 Delancy St., Newark, N.J. 07105, and John Mooi, 400 E. Sibley Blvd., Harvey, Ill. 60426

Continuation of Ser. No. 21,546, March 20, 1970, abandoned. This application May 2, 1972, Ser. No. 249,739

Claims priority, application Canada, Feb. 13, 1970, 74803

Int. Cl. B01j *11/08*

U.S. Cl. 252—466 PT **9 Claims**

1. A process for preparing an alumina-supported, rhenium and platinum series metal-containing, calcined catalyst which comprises the following steps:

i. drying an aqueous slurry of hydrated alumina to obtain a mixture which can be formed into macrosize particles;

ii. forming the mixture into macrosize particles;

iii. calcining the particles at a temperature from about 800 to 1800°F. so as to provide the particles with a surface area of below about 350 square meters per gram, with the proviso that said calcining is conducted at at least about 1200°F. when it is conducted in the substantial absence of water vapor;

iv. impregnating the calcined particles with aqueous solution of water-soluble platinum series metal acid or salt and aqueous solution of water-soluble rhenium acid or salt in an amount sufficient to provide about 0.1 to 1 weight percent of said platinum series metal and about 0.1 to 2 weight percent of said rhenium, calculated as the free metals, in the final catalyst; and

v. recalcining the impregnated particles at a temperature from about 600 to about 1200°F.

3,846,344

METHOD FOR PRODUCING NICKEL CATALYST

Floyd Gotthard Larson, Jr., Ringwood, and Edwin Snape, Ramsey, both of N.J., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed July 24, 1972, Ser. No. 274,412

Int. Cl. B01j *11/22*

U.S. Cl. 252—466 J **2 Claims**

1. A process for forming a catalyst structure having a first surface adapted to contact a reacting mass and having a second surface in direct metallic heat conductive relationship to said first surface adapted to contact a heat absorbing medium comprising electrodepositing nickel to firmly adhere on a first surface of a stainless steel article to a thickness of at least about 0.075 millimeter, depositing about 0.5 to about 30 grams of aluminum per square decimeter on said nickel coated first surface, interdiffusing said aluminum and said nickel to provide a diffusion layer at least 0.05 millimeter thick and to retain essentially pure aluminum on the surface and, thereafter, treating said article with a selective solvent for said aluminum to provide a catalytic layer of nickel on said first surface of said article and a corrosion resistant stainless steel surface on said second surface of said article.

3,846,345

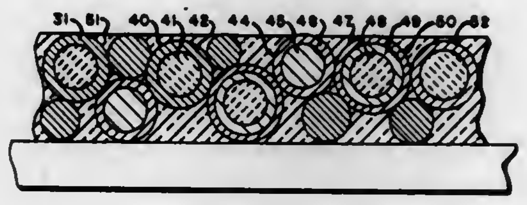
ELECTROCONDUCTIVE PASTE COMPOSITION AND STRUCTURES FORMED THEREFROM

Daniel W. Mason, Peabody, Mass., and Henry H. Nester, deceased, late of Peabody, Ill. (Dianne L. Nester, administratrix), assignors to Owens Illinois, Inc., Toledo, Ohio

Division of Ser. No. 13,918, Oct. 6, 1969, Pat. No. 3,718,608. This application July 31, 1972, Ser. No. 276,743

Int. Cl. H01b *1/02*

U.S. Cl. 252—514 **8 Claims**



1. An electroconductive body of material having a plurality of particulate bodies of less than about ten microns in diameter embedded within a fused glassy matrix of dielectric material in mutual interfacial contacting relationship and providing a continuous electroconductive path through said fused glassy matrix of dielectric material, said particulate bodies including a plurality of particulate bodies respectively having a core of dielectric material selected from at least one of the group consisting essentially of glass, alumina, beryllia, and ceramic material and surrounded by an essentially continuous skin of electroconductive noble metal material selected from at least one of the group consisting of palladium, rhodium, and oxides and alloys of either thereof.

3,846,346

DETERGENT COMPOSITION WITH CONTROLLED ALKALINITY

William K. Conn, Springfield, Pa., assignor to Philadelphia Quartz Company, Philadelphia, Pa.

Continuation of Ser. No. 109,654, Jan. 25, 1971, abandoned. This application Nov. 6, 1972, Ser. No. 303,731

Int. Cl. C11d *3/066*

U.S. Cl. 252—527 **10 Claims**

1. A detergent composition for use in laundering, consisting essentially of 5 to 40 percent surfactant, 10 to 50 percent sequestering agent, 0 to 5 percent anti-redeposition agent, 0 to 2 percent optical brightener, wherein said sequestering agent is selected from the group consisting of sodium nitrolotriacetate and sodium tripolyphosphate and said surfactant is selected from a group consisting of nonionic and anionic surfactants, and including the improvement consisting of using at least 5 percent and up to 40 percent alkali metal

silicate and 5 to 40 percent of a relatively acidic pH controller selected from a group consisting of fused borax, ethelenediaminetetraacetic acid, nitrilotriacetic acids and diethylenetriaminepentaacetic acid and whereby a normal wash solution of said composition has a pH of 9.5 to 10.5.

ERRATUM

For Class 260—000 see:
Patent No. 3,846,342

3,846,347

RIGID FOAMS FROM POLYURETHANE AND METHODS AND COMPOSITIONS FOR USE IN THEIR PREPARATION

Kenneth P. Satterly, Kennett Square, Pa., assignor to Witco Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 683,152, Nov. 15, 1967, abandoned, which is a continuation of Ser. No. 250,505, Jan. 10, 1963, abandoned, which is a continuation-in-part of Ser. No. 783,688, Dec. 30, 1958, abandoned. This application Sept. 21, 1970, Ser. No. 74,216

Int. Cl. C08g *22/48*

U.S. Cl. 260—2.5 AF **25 Claims**

1. A stable, highly branched prepolymer which is a polyurethane and is in liquid form, being dissolved in a solvent comprising a reactive organic polyisocyanate, said prepolymer being capable of being placed into the form of a rigid foam which has a K factor value of less than 0.22 and which foam has a closed cell content of about 90 percent, the cells being fine, uniform cells, said prepolymer comprising the reaction product of an excess of polyisocyanate and a polymeric hydroxy compound which compound is a polyalkylene oxide being the addition product of an alkylene oxide having at least three carbon atoms with a hydroxy compound having at least six hydroxyl groups, and said prepolymer containing reactive organic polyisocyanate contributing to the presence of unchanged isocyanato groups reactive to further polymerization, the said reactive polyisocyanate acting as said solvent.

3,846,348

HIGH IMPACT, FIRE RETARDANT, RIGID POLYURETHANE FOAM COMPOSITIONS HAVING HIGH RESISTANCE TO BOILING WATER AND PRODUCTS THEREFROM

Raymond W. Horst, Cincinnati, and Victor G. Soukup, Wyoming, both of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 876,601, Nov. 13, 1969, abandoned. This application July 24, 1972, Ser. No. 274,616

Int. Cl. C08g *22/48, 51/58*

U.S. Cl. 260—2.5 AJ **15 Claims**

1. An impact resistant, boiling water resistant, cured rigid polyurethane foam molding which is fire retardant, resulting from the reaction of (1) an isocyanate terminated product obtained by the reaction of a stoichiometric excess of an aromatic polyisocyanate with a poly (oxyalkylene) diol, copoly (oxyalkylene) diol, or mixture of poly (oxyalkylene) diols with (2) a polyether polyol having at least 4 hydroxyl groups per molecule which is the product of the reaction of one or more alkylene oxides with an aromatic, araliphatic, cycloalkyl or heterocyclic polyhydroxy compound or a mixture of polyether polyols containing at least one polyether polyol which is the reaction product obtained by reacting one or more alkylene oxides with an aromatic, araliphatic, cycloalkyl or heterocyclic polyhydroxy compound containing at least 4 hydroxyl groups per molecule, in the presence of (3) tris (1-bromo-3-chloroisopropyl) phosphate; (4) one or more blowing agents; and optionally (5) one or more catalysts; and (6) one or more surfactants.

3,846,349

POLYPROPYLENE COMPOSITION AND FOAMED POLYPROPYLENE SHEET THEREFROM

Taro Harada, Suita; Nobuo Ito, Ibaragi, and Kanemitsu Ohishi, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed June 26, 1973, Ser. No. 373,639

Int. Cl. C08f *47/10*

U.S. Cl. 260—2.5 HA **4 Claims**

1. A foamed polypropylene sheet having excellent impact resistance and a good texture and being soft, which is obtained by adding a blowing agent to a polypropylene composition consisting essentially of from 30 to 80 parts by weight of a crystalline polypropylene, from 10 to 40 parts by weight of a non-crystalline polypropylene and from 10 to 40 parts by weight of a low density polyethylene and then extruding the resulting mixture to foam.

3,846,350

PROCESS FOR THE VULCANIZATION AND EXPANSION OF POLYCHLOROPRENE RUBBER WITH AZODICARBNAMIDE

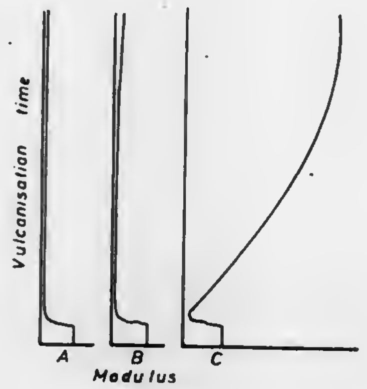
Jochen Schentger, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 213,545, Dec. 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 192,936, Oct. 27, 1971, abandoned. This application July 2, 1973, Ser. No. 375,546

Claims priority, application Germany, Oct. 29, 1970, 2053081; Dec. 10, 1971, 2161342

Int. Cl. C08d *13/10*

U.S. Cl. 260—2.5 H **5 Claims**



1. A process for the production of a cellular polychloroprene vulcanizate comprising heating a mixture of polychloroprene, at least one metal oxide and azodicarbonamide whereby said mixture is vulcanized and expanded.

3,846,351

SECONDARY AROMATIC ALKYL DIAMINES AS FOAM CATALYSTS AND CHAIN EXTENDERS

James E. Huffaker; Ambrose J. Clonce, and John E. Besser, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 275,123, July 26, 1972, abandoned. This application Aug. 21, 1973, Ser. No. 390,292

Int. Cl. C08g *22/46, 22/36*

U.S. Cl. 260—2.5 AM **1 Claim**

1. In the method of producing flexible polyurethane foam by reacting a polyether polyol with a diisocyanate and foaming said polyurethane by the use of a blowing agent, the improvement which comprises incorporating with said reactants as the only catalyst and chain extending agent between about 0.5 and about 5 parts by weight per hundred parts polyol of a compound selected from the group consisting of N,N′-dialkyl-p-phenylenediamine and N,N′-dialkyl-m-phenylenediamine wherein said alkyl groups contain between 3 and 10 carbon atoms.

3,846,352

PRESSURE SENSITIVE ADHESIVE COMPOSITIONS COMPRISING RUBBER AND A RESINOUS INTERPOLYMER

Herbert L. Bullard, Norton Village; David R. St. Cyr, Uniontown, and Robert A. Osborn, Stow, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 219,497, Jan. 20, 1972, Pat. No. 3,784,530. This application Sept. 4, 1973, Ser. No. 394,006

Int. Cl. C08f *15/40;* **C08d** *9/08*

U.S. Cl. 260—5 **2 Claims**

1. A composition which comprises a resinous material having a softening point in the range of about 60°C. to about 110°C. consisting essentially of piperylene, 2-methyl-2-butene, dicyclopentadiene and α-methyl styrene in an admixture with a polymeric material selected from natural rubber and synthetic rubber having a Mooney viscosity (ML–4) at about 100°C. of about 45 to about 65 where said resinous material comprises from about 30 to about 55 weight percent units derived from piperylene, from about 20 to about 45 weight percent units derived from 2-methyl-2-butene, from about 15 to about 30 weight percent units derived from dicyclopentadiene and from about 20 to about 35 weight percent units derived from α-methyl styrene prepared by the method which comprises polymerizing at a temperature in the range of about −20°C. to 50°C. in the presence of an anhydrous catalyst selected from aluminum chloride and ethyl aluminum dichloride and a solvent selected from aliphatic and aromatic hydrocarbons a mixture which comprises from about 15 to about 50 weight percent piperylene, from about 15 to about 50 weight percent 2-methyl-2-butene, from about 5 to about 40 weight percent dicyclopentadiene and from about 5 to about 40 weight percent α-methyl styrene, where the mole ratio of piperylene to 2-methyl-2-butene is in the range of about 0.8:1 to about 1.8:1.

3,846,353

NONTHROMBOGENIC PLASTIC MATERIAL AND METHOD FOR MAKING THE SAME

Henry M. Grotta, Delaware, Ohio, assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Filed June 8, 1970, Ser. No. 44,594

Int. Cl. A61k *17/18;* **B44d** *5/12;* **C08b** *25/00*

U.S. Cl. 260—9 **15 Claims**

1. A method of making a nonthrombogenic plastic material comprising the steps of exposing a polymeric plastic to an organic solvent solution of water-insoluble, organic solvent-soluble, plastic-compatible long chain alkyl quaternary ammonium salt at ambient temperature, said long-chain alkyl quaternary ammonium salt having from 2 to 4 alkyl groups each having from about 10 to about 30 carbon atoms, and thereafter exposing said polymer to a solution of heparin at ambient temperature.

3,846,354

COMPOSITION COMPRISING ETHYLENE/VINYL CHLORIDE/N-METHYLOL ACRYLAMIDE TERPOLYMER, STARCH AND A MINERAL PIGMENT FOR COATING PAPER

William F. Fallwell, Jr., Saint Louis, Mo., assignor to Monsanto Company, Saint Louis, Mo.

Division of Ser. No. 56,685, July 20, 1970, Pat. No. 3,755,233. This application Apr. 25, 1973, Ser. No. 354,300

Int. Cl. C08d *9/06;* **C08f** *37/16*

U.S. Cl. 260—17.4 ST **7 Claims**

1. An aqueous composition comprising a mineral pigment and as a binder (a) from about 1 to about 100 parts by weight per 100 parts by weight of pigment, of an ethylene/vinyl chloride/N-methylolacrylamide terpolymer containing from about 15 to about 70 weight percent ethylene, from about 30 to about 85 weight percent vinyl chloride and from about 0.1 to about 10 weight percent N-methylolacrylamide, and (b) starch in a ratio of starch solids to terpolymer solids of from about 95:5 to about 5:95; wherein said aqueous composition contains from about 20 to about 400 parts by weight of dispersed solids for each 100 parts by weight of water.

3,846,355

POLYURETHANE COMPOSITIONS EXTENDED WITH LOW AROMATIC HYDROCARBON OILS

Simon Ernest Mayer, 7 Russell Rd., Lexington, Mass. 02173

Continuation-in-part of Ser. No. 113,033, Feb. 5, 1971, abandoned. This application Oct. 16, 1972, Ser. No. 298,149

Int. Cl. C08g *22/04*

U.S. Cl. 260—18 TN **8 Claims**

1. In a polyurethane resin composition extended with at least 20 percent by weight of a low aromatic hydrocarbon oil having a Kauri-Butanol value of between about 25 and about 40, said polyurethane resin being a reaction product of an organic polyisocyanate and a polyol having a carbon chain of at least 10 carbon atoms:

> the inprovement comprising including in said composition at least about 1 percent by weight of an emulsifying agent which is an alkylene oxide adduct derived from a long chain fatty acid having from 12 to 20 carbon atoms, and at least about 0.5 percent by weight of a colloidal thixotropic agent which is a metallo-organic complex and which produces micelles of stable, uniform inorganic nuclei having a diameter of less than 0.1 micron in said low aromatic hydrocarbon oil.

3,846,356

TRIALKYLSILYL-TREATED FUMED SILICON DIOXIDE PIGMENTS FOR ELECTRO-DEPOSITION

Kenneth C. Hou, Somerset, and Norman W. Thomas, Warren, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed June 8, 1973, Ser. No. 368,153

Int. Cl. C08g *51/04*

U.S. Cl. 260—18 EP **6 Claims**

1. An aqueous electro-depositable composition comprising an ionically solubilized synthetic organic resin vehicle having

dispersed therein in pigmentary form up to about 15 percent by weight, based upon the vehicle, of a trialkylsilyl-treated fumed silicon dioxide pigment having a surface area in the range of 50 to 350 m^2/g wherein the total pigment to binder ratio is not higher than about 3 to 1.

3,846,357

PROCESS FOR THE POLYMERIZATION OF LACTAMES ALLOWING SUBSTANCES AFFECTED BY HIGH TEMPERATURES TO BE ADDED DURING POLYMERIZATION

Genevieve Morival, Serquigny, France, assignor to Societe Anonyme dite: Aquitaine Total Organico Tour Aquitaine, Courbevoie, France

Continuation of Ser. No. 191,474, Oct. 21, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 397,840

Int. Cl. C08g *51/02, 51/22*

U.S. Cl. 260—18 N **23 Claims**

1. A process for the polymerization of polyamides which consists essentially of polymerizing in the presence of water, a lactam having at least 6 carbon atoms in the ring and in the presence of an acidic catalyst or organic base catalyst, at a temperature between 270°C and 335°C, cooling the reaction mixture to a temperature between 260°C and 130°C, adding to said cooled reaction mixture a member selected from the group consisting of stabilizers, plasticizers, pigments, coloring agents, metal powders, molding agents, lubricating agents and anti-oxidizing agents, and completing the polymerization reaction at a temperature of 260°C to 130°C.

3,846,358

PROCESS FOR PRODUCING SILICONE RESINS

George F. Roedel, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Sept. 20, 1973, Ser. No. 399,072

Int. Cl. C08k *1/66*

U.S. Cl. 260—18 S **11 Claims**

1. A process for producing a silicone resin comprising (a) contacting an organohalosilane selected from the class consisting of organotrihalosilanes and diorganodihalosilanes and mixtures thereof, where the organo group is selected from the class consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals, with from 0.05 to 1 part of water based on per part of organohalosilane with from 0.1 to 1 part of an alcohol based on per part of said organohalosilane of the formula,

$$R'OH$$

where R′ is an alkyl radical of one to eight carbon atoms such that there is formed an alkoxylated organosiloxane containing 5 to 40 percent by weight of alkoxy groups; (b) adding from 0.04 to 1.0 parts of an alcohol based on per part of the alkoxylated organohalosiloxanes of the formula,

$$R'OH$$

where R′ is as previously defined and removing acid from alkoxylated organohalosiloxane to an acid concentration of 500 to 4000 ppm; (c) adjusting the acidity of the alkoxylated organohalosiloxane to 1 to 300 ppm; (d) adding from 0.04 to 1 part of water per part of said alkoxylated organohalosiloxanes to hydrolyze the alkoxylated organosiloxane; and (e) adjusting the resulting hydrolyzate to the desired solids content.

3,846,359

STORAGE STABLE BINDERS

Paul Rostaing, Vienne, France, assignor to RHone-Poulenc S.A., Paris, France

Filed Mar. 27, 1973, Ser. No. 345,331

Claims priority, application France, Mar. 28, 1972, 72.10820; Dec. 5, 1972, 72.43189

Int. Cl. C08g *17/16*

U.S. Cl. 260—22 S **9 Claims**

1. A binder composition comprising, in parts by weight,
60 to 120 parts of component A, which is at least one alkyl silicate or alkyl polysilicate, the alkyl radical of which contains one to three carbon atoms,
3 to 25 parts of component B, which is at least one alkyl titanate or allkyl polytitanate, the alkyl radical of which contains three to eight carbon atoms,
10 to 20,000 parts of component C, which is at least one film forming resin selected from the group consisting of (*a*) film form organic resins containing at least the elements carbon, hydrogen and oxygen but not silicon, (b) film forming organic resins containing at least the elements carbon hydrogen, oxygen and silicon and (c) co condensation products of organic resins (a) with organic resins (b), and
20 to 1,500 parts of component D, which is an organic solvent.

3,846,360

BASE FOR UNIVERSAL PIGMENT CONCENTRATES

Donald G. Needham, Ramona, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 13, 1971, Ser. No. 207,516

Int. Cl. C08c *11/18;* **C08d** *9/08*

U.S. Cl. 260—23.7 R **5 Claims**

1. A universal pigment concentrate for coloring a polymeric material selected from the group consisting of polyolefins, ethylene-vinyl acetate copolymers, acrylonitrile-butadiene-styrene terpolymers, polystyrene, polyamides and polyesters consisting essentially of:
distinct particles homogeneously dispersed in a carrier material, said carrier material consisting essentially of from about 10 to about 60 weight percent, based on weight of carrier material, of at least one first polymeric material selected from the grooup consisting of copolymers of at least one conjugated diene having from 4 to 12 carbon atoms and at least one monovinyl aromatic hydrocarbon having from 8 to 18 carbon atoms; said copolymer having been obtained by the polymerization of one or more of such monomers in the presence of an inert solvent for such copolymer and a polymerization initiator selected from the group consisting of an Alfin catalyst, an alkali metal and an organolithium compound;
from about 20 to about 75 weight percent, based on weight of carrier material of at least one extender oil; and,
from about 15 to about 70 weight percent of polyethylene as a binder material
wherein the amount of said pigment particles is in the range of about 20 to about 90 weight percent, based on weight of pigment and carrier material, and the amount of said carrier material is in the range of about 80 to 10 weight percent, based on weight of pigment and carrier material.

3,846,361

PHONOGRAPH RECORD COMPOSITION AND PROCESS

A. John Sands, P.O. Box 167, Bayside, N.Y. 11361

Filed June 14, 1972, Ser. No. 262,644

Int. Cl. C08f *45/52, 45/28;* **C09k** *3/00*

U.S. Cl. 260—28.5 D **17 Claims**

1. A phonograph record composition comprising a thermoplastic resin selected from the group consisting of polyvinyl chloride and a combination of polyvinyl chloride and a copolymer of vinyl chloride and vinyl acetate, toluene in an amount of about 2 to 5 parts for each 100 parts of thermoplastic resin, a heat stabilizer for the thermoplastic resin and a colorant for the phonograph record composition.

3,846,362

MOLDING COMPOSITIONS BASED ON ETHYLENE-VINYL ACETATE COPOLYMERS AND PITCH

Herbert Reinecke; Klaus Adler; Johann Bauer, all of Burghausen; Reinhard Kretschmer, Munich; Gerhard Lamhofer, Olching, and Engelbert Pichler, Burghausen, all of Germany, assignors to Wacker-Chemie, GmbH, Munich, Germany

Filed Sept. 7, 1972, Ser. No. 286,963

Claims priority, application Germany, Sept. 27, 1971, 2148186

Int. Cl. C08f *45/52*

U.S. Cl. 260—28.5 AS **6 Claims**

1. A molding composition for the preparation of foils based on ethylene-vinyl acetate copolymers and pitch consisting essentially of (A) from 40 to 60 percent by weight of a coal tar pitch having a softening point (DIN 1995) of from 100°C to 195°C, (B) from 30 to 60 percent by weight of an ethylene-vinyl acetate copolymer having a vinyl acetate content of from 50 to 70 percent by weight of the copolymer, (C) from 10 to 30 percent by weight of a thermoplastically shapable polymer having a freezing temperature of below −30°C, (D) from 0 to 10 percent by weight of additives selected from the group consisting of pigments, fillers, stabilizers and processing aids.

3,846,363

ADHESIVE CRAYON COMPOSITION CONTAINING SORBITOL-BENZALDEHYDE REACTION PRODUCT AS ADDITIVE

Takuo Ando, Ibaraki, and Hiroyuki Yamazaki, Toyonaka, both of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka-shi, Japan

Filed Jan. 28, 1972, Ser. No. 221,767

Claims priority, application Japan, Feb. 3, 1971, 46-4104; May 31, 1971, 46-38019; June 2, 1971, 46-38896

Int. Cl. C09j *3/12;* **C08f** *3/56;* **C09j** *3/00, 3/14*

U.S. Cl. 260—29.6 BM **6 Claims**

1. In an adhesive crayon comprising
1. an adhesive resin selected from the group consisting of partially or completely hydrolyzed polyvinyl acetate, hydrolyzed vinyl acetate-crotonic acid copolymer, hydrolyzed vinyl acetate-maleic anhydride copolymer, vinyl methyl ether-maleic anhydride copolymer, vinyl acetate-ethylene copolymer, hydrolyzed vinyl acetate-ethylene copolymer and polyvinyl pyrrolidone,
2. water, and
3. a water-miscible organic solvent, the improvement which comprises incorporating therein a reaction product prepared by reacting 1 mole of sorbitol and 1 to 3 moles of benzaldehyde with or without 0.1 to 2 moles of a boron compound; water, said water-miscible organic solvent and said reaction product being employed in the ratio of 5 to 40, 10 to 60 and 0.2 to 20 parts by weight, respectively, to 10 parts by weight of said adhesive resin.

3,846,364

RESILIENT OIL EXTENDED POLYURETHANE SURFACES

Dean W. Criddle, Pleasant Hill, and Arthur L. Meader, Jr., Berkeley, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 130,769, April 2, 1971, abandoned. This application Aug. 2, 1972, Ser. No. 277,459

Int. Cl. C08g *51/28*

U.S. Cl. 260—33.6 UB **9 Claims**

1. A resilient surfacing of from about ⅛ to 3 inches in thickness, comprising (1) 1 part by weight of a polyurethane prepared in situ from a polyisocyanate and a polyol mixture, wherein said polyol mixture is from 50–95 weight percent of a polypropylene glycol having a molecular weight of from 1,500 to about 3,000 and from 50–5 weight percent of a short-chain polyol having 2 to 3 hydroxyl groups and a molecular weight in the range of from 62–300, the mol ratio of said short-chain polyol to said polypropylene glycol being from 0.5–5.0:1.0, and wherein said polyisocyanate is used in an equivalent ratio of from about 1.3 to about 2.3 equivalents per equivalent of hydroxyl from said polyol mixture, (2) from 0.05 part to about 0.3 part by weight extender oil having a viscosity of from 100 to 10,000 SUS at 100°F., and an aniline point of from 80 to 140, (3) from about 2 to about 5 parts by weight natural or synthetic rubber particles having a maximum dimension of about 1 inch, not more than ten percent of which will pass through a No. 30 U.S. standard sieve, (4) from zero to about 0.08 part by weight drying agent, and (5) from zero to about 0.08 part by weight carbon black having a mean particle diameter of from about 10 to about 70 millimicrons.

3,846,365

PROCESS FOR THE PRODUCTION OF POURABLE ELASTOMER PARTICLES

Gerhard Berg; Karl-Heinz Nordsiek; Gunter Maahs, and Wilhelm Schanzer, all of Marl, Germany, assignors to Chemische Werke Heuls Aktiengesellschaft, Marl, Germany

Filed July 10, 1972, Ser. No. 270,003

Claims priority, application Germany, July 15, 1971, 2135266

Int. Cl. C08c *11/10, 11/18, 11/22*

U.S. Cl. 260—33.6 AQ **27 Claims**

1. A process for preparing discrete, finely divided, tack-free, pourable, powdery filler-containing elastomer particles from an admixture of (a) an aqueous emulsion of 1–50 percent by weight of an elastomer selected from the group consisting of polybutadienes having a 1,2-content of 15–75 percent, polyalkenamers, solution polymerized styrenebutadiene copolymers, ethylene-propylene copolymers and ethylenepropylene-diene copolymers, said aqueous emulsion consisting essentially of (i) a solution of said elastomer dissolved in a volatile, inert organic solvent having a boiling point below 100°C, (ii) an elastomer emulsifying amount of a quaternary ammonium salt cationic surfactant; and (iii) water, the volume ratio of the aqueous phase to the organic solvent phase of said emulsion being from about 0.25:1 to about 2.5:1 respectively, and (b) an aqueous suspension or dispersion of a solid, finely divided elastomer filler, the volume ratio of aqueous filler to said aqueous emulsion in said admixture being from about 0.2:1 to about 2.0:1, which process comprises:
gradually introducing said admixture into a 0.1 to 5 fold volume of an aqueous alkali silicate solution containing 2–20 moles of SiO_2 per mole of said quaternary ammonium salt while maintaining said silicate solution at a pH greater than 2 to avoid a condensation reaction of the silicate anions, and
simultaneously evaporating said volatile organic solvent to form said filler-containing elastomer particles.

3,846,366

STRUCTURAL MATERIAL AND METHOD

Richard A. Wallace, 43 Kingscote Garden, Stanford, Calif. 94305

Filed Nov. 22, 1971, Ser. No. 201,111

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 EP **23 Claims**

1. A composition comprising an intimate mixture of 60 to 90 parts by weight of a particulate reinforcement filler and 10 to 40 parts by weight of a resinous adhesive polymer binder bonding said filler particles together, said filler comprising a pyrolysis or incinceration residue of industrial or municipal solid waste products, said pyrolysis or incineration residue comprising at least 48 percent of silica and alumina and including a sufficient content of a plurality of different metal and metal oxide particles to significantly increase the strength of said composition in comparison to the same composition absent said metal and metal oxide particles, the majority of said filler particles having a gradation varying from —4 to 300 mesh size, said filler being characterized by non-homogeneous mesh size and individual filler particles with irregular rough shapes.

3,846,367

MINERAL REINFORCED NYLON COMPOSITION WITH HIGH IMPACT STRENGTH

Louis Lasseter Burton, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 24, 1973, Ser. No. 363,663

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 N **10 Claims**

1. A polyamide composition comprising (1) a blend of polycaprolactam and polyhexamethylene adipamide, said blend containing between 8 and 20 percent by weight polycaprolactam based on the weight of the total polyamide present, said blend comprising 55 to 75 percent by weight of the composition; (2) 25 to 45 percent by weight of the composition of a mineral reinforcing agent and (3) a silane coupling agent in the amount of 0.25 to 2 percent by weight of the mineral reinforcing agent.

3,846,368

THERMOSETTING ACRYLIC POWDER COATING COMPOSITION OF A POLYBLEND OF ACRYLIC POLYMER HAVING A HIGH GLASS TRANSITION TEMPERATURE AND AN ACRYLIC POLYMER HAVING A LOW GLASS TRANSITION TEMPERATURE AND A CROSS-LINKING AGENT

Paul H. Pettit, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 19, 1973, Ser. No. 352,738

Int. Cl. C08g *37/32, 45/10, 51/14*

U.S. Cl. 260—39 R **10 Claims**

1. A thermosetting acrylic polymer powder coating composition comprising finely divided particles having a particle size of 1–100 microns; wherein the powder particles are an intimately mixed blend of film-forming constituents consisting essentially of

A. 40–75 percent by weight of a hard acrylic polymer consisting essentially of
  1. 80–95 percent by weight, based on the weight of the hard acrylic polymer, of methyl methacrylate,
  2. 3–10 percent by weight, based on the weight of the hard acrylic polymer, of an alkyl methacrylate or an alkyl acrylate having 2–14 carbon atoms in the alkyl groups,
  3. 2–17 percent by weight, based on the weight of the hard acrylic polymer, of a hydroxyalkyl acrylate or hydroxyalkyl methacrylate having 2–4 carbon atoms in the alkyl groups or mixtures thereof;

wherein the hard acrylic polymer has a glass transition temperature of about 75° to 90°C. and a number average molecular weight of 3,000–10,000;

B. 10–25 percent by weight of a soft acrylic polymer consisting essentially of
  1. 40–60 percent by weight, based on the weight of the soft acrylic polymer, of methylmethacrylate,
  2. 30–56 percent by weight, based on the weight of the soft acrylic polymer, of an alkyl acrylate or an alkyl methacrylate having 2–14 carbon atoms in the alkyl groups,
  3. 4–10 percent by weight, based on the weight of the soft acrylic polymer, of a hydroxy alkyl acrylate or a hydroxy alkyl methacrylate having 2–4 carbon atoms in the alkyl groups or mixtures thereof;

wherein the soft acrylic polymer has a glass transition temperature of about 0° to 30°C. and a number average molecular weight of about 8,000–20,000;

C. 7–19.98 percent by weight of an alkylated melamine formaldehyde resin having 1–8 carbon atoms in the alkyl group;

D. 6–15 percent by weight of dihydroxy functional plasticizer of a polyester resin having a molecular weight of 520–4,000 or a polycaprolactone having a molecular weight of 520–2,000; and

E. 0.02–2.0 percent by weight of a blocked acid catalyst of a blocked paratoluene sulfonic acid catalyst.

3,846,369

COLOURATION OF POLYMERIC MATERIALS

James Lyon Whyte, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 94,564, Dec. 2, 1970, Pat. No. 3,728,124. This application Apr. 16, 1973, Ser. No. 351,611

Claims priority, application Great Britain, Dec. 5, 1969, 59512/69. The portion of the term of this patent subsequent to Apr. 17, 1990, has been disclaimed.

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 R **3 Claims**

1. A method of producing a polyester film which is resistant to light piping by including therein a grey dye mixture which consists of up to 0.15 percent by weight of the polyester of at least one dye selected from 6-paratoluidino-3-methyl 1'9' anthrapyridone and tetrachlorophthalo perinone and up to 0.15 percent by weight of the polyester of at least one dye selected from indanthrone and 1,4 bis (4-n-butyl anilino)-5,8, dihydroxy anthraquinone, said method comprising including the dye mixture in the polyester-forming reaction mixture, subjecting said reaction mixture to polycondensation while agitating to form said polyester with the dye mixture uniformly incorporated therein and then extruding the polyester to form said film.

3,846,370

SEALING ELEMENT AND COMPOSITION

Albert R. Bunk, Columbus, and Bailey Bennett, Worthington, both of Ohio, assignors to Shatterproof Glass Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 186,401, Oct. 4, 1971, abandoned. This application June 7, 1973, Ser. No. 367,815

Int. Cl. C08c *11/18, 11/08, 11/40*

U.S. Cl. 260—42.36 **5 Claims**

1. An elongated strip as a hermetic sealing element in multiple glaze construction, which elongated strip is a tacky, moisture and vapor impervious composition consisting essentially of:

A. a heat-processed, partially cured low-molecular-weight butyl rubber from masticating at between 280°F and 310°F for at least 12 and up to 60 minutes total masticating time of a blend of components, which for heat-processing and partial curing, in parts by weight consists essentially of:
  a. 100 parts of the low-molecular-weight butyl rubber which is a copolymer, having a viscosity average molecular weight between 10,000 and 45,000 of 96 to 95.5 parts of isobutylene and 4 to 4.5 parts of isoprene;
  b. up to 5 parts of zinc oxide;
  c. up to 10 parts of carbon black; and
  d. between 2¼ and 9 parts of a nonsulfur cure system which is devoid of sulfur and sulfur-containing constituents and which contains a constituent providing a dinitrosobenzene cross-linking moiety with
    i. between 1.5 and 8.5 parts total from at least two of from 0 to 2 parts of N-(2-methyl-2-nitropropyl)-4-nitrosoaniline, from 0 to 2.5 parts of tetrachloro-p-benzoquinone, and from 0.25 to 5 parts of p-quinonedioxime, and with less than one-half of said total consisting of N-(2-methyl-2-nitropropyl)-4-nitrosoaniline, and with at least 1.5 parts of tetrachloro-p-benzoquinone included when said total is 5 and greater, and
    ii. contains from 0 to 4 parts of lead dioxide with inclusion of between ¾ and 3¾ parts when the tetrachloro-p-benzoquinone is less than 1.5 or the total of (i) constituents is less than 5, and from 0 to ½ part of p,p-diaminodiphenylmethanc with inclusion of between 0.1 and 0.5 part when the tetrachloro-p-benzoquinone is 1.5 and greater or the total of (i) constiuents is 5 and greater.

3,846,371

MASTERBATCHING ELASTOMER BLENDS

Rolland Shih-Yuan Ro, Wilmington, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.

Filed Apr. 9, 1973, Ser. No. 349,303

Int. Cl. C08c *11/18;* **C08d** *9/08*

U.S. Cl. 260—42.33 **5 Claims**

1. A process for blending a chloroprene elastomeric polymer and an elastomeric polymer or its allylically brominated derivative comprising ethylene, propylene and at least one non-conjugated diene which consists essentially of separately adding to said chloroprene polymer a semi-reinforcing black, and adding a high reinforcing black to the ethylene containing polymer, blending the two black containing elastomers in the uncured state, curing the elastomers in the presence of one or more curing agents compatible with the elastomers in the blend and recovering a blend of elastomers having at least one optimized property.

3,846,372

SMOKE RETARDANT VINYL CHLORIDE POLYMER COMPOSITIONS

Lawrence C. Mitchell, Mt. Vernon, Ind., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 19, 1973, Ser. No. 352,505

Int. Cl. C08f *45/62*

U.S. Cl. 260—45.75 R **5 Claims**

1. As a composition of matter, a polyvinyl halide admixed with a smoke retardant amount of a vanadium oxide.

3,846,373

FLAME-RETARDANT ACRYLIC SYNTHETIC FIBERS HAVING IMPROVED PROPERTIES

Kenji Takeya; Hiroshi Suzuki, and Tadashi Ichimaru, all of Okayama, Japan, assignors to Japan Exlan Company, Limited, Osaka, Japan

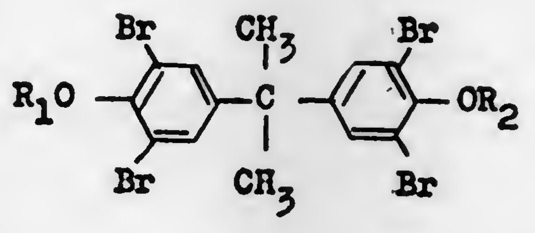
Filed Sept. 1, 1972, Ser. No. 285,664

Claims priority, application Japan, Sept. 4, 1971, 46-68218

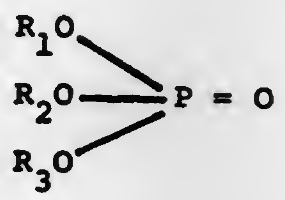
Int. Cl. C08g *51/58*

U.S. Cl. 260—45.95 G **9 Claims**

1. A flame-retardant monocomponent acrylic synthetic fiber comprising an acrylonitrile polymer selected from the group consisting of homopolymers of acrylonitrile and copolymers containing at least 70 percent acrylonitrile and up to 30 percent of at least one monoethylenically unsaturated monomer copolymerized therewith, and having incorporated in such fibers 3–40 percent by weight of a fluid mixture having a viscosity of at least 6,000 centipoises at 25°C obtained by dissolving (1) an organic compound selected from the group consisting of halogenated paraffins, halogenated aralkyl phosphates, halogenated aryl phosphates, halogenated diphenyl ethers, halogenated phenols, halogenated alkyl ethers of the halogenated phenols, tetrabromobisphenol-A and etherified derivatives of tetrabromobisphenol-A represented by the formula



wherein each of R_1 and R_2, respectively, represents alkyl, cycloalkyl, aralkyl or aryl which are unsubstituted or substituted by halogen, said R_1 and R_2 groups respectively having 2-20 carbon atoms, in (2) a liquid halogenated aliphatic phosphate represented by the formula



wherein each of R_1, R_2 and R_3 represents a halogenated aliphatic hydrocarbon radical having up to eight carbon atoms.

3,846,374

1,2-AZAPHOSPHOLANES AND THEIR 2-OXIDES, 2-SULFIDES AND SALTS AND PREPARATION THEREOF

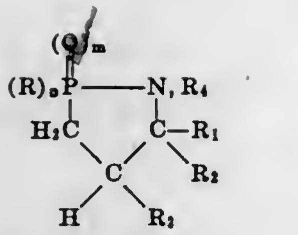
Charles Edward Farley, Norwalk, and Martin Grayson, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 801,748, Feb. 24, 1969, abandoned. This application May 27, 1971, Ser. No. 289,373

Int. Cl. C07d *105/02*

U.S. Cl. 260—551 P **7 Claims**

1. A 1,2-azaphospholane compound or salt, consisting of
  a. a compound having the formula



wherein R is selected from alkyl of 1 to 18 carbon atoms, phenyl, mono- and di-substituted alkylphenyl, chlorophenyl, and bromophenyl, R_1, R_2 and R_3 are hydrogen or lower alkyl, R_4 is a member of the group consisting of hydrogen, lower alkyl, phenyl and lower alkylphenyl, Q is oxygen or sulfur, *n* is 1 and *m* is zero or 1, or

b. a salt having a cation of the formula shown wherein R, R_1, R_2, R_3 and R_4 are as defined, m is zero and n is 1 or 2, with a salt forming anion selected from halogen, nitrate, sulfate, sulfide, acetate, carbonate, phenol, and thiophenol.

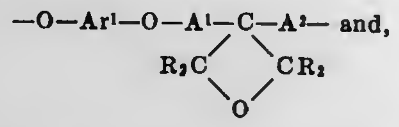
3,846,375
AROMATIC POLYETHER OXETANE RESINS

Robert L. Wear, West Saint, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 210,193, Dec. 20, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 397,800
Int. Cl. C08g *23/04*
U.S. Cl. 260—61 **14 Claims**

1. An aromatic containing polyether polymer consisting essentially of

I. units of the formula

(a)



II. 0 – 90 mole percent units of the formula

b. — O — Ar^1 — O — Ar^2 —

wherein

Ar^1 is an aromatic nucleus,

Ar^2 is an aromatic nucleus substituted with an electron withdrawing group capable of activating a halogen substituent in the aromatic nucleus, and

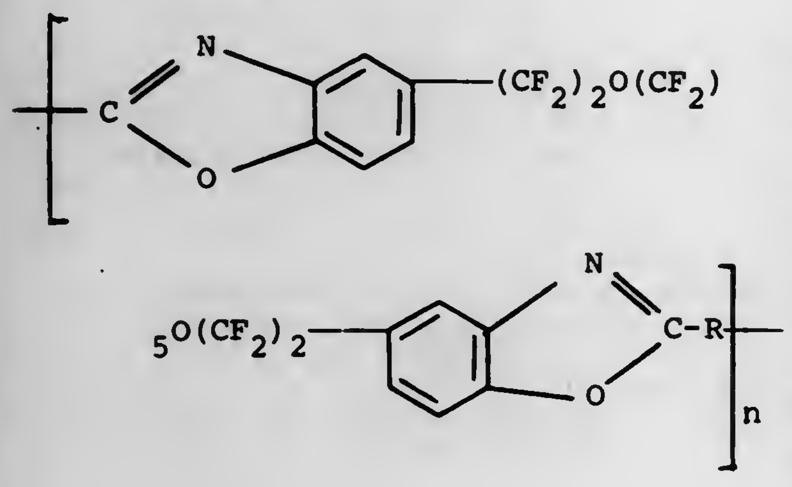
A^1 and A^2 are lower aliphatic radicals, and

R is selected from the group consisting of hydrogen and lower alkyl.

3,846,376
THERMALLY STABLE PERFLUOROALKYLENE ETHER BIBENZOXAZOLE POLYMERS

Robert C. Evers, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Sept. 26, 1973, Ser. No. 401,000
Int. Cl. C08g *23/00*
U.S. Cl. 260—61 **11 Claims**

1. A thermally stable polymer consisting essentially of repeating units having the following formula:



wherein R is $(CF_2(_8$, $(CF_2)O(CF_2)_2O(CF_2)$, or $(CF_2)_4O(CF_2.)_2O(CF_2)$, and *n* is an integer sufficient to provide an inherent viscosity from about 0.10 to 1.0 when measured at 25°C as a 0.2 weight percent solution in hexafluoroisopropanol.

3,846,377
METHOD OF PRODUCING POLYETHYLENE TEREPHTHALATE FIBERS

Arnon Siegmann, Haifa, Israel, assignor to Allied Chemical Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 198,407, Nov. 12, 1971, abandoned. This application July 2, 1973, Ser. No. 375,582
Int. Cl. C08g *17/00;* **B28b** *3/20*
U.S. Cl. 260—75 T **9 Claims**

1. A process for forming polyethylene terephthalate fibers comprising extruding, under a pressure in the approximate range of 30,000 to 80,000 psi and at a temperature in the approximate range of 250°C. to 260°C., a melt of polyethylene terephthalate through a spinneret provided with tapered apertures of a generally frusto-conical shape, and immediately cooling the filaments exiting from said spinneret to a temperature below about 85°C.

3,846,378
SYNCHRONOUS PROCESS FOR THERMALLY-CURABLE BLOCKED POLYURETHANES

Azel Alan Griswold, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.
Filed Apr. 17, 1972, Ser. No. 244,921
Int. Cl. C08g *22/32*
U.S. Cl. 260—77.5 TB **19 Claims**

1. A synchronous partial-blocking process for making an oxime-blocked intermediate polyurethane comprising the steps of

a. preparing a pre-polymer-free reaction mixture by mixing with an unblocked organic polyisocyanate an amount of an oxime equivalent to 5–35 percent of the isocyanate groups, at least one polyol in an amount such that the sum of the isocyanate-active hydrogens in the polyol and the oxime is at least substantially equivalent to said isocyanate groups and a catalyst and

b. allowing the polyisocyanate to react with the oxime and polyol in said mixture, the oxime blocking its equivalent of the isocyanate groups, and the polyol reacting with the residual isocyanate groups to form said oxime-blocked intermediate polyurethane.

3,846,379
POLYAMIDE SHOCK ABSORBER PISTON FROM TEREPHTHALIC ACID AND BRANCHED DIAMINE

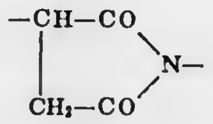
Johannes Schneider, and Wolfgang Pungs, both of Troisdorf, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany
Filed July 6, 1971, Ser. No. 160,120
Claims priority, application Germany, July 4, 1970, 2033193
Int. Cl. C08g *20/38*
U.S. Cl. 260—78 S **4 Claims**

1. A shock absorber piston, adapted to be guided in a cylinder containing a damping fluid and to be attached to a piston rod, said piston being produced from amorphous polyamide consisting essentially of the polymeric condensation product of the dimethyl ester of terephthalic acid and a mixture of 2,2,4- and 2,4,4-trimethylhexamethylenediamine, said polyamide exhibiting a viscosity of about 100 to about 200 measured in a 0.5 percent by weight solution in m-cresol at 25°C. and prior to the formation of said piston having been conditioned for 8 to 16 hours at a temperature from about 110°C. to about 150°C. in an inert gas atmosphere under vacuum.

3,846,380
POLYAMINO ACID DERIVATIVES AND COMPOSITIONS CONTAINING SAME

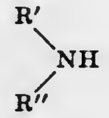
Yasuo Fujimoto, 1177-4, Ichigao-cho, Midori-ku, Yokohama-shi, Kanagawa-ken, and Masayuki Teranishi, Yamazaki-danchi 7-9-108, 2130, Yamazaki-cho, Machida-shi, Tokyo, both of Japan
Filed Oct. 31, 1972, Ser. No. 302,417
Int. Cl. C08g *20/08*
U.S. Cl. 260—78 A **19 Claims**

1. A process for preparing a polyaspartic acid derivative which comprises reacting a polyimide having in its molecule the group



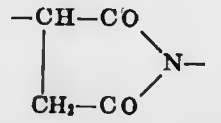
as a repeating unit, which is obtained by heat condensation of a compound selected from the group consisting of aspartic acid; ammonium salts of aspartic acid, malic acid, maleic acid and fumaric acid; and mono- and diamides of aspartic acid, malic acid, maleic acid and fumaric acid

with a primary or secondary amine represented by the formula

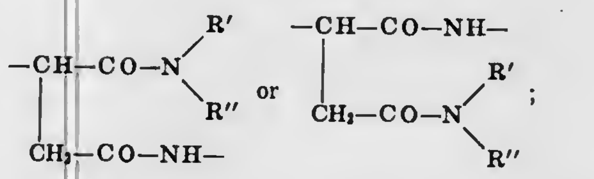


(wherein R′ is a hydrogen atom or or an alkyl or alkenyl group having one to 20 carbon atoms and R″ is an alkyl or alkenyl group having 8 to 20 carbon atoms), the amount of which is 0.005 - 1.0 equivalent based on the imide groups of the polyimide

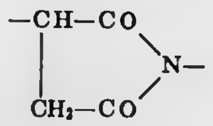
at room temperature or a higher one up to 100°C in a solvent in order to partially convert the repeating unit of polyimide



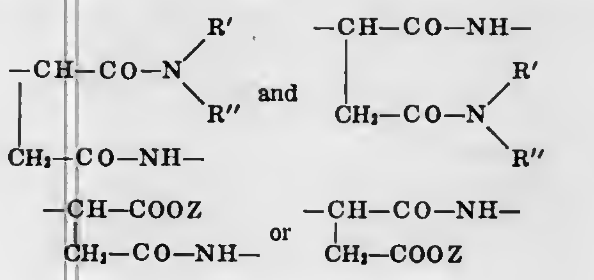
into



and hydrolyzing the resulting polyimide derivative with an alkali selected from alkali metal and alkaline earth metal hydroxides and carbonates in order to convert residual groups

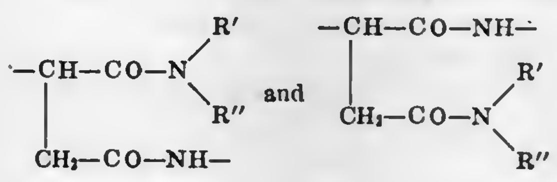


and some of the groups

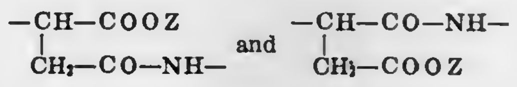


wherein Z represents a hydrogen atom, an alkali metal or an alkaline earth metal,

the finally produced polyaspartic acid derivative having in its molecule at least one of the groups



together with at least one of the groups



as a repeating unit.

3,846,381
IMPROVED PROCESS FOR CONTINUOUSLY PRODUCING POLYHEXAMETHYLENE ADIPAMIDE BY CARRYING OUT WATER REMOVAL STEP IN A FORMIC ACID VAPOR CONTAINING ATMOSPHERE

Wo Kong Kwok, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed May 16, 1973, Ser. No. 360,922
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **2 Claims**

1. In the continuous process for preparing a fiber forming polyamide from a polyamide-forming composition comprised of adipic acid and hexamethylene diamine wherein the composition is initially polymerized at amidation temperatures and pressures, and the molten polyamide obtained is ultimately passed to a finisher vessel where the molecular weight is increased by removing water from the polymerizate at temperatures of between about 250°C. and 320°C. and pressures of between about 25 mm. and 350 mm. of mercury, the improvement for reducing the rate of formation of gel deposits in the finisher vessel which comprises introducing formic acid into the atmosphere above the molten polyamide in the finisher and maintaining the formic acid in such atmosphere at a concentration of between about 5 percent and about 25 percent by weight, based on the weight of the atmosphere.

3,846,382
STERILE MEDICAL DUSTING POWDER

Wallace Burton Ramsey, Pittsburgh, Pa., and Darwin Fiske DeLapp, New Canaan, Conn., assignors to American Cyanamid Company, Stamford, Conn.
Division of Ser. No. 118,974, Feb. 25, 1971, Pat. No. 3,781,349. This application July 27, 1973, Ser. No. 383,236
Int. Cl. C08g *53/03*
U.S. Cl. 260—78.3 R **1 Claim**

1. A sterile medical dusting powder comprising a finely divided polyglycolic acid powdery material having more than 80%, by weight, of a particle size in the range of 1.5 to about 8 microns, less than 15%, by weight, of a particle size within the range of about 10 to 15 microns, and less than 1%, by weight, of the size of about 30 microns.

3,846,383
METHOD FOR PRODUCING COPOLYMERS

Fukuhito Uyama; Hisashi Tanaka, and Sukenao Ito, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki City, Japan

Continuation-in-part of Ser. No. 271,469, July 13, 1972, abandoned. This application Aug. 17, 1973, Ser. No. 389,293

Int. Cl. C08f *1/80*

U.S. Cl. 260—78.5 R **18 Claims**

1. In the method of producing an olefin-unsaturated acid anhydride copolymer wherein an olefin and an unsaturated acid anhydride are polymerized in the presence of a radical type polymerization catalyst in a solvent which dissolves reactant monomers but does not dissolve the copolymer products substantially,

the improvement which comprises incorporating into the polymerization reaction mixture, an effective amount, not less than 0.001 percent of the weight of the unsaturated acid anhydride, of a molecular weight lowering agent selected from the group consisting of

1. Groups I to IV metal salts, hydroxides or oxides, and
2. compounds having primary, secondary or tertiary aliphatic amine, primary or secondary aromatic amine or ammonium groups, whereby the molecular weight of the copolymer is lowered.

3,846,384
POLYMERIZATION PROCESS

Lester Adrian Doe, Jr., Newtown, Conn., assignor to GAF Corporation, New York, N.Y.

Filed Jan. 19, 1972, Ser. No. 219,164

Int. Cl. C08f *15/10*

U.S. Cl. 260—80.3 E **14 Claims**

1. A polymerization process which comprises contacting an acrylic compound selected from the group consisting of acrylic acid and the alpha-alkyl homologs thereof with a under substantially anhydrous conditions of the formula $H_2C{=}CH{-}O{-}R_1$ wherein R_1 has 1 to 18 carbon atoms vinyl ether compound co-polymerizible therewith in an inert organic hydrocarbon solvent in the presence of a free radical-supplying catalyst until polymer formation occurs.

3,846,385
PREPARATION OF SOLUTION POLYMERS USING A BARIUM DI-TERT ALKOXIDE AND A DI-BUTYL MAGNESIUM CATALYST COMPLEX

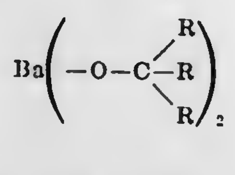
Ivan Glen Hargis, Tallmadge, and Russell A. Livigni, Akron, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed July 16, 1973, Ser. No. 379,507

Int. Cl. C08d *1/32;* **C08f** *19/08, 1/74*

U.S. Cl. 260—80.7 **10 Claims**

1. The method which comprises polymerizing under inert conditions in a hydrocarbon solvent at a temperature of from about −90° to 100°C. a polymerizable vinyl monomer having an activated double bond and having up to 14 carbon atoms and being free of groups which would destroy the catalyst complex, with a catalyst in a minor effective amount sufficient to polymerize said monomer to obtain a polymer and comprising a hydrocarbon soluble complex of (1)



in which R is selected from the group consisting of methyl, ethyl and propyl radicals and wherein each R may be the same or different and (2) dibutyl magnesium in which at least about 30 mole percent of the butyl radicals are secondary butyl radicals, the mole ratio of said barium compound to said magnesium compound being from about 0.25 to 3.25, said solvent being a solvent for said monomer, polymer and catalyst complex.

3,846,386
CROSS-LINKED COPOLYMER ACRYLONITRILE FIBERS OR FILMS

Akira Yamamoto; Kunio Nakaoji; Kunio Oohara; Zenjiro Momiyama; Heiichiro Murakami, and Akira Tomita, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha

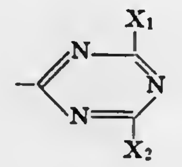
Division of Ser. No. 166,313, July 26, 1971, Pat. No. 3,759,849, which is a division of Ser. No. 753,515, Aug. 19, 1968, Pat. No. 3,626,049. This application July 24, 1972, Ser. No. 274,207

Claims priority, application Japan, Sept. 2, 1967, 42-56502; Dec. 22, 1967, 42-82509

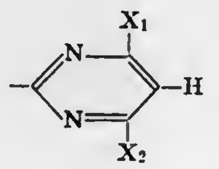
Int. Cl. C08f *19/00*

U.S. Cl. 260—80.72 **1 Claim**

1. An acrylic fiber or film of a cross-linked copolymer consisting essentially of (a) a vinyl monomeric material consisting mainly of acrylonitrile, (b) 0.03 to 10 percent by weight, based on the weight of the copolymer, of a polymerizable unsaturated monomer having a group selected from the class consisting of halogenated S-triazinyl groups of the general formula:



and halogenated pyrimidinyl groups of the general formula:



wherein each of X_1 and X_2 is a halogen, hydrogen, alkyl group, amino group, hydroxyl group, mercapto group or carboxyl group, and wherein at least one of X_1 and X_2 must be a halogen, (c) 0.3–10 percent by weight, based on the weight of the copolymer, of a polymerizable unsaturated monomer component containing an active hydrogen group selected from the class consisting of amino, imino, hydroxyl, glycidyl, pyrazinyl and quinolyl groups, said cross-linking existing between the active hydrogen group of component (c) and the halogenated S-triazinyl group or halogenated pyrimidinyl group of component (b).

3,846,387
CHAIN SATURATED COPOLYMERS OF ETHYLENE, ALPHA MONOOLEFINS, AND TRIENES CONTAINING SIDE-CHAINS WITH NON-TERMINAL CONJUGATED UNSATURATION

Aaron Chung Liong Su, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 29, 1972, Ser. No. 239,322

Int. Cl. C08f *15/40, 27/00*

U.S. Cl. 260—80.78 **8 Claims**

1. An elastomeric copolymer of

a. ethylene

b. at least one low molecular weight α-monolefin, and

c. at least one of 1,4,6-octatriene and 1,6,8-decatriene, said copolymer having an inherent viscosity of about 0.2 to 6.0 and being capable of undergoing a Diels-Alder reaction with a dienophile.

3,846,388
COPOLYMER OF A CONJUGATED DIOLEFIN AND VINYL CHLORIDE AND MANUFACTURING PROCESS THEREFOR

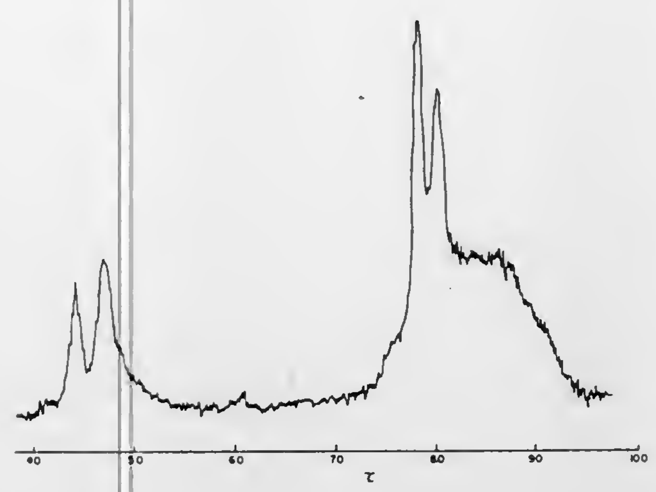
Takashi Ohashi, and Ryozo Sakata, both of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Chuo-ku, Tokyo, Japan

Continuation of Ser. No. 122,445, March 9, 1971, abandoned. This application May 9, 1973, Ser. No. 358,807

Claims priority, application Japan, Oct. 7, 1970, 45-87476; Mar. 10, 1970, 45-19742

Int. Cl. C08d *3/04, 1/18*

U.S. Cl. 260—82.1 **11 Claims**



1. A process for manufacturing a random copolymer of a conjugated diolefin and vinyl chloride, having a vinyl chloride content of 5 to 50 mol percent which comprises carrying out the copolymerization in the presence of a halogenated hydrocarbon as solvent, at a temperature of −100° to 80°C, the molar ratio of said conjugated diolefin to vinyl chloride being 98/2 to 2/98, using an unmodified catalyst, in the presence of at least the vinyl chloride monomer, said catalyst being selected from the group consisting of acidic Friedel-Crafts metal halide compounds wherein the metal is of Groups II to VIII of the Periodic Table and alkylaluminum halide compounds of the formula, $Al\,R_n\,X_{3-n}$ wherein R represents an alkyl group, X represents a halogen atom and *n* represents 1 or 1.5 so that the molar ratio of said catalyst to the total amount of the monomers as charged is 0.05 to 0.0001.

3,846,389
PRODUCTION OF ALTERNATING COPOLYMERS OF CONJUGATED DIENES AND CONJUGATED POLAR VINYL MONOMERS

Junji Furukawa, No. 64, Iori-cho, Kitashirakawa, Sakyo-ku, Kyoto; Yutaka Iseda; Kazuo Haga, both of No. 2800-1, Ogawa-Higashi-cho, Kodaira, Tokyo, and Nobuyuki Kataoka, No. 25-7, 4-chome, Nakaochiai, Shinjuku-ku, Tokyo, all of Japan

Division of Ser. No. 103,178, Dec. 31, 1970, , which is a continuation-in-part of Ser. No. 740,342, June 26, 1968,. This application Mar. 28, 1972, Ser. No. 345,771

Claims priority, application Japan, Mar. 28, 1968, 43-20335

Int. Cl. C08d *1/14, 1/56*

U.S. Cl. 260—83.5 **17 Claims**

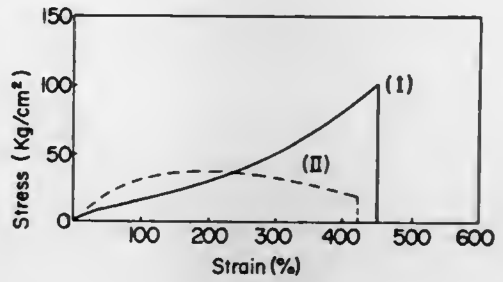
1. A method of producing alternating copoloymers of conjugated dienes and cojugated polar vinyl monomers, wherein the conjugated diene unit and the conjugated polar vinyl monomer unit are bonded alternately, which comprises copolymerizing a conjugated diene having 4 to 10 carbon atoms and a conjugated polar vinyl monomer selected from the group consisting of methyl acrylate, ethyl acrylate, propyl acrylate, butyl acrylate, methyl methacrylate, and ethyl methacrylate, the molar ratio of said conjugated diene to said polar vinyl monomer being 1:10 to 10:1, at a temperature of −78°C to 50°C, under the monomer gas with or without an inert gas, at a pressure from one determined by vapor pressure in the reaction system to 50 atm., in a non-aqueous medium in the presence of a catalyst prepared from

a component (A): at least one transition metal compound soluble in the monomer solution selected from the group consisting of halides, alcoxides, acetylacetonates, and salts of carboxylic acids of metals and oxy-metals of the Group IV–b and V–b in the Periodic Table and a component (B): an aluminum-containing component selected from the group consisting of alumininum compounds having the general formulae

R_2AlX, $R_3Al_2X_3$, and $RAlX_2$

and a combination of two or more aluminium compounds having the general formulae

R_2AlX, R_3AlCX_2, R_3Al, and AlX_3



wherein R represents a hydrocarbon radical selected from the group consisting off alkyl radicals having 1 to 10 carbon atoms and X represents a halogen radical selected from the group consisting to Cl and Br atoms, and wherein the ratio of the total number of the hydrocarbon radicals to the total number of halogen atoms in said aluminum-containing component is a positive number not greater than 2.0, and R and X in the aluminum compounds constituting said component (B) may be the same or different,

said catalyst being prepared at a temperature of −100°C to 20°C, after complexing at least one of the components (A) and (B) with a basic organic compound selected from the group consisting of organic nitriles, α,β-unsaturated carboxylic acid esters, benzoates, phenyl alkyl teritiary amines and thiophene avoiding direct contact of the conponents (A) with (B), the transition metal atom in the component (A) being $1{:}10^5$ to 1:1 g-atom based on a 1 g-atom of Al in the component (B), the total amount of metal atoms in the components (A) and (B) being $1{:}10^4$ to 1:10 g-atom based on 1 mole of the total amount of fed monomers.

3,846,390
PROCESS FOR PRODUCING POLYVINYL CHLORIDE IN THE PRESENCE OF ALKYL THIOGLYCOLATE AS A CHAIN TRANSFER AGENT

Ikoh Ito; Shojiro Ito, and Tomoyuki Emura, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 23, 1972, Ser. No. 237,502

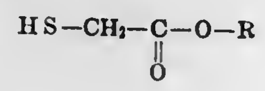
Claims priority, application Japan, Mar. 24, 1971, 46-17459

Int. Cl. C08f *3/30, 15/06, 15/08*

U.S. Cl. 260—86.3 **4 Claims**

1. A process for producing vinyl chloride polymers which comprises polymerizing vinyl chloride or a monomeric mixture comprising at least 80 percent by weight of vinyl chloride and up to 20 percent by weight of an other ethylenically unsaturated monomer copolymerizable therewith at a temper-

ature between about 50°C and about 70°C in an aqueous medium in the presence of a catalyst selected from the group consisting of an oilsoluble catalyst and a water-soluble catalyst and 0.01 to 2 parts by weight of an alkyl thioglycolate chain transfer agent of the formula:



$$HS{-}CH_2{-}\underset{\underset{O}{\parallel}}{C}{-}O{-}R$$

wherein R represents an alkyl group having 4 to 12 carbon atoms, per 100 parts by weight of the total monomer.

3,846,391

OXY-BIS-(N-ALKYLAMIDES) AND THEIR USE AS SLIP ADDITIVES

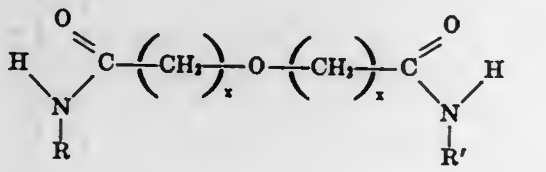
Richard James Powell, Irange, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 142,335, May 11, 1971, Pat. No. 3,766,269. This application June 26, 1973, Ser. No. 373,738

Int. Cl. C08f *15/00, 19/10, 45/44*

U.S. Cl. 260—87.3 **6 Claims**

1. A composition comprising (A) a polymer selected from the class consisting of polyethylene, polypropylene, copolymers of ethylene and α-olefins of more than two carbon atoms, copolymers of propylene and α-olefins of more than three carbon atoms, copolymers of ethylene and vinyl acetate wherein the copolymer contains up to about 12 percent by weight vinyl acetate copolymerized units, and mixture thereof and (B) 300 to 20,000 parts per million by weight of the composition having the formula



wherein x is 1 or 2, R is an alkyl group of from 4 to 22 carbon atoms, and R′ is an alkyl group of 4 to 22 carbon atoms.

3,846,392

METHOD OF MANUFACTURING CYCLOOLEFINES

hoichi Matsumura, Akashi, and Itaru Hatano, Kobe, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sept. 11, 1972, Ser. No. 287,618

Claims priority, application Japan, Sept. 20, 1971, 46-3628

Int. Cl. C08f *1/34, 1/38, 1/42*

.S. Cl. 260—93.1 **11 Claims**

1. A method of manufacturing polymer wherein a cycloolene of 4–5 carbon atoms or more than 7 carbon atoms having t least one double bond in a ring is polymerized in an inert olvent at a temperature of from −50°C to 80°C using an inert olvent soluble homogeneous catalyst component (A) prouced by reacting oxide of tungsten or molybdenum and ewis acid in a halogenated hydrocarbon at a temperature of 0°C or more or using a catalytic system wherein said catalyst omponent (A) is combined with an organometallic compound (B) including a metal of group I through group IV, wherein a molar ratio of tungsten or molybdenum in the component (A) to said organometallic compound (B) is 1: (0.1 to 50), and wherein a mole ratio of tungsten or molybdenum in the component (A) to cyclopentene is 1: (5,000 to 10,000).

3,846,393

EPOXY AND GLYCOL TERMINATED MACROMOLELCULAR MONOMERS HAVING A SUBSTANTIALLY UNIFORM MOLECULAR WEIGHT DISTRIBUTION

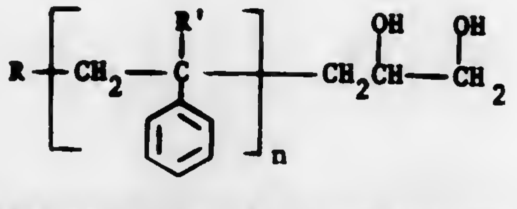
Ralph Milkovich, Naperville, and Mutong T. Chiang, Palos Heights, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Division of Ser. No. 282,099, Aug. 21, 1972, Pat. No. 3,786,116, which is a continuation-in-part of Ser. No. 244,205, April 14, 1972, , which is a continuation-in-part of Ser. No. 117,733, Feb. 22, 1971, abandoned. This application July 2, 1973, Ser. No. 376,108

Int. Cl. C08f *27/00, 7/04*

U.S. Cl. 260—93.5 A **3 Claims**

1. A copolymerizable macromolecular monomer having a substantially uniform molecular weight distribution such that its ratio of Mw/Mn is not substantiallyy above about 1.1, wherein Mw is the weight average molecular weight of the macromolecular monomer, and Mn is the number average molecular weight of the macromolecular monomer, said macromolecular monomer being represented by the structural formula:



wherein R is lower alkyl and R′ is either hydrogen or methyl, and n is a value such that the molecular weight of the macromolecular monomer is in the range of from about 5,000 to about 50,000.

3,846,394

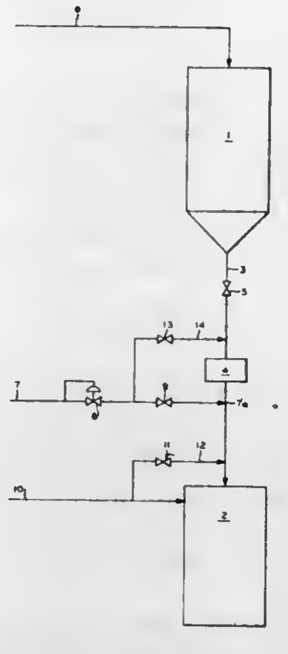
INTRODUCING CATALYST INTO A REACTOR

John Mitacek, deceased, late of Bartlesville, Okla. (by Bill Mitacek, administrator), assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 56,930, July 21, 1970, abandoned. This application June 6, 1973, Ser. No. 367,507

Int. Cl. C08f *1/56, 1/98*

U.S. Cl. 260—93.7 **9 Claims**



1. In a process for the introduction of at least one constituent of a catalyst system and a diluent into a reactor wherein

at least a first portion of said diluent forms a slurry of said catalyst constituent and wherein said slurry of said catalyst constituent and said first portion of diluent is transferred from a storage zone for said slurry of said catalyst constituent and said diluent to a metering zone, passed through said metering zone and thereafter introduced into said reaction zone, the improvement which comprises continually introducing a second portion of said diluent into said reaction zone by way of a first diluent addition zone intermediate of said metering zone and said storage zone for a slurry of said catalyst constituent and said first portion of said diluent whereby said second portion of diluent and slurry of said first portion of diluent and said catalyst constituent are passed through said metering zone and into said reaction zone.

3,846,395

PLASTICS COMPOSITIONS

David John Harper, and John Forgie McKellar, both of Blackley, England, assignors to Imperial-Chemical Industries Limited, London, England

Filed Oct. 26, 1971, Ser. No. 192,661

Claims priority, application Great Britain, Nov. 2, 1970, 51920/70

Int. Cl. C08f *27/28*

U.S. Cl. 260—94.9 GC **6 Claims**

1. A poly-alpha-olefin composition selected from the group consisting of homopolymers and copolymers of alpha-monoolefins having up to 6 carbon atoms which has incorporated therein as prodegradant 0.001percent up to 10 percent by weight of a ketone selected from the group consisting of p-laurly acetophenone or p-laurly benzophenone, [of the general formula

$$R^3{-}CO{-}R^4$$

where R^3 is a phenyl group with one of more substituents selected from the group consisting of alkyl and halogen, and where R^4 is a alkyl group, a phenyl group or a phenyl group with one or more substituents selected from the group consisting of alkyl and halogen,] said poly-alpha-olefin composition being capable of degradation by ultraviolet light faster than a poly-alpha-olefin composition without said prodegradant.

3,846,396

COUPLED PEROXIDES

Antonio Joseph D'Angelo, Buffalo; Orville Leonard Mageli, and Chester Stephen Sheppard, both of Kenmore, all of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

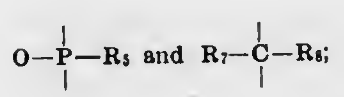
Division of Ser. No. 737,359, June 17, 1968, Pat. No. 3,725,455. This application Mar. 16, 1973, Ser. No. 342,106

Int. Cl. C08f *1/60, 27/00*

U.S. Cl. 260—94.9 GA **2 Claims**

1. In the process of crosslinking polyethylene using as the crosslinking agent a free radical affording compound, the improvement which comprises using as said agent a peroxide of the formula R-W-R′ where:

a. W is selected from $-C(=O)-$, $-C(=O)R^4C(=O)-$, $-C(=O)C(=O)-$,



$$O{-}\overset{|}{\underset{|}{P}}{-}R_5 \text{ and } R_7{-}\overset{|}{\underset{|}{C}}{-}R_8;$$

b. R and R′ are identical and are selected from $R_3OO{-}C(R_1)(R_2){-}R^3O{-}$, $(R_3OO)_2C(R_4){-}R^2O{-}$, $R_3OOC(=O)R^3O{-}$, $R_3OOC(=O)OR^3O{-}$, $R_1OC(=O)0{-}0{-}C(R_1)(R_2){-}R^2O{-}$, and $R_1C(=O)OO{-}C(R_1)(R_2){-}R^2O{-}$;

c. R_1 and R_2 are aliphatic having 1–12 carbon atoms, cycloaliphatic having 3–12 carbon atoms, or aromatic having 6–12 carbon atoms;

d. R_3 is aliphatic or cycloaliphatic, each having 4–10 carbon atoms and the carbon atom joined to the peroxy oxygen atom is a tertiary carbon atom;

e. R_4 is aliphatic having 1–10 carbon atoms or cycloaliphatic having 3–12 carbon atoms;

f. R_5 is lower alkyl, cycloalkyl, aralkyl, aryl, alkoxy, cycloalkoxy, aralkoxy, or aryloxy;

g. R_6 is H or lower alkyl;

h. Y is the diradical O, S, or $N{-}R_6$;

j. R^2 is an aliphatic diradical having 1–10 carbon atoms or a cycloaliphatic diradical having 3—12 carbon atoms;

k. R^3 is an aliphatic diradical having 1–10 carbon atoms, cycloaliphatic diradical having 3–12 carbon atoms, aromatic diradical having 6–12 carbon atoms, or araliphatic diradical having 7–16 carbon atoms;

l. R^4 is selected from R^3, YR^3Y, $R^3C(=O)YR^3YC(=O)R^3$, $YR^3YC(=O)YR^3YC(=O)YR^3Y$, $YR^3YC(=O)R^3C(=O)YR^3Y$, $YR^3C(=O)YR^3C(=O)YR^3Y$, $YR^3C(=O)YR^3YC(=O)R^3Y$, $YR^3YC(=O)YR^3Y$, $YR^3YC(=O)R^3Y$ and YR^3YR^3Y; and

m. R_7 and R_8 are selected from H, alkyl of 1–10 carbons and cycloalkyl of 3–12 carbons and, when R_7 is H, R_8 can also be aryl of 6–12 carbons, and R_7 and R_8 when taken together form alkylene of 2–11 carbons.

3,846,397

PROCESS FOR UTILIZING BARLEY MALT

John H. Ernster, 4530 Sugarhill Dr., Rolling Hills Estate, Calif. 90274

Filed Apr. 6, 1970, Ser. No. 26,025

Int. Cl. C07g *7/00*

U.S. Cl. 260—112 R **2 Claims**

1. In a process for recovering protein solids from brewer's grains in which said grains are treated with an alkaline solution and in which said alkaline solution is thereafter treated to recover protein solids, the improvement which comprises:

said treatment with an alkaline solution being carried out in an alkaline solution having a pH of about 9 at a temperature within the range of from 180° to 212°F. so as to place protein material in said brewer's grains in solution in order to produce a mixture of an insoluble residue and a protein solution,

separating said residue from said solution,

acidifying said solution to a pH of about 6 so as to precipitate protein solids from said solution, and

separating said precipitate protein solids from the liquid in said solution.

3,846,398

METHOD FOR CONTROLLED STEPWISE SYNTHESIS OF POLYPEPTIDES UTILIZING N-THIOCARBOXY ANHYDRIDES OF AMINO ACIDS AS REAGENTS

Ralph F. Hirschmann, Scotch Plains, and Robert G. Denkewalter, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 830,174, April 17, 1969, abandoned, which is a continuation of Ser. No. 545,855, April 28, 1966, abandoned. This application Mar. 1, 1971, Ser. No. 120,062

Int. Cl. C07c *103/52;* **C08h** *1/00*

U.S. Cl. 260—112.5 **7 Claims**

1. The process for the controlled stepwise synthesis of peptides and protected derivatives thereof which comprises reacting a starting amino compound selected from the group consisting of amino acids, peptides, and derivatives thereof wherein additional functional groups are protected, with a TCA reagent selected from the group consisting of N-thiocarboxy amino acid anhydrides, and derivatives thereof wherein additional functional groups are protected, said reaction being conducted by bringing together said amino compound and said TCA reagent in an aqueous medium while maintaining the pH at the protecting pH (whereby the only amino group present in appreciable concentration in reactive form during the course of the reaction is the amino group of the starting amino compound which is to participate in the reaction with the said TCA reagent) thereby forming the corresponding N-thiocarboxy peptide, and dethiocarboxylating by acidification, standing, heating or freeze-drying said N-thiocarboxy peptide.

3,846,399
PROCESS FOR CONTROLLED STEPWISE SYNTHESIS OF POLYPEPTIDES

Ralph F. Hirschmann, Scotch Plains, and Robert G. Denkewalter, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 816,177, April 10, 1969, abandoned, which is a continuation of Ser. No. 469,310, July 2, 1965, abandoned. This application Mar. 1, 1971, Ser. No. 120,063

Int. Cl. C07c *103/52*

U.S. Cl. 260—112.5 **9 Claims**

1. The process for the controlled stepwise synthesis of peptides and protected derivatives thereof which comprises reacting a starting amino compound selected from the group consisting of amino acids, peptides, and derivatives thereof wherein additional functional groups are protected, with an NCA reagent selected from the group consisting of N-carboxy amino acid anhydrides, and derivatives thereof wherein additional functional groups are protected, said reaction being conducted by bringing together said amino compound and said NCA reagent in an aqueous medium while maintaining the pH at the protecting pH (whereby the only amino group present in appreciable concentration in reactive form during the course of the reaction is the amino group of the starting amino compound which is to participate in the reaction with the said NCA reagent) thereby forming the corresponding N-carboxy peptide and, decarboxylating by acidification, standing, heating or freeze-drying said N-carboxy peptide.

3,846,400
NOVEL PROCESS FOR PRODUCING ANTIBIOTICS BLEOMYCIN

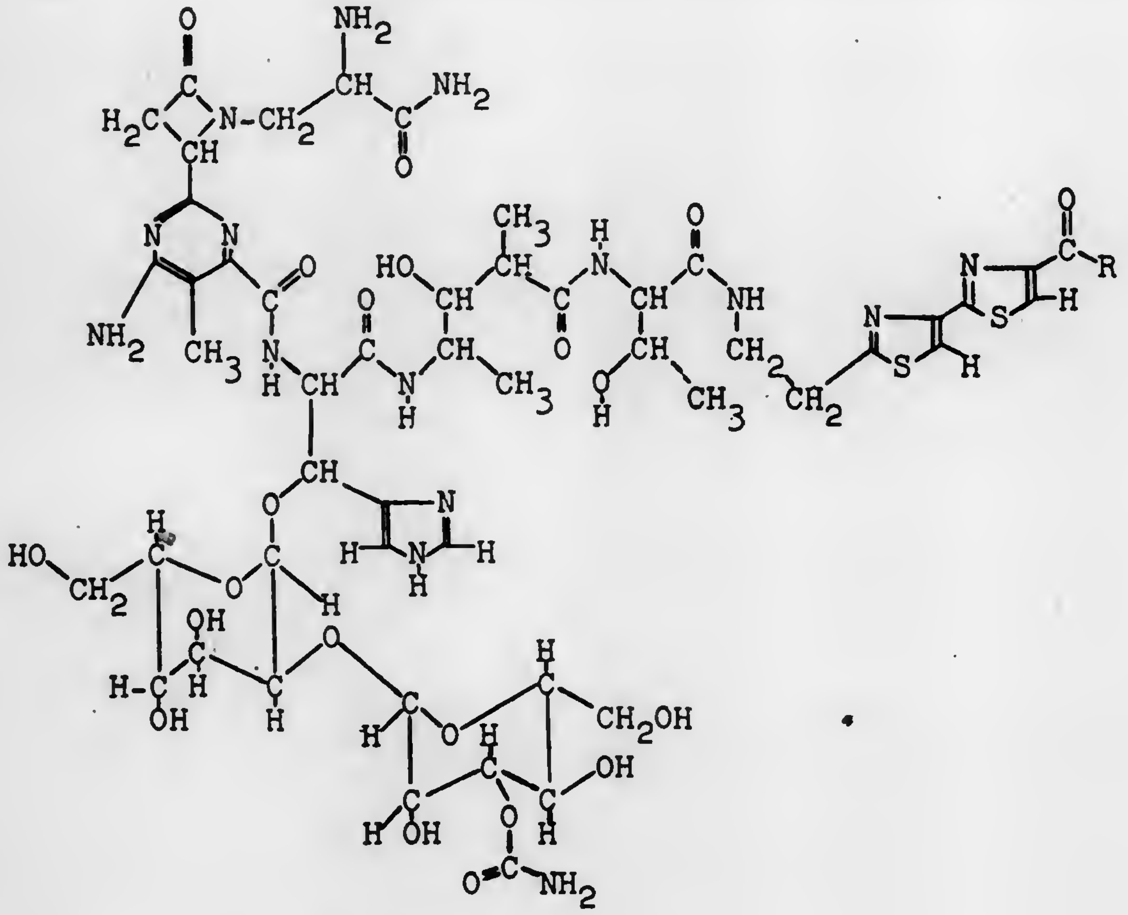
Hamao Umezawa; Kenji Maeda, both of Tokyo; Tomohisa Takita, Asaka; Yuya Nakayama, Yono; Akio Fujii, Tokyo; Nobuyoshi Shimada, Tokyo, and Hideo chimura, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenyu Kai, Tokyo, Japan

Continuation-in-part of Ser. No. 10,421, Feb. 11, 1970, abandoned. This application Sept. 21, 1972, Ser. No. 291,079

Int. Cl. C07c *103/52;* **A61k** *27/00;* **C07a** *7/00*

U.S. Cl. 260—112.5 **1 Claim**

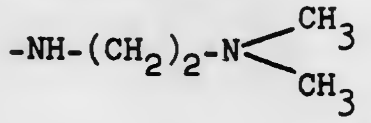
1. Bleomycins having a structure represented by the formula,



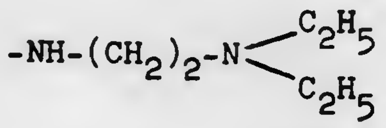
wherein

R = $-NH-(CH_2)_2-NH_2$

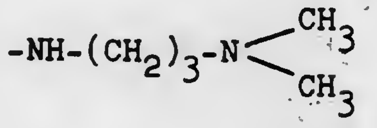
$-NH-(CH_2)_3-NH_2$



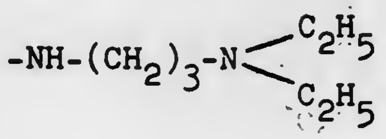
$-NH-(CH_2)_2-N(CH_3)_2$



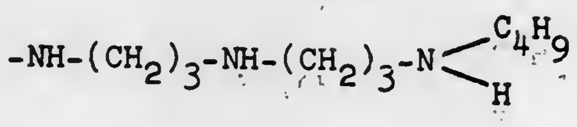
$-NH-(CH_2)_2-N(C_2H_5)_2$



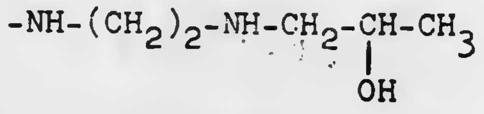
$-NH-(CH_2)_3-N(CH_3)_2$



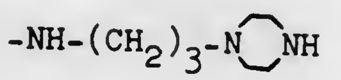
$-NH-(CH_2)_3-N(C_2H_5)_2$

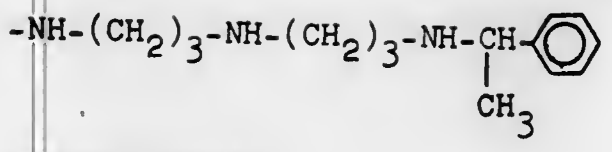


$-NH-(CH_2)_3-NH-(CH_2)_3-N(C_4H_9)(H)$

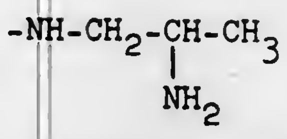


$-NH-(CH_2)_2-NH-CH_2-CH(OH)-CH_3$





$-NH-(CH_2)_3-NH-(CH_2)_3-NH-CH(CH_3)-C_6H_5$

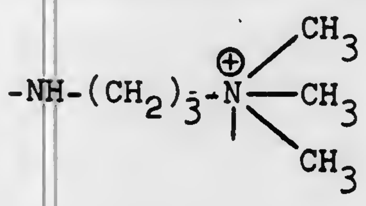


$-NH-CH_2-CH(NH_2)-CH_3$

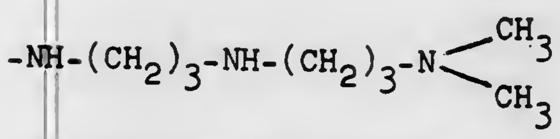
$-NH-(CH_2)_3-NH-CH_3$

$-NH-(CH_2)_3-NH-(CH_2)_3-CH_3$

$-NH-(CH_2)_3-NH-(CH_2)_6-NH_2$

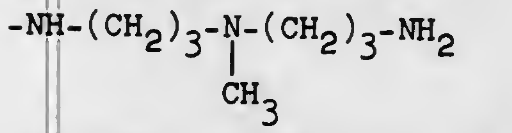


$-NH-(CH_2)_3-\overset{\oplus}{N}(CH_3)_3$

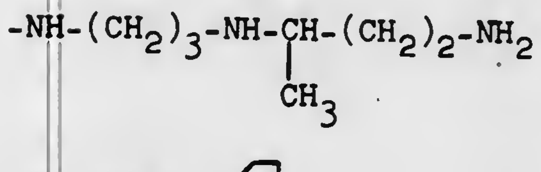


$-NH-(CH_2)_3-NH-(CH_2)_3-N(CH_3)_2$

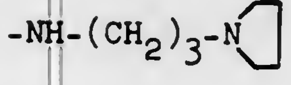
$-NH-(CH_2)_3-NH-(CH_2)_3-NH_2$

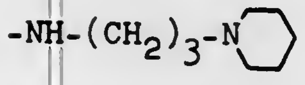


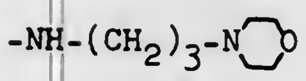
$-NH-(CH_2)_3-N(CH_3)-(CH_2)_3-NH_2$

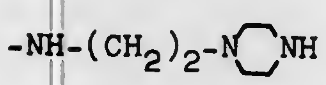


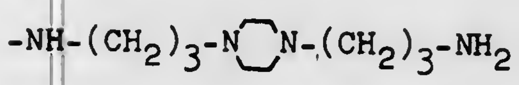
$-NH-(CH_2)_3-NH-CH(CH_3)-(CH_2)_2-NH_2$

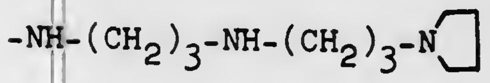


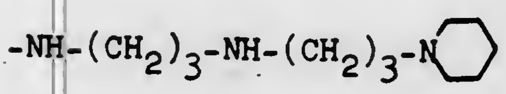


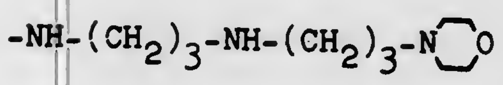






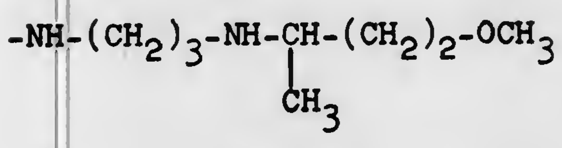






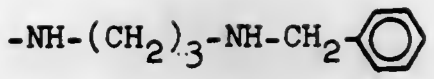
$-NH-(CH_2)_3-NH-(CH_2)_3-OH$

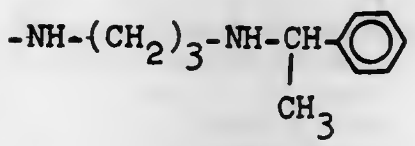
$-NH-(CH_2)_3-NH-(CH_2)_3-OCH_3$

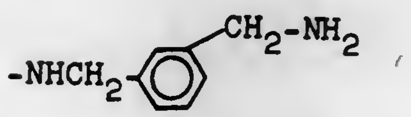


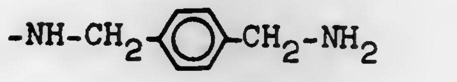
$-NH-(CH_2)_3-NH-CH(CH_3)-(CH_2)_2-OCH_3$

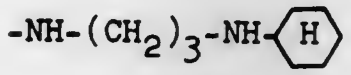
$-NH-(CH_2)_3-NH-(CH_2)_2-OCH_3$

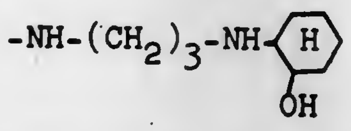


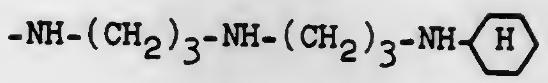


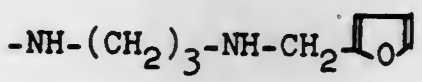


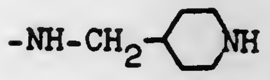


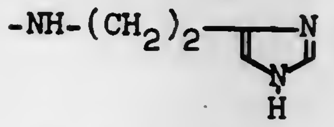


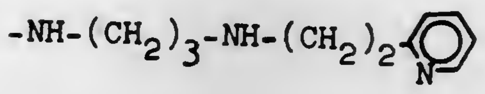












3,846,401
3′-O,5′-N-CYCLOPHOSPHATE NUCLEOSIDES

Akira Murayama, Gottingen; Hans Hettler, Weil am Rhein, and Bernd Jastorff, Rhumspringe, all of Germany, assignors to Max Planck-Gesellschaft zur Forderung Der Wissenschaften E.V., Munich, Germany

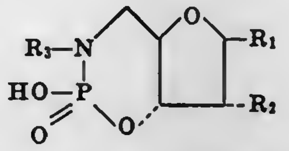
Filed July 1, 1971, Ser. No. 159,001

Claims priority, application Germany, July 1, 1970, 2032436

Int. Cl. C07d *51/52, 51/54*

U.S. Cl. 260—211.5 R **15 Claims**

1. A compound of the formula



wherein R_1 is pyrimidyl or purinyl attached by the ring nitrogen atom thereof at position 1 and 9, respectively, or a corresponding group substituted by at least one of halo, hydroxy, lower-alkyl, $-NH_2$, $-NH$-lower-alkyl and $-N(\text{lower-alkyl})_2$; R_2 is H, OH, alkoxy of one to 12 carbon atoms, or OH esterified with fatty acid of one to 18 carbon atoms, an alkylsulfonic acid of one to six carbon atoms, or an arylsulfonic acid of six to 10 carbon atoms; and R_3 is H or a hydrocarbon selected from the group consisting of alkyl, aryl, cycloalkyl, arylalkyl and cycloalkyl of up to ten carbon atoms, or a corresponding group substituted by hydroxy, alkoxy of one to four carbon atoms, amino, mercapto, alkylmercapto of one to four carbon atoms, carboxy carb-lower-alkoxy, guanidino, 3-indolyl or 4-imidazolyl; and the physiologically acceptable inorganic salts thereof.

3,846,402

THIOPHOSPHATE ANALOGUES OF THE NUCLEOSIDE DIPHOSPHATES AND TRIPHOSPHATES AND A METHOD FOR THE PREPARATION THEREOF

Fritz Eckstein, and Roger Sydney Goody, both of Gottingen, Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Gottingen, Germany

Filed May 2, 1972, Ser. No. 249,579

Claims priority, application Germany, May 6, 1971, 2122529

Int. Cl. C07d *51/52, 51/54*

U.S. Cl. 260—211.5 R **10 Claims**

1. Thiophosphate compound selected from the group consisting of adenosine-5′-0-(2-thiodiphosphate, guanosine-5′-0-(2-thiodiphosphate), inosine-5′-0-(thiodiphosphate), cytidine-5′-(thiodiphosphate), cytidine-5′-0-(2-thiodiphosphate), uridine-5′-0-(2-thiodiphosphate), thymidine-5′-0-(2-thiodiphosphate), 5-methylcytidine-5′-0-(2-thiodiphosphate), 5-hydroxymethylcytidine-5′-0-(2-thiodiphosphate), 5-hydroxymethylcytidine-5′-0-(2-thiodiphosphate), adenosine-5′-0-(2-thiodiphosphate)-disulfide, guanosine-5′-0-(2-thiodiphosphate)-disulfide, inosine-5′-0-(2-thiodiphosphate)-disulfide, cytidine-5′-0-(2-thiodiphosphate)-disulfide, uridine-5′-0-(2-thiodiphosphate)-disulfide, thymidine-5′-0-(2-thiodiphosphate)-disulfide, adenosine-5′-0-(3-thiotriphosphate), guanosine-5′-0-(3-thiotriphosphate), inosine-5′-0-(3-thiotriphosphate), cytidine-5′-0-(3-thiotriphosphate), uridine-5′-0-(3-thiotriphosphate), thymidine-5′-0-(3-thiotriphosphate), adenine-5′-0-(3-thiotriphosphate)-disulfide, guanosine-5′-0-(3-thiotriphosphate)-disulfide, inosine-5′-0-(3-thiotriphosphate)-disulfide, cytidine-5′-0-(3-thiotriphosphate)-disulfide, uridine-5′-0-(3-thiotriphosphate)-disulfide and thymidine-5′-0-(3-thiotriphosphate)-disulfide; and the corresponding desoxy compounds.

3,846,403

PRODUCTION OF CELLULOSE ESTERS FROM PARTIALLY PURIFIED WOOD PULP BY HEMICELLULOSE REMOVAL

Kelly B. Gibney, Burnaby, and Russell S. Evans, Vancouver, British Columbia, both of Canada, assignors to Canadian Cellulose Company, Limited, Vancouver, British Columbia, Canada

Filed June 21, 1973, Ser. No. 372,146

Int. Cl. C08b *3/06*

U.S. Cl. 260—227 **7 Claims**

1. In the production of a solution of a cellulose lower alkanoate wherein a cellulose source is subjected to esterification with a lower alkanoic acid anhydride in a lower alkanoic acid thereby to form said cellulose lower alkanoate dissolved in said acid, the improvement which comprises employing as said cellulose source cellulose having a hemicellulose content in excess of about 5 percent by weight, interrupting the esterification when the hemicellulose content of the still undissolved cellulose source has fallen to less than about one-half its initial value, filtering the reaction mass to remove therefrom the solution, adding fresh anhydride and acid to the filtration residue, and continuing the reaction, whereby the resulting solution is characterized by a performance during subsequent processing comparable to that of initially more pure cellulose sources.

3,846,404

PROCESS OF PREPARING GELLED CELLULOSE TRIACETATE PRODUCTS AND THE PRODUCTS PRODUCED THEREBY

Larry D. Nichols, Arlington, Mass., assignor to Moleculon Research Corporation, Cambridge, Mass.

Filed May 23, 1973, Ser. No. 363,267

Int. Cl. B01d *39/00, 13/04;* **C08b** *3/06*

U.S. Cl. 260—230 **61 Claims**

1. A process of preparing a gelled cellulose triacetate product, which process comprises:

a. providing a polymer solution comprising cellulose triacetate with an acetyl content greater than about 42 percent, and a major amount of a nonhydrolyzing acidic solvent for the cellulose triacetate;

b. forming the polymer solution into a configuration of the product;

c. introducing the formed product into contact with an excess of a gelling liquid which is both a nonsolvent for the cellulose triacetate and miscible with the solvent used for a period of time, so as to replace substantially the entire solvent in the formed product with the gelling liquid, the replacement carried out at a temperature low enough to provide an ultramicroporous gelled product having distinct interpenetrating polymer and liquid phases, which in film or fiber form is flexible, transparent and self-supporting; and

d. recovering the gelled product so prepared.

3,846,405

CATIONIC FLOURS AND STARCHES

Jack C. McClendon, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 5, 1972, Ser. No. 286,846. The portion of the term of this patent subsequent to Apr. 3, 1990, has been disclaimed.

Int. Cl. C08b *19/06*

U.S. Cl. 260—233.3 R **9 Claims**

1. A process for producing cationic farinaceous materials comprising the steps:

A. contacting
  1. ethylenimine in the vapor phase at a temperature of at least about 40°C., with
  2. at least one granular farinaceous material at a temperature below the dew point of the ethylenimine vapor;

B. warming the reaction mixture from (A) to a temperature sufficient to cause reaction between (1) and (2); and

C. acidifying the reaction product of step (B) with a Bronsted acid; the pH of an 8 weight percent aqueous slurry of the product from step (C) being from about pH 2.5 to 7.0.

3,846,406

6-[2-(1,4-CYCLOHEXADIEN-1-YL) ACETAMIDO]PENICILLANIC ACID

Harvey E. Alburn, West Chester, and William Dvonch, Radnor, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation of Ser. No. 843,739, July 22, 1969, abandoned. This application Sept. 24, 1970, Ser. No. 75,261

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **1 Claim**

1. 6-[2-(1,4-cyclohexadien-1-yl)acetamido]penicillanic acid.

3,846,407

PENICILLIN DERIVATIVES CONTAINING A HALOGENO-CARBONYL GROUP

Magda Huhn; Geza Toth; Gabor Resofszki; Eva Somfai, and Gabor Horvath, all of Budapest, Hungary, assignors to CHINOIN Gyogyszer- es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

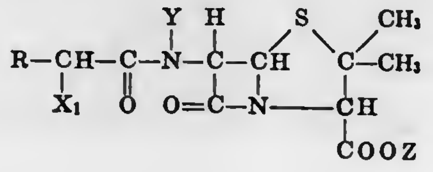
Filed July 1, 1971, Ser. No. 159,041

Claims priority, application Hungary, July 3, 1970, CI-1006

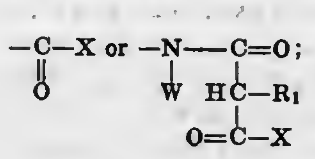
Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **6 Claims**

1. A penicillin derivative having the formula:



where R is phenyl, bromophenyl or chlorophenyl; X_1 is



$$-\underset{\underset{\displaystyle O}{\|}}{C}-X \text{ or } -\underset{\underset{\displaystyle W}{|}}{N}-\!\!-\underset{\underset{\underset{\displaystyle O=C-X}{|}}{HC-R_1}}{\underset{|}{C}}=O;$$

R_1 is phenyl, bromphenyl or chlorophenyl;
X is bromine or chlorine; and W, Y, and Z are the same or different and are hydrogen or trimethylsilane, or the trimethylamine, triethylamine, N-alkylpiperidine or morpholine salt thereof.

3,846,408

2-BENZAZEPINYLALKYLAMINO-BENZAMIDE DERIVATIVES

Bola Vithal Shetty, Bombay, India, assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 108,618, Jan. 21, 1971, abandoned, which is a division of Ser. No. 691,955, Dec. 20, 1967, Pat. No. 3,635,976. This application Nov. 16, 1971, Ser. No. 199,368

Int. Cl. C07d *41/08, 57/02, 99/10*

U.S. Cl. 260—239 BB **1 Claim**

1. 2-(2-[3-(1,2,4,5-tetrahydro-3H,3-benzazepinyl)] ethylamino) benzamide.

3,846,409

10,11-METHANO 5H-DIBENZ [B,F] AZEPINES 5-PHENACYL DERIVATIVES

Michael Marx, Sunnyvale, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 126,920, March 22, 1971,. This application Dec. 7, 1971, Ser. No. 205,741

Int. Cl. C07d *41/08*

U.S. Cl. 260—239 D **1 Claim**

1. A compound having the formula 10,11-difluoromethano-10,11-dihydro-5-(γ-(N-p-chlorophenacyl-N-methyl)-aminopropyl)-5H-dibenz(b,f)azepine.

3,846,410

3-SUBSTITUTED-7-HYDROXY LOWER ALKYL BENZODIAZEPINES

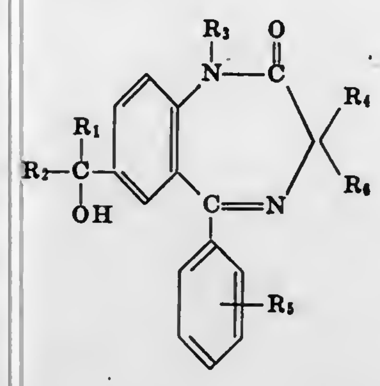
Robert Ye-Fong Ning, West Caldwell, and Leo Henryk Sternbach, Upper Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 10, 1971, Ser. No. 206,932The portion of the term of this patent subsequent to Aug. 8, 1989, has been disclaimed.

Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 D **15 Claims**

1. A compound of the formula



wherein R_1, R_2, R_3 and R_4 are each selected from the group consisting of hydrogen and lower alkyl, R_5 is selected from the group consisting of hydrogen and halogen and R_6 is selected from the group consisting of lower alkanoyloxy and hydroxy.

3,846,411

CHOLERETICALLY ACTIVE ESTERS AND SALTS OF BILE ACIDS

Josef Olav Widauer, Allschwil, Switzerland; Konrad Lang, Bad Krozingen, Germany; Laszlo Baum, and Suzanne Szabo, both of La Tour-de-Peilz, Switzerland, assignors to Medichemie A.G., Basel, Switzerland

Filed July 17, 1972, Ser. No. 272,156

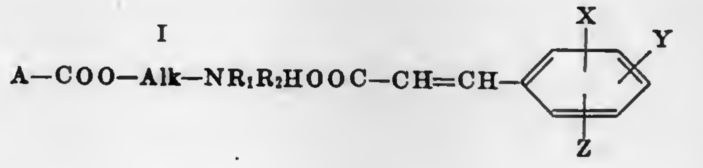
Claims priority, application Switzerland, Aug. 4, 1971, 11484/71; Sept. 28, 1971, 14085/71; Jan. 24, 1972, 1012/72

Int. Cl. C07c *173/10*

U.S. Cl. 260—239.5 **5 Claims**

1. Choleretically active salts of basic bile acid esters and cinnamic acids of the general formula

I



in which A—COO— is the rest of a bile acid having the formula of a cholanic acid with hydroxyl or oxo substitutents in at least one of the 3,7 or 12 positions, the hydroxyl groups being at the same face of the steroid molecule; X, Y, and Z, which are identical or different, represent a hydrogen atom, a hydroxyl, a lower alkyl or a lower acyloxy group, or a halogen atom; Alk is an ethylene, propylene or isopropylene group, and R_1 and R_2, which are identical or different, represent a hydrogen atom or a lower alkyl group or together with the nitrogen atom form a piperazino, N-methyl piperazino or morpholino group.

3,846,412

DIHYDRO-2-AMINO-ISOQUINOLINES AND THEIR DERIVATIVES

Giangiacomo Nathansohn; Giorgio Winters, and Gianfranco Odasso, all of Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

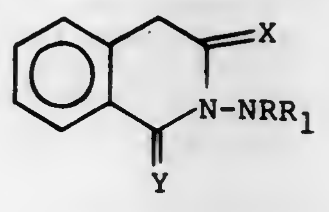
Continuation-in-part of Ser. No. 232,204, March 6, 1972, abandoned. This application Dec. 6, 1972, Ser. No. 312,579

Claims priority, application Italy, Mar. 18, 1971, 21931/71

Int. Cl. C07d *33/52*

U.S. Cl. 260—240 G **10 Claims**

1. A compound represented by the formula



wherein X and Y are different and represent H_2 or oxygen; R and R_1 independently represent a member from the group consisting of hydrogen, lower alkyl, hydroxy-lower alkyl, amino-lower alkyl, mono- and di-lower alkylamino-lower alkyl, carboxy-lower alkyl, carboalkoxy-lower alkyl, cycloalkyl, lower alkenyl, cycloalkenyl, phenyl, substituted phenyl, phenyl lower alkyl, phenyl lower alkenyl, lower alkynyl; acyl derived from a lower alkyl, a phenyl or a heterocyclic carboxylic acid moiety; carbamyl, thiocarbamyl, phenylcarbamyl, phenylthiocarbamyl, guanyl, phenylsulfonyl, lower alkylsulfonyl or halo lower alkylsulfonyl; or, R and R_1 together with the adjacent nitrogen atom, represent a phenyl lower alkenylideneamino, phenyl lower alkylideneamino, substituted phenyl lower alkylideneamino, lower alkylideneamino, carboxy lower alkylideneamino, carbalkoxy lower alkylideneamino or cycloalkylideneamino group or form a heterocyclic ring therewith of the group consisting of 4-methyl-1-piperazino, morpholino, piperidino and pyrrolidino; and pharmaceutically acceptable addition salts thereof.

3,846,413

NEW IMINES, THEIR PREPARATION AND THEIR PHARMACEUTICAL USE

Florin Seng, Colonge-Buchheim; Kurt Ley, Odenthal-Globusch, and Karl Georg Metzger, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

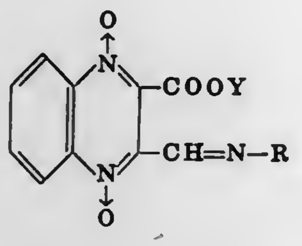
Division of Ser. No. 130,007, March 31, 1971,. This application , Ser. No. 359,277

Claims priority, application Germany, Apr. 2, 1970, 2015676

Int. Cl. C07d *51/78*

U.S. Cl. 260—240 G **4 Claims**

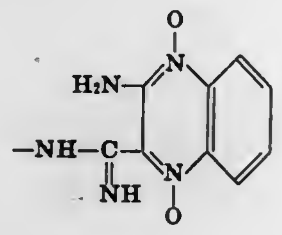
1. A compound of the formula:



or a pharmaceutically acceptable non-toxic salt thereof wherein

Y is hydrogen, an alkali metal cation or the cation $R^5—NH_3$; and

each of R and R^5 is



3,846,414

NEW IMINES, THEIR PREPARATION AND THEIR PHARMACEUTICAL USE

Florin Seng, Cologne-Buchheim; Kurt Ley, Odenthal-Globusch, and Karl Georg Metzger, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft

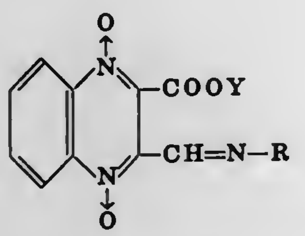
Division of Ser. No. 130,007, March 31, 1971,. This application May 11, 1973, Ser. No. 359,309

Claims priority, application Germany, Apr. 2, 1970, 2015676

Int. Cl. C07d *51/78*

U.S. Cl. 260—240 G **17 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable non-toxic salt thereof wherein

Y is hydrogen, an alkali metal cation or the cation $R^5\text{-}NH_3$; and

each of R and R^5 is alkyl of 1 to 6 carbon atoms, hydroxyalkyl of 1 to 6 carbon atoms, cyclopropyl, cyclopentyl, cyclohexyl, or norbornyl.

3,846,415

NEW IMINES, THEIR PREPARATION AND THEIR PHARMACEUTICAL USE

Florin Seng, Cologne-Buchheim; Kurt Ley, Odenthal-Globusch, and Karl Georg Metzger, Wuppertal-Eberfeld, all of Germany, assignors to Bayer Aktiengesellschaft

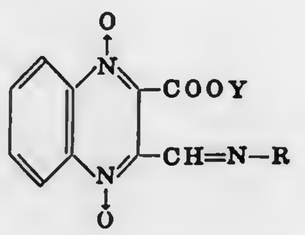
Division of Ser. No. 130,007, March 31, 1971,. This application May 11, 1973, Ser. No. 359,401

Claims priority, application Germany, Apr. 2, 1970, 2015667

Int. Cl. C07d *51/78*

U.S. Cl. 260—240 G **13 Claims**

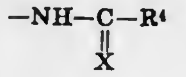
1. A compound of the formula



or a pharmaceutically acceptable non-toxic salt thereof wherein

Y is hydrogen, an alkali metal cation or the cation $R^5\text{-}NH_3$; and

each of R and R^5 is



$$—NH—\underset{X}{\underset{\|}{C}}—R^4$$

wherein

X is O, S or NH and

R^4 is phenyl, pyridyl or norbornyl.

3,846,416

CEPHALOSPORIN COMPOUNDS

James Kennedy, Montrose, Scotland; Alan Gibson Long, Greenford, and William George Elphinstone Underwood, Stokes Poges, both of England, assignors to Glaxo Laboratories Limited, Greenford, England

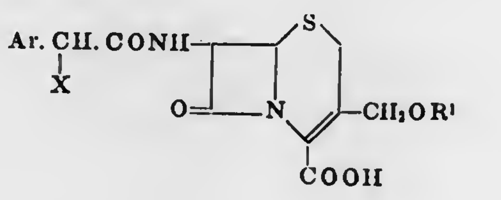
Division of Ser. No. 752,191, Aug. 13, 1968, Pat. No. 3,665,003. This application Dec. 28, 1971, Ser. No. 213,188

Claims priority, application Great Britain, Aug. 6, 1968, 38493/68

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **5 Claims**

1. A compound of the formula



wherein Ar is phenyl, or phenyl substituted by halo, hydroxy, lower alkyl, nitro, amino, lower alkanoyl, lower alkoxy or lower alkylmercapto; X is hydroxy, formyloxy or lower alkanoyloxy and R^1 is lower alkyl or a non-toxic salt thereof.

3,846,417

1,4-CYCLOHEXADIENYL IMIDAZOLIDINYL CEPHALOSPORANIC ACIDS AND DERIVATIVES THEREOF

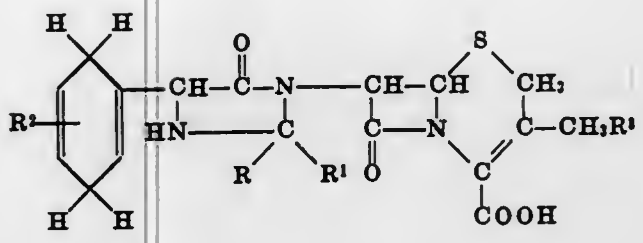
Manmohan Singh Atwal, Somerset; Daniel Jay Watts, Lawrenceville, and Frank Lee Weisenborn, Titusville, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed June 23, 1972, Ser. No. 265,874

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **8 Claims**

1. The compounds of the formula



and pharmaceutically acceptable salts thereof; wherein R^8 is hydrogen, hydroxy or acetoxy; R and R^1 each is hydrogen, lower alkyl or taken together form a three to seven carbon ring; and R^2 is hydrogen or lower alkyl.

3,846,418

DITHIOCARBONYLTHIOACETYL CEPHALOSPORINS

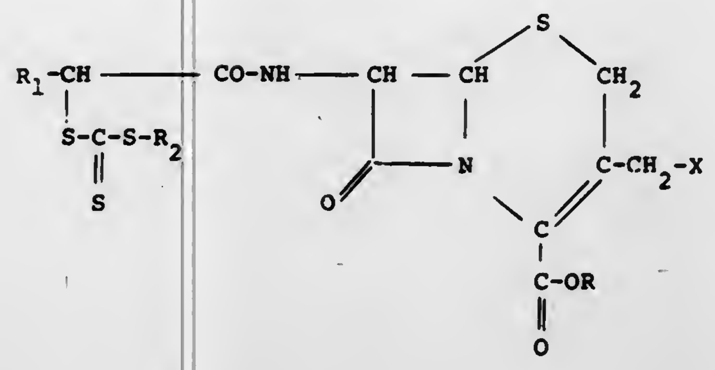
Uwe Treuner, Regensburg, and Hermann Breuer, Burgweinting, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 180,523, Sept. 14, 1971, abandoned. This application July 17, 1972, Ser. No. 272,228

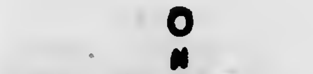
Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **8 Claims**

1. A compound of the formula



wherein R is hydrogen, lower alkyl, alkali metal, trimethylsilyl or



$$CH_2\text{-}O\text{-}\overset{O}{\overset{\|}{C}}\text{-}R_3;$$

R_1 is phenyl; R_2 is aluminum, alkali metal, alkaline earth metal, lower alkyl, C_5-C_6 cyclo-lower alkyl, phenyl or phenyl-lower alkyl, R_3 is lower alkyl, phenyl or phenyl-lower alkyl and X is hydrogen, hydroxy or lower alkanoyloxy.

3,846,419

4H-5,6-DIHYDRO-1,3-OXAZINES

Wolfgang Seeliger, and Karl-Dieter Hesse, both of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Continuation-in-part of Ser. No. 762,138, Sept. 24, 1968, abandoned. This application Feb. 15, 1972, Ser. No. 226,527

Claims priority, application Germany, Sept. 29, 1967, 43459

Int. Cl. C07d *87/20*

U.S. Cl. 260—244 R **17 Claims**

1. A process for the production of a 4H-5,6-dihydro-1,3-oxazine substituted in the **41position** which comprises reacting in one stage a mixture comprising

a. an aldehyde selected from the group consisting of a saturated aliphatic aldehyde having at least 2 carbon atoms and an aromatic aldehyde containing no olefinic unsaturation;

b. an α-olefin of 3 – 9 carbon atoms;

c. a carboxylic acid amide selected from the group consisting of alkyl amides, alkenyl amides, monocyclic arylamides and cycloalkylamides; and

d. a strong, non-oxidizing acid,

said reacting being conducted at a temperature between −10° and 50° until an oxaziine salt is formed.

3,846,420

PROCESS FOR THE PREPARATION OF 1-AMINOALKANE-1,-DIPHOSPHONIC ACIDS AND THEIR SALTS

Klaus Wollmann; Walter Ploger, both of Hilden, and Karl-Heinz Worms, Dusseldorf-Holthausen, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

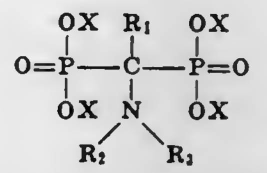
Filed Nov. 17, 1970, Ser. No. 90,454

Claims priority, application Germany, Nov. 19, 1969, 1958123

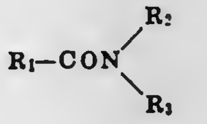
Int. Cl. C07d *87/28*

U.S. Cl. 260—247 **12 Claims**

1. A process for the production of a compound of the formula



wherein R_1 is a member selected from the group consisting of hydrogen, lower alkyl and phenyl, R_2 and R_3 are members selected from the group consisting of hydrogen, alkyl having one to 22 carbon atoms, cycloalkyl having five to six carbon atoms, phenyl, alkylphenyl having seven to 18 carbon atoms, phenylalkyl having seven to 18 carbon atoms, and together with the nitrogen atom, piperidino, pyrrolidino and morpholino, and X is a member selected from the group consisting of hydrogen and alkali metal, with the proviso that at least one of R_1, R_2 and R_3 is other than hydrogen, which consists essentially in reacting a phosphorus trihalide selected from the group consisting of phosphorus trichloride and phosphorus tribromide with a monocarboxylic acid amide of the formula



wherein the molecular weight of said carboxylic acid amide is over 46 and R_1, R_2 and R_3 have the above-assigned meanings, at a temperature of from 0° to 75° C, subjecting the resultant reaction product to hydrolysis, and recovering said compound.

3,846,421
TRIAZOLOBENZODIAZEPINE DERIVATIVES

Kanji Meguro, and Yutaka Kuwada, both of Hyogo, Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

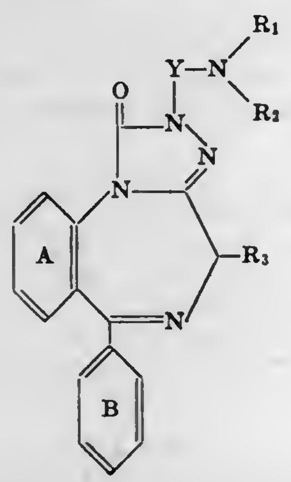
Filed Aug. 20, 1971, Ser. No. 173,634

Claims priority, application Japan, Sept. 26, 1970, 45-74749

Int. Cl. C07d *57/02, 99/02*

U.S. Cl. 260—247.2 A **15 Claims**

1. A member selected from the group consisting of (A) a compound of the formula



wherein Y represents alkylene having up to six carbons, R_1 represents hydrogen or lower alkyl, R_2 represents lower alkyl, or R_1 and R_2, together with the adjacent nitrogen, form a five or six membered ring selected from the group consisting of pyrrolidine, piperidine, morpholine, piperazine and N-lower alkyl piperazine, R_3 represents hydrogen or alkyl having up to six carbons and each of the rings A and B is unsubstituted or has one or more substituents selected from the group consisting of nitro, trifluoromethyl, halogen, lower alkyl and lower alkoxy, (B) a five-position N-oxide thereof and (C) a pharmaceutically acceptable acid salt thereof.

3,846,422
4,6-BIS(ALKARYL)-S-TRIAZINES

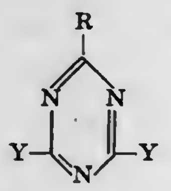
Raymond Seltzer, New City, and David A. Gordon, Scarsdale, both of N.Y., assignors to Ciba-Giegy Corporation, Ardsley, N.Y.

Filed May 1, 1972, Ser. No. 248,839

Int. Cl. C07d *55/50, 55/18*

U.S. Cl. 260—248 CS **6 Claims**

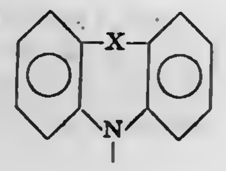
1. A 4,6-bis(alkaryl)-s-triazine compound having the formula



wherein

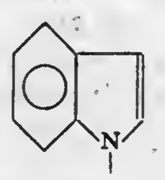
R is hydrogen, a straight or branched chain alkyl group having up to four carbon atoms, carboxyl, amino, phenyl, naphthyl, biphenyl or one of such aryl groups substituted with a lower alkyl group, halogen or a lower alkoxy group, diphenylamino, dinaphthylamino or a heterocyclic group selected from

(a)

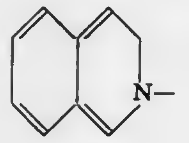


wherein X is oxygen, sulfur or a covalent bond,

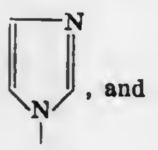
(b)



(c)

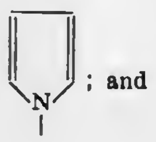


(d)



, and

(e)



; and

Y is a dialkyl substituted phenyl or naphthyl group where said alkyl groups having one to four carbon atoms.

3,846,423
PYRAZOLO (1,5A) 1,3,5-TRIAZINES

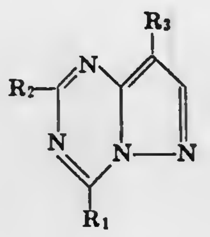
Joze Kobe, Costa Mesa; Robert H. Springer, Santa Ana, and Darrell E. O'Brien, Mission Viejo, all of Calif., assignors to ICN Pharmaceuticals, Inc., Pasadena, Calif.

Filed June 8, 1972, Ser. No. 260,850

Int. Cl. C07d *57/34*

U.S. Cl. 260—248 NS **19 Claims**

1. A compound of the structure:



wherein R_1 is OH, alkoxy, halogen, SH or SR_4 where R_4 is alkyl or aralkyl, N=N=N, amine or alkylamine, R_2 is SR_4, H, alkyl or amine, and R_3 is H or halogen, said alkyl and aralkyl being C_1 to C_8 linear or branched alkyl or aralkyl and the aryl portion of said aralkyl is phenyl; provided that when R_3 is H and R_1 is OH, R_2 is not SH.

3,846,424
RECOVERY OF CHLORINE AND CYANURIC ACID VALUES FROM POLYCHLOROISOCYANURIC ACID AND SALTS THEREOF

Louis C. Hirdler, Lake Charles, La.; Henry W. Schiessl, Northford, and David F. Doonan, both of Guilford, Conn., assignors to Olin Corporation, New Haven, Conn.

Filed May 22, 1973, Ser. No. 362,695

Int. Cl. C07d *55/36*

U.S. Cl. 260—248 A **26 Claims**

1. A process for the recovery of chlorine and cyanuric acid values from an aqueous solution containing a chlorinated s-triazine compound selected from the group consisting of polychloroisocyanuric acids, alkali metal salts of polychloroisocyanuric acids and mixtures thereof which comprises reacting said aqueous solution with a mineral acid to evolve gaseous chlorine and form an aqueous slurry containing solid cyanuric acid, recovering said gaseous chlorine, reacting said aqueous slurry containing solid cyanuric acid with an alkali metal compound selected from the group consisting of hydroxide and carbonate to form an aqueous slurry containing solid alkali metal cyanurate in an aqueous solution containing dissolved alkali metal cyanurate and separating said solid alkali metal cyanurate from said slurry.

3,846,425
NEW IMINES, THEIR PREPARATION AND THEIR PHARMACEUTICAL USE

Florin Seng, Colonge-Buchheim; Kurt Ley, Odenthal-GloBusch, and Georg Metzger, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft

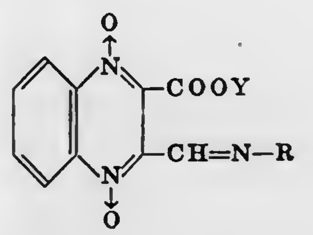
Division of Ser. No. 130,007, March 31, 1971. This application May 11, 1973, Ser. No. 359,279

Claims priority, application Germany, Apr. 2, 1970, 2015675

Int. Cl. C07d *51/78*

U.S. Cl. 260—250 QN **14 Claims**

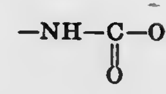
1. A compound of the formula:



or a pharmaceutically acceptable non-toxic salt thereof wherein

Y is hydrogen, an alkali metal cation or the cation $R^5—^+NH_3$; and

each of R and R^5 is



$$-NH-\underset{\underset{O}{\|}}{C}-O-R^3$$

wherein

R^3 is alkyl of one to four carbon atoms or hydroxyalkyl of one to four carbon atoms.

3,846,426
6-AMINO-9-(SUBSTITUTED BENZYL) PURINES AND THEIR N OXIDES

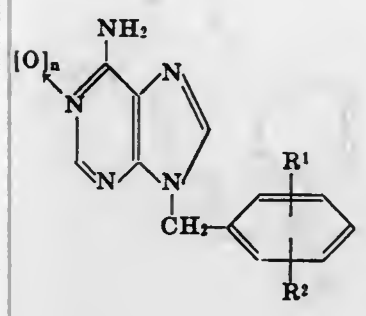
Emil P. Lira, Des Plaines; Walter M. Barker, Mundelein, and Robert C. McCrae, Lake Zurich, all of Ill., assignors to International Minerals & Chemical Corporation, Libertyville, Ill.

Continuation-in-part of Ser. No. 120,781, March 3, 1971, abandoned. This application Feb. 4, 1972, Ser. No. 219,848

Int. Cl. C07d *57/64*

U.S. Cl. 260—252 **27 Claims**

1. A compound of the structural formula:



wherein *n* is 0 or 1, and one of R^1 and R^2 is hydrogen with the other being a halogen selected from the group consisting of chlorine, bromine and iodine.

3,846,427
1-(PHTHALIMIDO-ALKYL)-1,2,3,4-TETRAHYDROQUINAZOLINONES AND ANALOGUES THEREOF

Bola Vithal Shetty, Bombay, India, assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 108,619, Jan. 21, 1971, abandoned, which is a division of Ser. No. 691,955, Dec. 20, 1967, Pat. No. 3,635,976. This application Nov. 16, 1971, Ser. No. 199,366

Int. Cl. C07d *51/48*

U.S. Cl. 260—256.4 Q **1 Claim**

1. 2-phenyl-1-(2-phthalimido-ethyl)-1,2,3,4-tetrahydro-4-quinazolin-one.

3,846,428
NITROFURYLPYRIMIDINES

Rudolf Albrecht; Hans-Joachim Kessler, and Eberhard Schroder, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

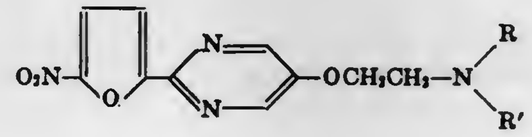
Filed Mar. 16, 1972, Ser. No. 235,426

Claims priority, application Germany, Mar. 17, 1971, 2113529

Int. Cl. C07d *51/36*

U.S. Cl. 260—256.4 C **28 Claims**

1. A compound of the formula



wherein R is alkyl of 1–6 carbon atoms, cycloalkyl of 3–7 carbon atoms, alkyl of 1–6 carbon atoms wherein 1–2 carbon atoms thereof are substituted by hydroxy or by alkanoyloxy of 1–6 carbon atoms or 1 carbon atom thereof is substituted by alkoxy of 1–6 carbon atoms or by dialkylamino wherein each alkyl group contains 1–6 carbon atoms or by tetrahydrofuryl or phenyl, and R′ is alkanoyl of 1–6 carbon atoms and the physiologically acceptable acid addition salts thereof.

3,846,429
METHOD OF PRODUCING 5-FLUOROURACIL

Solomon Aronovich Giller, ulitsa Pernavas, I0, kv. 76, Riga; Arvid Avgustovich Lazdinsh, ulitsa Mendeleeva, I, kv. 31, Olaine Latviiskoi; Artur Karlovich Veinberg, ulitsa Ludzas, 2.; Dagnia Yanovna Sniker, ulitsa Tserinju, 42, kv. 12, both of Jurmala Latviiskoi; Ivan Ljudvigovich Knunyants, Kotelnicheskaya naberezhnaya, 1/15, kv. 336, Moscow; Lev Solomonovich German, B. Serpukhovskaya ulitsa, 31, korpus 9, kv. 303, Moscow, and Natalya Borisovna Kazmina, ulitsa Krasnogo Mayaka, 8, korpus 2, kv. 41, Moscow, all of U.S.S.R.

Filed Sept. 22, 1971, Ser. No. 182,840

Int. Cl. C07d *51/30*

U.S. Cl. 260—260 **5 Claims**

1. A method of producing 5-fluorouracil comprising the steps of fluorinating uracil with elementary fluorine diluted with an inert gas in a glacial acetic acid medium under hydrodynamic conditions of Re = 35,000–45,000 at a temperature of from 15° to 35°C until the uracil disappears from the reaction mixture, heating said mixture at a temperature of from 90° to 95°C until 5-fluoro-6-acetoxy-dihydrouracil formed during the fluorination disappears therefrom and isolating the desired product.

3,846,430

1-(2-METHOXY-PHENYL)-4-[2-(4-FLUORO-BENZAMIDO)-ETHYL]-PIPERAZINE

Jacques de Antoni, Essonne, and Raymonde Eche, Paris, both of France, assignors to Les Laboratories Bruneau et Cie, Paris, France

Continuation of Ser. No. 888,087, Dec. 24, 1969, abandoned, which is a continuation-in-part of Ser. No. 733,754, June 3, 1968, abandoned. This application July 31, 1972, Ser. No. 278,602

Claims priority, application France, Jan. 12, 1968, 68.135764; Apr. 11, 1968, 68.147794

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 PH **1 Claim**

1. The substituted benzoic acid amide which is 1-(2-methoxy-phenyl)-4-[2-(4-fluoro-benzamido)-ethyl]-piperazine.

3,846,431

HETEROCYCLICALLY DIBENZO(A,D)CYCLOHEPTA(1,4)DIEN-5-ONE DERIVATIVES

Albrecht Edenhofer, Riehen, assignor to Hans Spiegelberg, Basel, both of, Switzerland and Hoffman-La Roche, Inc., Nutley, N.J.

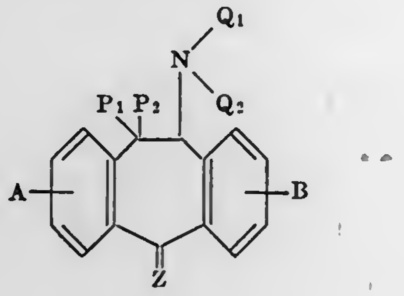
Division of Ser. No. 114,718, Feb. 11, 1971, Pat. No. 3,705,168, which is a division of Ser. No. 838,317, July 1, 1969, Pat. No. 3,586,718, which is a division of Ser. No. 517,893, Jan. 3, 1966, Pat. No. 3,478,048. This application Aug. 25, 1972, Ser. No. 283,877

Claims priority, application Switzerland, Jan. 8, 1965, 232/65; Jan. 14, 1965, 525/65

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 TR **2 Claims**

1. A compound of the formula



wherein A and B each is, individually, hydrogen, halogen, lower alkyl of 1 to 7 carbon atoms, lower alkoxy of 1 to 7 carbon atoms, trifluoromethyl, lower alkylmercapto of 1 to 7 carbon atoms, lower alkanoyl of 1 to 7 carbon atoms, sulfamoyl, lower alkylsulfamoyl of 1 to 7 carbon atoms of lower alkylsulfonyl of 1 to 7 carbon atoms; Z is oxo; P_1 is hydroxyl when P_2 is hydrogen, or together with P_2 is oxo; Q_1 and Q_2, taken together with the nitrogen atom, is piperazino or lower alkyl piperazino wherein lower alkyl is of 1 to 7 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

3,846,432

DERIVATIVES OF 1,2,3,4-TETRAHYDROISOQUINOLINE

Kunihiko Tanaka, Toyonaka; Teiji Kishimoto, Kawani, and Hisanao Zenno, Kyoto, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

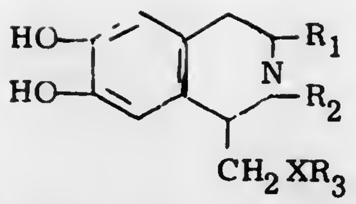
Filed Dec. 20, 1971, Ser. No. 210,213

Claims priority, application Japan, Dec. 29, 1970, 45-127198; Dec. 29, 1970, 45-127199; Dec. 29, 1970, 45-127200; Dec. 29, 1970, 45-127202; Dec. 29, 1970, 45-127201

Int. Cl. C07d *35/10*

U.S. Cl. 260—283 S **39 Claims**

1. A 1,2,3,4-tetrahydroisoquinoline having the formula:



wherein R_1 and R_2 are each a hydrogen or lower alkyl having 1 to 2 carbon atoms, X is an oxygen or sulfur atom, and R_3 is phenyl having substituted thereon a substituent selected from the group consisting of lower alkoxy, hydroxy, amaino, nitro, trifluoromethyl, trichloromethyl, tribomomethyl and halogen, or is phenyl having thereon two identical halogen substituents, a halogen and a lower alkyl substituent, or two lower alkoxy substituents, or is phenyl having thereof three lower alkoxy substituents, and pharmaceutically acceptable satls thereof, wherein "lower" refers to 1 to 6 carbon atoms.

3,846,433

PROCESS FOR PREPARING ERGOT ALKALOIDS

Paul Stadler, Biel-Benken/BL; Peter Stutz, Basel, and Stephan Guttmann, Allschwill, all of Switzerland, assignors to Sandoz Ltd. (aka Sandoz AG), Basel, Switzerland

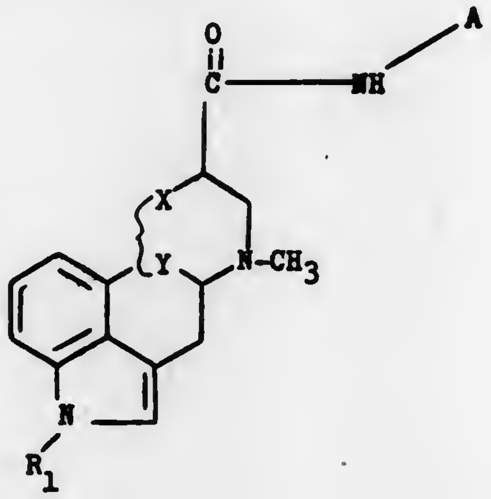
Continuation-in-part of Ser. No. 33,526, April 30, 1970, abandoned. This application July 19, 1972, Ser. No. 273,113

Claims priority, application Switzerland, May 6, 1969, 6912/69; July 2, 1969, 10118/69

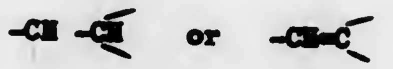
Int. Cl. C07d *43/20, 51/64;* **C07c** *103/52*

U.S. Cl. 260—285.5 **14 Claims**

1. A process for the preparation of a lysergic acid polypeptide compound of the formula

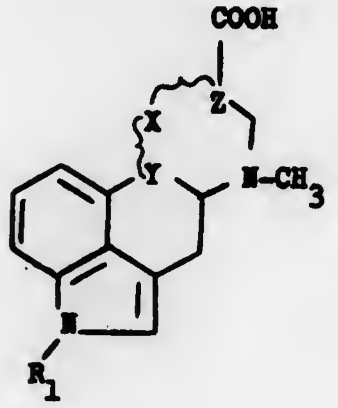


wherein x y is the group

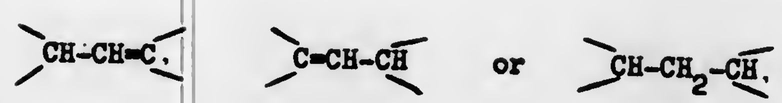


R_1 is hydrogen, lower alkyl, allyl, or benzyl, and -NH-A is a polypeptide with cyclic structure known in ergot peptide alkaloids, which comprises the steps:

a. reacting in an inert solvent a lysergic acid compound of the formula:



where R_1 is as defined above, and z x y is the group



with trifluoroacetic anhydride and

b. reacting the resulting mixed anhydride in inert solvent with a salt of an amine of the formula

H—NH—A

wherein —NH—A is as defined above, in the presence of a tertiary organic base which liberates the amine base from the amine salt, each stage of the reaction being carried out at a temperature of between −20° and −10°C,

the improvement which comprises carrying out step a) in the presence of 1 to 5 moles of trifluoroacetic acid per mole of lysergic acid compound to dissolve the lysergic acid compound in the inert solvent.

3,846,434

PROCESS FOR OBTAINING A GERMINE ADDUCT FROM GERMINE VALUES

Solomon Morris Kupchan, Ednam Forest, Charlottesville, Va. 22901

Continuation-in-part of Ser. No. 771,303, Oct. 28, 1968, abandoned. This application Feb. 16, 1970, Ser. No. 11,776

Int. Cl. C07d *39/00*

U.S. Cl. 260—287 R **13 Claims**

1. The process for obtaining a germine adduct from germine values which comprises:

a. treating germine values substantially free of protoveratrine with a basic hydrolyzing system, and

b. treating under substantially lower alkanol-free conditions the hydrolyzate thereby obtained with a liquid water-immiscible halogenated hydrocarbon in the presence of water, thereby to obtain a solid adduct of germine and said halogenated hydrocarbon, wherein the basic hydrolyzing system comprises an alkali metal hydroxide or an alkali metal alkoxide in a lower alkanol having 1 to 4 carbon atoms or water or mixtures thereof, and the halogenated hydrocarbon is selected from chlorinated aliphatic hydrocarbons.

3,846,435

PROCESS FOR THE PRODUCTION OF 2-METHYL-5-ETHYL PYRIDINE

Carlos B. Rosas, Rahway; Joseph A. Wantuck, Woodbridge, and Arnold Kaufman, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed July 21, 1972, Ser. No. 274,020

Int. Cl. C07d *31/08*

U.S. Cl. 260—290 P **4 Claims**

1. A process for preparing 2-methyl-5-ethyl pyridine which comprises reacting 1 mole of acetaldehyde with an aqueous solution of from 0.5 to 3.0 moles of ammonium acetate, ammonium dibasic phosphate, ammonium fluoride, ammonium bifluoride, ammonium benzoate, ammonium borate, or ammonium sulfide at a temperature in the range of 180° to 270°C. and at a pressure sufficient to maintain the reaction mixture in the liquid phase.

3,846,436

PIPERIDINOETHYL AND PIPERIDINOETHOXYETHYL ESTERS OF 2,2-DIARYL-CYCLOPROPANE-CARBOXYLIC ACIDS

Jean-Claude Cognacq, Bourg-la-Reine, France, assignor to Societe anonyme dite: Hexachimie, Rueil-Malmaison, France

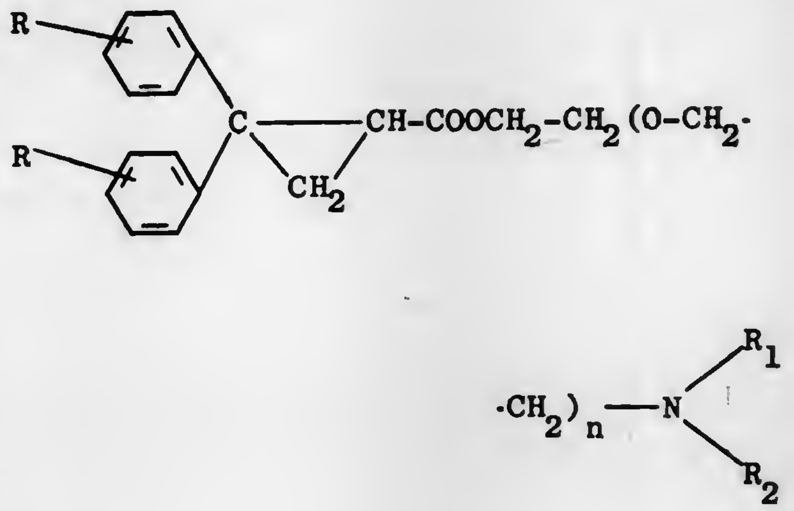
Filed Dec. 30, 1971, Ser. No. 214,473

Claims priority, application Great Britain, Dec. 31, 1970, 62024/70

Int. Cl. C07d *29/24*

U.S. Cl. 260—293.82 **6 Claims**

1. An ester of a 2,2-diphenyl cyclopropane-carboxylic acid having the formula:



in which R is hydrogen, halogen, lower alkyl, or lower alkoxy, *n* is zero or 1, and R_1 and R_2 together with the nitrogen atom to which they are attached, form piperidino or lower alkyl-substituted piperidino or a pharmaceutically acceptable salt thereof.

3,846,437

SULFUR DERIVATIVES OF PYRAZOLO(3,4-B)PYRIDINES

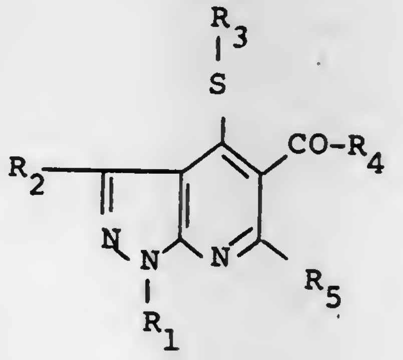
Hans Hoehn, Tegernheim, and Theodor Denzel, Nurnberg, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 220,373, Jan. 24, 1972, Pat. No. 3,773,778. This application Aug. 14, 1973, Ser. No. 388,283

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 C **7 Claims**

1. A compound of the formula



wherein R_1 is hydrogen or lower alkyl,

R_2 is hydrogen or methyl, R_3 is imidazolyl or lower alkyl-imidazolyl,

R_4 is hydroxy or lower alkoxy, R_5 is hydrogen or methyl, and physiologically acceptable acid addition salts thereof.

3,846,438
CERTAIN 1,2,4-THIADIAZOLES

Jorg Bader, deceased, late of Arlesheim, Switzerland (by Dagmar Bader-Ludwig, legal representative); Heinz Hambock, Binningen, Switzerland; Elmar Sturm, and Anton Georg Weiss, both of Benken/Bl, Switzerland, assignors to Ciba-Giegy Corporation, Ardsley, N.Y.

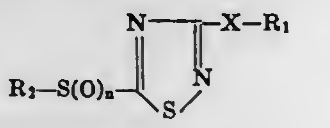
Filed Aug. 28, 1972, Ser. No. 284,198

Claims priority, application Switzerland, Aug. 31, 1971, 12796/71; Aug. 15, 1972, 12053/72

Int. Cl. C07d *91/60*

U.S. Cl. 260—302 SD **6 Claims**

1. A thiadiazole derivative of the formula



(I)

R_1 represents alkyl having 1–4 carbon atoms, unsubstituted, or mono- to trisubstituted by halogen alkoxy or alkylamino each having at most four carbon atoms, alkenyl having 2–4 carbon atoms, or cycloalkyl or cycloalkenyl having 3–7 carbon atoms,

X represents oxygen, sulphur or methyl-imino,

R_2 represents alkyl having 1–4 carbon atoms, unsubstituted, or mono- to disubstituted by halogen, and

n represents 1 or 2.

3,846,439
PROCESS FOR THE PREPARATION OF 3-PHENYL-5-T-UTYL-2-OXADIAZOLONES

Roger Boesch, Vitry sur Seine, and Andre Blind, Villeurbanne, both of France, assignors to Rhone-Poulenc S.A., Paris, France

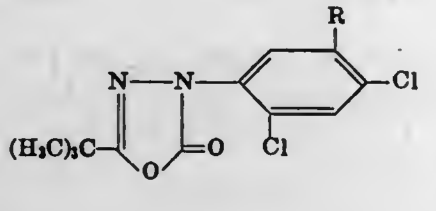
Filed Aug. 5, 1970, Ser. No. 61,461

Claims priority, application France, Apr. 6, 1970, 70.12389The portion of the term of this patent subsequent to Nov. 5, 1991, has been disclaimed.

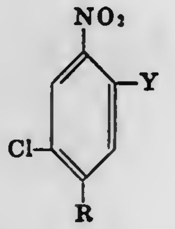
Int. Cl. C07d *85/54*

U.S. Cl. 260—307 A **9 Claims**

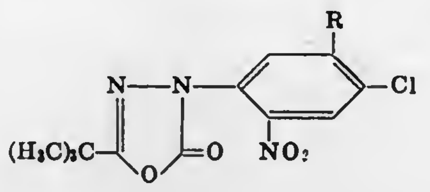
1. Process for the preparation of 3-(2,4-dichlorophenyl)-5-t-butyl-1,3,4-oxadiazol-2-ones of the formula:



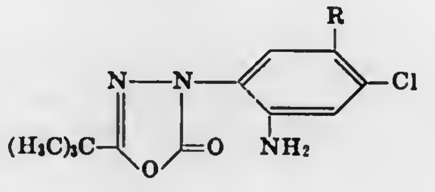
in which R represents hydrogen or alkoxy of one to four carbon atoms, which comprises reacting a halogenonitrobenzene of the formula:



in which Y represents halogen and R is as hereinbefore defined, with an alkali metal salt of 5-t-butyl-1,3,4-oxadiazol-2-one in an aprotic solvent selected from the group consisting of dimethylformamide, dimethylacetamide, hexamethylphosphotriamide, dimethylsulphoxide and N-methyl pyrrolid-2-one, reducing the nitro group in the resulting product of the formula:



in which R is as hereinbefore defined, to a primary amino group, diazotizing the amino group in the oxadiazolone derivative thus obtained of the formula:



in which R is as hereinbefore defined, and reacting the resulting diazonium compound with cuprous chloride to replace the dizaonium grouping by a chlorine atom.

3,846,440
PROCESS FOR THE PREPARATION OF 3-PHENYL-5-T-UTYL-2-OXADIAZOLONES

Roger Boesch, Vitry sur Seine; Andre Blind, Villeurbanne, and Jean-Marie Cassal, Saint-Louis, all of France

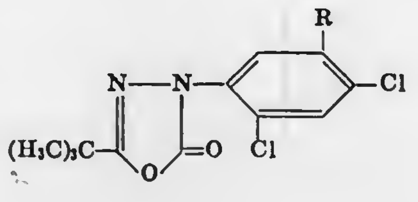
Filed Aug. 5, 1970, Ser. No. 61,487

Claims priority, application France, Aug. 7, 1969, 69.27227The portion of the term of this patent subsequent to Nov. 5, 1991, has been disclaimed.

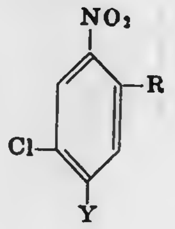
Int. Cl. C07d *85/54*

U.S. Cl. 260—307 A **9 Claims**

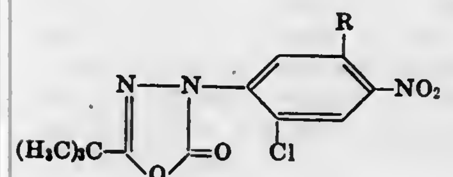
1. Process for the preparation of 3-(2,4-dichlorophenyl)-5-t-butyl-1,3,4-oxadiazol-2-ones of the formula:



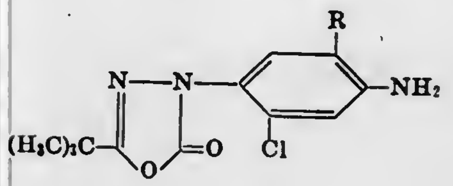
in which R represents hydrogen or alkoxy of one to four carbon atoms, which comprises reacting a halogenonitrobenzene of the formula:



in which Y represents halogen and R is as hereinbefore defined, with an alkali metal salt of 5-t-butyl-1,3,4-oxadiazol-2-one in an aprotic solvent selected from the group consisting of dimethylformamide, dimethylacetamide, hexamethylphosphotriamide, dimethylsulphoxide and N-methyl pyrrolid-2-one, reducing the nitro group in the resulting product of the formula:



in which R is as hereinbefore defined, to a primary amino group, diazotizing the amino group in the oxadiazolone derivative thus obtained of the formula:



in which R is as hereinbefore defined, and reacting the resulting diazonium compound with cuprous chloride to replace the diazonium grouping by a chlorine atom.

3,846,441
1,5-DISUBSTITUTED-3-SUBSTITUTED PHENYL HYDANTOINS

Akihiko Mine, Toyonaka; Akira Fujinami, Ashiya; Nobuyuki Kameda, Takarazuka; Naganori Hino, Toyonaka; Takeo Satomi, Takarazuka, and Kohshi Tateishi, Minoo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

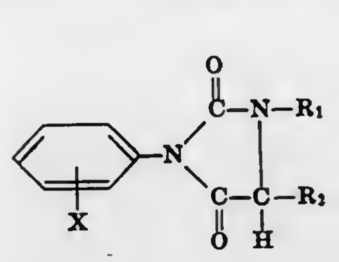
Filed Nov. 29, 1971, Ser. No. 203,003

Claims priority, application Japan, Dec. 9, 1970, 45-109772

Int. Cl. C07d *49/32*

U.S. Cl. 260—309.5 **4 Claims**

1. A hydantoin derivative having the formula



wherein X is nitro, cyano, lower alkoxy or lower alkoxycarbonyl, and R_1 and R_2 each are lower alkyl.

3,846,442
GLYCIDYL HYDANTOIN COMPOUNDS

Juergen Habermeier, Pfeffingen, and Daniel Porret, Binningen, both of Switzerland, assignors to Ciba-Geigy AG, Basle, Switzerland

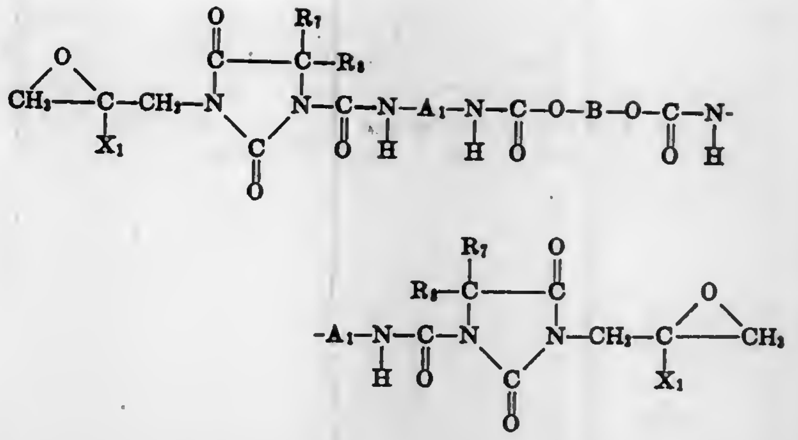
Filed Nov. 15, 1971, Ser. No. 198,989

Claims priority, application Switzerland, Nov. 17, 1970, 16964/70

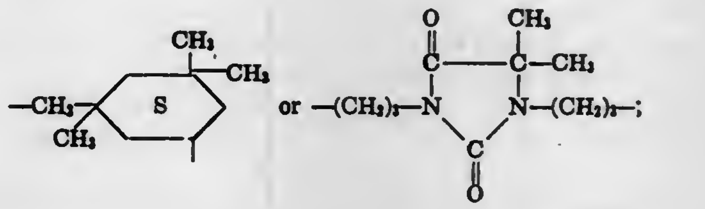
Int. Cl. C07d *49/32*

U.S. Cl. 260—309.5 **7 Claims**

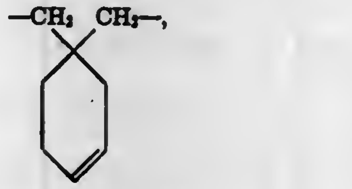
1. A compound of the formula

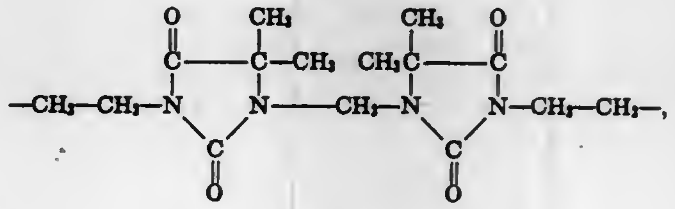


wherein A_1 is alkylene of 2 to 10 carbon atoms, cyclopentylene, cyclohexylene, tolylene, phenylene,

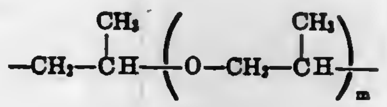


X_1 is hydrogen or methyl; B is alkylene of 2 to 12 carbon atoms,





or



wherein *m* is an interger corresponding to an average molecular weight of 250 to 2,500 for the group;

R_7 and R_8 is hydrogen orr alkyl of 1 to 4 carbon atoms or R_7 and R_8 together is tetramethylene or pentamethylene.

3,846,443
1H-IMIDAZO[1,2A][1,4]BENAO-DIAZEPINE-1,2(3H)-DIONES

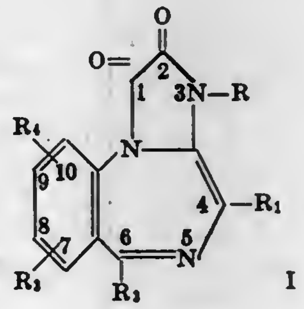
Robert B. Moffett, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 195,049, Nov. 2, 1971, abandoned. This application May 29, 1973, Ser. No. 364,616

Int. Ci. C07d *57/02*

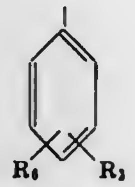
U.S. Cl. 260—309.7 **6 Claims**

1. A compound of the tormula



I

wherein R is selected from the group consisting of hydrogen, lower alkyl of 1 through 4 carbon atoms and lower alkenyl of 3 through 4 carbon atoms; R_1 is selected from the group consisting of hydrogen and lower alkyl of 1 through 3 carbon atoms; R_2 is selected from the group consisting of 2-pyridyl, 3-pyridyl, 4-pyridyl and



wherein R_5 and R_6 are selected from the group consisting of hydrogen, lower alkyl of 1 through 3 carbon atoms, halogen, nitro, cyano and trifluoromethyl; R_3 and R_4 have the same meaning as R_5 and R_6, above; or a pharmacologically acceptable addition salt thereof.

3,846,444
METHOD FOR THE PREPARATION OF 3-ACYLAMINO-PYRAZOLIN-5-ONES

Marcel Jacob Monbaliu, Mortsel, and Raphael Karel Van Poucke, Berchem, both of Belgium, assignors to Gevaert-Agfa, N.V., Mortsel, Belgium

Filed June 19, 1969, Ser. No. 834,858

Claims priority, application Great Britain, July 18, 1968, 34342/68

Int. Cl. C07d *49/14*

U.S. Cl. 260—310 A **7 Claims**

1. In a process for the preparation of a 3-acylamino-2-pyrazolin-5-one by allowing a 3-amino-2-pyrazolin-5-one to react with an acid chloride or anhydride, the improvement wherein the reaction is carried out in the presence of a heterocyclic nitrogen-containing basic condensing agent and a Friedel Crafts metal halide.

3,846,445
DIBENZOFURANYLOXY AND CARBAZOLYLOYX ALKANOIC ACIDS AND ESTERS

Ulf Goran Bondesson, Orrvagen; Lars Anders Fritz Carlson, Stora Malmagatan; Christina Hedbom, Karlslundsgatan; Harry Olof Magnusson, Satterstavagen, and Nils Erik Stjernstrom, Tappgatan, all of Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

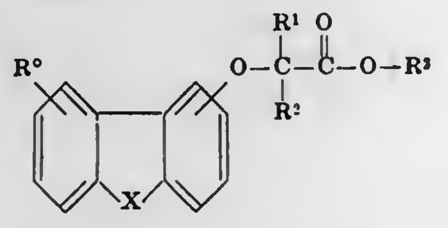
Filed Sept. 25, 1972, Ser. No. 292,138

Claims priority, application Sweden, Sept. 23, 1971, 12075/71

Int. Cl. C07d *27/68*

U.S. Cl. 260—315 **22 Claims**

1. A compound selected from the group consisting of compounds of the formula



and pharmaceutically acceptable salts thereof, in which formula X is selected from the group consisting of the bivalent radicals —O— and —NH—; R^0 is selected from the group consisting of H, F. Cl, Br and OCH_3; R^1 and R^2 are the same or different and selected from the group consisting of H and an alkyl group with 1–3 carbon atoms; R^3 is selected from the group consisting of H and an alkyl group with 1–3 carbon atoms; R^0 and the side chain containing the radicals R^1, R^2 and R^3 being placed on the same or different benzene ring.

3,846,446
SUBSTITUTED HETEROCYCLIC DERIVATIVES OF AZEPINE

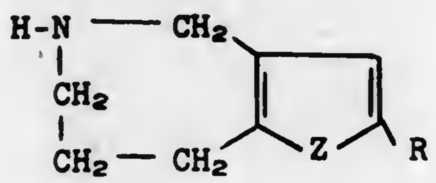
Martin Joseph Weiss, Oradell, N.J.; Gabriel Joseph Gibs, Pearl River; John Frank Poletto, Nanuet, both of N.Y., and William Alan Remers, West Lafayette, Ind., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 185,876, Oct. 1, 1971, Pat. No. 3,758,501. This application July 5, 1973, Ser. No. 376,776

Int. Cl. C07d *27/00*

U.S. Cl. 260—326.9 **7 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein Z is a divalent moiety selected from the group consisting of oxa, thia and imino, and R is selected from the group consisting of hydrogen and an alkyl group having up to four carbon atoms; and the pharmacologically acceptable acid-addition salts thereof.

3,846,447
PREPARATION OF 5-AROYL-PYRROLES AND INTERMEDIATES THEREFOR

John Robert Carson, Norristown, Pa., assignor to McNeil Laboratories, Inc., Ft. Washington, Pa.

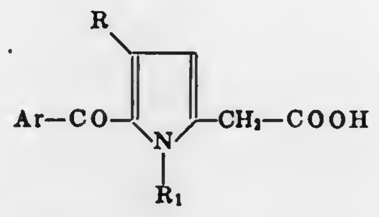
Filed Aug. 3, 1972, Ser. No. 277,845

Int. Cl. C07d *27/26*

U.S. Cl. 260—326.47 **15 Claims**

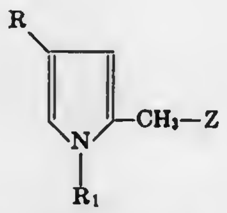
1. A process of preparing a 5-aroyl-pyrrole-2-alkanoic acid of the formula:

(1)



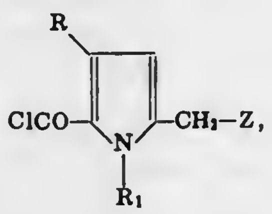
which comprises reacting a 5-unsubstituted pyrrole of the formula:

(2)



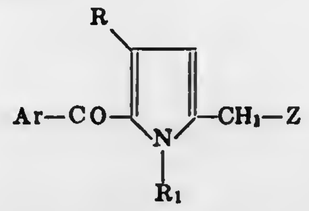
with phosgene in an aprotic solvent in order to prepare a 5-chlorocarbonyl pyrrole of the formula:

(3)



treating the latter with a member selected from the group consisting of (i) an aryl transition metal compound of the formula: $(Ar)_nM$, and (ii) an aryl Grignard reagent of the formula: ArMgBr, in the presence of a catalytic amount of a transition metal halide selected from the group consisting of $ZnCl_2$, $CdCl_2$, $FeCl_3$, $CoCl_3$ and $(CuBr)_2$, in order to transform said 5-chlorocarbonyl function into a 5-Ar-CO function, and hydrolyzing to the acid stage the thus-obtained 5-Ar-CO-pyrrole of the formula:

(4)



to yield the desired 5-aroyl-pyrrole-2-alkanoic acid, wherein the following meanings are assigned to the foregoing symbols: M is a transition metal selected from the group consisting of copper, zinc and cadmium;

n is an integer equal to the valence of said transition metal; R is a member selected from the group consisting of hydrogen and lower alkyl;

R_1 is lower alkyl;

Z is a member selected from the group consisting of CN and COO(lower alkyl); and

Ar is a member selected from the group consisting of phenyl and mono-, di- and tri-substituted phenyl wherein each substituent is selected from the group consisting of halo, lower alkyl, lower alkoxy, trifluoromethyl and methylthio; provided that, when said R is lower alkyl, then said Z is COO—(lower alkyl).

3,846,448
1,3-DITHIETANES

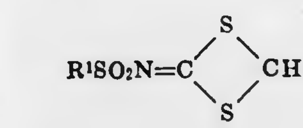
Stanley A. Greenfield, Ambler, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 100,297, Dec. 21, 1970, Pat. No. 3,772,331. This application Oct. 25, 1972, Ser. No. 300,686

Int. Cl. C07d *69/00*

U.S. Cl. 260—327 M **3 Claims**

1. A compound of the structure



wherein

R^1 is alkyl of 1 to 12 carbon.

3,846,449
N-SUBSTITUTED FATTY ACID AMIDE LUBRICANTS

Frank C. Magne; Robert R. Mod; Gene Sumrell, all of New Orleans, La., and Winfred E. Parker, Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 176,734, Aug. 31, 1971, Pat. No. 3,746,644. This application Apr. 6, 1973, Ser. No. 348,823

Int. Cl. C07d *59/00*

U.S. Cl. 260—327 E **3 Claims**

1. The compound N,N-dibutyl-9,10-epithiostearamide.

3,846,450
PURIFICATION OF OXYGENATED ORGANIC COMPOUNDS

Gerald C. Stalker, Bay City, and Roscoe L. Pearce, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sept. 8, 1972, Ser. No. 287,801

Int. Cl. C07d *13/04*

U.S. Cl. 260—340.2 **7 Claims**

1. A method of removing lower alkylene glycol impurities from oxygenated organic compounds comprising contacting a contaminated oxygenated compound selected from the group consisting of methylphenol ether, diethylcarbonate, butyrolactone and 4-methyl-1,3-dioxolan-2-one with a sufficient amount of a halide of an alkaline earth metal selected from the group consisting of calcium, magnesium, strontium, and barium to form a complex with the impurity; removing the alkaline earth metal halide and the impurityalkaline earth metal halide complex from the oxygenated compound thereby purifying the oxygenated compound.

3,846,451
ARTHROPOD MATURATION INHIBITORS

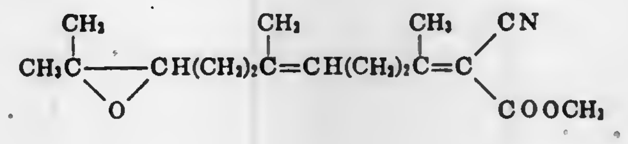
Meyer Schwarz, Kensington; Philip E. Sonnet, Bowie, and Nobel Wakabayashi, New Carrollton, all of Md., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 104,781, Jan. 7, 1971,. This application Apr. 6, 1973, Ser. No. 348,553

Int. Cl. C07d *1/24*

U.S. Cl. 260—348 A **1 Claim**

1. A compound of the formula



$$CH_3\overset{CH_3}{C}\underset{O}{\text{——}}CH(CH_2)_2\overset{CH_3}{C}=CH(CH_2)_2\overset{CH_3}{C}=C\begin{matrix}CN\\COOCH_3\end{matrix}$$

3,846,452
CARBOXYL-PHTHALEINS

Shojiro Horiguchi, Tokyo; Michiei Nakamura, Soka; Keiji Nakajima, Urawa, and Minoru Takizawa, Tokyo, all of Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd., Tokyo, Japan

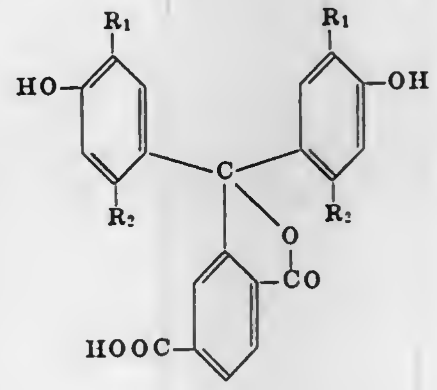
Filed June 28, 1972, Ser. No. 267,079

Claims priority, application Japan, June 28, 1971, 46-46288

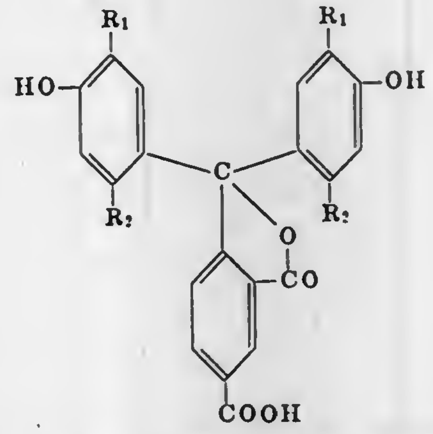
Int. Cl. C07d *5/06*

U.S. Cl. 260—343.4 **2 Claims**

1. A pH indicator having the formula:



or



wherein R_1 and R_2 each represent methyl, ethyl, or propyl.

3,846,453
SPHEROIDAL SHAPED PARTICLES OF AMINORESIN-SILICA POLYMERIC COMPOSITE

Modesto Erneta, Princeton Junction, N.J., assignor to N L Industries, Inc., New York, N.Y.

Filed May 7, 1973, Ser. No. 358,046
Int. Cl. C08g *51/04*
U.S. Cl. 260—39 SB **11 Claims**

1. A composition of matter comprising spheroidal shaped clusters of aminoresin-silica polymeric composite particles having an individual particle size range from 0.05 to 0.3 μ, said particles formed into spheroidal shaped clusters of size from 1 to 10 μ, said composition containing from 0.5 to 30 percent silica by weight, the remainder being the aminoresin.

3,846,454
PROCESS FOR PREPARING 2,3,6-TRIMETHYLBENZOQUINONE

Hajime Ohnishi, and Yuji Nakazawa, both of Saitama, Japan, assignors to Daicel Ltd., Osaka, Japan

Filed Sept. 13, 1973, Ser. No. 396,827
Int. Cl. C07c *49/64*
U.S. Cl. 260—396 R **7 Claims**

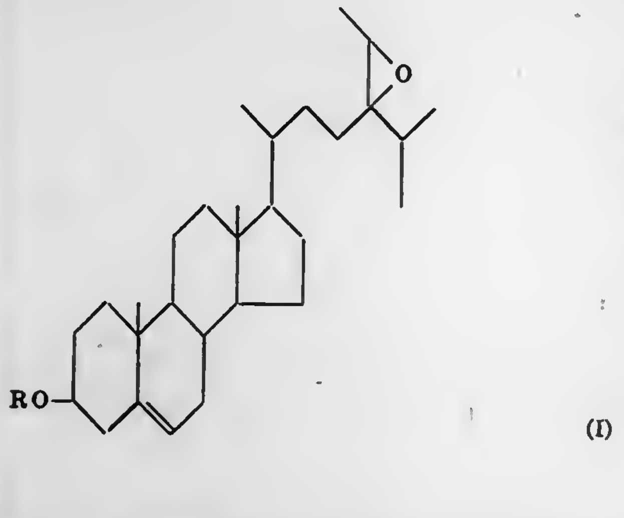
1. A process for preparing 2,3,6-trimethylbenzoquinone which comprises reacting pseudocumene with a peracid of pKa of more than 7.0 at a molar ratio of pseudocumene/peracid of 1/1 to 10, in the presence of from 1 to 150 percent by weight, based on the weight of pseudocumene, of an acid catalyst selected from the group consisting of strong acids of pKa of less than 3.0 and Lewis acids, at a temperature of from zero to 100°C.

3,846,455
PROCESS FOR THE PREPARATION OF 25-HYDROXY-CHOLESTEROL AND ESTERS THEREOF

Nobuo Ikekawa, and Masuo Morisaki, both of Tokyo, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

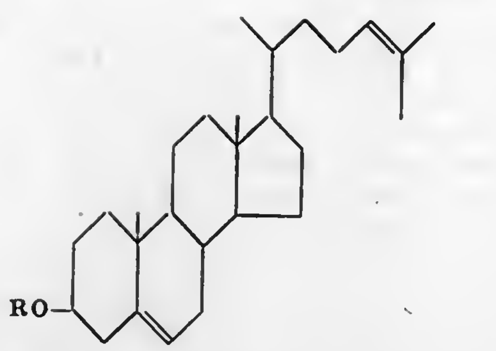
Filed May 21, 1973, Ser. No. 362,506
Claims priority, application Japan, May 22, 1972, 47-49879; May 22, 1972, 47-49880
Int. Cl. C07c *169/54*
U.S. Cl. 260—397.2 **1 Claim**

1. A process for the preparation of 25-hydroxycholesterol or an ester thereof comprising:
   1. reacting stannic chloride with fucosterol-24(28)-epoxide or an ester thereof represented by the formula



(I)

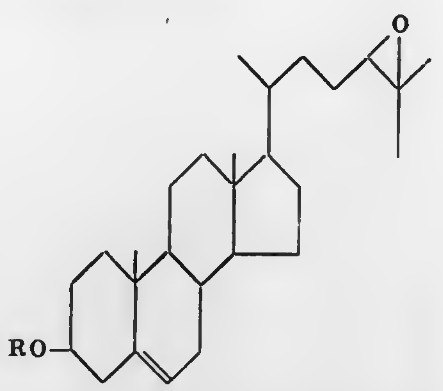
wherein R designates a hydrogen atom or an acetyl radical to obtain desmosterol or an ester thereof represented by the formula



II

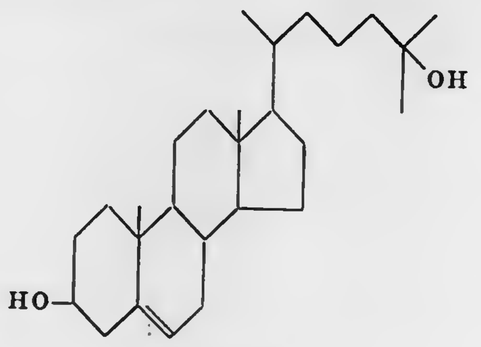
wherein R has the same meanings as those defined in the above formula (I);

   2. reacting a perorganic acid selected from the group consisting of perbenzoic acid, m-chloro perbenzoic acid and mono-perphthalic acid with the desmosterol or ester thereof of the formula (II) to obtain desmosterol-24(25)-epoxide having the formula



III

wherein R has the same meanings as given in formula (I); and 3. reacting an alkali metal hydride complex selected from the group consisting of lithiu- aluminum hydride and sodium (bis-2-methoxy-ethoxy) aluminum hydride with the desmosterol-24(25)-epoxide having the formula (III) to obtain 25-hydroxycholesterol represented by the formula



IV

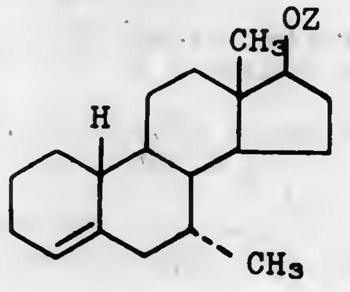
and, if necessary, further treating the 25-hydroxycholesterol with acetic anhydride to obtain the corresponding ester thereof.

3,846,456
ORGANIC COMPOUNDS

J. Allan Campbell, and John C. Babcock, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 7, 1965, Ser. No. 446,395
Int. Cl. C07c *169/10, 169/20*
U.S. Cl. 260—397.3 **19 Claims**

1. Compounds of the formula



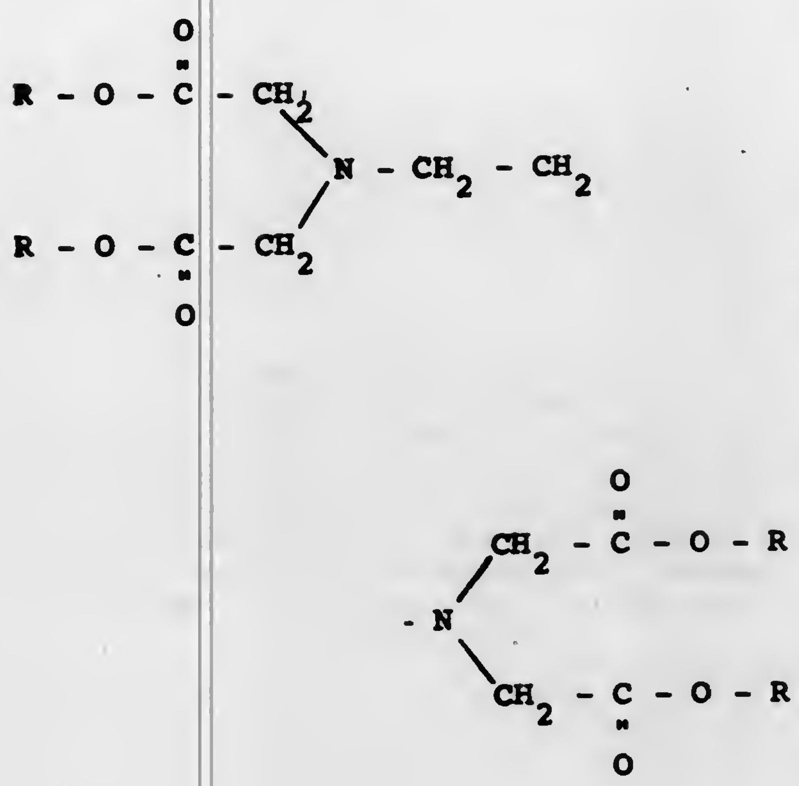
wherein Z is selected from the group consisting of hydrogen and the lower acyl radical of a hydrocarbon carboxylic acid containing from one to twelve carbon atoms, inclusive.

3,846,457
DEEP FAT FRYING WITH EDTA ESTERS TO REDUCE DARKENING

Erlend R. Lowrey, Greenhills, and Vernon E. Weis, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed June 28, 1971, Ser. No. 157,677
Int. Cl. C11b *5/00*
U.S. Cl. 260—398.5 **8 Claims**

1. A process for reducing the rates of darkening and/or foaming of fats and oils during frying which consists essentially of adding to the fats or oils about 1 to about 1,000 parts per million by weight of alkyl esters of ethylene-diamine-tetraacetic acid of the formula



wherein R is hydrogen or an alkyl radical containing from 6 to 24 carbon atoms and wherein at least two R groups are such an alkyl radical.

3,846,458
ARTHROPOD MATURATION INHIBITORS

Meyer Schwarz, Kensington; Philip E. Sonnet, Bowie, and Nobel Wakabayashi, New Carrolton, all of Md., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 104,781, Jan. 7, 1971,. This application Apr. 6, 1973, Ser. No. 348,844
Int. Cl. C07c *69/52*
U.S. Cl. 260—404 **1 Claim**

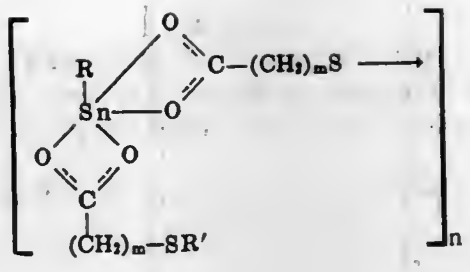
1. The methyl ester of 2-cyano-3,7,11-trimethyl-2,6,10-dodecatrienoic acid.

3,846,459
ORGANOTIN MERCAPTOCARBOXYLATES

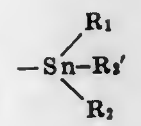
Christian H. Stapfer, Aachen, Germany, assignor to Cincinnati Milacron Chemicals, Inc., Reading, Ohio

Filed Oct. 18, 1972, Ser. No. 298,543
Int. Cl. C07f *7/22*
U.S. Cl. 260—429.7 **17 Claims**

1. A monohydrocarbyltin mecaptocarboxylate compound of the formula:



wherein:
R′ is H, Na, K or



R, R_1, R_2 and R_3 are alkyl, aralkyl or aryl;
n is an integer of at least 1; and
m is 1 to 3.

3,846,460
METHOD OF MANUFACTURING COPPER OXALATE

Charles C. Fite, Jr., East Windsor, N.J., assignor to Cities Service Company, New York, N.Y.

Filed Apr. 25, 1973, Ser. No. 354,275
Int. Cl. C07f *1/08*
U.S. Cl. 260—438.1 **11 Claims**

1. an improved process for the manufacture of copper oxalate comprising:
   a. reacting an aqueous ferrous salt solution with a soluble oxalate to precipitate ferrous oxalate;
   b. separating ferrous oxalate of step (a) from the resulting slurry;
   c. slurrying ferrous oxalate of step (b) in a solution of a water-soluble copper salt to yield copper oxalate and a solution of a ferrous salt; and
   d. filtering the copper oxalate of step (c) from the solution of said ferrous salt.

3,846,461
PROCESS OF PREPARING A ZEROVALENT NICKEL COMPLEX WITH ORGANIC PHOSPHORUS COMPOUNDS

Howard E. Shook, Jr., Orange, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 25, 1972, Ser. No. 300,824
Int. Cl. C07f *15/04*
U.S. Cl. 260—439 R **7 Claims**

1. A process of preparing a zerovalent complex of nickel with an organic phosphorus compound of the formula PZ_3 wherein Z is OR and R is a hdyrocarbyl aryl radical having up to 18 carbon atoms which comprises contacting nicekl chloride with an organic nitrile of the group consisting of 3-pentenenitrile, 4-pentenenitrile, adiponitrile, methylglutaronitrile and ethylsuccinonitrile, an organic phosphorus compound PZ_3, a promoter of the group consisting of NH_3, NH_4X, $Zn(NH_3)_2X_2$ and mixtures of NH_4X and ZnX_2 wherein X is a halide of the group consisting of chloride, bromide and iodide in an amount to provide a moleratio of promoter with respect to nickel of at least 0.01, and a finely-divided reducing metal which is more electropositive than nickel in the organic nitrile containing the organic phosphorus compound, and maintaining the reaction mixture at a temperature in the range of 60°C. to 115°C. to produce the zerovalent complex of the phosphorus compound PZ_3.

3,846,462
ORGANOSILICONE POLYMERS

Bela Prokai, Mahopac, and Bernard Kanner, West Nyack, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 11, 1972, Ser. No. 279,883
Int. Cl. C07f *7/10, 7/18*
U.S. Cl. 260—448.2 N 29 Claims

1. Organosilicone compositions which comprise polysiloxane-polyoxyalkylene block copolymers in which the average number of polyoxyalkylene blocks is between about 2 and about 30 and from about 20 to about 65 weight percent of the oxyalkylene content of said polyoxyalkylene blocks is constituted of oxyethylene units, and in which the polysiloxane backbone is endblocked by trialkylsiloxy units and contains an average of between about 10 and about 200 dialkylsiloxy units and an average of between about 3 and about 100 difunctional monoalkylsiloxy units the respective silicon atoms of which are further bonded to a cyanoalkyl group or to oyxgen of a cyanoalkoxy group.

3,846,463
PROCESS FOR PRODUCING ALKOXYSILANE

Yoichiro Nagai; Iwao Ojima, and Tetsuo Kogure, all of Sagamihara, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed Aug. 17, 1973, Ser. No. 389,133
Claims priority, application Japan, Aug. 24, 1972, 47-84094
Int. Cl. C07b *7/18*
U.S. Cl. 260—448.8 R 10 Claims

1. A process for producing an alkoxysilane which comprises reacting an organosilicon hydride selected from the group consisting of trialkyl monohydrosilanes, triphenyl monohydrosilanes, diphenylalkyl monohydrosilanes, dialkylphenyl monohydrosilanes, diphenyl dihydrosilanes, phenylalkyl dihydrosilanes, dialkyl dihydrosilanes, phenyl trihydrosilanes, and alkyl trihydrosilanes with an alcohol selected from the group consisting of aliphatic alcohols having 1 to 6 carbon atoms, aromatic alcohols, alicyclic alcohols, and polyalcohols in the presence of tris(triphenylphosphine) halorhodium.

3,846,464
PROCESS FOR PREPARING CYCLIC METHYLVINYLSILOXANES

John S. Razzano, Troy, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Nov. 27, 1973, Ser. No. 419,373
Int. Cl. C07f *7/08*
U.S. Cl. 260–448.2 E 8 Claims

1. A process for the preparation of sym-tetramethyltetravinylcyclotetrasiloxane comprising the heating of a mixture of 1 part of (i) a hydrolysis product of 99 to 95 parts of methylvinyldichlorosilane and from 1 to 99 parts of vinyltrichlorosilane and (ii) at least 2 parts of a high boiling hydrocarbon solvent in the presence of an effective, catalytic amount of potassium hydroxide.

3,846,465
ALKENOXY SUBSTITUTED UREAS

Jacques Mocotte, Didier au Mont D'Or; Andre Disdier, Lyon, and Francoise Prost, Villeurbanne, all of France, assignors to PROGIL, Paris, France

Continuation-in-part of Ser. No. 742,186, July 3, 1968, abandoned. This application Mar. 11, 1971, Ser. No. 123,440
Claims priority, application France, July 11, 1967, 67.48902; May 30, 1968, 68.50053
Int. Cl. C07c *127/18*
U.S. Cl. 260—453 R 2 Claims

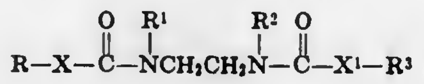
1. A urea derivative selected from the group consisting of N-3, 4-dichloro-phenyl-N'-methyl-N'-allyloxy urea; N-3,4-dichloro-phenyl-N'-methyl-N'-methallyloxy urea; N-3,4-dichloro-phenyl-n'-methyl-n'(1-methyl-2-propene-oxy)-urea and N-3,4-dichloro-phenyl-N'-methyl-n'-crotyloxy-urea.

3,846,466
ESTERS OF DI-(THIOCARBAMOYL)ETHYLENE AS JUVENILE HORMONE MIMICKING AGENTS FOR CONTROL OF INSECTS

Ferenc Marcus Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed May 26, 1972, Ser. No. 257,092
Int. Cl. C07c *155/02*
U.S. Cl. 260—455 A 10 Claims

1. A compound of the formula:



$$R-X-\overset{\overset{O}{\|}}{C}-\overset{\overset{R^1}{|}}{N}CH_2CH_2\overset{\overset{R^2}{|}}{N}-\overset{\overset{O}{\|}}{C}-X^1-R^3$$

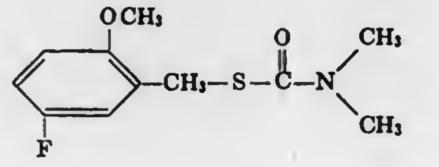
in which R is alkyl having 2 to 6 carbon atoms; R^1 is hydrogen or alkyl having 1 to 4 carbon atoms; R^2 is alkyl having 1 to 4 carbon atoms; R^3 is alkyl having 2 to 6 carbon atoms; X is sulfur and X^1 is sulfur.

3,846,467
2-METHOXY-5-FLUOROBENZYL N,N-DIMETHYL-THIOLCARBAMATE

Akio Kudamatsu, Kanagawa-ken; Masao Miyamoto, and Nobuo Fukazawa, both of Tokyo, all of Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 875,546, Nov. 10, 1969, abandoned. This application Sept. 5, 1972, Ser. No. 286,621
Claims priority, application Japan, Nov. 12, 1968, 43-82249
Int. Cl. C07c *154/02*
U.S. Cl. 260—455 A 1 Claim

1. 2-Methoxy-5-fluorobenzyl N,N-dimethylthiolcarbamate of the formula



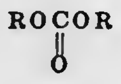
(I)

3,846,468
PROCESS FOR THE PREPARATION OF ESTERS OF CARBONIC ACID

Emilio Perrotti, and Gioacchino Cipriani, both of San Donato Milan, Itlay, assignors to Snam Progetti S.p.A., Milan, Italy

Filed Mar. 4, 1971, Ser. No. 121,193
Claims priority, application Italy, Mar. 4, 1970, 21468/70
Int. Cl. C07c *69/00*
U.S. Cl. 260—463 5 Claims

1. A process for the preparation of esters of carbonic acid having the general formula:



$$RO\underset{\overset{\|}{O}}{C}OR$$

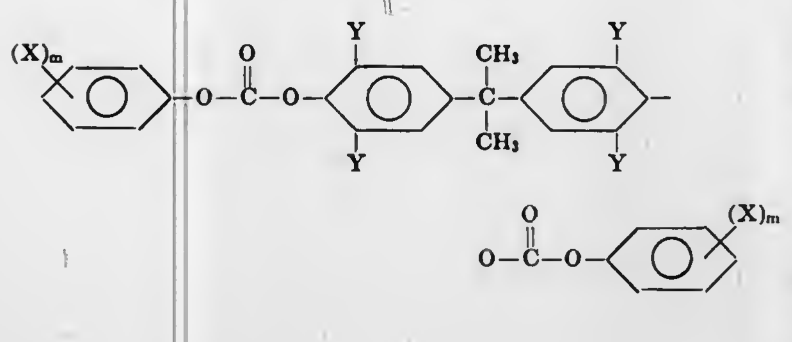
wherein R is a hydrocarbon radical selected from the class consisting of alkyl, aryl or cycloalkyl radicals characterized in that an alcohol represented by the formula ROH in which R has the aforesaid meaning is reacted with carbon monoxide and oxygen in the presence of a catalyst consisting of cuprous chloride complexed with an organic ligand selected from the group consisting of pyridine, dipyridyl, imidazole, phemanthroline alkyl or aryl, phosphines, dimethylsulfoxide, dimethylformamide, quinuchlidine, CH_3CN, C_6H_5CN, malonitrile, succinodinitrile and adiponitrile.

3,846,469
ISOPROPYLIDENE BIS(2,6-DIHALO-P-PHENYLENE) BIS(POLY-HALOPHENYL) CARBONATES

Jeffrey A. Gunsher, and R. Garth Pews, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 12, 1972, Ser. No. 261,666
Int. Cl. C07c *69/00;* **C08k** *1/36;* **C08f** *45/00*
U.S. Cl. 260—463 2 Claims

1. A compound of the general formula



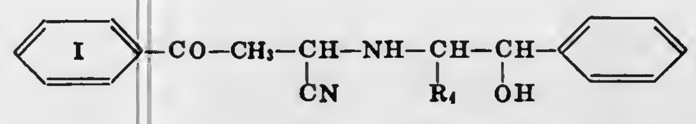
wherein
each X is independently Br,
Y is Br, and
m is an integer of 3 to 5.

3,846,470
DERIVATIVES OF 3-BENZOYL-2-(β-HYDROXYPHENETHYLAMINO)-PROPIONITRILE

Thomas Raabe, Heusenstamm uber Offenbach, Germany; Adolf Stachel, deceased, late of Frankfurt am Main-Fechenheim, Germany (by Ingeburg Lydia Katharina Stachel, heiress); Josef Scholtholt, Frankfurt am Main-Fechenheim, and Rolf-Eberhard Nitz, Bergen-Enkhein, both of Germany, assignors to Cassella Farbwerke mainkur Aktiengesellschaft, Frankfurt (Main)-Fechenheim, Germany

Filed Mar. 29, 1972, Ser. No. 239,359
Claims priority, application Germany, Apr. 2, 1971, 2116293
Int. Cl. C07c *121/50*
U.S. Cl. 260—465 E 6 Claims

1. Derivative of the 3-benzoyl-2-(β-hydroxyphenethylamino)-propionitrile having the formula



and its pharmaceutically acceptable acid addition salts, wherein R_4 stands for a member selected from the group consisting of hydrogen and methyl, and the nucleus I may have 1 – 3 substituents selected from the group consisting of mono-, di- and tri-methoxy, mono-methyl, mono-ethyl and mono-chlorine.

3,846,471
SEPARATION AND PURIFICATION OF CRUDE 1,4-DICYANO-2-BUTENE

Herbert Schwarz, Opladen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 73,751, Sept. 21, 1970, abandoned. This application July 19, 1972, Ser. No. 273,204
Claims priority, application Germany, Sept. 25, 1969, 1948458
Int. Cl. C07c *121/00, 121/30*
U.S. Cl. 260—465.8 R 3 Claims

1. In a process for the separation and purification of crude 1,4-dicyano-2-butene prepared from 1,4-dichloro-2-butene or 1,2-dichloro-3-butene or a mixture of the two by reaction with hydrocyanic acid or sodium cyanide in an aqueous acidic medium at a pH value of from 3 to 4 in the presence of a cuprous salt as a catalyst, the improvement which comprises contacting the reaction mixture at room temperature with methylene chloride, cooling the said mixture until it separates into an upper and lower layer, removing copper from said lower layer by treating said layer with an aqueous solution of hydrocyanic acid in an extraction column and recovering the 1,4-dicyanobutene from said treated lower layer by partial evaporation of the methylene chloride in said layer, followed by crystallization.

3,846,472
DEHYDROGENATION OF ORGANIC COMPOUNDS

Ulrich Bressel, Mannheim; Werner Fuchs, Ludwigshafen, and Rolf Platz, Mannheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/-Rhine, Germany

Filed Aug. 31, 1972, Ser. No. 285,247
Claims priority, application Germany, Sept. 3, 1971, 2144148
Int. Cl. C07c *121/02, 121/32, 69/54*
U.S. Cl. 260—465.9 4 Claims

1. In a process for the production of methylmethacrylate, methacrylonitrile, α-methylstyrene, styrene and vinyl-toluene by dehydrogenation of a corresponding saturated compound selected from the group consisting of methyl isobutyrate, isobutyronitrile, isopropylbenzene, ethylbenzene and ethyltoluene with iodine or iodine-yielding compounds and molecular oxygen at temperatures between 400° and 800°C, the improvement which comprises introducing the saturated compound to be dehydrogenated through a two-fluid nozzle at a speed of from 5 m/sec up to the speed of sound in this material into a mixing zone situated in a reaction zone and extending in the direction of flow, the diameter of said mixing zone being from 2 to 100 times the diameter of said nozzle and its length being from 3 to 30 times its diameter, and said mixing zone in its turn being arranged at the lower end of a circulation tube which likewise extends in the direction of flow, the diameter of said circulation tube being from 0.1 to 0.95 times the diameter of said reaction zone.

3,846,473
AMMOXIDATION PROCESS

Jer-Yu Shang, Wilmington, Del., and Raymond Wynkoop, Gladwyne, Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

Filed Sept. 6, 1972, Ser. No. 286,634
Int. Cl. C07c *121/02*
U.S. Cl. 260—465 C 6 Claims

1. A process for the vapor phase ammoxidation of hydrocarbons to nitriles which comprises reacting vapors of ammonia and said hydrocarbon under ammoxidation conditions in the presence of a molten salt eutectic mixture of V_2O_5 and K_2O, said molten salt being atomized by a nozzle in the presence of said ammonia and hydrocarbon.

3,846,474

PROCESS FOR HYDROCYANATION OF OLEFINIC COMPOUNDS

Young I. Mok, Wilmington, Del., assignor to E. I. duPont de Nemours and Company, Wilmington, Del.

Filed Oct. 2, 1973, Ser. No. 402,904

Int. Cl. C07c *121/04*

U.S. Cl. 260—465.8 R **18 Claims**

1. In a process of hydrocyanating an olefinically unsaturated organic compound of the group consisting of 3-pentenenitrile and 4-pentenenitrile under a pressure of about 0.05 to 100 atmospheres in the presence of a catalyst consisting essentially of a zerovalent nickel complex of the group consisting of $Ni(PXYZ)_4$, N-bonded nitrile complexes of the formula $Ni(PXYZ)_3R^2CN$ and olefin-bonded complexes of the formula $Ni(PXYZ)_2A$ wherein X is OR, Y and Z are R or OR and R is of the group consisting of aryl radicals and alkyl hydrocarbyl radicals of up to 18 carbon atoms, R^2 is of the group consisting of 2-butenyl, 3-butenyl and cyano-substituted alkyl radicals, and A is of the group consisting of 3-pentenenitrile and 4-pentenenitrile, wherein the R radicals of a given PXYZ ligand of $Ni(PXYZ)_3R^2CN$ and $Ni(PXYZ)_2A$ are so chosen that the ligand has a cone angle of 130° to 170°, the mole ratio of the mononitrile to the nickel complex being in the range of about 1:5 to 2000:1;

the improvement which comprises contacting the catalyst at a temperature in the range of 0°C. to 100°C. with an activated crystalline metal alumino-silicate zeolite molecular sieve having substantially uniform pore diameters in the range of about 3Å to about 13Å, the amount of molecular sieve used being about 5 percent to about 20 percent by weight based on weight of the catalyst solution.

3,846,475

10-HYDROXY PGE AND PGE

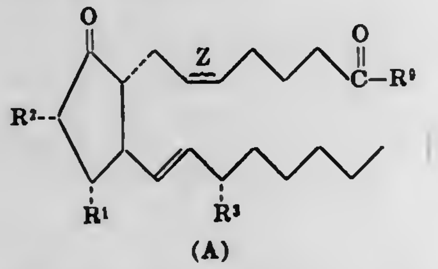
Pierre Crabbe, and Angel Guzman, both of Mexico City, Mexico, assignors to Syntex (U.S.A,) Inc., Palo Alto, Calif.

Filed Dec. 3, 1971, Ser. No. 204,681

Int. Cl. C07c *61/36*, *69/74*

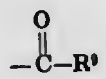
U.S. Cl. 260—468 D **13 Claims**

1. A compound of the formula



(A)

wherein R^1, R^2 and R^3 are independently selected from the group consisting of hydroxy or a hydrocarbon carboxylic acyloxy group having from two through 12 carbon atoms or a grouping selected from those consisting of methoxy, ethoxy, propoxy, 2-propoxy, cyclopropoxy, butoxy, 2-butoxy, t-butoxy, cyclobutoxy, pentoxy, 3-pentoxy, cyclopentoxy, hexoxy, cyclohexoxy, methoxymethoxy, 2-methoxy-ethoxy, 2-ethoxy-ethoxy, 2-aminoethoxy, 2-chloroethoxy, 3-fluorobutoxy, 2-acetoxyethoxy, 3-nitropropoxy, 3-aminocyclobutoxy, 4-hexylcyclohexoxy, 2-phenoxyethoxy, henoxy, tolyloxy, chlorophenoxy, *m*,m′-dimethylphenoxy, p-nitrophenoxy, β-chloropropoxy, p-aminophenoxy, teetrahydrofuran-2′-yloxy and tetrahydropyron-2′-epoxy; Z represents a saturated carbon-carbon linkage or a cis carbon= carbon double bond; R^9 is hydroxy; or the group



$$-\overset{\overset{\displaystyle O}{\|}}{C}-R^9$$

is a carbonalkoxy group having from two to 12 carbon atoms and pharmaceutically acceptable addition salts thereof.

3,846,476

N-BENZYLOXYCARBONYL-DOPA DERIVATIVES

Ado Kaiser, Neu-Frenkendorf; Wolfgang Koch, Reihen; Marcel Scheer, Basel, and Uwe Wolcke, Bottmingen, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

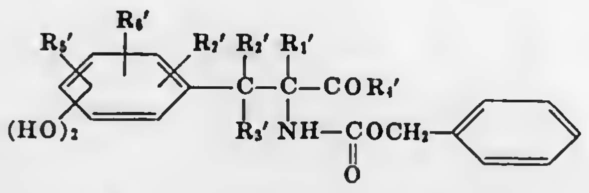
Filed Oct. 14, 1971, Ser. No. 189,371

Claims priority, application Switzerland, Oct. 30, 1970, 16045/70

Int. Cl. C07c *125/06*

U.S. Cl. 260—471 C **12 Claims**

1. A compound of the formula



wherein R_1', R_2' and R_3' individually are hydrogen or C_{1-7} alkyl; R_4' is hydroxy, C_{1-7} alkoxy, or phenyl- C_{1-7} alkoxy; R_5' or R_6' and R_7' are hydrogen, halogen, C_{1-7} alkyl, or C_{1-7} alkoxy; and the two phenolic hydroxy groups are ortho to each other and with the proviso that at least one of R_1', R_2', R_3', R_5', R_6' and R_7' is other than hydrogen when R_4' is hydroxy or pharmaceutically acceptable salts thereof.

3,846,477

2-ALKYLAMINO BENZOPHENONES

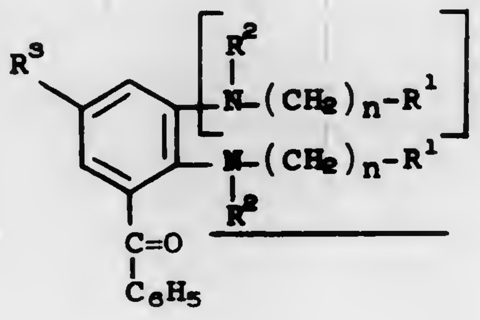
William John Welstead, Jr., and Harold Fisher Stauffer, Jr., both of Richmond, Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

Filed Sept. 20, 1972, Ser. No. 290,568

Int. Cl. C07d *125/06*

U.S. Cl. 260—482 C **4 Claims**

1. A compound selected from 2-alkylaminobenzophenones having the formula:



wherein:

R^1 is selected from carbamoyloxy, lower-alkyl-carbamoyloxy, and di-loweralkyl-carbamoyloxy,

R^2 is selected from hydrogen, lower-alkyl and carbethoxy,

R^3 is selected from halogen, hydrogen, methoxy, nitro and trifluoromethyl, and

n is selected from zero, one and two.

3,846,478

OXIDATION OF OLEFINIC COMPOUNDS TO GLYCOLS

Richard Williamson Cummins, Cranbury, N.J., assignor to FMC Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 549,158, May 11, 1966, Pat. No. 3,488,394. This application Dec. 5, 1969, Ser. No. 882,725

Int. Cl. C07c *69/66*

U.S. Cl. 260—484 R **18 Claims**

1. Process for the oxidation of olefinic compounds in which the olefinic compound is reacted in aqueous medium at a pH of at least 7 in the presence of osmium tetroxide with a hypochlorite of an alkali metal or alkaline earth metal at a temperature of about −10° to 60°C to form primarily a dihydroxy addition product of said olefinic compound.

3,846,479

ESTERS OF LACTIC ACID AND FATTY ALCOHOLS

John D. Zech, Wilmington, Del., assignor to ICI America Inc., Wilmington, Del.

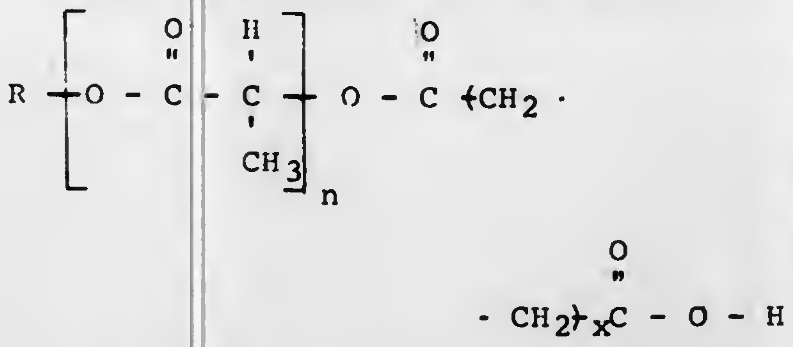
Filed Apr. 1, 1971, Ser. No. 130,465

Int. Cl. C07c *69/68*

U.S. Cl. 260—484 A **9 Claims**

1. A composition selected from the group consisting of

1. an ester characterized by the formula

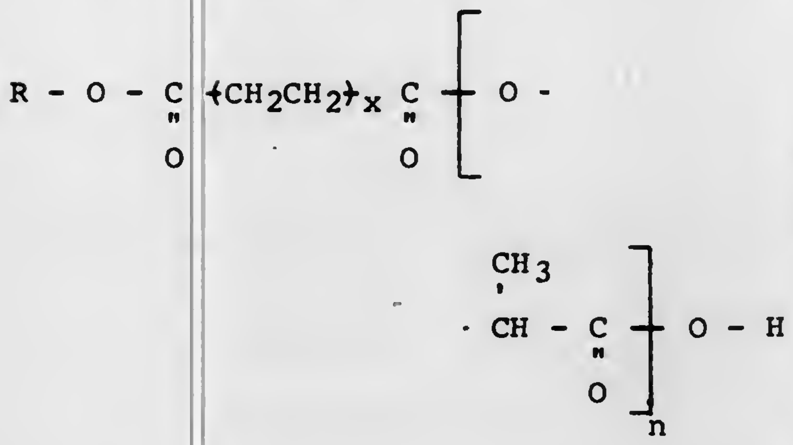


$$R\left[-O-\overset{\overset{\displaystyle O}{\|}}{C}-\underset{\underset{\displaystyle CH_3}{|}}{\overset{\overset{\displaystyle H}{|}}{C}}-\right]_n O-\overset{\overset{\displaystyle O}{\|}}{C}\left(CH_2\right. \cdot$$

$$\cdot\left.CH_2\right)_x\overset{\overset{\displaystyle O}{\|}}{C}-O-H$$

wherein R is an alkyl or alkenyl group containing from 10 to 22 carbon atoms, *n* is an integer from 1 to 4, and *x* is 1 or 2,

2. an ester characterized by the formula



$$R-O-\underset{\underset{\displaystyle O}{\|}}{C}\left(CH_2CH_2\right)_x\underset{\underset{\displaystyle O}{\|}}{C}\left[-O-\right.$$

$$\left.\cdot\underset{}{\overset{\overset{\displaystyle CH_3}{|}}{CH}}-\underset{\underset{\displaystyle O}{\|}}{C}-\right]_n O-H$$

wherein R is an alkyl or alkenyl group containing from 10 to 20 carbon atoms, *n* is an integer from 1 to 4, and *x* is 1 or 2,

3. an ester composition obtained by subjecting a mixture of succinic acid or anhydride or adipic acid, lactic acid, and a fatty alcohol to esterification reaction conditions, and
4. a potassium, calcium, or sodium salt of (1), (2), or (3).

3,846,480

CHLORPHENESIN SUCCINATE AND ALKALI METAL SALTS THEREOF

Yuichi Inai; Kanzo Okazaki, both of Tokyo; Katsutoshi Shimada, Saitama; Kengo Kagei, and Motoaki Bessho, both of Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

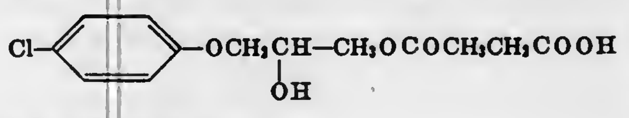
Filed Aug. 28, 1972, Ser. No. 284,357

Claims priority, application Japan, Sept. 3, 1971, 46-67494

Int. Cl. C07c *69/40*

U.S. Cl. 260—485 G **3 Claims**

1. A chlorphenesin derivative selected from the group consisting of chlorphenesin succinate having the formula



and its alkali metal salts.

3,846,481

ARYL CARBOXYLIC ACID SALTS OF DI(N-OCTADECYL)AMINE

Alexander Gaydasch, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 28, 1972, Ser. No. 284,393

Int. Cl. C07c *87/123*

U.S. Cl. 260—501.1 **4 Claims**

1. A salt of di-(n-octadecyl)amine and a phenyl carboxylic acid selected from the group consisting of benzoic and phenylalkylcarboxylic acids wherein said alkylcarboxylic acid moiety contains from 2 to 26 carbon atoms.

3,846,482

SUBSTITUTED ETHANE DIPHOSPHONIC ACIDS AND SALTS

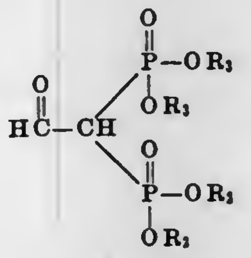
Al F. Kerst, Alma, Mich., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 27,988, April 13, 1970, Pat. No. 3,705,191. This application Aug. 23, 1972, Ser. No. 283,019

Int. Cl. C07f *9/38*; C02b *5/06*

U.S. Cl. 260—502.4 P **4 Claims**

1. An ethane diphosphonate of the formula



wherein R_3 is individually selected from the group consisting of hydrogen, alkali metal ions, alkaline earth metal ions, ammonium ions and lower alkyl amine ions.

3,846,483

SUBSTITUTED ETHANE DIPHOSPHONIC ACIDS AND SALTS AND ESTERS THEREOF

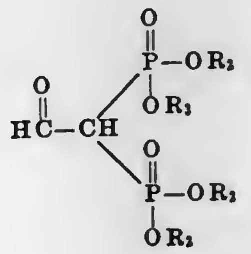
Al F. Kerst, Alma, Mich., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 27,988, April 13, 1970, Pat. No. 3,705,191. This application Aug. 23, 1972, Ser. No. 283,115

Int. Cl. C07f *9/38*; C02b *5/06*

U.S. Cl. 260—502.4 P **7 Claims**

1. An ethane diphosphonate of the formula



wherein each R_3 is individually selected from the group consisting of hydrogen, alkali metal ions, alkaline earth metal ions, ammonium ions, and lower alkyl amine ions, and R_1 and R_2 are either hydroxy or a $-CH(COOR_6)_2$ group wherein R_6 is hydrogen, an alkali metal ion or an alkyl group of 1 to 8 carbon atoms, provided that either R_1 or R_2, but not both, is always hydroxy.

3,846,484

PROCESS FOR THE PREPARATION OF 1,2,3,4,9,12-HEXAHYDRO-PHENANTHRENES

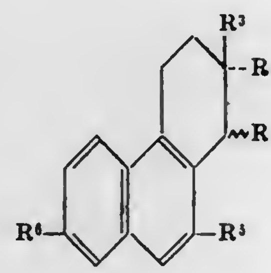
Norman H. Dyson, Palo Alto, Calif., assignor to Syntex Corporation, Panama, Panama

Filed Dec. 14, 1970, Ser. No. 98,046

Int. Cl. C07c *51/36, 69/76*

U.S. Cl. 260—514.5 10 Claims

1. The process which consists essentially of reducing a compound of the following formula:



wherein

R^1 is methyl or ethyl;

R^2 is carboxy, carb(lower)alkyloxy or hydroxymethyl;

R^3 is methyl or ethyl;

R^5 is hydrogen or methyl; and

R^6 is hydroxy or the acetate, propionate, butyrate, trimethylacetate, valerate, methylethylacetate, caproate, t-butylacetate, 3-emthylpentanoate,enanthate, caprylate, triethylacetate, pelargonate, decanoate, undecanoate, benzoate, phenylacetate, diphenylacetate, cyclopentylpropionate, methoxyacetate, aminoacetate, diethylaminoacetate, trichloroacetate, β-chloropropionate, bicyclo [2.2.2] octane-I-carboxylate, or adamantoate ester thereof, with an alkali metal in a lower alkyl amine, di(-lower alkyl) amine, or liuid ammonia and in the absence of lower monohydric alcohol and acidic proton donor, to prepare the corresponding 1,2,3,4,9,12-hexahydrophenanthrene.

3,846,485

PHENYLACETIC ACID DERIVATIVES, A METHOD FOR THEIR PREPARATION AND THE APPLICATIONS THEREOF

Jacques Georges Maillard, Paris, and Michel Langlois, Buc, both of France, assignors to Laboratories Jacques Logeais, Issy-les-Moulineaux, France

Filed Nov. 11, 1971, Ser. No. 197,912

Claims priority, application France, Nov. 24, 1970, 70.42109

Int. Cl. C07c *63/00*

U.S. Cl. 260—515 R 2 Claims

1. A compound selected from the group consisting of trans-2-[4-(2′-methyl-cyclohexyl)-phenyl] propionic acid and its non-toxic salts.

3,846,486

WATER-SOLUBLE TETRACYCLINES

Israel Marcus, Hemonylaan 17, Amsterdam, Netherlands

Filed June 10, 1970, Ser. No. 45,267

Claims priority, application Great Britain, June 12, 1969, 29968/69

Int. Cl. C07c *103/19*

U.S. Cl. 260—519 10 Claims

1. In a method of manufacturing a water-soluble tetracycline complex, which comprises the steps of: reacting a first component selected from the group consisting of tetracycline, chlortetracycline and oxytetracycline with a salicylate component selected from the group consisting of methyleneaminosalicylates and methyleneamino-salicylic acid, in methanol to thereby form a precipitate of said complex; filtering said precipitate to remove same from said methanol; washing said complex with methanol, and drying said complex, the improvement comprising performing said reaction in an inert atmosphere.

3,846,487

PROCESS FOR THE PRODUCTION OF FIBER GRADE TEREPHTHALIC ACID

Motoo Shigeyasu; Kenzo Kuihara, and Michio Kuki, all of Ehime, Japan, assignors to Maruzen Oil Co., Ltd., Osaka, Japan

Filed Nov. 1, 1971, Ser. No. 194,468

Claims priority, application Japan, Nov. 1, 1970, 45-96334

Int. Cl. C07c *63/26, 51/20*

U.S. Cl. 260—524 R 22 Claims

1. A process for producing terephthalic acid useful for direct polymerizations comprising subjecting *p*-xylene to a liquid-phase oxidation with oxygen or an oxygen-containing gas in a lower aliphatic carboxylic acid solvent in the presence of a cobalt-manganese-bromine catalyst, said catalyst meeting the following conditions:

a. the amount of cobalt is in a range of 0.05 to 0.50 percent by weight based on the weight of lower aliphatic carboxylic acid solvent,

b. the amount of manganese is in a range of 1 to 20 percent by weight based on the weight of cobalt,

c. cobalt bromide, free bromine, or a mixture thereof is the source of bromine, and

d. the weight ratio of bromine to cobalt is in the range of 1.5 : 1 to 6.0 : 1.

3,846,488

ACCELERATING SEPARATION RATE OF TWO LIQUID PHASES IN THE EXTRACTION OF AQUEOUS ACRYLIC ACID

Susumu Otsuki; Kyoichi Hori, and Isao Miyanohara, all of Shin Nanyo, Japan, assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jan. 6, 1972, Ser. No. 215,911

Int. Cl. C07c *53/00*

U.S. Cl. 260—526 N 2 Claims

1. A method of accelerating the separation rate of an organic solvent phase and an aqueous phase in the organic solvent extraction of an aqueous solution of acrylic acid or methacrylic acid which comprises adding an alkali metal salt or ammonium salt to the aqueous solution containing the acid, the amount of salt being from 0.05 to 1 percent by weight of the combined weights of the solvent, acid, water, and any additional solutes therein, and separating the phases.

3,846,489

PROCESS FOR PRODUCTION OF BETA-ALANINE

Hideyuki Uesugi, and Tsutomu Takeda, both of Yokosuka, Japan, assignors to Tokyo Fine Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1971, Ser. No. 209,338

Claims priority, application Japan, Dec. 29, 1970, 45-120883; Dec. 29, 1970, 45-120884; Dec. 29, 1970, 45-120885; Dec. 29, 1970, 45-120886

Int. Cl. C07c *99/00*

U.S. Cl. 260—534 C 4 Claims

1. A process for producing β-alanine by the reaction of acrylic acid or methyl or ethyl acrylate with aqueous ammonia at a temperature of 100°C to 200°C for a time of 1 to 5 hours, which consists essentially of effecting the reaction in the copresence of ammonium carbonates and 3,3′-imino dipropionic acid, in which said ammonium carbonates are used in an amount of 0.5 to 1.5 moles on the basis of the carbonate ion per mole of acrylic acid or methyl or ethyl acrylate and additionally 0.5 to 1.5 moles of said carbonate ion are used for each mole of 3,3′-imino dipropionic acid, said 3,3′-imino dipropionic acid being added in an amount of 0.5 to 5 parts by weight to 1 part by weight of acrylic acid or methyl or ethyl acrylate; and wherein the aqueous ammonia is used in a concentration 20 percent or more such that the aqueous ammonia is present in an amount of 5 moles or more per mole of acrylic acid or methyl or ethyl acrylate and an additional 5 moles or more per mole of 3,3-imino dipropionic acid.

3,846,490

METHOD OF PRODUCING ZETA-AMINOLEVULINIC ACID HYDROCHLORIDE

Nina Ivanovna Aronova, Peschanaya ulitsa, 12, kv. 54; Nina Nikolaevna Makhova, Belomorskaya ulitsa 22, korpus 2, kv. 7; Sergei Ivanovich Zavyalov, ulitsa Garibaldi 23/56, korpus 4, kv. 54; Jury Borisovich Volkenshtein, ulitsa Stanislavskoyo 12/9, kv. 37a, and Galina Mikhailovna Kunitskaya, Novocheremushkinskaya ulitsa 50, korpus 1, kv. 24, all of Moscow, U.S.S.R.

Filed Mar. 1, 1972, Ser. No. 230,984

Int. Cl. C07c *99/00, 101/04*

U.S. Cl. 260—534 R 2 Claims

1. A method of producing δ-aminolevulinic acid hydrochloride comprising the steps of acylating hippuric acid with monosuccinate acyl chloride in a medium of γ-picoline at a temperature of −5° to 0°C to form a c-acyl derivative, hydrolyzing the c-acyl derivative and isolating the δ-aminolevulinic acid hydrochloride.

3,846,491

DERIVATIVES OF N-2-HYDROXYPHENYLTHIOUREA

Lubomir Mihaylov Shindarov; Angel Simenov Galabov; Dimitar Simov Antonov; Nadejda Atanasova Neykova; Krum Atanasov Davidkov; Vesselina Dimitrova Vassileva; Veneta Borisova Kalcheva, and Dushka Staneva Stoycheva, all of Sofia, Bulgaria, assignors to Medizinska Akademia, Sofia, Bulgaria

Filed Aug. 23, 1972, Ser. No. 282,917

Claims priority, application Bulgaria, Aug. 23, 1971, 17223

Int. Cl. C07c *157/08*

U.S. Cl. 260—552 R 2 Claims

1. N-methyl-N-(2-hydroxy-5-chlorophenyl)-N′-benzylthiourea.

3,846,492

AMIDE PRODUCTION

John R. Norell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 827,024, May 22, 1969, which is a division of Ser. No. 560,859, June 27, 1966, abandoned. This application May 15, 1973, Ser. No. 360,417. The portion of the term of this patent subsequent to May 26, 1987, has been disclaimed.

Int. Cl. C07c *103/08*

U.S. Cl. 260—558 R 10 Claims

1. A process for producing a secondary amide comprising contacting an olefinic hydrocarbon selected from straight chain, branched chain and monocyclic compounds having at least one point of ethylenic unsaturation and having up to and including 30 carbon atoms per molecule with a cyanide of the formula R″CN wherein R″ is selected from hydrogen and hydrocarbon radicals having up to 24 carbon atoms selected from the group consisting of alkyl, cycloalkyl, aryl, alkaryl, and aralkyl radicals in the presence of hydrogen fluoride, the mole ratio of hydrogen fluoride to hydrocarbon being at least 1:1, in a reaction diluent comprising sulfur dioxide, and hydrolyzing the reaction mixture thus formed to form an amide.

3,846,493

NITRO SUBSTITUTED ACRYLIC ACID AMIDES

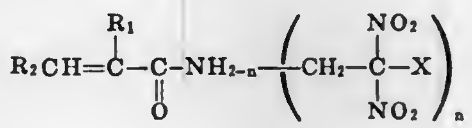
William H. Gilligan, Oxon Hill, and Horst G. Adolph, Beltsville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 28, 1971, Ser. No. 110,626

Int. Cl. C07c *103/12*

U.S. Cl. 260—561 N 9 Claims

1. A compound of the formula



$$R_2CH{=}\overset{R_1}{\underset{}{C}}-\underset{O}{\overset{}{\underset{\|}{C}}}-NH_{2-n}-\left(CH_2-\overset{NO_2}{\underset{NO_2}{C}}-X\right)_n$$

wherein n is an interger from 1 to 2 inclusive, X is selected from the group consisting of F, NO_2, H and CH_3, R_1 is selected from the group consisting of H and CH_3 and R_2 is selected from the group consisting of H and lower alkyl of 1–4 carbon atoms.

3,846,494

DIALKYLAMIDE ADDUCTS OF LITHIUM CYANIDE

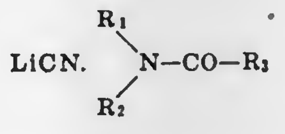
Doyt K. Hoffman, and Ricardo O. Bach, both of Gastonia, N.C., assignors to Gulf Resources & Chemical Corporation, Houston, Tex.

Division of Ser. No. 73,646, Sept. 18, 1970, abandoned. This application Feb. 23, 1972, Ser. No. 228,781

Int. Cl. C07c *103/30*

U.S. Cl. 260—561 R 3 Claims

1. An adduct in crystalline form corresponding to the formula



$$LiCN.\ \begin{matrix}R_1\\ \diagdown\\ \end{matrix}\!N-CO-R_3\ \text{with}\ R_2\ \text{on}\ N$$

where R_1 and R_2 are the same or dissimilar lower alkyl, and R_3 is selected from the group consisting of hydrogen and lower alkyl.

3,846,495

CONVERSION OF NITRILE TO ITS CORRESPONDING AMIDE USING IMPROVED COPPER OXIDE CATALYST

Jerry J. Svarz, La Grange, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Sept. 25, 1972, Ser. No. 292,216

Int. Cl. C07c *103/08*

U.S. Cl. 260—561 N 4 Claims

1. A process for catalytically hydrolyzing acrylonitrile to acrylamide, the improvement comprising contacting a reactant feed of acrylonitrile in the presence of water in a liquid phase with an activated copper oxide prepared by the following steps:

A. contacting an aqueous slurry of copper oxide and powdered alumina for ½ to 3 hours at a temperature within the range 0°–90°C with a dilute aqueous solution of from 5–20 percent by weight of an alkali metal hydroxide to yield a slurry containing 1 to 75 percent by weight of copper oxide and 1.0 to 90 percent by weight based on said copper oxide of powdered aluminum to form an activated copper oxide oxide catalyst; and

B. filtering, washing and recovering said copper oxide catalyst.

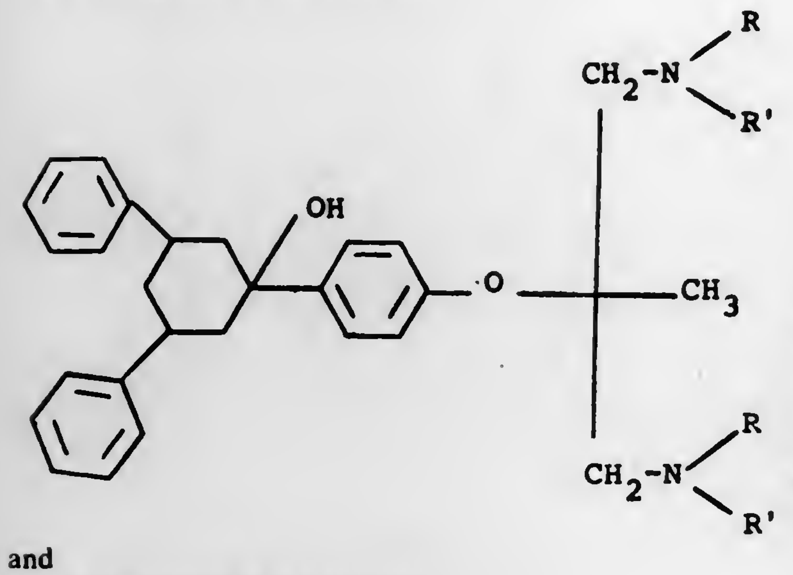
3,846,496
2-METHYL-1,3-PROPANEDIAMINE DERIVATIVES

Mario G. Buzzolini, Morristown, N.J., assignor to Sandoz-Wander Inc., Hanover, N.J.

Division of Ser. No. 42,897, June 2, 1970, Pat. No. 3,711,510.
This application Oct. 13, 1972, Ser. No. 297,237
Int. Cl. C07d ***27/02***
U.S. Cl. 260—570.7 **5 Claims**

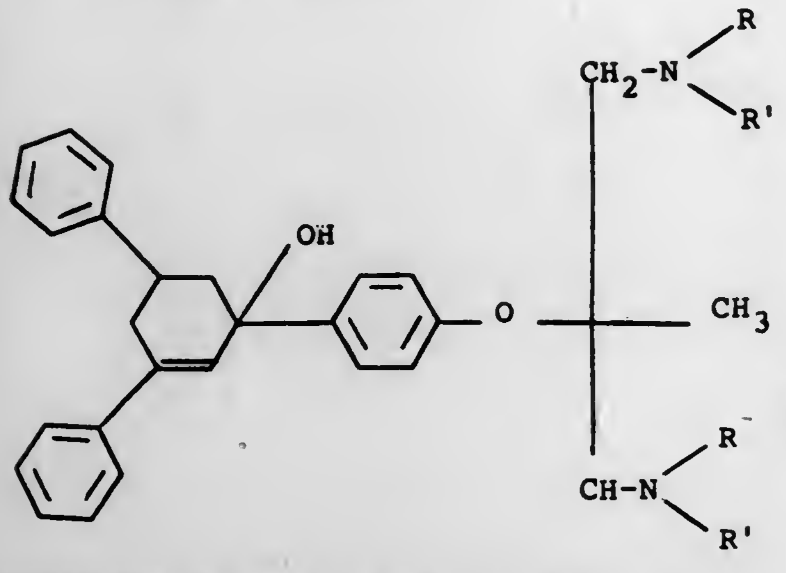
1. A compound selected from the group of:

a. a compound of the formula:



and

b. a compound of the formula:



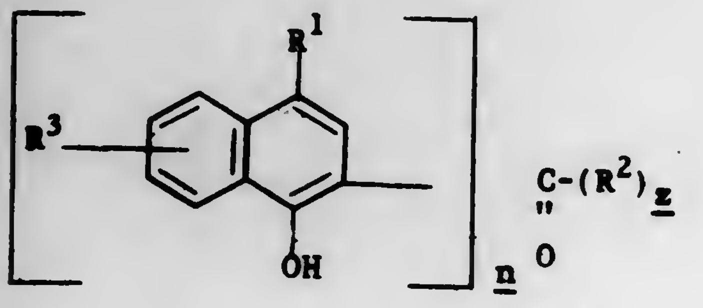
wherein each of R and R' is independently lower alkyl, or together with the nitrogen to which they are attached form a saturated heterocyclic ring having five to seven ring atoms of which one is nitrogen and the balance are carbon atoms.

3,846,497
PRODUCTION OF α-NAPHTHOLS

Walter Himmele, Walldorf, and Werner Aquilla, Ludwigshafen, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

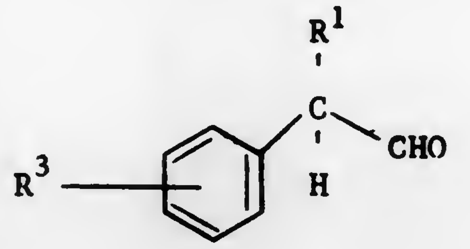
Filed Feb. 17, 1972, Ser. No. 227,271
Claims priority, application Germany, Feb. 19, 1971, 2107958
Int. Cl. C07c ***49/82***
U.S. Cl. 260—592 **7 Claims**

1. A process for the production of α-naphthols of the formula:



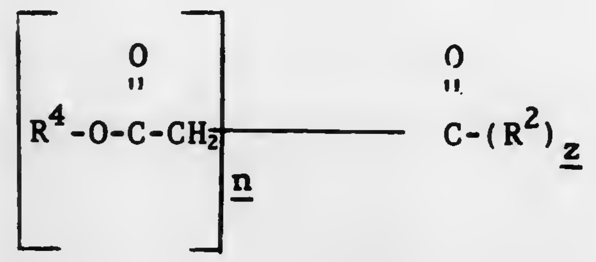
(I)

in which R^1 and R^2 are identical or different alkyls of one to seven carbon atoms, R^3 is hydrogen or a condensed aromatic hydrocarbon radical, *n* and *z* are both 1, or R^1 and R^3 are common members of one or two five or six membered cycloaliphatic or aromatic hydrocarbon rings which in each case are condensed on to the aryl nucleus bearing R^3 wherein an arylacetaldehyde of the formula



(II)

in which R^1 and R^3 have the meanings given above is reacted in the presence of a catalyst selected from the group consisting of amine and a carboxylic acid, an amine and an inorganic acid selected from the group consisting of hydrochloric acid and phosphoric acid and salts or carboxamides of said amines and carboxylic acids, with a β-dicarbonyl compound of the formula:



(III)

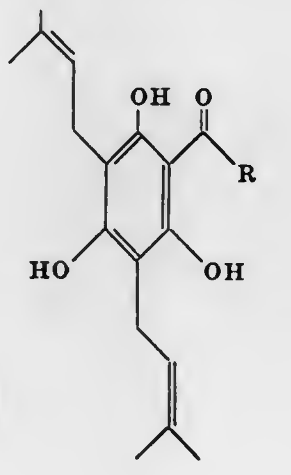
in which R^2, *n*, and *z* have the meanings given above, and R^4 is an alkyl of one to four carbon atoms.

3,846,498
PROCESS FOR PREPARATION OF 3,5-BIS (3,3-DIMETHALLYL)-2,4,6-TRIHYDROXY-PHENONES

Jost Wild, Zurich, and Trudi Sigg-Grutter, Wintherthur, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

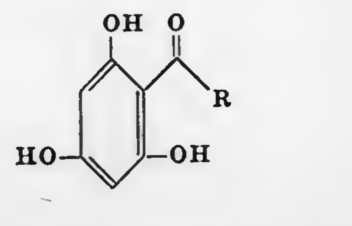
Filed July 12, 1973, Ser. No. 378,477
Claims priority, application Switzerland, July 20, 1972, 10870/72
Int. Cl. C07c ***49/82***
U.S. Cl. 260—592 **13 Claims**

1. A process for the manufacture of compounds of the formula



(I)

wherein R represents a C_{1-5} alkyl group, which process comprises reacting in an inert solvent a compound of the formula



(II)

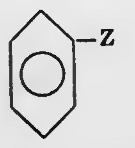
wherein R has the significance given earlier in this claim, with prenyl bromide or prenyl chloride in a mole ratio of at least 2 of the latter to 1 of II under alkaline conditions in the presence of at least 0.5 equivalent of magnesium oxide based on the prenyl bromide or prenyl chloride and in the presence of at least 1 percent of the amount of compound II of an alkali metal iodide, an alkaline earth metal iodide or a tetraalkylammonium iodide.

3,846,499
MANUFACTURE OF HYDROCARBYL HYDROPEROXIDE

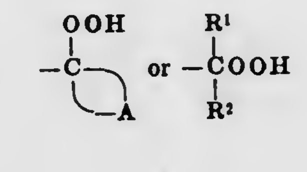
Peter A. Riedl, Wien, Austria, assignor to Texaco Inc., New York, N.Y.

Filed Oct. 22, 1970, Ser. No. 83,156
Int. Cl. C07c ***73/06***
U.S. Cl. 260—610 B **7 Claims**

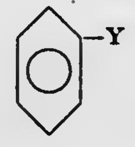
1. A method of producing a hydrocarbyl hydroperoxide of the formula:



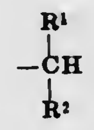
where Z is a radical selected from the group consisting of



where A is α, Ω alkylene of from three to eight carbons, R^1 and R^2 are n-alkyl and total 3 to 39 carbons consisting essentially of contacting a hydrocarbon of the formula:



where Y is cycloalkyl of from four to nine carbons or



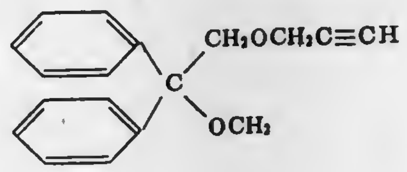
where R^1 and R^2 are as heretofore defined with a stoichiometric excess of oxygen containing gas at a first reaction temperature between 130° and 150°C. for a period of between about 1 and 3 hours and subsequently continuing said contacting at a second reaction temperature between 105° and 125°C. for a period of between about 2 and 4 hours.

3,846,500
DIPHENYLMETHANE DERIVATIVES

Shigeyoshi Kitamura, Toyonaka; Hajime Hirai, Minoo; Yositosi Okuno, Toyonaka, and Keimei Fujimoto, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Division of Ser. No. 20,058, March 16, 1970, Pat. No. 3,702,864. This application June 15, 1972, Ser. No. 263,243
Claims priority, application Japan, Mar. 29, 1969, 44-24144; Apr. 12, 1969, 44-28414
Int. Cl. C07c ***43/20***
U.S. Cl. 260—611 A **5 Claims**

1. A compound represented by the formula,



3,846,501
PREPARATION OF ALKOXY SUBSTITUTED HYDROXY AROMATIC COMPOUNDS

Jerome A. Vesely, Park Ridge, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 31, 1972, Ser. No. 285,162
Int. Cl. C07c ***43/20***
U.S. Cl. 260—613 D **8 Claims**

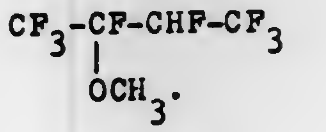
1. A process for the preparation of an alkoxy substituted hydroxy aromatic compound which comprises contacting hydrogen peroxide and a primary aliphatic alcohol of from one to about nine carbon atoms with a hydroxy aromatic compound selected from the group consisting of phenol, naphthol, alkyl phenols and naphthol containing one to four carbon atoms in the alkyl group, pyrocatechin, resorcinol, hydroquinone, hydroxyhydroquinone, phloroglucinol, pyrogallol, 1,2-dihydroxynaphthalene, 1,3-dihydroxynaphthalene, 1,4-dihydroxynaphthalene, and 2,5-dihydroxynaphthalene, said compounds being contacted at a temperature of from about 0° to about 50°C. and a pressure of from ambient to about 100 atmospheres and in the presence of a catalytic amount of a mixture consisting essentially of more than 60 percent hydrogen fluoride and at least about 15 weight percent of carbon dioxide.

3,846,502
2-METHOXY-3-H-PERFLUOROBUTANE

George L. Moore, South Plainfield, N.J., assignor to Airco, Inc., New York, N.Y.

Division of Ser. No. 168,380, Aug. 2, 1971, Pat. No. 3,723,629.
This application July 25, 1972, Ser. No. 275,020
Int. Cl. C07c ***43/00***
U.S. Cl. 260—614 F **1 Claim**

1. 2-Methoxy-3-hydroperfluorobutane of the formula



$$CF_3-\underset{\underset{\displaystyle OCH_3.}{|}}{CF}-CHF-CF_3$$

3,846,503
SATURATED HYDROCARBON ISOMERIZATION PROCESS

Louis Schmerling, and Jerome A. Vesely, both of Riverside, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 258,133, May 30, 1972, abandoned. This application May 25, 1973, Ser. No. 364,207

Int. Cl. C07c *5/22, 5/28*

U.S. Cl. 260—666 P **6 Claims**

1. A process for isomerizing a saturated hydrocarbon selected from the group consisting of cyclohexane, cycloheptane, cyclooctane, methylcyclohexane, methylcyclooctane, decahydronaphthalene and bicyclohexyl, which comprises contacting said hydrocarbon, at a temperature of from about 0°C. to about 300°C. and a pressure of from about 1 atmosphere to about 200 atmospheres, with a Friedel-Crafts metal halide selected from the group consisting of aluminum and zirconium chlorides and bromides and boron trifluoride in admixture with a chloride or bromide of copper in the cupric valence state, chromiun in the chromic valence state, or tungsten in its +6 valence state, and recovering the resultant isomerized hydrocarbon.

3,846,504
SATURATED HYDROCARBON ISOMERIZATION PROCESS

Louis Schmerling, and Jerome A. Vesely, both of Riverside, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 258,133, May 30, 1972, abandoned. This application May 25, 1973, Ser. No. 364,206

Int. Cl. C07c *5/28*

U.S. Cl. 260—666 P **1 Claim**

1. A process for the isomerization of cyclooctane which comprises contacting the cyclooctane with a mixture of zirconium chloride and cupric chloride at a temperature of about 0°C. to about 300°C. and a pressure of about 1 atmosphere to about 200 atmospheres, and recovering the resultant cyclooctane isomer.

3,846,505
HF ALKYLATION INCLUDING RECYCLE AND FURTHER ALKYLATION OF THE ALKYLATE-CONTAINING HYDROCARBON

Robert F. Anderson, La Grange Park, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 236,049, March 20, 1972, Pat. No. 3,787,518. This application Oct. 18, 1972, Ser. No. 298,708

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.45 **7 Claims**

1. A process for producing an alkylation reaction product from an isoparaffinic reactant and an olefin-acting reactant which comprises the steps of:

a. contacting said isoparaffinic reactant with a first portion of said olefin-acting reactant and with a first hydrogen fluoride alkylation catalyst in a first alkylation zone at alkylation conditions;
b. removing the resultant reaction mixture from said first zone and separating the same into a catalyst phase and a hydrocarbon phase containing alkylate and unreacted isoparaffinic reactant;
c. recycling a first portion of said hydrocarbon phase to said first zone;
d. commingling a second portion of said hydrocarbon phase with a second portion of said olefin-acting reactant and with a second hydrogen fluoride alkylation catalyst, said first and second portions of the hydrocarbon phase being of the same composition and both containing alkylate and unreacted isoparaffinic reactant;
e. subjecting the mixture formed in step (d) to alkylation conditions in a second alkylation zone; and
f. recovering said alkylation reaction product from the effluent of said second zone.

3,846,506
RAPID CURING ORGANOPOLYSILOXANE COMPOSITIONS

Robert Muir Gibbon, West Kilbride, and Edward Keith Pierpoint, Largs, both of Scotland, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 847,746, Aug. 5, 1969, abandoned. This application Nov. 9, 1973, Ser. No. 414,522

Claims priority, application Great Britain, Aug. 21, 1968, 40019/68

Int. Cl. C08g *47/04, 47/10*

U.S. Cl. 260–825 **10 Claims**

1. A composition comprising 100 parts by weight of a diorganopolysiloxane having at least two hydroxyl groups attached to different silicon atoms per molecule and of viscosity not less than 3,000 cS at 25°C., 1 to 20 parts by weight of an organohydrogen-polysiloxane of viscosity not greater than 1,000 cS at 25°C. and having at least one silicon-bonded hydrogen atom for every three silicon atoms, the organo groups in the said siloxanes being selected from the group consisting of alkyl, aryl, aralkyl, alkenyl, cycloalkyl and cycloalkenyl groups, 1 to 20 parts by weight of an aminoalkoxy silicon compound of the general formula

$$R_a^7(R^4R^5NR^8O)_bSiO_{(4-a-b)/2}$$

where R^4 and R^5, which may or may not be the same, are hydrogen or alkyl, cycloalkyl, aminoalkyl or hydroxyalkyl groups, R^7 is a hydrocarbyl or hydrocarbyloxy group, R^8 is an alkylene group or consists of alkylene groups joined by NR^6 groups or oxygen atoms where R^6 is hydrogen or an alkyl group having not more than 5 carbon atoms, a is a number from 0 to 2, b is a number from 0.1 to 4, a + b is not greater than 4 and not less than 1.95 and the total number of carbon atoms in the groups R^8, R^4, R^5 and R^7 is not greater than 24, and 5 to 20 parts of a tin compound of the general formula

$$YO(R_2SnO)_nY$$

where R is an alkyl group having not more than 20 carbon atoms, Y is R′R″C=N- where R′ is a hydrocarbyl group or hydrogen and R″ is a hydrocarbyl group, and n is 1, 2 or 3, in an organic solvent.

3,846,507
POLYAMIDE BLENDS WITH ONE POLYAMIDE CONTAINING PHTHALATE SULFONATE MOIETIES AND TERPHTHALATE ON ISOPHTHALATE RESIDUES

Ernest C. Thomm, and Barry R. Knowlton, both of Arnprior, Ontario, Canada, assignors to Union Carbide Canada Limited, Toronto, Ontario, Canada

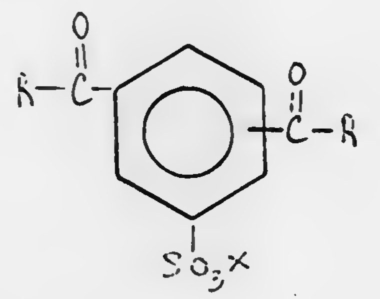
Filed Apr. 6, 1972, Ser. No. 241,838

Int. Cl. C08g *41/04*

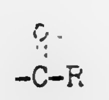
U.S. Cl. 260—857 TW **8 Claims**

1. A process for producing a fibre forming polyamide having improved basic dye receptivity and reduced acid dye receptivity, which process comprises:

A. melt polymerizing
 1. a compound of the formula:



wherein R is OH, Cl, OCH_3 or OC_2H_5 and X is Li, Na, K or NH_4 and wherein the



$$-\overset{O}{\overset{\|}{C}}-R$$

groups are not ortho relative to each other, with
 2. components selected from the group consisting of (a) and (b) wherein components (a) are
 a. (i) a compound selected from the group consisting of isophthalic acid and terephthalic acid and their polyamide-forming derivatives in an amount of from 1.0 mole to 9.0 moles per mole of compound (1), and
 a. (ii) a diamine having from 2 to 12 carbon atoms in an amount equal to the mole equivalent of compound (1) plus compound (a)(i); and components (b) are
 b. (i) a compound selected from the group consisting of isophthalic acid and terephthalic acid and their polyamide-forming derivatives, and
 b. (ii) a compound selected from the group consisting of a monoaminomonocarboxylic acid having from 2 to 12 carbon atoms, a lactam of said monoaminomonocarboxyic acid, an aliphatic dicarboxylic acid having from 2 to 12 carbon atoms and a polyamide-forming derivative of said aliphatic dicarboxylic acid, the amount of compound (b)(i) plus the amount of compound (b)(ii) being from 1.0 mole to 9.0 moles per mole of compound (1) with at least 0.25 moles being of compound (b)(i), and
 b. (iii) a diamine having from 2 to 12 carbon atoms, in an amount equal to the mole equivalent of compound (1) plus compound (b)(i), and plus compound (b)(ii) when (b)(ii) is an aliphatic dicarboxylic acid or its polyamide forming derivative to produce a polyamide intermediate having from 10 mole percent to 50 mole percent of sulphonate units based on the recurring units of the polymer, and

B. blending and melt-extruding said polyamide intermediate with from 5 to 95 percent by weight of the blend of normal fibre-forming polyamide in an amount sufficient to produce a fibre-forming polyamide having from 20 to 100 sulphonate gm. equivalents per 10^6 grams of total polyamide and from 35 to 80 amine gm. equivalents per 10^6 grams of total polyamide.

3,846,508
FIRE RETARDANT POLYURETHANES CONTAINING TRICHLOROETHYLENE/VINYL ACETATE COPOLYMER

Dietrich H. Heinert, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 1, 1973, Ser. No. 384,661

Int. Cl. C08g *41/04*

U.S. Cl. 260—859 R **3 Claims**

1. A polyurethane plastic containing a flame retarding amount of a copolymer said amount being in the range from about 1 to about 50 weight percent based on the weight of the polyurethane, and said copolymer consisting essentially of from about 33.3 to about 66.7 mole percent of trichloroethylene and from about 33.3 to about 66.7 mole percent of vinyl acetate wherein from 0 to about 100 mole percent of the copolymerized vinyl acetate is hydrolyzed to vinyl alcohol or is hydrolyzed and then re-esterified with a carboxylic acid, said copolymer having a molecular weight in the range from about 300 to about 20,000.

3,846,509
ACRYLONITRILE-ACRYLATE COPOLYMERS REINFORCED WITH GRAFTED BUTADIENE RUBBER

Gerald Michael Saluti, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 27, 1971, Ser. No. 193,189

Int. Cl. C08f *15/38*

U.S. Cl. 260—876 R **10 Claims**

1. A composition comprising from about 5 to about 30 percent, by weight, of (1) polybutadiene rubber grafted with acrylonitrile and from about 20 to about 80 percent, by weight, of an alkyl acrylate, the alkyl group thereof having from 2–4 carbon atoms, inclusive, the rubber to monomer ratio ranging from about 3 to 1 to about 1 to 2, and from about 70 to about 95 percent, by weight, of (2) a copolymer of (A) from about 60 to about 80 percent, by weight, of acrylonitrile and (B) from about 20 to about 40 percent, by weight, of a lower alkyl acrylate or methacrylate, the alkyl group thereof having 1–3 carbon atoms, inclusive, the number of carbon atoms in the alkyl group of the grafted acrylate of (1) being more than the number of carbon atoms in the alkyl group of the copolymerized acrylate or methacrylate of (2).

3,846,510
NON CROSS-LINKED POLYACRYLATE AS IMPACT MODIFIER

Robert L. Lauchlan, Granger, Ind., and Hugh E. Snodgrass, Arcadia, Calif., assignors to Uniroyal, Inc., New York, N.Y.

Filed Mar. 15, 1972, Ser. No. 235,072

Int. Cl. C03f *15/18*

U.S. Cl. 260—876 R **8 Claims**

1. A blend composition having improved impact strength and processability comprising:

A. between about 80 and 99 percent by weight of a matrix polyblend consisting essentially of
 a. between 10 and 35 percent by weight of a graft copolymer consisting essentially of a spine of
  i. 50 to 85 percent by weight of alkyl acrylate having four to eight carbon atoms in the alcohol component of the ester;
  ii. 10 to 40 percent by weight of vinyl alkyl ethers, said alkyl group containing one to eight carbon atoms; and
  iii. 5 to 20 percent by weight of acrylonitrile; said spine having been grafted with 10 to 90% by weight, (based upon the spine) of styrene and acrylonitrile in the ratios between 60:40 and 90:10 respectively, and
 b. between 90 and 65 percent of a separately prepared copolymer resin of styrene and acrylonitrile, having monomer ratios between 60:40 and 90:10 respectively, in admixture with

B. between about 1 and 20% of a non-cross linked polyacrylate elastomer formed by the polymerization of monomeric alkyl esters of acrylic acid, free of substitutents in either the alkyl group or the acrylic acid and containing up to 8 carbon atoms in the alkyl group.

3,846,511
RESINOUS ADHESIVES AND PRODUCTION THEREOF

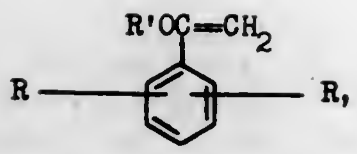
Harold Wayne Hill, Jr., and Charles W. Moberly, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 19, 1972, Ser. No. 290,313

Int. Cl. C08f *15/22, 19/02, 19/18*

U.S. Cl. 260—880 R **8 Claims**

1. A process of preparing graft copolymers comprising copolymerizing (a) an alpha-alkoxystyrene represented by the formula

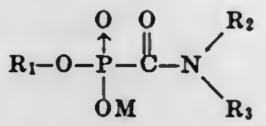


wherein each R is selected from hydrogen, methyl, and ethyl, and R′ is an alkyl radical having 1 to 6 carbon atoms, and (b) acrylonitrile and/or methacrylonitrile in (c) a solution or liquid suspension of a synthetic rubber prepared by polymerization of conjugated dienes or copolymerization of conjugated dienes with another monomer in the presence of a free radical polymerization initiator wherein the reactants charged to the polymerization reactor based on total weight of monomers (a) and (b) and rubber in (c) are in the range 45–65 weight percent alpha-alkoxystyrene, 15–30 weight percent acrylonitrile and/or methacrylonitrile, and 15–35 weight percent rubber.

3,846,512
CARBAMOYLPHOSPHONATES

William P. Langsdorf, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 85,221, Oct. 29, 1970, , which is a continuation-in-part of Ser. No. 803,962, March 3, 1969, abandoned, which is a continuation-in-part of Ser. No. 731,732, May 24, 1968, Pat. No. 3,627,507. This application Aug. 25, 1972, Ser. No. 283,769
Claims priority, application Germany, Aug. 26, 1971, 2142768
Int. Cl. C07f *9/40;* **A01n** *5/00*
U.S. Cl. 260—943 **5 Claims**

1. A compound of the formula:

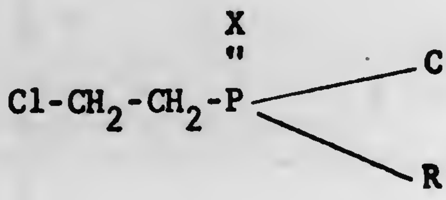


wherein:
- R_1 is alkyl of one through six carbon atoms, chloroalkyl of one through six carbon atoms containing up to three chlorine atoms, bromoalkyl of one through six carbon atoms containing up to three bromine atoms, alkoxy alkyl of three through seven carbon atoms, alkenyl of two through six carbon atoms, alkynyl of three through four carbon atoms, phenyl or benzyl;
- R_2 is hydrogen or methyl;
- R_3 is hydrogen or methyl;
- M is selected from the group consisting of ammonium, hydrogen, sodium, lithium, potassium, calcium, magnesium, manganese, or barium.

3,846,513
2-CHLOROETHANE-(THIONO)-PHOSPHONIC ACID ESTERS

Wolfgang Hofer, Wuppertal-Vohwinkel; Reinhard Schliebs, Cologne; Robert Rudolf Schmidt, Leverkusen, and Ludwig Eue, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Sept. 29, 1970, Ser. No. 76,594
Claims priority, application Germany, Oct. 4, 1969, 1950099
Int. Cl. C07f *9/34*
U.S. Cl. 260—960 **5 Claims**

1. 2-Chloroethanephosphonic acid and 2-chloroethanethionophosphonic acid compound of the general formula

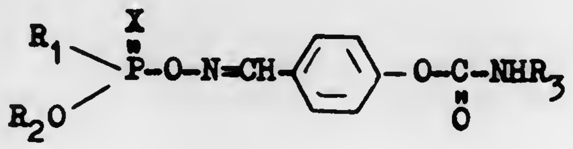


in which
- X is oxygen or sulfur;
- R is unsubstituted aryloxy or substituted aryloxy substituted with alkyl, hydroxy or nitro.

3,846,514
O-ALKYL-O-[4-(N-ALKYL-CARBAMOYL)-BENZALDOXIME]-(THIONO)(THIOL)PHOSPHORIC (PHOSPHONIC) ACID ESTERS

Gerhard Schrader, Wuppertal, and Ingeborg Hammann, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Aug. 13, 1973, Ser. No. 387,978
Claims priority, application Germany, Aug. 26, 1972, 2242135
Int. Cl. A01n *9/36;* **C07f** *9/16*
U.S. Cl. 260—938 **7 Claims**

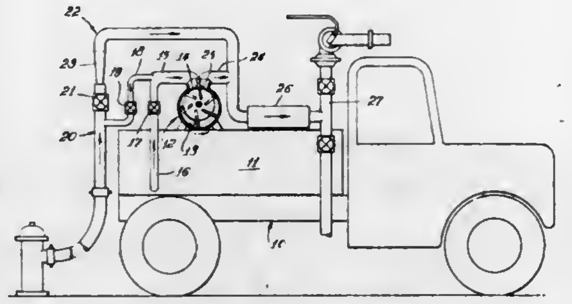
1. A (thiono)phosphoric(phosphonic) acid ester of a benzaldoxime of the formula



in which
- R_1 is lower alkyl, lower alkoxy, lower alkylmercapto or phenyl,
- R_2 and R_3 each independently is lower alkyl, and
- X is oxygen or sulfur.

3,846,515
MECHANICAL FOAM GENERATING METHOD AND SYSTEM

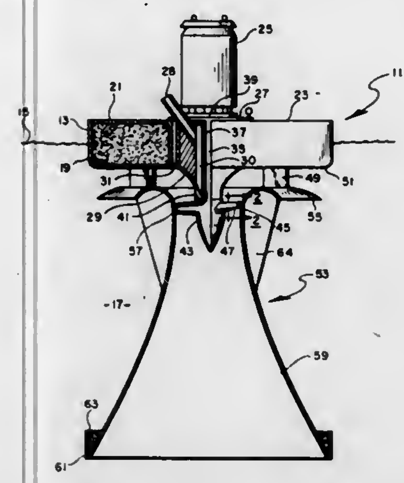
Hilding V. Williamson, Highland Park, Ill., assignor to Chemetron Corporation, Chicago, Ill.
Continuation of Ser. No. 170,786, Aug. 11, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 398,138
Int. Cl. B01f *3/04*
U.S. Cl. 261—18 B **16 Claims**



1. A mechanical foam generating system comprising a pump having a gas inlet port, a liquid inlet port and a foam outlet port, a liquid inlet conduit connected to the liquid inlet port, a main water conduit adapted for connection to a source of water under pressure, a pump water conduit between the main water conduit and the liuqid inlet conduit, a foam liquid concentrate conduit adapted for connection to a concentrate reservoir and connected to the liquid inlet conduit, a foam conduit connected to the foam outlet port and a by-pass water conduit between the main water conduit and the foam conduit whereby a portion of the water by-passes the pump.

3,846,516
AERATOR DEVICE AND METHOD

Larry W. Carlson, Canoga Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Sept. 25, 1972, Ser. No. 293,302
Int. Cl. B01f *3/04*
U.S. Cl. 261—87 **15 Claims**



1. In an aeration device having an axial flow impeller disposed to rotate below the surface of a liquid body, the improvement comprising:

a. an impeller, including a plurality of radially extending propeller blades, at least some of which are hollow, said hollow blades having at least one opening formed therein to permit passage of gas into said liquid from the interior of said hollow blades;

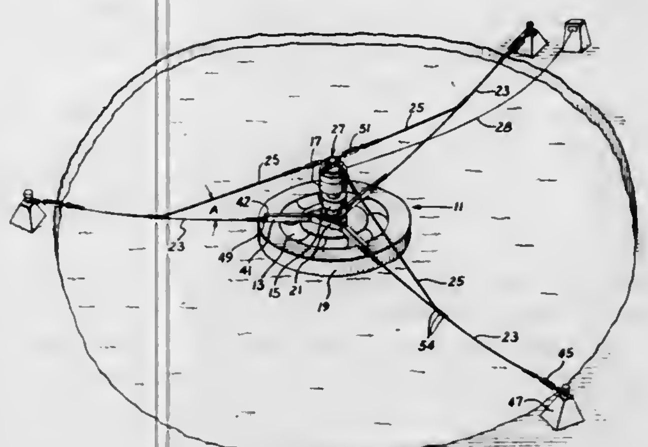
b. means communicating with the interior of said hollow blades wherefrom the gas flows out the openings in said blades as said blades rotate to impel liquid;

c. a vertically disposed venturi arranged to surround the impeller with the throat of said venturi adjacent said blades so that said blades impel a downward flow of liquid in the lower expanding portion of said venturi, said venturi having an inlet end disposed above said blades, said inlet end having a radially extending lip which curves inwardly and downwardly to said throat portion adjacent said blades; and

d. float means which support said venturi from above, said float means having a smoothly curved bottom which is spaced above said inlet end of said venturi and which cooperates with said lip to form a smooth course for liquid into said inlet end.

3,846,517
STABILIZATION SYSTEM FOR A FLOATING WATER AERATOR

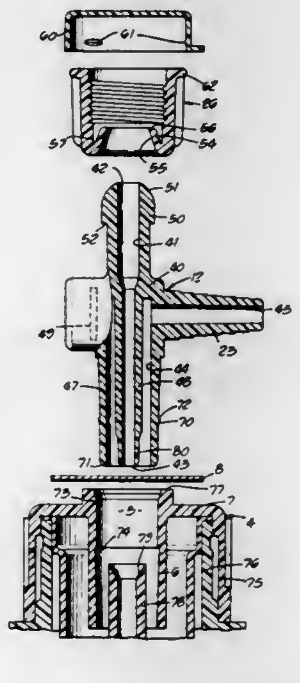
George Ross, Downers Grove, Ill., assignor to Clow Corporation, Oak Brook, Calif.
Filed July 26, 1972, Ser. No. 275,258
Int. Cl. B01f *03/04*
U.S. Cl. 261—91 **12 Claims**



1. A water aeration system comprising a floating aerator and means to stabilize said aerator, said floating aerator including a rotor having blades for movement in the water to be aerated, a motor for driving said rotor and a float disposed generally outboard of said rotor, said float supporting said motor above the water line; said stabilization means including a plurality of mooring lines, each having one end attached to said aerator generally adjacent said float and the other end fixed to a shore anchor and a plurality of inextensible guys, each of said guys having one end connected to an upper location upon said floating aerator, which location is positioned generally centrally thereof and serves to interconnect the upper ends of said plurality of guys, and the other end attached to one of said mooring lines at a predetermined distance from said aerator, said guys and said mooring lines cooperating to stabilize said floating aerator.

3,846,518
PORT SYSTEM FOR MEDICAL HUMIDIFIER CONTAINER

Charles J. McPhee, Sylmar, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed June 19, 1972, Ser. No. 264,315
Int. Cl. B01f *3/04;* **A61m** *15/00*
U.S. Cl. 261—123 **24 Claims**



1. In a system for administering a humidified medical gas to a patient during inhalation therapy and substantially deterring cross-contamination between patients comprising, for use in combination with a source of dry medical gas to be administered to a patient after humidification and means for connection to said source of medical gas for dispensing the gas;

a disposable dry medical gas humidifying assembly including means for connection to said means for dispensing the dry medical gas from the source; and means for administering humidified medical gas to a patient, said gas humidifying assembly comprising a disposable container for a medical liquid, said container including connection-and-retention means; and an adapter for connecting the dry medical gas source with the medical liquid container comprising a body member having a dry gas passage extending from an inlet adjacent a top portion of the body member to an outlet adjacent a lower portion of the body member, and a humidified gas passage extending from an inlet adjacent a lower portion of the body member upwardly to an exit portion on the body member; first connecting means on the body member at the dry gas passage inlet for connecting the adapter to the medical gas source; second connecting means at the dry gas passage outlet and humidified gas passage inlet for connecting the adapter with the medical liquid container, said second connecting means of the adapter and the connection-and-retention means of said container having interfitting structure including portions that permit the adapter to be manually connected to the container and integrate it as a permanent non-separable part thereof and deter subsequent manual separation therebetween whereby the adapter and medical container are discarded as a unit after inhalation therapy with the unit is completed and reuse of the humidifier assembly is deterred so that cross-contamination between patients is obviated.

3,846,519
METHOD OF PREVENTING THE FORMATION OF CLOUDS OF GAS OR SMOKE ON COOLING TOWERS, AND COOLING TOWER FOR CARRYING OUT THE METHOD

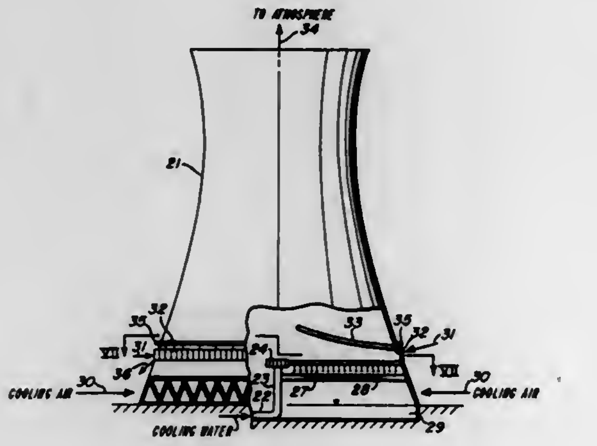
Kurt Spangemacher, Wasserburg, Inn, Germany, assignor to Balcke-Durr Aktiengesellschaft, Marienplatz, Bochum, Germany

Filed July 30, 1970, Ser. No. 59,646

Claims priority, application Germany, Aug. 1, 1969, 1939174. The portion of the term of this patent subsequent to Jan. 18, 1989, has been disclaimed

Int. Cl. B01f *3/04*

U.S. Cl. 261—151 **8 Claims**



1. A wet cooling tower system for preventing the formation of clouds thereon, which includes; a wet cooling tower with cooling insert means and with inlet means for admitting cooling water, air inlet means associated with said cooling tower for admitting cooling air thereto, said cooling tower also being provided with exhaust means for discharging exhaust air from said cooling tower, indirect heat transfer means having inlet means for a surrounding gaseous medium and also having internal means for heating up said gaseous medium admitted thereto, and conduit means establishing communication between said heat transfer means and said exhaust means for admixing said heated-up gaseous medium from said heat transfer means with the exhaust air discharged from said wet tower into said exhaust means.

3,846,520
SINTERING OF SOL-GEL MATERIAL

Engelbertus Jacobus Bruijn, Den Helder; Fokko Wessel Hamburg, Petten; Johannes Bastiaan Willem Kanij, Zvenaar, and Robert de Rooy, Egmond, all of Netherlands, assignors to Reactor Centrum Nederland, The Hague, Netherlands

Filed May 17, 1972, Ser. No. 254,038

Claims priority, application Netherlands, May 17, 1971, 7106712

Int. Cl. G21c *21/00*

U.S. Cl. 264—.5 **12 Claims**

1. A method for the conversion of spherical sol-gel fissile material into spherical oxidic, carbidic or carbonitridic nuclear fuel material, by means of a sintering step, comprising heating the sol-gel spheres to the sintering temperature and cooling from the sintering temperature at respectively heating and cooling rates ranging between 10° and 65°C/minute, the sol-gel material being a composition prepared by solidification through the action of one or more of the factors heat, dehydration, hydrolysis by the action of free ammonia, or of ammonia formed by the decomposition of an ammoniadonor on a globular aqueous metalliferous aqueous phase, selected from the group consisting of metal hydroxide sols, metal salt solutions or mixtures thereof.

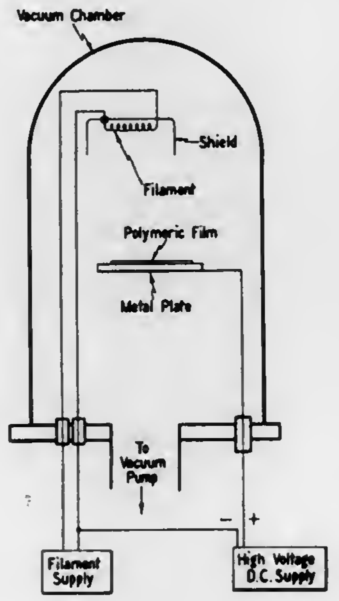
3,846,521
LOW ENERGY ELECTRON BEAM TREATMENT OF POLYMERIC FILMS, AND APPARATUS THEREFORE

Fred D. Osterholtz, Warwick, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 3, 1971, Ser. No. 112,125

Int. Cl. B29d *7/20, 21/00;* **C08j** *1/02;* **H01g** *37/30*

U.S. Cl. 264—22 **43 Claims**



1. Process which comprises exposing an organic polymeric film to a beam of low energy electrons at a potential from about 10 to about 30,000 volts, and under an absolute pressure below the pressure at which glow discharge occurs and below about 5×10^{-3} torr, the total exposure of said polymeric film to said beam of electrons being within the range of from about 0.005 to about 1,000 volt-ampere-seconds per square centimeter and sufficient to lower the permeability of said polymeric film with respect to at least one gas.

3,846,522
FORMING OF THERMOPLASTIC POLYMERS

Conrad Goldman, Rochester, N.Y., assignor to Elpex, Inc., Rochester, N.Y.

Continuation of Ser. No. 70,958, Sept. 10, 1970, abandoned. This application Mar. 15, 1973, Ser. No. 341,395

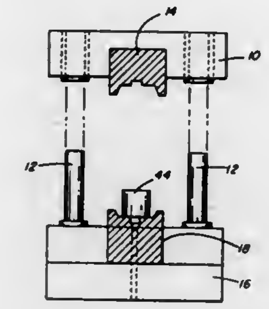
Int. Cl. B29f *5/00*

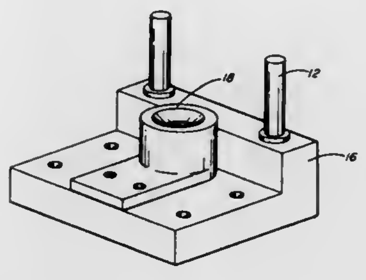
U.S. Cl. 264—25 **9 Claims**

1. A method of forming a shaped plastic article in a press comprising a removable mold which article does not obtain dimensional stability immediately after being shaped the method comprising:

1. heating comminuted thermoplastic resin to temperatures approaching but below the point of fusion of said resin;
2. placing the heated comminuted thermoplastic resin, which has a bulk density of 52 percent or less of the solid resin density, in a removable mold comprising an upper member and a lower member, said members in unlockable mated position, at least the upper member having a bore which allows the passage of the comminuted resin to the interior of the mold;

3. subjecting the comminuted resin, by means of a molding cap being slidably movable in the bore, to a forging force of such magnitude and rate of application such that the kinetic energy of the forging means is converted to sufficient thermal energy thereby forming a forged article from the comminutive resin;





4. without releasing the pressure produced by the forging force removing the mold containing the forged article from the press;
5. allowing the forged article to reach a state of dimensional stability; and
6. releasing the pressure and removing the stabilized, forged article from the mold.

3,846,523
METHOD OF FORMING EXPANDED COMPOSITE MATERIALS IN THE ABSENCE OF RECOGNIZED BLOWING AGENTS

James D. Geerdes, Cheshire, Conn., assignor to American Manufacturing Company, Inc., Brooklyn, N.Y.

Filed Dec. 12, 1967, Ser. No. 689,787

Int. Cl. B29d *27/00*

U.S. Cl. 264—41 **7 Claims**

1. A method of forming an expanded polymeric material, comprising, milling together particles of a thermoplastic polymeric material and submicro particles of an additive material, both said materials being essentially non-volatile at a temperature at which said polymeric material is fluid, said milling being effected by a rotary impact mill having impactors traveling at a velocity of at least about 600 linear feet per second, to form a composite of said two materials, said composite consisting essentially of said two materials, confining said composite in a mold cavity under pressure and heating said composite to said temperature to render said polymeric material fluid, releasing said pressure while said polymeric material is fluid and permitting said composite to expand as a foam, and solidifying the foamed polymeric material with said additive particles retained therein.

3,846,524
STRUCTURAL PANEL AND METHOD OF MAKING SAME

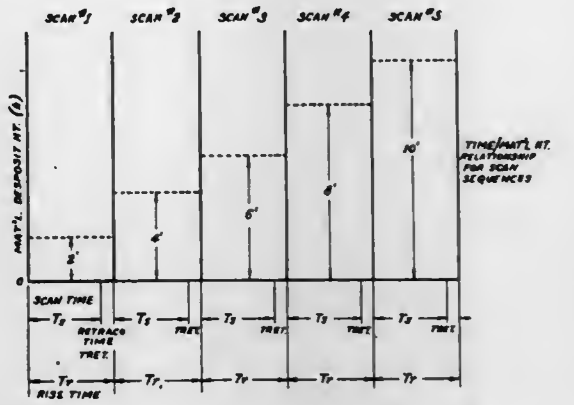
Richard R. Elmore, and Benjamin M. Couch, both of Herrin, Ill., assignors to Dura-Plex Industries, Inc., Peoria, Ill.

Filed Jan. 17, 1972, Ser. No. 218,398

Int. Cl. B29d *27/00*

U.S. Cl. 264—45.3 **13 Claims**

1. A method of making a structural panel comprised of fiber-reinforced skin sheets having a thermosetting foamable resin composition core therebetween for use in building structures and the like, comprising the steps of applying a first layer of gel coat to spaced surfaces of a mold which are configured to provide a panellike structure applying a first layer of polyester resin onto said gel coat, applying a first layer of glass fiber roving onto said layer of polyester resin before curing thereof, forcing the glass fiber roving into said first layer of resin in a manner to impregnate the roving fibers into said first layer of resin, applying a second layer of polyester resin into the combined first layer of resin and fibers, applying a second layer of glass fibers onto said second layer of resin before said second layer of resin is cured such that portions of the fibers of said second layer of fibers project outwardly from said second layer of resin on said space surfaces, curing said layers of resin, and introducing a thermosetting foamable core composition into a cavity defined by said spaced surfaces such that the thermosetting core composition substantially fills said cavity and integrally adheres to said opposing spaced surfaces and outwardly projecting fibers thereon to provide an increased area of surface adhesion between the thermosetting core composition and each of said skin sheet fibers, and effecting curing of said thermosetting core composition.



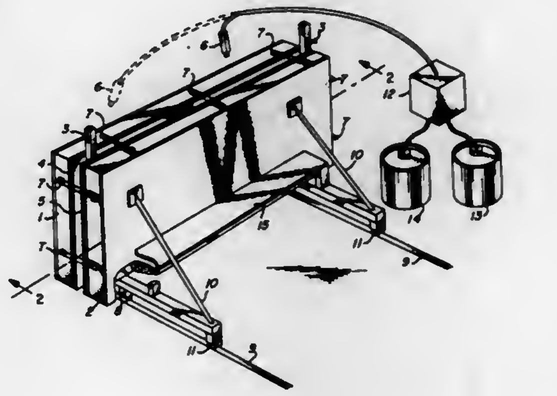
3,846,525
METHOD FOR MANUFACTURING FOAM SANDWICH PANELS

Frank E. Kinne, Eloy, and Phil D. Carmack, Casa Grande, both of Ariz., assignors to Permatank Engineering & Mfg. Co., Inc., Eloy, Ariz.

Filed Aug. 25, 1971, Ser. No. 174,806

Int. Cl. B29c *5/08;* **B29d** *27/04*

U.S. Cl. 264—46.5 D **1 Claim**



1. A method for fabricating a foam sandwich panel comprising the steps of:

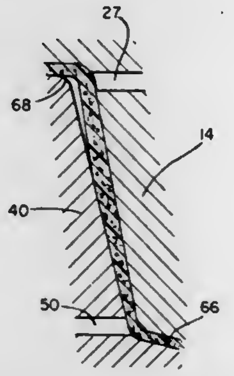
a. placing a first sheet of material, which sheet comprises one outer layer of the completed panel, in an upright position against the inner surface of a press outer stationary member;
b. placing a second sheet of material, which sheet comprises a second outer layer of the completed panel, in an upright position against the inner surface of a press outer movable member;

c. positioning a temporary and releaseable bottom and side closure member against one of said sheets;
d. moving said movable press member toward said stationary press member until said first and said second sheets are juxtaposed in contact with said closure member and spaced apart by said closure member;
e. securing said movable press member to said stationary press member;
f. injecting a stream of foamable polyurethane reaction mixture in a horizontal pass into the open space between the tops of said sheets; and
g. repeating said injecting step at timed intervals until the space between said sheets is filled with the foamed polyurethane from said reaction mixture,

said timed interval being equal to or greater than the rising time of said reaction mixture.

3,846,526
METHOD OF FORMING A PLASTIC CONTAINER

Gordon E. Wade, Glen Riddle, Pa., assignor to Scott Paper Company, Delaware County, Pa.
Division of Ser. No. 10,742, Feb. 12, 1970, Pat. No. 3,703,255. This application July 31, 1972, Ser. No. 276,826
Int. Cl. B29d *27/00*
U.S. Cl. 264—46.8 A **5 Claims**



1. A method of forming a foamed thermoplastic container having a bottom wall, a sidewall joining said bottom wall and extending upwardly and outwardly from said bottom wall, said sidewall having an inner surface which is free of protuberances, a lip defining an opening into said container, and a nesting ledge extending outwardly from said sidewall and disposed imtermediate the upper end of said sidewall and said lip, said method comprising the steps of:

A. clamping a heated, foamed, cellular thermoplastic sheet between male and female mold members, said male and female mold members when brought into telescoping relationship with each other defining the boundaries of a cavity therebetween, said cavity including a bottom region in which the bottom wall of the container is formed, a side region in which the entire sidewall of the container is formed, a nesting ledge region in which the nesting ledge is formed and lip region in which said lip is formed, the side surface of the male mold member which defines one boundary of the side region of the cavity is joined to a bottom surface of the male mold member which defines one boundary of the bottom region of the cavity, said side surface continuously sloping outwardly from the bottom surface and being substantially smooth and uninterrupted;
B. relatively moving said male and female mold members into final forming position to stretch said sheet into said cavity so that said sheet is compressed in the bottom region and the lip region of the cavity and incompletely fills the side region of said cavity; and
C. applying a vacuum to opposite sides of the sheet in the side region of the cavity to expand the sheet into conformity with substantially the entire cooperating surfaces of the mold members which define said side region to thereby form a container in which the sidewall has a greater thickness and a lower density than the lip region and the compressed bottom region.

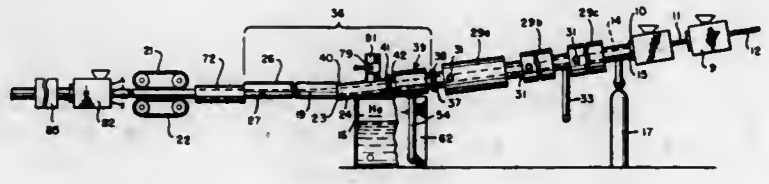
3,846,527
PRODUCTION OF INORGANIC FIBERS

Gerhard Winter; Manfred Mansmann, both of Krefeld; Nikolaus Schon, Leverkusen, and Hildegard Schnoring, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation-in-part of Ser. No. 77,324, Oct. 1, 1970, abandoned. This application Apr. 25, 1972, Ser. No. 247,457
Claims priority, application Germany, Oct. 17, 1969, 1952398
Int. Cl. C04b *35/64*
U.S. Cl. 264—63 **19 Claims**

1. A process for making inorganic fibers from a liquid medium comprising dry spinning into an evaporative environment a solution or sol containing one or more inorganic fiber forming compounds selected from the group consisting of nitrates, sulfates, acetates, oxalates, formates, tartrates, and citrates chlorides and oxychlorides, or sols selected from the group consisting of hydroxide sols, oxide sols, phosphate sols, silicate sols, borate sols, tungstate sols and molybdate sols, which upon heating yield an oxide or carbide, of at least one element selected from the group consisting of Be, Mg, Ca, Sr, Ba, rare earths, Th, U, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Fe, Co, Ni, Zn, B, Al, Ga, Si, Ge, Sn, Li, Na, K, Rb, Cs, Re, Ru, Os, Ir, Pt, Rh, Pd, Cu, Ag, Au, Cd, In, Tl, Pb, P, As, Sb, Bi, S, Se, and Te, said compounds being present in a concentration of about 5 percent to about 60 percent by weight, expressed as an oxide, and 0.01 to 5 percent by weight of a linear polymeric fiber-forming material having a degree of polymerization of at least about 2000 selected from the group consisting of olefin and diolefin polymers and copolymers, polyethers, polyphosphates, kurrol salts, polymers and copolymers of acrylamide, methacrylamide, methylmethacrylate, acrylonitrile, acrylic acid, methacrylic acid and their salts, polyvinylacetate, polyvinylalcohol, polyvinylmethylether and copolymers with maleic acid and their salts, the degree of polymerization and the amount of said polymeric fiber forming material being selected to produce a liquid medium having a viscosity of 1–100 poise and a degree of spinnability of at least 50 cm, and heating the dry spun fibers to a temperature sufficiently high to convert said inorganic fiber forming compound to an oxide or carbide.

3,846,528
METHOD OF CONTINUOUS VULCANIZATION IN THE PRESENCE OF HELIUM OR HYDROGEN

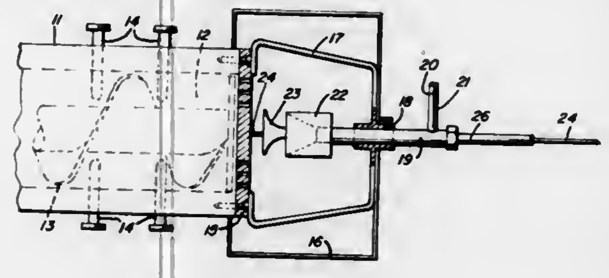
Willis L. Chrisman, Fairmont, Ind.; John D. Stauffer, De Kalb, Ill., and Edwin H. Arnaudin, Jr., Eden, N.C., assignors to The Anaconda Company, New York, N.Y.
Continuation-in-part of Ser. No. 842,418, May 9, 1969, Pat. No. 3,645,656. This application Feb. 9, 1972, Ser. No. 224,876
Int. Cl. B29h *5/28, 7/16*; **D01d** *11/06*
U.S. Cl. 264—85 **4 Claims**



1. A method of continuously vulcanizing a freshly extruded polymeric strand which comprises passing said strand through a zone wherein a gas selected from the group consisting of helium and hydrogen is disposed, simultaneously maintaining said gas under several atmospheres pressure and in relatively unchanging and stagnant state within said zone about said strand, transmitting to said strand by conduction through said gas heat sufficient to vulcanize said strand, and cooling said strand in a cooling area, said gas also serving as heat insulation against heat transfer between said cooling area to said zone.

3,846,529
EXTRUSION CUTTING DEVICE

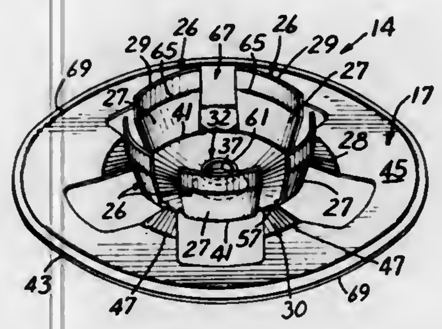
Charles S. Poteet, III, Cockeysville, Md., assignor to W. R. Grace & Co., New York, N.Y.
Division of Ser. No. 192,167, Oct. 26, 1971, Pat. No. 3,759,642. This application June 28, 1973, Ser. No. 374,455
Int. Cl. B26f *3/00*; **B29c** *17/14*
U.S. Cl. 264—142 **11 Claims**



1. A method of cutting extrusions at the face of an extruder die comprising extruding a material through said die to form multiple continuous extrusions and directing a shaped stream of high pressure gas from the center region of said die face outwardly toward the periphery of said die face whereby a surface of the extrusions in a perpendicular relationship to the face of said die is contacted by said shaped gas stream and said multiple extrusions are severed at essentially constant lengths.

3,846,530
TAPE SPOOL

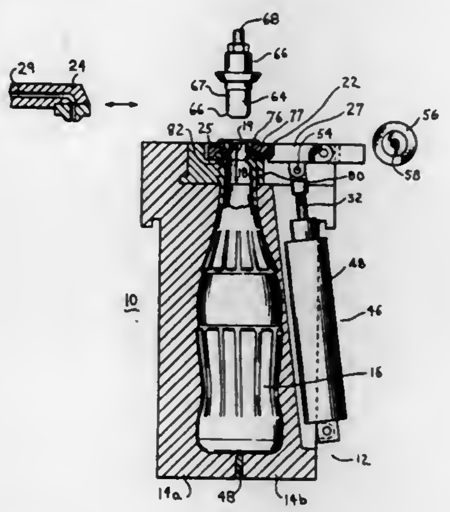
Michael W. Longworth, Glendale Heights, Ill., assignor to Ampex Corporation, Redwood City, Calif.
Filed Oct. 31, 1972, Ser. No. 302,513
Int. Cl. B29d *31/00*
U.S. Cl. 264—154 **6 Claims**



1. A method of forming a tape spool from a substantially flat sheet of plastic stock for supporting a coil of endless magnetic tape for use in a magnetic tape cartridge, said method comprising the steps of: piercing a sheet of flat plastic stock and forming a central spindle receiving opening at an axis for the spool, cutting pairs of outwardly extending slits each joined with an outer transverse slit in said sheet at locations about said spindle receiving opening to define therebetween hub portions for bending about inner portions integrally attached to remainder of the flat plastic sheet, deforming a central configuration in the plastic sheet from its flat planar condition to provide a spindle collar surface for bearing against the spindle for journaling the spindle for rotation in the cartridge and deflecting a portion of said sheet downwardly to form a surface for resting on the cartridge when the spindle is rotating, bending an arcuate cross section for each of said hub segments to define collectively a generally cylindrical surface about said axis for guiding the tape and bending said hub portions upwardly from the plane of said sheet about said integral inner portions to positions upstanding from the plane of said flat sheet to form a series of hub segments spaced circumferentially about said spindle receiving opening for supporting a coil of magnetic tape and leaving openings in a flat platform portion of said sheet and aligning said upwardly bent segments to define an upstanding hub from which tape may be payed out from the spool.

3,846,531
FINISHING HOLLOW BLOW MOLDED ARTICLES

Joseph R. Reilly, Navgatuck, Conn., assignor to Monsanto Company, St. Louis, Mo.
Division of Ser. No. 120,514, March 3, 1971, Pat. No. 3,736,091. This application Oct. 19, 1972, Ser. No. 299,007
Int. Cl. B29c *17/07, 17/12*
U.S. Cl. 264—161 **6 Claims**



1. A method of finishing a blown hollow thermoplastic article having waste flash attached to a neck portion which comprises:

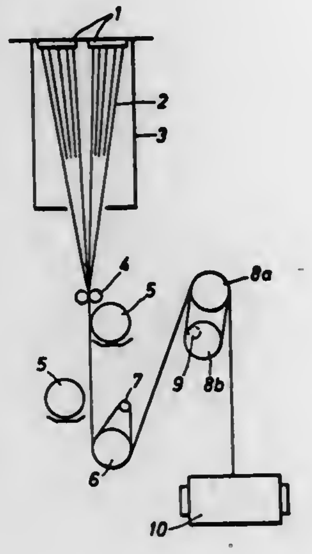
a. establishing a difference in temperature in the forming cavity between the neck portion and a flash portion adjacent said neck portion which is thicker than that of said neck portion, the temperature of said neck portion being sufficiently low as to resist substantial deformation on application of a force thereto and the temperature of said thickened portion being 25° to 100°F. in excess of that of the neck portion but below that at which the plastic is incapable of sustaining its form;
b. gripping the waste flash;
c. relatively moving the gripped waste flash and the article away from each other to sever the flash from the neck in the area of the thickened portion leaving an irregular lip extending around the opening at the outer end of the neck; and then
d. advancing a forming mandrel into said opening to roll said lip forwardly toward the body of the article and outwardly toward the wall of the blown neck to form a smooth neck finish on the article.

3,846,532
CONTINUOUS SPINNING AND STRETCHING PROCESS OF THE PRODUCTION OF POLYAMIDE-6 FILAMENTS

Harry Kubitzker; Bela Von Falkai, and Alfred Reichle, all of Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation of Ser. No. 4,350, Jan. 20, 1970, abandoned. This application Mar. 1, 1971, Ser. No. 119,930
Claims priority, application Germany, Jan. 28, 1969, 1904234
Int. Cl. D01f *3/10*
U.S. Cl. 264—210 F **5 Claims**

1. A continuous process for the production of stretched polyamide-6 filament consisting of the sequential steps of

1. spinning polyamide-6 filament from a melt;
2. cooling the spun filament;
3. dressing the filament immediately after cooling with 0.4 to 0.8 percent by weight of a non-ionic dressing agent which is temperature resistant up to 220°C;



4. drawing off the filament over a draw-off roller with a transposition device;
5. stretching the filament to 2.5 to 5.5 times its length using stretching rollers heated to 170° to 220°C; and
6. winding up the stretched filament under a tension of between 0.02 to 0.08 g/dtex.

3,846,533
IMPROVEMENTS IN THE MANUFACTURE OF MOLDS FOR FOOTWEAR

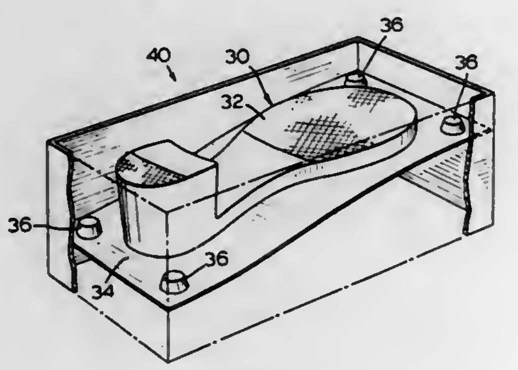
Joseph D. Carrier, Toronto, Ontario, Canada, assignor to J. D. Carrier Shoe Co., Limited, Toronto, Ontario, Canada

Filed Aug. 2, 1972, Ser. No. 277,265

Claims priority, application Canada, July 11, 1972, 146798

Int. Cl. B29c *1/02*

U.S. Cl. 264—225 **9 Claims**



1. A method of making a mold element having a mold cavity for molding a footwear sole comprising the steps of

a. forming a prototype having an upper surface, a lower surface and side surfaces conforming to the shape of the sole which is to be produced by molding,
b. securing a face plate, which is deformable to the longitudinal curvature of the upper surfaces of the prototype and having a length and width which is greater than the length and width of the prototype, to the prototype in a position overlying the prototype and projecting laterally therefrom to form a lip having a lower surface extending about the prototype,
c. rendering the lower surface of the lip and the lower and side surfaces of the prototype electrically sensitive by applying a coating of an electrically conductive material thereto,
d. electroplating the electrically sensitive areas with a metal selected from the group consisting of nickel, copper, zinc and tin to form a metal shell consisting of a main body portion and a flange projecting laterally therefrom, said main body portion having an inner surface formed to provide a cavity conforming to the shape of the lower and side surfaces of the prototype, said main body portion and said flange having an outer surface,
e. forming a reinforcing backing on said outer surface of said main body portion and said flange by molding a body of settable material thereon,
f. removing said face plate and prototype to expose said cavity, and
g. forming a complementary closure mold element for closing said female mold element during molding of said footwear sole.

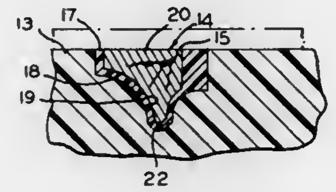
3,846,534
METHOD OF MAKING A CAST POLYESTER RESIN STRUCTURE HAVING A CORE OF LOW GRADE MATERIAL

John N. Hallinan, 4444 S.W. Greenleaf Dr., Portland, Oreg. 97221, and William F. Costner, 19515 S. Fisher's Mill Rd., Oregon City, Oreg. 97045

Filed Sept. 24, 1971, Ser. No. 183,421

Int. Cl. B29c *1/02*

U.S. Cl. 264—225 **1 Claim**



1. A method of making a cast polyester resin simulated wood frame having an open center and a core of low grade material and which frame will precisely duplicate a given wood master including the surface texture thereof, comprising making a master frame of a desired configuration from wood having a surface texture which it is desired to reproduce;

placing said master face up on a supporting surface;
pouring a molding compound around and over said master to form an open top mold, said molding compound being adapted precisely to pick up said surface texture of said master;
assembling a core structure generally in the shape of said master frame and comprising at least four elements so as to form a frame, said elements being of lesser cross-sectional area than said master frame, said elements being made from a material of lesser cost than polyester resin; attaching said elements together by staples to form a core;
placing said mold on a casting surface with its open top up; pouring a mixture of a polyester resin of a desired color and a catalyst into said mold;
then placing said core in the mixture in said mold with the surfaces of said core in a desired spaced relation with respect to the walls of the mold cavity, said core being inserted and weight down in said mixture to a level wherein said mixture rises to the level of the top of said core; and
permitting said mixture to gel and form a hardened resin cover layer about said core, the resin reproducing said surface texture of said master frame in precise detail.

3,846,535
METHOD FOR ABSORBING SULFUR OXIDES FROM GASEOUS MIXTURES AND REGENERATING THE ABSORBENT

Anthony G. Fonseca, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Sept. 5, 1972, Ser. No. 285,962

Int. Cl. C01b *17/00*

U.S. Cl. 423—242 **5 Claims**

1. A process for absorbing sulfur oxides from gaseous mixtures containing sulfur oxides and regenerating the adsorbent comprising sequentially:

a. contacting said gaseous mixture with an absorbent selected from the group consisting of sodium bicarbonate and potassium bicarbonate,
b. admixing the resulting sodium or potassium sulfite, sulfate, and combinations thereof with water and ammonium bicarbonate or ammonia and carbon dioxide,
c. separating the resulting sodium or potassium bicarbonate and the resulting ammonium sulfite, sulfate, and combinations thereof
d. reacting the separated ammonium sulfite, sulfate, and combinations thereof with an alkaline earth metal oxide or an alkaline earth metal hydroxide, and
e. separating the resulting ammonia and the resulting alkaline earth metal sulfite, sulfate, and combinations thereof

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3,846,536
REGENERATION PROCESS FOR FLUE GAS SORBENT

Neville L. Cull, Baker, and Darius B. Vohsberg, Baton Rouge, both of La., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Sept. 7, 1972, Ser. No. 286,941

Int. Cl. B01j *9/04, 9/15, 9/16, 9/20;* **C01b** *17/00*

U.S. Cl. 423—244 **9 Claims**

1. In a process for removing SO_2 from a gas mixture in which said gas mixture is contacted under oxidizing conditions with a solid sorbent which is selective for the removal of SO_2 and in which said sorbent is regenerated with a reducing gas, the improvement wherein said reducing gas comprises an alcohol having from 1 to about 6 carbon atoms and wherein said sorbent is contacted with said alcohol at a temperature within the range of about 600° to about 1,000°F.

3,846,537
PROCESS OF PREPARING SILICA XEROGELS

Ralph Marotta, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 21, 1972, Ser. No. 282,641

Int. Cl. C01b *33/12*

U.S. Cl. 423—338 **9 Claims**

1. A process of preparing an amorphous, pulverulent silica xerogel which comprises the steps of:

a. forming a silica sol by feeding, to an agitated aqueous heel, an alkali metal silicate solution and a mineral acid other than hydrofluoric acid, while maintaining a batch pH of less than about 4 and a batch temperature below about 70°C., the weight of silica added during this step (a) being from about 10 percent to about 45 percent of the total silica to be added during said process;
b. gelling said sol at a batch pH of about 4 or higher and a batch temperature of about 50°C. to 70°C., and interrupting the agitation for at least about 30 seconds;
c. resuming said agitation to disperse the gel;
d. introducing additional alkali metal silicate solution and acid while maintaining a batch pH of from about 4 to about 6.6 and a batch temperature of from about 75°C. to about 100°C.; and
e. recovering the silica xerogel product.

3,846,538
PROCESS FOR REGENERATING STRONG BASES FROM SOLUTIONS OF THEIR SULFIDES AND SIMULTANEOUSLY PRODUCING SULFUR

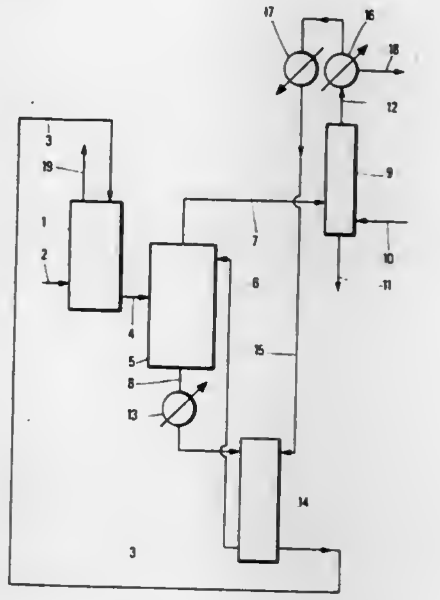
Philippe Renault, Noisy-le-Roi; Claude Dezael, Maisons-Laffitte, and Andre Deschamps, Chatou, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed Sept. 19, 1972, Ser. No. 290,406

Claims priority, application France, Sept. 27, 1971, 71.34749

Int. Cl. C01b *1/04, 17/04, 17/02*

U.S. Cl. 423—183 **15 Claims**



1. A process for regenerating a strong base from an aqueous solution of a corresponding sulfide of said strong base, wherein (a) the aqueous solution of said sulfide is contacted with an ammonium salt of a strong inorganic acid or an organic acid less volatile than hydrogen sulfide, at such a temperature that hydrogen sulfide and ammonia evolve, so as to obtain an aqueous solution of the salt of the acid and the strong base; (b) the hydrogen sulfide and the ammonia obtained in the stage (a) are contacted with sulfurous anhydride for recovering sulfur and releasing, in a gaseous state, ammonia and water; (c) the solution of the salt of the acid and the strong base produced in the stage (a) is contacted with an anionic ion exchange resin in order to release the strong base and to enrich the resin with acid; (c) the contact with the resin is periodically interrupted and the latter is treated with an aqueous solution of ammonia issuing from stage (b), so as to regenerate the resin which, after regeneration, is contacted with the solution of the salt formed by the acid and the strong base; and (e) the product obtained when regenerating the resin, which consists of an aqueous solution of the ammonium salt of the acid, is fed back to stage (a).

3,846,539
PURIFICATION OF GAS CONTAINING SULFUR DIOXIDE OR SULFUR TRIOXIDE WITH THE PRODUCTION OF ELEMENTAL SULFUR

Philippe Renault, Noisy-le-Roi; Claude Dezael, Maisons-Laffitte, and Andre Deschamps, Chatou, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed Oct. 10, 1972, Ser. No. 296,226

Claims priority, application France, Oct. 11, 1971, 71.36555

Int. Cl. C01b *17/02, 17/00*

U.S. Cl. 423—574 **21 Claims**

1. A process for purifying a sulfur dioxide containing gas by means of an aqueous solution of sodium carbonate and with the production of elemental sulfur, comprising the steps of (a) contacting said gas with an aqueous solution of sodium car-

bonate so as to dissolve said sulfur dioxide in the form of sodium sulfite; (b) contacting the resulting solution with an aqueous solution of ammonium hydrogen carbonate or a gaseous mixture of carbon dioxide and ammonia so as to form a mixture of a sodium hydrogen carbonate precipitate and a liquid phase, separating said precipitate and heating it to form carbon dioxide and sodium carbonate, separating said carbon dioxide from said sodium carbonate, recycling said carbon dioxide to step (b) and said sodium carbonate to step (a); (c) reacting said liquid phase or its vaporization products with hydrogen sulfide to produce sulfur and release a NH_3 containing gas, separating the sulfur and recycling the NH_3 containing gas to step (b).

3,846,540
METHOD FOR CONVERTING HIGH-DENSITY LOW-POROSITY ALUMINA INTO LOW-DENSITY HIGH POROSITY ALUMINA

Bruce E. Leach, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed June 15, 1972, Ser. No. 263,050

Int. Cl. C01f *7/02;* **B01j** *11/58*

U.S. Cl. 423—628 **11 Claims**

1. A method for converting dispersible high density, low-porosity alumina, having a loose bulk density from about 42 to about 50 lb/ft³ and a pore volume from about 0.40 to about 0.55 cc/g, and containing up to about 80 weight percent Al_2O_3 and produced by the water hydrolysis of aluminum alkoxides into low-density high porosity alumina said method consisting essentially of sequentially;

- a. dispersing said high-density, low-porosity alumina in a mixture of water and an acid selected from the group consisting of hydrochloric acid, nitric acid, formic acid, acetic acid, propionic acid, monochloroacetic acid and dichloroacetic acid to form a dispersion containing up to about 18 weight percent Al_2O_3 and wherein said acid is present in an amount equal to from about 0.04 to about 0.12 mole per mole of Al_2O_3;
- b. adjusting the pH of said dispersion to a value from about 7 to about 11 by the addition of an alkaline material, selected from the group consisting of ammonia, ammonium bicarbonate and ammonium carbonate, thereby precipitating alumina;
- c. admixing an organic solvent selected from the group consisting of acetone, methanol, ethanol, n-propanol, isopropanol, n-butanol, isobutanol and tertiary butanol with the products of the precipitation reaction in (b) to form a solvent-aqueous alumina mixture wherein said solvent is present in an amount sufficient to produce alumina having a loose bulk density from about 20 to about 30 lb/ft³, a pore volume from about 0.70 to about 1.30 cc/g, and a surface area from about 200 to about 300 m²/g; and
- d. drying said mixture to produce low-density high porosity alumina having a loose bulk density from about 20 to about 30 lb/ft³, a pore volume from about 0.70 to about 1.30 cc/g, and a surface area from about 200 to about 300 m²/g.

3,846,541
TREATMENT OF HYPERCHOLESTEREMIA

Alan Norman Howard, Cambridge, England, assignor to Pharmacia A/B, Uppsala, Sweden

Continuation-in-part of Ser. No. 188,965, Oct. 13, 1971, abandoned. This application Mar. 20, 1973, Ser. No. 343,182

Claims priority, application Great Britain, Oct. 15, 1970, 49140/70

Int. Cl. A61k *27/00*

U.S. Cl. 424—79 **12 Claims**

1. A method of treating patients suffering from hypercholesteremia which comprises the daily oral administration thereto of a hypocholesteremic effective amount of a composition comprising (a) a compound selected from the group consisting of para-chlorophenoxyisobutyric acid, the ethyl ester of said acid and salts of said acid with pharmacologically acceptable metals and (b) a pharmacologically acceptable grade of a solid non-toxic anion exchange resin in the weight ratio of 1:2 to 1:20, said resin being selected from the group consisting of (i) the solid copolymer of dextran and epichlorohydrin having from 10–35 percent of its weight of hydroxyl groups, based upon the dry substance, from 6–50 percent of said hydroxyl groups having been replaced by groups of the formula RYO- in which Y is an alkylene group having at least one but less than three carbon atoms and R is a dialkylamino group having at least two but less than five carbon atoms, said copolymer having an ion exchange capacity of 2–6 milliequivalents per gram of dry compound (ii) the solid copolymer of tetraethylene pentamine and epichlorohydrin which has been brought to a pH of approximately 4 and then dried, and (iii) a solid styrene-divinylbenzene copolymer containing not more than 5 percent by weight of divinyl-benzene into which quaternary alkylammonium groups containing not more than 10 carbon atoms have been introduced, which copolymer has an equivalent weight, based upon the ammonium groups of less than 500, said anion exchange resins being administered in an overall daily amount of 3 to 50 grams.

3,846,542
ACRYLIC TOOTH-FILLING COMPOSITION CONTAINING BORIC ACID-RELEASING COMPOUND

Albert Gross, Frankfurt/Main, Germany, assignor to Kulzer & Co., GmbH, Bad Homburg, Germany

Continuation of Ser. No. 56,646, July 20, 1970, abandoned, and a continuation-in-part of Ser. No. 751,714, Aug. 12, 1968, abandoned. This application Jan. 4, 1972, Ser. No. 215,406

Int. Cl. A61k *5/00*

U.S. Cl. 424—81 **3 Claims**

1. In a tooth-filling composition comprising a monomeric acrylic polymerizable liquid toxic to tooth pulp and suited for use in dental filling materials, and a Redox System curing agent, the improvement which comprises adding a boric acid alkyl ester, said compound being dissolved in said monomeric acrylic polymerizable liquid in a non toxic amount sufficient to protect the tooth pulp of a prepared tooth when using said toothfilling composition therein.

3,846,543
PROCESS FOR THE SEPARATION OF VIRUS FROM NON-VIRAL PROTEINS

Joseph E. Fields, Ballwin, and John H. Johnson, Kirkwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 829,146, May 29, 1969, Pat. No. 3,655,509, which is a continuation-in-part of Ser. No. 777,409, Nov. 20, 1968, abandoned, which is a continuation-in-part of Ser. No. 590,127, Aug. 19, 1966, abandoned, which is a division of Ser. No. 440,991, March 18, 1965, abandoned, which is a continuation-in-part of Ser. No. 248,881, Jan. 2, 1963, abandoned. This application Aug. 2, 1971, Ser. No. 168,390

Int. Cl. C12k *5/00*

U.S. Cl. 424—89 **15 Claims**

1. A method for the production f a virus vaccine comprising the steps of (1) preferentially sorbing a virus from an aqueous mixture of immunizing antigen virus particles and non-viral protein by contacting a water-soluble polyelectrolyte polymer, said polymer being polycationic or polyampholytic in nature, said polymer having a molecular weight of at least 1000 and being a copolymer of (a) a monoolefin having 2 to 12 carbon atoms and (b) a member selected fromthe group consisting of maleic acid and maleic anhydride and containing 2–100 percent groups selected from the group consisting of diloweralkyl-aminoloweralkylimide groups and loweralkyliminodi (loweralkylimide) linkages, with the said mixture, with the polymer and pH conditions being such that the polymer has a greater sorptive power for the virus than the protein, (2) removing the said polymer bearing the sorbed virus from the mixture, (3) eluting the virus from the polymer, and after inactivation of the virus, (4)incorporating the virus of reduced contamination by non-viral protein with a pharmaceutically acceptable vaccine diluent or carrier, to contain an adequate concentration of immunizing antigens.

3,846,544
SPARINGLY-SOLUBLE KALLIKREIN-INACTIVATOR DERIVATIVE AND PROCESSES INVOLVING SAID DERIVATIVE

Fritz Schultz, Wuppertal-Sonnborn, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. Nos. 257,758, Feb. 11, 1963, abandoned, and Ser. No. 356,978, April 2, 1964, abandoned, and Ser. No. 607,670, Jan. 6, 1967, abandoned. This application May 19, 1970, Ser. No. 38,696

Int. Cl. A61k *17/00*

U.S. Cl. 424—95 **2 Claims**

1. A sparingly soluble reaction product of kallikrein-inactivator with metaphosphoric acid, said product being nontoxic and while in aqueous suspension non-dialyzable and slowly soluble when injected intramuscularly and having a percentage composition of its elements as follows:

Carbon = 40.1
Hydrogen = 5.8
Nitrogen = 12.6
Oxygen = 30.8
Sulfur = 2.7
Phosphorus = 6.1
Water = 2.0

and having the infrared spectrum as shown in FIG. 1 of the drawing.

3,846,545
STABLE COPPER BASE FUNGICIDES

Earl H. Hess, Lancaster, Pa.; Daniel M. Kennedy, East Brunswick, N.J., and Charles I. Whitman, Garden City, N.Y., assignors to International Copper Research Association, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 579,550, Sept. 15, 1966, abandoned, and a continuation of Ser. No. 703,337, Feb. 6, 1968, abandoned. This application July 21, 1970, Ser. No. 64,031

Int. Cl. A01n *11/04*

U.S. Cl. 424—143 **9 Claims**

1. A stable Bordeaux mixture in powder form consisting of dehydrated copper base precipitates preponderantly in amorphous form of a freshly prepared aqueous interaction mixture of copper sulfate and calcium hydroxide, said powder Bordeaux mixture being capable of redispersing in water to form an aqueous spray mixture having fungicidal activity.

3,846,546
NEW EMULSIONS, AND COSMETIC PRODUCTS MADE FROM SUCH EMULSIONS

Felix Lachampt, Franconville; Andre Viout, Paris, and Guy Vanlerberghe, Mitrymory, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Continuation-in-part of Ser. No. 688,994, Dec. 8, 1967, abandoned. This application July 13, 1971, Ser. No. 162,265

Claims priority, application Luxembourg, Dec. 8, 1966, 52534

Int. Cl. A01n *9/04, 17/10, 9/00*

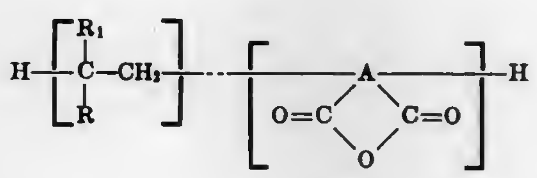
U.S. Cl. 424—170 **11 Claims**

1. A cosmetic water-in-oil emulsion, which effectively penetrates the skin, consisting essentially of water, oil, and an emulsifying agent having the formula

$$RO—C_2H_3O(R')—C_2H_3O(CH_2OH)—H$$

wherein R is selected from the group consisting of alkyl having 16–18 carbon atoms and hydrogenated lanolin alcohol residue; R′ is selected from the group consisting of $—CH_3$ and $—C_2H_5$, *m* is 3–5 and *n* is 2–3, and an emulsion stabilization agent selected from the group consisting of

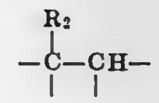
- a. magnesium isostearate,
- b. an oil-soluble copolymer selected from the group consisting of
  - i. a copolymer having the formula



I II

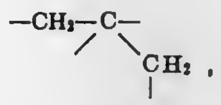
wherein A is selected from the group consisting of

(1)



and

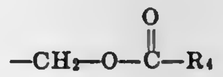
(2)



where R_2 is selected from the group consisting of hydrogen and methyl, and

R is selected from the group consisting of

3. alkyl having 8–18 carbon atoms,
4. $—O—R_3$ wherein R_3 is alkyl having 16 carbon atoms and
5.



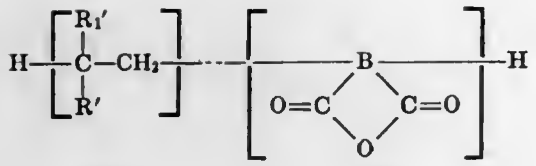
$$—CH_2—O—\overset{\overset{\large O}{\|}}{C}—R_4$$

wherein R_4 is alkyl having 11–17 carbon atoms,

with the pro:viso that when R is one of (3) and (4), R_1 is hydrogen and that when R is (5), R_1 is selected from the group consisting of hydrogen and methyl,

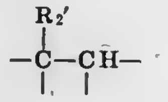
the molar ratio of monomeric units I:II is 1:1 and said copolymer has a molecular weight ranging between 4,000 – 100,000,

- ii. the magnesium salt of the copolymer of (i),
- iii. a copolymer having the formula



III IV

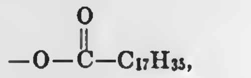
wherein B is



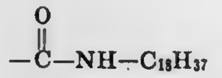
$$-\underset{|}{\overset{R_2'}{\overset{|}{C}}}-\underset{|}{CH}-$$

wherein R'₂ is selected from the group consisting of hydrogen and methyl, and

R' is selected from the group consisting of

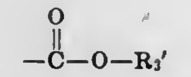
6. 

$$-O-\overset{O}{\overset{\|}{C}}-C_{17}H_{35},$$

7. 

$$-\overset{O}{\overset{\|}{C}}-NH-C_{18}H_{37}$$

and

8. 

$$-\overset{O}{\overset{\|}{C}}-O-R_3'$$

wherein R'_3 is alkyl having 12–18 carbon atoms,

with the proviso that when R' is one of (6) and (7), R'_1 is hydrogen and that when R' is (8), R'_1 is methyl, the molar ratio of monomeric units III:IV ranges between 1-1.4:0.5-1 and said copolymer has a molecular weight ranging between 4,000–100,000 and

iv. the magnesium salt of the copolymer of (iii), and

c. a mixture of (a) and (b), the amount of said emulsifying agent and emulsion stabilization agent in combination ranging between 8.5–20 weight percent of said composition, said oil being present in amounts ranging between about 22–45 weight percent of said composition, the remainder comprising essentially water.

3,846,547

STABILIZED AQUEOUS SUSPENSION OF PHTHALIMIDOMETHYL MONO THIO-OR DITHIO-PHOSPHATES OR PHOSPHONATES

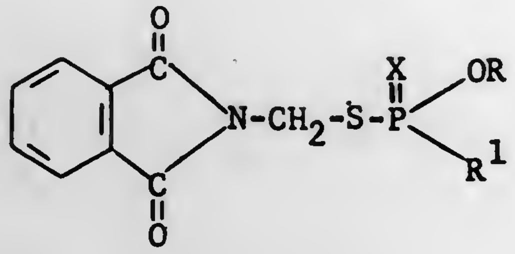
Ashley Herman Freiberg, Santa Clara, Calif., and David James Broadbent, Racine, Wis., assignors to Stauffer Chemical Company, New York, N.Y.

Filed July 18, 1972, Ser. No. 272,818

Int. Cl. A01n *9/36*

U.S. Cl. 424—200 **2 Claims**

1. A stable insecticidal composition comprising an insecticidally effective amount of a compound of the formula



wherein X is oxygen or sulfur, R is alkyl having 1 to 4 carbon atoms and R¹ is alkyl having 1 to 4 carbon atoms or alkoxy having 1 to 4 carbon atoms, water and phosphoric acid in an amount of 0.01 to 0.5 percent by weight of water.

3,846,548

AQUEOUS DOXYCYCLINE COMPOSITIONS

Yoshinobu Akazawa, Chitagun; Masami Yagyu, Nagoyashi; Shigenori Nozawa, and Satoshi Yasui, both of Chitagun, all of Japan, assignors to Pfizer Inc., New York, N.Y.

Filed July 19, 1972, Ser. No. 273,208

Claims priority, application Japan, July 19, 1971, 46-53146

Int. Cl. A61k *21/00*

U.S. Cl. 424—227 **3 Claims**

1. A stable aqueous composition which comprises doxycycline; water; a magnesium compound selected from the group consisting of magnesium chloride, magnesium ascorbate, magnesium lactate and magnesium gluconate; and a nonionic surface active agent selected from the group consisting of a polyoxyethylene hydrogenated castor oil derivative and a polyoxyethylene derivative of a partial ester of lauric acid, palmitic acid, stearic acid, or oleic acid and a hexitol anhydride derived from sorbitol; the doxycycline concentration being about 20–40 mg/ml of said composition; the molar ratio of magnesium compound to doxycycline being about 1:1 – 8:1; the concentration of nonionic surface active agent being less than 20 percent but not less than 7.5 percent w/v; said composition having a final pH of 5.0 to 7.0.

3,846,549

PHARMACEUTICAL COMPOSITIONS CONTAINING AN N-(1-BICYCLIC ARYL-PROPYL -2)-N-PHENYL-PIPERAZINE

Anton Mentrup; Karl Zeile; Peter Danneberg; Kurt Schromm, all of Ingelheim/Rhine; Jeanette Guenard, Mainz; Ernst-Otto Renth, and Harry Stotzer, both of Ingelheim/Rhine, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhine, Germany

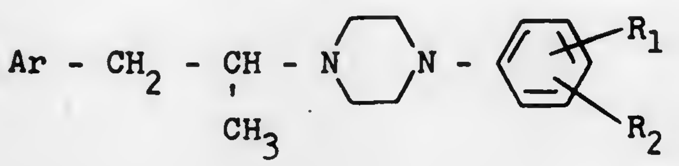
Continuation-in-part of Ser. No. 312,339, Dec. 5, 1972, abandoned, which is a division of Ser. No. 110,766, Jan. 8, 1971, Pat. No. 3,729,474, which is a continuation of Ser. No. 663,973, Aug. 29, 1967, abandoned, and a continuation-in-part of Ser. No. 274,903, July 25, 1972, abandoned. This application July 5, 1973, Ser. No. 376,910

Claims priority, application Germany, Aug. 1, 1967, 93758; Sept. 3, 1966, 88772; July 23, 1971, 2136929

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **18 Claims**

1. A pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective CNS-depressing amount or an effective antihypercholesteremic amount of a racemic or optically active compound of the formula



wherein Ar is 3,4-methylenedioxy-phenyl, indanyl, naphthyl or 1,4-benzodioxanyl, and

R_1 and R_2 are each hydrogen, halogen, amino, acetylamino, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylcarbonyl of 1 to 4 carbon atoms or alkylthio of 1 to 4 carbon atoms,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3,846,550

COSMETIC SKIN POWDER CONTAINING UREA

Harold S. Akrongold, and Rochelle Akrongold, both of 39 Cathay Rd., East Rockaway, L.I., N.Y. 11101

Continuation-in-part of Ser. No. 108,616, Jan. 21, 1971, abandoned, which is a continuation-in-part of Ser. No. 809,042, March 20, 1969, abandoned. This application Dec. 18, 1972, Ser. No. 315,883

Int. Cl. A61k *7/02*

U.S. Cl. 424—63 **3 Claims**

1. A cosmetic skin care powder composition consisting essentially of a precipitate formed by the reaction of about 0.1–74.9 percent by weight of urea in solution, about 0.1–60 percent by weight of an oil phase and about 0.1–99.5 percent by weight of an inorganic pigment, said urea solution and said oil phase being agitated in the presence of alcohol until a clear solution is obtained prior to admixture with the oil phase, said oil phase being selected from the group consisting of mineral oil, lanolin, lanolin alcohol, vegetable oil, silicon fluids, kerosene, polyalkylene glycol, saturated and unsaturated straight or branched chain fatty acids and dimer acids having between five and 52 carbon atoms, fatty alcohols and dimer alcohols having between five and 52 carbon atoms, esters of said fatty acids, and mixtures thereof.

3,846,551

INSECTICIDAL AND ACARICIDAL COMPOSITION AND PROCESS FOR CONTROLLING PESTS

Akira Mifune, Tokyo; Yoshio Katsuda, Nishinomiya, and Toyoaki Yoneda, Tokyo, all of Japan, assignors to Teijin Limited and Dai Nihon Jochugiku Co. Ltd., both of Osaka, Japan

Filed Nov. 16, 1973, Ser. No. 416,666

Claims priority, application Japan, Nov. 20, 1972, 47-115678

Int. Cl. A01n *9/00, 9/28*

U.S. Cl. 424—180 **5 Claims**

1. An insecticidal and acaricidal composition comprising a pesticidal amount of an interacted compound of a pyrethroid with a cyclodextrin and a diluent or carrier.

3,846,552

INSECTICIDAL COMPOSITIONS AND METHODS OF KILLING INSECTS USING N-ALLYL PHOSPHOROTHIOAMIDATES

Masachika Hirano, Minoo; Kunio Mukai, Nishinomiya; Hisami Takeda, and Katsutoshi Tanaka, both of Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

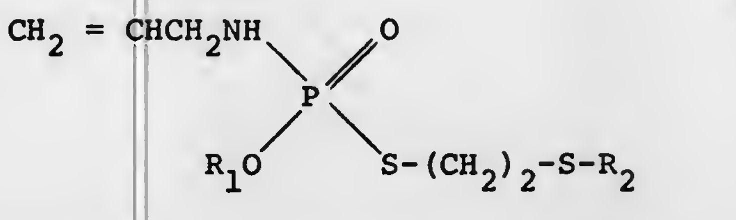
Division of Ser. No. 197,923, Nov. 11, 1971, Pat. No. 3,786,118. This application Sept. 19, 1973, Ser. No. 398,851

Claims priority, application Japan, Dec. 17, 1970, 45-114365

Int. Cl. A01n *9/20, 9/36*

U.S. Cl. 424—216 **2 Claims**

1. An insecticidal composition which comprises as an active ingredient an insecticidally effective amount of a phosphorothioamidate of the formula,



wherein R_1 is methyl or ethyl, and R_2 is an alkyl having 1 to 4 carbon atoms, and an inert carrier.

3,846,553

3-SUBSTITUTED-2-PYRIDONES IN THE TREATMENT OF PAIN, FEVER OR INFLAMMATION

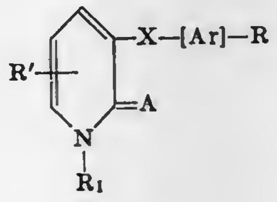
Tsung-Ying Shen; Gordon L. Walford, and Bruce E. Witzel, all of Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 881,922, Dec. 3, 1969, abandoned. This application Aug. 16, 1971, Ser. No. 172,319

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **8 Claims**

1. A method of treating a disease exhibiting the symptoms of pain, fever or inflammation in a human or animal which comprises the administration of about 0.5 mg./kg. to about 70 mg./kg. per day in dosage unit form of a compound of the formula:



where

A is O or S;

Ar is phenyl;

R is hydrogen, loweralkyl, halogen, hydroxy, loweralkoxy, haloloweralkyl, phenyl, naphthyl, nitro, amino, acetylamino, loweralkylamino or diloweralkylamino;

R' is hydrogen or loweralkyl;

X is

—CH—

$-CH_2-CH_2-$

—CH=CH— or

—C C—; and

R_1 is hydrogen, loweralkyl, loweralkenyl, loweralkynyl, phenyl loweralkyl, phenyl, hydroxyloweralkyl, aminoloweralkyl, or diloweralkylamino-loweralkyl; or a nontoxic pharmaceutically acceptable salt.

3,846,554

DETERGENT COMPOSITIONS EXHIBITING REDUCED SKIN IRRITATION AND METHOD OF REDUCING DETERGENT IRRITATION

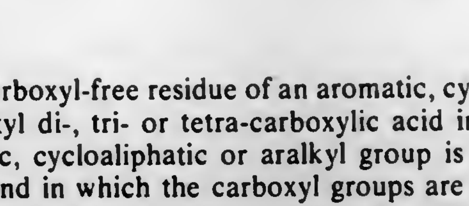
Walter E. Rieder, Terrace Park, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Dec. 15, 1972, Ser. No. 315,285

Int. Cl. A61k *27/00*

U.S. Cl. 424—272 **24 Claims**

1. A detergent composition consisting essentially of a skin irritating detergent and a skin irritation reducing effective amount of a compatible protective agent having the formula



in which

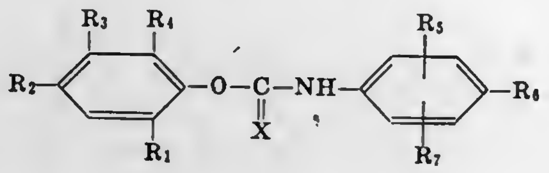
R is the carboxyl-free residue of an aromatic, cycloaliphatic or aralkyl di-, tri- or tetra-carboxylic acid in which the aromatic, cycloaliphatic or aralkyl group is a C_6 cyclic group and in which the carboxyl groups are attached to the C_6 cyclic group, directly or through $-CH_2-$ radicals; the carboxyl-free residue of the unsaturated polycarboxylic acid product obtained by the polymerization of two to four molecules of a monomeric ethylenically unsaturated C_{12} to C_{26} fatty acid; or the carboxyl-free residue of

the hydrogenated derivative of said unsaturated polycarboxylic acid product;
R′ is hydrogen, hydroxyl, C_1—C_6—alkyl, or C_1—C_6-alkyl substituted with hydroxyl or amine;
R″ and R‴ are hydrogen or C_1—C_6-alkyl;
X is oxygen or nitrogen;
M is H, or a cation;
m is 0, 1 or 2;
n is 1, 2, 3, or 4;
n + *m* is 2, 3, or 4;
q is 0 when X is oxygen and q is 1 when X is nitrogen; said detergent composition enhibiting reduced skin irritation relative to the said detergent composition absent the protective agent.

3,846,555
CONTROL OF MICROORGANISMS WITH O,N-DIPHENYLCARBAMIC ACID ESTERS

Walter Traber, Riehen; Heinz Hambock, Binningen, and Anton Georg Weiss, Benken, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Division of Ser. No. 5,954, Jan. 26, 1970, Pat. No. 3,721,699. This application Jan. 2, 1973, Ser. No. 320,388
Int. Cl. A01n *9/12, 9/20*
U.S. Cl. 424—300 **23 Claims**

1. A composition for controlling bacteria and fungi and for protecting organic material against attack by bacteria and fungi which comprises
(1) a bactericially or fungicidially effective amount of an O,N-diphenylcarbamic acid ester of the formula



R_1 represents phenoxy substituted by from 1 to 3 identical or different halogen atoms selected from the group consisting of fluorine, chlorine and bromine,
one of R_2, R_3 and Rrepresents chlorine or bromine, and each of the others of R_2, R_3 and R_4 represents hydrogen, chlorine or bromine,
each of R_5 and R_7 represents hydrogen, fluorine, chlorine, bromine, lower alkyl, lower alkoxy, halogeno-lower alkyl, nitro or hydroxy,
R_6 represents hydrogen, fluorine, chlorine, bromine, lower alkyl, lower alkoxy, di-lower alkylamino or hydroxy, and X represents oxygen or sulfur
and (2) a carrier compatible with said ester.

3,846,556
WATER-IN-OIL EMULSIONS, COSMETIC PRODUCTS MADE THEREFROM AND METHOD OF MAKING SAID COSMETIC PRODUCTS

Rose-Marie Handjani nee Vila, and Arlette Zabotto nee Arribau, both of Paris, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France
Filed Mar. 21, 1972, Ser. No. 236,785
Claims priority, application Luxembourg, Mar. 29, 1971, 62873
Int. Cl. A61k *27/00*
U.S. Cl. 424—364 **6 Claims**

1. A water-in-oil emulsion for use in the preparation of cosmetic compositions consisting essentially of a discontinuous aqueous internal phase, a continuous oil external phase and an emulsifying agent to emulsify said aqueous internal phase and said external oil phase, said emulsifying agent being a mixture of (a) a lanolate selected from the group consisting of magnesium lanolate, aluminum lanolate, lithium lanolate, zinc lanolate and calcium lanolate and (b) a member selected from the group consisting of hydrogenated lanolin, lanolin alcohol, and mixtures thereof, the weight ratio of (a) : (b) being between 80—10:20—90, said emulsifying agent being present in amounts of 3–50 percent by weight of said emulsion, the weight ratio of said continuous oil external phase to said emulsifying agent being between 95—20:5—80 and said aqueous internal phase being present in amounts of 5–70 percent by weight of said emulsion.

3,846,557
BAIT FOR SYNANTHROPIC FLIES AND METHOD FOR MAKING SAME

Mir S. Mulla, and Yih-Shen Hwang, both of Riverside, Calif., assignors to The Regents of the University of California, Berkeley, Calif.
Filed May 26, 1972, Ser. No. 257,315
Int. Cl. A01n *1/02*
U.S. Cl. 426—1 **7 Claims**

1. A method for attracting synanthropic flies and ants which comprises placing a solid and dry bait on a substrate in contact with the air and in an environment having an available moisture content of at least 10 percent by weight and leaving said bait on said substrate and in contact with said air and said environment whereby there is evolution of a gas attractant which is attractive to synanthropic flies and ants, said bait consisting essentially of a dry solid fermented protein composition from which substantially all of the water was removed while said composition was frozen, said freezing taking place when said protein was evolving an attractant gas.

3,846,558
METHOD FOR CONVERTING ANIMAL WASTE PRODUCTS INTO A FOOD SUPPLEMENT

Roger H. Stevens, New York, N.Y., assignor to International Farm Systems, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 829,194, Nov. 24, 1969, Pat. No. 3,633,547. This application Dec. 22, 1970, Ser. No. 100,587
Int. Cl. A23k *1/00*
U.S. Cl. 426—2 **16 Claims**

1. A method of increasing the weight of a group of swine which comprises:
forming a slurry of solid and liquid waste products of said swine and a yeast capable of assimilating nitrogen from urea, said slurry containing from 1 to 25 percent of said solid waste;
aerating and agitating said slurry while maintaining its temperature at about 75° to 95°F and its pH at about 4 to 6.5 for a period of time sufficient to effectuate a fermentation process and which produces a swine feed supplement by converting the nitrogen in said waste to a high protein product containing increased amino acids in an amount over that in the raw product and
feeding said swine feed supplement to said swine.

3,846,559
METHOD FOR CONVERTING ANIMAL WASTE PRODUCTS INTO A FOOD SUPPLEMENT

Roger H. Stevens, Streator, Ill., assignor to International Farm Systems, Inc., Streator, Ill.
Continuation-in-part of Ser. Nos. 879,194, Nov. 26, 1969, Pat. No. 3,633,547, and Ser. No. 100,587, Dec. 22, 1970. This application Nov. 30, 1971, Ser. No. 203,249
Int. Cl. A23k *1/00*
U.S. Cl. 426—2 **6 Claims**

1. A method of increasing the weight of a group of swine which comprises:

forming a slurry of solid and liquid waste products of said swine and a yeast,
aerating and agitating said slurry while maintaining its temperature at about 75° to 95°F and its pH at about 4 to 7 until the urea content of the slurry has been substantially eliminated, thereby producing a slurry useful as a swine feed supplement
heating said slurry at a temperature between about 140° – 200°F for a period of time to inactivate a substantial portion of enteric flora therein and to improve the digestability of said supplement, and
feeding said swine feed supplement to said swine.

3,846,560
PROCESS OF MAKING A BASE FOR PROTEIN BEVERAGES

Walter L. Hempenius, Maryland Heights; Joseph Valenti, St. Louis, both of Mo., and Robert E. Moser, Mentor, Ohio, assignors to Quaker Oats Company, Barrington, Ill.
Filed July 22, 1971, Ser. No. 165,338
Int. Cl. A23l *1/00*
U.S. Cl. 426—18 **9 Claims**

1. A process of making an acidic, aqueous solution of polypeptides for use as a base in preparing an acidic, protein beverage, comprising (a) heating an aqueous slurry of a defatted protein selected from the group consisting of soya, cotton or corn seeds at a temperature of from about 150° to 375°F. for a time sufficient to increase the yield of a soluble, nutritional, polypeptide product which is produced when the heated slurry is subsequently subjected to enzymatic hydrolysis, but insufficient to deleteriously affect the flavor of said polypeptide product, (b) subjecting the resulting slurry to enzymatic hydrolyis conditions including the action of a proteolytic enzyme to produce polypeptides, (c) adjusting the pH of the resulting slurry to within the range of from about 2.5 to 6.0, and (d) removing precipitated material from the slurry to leave a clear, acidic solution of polypeptides suitable for use as a base in preparing an acidic, protein beverage.

3,846,561
YOGURT-CONTAINING DOUGH COMPOSITION AND BAKED PRODUCT MADE THEREFROM

Larry G. Hill, 5110 N.E. 17 Ave., Ft. Lauderdale, Fla. 33308
Filed Aug. 7, 1972, Ser. No. 278,207
Int. Cl. A21d *2/34, 13/04*
U.S. Cl. 426—19 **10 Claims**

1. A bread dough composition consisting essentially of flour, water, yeast and yogurt, said yogurt being present in said bread dough composition in an amount in the range from about 0.5 to about 20.0 percent by weight based on the flour content of said dough composition.

3,846,562
PROCESS FOR THE TREATMENT OF COCONUT

John H. Forkner, Fresno, Calif., assignor to The Pillsbury Company, Minneapolis, Minn.
Continuation-in-part of Ser. No. 74,310, Sept. 22, 1970, abandoned, which is a continuation-in-part of Ser. No. 866,452, Oct. 15, 1969, abandoned. This application Aug. 19, 1971, Ser. No. 173,106
Int. Cl. A23l *1/36*
U.S. Cl. 426—44 **10 Claims**

1. In a process for the treatment of coconut meat, the step of subjecting hydrated coconut meat in particulate form to fermentation of the presence of bakers yeast as a fermenting medium to tenderize the meat.

3,846,563
QUICK-COOKING MACARONI PRODUCTS AND PROCESS

Thomas A. Cunningham, Cresskill, N.J., assignor to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.
Continuation-in-part of Ser. No. 242,800, April 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 143,271, May 13, 1971, abandoned. This application Oct. 1, 1973, Ser. No. 402,105
Int. Cl. A23l *1/16*
U.S. Cl. 426—158 **17 Claims**

1. A method for preparing quick cooking macaroni products which comprises the steps of:
a. combining a dry, at least partially precooked wheat flour, having from 20 percent to about 60 percent gelatinization, with water and other optional dough ingredients to form a manageable dough, the precooked flour being present at a level sufficient to provide cohesiveness in the dough to permit proper handling characteristics during the forming operation, while at the same time insuring a macaroni product which will rehydrate in less than a minute and a half following the addition thereto of boiling water;
b. forming the dough into pieces of the desired configuration; and
c. drying the dough pieces.

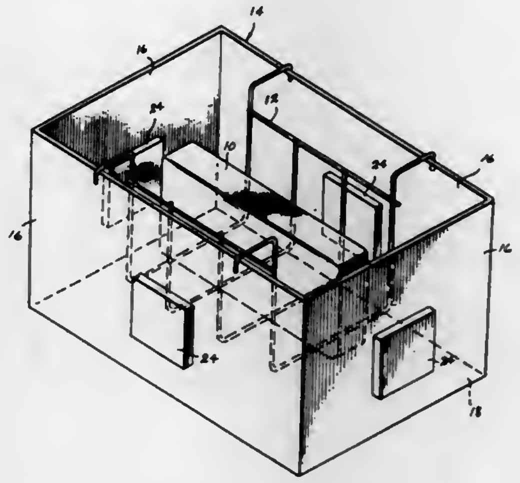
3,846,564
EDIBLE MIXTURE

Denis J. Malin, 13 Brandville Gardens, Essex, England
Filed Sept. 12, 1972, Ser. No. 288,284
Int. Cl. A23l *1/31*
U.S. Cl. 426—212 **17 Claims**

1. An edible mixture including textured protein mixed with an amount of comminuted animal glandular tissue sufficient to mask the flavor of the protein.

3,846,565
METHOD OF HEATING FROZEN FOOD USING SONIC OR ULTRASONIC WAVE ENERGY

Robert B. Rosenberg, Hinsdale; John D. Nesbitt, and Mark E. Fejer, both of Chicago, all of Ill., assignors to South Bend Range Corporation, South Bend, Ind.
Filed Aug. 3, 1972, Ser. No. 277,647
Int. Cl. A23l *3/56*
U.S. Cl. 426—238 **8 Claims**



1. A method of heating a frozen food comprising the steps:
a. providing a heated medium;
b. exposing said food to said heated medium; and
c. directing vibratory wave energy in the sonic or ultrasonic range through said heated medium and against said food to assist said heated medium in reheating said food to an elevated temperature.

3,846,566

PROCESS FOR INCREASING THE NATURAL COLOR INTENSITY OF SEAFOODS

Ralph Blomstrom, P. O. Box 8958, 402 74 Goteborg, Sweden
Continuation-in-part of Ser. No. 205,301, Dec. 6, 1971, abandoned. This application July 9, 1973, Ser. No. 377,517
Int. Cl. A22c *29/00*
U.S. Cl. 426—250 **12 Claims**

1. A method for enhancing the intensity of the natural color of crustaceans which comprises contacting the seafood with a solution of canthaxanthin or apo-carotenal at an elevated temperature above about 50℃ and for a time sufficient to deposit upon said seafood at least about 0.001 parts of canthaxanthin or apo-carotenal per part of seafood.

3,846,567

VEGETABLE PRODUCT COATED WITH PROPIONIC ACID IMPREGNATED PARTICULATE MATERIAL

Jakab Matyas; Istvan Petroczy; Eva Somfai, and Agoston David, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary
Filed Jan. 27, 1972, Ser. No. 221,376
Claims priority, application Hungary, Jan. 27, 1971, MA 2188
Int. Cl. B65b *55/009*
U.S. Cl. 426—289 **5 Claims**

1. A process for treating a vegetable product with vapors of propionic acid having a vapor pressure of 10 to 100 mm Hg at ambient temperature, comprising the steps of:

a. intimately mixing the propionic acid with a finely divided particulate solid selected from the group which consists of dispergent oxides, activated charcoal, perlite, plastic powders, bentonite or peat amorphous or microcrystalline to X-rays and of a particle size under 10 microns to produce a powder containing 50 to 95 percent of the propionic acid; and
b. contacting said vegetable product with said powder.

3,846,568

PREPARATION OF MEAT FLAVOR CONCENTRATES FROM HEAT-TREATED SLURRIED MEAT, WATER, AND ASCORBIC ACID

Alexander Leon Liepa, Cincinnati, and David Evans O'Connor, Greenhills, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed May 1, 1972, Ser. No. 248,993
Int. Cl. A23l *1/26*
U.S. Cl. 426—364 **10 Claims**

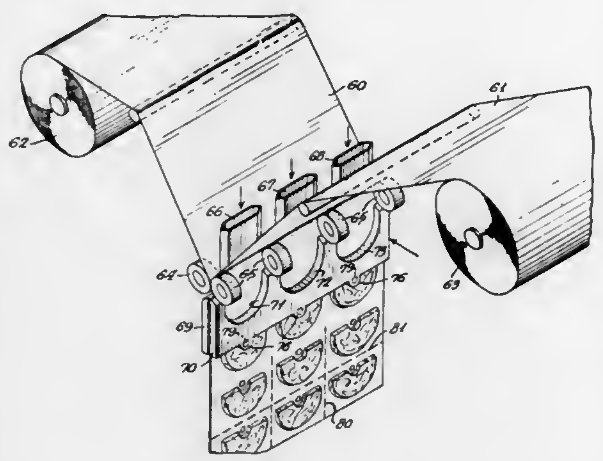
1. A process of preparing a meat analog flavoring substance comprising

a. comminuting any natural meat source to provide finely divided particles;
b. forming a slurry comprising the finely ground meat source of step (a), from 0.1 to 2.0 percent ascorbic acid and water in an amount corresponding to the range of from no added water to about 5 parts water to 1 part protein source,
c. heating the slurry of step (b) in a closed container at temperatures of from 200℉ to 400℉ for from 30 seconds to 5 hours; and
d. removing the slurry of step (c) and adjusting the pH to a range of about 4.5 to about 8.0 with a basic material selected from the group consisting of sodium hydroxide, potassium hydroxide, or calcium hydroxide; and
e. separating the liquid phase of step (d) and diluting said liquid phase with water to within the range of about 1 part concentrate to 10 parts water to about 1 part concentrate to 100 parts water; and
f. adding the dilute liquid phase of step (e) to meat analogs in concentrations of from 1.0 to 5.0 percent.

3,846,569

METHOD OF MAKING A DISPOSABLE PRECHARGED COFFEE BAG

Reuben A. Kaplan, c/o Owatanna Tool Company, Owatonna, Minn. 55060
Continuation of Ser. No. 114,149, Feb. 10, 1971, abandoned, which is a continuation of Ser. No. 881,053, Dec. 1, 1969, abandoned. This application Oct. 6, 1972, Ser. No. 295,473
Int. Cl. B65b *29/02*
U.S. Cl. 426—394 **1 Claim**

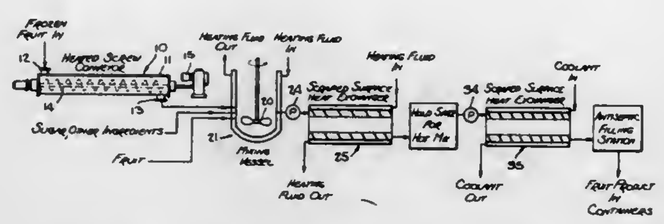


1. The method of making a disposable semiannular precharged coffee bag of porous sealable paper or the like comprising, feeding a pair of web sections of said paper into face-to-face relation and at opposite sides of a downwardly-depending coffee charging chute, a first sealing step of sealing said pair of web sections together across their width including a semicircular concave sealing line to leave an upwardly-open pocket immediately beneath the discharge end of said chute with a filling opening the full width of the pocket, charging said pocket through the full width opening with a charge of ground coffee issuing from the discharge end of said chute to partially fill the pocket, sealing said web sections together along a generally straight line above the level of the coffee in said pocket to close off said pocket and form a sealed band of said web sections and at the same time perform said first sealing step for the next of said upwardly-open pockets, forming an extension of said sealed band extending into said pocket and forming a hole therein to fit the riser of a percolator with a portion of said band extending outwardly beyond said hole in order to overlap with another similar coffee bag, and moving said web sections a short distance to move the newly-formed pocket a distance to position the full width opening beneath the discharge end of said chute.

3,846,570

PREPARATION OF FRUIT COMPOSITIONS

Walter Vetter, Meggen; Hanspeter Mueller, Emmenbruecke, and Theodor Geissman, Reinach, all of Switzerland, assignors to International Flavors & Fragrances, Inc., New York, N.Y.
Filed Mar. 26, 1973, Ser. No. 345,002
Int. Cl. A23c *3/00*
U.S. Cl. 426—399 **11 Claims**



1. A process for preparing fruit compositions suitable for addition to milk products while retaining the characteristic texture, structure, taste and color of fruit in the compositions which comprises: (a) mixing fruit with one or more fruit adjuvants while heating said mixture to form a substantially homogenous mixture, (b) passing said mixture through a scraped surface heat exchanger while turning the mixture over to rapidly thermally pasteurize the mixture without substantial degradation of the fruit composition or significant disintegration of fruit particles, (c) rapidly cooling said mixture to room or ambient temperature by passing said mixture through a second scraped surface heat exchanger, and (d) filling said mixture into a container under aseptic conditions.

3,846,571

PROCESS OF TREATMENT OF SMOKED-AND-DRIED MEAT

Oleg Alexandrovich Kremnev, ulitsa Vladinirskaya, 51-53, kv. 12; Vladimir Rudolfovich Borovsky, ulitsa Pimoenko, 20, kv. 12; Sergei Semenovich Kravets, ulitsa Kultury, 20, kv. 14, all of Kiev; Nikolai Fedorovich Alexeev, Balshay Dorogamilovskaya, 60, kv. 32, Moscow; Vladislav Arkhipovich Tsvetkov, Volzhsky bulvar, 34, Kv. 36, and Vladimir Borisovich Bogdanovsky, ulitsa Menikova, 17, kv. 43, Moscow, all of U.S.S.R.
Filed Mar. 2, 1972, Ser. No. 231,423
Int. Cl. A23l *1/31*
U.S. Cl. 426—415 **1 Claim**

1. A method for drying a smoked meat product while avoiding over-drying of the surface of said product comprising the steps of enclosing said product in an envelope of a paper material and exposing the enclosed product to a current of air having a temperature of 20℃. to 40℃. and flowing at a rate of 1 to 5 m/sec, whereby the product is dried in about 6–8 days.

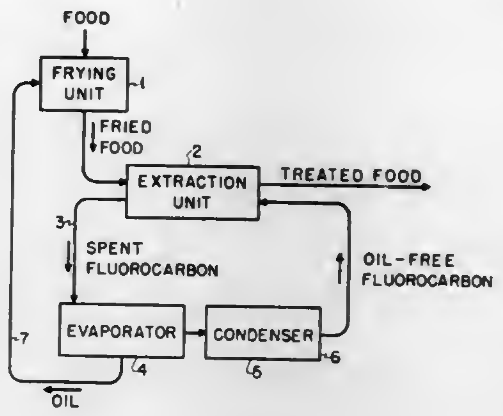
3,846,572

REDUCING OIL CONTENT OF FRIED POTATOES BY IMMERSING IN OIL-FREE DIFLUORODICHLOROMETHANE

Masahide Nonaka, Moraga; Earl Hautala, Richmond, and Merle L. Weaver, Martinez, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Oct. 18, 1971, Ser. No. 190,007
Int. Cl. A23l *1/12*
U.S. Cl. 426—429 **1 Claim**

1. A process for preparing fried potato products of decreased oil content, which consists of

a. cutting peeled potatoes into strips,
b. imparting a surface freeze to the strips by immersing them for 11 seconds in difluorodichloromethane at −21.6° F.,
c. leaching the strips in water at 125° F. for 20 minutes,
d. par-frying the strips in oil at 323° F. for 1 minute, and



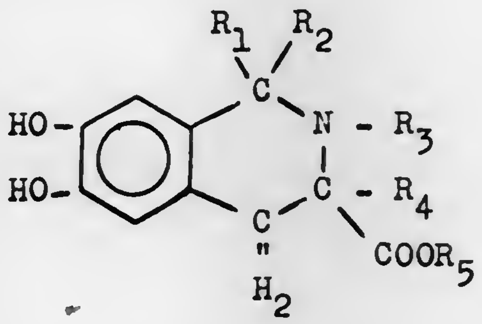
e. immersing the strips with agitation in oil-free difluorodichloromethane at −21.6° F. for 1 to 2 minutes.

3,846,573

METHOD OF STABILIZING ORGANIC COMPOUNDS AGAINST OXIDATION WITH ISOQUINOLINE DERIVATIVES

Shinji Okumura, Tokyo; Shito Takeshita, Kawasaki; Hitoshi Enei, Zushi, and Sadayoshi Ninagawa, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
Filed Aug. 17, 1973, Ser. No. 389,206
Claims priority, application Japan, Aug. 22, 1972, 47-83861
Int. Cl. A23d *5/04*
U.S. Cl. 426—182 **8 Claims**

1. A method of protecting an organic material against oxidation which comprises mixing said material with an isoquinoline derivative of the formula



wherein R_1 is hydrogen or lower alkyl; R_2 is hydrogen, lower alkyl, carboxy or carbo-alkoxy, said alkoxy having up to 24 carbon atoms; R_3 is hydrogen, or R_2 and R_3 jointly constitute a second carbon-to-nitrogen bond; R_4 is hydrogen or lower alkyl; and R_5 is hydrogen, alkali metal or alkyl having up to 24 carbon atoms;

said organic material being an oil, fat or wax of animal, vegetal, or mineral origin, rubber, or sythetic resin, and sensitive to oxidation by atmospheric oxygen, and the amount of said derivative being sufficient to retard said oxidation.

3,846,574

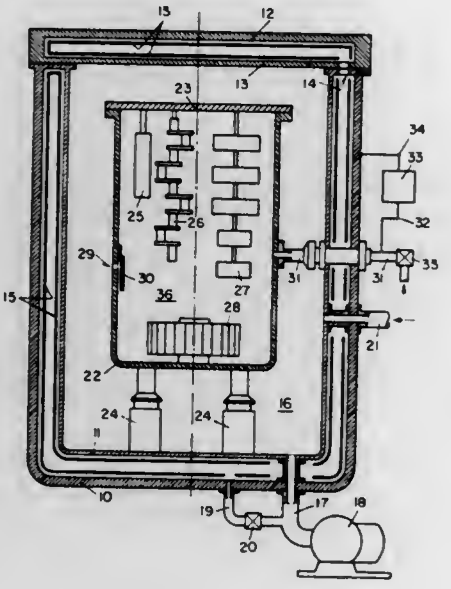
METHOD OF HEATING OBJECTS AND DEVICE FOR THE PERFORMANCE OF THE METHOD

Horst Edmund Rordorf, 8104 Weiningen, Ifang, 12, Switzerland

Division of Ser. No. 154;127, June 17, 1970, abandoned. This application July 9, 1973, Ser. No. 377,539

Int. Cl. H05b *7/16*

U.S. Cl. 13—31 **7 Claims**



1. An apparatus for heating objects within a furnace comprising:

a metallic furnace arranged within and electrically insulated from a metallic chamber provided with a gas pipe leading into said chamber and connected to a pump and a gas supply pipe for maintaining a gas atmosphere of a predetermined pressure in the interior of said chamber;

a current source connected, as one terminal, to said chamber and, as its other terminal, to a current lead-in insulated from the metallic walls of said chamber and contacting said furnace for maintaining an electric glow discharge between said chamber and furnace with the inner wall of said chamber and the outer side of said furnace as electrodes; and

at least one separate gas supply pipe communicating with the interior of the said furnace and sealed against the interior of the said chamber for maintaining a desired gas atmosphere within said furnace.

3,846,575

CABLE SHEATH AND READY ACCESS CLOSURE INCLUDING A CABLE SHEATH

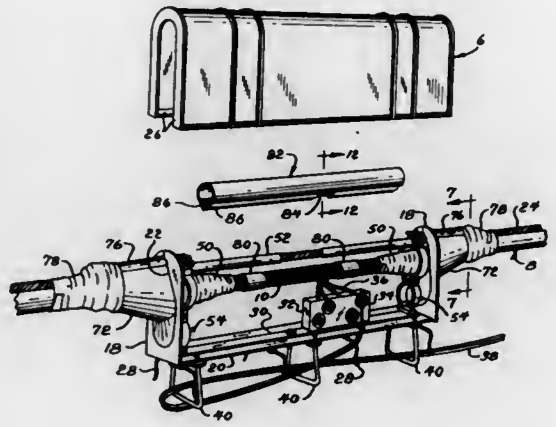
Michael K. Troy, Elmhurst, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.

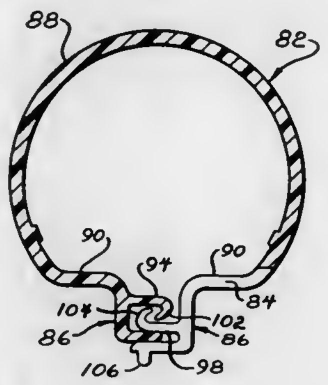
Filed July 16, 1973, Ser. No. 379,792

Int. Cl. H02g *7/06, 3/04*

U.S. Cl. 174—41 **9 Claims**

1. A ready access closure for a communications cable having a plurality of insulated wires and a metallic grounding shield surrounding said wires, said cable being supported by a messenger, said closure comprising a base assembly having opposed ends and a member joined to said ends and extending therebetween, said ends having openings receiving the cable, said metallic grounding shield being interrupted between said ends, means including electrically conductive clamps adjacent to said ends and secured to said member, an electrically conductive strap on said member and being in conductive connection with said clamps, said clamps being secured to said messenger and to said metallic grounding shield, at least one terminal block on said strap and having conductive terminals, a group of wires from said cable being connected to said terminals, said group of wires being less than all of the wires of said cable, a cable sheath constituting a closure over said cable, said sheath lying between said clamps and having adjacent longitudinal margins that define a lateral opening into the sheath and through which the cable may pass upon mounting the sheath onto the cable, said longitudinal margins having cooperating means for snap-fitting engagement to close said sheath and inhibit ready separation of said margins, said sheath also having a notch that forms an additional lateral opening and through which said group of wires projects, the notch being of such size that the remaining wires of the cable are substantially inaccessible for connection to said terminal block, and a removable cover cooperating with said base assembly substantially enclosing the sheath-covered cable and said terminal block.





3,846,576

PARTITION WITH OPENINGS FOR PLUGGING THROUGH VOLTAGE-CARRYING CONTACTS

Erich Silbermann, Bubenreuth, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany

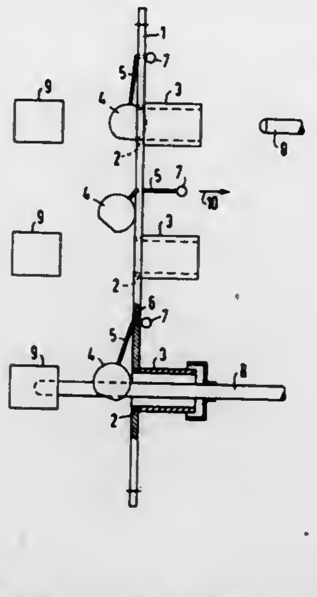
Filed Apr. 11, 1973, Ser. No. 350,045

Claims priority, application Germany, Apr. 20, 1972, 2219432

Int. Cl. H01r *13/44*

U.S. Cl. 174—67 **7 Claims**

1. In a switching installation wherein an insulating partition is placed between a bus bar space and a circuit breaker space, the partition having holes therein through which circuit breaker contacts may pass to plug into mating contacts in the bus bar space, apparatus to close off the holes when a circuit breaker is removed, comprising, for at least one hole in the panel, a spherical member vertically suspended, by means attached above the hole, said means permitting movement of said spherical member in at least one direction, to lie opposite the hole on the bus side, whereby a circuit breaker contact being inserted through the hole will push said spherical member out of its way and retraction of the circuit breaker contact will allow said spherical member to rest against the hole closing it off.



3,846,577

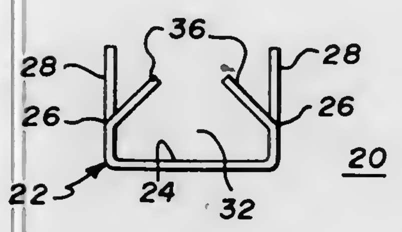
ELECTRICAL SPLICE

Ted L. C. Kuo, Elizabeth, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed July 10, 1973, Ser. No. 377,949

Int. Cl. H02g *15/08*

U.S. Cl. 174—84 C **1 Claim**



1. An electrical splice comprising: a body member having a base portion extending the length of said body portion, a first compartment including a first given length of said base portion and a pair of first sidewalls, and a second compartment including the remaining length of said base portion and a pair of second sidewalls foldable independently of said pair of first sidewalls; said pair of first sidewalls being selectively folded inwardly towards one another to provide an overhanging portion disposed at an angle generally oblique to the plane of said base portion so that the interior opening formed by said base portion and said pair of first sidewalls is selectively smaller than the interior opening formed by said base portion and said pair of second sidewalls, to restrict the acceptance of said first compartment to a first given sized conductor selectively smaller than a second given sized conductor acceptable within said second compartment.

3,846,578

SPLICE FOR ELECTRIC CABLES

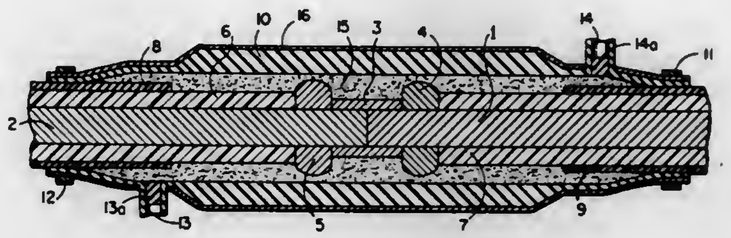
George Bahder, Suffern, and Felipe G. Garcia, New City, both of N.Y., assignors to Phelps Dodge Industries, Inc., New York, N.Y.

Filed Mar. 22, 1972, Ser. No. 237,018

Int. Cl. H02g *15/08*

U.S. Cl. 174—88 R **8 Claims**

1. In combination with a pair of axially aligned cables each having a central conductor and a surrounding insulating layer, said layers being cut back to expose opposing end portions of the conductors, a cable splice comprising a coupling member mechanically and electrically interconnecting said conductor end portions and coaxial therewith, insulating means forming a substantially closed annular chamber extending around said coupling member and insulating layers and having a filler inlet and an air outlet, said inlet and outlet being closed, said means including an insulating sleeve having integral portions surrounding said member and layers in spaced relation thereto, said sleeve having high dielectric properties and constituting the main electrical insulation of the splice, and a material of high dielectric constant filling said chamber.



3,846,579

COLOR TELEVISION SIGNAL GENERATING APPARATUS

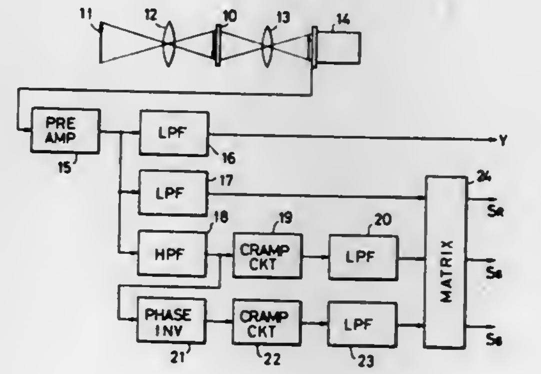
Itsuo Takanashi; Tadayoshi Miyoshi, both of Yokohama; Koji Uesaka, Tokyo; Kenichi Miyazaki, Sagamihara, and Sumio Yokokawa, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama City, Kanagawa-ken, Japan

Filed May 31, 1973, Ser. No. 365,581

Claims priority, application Japan, June 3, 1972, 41-55230; June 20, 1972, 47-61531; Aug. 20, 1972, 47-83158; Mar. 23, 1973, 48-33246

Int. Cl. H04n *9/06*

U.S. Cl. 358—47 **9 Claims**



1. A color television signal generating apparatus comprising:

a color-resolving striped filter comprising a plurality of groups of filter stripes, said groups being disposed parallelly and consecutively in sequentially repeated arrangement each of said groups comprising at least three filter stripes from among

  a first filter stripe having a light transmission characteristic such as to transmit the light of one of the three primary colors of an addition mixture color,

  a second filter stripe having a light transmission characteristic such as to transmit the light of a mixed color of the primary color transmitted through said first filter stripe and one of the other two primary colors, and

  a transparent third filter stripe transmitting white light, said at least three filter stripes being arranged parallelly and consecutively in a specific sequence;

a camera tube provided with said color-resolving striped filter disposed on the front surface thereof and operating to send out as an output signal a superimposed signal comprising, in superimposition, a direct wave signal containing signals of the three primary colors of said addition mixture color and

a high-band component signal comprising a group of modulated color signals representable as signals resulting from the amplitude modulation respectively of a carrier wave of a frequency equal to a space frequency determined by the number of said groups of filter stripes and carrier wave components of frequencies having higher harmonic relationships to the frequency of said carrier wave by the signals of two primary colors other than the primary color of the light transmitted through said first filter stripe;

first separation means for separating said direct wave signal from the output signal of said camera tube;

second separation means for separating said high-band component signal from the output signal of the camera tube;

first clamping means for clamping at a specific voltage level one of two limiting level parts, namely, the minimum level part and the maximum level part, of the high-band component signal obtained as output of said second separation means and obtaining a first two-color mixture signal; second clamping means for clamping at a specific voltage level the other of said two limiting level parts and obtaining a second two-color mixture signal; and

matrixing means supplied respectively with the direct wave signal produced as output of said first separation means, said first two-color mixture signal of the output of said first clamping means, and said second two-color mixture signal of the output of said second clamping means and operating to matrix said signals thus supplied and to produce three primary color signals.

3,846,580

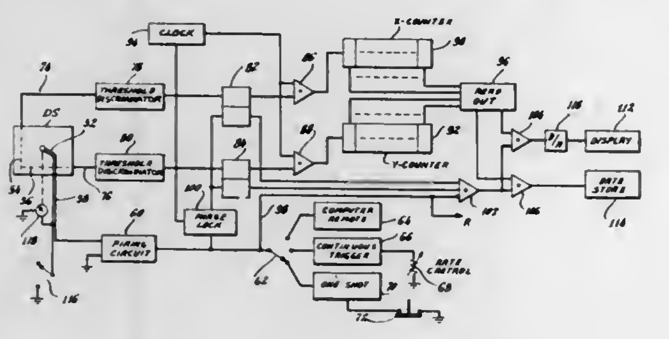
POSITION DETERMINATION DEVICE

Alfred E. Brenner, Glenellyn, Ill., assignor to Summagraphics Corporation, Fairfield, Conn.

Filed Dec. 6, 1972, Ser. No. 312,547

Int. Cl. G08c *21/00*

U.S. Cl. 178—19 **16 Claims**



1. A digitizing position determination device comprising, magnetostrictive transmission means arrayed about a data surface area defined by a plurality of planar coordinates,

pick-up means coupled to said magnetostrictive transmission means and responsive to transmissions from each of said planar coordinates of said magnetostrictive transmission means,

field generating means coupled to said magnetostrictive transmission means for generating a magnetostrictive transmission in each of said planar coordinates of said magnetostrictive transmission means,

said pick-up means and said field generating means being relatively displaceable from each other across said planar coordinates of said magnetostrictive transmission means, a signal source for providing an energizing signal,

first means responsive to said energizing signal for energizing said field generating means and generating thereby a magnetic field of a magnitude sufficient to magnetostrictively induce a vibrational mode into said magnetostrictive transmission means proximate said field generating means, said vibration propagating along said magnetostrictive transmission means at a predetermined velocity, said pick-up means responsive to said vibrational mode in said magnetostrictive means for providing a data signal, second means responsive to said signal source for initiating digitization in digitizing means corresponding to a coordinate position, and

third means responsive to said data signal from a coordinate position for stopping said digitization for said coordinate position, the accumulated digitization in said digitizing means therein representing the time of transit of said vibrational mode from said field generating device to said pick-up means, thereby providing a digitized coordinate position of the position of said pick-up means relative to said field generating device.

3,846,581

PRINTING APPARATUS USED FOR ELECTRONIC COMPUTERS

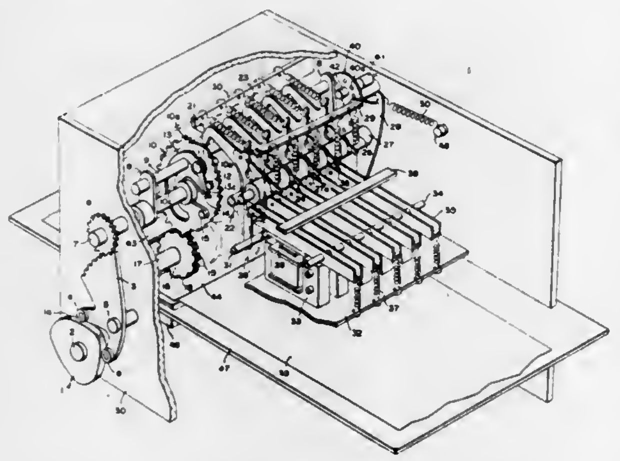
Yasuo Okawara; Toshikazu Shimazaki, and Nagao Mizutani, all of Tokyo, Japan, assignors to Citizen Tokei Company Limited, Tokyo, Japan

Filed Dec. 18, 1972, Ser. No. 316,215

Claims priority, application Japan, Dec. 18, 1971, 46-102996; Jan. 19, 1972, 47-7778; Feb. 14, 1972, 47-14819

Int. Cl. H04l *15/24*

U.S. Cl. 178—33 R **2 Claims**



1. A printer comprising a plurality of typewheels mounted for rotation in side by side relation to one another; a plurality of movable type selecting members rotatably disposed on a shaft and in side by side relation to one another adjacent said typewheels respectively, each type selecting member having a ratchet portion formed as a part thereof, a toothed portion in driving engagement with one of said typewheels formed as another part thereof, and a slot; an operation bar member connected to said shaft for reciprocal motion, said operation bar member extending through said slots for driving said type selecting members; a plurality of engaging members pivotally mounted on said type selecting members respectively adjacent said slots, each engaging member having a recess positioned to frictionally engage said operation bar member when said operation bar member is disposed adjacent a particular portion of said slot, each engaging member also having a slide surface continuing from said recess and positioned to frictionally engage said operation bar member when said operation bar member is adjacent a different portion of said slot, each type selecting member having a spring member for urging said operation bar member into frictional engagement with said recess and continuing slide surface; a plurality of selector members adapted to stop rotation of said type selecting members respectively by engagement with associated ones of said ratchet portions; means for retracting said selector members away from said ratchet portions; and means for actuating said selector members to move said selector members from their retracted positions into engagement with said associated ratchet portions of said type selecting members when desired printing types on said typewheels are properly located in registration with the printing positions.

3,846,582

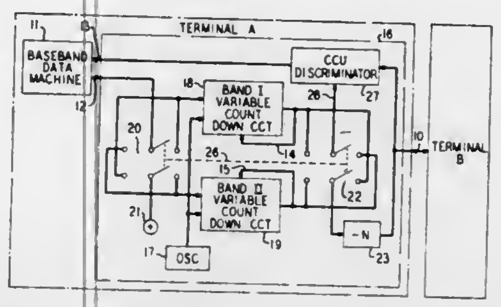
DATA TRANSMISSION TERMINAL FOR FSK FREQUENCY DUPLEXED SYSTEMS

Joseph Henry Condon, Summit, and William Kaminski, West Portal, both of N.J., assignors to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed Aug. 6, 1973, Ser. No. 385,900

Int. Cl. H04l *5/14*

U.S. Cl. 178—58 R **17 Claims**



1. In a frequency duplex telecommunication system terminal for a frequency shift-keyed system utilizing high frequency band mark and space frequencies for transmission in one direction and low frequency band mark and space frequencies for transmission in the opposite direction, an oscillator, a circuit for counting down the oscillator output to produce mark and space frequencies in one of the mentioned bands, a control circuit for applying the oscillator output to control a terminal receiver including a frequency discriminator, the terminal being CHARACTERIZED IN THAT

the countdown circuit and control circuit each include counting devices for providing selectable frequency signals, each of which signals is at a frequency N times a different one of the mentioned mark or space frequencies,

the control circuit includes a circuit for controlling the frequency discriminator in response to one of the selectable frequencies in the other of the bands for determining the band of discriminator operation,

the countdown circuit further includes an N-counter for dividing the selected frequencies provided by the counting device thereof to produce said mark and space frequencies in the one mentioned band as terminal output signals, and

switching arrangements interchangeably provide the selectable frequency signals of the counting devices to the N-counter input and to a control input of the discriminator, respectively.

3,846,583

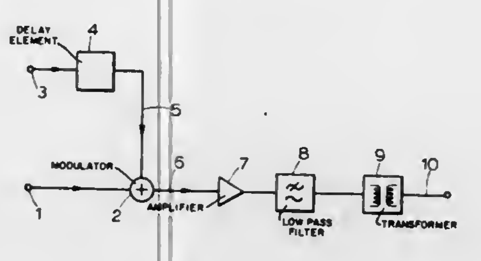
DIGITAL COMMUNICATION SYSTEMS

Richard Arnold Boulter, Saint Albans, England, assignor to The Post Office, London, England

Filed Oct. 18, 1972, Ser. No. 298,518

Int. Cl. H04l *25/02*

U.S. Cl. 178—67 **4 Claims**



1. A method of converting an isochronous base band data signal into a diphase signal including the steps of applying an unfiltered isochronous base band data signal and a carrier signal having a substantially square-waveform, and a frequency equal to the reciprocal of the duration of one element of the base band data signal to respective inputs of balanced modulating means and shifting the phase relation between the base band data signal and the carrier so that at the modulating means inputs, zero-crossings of the carrier occur one-quarter of a cycle before transitions of the base band data signal.

3,846,584

HORIZONTAL AUTOMATIC FREQUENCY CONTROL CIRCUIT

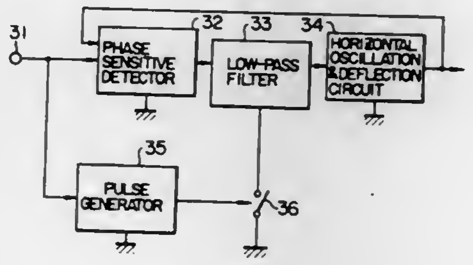
Takashi Itoh; Akio Nakashima, and Yoshihiro Arakawa, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 5, 1973, Ser. No. 403,834

Claims priority, application Japan, Oct. 9, 1972, 47-100692

Int. Cl. H04n *5/04*

U.S. Cl. 178—69.5 TV **4 Claims**



1. A horizontal automatic frequency control circuit comprising a synchronizing signal separating circuit for separating a synchronizing signal from a reproduced composite picture signal, a horizontal oscillation circuit, a horizontal deflection circuit for supplying deflection current to a horizontal deflection coil unit utilizing the signal applied from said horizontal oscillation circuit, a phase sensitive detector for comparing horizontal synchronizing pulses applied from said synchronizing signal separating circuit with phase comparing pulses derived from said horizontal deflection circuit thereby generating at the output thereof a control signal representative of the difference between the phase of the horizontal synchronizing pulses and the phase of the phase comparing pulses, means for applying said control signal to said horizontal oscillation circuit for controlling the phase of said horizontal oscillation circuit, a low-pass filter connected between said phase sensitive detector and said horizontal oscillation circuit, switching means connected to said low-pass filter for disconnectably connecting said low-pass filter to the transmission path between said phase sensitive detector and said horizontal oscillation circuit, and means for controlling said switching means by vertical synchronizing pulses so as to disconnect said low-pass filter from said transmission path for a predetermined limited period of time following the appearance of the vertical synchronizing signal, so that the AC loop gain of said horizontal automatic frequency control circuit can be increased by the disconnection of said low-pass filter from said transmission path and the phase of said horizontal oscillation circuit can quickly respond to phase shift of the horizontal synchronizing signal.

3,846,585

RECORDING STETHOSCOPE

Earl Slosberg, Cornwell Heights, Pa., and Samuel D. Williams, Jr., Stratford, N.J., assignors to Plastics Development Corporation of America, Philadelphia, Pa.

Filed Sept. 21, 1972, Ser. No. 291,101

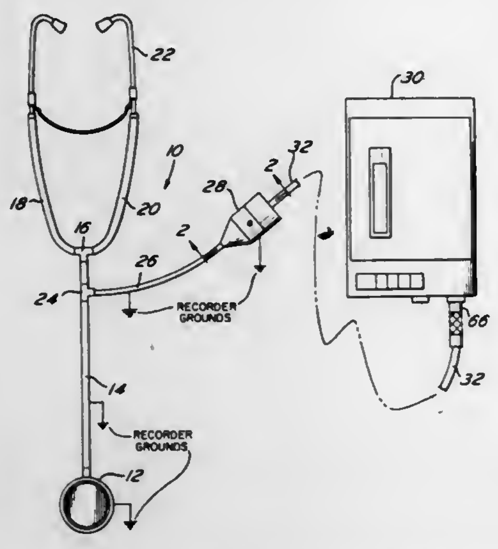
Int. Cl. H04r *1/46;* **A61b** *7/04*

U.S. Cl. 179—1 ST **5 Claims**

1. A recording stethoscope, comprising:

stethoscope means including an electrically conductive chest piece;

a transducer assembly for converting variations in air pressure within said stethoscope means into analog electrical signals for recording, said transducer assembly comprising a two section housing and means for adjustably connecting said two sections together, at least a part of said housing being electrically conductive, a disc shaped transducer responsive to variations in air pressure to generate the analog electrical signals, said transducer being mounted within said housing and being clamped at its periphery between said two sections, a resilient annular member positioned on each side of said transducer between said transducer and each of said two housing sections, an opening in said housing in open communication with the interior of said stethoscope means, and air pressure intensifying means in the form of a conical chamber between said opening and said transducer for amplifying variations in air pressure, said opening being at the smaller end of said conical chamber and said disc shaped transducer being at the larger end;

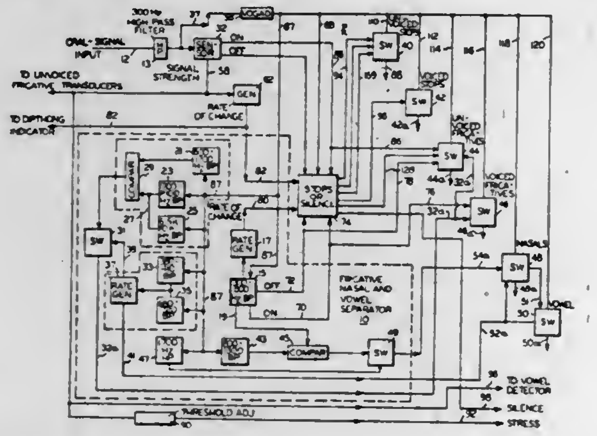


an electrically conductive hollow conduit connecting said chest piece and said opening of said transducer assembly; and an electrical connection means adapted for connection of the output of said transducer to a recording means, said electrical connection means including a conductor for connecting the conductive portion of said transducer assembly housing to the ground or reference potential connection of said recording means whereby the ground or reference potential of the recording means is the same as the potential of the transducer assembly housing and the chest piece adapted to be in contact with a subject being examined.

3,846,586
SINGLE ORAL INPUT REAL TIME ANALYZER WITH WRITTEN PRINT-OUT

David Thurston Griggs, 5128 So. Rolling Rd., Baltimore, Md. 21227

Filed Mar. 29, 1973, Ser. No. 346,173
Int. Cl. G10l *1/16*
U.S. Cl. 179—1 SA **5 Claims**



1. Sound separator device for speech-to-writer apparatus, using single-channel input through an amplifier circuit for connected speech, and separating in real time the speech elements into each of the types of speech sounds of, for example, English: (1) vowels and semi-vowels, (2) nasals, (3) unvoiced fricatives, (4) voiced fricatives, (5) unvoiced stops, (6) voiced stops; said separator device comprising (FIG. 1):

stops-or-silence detector means for distinguishing voiced and unvoiced stops from each other and from the interstitial silences of running speech (**74**);

detection means for nasal, fricative and vowel sounds as they occur in random speech sequence (**10**);

network means of six mutually exclusive logic gates responsive to said foregoing means for deriving the said types of speech sounds (**40,42,44,46,48,50**);

said stops-or-silence detector means (**74**) receiving inputs of the oral signal (**12**) from: (1) a linear amplifier (**88**); (2) oral ON and oral OFF signals from an oral sensor gate (**32**); (3) oral differentiator outputs from a differentiator means (**82**); and (4) signals representing voicing as detected in the range of about 300 to 800 Hz (**80**); and means providing outputs (1) to logic gates for unvoiced (**40**) or voiced (**42**) stops, (2) to a gate for unvoiced fricatives (**44**), and (3) to a silence signal (**98**);

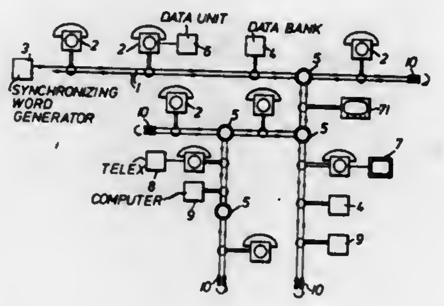
said detection means (**10**) consisting of four networks including filters, timers, rate gnerators, comparators and switches that differentiate instantaneously voiced fricatives, unvoiced fricatives, vowels and semi-vowels, and nasals from each other, at least two network-activated switching means (**31,49**) activated in response to outputs of said networks for enabling individual identification and processing for phoneme outputs, at least one of said filters (**15**) producing an output representing detected voicing in the range of about 300 to 800 Hz.;

said network means of logic gates (**40,42,44,46,48,50**) operated by said stops-or-silence detector means (**74**) or by the nasal, fricative and vowel detection means (**10**) in random real-time sequence according to the sounds of the vocal input.

3,846,587
DATA TRANSMISSION SYSTEM FOR A MULTIPLE BRANCH NETWORK

Klaus Dieter Schenkel, Senden; Wolfgang Herzig, Seligweiler; Rudolf Schehrer, Geisling En/Steige, and Rupert Hildenbrand, Ulm-Soflingen, all of Germany, assignors to LICENTIA Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Germany

Filed Feb. 22, 1973, Ser. No. 334,757
Claims priority, application Germany, Feb. 22, 1972, 2208159
Int. Cl. H04j *3/08*
U.S. Cl. 179—15 AL **12 Claims**

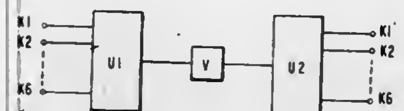


1. In a multiple access data transmission system connected in a communication network having a plurality of branches each composed of a first and second transmission line, a plurality of individual user stations connected to the branches and a plurality of nodes interconnecting the plurality of branches so as to form an interconnected system of all of the user stations, the improvement wherein said system comprises: generating means connected in the system for periodically transmitting synchronizing words; transfer means connected at the ends of each of the branches at the end of the network for transferring the synchronizing words between said first and second transmission lines; time division means connected within each of the user stations for dividing the interval between successive synchronizing words into n equal time slots; search means connected within each of the user stations for searching for a free time slot; and transmitting means connected within each of the user stations for transmitting a data block signal over one of said transmission lines within at least one free time slot.

3,846,588
TELECOMMUNICATION SYSTEMS

Herbert Holzwarth, Stockdorf, Germany, assignor to Siemens & Halske Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 856,881, Aug. 29, 1969, abandoned, which is a continuation of Ser. No. 447,423, Aug. 5, 1965, abandoned.
This application Nov. 16, 1970, Ser. No. 93,557
Claims priority, application Germany, Aug. 7, 1964, 92520
Int. Cl. H04j *1/00*
U.S. Cl. 179—15 FE **7 Claims**



1. A multiple message transmission system including in a single telephone exchange installation means for transmitting a multiplicity of telephone messages over distances of less than **10** km each over separate small diameter cable lines in their original time and frequency relationships, and for compensating for attenuation suffered by the messages in the cable lines, said single exchange installation including:

a common amplifier stage having two sets of terminals and operable to supply at one set of terminals amplified multiplexed messages supplied to its other set of terminals,

first multiplex converter means having its input connected to a plurality of said small diameter lines and its output connected to said other set of terminals of said amplifier stage,

second multiplex converter means having its input connected to said one set of terminals of said amplifier and its output connected to further extensions of said small diameter lines, said first and second converter means being operable respectively to multiplex together messages supplied thereto by said plurality of lines for common amplification in said amplifier stage, and to demultiplex the plurality of messages, after amplification, to restore them to their original time and frequency relationships for further transmission over said further extensions of said lines, said lines being of the smallest possible diameter down to a lower limit of 0.2 mm.

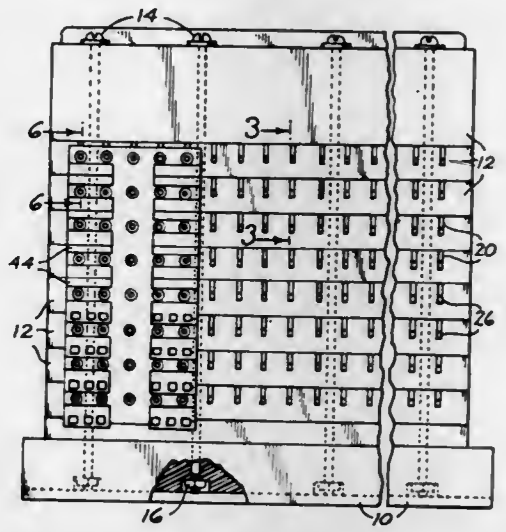
3,846,589
TELEPHONE TRUNK SIGNALING LINK CIRCUIT

Thomas J. Holce, Portland, and Charles M. Huckins, Tigard, both of Oreg., assignors to Kentrox Industries, Inc., Portland, Oreg.

Filed June 2, 1972, Ser. No. 259,222
Int. Cl. H04q *1/08;* H05k *1/04*
U.S. Cl. 179—98 **1 Claim**

1. An electrical connector and component mount assembly providing a telephone E and M trunk signaling link circuit, comprising:

a. a plurality of electrically non-conductive terminal support blocks arranged in a stack and secured together releasably to form a block assembly,
b. a plurality of electrically conductive terminals mounted between adjacent blocks in laterally and electrically spaced-apart relationship and projecting from opposite sides of the block assembly,
c. one projecting end of each terminal providing a connector for an electrical conductor,
d. the opposite projecting end of each terminal providing an electrical contact,
e. a printed circuit board having a plurality of openings therethrough arranged for reception of the electrical contacts for supporting the printed circuit board on the contacts,

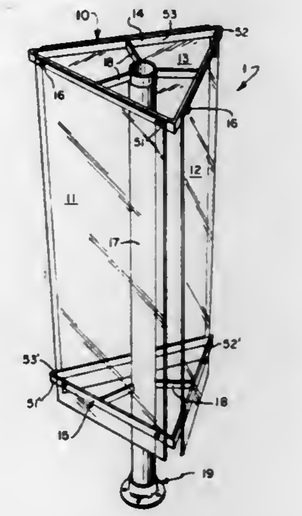


f. a plurality of electrical components supported on the printed circuit board and including a plurality of amplifiers supported removably on the printed circuit board, and
g. electrical conductors on the printed circuit board interconnecting predetermined ones of the contact-receiving openings and said electrical components in a telephone E and M trunk signaling link circuit configuration.

3,846,590
TELEPHONIC EQUIPMENT DISTRIBUTION PANEL ASSEMBLY

Travis R. McLain, Channelview, Tex., assignor to The Siemon Company, Watertown, Conn.

Filed Jan. 16, 1973, Ser. No. 324,126
Int. Cl. H04q *1/14*
U.S. Cl. 179—98 **4 Claims**



1. A telephonic equipment distribution panel assembly for use inside a building, the combination comprising:

a base member supported on the floor of the building;

an upright, central post supported on said base member;

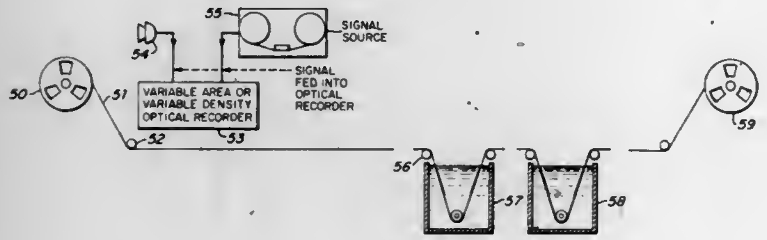
a plurality of triangular shaped support members coupled to said post by means of radial arms, said support members being spaced along said post;

each of the sides of one of said support members lying in the same substantially vertical plane as one of the sides of another of said support members;

three flat mounting members, each coupled to a respective pair of coplanar sides of said support members; and
a plurality of terminal connecting blocks secured to each of said mounting members in spaced, side-by-side rows.

3,846,591
PHOTOGRAPHICALLY MAGNETIC INFORMATION STORAGE ELEMENT

Laura K. Case, 14 Lockeland Rd., Winchester, Mass. 01890
Continuation-in-part of Ser. No. 862,824, Oct. 1, 1969, abandoned. This application Aug. 21, 1972, Ser. No. 282,206
Int. Cl. G11b *11/14, 5/84, 5/62*
U.S. Cl. 179—100.1 A **13 Claims**


50
51
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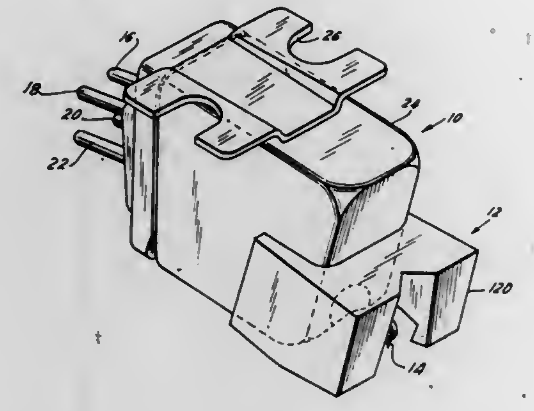
54
55
SIGNAL SOURCE
SIGNAL FED INTO OPTICAL RECORDER
VARIABLE AREA OR VARIABLE DENSITY OPTICAL RECORDER
56
57
58
59

1. The process of making a magnetic record photographically consisting essentially of exposing a photosensitive copy medium comprising a photoconductor and a binder imagewise to a pattern of activating radiation corresponding to a magnetically readable image to produce a physically developable image of catalytic nuclei and contacting this copy medium with a physical developer comprising chemically reactive, magnetizable image forming material comprising a solution of metal ions which reacts selectively to amplify the physically developable image to a visible magnetically readable image.

3,846,592
PHONOGRAPH PICKUP CARTRIDGE FOR FOUR CHANNEL RECORDINGS

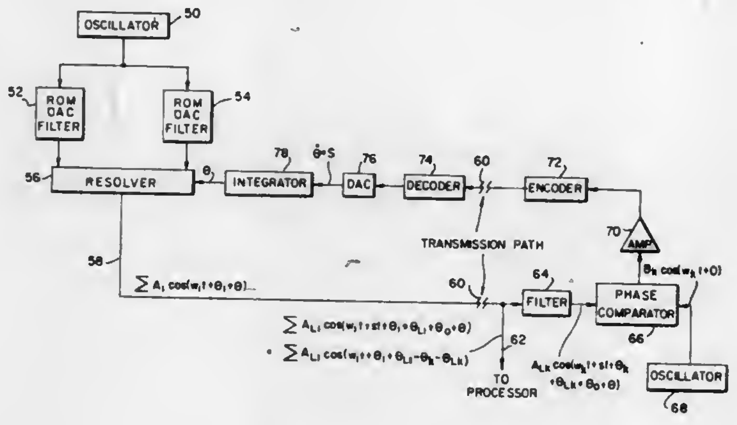
Walter O. Stanton, Laurel Hill Rd., Laurel Hollow, N.Y. 11948
Filed Mar. 29, 1973, Ser. No. 346,008
Int. Cl. H04r *11/12*
U.S. Cl. 179—100.41 K **8 Claims**



1. A magnetic phonograph pickup suitable for use in reproducing four channel recordings comprising:
a pair of separated magnetic circuits, each terminating in a pair of pole pieces with the pole pieces arranged in a quadrangular cluster;
a moving system with a stylus and a supporting magnetic armature mounted for pivotal movement between the cluster of pole pieces; and,
a nonmagnetic, electrically conductive, eddy current shield interposed between and in electrical contact with portions of said magnetic circuits intermediate said pole pieces.

3,846,593
TELEPHONE LINE TEST SYSTEM

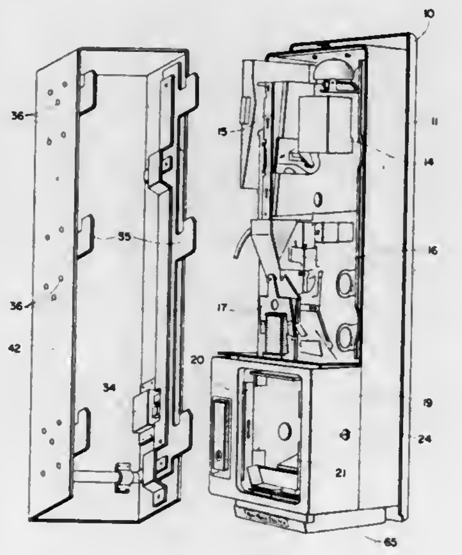
Frank R. Bradley, 9 Dash Pl., Bronx, N.Y. 10463
Filed Oct. 31, 1973, Ser. No. 411,274
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.3 R **7 Claims**


OSCILLATOR
50
52
ROM DAC FILTER
54
ROM DAC FILTER
56
RESOLVER
θ_1
78
INTEGRATOR
$\dot{\theta}=S$
76
DAC
74
DECODER
60
72
ENCODER
TRANSMISSION PATH
70
AMP
58
$\sum A_1 \cos(w_1 t+\theta_1+\theta)$
60
64
FILTER
PHASE COMPARATOR
$\theta_k \cos(w_k t+0)$
$\sum A_{L1} \cos(w_1 t+st+\theta_1+\theta_{L1}+\theta_0+\theta)$
$\sum A_{L1} \cos(w_1 t+\theta_1+\theta_{L1}-\theta_k-\theta_{Lk})$
62
TO PROCESSOR
$A_{Lk} \cos(w_k t+st+\theta_k+\theta_{Lk}+\theta_0+\theta)$
66
OSCILLATOR
68

1. A system for transmitting a predetermined complex signal having at least two frequency components therein along a transmission line from the transmitting end to the receiving end thereof, with the frequency shifts which are introduced by the transmission line being cancelled, comprising means for continuously shifting the phase of each frequency component in said complex signal prior to its transmission, means for comparing the phase of one of the received frequency components with the phase of a reference signal of the same frequency to derive a measure of the phase difference, means for transmitting a control signal indicative of the phase difference from the receiving end of the line to the transmitting end of the line, and means for controlling said phase shifting means in accordance with said control signal such that the phase shifts introduced at the transmitting end of the line are cancelled out by the line as said complex signal travels from the transmitting end to the receiving end thereof.

3,846,594
COIN TELEPHONE WITH SEPARATE COSMETICALLY ATTRACTIVE COVER

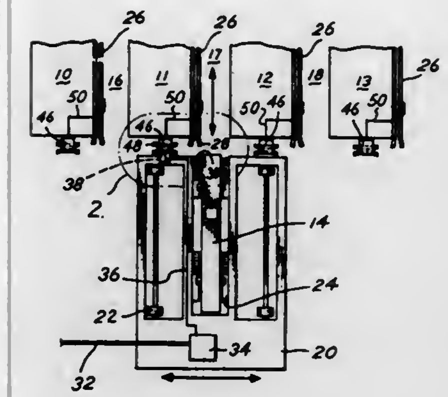
Ronald Joseph Morrell; Joseph Thompson; Raymond Charles Hemming, and Henry Allan Main, all of London, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed Oct. 26, 1972, Ser. No. 301,093
Int. Cl. H04m *1/02*
U.S. Cl. 179—179 **3 Claims**



1. A prepay coin telephone unit comprising:
a housing of heavy gauge steel;
an extension at the lower end of said housing, said extension extending forward of said housing and forming a box-like enclosure, the remainder of said housing having a forward facing peripheral edge;
an inner cover of heavy gauge steel, including a rear peripheral edge extending along the sides and top of the inner cover and in close fitting engagement with said forward facing peripheral edge of said housing, the lower edge of the inner cover in close fitting engagement with said extension;
a latch mechanism retaining said inner cover on said housing, said latch mechanism comprising; a vertically slidable latch member on each side of said inner cover, transverse connecting means connecting said latch members for simultaneous movement of said members, and formations on said latch members engaging with formations on said housing; and actuating mechanism on one side of said inner cover to actuate said latch members, and to lock said latch members in a latching position;
an outer cover of unitary construction attached to and in close fitting engagement with said housing and said inner cover, said outer cover of lightweight construction and presenting a cosmetically attractive outer surface;
latch means for releasably securing the outer cover of said housing;
a telephone dial mounted on said inner cover and extending through an aperture in said outer cover;
a telephone hook mounted on said inner cover and extending through an aperture in said outer cover;
a coin inlet and a coin return button mounted on said inner cover and extending through said outer cover.

3,846,595
VEHICLE POWER SYSTEM

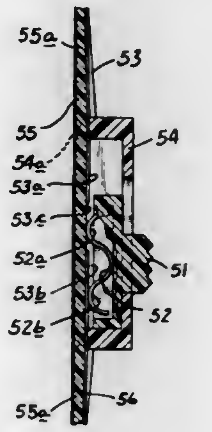
Raymond H. Richardson, Chicago, Ill., assignor to Interlake, Inc., Chicago, Ill.
Filed June 14, 1973, Ser. No. 370,173
Int. Cl. B60l *1/00*
U.S. Cl. 191—3 **5 Claims**



1. In a storage and retrieval system, a method of providing power to a load carrier only when a transfer vehicle is approximately aligned with a given aisle in a storage rack installation, comprising the steps of:
continuously transmitting power to said transfer vehicle,
moving the transfer vehicle across the ends of said aisles, moving a first power transmission coupling simultaneously with said transfer vehicle to engage said coupling with a second power transmission coupling adjacent said given aisle to energize said second power transmission coupling with said power when said transfer vehicle is at least approximately aligned with said given aisle, and
moving said load carrier between said given aisle and said transfer vehicle in response to such engagement of said couplings.

3,846,596
SLIDE SWITCH FOR ELECTRICAL STRIP CABLE

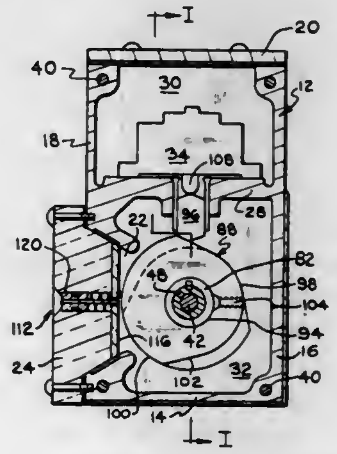
Leo Wolf, 5701 Sheridan Rd., Chicago, Ill. 60660
Division of Ser. No. 212,457, Dec. 27, 1971, Pat. No. 3,763,307. This application July 2, 1973, Ser. No. 375,527
Int. Cl. H01h *15/00;* **H05k** *1/04*
U.S. Cl. 200—16 D **1 Claim**



1. An electrical switch adapted for use in an electrical strip cable assembly of the type having an elongated thin flat strip of flexible insulating material and a pair of parallel spaced metal foil conductors bonded to a surface of said strip and extending longitudinally therewith, said switch comprising:
a switch base having gradually sloping end portions;
a pair of parallel spaced metal foil conductors mounted on said base and extending across said sloping end portions, said switch conductors adapted to mate with said cable conductors, and with at least one of said switch conductors having a discontinuous portion therein;
a resilient contact member having two foil-contacting portions and operable to selectively bridge said discontinuous portion of said switch conductor to thereby complete the circuit of said discontinuous switch conductor;
actuating means for selectively sliding said resilient conductive contact member between a bridging position and a non-bridging position;
and means for securing said contact member and actuating means in an operative relationship with said base.

3,846,597
ROTARY PROGRAMMER WITH DECLUTCHABLE CAMS AND TOOL OPERATED ADJUSTABLE MOUNTING MEANS

Clarence B. Ziegler, Jr., 3510 Balmars Ct., Jackson, Mich. 49201
Filed July 20, 1973, Ser. No. 381,279
Int. Cl. H01h *43/10*
U.S. Cl. 200—38 BA **12 Claims**



1. A rotary programmer apparatus comprising, in combination, a housing, a driven shaft rotatably mounted on said housing, a cam shaft coaxially mounted upon said driven shaft

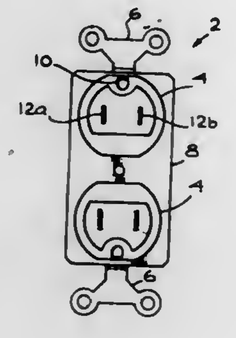
relatively rotatable thereto and having a cam mounting portion located within said housing, at least one cam mounted upon said cam shaft cam mounting portion, adjustable mounting means adjustably mounting said cam upon said cam shaft, control means mounted on said housing engaging said cam and controlled thereby, a key member mounted upon said driven shaft for rotation therewith, a clutch member mounted upon said cam shaft for rotation therewith and located adjacent said key member, means mounting one of said members for relative axial displacement upon its associated shaft, axially extending torque transmitting means defined on said members, said torque transmitting means intermeshing at a first axial position of said one of said members relative to the other of said members to lock said driven and cam shafts for simultaneous rotation and disengaging at a second axial position of said one of said members permitting rotation of said cam shaft upon said driven shaft and rotation of said cam relative to said driven shaft and housing.

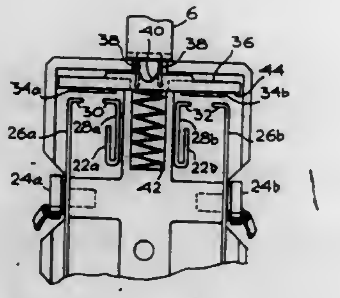
3,846,598

SAFETY, ELECTRICAL GROUNDING OUTLET WITH SAFETY SWITCH

Michael Mucsi, 2474 S. Centinela Ave., Los Angeles, Calif. 90064

Filed Nov. 2, 1973, Ser. No. 412,485
Int. Cl. H01r *33/30*
U.S. Cl. 200—51.09 **8 Claims**





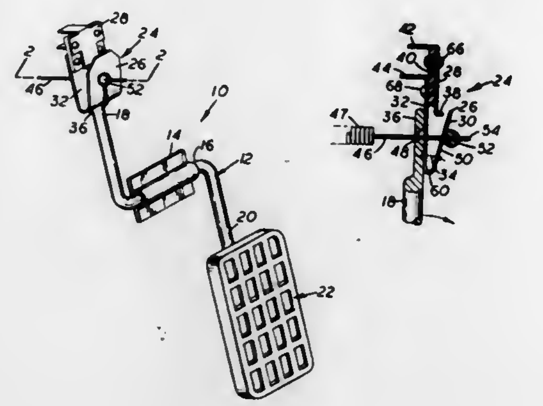
1. An electrical grounding outlet, comprising:
a plug receptacle having a ground prong hole and a plurality of circuit prong holes for receiving the ground prong and circuit prongs, respectively, of a corresponding and mating multiprong grounding plug;
grounding means and a plurality of separate circuit contacts secured to said receptacle, said ground prong hole being in communication with said grounding means and each of said circuit prong holes being in communication with one member of said plurality of separate circuit contacts, with the grounding means and the circuit contacts engaging a ground prong and circuit prongs, respectively, of the aforementioned plug when the prongs thereof are matingly inserted into the receptacle holes;
a plurality of separate circuit terminals secured to said receptacle, each of said circuit terminals being associated with one member of said plurality of separate circuit contacts to form a plurality of non-bridging partial circuits;
separate switch means associated with each of said non-bridging partial circuits, said separate switch means being mutually actuable to close or open said non-bridging partial circuits and thereby establish or interrupt electrical communication between the circuit terminal and the circuit contact thereof;
a non-conductive actuator disposed within said receptacle for actuating said separate switch means, said actuator being reciprocally displaceable between an opened circuit position and a closed circuit position, said separate switch means being actuated to close said non-bridging partial circuits when said actuator is displaced from the opened circuit position to the closed circuit position, and said separate switch means being actuated to open said non-bridging partial circuits when said actuator is displaced from the closed circuit position to the opened circuit position;
said actuator being adjacent said ground prong hole when said actuator is in the opened circuit position whereby the insertion of the plug ground prong into the ground prong hole displaces said actuator from the opened circuit position to the closed circuit position; and
means responsive to the removal of the ground prong from the ground prong hole for displacing the actuator from the closed circuit position to the opened circuit position.

3,846,599

VEHICLE PEDAL OPERATED SWITCH

John Garfield Fontaine, Fort Lauderdale, Fla., assignor to Fail Safe Brake Corporation, Fort Lauderdale, Fla.

Filed Oct. 29, 1973, Ser. No. 410,475
Int. Cl. H01h *3/14, 17/10*
U.S. Cl. 200—61.89 **11 Claims**



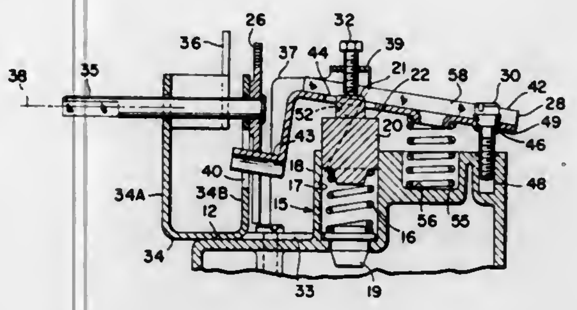
1. A switch for use in a foot pedal assembly on a motor vehicle which has an arm pivoted between its upper and lower ends, foot pedal on the lower end of said arm, said arm having an opening near its upper end, and a cable extending through said opening in the arm and having an enlargement on its front end in front of said opening in the arm, said switch comprising: first and second contact members having confronting engageable contact portions;
and means attaching said contact members to one another for handling as a unit and insulating said contact members from each other;
said first contact member having open-ended slot means therein for passing said cable when said first contact member is inserted between the front of said arm and said enlargement on the cable;
said first contact member being engageable from in front by said enlargement to cause relative movement between said confronting contact portions of the contact members to operate the switch when the foot pedal is depressed.

3,846,600

MEANS FOR CALIBRATING PRESSURE SWITCHES AT EXTRA-LOW PRESSURE SETTINGS

Lawrence A. Kolze, Bensenville, and William H. Jones, Villa Park, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 23, 1973, Ser. No. 408,787
Int. Cl. H01h *35/34, 1/34*
U.S. Cl. 200—83 S **13 Claims**



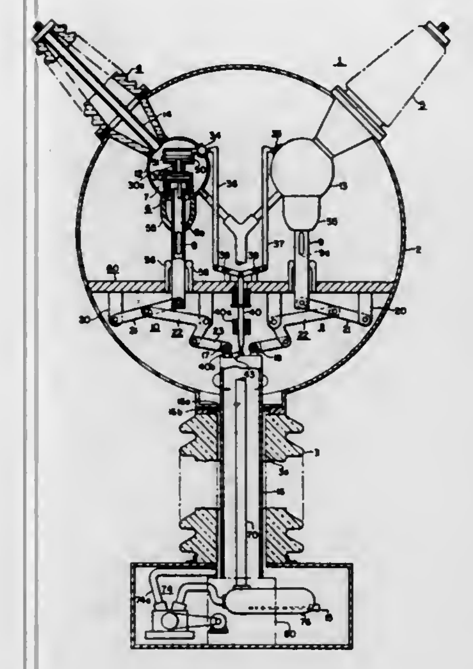
1. A calibration mechanism for a pressure switch of the type having a spring-biased plunger arrangement adjustable to sense different pressures to which said switch responds, said mechanism comprising:
means for establishing and calibrating normal "low to high" pressure settings of said switch, said "low to high" pressure setting means including lever means for adjusting said plunger and cam means operatively associated with said lever means to provide a "low to high" range of settings; and
means for establishing and calibrating an "extra-low" pressure setting for said switch, said "extra-low" pressure setting means effective to isolate said lever and said cam means from acting on said plunger when said "extra-low" pressure setting means is operative.

3,846,601

COMPRESSED-GAS CIRCUIT INTERRUPTER

Winthrop M. Leeds, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 31, 1972, Ser. No. 240,144
Int. Cl. H01h *33/82*
U.S. Cl. 200—148 B **21 Claims**



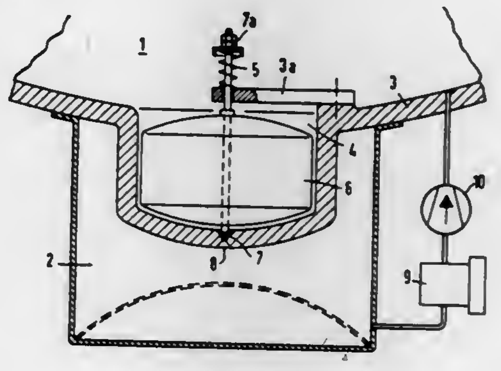
1. A compressed-gas circuit interrupter including a metallic tank and a terminal bushing extending therein, an arc-extinguishing unit including separable contact structure, at least, partically supported by the interior end of said terminal bushing, a high-pressure gas-reservoir chamber also supported adjacent the inner end of the terminal bushing and supported thereby for close proximity to said separable contact structure, and the gas exhausting during arc interruption into the general region within said metallic tank.

3,846,602

DUAL-PRESSURE HIGH-VOLTAGE COMPRESSED-GAS INSULATED ELECTRIC CIRCUIT BREAKER

Fritz Hoffmann, Reinheim, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany

Filed Jan. 4, 1973, Ser. No. 321,027
Int. Cl. H01h *33/82*
U.S. Cl. 200—148 E **5 Claims**



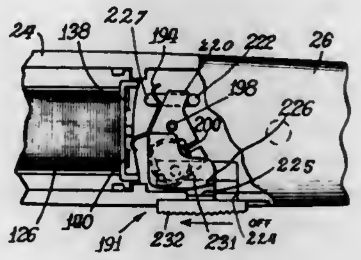
1. Electric high-voltage equipment including a chamber containing electrically insulating compressed gas which condenses to a liquid under increased pressure and/or lowered temperature, a condensate collecting container positioned and connected with the chamber to receive the condensed liquid therefrom and which is maintained at a reduced pressure returning the condensate to gas, and a compressor connected to this container to remove the gas therefrom and force it into the chamber to maintain in the latter the electrical insulation provided by the compressed gas; wherein the improvement comprises means for forming a fluid connection between the container and the chamber and which is responsive to the production of condensate in the latter to open the interconnection and which otherwise closes the interconnection.

3,846,603

HAIR CLIPPER WITH IMPROVED ON/OFF SWITCH

John M. Houser, Milwaukee, Wis., assignor to Oster Corporation, Milwaukee, Wis.

Filed Nov. 13, 1972, Ser. No. 305,952
Int. Cl. H01h *13/08*
U.S. Cl. 200—157 **8 Claims**



1. An electric appliance comprising a housing enclosing a motor which is drivingly connected to an implement mounted exteriorly of said housing, a power cord connected to said housing, a switch for electrically connecting said motor to said power cord including a manually operable member slidably in the wall of said housing and having a knob outside of said housing and an operating portion within said housing, spaced fixed contacts supported by insulating means on said motor, movable contact bridging means supported on a carrier pivotally mounted on the inside wall of said housing, over center spring means pivotally connected to said carrier and to said

operating portion to urge said movable contact bridging means into or out of engagement with said fixed contacts when said manually operable member is moved to the limit of its sliding movement in either direction, said housing including stop means to limit pivotal movement of said carrier when said over center spring means is urging said contact bridging means out of engagement with said fixed contacts, said over center spring mechanism comprises a plastic ring having integral parallel projections extending in opposite directions from diametrically opposed portions of said ring, said projections being received in openings in said carrier and said operating portion.

3,846,604

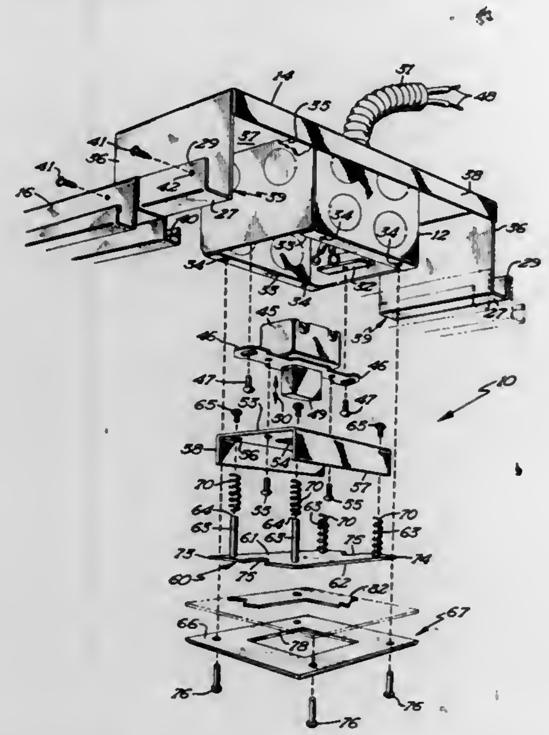
OVERHEAD ELECTRICAL SWITCHING DEVICE

George H. Shallbetter, Minneapolis, Minn., assignor to States Electric Manufacturing Co., North Minneapolis, Minn.

Filed June 11, 1973, Ser. No. 368,962

Int. Cl. H01h *9/02*

U.S. Cl. 200—168 D **5 Claims**



1. An overhead electrical switching device usable on a suspended ceiling having ceiling panels carried by frame members, the device positionable above an aperture in the ceiling, comprising:

- a mounting strap including a rigid, generally flat web positionable above the ceiling panels, said web having a pair of box channels, a box channel extending from said web at opposite sides of said web, each said box channel being attachable to a frame member of the ceiling to thereby rigidly fix said strap to the frame members of the ceiling; an electrical junction box fixed to said web of said mounting strap with its open side facing downwardly and confronting the aperture in the ceiling;
- a switch mounting plate having a plurality of guide sockets therein, said mounting plate attached to and within said junction box;
- electrical switch means including a button, said switch means operable between on and off conditions by displacing said button a predetermined distance, said switch means being rigidly mounted to said switch mounting plate;
- an actuating plate having an inner face positioned to confront said button of said electrical switch means and an outer substantially flat face;
- a plurality of guide rods, each rod having an end fixed to said actuating plate and a free end; said free ends extending within said plurality of guide sockets of said mounting plate for sliding movement therethrough as said actuating plate moves relative to said mounting plate from a rest position wherein said button is not displaced said predetermined distance by said actuating plate, to a depressed position wherein said button is displaced said predetermined distance by said actuating plate to operate said switch means between on and off conditions;
- a plurality of stops positioned at the free ends of a plurality of said guide rods to contain said free ends of said guide rods within said guide sockets in said mounting plate; and spring means connected between said actuating plate and said mounting plate urging said actuating plate to said rest position and yieldably retaining said actuating plate in said rest position permitting said actuating plate to be depressed by an operator.

3,846,605

VISUAL DISPLAY APPARATUS WITH CHARACTER MATRIX

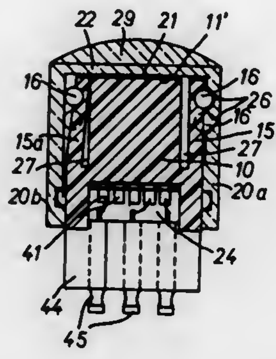
Pirchl, Gerhard, Dietikon, Switzerland, assignor to Romay AG, Oberkulm, Switzerland

Division of Ser. No. 287,267, Sept. 8, 1972. This application Apr. 1, 1974, Ser. No. 456,544

Claims priority, application Switzerland, Sept. 15, 1971, 13490/71

Int. Cl. G08b *5/36*

U.S. Cl. 200—316 **24 Claims**



1. An apparatus for the visual display of characters, especially decimal numerical characters which are associated with successive settings of an adjustment component and a base body and from which characters there is visually displayed during each setting the character associated therewith, comprising a base body and an adjustment component, said base body being provided with a visual surface with a character matrix for the characters to be displayed, said character matrix consisting of lines, cover element means including resilient tongues adjustable by means of the adjustment component for the lines of the character matrix in order to cover those lines which are not needed for the momentary display of a relevant character at the character matrix.

3,846,606

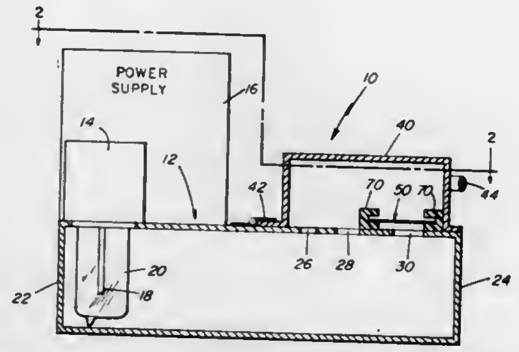
MICROWAVE ENERGY APPLICATOR

Richard H. Edgar, Chelmsford, and Robert A. Peterson, Canton, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Sept. 27, 1972, Ser. No. 292,567

Int. Cl. H05b *9/06*

U.S. Cl. 219—10.55 **3 Claims**



1. A microwave energy heating apparatus comprising:

- a source of electromagnetic microwave energy;

- means for propagating said energy including a waveguide having a longitudinal axis closed at both ends to establish standing waves with the axis of propagation extending along said longitudinal axis;
- said waveguide having an array of spaced slots in one wall with each of said slots having a gradually varying length substantially greater than the width with the major dimension extending transverse to the axis of the propagation of energy to provide high fringing electromagnetic fields along a path in close proximity to said slots;
- a conductive enclosure positioned on said slotted wall to confine energy escaping through said slots; and
- means for positioning an article within said enclosure to be exposed to energy from only one of said slots.

3,846,607

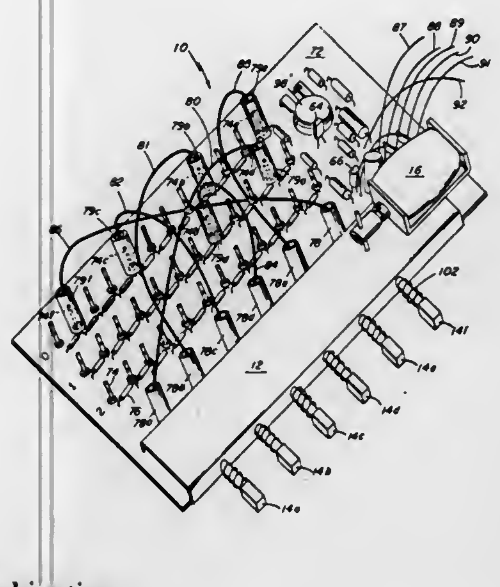
PROGRAMMING CIRCUIT FOR MICROWAVE OVENS

Arnold M. Bucksbaum, 2035 Blake Blvd., S.E., Cedar Rapids, Iowa 52401

Filed Apr. 3, 1972, Ser. No. 333,351

Int. Cl. H05b *9/06*

U.S. Cl. 219—10.55 **6 Claims**



1. In combination;

- a voltage source;
- an electromagnetic energy generator; and
- an electrical circuit to operate said energy generator connected to said voltage source;
- said circuit including means for automatically controlling the operation cycles;
- said means comprising;
- timing circuit means including serially connected resistances each having substantially the same value and a fixed capacitance for programming predetermined total time cycles of operation by electrically interconnecting a predetermined number of said resistances to said capacitance to collectively add to the required total resistance values to achieve the desired operation time;
- selector switch means operatively associated with said timing circuit means to select each desired operation cycle; and
- solid state means coupled to said timing circuit means for releasing said selector means upon completion of a desired programmed cycle.

3,846,608

HIGH TEMPERATURE RESISTANT DOOR SEAL FOR A MICROWAVE OVEN

Benjamin Vera Valles, San Jose, Calif., assignor to Litton Systems, Inc., San Carlos, Calif.

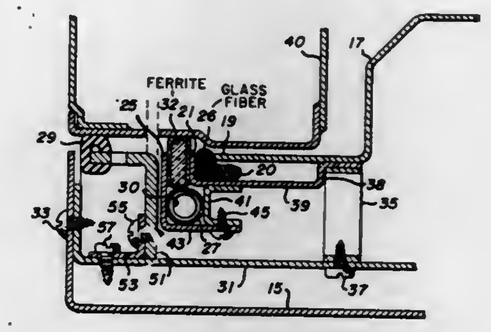
Filed Feb. 11, 1974, Ser. No. 441,044

Int. Cl. H05b *9/06*

U.S. Cl. 219–10.55 **23 Claims**

1. In a microwave oven having a heating chamber within which foodstuffs to be heated by exposure to microwave energy radiation are received, an entry opening at an end of said chamber to provide access to said chamber, an annular border region surrounding said entry opening, and a movable door operable between an open and closed position to prevent exit of microwave energy radiation, said door including a middle door portion to cover said entry opening to said chamber and an annular border region about said middle door portion which covers, at least in part, said annular border region surrounding said heating chamber entry opening to form opposed annular regions, and microwave energy seal means to prevent radiation leakage from physical gaps between said annular door portion and annular border region; the improvement in said combination wherein said microwave energy seal means comprises:

- a choke type seal which includes a first elongated continuous electrically conductive walled cavity of predetermined depth located behind one of said annular border regions and extending about said entry opening; and
- a narrow opening in said first cavity located in said one of said annular border regions and extending entirely about said entry opening and spaced a predetermined distance from said entry opening for providing microwave energy pervious path between said cavity and from about said opposed annular regions;
- a dissipative seal which includes a second elongated cavity underlying one of said annular regions and extending about said entry opening, a narrow opening in said second cavity located in said one of said annular regions and extending about said entry opening and spaced a predetermined distance therefrom for providing a passage between said annular region and said second cavity,
- microwave energy dissipating means located partially within, extending about, and protruding from said narrow opening in said second cavity,
- spring means located within and extending about said second cavity for providing a force on said dissipative means in a direction outwardly of said second cavity to force said dissipative means outwardly from said opening in said second cavity and apply a pressure to the opposed one of said annular regions;
- a third seal which includes a compressible strip of electrically lossy material located on one of said annular regions and extending about said entry opening for compressive engagement between said annular door region and said annular border region surrounding said chamber; and
- wherein said opening in said first cavity is spaced from said opening in said second cavity by a predetermined distance within the range of 0.02 and 0.24 inch and is located more proximate said entry opening than said opening in said second cavity and wherein said opening in said second cavity is located more proximate said entry opening than said third seal.



3,846,609

INDUCTOR FOR INDUCTIVELY HEATING ELONGATED ROTATING WORKPIECE

Larry G. Enk, Macedonia, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

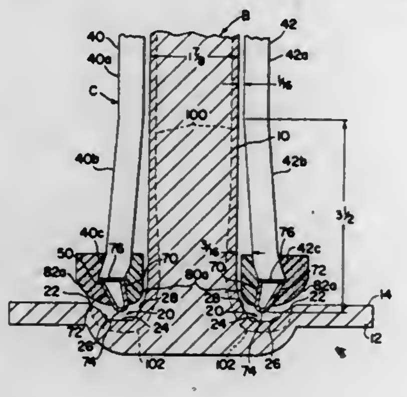
Filed Nov. 29, 1973, Ser. No. 420,018

Int. Cl. H05b *5/08*

U.S. Cl. 219—10.79 **12 Claims**

1. In an inductor for inductively heating an elongated workpiece as it is rotated about a central axis; said workpiece

including a generally cylindrical shaft portion concentric with said axis, a flange including a surface generally orthogonal to said axis and facing said shaft portion and a circumferentially extending recess between said shaft portion and said flange surface, said recess extending axially inwardly of said surface in a direction opposite to said shaft portion; said inductor including two generally parallel conductors extending along said shaft portion and into said recess and first and second cross over conductors joining said parallel conductors at axially spaced positions along said shaft portion with the first of said cross over conductors extending into said recess, said conductors being spaced from and inductively coupled to said workpiece, the improvement comprising: said one cross over conductor having a first portion generally facing said shaft portion of said workpiece, a second portion facing away from said shaft portion and a third portion between said first and second portions and generally facing into said recess; and a layer of high permeability material between said first portion and said shaft portion, said layer being carried by said first portion, spaced from said shaft portion and having a thickness allowing saturation thereof when an alternating induction heating current is passed through said inductor.



3,846,610
MAKING OF LONGITUDINALLY WELDED METAL TUBES

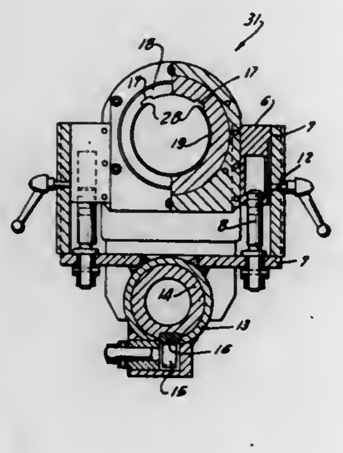
Peter Asselborn; Werner Cramer, both of Bergisch Gladbach, and Heinrich Mullejans, Erkrath-Unterbach, all of Germany, assignors to Felten & Guilleaume Carlswerk Aktiengesellschaft, Cologne, Germany

Filed Feb. 22, 1973, Ser. No. 334,953

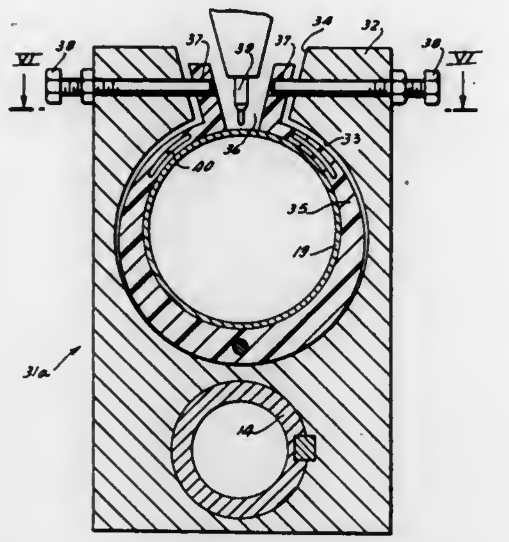
Claims priority, application Germany, May 17, 1972, 2208393; May 17, 1972, 2223984; July 13, 1972, 2234427

Int. Cl. B21c *37/08*

U.S. Cl. 219—61 12 Claims



1. A method of making metal tubes, comprising the steps of arcuately deforming the opposite longitudinally extending marginal portions of a metallic strip in direction inwardly towards one another; subjecting the exposed edges of said marginal portions to a material-removing operation in preparation for subsequent welding; engaging and arcuately deforming only the remainder of said strip intermediate said marginal portions to prevent contact with and contamination of said edges, so as to convert the strip into a tube in which said edges face one another; and welding said edges together so as to form a finished metal tube.



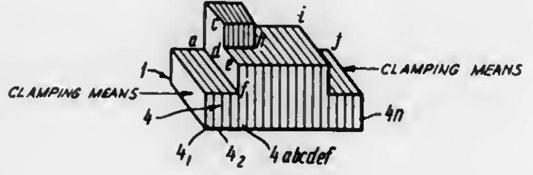
3,846,611
TOOL FOR SHAPING ARTICLES TO A PATTERN

Dmitry Lvovich Fedjukin, B-Cherkizovskaya ulitsa, 10-a, kv. 32; Ljudmila Semenovna Sergeeva, Leninsky prospekt, 97b, 107, kv. 59; Andrei Nikolaevich Bakharev, 3 Cherkizovskaya ulitsa 78, kv. 2; Inna Leonidovna Gorlina, ulitsa Panfilova 4/5, korpus 4, kv. 79; Anatoly Izrailevich Aronov, ultisa Vavilova 44, korpus 4, kv. 69; Arkady Timofeevich Kravets, ulitsa Vavilova 44, korpus 4, kv. 3; Petr Evmenovich Korochkin, Nizhne-Pervomaiskaya ulitsa 66, kv. 32, and Alexei Ivanovich Titov, Beregovoi prospekt, 7, korpus 2, kv. 69, all of Moscow, U.S.S.R.

Filed Aug. 15, 1973, Ser. No. 388,642

Int. Cl. B23k *9/16*

U.S. Cl. 219—69 E 2 Claims



1. A tool for electro-shaping articles to a pattern by way of three-dimensional copying of the tool having the shpae of the pattern, said tool comprising a pack of tightly fitting plates braced in the transverse direction at the ends thereof, at least some of said plates being of different lengths, each of said plates having an end surface dimensioned to conform to the profile of a respective cross-section of said pattern, said plates being arranged in one sequence conditioned by the shape of said pattern and adapted to be reset in the reverse sequence within said pack to produce a mirror image of the shape of said pattern on the tool for shaping articles with a mirror-image shape of said pattern.

3,846,612
PROCESS FOR SECURING A HOROLOGICAL BALANCE SPRING OR HAIR SPRING AND A COLLET TOGETHER BY WELDING

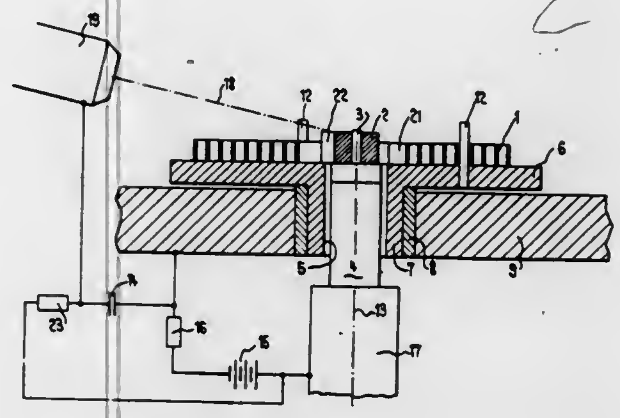
Jean-Jacques Augsburger, Lausanne, Switzerland, assignor to Erfinor A.G., Canton of Berne, Switzerland

Filed Nov. 15, 1973, Ser. No. 416,265

Claims priority, application Switzerland, Dec. 15, 1972, 18276/72

Int. Cl. B23k *27/00*

U.S. Cl. 219—121 LM 4 Claims



1. A process for fixing the inner end of a horological balance spring on a collet and then welding the two parts together including the steps of preliminarily positioning said balance spring on a conducting rotatable support, locating said collet on an arbour insulated from said support, applying an electric potential between said arbour and said rotating support and spring, bringing the inner end of said spring into contact with said collet so that an electric spark preliminarily bonds said spring and collet together in the required position, and then applying a laser beam to weld said spring and collet together.

3,846,613
METHOD OF MANUFACTURING WELDING ELECTRODES

Nikolai Petrovich Jurchenko, ul. Katerinicha, 13, kv. 24, Kramatorsk; Evgeny Arkadievich Chubarov, ul. Kurortnaya, 82, Rostov; Ivan Nikolaevich Pisarenko, Budenovsky Prospekt, 96, kv. 68, and Ljudmila Anatolievna Starikova, ul. Dimitrova, 103, both of Kramatorsk, all of U.S.S.R.

Filed Aug. 18, 1972, Ser. No. 281,771

Int. Cl. B23k *35/22*

U.S. Cl. 219—145 3 Claims

1. A method for manufacturing welding electrodes comprising the steps of preparing a coating mixture comprising calcium fluoride, rutile and metal oxide components, adding to said mixture dicalcium silicate in an amount from 0.1–5 percent by weight based on the weight of said mixture, mixing said coating with soluble silicate, coating the resulting mixture on a metal core and subsequently applying heat to the coated core.

3,846,614
ELECTRIC FLUID HEATING UNIT

Edward J. Doyle, Hatboro, and Richard S. Bagwell, Jr., Lancaster, both of Pa., assignors to Schick Incorporated, Lancaster, Pa.

Division of Ser. No. 76,454, Sept. 20, 1970, Pat. No. 3,758,002. This application May 2, 1973, Ser. No. 356,569

Int. Cl. H05b *1/00;* B67d *5/62;* F24h *1/12*

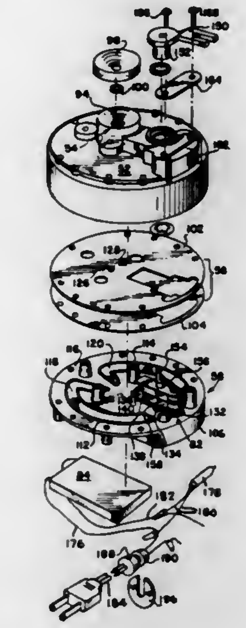
U.S. Cl. 219—302 2 Claims

1. In a product dispenser of the type including an electrical resistance heating element, and a heat storage element in thermal communication with said heating element and having on an outer surface thereof at least one open channel having an inlet and an outlet for receiving said product, the improvement comprising a cover assembly for said channel comprising, in combination:

a first member of relatively thin synthetic plastic material adapted to withstand the temperature of the product to be dispensed and dimensioned to overlie said channel;

a second member of relatively thick flexible material coextensive with and superimposed over said first member; and

means for urging said second member into closely overlying relationship to said outer surface of said heating element whereby said first member is urged into sealing engagement with the margins of said channel to form a heating chamber for said product.



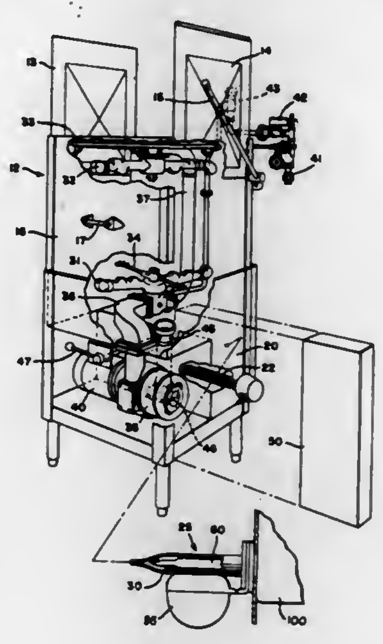
3,846,615
LIQUID TEMPERATURE CONTROL AND LOW LIQUID LEVEL DETECTOR

Stuart E. Athey, and W. Edwin Thornburg, both of Troy, Ohio, assignors to The Hobart Manufacturing Company, Troy, Ohio

Filed Apr. 5, 1973, Ser. No. 348,193

Int. Cl. F24h *1/00*

U.S. Cl. 219—333 13 Claims



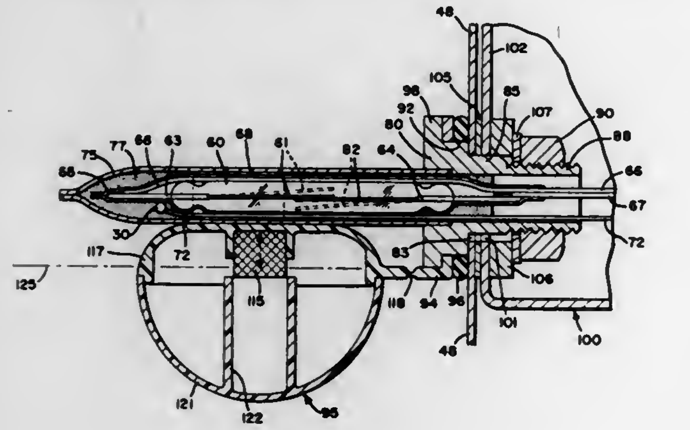
1. Apparatus for maintaining an elevated temperature of a liquid comprising

a reservoir adapted to contain the liquid to be heated,

heating means in said reservoir,

means positioned in said reservoir at a level above the level of said heating means including means for sensing the temperature of said liquid including a thermistor whose electrical characteristics vary in accordance with temperature and

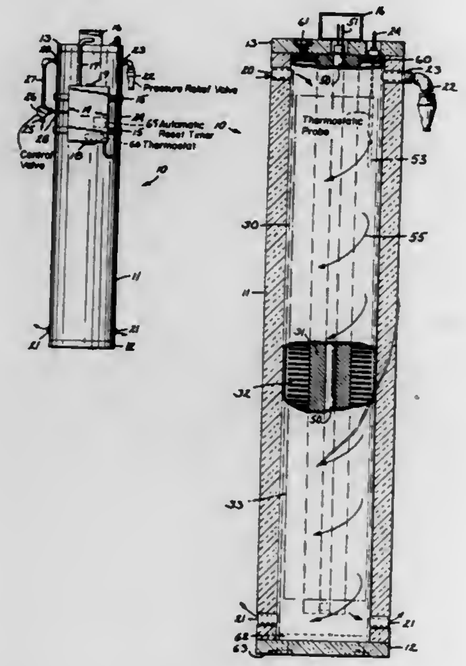
means for sensing that the liquid is above a predetermined level, and



circuit means responsive to said temperature sensing means for controlling the operation of said heating means whereby to maintain the liquid within a predetermined temperature range, said circuit means being responsive to said liquid level sensing means and said temperature sensing means for disabling said heating means if the liquid level falls below said predetermined level or if said thermistor becomes either open or shorted.

3,846,616
PORTABLE GAS HEATER

Joseph J. Beck, Berlin, Wis., assignor to McQuay-Perfex Inc., Minneapolis, Minn.
Filed Mar. 12, 1973, Ser. No. 340,447
Int. Cl. H05b *1/00;* F24h *3/00*
U.S. Cl. 219—365 **1 Claim**



1. A portable gas heater for supplying intermittent bursts of heated gas, comprising:

a. a generally cylindrical heat exchange tube having a central bore for receiving a heating element, said heat exchange tube having sufficient mass for providing a reservoir for storing a substantial amount of heat;

b. an electrical heating element positioned within said bore, said heating element contacting said heat exchange tube in direct heat conduction relationship therewith;

c. a cylindrical inner shell member coaxially positioned about said heat exchange tube but spaced apart therefrom to define a gas heating passage;

d. an outer insulative shell attached to the outside of said inner shell;

e. a plurality of heat exchange fins attached to the outside of said heat exchange tube and extending into said gas heating passage;

f. means for conveying cold gas into one end of said gas heating passage and for conveying heated gas from the other end;

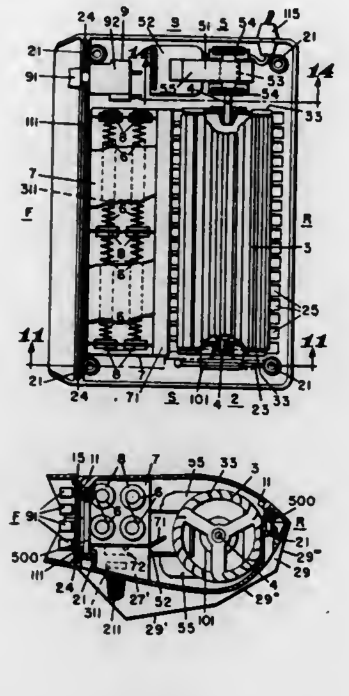
g. a control valve connected to said conveying means for controlling the flow of gas therethrough;

h. a control system including an adjustable automatic reset timer connected to said control valve, said timer operable when energized to open the control valve for a predetermined period of time to deliver a burst of gas; and

i. heater control means including a thermostat for controlling the energization of said electrical heating element to maintain a predetermined temperature within said gas heating passage, said heater control means operable independently of said timer for continual energization of said electrical heating element under control of said thermostat, to store heat in said reservoir prior to delivery of a burst of gas by said timer.

3,846,617
BLOWER AND HEATER UNIT

Dov Z. Glucksman, Newton Centre, Mass., assignor to Intermatic Incorporated, Spring Grove, Ill.
Continuation of Ser. No. 88,268, Nov. 10, 1970, abandoned. This application Oct. 22, 1971, Ser. No. 191,820
Int. Cl. H05b *1/00;* F24h *3/04*
U.S. Cl. 219—370 **7 Claims**



1. A blower and heater unit including

a an upper shell of a synthetic resin and a lower complementary shell of a synthetic resin abutting at juxtaposed edges thereof and jointly forming a housing defining a space closed at the rear and at both sides and open at the front thereof;

b stud means projecting through said lower shell into said upper shell for clamping said upper shell against said lower shell;

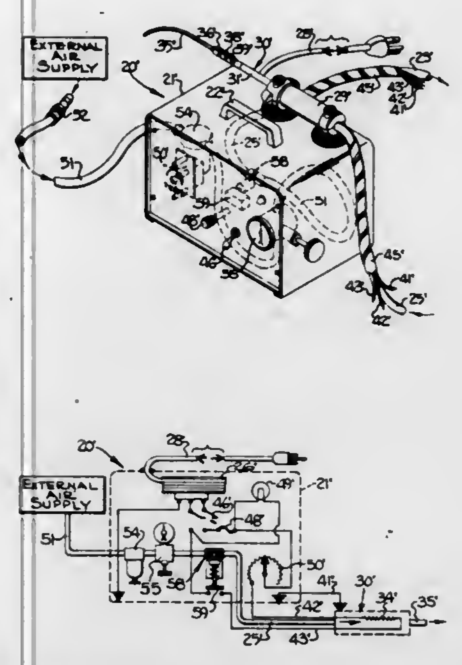
c a bladed substantially cylindrical transverse flow blower rotor supported by shaft means and arranged at said closed rear of said housing, an electromotor including a stator and a rotor arranged within said housing in coaxial relation to said blower rotor for driving said blower rotor, a plurality of electric heater resistors arranged within said housing adjacent said open front thereof for heating the flow of air established by said blower rotor, a frame structure arranged within said housing supporting said plurality of heater resistors and a control switch arranged within said housing for controlling said electromotor and said plurality of heater resistors;

d said upper shell and said lower shell each including one of a pair of internal partitions arranged in a common plane at right angles to said shaft means of said blower rotor and supporting the end of said shaft means remote from said electromotor, said upper shell and said lower shell each defining one of a pair of grooves arranged in a common plane adjacent said open front of said housing, said lower shell being provided with perforations at the region thereof juxtaposed to said blower rotor forming an air intake for said blower rotor, and at least said lower shell including internal projections engaging said stator of said electromotor for positioning said electromotor and internal projections engaging said frame structure supporting said plurality of heater resistors for positioning said frame structure and said plurality of heater resistors; and

e a perforated plate forming a combined control panel and air discharge grille having edges projecting into said pair of grooves defined by said upper shell and said lower shell and closing said open front of said housing.

3,846,618
ELECTRIC HEATING APPARATUS FOR REMOVING TEXTILE WASTE MATERIAL

James H. Henderlite, III., Charlotte, N.C., assignor to Air Knife, Inc., Charlotte, N.C.
Filed Mar. 9, 1972, Ser. No. 233,107
Int. Cl. H05b *1/02;* F24h *3/04;* B05b *1/24*
U.S. Cl. 219—373 **1 Claim**



1. Apparatus comprising:

manually portable housing means for enclosing components of the apparatus and having handle means for accommodating ready portability to a location of use,

electrical supply conducting means extensible from within said housing means for delivering electrical current through said housing means,

elongate flexible air supply conduit means extending from said housing means and connectable with an external supply of pressurized air for delivering through said housing means a flowing stream of air having a predetermined volume rate of flow,

manipulable handle means for manual control over the direction of air,

elongate flexible air delivery conduit means extending between said housing means and said handle means for conducting the flowing stream of air from said housing means to said handle means in substantially unimpeded flow and for permitting application thereof at locations remote from said housing means,

electrical resistance heater means extending from said handle means and interposed in the flow path of said flowing stream of air for heating air to an elevated temperature,

electrical delivery conducting means extending between said housing means and said handle means for conducting electrical current to said heater means,

means for binding said delivery conducting means and said delivery conduit means together into a single bundle extending between said housing means and said handle means,

nozzle means extending from said heater means for directing heated air, and

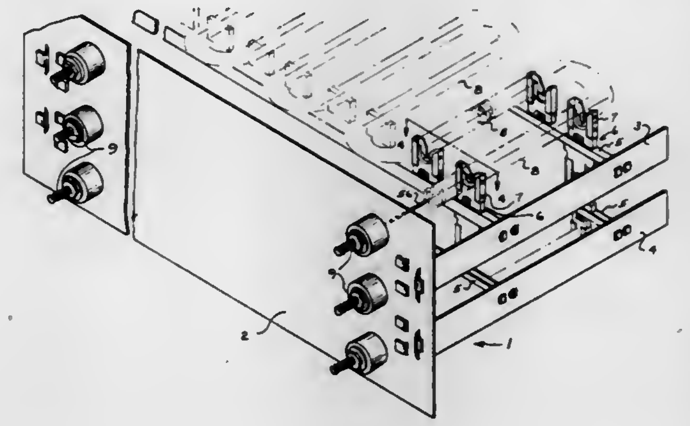
control means mounted within said housing means and operatively interconnected with said conduit means and said conducting means for coordinating delivery of electrical current and air to said heater means and including: air pressure electrical switch means interposed between said supply conduit means and said delivery conduit means for preventing energization of said heater means in the absence of the flowing stream of air and thereby protecting said heater means against failure otherwise possibly occurring due to energization thereof while no air is flowing therethrough,

means for adjustably regulating the pressure at which the flowing stream of air is delivered to said electrical heater means and thereby for varying the velocity at which heated air issues from said nozzle means, and

means for varying at least one characteristic of the electrical current flowing to said heater means and thereby varying the temperature at which air is delivered through said nozzle means.

3,846,619
OPEN COIL ELECTRIC HEATER

Lawrance W. Wightman, St. Louis; Howard C. Gebhart, Chesterfield, and Nick Tichy, Affton, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.
Filed Nov. 12, 1973, Ser. No. 415,007
Int. Cl. H05b *3/06*
U.S. Cl. 219—532 **15 Claims**



1. In an open coil electric heater having at least one heater coil, and a frame containing said heater coil, the improvement comprising insulating means for insulating the frame from said heater coil, and clip means for holding said heater coil, said clip means being insulated from said frame by said insulating means, said clip means including a wall separated to provide a pair of flanges defining a groove therebetween, each of said flanges being rotated oppositely one another, said wall having a channel through it, said channel communicating with the groove defined by said flanges.

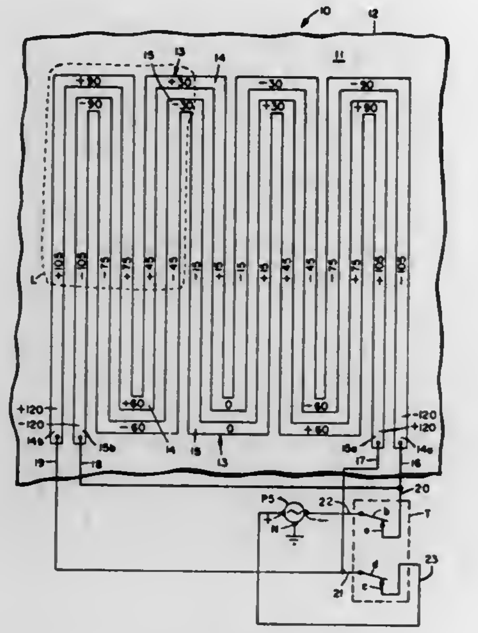
3,846,620
ELECTRICAL HEATING UNIT

James P. Hocker, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Sept. 24, 1973, Ser. No. 400,216
Int. Cl. H05b *3/16, 3/74*
U.S. Cl. 219—543 **6 Claims**

1. An electrical heating unit comprising;

A. a panel of a glassy material,

B. a 240 volt heating element including first and second electrical resistance conductors in physical contact with a surface of said panel in a selected area of such panel and extending over such surface in first and second sinuous paths paralleling each other throughout the lengths thereof with the first and second ends of said first conductor being adjacent the second and first ends, respectively, of said second conductor,

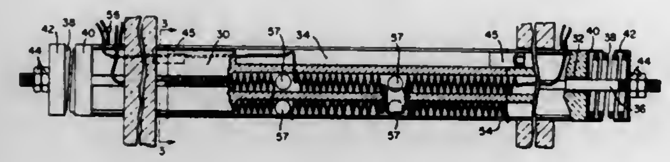


C. first circuit means including a first set of normally closed and thermally actuated contacts for connecting said first ends of said conductors with each other and with one terminal of a commercial **240** volt source of alternating current, and

D. second circuit means including a second set of normally closed and thermally actuated contacts for connecting said second ends of said conductors with each other and with the opposite terminal of said current source.

3,846,621
FURNACE HEATING ELEMENT

Paul W. Roos, Marlboro, Mass., assignor to BTU Engineering Corporation, North Billerica, Mass.
Filed Sept. 21, 1973, Ser. No. 399,629
Int. Cl. H05b *3/02, 3/06*
U.S. Cl. 219—550 **6 Claims**

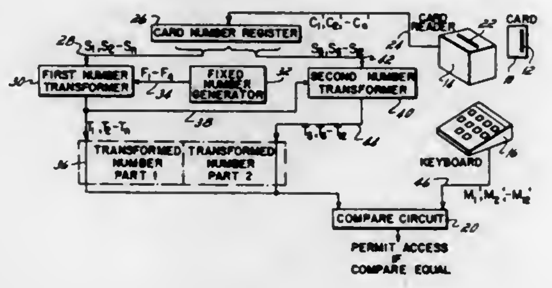


1. A heating element suitable for horizontal suspension by support at its opposite ends within a furnace operative in a predetermined temperature range comprising:

an elongated ceramic core having a plurality of longitudinal channels formed in the peripheral surface thereof and including:
  at least one elongated unitary core section having flat end surfaces oriented in a plane perpendicular to the longitudinal axis of said core;
  said at least one elongated core section when supported as aforesaid at temperatures within said predetermined temperature range being predisposed to sag and to place the lower portion thereof into tension;
electrical heating coils disposed longitudinally within said channels;
electrical connecting means for connection of said coils at said opposite ends to an external electrical power source;
a metal rod having the characteristic of retaining its tensile properties throughout said temperature range, said rod being disposed on the longitudinal axis of said core and extending beyond the ends thereof;
retaining means including perforated end pieces having flat faces confronting the respective flat end faces of said ceramic core and having an outer diameter at least equal to the cross sectional diameter of said core;
at least one compression spring disposed at at least one end of said rod and beyond said perforated end pieces;
spring retaining means including fastening means engaging said rod for maintaining said at least one spring in compression;
said rod being maintained in tension by compression of said at least one spring to thereby maintain the ceramic core continuously in compression throughout the entire cross section thereof during operation of said heating element at temperatures within said range whereby tensioning and subsequent cracking of said at least one elongated section is prevented.

3,846,622
ACCESS CONTROL APPARATUS

Martin R. Meyer, Cincinnati, Ohio, assignor to The Mosler Safe Company, Hamilton, Ohio
Filed Sept. 29, 1972, Ser. No. 293,595
Int. Cl. G07f *7/02;* **H04q** *5/02;* **G06k** *7/08, 5/00*
U.S. Cl. 235—61.7 B **9 Claims**

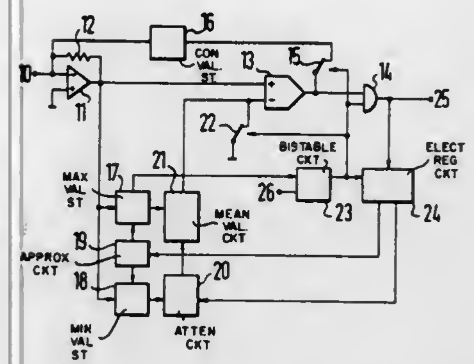


1. An apparatus for verifying that an authorized person is seeking entrance into a restricted area, the apparatus comprising in combination:

means for reading a multi-bit card number from a card presented by the person seeking entrance to the restricted area;
means for generating a multi-bit fixed number;
first number transforming means responsive to said fixed number and only part of said multi-bit read card number to form a multi-bit first part of a transformed number, said first part being logically related to the inputs to said first number transforming means;
second number transforming means responsive to the remaining part of said read card number and also responsive to said first part of said transformed number to form a multi-bit second part of a transformed number, said second part being logically related to the inputs to said second number transforming means; and
a comparing means for comparing said first and second parts of a transformed number with a memorized number entered by the person seeking entrance into the restricted area, a favorable comparison of these numbers being operative to permit the person to enter the restricted area.

3,846,623
SCANNING MEANS

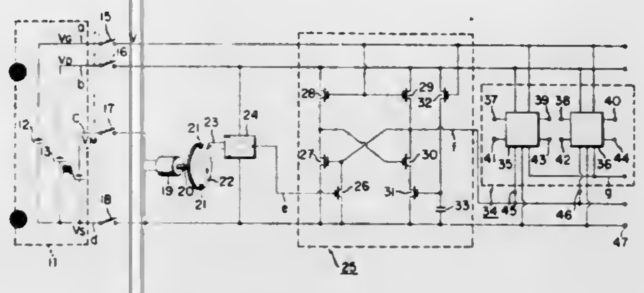
Norbert Wefers; Uwe Militz; Uwe Unglaube, all of Berlin, and Jan de Meer, Wurzburg, all of Germany, assignors to Nixdorf Computer AG, Paderborn, Germany
Filed Feb. 22, 1973, Ser. No. 334,644
Claims priority, application Germany, Feb. 22, 1972, 22083199
Int. Cl. G06k *7/01;* **G08c** *9/06*
U.S. Cl. 235—61.11 E **17 Claims**



1. A method for generating a pulse sequence signal of constant pulse amplitude from a bivalent signal having transitions between a maximum and a minimum amplitude value and having a superimposed unidirectional time-varying component, said method comprising the steps of comparing said signal with a controlled threshold value which is traversed by said signal at each transition thereof, storing the amplitude value of said signal present ahead of each transition, generating a mean value from said maximum and minimum amplitude values during a period of time following the beginning of a transition and employing said means value as the controlled threshold value for the next signal transition.

3,846,624
AUTOMATIC CLEARING DEVICE

Tsuyoshi Kawanabe, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 11, 1973, Ser. No. 359,214
Int. Cl. G06c *15/42;* **G11c** *11/00*
U.S. Cl. 235—144 E **6 Claims**

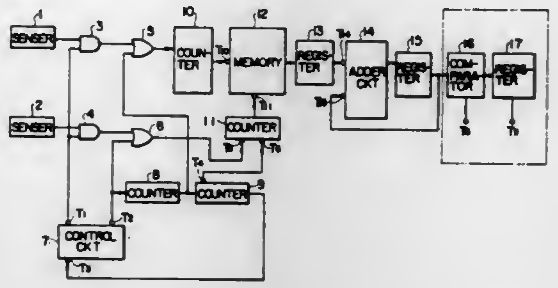


1. An automatic clearing device comprising:

storage means whose storage is to be cleared upon connection of a power source to said device;
synchronizing signal generating means for generating a synchronizing signal in accordance with revolutions of an electric motor driven by said power source;
clear signal generating means coupled to said synchronizing signal generating means for generating output, adapted to change from one state to another state upon connection of the power source and change from said another state to said one state upon arrival of said synchronizing signal; and
means coupled between said storage means and said signal generating means for applying as a clear signal to said storage means a signal resulting from the change of the state of said clear signal generating means.

3,846,625
COMPUTING DEVICE FOR AN INTERPOLATION

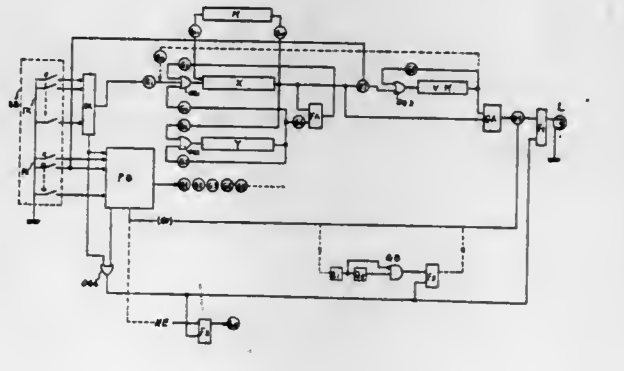
Takao Sasayama, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 21, 1973, Ser. No. 334,401
Claims priority, application Japan, Feb. 21, 1972, 47-17210
Int. Cl. G06f *1/02*
U.S. Cl. 235—152 **16 Claims**



1. A computing device for interpolation of values comprising digital memory means for memorizing data corresponding to selected values ($x_1, x_2, \cdots x_n, y_1, y_2, \cdots y_n$) of variations of the values (x, y), address control means connected to said digital memory means for reading out needed data from said memory means, input means connected to said address control means for setting certain values of said variations of (x, y) into said address control means, adder circuit means connected to said memory means for accumulating said output data of said memory means, and control circuit means for controlling said input means, said address control means and said adder circuit means, whereby at first certain values along said variations being set into said address control means and then said needed data to be accumulated are read out and the read out address of said memory means is shifted continuously by operation of said address control means, wherein said address control means comprises a plurality of address counters providing counted values which define said read out address, each of said address counters providing each of said certain values of said variations (x, y) from said input means, and wherein each of said address counters has an upper counter means connected to said memory means and a lower counter means connected to said upper counter means for counting increments of ($\Delta x_1, \Delta x_2 \cdots \Delta x_n, \Delta y_1, \Delta y_2 \cdots \Delta y_n$) between each of said selected values ($x_1, x_2 \cdots x_n, y_1, y_2 \cdots y_n$) of each variation of ($x, y$).

3,846,626
ELECTRONIC DESK CALCULATOR WITH VERIFICATION FUNCTION

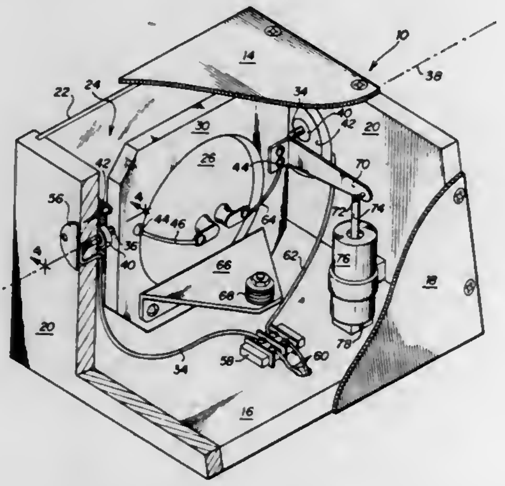
Kunio Yoshida, Kenjiro Tsugawa, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 29, 1972, Ser. No. 319,234
Claims priority, application Japan, Dec. 29, 1971, 47-1045; Dec. 29, 1971, 47-1046; Feb. 25, 1972, 47-19868
Int. Cl. G06f *11/00*
U.S. Cl. 235—153 BK **3 Claims**



1. A key controlled electronic desk calculator, comprising: manually operated keyboard means having digit keys and

function keys with a preselected one of said function keys causing verification of computations;
a plurality of registers including a storage register and a verification register for retaining computed computations transferred thereto;
means connecting said storage register with said verification register for transferring computed computations from said storage register to said verification register;
a decoder connected with said digit keys and said storage register;
comparison means;
means connecting said storage register and said verification register with said comparison means;
program memory means connected with said comparison means and to said register to enable transfer of computed computations between said registers; and
means connecting said function keys to said program memory means to control transfer of computed computations between said registers upon a first actuation of said one key and to cause verification between a second computation subsequently computed and stored in said first register with said first computation stored in said verification register upon a second actuation of said one key.

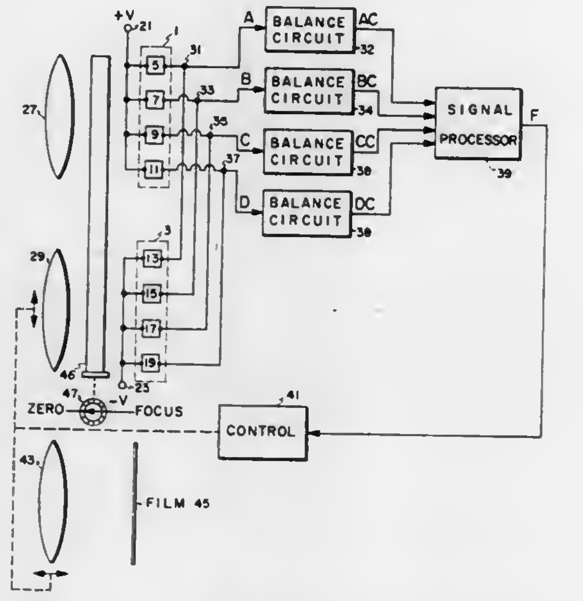
3,846,627
STABILIZED LAMP
Erle D. Chastain, Star Route, Gainsville, Tex. 76240
Filed Sept. 6, 1973, Ser. No. 394,840
Int. Cl. F21v *21/20*
U.S. Cl. 240—62.2 **7 Claims**



1. A self-adjusting lamp for mounting on a vehicle comprising a housing for attachment to said vehicle, a focused lamp means mounted in said housing to rotate about a horizontally extending axis, said lamp means mounted with its center of gravity located below said axis whereby said lamp means remains in a preselected attitude with respect to gravitational force as said vehicle moves; and means for varying the position of said center of gravity on said lamp means to alter the preselected attitude of said lamp means.

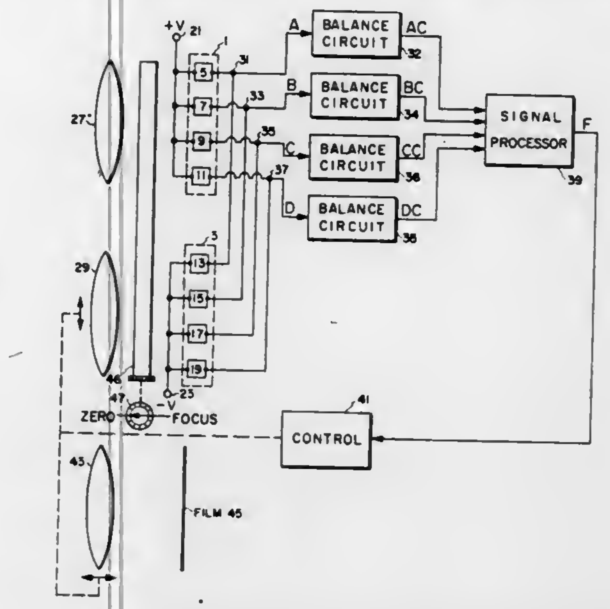
3,846,628
SENSITIVITY BALANCING APPARATUS FOR PHOTO RESPONSIVE DETECTING CIRCUITS
Gary L. Towne, Aurora, Colo., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 6, 1973, Ser. No. 422,167
Int. Cl. G01j *1/20*
U.S. Cl. 250—201 **10 Claims**

1. An apparatus comprising:
means arranged to receive radiation from an object for defining a light path including first and second discretely identifiable portions of said radiation;
first and second detecting devices positioned in said light path and arranged for sensing the intensity of said first and second discretely identifiable portions of said radiation to produce a difference signal at a common terminal representative of the difference therebetween;
circuit means connected to said common terminal;
means selectively operable between a first position in said light path, and a second position out of said light path, said selectively operable means, when in said first position, being effective to cause substantially equal amounts of radiation to fall on said first and second detecting devices, said circuit means including a storage means, a switching device connecting said common terminal with said storage means, said switching device being operable when said selectively operable means is in said first position for providing a low impedance path between said common terminal and said storage means, for rapidly charging said storage means to a balancing signal level representative of the difference signal generated while said first and second detecting devices are substantially equally radiated, said switching device being further operable when said selectively operable means is in said second position for providing a high impedance path between said common terminal and said storage means to substantially preclude a discharging of said storage means, and amplifier means for comparing said stored balancing signal with said difference signal generated when said selectively operable means is in said second position to provide a compensated difference signal which is representative of the difference between said stored balancing signal and said difference signal, said compensated difference signal being compensated for any inequality in effective sensitivity between said first and second detecting devices.

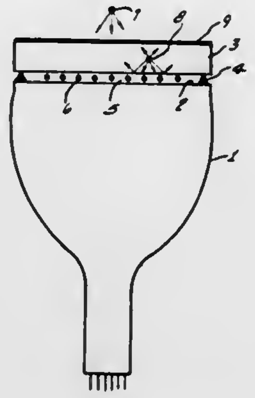


3,846,629
SENSITIVITY BALANCING APPARATUS FOR PHOTO RESPONSIVE DETECTING CIRCUITS
Norman L. Stauffer, Englewood, Calif., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 6, 1973, Ser. No. 422,168
Int. Cl. G01j *1/20*
U.S. Cl. 431—22 **10 Claims**

1. An apparatus comprising:
means arranged to receive radiation from an object for defining a light path including first and second discretely identifiable portions of said radiation;
first and second detecting devices positioned in said light path and arranged for sensing the intensity of said first and second discretely identifiable portions of said radiation to produce a difference signal at a common terminal representative of the difference therebetween;
circuit means connected to said common terminal;
means selectively operable between a first position in said light path, and a second position out of said light path, said selectively operable means, when in said first position, being effective to cause substantially equal amounts of radiation to fall on said first and second detecting devices, said circuit means including means for storing a balancing signal representative of the difference signal appearing at said common terminal when said selectively operable means is in said first position, said circuit means further including means for combining said stored balancing signal with said difference signal generated when said selectively operable means is in said second position to provide a compensated difference signal which is representative of the difference between said balancing signal and said difference signal, said compensated difference signal being compensated for any inequality in effective sensitivity between said first and second detecting devices.

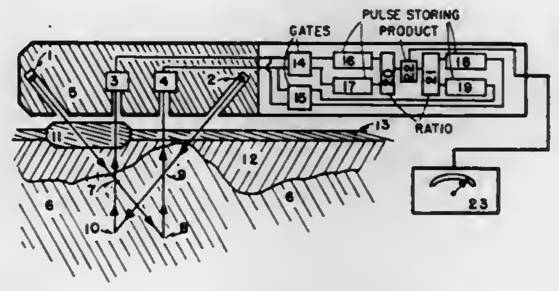


3,846,630
METHOD FOR IDENTIFYING ELEMENTAL AREAS OF A PHOTOCATHODE
Avraham Suhami, 36 Oren St.; Benjamin Sabbah, 22 Hazalafin St.; Dan Inbar, 1080 Hanassi Blvd., all of Haifa; Arizi Yarom, 33 Hapalmach St., Jerusalem, and Dan Ben-Zeev, 4 Hanesher St., Haifa, all of Israel
Division of Ser. No. 1,198, Jan. 7, 1970. This application Feb. 4, 1972, Ser. No. 223,617
Int. Cl. H01j *29/70*
U.S. Cl. 250—207 **5 Claims**



1. A method of sampling the anode voltage of a photomultiplier tube for identifying the elemental area of its photocathode illuminated by a light event comprising:
a. providing a grid of electrically separate conductors adjacent the photocathode comprising a group of x conductors that cross a group of y conductors wherein:
$2^{(p-1)} < x \leqslant 2^p$ and
$2^{(q-1)} < y \leqslant 2^q$
where p and q are integers, and the projection of the crossing of a pair of conductors on the photocathode defines the centre of an elemental area thereon;
b. sequentially applying to the conductors, within the decay cime τ of the anode voltage resulting from the occurrence of a light event, $(p + q)$ sets of retarding pulses, each set comprising pulses are applied simultaneously to selected ones of the conductors, for producing in the anode voltage, valleys whose location and depth depend on the spatial location of the elemental area illuminated by the light event and the sequence in which the sets of retarding pulses are applied; and
c. sampling the amplitude of the anode voltage at the same rate at which the sets of retarding pulses areapplied to the conductors.

3,846,631
GAMMA RAY DIFFERENTIAL DENSITY PROBE
Paul Kehler, South Bend, Ind., assignor to Applied Invention Corporation, Mishawaka, Ind.
Filed Mar. 13, 1972, Ser. No. 224,238
Int. Cl. G01v *5/00*
U.S. Cl. 250—269 **7 Claims**

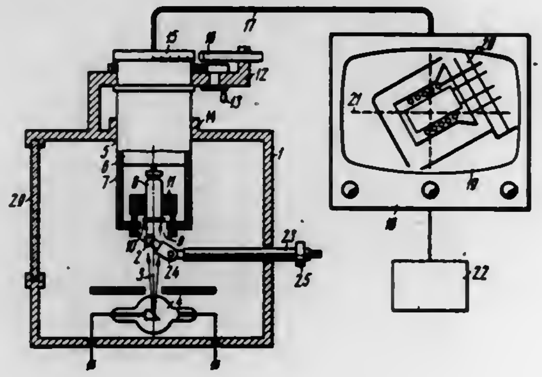


1. A gamma ray density probe utilizing a first collimated gamma ray source, a second collimated gamma ray source, a first collimated gamma ray detector and a second collimated gamma ray detector, wherein said first and said second collimated gamma ray sources are located on two parallel planes placed at a distance from each other, with said first gamma ray source emitting gamma rays into a sample to be measured along at least one trajectory within the first of said two parallel planes and said second collimated gamma ray source emitting gamma rays into said sample along at least one trajectory within the second of said two parallel planes, with some of the gamma rays emitted by said first collimated gamma ray source being scattered under a geometrically predetermined scattering angle towards said second collimated gamma ray detector at a first location in said sample and along at least one trajectory that is intersecting said second of said two parallel planes at a second location in said sample, with some of the gamma rays emitted by said second collimated gamma ray source being scattered under said geometrically predetermined angle towards said first collimated gamma ray detector at a third location in said sample and along at least one trajectory that is intersecting said first of said two parallel planes at a fourth location in said sample, with some of the gamma rays emitted by said first collimated gamma ray source being scattered under said geometrically predetermined scattering angle towards said first collimated gamma ray detector at said fourth location in said sample and with some of the gamma rays emitted by said second collimated gamma ray source being scattered under said geometrically predetermined scattering angle towards said second collimated gamma ray detector at said second location in said sample, wherein a ratio is computed by dividing the counting rate of said first collimated gamma ray detector which is caused by gamma rays scattered from said fourth location by the counting rate of said second collimated gamma ray detector which is caused by gamma rays scattered from said first location, wherein an inverse ratio is computed by dividing the counting rate of said second collimated gamma ray detector which is caused by gamma rays scattered from said second location by the counting rate of said first collimated gamma ray detector which is caused by gamma rays scattered from said third location, and wherein a

product of said ratio and said inverse ratio is formed and displayed in a manner that allows interpretation of this product in terms of the average density of that volume of said sample that is located between said four locations in said sample.

3,846,632
CLOSED-CIRCUIT TV INSPECTION X-RAY MICROSCOPE

Nikolai Vasilievich Rabodzei, Institutskays ulitsa, 6a, kv. 39; Evgeny Mikhailovich Ljubimov, ulitsa Lenina, 14, kv. 21; Mikhail Nikolaevich Nadobnikov, ulitsa Vokzalnaya, 21 kv. 7, and Alexandr Alexandrovich Krokhin, ulitsa Isentralnaya 12, kv. 8, all of Fryazino Moskovskoi oblasti, U.S.S.R.
Continuation-in-part of Ser. Nos. 90,262, Nov. 17, 1970, abandoned, and Ser. No. 50,431, Sept. 4, 1970. This application July 9, 1973, Ser. No. 377,776
Int. Cl. G03b *41/16*
U.S. Cl. 250—312 **4 Claims**

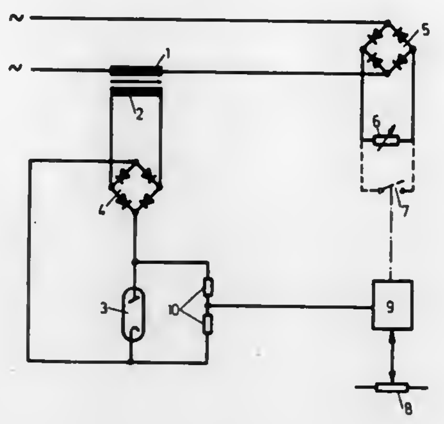


1. A closed-circuit TV inspection X-ray microscope comprising: a shielded specimen chamber to hold a specimen; an X-ray source intended for irradiation of the specimen with an X-ray beam and producing a shadow X-ray image of the inner structure of said specimen, said X-ray source being positioned so that said X-ray beam emerging from it illuminates said specimen chamber; said specimen chamber having a wall with an opening behind said specimen in the path of said X-ray beam and coaxial herewith; a shielding cylinder introduced through said opening coaxially with said X-ray beam and rotatable around its longitudinal axis; a transmitting TV camera contained in said shielding cylinder, said shielding cylinder having an opening at an end thereof facing said X-ray source; an X-ray sensitive TV pick-up tube to convert the X-ray shadow image of the specimen into a TV video signal, said pick-up tube being mounted in the interior of said transmitting TV camera coaxially therewith and oriented so that its target, on which said X-ray shadow image is projected, is perpendicular to the axis of said X-ray beam entering through said opening in said shielding cylinder; a turning means for rotating said transmitting TV camera with the TV pick-up tube around the axis of the X-ray beam; a TV monitor electrically connected to said TV camera; said TV monitor having a screen for viewing an enlarged image of the inner structure of said specimen; and means for producing an image of a cross-hair sight on said screen and for aligning the center of said cross-hair sight with the axis of said beam.

3,846,633
HIGH VOLTAGE GENERATOR FOR X-RAY DIAGNOSIS APPARATUS

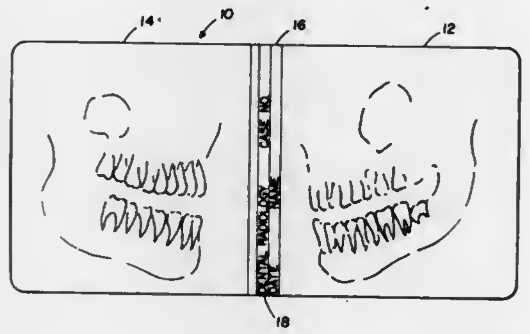
Denes Romandi, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany
Filed Nov. 16, 1973, Ser. No. 416,354
Claims priority, application Germany, Nov. 27, 1972, 2258085
Int. Cl. H05g *1/20*
U.S. Cl. 250—402 **4 Claims**

1. A high voltage generator for X-ray daignosis apparatus for use with an X-ray tube and a source of alternating current, the generator comprising a high voltage transformer having at least one primary winding connected to said source and at least one secondary winding connected to said X-ray tube, a circuit connected to said primary winding and having a rectifier bridge, and adjusting means connected with said rectifier bridge for high voltage by changing the primary alternating voltage, said adjusting means consisting of a variable resistance connected to the outlet of the rectifier.



3,846,634
METHOD FOR PRINTING AN IDENTIFYING LEGEND ON A PANORAMIC DENTAL X-RAY FILM

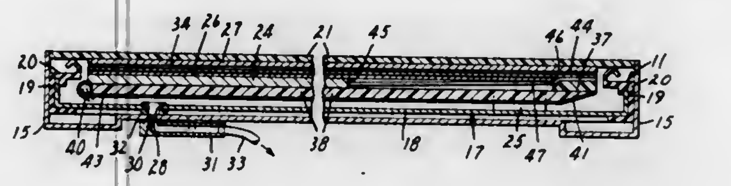
Robert D. Fleming, 675 Pelzer Dr., Iowa City, Iowa 29464
Filed Mar. 14, 1973, Ser. No. 341,096
Int. Cl. G03b *41/16*
U.S. Cl. 250—476 **2 Claims**



1. A method for printing an identifying legend on dental X-ray film of the type having an unexposed area in the center of the film, comprising the steps of: exposing a portion of the film to X-rays during a scan of one side of a patient's dental structures; stopping the exposure to X-rays for a brief time to allow repositioning of the patient relative to the source of X-rays; exposing another portion of the film to X-rays during a scan of the other side of the patient's dental structures thereby producing a single film showing both the right and left sides of the patient's dental structures, but with an unexposed area on the film between said sides; providing in a darkroom a light source whose path is confined to an area no greater than said unexposed area of said film; positioning in the path of said light source a translucent material containing the desired identifying information printed thereon; positioning said film with the unexposed area therof in the path of said light source and with said material between the film and light source; exposing the said unexposed area of said film by activating said light source; and processing the undeveloped film to produce a film showing the radiographic anatomy of the patient in a single film with a darkened central portion there between containing the identifying information permanently imprinted thereon.

3,846,635
FILM-HOLDER FOR EXPOSING X-RAY FILM

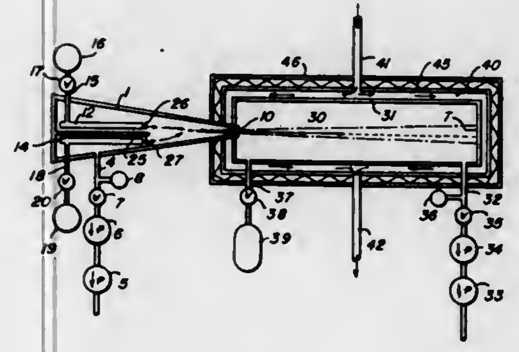
Edward C. Shaffer, Saint Paul, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 266,125, June 26, 1972, abandoned. This application May 25, 1973, Ser. No. 363,966
Int. Cl. G03b *41/16*
U.S. Cl. 250—480 **17 Claims**



1. A vacuum film-holder adapted for mounting in a bucky tray of a radiographic table where it may be rapidly loaded with x-ray film to be exposed at the table, comprising 1) a shallow open-topped receptacle that comprises a rigid bottom plate and upwardly extending sidewalls which comprise at least at their upper extremity a resilient gasket member that extends continuously around the open top of the receptacle and whose upper edge defines a single plane; 2) an elastically bendable top plate attached to the receptacle in position to rest against the upper edge of the gasket member to close the receptacle and adapted to be drawn toward the bottom plate a uniform amount over the whole area enclosed by the gasket member; 3) a pressure plate supported above and parallel to the bottom plate; 4) first and second intensifying screens disposed between the pressure plate and the top plate; and 5) an exhaust port located in the receptacle or top plate for attachment to a vacuum source, whereby a vacuum may be formed within the film-holder to draw the top plate toward the bottom plate and tightly sandwich film between the two intensifying screens.

3,846,636
METHOD AND MEANS FOR UTILIZING ACCELERATED NEUTRAL PARTICLES

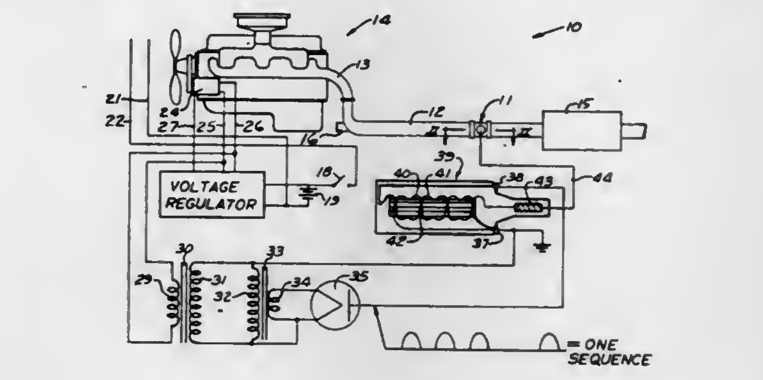
Phyllis Joan Zehr, Claymont, Del.; Monita May Thorp Lank, and Psych Lank, both of Media, Pa., assignors to Reactor Accelerator Development International, Inc., Claymont, Del.
Filed Aug. 31, 1971, Ser. No. 176,584
Int. Cl. G21g *3/00*
U.S. Cl. 250—499 **14 Claims**



1. The method of producing a low to high velocity neutral particle beam which comprises generating and accelerating to a high velocity a substantially rectilinear stream of positively charged particles, generating and accelerating to a high velocity a substantially rectilinear stream of negatively charged particles, directing them along substantially parallel but converging paths and into a single beam whereby the charges carried by the positively charged particles are neutralized by the charges carried by the negatively charged particles and combined in a low to high high velocity neutral particle beam.

3,846,637
APPARATUS FOR ELIMINATING NOXIOUS GASES FROM THE EXHAUST OF AN INTERNAL COMBUSTION ENGINE

Joseph Gettinger, 2115 W. Chare Ave., Chicago, Ill. 60645
Continuation-in-part of Ser. No. 96,859, Dec. 10, 1970, abandoned. This application Sept. 10, 1973, Ser. No. 395,404
Int. Cl. F01n *3/00;* B01j *1/14*
U.S. Cl. 250—546 **4 Claims**



1. In an arrangement for use in decomposing exhaust gas in an internal combustion engine exhaust system including an exhaust conduit and a muffler, a detachable conduit section for disposition in said exhaust conduit ahead of said muffler, two oscillatory terminals in said detachable conduit section, one of said terminals being an anode terminal and the other being a multi-electrode cathode terminal with there being a face-to-face separation between said anode terminal and said cathode terminal of at least ½ inch, said anode terminal comprising a square base pyramidal shape consisting of two parts and joined together; one of said two part being square base plate of not less than one-eighth of an inch in thickness of aluminum-nickel alloy and the other of said two parts being pyramidal shape of copper, a copper wire connected at the zenith of said shape and serving as a ground connection, a square block of ceramic material, said pyramidal shape of copper being rigidly incased within said square block of ceramic material, said base plate constituting the anode surface, said multi-electrode terminal comprising a square block of high heat resistance and high electrically insulating material and at least fifteen electrode wires individually and rigidly incased in staggered linear formation in said material within the width of one inch of said block, said block having a square inner end surface containing the inner ends of said electrode wires in spaced face to face relationship to said square inner surface of said anode terminal and defining therewith a gap for passage of residual exhaust gases therethrough and for formation of multi-oscillatory streams of free electrons therewithin, said block of said multi-electrode having an outer end of square shape with the outer ends of said electrode wires being arranged in a two linear staggered formation and said outer ends of said electrodes are flush with the ceramic material and are coated with a silicone substance.

ERRATUM

For Class 260—88 see:
Patent No. 3,846,833

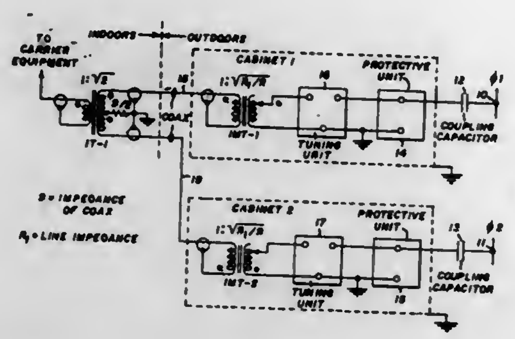
3,846,638
IMPROVED COUPLING ARRANGEMENT FOR POWER LINE CARRIER SYSTEMS

Daniel L. Wetherell, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.
Continuation-in-part of Ser. No. 294,244, Oct. 2, 1972, abandoned. This application Sept. 6, 1973, Ser. No. 394,559
Int. Cl. H04m *11/00*
U.S. Cl. 307—3 **8 Claims**

1. In a power line carrier system, an improved arrangement for coupling the carrier system to at least two phase wires of

an electrical power transmission line, said improved arrangement comprising:

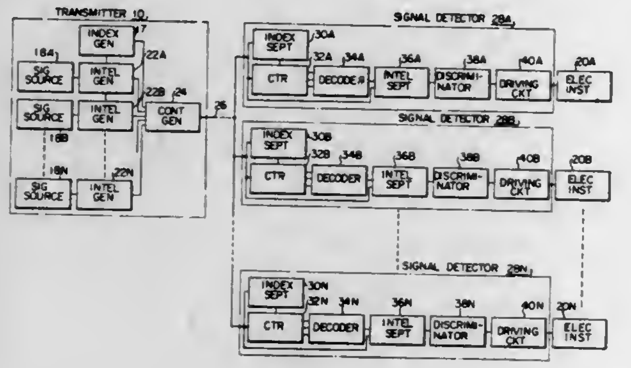
a. first and second impedance matching transformers each having coupled primary and secondary windings;
b. means for coupling said primary winding of said first impedance matching transformer to a first phase wire of said electrical power transmission line;
c. means for coupling said primary winding of said second impedance matching transformer to a second phase wire of said electrical power transmission line;
d. an isolation transformer having coupled primary and secondary windings, said primary winding having a center tap between its ends;



e. means, including at least one coaxial line, for respectively connecting one end of each of said secondary windings of said impedance matching transformers to one of said ends of said primary winding of said isolation transformer;
f. a common impedance having one end connected to said center tap of said isolation transformer primary winding and the other end connected to the other ends of said secondary windings of said impedance matching transformers;
g. and a coaxial line connected to said secondary winding of said isolation transformer for connection to a carrier system.

3,846,639
CONTROL SYSTEM FOR ELECTRIC INSTALLATIONS FOR USE ON VEHICLE

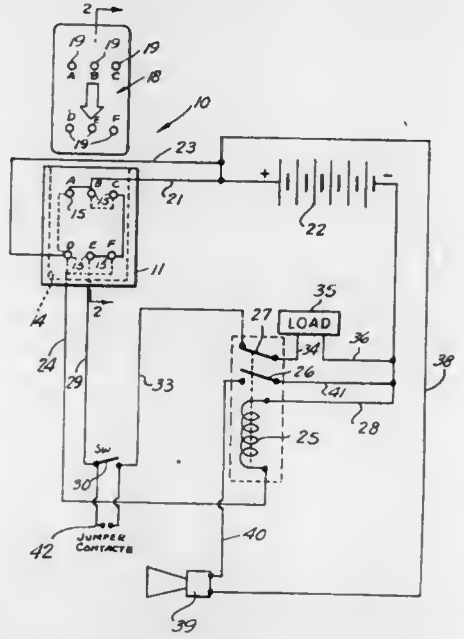
Atsushi Ueda, and Mitsuaki Ishii, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 21, 1973, Ser. No. 343,480
Int. Cl. G08c *3/00;* **H02g** *3/00*
U.S. Cl. 307—9 **4 Claims**



1. A control system for controlling electrically powered devices provided on a vehicle or the like, comprising in combination, a transmitter unit comprising a plurality of signal sources providing output signals having information content, each of said signal sources corresponding to an electrically powered device to be controlled, an index generator circuit for generating index pulses, an intelligence generator circuit, circuit means for applying said index pulses and said signal sources output signals to said intelligence generator circuit to generate intelligence pulses having said information content of said signal sources output signals, and a control generator circuit for receiving said index pulses and said intelligence pulses to provide control pulse trains comprised of said index pulses and said intelligence pulses; a transmission line comprising a single conductor connected to an output of said control generator circuit; and a plurality of signal detector means connected to said transmission line for receiving said control pulse trains, each of said signal detector means corresponding to an electrically powered device, each of said signal detector means comprising means for receiving said control pulse trains for separating said index pulses from said pulse trains, a counter circuit, means for applying said control pulse trains and said separated index pulses to said counter circuit for counting said intelligence pulses after each of said intelligence pulses after said separated index pulses are applied thereto; a decoder circuit connected to an output of said counter for detecting a predetermined count thereof corresponding to an electrically powered device to provide a separation pulse in response thereto, an intelligence separation circuit receptive of said separation pulse and said control pulse trains to separate from said control pulse trains intelligence pulses corresponding to said predetermined count of said counter and said electrically powered device, a pulse discrimination circuit receptive of said intelligence pulses separated by said intelligence separation circuit for providing output signals representative of said information content thereof, and a driving circuit receptive of said pulse discrimination circuit output signals for driving a corresponding electrically powered device in response to said output signals from said pulse discrimination circuit.

3,846,640
ELECTRICAL COMBINATION KEY LOCK

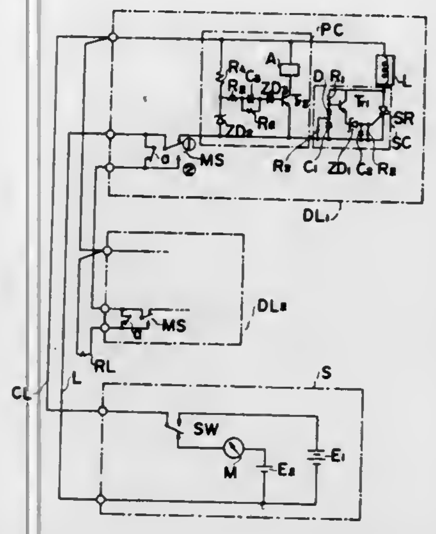
Nicholas W. Mihlhauser, PO Box 3694, Eureka, Calif. 95501
Filed Nov. 16, 1972, Ser. No. 307,243
Int. Cl. B60r *25/04*
U.S. Cl. 307—10 AT **1 Claim**



1. In an electric combination card lock for a system, an electrically actuated alarm and an electrically energized engine, a lock formed of insulating material and having a generally rectangular shape, said lock embodying a relatively thin card receiving pocket extending substantially all the way therethrough, a plurality of spaced contact elements embedded in the lock on opposite sides of said pocket and said contact elements coinciding with the surfaces of the pocket, insulators on the outer surfaces of said contact elements, electric circuits separately connecting at least one of said contact elements to an electrically actuated alarm circuit and at least one other of said contact elements to an electrically energized engine circuit, a relatively thin flat key card formed of insulating material insertable in the pocket of said lock, a plurality of selectively conductive and nonconductive balls rigidly mounted in said key card between opposite sides of the card with each ball extending from opposite faces of said card, said card with said conductive balls being adapted to electrically interconnect at least some of the contacts in the pocket of said lock to complete a circuit to said alarm, to said engine, or to both said alarm and said engine, and a hand control switch battery electrically connected in said circuits.

3,846,641
CONTROL SYSTEM FOR A PLURALITY OF LOADS

Yoshihiro Eguchi, Tokyo, Japan, assignor to Hochiki Kabushiki Kaisha
Filed Sept. 10, 1973, Ser. No. 396,125
Claims priority, application Japan, Sept. 22, 1972, 47-95699
Int. Cl. H02j *3/14*
U.S. Cl. 307—41 **4 Claims**

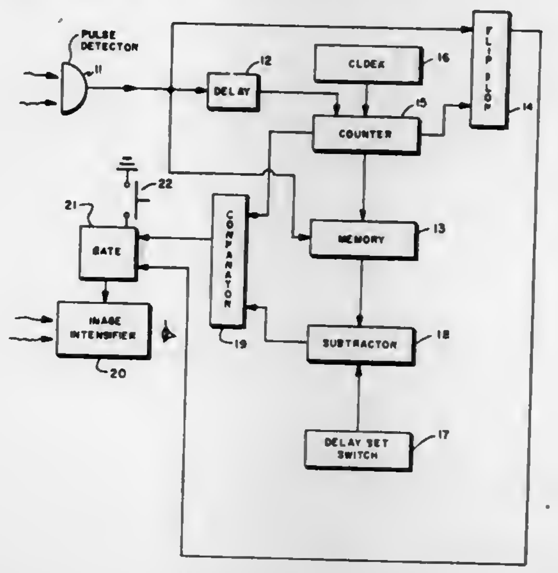


1. A control system for sequentially operating a plurality of loads connected in parallel across supply conductors, said control system comprising a plurality of switching circuits for respective loads, each one of said switching circuits being closed a predetermined interval after the application of the operating voltage for connecting the associated load to said supply conductors, a plurality of transfer switches for connecting the loads to said supply conductors in the second and succeeding stages, means responsive to the operation of the load in the preceding stage for operating the transfer switch of the succeeding stage to connect the load of said succeeding stage across said supply conductors, a plurality of relay contacts respectively connected in parallel with said transfer switches, relay means connected in preceding stages for opening said contacts when the loads and said switching circuits in the preceding stages are energized, and for closing said contacts after a predetermined interval, and a terminal impedance element connected across the end terminals of said supply conductors.

3,846,642
SYNCHRONIZED IMAGE INTENSIFIER GATING

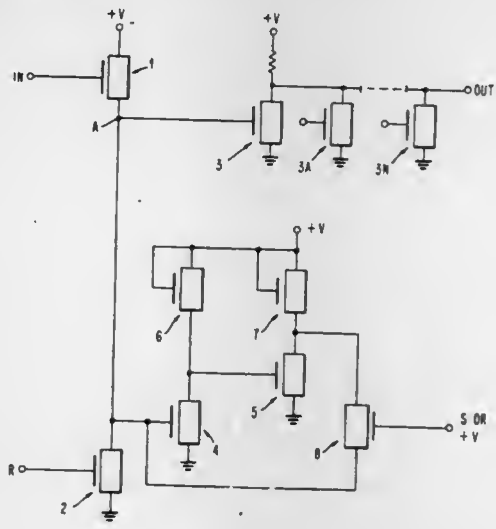
Donald Nichols, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Dec. 7, 1973, Ser. No. 423,046
Int. Cl. H03k *17/00*
U.S. Cl. 307—239 **7 Claims**

1. A gating control device for predicting an incoming pulse of a pulse train to an image intensifier having a gate and for turning on said image intensifier, comprising:
pulse detection means;
means for determining the interval between successive pulses;
means for storing an empirical value representative of the internal delays of the circuitry of said gating control device;
means for determining the difference between said interval and said empirical value; and
means for comparing said difference with the interval to a next succeeding incoming pulse and for providing a gating pulse to said gate when these values are equal, thereby turning on the image intensifier in time to observe the predicted incoming pulse.



3,846,643
DELAYLESS TRANSISTOR LATCH CIRCUIT

William M. Chu, Poughkeepsie; James M. Lee, and Gary C. Luckett, both of Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 29, 1973, Ser. No. 375,272
Int. Cl. H03k *17/60, 3/286*
U.S. Cl. 307—247 R **5 Claims**



1. A semiconductor circuit for providing a latched output signal without introducing circuit delay due to the latching function comprising:
an input node;
an intermediate node;
an output node;
a field effect transistor having a gating electrode and two gated electrodes, the first of said gated electrodes being operatively connected to a first fixed potential level, the second of said gated electrodes being operatively connected to said intermediate node, said gating electrode being operatively connected to said input node;
a plurality of parallel connected field effect transistor gates each having two gated electrodes and a gating electrode, one of said plurality of field effect transistors having its gating electrode operatively connected to said intermediate node, the first each of the gated electrodes of said plurality being operatively connected to said output node, the second of the gated electrodes of said plurality being operatively connected to a second fixed potential level; and

latching means operatively connected to said intermediate node, responsive to and holding the signal on said intermediate node, thereby latching the signal at said output node, said latching means having a pair of cross-coupled field effect transistors, a pair of load field effect transistors, each operatively associated with one of said cross-coupled field effect transistors having a gating electrode operatively connected to said intermediate node, isolation means operatively connected in a series path between said gating electrode and a gated electrode of the other one of said cross-coupled field effect transistors; and

reset means operatively connected between the intermediate node and said second fixed potential level.

3,846,644

INTERMITTENTLY DRIVING CIRCUIT FOR A LOAD SUCH AS A BUZZER OR A BELL

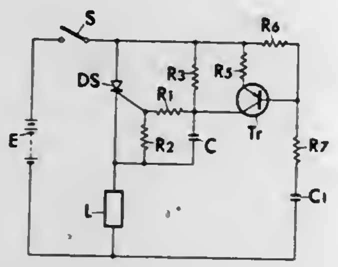
Shigeyuki Takagi, Nishikasugai-gun; Isamu Kawashima, Chita-gun; Katsuyuki Takagi, Gifu, and Sohei Hibino, Nagoya, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Aichi Pref., Japan

Division of Ser. No. 206,362, Dec. 9, 1971, abandoned. This application July 2, 1973, Ser. No. 375,593

Claims priority, application Japan, Dec. 11, 1970, 45-109349

Int. Cl. H03k *17/72, 17/26, 17/04*

U.S. Cl. 307—252 J **3 Claims**



1. An intermittent driving circuit, comprising in combination: an SCR having a gate;

a capacitor and coupling means connecting said capacitor to said gate;

a voltage source, a switch and a first resistor;

means defining a first loop connecting in series said voltage source, switch, first resistor and capacitor and responsive to closure of said switch for charging said capacitor to a level sufficient to fire said SCR;

means defining a second loop connecting in series said SCR, said voltage source and said switch for supplying sufficient SCR anode current to maintain SCR conduction when said second loop is closed;

a self interrupting load and means connecting same in series in said first and second loops for interrupting current flow through said second loop after energization by SCR current flow in said second loop;

means defining a third loop omitting said self interrupting load and connecting in series said SCR, said capacitor and at least said first resistor for discharging said capacitor through at least said first resistor to the anode of said SCR over a first time period independent of SCR conduction through said self interrupting load and for thereafter turning off said SCR upon simultaneous occurrence of capacitor discharge current less than the anode holding current of said SCR and a current interruption by said self interrupting load;

a transistor having collector and emitter electrodes connected between said capacitor and the anode of said SCR and a base bias circuit for said transistor connected across said series SCR and self interrupting load, said transistor having a base electrode connected intermediate the ends of said bias circuit, the collector and emitter terminals of said transistor being coupled in series with a second resistor across said first resistor, said base bias circuit including a resistive voltage divider and a further capacitor in series, whereby upon closure of said switch said transistor rapidly charges said first mentioned capacitor so as to substantially immediately cause said SCR to drive said self interrupting load but wherein said transistor is non-conductive for subsequent energizations of said self interrupting load by said SCR.

3,846,645

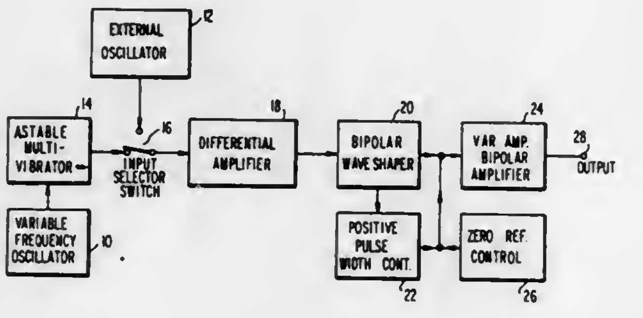
BI-POLAR PULSE GENERATOR

Robert H. Kim, Seoul, South Korea, and Lawrence D. White, Bethesda, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 17, 1973, Ser. No. 407,010

Int. Cl. H03k *4/00, 5/04*

U.S. Cl. 307—260 **11 Claims**



1. A bi-polar signal generator providing an output having selectively variable waveform characteristics, comprising in combination:

a signal source generating a periodic waveform of a selected frequency;

first circuit means coupled to said signal source and being operable in response to said periodic waveform to provide a bi-polar waveform signal of said selected frequency;

second circuit means coupled to said first circuit means and being operable in response to said bi-polar waveform signal to provide a bi-polar square wave signal having positive and negative signal portions;

third circuit means coupled to said second circuit means and being responsive to the bi-polar square wave signal to provide a bi-polar output signal; and

fourth circuit means coupled to said second and third circuit means and being operable in response to said positive signal portion of said bi-polar square wave signal to selectively vary the pulsewidth of the positive signal portion of said bi-polar output signal;

fifth circuit means coupled to said third and fourth circuit means and being operable in conjunction with said fourth circuit means to selectively vary the voltage amplitude of the waveform baseline existing intermediate said positive and negative signal portions of said bi-polar output signal when said positive signal portion is less than its maximum possible pulsewidth.

3,846,646

CONTROL APPARATUS FOR SUPPLYING OPERATING POTENTIALS

Edwin F. Peters, Maumee, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 8, 1972, Ser. No. 313,349

Int. Cl. H03k *17/04;* **G06k** *15/18;* **H05b** *41/29*

U.S. Cl. 307—268 **11 Claims**

1. In a system for supplying operating potential to a load device wherein at least two transversely oriented conductors are dielectrically isolated from a gas discharge medium between said conductors, comprising

a. voltage wave form generator means having an output means adapted to be connected to a transverse conductor;

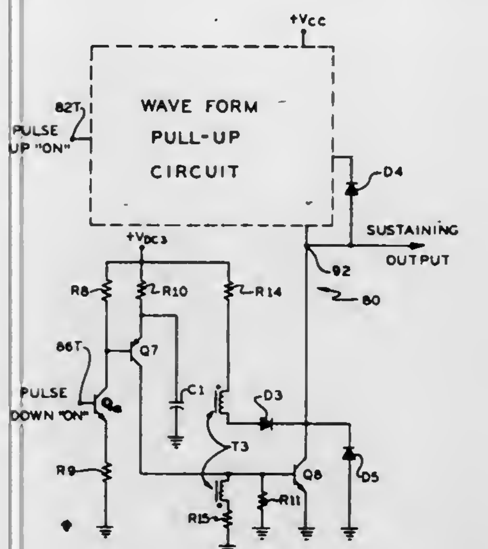
b. said wave form generating means including at least two sections, a first of said sections being operative to connect a first point at a first potential level to said output means while a second of said sections is operative to connect a second point at second potential level different from said first potential level to said output means;

c. one of said output sections including an output transistor connected as a switching means, said transistor having collector, base, and emitter electrodes and a collector-base junction, the emitter electrode to collector electrode current path through said transistor being connected in series between said output means and the point at a potential level associated with said one of said output sections;

d. means for selectively applying turn-on signals to the base electrode of said output transistor means, said signals being sufficient in magnitude to drive said transistor means into saturation; and

e. means responsive to saturation of said transistor and the removal of a turn-on signal from the base electrode for establishing current flow through said collector-base junction of said transistor means to reverse bias said collector-base junction to enable said transistor to turn off quickly;

f. said reverse bias establishing means including a transformer having primary and secondary windings, an isolating rectifier means, and means for connecting one side of a reverse bias source to said primary winding of said transformer;



g. said primary winding being connected in series with said isolating rectifier means between said bias source connecting means and said collector electrode of said transistor means, said isolating rectifier being connected in said series circuit to be reverse biased by potential levels on said collector electrode which are greater in magnitude than that of the reverse bias source thereby preventing current flow from said collector electrode through said primary winding;

h. said secondary winding being connected between said base electrode of said transistor and the other side of the reverse bias source, the emitter electrode of said transistor having a circuit connection to said other side of said reverse bias source;

i. the attainment of an "on" condition of said transistor means wherein the internal resistance of the collector-emitter circuit drops below a predetermined value which, in combination with current flow therethrough from the output potential level being controlled, provides a voltage drop across said emitter-collector circuit which is less than the potential of the reverse bias source enabling current flow from said reverse bias source through said primary winding and said isolating rectifier means in the forward direction to said collector electrode;

j. current flow in said primary winding from said reverse bias source inducing a voltage on said secondary winding which causes current flow through said collector-base junction in a direction to reverse bias said collector-base junction and discharge excess minority carriers from the saturated junction to enable said transistor to turn off quickly when a turn-on signal is removed from the base electrode.

3,846,647

TRIGGER CIRCUIT FOR USE WITH MULTIVIBRATORS

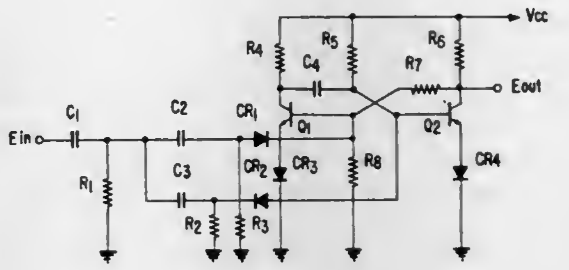
Kenji Tanimoto, 3-5, Akasaka 3-chome Minatoku, Tokyo, Japan

Filed Dec. 20, 1972, Ser. No. 316,752

Claims priority, application Japan, Dec. 23, 1971, 46-104091

Int. Cl. H03k *3/284*

U.S. Cl. 307—273 **4 Claims**



1. A monostable multivibrator including trigger circuit therefor comprising:

a single monostable multivibrator means having a normally conducting transistor with a collector, emitter, and base and a normally non-conducting transistor with a collector, emitter, and base;

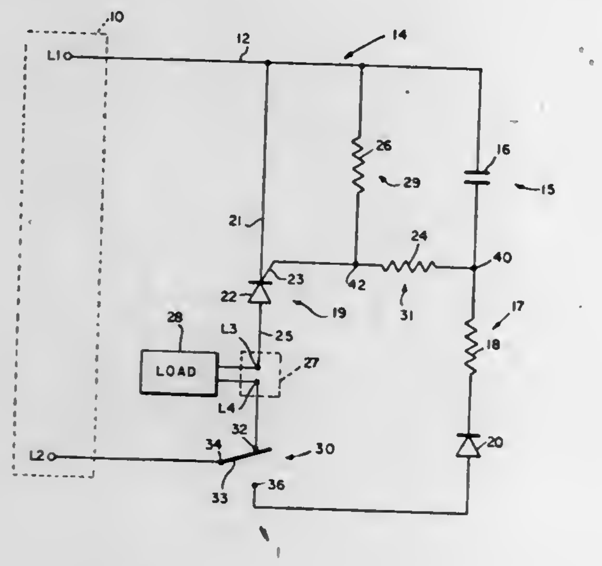
trigger means including means responsive to the positive-going transitions in an input pulse signal for triggering said normally non-conducting transistor on to thereby switch said monostable multivibrator means to its unstable state for a predetermined length of time which is set to be always shorter in duration than said input signal; and

said trigger means including means responsive to the negative-going transitions in said input pulse signal for triggering said normally conducting transistor off to thereby again switch said monostable multivibrator to its unstable state for said predetermined length of time,

said input signal being a pulse train and said trigger means including means for differentiating said input pulse train so that positive spikes are produced for each positive-going transition in the pulse train and applied to said one transistor and negative spikes are produced for the negative-going transitions and applied to said other transistor, said trigger means further including a first diode having one pole connected to said differentiating means and its other pole directly connected to the base of said normally non-conducting transistor and a second diode having one pole connected to said differentiating means and its other pole directly connected to the base of said normally conducting transistor, both said diodes being connected to their respective transistors at the same time.

3,846,648
SOLID-STATE TIMER SWITCH PROVIDING AC POWER TO A LOAD FOR A PREDETERMINED TIME AFTER A MAIN SOURCE OF POWER IS REMOVED

Charles E. Scott, Indianapolis, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed June 18, 1973, Ser. No. 370,958
Int. Cl. H03k *17/26*
U.S. Cl. 307—293 **8 Claims**

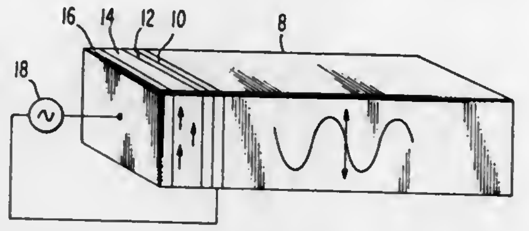


1. A solid-state timer switch circuit comprising:
- a. a power terminal means comprising first and second terminals for connecting said circuit to an alternating current electrical power source, said first terminal connected to a common side of said circuit;
- b. a capacitance means connected one side to said common side of said circuit;
- c. a first resistance means connected one side to the second side of said capacitance means;
- d. a diode connected cathode to the other side of said first resistance means;
- e. a solid-state switching means having terminals one of which is connected to said common side of said circuit;
- f. a second resistance means connected one side to another terminal of said solid-state switching means and another side to a junction of said first resistance means and said capacitance means;
- g. a third resistance means connected one side to said common side of said circuit and another side to said solid-state switching means;
- h. a load connecting means including third and fourth terminals, said third terminal connected to said solid-state switching means; and
- i. a single-pole double-throw switch, a normally closed pole of which is connected to said fourth terminal, a common pole of which is connected to said second terminal and a normally open pole of which is connected to an anode of said diode.

3,846,649
PIEZOELECTRIC TRANSDUCER COMPRISING ORIENTED ZINC OXIDE FILM AND METHOD OF MANUFACTURE

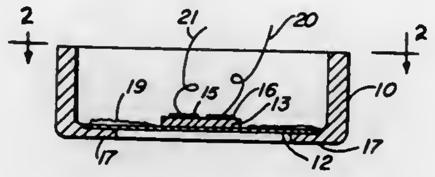
Hans Wilhelm Lehmann, Hedingen, and Roland Widmer, Rumlang, both of Switzerland, assignors to RCA Corporation, New York, N.Y.
Filed June 18, 1973, Ser. No. 370,616
Int. Cl. H01v *7/02;* **H04r** *17/00*
U.S. Cl. 310—8 **5 Claims**

1. A piezoelectric transducer comprising a polycrystalline film of parallel-oriented zinc oxide on a substrate comprising either a film of zinc, a film of In_2O_3 or a film of In_2O_3/SnO_2 capable of producing a parallel oriented film of ZnO, said last mentioned film being adhered to a body surface.



3,846,650
ELECTROACOUSTIC TRANSDUCER OF THE VIBRATILE DIAPHRAGM TYPE WITH CONTROLLED UNIFORMITY OF PERFORMANCE CHARACTERISTICS AND METHOD FOR CONTROLLING UNIFORMITY

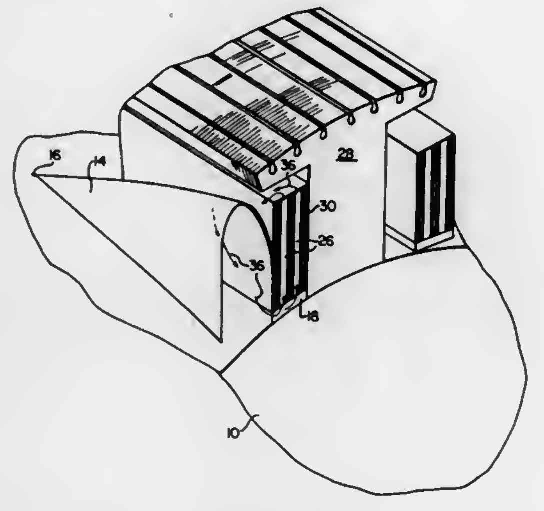
Gilbert C. Barrow, Scituate, Mass., assignor to Massa Division, Dynamics Corporation of America, Hingham, Mass.
Filed Oct. 8, 1970, Ser. No. 79,219
Int. Cl. H04r *17/00*
U.S. Cl. 310—8.2 **8 Claims**



1. An electroacoustic transducer comprising a rigid housing structure including a diaphragm attached at its periphery to said housing structure, a piezoelectric disc rigidly bonded to one side of said diaphragm for vibrating said diaphragm, and means comprising a flexible film of vibrational lossy material coating at least a portion of a surface of said diaphragm for lowering the resonance of said transducer to a predetermined frequency, said lossy material having a characteristic wherein it adheres to said diaphragm when applied in a liquid state, and thereafter solidifies to a solid state, said material further having a characteristic in said solid state wherein the internal molecular working of said material absorbs energy without distorting the vibrational pattern of said diaphragm.

3,846,651
DYNAMOELECTRIC MACHINE VENTILATING SYSTEM

Anil K. Mishra, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 12, 1973, Ser. No. 369,328
Int. Cl. H02k *1/32*
U.S. Cl. 310—61 **9 Claims**

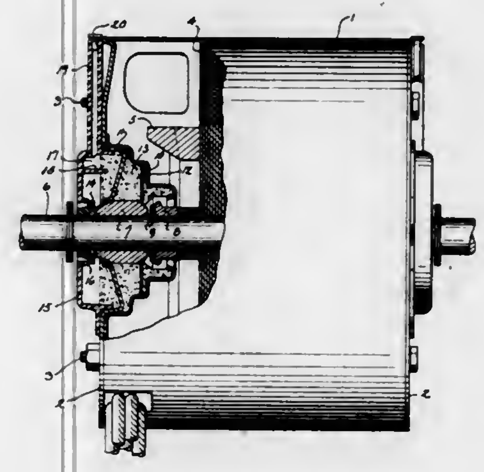


1. A dynamoelectric machine comprising:
a stator having windings thereon,

a shaft extending axially and centrally through said stator, a rotor mounted on said shaft, said rotor comprising a plurality of pole pieces, a winding positioned on each of said pole pieces, said pole pieces defining an interpolar space therebetween, said rotor and said stator defining an annular gap therebetween,
said windings each having at least one spacer member disposed therein, said spacer member being fabricated of a non-conducting, non-magnetic material, said spacer member being disposed at a predetermined position within said windings, the disposition of said spacer member within said windings forming at least one cooling duct extending in a generally radial direction through said winding,
means for providing an axial flow of coolant fluid, and,
means directing said coolant fluid through said radial cooling ducts,
said means comprising a baffle member mounted on said rotor, said baffle member adapted to deflect said axial flow of coolant fluid into said radial cooling ducts.

3,846,652
UNITARY LUBRICATING AND DUST CAP ASSEMBLY

Robert E. Lykes, Tipp City, Ohio, assignor to A. O. Smith Corporation, Milwaukee, Wis.
Filed Jan. 15, 1974, Ser. No. 433,554
Int. Cl. H02k *5/16*
U.S. Cl. 310—90 **7 Claims**

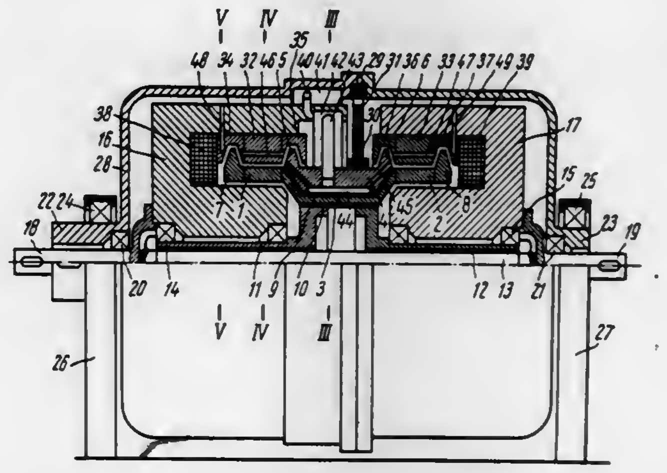


1. An oil and dust cap for assembly with a dynamoelectric machine having a stator defining a bore, a rotor secured to a shaft extending in said bore, and at least one bearing supporting the shaft in the bore, and a shell surrounding the stator and an end frame secured thereto and receiving said shaft and supporting the bearing and an oil receiving wick, said oil and dust cap characterized by a one-piece plastic construction having a hub assembled around the shaft at the end of the bore with a radially projecting wall extending therefrom and providing a dust cap over the outer end of the motor, an oil tube integrally formed with the dust cap and extending to adjacent the circumference of the end frame to receive lubricating oil and carry the oil for delivery to said wick, means to close the upper end of the oil tube, and means securing the dust cap to the end frame.

3,846,653
UNIPOLAR ELECTRIC TRANSMISSION

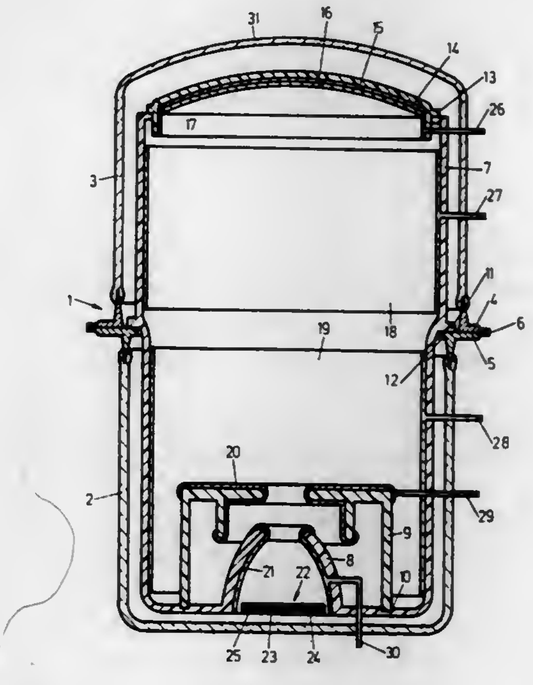
Boris Evdokimovich Korotenko; Vitaly Borisovich Korotenko, both of pereulok Armyansky 1/3, kv. 15, and Pavel Korneevich Shtepa, ulitsa Pushkinskaya 52, kv. 177, all of Kharkov, U.S.S.R.
Filed Mar. 26, 1973, Ser. No. 345,200
Int. Cl. H02k *49/12*
U.S. Cl. 310—102 **3 Claims**

1. A unipolar electric transmission comprising at least two coaxial arcylic machines with liquid-metal slip rings, which are combined into an adjustable-voltage system; a power circuit of each said acyclic machine including two operating current conductors, each formed of respectively a rotatable armature and a reactor; the armature of one of said acyclic machines connected to the armature of the other acyclic machine for joint rotation thereof; shafts for said acyclic machines, each said shaft being coupled to the reactor of a respective acyclic machine for their rotation; a casing for transmitting rotation to the interconnected armatures of the acyclic machines; a device for supplying liquid metal to the liquid-metal slip rings, comprising first and second inlet conduits having the respective inlet ends thereof placed at a greater radial distance from the axis of the transmission than their respective outlet ends; said first inlet conduit being coupled to a rotary magnetic circuit of the generator of the unipolar transmission, and said second inlet conduit being coupled to the armatures of the unipolar transmission; the inlet end of the first inlet conduit being located within a cavity containing liquid metal which is enclosed by the casing of the transmission, and the outlet end of the first conduit communicating with an annular groove which engages the inlet end of the second conduit.



3,846,654
VACUUM IMAGE CONVERTER

Karl Franz, Erlangen, and Hermann Christigau, Furth, both of Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany
Filed Mar. 8, 1973, Ser. No. 339,228
Claims priority, application Germany, Mar. 15, 1972, 2212579
Int. Cl. H01j *31/50, 39/00, 39/04*
U.S. Cl. 313—94 **3 Claims**

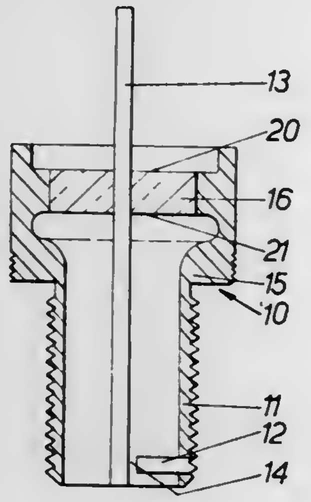


1. A vacuum image converter, comprising a vacuum flask, a cathode within said flask for releasing an electron ray bun-

dle, an anode within said flask and spaced from said cathode for receiving said electron ray bundle and an electrode system actuating said bundle of electrons and said vacuum image converter further comprising a carrier disposed within said vacuum flask consisting of an electrically insulating substance, said electrode system comprising a plurality of electrodes located between said cathode and said anode and mounted as electrically conducting coatings upon said carrier, said carrier having the shape of a pot with a bottom enclosing the anode and a top constituting a cover carrying said anode.

3,846,655
SPARKING PLUG

John Meredith Thring, Woodford Green, England, assignor to Gunson's Colorplugs Limited, London, England
Filed Jan. 4, 1973, Ser. No. 320,844
Claims priority, application Great Britain, Jan. 19, 1972, 2548/72
Int. Cl. H01t *13/12, 13/20, 13/38*
U.S. Cl. 313—118 **10 Claims**

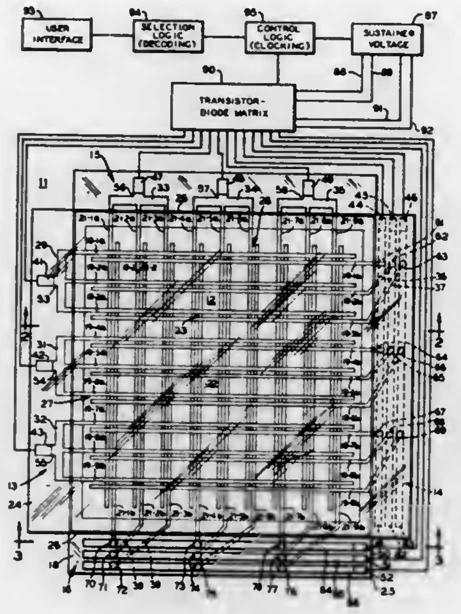


1. A sparking plug comprising a metal tubular housing, a housing electrode provided on a portion of said housing, a metal central electrode which is mounted within and spaced from the housing and extends axially thereof, the central and housing electrodes being made of different metals and being separated from each other by a spark gap, and an annular, translucent insulator disc which is mounted within the housing and is subjected to radial compression by the latter to effect sealing therebetween, the central electrode extending through and being sealed to the insulator disc, the coefficient of thermal expansion of the housing, throughout a predetermined temperature range, being substantially greater than that of the insulator disc, and the coefficient of thermal expansion of the insulator disc being substantially the same as that of the central electrode throughout the said predetermined temperature range.

3,846,656
MULTICELLED DISPLAY/MEMORY GAS DISCHARGE DEVICE HAVING INTEGRAL CELL INTERCONNECTIONS

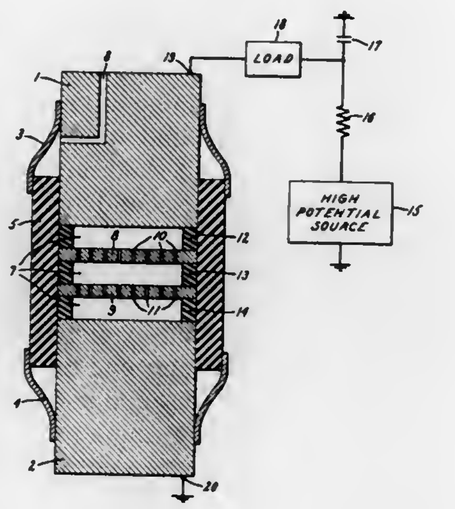
Jerry D. Schermerhorn, Swanton, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed June 22, 1973, Ser. No. 372,541
Int. Cl. H01l *61/00*
U.S. Cl. 313—188 **19 Claims**

1. A conductor array for a gaseous discharge display/memory panel comprising a non-conductive substrate; a plurality of closely spaced lines of conductive material on said substrate; a display area of said substrate mounted lines adapted to be enclosed; a terminal strip region of said substrate and said substrate mounted lines extending beyond said display area; a dielectric layer over said substrate mounted lines in said terminal strip region, said layer having apertures through its thickness which are in registry with and intersect with predetermined ones of said lines along predetermined paths which cross a plurality of said lines; and display connector lines formed as continuous strips of conductive material extending along said predetermined paths and into the apertures intersected by said paths to conductively engage said lines of conductive material on said substrate.



3,846,657
FAST RISE TIME QUENCHING SPARK GAP

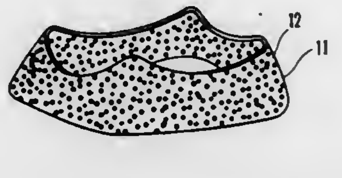
William E. Austin, Wayne, Pa., assignor to General Electric Company, New York, N.Y.
Filed May 17, 1973, Ser. No. 361,196
Int. Cl. H01j *1/46*
U.S. Cl. 313—195 **2 Claims**



1. A fast-rise-time quenched spark gap comprising:
a. a pair of fixed electrodes insulated from and opposed to each other to form a gap between them, and adapted to be connected to a source of potential;
b. at least one foraminate electrode or baffle having its foraminate portion in the gap between the fixed electrodes, spaced uniformly apart from and insulated from all other electrodes,
c. in an atmosphere of gas at a pressure at least approximately 1 atmosphere.

3,846,658
POST ACCELERATION TYPE CATHODE RAY TUBE WITH PERFORATED HOLLOW COLLECTOR ELECTRODE ADJACENT SHADOW MASK

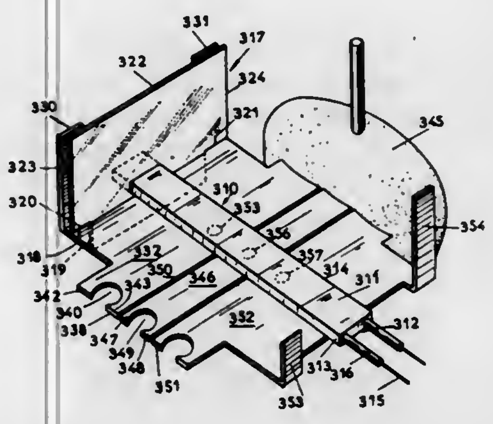
Masayoshi Kasai, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 4, 1972, Ser. No. 311,679
Claims priority, application Japan, Nov. 30, 1971, 46-11811[U]
Int. Cl. H01j *29/06, 31/20*
U.S. Cl. 313—408 **3 Claims**



1. In a post acceleration type cathode ray tube of the class comprising a panel, a fluorescent screen coated on the inner surface of said panel, a funnel, an auxiliary electrode coated on the inner surface of said funnel, a neck, at least one electron gun positioned within said neck, said panel, funnel and neck cooperating to form a sealed envelope, an electrode having perforations for transmitting an electron beam maintained at a potential below the post acceleration potential and positioned in front of said fluorescent screen, and a hollow secondary electron collector electrode positioned within the envelope and having open ends, said collector electrode forming an enclosure surrounding the path of the electron beam directed toward the fluorescent screen from the electron gun, the improvement in which said secondary electron collector electrode is constructed to have perforations for transmitting a portion of the secondary electrons generated by other electrodes of said tube to said auxiliary electrode.

3,846,659
MOUNTING ARRANGEMENT FOR COPLANAR GRIDS HAVING COMMON FLAT STRIP CATHODE

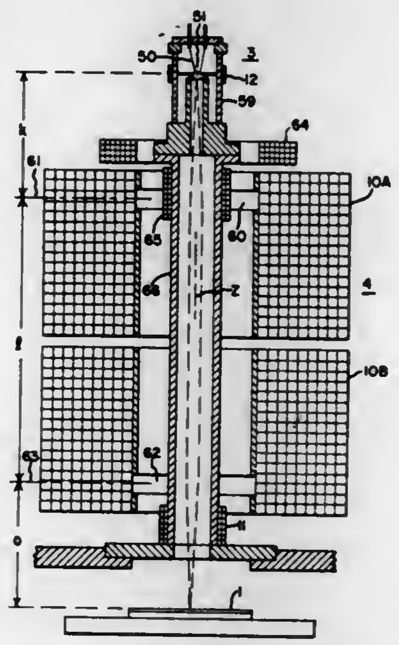
Georges Casset, Issi-Les-Moulineaux; Jean-Pierre Driffort, Chate-Nay-Malabry, and Pierre Lebel, Kremlin-Bicetre, all of France, assignors to Ste dite France-Couleur, Paris, France
Division of Ser. No. 857,638, Sept. 10, 1969, Pat. No. 3,733,507. This application Sept. 27, 1972, Ser. No. 292,639
Int. Cl. H01j *29/02, 29/46*
U.S. Cl. 213—411 **2 Claims**



1. In a color-television picture tube including a screen with luminescent triads of primary colors and a plurality of electron guns with coplanar parallel axes trained upon said screen, the improvement wherein said electron guns comprise a flat strip with an electron-emissive surface forming a common cathode, mounting means for said strip, a plurality of metal plates adjoining each other with boundaries transverse to said strip in a plane parallel to said electron-emissive surface, said plates being provided with respective perforations confronting said electron-emissive surface, and retaining means securing said plates to one another and to said mounting means with said perforations in mutual alignment; said plates including two outer plates and one intermediate plate, said mounting means comprising a pair of end supports for said strips interlockingly engaging said outer plates, said retaining means comprising a fusible body sealingly anchored to extremities of all said plates; said extremities having edges imbedded in said body, said edges forming recesses flanked by converging jaws.

3,846,660
ELECTRON BEAM GENERATING SYSTEM WITH COLLIMATED FOCUSING MEANS

John E. Wolfe, Camillus; George E. Ledges, Liverpool, and Homer H. Glascock, Scotia, all of N.Y., assignors to General Electric Company, Syracuse, N.Y.
Filed Aug. 6, 1969, Ser. No. 847,972
Int. Cl. H01j *29/64, 29/56*
U.S. Cl. 313—421 **6 Claims**



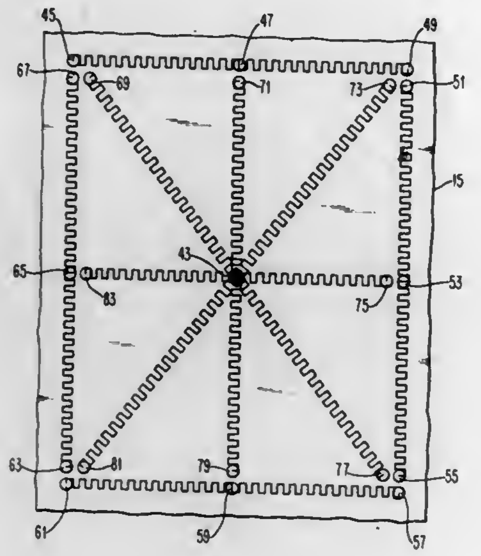
1. An electron beam structure for forming a high resolution, high current density electron beam, comprising:
a. an evacuated chamber,
b. cathode means within said chamber including a rigidly supported cathode needle structure, the tip of which provides an extremely small dimensioned emissive surface,
c. field means within said chamber for providing a generally radial electric field centered about the cathode needle emissive tip with a sufficiently high electric field gradient in the vicinity of the emissive tip for field emission, said cathode means and said field means producing a high density emission current formed into a beam having a divergent configuration,
d. a first focus lens for transposing the divergent configuration of said beam into a collimated configuration, and
e. a second focus lens for transposing the collimated configuration of said beam into a convergent configuration, producing at an image plane an extremely small spot at high current density.

3,846,661
TECHNIQUE FOR FABRICATING INTEGRATED INCANDESCENT DISPLAYS

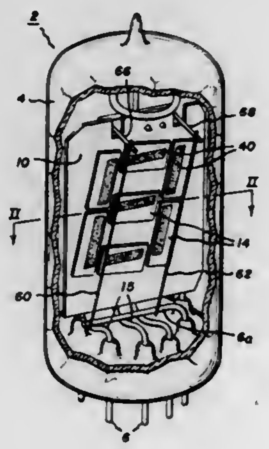
Alan V. Brown, and Frederick Hochberg, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 138,409, April 29, 1971, Pat. No. 3,715,785. This application Oct. 5, 1972, Ser. No. 296,366
Int. Cl. H01j *7/42*
U.S. Cl. 313—491 **10 Claims**

1. An incandescent filament arrangement comprising:
an insulative substrate base member having a lower surface

and an upper surface and having a plurality of conductive support posts extending at least from said lower surface through said substrate base member to at least said upper surface, and a body of incandescent material characterized by being substantially planar in a plane substantially parallel to and displaced from at least a portion of said upper surface and extending between and being integral with at least two of said plurality of conductive support posts.

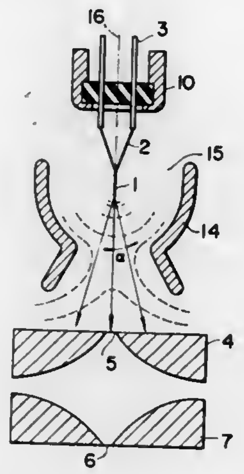


3,846,662
ALPHA-NUMBERIC DISPLAY TYPE ELECTRON DISCHARGE DEVICE
John M. Hooker, Owensboro, Ky., assignor to General Electric Company, Owensboro, Ky.
Filed June 22, 1970, Ser. No. 48,155
Int. Cl. H01j *61/66*
U.S. Cl. 313—496 **4 Claims**



1. An alpha-numeric display type electron discharge device comprising: an evacuated envelope containing a cathode, an insulating anode support substrate, and a plurality of planar anode segments mounted on said substrate generally in one plane, each of said anode segments having a coating of fluorescent material on at least a portion of a first surface of said segment and having means on the opposite surface of said segment to space the segments from said substrate an amount that is small with respect to the lateral dimensions of said segments, said spacing means being spaced from the edges of said opposite surface.

3,846,663
ELECTRON GUN DEVICE HAVING A FIELD EMISSION CATHODE TIP PROTECTED FROM DESTRUCTION DUE TO ION IMPINGEMENT
Tsutomu Komoda, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Sept. 20, 1971, Ser. No. 182,041
Claims priority, application Japan, Sept. 18, 1970, 45-81283
Int. Cl. H01j *29/02, 29/52*
U.S. Cl. 315—3 **2 Claims**

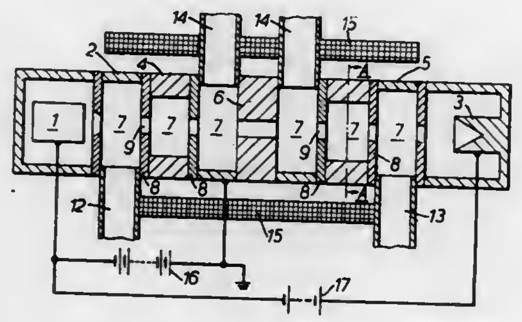


1. In an electron gun device of the field emission type having a cathode tip of needle shape, means for heating said cathode tip to clean it, means for drawing electrons from said cathode tip including an anode opposing said cathode tip and having a hole therein which is of smaller area than the area of the remainder of said anode through which at least part of the electrons from said cathode pass and means for applying a positive electric voltage to said anode with respect to said cathode tip so as to produce an electric field therebetween sufficient to cause electrons to be emitted from said cathode tip toward said anode, the improvement which comprises

suppression electrode means disposed between said cathode tip and said anode for preventing passage therethrough of ions emitted from said anode by means of electron impingement therein, said suppression electrode means including an electrode having an elongated annular configuration symmetrical about a central axis with a middle portion thereof being closer to said central axis than the two end portions thereof, and

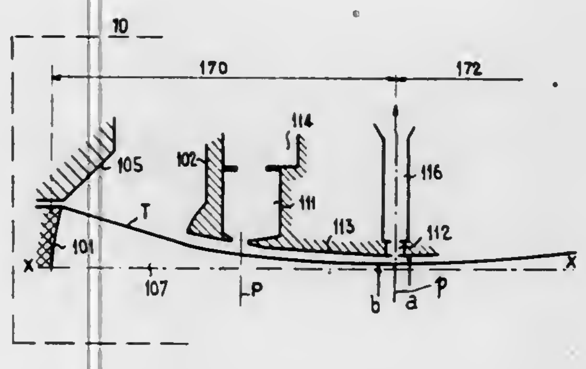
means for applying to said suppression electrode means a positive voltage higher than that applied to said anode, whereby said cathode tip can be protected from destruction due to ion impingement thereon.

3,846,664
COUPLED CAVITY TRAVELLING WAVE TUBES
Robin Charles Moorhouse King, Chelmsford, England, and Neville Wreford Harris, Acton, Mass., assignors to English Electric Valve Company Limited, Chelmsford, England
Filed Feb. 22, 1973, Ser. No. 334,939
Int. Cl. H01j *5/34*
U.S. Cl. 315—3.6 **10 Claims**



1. A travelling wave tube including an electron gun for producing an electron beam; a collector electrode for collecting said electron beam; a coupled cavity slow wave structure between said gun and collector for coupling radio frequency energy into and out of said electron beam and having a pass band defining a predetermined center frequency; a radio frequency signal input adjacent said electron gun and coupled to said slow wave structure to feed thereto radio frequency signals to be coupled to the beam; and a radio frequency signal output adjacent said collector electrode and coupled to the slow wave structure for extracting amplified radio frequency signals therefrom; and in which tube adjacent cavities of the slow wave structure are coupled one to the other by resonant coupling elements, the resonant frequencies of which elements are different from said center frequency and the resonant frequencies of some of which elements at the output end of the structure change successively to approach said center frequency toward the radio frequency output end of the tube.

3,846,665
VELOCITY MODULATION TUBE WITH FREQUENCY MULTIPLICATION FOR THE CONTINUOUS GENERATION OF HIGH POWER OUTPUTS
Gerard Firmain, and Georges Faillon, both of Paris, France, assignors to Thomson-CSF, Paris, France
Filed June 22, 1973, Ser. No. 372,757
Claims priority, application France, June 27, 1972, 72.23173
Int. Cl. H01j *25/10*
U.S. Cl. 315—5.43 **4 Claims**



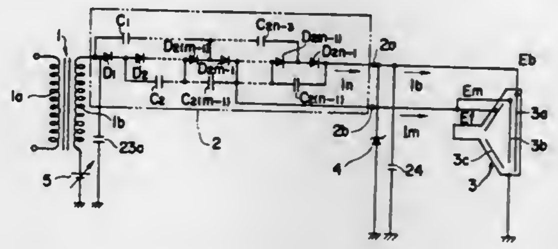
1. A high power velocity modulation tube, operating by frequency multiplication, for the production of a high frequency radio wave at a frequency nf_1 from a high frequency radio wave of frequency f_1, n being an integer greater than unity, said tube comprising:

an electron-gun and associated means for producing an electron beam and accelerating it towards a collector,

means provided to make the beam converge at its output from the cathode of the electron gun towards a minimum cross-section,

at least two electromagnetic high-frequency resonators, arranged in the path of the beam, through which the beam passes, separated by a space along which the electrons of the beam propagate with constant velocity, one of said resonators known as the first resonator, resonating at the frequency f_1 and velocity modulating the electrons of the beam, being located close to the cathode of said electron gun while one of the other of said resonators known as the second resonator, is arranged adjacent the said miminum cross-section of the beam, the aperture of said second resonator through which the beam passes being of dimensions which are small enough to provide coupling of said second resonator with the beam in the absence of grids in said resonator in the path of the beam, said second resonator which resonates at the frequency nf_1, picking up the high frequency wave generated at frequency nf_1 and directing it towards a load coupled to said resonator.

3,846,666
HIGH VOLTAGE CIRCUIT OF COLOR TELEVISION RECEIVER
Nobuyuki Suzuki; Toyotaro Nishihara, both of Yokohama, and Gentaro Miyazaki, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 5, 1973, Ser. No. 329,867
Claims priority, application Japan, Feb. 4, 1972, 47-12222
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD **17 Claims**



1. A high voltage circuit for a color television receiver, comprising:

a. fly-back transformer means including a primary winding and a secondary winding for producing high voltage pulses from horizontal deflection outputs,

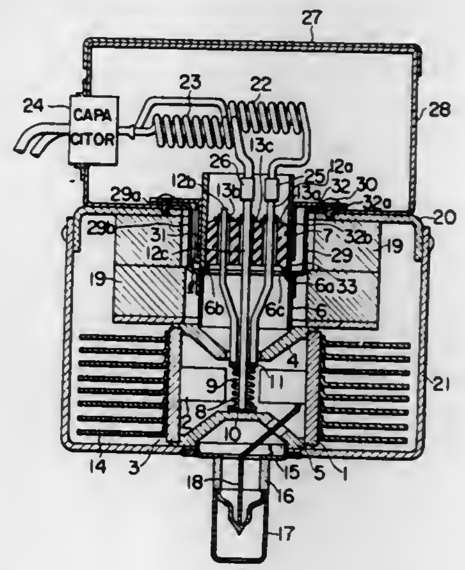
2. multiple stage voltage rectifier means made up of double voltage rectifier circuits formed into n stages for producing high DC voltages from the output of said transformer means,

3. A Braun tube including a shadow mask, a phosphor screen and a funnel electrode portion,

4. means to apply the output of the n-th stage of said voltage rectifier means to said phosphor screen, and means to apply the output of the m-th stage to said shadow mask, where n and m are integers, n being greater than m and greater than 1, and

5. means including a voltage stabilizing element connected between an output terminal of an l-th stage, where $(1 < l \leq n)$, of said voltage rectifier means and ground to stabilize the current flowing from said voltage rectifier means through said element to ground, thereby to maintain constant the voltage ratio between the phosphor screen voltage and the shadow mask voltage.

3,846,667
MAGNETRON HAVING EXTERNAL CHOKE STRUCTURE
Hiroshi Hisada, and Akikazu Harada, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed June 25, 1973, Ser. No. 372,903
Claims priority, application Japan, June 30, 1972, 47-76597
Int. Cl. H01j *25/50*
U.S. Cl. 315—39.53 **3 Claims**



1. A magnetron comprising an air-tight vacuum envelope, a cylindrical anode including a plurality of vanes, a cathode

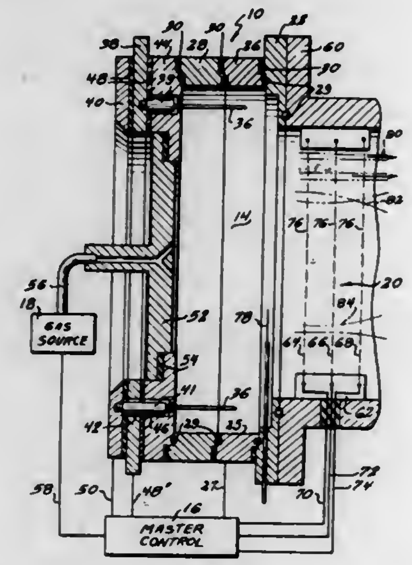
arranged on the central axis of said anode for thermionic emission, an input side insulator, a plurality of magnets for applying a magnetic field to the working space between said anode and cathode, a plurality of supports for supporting said cathode through said input side insulator, means for supplying working current through said supports to said cathode, an input side sealing metal member interposed between said anode and said input side insulator, said input side sealing metal member being hermetically closely attached to said input side insulator, an output side sealing member, an output side insulator, and an output terminal; said air-tight vacuum envelope being defined by said anode, said magnets, said input side insulator, said input side sealing member, said output side sealing member, said output side insulator and said output terminal, wherein said magnetron further comprises a choke structure having an opening in the vicinity of the connection between said input side insulator and said input side sealing metal member, said choke structure having an effective length approximately one fourth of the wavelength of microwave energy oscillated by said magnetron and being arranged on the outside of said air-tight vacuum envelope.

3,846,668
PLASMA GENERATING DEVICE
Kenneth W. Ehlers, Alamo, and Wulf B. Kunkel, Berkeley, both of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Feb. 22, 1973, Ser. No. 334,824

Int. Cl. H01j *7/24;* **H05h** *1/00*

U.S. Cl. 315—111 **6 Claims**



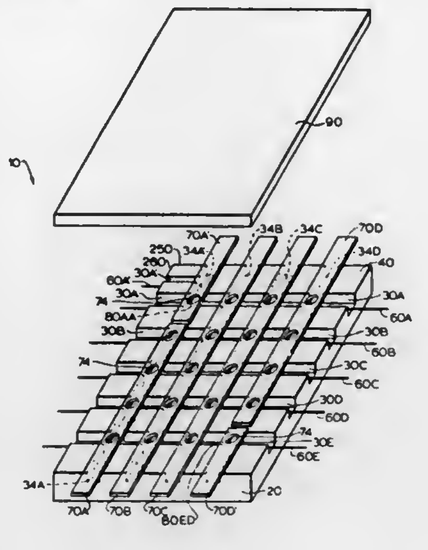
1. A high current plasma generating device comprising a vessel means having an evacuated electron arc discharge chamber therein, an electron emitter means being made up of a plurality of refractory metal filaments, each one of said plurality of metal filaments being individually mounted at one end of said vessel means so as to project longitudinally into the arc discharge chamber and to be disposed in circumferentially spaced relation to each other as well as inwardly spaced relation to the surrounding outer peripheral wall of said vessel means, reservoir means for selectively introducing a predetermined amount of a gaseous medium to be ionized into the discharge chamber of said vessel means, and an annular shaped anode means provided in the outer wall of said vessel means in outwardly spaced and circumjacent relation to said plurality of electron emitter means for causing a series of electron arc discharges between said plurality of electron emitter means and said anode means so as to effect formation of the introduced amount of gaseous medium into a relatively stable and quiescent high current plasma of substantially uniform ion current density throughout its extent upon simultaneous electric energization of said anode means and said plurality of emitter means when said reservoir means admits a predetermined amount of gaseous medium into the discharge chamber.

3,846,669
DISPLAY PANEL WITH RASTER SCANNING MEANS
David Glaser, Green Brook, and George A. Kupsky, Milford, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 223,039, March 2, 1972, abandoned, which is a continuation of Ser. No. 38,408, Aug. 18, 1970,. This application Feb. 16, 1973, Ser. No. 333,424

Int. Cl. H01j *17/04*

U.S. Cl. 315—169 R **13 Claims**



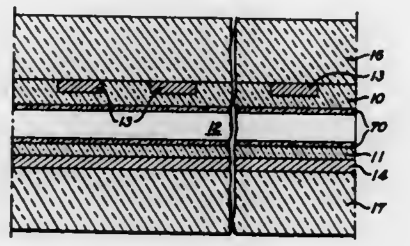
1. A display panel comprising
- an insulating plate including a plurality of anode electrodes and a plurality of cathode electrodes oriented with the anodes crossing the cathodes, with first gas-filled glow cells defined by each crossing of a pair of anode and cathode electrodes,
- gas communication channels formed in said plate and interconnecting all of said glow cells in a series which defines a raster, and
- an auxiliary cell for facilitating the start of a scanning operation and associated with the first cell in the scanning series,
- said auxiliary cell and said first cell in the scanning series comprising a single enlarged cell.

3,846,670
MULTIPLE GASEOUS DISCHARGE DISPLAY-MEMORY PANEL HAVING DECREASED OPERATING VOLTAGES
Robert F. Schaufele, Okemos, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 27, 1970, Ser. No. 67,604

Int. Cl. H05b *37/00*

U.S. Cl. 315—169 TV **6 Claims**



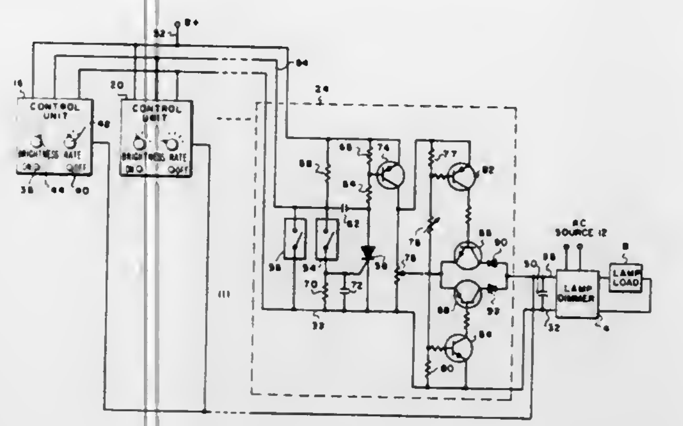
1. As an article of manufacture, a dielectric material body for a gaseous discharge display/memory device, said dielectric body containing a surface deposit of at least one electron emissive substance having a thickness of at least about 100 angstrom units to provide substantially decreased gaseous discharge operating voltages without substantially affecting the memory margin of said device, said electron emissive substance being selected from Group IA elements, Group IA oxides, barium, GaAs, GaP, InAs, InSb, InP, NiO, CsF, CsI, AgOCs, and AuOCs.

3,846,671
LIGHT DIMMING SYSTEM FOR CONTROLLING BRIGHTNESS AND RATE OF CHANGE OF BRIGHTNESS OF LIGHTS
James C. Johnson, Arlington, Tex., assignor to Hunt Electronics Company, Dallas, Tex.

Filed Mar. 26, 1973, Ser. No. 344,492

Int. Cl. H05b *37/02, 41/39*

U.S. Cl. 315—291 **8 Claims**



1. A light dimming system including:
- a dimmer circuit responsive to a voltage signal for controlling the flow of current through a lamp load; and
- at least one control unit coupled to said dimmer circuit, said control unit comprising:
- a potentiometer having a tap, the voltage at which determines the level of said voltage signal;
- a capacitor coupled to said dimmer circuit for storing an electrical charge to thereby develop thereacross a voltage substantially equal to said voltage level;
- a first conducting means including a first transistor having an emitter and a collector connected in series between the tap of said potentiometer and said capacitor for conducting current from said tap to said capacitor when the voltage at the tap exceeds the voltage across said capacitor;
- a second conducting means including a second transistor having an emitter and a collector connected in series between said tap of said potentiometer and said capacitor for conducting current from said capacitor to said tap when the voltage across said capacitor exceeds the voltage at said tap;
- a variable impedance means; and
- means coupling said variable impedance means to the bases of said first and second transistors and responsive to the impedance of said variable impedance means for controlling the current flow through said first and second conducting means to control the rate of current flow between said tap and said capacitor.

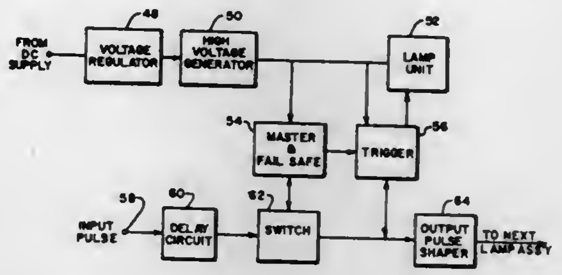
3,846,672
STROBE LIGHT SYSTEM FOR TRANSITIONAL GUIDANCE AND DELINEATION
Frederic C. Doughty, Tredyffrin Township Chester County, Pa., assignor to Elco Corporation, Willow Grove, Pa.

Filed Apr. 2, 1973, Ser. No. 347,257

Int. Cl. H05b *37/02, 41/44*

U.S. Cl. 315—312 **7 Claims**

1. A strobe light system for deployment along a roadway to provide vehicular transitional guidance comprising:
- a plurality of light assemblies, each of said light assemblies including;
- a portable support stand,
- a strobe lamp unit mounted on said support stand,
- a circuit housing mounted on said support stand,
- a jumper cable connected at one end to said assembly, and circuit means mounted in said circuit housing for controlling the flashing of said strobe lamp unit said circuit means including trigger means for causing said strobe lamp unit to flash,
- input means for receiving an external pulse from the circuit means of a preceding light assembly,
- output means connected to said trigger means for supplying an external pulse to the circuit means of the succeeding light assembly whenever said trigger means receives an actuating pulse,
- switching means for selectively connecting said input means to said trigger means, so that said external pulse actuates said trigger means, and
- pulse generator means connected to said trigger means for providing an actuating pulse to said trigger means,



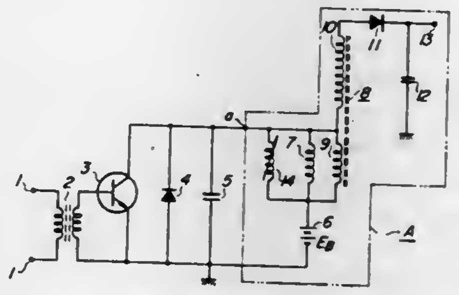
said switching means including means for controlling said pulse generator means to operate as a master trigger actuating pulse generator when said switching means causes said input means to be disconnected from said trigger means, and fail safe means for controlling said pulse generator means to operate as a fail safe trigger actuating pulse generator when said switching means causes said input means to be connected to said trigger means; and
- a primary cable which supplies operating voltage to and interconnects said circuit means of said light assemblies through the individual jumper cable associated with each of said light assemblies.

3,846,673
HIGH VOLTAGE REGULATION CIRCUIT FOR A COLOR TELEVISION RECEIVER
Ryoichi Hirota; Tooru Fujishima, both of Yokohama; Gentaro Miyazaki, Fujisawa; Tadahiko Iwasaki, Kamakura; Mitsuharu Akatsu, and Tomoo Kinoshita, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 809,244, March 21, 1969, Pat. No. 3,609,447. This application July 7, 1971, Ser. No. 160,481The portion of the term of this patent subsequent to Sept. 28, 1988, has been disclaimed.

Int. Cl. H01j *29/70*

U.S. Cl. 315—27 TD **3 Claims**



1. In a horizontal deflection and high voltage system for television including a D.C. power source for supplying a D.C. voltage to the system, a high voltage terminal for connection to a picture tube, a horizontal deflection yoke energizable to produce line deflection of an electron beam, switching means connected to said horizontal deflection yoke for supplying an energizing voltage to said horizontal deflection yoke to produce line trace movements of the electron beam and for cutting off such energizing voltage to produce retrace movements

of the electron beam in response to input horizontal deflection synchronizing signals, transformer means connected to said horizontal deflection yoke for producing a high voltage flyback pulse, and rectifying means connected to said high voltage terminal for rectifying the flyback pulse to produce high voltage power for electron beam acceleration,

a high voltage regulation circuit comprising:

variable inductance means comprising a saturable core, a high voltage regulation coil wound around at least one portion of said saturable core, said high voltage regulation coil, said horizontal deflection yoke and said transformer means being connected together in parallel;

a control winding wound around a different portion of said saturable core, one end of the control winding being connected to said switching means;

D.C. blocking means connected between said D.C. power source and said switching means for preventing a D.C. current from flowing into said high voltage regulation coil, said horizontal deflection yoke and said transformer means; and

an inductance element connected in series with said control winding between said D.C. power source and said switching means for preventing an A.C. current from flowing into the control winding;

whereby the inductance of said high voltage regulation coil is controlled so as to decrease or increase in inductance in response to an increase or a decrease, respectively, in the D.C. current flowing from said D.C. power source into said control winding.

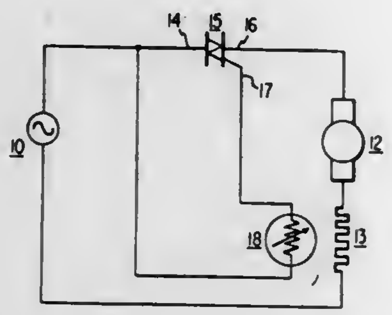
3,846,674
OVERCURRENT PROTECTION CIRCUIT INCLUDING A HEAT SENSITIVE ELEMENT AND A THYRISTOR

Thomas Charles McNulty, Middlesex, N.J., assignor to R.C.A. Corporation, New York, N.Y.

Continuation of Ser. No. 841,746, July 15, 1969, abandoned. This application Aug. 23, 1972, Ser. No. 174,230

Int. Cl. H02h *7/08*

U.S. Cl. 317—13 C **4 Claims**



1. An overload protection circuit adapted to sense overload conditions of a load and discontinue the supply of power thereto as a result thereof, comprising:

heat dissipating means adapted for connection to said load, the amount of heat dissipated by said means being proportionate to the current through said load;

a thyristor having first and second main terminal electrodes and a control electrode, said main terminal electrodes adapted for connection in series circuit with said load;

a time constant circuit comprising the serial combination of a resistor and a capacitor, said serial combination being connected across said first and second main terminal electrodes;

means for connecting the point between said resistor and said capacitor to said control electrode; and

a negative temperature coefficient thermistor connected in parallel circuit with said capacitor, said thermistor disposed in physical proximity with said heat dissipating means.

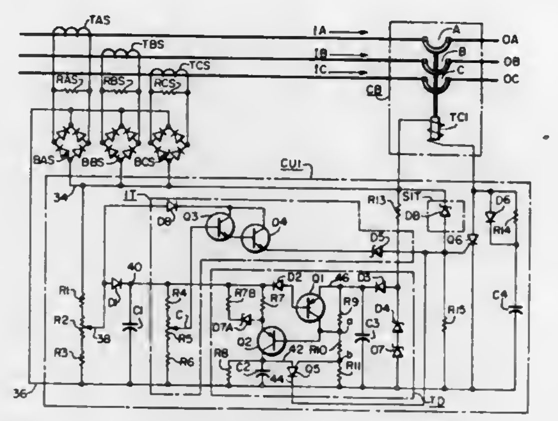
3,846,675
MOLDED CASE CIRCUIT BREAKERS UTILIZING SATURATING CURRENT TRANSFORMERS

Alan B. Shimp, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 30, 1973, Ser. No. 327,963

Int. Cl. H02h *3/08*

U.S. Cl. 317—33 R **10 Claims**



1. An electrical protective system for use with an electrical power system including at least one conductor, comprising:

a saturating current transformer means having output terminals and having a predetermined number of secondary turns for monitoring alternating electrical current in said conductor to thereby provide a combination power-intelligence signal at said output terminals, a core resistor means connected across said secondary turns of said saturating current transformer means, said saturating current transformer means being non-saturated within thirty electrical degrees of said alternating current zero so that said power-intelligence signal has a non-saturated position;

an electrical control circuit having a set of input terminals for being electrically connected in circuit relationship with said output terminals of said saturating current transformer means, said electrical control circuit having output terminal said electrical control circuit having means therein for anticipating the maximum absolute value of said alternating current during any half cycle thereof when energized by said non-saturated portion of said power-intelligence signal to provide an actuating signal at said output terminal of said electrical control circuit for useful purposes; and

electrical protective means including coil means of predetermined resistance value, said protective means having input terminals which are connected in circuit relationship with said output terminals of said electrical control circuit, said coil means being connected in circuit relationship with said output terminal of said saturating current transformer means, said electrical protective means responding to the presence of said actuating signal from said electrical control circuit to enable said protective means to thereafter be energized by power from said output terminals of said saturating current transformer means being supplied to said coil means to thereby cause a change in the magnitude of said alternating electrical current in said electrical conductor when said alternating electrical current reaches a predetermined value, said predetermined resistance value of said coil means being low compared to said resistance value of said core resistor means and said predetermined number of said secondary turns of said current transformer means being sufficient in magnitude to provide sufficient electrical power to energize said coil means from said current transformer means at a predetermined value within a range of 120 percent of overload or larger for said alternating current in said conductor, said predetermined number of said secondary turns being of such a value as to by necessity cause saturation in said current transformer means within said thirty degrees of current zero.

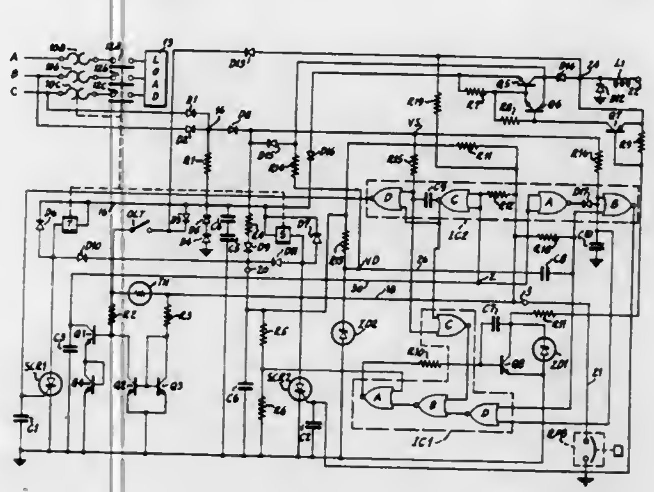
3,846,676
ELECTRONIC CONTROL SYSTEM FOR REMOTE CONTROL CIRCUIT BREAKERS

Lawrence J. Ryczek, East Troy; Walter L. Rutchik, Wauwatosa, and Donald L. Van Zeeland, Franklin, all of Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Sept. 13, 1973, Ser. No. 396,733

Int. Cl. H02h *3/08*

U.S. Cl. 317—33 SC **6 Claims**



1. In an electronic control for a remote control circuit breaker system in which a main circuit breaker is normally operated by energization of electromagnetic set and trip coils in response to the opening of a pilot control circuit breaker and in which overload trip-open of the main circuit breaker results in closure of overload trip contacts to initiate flow of a controlled current through the pilot control circuit breaker to cause the latter to open, the improvement comprising means responsive to the manual closing and opening of said pilot control circuit breaker to initiate corresponding energization of one or the other of said set and trip coils and thereafter deenergize the same after electrically timed intervals.

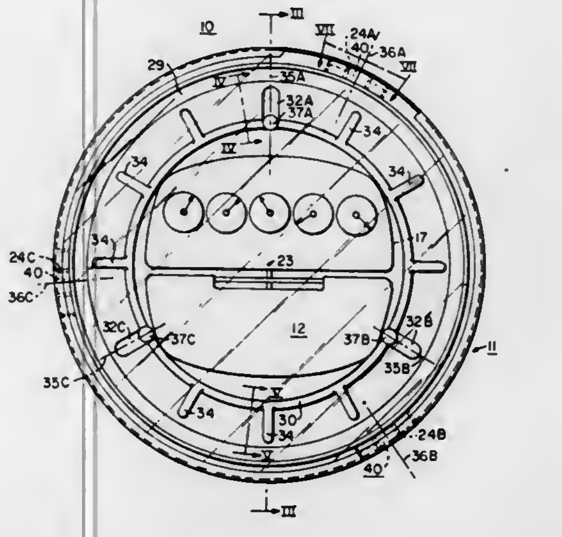
3,846,677
PLASTIC WATTHOUR METER COVER HAVING AN INDEXED AND PROTECTED FRONT FACE

Joseph M. Keever; Gerald W. Finnen, and James E. Ramsey, Jr., all of Raleigh, N.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 260,638, June 7, 1972, abandoned. This application July 9, 1973, Ser. No. 377,847

Int. Cl. H02b *9/00*

U.S. Cl. 317—107 **3 Claims**



1. A watthour meter enclosure comprising the combination of a molded plastic cup-shaped cover extending along a center longitudinal axis and a vertically mountable base assembly having a center vertical axis; said base assembly detachably carrying said cover on three equally circumferentially spaced arcuate lugs having a predetermined orientation relative to said vertical axis; said cover including a forward closed end, a side surface extending rearwardly with a circular cross section from said closed end to a rear open end, a radial mounting flange extending around the open end, said flange including three circumferentially spaced locking tabs positioned along three equidistant radial axes extending from said longitudinal axis at said open end in rotational engagement with said arcuate lugs, a transparent circular front face area having an outer circumference in said closed end for viewing the dial plate of a meter movement mountable on said base assembly; three forward end projections extending from said closed end forward of any other front most part of said closed end, said three forward end projections being radially positioned outside said front face area at the outer circumference of said front face area to terminate said closed end beyond said front face area, and said three forward end projections being positioned equally circumferentially spaced relationship along three equidistant radial axes extending from said longitudinal axis at said closed end with the last named axes being displaced about said longitudinal axis at equal predetermined arcuate distances from said radial axes at said open end such that each of the end projections is arcuately displaced at a predetermined arcuate distance relative to a separate one of the locking tab positions so that one of said end projections is positioned along a vertical axis longitudinally coinciding with the center vertical axis of said base assembly said cover is attached by said locking tabs in the final rotated mounting position on said arcuate lugs of said base assembly.

3,846,678
MULTI-CELLED MOUNTING FRAME FOR STATIC CONVERTER MODULES

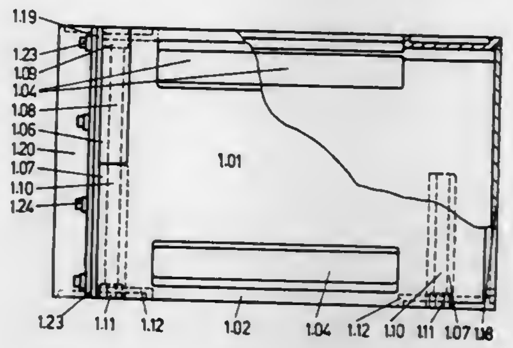
Erwin Klein, Heddesheim, Germany, assignor to BBC Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Dec. 14, 1971, Ser. No. 207,842

Claims priority, application Germany, Dec. 19, 1970, 2062666

Int. Cl. H05k *7/18*

U.S. Cl. 317—120 **8 Claims**



1. A mounting frame for a static converter system comprising an assembly of stacked and interconnected cells each of which receives a converter module of the plug-in type, each said cell having a rectangular configuration and including parallel spaced side walls, top and bottom walls and a rear wall, said side walls including parallel spaced externally located ribs provided with through-bores and which extend for a maximum of one-half the height of the side walls, the ribs on one side wall extending from the top down and the ribs on the opposite side wall extending from the bottom up, laterally adjacent cells being located in side-by-side relation with the lower ribs of one cell in alignment with the upper ribs of the adjacent cell, fastening bolts extending through the aligned bores of laterally adjacent cells for securing said cells in the side-by-side relationship, and connection terminal means carried by the rear wall of each cell and which are engaged with the plug-in terminals on the converter modules.

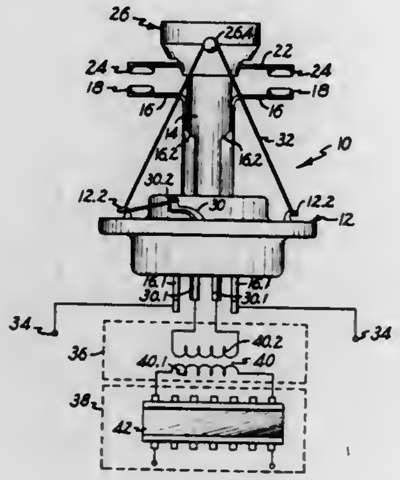
3,846,679
HIGH GAIN RELAYS AND SYSTEMS

Ernest M. Jost, Plainville; Lyle E. McBride, Jr., Norton, and Teuvo J. Santala, Attleboro, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 351,683, April 16, 1973. This application Jan. 7, 1974, Ser. No. 431,461

Int. Cl. H05b *1/02*; H01h *37/50*, *47/26*

U.S. Cl. 317—132 5 Claims



1. A control circuit system comprising a relay operable at low power levels having an insulating base, stationary contact means mounted on said base, movable contact means mounted on said base for movement between a closed circuit position engaging said stationary contact means and an open circuit position spaced from said stationary contact means, spring means mounted on said base biasing said movable contact means from one of said positions to the other of said positions, and a metal wire secured between said movable contact means and said base, said wire being of a selected metal alloy to be deformed from an original length to a second length by said spring bias as said movable contact means is moved from said one position to said other position by said spring bias while said alloy displays a relatively low modulus of elasticity below a transition temperature and to abruptly return to said original length and to display a relatively higher modulus of elasticity to move said movable contact means back to said one position against said spring bias when said wire is heated to said transition temperature, said wire having a selected cross-sectional size and length to be heated from room temperature to said transition temperature by passing electrical current through said wire with a power input of less than about 2 watts; a power source directing energizing current through said relay wire; a device to be energized from said power source through said relay contact means when said relay is in closed circuit position; and resistor means displaying varying resistance in response to temperature changes arranged to regulate said energizing current in said relay wire for operating said relay to energize said device at one temperature level and to deenergize said device at another temperature level.

3,846,680
AUTOMATIC-CONTROL ELECTRONIC APPARATUS FOR MACHINE TOOLS INCLUDING PROVISION FOR ZERO OFFSET

Carlo Guerci, Ivrea, and Amerigo Vigliermo, Baio Dora, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Nov. 5, 1971, Ser. No. 195,912

Claims priority, application Italy, Nov. 7, 1970, 70707/70

Int. Cl. G05b *19/36*

U.S. Cl. 318—685 11 Claims

1. Apparatus for automatic control of machine tools comprising:

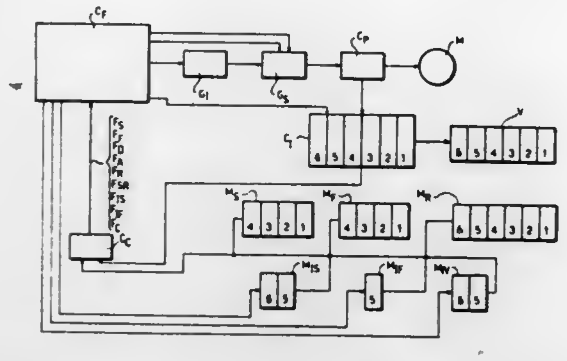
a stationary member,

a movable member transversely movable toward and away from said stationary member,

stepping motor means for supplying the motive power to said movable member,

means for generating electrical pulses, the output of which is coupled to said stepping motor and

frequency generator means for providing said pulses with predetermined frequencies, said frequency generator means having first and second oscillators generating different frequencies, said first oscillator causing said motor to move said movable member during a roughing-out operation, said second oscillator causing said stepping motor to move said member during a finishing operation with a speed slower than the speed of the roughing-out operation.



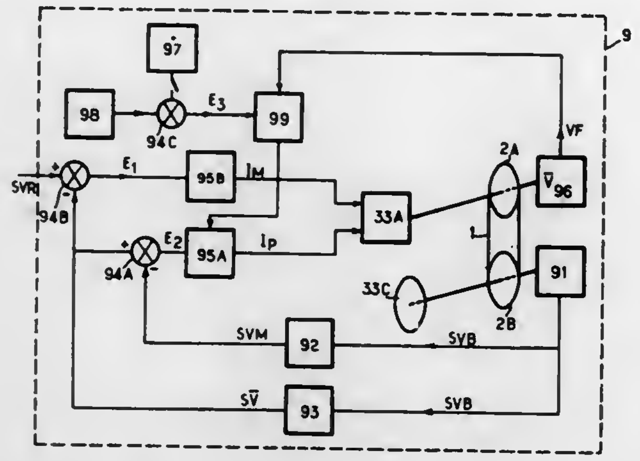
3,846,681
VELOCITY MODULATOR DEVICE

Roger Pierre Arhan, Belfort, and Andre Roger Camille Lacroix, Cravanche, both of France, assignors to Societe Honeywell Bull (Societe Anonyme), Paris, France

Filed Mar. 23, 1973, Ser. No. 344,312

Int. Cl. H02p *5/00*

U.S. Cl. 318—115 22 Claims



1. An intermittent motion system comprising, in combination:

a rotatable assembly having at least one rotatable member to which intermittent motion is to be applied;

a drive assembly for said rotatable device including a d.c. motor having a rotor of low inertia and a torsion bar connecting said rotor to said rotatable member, the system consisting of said rotatable assembly and said drive assembly having a natural mechanical frequency F, said drive assembly including means for imparting a uniform rotational motion component of constant velocity V to said rotatable member and means for energizing said d.c. motor at said frequency F to impart an oscillatory motion component to said rotatable member having a velocity function equal to $V_M \sin wt$ where V_M is the maximum velocity of said oscillatory component and $W = 2\pi F$; and control means for controlling energization of said drive assembly to assure V_M is substantially equal to V.

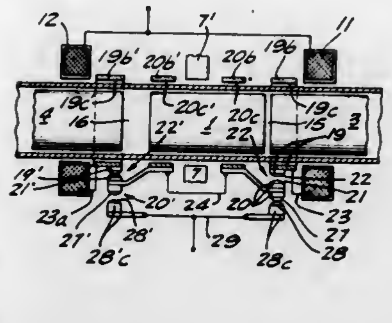
3,846,682
SEALED PUMP AND DRIVE CIRCUITS THEREFOR

Philip E. Massie, 4220 Irving Pl., Culver City, Calif. 90230

Division of Ser. No. 113,321, Feb. 8, 1971. This application Nov. 20, 1972, Ser. No. 308,044

Int. Cl. H02r *5/40*

U.S. Cl. 318—138 10 Claims



1. A reciprocating electrical machine comprising: a magnetically actuatable reciprocatable armature and means supporting it for movement; permanent magnet means associated with the armature and supporting means; electrical winding means disposed to produce an electromagnetic field for reciprocating the armature in association with the field of the permanent magnet; and switch means for energizing the windings in a manner to cause the armature to reciprocate, said switch means comprising magnetic reed switch means positioned in proximity to the electromagnetic field generated by the windings so as to be actuable thereby in a manner to cause the armature to reciprocate.

3,846,683
STARTING DEVICE FOR A SINGLE-PHASE ASYNCHRONOUS MOTOR

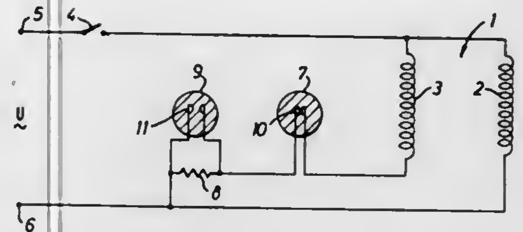
Gorm Laursen, Ahornsvej 6, 6400 Sonderborg, Denmark

Filed Sept. 4, 1973, Ser. No. 394,391

Claims priority, application Germany, Oct. 4, 1972, 2244680

Int. Cl. H02p *1/44*

U.S. Cl. 318—221 H 1 Claim



1. A starting device for a single phase asynchronous motor comprising an auxiliary winding, first and second glow discharge lamps each having a thermal switch, said lamps being in series with said winding, said first lamp having a glow discharge current established by current flowing in said auxiliary winding, said first lamp switch having normally closed contacts and said second lamp switch having normally open contacts, a resistor in shunt with said second lamp for causing ignition of said second lamp when crossed by a predetermined supply voltage, said second lamp switch being closeable after a time lag due to a glow discharge current of said second lamp, said first lamp switch being openable after a time lag when a maximum line current is established when said second line switch is closed, said resistor causing extinguishing of said second lamp when a minimum voltage drop thereacross is established by a minimum line current consisting only of said first lamp discharge current.

3,846,684
FEEDING DEVICE FOR DIRECT CURRENT MOTOR

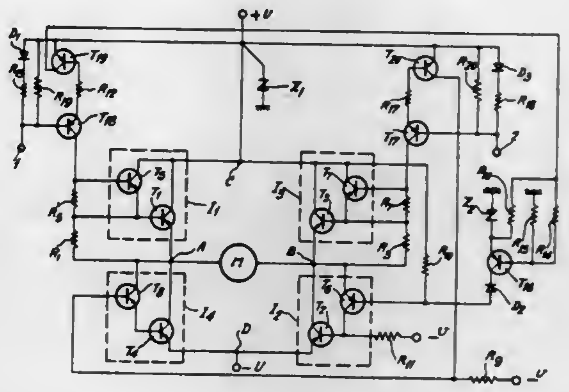
Alain Francois Jossic, Belfort, France, assignor to Societe Honeywell Bull (Societe Anonyme), Paris, France

Filed Apr. 2, 1973, Ser. No. 347,286

Claims priority, application France, Apr. 10, 1972, 72.12431

Int. Cl. H02p *5/16*

U.S. Cl. 318—257 10 Claims



1. A feeding device for a motor with D. C. current, comprising, on the one hand, at least two control arrangements for the passage of an electric current installed on either side of said motor to form a link of the circuit connected with the terminals of a D. C. power source, said arrangements each including at least one power transistor and, on the other hand, an actuating device, as such controlled by a control signal, to simultaneously render said arrangements conductive or blocking, said actuating device comprises two transitors of which, the first, receiving the control signal at its base, controls by its emitter-collector path, on the one hand, one of said arrangements apt to be rendered partially conductive by controlling the conduction of its power transistors as a function of said control signal, and on the other hand, the base of the second transistor which is saturated and whose emitter-collector path controls the second arrangement capable of becoming totally conductive by saturating its power transistors, irrespective of the amplitude of the control signal.

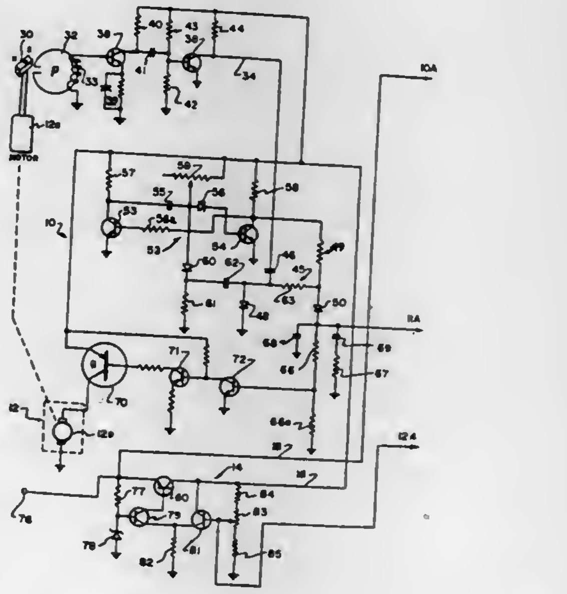
3,846,685
TAPE PLAYER CARTRIDGE CONTROL CIRCUIT

William B. Huber, 233 Juniper, Park Forest, Ill. 60466

Division of Ser. No. 80,263, Oct. 13, 1970, abandoned. This application Oct. 5, 1972, Ser. No. 295,150

Int. Cl. H02p *5/16*

U.S. Cl. 318—327 4 Claims



1. In a motor control circuit, the combination including:

a motor having an output shaft and winding means for receiving energizing current to cause rotation of said output shaft;

pulse generator means responsive to the speed of rotation of said output shaft to produce first pulses of one polarity having a time duration indicative of the speed of rotation with the time duration decreasing with increasing speed; a current control device having load electrodes connected to said winding means to supply energizing current thereto, and further having a control electrode;

a one-shot multivibrator circuit means having an input terminal for receiving said first pulses from said pulse generator, said one-shot multivibrator circuit means producing second pulses of a polarity opposite said one polarity of said first pulses of predetermined time duration;

a matrix circuit;

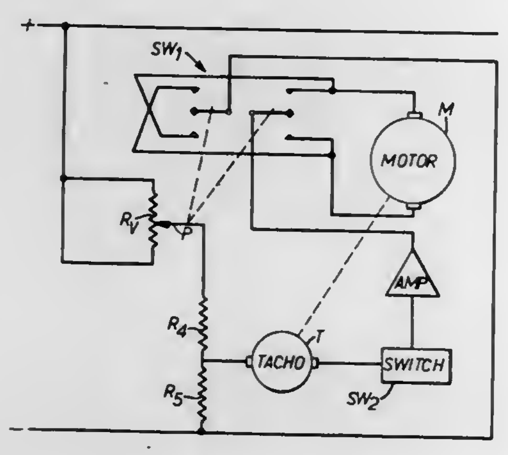
circuit means coupling said first and second pulses to said matrix circuit for algebraically combining said first pulses from said pulse generator and said second pulses from said one-shot multivibrator circuit means to produce an output signal;

a unidirectional current conducting device connected to said matrix circuit; and

bias control means coupled between said unidirectional current conducting device and said control electrode of said current control device to control conduction thereof in response to the polarity of said output signal from said matrix circuit thereby controlling the speed of rotation of said output shaft.

3,846,686
SERVO CONTROL SYSTEMS

Brian R. Malyon, Feltham, England, assignor to Selectro-Micro Company Limited, London, England
Filed May 8, 1973, Ser. No. 358,463
Claims priority, application Great Britain, May 9, 1972, 21476/72
Int. Cl. H02p *5/06*
U.S. Cl. 318—349 **4 Claims**



1. A servo control system, comprising

a supply source having a first terminal and a second terminal,

a variable resistor having a first terminal, a second terminal and a variable tapping arm providing a third terminal,

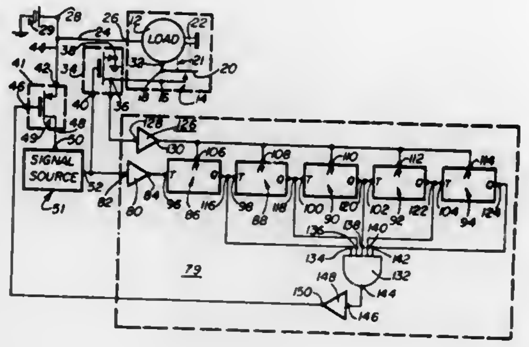
means short-circuiting the first and second terminals of the variable resistor to provide a non-linearly variable resistance means between the short circuiting means and the third terminal,

an electric motor, and

means connecting the electric motor, the third terminal, and the short circuiting means all in series across the first and second terminals of the supply source so that the non-linearly variable resistance means is in series with the electric motor.

3,846,687
DIGITAL POWER CONTROL CIRCUIT FOR AN ELECTRIC WRIST WATCH

R. Gary Daniels, Tempe, and James Walter Foltz, Scottsdale, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.
Continuation of Ser. No. 169,246, Aug. 5, 1971. This application July 10, 1972, Ser. No. 270,130
Int. Cl. H02p *1/18*
U.S. Cl. 318—446 **14 Claims**



1. A control circuit adapted for selectively applying and removing electrical power flowing from a power supply to the power terminal of a signal source which when energized provides a plurality of driving signals at a constant frequency at its output terminal to drive a load that selectively provides first control signals at its output terminal, the control circuit removing the power from the power terminal of the signal source in response to the duration between successive ones of the first control signals exceeding a predetermined time, the control circuit including in combination:

counter means having an input terminal, an output terminal and a reset terminal;

first circuit means coupling said input terminal to the output terminal of the signal source;

second circuit means coupling said reset terminal to the output terminal of the load;

said counter means counting the driving signals and providing a second control signal at said output terminal thereof in response to the occurrence of a predetermined number of said driving signals which takes substantially the predetermined time, said counter means resetting its count in response to each of the first control signals;

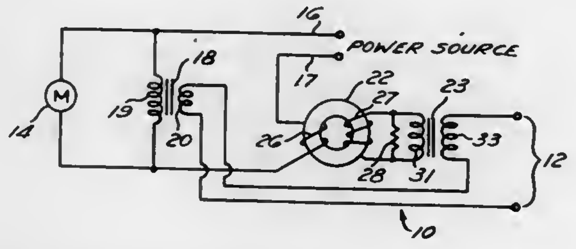
switch means for connecting the power supply to the signal source and having a control terminal;

third circuit means connecting said control terminal of said switch means to said output terminal of said counter means; and

said switch means being responsive to said second control signal applied to said control terminal thereof to disconnect the signal source from the power supply thereby causing the termination of the driving signal.

3,846,688
MACHINE WORK SENSOR

Ronald S. Perloff, Shaker Heights, Ohio, assignor to Electron Inc., Bratenahl, Ohio
Filed July 18, 1973, Ser. No. 380,406
Int. Cl. H02p *5/28*
U.S. Cl. 318—490 **10 Claims**

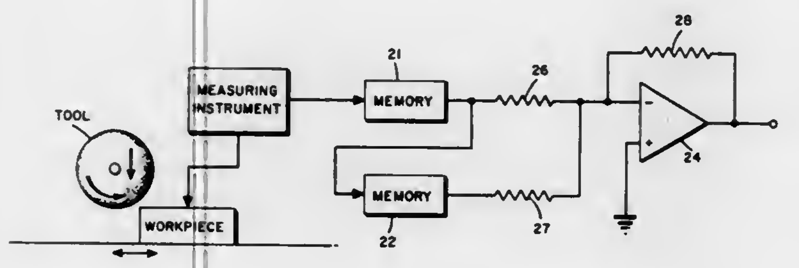


1. An electrical circuit for sensing the load on a motor comprising a plurality of lines for carrying electrical power

from a source to a motor, a step-down transformer having a primary coil shunted across two of said lines, said step-down transformer providing at its secondary coil a reduced voltage in phase with line voltage, one of said power lines forming a primary coil in a toroidal transformer, the toroidal transformer including a secondary coil providing a voltage in phase with line current, said toroidal transformer secondary coil driving the primary of a step-up transformer, the outputs of the step-down and step-up transformers being arranged to be substantially equal in magnitude and being connected in series to form a vectorial output signal variable between upper and lower amplitude limits in response to a change in the phase angle between motor voltage and motor current caused by a change in load on the motor.

3,846,689
METHOD AND DEVICE FOR THE CONTROL OF THE MACHINING ON A MACHINE TOOL FOR STOCK REMOVAL

Mario Possati, Bologna, Italy, assignor to Finiki Italiana Marposs-Soc. In Accomandita Semplice di Mario Possati & C, Bologne, Italy
Filed Apr. 5, 1973, Ser. No. 348,082
Claims priority, application Italy, Apr. 10, 1972, 3392/72; Jan. 18, 1973, 3304/73
Int. Cl. B23g *5/28*
U.S. Cl. 318—571 **11 Claims**



1. A method for controlling machining on a machine tool carrying out subsequent cuts for removing stock from a section of a workpiece, in which the stock of the section being machined is measured after the subsequent cuts and the machine is automatically controlled on the basis of said measurements, comprising the steps of:

storing signals representative of the stocks measured after the last and the preceding cut,

obtaining the difference signal of said signals,

comparing said difference signal with a signal representative of the stock still to be removed, and controlling the machine tool cycle by means of a signal resulting from said comparison.

3,846,690
DEVICE FOR CHARGING AN ELECTRIC POWER STORAGE ELEMENT TO A PREDETERMINED VOLTAGE

Roland Colyn, Le Perreux, France, assignor to Compagnie Generale d'Electricite, Paris, France
Filed July 11, 1973, Ser. No. 378,106
Claims priority, application France, July 11, 1972, 72.25037
Int. Cl. H03k *3/30;* **H02j** *7/00*
U.S. Cl. 320—1 **2 Claims**

1. A device for charging an electric power storage element to a predetermined voltage, said device comprising:

a continuous electric current source,

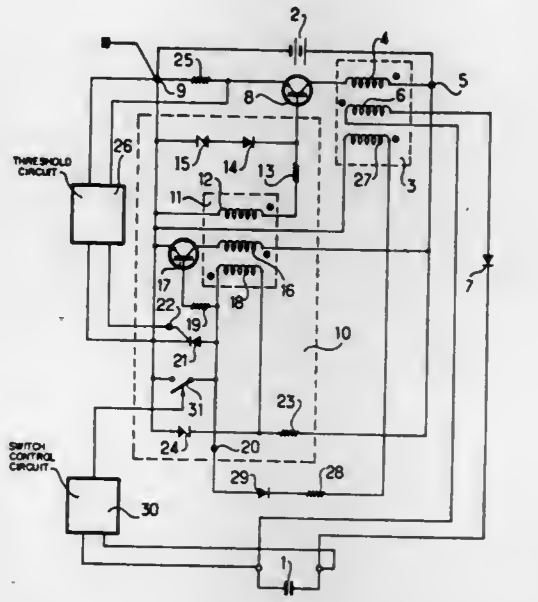
an induction coil comprising a primary winding, the ends of which are connected respectively to the terminals of said source to produce a charging current of this coil, and a secondary winding, the ends of which are connected respectively to the terminals of said storage element,

an interrupter in series with said primary winding,

control circuit means for controlling the opening and closing of said interrupter to produce by the opening of this interrupter the discharge into said electric power storage element of the charge of said coil,

a first rectifier connected in series with said secondary winding,

means sensitive to the charging voltage of said storage element to interrupt the charging of this storage element when this voltage reaches the predetermined value; said device further comprising:

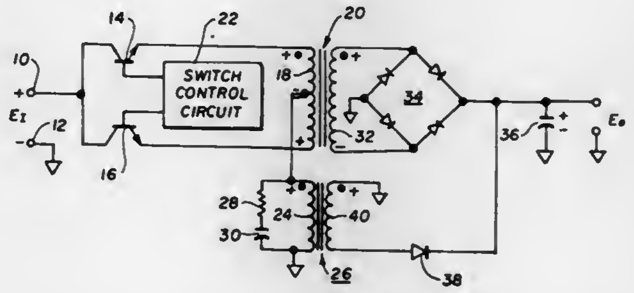


first means sensitive to the charging current of said coil and operative to open said interrupter when the intensity of the charging current reaches a predetermined threshold value,

and second means sensitive to the discharging current of said coil in said storage element and operative to keep the interrupter open during the entire discharging operation, said control circuit means controlling said interrupter being operative to keep said interrupter closed when said first and second means are not operative.

3,846,691
DIRECT CURRENT TO DIRECT CURRENT CHOPPER INVERTER

Edward Robert Higgins, North Linthicum, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 24, 1971, Ser. No. 118,356
Int. Cl. H02m *3/32*
U.S. Cl. 321—2 **5 Claims**



1. A chopper inverter comprising a pair of terminals adapted for connection to a source of direct current, a transformer having primary and secondary windings, at least one pair of switch devices for alternately connecting one terminal of said direct current source to opposite ends of the primary winding of said transformer, an output smoothing capacitor, means including a rectifier connecting the secondary winding of said transformer across said output smoothing capacitor, a flyback transformer having primary and secondary windings, means including the primary winding of said flyback transformer for connecting a center tap on the primary winding of

said first-mentioned transformer to said other input terminal, and unidirectional current means connecting the secondary winding of said flyback transformer to said output smoothing capacitor.

3,846,692
PEAK AMPLITUDE FOLLOWER CIRCUIT

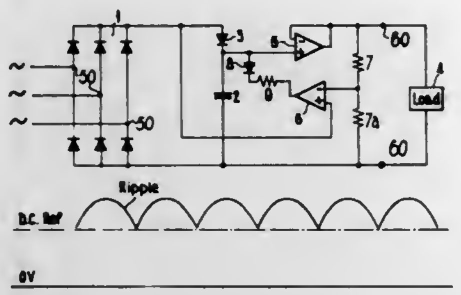
Anthony Hill, Wildwood, England, assignor to The General Electric Company Limited, London, England

Filed Nov. 14, 1973, Ser. No. 415,676

Claims priority, application Great Britain, Nov. 20, 1972, 53475/72

Int. Cl. H02m *7/02;* **G01r** *19/04*

U.S. Cl. 321—8 R **16 Claims**



1. An electrical circuit for producing a d.c. output signal which follows variations in the peak value of an alternating input signal comprising input terminals to which the alternating signal is applied, a rectifier for producing a rectified signal from the input signal, a storage capacitor which is connected to the rectifier output so as to be charged to a value corresponding to the peak value of the rectified signal, output terminals across which the d.c. output is produced, means for deriving a d.c. reference signal from the voltage across the capacitor, means for comparing the reference signal with the rectified signal to produce a control signal in response to variations, from a predetermined value, of the difference between the reference signal and the peak value of the rectified signal, due to falls in said peak value, and means controlled by said control signal for discharging the capacitor until said predetermined value of said difference is restored.

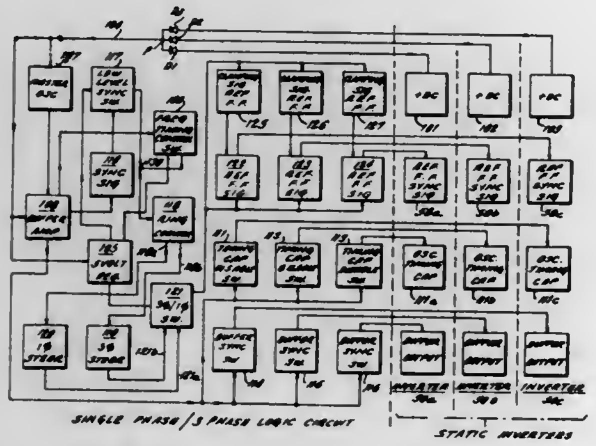
3,846,693
SELECTIVELY SWITCHED, MALFUNCTION-RESPONSIVE THREE PHASE AND PARALLEL LOGIC BOX FOR PLURAL STATIC INVERTERS

Albert William Compoly, Belmar, and Alfred Charles Temple, Manasquan, both of N.J., assignors to Avionic Instruments Inc., Rahway, N.J.

Filed Oct. 16, 1973, Ser. No. 406,912

Int. Cl. H02m *1/18*

U.S. Cl. 321—12 **8 Claims**



1. A logic control circuit for synchronizing a plurality of static inverters each comprising a local oscillator, a local bistable frequency divider coupled to the local oscillator and an output circuit coupled to the frequency divider for producing a regulated a.c. output at a regulated frequency, said logic control circuit comprising:

- a master oscillator;
- multiphase synchronizing means having an input for generating a plurality of phase synchronizing signals at each of its outputs which signals are at equidistant electrical phase intervals, said outputs each being coupled to a respective one of the local bistable frequency dividers of said static inverters for driving the local bistable frequency dividers;
- sensing means coupled to said master oscillator for sensing the operating condition of said master oscillator to generate a disabling signal only when said master oscillator is operating properly, which disabling signal is coupled in common to each of the local oscillators of said static inverters to disable said local oscillators, said disabling signal being terminated upon the malfunctioning of the master oscillator to permit each static inverter to operate under control of its respective local oscillator.

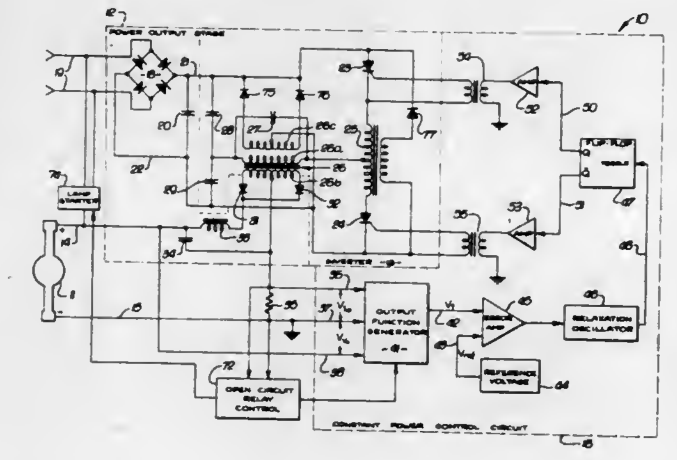
3,846,694
CONSTANT POWER SUPPLY EMPLOYING A VARIABLE FREQUENCY INVERTER

Albert E. Archer, Yorba Linda, Calif., assignor to John Fonseca, trustee, Alhambra, Calif.

Filed Mar. 30, 1973, Ser. No. 346,603

Int. Cl. H02m *7/52*

U.S. Cl. 321—18 **15 Claims**


POWER OUTPUT STAGE
10
INVERTER
OUTPUT FUNCTION GENERATOR
RELAXATION OSCILLATOR
REFERENCE VOLTAGE
OPEN CIRCUIT RELAY CONTROL
CONSTANT POWER CONTROL CIRCUIT
FLIP FLOP

1. A power supply having regulated power output, comprising:

- a power output stage including a variable frequency, substantially constant pulse width inverter for supplying dc power to a load, and
- constant power control circuit means for sensing deviation of the supply output power from a linear approximation of a constant power curve and for adjusting the frequency of said inverter to compensate for such sensed deviation, said control circuit and said output stage thereby cooperating to maintain the output power from said supply at a constant value.

3,846,695
SERIES-PARALLEL DUAL SWITCHING REGULATOR FOR USE WITH A VARIETY OF LINE VOLTAGES

Luther L. Genuit, Scottsdale, and John R. Nowell, Phoenix, both of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

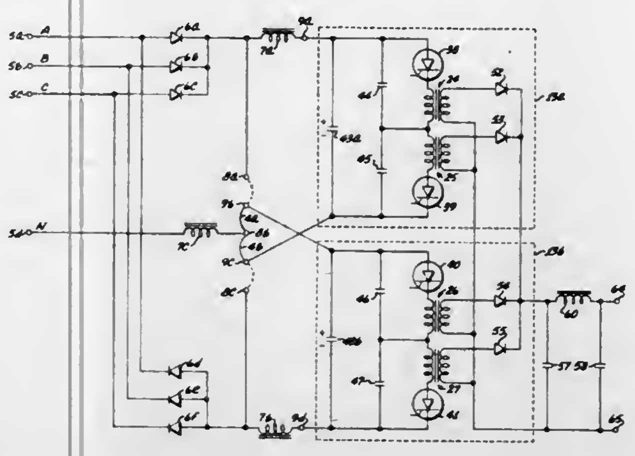
Filed May 7, 1973, Ser. No. 357,996

Int. Cl. H02m *7/04*

U.S. Cl. 321—27 R **3 Claims**

1. A series-parallel dual switching regulator for use with a polyphase power line having first, second, third and fourth output terminals, said regulator comprising:

- first and second switching regulators each having first and second input terminals;
- first, second, third, fourth, fifth and sixth diodes each having an anode and a cathode, said anodes of said first, second and third diodes each being connected to a corresponding one of said first, second and third line output terminals, said cathodes of first, second and third diodes being coupled to said first input terminal of said first regulator, said cathodes of said fourth, fifth and sixth diodes each being connected to a corresponding one of said first, second and third line output terminals, said anodes of said fourth, fifth and sixth diodes being coupled to said second input terminal of said second regulator;



- first, second and third connector terminals, said first connector terminal being connected to said cathodes of said first, second and third diodes, said second connector terminal being coupled to said fourth line output terminal, said third connector terminal being connected to said anodes of said fourth, fifth and sixth diodes;
- means for selectively connecting said second input terminal of first regulator to one of said second and said third connector terminals; and
- means for selectively connecting said first input terminal of said second regulator to one of said first and said second connector terminals.

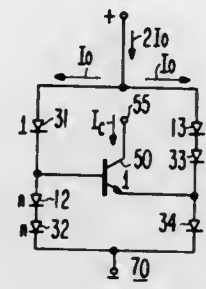
3,846,696
CURRENT ATTENUATOR

Adel Abdel Aziz Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed July 20, 1973, Ser. No. 381,176

Int. Cl. G05f *3/14*

U.S. Cl. 323—1 **15 Claims**



1. A current attenuator comprising:

- a first terminal and a second terminal between which an input current may be applied;
- a transistor having a base electrode and an emitter electrode and a base-emitter semiconductor junction therebetween and having a collector electrode;
- a first number M of semiconductor junctions serially connected from said transistor base electrode to said first terminal;
- a second number N of semiconductor junctions serially connected from said transistor emitter electrode, to said first terminal, one of the numbers M and N being one more than the other, each said semiconductor junction in the larger of said first and said second numbers having a higher conductivity on average than the conductivity on average of each semiconductor junction in the smaller of said first and said second numbers;
- means responding to said input current flow between said first and said second terminals and splitting it into two portions, namely, first and second currents, each in fixed proportion to the other, said first current being applied between said base electrode and said first terminal and said second current being applied between said emitter electrode and said first terminal; and
- a third terminal to which said transistor collector electrode is connected for supplying an output current substantially smaller than said first and said second currents.

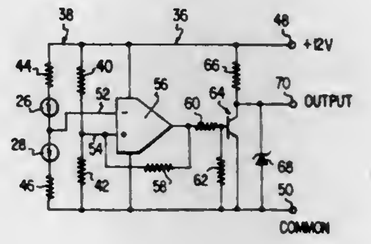
3,846,697
DIGITAL PICKUP

Otakar Cila, and Dudley D. Nye, Jr., both of Fort Lauderdale, Fla., assignors to Airpax Electronics Incorporated, Fort Lauderdale, Fla.

Filed Nov. 14, 1972, Ser. No. 306,287

Int. Cl. G01p *3/48, 1/02*

U.S. Cl. 324—34 GT **2 Claims**



1. A digital pickup comprising a resistance bridge, at least one magneto-resistor being connected in each of two arms of said bridge, a permanent magnet, said magneto-resistors being symmetrically mounted on one pole of said magnet, a solid state switch having set and reset terminals, the output of said bridge being coupled across said set and reset terminals of said switch, said switch comprising an integrated circuit differential amplifier with positive feedback, a junction transistor, and a pair of pickup output terminals coupled to the emitter-collector circuit of said junction transistor.

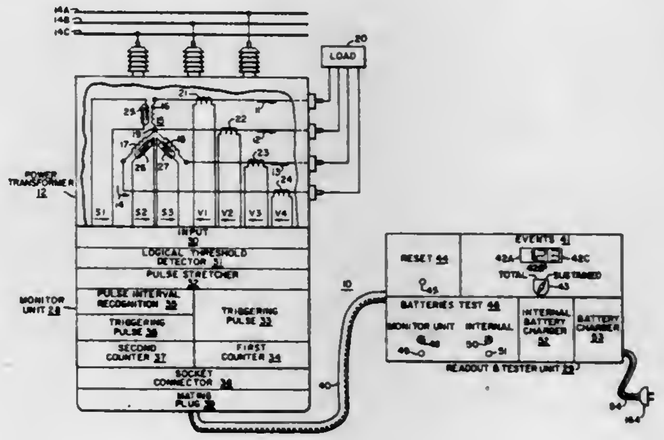
3,846,698
OVERCURRENT EVENTS MONITORING SYSTEM

David K. Lawton, Anaheim, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 25, 1973, Ser. No. 400,600

Int. Cl. G01r *31/02;* **G04r** *19/16*

U.S. Cl. 324—51 **10 Claims**



1. In an overcurrent events monitoring system, a monitor unit for digitally distinguishing and counting momentary and sustained occurrences of excessive current magnitudes in a circuit under test, said monitor unit comprising:

a logical threshold detector including an input and an output, said input being responsive to each of said occurrences of excessive current magnitudes, and said output developing first logic signals of first and second states having transitions therebetween in one and opposite directions upon each of said occurrences and at the end of said occurrences, respectively;

a pulse stretcher including a logic gate circuit including an input and an output, said output developing second logic signals of first and second states having transitions therebetween in one and opposite directions, said input being responsive to said one direction of transistion of said first logic signals so as to develop a normal gate circuit transition in one direction to effect a transition in said second logic signals in said one direction, and said pulse stretcher further including a time delay circuit means connected between said input and said output of the gate circuit to effect a linearly extended transition in an opposite direction in said second logic signals in response to said opposite direction of transition in said first logic signals;

a first binary counter responsive to said one direction of transition in said second logic signals so as to accumulate the total of occurrences of excessive current magnitudes occurring at intervals substantially equal to or longer than the linearly extended transition in said second logic signals;

a pulse interval recognition circuit including a logic gate circuit including an input and an output, and a time delay circuit means connected between said input and said output and externally of said gate circuit, said input being responsive to said second logic signals, said output developing third logic signals of first and second states having transitions in one and opposite directions therebetween, said third logic signals having a transition in said one direction in response to a normal gate circuit transition in said one direction between said first and second states in response to the opposite direction of transition in said second logic signals, said third logic signal having a linearly extended transition in an opposite direction between said first and second states, said last named extended transition in said third logic signals being established by said time delay circuit means so as to be longer than the extended transition in said second logic signal, and

a second binary counter means responsive to said opposite direction of transition in said third logic signals so as to accumulate the number of sustained occurrences of excessive current magnitudes occurring during an interval substantially equal to or longer than said linearly extended transition in said third logic signals.

3,846,699

METHOD AND DEVICE FOR MEASURING PARAMETERS OF RESONANT LC CIRCUIT ELEMENTS

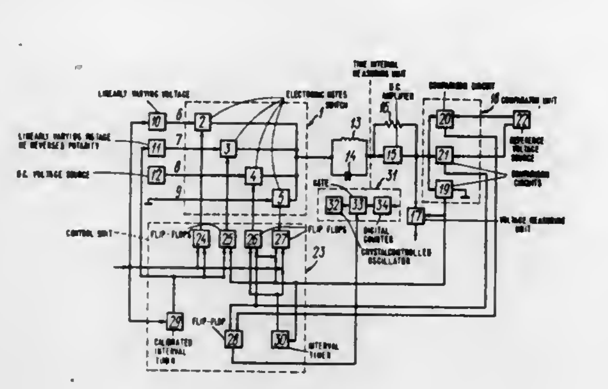
Alexandr Ivanovich Martyashin, ulitsa Kirova, 69, kv. 59; Andrei Elizarovich Morozov, ulitsa Uritskogo, 44/10, kv. 62; Eduard Konstantinovich Shakhov, ulitsa Gladkova, 13, kv. 5, and Viktor Mikhailovich Shlyandin, ulitsa Lermontova 12, kv. 17, all of Penza, U.S.S.R.

Filed July 16, 1973, Ser. No. 379,728

Int. Cl. G01r *27/00*

U.S. Cl. 324—57 R **6 Claims**

1. A method for measuring the parameters of elements in a resonant LC circuit comprising the steps of applying a linearly varying voltage to a resonant LC circuit formed of parallel-connected elements; setting a calibrated time interval at the end of which said linearly varying voltage is cut off; applying a linearly varying voltage of a polarity opposite to that of the linearly varying voltage that has been previously applied; interrupting said linearly varying voltage at the instant when the current passing through the resonant LC circuit becomes almost nil; measuring the current flowing through the resonant LC circuit after the interruption of said linearly varying voltage; applying a D.C. voltage to the resonant LC circuit; comparing the current caused in the resonant LC circuit by said D.C. voltage with two reference currents; measuring the time interval between the instants at which said current flowing through the resonant LC circuit alternately equals each of said reference currents, respectively, the magnitude of the time interval together with said measured current being used for determining the parameters of the parallel-connected elements of the resonant LC circuit.



3,846,700

ELECTROSTATIC FIELD MEASURING APPARATUS

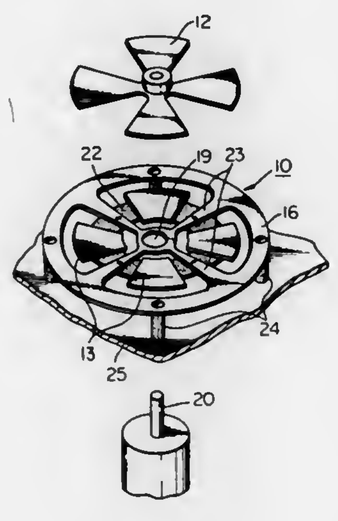
Hiroshi Sasaki, Tokorozawa, and Toshihiko Ohno, Higashimurayama, both of Japan, assignors to Rion Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1973, Ser. No. 336,499

Claims priority, application Japan, May 31, 1972, 47-54472

Int. Cl. G01r *31/02*

U.S. Cl. 324—72 **7 Claims**



1. In an electrostatic field measurement apparatus for detecting the intensity of an electric field adjacent a conducting surface, the combination comprising, a sensing electrode spaced from the conducting surface, means for supporting the sensing electrode including first and second insulators and a conductive feedback electrode, said first insulator disposed between the conducting surface and the feedback electrode, said second insulator disposed between the feedback electrode and the sensing electrode, an AC amplifier having an input connection connected to the sensing electrode as well as an output connection and a positive feedback connection, means for cyclically shielding the sensing electrode thereby to produce a fluctuating voltage thereon in the presence of an electric field, the positive feedback connection of the amplifier being connected to the feedback electrode so that said second insulator is included in a positive feedback path for the amplifier thereby to neutralize any tendency toward current leakage on the surface of the insulator from the sensing electrode to the conducting surface.

3,846,701

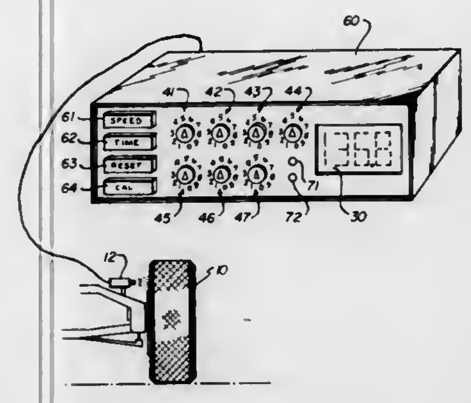
VEHICLE PERFORMANCE COMPUTER

Harry R. Sampey, Vanderbilt, Pa., assignor to Pentron Industries, Inc., Cleveland, Ohio

Filed May 10, 1971, Ser. No. 141,657

Int. Cl. G01p *3/36*

U.S. Cl. 324—175 **2 Claims**



1. A vehicle performance computer comprising, in combination: a digital indicator; driver means coupled to and driving said digital indicator to indicate time in seconds thereon in accordance with the number of clock pulses received and counted thereby; pulse generator means coupled to said driver means for providing clock pulses thereto; gating means associated with said digital indicator and said driver means operable to prevent further updating of the information displayed by said digital indicator; signal pulse generator means for producing an electrical signal pulse each time the vehicle travels a pre-established increment of distance; signal pulse counter means for receiving and counting said electrical signal pulses; said signal pulse counter means being programmed to count a pre-determined number of said electrical signal pulses corresponding to the number of said electrical signal pulses occurring in the vehicle traveling a pre-determined distance and triggering said gating means to prevent further updating of the information displayed by said digital indicator, whereby the time indicated in seconds on said digital indicator represents the time elapsed in the vehicle traveling said internally measured pre-determined distance; switch means for coupling said electrical signal pulses to said driver means and for disconnecting said clock pulses therefrom, whereby the information displayed by said digital indicator is directly proportional to the velocity of the vehicle; a clock pulse counter for counting a pre-determined number of clock pulses, said number of clock pulses counted corresponding to a time interval to establish a constant of proportionality of 1.0 MPH; gating means enabled by said clock pulse generating when said pre-determined number of clock pulses have been counted to gate said first-mentioned gating means to prevent further up-dating of the information displayed by said digital indicator, whereby said displayed information corresponds to the velocity of said vehicle; said digital indicator including a first portion thereof which is driven by said signal pulses coupled to said driver means to indicate the velocity of said vehicle in whole numbers and a second portion which is driven to indicate the hundredths of said velocity of said vehicle, said second portion being operated by second driver means independent of said driver means for said first portion; and means triggered by said signal pulses and producing 100 pulses per second during the time interval between each of said signal pulses, said 100 pulses per second being coupled to and driving said second driver means, whereby the information displayed by said second portion of said digital indicator indicates the hundredths velocity of said vehicle.

3,846,702

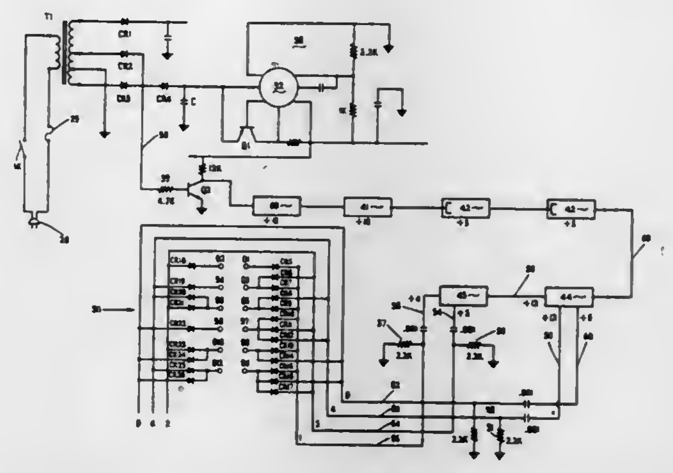
TIME ACCUMULATOR MAN-HOURS EXPENDED

Michael M. Dziki, Milton; George Schultz, Newton, and Elliott W. Markow, Waltham, all of Mass., assignors to ISM Corporation, Woburn, Mass.

Filed June 21, 1973, Ser. No. 372,075

Int. Cl. G04f *11/06*

U.S. Cl. 324—186 **16 Claims**



1. An accumulator for registering time expended by one or more operating units, which accumulator comprises;

means for establishing a plurality of different frequency signals, each of which signals is representative of a particular number of operating units,

counting means including means for visually displaying a cumulative count corresponding to expended time,

and selection means including a plurality of mutually exclusive switch means that individually correspond to a different one of said frequency signals and are individually employed for coupling a corresponding one of said frequency signals to the counting means.

3,846,703

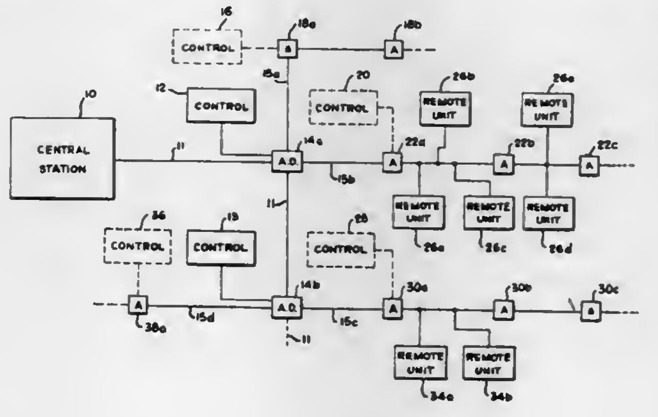
NOISE CONTROL SYSTEM FOR TRANSMISSION NETWORK

Floyd C. Stewart, Phoenix, Ariz.; Daniel W. Weeks, Irving, and Brian E. Belcher, Dallas, both of Tex., assignors to TOCOM Inc., Irving, Tex.

Filed Feb. 28, 1973, Ser. No. 336,618

Int. Cl. H04b *1/00*

U.S. Cl. 325—53 **19 Claims**



1. In a two-way, broad-band, high frequency coaxial communications system,

a central transmitting and receiving unit,

a plurality of remote transmitting and receiving units,

a primary coaxial trunk line connected to said central unit,
  a plurality of coaxial feeder lines each connected to one or more of said remote units,

means connecting said feeder lines to said trunk line at spaced points therealong to establish signal transmission paths between said central unit and said remote units,

- a plurality of bi-directional amplifier means interposed at selected points in said transmission paths, each including a forward amplifier for amplifying signals transmitted downstream from said central unit to one or more selected remote units and a return amplifier for amplifying signals transmitted upstream from one or more remote units to said central unit, and
- a control means including:
  - means for normally disabling selected ones of said return amplifiers sufficient to block the upstream signal paths from all of said remote units;
  - means for sensing an upstream transmission from a remote unit having a disabled return amplifier in its upstream signal path;
  - means for enabling each return amplifier in said upstream signal path of said transmitting remote unit in response to a predetermined signal characteristic of said upstream transmission; and
  - means for disabling each said enabled return amplifier when said transmitting remote unit ceases transmission.

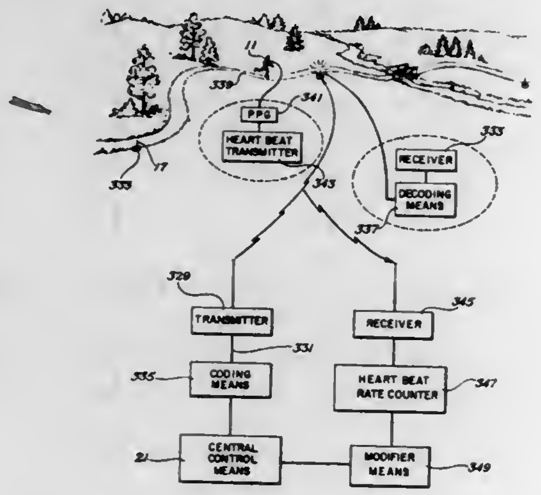
3,846,704
APPARATUS FOR EVALUATING ATHLETIC PERFORMANCE

Robert C. Bessette, 4425 Owendale Dr., Fort Worth, Tex. 76116

Filed Dec. 13, 1972, Ser. No. 314,801

Int. Cl. H04b *1/00*

U.S. Cl. 325—66 22 Claims



1. Apparatus for apprising an observer of the relative performance of an athlete compared with a useful predetermined performance comprising:
- a. a power source for supplying electrical energy;
- b. a timing means for indicating elapsed time;
- c. a plurality of apprisal means for apprising said observer of the progress of said predetermined performance; said plurality of apprisal means including at least respective lights that are visible to said observer and connected with said power source so as to be energized responsive to output signals from a settable central control means to afford at least a visual indication of the progress of said predetermined performance; said apprisal means being spaced apart and arranged so as to be compared by an observer with the progress of said athlete along a path said athlete will travel; each traverse along said path by said athlete being referred to as a lap;
- d. settable central control means for sequentially energizing respective ones of said plurality of apprisal means responsive to elapsed time and to said predetermined performance set into said settable central control means; said settable central control means being connected with said power source and said apprisal means for sequentially energizing respective said apprisal means to display progress of said predetermined performance; said settable central control means including a time setting means for setting said predetermined performance into said settable central control means; said settable central control means including means for dividing said predetermined performance into equal time increments, which time increments represent the respective distance increments between said plurality of apprisal means generate respective output signals after elapse of respective said time increments; said central control means including a timing means that emits a plurality of time signals for repeated indications of small elapsed time intervals; a time counter that is connected with said timing means for accumulating said time signals; and a time comparator means for signalling when an accumulation of said time signals is equal to said desired time interval set into said time setting means; said time comparator means being connected to said time setting means and said time counter for energizing respective said apprisal means sequentially and uniformly; and
- e. communication links communicating with respective said plurality of apprisal means and with said central control means for energizing said apprisal means sequentially with said output signals from said settable central control means.

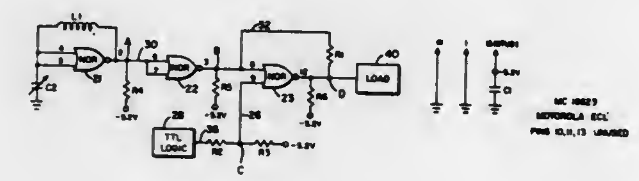
3,846,705
PULSE AMPLITUDE MODULATED SIGNAL GENERATOR

William W. Davis, Minneapolis, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Aug. 16, 1973, Ser. No. 388,869

Int. Cl. H04l *27/04*

U.S. Cl. 325—141 4 Claims



1. A pulse amplitude modulated signal generator, comprising:
- first, second and third NOR gates, each having first and second inputs and an output;
- inductor means coupling the output of said first NOR gate to the common coupled first and second inputs of said first NOR gate;
- capacitor means coupling the common coupled first and second inputs of said first NOR gate to a first voltage source;
- said first NOR gate coupling an oscillator signal of a frequency F_0 to its output;
- means coupling the output of said first NOR gate to the common coupled first and second inputs of said second NOR gate;
- first resistor means coupling the output of said first NOR gate to a second voltage source;
- means coupling the output of said second NOR gate to the first input of said third NOR gate;
- second resistor means coupling the output of said second NOR gate to a third voltage source;
- said second NOR gate buffering said oscillator signal and coupling a buffered signal to its output;
- pulse signal source means;
- means coupling said pulse signal source means to the second input of said third NOR gate for coupling a binary pulse signal of a frequency F_M to the second input of said third NOR gate;
- third resistor means coupling the first input of said third NOR gate to the output of said third NOR gate;
- fourth resistor means coupling the output of said third NOR gate to a fourth voltage source.

3,846,706
CONTROL SYSTEM

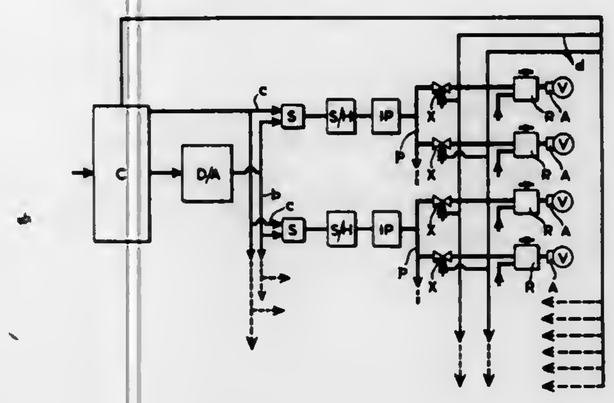
Allen Thompson, Northwich, England, assignor to Sim-Chem Limited (formerly Simon-Carves Chemical Engineering Ltd.), Cheadle Heath, Stockport, England

Continuation-in-part of Ser. No. 126,180, March 19, 1971, abandoned. This application Mar. 5, 1973, Ser. No. 337,844

Claims priority, application Great Britain, Apr. 9, 1970, 16871/70

Int. Cl. G06f *15/46;* F17d *3/00*

U.S. Cl. 235—151.1 9 Claims



1. A control system for regulating cyclically a group of individual control devices comprising a signal generating programming station (*c*), at least one combination of control elements including a set/hold amplifier (S/H) connected to receive repeatedly from said station a plurality of consecutive analogue signals quantifying the required settings for the respective control devices, a pneumatic pressure line (*p*), a current to pressure converter (IP) connected to sense the output from said amplifier and act in response thereto to control the pressure in said pneumatic line, a plurality of pneumatic pressure responsive setting devices (A) each connected to said pneumatic line via a normally closed valve (X), each of said pressure responsive setting devices being operatively connected to one of the control devices, and actuators (at X) connected to be operated from said station for opening each of said valves to connect its respective associated setting means with said pneumatic line during each of the successive periods when the current to pressure converter is receiving an analogue signal quantifying the required setting by the control device associated with said respective associated setting device.

3,846,707
CHANNEL SELECTION DEVICE

Yoichi Sakamoto, and Yukio Koyanagi, both of Osaka, Japan, assignors to Matsushita Electric Co., Ltd., Kadoma-shi, Osaka-fu, Japan

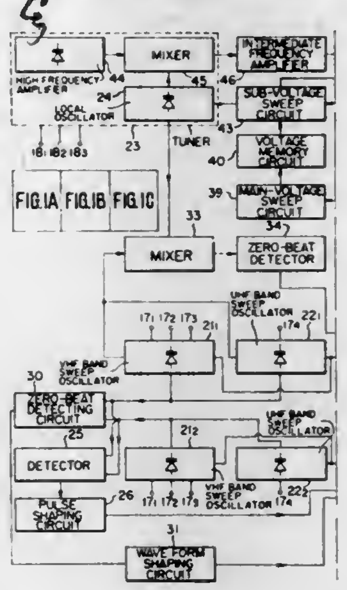
Filed Nov. 1, 1971, Ser. No. 194,421

Claims priority, application Japan, Nov. 4, 1970, 45-97388; Nov. 4, 1970, 45-97389; Nov. 4, 1970, 45-97390; Nov. 4, 1970, 45-97391; Nov. 4, 1970, 45-97392; Nov. 4, 1970, 45-97393; Nov. 4, 1970, 45-97394; Nov. 4, 1970, 45-97395; Nov. 4, 1970, 45-97396; Nov. 4, 1970, 45-97397; Nov. 4, 1970, 45-97398; Nov. 4, 1970, 45-97399; Nov. 4, 1970, 45-97400; Nov. 4, 1970, 45-97401; Nov. 4, 1970, 45-97402

Int. Cl. H04b *1/32*

U.S. Cl. 325—334 13 Claims

1. A channel selection device for use with a television receiver comprising
- two frequency-sweep oscillator circuits for oscillating at a constant frequency and for also sweeping their respective oscillating frequencies in respective predetermined frequency ranges,
- detecting means connected to said oscillator circuits for detecting the difference in oscillation frequency between the said two frequency-sweep oscillator circuits,
- means for reversing the functions of said two frequency-sweep oscillator circuits responsive to the detected difference in oscillation frequency between the two frequency-sweep oscillator circuits being a predetermined value such that one of said two oscillator circuits which was producing a constant frequency commences sweeping its frequency over said predetermined frequency range while the other oscillator circuit terminates a sweeping operation and commences to produce a constant frequency output,
- means for controlling the functioning of said two frequency-sweep oscillator circuits to alternately repeat the function reversal at each detected predetermined frequency value, counting means for counting the number of function reversals of said two frequency-sweep oscillator circuits,


MIXER
INTERMEDIATE FREQUENCY AMPLIFIER
HIGH FREQUENCY AMPLIFIER
44
45
46
24
LOCAL OSCILLATOR
SUB-VOLTAGE SWEEP CIRCUIT
43
181 182 183
23
TUNER
VOLTAGE MEMORY CIRCUIT
40
FIG.1A FIG.1B FIG.1C
39
MAIN-VOLTAGE SWEEP CIRCUIT
33
34
MIXER
ZERO-BEAT DETECTOR
UHF BAND SWEEP OSCILLATOR
171 172 173 211
174 221
VHF BAND SWEEP OSCILLATOR
30
ZERO-BEAT DETECTING CIRCUIT
212
UHF BAND SWEEP OSCILLATOR
25
DETECTOR
26
PULSE SHAPING CIRCUIT
171 172 173
VHF BAND SWEEP OSCILLATOR
174 222
31
WAVE FORM SHAPING CIRCUIT

- register means for registering a desired receiving channel number,
- means connected to said counting means and register means for generating a coincidence signal corresponding to a coincidence between signals in said register means and said counting means,
- means for stopping the one of said two frequency-sweep oscillator circuits operating in a sweeping state when the coincidence signal is detected,
- a tuner for said television receiver, and
- means for connecting said one oscillating circuit operating in a sweeping function which is stopped by said coincidence signal to operate as the local oscillator of said tuner.

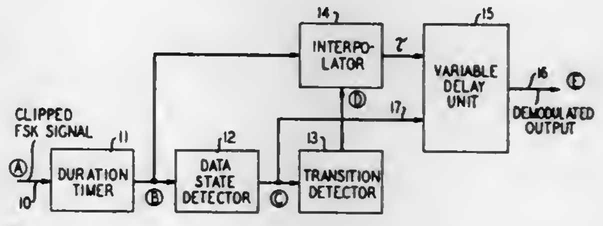
3,846,708
DIGITAL DEMODULATION OF FREQUENCY-SHIFT KEYED DATA SIGNALS

John Vincent Franco, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Mar. 15, 1973, Ser. No. 341,454

Int. Cl. H04l *27/14*

U.S. Cl. 329—104 11 Claims



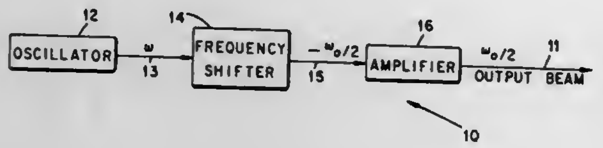
1. In a communications system encoding the states of a digital data signal in the discrete frequencies assumed by a transmitted carrier signal, a demodulator for recovering said data signal states from said carrier signal comprising

means for measuring the duration of each cycle of said carrier signal,
means for resolving each duration measurement into a corresponding data-signal state,
means jointly responsive to a change in resolved data-signal states and to the two most recent duration measurements for estimating the delay interval between the intermediate carrier-signal transition and the true data-state transition, and
variable means controlled by said estimating means for producing an output data transition delayed from the most recent carrier-signal transition by said estimated delay interval.

3,846,709

LASER SYSTEM EMPLOYING STIMULATED MULTIPLE-PHOTON EMISSION PROCESS

Charles K. Rhodes, Pleasanton, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Feb. 9, 1973, Ser. No. 331,154
Int. Cl. H01s *3/10*
U.S. Cl. 330—4.3 **5 Claims**

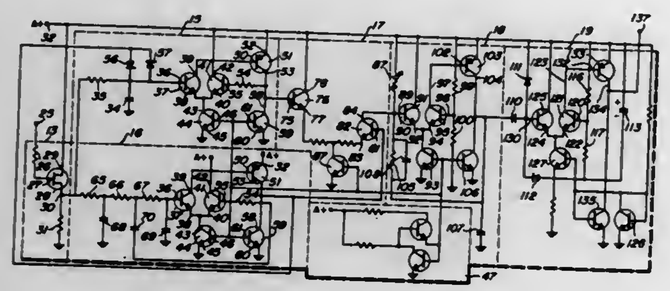


1. A laser system comprising: an oscillator means for producing a narrow pulse of light at one frequency, a frequency shifter means positioned to receive said pulse from said oscillator means and for converting at least a fraction of said pulse to a pulse at a different frequency, and electron beam activated amplifier means containing an active lasing medium capable of producing stimulated multiple-photon emission when illuminated by an intense electromagnetic wave positioned to receive said different frequency pulsed from said frequency shifter means and for amplifying said different frequency pulse, producing pulsed outputs of high energy, short wavelength, and narrow pulsewidth.

3,846,710

DC RESTORATION AMPLIFIER WITH AUTOMATIC ZERO OFFSET ADJUSTMENT

Ronald H. Chapman, Wheaton, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Feb. 2, 1973, Ser. No. 329,266
Int. Cl. H03f *21/00*
U.S. Cl. 330—11 **14 Claims**

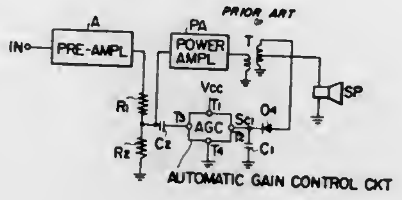


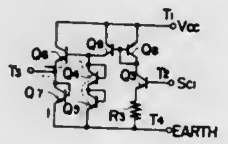
1. A DC restoration amplifier for first signals having a first frequency range and DC offset signals having a second frequency range lower than said first frequency range including in combination; first filter means having a filter response characteristic for coupling therethrough at least the range of frequencies of the first signals and offset signals coupled thereto, second filter means for coupling therethrough the range of frequencies of the DC offset signals coupled thereto, summing means coupled to said first and second filter means for subtracting said DC offset signals coupled thereto from said second filter means from said first signals and DC offset signals coupled thereto from said first filter means and develop resultant signals proportional to said first frequency range signals, and DC restoration means coupled to said summing means and responsive to said resultant signals to develop second signals corresponding to said first signals and having a DC reference bias of one-half the peak-to-peak amplitude of said second signals.

3,846,711

AUTOMATIC GAIN CONTROL CIRCUIT

Kazuya Takahashi, Katsuta; Mitsuya Sato, Tokyo; Kaname Ohta, Katsuta, and Tadashi Takamiya, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 7, 1973, Ser. No. 386,415
Claims priority, application Japan, Aug. 30, 1972, 47-86305
Int. Cl. H03g *3/30*
U.S. Cl. 330—29 **17 Claims**





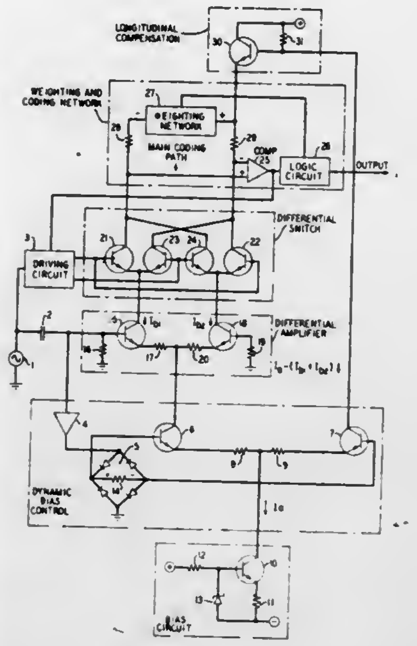
1. An automatic gain control circuit comprising amplifier means for amplifying an automatic gain control signal, variable impedance means having a non-linear voltage characteristic for providing a varying impedance in response to the amplified automatic gain control signal, an impedance control circuit connecting the output of said amplifier means to said variable impedance means, and bypass means including a plurality of forward biased PN junction devices series connected to the input of said impedance control circuit and having a non-linear voltage characteristic for bypassing AC signal components to ground.

3,846,712

DIFFERENTIAL AMPLIFIER WITH DYNAMIC BIASING

Frederick John Kiko, Sheffield Village, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Mar. 12, 1973, Ser. No. 340,267
Int. Cl. H03f *3/68*
U.S. Cl. 330—30 D **7 Claims**

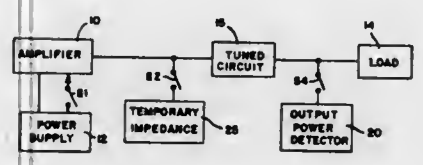
1. A dynamically biased amplifier comprising first and second transistors, d.c. biasing means connected to the base and emitter electrodes of each of said first and second transistors to bias said first and second transistors for operation as a differential amplifier, an input signal to be differentially amplified connected to the base electrode of said first transistor, a third transistor, a source of biasing current for maintaining a constant current therethrough, means connecting the collector-emitter paths of said first and second transistors in parallel, means serially connecting the parallel combination of the collector-emitter paths of said first and second transistors, the collector-emitter path of said third transistor, and said source of constant biasing current, a fourth transistor having its collector-emitter path connected across said source of biasing current to provide an alternate current path for a portion of the constant current maintained by said source of biasing current and means connecting said input signal to the base electrode of said third transistor and to the base electrode of said fourth transistor to vary the biasing current flow through the parallel collector-emitter paths of said first and second transistors in proportion with the magnitude of said input signal and to vary the current flow through the collector-emitter path of said fourth transistor in inverse relationship to the magnitude of said input signal, the current flow in the collector-emitter path of said fourth transistor being equal to the difference between the constant current maintained by said source of biasing current and the biasing current flow through the parallel collector-emitter paths of said first and second transistors.



3,846,713

METHOD AND APPARATUS FOR TUNING AN AMPLIFIER CIRCUIT

Harold James Kittel, Dayton, Ohio, assignor to R. L. Drake Company, Miamisburg, Ohio
Continuation-in-part of Ser. No. 261,683, June 12, 1972, abandoned. This application Nov. 15, 1973, Ser. No. 415,928
Int. Cl. H03h *7/38*
U.S. Cl. 330—192 **8 Claims**

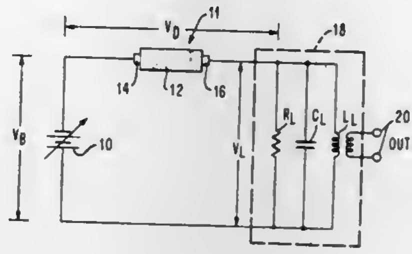


1. Method of adjusting a tuned circuit which receives power from an amplifier and which transfers power to a load including the steps of
lowering the power output of said amplifier thereby changing its characteristics,
temporarily connecting an impedance device to the output of said amplifier, said impedance device approximating the optimum load impedance for said amplifier when operated at its normal power level,
adjusting the tuned circuit for maximum output to said load at the lower power level,
removing said temporary impedance device, and
thereafter operating said amplifier at its normal power level without further need for adjustment of the tuned circuit.

3,846,714

MICROWAVE OSCILLATOR

John B. Gunn, Mt. Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 524,406, Feb. 2, 1966, abandoned. This application Nov. 25, 1968, Ser. No. 778,861
Int. Cl. H03b *7/06*
U.S. Cl. 331—107 G **13 Claims**

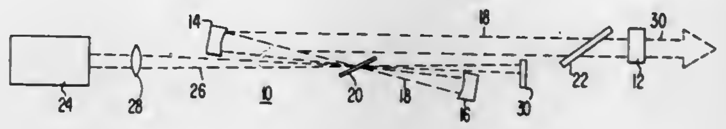


1. A microwave oscillator circuit comprising:
a. a bulk effect device including a body of semiconductor material capable of having nucleated therein domains of electric field concentration which propagate in said body;
b. said body being capable of having domains nucleated therein when the voltage across said device exceeds a first threshold voltage V_T at a time when no domain is propagating in the body and when the voltage across the device exceeds a second higher threshold voltage V_{T1} even when a domain is propagating in the body;
c. means including a voltage source and a load circuit connected to said device for causing domains to be nucleated, propagated and extinguished in said body and produce voltage oscillations across said device;
d. said oscillations causing the voltage across said device to oscillate above and below one of said threshold voltages.

3,846,715

MULTIPLE DYE STREAM LASER

J. Michael Yarborough, Santa Clara, Calif., assignor to Coherent Radiation, Palo Alto, Calif.
Filed May 30, 1973, Ser. No. 365,316
Int. Cl. H01s *3/20*
U.S. Cl. 331—94.5 **8 Claims**



1. A dye laser comprising:
a. an optical resonator cavity;
b. means for providing a flat, unsupported fluid stream of dye within said optical resonator cavity to intersect the optical cavity thereof, said dye providing means comprising:
  i. a nozzle from which said fluid streams exit into said optical resonator cavity;
  ii. a plurality of sources of different dyes having different ranges of lasing wavelengths;
  iii. first means for selectively providing any single one of said plurality of dyes to said nozzle to provide said unconfined fluid stream; and
  iv. means for collecting said unsupported fluid stream after it passes through said optical path; and
c. means for optically pumping said dye stream.

3,846,716

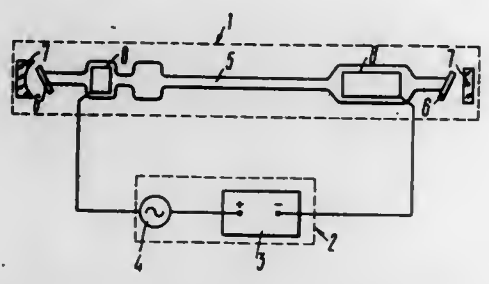
METHOD OF REGULATING LIGHT EMITTING POWER OF LASER AND APPARATUS FOR EFFECTING SAME

Mikhail Konstantinovich Dyatlov, ulitsa Lenina, 13-a, kv. 45; Evgeny Petrovich Ostapchenko, ulitsa Schedrina, 4, kv. 58; Vladimir Anatolievich Stepanov, ulitsa Schedrina, 4, kv. 61, and Jury Nikolaevich Kulikov, ulitsa Libknekhta, 95, all of Ryazan, U.S.S.R.

Filed July 3, 1973, Ser. No. 376,206

Int. Cl. H01s *3/09*

U.S. Cl. 331—94.5 **11 Claims**



1. Method of regulating the light emitting power of a laser comprising a cavity and a gas discharge tube having electrodes and filled with a mixture of an inert gas and vapours of chemical elements, which mixture is the laser medium of said laser, consisting in applying a DC field to the electrodes, which field initiates a DC discharge in said laser medium exciting the latter, whereby stimulated light emission is ensured, then applying to the same laser medium an AC field and varying the frequency of the AC field within the range of frequencies of unsteady oscillations of the laser medium upon initiation therein of said DC discharge, whereby the light emitting power is varied.

3,846,717

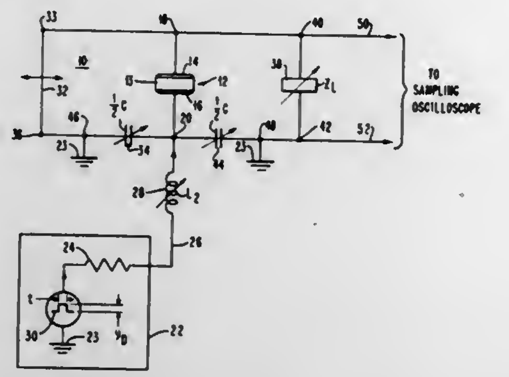
BULK EFFECT SEMICONDUCTOR OSCILLATOR INCLUDING RESONANT LOW FREQUENCY INPUT CIRCUIT

Paul L. Fleming, Peekskill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 2, 1966, Ser. No. 524,594

Int. Cl. H03b *7/06;* **H03c** *1/14*

U.S. Cl. 332—52 **7 Claims**



1. In an oscillator circuit of the type which includes a body of single conductivity type semiconductor material, to which there is applied an electric field above a threshold field at which the body exhibits a negative resistance characteristic due to a change in the mobility of the conduction carriers in the body, to produce output high frequency oscillations in an output means connected to the body, the improvement comprising:

a. input means connected to said body for applying an input voltage across the body which causes the threshold field for the body to be exceeded and said high frequency oscillations to be produced;

b. said input means including means connected to said body forming a driving circuit resonant at a frequency lower than the frequency of said high frequency output oscillations;

c. said negative resistance exhibited by said body when said threshold is exceeded to produce said high frequency oscillations causing the voltage in said driving circuit to resonate at said lower frequency;

d. said output means connected to said body includes output circuit means resonant at the frequency of said high frequency oscillations; and

e. said oscillator circuit includes means decoupling said high frequency output resonant circuit from said lower frequency driving resonant circuit.

3,846,718

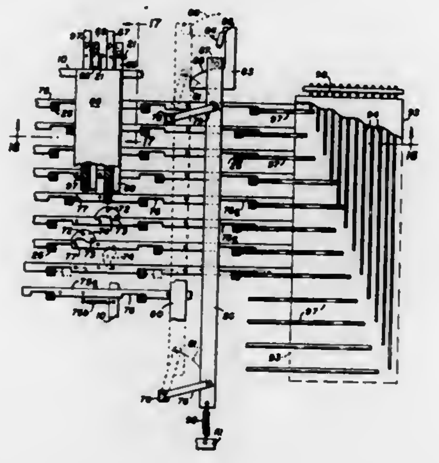
VOTING MACHINE WITH PUNCH CARD ATTACHMENT

Cothburn M. O'Neal, Arlington, Tex., assignor to Riverside Press, Inc., Dallas, Tex.

Division of Ser. No. 35,671, May 8, 1970, Pat. No. 3,630,434, which is a division of Ser. No. 740,415, May 27, 1968, Pat. No. 3,524,969. This application Nov. 15, 1971, Ser. No. 199,069The portion of the term of this patent subsequent to Aug. 1, 1989, has been disclaimed.

Int. Cl. G06k *1/08*

U.S. Cl. 234—1 **11 Claims**



1. In a voting machine having multiple selection keys, multiple means for registering the voter selections comprising:

a counter corresponding to each selection key,

means for receiving a recording medium, said means including marking means adapted to cooperate with said receiving means to record the voter selections on said recording medium,

mechanical linkage means interconnecting said keys and said marking means whereby said linkage means partially blocks said marking means to establish a mechanical pattern on said marking means corresponding to said voter selections, and

voting registering means including means for advancing the counters corresponding to the voter selections and means for simultaneously actuating said mechanical linkage to register said marking means with said recording medium thereby transferring said mechanical blocking pattern in its entirety simultaneously to said recording medium.

3,846,719

NOISE REDUCTION SYSTEMS

Ray Milton Dolby, c/o Dolby Laboratories, 590 Wandsworth Rd., London, England

Continuation of Ser. No. 173,261, Aug. 19, 1971, abandoned. This application Sept. 13, 1973, Ser. No. 397,159

Int. Cl. H03g *7/06;* **H03h** *7/10;* **H04b** *1/64*

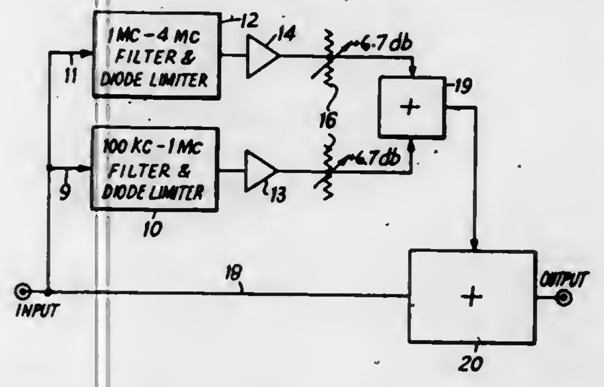
U.S. Cl. 333—14 **71 Claims**

1. A signal processing system which responds to an input signal to produce an output signal with modified dynamic range, said signal processing system comprising

a main signal circuit responsive to the input signal to provide in a specified frequency band a first signal with dynamic range linearity relative to the input signal;

means in the main signal circuit for combining linearly a second signal in said specified frequency band with the first signal to provide the output signal; and

a further signal circuit responsive to a signal from the main signal circuit for providing the second signal such as to affect the level of the output signal significantly at very low input signal levels, the further signal circuit including one or more variable gain elements with outputs thereof which are substantially free of non-linear distortion at all frequencies in said specified frequency band, the outputs of said variable gain elements being coupled to the output of the further signal circuit to provide the second signal, said variable gain elements having the characteristics that below predetermined low levels there is no gain reduction of signals in said further signal circuit and above said low levels there is substantial gain reduction,


1MC-4MC FILTER & DIODE LIMITER
12
14
6.7db
11
19
+
16
100KC-1MC FILTER & DIODE LIMITER
6.7db
9
13
10
18
+
OUTPUT
INPUT
20

the outputs of said variable gain elements and the second signal produced thereby being limited to levels corresponding to small fractional parts of the maximum signal level applied to the further signal circuit, where said small fractional parts are in the region of an order of magnitude less than unity, or smaller.

3,846,720

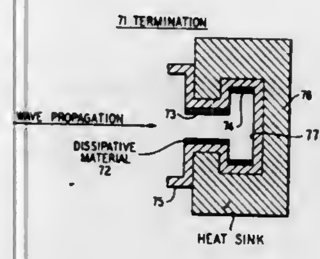
COMPACT MICROWAVE TERMINATION AND USES THEREOF

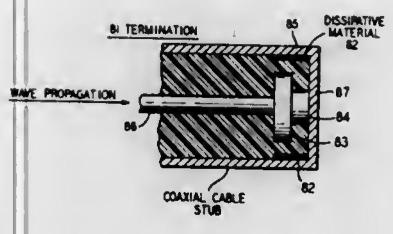
Theodore Warren Mohr, Whitehall, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 15, 1973, Ser. No. 416,036

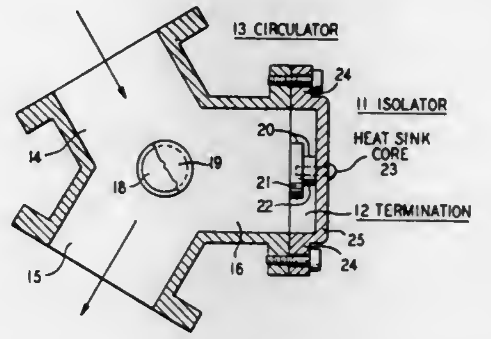
Int. Cl. H01p *1/26*

U.S. Cl. 333—22 R **12 Claims**





1. Apparatus for terminating an enclosed wave propagation medium having a characteristic impedance, comprising a section of said medium, a reflective end member for said section, and means for loading said section, including a body composed of material absorptive for the propagating waves and shaped into first and second portions providing said loaded section with respectively associated impedances lower than said characteristic impedance and having respective lengths in the direction of wave propagation presenting resistive impedance at the input to said section, the body being rendered shorter than a quarter wavelength in that the second portion is intermediate said first portion and said end member and provides said loaded section with a respectively associated impedance intermediate the impedance provided by said first portion and said characteristic impedance.



3,846,721

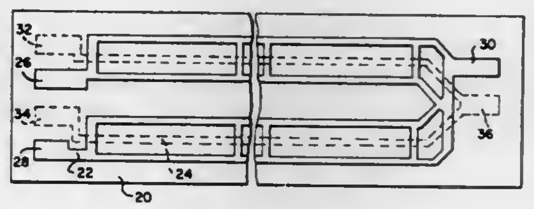
TRANSMISSION LINE BALUN

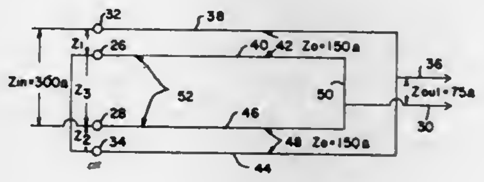
William Baird Fritz, Hershey, and Emerson Marshall Reyner, II, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 8, 1973, Ser. No. 386,812

Int. Cl. H01p *5/10;* **H03h** *7/42*

U.S. Cl. 333—26 **12 Claims**





1. An improved transmission line balun for providing an impedance transition over a desired operating range of frequencies comprising in combination:

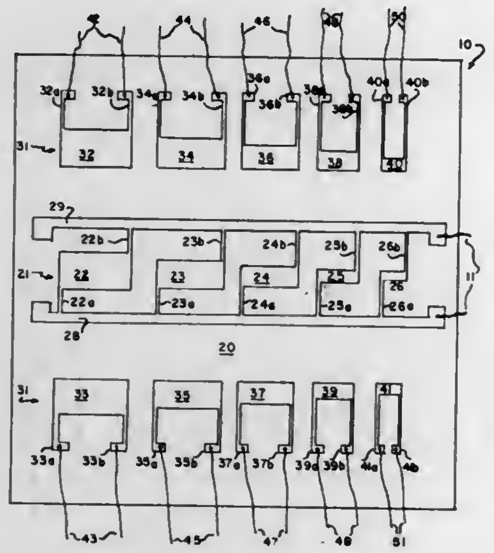
a flexible substrate having two substantially parallel spaced side portions;

a first circuit formed on a first side of said substrate extending from one end of said substrate to the opposite end thereof, said first circuit including two conductors connected together adjacent one end of said substrate; and

a second circuit formed on the second side of said substrate extending from one end of said substrate to the opposite end thereof, said second circuit including first and second conductors each of which is so positioned as to lie parallel to a respective conductor of said first circuit and being connected together adjacent said one end of said substrate, said conductors of said first and second circuits forming a pair of transmission lines, said first and second circuits having an electrical length which is not equal to one half wave length or multiple thereof at any operating frequency.

3,846,722
SURFACE WAVE PRESELECTOR

John deKlerk, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 4, 1973, Ser. No. 347,979
Int. Cl. H03h *9/26, 9/32;* H01v *7/00*
U.S. Cl. 333—72 **4 Claims**



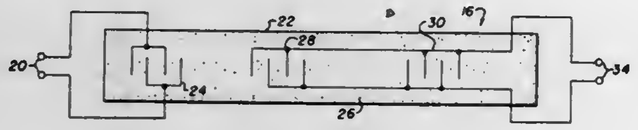
1. A surface wave preselector comprising:
a. piezoelectric base;
b. a plurality of interdigital transmitter grids deposited on said base, each of said grids adapted to receive an input signal and generate a surface wave in response to a selected frequency of said input signal;
c. a plurality of interdigital receiver grids deposited on said base, each of said grids being adapted to receive a surface wave of selected frequency transmitted in said base by a transmitter grid and produce an output signal in response thereto, each of said receiver grids being positioned opposite from an associated transmitter grid, and wherein said transmitter and receiver grids each includes a plurality of electrodes having widths and spaces therebetween in accordance with the following general formula

$$w_m = v/4\ (1/f_1 + (m-1)\ \delta f),$$

where
w_m = the electrode width or space;
$\delta f = \Delta f/3N$;
Δf = the bandwidth;
f_1 = the lowest band frequency;
m = 1,3,5...3N for the electrode widths;
m = 2,4,6...($3N-1$) for the spaces between electrodes; and
N = total electrode pairs.

3,846,723
SURFACE WAVE NARROW BANDPASS FILTER

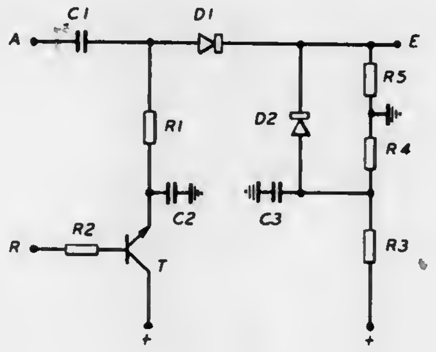
Philip L. Writer, and Maurice L. Schiff, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed June 22, 1973, Ser. No. 372,560
Int. Cl. H03h *9/00*
U.S. Cl. 333—72 **2 Claims**



1. Bandpass filter apparatus comprising:
an acoustic-wave propagating medium;
a first pair of electrically conductive, U-shaped members deposited on said medium in a symmetrical, interleaved manner with respect to each other and being responsive to incoming signals to launch acoustic waves in said medium at frequencies on either side of a center frequency f_o, and to launch no acoustic waves at said frequency f_o;
second and third pairs of U-shaped members deposited on said medium and spaced apart from said first pair and disposed thereon in an in-line and parallel manner with respect to said first pair,
said second and third pairs being electrically connected to each other in a polarity-reversed sense and further being spaced from each other an integral number of wavelengths, $N\lambda_o$, where N is equal to any integer and $\lambda_o = V_o/f_o$; and,
terminal means connected to the output of said third pair for providing an output signal having a bandwidth proportional said number of wavelengths, $N\lambda_o$.

3,846,724
ADJUSTABLE ATTENUATOR WITH P-I-N DIODES

Gerhard Maier, Ahornweg, Germany, assignor to SABA Schwarzwalder Apparate-bau-Anstalt August Schiver Sohne G.m.b.H., Villingen, Germany
Filed July 25, 1973, Ser. No. 382,446
Int. Cl. H03h *7/24;* H01p *1/22*
U.S. Cl. 333—81 R **2 Claims**



1. An adjustable π network form of attenuator comprising:
a longitudinal branch including a first p-i-n diode interconnecting antenna and signal receiver terminals;
an antenna cross branch including a resistor coupled to said antenna terminal and a transistor coupled to said resistor, to a potential source, and to a variable amplifier source, said antenna cross branch including a high frequency short circuiting capacitor coupling said resistor and transistor to a potential reference level; and
a receiver cross branch including a second p-i-n diode coupling said receiver terminal to a positive potential source.

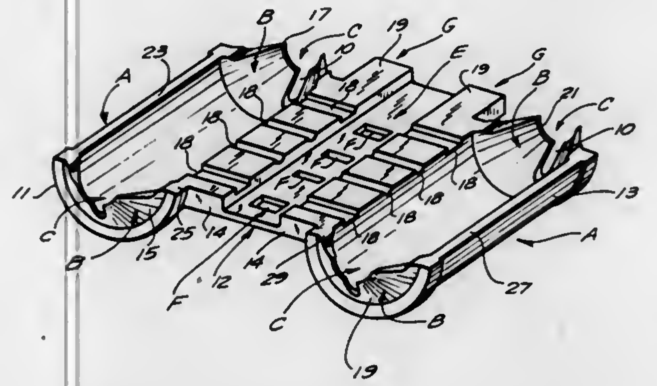
ERRATUM

For Class 234—1 see:
Patent No. 3,846,718

3,846,725
COIL RETAINER

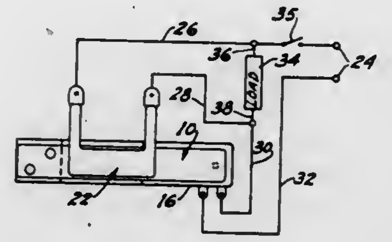
Donald B. Mears, Jr., Enfield, Conn., assignor to General Instrument Corporation, Newark, Ill.
Filed Apr. 30, 1973, Ser. No. 355,976
Int. Cl. H01f *27/30*
U.S. Cl. 336—92 **32 Claims**

1. In combination, a FM coil or the like and a coil retaining device for the mounting of said coil on a circuit board, the coil being of coil housing on a circuit board, the coil being of the type having at least one lead extending therefrom to connect it to the circuit board, said device comprising a coil form upon which the coil is wound, a pair of coil form retaining members which assemble in opposing relationship to form an enclosure for the coil, each of said members having a portion situated on each end thereof, each of said end portions having an aperture therein, said apertures engaging and securely retaining said coil form, means for articulately connecting one of the opposing edges of each of said members such that said members may be moved between assembled and separated positions, said connecting means having a lead aperture forming a passage therethrough when said members are assembled such that said coil lead may be electrically connected to said circuit board.



3,846,726
BIMETAL ACTUATOR WITH ELECTRICAL RESISTANCE HEATER

Frank J. Hierholzer, Jr., Florissant, and John A. Ancona, St. Louis, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.
Filed Mar. 15, 1973, Ser. No. 341,537
Int. Cl. H01h *7/22*
U.S. Cl. 337—107 **5 Claims**

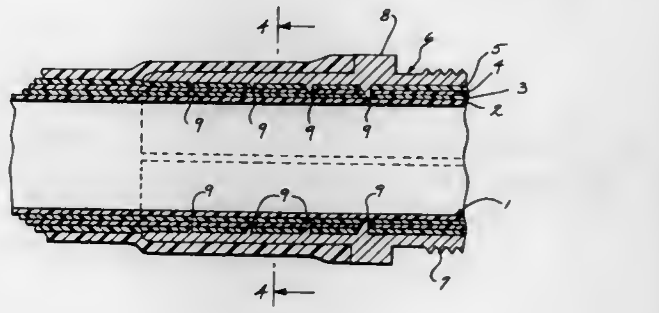


1. A bimetal actuator comprising a bimetal element with support means fixing a portion thereof so that another portion moves relative to the support means when the element warps and a thin flexible resistance heater bonded to the high expansion side of said element, said heater comprising a thin, flexible, insulating film and a thin, narrow, flexible, metallic, electrical resistance element bonded to one side thereof, the other side of said film being bonded to the high expansion side of said bimetallic element, said insulating film including portions thereof extending freely from said bimetal element, and said resistance element including integral lead portions at the ends thereof, which lead portions are considerably wider than said resistance element and coextend with and are bonded to said freely extending film portions thereby to provide integral flexible leads.

3,846,727
CURRENT LIMITING DEVICE

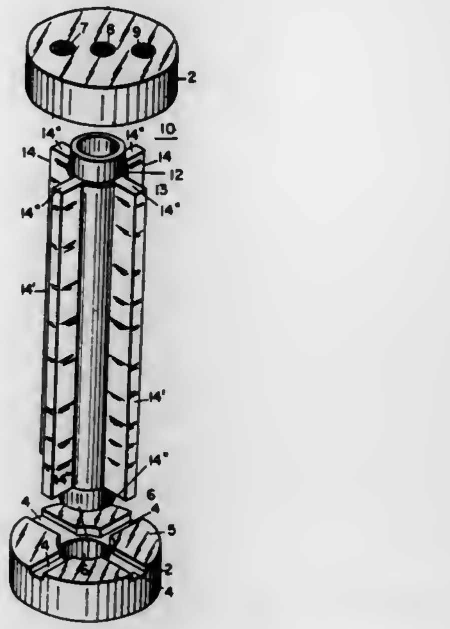
Emerson R. Harmon, Hartland, Wis., assignor to The Amalga Corporation, Menomonee Falls, Wis.
Filed July 9, 1973, Ser. No. 377,426
Int. Cl. H01h *85/36*
U.S. Cl. 337—246 **7 Claims**

1. A current limiting fuse holder, which comprises a tubular housing formed of layers of filament wound fibers impregnated with a thermosetting resin, at least one terminal fitting having internal teeth secured to an end of the housing by the teeth being embedded within different layers of filament wound fibers, and means overlaying the terminal fitting to lock the fitting in place.



3,846,728
HIGH-VOLTAGE FUSE INCLUDING INSULATING MANDREL FOR SUPPORTING FUSIBLE ELEMENTS

Erwin Salzer, Waban, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.
Filed Oct. 23, 1973, Ser. No. 408,320
Int. Cl. H01h *85/04*
U.S. Cl. 337—159 **9 Claims**

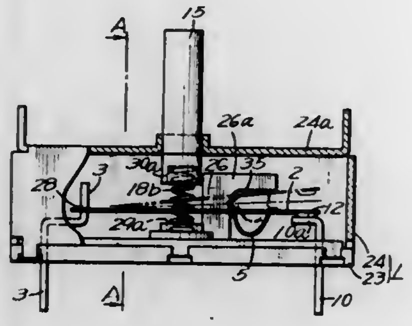


1. A high-voltage fuse including
a. a tubular casing of electric insulating material;
b. a pair of terminal plugs closing the ends of said casing, each of said pair of terminal plugs having a pair of narrow grooves in the axially inner end surface thereof arranged at right angles to each other, and each of said pair of terminal plugs having a circular recess in the axially inner end surface thereof exceeding in depth the depth of said pair of grooves, and one of said pair of plugs having an eccentric internally screw-threaded filling hole normally closed by a plug means;
c. a post of electric insulating material arranged in the center of said casing and projecting with each end thereof into said recess in one of said pair of terminal plugs, said post having grooves in the lateral surface thereof extending in a direction longitudinally of said post and being angularly displaced 90°;
d. substantially rectangular plates of heat resistant electric insulating material arranged inside said casing each having relatively long edges and relatively short edges and each engaging with a radially inner relatively long edge thereof one of said grooves in said post and each engaging with an axially outer relatively short edge thereof one of said pair of grooves in the axially inner end surfaces of said pair of terminal plugs;

- e. a fuse link wound helically around the radially outer edges of said plates; and
- f. a pulverulent arc-quenching filler inside said casing filling the space thereof unoccupied by said post, said plates and said fuse link.

3,846,729
CURRENT LIMITER

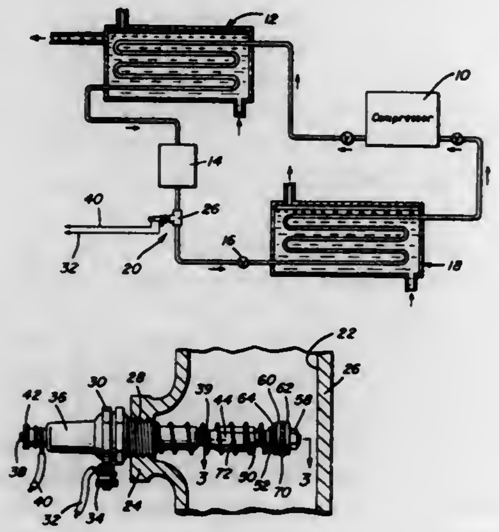
Mitsuo Sorimachi, Isezaki, Japan, assignor to Tokyo Hoshiden Kabushiki Kaisha, Isezaki-shi, Gumma-ken, Japan
Filed Mar. 27, 1973, Ser. No. 345,397
Int. Cl. H01h *37/74*
U.S. Cl. 337—343 **9 Claims**



1. A current limiter comprising a first and a second terminal mounted in a casing, a thin blade-shaped bimetal electrically connected with the first terminal within the casing and incapable of providing a contact pressure by itself, bias means for energizing the bimetal with a bias force acting lengthwise thereof to cause it to assume either of two stable positions in which the plane of the bimetal is respectively located on opposite sides of a critical line, said bias means serving to provide a contact pressure, a contact mounted on the surface of the bimetal and adapted to be urged against the second terminal in one of the stable positions and to move away from the second terminal in the other stable position, said bimetal when located in said other stable position being incapable of returning to said one stable position by itself, and reset means for selectively returning the bimetal from said other stable position to said one stable position.

3,846,730
PROPORTIONING MOISTURE SENSING DEVICE FOR REFRIGERATION SYSTEMS

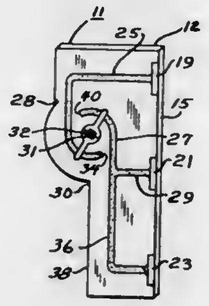
Samuel L. Hamilton, 3800 N.W. 22nd Ave., Miami, Fla. 33142
Filed Mar. 12, 1973, Ser. No. 340,373
Int. Cl. H01c *13/00*
U.S. Cl. 338—34 **10 Claims**



1. A sensing device for detecting the presence of low concentrations of moisture and moisture related contaminants in refrigerant systems comprising an anode and cathode disposed in spaced relation in the flow path of the refrigerant system and adapted to be connected into an electrical circuit, absorbent means disposed between the anode and cathode and in the flow path with the absorbent means including material capable of change of electrical conductivity in response to moisture absorption including dissolved and undissolved moisture and moisture related contaminants in the refrigerant system whereby changes of conductivity will enable electrical flow in the circuit for enabling detection of the presence of moisture or moisture related contaminants in the refrigerant system.

3,846,731
VARIABLE RESISTANCE ASSEMBLY

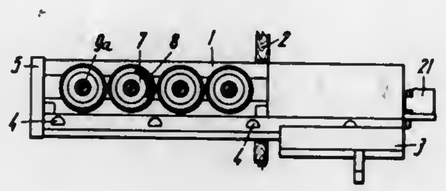
Christ J. Dumas, Forest View, and Leo J. Aubel, Deerfield, both of Ill., assignors to American Plasticraft Company, Chicago, Ill.
Filed Dec. 29, 1972, Ser. No. 319,929
Int. Cl. H01c *9/02*
U.S. Cl. 338—127 **5 Claims**

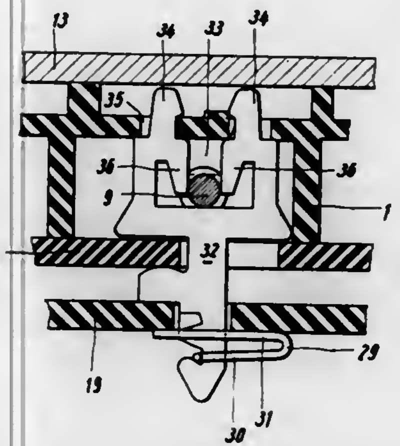


1. A variable resistance assembly comprising an electrically non-conductive substrate having at least three terminal pads, first and second electrically resistive paths on said substrate, said paths being electrically separated one from the other, the first resistive path having one end connected to one terminal and the second resistive path dividing into a first portion which connects to a second terminal pad and another portion which connects to a third terminal pad, and the resistive paths each having an electrically open or unconnected end, and an electrically conductive contactor engaging said first and second paths, said contactor being selectively adjustable to increase and decrease the effective length of the resistive paths and hence the effective electrical resistance thereof.

3,846,732
TUNER HOUSING WITH CONTACT BRIDGE MEANS

Wolfgang Labude, and Karl-Heinz Bauer, both of Bad Neustadt, Germany, assignors to FA."PREH. Elektrofeinmechanische Werke, Jakob PREH, NACHF", Bad Neustadt-/Saale, Germany
Filed Oct. 12, 1973, Ser. No. 405,785
Int. Cl. H01c *9/02*
U.S. Cl. 338—133 **12 Claims**



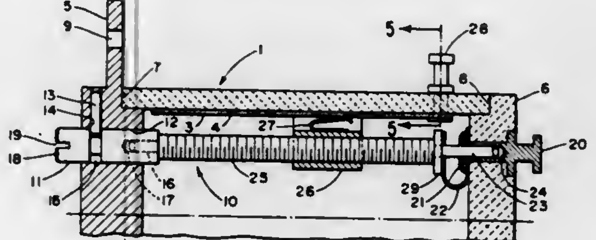


1. A housing for a tuner for radio and television receivers comprising an elongated enclosure having longitudinal side walls, a plurality of control knobs along each of said side walls, a rotatable spindle shaft extending from each of said knobs and the shafts arranged in aligned pairs with the inner ends of the shafts of a pair facing each other, sliders moveable along

said shafts in response to rotation thereof, an insulator wall adjacent to said shafts and extending over said enclosure, electrical resistance means on said insulator wall and traversed by said sliders for the tuning of capacitance of diodes, a plurality of electrical conducting paths on said insulator wall electrically connecting said electrical resistance means thereon, a printed circuit board having a plurality of electrical conducting paths thereon spaced from said insulator wall, a plurality of electrical contact elements of resilient electrically conducting material detachably mounted on said printed circuit board and electrically connected to the conducting paths thereon, and contact bridge means of electrically conducting material electrically connecting said contact elements to the electrical conducting paths on said insulator wall.

3,846,733
PLURAL POTENTIOMETER

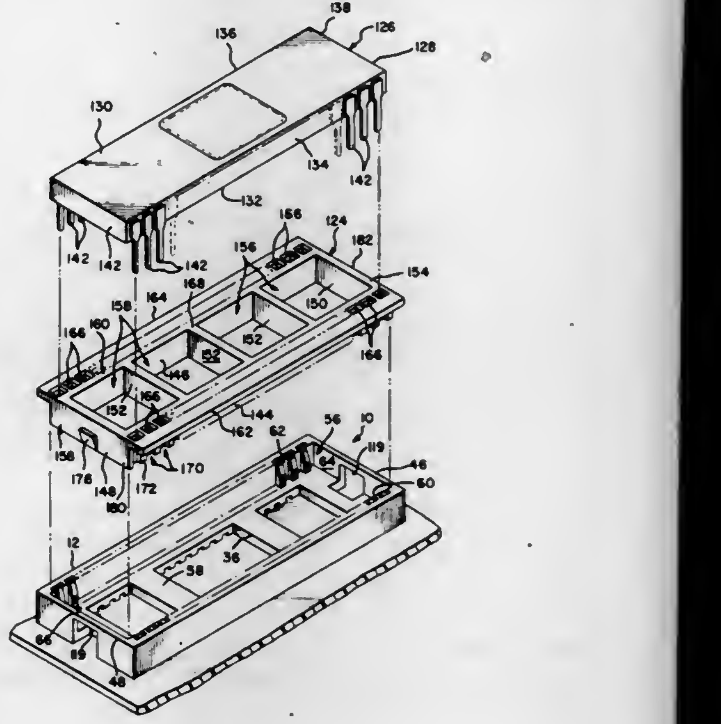
Arthur B. Beetle, St. Petersburg, Fla., assignor to TRW Inc., Elk Grove Village, Ill.
Filed Oct. 19, 1973, Ser. No. 408,097
Int. Cl. H01c *9/02*
U.S. Cl. 338—133 **8 Claims**



1. A multiple independently and infinitely variable potentiometer instrument comprising:
- an elongated housing having a closed curve cross section of dielectric material;
- a plurality of resistance elements axially disposed on the inner surface of the housing;
- first and second end plates secured to and closing the ends of the housing;
- a plurality of electrically conductive leadscrews each associated with one resistance element by having its ends rotatably mounted in the end plates and each leadscrew being spaced from its associated resistance element radially inward with respect to the axis of the housing, and parallel thereto;
- adjustment means at one end of each leadscrew enabling independent rotation thereof;
- means for electrically isolating the leadscrews from each other;
- a wiper nut on each leadscrew and having a wiper portion thereof in contact with its associated resistance element;
- a plurality of first terminal means each associated with at least one resistance element at one end thereof;
- a plurality of second terminal means each associated with at least one leadscrew.

3,846,734
FRAMES FOR ADAPTING A MULTI-CONTACT ELECTRICAL CONNECTOR TO ELECTRICALLY CONNECT WITH VARIOUS STYLES OF SUBSTRATES

William Vito Pauza, and Edward Michael Poltonavage, both of Palmyra, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Feb. 6, 1973, Ser. No. 330,158
Int. Cl. H01r *13/54;* H05k *1/02*
U.S. Cl. 339—17 CF **1 Claim**



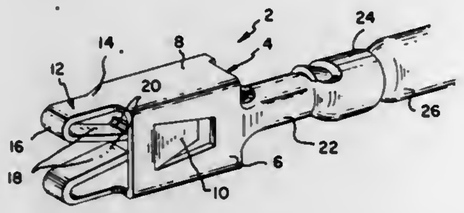
1. In combination, a printed circuit board having an electrical circuit thereon, apertures in said board, a ceramic substrate having a plurality of electrical contacts exposed to one side of said substrate, said contacts on the substrate comprising electrical leads extending at an angle to the plane of the substrate, and a housing for connecting said substrate to said board, said housing comprising:
- a member having a pair of opposed parallel sides,
- electrically conductive spring members positioned in said parallel sides to accomodate the ceramic substrate and effect an electrical connection with the contacts,
- means on the spring members for electrically attaching them to the circuitry of a printed circuit board,
- and locking means to retain said substrate in electrically conductive relationship with said housing, said locking means comprising a frame with slots therein that receive the leads and wedge them against the spring members, and a detent on the frame that snaps into a slot in the housing.

3,846,735
ELECTRICAL CONTACT TERMINAL WHICH CAN BE MATED WITH AN IDENTICAL TERMINAL OR WITH A DISSIMILAR TERMINAL

Clyde Thomas Carter, Shermansdale, and Homer Ernst Henschen, Carlisle, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Division of Ser. No. 128,439, March 26, 1971, Pat. No. 3,732,525. This application May 4, 1973, Ser. No. 357,429
Int. Cl. H01r *13/12*
U.S. Cl. 339—47 **3 Claims**

1. An electrical terminal which is adapted to be disengageably coupled with an identical terminal or with a dissimilar terminal, said terminal comprising:
- a substantially flat web having sidewalls extending from the longitudinal edges thereof,
- means on said terminal at one end of said web for securing said terminal to an electrical conductor,

a pair of contact springs on said terminal at the other end thereof, each of said contact springs comprising an extension on one of said sidewalls, each of said springs projecting co-planarly from its respective sidewall and being reversely bent and extending reversely inwardly and between said sidewalls, said springs each having a width which is less than the width of said sidewalls and said springs extending centrally from the forward ends of said sidewalls so that the sides of said springs are spaced from the edges of said sidewalls are spaced from said web, the reversely extending end portions of said springs extending convergently towards the longitudinal axis of said terminal and

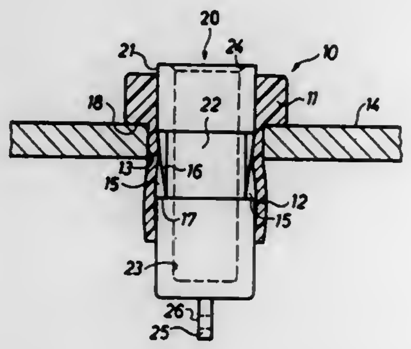


a retention lance struck from said web, said lance extending obliquely from said web between said sidewalls, and towards said one end whereby,

said terminal and an identical terminal can be engaged with each other upon positioning said terminals in opposed axially offset relationship with the webs of said terminal and said coplanar terminal in a common plane so that said terminal on said identical terminal can be moved into engagement with each other with one sidewall and one contact spring of each terminal extending between the two contact springs of the other terminal.

3,846,736
INSULATED ELECTRICAL CONDUCTOR FOR PANEL MOUNTING

Edwin Muz, Uhlandstrasse, Germany, assignor to Nicolay GmbH, Waiblingen, Germany
Filed Aug. 2, 1972, Ser. No. 277,268
Int. Cl. H01r ***11/16***
U.S. Cl. 339—126 RS **1 Claim**



1. An electrical connector assembly for panel mounting, the connector being of the type having an electrically conductive connector member and an electrically nonconductive sleeve member which surrounds and electrically isolates the connector member from the panel, the improvement comprising the combination of

a sleeve member including a head portion having a surface for abutting the panel, and a tubular portion insertable through an opening in the panel,

said tubular portion having a radially expandable section axially spaced from said head portion a distance approximating the desired panel thickness, and

a connector member having a cylindrical outer surface, the outer diameter of at least part of said connector member being larger than the inner dimension of said radially expandable section so that insertion of said connector member causes said section to expand,

said sleeve member and said connector member being provided with means for retaining the assembly in assembled condition including

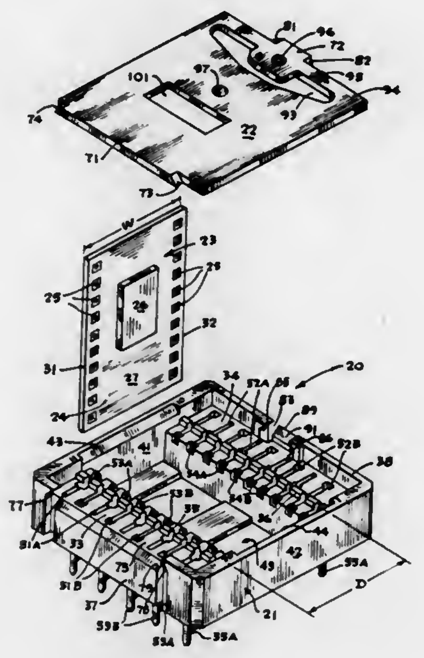
an annular recess in the outer surface of said connector member and

a plurality of radially inwardly extending projections disposed to engage said recess,

said recess and projection being disposed to engage when the members are assembled.

3,846,737
ELECTRICAL CONNECTOR UNIT FOR LEADLESS CIRCUIT DEVICE

Tedford H. Spaulding, Norridge, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.
Filed Feb. 26, 1973, Ser. No. 335,479
Int. Cl. H01r ***13/50***
U.S. Cl. 339—174 **16 Claims**



1. An electrical connector unit for supporting and for completing electrical connections to a leadless circuit device comprising a thin, flat substrate and a plurality of conductive pads arranged in a predetermined pattern on a substantially planar connection surface of that substrate, said connector unit comprising:

an insulator base having walls with upper edges defining an open-top receptacle for receiving and locating said circuit device in predetermined position extending across the top of the receptacle;

a plurality of individual resilient metal contact members mounted in said base, each of said contact members including a terminal element projecting outwardly of said base for connection to an external circuit and an active contact element projecting upwardly into said receptacle, the active contact elements of said contact members being arranged in a pattern providing for contact between said contact members and said conductive pads when said device is positioned in said receptacle;

an insulator cover for closing the top of said receptacle to enclose said device in said receptacle, said cover including two key projections extending outwardly of the opposed ends thereof, each key projection having an upwardly inclined positioning surface, said cover further having an elongated slot extending parallel to one edge of said cover closely adjacent one of said key projections to form, with said one key projection, a releasable latch;

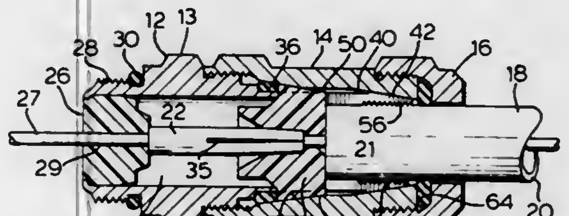
and two keyways, formed in the upper edges of opposed walls of said base above the adjoining inserted device, for receiving said key projections, each keyway having an upwardly inclined retaining surface complementary to and engageable with the positioning surface of one of said key projections;

said key projections including a given key projections with opposite ends and a second inclined surface to form two upwardly inclined converging positioning surfaces at said opposite ends and said keyway for said given key projection includes a second inclined surface to form two upwardly inclined converging retaining surfaces complementary to and engageable with the positioning surfaces of said given key projection;

said resilient contact members biasing said device and said cover upwardly outwardly of said receptacle, when said connector unit is assembled with said circuit device inserted in said receptacle and said cover mounted on said base with said key projections extending into said keyways, to force the inclined positioning surfaces of said key projections into snug engagement with the inclined retaining surfaces of said keyways and thereby lock said cover and said device firmly in said base.

3,846,738
CABLE CONNECTOR

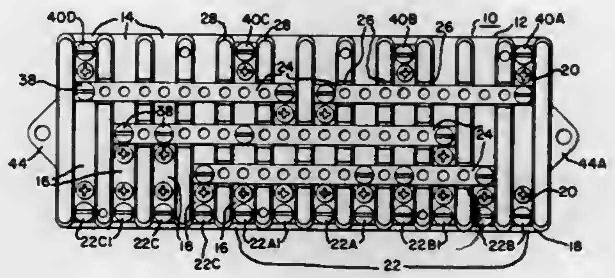
Zdenek Nepovim, Lindsay, Ontario, Canada, assignor to Lindsay Specialty Products Limited, Lindsay, Ontario, Canada
Filed Apr. 5, 1973, Ser. No. 348,242
Int. Cl. H01r ***17/04***
U.S. Cl. 339—177 R **11 Claims**



1. A connector for securement to the end of a coaxial cable having a sheath electrode and a core electrode which comprises: a hollow housing having a rearwardly extending and peripherally discontinuous electrically conductive tubular skirt for radially inward compression into gripping engagement and electrical contact with the sheath electrode of a coaxial cable extending forwardly into said skirt, said tubular skirt being formed with an external cam surface and at least one longitudinal slot; a radially inwardly compressible and electrically conductive collet sleeve mounted generally axially within said housing for receiving an exposed forward end portion of the core electrode of the coaxial cable inserted into said connector; a radially inwardly compressible and electrically insulating bushing generally coaxially disposed around said collet sleeve and having at least one projection extending through said slot formed in said tubular skirt, said projection defining an external cam surface; a hollow tubular cap having associated therewith at least one internal cam surface for conjoint axial movement with said cap and for engagement with said external cam surface of said tubular skirt and said external cam surface of said bushing projection when said cap is disposed coaxially around said tubular skirt whereby on forward axial movement of said cap relative to said housing, said cap is adapted to cause radially inward compression of said tubular skirt into gripping engagement and electrical contact with the sheath electrode of the coaxial cable disposed within said tubular skirt and adapted to cause radially inward compression of said bushing and said collet sleeve to move said collet sleeve into gripping engagement and electrical contact with the core electrode of the cable; said compression of the collet sleeve occurring concurrently with the compression of the tubular skirt for simultaneous gripping of the core electrode and sheath electrode without any torsional shearing action between the said electrodes; and co-operating means on said housing and on said cap for retaining said cap in a desired axial position on said housing.

3,846,739
TWO-OUT-OF-THREE LOGIC TERMINAL BOARD

Charles L. Devlin, Ballston Lake, and Markus A. Eggenberger, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed June 20, 1973, Ser. No. 371,824
Int. Cl. H01r ***9/00***
U.S. Cl. 339—198 V **5 Claims**



1. A terminal board for connecting first, second and third pairs of actuatable devices controlled respectively by first, second, and third monitoring devices into a two-out-of-three logic arrangement to apply power to an external load when at least two of said pairs of said actuatable devices are actuated comprising:

an electrically insulated base including first, second, and third sections, each of said sections having a plurality of substantially parallel channels formed therein, the sides of said channels forming insulative dividers;

a plurality of conducting strips, said strips being disposed one in each of said channels, each of said strips including at least one connecting terminal;

a plurality of bus bars arranged transversely to said conducting strips and disposed in slots formed in said dividers, wherein said bus bars are located in a plane spaced above said strips and spaced below the plane defined by the tips of the dividers formed by said channels; and

means for attaching said bus bars to said strips at selected points for interconnecting specified ones of said strips to effect a two-out-of-three logic arrangement of said actuatable devices.

3,846,740
MULTIPLE-PIN PLUG ADAPTOR

Neil F. Damon, Cumberland, R.I., assignor to Augat Inc., Attleboro, Mass.
Filed July 17, 1972, Ser. No. 272,694
Int. Cl. H01r ***9/08***
U.S. Cl. 339—220 R **5 Claims**

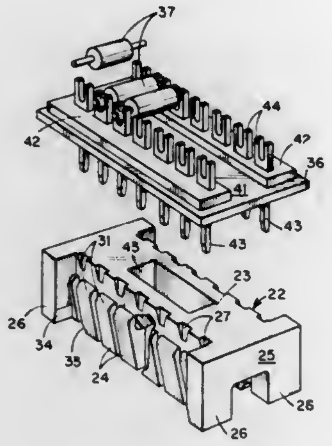
1. An insulative adaptor for a multiple-pin plug having parallel rows of terminal pins, said adaptor comprising:

a generally flat rectangular body portion;

a pair of spaced parallel rows of upstanding posts projecting substantially perpendicularly from one side of said body portion and integral therewith, said posts being disposed along said side adjacent opposite parallel edges thereof;

a plurality of spaced shoulders projecting laterally beyond said parallel edges of said body portion and integral therewith, said shoulders being aligned with and substantially equal to the width of said posts, thereby forming a plurality of generally parallel slots between said shoulders; and

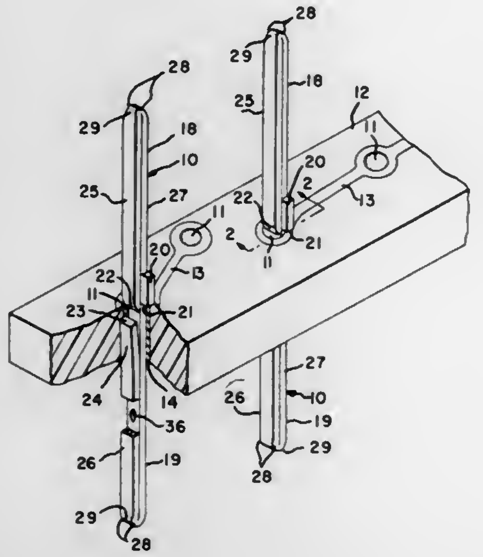
a pair of U-shaped end members integral with said body portion and having legs substantially parallel with said posts, the sides of said end members extending laterally



from said body portion parallel to and farther than said shoulders.

3,846,741
CIRCUIT BOARD POST TYPE TERMINAL

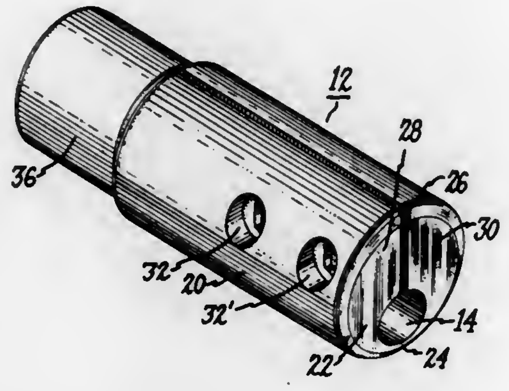
John Philip Kunkle, Harrisburg, and Ronald Bruce Barnes, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Sept. 25, 1973, Ser. No. 400,469
Int. Cl. H01r *9/08*
U.S. Cl. 339—221 R **13 Claims**



1. A terminal post inserted in a hole in a circuit board and comprising an electrically conductive metal strip having first and second ends and folded over onto itself at first and second fold points about the center portion of said metal strip so that the said first and second ends are facing and adjacent to each other but separated by a distance less than the thickness of said circuit board, and stop means affixed to said terminal post and constructed to seat upon the insertion side surface of said circuit board when said terminal post is fully inserted in said hole to position a given end of said metal strip within said hole, one of said ends of said metal strip being positioned and shaped to penetrate into the wall of said hole when said terminal post is fully inserted therein to provide good electrical and mechanical contact with said wall and to inhibit withdrawal of said terminal post from said hole.

3,846,742
QUICK DEMOUNTABLE LOAD TAP CHANGER TERMINAL

Robert H. Ettinger, Pittsfield, Mass., assignor to General Electric Company
Filed Aug. 2, 1973, Ser. No. 385,080
Int. Cl. H01r *7/08*
U.S. Cl. 339—263 R **5 Claims**



1. A clamp-type electrical connector for connecting a cable to a male electrical terminal comprising:

a. an elongated metal cylinder having a longitudinal axis, and having a cylindrical end adapted to receive a cable;

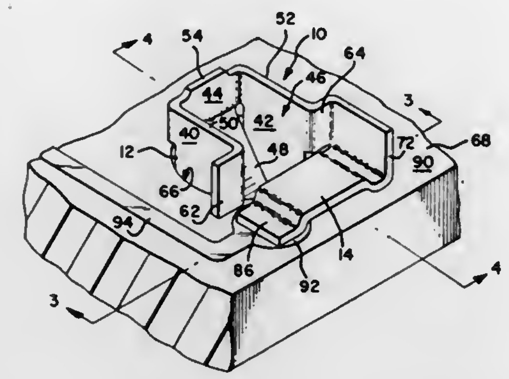
b. said cylinder having a cylindrical opening at an end opposite from the cable end, said opening having a longitudinal axis that is generally parallel to and displaced a substantial distance from the longitudinal axis of said cylinder, said axis of said cable end being parallel to said axis of said cylindrical opening;

c. a longitudinally extending slot between said opening and the exterior of said cylinder dividing a region of said connector into two portions; and

d. clamping means attached to and connected between said two portions of said cylinder for the purpose of bringing said two portions closer together thereby reducing the dimensions of said opening, and clamping said electrical connector to a mating male electrical terminal.

3,846,743
THROUGH-HOLE ELECTRICAL CONNECTOR FOR A CIRCUIT BOARD

William Joseph Garver, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Dec. 11, 1972, Ser. No. 314,061
Int. Cl. H05k *1/10*
U.S. Cl. 339—275 B **6 Claims**



1. A through-hole electrical connector for flexibly interconnecting electrical circuitry on opposite sides of a circuit board, said connector comprising:

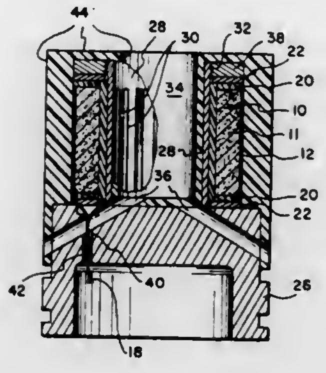
an elongated body disposable through a hole defined in said board, said body having forward and rearward opposing end portions and an intermediate portion therebetween, said forward end portion being tapered inwardly toward the longitudinal axis of said body to facilitate insertion of said body through said hole and being disposable beyond one of said opposite sides of said board by insertion of said body through said hole to facilitate attachment of said forward end portion with the electrical cricuitry disposed on said one of said opposite sides of said board, said intermediate portion being disposable within said hole by insertion of said body through said hole, and said rearward end portion being disposable beyond the other of said opposite sides of said board by insertion of said body through said hole; and

an elongated arm, said arm having an inner portion which is connected with said rearward end portion of said body and lies in a plane generally parallel to said axis of said body, a bendable outer portion which merges from said inner portion along an edge of said inner portion extending substantially perpendicular to the longitudinal axis of said body, said bendable outer portion extending from said inner portion in a substantially transverse relationship to both the longitudinal axis of said body and said inner portion, said bendable outer portion being disposable in a position overlying a surface portion of said other of said opposite sides of said board by insertion of said body through said hole, said bendable outer portion having a free end, said free end being disposable in a position overlying the portion of the electrical circuitry disposed on said other of said opposite sides of said board by insertion of said body through said hole to facilitate attachment of said rearward end portion via said arm with said other preselected area of electrical circuitry,

whereby said outer portion of said arm will bend to accommodate expansive and contractive changes in the thickness of said board due to varying environmental conditions imposed on said board while said free end of said outer portion of said arm maintains its attachment to said other preselected area of electrical circuitry and thereby provide a flexible link in the interconnection provided between said preselected areas of electrical circuitry by said connector.

3,846,744
SHOCK HARDENED TRANSDUCER

Nicholas Renna, Jr., Thousands Oaks; Theodore C. Madison, and Bernard A. Harvey, both of Santa Barbara, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 17, 1973, Ser. No. 361,117
Int. Cl. H04b *13/00*
U.S. Cl. 340—10 **7 Claims**



1. A shock hardened transducer for use as an underwater hydrophone comprising:

a tubular piezoelectric ceramic element;

an electrode deposited over each of the inner and outer cyclindrical surfaces of said ceramic element;

wrap means tightly encompassing the outer cylindrical surface of said ceramic element for producing a compressive hoop prestress;

mounting means contacting the ends of said ceramic element for producing a compressive axial prestress, including

a base having a tubular collar with an externally threaded end, and

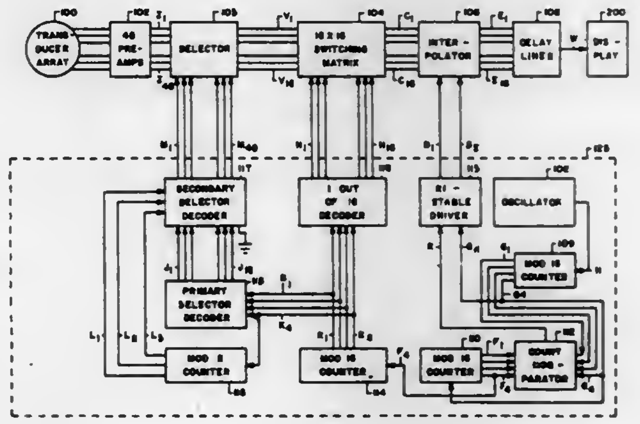
a stress-nut engaging said threaded end;

compliant rings interposed between said mounting means and each end of said ceramic element; and

potting compound completely surrounding said ceramic element.

3,846,745
ELECTRONIC SCANNING SWITCH

Eugene Emerson Hill, 1210 Caswell Cres., and Marvin Seymour Scrimshaw, 708 Sanfield Cres., both of Cornwall, Ontario, Canada
Continuation-in-part of Ser. No. 120,598, March 3, 1971, abandoned. This application June 7, 1973, Ser. No. 367,751
Claims priority, application Canada, Dec. 18, 1970, 101027
Int. Cl. G01s *7/54, 3/80*
U.S. Cl. 340—6 R **25 Claims**



1. An electronic interpolator means including a first input conductor adapted to carry a first input signal; a second input conductor adapted to carry a second input signal; an output conductor; electronic switching means connected to said first and second input conductors and to said output conductor; said switching means being adapted to connect said output conductor to said first input conductor and to said second input conductor, alternately; said switching means being adapted to provide an output signal in said output conductor which is an interpolation of said first input signal and said second input signal, said output signal consisting of alternate portions of said first input signal and said second input signal in selected proportions, means adapted to alter the proportions of said first and said second input signals carried by said output conductor to thereby alter the degree of interpolation of said first and said second input signals in said output signal.

3,846,746
PILOT WARNING INDICATOR SYSTEM

James H. Trageser, and Joseph A. Cali, both of Dayton, Ohio, assignors to Technology Incorporated, Dayton, Ohio
Division of Ser. No. 47,823, June 19, 1970, Pat. No. 3,736,559. This application Apr. 23, 1973, Ser. No. 353,348
Int. Cl. G08g *5/00*
U.S. Cl. 340—27 R **19 Claims**

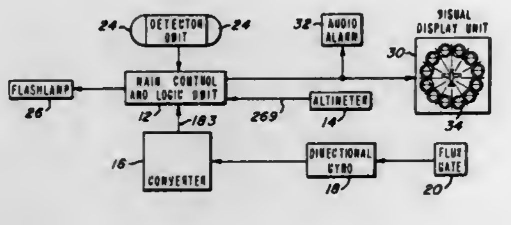
1. An indicator system for an aircraft comprising:

control and logic means,

flight condition responsive means joined to the control and logic means for providing signals thereto which have relationship to the flight condition of the aircraft,

flashlamp means joined to the control and logic means for providing spaced-apart pulses of light energy in which the time spacing of the pulses is in relationship to the flight condition of the aircraft, detector means for sensing light energy, the detector means being joined to the control and logic means for providing pulse signals in accordance with pulses of light energy received by the detector means from another aircraft,

alarm means joined to the control and logic means,



the control and logic means including means for comparing the flight condition of said other aircraft with the flight condition of the first said aircraft and for providing a signal to the alarm means if the possibility of a collision between said other aircraft and the first said aircraft exists.

3,846,747
DEVICE FOR DETECTING AND INDICATING QUANTITY OF ENGINE OIL

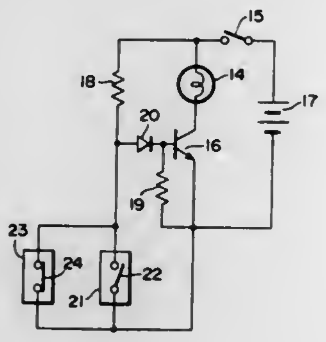
Hiroshi Arai; Jun Ohta, and Yasunobu Kikuchi, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 7, 1973, Ser. No. 422,766

Claims priority, application Japan, Aug. 11, 1973, 48-90378

Int. Cl. G08b *19/00*

U.S. Cl. 340—59 **9 Claims**



1. A device for detecting and indicating the quantity of engine oil in an oil pan of an engine for vehicles and the like comprising a detecting and indicating circuit including a indicate element and a switching transistor, an oil level stabilization detector for detecting stabilization of the engine oil level in the oil pan after starting of the engine, an oil level detector for detecting lowering of the engine oil level to a level lower than a predetermined level, and means for connecting the outputs of said oil level stabilization detector and said oil level detector to said detecting and indicating circuit, whereby said switching transistor is turned on to energize said indicate element when the outputs of both said detectors are simultaneously applied to said detecting and indicating circuit.

3,846,748
SIGNALING SYSTEM AND SENSOR

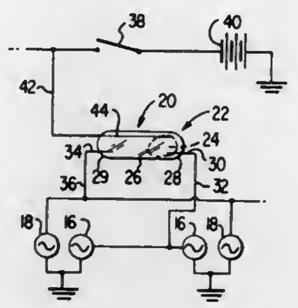
Charles E. Hopwood, 1319 S. Michigan Ave., Clearwater, Fla. 33516

Filed Mar. 23, 1973, Ser. No. 344,196

Int. Cl. B60q *1/26;* **H01h** *35/02*

U.S. Cl. 340—71 **4 Claims**

1. In a signal system for a vehicle, a sensor unit for actuating a signal responsive to movement of the vehicle, the sensor unit comprising, a body adapted to be operatively fixed to the vehicle, said body having a fulcrum part, a sensor including a container and a pair of spaced apart contacts for connection in circuit between a source of electrical power and the signal, and a mass of fluid movable in the container between a normal position out of circuit with at least one of the contacts and, responsive to a change of velocity of the vehicle a position in circuit with the contacts, for actuating the signal, a rigid block encasing said container and having a fulcrum part cooperating with the body fulcrum part, conductors, one connected with each of the contacts, and extending outwardly from the block, for connection in said circuit with the signal, and adjusting means mounted on the body and engaging the block for adjusting the disposition of the block and leveling the sensor after installation on the vehicle.



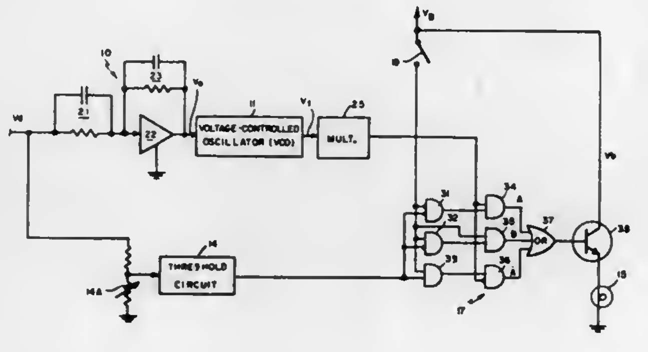
3,846,749
VEHICLE BRAKE LIGHT CONTROL SYSTEM

Renwick E. Curry, Hingham, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 1, 1973, Ser. No. 328,798

Int. Cl. B60q *1/44*

U.S. Cl. 340—72 **12 Claims**



1. A vehicle brake light control system comprising

means for producing a voltage representative of the deceleration of a vehicle;

means responsive to said deceleration voltage for producing a pulsed signal having pulse repetition rate dependent on the sum of said deceleration voltage and the derivative thereof;

threshold means responsive to said deceleration voltage for producing a threshold signal when said deceleration voltage exceeds a predetermined threshold level;

means for producing a braking signal when the brakes of said vehicle are applied;

brake signal actuation circuit means responsive to said pulsed signal, said threshold signal and said braking signal for flashing on the brake light system of said vehicle at a rate dependent on the repetition rate of said pulsed signal when said vehicle is in a first state wherein it is decelerating without the application of said vehicle brakes, for turning on said brake light system when said vehicle is in a second state wherein said brakes are applied and said vehicle is decelerating at a level below said threshold level, and for flashing off said brake light system at a rate dependent on the repetition rate of said pulsed signal when said vehicle is in a third state wherein said brakes are applied and the vehicle is decelerating at a level which exceeds said threshold level.

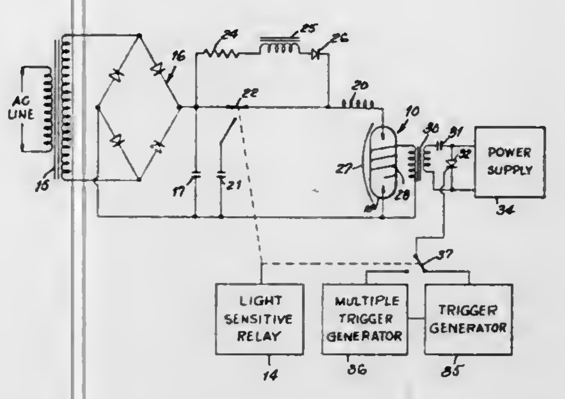
3,846,750
DAY-NIGHT FLASH BEACON

Wayne A. Kearsley, Chelmsford, Mass., assignor to Flash Technology Corporation of America, Nashua, N.H.

Filed July 27, 1972, Ser. No. 275,720

Int. Cl. H05b *41/32*

U.S. Cl. 340—105 **5 Claims**



1. A flash beacon for providing high power daytime flashes and relatively lower power nighttime flashes comprising:

- a. A dual-mode capacitive discharge power supply having selectable large and small discharge capacities;
- b. A gaseous discharge flashlamp connected to said power supply;
- c. A dual-mode trigger circuit having selectable single repetitive trigger generator and group repetitive trigger generator connected to said flashlamp for providing ionizing trigger pulses; and,
- d. An automatic switch connected to said dual-mode capacitive discharge power supply and said dual-mode trigger circuit for operating to select said small discharge capacity and said group repetitive trigger generator at night.

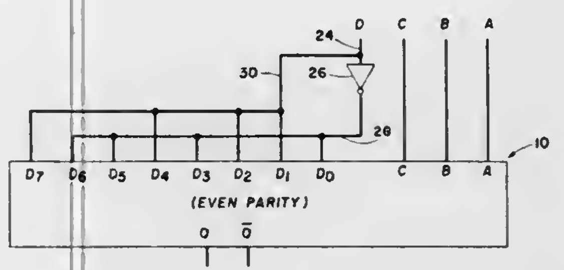
3,846,751
FOUR-BIT PARITY CHECKER/GENERATOR

Anthony Prieto, Tulsa, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.

Filed June 12, 1973, Ser. No. 369,166

Int. Cl. G06f *11/10*

U.S. Cl. 340—146.1 AG **11 Claims**



1. A four bit parity checker comprising:

- a. an eight bit data selector/multiplexer integrated circuit having three input address terminals, eight data input terminals and at least one Q output terminal and including means to connect said eight data terminals into two sets of four each, a first set comprising terminals D_1, D_2, D_4, D_7 and the second set comprising terminals D_0, D_3, D_5, D_6;
- b. means to connect three data circuits to said three input address terminals;
- c. means to connect a fourth data circuit to one of the said two sets of data input terminals; and
- d. means also to connect said fourth data circuit through inverter means to the other of said two sets of data terminals.

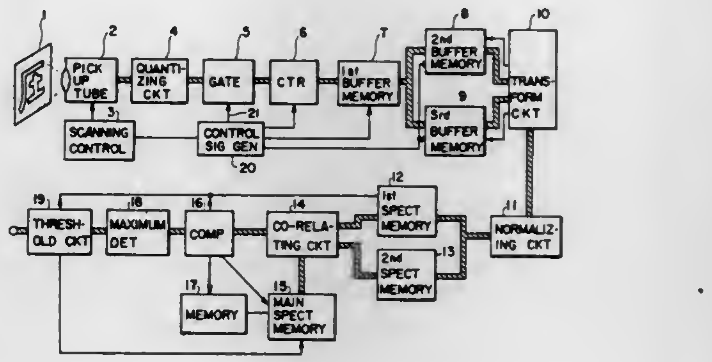
3,846,752
CHARACTER RECOGNITION APPARATUS

Yasuaki Nakano, Hino; Kazuo Nakata, Kokubunji, and Yuriko Uchikura, Nishitama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 2, 1972, Ser. No. 294,179

Int. Cl. G06k *9/02*

U.S. Cl. 340—146.3 Q **6 Claims**



1. Character recognition apparatus which comprises

- a. means to obtain a peripheral distribution pattern of an unknown input character by projecting the density distribution of said character on at least one axis,
- b. means to obtain an amplitude spectrum pattern of said peripheral distribution pattern,
- c. memory means for storing a number of standard amplitude spectrum patterns corresponding to a number of standard characters,
- d. comparator means for comparing said standard spectrum patterns stored in said memory means and said amplitude spectrum pattern of said unknown input character and providing a correlation value between both the patterns, and
- e. output circuit means for deriving as the unknown input pattern the standard character corresponding to the standard amplitude spectrum pattern which attains the maximum one of a number of correlation values obtained by said comparator means.

3,846,753
AUTOMATIC ADDRESS DETECTION SYSTEM

Arie Adriaan Spanjersberg, Leiderdorp, Netherlands, assignor to De Staat Der Nederlanden, Ten Deze Vertegenwoordigd Door De Directeur-Generaal Der Posterijen, Telegrafie, Hague, Netherlands

Filed Sept. 20, 1972, Ser. No. 290,717

Claims priority, application Netherlands, Sept. 23, 1971, 7113082

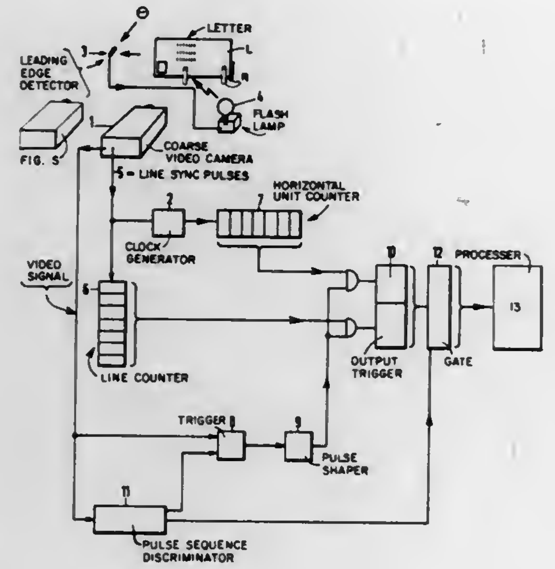
Int. Cl. G06k *9/16*

U.S. Cl. 340—146.3 D **9 Claims**

1. An apparatus for locating and recognizing a coded address on documents comprising:

- a. a video camera having a coarse raster scanning means for viewing said documents,
- b. an image dissector tube having a fine raster scanning means for viewing said documents, said tube being spaced from said camera along a path for said documents,
- c. means for moving said documents successively passed said camera and said tube at a constant continuous rate,

d. means connected to said camera for determing the location of the coded address on said documents, comprising a pulse sequence discriminator means for determining the presence of the coded address, and separate counter means for determining the horizontal and vertical distances of said address from the edges of said documents, and



e. means for controlling said tube for scanning only the location determined by said location determining means for only viewing said address by said tube for reading the code of said addresss, comprising a digital to analogue convertor means for producing a direct current for vertically positioning the location of said address to be scanned by said tube in accordance with one of said separate counter means, and a sawtooth wave generator for horizontally positioning the location of said address in accordance with the other of said separate counter means.

3,846,754

PATTERN PRE-PROCESSING APPARATUS

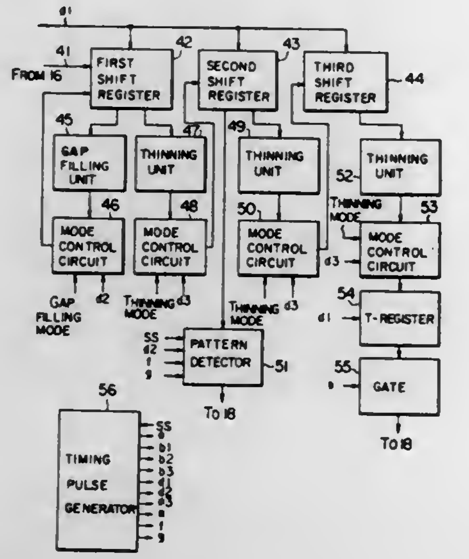
Mitsunori Oka, Hachioji, and Michio Yasuda, Koganei, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 4, 1973, Ser. No. 347,662

Claims priority, application Japan, Apr. 7, 1972, 47-34375

Int. Cl. G06k *9/02*

U.S. Cl. 340—146.3 H **6 Claims**



1. In a pattern recognition system, a pattern pre-processing apparatus for modifying a quantized input pattern obtained by the scanning of a pattern, by the conversion into a first digital value of a signal produced in the case of said scanning of a pattern area, and by the conversion into a second digital value of a signal produced in the case of said scanning of a background area, said pattern pre-processing apparatus comprising:

at least one shift register for storing and shifting therein said input pattern in the order in which it has been scanned, and

pattern thinning means for receiving, on the basis of a first prespecified bit position of said shift register, the bit contents in accordance with said input pattern of said shift register corresponding to selected bit positions located adjacent to said first prespecified bit position, including means for producing a signal of said second digital value when the contents of said adjoining bit positions indicate any one of predetermined patterns, and for producing a signal indicating as before the content of said first prespecified bit position when the contents of said adjoining bit positions indicate none of said predetermined patterns, said pattern thinning means including a plurality of circuit means for examining whether said contents of said adjoining bit positions indicate any one of said predetermined patterns, said circuit means producing a signal of said second digital value as an output of said pattern pre-processing apparatus when the content of a peripheral portion of said pattern area is shifted to said first prespecified bit position, thereby leaving only a skeletal portion of said pattern area in the state of said first digital value.

3,846,755

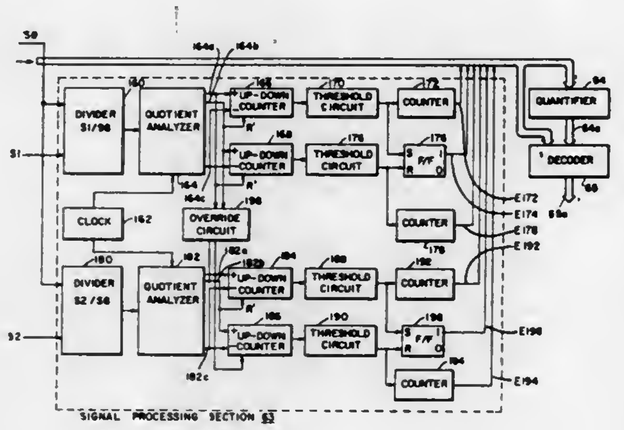
PATTERN RECOGNITION SYSTEM

William H. Hart, Arlington, Mass., assignor to Electronic Reading Systems, Watertown, Mass.

Continuation-in-part of Ser. No. 93,378, Nov. 27, 1970, which is a continuation-in-part of Ser. No. 885,044, Dec. 15, 1969, abandoned. This application Aug. 6, 1973, Ser. No. 385,713

Int. Cl. G06k *9/13*

U.S. Cl. 340—146.3 AC **23 Claims**



1. A method of identifying an unknown pattern comprising the steps of:

A. measuring a plurality of moments about at least one predetermined axis in each of successive portions of the pattern, at least two of the moments being different moments with respect to the same axis,

B. generating a moment signal corresponding to the value of each of the measurements,

C. selecting certain of the moment signals indicative of predetermined characteristics of the pattern in sections thereof less than the entire pattern,

D. generating a plurality of comparison parameter signals including comparison parameter signals for the sections, at least one of the comparison parameter signals for a section being generated by taking a ratio of said moment signals, at least one moment signal for that ratio being a preselected moment signal for that section, and

E. comparing the values of the comparison parameter signals with corresponding values of reference patterns to identify the unknown pattern.

3,846,756

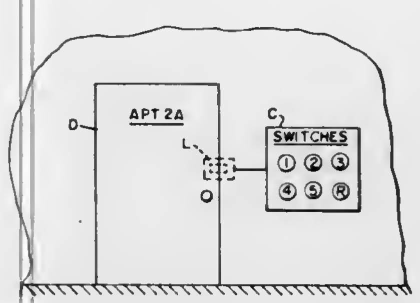
PROGRAMMABLE SEQUENTIAL LOGIC CIRCUIT

Lawrence S. Schmitz, Plumboro, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 25, 1973, Ser. No. 373,345

Int. Cl. H04q *5/00*

U.S. Cl. 340—147 MD **5 Claims**



1. A sequential logic circuit comprising logic memory means having a plurality of inputs and outputs and including a stored program including a plurality of locations each including stored word consisting of one or more bits, digital input means connected to said inputs of said logic memory means to provide sequential entry of digital signals at said inputs, the sequential application of digital signals to said inputs of said logic memory means developing an input address comprised of a number of bits corresponding to the number of bits of said stored words, said logic memory means adapted to respond to said digital signals applied to said inputs by sequencing through one or more locations of said stored program to a location wherein the stored word exhibits a digital value equivalent to the digital value of the input address, the sequencing of an input address from one location to another causing the change of only one bit of said input address, the presence of a stored word having a digital value corresponding to the digital value of the input address causing said logic memory means to develop a digital output signal indicative thereof, and feedback means for directly connecting one or more of said outputs of said logic memory means to one or more of said inputs to apply said digital output signal to the input of said logic memory means that entered said digital signal to latch said digital signal at said input in a stable state.

3,846,757

EQUAL PROBABILITY SELECTION CIRCUIT

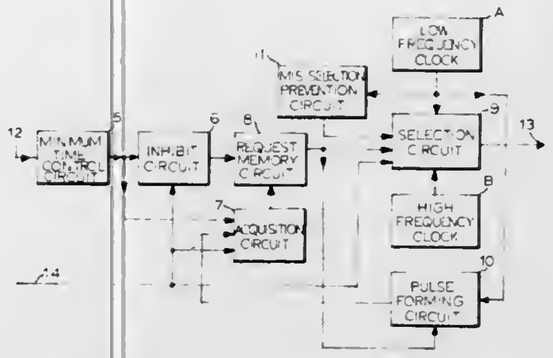
David Warren Friedman, No. 30-152 chome Kakinokizaka, Meguro-ku, Tokyo, Japan

Filed Aug. 9, 1973, Ser. No. 387,195

Claims priority, application Japan, Nov. 29, 1972, 47-119498

Int. Cl. H04q *3/00*

U.S. Cl. 340—166 R **15 Claims**



1. An equal probability selection circuit allowing the selection of any one of N unique selection intersections with equal probability and comprising:

a selection start switch means;

clock circuit means, driven by said selection start switch, and having a low frequency output and a high frequency output;

counter circuit means, driven by the output of the clock circuit means, and having two sets of outputs;

a switch matrix, comprising N switches each switch comprising a selection intersection; each switch having two terminals, one terminal of each switch being connected to an output from one of the two sets of outputs of the counter circuit; the other terminal of each switch being connected to an output from the other of the two sets of outputs of the counter circuits; and

feedback circuit means receiving an output from said matrix when a selection intersection has been selected and providing, at that time, an output to the clock circuit to inhibit the high frequency output of the clock circuit.

3,846,758

ELECTRONIC KEYBOARD INCLUDING PROGRAM MEMORY MEANS AND PROGRAM SELECTING MEANS

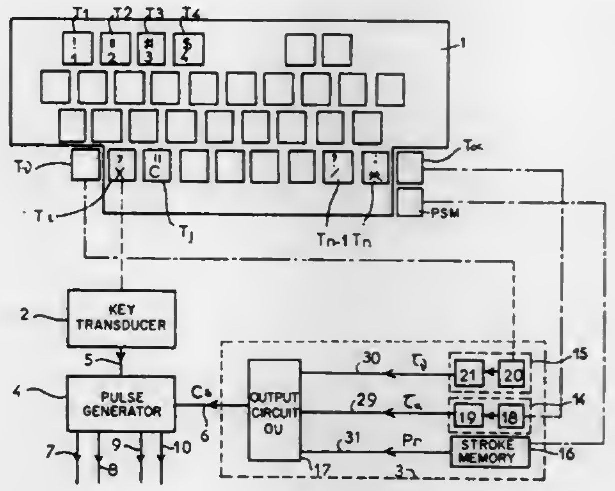
Cyrille Gosset, Danjoutin, France, assignor to Societe-Industrielle Honeywell Bull. (Societe Anonyme), Paris, France

Filed June 28, 1972, Ser. No. 266,894

Claims priority, application France, June 30, 1971, 71.23931

Int. Cl. B41j *25/24*

U.S. Cl. 340—172.5 **12 Claims**



1. An electronic keyboard, comprising a plurality of character keys, each associated with a lower case character and an upper case character; character key circuit means for each character key for providing a key signal when a corresponding character key is actuated; a lower case selector key; lower case circuit means for providing a binary signal τ_a of a first level when said lower case selector key is actuated and of a second level when said lower case selector key is not actuated; an upper case character selector key; upper case circuit means for providing a binary signal τ_a of said first level when said upper case selector key is actuated and of said second level when said upper case selector key is not actuated; automatic control means providing a signal P_r as a string of binary signals having either said first level or said second level; means for actuating said automatic control means; and output selector circuit means for selecting said lower case character associated with said actuated character key when said signal P_r is at said second level, said signal τ_a is at said second level, and said signal τ_a is at said second level, and for selecting said upper case character associated with said actuated character key when said signal P_r is at said first level, said signal τ_a is at said second level, and said signal $\tau\alpha$ is at said second level.

3,846,759
DATA PROCESSING ARRANGEMENTS

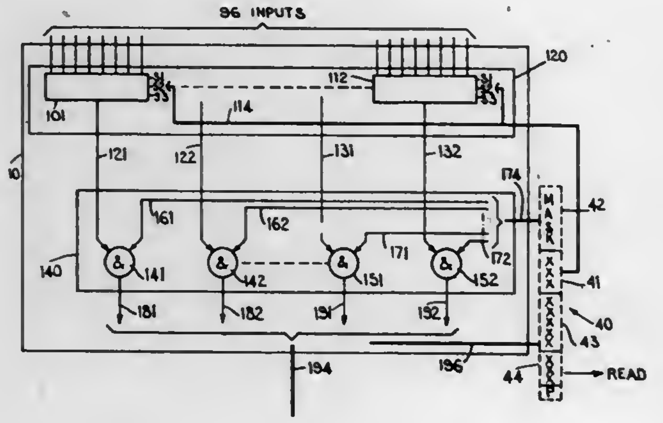
John Alfred Drake; Alan James Payne, both of Biggleswade, and Andrew Ronald Reichert, Stevenage, all of England, assignors to International Computer Limited, London, England

Filed July 24, 1972, Ser. No. 274,703

Claims priority, application Great Britain, July 23, 1971, 34604/71

Int. Cl. G06f *9/00*

U.S. Cl. 340—172.5 **2 Claims**



1. In a data processing system in which items of data are required to be applied through peripheral data handling units, at least one peripheral unit function control device including:

groups of input lines arranged to carry input information;
- groups of output lines;
- control word storage registers arranged in at least two groups;
- means for storing instruction words;
- means for reading out instruction words in succession from the instruction storing means, the instruction words read out specifying functional linkages required to be set up between input and output lines;
- means responsive to a first portion of a first instruction word to select one of the groups of input lines and to mask input lines of the selected group to render effective only some of the lines of that group to pass information;
- means responsive to a second portion of said first instruction word to select a word storage register in one of said groups to receive information from the effective ones of the masked input lines;
- control means responsive to the second and a third portion of a following instruction word to read the received information from the selected word storage register and to read out other information from a word storage register of a different group and to combine logically said contents of the word registers read out to produce a resultant multi-digit output control word; and
- means responsive to the output control word to energise with an output signal pattern a plurality of selected ones of the output line groups, the energisation pattern being related to the digits of the output control word.

3,846,760
ENGINE CONTROL SYSTEMS

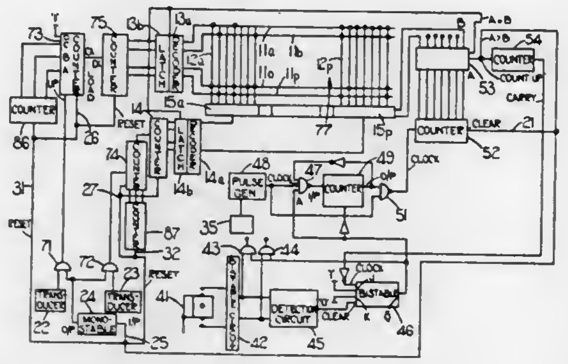
John Michael Ironside, Birmingham, England, assignor to Joseph Lucas (Electrical) Limited, Birmingham, England

Continuation-in-part of Ser. Nos. 220,657, Jan. 25, 1972, and Ser. No. 220,658, Jan. 25, 1972, and Ser. No. 220,659, Jan. 25, 1972. This application Mar. 6, 1973, Ser. No. 338,576

Int. Cl. G06f *15/46*

U.S. Cl. 340—172.5 **11 Claims**

1. An engine control system for an engine in which an operating function of the engine is controlled by the length of an electric pulse applied to the engine, comprising in combination a first transducer producing a first signal representative of a first engine parameter, a second transducer producing a second signal representative of another engine parameter, a programmed logic circuit means, to which said signals are fed, said logic circuit means producing an output dependent on the values of said first and second signals, a controllable output circuit means for normally producing an output pulse having a predetermined length in the absence of an output signal from said logic circuit means, said output pulse controlling said operating function of the engine, means controlled by the engine for initiating each output pulse, and means coupling said logic circuit means to the output stage, such that the length of said output pulse is increased in accordance with and upon the occurrence of said output signal from said logic circuit means.



3,846,761
POSITIONING CONTROLLING APPARATUS

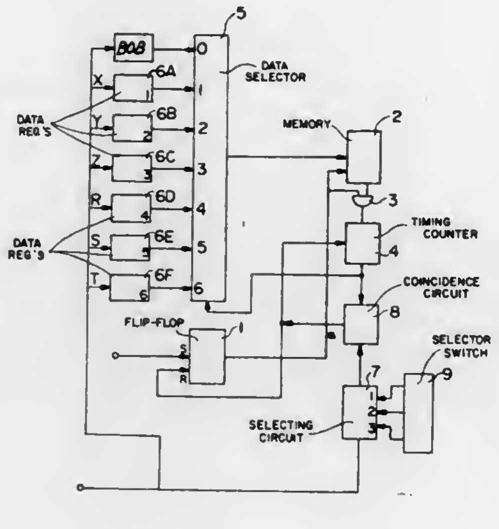
Shigeru Matsuoka, Toyama, and Shigeru Mori, Nakaniikawa-gun, both of Japan, assignors to Kabushiki Kaisha Fujikoshi, Toyama-shi, Toyama-ken, Japan

Filed June 21, 1973, Ser. No. 371,953

Claims priority, application Japan, July 13, 1972, 47-70276

Int. Cl. G06f *15/50;* **G05b** *19/00*

U.S. Cl. 340—172.5 **10 Claims**



1. Apparatus for controlling the positioning of a moving machine including a plurality of drive axes, by providing variable length positioning information data blocks, said apparatus comprising:
- a flip-flop circuit (1) coupled to be set by a sampling input signal for producing a recording signal;
- a memory device (2) responsive to said recording signal for generating a timing signal;
- a timing counter (4) coupled to said memory device (2) and to said flip-flop circuit (1) and operative in response to the presence of said recording signal and said timing signal;
- a plurality of data registers (6A-6F) for storing positioning data words of said machine, said data words collectively defining a block of data;

- a data selector (5) coupled to said timing counter (4), to said memory device (2) and to said data registers (6A-6F) for selecting a block commencement code (BOB) and writing said code into said memory device (2) when the count of said timing counter (4) assumes a predetermined value;
- said timing counter (4) successively selecting one of said data registers (6A-6F) via said data selector (5) to write the data stored in said selected data register into said memory device (2) each time said timing counter (4) increases its count;
- a block length selecting circuit (7) for selecting the total number of said data words which are to comprise a given block of data, said block length selecting circuit (7) selecting one of said data registers which has stored therein the information word corresponding to the last position information data which comprises said given block of data, said given block of data thereby comprising the data words stored in said data registers successively selected by said data selector (5) up to and including the data register selected by said block length selecting circuit (7); and
- a coincidence circuit (8) for comparing the output of said block length selecting circuit (7) with the count of said counter (4) and for resetting said flip-flop circuit (1) and said timing counter (4) upon detection of coincidence between the outputs of said timing counter (4) and said block length selecting circuit (7);
- whereby only the information which has been stored in said successively selected data registers up to and including the data register selected by said block length selecting circuit (7), which information corresponds to said given block of data, is selectively stored in said memory device (2).

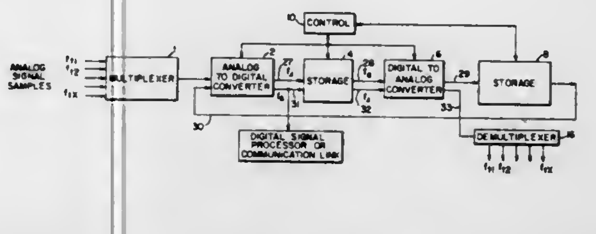
3,846,762
APPARATUS FOR OPTIMAL DATA STORAGE

John G. Gregory, White Marsh, and Robert M. Trepp, Laurel, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 10, 1973, Ser. No. 387,417

Int. Cl. G06f *3/05*

U.S. Cl. 340—172.5 **10 Claims**


10
CONTROL
ANALOG SIGNAL SAMPLES
MULTIPLEXER
2
ANALOG TO DIGITAL CONVERTER
27
4
STORAGE
28
6
DIGITAL TO ANALOG CONVERTER
29
8
STORAGE
31
32
33
30
DIGITAL SIGNAL PROCESSOR OR COMMUNICATION LINK
DEMULTIPLEXER

1. Apparatus for the storage of data from an input source of analog signal samples comprising:
- a control means;
- a first storage means for storing digital signals;
- an analog to digital converter adapted to receive said analog signal samples and to convert said analog signals to digital signals, said analog to digital converter being responsive to said control means to write said converted digital signals into said first storage means at a first digital word rate f_i;
- digital to analog converter means responsive to said control circuit to read said digital signals out of said first storage means at a second digital word rate f_s and to convert said digital signals back into output analog signals having a particular analog bandwidth;
- second storage means responsive to said control circuit to record the output analog signals of said digital to analog converter, said second digital word rate f_s being chosen in accordance with the maximum information storage bandwidth of said second storage means whereby said particular analog bandwidth of said converted output analog signals will be substantially equal to the maximum information storage bandwidth of said second storage means; and
- means to process the recorded signals of said second storage means to thereby reconstitute the input analog signal samples.

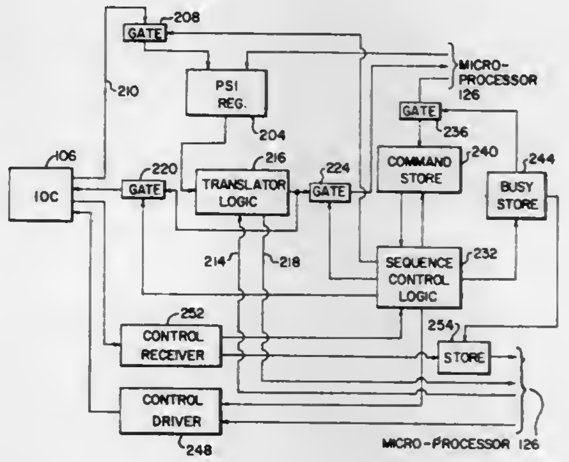
3,846,763
METHOD AND APPARATUS FOR AUTOMATIC SELECTION OF TRANSLATORS IN A DATA PROCESSING SYSTEM

Douglas L. Riikonen, Billerica, Mass., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Jan. 4, 1974, Ser. No. 430,838

Int. Cl. G06f *3/00, 5/00*

U.S. Cl. 340—172.5 **15 Claims**



1. In a data processing system which includes a central processing unit and at least one peripheral device, a peripheral control unit for transferring encoded data between the central processing unit and the peripheral device and including a plurality of translators, each responsive to an enabling signal for translating encoded data applied thereto from one code to another and each including means for storing a translator code word which identifies and distinguishes said each translator from the other translators, output lines, and means responsive to said enabling signal for applying the translator code word stored in said each translator to the translator output lines, means for successively supplying identification code words, at least some of which correspond to the translator code words, means for storing said identification code words, means for applying said enabling signal to successive ones of said translators, and means for comparing the identification code word stored in said storing means with each translator code word applied to the output lines, for causing said enabling signal applying means to apply said enabling signal to a next successive one of said translators upon the occurrence of a mismatch, and for causing the enabling signal applying means to maintain application of said enabling signal to a selected translator when the translator code word of the selected translator matches the identification code word stored in the register.

3,846,764
TECHNIQUE FOR INFORMATION STORAGE USING ANISOTROPIC COLOR CENTERS IN ALKALI HALIDE CRYSTALS

Irwin Schneider, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 18, 1973, Ser. No. 361,700

Int. Cl. G11c *11/42, 13/04*

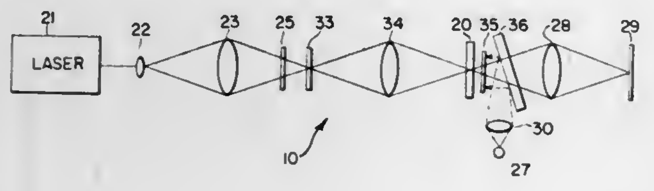
U.S. Cl. 340—173 LS **11 Claims**

1. An information storage and display system comprising:
- an optical material having anisotropic centers capable of being aligned in a common direction;

first illuminating means consisting essentially of incoherent polarized radiation operatively associated with said material, said illuminating means being capable of aligning said color centers at one polarity as well as reorienting said color centers at a second polarity;

second illuminating means including coherent polarized radiation operatively associated with said material, said second illuminating means being capable of suppressing the color center reorientation caused by said first illuminating means whereby information is written into said material; and

detection means including said second illuminating means to determine the information state of the material.



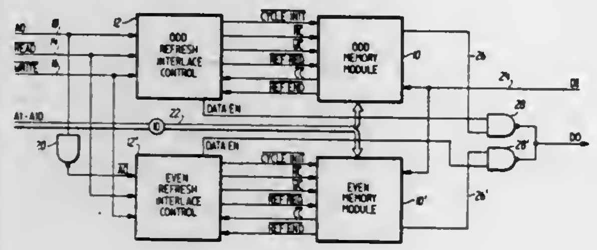
3,846,765
DYNAMIC CELL SEMICONDUCTOR MEMORY WITH INTERLACE REFRESH

Robert Gale De Vries, Littleton, Colo., assignor to Monolithic Systems Corporation, Englewood, Colo.

Filed Feb. 14, 1973, Ser. No. 332,296

Int. Cl. G11c *11/40, 11/24*

U.S. Cl. 340—173 DR **10 Claims**



1. A memory system comprising:

first and second memory modules each having a plurality of addressable storage locations for dynamically storing data signals as trapped charges, said charges requiring refreshing at intervals of time,

means for applying addressing signals to each of said memory modules;

first and second memory cycle control means for sequencing said first and second memory modules, respectively, through a read or write cycle in response to a cycle initiate signal or through a refresh cycle in response to a refresh request signal;

first and second interlace control circuits for producing said refresh request signals and said cycle initiate signals;

means for applying to each of said interlace control circuits an address signal indicating which memory module contains the storage locations being addressed; and,

means for applying to each of said interlace control circuits a signal indicating whether a read or write operation is to be performed at the addressed storage location,

said first interlace control circuit including,

first means responsive said read and write operation signals and said address signal for producing and applying a refresh request signal to said first memory cycle control means when said address signal indicates the addressed storage location is not in said first memory module, and

second means responsive to said read and write operation signals and said address signal for applying a cycle initiate signal to said first memory cycle control means when said address signal indicates the addressed storage location is in said first memory module;

said second interlace control circuit including,

first means responsive to said read and write operation signals and said address signal for producing and applying a refresh request signal to said second memory cycle control means when said address signal indicates the addressed storage location is not in said second memory module, and

second means responsive to said read and write operation signals and said address signal for applying a cycle initiate signal to said second memory cycle control means when said address signal indicates the addressed storage location is in said second memory module.

3,846,766
ASSOCIATIVE MEMORIES INCLUDING MOS TRANSISTORS

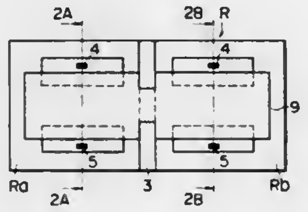
Isao Nojima; Keikichi Tamaru, and Tai Sato, all of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Continuation of Ser. No. 237,455, March 23, 1972. This application Aug. 30, 1973, Ser. No. 393,037

Claims priority, application Japan, Mar. 25, 1971, 46-16834

Int. Cl. H01r *13/50*

U.S. Cl. 340—173 AM **5 Claims**



1. An associative memory comprising one bit memory cell including:

a pair of MIOS transistors each having a source electrode, a drain electrode, and a gate electrode including double insulating layers and presenting threshold voltage-hysteresis characteristics;

a word line connected commonly to the gate electrodes of said pair of MIOS transistors;

a pair of digit lines connected respectively to the drain electrodes of said pair of MIOS transistors;

a read-out line connected commonly to the source electrodes of said pair of MIOS transisotrs;

writing means for writing a binary signal, including means for selectively impressing voltages of different levels respectively on said pair of digit lines according to the content of said binary signal and for selectively impressing at the same time on said word line a negative or positive polarity voltage of a level high enough to vary the hysteresis characteristics of said pair of MIOS transistors also according to the content of said binary signal; and

interrogation means for detecting an output from said readout line, including means for selectively impressing voltages of different levels respectively on said pair of digit lines according to the content of a binary signal to be interrogated and for impressing at the same time on said word line a voltage of intermediate value between the threshold voltages presented by said hysteresis characteristics varied by said writing means.

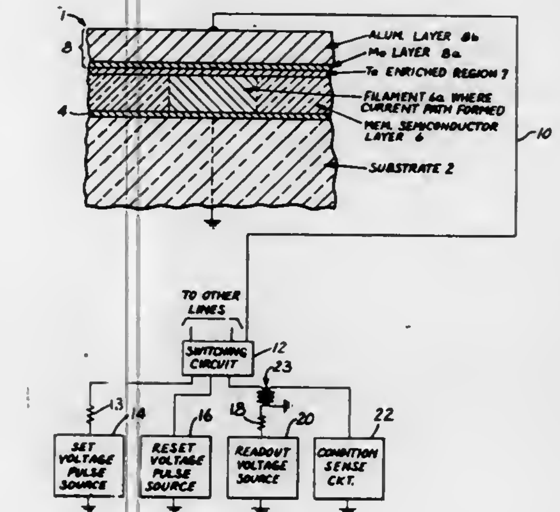
3,846,767
METHOD AND MEANS FOR RESETTING FILAMENT-FORMING MEMORY SEMICONDUCTOR DEVICE

Morrel H. Cohen, Chicago, Ill., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Oct. 24, 1973, Ser. No. 409,135

Int. Cl. G11c *13/00*

U.S. Cl. 340—173 R **9 Claims**



1. A method of resetting a filament-type memory device including spaced electrodes between which extend a body of generally amorphous substantially non-conductive memory semiconductor material which, when a set voltage pulse in excess of a given threshold voltage value and duration is applied to said electrodes, has formed therein a crystalline low resistance filamentous path resettable into a generally amorphous condition by application of one or more reset voltage pulses producing reset current pulses through said filamentous path which heat the same to a temperature which dissipates the crystalline filament and are of a duration which is so short that upon termination of each reset current pulse the filamentous path will be quickly quenched to leave at least portions of the filamentous path in a substantially amorphous condition, said method comprising: first applying to said electrodes one or more reset voltage pulses which produce a reset current pulse or pulses which substantially completely convert the crystalline filamentous path to a substantially amorphous filamentous path where the memory device has its maximum resistance and threshold voltage value, and then applying to said electrodes one or more additional reset voltage pulses each in excess of the maximum threshold voltage value of the memory device which additional voltage pulses cause an additional reset current pulse or pulses to flow through the high resistance filamentous path to homogenize the same and prevent crystallization from developing therein due to high ambient temperature storage of the memory device.

3,846,768
FIXED THRESHOLD VARIABLE THRESHOLD STORAGE DEVICE FOR USE IN A SEMICONDUCTOR STORAGE ARRAY

Paul J. Krick, Crugers, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,406

Int. Cl. G11c *11/40*

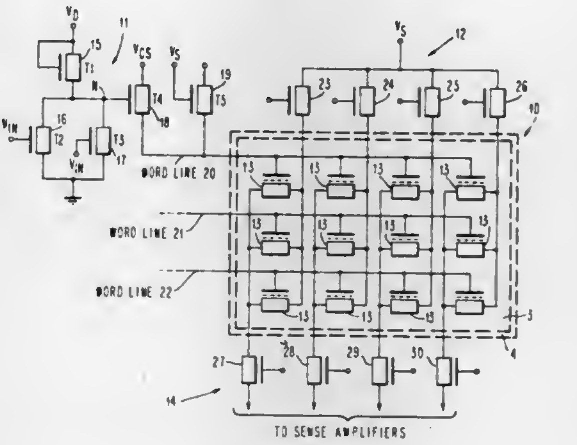
U.S. Cl. 340—173 R **25 Claims**

1. A composite information storage device comprising:

a semiconductor substrate of one conductivity type;

a pair of regions of opposite conductivity type disposed in said substrate defining a channel region therebetween;

a variable threshold device which includes a first portion of said channel region; and,



at least a fixed threshold device which includes a portion of said channel region different from said first portion.

3,846,769
MAGNETIC DATA STORAGE ARRANGEMENT HAVING SEQUENTIAL ADDRESSING OF ROWS

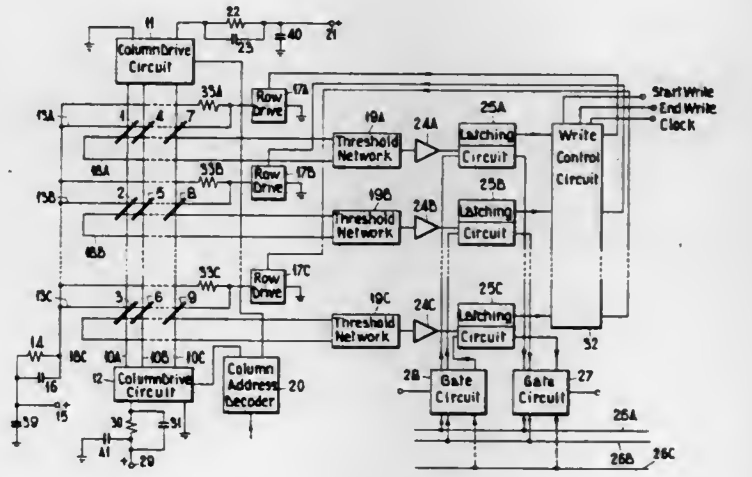
Graham Shepherd, Maidstone, England, assignor to Elliott Brothers (London) Limited, New Street, Chelmsford, England

Filed Jan. 12, 1973, Ser. No. 323,090

Claims priority, application Great Britain, Jan. 14, 1972, 1968/72

Int. Cl. G11c *7/00, 11/06*

U.S. Cl. 340—174 M **4 Claims**



1. A magnetic data storage arrangement comprising: a plurality of current operated bistable magnetic elements arranged in rows and columns; a set of column conductors each of which is inductively coupled with a respective column of said magnetic elements; a set of row conductors each of which is inductively coupled with a respective row of said magnetic elements; write means comprising first drive means for applying a first current of predetermined value to any selected column conductor, and second drive means for applying a second current of predetermined value to each in turn of any desired selection of row conductors whereby simultaneous first and second said currents can be applied in turn to a desired selection of elements in a selected column, thereby to operate said desired selection of elements into their second stable magnetic state and store a data word in said selected column; impedance means incorporated in said second drive means for defining the value of said second current for each row conductor, at least two row conductors sharing the same current defining impedance means; and read means for sens-

ing the stable states of all the elements in any selected column, thereby to read out the stored data word in that selected column.

3,846,770

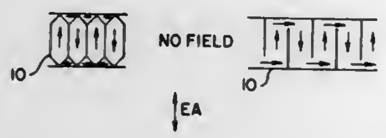
SERIAL ACCESS MEMORY USING MAGNETIC DOMAINS IN THIN FILM STRIPS

Leonard J. Schwee, Colesville, and Henry R. Irons, Adelphi, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 11, 1973, Ser. No. 378,296

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 FB **4 Claims**



1. A magnetic storage system comprising:
a polycrystalline thin film strip approximately 25 μm wide; means for placing reversal domains on said strip;
an easy axis field applied along the width of strip whereby several reversal domains collapse enabling the remaining reversal domains to be stable;
means producing a field for propagating said reversal domains along the hard axis; and
conductor means for sensing said reversal domains on said strip.

3,846,771

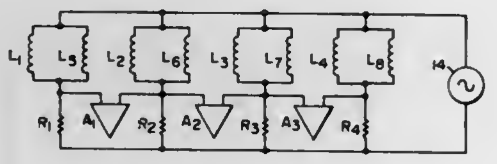
POSITION INDICATION SYSTEM

Frederick J. Young, Swissvale; Francis T. Thompson, Murrysville, and Dirk J. Boomgaard, Monroeville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 3, 1973, Ser. No. 320,776

Int. Cl. G08c *19/06*

U.S. Cl. 340—195 **11 Claims**



1. A position indication system for detecting the location of an elongated, longitudinally movable, metallic member having one degree of freedom along an axis corresponding to its longitudinal dimension comprising:
a plurality of discrete electrical coils wound around the circumferential periphery of the axis of movement of the movable member and arranged in tandem longitudinally therealong;
an alternating current source electrically coupled to each of said plurality of coils; and
means for respectively detecting a change in impedance within each of said plurality of coils as the movable member moves along its axis of movement, said detection means providing discrete outputs indicative of the location of the movable member relative to said tandem arrangement of discrete coils.

ERRATUM

For Class 340—199 see:
Patent No. 3,846,804

3,846,772

FIRE DETECTOR RESPONSIVE TO AMPLITUDE MODULATION OF A PULSED EM BEAM

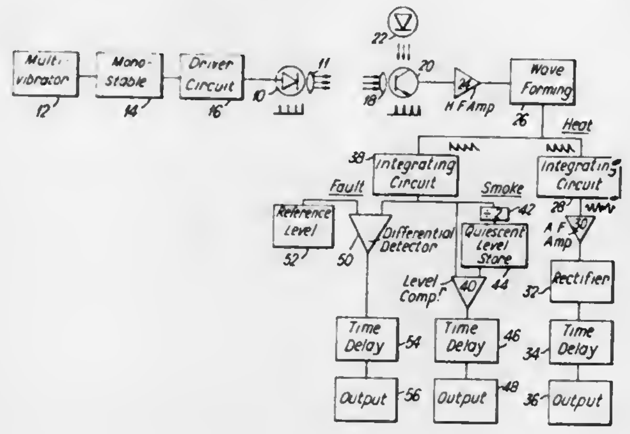
William T. Peberdy, Thatcham, England, assignor to Chubb Fire Security Limited, Middlesex, England

Filed Aug. 6, 1973, Ser. No. 385,708

Claims priority, application Great Britain, Aug. 11, 1972, 37633/72

Int. Cl. G08b *17/10, 17/12*

U.S. Cl. 340—227 R **9 Claims**



1. Fire-detecting apparatus comprising: a source of radiation including a solid-state emitter emitting a beam of radiation in a series of pulses; radiation-receiving means positioned to receive radiation which has passed through an intervening gaseous medium from the said source and including a device sensitive to the received radiation to produce a corresponding electric signal, the beam of radiation, where incident on the radiation-receiving means, overlapping the radiation-receiving means around the whole of its perimeter; a frequency-selective circuit for selecting from the output of the radiation-sensitive device a pulse signal resulting from the pulses of radiation from the said source; and an alarm circuit connected to receive this pulse signal and responsive to an amplitude modulation thereof indicative of the effect of a fire on the said intervening gaseous medium.

3,846,773

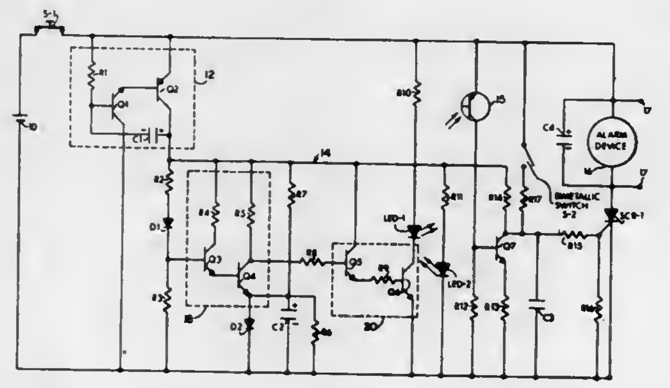
BATTERY OPERATED SURVEILLANCE DEVICE

Willy Lintelmann, Ayeres Point Rd., Old Saybrook, Conn. 06475, and Peter J. Frey, 1560 Asylum Ave., West Hartford, Conn. 06117

Filed Aug. 18, 1972, Ser. No. 281,947

Int. Cl. G08b *19/00, 17/10*

U.S. Cl. 340—237.5 **3 Claims**



1. A condition responsive alarm device for generating a warning signal upon the occurrence of a preselected degree of smoke density including:

continuously running oscillator means for generating timing pulses;
first light emitting means connected to receive said oscillator means timing pulses and to emit light pulses in accordance with said timing pulses;
light responsive means positioned to receive light pulses from said first light emitting means and to generate electrical signals commensurate in magnitude with the intensity of the received light signals pulses;
normally open switch means;
control means connected to said switch means and connected to receive said timing signals and said electric signals from said first light responsive means, said control means maintaining said switch means in the normally open condition in response to substantially simultaneous receipt of one of said timing signals and an electric signal of at least a preselected magnitude from said light responsive means, said control means activating said switch means to the closed condition upon substantially simultaneous receipt of a timing signal and an electric signal from said light responsive means having a magnitude less than said preselected magnitude; and
alarm means connected to said switch means, said alarm means being energized upon the activation of said switch means to the closed condition commensurate with the partial obscuration of the light responsive means by a preselected smoke density.

3,846,774

FLOW AND DIFFERENTIAL PRESSURE MONITOR

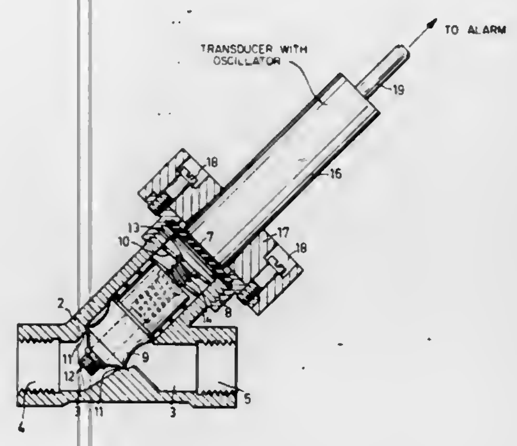
Hugo Adiel Thorbard, Huddinge, and Bjorn Anders Thorbard, Hagersten, both of Sweden, assignors to Elektriske AB Eletta, Huddinge, Sweden

Filed Feb. 6, 1973, Ser. No. 330,036

Claims priority, application Sweden, Feb. 11, 1972, 1662/72

Int. Cl. G08b *21/00*

U.S. Cl. 340—239 R **13 Claims**



1. A flow and differential pressure monitor for indicating fluid flow comprising a fluid flow channel and a signal generating indicating means, said signal generating indicating means comprising a movable element provided with a metal portion and located within the channel, means mounting said element for movement to different positions by the fluid flowing in said channel, and externally of the channel a transducer in which an oscillator is arranged to be actuated by the metal portion at a certain position of the movable element to switch from one state to another to produce a signal in response to actuation by said metal portion, said switching from one state to another being caused by generation of eddy currents in said metal portion, the channel having a wall portion located between the movable element and the transducer comprising an electric insulating material.

3,846,775

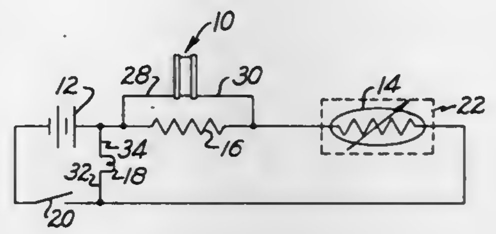
ELECTRO-OPTICAL DISPLAY APPARATUS FOR SIGNALLING WARNING OF PREDETERMINED CONDITION AMBIENT COMPENSATED

Henry David Epstein, Cambridge, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 6, 1972, Ser. No. 295,641

Int. Cl. G02f *1/16*

U.S. Cl. 340—244 R **13 Claims**



1. Automotive warning display apparatus comprising:
a sensor having a steeply sloped positive temperature coefficient of electrical resistance;
a housing having an open end;
an electrical resistance lamp element mounted within the housing having a portion adjacent the open end thereof; a display element received in and closing the open end of the housing and in heat transfer relation with the electrical resistance lamp element including:
a first optically transmissive substrate having an optically transmissive and electrically conductive coating on a face thereof,
a second substrate having an electrically conductive coating on a face thereof, the substrates being positioned such that the coatings are adjacent and substantially parallely spaced,
a liquid crystal composition occupying the space between the coatings on the substrates, the composition having a threshold voltage level at which an optical characteristic of the composition is changed; and voltage impressing means for impressing a voltage gradient between the coatings, the sensor being electrically coupled to the means for impressing a voltage gradient so that current is conducted through the sensor, the sensor normally operating in one of two temperature ranges, the resistance level of the sensor controlling the magnitude of the voltage gradient, the voltage impressing means including means to electrically energize the electrical resistance lamp element, heat from the lamp element being transferred to the display element to provide ambient temperature compensation.

3,846,776

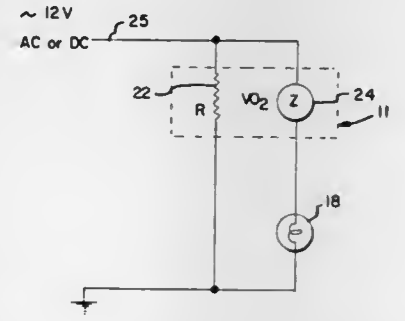
LIQUID LEVEL SENSOR

David Kahn, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 16, 1973, Ser. No. 351,715

Int. Cl. G08b *21/00*

U.S. Cl. 340—244 R **10 Claims**



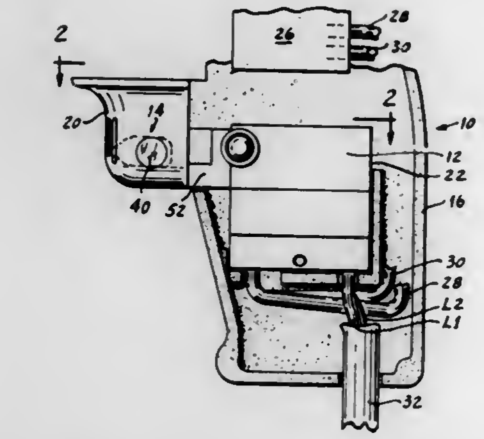
1. A device, adapted to be connected to a source of current, for detecting the presence or absence of a heat conducting

medium, said device comprising an electrical resistance element and a polyconductor having a predetermined transition temperature selected at a temperature above the temperature to which said heat conducting medium is normally subjected, said polyconductor being thermally connected to said resistance element and said resistance element having a predetermined resistance value selected to dissipate heat to said heat conducting medium at a temperature below the transition temperature of said polyconductor when surrounded by said heat conducting medium and to heat said polyconductor to a temperature above said transition temperature, in the absence of said heat conducting medium, whereby said polyconductor becomes conductive.

3,846,777
WARNING LIGHT FOR ELECTRICAL SWITCHES

Harry W. Brown, Big Bend, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Mar. 13, 1973, Ser. No. 340,930
Int. Cl. G08b *21/00*
U.S. Cl. 340—252 R **9 Claims**

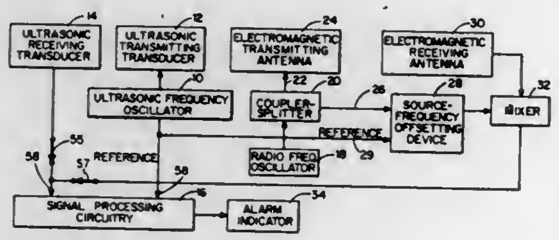


1. The combination in an electrical switch for mounting in the housing of an electric power tool and controlling the supply of electrical power to the driving motor thereof, of terminal means for attachment to a source of electrical power, a trigger actuator operable to initiate closing and opening power circuits to said driving motor, an electric lamp mounted in and movable with said trigger actuator, and resilient conductor means in circuit with said terminal means and said lamp for maintaining circuit therebetween in various positions of said actuator.

3,846,778
COMBINED ULTRASONIC AND ELECTROMAGNETIC INTRUSION ALARM SYSTEM

Aaron A. Galvin, Lexington, and L. Dennis Shapiro, Lincoln, both of Mass., assignors to Aerospace Research, Inc., Boston, Mass.

Filed June 21, 1973, Ser. No. 372,193
Int. Cl. G08b *13/16, 13/18*
U.S. Cl. 340—258 A **11 Claims**

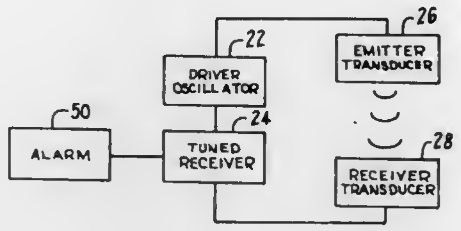

ULTRASONIC RECEIVING TRANSDUCER
14
ULTRASONIC TRANSMITTING TRANSDUCER
12
ELECTROMAGNETIC TRANSMITTING ANTENNA
24
ELECTROMAGNETIC RECEIVING ANTENNA
30
ULTRASONIC FREQUENCY OSCILLATOR
10
22
20
COUPLER-SPLITTER
26
SOURCE-FREQUENCY OFFSETTING DEVICE
28
MIXER
32
REFERENCE
29
RADIO FREQ. OSCILLATOR
18
55
56
57
REFERENCE
58
16
SIGNAL PROCESSING CIRCUITRY
ALARM INDICATOR
34

1. An intrusion alarm system comprising:
means for transmitting an electromagnetic signal of first frequency into a zone under surveillance;
means for transmitting an ultrasonic signal of second frequency into a zone under surveillance, said electromagnetic and ultrasonic signals being related in frequency to have substantially the same wavelengths in air;
means operative to receive electromagnetic signals returned from a surveillance zone and to provide a first electrical signal in response thereto;
means operative to receive ultrasonic signals returned from a surveillance zone and to provide a second electrical signal in response thereto;
frequency shifting means operative in response to at least one of said first and second electrical signals to provide electrical signals of a common frequency;
common signal processing means operative in response to said common frequency electrical signals to provide an output signal in the presence of a valid moving target and including means for establishing a threshold representative of the steadystate condition of the surveillance zones in the absence of a valid moving target; and
means operative to provide an alarm indication in response to exceedance of said threshold by said output signal.

3,846,779
ULTRASONIC TRANSDUCER

John G. Martner, Atherton, Calif., assignors to Charles E. Galloway, San Jose; Keith W. Gray, Sunnyvale and Leatrice J. Carr, East Palo Alton, all of Calif.

Filed Aug. 28, 1972, Ser. No. 284,344
Int. Cl. G08b *13/16*
U.S. Cl. 340—258 B **3 Claims**



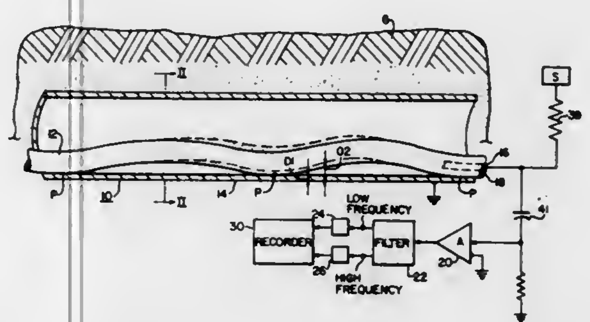
1. In an alarm device for dectecting variations in ultrasonic signals and activating an alarm,
a transducer for transmitting or receiving ultrasonic signals is an air environment comprising a piezoelectric element coupled to a thin flat plate which is substantially larger than said piezoelectric element and which has a periphery maintained substantially free and unsupported during operation, said piezoelectric element having a resonant frequency at which it is excitable and said flat plate having a resonant frequency when coupled to said element substantially equal to the resonant frequency of the piezoelectric element.

3,846,780
INTRUSION DETECTION SYSTEM

Heinz Gilcher, Export, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 24, 1973, Ser. No. 382,264
Int. Cl. G08b *13/16*
U.S. Cl. 340—261 **11 Claims**

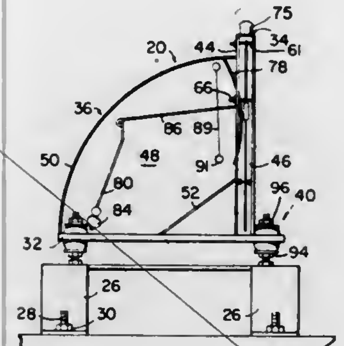
1. Apparatus for monitoring disturbances caused by mechanical shock, pressure, impact, etc., comprising in combination, a substantially rigid first electrically conductive member adapted to respond to disturbances, a second electrically conductive member disposed in a loose fitting, intermittent contacting relationship with said first electrically conductive member and being mechanically free to move with respect to said first electrically conductive member, electrical insulating material disposed between said first and second electrically conductive members to establish a capacitance therebetween, disturbance of said substantially rigid first electrically conductive member resulting in mechanical displacement of said second electrically conductive member with respect to said first electrically conductive member, the displacement producing a change in said capacitance.



3,846,781
SLOPE INDICATOR AND ROLL-OVER WARNING INDICATOR FOR EARTHMOVING EQUIPMENT

Lawrence S. Smith, Box 155, Wellington, Nev. 89444

Filed Jan. 10, 1973, Ser. No. 322,437
Int. Cl. G08b *21/00*
U.S. Cl. 340—267 R **13 Claims**

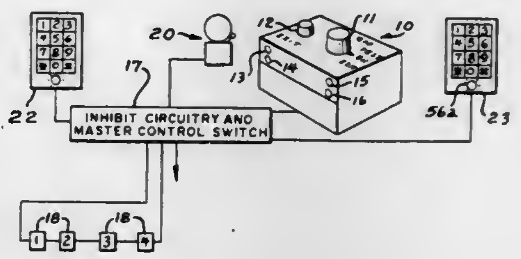


1. A slope indicator for mounting on earthmoving equipment to indicate the slope on which the equipment is working, said slope indicator comprising, a double walled, hollow housing having a front plate with sideslope measurement markings located along a lower part of the plate, said plate being transparent in at least the portion having said sideslope measurement markings, mounting means for mounting the housing on earthmoving equipment, pendulum means mounted for swinging movement within the interior of the housing, said pendulum means including a pendulum and a pointer for indicating the marking corresponding to the sideslope on which the earthmoving equipment is working, said pendulum means including pivot means connecting the top of the pendulum behind the front plate to a top part of the plate whereby the sideslope is continuously indicated by the pointer behind the measurement markings of the front plate, a viscous fluid within the housing for dampening movement of the pendulum, leveling means for leveling the slope indicator on the earthmoving equipment, and including cushioning means in the leveling means for absorbing a substantial part of the earthmoving equipment vibration while letting some of the vibration through to prevent sticking of the pendulum within the double walled housing.

3,846,782
DETECTION SYSTEM FOR PROTECTED AREA WITH KEYBOARD INHIBITOR FOR RE-ENTRY

Robert S. Brodsky, 7605 New Castle Dr., Annandale, Va. 22003

Filed Jan. 31, 1973, Ser. No. 328,451
Int. Cl. G08b *13/08*
U.S. Cl. 340—274 **10 Claims**

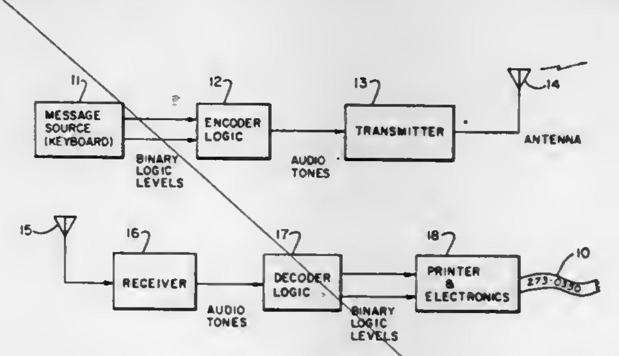


1. A detection system for a protected area comprising: a plurality of sensing elements, connected in circuit, each operatively associated with an access to said area for detecting an unauthorized breach of said area, master switch means adapted to be enabled or inhibited and responsive to said sensing elements only when enabled for generating an output signal when one of said elements indicated an alarm condition in said area; a manual selection switch, selectively settable to one of a SURVEILLANCE position and an EXIT position; said master switch means being enabled when said manual switch is set to said SURVEILLANCE state; a keyboard having a plurality of switches including unlock switches accessible external to said protected area; inhibit circuit means responsive to the actuation of predetermined unlock switches of said keyboard switches when said manual switch is set in said EXIT position for inhibiting said master switch means whereby an authorized re-entry may be made into said protected area without generating said output signal; and EXIT switch means located within said protected area for de-activating said inhibit circuit means when it is desired to leave said protected area without sounding an alarm; and reset circuit means responsive to at least one of said keyboard switches other than said unlock switches for re-activating said inhibit circuit means after a person has left said protected area, whereby said system is left in an active state but capable of being inhibited when said keyboard unlock switches are actuated in proper combination.

3,846,783
REMOTE PAGING WITH MESSAGE STORAGE

Sheldon P. Apsell, Nahant; Olof C. Johnson, Jr., Chelmsford, and Robert W. Whitney, Burlington, all of Mass., assignors to Eikonix Corporation, Burlington, Mass.

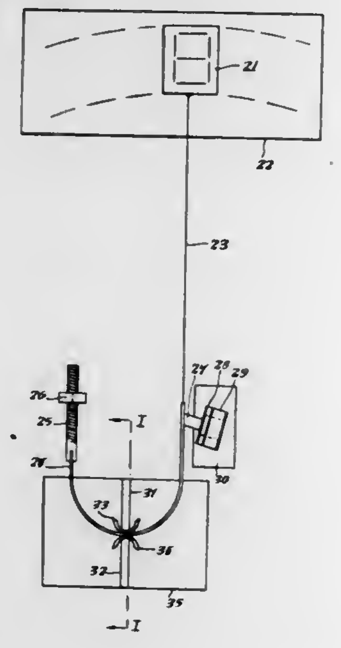
Filed Mar. 12, 1973, Ser. No. 340,225
Int. Cl. H04m *11/02*
U.S. Cl. 340—311 **25 Claims**



1. A personal paging system comprising,
a source of digital message signals at a first location,
a source of digital address signals at said first location identifying a recipient of a message,

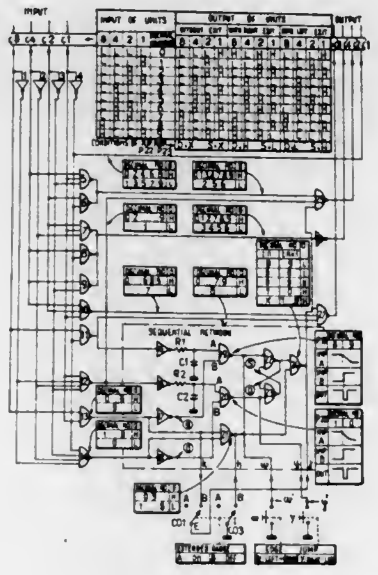
means for characterizing said digital address and message signals as a sequence of audio tones,
means for transmitting said tones upon a radio frequency carrier with the address signal tones preceding the message signal tones,
a personally transportable receiving system including means for receiving said radio frequency carrier and detecting said tones at a second location remote from said first location,
input register means for receiving the detected tones and for storing each digital address word and message word one-by-one as the words are received,
address decoding means coupled to said input register means for providing an identity signal when the input register means then stores an address word identifying that receiving system for receiving the message carried by the digital message words immediately following,
message decoding means coupled to said input register means for decoding each digital message word as it is stored in said input register means when enabled,
means responsive to said identity signal for enabling said message decoding means to provide a sequence of decoded digital message word signals representative of said message,
means for storing said decoded digital message signals and reproducing them in visible form identifiable as alphanumeric characters,
a source of an end of message signal in digital form at said first location,
means for transmitting said end of message signal after said message signals,
and means coupled to said input register means responsive to said end-of-message signal for disabling said message decoding means.

3,846,784
ELECTRONIC DIGITAL DISPLAYS
Clive Marles Sinclair, 18 Newton Rd., Cambridge, England
Filed May 7, 1973, Ser. No. 357,719
Claims priority, application Great Britain, May 22, 1972, 23893/72
Int. Cl. G09f *9/32*
U.S. Cl. 340—336 **11 Claims**



1. A digital display apparatus for displaying a plurality of alphanumeric characters including: a single electronic display unit having a plurality of individual segments which can be separately illuminated; an arm carrying the electronic display unit at one end thereof; means for mounting said arm so that the end of the arm carrying the display unit can be made to reciprocate through a given arc of a circle; means defining a plurality of spaced positions along the arc of the circle at which the required sequence of alphanumeric characters can be displayed from the single display unit; display unit reciprocating means energized at a given frequency to cause a given periodicity of reciprocation to the end of the arm carrying the display unit; means for energizing the appropriate individual segments of the display unit at precise moments as the unit passes each of the spaced positions during each reciprocation, said display unit energizing means being synchronized with the reciprocation of the arm so that the positions of display are identical from one reciprocation to the next, whereby a series of alphanumeric characters are continuously visible due to persistance of vision.

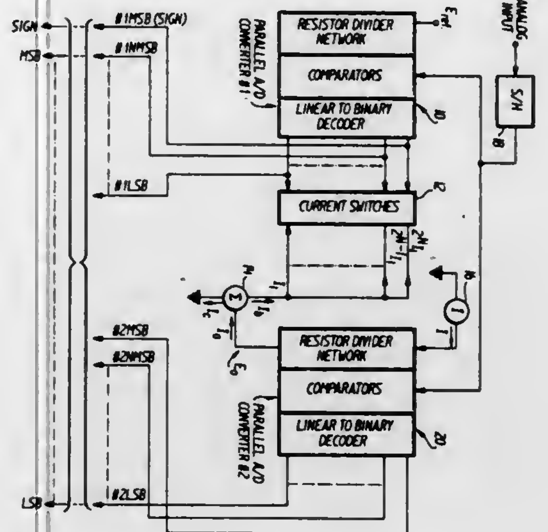
3,846,785
PROCESS AND APPARATUS FOR EXTENDING THE RANGE OF A DIGITAL TO ANALOG CONVERTER TO BE USED WITH A STRIP RECORDER
Armando Rossi, Corso Giambone 68, Turin, Italy
Filed Aug. 21, 1972, Ser. No. 282,458
Claims priority, application Italy, Nov. 24, 1971, 70843/71
Int. Cl. H03k *13/243;* **G01d** *9/02*
U.S. Cl. 340—347 DA **8 Claims**



1. In a recording system comprising a digital to analog converter which receives binary coded decimal (BCD) signals representing a quantity being measured and applies one decimal digit of the quantity to a strip recorder which utilizes a recording medium having a decimal amplitude scale, the process for extending the amplitude range of the strip recorder by adding zones to the ends of the scale, comprising the steps of:

a. encoding the BCD signals into a further code having an amplitude range greater than the BCD range;
b. detecting the BCD value of zero in the digit being recorded;
c. detecting the direction of change of the quantity being measured;
d. encoding a BCD zero from the digit into a number in said further code whose amplitude is greater than the encoded value of BCD 9, when the quantity is increasing in value, and encoding a BCD zero from the digit into a number in said further code whose amplitude is less than the encoded value of BCD 1, when the quantity is decreasing in value; and
e. providing a scale transition signal for the digit being recorded at a value increasing from BCD zero when the quantity is increasing, and providing a scale transition signal for the digit being recorded at a value decreasing from BCD zero when the quantity is decreasing.

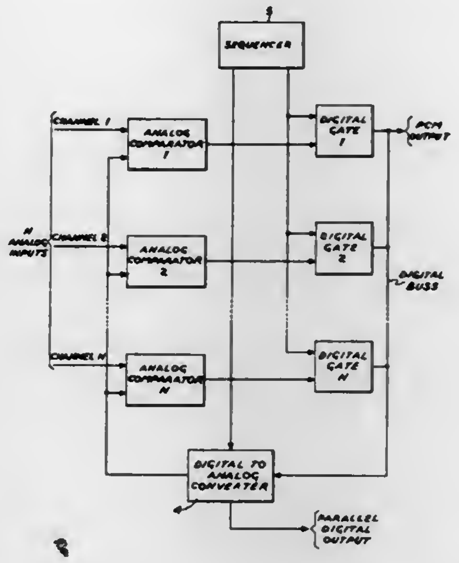
3,846,786
HIGH SPEED PARALLEL-CASCADED ANALOG TO DIGITAL CONNECTOR
James H. Brown, Severna Park; James E. Buchanan, Bowie, and Steven Morrison, Randallstown, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 10, 1973, Ser. No. 322,350
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **11 Claims**



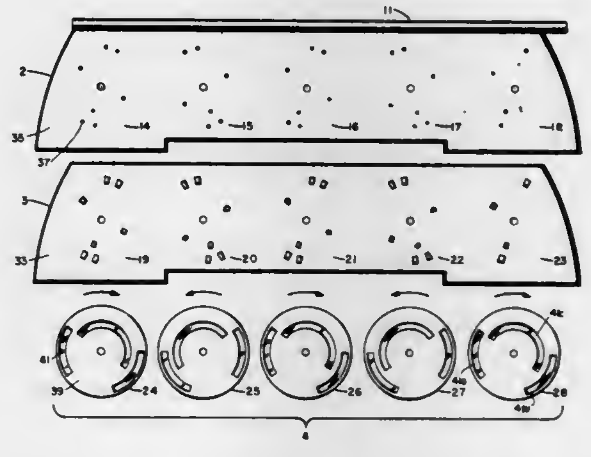
1. A parallel-cascaded analog to digital converter for converting an analog input signal to a 2N bit digital output signal, comprising:
a first parallel analog to digital converter receiving and converting the analog input signal to a first N bit digital output signal comprising the more significant bits of the 2N bit digital output signal,
a summer,
a constant current source,
a second parallel analog to digital converter receiving and converting the analog input signal to a second N bit digital output signal comprising the lesser significant bits of the 2N bit digital output signal,
said second analog to digital converter including reference voltage level establishing means connected in circuit with said summer means and energized by said constant current source for establishing a range of reference voltage levels.
current switching means connected in circuit with said summer and responsive to the first N bit output signal to control the current flow in said summer for selectively establishing voltages of predetermined levels across said summer said voltages of predetermined levels, respectively corresponding to the bit values of the first N bit output signal, and correspondingly selectively varying the range of reference voltage levels established by said reference voltage establishing means.

3,846,787
TIME DIVISION MULTIPLEXER EMPLOYING DIGITAL GATES AND A DIGITAL-TO-ANALOG CONVERTER
Clayborne E. Myers, Oviedo, and Arthur E. Vreeland, Eau Gallie, both of Fla., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Aug. 17, 1972, Ser. No. 281,602
Int. Cl. H03k *13/20*
U.S. Cl. 340—347 AD **3 Claims**

1. An improved multi-channel time division multiplexer for multiplexing a plurality of analog signals and generating a PCM output and a parallel digital output, comprising:
a digital-to-analog converter having an input, an analog output and a plurality of parallel digital outputs;
a plurality of analog comparators, one in each channel, having first and second inputs, said first input coupled to a different one of said plurality of analog signals and said second input coupled to the analog output of said digital-to-analog converter, and having a bistable output which assumes a first state if said analog signal is greater than said digital-to-analog converter analog output and a second state if said analog signal is less than said digital-to-analog converter analog output;
a plurality of digital gates, one in each channel, having first and second inputs and an output, said first input coupled to the output of said analog comparator in the same channel and said output coupled to the outputs of the remaining digital gates, for forming said multiplexer PCM output and said digital-to-analog converter input; and
a sequencer control unit having a first plurality and second plurality of outputs each of said first plurality consisting of pulses at channel rate, coupled to said second input of one of said plurality of digital gates, and said second plurality, consisting of pulses at bit rate, coupled to said digital-to-analog converter, whereby the voltage of each of said analog signals is converted into an n-bit binary number according to the half-split approximation process.



3,846,788
POLYDECADE DECIMAL TO DIGITAL ENCODER
Salvatore R. Calabro, Belleville, N.J.; John A. Calabro, Forest Hills, N.Y., and Peter R. Mick, East Orange, N.J., assignors to Automated Technology Corporation, Hackensack, N.J.
Continuation-in-part of Ser. No. 128,237, March 26, 1971, abandoned. This application Dec. 12, 1972, Ser. No. 314,391
Int. Cl. G08c *9/06*
U.S. Cl. 340—347 P **8 Claims**



1. A converter for encoding the decimal digits represented by the successive stages of a multi-stage meter into binary coded form, each stage of said meter including a rotatable shaft which is angularly displaceable on a 10:1 ratio with

respect to the higher adjacent shaft to record decimal readings of measurements effected by said meter, said converter comprising:

means establishing a plurality of point light sources;

a plurality of point light sensors in one-to-one optical path registration with said point light sources;

a plurality of encoding wheels, one each of said wheels being mounted for rotation upon each of the said shafts of stages of said meter said shafts being intergeared in a 10:1 ratio, the plane of said wheels intercepting the light path between said sources and sensors in registration therewith, and said wheels being provided with slots extending along circular tracks on said wheels, whereby groups of said sensors are illuminated in accordance with the angular position of said wheels to provide signal outputs from said illuminated sensors; at least four said light sensors being associated with each of said encoding wheels, said sensors being spatially distributed with respect to said slots such that a distinctive four-bit digitally encoded output may be provided for each of the ten angular positions about said wheel corresponding to decimal readings from 1 to 10, the group of said sensors associated with each of said wheels numerically exceeding the number necessary to provide said four-bit output defining said angular positions and including paired sensors in lead-lag arrangement; and

decoder logic means connected to receive the outputs from two groups of sensors and provide said four-bit digital output signals each group in binary excess three code representative of the said angular positions of said wheels in accordance with the said enabled outputs from said sensors, said decoder logic including means to generate an ADVANCE/RETARD command signal in accordance with the sensor output readings derived from the said wheel associated with the least significant digit (LSD) of said meter, and said apparatus including means for selecting one or the other of said two groups of four bit signals the outputs from four among each said group of sensors, minimizing the possibility of ambiguous readings at said higher decade.

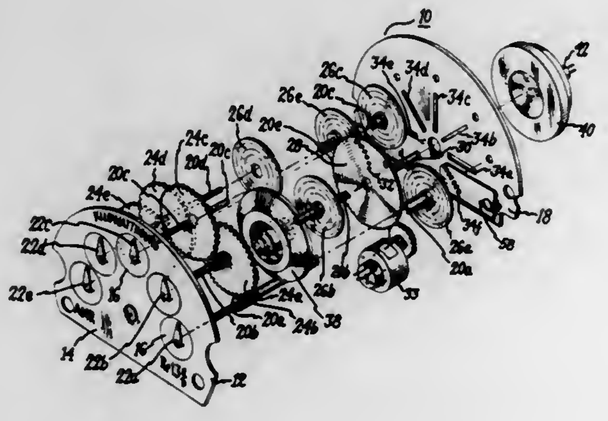
3,846,789
REMOTE-READING REGISTER WITH ERROR DETECTING CAPABILITY

Warren R. Germer, Rochester, and Ansell W. Palmer, Hampton, both of N.H., assignors to General Electric Company, Pittsfield, Mass.

Filed Apr. 6, 1973, Ser. No. 348,513

Int. Cl. G08c *9/06*

U.S. Cl. 340—347 P **3 Claims**



1. A meter register of the type comprising at least two indicator shafts rotatably coupled to one another in a fixed ratio number of relative rotation greater than one, wherein the improvement comprises means for generating an electrical code representative of the angular position of each of said shafts to an approximate resolution of at least twice said ratio number, said means comprising:

a six bit binary code angular position indicator rigidly attached to each of said shafts, said position indicators being optical gray code encoding discs having at least six rings of optical encoding modulations at different radial locations and providing an actual resolution of about one in 30 angular positions for each of said shafts, said shafts being mutually parallel and having their ends arranged in an arc on a backplate of said register;

a single rotating scan disc comprising a series of radially spaced, angularly staggered, graded arc scan slots for scanning said encoding discs; and

a series of elongated reading slots arranged in an arc configuration on said backplate, each one of said reading slots being along a line perpendicular to and intersecting one of said shafts.

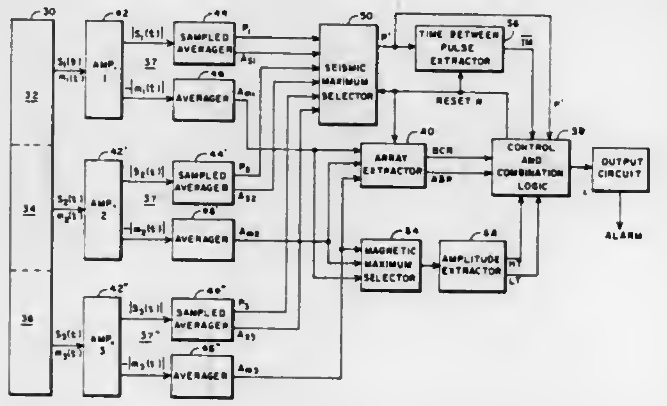
3,846,790
INTRUSION DETECTION SYSTEMS

David P. Erdmann, Hopkins, and Dennis L. Kurschner, Minnetonka, both of Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed June 8, 1973, Ser. No. 368,162

Int. Cl. G08b *13/24*

U.S. Cl. 340—258 D **12 Claims**



1. Intrusion detection apparatus for processing a plurality of sensor signals, each of which is indicative of the level of magnetic disturbances in a distinct segment of a predetermined segmented boundary, comprising:

averaging means for receiving said sensor signals, and producing a plurality of output signals which are the time averages thereof;

array extractor means connected to receive said output signals from said averaging means and responsive thereto to compare the relative amplitudes of the signals received with one another, said array extractor means generating an inhibit signal if the relative amplitudes are within a predetermined range;

threshold detection means, responsive to said averaged sensor signals for detecting when one of said averaged sensor signals exceeds a predetermined threshold amplitude, and upon such detection generating an activate signal; and

alarm control logic, associated with said threshold detection means and said array extractor means, and operable to produce an alarm actuation signal at times when said activate signal is generated by said threshold detection means and said inhibit signal is not being generated by said array extractor means.

3,846,791
SOLID STATE KEYBOARD

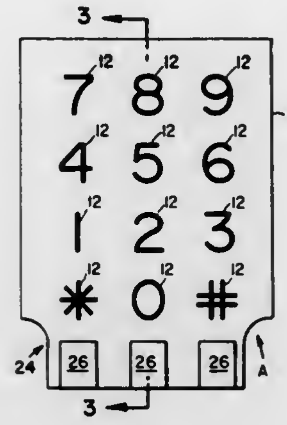
Richard C. Foster, 11750 Eight Mile Rd., Stockton, Calif. 95207

Filed Oct. 2, 1972, Ser. No. 294,038

Int. Cl. H04l *15/06*

U.S. Cl. 340—365 C **9 Claims**

1. A solid state keyboard comprising a plurality of conductive terminals, signal source means for generating a high frequency signal, coupling impedance means connected to each of said terminals for applying said signal to said terminals and sensing means for each of said terminals for sensing a reduction in signal level at the output of said coupling impedance means, the product of the frequency of said signal and the impedance of said coupling impedance means being from about 2×10^9 Hertz-ohms to about 50×10^9 Hertz-ohms so that conductive contact of the operator's finger on said terminal is required to reduce the signal level sufficiently to actuate said sensing means.



3,846,792
ELECTRIC SOUND-PRODUCING DEVICE

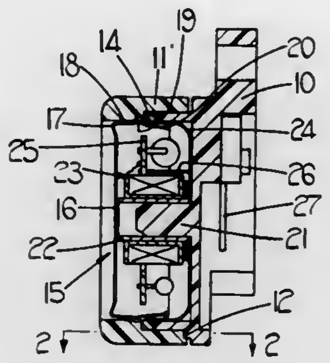
Richard Wolliscroft Haigh, Harborough Bank, Shelsley Beauchamp, England

Filed Nov. 5, 1971, Ser. No. 196,032

Claims priority, application Great Britain, Nov. 7, 1970, 53087/70; Apr. 20, 1971, 10310/71

Int. Cl. G08b *3/10*

U.S. Cl. 340—384 E **24 Claims**



1. An electrical sound-producing device comprising a resilient diaphragm of ferromagnetic material having a substantially flat portion, an electromagnet including a tubular core having one end adjacent said flat portion of the diaphragm and spaced therefrom by an air gap, the other end thereof being mounted on a spigot, whereby said diaphragm is deformed when current is supplied to said electromagnet, and an oscillator for repeatedly supplying current in short duration pulses to said electromagnet.

3,846,793
OPEN CIRCUIT AND GROUND DETECTOR FOR FIRE AND BURGLAR ALARM SYSTEM

Charles W. Cook, Huntsville, Ala., assignor to Avco Corporation, Huntsville, Ala.

Filed Apr. 30, 1973, Ser. No. 355,963

Int. Cl. G08b *19/00*

U.S. Cl. 340—409 **5 Claims**

1. The combination of first and second transistors each having a base and an emitter and a collector,

a source of bias currents,

third and fourth transistors each having a base and an emitter and a collector,

a first conductive path between the base and emitter of the first transistor,

a second conductive path between the base and emitter of the second transistor,

the collector-emitter circuits of the four transistors being connected in parallel, and

means, including a first resistor between ground and the emitters of the first and third transistors and a second resistor between ground and the emitters of the second and fourth transistors, for biasing the four transistors so that, in response to an open on either of said conductive paths one of the first and second transistors becomes conductive and so that in response to a ground on either of said paths one of said resistors is short-circuited and one of the third and fourth transistors becomes conductive,

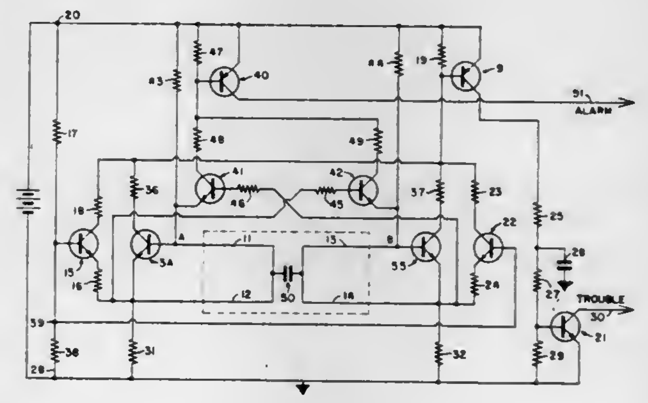
a trouble-indicating network coupled to the collectors of all of said transistors and responsive to collector current in any of the first, second, third or fourth transistors to indicate a fault in one of said conductive paths,

normally open switch contacts between said conductive paths,

fifth and sixth transistors each having a base and an emitter and a collector, the emitters of the fifth and sixth transistors being connected to the bases of the first and second transistors, respectively, the bases of the fifth and sixth transistors being coupled to the emitters of the second and first transistors, respectively, and the collectors of the fifth and sixth transistors being connected in parallel,

an alarm indicator in series with the collectors of said fifth and sixth transistors and responsive to the absence of collector currents in both of the fifth and sixth transistors to provide an alarm, and

means for completing the biasing on said fifth and sixth transistors so that the sixth transistor conducts in the absence of any open or ground in either path.



3,846,794
ALARM RETRANSMISSION SYSTEM

Tom W. Le Nay, Encino, and Donald L. Hadden, Fountain Valley, both of Calif., assignors to Baker Industries Inc., Parsippany, N.J.

Filed Mar. 15, 1973, Ser. No. 341,541

Int. Cl. G08b *19/00*

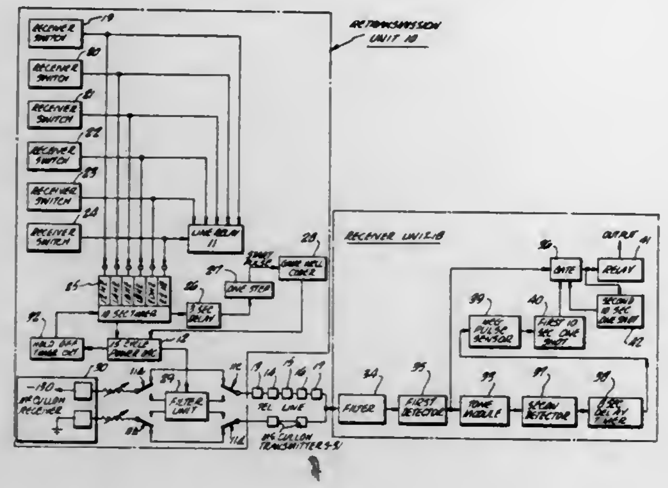
U.S. Cl. 340—415 **11 Claims**

1. An alarm retransmission system for use in a McCulloh circuit for presignaling a selected receiver unit by a first signal and subsequently providing additional data by a second signal to the selected receiver unit comprising:

first means for transmitting a basic signal at a preselected frequency in response to an alarm event;

a command unit electrically connected to said first means capable of modulating the basic signal at a plurality of predetermined frequencies thereby forming a first signal; a coder unit electrically connected to said first means capable of modulating the basic signal in a code thereby forming a second signal, said code being indicative of the origin of the alarm event;

a plurality of receiver units, each of said receiver units being connected in series in a single circuit, each of said receiver units being adapted to receive the first signal and the second signal;



a tone module electrically connected in each of said receiver units, each of said tone modules having a different frequency range corresponding to a predetermined frequency output of said command unit; and

a gate unit for receiving the additional data, electrically coupled with each of said tone modules in each of said receiver units and activated in response to the second signal within a predetermined time after the appropriate first signal has been received by said appropriate receiver unit, said appropriate receiver unit including said tone module of the corresponding frequency range as the preselected frequency of said command unit.

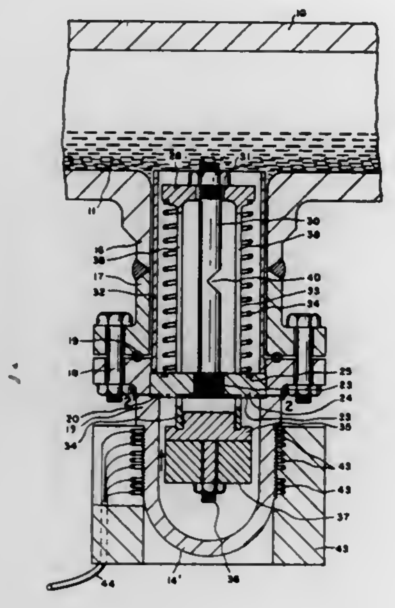
3,846,795
EARLY WARNING MATERIAL FAILURE INDICATOR

Cecil Roy Jones, Orange, Conn., assignor to Transfer Systems Incorporated, North Haven, Conn.

Filed Nov. 3, 1972, Ser. No. 303,549

Int. Cl. G08b *21/00*

U.S. Cl. 340—421 **13 Claims**



1. Apparatus for providing an early warning indication of impending failure of a structural element subjected to a corrosive environment, comprising a corrodible member, means for exposing said corrodible member to the corrosive environment, means for stressing said corrodible member including means for applying to said corrodible member a tensile stress such as to cause movement of the stressing means upon failure of the corrodible member, the amount of stress applied to said corrodible member being such as to cause failure by corrosion of the corrodible member before failure of the structural element, a magnetic member coupled to the corrodible member and adapted to move upon failure of the corrodible member, and means in response to failure of the corrodible member to provide an indication of said failure, said failure responsive means including electromagnetic means magnetically coupled to the magnetic member for detecting movement thereof causing a change in the magnetic coupling.

3,846,796
OPERATING METHOD AND SYSTEM FOR PREDICTING COLLISION

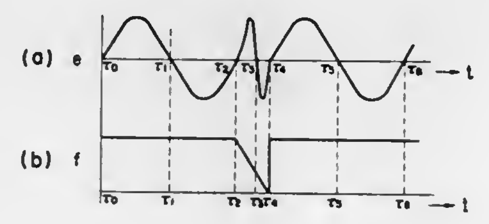
Kazuo Oishi, Oobu; Toshiaki Kato, Nishio; Takeshi Matsui, Kariya; Matatoyo Hinachi, Nagoya, and Takashi Yamada, Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio-shi, Aichi-ken, Japan

Filed Jan. 15, 1973, Ser. No. 323,395

Claims priority, application Japan, Jan. 17, 1972, 47-6736

Int. Cl. G01s *9/24, 9/46*

U.S. Cl. 343—7.5 **5 Claims**



1. An operating method for predicting collision comprising the steps of:

transmitting the first wave to a target,

receiving said first wave reflected by said target, obtaining a second wave of frequency corresponding to the frequency of said first wave,

causing said second wave to interfere with said reflected wave to produce a first beat wave by Doppler effect,

changing the frequencies of said first and second waves at the occurance of a specified phase angle of said first beat wave, and

detecting at least either one of the polarity and the amount of change of phase of a second beat wave which is generated similarly as said first beat wave according to the frequency variation.

3,846,797
FORWARD AREA ALERTING SENSOR NETTING SYSTEM

James E. Brown, Somerville; Andrew B. Woods, Decatur, both of Ala., and Howard S. Kliger, Altamonte Springs, Fla., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

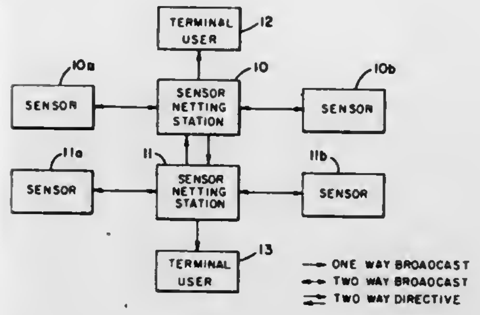
Filed Sept. 25, 1972, Ser. No. 292,199

Int. Cl. G01s *9/00*

U.S. Cl. 343—6 R **5 Claims**

1. A forward area alerting sensor netting system including a plurality of sensor netting stations; a plurality of sensors, with at least one of said sensors linked to each of said sensor netting stations; and a plurality of terminal users; and means in said stations for broadcasting information for said users; wherein said sensor netting stations are linked to respective

sensors by first communication means including a first receiver and a first transmitter and are linked to said terminal users by second communications means including a second receiver and a second transmitter; and identification handling means having inputs connected to said first and second receivers and having a friend output and two foe outputs; target buffer means, connected between one of said foe outputs and said second transmitter, the other foe output also connected to said second transmitter, and said friend output connected to said first transmitter; wherein each of said sensors includes data pick-off means; first and second adder means each having an output and first and second inputs; parallax correcting means connected to the first input of each of said adders; said data pick-off means connected to the second input of said first adder; means for transmitting to said first receiver of said first communication means; means for receiving from said first transmitter of said first communication means; said output of said first adder connected to said means for transmitting; the output of said means for receiving connected to said second input of said second adder; friend indicating means; said output of said second adder connected to said friend indicating means.



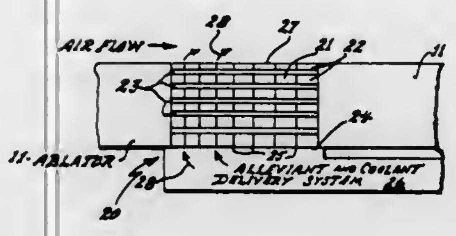
3,846,798
INTEGRATED WINDOW, ANTENNA, AND WAVEGUIDE WITH PLASMA ALLEVIATION

James R. Carl, Bridgeton, Mo., assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Aug. 12, 1968, Ser. No. 752,082

Int. Cl. H01q *1/28*

U.S. Cl. 343—705 **10 Claims**



1. An electromagnetic wave transmitting and receiving structure, comprising:

a. an antenna;

b. an electromagnetic wave permeable window which includes:

(1). a plurality of alternating bonded layers; and

(2). a plurality of hollow channels, essentially parallel to each other and extending throughout said window.

c. means for supporting said electromagnetic wave permeable window within said antenna; and

d. a waveguide affixed to said antenna.

3,846,799
ELECTRONICALLY STEP-BY-STEP ROTATED DIRECTIVE RADIATION BEAM ANTENNA

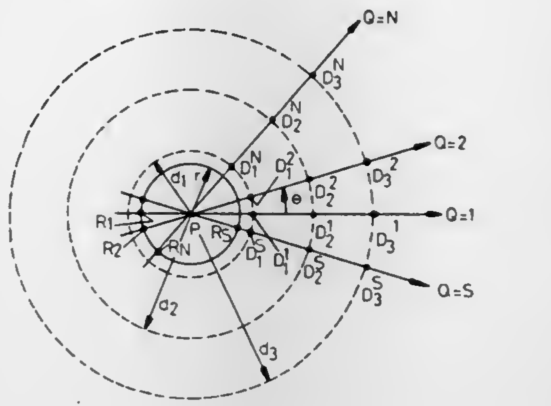
Michel Gueguen, Maurepas, France, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 13, 1973, Ser. No. 387,837

Claims priority, application France, Aug. 16, 1972, 72.29274

Int. Cl. H01q *19/00*

U.S. Cl. 343—833 **2 Claims**



1. A directive radiation beam antenna of the type wherein said beam is rotated angularly in a step-by-step fashion comprising:

a plurality of S identical Yagi-type arrays having a common driven element, each of said plurality comprising:

one reflector parasitic element; and

a plurality p of director parasitic elements D_k where 1 *k* *p*;

wherein the array angularly ranked Q is derived from the array Q-1 by rotating it by an angle $\theta = 360°/S$ around the axis of said common driven element;

a ground plane comprising a circular metal ground plate having a common axis with said common driven element, the $S(1+p)$ parasitic elements having a height of approximately *l*/4 and arranged perpendicular to said ground plate;

a source of a bias signal;

a source of RF energy mounted between the base of said common driven element and said ground plate for feeding said common driven element;

a plurality of unidirectional current conducting elements each coupled to said ground plate, said source of bias signal and one of the $S(1+p)$ parasitic elements, the impedance of each of said unidirectional elements being dependent upon said bias signal; and

a logic control device for controlling the step-by-step radiation beam rotation, said control device comprising:

an S-stage shift register having a clock frequency equivalent to S/τ, τ being the time duration required for a 360° beam rotation; and

a plurality of pS three input OR-gates, each having outputs connected to the bias input of each unidirectional current conducting element associated with a director element, each of the S shift register outputs being provided with $(1+3p)$ connections, the first coupled from the Qth stage to the bias input of the unidirectional element associated with the director element angularly ranked Q, *p* second ones coupled from the Qth stage output to the input of each of the OR-gates having outputs which control unidirectional elements associated with director elements angularly ranked Q, *p* third ones coupled from Qth stage output to the inputs of each of the *p* OR-gates whose outputs control the unidirectional elements associated with director elements of arrays angularly ranked $(Q+M_k)$ or $(Q+M_k-S)$ if $(Q+M_k)$ is greater than S, and *p* fourth ones coupled from the Qth stage to the input of each of the OR-gates whose outputs control unidirectional elements associated with director elements of arrays angularly ranked $(Q-M_k)$ or $(Q-M_k+S)$ if $(Q-M_k)$ is less than 0, where the k values of M_k are independent of Q and are determined by the polar coordinates of the closest director elements D_k of generatrices of a cylinder having a parabolic cross-section having as a focus the base of the driven element and having as an apex the base of the reflector element of the associated array.

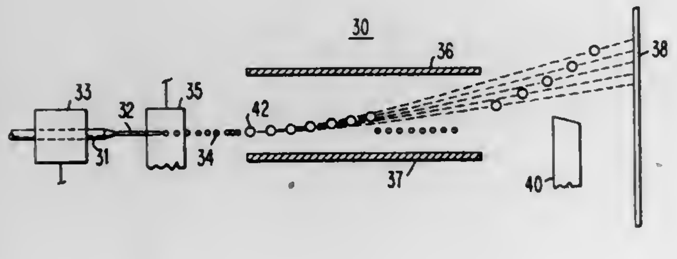
3,846,800
INK JET RECORDING METHOD AND APPARATUS

Winston H. Chen, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 3, 1973, Ser. No. 403,149

Int. Cl. G01d *15/18*

U.S. Cl. 346—1 **7 Claims**



1. In a method of printing on a document wherein ink is supplied to a nozzle under pressure and varicosities are produced in the ink stream to cause the stream to break up into uniformly sized and spaced drops in the region of a charging electrode which is energized to charge selected ones of said drops for causing them to deflect while passing through an electric field, the improvement which comprises;

energizing said charging electrode with signal voltages of one polarity at spaced time intervals to charge spaced ink drops to deflect them onto said document in a predetermined pattern, and energizing said charging electrode at intervening time intervals with a base voltage of the opposite polarity and sufficient value to cause selected ones of said signal voltage charged drops to merge in flight before being deflected to print on said document.

3,846,801
METHOD AND APPARATUS FOR ELECTROGRAPHIC DRAWING

Hans-Christoph DuMont, Malmsheim; Rainer Strohwald, and Helmut Reum, both of Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 21, 1973, Ser. No. 343,397

Claims priority, application Germany, Mar. 30, 1972, 2215519

Int. Cl. G01d *15/06*

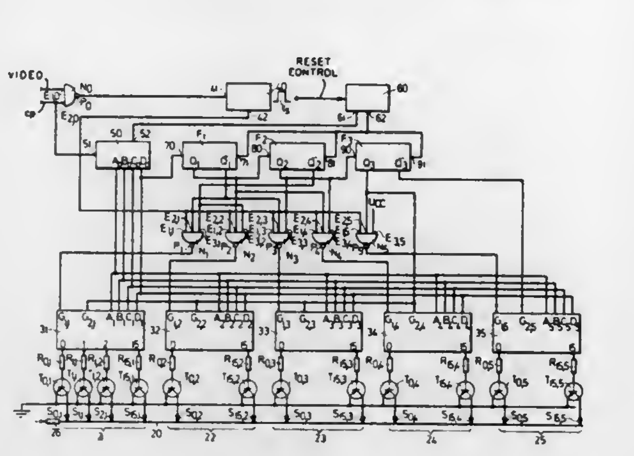
U.S. Cl. 346—74 E **11 Claims**

1. The method of visually recording electrical information by means of a multiplicity of writing electrodes, arranged in a substantially linear array and electrically insulated from each other, on electrosensitive sheet material, which method comprises the steps of:

preparing information to be recorded in sequential form;

gating said information at intervals to produce a sequence of pulses having a predetermined duration less than the shortest time required to produce local burnout on said sheet material therefrom, and

connecting individual electrodes of said array in succession, for time intervals longer than the duration of said pulses to a circuit supplying said sequence of pulses,



thereby energizing those electrodes so connected when one of said pulses is present and then only for the duration of said respective pulses.

3,846,802
SELF RENEWING STYLUS STRUCTURE

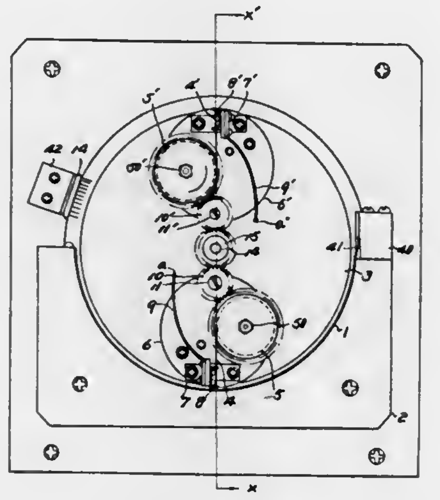
Hirosi Kyotani, Osaka; Yositaka Murono, Tenri, and Katuhiko Siojima, Nara-Ken, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 18, 1973, Ser. No. 361,582

Claims priority, application Japan, May 19, 1972, 47-51382; Feb. 8, 1973, 48-15901; Feb. 14, 1973, 48-18132; Feb. 16, 1973, 48-19530

Int. Cl. G01d *15/06, 15/20*

U.S. Cl. 346—74 E **12 Claims**



1. A recorder comprising:

a record member on which a desired pattern is to be reproduced;

a recording electrode stylus means wound in a spiral configuration with a tendency to enlarge and unwind said configuration in response to a revolution torque;

a rotatably mounted disc means;

means for rotating said disc means at a given velocity during a recording operation;

reel means for accommodation of said spirally wound electrode stylus, said reel means being rotatably secured on an axis on said disc means; and

stylus protrusion means coupled to said reel means for imparting to the stylus means, a revolution torque of a selected value which tends to enlarge and unwind said spiral configuration and cause a tip portion of said stylus to protrude from said reel means toward a recording position on said record member.

3,846,803
DISTANCE MEASURING INSTRUMENT FOR MOTOR VEHICLES

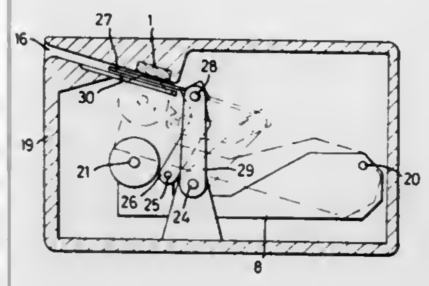
Lennart Borgstrom, Svangsta, Sweden, assignor to Recard Taxameter AB, Halmstad, Sweden

Filed June 21, 1973, Ser. No. 372,493

Claims priority, application Sweden, June 28, 1972, 8507/72; June 28, 1972, 8508/72

Int. Cl. G01c *22/00*

U.S. Cl. 346—95 **8 Claims**



1. A distance measuring instrument for motor vehicles by which the distance covered by the vehicle is printed by symbols, preferably figures, on a card, comprising a casing having a slit into which a card is insertable, an ink containing means adjacent the slit, an accummulating counting mechanism within the casing, means for moving said counting mechanism from a protected non-operative position remote from the slit to an operating position adjacent the slit for coaction with the ink containing means for stamping the accummulated value on the card inserted in the slit, said means for moving said accumulating counting mechanism comprising a frame, an axle serving simultaneously as a torsion spring about which said frame is rotatably supported, control means for manual actuation of the stamping of the card inserted into the slit, and a locking pawl retaining the frame for the counting mechanism in protected non-operative position until the control means is actuated to release the locking pawl, characterized in that said slit is provided with an opening through which the counting mechanism coacts with the ink containing means during stamping, a curtain covering the opening in the non-operative position of the counting mechanism and means connecting the curtain with the counting mechanism so that the curtain exposes the opening immediately prior to stamping and returns to the position covering the opening immediately after stamping.

3,846,804
FORCE BALANCE INSTRUMENT WITH OVERLOAD RELEASE MECHANISM

Jack Mort White, Chili, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed June 24, 1971, Ser. No. 156,392

Int. Cl. G08c *19/08*

U.S. Cl. 340—199 **6 Claims**

1. A force balance instrument including:

a first motor, a second motor and a linkage, said linkage having a first lever and a second lever connecting said linkage to said first motor and to said second motor, respectively;

said first motor being responsive to a first condition for first deflection of said first lever with respect to ground in proportion to the magnitude of said first condition;

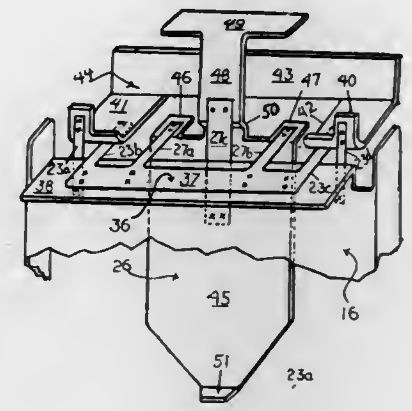
said second motor being responsive to a second condition for second deflection of said second lever with respect to ground in proportion to the magnitude of said second condition;

said linkage being responsive to said first deflection and to said second deflection to respectively convert them into a first force and a second force acting on said second lever so as to urge said second lever to deflect in opposing senses about a first given axis;

there being control means for causing the magnitude of said second condition to be of such value that said forces create equal and opposite moments about said first given axis, whereby the magnitude of said second condition is a measure of the magnitude of said first condition;

said second lever having as part therof;

a third lever, said second and third levers being flexure-



pivoted together for relative deflection about a second given axis;

flexible, inextensible means integrally fixed to both said second and third levers for limiting said relative deflection when of one sense, while providing for said relative deflection when of a sense opposite said one sense;

spring means interconnecting said levers for urging said relative deflection to be in said one sense and for resisting relative deflection in the other said sense;

and one of said second and third levers being flexure-pivoted to ground for defining said first given axis.

3,846,805
EXPOSURE CONTROL CIRCUIT STRUCTURE

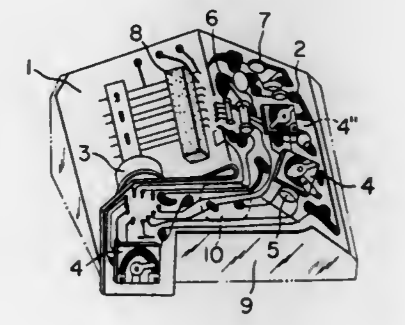
Takehiko Kiyohara, Zama, and Tetsuya Taguchi, Kawasaki, both of Japan, assignors to Canon Kabashiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1974, Ser. No. 435,774

Claims priority, application Japan, Feb. 6, 1973, 48-15016

Int. Cl. G03b *13/02, 17/12*

U.S. Cl. 354—23 **5 Claims**



1. An exposure control circuit structure for a photographic camera comprising a flexible print substrate, an electric circuit printed on said substrate, and at least one photoelectric element provided on said substrate and connected to said electric circuit, said print substrate being disposed on and along non-functional faces of an optical element in the viewfinder's optical system of the camera.

3,846,806

AUTOMATIC FLASH DEVICE FOR A PHOTOGRAPHIC CAMERA

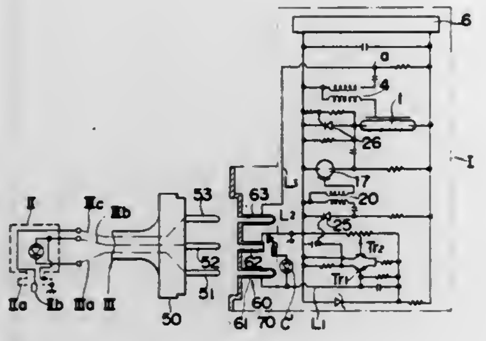
Kotaro Yata, and Motonobu Matsuda, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 26, 1973, Ser. No. 427,858

Claims priority, application Japan, Dec. 30, 1972, 48-126; Feb. 8, 1973, 48-16970

Int. Cl. G03b *15/05*

U.S. Cl. 354—31 7 Claims



1. An automatic flash device for use in association with a photographic camera having a shutter synchronized switch, which comprises:
  - a flash housing structure accommodating therein a flash circuit which comprises means including a flash capacitor and a flash tube for selectively artificially illuminating a subject to be photographed through said flash tube upon discharge of voltage stored on said flash capacitor, said discharge of voltage occurring upon closure of said shutter synchronized switch in the photographic camera, a light measuring circuit means responsive to an incident pulse of reflected light energy originating from said flash tube to produce an electrical signal indicative of the amount of said reflected light energy, a triggering circuit means responsive to said electrical signal from said light measuring circuit means to produce a trigger pulse and a switch circuit means responsive to the trigger pulse for terminating the flash illumination; and
  - a sensor housing structure having a mounting shoe of substantially inverted T-shape for connection with the camera and accommodating therein a photo cell which forms a part of said light measuring circuit means, said sensor housing structure being separate of said flash housing structure and adapted to be coupled to the camera through said mounting shoe to complete a circuit for said shutter synchronized switch and said photo cell.

3,846,807

AUTOMATIC EXPOSURE CONTROL DEVICE FOR PHOTOGRAPHIC CAMERAS

Jiro Sekine, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

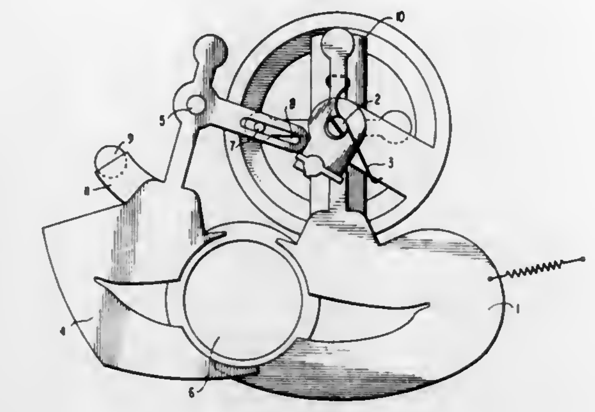
Filed Feb. 14, 1974, Ser. No. 442,554

Claims priority, application Japan, Feb. 14, 1973, 48-18629

Int. Cl. G03b *9/02*

U.S. Cl. 354—42 7 Claims

1. An automatic exposure control device for a camera for controlling a diaphragm in accordance with the illumination of an object to be photographed comprising
  - a photoreceptor which receives light from said object and generates an output current in proportion to the amount of light received,
  - at least one movable diaphragm control blade moved in accordance with the output current from said photoreceptor for controlling the aperture size, and
  - light intercepting means associated with said diaphragm control blade for reducing the amount of light received by said photoreceptor when said blade approaches the fully opened aperture position.



3,846,808

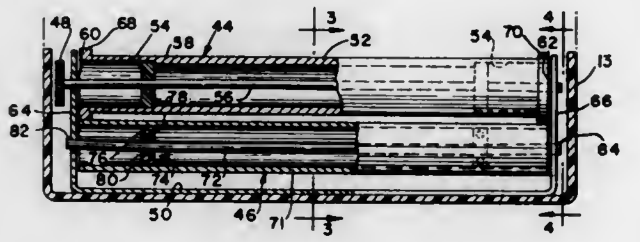
PROCESSOR ASSEMBLY

James M. Whall, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 2, 1974, Ser. No. 429,898

Int. Cl. G03b *17/50*

U.S. Cl. 354—86 23 Claims



1. In a self-developing camera of the type in which an exposed film unit is processed by passage thereof between a pair of oppositely biased spreader surfaces, the improvement comprising:
  - a pair of rollers each including a tubular roller shell, a flexible shaft extending through said shell and means for mounting said shells on said shafts respectively; and
  - means for supporting said shafts in coplanar relationship to establish a working nip between said roller shells and to flex said shafts to bow about said mounting means, thereby to hold said roller shells yieldably one against the other at said nip under the elastic restoration force of said flexed shafts.

3,846,809

REFLECTORS AND MOUNTS FOR PANORAMIC OPTICAL SYSTEMS

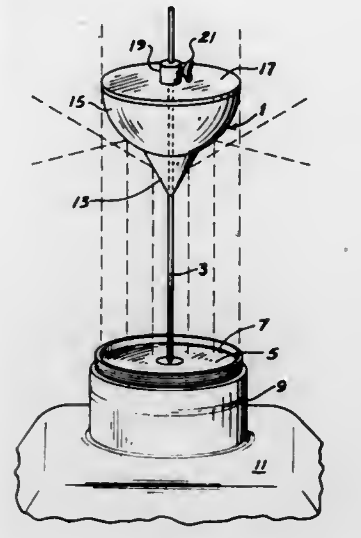
Joseph A. Pinzone, 829 Bushwick Ave., Brooklyn, N.Y. 11221; Gerald J. Troje, 1719 Centre St., Ridgewood, N.Y. 11227, and Edward L. Schiavone, 10502 Insley St., Silver Spring, Md. 20902

Filed Oct. 18, 1973, Ser. No. 407,588

Int. Cl. G03b *37/00*

U.S. Cl. 354—95 8 Claims

1. In an optical system for recording panoramic images with a photographic camera having a lens mounted within a lens barrel the combination comprising
  - a reflector containing a surface of revolution,
    - the axis of said surface of revolution being concentric with the viewing axis of said camera, and
    - said surface of revolution being so oriented with respect to said camera lens as to reflect a view of the panorama along said camera axis,
  - means for mounting said reflector in spaced position in front of the lens of said camera,



  - said means for mounting comprising at least one transparent stem member having one end adapted for connection to the lens barrel of the camera and the other end adapted to support said reflector,
  - whereby said camera can record a panoramic image

3,846,810

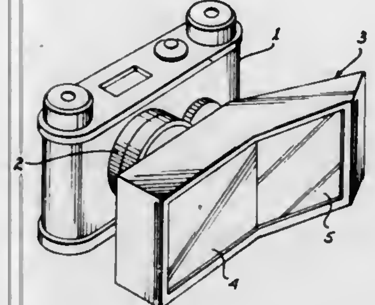
APPARATUS FOR STEROSCOPIC PHOTOGRAPHY

James Ernest Ihms, 1569 W. Hazelwood, Phoenix, Ariz. 85015

Filed July 2, 1973, Ser. No. 375,335

Int. Cl. G03b *35/12*

U.S. Cl. 354—117 2 Claims



1. Apparatus for forming a composite image of a given object upon an image recording medium by simultaneously combining a first white light image of the object with a second white light image of the object where said first and second images are angularly displaced from one another, said apparatus comprising:
  - a. a light reflecting element for reflecting said first image along a light path to intersect the light path of said second image;
  - b. a light transmissive element disposed at the intersection of said reflected first image and said second image;
  - c. said transmissive element including a dichroic mirror having a first planar surface set at an angle with respect to the light path of said first reflected image for receiving the totality of said first reflected image and a second planar surface parallel to said first planar surface and set at an angle with respect to the light path of said second image for receiving the totality of said second reflected image such that said first reflected image and said second image enter said transmissive element at opposite sides thereof, said further reflected portions of said reflected first image in combination with said non-reflected portions of said second image forming said composite image;
  - d. filter means for altering the content of only one of said first and second white light images; and
  - e. said image recording medium being disposed in the path of said composite image; whereby, said recorded composite image includes said simultaneously received first and second images, each of said first and second images having a full spectrum of color content and portraying two different views of the same object.

3,846,811

FLASH UNIT FOR USE WITH CAMERA

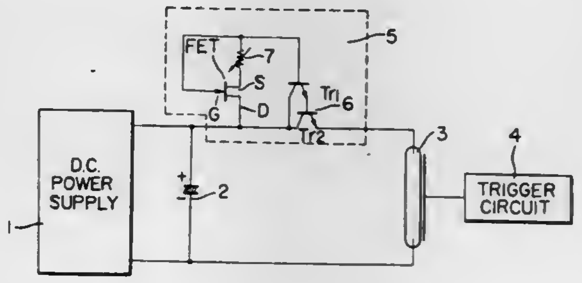
Zenzo Nakamura, Urawa; Takashi Uchiyama, Yokohama; Tetsuya Taguchi, Kawasaki, and Yukio Mashimo, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1973, Ser. No. 344,467

Claims priority, application Japan, Mar. 29, 1972, 47-31343; Apr. 20, 1972, 47-39957

Int. Cl. H05b *41/38*

U.S. Cl. 354—145 14 Claims



1. A flash unit for cameras comprising
  - a. a DC power supply for supplying a high DC voltage,
  - b. at least one flash lamp provided with an auxiliary or trigger electrode arranged in circuit for application of a trigger pulse thereto and an anode and a cathode arranged in circuit for application of a discharge current thereto, and
  - c. a constant current circuit means interconnected in series between said DC power supply and said at least one flash lamp for maintaining the current supplied from said DC power supply to said at least one flash lamp at a constant level for a period of time after application of a triggering pulse as aforesaid.

3,846,812

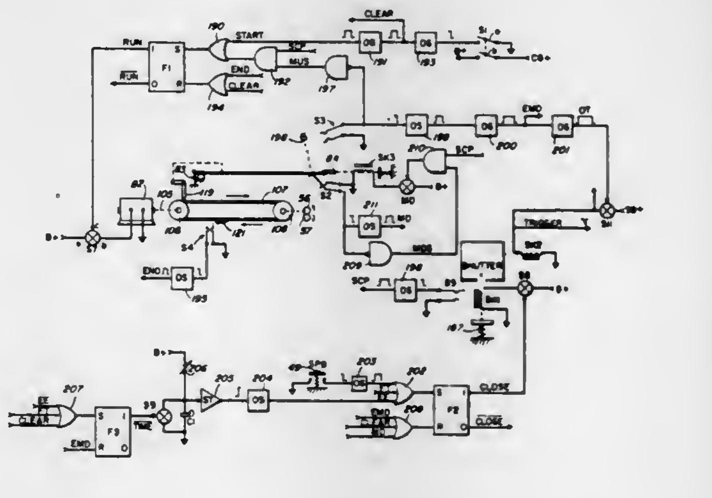
AUTOMATIC ELECTRONIC FLASH CAMERA

Conrad H. Biber, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 20, 1973, Ser. No. 426,966

Int. Cl. G03b *15/05, 17/52, 1/12*

U.S. Cl. 354—145 13 Claims



1. In combination with a camera having an electric film transport motor; an electronic flash unit, said flash unit com-

prising a storage capacitor, means responsive to an applied voltage for charging said capacitor, a gas discharge tube, and circuit means responsive to an applied trigger signal for discharging said capacitor through said discharge tube to produce an illuminating flash of light; a pair of terminals adapted to be connected to a source of voltage; first switching means operable to first and second states, circuit means closed by said first switching means in its first state for connecting said terminals to said film transport motor to operate said motor when said terminals are connected to a source; second switching means operable to first and second states, circuit means closed by said second switching means in its first state for connecting said terminals to said capacitor charging means, means effective when said first switching means is in its second state for setting said second switching means to its first state, and means responsive to the discharge of said capacitor through said tube for setting said second switching means to its second state.

3,846,813

CAMERA WITH FILM CARTRIDGE

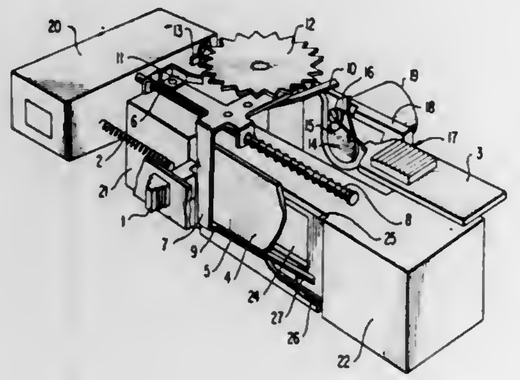
Shigeru Oshima, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 24, 1973, Ser. No. 409,118

Claims priority, application Japan, Oct. 25, 1972, 47-106972

Int. Cl. G03b *17/42, 1/22*

U.S. Cl. 354—213 **5 Claims**



1. A photographic camera adapted to receive a film cartridge in which a film having one perforation per frame is loaded comprising;

a rail stationarily provided in the camera extending parallel to the film feed direction,

a lever with a claw slidably and rotatably mounted on said rail,

said lever with said claw being slidable between a film feed start position and a shutter release position and normally urged toward the start position, said lever with said claw being swingable between an engaging position where said claw is engaged with a perforation of the film and a release position where said claw is released from said perforation of said film and urged toward said engaging position,

a film feed lever which is engagable with said lever with said claw to slide said lever with said claw toward said shutter release position, said film feed lever being urged in a direction opposite to the film feed direction,

a claw holding means which holds said claw in a position where said lever with said claw is in said shutter release position and in said engaging position overcoming the force urging said lever toward said start position,

a shutter blade provided behind the taking lens of the camera and urged to the closed position,

a shutter release member provided on said lever with said claw which opens said shutter blade when said lever with said claw moves from said shutter release position to said start position, and

a shutter button movable up and down and urged to move upward and provided above said shutter release position of said lever with said claw so that said shutter button may be engaged with said lever with said claw and swing said lever with said claw from said engaging position to said release position when said shutter button is depressed,

whereby said lever with said claw is slid back to said start position when the lever with said claw is swung to said release position and releases said shutter on the way back to said start position.

3,846,814

ELECTRICAL EXPOSURE CONTROL DEVICE FOR PHOTOGRAPHIC CAMERAS

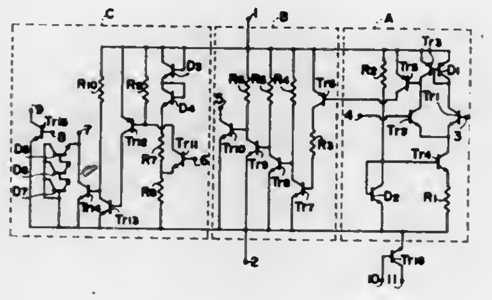
Koutaro Yata, and Masayoshi Sahara, both of Osaka-fu, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Continuation of Ser. No. 230,294, Feb. 29, 1972, abandoned. This application July 23, 1973, Ser. No. 381,393

Claims priority, application Japan, Mar. 6, 1971, 46-11593; Apr. 10, 1971, 46-26599

Int. Cl. G03b *7/08*

U.S. Cl. 354—226 **9 Claims**



1. A universal circuit module adaptable for automatic exposure control of different types of camera shutter mechanisms, comprising:

a pair of common terminals for connection to a power source;

first switching means connected to said common terminals and comprising:

first and second input terminals and a first output terminal adapted to receive a load, means for generating a signal in response to an input signal between said first and second input terminals, and means responsive to said signal for supplying electrical energy to said first output terminal with said load connected thereto; said circuit module further comprising:

second switching means comprising:

semiconductor switch means having a third input terminal adapted to at least be connected to said first ouput terminal, and a second output terminal adapted to receive a second load, said semiconductor switch means providing electrical energy to said second output terminal with said second load connected thereto;

a third output terminal;

means for supplying electrical energy to a third output terminal adapted to receive a third laod and adapted to be responsive to the actuation of said semiconductor switch means; and said circuit module further comprising: biasing means connected to said common terminals and having a third output terminal for biasing said semiconductor switch means whereby said semiconductor switch means may be actuated when the voltage at said third input terminal is one-half of the voltage of said power source.

3,846,815

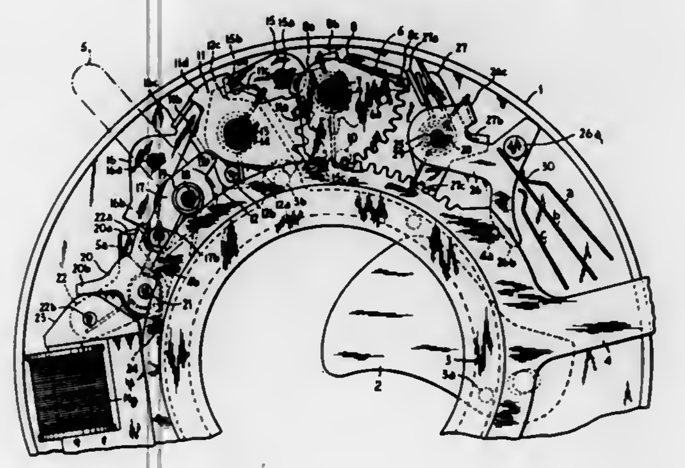
POWER SWITCH CONTROL IN ELECTRIC SHUTTER

Kiyoshi Kitai, Tokyo; Yukio Nakamura, Chiba; Hiroaki Ishida, Chiba, and Shinji Nagaoka, Chiba, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 28, 1974, Ser. No. 437,182

Int. Cl. G03b *9/08*

U.S. Cl. 354—234 **2 Claims**



1. An electric shutter comprising, a plurality of shutter blades operable from a closed position to an open position and back to the closed position, means for opening and closing the shutter blades, an exposure time control circuit for controlling closing of the shutter blades having a power source, an electromagnet and a power switch operable to a closed position for placing the power source in circuit for energizing the electromagnet and an open position, means to de-energize the electromagnet when an exposure time terminates, a switch lever for operating the power switch to said closed position, a switch interlocking lever engaged with the switch lever and coaxial therewith for operating the switch to an open position and returning the switch lever to a position of readiness for closing the power switch, and travelling means controlled by said means to open and close the shutter blades travelling ahead of the opening of the shutter blades to actuate said switch lever to said closed position to energize said electromagnet and travelling ahead of the closing of the shutter blades to actuate said switch interlocking lever to open said power switch.

3,846,816

PRINTING PLATE PROCESSOR AND MEANS FOR OPENING AND CLOSING THE SAME

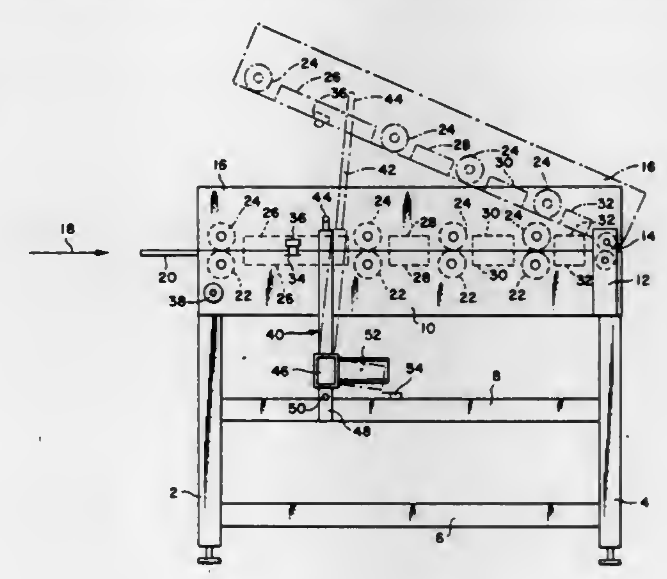
Eugene J. Gaisser, Sparta, N.J., assignor to American Hoechst Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 191,192, Oct. 21, 1974, abandoned. This application Apr. 10, 1973, Ser. No. 349,736

Int. Cl. G03b *17/56*

U.S. Cl. 354—307 **10 Claims**

1. A printing plate processor for a plate coated and imaged on both sides or a pair of plates, in back-to-back relation, coated and imaged on one side only and wherein said plate travels through said processor along a straight line path, comprising a fixed lower section and a pivotal upper section, pivotally mounted on said lower section adjacent one end thereof; said upper section and said lower section being separated along a plane coincident with the path of travel of said plate through said processor; a pair of feed roller means, a pair of discharge roller means and a pair of processing means adapted to contact both sides of said plate and subject said both sides of said plate to identical mechanical action; one each of said pairs of feed means, discharge means and processing means being mounted in said lower section and the other of said pairs being mounted in said upper section; and extension jack means, having one end thereof attached to said lower section and the other end thereof attached to said upper section, to lower and raise said upper section, maintain proper



alignment between said sections during opening and closing and apply a predetermined pressure to said plate when said processor is closed and said plate is being processed.

3,846,817

APPARATUS FOR CONVEYING SYNTHETIC RESIN-MADE ARTICLES IN THE SHEET FORM

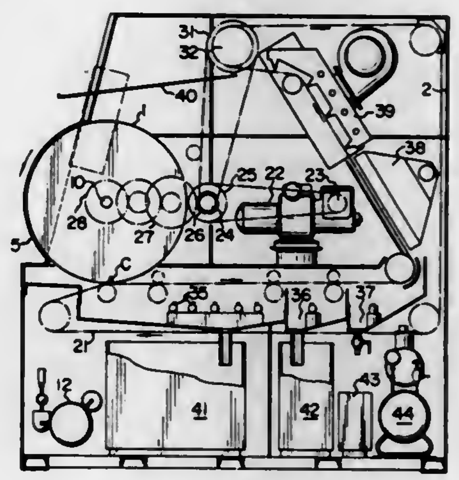
Takao Yamada, Kawasaki, and Kiyoshi Sunakawa, Yamato, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka and Toshiba Machine Co., Ltd., Tokyo, both of, Japan

Filed Aug. 31, 1973, Ser. No. 393,366

Claims priority, application Japan, Sept. 4, 1972, 47-88462

Int. Cl. G03d *3/08*

U.S. Cl. 354—319 **2 Claims**



1. An apparatus for conveying synthetic resin-made articles in the sheet form, comprising

a rotatably supported drum provided at the peripheral surface with vacuum suction apertures for retaining a synthetic resin-made, sheet-like article on said surface and also provided at the periphery of the end portions with annular grooves, and

a pair of endless chains continuously movable through a transferring position under and near the end portions of said drum at a predetermined speed and having needle-like projections thereon at a predetermined spacing, which projections are capable of insertion through said sheet-like article at both the edges into said grooves of the drum while terminating the vacuum suction during the passage of said article through the transferring position whereby said article is transferred from said drum to said chains, said drum being started to rotate at a peripheral speed equal to the travelling speed of said chains when one of the projections contacts a limit switch disposed at a predetermined position to close it prior to the arrival of the forward end of said article at the transferring position and, on the other hand, the rotation of said drum being automatically discontinued when the rear end of said article is passed through the transferring position.

3,846,818
APPARATUS FOR DEVELOPING PHOTOGRAPHIC MATERIALS

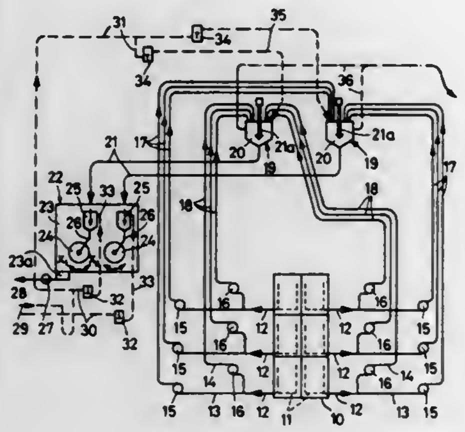
Werner Merz, Napoleonweg 3, D-7011 Oberelchingen, Germany

Filed Feb. 12, 1973, Ser. No. 331,986

Claims priority, application Germany, Feb. 16, 1972, 2207137

Int. Cl. G03d *3/02*

U.S. Cl. 354—324 **28 Claims**



1. In an apparatus for developing photographic materials, particularly color films, a combination comprising a film developing unit; a source of developer; supplying means for supplying metered quantities of developer from said source to said unit; selecting means operatively associated with said supplying means for selecting the magnitude of said metered quantities; sensing means for sensing the developer content in said supplying means and for controlling operation of said supplying means in dependence upon the sensed content and within the magnitude selected by said selecting means; and signal-generating means for generating a control signal for controlling the inflow of medium into said unit in response to the contents of said unit exceeding a predetermined level, and for also generating a warning signal at least substantially simultaneously with said control signal.

3,846,819
METHOD FOR RECORDING TWO SEPARATE SIGNALS

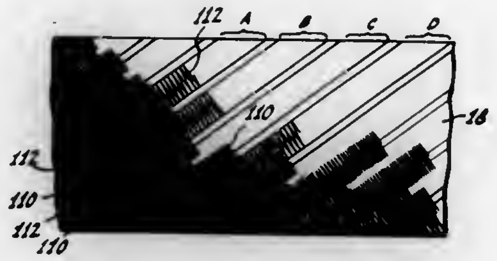
Henry Ray Warren, Indianapolis, Ind., assignor to RCA Corporation, New Yok, N.Y.

Division of Ser. No. 778,912, Nov. 1, 1968, Pat. No. 3,542,946, which is a continuation-in-part of Ser. No. 627,468, March 31, 1967, abandoned. This application June 29, 1970, Ser. No. 50,646

Int. Cl. H04n *5/78*

U.S. Cl. 360—19 **9 Claims**

1. A method of recording two separate signals of respectively long and short wavelength frequency content on a tape record having a magnetizable coating comprising the steps of: recording the long wavelength frequency signals substantially into the thickness of the magnetizable tape coating and sequentially in a first group of parallel aligned tracks on said tape, adjacent pairs of tracks in said first group being separated by a first guard band therebetween, and then recording the short wavelength frequency signals substantially into the surface layer of said magnetizable coating and sequentially in the second group of parallel aligned tracks on said tape, each of the tracks in said second group encompassing different portions of two adjacent tracks in said first group and the first guard band therebetween, adjacent pairs of tracks in said second group being separated by a second guard band therebetween.



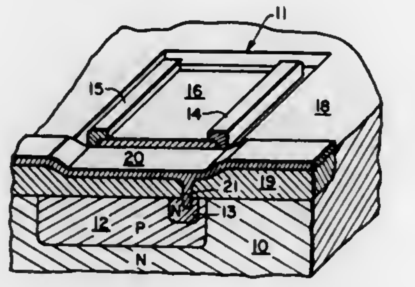
3,846,820
MOSAIC FOR IR IMAGING USING PYROELECTRIC SENSORS IN A BIPOLAR TRANSISTOR ARRAY

Donald R. Lampe, Ellicott City, and Edgar L. Irwin, Glen Burnie, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 26, 1973, Ser. No. 373,725

Int. Cl. H01l *17/00*

U.S. Cl. 357—31 **11 Claims**



1. An integrated array of pyroelectric sensors responsive to incident IR radiation comprising:

a plurality of pyroelectric sensors arranged in the form of a column such that a plurality of said columns defines an array of said sensors each for thermal transformation of incident IR radiation into an electrical charge proportional thereto;

an integrated circuit supporting said sensors including a reverse-biased P-N junction for integration of said electrical charge from each of said pyroelectric sensors; and

emitter means electrically joined to one member forming said P-N junction for detecting the integrated electrical charge stored by said reverse-biased P-N junction.

3,846,821
LATERAL TRANSISTOR HAVING EMITTER REGION WITH PORTIONS OF DIFFERENT IMPURITY CONCENTRATION

Minoru Nagata, and Kozi Sato, both of Kodaira, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 772,913, Nov. 4, 1968, Pat. No. 3,652,347. This application Feb. 9, 1971, Ser. No. 114,021

Claims priority, application Japan, Nov. 6, 1971, 46-70971

Int. Cl. H01l *29/72*

U.S. Cl. 357—35 **10 Claims**

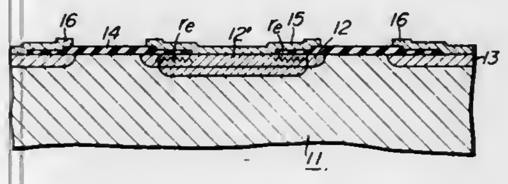
1. A lateral transistor comprising:

a semiconductor substrate of a first conductivity type;

a first diffused region of a second conductivity type with a relatively high impurity concentration formed in one principal surface of said substrate;

a second diffused region of the second conductivity type with a relatively low impurity concentration formed at least in one portion of said first diffused region and in one portion of said substrate adjacent thereto;

a third diffused region with an impurity concentration distribution the same as that of said second diffused region formed in said principal surface of said substrate near the second diffused region, the distance between said second and third diffused regions being defined shorter than the diffusion length of a minority carrier in said substrate; and an emitter, a collector and a base electrode connected to the first region, the third region and the substrate, respectively.



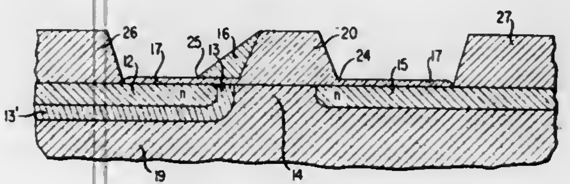
3,846,822
METHODS FOR MAKING FIELD EFFECT TRANSISTORS

Terence James Riley, Warren, and Peter William Shackle, Sommerville, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 5, 1973, Ser. No. 403,918

Int. Cl. H01l *11/00*

U.S. Cl. 357—23 **12 Claims**



1. In a method for making a field effect transistor comprising the steps of forming source, channel, drift and drain regions, and a gate electrode overlying the channel region, the improvement comprising the steps of:

forming an oxide mesa over the drift region portion of a semiconductor wafer;

defining the gate electrode on one side of the mesa by shadow masking, said defining step comprising the step of irradiating the mesa at an angle;

and using one side of the mesa to define one boundary of the drain region and one side of the gate electrode to define one boundary of the source region.

3,846,823
SEMICONDUCTOR ASSEMBLY

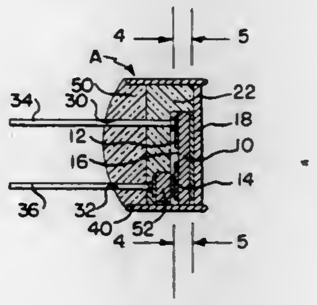
Benjamin H. Matthews, Peninsula, and Jules W. Rhine, Bedford, both of Ohio, assignors to Lucerne Products, Inc., Northfield, Ohio

Continuation of Ser. No. 169,255, Aug. 5, 1971, abandoned. This application June 1, 1973, Ser. No. 366,051

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 357—74 **14 Claims**

1. A semiconductor assembly comprising a semiconductor device having a predetermined peripheral shape, a nonconducting ceramic body defining a fixture for said assembly and having opposite faces, a shaped recess in one face thereof configured to closely conform to the peripheral shape of said semiconductor device, a cathode electrode and a spaced gate electrode on one side of said semiconductor device, an anode electrode on the other side of said semiconductor device, an electrical lead bonded to each of said gate and cathode electrodes, openings extending through said body from said shaped recess and through to the other face thereof, said semiconductor device being received in said recess and presenting a substantially flush surface at said one face, said electrical leads extended through said openings, a cup-shaped, one-piece metallic cap having a substantially flat end wall and an integral, upstanding side wall defining a cavity, said body and said semiconductor device fitted in said cavity in said cap with said anode electrode in engagement with said cap end wall, and an encapsulating compound secured in the cavity in the cap outwardly of the body to retain the assembled body, electrical leads, and semiconductor device in the cap, said ceramic body thus serving as a fixture for the electrical leads and semiconductor device whereby the semiconductor assembly can be easily and quickly fabricated under high speed production line conditions.



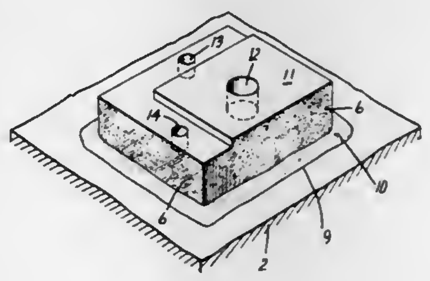
3,846,824
IMPROVED THERMALLY CONDUCTIVE AND ELECTRICALLY INSULATIVE MOUNTING SYSTEMS FOR HEAT SINKS

Gordon M. Bell, Fort Wayne, Ind., assignor to General Electric Company, Indianapolis, Ind.

Filed June 13, 1973, Ser. No. 369,700

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 357—80 **14 Claims**



1. An apparatus for mounting at least one electrical device to

a supportive surface comprising:

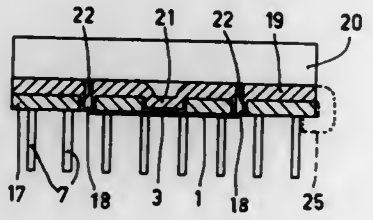
a heat sink for dissipating thermal energy;

means for mounting at least one electrical device to said heat sink; said heat sink having a first portion disposed toward said supportive surface; said first portion having a coating of a material exhibiting a high degree of electrical insulation and a high degree of thermal conductivity; an adhesive material situated between said coating on said first portion of said heat sink and a corresponding portion of said supportive surface for providing a mechanical bond between said heat sink and said supportive surface, said adhesive material exhibiting a high degree of electrical insulation and a high degree of thermal conductivity.

3,846,825

SEMICONDUCTOR DEVICE HAVING CONDUCTING PINS AND COOLING MEMBER

Herman Budde, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 219,479, Jan. 20, 1972, abandoned. This application June 13, 1973, Ser. No. 370,476
Claims priority, application Netherlands, Feb. 5, 1971, 7101600
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 357—81 **8 Claims**



1. A semiconductor device comprising:

a. an electrically insulating support plate having oppositely disposed first and second major surfaces, said plate comprising an aperture;

b. a pattern of metal conductors disposed completely at said first major surface;

c. current supply pins mounted on said support plate and having at least one thereof extending completely therethrough so as to be accessible from said second surface, said pins projecting orthogonally in the same direction from said first major surface, said pins being electrically and mechanically connected directly to respective parts of said metal conductors and extending a substantial distance from said first major surface so as to be available for making external electrical connections to said metal conductors;

d. a semiconductor body comprising contact places, said semiconductor body being disposed in said plate aperture;

e. a flexible electrically insulating foil of synthetic material;

f. metal conductor tracks disposed on a first foil face and individually defining proximate and distal end portions, said distal end portions being spaced closer to the periphery of said foil, said semiconductor body being mounted on said foil with its contact places being disposed on and in electrical contact with respective proximate end portions of said metal conductor tracks, said foil being disposed on said first major surface and lying wholly between the pins with the distal end portions being disposed on and in electrical contact with respective ones of said metal conductors and with the body being spaced from said second major surface, whereby said external electrical connections are made to said body and the opposite face of said foil is in overlying protective relationship to the body; and

g. a cooling member connected to said support plate, said cooling member extending over at least a part of said second major surface of said support plate and comprising a projecting part which extends into said aperture of said support plate and engages the rear side of the semiconductor body in thermally conductive fashion.

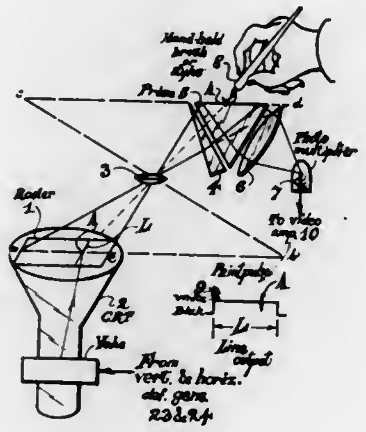
ERRATUM

For Class 358—47 see:
Patent No. 3,846,579

3,846,826

DIRECT TELEVISION DRAWING AND IMAGE MANIPULATING SYSTEM

Robert E. Mueller, Britton House, Roosevelt, N.J. 08558
Continuation-in-part of Ser. No. 171,155, Aug. 12, 1971, abandoned. This application Jan. 15, 1973, Ser. No. 323,874
Int. Cl. H04n *9/02*
U.S. Cl. 358—81 **11 Claims**



1. In a real-time television drawing system comprising means to scan over a given area in synchronism with a television timing signal;
means to produce a plurality of image points within said given area;
means to produce electrical signals in response to said image points;
means for generating a plurality of voltages capable of changing said scan in toto according to various patterns;
means for superimposing said voltages selectively on said scanning means;
means including a display system synchronized to said television timing signals responsive to the electrical signals, for producing at points corresponding to said image points the pattern selected during the time of each produced image points.

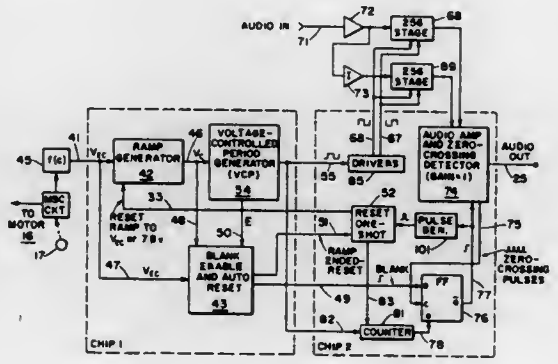
ERRATUM

For Class 360—19 see:
Patent No. 3,846,819

3,846,827

SPEECH COMPRESSOR-EXPANDER WITH SIGNAL SAMPLE ZERO RESET

William G. Eppler, Jr., Westport, Conn., assignor to Cambridge Research and Development Group, Westport, Conn.
Filed Feb. 12, 1973, Ser. No. 331,536
Int. Cl. G11b *5/02, 27/18*
U.S. Cl. 360—26 **4 Claims**



1. In a speech compression-expansion system having variable delay line means repetitively varied to provide frequency transformation of signals passing through the line the combination comprising:
means for sensing zero crossing points on said signal at the output of said line;
enabling means for establishing an interval at the end of each repetitive variation;
blanking means responsive to detection of a zero crossing within said interval and if no such zero crossing is detected responsive to the end of said interval for blanking the output of said line; and
means responsive to the initiation of said blanking for resetting said variation to start the next repetitive variation of said line.

3,846,828

HIGH SOLIDS CONTENT VINYLIDENE CHLORIDE POLYMER DISPERSIONS IN STRONGLY HYDROGEN BONDED DISPERSING MEDIA AND PROCESS OF PREPARATION THEREOF

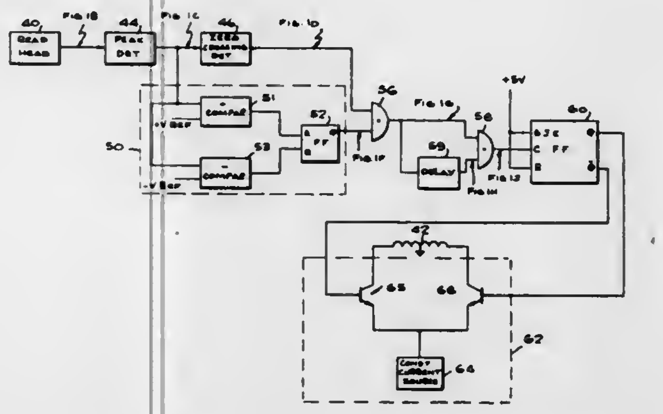
Dieter H. Klein, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Apr. 4, 1973, Ser. No. 347,828
Int. Cl. C08f *45/24, 45/34*
U.S. Cl. 260—33.4 R **10 Claims**

1. Dispersions of normally crystalline vinylidene chloride polymers containing from about 70 to 95 percent by weight of vinylidene chloride in a strongly hydrogen bonded dispersing media said dispersions containing about 0.1 to 20 percent based on polymer solids of a dispersion stabilizer consisting essentially of the reaction product of (A) tripropylene glycol methylether acrylate and (B) at least one reactive comonomer capable of forming a side chain on said stabilizer which side chain is insoluble in the hydrophilic liquid and associated with said vinylidene chloride polymer, and wherein the mass ratio of (A) to (B) is from about 99:1 to 80:20.

3,846,829

READ-WRITE SERVO TRACK COPY SYSTEM

Frank W. Lin, Cupertino, Calif., assignor to Caelus Memories, Inc., San Jose, Calif.
Filed Nov. 6, 1972, Ser. No. 303,794
Int. Cl. G11b *5/44*
U.S. Cl. 360—46 **8 Claims**

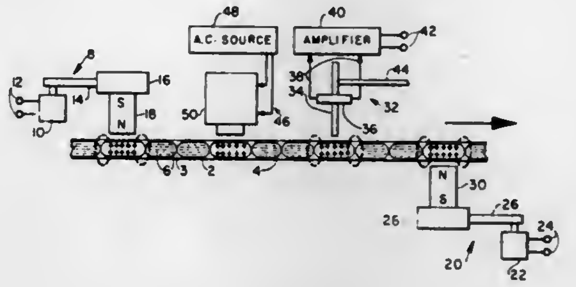


1. In combination with a read head means adapted to sense discrete relatively short designations in a magnetized track wherein the track is magnetized in a first direction and the designations are magnetized in a second direction, said read head means providing for each designation a signal with an amplitude which first varies from a zero reference level in a first direction, toward a first peak, thereafter crosses said zero reference level and then varies from the zero reference level in a second direction toward a second peak and returns to said zero reference level to thereby form said first and second peaks of opposite polarities, with respect to said zero reference level, the combination comprising:
a zero crossing detector for providing a first pulse when the amplitude of said signal first varies from said zero reference level in said first direction and a second pulse when said signal amplitude crosses said zero reference level and varies in said second direction;
first means for establishing a time interval which extends from the time when the amplitude of said signal first equals a first reference amplitude which is between said zero reference level and said first peak to the time when the amplitude of said first signals equals a second reference amplitude, which is between said zero reference level and said second peak, said first and second reference amplitudes having opposite polarities with respect to said zero reference level;
gating means coupled to said zero crossing detector and to said first means, said gating means being enabled only during said time interval for providing a first control pulse only in response to said second pulse from said zero crossing detector with said gating means being inhibited from providing a pulse corresponding to said first pulse;
delay means responsive to said first control pulse for providing a second control pulse delayed by a fixed time period from said first control pulse; and
utilization means for utilizing said first and second control pulses.

3,846,830

RECORDING AND PLAYBACK APPARATUS

Norman L. Stauffer, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.
Continuation of Ser. No. 191,177, Oct. 21, 1971, abandoned. This application Sept. 26, 1973, Ser. No. 400,710
Int. Cl. G11b *5/78*
U.S. Cl. 360—56 **10 Claims**



1. A recording apparatus for recording on a recording medium having a suspension of force field responsive and selectively alignable particles therein comprising:
first means for producing a confined force field perpendicular to a recording surface of said recording medium and within said suspension of particles,
means for selectively energizing said first means to selectively produce an alternating force field as said confined force field to align said particles therewith,
second means for producing a second confined force field perpendicular to the recording surface of said recording medium and within said suspension of particles, said second means being spaced from said first means along said recording medium, and,
second means for selectively actuating said second means for producing to selectively produce a unidirectional force field as said second confined force field to align said particles therewith, said particles exhibiting a net remanent field in response to said unidirectional force field and a substantially zero net remanent field in response to said alternating force field.

3,846,831

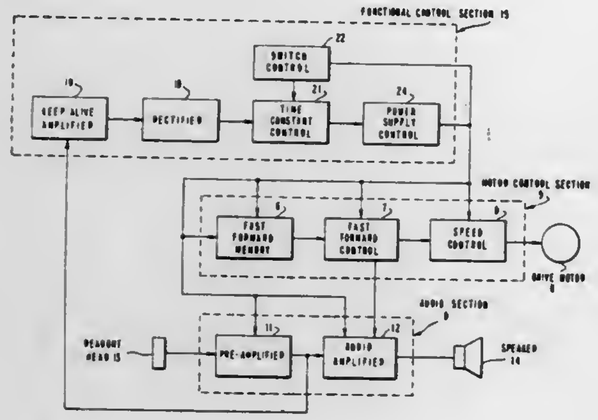
SOUND REPRODUCING APPARATUS IN WHICH THE DRIVE MEANS OPERATES IN RESPONSE TO A PRERECORDED CONTROL SIGNAL

Clark E. Johnson, Jr., Weston, and Peter L. Richman, Lexington, both of Mass., assignors to Micro Communications Corporation, Waltham, Mass.

Filed Mar. 7, 1973, Ser. No. 338,733

Int. Cl. G11b *27/22, 23/18, 23/16*

U.S. Cl. 360—74 **5 Claims**



1. Signal reproduction means for reproducing intelligence signals within a pre-selected frequency range in response to a control signal having a major frequency component outside said range, said signals being recorded on a record medium, comprising:

first detecting means for detecting said control signal;

second detecting means for detecting said intelligence signals;

intelligence signal reproducing means for reproducing said intelligence signals on said record medium; and

operating means responsive to said control signal for controlling said intelligence signal means to reproduce said intelligence signals only in continuing response to said control signal.

3,846,832

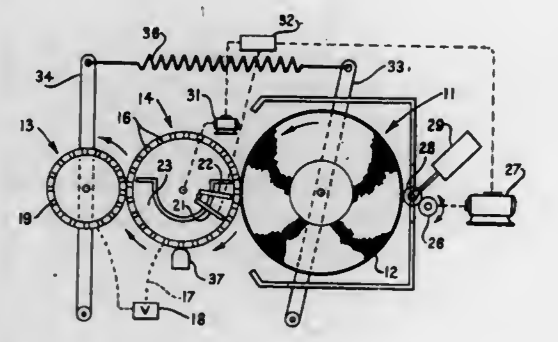
VACUUM TAPE THREADING SYSTEM

Konrad A. Krause, 870 E. El Camino Real, Mountain View, Calif. 94040

Continuation-in-part of Ser. No. 843,452, July 22, 1969, Pat. No. 3,643,889. This application Dec. 3, 1971, Ser. No. 204,524

Int. Cl. G11b *15/32*

U.S. Cl. 360—85 **10 Claims**



1. A tape transport system for tape apparatus having a record reproduce head and a tape supply reel with drive means for rotating the reel comprising,

a rotatably mounted disc having vacuum openings in the periphery thereof,

said disc having a stationary portion and at least one rotatable portion,

vacuum connections to said disc for drawing a vacuum through said peripheral openings to hold tape against the disc,

tape end sensing means disposed in the stationary portion of said disc directed toward said tape supply reel and producing a signal upon passage of a free tape end thereover, said drive means initially rotating said supply reel in the tape wind direction to thus pass the free tape end over said sensing means,

means applying the tape end sensing signal to said drive means for reversing the drive means to rotate the supply reel in a taped unwind direction, and

resilient means urging said disc and supply reel with the tape thereon into peripheral engagement for rotating the disc by rotation of supply reel whereby tape on the reel is unreeled by the disc and passed over said head.

3,846,833

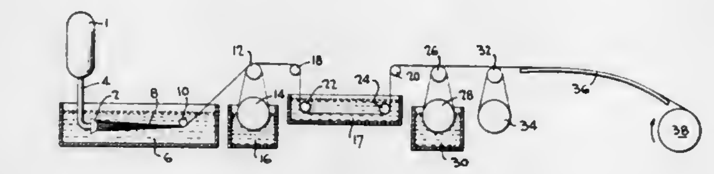
ACRYLIC FILAMENTS WHICH ARE PARTICULARLY SUITED FOR THERMAL CONVERSION TO CARBON FILAMENTS

Michael J. Ram, West Orange, and John P. Riggs, Berkley Heights, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 28,545, April 14, 1970, Pat. No. 3,657,409. This application Apr. 17, 1972, Ser. No. 244,541

Int. Cl. C08f *3/74, 15/22*

U.S. Cl. 260—88.7 R **2 Claims**



1. An improved acrylic filament which is particularly suited for thermal conversion to a carbon filament formed in accordance with the process comprising:

a. providing a spinning solution having a low shear viscosity of about 125 to 1,500 poise measured at 25°C. comprising (1) a fiber-forming acrylic polymer in a concentration of about 18 to 25 percent by weight based upon the total weight of the solution selected from the group consisting of an acrylonitrile homopolymer and an acrylonitrile copolymer which contains at least about 85 mol percent of acrylonitrile units and up to about 15 mol percent of one or more monovinyl units copolymerized therewith, (2) lithium chloride in a concentration of about 0.1 to 5 percent by weight based upon the total weight of the solution which lowers and preserves upon standing the viscosity of the solution, and (3) a dimethylacetamide solvent,

b. extruding said spinning solution into an essentially non-aqueous coagulation bath having a temperature of about 10° to 35°C. consisting essentially of about 55 to 85 percent by weight of ethylene glycol and about 15 to 45 percent by weight of dimethylacetamide to form an as-spun filament which is present in said coagulation bath for a residence time of about 6 to 300 seconds,

c. washing the resulting as-spun filament in water to remove dimethylacetamide and lithium chloride from the same, the said washing being initially conducted for at least 25 seconds with said water at a temperature of about 10° to 50°C., and

d. drawing said washed filament to increase the orientation thereof.

3,846,834

CARTRIDGE LOCKING AND EJECTING MECHANISM

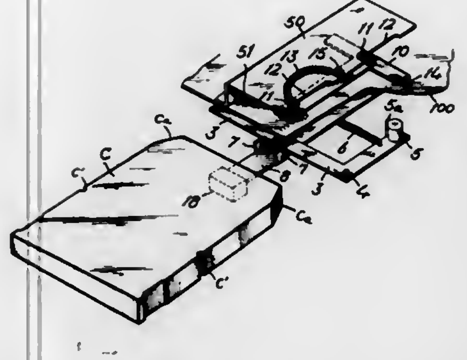
Shinji Nakamori, Soka, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed May 1, 1972, Ser. No. 248,807

Claims priority, application Japan, Apr. 30, 1971, 46-33651

Int. Cl. G11b *5/00, 15/32, 23/04*

U.S. Cl. 360—93 **10 Claims**



1. A notched cartridge locking and ejecting mechanism consisting of a deck having a motor, capstan, and reproducing head,

a cartridge supporting mechanism forming a receiving area for said cartridge,

a pair of locking arms arranged on said cartridge supporting mechanism and provided with an elastic material, the end portions of said arms projecting into said receiving area, and

an ejecting mechanism engaging at the ends of said locking arms and having a return action with said elastic material; wherein said arms are being equipped with supporters capable of fitting into notches in the sides of the cartridge, whereby when the cartridge is inserted said supporters fit into said notches to hold the cartridge and said ejecting mechanism is operated to retract said supporters from said notches of the cartridge.

3,846,835

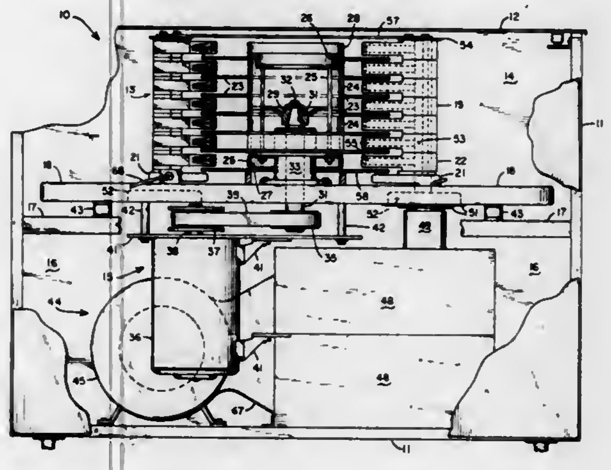
CLEAN AIR SYSTEM FOR MAGNETIC STORAGE DISK PACK

Beatrice Horovitz, Philadelphia, and Michael Gary Savage, Warminster, both of Pa., assignors to Sperry Rand Corporation, New York, N.Y.

Filed May 29, 1973, Ser. No. 365,007

Int. Cl. G11b *23/04;* **B01d** *46/00*

U.S. Cl. 360—98 **14 Claims**



1. An open shroud clean air system for a plurality of magnetic memory disks, comprising:

a source of clean filtered air comprising a blower and an absolute filter system,

a plurality of magnetic disks of the type having memory tracks,

said disks being spaced apart one from another by an imperforate cylindrical wall,

read-write head means extending between said spaced apart disks and supporting flying read-write heads thereon,

conduit means connected to said source of clean filtered air and extending inwardly between adjacent pairs of magnetic disks immediately upstream of said read-write heads,

said conduit means comprising an outlet stream of clean filtered air supplied to a point radially inward of said memory tracks for maintaining continuous clean air flow at said read-write heads whereby said read-write heads are supported in a boundary layer consisting entirely of said clean filtered air.

3,846,836

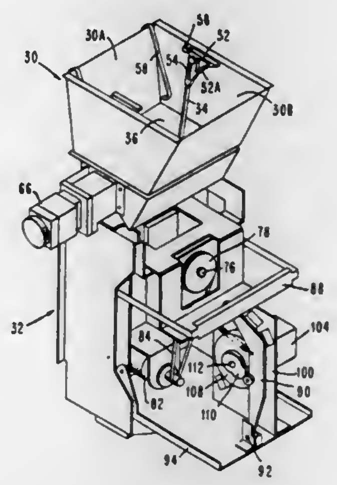
LOADING AND UNLOADING MECHANISM FOR FLEXIBLE MAGNETIC DISKS

Philip R. Masse; William J. Pendy, and William S. Wentink, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 30, 1973, Ser. No. 393,246

Int. Cl. G11b *17/00*

U.S. Cl. 360—98 **13 Claims**



1. A recording system utilizing record disks adapted to have information recorded on faces thereof and comprising a stationary support, a drive member rotatably mounted in said support and adapted to have engagement with a record disk for driving the disk for transfer of information to or from the disk, motor means for rotatably driving said drive member and thereby driving a record disk in engagement therewith, means for moving one of said disks onto said drive member prior to an information transfer operation and then off of said drive member after an information transfer operation has taken place and including a friction drive roll located to the side of said drive member and frictionally driving the disk in a direction laterally of the disk, and reversible motor means drivingly connected with said friction drive roll for driving the friction drive roll in one direction or the other so as to thereby move the disk laterally onto and off of said drive member.

3,846,837

STACKED FLEXIBLE DISC UNIT WITH HEAD PLUGS

James O. Jacques, Longmont, Colo., assignor to Intelligent Memory Systems, Inc., Santa Ana, Calif.

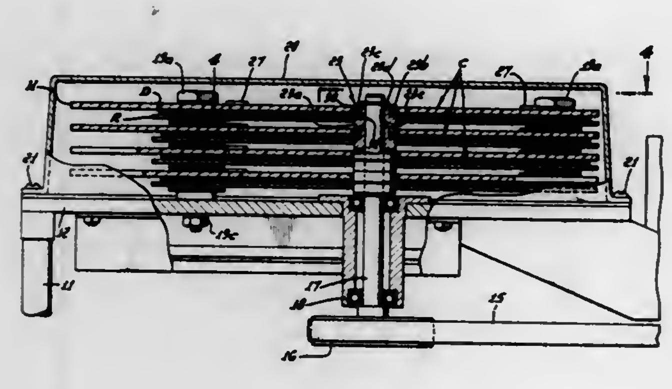
Filed June 20, 1973, Ser. No. 371,858

Int. Cl. G11b *5/60*

U.S. Cl. 360—99 **20 Claims**

1. In flexible disc magnetic storage apparatus: a base support, a rotatable shaft projecting upwardly from said base, means for rotating said shaft, and flexible disc storage means disposed about said shaft, said storage means including at least one cartridge unit including a printed circuit head board

having a transducer head projecting below said head board, a rest plate below said head board, means supporting said head board and said rest plate on said base plate in vertically spaced relation, a flexible magnetic storage disc disposed between said head board and said rest plate, said disc having a hub on said shaft and rotatable therewith, and said head board and



said rest plate having air inlet openings adjacent to said hub for admitting air to the spaces between said head board, said rest plate and said disc.

3,846,838
SELECTION DEVICE

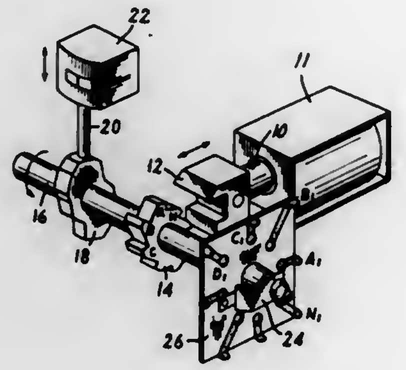
Haruki Okamoto; Masaki Sato, and Shunichi Kusaka, all of Amagasaki, Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed July 22, 1969, Ser. No. 843,375

Claims priority, application Japan, July 22, 1968, 43-51771; Nov. 5, 1968, 43-80796

Int. Cl. G11b *5/56*

U.S. Cl. 360—106 **4 Claims**



1. A selection device comprising, in combination, a controlled member for being selectively set to any one of a plurality of predetermined positions, an astable multivibrator having an output terminal for producing an alternating output signal, a plurality of selection switch contacts one for each of the predetermined positions of said controlled member, means connecting said selection contacts to said multivibrator, contact means for selective engagement with any one of said selection contacts to cause energization of said multivibrator, electrically actuated rotatable driving means coupled to said multivibrator output terminal for advancing said controlled member sequentially from one position to the next in response to each alternation of the output signal, a rotatable switch contact, means mounting said rotatable switch contact for sequentially sweeping said selection switch contacts, and means coupling said rotatable switch contact to said multivibrator for deenergizing said multivibrator when said rotatable switch contact closes against one of said selection contacts engaged by said contact means.

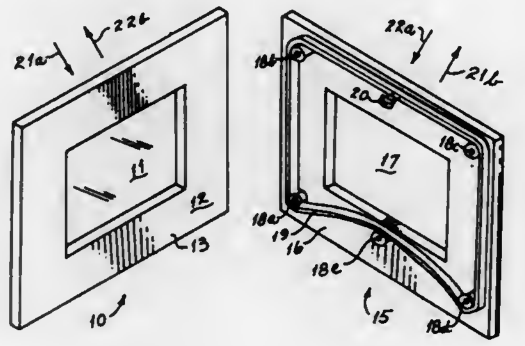
3,846,839
MECHANICAL SCANNER

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

Filed June 25, 1973, Ser. No. 372,908

Int. Cl. G11b *5/48*

U.S. Cl. 360—108 **15 Claims**



1. In a mechanical scanner for transporting a head:
endless means comprising in combination:
- an insulating endless belt; and
- electrically conductive endless members integral with said insulating endless belt, said electrically conductive endless members having partially exposed portions.

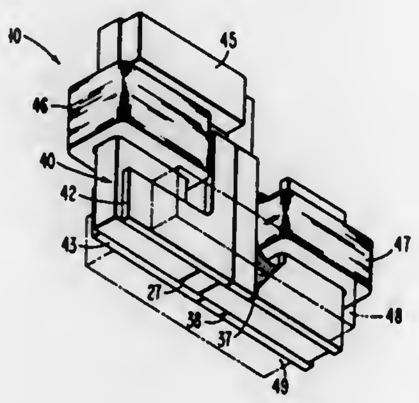
3,846,840
READ/WRITE AND LONGITUDINAL EDGE ERASE HEAD ASSEMBLY HAVING MULTIPLE SIMILARLY SHAPED LAYERS

William Walter Childers; Karl Heinz Elser, both of San Jose, and Phillip John Peterson, Morgan Hill, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 10, 1973, Ser. No. 387,564

Int. Cl. G11b *5/26*

U.S. Cl. 360—118 **5 Claims**



1. A magnetic head assembly for recording or reading data and for erasing edge portions of newly-recorded data and previously recorded data comprising:
- at least one group of three like layers joined in a sandwich structure for recording or reading and erasing data associated with a single data track, the center layer being a read-write layer, and the outer layers being erase layers, the center layer facing in a direction opposite to the outer layers;
- each layer having a magnetic core portion having a transducing gap said magnetic core portion having two legs separated by said transducing gap, said gap being formed by a nonmagnetic spacer portion joined to one leg of said core, and the axes of said gaps being parallel;
- a sidebar bridging the legs of said core portion of said center layer to form a closed magnetic path about said gap;

- a first electrical conducting coil disposed about an end leg of the core of said center read-write layer; and
- a second electrical conducting coil disposed about the end legs of the cores of the outer erase layers;
- each layer having a nonmagnetic portion joined to on one leg of said magnetic core portion, said outer erase layers aligned similarly with respect to each other and opposite to said center read-write layer such that only the nonmagnetic portions contact the magnetic core portion of said center read-write layer.

3,846,841
MULTIPLE MAGNETIC HEAD DEVICES

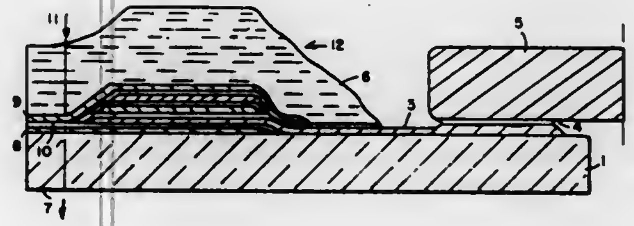
Jean-Pierre Lazzari, Villiers Saint Frederic, and Jean Michard, Orsay, both of France, assignors to Compagnie Internationale Pour L'Informatique, Louveciennes, France

Filed June 25, 1973, Ser. No. 373,461

Claims priority, application France, July 3, 1972, 72.23938

Int. Cl. G11b *5/12, 5/26, 5/20*

U.S. Cl. 360—121 **14 Claims**



1. A read-write magnetic head device comprising in combination:
- a. a dielectric, non-magnetic planar substrate;
- b. a plurality of planar magnetic head structures having their air gaps aligned on one edge of said substrate, each head including a flat coil;
- c. a plurality of coil terminals substantially aligned on an opposite edge of said substrate;
- d. a plurality of flat conductors equal in number to said terminals, one soldered to each of said terminals respectively, said conductors having a uniform thickness so that their upper surfaces lie in a common plane parallel to the plane of said substrate;
- e. a primary protection formed of a dielectric layer coated over said magnetic head structures, having one surface which is flat and substantially level with but spaced from the upper surfaces of said flat conductors and a second surface joining said first and sloping toward but terminating short of said terminals;
- f. a secondary protection formed of a non-magnetic dielectric plate having substantially the same area as said substrate and applied over the upper surfaces of said primary protection and flat conductors; and
- g. bonding means between said plate and said primary protection and flat conductors; the materials of said primary and secondary protections having coefficient of thermal expansion substantially equal to that of said substrate.

3,846,842
MAGNETIC TRANSDUCER STRUCTURE

Jean-Pierre Lazzari, Villiers Saint Frederic, France, assignor to Compagnie Internationale Pour L'Informatique, Louveciennes, France

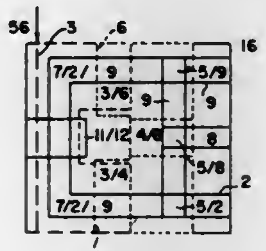
Filed June 25, 1973, Ser. No. 373,460

Claims priority, application France, July 3, 1972, 72.23939

Int. Cl. G11b *5/16, 5/20, 5/22*

U.S. Cl. 360—126 **6 Claims**

1. A magnetic transducer structure formed of a stack of individually shaped thin layers coated on a dielectric nonmagnetic substrate having substantially parallel front and rear edges, the stack comprising a pair of magnetic layers having a front to rear axis of symmetry with respect to the substrate, spaced apart at one end to define an air-gap face end portion adjacent one edge of said substrate and contacting one another at their opposite end portions at a point between the front and rear edges of said substrate, and a flat helix insulated conductor coil at least a part of which surrounds the contacting portions of said magnetic layers wherein a plurality of insulating layers of the stack together define a flat insulating helix having portions of its turns surrounding said contacting portions of said magnetic layers and having portions of its turns positioned between the magnetic layers at the airgap faces thereof, wherein conductive layers of smaller dimensions in the plane parallel to said substrate are positioned between said insulating layers to define a conductive flat helix embedded within the insulating helix with the exception of rear terminal portions which extend substantially to the rear edge of said substrate, wherein the turns of the insulating helix are in substantially mutual registration and the turns of the conductive helix are also in substantially mutual registration and wherein each one of said insulating and conductive layers in the helixes either has an axis of symmetry coincident with the said front to rear axis of symmetry of the pair of magnetic layers or is a mirror image of another one of the layers with respect to said front to rear axis of symmetry.



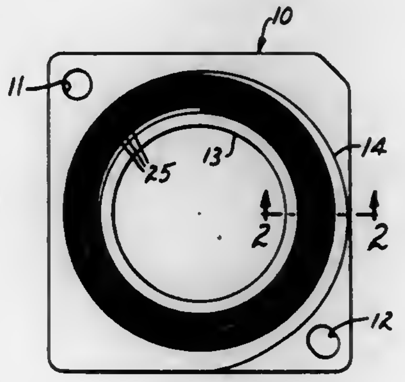
3,846,843
COMPOSITE FILM

Victor R. Franer, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 163,915, July 19, 1971, Pat. No. 3,772,081. This application May 16, 1973, Ser. No. 360,904

Int. Cl. G11b *5/62, 5/82*

U.S. Cl. 360—135 **4 Claims**



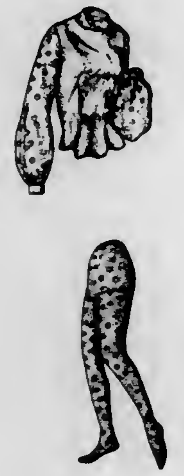
1. A sound disc comprising a flat flexible heat-resistant dimensionally stable support layer, an intermediate layer, said support layer being adherently bonded to one major surface of said intermediate layer, said intermediate layer having a raised spiral pattern on the opposite major surface thereof, said intermediate layer being comprised of an adherent heat softenable pressure formable material having a softening point within a temperature range of 55°C to 90°C and being free of magnetically susceptable material, and a thin layer of magnetically susceptible material dispersed in a non-magnetic binder adherently bonded in substantially uniform thickness to said opposite major surface.

DESIGNS

NOVEMBER 5, 1974

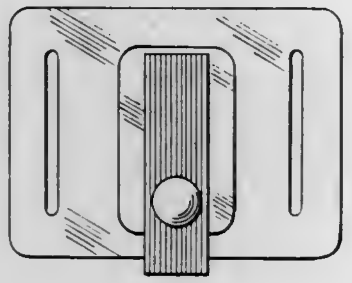
233,489
ENSEMBLE INCLUDING BLOUSE AND PANTY HOSE

Joyce Curry, Suitland, Md. (2300 S. 24th Road, Apt. 730, Arlington, Va. 22206), and Martha G. Pugh, 11 New Providence Ave., Summit, N.J. 07901
Filed Apr. 2, 1971, Ser. No. 130,867
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—29



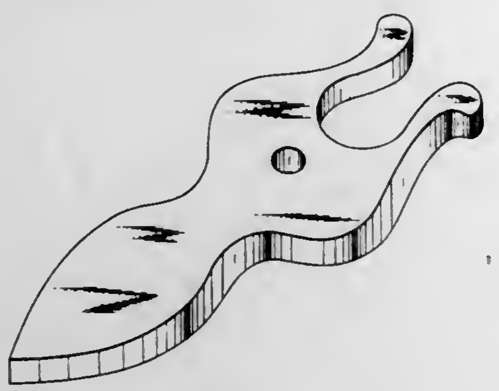
233,490
BELT ATTACHABLE FLASH LIGHT HOLDER

Robert A. Bailey, 2339 E. 12th St., Des Moines, Iowa 50316
Filed Sept. 21, 1972, Ser. No. 290,842
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—400



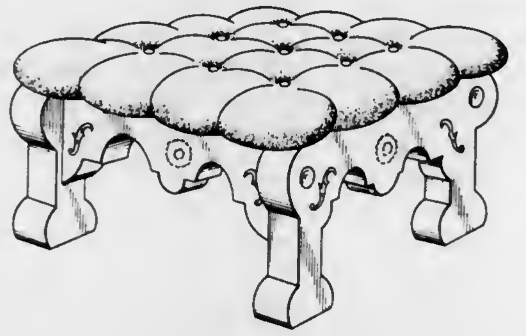
233,491
IMPLEMENT FOR INTERWEAVING BRAID

Hope Hanley, P.O. Box 537, Purcellville, Va. 22132
Filed Feb. 13, 1973, Ser. No. 331,737
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D3—19 A



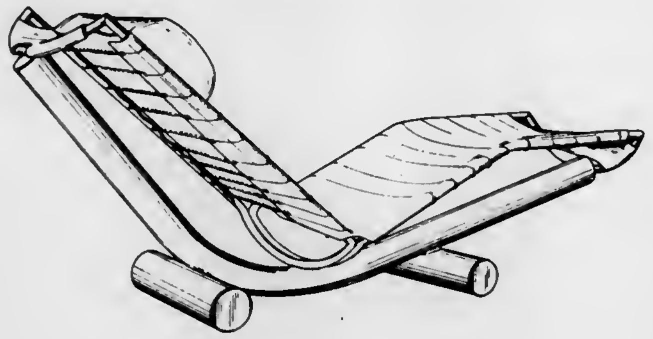
233,492
HASSOCK

Evalin S. Gilbert, 2121 N. Bay Shore Drive, Miami, Fla. 33137
Filed Nov. 20, 1972, Ser. No. 308,042
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—36



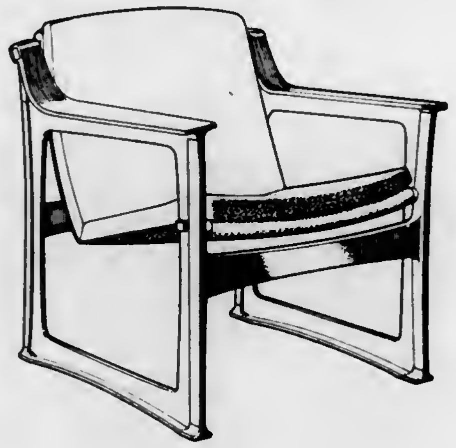
233,493
CHAISE LONGUE

Paul Tuttle, Santa Barbara, Calif., assignor to Intercollection Development SA Kirchberg, Switzerland
Filed Feb. 14, 1973, Ser. No. 332,342
Claims priority, application Switzerland Sept. 4, 1972
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—38



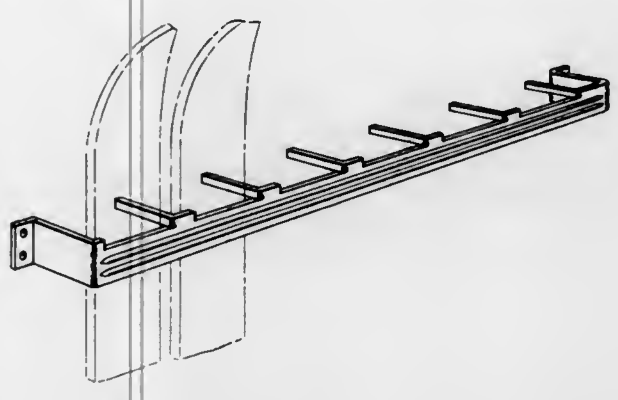
233,494
ARMCHAIR

Imre Bolyos, 25 Kevingeringen, S-182, 33 Danderyd, Sweden
Filed Oct. 18, 1972, Ser. No. 298,553
Claims priority, application Sweden Apr. 18, 1972
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



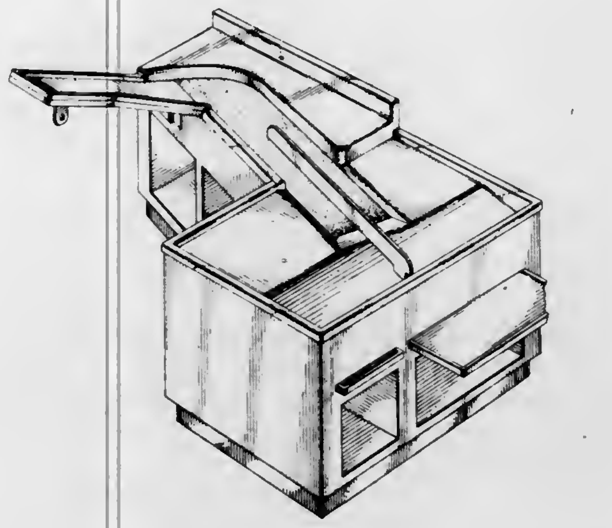
233,495
SKI STORAGE RACK

Salvatore Laterra, Providence, R.I., assignor of a fractional part interest to Norma Hines, Attleboro, Mass.
Filed Apr. 9, 1973, Ser. No. 348,964
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130



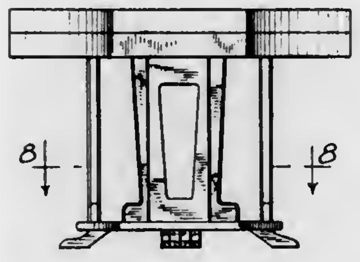
233,496
BAGGER STATION OR SIMILAR ARTICLE

John David Hunt, Turnersville, N.J., assignor to RCA Corporation
Filed July 12, 1973, Ser. No. 378,518
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—143



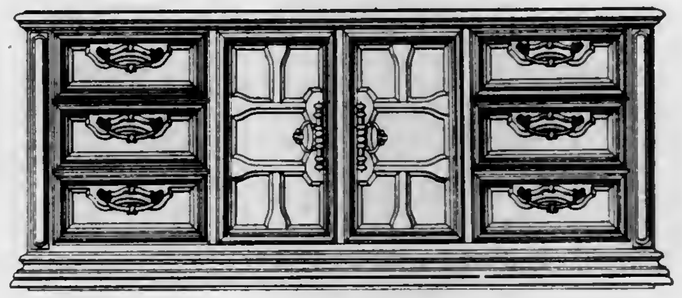
233,497
CONVERTIBLE GAME TABLE

Philip Zelkowitz, Lincolnwood, Ill., assignor to Armac Enterprises, Inc., Chicago, Ill.
Filed July 24, 1972, Ser. No. 274,185
Term of patent 3½ years
Int. Cl. D6—*03*
U.S. Cl. D6—149



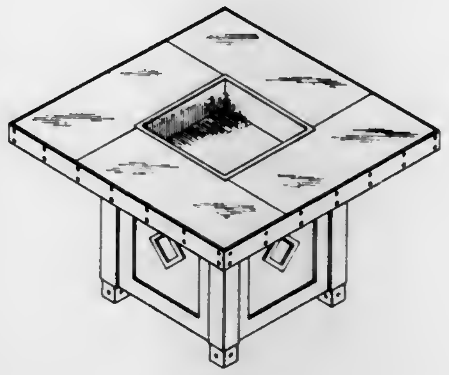
233,498
DRESSER OR THE LIKE

Huey T. Keller, High Point, N.C., assignor to The Vaughan Furniture Company, Inc., Galax, Va.
Filed Jan. 17, 1973, Ser. No. 324,555
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154



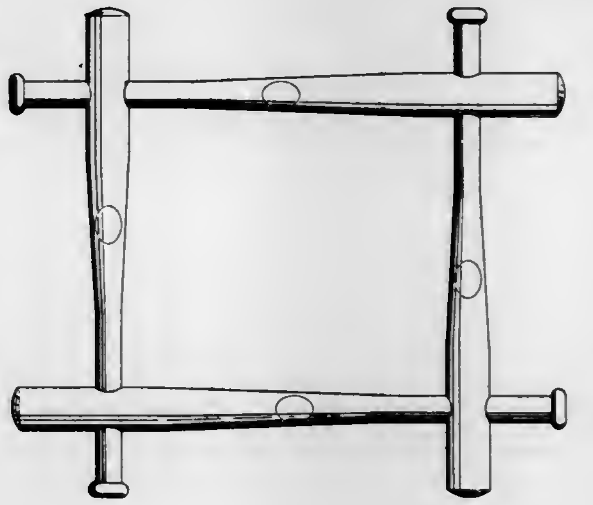
233,499
RESTAURANT DINING TABLE

James T. Sakata, 653 20th Ave., San Francisco, Calif. 94121
Filed July 2, 1971, Ser. No. 159,163
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



233,500
BALL BAT PICTURE FRAME

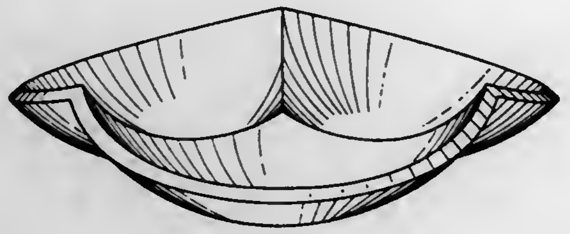
David A. Phillips, Box 101, Coppell, Tex. 75019
Filed Oct. 10, 1972, Ser. No. 296,127
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—239



233,501

DISH

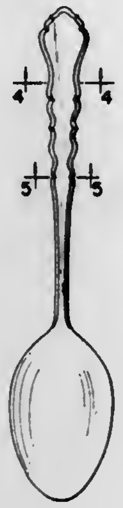
Walter Zeischegg, 3 Neue Str., 79 Ulm, Germany
Filed Mar. 30, 1973, Ser. No. 346,636
Claims priority, application Germany Oct. 2, 1972
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—1



233,502

SPOON OR SIMILAR ARTICLE OF FLATWARE

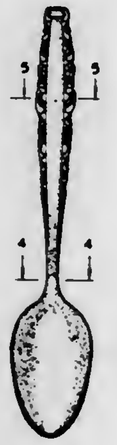
John Rutland, Meriden, Conn., assignor to International Silver Company, Meriden, Conn.
Filed Dec. 4, 1972, Ser. No. 311,540
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137



233,503

SPOON OR SIMILAR ARTICLE

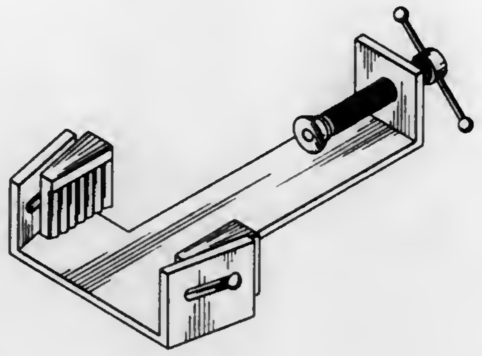
Frank R. Perry, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed May 2, 1973, Ser. No. 356,339
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137



233,504

STILE CLAMP

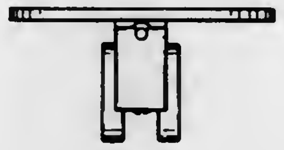
William C. Wildman, 3915 Hoover St., Boise, Idaho 83705
Filed Dec. 26, 1972, Ser. No. 318,080
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—72



233,505

CASTER

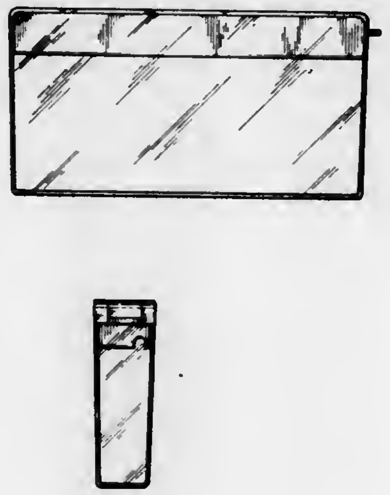
Sven-Eric Juhlin, 31 Hovvagen, 134 Gustavsberg, Sweden, and Per-Olof Landgren, 4 Skurubacke, 130 Ektorp 10, Sweden
Filed May 29, 1973, Ser. No. 364,299
Claims priority, application Sweden Dec. 1, 1972
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D8—226



233,506

DISPENSER FOR CONFECTIONERY, GUM AND THE LIKE

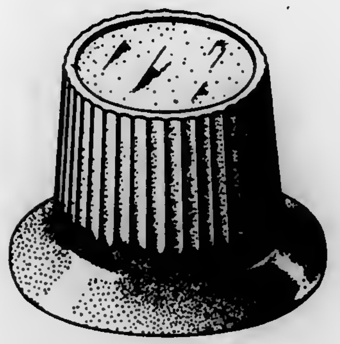
Luis R. Rey, Brooklyn, N.Y., and Donald K. Takacs, Wheaton, Ill., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Mar. 26, 1973, Ser. No. 345,054
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—239



233,507

CONTAINER CLOSURE OR THE LIKE

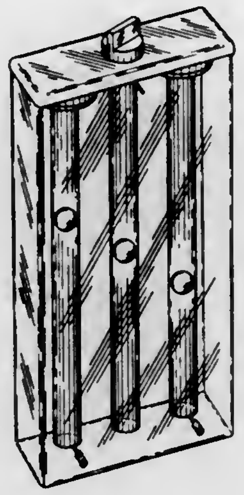
Peter P. Stevens, Jr., P.O. Box 95, Point Reyes, Calif. 94956
Filed Mar. 21, 1973, Ser. No. 343,291
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—285



233,508

DUAL COMPARATIVE FALLING BALL VISCOMETER

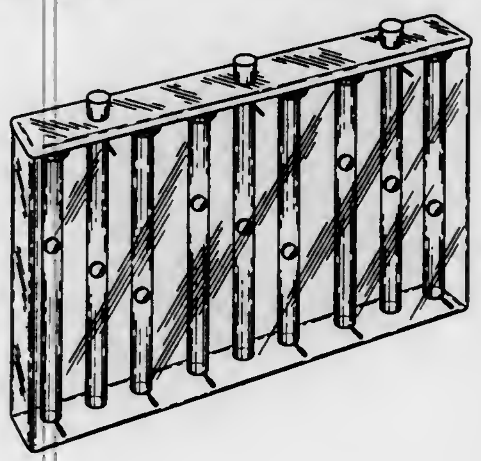
Primo L. Pinotti, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Aug. 28, 1972, Ser. No. 284,387
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—84



233,509

TRIPLE DUAL COMPARATIVE FALLING BALL VISCOMETER

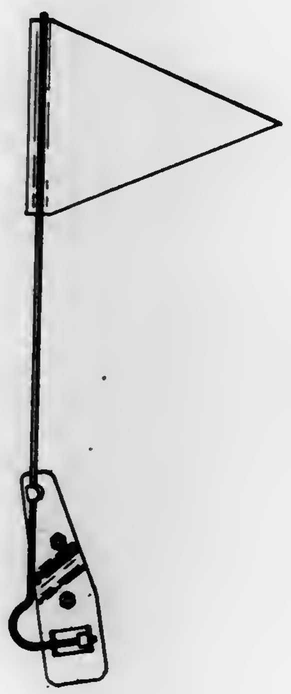
Noel L. McHone, Redwood City, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Dec. 1, 1972, Ser. No. 311,082
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—84



233,510

SAFETY FLAG FOR A BICYCLE

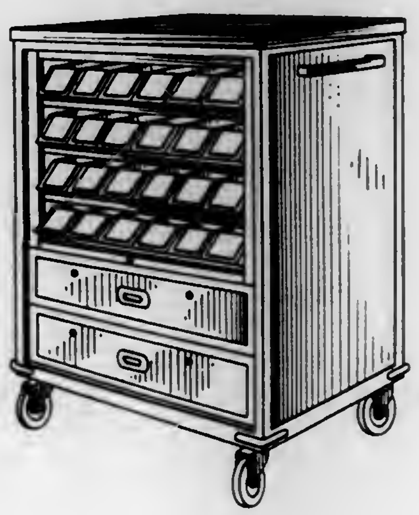
John B. Baker, Medina, Wash. (P.O. Box 368, Issaquash, Wash. 98027)
Filed Sept. 7, 1973, Ser. No. 395,232
Term of patent 7 years
Int. Cl. D29—*02*
U.S. Cl. D10—109



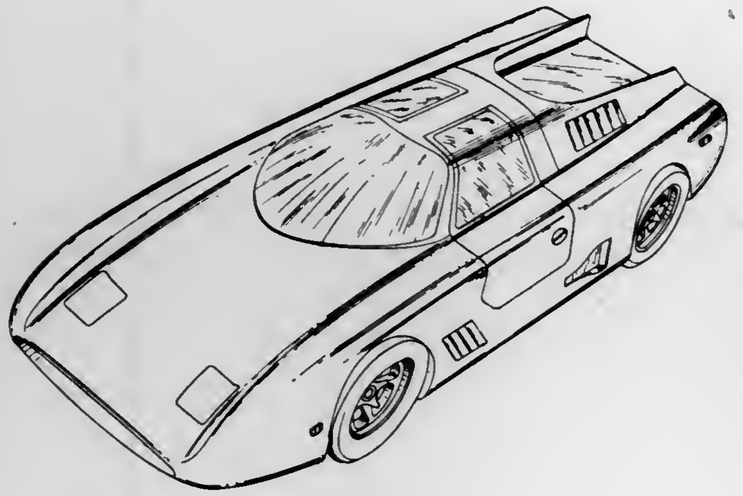
233,511

MEDICINE DISPENSING CABINET AND SIMILAR ARTICLE

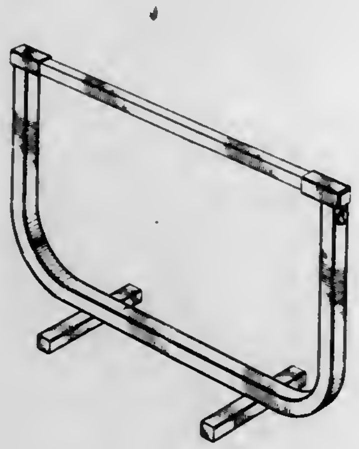
Charles V. Condon, George E. Moore, and James Larson, Jamestown, N.Y., assignors to Watson Manufacturing, Jamestown, N.Y.
Filed Sept. 7, 1973, Ser. No. 394,994
Term of patent 14 years
Int. Cl. D12—*02;* D24—*99*
U.S. Cl. D12—28



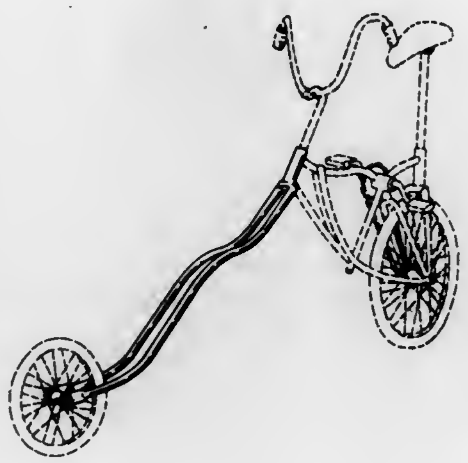
233,512
AUTOMOBILE
Thomas M. Love, Rte. 3, Box 436, and Thomas M. Love, Jr., 1031 Martha Drive, Apt. 3C, both of Annapolis, Md. 21403
Filed Sept. 13, 1973, Ser. No. 396,697
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—91



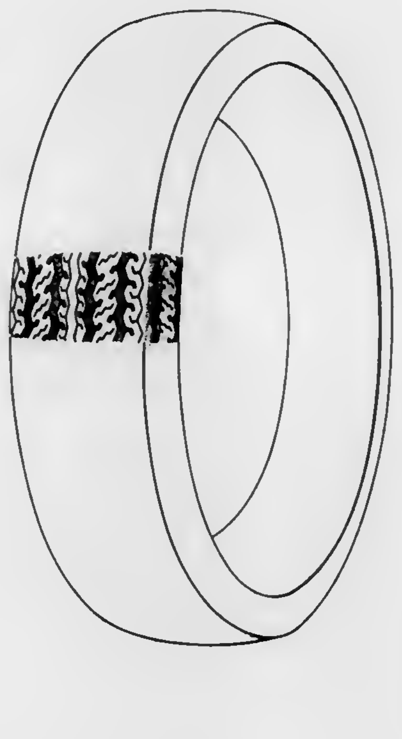
233,513
LOCKING BICYCLE STAND
Gary D. Corkill, 1143 E. D St., Ontario, Calif. 91764
Filed Apr. 16, 1973, Ser. No. 351,377
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D12—115



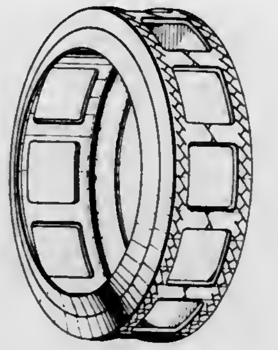
233,514
BICYCLE FORK
James A. Respress, 256 Box Ave., Buffalo, N.Y. 14211
Filed Apr. 16, 1973, Ser. No. 351,378
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—118



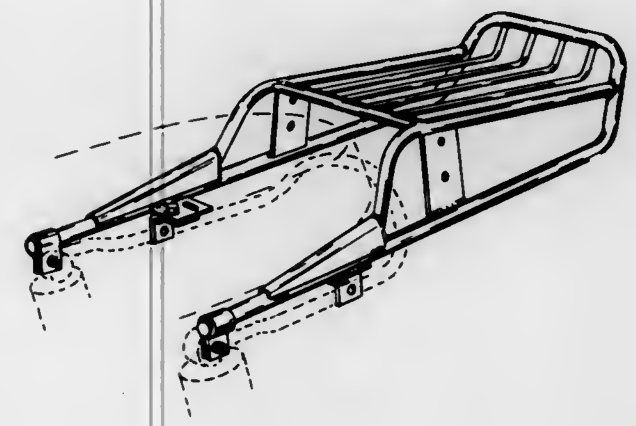
233,515
PNEUMATIC TIRE TREAD AND BUTTRESS
James H. Bierbusse, Grosse Pointe Farms, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Sept. 21, 1973, Ser. No. 399,665
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—143



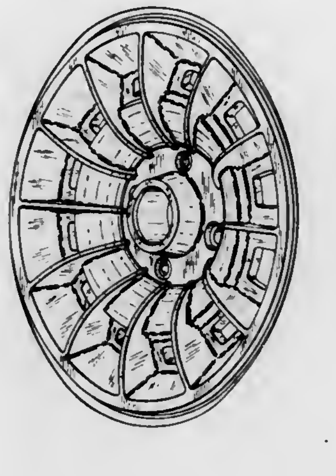
233,516
AUTOMOBILE OVERTIRE
Raymond G. Beadle, P.O. Box 1813, Lubbock, Tex. 79408
Filed June 6, 1973, Ser. No. 367,644
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—154



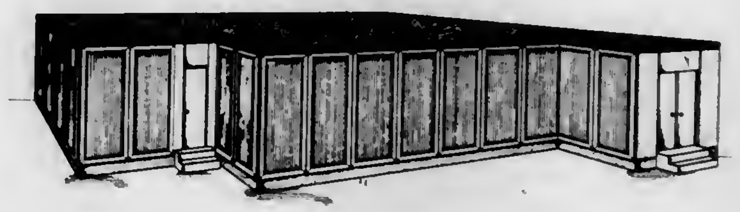
233,517
MOTORCYCLE RACK
Robert H. Girvin III, 170 Locust St., Holliston, Mass. 01746
Filed Jan. 29, 1973, Ser. No. 327,799
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—158



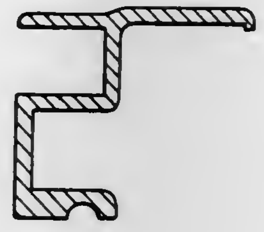
233,518
WHEEL CENTER
Donald J. Reid, Pleasant Ridge, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Oct. 2, 1972, Ser. No. 294,490
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—211



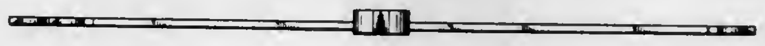
233,519
BUILDING
Paul Ear Chen, Glen Ellyn, and Joseph Charles Manganello, Naperville, Ill., and Gordon Elliott Sylvester, Jamaica, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 9, 1973, Ser. No. 339,561
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 R

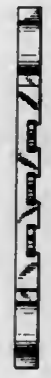


233,520
EXTRUDED STRUCTURAL MEMBER OR SIMILAR ARTICLE
Eugene B. Le Van, 15858 El Paseo Drive, Whittier, Calif. 90603
Filed Mar. 8, 1972, Ser. No. 233,011
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6

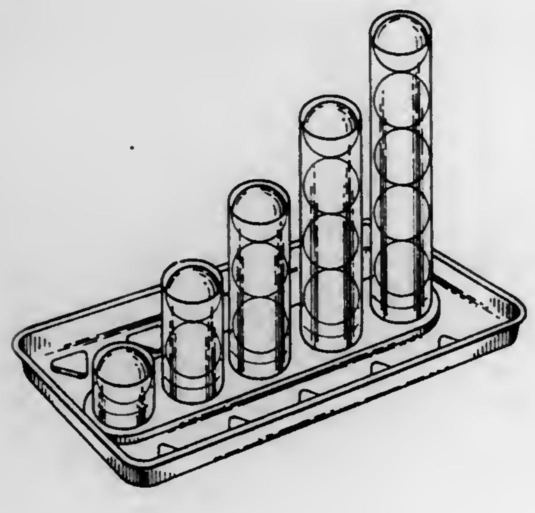


233,521
PERPETUAL CALENDAR
Alan E. Morris, 95 Westwood Drive, Westbury, N.Y. 11590
Filed Jan. 26, 1973, Ser. No. 327,136
Term of patent 3½ years
Int. Cl. D19—*03*
U.S. Cl. D19—25

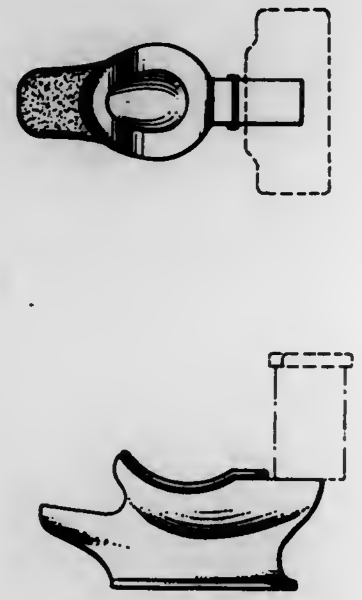




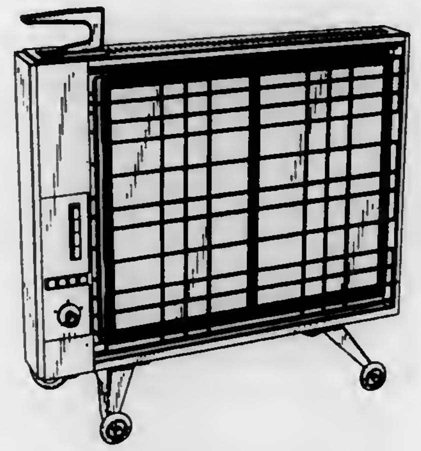
233,522
CHILD'S COUNTING DEVICE
Eugene J. Majewski, 121 Elmore St.,
Park Ridge, Ill. 60068
Filed Sept. 5, 1972, Ser. No. 286,757
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—59



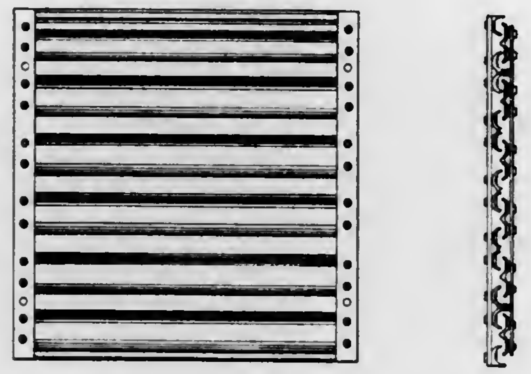
233,523
COMBINED WATER CLOSET BOWL AND SEAT
Minoru Sakamoto, 3911 Nioi Place,
Honolulu, Hawaii 96816
Filed Feb. 21, 1973, Ser. No. 334,207
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—67



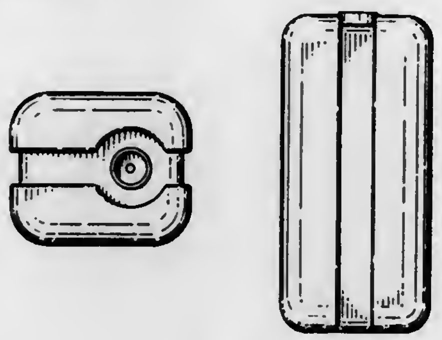
233,524
PORTABLE HEATER
Francisco Beldarrain, Cordovilla-Pamplona, Spain,
assignor to Orbaiceta S.A., Cordovilla, Spain
Filed Dec. 18, 1972, Ser. No. 315,843
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—123



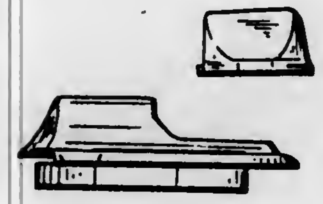
233,525
GREASE FILTER
Anthony Jordan, 262 Great River Road,
Great River, N.Y. 11739
Filed Dec. 11, 1972, Ser. No. 313,767
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—149



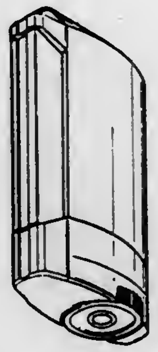
233,526
CIGARETTE LIGHTER
Hans Lowenthal, Kensington, England, assignor to Colibri
Lighters Limited, London, England
Filed Dec. 26, 1972, Ser. No. 318,197
Claims priority, application Great Britain July 7, 1972
Term of patent 7 years
Int. Cl. D27—*05*; D9—*03*
U.S. Cl. D27—36



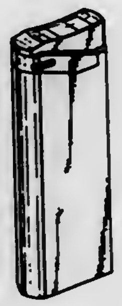
233,527
HEAD FOR A LIGHTER
Ricardo Aguirre Gili, Barcelona, Spain, assignor to
Flamagas S.A., Barcelona, Spain
Filed Jan. 26, 1973, Ser. No. 327,099
Claims priority, application Spain Nov. 21, 1972
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—36 R



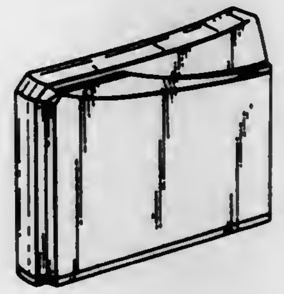
233,528
LIGHTER
Alfred Racek, Seitenberggasse 50, Wien 16, Austria
Filed Feb. 1, 1973, Ser. No. 328,650
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42 R



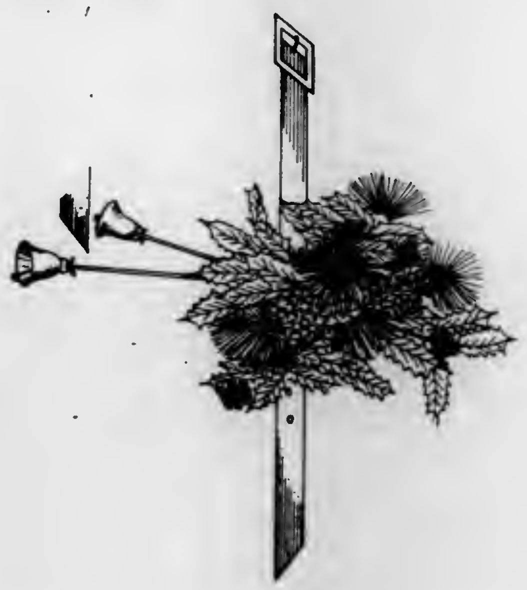
233,529
CIGARETTE LIGHTER
Nobuyoshi Moriya, Urawa, Japan, assignor to Mansei
Kogyo Kabushiki Kaishya, Saitama, Japan
Filed Mar. 14, 1973, Ser. No. 341,124
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42 R



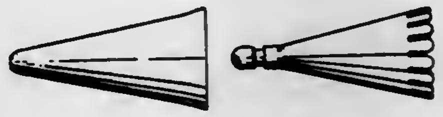
233,530
CIGARETTE LIGHTER
Kenjiro Goto, Tokyo, Japan, assignor to Mansei Kogyo
Kabushiki Kaishya, Saitama, Japan
Filed Mar. 14, 1973, Ser. No. 341,125
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42



233,531
SEASONAL TRIMMING FOR A MAILBOX OR SIMILAR ARTICLE
Jerome Marrow, 40 E. 66th St.,
New York, N.Y. 10017
Filed Mar. 15, 1972, Ser. No. 235,098
Term of patent 3½ years
Int. Cl. D11—*05*
U.S. Cl. D29—1 B



233,532
HOLDER FOR ARTIFICIAL FLORAL PETALS AND LEAVES
Leon Jack Mitchell, 29 Wadeson St.,
London E.2, England
Filed Dec. 27, 1972, Ser. No. 318,742
Claims priority, application Great Britain June 29, 1972
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—1 R



233,533
TABLET CRUSHER

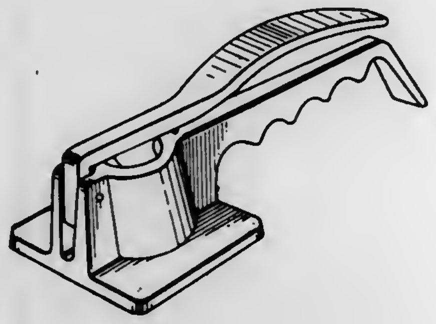
Donald J. Ocel, 2732 41st Ave. S., Minneapolis, Minn. 55406; John J. Ocel, 7521 Elliot Ave. S., Bloomington, Minn. 55423; Samuel F. Ocel, 14442 Gladiola Court, Rosemount, Minn. 55068; and Donald M. Aslesen, 5135 36th Ave. S., Minneapolis, Minn. 55417

Filed Dec. 26, 1972, Ser. No. 318,026

Term of patent 14 years

Int. Cl. D24—*02;* D7—*04*

U.S. Cl. D32—3



233,534
TOY FIGURE

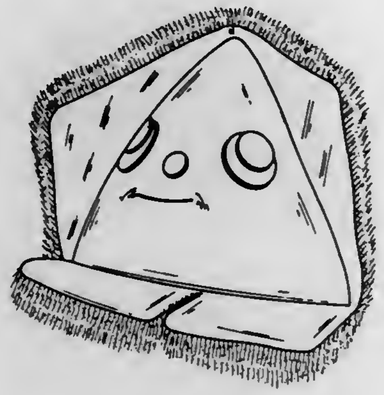
William J. Maloney II, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed July 9, 1973, Ser. No. 377,521

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D34—4 R



233,535
COMBINED GOLF PUTTER HEAD AND MIRROR ADAPTER

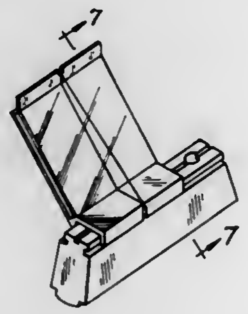
James Karban, 2307 S. 17th Ave., North Riverside, Ill. 60546

Filed Aug. 16, 1972, Ser. No. 281,104

Term of patent 14 years

Int. Cl. D21—*02*

U.S. Cl. D34—5 GH



233,536
POLO GOAL

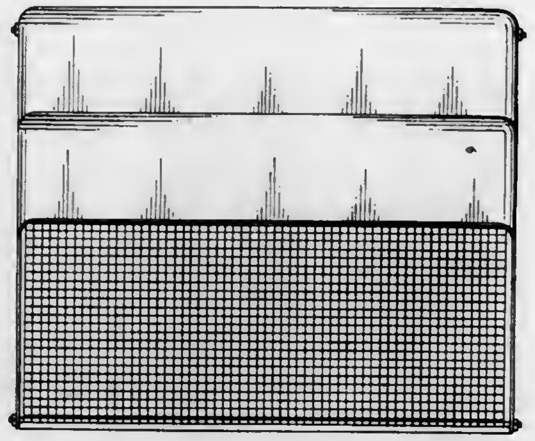
Don C. Herold, 10023 Hocker Drive, Merriam, Kans. 64106

Filed Aug. 31, 1972, Ser. No. 285,472

Term of patent 14 years

Int. Cl. D21—*02*

U.S. Cl. D34—5 VV



233,537
ROLLER SKATE

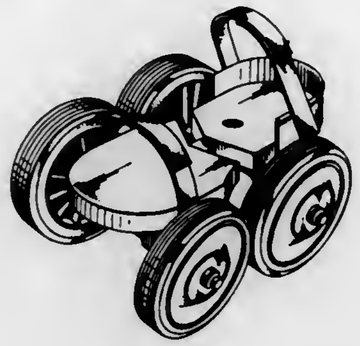
C. O. Horner, P.O. Box 248, St. Joseph, Mo. 64502

Filed July 23, 1973, Ser. No. 381,419

Term of patent 14 years

Int. Cl. D21—*02*

U.S. Cl. D34—14 C



233,538
ORNAMENTAL DESIGN FOR A COMBINED RABBIT FIGURE AND TRICYCLE TOY

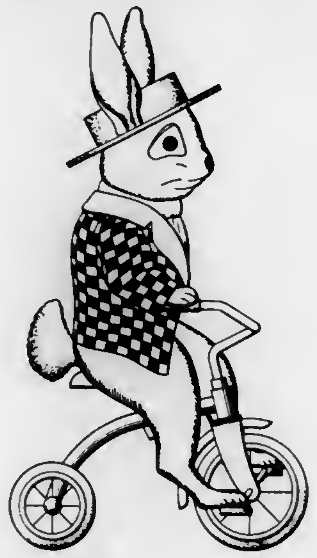
Esther Lee Singleton, R.R. 1, Box 52, St. Anne, Ill. 60964

Filed July 28, 1972, Ser. No. 276,053

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D34—15 AN



233,539
DOG FIGURE TOY BALL

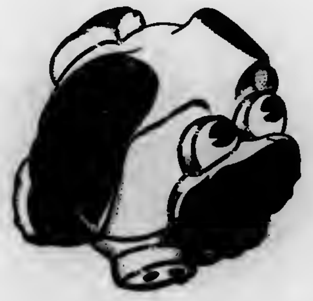
Eugene J. Echterling, Woodland Hills, Calif., assignor to Questor Corporation, Toledo, Ohio

Filed Jan. 24, 1973, Ser. No. 326,302

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D34—15 EE



233,540
RATTLE TOY

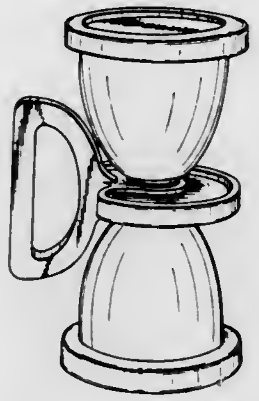
Walter P. Doe, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Apr. 9, 1973, Ser. No. 349,436

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D34—15 AG



233,541
TOY ASSEMBLY ELEMENT

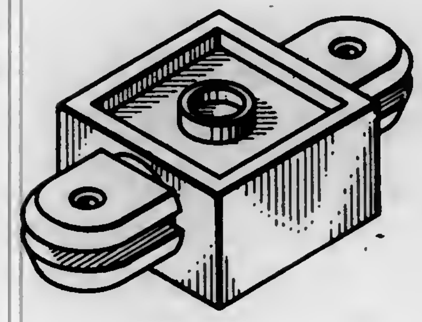
Godtfred Kirk Christiansen, Billund, Denmark, assignor to Interlego A.G., Zug, Switzerland

Filed Mar. 15, 1973, Ser. No. 341,494

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D34—15 GG



233,542
TOY ASSEMBLY ELEMENT

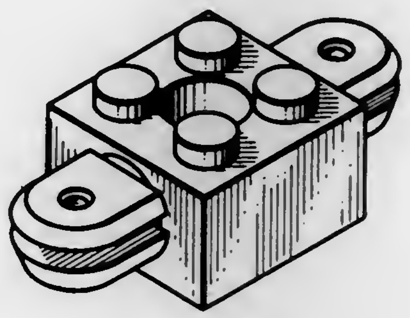
Godtfred Kirk Christiansen, Billund, Denmark, assignor to Interlego A.G., Zug, Switzerland

Filed Mar. 15, 1973, Ser. No. 341,495

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D34—15 GG



233,543
TOY ASSEMBLY ELEMENT

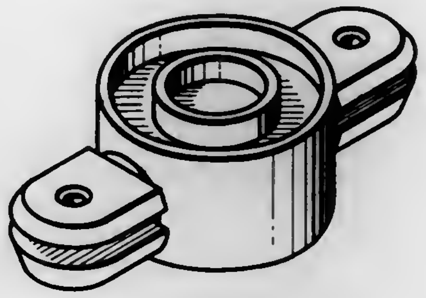
Godtfred Kirk Christiansen, Billund, Denmark, assignor to Interlego A.G., Zug, Switzerland

Filed Mar. 15, 1973, Ser. No. 341,496

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D34—15 GG



233,544
KITE

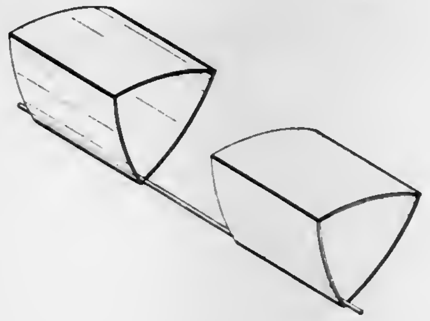
Julius M. Christoffel, Jr., Houston, Tex., assignor to Gayla Industries, Inc., Houston, Tex.

Filed June 8, 1973, Ser. No. 368,196

Term of patent 14 years

Int. Cl. D21—*01*

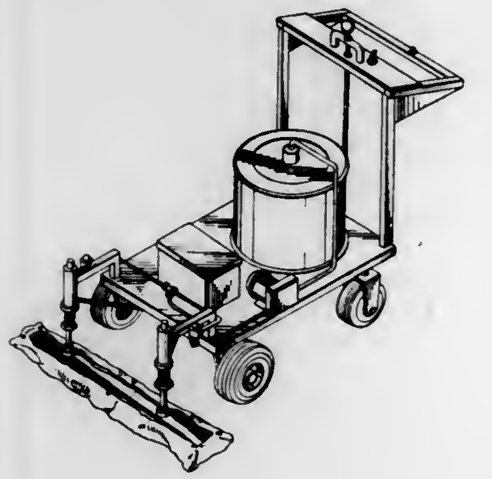
U.S. Cl. D34—15 AF



233,545

LIQUID WAX APPLICATOR

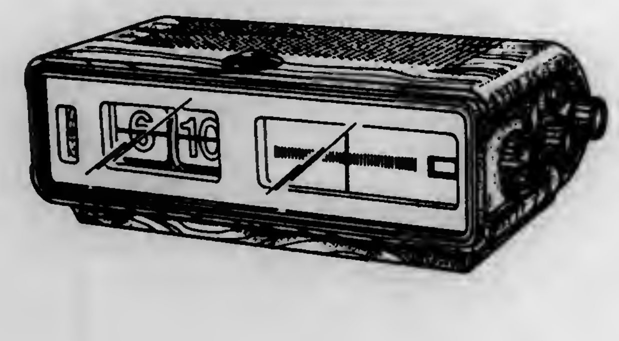
Larry L. Johns, 1724 Penninger, Boise, Idaho 83705
Filed Oct. 5, 1972, Ser. No. 295,347
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D37—3



233,546

DIGITAL CLOCK RADIO

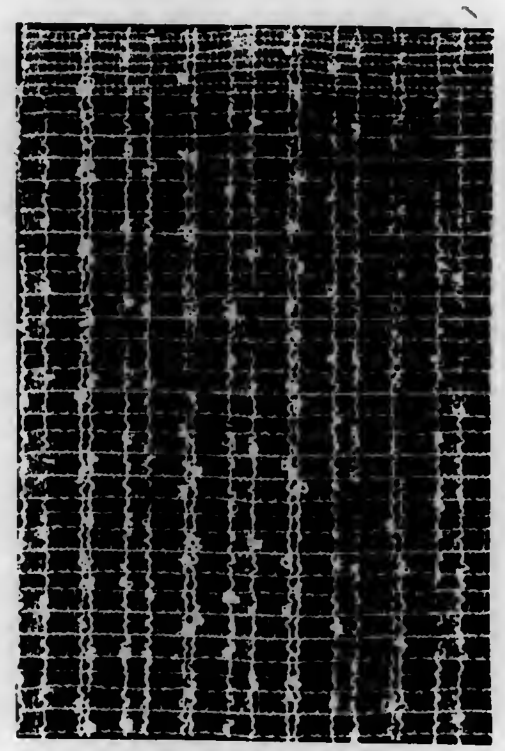
Shuhei Taguchi, Osaka, Japan, assignor to Matsushita Electric Co., Ltd., Osaka, Japan
Filed Dec. 7, 1972, Ser. No. 313,055
Claims priority, application Japan June 9, 1972
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 H



233,547

CURTAIN FABRIC

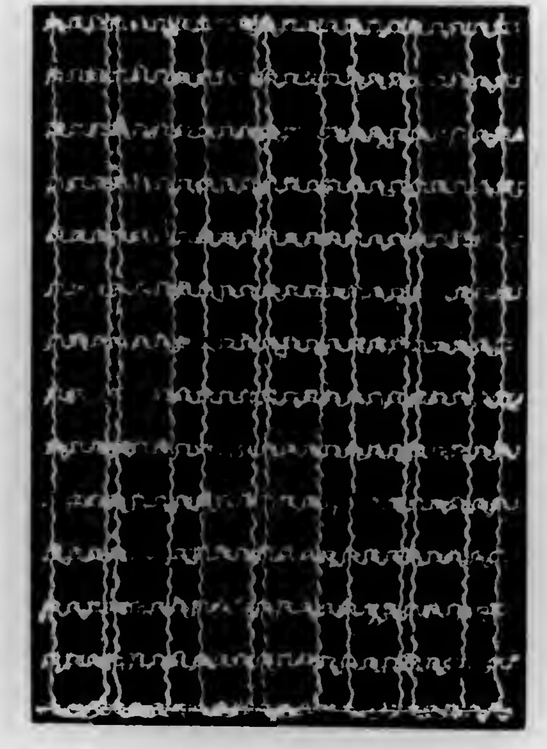
Peter E. Schroeder, Oberwil, near Brenngarten, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed May 16, 1973, Ser. No. 360,820
Claims priority, application Germany Nov. 17, 1972
Term of patent 14 years
Int. Cl. D5—*02*
U.S. Cl. D47—6 E



233,548

CURTAIN FABRIC

Peter E. Schroeder, Oberwil, near Brenngarten, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed May 22, 1973, Ser. No. 362,815
Claims priority, application Germany Feb. 20, 1973
Term of patent 14 years
Int. Cl. D5—*02*
U.S. Cl. D47—6 E



233,549

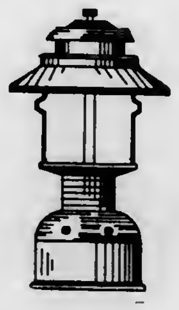
CURTAIN FABRIC

Peter E. Schroeder, am Falter, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed May 22, 1973, Ser. No. 362,841
Claims priority, application Germany Jan. 23, 1973
Term of patent 14 years
Int. Cl. D5—*02*
U.S. Cl. D47—6 E

233,550

FLUORESCENT LANTERN

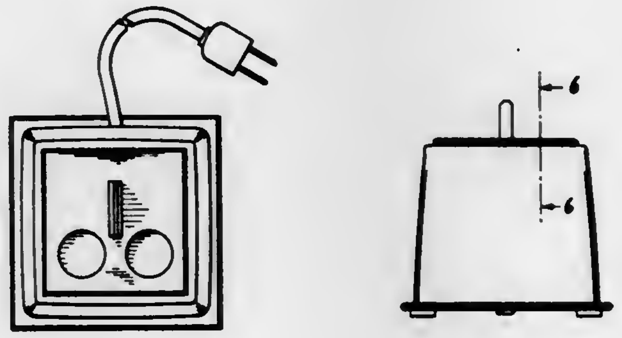
James E. Hetherington, Tannery Road, R.D. 2, Girard, Pa. 16417, and John H. Zelina, 4226 McCreary Ave., Erie, Pa. 16506
Filed Jan. 12, 1973, Ser. No. 322,963
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R



233,551

CONTACT LENS STEAMER UNIT OR THE LIKE

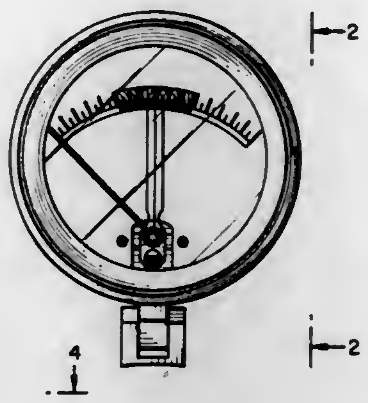
George F. Sitterle, Jacksonville, Fla., assignor to Frontier Contact Lenses of Florida, Inc., Jacksonville, Fla.
Filed Feb. 21, 1973, Ser. No. 334,265
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D49—11



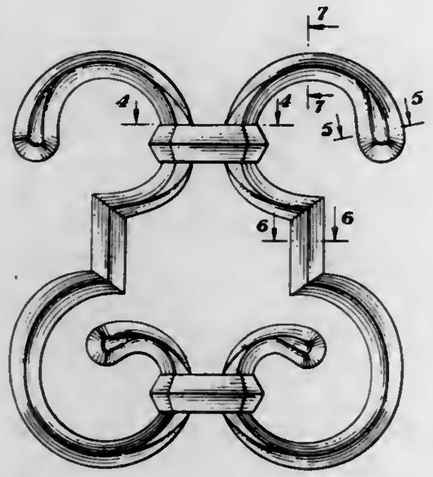
233,552

TACHOMETER WITH TORQUE ZONE INDICATOR

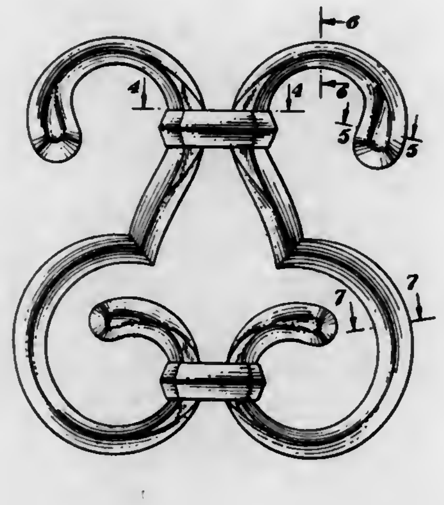
Edwin L. Schwartz, Los Angeles, Calif., assignor to Rite Autotronics Corp., Los Angeles, Calif.
Filed Nov. 16, 1972, Ser. No. 307,159
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R



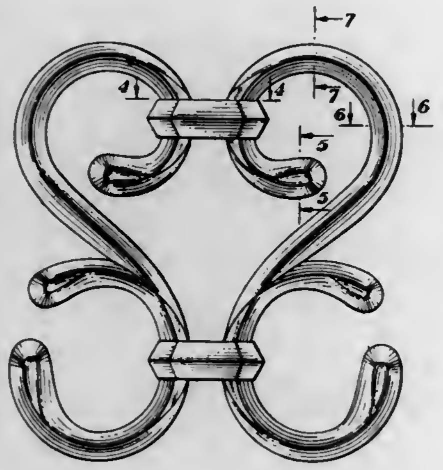
233,553
GRILLEWORK FOR TREILLAGES, ROOM DIVIDERS OR THE LIKE
Robert F. Seery, Oak Brook, Ill., assignor to Julius Blum & Co., Inc., Carlstadt, N.J.
Filed Dec. 30, 1971, Ser. No. 214,505
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D54—2 T



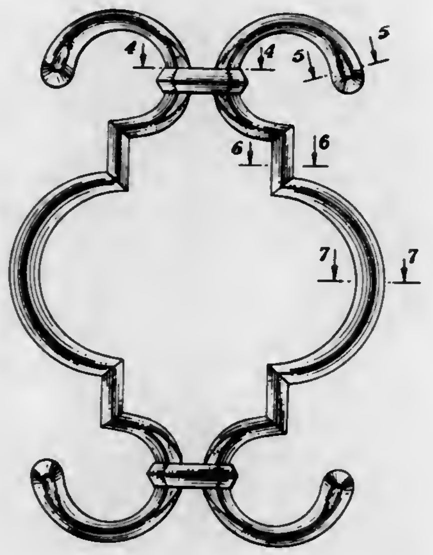
223,555
GRILLEWORK FOR TREILLAGES, ROOM DIVIDERS OR THE LIKE
Robert F. Seery, Oak Brook, Ill., assignor to Julius Blum & Co., Inc., Carlstadt, N.J.
Filed Dec. 30, 1971, Ser. No. 214,536
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D54—2 T



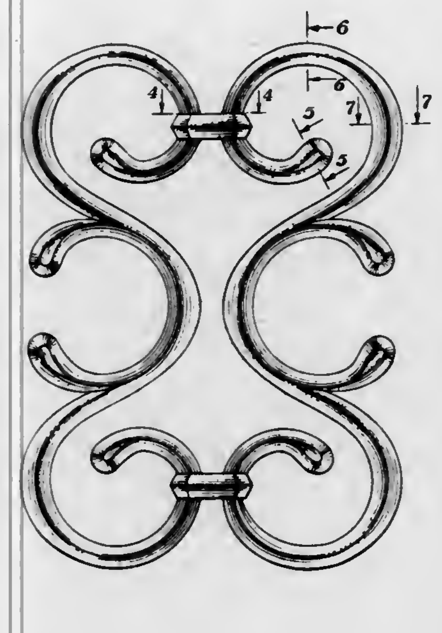
233,554
GRILLEWORK FOR TREILLAGES, ROOM DIVIDERS OR THE LIKE
Robert F. Seery, Oak Brook, Ill., assignor to Julius Blum & Co., Inc., Carlstadt, N.J.
Filed Dec. 30, 1971, Ser. No. 214,506
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D54—2 T



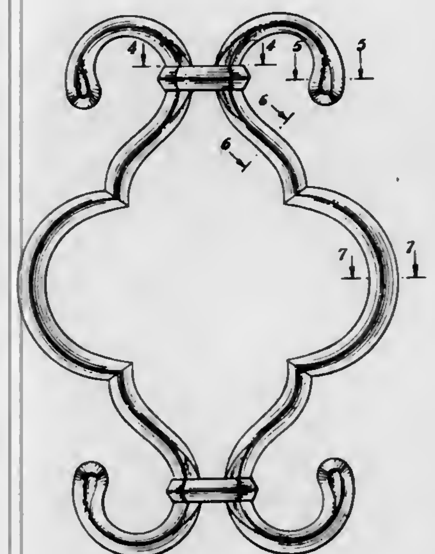
233,556
GRILLEWORK FOR TREILLAGES, ROOM DIVIDERS OR THE LIKE
Robert F. Seery, Oak Brook, Ill., assignor to Julius Blum & Co., Inc., Carlstadt, N.J.
Filed Jan. 3, 1972, Ser. No. 215,265
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D54—2 T



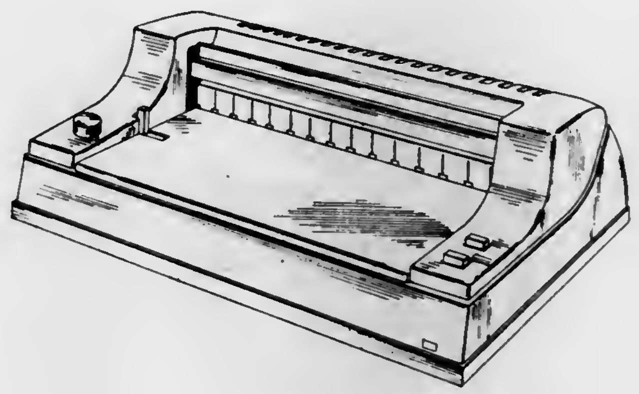
233,557
GRILLEWORK FOR TREILLAGES, ROOM DIVIDERS OR THE LIKE
Robert F. Seery, Oak Brook, Ill., assignor to Julius Blum & Co., Inc., Carlstadt, N.J.
Filed Jan. 3, 1972, Ser. No. 215,266
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D54—2 T

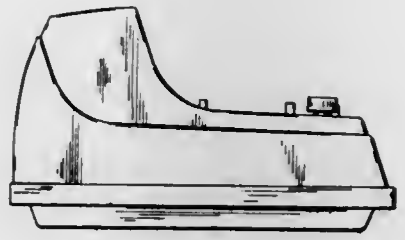


233,558
GRILLEWORK FOR TREILLAGES, ROOM DIVIDERS OR THE LIKE
Robert F. Seery, Oak Brook, Ill., assignor to Julius Blum & Co., Inc., Carlstadt, N.J.
Filed Jan. 3, 1972, Ser. No. 215,267
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D54—2 T

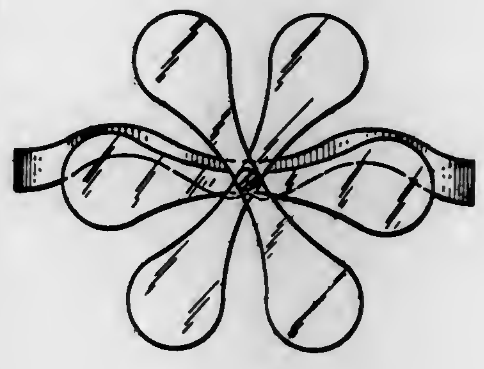


233,559
MACHINE FOR BINDING BOOKS
David R. Estes, Mountain View, Calif., assignor to Velo-Bind, Inc., Sunnyvale, Calif.
Filed Mar. 12, 1973, Ser. No. 340,388
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D55—1



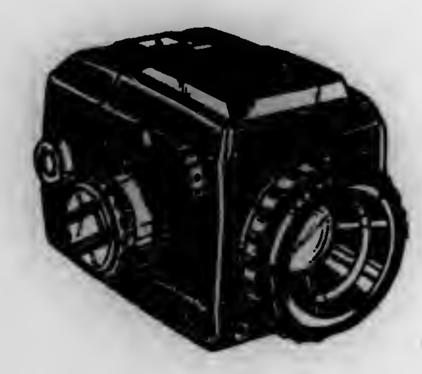


233,560
SUNGLASSES
St. Barth Alaska, 3811 S. Scoville Ave., Berwyn, Ill. 60402
Filed May 19, 1969, Ser. No. 17,219
Term of patent 14 years
Int. Cl. D16—*08*
U.S. Cl. D57—1



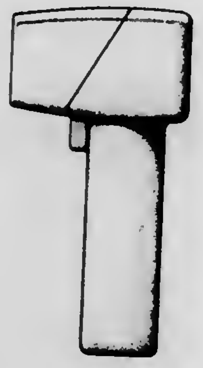
233,561
CAMERA

Zenzaburo Yoshino, Tokyo, Japan, assignor to Zenza Bronica Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 3, 1972, Ser. No. 277,822
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 B



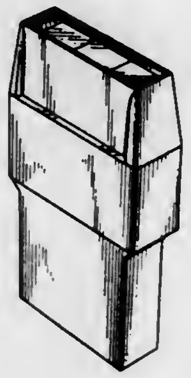
233,562
ADJUSTABLE-HEAD ELECTRONIC FLASH UNIT

Claus Prochnow, Braunschweig, Klaus Pfitzner, Linden, and Jochen Kramer and Hans Schönfeld, Wolfsburg, Germany, assignors to Rollei-Werke Franke & Heidecke, Braunschweig, Germany
Filed July 16, 1973, Ser. No. 379,558
Claims priority, application Germany Jan. 18, 1973
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 F



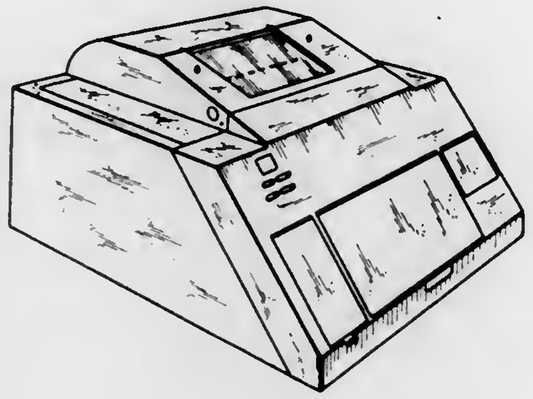
233,563
STAMP WITH INTERCHANGEABLE LETTER-BLOCKS

Takaji Funahashi, 1, 2-chome, Kitatakasho-machi, Nishi-ku, Nagoya-shi, Aichi-ken, Japan
Filed Mar. 20, 1973, Ser. No. 343,341
Claims priority, application Japan Oct. 13, 1972
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D64—10



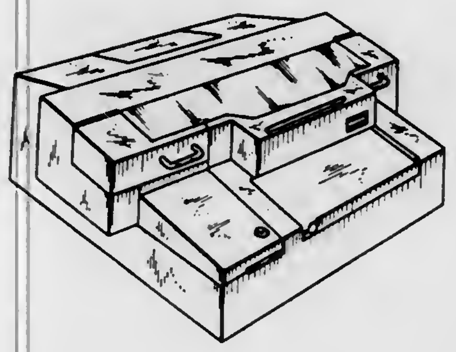
233,564
SOUND REDUCING COVER FOR A TYPEWRITER, TELEPRINTER OR THE LIKE

Berndt Ebbe Frick, 9 Herrgardsvagen, 13500 Tyreso, Sweden
Filed Apr. 30, 1973, Ser. No. 355,433
Claims priority, application Sweden Nov. 17, 1972
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 A



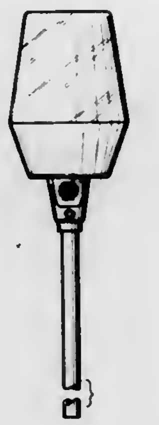
233,565
SOUND REDUCING COVER FOR TYPEWRITER, TELEPRINTER OR THE LIKE

Berndt Ebbe Frick, 9 Herrgardsvagen, 13500 Tyreso, Sweden
Filed Apr. 30, 1973, Ser. No. 355,434
Claims priority, application Sweden Nov. 17, 1972
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 A



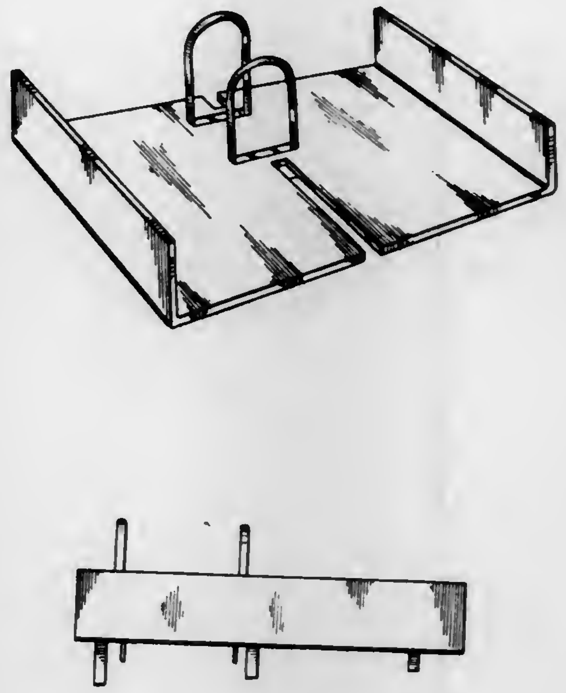
233,566
HIGHWAY COMMUNICATIONS STANDARD

Dennis J. Foley and Richard A. Gilmore, Columbus, Ohio, assignors to Design Properties, Inc., Wellston, Ohio
Filed Aug. 16, 1972, Ser. No. 281,169
Term of patent 3½ years
Int. Cl. D29—*02*
U.S. Cl. D72—1 H



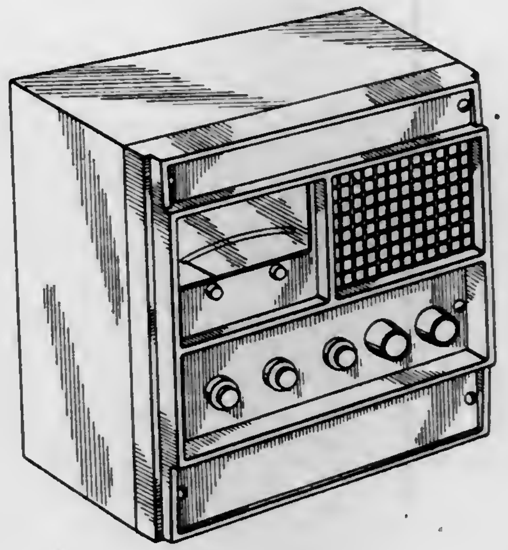
233,567
CALENDAR HOLDER

Gordon Perry, Bayside, N.Y., assignor to Oxford Pendaflex Corporation, Garden City, N.Y.
Filed Sept. 28, 1972, Ser. No. 295,981
Term of patent 14 years
Int. Cl. D19—*03*
U.S. Cl. D74—5 R



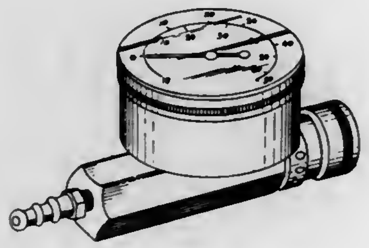
233,568
MEDICAL STATION INSTRUMENT UNIT

Paul A. Lyons, La Jolla, and Nathaniel W. Burks, Jr., and David L. Britt, San Diego, Calif., assignors to Medical Instruments & Technology Corp., San Diego, Calif.
Filed Oct. 20, 1972, Ser. No. 299,230
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 F



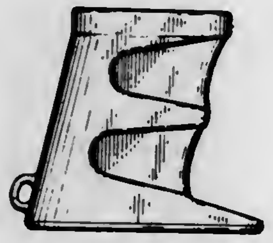
233,569
COMBINATION MANOMETER AND VARIABLE RELIEF VALVE

Bruce B. Miller, Eaton Rapids, Mich., assignor to
Neo-Care, Inc., Eaton Rapids, Mich.
Filed Nov. 24, 1972, Ser. No. 308,966
Term of patent 14 years
Int. Cl. D24—*99, 02;* D23—*01*
U.S. Cl. D83—12 R



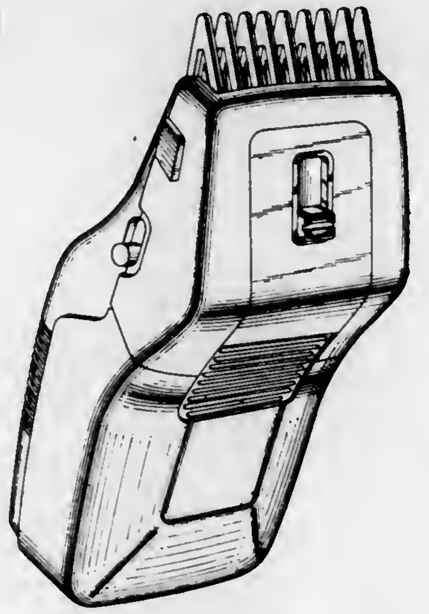
233,570
UMBRELLA HANDLE

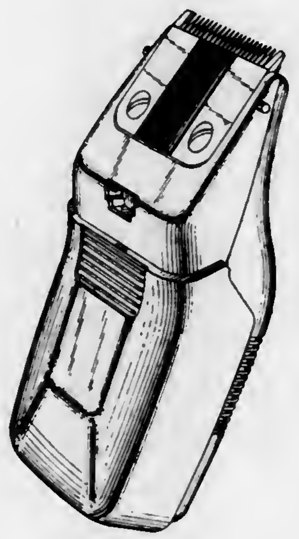
Hans Hoffmann, Essen, Germany, assignor to Telesco
Brophey Limited, Montreal, Quebec, Canada
Filed Feb. 25, 1972, Ser. No. 229,616
Claims priority, application West Germany Aug. 26, 1971
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D88—3 A



233,571
ELECTRIC HAIR CUTTER

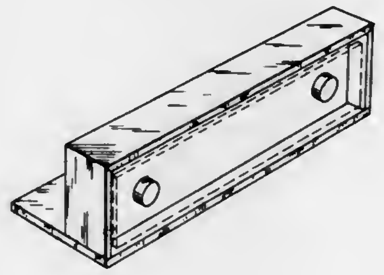
Taisuke Ono and Hisatane Ohi, Osaka, Japan, assignors
to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Jan. 3, 1973, Ser. No. 320,719
Claims priority, application Japan July 3, 1972
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A





233,572
NAME PLATE HOLDER

James R. Norrbohm, 9936 Columbus Ave.,
Minneapolis, Minn. 55420
Filed Jan. 2, 1973, Ser. No. 320,561
Term of patent 3½ years
Int. Cl. D20—*03*
U.S. Cl. D96—12 F



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF NOVEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- : *See—*
- Abbott, Bennie J.; and Stroud, Jeff A. Litter removal mechanism for poultry houses and the like. 3,845,516, Cl. 15-93.00h.
- Abrams, Eileen Marie: *See—*
  - Abrams, Victor Joseph, 3,845,595.
- Abrams, Victor Joseph; deceased (by Abrams, Eileen Marie; administratrix). Portable buildings. 3,845,595, Cl. 52-93.000.
- ACF Industries, Incorporated: *See—*
  - Carlson, Edwin S., 3,845,878.
  - Needham, Robert F.; and Souchek, Dwaine G., 3,845,876.
- Acoustics Development Corporation: *See—*
  - Ertl, Edward S., 3,845,590.
- Acoustifone Corporation: *See—*
  - Malmrose, Gerald E.; and Helgesson, Ulf R., 3,845,838.
- Acquaviva, Thomas; and Kukucka, William P., to Xerox Corporation. Sorter control to prevent over-stacking in the sorter trays. 3,845,949, Cl. 271-64.000.
- Adams, George C., to Rollform Incorporated. Ceiling grid system expansion joint. 3,846,031, Cl. 403-28.000.
- Addressograph-Multigraph Corporation: *See—*
  - Roteman, Jerome; and Gogola, Joseph K., 3,846,151.
- Adler, Kalus: *See—*
  - Reinecke, Herbert; Adler, Kalus; Bauer, Johann; Kretschmer, Reinhard; Lamhofer, Gerhard; and Pichler, Engelbert, 3,846,362.
- Adolph, Horst G.: *See—*
  - Gilligan, William H.; and Adolph, Horst G., 3,846,493.
- Aerojet-General Corporation: *See—*
  - Zimmerman, Gilbert A.; and Sherman, Marshall L., 3,846,195.
- Aerospace Research, Inc.: *See—*
  - Galvin, Aaron A.; and Shapiro, L. Dennis, 3,846,778.
- Agfa-Gevaert Aktiengesellschaft: *See—*
  - Hellmig, Erhard; Moll, Franz; Randolph, August; and Saleck, Wilhelm, 3,846,135.
  - Riester, Oskar; Ohlschlager, Hans; and Odenwalder, Heinrich, 3,846,137.
  - Zorn, Hugo; Broll, Helmut; and Reckziegel, Erich, 3,846,133.
- Agfa-Gevaert N.V.: *See—*
  - Lohmann, Joachim Werner; Peeters, Hugo Karel; Ceulemans, Renaat Andreas; and Moelants, Felix Jan, 3,846,131.
  - Van Paesschen, August Jean; and Herbots, Joseph Antonine, 3,846,134.
- Ahlquist, Harry Richard. Skip bridge valve. 3,846,308, Cl. 210-331.000.
- Ahmed, Adel Abdel, to RCA Corporation. Current attenuator. 3,846,696, Cl. 323-1.000.
- Aida, Masaaki: *See—*
  - Kobayashi, Takashi; Aida, Masaaki; Mita, Tooru; and Nishi, Takayuki, 3,845,536.
- Air Knife Inc.: *See—*
  - Henderlite, James H., III, 3,846,618.
- Airco, Inc.: *See—*
  - Croix, Louise S., 3,846,332.
  - Moore, George L., 3,846,502.
- Airpax Electronics Incorporated: *See—*
  - Cila, Otakar; and Nye, Dudley D., Jr., 3,846,697.
- Aisin Seike Kabushiki Kaisha: *See—*
  - Takayama, Katsuki, 3,845,992.
- Aisin Seiki Kabushiki Kaisha: *See—*
  - Ueda, Atsumi, 3,845,776.
- Ajinomoto Co., Inc.: *See—*
  - Okumura, Shinji; Takeshita, Shito; Enei, Hitoshi; and Ninagawa, Sadayoshi, 3,846,573.
- Akatsu, Mitsuharu: *See—*
  - Hirota, Ryoichi; Fujishima, Tooru; Miyazaki, Gentaro; Iwasaki, Tadahiko; Akatsu, Mitsuharu; and Kinoshita, Tomoo, 3,846,673.
- Akazawa, Yoshinobu; Yagyu, Masami; Nozawa, Shigenori; and Yasui, Satoshi, to Pfizer Inc. Aqueous doxycycline compositions. 3,846,548, Cl. 424-227.000.
- Akrongold, Harold S.; and Akrongold, Rochelle. Cosmetic skin powder containing urea. 3,846,550, Cl. 424-63.000.
- Akrongold, Rochelle: *See—*
  - Akrongold, Harold S.; and Akrongold, Rochelle, 3,846,550.
- Aksamit, Marion W.: *See—*
  - Herr, Robert W.; Sigl, Edward D.; and Aksamit, Marion W., 3,845,850.
- Akzo N.V.: *See—*
  - Seibert, Gerhard; and Pitowski, Hans-Jurgen, 3,846,156.
- Aladdin Industries, Incorporated: *See—*
  - Bridges, John A., 3,845,873.
- Alagy, Jacob; Cha, Bernard; and Koen, Cornelis, to Institut Francais du Petrole, des Carburants et Lubrifiants. Vertical reaction vessel for effecting reaction of liquid and gaseous reactants by liquid-gas contact. 3,846,079, Cl. 23-283.000.
- Albani, Peter E., to Avco Corporation. Impingement cooled turbine blades and method of making same. 3,846,041, Cl. 416-97.000.
- Albrecht, Rudolf; Kessler, Hans-Joachim; and Schroder, Eberhard, to Schering Aktiengesellschaft. Nitrofurylpyrimidines. 3,846,428, Cl. 260-256.40c.
- Alburn, Harvey E.; and Dvonch, William, to American Home Products Corporation. 6-[2-(1,4-Cyclohexadien-1-yl)acetamido] penicillanic acid. 3,846,406, Cl. 260-239.001.
- Alderman, Robert Joe. Method for applying bands to a roof. 3,845,602, Cl. 52-741.000.
- Aldrich, Ralph E.; and Simmons, William A., Jr., to Itek Corporation. Liquid crystal display containing an additional broad angle back scattering material. 3,846,014, Cl. 350-160.01c.
- Aleseev, Nikolai Efimovich: *See—*
  - Buzhinsky, Igor Mikhailovich; Gapontsev, Valentin Pavlovich; Zhabotinsky, Mark Efremovich; Izyneev, Anatoly Andreevich; Koryagina, Elizaveta Ivanovna; Kravchenko, Valery Borisovich; Rudnitsky, Jury Petrovich; Sverchkov, Evgeny Ivanovich; Aleseev, Nikolai Eimovich; and Davydov, Boris Leonidovich, 3,846,142.
- Alexeev, Nikolai Fedorovich: *See—*
  - Kremnev, Oleg Alexandrovich; Borovsky, Vladimir Rudolfovich; Kravets, Sergei Semenovich; Alexeev, Nikolai Fedorovich; Tsvetkov, Vladislav Arkhipovich; and Bogdanovsky, Vladimir Borisovich, 3,846,571.
- Alfa-Laval AB: *See—*
  - Ehnstrom, Lars Karl Johan, 3,846,309.
- Algoship International Limited: *See—*
  - Campbell, Goerge Thomas Richardson; and Kasuga, Toshishige, 3,845,865.
- Align-O-Tron Corporation: *See—*
  - Hyman, Maxwell; and De Puy, Donald C., 3,846,027.
- Alimanestianu, Mihai. Vehicle traffic handling system. 3,845,717, Cl. 104-26.000.
- Allen, Joseph C.; and Tate, Jack F., to Texaco Inc. Solution mining technique for tar sand deposits. 3,845,820, Cl. 166-266.000.
- Allen, Joseph C.; and Braden, William B., Jr., to Texaco Inc. Recovery of oil by a vertical miscible flood. 3,845,821, Cl. 166-269.000.
- Allen, Joseph C., to Texaco Inc. Method for preventing bottom water coning in oil wells. 3,845,823, Cl. 166-303.000.
- Allied Chemical Corporation: *See—*
  - Hamilton, Brian K., 3,845,971.
  - Kavesh, Sheldon, 3,845,805.
  - Siegmann, Arnon, 3,846,377.
  - Vermeer, Dick Charles; and Pontrelli, Gene Joseph, 3,845,528.
- Alquist, Henry E.; Pollock, Lyle W.; and Dale, Glenn H., to Phillips Petroleum Company. Auxiliary fuel vaporizer system for an internal combustion engine. 3,845,749, Cl. 123-133.000.
- Altamira, Anthony Francis: *See—*
  - Hoyt, Donald L.; and Altamira, Anthony Francis, 3,845,817.
- Altenhaus, Rhoda: *See—*
  - Rosenzweig, Julius; and Altenhaus, Rhoda, 3,846,214.
- Aluminum Company of America: *See—*
  - Racunas, Bernard J.; and Jarrett, Noel, 3,846,123.
- Alza Corporation: *See—*
  - Theeuwes, Felix; and Higuchi, Takeru, 3,845,770.
  - Zaffaroni, Alejandro, 3,845,761.
- Amalga Corporation, The: *See—*
  - Harmon, Emerson R., 3,846,727.
- American Brattice Cloth Corporation: *See—*
  - Clarke, Robert H., 3,846,202.
- American Cyanamid Company: *See—*
  - Farley, Charles Edward; and Grayson, Martin, 3,846,374.
  - Ramsey, Wallace Burton; and Delapp, Darwin Fiske, 3,846,382.
  - Saluti, Gerald Michael, 3,846,509.
  - Smithey, Walter A., 3,846,226.
  - Weiss, Martin Joseph; Gibs, Gabriel Joseph; Poletto, John Frank; and Remers, William Alan, 3,846,446.
- American Forest Products Corporation: *See—*
  - Fieri, Anthony J., 3,845,861.
- American Gage & Machine Company: *See—*
  - Sommer, Peter J., 3,845,560.
- American Hoechst Corporation: *See—*
  - Gaisser, Eugene J., 3,846,816.
- American Home Products Corporation: *See—*
  - Alburn, Harvey E.; and Dvonch, William, 3,846,406.
- American Hospital Supply Corporation: *See—*

McPhee, Charles J., 3,846,518.
American Manufacturing Company, Inc.: *See—*
  Geerdes, James D., 3,846,523.
American Plasticraft Company: *See—*
  Dumas, Christ J.; and Aubel, Leo J., 3,846,731.
AMF Incorporated: *See—*
  Petrucci, Raymond M.; and Schnick, Arthur W., 3,846,307.
Amoco Production Company: *See—*
  Sharp, Shelby P.; and Sudduth, Lamar F., 3,846,311.
AMP Incorporated: *See—*
  Carter, Clyde Thomas; and Henschen, Homer Ernst, 3,846,735.
  Demler, Henry William, Sr., 3,845,538.
  Fritz, William Baird; and Reyner, Emerson Marshall, II, 3,846,721.
  Garver, William Joseph, 3,846,743.
  Kahn, David, 3,846,776.
  Kunkle, John Philip; and Barnes, Ronald Bruce, 3,846,741.
  Mayberry, Mickey Lee, 3,845,523.
  Over, William Roderick, 3,845,535.
  Pauza, William Vito; and Poltonavage, Edward Michael, 3,846,734.
Ampex Corporation: *See—*
  Gooch, Beverley R.; and Schiller, Edward, 3,845,550.
  Longworth, Michael W., 3,846,530.
Amsler, Joachim: *See—*
  Roth, Adrian W.; and Amsler, Joachim, 3,845,543.
Amstar Corporation: *See—*
  Randazzo, Anthony J., 3,845,695.
Anaconda Company, mesne: *See—*
  Chrisman, Willis L.; Stauffer, John D.; and Arnaudin, Edwin H., Jr., 3,846,528.
Anchia, Sergio A. Automatic word counting apparatus for a typewriter. 3,845,900, Cl. 235-102.000.
Ancona, John A.: *See—*
  Hierholzer, Frank J., Jr.; and Ancona, John A., 3,846,726.
Anderson, Paul, Industrier AB: *See—*
  Andersson, Bengt Valfrid, 3,845,934.
Anderson, Robert F., to Universal Oil Products Company. HF alkylation including recycle and further alkylation of the alkylate-containing hydrocarbon. 3,846,505, Cl. 260-683.450.
Anderson, Stanley R. Rotary massager. 3,845,758, Cl. 128-56.000.
Andersson, Bengt Valfrid, to Anderson, Paul, Industrier AB. Climbing pole for climbing jacks. 3,845,934, Cl. 254-105.000.
Andersson, Per Ake, to International Cybernetic Machines Limited. Coin testing device. 3,845,849, Cl. 194-97.00r.
Ando, Takuo; and Yamazaki, Hiroyuki, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Adhesive crayon composition containing sorbitol-benzaldehyde reaction product as additive. 3,846,363, Cl. 260-29.6bm.
Andreani, Monique Andree: *See—*
  Leclercq, Marius; Morin, Daniel Louis; Damien, Michael Henri; and Andreani, Monique Andree, 3,846,224.
Andreasson, Bror Elis. Device for pressing air into inflatable articles. 3,845,795, Cl. 141-313.000.
Andrews, James D., to TRW Inc. Electrochemical machining cutoff. 3,846,262, Cl. 204-129.600.
Angliker, Hans-Joerg; Peter, Richard; and Artz, Klaus, to Ciba-Geigy AG. Sublimation transfer dyeing with styryl dyes. 3,846,069, Cl. 8-2.500.
Anonima Castelli S.A.S. di Cesare Castelli & C.: *See—*
  Piretti, Giancarlo, 3,845,728.
Antonov, Dimitar Simov: *See—*
  Shindarov, Lubomir Mihaylov; Galabov, Angel Simenov; and Antonov, Dimitar Simov, 3,846,491.
Appenzeller, Valentin: *See—*
  Kusters, Eduard; and Appenzeller, Valentin, 3,845,534.
Apple, Joseph P., Jr.; and Lauterbach, William E., to Dole Refrigerating Company. Plate refrigeration air system. 3,845,638, Cl. 62-426.000.
Applied Inventions Corporation: *See—*
  Kehler, Paul, 3,846,631.
Apsell, Sheldon P.; Johnson, Olof C., Jr.; and Whitney, Robert W., to Eikonix Corporation. Remote paging with message storage. 3,846,783, Cl. 340-311.000.
Aquila, Werner: *See—*
  Himmele, Walter; and Aquila, Werner, 3,846,497.
Arai, Hiroshi; Ohta, Jun; and Kikuchi, Yasunobu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for detecting and indicating quantity of engine oil. 3,846,747, Cl. 340-59.000.
Arakawa, Yoshihiro: *See—*
  Itoh, Takashi; Nakashima, Akio; and Arakawa, Yoshihiro, 3,846,584.
Archer, Albert E., to Fonseca, John; as trustee for Archer, Albert E.; Hopper, Donald J.; Fonseca, John; Winlund, Lawrence J.; and Lee, Seward. Constant power supply employing a variable frequency inverter. 3,846,694, Cl. 321-18.000.
Arhan, Roger Pierre; and Lacroix, Andre Roger Camille, to Societe Honeywell Bull (Societe Anonyme). Velocity modulator device. 3,846,681, Cl. 318-115.000.
Armco Steel Corporation: *See—*
  Raabe, Francis O.; and Yossa, Frank A., 3,846,190.
Armstrong Cork Company: *See—*
  Lewicki, Walter J., Jr., 3,845,712.
Arnaudin, Edwin H., Jr.: *See—*
  Chrisman, Willis L.; Stauffer, John D.; and Arnaudin, Edwin H., Jr., 3,846,528.
Arnett, Lawrence E.; and Wiggins, Earl M., to Ford Motor Company. Inlet insert. 3,845,877, Cl. 220-86.00r.
Arnold, Richard B., to General Electric Company. Apparatus and method for inserting dynamoelectric machine coils. 3,845,548, Cl. 29-596.000.
Aronov, Anatoly Izrailevich: *See—*
  Fedjukin, Dmitry Lvovich; Sergeeva, Ljudmila Semenovna; Bakharev, Andrei Nikolaevich; Gorlina, Inna Leonidovna; Aronov, Anatoly Izrailevich; Kravets, Arkady Timofeevich; Korochkin, Petr Evmenovich; and Titov, Alexei Ivanovich, 3,846,611.
Aronova, Nina Ivanovna; Makhova, Nina Nikolaevna; Zavyalov, Sergei Ivanovich; Volkenshtein, Jury Borisovich; and Kunitskaya, Galina Mikhailovna. Method of producing zeta-aminolevulinic acid hydrochloride. 3,846,490, Cl. 260-534.00r.
Artz, Klaus: *See—*
  Angliker, Hans-Joerg; Peter, Richard; and Artz, Klaus, 3,846,069.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
  Yamada, Takao; and Sunakawa, Kiyoshi, 3,846,817.
Aschenbrenner, Frank A.: *See—*
  Senturk, Necdet; and Aschenbrenner, Frank A., 3,845,611.
Aske, Leonard E. T-manifold assembly for gas heated tool. 3,845,755, Cl. 126-401.000.
Asselborn, Peter; Cramer, Werner; and Mullejans, Heinrich, to Felten & Guilleaume Carlswerk Aktiengesellschaft. Making of longitudinally welded metal tubes. 3,846,610, Cl. 219-61.000.
Association d'Recherche et d'Entraide Cardiologiques et Angeiologiques: *See—*
  Fontaine, Guy Hugues; and Ribot, Alain, 3,845,773.
Astra Lakemedel Aktiebolag: *See—*
  Bondesson, Ulf Goran; Carlson, Lars Anders Fritz; Hedbom, Christina; Magnusson, Harry Olof; and Stjernstrom, Nils Erik, 3,846,445.
Astrom, Klas Johan: *See—*
  Karden, Karl Gosta; Westerberg, Sven Peter Johas; and Astrom, Klas Johan, 3,845,673.
Athey, Stuart E.; and Thornburg, W. Edwin, to Hobart Manufacturing Company, The. Liquid temperature control and low liquid level detector. 3,846,615, Cl. 219-333.000.
Atkinson, David William, to Caterpillar Tractor Company. Vibration-isolating mounting for engines. 3,845,923, Cl. 248-3.000.
Atlas Copco Aktiebolag: *See—*
  Karden, Karl Gosta; Westerberg, Sven Peter Johas; and Astrom, Klas Johan, 3,845,673.
Atlee, Zed J.; and Gager, Robert M., to Picker Corporation. Method of manufacture of X-ray tube having thoriated tungsten. 3,846,006, Cl. 316-26.000.
Atwal, Manmohan Singh; Watts, Daniel Jay; and Weisenborn, Frank Lee, to Squibb, E. R., & Sons, Inc. 1,4-Cyclohexadienyl imidazolidinyl cephalosporanic acids and derivatives thereof. 3,846,417, Cl. 260-243.00c.
Aubel, Leo J.: *See—*
  Dumas, Christ J.; and Aubel, Leo J., 3,846,731.
Augat, Inc.: *See—*
  Damon, Neil F., 3,846,740.
Augsburger, Jean-Jacques, to Erfinor A.G. Process for securing a horological balance spring or hair spring and a collet together by welding. 3,846,612, Cl. 219-121.00m.
Austin, William E., to General Electric Company. Fast rise time quenching spark gap. 3,846,657, Cl. 313-195.000.
Automated Technology Corporation: *See—*
  Calabro, Salvatore R.; Calabro, John A.; and Mick, Peter R., 3,846,788.
Automobiles Peugeot: *See—*
  Henault, Claude, 3,846,076.
  Lefeuvre, Andre, 3,845,700.
Avco Corporation: *See—*
  Albani, Peter E., 3,846,041.
  Cook, Charles W., 3,846,793.
  Shank, Wayne C., 3,846,044.
Avionic Instruments Inc.: *See—*
  Compoly, Albert William; and Temple, Alfred Charles, 3,846,693.
Avramidis, Stellios Antony, to FMC Corporation. Multi-speed motion transmitting mechanism. 3,845,666, Cl. 74-336.000.
Ayers, Clifton E.; and Herreman, Walter G., to Mallory, P. R., & Co., Inc. Assembly apparatus. 3,845,537, Cl. 29-208.00f.
Babcock, John C.: *See—*
  Campbell, J. Allan; and Babcock, John C., 3,846,456.
Bach, Ricardo O.: *See—*
  Hoffman, Doyt K.; and Bach, Ricardo O., 3,846,494.
Bader, Jorg; deceased (by Bader-Ludwig, Dagmar; legal representative); Hambock, Heinz; Sturm, Elmar; and Weiss, Anton Georg, to Ciba-Geigy Corporation. Certain 1,2,4-thiadiazoles. 3,846,438, Cl. 260-302.0sd.
Bader-Ludwig, Dagmar: *See—*
  Bader, Jorg; Hambock, Heinz; Sturm, Elmar; and Weiss, Anton Georg, 3,846,438.
Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
  Bressel, Ulrich; Fuchs, Werner; and Platz, Rolf, 3,846,472.
  Fischer, Adolf, 3,846,113.
  Friedenreich, Heinrich; Suck, Bernhard; and Reitsch, Juergen, 3,845,908.
  Himmele, Walter; and Aquila, Werner, 3,846,497.

Badische Uhrenfabrik GmbH: *See—*
  Holzmann, Karl, 3,845,617.
Bagwell, Richard S., Jr.: *See—*
  Doyle, Edward J.; and Bagwell, Richard S., Jr., 3,846,614.
Bahder, George; and Garcia, Felipe G., to Phelps Dodge Industries, Inc. Splice for electric cables. 3,846,578, Cl. 174-88.00r.
Baikov, Valentin Nikolaevich: *See—*
  Surgina, Ninel Leonidovna; Gurevich, Ljudmila Ivanovna; Yanchenko, Larisa Nikolaevna; Bei, Tamara Alexandrovna; and Baikov, Valentin Nikolaevich, 3,845,662.
Bailey, Jay Richard, to McCulloch Corporation. Chain saw anti-vibration system. 3,845,557, Cl. 30-381.000.
Baird-Atomic, Inc.: *See—*
  Turner, Arthur, 3,846,024.
Baker, Billy Z., to Roberts Supply, Inc. Apparatus and method for striating concrete. 3,846,036, Cl. 404-75.000.
Baker Hydro Inc.: *See—*
  Baker, William O.; and Johnson, Charles S., 3,845,510.
Baker Industries, Inc.: *See—*
  LeNay, Tom W.; and Hadden, Donald L., 3,846,794.
Baker, William O.; and Johnson, Charles S., to Baker Hydro Inc. Swimming pool racing line take-up float assembly. 3,845,510, Cl. 4-172.000.
Bakharev, Andrei Nikolaevich: *See—*
  Fedjukin, Dmitry Lvovich; Sergeeva, Ljudmila Semenovna; Bakharev, Andrei Nikolaevich; Gorlina, Inna Leonidovna; Aronov, Anatoly Izrailevich; Kravets, Arkady Timofeevich; Korochkin, Petr Evmenovich; and Titov, Alexei Ivanovich, 3,846,611.
Balch, Conrad J.; and Gendreau, Armand W. Ignitable fuel package. 3,846,086, Cl. 44-40.000.
Balderson Inc.: *See—*
  Balderson, Willard E.; and Birk, Billy D., 3,845,870.
Balderson, Willard E.; and Birk, Billy D., to Balderson Inc. Landfill bucket. 3,845,870, Cl. 214-145.000.
Balkhanova, Galina Fedorovna: *See—*
  Kachlova, Revekka Vulfovna; Nemtsov, Mark Semenovich; Balkhanova, Galina Fedorovna; Bychkovskaya, Ljudmila Nikolaevna; Mescherskaya, Vera Mikhailovna; and Rabinovich, Sofya Petrovna, 3,846,338.
Banjavich, Mark P., to Taylor Diving & Salvage Co., Inc. Methods for cutting and raising submerged masses. 3,845,893, Cl. 225-1.000.
Barker, Sidney Alan; and Gray, Charles John, to Koch-Light Laboratories Limited. Bonding bonding of enzymes, enzyme derivatives and other biologically active molecules to polymeric materials. 3,846,306, Cl. 210-198.00c.
Barker, Walter M.: *See—*
  Lira, Emil P.; Barker, Walter M.; and McCrae, Robert C., 3,846,426.
Barner, Roland K. Combined bowstring draw and trigger release mechanism for use in archery. 3,845,752, Cl. 124-35.000.
Barnes, Ronald Bruce: *See—*
  Kunkle, John Philip; and Barnes, Ronald Bruce, 3,846,741.
Barrett, Burton M.; and DeVoe, James A., to Lowrance Electronics, Inc. Spring loaded transducer bracket. 3,845,928, Cl. 248-291.000.
Barrett, Edward L. Proportioned current battery. 3,846,174, Cl. 136-6.00r.
Barrett, Robert M. Wheel locking device. 3,845,643, Cl. 70-18.000.
Barrow, Gilbert C., to Massa Division, Dynamics Corporation of America. Electroacoustic transducer of the vibratile diaphragm type with controlled uniformity of performance characteristics and method for controlling uniformity. 3,846,650, Cl. 310-8.200.
Barsova, Antonina Petrovna: *See—*
  Shubin, Vladimir Nikolaevich; Silantiev, Viktor Sergeevich; Khlyntsev, Alexandr Sergeevich; and Barsova, Antonina Petrovna, 3,845,648.
Bartlett, Raymond H. Stump splitter. 3,845,797, Cl. 144-2.00n.
Bashford, Gordon Dennis, to Rover Company Limited, The. Vehicle seating. 3,845,987, Cl. 297-385.000.
Batcheller, George C., Co., Inc.: *See—*
  Kirby, John Ashley, 3,845,507.
Bauer, Johann: *See—*
  Reinecke, Herbert; Adler, Kalus; Bauer, Johann; Kretschmer, Reinhard; Lamhofer, Gerhard; and Pichler, Engelbert, 3,846,362.
Bauer, Karl-Heinz: *See—*
  Labude, Wolfgang; and Bauer, Karl-Heinz, 3,846,732.
Baum, Henry T.; and Stiles, Claude J., to National Distillers and Chemical Corporation. Process and apparatus for measuring the composition of fluid plastics. 3,846,073, Cl. 23-230.00a.
Baum, Laszlo: *See—*
  Widauer, Josef Olav; Lang, Konrad; Baum, Laszlo; and Szabo, Suzanne, 3,846,411.
Baverstock, Richard, to Impco Carburetion, Inc. Air-gas mixing device. 3,846,094, Cl. 48-180.00c.
Bayer Aktiengesellschaft: *See—*
  Kubitzker, Harry; Falkai, Bela Von; and Reichle, Alfred, 3,846,532.
  Kudamatsu, Akio; Miyamoto, Masao; and Fukazawa, Nobuo, 3,846,467.
  Langmann, Werner; and Kuth, Robert, 3,846,070.
  Schnetger, Jochen, 3,846,350.
  Schrader, Gerhard; and Hammann, Ingeborg, 3,846,514.
  Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, 3,846,413.
  Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, 3,846,414.
  Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, 3,846,415.
  Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, 3,846,425.
  Winter, Gerhard; Mansmann, Manfred; Schon, Nikolaus; and Schnoring, Hildegard, 3,846,527.
Bayer Aktiengesellschaft Leverkusen: *See—*
  Hofer, Wolfgang; Schliebs, Reinhard; Schmidt, Robert Rudolf; and Eue, Ludwig, 3,846,513.
Bayern-Chemie Gesellschaft fur Flugchemische Antriebe mit beschrankter Haftung: *See—*
  Herrmann, Gunter, 3,845,970.
BBC Aktiengesellschaft Brown, Boveri & Cie.: *See—*
  Klein, Erwin, 3,846,678.
Beaudette, James C.: *See—*
  McElhinney, Warren W.; and Beaudette, James C., 3,845,998.
Beaumier, Pierre: *See—*
  Begin, Marcel; Morrissette, Camille; Beaumier, Pierre; and Tupinier, Charles, 3,846,211.
Becher, Steven J. Side and rear mount tire carrier. 3,845,891, Cl. 224-42.210.
Beck, Joseph J., to McQuay-Perfex Inc. Portable gas heater. 3,846,616, Cl. 219-365.000.
Beckerman, Martin: *See—*
  Kelly, Daniel E.; Theed, Robert W.; and Beckerman, Martin, 3,845,558.
Beer, Carl: *See—*
  Jeris, John S.; Beer, Carl; and Mueller, James A., 3,846,289.
Beetle, Arthur B., to TRW Inc. Plural potentiometer. 3,846,733, Cl. 338-133.000.
Begin, Marcel; Morrissette, Camille; Beaumier, Pierre; and Tupinier, Charles, to Victoriaville Furniture Limited. Furniture element. 3,846,211, Cl. 161-7.000.
Behrend, Gerda A.: *See—*
  Behrend, Gerda A.; and Pahlow, Fritz H. (said Pahlow assor. to said), 3,845,985.
Behrend, Gerda A.; and Pahlow, Fritz H., said Pahlow assor. to said Behrend, Gerda A. Draft shield. 3,845,985, Cl. 297-184.000.
Bei, Tamara Alexandrovna: *See—*
  Surgina, Ninel Leonidovna; Gurevich, Ljudmila Ivanovna; Yanchenko, Larisa Nikolaevna; Bei, Tamara Alexandrovna; and Baikov, Valentin Nikolaevich, 3,845,662.
Beisch, Hanspeter E., to Skil Corporation. Rotary disconnect for a rotary hammer tool. 3,845,826, Cl. 173-48.000.
Belcher, Brian E.: *See—*
  Stewart, Floyd C.; Weeks, Daniel W.; and Belcher, Brian E., 3,846,703.
Bell & Howell Company: *See—*
  Reekie, James; and Royston, Marvin F., 3,845,929.
Bell, Gordon M., to General Electric Company. Thermally conductive and electrically insultive mounting systems for heat sinks. 3,846,824, Cl. 357-80.000.
Bell Telephone Laboratories, Inc.: *See—*
  Condon, Joseph Henry; and Kaminski, William, 3,846,582.
Bell Telephone Laboratories, Incorporated: *See—*
  Courtney-Pratt, Jeofry Stuart; and Gregory, Richard Langton, 3,846,009.
  Franco, John Vincent, 3,846,708.
  Kiko, Frederick John, 3,846,712.
  MacArthur, Donald Morley; and Skurkiss, Peter Kenny, 3,846,196.
  Mohr, Theodore Warren, 3,846,720.
  Riley, Terence James; and Shackle, Peter William, 3,846,822.
Bellmann, Manfred; and Pfeiffer, Gerd, to Mannesmannrohren-Werke Aktiengesellschaft. Diagonal rolling mill. 3,845,646, Cl. 72-100.000.
Beloit Corporation: *See—*
  Ely, Donald A.; and McKie, Thomas G., 3,846,228.
Bendix Corporation, The: *See—*
  Meyers, Robert E., 3,845,693.
Bendler, Hellmut; and Marondel, Gunther, to Dynamit Nobel AG. Safety device for vehicles. 3,845,836, Cl. 180-82.00c.
Benkoe, Erwin: *See—*
  Goldfarb, Adolph E.; and Benkoe, Erwin, 3,845,956.
Benn, Edgar; Buchtl, Benno; and Ender, Manfred, to Briag AG. Dispenser assembly for wax substances. 3,846,029, Cl. 401-96.000.
Bennett, Bailey: *See—*
  Bunk, Albert R.; and Bennett, Bailey, 3,846,370.
Benoit, Roland A.; and Duprey, Richard H., to Interroyal Corporation. Universal headboard construction. 3,845,511, Cl. 5-53.00r.
Berg, Carls Olof: *See—*
  Warden, Hans Erik; Kindvall, Frank; and Berg, Carls Olof, 3,845,946.
Berg, Gerhard; Nordsiek, Karl-Heinz; Maahs, Gunter; and Schanzer, Wilhelm, to Chemische Werke Heuls Aktiengesellschaft. Process for the production of pourable elastomer particles. 3,846,365, Cl. 260-33.6aq.
Berg, Lawrence F., to Caterpillar Tractor Company. End of stroke impact reducing means for linear fluid motors. 3,845,694, Cl. 91-402.000.
Berkman, Samuel; and Roundtree, Ural, Jr., to RCA Corporation. Vapor deposition apparatus with pyrolytic graphite heat shield. 3,845,738, Cl. 118-49.000.
Bernard, Walter J., to Sprague Electric Company. Tantalum pellet system and methods of making and using the same. 3,846,260, Cl. 204-25.000.
Bernhardt, William F., Jr. Bicycle safety seat for child. 3,845,892, Cl. 224-36.000.

- Berntell, John Osvald; and Hellmen, Sven Rolf Bertil, to Kommanditbolaget United Stirling (Sweden) AB & Co. Hot gas Stirling cycle engine with in-line cylinders. 3,845,626, Cl. 60-525.000.
- Bertelsen, William R. Surface effect vehicles and guideways therefor. 3,845,716, Cl. 104-23.0fs.
- Besser, John E.: *See—*
  - Huffaker, James E.; Clonce, Ambrose J.; and Besser, John E., 3,846,351.
- Bessette, Robert C. Apparatus for evaluating athletic performance. 3,846,704, Cl. 325-66.000.
- Bessho, Motoaki: *See—*
  - Inai, Yuichi; Okazaki, Kanzo; Shimada, Katsutoshi; Kagei, Kengo; and Bessho, Motoaki, 3,846,480.
- Bethlehem Steel Corporation: *See—*
  - Henry, Robert J., 3,846,183.
  - Kostecky, James F., 3,845,601.
  - Melloy, George F.; Riedel, John Y.; and Oodgursky, Paul P., 3,846,184.
  - Smollinger, Carl W., 3,846,033.
  - Strimple, Robert A.; McCall, George L.; and Walker, Robert L., 3,845,706.
- Beuther, Harold; Chun, Sun W.; and Montagna, Angelo A., to Gulf Research & Development Company. Regenerative process for the selective hydrodesulfurization of petroleum residuals under mild conditions. 3,846,285, Cl. 208-216.000.
- Bianchi, Giuseppe; DeNora, Vittorio; Gallone, Patrizio; and Nidola, Antonio, to Electronor Corporation. Method of producing valve metal electrode with valve metal oxide semi-conductive coating having a chlorine discharge catalyst in said coating. 3,846,273 Cl. 204-290.00f.
- Biber, Conrad H., to Polaroid Corporation. Automatic electronic flash camera. 3,846,812, Cl. 354-145.000.
- Bice, William A., to Clark Equipment Company. Tractor suspension. 3,845,833, Cl. 180-29.000.
- Bicosa Societe de Recherches: *See—*
  - Courier-De-Mere, Henri Edouard Francois Marie, 3,846,063.
- Bing, Alan J.: *See—*
  - Boocock, David; Bing, Alan J.; and Preston, Kevin S., 3,845,724.
- Birch Brothers, Inc.: *See—*
  - Straujups, John E., 3,845,914.
- Birk, Billy D.: *See—*
  - Balderson, Willard E.; and Birk, Billy D., 3,845,870.
- Birko Chemical Corporation: *See—*
  - Rose, J. Sterling, 3,846,248.
- Birman, Joao. Loop for erecting a male member. 3,845,760, Cl. 128-79.000.
- Black, Sevalls, & Bryson, Inc.: *See—*
  - Ebeling, Harold O.; and Smith, Russell D., 3,846,066.
- Blackwell, Robert J.; Kehn, Donald M.; and Whitney, Thomas A., to Esso Production Research Company. Hydraulic fracturing method using gelled hydrocarbons. 3,846,310, Cl. 252-8.55r.
- Blaw-Krox Construction Equipment, Inc.: *See—*
  - Davin, Donald R., 3,846,035.
- Blea, Maxine R.: *See—*
  - Harper, Marie R.; and Blea, Maxine R., 3,846,005.
- Blind, Andre: *See—*
  - Boesch, Roger; and Blind, Andre, 3,846,439.
  - Boesch, Roger; Blind, Andre; and Cassal, Jean-Marie, 3,846,440.
- Blomberg, Folke Ivar; and Engerstam, Marten, to Monark-Crescent AB. Bicycle exerciser with work indicator structure. 3,845,663, Cl. 73-379.000.
- Blomstrom, Ralph. Process for increasing the natural color intensity of seafoods. 3,846,566, Cl. 426-250.000.
- Bloom, John Allison, to Texas Instruments Incorporated. Metal carbonitride coatings. 3,846,162, Cl. 117-106.00r.
- Blum, Joseph M.; and Shih, Kwang K., to International Business Machines Corporation. Liquid phase epitaxy of $Al_x Ga_{1-x} As$. 3,846,191, Cl. 148-172.000.
- Blumenthal, Jack L.; and Guth, Eugene D., to TRW Inc. Catalyst for the spontaneous decomposition of monopropellant hydrazine. 3,846,339, Cl. 252-438.000.
- BMT Manufacturing Corporation: *See—*
  - Schwarz, Karl E.; and Yeman, Donald E., 3,845,855.
- Boden, Karl; Geweke, Werner; and Scheffer, Dietrich, to Padana AG. Magnetic bearing assembly for journalling a rotor in a stator. 3,845,997, Cl. 308-10.000.
- Boden, Ogden W. Cord locking assembly. 3,845,575, Cl. 36-50.000.
- Boedecker, Kenneth J., Jr.; and Gibson, Charles I., to United States Steel Corporation. Modular crash cushion. 3,845,936, Cl. 256-1.000.
- Boehringer Ingelheim GmbH: *See—*
  - Mentrup, Anton; Zeile, Karl; Danneberg, Peter; Schromm, Kurt; Guenard, Jeanette; Renth, Ernst-Otto; and Stotzer, Harry, 3,846,549.
- Boeing Company, The: *See—*
  - Jenny, Robert W., 3,845,919.
- Boesch, Roger; and Blind, Andre, to Rhone-Poulenc S.A. Process for the preparation of 3-phenyl-5-t-butyl-2-oxadiazolones. 3,846,439, Cl. 260-307.00a.
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- Bogue, John C.: *See—*
  - Mauch, Robert E.; and Sarbacher, Robert I., 3,846,177.
- Bohn, Gerhard; Winkle, Gunther; and Wende, Helmut, to Krauss-Maffei Aktiengesellschaft. Magnetic-levitation vehicle with auxiliary magnetic support at track-branch locations. 3,845,720, Cl. 104-148.0ms.
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  - Cledaniel, William Richard, 3,845,910.
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  - Johnson, Walker P.; Cotton, Charles C.; Bon, David R.; and Peterson, Trules L., 3,845,937.
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  - Young, Frederick J.; Thompson, Francis T.; and Boomgaard, Dirk J., 3,846,771.
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  - Oglesby, Cecil D., 3,845,508.
  - Zimmer, George A.; and Struttmann, Hilarius S., 3,845,999.
- Borgstrom, Lennart, to Record Taxameter AB. Distance measuring instrument for motor vehicles. 3,846,803, Cl. 346-95.000.
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- Bosch, Robert, G.m.b.H.: *See—*
  - DuMont, Hans-Christoph; Strohwald, Rainer; and Reum, Helmut, 3,846,801.
  - Esper, Friedrich Josef; and Kaiser, Gerhard, 3,846,323.
- Bossler, Robert B., Jr., to Kaman Aerospace Corporation. Apparatus for measuring wear of rod end bearings. 3,845,735, Cl. 116-114.00q.
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  - Lederman, Burton E.; and Boudrie, Jack D., 3,846,223.
- Bougard, Georges. Water cooling of wall surfaces. 3,845,813, Cl. 165-47.000.
- Boulter, Richard Arnold, to Post Office, The. Digital communication systems. 3,846,583, Cl. 178-67.000.
- Bowmar Instrument Corporation: *See—*
  - Herr, Robert W.; Sigl, Edward D.; and Aksamit, Marion W., 3,845,850.
- Boyer, Lyndon D.: *See—*
  - Dew, John N.; Boyer, Lyndon D.; and Gawel, Len J., 3,846,244.
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  - Allen, Joseph C.; and Braden, William B., Jr., 3,845,821.
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- Brenner, Alfred E., to Summagraphics Corporation. Position determination device. 3,846,580, Cl. 178-19.000.
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- Breuer, Hermann: *See—*
  - Treuner, Uwe; and Breuer, Hermann, 3,846,418.
- Briag AG: *See—*
  - Benn, Edgar; Buchtl, Benno; and Ender, Manfred, 3,846,029.
- Bridges, John A., to Aladdin Industries, Incorporated. Vacuum insulated container. 3,845,873, Cl. 215-13.00r.
- Bridgestone Tire Company Limited: *See—*
  - Ohashi, Takashi; and Sakata, Ryozo, 3,846,388.
- Bridigum, Robert J., to Westinghouse Air Brake Company. Automatic drain valve. 3,845,778, Cl. 137-204.000.
- Brindisi, Anthony Thomas: *See—*
  - Towns, Edward Johnson; and Brindisi, Anthony Thomas, 3,845,872.
- British Leyland Truck and Bus Division Limited: *See—*
  - O'Neill, John Sidney, 3,845,619.
  - Surrall, Alan John; and Candlin, Peter Philip, 3,845,545.
- British Petroleum Company Limited, The: *See—*
  - Evans, Gordon Homer; and Shennan, Jean Lindsay, 3,846,238.
- British Railways Board: *See—*
  - Boocock, David; Bing, Alan J.; and Preston, Kevin S., 3,845,724.
- British Steel Corporation: *See—*
  - Mayorcas, Reginald; and Hawkes, David Alec, 3,846,120.
- Broadbent, David James: *See—*

  - Freiberg, Ashley Herman; and Broadbent, David James, 3,846,547.
- Broan Manufacturing Co., Inc.: *See—*
  - Wolbrink, David W.; and Busch, Robert W., 3,846,043.
- Brockmuller, Brigitte, nee Papst: *See—*
  - Papst, Josef, 3,845,786.
- Brodrueck, Detlef A., to Teletype Corporation. Print control logic circuitry for on-the-fly printers. 3,845,710, Cl. 101-93.140.
- Brodsky, Robert S. Detection system for protected area with keyboard inhibitor for re-entry. 3,846,782, Cl. 340-274.000.
- Broll, Helmut: *See—*
  - Zorn, Hugo; Broll, Helmut; and Reckziegel, Erich, 3,846,133.
- Bronicki, Lucien Yehuda; and Yogev, Amnon, to Ormat Turbines (1965) Ltd. Heat transfer apparatus. 3,845,628, Cl. 60-656.000.
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- Brown, Ced F. Wheel conveyor system. 3,845,854, Cl. 198-184.000.
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  - Buttery, Kenneth T.; and Lugt, Thomas Vander, Jr., 3,845,897.
- Brown, Harry W., to Cutler-Hammer, Inc. Warning light for electrical switches. 3,846,777, Cl. 340-252.00r.
- Brown, James E.; Woods, Andrew B.; and Kliger, Howard S., to United States of America, Army. Forward area alerting sensor netting system. 3,846,797, Cl. 343-6.00r.
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- Brown, John W., to Qantix Corporation. Transparent front projection screen having concave ridges thereon. 3,846,012, Cl. 350-128.000.
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- Brucker, Christian. Process of an installation for purifying sewage. 3,846,291, Cl. 210-14.000.
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- Brundage, Robert Wesley. Rotary abutment hydraulic motor or pump. 3,846,055, Cl. 418-124.000.
- Bryan, John L.: *See—*
  - Fowler, Joe R.; and Bryan, John L., 3,845,830.
- BTV Engineering Corporation: *See—*
  - Roos, Paul W., 3,846,621.
- Buchanan, James E.: *See—*
  - Brown, James H.; Buchanan, James E.; and Morrison, Steven, 3,846,786.
- Buchner, Norbert, to Fr. Hesser Maschinenfabrik AG. Multi-layer web of packaging material. 3,846,220, Cl. 161-145.000.
- Buchtl, Benno: *See—*
  - Benn, Edgar; Buchtl, Benno; and Ender, Manfred, 3,846,029.
- Bucksbaum, Arnold M. Programming circuit for microwave ovens. 3,846,607, Cl. 219-10.550.
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- Bunk, Albert R.; and Bennett, Bailey, to Shatterproof Glass Corporation. Sealing element and composition. 3,846,370, Cl. 260-42.360.
- Bunker Ramo Corporation: *See—*
  - Spaulding, Tedford H., 3,846,737.
- Bunn, Clinton O., to Col-Ment Corporation. Composition for recovering oil from water. 3,846,335, Cl. 252-428.000.
- Burcik, Emil J.: *See—*
  - Slobod, Robert L.; and Burcik, Emil J., 3,845,632.
- Burgess Pigment Company: *See—*
  - Tapper, Michael, 3,846,147.
- Burlington Industries, Inc.: *See—*
  - Griswold, Azel Alan, 3,846,378.
- Burns, Patrick, to Triplex Safety Glass Company Limited. Units for suspending glass between opposed bending dies. 3,846,110, Cl. 65-273.000.
- Burpulis, John Samuel: *See—*
  - Counceller, John D.; De Capite, Robert T.; Burpulis, John Samuel; and Souffie, Robert David, 3,846,057.
- Burroughs Corporation: *See—*
  - Glaser, David; and Kupsky, George A., 3,846,669.
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- Busch, Robert W.: *See—*
  - Wolbrink, David W.; and Busch, Robert W., 3,846,043.
- Busma, John H., Jr.; and Romander, Curtis M., to Stanford Research Institute. Method for bonding concentric tubular elements to one another. 3,846,206, Cl. 156-294.000.
- Buttery, Kenneth T.; and Lugt, Thomas Vander, Jr., to Brown Company. Snap-erected container. 3,845,897, Cl. 229-16.00r.
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- Buzzolini, Mario G., to Sandoz-Wander Inc. 2-Methyl-1,3-propanediamine derivatives. 3,846,496, Cl. 260-570.700.
- Bychkovskaya, Ljudmila Nikolaevna: *See—*
  - Kachlova, Revekka Vulfovna; Nemtsov, Mark Semenovich; Balkhanova, Galina Fedorovna; Bychkovskaya, Ljudmila Nikolaevna; Mescherskaya, Vera Mikhailovna; and Rabinovich, Sofya Petrovna, 3,846,338.
- Bykov, Valery Andreevich: *See—*
  - Zhislin, Yakov Moiseevich; Kirkunov, Alexandr Eliseevich; Sokolov, Alexandr Yakovlevich; Ivanoz, Alexei Ivanovich; Leikin, Albert Yakovlevich; Grinberg, Efim Naumovich; Vinogradov, Vyacheslav Dmitrievich; Yanovskaya, Zinaida Solomonovna; and Bykov, Valery ndreevich, 3,845,704.
- Byrd, Walter C., III, to General Motors Corporation. Self-locking seal for generator leads. 3,845,961, Cl. 277-212.00f.
- Byrum, Bernard W., Jr.; and Ernsthausen, Roger E., to Owens-Illinois, Inc. Gaseous discharge device. 3,846,171, Cl. 117-223.000.
- Cabot Corporation: *See—*
  - Foley, Edward M.; Dreyer, Dennis G.; and Rogers, Herbert E., Jr., 3,846,126.
- Caelus Memories, Inc.: *See—*
  - Lin, Frank W., 3,846,829.
- Cake, Arthur F., to Uranus Electronics Inc. Multiplexed liquid crystal display. 3,845,615, Cl. 58-50.00r.
- Calabro, John A.: *See—*
  - Calabro, Salvatore R.; Calabro, John A.; and Mick, Peter R., 3,846,788.
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- Calcagno, Benedetto: *See—*
  - Di Fiore, Lucio; and Calcagno, Benedetto, 3,846,334.
- Caldwell, Donald L.: *See—*
  - Mod, William A.; and Caldwell, Donald L., 3,846,143.
- Cali, Joseph A.: *See—*
  - Trageser, James H.; and Cali, Joseph A., 3,846,746.
- Callahan, John William; and Capdeville, Martin John, to Pennwalt Corporation. Abrading apparatus. 3,845,586, Cl. 51-12.000.
- Cambridge Research & Development Group: *See—*
  - Eppler, William G., Jr., 3,846,827.
- Camp, Richard H. Throttle, ignition and brake controls. 3,845,847, Cl. 192-3.00s.
- Campbell, Goerge Thomas Richardson; and Kasuga, Toshishige, to Algoship International Limited. Marine cargo handling crane. 3,845,865, Cl. 212-57.000.
- Campbell, J. Allan; and Babcock, John C., to Upjohn Company, The. Organic compounds. 3,846,456, Cl. 260-397.300.
- Campbell, Sylvester J. Liquid waste treatment. 3,846,293, Cl. 210-18.000.
- Canadian Cellulose Company, Limited: *See—*
  - Gibney, Kelly B.; and Evans, Russell S., 3,846,403.
- Candlin, Peter Philip: *See—*
  - Surrall, Alan John; and Candlin, Peter Philip, 3,845,545.
- Canon Kabushiki Kaisha: *See—*
  - Kawanabe, Tsuyoshi, 3,846,624.
  - Kiyohara, Takehiko; and Taguchi, Tetsuya, 3,846,805.
  - Nakamura, Zenzo; Uchiyama, Takashi; Taguchi, Tetsuya; and Mashimo, Yukio, 3,846,811.
- Caoutchouc Industriel de Rochassieux S.A.: *See—*
  - Taviere, Jean Andre; and Taviere, Pascal Xavier, 3,845,924.
- Capdeville, Martin John: *See—*
  - Callahan, John William; and Capdeville, Martin John, 3,845,586.
- Cappelli, Quido A., to Danker & Wohlk, Inc. Artificial eye and method of construction. 3,846,199, Cl. 156-61.000.
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- Carando Machine Works: *See—*
  - Spaan, Harry C., 3,845,656.
- Cardas, Octavian. Pressure regulating means for gas storage tanks included in severage systems. 3,845,780, Cl. 137-251.000.
- Carl, James R., to United States of America, Air Force. Integrated window, antenna, and waveguide with plasma alleviation. 3,846,798, Cl. 343-705.000.
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- Carlson, Larry W., to Rockwell International Corporation. Aerator device and method. 3,846,516, Cl. 261-87.000.
- Carlson, Lars Anders Fritz: *See—*
  - Bondesson, Ulf Goran; Carlson, Lars Anders Fritz; Hedbom, Christina; Magnusson, Harry Olof; and Stjernstrom, Nils Erik, 3,846,445.
- Carlson, Oscar N.: *See—*
  - Schmidt, Frederick A.; and Carlson, Oscar N., 3,846,121.
- Carmack, Phil D.: *See—*
  - Kinne, Frank E.; and Carmack, Phil D., 3,846,525.

- Carnahan, Robert D.: *See—*
  - Youtsey, Karl J.; Holt, William C., Jr.; and Carnahan, Robert D., 3,846,140.
- Carr, Hugh G.; and Steffen, William L., to Starr Corporation, The. Animal self feeder. 3,845,744, Cl. 119-51.130.
- Carr, Leatrice J.: *See—*
  - Martner, John G., 3,846,779.
- Carrier, J. D., Shoe Co. Limited: *See—*
  - Carrier, Joseph D., 3,846,533.
- Carrier, Joseph D., to Carrier, J. D., Shoe Co. Limited. Manufacture of molds for footwear. 3,846,533, Cl. 264-225.000.
- Carriere, Pierre P.; Leynaert, Jacky R.; Meauze, Georges D.; and Thibert, Jean-Jacques, to Office National d'Etudes et de Recherchs Aerospatiales (par abreviation: O.N.E.R.A.). Fixed blading of axial compressors. 3,846,038, Cl. 415-1.000.
- Carson, John Robert, to McNeil Laboratories, Inc. Preparation of 5-aroyl-pyrroles and intermediates therefor. 3,846,447, Cl. 260-326.470.
- Carter, Clyde Thomas; and Henschen, Homer Ernst, to AMP Incorporated. Electrical contact terminal which can be mated with an identical terminal or with a dissimilar terminal. 3,846,735, Cl. 339-47.000.
- Carter, Crawford F.: *See—*
  - Dreher, John L.; and Carter, Crawford F., 3,846,314.
- Carver, Richard N.: *See—*
  - Lohr, Raymond J.; Condry, Martin; Hirsch, Mahlon E.; Carver, Richard N.; and Rogers, Maxmillina P., 3,845,957.
- Case, George S. Racket with disposable hand grip. 3,845,954, Cl. 273-75.000.
- Case, Laura K. Photographically magnetic information storage element. 3,846,591, Cl. 179-100.10a.
- Cassal, Jean-Marie: *See—*
  - Boesch, Roger; Blind, Andre; and Cassal, Jean-Marie, 3,846,440.
- Cassella Farbwerke mainkur Aktiengesellschaft: *See—*
  - Raabe, Thomas; Stachel, Adolf; Scholtholt, Josef; and Nitz, Rolf-Eberhard, 3,846,470.
- Casset, Georges; Driffort, Jean-Pierre; and Lebel, Pierre, to Ste dite France-Couleur. Mounting arrangement for coplanar grids having common flat strip cathode. 3,846,659, Cl. 313-411.000.
- Caterpillar Tractor Company: *See—*
  - Atkinson, David William, 3,845,923.
  - Berg, Lawrence F., 3,845,694.
  - Fuller, Francis W.; Melvin, Samuel L.; and Merritt, Paul H., 3,845,654.
  - Holmstrom, William L., 3,845,578.
  - Whitfield, Joseph A., 3,845,981.
- Cecil, Florence A. Casement window. 3,845,585, Cl. 49-139.000.
- Celanese Corporation: *See—*
  - Hou, Kenneth C.; and Thomas, Norman W., 3,846,356.
  - Levy, Leon B., 3,846,336.
  - Ram, Michael J.; and Riggs, John P., 3,846,833.
- Centre d'Etudes Techniques des Industries de l'Habillement: *See—*
  - Guichard, Jean, 3,845,732.
- Century Wheels, Inc.: *See—*
  - Morgan, Paul A., 3,845,564.
- Ceulemans, Renaat Andreas: *See—*
  - Lohmann, Joachim Werner; Peeters, Hugo Karel; Ceulemans, Renaat Andreas; and Moelants, Felix Jan, 3,846,131.
- Cha, Bernard: *See—*
  - Alagy, Jacob; Cha, Bernard; and Koen, Cornelis, 3,846,079.
- Chacko, Joseph: *See—*
  - Satterfield, Robert S.; and Chacko, Joseph, 3,845,920.
- Chambers, Henry B., to Hydranautics. Chain jack with mechanically and hydraulically operated pawls. 3,845,935, Cl. 254-110.000.
- Chapman, Robert R., to Sortex Company of North America, Inc. Vegetable orienting and crowning. 3,845,705, Cl. 99-643.000.
- Chapman, Ronald H., to Motorola, Inc. DC restoration amplifier with automatic zero offset adjustment. 3,846,710, Cl. 330-11.000.
- Chapman, Ronald W.: *See—*
  - Dille, Roger M.; and Chapman, Ronald W., 3,846,087.
- Chase, Herbert S., 20% to Lee, Raymond, Organization, Inc., The. Folding shelving. 3,845,727, Cl. 108-111.000.
- Chase-Shawmut Company, The: *See—*
  - Salzer, Erwin, 3,846,728.
- Chastain, Erle D. Stabilized lamp. 3,846,627, Cl. 240-62.200.
- Chemetron Corporation: *See—*
  - Williamson, Hilding V., 3,846,515.
- Chemische Werke Heuls Aktiengesellschaft: *See—*
  - Berg, Gerhard; Nordsiek, Karl-Heinz; Maahs, Gunter; and Schanzer, Wilhelm, 3,846,365.
- Chemische Werke Huls Aktiengesellschaft: *See—*
  - Seeliger, Wolfgang; and Hesse, Karl-Dieter, 3,846,419.
- Chen, Winston H., to International Business Machines Corporation. Ink jet recording method and apparatus. 3,846,800, Cl. 346-1.000.
- Chevron Research Company: *See—*
  - Criddle, Dean W.; and Meader, Arthur L., Jr., 3,846,364.
  - Dreher, John L.; and Carter, Crawford F., 3,846,314.
  - Hotten, Bruce W., 3,846,319.
  - Jaffe, Joseph, 3,846,284.
  - Jaffe, Joseph; and Reed, Echol M., Jr., 3,846,287.
  - Lowe, Warren, 3,846,318.
  - Sims, Marc J., 3,846,313.
  - Stanton, Garth M.; and Dreher, John L., 3,846,315.
- Chiang, Mutong T.: *See—*
  - Milkovich, Ralph; and Chiang, Mutong T., 3,846,393.
- Chiang, Yuen-Sheng: *See—*
  - Wen, Cheng Paul; and Chiang, Yuen-Sheng, 3,846,198.
- Chicago Fire Brick Company: *See—*
  - Parsons, Joseph R.; and Rechter, Harold L., 3,846,144.
- Childers, William Walter; Elser, Karl Heinz; and Peterson, Phillip John, to International Business Machines Corporation. Read/write and longitudinal edge erase head assembly having multiple similarly shaped layers. 3,846,840, Cl. 360-118.000.
- Chimura, Hideo: *See—*
  - Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, 3,846,400.
- Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See—*
  - Matyas, Jakab; Petroczy, Istvan; Somfai, Eva; and David, Agoston, 3,846,567.
- CHINOIN Gyogyszer- es Vegyeszeti Termekek Gyara Rt.: *See—*
  - Huhn, Magda; Toth, Geza; Resofszki, Gabor; Somfai, Eva; and Horvath, Gabor, 3,846,407.
- Chisholm, Andrew Alexander; and Copple, Christopher John, to Platt International Limited. Spinning apparatus. 3,845,612, Cl. 57-56.000.
- Chorak, Peter P.: *See—*
  - Long, Donald V.; Derby, Norwin Cedric; and Chorak, Peter P., 3,845,696.
- Chrisman, Willis L.; Stauffer, John D.; and Arnaudin, Edwin H., Jr., to Anaconda Company, mesne. Method of continuous vulcanization in the presence of helium or hydrogen. 3,846,528, Cl. 264-85.000.
- Christ, Leon L. Desk clock with visual alarm indicator. 3,845,614, Cl. 58-19.00a.
- Christigau, Hermann: *See—*
  - Franz, Karl; and Christigau, Hermann, 3,846,654.
- Chrysler Corporation: *See—*
  - McElhinney, Warren W.; and Beaudette, James C., 3,845,998.
  - Sharp, Ellis Alvin; and Dolan, Courtney F., 3,845,671.
- Chu, William M.; Lee, James M.; and Luckett, Gary C., to International Business Machines Corporation. Delayless transistor latch circuit. 3,846,643, Cl. 307-247.00r.
- Chubarov, Evgeny Arkadievich: *See—*
  - Jurchenko, Nikolai Petrovich; Chubarov, Evgeny Arkadievich; Pisarenko, Ivan Nikolaevich; and Starikova, Ljudmila Anatolievna, 3,846,613.
- Chubb Fire Security Limited: *See—*
  - Peberdy, William T., 3,846,772.
- Chun, Sun W.: *See—*
  - Beuther, Harold; Chun, Sun W.; and Montagna, Angelo A., 3,846,285.
- Chun, Sun W.; and Montagna, Angelo A., to Gulf Research & Development Company. Acid number reduction of hydrocarbon fractions using a solid catalyst and methanol. 3,846,288, Cl. 208-263.000.
- Ciba-Geigy AG: *See—*
  - Angliker, Hans-Joerg; Peter, Richard; and Artz, Klaus, 3,846,069.
  - Habermeier, Juergen; and Porret, Daniel, 3,846,442.
  - Lohmann, Frank; Eckhardt, Claude; and Kleiber, Karl, 3,846,324.
- Ciba-Geigy Corporation: *See—*
  - Bader, Jorg; Hambock, Heinz; Sturm, Elmar; and Weiss, Anton Georg, 3,846,438.
  - Seltzer, Raymond; and Gordon, David A., 3,846,422.
  - Traber, Walter; Hambock, Heinz; and Weiss, Anton Georg, 3,846,555.
- Cila, Otakar; and Nye, Dudley D., Jr., to Airpax Electronics Incorporated. Digital pickup. 3,846,697, Cl. 324-34.0gt.
- Cincinnati Milacon Inc.: *See—*
  - Rieder, Walter E., 3,846,554.
- Cincinnati Milacron Chemicals, Inc.: *See—*
  - Stapfer, Christian H., 3,846,459.
- Cincinnati Milacron Inc.: *See—*
  - Horst, Raymond W.; and Soukup, Victor G., 3,846,348.
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  - Perrotti, Emilio; and Cipriant, Gioacchino, 3,846,468.
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  - Fite, Charles C., Jr., 3,846,460.
- Citizen Tokei Company Limited: *See—*
  - Okawara, Yasuo; Shimazaki, Toshikazu; and Mizutani, Nagao, 3,846,581.
- Clampitt, Richard L.; and Hessert, James E., to Phillips Petroleum Company. Plugging or sealing fractures in formations. 3,845,822, Cl. 166-281.000.
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  - Nakamori, Shinji, 3,846,834.
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  - Bice, William A., 3,845,833.
- Clarke, Robert H., to American Brattice Cloth Corporation. Method for making reinforced flexible tubing. 3,846,202, Cl. 156-143.000.
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  - Taylor, A. C.; and Clarke, Robert W., 3,845,828.
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- Cledaniel, William Richard, to Bolton-Emerson, Inc. Inlets for a double disc refiner. 3,845,910, Cl. 241-245.000.
- Cless, Gerhard: *See—*
  - Kaplan, Edward L.; and Cless, Gerhard, 3,846,001.

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  - Huffaker, James E.; Clonce, Ambrose J.; and Besser, John E., 3,846,351.
- Clow Corporation: *See—*
  - Ross, George, 3,846,517.
- Cloyd, Harold S., to Nosco Plastics Incorporated. Syringe. 3,845,762, Cl. 128-218.00p.
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  - Wright, Maurice James; and Cockshott, Charles Peter, 3,846,061.
- Cognacq, Jean-Claude, to Societe Anonyme dite: Hexachimie. Piperidinoethyl and piperidinoethoxyethyl esters of 2,2-diaryl-cyclopropane-carboxylic acids. 3,846,436, Cl. 260-293.820.
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- Coherent Radiation: *See—*
  - Yarborough, J. Michael, 3,846,715.
- Cohn, Sigmund, Corporation: *See—*
  - Stevens, Franklyn, Jr., 3,846,125.
- Col-Ment Corporation: *See—*
  - Bunn, Clinton O., 3,846,335.
- Cole, Mark F., Jr. Can for liquid. 3,845,880, Cl. 220-258.000.
- Coles, Donald K. Musical instruments. 3,845,685, Cl. 84-451.000.
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  - Kirby, John Ashley, 3,845,507.
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  - Jolly, Clarence Harold, 3,845,599.
- Communications Satellite Corporation: *See—*
  - Rostron, Robert Walther; and Varadi, Peter Ferenc, 3,846,258.
- Compagnie Europeene Pour l'Equipment Menager CEPEM: *See—*
  - Capy, Marcel, 3,845,582.
- Compagnie Generale d'Electricite: *See—*
  - Colyn, Roland, 3,846,690.
- Compagnie Internationale pour l'Informatique: *See—*
  - Lazzari, Jean-Pierre; and Michard, Jean, 3,846,841.
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- Compoly, Albert William; and Temple, Alfred Charles, to Avionic Instruments Inc. Selectively switched, malfunction-responsive three phase and parellel logic box for plural static inverters. 3,846,693, Cl. 321-12.000.
- Compton, Leslie E.: *See—*
  - Mallan, George M.; and Compton, Leslie E., 3,846,096.
- Compucolor, Incorporated: *See—*
  - Scholle, George L., 3,845,698.
- Condon, Joseph Henry; and Kaminski, William, to Bell Telephone Laboratories, Inc. Data transmission terminal for FSK frequency duplexed systems. 3,846,582, Cl. 178-58.00r.
- Condry, Martin: *See—*
  - Lohr, Raymond J.; Condry, Martin; Hirsch, Mahlon E.; Carver, Richard N.; and Rogers, Maxmillina P., 3,845,957.
- Conn, William K., to Philadelphia Quartz Company. Detergent composition with controlled alkalinity. 3,846,346, Cl. 252-527.000.
- Conner, Kenneth F.: *See—*
  - Conway, Edward F.; and Conner, Kenneth F., 3,845,658.
- CONSERVATOME: *See—*
  - Meunier, Jean-Paul, 3,846,149.
- Continental Can Company, Inc.: *See—*
  - Friendship, Kenneth Francis Montague, 3,845,791.
  - Hilgenbrink, John T., 3,845,653.
- Continental Oil Company: *See—*
  - Dew, John N.; Boyer, Lyndon D.; and Gawel, Len J., 3,846,244.
  - Fonseca, Anthony G., 3,846,535.
  - Leach, Bruce E., 3,846,540.
  - McCain, David L., 3,845,990.
  - McGuire, Stephen E.; Kennedy, Carl D.; and Stauter, John C., 3,845,862.
  - Waters, Kenneth H., 3,846,026.
- Conway, Edward F.; and Conner, Kenneth F., to Magnaflux Corporation. Method of detecting flaws in the exterior surfaces of hollow workpieces. 3,845,658, Cl. 73-104.000.
- Cook, Charles W., to Avco Corporation. Open circuit and ground detector for fire and burglar alarm system. 3,846,793, Cl. 340-409.000.
- Cook, Wallace H. Tab top can opener. 3,845,675, Cl. 81-3.30r.
- Cooke, Robert E.: *See—*
  - Roe, Kenneth W.; Studwell, Ernest E.; and Cooke, Robert E., 3,846,046.
- Copple, Christopher John: *See—*
  - Chisholm, Andrew Alexander; and Copple, Christopher John, 3,845,612.
- Corning Glass Works: *See—*
  - Hocker, James P., 3,846,620.
  - Love, Roy E.; and Smith, Rex L., 3,846,010.
  - Wiley, Robert F., 3,846,197.
- Costner, William F.: *See—*
  - Hallinan, John N.; and Costner, William F., 3,846,534.
- Cotton, Charles C.: *See—*
  - Johnson, Walker P.; Cotton, Charles C.; Bon, David R.; and Peterson, Trules L., 3,845,937.
- Couch, Benjamin M.: *See—*
  - Elmore, Richard R.; and Couch, Benjamin M., 3,846,524.
- Counceller, John D.; De Capite, Robert T.; Burpulis, John Samuel; and Souffie, Robert David, said Counceller & said De Capite assors. to Du Pont de Nemours, E. I., and Company, mesne. Apparatus for injection molding of rubber. 3,846,057, Cl. 425-207.000.
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- Courtney-Pratt, Jeofry Stuart; and Gregory, Richard Langton, to Bell Telephone Laboratories, Incorporated. Apparatus for enhanced depth of field viewing. 3,846,009, Cl. 350-87.000.
- Courty, Philippe, to Institut Francais du Petrole, des Carburants et Lubrifiants. Process for manufacturing iron molybdate catalysts of high strength and the use of the resulting catalysts in the catalytic oxidation of alcohols to aldehydes. 3,846,341, Cl.252-462.000.
- Cousins, Alexander G.: *See—*
  - Stokes, John H.; and Cousins, Alexander G., 3,846,301.
- Cox, Percy T.: *See—*
  - McEvers, William R., Jr.; Cox, Percy T.; and Richter, Albert P., Jr., 3,845,837.
- CPC International Inc.: *See—*
  - Milkovich, Ralph; and Chiang, Mutong T., 3,846,393.
- Crabbe, Pierre; and Guzman, Angel, to Syntex (U.S.A.) mesne. 10-Hydroxy PGE and PGE. 3,846,475, Cl. 260-468.00d.
- Crabtree, Kenneth L., to Keyes Fibre Company. Open bottom tray with multiple pedestal display platform. 3,845,896, Cl. 229-2.500.
- Cramer, Werner: *See—*
  - Asselborn, Peter; Cramer, Werner; and Mullejans, Heinrich, 3,846,610.
- Creusot-Loire: *See—*
  - Trey, Roger, 3,845,994.
- Criddle, Dean W.; and Meader, Arthur L., Jr., to Chevron Research Company. Resilient oil extended polyurethane surfaces. 3,846,364, Cl. 260-33.6ub.
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- Croix, Louise S., to Airco, Inc. Azeotropes of 1-chloro-2,2,2-trifluoroethyl difluoromethyl ether with acetone, methyl ethyl ketone and tetrahydrofuran. 3,846,332, Cl. 252-364.000.
- Cronan, Charles J.: *See—*
  - Labelle, Harold E., Jr.; Mlavsky, Abraham I.; and Cronan, Charles J., 3,846,082.
- Crosby, William E.; and Lee, Hong H., to Westvaco Corporation. Determination of the magnitude of total specific energy absorbed by a sample of pulp stock. 3,846,231, Cl. 162-263.000.
- Cross, Edward A.; and Frye, Richard L., to Texaco Inc. Grease thickened with coated fibrous asbestos. 3,846,312, Cl. 252-13.000.
- Crouch, William B., to Texaco, Inc. Reducing gas generation. 3,846,095, Cl. 48-196.00r.
- Cuckson, Kenneth: *See—*
  - Higginbotham, Gordon John Spencer; and Cuckson, Kenneth, 3,845,808.
- Cull, Neville L.; and Vohsberg, Darius B., to Esso Research and Engineering Company. Regeneration process for flue gas sorbent. 3,846,536, Cl. 423-244.000.
- Cummins, Richard Williamson, to FMC Corporation. Oxidation of olefinic compounds to glycols. 3,846,478, Cl. 260-484.00r.
- Cunningham, Thomas A., to Lipton, Thomas J., Inc. Quick-cooking macaroni products and process. 3,846,563, Cl. 426-158.000.
- Curry, Renwick E., to Massachusetts Institute of Technology. Vehicle brake light control system. 3,846,749, Cl. 340-72.000.
- Cutler-Hammer, Inc.: *See—*
  - Brown, Harry W., 3,846,777.
  - Ryczek, Lawrence J.; Rutchik, Walter L.; and Van Zeeland, Donald L., 3,846,676.
- Dai Nihon Jochugiku Co., Ltd.: *See—*
  - Mifune, Akira; Katsuda, Yoshio; and Yoneda, Toyoaki, 3,846,551.
- Daicel Ltd.: *See—*
  - Ohnishi, Hajime; and Nakazawa, Yuji, 3,846,454.
- Dainichiseika Color & Chemicals Mfg. Co., Ltd.: *See—*
  - Horiguchi, Shojiro; Nakamura, Michiei; Nakajima, Keiji; and Takizawa, Minoru, 3,846,452.
- Dainippon Ink and Chemicals, Inc.: *See—*
  - Midorikawa, Yoshinori; and Sasanami, Tsuneo, 3,846,246.
- Dale, Glenn H.: *See—*
  - Alquist, Henry E.; Pollock, Lyle W.; and Dale, Glenn H., 3,845,749.
- Dallas, Charles G., to Mobil Oil Corporation. Method and apparatus for determining the thickness of a gap between elements. 3,845,562, Cl. 33-169.00r.
- Dalpak Corporation, The: *See—*
  - Long, Donald V.; Derby, Norwin Cedric; and Chorak, Peter P., 3,845,696.
- Damien, Michael Henri: *See—*

- Leclercq, Marius; Morin, Daniel Louis; Damien, Michael Henri; and Andreani, Monique Andree, 3,846,224.
- Damon, Neil F., to Augat, Inc. Multiple-pin plug adaptor. 3,846,740, Cl. 339-220.0ri.
- Danfoss A/S: *See—*
  - De Lepeleire, Guido A., 3,845,783.
- D'Angelo, Antonio Joseph; Mageli, Orville Leonard; and Sheppard, Chester Stephen, to Pennwalt Corporation. Coupled peroxides. 3,846,396, Cl. 260-94.9ga.
- Daniels, R. Gary; and Foltz, James Walter, to Motorola, Inc. Digital power control circuit for an electric wrist watch. 3,846,687, Cl. 318-446.000.
- Danker & Wohlk, Inc.: *See—*
  - Cappelli, Quido A., 3,846,199.
- Danneberg, Peter: *See—*
  - Mentrup, Anton; Zeile, Karl; Danneberg, Peter; Schromm, Kurt; Guenard, Jeanette; Renth, Ernst-Otto; and Stotzer, Harry, 3,846,549.
- Darf Corporation: *See—*
  - Glover, John W., 3,845,832.
- Data Products Corporation: *See—*
  - Helms, Clifford J., 3,845,711.
- David, Agoston: *See—*
  - Matyas, Jakab; Petroczy, Istvan; Somfai, Eva; and David, Agoston, 3,846,567.
- Davin, Donald R., to Blaw-Krox Construction Equipment, Inc. Reference beam grade control for asphalt pavers. 3,846,035, Cl. 404-84.000.
- Davis, Bernard H., to Robertson, H. H., Company. Apparatus for fabricating double-skin foam core construction panels. 3,846,054, Cl. 425-110.000.
- Davis, William W., to Sperry Rand Corporation. Pulse amplitude modulated signal generator. 3,846,705, Cl. 325-141.000.
- Davison, Ellison L.; and Menold, Robert F., to Mine Safety Appliances Company. Adjustable ear cover assembly for safety hats. 3,845,505, Cl. 2-209.000.
- Davydov, Boris Leonidovich: *See—*
  - Buzhinsky, Igor Mikhailovich; Gapontsev, Valentin Pavlovich; Zhabotinsky, Mark Efremovich; Izyneev, Anatoly Andreevich; Koryagina, Elizaveta Ivanovna; Kravchenko, Valery Borisovich; Rudnitsky, Jury Petrovich; Sverchkov, Evgeny Ivanovich; Aleseev, Nikolai Eimovich; and Davydov, Boris Leonidovich, 3,846,142.
- Day, Edmund. Method of forming graduations and other markings on a surface-coated metal article. 3,846,263, Cl. 204-129.650.
- De Capite, Robert T.: *See—*
  - Counceller, John D.; De Capite, Robert T.; Burpulis, John Samuel; and Souffie, Robert David, 3,846,057.
- De Lancey, Warren H. Drive transmission. 3,845,623, Cl. 60-425.000.
- De Lepeleire, Guido A., to Danfoss A/S. Bag diaphragms and bag diaphragm operated air dampers. 3,845,783, Cl. 137-504.000.
- De Meer, Jan: *See—*
  - Wefers, Norbert; Militz, Uwe; Unglaube, Uwe; and De Meer, Jan, 3,846,623.
- De Puy, Donald C.: *See—*
  - Hyman, Maxwell; and De Puy, Donald C., 3,846,027.
- De Rooy, Robert: *See—*
  - Bruijn, Engelbertus Jacobus; Hamburg, Fokko Wessel; Kanij, Johannes Bastiaan Willem; and De Rooy, Robert, 3,846,520.
- De Staat der Nederlanden, Ten deze Vertegenwoordigd Door de Directeur-General der Posterijen, Telegrafie en Telefonie: *See—*
  - Spanjersberg, Arie Adriaan, 3,846,753.
- De Vries, Hubert Gale, to Monolithic Systems Corporation. Dynamic cell semiconductor memory with interlace refresh. 3,846,765, Cl. 340-173.0dr.
- De Wit, Johannes Adrianus: *See—*
  - Van Mal, Harmannus Hinderikus; Mijnheer, Andries; Rauwerdink, Hendrik Jan; and De Wit, Johannes Adrianus, 3,845,636.
- Dean, Warren E.; and Posego, John J., to PPG Industries, Inc. Process for separating sodium sulfate from brines. 3,846,081, Cl. 23-297.000.
- DeAntoni, Jacques; and Eche, Raymonde, to Les Laboratories Bruneau et Cie. 1-(2-Methoxy-phenyl)-4-[2-(4-fluoro-benzamido)-ethyl]-piperazine. 3,846,430, Cl. 260-268.0ph.
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- Deaton, Thomas M., to Otis Engineering Company. Well tools. 3,845,818, Cl. 166-224.000.
- Decker, Alfred S.; Duff, John R.; and Heier, Robert J., to Owens-Illinois, Inc. Article handling apparatus. 3,845,851, Cl. 198-22.00r.
- Deere & Company: *See—*
  - Johnson, Robert Allen, 3,845,567.
  - Johnson, Robert Allen; and Raisbeck, Wesley Paul, 3,845,568.
- DeKlerk, John, to Westinghouse Electric Corporation. Surface wave preselector. 3,846,722, Cl. 333-72.000.
- Delamater, William B. Sprinkler feeder for lawn food. 3,845,902, Cl. 239-314.000.
- Delaney, Keith P.: *See—*
  - Heussy, William C.; Vetor, Earl L.; Delaney, Keith P.; and Hyde, Paul E., 3,845,737.
- Delapp, Darwin Fiske: *See—*
  - Ramsey, Wallace Burton; and Delapp, Darwin Fiske, 3,846,382.
- Delmag Maschinenfabrik, Rheinhold Dornfeld: *See—*
  - Mozdzanowski, Joachim, 3,846,037.
- Deltente, Jacques J.; O'Connor, Richard J.; and Kuo, Mau-Jung, to Monsanto Company. Process for the preparation of heat-resistant alpha-galactosidase enzyme. 3,846,239, Cl. 195-66.00r.
- Demler, Henry William, Sr., to AMP Incorporated. Hand tool. 3,845,538, Cl. 29-234.000.
- Demmel, Edward J.: *See—*
  - Owen, Hartley; and Demmel, Edward J., 3,846,280.
- Demos, Peter T. Apparent wind indicator adapted to establish optimum wind direction relative to the sail of a sailboat. 3,845,734, Cl. 116-114.00r.
- Denkewalter, Robert G.: *See—*
  - Hirschmann, Ralph F.; and Denkewalter, Robert G., 3,846,398.
  - Hirschmann, Ralph F.; and Denkewalter, Robert G., 3,846,399.
- Dennis, Donald I. Blower housing. 3,846,040, Cl. 415-219.00c.
- DeNora, Vittorio: *See—*
  - Bianchi, Giuseppe; DeNora, Vittorio; Gallone, Patrizio; and Nidola, Antonio, 3,846,273.
- Denzel, Theodor: *See—*
  - Hoehn, Hans; and Denzel, Theodor, 3,846,437.
- Derby, Norwin Cedric: *See—*
  - Long, Donald V.; Derby, Norwin Cedric; and Chorak, Peter P., 3,845,696.
- Dernbach, Berthold; Jurisch, Ewald; and Landgraf, Helmut, to Siemens Aktiengesellschaft. Safety fitting. 3,845,879, Cl. 220-89.00a.
- Desai, Ramesh R., to Globe-Union Inc. Storage battery. 3,846,175, Cl. 136-14.000.
- Deschamps, Andre: *See—*
  - Renault, Philippe; Dezael, Claude; and Deschamps, Andre, 3,846,538.
  - Renault, Philippe; Dezael, Claude; and Deschamps, Andre, 3,846,539.
- Detroit Gasket and Manufacturing Company: *See—*
  - Doerfling, Ralph G.; and Motycka, Charles J., 3,846,200.
- Devlin, Charles L.; and Eggenberger, Markus A., to General Electric Company. Two-out-of-three logic terminal board. 3,846,739, Cl. 339-198.00j.
- DeVoe, James A.: *See—*
  - Barrett, Burton M.; and DeVoe, James A., 3,845,928.
- Dew, John N.; Boyer, Lyndon D.; and Gawel, Len J., to Continental Oil Company. Microorganism recovery process. 3,846,244, Cl. 195-104.000.
- Dexion-Comino International Limited: *See—*
  - Rogers, Peter C.; Harrison, Frank B.; Hipkiss, Richard C.; Sunasky, Joseph; and Shapcott, Nigel G., 3,845,718.
- Dezael, Claude: *See—*
  - Renault, Philippe; Dezael, Claude; and Deschamps, Andre, 3,846,538.
  - Renault, Philippe; Dezael, Claude; and Deschamps, Andre, 3,846,539.
- Di Fiore, Lucio; and Calcagno, Benedetto, to Societa Italiana Resine S.I.R. S.p.A. Reactivation of aluminum trichloridehydrocarbon catalytic complexes used in the alkylation of aromatic compounds. 3,846,334, Cl. 252-414.000.
- Dick, A. B., Company: *See—*
  - Ostergren, Dale C.; and Zabiak, Daniel M., 3,846,141.
- Dieckmann, Uwe: *See—*
  - Schatz, Oskar; and Dieckmann, Uwe, 3,845,979.
- Dietrich, William C., to United States of America, Atomic Energy Commission. Chemical trap. 3,846,256, Cl. 203-33.000.
- Dietz, Raymond Louis, to Owens-Illinois, Inc. Multilayer dielectric. 3,846,222, Cl. 161-162.000.
- Diguet, Daniel; and Henry, Loic, to U.S. Philips Corporation. Method of treating semiconductor materials consisting of III-V compounds. 3,846,169, Cl. 117-213.000.
- Dilillo, Franklin M.; and Dilillo, Michael A. Excavating apparatus. 3,845,871, Cl. 214-145.000.
- Dilillo, Michael A.: *See—*
  - Dilillo, Franklin M.; and Dilillo, Michael A., 3,845,871.
- Dille, Roger M.; and Chapman, Ronald W., to Texaco Inc. Method of reducing the viscosity of carbon-containing oils. 3,846,087, Cl. 44-51.000.
- Direccion General de Investigacion y Desarrollo (DIGID), Ministerio de Defensa de la Republica Argentina: *See—*
  - Infantino, Osvaldo Cesar, 3,845,581.
- Disdier, Andre: *See—*
  - Mocotte, Jacques; Disdier, Andre; and Prost, Francoise, 3,846,465.
- Doe, Lester Adrian, Jr., to GAF Corporation. Polymerization process. 3,846,384, Cl. 260-80.30e.
- Doerfling, Ralph G.; and Motycka, Charles J., to Detroit Gasket and Manufacturing Company. Decorative covering and method for applying decorative covering to vehicle panels. 3,846,200, Cl. 156-85.000.
- Doesburg, Van I.: *See—*
  - Householder, Kermit W.; and Doesburg, Van I., 3,846,329.
- Dolan, Courtney F.: *See—*
  - Sharp, Ellis Alvin; and Dolan, Courtney F., 3,845,671.
- Dolby, Ray Milton. Noise reduction systems. 3,846,719, Cl. 333-14.000.
- Dole Refrigerating Company: *See—*
  - Apple, Joseph P., Jr.; and Lauterbach, William E., 3,845,638.
- Dondis, Edward F.; and Payne, John W., to Mobil Oil Corporation. Process for growing microorganisms with low pressure air. 3,846,245, Cl. 195-109.000.

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- Doonan, David F.: *See—*
  - Hirdler, Louis C.; Schiessl, Henry W.; and Doonan, David F., 3,846,424.
- Dornbush, Ross J. Shipper package. 3,845,859, Cl. 206-320.000.
- Doty, Myron L., to Moorfeed Corporation. Spring mount for vibratory feeder. 3,845,857, Cl. 198-220.0ca.
- Doughty, Frederic C., to Elco Corporation. Strobe light system for transitional guidance and delineation. 3,846,672, Cl. 315-312.000.
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- Douglas, James K., to Oilgear Company, The. Intensifier pump with half wave modulator. 3,846,049, Cl. 417-404.000.
- Dover Corporation: *See—*
  - McMath, Jack A., 3,845,785.
- Dovre Ski Binding, Inc.: *See—*
  - Ulbrich, Konrad A., 3,845,966.
- Dow Chemical Company, The: *See—*
  - Gunsher, Jeffrey A.; and Pews, R. Garth, 3,846,469.
  - Heinert, Dietrich H., 3,846,508.
  - Klein, Dieter H., 3,846,828.
  - McClendon, Jack C., 3,846,405.
  - Mod, William A.; and Caldwell, Donald L., 3,846,143.
  - Pitts, Charles A., 3,845,816.
  - Stalker, Gerald C.; and Pearce, Roscoe L., 3,846,450.
- Dow Corning Corporation: *See—*
  - Householder, Kermit W.; and Doesburg, Van I., 3,846,329.
- Doyle, Edward J.; and Bagwell, Richard S., Jr., to Schick Incorporated. Electric fluid heating unit. 3,846,614, Cl. 219-302.000.
- Drake, John Alfred; Payne, Alan James; and Reichert, Andrew Ronald, to International Computer Limited. Data processing arrangements. 3,846,759, Cl. 340-172.500.
- Drake, R. L., Company: *See—*
  - Kittel, Harold James, 3,846,713.
- Drees, Jan M., to Textron Inc. Helicopter vibration isolation. 3,845,917, Cl. 244-17.270.
- Dreher, John L.: *See—*
  - Stanton, Garth M.; and Dreher, John L., 3,846,315.
- Dreher, John L.; and Carter, Crawford F., to Chevron Research Company. Grease thickened with ureido compound and alkaline earth metal aliphatic carboxylate. 3,846,314, Cl. 252-18.000.
- Dreyer, Dennis G.: *See—*
  - Foley, Edward M.; Dreyer, Dennis G.; and Rogers, Herbert E., Jr., 3,846,126.
- Driffort, Jean-Pierre: *See—*
  - Casset, Georges; Driffort, Jean-Pierre; and Lebel, Pierre, 3,846,659.
- Drustar Unit Dose Systems, Inc.: *See—*
  - Relyea, Kenneth D., 3,846,004.
- DT Liquidating Partnership: *See—*
  - Eppler, William G., Jr., 3,846,827.
- Du Pont de Nemours, E. I., and Company: *See—*
  - Burton, Louis Lasseter, 3,846,367.
  - Graf, Walter Luttrell, 3,846,330.
  - Kwok, Wo Kong, 3,846,381.
  - Langsdorf, William P., 3,846,512.
  - Mok, Young I., 3,846,474.
  - Pettit, Paul H., Jr., 3,846,368.
  - Powell, Richard James, 3,846,391.
  - Shih-Yuan Ro, Rolland, 3,846,371.
  - Shook, Howard E., Jr., 3,846,461.
  - Su, Aaron Chung Liong, 3,846,387.
- Du Pont de Nemours, E. I., and Company, mesne: *See—*
  - Counceller, John D.; De Capite, Robert T.; Burpulis, John Samuel; and Souffie, Robert David (said Counceller & said De Capite assors. to), 3,846,057.
- Duff, John R.: *See—*
  - Decker, Alfred S.; Duff, John R.; and Heier, Robert J., 3,845,851.
- Duff, Joseph H., to Gulf Degremont, Inc. Method and apparatus for controlling flow to a battery of filters. 3,846,303, Cl. 210-73.000.
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- Dunlap, Charles R.; and Himes, Harris D. Water injection system for an internal combustion engine. 3,845,745, Cl. 123-25.00l.
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- Duprey, Richard H.: *See—*
  - Benoit, Roland A.; and Duprey, Richard H., 3,845,511.
- Dura-Plex Industries, Inc.: *See—*
  - Elmore, Richard R.; and Couch, Benjamin M., 3,846,524.
- Durr, Manfred, to Polysius AG. Rotary furnace. 3,846,067, Cl. 432-80.000.
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  - Alburn, Harvey E.; and Dvonch, William, 3,846,406.
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  - Bendler, Hellmut; and Marondel, Gunther, 3,845,836.
- Dynamit Nobel Aktiengesellschaft: *See—*
  - Schneider, Johannes; and Pungs, Wolfgang, 3,846,379.
- Dyson, Norman H., to Syntex Corporation. Process for the preparation of 1,2,3,4,9,12-hexahydrophenanthrenes. 3,846,484, Cl. 260-514.500.
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  - Huber, John Richard, 3,845,978.
- Eastman Kodak Company: *See—*
  - Huffaker, James E.; Clonce, Ambrose J.; and Besser, John E., 3,846,351.
  - Kuh, Arthur D., 3,846,129.
  - Purol, Michael Dennis; and Malloy, Richard Joseph, 3,846,130.
  - Sullivan, Michael F., 3,846,136.
  - Thomas, Leo J.; and Tuite, Robert J., 3,846,128.
- Eaton Corporation: *See—*
  - Goscenski, Edward J., Jr., 3,845,672.
  - Kolze, Lawrence A.; and Jones, William H., 3,846,600.
  - McDermott, Hugh L., 3,846,051.
- Ebeling, Harold O.; and Smith, Russell D., to Black, Sevalls, & Bryson, Inc. Fuel burner apparatus. 3,846,066, Cl. 431-351.000.
- Eberl, Karlheinz: *See—*
  - Hollweck, Walter; Schnee, Wilhelm; Eberl, Karlheinz; and Wagner, Kurt, 3,845,661.
- EBR Development Corporation, mesne: *See—*
  - Palmonka, Edward, 3,846,132.
- Eche, Raymonde: *See—*
  - DeAntoni, Jacques; and Eche, Raymonde, 3,846,430.
- Eckel, Alan. Batten assembly to hold enclosure sheets. 3,845,603, Cl. 52-753.00j.
- Eckhardt, Claude: *See—*
  - Lohmann, Frank; Eckhardt, Claude; and Kleiber, Karl, 3,846,324.
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  - Jeris, John S.; Beer, Carl; and Mueller, James A., 3,846,289.
- Edenhofer, Albrecht; and Spiegelberg, Hans, to Hoffmann-La Roche Inc. Heterocyclically dibenzo(a,d)cyclohepta(1,4)dien-5-one derivatives. 3,846,431, Cl. 260-268.0tr.
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  - Pappas, Peter G.; Edmisten, Walter C.; and Von Levern, Hobe Schroeder, 3,846,092.
- Edmunson, Tillson H. Cut control attachment for chain saws. 3,845,556, Cl. 30-381.000.
- Edwards, Elizabeth G. Apparatus for removing grease from pot liquids. 3,846,320, Cl. 210-471.000.
- Edwards, Jones Burnett. Lighter socket and screw threads mounting. 3,845,925, Cl. 248-27.000.
- Eggenberger, Markus A.: *See—*
  - Devlin, Charles L.; and Eggenberger, Markus A., 3,846,739.
- Eggers, Berend: *See—*
  - Class, Gottfried; and Eggers, Berend, 3,846,234.
- Eggert, Ralph H.; and Woods, Quentin T. Unwind stand. 3,845,678, Cl. 82-92.000.
- Eguchi, Yoshihiro, to Hochiki Kabushiki Kaisha. Control system for a plurality of loads. 3,846,641, Cl. 307-41.000.
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  - Apsell, Sheldon P.; Johnson, Olof C., Jr.; and Whitney, Robert W., 3,846,783.
- Eisai Co., Ltd.: *See—*
  - Ikekawa, Nobuo; and Morisaki, Masuo, 3,846,455.

  - Inai, Yuichi; Okazaki, Kanzo; Shimada, Katsutoshi; Kagei, Kengo; and Bessho, Motoaki, 3,846,480.
- Eisenberg, Eugene, to Mack Trucks, Inc. Fuel injection nozzle holder installation. 3,845,748, Cl. 123-32.00r.
- Eisler, Paul. Heating methods. 3,846,204, Cl. 156-275.000.
- Elco Corporation: *See*—
  - Doughty, Frederic C., 3,846,672.
- Electron Inc.: *See*—
  - Perloff, Ronald S., 3,846,688.
- Electronic Reading Systems: *See*—
  - Hart, William H., 3,846,755.
- Electronor Corporation: *See*—
  - Bianchi, Giuseppe; DeNora, Vittorio; Gallone, Patrizio; and Nidola, Antonio, 3,846,273.
- Electrospin Corporation, mesne: *See*—
  - Senturk, Necdet; and Aschenbrenner, Frank A., 3,845,611.
- Elektriska AB Eletta: *See*—
  - Thorbard, Hugo Adiel; and Thorbard, Bjorn Anders, 3,846,774.
- Elliott Brothers (London) Limited: *See*—
  - Shepherd, Graham, 3,846,769.
- Elmore, Glenn V., to International Business Machines Corporation. Method of forming bondable substrate surfaces. 3,846,168, Cl. 117-213.000.
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  - Goldman, Conrad, 3,846,522.
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- Elser, Karl Heinz: *See*—
  - Childers, William Walter; Elser, Karl Heinz; and Peterson, Phillip John, 3,846,840.
- Ely, Donald A.; and McKie, Thomas G., to Beloit Corporation. Forming tissue paper by pressing the web while on an uprunning forming wire and transferring the web directly to a yankee dryer. 3,846,228, Cl. 162-206.000.
- Emerson Electric Co.: *See*—
  - Enright, James H.; and Wicke, Charles A., 3,845,707.
  - Hierholzer, Frank J., Jr.; and Ancona, John A., 3,846,726.
  - Wightman, Lawrance W.; Gebhart, Howard C.; and Tichy, Nick, 3,846,619.
- Emhart Corporation: *See*—
  - Foster, Thomas Vincent; and Jaeger, Eginhard, 3,846,107.
  - Price, Richard W., 3,845,963.
  - Rowe, George E., 3,846,103.
- Emura, Tomoyuki: *See*—
  - Ito, Ikoh; Ito, Shokiro; and Emura, Tomoyuki, 3,846,390.
- Ender, Manfred: *See*—
  - Benn, Edgar; Buchtl, Benno; and Ender, Manfred, 3,846,029.
- Enei, Hitoshi: *See*—
  - Okumura, Shinji; Takeshita, Shito; Enei, Hitoshi; and Ninagawa, Sadayoshi, 3,846,573.
- Energy Conversion Devices, Inc.: *See*—
  - Cohen, Morrel H., 3,846,767.
- Enge, Willi: *See*—
  - Harings, Horst, 3,845,750.
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  - Blomberg, Folke Ivar; and Engerstam, Marten, 3,845,663.
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  - King, Robin Charles Moorhouse; and Harris, Neville Wreford, 3,846,664.
- Enk, Larry G., to Park-Ohio Industries, Inc. Inductor for inductively heating elongated rotating workpiece. 3,846,609, Cl. 219-10.790.
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  - Houot, Jean Jacques, 3,845,973.
  - Mourlevat, Jean, 3,845,819.
- Eppler, William G., Jr., to Cambridge Research & Development Group, Greenberg, Sanford D. and DT Liquidating Partnership. Speech compressor-expander with signal sample zero reset. 3,846,827, Cl. 360-26.000.
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  - Augsburger, Jean-Jacques, 3,846,612.
- Erhart, Francis J.; and Schroeder, Harold H., to Xerox Corporation. System for vapor deposition of thin films. 3,845,739, Cl. 118-49.100.
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  - Byrum, Bernard W., Jr.; and Ernsthausen, Roger E., 3,846,171.
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  - Blackwell, Robert J.; Kehn, Donald M.; and Whitney, Thomas A., 3,846,310.
- Esso Research and Engineering Company: *See*—
  - Cull, Neville L.; and Vohsberg, Darius B., 3,846,536.
- Etablissement Wanderfield & Co.: *See*—
  - Filter, Walther; and Filter, Claus, 3,845,790.
- Ethyl Corporation: *See*—
  - Immethun, Peter A., 3,846,203.
  - Mitchell, Lawrence C., 3,846,372.
  - Valdo, Alex R., 3,846,122.
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  - Hofer, Wolfgang; Schliebs, Reinhard; Schmidt, Robert Rudolf; and Eue, Ludwig, 3,846,513.
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  - Heussy, William C.; Vetor, Earl L.; Delaney, Keith P.; and Hyde, Paul E., 3,845,737.
- Evans Products Company Transportation Systems Division: *See*—
  - Fuller, Oliver C., 3,845,726.
- Evans, Russell S.: *See*—
  - Gibney, Kelly B.; and Evans, Russell S., 3,846,403.
- Evans, William J.: *See*—
  - Douglas, Carl L.; Evans, William J.; Kiess, Ronald J.; and Sutton, Robert A., 3,845,875.
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  - Feldman, Nicholas, 3,846,093.
  - Mertzweiller, Joseph K., 3,846,281.
  - Wright, Donald L.; and Frankenfeld, John W., 3,846,326.
- FA. "PREH, Elektrofeinmechanische Werke Jakob Preh, NACHF.": *See*—
  - Labude, Wolfgang; and Bauer, Karl-Heinz, 3,846,732.
- Fail Safe Brake Corporation: *See*—
  - Fontaine, John G., 3,845,932.
  - Fontaine, John Garfield, 3,846,599.
- Faillon, Georges: *See*—
  - Firmain, Gerard; and Faillon, Georges, 3,846,665.
- Falkai, Bela Von: *See*—
  - Kubitzker, Harry; Falkai, Bela Von; and Reichle, Alfred, 3,846,532.
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- Fancher, Llewellyn W., to Stauffer Chemical Company. Plant growth regulators. 3,846,112, Cl. 71-76.000.
- Farbenfabriken Bayer Aktiengesellschaft: *See*—
  - Schultz, Fritz, 3,846,544.
  - Schwarz, Herbert, 3,846,471.
- Farfaglia, Silvio T., to Phillips Petroleum Company. Score breaking mechanism for gable top carton. 3,845,607, Cl. 53-378.000.
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  - Lueshen, Deldon, 3,845,608.
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- Favre, Marc, & Cie S.A.: *See*—
  - Jeanmairet, Pierre; and Paroz, Andre, 3,845,616.
- Fedjukin, Dmitry Lvovich; Sergeeva, Ljudmila Semenovna; Bakharev, Andrei Nikolaevich; Gorlina, Inna Leonidovna; Aronov, Anatoly

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- Fejer, Mark E.: *See*—
  - Rosenberg, Robert B.; Nesbitt, John D.; and Fejer, Mark E., 3,846,565.
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- Felten & Guilleaume Carlswerk Aktiengesellschaft: *See*—
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  - Pickles, Joseph, 3,845,669.
  - Pickles, Joseph, 3,845,982.
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  - Filter, Walther; and Filter, Claus, 3,845,790.
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  - Possati, Mario, 3,846,689.
- Finken, Hans-Joachim: *See*—
  - Eichmanns, Winfried Paul; Finken, Hans-Joachim; and Mager, Guenther Winand, 3,845,912.
- Finnen, Gerald W.: *See*—
  - Keever, Joseph M.; Finnen, Gerald W.; and Ramsey, James E., Jr., 3,846,677.
- Firm K. Bratschi Silent Gliss: *See*—
  - Bratschi, Konrad, 3,845,927.
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- Floden, Bjorn Fritjof: *See*—
  - Livingston, Daniel K.; Floden, Bjorn Fritjof; Wright, Harry Gilbert; and Tsien, Wei Hwa, 3,845,916.
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  - Avramidis, Stellios Antony, 3,845,666.
  - Cummins, Richard Williamson, 3,846,478.
  - Ihrig, John Kenneth, 3,846,173.
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  - Daniels, R. Gary; and Foltz, James Walter, 3,846,687.
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  - Arnett, Lawrence E.; and Wiggins, Earl M., 3,845,877.
  - Huff, John C.; Ludwig, Frank A.; and Smith, Arthur G., 3,846,182.
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  - Buchner, Norbert, 3,846,220.
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- Frankenfeld, John W.: *See*—
  - Wright, Donald L.; and Frankenfeld, John W., 3,846,326.
- Frant, Martin: *See*—
  - Riseman, John H.; and Frant, Martin, 3,846,257.
- Franz, Helmut, to PPG Industries, Inc. Selective reflecting metal/metal oxide coatings. 3,846,152, Cl. 117-33.300.
- Franz, Karl; and Christigau, Hermann, to Siemens Aktiengesellschaft. Vacuum image converter. 3,846,654, Cl. 313-94.000.
- Freedman Seating Company: *See*—
  - Wahls, Robert A., 3,845,926.
- Freiberg, Ashley Herman; and Broadbent, David James, to Stauffer Chemical Company. Stabilized aqueous suspension of phthalimidomethyl mono thio- or dithio-phosphates or phosphonates. 3,846,547, Cl. 424-200.000.
- Frey, Peter J.: *See*—
  - Lintelmann, Willy; and Frey, Peter J., 3,846,773.
- Fridman, Viktor Mironovich: *See*—
  - Voloshin, Petr Stepanovich; Ivanov, Mark Efremovich; Klopovsky, Boris Alexeevich; Lindin, Viktor Mikhailovich; Novitsky, Boris Georgievich; Olevsky, Viktor Markovich; and Fridman, Viktor Mironovich, 3,845,901.
- Friedenreich, Heinrich; Suck, Bernhard; and Reitsch, Juergen, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Conveyor machine for suspensions and viscous materials having a cage-like housing. 3,845,908, Cl. 241-46.110.
- Friedman, David Warren. Equal probability selection circuit. 3,846,757, Cl. 340-166.00r.
- Friendship, Kenneth Francis Montague, to Continental Can Company, Inc. Universal filling head. 3,845,791, Cl. 141-6.000.
- Friese, Axel; and Simon, Stefan, to Hahn, Carl, Dr., GmbH. Tampon for feminine hygiene. 3,845,767, Cl. 128-285.000.
- Fritsch, Rudolf Paul, to Scheer, C. F., & Cie, Firma. Granulator for granulating plastic strands. 3,845,681, Cl. 83-356.300.
- Fritz, William Baird; and Reyner, Emerson Marshall, II, to AMP Incorporated. Transmission line balun. 3,846,721, Cl. 333-26.000.
- Fritzsche, Helmut: *See*—
  - Knappstein, Johannes; Fritzsche, Helmut; and Stratmann, Josef, 3,846,250.
- Frye, Richard L.: *See*—
  - Cross, Edward A.; and Frye, Richard L., 3,846,312.
- Fuchs, Werner: *See*—
  - Bressel, Ulrich; Fuchs, Werner; and Platz, Rolf, 3,846,472.
- Fuji Photo Film Co., Ltd.: *See*—
  - Oshima, Shigeru, 3,846,813.
  - Sekine, Jiro, 3,846,807.
- Fujii, Akio: *See*—
  - Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, 3,846,400.
- Fujikura Cable Works, Ltd., The: *See*—
  - Isawa, Kazuo; Maejima, Masatsugu; Kiuchi, Kuninosuke; Yokota, Ken; and Ogawa, Masaru, 3,846,170.

Fujimoto, Keimei: *See—*

Kitamura, Shigeyoshi; Hirai, Hajime; Okuno, Yositosi; and Fujimoto, Keimei, 3,846,500.

Fujimoto, Yasuo; and Teranishi, Masayuki. Polyamino acid derivatives and compositions containing same. 3,846,380, Cl. 260-78.00a.

Fujinami, Akira: *See—*

Mine, Akihiko; Fujinami, Akira; Kameda, Nobuyuki; Hino, Naganori; Satomi, Takeo; and Tateishi, Kohshi, 3,846,441.

Fujisawa Pharmaceutical Co., Ltd.: *See—*

Tanaka, Kunihiko; Kishimoto, Teiji; and Zenno, Hisanao, 3,846,432.

Fujishima, Tooru: *See—*

Hirota, Ryoichi; Fujishima, Tooru; Miyazaki, Gentaro; Iwasaki, Tadahiko; Akatsu, Mitsuharu; and Kinoshita, Tomoo, 3,846,673.

Fukazawa, Nobuo: *See—*

Kudamatsu, Akio; Miyamoto, Masao; and Fukazawa, Nobuo, 3,846,467.

Fuller, Francis W.; Melvin, Samuel L.; and Merritt, Paul H., to Caterpillar Tractor Company. Die forming apparatus. 3,845,654, Cl. 72-381.000.

Fuller, Oliver C., to Evans Products Company Transportation Systems Division. Rack and pinion hopper gate actuating mechanism. 3,845,726, Cl. 105-282.00p.

Furbeck, Warren R.; and Lee, Charles A., to International Paper Company. Method of and apparatus for producing stacks of folded sheet material. 3,845,948, Cl. 270-40.000.

Furner, Raymond L.: *See—*

United States of America, National Aeronautics and Space Administration, 3,846,243.

Furukawa, Junji; Iseda, Yutaka; Haga, Kazuo; and Kataoka, Nobuyuki. Production of alternating copolymers of conjugated dienes and conjugated polar vinyl monomers. 3,846,389, Cl. 260-83.500.

Futaki, Kiyoshi; Kohmura, Isao; and Haino, Kozo, to Mitsubishi Paper Mills, Ltd. Heat sensitive composition and thermal recording sheet containing the same. 3,846,153, Cl. 117-36.900.

GAF Corporation: *See—*

Doe, Lester Adrian, Jr., 3,846,384.

Mestetsky, Thomas S.; and Webster, Bruce G., 3,846,227.

Tiedemann, Herman H., 3,846,272.

Gager, Robert M.: *See—*

Atlee, Zed J.; and Gager, Robert M., 3,846,006.

Gaisser, Eugene J., to American Hoechst Corporation. Printing plate processor and means for opening and closing the same. 3,846,816, Cl. 354-307.000.

Galabov, Angel Simenov: *See—*

Shindarov, Lubomir Mihaylov; Galabov, Angel Simenov; and Antonov, Dimitar Simov, 3,846,491.

Gallone, Patrizio: *See—*

Bianchi, Giuseppe; DeNora, Vittorio; Gallone, Patrizio; and Nidola, Antonio, 3,846,273.

Galloway, Charles E.: *See—*

Martner, John G., 3,846,779.

Galvin, Aaron A.; and Shapiro, L. Dennis, to Aerospace Research, Inc. Combined ultrasonic and electromagnetic instrusion alarm system. 3,846,778, Cl. 340-258.00a.

Gandon, Louis; and Solar, Serge, to Le Nickel. Method for producing high-purity nickel powder with predetermined physical characteristics. 3,846,117, Cl. 75-.5aa.

Gapontsev, Valentin Pavlovich: *See—*

Buzhinsky, Igor Mikhailovich; Gapontsev, Valentin Pavlovich; Zhabotinsky, Mark Efremovich; Izyneev, Anatoly Andreevich; Koryagina, Elizaveta Ivanovna; Kravchenko, Valery Borisovich; Rudnitsky, Jury Petrovich; Sverchkov, Evgeny Ivanovich; Aleseev, Nikolai Eimovich; and Davydov, Boris Leonidovich, 3,846,142.

Garbo, Paul W. Method for cleaning liquid filter beds. 3,846,304, Cl. 210-80.000.

Garcia, Felipe G.: *See—*

Bahder, George; and Garcia, Felipe G., 3,846,578.

Gardiner, Derek J., to Iomec Corporation. Multifont selection. 3,845,709, Cl. 101-93.00c.

Garrahan, Richard. Form fit vertical flow diving head gear. 3,845,768, Cl. 128-142.700.

Garver, William Joseph, to AMP Incorporated. Through-hole electrical connector for a circuit board. 3,846,743, Cl. 339-275.00b.

Garwood, Turner G., to Otis Engineering Corporation. Well tools. 3,845,815, Cl. 166-154.000.

Gaskell, Philip Hedley; Loftus, James Peter; and Greengrass, Jane, to Pilkington Brothers Limited. Thermally crystallizing an article while supported in vertical attitude. 3,846,101, Cl. 65-33.000.

Gawel, Len J.: *See—*

Dew, John N.; Boyer, Lyndon D.; and Gawel, Len J., 3,846,244.

Gaydasch, Alexander, to Universal Oil Products Company. Aryl carboxylic acid salts of di(n-octadecyl) amine. 3,846,481, Cl. 260-501.100.

Gaylord, John A., to Koch, H., & Sons, Inc. Survival kit connection to harness. 3,845,525, Cl. 24-201.00a.

Gebauer, Hans, to Hoesch Maschinenfabrik Deutschland. Method and apparatus for the production of helical seam pipe. 3,845,645, Cl. 72-12.000.

Gebhart, Howard C.: *See—*

Wightman, Lawrance W.; Gebhart, Howard C.; and Tichy, Nick, 3,846,619.

Gebruder Junghans G.m.b.H., Firma: *See—*

Kaiser, Hans, 3,845,714.

Gee, David William: *See—*

Nicholls, Lawrence George; and Gee, David William, 3,845,782.

Geerdes, James D., to American Manufacturing Company, Inc. Method of forming expanded composite materials in the absence of recognized blowing agents. 3,846,523, Cl. 264-41.000.

Geissmann, Theodor: *See—*

Vetter, Walter; Mueller, Hanspeter; and Geissmann, Theodor, 3,846,570.

Geisthoff, Hubert, to Walterscheid, Jean, GmbH. Wheel chock for vehicles. 3,845,845, Cl. 188-32.000.

Gelhard, Egon; and Gunkel, H. Rudolf. Self-progressing construction system. 3,845,515, Cl. 14-77.000.

Gendreau, Armand W.: *See—*

Balch, Conrad J.; and Gendreau, Armand W., 3,846,086.

General Electric Company: *See—*

Arnold, Richard B., 3,845,548.

Austin, William E., 3,846,657.

Bell, Gordon M., 3,846,824.

Devlin, Charles L.; and Eggenberger, Markus A., 3,846,739.

Ettinger, Robert H., 3,846,742.

Evjen, John M.; and Herrin, Jerry, 3,846,178.

Germer, Warren R.; and Palmer, Ansell W., 3,846,789.

Hooker, John M., 3,846,662.

Kenworthy, Milton J., 3,845,620.

Razzano, John S., 3,846,464.

Reynolds, Hugh B., 3,845,547.

Roedel, George F., 3,846,358.

Wetherell, Daniel L., 3,846,638.

Wolfe, John E.; Ledges, George E.; and Glascock, Homer H., 3,846,660.

General Electric Company Limited, The: *See—*

Hill, Anthony, 3,846,692.

General Instrument Corporation: *See—*

Mears, Donald B., Jr., 3,846,725.

General Motors Corporation: *See—*

Byrd, Walter C., III, 3,845,961.

Hause, Gilbert K., 3,845,674.

Hufstader, Gibson O., 3,845,622.

Johns, Harold W., 3,845,890.

Quinn, Ronald E., 3,846,062.

Scheibe, Elias W., 3,846,052.

General Signal Corporation: *See—*

Engle, Thomas, 3,845,991.

General Tire & Rubber Company, The: *See—*

Hargis, Ivan Glen; and Livigni, Russell A., 3,846,385.

Genuit, Luther L.; and Nowell, John R., to Honeywell Information Systems Inc. Series-parallel dual switching regulator for use with a variety of line voltages. 3,846,695, Cl. 321-27.00r.

Geothermal Investment Co.: *See—*

Hutchinson, Arthur J. L., 3,845,627.

Gerding, Charles Christian, to Jones & Laughlin Steel Corporation. Strip casting apparatus. 3,845,810, Cl. 164-276.000.

German, Lev Solomonovich: *See—*

Giller, Solomon Aronovich; Lazdinsh, Arvid Avgustovich; Veinberg, Artur Karlovich; Sniker, Dagnia Yanovna; Knunyants, Ivan Ljudvigovich; German, Lev Solomonovich; and Kazmina, Natalya Borisovna, 3,846,429.

Germer, Warren R.; and Palmer, Ansell W., to General Electric Company. Remote-reading register with error detecting capability. 3,846,789, Cl. 340-347.00p.

Gerretz, Josef; Joeres, Paul; and Zeunert, Fritz, to Wean United, Inc. Tube production. 3,845,649, Cl. 72-189.000.

Gerry, Martin E. Mechanical scanner. 3,846,839, Cl. 360-108.000.

Gerson, Lawrence Gordon. Eyeglasses with selectively tiltable frames. 3,846,018, Cl. 351-120.000.

Gesellschaft fur Kernforschung: *See—*

Class, Gottfried; and Eggers, Berend, 3,846,234.

Gettinger, Joseph. Apparatus for eliminating noxius gases from the exhaust of an internal combustion engine. 3,846,637, Cl. 250-546.000.

Gevaert-Agfa N.V.: *See—*

Monbaliu, Marcel Jacob; and Van Poucke, Raphael Karel, 3,846,444.

Geweke, Werner: *See—*

Boden, Karl; Geweke, Werner; and Scheffer, Dietrich, 3,845,997.

Geweke, Werner, to Padana AG. Bearing systems. 3,845,996, Cl. 308-10.000.

Gibbon, Robert Muir; and Peirpoint, Edward Keith, to Imperial Chemical Industries Limited. Rapid curing organopolysiloxane compositions. 3,846,506, Cl. 260-825.000.

Gibbs, Erich L., to Ultrascience Incorporated. Method and apparatus for use in water purification by reverse osmosis. 3,846,295, Cl. 210-23.000.

Gibney, Kelly B.; and Evans, Russell S., to Canadian Cellulose Company, Limited. Production of cellulose esters from partially purified wood pulp by hemicellulose removal. 3,846,403, Cl. 260-227.000.

Gibs, Gabriel Joseph: *See—*

Weiss, Martin Joseph; Gibs, Gabriel Joseph; Poletto, John Frank; and Remers, William Alan, 3,846,446.

Gibson, Charles I.: *See—*

Boedecker, Kenneth J., Jr.; and Gibson, Charles I., 3,845,936.

Gierlach, Robert W., to Standard Car Truck Company. Snubbed railway truck. 3,845,725, Cl. 105-197.0db.

Gifford, John F. Electroperistalic ion pump. 3,846,274, Cl. 204-299.000.

Gilbert, Harold James. Multi-spindle automatic lathes. 3,845,677, Cl. 82-29.00r.

Gilbert, Stephen Lee: *See—*

Ettenberg, Michael; and Gilbert, Stephen Lee, 3,846,165.

Gilcher, Heinz, to Westinghouse Electric Corporation. Intrusion detection system. 3,846,780, Cl. 340-261.000.

Giller, Solomon Aronovich; Lazdinsh, Arvid Avgustovich; Veinberg, Artur Karlovich; Sniker, Dagnia Yanovna; Knunyants, Ivan Ljudvigovich; German, Lev Solomonovich; and Kazmina, Natalya Borisovna. Method of producing 5-fluorouracil. 3,846,429, Cl. 260-260.00.

Gillespie, Robert M., to Sortex Company of North America, Inc. Controlling article topping and orientation detecting. 3,845,703, Cl. 99-491.000.

Gilligan, William H.; and Adolph, Horst G., to United States of America, Navy. Nitro substituted acrylic acid amides. 3,846,493, Cl. 260-561.00n.

Gilson, Paul R. Bistable flow control valve. 3,845,777, Cl. 137-119.000.

Girling Limited: *See—*

Nicholls, Lawrence George; and Gee, David William, 3,845,782.

Givaudan Corporation: *See—*

Wild, Jost; and Sigg-Grutter, Trudi, 3,846,498.

Glascock, Homer H.: *See—*

Wolfe, John E.; Ledges, George E.; and Glascock, Homer H., 3,846,660.

Glaser, David; and Kupsky, George A., to Burroughs Corporation. Display panel with raster scanning means. 3,846,669, Cl. 315-169.00r.

Glaxo Laboratories Limited: *See—*

Kennedy, James; Long, Alan Gibson; and Underwood, William George Elphinstone, 3,846,416.

Globe-Union Inc.: *See—*

Desai, Ramesh R., 3,846,175.

Towle, Warren Ladd; Mrotek, Edward Norman; and Wiethaup, Robert Roland, 3,846,180.

Glover, John W., to Darf Corporation. Power take-off connection. 3,845,832, Cl. 180-14.00r.

Glucksman, Dov Z., to Intermatic Incorporated, mesne. Blower and heater unit. 3,846,617, Cl. 219-370.000.

Gogola, Joseph K.: *See—*

Roteman, Jerome; and Gogola, Joseph K., 3,846,151.

Golbeck, Bernard J.; and Lewandowski, Raymond F., to Oak Industries, Inc. Pushbutton switch with position indicator. 3,845,736, Cl. 116-124.00r.

Goldfarb, Adolph E.; and Benkoe, Erwin. Knock-down boxing figure toys. 3,845,956, Cl. 273-85.00f.

Goldman, Arthur J.: *See—*

Jones, Cecil R.; Goldman, Arthur J.; and Rowe, D. Garth, 3,846,235.

Goldman, Conrad, to Elpex, Inc. Forming of thermoplastic polymers. 3,846,522, Cl. 264-25.000.

Golec, Josef W., to Norprint Limited. Labelling devices. 3,846,221, Cl. 161-159.000.

Gooch, Beverley R.; and Schiller, Edward, to Ampex Corporation. Method of manufacturing a magnetic head. 3,845,550, Cl. 29-603.000.

Good, Paul F. Machine for filling luncheon dough into mold cans. 3,845,793, Cl. 141-67.000.

Goody, Roger Sydney: *See—*

Eckstein, Fritz; and Goody, Roger Sydney, 3,846,402.

Goodyear Tire & Rubber Company, The: *See—*

Bullard, Herbert L.; St. Cyr, David R.; and Osborn, Robert A., 3,846,352.

Gordon, David A.: *See—*

Seltzer, Raymond; and Gordon, David A., 3,846,422.

Gorlina, Inna Leonidovna: *See—*

Fedjukin, Dmitry Lvovich; Sergeeva, Ljudmila Semenovna; Bakharev, Andrei Nikolaevich; Gorlina, Inna Leonidovna; Aronov, Anatoly Izrailevich; Kravets, Arkady Timofeevich; Korochkin, Petr Evmenovich; and Titov, Alexei Ivanovich, 3,846,611.

Goscenski, Edward J., Jr., to Eaton Corporation. Differential drive mechanism. 3,845,672, Cl. 74-711.000.

Gosset, Cyrille, to Societe Industrielle Honeywell Bull (Societe Anonyme). Electronic keyboard including program memory means and program selecting means. 3,846,758, Cl. 340-172.500.

Goto, Kenji; and Nakamura, Michiya, to Toyota Jidosha Kogyo Kabushiki Kaisha. Manifold reactor. 3,845,621, Cl. 60-282.000.

Gottlieb Binder Holzgerlingen: *See—*

Waller, Norbert, 3,845,641.

Gottwald, Leo, KG: *See—*

Eucken, Harry, 3,845,866.

Gould Inc.: *See—*

Sabatino, Anthony, 3,845,542.

Grabast, Edwin F. Mobile trailer garage with convertible furnishings. 3,845,980, Cl. 296-23.00r.

Grac, Zdenek: *See—*

Zahalka, Jindrich; Plander, Emil; and Grac, Zdenek, 3,846,268.

Grace, W. R., & Co.: *See—*

Poteet, Charles S., III, 3,846,529.

Graf, Walter Luttrell, to Du Pont de Nemours, E. I., and Company. Apparatus. 3,846,330, Cl. 252-361.000.

Graham Magnetics, Inc.: *See—*

Ehrreich, John E.; and Reti, Adrian R., 3,846,118.

Gray, Charles John: *See—*

Barker, Sidney Alan; and Gray, Charles John, 3,846,306.

Gray, Keith W.: *See—*

Martner, John G., 3,846,779.

Grayson, Leonard W. Twin drive system. 3,845,670, Cl. 74-465.000.

Grayson, Martin: *See—*

Farley, Charles Edward; and Grayson, Martin, 3,846,374.

Green, Wilbur. Inclinometer. 3,845,570, Cl. 33-401.000.

Greenberg, Sanford D.: *See—*

Eppler, William G., Jr., 3,846,827.

Greene, Henry E., Jr., to Waldon Devices, Inc. Garden hose evacuating device. 3,845,779, Cl. 137-209.000.

Greenfield, Stanley A., to Rohm & Haas Company. 1,3-Dithietanes. 3,846,448, Cl. 260-327.00m.

Greengrass, Jane: *See—*

Gaskell, Philip Hedley; Loftus, James Peter; and Greengrass, Jane, 3,846,101.

Gregory, John G.; Marsh, White; and Trepp, Robert M., to Westinghouse Electric Corporation. Apparatus for optimal data storage. 3,846,762, Cl. 340-172.500.

Gregory, Richard Langton: *See—*

Courtney-Pratt, Jeofry Stuart; and Gregory, Richard Langton, 3,846,009.

Griffin, James L.: *See—*

Rossi, Joseph R.; Griffiths, Frederick J.; and Griffin, James L., 3,845,540.

Griffiths, Frederick J.: *See—*

Rossi, Joseph R.; Griffiths, Frederick J.; and Griffin, James L., 3,845,540.

Griggs, David Thurston. Single oral input real time analyzer with written print-out. 3,846,586, Cl. 179-1.0sa.

Grinberg, Efim Naumovich: *See—*

Zhislin, Yakov Moiseevich; Kirkunov, Alexandr Eliseevich; Sokolov, Alexandr Yakovlevich; Ivanoz, Alexei Ivanovich; Leikin, Albert Yakovlevich; Grinberg, Efim Naumovich; Vinogradov, Vyacheslav Dmitrievich; Yanovskaya, Zinaida Solomonovna; and Bykov, Valery ndreevich, 3,845,704.

Griswold, Azel Alan, to Burlington Industries, Inc. Synchronous process for thermally-curable blocked polyurethanes. 3,846,378, Cl. 260-77.5tb.

Grosheim, Gene Edward, to Formica Corporation. Postformable thermoset resin containing fibrous laminate and process of postforming the same. 3,846,217, Cl. 161-88.000.

Gross, Albert, to Kulzer & Co., GmbH. Acrylic tooth-filling composition containing boric acid-releasing compound. 3,846,542, Cl. 424-81.000.

Grotta, Henry M., to United States of America, Health, Education and Welfare. Nonthrombogenic plastic material and method for making the same. 3,846,353, Cl. 260-9.000.

Groundwater, Fergus M. Apparatus for heat sealing thermoplastic films. 3,846,210, Cl. 156-583.000.

Grundstrom, Karl-Johan: *See—*

Wahren, Douglas; Norman, Bo; and Grundstrom, Karl-Johan, 3,846,230.

Gruppo Lepetit S.p.A.: *See—*

Nathansohn, Giangiacomo; Winters, Giorgio; and Odasso, Gianfranco, 3,846,412.

Guay, Wilbur J., to Newmont Exploration Limited. Method of increasing the cyanidation recoverability of gold from organic carbon-containing gold-bearing ores. 3,846,124, Cl. 75-112.000.

Gueguen, Michel, to International Standard Electric Corporation. Electronically step-by-step rotated directive radiation beam antenna. 3,846,799, Cl. 343-833.000.

Guenard, Jeanette: *See—*

Mentrup, Anton; Zeile, Karl; Danneberg, Peter; Schromm, Kurt; Guenard, Jeanette; Renth, Ernst-Otto; and Stotzer, Harry, 3,846,549.

Guerci, Carlo; and Vigliermo, Amerigo, to Olivetti, C., Ing., & C. S.p.A. Automatic-control electronic apparatus for machine tools including provision for zero offset. 3,846,680, Cl. 318-685.000.

Guichard, Jean, to Centre d'Etudes Techniques des Industries de l'Habillement. Method of forming braided elongated openings. 3,845,732, Cl. 112-264.000.

Gulf & Western Industrial Products Company: *See—*

Lederman, Burton E.; and Boudrie, Jack D., 3,846,223.

Gulf & Western Manufacturing Company: *See—*

Michelson, Anatol; and Pace, Clifford, 3,845,652.

Gulf Degremont, Inc.: *See—*

Duff, Joseph H., 3,846,303.

Gulf Research & Development Company: *See—*

Beuther, Harold; Chun, Sun W.; and Montagna, Angelo A., 3,846,285.

Chun, Sun W.; and Montagna, Angelo A., 3,846,288.

Gulf Resources & Chemical Corporation, mesne: *See—*

Hoffman, Doyt K.; and Bach, Ricardo O., 3,846,494.

Gulla, Michael, to Webline Corporation, The. Electroless copper plating. 3,846,138, Cl. 106-1.000.

Gunkel, H. Rudolf: *See—*

Gelhard, Egon; and Gunkel, H. Rudolf, 3,845,515.

Gunn, John B., to International Business Machines Corporation. Microwave oscillator. 3,846,714, Cl. 331-107.00g.

Gunsher, Jeffrey A.; and Pews, R Garth, to Dow Chemical Company, The. Isopropylidene bis(2,6-dihalo-p-phenylene) bis(poly-halophenyl) carbonates. 3,846,469, Cl. 260-463.000.

Gunson's Colorplugs Limited: *See—*

Thring, John Meredith, 3,846,655.

Gurevich, Ljudmila Ivanovna: *See—*

  - Surgina, Ninel Leonidovna; Gurevich, Ljudmila Ivanovna; Yanchenko, Larisa Nikolaevna; Bei, Tamara Alexandrovna; and Baikov, Valentin Nikolaevich, 3,845,662.
- Gurevich, Vladimir Zakhrovich: *See—*
  - Romanov, Boris Mikhailovich; Moshnin, Evgeny Nikolaevich; Yanov, Stanislav Ivanovich; Gurevich, Vladimir Zakhrovich; and Ryabokovylenko, Viktor Ivanovich, 3,845,650.
- Guth, Eugene D.: *See—*
  - Blumenthal, Jack L.; and Guth, Eugene D., 3,846,339.
- Gutner, Kenneth H.: *See—*
  - Kaplan, Edward L.; and Cless, Gerhard, 3,846,001.
- Guttmann, Stephan: *See—*
  - Stadler, Paul; Stutz, Peter; and Guttmann, Stephan, 3,846,433.
- Guzman, Angel: *See—*
  - Crabbe, Pierre; and Guzman, Angel, 3,846,475.
- Habermeier, Juergen; and Porret, Daniel, to Ciba-Geigy AG. Glycidyl hydantoin compounds. 3,846,442, Cl. 260-309.500.
- Hackenberg, Robert A., to Robertson Paper Box Co., Inc. Collapsible compartmented box. 3,845,898, Cl. 229-28.00r.
- Hadden, Donald L.: *See—*
  - LeNay, Tom W.; and Hadden, Donald L., 3,846,794.
- Haga, Kazuo: *See—*
  - Furukawa, Junji; Iseda, Yutaka; Haga, Kazuo; and Kataoka, Nobuyuki, 3,846,389.
- Hagen, Werner, to Maschinenfabrik Niehoff-Kommanditgesellschaft. Method and apparatus for winding wire. 3,845,913, Cl. 242-25.00r.
- Hahn, Carl, Dr., GmbH: *See—*
  - Friese, Axel; and Simon, Stefan, 3,845,767.
  - Simon, Stefan, 3,845,520.
- Haigh, Richard Wolliscroft. Electric sound-producing device. 3,846,792, Cl. 340-384.00e.
- Haino, Kozo: *See—*
  - Futaki, Kiyoshi; Kohmura, Isao; and Haino, Kozo, 3,846,153.
- Halberstadt, Ernst. Process for producing pewter effects. 3,846,157, Cl. 117-64.00r.
- Halko, Andrew R.; and Hughes, Allan B., to Halko Manufacturing Company, Inc. Composite casting apparatus. 3,845,531, Cl. 29-33.00c.
- Halko Manufacturing Company, Inc.: *See—*
  - Halko, Andrew R.; and Hughes, Allan B., 3,845,531.
- Hall, John S.: *See—*
  - Butts, Ernest O.; and Hall, John S., 3,845,594.
- Hall, William G.; and Pittman, Paul F., to Westinghouse Electric Corporation. Surveillance system including means for detecting impending failure in high pressure, high temperature fluid conducting pipes. 3,845,657, Cl. 73-88.50r.
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- Hamaker, Ralph A., to Xerox Corporation. Foraminous sheet registration system. 3,845,951, Cl. 271-243.000.
- Hamano, Yoshimasa: *See—*
  - Muto, Giichi; Takata, Yoshinori; and Hamano, Yoshimasa, 3,846,270.
- Hambock, Heinz: *See—*
  - Bader, Jorg; Hambock, Heinz; Sturm, Elmar; and Weiss, Anton Georg, 3,846,438.
  - Traber, Walter; Hambock, Heinz; and Weiss, Anton Georg, 3,846,555.
- Hambro Structural Systems Limited: *See—*
  - Butts, Ernest O.; and Hall, John S., 3,845,594.
- Hamburg, Fokko Wessel: *See—*
  - Bruijn, Engelbertus Jacobus; Hamburg, Fokko Wessel; Kanij, Johannes Bastiaan Willem; and De Rooy, Robert, 3,846,520.
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  - Stein, Edward H., 3,846,011.
- Hamilton, Samuel L. Proportioning moisture sensing device for refrigeration systems. 3,846,730, Cl. 338-34.000.
- Hammann, Ingeborg: *See—*
  - Schrader, Gerhard; and Hammann, Ingeborg, 3,846,514.
- Hammar, Paavo Henrikki: *See—*
  - Nurminen, Matti Pekka; and Hammar, Paavo Henrikki, 3,845,544.
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  - Nordyke, John S.; and Spangenberg, William C., 3,846,148.
- Hammond, Roland P., to United States of America, Atomic Energy Commission. Interceptor for preventing ship collisions with offshore power stations and the like. 3,845,633, Cl. 61-46.500.
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- Hansen, Charles C.; and Nilles, John D., to Refrigerating Specialties Co. Check valve for pulsating flows. 3,845,781, Cl. 137-331.000.
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  - Hanson, James E., 3,845,555.
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  - Irie, Tatsuhiko; Hara, Kazuhiko; and Kuroyanagi, Akihiro, 3,845,899.
- Harada, Akikazu: *See—*
  - Hisada, Hiroshi; and Harada, Akikazu, 3,846,667.
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- Harper, Marie R.; and Blea, Maxine R. Utensil storage unit. 3,846,005, Cl. 312-248.000.
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- Harris, James Leslie. Scraper attachment. 3,845,517, Cl. 15-93.00b.
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  - King, Robin Charles Moorhouse; and Harris, Neville Wreford, 3,846,664.
- Harrison, Frank B.: *See—*
  - Rogers, Peter C.; Harrison, Frank B.; Hipkiss, Richard C.; Sunasky, Joseph; and Shapcott, Nigel G., 3,845,718.
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  - Reed, Edward A., 3,845,885.
- Hart, William H., to Electronic Reading Systems. Pattern recognition system. 3,846,755, Cl. 340-146.3ac.
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  - Renna, Nicholas, Jr.; Madison, Theodore C.; and Harvey, Bernard A., 3,846,744.
- Haslberger, Josef. Method and device for preparing gravel. 3,845,905, Cl. 241-26.000.
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  - Matsumura, Shoichi; and Hatano, Itaru, 3,846,392.
- Hause, Gilbert K., to General Motors Corporation. Transmission controls for low torque shifting. 3,845,674, Cl. 74-878.000.
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  - Nonaka, Masahide; Hautala, Earl; and Weaver, Merle L., 3,846,572.
- Hawera Probst KG Hartmetall Werkzeugfabrik Ravensburg: *See—*
  - Schaumann, Dietrich, 3,845,829.
- Hawkes, David Alec: *See—*
  - Mayorcas, Reginald; and Hawkes, David Alec, 3,846,120.
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- Hay, William C. Waste water purification system. 3,846,296, Cl. 210-27.000.
- Hayes, John C., to Universal Oil Products Company. Trimetallic catalytic composite and uses thereof. 3,846,282, Cl. 208-139.000.
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  - Knebel, Gustav, 3,845,613.
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  - Bondesson, Ulf Goran; Carlson, Lars Anders Fritz; Hedbom, Christina; Magnusson, Harry Olof; and Stjernstrom, Nils Erik, 3,846,445.
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  - Decker, Alfred S.; Duff, John R.; and Heier, Robert J., 3,845,851.
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- Heizer, Marshall B., Jr. Chair lift. 3,845,933, Cl. 254-8.00r.
- Helgesson, Ulf R.: *See—*
  - Malmrose, Gerald E.; and Helgesson, Ulf R., 3,845,838.
- Hellmen, Sven Rolf Bertil: *See—*
  - Berntell, John Osvald; and Hellmen, Sven Rolf Bertil, 3,845,626.
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- Hemming, Raymond Charles: *See—*
  - Morrell, Ronald Joseph; Thompson, Joseph; Hemming, Raymond Charles; and Main, Henry Allan, 3,846,594.

- Hempenius, Walter L.; Valenti, Joseph; and Moser, Robert E., to Quaker Oats Company, mesne. Process of making a base for protein beverages. 3,846,560, Cl. 426-18.000.
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- Henderlite, James H., III, to Air Knife Inc. Electric heating apparatus for removing textile waste material. 3,846,618, Cl. 219-373.000.
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  - Wollmann, Klaus; Ploger, Walter; and Worms, Karl-Heinz, 3,846,420.
- Henry, Loic: *See—*
  - Diguet, Daniel; and Henry, Loic, 3,846,169.
- Henry, Robert J., to Bethlehem Steel Corporation. Method of treating steel rail. 3,846,183, Cl. 148-12.000.
- Henschen, Homer Ernst: *See—*
  - Carter, Clyde Thomas; and Henschen, Homer Ernst, 3,846,735.
- Hensley, Albert L., Jr.; and Nevitt, Thomas D., to Standard Oil Company (Indiana). Catalyst containing an oxide of technetium as a promoter. 3,846,342, Cl. 252-465.000.
- Herbots, Joseph Antonine: *See—*
  - Van Paesschen, August Jean; and Herbots, Joseph Antonine, 3,846,134.
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- Herr, Robert W.; Sigl, Edward D.; and Aksamit, Marion W., to Bowmar Instrument Corporation. Thermal printer. 3,845,850, Cl. 197-1.00r.
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  - Ayers, Clifton E.; and Herreman, Walter G., 3,845,537.
- Herrin, Jerry: *See—*
  - Evjen, John M.; and Herrin, Jerry, 3,846,178.
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  - Schenkel, Klaus Dieter; Herzig, Wolfgang; Schehrer, Rudolf; and Hildenbrand, Rupert, 3,846,587.
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- Hesse, Karl-Dieter: *See—*
  - Seeliger, Wolfgang; and Hesse, Karl-Dieter, 3,846,419.
- Hessert, James E.: *See—*
  - Clampitt, Richard L.; and Hessert, James E., 3,845,822.
- Hettler, Hans: *See—*
  - Murayama, Akira; Hettler, Hans; and Jastorff, Bernd, 3,846,401.
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- Hibino, Sohei: *See—*
  - Takagi, Shigeyuki; Kawashima, Isamu; Takagi, Katsuyuki; and Hibino, Sohei, 3,846,644.
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- Higginbotham, Gordon John Spencer; and Cuckson, Kenneth, to Rolls-Royce (1971) Limited. Apparatus for casting directionally solidified articles. 3,845,808, Cl. 164-258.000.
- Higgins, Edward Robert, to Westinghouse Electric Corporation. Direct current to direct current chopper inverter. 3,846,691, Cl. 321-2.000.
- Highway Manufacturing Company: *See—*
  - Veenstra, David K., 3,845,596.
- Higuchi, Hisayuki; and Maki, Michiyoshi, to Hitachi, Ltd. Method of manufacturing semiconductor devices. 3,846,167, Cl. 117-212.000.
- Higuchi, Takeru: *See—*
  - Theeuwes, Felix; and Higuchi, Takeru, 3,845,770.
- Hildenbrand, Rupert: *See—*
  - Schenkel, Klaus Dieter; Herzig, Wolfgang; Schehrer, Rudolf; and Hildenbrand, Rupert, 3,846,587.
- Hilgenbrink, John T., to Continental Can Company, Inc. Double stage necking. 3,845,653, Cl. 72-354.000.
- Hill, Anthony, to General Electric Company Limited, The. Peak amplitude follower circuit. 3,846,692, Cl. 321-8.00r.
- Hill, Eugene Emerson; and Scrimshaw, Marvin Seymour. Electronic scanning switch. 3,846,745, Cl. 340-6.00r.
- Hill, Harold Wayne, Jr.; and Moberly, Charles W., to Phillips Petroleum Company. Resinous adhesives and production thereof. 3,846,511, Cl. 260-880.00r.
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- Himes, Harris D.: *See—*
  - Dunlap, Charles R.; and Himes, Harris D., 3,845,745.
- Himmele, Walter; and Aquila, Werner, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of -naphthols. 3,846,497, Cl. 260-592.000.
- Hinachi, Matatoyo: *See—*
  - Oishi, Kazuo; Kato, Toshiaki; Matsui, Takeshi; Hinachi, Matatoyo; and Yamada, Takashi, 3,846,796.
- Hindin, Saul G.: *See—*
  - Erickson, Henry; Hindin, Saul G.; Keith, Carl D.; and Mooi, John, 3,846,343.
- Hino, Naganori: *See—*
  - Mine, Akihiko; Fujinami, Akira; Kameda, Nobuyuki; Hino, Naganori; Satomi, Takeo; and Tateishi, Kohshi, 3,846,441.
- Hipkiss, Richard C.: *See—*
  - Rogers, Peter C.; Harrison, Frank B.; Hipkiss, Richard C.; Sunasky, Joseph; and Shapcott, Nigel G., 3,845,718.
- Hirai, Hajime: *See—*
  - Kitamura, Shigeyoshi; Hirai, Hajime; Okuno, Yositosi; and Fujimoto, Keimei, 3,846,500.
- Hirakawa, Hiroshi; and Sakai, Toshiyuki, to Yokohama Rubber Co., Ltd., The. Process for enhancing the adhesion between steel cord and a rubber compound. 3,846,160, Cl. 117-79.000.
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- Hirsch, Mahlon E.: *See—*
  - Lohr, Raymond J.; Condry, Martin; Hirsch, Mahlon E.; Carver, Richard N.; and Rogers, Maxmillina P., 3,845,957.
- Hirschmann, Ralph F.; and Denkewalter, Robert G., to Merck & Co., Inc. Method for controlled stepwise synthesis of polypeptides utilizing N-thiocarboxy anhydrides of amino acids as reagents. 3,846,398, Cl. 260-112.500.
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  - Koronka, Paul; and Hirst, Richard John, 3,845,730.
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  - Higuchi, Hisayuki; and Maki, Michiyoshi, 3,846,167.
  - Hirota, Ryoichi; Fujishima, Tooru; Miyazaki, Gentaro; Iwasaki, Tadahiko; Akatsu, Mitsuharu; and Kinoshita, Tomoo, 3,846,673.
  - Hisada, Hiroshi; and Harada, Akikazu, 3,846,667.
  - Itoh, Takashi; Nakashima, Akio; and Arakawa, Yoshihiro, 3,846,584.
  - Kasai, Masayoshi, 3,846,658.
  - Kobayashi, Takashi; Aida, Masaaki; Mita, Tooru; and Nishi, Takayuki, 3,845,536.
  - Komoda, Tsutomu, 3,846,663.
  - Muto, Giichi; Takata, Yoshinori; and Hamano, Yoshimasa, 3,846,270.
  - Nagata, Minoru; and Sato, Kozi, 3,846,821.
  - Nakano, Yasuaki; Nakata, Kazuo; and Uchikura, Yuriko, 3,846,752.
  - Oka, Mitsunori; and Yasuda, Michio, 3,846,754.
  - Saiki, Atsushi; Mori, Takaaki; Harada, Seiki; and Sato, Kikuji, 3,846,166.
  - Sasayama, Takao, 3,846,625.
  - Suzuki, Nobuyuki; and Miyazaki, Gentaro, 3,846,666.
  - Takahashi, Kazuya; Sato, Mitsuya; Ohta, Kaname; and Takamiya, Tadashi, 3,846,711.
- Hobart Manufacturing Company, The: *See—*
  - Athey, Stuart E.; and Thornburg, W. Edwin, 3,846,615.
- Hochberg, Frederick: *See—*
  - Brown, Alan V.; and Hochberg, Frederick, 3,846,661.
- Hochiki Kabushiki Kaisha: *See—*
  - Eguchi, Yoshihiro, 3,846,641.
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- Hoerbiger Ventilwerke Aktiengesellschaft: *See—*
  - Papst, Josef, 3,845,786.
- Hoesch Maschinenfabrik Deutschland: *See—*
  - Gebauer, Hans, 3,845,645.
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- Hoffmann, Fritz, to Siemens Aktiengesellschaft. Dual-pressure high-voltage compressed-gas insulated electric circuit breaker. 3,846,602, Cl. 200-148.00e.
- Hoffmann-La Roche Inc.: *See—*
  - Edenhofer, Albrecht; and Spiegelberg, Hans, 3,846,431.

Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,846,476.
Ning, Robert Ye-Fong; and Sternbach, Leo Henryk, 3,846,410.
Hojitsu Kogyo Co., Ltd.: *See—*
Harada, Isao; and Ryuka, Fumitaka, 3,846,032.
Holce, Thomas J.; and Huckins, Charles M., to Kentrox Industries, Inc. Telephone trunk signaling link circuit. 3,846,589, Cl. 179-98.000.
Hollweck, Walter; Schnee, Wilhelm; Eberl, Karlheinz; and Wagner, Kurt, to Inter Control Herman Kohler Elektrik GmbH & Co. KG. Device for securing a temperature sensor to a vessel wall. 3,845,661, Cl. 73-343.00r.
Holmstrom, William L., to Caterpillar Tractor Company. Replaceable cutting edge with plural tangs. 3,845,578, Cl. 37-141.00r.
Holt, William C., Jr.: *See—*
Youtsey, Karl J.; Holt, William C., Jr.; and Carnahan, Robert D., 3,846,140.
Holzmann, Karl, to Badische Uhrenfabrik GmbH. Pendulum clock. 3,845,617, Cl. 58-129.000.
Holzwarth, Herbert, to Siemens & Halske Aktiengesellschaft. Telecommunication systems. 3,846,588, Cl. 179-15.0fe.
Honeywell Inc.: *See—*
Erdmann, David P.; and Kurschner, Dennis L., 3,846,790.
Stauffer, Norman L., 3,846,629.
Stauffer, Norman L., 3,846,830.
Towne, Gary L., 3,846,628.
Honeywell Information Systems Inc.: *See—*
Genuit, Luther L.; and Nowell, John R., 3,846,695.
Riikonen, Douglas L., 3,846,763.
Honrath, Kurt; and Naumann, Wilhelm, to Klockner-Humboldt-Deutz Aktiengesellschaft. Fabricated tube control cam shafts. 3,845,667, Cl. 74-567.000.
Hooker Chemical Corporation: *See—*
Wagner, George M., 3,846,155.
Hooker, John M., to General Electric Company. Alpha-numeric display type electron discharge device. 3,846,662, Cl. 313-496.000.
Hopwood, Charles E. Signaling system and sensor. 3,846,748, Cl. 340-71.000.
Hori, Kyoichi: *See—*
Otsuki, Susumu; Hori, Kyoichi; and Miyanohara, Isao, 3,846,488.
Horiguchi, Shojiro; Nakamura, Michiei; Nakajima, Keiji; and Takizawa, Minoru, to Dainichiseika Color & Chemicals Mfg. Co., Ltd. Carboxyl-phthaleins. 3,846,452, Cl. 260-343.400.
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Horst, Wilfried; Schuppler, Emil; and Santen, Horst, to Huppe, Justin, Firma. Slat-type venetian blind apparatus. 3,845,803, Cl. 160-166.000.
Horvath, Gabor: *See—*
Huhn, Magda; Toth, Geza; Resofszki, Gabor; Somfai, Eva; and Horvath, Gabor, 3,846,407.
Hotten, Bruce W., to Chevron Research Company. Dioxan-containing aluminum lubricant. 3,846,319, Cl. 252-49.500.
Hou, Kenneth C.; and Thomas, Norman W., to Celanese Corporation. Trialkylsilyl-treated fumed silicon dioxide pitments for electrodeposition. 3,846,356, Cl. 260-18.0ep.
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Houser, John M., to Oster Corporation. Hair clipper with improved on/off switch. 3,846,603, Cl. 200-157.000.
Howard, Alan Norman, to Pharmacia A/B. Treatment of hypercholesteremia. 3,846,541, Cl. 424-79.000.
Howard, H. Keith. Apparatus for applying closure strips to plastic film. 3,846,209, Cl. 156-502.000.
Howard, Larry J. Engine with resilient piston. 3,845,691, Cl. 91-325.000.
Howland, Raymond J., Jr., to Safety, Inc. Protective device for safety shoes. 3,845,576, Cl. 36-77.00r.
Hoyt, Donald L.; and Altamira, Anthony Francis, to Texaco Inc. Tertiary oil recovery method. 3,845,817, Cl. 166-245.000.
Hromas, Leslie A.: *See—*
Thompson, Thomas R.; and Hromas, Leslie A., 3,845,921.
Huber, John Richard, to Eastern Rotorcraft Corporation. Swivelled cargo release device. 3,845,978, Cl. 294-83.00r.
Huber, William B. Tape player cartridge control circuit. 3,846,685, Cl. 318-327.000.
Hubner, Heidegund. Safety sleeping bag for infants and babies. 3,845,513, Cl. 5-336.000.
Huckins, Charles M.: *See—*
Holce, Thomas J.; and Huckins, Charles M., 3,846,589.
Huff, John C.; Ludwig, Frank A.; and Smith, Arthur G., to Ford Motor Company. Method of forming a hydrophilic coating over an aluminum surface. 3,846,182, Cl. 148-6.200.
Huffaker, James E.; Clonce, Ambrose J.; and Besser, John E., to Eastman Kodak Company. Secondary aromatic-alkyl diamines as foam catalysts and chain extenders. 3,846,351, Cl. 260-2.5am.
Huffman, Coy L., Jr. Article finishing machine. 3,845,588, Cl. 51-139.000.
Huffman, Galen R.: *See—*
Boone, James A.; Walker, Harold G.; and Huffman, Galen R., 3,845,825.
Hufstader, Gibson O., to General Motors Corporation. Fastening means establishing concentricity between a vehicle flywheel, a fluid converter and an engine crankshaft. 3,845,622, Cl. 60-330.000.
Hughes, Allan B.: *See—*
Halko, Andrew R.; and Hughes, Allan B., 3,845,531.
Hughes, D. A., Affiliates, Inc.: *See—*
Moeglich, Karl, 3,846,261.
Huhn, Magda; Toth, Geza; Resofszki, Gabor; Somfai, Eva; and Horvath, Gabor, to CHINOIN Gyogyszer- es Vegyeszeti Termekek Gyara Rt. Penicillin derivatives containing a halogenocarbonyl group. 3,846,407, Cl. 260-239.00l.
Hull, Neil A.; and Peel, Richard E., to Ford Motor Company. Coupling device for seat belts. 3,845,524, Cl. 24-222.00r.
Hulter, Heinr., Jr., Firma: *See—*
Lindner, Gisela, 3,845,644.
Hume, Alister C., to MacMillan Bloedel Research Limited. Screw conveyor for particulate material. 3,845,856, Cl. 198-213.000.
Hunnicutt, Vaughn E.: *See—*
Sowers, Blaine E.; and Hunnicutt, Vaughn E., 3,845,869.
Hunt Electronics Company: *See—*
Johnson, James C., 3,846,671.
Hunting, Bernardus Jacobus; and Jeunink, Gerardus Alfonsus, to U.S. Philips Corporation. Transparent articles of aluminum oxide and method of manufacturing said articles. 3,846,146, Cl. 106-62.000.
Huppe, Justin, Firma: *See—*
Horst, Wilfried; Schuppler, Emil; and Santen, Horst, 3,845,803.
Hurd, Raymond M. Shotgun shell holder. 3,845,889, Cl. 224-16.000.
Huskins, Homer L., to Ragan, Brad, Inc. Assembly and method for bonding tread material to a tire body. 3,846,201, Cl. 156-96.000.
Hutchinson, Arthur J. L., to Geothermal Investment Co. Power generation from hot brines. 3,845,627, Cl. 60-641.000.
Huver, Lawrence L.: *See—*
Quinlan, William J.; and Huver, Lawrence L., 3,845,519.
Hwang, Yih-Shen: *See—*
Mulla, Mir S.; and Hwang, Yih-Shen, 3,846,557.
Hyde, Paul E.: *See—*
Heussy, William C.; Vetor, Earl L.; Delaney, Keith P.; and Hyde, Paul E., 3,845,737.
Hydranautics: *See—*
Chambers, Henry B., 3,845,935.
Hyman, Maxwell; and De Puy, Donald C., to Align-O-Tron Corporation. Reflection densitometer. 3,846,027, Cl. 356-188.000.
Ichimaru, Tadashi: *See—*
Takeya, Kenji; Suzuki, Hiroshi; and Ichimaru, Tadashi, 3,846,373.
ICI America Inc.: *See—*
Zech, John D., 3,846,479.
ICN Pharmaceuticals, Inc.: *See—*
Kobe, Joze; Springer, Robert H.; and O'Brien, Darrell E., 3,846,423.
Ideal Industries Incorporated: *See—*
Boone, James A.; Walker, Harold G.; and Huffman, Galen R., 3,845,825.
Ideal Toy Corporation: *See—*
Reinertsen, Tormod K., 3,845,958.
Ihms, James Ernest. Apparatus for stereoscopic photography. 3,846,810, Cl. 354-117.000.
Ihrig, John Kenneth, to FMC Corporation. Process for cleaning of oil-laden metal waste to recover the metal and to reclaim the oil. 3,846,173, Cl. 134-10.000.
Ikeda, Sakashi: *See—*
Nakao, Yoshio; Nara, Kiyoshi; Katamoto, Kazuyoshi; Ito, Kikuo; and Ikeda, Sakashi, 3,846,240.
Ikeda, Yukio, to Plus Ika Kogyo Kabushiki Kaisha. Drainage fluid removing device. 3,845,765, Cl. 128-277.000.
Ikekawa, Nobuo; and Morisaki, Masuo, to Eisai Co., Ltd. Process for the preparation of 25-hydroxycholesterol and esters thereof. 3,846,455, Cl. 260-397.200.
Immethun, Peter A., to Ethyl Corporation. Method of making a sandwich panel construction. 3,846,203, Cl. 156-265.000.
Impco Carburetion, Inc.: *See—*
Baverstock, Richard, 3,846,094.
Imperial Chemical Industries Limited: *See—*
Gibbon, Robert Muir; and Peirpoint, Edward Keith, 3,846,506.
Harper, David John; and McKellar, John Forgie, 3,846,395.
Koronka, Paul; and Hirst, Richard John, 3,845,730.
McDonnell, Neil Patrick Hugh, 3,845,660.
Osmond, Desmond Wilfrid John; Smith, Norman Douglas Patrick; and Waite, Frederick Andrew, 3,846,090.
Osmond, Desmond Wilfrid John; Smith, Norman Douglas Patrick; and Waite, Frederick Andrew, 3,846,091.
Phillipson, John Joseph, 3,846,286.
Whyte, James Lyon, 3,846,369.
Improved Machinery Inc.: *See—*
Krasnoff, Eugene L., 3,846,299.
Inai, Yuichi; Okazaki, Kanzo; Shimada, Katsutoshi; Kagei, Kengo; and Bessho, Motoaki, to Eisai Co., Ltd. Chlorphenesin succinate and alkali metal salts thereof. 3,846,480, Cl. 260-485.00g.
Inbar, Dan: *See—*
Suhami, Avraham; Sabbah, Benjamin; and Inbar, Dan, 3,846,630.

Industrie Pirelli Societa per Azioni: *See—*
Ferrentino, Antonio, 3,845,549.
Infantino, Osvaldo Cesar, to Direccion General de Investigacion y Desarrollo (DIGID), Ministerio de Defensa de la Republica Argentina. Firearms. 3,845,581, Cl. 42-76.00r.
Inoue, Kiyoshi, to Inoue-Japax Research Inc. Water purification. 3,846,300, Cl. 210-47.000.
Inoue-Japax Research Inc.: *See—*
Inoue, Kiyoshi, 3,846,300.
Inselek Inc.: *See—*
Dumin, David Joseph, 3,846,194.
Institut Francais du Petrole, des Carburants et Lubrifiants: *See—*
Alagy, Jacob; Cha, Bernard; and Koen, Cornelis, 3,846,079.
Courty, Philippe, 3,846,341.
Renault, Philippe; Dezael, Claude; and Deschamps, Andre, 3,846,538.
Renault, Philippe; Dezael, Claude; and Deschamps, Andre, 3,846,539.
Intelligent Memory Systems, Inc.: *See—*
Jacques, James O., 3,846,837.
Inter Control Herman Kohler Elektrik GmbH & Co. KG: *See—*
Hollweck, Walter; Schnee, Wilhelm; Eberl, Karlheinz; and Wagner, Kurt, 3,845,661.
Interlake, Inc.: *See—*
Richardson, Raymond H., 3,846,595.
Intermatic Incorporated, mesne: *See—*
Glucksman, Dov Z., 3,846,617.
International Business Machines Corporation: *See—*
Blum, Joseph M.; and Shih, Kwang K., 3,846,191.
Brown, Alan V.; and Hochberg, Frederick, 3,846,661.
Chen, Winston H., 3,846,800.
Childers, William Walter; Elser, Karl Heinz; and Peterson, Phillip John, 3,846,840.
Chu, William M.; Lee, James M.; and Luckett, Gary C., 3,846,643.
Duncan, Bernard F.; and Seto, David K., 3,846,259.
Elmore, Glenn V., 3,846,168.
Fleming, Paul L., 3,846,717.
Gunn, John B., 3,846,714.
Jacobus, William N., Jr.; and Ku, San-Mei, 3,846,193.
Krick, Paul J., 3,846,768.
Masse, Philip R.; Pendy, William J.; and Wentink, William S., 3,846,836.
International Computer Limited: *See—*
Drake, John Alfred; Payne, Alan James; and Reichert, Andrew Ronald, 3,846,759.
International Copper Research Association, Inc.: *See—*
Hess, Earl H.; Kennedy, Daniel M.; and Whitman, Charles I., 3,846,545.
International Cybernetic Machines Limited: *See—*
Andersson, Per Ake, 3,845,849.
International Farm Systems, Inc.: *See—*
Stevens, Roger H., 3,846,558.
Stevens, Roger H., 3,846,559.
International Flavors & Fragrances, Inc.: *See—*
Vetter, Walter; Mueller, Hanspeter; and Geissmann, Theodor, 3,846,570.
International Harvester Company: *See—*
Luft, Robert G., 3,845,629.
International Minerals & Chemical Corporation: *See—*
Lira, Emil P.; Barker, Walter M.; and McCrae, Robert C., 3,846,426.
International Nickel Company, Inc., The: *See—*
Larson, Floyd Gotthard, Jr.; and Snape, Edwin, 3,846,344.
International Paper Company: *See—*
Furbeck, Warren R.; and Lee, Charles A., 3,845,948.
International Standard Electric Corporation: *See—*
Gueguen, Michel, 3,846,799.
International Telephone and Telegraph Corporation: *See—*
Myers, Clayborne E.; and Vreeland, Arthur E., 3,846,787.
Interroyal Corporation: *See—*
Benoit, Roland A.; and Duprey, Richard H., 3,845,511.
Iomec Corporation: *See—*
Gardiner, Derek J., 3,845,709.
Iowa Manufacturing Company: *See—*
Lillig, Floyd A.; and Spangler, Edward O., 3,845,906.
Irie, Tatsuhiko; Hara, Kazuhiko; and Kuroyanagi, Akihiro, to Matsushita Electric Works, Ltd. Electromagnetic counter. 3,845,899, Cl. 235-92.00c.
Irons, Henry R.: *See—*
Schwee, Leonard J.; and Irons, Henry R., 3,846,770.
Ironside, John Michael, to Lucas, Joseph, Electrical Limited. Engine control systems. 3,846,760; Cl. 340-172.500.
Irwin, Edgar L.: *See—*
Lampe, Donald R.; and Irwin, Edgar L., 3,846,820.
Isawa, Kazuo; Maejima, Masatsugu; Kiuchi, Kuninosuke; Yokota, Ken; and Ogawa, Masaru, to Fujikura Cable Works, Ltd., The. Method of forming electrically insulating chemical conversion coating on aluminum wires. 3,846,170, Cl. 117-218.000.
Iseda, Yutaka: *See—*
Furukawa, Junji; Iseda, Yutaka; Haga, Kazuo; and Kataoka, Nobuyuki, 3,846,389.
Ishida, Hiroaki: *See—*
Kitai, Kiyoshi; Nakamura, Yukio; Ishida, Hiroaki; and Nagaoka, Shinji, 3,846,815.
Ishii, Mitsuaki: *See—*
Ueda, Atsushi; and Ishii, Mitsuaki, 3,846,639.
ISM Corporation: *See—*
Dziki, Michael M.; Schultz, George; and Markow, Elliott W., 3,846,702.
Itek Corporation: *See—*
Aldrich, Ralph E.; and Simmons, William A., Jr., 3,846,014.
Ito, Ikoh; Ito, Shokiro; and Emura, Tomoyuki, to Sumitomo Chemical Company, Limited. Process for producing polyvinyl chloride in the presence of alkyl thioglycolate as a chain transfer agent. 3,846,390, Cl. 260-86.300.
Ito, Kikuo: *See—*
Nakao, Yoshio; Nara, Kiyoshi; Katamoto, Kazuyoshi; Ito, Kikuo; and Ikeda, Sakashi, 3,846,240.
Ito, Nobuo: *See—*
Harada, Taro; Ito, Nobuo; and Ohishi, Kanemitsu, 3,846,349.
Ito, Shokiro: *See—*
Ito, Ikoh; Ito, Shokiro; and Emura, Tomoyuki, 3,846,390.
Ito, Sukenao: *See—*
Uyama, Fukuhito; Tanaka, Hisashi; and Ito, Sukenao, 3,846,383.
Itoh, Takashi; Nakashima, Akio; and Arakawa, Yoshihiro, to Hitachi, Ltd. Horizontal automatic frequency control circuit. 3,846,584, Cl. 178-69.5tv.
Ivanov, Mark Efremovich: *See—*
Voloshin, Petr Stepanovich; Ivanov, Mark Efremovich; Klopovsky, Boris Alexeevich; Lindin, Viktor Mikhailovich; Novitsky, Boris Georgievich; Olevsky, Viktor Markovich; and Fridman, Viktor Mironovich, 3,845,901.
Ivanoz, Alexei Ivanovich: *See—*
Zhislin, Yakov Moiseevich; Kirkunov, Alexandr Eliseevich; Sokolov, Alexandr Yakovlevich; Ivanoz, Alexei Ivanovich; Leikin, Albert Yakovlevich; Grinberg, Efim Naumovich; Vinogradov, Vyacheslav Dmitrievich; Yanovskaya, Zinaida Solomonovna; and Bykov, Valery ndreevich, 3,845,704.
Iwama, Atsuaki: *See—*
Yoshida, Soushi; Iwama, Atsuaki; Okada, Takashi; and Suda, Tetuo, 3,846,058.
Iwasaki, Tadahiko: *See—*
Hirota, Ryoichi; Fujishima, Tooru; Miyazaki, Gentaro; Iwasaki, Tadahiko; Akatsu, Mitsuharu; and Kinoshita, Tomoo, 3,846,673.
Izyneev, Anatoly Andreevich: *See—*
Buzhinsky, Igor Mikhailovich; Gapontsev, Valentin Pavlovich; Zhabotinsky, Mark Efremovich; Izyneev, Anatoly Andreevich; Koryagina, Elizaveta Ivanovna; Kravchenko, Valery Borisovich; Rudnitsky, Jury Petrovich; Sverchkov, Evgeny Ivanovich; Aleseev, Nikolai Eimovich; and Davydov, Boris Leonidovich, 3,846,142.
Jackman, Richard L. Boat propulsion means. 3,845,733, Cl. 115-28.00r.
Jackson, Byron, Inc.: *See—*
Sullivan, Wayne N., 3,845,784.
Jackson, William B. Oven enclosure for a grill. 3,845,753, Cl. 126-9.00r.
Jacobs, Justin M., Jr.; and Stafford, Neil S. Highly improved transportation system. 3,845,723, Cl. 105-147.000.
Jacobus, William N., Jr.; and Ku, San-Mei, to International Business Machines Corporation. Minimizing cross-talk in L. E. D. arrays. 3,846,193, Cl. 148-187.000.
Jacques, James O., to Intelligent Memory Systems, Inc. Stacked flexible disc unit with head plugs. 3,846,837, Cl. 360-99.000.
Jaeger, Eginhard: *See—*
Foster, Thomas Vincent; and Jaeger, Eginhard, 3,846,107.
Jaffe, Joseph, to Chevron Research Company. Hydroconversion process. 3,846,284, Cl. 208-216.000.
Jaffe, Joseph; and Reed, Echol M., Jr., to Chevron Research Company. Hydrodesulfurization. 3,846,287, Cl. 208-216.000.
James, Jesse C., 25% to Martin, Charles D. Vehicle for rough and muddy terrain. 3,845,831, Cl. 180-8.00f.
Japan Atomic Energy Research Institute: *See—*
Tabata, Yoneho, 3,846,267.
Japan Exlan Company Limited: *See—*
Takeya, Kenji; Suzuki, Hiroshi; and Ichimaru, Tadashi, 3,846,373.
Japan Gasoline Co., Ltd.: *See—*
Midorikawa, Yoshinori; and Sasanami, Tsuneo, 3,846,246.
Jarrett, Noel: *See—*
Racunas, Bernard J.; and Jarrett, Noel, 3,846,123.
Jastorff, Bernd: *See—*
Murayama, Akira; Hettler, Hans; and Jastorff, Bernd, 3,846,401.
Jeanmairet, Pierre; and Paroz, Andre, to Favre, Marc, & Cie S.A. Lever escapement for a timepiece movement. 3,845,616, Cl. 58-121.00r.
Jenkins, Garry W. Package for disposal of chewing gum. 3,845,858, Cl. 206-233.000.
Jenny, Robert W., to Boeing Company, The. Landing gear truck pitch damping. 3,845,919, Cl. 244-103.00r.
Jeris, John S.; Beer, Carl; and Mueller, James A., to Ecolotrol, Inc. Waste treatment process. 3,846,289, Cl. 210-8.000.
Jeunink, Gerardus Alfonsus: *See—*
Hunting, Bernardus Jacobus; and Jeunink, Gerardus Alfonsus, 3,846,146.
Joanis, Norman R.; and Lavoie, Raymond R. Knife blade and handle. 3,845,554, Cl. 30-125.000.
Joeres, Paul: *See—*
Gerretz, Josef; Joeres, Paul; and Zeunert, Fritz, 3,845,649.

Johansson, Inge J. G. Grinding apparatus for vegetable materials. 3,845,909, Cl. 241-65.000.

Johns, Harold W., to General Motors Corporation. Garment hook and garnish molding retainer. 3,845,890, Cl. 224-42.10c.

Johnson, Charles S.: *See—*

Baker, William O.; and Johnson, Charles S., 3,845,510.

Johnson, Clark E., Jr.; and Richman, Peter L., to Micro Communications Corporation. Sound reproducing apparatus in which the drive means operates in response to a prerecorded control signal. 3,846,831, Cl. 360-74.000.

Johnson, Edward P.; and Waite, Ross E. Measuring apparatus. 3,845,883, Cl. 222-30.000.

Johnson, Everett M., to Texaco Inc. Fuel-dispensing nozzle seal. 3,845,792, Cl. 141-46.000.

Johnson, James C., to Hunt Electronics Company. Light dimming system for controlling brightness and rate of change of brightness of lights. 3,846,671, Cl. 315-291.000.

Johnson, John H.: *See—*

Fields, Joseph E.; and Johnson, John H., 3,846,543.

Johnson, Olof C., Jr.: *See—*

Apsell, Sheldon P.; Johnson, Olof C., Jr.; and Whitney, Robert W., 3,846,783.

Johnson, Ralph S. Ski binding apparatus. 3,845,964, Cl. 280-11.35k.

Johnson, Robert Allen, to Deere & Company. Tapered keyway checking gauge. 3,845,567, Cl. 33-174.00e.

Johnson, Robert Allen; and Raisbeck, Wesley Paul, to Deere & Company. Tapered bore checking gauge. 3,845,568, Cl. 33-174.00e.

Johnson, Walker P.; Cotton, Charles C.; Bon, David R.; and Peterson, Trules L., to United States of America, Navy. Helicopter cargo lifting system. 3,845,937, Cl. 258-1.800.

Johnson, Wallace H. Elevator system. 3,845,842, Cl. 187-15.000.

Jolly, Clarence Harold, to Comalco Limited (formerly K/a Comalco Industries Pty., Limited). Window drain valve. 3,845,599, Cl. 52-209.000.

Jones & Laughlin Steel Corporation: *See—*

Gerding, Charles Christian, 3,845,810.

Jones, Cecil R.; Goldman, Arthur J.; and Rowe, D. Garth, to Transfer Systems, Incorporated. Failure indicator for nuclear reactor fuel element. 3,846,235, Cl. 176-80.000.

Jones, Cecil Roy, to Transfer Systems Incorporated. Early warning material failure indicator. 3,846,795, Cl. 340-421.000.

Jones, Henry B.: *See—*

MacLean, John P.; and Jones, Henry B., 3,846,080.

Jones, Philip Harry: *See—*

Flynn, Francis Gerard; and Jones, Philip Harry, 3,846,325.

Jones, William H.: *See—*

Kolze, Lawrence A.; and Jones, William H., 3,846,600.

Jossic, Alain Francois, to Societe Honeywell Bull (Societe Anonyme). Feeding device for direct current motor. 3,846,684, Cl. 318-257.000.

Jost, Ernest M.; McBride, Lyle E., Jr.; and Santala, Teuvo J., to Texas Instruments, Incorporated. High gain relays and systems. 3,846,679, Cl. 317-132.000.

Jurchenko, Nikolai Petrovich; Chubarov, Evgeny Arkadievich; Pisarenko, Ivan Nikolaevich; and Starikova, Ljudmila Anatolievna. Method of manufacturing welding electrodes. 3,846,613, Cl. 219-145.000.

Jurisch, Ewald: *See—*

Dernbach, Berthold; Jurisch, Ewald; and Landgraf, Helmut, 3,845,879.

Jwuc, Karl J., to Midland-Ross Corporation. Car coupler. 3,845,867, Cl. 213-121.000.

Kabushiki Kaisha Fujikoshi: *See—*

Matsuoka, Shigeru; and Mori, Shigeru, 3,846,761.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*

Takagi, Shigeyuki; Kawashima, Isamu; Takagi, Katsuyuki; and Hibino, Sohei, 3,846,644.

Kachlova, Revekka Vulfovna; Nemtsov, Mark Semenovich; Balkhanova, Galina Fedorovna; Bychkovskaya, Ljudmila Nikolaevna; Mescherskaya, Vera Mikhailovna; and Rabinovich, Sofya Petrovna. Method for producing phosphate catalyst. 3,846,338, Cl. 252-437.000.

Kado, Masaru: *See—*

Konnai, Makoto; Kamata, Hiroshi; and Kado, Masaru, 3,846,115.

Kagei, Kengo: *See—*

Inai, Yuichi; Okazaki, Kanzo; Shimada, Katsutoshi; Kagei, Kengo; and Bessho, Motoaki, 3,846,480.

Kahle, Gerald R.: *See—*

Schiff, Sidney; and Kahle, Gerald R., 3,846,316.

Kahn, David, to AMP Incorporated. Liquid level sensor. 3,846,776, Cl. 340-244.00r.

Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, to Hoffmann-La Roche Inc. N-benzyloxycarbonyl-dopa derivatives. 3,846,476, Cl. 260-471.00c.

Kaiser, Gerhard: *See—*

Esper, Friedrich Josef; and Kaiser, Gerhard, 3,846,323.

Kaiser, Hans, to Gebruder Junghans G.m.b.H., Firma. Electric detonator system for projectiles. 3,845,714, Cl. 102-70.20r.

Kalle Aktiengesellschaft: *See—*

Schmidt, Willi Johann; and Lumb, Hugo, 3,845,915.

Kallmes, Otto Julius, to Lodding Engineering Corporation. Flow systems for inducing fine-scale turbulence. 3,846,229, Cl. 162-216.000.

Kaman Aerospace Corporation: *See—*

Bossler, Robert B., Jr., 3,845,735.

Kamata, Hiroshi: *See—*

Konnai, Makoto; Kamata, Hiroshi; and Kado, Masaru, 3,846,115.

Kameda, Nobuyuki: *See—*

Mine, Akihiko; Fujinami, Akira; Kameda, Nobuyuki; Hino, Naganori; Satomi, Takeo; and Tateishi, Kohshi, 3,846,441.

Kaminski, William: *See—*

Condon, Joseph Henry; and Kaminski, William, 3,846,582.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*

Matsumura, Shoichi; and Hatano, Itaru, 3,846,392.

Kanij, Johannes Bastiaan Willem: *See—*

Bruijn, Engelbertus Jacobus; Hamburg, Fokko Wessel; Kanij, Johannes Bastiaan Willem; and De Rooy, Robert, 3,846,520.

Kankaanpaa, Matti, to Valmet Oy. Twin-wire paper forming with wires wrapping around a suction web-forming breast roll and then following a curved path to a suction couch roll. 3,846,232, Cl. 162-301.000.

Kankaanpaa, Matti, to Valmet Oy. Papermaking machine having a single wire run and a double wire run over a downwardly curving detwatering box. 3,846,233, Cl. 162-312.000.

Kanner, Bernard: *See—*

Prokai, Bela; and Kanner, Bernard, 3,846,462.

Kapff, Sixt Frederick: *See—*

Tulumello, Angelo; and Kapff, Sixt Frederick, 3,846,074.

Kaplan, Edward L.; and Cless, Gerhard, to Gutner, Kenneth H. Plastic guide for drawer. 3,846,001, Cl. 308-3.600.

Kaplan, Reuben A. Method of making a disposable precharged coffee bag. 3,846,569, Cl. 426-394.000.

Kappus, Helmut: *See—*

Rodermund, Gerd; and Kappus, Helmut, 3,846,212.

Karden, Karl Gosta; Westerberg, Sven Peter Johas; and Astrom, Klas Johan, to Atlas Copco Aktiebolag. Nut runner with pressure means to hold torque clutch member disengaged. 3,845,673, Cl. 74-751.000.

Karnas, Joseph. Mechanical reef. 3,845,630, Cl. 61-4.000.

Kasai, Masayoshi, to Hitachi, Ltd. Post acceleration type cathode ray tube with perforated hollow collector electrode adjacent shadow mask. 3,846,658, Cl. 313-408.000.

Kasamatsu, Takuo. Apparatus for assembling electrical circuits for experimentation. 3,845,573, Cl. 35-19.00a.

Kasuga, Toshishige: *See—*

Campbell, Goerge Thomas Richardson; and Kasuga, Toshishige, 3,845,865.

Katamoto, Kazuyoshi: *See—*

Nakao, Yoshio; Nara, Kiyoshi; Katamoto, Kazuyoshi; Ito, Kikuo; and Ikeda, Sakashi, 3,846,240.

Kataoka, Nobuyuki: *See—*

Furukawa, Junji; Iseda, Yutaka; Haga, Kazuo; and Kataoka, Nobuyuki, 3,846,389.

Katayama, Hitoshi: *See—*

Yamaguchi, Isao; and Katayama, Hitoshi, 3,846,019.

Katchka, Jay R., to Robertshaw Controls Company. Flame spreader with stress relief for a burner. 3,846,064, Cl. 431-285.000.

Kato, Jinichi: *See—*

Sobajima, Masaru; and Kato, Jinichi, 3,846,008.

Kato, Toshiaki: *See—*

Oishi, Kazuo; Kato, Toshiaki; Matsui, Takeshi; Hinachi, Matatoyo; and Yamada, Takashi, 3,846,796.

Katsuda, Yoshio: *See—*

Mifune, Akira; Katsuda, Yoshio; and Yoneda, Toyoaki, 3,846,551.

Katt, Herbert L. Post. 3,846,030, Cl. 403-2.000.

Kaufman, Arnold: *See—*

Rosas, Carlos B.; Wantuck, Joseph A.; and Kaufman, Arnold, 3,846,435.

Kavesh, Sheldon, to Allied Chemical Corporation. Liquid quenching of free jet spun metal and ceramic filaments. 3,845,805, Cl. 164-89.000.

Kawakami, Koichi, to Yoshida Kogyo Kabushiki Kaisha. Zip fastener chain for trouser flies. 3,845,526, Cl. 24-205.00r.

Kawanabe, Tsuyoshi, to Canon Kabushiki Kaisha. Automatic clearing device. 3,846,624, Cl. 235-144.00e.

Kawashima, Isamu: *See—*

Takagi, Shigeyuki; Kawashima, Isamu; Takagi, Katsuyuki; and Hibino, Sohei, 3,846,644.

Kazmina, Natalya Borisovna: *See—*

Giller, Solomon Aronovich; Lazdinsh, Arvid Avgustovich; Veinberg, Artur Karlovich; Sniker, Dagnia Yanovna; Knunyants, Ivan Ljudvigovich; German, Lev Solomonovich; and Kazmina, Natalya Borisovna, 3,846,429.

Kearsley, Wayne A., to Flash Technology Corporation of America. Day-night flash beacon. 3,846,750, Cl. 340-105.000.

Keene, Charles I., to Smith, Herman P. Pedestal mounted wind generator. 3,846,042, Cl. 416-110.000.

Keever, Joseph M.; Finnen, Gerald W.; and Ramsey, James E., Jr., to Westinghouse Electric Corporation. Plastic watthour meter cover having an indexed and protected front face. 3,846,677, Cl. 317-107.000.

Kehler, Paul, to Applied Inventions Corporation. Gamma ray differential density probe. 3,846,631, Cl. 250-269.000.

Kehn, Donald M.: *See—*

Blackwell, Robert J.; Kehn, Donald M.; and Whitney, Thomas A., 3,846,310.

Keith, Carl D.: *See—*

Erickson, Henry; Hindin, Saul G.; Keith, Carl D.; and Mooi, John, 3,846,343.

Keller Spezialtechnik GmbH: *See—*

Rhotert, Bernhard, 3,845,679.

Kelly, Daniel E.; Theed, Robert W.; and Beckerman, Martin. Denture liner. 3,845,558, Cl. 32-3.000.

Kennedy, Carl D.: *See—*

McGuire, Stephen E.; Kennedy, Carl D.; and Stauter, John C., 3,845,862.

Kennedy, Daniel M.: *See—*

Hess, Earl H.; Kennedy, Daniel M.; and Whitman, Charles I., 3,846,545.

Kennedy, James; Long, Alan Gibson; and Underwood, William George Elphinstone, to Glaxo Laboratories Limited. Cephalosporin compounds. 3,846,416, Cl. 260-243.00c.

Kentrox Industries, Inc.: *See—*

Holce, Thomas J.; and Huckins, Charles M., 3,846,589.

Kenworthy, Milton J., to General Electric Company. Cooling film promoter for combustion chambers. 3,845,620, Cl. 60-39.650.

Kerst, Al F., to Monsanto Company. Substituted ethane diphosphonic acids and salts. 3,846,482, Cl. 260-502.40p.

Kerst, Al F., to Monsanto Company. Substituted ethane diphosphonic acids and salts and esters thereof. 3,846,483, Cl. 260-502.40p.

Kessler, Hans-Joachim: *See—*

Albrecht, Rudolf; Kessler, Hans-Joachim; and Schroder, Eberhard, 3,846,428.

Kest, Donald O. Method of making elastomer-based pressure sensitive adhesive coated article. 3,846,163, Cl. 117-122.0pa.

Keyes Fibre Company: *See—*

Crabtree, Kenneth L., 3,845,896.

Khlyntsev, Alexandr Sergeevich: *See—*

Shubin, Vladimir Nikolaevich; Silantiev, Viktor Sergeevich; Khlyntsev, Alexandr Sergeevich; and Barsova, Antonina Petrovna, 3,845,648.

Kiess, Ronald J.: *See—*

Douglas, Carl L.; Evans, William J.; Kiess, Ronald J.; and Sutton, Robert A., 3,845,875.

Kiko, Frederick John, to Bell Telephone Laboratories, Incorporated. Differential amplifier with dynamic biasing. 3,846,712, Cl. 330-30.00d.

Kikuchi, Yasunobu: *See—*

Arai, Hiroshi; Ohta, Jun; and Kikuchi, Yasunobu, 3,846,747.

Killian, Gerald I. Archer's finger tab. 3,845,504, Cl. 2-21.000.

Kim, Robert H.; and White, Lawrence D., to Westinghouse Electric Corporation. Bi-polar pulse generator. 3,846,645, Cl. 307-260.000.

Kimberly-Clark Corporation: *See—*

Lecompte, Archie R., Jr., 3,846,292.

Kimura, Fumihiko: *See—*

Konishi, Akio; Takahashi, Masaaki; Kimura, Fumihiko; and Toguchi, Takehisa, 3,846,331.

Kindvall, Frank: *See—*

Warden, Hans Erik; Kindvall, Frank; and Berg, Carls Olof, 3,845,946.

King, Robin Charles Moorhouse; and Harris, Neville Wreford, to English Electric Valve Company Limited. Coupled cavity travelling wave tubes. 3,846,664, Cl. 315-3.600.

Kinne, Frank E.; and Carmack, Phil D., to Permatank Engineering & Mfg. Co., Inc. Method for manufacturing foam sandwich panels. 3,846,525, Cl. 264-46.500.

Kinoshita, Tomoo: *See—*

Hirota, Ryoichi; Fujishima, Tooru; Miyazaki, Gentaro; Iwasaki, Tadahiko; Akatsu, Mitsuharu; and Kinoshita, Tomoo, 3,846,673.

Kinzler, Raymond C.: *See—*

Edgar, William D.; Sustarsic, John D.; and Kinzler, Raymond C., 3,846,252.

Kirby, John Ashley, to Colonnese, Louis J. and Batcheller, George C., Co., Inc. Brassiere worn breast prosthesis. 3,845,507, Cl. 3-36.000.

Kirkunov, Alexandr Eliseevich: *See—*

Zhislin, Yakov Moiseevich; Kirkunov, Alexandr Eliseevich; Sokolov, Alexandr Yakovlevich; Ivanoz, Alexei Ivanovich; Leikin, Albert Yakovlevich; Grinberg, Efim Naumovich; Vinogradov, Vyacheslav Dmitrievich; Yanovskaya, Zinaida Solomonovna; and Bykov, Valery ndreevich, 3,845,704.

Kishimoto, Teiji: *See—*

Tanaka, Kunihiko; Kishimoto, Teiji; and Zenno, Hisanao, 3,846,432.

Kitai, Kiyoshi; Nakamura, Yukio; Ishida, Hiroaki; and Nagaoka, Shinji, to Seiko Koki Kabushiki Kaisha. Power switch control in electric shutter. 3,846,815, Cl. 354-234.000.

Kitamura, Shigeyoshi; Hirai, Hajime; Okuno, Yositosi; and Fujimoto, Keimei, to Sumitomo Chemical Company, Ltd. Diphenylmethane derivatives. 3,846,500, Cl. 260-611.00a.

Kittel, Harold James, to Drake, R. L., Company. Method and apparatus for tuning an amplifier circuit. 3,846,713, Cl. 330-192.000.

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Isawa, Kazuo; Maejima, Masatsugu; Kiuchi, Kuninosuke; Yokota, Ken; and Ogawa, Masaru, 3,846,170.

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Kleiber, Karl: *See—*

Lohmann, Frank; Eckhardt, Claude; and Kleiber, Karl, 3,846,324.

Klein, Dieter H., to Dow Chemical Company, The. High solids content vinylidene chloride polymer dispersions in strongly hydrogen bonded dispersing media and process of preparation thereof. 3,846,828, Cl. 260-33.40r.

Klein, Erwin, to BBC Aktiengesellschaft Brown, Boveri & Cie. Multicelled mounting frame for static converter modules. 3,846,678, Cl. 317-120.000.

Klievoneit, Harold R. Radial surface finishing apparatus. 3,845,587, Cl. 51-118.000.

Kliger, Howard S.: *See—*

Brown, James E.; Woods, Andrew B.; and Kliger, Howard S., 3,846,797.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*

Honrath, Kurt; and Naumann, Wilhelm, 3,845,667.

Wagner, Gerhard, 3,845,514.

Kloefkorn, Earl W. Auxiliary fuel feeding system for a vehicle. 3,845,841, Cl. 180-54.00r.

Klopovsky, Boris Alexeevich: *See—*

Voloshin, Petr Stepanovich; Ivanov, Mark Efremovich; Klopovsky, Boris Alexeevich; Lindin, Viktor Mikhailovich; Novitsky, Boris Georgievich; Olevsky, Viktor Markovich; and Fridman, Viktor Mironovich, 3,845,901.

Knappstein, Johannes; Fritzsche, Helmut; and Stratmann, Josef, to Recklinghausen, Carl Still, Firma. Coke quenching method and device. 3,846,250, Cl. 201-39.000.

Knebel, Gustav, to Heberlein & Co., AG. False-twist device. 3,845,613, Cl. 57-77.400.

Knowlton, Barry R.: *See—*

Thomm, Ernest C.; and Knowlton, Barry R., 3,846,507.

Knunyants, Ivan Ljudvigovich: *See—*

Giller, Solomon Aronovich; Lazdinsh, Arvid Avgustovich; Veinberg, Artur Karlovich; Sniker, Dagnia Yanovna; Knunyants, Ivan Ljudvigovich; German, Lev Solomonovich; and Kazmina, Natalya Borisovna, 3,846,429.

Kobayashi, Takashi; Aida, Masaaki; Mita, Tooru; and Nishi, Takayuki, to Hitachi, Ltd. Covered wire wrapping apparatus. 3,845,536, Cl. 29-203.0dt.

Kobe, Joze; Springer, Robert H.; and O'Brien, Darrell E., to ICN Pharmaceuticals, Inc. Pyrazolo(1,5-a)1,3,5-triazines. 3,846,423, Cl. 260-248.0ns.

Kobe Steel, Ltd.: *See—*

Yoshida, Soushi; Iwama, Atsuaki; Okada, Takashi; and Suda, Tetuo, 3,846,058.

Koch, H., & Sons, Inc.: *See—*

Gaylord, John A., 3,845,525.

Koch, Wolfgang: *See—*

Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,846,476.

Koch-Light Laboratories Limited: *See—*

Barker, Sidney Alan; and Gray, Charles John, 3,846,306.

Koen, Cornelis: *See—*

Alagy, Jacob; Cha, Bernard; and Koen, Cornelis, 3,846,079.

Kogure, Tetsuo: *See—*

Nagai, Yoichiro; Ojima, Iwao; and Kogure, Tetsuo, 3,846,463.

Kohler, Alfred, to SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH. Wiper bearing for a windshield wiper for motor vehicles. 3,846,000, Cl. 308-238.000.

Kohmura, Isao: *See—*

Futaki, Kiyoshi; Kohmura, Isao; and Naino, Kozo, 3,846,153.

Kokan Camera Laboratory Company Limited: *See—*

Sakamoto, Isamu, 3,845,731.

Kokeisl, Theodor. Device for metering flowable solids from a container. 3,845,886, Cl. 222-241.000.

Kolze, Lawrence A.; and Jones, William H., to Eaton Corporation. Means for calibrating pressure switches at extra-low pressure settings. 3,846,600, Cl. 200-83.00s.

Kommanditbolaget United Stirling (Sweden) AB & Co.: *See—*

Berntell, John Osvald; and Hellmen, Sven Rolf Bertil, 3,845,626.

Komoda, Tsutomu, to Hitachi, Ltd. Electron gun device having a field emission cathode tip protected from destruction due to ion impingement. 3,846,663, Cl. 315-3.000.

Koninklijke Nederlandsche Hoogovens en Staalfabrieken, N.V.: *See—*

van Laar, Jacobus, 3,846,068.

Konishi, Akio; Takahashi, Masaaki; Kimura, Fumihiko; and Toguchi, Takehisa, to Kureha Kagaku Kogyo Kabushiki Kaisha. Solvent composition for dyes for use in pressure-sensitive copying paper. 3,846,331, Cl. 252-364.000.

Konnai, Makoto; Kamata, Hiroshi; and Kado, Masaru, to Kumiai Chemical Industry Co., Ltd. Herbicidal Composition. 3,846,115, Cl. 71-100.000.

Koon, Howard T. Vacuum casting furnace. 3,845,807, Cl. 164-255.000.

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Edgar, William D.; Sustarsic, John D.; and Kinzler, Raymond C., 3,846,252.

Korochkin, Petr Evmenovich: *See—*

Fedjukin, Dmitry Lvovich; Sergeeva, Ljudmila Semenovna; Bakharev, Andrei Nikolaevich; Gorlina, Inna Leonidovna; Aronov, Anatoly Izrailevich; Kravets, Arkady Timofeevich; Korochkin, Petr Evmenovich; and Titov, Alexei Ivanovich, 3,846,611.

Koronka, Paul; and Hirst, Richard John, to Imperial Chemical Industries Limited. Agricultural apparatus. 3,845,730, Cl. 111-88.000.

Korotenko, Boris Evdokimovich; Korotenko, Vitaly Borisovich; and Shtepa, Pavel Korneevich. Unipolar electric transmission. 3,846,653, Cl. 310-102.000.

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Korotenko, Boris Evdokimovich; Korotenko, Vitaly Borisovich; and Shtepa, Pavel Korneevich, 3,846,653.

Koryagina, Elizaveta Ivanovna: *See—*

Buzhinsky, Igor Mikhailovich; Gapontsev, Valentin Pavlovich; Zhabotinsky, Mark Efremovich; Izyneev, Anatoly Andreevich; Koryagina, Elizaveta Ivanovna; Kravchenko, Valery Borisovich; Rudnitsky, Jury Petrovich; Sverchkov, Evgeny Ivanovich; Aleseev, Nikolai Eimovich; and Davydov, Boris Leonidovich, 3,846,142.

Kosarek, Daniel. Three-dimensional block puzzle. 3,845,959, Cl. 273-153.00s.

Kostecky, James F., to Bethlehem Steel Corporation. Metal wall framing system. 3,845,601, Cl. 52-290.000.

Koyanagi, Yukio: *See—*

Sakamoto, Yoichi; and Koyanagi, Yukio, 3,846,707.

Kraft, Edwin H.: *See—*

Bornstein, Norman S.; and Kraft, Edwin H., 3,846,159.

Kramer, John F. Fluid conduit arrangement. 3,846,083, Cl. 29-157.00r.

Krasnoff, Eugene L., to Improved Machinery Inc. Clarifying apparatus and methods for influent waters. 3,846,299, Cl. 210-44.000.

Krause, Konrad A. Vacuum tape threading system. 3,846,832, Cl. 360-85.000.

Krauss-Maffei Aktiengesellschaft: *See—*

Bohn, Gerhard; Winkle, Gunther; and Wende, Helmut, 3,845,720.

Kravchenko, Valery Borisovich: *See—*

Buzhinsky, Igor Mikhailovich; Gapontsev, Valentin Pavlovich; Zhabotinsky, Mark Efremovich; Izyneev, Anatoly Andreevich; Koryagina, Elizaveta Ivanovna; Kravchenko, Valery Borisovich; Rudnitsky, Jury Petrovich; Sverchkov, Evgeny Ivanovich; Aleseev, Nikolai Eimovich; and Davydov, Boris Leonidovich, 3,846,142.

Kravets, Arkady Timofeevich: *See—*

Fedjukin, Dmitry Lvovich; Sergeeva, Ljudmila Semenovna; Bakharev, Andrei Nikolaevich; Gorlina, Inna Leonidovna; Aronov, Anatoly Izrailevich; Kravets, Arkady Timofeevich; Korochkin, Petr Evmenovich; and Titov, Alexei Ivanovich, 3,846,611.

Kravets, Sergei Semenovich: *See—*

Kremnev, Oleg Alexandrovich; Borovsky, Vladimir Rudolfovich; Kravets, Sergei Semenovich; Alexeev, Nikolai Fedorovich; Tsvetkov, Vladislav Arkhipovich; and Bogdanovsky, Vladimir Borisovich, 3,846,571.

Kremnev, Oleg Alexandrovich; Borovsky, Vladimir Rudolfovich; Kravets, Sergei Semenovich; Alexeev, Nikolai Fedorovich; Tsvetkov, Vladislav Arkhipovich; and Bogdanovsky, Vladimir Borisovich. Process of treatment of smoked-and-dried meat. 3,846,571, Cl. 426-45.000.

Kretschmer, Reinhard: *See—*

Reinecke, Herbert; Adler, Kalus; Bauer, Johann; Kretschmer, Reinhard; Lamhofer, Gerhard; and Pichler, Engelbert, 3,846,362.

Krick, Paul J., to International Business Machines Corporation. Fixed threshold variable threshold storage device for use in a semiconductor storage array. 3,846,768, Cl. 340-173.00r.

Krieg, Adrian H., to Widder Corporation. Press brakes. 3,845,655, Cl. 72-389.000.

Krokhin, Alexandr Alexandrovich: *See—*

Rabodzei, Nikolai Vasilievich; Ljubimov, Evgeny Mikhailovich; Nadobnikov, Mikhail Nikolaevich; and Krokhin, Alexandr Alexandrovich, 3,846,632.

Kronish, Donald P.; Zuriff, Lee S.; Young, William D.; and Lewandowski, Paul R., to Warner-Lambert Company. Moisture barrier. 3,846,247, Cl. 195-12.00t.

Krupp, Fried., Gesellschaft mit beschrankter Haftung: *See—*

Schatz, Oskar; and Dieckmann, Uwe, 3,845,979.

Ku, San-Mei: *See—*

Jacobus, William N., Jr.; and Ku, San-Mei, 3,846,193.

Kubitzker, Harry; Falkai, Bela Von; and Reichle, Alfred, to Bayer Aktiengesellschaft. Continuous spinning and stretching process of the production of polyamide-6 filaments. 3,846,532, Cl. 264-210.00f.

Kuchar, Paul J., to Universal Oil Products Company. Homogenized particulate matter for spray drying. 3,845,801, Cl. 159-48.00r.

Kudamatsu, Akio; Miyamoto, Masao; and Fukazawa, Nobuo, to Bayer Aktiengesellschaft. 2-Methoxy-5-fluorobenzyl n,n-dimethylthiolcarbamate. 3,846,467, Cl. 260-455.00a.

Kuh, Arthur D., to Eastman Kodak Company. Dye diffusion transfer compositions, elements and processes. 3,846,129, Cl. 96-3.000.

Kuhl, Dieter, to Siemens Aktiengesellschaft. Fuel cell encased in molded plastic material. 3,846,176, Cl. 136-86.00r.

Kuhn, Robert: *See—*

Machleder, Warren H.; and Kuhn, Robert, 3,846,089.

Kuihara, Kenzo: *See—*

Shigeyasu, Motoo; Kuihara, Kenzo; and Kuki, Michio, 3,846,487.

Kuki, Michio: *See—*

Shigeyasu, Motoo; Kuihara, Kenzo; and Kuki, Michio, 3,846,487.

Kukucka, William P.: *See—*

Acquaviva, Thomas; and Kukucka, William P., 3,845,949.

Kulikov, Jury Nikolaevich: *See—*

Dyatlov, Mikhail Konstantinovich; Ostapchenko, Evgeny Petrovich; Stepanov, Vladimir Anatolievich; and Kulikov, Jury Nikolaevich, 3,846,716.

Kulzer & Co., GmbH: *See—*

Gross, Albert, 3,846,542.

Kumiai Chemical Industry Co., Ltd.: *See—*

Konnai, Makoto; Kamata, Hiroshi; and Kado, Masaru, 3,846,115.

Kun, Leslie C., to Union Carbide Corporation. Finned primary surface heat exchanger. 3,845,814, Cl. 165-148.000.

Kunitskaya, Galina Mikhailovna: *See—*

Aronova, Nina Ivanovna; Makhova, Nina Nikolaevna; Zavyalov, Sergei Ivanovich; Volkenshtein, Jury Borisovich; and Kunitskaya, Galina Mikhailovna, 3,846,490.

Kunkel, Wulf B.: *See—*

Ehlers, Kenneth W.; and Kunkel, Wulf B., 3,846,668.

Kunkle, John Philip; and Barnes, Ronald Bruce, to AMP Incorporated. Circuit board post type terminal. 3,846,741, Cl. 339-221.00r.

Kunsman, Laurence D., to Westinghouse Electric Corporation. High strength high conductivity aluminum alloy windings in large core form transformers. 3,845,551, Cl. 29-605.000.

Kunz, Albrecht, to Uniboard AG. Wood-chip boards. 3,846,219, Cl. 161-119.000.

Kuo, Mau-Jung: *See—*

Deltente, Jacques J.; O'Connor, Richard J.; and Kuo, Mau-Jung, 3,846,239.

Kuo, Ted L. C., to Thomas & Betts Corporation. Electrical splice. 3,846,577, Cl. 174-84.00c.

Kupchan, Solomon Morris. Process for obtaining a germine, adduct from germine values. 3,846,434, Cl. 260-287.00r.

Kupsky, George A.: *See—*

Glaser, David; and Kupsky, George A., 3,846,669.

Kuraray Co., Ltd.: *See—*

Uyama, Fukuhito; Tanaka, Hisashi; and Ito, Sukenao, 3,846,383.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*

Konishi, Akio; Takahashi, Masaaki; Kimura, Fumihiko; and Toguchi, Takehisa, 3,846,331.

Kurhi, Jaakko. Optical printer. 3,846,022, Cl. 355-53.000.

Kuroki, Katuro: *See—*

Sakakura, Akira; Matsumoto, Fumio; Ueno, Kiyoshi; Takashima, Junihide; and Kuroki, Katuro, 3,846,187.

Kuroyanagi, Akihiro: *See—*

Irie, Tatsuhiko; Hara, Kazuhiko; and Kuroyanagi, Akihiro, 3,845,899.

Kurschner, Dennis L.: *See—*

Erdmann, David P.; and Kurschner, Dennis L., 3,846,790.

Kusaka, Shunichi: *See—*

Okamoto, Haruki; Sato, Masaki; and Kusaka, Shunichi, 3,846,838.

Kusters, Eduard: *See—*

Kusters, Eduard; and Appenzeller, Valentin (said Appenzeller assor. to said), 3,845,534.

Kusters, Eduard; and Appenzeller, Valentin, said Appenzeller assor. to said Kusters, Eduard. Grooved roller and method of making same. 3,845,534, Cl. 29-130.000.

Kuth, Robert: *See—*

Langmann, Werner; and Kuth, Robert, 3,846,070.

Kuwada, Yutaka: *See—*

Meguro, Kanji; and Kuwada, Yutaka, 3,846,421.

Kuzniak, Bernard. Material handling apparatus. 3,845,950, Cl. 271-194.000.

Kwok, Wo Kong, to Du Pont de Nemours, E. I., and Company. Process for continuously producing polyhexamethylene adipamide by carrying out water removal step in a formic acid vapor containing atmosphere. 3,846,381, Cl. 260-78.00r.

Kyotani, Hirosi; Murono, Yositaka; and Siojima, Katuhiko, to Sharp Kabushiki Kaisha. Self renewing stylus structure. 3,846,802, Cl. 346-74.00e.

L & C Steinmuller, G.m.b.H.: *See—*

Plura, Georg, 3,846,298.

Labelle, Harold E., Jr.; Mlavsky, Abraham I.; and Cronan, Charles J., to Tyco Laboratories, Inc. Production of crystalline bodies of complex geometries. 3,846,082, Cl. 23-301.0sp.

Laboratories Jacques Loglais: *See—*

Maillard, Jacques Georges; and Langlois, Michel, 3,846,485.

Labude, Wolfgang; and Bauer, Karl-Heinz, to FA. "PREH, Elektrofeinmechanische Werke Jakob Preh, NACHF.". Tuner housing with contact bridge means. 3,846,732, Cl. 338-133.000.

Lachampt, Felix; Viout, Andre; and Vanlerberghe, Guy, to Societe Anonyme dite: L'Oreal. Emulsions, and cosmetic products made from such emulsions. 3,846,546, Cl. 424-170.000.

Lacroix, Andre Roger Camille: *See—*

Arhan, Roger Pierre; and Lacroix, Andre Roger Camille, 3,846,681.

Ladouceur, Harold A.; and Matthews, John H., to Multifastener Corporation. Fastener strip. 3,845,860, Cl. 206-338.000.

Lagache, Michel; Ranson, Claude; and Tillon, Nicole, to Regie Nationale des Usines Renault and Rhone Progil. Methods of manufacturing polyester resins impregnated fibrous compositions. 3,846,164, Cl. 117-126.0gb.

Laing, Nikolaus. Centrifugal pumps having rotatable pole rings supported in contactless bearings. 3,846,050, Cl. 417-420.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes George Claude: *See—*

Pelloux-Gervais, Pierre, 3,845,974.

Lamhofer, Gerhard: *See—*

Reinecke, Herbert; Adler, Kalus; Bauer, Johann; Kretschmer, Reinhard; Lamhofer, Gerhard; and Pichler, Engelbert, 3,846,362.

Lampe, Donald R.; and Irwin, Edgar L., to Westinghouse Electric Corporation. Mosaic for IR imaging using pyroelectric sensors in a bipolar transistor array. 3,846,820, Cl. 357-31.000.

Landgraf, Helmut: *See—*

Dernbach, Berthold; Jurisch, Ewald; and Landgraf, Helmut, 3,845,879.

Lang, Konrad: *See—*

Widauer, Josef Olav; Lang, Konrad; Baum, Laszlo; and Szabo, Suzanne, 3,846,411.

Langdo, Steven H.: *See—*

Cappetta, Joseph G.; and Langdo, Steven H., 3,845,665.

Langdon, Michael Guy, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for the Environment in Her Britannic Majesty's Government of the. Guidance apparatus for track following vehicles. 3,845,719, Cl. 104-130.000.

Langen, Jacobus J.: *See—*

Langen, Marinus J. M.; and Langen, Jacobus J., 3,845,852.

Langen, Marinus J. M.; and Langen, Jacobus J. Carton loader. 3,845,852, Cl. 198-34.000.

Langlois, Michel: *See—*

Maillard, Jacques Georges; and Langlois, Michel, 3,846,485.

Langmann, Werner; and Kuth, Robert, to Bayer Aktiengesellschaft. Process for the dyeing of polyester textile materials. 3,846,070, Cl. 8-172.000.

Langsdorf, William P., to Du Pont de Nemours, E. I., and Company. Carbamoylphosphonates. 3,846,512, Cl. 260-943.000.

Lank, Monita May Thorp: *See—*

Zehr, Phyllis Joan Lane; Lank, Monita May Thorp; and Lank, Psych, 3,846,636.

Lank, Psych: *See—*

Zehr, Phyllis Joan Lane; Lank, Monita May Thorp; and Lank, Psych, 3,846,636.

Larami Corporation: *See—*

Ziff, Louis J., 3,845,583.

Larson, Floyd Gotthard, Jr.; and Snape, Edwin, to International Nickel Company, Inc., The. Method for producing nickel catalyst. 3,846,344, Cl. 252-466.00j.

Larson, Mary E. Wheeled carrier for refuse containers. 3,845,968, Cl. 280-36.00c.

Lauchlan, Robert L.; and Snodgrass, Hugh E., to Uniroyal, Inc. Non cross-linked polyacrylate as impact modifier. 3,846,510, Cl. 260-876.00r.

Laursen, Gorm. Starting device for a single-phase asynchronous motor. 3,846,683, Cl. 318-221.00h.

Lauterbach, William E.: *See—*

Apple, Joseph P., Jr.; and Lauterbach, William E., 3,845,638.

Laven, Thomas R., to Western States Machine Company, The. Motor controlled valve for continuously feeding viscous liquids. 3,845,788, Cl. 137-604.000.

Lavoie, Raymond R.: *See—*

Joanis, Norman R.; and Lavoie, Raymond R., 3,845,554.

Lawley, Tommy Joe: *See—*

Lawley, Wraymon Randle; and Lawley, Tommy Joe, 3,845,945.

Lawley, Wraymon Randle; and Lawley, Tommy Joe. Obstetrical examining chair and examination method. 3,845,945, Cl. 269-323.000.

Lawton, David K., to Westinghouse Electric Corporation. Overcurrent events monitoring system. 3,846,698, Cl. 324-51.000.

Lazdinsh, Arvid Avgustovich: *See—*

Giller, Solomon Aronovich; Lazdinsh, Arvid Avgustovich; Veinberg, Artur Karlovich; Sniker, Dagnia Yanovna; Knunyants, Ivan Ljudvigovich; German, Lev Solomonovich; and Kazmina, Natalya Borisovna, 3,846,429.

Lazzari, Jean-Pierre; and Michard, Jean, to Compagnie Internationale pour l'Informatique. Multiple magnetic head devices. 3,846,841, Cl. 360-121.000.

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Le Nickel: *See—*

Gandon, Louis; and Solar, Serge, 3,846,117.

Leach, Bruce E., to Continental Oil Company. Method for converting high-density low-porosity alumina into low-density high porosity alumina. 3,846,540, Cl. 423-628.000.

Lear Motors Corporation: *See—*

Lear, William P., 3,846,065.

Lear, William P., to Lear Motors Corporation. Vapor generators with low pollutant emission. 3,846,065, Cl. 431-347.000.

Lebel, Pierre: *See—*

Casset, Georges; Driffort, Jean-Pierre; and Lebel, Pierre, 3,846,659.

Leclercq, Marius; Morin, Daniel Louis; Damien, Michael Henri; and Andreani, Monique Andree, to Societe Nationale des Poudres et Explosifs. Boron filaments with a boron carbide antidiffusion coating, and metal matrix made therefrom. 3,846,224, Cl. 161-170.00.

Lecompte, Archie R., Jr., to Kimberly-Clark Corporation. Ejector aerated oxidation ditch for waste treatment. 3,846,292, Cl. 210-14.000.

Lederman, Burton E.; and Boudrie, Jack D., to Gulf & Western Industrial Products Company. Conductive plastic article and method for making same. 3,846,223, Cl. 161-162.000.

Ledges, George E.: *See—*

Wolfe, John E.; Ledges, George E.; and Glascock, Homer H., 3,846,660.

Lee, Charles A.: *See—*

Furbeck, Warren R.; and Lee, Charles A., 3,845,948.

Lee, Hong H.: *See—*

Crosby, William E.; and Lee, Hong H., 3,846,231.

Lee, James M.: *See—*

Chu, William M.; Lee, James M.; and Luckett, Gary C., 3,846,643.

Lee, Norman John. Surgical operation tables. 3,845,947, Cl. 269-324.000.

Lee, Raymond, Organization, Inc., The: *See—*

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Valles, Benjamin Vera, 3,846,608.

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  - Rabodzei, Nikolai Vasilievich; Ljubimov, Evgeny Mikhailovich; Nadobnikov, Mikhail Nikolaevich; and Krokhin, Alexandr Alexandrovich, 3,846,632.
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  - Kallmes, Otto Julius, 3,846,229.
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- Longworth, Michael W., to Ampex Corporation. Tape spool. 3,846,530, Cl. 264-154.000.
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  - Wright, Maurice James; and Cockshott, Charles Peter, 3,846,061.
- Lucas, Joseph, (Electrical) Limited: *See—*
  - Cockin, Robert, 3,845,647.
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  - Ironside, John Michael, 3,846,760.
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  - Matthews, Benjamin H.; and Rhine, Jules W., 3,846,823.
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  - Lodige, Wilhelm; Lodige, Fritz; and Lucke, Josef, 3,845,940.
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  - Chu, William M.; Lee, James M.; and Luckett, Gary C., 3,846,643.
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  - Buttery, Kenneth T.; and Lugt, Thomas Vander, Jr., 3,845,897.
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  - Schmidt, Willi Johann; and Lumb, Hugo, 3,845,915.
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- Machleder, Warren H.; and Kuhn, Robert, to Rohm and Haas Company. Motor fuel composition. 3,846,089, Cl. 44-58.000.
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  - Eisenberg, Eugene, 3,845,748.
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  - Hume, Alister C., 3,845,856.
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- Mageli, Orville Leonard: *See—*
  - D'Angelo, Antonio Joseph; Mageli, Orville Leonard; and Sheppard, Chester Stephen, 3,846,396.
- Mager, Guenther Winand: *See—*
  - Eichmanns, Winfried Paul; Finken, Hans-Joachim; and Mager, Guenther Winand, 3,845,912.
- Magnaflux Corporation: *See—*
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- Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., to United States of America, Agriculture. N-substituted fatty acid amide lubricants. 3,846,449, Cl. 260-327.00e.
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- Mai, George, Jr. Gun drill and bore grinding fixture. 3,845,589, Cl. 51-219.00r.
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  - Morrell, Ronald Joseph; Thompson, Joseph; Hemming, Raymond Charles; and Main, Henry Allan, 3,846,594.
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- Majewski, Eugene J. Educational game type toy. 3,845,574, Cl. 35-72.000.
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- Malan, George L. Dam building system. 3,845,631, Cl. 61-30.000.
- Malhas, Farouk S. Tennis serve training device. 3,845,953, Cl. 273-29.00a.
- Malin, Denis J. Edible mixture. 3,846,564, Cl. 426-212.000.
- Mallan, George M.; and Compton, Leslie E., to Occidental Petroleum Corporation. Gasification of carbonaceous solids. 3,846,096, Cl. 48-209.000.
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  - Ayers, Clifton E.; and Herreman, Walter G., 3,845,537.
  - Scott, Charles E., 3,846,648.
  - Underwood, David W., 3,845,668.
- Malloy, Richard Joseph: *See—*
  - Purol, Michael Dennis; and Malloy, Richard Joseph, 3,846,130.
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- Malyon, Brian R., to Selector-Micro Company Limited. Servo control systems. 3,846,686, Cl. 318-349.000.
- Manabe, Shinichi: *See—*
  - Okuyama, Toshiki; Sano, Mitsuyoshi; Manabe, Shinichi; Mine, Junichi; and Sato, Mikiko, 3,846,340.
- Maneely-Illinois Inc.: *See—*
  - Rossi, Joseph R.; Griffiths, Frederick J.; and Griffin, James L., 3,845,540.
- Mannesmannrohren-Werke Aktiengesellschaft: *See—*
  - Bellmann, Manfred; and Pfeiffer, Gerd, 3,845,646.
- Mansmann, Manfred: *See—*
  - Winter, Gerhard; Mansmann, Manfred; Schon, Nikolaus; and Schnoring, Hildegard, 3,846,527.
- Marathon Oil Company: *See—*
  - Merrill, Lavaun S., Jr., 3,846,279.
- Marchese, Michael Anthony: *See—*
  - Perkins, Warren Edwin; and Marchese, Michael Anthony, 3,845,635.
- Marcus, Israel. Water-soluble tetracyclines. 3,846,486, Cl. 260-519.000.
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  - Dziki, Michael M.; Schultz, George; and Markow, Elliott W., 3,846,702.
- Marks, Alvin M. Method of producing hard transparent sheet-like material or coating. 3,846,161, Cl. 117-93.000.
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  - Bendler, Hellmut; and Marondel, Gunther, 3,845,836.
- Marotta, Ralph, to Monsanto Company. Process of preparing silica xerogels. 3,846,537, Cl. 423-338.000.
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  - Gregory, John G.; Marsh, White; and Trepp, Robert M., 3,846,762.

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- Martin, Charles D.: *See—*
  - James, Jesse C., 3,845,831.
- Martin, Hubert, to Tercell Corporation. Apparatus for float continuous casting of metal. 3,845,811, Cl. 164-281.000.
- Martner, John G., to Galloway, Charles E., Gray, Keith W. and Carr, Leatrice J. Ultrasonic transducer. 3,846,779, Cl. 340-258.00b.
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  - Shigeyasu, Motoo; Kuihara, Kenzo; and Kuki, Michio, 3,846,487.
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  - Lohr, Raymond J.; Condry, Martin; Hirsch, Mahlon E.; Carver, Richard N.; and Rogers, Maxmillina P., 3,845,957.
- Marx, Michael, to Syntex (U.S.A.) Inc. 10,11-Methano 5H-dibenz [b,f]azepines 5-phenacyl derivatives. 3,846,409, Cl. 260-239.00d.
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  - Spangemacher, Kurt, 3,846,519.
- Maschinenfabrik Fr. Niepmann & Co.: *See—*
  - Niepmann, Otto, 3,845,697.
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  - Hagen, Werner, 3,845,913.
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  - Nakamura, Zenzo; Uchiyama, Takashi; Taguchi, Tetsuya; and Mashimo, Yukio, 3,846,811.
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  - Barrow, Gilbert C., 3,846,650.
- Massachusetts Institute of Technology: *See—*
  - Curry, Renwick E., 3,846,749.
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- Massie, Philip E. Sealed pump and drive circuits therefor. 3,846,682, Cl. 318-138.000.
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  - Flogaus, William S.; and Masutani, Mitsumasa, 3,846,007.
- Matsuda, Motonobu: *See—*
  - Yata, Kotaro; and Matsuda, Motonobu, 3,846,806.
- Matsui, Takeshi: *See—*
  - Oishi, Kazuo; Kato, Toshiaki; Matsui, Takeshi; Hinachi, Matatoyo; and Yamada, Takashi, 3,846,796.
- Matsumoto, Fumio: *See—*
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  - Sakamoto, Yoichi; and Koyanagi, Yukio, 3,846,707.
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  - Yamaguchi, Isao; and Katayama, Hitoshi, 3,846,019.
- Matsushita Electric Works, Ltd.: *See—*
  - Irie, Tatsuhiko; Hara, Kazuhiko; and Kuroyanagi, Akihiro, 3,845,899.
  - Wada, Yukio; and Okutu, Hideo, 3,846,047.
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  - Ladouceur, Harold A.; and Matthews, John H., 3,845,860.
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  - Eckstein, Fritz; and Goody, Roger Sydney, 3,846,402.
  - Murayama, Akira; Hettler, Hans; and Jastorff, Bernd, 3,846,401.
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  - Faur, Yvonne Constance; Weisburd, Martin Harold; Wilson, Marion Evans; and May, Paul S., 3,846,241.
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  - Jost, Ernest M.; McBride, Lyle E., Jr.; and Santala, Teuvo J., 3,846,679.
- McCain, David L., to Continental Oil Company. Slurry hopper system. 3,845,990, Cl. 302-15.000.
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- McCanney, Neil R., to Singer Company, The. Modular vehicle trainer sound system having a plurality of separately controllable sound generators and a polyphonic speaker array. 3,845,572, Cl. 35-11.000.
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  - Bailey, Jay Richard, 3,845,557.
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  - Werkema, Robert G.; and Newcomer, Robert E., 3,846,188.
- McDonnell, Neil Patrick Hugh, to Imperial Chemical Industries Limited. Detection of velocities of fluids in conduits. 3,845,660, Cl. 73-194.00e.
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- McElroy, Arthur H. Combination pipe fusion unit. 3,846,208, Cl. 156-499.000.
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  - MacDaniel, Gene; and McElvy, Howell T., 3,846,207.
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  - Cochran, J. Richard, 3,845,642.
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  - Harper, David John; and McKellar, John Forgie, 3,846,395.
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- McKinney, Daniel F. Simulated log-rolling device with inwardly extending baffle members. 3,845,952, Cl. 272-1.00e.
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  - Carson, John Robert, 3,846,447.
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- McNulty, Thomas Charles, to RCA Corporation. Overcurrent protection circuit including a heat sensitive element and a thyristor. 3,846,674, Cl. 317-13.00c.
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- McQuay-Perfex Inc.: *See—*
  - Beck, Joseph J., 3,846,616.
- Meader, Arthur L., Jr.: *See—*
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  - Carriere, Pierre P.; Leynaert, Jacky R.; Meauze, Georges D.; and Thibert, Jean-Jacques, 3,846,038.
- Medichemie A.G.: *See—*
  - Widauer, Josef Olav; Lang, Konrad; Baum, Laszlo; and Szabo, Suzanne, 3,846,411.
- Medizinska Akademia: *See—*
  - Shindarov, Lubomir Mihaylov; Galabov, Angel Simenov; and Antonov, Dimitar Simov, 3,846,491.
- Meguro, Kanji; and Kuwada, Yutaka, to Takeda Chemical Industries, Ltd. Triazolobenzodiazepine derivatives. 3,846,421, Cl. 260-247.20a.
- Mejia, Carlos Molini. Organic fertilizer for plants. 3,846,111, Cl. 71-28.000.

Melloy, George F.; Riedel, John Y.; and Oodgursky, Paul P., to Bethlehem Steel Corporation. Wear resistant steel. 3,846,184, Cl. 148-36.000.
Melvin, Samuel L.: *See—*
Fuller, Francis W.; Melvin, Samuel L.; and Merritt, Paul H., 3,845,654.
Mendenhall, Robert L. Apparatus for producing asphalt-aggregate compositions. 3,845,941, Cl. 259-157.000.
Menold, Robert F.: *See—*
Davison, Ellison L.; and Menold, Robert F., 3,845,505.
Mentrup, Anton; Zeile, Karl; Danneberg, Peter; Schromm, Kurt; Guenard, Jeanette; Renth, Ernst-Otto; and Stotzer, Harry, to Boehringer Ingelheim GmbH. Pharmaceutical compositions containing an N-(1-bicyclic aryl-propyl-2)-N-phenyl-piperazine. 3,846,549, Cl.424-250.000.
Mercer, F. B., Limited: *See—*
Mercer, Frank Brian, 3,845,584.
Mercer, Frank Brian, to Mercer, F. B., Limited. Growing of grasses. 3,845,584, Cl. 47-56.000.
Merck & Co., Inc.: *See—*
Hirschmann, Ralph F.; and Denkewalter, Robert G., 3,846,398.
Hirschmann, Ralph F.; and Denkewalter, Robert G., 3,846,399.
Rosas, Carlos B.; Wantuck, Joseph A.; and Kaufman, Arnold, 3,846,435.
Shen, Tsung-Ying; Walford, Gordon L.; and Witzel, Bruce E., 3,846,553.
Merlin, David G. Film retaining dispenser attachment. 3,845,894, Cl. 225-25.000.
Merrill, Lavaun S., Jr., to Marathon Oil Company. Method for making and slurrying wax beads. 3,846,279, Cl. 208-93.000.
Merriman, Horace B., to Mobil Oil Corporation. Method and apparatus for simultaneously fractionating a plurality of crude oils. 3,846,249, Cl. 196-111.000.
Merritt, Paul H.: *See—*
Fuller, Francis W.; Melvin, Samuel L.; and Merritt, Paul H., 3,845,654.
Mertzweiller, Joseph K., to Exxon Research and Engineering Company. Platinum-magnesium reforming catalyst. 3,846,281, Cl. 208-139.000.
Merz, Werner. Apparatus for developing photographic materials. 3,846,818, Cl. 354-324.000.
Mescherskaya, Vera Mikhailovna: *See—*
Kachlova, Revekka Vulfovna; Nemtsov, Mark Semenovich; Balkhanova, Galina Fedorovna; Bychkovskaya, Ljudmila Nikolaevna; Mescherskaya, Vera Mikhailovna; and Rabinovich, Sofya Petrovna, 3,846,338.
Messer. Griesheim GmbH: *See—*
Roeder, Georg, 3,845,942.
Mestetsky, Thomas S.; and Webster, Bruce G., to GAF Corporation. Deinking of waste paper with an aqueous solution containing a N-alkylactam solvent. 3,846,227, Cl. 162-5.000.
Metrailer, Charles E. Telescopic supports for adjustable roof and beam form. 3,845,930, Cl. 249-29.000.
Metzger, Karl Georg: *See—*
Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, 3,846,413.
Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, 3,846,414.
Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, 3,846,415.
Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, 3,846,425.
Meunier, Jean-Paul, to CONSERVATOME. Methods, means and compositions for painting object. 3,846,149, Cl. 117-6.000.
Meuresch, Herbert; and Zimmerhackel, Franz, to Precision Valve Corporation. Pressurized aerosol dispenser valve and gasket. 3,845,887, Cl. 222-402.160.
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Duynstee, Eduard F. J.; and Mevis, Maria E. H. A., 3,846,266.
Meyer, Erwin: *See—*
Forgo, Gabor; Meyer, Erwin; and Moser, Karl, 3,846,150.
Meyer, Martin R., to Mosler Safe Company, The. Access control apparatus. 3,846,622, Cl. 235-61.70b.
Meyers, Robert E., to Bendix Corporation, The. Power brake boost mechanism with pressure regulating device. 3,845,693, Cl. 91-371.000.
Meyerson, Stanley. Bracelet construction. 3,845,618, Cl. 59-80.000.
Michard, Jean: *See—*
Lazzari, Jean-Pierre; and Michard, Jean, 3,846,841.
Michelson, Anatol; and Pace, Clifford, to Gulf & Western Manufacturing Company. Rotary hydraulic press. 3,845,652, Cl. 72-349.000.
Mick, Peter R.: *See—*
Calabro, Salvatore R.; Calabro, John A.; and Mick, Peter R., 3,846,788.
Micro Communications Corporation: *See—*
Johnson, Clark E., Jr.; and Richman, Peter L., 3,846,831.
Midland-Ross Corporation: *See—*
Jwuc, Karl J., 3,845,867.
Midorikawa, Yoshinori; and Sasanami, Tsuneo, to Dainippon Ink and Chemicals, Inc. and Japan Gasoline Co., Ltd. Cultivation process for micro-organisms. 3,846,246, Cl. 195-109.000.
Mies, Carl P., to Mies Filter Products, Incorporated. Apparatus for cooking chicken. 3,845,702, Cl. 99-408.000.
Mies Filter Products, Incorporated: *See—*
Mies, Carl P., 3,845,702.
Mifune, Akira; Katsuda, Yoshio; and Yoneda, Toyoaki, to Teijin Limited and Dai Nihon Jochugiku Co., Ltd. Insecticidal and acaricidal composition and process for controlling pests. 3,846,551, Cl. 424-180.000.
Mihlhauser, Nicholas W. Electrical combination key lock. 3,846,640, Cl. 307-10.0at.
Mijnheer, Andries: *See—*
Van Mal, Harmannus Hinderikus; Mijnheer, Andries; Rauwerdink, Hendrik Jan; and De Wit, Johannes Adrianus, 3,845,636.
Miklovic, John. Whirlpool bath. 3,845,759, Cl. 128-66.000.
Militz, Uwe: *See—*
Wefers, Norbert; Militz, Uwe; Unglaube, Uwe; and De Meer, Jan, 3,846,623.
Milkovich, Ralph; and Chiang, Mutong T., to CPC International Inc. Epoxy and glycol terminated macromolecular monomers having a substantially uniform molecular weight distribution. 3,846,393, Cl. 260-93.50a.
Miller, Robert T.; and Murin, Elias M., to Mack Trucks, Inc. Adjustable expanding die. 3,845,944, Cl. 269-48.100.
Mincuzzi, Antonio, to Societe Internationale de Mecanique Industrielle, S.A. Pump impellers for cooling systems of I.C.E. 3,846,045, Cl. 416-230.000.
Mine, Akihiko; Fujinami, Akira; Kameda, Nobuyuki; Hino, Naganori; Satomi, Takeo; and Tateishi, Kohshi, to Sumitomo Chemical Company, Limited. 1,5-Disubstituted-3-substituted phenyl hydantoins. 3,846,441, Cl. 260-309.500.
Mine, Junichi: *See—*
Okuyama, Toshiki; Sano, Mitsuyoshi; Manabe, Shinichi; Mine, Junichi; and Sato, Mikiko, 3,846,340.
Mine Safety Appliances Company: *See—*
Davison, Ellison L.; and Menold, Robert F., 3,845,505.
Strange, John P., 3,846,321.
Minnesota Mining & Manufacturing Company: *See—*
Shaffer, Edward C., 3,846,635.
Weyer, James H., 3,845,757.
Minnesota Mining and Manufacturing Company: *See—*
Franer, Victor R., 3,846,843.
Wear, Robert L., 3,846,375.
Minolta Camera Kabushiki Kaisha: *See—*
Yata, Kotaro; and Matsuda, Motonobu, 3,846,806.
Yata, Koutaro; and Sahara, Masayoshi, 3,846,814.
Mishra, Anil K., to Westinghouse Electric Corporation. Dynamoelectric machine ventilating system. 3,846,651, Cl. 310-61.000.
Mita, Tooru: *See—*
Kobayashi, Takashi; Aida, Masaaki; Mita, Tooru; and Nishi, Takayuki, 3,845,536.
Mitacek, Bill: *See—*
Mitacek, John, 3,846,394.
Mitacek, John; deceased (by Mitacek, Bill; administrator), to Phillips Petroleum Company. Introducing catalyst into a reactor. 3,846,394, Cl. 260-93.700.
Mitchell, Lawrence C., to Ethyl Corporation. Smoke retardant vinyl chloride polymer compositions. 3,846,372, Cl. 260-45.75r.
Mitsubishi Denki Kabushikl Kaisha: *See—*
Nakajima, Yozo; and Ohiani, Shohei, 3,846,185.
Okamoto, Haruki; Sato, Masaki; and Kusaka, Shunichi, 3,846,838.
Ueda, Atsushi; and Ishii, Mitsuaki, 3,846,639.
Mitsubishi Paper Mills, Ltd.: *See—*
Futaki, Kiyoshi; Kohmura, Isao; and Haino, Kozo, 3,846,153.
Mitsubishi Petrochemical Company Limited: *See—*
Yamaguchi, Yasuju; and Nakayama, Yujiro, 3,846,265.
Mittell, Peter. Spectacle case. 3,845,799, Cl. 150-29.000.
Miyamoto, Masao: *See—*
Kudamatsu, Akio; Miyamoto, Masao; and Fukazawa, Nobuo, 3,846,467.
Miyanohara, Isao: *See—*
Otsuki, Susumu; Hori, Kyoichi; and Miyanohara, Isao, 3,846,488.
Miyazaki, Gentaro: *See—*
Hirota, Ryoichi; Fujishima, Tooru; Miyazaki, Gentaro; Iwasaki, Tadahiko; Akatsu, Mitsuharu; and Kinoshita, Tomoo, 3,846,673.
Suzuki, Nobuyuki; and Miyazaki, Gentaro, 3,846,666.
Miyazaki, Kenichi: *See—*
Takanashi, Itsuo; Miyoshi, Tadayoshi; Uesaka, Koji; Miyazaki, Kenichi; and Yokokawa, Sumio, 3,846,579.
Miyoshi, Tadayoshi: *See—*
Takanashi, Itsuo; Miyoshi, Tadayoshi; Uesaka, Koji; Miyazaki, Kenichi; and Yokokawa, Sumio, 3,846,579.
Mizutani, Nagao: *See—*
Okawara, Yasuo; Shimazaki, Toshikazu; and Mizutani, Nagao, 3,846,581.
Mlavsky, Abraham I.: *See—*
Labelle, Harold E., Jr.; Mlavsky, Abraham I.; and Cronan, Charles J., 3,846,082.
Moberly, Charles W.: *See—*
Hill, Harold Wayne, Jr.; and Moberly, Charles W., 3,846,511.
Mobil Oil Corporation: *See—*
Dallas, Charles G., 3,845,562.
Dondis, Edward F.; and Payne, John W., 3,846,245.
Merriman, Horace B., 3,846,249.
Owen, Hartley; and Demmel, Edward J., 3,846,280.
Mocarski, Zenon R., to S.R.C. Laboratories, Inc. Variable flow two stage nozzle. 3,845,904, Cl. 239-410.000.
Mocotte, Jacques; Disdier, Andre; and Prost, Francoise, to PROGIL. Alkenoxy substituted ureas. 3,846,465, Cl. 260-453.00r.

Mod, Robert R.: *See—*
Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,846,449.
Mod, William A.; and Caldwell, Donald L., to Dow Chemical Company, The. Source composition for alkali metal oxides and aluminum oxide. 3,846,143, Cl. 106-52.000.
Moeglich, Karl, to Hughes, D. A., Affiliates, Inc. Anodizing of metals. 3,846,261, Cl. 204-56.00r.
Moelants, Felix Jan: *See—*
Lohmann, Joachim Werner; Peeters, Hugo Karel; Ceulemans, Renaat Andreas; and Moelants, Felix Jan, 3,846,131.
Moffett, Robert B., to Upjohn Company, The. 1H-imidazo[1,2-a][1,4]benzo-diazepine-1,2(3H)-diones. 3,846,443, Cl. 260-309.700.
Mohr, Theodore Warren, to Bell Telephone Laboratories, Incorporated. Compact microwave termination and uses thereof. 3,846,720, Cl. 333-22.00r.
Moi, Manfred Edvin, to Norstron Electro-Optic Systems Ltd. Liquid crystal display device. 3,846,015, Cl. 350-160.01c.
Mok, Young I., to Du Pont de Nemours, E. I., and Company. Process for hydrocyanation of olefinic compounds. 3,846,474, Cl. 260-465.80r.
Moleculon Research Corporation: *See—*
Nichols, Larry D., 3,846,404.
Molin, Vallard B. Floating work driver chuck. 3,845,962, Cl. 279-1.00j.
Moll, Franz: *See—*
Hellmig, Erhard; Moll, Franz; Randolph, August; and Saleck, Wilhelm, 3,846,135.
Molnlycke, AB: *See—*
Zoller, Henry, 3,845,766.
Momiyama, Zenjiro: *See—*
Yamamoto, Akira; Nakaoji, Kunio; Oohara, Kunio; Momiyama, Zenjiro; Murakami, Heiichiro; and Tomita, Akira, 3,846,386.
Monark-Crescent AB: *See—*
Blomberg, Folke Ivar; and Engerstam, Marten, 3,845,663.
Monbaliu, Marcel Jacob; and Van Poucke, Raphael Karel, to Gevaert-Agfa N.V. Method for the preparation of 3-acylamino-2-pyrazolin-5-ones. 3,846,444, Cl. 260-310.00a.
Monolithic Systems Corporation: *See—*
De Vries, Hubert Gale, 3,846,765.
Monsanto Company: *See—*
Deltente, Jacques J.; O'Connor, Richard J.; and Kuo, Mau-Jung, 3,846,239.
Fallwell, William F., Jr., 3,846,354.
Fields, Joseph E.; and Johnson, John H., 3,846,543.
Kerst, Al F., 3,846,482.
Kerst, Al F., 3,846,483.
Marotta, Ralph, 3,846,537.
Reilly, Joseph R., 3,846,531.
Montagna, Angelo A.: *See—*
Beuther, Harold; Chun, Sun W.; and Montagna, Angelo A., 3,846,285.
Chun, Sun W.; and Montagna, Angelo A., 3,846,288.
Montgomery, Eldwin C.; Shamp, Donald E.; and Swillinger, Francis L., to Libbey-Owens-Ford Company. Float glass bath fender supports. 3,846,109, Cl. 65-182.00r.
Montillier, Jean-Pierre, to Pitney-Bowes, Inc. Method for synthesizing dicarbazolyl cyclobutane. 3,846,264, Cl. 204-158.00r.
Mooi, John: *See—*
Erickson, Henry; Hindin, Saul G.; Keith, Carl D.; and Mooi, John, 3,846,343.
Moore, Calvin K. Root cutter. 3,845,796, Cl. 144-1.00r.
Moore, George L., to Airco, Inc. 2-Methoxy-3-h-perfluorobutane. 3,846,502, Cl. 260-614.00f.
Moore, John W., to Swan Corporation. Biased wall panel for use with a three-sided alcove. 3,845,600, Cl. 52-222.000.
Moorfeed Corporation: *See—*
Doty, Myron L., 3,845,857.
Moran, Stephen F.: *See—*
Rosenberg, Edgar N.; and Moran, Stephen F., 3,845,634.
Morgan, Paul A., to Century Wheels, Inc. Micrometer with movable anvil. 3,845,564, Cl. 33-164.00r.
Mori, Shigeru: *See—*
Matsuoka, Shigeru; and Mori, Shigeru, 3,846,761.
Mori, Takaaki: *See—*
Saiki, Atsushi; Mori, Takaaki; Harada, Seiki; and Sato, Kikuji, 3,846,166.
Morin, Daniel Louis: *See—*
Leclercq, Marius; Morin, Daniel Louis; Damien, Michael Henri; and Andreani, Monique Andree, 3,846,224.
Morisaki, Masuo: *See—*
Ikekawa, Nobuo; and Morisaki, Masuo, 3,846,455.
Morival, Genevieve, to Societe Anonyme dite: Aquitaine Total Organico Tour Aquitaine. Process for the polymerization of lactames allowing substances affected by high temperatures to be added during polymerization. 3,846,357, Cl. 260-18.00n.
Morozov, Andrei Elizarovich: *See—*
Martyashin, Alexandr Ivanovich; Morozov, Andrei Elizarovich; Shakhov, Eduard Konstantinovich; and Shlyandin, Viktor Mikhailovich, 3,846,699.
Morrell, Ronald Joseph; Thompson, Joseph; Hemming, Raymond Charles; and Main, Henry Allan, to Northern Electric Company Limited. Coin telephone with separate cosmetically attractive cover. 3,846,594, Cl. 179-179.000.
Morrison, Steven: *See—*
Brown, James H.; Buchanan, James E.; and Morrison, Steven, 3,846,786.
Morrissette, Camille: *See—*
Begin, Marcel; Morrissette, Camille; Beaumier, Pierre; and Tupinier, Charles, 3,846,211.
Moser, Karl: *See—*
Forgo, Gabor; Meyer, Erwin; and Moser, Karl, 3,846,150.
Moser, Robert E.: *See—*
Hempenius, Walter L.; Valenti, Joseph; and Moser, Robert E., 3,846,560.
Moshnin, Evgeny Nikolaevich: *See—*
Romanov, Boris Mikhailovich; Moshnin, Evgeny Nikolaevich; Yanov, Stanislav Ivanovich; Gurevich, Vladimir Zakhrovich; and Ryabokovylenko, Viktor Ivanovich, 3,845,650.
Mosler Safe Company, The: *See—*
Meyer, Martin R., 3,846,622.
Mossberg, O. F., & Sons, Inc.: *See—*
Seecamp, Louis W., 3,845,688.
Motorola, Inc.: *See—*
Chapman, Ronald H., 3,846,710.
Daniels, R. Gary; and Foltz, James Walter, 3,846,687.
Flowers, Dervin L., 3,846,181.
Motycka, Charles J.: *See—*
Doerfling, Ralph G.; and Motycka, Charles J., 3,846,200.
Mourlevat, Jean, to Entreprise de Recherches et d'Activites Petrolieres (ELF). Cable tool for setting liners. 3,845,819, Cl. 166-239.000.
Mozdzanowski, Joachim, to Delmag Maschinenfabrik, Rheinhold Dornfeld. Vibratory compaction vehicle. 3,846,037, Cl. 404-117.000.
Mrotek, Edward Norman: *See—*
Towle, Warren Ladd; Mrotek, Edward Norman; and Wiethaup, Robert Roland, 3,846,180.
Mucsi, Michael. Safety, electrical grounding outlet with safety switch. 3,846,598, Cl. 200-51.090.
Mueller, Hanspeter: *See—*
Vetter, Walter; Mueller, Hanspeter; and Geissmann, Theodor, 3,846,570.
Mueller, James A.: *See—*
Jeris, John S.; Beer, Carl; and Mueller, James A., 3,846,289.
Mueller, Robert E. Direct television drawing and image manipulating system. 3,846,826, Cl. 358-81.000.
Mukai, Kunio: *See—*
Hirano, Masachika; Mukai, Kunio; Takeda, Hisami; and Tanaka, Katsutoshi, 3,846,552.
Mulla, Mir S.; and Hwang, Yih-Shen, to University of California, The Regents of the. Bait for synanthropic flies and method for making same. 3,846,557, Cl. 426-1.000.
Mullejans, Heinrich: *See—*
Asselborn, Peter; Cramer, Werner; and Mullejans, Heinrich, 3,846,610.
Multifastener Corporation: *See—*
Ladouceur, Harold A.; and Matthews, John H., 3,845,860.
Murakami, Heiichiro: *See—*
Yamamoto, Akira; Nakaoji, Kunio; Oohara, Kunio; Momiyama, Zenjiro; Murakami, Heiichiro; and Tomita, Akira, 3,846,386.
Murayama, Akira; Hettler, Hans; and Jastorff, Bernd, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften E.V. 3'-O, 5'-N-cyclophosphate nucleosides. 3,846,401, Cl. 260-211.504.
Murin, Elias M.: *See—*
Miller, Robert T.; and Murin, Elias M., 3,845,944.
Murono, Yositaka: *See—*
Kyotani, Hirosi; Murono, Yositaka; and Siojima, Katuhiko, 3,846,802.
Murrmann, Helmuth, to Siemens Aktiengesellschaft. Method of producing schottky diodes. 3,846,192, Cl. 148-175.000.
Muz, Edwin, to Nicolay GmbH. Insulated electrical conductor for panel mounting. 3,846,736, Cl. 339-126.0rs.
Myers, Clayborne E.; and Vreeland, Arthur E., to International Telephone and Telegraph Corporation. Time division multiplexer employing digital gates and a digital-to-analog converter. 3,846,787, Cl. 340-347.0ad.
Myers, Glenn R. Nonstop refuse collection system. 3,845,868, Cl. 214-42.00r.
Nadeau, James H. Door dolly. 3,845,969, Cl. 280-47.130.
Nadobnikov, Mikhail Nikolaevich: *See—*
Rabodzei, Nikolai Vasilievich; Ljubimov, Evgeny Mikhailovich; Nadobnikov, Mikhail Nikolaevich; and Krokhin, Alexandr Alexandrovich, 3,846,632.
Nagai, Yoichiro; Ojima, Iwao; and Kogure, Tetsuo, to Sagami Chemical Research Center. Process for producing alkoxysilane. 3,846,463, Cl. 260-448.80r.
Nagaoka, Shinji: *See—*
Kitai, Kiyoshi; Nakamura, Yukio; Ishida, Hiroaki; and Nagaoka, Shinji, 3,846,815.
Nagata, Minoru; and Sato, Kozi, to Hitachi, Ltd. Lateral transistor having emitter region with portions of different impurity concentration. 3,846,821, Cl. 357-35.000.
Nagoya Metal Co., Ltd.: *See—*
Nakahara, Yositaka, 3,845,895.
Nakahara, Yositaka, to Nagoya Metal Co., Ltd. Apparatus for cracking castings. 3,845,895, Cl. 225-93.500.
Nakajima, Keiji: *See—*
Horiguchi, Shojiro; Nakamura, Michiei; Nakajima, Keiji; and Takizawa, Minoru, 3,846,452.

- Nakajima, Yozo; and Ohiani, Shohei, to Mitsubishi Denki Kabushiki Kaisha. Method of producing semi-hard magnetic Ni-Cu-Fe alloys and the resulting product. 3,846,185, Cl. 148-120.000.
- Nakamori, Shinji, to Clarion Co., Ltd. Cartridge locking and ejecting mechanism. 3,846,834, Cl. 360-93.000.
- Nakamura, Michiei: *See—*
  - Horiguchi, Shojiro; Nakamura, Michiei; Nakajima, Keiji; and Takizawa, Minoru, 3,846,452.
- Nakamura, Michiya: *See—*
  - Goto, Kenji; and Nakamura, Michiya, 3,845,621.
- Nakamura, Yukio: *See—*
  - Kitai, Kiyoshi; Nakamura, Yukio; Ishida, Hiroaki; and Nagaoka, Shinji, 3,846,815.
- Nakamura, Zenzo; Uchiyama, Takashi; Taguchi, Tetsuya; and Mashimo, Yukio, to Canon Kabushiki Kaisha. Flash unit for use with camera. 3,846,811, Cl. 354-145.000.
- Nakano, Yasuaki; Nakata, Kazuo; and Uchikura, Yuriko, to Hitachi, Ltd. Character recognition apparatus. 3,846,752, Cl. 340-146.30q.
- Nakao, Yoshio; Nara, Kiyoshi; Katamoto, Kazuyoshi; Ito, Kikuo; and Ikeda, Sakashi, to Takeda Chemical Industries, Ltd. Preparation of a ductless powdery protease-containing composition. 3,846,240, Cl. 195-68.000.
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  - Yamamoto, Akira; Nakaoji, Kunio; Oohara, Kunio; Momiyama, Zenjiro; Murakami, Heiichiro; and Tomita, Akira, 3,846,386.
- Nakashima, Akio: *See—*
  - Itoh, Takashi; Nakashima, Akio; and Arakawa, Yoshihiro, 3,846,584.
- Nakashima, Tsuyoshi; and Shibata, Tsutomu, to Nippon Toki Kabushiki Kaisha. Manufacture of a white porcelain body of high translucency and high strength. 3,846,098, Cl. 65-18.000.
- Nakata, Kazuo: *See—*
  - Nakano, Yasuaki; Nakata, Kazuo; and Uchikura, Yuriko, 3,846,752.
- Nakayama, Yujiro: *See—*
  - Yamaguchi, Yasuju; and Nakayama, Yujiro, 3,846,265.
- Nakayama, Yuya: *See—*
  - Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, 3,846,400.
- Nakazawa, Yuji: *See—*
  - Ohnishi, Hajime; and Nakazawa, Yuji, 3,846,454.
- Nalco Chemical Company: *See—*
  - Svarz, Jerry J., 3,846,495.
- Nara, Kiyoshi: *See—*
  - Nakao, Yoshio; Nara, Kiyoshi; Katamoto, Kazuyoshi; Ito, Kikuo; and Ikeda, Sakashi, 3,846,240.
- Nash Engineering Company: *See—*
  - Roe, Kenneth W.; Studwell, Ernest E.; and Cooke, Robert E., 3,846,046.
- Nathansohn, Giangiacomo; Winters, Giorgio; and Odasso, Gianfranco, to Gruppo Lepetit S.p.A. Dihydro-2-amino-isoquinolines and their derivatives. 3,846,412, Cl. 260-240.00g.
- National Distillers and Chemical Corporation: *See—*
  - Baum, Henry T.; and Stiles, Claude J., 3,846,073.
- Naumann, Wilhelm: *See—*
  - Honrath, Kurt; and Naumann, Wilhelm, 3,845,667.
- Naymik, Michael M. Lightweight snowplow for quick attachment to small vehicle. 3,845,577, Cl. 37-42.0vl.
- Needham, Donald G., to Phillips Petroleum Company. Base for universal pigment concentrates. 3,846,360, Cl. 260-23.70r.
- Needham, Robert F.; and Souchek, Dwaine G., to ACF Industries, Incorporated. Pressure tank safety vent system. 3,845,876, Cl. 220-203.000.
- Nemtsov, Mark Semenovich: *See—*
  - Kachlova, Revekka Vulfovna; Nemtsov, Mark Semenovich; Balkhanova, Galina Fedorovna; Bychkovskaya, Ljudmila Nikolaevna; Mescherskaya, Vera Mikhailovna; and Rabinovich, Sofya Petrovna, 3,846,338.
- Nepovim, Zdenek, to Lindsay Specialty Products Limited. Cable connector. 3,846,738, Cl. 339-177.00r.
- Nesbitt, John D.: *See—*
  - Rosenberg, Robert B.; Nesbitt, John D.; and Fejer, Mark E., 3,846,565.
- Nester, Dianne L.: *See—*
  - Mason, Daniel W.; and Nester, Henry H., 3,846,345.
- Nester, Henry H.: *See—*
  - Mason, Daniel W.; and Nester, Henry H., 3,846,345.
- Nevitt, Thomas D.: *See—*
  - Hensley, Albert L., Jr.; and Nevitt, Thomas D., 3,846,342.
- Newcomer, Robert E.: *See—*
  - Werkema, Robert G.; and Newcomer, Robert E., 3,846,188.
- Newman, Joseph L.: *See—*
  - Shelton, Winston L.; and Newman, Joseph L., 3,845,812.
- Newmont Exploration Limited: *See—*
  - Guay, Wilbur J., 3,846,124.
- Newswanger, Paul S. Angle measuring device. 3,845,565, Cl. 33-174.00r.
- Nicholls, Lawrence George; and Gee, David William, to Girling Limited. Flow control valve for hydraulic damper and the like. 3,845,782, Cl. 137-493.000.
- Nichols, Donald, to United States of America, Army. Synchronized image intensifier gating. 3,846,642, Cl. 307-239.000.
- Nichols, Larry D., to Moleculon Research Corporation. Process of preparing gelled cellulose triacetate products and the products produced thereby. 3,846,404, Cl. 260-230.000.
- Nicolay GmbH: *See—*
  - Muz, Edwin, 3,846,736.
- Nidola, Antonio: *See—*
  - Bianchi, Giuseppe; DeNora, Vittorio; Gallone, Patrizio; and Nidola, Antonio, 3,846,273.
- Niepmann, Otto, to Maschinenfabrik Fr. Niepmann & Co. Method of making an envelope for a cigarette block. 3,845,697, Cl. 93-35.0sb.
- Nilles, John D.: *See—*
  - Hansen, Charles C.; and Nilles, John D., 3,845,781.
- Ninagawa, Sadayoshi: *See—*
  - Okumura, Shinji; Takeshita, Shito; Enei, Hitoshi; and Ninagawa, Sadayoshi, 3,846,573.
- Ning, Robert Ye-Fong; and Sternbach, Leo Henryk, to Hoffmann-La Roche Inc. 3-Substituted-7-hydroxy lower alkyl benzodiazepines. 3,846,410, Cl. 260-239.30d.
- Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See—*
  - Ando, Takuo; and Yamazaki, Hiroyuki, 3,846,363.
- Nippon Kogaku Kabushiki Kaisha: *See—*
  - Sobajima, Masaru; and Kato, Jinichi, 3,846,008.
- Nippon Kokan Kabushiki Kaisha: *See—*
  - Yamagishi, Hidehisa; and Yokoi, Fumitoshi, 3,845,539.
- Nippon Selfoc Co., Ltd.: *See—*
  - Matsumura, Hiroyoshi; and Ono, Seiichi, 3,846,100.
- Nippon Selfoc Kabushiki Kaisha; a/k/a: *See—*
  - Matsumura, Hiroyoshi; and Ono, Seiichi, 3,846,100.
- Nippon Soken, Inc.: *See—*
  - Oishi, Kazuo; Kato, Toshiaki; Matsui, Takeshi; Hinachi, Matatoyo; and Yamada, Takashi, 3,846,796.
- Nippon Steel Corporation: *See—*
  - Sakakura, Akira; Matsumoto, Fumio; Ueno, Kiyoshi; Takashima, Junihide; and Kuroki, Katuro, 3,846,187.
- Nippon Toki Kabushiki Kaisha: *See—*
  - Nakashima, Tsuyoshi; and Shibata, Tsutomu, 3,846,098.
- Nishi, Takayuki: *See—*
  - Kobayashi, Takashi; Aida, Masaaki; Mita, Tooru; and Nishi, Takayuki, 3,845,536.
- Nissan Motor Company, Limited: *See—*
  - Okuyama, Toshiki; Sano, Mitsuyoshi; Manabe, Shinichi; Mine, Junichi; and Sato, Mikiko, 3,846,340.
- Nisshin Kogyo Kabushiki Kaisha: *See—*
  - Takeuchi, Hiroo, 3,845,692.
- Nitz, Rolf-Eberhard: *See—*
  - Raabe, Thomas; Stachel, Adolf; Scholtholt, Josef; and Nitz, Rolf-Eberhard, 3,846,470.
- Nixdorf Computer AG: *See—*
  - Wefers, Norbert; Militz, Uwe; Unglaube, Uwe; and De Meer, Jan, 3,846,623.
- NL Industries, Inc.: *See—*
  - Erneta, Modesto, 3,846,453.
- Nojima, Isao; Tamaru, Keikichi; and Sato, Tai, to Tokyo Shibaura Electric Co., Ltd. Associative memories including MOS transistors. 3,846,766, Cl. 340-173.0am.
- Nonaka, Masahide; Hautala, Earl; and Weaver, Merle L., to United States of America, Agriculture. Reducing oil content of fried potatoes by immersing in oil-free difluorodichloro-methane. 3,846,572, Cl. 426-429.000.
- Norddeutsche Affinerie: *See—*
  - Perkow, Werner, 3,846,114.
- Nordsiek, Karl-Heinz: *See—*
  - Berg, Gerhard; Nordsiek, Karl-Heinz; Maahs, Gunter; and Schanzer, Wilhelm, 3,846,365.
- Nordyke, John S.; and Spangenberg, William C., to Hammond Lead Products, Inc. Novel composite pigments. 3,846,148, Cl. 106-308.00b.
- Norell, John R., to Phillips Petroleum Company. Amide production. 3,846,492, Cl. 260-558.00r.
- Norman, Bo: *See—*
  - Wahren, Douglas; Norman, Bo; and Grundstrom, Karl-Johan, 3,846,230.
- Norprint Limited: *See—*
  - Golec, Josef W., 3,846,221.
- Norris, Paul R.; Van Haltern, Frank, Jr.; and Walz, David K., to Olin Corporation. Car top tent. 3,845,775, Cl. 135-1.00a.
- Norstron Electro-Optic Systems Ltd.: *See—*
  - Moi, Manfred Edvin, 3,846,015.
- North American Van Lines, Inc.: *See—*
  - Sowers, Blaine E.; and Hunnicutt, Vaughn E., 3,845,869.
- Northern Electric Company Limited: *See—*
  - Morrell, Ronald Joseph; Thompson, Joseph; Hemming, Raymond Charles; and Main, Henry Allan, 3,846,594.
- Nosco Plastics Incorporated: *See—*
  - Cloyd, Harold S., 3,845,762.
  - Cloyd, Harold S., 3,845,763.
- Novitsky, Boris Georgievich: *See—*
  - Voloshin, Petr Stepanovich; Ivanov, Mark Efremovich; Klopovsky, Boris Alexeevich; Lindin, Viktor Mikhailovich; Novitsky, Boris Georgievich; Olevsky, Viktor Markovich; and Fridman, Viktor Mironovich, 3,845,901.
- Nowell, John R.: *See—*
  - Genuit, Luther L.; and Nowell, John R., 3,846,695.
- Nozawa, Shigenori: *See—*

  - Akazawa, Yushinobu; Yagyu, Masami; Nozawa, Shigenori; and Yasui, Satoshi, 3,846,548.
- Nurminen, Matti Pekka; and Hammar, Paavo Henrikki. Method of producing a light room element. 3,845,544, Cl. 29-458.000.
- N.V. Industriele Handelscombinatie Holland: *See—*
  - Van Heijst, Willem Jan, 3,845,975.
- Nye, Dudley D., Jr.: *See—*
  - Cila, Otakar; and Nye, Dudley D., Jr., 3,846,697.
- Oak Industries, Inc.: *See—*
  - Golbeck, Bernard J.; and Lewandowski, Raymond F., 3,845,736.
- Obrecht, Robert Paul, to Stauffer Chemical Company. Distillation of chlorinated hydrocarbons with alkali metal material addition. 3,846,253, Cl. 203-7.000.
- O'Brien, Billy L.; and O'Brien, Heber P. Apparatus for connecting underwater pipelines. 3,845,972, Cl. 285-24.000.
- O'Brien, Darrell E.: *See—*
  - Kobe, Joze; Springer, Robert H.; and O'Brien, Darrell E., 3,846,423.
- O'Brien, Heber P.: *See—*
  - O'Brien, Billy L.; and O'Brien, Heber P., 3,845,972.
- O'Brien, Roy E.; Leslie, Donald J.; and Leslie, Michael R. Ski construction for vehicles. 3,845,967, Cl. 280-14.000.
- Occidental Petroleum Corporation: *See—*
  - Mallan, George M.; and Compton, Leslie E., 3,846,096.
- Oce'-Van der Grinten, N.V.: *See—*
  - Vola, Mathias J. J. M., 3,846,021.
- O'Connor, David Evans: *See—*
  - Liepa, Alexander Leon; and O'Connor, David Evans, 3,846,568.
- O'Connor, Richard J.: *See—*
  - Deltente, Jacques J.; O'Connor, Richard J.; and Kuo, Mau-Jung, 3,846,239.
- Odasso, Gianfranco: *See—*
  - Nathansohn, Giangiacomo; Winters, Giorgio; and Odasso, Gianfranco, 3,846,412.
- Odenwalder, Heinrich: *See—*
  - Riester, Oskar; Ohlschlager, Hans; and Odenwalder, Heinrich, 3,846,137.
- Oehler-, Wyhlen- Lagertechnik AG: *See—*
  - Hochstrasser, Rolf, 3,845,715.
- Offer, Robert J., to Tenneco Inc. Filter element selector. 3,845,559, Cl. 33-143.00r.
- Office National d'Etudes et de Recherchs Aerospatiales (par abreviation: O.N.E.R.A.): *See—*
  - Carriere, Pierre P.; Leynaert, Jacky R.; Meauze, Georges D.; and Thibert, Jean-Jacques, 3,846,038.
- Ogawa, Masaru: *See—*
  - Isawa, Kazuo; Maejima, Masatsugu; Kiuchi, Kuninosuke; Yokota, Ken; and Ogawa, Masaru, 3,846,170.
- Oglesby, Cecil D., to Borg-Warner Corporation. Water closet control system. 3,845,508, Cl. 4-41.000.
- Ohashi, Takashi; and Sakata, Ryozo, to Bridgestone Tire Company Limited. Copolymer of a conjugated diolefin and vinyl chloride and manufacturing process therefor. 3,846,388, Cl. 260-82.100.
- Ohiani, Shohei: *See—*
  - Nakajima, Yozo; and Ohiani, Shohei, 3,846,185.
- Ohishi, Kanemitsu: *See—*
  - Harada, Taro; Ito, Nobuo; and Ohishi, Kanemitsu, 3,846,349.
- Ohlschlager, Hans: *See—*
  - Riester, Oskar; Ohlschlager, Hans; and Odenwalder, Heinrich, 3,846,137.
- Ohnishi, Hajime; and Nakazawa, Yuji, to Daicel Ltd. Process for preparing 2,3,6-trimethylbenzoquinone. 3,846,454, Cl. 260-396.00r.
- Ohno, Toshihiko: *See—*
  - Sasaki, Hiroshi; and Ohno, Toshihiko, 3,846,700.
- Ohringer, Philip. Liquid sample collection tube. 3,846,077, Cl. 23-259.000.
- Ohta, Jun: *See—*
  - Arai, Hiroshi; Ohta, Jun; and Kikuchi, Yasunobu, 3,846,747.
- Ohta, Kaname: *See—*
  - Takahashi, Kazuya; Sato, Mitsuya; Ohta, Kaname; and Takamiya, Tadashi, 3,846,711.
- Oilgear Company, The: *See—*
  - Douglas, James K., 3,846,049.
- Oishi, Kazuo; Kato, Toshiaki; Matsui, Takeshi; Hinachi, Matatoyo; and Yamada, Takashi, to Nippon Soken, Inc. Operating method and system for predicting collision. 3,846,796, Cl. 343-7.500.
- Ojima, Iwao: *See—*
  - Nagai, Yoichiro; Ojima, Iwao; and Kogure, Tetsuo, 3,846,463.
- Oka, Mitsunori; and Yasuda, Michio, to Hitachi, Ltd. Pattern preprocessing apparatus. 3,846,754, Cl. 340-146.30h.
- Okada, Takashi: *See—*
  - Yoshida, Soushi; Iwama, Atsuaki; Okada, Takashi; and Suda, Tetuo, 3,846,058.
- Okamoto, Haruki; Sato, Masaki; and Kusaka, Shunichi, to Mitsubishi Denki Kabushiki Kaisha. Selection device. 3,846,838, Cl. 360-106.000.
- Okawara, Yasuo; Shimazaki, Toshikazu; and Mizutani, Nagao, to Citizen Tokei Company Limited. Printing apparatus used for electronic computers. 3,846,581, Cl. 178-33.00r.
- Okazaki, Kanzo: *See—*
  - Inai, Yuichi; Okazaki, Kanzo; Shimada, Katsutoshi; Kagei, Kengo; and Bessho, Motoaki, 3,846,480.
- Okumura, Shinji; Takeshita, Shito; Enei, Hitoshi; and Ninagawa, Sadayoshi, to Ajinomoto Co., Inc. Method of stabilizing organic compounds against oxidation with isoquinoline derivatives. 3,846,573, Cl. 426-182.000.
- Okuno, Yositosi: *See—*
  - Kitamura, Shigeyoshi; Hirai, Hajime; Okuno, Yositosi; and Fujimoto, Keimei, 3,846,500.
- Okutu, Hideo: *See—*
  - Wada, Yukio; and Okutu, Hideo, 3,846,047.
- Okuyama, Toshiki; Sano, Mitsuyoshi; Manabe, Shinichi; Mine, Junichi; and Sato, Mikiko, to Nissan Motor Company, Limited. Catalytic composition for treatment of exhaust gases and a method of production thereof. 3,846,340, Cl. 252-455.00r.
- Olevsky, Viktor Markovich: *See—*
  - Voloshin, Petr Stepanovich; Ivanov, Mark Efremovich; Klopovsky, Boris Alexeevich; Lindin, Viktor Mikhailovich; Novitsky, Boris Georgievich; Olevsky, Viktor Markovich; and Fridman, Viktor Mironovich, 3,845,901.
- Olin Corporation: *See—*
  - Hirdler, Louis C.; Schiessl, Henry W.; and Doonan, David F., 3,846,424.
  - Norris, Paul R.; Van Haltern, Frank, Jr.; and Walz, David K., 3,845,775.
- Olivetti, C., Ing., & C. S.p.A.: *See—*
  - Guerci, Carlo; and Vigliermo, Amerigo, 3,846,680.
- Olson, Warren E.: *See—*
  - Ross, William A.; Schmaling, Roderick N.; and Olson, Warren E., 3,845,713.
- Olsson, Sven-Gunnar Sigvard, to Siemens Aktiengesellschaft. Ergometer device. 3,845,756, Cl. 128-2.06r.
- O'Neal, Cothburn M., to Riverside Press, Inc., mesne. Voting machine with punch card attachment. 3,846,718, Cl. 234-1.000.
- O'Neill, John Sidney, to British Leyland Truck and Bus Division Limited. Composite heat-conducting means. 3,845,619, Cl. 60-39.51h.
- Ono, Seiichi: *See—*
  - Matsumura, Hiroyoshi; and Ono, Seiichi, 3,846,100.
- Oodgursky, Paul P.: *See—*
  - Melloy, George F.; Riedel, John Y.; and Oodgursky, Paul P., 3,846,184.
- Oohara, Kunio: *See—*
  - Yamamoto, Akira; Nakaoji, Kunio; Oohara, Kunio; Momiyama, Zenjiro; Murakami, Heiichiro; and Tomita, Akira, 3,846,386.
- Orion Research Incorporated: *See—*
  - Riseman, John H.; and Frant, Martin, 3,846,257.
- Ormat Turbines (1965) Ltd.: *See—*
  - Bronicki, Lucien Yehuda; and Yogev, Amnon, 3,845,628.
- Osakeyhtio, A. Ahlstrom: *See—*
  - Wahren, Douglas; Norman, Bo; and Grundstrom, Karl-Johan, 3,846,230.
- Osborn, Robert A.: *See—*
  - Bullard, Herbert L.; St. Cyr, David R.; and Osborn, Robert A., 3,846,352.
- Oshima, Shigeru, to Fuji Photo Film Co., Ltd. Camera with film cartridge. 3,846,813, Cl. 354-213.000.
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- Ostapchenko, Evgeny Petrovich: *See—*
  - Dyatlov, Mikhail Konstantinovich; Ostapchenko, Evgeny Petrovich; Stepanov, Vladimir Anatolievich; and Kulikov, Jury Nikolaevich, 3,846,716.
- Oster Corporation: *See—*
  - Houser, John M., 3,846,603.
- Ostergren, Dale C.; and Zabiak, Daniel M., to Dick, A. B., Company. Jet printing ink composition. 3,846,141, Cl. 106-22.000.
- Osterholtz, Fred D., to Union Carbide Corporation. Low energy electron beam treatment of polymeric films and apparatus therefore. 3,846,521, Cl. 264-22.000.
- Otis Engineering Company: *See—*
  - Deaton, Thomas M., 3,845,818.
- Otis Engineering Corporation: *See—*
  - Garwood, Turner G., 3,845,815.
- Otis, George A. Trowelling tool. 3,846,060, Cl. 425-458.000.
- Otsuki, Susumu; Hori, Kyoichi; and Miyanohara, Isao, to Rohm & Haas Company. Accelerating separation rate of two liquid phases in the extraction of aqueous acrylic acid. 3,846,488, Cl. 203-15.000.
- Otte, Hubert Josef; and Roosman, Gosta, to Selco Mining Corporation Limited. Bore hole logging device. 3,845,569, Cl. 33-312.000.
- Outboard Marine Corporation: *See—*
  - Donohue, James A.; Winston, John H.; and Ward, Harry M., III, 3,845,747.
- Over, William Roderick, to AMP Incorporated. Apparatus for connecting conductors to contact terminals in an electrical connector. 3,845,535, Cl. 29-203.0mw.
- Owen, Hartley; and Demmel, Edward J., to Mobil Oil Corporation. Method of improving a dense fluid bed catalyst regenerator used in conjunction with a riser hydrocarbon conversion operation on hi-sulfur feeds. 3,846,280, Cl. 208-120.000.
- Owens-Corning Fiberglas Corporation: *See—*
  - Stalego, Joseph P., 3,846,225.
- Owens-Corning Fiberglass Corporation: *See—*
  - Russell, Robert G., 3,846,097.

Owens-Illinois, Inc.: *See—*
Byrum, Bernard W., Jr.; and Ernsthausen, Roger E., 3,846,171.
Decker, Alfred S.; Duff, John R.; and Heier, Robert J., 3,845,851.
Dietz, Raymond Louis, 3,846,222.
Mason, Daniel W.; and Nester, Henry H., 3,846,345.
Peters, Edwin F., 3,846,646.
Schaufele, Robert F., 3,846,670.
Schermerhorn, Jerry D., 3,846,656.
Simmons, George A., 3,846,099.

Oy Tampella AB: *See—*
Savia, Risto Martti, 3,845,863.

Pace, Clifford: *See—*
Michelson, Anatol; and Pace, Clifford, 3,845,652.

Padana AG: *See—*
Boden, Karl; Geweke, Werner; and Scheffer, Dietrich, 3,845,997.
Geweke, Werner, 3,845,996.

Pahlow, Fritz H.: *See—*
Behrend, Gerda A.; and Pahlow, Fritz H., 3,845,985.

Pallos, Ferenc Marcus, to Stauffer Chemical Company. Esters of di-(thiocarbamoyl) ethylene as juvenile hormone mimicking agents for control of insects. 3,846,466, Cl. 260-455.00a.

Palmer, Ansell W.: *See—*
Germer, Warren R.; and Palmer, Ansell W., 3,846,789.

Palmonka, Edward, to EBR Development Corporation, mesne. Bleach system. 3,846,132, Cl. 96-60.00r.

Palumbo, Salvatore. Disassemblable hatchet. 3,845,798, Cl. 145-2.00r.

Pappas, Peter G.; Edmisten, Walter C.; and Von Levern, Hobe Schroeder, to Standard Oil Company. Crude oils and fuel oils of improved pour point depressant and flowability properties. 3,846,092, Cl. 44-62.000.

Papst, Josef; deceased (by Papst, Stephanie; and Brockmuller, Brigitte, nee Papst; sole beneficiaries), to Hoerbiger Ventilwerke Aktiengesellschaft. Disc or plate valve for piston-type compressors. 3,845,786, Cl. 137-535.000.

Papst, Stephanie: *See—*
Papst, Josef, 3,845,786.

Park-Ohio Industries, Inc.: *See—*
Enk, Larry G., 3,846,609.

Parker, Winfred E.: *See—*
Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,846,449.

Paroz, Andre: *See—*
Jeanmairet, Pierre; and Paroz, Andre, 3,845,616.

Parsons, Joseph R.; and Rechter, Harold L., to Chicago Fire Brick Company. Gunable refractory composition. 3,846,144, Cl. 106-56.000.

Patena, Jaime. System for modular construction. 3,845,592, Cl. 52-93.000.

Patterson, Lawrence. Ultraviolet Lamp fixture. 3,846,072, Cl. 21-74.00r.

Pauza, William Vito; and Poltonavage, Edward Michael, to AMP Incorporated. Frames for adapting a multi-contact electrical connector to electrically connect with various styles of substrates. 3,846,734, Cl. 339-17.0cf.

Payne, Alan James: *See—*
Drake, John Alfred; Payne, Alan James; and Reichert, Andrew Ronald, 3,846,759.

Payne, John W.: *See—*
Dondis, Edward F.; and Payne, John W., 3,846,245.

Pearce, Roscoe L.: *See—*
Stalker, Gerald C.; and Pearce, Roscoe L., 3,846,450.

Pearson, Melton T., to Standard Spray and Chemical Company. Method for treating a peanut crop. 3,846,116, Cl. 71-65.000.

Peberdy, William T., to Chubb Fire Security Limited. Fire detector responsive to amplitude modulation of a pulsed EM beam. 3,846,772, Cl. 340-227.00r.

Peel, Richard E.: *See—*
Hull, Neil A.; and Peel, Richard E., 3,845,524.

Peeters, Hugo Karel: *See—*
Lohmann, Joachim Werner; Peeters, Hugo Karel; Ceulemans, Renaat Andreas; and Moelants, Felix Jan, 3,846,131.

Peirpoint, Edward Keith: *See—*
Gibbon, Robert Muir; and Peirpoint, Edward Keith, 3,846,506.

Pelloux-Gervais, Pierre, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes George Claude. Coupling device for transfer conduit for a cryogenic liquid. 3,845,974, Cl. 285-47.000.

Pelton, John Franklin, to Union Carbide Corporation. Chromium-chromium carbide powder and article made therefrom. 3,846,084, Cl. 29-191.200.

Pendy, William J.: *See—*
Masse, Philip R.; Pendy, William J.; and Wentink, William S., 3,846,836.

Pennwalt Corporation: *See—*
Callahan, John William; and Capdeville, Martin John, 3,845,586.
D'Angelo, Antonio Joseph; Mageli, Orville Leonard; and Sheppard, Chester Stephen, 3,846,396.
Shetty, Bola Vithal, 3,846,408.
Shetty, Bola Vithal, 3,846,427.

Pentrol Industries, Inc.: *See—*
Sampey, Harry R., 3,846,701.

Peppard, William D., to Rexnord, Inc. Chain-driven incline. 3,845,722, Cl. 104-165.000.

Perkins, Warren Edwin; and Marchese, Michael Anthony, to Union Carbide Corporation. Phase-separating spray header. 3,845,635, Cl. 62-51.000.

Perkow, Werner, to Norddeutsche Affinerie and Spiess, C. F., & Sohn. Method for killing moss. 3,846,114, Cl. 71-97.000.

Perloff, Ronald S., to Electron Inc. Machine work sensor. 3,846,688, Cl. 318-490.000.

Permatank Engineering & Mfg. Co., Inc.: *See—*
Kinne, Frank E.; and Carmack, Phil D., 3,846,525.

Perrotti, Emilio; and Cipriant, Gioacchino, to Snam Progetti S.p.A. Process for the preparation of esters of carbonic acid. 3,846,468, Cl. 260-463.000.

Perry, Joseph A., Jr. Pressure transducer. 3,845,664, Cl. 73-406.000.

Peter, Richard: *See—*
Angliker, Hans-Joerg; Peter, Richard; and Artz, Klaus, 3,846,069.

Peternel, Jacob R.: *See—*
Petrella, Joseph R.; Shaw, John N.; and Peternel, Jacob R., 3,846,105.

Peters, Edwin F., to Owens-Illinois, Inc. Control apparatus for supplying operating potentials. 3,846,646, Cl. 307-268.000.

Peterson, Phillip John: *See—*
Childers, William Walter; Elser, Karl Heinz; and Peterson, Phillip John, 3,846,840.

Peterson, Raymond E. Casket locking mechanism. 3,845,976, Cl. 292-158.000.

Peterson, Robert A.: *See—*
Edgar, Richard H.; and Peterson, Robert A., 3,846,606.

Peterson, Trules L.: *See—*
Johnson, Walker P.; Cotton, Charles C.; Bon, David R.; and Peterson, Trules L., 3,845,937.

Petit, Earl W. Electric power plant for land vehicles. 3,845,835, Cl. 180-65.00r.

Petrella, Joseph R.; Shaw, John N.; and Peternel, Jacob R., to PPG Industries, Inc. Method of controlling the shape of thermoplastic press bent sheets. 3,846,105, Cl. 65-106.000.

Petroczy, Istvan: *See—*
Matyas, Jakab; Petroczy, Istvan; Somfai, Eva; and David, Agoston, 3,846,567.

Petrolite Corporation: *See—*
Redmore, Derek, 3,846,071.

Petrucci, Raymond M.; and Schnick, Arthur W., to AMF Incorporated. Filter housing with removable diaphragm and a seal means therefor. 3,846,307, Cl. 210-323.000.

Pettit, Paul H., Jr., to Du Pont de Nemours, E. I., and Company. Thermosetting acrylic powder coating composition of a polyblend of acrylic polymer having a high glass transition temperature and an acrylic polymer having a low glass transition temperature nd a cross-linking agent. 3,846,368, Cl. 260-39.00r.

Pews, R. Garth: *See—*
Gunsher, Jeffrey A.; and Pews, R. Garth, 3,846,469.

Pfeiffer, Gerd: *See—*
Bellmann, Manfred; and Pfeiffer, Gerd, 3,845,646.

Pfizer Inc.: *See—*
Akazawa, Yoshinobu; Yagyu, Masami; Nozawa, Shigenori; and Yasui, Satoshi, 3,846,548.

Pharmacia A/B: *See—*
Howard, Alan Norman, 3,846,541.

Phelps Dodge Industries, Inc.: *See—*
Bahder, George; and Garcia, Felipe G., 3,846,578.

Philadelphia Quartz Company: *See—*
Conn, William K., 3,846,346.

Phillips, David C.: *See—*
Martello, Norman E.; and Phillips, David C., 3,846,269.

Phillips Petroleum Company: *See—*
Alquist, Henry E.; Pollock, Lyle W.; and Dale, Glenn H., 3,845,749.
Clampitt, Richard L.; and Hessert, James E., 3,845,822.
Farfaglia, Silvio T., 3,845,607.
Hill, Harold Wayne, Jr.; and Moberly, Charles W., 3,846,511.
Mitacek, John, 3,846,394.
Needham, Donald G., 3,846,360.
Norell, John R., 3,846,492.
Schiff, Sidney; and Kahle, Gerald R., 3,846,316.
Warner, Paul F., 3,846,139.

Phillipson, John Joseph, to Imperial Chemical Industries Limited. Hydrodesulfurization catalyst. 3,846,286, Cl. 208-216.000.

Pichler, Engelbert: *See—*
Reinecke, Herbert; Adler, Kalus; Bauer, Johann; Kretschmer, Reinhard; Lamhofer, Gerhard; and Pichler, Engelbert, 3,846,362.

Picker Corporation: *See—*
Atlee, Zed J.; and Gager, Robert M., 3,846,006.

Pickles, Joseph, to Ferro Manufacturing Corporation. Rotary to linear motion converter. 3,845,669, Cl. 74-422.000.

Pickles, Joseph, to Ferro Manufacturing Corporation. Safety seat track construction. 3,845,982, Cl. 296-65.00a.

Pierce, Donald Cameron. Device for cutting ovals in mats or glass sheets. 3,845,676, Cl. 82-1.300.

Pilkington Brothers Limited: *See—*
Gaskell, Philip Hedley; Loftus, James Peter; and Greengrass, Jane, 3,846,101.

Pillsbury Company, The: *See—*
Forkner, John H., 3,846,562.

Pimentel, Daniel R., to Texas Instruments, Incorporated. Valve. 3,845,931, Cl. 251-11.000.

Pinzone, Joseph A.; Troje, Gerald J.; and Schiavone, Edward L. Reflectors and mounts for panoramic optical systems. 3,846,809, Cl. 354-95.000.

Pirchl, Gerhard, to Romay AG. Visual display apparatus with character matrix. 3,846,605, Cl. 200-316.000.

Piretti, Giancarlo, to Anonima Castelli S.A.S. di Cesare Castelli & C. Folding table. 3,845,728, Cl. 108-131.000.

Pisarenko, Ivan Nikolaevich: *See—*
Jurchenko, Nikolai Petrovich; Chubarov, Evgeny Arkadievich; Pisarenko, Ivan Nikolaevich; and Starikova, Ljudmila Anatolievna, 3,846,613.

Pitney-Bowes, Inc.: *See—*
Montillier, Jean-Pierre, 3,846,264.
Ross, William A.; Schmaling, Roderick N.; and Olson, Warren E., 3,845,713.

Pitowski, Hans-Jurgen: *See—*
Seibert, Gerhard; and Pitowski, Hans-Jurgen, 3,846,156.

Pittman, Paul F.: *See—*
Hall, William G.; and Pittman, Paul F., 3,845,657.

Pitts, Charles A., to Dow Chemical Company, The. Compression packer. 3,845,816, Cl. 166-120.000.

Plander, Emil: *See—*
Zahalka, Jindrich; Plander, Emil; and Grac, Zdenek, 3,846,268.

Plastics Development Corporation of America: *See—*
Slosberg, Earl; and Williams, Samuel D., Jr., 3,846,585.

Plate extruder: *See—*
Wagner, Claude Julien Rene, 3,846,059.

Platt International Limited: *See—*
Chisholm, Andrew Alexander; and Copple, Christopher John, 3,845,612.

Platt, Richard Bibby, to RCA Corporation. Method for rendering cathode-ray tube more resistant to implosion and product thereof. 3,845,530, Cl. 29-25.130.

Platz, Rolf: *See—*
Bressel, Ulrich; Fuchs, Werner; and Platz, Rolf, 3,846,472.

Ploger, Walter: *See—*
Wollmann, Klaus; Ploger, Walter; and Worms, Karl-Heinz, 3,846,420.

Plura, Georg, to L & C Steinmuller, G.m.b.H. Method of treating (regenerating) used up ion exchange particles. 3,846,298, Cl. 210-33.000.

Plus Ika Kogyo Kabushiki Kaisha: *See—*
Ikeda, Yukio, 3,845,765.

Polaroid Corporation: *See—*
Biber, Conrad H., 3,846,812.
Cohen, Fredric S., 3,846,013.
Whall, James M., 3,846,808.

Poletto, John Frank: *See—*
Weiss, Martin Joseph; Gibs, Gabriel Joseph; Poletto, John Frank; and Remers, William Alan, 3,846,446.

Pollock, Lyle W.: *See—*
Alquist, Henry E.; Pollock, Lyle W.; and Dale, Glenn H., 3,845,749.

Poltonavage, Edward Michael: *See—*
Pauza, William Vito; and Poltonavage, Edward Michael, 3,846,734.

Polymer Processing Research Institute Ltd.: *See—*
Yazawa, Masahide, 3,846,205.

Polysius AG: *See—*
Durr, Manfred, 3,846,067.

Pomey, Jacques, to Societe des Aciers Fins de l'Est. Means for the continuous casting of steel. 3,845,809, Cl. 164-259.000.

Pontrelli, Gene Joseph: *See—*
Vermeer, Dick Charles; and Pontrelli, Gene Joseph, 3,845,528.

Popeil Brothers, Inc.: *See—*
Popeil, Samuel J.; and Shaw, David V., 3,845,518.

Popeil, Samuel J.; and Shaw, David V., to Popeil Brothers, Inc. Mop head. 3,845,518, Cl. 15-228.000.

Porret, Daniel: *See—*
Habermeier, Juergen; and Porret, Daniel, 3,846,442.

Portage Machine Company: *See—*
Schiler, Frederick S., 3,845,993.

Posego, John J.: *See—*
Dean, Warren E.; and Posego, John J., 3,846,081.

Possati, Mario, to Finike Italiana Marposs-Soc. in Accomandita Semplice di Mario Possati & C. Method and device for the control of the machining on a machine tool for stock removal. 3,846,689, Cl. 318-571.000.

Post Office, The: *See—*
Boulter, Richard Arnold, 3,846,583.

Poteet, Charles S., III, to Grace, W. R., & Co. Extrusion cutting device. 3,846,529, Cl. 264-142.000.

Pousche, Walter: *See—*
Fleisch, William F.; and Pousche, Walter, 3,845,988.

Powell, Richard James, to Du Pont de Nemours, E. I., and Company. Oxy-bis-(N-alkylamides) and their use as slip additives. 3,846,391, Cl. 260-87.300.

PPG Industries, Inc.: *See—*
Dean, Warren E.; and Posego, John J., 3,846,081.
Franz, Helmut, 3,846,152.
Heithoff, Robert B., 3,846,102.
Petrella, Joseph R.; Shaw, John N.; and Peternel, Jacob R., 3,846,105.
Seymour, Samuel L., 3,846,104.
Seymour, Samuel L., 3,846,106.
Smith, Randal M., 3,846,108.

Pratt-Read Corporation: *See—*
Lehmann, Alfred H., 3,845,683.

Precision Valve Corporation: *See—*
Focht, John Richard, 3,845,888.
Meuresch, Herbert; and Zimmerhackel, Franz, 3,845,887.

Preston, Kevin S.: *See—*
Boocock, David; Bing, Alan J.; and Preston, Kevin S., 3,845,724.

Price, Richard W., to Emhart Corporation. Adjustable chuck for containers or vials. 3,845,963, Cl. 279-89.000.

Prieto, Anthony, to Telex Computer Products, Inc. Four-bit parity checker/generator. 3,846,751, Cl. 340-146.1ag.

Procter & Gamble Company, The: *See—*
Liepa, Alexander Leon; and O'Connor, David Evans, 3,846,568.
Lowrey, Erlend R.; and Weiss, Vernon E., 3,846,457.
Willhite, William, Jr.; and Strube, Herbert Eugene, 3,845,682.

PROGIL: *See—*
Mocotte, Jacques; Disdier, Andre; and Prost, Francoise, 3,846,465.

Prokai, Bela; and Kanner, Bernard, to Union Carbide Corporation. Organosilicone polymers. 3,846,462, Cl. 260-448.20n.

Prost, Francoise: *See—*
Mocotte, Jacques; Disdier, Andre; and Prost, Francoise, 3,846,465.

Pungs, Wolfgang: *See—*
Schneider, Johannes; and Pungs, Wolfgang, 3,846,379.

Purex Corporation, Ltd.: *See—*
Brett, James E., 3,846,078.

Purol, Michael Dennis; and Malloy, Richard Joseph, to Eastman Kodak Company. Process for developing photographic elements. 3,846,130, Cl. 96-22.000.

Qantix Corporation: *See—*
Brown, John W., 3,846,012.

Quaker Oats Company, mesne: *See—*
Hempenius, Walter L.; Valenti, Joseph; and Moser, Robert E., 3,846,560.

Quik-Die, Inc.: *See—*
Shelton, Winston L.; and Newman, Joseph L., 3,845,812.

Quinlan, William J.; and Huver, Lawrence L. Windshield wiper assembly. 3,845,519, Cl. 15-250.320.

Quinn, Ronald E., to General Motors Corporation. External recirculation burner. 3,846,062, Cl. 431-116.000.

Raabe, Francis O.; and Yossa, Frank A., to Armco Steel Corporation. Method and apparatus for the high temperature annealing of metallic coils. 3,846,190, Cl. 148-155.000.

Raabe, Thomas; Stachel, Adolf; deceased (by Stachel, Ingeburg Lydia Katharine; heiress); Scholtholt, Josef; and Nitz, Rolf-Eberhard, to Cassella Farbwerke mainkur Aktiengesellschaft. Derivatives of 3-benzoyl-2-(-hydroxyphenethylamino)-propionitrile. 3,846470, Cl. 260-465.00e.

Rabinovich, Sofya Petrovna: *See—*
Kachlova, Revekka Vulfovna; Nemtsov, Mark Semenovich; Balkhanova, Galina Fedorovna; Bychkovskaya, Ljudmila Nikolaevna; Mescherskaya, Vera Mikhailovna; and Rabinovich, Sofya Petrovna, 3,846,338.

Rabodzei, Nikolai Vasilievich; Ljubimov, Evgeny Mikhailovich; Nadobnikov, Mikhail Nikolaevich; and Krokhin, Alexandr Alexandrovich. Closed-circuit TV inspection X-ray microscope. 3,846,632, Cl. 250-312.000.

Racunas, Bernard J.; and Jarrett, Noel, to Aluminum Company of America. Aluminum recovery from scrap materials. 3,846,123, Cl. 75-68.00r.

Ragan, Brad, Inc.: *See—*
Huskins, Homer L., 3,846,201.

Raisbeck, Wesley Paul: *See—*
Johnson, Robert Allen; and Raisbeck, Wesley Paul, 3,845,568.

Ram, Michael J.; and Riggs, John P., to Celanese Corporation. Acrylic filaments which are particularly suited for thermal conversion to carbon filaments. 3,846,833, Cl. 260-88.70r.

Rameson, William W., to TRW Inc. Differential gaging instrument. 3,845,566, Cl. 33-174.00l.

Ramsey, James E., Jr.: *See—*
Keever, Joseph M.; Finnen, Gerald W.; and Ramsey, James E., Jr., 3,846,677.

Ramsey, Wallace Burton; and Delapp, Darwin Fiske, to American Cyanamid Company. Sterile medical dusting powder. 3,846,382, Cl. 260-78.30r.

Randazzo, Anthony J., to Amstar Corporation. Method and apparatus for making a bag with a sealed pouring spout. 3,845,695, Cl. 93-1.0ts.

Randolph, August: *See—*
Hellmig, Erhard; Moll, Franz; Randolph, August; and Saleck, Wilhelm, 3,846,135.

Ranieri, Louis F. Self-contained multi-blade package and method of making same. 3,845,541, Cl. 29-432.000.

Ranson, Claude: *See—*
Lagache, Michel; Ranson, Claude; and Tillon, Nicole, 3,846,164.

Rausch, Richard E., to Universal Oil Products Company. Bimetallic catalytic reforming with halogen addition. 3,846,283, Cl. 208-139.000.

- Rautio, Eskil: *See—*
  - Wikefeldt, Per; and Rautio, Eskil, 3,845,659.
- Rauwerdink, Hendrik Jan: *See—*
  - Van Mal, Harmannus Hinderikus; Mijnheer, Andries; Rauwerdink, Hendrik Jan; and De Wit, Johannes Adrianus, 3,845,636.
- Raymond, Richard L., to Sun Research and Development Co. Reclamation of hydrocarbon contaminated ground waters. 3,846,290, Cl. 210-11.000.
- Raytheon Company: *See—*
  - Edgar, Richard H.; and Peterson, Robert A., 3,846,606.
- Razzano, John S., to General Electric Company. Process for preparing cyclic methylvinyl-siloxanes. 3,846,464, Cl. 260-448.20e.
- RCA Corporation: *See—*
  - Ahmed, Adel Abdel, 3,846,696.
  - Berkman, Samuel; and Roundtree, Ural, Jr., 3,845,738.
  - Ettenberg, Michael; and Gilbert, Stephen Lee, 3,846,165.
  - Lehmann, Hans Wilhelm; and Widmer, Roland, 3,846,649.
  - Livingston, Daniel K.; Floden, Bjorn Fritjof; Wright, Harry Gilbert; and Tsien, Wei Hwa, 3,845,916.
  - McCue, Bernard Beverly, 3,846,328.
  - McNulty, Thomas Charles, 3,846,674.
  - Platt, Richard Bibby, 3,845,530.
  - Vossen, John Louis, 3,846,294.
  - Warren, Henry Ray, 3,846,819.
  - Wen, Cheng Paul; and Chiang, Yuen-Sheng, 3,846,198.
- Reactor Accelerator Development International, Inc.: *See—*
  - Zehr, Phyllis Joan Lane; Lank, Monita May Thorp; and Lank, Psych, 3,846,636.
- Reactor Centrum Nederland: *See—*
  - Bruijn, Engelbertus Jacobus; Hamburg, Fokko Wessel; Kanij, Johannes Bastiaan Willem; and De Rooy, Robert, 3,846,520.
- Rechter, Harold L.: *See—*
  - Parsons, Joseph R.; and Rechter, Harold L., 3,846,144.
- Recklinghausen, Carl Still, Firma: *See—*
  - Knappstein, Johannes; Fritzsche, Helmut; and Stratmann, Josef, 3,846,250.
- Reckziegel, Erich: *See—*
  - Zorn, Hugo; Broll, Helmut; and Reckziegel, Erich, 3,846,133.
- Record Taxameter AB: *See—*
  - Borgstrom, Lennart, 3,846,803.
- Redmore, Derek, to Petrolite Corporation. Process of inhibiting corrosion by treatment with phosphate-cyclic amidine salts. 3,846,071, Cl. 21-2.70a.
- Reed, Echol M., Jr.: *See—*
  - Jaffe, Joseph; and Reed, Echol M., Jr., 3,846,287.
- Reed, Edward A., to Harsco Corporation. Manure spreader. 3,845,885, Cl. 222-176.000.
- Reekie, James; and Royston, Marvin F., to Bell & Howell Company. Stabilizing mechanism. 3,845,929, Cl. 248-358.00r.
- Refrigerating Specialties Co.: *See—*
  - Hansen, Charles C.; and Nilles, John D., 3,845,781.
- Regie Nationale des Usines Renault: *See—*
  - Henault, Claude, 3,846,076.
  - Lagache, Michel; Ranson, Claude; and Tillon, Nicole, 3,846,164.
  - Lefeuvre, Andre, 3,845,700.
- Reichert, Andrew Ronald: *See—*
  - Drake, John Alfred; Payne, Alan James; and Reichert, Andrew Ronald, 3,846,759.
- Reichle, Alfred: *See—*
  - Kubitzker, Harry; Falkai, Bela Von; and Reichle, Alfred, 3,846,532.
- Reilly, James W.: *See—*
  - Sze, Morgan C.; and Reilly, James W., 3,846,278.
- Reilly, Joseph R., to Monsanto Company. Finishing hollow blow molded articles. 3,846,531, Cl. 264-161.000.
- Reinecke, Herbert; Adler, Kalus; Bauer, Johann; Kretschmer, Reinhard; Lamhofer, Gerhard; and Pichler, Engelbert, to Wacker-Chemie GmbH. Molding compositions based on ethylene-vinyl acetate copolymers and pitch. 3,846,362, Cl. 260-28.5as.
- Reinertsen, Tormod K., to Ideal Toy Corporation. Letters and numbers game. 3,845,958, Cl. 273-135.00d.
- Reinis, Gedeminas J., to Xerox Corporation. Imaging system. 3,846,127, Cl. 96-1.00m.
- Reitsch, Juergen: *See—*
  - Friedenreich, Heinrich; Suck, Bernhard; and Reitsch, Juergen, 3,845,908.
- Reliable Electric Company: *See—*
  - Troy, Michael K., 3,846,575.
- Relyea, Kenneth D., to Drustar Unit Dose Systems, Inc. Pharmaceutical cabinet. 3,846,004, Cl. 312-209.000.
- Remers, William Alan: *See—*
  - Weiss, Martin Joseph; Gibs, Gabriel Joseph; Poletto, John Frank; and Remers, William Alan, 3,846,446.
- Renault, Philippe; Dezael, Claude; and Deschamps, Andre, to Institut Francais du Petrole, des Carburants et Lubrifiants. Process for regenerating strong bases from solutions of their sulfides and simultaneously producing sulfur. 3,846,538, Cl. 423-183.000.
- Renault, Philippe; Dezael, Claude; and Deschamps, Andre, to Institut Francais du Petrole, des Carburants et Lubrifiants. Purification of gas containing sulfur dioxide or sulfur trioxide with the production of elemental sulfur. 3,846,539, Cl. 423-574.000.
- Renna, Nicholas, Jr.; Madison, Theodore C.; and Harvey, Bernard A., to United States of America, Navy. Shock hardened transducer. 3,846,744, Cl. 340-10.000.
- Renth, Ernst-Otto: *See—*
  - Mentrup, Anton; Zeile, Karl; Danneberg, Peter; Schromm, Kurt; Guenard, Jeanette; Renth, Ernst-Otto; and Stotzer, Harry, 3,846,549.
- Republic Steel Corporation: *See—*
  - Tipnis, Vijayakumar A., 3,846,186.
- Resofszki, Gabor: *See* –
  - Huhn, Magda; Toth, Geza; Resofszki, Gabor; Somfai, Eva; and Horvath, Gabor, 3,846,407.
- Reti, Adrian R.: *See—*
  - Ehrreich, John E.; and Reti, Adrian R., 3,846,118.
- Reum, Helmut: *See—*
  - DuMont, Hans-Christoph; Strohwald, Rainer; and Reum, Helmut, 3,846,801.
- Rexnord, Inc.: *See—*
  - Peppard, William D., 3,845,722.
- Reyner, Emerson Marshall, II: *See—*
  - Fritz, William Baird; and Reyner, Emerson Marshall, II, 3,846,721.
- Reynolds, Hugh B., to General Electric Company. Method of manufacturing a laminated assembly. 3,845,547, Cl. 29-596.000.
- Reynolds, Ronald W.: *See—*
  - Brown, Ronald W.; and Reynolds, Ronald W., 3,846,088.
- Rhine, Jules W.: *See—*
  - Matthews, Benjamin H.; and Rhine, Jules W., 3,846,823.
- Rhodes, Charles K., to United States of America, Atomic Energy Commission. Laser system employing stimulated multiple-photon emission process. 3,846,709, Cl. 330-4.300.
- Rhone Progil: *See—*
  - Lagache, Michel; Ranson, Claude; and Tillon, Nicole, 3,846,164.
- Rhone-Poulenc S.A.: *See—*
  - Boesch, Roger; and Blind, Andre, 3,846,439.
  - Boesch, Roger; Blind, Andre; and Cassal, Jean-Marie, 3,846,440.
  - Rostaing, Paul, 3,846,359.
- Rhotert, Bernhard, to Keller Spezialtechnik GmbH. Apparatus for cutting veneer or other strip material. 3,845,679, Cl. 83-110.000.
- Ribot, Alain: *See—*
  - Fontaine, Guy Hugues; and Ribot, Alain, 3,845,773.
- Richardson, Raymond H., to Interlake, Inc. Vehicle power system. 3,846,595, Cl. 191-3.000.
- Richman, Peter L.: *See—*
  - Johnson, Clark E., Jr.; and Richman, Peter L., 3,846,831.
- Richter, Albert P., Jr.: *See—*
  - McEvers, William R., Jr.; Cox, Percy T.; and Richter, Albert P., Jr., 3,845,837.
- Riedel, John Y.: *See—*
  - Melloy, George F.; Riedel, John Y.; and Oodgursky, Paul P., 3,846,184.
- Rieder, Walter E., to Cincinnati Milacon Inc. Detergent compositions exhibiting reduced skin irritation and method of reducing detergent irritation. 3,846,554, Cl. 424-272.000.
- Riedl, Peter A., to Texaco Inc. Manufacture of hydrocarbyl hydroperoxide. 3,846,499, Cl. 260-610.00b.
- Riegel Textile Corporation: *See—*
  - Van Deusen, George S.; and Teed, Richard K., 3,845,529.
- Riester, Oskar; Ohlschlager, Hans; and Odenwalder, Heinrich, to Agfa-Gevaert Aktiengesellschaft. Spectrally sensitized direct positive emulsion. 3,846,137, Cl. 96-130.000.
- Riggs, John P.: *See—*
  - Ram, Michael J.; and Riggs, John P., 3,846,833.
- Riikonen, Douglas L., to Honeywell Information Systems, Inc. Method apparatus for automatic selection of translators in a data processing system. 3,846,763, Cl. 340-172.500.
- Riley, Terence James; and Shackle, Peter William, to Bell Telephone Laboratories, Incorporated. Methods for making field effect transistors. 3,846,822, Cl. 357-23.000.
- Rion Co., Ltd.: *See—*
  - Sasaki, Hiroshi; and Ohno, Toshihiko, 3,846,700.
- Riseman, John H.; and Frant, Martin, to Orion Research Incorporated. Electrochemical monitoring. 3,846,257, Cl. 204-1.00t.
- Ritter, Johannes Andreas: *See—*
  - Ritter, Karl Hermann; and Ritter, Johannes Andreas, 3,845,580.
- Ritter, Karl Hermann; and Ritter, Johannes Andreas. Calendar. 3,845,580, Cl. 40-121.000.
- Riverside Press, Inc., mesne: *See—*
  - O'Neal, Cothburn M., 3,846,718.
- Robbins, Douglas R.; and Robbins, Samuel B., Jr. Safety vial and cap therefor. 3,845,874, Cl. 215-214.000.
- Robbins, Elmer A., to Tokheim Corporation. Bill accepting motor fuel dispensing apparatus. 3,845,848, Cl. 194-13.000.
- Robbins, Roland W., Jr., to United States of America, Navy. Free piston pump. 3,846,048, Cl. 417-393.000.
- Robbins, Samuel B., Jr.: *See—*
  - Robbins, Douglas R.; and Robbins, Samuel B., Jr., 3,845,874.
- Roberts, Keith E. Apparatus for removing excess coating material from chain link fabric. 3,845,741, Cl. 118-57.000.
- Roberts, Stanley. Rotary internal combustion engine having dynamic fluid seals. 3,846,053, Cl. 418-94.000.
- Roberts Supply, Inc.: *See—*
  - Baker, Billy Z., 3,846,036.
- Robertshaw Controls Company: *See—*
  - Katchka, Jay R., 3,846,064.
- Robertson, H. H., Company: *See—*
  - Davis, Bernard H., 3,846,054.
- Robertson Paper Box Co., Inc.: *See—*
  - Hackenberg, Robert A., 3,845,898.

- Robins, A. H., Company, Incorporated: *See—*
  - Welstead, William John, Jr.; and Stauffer, Harold Fisher, Jr., 3,846,477.
- Rochester Applied Science Associates, Inc.: *See—*
  - White, Richard P., Jr., 3,845,918.
- Rockwell International Corporation: *See—*
  - Carlson, Larry W., 3,846,516.
- Rockwell, Jerry E., to Singer Company, The. Drawer construction. 3,846,003, Cl. 312-204.000.
- Rodermund, Gerd: *See—*
  - Rodermund, Gerd; and Kappus, Helmut (said Kappus assor. to said), 3,846,212.
- Rodermund, Gerd; and Kappus, Helmut, said Kappus assor. to said Rodermund, Gerd. Method and machine for the manufacture of wreaths, pompons, rosettes and the like. 3,846,212, Cl. 161-15.000.
- Roe, Kenneth W.; Studwell, Ernest E.; and Cooke, Robert E., to Nash Engineering Company. Liquid ring pump lobe purge. 3,846,046, Cl. 417-54.000.
- Roedel, George F., to General Electric Company. Process for producing silicone resins. 3,846,358, Cl. 260-18.00s.
- Roeder, Georg, to Messer. Griesheim GmbH. Torch cutting machine. 3,845,942, Cl. 266-23.00k.
- Rogers, Herbert E., Jr.: *See—*
  - Foley, Edward M.; Dreyer, Dennis G.; and Rogers, Herbert E., Jr., 3,846,126.
- Rogers, Maxmillina P.: *See—*
  - Lohr, Raymond J.; Condry, Martin; Hirsch, Mahlon E.; Carver, Richard N.; and Rogers, Maxmillina P., 3,845,957.
- Rogers, Peter C.; Harrison, Frank B.; Hipkiss, Richard C.; Sunasky, Joseph; and Shapcott, Nigel G., to Dexion-Comino International Limited. Transporter systems. 3,845,718, Cl. 104-130.000.
- Rohm & Haas Company: *See—*
  - Greenfield, Stanley A., 3,846,448.
  - Otsuki, Susumu; Hori, Kyoichi; and Miyanohara, Isao, 3,846,488.
- Rohm and Haas Company: *See—*
  - Machleder, Warren H.; and Kuhn, Robert, 3,846,089.
- Rohrer, Carl H. Sub-surface gas main replacement method. 3,845,789, Cl. 138-97.000.
- Rollform Incorporated: *See—*
  - Adams, George C., 3,846,031.
- Rolls-Royce (1971) Limited: *See—*
  - Higginbotham, Gordon John Spencer; and Cuckson, Kenneth, 3,845,808.
- Romander, Curtis M.: *See—*
  - Busma, John H., Jr.; and Romander, Curtis M., 3,846,206.
- Romandi, Denes, to Siemens Aktiengesellschaft. High voltage generator for X-ray diagnosis apparatus. 3,846,633, Cl. 250-402.000.
- Romanov, Boris Mikhailovich; Moshnin, Evgeny Nikolaevich; Yanov, Stanislav Ivanovich; Gurevich, Vladimir Zakhrovich; and Ryabokovylenko, Viktor Ivanovich. Machine for manufacturing a coil of a pipe by bending it. 3,845,650, Cl. 72-310.000.
- Romay AG: *See—*
  - Pirchl, Gerhard, 3,846,605.
- Romberg, Felix B. Traction gate with camming bar. 3,845,804, Cl. 160-328.000.
- Roos, Paul W., to BTV Engineering Corporation. Furnace heating element. 3,846,621, Cl. 219-550.000.
- Roos, Willem Cornelis. Sterling process engines. 3,845,624, Cl. 60-517.000.
- Roosman, Gosta: *See—*
  - Otte, Hubert Josef; and Roosman, Gosta, 3,845,569.
- Rordorf, Horst Edmund. Method of heating objects and device for the performance of the method. 3,846,574, Cl. 13-31.000.
- Rosas, Carlos B.; Wantuck, Joseph A.; and Kaufman, Arnold, to Merck & Co., Inc. Process for the production of 2-methyl-5-methyl pyridine. 3,846,435, Cl. 260-290.00p.
- Rose, J. Sterling, to Birko Chemical Corporation. Method and apparatus for taking and transferring bacteria samples. 3,846,248, Cl. 195-127.000.
- Rosenberg, Edgar N.; and Moran, Stephen F., to United States of America, Navy. Dual hydro winch lift mechanism. 3,845,634, Cl. 61-46.500.
- Rosenberg, Robert B.; Nesbitt, John D.; and Fejer, Mark E., to South Bend Range Corporation. Method of heating frozen food using sonic or ultrasonic wave energy. 3,846,565, Cl. 426-238.000.
- Rosenzweig, Julius; and Altenhaus, Rhoda. Ornamental plaque. 3,846,214, Cl. 161-19.000.
- Ross, George, to Clow Corporation. Stabilization system for a floating water aerator. 3,846,517, Cl. 261-91.000.
- Ross, William A.; Schmaling, Roderick N.; and Olson, Warren E., to Pitney-Bowes, Inc. Automatic etcher for offset master. 3,845,713, Cl. 101-148.000.
- Rossi, Armando. Process and apparatus for extending the range of a digital to analog converter to be used with a strip recorder. 3,846,785, Cl. 340-347.0da.
- Rossi, Joseph R.; Griffiths, Frederick J.; and Griffin, James L., to Maneely-Illinois Inc. Hot galvanizing process and apparatus. 3,845,540, Cl. 29-430.000.
- Rostaing, Paul, to Rhone-Poulenc S.A. Storage stable binders. 3,846,359, Cl. 260-22.00s.
- Rostron, Robert Walther; and Varadi, Peter Ferenc, to Communications Satellite Corporation. Process for solder coating silicon solar cells. 3,846,258, Cl. 204-15.000.
- Roteman, Jerome; and Gogola, Joseph K., to Addressograph-Multigraph Corporation. Fixing device. 3,846,151, Cl. 117-21.000.
- Roth, Adrian W.; and Amsler, Joachim, to Sprecher & Schuh AG. Method of producing a vacuum switch contact. 3,845,543, Cl. 29-472.300.
- Roudabush, Ned Wright, to Taylor's, Chas., Sons Company, The. Refractory articles for metal pouring tubes and the like. 3,846,145, Cl. 106-57.000.
- Roundtree, Ural, Jr.: *See—*
  - Berkman, Samuel; and Roundtree, Ural, Jr., 3,845,738.
- Rover Company Limited, The: *See—*
  - Bashford, Gordon Dennis, 3,845,987.
- Rowe, D. Garth: *See—*
  - Jones, Cecil R.; Goldman, Arthur J.; and Rowe, D. Garth, 3,846,235.
- Rowe, George E., to Emhart Corporation. Method for making glassware by a press and blow technique. 3,846,103, Cl. 65-79.000.
- Rowland, David L. Folding chair. 3,845,984, Cl. 297-56.000.
- Rowland, David L. Stackable seating units. 3,845,986, Cl. 297-239.000.
- Royston, Marvin F.: *See—*
  - Reekie, James; and Royston, Marvin F., 3,845,929.
- Rudnitsky, Jury Petrovich: *See—*
  - Buzhinsky, Igor Mikhailovich; Gapontsev, Valentin Pavlovich; Zhabotinsky, Mark Efremovich; Izyneev, Anatoly Andreevich; Koryagina, Elizaveta Ivanovna; Kravchenko, Valery Borisovich; Rudnitsky, Jury Petrovich; Sverchkov, Evgeny Ivanovich; Aleseev, Nikolai Eimovich; and Davydov, Boris Leonidovich, 3,846,142.
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- Runstetler, Roy H. Oil purifying means employed in connection with internal combustion engines. 3,845,751, Cl. 123-196.00a.
- Russell, Robert G., to Owens-Corning Fiberglass Corporation. Method for processing glass and forming fibers therefrom. 3,846,097, Cl. 65-2.000.
- Rutchik, Walter L.: *See—*
  - Ryczek, Lawrence J.; Rutchik, Walter L.; and Van Zeeland, Donald L., 3,846,676.
- Rutschke, Arno, to Werkzeugmaschinenfabrik Oerlikon-Buhrle. Tool change mechanism. 3,845,546, Cl. 29-568.000.
- Ryabokovylenko, Viktor Ivanovich: *See—*
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- Ryczek, Lawrence J.; Rutchik, Walter L.; and Van Zeeland, Donald L., to Cutler-Hammer, Inc. Electronic control system for remote control circuit breakers. 3,846,676, Cl. 317-33.0sc.
- Ryuka, Fumitaka: *See—*
  - Harada, Isao; and Ryuka, Fumitaka, 3,846,032.
- SABA, Schwarzwalder Apparate-bau-Anstalt August Schwer Sohne G.m.b.H.: *See—*
  - Maier, Gerhard, 3,846,724.
- Sabatino, Anthony, to Gould Inc. Method of attaching a rope handle to a thin-walled battery. 3,845,542, Cl. 29-458.000.
- Sabbah, Benjamin: *See—*
  - Suhami, Avraham; Sabbah, Benjamin; and Inbar, Dan, 3,846,630.
- Sachko, William R. Lighted-cigarette dispensing machine. 3,845,881, Cl. 221-144.000.
- Sachnik, Norman H. Material treating apparatus. 3,845,701, Cl. 99-323.500.
- Safety, Inc.: *See—*
  - Howland, Raymond J., Jr., 3,845,576.
- Saft Batteries Limited: *See—*
  - Shaw, Frank Donald, 3,846,179.
- Sagami Chemical Research Center: *See—*
  - Nagai, Yoichiro; Ojima, Iwao; and Kogure, Tetsuo, 3,846,463.
- Sahara, Masayoshi: *See—*
  - Yata, Koutaro; and Sahara, Masayoshi, 3,846,814.
- Saiki, Atsushi; Mori, Takaaki; Harada, Seiki; and Sato, Kikuji, to Hitachi, Ltd. Method of producing multilayer wiring structure of integrated circuit. 3,846,166, Cl. 117-212.000.
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  - Eichmanns, Winfried Paul; Finken, Hans-Joachim; and Mager, Guenther Winand, 3,845,912.
- Sakai, Toshiyuki: *See—*
  - Hirakawa, Hiroshi; and Sakai, Toshiyuki, 3,846,160.
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- Sakamoto, Isamu, to Kokan Camera Laboratory Company Limited. Record controlled sewing machine. 3,845,731, Cl. 112-102.000.
- Sakamoto, Yoichi; and Koyanagi, Yukio, to Matsushita Electric Co. Ltd. Channel selection device. 3,846,707, Cl. 325-334.000.
- Sakata, Ryozo: *See—*
  - Ohashi, Takashi; and Sakata, Ryozo, 3,846,388.
- Saleck, Wilhelm: *See—*
  - Hellmig, Erhard; Moll, Franz; Randolph, August; and Saleck, Wilhelm, 3,846,135.
- Saluti, Gerald Michael, to American Cyanamid Company. Acrylonitrile-acrylate copolymers reinforced with grafted butadiene rubber. 3,846,509, Cl. 260-876.00r.

- Salvo, Andrew D. Intonation guide for player of string instrument. 3,845,686, Cl. 84-485.000.
- Salzer, Erwin, to Chase-Shawmut Company, The. High-voltage fuse including insulating mandrel for supporting fusible elements. 3,846,728, Cl. 337-159.000.
- Sampey, Harry R., to Pentrol Industries, Inc. Vehicle performance computer. 3,846,701, Cl. 324-175.000.
- Sandoz Ltd., a/k/a Sandoz AG: *See—*
  - Stadler, Paul; Stutz, Peter; and Guttmann, Stephan, 3,846,433.
- Sandoz-Wander Inc.: *See—*
  - Buzzolini, Mario G., 3,846,496.
- Sands, A. John. Phonograph record composition and process. 3,846,361, Cl. 260-28.500.
- Sanitas Company Limited, The: *See—*
  - Stokes, John H.; and Cousins, Alexander G., 3,846,301.
- Sano, Mitsuyoshi: *See—*
  - Okuyama, Toshiki; Sano, Mitsuyoshi; Manabe, Shinichi; Mine, Junichi; and Sato, Mikiko, 3,846,340.
- Santala, Teuvo J.: *See—*
  - Jost, Ernest M.; McBride, Lyle E., Jr.; and Santala, Teuvo J., 3,846,679.
- Santen, Horst: *See—*
  - Horst, Wilfried; Schuppler, Emil; and Santen, Horst, 3,845,803.
- Sarbacher, Robert I.: *See—*
  - Mauch, Robert E.; and Sarbacher, Robert I., 3,846,177.
- Sargent Industries, Inc.: *See—*
  - Satterfield, Robert S.; and Chacko, Joseph, 3,845,920.
- Sasaki, Hiroshi; and Ohno, Toshihiko, to Rion Co., Ltd. Electrostatic field measuring apparatus. 3,846,700, Cl. 324-72.000.
- Sasanami, Tsuneo: *See—*
  - Midorikawa, Yoshinori; and Sasanami, Tsuneo, 3,846,246.
- Sasayama, Takao, to Hitachi, Ltd. Computing device for an interpolation. 3,846,625, Cl. 235-152.000.
- Sato, Kikuji: *See—*
  - Saiki, Atsushi; Mori, Takaaki; Harada, Seiki; and Sato, Kikuji, 3,846,166.
- Sato, Kozi: *See—*
  - Nagata, Minoru; and Sato, Kozi, 3,846,821.
- Sato, Masaki: *See—*
  - Okamoto, Haruki; Sato, Masaki; and Kusaka, Shunichi, 3,846,838.
- Sato, Mikiko: *See—*
  - Okuyama, Toshiki; Sano, Mitsuyoshi; Manabe, Shinichi; Mine, Junichi; and Sato, Mikiko, 3,846,340.
- Sato, Mitsuya: *See—*
  - Takahashi, Kazuya; Sato, Mitsuya; Ohta, Kaname; and Takamiya, Tadashi, 3,846,711.
- Sato, Tai: *See—*
  - Nojima, Isao; Tamaru, Keikichi; and Sato, Tai, 3,846,766.
- Satomi, Takeo: *See—*
  - Mine, Akihiko; Fujinami, Akira; Kameda, Nobuyuki; Hino, Naganori; Satomi, Takeo; and Tateishi, Kohshi, 3,846,441.
- Satterfield, Robert S.; and Chacko, Joseph, to Sargent Industries, Inc. Inflatable evacuation ramp. 3,845,920, Cl. 244-137.00p.
- Satterly, Kenneth P., to Witco Chemical Corporation. Polyurethane rigid foams from prepolymers. 3,846,347, Cl. 260-2.5af.
- Savage, Michael Gary: *See—*
  - Horovitz, Beatrice; and Savage, Michael Gary, 3,846,835.
- Savia, Risto Martti, to Oy Tampella AB. Pulp sifter with cleaning means. 3,845,863, Cl. 209-303.000.
- Sawvell, Roger V.: *See—*
  - Scott, William B.; and Sawvell, Roger V., 3,845,680.
- Schanzer, Wilhelm: *See—*
  - Berg, Gerhard; Nordsiek, Karl-Heinz; Maahs, Gunter; and Schanzer, Wilhelm, 3,846,365.
- Schatz, Oskar; and Dieckmann, Uwe, to Krupp, Fried., Gesellschaft mit beschrankter Haftung. Charging device. 3,845,979, Cl. 294-88.000.
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- Schaumann, Dietrich, to Hawera Probst KG Hartmetall Werkzeugfabrik Ravensburg. Drill, especially stone drill. 3,845,829, Cl. 175-395.000.
- Scheer, C. F., & Cie, Firma: *See—*
  - Fritsch, Rudolf Paul, 3,845,681.
- Scheer, Marcel: *See—*
  - Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,846,476.
- Scheffer, Dietrich: *See—*
  - Boden, Karl; Geweke, Werner; and Scheffer, Dietrich, 3,845,997.
- Schehrer, Rudolf: *See—*
  - Schenkel, Klaus Dieter; Herzig, Wolfgang; Schehrer, Rudolf; and Hildenbrand, Rupert, 3,846,587.
- Scheibe, Elias W., to General Motors Corporation. Metering pump. 3,846,052, Cl. 418-84.000.
- Schekin, Vladimir Ivanovich; and Stepanov, Vasily Nikolaevich. High-voltage discharge arrangement for stripping foundry moulds off castings. 3,845,806, Cl. 164-250.000.
- Schenkel, Klaus Dieter; Herzig, Wolfgang; Schehrer, Rudolf; and Hildenbrand, Rupert, to Licentia Patent-Verwaltungs-G.m.b.H. Data transmission system for a multiple branch network. 3,846,587, Cl. 179-15.0al.
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  - Albrecht, Rudolf; Kessler, Hans-Joachim; and Schroder, Eberhard, 3,846,428.
- Schermerhorn, Jerry D., to Owens-Illinois, Inc. Multicelled display/memory gas discharge device having integral cell interconnections. 3,846,656, Cl. 313-188.000.
- Schiavone, Edward L.: *See—*
  - Pinzone, Joseph A.; Troje, Gerald J.; and Schiavone, Edward L., 3,846,809.
- Schick Incorporated: *See—*
  - Doyle, Edward J.; and Bagwell, Richard S., Jr., 3,846,614.
- Schiessl, Henry W.: *See—*
  - Hirdler, Louis C.; Schiessl, Henry W.; and Doonan, David F., 3,846,424.
- Schiff, Maurice L.: *See—*
  - Writer, Philip L.; and Schiff, Maurice L., 3,846,723.
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- Schiler, Frederick S., to Portage Machine Company. Recirculating ball flat way bearing assembly. 3,845,993, Cl. 308-6.000.
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  - Gooch, Beverley R.; and Schiller, Edward, 3,845,550.
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  - Hofer, Wolfgang; Schliebs, Reinhard; Schmidt, Robert Rudolf; and Eue, Ludwig, 3,846,513.
- Schmaling, Roderick N.: *See—*
  - Ross, William A.; Schmaling, Roderick N.; and Olson, Warren E., 3,845,713.
- Schmerling, Louis; and Vesely, Jerome A., to Universal Oil Products Company. Saturated hydrocarbon isomerization process. 3,846,503, Cl. 260-666.00p.
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- Schmidt, Frederick A.; and Carlson, Oscar N., to United States of America, Atomic Energy Commission. Method for preparing scandium metal. 3,846,121, Cl. 75-62.000.
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  - Hofer, Wolfgang; Schliebs, Reinhard; Schmidt, Robert Rudolf; and Eue, Ludwig, 3,846,513.
- Schmidt, Willi Johann; and Lumb, Hugo, to Kalle Aktiengesellschaft. Winding machine. 3,845,915, Cl. 242-68.400.
- Schmitz, Lawrence S., to Westinghouse Electric Corporation. Programmable sequential logic circuit. 3,846,756, Cl. 340-147.0md.
- Schnee, Wilhelm: *See—*
  - Hollweck, Walter; Schnee, Wilhelm; Eberl, Karlheinz; and Wagner, Kurt, 3,845,661.
- Schneider, Irwin, to United States of America, Navy. Technique for information storage using anisotropic color centers in alkali halide crystals. 3,846,764, Cl. 340-173.0ls.
- Schneider, Johannes; and Pungs, Wolfgang, to Dynamit Nobel Aktiengesellschaft. Polyamide shock absorber piston from terephthalic acid and branched diamine. 3,846,379, Cl. 260-78.00s.
- Schnetger, Jochen, to Bayer Aktiengesellschaft. Process for the vulcanization and expansion of polychloroprene rubber with azodicarbonamide. 3,846,350, Cl. 260-2.50h.
- Schnick, Arthur W.: *See—*
  - Petrucci, Raymond M.; and Schnick, Arthur W., 3,846,307.
- Schnoring, Hildegard: *See—*
  - Winter, Gerhard; Mansmann, Manfred; Schon, Nikolaus; and Schnoring, Hildegard, 3,846,527.
- Schofield, John A., to Union Carbide Corporation. Azeotropic composition. 3,846,327, Cl. 252-170.000.
- Schold, George R. Apparatus for dispersing finely divided solid particles in a liquid vehicle. 3,845,938, Cl. 259-8.000.
- Scholle, George L., to Compucolor, Incorporated. Method of making an envelope containing a separate enclosure sheet. 3,845,698, Cl. 93-61.00r.
- Scholtholt, Josef: *See—*
  - Raabe, Thomas; Stachel, Adolf; Scholtholt, Josef; and Nitz, Rolf-Eberhard, 3,846,470.
- Schon, Nikolaus: *See—*
  - Winter, Gerhard; Mansmann, Manfred; Schon, Nikolaus; and Schnoring, Hildegard, 3,846,527.
- Schrader, Gerhard; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. O-alkyl-O-[3- (n-alkyl-carbamoyl)-benzaldoxime)-(thiono) (thiol)phosphoric (phosphonic) acid esters. 3,846,514, Cl. 260-938.000.
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- Schreiber, Berthold: *See—*
  - Schreiber, August; Schreiber, Erhard; and Schreiber, Berthold, 3,846,305.
- Schreiber, Erhard: *See—*
  - Schreiber, August; Schreiber, Erhard; and Schreiber, Berthold, 3,846,305.
- Schroder, Eberhard: *See—*
  - Albrecht, Rudolf; Kessler, Hans-Joachim; and Schroder, Eberhard, 3,846,428.
- Schroder, Horst: *See—*
  - Halliger, Leonhard; and Schroder, Horst, 3,846,034.

- Schroder, Johann, to U.S. Philips Corporation. Heat accumulator. 3,845,625, Cl. 60-524.000.
- Schroeder, Harold H.: *See—*
  - Erhart, Francis J.; and Schroeder, Harold H., 3,845,739.
- Schromm, Kurt: *See—*
  - Mentrup, Anton; Zeile, Karl; Danneberg, Peter; Schromm, Kurt; Guenard, Jeanette; Renth, Ernst-Otto; and Stotzer, Harry, 3,846,549.
- Schulin, Gotthilf, to Stihl, Andreas, Maschinenfabrik. Portable implement, especially motor chain saw. 3,845,827, Cl. 173-162.000.
- Schultz, Fritz, to Farbenfabriken Bayer Aktiengesellschaft. Sparingly-soluble kallikrein-inactivator derivative and processes involving said derivative. 3,846,544, Cl. 424-95.000.
- Schultz, George: *See—*
  - Dziki, Michael M.; Schultz, George; and Markow, Elliott W., 3,846,702.
- Schuppler, Emil: *See—*
  - Horst, Wilfried; Schuppler, Emil; and Santen, Horst, 3,845,803.
- Schwarz, Herbert, to Farbenfabriken Bayer Aktiengesellschaft. Separation and purification of crude 1,4-dicyano-2-butene. 3,846,471, Cl. 260-465.80r.
- Schwarz, Karl E.; and Yeman, Donald E., to BMT Manufacturing Corporation. Helical screw-type conveyor. 3,845,855, Cl. 198-213.000.
- Schwarz, Meyer; Sonnet, Philip E.; and Wakabayashi, Nobel, to United States of America, Agriculture. Arthropod maturation inhibitors. 3,846,451, Cl. 260-348.00a.
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- Schwarz, Werner. Apparatus for comminuting trash. 3,845,907, Cl. 241-36.000.
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- Scott, Charles E., to Mallory, P. R., & Co., Inc. Solid-state timer switch providing AC power to a load for a predetermined time after a main source of power is removed. 3,846,648, Cl. 307-293.000.
- Scott Paper Company: *See—*
  - Vasilyadis, Kosta O., 3,846,158.
  - Wade, Gordon E., 3,846,526.
- Scott, William B.; and Sawvell, Roger V., to Whitney, W. A., Corporation. Hydraulic punch press with mechanism for adjusting stripper. 3,845,680, Cl. 83-146.000.
- Scrimshaw, Marvin Seymour: *See—*
  - Hill, Eugene Emerson; and Scrimshaw, Marvin Seymour, 3,846,745.
- Seecamp, Louis W., to Mossberg, O. F., & Sons, Inc. Sear-disconnector for firearms. 3,845,688, Cl. 89-146.000.
- Seeliger, Wolfgang; and Hesse, Karl-Dieter, to Chemische Werke Huls Aktiengesellschaft. 4H-5,6-Dihydro-1,3-oxazines. 3,846,419, Cl. 260-244.00r.
- Seibert, Gerhard; and Pitowski, Hans-Jurgen, to Akzo N.V. Process for producing a soft, drapable artificial leather. 3,846,156, Cl. 117-63.000.
- Seiko Koki Kabushiki Kaisha: *See—*
  - Kitai, Kiyoshi; Nakamura, Yukio; Ishida, Hiroaki; and Nagaoka, Shinji, 3,846,815.
- Sekine, Jiro, to Fuji Photo Film Co., Ltd. Automatic exposure control device for photographic cameras. 3,846,807, Cl. 354-42.000.
- Selco Mining Corporation Limited: *See—*
  - Otte, Hubert Josef; and Roosman, Gosta, 3,845,569.
- Selector-Micro Company Limited: *See—*
  - Malyon, Brian R., 3,846,686.
- Seltzer, Raymond; and Gordon, David A., to Ciba-Geigy Corporation. 4,6-Bis(alkaryl)-s-triazines. 3,846,422, Cl. 260-248.0cs.
- Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, to Bayer Aktiengesellschaft. Imines, their preparation and their pharmaceutical use. 3,846,413, Cl. 260-240.00g.
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- Senturk, Necdet; and Aschenbrenner, Frank A., to Electrospin Corporation, mesne. Method and apparatus for producing composite yarn. 3,845,611, Cl. 57-5.000.
- Sephton, Hugo H. Interface enhancement applied to evaporation of liquids. 3,846,254, Cl. 203-11.000.
- Sergeeva, Ljudmila Semenovna: *See—*
  - Fedjukin, Dmitry Lvovich; Sergeeva, Ljudmila Semenovna; Bakharev, Andrei Nikolaevich; Gorlina, Inna Leonidovna; Aronov, Anatoly Izrailevich; Kravets, Arkady Timofeevich; Korochkin, Petr Evmenovich; and Titov, Alexei Ivanovich, 3,846,611.
- Seto, David K.: *See—*
  - Duncan, Bernard F.; and Seto, David K., 3,846,259.
- Seymour, Samuel L., to PPG Industries, Inc. Handling glass sheets for shaping and cooling. 3,846,104, Cl. 65-104.000.
- Seymour, Samuel L., to PPG Industries, Inc. Tempering glass sheets. 3,846,106, Cl. 65-114.000.
- Shackle, Peter William: *See—*
  - Riley, Terence James; and Shackle, Peter William, 3,846,822.
- Shaffer, Edward C., to Minnesota Mining & Manufacturing Company. Film-holder for exposing X-ray film. 3,846,635, Cl. 250-480.000.
- Shakhov, Eduard Konstantinovich: *See—*
  - Martyashin, Alexandr Ivanovich; Morozov, Andrei Elizarovich; Shakhov, Eduard Konstantinovich; and Shlyandin, Viktor Mikhailovich, 3,846,699.
- Shallbetter, George H., to States Electric Manufacturing Co. Overhead electrical switching device. 3,846,604, Cl. 200-168.00d.
- Shamp, Donald E.: *See—*
  - Montgomery, Eldwin C.; Shamp, Donald E.; and Swillinger, Francis L., 3,846,109.
- Shang, Jer-Yu; and Wynkoop, Raymond, to Sun Research and Development Co. Ammoxidation process. 3,846,473, Cl. 260-465.00c.
- Shank, Wayne C., to Avco Corporation. Turbomachine assembly. 3,846,044, Cl. 416-199.000.
- Shapcott, Nigel G.: *See—*
  - Rogers, Peter C.; Harrison, Frank B.; Hipkiss, Richard C.; Sunasky, Joseph; and Shapcott, Nigel G., 3,845,718.
- Shapiro, L. Dennis: *See—*
  - Galvin, Aaron A.; and Shapiro, L. Dennis, 3,846,778.
- Shapland, James T., to United States Steel Corporation. Refractory pouring tube. 3,845,943, Cl. 266-38.000.
- Sharp, David E.: *See—*
  - Sharp, James G.; and Sharp, David E., 3,845,610.
- Sharp, Ellis Alvin; and Dolan, Courtney F., to Chrysler Corporation. Full time slip controlled four wheel drive. 3,845,671, Cl. 74-710.500.
- Sharp, James G.; and Sharp, David E. Blade construction for fruit harvesting machine. 3,845,610, Cl. 56-328.00r.
- Sharp Kabushiki Kaisha: *See—*
  - Kyotani, Hirosi; Murono, Yositaka; and Siojima, Katuhiko, 3,846,802.
  - Yoshida, Kunio; and Tsugawa, Kenjiro, 3,846,626.
- Sharp, Shelby P.; and Sudduth, Lamar F., to Amoco Production Company. Method for removing elemental sulfur from wells and flowlines. 3,846,311, Cl. 252-8.55b.
- Shatterproof Glass Corporation: *See—*
  - Bunk, Albert R.; and Bennett, Bailey, 3,846,370.
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  - Popeil, Samuel J.; and Shaw, David V., 3,845,518.
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  - Petrella, Joseph R.; Shaw, John N.; and Peternel, Jacob R., 3,846,105.
- Shell Oil Company: *See—*
  - Lintzenich, Vincent G., 3,846,317.
- Shelton, Winston L.; and Newman, Joseph L., to Quik-Die, Inc. Apparatus for manufacturing sheet-cutting female dies. 3,845,812, Cl. 164-335.000.
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  - Evans, Gordon Homer; and Shennan, Jean Lindsay, 3,846,238.
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  - D'Angelo, Antonio Joseph; Mageli, Orville Leonard; and Sheppard, Chester Stephen, 3,846,396.
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- Sherman, Marshall L.: *See—*
  - Zimmerman, Gilbert A.; and Sherman, Marshall L., 3,846,195.
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  - Nakashima, Tsuyoshi; and Shibata, Tsutomu, 3,846,098.
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  - Blum, Joseph M.; and Shih, Kwang K., 3,846,191.
- Shih-Yuan Ro, Rolland, to Du Pont de Nemours, E. I., and Company. Masterbatching elastomer blends. 3,846,371, Cl. 260-42.330.
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  - Inai, Yuichi; Okazaki, Kanzo; Shimada, Katsutoshi; Kagei, Kengo; and Bessho, Motoaki, 3,846,480.
- Shimada, Nobuyoshi: *See—*
  - Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, 3,846,400.
- Shimazaki, Toshikazu: *See—*
  - Okawara, Yasuo; Shimazaki, Toshikazu; and Mizutani, Nagao, 3,846,581.

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  - Martyashin, Alexandr Ivanovich; Morozov, Andrei Elizarovich; Shakhov, Eduard Konstantinovich; and Shlyandin, Viktor Mikhailovich, 3,846,699.
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  - Korotenko, Boris Evdokimovich; Korotenko, Vitaly Borisovich; and Shtepa, Pavel Korneevich, 3,846,653.
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- Siegmann, Arnon, to Allied Chemical Corporation. Method of producing polyethylene terephthalate fibers. 3,846,377, Cl. 260-75.00t.
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  - Holzwarth, Herbert, 3,846,588.
- Siemens Aktiengesellschaft: *See—*
  - Dernbach, Berthold; Jurisch, Ewald; and Landgraf, Helmut, 3,845,879.
  - Franz, Karl; and Christigau, Hermann, 3,846,654.
  - Hoffmann, Fritz, 3,846,602.
  - Kuhl, Dieter, 3,846,176.
  - Murrmann, Helmuth, 3,846,192.
  - Olsson, Sven-Gunnar Sigvard, 3,845,756.
  - Romandi, Denes, 3,846,633.
  - Silbermann, Erich, 3,846,576.
  - Wagner, Jakob, 3,845,721.
  - Warden, Hans Erik; Kindvall, Frank; and Berg, Carls Olof, 3,845,946.
- Siemon Company, The: *See—*
  - McLain, Travis R., 3,846,590.
- Sievers, Robert E. Rare earth complexes as nuclear magnetic resonance shift reagents. 3,846,333, Cl. 252-408.000.
- Sigg-Grutter, Trudi: *See—*
  - Wild, Jost; and Sigg-Grutter, Trudi, 3,846,498.
- Sigl, Edward D.: *See—*
  - Herr, Robert W.; Sigl, Edward D.; and Aksamit, Marion W., 3,845,850.
- Silantiev, Viktor Sergeevich: *See—*
  - Shubin, Vladimir Nikolaevich; Silantiev, Viktor Sergeevich; Khlyntsev, Alexandr Sergeevich; and Barsova, Antonina Petrovna, 3,845,648.
- Silbermann, Erich, to Siemens Aktiengesellschaft. Partition with openings for plugging through voltage-carrying contacts. 3,846,576, Cl. 174-67.000.
- Sim-Chem Limited (formerly Simon-Carves Chemical Engineering Ltd.): *See—*
  - Thompson, Allen, 3,846,706.
- Simmons, George A., to Owens-Illinois, Inc. Glass-ceramic and process therefor. 3,846,099, Cl. 65-30.000.
- Simmons, William A., Jr.: *See—*
  - Aldrich, Ralph E.; and Simmons, William A., Jr., 3,846,014.
- Simon, Stefan: *See—*
  - Friese, Axel; and Simon, Stefan, 3,845,767.
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- Sims, Marc J., to Chevron Research Company. Lubricant composition containing dispersed alkali metal borate. 3,846,313, Cl. 252-18.000.
- Sinclair, Clive Marles. Electronic digital displays. 3,846,784, Cl. 340-336.000.
- Sinding, John R. Bottle with an inverted position support and sealing ring. 3,845,884, Cl. 222-173.000.
- Singer Company, The: *See—*
  - McCanney, Neil R., 3,845,572.
  - Rockwell, Jerry E., 3,846,003.
- Singleton, Albert. Plating barrel with spiral sides. 3,846,271, Cl. 204-213.000.
- Siojima, Katuhiko: *See—*
  - Kyotani, Hirosi; Murono, Yositaka; and Siojima, Katuhiko, 3,846,802.
- Sisk, Francis J., to Westinghouse Electric Corporation. Separating phenol from phenol-water subazeotrope by treatment with brine. 3,846,255, Cl. 203-18.000.
- SKF Industrial Trading and Development Company, B.V.: *See—*
  - Halliger, Leonhard; and Schroder, Horst, 3,846,034.
- Skil Corporation: *See—*
  - Beisch, Hanspeter E., 3,845,826.
- Skurkiss, Peter Kenny: *See—*
  - MacArthur, Donald Morley; and Skurkiss, Peter Kenny, 3,846,196.
- Slagle, William E., to Lincoln Hall Research Co. Liquor supply for an automated liquor dispensing system. 3,845,787, Cl. 137-571.000.
- Slobod, Robert L.; and Burcik, Emil J. Method of sealing coal against methane emission. 3,845,632, Cl. 61-36.00r.
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- Smith, A. O., Corporation: *See—*
  - Cohen, David J., 3,845,843.
  - Lykes, Robert E., 3,846,652.
- Smith, Arthur G.: *See—*
  - Huff, John C.; Ludwig, Frank A.; and Smith, Arthur G., 3,846,182.
- Smith, Dean B. Retention suture device and method. 3,845,772, Cl. 128-335.000.
- Smith, Herman P.: *See—*
  - Keene, Charles I., 3,846,042.
- Smith, Joseph L., Jr.; and Thullen, Philip, to Massachusetts Institute of Technology. Relatively rotatable cryogenic transfer system. 3,845,639, Cl. 62-505.000.
- Smith, Lawrence S. Slope indicator and roll-over warning indicator for earth moving equipment. 3,846,781, Cl. 340-267.00r.
- Smith, Norman Douglas Patrick: *See—*
  - Osmond, Desmond Wilfrid John; Smith, Norman Douglas Patrick; and Waite, Frederick Andrew, 3,846,090.
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- Smith, Randal M., to PPG Industries, Inc. Float glass bath having submerged extension tiles. 3,846,108, Cl. 65-182.00r.
- Smith, Rex L.: *See—*
  - Love, Roy E.; and Smith, Rex L., 3,846,010.
- Smith, Russell D.: *See—*
  - Ebeling, Harold O.; and Smith, Russell D., 3,846,066.
- Smith, William R., to Textron, Inc. Turret lathe. 3,845,532, Cl. 29-40.000.
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- Smollinger, Carl W., to Bethlehem Steel Corporation. Vibration damped fitting. 3,846,033, Cl. 403-220.000.
- Snam Progetti S.p.A.: *See—*
  - Perrotti, Emilio; and Cipriant, Gioacchino, 3,846,468.
- Snape, Edwin: *See—*
  - Larson, Floyd Gotthard, Jr.; and Snape, Edwin, 3,846,344.
- Sniker, Dagnia Yanovna: *See—*
  - Giller, Solomon Aronovich; Lazdinsh, Arvid Avgustovich; Veinberg, Artur Karlovich; Sniker, Dagnia Yanovna; Knunyants, Ivan Ljudvigovich; German, Lev Solomonovich; and Kazmina, Natalya Borisovna, 3,846,429.
- Snodgrass, Hugh E.: *See—*
  - Lauchlan, Robert L.; and Snodgrass, Hugh E., 3,846,510.
- Sobajima, Masaru; and Kato, Jinichi, to Nippon Kogaku Kabushiki Kaisha. Measurement microscope. 3,846,008, Cl. 350-10.000.
- Societa Italiana Resine S.I.R. S.p.A.: *See—*
  - Di Fiore, Lucio; and Calcagno, Benedetto, 3,846,334.
- Societe Anonyme dite: Aquitaine Total Organico Tour Aquitaine : *See-*
  - Morival, Genevieve, 3,846,357.
- Societe Anonyme dite: Hexachimie: *See—*
  - Cognacq, Jean-Claude, 3,846,436.
- Societe Anonyme dite: L'Oreal: *See—*
  - Handjani, Rose-Marie, nee Vila; and Zabotto, Arlette, nee Arribau, 3,846,556.
  - Lachampt, Felix; Viout, Andre; and Vanlerberghe, Guy, 3,846,546.
- Societe des Aciers Fins de l'Est: *See—*
  - Pomey, Jacques, 3,845,809.
- Societe Europeene de Propulsion: *See—*
  - Maistre, Michel Antoine Jules, 3,846,215.
- Societe Honeywell Bull (Societe Anonyme): *See—*
  - Arhan, Roger Pierre; and Lacroix, Andre Roger Camille, 3,846,681.
  - Jossic, Alain Francois, 3,846,684.
- Societe Industrielle Honeywell Bull (Societe Anonyme): *See—*
  - Gosset, Cyrille, 3,846,758.
- Societe Internationale de Mecanique Industrielle, S.A.: *See—*
  - Mincuzzi, Antonio, 3,846,045.
- Societe Nationale des Poudres et Explosifs: *See—*
  - Leclercq, Marius; Morin, Daniel Louis; Damien, Michael Henri; and Andreani, Monique Andree, 3,846,224.
- Sokolov, Alexandr Yakovlevich: *See—*
  - Zhislin, Yakov Moiseevich; Kirkunov, Alexandr Eliseevich; Sokolov, Alexandr Yakovlevich; Ivanoz, Alexei Ivanovich; Leikin, Albert Yakovlevich; Grinberg, Efim Naumovich; Vinogradov, Vyacheslav Dmitrievich; Yanovskaya, Zinaida Solomonovna; and Bykov, Valery ndreevich, 3,845,704.
- Solar, Serge: *See—*
  - Gandon, Louis; and Solar, Serge, 3,846,117.
- Solheim, Karsten. Gold club indicia. 3,845,955, Cl. 273-77.00a.
- Somfai, Eva: *See—*
  - Huhn, Magda; Toth, Geza; Resofszki, Gabor; Somfai, Eva; and Horvath, Gabor, 3,846,407.
  - Matyas, Jakab; Petroczy, Istvan; Somfai, Eva; and David, Agoston, 3,846,567.
- Sommer, Peter J., to American Gage & Machine Company. Gage block. 3,845,560, Cl. 33-168.00r.
- Sonnet, Philip E.: *See—*
  - Schwarz, Meyer; Sonnet, Philip E.; and Wakabayashi, Nobel, 3,846,451.
  - Schwarz, Meyer; Sonnet, Philip E.; and Wakabayashi, Nobel, 3,846,458.
- Sorimachi, Mitsuo, to Tokyo Hoshiden Kabushiki Kaisha. Current limiter. 3,846,729, Cl. 337-343.000.

- Sortex Company of North America, Inc.: *See—*
  - Chapman, Robert R., 3,845,705.
  - Gillespie, Robert M., 3,845,703.
- Souchek, Dwaine G.: *See—*
  - Needham, Robert F.; and Souchek, Dwaine G., 3,845,876.
- Souffie, Robert David: *See—*
  - Counceller, John D.; De Capite, Robert T.; Burpulis, John Samuel; and Souffie, Robert David, 3,846,057.
- Soukeras, John E. Safe personal effects pouches and strap means for under arm or shoulder wear. 3,845,522, Cl. 24-74.00a.
- Soukup, Victor G.: *See—*
  - Horst, Raymond W.; and Soukup, Victor G., 3,846,348.
- South Bend Range Corporation: *See—*
  - Rosenberg, Robert B.; Nesbitt, John D.; and Fejer, Mark E., 3,846,565.
- Sowers, Blaine E.; and Hunnicutt, Vaughn E., to North American Van Lines, Inc. Loading and unloading device. 3,845,869, Cl. 212-65.000.
- S.p.A. Luigi Franchi: *See—*
  - Zanoni, Ernesto, 3,845,689.
- Spaan, Harry C., to Carando Machine Works. Die-stabilizing mechanism for a split flanging die unit. 3,845,656, Cl. 72-392.000.
- Spangemacher, Kurt, to Maschinenbau-Aktiengesellschaft Balcke. Method of preventing the formation of clouds of gas or smoke on cooling towers, and cooling tower for carrying out the method. 3,846,519, Cl. 261-151.000.
- Spangenberg, William C.: *See—*
  - Nordyke, John S.; and Spangenberg, William C., 3,846,148.
- Spangler, Edward O.: *See—*
  - Lillig, Floyd A.; and Spangler, Edward O., 3,845,906.
- Spanjersberg, Arie Adriaan, to De Staat der Nederlanden, Ten deze Vertegenwoordigd Door de Directeur-General der Posterijen, Telegrafie en Telefonie. Automatic address detection system. 3,846,753, Cl. 340-146.30d.
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  - Davis, William W., 3,846,705.
  - Horovitz, Beatrice; and Savage, Michael Gary, 3,846,835.
- Spiegelberg, Hans: *See—*
  - Edenhofer, Albrecht; and Spiegelberg, Hans, 3,846,431.
- Spiess, C. F., & Sohn: *See—*
  - Perkow, Werner, 3,846,114.
- Sprague Electric Company: *See—*
  - Bernard, Walter J., 3,846,260.
- Spray Steelmaking Ltd.: *See—*
  - Mayorcas, Reginald; and Hawkes, David Alec, 3,846,120.
- Sprecher & Schuh AG: *See—*
  - Roth, Adrian W.; and Amsler, Joachim, 3,845,543.
- Springer, Robert H.: *See—*
  - Kobe, Joze; Springer, Robert H.; and O'Brien, Darrell E., 3,846,423.
- Squibb, E. R., & Sons, Inc.: *See—*
  - Atwal, Manmohan Singh; Watts, Daniel Jay; and Weisenborn, Frank Lee, 3,846,417.
  - Cioffi, Francis J., 3,846,075.
  - Hoehn, Hans; and Denzel, Theodor, 3,846,437.
  - Treuner, Uwe; and Breuer, Hermann, 3,846,418.
- S.R.C. Laboratories, Inc.: *See—*
  - Mocarski, Zenon R., 3,845,904.
- St. Cyr, David R.: *See—*
  - Bullard, Herbert L.; St. Cyr, David R.; and Osborn, Robert A., 3,846,352.
- Stachel, Adolf: *See—*
  - Raabe, Thomas; Stachel, Adolf; Scholtholt, Josef; and Nitz, Rolf-Eberhard, 3,846,470.
- Stachel, Ingeburg Lydia Katharine: *See—*
  - Raabe, Thomas; Stachel, Adolf; Scholtholt, Josef; and Nitz, Rolf-Eberhard, 3,846,470.
- Stadler, Paul; Stutz, Peter; and Guttmann, Stephan, to Sandoz Ltd., a/k/a Sandoz AG. Process for preparing ergot alkaloids. 3,846,433, Cl. 260-285.500.
- Stafford, Neil S.: *See—*
  - Jacobs, Justin M., Jr.; and Stafford, Neil S., 3,845,723.
- Stalego, Joseph P., to Owens-Corning Fiberglas Corporation. High temperature insulation-binder compositions. 3,846,225, Cl. 161-175.000.
- Stalker Corporation, The: *See—*
  - Stalker, Edward A., 3,846,039.
- Stalker, Edward A., to Stalker Corporation, The. Axial flow compressor. 3,846,039, Cl. 415-206.000.
- Stalker, Gerald C.; and Pearce, Roscoe L., to Dow Chemical Company, The. Purification of oxygenated organic compounds. 3,846,450, Cl. 260-340.200.
- Stamicarbon N.V.: *See—*
  - Duynstee, Eduard F. J.; and Mevis, Maria E. H. A., 3,846,266.
- Standard Car Truck Company: *See—*
  - Gierlach, Robert W., 3,845,725.
- Standard Oil Company: *See—*
  - Pappas, Peter G.; Edmisten, Walter C.; and Von Levern, Hobe Schroeder, 3,846,092.
  - Tulumello, Angelo; and Kapff, Sixt Frederick, 3,846,074.
- Standard Oil Company (Indiana): *See—*
  - Hensley, Albert L., Jr.; and Nevitt, Thomas D., 3,846,342.
- Standard Spray and Chemical Company: *See—*
  - Pearson, Melton T., 3,846,116.
- Stanford Research Institute: *See—*
  - Busma, John H., Jr.; and Romander, Curtis M., 3,846,206.
- Stanton, Garth M.; and Dreher, John L., to Chevron Research Company. Grease thickened with polyurea metal salts and alkaline earth metal aliphatic monocarboxylate. 3,846,315, Cl. 252-18.000.
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- Stapfer, Christian H., to Cincinnati Milacron Chemicals, Inc. Organotin mercaptocarboxylates. 3,846,459, Cl. 260-429.700.
- Starikova, Ljudmila Anatolievna: *See—*
  - Jurchenko, Nikolai Petrovich; Chubarov, Evgeny Arkadievich; Pisarenko, Ivan Nikolaevich; and Starikova, Ljudmila Anatolievna, 3,846,613.
- Starr Corporation, The: *See—*
  - Carr, Hugh G.; and Steffen, William L., 3,845,744.
- States Electric Manufacturing Co.: *See—*
  - Shallbetter, George H., 3,846,604.
- Stauffer Chemical Company: *See—*
  - Fancher, Llewellyn W., 3,846,112.
  - Freiberg, Ashley Herman; and Broadbent, David James, 3,846,547.
  - Obrecht, Robert Paul, 3,846,253.
  - Pallos, Ferenc Marcus, 3,846,466.
- Stauffer, Harold Fisher, Jr.: *See—*
  - Welstead, William John, Jr.; and Stauffer, Harold Fisher, Jr., 3,846,477.
- Stauffer, John D.: *See—*
  - Chrisman, Willis L.; Stauffer, John D.; and Arnaudin, Edwin H., Jr., 3,846,528.
- Stauffer, Norman L., to Honeywell Inc. Sensitivity balancing apparatus for photo responsive detecting circuits. 3,846,629, Cl. 250-201.000.
- Stauffer, Norman L., to Honeywell Inc. Recording and playback apparatus. 3,846,830, Cl. 360-56.000.
- Stauter, John C.: *See—*
  - McGuire, Stephen E.; Kennedy, Carl D.; and Stauter, John C., 3,845,862.
- Ste dite France-Couleur: *See—*
  - Casset, Georges; Driffort, Jean-Pierre; and Lebel, Pierre, 3,846,659.
- Steffen, William L.: *See—*
  - Carr, Hugh G.; and Steffen, William L., 3,845,744.
- Stein, Edward H., to Hamilton of Indiana, Inc., mesne. Chalkboard usable as a rear projection screen. 3,846,011, Cl. 350-117.000.
- Stepanov, Vasily Nikolaevich: *See—*
  - Schekin, Vladimir Ivanovich; and Stepanov, Vasily Nikolaevich, 3,845,806.
- Stepanov, Vladimir Anatolievich: *See—*
  - Dyatlov, Mikhail Konstantinovich; Ostapchenko, Evgeny Petrovich; Stepanov, Vladimir Anatolievich; and Kulikov, Jury Nikolaevich, 3,846,716.
- Sternbach, Leo Henryk: *See—*
  - Ning, Robert Ye-Fong; and Sternbach, Leo Henryk, 3,846,410.
- Stevens, Franklyn, Jr., to Cohn, Sigmund, Corporation. Gold alloy composition. 3,846,125, Cl. 75-165.000.
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- Stihl, Andreas, Maschinenfabrik: *See—*
  - Schulin, Gotthilf, 3,845,827.
- Stiles, Claude J.: *See—*
  - Baum, Henry T.; and Stiles, Claude J., 3,846,073.
- Stine, John L. Expandable cover system. 3,845,591, Cl. 52-67.000.
- Stjernstrom, Nils Erik: *See—*
  - Bondesson, Ulf Goran; Carlson, Lars Anders Fritz; Hedbom, Christina; Magnusson, Harry Olof; and Stjernstrom, Nils Erik, 3,846,445.
- Stokes, John H.; and Cousins, Alexander G., to Sanitas Company Limited, The. Treatment of sewage. 3,846,301, Cl. 210-60.000.
- Stotzer, Harry: *See—*
  - Mentrup, Anton; Zeile, Karl; Danneberg, Peter; Schromm, Kurt; Guenard, Jeanette; Renth, Ernst-Otto; and Stotzer, Harry, 3,846,549.
- Strange, John P., to Mine Safety Appliances Company. Centrifugal filtering apparatus. 3,846,321, Cl. 210-512.000.
- Stratmann, Josef: *See—*
  - Knappstein, Johannes; Fritzsche, Helmut; and Stratmann, Josef, 3,846,250.
- Straujups, John E., to Birch Brothers, Inc. Method and apparatus for cutting a web of material in a web winding machine and air lapping a cut end of the material about a winding core in the machine. 3,845,914, Cl. 242-56.00r.
- Streeter, Daniel D., Jr. Reinforcement mat for tire. 3,846,216, Cl. 161-49.000.
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- Strohwald, Rainer: *See—*

  - DuMont, Hans-Christoph; Strohwald, Rainer; and Reum, Helmut, 3,846,801.
- Stroud, Jeff A.: *See—*
  - Abbott, Bennie J.; and Stroud, Jeff A., 3,845,516.
- Strube, Herbert Eugene: *See—*
  - Willhite, William, Jr.; and Strube, Herbert Eugene, 3,845,682.
- Struttmann, Hilarius S.: *See—*
  - Zimmer, George A.; and Struttmann, Hilarius S., 3,845,999.
- Studwell, Ernest E.: *See—*
  - Roe, Kenneth W.; Studwell, Ernest E.; and Cooke, Robert E., 3,846,046.
- Sturm, Elmar: *See—*
  - Bader, Jorg; Hambock, Heinz; Sturm, Elmar; and Weiss, Anton Georg, 3,846,438.
- Stutz, Peter: *See—*
  - Stadler, Paul; Stutz, Peter; and Guttmann, Stephan, 3,846,433.
- Su, Aaron Chung Liong, to Du Pont de Nemours, E. I., and Company. Chain saturated copolymers of ethylene, alph monoolefins, and trienes containing side-chains with non-terminal conjugated unsaturation. 3,846,387, Cl. 260-80.780.
- Suck, Bernhard: *See—*
  - Friedenreich, Heinrich; Suck, Bernhard; and Reitsch, Juergen, 3,845,908.
- Suda, Tetuo: *See—*
  - Yoshida, Soushi; Iwama, Atsuaki; Okada, Takashi; and Suda, Tetuo, 3,846,058.
- Sudduth, Lamar F.: *See—*
  - Sharp, Shelby P.; and Sudduth, Lamar F., 3,846,311.
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  - Harada, Taro; Ito, Nobuo; and Ohishi, Kanemitsu, 3,846,349.
  - Hirano, Masachika; Mukai, Kunio; Takeda, Hisami; and Tanaka, Katsutoshi, 3,846,552.
  - Ito, Ikoh; Ito, Shokiro; and Emura, Tomoyuki, 3,846,390.
  - Mine, Akihiko; Fujinami, Akira; Kameda, Nobuyuki; Hino, Naganori; Satomi, Takeo; and Tateishi, Kohshi, 3,846,441.
- Sumitomo Chemical Company, Ltd.: *See—*
  - Kitamura, Shigeyoshi; Hirai, Hajime; Okuno, Yositosi; and Fujimoto, Keimei, 3,846,500.
- Summagraphics Corporation: *See—*
  - Brenner, Alfred E., 3,846,580.
- Sumrell, Gene: *See—*
  - Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,846,449.
- Sun Oil Company of Pennsylvania: *See—*
  - Brown, Ronald W.; and Reynolds, Ronald W., 3,846,088.
- Sun Research and Development Co.: *See—*
  - Raymond, Richard L., 3,846,290.
  - Shang, Jer-Yu; and Wynkoop, Raymond, 3,846,473.
- Sunakawa, Kiyoshi: *See—*
  - Yamada, Takao; and Sunakawa, Kiyoshi, 3,846,817.
- Sunasky, Joseph: *See—*
  - Rogers, Peter C.; Harrison, Frank B.; Hipkiss, Richard C.; Sunasky, Joseph; and Shapcott, Nigel G., 3,845,718.
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  - Edgar, William D.; Sustarsic, John D.; and Kinzler, Raymond C., 3,846,252.
- Sutton, Robert A.: *See—*
  - Douglas, Carl L.; Evans, William J.; Kiess, Ronald J.; and Sutton, Robert A., 3,845,875.
- Suzuki, Hiroshi: *See—*
  - Takeya, Kenji; Suzuki, Hiroshi; and Ichimaru, Tadashi, 3,846,373.
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  - Buzhinsky, Igor Mikhailovich; Gapontsev, Valentin Pavlovich; Zhabotinsky, Mark Efremovich; Izyneev, Anatoly Andreevich; Koryagina, Elizaveta Ivanovna; Kravchenko, Valery Borisovich; Rudnitsky, Jury Petrovich; Sverchkov, Evgeny Ivanovich; Aleseev, Nikolai Eimovich; and Davydov, Boris Lèonidovich, 3,846,142.
- Swan Corporation: *See—*
  - Moore, John W., 3,845,600.
- Sweetheart Plastics, Inc.: *See—*
  - MacDaniel, Gene; and McElvy, Howell T., 3,846,207.
- SWF-Spezialfabrik fur Aulozubehor Gustav Rou GmbH: *See—*
  - Kohler, Alfred, 3,846,000.
- Swillinger, Francis L.: *See—*
  - Montgomery, Eldwin C.; Shamp, Donald E.; and Swillinger, Francis L., 3,846,109.
- Sybron Corporation: *See—*
  - Ernst, Robert R., 3,846,242.
  - White, Jack Mort, 3,846,804.
- Syntex (U.S.A.) Inc.: *See—*
  - Marx, Michael, 3,846,409.
- Syntex (U.S.A.) mesne: *See—*
  - Crabbe, Pierre; and Guzman, Angel, 3,846,475.
- Syntex Corporation: *See—*
  - Dyson, Norman H., 3,846,484.
- Szabo, Suzanne: *See—*
  - Widauer, Josef Olav; Lang, Konrad; Baum, Laszlo; and Szabo, Suzanne, 3,846,411.
- Sze, Morgan C.; and Reilly, James W., to Lummus Company, The. Production of jet fuel. 3,846,278, Cl. 208-57.000.
- Szekely, Andrew G.: *See—*
  - Death, Frank S.; and Szekely, Andrew G., 3,846,119.
- Tabata, Yoneho, to Japan Atomic Energy Research Institute. Method for cross-linking copolymer of tetrafluoroethylene and propylene by ionizing radiation. 3,846,267, Cl. 204-159.170.
- Taguchi, Tetsuya: *See—*
  - Kiyohara, Takehiko; and Taguchi, Tetsuya, 3,846,805.
  - Nakamura, Zenzo; Uchiyama, Takashi; Taguchi, Tetsuya; and Mashimo, Yukio, 3,846,811.
- Takagi, Katsuyuki: *See—*
  - Takagi, Shigeyuki; Kawashima, Isamu; Takagi, Katsuyuki; and Hibino, Sohei, 3,846,644.
- Takagi, Shigeyuki; Kawashima, Isamu; Takagi, Katsuyuki; and Hibino, Sohei, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Intermittently driving circuit for a load such as a buzzer or a bell. 3,846,644, Cl. 307-252.00j.
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- Takahashi, Masaaki: *See—*
  - Konishi, Akio; Takahashi, Masaaki; Kimura, Fumihiko; and Toguchi, Takehisa, 3,846,331.
- Takamiya, Tadashi: *See—*
  - Takahashi, Kazuya; Sato, Mitsuya; Ohta, Kaname; and Takamiya, Tadashi, 3,846,711.
- Takanashi, Itsuo; Miyoshi, Tadayoshi; Uesaka, Koji; Miyazaki, Kenichi; and Yokokawa, Sumio, to Victor Company of Japan, Ltd. Color television signal generating apparatus. 3,846,579, Cl. 358-47.000.
- Takashima, Junihide: *See—*
  - Sakakura, Akira; Matsumoto, Fumio; Ueno, Kiyoshi; Takashima, Junihide; and Kuroki, Katuro, 3,846,187.
- Takata, Yoshinori: *See—*
  - Muto, Giichi; Takata, Yoshinori; and Hamano, Yoshimasa, 3,846,270.
- Takayama, Katsuki, to Aisin Seike Kabushiki Kaisha. Hydraulic pressure control apparatus. 3,845,992, Cl. 303-21.00f.
- Takeda Chemical Industries, Ltd.: *See—*
  - Meguro, Kanji; and Kuwada, Yutaka, 3,846,421.
  - Nakao, Yoshio; Nara, Kiyoshi; Katamoto, Kazuyoshi; Ito, Kikuo; and Ikeda, Sakashi, 3,846,240.
- Takeda, Hisami: *See—*
  - Hirano, Masachika; Mukai, Kunio; Takeda, Hisami; and Tanaka, Katsutoshi, 3,846,552.
- Takeda, Tsutomu: *See—*
  - Uesugi, Hideyuki; and Takeda, Tsutomu, 3,846,489.
- Takeshita, Shito: *See—*
  - Okumura, Shinji; Takeshita, Shito; Enei, Hitoshi; and Ninagawa, Sadayoshi, 3,846,573.
- Takeuchi, Hiroo, to Nisshin Kogyo Kabushiki Kaisha. Vacuum suspended type servo-motor. 3,845,692, Cl. 91-369.00b.
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- Takita, Tomohisa: *See—*
  - Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, 3,846,400.
- Takizawa, Minoru: *See—*
  - Horiguchi, Shojiro; Nakamura, Michiei; Nakajima, Keiji; and Takizawa, Minoru, 3,846,452.
- Tamaru, Keikichi: *See—*
  - Nojima, Isao; Tamaru, Keikichi; and Sato, Tai, 3,846,766.
- Tanaka, Hisashi: *See—*
  - Uyama, Fukuhito; Tanaka, Hisashi; and Ito, Sukenao, 3,846,383.
- Tanaka, Katsutoshi: *See—*
  - Hirano, Masachika; Mukai, Kunio; Takeda, Hisami; and Tanaka, Katsutoshi, 3,846,552.
- Tanaka, Kunihiko; Kishimoto, Teiji; and Zenno, Hisanao, to Fujisawa Pharmaceutical Co., Ltd. Derivatives of 1,2,3,4-tetrahydroisoquinoline. 3,846,432, Cl. 260-283.00s.
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- Tapper, Michael, to Burgess Pigment Company. Stable suspensions of calcined clays. 3,846,147, Cl. 106-288.00b.
- Tate, Jack F.: *See—*
  - Allen, Joseph C.; and Tate, Jack F., 3,845,820.
- Tate, John F. P. Method and system of installing precast garden steps. 3,845,598, Cl. 52-173.000.
- Tateishi, Kohshi: *See—*
  - Mine, Akihiko; Fujinami, Akira; Kameda, Nobuyuki; Hino, Naganori; Satomi, Takeo; and Tateishi, Kohshi, 3,846,441.
- Taviere, Jean Andre; and Taviere, Pascal Xavier, to Caoutchouc Industriel de Rochassieux S.A. Cushioning and vibration damping supports. 3,845,924, Cl. 248-22.000.
- Taviere, Pascal Xavier: *See—*
  - Taviere, Jean Andre; and Taviere, Pascal Xavier, 3,845,924.
- Taylor, A. C.; and Clarke, Robert W. Machine for original boring described and claimed therein. 3,845,828, Cl. 175-73.000.
- Taylor Diving & Salvage Co., Inc.: *See—*
  - Banjavich, Mark P., 3,845,893.
- Taylor's, Chas., Sons Company, The: *See—*
  - Roudabush, Ned Wright, 3,846,145.
- Technology Incorporated: *See—*
  - Trageser, James H.; and Cali, Joseph A., 3,846,746.
- Teed, Richard K.: *See—*
  - Van Deusen, George S.; and Teed, Richard K., 3,845,529.
- Teijin Limited: *See—*
  - Mifune, Akira; Katsuda, Yoshio; and Yoneda, Toyoaki, 3,846,551.
- Teldix GmbH: *See—*
  - Wehde, Heinz, 3,845,995.
- Teletype Corporation: *See—*
  - Brodrueck, Detlef A., 3,845,710.
- Telex Computer Products, Inc.: *See—*
  - Prieto, Anthony, 3,846,751.
- Temple, Alfred Charles: *See—*
  - Compoly, Albert William; and Temple, Alfred Charles, 3,846,693.
- Tenneco Inc.: *See—*
  - Offer, Robert J., 3,845,559.
- Teranishi, Masayuki: *See—*
  - Fujimoto, Yasuo; and Teranishi, Masayuki, 3,846,380.
- Tercell Corporation: *See—*
  - Martin, Hubert, 3,845,811.
- Texaco Inc.: *See—*
  - Allen, Joseph C.; and Tate, Jack F., 3,845,820.
  - Allen, Joseph C.; and Braden, William B., Jr., 3,845,821.
  - Allen, Joseph C., 3,845,823.
  - Cross, Edward A.; and Frye, Richard L., 3,846,312.
  - Crouch, William B., 3,846,095.
  - Dille, Roger M.; and Chapman, Ronald W., 3,846,087.
  - Fowler, Joe R.; and Bryan, John L., 3,845,830.
  - Hoyt, Donald L.; and Altamira, Anthony Francis, 3,845,817.
  - Johnson, Everett M., 3,845,792.
  - MacLean, John P.; and Jones, Henry B., 3,846,080.
  - McEvers, William R., Jr.; Cox, Percy T.; and Richter, Albert P., Jr., 3,845,837.
  - McIntosh, Herbert A., 3,846,277.
  - Riedl, Peter A., 3,846,499.
  - Walker, Clarence O., 3,846,276.
- Texas Instruments Incorporated: *See—*
  - Bloom, John Allison, 3,846,162.
  - Epstein, Henry David, 3,846,775.
  - Jost, Ernest M.; McBride, Lyle E., Jr.; and Santala, Teuvo J., 3,846,679.
  - Pimentel, Daniel R., 3,845,931.
  - Shepherd, Glen C., 3,845,637.
- Textron Inc.: *See—*
  - Drees, Jan M., 3,845,917.
  - Smith, William R., 3,845,532.
- Thaw, Wallace Malcolm. Chromatography. 3,846,297, Cl. 210-31.00c.
- Theed, Robert W.: *See—*
  - Kelly, Daniel E.; Theed, Robert W.; and Beckerman, Martin, 3,845,558.
- Theeuwes, Felix; and Higuchi, Takeru, to Alza Corporation. Osmotic dispensing device for releasing beneficial agent. 3,845,770, Cl. 128-260.000.
- Thettu, Raghulinga R., to Xerox Corporation. Fuser roll construction. 3,845,742, Cl. 118-60.000.
- Thibert, Jean-Jacques: *See—*
  - Carriere, Pierre P.; Leynaert, Jacky R.; Meauze, Georges D.; and Thibert, Jean-Jacques, 3,846,038.
- Thiemann, Norbert. Foldable artificial Christmas tree. 3,846,213, Cl. 161-17.000.
- Thomas & Betts Corporation: *See—*
  - Kuo, Ted L. C., 3,846,577.
- Thomas, Leo J.; and Tuite, Robert J., to Eastman Kodak Company. Photosensitive elements having improved processing temperature latitude. 3,846,128, Cl. 96-3.000.
- Thomas, Norman W.: *See—*
  - Hou, Kenneth C.; and Thomas, Norman W., 3,846,356.
- Thomm, Ernest C.; and Knowlton, Barry R., to Union Carbide Canada Limited. Polyamide blends with one polyamide containing phthalate sulfonate moieties and terphthalate or isophthalate residues. 3,846,507, Cl. 260-857.0tw.
- Thompson, Allen, to Sim-Chem Limited (formerly Simon-Carves Chemical Engineering Ltd.). Control system. 3,846,706, Cl. 235-151.100.
- Thompson, Francis T.: *See—*
  - Young, Frederick J.; Thompson, Francis T.; and Boomgaard, Dirk J., 3,846,771.
- Thompson, Joseph: *See—*
  - Morrell, Ronald Joseph; Thompson, Joseph; Hemming, Raymond Charles; and Main, Henry Allan, 3,846,594.
- Thompson, Stanley C. Weight-balanced golfing iron. 3,845,960, Cl. 273-171.000.
- Thompson, Thomas R.; and Hromas, Leslie A., to United States of America, Army. Telescoping boom. 3,845,921, Cl. 244-158.000.
- Thomson-CSF: *See—*
  - Firmain, Gerard; and Faillon, Georges, 3,846,665.
- Thorbard, Bjorn Anders: *See—*
  - Thorbard, Hugo Adiel; and Thorbard, Bjorn Anders, 3,846,774.
- Thorbard, Hugo Adiel; and Thorbard, Bjorn Anders, to Elektriska AB Eletta. Flow and differential pressure monitor. 3,846,774, Cl. 340-239.00r.
- Thornburg, W. Edwin: *See—*
  - Athey, Stuart E.; and Thornburg, W. Edwin, 3,846,615.
- Thrasher, George E., to Master Pneumatic-Detroit, Inc. Silencer and lubricant trap for air tool exhaust. 3,845,840, Cl. 181-36.00r.
- Thring, John Meredith, to Gunson's Colorplugs Limited. Sparking plug. 3,846,655, Cl. 313-118.000.
- Thullen, Philip: *See—*
  - Smith, Joseph L., Jr.; and Thullen, Philip, 3,845,639.
- Tichy, Nick: *See—*
  - Wightman, Lawrance W.; Gebhart, Howard C.; and Tichy, Nick, 3,846,619.
- Tiedemann, Herman H., to GAF Corporation. Cathodic plug. 3,846,272, Cl. 204-219.000.
- Tillon, Nicole: *See—*
  - Lagache, Michel; Ranson, Claude; and Tillon, Nicole, 3,846,164.
- Tinfow, Lionel; and Winton, Sidney V. Method of and apparatus for conditioning the surfaces of thin materials. 3,845,533, Cl. 29-90.00r.
- Tinsley, John M., to Halliburton Company. Fracturing subterranean formations without damaging the formation. 3,845,824, Cl. 166-308.000.
- Tipnis, Vijayakumar A., to Republic Steel Corporation. Stainless steel having improved machinability. 3,846,186, Cl. 148-37.000.
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- Titov, Alexei Ivanovich: *See—*
  - Fedjukin, Dmitry Lvovich; Sergeeva, Ljudmila Semenovna; Bakharev, Andrei Nikolaevich; Gorlina, Inna Leonidovna; Aronov, Anatoly Izrailevich; Kravets, Arkady Timofeevich; Korochkin, Petr Evmenovich; and Titov, Alexei Ivanovich, 3,846,611.
- TOCOM, Inc.: *See—*
  - Stewart, Floyd C.; Weeks, Daniel W.; and Belcher, Brian E., 3,846,703.
- Toguchi, Takehisa: *See—*
  - Konishi, Akio; Takahashi, Masaaki; Kimura, Fumihiko; and Toguchi, Takehisa, 3,846,331.
- Tokheim Corporation: *See—*
  - Robbins, Elmer A., 3,845,848.
- Tokyo Fine Chemical Co., Ltd.: *See—*
  - Uesugi, Hideyuki; and Takeda, Tsutomu, 3,846,489.
- Tokyo Hoshiden Kabushiki Kaisha: *See—*
  - Sorimachi, Mitsuo, 3,846,729.
- Tokyo Shibaura Electric Co., Ltd.: *See—*
  - Nojima, Isao; Tamaru, Keikichi; and Sato, Tai, 3,846,766.
- Tomita, Akira: *See—*
  - Yamamoto, Akira; Nakaoji, Kunio; Oohara, Kunio; Momiyama, Zenjiro; Murakami, Heiichiro; and Tomita, Akira, 3,846,386.
- Toohey, John I. Process for production of corrinoid compounds containing no metal. 3,846,237, Cl. 195-28.00r.
- Torau Company: *See—*
  - Flynn, Francis Gerard; and Jones, Philip Harry, 3,846,325.
- Toshiba Machine Co., Ltd.: *See—*
  - Yamada, Takao; and Sunakawa, Kiyoshi, 3,846,817.
- Toth, Geza: *See—*
  - Huhn, Magda; Toth, Geza; Resofszki, Gabor; Somfai, Eva; and Horvath, Gabor, 3,846,407.
- Towle, Warren Ladd; Mrotek, Edward Norman; and Wiethaup, Robert Roland, to Globe-Union Inc. Process for reduction of pressure build-up in batteries. 3,846,180, Cl. 136-176.000.
- Towne, Gary L., to Honeywell Inc. Sensitivity balancing apparatus for photo responsive detecting circuits. 3,846,628, Cl. 250-201.000.
- Towns, Edward Johnson; and Brindisi, Anthony Thomas. Containers and safety closure therefor. 3,845,872, Cl. 215-9.000.
- Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
  - Arai, Hiroshi; Ohta, Jun; and Kikuchi, Yasunobu, 3,846,747.
  - Goto, Kenji; and Nakamura, Michiya, 3,845,621.
- Traber, Walter; Hambock, Heinz; and Weiss, Anton Georg, to Ciba-Geigy Corporation. Control of microorganisms with O,N-diphenylcarbamic acid esters. 3,846,555, Cl. 424-300.000.
- Trageser, James H.; and Cali, Joseph A., to Technology Incorporated. Pilot warning indicator system. 3,846,746, Cl. 340-27.00r.
- Transfer Systems, Incorporated: *See—*
  - Jones, Cecil R.; Goldman, Arthur J.; and Rowe, D. Garth, 3,846,235.
  - Jones, Cecil Roy, 3,846,795.

- Trepp, Robert M.: *See—*
  - Gregory, John G.; Marsh, White; and Trepp, Robert M., 3,846,762.
- Treuner, Uwe; and Breuer, Hermann, to Squibb, E. R., & Sons, Inc. Dithiocarbonylthioacetyl cephalosporins. 3,846,418, Cl. 260-243.00c.
- Trey, Roger, to Creusot-Loire. Plain bearing with high load capacity, particularly for boring tools with cutting wheels. 3,845,994, Cl. 308-8.200.
- Triplex Safety Glass Company Limited: *See—*
  - Burns, Patrick, 3,846,110.
- Troje, Gerald J.: *See—*
  - Pinzone, Joseph A.; Troje, Gerald J.; and Schiavone, Edward L., 3,846,809.
- Troy, Michael K., to Reliable Electric Company. Cable sheath and ready access closure including a cable sheath. 3,846,575, Cl. 174-41.000.
- TRW Inc.: *See—*
  - Andrews, James D., 3,846,262.
  - Beetle, Arthur B., 3,846,733.
  - Blumenthal, Jack L.; and Guth, Eugene D., 3,846,339.
  - Rameson, William W., 3,845,566.
- Tsien, Wei Hwa: *See—*
  - Livingston, Daniel K.; Floden, Bjorn Fritjof; Wright, Harry Gilbert; and Tsien, Wei Hwa, 3,845,916.
- Tsipilis, Strgios. Emergency traction device for a vehicle wheel. 3,845,802, Cl. 152-233.000.
- Tsugawa, Kenjiro: *See—*
  - Yoshida, Kunio; and Tsugawa, Kenjiro, 3,846,626.
- Tsvetkov, Vladislav Arkhipovich: *See—*
  - Kremnev, Oleg Alexandrovich; Borovsky, Vladimir Rudolfovich; Kravets, Sergei Semenovich; Alexeev, Nikolai Fedorovich; Tsvetkov, Vladislav Arkhipovich; and Bogdanovsky, Vladimir Borisovich, 3,846,571.
- Tuite, Robert J.: *See—*
  - Thomas, Leo J.; and Tuite, Robert J., 3,846,128.
- Tulumello, Angelo; and Kapff, Sixt Frederick, to Standard Oil Company. Determination of P_2O_5. 3,846,074, Cl. 23-230.00r.
- Tupinier, Charles: *See—*
  - Begin, Marcel; Morrissette, Camille; Beaumier, Pierre; and Tupinier, Charles, 3,846,211.
- Turbo Machine Company: *See—*
  - Wyatt, William Kirk, 3,845,911.
- Turner, Arthur, to Baird-Atomic, Inc. Optical alignment system for optical spectrometers. 3,846,024, Cl. 356-80.000.
- Tyco Laboratories, Inc.: *See—*
  - Labelle, Harold E., Jr.; Mlavsky, Abraham I.; and Cronan, Charles J., 3,846,082.
- Uchikura, Yuriko: *See—*
  - Nakano, Yasuaki; Nakata, Kazuo; and Uchikura, Yuriko, 3,846,752.
- Uchiyama, Takashi: *See—*
  - Nakamura, Zenzo; Uchiyama, Takashi; Taguchi, Tetsuya; and Mashimo, Yukio, 3,846,811.
- Ueda, Atsumi, to Aisin Seiki Kabushiki Kaisha. Unloader valve. 3,845,776, Cl. 137-116.000.
- Ueda, Atsushi; and Ishii, Mitsuaki, to Mitsubishi Denki Kabushiki Kaisha. Control system for electric installations for use on vehicle. 3,846,639, Cl. 307-9.000.
- Ueno, Kiyoshi: *See—*
  - Sakakura, Akira; Matsumoto, Fumio; Ueno, Kiyoshi; Takashima, Junihide; and Kuroki, Katuro, 3,846,187.
- Uesaka, Koji: *See—*
  - Takanashi, Itsuo; Miyoshi, Tadayoshi; Uesaka, Koji; Miyazaki, Kenichi; and Yokokawa, Sumio, 3,846,579.
- Uesugi, Hideyuki; and Takeda, Tsutomu, to Tokyo Fine Chemical Co., Ltd. Process for production of beta-alanine. 3,846,489, Cl. 260-534.00c.
- Ulbrich, Konrad A., to Dovre Ski Binding, Inc. Ski binding. 3,845,966, Cl. 280-11.35t.
- Ultrascience Incorporated: *See—*
  - Gibbs, Erich L., 3,846,295.
- Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, to Zaidan Hojin Biseibutsu Kagaku Kenyu Kai. Novel process for producing antibiotics bleomycin. 3,846,400, Cl. 260-112.500.
- Underwood, David W., to Mallory, P. R., & Co. Inc. Clutch and gear train utilizing same. 3,845,668, Cl. 74-412.000.
- Underwood, William George Elphinstone: *See—*
  - Kennedy, James; Long, Alan Gibson; and Underwood, William George Elphinstone, 3,846,416.
- Unglaube, Uwe: *See—*
  - Wefers, Norbert; Militz, Uwe; Unglaube, Uwe; and De Meer, Jan, 3,846,623.
- Uniboard AG: *See—*
  - Kunz, Albrecht, 3,846,219.
- Union Carbide Canada Limited: *See—*
  - Thomm, Ernest C.; and Knowlton, Barry R., 3,846,507.
- Union Carbide Corporation: *See—*
  - Death, Frank S.; and Szekely, Andrew G., 3,846,119.
  - Kun, Leslie C., 3,845,814.
  - Osterholtz, Fred D., 3,846,521.
  - Pelton, John Franklin, 3,846,084.
  - Perkins, Warren Edwin; and Marchese, Michael Anthony, 3,845,635.
  - Prokai, Bela; and Kanner, Bernard, 3,846,462.
  - Schofield, John A., 3,846,327.
- Union Oil Company of California: *See—*
  - Young, Dean Arthur, 3,846,337.
- Uniroyal, Inc.: *See—*
  - Lauchlan, Robert L.; and Snodgrass, Hugh E., 3,846,510.
- United Aircraft Corporation: *See—*
  - Bornstein, Norman S.; and Kraft, Edwin H., 3,846,159.
- United Kingdom Atomic Energy Authority: *See—*
  - Lefevre, Raymond Leon Rene, 3,846,154.
- United Kingdom of Great Britain and Northern Ireland, Secretary of State for the Environment in Her Britannic Majesty's Government of the: *See—*
  - Langdon, Michael Guy, 3,845,719.
- United States of America
  - Agriculture: *See—*
    - Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,846,449.
    - Nonaka, Masahide; Hautala, Earl; and Weaver, Merle L., 3,846,572.
    - Schwarz, Meyer; Sonnet, Philip E.; and Wakabayashi, Nobel, 3,846,451.
    - Schwarz, Meyer; Sonnet, Philip E.; and Wakabayashi, Nobel, 3,846,458.
  - Air Force: *See—*
    - Carl, James R., 3,846,798.
    - Evers, Robert C., 3,846,376.
  - Army: *See—*
    - Brown, James E.; Woods, Andrew B.; and Kliger, Howard S., 3,846,797.
    - Cappetta, Joseph G.; and Langdo, Steven H., 3,845,665.
    - Flogaus, William S.; and Masutani, Mitsumasa, 3,846,007.
    - Nichols, Donald, 3,846,642.
    - Thompson, Thomas R.; and Hromas, Leslie A., 3,845,921.
    - Wilkin, Michael J., 3,846,023.
    - Ziegler, William H., 3,845,690.
  - Atomic Energy Commission: *See—*
    - Dietrich, William C., 3,846,256.
    - Ehlers, Kenneth W.; and Kunkel, Wulf B., 3,846,668.
    - Hammond, Roland P., 3,845,633.
    - Rhodes, Charles K., 3,846,709.
    - Schmidt, Frederick A.; and Carlson, Oscar N., 3,846,121.
  - Health, Education and Welfare: *See—*
    - Grotta, Henry M., 3,846,353.
  - National Aeronautics and Space Administration; Administrator; with respect to an invention of:
    - Furner, Raymond L. Automated analysis of oxidative metabolates. 3,846,243, Cl. 195-103.50r.
  - Navy: *See—*
    - Gilligan, William H.; and Adolph, Horst G., 3,846,493.
    - Johnson, Walker P.; Cotton, Charles C.; Bon, David R.; and Peterson, Trules L., 3,845,937.
    - Renna, Nicholas, Jr.; Madison, Theodore C.; and Harvey, Bernard A., 3,846,744.
    - Robbins, Roland W., Jr., 3,846,048.
    - Rosenberg, Edgar N.; and Moran, Stephen F., 3,845,634.
    - Schneider, Irwin, 3,846,764.
    - Schwee, Leonard J.; and Irons, Henry R., 3,846,770.
    - Writer, Philip L.; and Schiff, Maurice L., 3,846,723.
- United States Steel Corporation: *See—*
  - Boedecker, Kenneth J., Jr.; and Gibson, Charles I., 3,845,936.
  - Shapland, James T., 3,845,943.
- Universal Oil Products Company: *See—*
  - Anderson, Robert F., 3,846,505.
  - Gaydasch, Alexander, 3,846,481.
  - Hayes, John C., 3,846,282.
  - Kuchar, Paul J., 3,845,801.
  - Rausch, Richard E., 3,846,283.
  - Schmerling, Louis; and Vesely, Jerome A., 3,846,503.
  - Schmerling, Louis; and Vesely, Jerome A., 3,846,504.
  - Urban, Peter, 3,846,275.
  - Vesely, Jerome A., 3,846,501.
  - Youtsey, Karl J.; Holt, William C., Jr.; and Carnahan, Robert D., 3,846,140.
- University of California, The Regents of the: *See—*
  - Mulla, Mir S.; and Hwang, Yih-Shen, 3,846,557.
- Updike, Stuart J., to Wisconsin Alumni Research Foundation. Method and apparatus for dialysis. 3,846,236, Cl. 195-1.800.
- Upjohn Company, The: *See—*
  - Campbell, J. Allan; and Babcock, John C., 3,846,456.
  - Moffett, Robert B., 3,846,443.
- Uranus Electronics Inc.: *See—*
  - Cake, Arthur F., 3,845,615.
- Urban, Peter, to Universal Oil Products Company. Coal liquefaction process. 3,846,275, Cl. 208-10.000.
- U.S. Philips Corporation: *See—*
  - Budde, Herman, 3,846,825.
  - Diguet, Daniel; and Henry, Loic, 3,846,169.
  - Hunting, Bernardus Jacobus; and Jeunink, Gerardus Alfonsus, 3,846,146.
  - Schroder, Johann, 3,845,625.
  - Van Mal, Harmannus Hinderikus; Mijnheer, Andries; Rauwerdink, Hendrik Jan; and De Wit, Johannes Adrianus, 3,845,636.
- Ustav pro vyzkum, vyrobu a vyuziti radioisotopu: *See—*
  - Zahalka, Jindrich; Plander, Emil; and Grac, Zdenek, 3,846,268.

- Uyama, Fukuhito; Tanaka, Hisashi; and Ito, Sukenao, to Kuraray Co., Ltd. Method for producing copolymers. 3,846,383, Cl. 260-78.50r.
- Valdo, Alex R., to Ethyl Corporation. Aluminum purification process. 3,846,122, Cl. 75-68.00c.
- Valenti, Joseph: *See—*
  - Hempenius, Walter L.; Valenti, Joseph; and Moser, Robert E., 3,846,560.
- Valles, Benjamin Vera, to Litton Systems, Inc. High temperature resistant door seal for a microwave oven. 3,846,608, Cl. 219-101.550.
- Valmet Oy: *See—*
  - Kankaanpaa, Matti, 3,846,232.
  - Kankaanpaa, Matti, 3,846,233.
- Van Deusen, George S.; and Teed, Richard K., to Riegel Textile Corporation. Apparatus and process for tacking fabrics. 3,845,529, Cl. 28-4.00r.
- Van Haltern, Frank, Jr.: *See—*
  - Norris, Paul R.; Van Haltern, Frank, Jr.; and Walz, David K., 3,845,775.
- Van Heijst, Willem Jan, to N.V. Industriele Handelscombinatie Holland. Hinged pipe joint. 3,845,975, Cl. 285-283.000.
- van Laar, Jacobus, to Koninklijke Nederlandsche Hoogovens en Staalfabrieken, N.V. Refractory structure, particularly for a metallurgical shaft furnace. 3,846,068, Cl. 432-251.000.
- Van Mal, Harmannus Hinderikus; Mijnheer, Andries; Rauwerdink, Hendrik Jan; and De Wit, Johannes Adrianus, to U.S. Philips Corporation. Control device for maintaining the level of a liquefield gas in a container between two different limits. 3,845,636, Cl. 2-55.000.
- Van Paesschen, August Jean; and Herbots, Joseph Antonine, to Agfa-Gevaert N.V. Photographic materials with removable antihalation layers. 3,846,134, Cl. 96-84.00r.
- Van Poucke, Raphael Karel: *See—*
  - Monbaliu, Marcel Jacob; and Van Poucke, Raphael Karel, 3,846,444.
- Van Staveren, Nicolaas Arie. Elastically deformable hose and a teat cup provided with a lining in conformity with this hose. 3,845,743, Cl. 119-14.310.
- Van Zeeland, Donald L.: *See—*
  - Ryczek, Lawrence J.; Rutchik, Walter L.; and Van Zeeland, Donald L., 3,846,676.
- Vanlerberghe, Guy: *See—*
  - Lachampt, Felix; Viout, Andre; and Vanlerberghe, Guy, 3,846,546.
- Varadi, Peter Ferenc: *See—*
  - Rostron, Robert Walther; and Varadi, Peter Ferenc, 3,846,258.
- Varo Semiconductor, Inc.: *See—*
  - Waltz, Douglas G., 3,845,552.
- Vasilyadis, Kosta O., to Scott Paper Company. Flushable, premoistened wipers. 3,846,158, Cl. 117-68.500.
- Vau, Jean-Baptiste Paul. Method and device for the precision shaping of a metal part. 3,845,651, Cl. 72-332.000.
- Veenstra, David K., to Highway Manufacturing Company. Drive system for a telescopic boom. 3,845,596, Cl. 52-118.000.
- Veinberg, Artur Karlovich: *See—*
  - Giller, Solomon Aronovich; Lazdinsh, Arvid Avgustovich; Veinberg, Artur Karlovich; Sniker, Dagnia Yanovna; Knunyants, Ivan Ljudvigovich; German, Lev Solomonovich; and Kazmina, Natalya Borisovna, 3,846,429.
- Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Aktiengesellschaft: *See—*
  - Filter, Walther; and Filter, Claus, 3,845,790.
- Vermeer, Dick Charles; and Pontrelli, Gene Joseph, to Allied Chemical Corporation. Noncircular air orifice in commingling jets for multifilament yarn. 3,845,528, Cl. 28-1.400.
- Versatile Structures Incorporated: *See—*
  - Dunn, Edward D., Jr., 3,846,085.
- Vesely, Jerome A.: *See—*
  - Schmerling, Louis; and Vesely, Jerome A., 3,846,503.
  - Schmerling, Louis; and Vesely, Jerome A., 3,846,504.
- Vesely, Jerome A., to Universal Oil Products Company. Preparation of alkoxy substituted hydroxy aromatic compounds. 3,846,501, Cl. 260-613.00d.
- Vetor, Earl L.: *See—*
  - Heussy, William C.; Vetor, Earl L.; Delaney, Keith P.; and Hyde, Paul E., 3,845,737.
- Vetter, Walter; Mueller, Hanspeter; and Geissmann, Theodor, to International Flavors & Fragrances, Inc. Preparation of fruit compositions. 3,846,570, Cl. 426-399.000.
- Victor Company of Japan, Ltd.: *See—*
  - Takanashi, Itsuo; Miyoshi, Tadayoshi; Uesaka, Koji; Miyazaki, Kenichi; and Yokokawa, Sumio, 3,846,579.
- Victoriaville Furniture Limited: *See—*
  - Begin, Marcel; Morrissette, Camille; Beaumier, Pierre; and Tupinier, Charles, 3,846,211.
- Vigliermo, Amerigo: *See—*
  - Guerci, Carlo; and Vigliermo, Amerigo, 3,846,680.
- Vinogradov, Vyacheslav Dmitrievich: *See—*
  - Zhislin, Yakov Moiseevich; Kirkunov, Alexandr Eliseevich; Sokolov, Alexandr Yakovlevich; Ivanoz, Alexei Ivanovich; Leikin, Albert Yakovlevich; Grinberg, Efim Naumovich; Vinogradov, Vyacheslav Dmitrievich; Yanovskaya, Zinaida Solomonovna; and Bykov, Valery ndreevich, 3,845,704.
- Viout, Andre: *See—*
  - Lachampt, Felix; Viout, Andre; and Vanlerberghe, Guy, 3,846,546.
- Vise, William Michael. Electrosurgical glove. 3,845,771, Cl. 128-303.130.
- Vohsberg, Darius B.: *See—*
  - Cull, Neville L.; and Vohsberg, Darius B., 3,846,536.
- Vola, Mathias J. J. M., to Oce'-Van der Grinten, N.V. Production apparatus using an endless image-bearing belt. 3,846,021, Cl. 355-16.000.
- Volkenshtein, Jury Borisovich: *See—*
  - Aronova, Nina Ivanovna; Makhova, Nina Nikolaevna; Zavyalov, Sergei Ivanovich; Volkenshtein, Jury Borisovich; and Kunitskaya, Galina Mikhailovna, 3,846,490.
- Voloshin, Petr Stepanovich; Ivanov, Mark Efremovich; Klopovsky, Boris Alexeevich; Lindin, Viktor Mikhailovich; Novitsky, Boris Georgievich; Olevsky, Viktor Markovich; and Fridman, Viktor Mironovich. Device for spraying liquid products and melts. 3,845,901,Cl. 239-102.000.
- Von Berlichingen, Max. Air jet head assembly for pit type incinerators. 3,845,729, Cl. 110-72.00r.
- Von Levern, Hobe Schroeder: *See—*
  - Pappas, Peter G.; Edmisten, Walter C.; and Von Levern, Hobe Schroeder, 3,846,092.
- Vossen, John Louis, to RCA Corporation. Method of coating the interior walls of through-holes. 3,846,294, Cl. 204-192.000.
- Vreeland, Arthur E.: *See—*
  - Myers, Clayborne E.; and Vreeland, Arthur E., 3,846,787.
- Wacker-Chemie GmbH: *See—*
  - Reinecke, Herbert; Adler, Kalus; Bauer, Johann; Kretschmer, Reinhard; Lamhofer, Gerhard; and Pichler, Engelbert, 3,846,362.
- Wada, Yukio; and Okutu, Hideo, to Matsushita Electric Works, Ltd. Foldable hair dryer. 3,846,047, Cl. 417-234.000.
- Wade, Gordon E., to Scott Paper Company. Method of forming a plastic container. 3,846,526, Cl. 264-46.800.
- Waeber, Vladimir, to Werkzeugmaschinen-fabrik Oerlikon-Buhrle AG. Apparatus for a firing weapon mounted at a light vehicle. 3,845,687, Cl. 89-37.00k.
- Wagner, Claude Julien Rene, to Plate extruder. . 3,846,059, Cl. 425-381.200.
- Wagner, George M., to Hooker Chemical Corporation. Flame retardant process for cellulosics. 3,846,155, Cl. 117-62.200.
- Wagner, Gerhard, to Klockner-Humboldt-Deutz Aktiengesellschaft. Movable bridge laying device. 3,845,514, Cl. 14-1.000.
- Wagner, Jakob, to Siemens Aktiengesellschaft. Linear motor assembly for driving a vehicle of a conveying system. 3,845,721, Cl. 104-148.01m.
- Wagner, Kurt: *See—*
  - Hollweck, Walter; Schnee, Wilhelm; Eberl, Karlheinz; and Wagner, Kurt, 3,845,661.
- Wahls, Robert A., to Freedman Seating Company. Seat pedestal with vertical and swivel adjustments. 3,845,926, Cl. 248-162.000.
- Wahren, Douglas; Norman, Bo; and Grundstrom, Karl-Johan, to Osakeyhtio, A. Ahlstrom. Fibrous sheet former wherein concentrated stock is passed through separate channels into a deflection chamber and out through an outlet channel. 3,846,230, Cl. 162-216.000
- Wahren, Janne Ragnvald Ejvin. System for interconnecting continuously operating conveyor paths. 3,845,853, Cl. 198-78.000.
- Waite, Frederick Andrew: *See—*
  - Osmond, Desmond Wilfrid John; Smith, Norman Douglas Patrick; and Waite, Frederick Andrew, 3,846,090.
  - Osmond, Desmond Wilfrid John; Smith, Norman Douglas Patrick; and Waite, Frederick Andrew, 3,846,091.
- Waite, Ross E.: *See—*
  - Johnson, Edward P.; and Waite, Ross E., 3,845,883.
- Wakabayashi, Nobel: *See—*
  - Schwarz, Meyer; Sonnet, Philip E.; and Wakabayashi, Nobel, 3,846,451.
  - Schwarz, Meyer; Sonnet, Philip E.; and Wakabayashi, Nobel, 3,846,458.
- Waldenville, David B., to Waste-Treat, Inc. Composting apparatus. 3,845,939, Cl. 259-10.000.
- Waldon Devices, Inc.: *See—*
  - Greene, Henry E., Jr., 3,845,779.
- Walford, Gordon L.: *See—*
  - Shen, Tsung-Ying; Walford, Gordon L.; and Witzel, Bruce E., 3,846,553.
- Walker, Clarence O., to Texaco Inc. Process for separating bitumen from tar sand recovered from deposits by mining. 3,846,276, Cl. 208-11.000.
- Walker, Harold G.: *See—*
  - Boone, James A.; Walker, Harold G.; and Huffman, Galen R., 3,845,825.
- Walker, Robert L.: *See—*
  - Strimple, Robert A.; McCall, George L.; and Walker, Robert L., 3,845,706.
- Wallace, Richard A. Structural material and method. 3,846,366, Cl. 260-37.0ep.
- Waller, Norbert. Method and apparatus for producing a knitted fabric with projecting barbs. 3,845,640, Cl. 66-91.000.
- Waller, Norbert, to Gottlieb Binder Holzgerlingen. Method and apparatus for producing a knitted fabric with projecting barbs. 3,845,641, Cl. 66-192.000.
- Walterscheid, Jean, GmbH: *See—*
  - Geisthoff, Hubert, 3,845,845.

Waltz, Douglas G., to Varo Semiconductor, Inc. Method of making an encapsulated assembly. 3,845,552, Cl. 29-628.000.

Walz, David K.: *See—*
Norris, Paul R.; Van Haltern, Frank, Jr.; and Walz, David K., 3,845,775.

Wantuck, Joseph A.: *See—*
Rosas, Carlos B.; Wantuck, Joseph A.; and Kaufman, Arnold, 3,846,435.

Ward, Harry M., III: *See—*
Donohue, James A.; Winston, John H.; and Ward, Harry M., III, 3,845,747.

Warden, Hans Erik; Kindvall, Frank; and Berg, Carls Olof, to Siemens Aktiengesellschaft. Medical device with hydraulically movable parts. 3,845,946, Cl. 269-323.000.

Warner, Paul F., to Phillips Petroleum Company. Tarnish preventive agent. 3,846,139, Cl. 106-3.000.

Warner-Lambert Company: *See—*
Kronish, Donald P.; Zuriff, Lee S.; Young, William D.; and Lewandowski, Paul R., 3,846,247.

Warren, Henry Ray, to RCA Corporation. Method for recording two separate signals. 3,846,819, Cl. 360-19.000.

Waste-Treat, Inc.: *See—*
Waldenville, David B., 3,845,939.

Watanabe, Hiroshi: *See—*
Sugimoto, Mitsuo; and Watanabe, Hiroshi, 3,846,322.

Waters, Kenneth H., to Continental Oil Company. Rotating beam surveying method and apparatus. 3,846,026, Cl. 356-152.000.

Watts, Daniel Jay: *See—*
Atwal, Manmohan Singh; Watts, Daniel Jay; and Weisenborn, Frank Lee, 3,846,417.

Wean United, Inc.: *See—*
Gerretz, Josef; Joeres, Paul; and Zeunert, Fritz, 3,845,649.

Wear, Robert L., to Minnesota Mining and Manufacturing Company. Aromatic polyether oxetane resins. 3,846,375, Cl. 260-61.000.

Weaver, Merle L.: *See—*
Nonaka, Masahide; Hautala, Earl; and Weaver, Merle L., 3,846,572.

Webline Corporation, The: *See—*
Gulla, Michael, 3,846,138.

Webster, Bruce G.: *See—*
Mestetsky, Thomas S.; and Webster, Bruce G., 3,846,227.

Weeks, Daniel W.: *See—*
Stewart, Floyd C.; Weeks, Daniel W.; and Belcher, Brian E., 3,846,703.

Wefers, Norbert; Militz, Uwe; Unglaube, Uwe; and De Meer, Jan, to Nixdorf Computer AG. Scanning means. 3,846,623, Cl. 235-61.11e.

Wehde, Heinz, to Teldix GmbH. Magnetically mounted rotor. 3,845,995, Cl. 308-10.000.

Weisburd, Martin Harold: *See—*
Faur, Yvonne Constance; Weisburd, Martin Harold; Wilson, Marion Evans; and May, Paul S., 3,846,241.

Weisenborn, Frank Lee: *See—*
Atwal, Manmohan Singh; Watts, Daniel Jay; and Weisenborn, Frank Lee, 3,846,417.

Weiss, Anton Georg: *See—*
Bader, Jorg; Hambock, Heinz; Sturm, Elmar; and Weiss, Anton Georg, 3,846,438.
Traber, Walter; Hambock, Heinz; and Weiss, Anton Georg, 3,846,555.

Weiss, Martin Joseph; Gibs, Gabriel Joseph; Poletto, John Frank; and Remers, William Alan, to American Cyanamid Company. Substituted heterocyclic derivatives of azepine. 3,846,446, Cl. 260-326.900.

Weiss, Vernon E.: *See—*
Lowrey, Erlend R.; and Weiss, Vernon E., 3,846,457.

Welstead, William John, Jr.; and Stauffer, Harold Fisher, Jr., to Robins, A. H., Company, Incorporated. 2-Alkylamino benzophenones. 3,846,477, Cl. 260-482.00c.

Wen, Cheng Paul; and Chiang, Yuen-Sheng, to RCA Corporation. Method of making semiconductor devices having thin active regions of the semiconductor material. 3,846,198, Cl. 156-17.000.

Wende, Helmut: *See—*
Bohn, Gerhard; Winkle, Gunther; and Wende, Helmut, 3,845,720.

Wentink, William S.: *See—*
Masse, Philip R.; Pendy, William J.; and Wentink, William S., 3,846,836.

Werkema, Robert G.; and Newcomer, Robert E., to McDonnell Douglas Corporation. Method for stabilizing titanium alloys against hydrogen pickup and stabilized titanium alloy produced thereby. 3,846,188, Cl. 148-133.000.

Werkzeugmaschinen-fabrik Oerlikon-Buhrle AG: *See—*
Waeber, Vladimir, 3,845,687.

Werkzeugmaschinenfabrik Oerlikon-Buhrle: *See—*
Rutschke, Arno, 3,845,546.

Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
Mayer, Cornelius, 3,845,922.

Westerberg, Sven Peter Johas: *See—*
Karden, Karl Gosta; Westerberg, Sven Peter Johas; and Astrom, Klas Johan, 3,845,673.

Western States Machine Company, The: *See—*
Laven, Thomas R., 3,845,788.

Westinghouse Air Brake Company: *See—*
Bridigum, Robert J., 3,845,778.

Westinghouse Electric Corporation: *See—*
Brown, James H.; Buchanan, James E.; and Morrison, Steven, 3,846,786.
DeKlerk, John, 3,846,722.
Gilcher, Heinz, 3,846,780.
Gregory, John G.; Marsh, White; and Trepp, Robert M., 3,846,762.
Hall, William G.; and Pittman, Paul F., 3,845,657.
Higgins, Edward Robert, 3,846,691.
Keever, Joseph M.; Finnen, Gerald W.; and Ramsey, James E., Jr., 3,846,677.
Kim, Robert H.; and White, Lawrence D., 3,846,645.
Kunsman, Laurence D., 3,845,551.
Lampe, Donald R.; and Irwin, Edgar L., 3,846,820.
Lawton, David K., 3,846,698.
Leeds, Winthrop M., 3,846,601.
List, William F., 3,846,028.
Martello, Norman E.; and Phillips, David C., 3,846,269.
Mishra, Anil K., 3,846,651.
Schmitz, Lawrence S., 3,846,756.
Shimp, Alan B., 3,846,675.
Sisk, Francis J., 3,846,255.
Young, Frederick J.; Thompson, Francis T.; and Boomgaard, Dirk J., 3,846,771.

Westvaco Corporation: *See—*
Crosby, William E.; and Lee, Hong H., 3,846,231.

Wetherell, Daniel L., to General Electric Company. Coupling arrangement for power line carrier systems. 3,846,638, Cl. 307-3.000.

Weyer, James H., to Minnesota Mining & Manufacturing Company. Biomedical monitoring electrode. 3,845,757, Cl. 128-2.10e.

Whall, James M., to Polaroid Corporation. Processor assembly. 3,846,808, Cl. 354-86.000.

Wheaton Industries: *See—*
Flynn, Joseph C., 3,846,056.

White, Jack Mort, to Sybron Corporation. Force balance instrument with overload release mechanism. 3,846,804, Cl. 340-199.000.

White, Lawrence D.: *See—*
Kim, Robert H.; and White, Lawrence D., 3,846,645.

White, Richard P., Jr., to Rochester Applied Science Associates, Inc. Vortex dissipator. 3,845,918, Cl. 244-41.000.

Whitfield, Joseph A., to Caterpillar Tractor Company. Multi-directional panel adjustment means. 3,845,981, Cl. 296-28.00c.

Whitley, Andrew. Tobacco primer. 3,845,609, Cl. 56-27.500.

Whitman, Charles I.: *See—*
Hess, Earl H.; Kennedy, Daniel M.; and Whitman, Charles I., 3,846,545.

Whitney, Robert W.: *See—*
Apsell, Sheldon P.; Johnson, Olof C., Jr.; and Whitney, Robert W., 3,846,783.

Whitney, Thomas A.: *See—*
Blackwell, Robert J.; Kehn, Donald M.; and Whitney, Thomas A., 3,846,310.

Whitney, W. A., Corporation: *See—*
Scott, William B.; and Sawvell, Roger V., 3,845,680.

Whyte, James Lyon, to Imperial Chemical Industries Limited. Colouration of polymeric materials. 3,846,369, Cl. 260-40.00r.

Wicke, Charles A.: *See—*
Enright, James H.; and Wicke, Charles A., 3,845,707.

Widauer, Josef Olav; Lang, Konrad; Baum, Laszlo; and Szabo, Suzanne, to Medichemie A.G. Choleretically active esters and salts of bile acids. 3,846,411, Cl. 260-239.500.

Widder Corporation: *See—*
Krieg, Adrian H., 3,845,655.

Widmer, Roland: *See—*
Lehmann, Hans Wilhelm; and Widmer, Roland, 3,846,649.

Wiethaup, Robert Roland: *See—*
Towle, Warren Ladd; Mrotek, Edward Norman; and Wiethaup, Robert Roland, 3,846,180.

Wiggins, Earl M.: *See—*
Arnett, Lawrence E.; and Wiggins, Earl M., 3,845,877.

Wightman, Lawrance W.; Gebhart, Howard C.; and Tichy, Nick, to Emerson Electric Co. Open coil electric heater. 3,846,619, Cl. 219-532.000.

Wikefeldt, Per; and Rautio, Eskil. Microtome having electro-mechanical knife controlling means. 3,845,659, Cl. 73-133.00r.

Wilber, Scott A. Frequency sensitive laser rotary motion sensor. 3,846,025, Cl. 356-106.01r.

Wild, Jost; and Sigg-Grutter, Trudi, to Givaudan Corporation. Process for preparation of 3,5-bis(3,3-dimethallyl)-2,4,6-trihydroxyphenones. 3,846,498, Cl. 260-592.000.

Wiley, Robert F., to Corning Glass Works. Extrusion die and method of making same. 3,846,197, Cl. 156-11.000.

Wilkening, Albert L. Fireplace home heater. 3,845,754, Cl. 126-121.000.

Wilkin, Michael J., to United States of America, Army. Range reticle in a night vision device. 3,846,023, Cl. 356-21.000.

Willhite, William, Jr.; and Strube, Herbert Eugene, to Procter & Gamble Company, The. Web perforating apparatus. 3,845,682, Cl. 83-431.000.

Williams, Samuel D., Jr.: *See—*
Slosberg, Earl; and Williams, Samuel D., Jr., 3,846,585.

Williamson, Hilding V., to Chemetron Corporation. Mechanicl foam generating method and system. 3,846,515, Cl. 261-18.00b.

Wilson, Donald C. Package sealing in steam atmosphere. 3,845,606, Cl. 53-21.0fc.

Wilson, Marion Evans: *See—*
Faur, Yvonne Constance; Weisburd, Martin Harold; Wilson, Marion Evans; and May, Paul S., 3,846,241.

Windsor, Robert K. Device for applying material to the area of the eye. 3,845,764, Cl. 128-233.000.

Winkle, Gunther: *See—*
Bohn, Gerhard; Winkle, Gunther; and Wende, Helmut, 3,845,720.

Winston, John H.: *See—*
Donohue, James A.; Winston, John H.; and Ward, Harry M., III, 3,845,747.

Winter, Gerhard; Mansmann, Manfred; Schon, Nikolaus; and Schnoring, Hildegard, to Bayer Aktiengesellschaft. Production of inorganic fibers. 3,846,527, Cl. 264-63.000.

Winters, Giorgio: *See—*
Nathansohn, Giangiacomo; Winters, Giorgio; and Odasso, Gianfranco, 3,846,412.

Winton, Sidney V.: *See—*
Tinfow, Lionel; and Winton, Sidney V., 3,845,533.

Wisconsin Alumni Research Foundation: *See—*
Updike, Stuart J., 3,846,236.

Witco Chemical Corporation: *See—*
Satterly, Kenneth P., 3,846,347.

Witzel, Bruce E.: *See—*
Shen, Tsung-Ying; Walford, Gordon L.; and Witzel, Bruce E., 3,846,553.

Woerner, Joseph F. Wheel chocks for tandem wheels. 3,845,844, Cl. 188-32.000.

Wolbrink, David W.; and Busch, Robert W., to Broan Manufacturing Co., Inc. Blower wheel. 3,846,043, Cl. 416-183.000.

Wolcke, Uwe: *See—*
Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,846,476.

Wolf, Leo. Slide switch for electrical strip cable. 3,846,596, Cl. 200-16.00d.

Wolfe, John E.; Ledges, George E.; and Glascock, Homer H., to General Electric Company. Electron beam generating system with collimated focusing means. 3,846,660, Cl. 313-421.000.

Wollmann, Klaus; Ploger, Walter; and Worms, Karl-Heinz, to Henkel & Cie GmbH. Process for the preparation of 1-aminoalkane-1,1-diphosphonic acids and their salts. 3,846,420, Cl. 260-247.000.

Woods, Andrew B.: *See—*
Brown, James E.; Woods, Andrew B.; and Kliger, Howard S., 3,846,797.

Woods, Quentin T.: *See—*
Eggert, Ralph H.; and Woods, Quentin T., 3,845,678.

Wootten, William A. Fiber or paper board structure. 3,846,218, Cl. 161-111.000.

Worms, Karl-Heinz: *See—*
Wollmann, Klaus; Ploger, Walter; and Worms, Karl-Heinz, 3,846,420.

Wright, Donald L.; and Frankenfeld, John W., to Exxon Research and Engineering Company. Bacteriostat soap, shampoo and shave lotion formulations. 3,846,326, Cl. 252-107.000.

Wright, Harry Gilbert: *See—*
Livingston, Daniel K.; Floden, Bjorn Fritjof; Wright, Harry Gilbert; and Tsien, Wei Hwa, 3,845,916.

Wright, Maurice James; and Cockshott, Charles Peter, to Lucas Aerospace Limited. Flame-detection circuits. 3,846,061, Cl. 431-79.000.

Writer, Philip L.; and Schiff, Maurice L., to United States of America, Navy. Surface wave narrow bandpass filter. 3,846,723, Cl. 333-72.000.

Wyatt, William Kirk, to Turbo Machine Company. Winder. 3,845,911, Cl. 242-18.0dd.

Wynkoop, Raymond: *See—*
Shang, Jer-Yu; and Wynkoop, Raymond, 3,846,473.

Xerox Corporation: *See—*
Acquaviva, Thomas; and Kukucka, William P., 3,845,949.
Erhart, Francis J.; and Schroeder, Harold H., 3,845,739.
Fletcher, Gerald M., 3,846,020.
Hamaker, Ralph A., 3,845,951.
Reinis, Gedeminas J., 3,846,127.
Thettu, Raghulinga R., 3,845,742.

Yagyu, Masami: *See—*
Akazawa, Yoshinobu; Yagyu, Masami; Nozawa, Shigenori; and Yasui, Satoshi, 3,846,548.

Yamada, Takao; and Sunakawa, Kiyoshi, to Asahi Kasei Kogyo Kabushiki Kaisha and Toshiba Machine Co., Ltd. Apparatus for conveying synthetic resin-made articles in the sheet form. 3,846,817, Cl. 354-319.000.

Yamada, Takashi: *See—*
Oishi, Kazuo; Kato, Toshiaki; Matsui, Takeshi; Hinachi, Matatoyo; and Yamada, Takashi, 3,846,796.

Yamagishi, Hidehisa; and Yokoi, Fumitoshi, to Nippon Kokan Kabushiki Kaisha. Apparatus for manufacturing steel sheets with layers of protective metal. 3,845,539, Cl. 29-420.000.

Yamaguchi, Isao; and Katayama, Hitoshi, to Matsushita Electric Industrial Co., Ltd. Electrophotographic copying apparatus. 3,846,019, Cl. 355-3.00r.

Yamaguchi, Yasuju; and Nakayama, Yujiro, to Mitsubishi Petrochemical Company Limited. Production of shaped structures. 3,846,265, Cl. 204-159.012.

Yamamoto, Akira; Nakaoji, Kunio; Oohara, Kunio; Momiyama, Zenjiro; Murakami, Heiichiro; and Tomita, Akira. Cross-linked copolymer acrylonitrile fibers or films. 3,846,386, Cl. 260-80.720.

Yamazaki, Hiroyuki: *See—*
Ando, Takuo; and Yamazaki, Hiroyuki, 3,846,363.

Yanchenko, Larisa Nikolaevna: *See—*
Surgina, Ninel Leonidovna; Gurevich, Ljudmila Ivanovna; Yanchenko, Larisa Nikolaevna; Bei, Tamara Alexandrovna; and Baikov, Valentin Nikolaevich, 3,845,662.

Yanov, Stanislav Ivanovich: *See—*
Romanov, Boris Mikhailovich; Moshnin, Evgeny Nikolaevich; Yanov, Stanislav Ivanovich; Gurevich, Vladimir Zakhrovich; and Ryabokovylenko, Viktor Ivanovich, 3,845,650.

Yanovskaya, Zinaida Solomonovna: *See—*
Zhislin, Yakov Moiseevich; Kirkunov, Alexandr Eliseevich; Sokolov, Alexandr Yakovlevich; Ivanoz, Alexei Ivanovich; Leikin, Albert Yakovlevich; Grinberg, Efim Naumovich; Vinogradov, Vyacheslav Dmitrievich; Yanovskaya, Zinaida Solomonovna; and Bykov, Valery ndreevich, 3,845,704.

Yarborough, J. Michael, to Coherent Radiation. Multiple dye stream laser. 3,846,715, Cl. 331-94.500.

Yasuda, Michio: *See—*
Oka, Mitsunori; and Yasuda, Michio, 3,846,754.

Yasui, Satoshi: *See—*
Akazawa, Yoshinobu; Yagyu, Masami; Nozawa, Shigenori; and Yasui, Satoshi, 3,846,548.

Yata, Kotaro; and Matsuda, Motonobu, to Minolta Camera Kabushiki Kaisha. Automatic flash device for a photographic camera. 3,846,806, Cl. 354-31.000.

Yata, Koutaro; and Sahara, Masayoshi, to Minolta Camera Kabushiki Kaisha. Electrical exposure control device for photographic cameras. 3,846,814, Cl. 354-226.000.

Yazawa, Masahide, to Polymer Processing Research Institute Ltd. Method for producing laminated materials of fibers. 3,846,205, Cl. 156-291.000.

Yeman, Donald E.: *See—*
Schwarz, Karl E.; and Yeman, Donald E., 3,845,855.

Ylonen, George. Excavating apparatus. 3,845,989, Cl. 299-13.000.

Yogev, Amnon: *See—*
Bronicki, Lucien Yehuda; and Yogev, Amnon, 3,845,628.

Yokohama Rubber Co., Ltd., The: *See—*
Hirakawa, Hiroshi; and Sakai, Toshiyuki, 3,846,160.

Yokoi, Fumitoshi: *See—*
Yamagishi, Hidehisa; and Yokoi, Fumitoshi, 3,845,539.

Yokokawa, Sumio: *See—*
Takanashi, Itsuo; Miyoshi, Tadayoshi; Uesaka, Koji; Miyazaki, Kenichi; and Yokokawa, Sumio, 3,846,579.

Yokota, Ken: *See—*
Isawa, Kazuo; Maejima, Masatsugu; Kiuchi, Kuninosuke; Yokota, Ken; and Ogawa, Masaru, 3,846,170.

Yoneda, Toyoaki: *See—*
Mifune, Akira; Katsuda, Yoshio; and Yoneda, Toyoaki, 3,846,551.

Yoshida Kogyo Kabushiki Kaisha: *See—*
Kawakami, Koichi, 3,845,526.

Yoshida, Kunio; and Tsugawa, Kenjiro, to Sharp Kabushiki Kaisha. Electronic desk calculator with verification function. 3,846,626, Cl. 235-153.0bk.

Yoshida, Soushi; Iwama, Atsuaki; Okada, Takashi; and Suda, Tetuo, to Kobe Steel, Ltd. Apparatus for withdrawal of cured tires from a press for shaping and curing tires. 3,846,058, Cl. 425-38.000.

Yossa, Frank A.: *See—*
Raabe, Francis O.; and Yossa, Frank A., 3,846,190.

Young, Dean Arthur, to Union Oil Company of California. Phosphate-silica-aluminosilicate compositions of improved crushing strength and methods of preparing the same. 3,846,337, Cl. 252-437.000.

Young, Frederick J.; Thompson, Francis T.; and Boomgaard, Dirk J., to Westinghouse Electric Corporation. Position indication system. 3,846,771, Cl. 340-195.000.

Young, William D.: *See—*
Kronish, Donald P.; Zuriff, Lee S.; Young, William D.; and Lewandowski, Paul R., 3,846,247.

Youtsey, Karl J.; Holt, William C., Jr.; and Carnahan, Robert D., to Universal Oil Products Company. Electrical resistor inks. 3,846,140, Cl. 106-20.000.

Zabiak, Daniel M.: *See—*
Ostergren, Dale C.; and Zabiak, Daniel M., 3,846,141.

Zabotto, Arlette, nee Arribau: *See—*
Handjani, Rose-Marie, nee Vila; and Zabotto, Arlette, nee Arribau, 3,846,556.

Zaffaroni, Alejandro, to Alza Corporation. Intrauterine contraceptive anti-fertility device for the management of reproduction. 3,845,761, Cl. 128-130.000.

Zahalka, Jindrich; Plander, Emil; and Grac, Zdenek, to Ustav pro vyzkum, vyrobu a vyuziti radioisotopu. Process for preparing 1,1,1-trichloroethane. 3,846,268, Cl. 204-163.0he.

Zaidan Hojin Biseibutsu Kagaku Kenyu Kai: *See—*
Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, 3,846,400.

Zanoni, Ernesto, to S.p.A. Luigi Franchi. Breech-block for automatic guns, more particularly automatic shotguns. 3,845,689, Cl. 89-181.000.

Zavyalov, Sergei Ivanovich: *See—*
Aronova, Nina Ivanovna; Makhova, Nina Nikolaevna; Zavyalov, Sergei Ivanovich; Volkenshtein, Jury Borisovich; and Kunitskaya, Galina Mikhailovna, 3,846,490.

Zech, John D., to ICI America Inc. Esters of lactic acid and fatty alcohols. 3,846,479, Cl. 260-484.00a.
Zehr, Phyllis Joan Lane; Lank, Monita May Thorp; and Lank, Psych, to Reactor Accelerator Development International, Inc. Method and means for utilizing accelerated neutral particles. 3,846,636, Cl. 250-499.000.
Zeile, Karl: *See—*
  Mentrup, Anton; Zeile, Karl; Danneberg, Peter; Schromm, Kurt; Guenard, Jeanette; Renth, Ernst-Otto; and Stotzer, Harry, 3,846,549.
Zellweger AG: *See—*
  Forgo. Gabor; Meyer, Erwin; and Moser, Karl, 3,846.150.
Zen, Giovanni. Lightweight concrete panel. 3,845,593, Cl. 52-144.000.
Zenno, Hisanao: *See—*
  Tanaka, Kunihiko; Kishimoto, Teiji; and Zenno, Hisanao, 3,846,432.
Zeunert, Fritz: *See—*
  Gerretz, Josef; Joeres, Paul; and Zeunert, Fritz, 3,845,649.
Zhabotinsky, Mark Efremovich: *See—*
  Buzhinsky, Igor Mikhailovich; Gapontsev, Valentin Pavlovich; Zhabotinsky, Mark Efremovich; Izyneev, Anatoly Andreevich; Koryagina, Elizaveta Ivanovna; Kravchenko, Valery Borisovich; Rudnitsky, Jury Petrovich; Sverchkov, Evgeny Ivanovich; Aleseev, Nikolai Eimovich; and Davydov, Boris Leonidovich, 3,846,142.
Zhislin, Yakov Moiseevich; Kirkunov, Alexandr Eliseevich; Sokolov, Alexandr Yakovlevich; Ivanoz, Alexei Ivanovich; Leikin, Albert Yakovlevich; Grinberg, Efim Naumovich; Vinogradov, Vyacheslav Dmitrievich; Yanovskaya, Zinaida Solomonovna; and Bykov, Valery ndreevich. Air-blast grain huller. 3,845,704, Cl. 99-519.000.
Ziegler, Clarence B., Jr. Rotary programmer with declutchable cams and tool operated adjustable mounting means. 3,846,597, Cl. 200-38.0ba.
Ziegler, William H., to United States of America, Army. Digital fluidic circuit with adjustable time delay means for output control. 3,845,690, Cl. 91-35.000.
Ziff, Louis J., to Larami Corporation. Bubble blowing device. 3,845,583, Cl. 46-7.000.
Zimmer, George A.; and Struttmann, Hilarius S., to Borg-Warner Corporation. Bearing assembly. 3,845,999, Cl. 308-194.000.
Zimmerhackel, Franz: *See—*
  Meuresch, Herbert; and Zimmerhackel, Franz, 3,845;887.
Zimmérman, Gilbert A.; and Sherman, Marshall L., to Aerojet-General Corporation. Composite polyurethane propellants with negative pressure exponent of ammonium sulfate. 3,846,195, Cl. 149-19.400.
Zoller, Henry, to Molnlycke, AB. Cup-shaped device for the collection of menstrual fluids and intended for internal use. 3,845,766, Cl. 128-285.000.
Zorn, Hugo; Broll, Helmut; and Reckziegel, Erich, to Agfa-Gevaert Aktiengesellschaft. Multilayered color photographic material with improved stability under tropical conditions. 3,846,133, Cl. 96-74.000.
Zuriff, Lee S.: *See—*
  Kronish, Donald P.; Zuriff, Lee S.; Young, William D.; and Lewandowski, Paul R., 3,846,247.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 5TH DAY OF NOVEMBER, 1974

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Bahl, Lalit R., D. I. Barnea, and H. Kobayashi, to International Business Machines Corp. Sequential learning predictor for an image compression system. T928,003, 11–5–74, Cl. 235—154.
Barnea, Daniel I.: *See—*
  Bahl, Lalit R., Barnea, and Kobayashi. T928,003.
Blackwell, Samuel E. Process for imparting flame retardance to polyester fibers. T928,001, 11–5–74, Cl. 8—17.
Cabbiness, Dale K., and G. J. Hanggi, to Continental Oil Co. Optical bench for a stable source of radiation. T928,005, 11–5–74, Cl. 356—256.
Carpenter, Robert G., E. Lindbloom, and M. T. McMahon, Jr., to International Business Machines Corp. System for reducing the number of increments in a bilevel electrical signal test pattern for non-linear circuits. T928,004, 11–5–74, Cl. 235—151.3.
Continental Oil Co.: *See—*
  Cabbiness, Dale K., and Hanggi. T928,005.
Delling, David R., and J. V. Wiseman, to Stauffer Chemical Co. Process for producing crystalline anhydrous sodium carbonate. T928,002, 11–5–74, Cl. 23—302.
Hanggi, George J.: *See—*
  Cabbiness, Dale K., and Hanggi. T928,005.
Imperial Chemical Industries Ltd.: *See—*
  Leslie, Victor J. T928,006.
International Business Machines Corp.: *See—*
  Bahl, Lalit R., Barnea, and Kobayashi. T928,003.
  Carpenter, Robert G., Lindbloom, and McMahon, Jr. T928,004.
Kobayashi, Hisashi: *See—*
  Bahl, Lalit R., Barnea, and Kobayashi. T928,003.
Leslie, Victor J., to Imperial Chemical Industries Ltd. Silencers. T928,006, 11–5–74, Cl. 117—97.
Lindbloom, Eric: *See—*
  Carpenter, Robert G., Lindbloom, and McMahon, Jr. T928,004.
McMahon, Maurice T., Jr.: *See—*
  Carpenter, Robert G., Lindbloom, and McMahon, Jr. T928,004.
Stauffer Chemical Co.: *See—*
  Delling, David R., and Wiseman. T928,002.
Wiseman, James V.: *See—*
  Delling, David R., and Wiseman. T928,002.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF NOVEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bassett, Max; H. W. Olsen, deceased, by M. M. Olsen, executrix, to C. Nelson Shields, Jr. Methods of grouting offshore structures. Re. 28,232, 10–22–74, Cl. 61—46.
Benghiat, Ralph, to The Riley Co. Priority interrupt monitoring system. Re. 28,221, 11–5–74, Cl. 340—172.5.
Bertrand, Guy, and J. M. Maison, to Rhone-Poulenc S.A. N-nitroso-4,4′-bis(2-phenylisopropyl)-diphenylamine. Re. 28,234, 11–5–74, Cl. 260—570.
Cook, F. W., & Associates, Inc.: *See—*
  Cook, Franklin W. Re. 28,226.
Cook, Franklin W., to F. W. Cook & Associates, Inc. Circulating air dryer. Re. 28,226, 11–5–74, Cl. 34—191.
Eastman Kodak Co.: *See—*
  Heseltine. Donald W., Jenkins, and Mee. Re. 28,225.
Elders, Gerald W., to Lee-Norse Co. Mine roof pins and apparatus for setting the same. Re. 28,227, 11–5–74, Cl. 85—10.
Faust, John A., and M. Sahyun; said Faust assignor to said Sahyun, d.b.a. Sahyun Laboratories. Beta-alkoxy-trifluoromethylphenalkylamines. Re. 28,229, 11–5–74, Cl. 424—330.
Glastrusions, Inc.: *See—*
  Goldsworthy, William B. Re. 28,233.
Goldsworthy, William B., to Glastrusions, Inc. Augmented curing of reinforced plastic stock. Re. 28,233, 11–5–74, Cl. 156—380.
Graham, Donald P., to Hercules, Inc. Booster cap assembly. Re. 28,228. 11–5–74, Cl. 102—24.
Hashizume, George K.: *See—*
  Odenthal, Conrad J., and Hashizume. Re. 28,223.
Hercules. Inc.: *See—*
  Graham, Donald P. Re. 28,228.
Heseltine, Donald W., P. W. Jenkins, and J. D. Mee, to Eastman Kodak Co. Photobleachable dye composition. Re. 28,-225. 11–5–74, Cl. 96—27.
Horstkorta, Donald A.: *See—*
  Stosberg. Arturo E., and Horstkorta. Re. 28,231.
Illinois Tool Works Inc.: *See—*
  Rayburn, Charles C. Re. 28,230.
Jenkins, Philip W.: *See—*
  Heseltine, Donald W., Jenkins, and Mee. Re. 28,225.
Lee-Norse Co.: *See—*
  Elders, Gerald W. Re. 28,227.
Machein, Kurt R.: *See—*
  Stosberg, Arturo E., and Horstkorta. Re. 28,231.
Maison, Jean M.: *See—*
  Bertrand, Guy, and Maison. Re. 28,234.
Mee, John D.: *See—*
  Heseltine, Donald W., Jenkins, and Mee. Re. 28,225.
Metcalf, Michael H., to Tektronix, Inc. Transistor matrix. Re. 28,224, 11–5–74, Cl. 340—166.
Odenthal, Conrad J., and G. K. Hashizume, to Tektronix, Inc. Electron beam deflection apparatus. Re. 28,223, 11–5–74, Cl. 315—3.
Olsen, Horace W.: *See—*
  Bassett, Max, Olsen, and Shields Jr. Re. 28,232.
Olsen, Magdalene M.: *See—*
  Bassett, Max, Olsen, and Shields Jr. Re. 28,232.
Rayburn, Charles C., to Illinois Tool Works Inc. Method of making a miniature metalized capacitor. Re. 28,230, 11–5–74, Cl. 29—25.42.
Rhone-Poulenc S.A.: *See—*
  Bertrand, Guy, and Maison. Re. 28,234.
Riley Co., The: *See—*
  Benghiat, Ralph. Re. 28,221.
Sahyun Laboratories: *See—*
  Faust, John A., and Sahyun. Re. 28,229.
Sahyun, Melville: *See—*
  Faust, John A., and Sahyun. Re. 28,229.
Shields, C. Nelson, Jr.: *See—*
  Bassett, Max, Olsen, and Shields Jr. Re. 28,232.
Stosberg, Arturo E., and D. A. Horstkorta, to Kurt R. Machein. Single picture selector system. Re. 28,231, 8–13–68, Cl. 360—35.
Tektronix, Inc.: *See—*
  Metcalf, Michael H. Re. 28,224.
  Odenthal, Conrad J., and Hashizume. Re. 28,223.
Wycoff, Keith H. Communication receiver incorporating tone operated pulser circuit and electronic switch. Re. 28,222, 11–5–74, Cl. 325—492.

LIST OF PLANT PATENTEES

Cole Nursery Co., Inc.: *See—*
  Ross, Henry A. 3,644.
Howard, Grady, Jr., assignor of a fractional part interest to J and L Plants, Inc., d.b.a. Howard Greenhouses. Kalanchoe plant. 3,645, 11–5–74, Cl. 68.
Irwin, James T., to J and L Plants, Inc. Kalanchoe plant. 3,646, 11–5–74, Cl. 68.
J and L Plants, Inc.: *See—*
  Howard, Grady, Jr. 3,645.
  Irwin, James T. 3,646.
Ross, Henry A., to Cole Nursery Co., Inc. Flowering crab-apple tree. 3,644, 11–5–74, Cl. 34.

LIST OF DESIGN PATENTEES

- Alaska, St. Barth. Sunglasses. 233,560, 11-5-74, Cl. D57—1.
- Almac Enterprises, Inc.: *See*—
  - Zelkowitz, Philip. 233,497.
- Aslesen, Donald M.: *See*—
  - Ocel, Donald J., J. J., S. F., and Aslesen. 23,533.
- Bailey, Robert A. Belt attachable flash light holder. 233,490, 11-5-74, Cl. D2—400.
- Baker, John B. Safety flag for a bicycle. 233,510, 11-5-74, Cl. D10—109.
- Beadle, Raymond G. Automobile overtire. 233,516, 11-5-74, Cl. D12—154.
- Beldarrain, Francisco, to Orbaiceta, S.A. Portable heater. 233,524, 11-5-74, Cl. D23—123.
- Bell Telephone Laboratories, Inc.: *See*—
  - Chen, Paul E., Manganello, and Sylvester. 233,519.
- Bierbusse, James H., to Uniroyal, Inc. Pneumatic tire tread and buttress. 233,515, 11-5-74, Cl. D12—143.
- Bolyos, Imre. Armchair. 233,494, 11-5-74, Cl. D6—69.
- Britt, David L.: *See*—
  - Lyons, Paul A., Burks, and Britt. 233,568.
- Burks, Nathaniel W., Jr.: *See*—
  - Lyons, Paul A., Burks, and Britt. 233,568.
- Chen, Paul E., J. C. Manganello, and G. E. Sylvester, to Bell Telephone Laboratories, Inc. Ornamental design for a building. 233,519, 11-5-74, Cl. D13—1.
- Chevron Research Co.: *See*—
  - McHone, Noel L. 233,509.
  - Pinotti, Primo L. 233,508.
- Christiansen, Godtfred K., to Interlego A.G. Toy assembly element. 233,541, 11-5-74, Cl. D34—15.
- Christiansen, Godtfred K., to Interlego A.G. Toy assembly element. 233,542, 11-5-74, Cl. D34—15.
- Christiansen, Godtfred K., to Interlego A.G. Toy assembly element. 233,543, 11-5-74, Cl. D34—15.
- Christoffel, Julius M., Jr., to Gayla Industries, Inc. Kite. 233,544, 11-5-74, Cl. D34—15.
- Colibri Lighters Ltd.: *See*—
  - Lowenthal, Hans. 233,526.
- Condon, Charles V., G. E. Moore, and J. Larson, to Watson Mfg. Medicine dispensing cabinet and similar article. 233,511, 11-5-74, Cl. D12—28.
- Corkill, Gary D. Locking bicycle stand. 233,513, 11-5-74, Cl. D12—115.
- Curry, Joyce, and M. G. Pugh. Ensemble including blouse and panty. 233,489, 11-5-74, Cl. D2—29.
- Design Properties, Inc.: *See*—
  - Foley, Dennis J., and Gilmore. 233,566.
- Doe, Walter P., to The Quaker Oats Co. Rattle toy. 233,540, 11-5-74, Cl. D34—15.
- Echterling, Eugene J., to Questor Corp. Dog figure toy ball. 233,539, 11-5-74, Cl. D34—15.
- Estes, David R., to Velo-Bind, Inc. Machine for binding books. 233,559, 11-5-74, Cl. D55—1.
- Flamagas S.A.: *See*—
  - Gili, Ricardo A. 233,527.
- Foley, Dennis J., and R. A. Gilmore, to Design Properties, Inc. Highway communications standard. 233,566, 11-5-74, Cl. D72—1.
- Frick, Berndt E. Sound reducing cover for a typewriter, teleprinter or the like. 233,564, 11-5-74, Cl. D64—11.
- Frick, Berndt E. Sound reducing cover for typewriter, teleprinter or the like. 233,565, 11-5-74, Cl. D64—11.
- Frontier Contact Lenses of Florida, Inc.: *See*—
  - Sitterle, George F. 233,551.
- Funahashi, Takaji. Stamp with interchangeable letter-blocks. 233,563, 11-5-74, Cl. D64—10.
- Gardisette International A.G.: *See*—
  - Schroeder, Peter E. 233,547.
  - Schroeder, Peter E. 233,548.
  - Schroeder, Peter E. 233,549.
- Gayla Industries, Inc.: *See*—
  - Christoffel, Julius M., Jr. 233,544.
- Gilbert, Evalin S. Hassock. 233,492, 11-5-74, Cl. D6—36.
- Gili, Ricardo A., to Flamagas S.A. Head of lighter. 233,527, 11-5-74, Cl. D27—36.
- Gilmore, Richard A.: *See*—
  - Foley, Dennis J., and Gilmore. 233,566.
- Girvin, Robert H. Motorcycle rack. 233,517, 11-5-74, Cl. D12—158.
- Goto, Kenjiro, to Mansei Kogyo Kabushiki Kaisha. Cigarette lighter. 233,530, 11-5-74, Cl. D27—42.
- Hanley, Hope. Implement for interweaving braid. 233,491, 11-5-74, Cl. D3—19.
- Herold, Don C. Polo goal. 233,536, 11-5-74, Cl. D34—5.
- Hetherington, James E., and J. H. Zelina. Fluorescent lantern. 233,550, 11-5-74, Cl. D48—24.
- Hines, Norma: *See*—
  - Laterra, Salvatore. 233,495.
- Hoffmann, Hans, to Telesco Brophey Ltd. Umbrella handle. 233,570, 11-5-74, Cl. D88—3.
- Horner, C. O. Roller skate. 233,537, 11-5-74, Cl. D34—14.
- Hunt, John D., to RCA Corp. Bagger station or similar article. 233,496, 11-5-74, Cl. D6—143.
- Intercollection Development SA: *See*—
  - Tuttle, Paul. 233,493.
- Interlego A.G.: *See*—
  - Christiansen, Godtfred K. 233,541.
  - Christiansen, Godtfred K. 233,542.
  - Christiansen, Godtfred K. 233,543.
- International Silver Co.: *See*—
  - Rutland, John. 233,502.
- Johns, Larry L. Liquid wax applicator. 233,545, 11-5-74, Cl. D37—3.
- Jordan, Anthony. Grease filter. 233,525, 11-5-74, Cl. D23—149.
- Juhlin, Sven-Eric, and P. Landgren. Caster. 233,505, 11-5-74, Cl. D8—226.
- Julius Blum & Co., Inc.: *See*—
  - Seery, Robert F. 233,553.
  - Seery, Robert F. 233,554.
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  - Seery, Robert F. 233,558.
- Karban, James. Combined golf putter head and mirror adapter. 233,535, 11-5-74, Cl. D34—5.
- Keller, Huey T., to The Vaughan Furniture Co., Inc. Dresser or the like. 233,498, 11-5-74, Cl. D6—154.
- Kelsey-Hayes Co.: *See*—
  - Reid, Donald J. 233,518.
- Kramer, Jochen: *See*—
  - Prochnow, Claus, Pfitzner, Kramer, and Schonfeld. 233,562.
- Landgren, Per-Olof: *See*—
  - Juhlin, Sven-Eric, and Landgren. 233,505.
- Larson, James: *See*—
  - Condon, Charles V., Moore, and Larson. 233,511.
- Laterra, Salvatore, assignor of a fractional part interest to Norma Hines. Ski storage rack. 233,495, 11-5-74, Cl. D6—130.
- LeVan, Eugene B. Extruded structural member or similar article. 233,520. 11-5-74, Cl. D13—6.
- Love, Thomas M., and T. M., Jr. Automobile. 233,512, 11-5-74, Cl. D12—91.
- Love, Thomas M., Jr.: *See*—
  - Love, Thomas M., and T. M. Jr. 233,512.
- Lowenthal, Hans, to Colibri Lighters Ltd. Cigarette lighter. 233,526, 11-5-74, Cl. D27—36.
- Lyons, Paul A., N. W. Burks, Jr., and D. L. Britt, to Medical Instruments & Technology Corp. Medical station instrument unit. 233,568, 11-5-74, Cl. D83—1.
- Majewski, Eugene J. Child's counting device. 233,522, 11-5-74, Cl. D19—59.
- Maloney, William J. II, to The Quaker Oats Co. Toy figure. 233,534, 11-5-74, Cl. D34—4.
- Manganello, Joseph C.: *See*—
  - Chen, Paul E., Manganello, and Sylvester. 233,519.
- Mansei Kogyo Kabushiki Kaisha: *See*—
  - Goto, Kenjiro. 233,530.
  - Moriya, Nobuyoshi. 233,529.
- Marrow, Jerome. Seasonal trimming for a mail box or similar article. 233,531, 11-5-74, Cl. D29—1.
- Matsushita Electric Co., Ltd.: *See*—
  - Taguchi, Shuhei. 233,546.
- Matsushita Electric Works, Ltd.: *See*—
  - Ono, Taisuke, and Ohi. 233,571.
- McHone, Noel L., to Chevron Research Co. Triple dual comparative falling ball viscometer. 233,509, 11-5-74, Cl. D10—84.
- Medical Instruments & Technology Corp.: *See*—
  - Lyons, Paul A., Burks, and Britt. 233,568.
- Miller, Bruce B., to Neo-Care, Inc. Combination manometer and variable relief valve. 233,569, 11-5-74, Cl. D83—12.
- Mitchell, Leon J. Holder for artificial floral petals and leaves. 233,532, 11-5-74, Cl. D27—1.
- Moore, George E.: *See*—
  - Condon, Charles V., Moore, and Larson. 233,511.
- Moriya, Nobuyoshi, to Mansei Koygo Kabushiki Kaisha. Cigarette lighter. 233,529, 11-5-74, Cl. D27—42.
- Morris, Alan E. Perpetual calendar. 233,521, 11-5-74, Cl. D19—25.
- Neo-Care, Inc.: *See*—
  - Miller, Bruce B. 233,569.
- Norrbohm, James R. Name plate holder. 233,572, 11-5-74, Cl. D96—12.
- Ocel, Donald J., J. J., S. F., and D. M. Aslesen. Table crusher. 233,533, 11-5-74, Cl. D32—3.
- Ocel, John J.: *See*—
  - Ocel, Donald J., J. J., S. F., and Aslesen. 233,533.
- Ocel, Samuel F.: *See*—
  - Ocel, Donald J., J. J., S. F., and Aslesen. 233,533.
- Ohi, Hisatane: *See*—
  - Ono, Taisuke, and Ohi. 233,571.
- Oneida Ltd.: *See*—
  - Perry, Frank R. 233,503.
- Ono, Taisuke, and H. Ohi, to Matsushita Electric Works, Ltd. Electric hair cutter. 233,571, 11-5-74, Cl. D95—3.
- Orbaiceta, S.A.: *See*—
  - Beldarrain, Francisco. 233,524.
- Oxford Pendaflex Corp.: *See*—
  - Perry, Gordon. 233,567.
- Perry, Frank R., to Oneida Ltd. Spoon or similar article. 233,503, 11-5-74, Cl. D7—137.
- Perry, Gordon, to Oxford Pendaflex Corp. Calendar holder. 233,567, 11-5-74, Cl. D74—5.
- Pfitzner, Claus: *See*—
  - Prochnow, Claus, Pfitzner, Kramer, and Schonfeld. 233,562.
- Phillips, David A. Ball bat picture frame. 233,500, 11-5-74, Cl. D6—239.
- Pinotti, Primo L., to Chevron Research Co. Dual comparative falling ball viscometer. 233,508, 11-5-74, Cl. D10—84.

- Prochnow, Claus, K. Pfitzner, J. Kramer, and H. Schonfeld, to Rollei-Werke Franke & Heidecke. Adjustable-head electronic flash unit. 233,562, 11-5-74, Cl. D61—1.
- Pugh, Martha G.: *See*—
  - Curry, Joyce, and Pugh. 233,489.
- Quaker Oats Co., The: *See*—
  - Doe, Walter P. 233,540.
  - Maloney, William J. II: 233,534.
- Questor Corp.: *See*—
  - Echterling Eugene J. 233,539.
- RCA Corp.: *See*—
  - Hunt, John D. 233,496.
- Racek, Alfred. Lighter. 233,528, 11-5-74, Cl. D27—42.
- Reid, Donald J., to Kelsey-Hayes Co. Wheel center. 233,518, 11-5-74, Cl. D12—211.
- Respress, James A. Bicycle fork. 233,514, 11-5-74, Cl. D12—118.
- Rey, Luis R., and D. K. Takacs, to Warner-Lambert Co. Dispenser for confectionery, gum and the like. 233,506, 11-5-74, Cl. D9—239.
- Rite Autotronics Corp.: *See*—
  - Schwartz, Edwin L. 233,552.
- Rollei-Werke Franke & Heidecke: *See*—
  - Prochnow, Claus, Pfitzner, Kramer, and Schonfeld. 233,562.
- Rutland, John, to International Silver Co. Spoon or similar article of flatware. 233,502, 11-5-74, Cl. D7—137.
- Sakamoto, Minoru. Combined water closed bowl and seat. 233,523, 11-5-74, Cl. D23—67.
- Sakata, James T. Restaurant dining table. 233,499, 11-5-74, Cl. D6—179.
- Schonfeld, Hans: *See*—
  - Prochnow, Claus, Pfitzner, Kramer, and Schonfeld. 233,562.
- Schroeder, Peter E., to Gardisette International A.G. Curtain fabric. 233,547, 11-5-74, Cl. D47—6.
- Schroeder, Peter E., to Gardisette International A.G. Curtain fabric. 233,548, 11-5-74, Cl. D47—6.
- Schroeder, Peter E., to Gardisette International A.G. Curtain fabric. 233,549, 11-5-74, Cl. D47—6.
- Schwartz, Edwin L., to Rite Autotronics Corp. Tachometer with torque zone indicator. 233,552, 11-5-74, Cl. D52—6.
- Seery, Robert F., to Julius Blum & Co., Inc. Grillework for treillages, room dividers or the like. 233,553, 11-5-74, Cl. D54—2.
- Seery, Robert F., to Julius Blum & Co., Inc. Grillework for treillages, room dividers or the like. 233,554, 11-5-74, Cl. D54—2.
- Seery, Robert F., to Julius Blum & Co., Inc. Grillework for treillages, room dividers or the like. 233,555, 11-5-74, Cl. D54—2.
- Seery, Robert F., to Julius Blum & Co., Inc. Grillework for treillages, room dividers or the like. 233,556, 11-5-74, Cl. D54—2.
- Seery, Robert F., to Julius Blum & Co., Inc. Grillework for treillages, room dividers or the like. 233,557, 11-5-74, Cl. D54—2.
- Seery, Robert F., to Julius Blum & Co., Inc. Grillework for treillages, room dividers or the like. 233,558, 11-5-74, Cl. D54—2.
- Singleton, Esther L. Ornamental design for a combined rabbit figure and tricycle toy. 233,538, 11-5-74, Cl. D34—15.
- Sitterle, George F., to Frontier Contact Lenses of Florida, Inc. Contact lens steamer unit or the like. 233,551, 11-5-74, Cl. D49—11.
- Stevens, Peter P., Jr. Container closure or the like. 233,507, 11-5-74, Cl. D9—285.
- Sylvester, Gordon E.: *See*—
  - Chen, Paul E., Manganello, and Sylvester. 233,519.
- Taguchi, Shuhei, to Matsushita Electric Co., Ltd. Digital clock radio. 233,546, 11-5-74, Cl. D42—7.
- Takacs, Donald K.: *See*—
  - Rey, Luis R., and Takacs. 233,506.
- Telesco Brophey Ltd.: *See*—
  - Hoffmann, Hans. 233,570.
- Tuttle, Paul, to Intercollection Development SA. Chaise lounge. 233,493, 11-5-74, Cl. D6—38.
- Uniroyal, Inc.: *See*—
  - Bierbusse, James H. 233,515.
- Vaughan Furniture Co., Inc., The: *See*—
  - Keller, Huey T. 233,498.
- Velo-Bind, Inc.: *See*—
  - Estes, David R. 233,559.
- Warner-Lambert Co.: *See*—
  - Rey, Luis R., and Takacs. 233,506.
- Watson Mfg.: *See*—
  - Condon, Charles V., Moore, and Larson. 233,511.
- Wildman, William C. Stile clamp. 233,504, 11-5-74, Cl. D8—72.
- Yoshino, Zenzaburo, to Zenza Bronica Kogyo Kabushiki Kaisha. Camera. 233,561, 11-5-74, Cl. D61—1.
- Zeischegg, Walter. Dish. 233,501, 11-5-74, Cl. D7—1.
- Zelina, John H.: *See*—
  - Hetherington, James E., and Zelina. 233,550.
- Zelkowitz, Philip, to Almac Enterprises, Inc. Convertible game table. 233,497, 11-5-74, Cl. D6—149.
- Zenza Bronica Kogyo Kabushiki Kaisha: *See*—
  - Yoshino, Zenzaburo. 233,561.

CLASSIFICATION OF PATENTS

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NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	
21	3,845,504
209	3,845,505
224R	3,845,506
CLASS 3	
36	3,845,507
CLASS 4	
7	3,845,509
41	3,845,508
172	3,845,510
CLASS 5	
53R	3,845,511
82	3,845,512
336	3,845,513
CLASS 8	
2.5	3,846,069
172	3,846,070
CLASS 13	
31	3,846,574
CLASS 14	
1	3,845,514
77	3,845,515
CLASS 15	
93B	3,845,516
	3,845,517
228	3,845,518
250.32	3,845,519
CLASS 19	
144.5	3,845,520
CLASS 21	
2.7A	3,846,071
74R	3,846,072
CLASS 23	
230A	3,846,073
230R	3,846,074
253R	3,846,075
254E	3,846,076
259	3,846,077
267A	3,846,078
283	3,846,079
288S	3,846,080
297	3,846,081
301SP	3,846,082
CLASS 24	
67.9	3,845,521
74A	3,845,522
134P	3,845,523
201A	3,845,525
205R	3,845,526
221R	3,845,527
222R	3,845,524
CLASS 28	
1.4	3,845,528
4R	3,845,529
CLASS 29	
25.13	3,845,530
25.42	Re.28,230
33C	3,845,531
40	3,845,532
90R	3,845,533
130	3,845,534
157R	3,846,083
191.2	3,846,084
191.6	3,846,085
203DT	3,845,536
203MW	3,845,535
208F	3,845,537
234	3,845,538
420	3,845,539
430	3,845,540
432	3,845,541
458	3,845,542
	3,845,544
472.3	3,845,543
494	3,845,545
568	3,845,546
596	3,845,547
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600	3,845,549
603	3,845,550
605	3,845,551
628	3,845,552
CLASS 30	
29	3,845,553
125	3,845,554
164.9	3,845,555
381	3,845,556
	3,845,557
CLASS 32	
3	3,845,558
CLASS 33	
107	3,845,563
143M	3,845,559
164R	3,845,564
168R	3,845,560
169R	3,845,561
	3,845,562
174E	3,845,567
	3,845,568
174L	3,845,566
174R	3,845,565
312	3,845,569
401	3,845,570
CLASS 34	
191	Re.28,226
CLASS 35	
10.2	3,845,571
11	3,845,572
19A	3,845,573
72	3,845,574
CLASS 36	
50	3,845,575
77R	3,845,576
CLASS 37	
42VL	3,845,577
141R	3,845,578
CLASS 40	
78	3,845,579
121	3,845,580
CLASS 42	
76R	3,845,581
CLASS 44	
40	3,846,086
51	3,846,087
56	3,846,088
58	3,846,089
62	3,846,090
	3,846,091
	3,846,092
	3,846,093
CLASS 46	
7	3,845,583
CLASS 47	
56	3,845,584
CLASS 48	
180C	3,846,094
196R	3,846,095
209	3,846,096
CLASS 49	
139	3,845,585
CLASS 51	
12	3,845,586
118	3,845,587
139	3,845,588
219R	3,845,589
CLASS 52	
36	3,845,590
67	3,845,591
93	3,845,592
	3,845,595
98	3,845,594
118	3,845,596
144	3,845,593
166	3,845,597
173	3,845,598
209	3,845,599
222	3,845,600
290	3,845,601
741	3,845,602
753J	3,845,603
758H	3,845,604
CLASS 53	
3	3,845,605
21FC	3,845,606
378	3,845,607
CLASS 56	
13.3	3,845,608
27.5	3,845,609
328R	3,845,610
CLASS 57	
5	3,845,611
56	3,845,612
77.4	3,845,613
CLASS 58	
19A	3,845,614
50R	3,845,615
121R	3,845,616
129	3,845,617
CLASS 59	
80	3,845,618
CLASS 60	
39.51H	3,845,619
39.65	3,845,620
282	3,845,621
330	3,845,622
425	3,845,623
517	3,845,624
524	3,845,625
525	3,845,626
641	3,845,627
656	3,845,628
719	3,845,629
CLASS 61	
4	3,845,630
30	3,845,631
36R	3,845,632
46	Re.28,232
46.5	3,845,633
	3,845,634
CLASS 62	
51	3,845,635
55	3,845,636
155	3,845,637
426	3,845,638
505	3,845,639
CLASS 65	
2	3,846,097
18	3,846,098
30	3,846,099
	3,846,100
33	3,846,101
65A	3,846,102
79	3,846,103
104	3,846,104
106	3,846,105
114	3,846,106
164	3,846,107
182R	3,846,108
	3,846,109
273	3,846,110
CLASS 66	
91	3,845,640
192	3,845,641
CLASS 68	
23.7	3,845,642
CLASS 70	
18	3,845,643
74	3,845,644
CLASS 71	
28	3,846,111
65	3,846,116
76	3,846,112
91	3,846,113
97	3,846,114
100	3,846,115
CLASS 72	
12	3,845,645
100	3,845,646
137	3,845,647
173	3,845,648
189	3,845,649
310	3,845,650
332	3,845,651
349	3,845,652
354	3,845,653
381	3,845,654
389	3,845,655
392	3,845,656
CLASS 73	
88.5R	3,845,657
104	3,845,658
133R	3,845,659
194E	3,845,660
343R	3,845,661
358	3,845,662
359	3,845,706
379	3,845,663
406	3,845,664
432SD	3,845,665
CLASS 74	
336	3,845,666
412	3,845,668
422	3,845,669
465	3,845,670
567	3,845,667
710.5	3,845,671
711	3,845,672
751	3,845,673
878	3,845,674
CLASS 75	
.5AA	3,846,117
	3,846,118
43	3,846,119
59	3,846,120
62	3,846,121
68C	3,846,122
68R	3,846,123
112	3,846,124
165	3,846,125
211	3,846,126
CLASS 81	
3.3R	3,845,675
CLASS 82	
1.3	3,845,676
29R	3,845,677
92	3,845,678
CLASS 83	
110	3,845,679
146	3,845,680
356.3	3,845,681
431	3,845,682
CLASS 84	
1.01	3,845,683
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CLASS 85	
10R	Re.28,227
CLASS 89	
37K	3,845,687
146	3,845,688
181	3,845,689
CLASS 91	
35	3,845,690
325	3,845,691
369B	3,845,692
371	3,845,693
402	3,845,694
CLASS 93	
1TS	3,845,695
35SB	3,845,697
35R	3,845,696
61R	3,845,698
CLASS 95	
42	3,845,699
CLASS 96	
1M	3,846,127
3	3,846,128
	3,846,129
22	3,846,130
27R	Re.28,225
48R	3,846,131
60R	3,846,132
68	3,846,135
74	3,846,133
84R	3,846,134
114.1	3,846,136
130	3,846,137
CLASS 98	
2	3,845,700
CLASS 99	
323.5	3,845,701
408	3,845,702
491	3,845,703
519	3,845,704
643	3,845,705
CLASS 100	
53	3,845,707
155	3,845,708
CLASS 101	
93C	3,845,709
93.14	3,845,710
111	3,845,711
129	3,845,712
148	3,845,713
CLASS 102	
24R	Re.28,228
70.2R	3,845,714
CLASS 104	
1R	3,845,715
23FS	3,845,716
26	3,845,717
130	3,845,718
	3,845,719
148LM	3,845,721
148MS	3,845,720
165	3,845,722
CLASS 105	
147	3,845,723
164	3,845,724
197DB	3,845,725
282P	3,845,726
CLASS 106	
1	3,846,138
3	3,846,139
20	3,846,140
22	3,846,141
47R	3,846,142
52	3,846,143
56	3,846,144
57	3,846,145
62	3,846,146
288B	3,846,147
308B	3,846,148
CLASS 108	
111	3,845,727
131	3,845,728
CLASS 110	
72R	3,845,729
CLASS 111	
88	3,845,730
CLASS 112	
102	3,845,731
264	3,845,732
CLASS 115	
28R	3,845,733
CLASS 116	
114Q	3,845,735
114R	3,845,734
124R	3,845,736
CLASS 117	
6	3,846,149
17.5	3,846,150
21	3,846,151
33.3	3,846,152
36.9	3,846,153
46CG	3,846,154
62.2	3,846,155
63	3,846,156
64R	3,846,157
68.5	3,846,158
71M	3,846,159
79	3,846,160
93	3,846,161
106R	3,846,162
122PA	3,846,163
126GB	3,846,164
201	3,846,165
212	3,846,166
	3,846,167
213	3,846,168
	3,846,169
218	3,846,170
223	3,846,171
CLASS 118	
8	3,845,737
49	3,845,738
49.1	3,845,739
52	3,845,740
57	3,845,741
60	3,845,742
CLASS 119	
14.31	3,845,743
51.13	3,845,744
CLASS 123	
8.01	3,845,747
25L	3,845,745
30C	3,845,746
32R	3,845,748
133	3,845,749
139AW	3,845,750
196A	3,845,751
CLASS 124	
35	3,845,752
CLASS 126	
9R	3,845,753
121	3,845,754
401	3,845,755
CLASS 128	
2.06R	3,845,756
2.1E	3,845,757
56	3,845,758
66	3,845,759
79	3,845,760
130	3,845,761
142.7	3,845,768
165	3,845,769
218DA	3,845,763
218P	3,845,762
233	3,845,764
260	3,845,770
277	3,845,765
285	3,845,766
	3,845,767
303.13	3,845,771
335	3,845,772
419P	3,845,773
CLASS 131	
140C	3,845,774
CLASS 134	
4	3,846,172
10	3,846,173
CLASS 135	
1A	3,845,775
CLASS 136	
6R	3,846,174
14	3,846,175
86R	3,846,176
114	3,846,177
166	3,846,178
171	3,846,179
176	3,846,180
CLASS 137	
116	3,845,776
119	3,845,777
204	3,845,778
209	3,845,779
251	3,845,780
331	3,845,781
360	Re.28,235
493	3,845,782
504	3,845,783
515	3,845,784
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571	3,845,787
604	3,845,788
CLASS 138	
97	3,845,789
CLASS 139	
194	3,845,790
CLASS 141	
6	3,845,791
46	3,845,792
67	3,845,793
83	3,845,794
313	3,845,795
CLASS 144	
1R	3,845,796
2N	3,845,797
CLASS 145	
2R	3,845,798
CLASS 148	
1.5	3,846,181
6.2	3,846,182
12	3,846,183
36	3,846,184
37	3,846,186
112	3,846,187

120	3,846,185
133	3,846,188
135	3,846,189
155	3,846,190
172	3,846,191
175	3,846,192
187	3,846,193
188	3,846,194
CLASS 149	
19.4	3,846,195
CLASS 150	
29	3,845,799
39	3,845,800
CLASS 152	
233	3,845,802
CLASS 156	
8	3,846,196
11	3,846,197
17	3,846,198
61	3,846,199
85	3,846,200
96	3,846,201
143	3,846,202
265	3,846,203
275	3,846,204
291	3,846,205
294	3,846,206
380	Re.28,233
443	3,846,207
499	3,846,208
502	3,846,209
583	3,846,210
CLASS 159	
48R	3,845,801
CLASS 160	
166	3,845,803
328	3,845,804
CLASS 161	
7	3,846,211
15	3,846,212
17	3,846,213
19	3,846,214
47	3,846,215
49	3,846,216
88	3,846,217
111	3,846,218
119	3,846,219
145	3,846,220
159	3,846,221
162	3,846,222
	3,846,223
170	3,846,224
175	3,846,225
178	3,846,226
CLASS 162	
5	3,846,227
206	3,846,228
216	3,846,229
	3,846,230
263	3,846,231
301	3,846,232
312	3,846,233
CLASS 164	
89	3,845,805
250	3,845,806
255	3,845,807
258	3,845,808
259	3,845,809
276	3,845,810
281	3,845,811
335	3,845,812
CLASS 165	
47	3,845,813
148	3,845,814
CLASS 166	
120	3,845,816
154	3,845,815
224S	3,845,818
239	3,845,819
245	3,845,817
266	3,845,820
269	3,845,821
281	3,845,822
303	3,845,823
308	3,845,824
CLASS 172	
158	3,845,825
CLASS 173	
48	3,845,826
162	3,845,827
CLASS 174	
41	3,846,575
67	3,846,576
84C	3,846,577
88R	3,846,578
CLASS 175	
73	3,845,828
395	3,845,829
404	3,845,830
CLASS 176	
78	3,846,234
80	3,846,235
CLASS 178	
19	3,846,580
33R	3,846,581
58R	3,846,582
67	3,846,583
69.5TV	3,846,584
CLASS 179	
1SA	3,846,586
1ST	3,846,585
15AL	3,846,587
15FE	3,846,588
98	3,846,589
	3,846,590
100.1A	3,846,591
100.41K	3,846,592
175.3R	3,846,593
179	3,846,594
CLASS 180	
8F	3,845,831
14R	3,845,832
29	3,845,833
33A	3,845,834
54R	3,845,841
65R	3,845,835
82C	3,845,836
CLASS 181	
33K	3,845,839
36R	3,845,840
106	3,845,837
129	3,845,838
CLASS 187	
15	3,845,842
29R	3,845,843
CLASS 188	
32	3,845,844
	3,845,845
112	3,845,846
CLASS 191	
3	3,846,595
CLASS 192	
3S	3,845,847
CLASS 194	
13	3,845,848
97R	3,845,849
CLASS 195	
1.8	3,846,236
28R	3,846,237
	3,846,238
66R	3,846,239
68	3,846,240
100	3,846,241
103.5R	3,846,242
	3,846,243
104	3,846,244
109	3,846,245
	3,846,246
127	3,846,247
	3,846,248
CLASS 196	
111	3,846,249
CLASS 197	
1R	3,845,850
CLASS 198	
22R	3,845,851
34	3,845,852
78	3,845,853
184	3,845,854
213	3,845,855
	3,845,856
220CA	3,845,857
CLASS 200	
16D	3,846,596
38BA	3,846,597
51.09	3,846,598
61.89	3,846,599
83S	3,846,600
148B	3,846,601
148E	3,846,602
157	3,846,603
168D	3,846,604
316	3,846,605
CLASS 201	
39	3,846,250
CLASS 202	
234	3,846,251
262	3,846,252
CLASS 203	
7	3,846,253
11	3,846,254
18	3,846,255
33	3,846,256
CLASS 204	
1T	3,846,257
15	3,846,258
	3,846,259
25	3,846,260
56R	3,846,261
129.6	3,846,262
129.65	3,846,263
158R	3,846,264
159.12	3,846,265
159.17	3,846,267
159.2	3,846,266
163HE	3,846,268
181	3,846,269
192	3,846,294
195T	3,846,270
213	3,846,271
219	3,846,272
290F	3,846,273
299	3,846,274
CLASS 206	
233	3,845,858
320	3,845,859
338	3,845,860
523	3,845,861
CLASS 208	
10	3,846,275
11	3,846,276
31	3,846,277
57	3,846,278
93	3,846,279
120	3,846,280
139	3,846,281
	3,846,282
	3,846,283
216	3,846,284
	3,846,285
	3,846,286
	3,846,287
263	3,846,288
CLASS 209	
166	3,845,862
303	3,845,863
CLASS 210	
8	3,846,289
11	3,846,290
14	3,846,291
	3,846,292
18	3,846,293
23	3,846,295
27	3,846,296
31C	3,846,297
33	3,846,298
44	3,846,299
47	3,846,300
60	3,846,301
71	3,846,302
73	3,846,303
80	3,846,304
150	3,846,305
198C	3,846,306
323	3,846,307
331	3,846,308
370	3,846,309
471	3,846,320
512	3,846,321
CLASS 211	
153	3,845,864
CLASS 212	
57	3,845,865
64	3,845,866
65	3,845,869
CLASS 213	
121	3,845,867
CLASS 214	
42R	3,845,868
145	3,845,870
	3,845,871
CLASS 215	
9	3,845,872
13R	3,845,873
214	3,845,874
CLASS 219	
10.55	3,846,606
	3,846,607
	3,846,608
10.79	3,846,609
61	3,846,610
69E	3,846,611
121LM	3,846,612
145	3,846,613
302	3,846,614
333	3,846,615
365	3,846,616
370	3,846,617
373	3,846,618
532	3,846,619
543	3,846,620
550	3,846,621
CLASS 220	
20	3,845,875
86R	3,845,877
89A	3,845,878
	3,845,879
203	3,845,876
258	3,845,880
CLASS 221	
144	3,845,881
279	3,845,882
CLASS 222	
30	3,845,883
173	3,845,884
176	3,845,885
241	3,845,886
402.16	3,845,887
402.24	3,845,888
CLASS 224	
16	3,845,889
36	3,845,892
42.1C	3,845,890
42.21	3,845,891
CLASS 225	
1	3,845,893
25	3,845,894
93.5	3,845,895
CLASS 229	
2.5	3,845,896
16R	3,845,897
28R	3,845,898
CLASS 234	
1	3,846,718
CLASS 235	
61.11E	3,846,623
61.7B	3,846,622
92C	3,845,899
102	3,845,900
144E	3,846,624
151.1	3,846,706
152	3,846,625
153BK	3,846,626
CLASS 239	
102	3,845,901
314	3,845,902
406	3,845,903
410	3,845,904
CLASS 240	
62.2	3,846,627
CLASS 241	
26	3,845,905
32	3,845,906
36	3,845,907
46.11	3,845,908
65	3,845,909
245	3,845,910
CLASS 242	
18DD	3,845,911
18R	3,845,912
25R	3,845,913
56R	3,845,914
68.4	3,845,915
197	3,845,916
CLASS 244	
3.28	3,845,922
17.27	3,845,917
41	3,845,918
103R	3,845,919
137P	3,845,920
158	3,845,921
CLASS 248	
3	3,845,923
22	3,845,924
27	3,845,925
162	3,845,926
223	3,845,927
291	3,845,928
358R	3,845,929
CLASS 249	
29	3,845,930
CLASS 250	
201	3,846,628
	3,846,629
207	3,846,630
269	3,846,631
312	3,846,632
402	3,846,633
476	3,846,634
480	3,846,635
499	3,846,636
546	3,846,637
CLASS 251	
11	3,845,931
63.4	3,845,932
CLASS 252	
8.55B	3,846,311
8.55R	3,846,310
13	3,846,312
18	3,846,313
	3,846,314
	3,846,315
33	3,846,316
46.7	3,846,317
47.5	3,846,318
49.5	3,846,319
62.62	3,846,322
62.63	3,846,323
95	3,846,324
99	3,846,325
107	3,846,326
170	3,846,327
301.6S	3,846,328
358	3,846,329
361	3,846,330
364	3,846,331
	3,846,332
408	3,846,333
414	3,846,334
428	3,846,335
435	3,846,336
437	3,846,337
	3,846,338
438	3,846,339
455R	3,846,340
462	3,846,341
465	3,846,342
466PT	3,846,343
466J	3,846,344
514	3,846,345
527	3,846,346
CLASS 254	
8R	3,845,933
105	3,845,934
110	3,845,935
CLASS 256	
1	3,845,936
CLASS 258	
1.8	3,845,937
CLASS 259	
8	3,845,938
10	3,845,939
107	3,845,940
157	3,845,941
CLASS 260	
2.5AF	3,846,347
2.5AJ	3,846,348
2.5AM	3,846,351
2.5HA	3,846,349
2.5H	3,846,350
5	3,846,352
9	3,846,353
17.4ST	3,846,354
18EP	3,846,356
18TN	3,846,355
18N	3,846,357
18S	3,846,358
22S	3,846,359
23.7R	3,846,360
28.5AS	3,846,362
28.5D	3,846,361
29.6BM	3,846,363
33.6AQ	3,846,365
33.6UB	3,846,364
37EP	3,846,366
37N	3,846,367
39SB	3,846,453
39R	3,846,368
40R	3,846,369
42.33	3,846,371
42.36	3,846,370
45.75R	3,846,372
45.95G	3,846,373
61	3,846,375
	3,846,376
75T	3,846,377
77.5TB	3,846,378
78A	3,846,380
78R	3,846,381
78S	3,846,379
78.3R	3,846,382
78.5R	3,846,383
80.3E	3,846,384
80.7	3,846,385
80.72	3,846,386
80.78	3,846,387
82.1	3,846,388
83.5	3,846,389
86.3	3,846,390
87.3	3,846,391
88.7R	3,846,833
93.1	3,846,392
93.5A	3,846,393
93.7	3,846,394
94.9GA	3,846,396
94.9GC	3,846,395
112R	3,846,397
112.5	3,846,398
	3,846,399
	3,846,400
211.5R	3,846,401
	3,846,402
227	3,846,403
230	3,846,404
233.3R	3,846,405
239BB	3,846,408
239D	3,846,409
239.1	3,846,406
	3,846,407
239.3D	3,846,410
239.5	3,846,411
240G	3,846,412
	3,846,413
	3,846,414
	3,846,415
243C	3,846,416
	3,846,417
	3,846,418
244R	3,846,419
247	3,846,420
247.2A	3,846,421
248CS	3,846,422
248NS	3,846,423
248A	3,846,424
250QN	3,846,425
252	3,846,426
256.4C	3,846,428
256.4Q	3,846,427
260	3,846,429
268PH	3,846,430
268TR	3,846,431
283S	3,846,432
285.5	3,846,433
287R	3,846,434
290P	3,846,435
293.82	3,846,436
294.8C	3,846,437
302SD	3,846,438
307A	3,846,439
	3,846,440
309.5	3,846,441
	3,846,442
309.7	3,846,443
310A	3,846,444
315	3,846,445
326.47	3,846,447
326.9	3,846,446
327E	3,846,449
327M	3,846,448
340.2	3,846,450
343.4	3,846,452
348A	3,846,451
396R	3,846,454
397.2	3,846,455
397.3	3,846,456
398.5	3,846,457
404	3,846,458
429.7	3,846,459
438.1	3,846,460
439R	3,846,461
448.2E	3,846,464
448.2N	3,846,462
448.8R	3,846,463
453R	3,846,465
455A	3,846,466
	3,846,467
463	3,846,468
	3,846,469
465C	3,846,473
465E	3,846,470
465.8R	3,846,471
	3,846,474
465.9	3,846,472
468D	3,846,475
471C	3,846,476
482C	3,846,477
484A	3,846,479
484R	3,846,478
485G	3,846,480
501.1	3,846,481
502.4P	3,846,482
	3,846,483
514.5	3,846,484
515R	3,846,485
519	3,846,486
524R	3,846,487
526N	3,846,488
534C	3,846,489
534R	3,846,490
551P	3,846,374
552R	3,846,491
558R	3,846,492
561N	3,846,493
	3,846,495
561R	3,846,494
570R	Re.28,234
570.7	3,846,496
592	3,846,497
	3,846,498
610B	3,846,499
611A	3,846,500
613D	3,846,501
614F	3,846,502
666P	3,846,503
	3,846,504
683.45	3,846,505
825	3,846,506
857TW	3,846,507
859R	3,846,508
876R	3,846,509
	3,846,510
880R	3,846,511
938	3,846,514
943	3,846,512
960	3,846,513
CLASS 261	
18B	3,846,515
87	3,846,516
91	3,846,517
123	3,846,518
151	3,846,519
CLASS 264	
.5	3,846,520

22	3,846,521
25	3,846,522
41	3,846,523
45.3	3,846,524
46.5	3,846,525
46.8	3,846,526
63	3,846,527
85	3,846,528
142	3,846,529
154	3,846,530
161	3,846,531
210F	3,846,532
225	3,846,533
	3,846,534
CLASS 266	
23K	3,845,942
38	3,845,943
CLASS 269	
48.1	3,845,944
323	3,845,945
	3,845,946
324	3,845,947
CLASS 270	
40	3,845,948
CLASS 271	
64	3,845,949
194	3,845,950
243	3,845,951
CLASS 272	
1E	3,845,952
CLASS 273	
29A	3,845,953
75	3,845,954
77A	3,845,955
85F	3,845,956
101	3,845,957
135D	3,845,958
153S	3,845,959
171	3,845,960
CLASS 277	
212F	3,845,961
CLASS 279	
1J	3,845,962
89	3,845,963
CLASS 280	
11.35C	3,845,965
11.35K	3,845,964
11.35T	3,845,966
14	3,845,967
36C	3,845,968
47.13	3,845,969
150AB	3,845,970
	3,845,971
CLASS 285	
24	3,845,972
26	3,845,973
47	3,845,974
283	3,845,975
CLASS 292	
158	3,845,976
CLASS 293	
19	3,845,977
CLASS 294	
83R	3,845,978
88	3,845,979
CLASS 296	
23R	3,845,980
28C	3,845,981
65A	3,845,982
84	3,845,983
CLASS 297	
56	3,845,984
184	3,845,985
239	3,845,986
385	3,845,987
440	3,845,988
CLASS 299	
13	3,845,989
CLASS 302	
15	3,845,990
CLASS 303	
3	3,845,991
21F	3,845,992
CLASS 307	
3	3,846,638
9	3,846,639
10AT	3,846,640
41	3,846,641
239	3,846,642
247R	3,846,643
252J	3,846,644
260	3,846,645
268	3,846,646
273	3,846,647
293	3,846,648
CLASS 308	
3.6	3,846,001
6	3,845,993
8.2	3,845,994
10	3,845,995
	3,845,996
	3,845,997
36.1	3,845,998
194	3,845,999
238	3,846,000
CLASS 310	
8	3,846,649
8.2	3,846,650
61	3,846,651
90	3,846,652
102	3,846,653
CLASS 312	
107	3,846,002
204	3,846,003
209	3,846,004
248	3,846,005
CLASS 313	
94	3,846,654
118	3,846,655
188	3,846,656
195	3,846,657
408	3,846,658
411	3,846,659
421	3,846,660
491	3,846,661
496	3,846,662
CLASS 315	
3	Re.28,223
	3,846,663
3.6	3,846,664
5.43	3,846,665
27TD	3,846,666
39.53	3,846,667
111	3,846,668
169TV	3,846,670
169R	3,846,669
291	3,846,671
312	3,846,672
400	3,846,673
CLASS 316	
26	3,846,006
CLASS 317	
13C	3,846,674
33SC	3,846,676
33R	3,846,675
107	3,846,677
120	3,846,678
132	3,846,679
CLASS 318	
115	3,846,681
138	3,846,682
221H	3,846,683
257	3,846,684
327	3,846,685
349	3,846,686
446	3,846,687
490	3,846,688
571	3,846,689
685	3,846,680
CLASS 320	
1	3,846,690
CLASS 321	
2	3,846,691
8R	3,846,692
12	3,846,693
18	3,846,694
27R	3,846,695
CLASS 323	
1	3,846,696
CLASS 324	
34GT	3,846,697
51	3,846,698
57R	3,846,699
72	3,846,700
175	3,846,701
186	3,846,702
CLASS 325	
53	3,846,703
66	3,846,704
141	3,846,705
334	3,846,707
492	Re.28,222
CLASS 329	
104	3,846,708
CLASS 330	
4.3	3,846,709
11	3,846,710
29	3,846,711
30D	3,846,712
192	3,846,713
CLASS 331	
94.5	3,846,715
	3,846,716
107G	3,846,714
CLASS 332	
52	3,846,717
CLASS 333	
14	3,846,719
22R	3,846,720
26	3,846,721
72	3,846,722
	3,846,723
81R	3,846,724
CLASS 336	
92	3,846,725
CLASS 337	
107	3,846,726
159	3,846,728
246	3,846,727
343	3,846,729
CLASS 338	
34	3,846,730
127	3,846,731
133	3,846,732
	3,846,733
CLASS 339	
17CF	3,846,734
47	3,846,735
126RS	3,846,736
174	3,846,737
177R	3,846,738
198J	3,846,739
220R	3,846,740
221R	3,846,741
263R	3,846,742
275B	3,846,743
CLASS 340	
6R	3,846,745
10	3,846,744
27R	3,846,746
59	3,846,747
71	3,846,748
72	3,846,749
105	3,846,750
146.1AG	3,846,751
146.3AC	3,846,755
146.3D	3,846,753
146.3H	3,846,754
146.3Q	3,846,752
147MD	3,846,756
166R	Re.28,224
	3,846,757
172.5	Re.28,221
	3,846,758
	3,846,759
	3,846,760
	3,846,761
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173AM	3,846,766
173DR	3,846,765
173LS	3,846,764
173R	3,846,767
	3,846,768
174FB	3,846,770
174M	3,846,769
195	3,846,771
199	3,846,804
227R	3,846,772
237S	3,846,773
239R	3,846,774
244R	3,846,775
	3,846,776
252R	3,846,777
258A	3,846,778
258B	3,846,779
258D	3,846,790
261	3,846,780
267R	3,846,781
274	3,846,782
311	3,846,783
336	3,846,784
347AD	3,846,786
	3,846,787
347DA	3,846,785
347P	3,846,788
	3,846,789
365C	3,846,791
384E	3,846,792
409	3,846,793
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421	3,846,795
CLASS 343	
6R	3,846,797
7.5	3,846,796
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CLASS 346	
1	3,846,800
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	3,846,802
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CLASS 350	
6	3,846,007
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87	3,846,009
96WG	3,846,010
117	3,846,011
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	3,846,015
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CLASS 351	
106	3,846,017
120	3,846,018
CLASS 354	
23	3,846,805
31	3,846,806
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86	3,846,808
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CLASS 355	
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	3,846,020
16	3,846,021
53	3,846,022
CLASS 356	
21	3,846,023
80	3,846,024
106LR	3,846,025
152	3,846,026
188	3,846,027
218	3,846,028
CLASS 357	
23	3,846,822
31	3,846,820
35	3,846,821
74	3,846,823
80	3,846,824
81	3,846,825
CLASS 358	
47	3,846,579
81	3,846,826
CLASS 360	
19	3,846,819
26	3,846,827
35	Re.28,231
46	3,846,829
56	3,846,830
74	3,846,831
85	3,846,832
93	3,846,834
98	3,846,835
	3,846,836
99	3,846,837
106	3,846,838
108	3,846,839
118	3,846,840
121	3,846,841
126	3,846,842
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135	3,846,843
CLASS 401	
96	3,846,029
CLASS 403	
2	3,846,030
28	3,846,031
140	3,846,032
220	3,846,033
351	3,846,034
CLASS 404	
75	3,846,036
84	3,846,035
117	3,846,037
CLASS 415	
1	3,846,038
206	3,846,039
219C	3,846,040
CLASS 416	
97	3,846,041
110	3,846,042
183	3,846,043
199	3,846,044
230	3,846,045
CLASS 417	
54	3,846,046
234	3,846,047
393	3,846,048
404	3,846,049
420	3,846,050
CLASS 418	
61B	3,846,051
84	3,846,052
94	3,846,053
124	3,846,055
CLASS 423	
183	3,846,538
242	3,846,535
244	3,846,536
338	3,846,537
574	3,846,539
628	3,846,540
CLASS 424	
63	3,846,550
79	3,846,541
81	3,846,542
89	3,846,543
95	3,846,544
143	3,846,545
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227	3,846,548
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263	3,846,553
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300	3,846,555
330	Re.28,229
364	3,846,556
CLASS 425	
38	3,846,058
110	3,846,054
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CLASS 426	
1	3,846,557
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	3,846,559
18	3,846,560
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158	3,846,563
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289	3,846,567
364	3,846,568
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415	3,846,571
429	3,846,572
CLASS 431	
1	3,845,582
79	3,846,061
116	3,846,062
255	3,846,063
285	3,846,064
347	3,846,065
351	3,846,066
CLASS 432	
80	3,846,067
251	3,846,068

CLASSIFICATION OF DESIGNS

D2—	29	233,489
	400	233,490
D3—	19A	233,491
D6—	36	233,492
	38	233,493
	69	233,494
	130	233,495
	143	233,496
	149	233,497
	154	233,498
	179	233,499
	239	233,500
D7—	1	233,501
	137	233,502
		233,503
D8—	72	233,504
	226	233,505
D9—	239	233,506
	285	233,507
D10—	84	233,508
		233,509
	109	233,510
D12—	28	233,511
	91	233,512
	115	233,513
	118	233,514
	143	233,515
	154	233,516
	158	233,517
	211	233,518
D13—	1R	233,519
	6	233,520
D19—	25	233,521
	59	233,522
D23—	67	233,523
	123	233,524
	149	233,525
D27—	36	233,526
		233,527
	42	233,528
		233,529
		233,530
D29—	1B	233,531
	R	233,532
D32—	3	233,533
D34—	4R	233,534
	5GH	233,535
	VV	233,536
	14C	233,537
	15AF	233,544
	AG	233,540
	AN	233,538
	EE	233,539
	GG	233,541
		233,542
		233,543
D37—	3	233,545
D42—	7H	233,546
D47—	6E	233,547
		233,548
		233,549
D48—	24R	233,550
D49—	11	233,551
D52—	6R	233,552
D54—	2A	233,557
	T	233,553
		233,554
		233,555
		233,556
		233,558
D55—	1	233,559
D57—		233,560
D61—	B	233,561
	F	233,562
D64—	10	233,563
	11A	233,564
		233,565
D72—	1H	233,566
D74—	5R	233,567
D83—	1F	233,568
	12R	233,569
D88—	3A	233,570
D95—		233,571
D96—	12F	233,572

CLASSIFICATION OF PLANTS

P. —	34	3,644
P. —	68	3,645
P. —		3,646

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,845,831
3,846,312
3,846,793
3,846,797
2 : Re.28,235
4 : 3,845,587
3,845,868
3,845,955
3,846,044
3,846,181
3,846,525
3,846,687
3,846,695
3,846,703
3,846,810
6 : Re.28,221
Re.28,229
Re.28,231
Re.28,233
3,845,510
3,845,522
3,845,525
3,845,550
3,845,556
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3,845,566
3,845,575
3,845,592
3,845,595
3,845,606
3,845,627
3,845,631
3,845,634
3,845,656
3,845,676
3,845,711
3,845,722
3,845,723
3,845,745
3,845,753
3,845,768
3,845,770
3,845,777
3,845,780
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3,845,828
3,845,838
3,845,858
3,845,861
3,845,881
3,845,902
3,845,920
3,845,921
3,845,935
3,845,956
3,845,960
3,846,005
3,846,016
3,846,022
3,846,027
3,846,041
3,846,042
3,846,048
3,846,060
3,846,064
3,846,078
3,846,083
3,846,087
3,846,094
3,846,095
3,846,096
3,846,109
3,846,112
3,846,177
3,846,195
3,846,199
3,846,206
3,846,218
3,846,235
3,846,251
3,846,253
3,846,254
3,846,284
3,846,287
3,846,297
3,846,313
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3,846,318
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3,846,337
3,846,339
3,846,364
3,846,366
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3,846,484
3,846,516
3,846,518
3,846,547
3,846,557
3,846,562
3,846,572
3,846,598
3,846,608
3,846,640
3,846,668
3,846,682
3,846,694
3,846,698
3,846,709
3,846,715
3,846,723
3,846,744
3,846,779
3,846,791
3,846,794
3,846,828
3,846,829
3,846,832
3,846,839
3,846,840
8 : Re.28,227
3,845,585
3,845,891
3,846,025
3,846,248
3,846,279
3,846,335
3,846,482
3,846,483
3,846,628
3,846,629
3,846,765
3,846,830
3,846,837
9 : 3,845,507
3,845,511
3,845,554
3,845,686
3,845,688
3,845,692
3,845,698
3,845,713
3,845,735
3,845,898
3,845,904
3,845,963
3,846,008
3,846,103
3,846,124
3,846,125
3,846,159
3,846,264
3,846,307
3,846,327
3,846,374
3,846,384
3,846,509
3,846,523
3,846,531
3,846,725
3,846,773
3,846,795
3,846,805
3,846,827
10 : 3,845,531
3,846,088
3,846,158
3,846,290
3,846,367
3,846,368
3,846,371
3,846,381
3,846,387
3,846,473
3,846,474
3,846,479
3,846,512
3,846,636
11 : 3,845,953
3,846,258
12 : 3,845,558
3,845,597
3,845,614
3,845,741
3,845,835
3,845,900
3,845,932
3,845,936
3,845,937
3,845,938
3,845,968
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3,846,178
3,846,226
3,846,561
3,846,599
3,846,697
3,846,730
3,846,733
3,846,748
3,846,787
13 : 3,845,602
3,845,775
3,846,017
3,846,085
3,846,147
3,846,207
3,846,296
15 : 3,845,563
3,846,302
16 : 3,845,796
3,846,086
17 : Re.28,230
3,845,518
3,845,541
3,845,560
3,845,564
3,845,574
3,845,578
3,845,590
3,845,629
3,845,638
3,845,653
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3,845,680
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3,845,710
3,845,716
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3,845,787
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3,845,801
3,845,826
3,845,842
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3,845,851
3,845,883
3,845,923
3,845,926
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3,845,952
3,845,959
3,845,976
3,845,981
3,845,985
3,846,001
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3,846,046
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3,846,074
3,846,092
3,846,140
3,846,141
3,846,144
3,846,173
3,846,174
3,846,228
3,846,275
3,846,282
3,846,283
3,846,295
3,846,317
3,846,343
3,846,393
3,846,426
3,846,481
3,846,495
3,846,501
3,846,503
3,846,504
3,846,505
3,846,515
3,846,517
3,846,524
3,846,530
3,846,559
3,846,565
3,846,575
3,846,580
3,846,595
3,846,596
3,846,600
3,846,637
3,846,685
3,846,710
3,846,731
3,846,737
3,846,767
18 : Re.28,228
3,845,537
3,845,547
3,845,548
3,845,643
3,845,666
3,845,668

3,845,685
3,845,693
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3,846,062
3,846,126
3,846,202
3,846,372
3,846,510
3,846,648
3,846,819
3,846,824
19 : 3,845,567
3,845,568
3,845,906
3,845,983
3,846,121
3,846,607
3,846,634
20 : 3,845,512
3,845,825
3,845,870
3,846,209
21 : 3,845,702
3,845,785
3,845,812
3,846,662
22 : 3,845,509
3,845,671
3,845,695
3,845,893
3,845,930
3,846,122
3,846,281
3,846,424
3,846,536
23 : 3,845,896
24 : 3,845,748
3,845,774
3,845,793
3,845,944
3,846,028
3,846,102
3,846,108
3,846,451
3,846,458
3,846,493
3,846,529
3,846,586
3,846,691
3,846,762
3,846,770
3,846,786
3,846,809
3,846,820
25 : 3,845,603
3,845,611
3,845,639
3,845,709
3,845,734
3,845,799
3,845,892
3,845,910
3,845,914
3,845,931
3,845,966
3,846,013
3,846,014
3,846,024
3,846,039
3,846,082
3,846,118
3,846,138
3,846,157
3,846,229
3,846,257
3,846,260
3,846,345
3,846,355
3,846,404
3,846,591
3,846,606
3,846,617
3,846,621
3,846,650
3,846,679
3,846,702
3,846,728
3,846,749
3,846,750
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3,846,763
3,846,775
3,846,778
3,846,783
3,846,808
3,846,812
3,846,831
26 : 3,845,519
3,845,524
3,845,622
3,845,669
3,845,672
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3,845,675
3,845,703
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3,845,840
3,845,854
3,845,859
3,845,860
3,845,877
3,845,890
3,845,897
3,845,967
3,845,971
3,845,982
3,845,998
3,846,031
3,846,052
3,846,072
3,846,172
3,846,182
3,846,200
3,846,203
3,846,262
3,846,443
3,846,450
3,846,456
3,846,469
3,846,508
3,846,597
3,846,670
27 : 3,845,542
3,845,555
3,845,596
3,845,664
3,845,754
3,845,755
3,845,757
3,845,962
3,846,051
3,846,308
3,846,375
3,846,569
3,846,604
3,846,635
3,846,705
3,846,790
3,846,836
3,846,843
29 : 3,845,508
3,845,600
3,845,691
3,845,744
3,845,876
3,845,878
3,846,055
3,846,071
3,846,163
3,846,188
3,846,239
3,846,354
3,846,537
3,846,543
3,846,560
3,846,619
3,846,726
3,846,798
30 : 3,845,670
3,845,752
3,845,980
31 : Re.28,222
3,845,608
32 : 3,845,941
3,846,065
3,846,781
33 : 3,845,576
3,846,789
34 : 3,845,533
3,845,562
3,845,586
3,845,635
3,845,665
3,845,678
3,845,727
3,845,738
3,845,769
3,845,802
3,845,805
3,845,872
3,845,916
3,846,009
3,846,012
3,846,023
3,846,056
3,846,075
3,846,093
3,846,119
3,846,165
3,846,175
3,846,194
3,846,196
3,846,198
3,846,227
3,846,245
3,846,247
3,846,278
3,846,280
3,846,294
3,846,299
3,846,303
3,846,332
3,846,344
3,846,356
3,846,398
3,846,399
3,846,401
3,846,410
3,846,417
3,846,435
3,846,446
3,846,453
3,846,460
3,846,478
3,846,496
3,846,502
3,846,553
3,846,563
3,846,577
3,846,582
3,846,669
3,846,674
3,846,693
3,846,696
3,846,708
3,846,788
3,846,816
3,846,822
3,846,826
3,846,833
35 : 3,846,274
36 : Re.28,225
3,845,527
3,845,572
3,845,577
3,845,607
3,845,610
3,845,615
3,845,618
3,845,624
3,845,655
3,845,690
3,845,717
3,845,739
3,845,742
3,845,761
3,845,792
3,845,798
3,845,814
3,845,855
3,845,874
3,845,888
3,845,894
3,845,918
3,845,949
3,845,951
3,845,954
3,845,958
3,845,965
3,845,984
3,845,986
3,845,988
3,845,991
3,845,999
3,846,010
3,846,018
3,846,053
3,846,077
3,846,084
3,846,127
3,846,128
3,846,129
3,846,130
3,846,132
3,846,136
3,846,155
3,846,161
3,846,168
3,846,191
3,846,197
3,846,214
3,846,241
3,846,242
3,846,259
3,846,261
3,846,272
3,846,289
3,846,304
3,846,326
3,846,329
3,846,358
3,846,361
3,846,396
3,846,422
3,846,462
3,846,464
3,846,521
3,846,522
3,846,550
3,846,558
3,846,578
3,846,592
3,846,593
3,846,620
3,846,631
3,846,643
3,846,660
3,846,661
3,846,714
3,846,717
3,846,739
3,846,768
3,846,800
3,846,804
37 : 3,845,523
3,845,529
3,845,609
3,845,684
3,845,832
3,845,925
3,846,003
3,846,201
3,846,378
3,846,494
3,846,528
3,846,618
3,846,677
38 : 3,846,402
39 : 3,845,521
3,845,540
3,845,620
3,845,623
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41 : Re.28,223
Re.28,224
Re.28,226
3,845,504
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3,845,880
3,845,903
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42 : 3,845,505
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3,846,123
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43 : 3,846,111
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3,846,740
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3,845,873
3,845,948
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48 : Re.28,232
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3,846,036
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3,846,139
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3,846,276
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3,846,336
3,846,391
3,846,405
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3,846,627
3,846,671
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49 : 3,846,243
50 : 3,845,532
3,846,193
51 : 3,845,528
3,845,598
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52 : 3,846,434
53 : 3,845,919
3,846,216
54 : 3,845,506
3,846,081
55 : 3,845,553
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3,846,236
3,846,292
3,846,603
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56 : 3,845,964

DESIGN PATENTS

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	233,499	9 :	233,502		233,553		233,512		233,506	37 :	233,498
	233,507	12 :	233,492		233,554	25 :	233,517		233,511	39 :	233,566
	233,508		233,551		233,555	26 :	233,515		233,514	42 :	233,550
	233,509	15 :	233,523		233,556		233,518		233,519	44 :	233,495
	233,513	16 :	233,504		233,557		233,569		233,521	48 :	233,500
	233,520		233,545		233,558	27 :	233,533		233,525		233,516
	233,539	17 :	233,497		233,560		233,572		233,531		233,544
	233,552		233,522	19 :	233,490	29 :	233,537		233,534	51 :	233,491
	233,559		233,535	20 :	233,536	34 :	233,496		233,540	53 :	233,510

PLANT PATENTS

39 :	3,644	48 :	3,645		3,646						

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U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, *Secretary*

PATENT OFFICE
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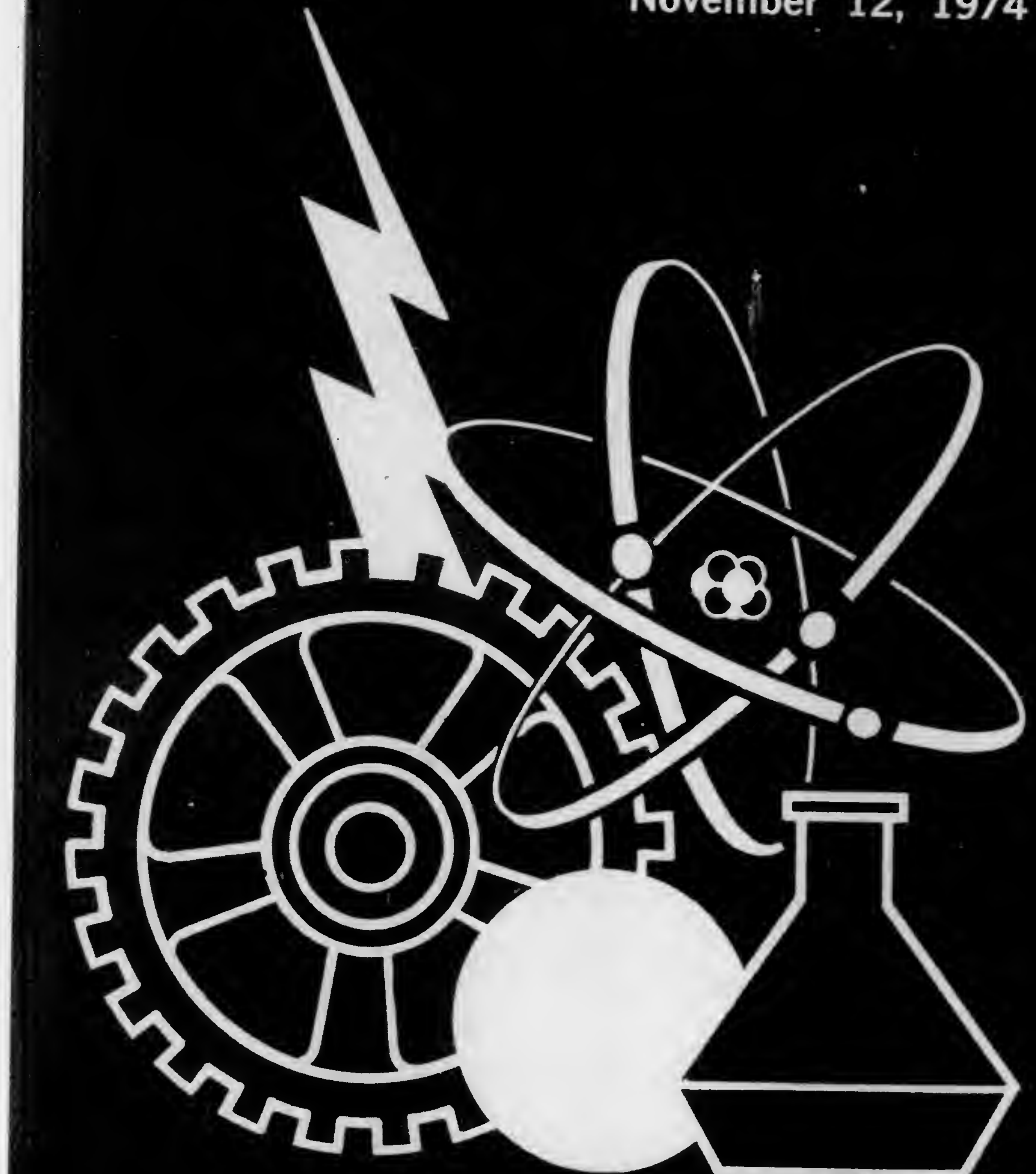
PATENTS

November 12, 1974



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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

November 12, 1974 Volume 928 Number 2

CONTENTS

Page

Patent and Trademark Notices
- Registration to Practice 438

Patent Notices
- Certificates of Correction for the Week of November 12, 1974 439
- Adverse Decisions in Interferences 439
- Disclaimers 439
- Dedications 440
- National Technical Information Service 440

Condition of Patent Applications 442

Reissue Patents Granted (28,236) 443

Plant Patents Granted (3,647) 446

Patents Granted
- General and Mechanical (3,846,844) 447
- Chemical (3,847,541) 673
- Electrical (3,848,072) 806

Design Patents Granted (233,573) 872

Index of Patentees . . . . PI 1

Indices of Reissues, Plants and Designs . . . . PI 44

Classification of
- Patents (Including Reissues) . . . . PI 47
- Designs and Plants . . . . PI 50

Geographical Index of Residence of Inventors
- Patents (Including Reissues) . . . . PI 51
- Designs and Plants . . . . PI 53

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PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before November 29, 1974.

Dunne, Gerard F., 2447 39th Place, NW., Washington, D.C. 20007
Franklin, Jordan, 2510 Virginia Ave. NW., Washington, D.C. 20037
Glynn, Michael W., 14 Plum St., Fairfield, Conn. 05430
Weissman, Milton, 310 Hillwood Ave., Falls Church, Va. 22046.

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Certificates of Correction for the Week of Nov. 12, 1974

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3,814,600
3,814,736
3,814,961
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3,815,660
3,815,786
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3,816,380
3,816,427
3,816,608
3,816,693
3,816,976
3,816,992
3,817,145
3,817,150
3,817,162
3,817,326
3,817,981
3,817,987
3,818,019
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3,819,136
3,819,326
3,819,602
3,819,826
3,819,861
3,820,176
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3,820,348
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3,820,854
3,820,883
3,820,913
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3,821,097
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3,822,179
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3,823,297
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3,829,407
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Adverse Decisions in Interferences

In the designated interference involving the indicated claims of the following patents final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,143,172, C. E. Wakefield, Jr., SELF-ALIGNING LANDING BASE FOR OFF-SHORE DEEP WATER DRILLING, Interference No. 94,904, decided Mar. 2, 1972, claims 1–3, 7 and 8.

Patent No. 3,315,793, V. I. Yakubovich, VIBRATORY ELECTROMAGNETIC DRIVE, Interference No. 96,587, decided Sept. 27, 1972, claims 1–3.

Patent No. 3,340,443, H. F. Rieth and G. O'Leary, COLOR TELEVISION DEGAUSSING APPARATUS, Interference No. 97,944, decided Jan. 24, 1974, claims 1–3, 5 and 7.

Patent No. 3,513,033, J. Watanabe, S. Hosoi, M. Kuwazaki, T. Sawai and H. Ueno, DRY CELL, Interference No. 97,589, decided June 10, 1974, claims 1–4, 6 and 12.

Patent No. 3,522,899, F. A. Siemonsen and A. L. Garriques, EASY OPEN MEANS FOR BOTTLES AND THE LIKE, Interference No. 97,684, decided June 4, 1974, claims 22–24.

Patent No. 3,555,360, S. C. Lee and C. E. Brockway, PHASE CONTROLLED GROUND FAULT CIRCUIT INTERRUPTER, Interference No. 97,733, decided May 28, 1974, claims 1, 2, 4, 5 and 7.

Patent No. 3,657,328, N. Finch, PGE_1 OXIMES, Interference No. 98,412, decided July 18, 1974, claim 1.

Patent No. 3,658,097, R. C. Martin and M. E. Sixt, CORRUGATED TUBING, Interference No. 98,157, decided July 8, 1974, claims 1–7.

Patent No. 3,673,856, P. L. Panigati, FLUID OPERATED SENSOR, Interference No. 98,414, decided July 30, 1974, claims 1–12 and 14–16.

Patent No. 3,684,054, R. D. Lemmerman, JET ENGINE EXHAUST AUGMENTATION UNIT, Interference No. 98,103, decided July 18, 1974, claim 3.

Disclaimers

3,523,798.—*Ralph L. Kail,* Edinburg, Ind. LIQUID FEED SUPPLEMENT FOR RUMINANTS AND METHOD OF PREPARATION. Patent dated Aug. 11, 1970. Disclaimer filed July 26, 1974, by the assignee, *W. R. Grace & Co.*

Hereby enters this disclaimer to claims 7, 8, 9, 10, 13 and 14 of said patent.

3,732,952.—*Anthony Asquith,* Nuneaton, England. BRAKE ADJUSTERS. Patent dated May 15, 1973. Disclaimer filed Sept. 11, 1974, by the assignee, *Girling Limited.*

Hereby enters this disclaimer to claims 4 and 7 of said patent.

3,745,482.—*Chandra K. N. Patel,* Chatham, N.J. CARBON DIOXIDE LASER EMPLOYING MULTIPLE GASES INCLUDING HELIUM. Patent dated July 10, 1973. Disclaimer filed Sept. 14, 1973, by the assignee, *Bell Telephone Laboratories Incorporated.*

Hereby disclaims the portion of the term of the patent subsequent to July 27, 1988.

3,764,736.—*Richard P. Kosky,* East Granby, Conn., and *Preston W. Averill, Jr.,* Springfield, Mass. REMOTE VISUAL EXAMINATION APPARATUS. Patent dated Oct. 9, 1973. Disclaimer filed Aug. 30, 1974, by the assignee, *Combustion Engineering, Inc.*

Hereby enters this disclaimer to claim 1 of said patent.

3,778,120.—*Magnus F. Hagen,* Fullerton, and *Fred H. Ordan,* Whittier, Calif. PRECISION TELESCOPING BALL BEARING DRAWER SLIDE SUSPENSION FOR WOOD AND METAL FURNITURE PRODUCTION. Patent dated Dec. 11, 1973. Disclaimer filed Aug. 12, 1974, by the inventors.

Hereby enter this disclaimer to claims 1, 2, 3, 4 and 5 of said patent.

3,791,393.—*David John Baldwin,* London, England. TANK CLEANING APPARATUS. Patent dated Feb. 12, 1974. Disclaimer filed Aug. 30, 1974, by the assignee, *Sybron Corporation.*

Hereby enters this disclaimer to claims 1, 2, 3 and 5 of said patent.

3,793,268.—*Werner Dietrich,* Cologne-Stammheim, *Konrad Uhlig* and *Kuno Wagner,* Leverkusen, *Dieter Maaben* and *Horst Conrad,* Dormagen, and *Heinrich Bormann* and *Helmut Piechota,* Leverkusen, Germany. PROCESS FOR THE PRODUCTION OF POLYURETHANE FOAM RESINS. Patent dated Feb. 19, 1974. Disclaimer filed Aug. 30, 1974, by the assignee, *Bayer Aktiengesellschaft.*

Hereby enters this disclaimer to claims 1 through 7 of said patent.

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DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

DEPARTMENT OF THE ARMY

Chief, Patents Division, Washington, D.C. 20310

Patent 3,757,806. Pulsating Hydrojet Lavage Device. Filed Jan. 19, 1972. Patented Sept. 11, 1973. Not available NTIS.

Patent 3,758,919. Hinge. Filed Aug. 19, 1971. Patented Sept. 18, 1973. Not available NTIS.

Patent 3,764,947. High-Precision Variable Radio Frequency Coil. Filed Nov. 1, 1972. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,768,100. Cold Weather Face Mask. Filed May 23, 1972. Patented Oct. 30, 1973. Not available NTIS.

U.S. ATOMIC ENERGY COMMISSION

Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent 3,796,589. Method of Vapor Seal Coating Plutonium Oxide Particles With Molybdenum. Filed July 28, 1972. Patented Mar. 12, 1974. Not available NTIS.

Patent 3,799,790. Metal Carbide Spherules Encapsulated Within a Pyrolytic Carbon Shell. Filed Sept. 10, 1970. Patented Mar. 26, 1974. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Chief, Research Agreements and Patent Mgmt. Branch,
Federal Bldg., Hyattsville, Md. 20782

Patent application 363,295. Synthetic Hormones for Insect Control. Filed May 23, 1973. PC $5.25/MF $2.25.

Patent 3,716,371. Separator for Negatively Phototactic Housefly Larvae From Chicken Hen Excreta. Filed Feb. 8, 1971. Patented Feb. 13, 1973. Not available NTIS.

Patent 3,717,706. Attractants for the Yellow Jacket Wasp (Vespula SPP: Vespidae). Filed June 16, 1970. Patented Feb. 20, 1973. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

National Institutes of Health, Chief, Patent Branch,
Bethesda, Md. 20014

Patent application 492,928. Method of Radiation Therapy Treatment Planning. Filed July 29, 1974. PC $4.25/MF $2.25.

Patent 3,826,244. Thumbtack Microelectrode and Method of Making Same. Filed July 20, 1973. Patented July 30, 1974. Not available NTIS.

U.S. ATOMIC ENERGY COMMISSION

Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent application 458,365. Self Adjusting Load Balancing Pneumatic Hoist. Filed Apr. 5, 1974. PC $4/MF $2.25.

Patent 3.781,716. Biphase Radio-Frequency Modulator. Filed Oct. 27, 1972. Patented Dec. 25, 1973. Not available NTIS.

Patent 3,781,733. Low Heat Conductant Temperature Stabilized Strutucal Support. Filed Dec. 21, 1972. Patented Dec. 25, 1973. Not available NTIS.

Patent 3,793,408. Method for the Purification of Bis(2-Ethyl-Hexyl) Phosphoric Acid. Filed Jan. 20, 1972. Patented Feb. 19, 1974. Not available NTIS.

Patent 3,793,433. Extraction of Lithium From Natural Brines Using a Beta Diketone and Trioctylphosphine Oxide. Filed July 23, 1971. Patented Feb. 19, 1974. Not available NTIS.

U.S. DEPARTMENT OF AIR FORCE

AF/JACP, Washington, D.C. 20314

Patent 3,739,301. Single Diode Single Sideband Modulator. Filed June 30, 1971. Patented June 12, 1973. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Chief, Research Agreements and Patent Mgmt. Branch,
General Services Division, Hyattsville, Md. 20782

Patent application 275,009. Metallic Dibasic Fatty Soap Based Greases. Filed July 25, 1972. PC $4/MF $2.25.

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

Chief, Patent Branch, Bethesda, Md. 20014

Patent application 453,141. Catalytic Hydrogenolysis of Protected Sulfur Compounds. Filed Mar. 20, 1974. PC $4/MF $2.25.

Patent application 478,547. Phenylpiperidines. Filed June 11, 1974. PC $4/MF $2.25.

Patent application 483,871. Filtering Apparatus. Filed June 17, 1974. PC $4/MF $2.25.

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Patent application 491,610. Production of Angular Alkylated Polycyclides by Electrochemical Annelation. Filed July 24, 1974. PC $4.25/MF $2.25.

DEPARTMENT OF THE ARMY

Chief, Patents Division,
Office of the Judge Advocate General,
Washington, D.C. 20310

Patent 3,740,196. Chemical Spot Test System. Filed Mar. 30, 1971. Patented June 19, 1973. Not available NTIS.

Patent 3,741,882. Method of Electrodepositing a Lusterless Electrically Conductive Coating. Filed Dec. 7, 1971. Patented June 26, 1973. Not available NTIS.

Patent 3,742,891. Disc Anchor. Filed Dec. 30, 1971. Patented July 3, 1973. Not available NTIS.

Patent 3,744,272. Refrigeration System With Heat Exchanger Employing Eutectic. Filed Dec. 22, 1971. Patented July 10, 1973. Not available NTIS.

Patent 3,744,534. Protective Clothing Fabric. Filed Apr. 12, 1972. Patented July 10, 1973. Not available NTIS.

Patent 3,748,108. Thermally Activated Spring With Improved Thermal Properties. Filed Apr. 7, 1970. Patented July 24, 1973. Not available NTIS.

Patent 3,748,161. Combustible Water Repellent Coating. Filed Mar. 2, 1971. Patented July 24, 1973. Not available NTIS.

Patent 3,751,301. Reserve Battery Electrodes Using Bonded Active Materials. Filed July 13, 1970. Patented Aug. 7, 1973. Not available NTIS.

Patent 3,751,307. Thermal-Mechanically Processed Low-Alloy Steel. Filed Apr. 26, 1972. Patented Aug. 7, 1973. Not available NTIS.

Dedications

3,319,344.—*George F. Sachsel,* Worthington, and *William H. Mink,* Columbus, Ohio. FREEZE DRYING LIQUID FOODS. Patent dated May 16, 1967. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,331,120.—*Paul D. Frost,* Columbus, Ohio. PROCESS FOR COMPOSITE METAL SHAPES. Patent dated July 18, 1967. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,365,599.—*Donald E. Brzezinski,* Brookfield, and *Raymond L. Watts,* Mukwonago, Wis. MAGNETIC CIRCUIT. Patent dated Jan. 23, 1968. Dedication filed Mar. 2, 1972, by the assignee, *Wehr Corporation.*

Hereby dedicates claims 10, 11, and 14 of said patent.

3,371,629.—*Richard B. Engdahl, Herbert R. Hazard* and *Glen M. Hein,* Columbus, Ohio. MOBILE INCINERATOR. Patent dated Mar. 5, 1968. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,377,695.—*Paul J. Gripshover,* Columbus, Ohio. BONDING PROCESS FOR FABRICATING AND SHAPING STRUCTURES. Patent dated Apr. 16, 1968. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,382,093.—*Herman Nack,* Columbus, Ohio. FLUIDIZED BED COATING OF FRAGILE BODIES. Patent dated May 7, 1968. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,391,194.—*Emil A. Lawton,* Columbus, Ohio, *Earl A. Weilmuenster,* Kenmore, N.Y., and *Arthur Levy,* Worthington, Ohio. Patent dated July 2, 1968. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,460,972.—*Herman Nack,* Columbus, Ohio. LIQUID ENCAPSULATION. Patent dated Aug. 12, 1969. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,505,238.—*Robert W. Liddell,* Pittsburgh, Pa. METHODS AND COMPOSITIONS FOR INHIBITING SCALE IN SALINE WATER EVAPORATORS. Patent dated Apr. 7, 1970. Dedication filed Aug. 9, 1974, by the assignee, *Calgon Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

3,580,089.—*Serge Ramseier,* Carouge, Geneva, Switzerland. MOTION CONVERTING MECHANISM. Patent dated May 25, 1971. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,602,024.—*Alvin M. Sabroff,* Columbus, and *Robert J. Fiorentino,* Worthington, Ohio. HYDROSTATIC BENDING AND DIE FORMING. Patent dated Aug. 31, 1971. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,602,687.—*Robert E. Pollock,* Hilliard, Ohio. ARC LENGTH CONTROL. Patent dated Aug. 31, 1971. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,639,206.—*Edgar L. Spruill,* Jonesboro, La. TREATMENT OF WASTE WATER FROM ALKALINE PULPING PROCESSES. Patent dated Feb. 1, 1972. Dedication filed Aug. 20, 1974, by the assignee, *Continental Can Company, Inc.*

Hereby dedicates the entire term of said patent to the Public.

3,662,811.—*Paul Esslinger,* Frankfurt am Main, and *Rudolf Walkling,* Frankfurt am Main-Bockenheim, Germany. METHOD OF CASTING BY CATCHING FREE-FALLING MOLTEN METAL MASS. Patent dated May 16, 1972. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,686,096.—*Aharon Zeev Hed,* Columbus, and *Paul J. Freud,* Worthington, Ohio. POLARONIC SEMICONDUCTOR DEVICES. Patent dated Aug. 22, 1972. Dedication filed Aug. 2,1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,732,717.—*Dieter Ahlvers,* Mellendorf, Germany. APPARATUS FOR THE PRODUCTION OF HELICALLY CORRUGATED METAL TUBING. Patent dated May 15, 1973. Dedication filed July 23, 1974, by the assignee, *Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,781,228.—*Robert William McDonnell,* Teaneck, and *Maung Hla Win,* Berkeley Heights, N.J. LAUNDRY PRODUCT CONTAINING ENZYME. Patent dated Dec. 25, 1973. Dedication filed Sept. 23, 1973, by the assignee, *Colgate-Palmolive Company.*

Hereby dedicates to the Public the entire term of said patent.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 12, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions: Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-10-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-10-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-13-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-17-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-7-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	3-6-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	4-2-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-3-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	1-2-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-13-73
DESIGNS, GROUP 290—C D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	6-4-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-19-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools: Cutlery; Jacks.	1-2-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-28-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-29-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	3-11-74

Expiration of patents: The patents within the range of numbers indicated below expire during September 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,807,804 to 2,811,721, inclusive
Plant Patents	Numbers 1,646 to 1,655, inclusive

REISSUES

NOVEMBER 12, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,236

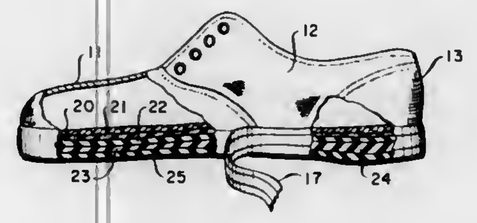
FOOTWEAR ASSEMBLY

Willis R. Hendricks and Richard L. Danforth, Palos Verdes Peninsula, Harbor City, Calif., assignors to Shell Oil Company, New York, N.Y.

Original No. 3,589,036, dated June 29, 1971, Ser. No. 880,257, Jan. 16, 1970, which is a continuation-in-part of application Ser. No. 698,990, Jan. 12, 1968, which is a continuation-in-part of application Ser. No. 423,724, Jan. 6, 1965, both now abandoned. Application for reissue May 15, 1972, Ser. No. 253,214

Int. Cl. A43b *13/04*

U.S. Cl. 36—2.5 R **11 Claims**



1. A footwear construction including an upper component and a sole component wherein at least one of said components comprises unvulcanized-block copolymer *having the structure A—B—A* of the group consisting of polymers of a monovinyl arene and of a conjugated diene, and hydrogenated derivatives of said polymers wherein the original unsaturation has been reduced at least 50 percent by hydrogenation, the monovinyl arene blocks *A* having an average molecular weight between about 9,000 and about 30,000 and the conjugated diene blocks *B* having an average molecular weight between about *40,000* [35,000] and about *80,000* [130,000] the weight ratio of monovinyl arene polymer blocks to conjugated diene polymer blocks being between about 25:75 and about [60:40] *40:60.*

28,237

FIELD GENERATING INDUCTION DEVICE

Max Baermann, 506 Bensberg, Bejirk, Cologne Germany

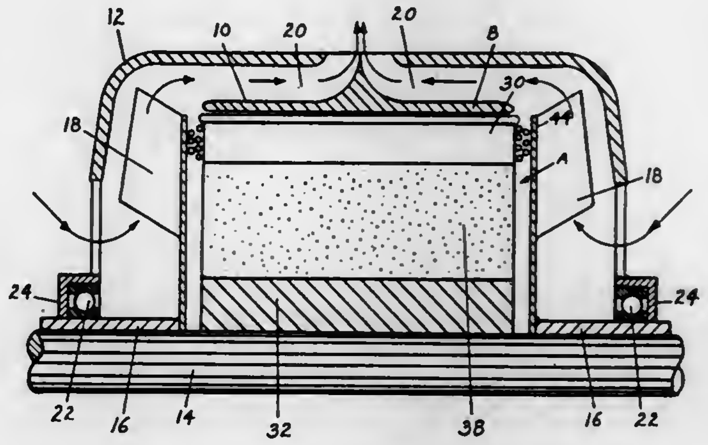
Original No. 3,601,641, dated Aug. 24, 1971, Ser. No. 5,889, Jan. 26, 1970. Application for reissue Apr. 3, 1973, Ser. No. 347,612

Claims priority, application Germany, Jan. 24, 1969, P 19 03 528.0

Int. Cl. H02k *49/02*

U.S. Cl. 310—93 **15 Claims**

1. An eddy current and/or induction brake or clutch comprising: a braking inductor; a ferromagnetic eddy current conductor adjacent said inductor and separated therefrom by an airgap; said inductor and conductor being arranged for relative rotation with respect to each other; said inductor having a plurality of pole shoes of alternating magnetic polarity arranged in an annular ring; a plurality of permanent magnets having a pair of opposite pole surfaces disposed intermediate adjacent shoes; and electromagnetic means operatively associated with said permanent magnets for selectively regulating the magnetic field generated by said inductor from a zero magnetic field in the airgap to a field greater than the permanent magnets themselves.



28,238

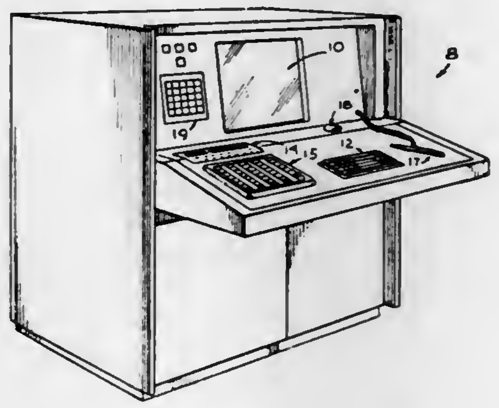
CONTROL/DISPLAY APPARATUS

Robert A. Koster, Santa Ana, Calif., assignor to The Bunker-Ramo Corp., Oak Brook, Ill.

Original No. 3,389,404, dated June 18, 1968, Ser. No. 488,639, Sept. 20, 1965. Application for reissue May 7, 1973, Ser. No. 358,039

Int. Cl. G06f *3/14*

U.S. Cl. 340—172.5 **19 Claims**



1. A control and display console adapted to be used by an operator for communication with a digital computer, said console including:

a processor section;

said processor section including a memory having a plurality of word storage locations, first and second registers, and a control means;

said memory storing a plurality of instruction words and a plurality of operand words, said instruction words each defining an operation to be performed with respect to an identified one *or more* of said words, said operand words defining symbol and position information;

means for sequentially accessing said instruction words;

said control means being responsive to said accessed instruction words for causing the operations defined thereby to be performed on the identified words;
said instruction words including at least one display instruction word identifying an initial memory location in a string of memory locations;
said control means being responsive to said display instruction for sequentially accessing said string of memory locations;
means for storing position information accessed from said string of memory locations in said first and second registers;
a display section;
said display section including a cathode ray tube having horizontal and vertical deflection means; and
means respectively coupling said first and second registers to said horizontal and vertical deflection means.

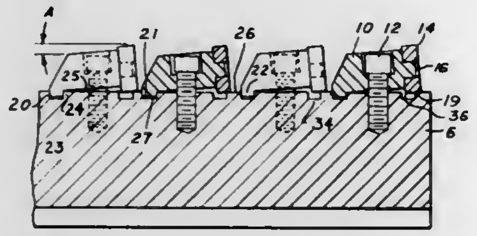
28,239
INDEXABLE BROACH

Hubert J. Dupuis, Warren, Mich., assignor to Carmet Co., Pittsburgh, Pa.

Original No. 3,656,220, dated Apr. 18, 1972, Ser. No. 176, Jan. 2, 1970. Application for reissue May 11, 1973, Ser. No. 359,367

Int. Cl. B26d *1/00, 1/12*

U.S. Cl. 29—95.1 **15 Claims**



1. Apparatus for broaching comprising a broaching block, a reversible and indexable cutting tool having a bore extending therethrough and having sides disposed between reversible cutting edges for each index position, a tool holder for said cutting tool superimposed on the outer surface of said broaching block and projecting therefrom, a locating post projecting from said tool holder at an angle to said surface and through said bore in the cutting tool for positioning the tool on said holder at an inclination to said surface, and means detachably securing said tool holder to the broaching block, the broaching block being provided with a transverse shoulder forming gauging means engaging the end of the tool holder opposite said post to position the holder on the block, and the broaching block also being provided with a transverse gauging recess having a wall with an edge engaging the cutting tool along a side between inactive cutting edges adjacent the broaching block to project those edges.

28,240
PHOTOSENSITIVE ELEMENTS CONTAINING PHOTOOXIDANTS CONTAINING HETEROCYCLIC NITROGEN ATOM SUBSTITUTED BY AN ALKOXY OR AN ACYLOXY GROUP

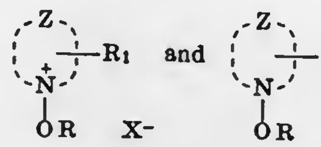
Philip W. Jenkins, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original No. 3,615,568, dated Oct. 26, 1971, Ser. No. 859,205, Sept. 18, 1969. Application for reissue Sept. 10, 1973, Ser. No. 396,290

Int. Cl. G03c *1/40, 1/64*

U.S. Cl. 96—90 R **15 Claims**

2. A photosensitive element comprising a support containing a composition comprising
a. an essentially colorless, oxidizable, nitrogen-containing, organic color generator, which when contained in said composition, is stable to oxidation by atmospheric oxygen under normal room and storage conditions but which is oxidizable to a colored material and
b. a photo-oxidant which is capable of oxidizing said color generator to a colored material when subjected to actinic radiation, said photo-oxidant having a formula selected from the group consisting of:



wherein:
R_1 is selected from the group consisting of:
a. a methine linkage terminated by a heterocyclic nucleus of the type contained in cyanine dyes,
[b. an alkyl radical,]
b. [c.] an anilinovinyl radical,
[d. a hydrogen atom,
e. an aryl radical,
f. an aldehyde group,] and
c. [g.] a styryl radical;
R_8 is selected from the group consisting of:
a. a methine linkage terminated by a heterocyclic nucleus of the type contained in merocyanine dyes and
b. an allylidene radical *selected from the group consisting of a cyanoallylidene radical, an alkylcarboxyallylidene radical and an alkylsulfonylallylidene radical;*
[R] R_1 is selected from the group consisting of:
a. an alkyl radical and
b. an acyl radical;
[X] X^- is an acid anion, and,
Z represents the atoms necessary to complete a five- to six-membered heterocyclic nucleus.

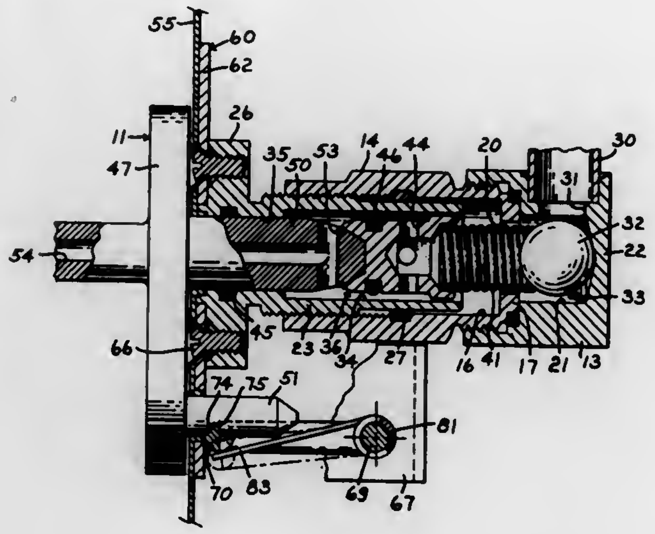
28,241
COUPLER ASSEMBLY

Bidwell C. Cranage, Ferguson, Mo., assignor to Chemetron Corporation, Chicago, Ill.

Original No. 3,477,105, dated Nov. 11, 1969, Ser. No. 329,319, Dec. 9, 1963. Application for reissue Nov. 16, 1973, Ser. No. 416,714

Int. Cl. F16b *21/06;* **F16l** *37/28*

U.S. Cl. 24—230 AU **3 Claims**



1. A latching device for a pair of relatively movable members comprising:
(a) a latch plug having a catch abutment and adapted to be mounted on one member,
(b) a latching unit adapted to be mounted on the other member including a cover plate with an opening therethrough to receive the latch plug,
(c) a bracket secured to the cover plate,
(d) a latch arm including an integral hinge portion pivotally mounted to the bracket and an integral latch portion disposed in spaced relation from the hinge portion and extending across the plate opening in the path of the plug, the latch portion engaging the plug abutment when the plug is inserted,
(e) resilient means tending to pivot the latch arm and to urge the latch portion into the path of the plug for connection to the abutment, and
(f) the latch arm having an integral lever portion extending through the cover plate for actuation to pivot the latch arm and release the plug,
(g) the bracket including a flange,
(h) the latch arm being pivoted to the flange, and
(i) the latching unit including a stop means engageable by the latch arm to determine the latch portion position in alignment with the plate opening and the path of the plug.

28,242
METHOD FOR MANUFACTURING TETRONIC ACID

Karl-Josef Boosen, La Neuveville, Switzerland, assignor to Lonza Ltd., Gampel, Valais, Switzerland

No Drawing. Original No. 3,758,515, dated Sept. 11, 1973, Ser. No. 40,699, May 26, 1970. Application for reissue Feb. 7, 1974, Ser. No. 441,028

Claims priority, application Switzerland, May 28, 1969, 8,076/69

Int. Cl. C07d *5/06*

U.S. Cl. 260—343.6 **8 Claims**

1. A process for the preparation of tetronic acid which comprises the steps of:
(a) reacting a lower alkyl ester of gamma-chloroacetoacetic acid with an aryl amine, selected from the group consisting of aniline, chloroaniline and toluidine in a reaction inert aromatic hydrocarbon at a temperature of from about 70° C. to 140° C. to form the corresponding beta-arylamino crotonic acid lactone,
(b) separating said lactone from said aromatic hydrocarbon,
(c) reacting said lactone with an alkali metal hydroxide to form the alkali metal salt of tetronic acid and
(d) converting said salt to tetronic acid by reaction with mineral acid.

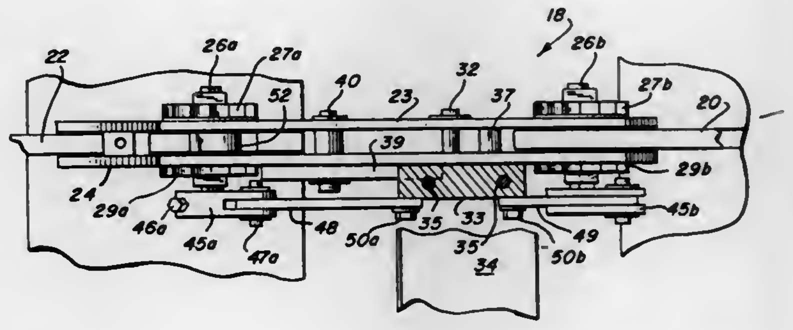
28,243
BOLTED CONTACT SWITCH WITH CAM MEANS FOR OVERCOMING MAGNETIC PINCH FORCES ON CONTACT BLADES

Tadeusz J. Rys, Edgewood, Ky., assignor to Square D Company, Park Ridge, Ill.

Original No. 3,787,654, dated Jan. 22, 1974, Ser. No. 336,147, Feb. 26, 1973. Application for reissue Apr. 1, 1974, Ser. No. 457,044

Int. Cl. H01l *1/50*

U.S. Cl. 200—256 **8 Claims**



1. In a bolted contact switch having clamping means including a [pivotally mounted] threaded stud [and a pair of nuts carried by] *pivotally mounted between* a pair of spaced movable contact blades, *threaded means to receive said stud, said threaded means being operatively associated with at least one of said spaced contact blades* for clamping a stationary contact blade therebetween, cooperative cam means [fixedly] mounted respectively on the threaded stud of the clamping means between the movable contact blades and on at least one of the movable contact blades and operable to force the movable contact blades apart when the stud is pivoted in an unclamping direction.

PLANT PATENTS

GRANTED NOVEMBER 12, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,647
ROSE PLANT

Georges Alphonse Delbard, Paris, France, assignor to The Conard-Pyle Company, West Grove, Pa.
Filed Dec. 6, 1973, Ser. No. 422,147
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—25 **1 Claim**

1. A new and distinct variety of rose plant typical of the class known as Floribunda substantially as herein disclosed, characterized as to novelty by a unique combination of vigorous, freely branched and compact growth habit, giving the plant rounded form and covered with abundant foliage of medium green color and showing resistance to common rose diseases, with greater tolerance to seasonal temperature variations than the average for the class; bearing an abundance of flowers, usually in clusters, continuously through the season, these flowers being semi-double with attractive form and of distinctive pink color with shadings of yellow and red giving an overall coral effect.

3,648
ROSE PLANT

Gijsbert de Ruiter, Hazerswoude, Netherlands, assignor to The Conard-Pyle Company, West Grove, Pa.
Filed May 31, 1973, Ser. No. 365,441
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—17 **1 Claim**

1. A new and distinct variety of rose plant of the Hybrid Tea class substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a vigorous, upright plant of even, balanced, attractive growth habit, covered with dark green glossy foliage in abundance and with flowers borne freely, usually one to a stem, with few prickles, and having an urn shaped bud of attractive salmon-orange color opening to a fully double flower of high center, medium size of the same salmon-orange color and carried above the foliage continuously through the summer in unusually large quantities, and with the plant having above average resistance to common garden diseases and with more winter-hardiness when compared to other varieties characteristic of the class.

3,649
ROSE PLANT

Dorothy Jean Searles Bailey, 1101 Lomita Drive, Bakersfield, Calif. 93307
Filed May 10, 1973, Ser. No. 359,096
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—14 **1 Claim**

1. A new and distinct variety of rose plant of the Hybrid Tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a neat upright plant, moderately vigorous of typical Hybrid Tea habit; medium large, Dark Green foliage that abundantly covers the plant; abundant bloom production from early spring until fall, especially during the warmest periods; flowers usually borne singly to each stem, the stems being strong and long; thick velvety petals that have good resistance to spotting and bruising; urn shaped large buds that slowly open into large high-centered blooms of very regular petal conformation; clean white petal color that shades into Naples Yellow 403/3 and lighter at the base; and a slight clear Sweetbriar fragrance.

3,650
ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.
Filed Aug. 9, 1973, Ser. No. 387,190
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—24 **1 Claim**

1. A new and distinct cultivar of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its ovoid, chrome yellow bud, high centered Lemon yellow flower, dark semi-glossy foliage, and high rate of production of flowers borne mostly on stems of medium length.

3,651
ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.
Filed Sept. 7, 1973, Ser. No. 395,248
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—24 **1 Claim**

1. A new and distinct cultivar of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its pointed-ovoid bud; Buttercup yellow bud color developing into Empire yellow blooms; well formed flowers of 40–50 petals; and unusual licorice like fragrance.

3,652
ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.
Filed May 16, 1973, Ser. No. 360,751
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—6 **1 Claim**

1. A new and distinct variety of rose plant of the climbing class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of an extremely vigorous and everblooming habit of growth; production of climbing canes which bloom on the terminals and later bloom on the lateral growth, a flower color of a brighter tone but near Wilson's Currant Red.

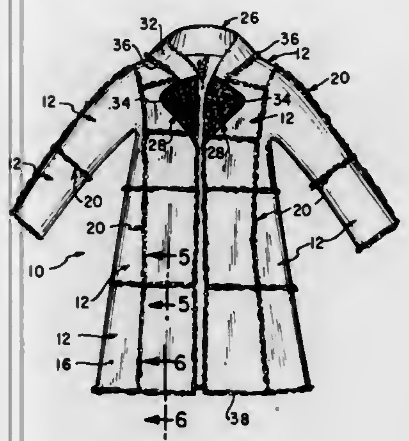
PATENTS

GRANTED NOVEMBER 12, 1974

GENERAL AND MECHANICAL

3,846,844
REVERSIBLE FUR GARMENT

Ernest Graf, Beechhurst Queens, N.Y., assignor to Ben Kahn Furs Corp., New York, N.Y.
Filed July 18, 1973, Ser. No. 380,367
Int. Cl. A41d *5/00*
U.S. Cl. 2—93 **14 Claims**



1. A reversible garment having on one side a surface predominantly of natural animal fur and on the reverse side thereof a dressed or tanned surface, said garment being comprised of:

a. pre-cut sections of natural fur skins having on one side a surface of natural animal fur and on the reverse side thereof a dressed or tanned surface;

b. means to secure said sections together along marginal portions thereof to form finished seams on the fur side; and

c. elongated cover sections positioned over the seams on the dressed or tanned side of the garment in a manner which conceals and protects the seams on said tanned side while providing an aesthetically pleasing appearance corresponding to the configurations of said sections.

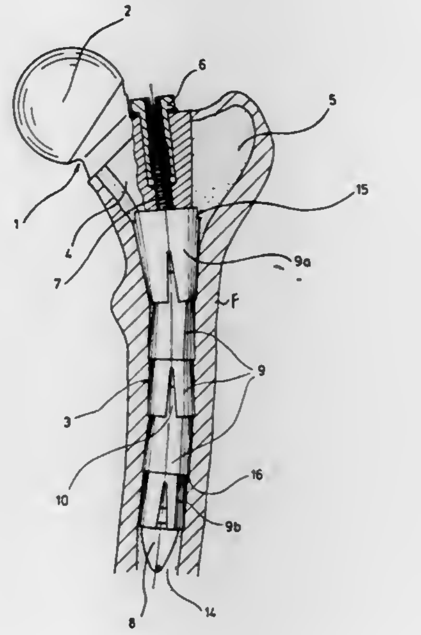
3,846,845
PROCESS OF CURING CHEMICALLY TREATED CELLULOSIC FABRIC

Robert D. Englert, Corona Del Mar, and Lester P. Berriman, Irvine, both of Calif., assignors to Koratron Company, Inc., San Francisco, Calif.
Continuation-in-part of Ser. No. 886,769, Dec. 19, 1969, abandoned. This application Sept. 1, 1971, Ser. No. 177,156
Int. Cl. D06m *15/58*
U.S. Cl. 2—243 R **12 Claims**

1. A method of improving the crease resistance of a textile material wherein a cellulosic containing fabric impregnated with an aqueous solution of a cellulose-reactive cross-linking agent is subjected to treatment with microwave energy at a frequency within the range of from approximately 800 megacycles per second to about 30 kilomegacycles per second to elevate the fabric temperature to the curing temperature and heat loss from the fabric surface occasioned by the evaporation of water therefrom during the microwave energy reaction promotion is compensated for by either interposing a water vapor pervious insulating material between the fabric surface and the ambient atmosphere or directly contacting the fabric surface with air at elevated temperatures prior to beginning said treatment with microwave energy.

3,846,846
HIP JOINT PROSTHESIS

Artur Fischer, Altheimer Str. 219, D-7241 Tumlingen, Germany
Filed Sept. 26, 1973, Ser. No. 401,103
Claims priority, application Germany, Sept. 28, 1972, 2247560
Int. Cl. A61f *1/00*
U.S. Cl. 3—1 **13 Claims**



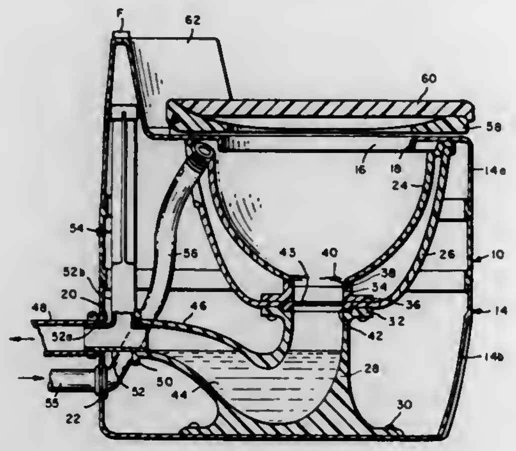
1. A hip joint prosthesis, comprising first means, including a ball-shaped portion which is to form part of a hip joint, and a second portion which is to be inserted into a human femur and extends from said first portion; and second means for anchoring said second portion in the femur, comprising an elongated expander rod inserted through said second portion and insertable into the femur longitudinally thereof, a row of tubular expansion elements each surrounding said rod and being angularly displaceable with reference to the longitudinal axis of the same, and actuating means on said expander rod for effecting axial movement of said rod with reference to said row and for thereby causing expansion of said expansion elements into anchoring contact with the femur.

3,846,847
MARINE TOILET

Wesley H. Tufts, Holliston, and James H. Albertassi, Braintree, both of Mass., assignors to Nautron Corporation, Braintree, Mass.
Filed Dec. 7, 1972, Ser. No. 313,179
Int. Cl. E03d *5/012, 11/11*
U.S. Cl. 4—95 **12 Claims**

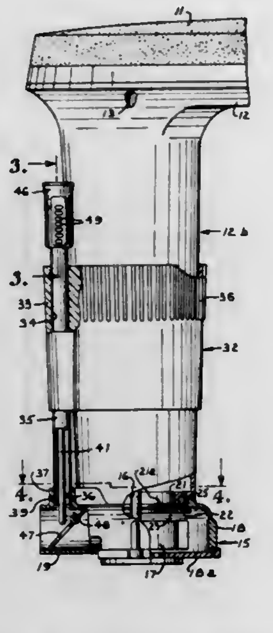
1. In a marine toilet, a bowl open at the top and bottom, a trap connected to the bottom opening, a decontamination tank, a combination pump, maserator and valve, a conductor interconnecting the trap and tank, intake and discharge conductors connected respectively to the intake and discharge sides of the pump so that clean water entering the intake conductor passes through the valve and is delivered to the bowl by the intake side of the pump and the mixture of clean water and effluent is withdrawn from the trap into the maserator and delivered into the decontamination tank by the discharge side of the pump, said valve comprising flat plates

containing parts aligned by shifting of one of the valve plates relative to the other to provide for the aforesaid introduction of clean water into the bowl and delivery of the mixture of clean water and effluent to the decontamination tank, said plates being arranged to have sliding engagement with each other and so that the edges of the ports have shearing engagement with each other and a solenoid operated plunger connected to the moveable one of the plates, said solenoid when energized being operable to slide the moveable one of the valve plates on the fixed one of the valve plates in a direction to initiate a flushing cycle and a flush button electrically connected to the solenoid operable to energize the solenoid.



3,846,848
CONTROL ASSEMBLY FOR BATHTUB HYDROTHERAPY UNIT

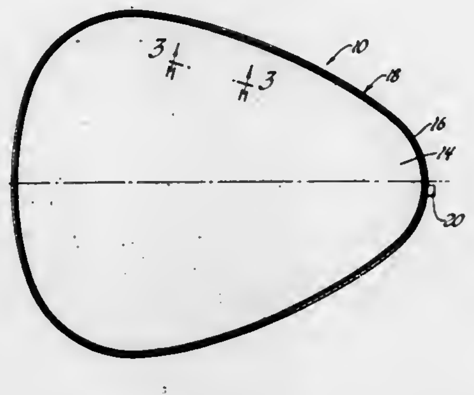
Samuel L. McNair, Overland Park, Kans., assignor to Dazey Products Co., Kansas City, Mo.
Filed Aug. 22, 1973, Ser. No. 390,384
Int. Cl. A47k *3/00;* A61h *33/02, 9/00*
U.S. Cl. 4—180 **3 Claims**



1. In an apparatus for circulating water in a tub, said apparatus including a centrifugal pump for immersion in the tub and a vertical casing extending thereabove for housing the pump drive shaft, the improvement comprising:
a centrifugal pump housing supported on the bottom end of said casing and rotatable relative thereto, said pump housing having an inlet and a lateral discharge outlet.
a valve member mounted interiorly of said outlet for controlling flow therethrough,
a sleeve circumscribing said casing above the pump housing and rotatable in relation to the casing, and
rigid connecting means connecting the sleeve to the pump housing to effect angular adjustment of said outlet in response to rotation of the sleeve, said rigid means including means for controlling the operation of said valve.

3,846,849
TWO-PIECE BEDPAN

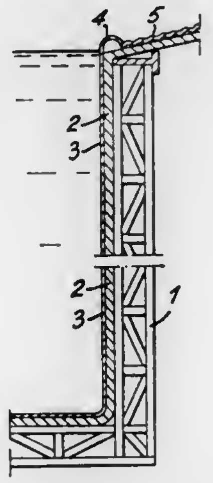
Ronald M. Dooley, East Lansing, and John W. Haas, Ypsilanti, both of Mich., assignors to Tri-State Hospital Supply Corporation, Howell, Mich.
Filed Mar. 22, 1973, Ser. No. 343,994
Int. Cl. A61g *9/00*
U.S. Cl. 4—112 **5 Claims**



1. A bedpan comprising: a bowl member comprising a base, a sidewall extending upwardly from said base, and a plurality of lugs depending from the upper edge of said sidewall for preventing friction interlock between said bowl member and a similar second bowl member within which said bowl member is telescopically stacked; a seat member separable from said bowl member; and mating interlock portions respectively carried by said bowl member and said seat member comprising an extension lip carried by one of said bowl member and said seat member and a socket carried by the other of said bowl member and said seat member adapted to receive said extension lip, said extension lip including a yieldable continuous ridge, said extension lip and said socket including corresponding beveled surfaces, and said extension lip and said socket extending substantially around the perimeter of said bedpan.

3,846,850
SWIMMING POOL

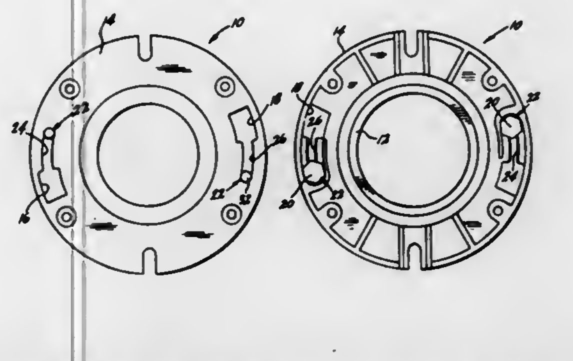
Natale Banchi, Via San Pio X 16, Genova, Italy
Filed Apr. 13, 1973, Ser. No. 350,776
Claims priority, application Italy, Apr. 13, 1972, 12602-/72; Mar. 16, 1973, 12520-/73
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.19 **15 Claims**



1. A swimming pool assembly comprising the following elements, a supporting structure including a frame, a plurality of sheet metal plates in spaced edge to edge relationship supported on said frame, lining panels including edge portions arranged to overlie said plurality of plates, means serving to join said panels together in a water-tight manner and compensate for movement in the structure as well as thermal expansion of said respective elements comprising the pool assembly.

3,846,851
PLUMBING FITTING

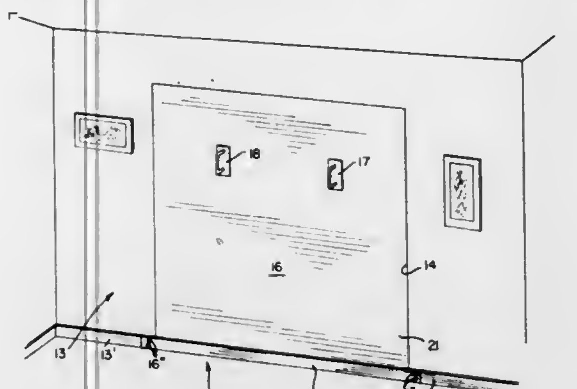
Kenneth V. Pepper, Davison, Mich., assignor to Genova Products, Davison, Mich.
Filed Oct. 10, 1972, Ser. No. 295,802
Int. Cl. E03d *11/13;* F16l *5/00, 15/00*
U.S. Cl. 4—252 R **8 Claims**



1. A closet flange on which a water closet is adapted to be mounted, said flange having bolt slots in which bolts are inserted in inverted positions for securing said closet in place, each of said slots being wider at one end for initial insertion of a bolt and having a width at the other end substantially the same as that of the diameter of the bolt, the slot having an inwardly directed feathered edge at said other end of a dimension to require the bolt to be pressed therein so that a fit for the bolt is provided at said feathered edge sufficient to sustain the bolt in place.

3,846,852
WALL PANEL DISAPPEARING BED

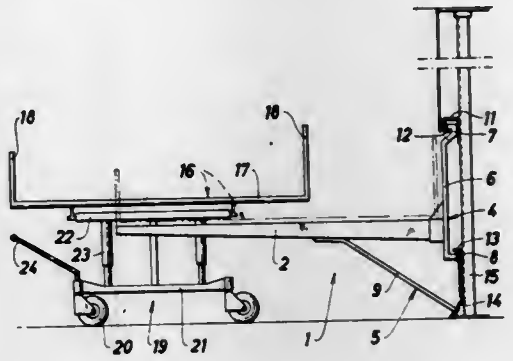
George J. Mercier, 71 Central Ave., Rochelle Park, N.J. 07662
Filed Aug. 29, 1973, Ser. No. 392,433
Int. Cl. A47c *17/40*
U.S. Cl. 5—10 R **5 Claims**



1. A wall panel disappearing bed comprising floor brackets adapted to be fitted lengthwise into a wall opening and respectively fixed to the floor at the respective opposite sides thereof, each of said brackets having a top forwardly extending runner adapted to overlie the floor and provide free space thereunder, a disappearing bed structure pivotally connected between the forward ends of the top runners and having a wall panel adapted to be flush in the wall opening when lifted thereinto, lifting spring means connected to the floor brackets and the bed structure to assist the lifting thereof, said wall opening extended down to the floor, a removable transverse floor molding piece adapted to extend between the sides of the wall opening and over the floor, said wall panel of the bed structure having a lower edge means that rides under the top forwardly extending runners and into the free space thereunder as the bed structure is lowered to the floor and when the bed structure is lifted the lower edge means of the bed wall panel will engage with the rear face of the removable transverse floor molding piece, whereby the bed wall panel and the floor molding piece will fully close the wall opening at the floor thereof.

3,846,853
BED PLANT FOR HOSPITALS

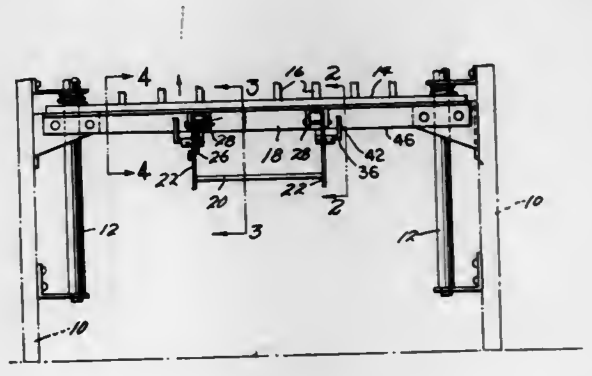
Oake L. F. Jacobsson, 41253 Goteborg, Sweden
Filed Feb. 7, 1972, Ser. No. 223,875
Claims priority, application Sweden, Feb. 8, 1971, 1525/71
Int. Cl. A47c *17/04*
U.S. Cl. 5—60 **1 Claim**



1. Bed-plant for hospitals, comprising a plurality of suspension means each comprising one upper rail having longitudinally extending grooves and one lower rail which can be fastened in horizontal position to the walls of the hospital selected for installation of bedsteads, a plurality of brackets elements dismountably supported by said suspension rails in any desired longitudinal position of the latter, said brackets being provided with supporting arms and upper hooking means provided to cooperate with edges of said longitudinally extending grooves provided on said upper rail, and lower supporting means arranged to support against said lower rail, a number of bed elements each one substantially comprising a bed-plane with bedstead ends, and being detachably supported by the supporting arms of said brackets elements, a plurality of carriages provided with lifting means, arranged for the transportation of said bed elements and for lifting up the same from, or respectively lowering them onto, said bracket elements, and a plurality, of carriages provided in said plant serving the purpose to transport separate, empty bedstead elements, and each one of said carriags having supporting means arranged to cooperate in supporting a plurality of upwards tilted ones of said bed elements.

3,846,854
SAFETY TRIP LOCK FOR CRIBS

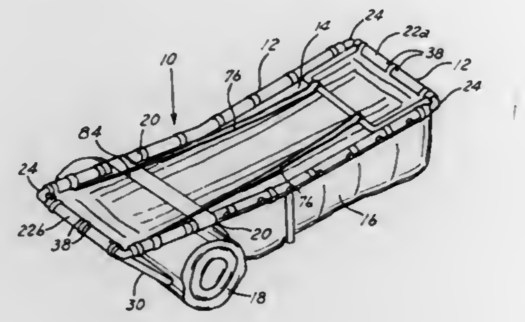
Robert G. Bryant, Gardner, Mass., assignor to Gem Industries, Inc., Gardner, Mass.
Filed Oct. 9, 1973, Ser. No. 404,440
Int. Cl. A47c *21/00*
U.S. Cl. 5—100 **4 Claims**



1. The combination of a crib having a drop side and a pivotal latch normally maintaining the drop side latched in its upper position, and means on the drop side engaging said pivotal latch and maintaining it against pivotal motion to unlatch the drop side, said means being constructed and arranged to disengage the latch upon motion of the drop side in an upward direction.

3,846,855
CONVERTIBLE BACKPACK AND COT APPARATUS

Charles J. Peterson, 332 S. Can St., Lakewood, Colo. 80226
Filed Feb. 20, 1973, Ser. No. 333,468
Int. Cl. A45f *1/00*; **E04b** *1/347*
U.S. Cl. 5—114 **10 Claims**



1. A convertible packpack and cot apparatus comprising:

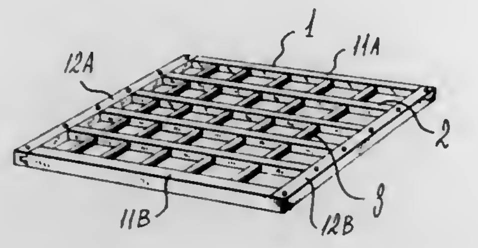
a substantially rectangularly shaped frame having a pair of end members, a pair of side members, and first and second pairs of elbow members forming the corners of said frame, each of said elbow members being telescopically connected to one of said end members and one of said side members to define an adjustable extension of the associated end member and side member, at least one of the end frame members being rotatable relative to the associated elbow members telescopically connected therewith, and releasable lock means operably interconnecting said end frame member and the associated elbow members for securing the said end frame member relative to the associated elbow members in a selected angularly related position,

leg members connected to said end members and rotatable relative to said elbow members along with the end members so that said leg members can be positioned to elevate said frame from a supporting surface, and

a cot sheet attached to said frame along the periphery of the frame.

3,846,856
SOFT MAT

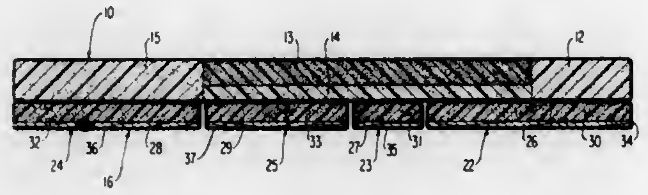
Hsiu-Ying Tu, No. 182, Shih Feng Rd., Chiao Tou Hsiang, China /Taiwan
Filed May 22, 1973, Ser. No. 362,816
Int. Cl. A47g *9/00*
U.S. Cl. 5—344 **3 Claims**



1. A flexible mat comprising an outer peripheral frame, a plurality of parallel longitudinal bar members, a series of short transverse opposed rod members extending from each side of said bar members at spaced intervals therealong and siad opposed rod members being aligned between adjacent bar members, tubular members disposed on said opposed rod members and extending between said adjacent bar members, flange members disposed at the ends of said bar members, said flange members being secured within grooves in said frame by fastening means.

3,846,857
MULTI-SECTION VARIABLE DENSITY MATTRESS

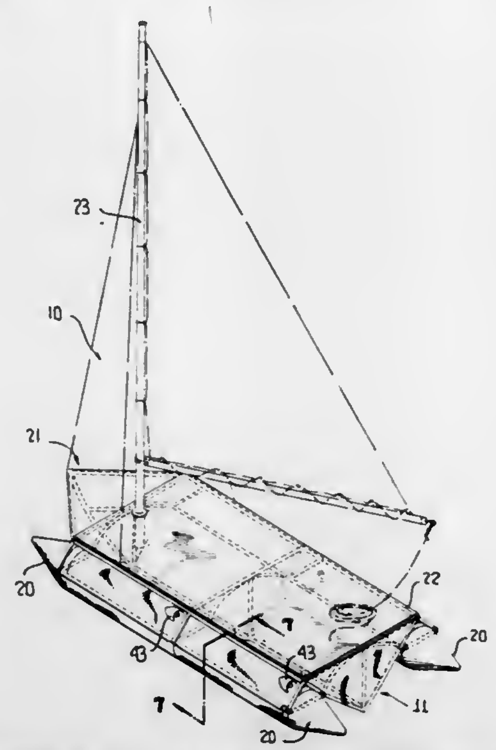
Clifford Weinstock, Pompano Beach, Fla., assignor to Neurological Research and Development Group Incorporated, Scranton, Pa.
Continuation-in-part of Ser. No. 233,687, March 10, 1972, abandoned. This application Mar. 28, 1973, Ser. No. 345,605
Int. Cl. A47c *27/08, 27/22*
U.S. Cl. 5—345 R **5 Claims**



1. A mattress made of foam having three distinct sections, said distinct sections being integral and coextensive with each other, said foam material of the first zone having a first density and compressibility factor at 4 inches in the order of 22 to 30 lbs. per cubic foot, said second zone being adjacent to said first zone and having a second density and second compressibility factor, said second zone having a first and second portion, said first portion having a compressibility factor at 4 inches in the order of 37 to 60 lbs. per cubic foot, and said third zone adjacent to said second zone and having a third density and compressibility factor at 4 inches in the order of 22 to 30 lbs. per cubic foot, and said second portion of said second zone having a compressibility factor at 4 inches in the order of 22 to 30 lbs. per cubic foot.

3,846,858
ASSEMBLY FOR USE IN RECREATIONAL ACTIVITIES

Harold A. Syfritt, 1025 Somera Rd., Los Angeles, Calif. 90024
Filed Feb. 18, 1972, Ser. No. 229,096
Int. Cl. B63b *7/00*
U.S. Cl. 9—25 **12 Claims**



1. An assembly for use in recreational activities comprising:

a. at least two elongated units mounted on a rigid support means,

b. said units being parallel and laterally displaced with respect to each other,

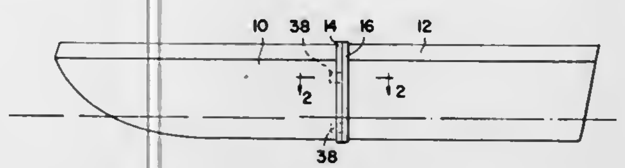
c. at least one of the units being detachably connected to the rigid support means,

d. each said unit including a collapsible, elongated container adapted to receive a fluid medium therein and an elongated frame structure having a plurality of parallel linear support members wherein each support member is laterally spaced with respect to any other lateral support member and a separate end frame portion connected at each end of said support members to form an open structural configuration to receive the collapsible container,

e. said detachably connected unit having a collapsible, elongated container adapted to hold either a liquid fluid medium or a gas fluid medium whereby the detachably connected unit may be used as a pontoon when the container is inflated with a gas fluid medium and is employable in other uses when the container is not inflated or holds a liquid fluid medium.

3,846,859
BOATING APPARATUS

Warren J. Vertrees, Anchorage, Alaska, assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Sept. 28, 1973, Ser. No. 401,827
Int. Cl. B63b *7/04*
U.S. Cl. 9—2 S **2 Claims**



1. Boating apparatus comprising:

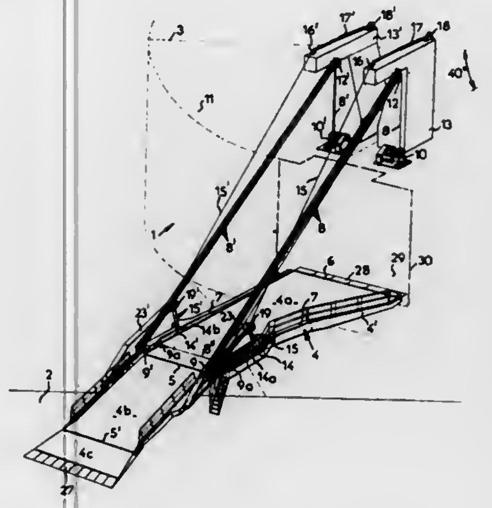
a boat having separate front and rear mating halves;

first and second detachable mating half rib sections, each section being secured to an edge of a corresponding boat half which is adapted to abut an edge of the other boat half, the sections extending vertically along the sides and horizontally along the bottom of the boat halves and having mating tongues and grooves; and

locking means being disposed in the sections in a plurality of spaced positions, the sections having aligned transverse slots at said spaced positions, the locking means being disposed partially in one section and partially in the other to enable the sections to be locked together in sealing engagement to assemble the boat and enable the sections to be separated and the boat disassembled, the means including a stationary member disposed in each of the slots of one section and a corresponding movable member disposed in each of the slots of the other section.

3,846,860
MOVABLE ACCESS RAMP FOR VEHICLES

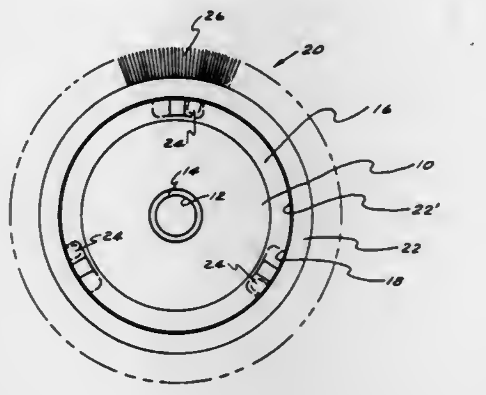
Henri Kummerman, Geneva, Switzerland, assignor to MacGregor-Comarain S.A., D'Avray, France
Filed June 21, 1973, Ser. No. 372,051
Claims priority, application France, June 28, 1972, 72.23373; May 29, 1973, 73.19511
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 **30 Claims**



1. A movable device forming a foldable access ramp to interconnect a vehicle with an outside platform, said ramp being adapted to swing in parallel relation to a vertical plane so as to be raised into inoperative stowed position on said vehicle and lowered into operative working position to rest at least partially on said platform, said ramp comprising at least two successive ramp sections pivotally interconnected endwise in the longitudinal direction and the first one of which forming an innermost section is pivotally connected to said vehicle and attached with at least one point of said ramp section to at least one constantly tensioned handling cable winding up on at least one winch located on said vehicle whereas the other or second ramp section may be folded back and downwards against and along said innermost ramp section and is attached to at least one handling cable controlling its outward extension for raising said other ramp section into the extended position in at least approximatively aligned registering relationship with said innermost ramp section in the lowered working position, wherein the improvement consists in that each handling cable for controlling the outward extension of said second ramp section is connected to means for automatically tensioning and taking up the slack of said cable through the action of potential energy, said means being provided on said vehicle and comprising self-acting means for stopping said cable and holding it unidirectionally against motion, said latter means being adapted to form a stationary fastening means for generating, through blocking of the effective useful length of said cable, a tractive reaction force tending to raise said second ramp section into its outward extended position during the lowering motion through gravity of said innermost ramp section which is constantly suspended from each one of its own handling cables.

3,846,861
BRUSH UNIT AND REPLACEMENT BRUSH THEREFOR

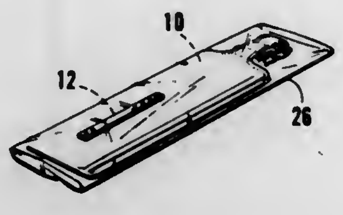
James S. Smith, Sr., 2443 Armstrong Cir., Gastonia, N.C. 28052
Filed Jan. 23, 1973, Ser. No. 326,021
Int. Cl. A46b *1/00, 13/02*
U.S. Cl. 15—179 **13 Claims**



1. A brush unit comprising a hub, said hub having a mounting opening therethrough, and a brush removably secureable around said hub, said brush having a body with an inside periphery substantially conforming in shape to an outside periphery of said hub, one of said hub and said brush having a plurality of elongated slots extending circumferentially thereabout and having a side opening intermediate the length thereof and the other of said hub and said brush having a plurality of projections thereon, said projections being passable through said intermediate openings into said slots and drivingly connecting said brush and said hub away from said openings.

3,846,862
SHEATH FOR A CURLING BROOM

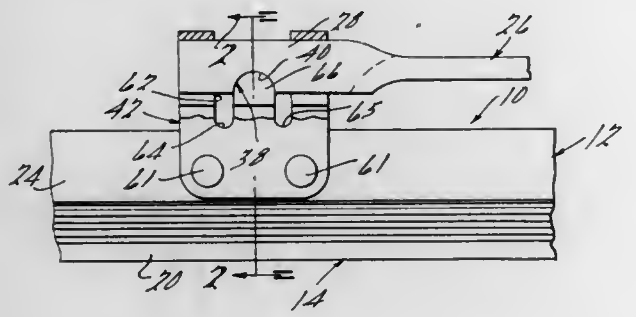
Albert L. Botting, 616 12th St., Hanover, Ontario, Canada
Filed Mar. 19, 1973, Ser. No. 342,355
Int. Cl. A46b *17/04;* **A63b** *67/14*
U.S. Cl. 15—210 R **2 Claims**



1. A sheath for a curling broom having a handle and a cornstalk brush and comprising: a single length of multiple ply material of uniform width to its side edges and terminating at its ends in portions of narrower width, said uniform width portion being folded transversely on a line midway between its ends; means fastening the edges of said material inwardly to form a sheath having a closed end at said fold line, said narrower end portions being inturned and fastened to define corresponding openings therein, said multiple ply material being in the form of a laminate of an external sheet of coarse surfaced synthetic fibre separated from an inner liner of synthetic fibre material by an elastomer foam sheet, fastening means connectable through the openings of said end portions for fastening the sheath to the curling broom, and a packaging sleeve adapted for packaging same and for retaining the cornstalks of a broom in alignment during insertion of the cornstalks into the sheath.

3,846,863
WINDSHIELD WIPER ASSEMBLY

Johan H. van den Berg, and Alex H. A. van Eekelen, both of Hasselt, Belgium, assignors to Monroe Belgium N.V., Sint-Truiden, Belgium
Filed Nov. 10, 1972, Ser. No. 305,500
Int. Cl. B60s *1/40*
U.S. Cl. 15—250.32 **6 Claims**



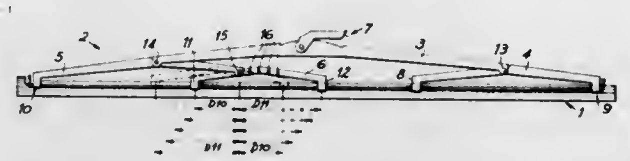
1. A windshield wiper blade connector adapted to detachably secure a windshield wiper blade assembly to an associated wiper arm having a generally flat rectangular cross-section end portion defining a detachment area along one side thereof,

said connector being of a generally inverted U-shape configuration and including an end section and a pair of spaced side sections adapted to be secured to the blade assembly, said connector section defining a cavity adapted to removably receive the end portion of the wiper arm,

said side sections of said connector include upwardly extending and inwardly projecting spring lips, the uppermost portions of which are spaced downwardly from said top section of said connector a predetermined distance, and wherein said attachment area of said arm includes a recessed portion formed in the underside thereof, the uppermost portion of said recessed area being spaced from the opposite side of said wiper arm end portion a distance approximately equal to said predetermined distance, whereby upon insertion of said wiper arm end portion into said cavity, said end portion is confined between the uppermost portions of said spring lips and the underside of said top section of said connector.

3,846,864
WINDSCREEN WIPER FRAME

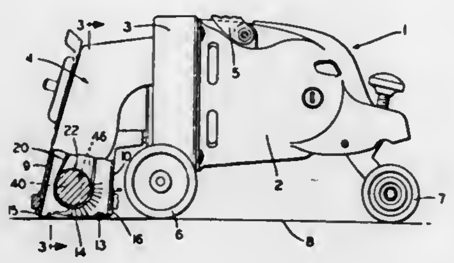
Jacques Baut, 213 boulevard du Souverain, 1160 Brussels, Belgium, and Paul Journee, Chateau de Reilly, 60 Reilly, France
Filed Jan. 24, 1973, Ser. No. 326,456
Claims priority, application France, July 7, 1972, 72.24790
Int. Cl. B60s *1/04*
U.S. Cl. 15—250.42 **4 Claims**



1. Windscreen wiper having a frame comprising the combination of, at least: a main bridge; a swingle bar articulated at one end of the bridge and bearing at both its extremities on the elastic wiper blade; a secondary bridge articulated at the other end of said main bridge, the outer extremity of said secondary bridge bearing on the wiper blade, and articulated at the inner extremity of said secondary bridge, an intercalary swingle bar, both extremities of which bearing on said wiper blade.

3,846,865
ATTACHMENT CLIP FOR SUCTION CLEANER BRUSH

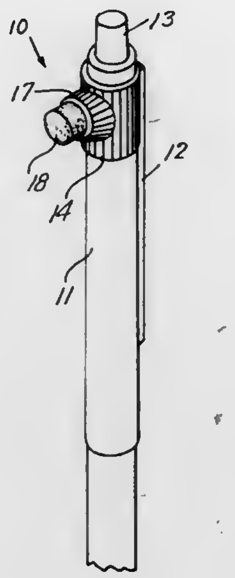
William G. Holman, Stoughton, Wis., assignor to Royal Appliance Mfg. Co., Highland Heights, Ohio
Filed July 13, 1973, Ser. No. 379,052
Int. Cl. A47l *5/26, 5/34*
U.S. Cl. 15—392 **4 Claims**



1. In a suction cleaner of the type having a nozzle, a brush mounted within the nozzle, an axle pin in each end of the brush, a block ecentrically journalled on each end of the pin rotatably mounting the brush within the nozzle, a squared stationary end member mounted on each block, and inverted U-shaped brackets having spaced fingers in the nozzle detachably mounting the squared end members between the fingers, the improvement comprising; clip means mounted on the squared end member at each end of the brush; each clip means having a vertically extending wall with inner and outer surfaces, and flanges extending outwardly from three sides of the clip means outer surface forming an open clip top end; a squared opening formed in the vertical wall between said flanges through which the squared brush end member extends mounting said clip means on the brush end; and the nozzle brackets being inserted through the open clip top ends with the bracket fingers located within the flanges whereby the brush end members can be mounted in only one position on the brackets when the brush is mounted within the nozzle, and whereby the eccentricity of the axle pins are the same at both brush ends.

3,846,866
ERASER FOR BALL POINT PEN

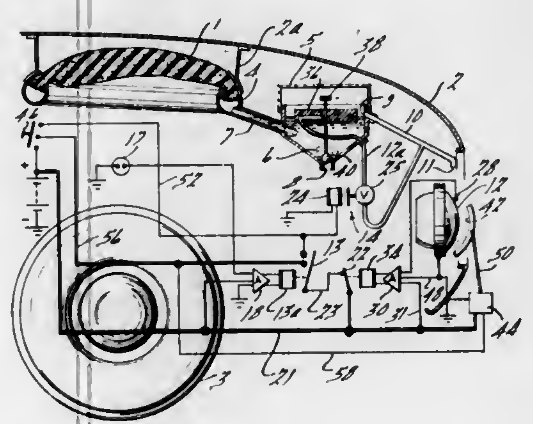
George E. Burnett, 1020 Josephine St., Marinette, Wis. 54143
Filed May 1, 1973, Ser. No. 356,153
Int. Cl. B43k *29/02*
U.S. Cl. 15—425 **3 Claims**



1. In an eraser attachment for ball point pens of the type that include a pocket clip and a hand actuated plunger, a generally cylindrical body adapted to encompass the ball point pen, a generally cylindrical eraser socket integrally secured to said body and projecting outwardly therefrom with its axis perpendicular to the axis of said body, means on said body cooperating with said pocket clip for preventing rotation of said body on said ball point pen during use of said eraser attachment, a generally resilient eraser seated in said socket, the means for preventing rotation of said body including a generally rectangular notch formed in the upper edge of said body for engaging around the base of said pocket clip to prevent the body from rotating around the pen as the eraser attachment is used and from moving longitudinally of the pen in one direction, said body being resilient and having a longitudinal split parallel to the axis of the body to permit said body to resiliently grasp the ball point pen, the upper edge of said split communicating with said notch, said socket being positioned generally in diametrically opposed relation relative to said notch and split.

3,846,867
ROAD WATER COLLECTION AND SURFACE CLEANING APPARATUS

John J. Bryant, 359 Hawthorn, Glen Ellyn, Ill. 60137
Filed June 19, 1972, Ser. No. 264,365
Int. Cl. A47l *1/46*
U.S. Cl. 15—250.02 **33 Claims**



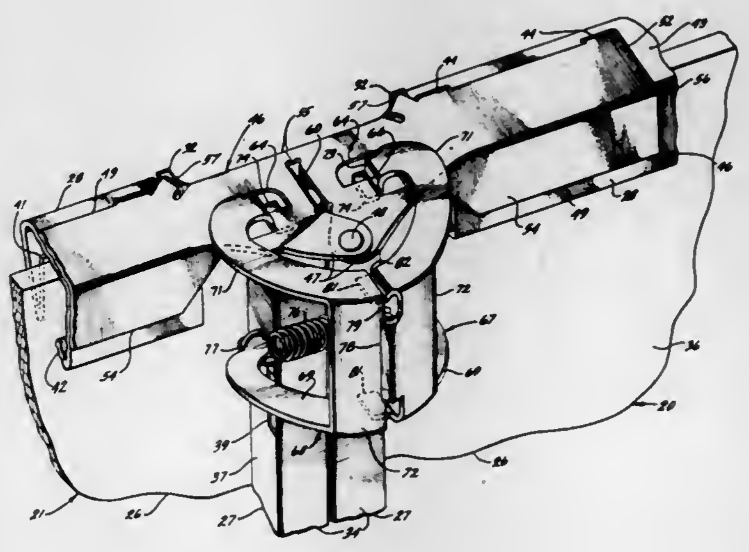
1. A mechanism for wetting selected surfaces of a vehicle having wheels with water collected from the surface on which the vehicle is travelling, the mechanism comprising means for lifting the water from the surface to a position spaced from the surface including at least one wheel of the vehicle, the water to be lifted collecting on the exterior of the wheel as it leaves the surface on which it is travelling and being carried upwardly thereafter, means mounted on the vehicle and positioned adjacent said one wheel for collecting the lifted water, the water being directed to said collecting means by a flinging action, and means in fluid communication with said collecting means for directing the collected water to the vehicle surface to be wetted.

ERRATUM

For Class 16,148 see:
Patent No. 3,846,871

3,846,868
HINGE FOR DOOR WITH HOLLOW STILE

Robert Brydolf, Pasadena, Calif., assignor to Acme General Corporation, Monrovia, Calif.
Filed Sept. 19, 1972, Ser. No. 290,320
Int. Cl. E05f *1/12*
U.S. Cl. 16—181 **7 Claims**



1. A spring hinge for a pair of bifold doors each having a door panel, a stile along each of the side edges of the panel, and a rail along each end of the panel comprising:

first and second hinge leaves, each hinge leaf comprising a leg for engaging a stile and an arm for fitting over the top of a rail and engaging therewith for connecting the rail and stile together;

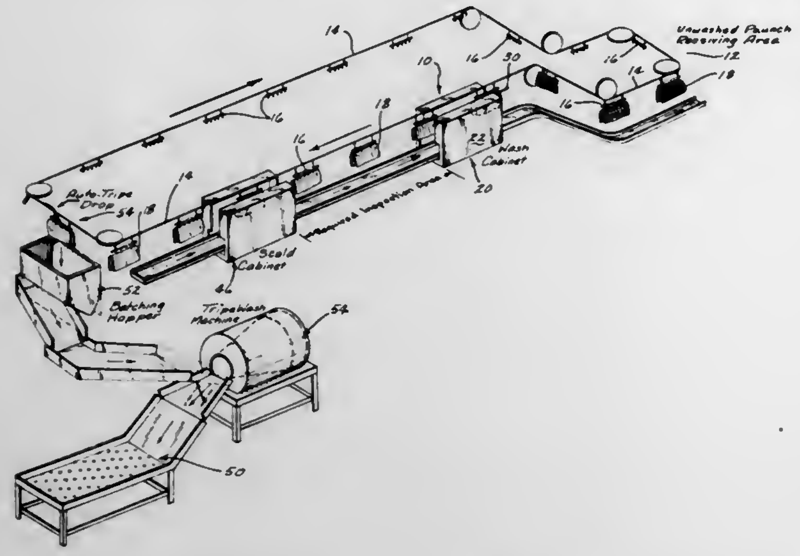
a hinge pivot interconnecting the hinge leaves for pivoting between an open position with rails in alignment and a closed position with rails approximately side by side; and spring means engaging the hinge leaves for biasing the leaves towards each other, the hinge pivot axis being on one side of a line between the loci of engagement of the spring means with the hinge leaves when in the closed position and not on the same side when in the open position.

3,846,869
METHOD OF WASHING TRIPE

Wilford A. Barbee, Homer, Nebr., assignor to Iowa Beef Processors, Dakota City, Nebr.
Filed Jan. 15, 1973, Ser. No. 323,881
Int. Cl. A22c *17/16*
U.S. Cl. 17—43 **8 Claims**

1. A method of washing tripe and separating the knap therefrom, said tripe having a knap side and an opposite side, said

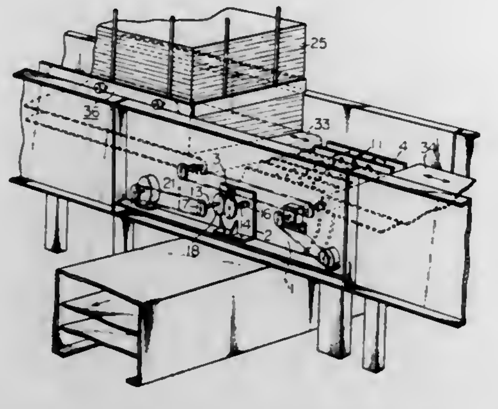
method comprising, opening the tripe and removing the contents therefrom,
  folding said tripe to allow subsequent exposure of the entire knap side of said tripe to scalding and to prevent subse-



quent exposure of the opposite side of said tripe to scalding,
  water washing both the knap side and the opposite side of said tripe, and scalding only the knap side of said tripe to cook the knap loose from said tripe.

3,846,870
DEVICE FOR STRIPPING FIBER TUFTS IN THE PICKING PROCESS

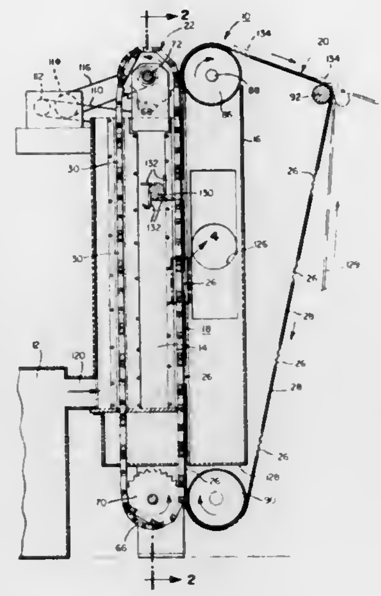
Hidejiro Araki, Aichi-ken; Takashi Katoh, Kariya, and Susumu Otani, Ohbu, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi-ken, Japan
Filed June 25, 1973, Ser. No. 373,515
Claims priority, application Japan, June 27, 1972, 47-64819
Int. Cl. D01g *7/06*
U.S. Cl. 19—80 R **6 Claims**



1. Device for stripping fiber tufts from a mass of fibers in the picking process, comprising an assembly of plural stripping members turnably assembled about a common shaft, a plurality of separation plates each disposed between two adjacent stripping members, a first means for turning half of said stripping members in a clockwise direction about said common shaft, a second means for turning the other half of said stripping members in a counterclockwise direction about said common shaft, each of said stripping members provided with a plurality of saw teeth or pins secured on the working surface thereof, means for supplying said fiber mass to a working position of said assembly of said stripping members, said supplying means disposed in proximity to and above said assembly, means for delivering stripping fibers to a succeeding machine and said delivery means disposed below said stripping members, whereby each combination of said stripping members turning opposite directions to each other impart stripping actions in opposite directions to said mass of fibers at said working position thereof.

3,846,871
APPARATUS FOR FORMING FIBROUS PADS

Charles G. Kolbach, Media, Pa., assignor to Scott Paper Company, Delaware County, Pa.
Continuation-in-part of Ser. No. 67,862, Aug. 28, 1970, abandoned. This application Mar. 24, 1972, Ser. No. 237,963
Int. Cl. D01g *25/00*
U.S. Cl. 19—148 **21 Claims**

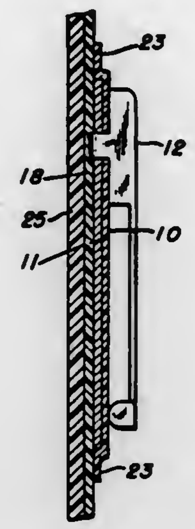


1. An apparatus for forming discrete fibrous pads, said apparatus comprising:
- A. a pad-formation assembly having spaced, three-dimensional pad-receiving compartments, said compartments being separated from each other by air-impermeable regions; each pad-receiving compartment having a configuration of a fibrous pad to be formed therein and being defined by a bottom air-permeable surface and sidewall means extending outwardly from one side of said bottom surface; sections of said sidewall means being movable relative to each other and to said bottom surface to aid in releasing a formed pad from each of said pad-receiving compartments; said pad-formation assembly including;
  - 1. a flexible substrate adhered to a conveyor means;
  - 2. said conveyor means providing said bottom air-impermeable surfaces, and said flexible substrate including surfaces disposed contiguous to the periphery of said air-permeable surfaces for providing said sidewall means;
- B. drive means for moving said pad-formation assembly along a predetermined path including a pad-formation run directed through a pad-forming region;
- C. means for forming a gaseous suspension of fibers in said pad-forming region; and
- D. vacuum means for pulling the gas of said suspension through the bottom air-permeable surfaces of said pad-receiving compartments from said one side of said air-permeable surfaces to said in depositing the fibers of said suspension on said bottom air-permeable surfaces as said air-permeable surfaces pass through said pad-forming region.

3,846,872
SPECTACLE CASE

Emanuel Nathan, South Orange, N.J., assignor to Opticase, Inc., Rockaway, N.J.
Division of Ser. No. 201,329, Nov. 23, 1971, Pat. No. 3,749,231. This application Mar. 26, 1973, Ser. No. 344,992
Int. Cl. B43k *25/00*
U.S. Cl. 24—3 G **1 Claim**

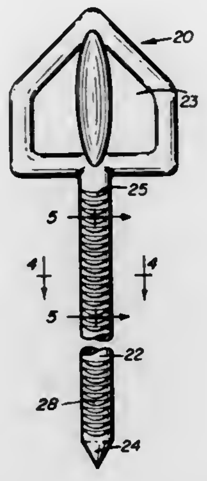
1.
An assemblage comprising,
- a - a patch of flexible material having a generally rectangular configuration,
- b - a rigid backing member disposed on one side of said patch, said backing member having edges spaced inwardly from and proximate to the edges of said patch, and
- c - a pocket clip disposed on the other side of said patch, said clip having integral prongs passing through the patch



and backing member with the end portions of said prongs being offset into engagement with a surface of the backing member; the recited assemblage being attachable to a relatively flat surface by means of the marginal edge portions of the patch which extend beyond the edges of the backing member.

3,846,873
FACE PIN FOR ARCHERY TARGETS

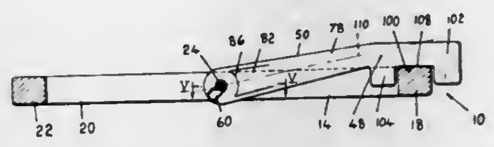
Charles A. Saunders, Columbus, Nebr., assignor to Saunders Archery Co., Columbus, Nebr.
Filed July 5, 1973, Ser. No. 371,821
Int. Cl. A44b *9/00;* **A63b** *71/00*
U.S. Cl. 24—153 R **8 Claims**



7. A face pin for selectively securing a target sheet to and releasing a target sheet from a target mat of the type having a mass of oriented fibers, the fibers defining a series of spaced zones therebetween adapted to receive a probe therewithin for interlocking engagement with said fibers; said face pin comprising
  a mat-pentrating shaft defining a principal axis of said pin, and
  rib means extending outwardly of a principal surface of said shaft and radially of said principal axis, said rib means comprising a plurality of discrete projections spaced annularly for one another and extending around less than the entire perimeter of said shaft;
  whereby said pin means interlocks with said fibers of said mat when said rib means projects toward said fibers and whereby said pin means is selectively readily removable from said mat when said rib means projects into said zones and substantially out of contact with said fibers.

3,846,874
BUCKLE ASSEMBLY

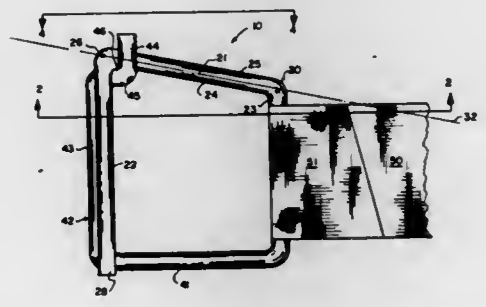
Helmut Johann Swierkot, 26 Seabrook Ave., Toronto, Ontario, Canada
Filed Mar. 9, 1973, Ser. No. 339,722
Claims priority, application Canada, Apr. 28, 1972, 140898
Int. Cl. A44b *11/20*
U.S. Cl. 24—188 **5 Claims**



1. A buckle assembly comprising a frame and a hinge pin, the frame including a pivotal cross-member and a parallel support cross-member, the pivotal cross-member having a cylindrical shaft portion, the hinge pin being elongated and formed of a suitably resilient plastic and having a first end portion, a main body portion and a second end portion, the first end portion having an outer surface, a central cylindrical transverse opening adapted to pivotally receive the shaft portion, and a passage with first and second opposed sides extending from the outer surface to the central opening, the first side being flat, the second side having a first flat portion extending from the outer surface of the first end portion parallel to the first side, and a second flat portion converging towards the first side as it extends from the first flat portion to the central opening to form a retaining ridge adjacent the central opening, the passage adapted to permit resilient insertion of the shaft portion of the pivotal cross-member through the passage into retained pivotal receipt in the central opening, the support cross-member of the frame being rigidly located relative to the pivotal cross-member and adapted to support the second end portion of the hinge pin when the shaft is in pivotal receipt in the central opening and the buckle assembly is in use.

3,846,875
BUCKLE-STRAP BELT

Peter V. Catlos, and Gert Somann, both of Huron Park, Ontario, Canada, assignors to Ferplas Industries Limited, Ontario, Canada
Filed Dec. 20, 1973, Ser. No. 426,743
Int. Cl. A44b *11/04*
U.S. Cl. 24—200 **4 Claims**



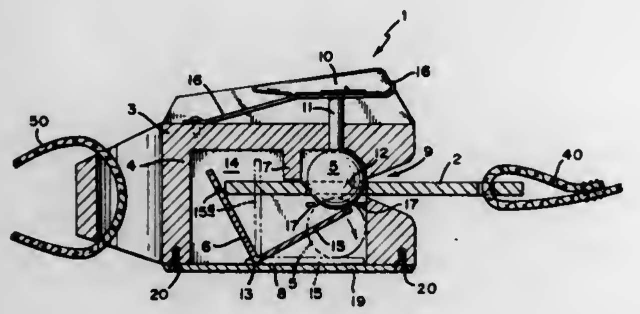
1. As an article of manufacture, a buckle comprising a single piece of wire formed as follows:
- a. a first generzally U-shaped portion including a distal leg, a bight and a first proximal leg, a bend connecting one end of said distal leg to said bight, the distal leg opposite said bight terminating in a free end, said first proximal leg being adapted to be engaged by a strap;
- b. an essentially L-shaped member having one arm integrally joined by a bend to an end of said first proximal leg opposite said bight, said L-shaped member further comprising a second proximal leg joined by a bend to said first arm, said second proximal leg being in adjacent, parallel

relationship to said distal leg, said second proximal leg at the end thereof opposite its connection with said first arm having a dog-legged portion generally parallel to and offset from said second proximal leg and integrally connected thereto by a bend and thereby forming a notch, said doglegged portion extending substantially across said bight to constrain said distal leg in said adjacent parallel relationship to said second proximal leg, said doglegged portion terminating in a free end, said bend between said distal leg and said bight being lockingly engaged by said notch;

c. whereby the end portion of a strap can be locked between the distal leg and the second proximal leg.

3,846,876
BUCKLE WITH LATCH

Per Olag Weman, Haslah, Germany, assignor to Sigmatex, A.G., Basel, Switzerland
Filed Oct. 1, 1973, Ser. No. 402,499
Int. Cl. A44b *11/26*
U.S. Cl. 24—230 A **5 Claims**

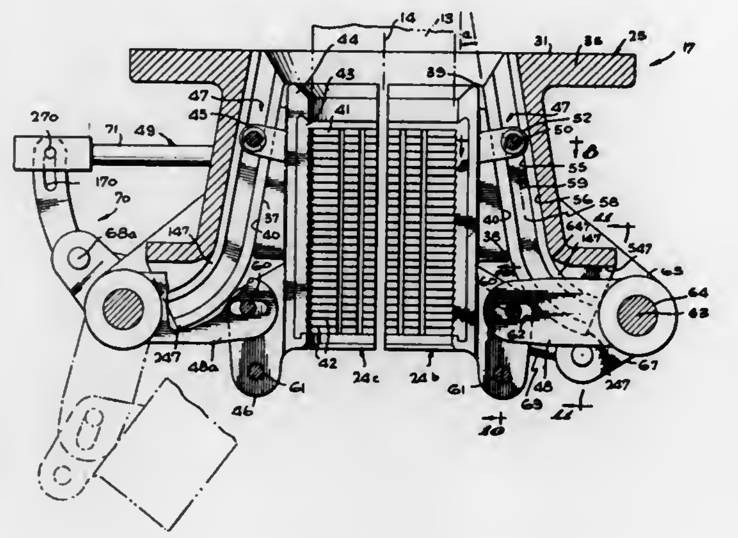


1. Seat belt buckle with apertured tongue received therein for locking said tongue in said buckle, said buckle comprising a housing having a base, the housing forming a chamber, the tongue extending into the housing chamber to be locked therein, freely moveable locking element within said housing chamber for reception in the aperture of the tongue to lock said tongue in said housing chamber, pivotable latch means mounted on the base within said housing chamber, said locking element resting on said latch means, said locking element in contact with said tongue when said tongue is inserted in said housing, said latch means pivoting and moving said locking element into engagement with the aperture of the tongue when the tongue is inserted in position in the housing chamber, and release means associated with said housing for depressing the locking element against the force of the latch means so that the locking element is disengaged from its position in the aperture in the tongue and the latch means ejects the tongue from the chamber.

3,846,877
WELL SLIP ASSEMBLY

Willy H. Spiri, Whittier, Calif., assignor to The Cavins Co., Long Beach, Calif.
Filed Aug. 20, 1973, Ser. No. 390,002
Int. Cl. E21b *19/06*
U.S. Cl. 24—263 CA **13 Claims**

1. A slip assembly for gripping a tubular well string, extending along an axis, comprising a slip bowl structure, a plurality of slip structures engaging said bowl structure in a camming relation acting to cam the slip structures radially inwardly upon axial movement thereof, a first connection attaching one of said slip structures to said bowl structure movably at a first location for generally axial relative movement between an active string gripping position and a retracted position, and a second connection attaching the same slip structure to said bowl structure movably at a second location spaced generally axially from said first location and in a relation positively controlling its orientation during shifting movement by the movable attachment of the slip structure to the bowl at said two spaced locations, said second connection including means forming a generally axially extending guideway in said slip bowl structure which converges progressively toward said axis



as it advances axially, and interfitting means carried by said one slip structure and projecting into and movable along said guideway, said guideway having a first portion extending at essentially a uniform angle to said axis, and having an end portion curving progressively away from the axis.

ERRATA

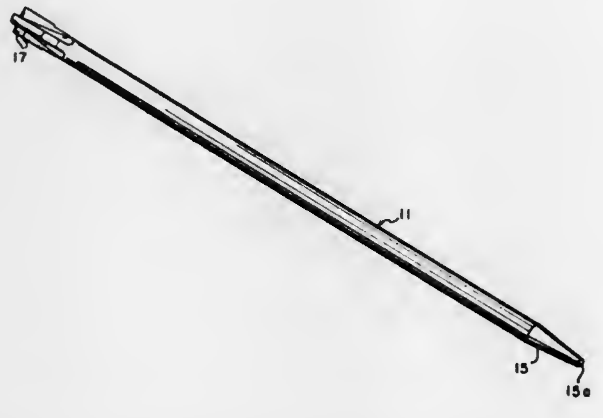
For Classes 26—458 and 26—589 see:
Patents Nos. 3,846,902 and 3,846,905

ERRATUM

For Class 28—72 see:
Patent No. 3,846,881

3,846,878
METHOD OF MAKING AN UNDERWATER PROJECTILE

Franklin A. Monson, Glen Arm, and Kenneth E. Mueller, Baltimore, both of Md., assignors to AAI Corporation, Cockeysville, Md.
Division of Ser. No. 734,291, June 4, 1968. This application Dec. 24, 1970, Ser. No. 101,431
Int. Cl. B21k *21/06*
U.S. Cl. 29—1.2 **1 Claim**



1. The method of making an underwater projectile comprising:

forming a cylindrical shaft having opposite flat ends,

taper-grinding at one end of said shaft to a degree sufficient to leave a flat blunt end whereby said one end is frustoconical and flat-ended,

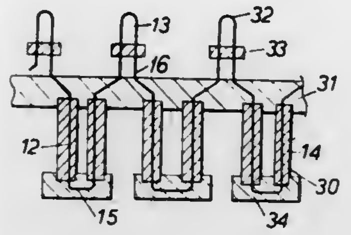
impact die forming the opposite end of said cylindrical shaft by impact in a forming die and thereby working the cylindrical shaft material into a convex finned shape with the fins extending radially beyond the shaft diameter with the connecting shaft body being rearwardly inwardly tapered from the beginning to the ends of the fins,

surface grinding the radial surfaces of the fins to a first substantially constant radius at all longitudinal points along a rearward section of said fins,

and surface grinding the radial surfaces of the fins to a second smaller radius substantially constant along a forward section of said fins while grinding a forwardly facing shoulder on each of said fins and adjoining said rearward and forward different constant radii sections.

3,846,879
METHOD OF CONSTRUCTING A MULTI-PLATE ELECTRODE STRUCTURE

Jonathan Moubray Jenkins, Sevenoaks, England, assignor to Unigate Limited, London, England
Filed Mar. 8, 1973, Ser. No. 339,453
Claims priority, application Great Britain, Mar. 9, 1972, 11099/72
Int. Cl. B23p *17/04*
U.S. Cl. 29—2 **13 Claims**

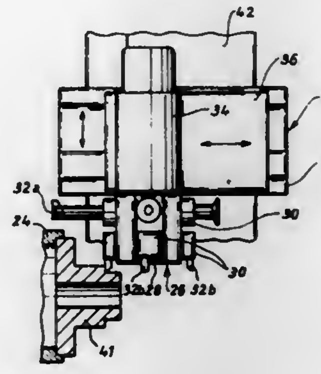


1. A method of making an electrode structure for use in an electric cell, said method comprising feeding a deformable substrate carrier to a coating apparatus, feeding to said coating apparatus an electrode material incorporating a porous material, applying said material in said coating apparatus as a spread onto at least one side of said carrier in spaced areas to form coated areas on said carrier separated by coating free areas of said carrier, causing said coating to become attached to said carrier, deforming said coated carrier to form coated areas in substantially opposing relationship inter-connected by coating free carrier areas, and securing at least some of said coating free areas in support means, to form a multi-plate electrode structure.

3,846,880
TOOL SUPPORT FOR USE IN MACHINE TOOLS PARTICULARLY IN TURNING MACHINES

Gerhard Foll, and Heinrich Lahm, Esslingen-Sirnau, Germany, assignors to Index-Werke KG Hahn & Tessky, Esslingen/Neckar, Germany
Division of Ser. No. 79,483, Oct. 9, 1970, Pat. No. 3,786,539. This application Oct. 31, 1973, Ser. No. 411,381
Claims priority, application Germany, Oct. 16, 1969, 1952050
Int. Cl. B23b *7/04*
U.S. Cl. 29—36 **8 Claims**

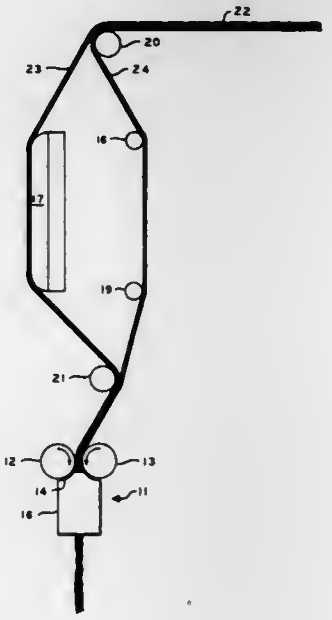
1. In a machine tool, a combination comprising a frame; a work spindle for carrying a workpiece to be machined, said work spindle being mounted on said frame rotatable about a first axis; a slide including a first carriage reciprocably mounted on said frame and a second carriage mounted on said first carriage, one of said carriages being reciprocably substantially axially and the other substantially radially of said work spindle; and tool support means mounted on said second carriage and comprising a turret indexible with respect to the second carriage only about a second axis located in a plane including said first axis, said turret being provided with at least



two rows of receiving means for tool holders, said rows being arranged about said second axis coaxial therewith, said coaxial rows of receiving means being spaced from each other in the direction of movement of one of said carriages.

3,846,881
FILAMENT CRIMPING

Wayne K. Erickson, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jan. 5, 1972, Ser. No. 215,461
Int. Cl. D02g *1/12*
U.S. Cl. 28—72.14 **4 Claims**



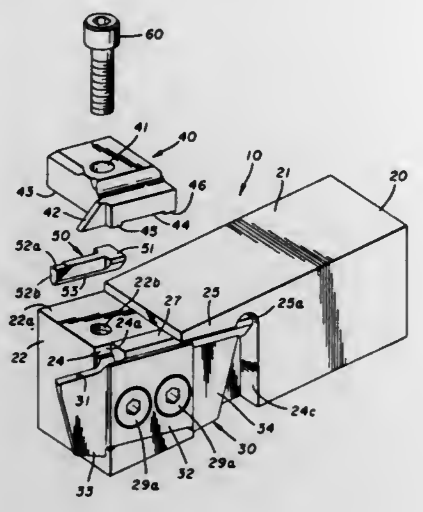
1. A method of producing a crimped filament structure comprising

passing a first portion of said filament structure into a stuffer crimper at a first temperature;

simultaneously passing a second portion of said filament structure into said stuffer crimper at a second temperature substantially higher than said first temperature; and simultaneously subjecting said first portion and said second portion to crimping conditions in said stuffer crimper thereby producing a filament structure having crimp variations between individual filaments thereof.

3,846,882
CUTOFF INSERT APPARATUS

William B. Stein, Barberton, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio
Division of Ser. No. 310,353, Nov. 29, 1972, Pat. No. 3,805,350. This application Sept. 24, 1973, Ser. No. 400,156
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 **3 Claims**



1. A cutoff tool comprising,
- A. an elongate tool holder having
  - 1. a base portion and
  - 2. a coextensive forward portion having a pocket formed therein;
- B. a support blade
  - 1. releasably secured in said pocket and
  - 2. having a V-shaped support groove in its upper surface and
  - 3. having a central portion and an end portion, with said central portion being approximately double the thickness of said end portion;
- C. a cutting insert having
  - 1. a base portion with
    - a. a length and width dimension and
    - b. a V-shaped bottom surface and
  - 2. a cutting portion projecting coextensively from said base portion of said insert and having
    - a. a length and width dimension and
    - b. a V-shaped bottom surface that is coplanar with the bottom surface of said base portion of said insert;
- D. the width dimension of said cutting portion being substantially less than the width dimension of said base portion whereby said cutting portion of said insert can be supported on said end portion of said blade while said base portion of said insert is supported on said central portion of said blade;
- E. the length dimension of said cutting portion being a substantial multiple of the length dimension of said base portion;
- F. said insert being releasably and adjustably receivable on the V-shaped support groove of said support blade; and
- G. a clamp member releasably receivable on said forward portion of said tool holder in overlying relationship to said insert
  - 1. whereby said insert may be held on said support blade.

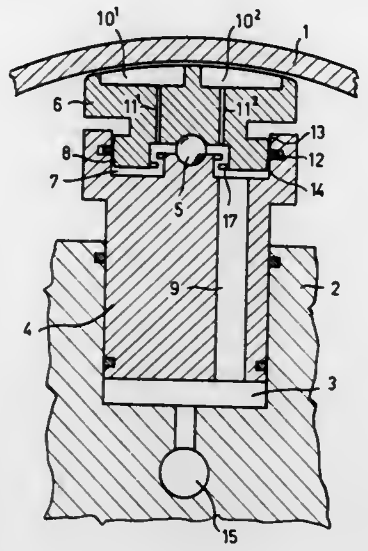
3,846,883
ROLLER FOR A PRESSURE TREATMENT OF WEBS

Mario Biondetti, Schio, Italy, assignor to Escher Wyss Aktiengesellschaft, Zurich, Switzerland
Filed Sept. 17, 1973, Ser. No. 397,926
Claims priority, application Germany, Sept. 16, 1972, 2245597
Int. Cl. B21b *13/02*
U.S. Cl. 29—116 AD **9 Claims**

1. A roller for pressure treatment of webs comprising a hollow cylincrical rotatable shell;

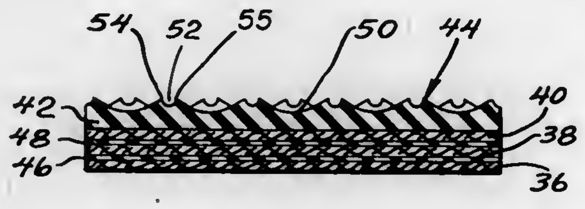
a non-rotatable yoke extending through said shell and having means at each end for supporting said yoke in a support; and

means for transmitting pressure between said yoke and said shell, said means including cylinders in said yoke, a pressure piston slidably mounted in each cylinder, a joint on each piston, a bearing shoe mounted on each joint for bearing against said shell, each said bearing shoe and piston defining a relief pressure chamber therebetween to receive a pressure medium for partially relieveing said joint, and an annular seal between each said bearing shoe and said piston disposed in a plane extending through a pivot point of said joint, at least one of said piston and said bearing shoe having a spherical surface in sealing engagement with said seal.



3,846,884
FOLDING MACHINE ROLLER

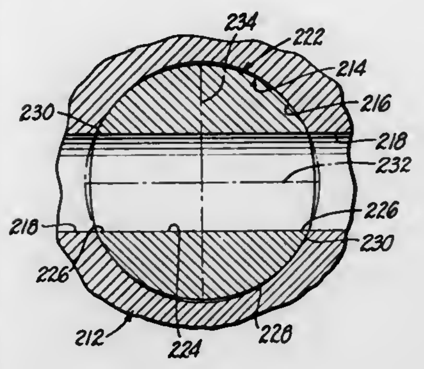
John J. Bartizal, Jr., 1015 W. 61st St., Lisle, Ill. 60532
Continuation of Ser. No. 270,218, July 10, 1972, abandoned. This application Oct. 31, 1973, Ser. No. 411,370
Int. Cl. B21b *31/08*
U.S. Cl. 29—127 **3 Claims**



1. A roller for use in driving sheet material to be folded in a folding machine comprising; an elongated cylindrical body having a longitudinal axis; said cylindrical body having a cylindrical outer surface; an axle connected to the body for rotatably supporting said body for rotating the body about its longitudinal axis; an elongated strip friction belt removably mounted on said surface; said friction belt including a first fabric web, a second fabric web over the first fabric web, a rubber body having a portion extending through the first and second fabric webs, a third fabric web above the second fabric web, and said rubber body having a second portion extending through the third fabric web and extending above the third fabric web, said rubber body having a friction surface formed therein above the third fabric web; said friction belt being helically wound on the outer surface of the cylindrical body at an angle to the longitudinal axis with adjacent edges of the belt abutting each other; said friction surface being drivingly engageable with sheet material to be folded in the folding machine; said friction surface having a plurality of straight gripper edges formed integral therewith; each of said gripper edges having tapered sides to form a sharp edge forming an angle of less than 90° between the sides; and means releasably securing the belt to the cylindrical body.

3,846,885
VALVE WITH ELLIPTICAL SEALING

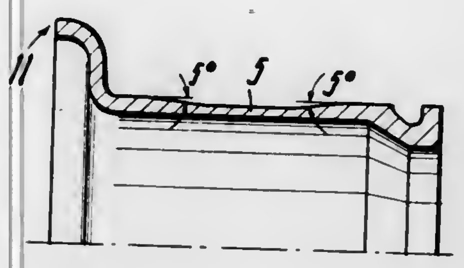
Dean A. Perry, 2235 W. 229th, Torrance, Calif. 90501
Division of Ser. No. 246,765, April 24, 1972, Pat. No. 3,780,985. This application Aug. 1, 1973, Ser. No. 384,453
Int. Cl. B21d *53/00*
U.S. Cl. 29—157.1 R **2 Claims**



1. A method of making a rotary valve including a valve body having a valve chamber of substantially elliptical cross section, comprising the steps of:
- a. providing a valve body including therein a valve chamber having an axis of rotation and having an internal, peripheral, valve chamber surface which is initially circular in cross section in a plane perpendicular to said axis of rotation and which is provided therein with opposed ports spaced apart along a port axis perpendicular to and intersecting said axis of rotation and spaced apart about said axis of rotation by 180°; and
- b. compressing said valve body in the direction of said port axis until said valve chamber surface is permanently distorted into a substantially elliptical cross section in a plane perpendicular to said axis of rotation with the minor axis of the ellipse coinciding with said port axis.

3,846,886
METHOD FOR PRODUCING RIMS

Paul B. Schroder, Hamm, and Gunter Pollkotter, Ahlen, both of Germany, assignors to Liefeld & Co., Ahlen, Germany
Filed June 14, 1973, Ser. No. 370,042
Claims priority, application Germany, June 29, 1972, 22318429
Int. Cl. B21h *1/10*; **B21k** *1/38*
U.S. Cl. 29—159.1 **5 Claims**

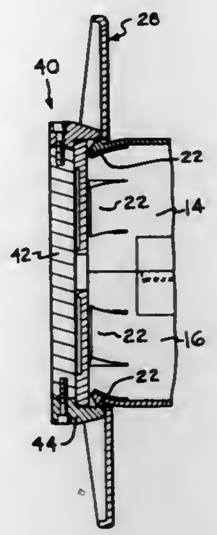


1. A method of producing a slant shoulder rim comprising the steps of:

forming a metal strip into a ring, welding the strip along a longitudinal seam when forming said ring, thickening the cross-sectional thickness of one end of said ring, forming a profile and drawing a snap ring groove in the thickened end of said ring and thereby reducing the thickness thereof, and erecting a wheel flange into an upright position by a spinning operation using an internal chuck.

3,846,887
DISASSEMBLY APPARATUS FOR KNOCKDOWN REEL

Glenn Woods, and Anthony J. Frackowiak, both of Erie, Pa., assignors to Hoover Ball and Bearing Company, Saline, Mich.
Filed Nov. 30, 1973, Ser. No. 420,396
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 D **5 Claims**



1. In combination, a knockdown reel comprising a tubular hub member having at its opposite ends axially extending resilient latch members adapted for simultaneous inward deflection, said latch members having locking abutments projecting radially outward adjacent to their terminal ends, and end flange members mounted on the opposite ends of said tubular hub member, each of said flange members defining in its central portion a socket, said socket having a dimension for receiving in close fitting mating relation an end of said tubular hub member and having holes in its circumference through which said locking abutments project for locking the flange member on said hub member, and a disassembly fixture having axially extending finger portions corresponding in numbers and spacing to said locking abutments, said finger portions defining an inner circumference corresponding to the inner circumference of said socket so that when the fixture is pressed in an axial direction onto the outer end of said socket the fingers will depress said latch members radially inwardly sufficiently far to permit removal of the end flange member from the tubular hub member.

3,846,888
APPARATUS FOR PROVIDING BALL ENDS ON GUITAR STRINGS

William H. Chaffee; Alfred M. Rubio, and Richard L. Lorenz, all of Chicago, Ill., assignors to Columbia Broadcasting System, Inc., New York, N.Y.
Division of Ser. No. 274,810, July 24, 1972, Pat. No. 3,777,613, which is a continuation-in-part of Ser. No. 160,734, July 8, 1971, abandoned. This application June 27, 1973, Ser. No. 373,949
Int. Cl. B21f *15/06*
U.S. Cl. 29—200 B **43 Claims**

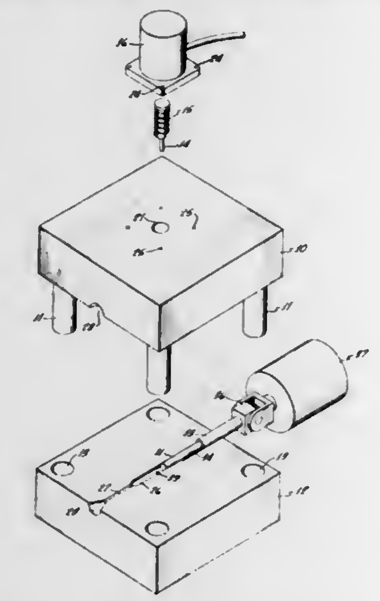
1. Apparatus for providing a ball end on a guitar string or the like, which comprises:

means to effect lateral deformation of an elongated metal element,

said means to effect lateral deformation comprising a movable element adapted to move generally radially of said metal element,

said means to effect lateral deformation further comprising means to move said movable element inwardly to laterally deform said metal element, and

means to effect longitudinal deformation and flow of said metal element while the end of said string is at least substantially enclosed therein, said last-named means comprising means to define a forming chamber around said metal element, said last-named means further comprising means to force a ram along said forming chamber longitudinally of said metal element and with a force sufficient to cause flow of said metal element without the



necessity of effecting melting thereof, said means to force said ram effecting shifting thereof through a distance sufficient to cause said metal element to at least substantially conform to the shape of said chamber, and to effectively anchor said string end in said metal element.

3,846,889

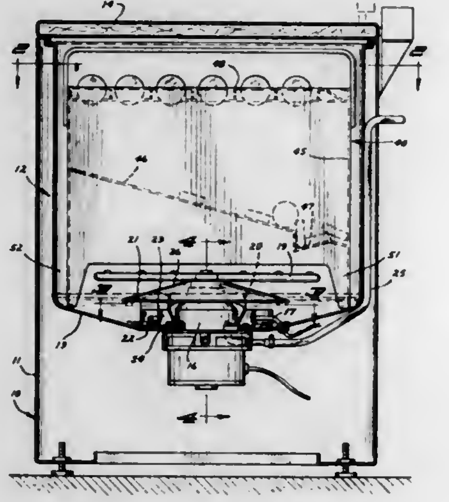
LENS PROCESSING APPARATUS

Jack L. Reisman, 4713 E. Coventry Rd., Minnetonka, Minn. 55343

Division of Ser. No. 234,902, March 15, 1972. This application Aug. 17, 1973, Ser. No. 389,173

Int. Cl. B23p *19/00, 17/00*

U.S. Cl. 29—200 D 8 Claims



1. Apparatus for processing lenses having mounting blocks adhesively secured thereto by a low melting point adhesive that is immiscible in aqueous solutions comprising, in combination;

- a tub having a downwardly extending convex bottom and a sealable cover;
- a pump for spraying an aqueous washing solution upwardly into said tub, said pump being mounted substantially at the lowest level of the bottom of said tub;
- a drain disposed in the bottom of said tub adjacent said pump;
- means for disposing lenses, having mounting blocks adhesively secured thereto, adjacent the top of said tub and for receiving the blocks after the adhesive is liquified; and
- means adjacent said pump for excluding liquified adhesive from said pump.

3,846,890

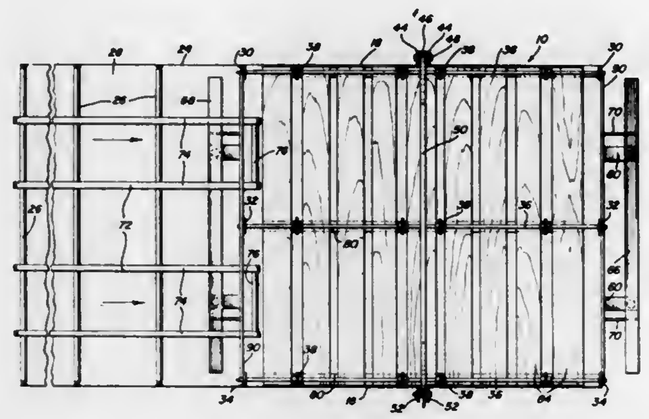
PALLET DISASSEMBLY MACHINE

Raymond J. Bielkiewicz, 513 Rienzi Dr., La Place, La. 70068

Filed Jan. 2, 1974, Ser. No. 429,714

Int. Cl. B23p *19/00*

U.S. Cl. 29—200 D 8 Claims



1. A pallet disassembly machine comprising a support table including opposite sides and opposite ends, at least three transversely spaced pairs of longitudinally spaced and aligned uprights supported from opposite end portions of said table, an elongated support member extending between and supported from the upper end portions of each pair of uprights, each of said support members including a plurality of depending abutment members supported therefrom and shiftable longitudinally therealong, and a plurality of elongated longitudinal abutment members equal in number to the number of spaces between adjacent pairs of uprights, said longitudinal abutment members being adapted to be inserted lengthwise between adjacent stringers of a pallet disposed on said table with its deck boards extending transversely of said table, and a pair of elongated transverse abutment members supported at opposite ends of said table for vertical shifting relative to said table and engaging the opposite ends of and raising said elongated abutment members to force the upper deck boards of a pallet disposed on said table from the pallet stringers thereof with which said depending abutment members are adapted to be engaged, and means connected between said table and said transverse abutment members for selectively raising the latter.

3,846,891

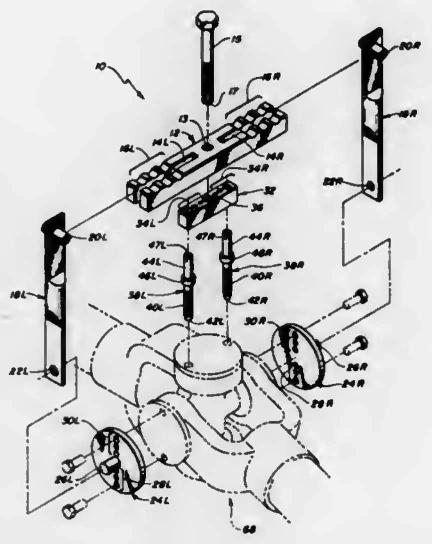
APPARATUS FOR REMOVING FLANGED CUP BEARINGS FROM HEAVY DUTY UNIVERSAL JOINTS

Carl L. Elg, 5224 38th Ave. S., Minneapolis, Minn. 55417

Filed Dec. 20, 1973, Ser. No. 426,970

Int. Cl. B23p *19/04*

U.S. Cl. 29—201 R 5 Claims



5. A tool for facilitating the removal of flanged cup bearings from the yokes of a heavy duty universal joint comprising:

- a. first and second disc members adapted to be connected to the opposed legs of the universal joint yoke orthogonal to the yoke whose flanged cup bearing is to be removed;
- b. first and second linkages having first and second ends, said first ends being coupled to said first and second disc members;
- c. first and second pin members having a threaded end and a slotted end with a cylindrical collar located between said threaded and slotted ends, said threaded end being adapted to be inserted into threaded holes in the leg of the yoke whose bearing is to be removed;
- d. a pressure plate having first and second apertures therethrough, adapted to be fitted onto the slotted ends of said first and second pin members to abut said collar;
- e. a bar member having means at each end thereof for coupling to the second ends of said first and second linkages and a threaded hole located midway between said two ends of said bar members; and
- f. a threaded bolt adapted to be inserted into the threaded hole in said bar member to contact said pressure plate such that as said bolt is turned into said threaded hole, the pressure plate and said bar are forced apart causing the cross of the universal joint to move toward said pressure plate forcing the flanged cup member from said yoke member leg.

3,846,892

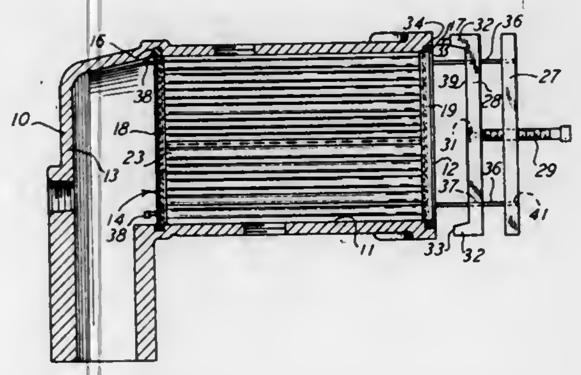
EXTRACTOR TOOL FOR HEAT-EXCHANGER CORE

Fred M. Young, Racine, Wis., assignor to Young Radiator Company, Racine, Wis.

Filed July 9, 1973, Ser. No. 377,577

Int. Cl. B23p *19/04*

U.S. Cl. 29—202 R 4 Claims



1. An extractor tool for use in extracting from a casing a heat exchanger core which has elongated heat-exchange tubes and a header plate at each axial end of said tubes, comprising two rigid members with one of said members having two spaced-apart bearing surfaces offset from the remainder of said one member and disposed at the opposite ends thereof for the purpose of spanning said core and being in contact with said casing only, a screw extending between said members for moving them apart in response to rotation of said screw in one direction, two elongated fingers attached at one end of each thereof to the other of said members and slidably extending through said one member and therebeyond and being of a spring material to be flexible in the extending portions in the directions transverse to the length of each of said fingers, and an offset portion on the extending end of each of said fingers and with said offset portions respectively extending to only one side of each of said fingers and extending in opposite directions relative to each other and being offset in said transverse directions for the purpose of hooking onto a remote end of said heat-exchange tubes when said fingers are inserted into said tubes.

3,846,893

MECHANISM FOR FEEDING AND FIXING MAGNETIC CORES IS A MEMORY MATRIX INTERWEAVING DEVICE

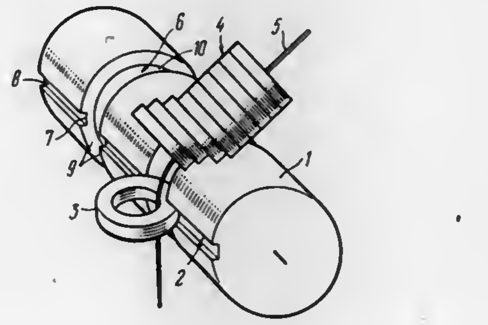
Jury Alexandrovich Burkin, Tsvetnoi proezd 29, kv. 24, and Jury Emelyanovich Seleznev, Vesenny proezd 4a, kv. 16, both of Novosibirsk, U.S.S.R.

Filed Aug. 15, 1973, Ser. No. 388,415

Claims priority, application U.S.S.R., Dec. 18, 1972, 1862912

Int. Cl. H05k *13/04*

U.S. Cl. 29—203 MM 1 Claim



1. A mechanism for feeding and fixing magnetic cores strung in piles on wires in a memory matrix interweaving device, said mechanism including a shaft having at least one longitudinal slot for catching said magnetic cores, and recesses located over the length of the shaft and extending transversely to said longitudinal slot, said recesses having a width large enough to accommodate therein the bottom magnetic cores of said piles, and a depth exceeding the depth of said longitudinal slot, as a result of which the edges provided by the bottom of said longitudinal slot and the side walls of said recesses define two stops to hold each said magnetic core accommodated in said longitudinal slot, against being displaced therealong.

3,846,894

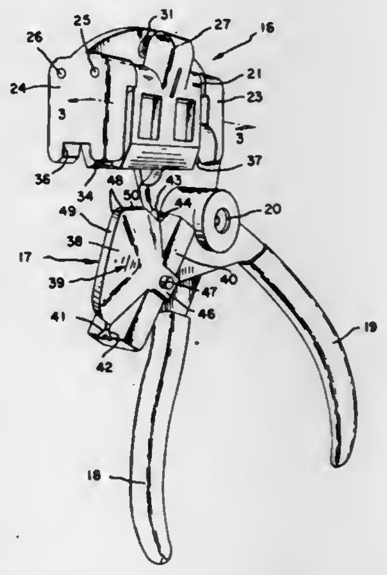
METHOD AND TOOL FOR PREPARING THREE CONDUCTOR-CABLE FOR ELECTRICAL FIXTURE

Stuart L. Parsons, Clearwater, and James Albert Kloth, St. Petersburg, both of Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. Nos. 284,804, Aug. 30, 1972, abandoned, which is a continuation-in-part of Ser. No. 267,331, June 29, 1972, abandoned, which is a continuation-in-part of Ser. No. 232,595, March 7, 1972, abandoned. This application Aug. 23, 1973, Ser. No. 390,977

Int. Cl. H01t *43/04, 43/00*

U.S. Cl. 29—203 H 22 Claims



1. A tool for preparing a sheathed cable having two outer insulated conductors at opposite sides of a central conductor

for electrical connection to an electrical fixture having transversely spaced electrical contacts therein without severing said conductors, said tool comprising:

a first clamping jaw,

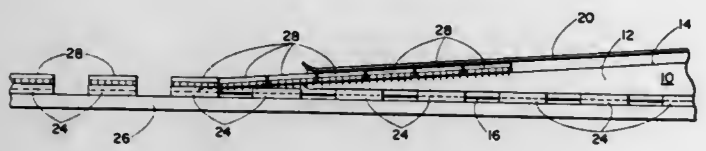
an anvil mounted on said first clamping jaw and having a supporting surface arranged to extend along and support the central portion of said cable, said anvil being narrower than the space between said outer conductors,

a pair of cable gripping members mounted on said first clamping jaw for movement between an inner position at which they grip and support opposite outer portions of such cable supported on said anvil, and an outer position at which they grip and support said outer portions after lateral deflection of said outer conductors for respective engagement with said contacts, yieldable means biasing said cable gripping members toward said inner position,

a second clamping jaw,

a pair of cutting blades mounted on said second clamping jaw, said cutting blades having cutting edges extending parallel to one another adjacent opposite edges of said anvil and wedging surfaces extending rearwardly and outwardly at an acute angle from said cutting edges, and means to cause relative movement of said first and second clamping jaws toward one another to cause said cutting edges first to slice through the sheath of a cable supported on said anvil along two parallel lines approximately coinciding with the inner sides of the outer conductors therein and then to cause said wedging surfaces to bend said outer conductors outwardly away from said central conductor, said gripping members being thereby forced outwardly against the resistance of said yieldable means to said outer positions.

3,846,895
DUAL-IN-LINE PACKAGE EXTRACTION TOOL
Michael A. Cosham, Richmond, Ontario, and Dieter O. Marx, Stittsville, Ontario, both of Canada, assignors to Microsystems International Limited, Montreal, Quebec, Canada
Filed Sept. 26, 1973, Ser. No. 400,941
Int. Cl. B23p *19/04*
U.S. Cl. 29—203 H **3 Claims**



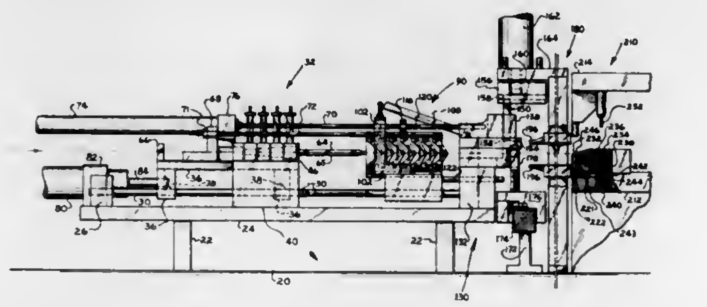
1. An extraction tool for sequentially removing and gathering a plurality of dual-in-line multipin integrated circuit packages from a plurality of dual-in-line integrated circuit sockets rectilinearly arranged in end-to-end configuration on a planar supporting surface, each of said sockets being provided with a rectangular central slot, of substantially uniform width and depth, running parallel to the rows of pins of said each of said sockets, said extraction tool comprising;

a. a substantially rigid longitudinal member having a pair of substantially parallel wedge-shaped side faces, bridged by an upper edge of a thickness less than the minimum distance between the two parallel rows of pins of any one of said integrated circuit packages and having a lower edge of a thickness less than the width of the rectangular central slot of any one of said sockets, the thickness of said lower edge less than the thickness of said upper edge by a groove running longitudinally along the portion of each wedge-shaped side face near the lower edge of said longitudinal member to form a rigid longitudinal member of substantially T-shaped cross-section, the wedge-shaped side faces having a width increasingly tapering from a first measure less than the depth of the rectangular central slot of any one of said sockets to a second measure greater than the maximum distance the pins of said packages extend into the dual-in-line sockets;

b. a resilient longitudinal cover connected to said wedge like member and overlying, in spaced relationship, the upper edge and a portion of at least one wedge-shaped side face thereof by a distance sufficient to permit a row of dual-in-line integrated circuit packages to straddle said upper edge and readily slide along the length of said longitudinal member without buckling sufficiently to jam out of sequence;

whereby, by sliding the lower edge of said longitudinal member along the rectangular central slots of the dual-in-line integrated circuit sockets, the dual-in-line integrated circuit packages are sequentially removed from their corresponding dual-in-line integrated circuit sockets and slid astraddle and along the upper edge of said longitudinal member into the space bounded by said longitudinal member and said longitudinal cover.

3,846,896
TERMINAL BLOCK ASSEMBLY APPARATUS
Fransiscus Cornelius Bakermans, Shiremanstown, and William Charles Thoms, East Berlin, both of Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 15, 1973, Ser. No. 406,304
Int. Cl. H01t *43/04*
U.S. Cl. 29—203 DT **21 Claims**



1. An apparatus for assembling terminal blocks having a plurality of spring wire contacts interconnected with a plurality of lead wires in a terminal block, comprising

a terminal block assembly station for positioning a terminal block for receiving a plurality of spring wires and interconnecting the spring wires with a plurality of lead wires,

first means for positioning the plurality of spring wires in alignment with a plurality of spaced holes in the terminal block at said terminal block assembly station for insertion through the spaced holes in the terminal block,

means for feeding a plurality of spring wires through the spaced holes in the terminal block at said terminal block assembly station,

second means for positioning the spring wires inserted through the spaced holes in the terminal block in alignment with the lead wires at the terminal block assembly station,

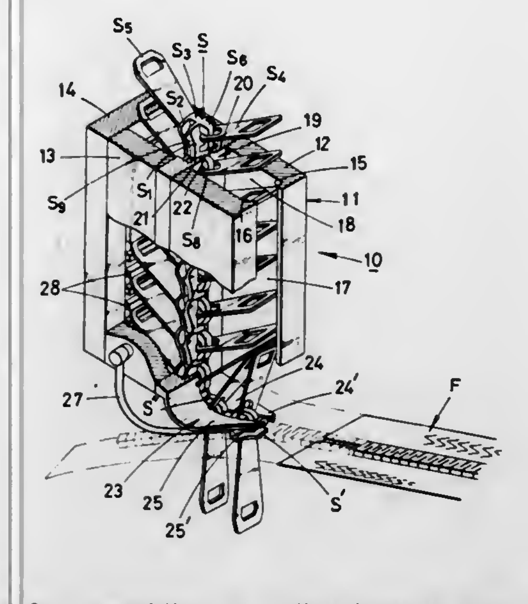
means for positioning the plurality of lead wires at said terminal block assembly station,

means for splicing the spring wires and lead wires at said terminal block assembly station to form a permanent electrical interconnection,

means for retracting the spliced interconnection between the spring wires and the lead wires into the terminal block, and

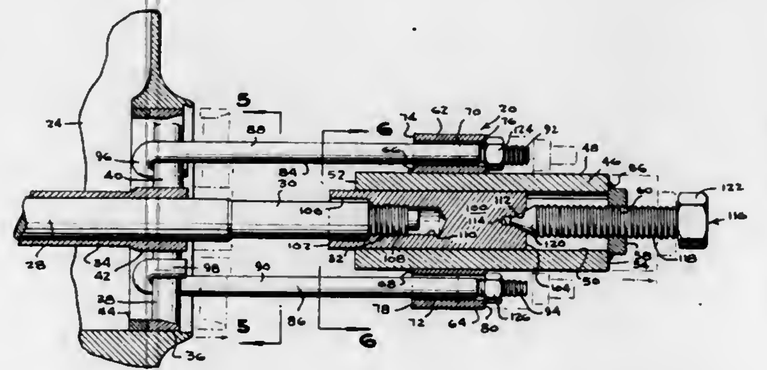
means for severing the plurality of continuous spring wires a spaced distance from the terminal block in said terminal block assembly station to provide a plurality of spring wire contacts on the terminal block interconnected to a plurality of lead wires within the terminal block.

3,846,897
SLIDER ASSEMBLING DEVICE FOR SLIDE FASTENER CHAIN
Hisashi Douri, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 25, 1973, Ser. No. 400,539
Claims priority, application Japan, Oct. 3, 1972, 47-99280
Int. Cl. B23p *19/04*
U.S. Cl. 29—207.5 SL **5 Claims**



1. A device for assembling on a slide fastener chain sliders of the type including a pivotally supported pull tab, which device comprises a vertically elongated casing having an opening therein for accommodating a series of sliders that are transported by their own gravity, a guiding means disposed in said opening and guiding the movement of said series of sliders, a holding means integral with said guiding means and holding a leading one of said sliders in position for assembly on the slide fastener chain, a spring member for releasably holding said leading slider, and means for arresting and preventing said series of sliders from moving backward during the assembling operation.

3,846,898
PULLER FOR BEARING CARRIER
Robert M. Kerr, Winter Garden, Fla. 32787
Filed Apr. 2, 1973, Ser. No. 346,938
Int. Cl. B23p *19/02*
U.S. Cl. 29—259 **4 Claims**



1. An implement for extraction of a component being positioned about a fixed shaft, the implement comprising:

an elongated tubular main sleeve including a sleeve outer side, the sleeve having an inward end and an outward end and the sleeve defining a slideway;

a nut member, having a threaded bore formed therein, said bore being axially aligned with the slideway; the nut member being fixedly mounted at the outward end of the sleeve;

a pair of secondary sleeve members of tubular form fixedly secured to the outer side of the main sleeve at substantially diametrically opposite locations thereon;

the secondary sleeve members having passageways therein arranged substantially parallel to the slideway of the main sleeve;

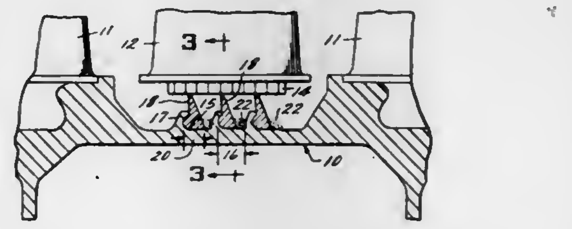
hook members, each including an elongated shaft, a hook end and an opposite threaded end, the shafts extending through the secondary sleeves, and having nuts engaged on the threaded ends thereof with the hook ends projecting forwardly of the inward end of the main sleeve, the hook members engaging said web;

a thrust member slidably positioned in the slideway, the thrust member having a first end extended in the direction of the inward end of the main sleeve, and a second end extending toward said nut member;

a thrust actuator comprising a threaded shaft contacting the second end of the thrust member, the shaft being threadedly engaged in the nut member, rotation of the threaded shaft forcing the thrust member against said fixed shaft and causing the withdrawal of the web from the housing; the first end of the thrust member has a chamber formed therein with a threaded chamber section; and

the fixed shaft is outwardly threaded for connection with said chamber section.

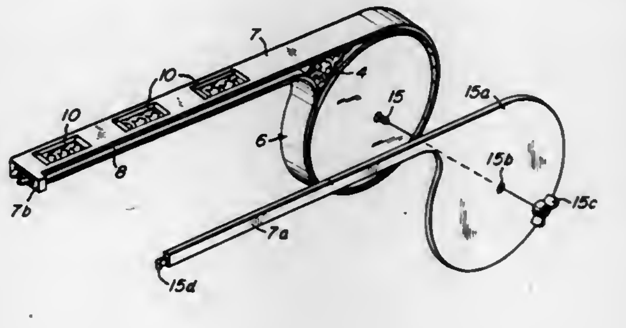
3,846,899
A METHOD OF CONSTRUCTING A LABYRINTH SEAL
Donald F. Gross, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio
Division of Ser. No. 276,076, July 28, 1972, abandoned. This application Jan. 30, 1974, Ser. No. 438,031
Int. Cl. B23p *7/00*
U.S. Cl. 29—401 **5 Claims**



1. A method for constructing a labyrinth seal between relatively rotating members, said method comprising the steps of: positioning a tooth segment having a base portion in cooperation with a first of said relatively rotating members; and

disposing a retaining deposit upon said base portion for securing said tooth segment upon said first member.

3,846,900
METHOD OF APPLYING RETAINER RINGS FROM INTERCONNECTED RETAINER RING SUPPLY
David E. Weglage, Dayton, Ohio, assignor to Walter Becker, Kettering, Ohio, a part interest
Continuation of Ser. No. 233,137, March 9, 1972, abandoned. This application Sept. 13, 1973, Ser. No. 396,841
Int. Cl. B23p *17/00*
U.S. Cl. 29—413 **4 Claims**



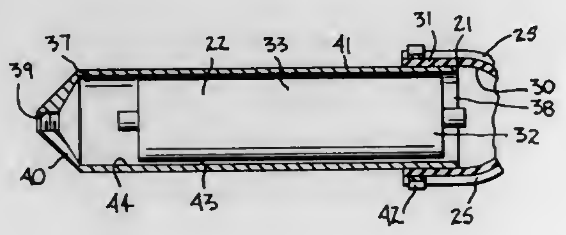
1. The method of applying retainer rings, each of which comprises two resilient legs spaced from each other at its front

portion and adapted to be forced and snapped into a groove in an object by pressing said legs into said groove initially to spread said legs apart, said rings being arranged successively in the form of a flat strip with the legs of each successive ring integrally connected to the rear portion of the respective directly preceding ring and having the leg ends of one end ring free, said method comprising passing said strip through a substantially rigid hand carried holder, projecting said one end ring from the adjacent end of the holder with its legs outward of the last mentioned end of the holder, pressing said legs of said projected ring into said groove while spreading said last mentioned legs resiliently in the plane of said projected ring and to embrace said object and to engage a portion in said groove, and bending said strip at the juncture of said one end ring with the next succeeding ring by using said holder as a handle to bend and break said strip between said one end ring and the directly adjacent ring while said one end ring is held rigid and clamped-in in said groove.

3,846,901

METHOD OF MOUNTING A RESILIENT SLEEVE ON A CONVEYOR ROLLER

John R. Lovett, 23604 Lake Rd., Bay Village, Ohio 44140
Division of Ser. No. 216,847, Jan. 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 43,349, June 4, 1970, abandoned. This application Apr. 19, 1973, Ser. No. 352,485
Int. Cl. B23p *11/02*
U.S. Cl. 29—450 1 Claim



1. A method of mounting a resilient tubular sleeve of elastomeric material on a closed-end conveyor roller whose external diameter is greater than the un-stressed internal diameter of said sleeve, comprising the steps of:

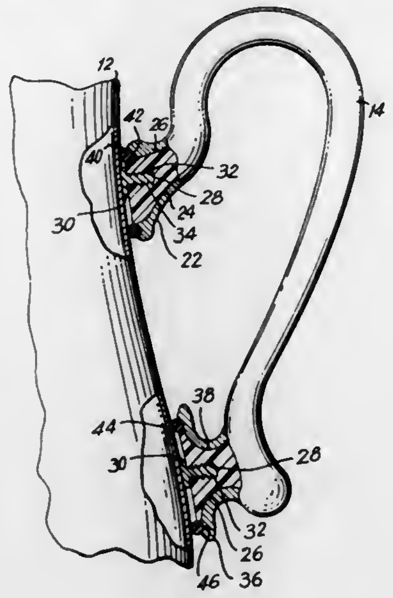
a. Slidably nesting said closed-end conveyor roller into a close-fitting hollow cylinder to provide a restricted fluid flow annular passageway around said roller,
b. Expanding one end of said sleeve sufficiently to mount it in coupled relationship to an open end portion of said cylinder,
c. Injecting fluid under pressure into the opposite end of said cylinder to displace said roller into sealing engagement with the unexpanded portion of said sleeve to create a fluid barrier,
d. Maintaining said fluid pressure to cause fluid flow through said annular passageway to progressively open said barrier and expand the remainder of said sleeve while displacing said roller by said fluid pressure into said expanded remainder until said roller has attained and desired positional longitudinal relationship to said sleeve, and
e. Relieving said pressure to permit said sleeve to contract into gripping relationship to said roller.

3,846,902

METHOD OF MOUNTING A HANDLE TO A VESSEL

Burr Sebring, Barrington, R.I., assignor to Gorham, a division of Textron Inc., Providence, R.I.
Filed Apr. 21, 1972, Ser. No. 246,262
Int. Cl. B23p *3/00, 25/00*
U.S. Cl. 29—458 4 Claims

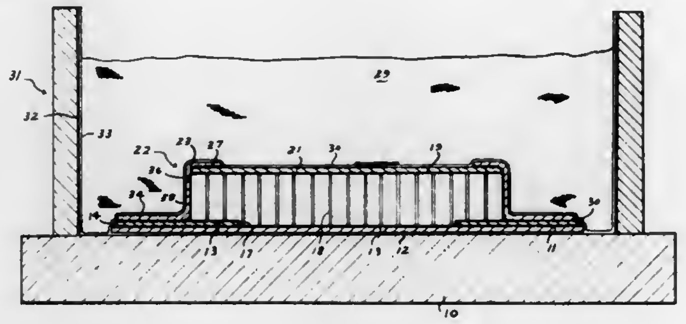
1. A method of forming a rigid, thermally insulated connection between a liquid vessel and a heat-conductive handle having at least one hollow end portion positioned proximate to said vessel, comprising the steps of; fastening at least one stud means to said vessel so as to extend therefrom; positioning a heat-insulating ring member about said stud means, one side wall of said ring member contacting the surface of said vessel about said stud means; filling the hollow end portion of said handle with a self-setting, heat-insulating, cementitious material; and superimposing the hollow handle end portion containing said cementitious material over said stud means in spaced relationship therewith, the end surface of said handle end portion contacting the opposite side wall of said ring member so as to form a thermally insulated rigid gripping assembly between said handle and said vessel upon setting of said cementitious material.



3,846,903

VACUUM BRAZING TANTALUM ALLOYS

Edward J. Rupert, Wheatridge; Monroe W. Meyer, Littleton, and Gerald E. Uhland, Aurora, all of Colo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed July 13, 1973, Ser. No. 379,024
Int. Cl. B23k *1/04*
U.S. Cl. 29—487 8 Claims



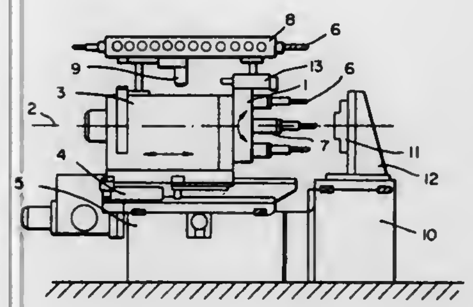
1. In a process for vacuum brazing tantalum alloy structural elements, the improvement which comprises the steps of:

a. positioning braze foil of a columbium-vanadium alloy between surfaces of the elements to be joined:
b. coating surfaces of the elements that are to be in contact wih a tungsten hearth plate and tungsten pellets with yttria powder;
c. positioning the elements on the tungsten hearth plate disposed in a vacuum heating zone so that the yttria coated lowermost surface of the elements rests on the hearth plate;
d. placing tungsten pellets on the yttria coated uppermost surface of the elements, thereby applying a downward pressure thereon and controlling the gap between the surfaces to be joined;
e. heating the elements in the heating zone under a vacuum to a temperature sufficient to melt the foil; and
f. after soaking at that temperature for from 3 to 8 minutes allowing the elements to cool gradually to room temperature.

3,846,904

MACHINING CENTER WITH A STORAGE DRUM ROTATABLE ABOUT A HORIZONTAL AXIS

Hans Kuhnert, Wiesloch, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany
Filed Jan. 20, 1972, Ser. No. 219,318
Claims priority, application Germany, Jan. 21, 1971, 2102860
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 5 Claims

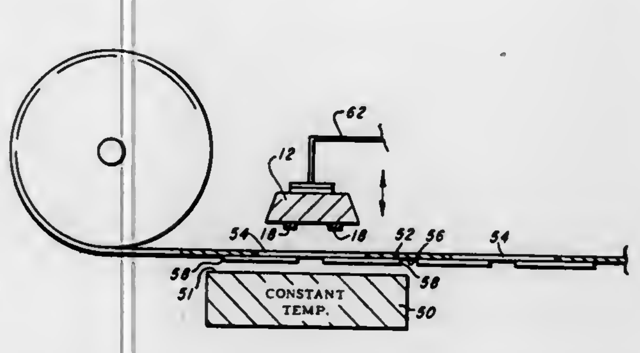


1. Machining center comprising at least one tool drum rotatable about a substantially horizontal axis, said tool drum bein displaceable in the direction of said axis, said tool drum having one side through which said axis passes facing a workpiece with said side movable along said axis toward and away from said workpiece, a plurality of spindle sleeves disposed substantially parallel to said axis for accommodating respectively associated tools disposed on said one side of said drum facing toward said workpiece, said spindle sleeves disposed on said one side through which said axis passes being placeable into respective working positions with change of height by rotation of said drum about its axis, a cross slide at an elevation below said tool drum, a head stock on said cross slide for supporting said rotatable tool drum, said head stock being disposed on said cross slide for slidable displacement thereon toward a workpiece, a tool storage unit disposed adjacent said head stock, and a tool exchanging arrangement disposed between said tool storage unit and said tool drum whereby said tool exchanging arrangement will remove a tool from a spindle sleeve in said tool drum and replace it with another tool from said tool storage unit.

3,846,905

ASSEMBLY METHOD FOR SEMICONDUCTOR CHIPS

James G. Harper, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed July 9, 1973, Ser. No. 377,844
Int. Cl. H01l *7/00*
U.S. Cl. 29—589 2 Claims



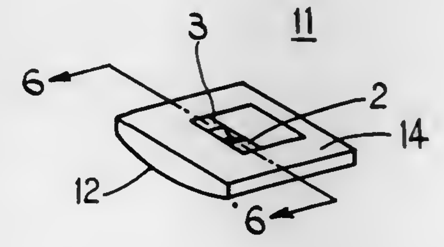
1. A method for bonding a metal lead which is formed on one surface of a plastic strip to extend over an edge of an aperture therethrough to a contact on a surface of a semiconductor body comprising the steps of:

a. positioning said lead adjacent a support which is maintained at a constant elevated temperature sufficient for alloying said lead to said contact;
b. aligning said semiconductor body with said aperture in said plastic strip such that said contact directly overlies said metal lead;
c. inserting said body through said aperture such that said contact deflects said lead into thermal contact with said support, thereby heating said lead and said contact to alloy a portion of said lead to said contact; and
d. withdrawing said body from said aperture, the tension of said deflected lead maintaining contact between said lead and said contact during the interval required for said alloyed portion to solidify.

3,846,906

METHODS OF MANUFACTURING MAGNETIC TRANSDUCING HEADS

Derek Frank Case, Sunbury-on-Thames, England, assignor to International Computer Limited, London, England
Filed June 5, 1973, Ser. No. 367,302
Claims priority, application Great Britain, June 6, 1972, 26230/72
Int. Cl. G11b *5/42*
U.S. Cl. 29—603 6 Claims



1. A method of manufacturing a magnetic transducing head including the steps of fabricating a pole piece unit having at least one pair of ferrite pole pieces spaced apart by a predetermined non-magnetic transducing gap, the pole pieces being located within a glass-ceramic block having an operating surface with a profile effective to cause the transducing head to fly out of contact over a record medium; independently fabricating a yoke assembly having a magnetic yoke for each pair of pole pieces, each yoke having at least one coil electromagnetically coupled thereto; dynamically testing the profiled pole piece unit in conjunction with the record medium independently of said yoke assembly; testing said yoke assembly independently of said pole piece unit; and aligning and securing together a satisfactorily tested yoke assembly and a satisfactorily tested pole piece unit so that the magnetic yoke and the pole pieces constitute a core for a magnetic transducing head.

3,846,907

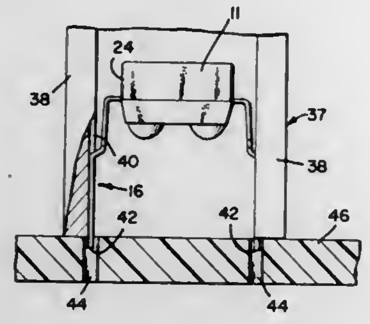
CONTINUOUS GUIDANCE METHOD AND APPARATUS FOR INSTALLING DIP DEVICES ON CIRCUIT BOARDS

Borislav Ivanovic, 615 Almar, Santa Barbara, Calif. 93105
Continuation of Ser. No. 99,338, Dec. 18, 1970, abandoned. This application Dec. 26, 1972, Ser. No. 318,203
Int. Cl. H05k *3/30, 13/02*
U.S. Cl. 29—626 8 Claims

1. The method of guiding while inserting into a circuit board a dual in-line package device having opposed sets of terminals extending outward from the package and bent to permit insertion of the terminals in a circuit board socket, each of said terminals having a shoulder portion adjacent the package and a leg portion remote from the package and narrower than the shoulder portion, the leg portions of each set being located in a plane distinct from the shoulder portions thereof, comprising the steps of:

receiving the device within a guide member having opposed grooved walls outboard of the shoulder portions while constraining each of the individual terminal leg portions on three sides throughout the major extent of the narrow portion of the terminal;

locating the guide member and device adjacent a circuit board socket such that the leg portions are aligned with corresponding socket openings;



moving the device from its position within the guide member toward the circuit board and inserting the leg portions into the respective socket openings while continuing to constrain the leg portions during said movement; and

removing the guide member from its position adjacent the circuit board without spreading said walls while leaving the device mounted in said socket.

3,846,908

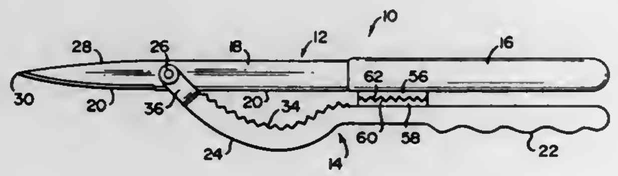
CLAM, OYSTER AND NUT CRACKER

Joseph Allievi, 4610 Pleasure Dr., Holiday, Fla. 33589

Filed Oct. 24, 1973, Ser. No. 409,321

Int. Cl. B26b *13/06*

U.S. Cl. 30—120.1 **4 Claims**



1. An opening device designed primarily to open shellfish or the like, said device comprising: a first leg means and a second leg means attached to one another; said first leg means comprising blade means and a first handle means formed thereon, said blade means and said first handle means defining the opposite extremities of said first leg means and disposed in substantially collinear relation to one another; said blade means including a first cutting edge extending the entire length of said blade means and having a substantially linear configuration and being disposed adjacent said second leg means; pivot means mounted between opposite ends of said blade means, said pivot means interconnected between said blade means and one end of said second leg means including one end thereof defined by a curvilinear portion disposed in facing, substantially coplanar relation to said first cutting edge; said second leg means comprising a second handle means connected to said curvilinear portion; a second cutting edge having a curvilinear configuration disposed on and substantially corresponding to that of said curvilinear portion, said second cutting edge formed between said second handle means and the end of said second leg means connected to said pivot means; said first and second leg means movable between an open and closed position, said closed position defined by substantially parallel orientation of said first and second handle means, whereby said first cutting edge between said pivot means and said first handle means and second cutting edge are engageable with the approximate center of an object therebetween thereby accomplishing separation of said object about said center.

3,846,909

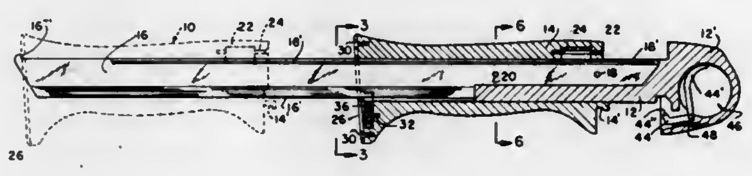
COMBINATION OF A KNIFE AND SHARPENER

Robert E. Clarke, 1410 Saratoga Dr., Bel Air, Md. 21014

Filed Oct. 29, 1973, Ser. No. 410,751

Int. Cl. B24b *3/54;* **B26b** *11/00*

U.S. Cl. 30—138 **7 Claims**



1. The combination of a knife, including a handle means and a cutting blade, and a sharpener for the cutting edge of the blade, comprising:

a. said handle means having an inner handle member having means for attaching the inner handle member to one end of the blade wherein the knife blade is adapted to extend outwardly from one end of the inner handle member;

b. an outer handle member adapted to be slidably receivable over at least a substantial portion of the inner handle member and slidably removable therefrom over the end of the inner handle member from which the blade extends, and slidable along the knife blade;

c. means carried by the handle members for releasably securing the outer handle member in telescoped position over the inner handle member;

d. means for supporting the sharpening means on the outer handle member on its end adjacent the extended blade, and means for resiliently urging the sharpening means toward the blade and in contact with the cutting edge thereof when the outer handle member is released from the inner handle and moved along said blade.

3,846,910

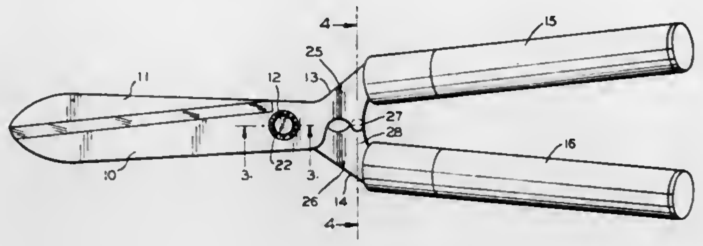
SHEAR BUMPER

Robert T. Davis, Kirtland, Ohio, assignor to True Temper Corporation, Cleveland, Ohio

Filed Sept. 24, 1973, Ser. No. 400,010

Int. Cl. B26b *13/00*

U.S. Cl. 30—271 **7 Claims**



6. In a pair of shears comprising upper and lower blades each having a rearwardly projecting gripping means for opening and closing movements of the blade in a plane; pivot means connecting said blades including resilient means resiliently urging said blades toward each other at said pivot means; each of said gripping means having a stop rigidly fixed with respect thereto and adapted to abut the stop of the other gripping means to limit the closing movements of said blades; at least one of said stops having abutting surface means inclined with respect to the plane of closing movement of the shears; the other said stop having abutting surface means for engaging said first mentioned abutting surface means whereby in response to forceful closing contact, the stops are cammed apart and the associated gripping means are flexed apart in opposite directions perpendicular to the direction of closing movement, said stops and said abutting surface means affording unrestrained flexing of said gripping means in said opposite perpendicular directions against the bias of said resilient means at all times whereby said resilient means absorbs a substantial portion of the impact shock.

3,846,911

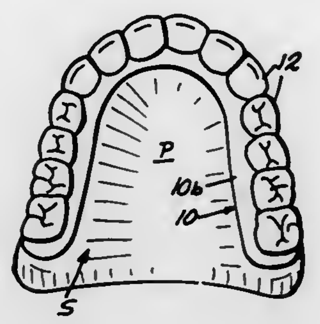
PREFORMED BLANKS FOR FALSE TEETH SET-UP

Theodore Wichner, Miami Beach, Fla., assignor to Valeria O. Wichner, Miami Beach, Fla., a part interest

Filed Jan. 5, 1973, Ser. No. 321,257

Int. Cl. A61c *13/00*

U.S. Cl. 32—2 **5 Claims**



1. A dental ridge blank provided in a range of sizes and arch shaped configurations corresponding to those of the human dental ridge, said blank being preformed of a material and of a limited thickness to become an integral part of the completed denture, and having a cut-out portion for positioning therein the support end of false teeth of standard construction, said positioning permitting relative movement of the teeth for adjustment purposes.

3,846,912

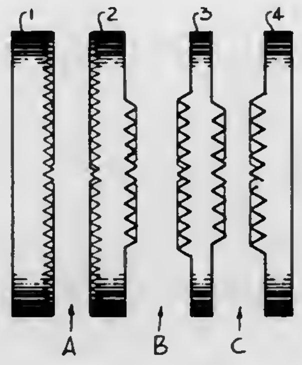
INDEXING MECHANISM

Richard J. Newbould, 443 S. Union Ave., Kenilworth, N.J. 07016

Continuation-in-part of Ser. No. 211,366, Jan. 10, 1972, abandoned. This application Dec. 13, 1972, Ser. No. 313,821

Int. Cl. B23q *17/04*

U.S. Cl. 33—1 D **8 Claims**



1. An indexing mechanism comprising at least three relatively movable members, the first and second of said members each having a set of teeth respectively of different pitches, at least one of said pitches not being evenly divisible into a predetermined dimension corresponding to the dimension of the other pitch, and the third member being an adaptor member for the other two and having two sets of teeth thereon respectively complementary to and meshingly coengageable with the teeth on each of said first and second members, said members all being separable to disengage said teeth thereon to permit relative movement between said members to establish a new predetermined meshing position between said first, second and third members, and thereby provide a desired relative position between said first and second members.

3,846,913

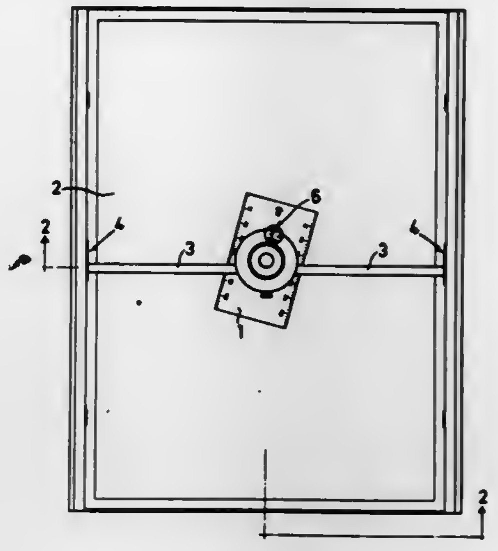
APPARATUS FOR DETERMINATION OF COURSES ON NAUTICAL CHARTS ETC.

Odd Olov Johansson, Medsommarvagen 215-126-35, Hagersten, Sweden

Filed May 15, 1972, Ser. No. 253,037

Int. Cl. B43l *13/08*

U.S. Cl. 33—76 V **6 Claims**



1. Apparatus for determining courses on a chart characterized by:

a. a rectangular plate which is adapted to hold a chart thereon,

b. parallel racks mounted along two opposite sides of said plate,

c. a guide shaft disposed above and parallel to said rectangular plate,

d. gear wheels provided at the opposite ends of said guide shaft,

e. said gear wheels being positioned to mesh with and engage the underside of said parallel racks,

f. a carrying device slideably mounted on said guide shaft so as to be moveable along said shaft,

g. said carrying device being associated with a course rule that is rotatable about a vertical shaft that is perpendicular to said plate,

h. said course rule being adapted to bear against a chart placed on said plate,

i. said parallel racks being spaced above said plate with the teeth of said racks facing said plate,

j. a spring force acting between the carrying device and the course rule so as to urge the course rule towards the chart and the carrying device away from the chart,

whereby there is achieved great reading accuracy between the course rule and the chart and great exactness in the movement of the guide shaft in a direction normal to its axis is obtained by the gear wheels of the guide shaft by virtue of their being firmly urged against the teeth of the racks.

3,846,914

DRAFTSMAN'S DEVICE

Lucilo Lam, and Guillermo Hernandez Cartaya, both of 2121 Ponce de Leon Blvd., Miami, Fla. 33134

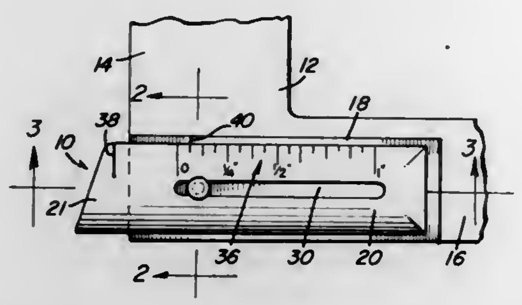
Filed May 31, 1973, Ser. No. 365,562

Int. Cl. B43l *13/24*

U.S. Cl. 33—110 **7 Claims**

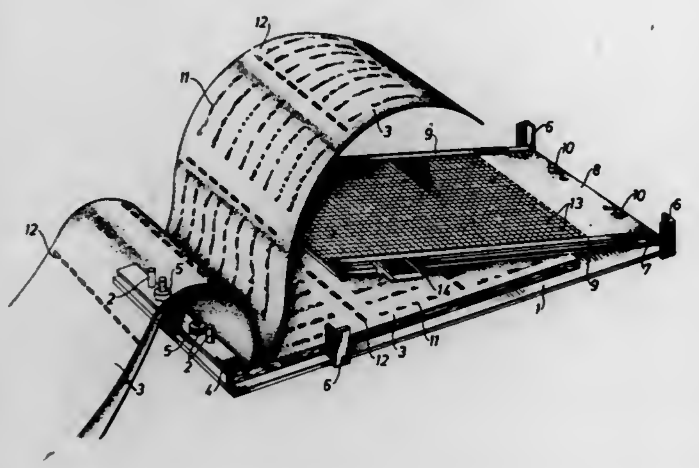
1. A draftsman's device for facilitating the drawing of equidistant parallel lines comprising a straight edge instrument having a base and a leading edge perpendicular to said base; an elongated mounting element fixedly mounted on said base and carrying a distance reference mark; said elongated mounting element defining a groove having a wider base than its top, an elongated indicating element with a tongue projection slidably mounted on said mounting element and mating with

said groove, said indicating element having a leading portion extending past the leading edge of said instrument and being provided with a line reference mark spaced from the leading edge of said instrument, said indicating element carrying a scale thereon associating with said distance reference mark, the distance measured on said scale by said distance reference



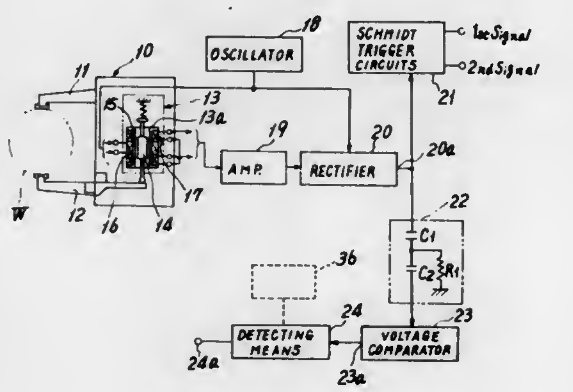
mark being equal to the distance between said line reference mark and the leading edge of said instrument; said indicating element defining a slot with lock means mounted in said slot and secured to said mounting element to selectively lock said indicating element to said mounting element in a predetermined positional relationship.

3,846,915
MEANS FOR MANUAL DATA REGISTRATION
Herbert Mauritz Obermark, deceased, late of Sollentuna, Sweden, and by Tommy Ludvig Wilhelm Ekholm, administrator, Stockholm, Sweden, assignors to Erik Gunnar Ekman, Ska, Sweden
Filed June 9, 1971, Ser. No. 151,182
Int. Cl. B41n *1/24*
U.S. Cl. 33—174 R **7 Claims**



1. A device for manual registration of coded data, especially of data intended to be subjected to subsequent automatic process, comprising, in combination, a registration medium of generally rectangular configuration having a plurality of different marking locations arranged in a field of mutually perpendicular columns and rows, a plurality of pattern sheets of generally rectangular sheet-like configuration successively provided with displaced columns of directive information and marking indicia for guiding the recordal of responses to such directive information with said directive information and the indicia related thereto being in rows perpendicular to said columns and with said indicia being in mutually displaced columns on successive ones of said plurality of pattern sheets, and a carrier for said registration medium and said plurality of pattern sheets, said carrier comprising means for simultaneously securably retaining said plurality of pattern sheets and registration medium in predetermined position and for insuring successive accurate mutual positioning of said registration medium and each of said pattern sheets, with each of the marking indices being arranged in a unique position from each of the other marking indices of the respective pattern sheets corresponding to said different marking locations of said registration medium so that marks made corresponding to any of said marking indices appear in a separate position of said field of said registration medium.

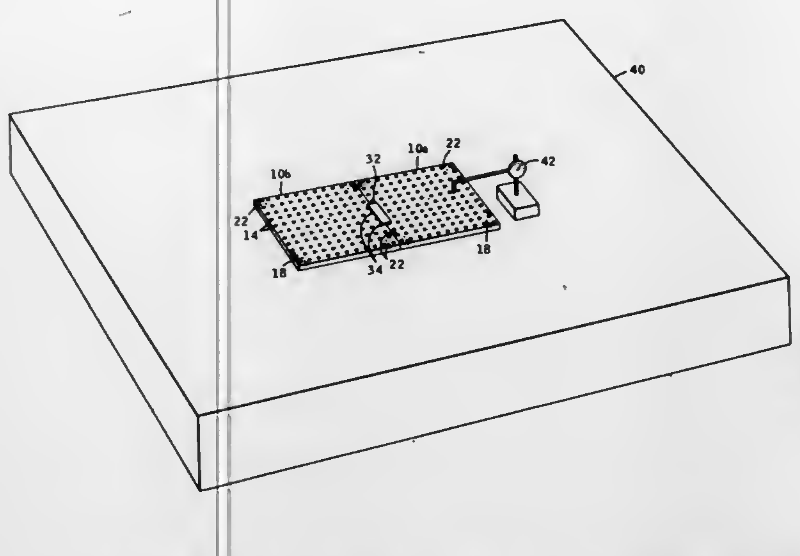
3,846,916
MEASURING SYSTEM FOR ROUNDNESS OF WORKPIECE
Kazuo Moriya, Kariya, and Isao Suzuki, Okazaki, both of Japan, assignors to Toyoda-Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed May 11, 1973, Ser. No. 359,420
Claims priority, application Japan, May 16, 1972, 47-48717
Int. Cl. G01b *7/28, 7/34, 19/26*
U.S. Cl. 33—174 Q **6 Claims**



1. A system, for measuring the roundness of a workpiece during working, comprising; a feeler means adapted to be held in abutting engagment with a workpiece so as to respond to changes of diameter of the workpiece, a displacement detector connected to said feeler means for generating an output signal in response to the displacement of said feeler means, circuit means for converting said output signal to a voltage signal including a direct current portion corresponding to the decrease of a diameter of the workpiece and an alternating current portion corresponding to the deviation of roundness of the workpiece, filter circuit means for eliminating said direct current portion of the voltage signal, a voltage comparator having a pre-set reference voltage corresponding to an allowable roundness connected to said filter circuit means for comparing said alternating current portion of the voltage signal with said pre-set reference voltage and thereby generating a series of pulses until the voltage of said alternating current portion of said voltage signal drops to the value of said reference voltage, and detecting means connected to said voltage comparator for detecting the decay of charging voltage of said pulses to a predetermined limit to thereby generate a signal of roundness indicative that the roundness of the workpiece is within said predetermined limit.

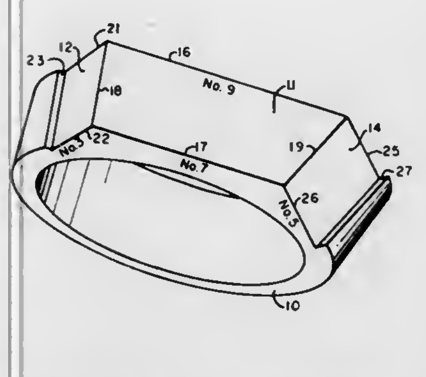
3,846,917
MEASURING AND LOCATING SYSTEM COMPONENTS
Alexander G. Blakey, San Diego, Calif.
Division of Ser. No. 300,547, Oct. 25, 1972, Pat. No. 3,793,738. This application July 30, 1973, Ser. No. 383,928
Int. Cl. G01b *5/14, 3/30*
U.S. Cl. 33—180 R **6 Claims**

1. A measuring and locating system which comprises:
a thin planar tile having a plurality of recesses formed in one substantially flat surface;
said recesses arranged in a uniform repeating geometric pattern;
said tile adapted to be placed in contiguous relationship with other similar tiles on a substantially flat table surface so that said recess pattern is extended over a greater area;
positioning means adapted to contact adjacent tiles and position them in a selected spatial relationship;



locking means to secure adjacent tiles in a fixed relationship when located as desired; and
height adjusting means in each tile to level the tile and set the height thereof.

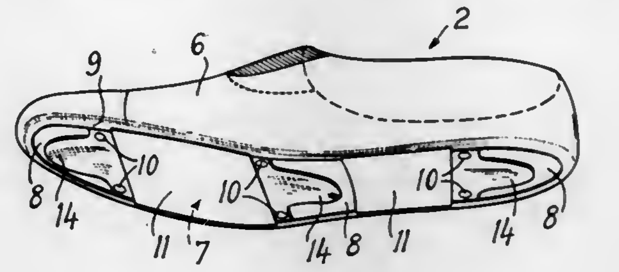
3,846,918
GOLF AID
Paul A. Wehlau, 397 Cascade Dr., Fairfax, Calif. 94930
Filed Nov. 16, 1973, Ser. No. 416,611
Int. Cl. G01c *3/24;* **A44c** *9/00*
U.S. Cl. 33—262 **7 Claims**



1. A distance measuring device comprising
a ring adapted to fit on the finger of an observer, a plurality of facets on said ring having edges of different dimensions, the edges of said facets arranged on said ring in a manner permitting comparison of individual edges with said known dimension of said distant object when said ring is worn on a finger of said observer and held at arms length from an eye of said observer.

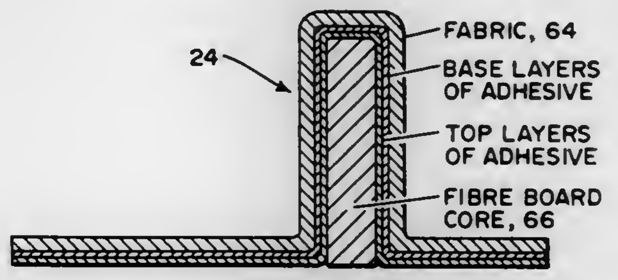
3,846,919
TRANSFORMABLE FOOTWEAR
Milio Milotic, 15, Avenue Montaigne, 94170 Le Perreux, France
Filed Nov. 8, 1973, Ser. No. 413,883
Claims priority, application France, Aug. 21, 1973, 73.30327
Int. Cl. A43b
U.S. Cl. 36—2.5 W **6 Claims**

1. A shoe which is transformable simply by substituting one of its elements, wherein said shoe comprises three independent components constituted by a bottom comprising a wearing sole and a heel, an inner shoe assembly comprising an insole integral with a complete lining, and an outer dressing chosen from a series created for its variety, this outer dressing comprising a visible upper extended by a lower inset part to



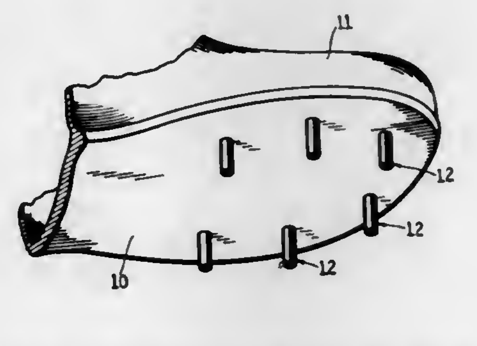
allow it to be fitted onto the inner shoe assembly and wherein dismountable connecting means are provided between the insole and the bottom.

3,846,920
SEWING RIB
Reginald P. Perry, Wellesley, and Nils W. Sjoberg, Lynn, both of Mass., assignors to Prime Manufacturing Company, Lynn, Mass.
Filed Oct. 30, 1973, Ser. No. 411,294
Int. Cl. A43b *13/00*
U.S. Cl. 36—22 A **3 Claims**



1. Insole sewing rib stock comprising a core, a tape enfolding and adhered to the core and presenting base flanges extending from the core, said flanges being coated on lower surfaces thereof with an adhesive system comprising a first layer and a second layer, said first layer adhered directly on said lower surfaces and comprising a heat-activatable adhesive composition containing a dark filler and said second layer adhered to said first layer comprising a heat-activatable adhesive composition that transmits infrared radiation.

3,846,921
SPIKED SHOE
Kazutoshi Kobayashi, Tokyo, Japan, assignor to Onitsuka Co., Ltd., Kobe City, Japan
Filed May 31, 1973, Ser. No. 365,547
Claims priority, application Japan, June 6, 1972, 47-65978; Dec. 27, 1972, 47-148345
Int. Cl. A43b *23/28*
U.S. Cl. 36—59 R **6 Claims**

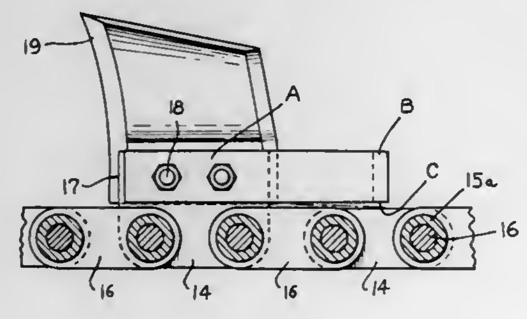


1. A spiked shoe comprising a sole and an upper mounted on the sole, the sole having a lower surface, a plurality of spikes extending from the lower surface of the sole, each spike

having a longitudinal axis and an effective part which extends between the lower surface of the sole and the lower end of the spike, the effective part of each spike comprising an upper part extending axially downwardly from the lower surface of the sole and a lower part extending axially downwardly from the upper part and formed integrally therewith, each of the upper and lower parts extending parallel to the longitudinal axis of the spike and having a uniform cross section throughout the length thereof, the cross section of the upper part being larger than the cross section of the lower part, the lower end of each lower part having a planar surface crossing the axis of the spike and the lower end of each upper part having a resistance face extending outwardly beyond the lower part for checking unnecessarily deep penetration of the spike into the track.

3,846,922
STABILIZING MEANS FOR CHAIN DITCH DIGGING IMPLEMENT

Steven A. Horton, Rt. 3, Easley, S.C. 29640
Filed Jan. 8, 1973, Ser. No. 322,000
Int. Cl. E02f *5/06*
U.S. Cl. 37—83 **2 Claims**

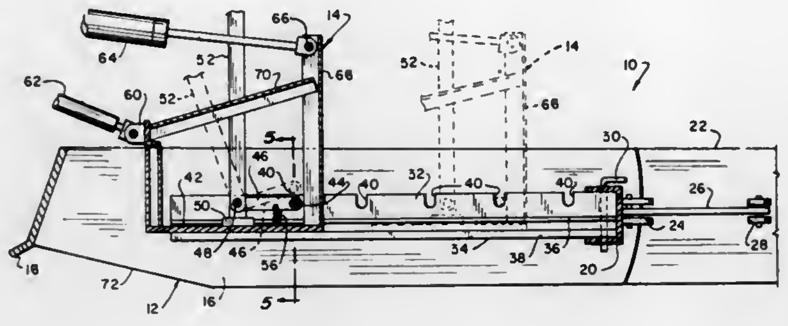


1. In a ditch digging machine having an endless chain carried about a sprocket with alternate inner and outer links pivoted to each other carrying bracket means attached at a lower portion thereof to a link and projecting thereabove carrying a digging implement adjacent an upper portion thereof, the improvement comprising: a stabilizing element carried adjacent a trailing end of said bracket means, said element including an extension projecting rearwardly of said bracket means and a portion of one link next adjacent said bracket means beyond a pivot point of a succeeding link rearwardly of said one link at least to a medial portion of a next succeeding link, a lower engaging surface carried by said extension which engages a medial portion of said succeeding link, and said stabilizing element being fixedly carried with respect to said bracket and said medial portion to limit relative movement therebetween dividing the force exerted by said stabilizing element between pivot points of said succeeding link when said digging implement engages an obstacle when digging but permitting articulated movement therebetween when passing about said sprocket.

3,846,923
VARIABLY ADJUSTABLE DITCHING IMPLEMENT

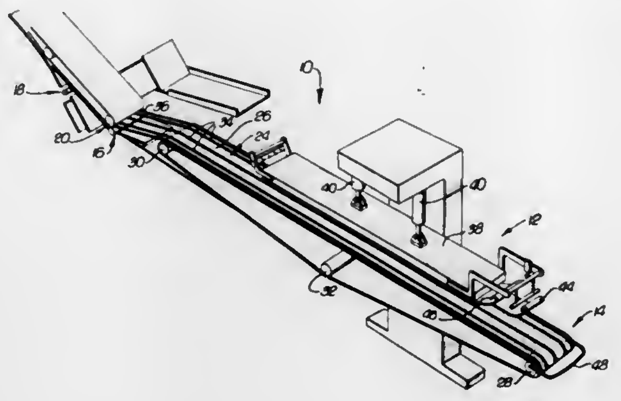
Clyde Whittier, 5300 Ln. 7 N, Mosca, Colo. 81146
Filed May 24, 1973, Ser. No. 363,594
Int. Cl. E02f *5/02*
U.S. Cl. 37—98 **6 Claims**

1. A ditch digging implement adapted to be towed by a tractor having a three-point hitch, said implement comprising a main frame having a pair of elongate wings ridigly interconnected, at their forward ends and diverging rearwardly from each other, a hitch frame mounted upon said main frame for sliding movement forwardly and rearwardly along the central longitudinal axis of said V-shaped main frame, releasable locking means for locking said hitch frame to said main frame at selected positions of longitudinal adjustment thereon, first coupling means adjacent the forward end of said hitch frame for coupling said hitch frame to two points of the three-point hitch of said tractor for pivotal movement about a horizontal axis normal to said longitudinal axis, an extensible hydraulic motor adapted to be coupled at one end to the third point of said three-point hitch, and second coupling means for coupling the other end of said motor to said hitch frame whereby said other end is movable with the hitch frame relative to the main frame, actuation of said motor means being operable to pivot said implement about said horizontal axis into a forwardly inclined position when said locking means is locked.



3,846,924
KNITTED T-SHIRT HOT PRESSER AND FOLDER AND METHOD

Carl F. Sjoman, Los Angeles, Calif., assignor to Team Industries, Los Angeles, Calif.
Continuation of Ser. No. 191,448, Oct. 21, 1971, abandoned. This application Dec. 3, 1973, Ser. No. 421,153
Int. Cl. D06f *61/00, 63/00, 69/00*
U.S. Cl. 38—2 **2 Claims**

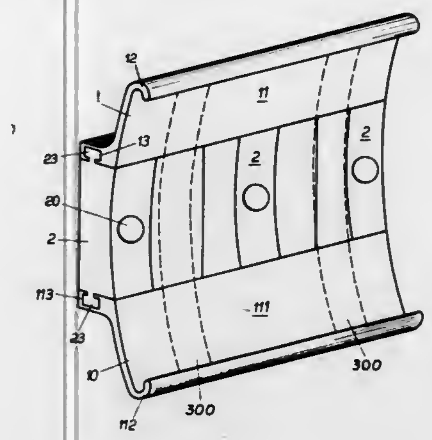


1. A method of pressing and folding a knitted T-shirt, including the steps of:
applying heat and pressure at a central zone only of a knitted T-shirt to lock together the fibers of the knitted fabric; and
while the fabric remains heated and the fibers remain locked, folding the T-shirt along fold lines adjacent and extending along opposite edges of the central zone, leaving a pressed portion of the T-shirt exposed to view.

3,846,925
FRAME MEANS

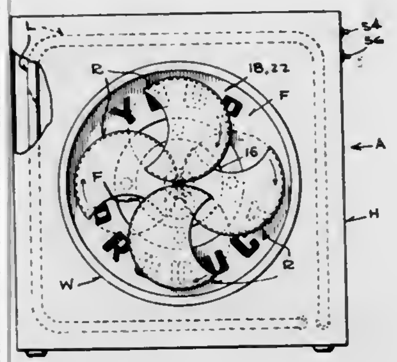
Rido Busse, Napoleonweg 6-8, 7911 Oberelchingen, Germany
Filed Aug. 1, 1972, Ser. No. 276,967
Claims priority, application Germany, Aug. 11, 1971, 2140231; Aug. 11, 1971, 2140232; Jan. 25, 1972, 2203387
Int. Cl. G09f *3/18*
U.S. Cl. 40—16.2 **1 Claim**

1. A frame adapted to receive, removably, at least one two-dimensional object,
said frame comprising, in combination:
edge supports adapted to receive therein the edges of the object, said edge supports having end portions and being spaced apart from each other for a distance slightly smaller than the corresponding straight dimension of the object,
a back support for supporting the object when it is placed in position in said frame engaged with relation to said edge supports; said back support having a middle portion lying behind an imaginary connecting straight line between said edge supports, whereby the object placed into said frame will assume a concave position when positioned abutting against said back support;
securing means operable for securing said middle portion and said end portions together, said securing means comprising groove means and resilient means to be slidably engaged in said groove means; and
said middle portion comprising a plurality of web means spaced apart from each other when said web means are assembled into said frame, said web means forming a rigid structure with said edge supports and said back support.



3,846,926
PLANETARY GEAR DRIVEN ROTARY DISPLAY DEVICE

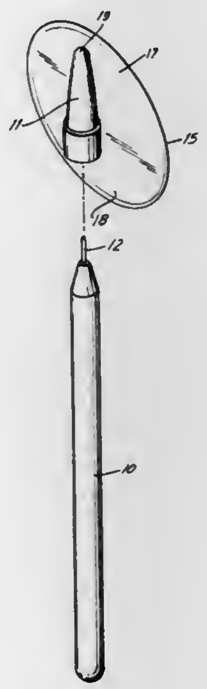
Harry G. Sullivan, 230 S. Boundary St., DeLand, Fla. 32720
Filed Jan. 9, 1974, Ser. No. 432,091
Int. Cl. G09f *11/04*
U.S. Cl. 40—34 **21 Claims**



1. A planetary gear driven rotary display device comprising in combination:
- a. a relatively stationary main support shaft with means axially centering it relative to a central viewing area and viewing member, indicia on said viewing area and said viewing member, and a stationary relatively small diameter first sun gear fixed to said shaft;
- b. a second sun gear but of compound form and rotatably mounted forwardly adjacent said first sun gear and upon said main support shaft;
- c. a rotatable-display-member-support constituted by a rotatable planetary gear carrier mounted for rotation upon said stationary support shaft which passes through a center axis thereof;
- d. a plurality of stub shafts fixedly attached to said planetary gear carrier with the respective shaft axes parallel to and uniformly spaced radially from said main support shaft;
- e. a like plurality of driven, uniform size planetary gears, and a corresponding like plurality of rotatable display members respectively mounted parallel to said planetary gears with one of each rotatably disposed on each of said plural stub shafts for collective orbital movement around and with said planetary gears in engagement with said rotatable second sun gear; said rotary display members being of predetermined shape so as to progressively collectively cover and uncover at least portions of the central viewing area during operation of the device;
- f. a planetary compound output drive gear carried with and upon said planetary gear carrier and freely rotatably disposed on a further stub shaft radially spaced from said main support shaft, said compound output drive gear being of substantially lesser size relative to said planetary gears;
- g. said compound planetary output drive gear meshing with both said stationary sun gear and with said second compound rotatable sun gear as mounted for free rotation upon said main support shaft;
- h. certain of said planetary gears being axially offset in parallel planes from others; said rotatable compound sun gear having an axially extended hub gear portion so as to intermesh with the axially offset planetary gears, and the respective gears being proportioned so as to uniformly impart thereto a continuous positive rotation of said planetary gears and correspondingly connected display members at a relatively different speed than that of said planetary gear carrier, whereby said respectively rotatable display members are periodically synchronously and cyclically collectively orbitally moved during their individual rotation about their respective individual axes so as to effect said progressive covering and uncovering of the indicia in the central viewing area.

3,846,927
DISPLAY WRITING INSTRUMENT

Hyman Geffen, 1270 E. 100th St., Brooklyn, N.Y. 11236
Filed Aug. 30, 1973, Ser. No. 393,103
Int. Cl. B43k *29/00*
U.S. Cl. 40—334 **7 Claims**



1. A writing instrument comprising an elongated body, and a combination display device and pocket clip carried by said body, said combination display device and pocket clip comprising a plate wider than said body having a display surface, the opposite surface of said plate being secured to said body at a point spaced from an edge of said plate, a portion of said plate overlying but being unsecured to said body, whereby

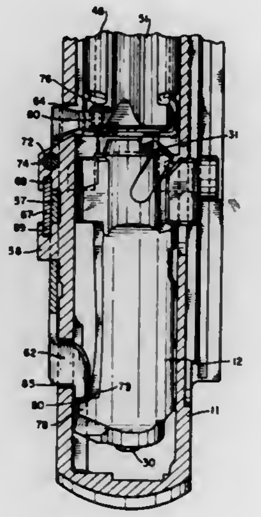
when said body is inserted into a shirt pocket the upper margin of the shirt pocket can be pushed between said body and the unsecured portion of said plate to hold the writing instrument in the pocket and to display the entire display surface of said plate outside the pocket.

3,846,928
BOLT LATCH FOR AUTO LOADING FIREARM

William B. Ruger, Southport, and Harry H. Sefried II, New Haven, both of Conn., assignors to Strum, Ruger & Co., Inc., Southport, Conn.

Filed Aug. 20, 1973, Ser. No. 389,710
Int. Cl. F41c *11/00;* **F41d** *1/00*

U.S. Cl. 42—16 **6 Claims**



1. In an auto-loading firearm having a receiver, a barrel having a chamber secured to the receiver, a bolt mounted for longitudinal travel in the receiver behind the barrel, an auto-loading mechanism connected to the bolt for moving the bolt from a forward closed position to a rearward open position and return when the firearm is fired, a magazine disposed beneath the bolt, said magazine being adapted to contain a plurality of cartridges and having a spring-pressed vertically movable magazine follower that moves the cartridges contained in the magazine upwardly into position to be loaded into the chamber of the barrel, and bolt lock means for locking the bolt in its open position when the magazine is empty and the last cartridge from the magazine has been fired, the improvement in bolt lock means which comprises:

a longitudinally extending bolt lock lever pivotally mounted on the receiver, said bolt lock lever having a magazine follower engaging arm at the forward end thereof and having a bolt stop arm at the rearward end thereof, said forward and rearward ends of said bolt lock lever each being vertically movable between predetermined upper and lower positions when the bolt lock lever is rotated about the pivot thereof,

a bolt lock lever spring that urges the forward end of the pivoted bolt lock lever to its lower position and the rearward end of said bolt lock lever to its upper position,

a bolt stop lug disposed at the rearward end of the bolt in position to be clear of the bolt stop arm of the bolt lock lever when the rearward end of the bolt lock lever is at its upper position and in position to be blocked by the bolt stop arm of the bolt lock lever when the rearward end of the bolt lock lever is at its lower position, and

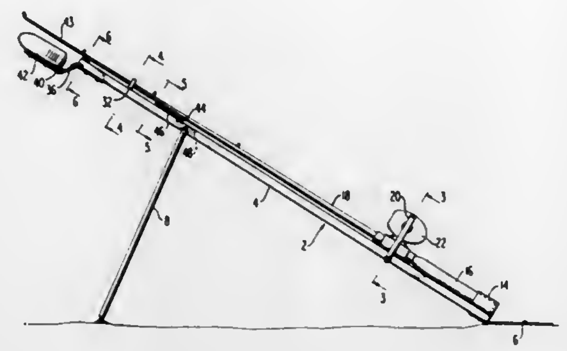
a bolt lock activating surface disposed on the upper end of the spring-pressed magazine follower in position to contact the magazine follower engaging arm of the bolt lock lever when the magazine is empty, said bolt lock activating surface moving the forward end of the pivoted bolt lock lever to its upper position and moving the rearward end of the pivoted bolt lock lever to its lower position when said magazine is empty.

3,846,929
FISHING POLE HOLDER AND SIGNALING DEVICE

Jack C. McBride, Space No. 2, Deck Dr., Suisun City, Calif. 94585

Filed Aug. 17, 1973, Ser. No. 389,182
Int. Cl. A01k *97/12*

U.S. Cl. 43—17 **7 Claims**



1. A fishing rod holder and alarm, comprising

an elongate support member having means thereon for supporting a fishing rod with the tip-end portion of the rod disposed at one end of the support member and the butt-end portion of the rod disposed at the other end thereof,

means on said support member for holding the butt-end portion of the rod,

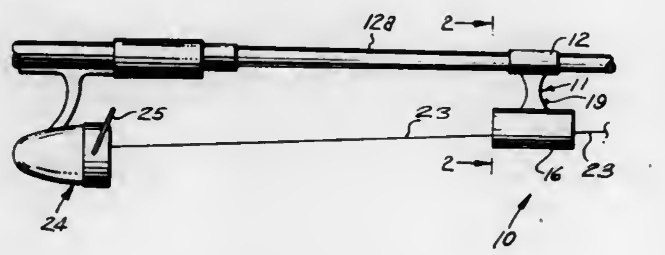
an electrical alarm system including a switch adjacent said one end of said support member, and means on said support member intermediate the ends thereof for adjustably supporting an intermediate portion of said rod at a selected distance away from said support member, whereby selectively to vary the force required to be applied to the tip end thereof to actuate said switch.

3,846,930
APPLICATOR FOR APPLYING A LUBRICANT AND DE-ICER TO A FISHING LINE

Dorian W. Brown, 3262 Stephens Ave., Ogden, Utah 84401

Filed June 28, 1973, Ser. No. 374,621
Int. Cl. A01k *97/16*

U.S. Cl. 43—25 **5 Claims**



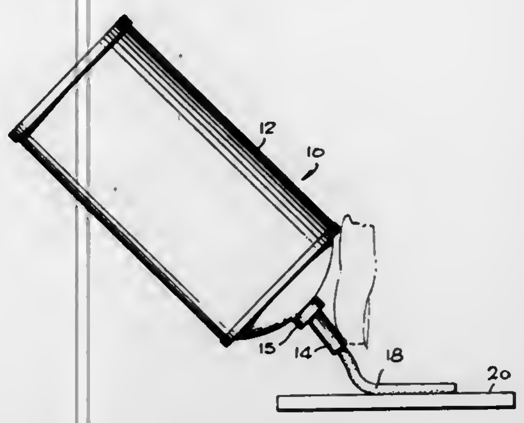
1. An applicator for applying a lubricant and de-icer fluid to fishing lines, comprising a mounting base having a sleeve including a rubber bushing mounted therein for frictionally securing said device to a fishing rod, a hollow double walled sleeve mounted on said base and providing reservoir storage means for said lubricant and de-icer fluid and plug means mounted on said base and said sleeve for enabling said hollow sleeve to be refilled with said fluid, a felt liner mounted within said hollow sleeve and providing a means for absorbing said fluid and applying said fluid to the fishing line, said sleeve having means to permit flow of said liquid to said liner.

3,846,931
APPARATUS AND METHOD FOR PRODUCING FISH LURE OF EXTRUDED FISH BAIT COMPOSITION

Marshall H. Block, 16016 Vose St., Van Nuys, Calif. 91406; Gerald L. Hubbard, 6701 Sunnybrae Ave., Canoga Park, Calif. 91306, and Donald E. Podolor, 3102 Dona Sofia, Studio City, Calif. 91604

Filed Feb. 5, 1973, Ser. No. 329,712
Int. Cl. A01k *85/00*

U.S. Cl. 43—42.53 **5 Claims**

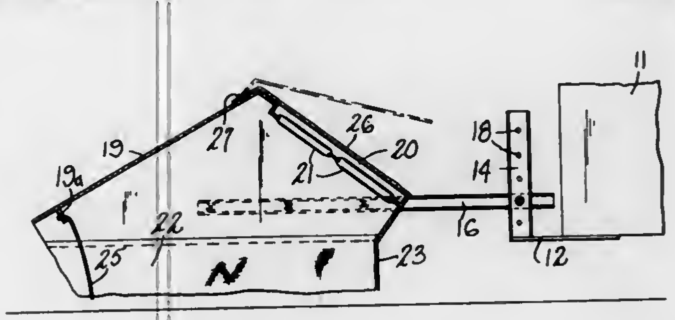


1. Apparatus for producing an extruded wormlike fish lure, comprising a vessel pressurized with a pressurant and having means including a fish bait composition in said vessel and an extrusion nozzle connected to said vessel for extruding from said vessel a fish lure of said composition that is wormlike in length, diameter, flexibility, resiliency, rubberiness, and strength sufficient to permit the lure to be impaled upon a fishhook and immersed in water while maintaining its wormlike form.

3,846,932
VEHICLE MOUNTED INSECT EXTERMINATOR

Walter Bialobrzeski, 92 Grove St., East Berlin, Conn. 06023
Continuation-in-part of Ser. No. 214,328, Dec. 30, 1971, abandoned. This application May 15, 1972, Ser. No. 253,457
Int. Cl. A01m *5/04*

U.S. Cl. 43—138 **13 Claims**



1. A device for exterminating insects comprising an opaque hood-like member having closed sides, a closed forward roof portion and an open button, said member being constructed and arranged to be moved by a vehicle with said open bottom a slight distance above ground growth, said member having an opening therein rearwardly from said roof portion, and insect exterminating means disposed adjacent said opening.

3,846,933
PNEUMATIC TOY STOVE ACCESSORY

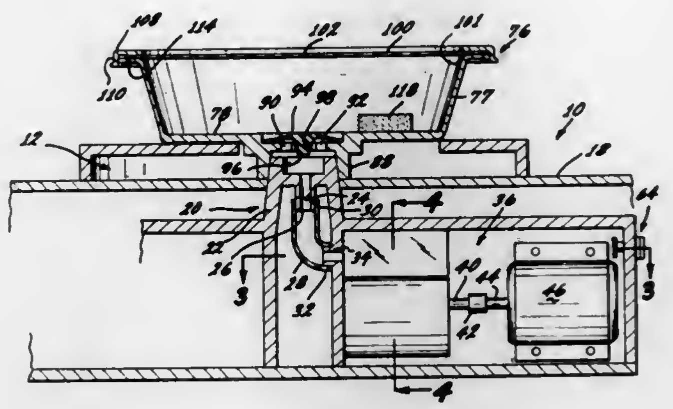
Allen D. Hill, Manhattan Beach; Sidney Bass, Los Angeles, and Hubert A. Rich, Westminister, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 19, 1973, Ser. No. 417,025
Int. Cl. A63l *3/52*

U.S. Cl. 46—14 **6 Claims**

1. In combination with a pneumatic stove toy having an air outlet and means for supplying air under pressure to said outlet, a simulated food-cooking device comprising:

a simulated food item including an air inlet and a stretchable diaphragm which is decorated to siumlate uncooked food when in a relaxed condition and cooked food when in a distended condition;



means connecting said air inlet on said simulated food item to said air outlet on said stove toy for supplying air to said simulated food item and distend said diaphragm to simulate a change from uncooked to cooked food; and

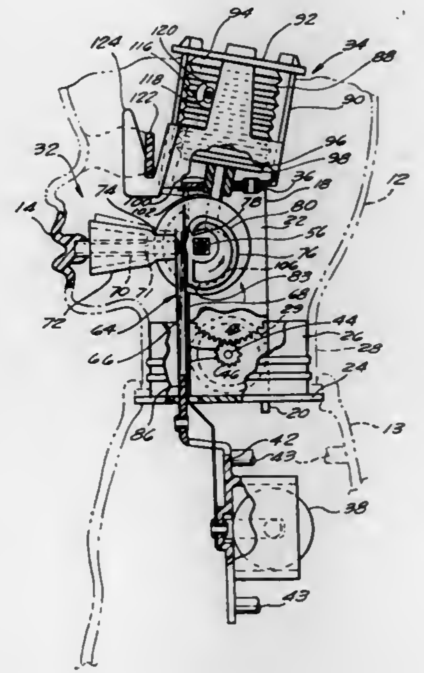
aperture means in fluid communication with said simulated food item for bleeding air therefrom.

3,846,934
KISSING DOLL ACTUATED BY PRESSURE APPLIED TO LIPS

Herbert Thorn, Jamaica, N.Y., and Robert E. Davis, North Branford, Conn., assignors to Ideal Toy Corporation, Hollis, N.Y.

Filed Mar. 1, 1973, Ser. No. 337,249
Int. Cl. A63h *3/31*

U.S. Cl. 46—232 **16 Claims**

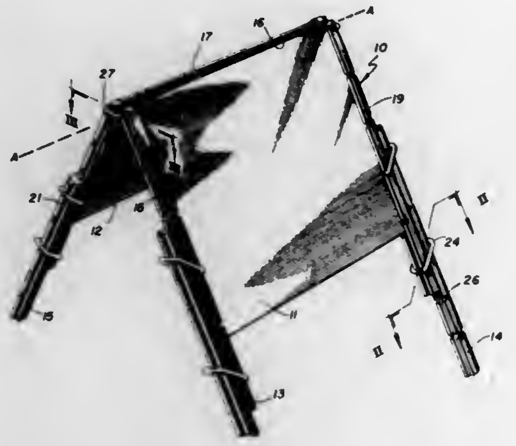


1. A doll comprising a head having a flexible face including a pair of movable lips formed thereon, means mounted within said doll for moving said lips and means mounted within said doll responsive to a slight pressure applied externally to said lips to actuate said lip-moving means for moving said lips from their normal position to an extended puckered position, thereby to simulate a kissing action.

3,846,935

SHRUB PROTECTOR

Ronald W. Wagner, 79a Main St., Morningdale, Mass. 01530
Filed Nov. 16, 1972, Ser. No. 307,161
Int. Cl. A01g *13/00*
U.S. Cl. 47—26 **1 Claim**

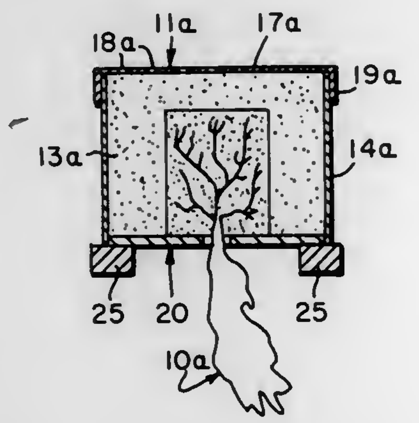


1. A shrub protector, comprising:
a. a first plate, having a first side, and two other opposed sides,
b. a second plate having a first side, and two other opposed sides hingedly connected to the first plate, along the first side of each plate,
c. two spaced, parallel legs associated with each plate, and
d. means adjustably connecting each leg to its plate, each plate having a reinforcing strip extending along two opposed sides extending at right angles to said first side, and
f. the legs and reinforcing strips being provided with spaced notches and joined by bails which lock in the notches to hold each leg in an adjusted position relative to its reinforcing strip,
wherein each plate is rectangular,
wherein each reinforcing strip is provided with a rib which slidably engages a groove on a leg,
wherein the plates are hingedly connected by means of a U-shaped element having its ends located in bores in the ends of the reinforcing strips, and
wherein the legs and the reinforcing strips are formed of extruded material of the same cross-sectional size and shape, the said shape consisting of a rectangle having a notch at one side and a rectangular protrusion at the other side, the rectangular protrusion having parallel sides.

3,846,936

METHOD AND APPARATUS FOR TRANSPLANTING

Albert W. Kelley, R.D. 1, Box 28, Creamridge, N.J. 08514
Continuation-in-part of Ser. No. 152,182, June 11, 1971, abandoned. This application Nov. 8, 1972, Ser. No. 304,764
Int. Cl. A01g *9/02*
U.S. Cl. 47—58 **10 Claims**



1. In the method of transplanting a plant from a small diameter sleeve container to a large diameter sleeve container, the steps which comprise: placing a plant having its roots and growing medium contained in a small sleeve in an inverted position on and spaced within the bounds of a generally flat filling support having an opening with the roots and growing medium above the filling support and the stem depending through the filling support opening, placing a large sleeve container about the roots and growing medium with its lower end closed by the filling support, filling the large sleeve container with additional growing medium horizontally and vertically, placing a perforated growing support on the large sleeve container while the plant is inverted, inverting the plant to an upright position on the growing support, and removing the filling support.

3,846,937

PRODUCTION OF ALLERGENS BY PLANT TISSUE CULTURE TECHNIQUE

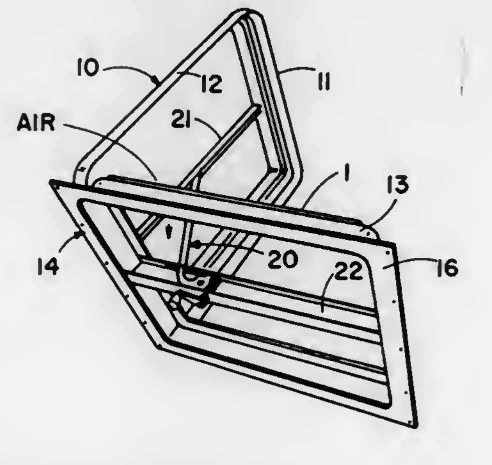
E. John Staba, and Ali Shafiee, both of Minneapolis, Minn., assignors to The Regents of the University of Minnesota, Minneapolis, Minn.
Filed Mar. 29, 1973, Ser. No. 346,074
Int. Cl. A61k *23/00*
U.S. Cl. 47—58 **12 Claims**

1. A process for the production and isolation of specific ragweed allergens from cultures of short ragweed plants which comprises aseptically growing cells derived from tissue of said plants under tissue growth conditions in a nutrient medium and separating the allergens from said cells.

3,846,938

VENT OPERATOR ASSEMBLY

Donald V. Kelly, 10642 Helendale, Tujunga, Calif. 91042
Filed Nov. 22, 1972, Ser. No. 305,696
Int. Cl. E05f *11/24*
U.S. Cl. 49—342 **1 Claim**

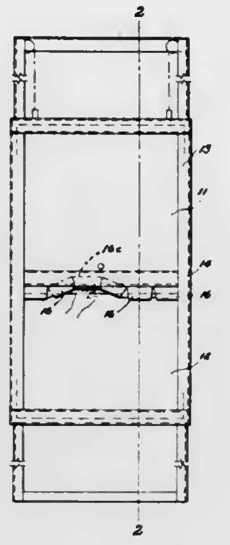


1. A vent assembly comprising
a frame adapted to be installed in an enclosure and defining the opening therein;
a vent cover hinged to one side of said frame;
an operator including an arm engaging said vent cover for opening, closing and securing said vent cover in different positions;
said operator including a brace member including two parallel extending surfaces joined by a perpendicular connecting web portion;
means securing said brace member to said frame with said two parallel extending surfaces generally normal to the direction of opening of said vent cover;
said arm of said operator including one end rotatably secured to the web portion of said brace member and including a sector gear portion centered about the axis of rotation of the arm;
a helical screw journaled between the parallel extending surfaces of said brace member and in operable engagement with said sector gear portion;
said operator also including means for turning said helical screw to actuate said arm and open and close said vent cover;
and wherein said brace member includes elongated ribs in said paralell extending surfaces integral and extending parallel to and spaced from said web portion and including flexible cover means dimensional to enclose said helical screw and sector gear portion of said arm and in engagement with said elongated ribs.

3,846,939

SAFETY ASTRAGAL

Herbert Schuyler Weaver, Poughkeepsie, N.Y., assignor to Sedgwick Machine Works, Inc., Poughkeepsie, N.Y.
Filed June 12, 1973, Ser. No. 369,224
Int. Cl. E06b *3/44;* **E05f** *7/00*
U.S. Cl. 49—370 **3 Claims**



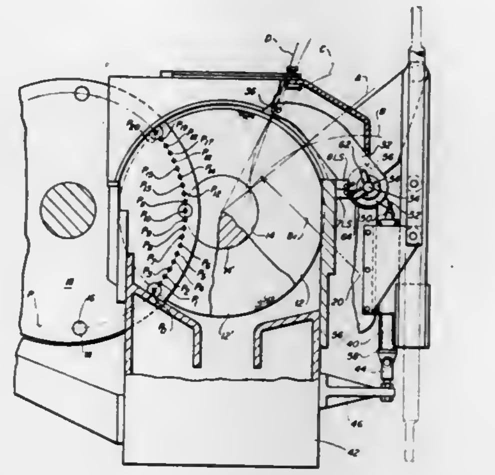
1. An astragal for closing the junction between panel members movable in a common plane between an open and a closed position including, in combination, first and second panel members having adjacent junction edges, first and second open-ended channel members, said first channel member being fixedly secured at its base to the junction edge of the first panel member, the second channel member being comprised of a plurality of articulated links, each of the said links being freely supported by and protruding from the open end of the first channel member and being receivable within the first channel member when movement in a direction toward the same is imparted thereto, the junction edge and a portion of the second panel being receivable within the second channel member when the members are moved to a closed position.

3,846,940

DOUBLE DISC GRINDER

Elman R. Dunn, Roscoe, Ill., assignor to Litton Industries, Inc., Beverly Hills, Calif.
Filed Mar. 8, 1973, Ser. No. 339,126
Int. Cl. B24b *7/00, 9/00*
U.S. Cl. 51—118 **5 Claims**

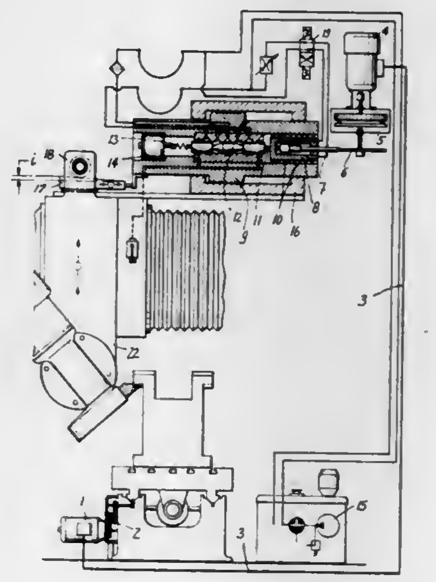
1. A double disc grinder comprising
abrasive disc means including a pair of substantially coaxial discs each having a central bore therein, said abrasive discs being adapted to be rotated about the axes thereof,
means for displacing a workpiece along a predetermined arcuate feed path across the abrading surfaces of said discs from an entry position proximate the outer periphery of said discs, past a midpoint whereat the workpiece partially overlays said central bores to an exit point proximate the outer periphery of said discs,
said discs being selectively canted so that the separation therebetween along said feed path will gradually decrease from said entry position to said exit position and so that the peripheral portions of said discs proximate said exit point will be substantially parallel, and
dressing means, and
means for displacing said dressing means along a path extending from the outer to the inner periphery of said discs, said path being selectively defined so that a predetermined convex curvature will be established on said abrasive discs along said dressing means path whereby approximately one-third of the total stock removed from the workpiece will be removed and the separation of said discs will be substantially uniformly decreasing at a relatively slow rate during the last one-half of said feed path.



3,846,941

CONTROL FOR A LIFTING MECHANISM FOR A HYDRAULIC COPYING DEVICE ON MACHINE TOOLS

Heinz Gerner, Coburg, and Rudolf Merkel, Scheuerfeld, both of Germany, assignors to Werkzeugmaschinenfabrik Adolf Waldrich Coburg, Coburg, Bavaria, Germany
Filed July 20, 1972, Ser. No. 273,624
Claims priority, application Germany, July 22, 1971, 7128109
Int. Cl. B24b *7/02*
U.S. Cl. 51—165.89 **6 Claims**



1. A lifting mechanism for use in a hydraulic copying device for machine tools, having a rectilineal sliding tracer scanning the outline of a template and a control piston connected with the tracer which controls the supply of pressure medium from a pump to the working piston effecting the adjusting movement of the tool, the improvement comprising:
means defining a cylinder supported for axial slidable movement in a direction parallel to the movement of said tracer, said tracer being axially slidably supported for movement on said cylinder means;

means defining a pair of axially spaced stops adapted to limit the relative sliding movement between said slidable cylinder means and said tracer;

means defining a control piston engaging said cylinder means; and

operating means for selectively controlling the relative sliding movement between said cylinder means and said tracer to the limits defined by said stop means.

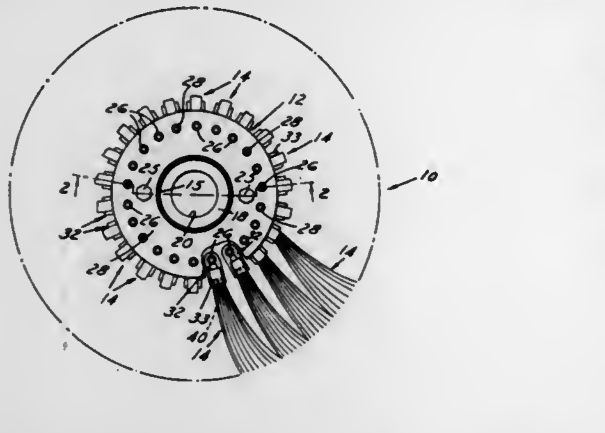
3,846,942
ROTARY FINISHING WHEELS

James A. Belanger, Livonia, Mich., assignor to Belanger, Inc., Northville, Mich.

Division of Ser. No. 339,352, March 8, 1972, which is a division of Ser. No. 155,733, June 23, 1971, abandoned. This application Dec. 14, 1973, Ser. No. 424,777

Int. Cl. B24b *9/02*

U.S. Cl. 51—334 18 Claims



1. A rotary finishing wheel comprising a rotatable hub structure having an axis and a series of circumferentially spaced and radially extending pack units carried by said hub structure, said hub structure comprising a pair of axially spaced apart flanges arranged in parallel relationship and which extend radially outwardly from said axis, means for maintaining said flanges in said axially spaced relationship, and a circumferential series of elongated mounting pins carried by said flanges adjacent the outer periphery thereof for mounting said pack units, one mounting pin for each of said pack units, each of said pack units comprising a flap-like member of fill material presenting a radially outer portion adapted to engage a workpiece, and a rigid mounting member distinct from said flap-like member for thus mounting the latter on the corresponding pin of the hub structure, said rigid mounting member providing a single radially inner and axially extending rigid portion having an axial aperture of at least part cylindrical outline for telescopingly mounting said pack unit on the corresponding pin, said inner rigid portion surrounding said axial aperture including restricting means circumferentially extending and wrapping around said pin to prevent undesirable radial separation between the pin and said mounting member, and a radially outer and outwardly extending arm formation on said inner rigid portion and coextensive therewith in overall axial length, said flap-like member having a radially inner portion secured to said arm formation.

3,846,943
PREFABRICATED SHELTER STRUCTURE

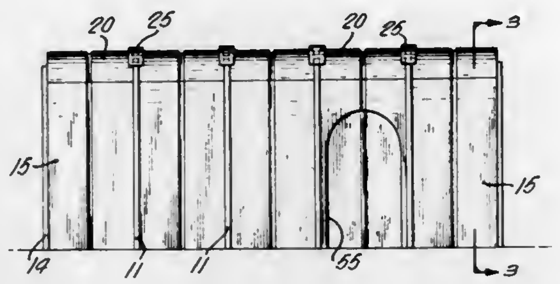
Joseph Wagner, 97 Du Crochet Ave., Laval des Rapides, Quebec, Canada

Filed Oct. 16, 1973, Ser. No. 406,897

Int. Cl. E04h *1/12;* **E04b** *1/32*

U.S. Cl. 52—23 10 Claims

1. A prefabricated shelter structure comprising at least two pairs of spaced apart elongated opposed support ribs secured at the lower end thereof, a preformed side panel secured between opposed support ribs from adjacent pairs of support ribs, a preformed top panel between said at least two pairs of support ribs and secured above and bridging opposed side panels, a first adjustable connection member attached near the upper end of said opposed ribs and extending therebetween, a second adjustable connection member secured near the upper end of a respective one of said ribs and extending downwardly outwards of said structure for connection to an anchor means whereby to retain said ribs in position.



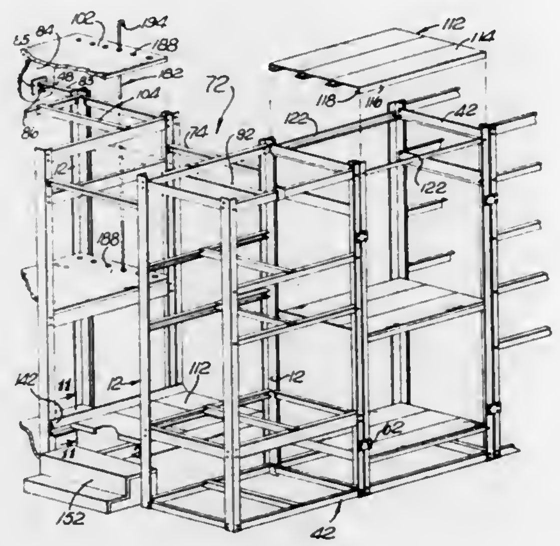
3,846,944
STRUCTURAL SELF-SUPPORTING SYSTEM

Harry Lambert, Monterey Park, Calif., assignor to Barton-King Systems Corporation, Monrovia, Calif.

Continuation-in-part of Ser. No. 100,321, Dec. 21, 1970, abandoned. This application Nov. 6, 1972, Ser. No. 304,188

Int. Cl. A47f *5/10*

U.S. Cl. 52—758 R 11 Claims



1. A structural self-supporting system, comprising:

a plurality of axially-extending upright members arranged to form a generally box-like structure, each of said upright members having an L-shaped cross-sectional configuration defining a first section, and a second section formed in a plane generally perpendicular to said first section;

a row of spaced openings in each section extending axially thereof, each of said openings comprising an enlarged central portion and a reduced portion contiguous therewith;

means for interconnecting said uprights and completing said box-like structure, including elongated support members each having a surface parallel to one of said upright sections and an axis generally perpendicular to the axis of said openings;

at least one headed projection extending from said surface adjacent each end of a support member, insertion of said headed projections on one of said support members into openings of spaced-apart upright members providing a rigid interconnection between the support member and said upright members;

said interconnecting means including a plurality of generally horizontally-positioned, parallel pairs of said support members completing said box-like structure; and

strengthening means interconnecting a parallel pair of support members for preventing said support members from rotating, including a tie strap whose central portion extends between said parallel support members with an L-shaped section at each end positioned around one of said parallel support members in rotation preventing engagement therewith.

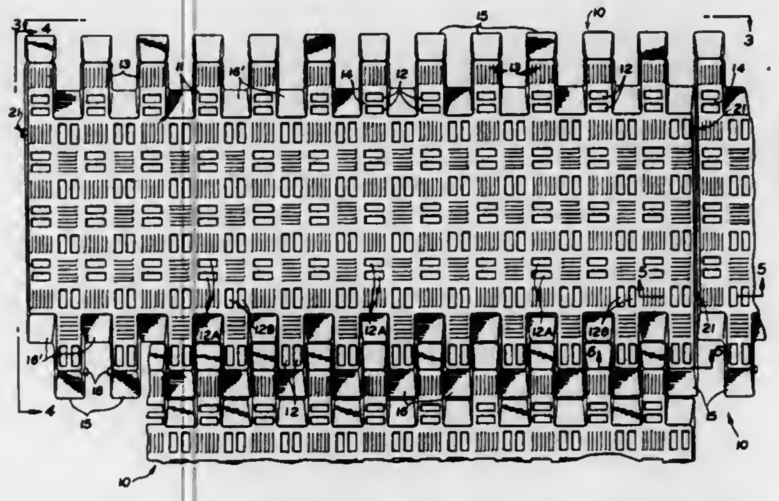
3,846,945
DUCKBOARD FATIGUE RELIEF MAT

Michael A. Roby, Winchester, Va., assignor to Rubbermaid Commercial Products Inc., Wooster, Ohio

Filed Oct. 2, 1972, Ser. No. 294,212

Int. Cl. E04c *1/10*

U.S. Cl. 52—177 3 Claims



1. A resilient duckboard fatigue relief mat module having a network of intersecting longitudinal and lateral major floor-engaging ribs on its underside, an upper wearing surface having openings therein, and a plurality of tongues projecting laterally from opposite sides and each having downwardly inclined top walls and floor-engaging side walls, said side walls having projections and recesses for interlocking connection with projections and recesses on the side walls of like tongues of adjoining like modules, and skid resistant strips attached to certain of said major ribs.

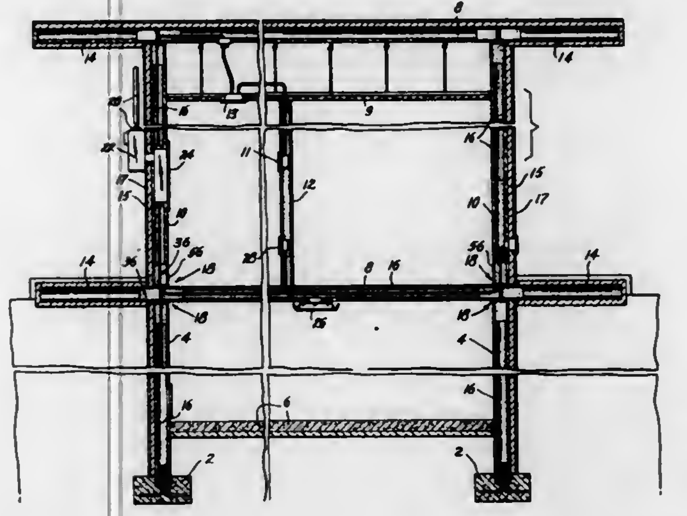
3,846,946
PRECAST CONCRETE BUILDING CONSTRUCTION

Wayne R. Sandstrom, P.O. Box 1993, Fairbanks, Alaska 99707, and Raymond C. Keturi, 129 Kantishna Way, Fairbanks, Alaska 99701

Filed Nov. 20, 1973, Ser. No. 417,484

Int. Cl. E04b *5/48;* **E04c** *2/52*

U.S. Cl. 52—221 10 Claims



1. In a construction wherein precast and stressed concrete slabs are assembled to define a structure, the improvement comprising:

at least one horizontal slab having a plurality of spaced, parallel, generally cylindrical openings extending therethrough from one edge thereof to an opposed edge and generally rectangular integral beam members extending from at least one of said edges between said openings and being of a length greater than the thickness of said slab; and

a vertical slab, of the same construction as said horizontal slab, arranged with the ends of the beams on said one edge thereof abutting edge portions of the corresponding beams of said horizontal slab to define an inside corner of said structure, the spaces between said beams, adjacent said edges, thereby being accessible from said inside corner for connecting a utility service component in an opening in one of said slabs to a corresponding utility service component in an opening of the other slab, after said structure is erected.

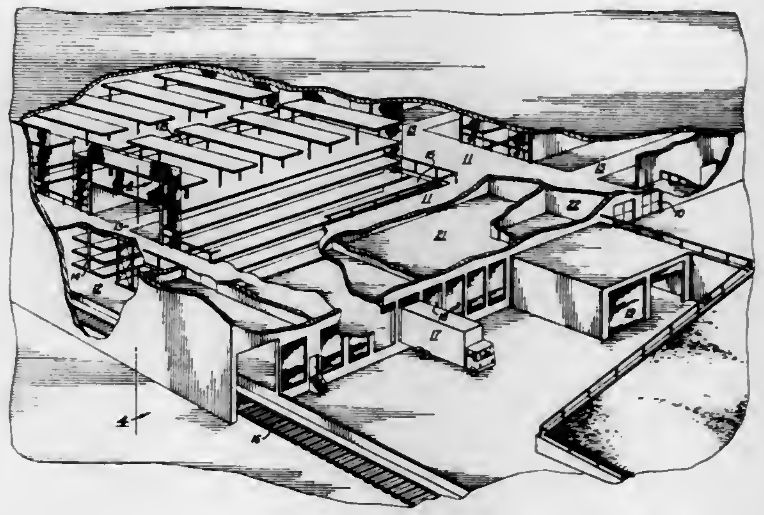
3,846,947
COMBINATION WAREHOUSE-RETAIL SALES FACILITY

Thomas W. Short, Phoenix, Ariz., assignor to Levitz Furniture Corporation, Pottstown, Pa.

Filed Nov. 19, 1973, Ser. No. 417,033

Int. Cl. E04h *3/02*

U.S. Cl. 52—236 1 Claim



1. In a combination furniture warehouse - retail sales facility specially adapted to physically inform prospective retail customers that they are purchasing merchandise from a warehouse facility, said facility having

a plurality of elongate parallel warehouse rack structures spaced laterally to provide warehouse access aisles on the floor of said facility for movement of furniture-handling equipment,

means defining continuous elongate retail showroom areas on the floor of said facility enclosed within the lower portions of each of said warehouse rack structures,

a cross-aisle extending upwardly from the floor of said facility and at right angles to said warehouse rack structures, providing communication for prospective customers between said retail showroom areas and providing communication for furniture-handling equipment between said warehouse access aisles, and

a customer entrance door in an outer wall of said facility communicating with said cross-aisle,

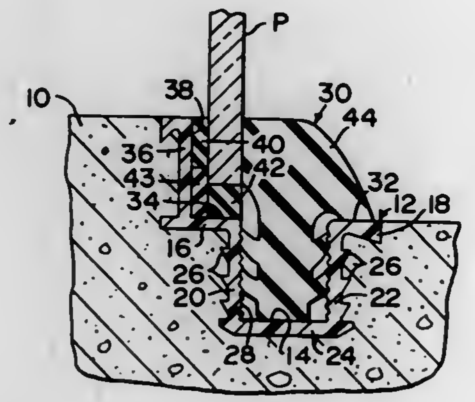
the improvement whereby customers and furniture-handling equipment are physically separated to avoid the possibility of injury of customers by the moving equipment, said improvement comprising:

a. side wall, ceiling and floor means carried in said warehouse rack structures defining continuous elongate retail showroom enclosures, the floors of which are spaced vertically above the floors of said warehouse access aisles;

- b. means forming a continuous mezzanine in said cross-aisle extending at right angles to said retail showroom enclosures and across said warehouse access aisles, providing communication between said enclosures for customers;
- c. a plurality of vertically spaced warehouse storage floors located below said enclosures, the warehouse storage spaces between said floors opening onto and being accessible from the warehouse access aisles and said cross-aisle;
- d. outer walls and roof means forming a building enclosing said warehouse rack structures, said warehouse access aisles, said warehouse storage spaces and said cross-aisle; and
- e. means defining a customer entrance door in one of said outer walls communicating with said mezzanine.

3,846,948
GLAZING SYSTEM

John A. Dallen, Port Clinton, Ohio, assignor to The Standard Products Company, Cleveland, Ohio
Continuation-in-part of Ser. No. 831,498, June 9, 1969, abandoned. This application Nov. 16, 1970, Ser. No. 89,954
Int. Cl. E04b *1/62*
U.S. Cl. 52—400 **8 Claims**

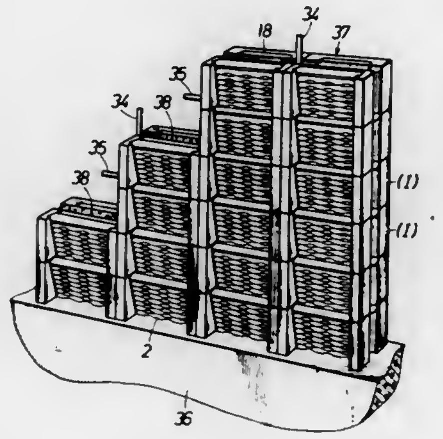


1. A glazing system for an opening comprising in combination:

- a. a first generally narrow surface coplanar with and surrounding said opening;
- b. a second surface surrounding said opening and perpendicular to said opening adjacent to said first surface;
- c. a channel in said second surface and co-extensive therewith spaced from said first surface and open towards said opening;
- d. sealing means adapted to be positioned between a panel for closing said opening and said first surface; and,
- e. an elongated elastomeric stop member including first and second portions, said first portion being adapted to extend longitudinally into said channel, said second portion including a first sealing surface extending upwardly and inwardly with respect to said first portion toward said panel and terminating in a first outermost leading edge, said second portion further including a second sealing surface extending outwardly and downwardly with respect to said first portion toward the side of said channel remote from said panel, (1) an outer portion only of said first sealing surface being adapted to sealingly engage said panel on the panel surface opposite said sealing means, (2) an outer portion only of said second sealing surface being adapted to sealingly engage said second surface on the side of said channel remote from said first surface, (3) said second portion of said stop member being displaceable relative to said first portion thereof about a longitudinally extending axis disposed in said stop member vertically below said outer portion of said first sealing surface, whereby upon insertion of said first portion of said stop member into said channel, said outer portion only of said second sealing surface engages said second surface to displace said second portion of said stop member about said axis for said outer portion only of said first sealing surface to engage said panel surface, (4) and the remaining portions of said first and second sealing surfaces being spaced respectively from said panel surface and second surface upon insertion of said first portion of said stop member into said channel.

3,846,949
SOUND INSULATING BLOCK

Isao Okawa, Tokyo, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Jan. 26, 1973, Ser. No. 326,826
Claims priority, application Japan, Jan. 26, 1972, 47-9691; Jan. 26, 1972, 47-11045; Feb. 29, 1972, 47-20940
Int. Cl. E04b *1/84, 17/00*
U.S. Cl. 52—438 **10 Claims**



1. A sound-insulating building block comprising:

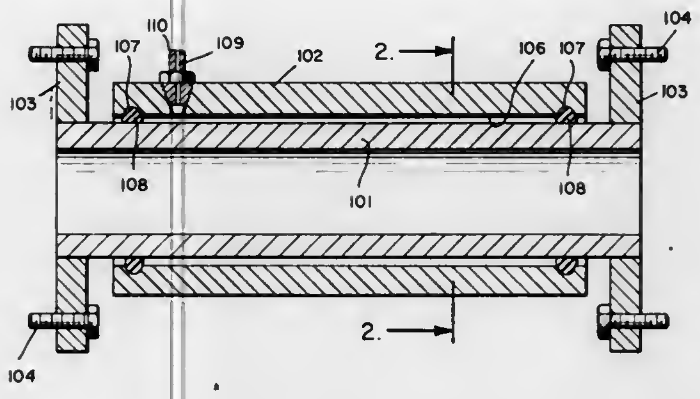
- a. a thick walled structural support member of sound-insulating material having a main wall and two side walls defining a compartment with three open sides;
- b. a thin walled panel member having a main side and upper and lower sides and inserted in and cooperating with said support member to enclose said compartment, said main side having a plurality of apertures therein to permit the passage of incident sound waves into said compartment; and
- c. a partition member of sound-absorbing material spanning the upper and lower sides of said panel member within said compartment and defining respective air spaces between its opposite surfaces and the main side of said panel member and the main wall of said support member.

3,846,950
HYDRAULICALLY EXTENSIBLE STRUT

Siegfried Hansen, West Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Continuation of Ser. No. 235,740, March 17, 1972, abandoned. This application June 11, 1973, Ser. No. 368,910
Int. Cl. E04c *3/32;* **G04b** *17/20*
U.S. Cl. 50—632 **6 Claims**

1. An adjustable strut assembly comprising an inner tubular member having a longitudinal axis and a constant outer radius R_o for the greater portion of its length therealong;

an outer tubular member coaxially disposed about said inner member and having a constant inner radius R_i for the greater portion of its length in slip-fit dimensional relationship with said inner tube outer radius, said radius R_i not exceeding said radius R_o by more than approximately 0.005 inch;

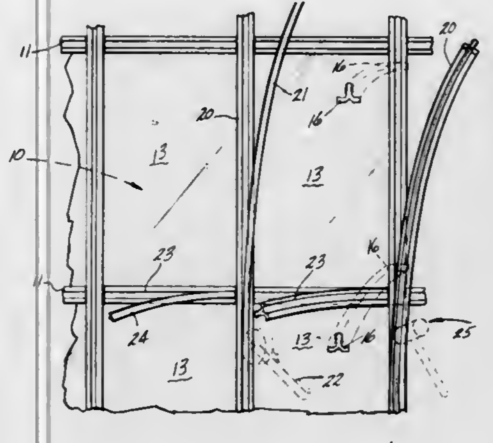


hermetic sealing means disposed between opposing portions of said inner member and said outer member at longitudinally spaced locations along said constant radius portions for providing in conjunction with said portions a thin tubular fluid-tight space; and

means for controllably introducing pressurized fluid into said tubular space.

3,846,951
ON SITE METHOD OF ERECTING A WALL STRUCTURE AND A WEATHER GASKET JOINT

David Paull, Big Rapids, Mich., assignor to Swiss Aluminium Ltd., Chippis, Switzerland
Filed Mar. 21, 1973, Ser. No. 343,546
Int. Cl. E04g *21/00;* **E04b** *2/88*
U.S. Cl. 52—741 **5 Claims**

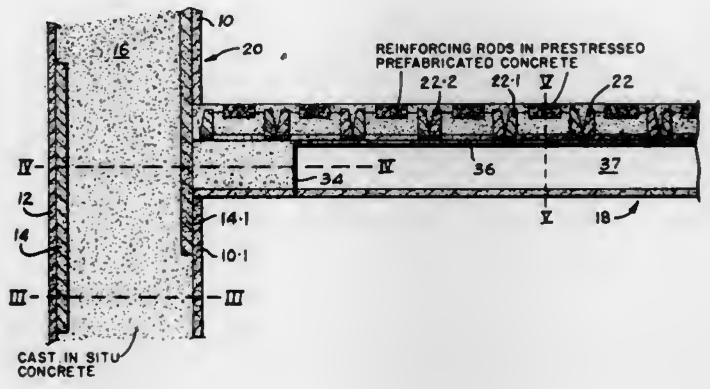


1. In the method of closing an open framework of interconnecting longitudinal and vertical support members to form a wall by inserting spaced closure panels, retaining and sealing said panels by driving an elongated, deformable gasket into interlocking relationship with the support members, said elongated gasket closing joints between adjacent panels, the improvement comprising the steps of:

providing a plurality of elongated, one-piece, deformable gaskets having a given cross-sectional configuration, dividing at least one of said elongated gaskets into a plurality of short, segmental gaskets, inserting said closure panels, retaining said closure panels temporarily by driving said segmental gaskets into interlocking relationship with the support members at spaced intervals within said joints, thereafter progressively inserting and driving said elongated gaskets into said joints while progressively removing said segmental gaskets whereby said panels are retained and sealed permanently.

3,846,952
METHOD OF ON SITE BUILDING

Marinus De Winter, P.O. Box 4364, Pretoria, South Africa
Filed June 27, 1972, Ser. No. 266,736
Int. Cl. E04b *5/19*
U.S. Cl. 52—743 **3 Claims**



1. A method of on-site building, which comprises the steps of

providing at least one open-topped supporting member having upstanding sides and a hollow interior between said sides;

providing at least one transportable preformed, prestressed channel-shaped body, comprising a soffit and channel sides defining a space therebetween;

partitioning between and along said channel sides at a predetermined distance from the end of the soffit forming a hollow enclosure with the soffit and sides of the channel-shaped body;

positioning said transportable preformed prestressed channel-shaped body with the soffit resting directly on an upstanding side of said open-topped supporting member; at least partially filling continuous space of said open-topped supporting member and channel-shaped body with settable cementitious material and a transportable reinforced cementitious load-bearing element, the transportable reinforced cementitious load-bearing element being placed at least partly within the channel of the channel-shaped body and being at least partially surrounded with the settable cementitious material;

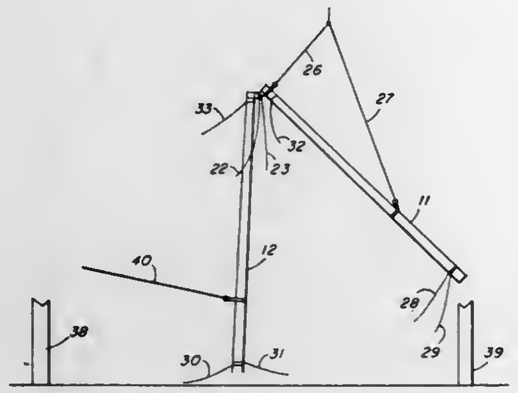
and permitting the settable cementitious material to set, thereby bonding the said supporting member, the preformed, prestressed channel-shaped body and the transportable reinforced cementitious load-bearing element together with a continuous mass of set cementitious material while leaving an air space below the partitioning on the side which cannot be reached by the settable cementitious material.

3,846,953
BEAMS FOR HYPERBOLIC PARABOLOID ROOFS

Paul T. Hodess, Cambridge, Mass., assignor to Creative Building Systems, Melrose, Mass.
Filed Aug. 2, 1973, Ser. No. 384,934
Int. Cl. E04g *21/00*
U.S. Cl. 52—745 **1 Claim**

1. A method for erecting roof beams for a hyperbolic paraboloid roof or the like comprising the steps of attaching the ends of each pair of opposing beams with hinge means, attaching guy wires to the hinge means, and placing the pair of hinged beams in the desired position by first lifting one beam to the required angle and position while the second beam hangs loose, then lifting said second beam to the required

angle and position, and then placing both beams on a suitably prepared abutment, the hinge portion being temporarily stabilized by the guy wires, and then attaching the beams to the abutments in a permanent fashion; said guy wires being removed after the structure has been permanently stabilized.



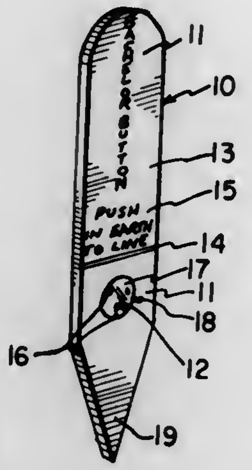
3,846,954
SELF-STARTING PLANT MARKER AND METHODS AND APPARATUS FOR MAKING SAME

Edward F. Meyers, Oyster Bay, N.Y., assignor to Enviro-Gro, Inc., Hauppage, N.Y.

Continuation-in-part of Ser. Nos. 256,365, May 24, 1972, abandoned, and Ser. No. 297,202, Oct. 13, 1972, abandoned. This application July 27, 1973, Ser. No. 383,154

Int. Cl. B65b *1/16, 61/02*

U.S. Cl. 53—14 **12 Claims**



1. A method of manufacturing self-starting plant markers comprising the steps of:

a. supplying a series of wooden sticks;
b. branding said sticks to provide index means thereon;
c. forming an aperture in each of said sticks;
d. depositing at least one seed in said aperture;
e. maintaining a flowable supply of water soluble vehicle means at a temperature less than 125°F;
f. injecting said flowable vehicle means into said aperture to fill the same; and
g. chilling said vehicle means to a solid, non-flowable state, thereby securing said seed within said aperture.

3,846,955
PROCESS FOR PACKAGING ACRYLIC FIBERS

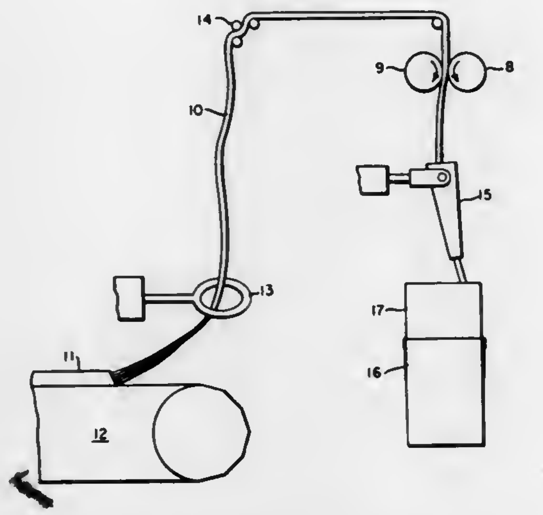
Weat Carl Mattis, Camden, S.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 8, 1974, Ser. No. 458,462

Int. Cl. B65b *1/24*

U.S. Cl. 53—24 **7 Claims**

1. Process for preparing a package of tow of acrylic fiber in a flat-sided paperboard container comprising: providing a free standing flat-sided paperboard container having the dimensions of the package to be prepared, said container having an opening at the top; providing an extending member on said top temporarily extending the height of said container; heating a tow consisting essentially of acrylic fibers to a temperature not exceeding 160° C. to provide a tow of fibers having a shrinkage of not more than 3 percent and a moisture content of not more than 2 percent by weight and advancing said tow at a rate of at least 60 yds./min. through said extending member at a temperature not exceeding 125° C., and at a minimum temperature of at least 65° C. when the heating of said tow is carried out in an atmosphere having a water vapor content of 40 percent or more by volume, and of at least about 75° C. when the heating of said tow is carried out in an atmosphere having a water vapor content of 20 percent to 40 percent by volume; compressing said deposited tow into the container to a density of at least 20 lbs./ft.^{3} by pressure applied substantially uniformly across the cross-section of the container defined by the opening, removing the extending member, and closing the container.



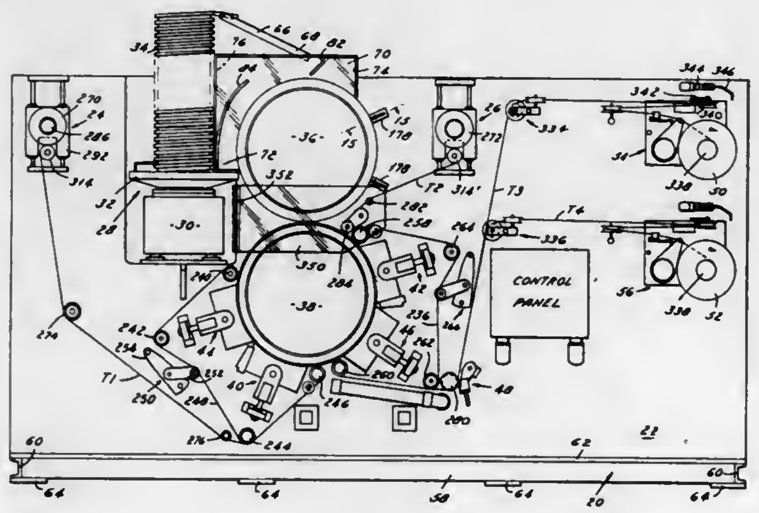
3,846,956
METHOD OF AND APPARATUS FOR MAKING SEED TAPE

Carl W. Johnson, Neenah, Wis., assignor to Ferry-Morse Seed Company, Mountain View, Calif.

Filed May 2, 1973, Ser. No. 356,485

Int. Cl. B65b *9/04*

U.S. Cl. 53—28 **19 Claims**



1. A method of manufacturing a seed tape comprising:

moving a first elongate strip of water soluble tape at a constant speed,

forming a series of uniformly longitudinally spaced apart pockets in the moving strip of tape,

moving at the speed of said strip of tape a series of recesses, which are sized to only receive a single seed and are longitudinally spaced apart corresponding to said pocket spacing, in a recyling path from a point remote from said tape into conjunctive recess-to-pocket registration therewith,

inducing a partial vacuum at the bottom of each recess during movement between said point and the recess-to-pocket registration,

spilling a continuous stream of free falling seeds onto said recesses during their movement between said point and the recess-to-pocket registration to catch a single seed in each recess,

discontinuing the induced partial vacuum of each recess when in registry with the pocket to release a seed from each recess into the pocket, and

moving a second elongate strip of water soluble tape at the same speed as and into conjunction with and covering the pockets in the first strip of tape following deposit of each seed in a pocket and sealing the strips of tape together around each pocket.

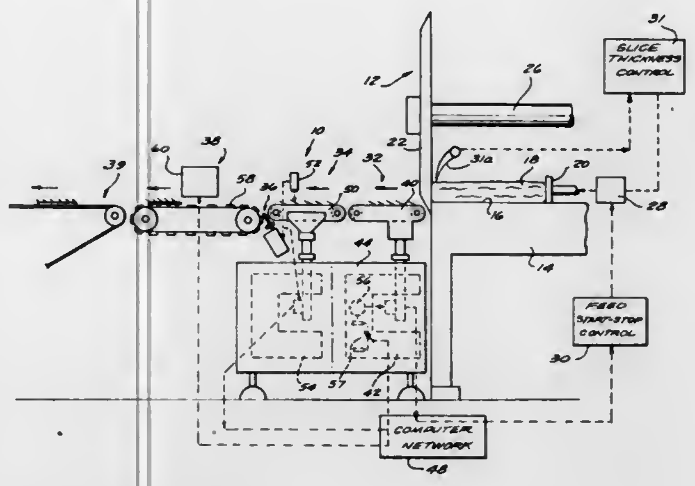
3,846,957
APPARATUS FOR WEIGHING AND SEGREGATING SLICED BACON FROM A SLICING MACHINE

William J. Divan, Centerport, N.Y., assignor to Cashin Systems Corp., Williston Park, N.Y.

Filed Oct. 10, 1973, Ser. No. 405,087

Int. Cl. B26d *4/56, 4/24, 5/00*

U.S. Cl. 53—59 W **20 Claims**



1. The combination of:

a. a slicing machine having:

a slicing blade;

feed mechanism for feeding products to be sliced into the blade;

first control means for determining the rate of advance of said feeding mechanism towards said slicing blade and, consequently, the sliced thickness, said first control means including sensing levers for sensing the cross-sectional size of the product to be sliced whereupon as the cross-sectional size decreases, the rate of advance of the feeding mechanism increases to increase slice thickness and as the cross-sectional size of the product to be sliced increases, the rate of advance of the feeding mechanism is decreased to thereby decrease slice thickness whereupon a more uniform number of slices of the product to be sliced in each segregated measured quantity is obtained; and

b. apparatus for weighing the sliced products coming from the machine and separating them into segregated weighed quantities comprising:

receiving and conveying means for receiving the sliced products from the slicing machine;

second control means operatively connected to said feeding mechanism for interrupting the operation of the feeding mechanism for a sufficient period of time for the receiving and conveying means to operate to convey the sliced products away;

weighing means operatively connected to the receiving and conveying means for causing the operation of the second control means when a predetermined weight of sliced product has been discharged onto the receiving and conveying means to interrupt the operation of the feeding mechanism;

said second control means including means automatically initiating the operation of the feeding mechanism after it has been interrupted for a sufficient period of time for the predetermined weight of the sliced products to be conveyed away;

a second receiving and conveying means for receiving the segregated, predetermined quantity of sliced products from the first receiving and conveying means;

third control means for adjusting the setting of the first weighing means; and

second weighing means operatively connected to the second receiving and conveying means for causing the operation of the third control means when a predetermined quantity of the sliced products has been weighed by the second receiving and conveying means, said second weighing means feeding back signals to the first weighing means corresponding to the weight of the predetermined quantity of the sliced products on the second receiving and conveying means over and below the prescribed weight to thereby automatically correct the weight of the predetermined quantity of the sliced products weighed on the first receiving and conveying means proportionately to the departure from the prescribed weight as registered by the second weighing means.

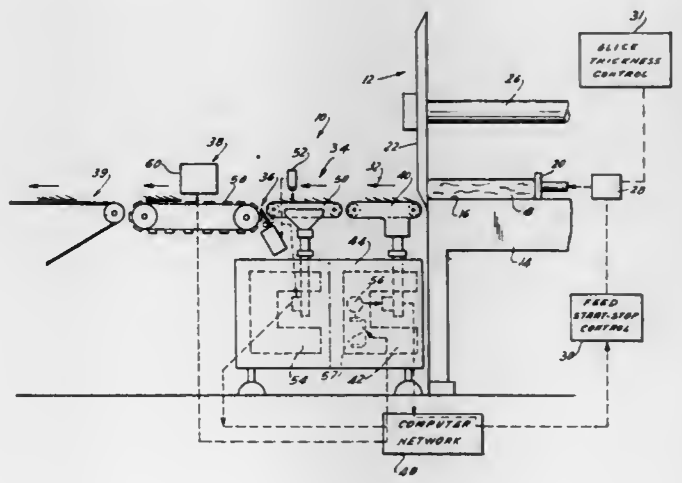
3,846,958
APPARATUS FOR WEIGHING AND SEGREGATING SLICED BACON FROM A SLICING MACHINE

William J. Divan, Centerport, N.Y., assignor to Cashin Systems Corp., Williston Park, N.Y.

Filed Oct. 10, 1973, Ser. No. 405,100

Int. Cl. B26d *4/56, 4/24, 5/00*

U.S. Cl. 53—59 W **15 Claims**



1. The combination with a slicing machine having a slicing blade and feeding mechanism for feeding products to be sliced into the blade, of apparatus for weighing the slice products coming from the machine and separating them into segregated weighed quantities comprising:

receiving and conveying means for receiving the sliced products from the slicing machine;

control means operatively connected to said feeding mechanism for interrupting the operation of the feeding mechanism for a sufficient period of time for the receiving and conveying means to operate to convey the sliced products away;

weighing means operatively connected to the receiving and conveying means for causing the operation of the control means when a predetermined weight of sliced product has been discharged onto the receiving and conveying means to interrupt the operation of the feeding mechanism;

said control means including means automatically initiating the operation of the feeding mechanism after it has been interrupted for a sufficient period of time for the predetermined weight of the sliced products to be conveyed away;

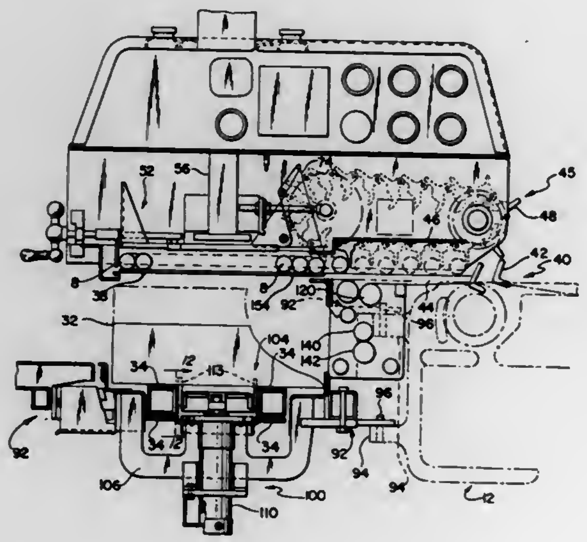
a second receiving and conveying means for receiving the segregated, predetermined quantity of sliced products from the first receiving and conveying means;

second control means for adjusting the setting of the first weighing means; and

second weighing means operatively connected to the second receiving and conveying means for causing the operation of the second control means when a predetermined quantity of the sliced products has been weighed by the second receiving and conveying means, said second weighing means feeding back signals to the first weighing means corresponding to the weight of the predetermined quantity of the sliced products on the second receiving and conveying means over and below the prescribed weight to thereby automatically correct the weight of the predetermined quantity of the sliced products weighed on the first receiving and conveying means proportionately to the departure from the prescribed weight as registered by the second weighing means.

3,846,959
BULK-LOADING APPARATUS

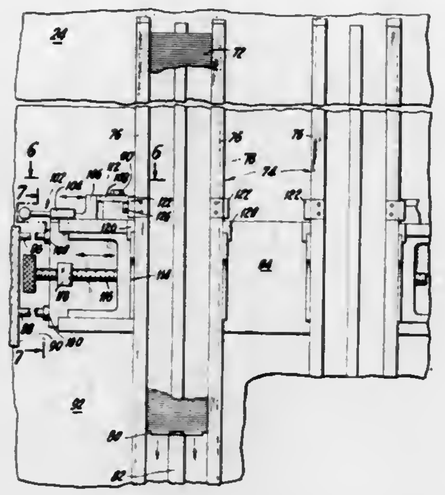
Paul F. Good, Lutherville, Md., assignor to Speedco, Inc., Baltimore, Md.
Filed May 30, 1973, Ser. No. 365,233
Int. Cl. B65b *57/10, 35/44*
U.S. Cl. 53—61 **21 Claims**



1. A bulk loader for packaging a plurality of sausages in a container having side walls comprising:
- a. support means for supporting a group of sausages;
- b. container support means, positioned below said support means, for supporting the container;
- c. feeder means for advancing sausages onto said support means;
- d. stripping means mounted for stripping movement relative to said support means for intermittently moving a group of sausages from said support means into the container;
- e. shearing means for cutting a web of paper into discrete lengths;
- f. supply means for feeding a web of paper to the shearing means; and
- g. paper outfeed means for feeding a discrete length of paper from said shearing means along each group of sausages deposited on the support means to permit simultaneous movement of the discrete length of paper and the group of sausages into the container by said stripping means.

3,846,960
STRIP MATERIAL PACKING APPARATUS

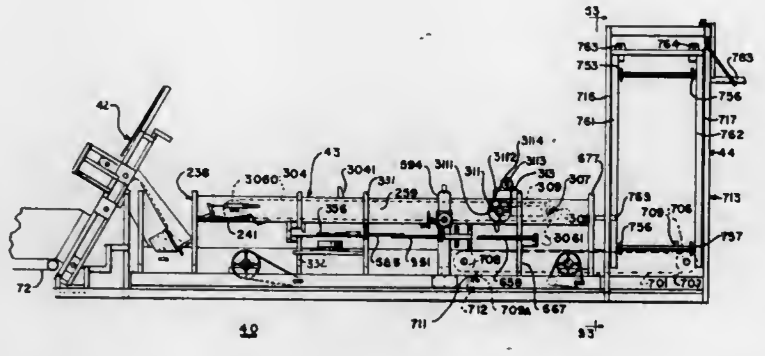
Frederick F. Forthmann, Jr., 688 Pascack Rd., Washington Township, Bergen County, N.J. 07675
Division of Ser. No. 258,735, June 1, 1972, Pat. No. 3,804,266. This application July 31, 1973, Ser. No. 384,222
Int. Cl. B65b *5/10, 35/40*
U.S. Cl. 53—163 **5 Claims**



1. A packing device for packing individual lengths of strip material which are delivered to drop openings, comprising a guide adapted to be positioned alongside one or more of the drop openings, a support plate movable backwardly and forwardly on said guide, a plurality of strip material packing chutes on said plate arranged in substantially parallel relationship and adjustment means carried on said support plate and connected to at least one of said packing chutes for moving said chutes relative to said plate.

3,846,961
MACHINE FOR LOADING A STACK OF ARTICLES IN A CARTON

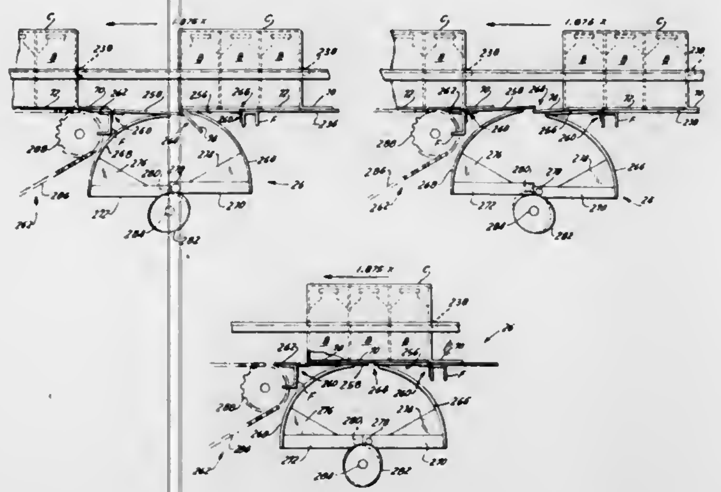
Edwin A. Molitor; Walter Elsten, both of Miami Twsp., and Enoch A. Sergent, Ohio Twsp., all of Clermont County, Ohio, assignors to Multifold-International, Inc., Milford, Ohio
Filed July 2, 1973, Ser. No. 375,661
Int. Cl. B65b *43/26, 39/12*
U.S. Cl. 53—250 **10 Claims**



1. A machine for loading a stack of articles in a carton which comprises a pivotally mounted stack turning frame, stack guiding means extending outwardly of the axis of the stack turning frame, means for advancing the stack in upright position into the stack turning frame adjacent the stack guiding means when the stack guiding means is upright, a stack advancing head mounted on the stack turning frame and engageable with the underside of the stack, stack holding flap means mounted on the stack guiding means remote from the axis of the stack turning frame, means for advancing the head toward the flap means to hold the stack against the flap means, means for swinging the stack turning frame from the position in which the stack guiding means is upright to a position in which the stack guiding means is horizontal, tracks opposite the stack turning frame, means for advancing an erect carton along the tracks to a loading station at which the interior of the carton is aligned with the stack guiding means in horizontal position, means for withdrawing the flap means from the stack and for further advancing the head to advance the stack into the carton, and means for closing flaps of the carton to hold the stack in the carton.

3,846,962
FLAP CLOSING MECHANISM FOR HIGH SPEED AUTOMATIC CASING MACHINE

Anthony T. Rossi, Bradenton, Fla.
Division of Ser. No. 183,471, Sept. 24, 1971, Pat. No. 3,805,484. This application Feb. 11, 1974, Ser. No. 441,041
Int. Cl. B65b *7/20, 7/26*
U.S. Cl. 53—374 **6 Claims**

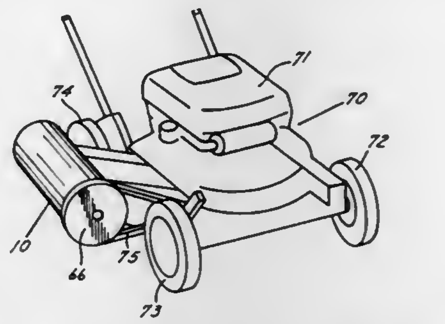


1. For use in a automatic carton packing operation, in which filled cartons having at least the botton leading flaps thereof in the open position are conveyed past a leading flap closing station, a leading flap closing mechanism comprising support means at said leading flap closing station, said support means having an opening, means for conveying said cartons along said support means past said opening, a pair of spaced reciprocating members in said opening defining a slot therebetween and means for reciprocating said spaced members to receive said front flap extending outwardly ahead of said carton in said slot in the direction of carton movement and to thereafter engage said front flap and pivot same inwardly toward the underside of said carton, said front flap leaving said slot in the closed position.

3,846,963
GRASS CLIPPING COMPACTER ATTACHMENT FOR LAWNMOWERS

Richard A. Pedigo, 2900 Fairfax St., Denver, Colo. 80207
Filed Oct. 4, 1972, Ser. No. 294,815
Int. Cl. A01d *73/00*
U.S. Cl. 56—13.3 **4 Claims**

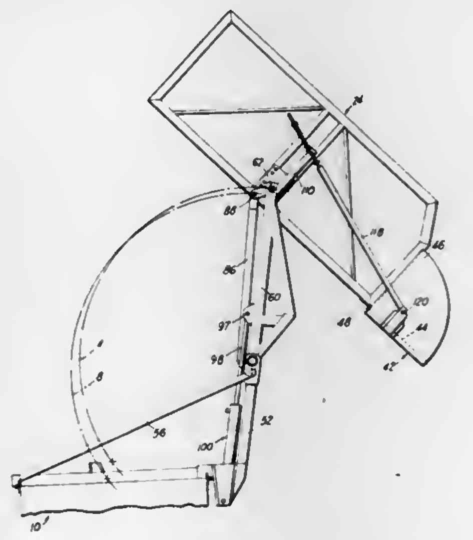
1. A grass clipping compressor apparatus for use with a power lawnmower having a cutting device driven by a power means for severing lawn clippings, said compressor apparatus comprising:
- a. a hollow, generally uniform diameter tubular body mounted on said lawnmower and having a generally closed end and an opposite full diameter open end, said body further having an elongated side opening positioned longitudinally along a portion of said body and near said closed end, said body side opening being arranged to receive said grass clippings from said mower;
- b. a rotatable shaft means mounted in said tubular body with one end extending centrally through said body closed end;
- c. a spiral conveyor means extending through said body and rotatably mounted on said shaft means, said conveyor means terminating adjacent said body open end and including at least a double flight portion adjacent said open end;
- d. a stationary cutting means mounted in the open end of said body and arranged in contact with the end of said conveyor means, said stationary cutting means includes a plurality of radially extending blades and centrally located bearing means for supporting the end of said rotatable shaft means;



- e. a rotary cutting means mounted for rotation on the end of said shaft means downstream of said stationary cutting means and including a plurality of radially extending blades in rotative contact with said stationary cutting means;
- f. an extruder plate having a plurality of holes mounted in said body open end adjacent to and downstream of said rotary cutting means; and
- g. means for drivingly connecting the extended end of said shaft means with said lawnmower drive means whereby said apparatus compresses and forms said grass clippings into dense pellets having considerably less volume than the loose clippings.

3,846,964
PEANUT HARVESTING MACHINE

George Victor Frushour, and Marvin Lee Nafziger, both of Albany, Ga., assignors to Lilliston Corporation, Albany, Ga.
Filed Feb. 27, 1973, Ser. No. 336,202
Int. Cl. A01d *41/10*
U.S. Cl. 56—16.6 **18 Claims**



1. A peanut harvesting maching comprising, in combination:

- a harvester body including pick-up head means for gathering in peanut vines with peanuts attached and means for separating peanuts from their vines;
- support wheels for said harvester body;
- a peanut collection box mounted on top of said body and having a bottom opening at one side thereof;
- means for discharging separated peanuts upwardly into said collection box through said bottom opening;
- means for elevating said collection box and tipping it to that other side of said body opposite said one side of the collection box to discharge the contents thereof into a receptacle alongside said machine, and including an upright assembly at said other side of the machine, arms pivotally connected to said upright assembly fore and aft of said box and extending transversely downwardly therefrom into pivotal connection with the bottom portion of said box essentially midway between the opposite sides thereof, extensible means connecting said body to said arms for swinging said arms about their pivotal connections to said upright assembly bodily to lift said box to a position above said upright assembly, and linkage means interconnecting said box to said upright assembly for maintaining said box essentially level as it moves to said position above the upright assembly and then to tilt said box downwardly toward said other side of the body; and a door normally closing that other side of said collection box at said other side of said machine, said door being provided with a hinge along the bottom edge thereof, at least one of said arms having an extension projecting from its pivotal connection with said collection box, and linkage means connecting said extension to said door for closing said door positively when the collection box is in lowered position and for allowing said door to swing downwardly into position in which it forms a continuation of the bottom of the box when the latter is tipped.

3,846,965
SIMULTANEOUS MULTIPLE TWISTING APPARATUS

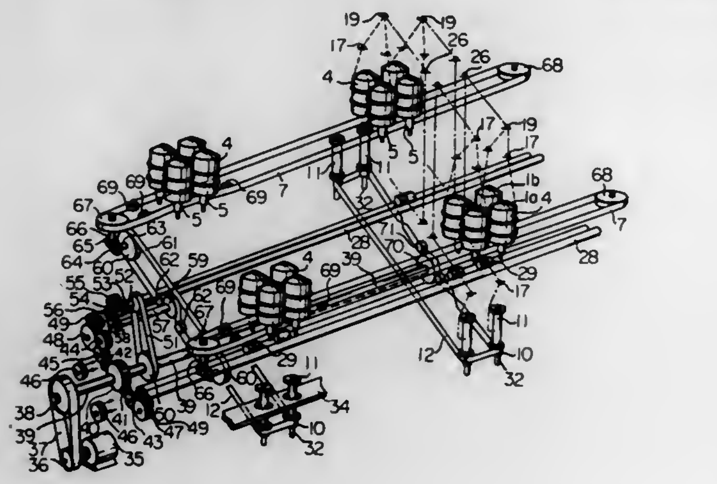
Sakujiro Matsumura; Tadashi Yamamura; Akira Ogura, and Masataka Hayashi, all of Aichi-ken, Japan, assignors to Toyo Tire Cord Company Limited, Osaka, Japan

Filed May 21, 1973, Ser. No. 362,107

Claims priority, application Japan, May 26, 1972, 47-051680

Int. Cl. D01h *1/10, 1/28, 7/86*

U.S. Cl. 57—58.52 **10 Claims**



1. A multiple twisting apparatus provided with at least one twisting unit comprising a first twisting device provided with at least two two-for-one twisting assemblies disposed in a sustantially upright condition, means for doubling first-twisted yarns withdrawn from said two-for-one twisting assemblies, a second ring twisting assembly disposed below said first twisting device for imparting a second twist to a double yarn carried from said doubling means,

- a means for positively feeding said doubled yarn to said second twisting assembly, and
- a plurality of yarn guides for forming a yarn passage behind said first twisting device and for forming a yarn passage to said feeding means.

3,846,966
TWISTING OF TEXTILE FILAMENTS

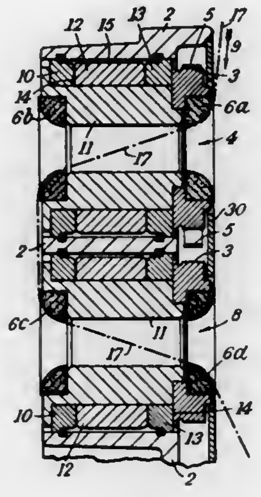
George Brandwood Peacock, Holcombe Brook, near Bury, and Austin Dobson, Rossendale, both of England, assignors to Platt International Limited, Lancashire, England

Filed Oct. 26, 1972, Ser. No. 301,107

Claims priority, application Great Britain, Oct. 29, 1971, 50454/71

Int. Cl. D02g *1/02, 1/04*

U.S. Cl. 57—77.4 **25 Claims**



1. A method of false twisting a running synthetic filament yarn comprising the step of contacting the running yarn in succession with two moving deformable twist-imparting surfaces of different hardness to false twist the yarn, the second contacted surface being of greater hardness than the first contacted surface.

3,846,967
MOUNTING APPARATUS FOR SPINNING ASSEMBLY

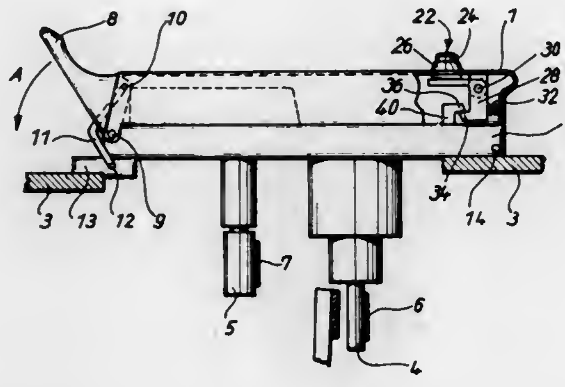
Wilhelm Braun, Wendlingen, Germany, assignor to SKF Kugellager fabriken GmbH, Schweinfurt, Germany

Filed June 20, 1972, Ser. No. 264,528

Claims priority, application Germany, June 21, 1971, 2130739

Int. Cl. D01h *1/28, 1/12*

U.S. Cl. 57—78 **6 Claims**



1. Apparatus for mounting a spinning assembly on a machine frame, comprising a housing formed of a shell pivotally mounted at one end to said machine frame and a cover pivotally mounted on said shell at the opposite end to be movable between an open and closed position relative thereto, said shell being adapted to house at least a spinning turbine journalled within said shell having a drive whorl extending outwardly therefrom for tangential engagement with a continuously driven belt, a lever mechanism interconnecting said shell, said cover and said frame, said lever mechanism comprising a toggle assembly located at the end of said shell opposite to said fixed pivot means, comprising an operating lever pivotally connected at one end to said shell, and an L-shaped lever pivotally connected at one of its ends to the midpoint of said operating lever and pivotally connected at its other end to said frame, the mid-point of said operating lever being swingable about the pivotal connection of said operating lever to said shell whereby said lever is opened and movable therewith into an over the center position with respect to the pivotal connection to cause said L-shaped lever to abut said frame, further movement in the open position causing said operating lever to fulcrum about said L-shaped lever and raise said opposite end from said frame whereby said shell may be caused to pivot about said one end with said cover in closed position between a first position wherein said whorl is in engagement with said belt and a second position wherein said whorl is out of engagement with said belt to thereby interrupt the drive of said spinning turbine and thereafter to cause said cover to pivot relative to said shell.

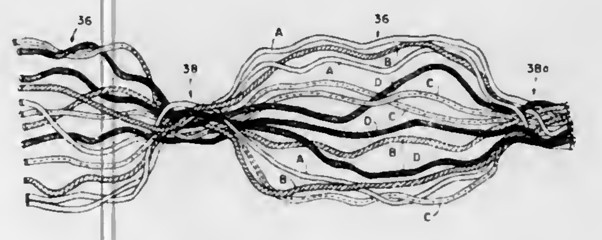
3,846,968
YARN STRUCTURE AND METHOD FOR PRODUCING SAME

Richard W. Sheehan; David B. Parlin; Harry F. Jamrogowicz, all of Greenville, and John A. Patterson, Abbeville, all of S.C., assignors to Bigelow-Stanford, Inc., Greenville, S.C.

Filed June 11, 1973, Ser. No. 368,875

Int. Cl. D02g *3/34, 1/16, 3/12*

U.S. Cl. 57—140 J **8 Claims**



1. A continuous yarn structure comprising at least one yarn element formed from a plurality of fibers, said yarn structure comprising lengths of high bulk, substantially un-entangled yarn element fibers alternating with lengths of compacted yarn element fibers in which substantially all fibers are mutually entangled throughout the volume of the compacted lengths, at least some of the individual fibers have a lesser cross-sectional area in the final yarn structure than in their unprocessed lengths.

3,846,969
FALSE-TWIST TEXTURING YARN OF POLYESTER FILAMENTS HAVING MULTILOBAL CROSS SECTIONS

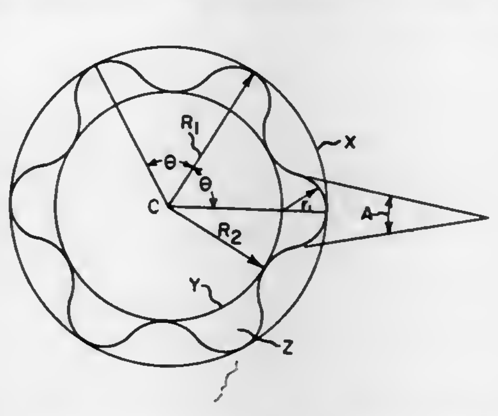
Jerry Bruce McKay, Kinston, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 243,795, April 13, 1972, , which is a continuation-in-part of Ser. No. 99,446, Dec. 18, 1970, abandoned. This application Aug. 30, 1973, Ser. No. 393,167

Int. Cl. D02g *3/22, 3/34*

U.S. Cl. 57—140 J **8 Claims**

1. An improvement in multifilament polyester yarn for false-twist texturing at a maximum ratio (R) of output-to-input of up to 6:1, wherein the improvement comprises yarn composed of polyester filaments of multilobal cross section characterized by a total number (N) of 6 to 10 essentially symmetric lobes of substantially equal length, equispaced radially about the center of the filament, and having between



1.17 and 1.85 modification ratio (M), the filaments having a denier per filament between 3.8(R) and (5.88M − 10 + N)(R).

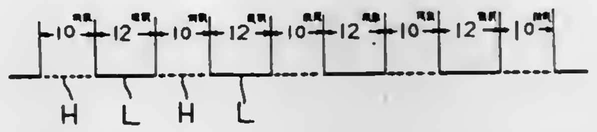
3,846,970
HIGH BULK AND POTENTIALLY HIGH BULK FIBROUS MATERIAL

Keiichi Hitomi, Tokyo; Kachio Takagi, Tokyo; Seinosuke Nomura, Tokyo, and Sadayuki Okada, Odawara-shi, all of Japan, assignors to Mitsubishi Reiyon Kabushiki Kaisha and Daido Keori Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 142,546, Oct. 3, 1961, Pat. No. 3,248,771. This application Oct. 22, 1965, Ser. No. 500,599

Int. Cl. D02g *3/24*

U.S. Cl. 57—140 R **18 Claims**



1. An elongated fibrous unit having substantially invariable denier and comprising repeating longitudinal segments having different shrinkage potentials but all being oriented, whereby said fibrous unit upon subsequent treatment to induce shrinkage will shrink more at some of said longitudinal segments than at other of said longitudinal segments, and said segments being disposed alternately axially of said elongated unit.

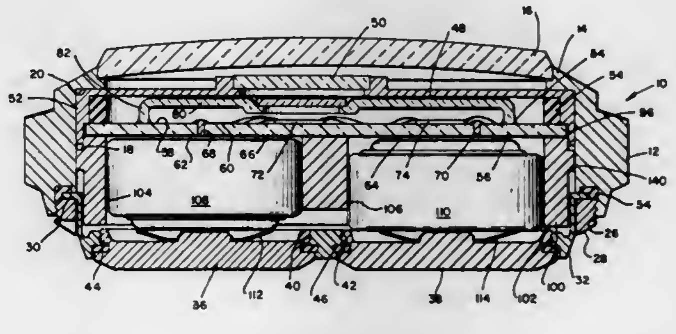
3,846,971
PACKAGE FOR ELECTRONIC WATCH MOVEMENT

Ernest C. Ho, Newport Beach; Karl H. Reissmueller, Tustin, and Richard J. Belardi, Anaheim, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 21, 1973, Ser. No. 343,320

Int. Cl. G04b *29/00*

U.S. Cl. 58—23 R **10 Claims**



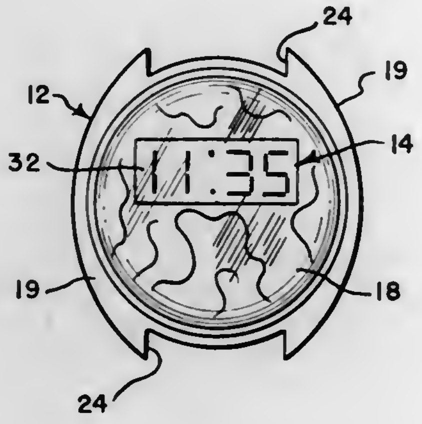
1. A package for packaging components of a digital electronic watch movement in a watch case comprising:

- a substantially flat substrate having a peripheral edge and a face and a back, said substrate being fabricated from insulative material;

at least one bare integrated circuit chip secured to said face of said substrate;
an electronically controlled digital display device mounted on the face of said substrate;
means for electrically coupling said integrated circuit chip to said display device;
a cover positioned over the portions of said substrate which include said integrated circuit chip and said display device, said cover being substantially flat where it extends over said substrate and having downturned flanges along the edge of said cover, said cover having a transparent window therein positioned over said display device, said cover being optically opaque away from said window said cover being attached at its downturned flanges to the front of said substrate and spaced by said flanges over said display device and said chip to enclose the integrated circuit chip and display device within a protected volume defined by said flanges, cover, and substrate.

3,846,972
CRYSTAL CONTROLLED WATCH

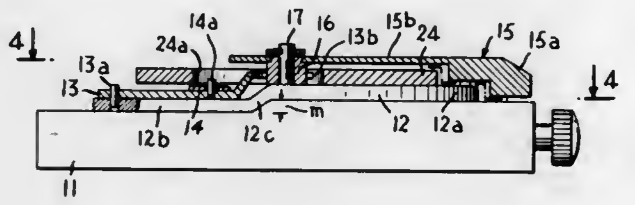
David Doss, Overland Park, Kans., assignor to Textron Inc., Providence, R.I.
Filed Dec. 26, 1973, Ser. No. 427,910
Int. Cl. G04c *3/00;* **G04b** *27/00*
U.S. Cl. 58—23 R **5 Claims**



1. In an electronic watch comprising a crystal controlled watch movement mounted in a watch case; said watch movement having a crystal controlled oscillator circuit, manually operative internal oscillator circuit adjustment means for fine tuning the frequency of oscillation of the oscillator circuit, visual time display means, and manually operative internal display adjustment means for changing the time displayed by said display means; said watch case having a generally tubular side wall, a generally transparent top wall, a generally circular bottom wall, and exterior manually operated means mounted on the case and connected to said internal display adjustment means; the improvement which comprises:
internal display adjustment means located on the underside of the watch movement adjacent the bottom wall of the watch case,
exterior manually operated means mounted on the bottom wall of the watch case and connected to the internal display adjustment means for changing the time displayed by said display means.
internal oscillator circuit adjustment means located on the underside of the watch movement adjacent the bottom wall of the watch case, and
access means mounted on the bottom wall of the watch case for providing access to the internal oscillator circuit adjustment means for fine tuning the frequency of oscillation of said oscillator circuit.

3,846,973
AUTOMATIC WINDING WATCH WITH BRIDGE PLATE OFFSET TO RECEIVE AUTOMATIC WINDING MECHANISM

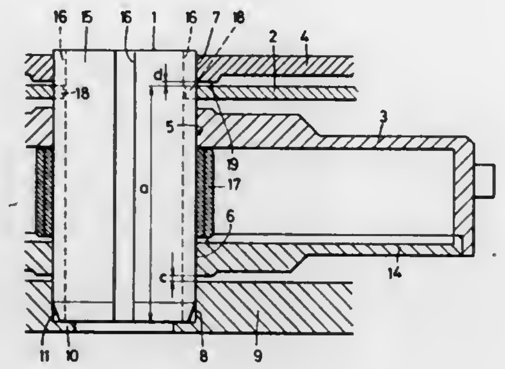
Hirohisa Kurita, Shimosuwa-machi, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Continuation-in-part of Ser. No. 212,456, Nov. 27, 1971, abandoned. This application Oct. 15, 1973, Ser. No. 406,320
Claims priority, application Japan, Dec. 28, 1970, 45-132723
Int. Cl. G04b *5/02, 7/00*
U.S. Cl. 58—82 R **6 Claims**



1. In an automatic winding watch comprising a basic watch movement having a main spring, an oscillating weight, and an automatic winding mechanism for transforming the movement of the oscillating weight into movement for winding the main spring of the watch movement, the improvement that the watch movement comprises a bridge plate with two parallel portions of said bridge plate offset from one another so that one of said portions is lower and the other of said portions is higher, and the automatic winding mechanism is superposed on the lower portion of the bridge plate so that the total height of the watch movement and the automatic winding mechanism is reduced, said bridge plate comprising a single piece of metal plate of uniform thickness bent to form said offset between said higher and lower portions of said bridge plate.

3,846,974
MOTOR-BARREL WATCH MOVEMENT

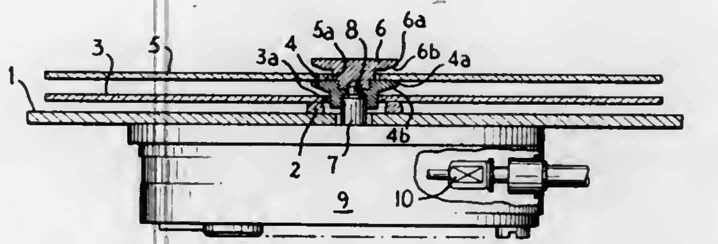
Urs Giger, Solothurn, Switzerland, assignor to Eta A.G. Ebauches-Fabrik, Grenchen, Switzerland
Filed Nov. 16, 1973, Ser. No. 416,430
Claims priority, application Switzerland, Dec. 18, 1972, 18385/72
Int. Cl. G04b *1/18*
U.S. Cl. 58—87 **9 Claims**



1. A motor-barrel watch movement characterized in that the barrel arbor is made of one piece with a circular, cylindrical surface, and in which rotation of the arbor in the frame of the movement and the rotation of the barrel about the arbor are ensured by four annular bearings surrounding said cylindrical surface and which lie in the space between an aperture fashioned on one hand in two of the frame components and on the other, in the drum and the barrel cover, said arbor including an anchoring means for the spring motor characterized as a recess formed in the cylindrical surface of said arbor.

3,846,975
TIME INDICATOR FOR A TIMEPIECE

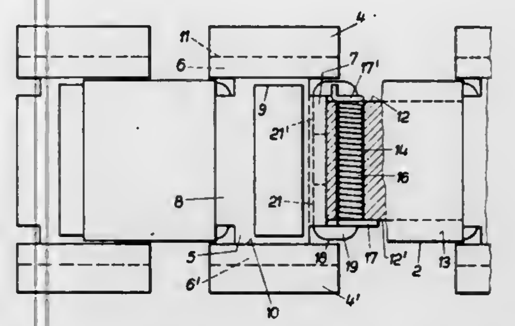
Yasuyuki Masui, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan
Filed Feb. 25, 1974, Ser. No. 445,240
Claims priority, application Japan, Feb. 28, 1973, 48-25253
Int. Cl. G04b *19/00*
U.S. Cl. 58—126 A **7 Claims**



1. Time indicator for use in a timepiece comprising two transparent driven disc indicators each having a non-circular central aperture, one of said disc indicators comprising an hour disc indicator and another of said disc indicators comprising a minute disc indicator, first driving means driving said hour disc indicator comprising a driven hour shaft and a first driving element on said hour shaft, said first driving element on said hour shaft having a non-circular cross section and a support surface, said another disc indicator comprising a minute disc indicator resting on said support surface of said first driving element for relative rotation thereon, second driving means driving said minute disc indicator comprising a driven minute shaft coaxial with said hour shaft and a second driving element on said minute shaft, said second driving element having a non-circular cross section, said hour and minute disc indicators each having a non-circular central aperture receiving the corresponding first and second driving elements, said apertures being complementary with the cross section of said corresponding driving elements.

3,846,976
EXPANSION BRACELET

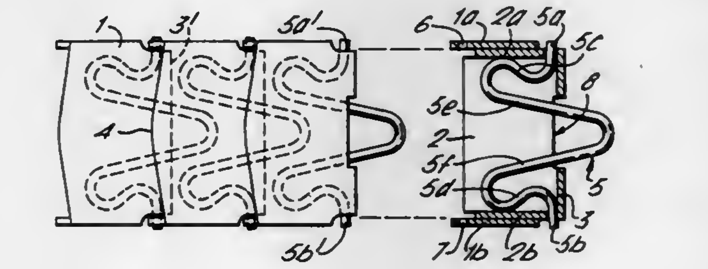
Rolf Schaudel, Karlsbad-Langensteinbach, Germany, assignor to Rodl & Wienenberger Aktiengesellschaft, Pforzheim, Germany
Filed Oct. 11, 1973, Ser. No. 405,592
Claims priority, application Germany, Nov. 2, 1972, 2253557
Int. Cl. F16g *13/24*
U.S. Cl. 59—79 R **8 Claims**



1. An expansion bracelet, particularly for wristwatches, comprising a row of connected links, each of said links comprising a plate member having a pair of first edge portions extending transversely of said row, and a pair of second edge portions extending longitudinally of said row; a pair of solid outer members each connected to one of said second edge portions and being spaced from one another transversely of said row; a solid inner member located between said outer members and in part projecting beyond them in direction longitudinally of said row, said inner member having an underside facing towards said plate member and provided with a pair of transversely extending channels; a pair of substantially C-shaped brackets, each having a bight portion pivotably received in one of said channels and a pair of leg portions, the leg portions of one of said brackets being pivotably connected to one of said first edge portions of said plate member so that said one bracket can be tilted longitudinally of said row out from between said outer members; and a pair of biasing springs received in the respective channels in engagement with the respective brackets and permanently resisting such tilting thereof.

3,846,977
WRISTLET AT LEAST PARTIALLY MADE OF ELEMENTS ARTICULATED TO EACH OTHER

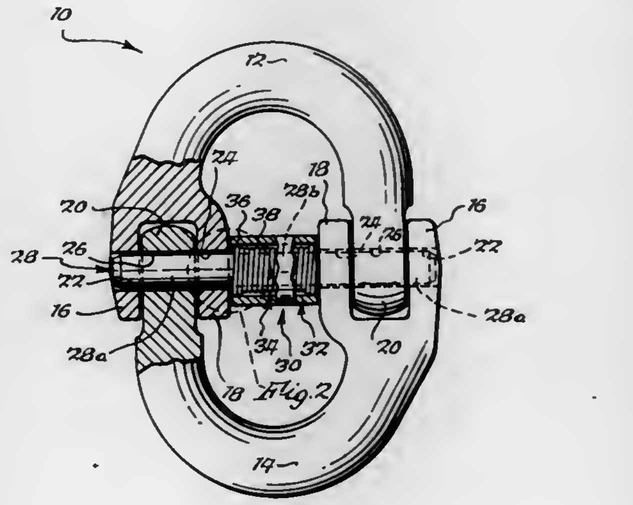
Emile Currat, Vesenaz, Switzerland, assignor to Etampes et Mecanique L. Serafini, Geneva, Switzerland
Filed Aug. 20, 1973, Ser. No. 389,876
Claims priority, application Switzerland, Aug. 30, 1972, 12764/72
Int. Cl. F16g *15/00*
U.S. Cl. 59—80 **4 Claims**



1. Wristlet at least partially constituted with elements articulated on each other, characterized by the fact that these elements are hollow and are articulated by means of a spring having the general shape of a W developing itself inner the elements, the ends of this spring being bent so as to pass through lateral walls of the element for engaging holes provided in the adjacent element, while the medium portion of the spring constitutes a buckle extending, through an opening of the element, into the adjacent element.

3,846,978
JOINER LINK PIN RETAINER

Kenneth D. Schreyer, Clarence, N.Y., assignor to Columbus McKinnon Corporation, Tonawanda, N.Y.
Filed Apr. 20, 1973, Ser. No. 352,924
Int. Cl. F16g *15/04*
U.S. Cl. 59—85 **3 Claims**



1. In a joiner link including a pair of substantially U-shaped complementary link halves, said link halves having leg por-

tions formed with through openings, a pin for pivotally joining said link halves, said pin having end portions passing through said openings and a central portion disposed between said leg portions, and a pin retainer disposed about said central portion of said pin to abut against said leg portions for normally constraining said pin from uncoupling movement axially through said openings, the improvement wherein said pin retainer comprises in combination:

- an outer sleeve having a length to extend substantially between for end abutment with said leg portions; and
- a variable diameter inner sleeve disposed radially intermediate said pin and said outer sleeve, said inner sleeve having enlarged diameter portions and a reduced diameter portion, said inner sleeve portions being resiliently deformable in a direction radially thereof, characterized in that said reduced diameter portion is dimensioned to resiliently grip said pin without engaging an inner surface of said outer sleeve, said enlarged diameter portions are dimensioned to resiliently grip said inner surface of said outer sleeve without engaging said pin, said enlarged diameter portions are arranged adjacent opposite ends of said inner sleeve, and said enlarged diameter portions additionally form guides for directing insertion of an end of said pin axially into said reduced diameter portion.

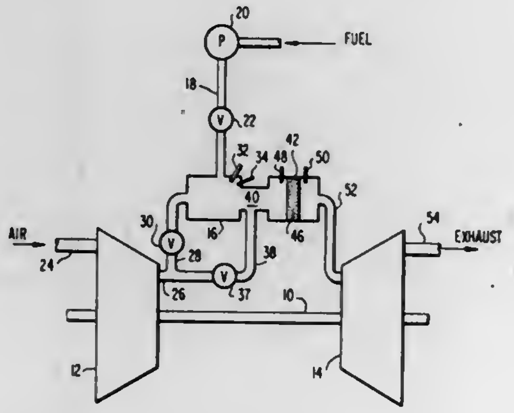
3,846,979
TWO STAGE COMBUSTION PROCESS

William C. Pfefferle, Middletown, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.

Continuation-in-part of Ser. No. 209,169, Dec. 17, 1971, abandoned. This application Aug. 16, 1973, Ser. No. 388,906

Int. Cl. F02c *7/00;* **F02g** *3/00*

U.S. Cl. 60—39.04 **25 Claims**



1. In a method for oxidizing carbonaceous fuel which when burned with a stoichiometric amount of air has an adiabatic flame temperature of at least about 3,300° F., the improvement comprising admixing the carbonaceous fuel and air, partially combusting the fuel in a thermal combustion zone and producing an effluent containing partially combusted fuel, immediately quenching said effluent, and essentially adiabatically oxidizing at a temperature of about 1,500° to 3,200° F. at least about 10 percent of the fuel by contacting the quenched effluent containing partially combusted fuel with a solid oxidation catalyst.

3,846,980
CATALYTIC TREATMENT OF RECYCLE GASES FOR AN INTERNAL COMBUSTION ENGINE

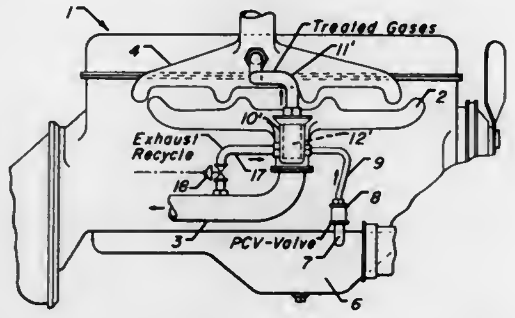
Ted V. DePalma, Schaumburg, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 23, 1973, Ser. No. 344,307

Int. Cl. F02m *25/06*

U.S. Cl. 60—279 **9 Claims**

1. In the operation of an internal combustion engine to reduce noxious gaseous components therefrom, the improved operation which comprises, positioning a gas previous oxidation catalyst in a confined zone in heat exchange relationship with an exhaust gas outlet means from said engine and effecting indirect exhaust gas heating to said catalyst, collecting at least a portion of a hydrocarbon containing gaseous stream from the crankcase ventilation system of said engine and effecting the passage of such stream through said catalyst into the intake manifold system for said engine to thereby provide for resulting CO_2 and water vapor from the catalyst zone to admix with the air-fuel mixture being introduced to the engine, and collecting at least a portion of the exhaust gas stream from said engine and recycling said exhaust gas stream through said catalyst to combine with said gaseous stream from said crankcase ventilation system prior to feeding thereof to said intake manifold system.



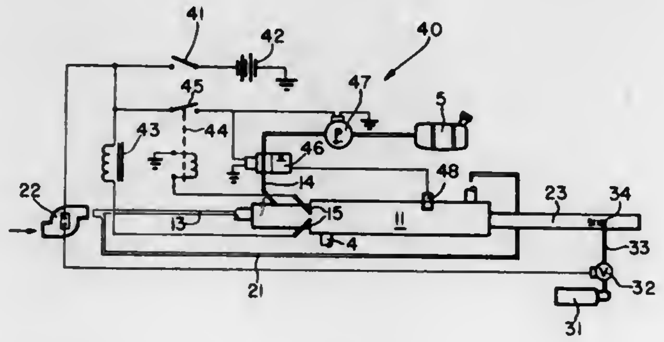
3,846,981
EMISSION CONTROL PROCESS AND SYSTEM

Michael M. Paczkowski, Nanimo, British Columbia, Canada, assignor to Nanaimo Enviro Systems, Corp., Seattle, Wash.

Continuation of Ser. No. 82,053, Oct. 19, 1970, abandoned, Continuation-in-part of Ser. No. 70,394, Sept. 8, 1970, abandoned. This application June 4, 1973, Ser. No. 366,972

Int. Cl. F01n *3/14*

U.S. Cl. 60—286 **2 Claims**



1. An emission control system for fitting onto a wheeled vehicle powered by an internal combustion engine for reducing the amounts of unburned hydrocarbons, carbon monoxide and oxides of nitrogen emitted in the exhaust gases, comprising:

- a high temperature unit having a non-catalytic combustion zone in the forward end thereof,
- means for injecting air and fuel in a predetermined ratio into the combustion zone,
- ignition means in the combustion zone igniting the fuel-air mixture,
- a first conduit communicating with the forward end of the combustion zone for the introduction of exhaust gases containing unburned hydrocarbons, carbon monoxide and oxides of nitrogen, the unburned hydrocarbons and carbon monoxide being oxidized in the combustion zone to carbon dioxide and water,
- baffle means in the combustion zone controlling flow of the exhaust gases therethrough,
- a perforated tubular member within the combustion zone surrounding the flame front resulting from combustion of the air-fuel mixture in the combustion zone,
- a second conduit communicating with the combustion zone providing an exit for the hot oxidized gases,
- blower means communicating with the second conduit injecting ambient air into the hot oxidized gases exiting from the combustion zone to cool them, and
- means injecting regulated amounts of nitrogen-containing compound into the cooled gas stream to react with the oxides of nitrogen, converting them to nitrogen gas and water, said means including (1) a storage vessel for the nitrogen-containing compound, (2) a nozzle positioned in the stream of exhaust gases exiting from the combustion zone, (3) a conduit connecting the nozzle and storage vessel, and (4) valve means regulating the amount of nitrogen-containing compound injected into the exhaust gases through the conduit and nozzle.

3,846,982
HYDROSTATIC DRIVE FOR AUTOMOTIVE VEHICLES OR THE LIKE

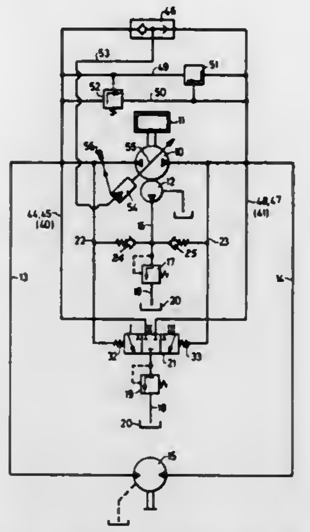
Werner Rometsch, Gerlingen, and Karl Veil, Uhingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed May 29, 1973, Ser. No. 364,439

Claims priority, application Germany, June 27, 1972, 2231421

Int. Cl. F16h *39/46*

U.S. Cl. 60—445 **10 Claims**



1. A hydrostatic drive for automotive vehicles or the like, comprising at least one adjustable first pump; a motor; high- and low-pressure lines connecting said pump with said motor; hydraulic adjusting means for said pump; an auxiliary pump having an outlet; relief valve means arranged to open in response to a predetermined fluid pressure at said outlet; prime mover means for said pumps; conduit means connecting said outlet with said low-pressure line and with said adjusting means; and a scavenger valve having a body, a valve member reciprocable in said body and having first and second ends respectively subjected to fluid pressure in said high- and low-pressure lines, and first and second prestressed springs reacting against said body and respectively bearing against said first and second ends of said valve member, said valve member being movable by pressurized fluid between a neutral position and at least one second position in which said scavenger valve allows the outflow of heated fluid from said low-pressure line, the bias of said springs upon said valve member being such that said valve member leaves said neutral position only when the fluid pressure in said high-pressure line exceeds said predetermined pressure.

3,846,983
HYDRAULIC FLUID RESERVOIR PRESSURIZATION ARRANGEMENT

Allan L. Freedy, Aurora, and Norman E. Risk, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 19, 1973, Ser. No. 416,827

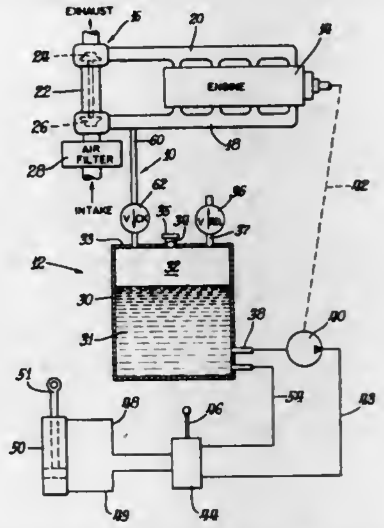
Int. Cl. F15b *1/06*

U.S. Cl. 60—478 **5 Claims**

1. A hydraulic fluid reservoir pressurization arrangement for a closed hydraulic system having a reservoir for containing a variable volume of hydraulic fluid below its full capacity so as to provide a variable air space above such hydraulic fluid comprising:

- an internal combustion engine having a forced air intake system providing a source of air under pressure; and

conduit means connecting said source of air under pressure with said variable air space in the reservoir to insure a continuous supply of hydraulic fluid to the system so as to avoid any cavitation forming interruptions in the flow of such fluid to the system.



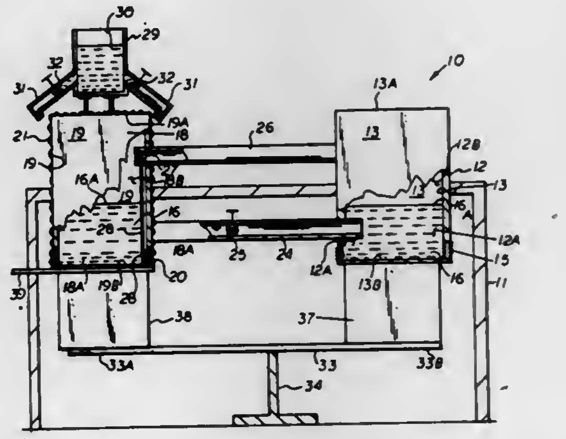
3,846,984
TEMPERATURE DIFFERENTIAL FLUID MOTOR

Israel Siegel, 351 W. 71st St., New York, N.Y. 10023

Filed Apr. 29, 1974, Ser. No. 464,823

Int. Cl. F01k *27/00;* **F03g** *7/06*

U.S. Cl. 60—509 **13 Claims**



1. A temperature differential fluid motor comprising at least one relatively warm and at least one relatively cold chamber, inside of said chambers being sealed from the external environment,

- a supply of liquid disposed in said chambers dividing the chambers into a vapor chamber portion and a liquid chamber portion,
- at least one of said chambers having a moveable portion adapted to be displaced from an initial position when the vapor pressure within said chamber reaches one predetermined limit,
- means for returning said moveable portion to its initial position when vapor pressure in said chamber reaches another predetermined limit,
- vapor connecting means for placing the respective vapor portions of cold and warm chambers into communication,
- vapor control means for controlling the flow of vapor between said cold and warm chamber to create periodic pressure differential between said chambers,
- said control means being operatively associated with said moveable portion of one of said chambers,
- liquid connecting means for placing the liquid portions of the respective cold and warm chambers into communication,
- liquid control means for controlling flow of liquid between said chambers,

means for obtaining a temperature differential between said chambers, and

a force transmission member connected to said moveable portion for translating the movement of said moving portion into useful work.

3,846,985
DEVICE FOR CONVERTING THERMAL ENERGY INTO MECHANICAL ENERGY

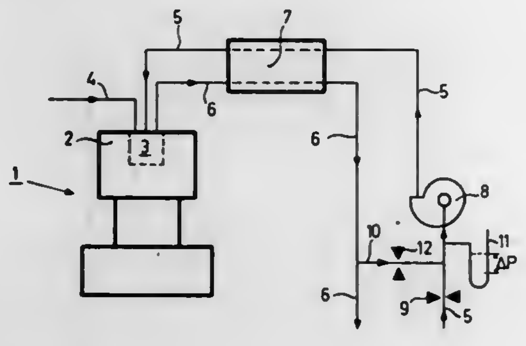
Albertus Peter Johannes Michels; Franciscus Wilhelmus Engelbert Gasseling, and Carl Fridriech Johan Findhammer, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,471

Claims priority, application Netherlands, Apr. 29, 1972, 7205878

Int. Cl. F03g *7/06;* **F25b** *9/00*

U.S. Cl. 60—521 **9 Claims**



1. In an apparatus for converting thermal energy into mechanical energy, and operable with a source of fuel and a source of air, and including a combustion chamber, a first duct for flowing air from said air source to said chamber and a second duct for discharging flue gas from said chamber, and a third return flow duct for flowing some flue gas from the second duct to the first duct, the improvement in combination therewith of flow control means comprising first restrictor means in said first duct, second restrictor means in said third duct, said third duct having a discharge end feeding said first duct at a point therein intermediate the first restrictor means and the chamber, said first restrictor means permitting air flow directly proportional to the pressure difference across said first restrictor, and said second restrictor means permitting flue gas flow directly proportional to the square root of the pressure difference across said second restrictor.

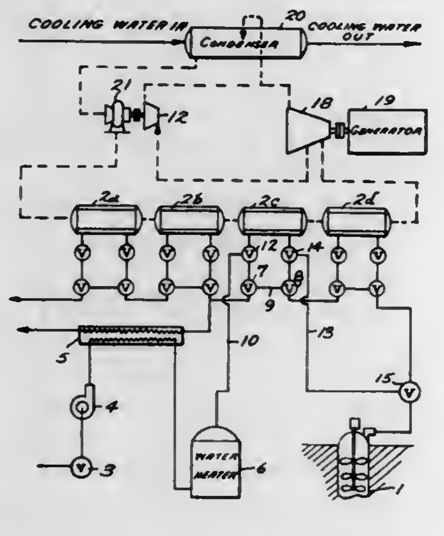
3,846,986
GEOTHERMAL PLANT CLEANING SYSTEM

James Hilbert Anderson, 1615 Hillock Ln., York, Pa. 17403

Filed Aug. 27, 1971, Ser. No. 175,679

Int. Cl. F01b *7/00*

U.S. Cl. 60—641 **10 Claims**



1. In a system for utilizing the heat obtainable from a source of geothermal hot water of the type including at least one heat exchanger having internal walls through which heat is transmitted from geothermal hot water to another fluid as said geothermal hot water and said other fluid flow through said heat exchanger, the improved means for removing mineral material deposited from said geothermal hot water on surfaces of said internal walls comprising means for heating a body of water of lower mineral content than the geothermal hot water to a temperature at least equal to the temperature of the geothermal hot water flowing through said heat exchanger, said heating means including heat exchange means for passing the substantially mineral-free water in heat exchange relationship with geothermal hot water, and valve and conduit means for replacing the geothermal hot water flowing through said heat exchanger with heated water from said heating means whereby said heated water dissolves mineral material from said surfaces of said internal walls.

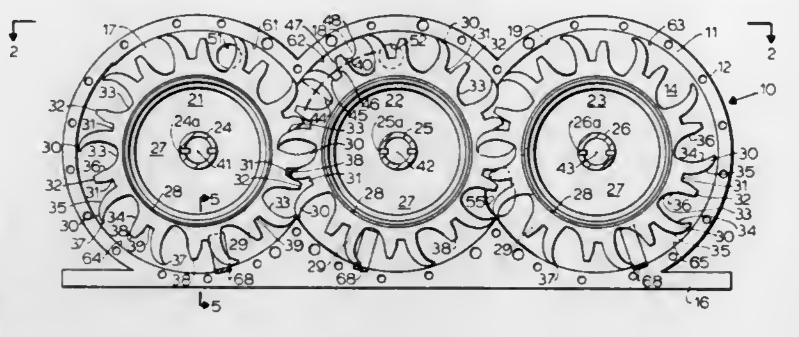
3,846,987
ROTARY FLUID MOTOR

Guy N. Baldwin, 20 Circle Way, Mill Valley, Calif. 94941

Filed Oct. 16, 1973, Ser. No. 406,947

Int. Cl. F01k *7/02*

U.S. Cl. 60—690 **9 Claims**



1. A rotary fluid motor including in combination:

a hollow casing providing an interior chamber shaped substantially as first, second, and third successive and intersecting cylindrical chambers with flat side walls,

first, second, and third identical, interengaging generally cylindrical rotors, each in and aligned with the respective said cylinder, said rotors having lateral flat surfaces facing said side walls and being mounted in said casing for rotation about three respective spaced-apart, parallel, axes,

each said rotor having its periphery consisting of a series of peripheral projections and recesses providing for the interengagement of said rotors and comprising a serially repeated succession of identically spaced series of piston blade, gear recess, gear tooth, and piston-blade-receiving notch, whereby said rotors rotate together with said second rotor rotating in the opposite direction from said first and third rotors, with each blade of each rotor engaging a notch of another rotor, and vice versa, during each revolution, and each gear tooth of each rotor engaging a gear recess of another rotor, and vice versa, during each revolution, to provide said interengagement and to synchronize the rotary movement of said rotors,

each said notch comprising two cylindrical concave arcs meeting at a vertex, one said arc defining one edge of a blade, the other said arc defining one edge of a said gear tooth, each said gear recess being partially defined by another edge of its adjacent said gear tooth and by a second edge of its adjacent said blade, said second edge being a cylindrical convex arc which during engagement with the notch of its adjacent rotor is in sliding contact therewith,

said casing having a first inlet port at the intersection of said first and second chambers offset from the plane joining the axes of said first and second rotors, a second inlet port at the intersection of said second and third chambers offset from the plane joining the axes of said second and third rotors and on the opposite side from said first inlet port,

said casing having first and second outlet ports from said first and second chambers respectively, each at a rotational distance less than 90° beyond said first inlet port, first conduit means connecting said first and second outlet ports to said second inlet port,

said casing having a third outlet port lying rotationally beyond said first outlet port from said first chamber, and at all times separated therefrom by at least one said blade, a fourth outlet port from said second chamber rotationally between said second outlet port and said second inlet port, and at all times separated therefrom by at least one said blade, a fifth outlet port from said second chamber rotationally beyond said second inlet port, and a sixth outlet port from said third chamber rotationally beyond said second inlet port, and

second conduit means for outlet gases connected to said third, fourth, fifth, and sixth outlet ports.

3,846,988
SWELL DAMPER

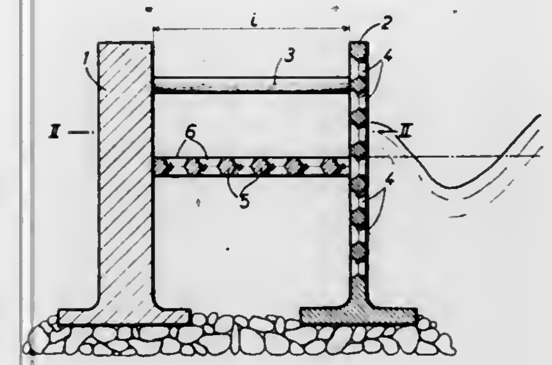
Jacques Edouard Lamy, Fontenay-aux-Roses, France, assignor to C. G. Doris (Compagnie Generale pour les Development Operationnels des Richesses Sous-Marines), Paris, France

Filed May 9, 1973, Ser. No. 358,500

Claims priority, application France, May 10, 1972, 72.16869

Int. Cl. E02b *3/06*

U.S. Cl. 61—3 **20 Claims**



1. A swell-damping device for protecting a region against a swell developing in a volume of water, said device comprising means for establishing between said region and said volume of water in which the swell develops, a curtain having its base immersed in said volume of water and a pluralityy of ducts distributed over the surface of the curtain in order to pass the water through the curtain, said ducts having a profile flared towards said region with a sufficiently steep gradient of section for the water flowing from said volume of water into said region to break away from the wall of the duct and produce eddies which dissipate the water energy.

3,846,989
INSULATED EMBANKMENT DESIGN TECHNIQUES

Glenn R. Burt, Deer Park, Tex.; Albert C. Condo, Newton Sq., Pa., and George R. Knight, College, Alaska, assignors to Atlantic Richfield Company, New York, N.Y.

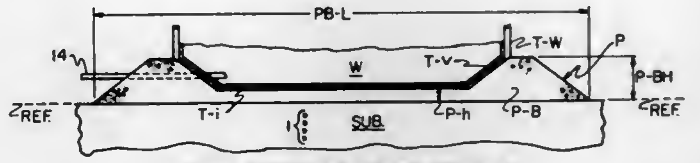
Filed July 10, 1972, Ser. No. 270,359

Int. Cl. E02d *3/00;*

U.S. Cl. 61—.5 **12 Claims**

1. A method which permits the long term continuous use of a heated liquid storage reservoir in permafrost regions said reservoir being supported by frozen terrain and being thermally insulated from said terrain by a thermal barrier comprised of a layer of synthetic thermal insulation, said method comprising the steps of:

a. Storing heated liquid in the reservoir until the thaw front resulting from the transmission of heat from the heated liquid downwardly through the frozen terrain extends to a predetermined depth,



TYPICAL RESERVOIR CROSS SECTION

b. Removing substantially all of the heated liquid from the reservoir, and

c. Permitting the terrain beneath the reservoir to refreeze.

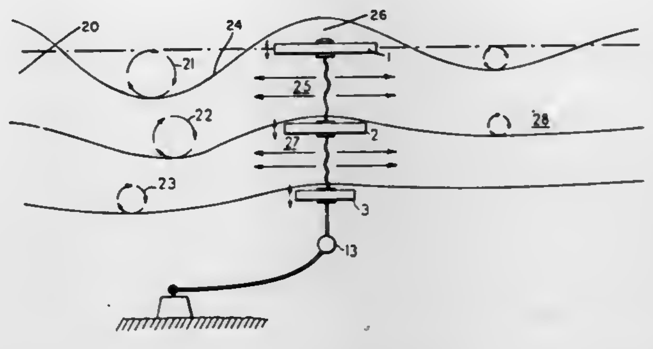
3,846,990
FLOATING WAVE BARRIER

Wallace William Bowley, Stafford Springs, Conn., assignor to William Barney Ritchie, Jr., Duxbury, Mass., a part interest

Continuation-in-part of Ser. No. 267,086, June 28, 1972, abandoned. This application May 7, 1973, Ser. No. 357,938

Int. Cl. E02b *3/04*

U.S. Cl. 61—5 **14 Claims**



1. A wave barrier comprising a plurality of buoyant substantially flat disk members each member being of relatively great horizontal extent compared to its thickness, said members being connected with flexible line and anchored in a configuration such that when placed in water, the members are located at different vertical levels along a common vertical axis, the mass and buoyancy of said members and the distance between said members being such as to provide vertical, out of phase motion of said members to exert a compression force on water between said members to reduce a vertical wave velocity component and increase a horizontal wave velocity component in both a landward and seaward direction without substantial contact of said members.

3,846,991
PILE DRIVING METHOD AND APPARATUS

Serge S. Wisotsky, c/o ORB Inc., 89 Bullard St., Sharon, Mass. 02067, assignor to ORB, Inc., Marion, Ohio

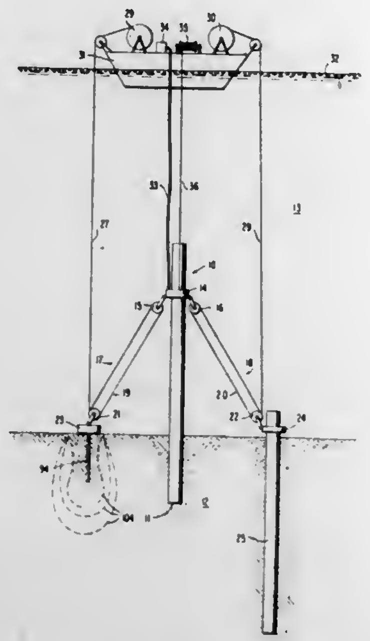
Continuation-in-part of Ser. No. 163,422, July 16, 1971, abandoned. This application June 30, 1972, Ser. No. 267,752

Int. Cl. E02d *7/00, 7/18, 7/20*

U.S. Cl. 61—53.5 **37 Claims**

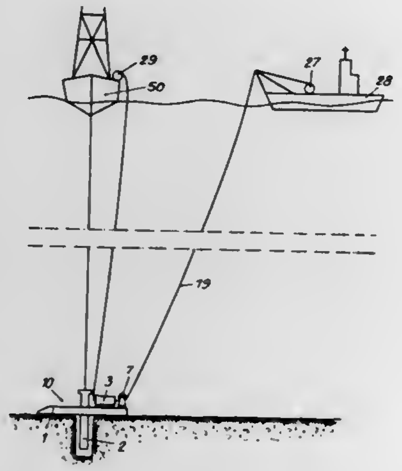
1. In a method of driving piles into soil with a vibratory or impulsive driving means adapted to subject the pile to repetitive vibrations or pulses for driving same, the improvement which comprises: subjecting the pile to a steadily applied, downwardly directed force which is at least 200% of the peak force generated by any such vibration, which substantially exceeds the incidental preload provided by the driving means and pile, and which is of sufficient magnitude to appreciably deflect the subsoil in which the pile is embedded for maintain-

ing said soil in a deformed and prestressed condition, and driving the pile by superimposing said vibrations or pulses upon said steadily applied force, thereby reducing the amount of available driving energy which would otherwise be lost in the reversible elastic deformation of the soil and pile.



3,846,992
SYSTEM OF CONNECTION OF A PIPELINE TO AN UNDERWATER PIPELINE AND A METHOD OF PUTTING IT INTO EFFECT

Jean A. Lliautaud, Paris, France, assignor to Subsea Equipment Associates Limited, Hamilton, Bermuda
Filed Apr. 5, 1973, Ser. No. 348,417
Claims priority, application France, Apr. 11, 1972, 72.12603
Int. Cl. F16l *1/00*
U.S. Cl. 61—72.3 **9 Claims**

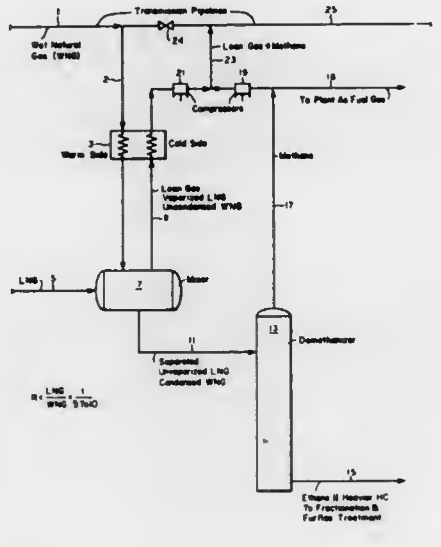


1. Apparatus for connecting an upwardly extending member of an underwater pipe system to the surface, said apparatus comprising:

1. a baseplate adapted to be anchored on the bottom of a body of water;
2. a reception and attachment device integrally connected to said baseplate, said reception and attachment device being shaped to engage a locking head to be recited;
3. a connection frame, the lower surface of which is shaped to conform to the upper surface of said baseplate;
4. a locking head mounted on said connection frame, said locking head being shaped to engage said reception and attachment device and to orient said connection frame with respect to said baseplate;
5. a guide and mating structure mounted on said connection frame, said guide and mating structure being shaped to surround an upwardly extending member of an underwater pipe system; and
6. means for bringing said locking head into engagement with said reception and attachment device, thereby fixing said connection frame on the upper surface of said baseplate.

3,846,993
CRYOGENIC EXTRACTION PROCESS FOR NATURAL GAS LIQUIDS

Bruce L. Bates, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Feb. 1, 1971, Ser. No. 111,330
Int. Cl. F25j *3/06, 3/02*
U.S. Cl. 62—23 **5 Claims**



1. A process for the extraction of ethane and heavier hydrocarbons from a wet natural gas containing methane, ethane and propane and the vaporization of a portion of a liquefied natural gas containing methane, ethane and propane, comprising:

passing a first stream of the liquefied natural gas and a second stream of the wet natural gas into a mixing zone so as to vaporize a portion of the liquefied natural gas and condense a portion of the wet natural gas;
removing from the mixing zone a third stream comprising the vaporized liquefied natural gas and the wet natural gas which is not condensed;
removing from the mixing zone a fourth stream comprising the condensed wet natural gas and the liquefied natural gas which is not vaporized;
passing the fourth stream to a demethanizer;
removing a fifth stream comprising methane from the demethanizer; and
removing a sixth stream from the demethanizer comprising hydrocarbons in the fourth stream heavier than methane.

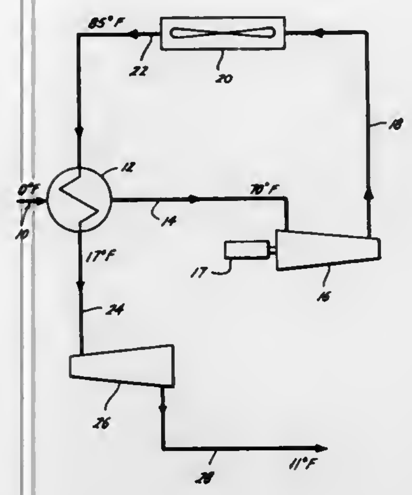
3,846,994
LOW TEMPERATURE NATURAL GAS TRANSMISSION

William M. Reid, 1766 Maux, Houston, Tex. 77043
Filed Nov. 5, 1973, Ser. No. 412,783
Int. Cl. F25b *9/02*
U.S. Cl. 62—87 **6 Claims**

1. A method for moving natural gas at low temperatures in a pipeline which comprises;

a. conducting the natural gas through a heat exchanger wherein heat is transferred with the cooled gas from step (c);
b. compressing the natural gas from step (a) to a pressure greater than the pressure of the pipeline at the point at which the gas is returned thereto;
c. cooling the compressed gas by rejecting heat to the surroundings;

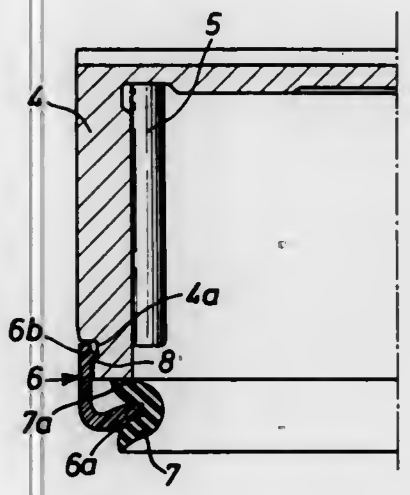
d. conducting the cooled gas to the heat exchanger wherein heat is transferred with the gas entering from the pipeline; and



e. returning the gas to the pipeline at pipeline pressure and a temperature below that which would damage the environment.

3,846,995
SEALING DEVICE FOR USE IN UNIVERSAL JOINTS

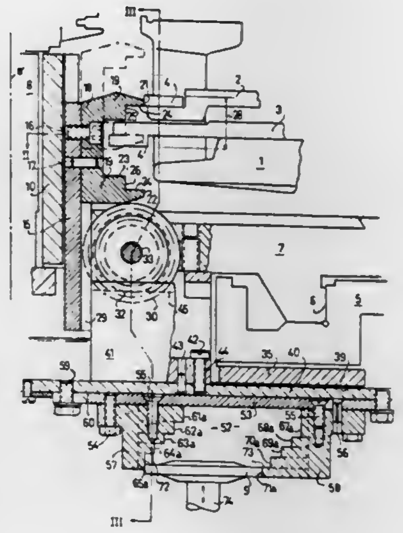
Jacques Manglavacchi, Chatou, France, assignor to Societe Anonyme: Glaenzer Spicer, Poissy, France
Filed Feb. 26, 1973, Ser. No. 335,891
Claims priority, application France, May 5, 1972, 72.16142
Int. Cl. F16d *3/26*
U.S. Cl. 64—17 R **4 Claims**



1. A sealing device for use in universal joints of the type including a pair of yokes, a cross piece joining the yokes, the arms of the cross piece being mounted for rotation in bearings arranged in the yokes, comprising a lipped rubber gasket for sealing each bearing, an annular clip for retaining each gasket in position on its associated bearing, each said clip being secured to its associated bearing coaxial to the associated arm and having an inner circular flange engaging the lipped gasket, said annular clip being generally L-shaped in cross-section, and wherein the rubber gasket straddles the inner flange formed as the horizontal leg of the L-shaped section, the other vertical leg of the L-shaped section carrying securing means for cooperating with complementary securing means on the bearing to position each clip and rubber gasket axially relative to the associated bearing, the portion of said clip joining the legs of the L-shaped section being slightly bulged out for facilitating the positioning of the lip of the gasket to be gripped between said clip and said one end of the bearing.

3,846,996
MECHANISM FOR ACTUATING PATTERN OR CONTROL DRUMS IN KNITTING MACHINES, AND KNITTING MACHINES INCORPORATING THE SAME

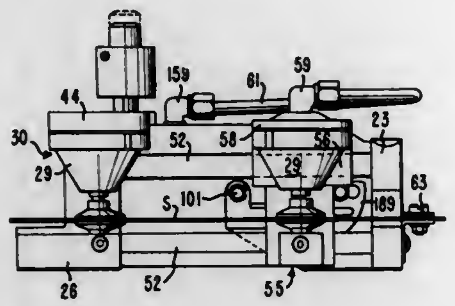
Jorge Rectoret Comas, Calle Santalo, 96, Barcelona, Spain
Filed June 1, 1972, Ser. No. 258,490
Claims priority, application Spain, June 8, 1971, 392471
Int. Cl. D04b *15/74*
U.S. Cl. 66—50 B **10 Claims**



1. In a circular knitting machine, pattern drum means, a pair of turning means operatively connected with said pattern drum means for respectively turning the latter in one direction or the other, a pair of cam follower means respectively connected operatively with said pair of turning means for respectively actuating the latter to turn said drum means in one direction or the other, rotary driven cam means supported for rotary movement about an axis of a cylinder of the knitting machine, said rotary driven cam means having a pair of cam portions for respectively cooperating with said pair of cam follower means to transmit movement through one or the other of said cam follower means to one or the other of said turning means for turning the drum means in one direction or the other, said pair of cam portions of said driven cam means being fixed to each other for rotation about the cylinder axis as a single unit and having with respect to each other a space which is too great for possible simultaneous actuation of both of said cam follower means, rotary driving cam means for assuming a plurality of positions to be respectively transmitted to said driven cam means for controlling the operation of the pair of cam follower means thereby, said rotary driving cam means also being supported for rotary movement about the axis of the cylinder of the knitting machine, transmission means extending between and operatively connected with said driving and driven cam means for transmitting movement of said driving cam means to said driven cam means so that the latter will assume a position determined by the position of said driving cam means, positioning means situated in the path of rotary movement of said driving cam means for engaging and positioning the latter, said positioning means itself having a plurality of positions and said driving cam means responding to the position of said positioning means for providing through said transmission means a corresponding position of said driven cam means, information means containing data for controlling said pattern drum means, and detecting means cooperating with said information means and operatively connected with said positioning means for detecting the information in said information means and for responding to the latter information to displace said positioning means to a position corresponding to the detected information.

3,846,997
STOCK FEEDER

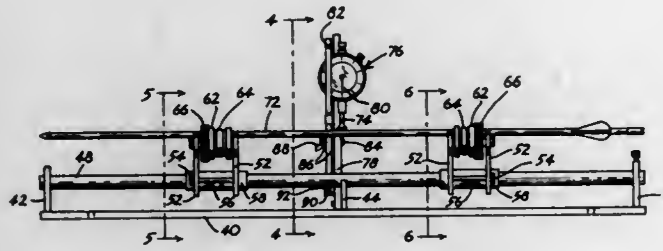
Arthur F. Leis, c/o A. F. Leis Co., Inc., 4316 Webster St., Dayton, Ohio 45414
Filed July 23, 1973, Ser. No. 381,502
Int. Cl. B21d *43/10*
U.S. Cl. 72—6 **15 Claims**



1. A device for feeding stock in precise step-by-step increments into a metal working press or the like, comprising a first fluid actuated stock gripper and a second fluid actuated stock gripper, means supporting said second stock gripper for reciprocating movement between predetermined limits relative to said first stock gripper, a rotatably supported shaft, a fluid actuator connected to rotate said shaft, means for connecting said shaft to said second stock gripper to reciprocate said second stock gripper in response to rotation of said shaft to effect gradual acceleration and deceleration of said second stock gripper adjacent said limits, and fluid control means for operating said fluid actuator in response to a predetermined pressure in at least said second stock gripper.

3,846,998
MACHINE FOR TESTING AND STRAIGHTENING ARROWS

William E. Lock, 11780 Michael Rd., Central Point, Oreg. 97501
Filed Aug. 9, 1973, Ser. No. 387,124
Int. Cl. B21d *3/16*
U.S. Cl. 72—34 **6 Claims**



1. An arrow testing and straightening machine for testing straightness and directly, manually correcting deviations from straightness of arrow shafts composed of freely bendable, metallic tubing, comprising, in combination,

a. a stand located at a central deflection detecting and straightening station;
b. a fixed, straight, horizontal trackway constructed and arranged to extend at opposite sides of the deflection detecting and straightening station;
c. a pair of cooperative arrow supporting carriages mounted on said trackway at opposite sides of said station with freedom for individual adjustment along the trackway toward and from said central station, each of said carriages including a pair of side by side rollers adapted jointly to support an arrow shaft segment between them, and means constructed and arranged to operate the rollers of each carriage in unison for turning a roller supported arrow;
d. a sensitive, deflection detecting, magnifying and indicating instrument of the dial type mounted on the stand and comprising a plunger, spring pressed downward to bear downward against the upper side of the arrow shaft being tested, and
e. a manually operable deflection correcting means at said station, engageable with the upper side of the carriage-bridging arrow shaft, and movable freely in a downward direction to deform the arrow shaft beyond its elastic limit, the space beneath the carriage-bridging arrow shaft being free of obstruction so that the arrow shaft can be freely deformed to any extent dictated by the judgment of the operator.

3,846,999
FORMING ROLLS

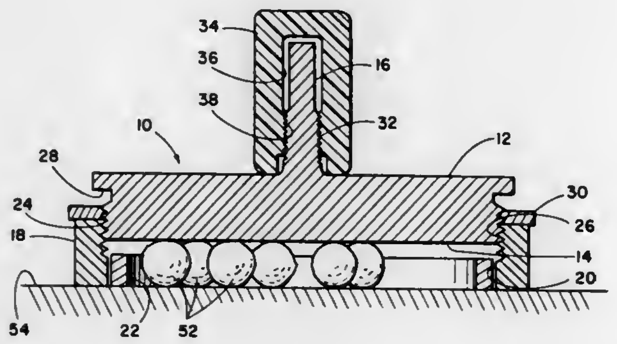
Gordon Sidney Connell, Cheltenham, England, assignor to Formflo Limited, Gloucestershire, England
Filed Nov. 22, 1972, Ser. No. 308,871
Claims priority, application Great Britain, Nov. 24, 1971, 54644/71
Int. Cl. B21h *5/02*
U.S. Cl. 72—68 **10 Claims**

1. A method of preparing a forming roll for use in preparing gears by roll forming workpieces comprising the steps of:

a. preparing a reference gear by machining operations not including rolling, having teeth whose profile corresponds accurately to the desired profile of said gears,
b. rolling said reference gear against a blank of material softer than the material of said reference gear to shape in said blank teeth having a modified profile, and
c. hardening said blank to give said forming roll which, when used to roll form said gears from said workpieces, will shape in said workpieces teeth corresponding accurately to said desired profile.

3,847,000
BALL SPRUE SWAGE METHOD AND MEANS

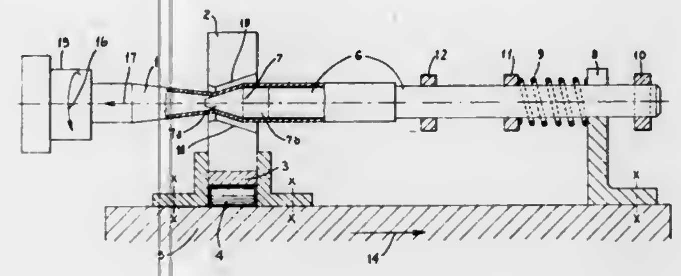
Gilbert B. Teague, 2111 W. 44th, Tulsa, Okla. 74104
Filed Apr. 23, 1973, Ser. No. 353,595
Int. Cl. B21h *1/14*
U.S. Cl. 72—89 **6 Claims**



1. A ball sprue swage device for use in combination with a flat substantially rigid surface and comprising a cylindrical body having a flat face at one end thereof, a sleeve member carried by the said body and extending around the outer periphery of the said body to form a wall around the outer periphery of the flat face, the depth of said wall being substantially equal to the diameter of the ball to be swaged, a ball retainer ring having a thickness less than the depth of the wall of the sleeve member and having an outer diameter less than the inner diameter of the sleeve member whereby the balls having sprues thereon may be placed within the retainer ring on the rigid surface, the body and sleeve member being placed over the retainer ring and balls, the said device being moved in a revolving circular pattern thereby causing the said balls to be rounded and the sprues thereon removed.

3,847,001
DEVICE FOR CONICAL TAPERING OF TUBES OF CIRCULAR CROSS SECTION

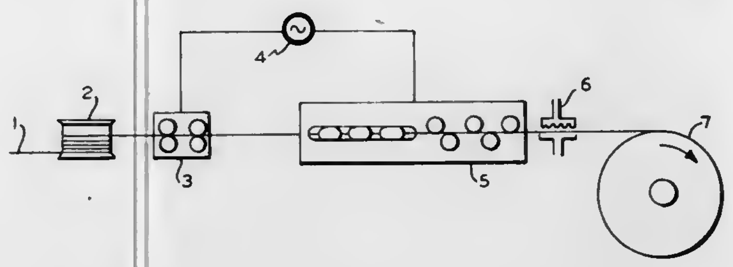
Eberhard Thamasett, Reutti, Germany, assignor to Wieland-Werke AG, Ulm, Germany
Filed Apr. 6, 1973, Ser. No. 348,760
Claims priority, application Germany, Apr. 12, 1972, 2217505
Int. Cl. B21d *51/10*
U.S. Cl. 72—96 **8 Claims**



1. In a mandrel support device for providing a conical taper on a tube having a circular cross section during a simultaneously occurring continuous rotation of said tube about a longitudinal axis and an axial feed thereof, a pair of tools arranged in one plane perpendicular to said longitudinal axis and which can be fed radially of said longitudinal axis, at least one of said tools being composed of two operating surfaces which are fixedly connected with one another and defining an angle with said longitudinal axis of said tool, means defining a mandrel having guide means which is adjustable together with said tools relative to said tubes in said axial direction and supports said mandrel for movement with respect to said tools, said mandrel having an approximately conically tapered end at its free end located between said tools, the improvement comprising resilient means connected between said guide means and said mandrel for resiliently urging said mandrel toward said operating surfaces, said resilient means providing the only force for urging said mandrel toward said operating surfaces.

3,847,002
METHOD OF PRODUCING STEEL WIRE AND STRAND FOR PRE-STRESSED CONCRETE CONSTRUCTION

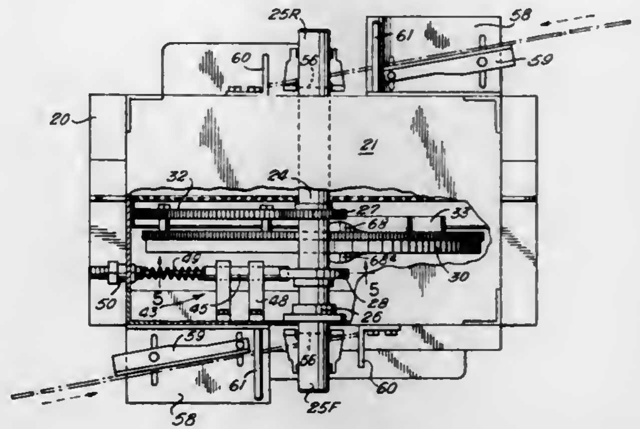
Akira Suzuki, Chibashi; Masaki Hagiwara, and Nobuhiro Teraoka, both of Tokyo, all of Japan, assignors to Suzuke Metal Industry Co., Ltd., Kitaku, Japan
Filed Dec. 29, 1972, Ser. No. 319,712
Claims priority, application Japan, June 13, 1972, 47-58177
Int. Cl. B21f *9/00*
U.S. Cl. 72—128 **7 Claims**



1. A method of producing steel wire and strand for pre-stressed concrete construction, having low relaxation value and excellent straightness, which comprises the steps of applying, in the ordinary low-temperature annealing range of 300° - 400°C, to cold drawn steel wire and strand composed thereof, containing 0.6 - 0.9 percent of carbon, a tension corresponding to 10 - 50 percent of the tensile strength of the cold drawn wire at room temperature and, simultaneously applying a bending stress so as to give 0.1 - 0.5 percent maximum surface strain.

3,847,003
APPARATUS FOR PRODUCING PIGTAILS ON HANGER WIRES

Otto W. Schaefer, 2838 Alan-A-Dale, Irving, Tex. 75061
Filed Apr. 1, 1974, Ser. No. 456,893
Int. Cl. B21f *3/027*
U.S. Cl. 72—134 **9 Claims**



1. Apparatus for producing hanger wires comprising a frame;

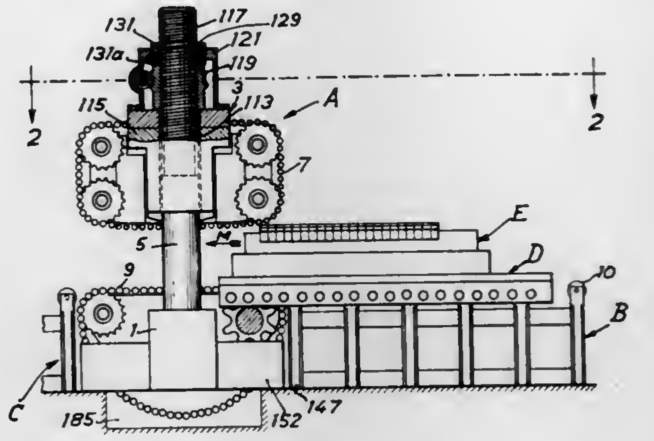
a rotatable shaft supported on said frame, having a cylindrical mandrel at one end provided with a diametral slot opening to its distal end; index means acting on said shaft for indexing said shaft, in the rest position, with the mandrel slot oriented in a preselected position; drive means for driving said shaft intermittently through selected numbers of revolutions;

guide means on said frame for guiding an elongated wire segment longitudinally into said mandrel slot transversely of said mandrel; stop means on said frame for limiting the longitudinal movement of said wire segment beyond said mandrel slot;

stripper means for stripping the hanger wire axially from said mandrel; and actuator means for effecting operation of said stripper means by said shaft drive means in timed relation with the intermittent drive of said shaft.

3,847,004
APPARATUS AND METHOD FOR APPLYING PRESSURE AND DIE AND METHOD FOR FORMING A PART

August R. Bringewald, Dix Hills, N.Y., assignor to Bringewald Process Corporation, Huntington, N.Y.
Filed Mar. 25, 1971, Ser. No. 128,085
Int. Cl. B21j *13/02*
U.S. Cl. 72—184 **14 Claims**



1. The combination comprising a pressure base, pressure means vertically spaced above said pressure base to define a

pressure zone, means for coveying work between said pressure base and said pressure means, one of the pressure base and said pressure means being inwardly inclined in the direction said work is conveyed so that pressure is gradually applied to said work, rollers for converting sliding friction into rolling friction as said work passes through said pressure zone, means for guiding said rollers as they pass under said pressure means, an auxiliary pressure unit adjustably mounted on said pressure means, and means for adjusting said guide means to compensate for movement between said pressure means and said auxiliary pressure unit.

3,847,005

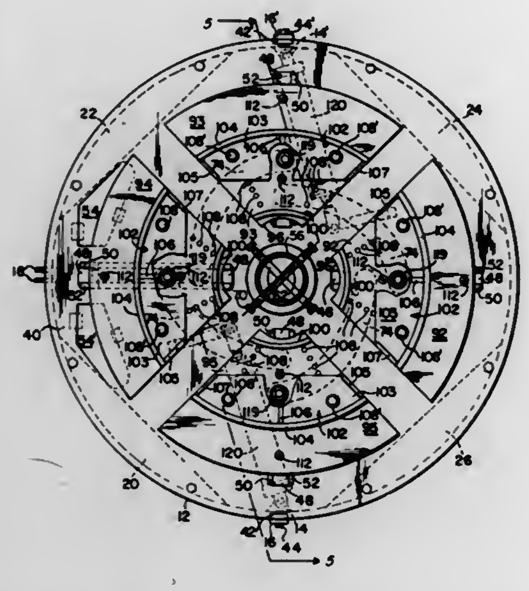
BELL WIRE EXPANDER

Joseph C. Criner, Marietta, Ga., assignor to Kyle Incorporated, Tucker, Ga.

Filed July 19, 1973, Ser. No. 380,595

Int. Cl. B21d *41/02*

U.S. Cl. 72—393 **16 Claims**



1. Apparatus for expanding a cylindrical body, comprising a plurality of shoes for engaging the inside surface of said body, said shoes being mounted on shoe mounting means, said shoe mounting means having a plurality of attachment means spaced at different radial positions to receive shoes of different sizes and secure said shoes of different sizes at different radial positions, whereby said apparatus may be adjusted to expand cylindrical bodies of different diameters, and driving means for moving said shoe mounting means outwardly to cause said shoes mounted on said shoe mounting means to expand a cylindrical body positioned about said apparatus.

3,847,006

METHOD AND APPARATUS FOR BENDING ARCHES FOR DOORWAYS AND THE LIKE

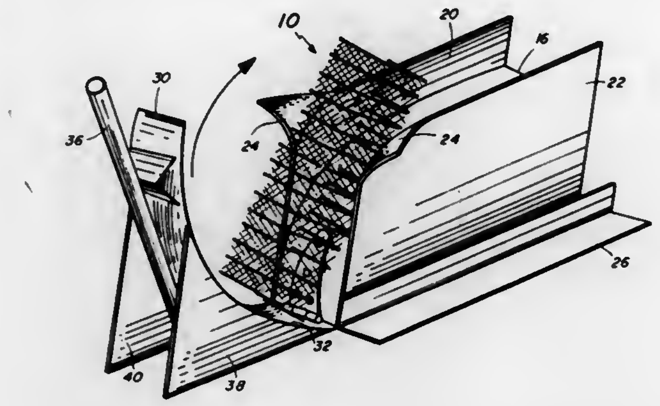
Herbert E. Rose, 140 Mandrake St., P.O. Box 15,105, Orlando, Fla. 32811

Filed Nov. 12, 1973, Ser. No. 414,796

Int. Cl. B21d *7/06*

U.S. Cl. 72—375 **10 Claims**

1. Arch bending apparatus comprising:
means for bending a flat workpiece into an elongated U-shaped piece;
a first member having a beveled surface;
a second member having a surface corresponding to said beveled surface of said first member and adapted to mate therewith; and
means for moving said beveled surface of said second member against said beveled surface of said first member to thereby bend an arch about said elongated U-shaped piece when positioned between said members.



3,847,007

VARIABLE THROW ROCKER

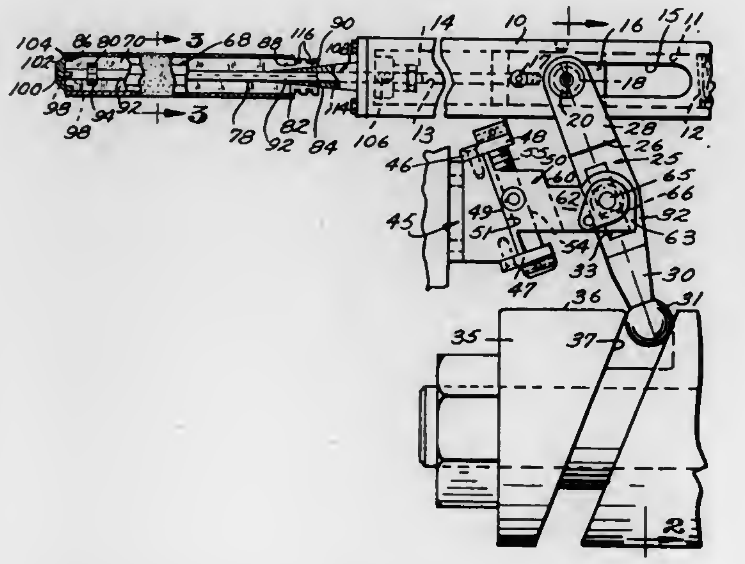
Thomas Duncan Brownbill, 4 Hamilton Rd., London N77, England

Continuation-in-part of Ser. No. 168,581, Aug. 3, 1971, abandoned. This application June 14, 1973, Ser. No. 369,880

Claims priority, application Great Britain, Aug. 11, 1970, 38663/70

Int. Cl. B21d *41/02*

U.S. Cl. 72—393 **8 Claims**



1. Actuating means for a mandrel assembly of the type having a plurality of discreet longitudinal segments which together constitute a segment assembly to define a generally cylindrical mandrel surface, hinge means provided towards one end of said assembly to permit each of said segments to hinge radially outwardly of the longitudinal axis of said cylindrical surface at least towards one end thereof, expansion means adapted to urge said segments outwardly and about said hinge means at said one end of the segment assembly so that the outer surface of the segments together define a taper and operating means for producing relative motion between said segments and said expansion means between an inoperative position in which the segments define a substantially cylindrical mandrel surface and an expanded position in which the segments define a taper surface, the operating means comprising a longitudinal rod adapted to draw said segment assembly onto said expansion means, said actuating means comprising: a rocker arm adapted to drive the rod, said arm having a first part and a second part, said first part being coupled to the rod and being adapted in response to actuation of said arm to execute a linear reciprocating motion from a datum position at an extremity of said motion; floating fulcrum means for said arm disposed intermediate said first and said second parts; and adjustment means for varying the position of said fulcrum with respect to the datum position of said first part and in a plane containing or parallel to the datum position of said first part and said second part of said arm, whereby the throw of the longitudinal rod can be varied by operation of said adjustment means while maintaining said one extremity of said motion of said first part and the rod connected thereto in said datum position for varying the taper imparted to the segment assembly in its expanded position.

3,847,008

HYDRAULIC FORGING PRESS

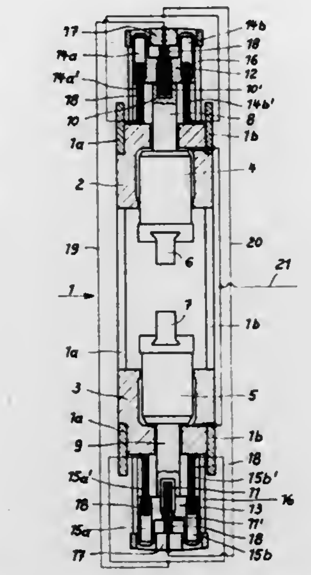
Heinz Schmoll, Huckeswagen, and Helmut Robra, Mulheim/-Ruhr, both of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed May 2, 1973, Ser. No. 356,452

Claims priority, application Germany, May 2, 1972, 2221341

Int. Cl. B21d *7/06*

U.S. Cl. 72—407 **5 Claims**



1. A horizontal hydraulic forging press comprising:
a press frame;
counter-acting first and second forging pistons, each said piston defining a step and having a rearwardly-extending shank;
forging tool holding means mounted on each of said forging pistons;
respective cylinders receiving said forging pistons, said steps being within respective said cylinders and said shanks projecting rearwardly out of respective said cylinders;
retraction means for retracting said forging pistons after a forging stroke;
at least two coupling piston-cylinder units connected to each said shank, at least one of said piston-cylinder units having a cylinder volume which increases with progressive motion of said shank in the forging direction and at least another one of said piston-cylinder units having a cylinder volume which decreases with progressive motion of said shank in the forging direction; and
duct means intercommunicating the at least one coupling piston-cylinder unit which is connected to said first forging piston and has said increasing cylinder volume with the at least one coupling piston-cylinder unit which is connected to said second forging piston and has said decreasing cylinder volume, and also intercommunicating the at least one coupling piston-cylinder unit which is connected to said second forging piston and has said increasing cylinder volume with the at least one coupling piston-cylinder unit which is connected to said first forging piston and has said decreasing cylinder volume, whereby said coupling piston-cylinder units couple together the forging movements of said forging pistons.

3,847,009

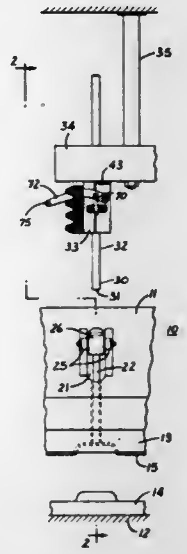
SAFE KNOCKOUT ARRANGEMENT FOR POWER PRESS

Henry R. Wiersma, Palos Heights, Ill., assignor to Danly Machine Corporation, Chicago, Ill.

Filed Jan. 24, 1974, Ser. No. 436,033

Int. Cl. B21d *45/00*

U.S. Cl. 72—427 **6 Claims**



1. In a power press the combination comprising a slide, a bolster, cooperating upper and lower dies on the slide and bolster and so constructed that the workpiece tends to cling to the upper die, means for reciprocating the slide relative to the bolster, a knockout bar extending horizontally through the slide and having provision for limited movement therein in the vertical direction, a knockout pin on the knockout bar extending downwardly into engagement with the workpiece and of such length that when the workpiece is deformed by operation of the dies the pin retreats upwardly to move the knockout bar to an upraised position, a support bracket above the slide, a clamp on the support bracket, a vertically extending knockout post in said clamp, said knockout post being arranged in the path of movement of the bar so that when the slide is raised the bar strikes the post forcing the bar relatively downwardly so that the pin thereon engages the workpiece to knock it out of the upper die, the clamp being in the form of a vertically oriented split sleeve having cooperating halves, the clamp having a plurality of springs, means including a throw-off lever coupled to the springs to define an active condition and a throw-off condition, the springs being so connected to the respective halves of the clamp that in the active condition the clamp applies to the post a predetermined clamping pressure which is out of the normal control of the press operator so as to develop a sufficiently high level of friction to insure reliable knockout of the workpiece but nonetheless providing an impositive connection with the post so that in the event of axial misadjustment of the post resulting in bottoming of the bar in the slide the post is free to yield endwise avoiding creation of destructive forces, the lever having provision for movement to the throw-off condition for temporarily and simultaneously disabling the springs accompanied by slight separation of the halves of the clamp thereby to permit free readjustment of the post in the clamp.

3,847,010

SMOOTH TAPE FORMATION OF TUBES

Bretislav Paul Zuber, Montreal, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

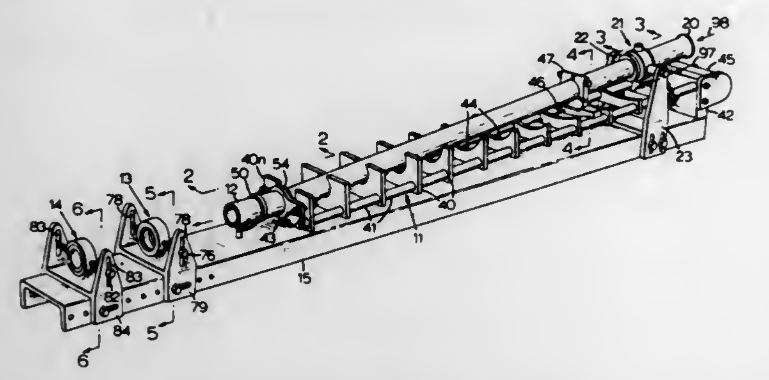
Division of Ser. No. 52,434, July 6, 1970, Pat. No. 3,738,141. This application Jan. 31, 1973, Ser. No. 328,351

Int. Cl. B21c *3/06*

U.S. Cl. 72—468 **4 Claims**

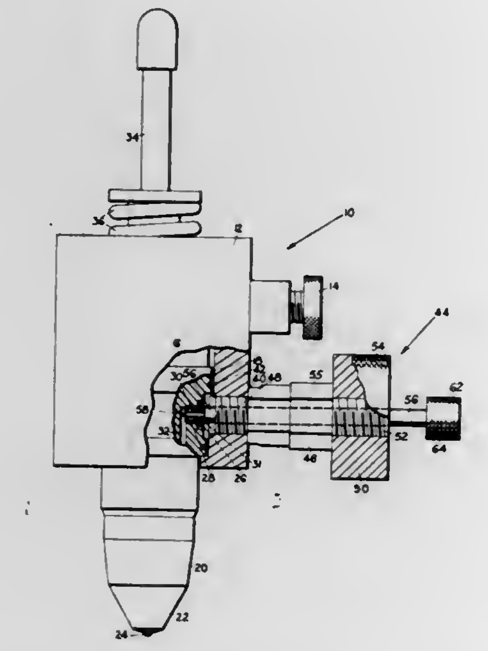
1. An overlapping die assembly for forming a longitudinal seam in a tube shaped from a continuous tape, comprising an annular casing adapted to be mounted for free flotation of the

assembly on the tube, an annular retainer mounted concentrically within the casing and freely rotatable axially therein, an annular die ring mounted concentrically within the retainer and split to form a step interrupting the inner circumferential surface thereof, means bearing radially against the die ring to adjust the depth of the step, and means to urge axial rotation of the retainer and die ring within the casing in a direction outwardly from the face of the step.



3,847,011
APPARATUS FOR ADJUSTING FUEL DELIVERY IN DIESEL INJECTORS

Carl G. Errett, 1068 River Rd., Sweet Home, Oreg. 97386
Filed July 23, 1973, Ser. No. 381,867
Int. Cl. B21d *41/00*
U.S. Cl. 72—477 6 Claims



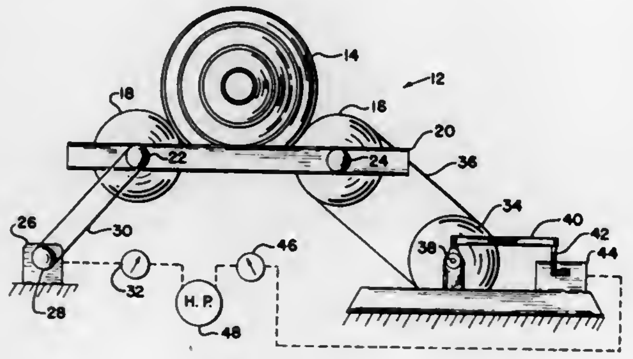
1. Apparatus for adjusting fuel delivery to a Diesel injector having an orifice plug and a fuel delivery orifice therethrough comprising a holder, means defining a bore through said holder, means on said holder arranged to secure it to the injector with the bore thereof in alignment with the orifice in the orifice plug, orifice enlarging means insertable into said bore arranged to engage said orifice and enlarge the latter, and peening means insertable into said bore arranged to peen one end of the orifice for reducing fuel delivery therethrough.

3,847,012
METHOD OF CONTROLLING AND MEASURING TIRE FORCES

Lawrence R. Sperberg, 6740 Fiesta Dr., El Paso, Tex. 79912
Continuation of Ser. No. 15,509, March 2, 1970, abandoned. This application Nov. 23, 1971, Ser. No. 201,587
Int. Cl. G01m *17/02*
U.S. Cl. 73—8 12 Claims

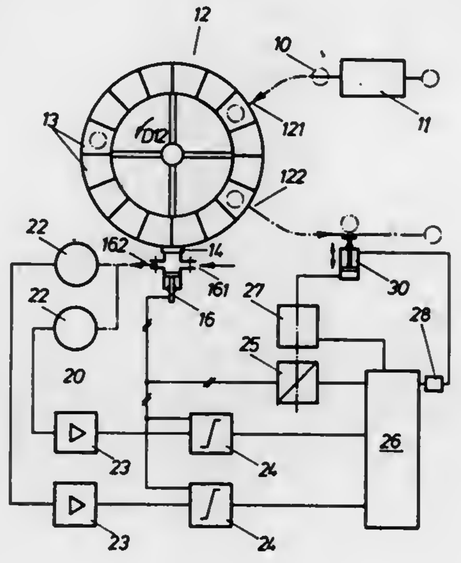
1. A method of measuring the work performed by a tire tread surface which is held against a moving surface while a portion of the tread compound is abraded away, comprising the steps of:

1. measuring the work performed by the tread surface of the tire as a function of vehicle power plant power output as the power plant causes the tire to rotate against a moving surface which exerts a controlled resisting force against the tire;
2. carrying out step (1) at various rotational velocities of the tire for each of a plurality of controlled resistive forces;
3. recording the vehicle power plant outputs with the work performed against the moving surface at the various velocities and controlled resistive forces to thereby provide a dictionary of stored terms which relates the work performed at the tire tread surface to the vehicle power output;
4. wearing away a portion of the tread surface by rotating the tire by means of said vehicle at a velocity corresponding to one of said various velocities and under a resistive force corresponding to one of said plurality of resistive forces, while recording the power plant output of the vehicle;
5. to thereby determine the work performed by said portion of the tire tread surface during step (4).



3,847,013
METHOD AND APPARATUS FOR LEAK TESTING OF FILLED-UP AND CLOSED CONTAINERS

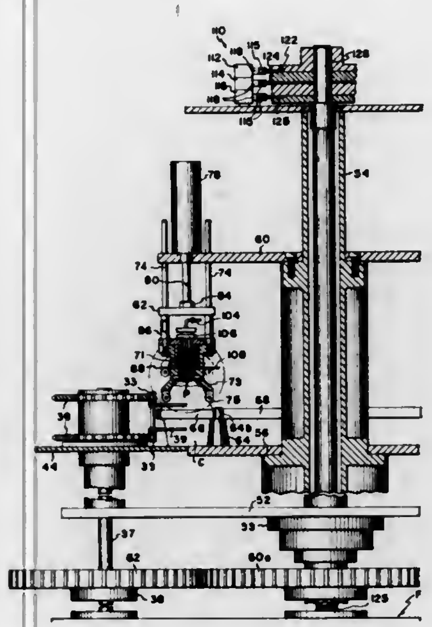
Hasso Luy, 2359 Henstedt Ulzburg 3, Am Heidberg 18b, Germany
Filed Oct. 11, 1972, Ser. No. 296,590
Claims priority, application Germany, Oct. 14, 1971, 2151211
Int. Cl. G01m *3/16*
U.S. Cl. 73—40.7 12 Claims



1. The method of testing filled-up and closed containers for leakage of a particular gas, particularly aerosol cans containing propellent gas, comprising the following steps: a) introducing pre-sealed containers with a particular gas under pressure therein one after another at an inlet station respectively into continuously moving separate chambers; b) thereafter hermetically closing and scavenging said chambers successively with a gas other than that to be tested; c) moving said chambers and said containers sealed therein along a predetermined length of path between said inlet station and an outlet station; d) removing gas samples of predetermined volume successively out of each hermetically closed chamber upstream of said outlet station; e) feeding said sample to a detector generating a signal correlated to the quantity of particular gas detected; f) storing at least said signals surpassing a threshold value correlated to respective leaky containers; g) discharging said containers from said chambers at said outlet station; h) thereafter removing only said respective leaky containers in dependency upon the correlated stored signals surpassing the threshold value; i) and thereafter extinguishing the stored signals.

3,847,014
ENCLOSURE LEAK TESTER AND METHOD

Robert J. Mistarz, North Brook, Ill., assignor to Koehring Company, Milwaukee, Wis.
Filed Nov. 13, 1972, Ser. No. 306,330
Int. Cl. G01m *3/34*
U.S. Cl. 73—49.3 21 Claims



1. A method of leak testing a fluid-filled, resilient container having a resiliently flexible container cap sealing said container comprising the steps of:

deforming a portion of the container and said cap inwardly of said container to decrease the volumetric capacity of the container and increase the pressure in the container so that fluid in the container will be forced through any unsealed openings in the container;

releasing the deforming force on said cap to permit the cap to return to its undeformed position while maintaining the deforming force on said portion of said container; and

sensing whether or not the cap returns to its undeformed position.

3,847,015
DISPLACEMENT MEASURING AND RECORDING APPARATUS

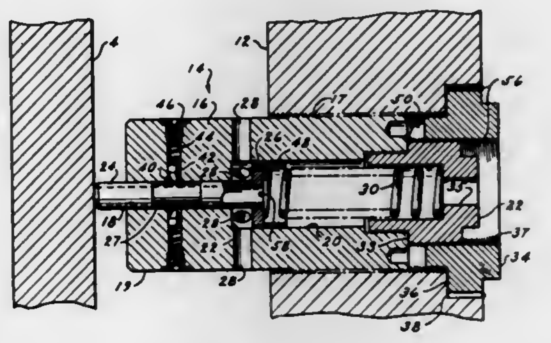
Albert Joseph Blatter, 14 Kelsey Pl., Bloomfield, Conn. 06095
Filed Mar. 13, 1972, Ser. No. 234,286
Int. Cl. G01n *29/00*
U.S. Cl. 73—70 5 Claims

1. Apparatus for measuring and recording the amplitude of the relative movement between a first object and a second object spatially disposed with respect to the first object comprising:

a. a housing attached to said first object and having a continuous passage therethrough defined by a first bore section and a second bore section larger in cross section than said first bore section, the transition between said first and second bores defining a shoulder interior of said housing, said housing having a second passageway generally perpendicular to said first passageway and extending from an outside wall thereof to the interior of said first bore section;

b. a follower member slidably positioned in and extending through said first bore section, said follower having a first end extending from said housing to engage said second object, the other end of said follower terminating within said second bore section and having an enlarged portion thereof to engage said shoulder;

c. a first spring means disposed within said second bore section and engaging said enlarged portion of said follower member for urging said follower into engagement with said second object;



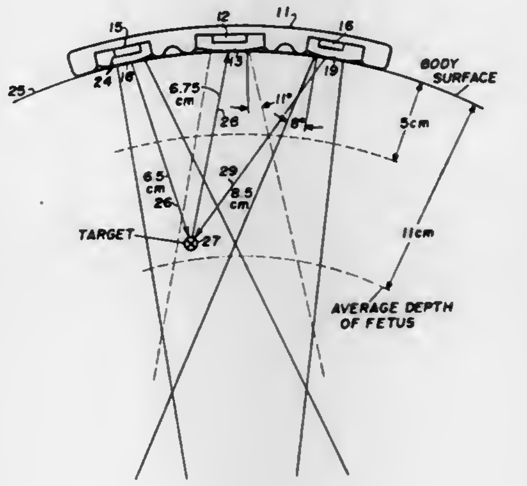
d. removable retaining means disposed in the end of said housing containing said second bore section to confine said first spring means within said bore;

e. scribe means slidably positioned within said second passageway having a pointed end directed toward the interior of said housing to engage a side of said follower member, said means being made from a material harder than that from which said follower is made; and

f. a second spring means disposed within said second passageway for urging the pointed end of said marker into engagement with said follower.

3,847,016
ULTRASONIC TRANSDUCER ASSEMBLY

Janis Gunars Ziedonis, Cranbury, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Dec. 8, 1971, Ser. No. 206,012
Int. Cl. G01n *29/00*; A61b *10/00*
U.S. Cl. 73—71.5 U 10 Claims

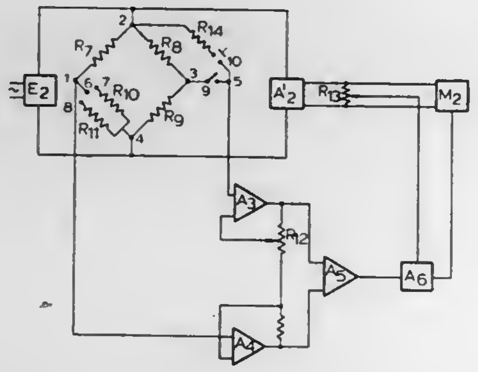


1. An ultrasonic multiple element transducer assembly for use particularly in patient monitoring, comprising:

a. A base of substantially flattened cloverleaf type configuration and homogeneous, flexible material composition, having a center area with at least three arms extending outwardly therefrom, the arrangement of each of said arms being such as to be independently flexible relative to each other and to the center area with each arm having proximate said center area narrower width and thickness dimensions than the outer arm area and said center area, for enabling the assembly to conform to varying body curvatures, said base being constructed so as to virtually eliminate cross-coupling of ultrasonic energy therethrough between the center area and the arms;
b. ultrasonic transmitter means provided proximate the free end of each of said arms, said transmitter means being arranged and including lens means for providing overlapping direct beam illumination of a predetermined volume of the interior of the patient's body intended to be monitored; and
c. ultrasonic receiver means provided at said center area and including lens means arranged to provide illumination of a substantially greater percentage of the portion of the patient intended to be monitored than that provided by the said transmitter means associated with any of said arms, for enabling detection by said receiver means of ultrasonic energy from whichever of said transmitter means is illuminating the portion of the patient's body intended to be monitored at any time.

3,847,017
STRAIN MEASURING SYSTEM

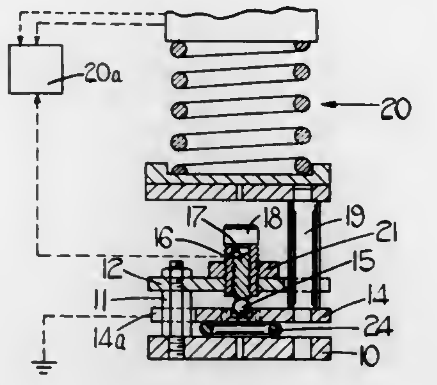
Jack Watts, Whitley Bay, England, assignor to Welwyn Electric Limited, Bedlington, England
Filed Feb. 21, 1973, Ser. No. 334,253
Claims priority, application Great Britain, Mar. 20, 1972, 12824/72; Mar. 24, 1972, 14070/72
Int. Cl. G01b *7/16*
U.S. Cl. 73—88.5 R **9 Claims**



1. A measuring device comprising:
a. a Wheatstone bridge containing at least one resistance strain gauge adapted to produce an output voltage corresponding to unbalance in the bridge due to the effect of strain on the gauge;
b. means for providing a DC voltage to the bridge;
c. means for sensing the DC voltage applied to the bridge and producing a reference voltage therefrom;
d. means for amplifying said output voltage;
e. means for calibrating the device for different strain gauges by varying the gain in said amplifying means;
f. means for indicating the ratio between the output voltage and the reference voltage; and
g. means for compensating for bridge unbalance by summing the output voltage and a balance voltage derived from said reference voltage.

3,847,018
APPARATUS FOR TESTING THE DEFORMATION UNDER LOAD OF RUBBER OR OTHER ELASTICALLY DEFORMABLE MATERIALS

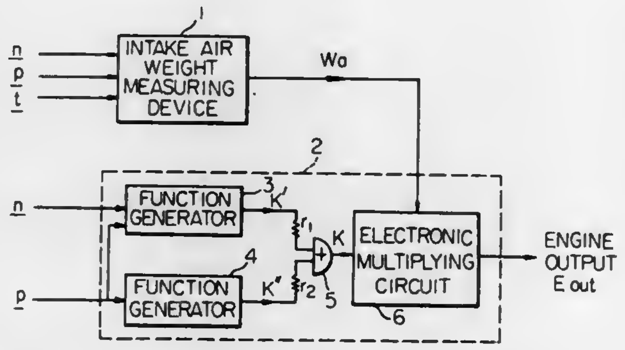
Michael William Aston, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed July 10, 1973, Ser. No. 377,916
Int. Cl. G01n *3/08*
U.S. Cl. 73—94 **9 Claims**



1. Apparatus for testing the deformation under load of rubber or other elastically deformable materials, comprising, in combination, a base for supporting the specimen, a pressure plate arranged to bear against the specimen supported on the base, an electrically conductive contact piece upstanding from the centre of the pressure plate, a clamping plate connected to the base, screw means whereby a load is, in use, applied from the clamping plate through the contact piece and pressure plate to a specimen on the base, load applying means arranged to bear on the pressure plate, and load measuring apparatus connected to said load applying means, the said screw means comprising a bush which is axially adjustable with respect to said clamping plate and a plug threadedly engaged within the bush, the said plug having an abutment which is engageable with the sleeve to locate the plug axially with respect to the bush, the arrangement being such that when the load applied by said load applying means exceeds the load applied from the clamping plate, the contact piece will be removed from contact with the clamping plate to break an electric connection therewith.

3,847,019
ENGINE OUTPUT MEASURING DEVICE

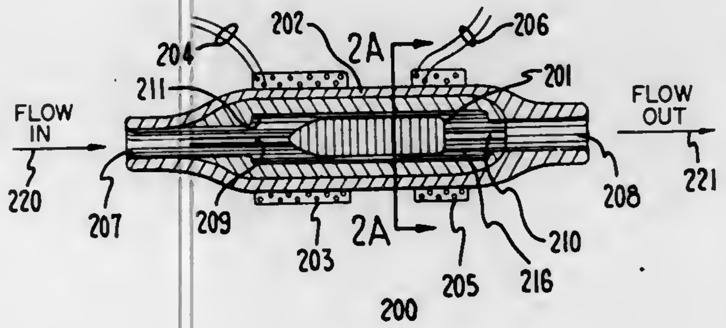
Kenji Masaki, and Shigeo Aono, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan
Filed May 25, 1973, Ser. No. 363,899
Claims priority, application Japan, May 26, 1972, 47-52345
Int. Cl. G01m *15/00*
U.S. Cl. 73—117.3 **4 Claims**



1. An electronic device for electronically measuring an output of an engine with an intake manifold having an engine speed sensor responsive to engine speed to produce an electrical engine speed analog signal representing prevailing value of engine speed, an intake manifold vacuum sensor responsive to intake manifold vacuum to produce an electrical intake manifold vacuum analog signal representing prevailing value of intake manifold vacuum, and an intake air weight measuring device for electronically measuring the weight of intake air drawn into the engine to produce an electrical functional signal representing the weight of intake air, comprising:
first electronic computing means responsive to said electrical analog signals from the engine speed sensor and the intake manifold vacuum sensor to produce an electrical functional signal representing a proportional constant dependent on the weight of intake air and the output of the engine; and
second electronic computing means for multiplying said electrical functional signal from said first computing means by said electrical functional signal from the intake air weight measuring device to thereby produce an electrical output signal proportional to the variation of the engine output.

3,847,020
FLOW METER

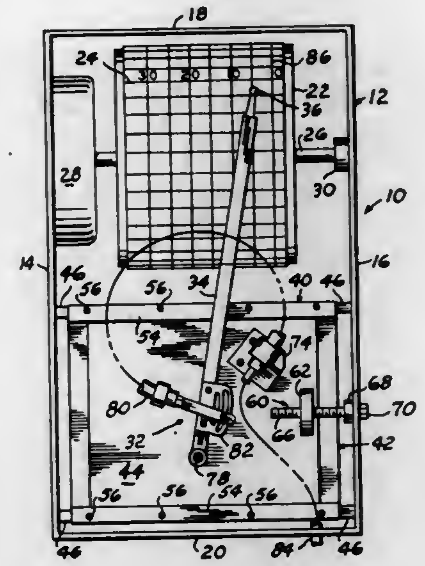
John Jurschak, 825 Casozza Dr., Reno, Nev. 89502
Filed Jan. 26, 1973, Ser. No. 327,079
Int. Cl. G01f *1/00*
U.S. Cl. 73—228 **11 Claims**



1. A flow meter comprising:
a solenoidal transducer for installation in a conduit in which flow occurs in a predetermined direction from upstream to downstream, said transducer including a substantially non-magnetic housing defining an elongated chamber, at least a proportionate amount of said flow being through said chamber, a magnetically responsive armature disposed in said chamber for reciprocating movement in line with the chamber flow, dynamic forces being exerted on said armature as a result of its interaction with said chamber flow, said chamber including mechanical means to limit armature movement in at least the downstream direction, inductive coil means disposed adjacent said chamber and including said armature in the magnetic circuit thereof for applying a force thereon effective to urge said armature in the direction opposite of said chamber flow, armature movement causing a parametric change in said coil means;
means electrically coupled to said coil means for alternately energizing and de-energizing said transducer, thereby producing reciprocation of said armature;
measurement means electrically coupled to said coil means for providing a signal proportional to the currents thereof, and,
sensing means for providing a signal manifesting said parametric changes; and
computing means responsive to said coil current and parametric change signals wherefrom the rate of flow in said conduit is obtained.

3,847,021
RECORDER SLIDING BASE ASSEMBLY

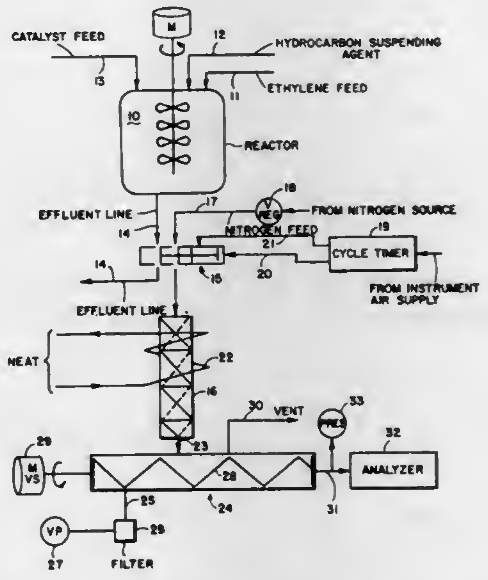
Calvin R. Howeth, P.O. Box 94262, Oklahoma City, Okla. 73109
Filed July 27, 1973, Ser. No. 383,423
Int. Cl. G01l *7/04*
U.S. Cl. 73—418 **4 Claims**



1. A Bourdon tube mounting apparatus, comprising:
a stationary base,
said base having a coextensive socket formed in opposing marginal edge portions in aligned cooperative confronting relation;
a slider panel overlying said base and having opposing marginal edge portions nested by the base sockets for sliding movement of said slider panel relative to said base,
said slider panel having a plurality of spaced-apart bores for connection with and supporting a Bourdon tube; and,
slider panel moving means including a block, having a threaded aperture, secured to a marginal edge portion of said slider panel for receiving one end portion of an axially stationary revoluble shaft.

3,847,022
SLURRY SAMPLER FOR POLYMER SEPARATION

Floyd H. McGinnis, Broken Arrow, Okla., assignor to Seismograph Service Corporation, Tulsa, Okla.
Filed May 29, 1973, Ser. No. 364,594
Int. Cl. G01n *1/10*
U.S. Cl. 73—421 R **10 Claims**



1. A system for extracting solid particles from a slurry comprising:

a heat exchanger for volatilizing the slurry suspending agent;

means for compressing the solid particles having an evacuated interior for removing volatilized materials therefrom; and

means for flushing the volatilized slurry through the heat exchanger and into the compressing means.

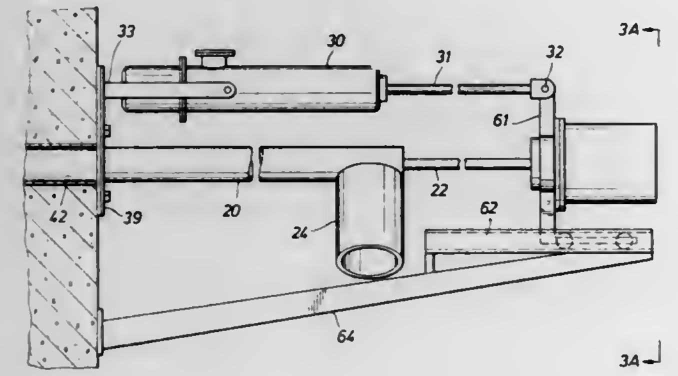
3,847,023
SAMPLING DEVICE AND SYSTEM

Richard G. Mallander, Wheatridge, and John H. Lake, Lakewood, both of Colo., assignors to Shell Oil Company, Houston, Tex.

Filed May 21, 1973, Ser. No. 362,623

Int. Cl. G01n *1/16*

U.S. Cl. 73—423 R **4 Claims**



1. A sampling device for solid material in an aggregate form comprising, in combination:

a guide sleeve having one end open and having a conduit from said guide sleeve near the other end, the conduit being in a plane substantially perpendicular to the longitudinal axis of the guide sleeve;

a sample-withdrawing auger rotatably mounted within the guide sleeve and adapted to move longitudinally with respect to the guide sleeve, the auger having a shaft portion extending from one end thereof, the other end of the auger being positioned in and extendible from the open end of the guide sleeve to pull material into the sleeve;

first means connected to the shaft portion of said auger for rotating the auger; and

second means for moving said auger longitudinally in two directions into and out of contact with the aggregate material being sampled, said second means being connected to said first means.

3,847,024
SIMULATION AND MEASUREMENT APPARATUS

Elmer R. Beever, Hacienda Heights; Rindge Shima, Santa Monica, and Paul P. Zebus, Lakewood, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 843,944, July 23, 1969, abandoned. This application Sept. 1, 1971, Ser. No. 177,146

Int. Cl. G01n *1/00, 21/48*

U.S. Cl. 73—432 SD **5 Claims**

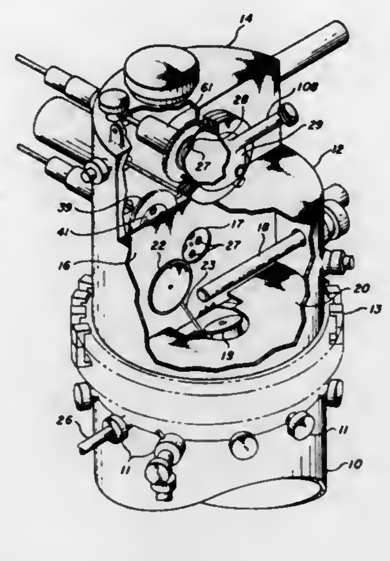
1. In an evacuable simulator, an improved transport mechanism within the evacuable portion of the simulator comprising:

a support wheel;

a specimen mounting member on said support wheel, said specimen mounting member including means for mounting a plurality of separate specimens;

means for measuring the temperature of each of said specimens; and

means for moving said support wheel for transferring said specimen mounting member between a simulation station within the evacuable portion of the simulator and a measurement station also within the evacuable portion of the simulator.



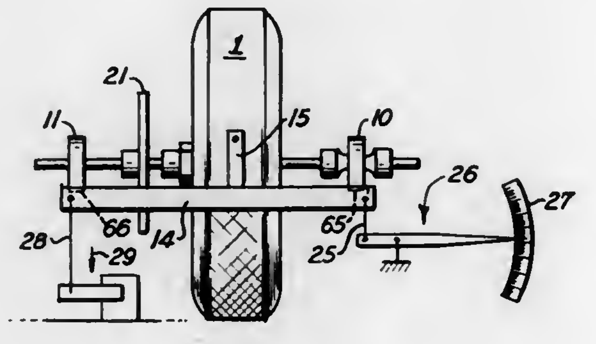
3,847,025
DYNAMIC TIRE BALANCING METHOD AND APPARATUS

Richard M. Hultberg, 11 Boulevard de Empereur, Brussels, Belgium (1000)

Filed Apr. 4, 1973, Ser. No. 347,741

Int. Cl. G01m *1/04, 1/16*

U.S. Cl. 73—460 **12 Claims**



1. A method of determining the dynamic imbalance of a wheel comprising the steps of;

mounting said wheel for rotation about its center,

suspending said wheel from a support means which is pivotally mounted about an axis which is parallel to a face of said wheel,

rotating said wheel about its center,

measuring the pivotal displacement of said support means which displacement is due to the dynamic imbalance of said wheel being rotated,

successively placing a pair of weights of known value at three different pairs of locations about the periphery of said wheel, said pairs of locations being spaced 120° from each other, and after each such placement rotating said wheel about its center and measuring the total pivotal displacement of said support means which total displacement is due to the rotational imbalance of said wheel and the imbalance produced by each pair of weights,

determining the theoretical displacement of said support means due to the imbalance of said wheel which is caused by a pair of said known weights acting by itself,

and deriving from said theoretical displacement and said known value of said weights the proper balancing weight and proper location necessary to compensate for said rotational imbalance.

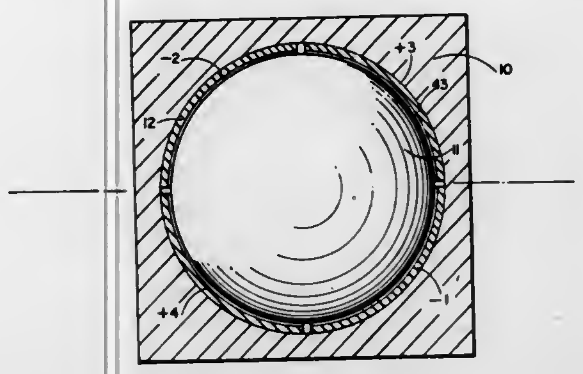
3,847,026
CROSS PRODUCT PICKOFF FOR BALL GYROS OF THE ELECTROSTATIC LEVITATION TYPE

Joseph C. Boltinghouse, Whittier; Frank M. Pelteson, Santa Ana, and John C. Pinson, Anaheim, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 12, 1970, Ser. No. 88,776

Int. Cl. G06c *19/08*

U.S. Cl. 74—5.6 D **10 Claims**



1. In combination with a pickoff system for an electrostatic gyroscope of the type wherein there is provided, a case, a set of at least six electrodes in symmetrical array with respect to the case, a ball adpted to spin about a spin axis within the electrode array with the ball constructed and arranged to have its center of mass displaced laterally from the spin axis so that the ball orbits at the spin frequency with circuit means for establishing electrical fields between the electrodes and the ball, which fields are modulated at the spin frequency, the improvement which comprises:

a. means 11, 14, 30 for detecting the modulated fields between the electrodes and said ball to provide signals proportional to said detected fields;

b. means 40, 41, 42, 51, 52, 53 for transforming the detected modulated field signals into signals representing a modulated field resolved into components along three mutually orthogonal axes;

c. reference carrier signal generating means (90, 91, 92, 111) for generating a first reference signal which is substantially proportional to the spin frequency of said ball and a second reference signal which is displaced in time phase quadrature relative to said first reference signal;

d. first demodulator means for demodulating each of said mutually orthogonal signal components with respect to said first generated carrier signal;

e. second demodulator means for demodulating each of said mutually orthogonal signal components with respect to said second generated carrier signal; and

f. means (70, 71, 72, 73, 74, 75, 80, 81, 82) for combining the demodulated signals from said first and said second demodulator in vector cross-product relationship to form signals proportional to the direction cosines of said spin axis which combined signals define the orientation of said spin axis with respect to said electrode array.

3,847,027
SPEED CONTROL MECHANISM

David C. Bailey, Woodbridge, Va., assignor to General Electric Company, Syracuse, N.Y.

Filed Nov. 1, 1972, Ser, No. 302,646

Int. Cl. F16h *15/08, 15/46*

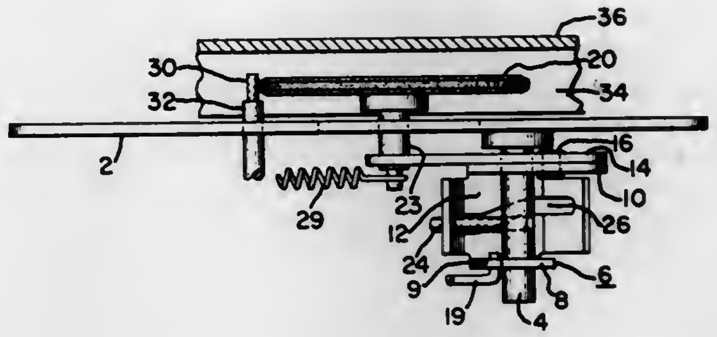
U.S. Cl. 74—190 **21 Claims**

1. A speed control mechanism comprising:

a base plate;

stationary mounting post means rigidly affixed to said base plate;

a rotatable member mounted on said mounting post means so as to be rotatable thereabout, said member being slideable along the longitudinal axis of said mounting post means, said mounting post means including means engaging said rotatable member so as to urge said rotatable member along the longitudinal axis of said mounting post means in response to rotational movement of said rotatable member and in a direction determined by the direction of rotation of said rotatable member;



a connecting member pivoted about said rotatable member at a location radially removed from said mounting post;

a driving shaft including a plurality of driving radii; and

a wheel rotatably mounted on said connecting member with its axis substantially perpendicular thereto, said driving shaft being engaged on a different one of said driving radii, respectively, by said wheel when said rotatable member is rotated from a first predetermined position to a second predetermined position.

3,847,028
LEAF SPRING BIASED DERAILLEUR ARRANGEMENT

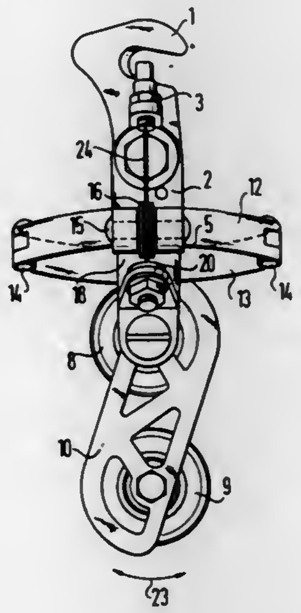
Eduard Bergles, Graz, Austria, assignor to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Feb. 20, 1974, Ser. No. 444,094

Claims priority, application Germany, Mar. 23, 1973, 2314555

Int. Cl. F16h *11/00, 11/08*

U.S. Cl. 74—217 B **8 Claims**



1. A variable-speed transmission arrangement comprising, in combination:

a. a shaft having an axis;

b. a plurality of sprocket wheels mounted on said shaft for rotation about said axis,

1 said wheels decreasing in diameter in axial sequence and jointly defining a conical enveloping surface having a generatrix obliquely inclined relative to said axis;

c. elliptic spring means including two elongated leaf springs having each a first and a second terminal portion, and two hinge means respectively connecting said first terminal portions and said second terminal portions for relative pivotal movement of the connected terminal portions about a first pivot axis and a second pivot axis,

1. said pivot axes being spaced from each other in the direction of elongation of said leaf springs and jointly defining a plane perpendicular to said generatrix,
2. said leaf springs having respective longitudinally intermediate portions spaced from said plane in opposite directions;

d. carrier means fixedly securing one of said intermediate portions to said shaft;
e. manually operable moving means for moving said intermediate portions toward and away from each other;
f. a guide wheel; and
g. bracket means fastened to the other intermediate portion and supporting said guide wheel for rotation about an axis extending in the direction of the axis of said shaft.

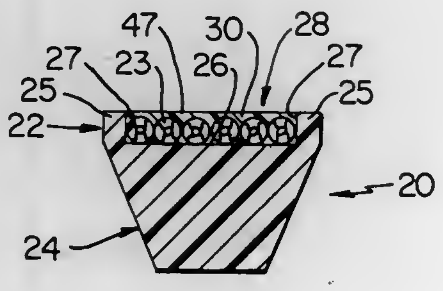
3,847,029
ENDLESS POWER TRANSMISSION BELT AND METHOD OF MAKING SAME

Robert L. Ray, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Dec. 11, 1972, Ser. No. 314,058

Int. Cl. F16q *5/16*

U.S. Cl. 74—233 **7 Claims**



1. An endless power transmission belt comprising the body made substantially of a thermoplastic polyester elastomer, said body having a pair of spaced integral projections provided at opposite side portions thereof and defining a channel in the outer surface of said body, said belt having load-carrying means integrally bonded within said channel and a heat-fused area at a location along its endless path which has physical properties substantially equal to the physical properties of the remainder of said body, each of said integral projections extending along the entire endless path of said belt and having a substantially uniform cross-sectional configuration at any location along the endless path, and each of said integral projections being heat fused at said heat-fused area.

3,847,030
APPARATUS FOR REGULATING THE DRIVE OF A PRESS OR THE LIKE

Walter Grutter, Morrens, Switzerland, assignor to J. Bobst & Fils, S.A., Switzerland

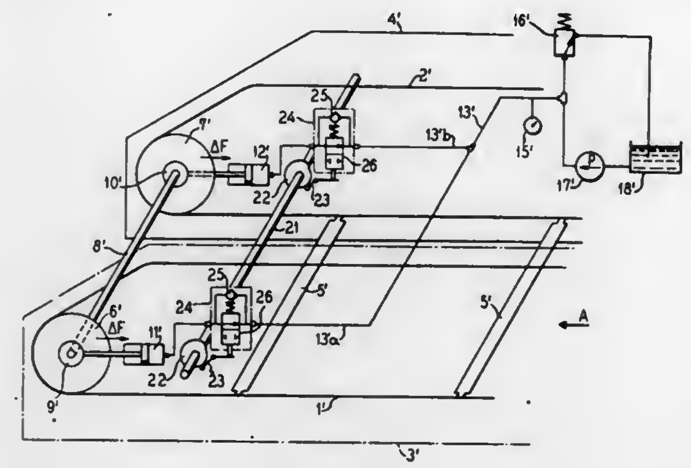
Filed Mar. 12, 1973, Ser. No. 340,059

Claims priority, application Switzerland, Mar. 14, 1972, 3719/72

Int. Cl. F16h *7/10*

U.S. Cl. 74—242.14 R **5 Claims**

1. In a platen press having a transfer chain for intermittently driving a plurality of gripper bars, means for maintaining the chain under tension comprising a source of pressurized fluid, a cylinder connected with said source, a piston slidable within said cylinder and connected with said chain to apply a force to said chain, whereby the tension of said chain is proportional to the pressure of said fluid, means for maintaining the pressure of said fluid at a predetermined level, whereby a constant minimum tension is applied to said chain, and a check valve interconnected in the line between said source and said cylinder for preventing the rapid movement of said piston in response to a temporary increase in the tension of said chain.



3,847,031
CONNECTING LINK OF ROLLER CHAIN

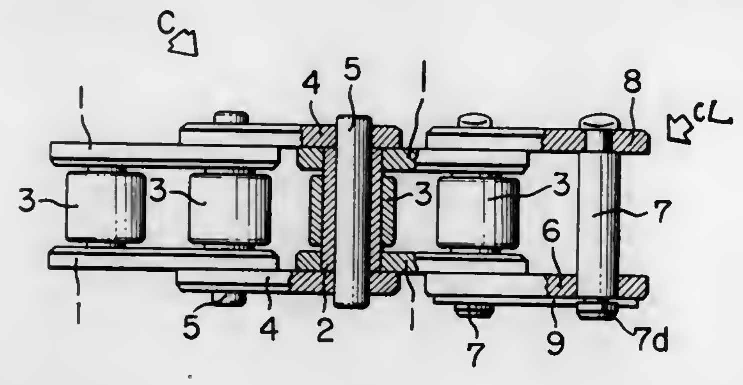
Kumakichi Araya, No. 2, Daishoji Seki-machi, Kaga-shi, Ishikawa-ken, Japan

Filed June 5, 1973, Ser. No. 367,129

Claims priority, application Japan, June 16, 1972, 47-59399; Sept. 25, 1972, 47-95226; Sept. 28, 1972, 47-96631

Int. Cl. F16g *13/02*

U.S. Cl. 74—258 **5 Claims**



1. A connecting link of roller chain, comprising a pair of link plates for connecting both ends of a length of chain, one link plate of said pair of said link plates having a pair of connecting pins integrally secured thereon adjacent to both ends of said one link plate, the other link plate fitted over said connecting pins adjacent to free ends thereof, and locking means of resilient material such as plastic resin or rubber placed outwardly on said other link plate and having a pair of openings snapped over said pair of said connecting pins adjacent to free ends thereof.

3,847,032
TORQUE EQUALIZING DRIVE

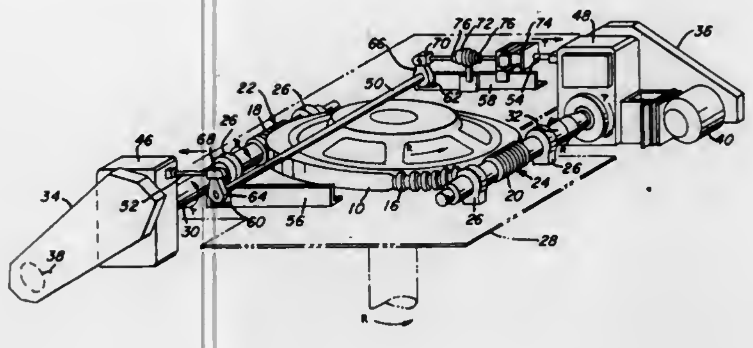
Harold Bob Moser, 7301 Dale Ct., Westminster, Colo. 80030

Continuation of Ser. No. 252,283, May 11, 1972, abandoned. This application June 20, 1973, Ser. No. 372,491

Int. Cl. F16h *1/16, 35/06, 37/06*

U.S. Cl. 74—427 **10 Claims**

1. A torque equalizing device for use in a multiple drive mechanism which rotates a main shaft by a plurality of gear worms being in driving engagement with a worm wheel secured to said main shaft, comprising: a driving motor assembly provided for each gear worm and supported on a drive shaft of each of said gear worms to impart driving torque thereto independently of other of said gear worms; each of said motor assemblies having a driving connection with a respective one of said drive shafts for producing a limited rotating movement of said assembly in reaction to the imparted torque; a mechanical linkage connected to each motor assembly and operable to convert said rotating movement to a lineal thrusting force; and reaction arm means interconnecting the linkages of a plurality of motor assemblies to equalize the torque of the gear worms by rotation of respective motor assemblies.



3,847,033
METHOD AND CONSTRUCTION FOR INCREASING THE SERVICE LIFE OF ROLLING SCREW MECHANISM WITH DOUBLE-NUT PRESTRESS

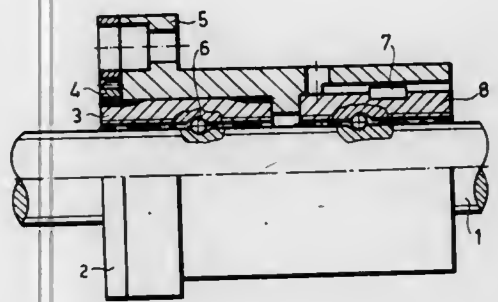
Ivan Toth, Budapest, Hungary, assignor to Csepeli Szerszamgepgyar, Budapest, Hungary

Filed May 14, 1973, Ser. No. 360,179

Claims priority, application Hungary, July 13, 1972, 10986

Int. Cl. F16h *55/04, 55/18*

U.S. Cl. 74—459 **8 Claims**



1. A method of operating a roller-spindle mechanism comprising an externally threaded spindle, a pair of nuts mounted on said spindle and each formed with a helical thread having oppositely facing flanks, and a multiplicity of roller elements received between the threads of said nuts and said spindle, said method comprising the steps of:

relatively rotating said nuts to stress the roller elements against the flanks of the nut thread of one nut facing in one direction and the flank of the other nut thread facing in the opposite direction;

driving said mechanism until the stressed flanks of said nut threads are worn; and

displacing one of said nuts to cause said roller elements to be stressed against the previously unstressed flank of each nut thread for further driving of the mechanism for a doubling of the essential life of said nut threads.

3,847,034
CONTROL DEVICES

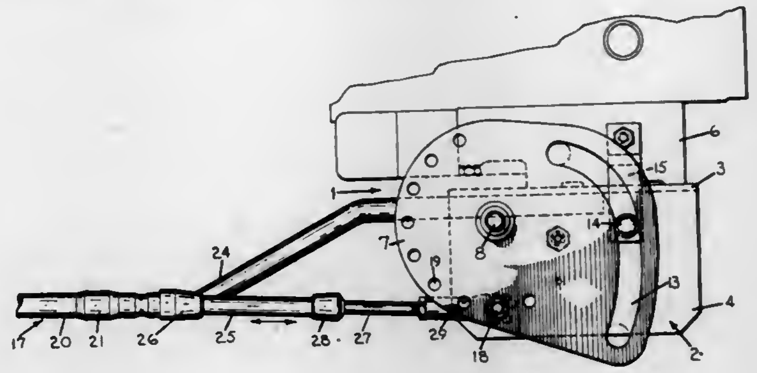
James Frederick Hemens, Billericay, England, assignor to Teleflex Limited, Essex, England

Filed Apr. 30, 1973, Ser. No. 355,913

Claims priority, application Great Britain, Nov. 20, 1972, 53606/72

Int. Cl. G05g *1/04*

U.S. Cl. 74—491 **5 Claims**



1. A non-linear control device responding to movement of a cable core of a push-pull cable to control a pump means through rotation of a control shaft of said pump means comprising:

a flange member fixedly attached to a housing of said pump means;

a cam plate rotatably attached to said flange member for pivotal movement thereon about an axis which is parallel with said control shaft;

said cam plate having a arcuate cam slot provided therein; said control shaft having a radially extending shaft lever with a bearing cam follower mounted on the extended end thereof;

said bearing cam follower being operatively disposed within said cam slot; and

said cable core being attached to said cam plate at a point remote from said axis.

3,847,035
POWER TRANSMISSION DEVICE

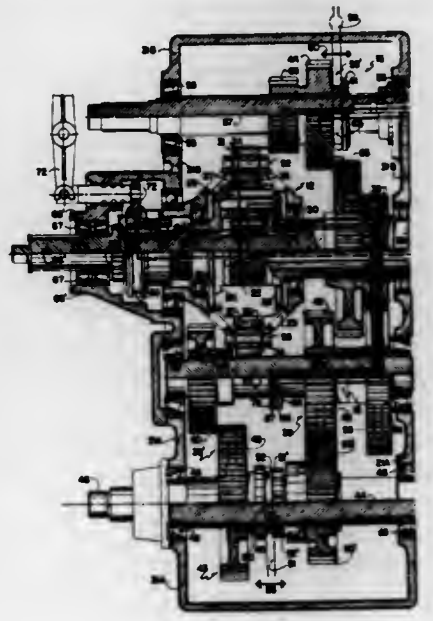
Michael Stasiuk, West Fargo, N. Dak., assignor to Versatile Manufacturing Ltd., Winnipeg, Manitoba, Canada

Division of Ser. No. 241,248, April 5, 1972, Pat. No. 3,782,224. This application Oct. 9, 1973, Ser. No. 404,752

Claims priority, application Canada, Apr. 4, 1972, 138738

Int. Cl. F16h *47/04*

U.S. Ci. 74—687 **7 Claims**



1. A multiple mode transmission for mobile units such as tractors and the like which include a source of power; com-

prising in combination a casing, a main drive shaft bearably supported for rotation in said casing and being selectively connectable to said source of power, a planetary gear assembly surrounding said main shaft and being bearably supported for operation upon said main shaft and within said casing, a constant mesh gear box, an hydrostatic pump operatively connected to said source of power, an hydrostatic motor operatively connected to said hydrostatic pump, means to selectively operate said transmission in a plurality of modes including a basic mechanical mode, by operatively connecting said planetary gear assembly to said constant mesh gear box, a hydrostatic mode by operatively connecting said hydrostatic motor to said constant mesh gear box, and a hydromechanical mode by operatively connecting said hydrostatic motor to said constant mesh gear box via said planetary gear assembly, and a power takeoff shaft extending from said casing and supported for rotation therein, said power takeoff shaft being in axial alignment with said main drive shaft, and means mounted on said casing to selectively connect said power takeoff shaft to said main drive shaft, said last means including a dog clutch collar splined upon said main shaft for end shiftable movement, said power takeoff shaft and one side of said collar having mutually engageable dog clutch means thereon.

3,847,036

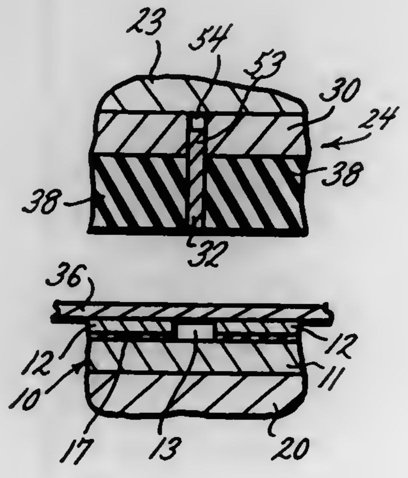
METHOD OF PRODUCING CUTTING PLATES FOR DIE CUTTING OPERATIONS

Orville C. Miller, St. Louis, Mo., assignor to Centenary Central, Inc., St. Louis, Mo.

Filed Oct. 10, 1973, Ser. No. 405,073

Int. Cl. B21k *5/20*

U.S. Cl. 76—107 C **10 Claims**



1. A method of producing a cutting and creasing plate having a counter pattern thereon for die cutting operations comprising the steps of bonding a first sheet from which the counter pattern is to be formed to a backing sheet, forming grooves in the first sheet in accordance with the desired counter pattern, which grooves extend completely through the first sheet but not completely through the backing sheet, bonding the outer surface of the first sheet to a surface of a plate after the grooves are formed, and removing the backing sheet from the first sheet and the excess of the first sheet from the plate after the second bonding step leaving those sections of the first sheet bonded to the plate which define the counter pattern to form a cutting and creasing plate.

3,847,037

DUCT JOINING TOOL

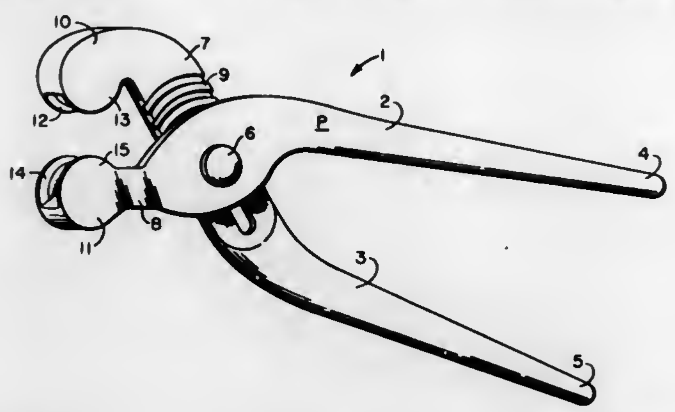
Elmer E. Fox, 2149 Mildred Ave., Beloit, Wis. 53511

Filed June 25, 1973, Ser. No. 373,425

Int. Cl. B25b *7/00, 7/02*

U.S. Cl. 81—5.1 R **6 Claims**

1. A duct joining tool comprising a pair of arms disposed in crossed relation, a pivot means extending through said arms at their point of crossing and connecting said arms together for relative pivotal movement, said arms including a pair of cooperating handle portions at one end and a pair of opposing work engaging portions at the other end, each said work engaging portions including a convexly shaped inwardly facing duct engaging flange connected to an end portion of each said work engaging portions.



3,847,038

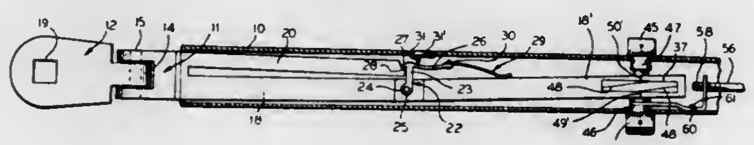
AUTOMATIC RELEASE WRENCH OF THE PRESET TYPE

Talmage O. Green, Schaumberg, Ill., assignor to Snap-on Tools Corporation, Kenosha, Wis.

Continuation-in-part of Ser. No. 166,003, July 26, 1971, Pat. No. 3,763,724. This application July 18, 1973, Ser. No. 380,404

Int. Cl. B25b

U.S. Cl. 81—52.4 R **10 Claims**



1. A preset torque wrench comprising a rigid elongated tubular handle member, a pair of superposed flex beams disposed along and within said elongated tubular handle member, a work engaging head member anchored to both of said flex beams and projecting within said tubular handle member, a trigger release latch mechanism on one of said flex beams to engage the other flex beam after a partial load is impressed upon said first named flex beam to displace said trigger release latch therewith for detachable engagement with the second named flex beam so that both beams flex to carry the preset load beyond the initial load sustained alone by said first named flex beam, whereby the further application of a turning load continues until said trigger latch is deflected by an obstruction in the path thereof to release the last named flex beam from the first named flex beam in order to preclude further effective turning of the fastener by said work engaging member, and calibrated micromatic preset torque release setting means on said handle member in operative engagement with one of said flex beams to cooperate with inter-related calibrated scales on said last named flex beam to initially preset the position of said trigger release latch means relative to the obstruction in the path thereof to control the torque load release of said trigger release latch mechanism.

3,847,039

VALVE OPERATING DEVICE

Shoziro Azuma, 41, 2-chome, Soshigaya, Setagaya-ku, Tokyo, Japan

Filed Aug. 25, 1971, Ser. No. 174,636

Int. Cl. B25b , *17/00, 21/00*

U.S. Cl. 81—52.4 R **2 Claims**

1. A valve operating device including: at least one valve stem rotating head having means for releasably engaging a valve stem and for applying torque thereto in a sense to rotate the valve stem when engaged therewith;

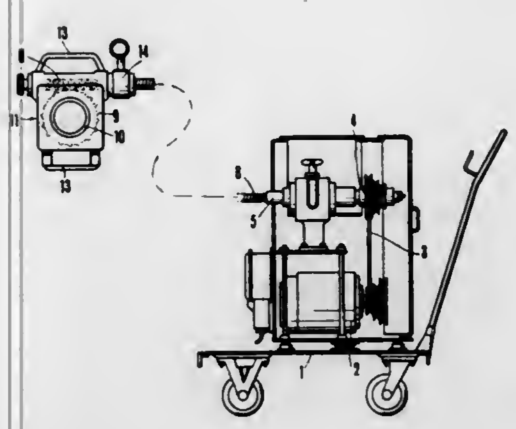
a flexible shaft having one end connected to the valve stem rotating head for driving the same;

a transmission unit including a torque limiting means;

the opposite end of the flexible shaft means being connected to the transmission unit;

said transmission unit having means for accepting a rotational input and for supplying rotation to said flexible shaft via said torque limiting means, for ensuring against over-torquing of the valve stem when the valve associated therewith is being opened and becomes fully open and when that valve is being closed and becomes fully closed; a control unit connected to said transmission unit for selectively operating said transmission unit to control rotation of said flexible shaft;

a motor for supplying said rotational input and drive shaft means connecting said motor and said transmission unit rotational input accepting means, said motor being constituted by a motor vehicle powering motor mounted on a motor vehicle together with said transmission unit and said control unit;



a boom;

turn-table means mounting said boom, cantilever fashion, on said motor vehicle for pivoting about a generally vertical axis near one end of the boom, between a stowed condition on board the motor vehicle and an extended condition wherein the free end of the boom is spaced outwardly from the vehicle;

said valve stem rotating head being mounted on the free end of the boom;

rail means mounted on said motor vehicle; said turn-table being mounted on said wall rail means for translation therealong to increase the mobility of the valve stem rotating head.

3,847,040

TORQUE LIMIT MEANS FOR POWERED PIPE WRENCH MEANS

Stephen L. Bufkin, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.

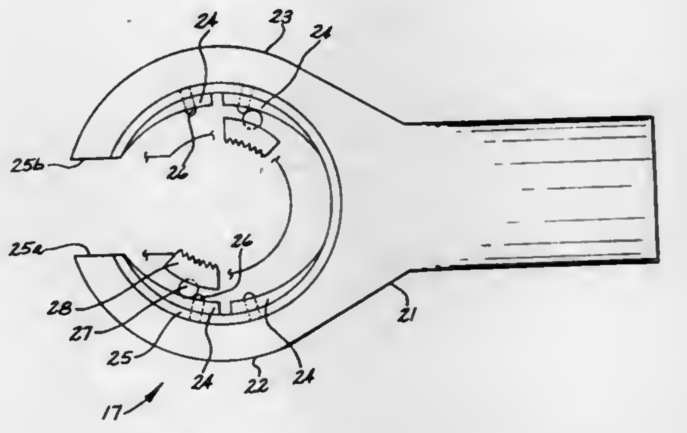
Filed May 14, 1973, Ser. No. 360,117

Int. Cl. B25b *17/00*

U.S. Cl. 81—57.18 **8 Claims**

1. A powered pipe tong for making up and breaking out threaded connections in a pipe string without damaging the pipe, comprising:

a. support means;
b. housing means connected to said support means and including a pair of stationary extending members spaced apart for receiving a pipe;
c. collar means rotatably mounted within said housing;
d. powering means operatively connected to said collar means for rotatably driving said collar means;
e. cam surface means carried by said rotary collar means;
f. cam follower means mounted adjacent said cam surface means for radial movement in response to relative rotational movement between said cam follower means and said rotary collar;



g. stop means selectively positionable along said cam surface means for engaging said cam follower means and selectively limiting rotation of said cam surface means relative to said cam follower means; and
h. pipe gripping means driven by said cam follower means for gripping said pipe.

3,847,041

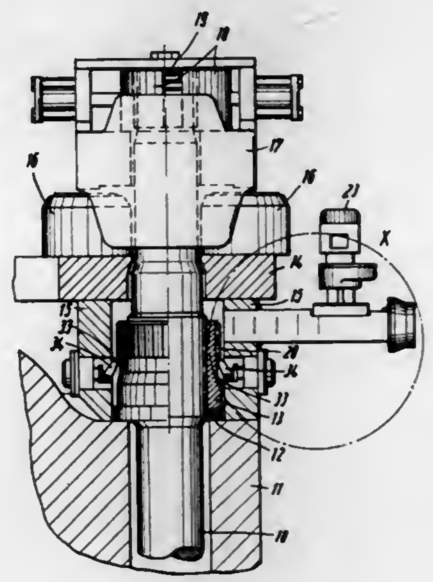
BOLT TENSIONING AND NUT THREADING ARRANGEMENT

Gunter Meschonat, and Peter Schungel, both of Dortmund, Germany, assignors to Klockner-Werke AG, Duisburg, Germany

Filed Aug. 30, 1973, Ser. No. 393,143

Int. Cl. B25b *29/02*

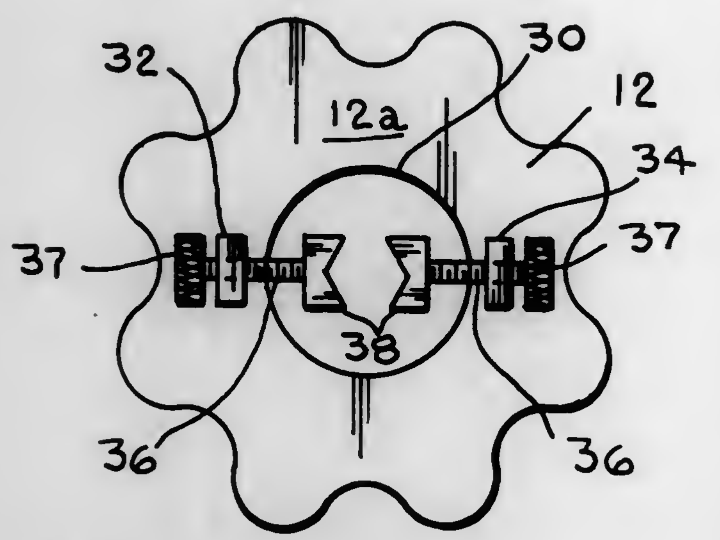
U.S. Cl. 81—57.38 **8 Claims**



1. In an arrangement of the character described a combination comprising a vessel having a flange provided with an annulus of projecting threaded bolts; a nut threaded onto each of said bolts and having an outer periphery provided with an annulus of teeth and with an annular groove; drive means engageable with said teeth for rotating the respective nut so as to bring it into and out of mesh with the associated bolt; detent means engageable in the respective groove for holding the associated nut when the same moves towards out-of-mesh position; tensioning means for axially tensioning said bolts; and lifting means for lifting said tensioning means away from said bolts and said flange.

3,847,042
HAND STAR WRENCH

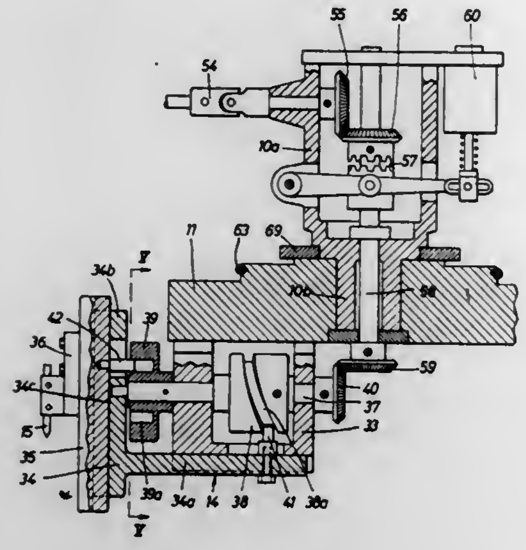
Richard D. Wilson, 7918 Windswept, Houston, Tex. 77042
Filed Jan. 5, 1973, Ser. No. 321,215
Int. Cl. B25b *13/16*
U.S. Cl. 81—175 **2 Claims**



1. A wrench conprising:
a substantially circular wrench plate having a plurality of circumferentially spaced radially extending projections thereon, said radial projections having inwardly extending indentations for operative engagement by finger tips therewith; and,
a wrench plate aperture in said wrench plate having a plurality of wrench faces formed therein for engaging a workpiece for imparting rotation to such workpiece, said wrench faces being movably mounted with respect to said wrench plate whereby the opening between said wrench faces may be adjusted for receiving and connecting to various size workpieces.

3,847,043
AUTOMATIC THREAD CUTTING MACHINE

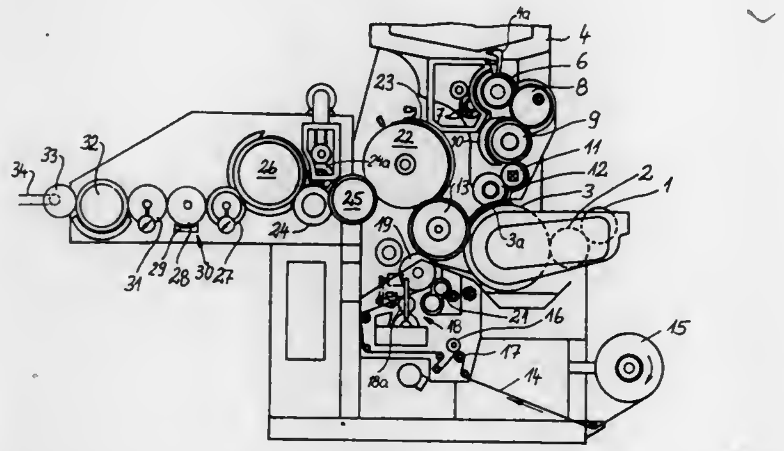
Andre Bechler, 4, rue Centrale, 2740 Moutier, Switzerland
Filed Sept. 25, 1972, Ser. No. 292,133
Claims priority, application Switzerland, Sept. 30, 1971, 14230/71
Int. Cl. B23b *3/18, 3/26, 3/28*
U.S. Cl. 82—5 **1 Claim**



1. An automatic thread cutting machine, comprising a workpiece spindle rotatable about an axis of rotation, a tool support disk, means for rotatably indexing the tool support disk for rotation about a geometric axis which intersects at right angles the axis of rotation of the workpiece spindle, at least one thread cutting device secured to the tool support disk, a housing provided for the thread cutting device, a thread cutting tool holder guided at the housing for carrying out lengthwise movements in radial direction of the tool support disk and transverse movements in the direction of the geometric axis, a shaft mounted at the housing of the thread cutting device, said shaft carrying a cam element for controlling the lengthwise movements and a cam element for controlling the transverse movements, drive connection means between said shaft of the thread cutting device and the workpiece spindle, motor driven means for moving the tool support disk in the direction of its geometric axis, a bed, a bearing block, the tool support disk being rotatably but non-axially movably supported at the bearing block, said bearing block belonging to said motor driven means, a cross-slide carried by the bed, said bearing block being mounted at said cross-slide, a motor driven-control shaft, a cam element seated on the motor driven-control shaft for controlling movement of the cross-slide, said drive connection means between the workpiece spindle and the shaft of the thread cutting device comprises a transmission shaft mounted at the bearing block substantially coaxially with regard to the tool support disk and piercingly extending through the latter, a telescopic universal shaft means and a change-gear drive mounted at the bed, a coupling mechanism which can be engaged and disengaged, said coupling mechanism being arranged between the transmission shaft and the universal shaft means, and means for ensuring that the coupling mechanism only will be engaged when the tool support disk assumes an indexing position in which the thread cutting device is located in its work position.

3,847,044
METHOD AND APPARATUS FOR TESTING WRAPPERS OF CIGARETTES OR THE LIKE

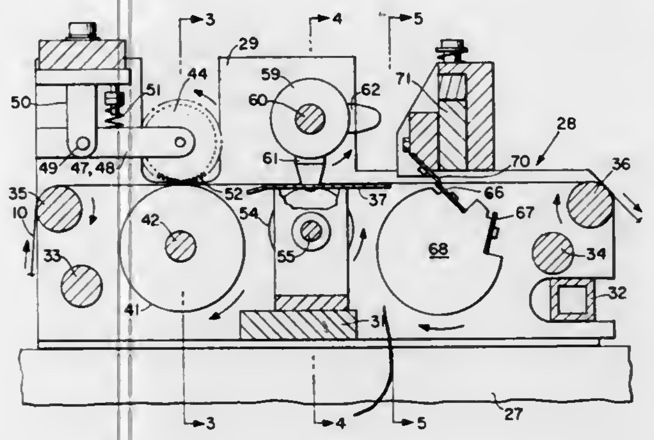
Willy Rudszinat, Dassendorf, Germany, assignor to Hauni-Werke Korber & Co. KG, Hamburg, Germany
Filed Nov. 8, 1973, Ser. No. 413,990
Int. Cl. A24c *5/28*
U.S. Cl. 83—2 **14 Claims**



1. A method of repeatedly testing the wrappers of cigarettes or analogous articles wherein a tubular wrapper surrounds a rod-like filler of fibrous material or the like, comprising the steps of conveying a succession of articles along a predetermined path; testing the wrappers of successive articles in a first portion of the path including establishing an air pressure differential between the interior and exterior of successive wrappers and producing first test signals indicating the rate of air flow through the wrappers; perforating the wrappers of articles in a second portion of said path so that each of the thus perforated wrappers exhibits a predetermined number of holes therein; and testing successive perforated wrappers in a third portion of said path including establishing an air pressure differential between the interior and exterior of successive perforated wrappers and producing second test signals indicating the rate of air flow through the wrappers.

3,847,045
WEB PERFORATING APPARATUS

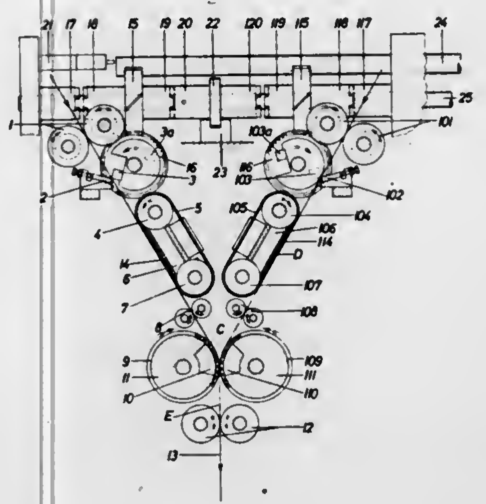
William Willhite, Jr., 6322 Elkwater Ct., Cincinnati, Ohio 45211, and Herbert Eugene Strube, 10952 Gosling Rd., Cincinnati, Ohio 45239
Filed May 25, 1973, Ser. No. 363,937
Int. Cl. B26f *1/20*
U.S. Cl. 83—37 **12 Claims**



1. A web perforating apparatus comprising:
a. means for continuously supporting a web moving through said apparatus,
b. means for forming continuous spaced lines of longitudinal perforations along opposite edges of said web,
c. means for forming an elongated longitudinal slit at predetermined intervals coextensive with at least one of said lines of longitudinal perforations, and,
d. means for forming transverse perforations at spaced intervals on said web, said transverse perforations extending between said longitudinal perforations and having an elongated transverse slit whereby a succession of substantially rectangular side-by-side perforated areas are formed on said web having at least one slitted corner.

3,847,046
DEVICE FOR CUTTING CONTINUOUS WEBS

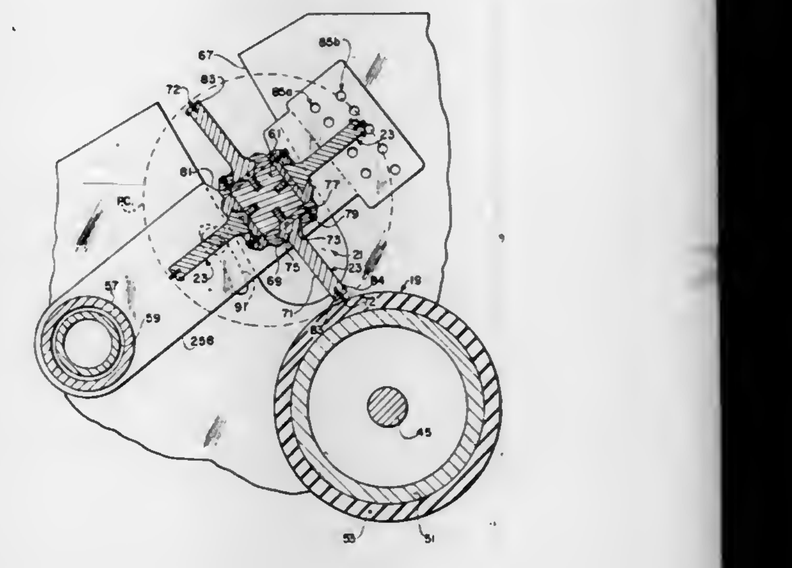
Alfred Schmermund, 62 Kornerstrasse, 5820 Gevelsberg, Germany
Filed Oct. 26, 1973, Ser. No. 410,159
Claims priority, application Great Britain, Oct. 31, 1972, 50095/72
Int. Cl. B26d *7/06, 5/20*
U.S. Cl. 83—152 **16 Claims**



1. A device for cutting continuous webs into lengths comprising, in combination:
guide means defining two web feed paths each having a portion common to the other;
respective cutter means associated with each said feed path and each having a displaceable knife element;
respective web feeder means each selectively operable to feed a web past the respective one of said cutter means in co-ordination with the displacement of said knife element thereof;
web change-over means selectably actuatable to render inoperative substantially simultaneously said feeder means and said cutter means associated with one said feed path and to render operative substantially simultaneously said feeder means and said cutter means associated with the respective other said feed path; and
constraining means co-operating with said change-over means and with said knife elements to render said change-over means actuatable when and only when said displaceable knife elements of said respective cutter means are in predetermined and mutually corresponding positions; whereby the web change-over takes place when the leading edges of said respective webs are each located at corresponding positions in the respective ones of said feed paths.

3,847,047
APPARATUS FOR PERFORATING A WEB OF FLEXIBLE FILM

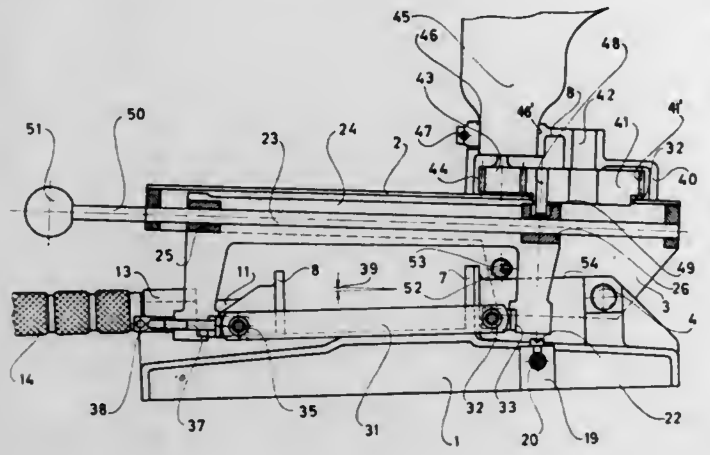
Richard S. Jackson, Saint Louis, Mo., assignor to Roll-O-Sheets, Incorporated, St. Louis, Mo.
Filed Mar. 29, 1972, Ser. No. 239,239
Int. Cl. B26d *1/40, 5/32*
U.S. Cl. 83—344 **7 Claims**



1. Apparatus for perforating a web on transverse lines spaced longitudinally of the web comprising:
means for feeding the web through the apparatus at a substantially constant speed comprising a rotary back-up roll and means for driving the back-up roll at a substantially constant speed;
a perforator having at least one perforating blade for forming transverse lines of perforations in the web as it travels over the back-up roll, said perforator comprising a plurality of perforating blades spaced at equal angular intervals therearound, a shaft of square cross section thereby having four faces, and means on each of said faces for removably mounting a perforating blade with the blade extending radially outwardly from the shaft;
means mounting said perforator for rotation on an axis parallel to the axis of the back-up roll for movement toward and away from the back-up roll thereby to position the perforating blade to perforate through the web on the back-up roll; and
means for driving the perforator.

3,847,048
POWER FRAME SAW

Paul Stolzer, Achern, Germany, assignor to Keuro Maschinenbau Gesellschaft mit beschhrankter Haftung & Co., KG, Achern, Germany
Filed Nov. 8, 1973, Ser. No. 414,127
Claims priority, application Germany, Dec. 22, 1972, 2262957
Int. Cl. B23d *49/04;* **B26d** *7/02*
U.S. Cl. 83—452 **10 Claims**

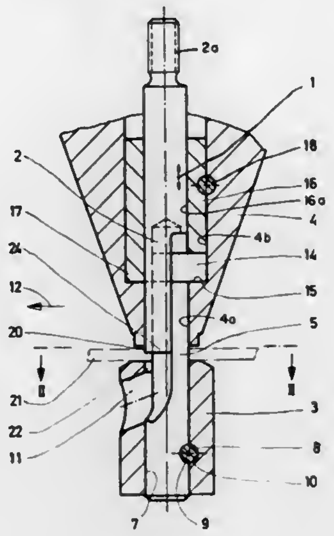


1. In a power frame saw including a bench plate, a machine frame arranged on the bench plate, adjustable clamping means operatively arranged on the bench plate for holding a workpiece during a cutting operation, saw frame for holding a saw blade and including a back portion, housing means pivotably articulated to the machine frame for holding the saw frame in a displaceably mounted arrangement so that the saw frame is capable of being moved in a reciprocating stroke direction, the back portion extending along a longitudinal axis parallel to the reciprocating stroke movement of the saw frame, and drive means arranged within the housing means and having a motor-driven crank drive for driving the saw frame, the improvement comprising: means defining two web sections, each extending transverse to the longitudinal axis of said back portion, said web sections being constituted by two widened sections of said back portion, and guide means displaceably guiding said web sections within said housing means, and wherein said crank drive includes a crank disc rotatably mounted in said housing means above said back portion and operatively associated with said back portion, and said crank disc is positioned substantially within the region of the stroke movement of said saw frame and is mounted for rotation about an axis parallel to the cutting plane of a saw blade held by said saw frame and perpendicular to the direction of the stroke movement.

3,847,049
CUTTING TOOL HAVING A RECIPROCATING PUNCH WITH A CARRIER MEMBER INTERCONNECTING A HEAD PORTION AND A DIE PORTION

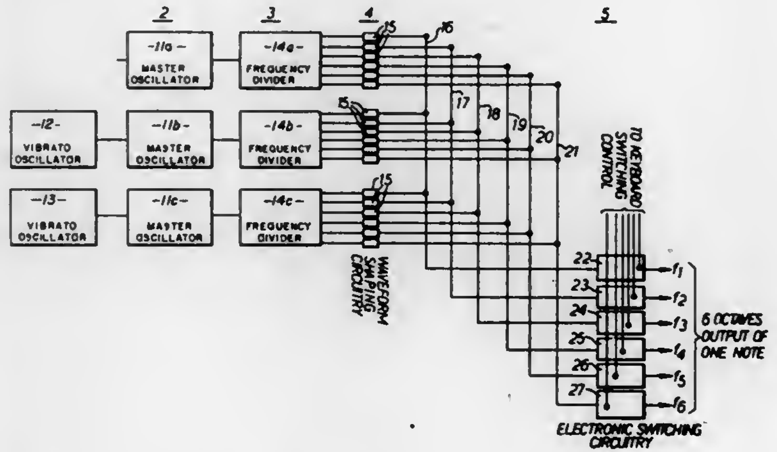
Hubert Bitzel, Warmbornn, Germany, assignor to Firma Trumpf Maschinen AG
Filed June 12, 1973, Ser. No. 369,207
Int. Cl. B23d *27/00*
U.S. Cl. 83—613 **13 Claims**

1. A cutting tool such as a nibbler having a motor driven reciprocatable punch, comprising a head portion having a bore therein, a die member having a bore and being spaced from said head portion to define a workpiece receiving access therebetween, a carrying member engaged in the bores of and secured to said head portion and said die member and having a reduced cross sectional area at a location extending between said head portion and said die member and a predetermined distance into said head portion and said die member, a punch rod member reciprocatable in the bore of said head portion and having a portion of reduced cross section complementary to and slideable on the reduced cross section of said carrying member, the arrangement being such that the total cross section of said punch and said carrying member conforms to the bores of said head portion and said die member, said reduced cross sectional portion of said punch being movable during operation into the space between said head portion and said die member to cut the workpiece positioned therebetween.



3,847,050
ELECTRONIC ORGAN WITH PLURAL MASTER OSCILLATORS AND PLURAL VIBRATO OSCILLATORS FOR EACH NOTE

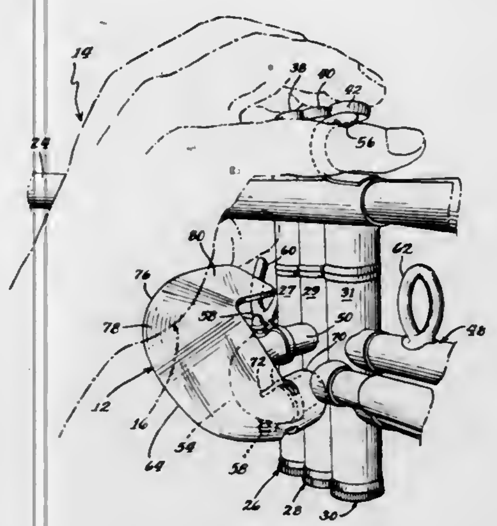
Kenneth Freeman, Sheldon, England, assignor to Audio Synthesisers Limited, North Harron, Middlesex, England
Filed July 26, 1971, Ser. No. 166,116
Claims priority, application Great Britain, Aug. 26, 1970, 41036/70
Int. Cl. G10h *1/04*
U.S. Cl. 84—1.25 **14 Claims**



1. In an electronic organ having a number of keys for producing different musical notes, a network producing each note comprising at least two master oscillators, at least two vibrato oscillators, said vibrato oscillators each being connected for modulating the frequency of a respective master oscillator, the said vibrato oscillators operating at mutually uncorrelated frequency and/or phase, and means operative upon actuation of each of said keys for combining the outputs of the said two master oscillators thereby forming an output electrical signal from said network to produce a musical note which displays a random variation.

3,847,051
HAND SUPPORT ATTACHMENT FOR A TRUMPET OR LIKE INSTRUMENT

John Herbert Miller, c/o P. Barrick, 575 Bridge St., Watsonville, Calif. 95076
Filed Jan. 11, 1974, Ser. No. 432,478
Int. Cl. G10d *7/10*
U.S. Cl. 84—387 **10 Claims**

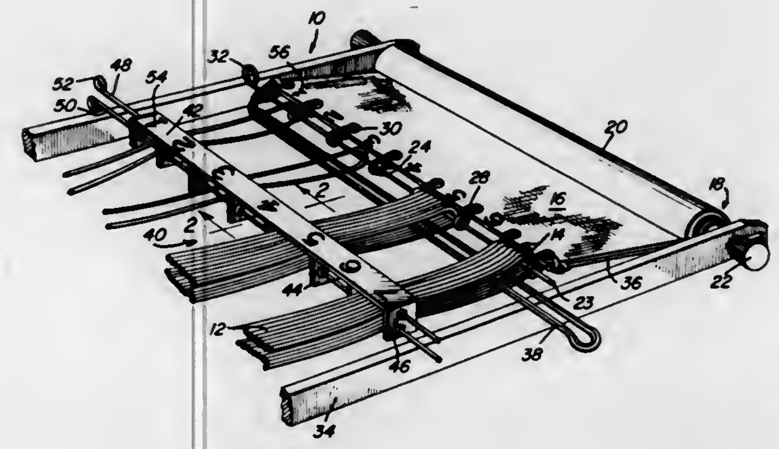


1. A hand support attachment for a trumpet or like instrument having a laterally extending tubular valve slide, said attachment being constructed of rigid sheet material and comprising:

- a body portion,
- a sleeve-like portion extending from said body portion, said sleeve-like portion being constructed and arranged to be mounted around a section of said slide for supporting the attachment thereon, and
- a hand rest portion on said body portion, said hand rest portion being constructed and arranged for supporting the heel of a player's hand for one-hand instrument playing.

3,847,052
FABRIC CONSTRUCTION GUIDE

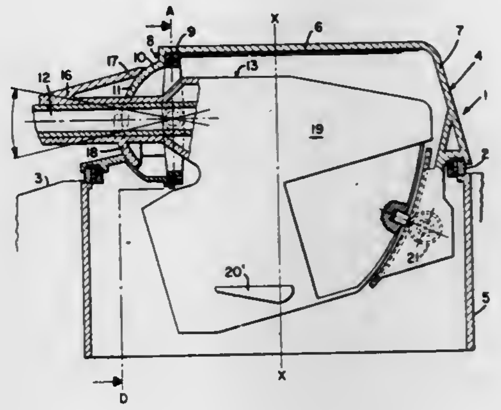
Rosario Forlano Morcaldi D', 18 Haynes St., East Boston, Mass. 02028
Filed Mar. 28, 1973, Ser. No. 345,698
Int. Cl. D04g *1/00*
U.S. Cl. 87—31 **5 Claims**



1. A guide for use in forming a fabric and associated with a frame having longitudinally extending frame rails having a plurality of parallel fabric yarns disposed therebetween, said guide comprising a transverse bar having depending flanges defining transverse spaces receiving groups of yarn strands, a pair of rods extending through said flanges in vertically spaced relation for maintaining each group of strands divided into upper and lower groups to retain the yarn strands in orderly orientation, said rods being removable from the flanges to enable assembly and disassembly of the guide with respect to the yarns.

3,847,053
ARMORED VEHICLE

Erich Ubelacker, Bremen, Germany, assignor to Rheinstahl Aktiengesellschaft, Essen, Germany
Filed Jan. 6, 1971, Ser. No. 112,490
Int. Cl. F41f *14/21;* **F41h** *5/20*
U.S. Cl. 89—36 K **6 Claims**



1. In an armored vehicle having a turret rotatable about its axis, a tubular weapon pivotally mounted in said turret by means of trunnions extending from the sides of the barrel cradle of said weapon, said turret having a cupola which protrudes from the roof of said vehicle, and a cage therebelow which accommodates an ammunition store and the seats for the operating crew of said weapon, the improvement comprising:

- a tilt bearing having an outer ring which is firmly mounted in said cupola of said turret and an inner ring which is rotatable about the bore axis of the barrel of said weapon; said barrel cradle having its said trunnions pivotally mounted in said inner ring of said tilt bearing and being provided with an extension which, when said weapon is horizontally aligned, extends rearwardly from said trunnions into said turret beyond the plane of the axis of rotation of the turret and downwardly below the roof of said vehicle into said turret cage, said extension serving as an ammunition store for said weapon.

3,847,054
BURST FIRE MECHANISM FOR AUTO-LOADING FIREARM

William B. Ruger, Southport, and Harry H. Sefried, II, New Haven, both of Conn., assignors to Sturm, Ruger & Co. Inc., Southport, Conn.
Filed Sept. 21, 1973, Ser. No. 396,662
Int. Cl. F41d *11/10*
U.S. Cl. 89—129 B **10 Claims**

1. In an auto-loading firearm having a frame, a barrel secured to the frame, a bolt mounted for longitudinal travel in the frame behind the barrel, an auto-loading mechanism connected to the bolt for moving the bolt from its forward closed position to its rearward open position and return when the firearm is fired, a hammer pivotally mounted on the frame, said hammer being formed with a primary sear notch and with a secondary sear notch, a trigger pivotally mounted on the frame, said trigger having a primary sear for engaging the primary sear notch of the hammer, a secondary sear pivotally mounted on the frame for engaging the secondary sear notch of the hammer, a rocker arm pivotally mounted on the frame, the rearward end of the pivoted rocker arm being moved upwardly when the bolt is at its forward closed position and

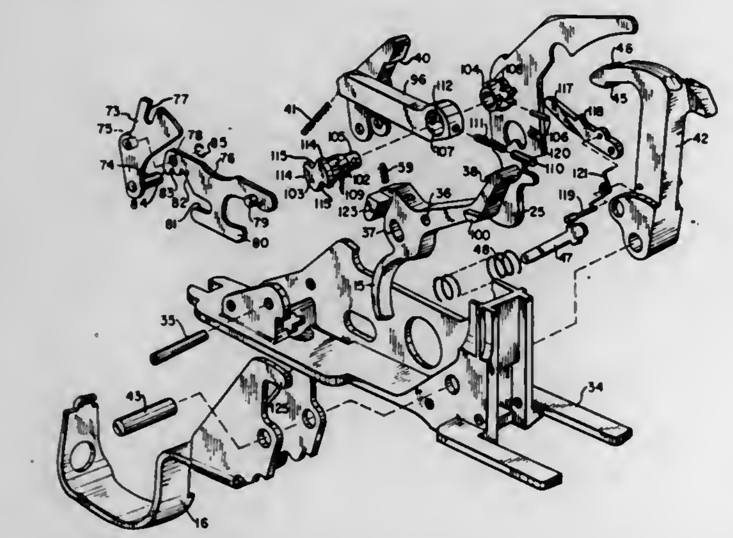
being moved downwardly when the bolt is moved to its rearward open position, said upward and downward movement of the rocker arm alternately causing the secondary sear to be disengaged from and permitting the secondary sear to engage the secondary sear notch of the hammer, the improvement which comprises a firing mechanism capable of firing semi-automatically, fully automatically and in bursts of predetermined duration, said mechanism comprising:

a secondary sear disengager and interrupter support member pivotally mounted on the frame, upward movement of the forward end of said pivoted support member causing the upper end of the secondary sear to move rearwardly out of engagement with the secondary sear notch of the hammer,

an indexing and interrupter assembly rotatably mounted on the forward end of said support member, said assembly comprising an indexing ratchet having a predetermined number of ratchet teeth and an interrupter disc having at least one disengager arm contact surface and at least one disengager arm receiving notch,

an indexing pawl pivotally mounted on the hammer, said pawl engaging the teeth of said indexing ratchet and causing said indexing and interrupter assembly to rotate one tooth at a time each time a cartridge is fired,

an activator link positioner pivotally mounted on the frame for longitudinal movement to a rearwardmost, to an intermediate and to a forwardmost position,



an automatic fire activator link pivotally mounted on said activator link positioner, said activator link having a rocker arm engaging means adapted to engage the rearward end of said rocker arm and a secondary sear disengager arm adapted to contact the interrupter disc of the indexing and interrupter assembly, said rocker arm engaging means and said secondary sear disengager arm being movable forwardly and rearwardly by corresponding movement of the activator link positioner and being movable upwardly and downwardly by corresponding movement of said rocker arm when in engagement therewith, said secondary sear disengager arm moving the foreward end of said support member upwardly to disengage said secondary sear when said disengager arm is moved forwardly and upwardly into contact with an arm contact surface of said interrupter disc,

said activator link positioner being moved to its rearwardmost position to place the activator link at its semi-automatic fire position at which the rocker arm engaging means is out of engagement with the rearward end of the rocker arm and the disengager arm is out of position to contact the interrupter disc of the indexing and interrupter assembly,

said activator link positioner being moved to its intermediate position to place the activator link at its burst fire position at which the rocker arm engaging means is in engagement with the rearward end of the rocker arm and the forward end of the disengager arm is in position to contact the arm contact surfaces and to enter the arm receiving notches of the interrupter disc when the disengager arm is caused to move upwardly by the rocker arm, and

said activator link positioner being moved to its forwardmost position to place the activator link at its fully automatic fire position at which the rocker arm engaging means is in engagement with the rearward end of the rocker arm and the forward end of the disengager arm is in position to contact the arm contact surfaces of the interrupter disc and is forward of the position at which it can enter the arm receiving notches of the interrupter disc when the disengager arm is caused to move upwardly by the rocker arm.

3,847,055

APPARATUS FOR CONTROLLING THE WEIGHT CORRECTION OF WORKPIECES PRIOR TO FINISH-MACHINE

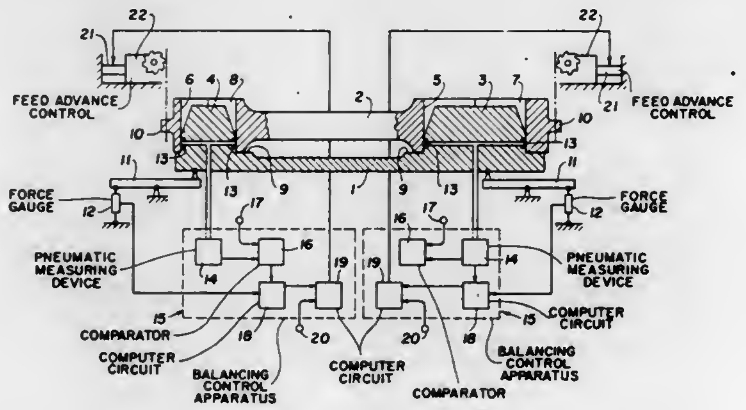
Heinrich Hack, Spachbruecken, Germany, assignor to Carl Schenck Maschinenfabrick GmbH, Darmstadt, Germany

Filed Mar. 19, 1973, Ser. No. 342,780

Claims priority, application Germany, Apr. 19, 1972, 2218904

Int. Cl. B23c *3/00*

U.S. Cl. 90—14 **2 Claims**



1. In an apparatus for the weight correction of a preliminarily machined connecting rod of the type including separate scale means for weighing the connecting rod at each end thereof, and including control means for the weight correction having a computer circuit for converting the difference between the measured weight of the connecting rod and the rated weight of the connecting rod into a control quantity for controlling the feed advance of a milling device for milling the bosses at each connecting rod end; the improvement comprising separate pneumatic diameter measuring means on said scale means for measuring the diameters of the bores of said connecting rod, said control means for the weight correction further comprising comparator means connected to compare the measured diameter with a signal corresponding to a rated diameter to produce a diameter difference signal, and a computer circuit connected to subtract the weight difference from said diameter difference signal to produce a control signal for said milling device.

3,847,056

APPARATUS FOR MANUFACTURING INTERNAL GEARS

Yves Roger, Meudon-la-Foret, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt and Automobiles Peugeot, Paris, both of, France

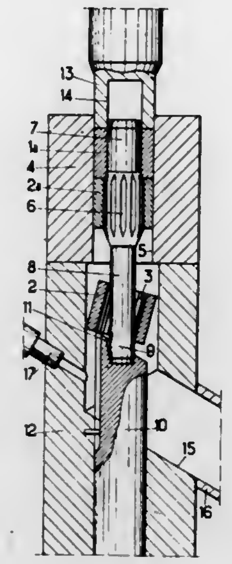
Filed May 7, 1973, Ser. No. 357,597

Claims priority, application France, May 23, 1972, 72.18346

Int. Cl. B23d *37/10*

U.S. Cl. 90—73 **10 Claims**

1. Apparatus for manufacturing internally toothed articles from similar hollow cylindrical blanks comprising a die having a cylindrical bore for receiving a series of such blanks in end to end relation, an externally toothed extrusion broach within the bore, said broach having a blank centering extension at the entry side of the die and a supporting extension at the exit side of the die, ram means constructed and arranged to act on said blanks to periodically force said blanks in succession through the die where there are formed with internal teeth in passing over said broach, and a retractable support mounted to be displaced between a position where it engages the free end of said supporting extension of the broach while the ram means acts to move said blanks and a retracted position permitting a finished toothed article to pass from said supporting extension.



3,847,057

PRECHARGING ARRANGEMENT FOR A HYDRAULIC DISPLACEMENT MACHINE

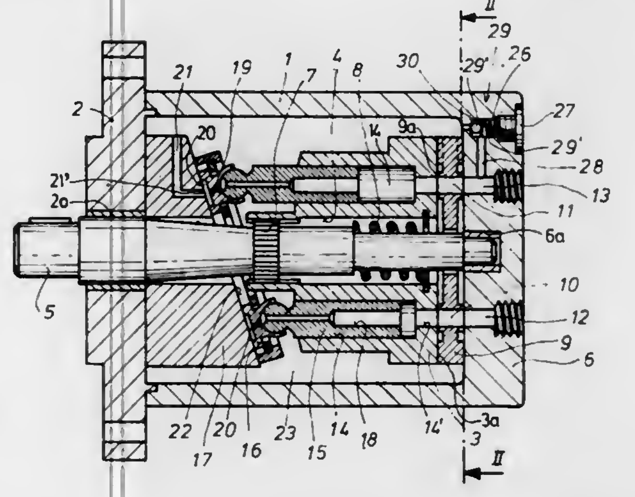
Gunter Ital, and Horst Baurle, both of Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 3, 1972, Ser. No. 240,388

Claims priority, application Germany, Apr. 16, 1971, 7114577

Int. Cl. F01b *3/00*

U.S. Cl. 91—6.5 **10 Claims**



1. Precharging arrangement for a hydraulic displacement machine, comprising closed housing means having an inner control face formed with part-circular high pressure and low pressure ports; actuating means secured to said housing means; cylinder block means mounted in said housing means and having a cylinder block end face slidingly cooperating with said control face, said cylinder block means including working chambers opening in cylinder ports on said end face so that said high pressure and low pressure ports communicate with said cylinder ports during relative rotation of said housing means and said cylinder block means, said cylinder block means including displacement members in said working chambers having free end portions cooperating with said actuating means so that said displacement members are reciprocated between a suction stroke and a compression stroke, and fluid from said working chambers flows through said high pressure and low pressure ports, said actuating means and said cylinder block means forming in said housing means a closed inner space; throttle means connecting said closed inner space with said low pressure port when leakage fluid at a predetermined pressure fills said inner space; and control means, including openings in said free end portions of said displacement members communicating with the associated working chambers, and channel means in said actuating means cooperating at one end with said closed inner space and at the other end with said openings, for disconnecting said closed inner space from said working chambers when said cylinder ports are located on said high pressure and low pressure ports, and for connecting said closed inner space with a respective working chamber when the cylinder port of the respective working chamber is located between said high pressure and low pressure ports on said control face and as the displacement member in said respective working chamber approaches the end of its suction stroke so that the respective working chamber is filled with fluid from said closed inner space having said predetermined pressure.

3,847,058

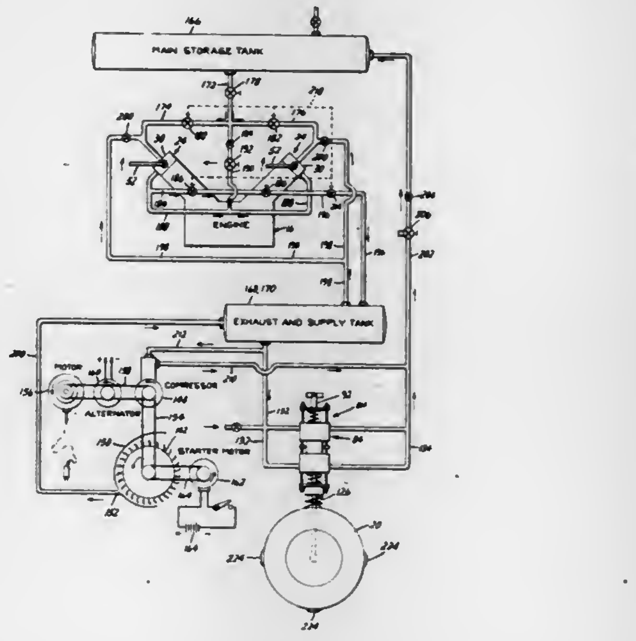
VALVE MECHANISM FOR AN AIR OPERATED RECIPROCATING ENGINE

Robert T. Manor, Box 95, Salmonia, Ind. 47381

Filed Mar. 14, 1973, Ser. No. 341,318

Int. Cl. F15b *11/00*

U.S. Cl. 91—413 **7 Claims**

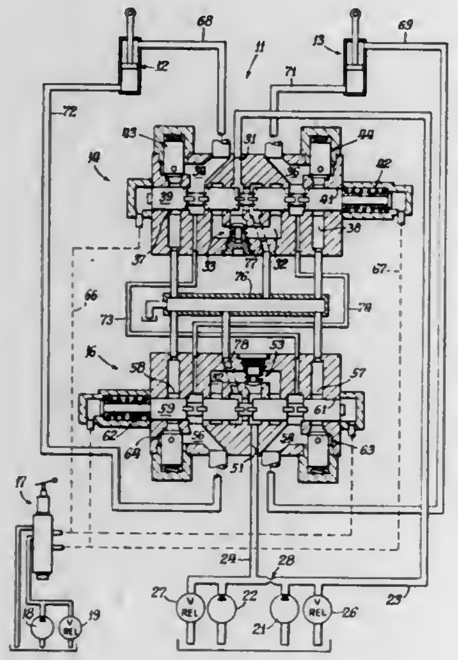


1. For use in a reciprocating engine, a valve mechanism comprising body means having two inlets, two outlets and two exhaust passages therein, a cylindrical cavity in said body means intersected by said passages, said inlets and outlets being on different sides of said cavity, a cylindrical sleeve valve rotatably slidably fitted into said cavity and having a first series of ports in the wall thereof, a cylindrical spool valve rotatably mounted coaxially inside said sleeve valve and having a plurality of passages therethrough extending generally transversely with respect to the axis thereof, said sleeve and spool valves each having two angularly related operative positions, in one of said positions first and second ones of said ports registers with opposite ends, respectively, of a first one of said spool passages and first ones, respectively of said inlet and outlet passages, none of the other ports register with any

other passages for said first position; with said sleeve valve in said first position and said spool valve in said second position a second passage in said spool valve registers at opposite ends with said second port and a third port in said sleeve valve and said second and third ports in turn register with said first outlet passage and a first exhaust passage, none of the other ports and passages being in registry; with said sleeve and spool valves in said second position said first spool passage registers at opposite ends with said first and second sleeve ports which registers in turn with second ones of said inlets and outlets and none of the other ports and passages being in registry; with said sleeve in said second position and said spool in said first position a third passage in said spool registers at opposite ends with said second sleeve port and a fourth sleeve port, said second and fourth sleeve ports also registering, respectively, with said second outlet and the second exhaust passage; with said sleeve in said second position and said spool in said second position said first spool passage registers at opposite ends with said first and second sleeve ports and these in turn register, respectively, with said second inlet and outlet while none of the other spool passages register with any other sleeve port; the first position of said sleeve valve being for forward operation of said engine and the second position for reverse; means for moving each of said sleeve and spool valves individually to the first and second positions thereof; a first engine cylinder having a piston defining a chamber therein, said outlets communicating with the chamber above said piston.

3,847,059
DUAL CONTROL VALVE ASSEMBLY

Henry E. Beck, Oswego, and Wayne A. Peterson, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Sept. 4, 1973, Ser. No. 394,192
Int. Cl. F15b *11/22*
U.S. Cl. 91—413 **8 Claims**



1. A hydraulic control circuit for operating a pair of double-acting hydraulic jacks in unison, each of the jacks having a rod end and a head end, the hydraulic control circuit comprising two similar control valves responsive to a common actuating means, each control valve including a fluid inlet port, two service chambers and drain means, a spool being movable within each control valve by the common actuating means for selectively communicating the service chambers with the inlet port and drain means, each control valve having its service chambers in communication with one end of each of the two hydraulic jacks,

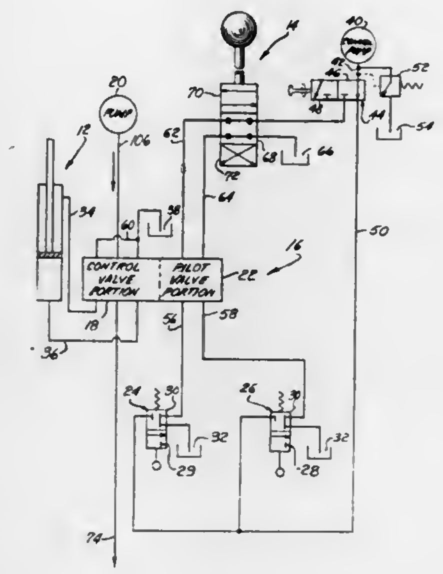
two similar sources of fluid under pressure,

inlet conduit means respectively communicating the two sources with the fluid inlet ports for the two control valves, and

means defining a restrictive orifice arranged in communication between the two inlet conduits.

3,847,060
CONTROL VALVE

Stanley C. Jasinski, Woodstock, Ontario, Canada, and Timberjack Machines Limited, 03, Woodstock, Ontario, Canada
Continuation of Ser. No. 27,549, April 13, 1970, abandoned. This application Sept. 13, 1972, Ser. No. 288,819
Int. Cl. F15b *11/08, 13/042*
U.S. Cl. 91—453 **6 Claims**



1. A fluid system for controlling a fluid motor in a first operational mode through a plurality of binary control valves actuated by automatic means and in a second operational mode by a manually actuated control valve comprising:

a fluid motor;

a pilot operated control valve assembly having a control valve portion for conducting pressurized fluid from a pressurized fluid supply to said fluid motor to effect control of said fluid motor and having a pilot valve portion connected to said control valve portion to control said control valve portion, said control valve portion having a passageway for allowing pressurized fluid to be transmitted to successive fluid systems, said pilot valve portion including a piston member and a body having a chamber therein for receiving said piston member, said piston member dividing said chamber into first and second chamber portions, means for directing fluid pressure into the first chamber portion, and means for directing fluid pressure from the first chamber portion into the second chamber portion, said piston member having a greater pressure face against which the fluid pressure in the second chamber portion acts than the pressure face against which the fluid pressure in the first chamber portion acts;

a plurality of binary control valves connected to said pilot valve portion to operate said fluid motor in said first operational mode, each of said binary control valves establishing a first signal and a second signal to said pilot operated control valve such that when a first signal is provided by one of said binary control valves or a second signal is provided by another of said binary control valves said pilot operated control valve conducts pressurized fluid to the fluid motor to move the fluid motor in a respective direction during the operation of said system in said first operational mode;

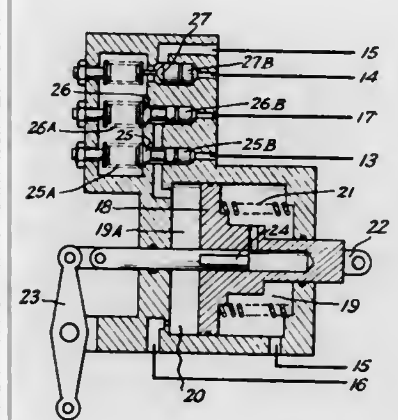
a manual control valve for operating said fluid motor in said second operational mode, said manual valve having a neutral position and a second position, said manual valve receiving pressurized fluid transmitted to the second chamber portion from the first chamber portion through said means for directing fluid pressure into the second chamber portion when pressurized fluid is supplied to the first chamber portion, the second position of said manual valve blocking the second chamber portion from fluid communication with the reservoir so that the pressurized fluid received by the second chamber portion from the first chamber portion exerts a force greater than the force exerted by the pressurized fluid in the first chamber portion due to the greater pressure face area, said manual control valve further including means for blocking fluid flow in a conduit means for normally directing fluid from said second chamber to a low pressure reservoir;

a selector valve for switching the operation of said fluid motor between said first operational mode and said second operational mode by supplying pressurized fluid to either said manual control valve or said binary control valve to exclusively operate the valve supplied with said pressurized fluid; and

said manual control valve including means for overriding the control of said control valve through said binary control valves during the first operational mode and reversing the direction of said fluid motor movement to an opposite direction upon actuation of said override means.

3,847,061
CONTROLS FOR VARIABLE PUMPS OR MOTORS

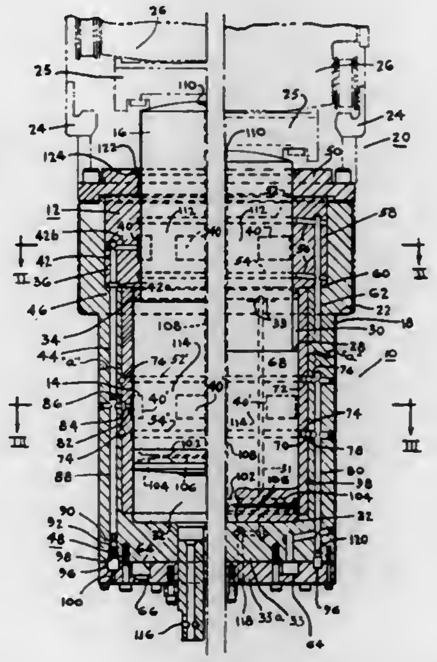
Richard Joseph Ifield, Dural, New South Wales, Australia, assignor to Advanced Products Pty. Limited, Dural, New South Wales, Australia
Filed July 24, 1972, Ser. No. 274,691
Claims priority, application Australia, July 28, 1971, 5697/71
Int. Cl. F04b *1/26*
U.S. Cl. 91—497 **7 Claims**



1. In a control system for variable displacement pumps, motors and the like, including a servo-motor having a pilot element operably associated therewith for control of said servo-motor in response to positioning of said pilot element, which positioning effects changes in the displacement of the pump, motor, and the like with which it may be associated, the combination of a main control means operative to position said pilot element, a primary servo-motor includng a cylinger having a piston mounted therein, said piston defining a chamber at one end of said cylinder, said piston being operably movable within said cylinder by pressures developed in said chamber, and being operably interconnected to said pilot element whereby movement of said piston varies the position of said pilot element in precedence to the operative effect thereon of said main control means, and vent means for reducing the pressure level within said chamber, said vent means including at least one vent valve having a movable valve element and a coacting valve seat, spring means resiliently urging said valve element to a closed position against said valve seat, a variable fluid pressure to be monitored and sealed plunger means subject to said pressure to be monitored and acting on said valve element in opposition to said spring means, whereby, when said pressure to be monitored reaches a predetermined value, said valve element is unseated to vent said chamber.

3,847,062
PLUNGER AND CYLINDER ARRANGEMENT

John J. Sutyak, Pittsburgh, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa.
Filed Dec. 27, 1971, Ser. No. 212,558
Int. Cl. F01b *31/10*
U.S. Cl. 92—86.5 **12 Claims**



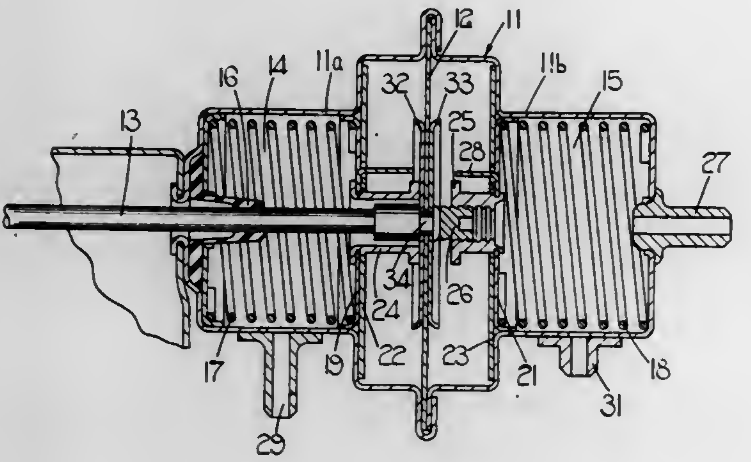
1. A fluid bearing plunger and housing arrangement comprising a housing, a plunger member closely fitted within said housing for reciprocation therein, said housing defining a pressure chamber therein for actuating said plunger member, a plurality of discrete pressure recesses formed in an inner surface of said housing and juxtaposed to said plunger member, said recesses circumferentially surrounding said plunger member and in addition being substantially equally spaced from one another, a pair of exhaust grooves formed in said inner housing surface and juxtaposed to said plunger member, said exhaust grooves being axially spaced one of each side of said recesses, said grooves circumferentially and continuously surrounding said plunger member, one of said grooves being disposed between said recesses and said chamber, and conduit means for supplying a pressurized fluid to each of said recesses and for conveying from said exhaust grooves any fluid collected therein, each of said pressure recesses being circumferentially spaced from adjacent recesses and axially spaced from said exhaust grooves to an extent that the fluid resistance of surrounding first interfacial areas of said member and said housing establish an essentially hydrostatic pressure condition in said recesses, said first interfacial areas extending uninterruptedly between adjacent one of said pressure recesses and uninterruptedly between said recesses and said exhaust grooves, said plunger member extending beyond said one groove and toward said chamber so that second interfacial areas of said member and said housing between said chamber and said one groove effectively isolate said one groove from said chamber, said second interfacial areas and said one groove interrupting any leakage from said pressure chamber to said first interfacial areas and said pressure recesses.

3,847,063
VACUUM OPERABLE UNITS FOR IGNITION DISTRIBUTORS

William Harold Cooksey, Walsall, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed June 29, 1972, Ser. No. 267,595
Claims priority, application Great Britain, July 2, 1971, 31079/71
Int. Cl. F01b *19/00;* **F16j** *3/00*
U.S. Cl. 92—100 **4 Claims**

1. A vacuum operable unit for use with an internal combustion engine ignition distributor including a hollow casing hav-

ing a pair of fixed outer walls and divided into first and second chambers by a flexible diaphragm, a push rod coupled at one end to the diaphragm so as to move therewith and arranged at its other end to be coupled to the timing plate of an ignition distributor, said rod extending through said outer wall of said first chamber and sealing means engaging said outer wall of the first chamber and the rod to seal said first chamber while permitting movement of the rod, first resilient means within the first chamber having first retaining means at a first end thereof which is operatively acted upon by the diaphragm during movement of the diaphragm in a first direction from a central position thereof to reduce the volume of the first chamber, a second end thereof restrained by said outer fixed wall of said first chamber, second resilient means within the second chamber having second retaining means at a first end thereof which is operatively acted upon by the diaphragm during movement of the diaphragm in a second direction from said central position to reduce the volume of the second chamber, a second end thereof restrained by said outer fixed wall of said second chamber, and first and second abutment means fixed to the casing and engagable by said first and second retaining means respectively in said central position of the diaphragm for preventing said first and second resilient means respectively from operatively acting on said diaphragm in said central position, and first and second extensions on said first and second retaining means, respectively, extending through and beyond said first and second abutment means, respectively, for engaging said diaphragm.



3,847,064
TOBACCO SMOKE FILTER

Richard M. Berger, Richmond, Va., assignor to American Filtrona Corporation, Richmond, Va.

Division of Ser. No. 287,803, Sept. 11, 1972, Pat. No. 3,811,451. This application Jan. 17, 1974, Ser. No. 434,223

Int. Cl. A24c *5/50*

U.S. Cl. 93—1 C **9 Claims**

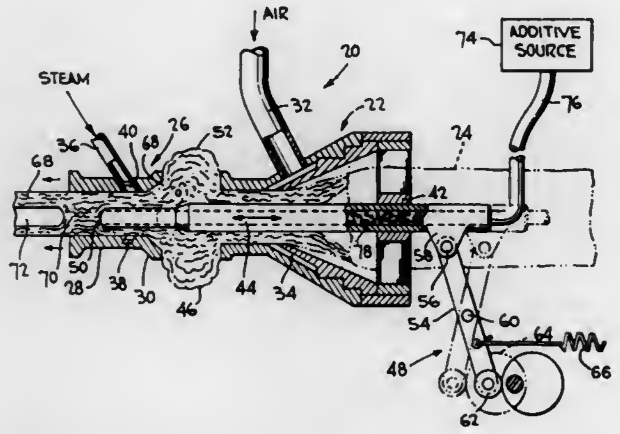
1. A method of making smoke filter means comprising:

a. providing a bondable filtering material including a multiplicity of fibrous members;

b. continuously passing said filtering material into and through an elongated bonding zone and, intermediate the passage of said filtering material through said bonding zone, contacting same with a bonding agent to bond said fibrous members of said filtering material to each other at spaced contact points thereby forming an elongated, smoke-permeable, rod defining a tortuous path for passage of smoke therethrough;

c. during the passage of said filtering material through said bonding zone, positioning a mandrel generally axially of said bonding zone to define an annular space through which said filtering material must pass;

d. reciprocating said mandrel in timed relationship to the passage of said filtering material through said bonding zone between a first position, at least as far forward in the path of travel of said filtering material as the point at which said filtering material is contacted by said bonding agent, to thereby produce a smoke-permeable annular wall of bonded fibrous members as said filtering passes said point, and a second position, sufficiently rearwardly of said point in the path of travel of said filtering material to permit a portion of said filtering material to extend transversely completely across said bonding zone before reaching said point, to thereby produce a smoke-permeable plug of bonded fibrous members as said filtering material passes said point, said annular wall and said plug being integral with each other, whereby said rod is provided with intermittent internal cavities totally enclosed and surrounded by said annular wall and by plugs forwardly and rearwardly thereof;



e. overwrapping said rod with an overwrapping material so as to juxtapose portions of the inner surface of said overwrapping material with continuous peripheral portions of the exterior surface of at least portions of selected plugs to form sealed areas precluding passage of smoke thereacross; and

f. transversely severing said overwrapped rod at selected locations to form filter elements each of which includes at least one of said internal cavities and at least one of said sealed areas.

3,847,065
VENTILATION SYSTEM

Jorgen Holt, Naestved; Christian Videmark, Haslev, and Palle Hein Christiansen, Naestved, all of Denmark, assignors to Nordisk Ventilator Co., A/S, Naestved, Denmark

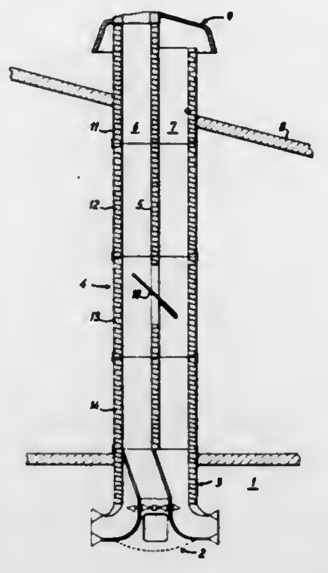
Filed June 7, 1973, Ser. No. 367,906

Claims priority, application Denmark, June 9, 1972, 2914/72

Int. Cl. F24f *13/00*

U.S. Cl. 98—33 **2 Claims**

1. A ventilation system comprising a duct for the injection of fresh air and a duct for the exhaustion of air from a ventilated room, said ducts extending at least on part of their length side by side, a common flat partition separating said ducts on said part of their length and incorporation an opening between said ducts and a damper member which is arranged in said opening to be movable between two extreme position in one of which it closes said opening and in the other of which it blocks both ducts and opens up for complete recirculation of air exhausted from the room back to the room through the injection duct, said damper member consisting of a damper plate of a material of high heat conductivity and coatings of insulating material applied to both surfaces of said plate, the coating on the surface facing the injected air flow covering said plate completely absent from an area along the peripheral edge of the part of the damper plate located in the injection duct and the coating on the opposite surface of said damper plate covering said part of the plate located in the injection duct right to said peripheral edge and leaving the part of the plate located in the exhaust duct uncovered.



3,847,066
INLET GRILL

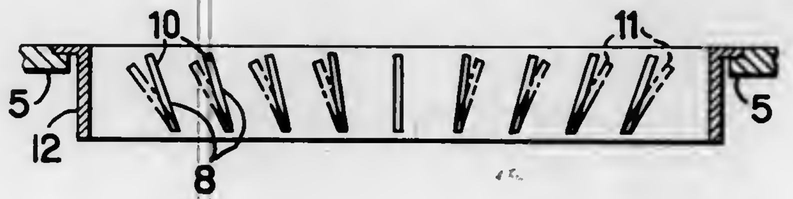
Wim Van Der Ham, Asenvagen 7, Jonkoping, Sweden

Filed Aug. 2, 1972, Ser. No. 277,141

Claims priority, application Switzerland, Aug. 13, 1971, 10318/72

Int. Cl. F24f *13/06*

U.S. Cl. 98—40 VT **9 Claims**



1. An inlet grill for supplying gases with varying conditions for control of dwelling rooms, comprising a plurality of elongated blades disposed with their edges facing the supply of gas, said blades constituting guide bars for guiding the gas stream, characterized in that at least of some of the blades are automatically adjusted to different angles relative to the flow direction in response to the varying conditions of the supplied gas, said blades being made of a material which can be bent or flexed to change the angular deflection of the gas stream through the grill, and including bimetal strips secured to said blades transverse to said edges to effect bending of said blades in response to temperature changes in the gas stream.

3,847,067
ELECTRICALLY HEATED CORN POPPER AND FOOD WARMING APPARATUS

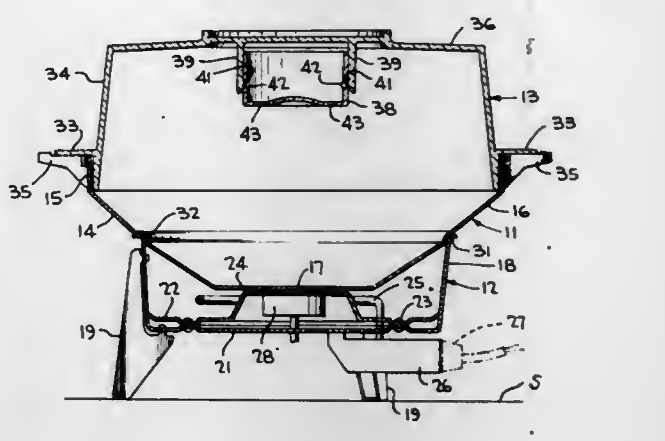
George B. Munsey, Little Rock, Ark., assignor to Munsey Products, Inc., Little Rock, Ark.

Filed Mar. 12, 1973, Ser. No. 340,083

Int. Cl. A23l *1/18*

U.S. Cl. 99—323.8 **7 Claims**

1. A corn popper and food warming apparatus comprising a receptacle having a bottom portion and circular sidewall for containing a quantity of corn to be popped, a stand base supporting said receptacle, said base including an upwardly open cup-shaped element having a bottom wall and a circular sidewall for the reception of said bottom portion of said receptacle, legs on said cup-shaped element, a deep-dished cover for said receptacle, said cover having a circular sidewall, a butter container removably mounted at the top inner portion of said cover, a receptacle support plate connected to the inner surface of said bottom wall, said plate having a raised and flat central portion spaced from said inner surface, electric heating element surrounding said raised and flat central portion, and said bottom portion of said receptacle being formed as a truncated cone defining a conical section and a flat and central portion, said conical section being supported along the peripheral edge of said base circular sidewall and said flat central portions abutting one another to stabilize the support of said receptacle.



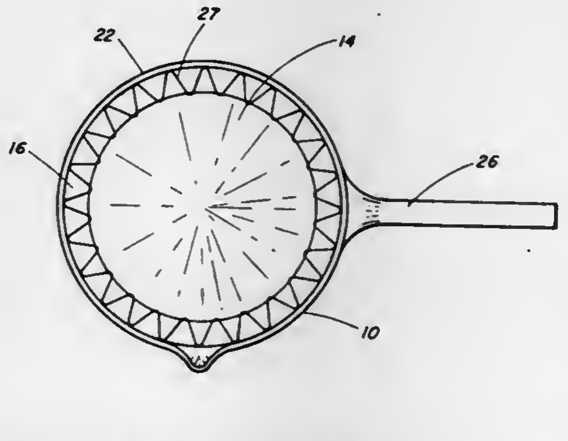
3,847,068
FATLESS FRYING PAN

Carl Beer, Taborton Rd., Sand Lake, N.Y. 12153, and Steven Vincent Beer, 312 Eastwood Ave., Ithaca, N.Y. 14850

Division of Ser. No. 180,811, Sept. 15, 1971, abandoned. This application July 30, 1973, Ser. No. 383,598

Int. Cl. A47j *37/10*

U.S. Cl. 99—425 **4 Claims**



1. A self-draining fry pan which comprises;

a. a convex surface for frying foods;

b. a channel for collecting fat or grease from frying food circumferentially disposed about the frying surface, said channel having an inner side wall connected to the periphery of said frying surface and an outer side wall forming an outer pan rim, the base of said channel being below the periphery of said frying surface;

c. means for arresting the frying food on said convex surface and for preventing said food from contacting said fat or grease collected in said channel which comprises a member having crimped lateral walls and which is disposed about the periphery of the convex surface and atop said channel, said crimped lateral side walls extending to a height above the lowest point on said convex surface; and

d. means connected to said inner side wall for grasping said fry pan.

3,847,069
PIZZA BAKING OVEN WITH A HELICAL RACK AND A RADIALLY DRIVEN IMPELLER

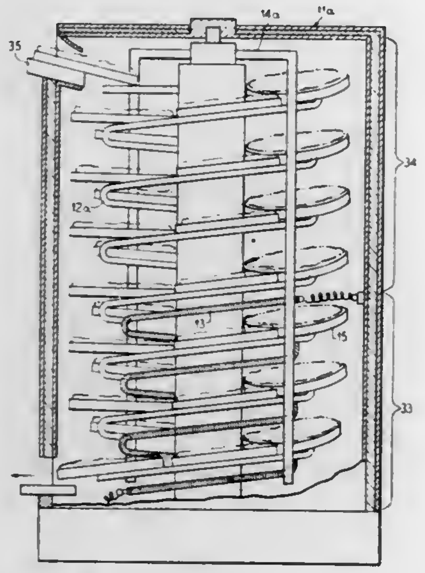
Raul Guibert, New York, N.Y., assignor to Jeno F. Paulucci, Duluth, Minn.

Filed Dec. 19, 1972, Ser. No. 426,065

Claims priority, application Argentina, Dec. 20, 1972, 245751; Dec. 20, 1972, 245752

Int. Cl. A47j *37/06*

U.S. Cl. 99—443 R **12 Claims**



1. An oven comprising:
a. a cabinet having a baking chamber;
b. a support rack including means defining a helical track for supporting a circular article to be baked, in a radially outwardly overhanging relation thereon, said helical track having a vertical axis;
c. a electrical baking heater disposed in proximity to said rack; and
d. a driven impeller movable about said vertical axis in a path which is radially external to said rack but which intersects the overhanging portion of the circular articles, the coaction between said support rack and said impeller on the article causing the article to pass along the helical track about said vertical axis, while simultaneously rotating about its own axis,
whereby uniform baking of the article is obtained.

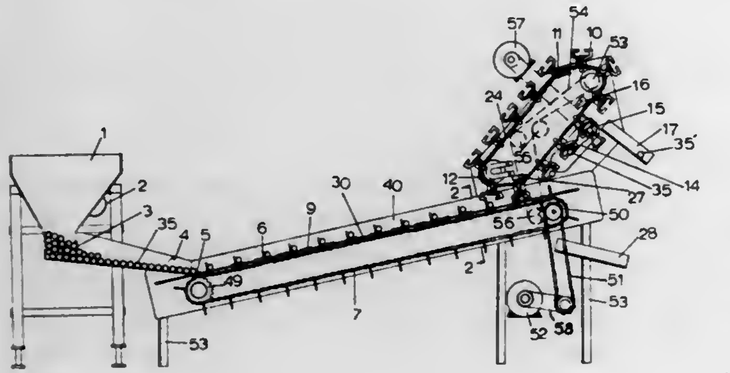
3,847,070
MACHINE TO CUT THE ENDS OFF ONIONS OR THE LIKE

Henry A. Draggett, Fredonia, N.Y., assignor to Ajax Flexible Coupling Co., Inc., Westfield, N.Y.

Filed Oct. 12, 1972, Ser. No. 297,003

Int. Cl. A23n *15/04*

U.S. Cl. 99—643 **6 Claims**



1. A machine for removing ends from articles that are like onions in shape comprising,
a first conveyor having spaced articles receiving positions thereon,
means for feeding said articles in sequence to said first conveyor,
a second conveyor,
a plurality of spaced cutting members for removing said ends from said articles,
gripping means on said second conveyor for transferring said articles from said first conveyor to said second conveyor, said gripping means engaging said articles on opposite sides thereof generally midway between said ends and moving said articles between said cutting members whereby said ends are removed,
means to discharge said articles from said second conveyor, said first conveyor having a bottom and sides extending upwardly from said bottom,
means for adjusting said sides of said first conveyor toward and away from each other,
said sides being adapted to be spaced from each other a distance slightly greater than the distance between the ends of said articles,
a chute for feeding articles to said first conveyor,
a stop member supported at an end of said chute adjacent said first conveyor,
said first conveyor having a continuous chain member,
a platelike member supported on said platelike chain member, laterally spaced pins fixed to said continuous member,
said spaced pins being adapted to move along each side of said stop to move said articles from said stop up said first conveyor to said second conveyor.

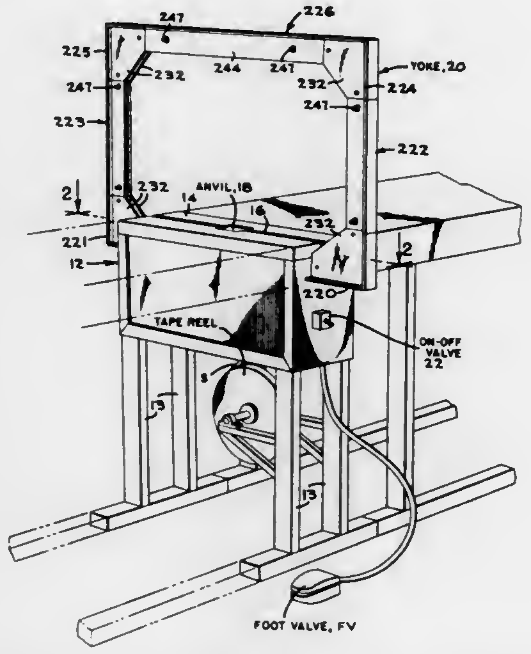
3,847,071
STRAPPING MACHINE FEED

George F. Goodley, Media, Pa., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 198,862, Nov. 15, 1971, Pat. No. 3,759,169. This application Feb. 14, 1973, Ser. No. 332,465

Int. Cl. B65b *13/32*

U.S. Cl. 100—32 **1 Claim**



1. Article strapping apparatus of the type wherein reversible, power driven strap transport wheel means includes a friction feed wheel that feeds the strap through an article receiving yoke and a friction tension wheel, means for gripping the free end of the strap, and the transport wheel means is reversed to cause the tension wheel to tension the strap; the improvement wherein said feed and tensioning friction wheels are of the same diameter and are geared solidly together, said wheels being covered with a rubber-like material for peripherally gripping the strap between them, and means for guiding the strap so that the strap enters at the feed wheel and wraps around it at least 90° whereupon the strap passes through the nip of the wheels, wraps around the tensioning wheel at least 180° and continues on to the yoke.

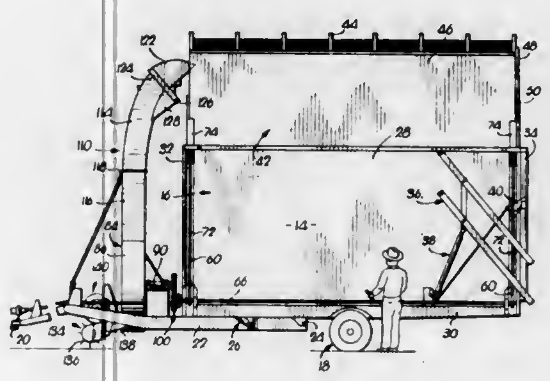
3,847,072
LOOSE HAY WAGON

Harold Keith Garrison, Newton, Kans., assignor to Hesston Corporation, Hesston, Kans.

Continuation of Ser. No. 83,665, Oct. 23, 1970, abandoned, which is a division of Ser. No. 815,894, April 14, 1969, Pat. No. 3,556,327. This application Apr. 18, 1973, Ser. No. 352,123

Int. Cl. B30b *9/30*

U.S. Cl. 100—35 **7 Claims**



1. The method of making a stack of hay which comprises the steps of:
feeding a stream of loose hay into a collapsible container having a pair of sections of substantially identical sizes and configurations, including a hollow, open top body provided with a bed, and a normally elevated open bottom press having a crowned roof, each being additionally provided with opposed, upright side and end walls, the press being restricted to vertical, rectilinear reciprocation and being an upper extension of the body, aligned and in registered communication with the latter, when the press is elevated;
placing as much of said hay into the container as can be held or practically contained by continuing said hay feeding step while the press is elevated until both the body and the press are filled with a loose mass of said hay; thereupon
preforming said mass into the shape of a polygonal haystack by lowering the press into the body with a steady, continuous force sufficient to slip the press between the body and said mass to dispose the press over and around the mass, enclosing the latter within the press, surrounded by the side and end walls of the press, and confined between said roof and said bed; and
condensing said preformed mass into a compact stack of substantially uniform density throughout, molded to the internal configuration of the press, by continuing said steady press lowering force without interruption to inwardly compress the preformed mass simultaneously end to end thereof, laterally thereof and from top to bottom thereof prior to raising the press to its normally elevated position.

3,847,073
HAY ROLL FORMING MACHINE

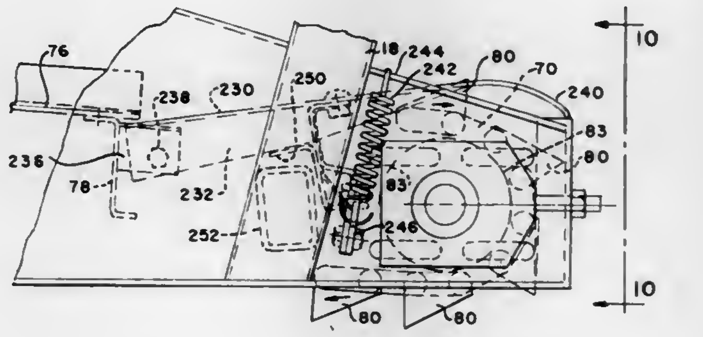
Aquila D. Mast, Lancaster; Edward T. Eggers, New Holland, and Myles Hyman, Lancaster, all of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Apr. 24, 1973, Ser. No. 353,948

Int. Cl. B30b *5/06, 9/00;* **A01d** *39/00*

U.S. Cl. 100—88 **5 Claims**

1. A mobile hay roll-forming machine comprising in combination, a mobile frame, an endless apron in the lower portion of said frame having an upper course extending substantially horizontally, floor means supported beneath said upper course of said apron to support the same for movement thereover, means operable to move said upper course rearwardly in said machine, means to deliver a swath of agricultural product to the forward end of said upper course of said apron, upper roll-forming means in said machine operable to cooperate with said endless apron to form said swath of product into a roll, said endless apron comprising a plurality of endless flexible members spaced from each other transversely across said machine and the upper courses of said members being movable within a plane extending longitudinally of said machine relative to the direction of movement thereof along a field, upstanding lugs on said flexible members engageable with the lower surface of a roll of said product and operable to move the same rearwardly while said upper roll-forming means engages and moves the upper surface of said roll forwardly and thus revolves said roll about its axis while supported in said machine, a terminal supporting means extending rearwardly from the rearward end of said floor means, said means having slots therebetween through which said flexible members and the lugs thereon passes to disengage said roll, and means engaging said terminal supporting means and normally urging the same in a position to cause said flexible means and lugs thereon to pass through said slots therein as aforesaid but said means also being operable to depress said terminal supporting means when a roll is to be discharged therefrom and thereby cause said lugs on said flexible members to continue to be exposed and engage said roll substantially to the end of said terminal supporting means and thereby facilitate discharge of said roll from said machine.



3,847,074
POWER SYSTEM FOR MULTI-PRESSURE HYDRAULIC PRESS

Edmund Nowak, Warszawa, Poland, assignor to Przedsiebiorstwo Doswiadczalne Pras Automatycznych i Tlocznikow "Ponar-Hydomat", Warsaw, Poland

Filed Aug. 17, 1972, Ser. No. 281,389

Claims priority, application Poland, Nov. 9, 1971, 150463

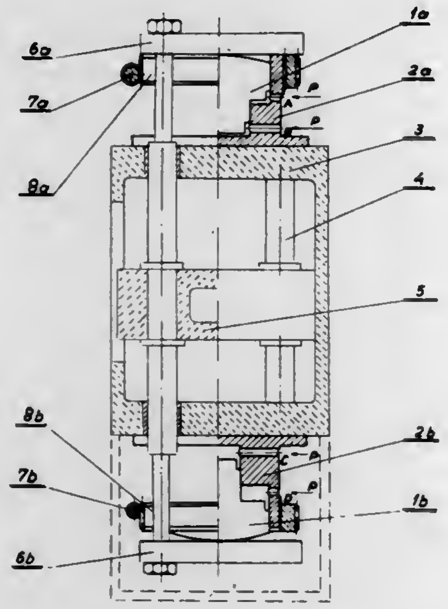
Int. Cl. B30b *1/34, 15/06*

U.S. Cl. 100—209 **8 Claims**

1. A double-acting hydraulic press having two pressing stations comprising, in combination:
a. a first power cylinder;
b. a first plunger positioned in said first power cylinder, said first plunger having a first plurality of working faces to which hydraulic fluid may be independently applied;
c. means for selectively supplying hydraulic fluid to said first power cylinder and thence selectively to at least one of said first plurality of working faces;
d. a platen positioned between said two pressing stations and having a first and a second working surface;
e. coupling means coupling said platen to said first plunger;
f. a second power cylinder;

g. a second plunger positioned in said second power cylinder, said second plunger having a second plurality of working faces to which hydraulic fluid may be independently applied;

h. means for selectively supplying hydraulic fluid to said second power cylinder and thence selectively to at least one of said second plurality of working faces; and



i. further coupling means for coupling said platen to said second plunger;

whereby various pressures for the press may be effected by selectively supplying hydraulic fluid to one or simultaneously more than one of said working faces to move said platen selectively and alternatively into one and the other of said pressing stations.

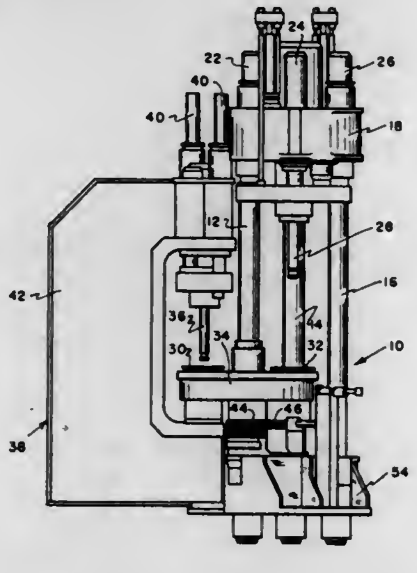
3,847,075
TURNTABLE APPARATUS FOR PRESSES

Raymond F. Boshold, Springfield, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Oct. 16, 1973, Ser. No. 407,016

Int. Cl. B30b *15/32*

U.S. Cl. 100—223 8 Claims



1. In a press having turntable for selectively carrying a number of containers into and out of a pressing station of said press,

means for lowering and raising said turntable to bring said turntable into two different axial positions with respect to the pressing axis of said press,

a driving member mounted in a spaced relationship with said turntable,

a driven member connected to said turntable arranged to be engaged by said driving member on operation of said turntable, lowering and raising means to bring said turntable into one of said two different positions, and

power means for driving said driving member to cause a rotation of said turntable when said turntable is in said raised position.

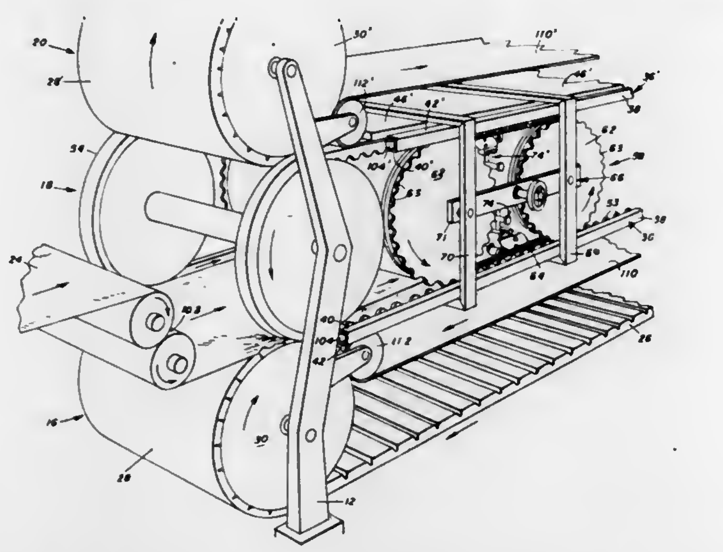
3,847,076
PRINTING APPARATUS

Michael Vasilantone, 147 E. First Ave., Roselle, N.J. 07203

Filed Jan. 4, 1973, Ser. No. 321,016

Int. Cl. B41l *13/08*

U.S. Cl. 101—122 4 Claims



1. In an apparatus for continuously printing on a moving flexible material comprising a platen for receiving said material to be printed, said platen comprising a movable endless web having a top run and a bottom run, means for moving said material over said platen for movement therewith, printing means adjacent one of said runs of said platen for continuously printing said material supported by said platen, and a table supporting that portion of said one of said runs disposed opposite said printing means, the improvement comprising a movable endless friction reducing band of substantially planar sheet-like material having a surface friction coefficient less than that of said platen disposed within said endless platen and having a run extending between said platen run and said table and movable with said platen, thereby reducing friction between said platen and said table.

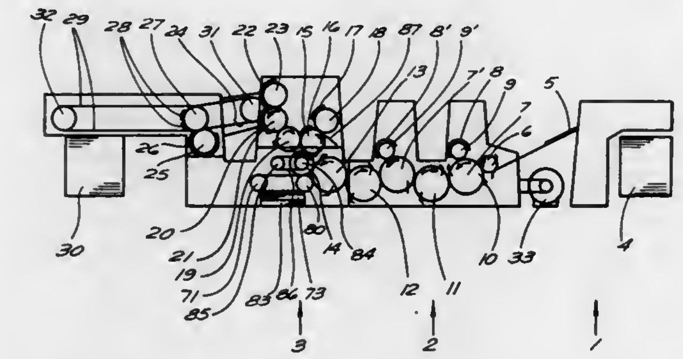
3,847,077
SETTING UP ARRANGEMENT FOR A COMBINED PRINTING AND STAMPING MACHINE

Peter Zirnstein, Rathmannsdorf; Erwin Schebiella, Heidenau; Siegfried Koerner, Dresden; Joachim Weise, Dresden, and Horst Mulansky, Dresden, all of Germany, assignors to Veb Polygraph Leipzig Kombinat Fuer Polygraphische Maschinen und Ausruestungen, Leipzig, Germany

Filed Apr. 2, 1973, Ser. No. 347,360

Int. Cl. B41b *5/02*

U.S. Cl. 101—24 20 Claims



1. Setting up arrangement for a combined printing and stamping machine, comprising a printing machine including sheet feeding means, a plurality of printing rollers for printing and transporting a sheet, and including an output roller, and auxiliary depositing means for receiving printed sheets from said output roller, and for depositing said sheet on a first stack; drive means for driving said printing machine; a stamping machine including a plurality of stamping rollers including an input roller; main depositing means for receiving stamped out sheet portions from said stamping machine and for depositing the stamped out sheets on a second stack; a transfer roller having an inoperative position separated from said output and input rollers, and a transfer position for transferring the imprinted sheets from said output roller to said input roller; clutch means having an engaged position for connecting said driven output roller, said transfer roller, and said input roller for rotation, and a disengaged position in which said stamping machine is not driven by said drive means; and control means having a setting up position for placing said transfer roller in said inoperative position and said clutch means in said disengaged position so that said printing machine can be set up separately while printed sheets are deposited on said first stack and said stamping machine is not driven by said drive means, and an operating position for placing said transfer roller in said transfer position and said clutch means in said engaged position so that said drive means drive said printing machine, said transfer roller, and said stamping machine while the printed and stamped out sheet portions are deposited on said second stack.

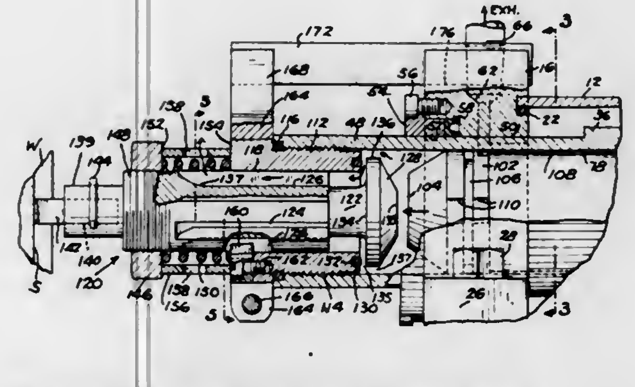
3,847,078
PNEUMATICALLY OPERATED MARKING TOOL

Frank Krembel, Jr., St. Clair Shores, Mich., assignor to Columbia Marking Tools, Inc., Detroit, Mich.

Filed Nov. 29, 1973, Ser. No. 420,074

Int. Cl. B44b *5/00*

U.S. Cl. 101—3 R 35 Claims



1. Marking tool structure which comprises,

a first pneumatic cylinder with a piston and piston rod therein, a portion of the rod projecting beyond an end of the cylinder,

said rod being hollow and defining a second pneumatic cylinder,

vent means between the interior of said second cylinder and atmosphere,

a member axially movable in said rod portion between one position in which it pneumatically closes said vent means and another position in which it opens said vent means, said member being biased toward said one position,

means providing a marking die holder mounted for movement with said member,

said first cylinder being ported to receive air under pressure for advancing and retracting said piston relative to a workpiece,

said holder being effective to move said member against said bias to said other position responsive to engagement of a marking die held thereby with a workpiece,

said member being provided with means forming an anvil, a ram pneumatically movable in said second cylinder,

said second cylinder being provided with first porting to receive air under piston-advancing pressure from said first cylinder, and second porting to receive air under piston-retracting pressure from said first cylinder,

said ram, responsive to opening of said vent means being advanceable under the force of air under pressure received through said first porting for striking said anvil,

said member being effective to transmit striking force of said ram against said anvil to said holder and a marking die held thereby for marking a workpiece,

said ram being retractable in said second cylinder under the force of air under pressure received through said second porting,

and pressure retaining means associated with said first porting cooperable with said member in said one position to retain air under pressure in said second cylinder received through said second porting.

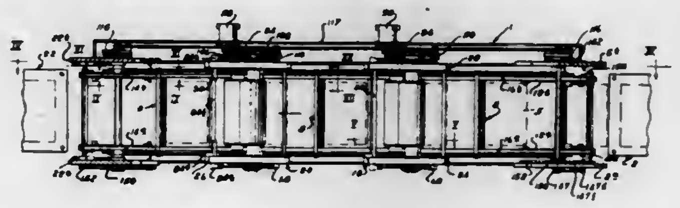
3,847,079
METHOD OF PRINTING SHEETS

Harold P. Dahlgren, 726 Regal Row, Dallas, Tex. 75247

Continuation of Ser. No. 250,143, May 4, 1972, abandoned, which is a continuation-in-part of Ser. No. 737,521, June 17, 1968, Pat. No. 3,664,261. This application Sept. 10, 1973, Ser. No. 395,808

Int. Cl. B41f *5/08*

U.S. Cl. 101—426 5 Claims



1. A method of sheet-fed printing comprising, providing a sheet; providing a printing press having at least two adjacent rotatable printing cylinders; positioning the leading edge of a sheet in a gripper element; moving the gripper element toward and between the printing cylinders in a straight line substantially normal to a line intersecting the tangent point of the cylinders and the longitudinal axes thereof; printing on both sides of the sheet carried by the gripper element at substantially the same instant; and moving the gripper element away from the printing cylinders in a substantially straight line to disengage the sheet from surfaces of each of the printing cylinders whereby the sheet when passing between the cylinders is maintained in substantial line contact with the cylinders.

3,847,080
REMOTE ROCK BREAKING METHOD APPARATUS THEREFOR

Robert E. Eckels, Golden, Colo. 80401

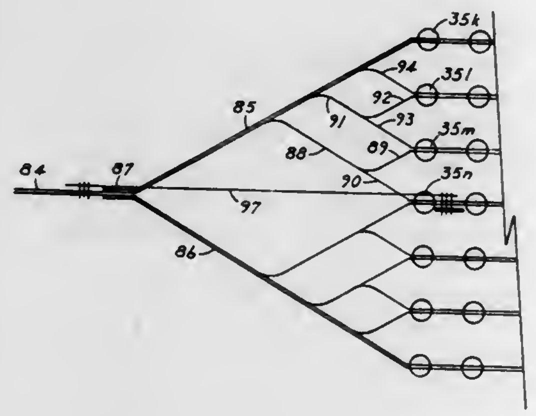
Division of Ser. No. 117,537, Feb. 22, 1971, Pat. No. 3,741,119. This application Apr. 19, 1973, Ser. No. 352,503

Int. Cl. F42b *3/10;* **C06d** *5/00*

U.S. Cl. 102—27 R 4 Claims

1. A detonating cord bridle arrangement for a plurality of explosive charges placed in a plurality of parallel rows for essential simultaneously detonating each row of explosives, said bridle arrangement comprising a length of detonating cord extending from an initiating point to a first juncture of a first set of at least two detonating cords, said first set of detonating cords extending from said length of detonating cord at an angle less than 60°; each cord of said set being extended to a pair of second junctures of a pair of second sets of at least two detonating cords, each of the cords of said second sets extending from the respective cords of said first set at an angle less than 30°; each cord of said second sets being arranged for

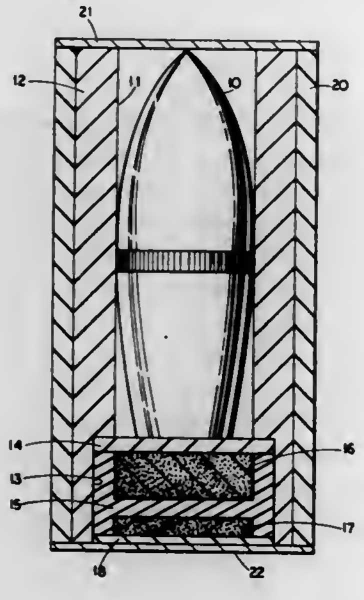
detonating a row of explosive charges; the detonating cords forming said bridle arrangement being of a flexible, unshielded type and the length of the detonation paths of all the cords from said first juncture to each of the charge rows being equal; and float means attached to the detonating cords for maintaining said cords taut to provide separation and prevent sharp directional changes in said cords.



3,847,081
AMMUNITION

Joseph B. Quinlan, and Arthur F. Darrah, both of Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

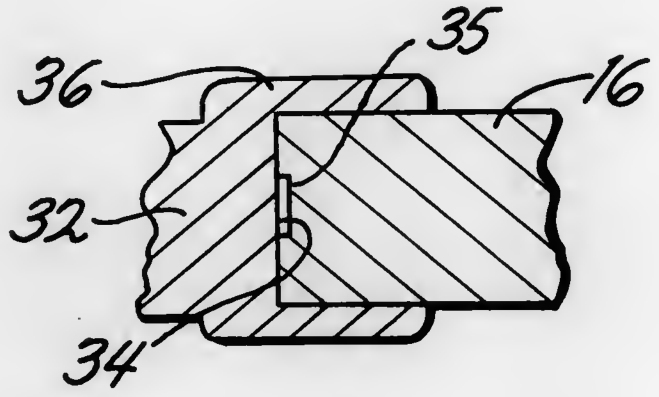
Filed Dec. 20, 1972, Ser. No. 316,955
Int. Cl. F42b *5/18*
U.S. Cl. 102—38 **6 Claims**



1. A high temperature resistant telescope caseless cartridge comprising,
- a first cylindrical single base molded propellant charge having a forward central passage containing a projectile completely encapsulated therein and a relatively larger rearward central passage,
- a booster seal extending across said rearward passage adjacent said projectile,
- a primer cup containing a booster mix and a primer mix in said rearward passage with said booster mix adjacent said booster seal,
- a primer seal extending across said rearward passage adjacent said primer mix,
- a second cylindrical high temperature resistant molded propellant charge surrounding the periphery of said first cylindrical molded charge, said high temperature resistant molded charge comprising a cyclic nitramine selected from the group consisting of tetranitrotetramethylenetetramine and trinitrotrimethylenetriamene, and a polymeric binder selected from the group consisting of polyacrylate, cellulose acetate and cellulose butrate, and a pair of end seals extending completely across the respective ends of said second cylindrical molded propellant charge, said pair of end seals being of the same material as said high temperature resistant molded charge.

3,847,082
SPIN STABILIZED, DISCARDING SABOT PROJECTILE

Fritz Feldmann, Santa Barbara, Calif., assignor to Pacific Technica Corporation, Santa Barbara, Calif.
Division of Ser. No. 854,095, Aug. 29, 1969, Pat. No. 3,714,900. This application Aug. 8, 1972, Ser. No. 278,859
Int. Cl. F42b *11/14, 13/16*
U.S. Cl. 102—93 **1 Claim**

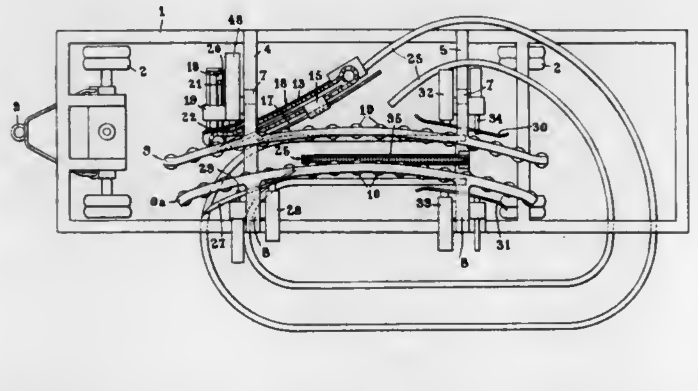


1. A spin-stabilized discarding sabot projectile comprising a full caliber sabot base formed of a relatively soft metal, means on said sabot base for imparting rotation to the projectile during traverse of a gun barrel, a recess in the sabot base, a sub-caliber core fitted into the recess, the core having a conical forward body portion and a generally cylindrical main body portion terminating in a base portion, said base portion of the core having a slot therein into which the metal base is pressed during launch of the projectile to increase the transfer of torque between the base and the core.

3,847,083
Patent Not Issued For This Number

3,847,084
DEVICE FOR AUTOMATICALLY COUPLING AND UNCOUPLING THE GONDOLAS OF A FUN FAIR RIDE

Michel Fouche, Milly, 49350, Gennes, France
Filed Jan. 23, 1974, Ser. No. 435,642
Claims priority, application France, Jan. 30, 1973, 73.03210
Int. Cl. B61k *1/00*
U.S. Cl. 104—20 **6 Claims**

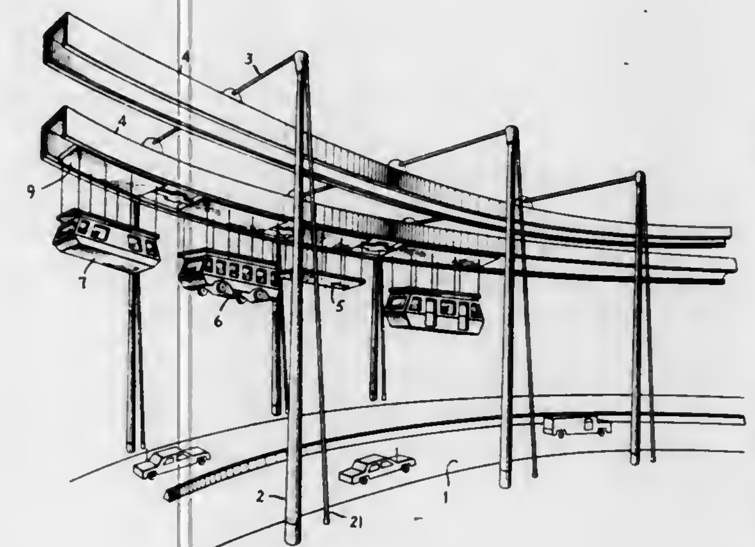


1. A device for automatically uncoupling and coupling the gondolas of a fun-fair ride, of the interchanger or belt-line type which comprises a frame structure 1 mounted on wheels

2 and having a pair of parallel cross members 4, 5 interconnecting a pair of longitudinal frame members at the ends of said device, two pairs of registering posts 7, 8 pivoted to said cross members, the posts of each pair being adapted to be moved towards and away from each other by manual or automatic means in order to move a pair of parallel rails 9, 9*a* towards and away from each other, said rails 9, 9*a* having the same curvature as the loop of said ride along which the gondolas are normally driven during the ride operation, one post 7 on the side of the incoming gondolas carrying beneath the rails 9, 9*a* an endless chain 13 and a ramp 14, the opposite post 8 carrying a longer ramp 27, members for controlling the movements of said rails and ramps in order to lock the coupling member 38 of a gondola 37 and allow the relevant support 24 to continue its travel between said rails, the pair of posts 7, 8 on the outlet side of the belt line comprising similar ramps 30, 31 adapted to cause said gondolas to be coupled with their supports, and a loop track 25 terminating on one side beneath the uncoupling station and on the other side beneath the coupling station for routing the released or uncoupled gondolas towards the coupling station.

3,847,085
DUAL-MODE TRANSPORTATION SYSTEM

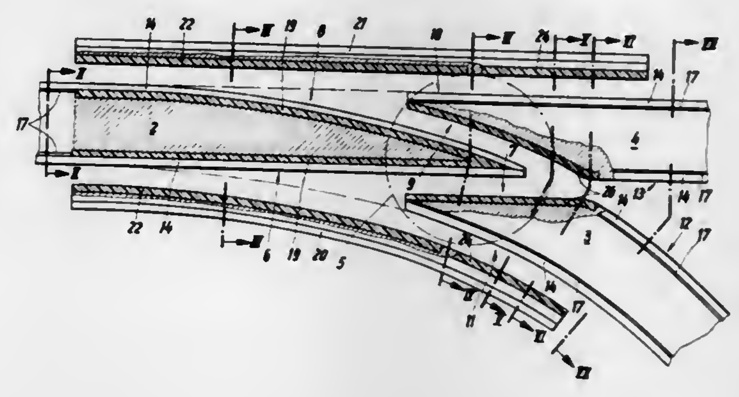
Albert B. Rypinski, Teaneck, N.J., assignor to Duo-Mode Electric Transport System, Inc., Teaneck, N.J.
Continuation-in-part of Ser. No. 379,203, July 16, 1973, which is a continuation of Ser. No. 89,266, Nov. 13, 1970, abandoned. This application July 23, 1973, Ser. No. 381,440
Int. Cl. B61b *3/00*
U.S. Cl. 104—122 **12 Claims**



1. A transportation system comprising:
- a self-propelled surface vehicle;
- an overhead track extending over part of a route to be traveled by said vehicle;
- a motor-driven vehicle carrier riding on said track; and
- hoist means on said carrier engageable with said vehicle for lifting same off the surface at a first location and redepositing same on the surface at a second location interlinked with said first location by said track, said hoist means comprising a platform, cable means suspending said platform from said carrier, reversible wind-up means for said cable means on said platform, and coupling means on said platform engageable with the top of said vehicle for suspending same from said platform upon a raising of the latter by operation of said wind-up means.

3,847,086
SUSPENDED RAILWAY HAVING A MAGNETIC SUSPENDED GUIDE OF ITS VEHICLES

Ulf Steenbeck, Miesbach, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany
Filed Dec. 29, 1972, Ser. No. 319,908
Claims priority, application Germany, Jan. 15, 1972, 2201820
Int. Cl. E01b *25/06*
U.S. Cl. 104—130 **11 Claims**



1. In a switching zone for a magnetic suspended railway having means defining a switch entrance and a pair of switch exits and means defining a support beam at said switch entrance and said switch exits on which at least one vehicle having a pair of laterally spaced means defining driving legs thereon is supported in a suspended position by means defining conductive rails and guided by first guide magnets positioned relative to said conductive rail means, said first guide magnets being mounted on opposed surfaces of said driving legs, said conductive rail means being mounted on oppositely facing surfaces of said support beam means outside of said switching zone, said support beam means being partly enclosed by said driving legs on said vehicle, the improvement comprising wherein, within said switching zone, said support beam means comprises at least three support beams which are each tapered on one side toward a central portion of said switching zone and terminate at said central portion, a first support beam including support means extending from said switch entrance into said central portion and between the remaining two of said support beams, said remaining two of said support beams extending from said central portion to one of said switch exits, the spacing between said first support beam and said remaining two support beams in said central portion being equal, means in said central portion of said switching zone defining a pair of second guide magnets, one on each side of said first support beam, for establishing a magnetic coupling with said first guide magnets in said central portion and on at least one side of said vehicle, said first and second guide magnets having identical polarity, means defining first magnetically conductive guide rails on the opposite side of said driving legs from said second guide magnets and means defining a pair of third guide magnets for establishing a magnetic coupling with said first conductive guide rail means in said central portion and on at least the other side of said vehicle from said one side.

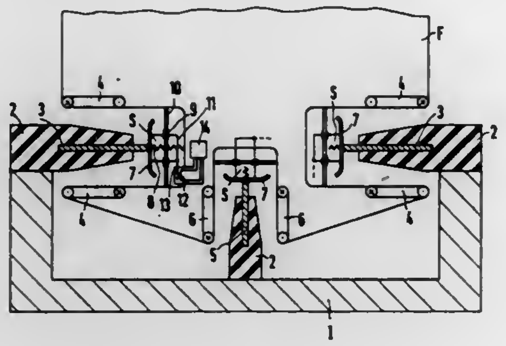
3,847,087
POWER TRANSMISSION ARRANGEMENT FOR A MAGNETIC SUSPENSION RAILROAD

Alfred Lichtenberg, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany
Filed July 26, 1973, Ser. No. 382,882
Claims priority, application Germany, Aug. 11, 1972, 2239595
Int. Cl. B61b *13/08;* **B60l** *5/00*
U.S. Cl. 104—148 MS **3 Claims**

1. An improved power transmission arrangement for a suspension railroad of the type in which magnets or current

carrying primary conductor loops installed in a vehicle react with secondary conductor loops or electrically conducting plates installed on the roadbed for the purpose of generating forces for lifting and guidance comprising:

a. means supporting the secondary conductor loops or



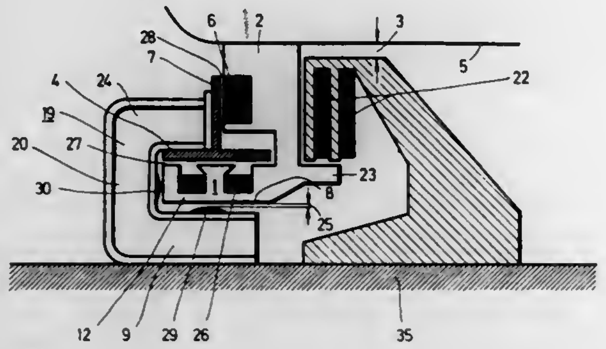
electrically conducting plates so that they are insulated from the roadbed;

b. at least one live rail supported by one of said insulating supports; and

c. at least one collector having a long sliding strip mounted on the vehicle and arranged to contact said live rail.

3,847,088
MAGNETICALLY SUSPENDED RAILWAY SYSTEM

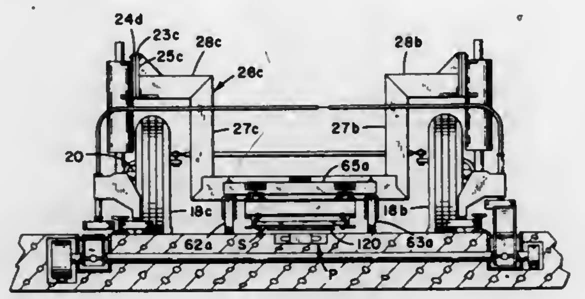
Ludwig Karch, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany
Division of Ser. No. 139,355, May 3, 1971. This application Sept. 7, 1973, Ser. No. 395,131
Int. Cl. B61b *13/00*
U.S. Cl. 104—148 MS **14 Claims**



1. A suspension railway system, comprising a vehicle, rail means located under the vehicle, carrying magnet means disposed below the vehicle and coupled to said rail means for suspending the vehicle and moving the vehicle forward, guide magnet means secured under said vehicle and coupled to said rail means for transversely guiding the vehicle relative to said rail means, carrier means secured to the bottom of said vehicle and mounting said carrying magnet means, said rail means including at least one magnetic structure forming an armature for both said carrying magnet and said guide magnet means, said carrier means projecting said carrying magnet means below the armature, said armature being disposed between said carrying magnet means and the bottom of the vehicle, and a plurality of running surfaces on said rail means and opposite said carrier means for mechanically supporting said vehicle during the absence of suspension.

3,847,089
VEHICLE DRIVE MEANS

Roy A. Nelson, Grand Prairie, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.
Filed Oct. 16, 1972, Ser. No. 298,064
Int. Cl. B60l *13/00;* **B61b** *13/08*
U.S. Cl. 104—148 LM **5 Claims**



1. In a vehicle movable over a roadway having one operative element of a linear induction motor extending longitudinally along the roadway;

a chassis;

a plurality of wheels movable over the roadway;

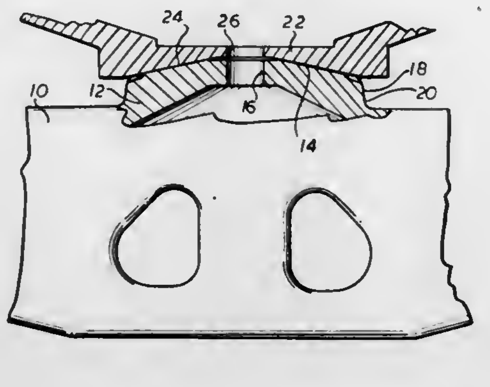
mounting means connecting the chassis to the wheels including means yieldably biasing the chassis against downward movement relative to the wheels;

a second element of the linear induction motor for imparting a thrust force to said chassis to move the vehicle over the roadway when said motor is energized;

connecting means connecting said second motor element to said chassis including means for varying the operative position of said second element relative to said first element for varying the propelling thrust force on the chassis in accordance with the load on the chassis, said connecting means including a carriage, front and rear pairs of rollers supporting front and rear ends of said carriage for movement over the roadway, and linkage means operatively associated with said chassis and said rollers for moving said carriage vertically relative to said rollers in accordance with the vertical movement of said chassis relative to said wheels, said second element being rigidly secured to said carriage.

3,847,090
TRUCK CENTER PLATE BEARING

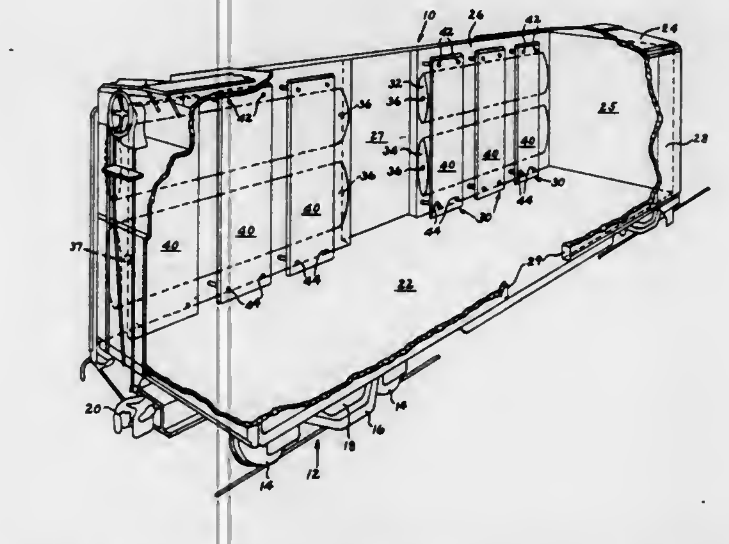
Robert B. Love, Park Forest, and Robert P. Radwill, Oak Lawn, both of Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.
Filed Mar. 9, 1973, Ser. No. 339,586
Int. Cl. B61f *5/16, 5/50;* **F16c** *17/04*
U.S. Cl. 105—199 C **6 Claims**



1. A center plate assembly for a railway vehicle comprising; a body center plate having a body central portion including a lower frusto-conical surface tapering inwardly from its outer edge toward said body central portion, and a truck center plate having a truck central portion including an upper frusto-conical surface tapering inwardly from its outer edge toward said truck central portion, said frusto-conical surfaces being complementary and forming load-bearing surfaces between said plates; at least one of said frusto-conical surfaces having a circumferentially oriented depressed contour contiguous to at least part of the outer edge of that surface.

3,847,091
INFLATABLE DUNNAGE

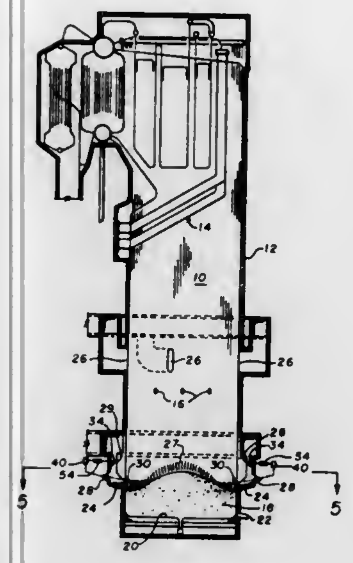
Jan D. Holt, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Nov. 13, 1972, Ser. No. 305,853
Int. Cl. B65d *45/00*
U.S. Cl. 105—369 BA **17 Claims**



1. A lading restraint apparatus comprising: a plurality of inflatable members mounted along the longitudinal length of a transportation vehicle; a plurality of panels mounted along the longitudinal length of the vehicle inwardly from the inflatable members whereby during inflation the inflatable members urge the panels inwardly to engage the lading; adjacent panels being urged inwardly by different inflatable members so that the panels are movable inwardly to different extents to provide flexibility in lading restraint.

3,847,092
AUTOMATIC BED LEVEL CONTROL FOR FURNACES

Lyman Francis Gilbert, Somers, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 10, 1973, Ser. No. 423,645
Int. Cl. F23k *3/00*
U.S. Cl. 110—101 R **14 Claims**



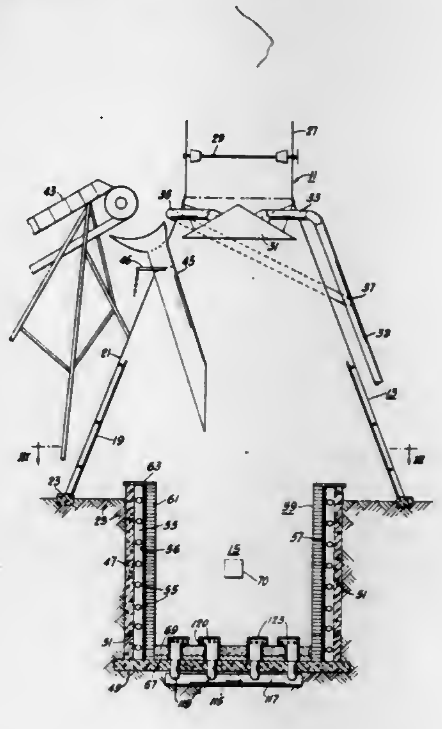
1. In a furnace in which a material is burned on a bed, emitting light, and in which the level of said bed is a function of a control variable, means for controlling the level of said bed comprising:

a. means for sensing said emitted light and providing a signal which varies as a function of the intensity of said sensed light and is indicative of the level of said bed; and

b. means responsive to said signal for controlling said control variable to control said bed depth.

3,847,093
REFUSE BURNER APPARATUS

Anthony Foster, Paradise, Calif., assignor to Koppers Company, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 339,336, March 8, 1973, abandoned. This application May 30, 1973, Ser. No. 364,021
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 C **8 Claims**



1. A burner comprising:

a. a shell disposed above and surrounding;

b. a subterranean chamber for burning material therein having an open top;

c. means at the top of said shell for regulating the emission therefrom of effluent produced by said burning material;

d. means adjacent the top of said shell for collecting said effluent, and conduit means for carrying it thence;

e. said conduit means communicating with a fan that is motorized and discharges said effluent into

f. a second conduit means in communication with said chamber whereby said effluent is reintroduced thereinto;

g. said chamber having side walls that are fluid cooled and a bottom or floor of sand;

h. means for introducing and for removing fluid from said side walls;

i. means for introducing burnable material into said chamber;

j. means for removing ash residue from said chamber; and

k. burner means discharging heat into said chamber for raising the ambient therein.

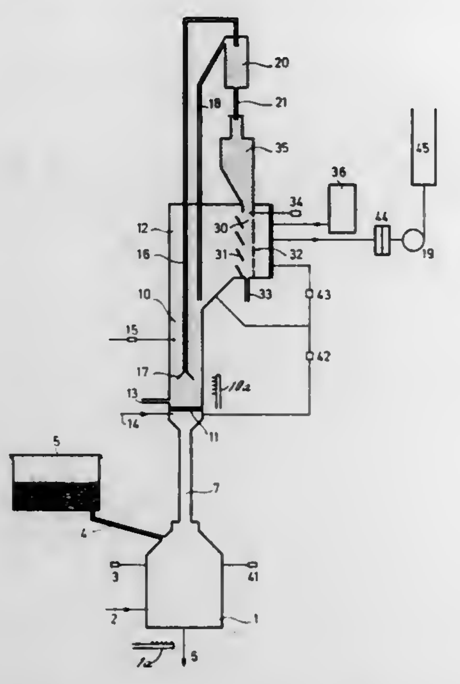
3,847,094
TREATMENT OF COMBUSTIBLE RESIDUE

Alois Taeymans; Georges Dumont, and Willem Balleux, all of Mol, Belgium, assignors to Belgonucleaire, Brussels, Belgium
Filed Sept. 5, 1973, Ser. No. 394,444
Claims priority, application Belgium, Sept. 6, 1972, 121748
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **12 Claims**

1. A process for treating incinerated material to filter out particles and for regenerating the filter comprising the steps of:

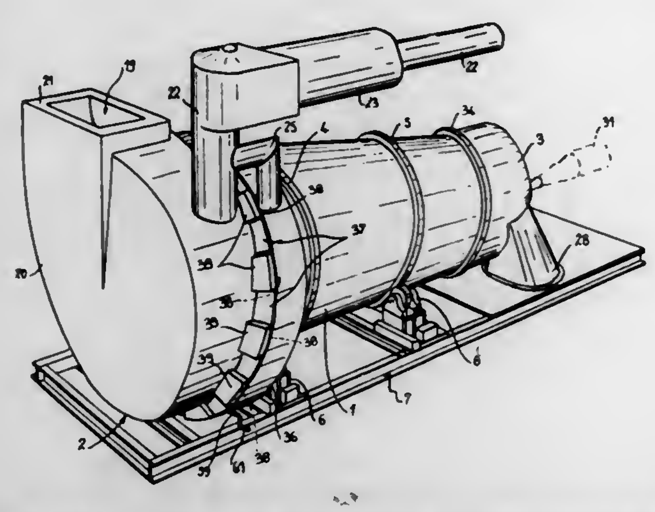
incinerating the material, thereby generating fumes and particles;

passing the fumes and particles through a filter of the granule bed type to filter out the particles, the particles being retained among the filter granules;
regenerating the granules by transferring them from the filter into a fluidized bed of such granules and incinerating the granules in the bed, thereby destroying the particles;
returning the regenerated granules to the filter;
after incineration of the material, first passing the fumes and particles through the fluidized bed.



3,847,095
REFUSE INCINERATOR

Felix Bauer, 87, Rue Moncey, Lyon, and Claude Valdenaire, 11, Rue des Roses, Villeurbanne, both of France
Filed May 11, 1973, Ser. No. 359,326
Int. Cl. F23g *5/06*
U.S. Cl. 110—14 **16 Claims**



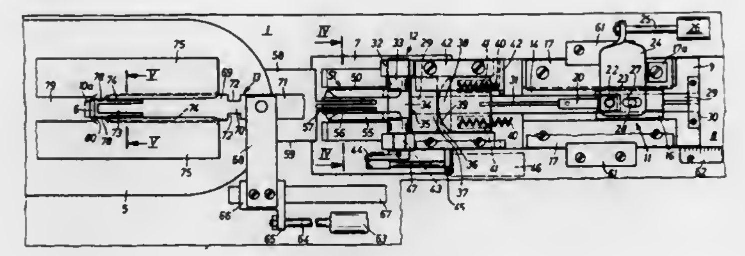
1. A refuse incinerator comprising: a central rotatable drum having a casing of generally frusto-conical shape; an inner enclosure secured to said casing, said enclosure being at least partly polygonal in cross-section and having an internal refractory wall; a loading compartment fixed at one end of said drum; an ash-box fixed at the other end of said drum; said inner enclosure defining with said casing a corresponding number of independent passage means to carry combustion air into said enclosure; and a distributor for injecting said combustion air only into the lower portion of said enclosure.

ERRATUM

For Class 110—165 see:
Patent No. 3,847,296

3,847,096
RIBBON FEEDING DEVICE IN BUTTONHOLE SEWING MACHINES

Ernst Albrecht, Hochspeyer, and Klaus Hubele, Kaiserslautern, both of Germany, assignors to Pfaff Industriemaschinen GmbH, Kaiserslautern, (Pfalz), Germany
Filed May 9, 1974, Ser. No. 468,539
Claims priority, application Germany, May 21, 1973, 2325705
Int. Cl. D05b *3/04*
U.S. Cl. 112—65 **10 Claims**

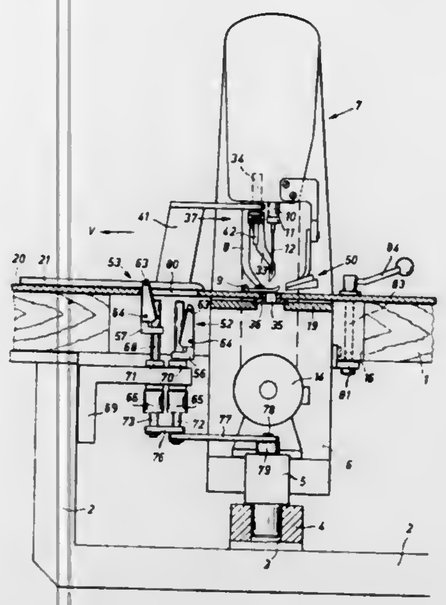


1. In a bottonhole sewing machine for forming ribbon-reinforced buttonholes, including a bedplate, a sewing needle, a stitch plate on the bedplate and formed with a needle hole to receive the needle and defining a stitch formation location, a material feeding frame for feeding material to the sewing needle, ribbon supply and ribbon cutting means for supplying ribbon lengths to a ribbon feeder a receiving zone for feeding of the ribbon to the stitch formation location beneath the material feeding frame for stitching to the material, and drive and control means for operating the machine in repetitive buttonhole forming cycles: an improved ribbon feeding device comprising, in combination, means forming a channel in said stitch plate in the working zone of said material feeding frame and extending to said stitch formation location, and providing a feeding surface over which the material is fed to said stitch formation location by said frame; the upper edges of said channel having, over at least a part of their length, inwardly projecting ledges, which ledges, in said working zone, are flush with said feeding surface; said ribbon feeder comprising a relatively elongated strip of resilient material reciprocable, in guided relation, forwardly from said receiving zone into said channel, and reversely to said receiving zone, and said strip including means engageable with the ribbon at said receiving zone to feed a length of the same into said channel and to said stitch formation location; said strip having guide surfaces projecting laterally over the ribbon and engageable beneath said ledges; and means for reciprocating said ribbon feeder.

3,847,097
DEVICE FOR MAKING BRAID OPENINGS IN CUTOUT PIECES OF GARMENTS

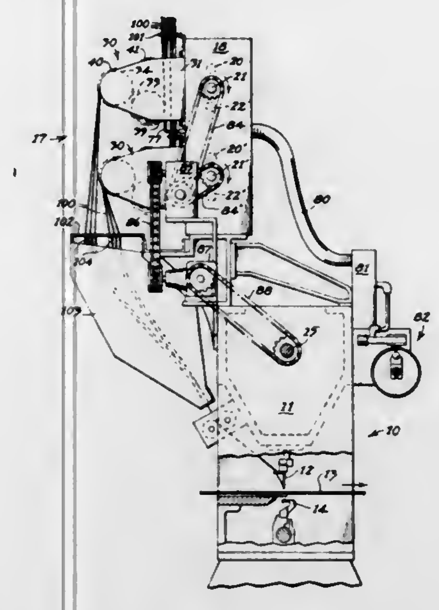
Albert Dusch, Kaiserslautern, and Peter Hintzen, Krickenbach, both of Germany, assignors to Pfaff Industriemaschinen GmbH, Kaiserslautern (Pfalz), Germany
Filed Mar. 18, 1974, Ser. No. 452,446
Claims priority, application Germany, Mar. 20, 1973, 2313717
Int. Cl. D05b *3/00*
U.S. Cl. 112—68 **8 Claims**

1. In a device for making braid openings, extending either straightly or obliquely to the hem edge of cutout pieces of a garment, of the type including a displaceable workpiece clamp, on a two-needle sewing machine which is pivotable about a pivot axis, coinciding with the axis of symmetry of the needles, into selected angular positions, defined by the displacement direction of the workpiece clamp and the longitudinal axis of the sewing machine arm shaft, and lockable in these positions, a folding guide mechanism for a braid strip, a cutting knife, for making a longitudinal slit, working between the needles, a drive member for the cutting knife included in the sewing machine, and a cutting mechanism, including a set of individually controllable angle knives, for making diverging incisions at the ends of the longitudinal slit: the improvement comprising, in combination, means mounting said angle knives separately from said sewing machine for conjoint rotation about respective axes each of which is parallel to the motion path of the associated angle knife; transmission means connecting said angle knives to said sewing machine for positive angular adjustment of said angle knives responsive to such pivoting of said sewing machine; a support for said cutting knife; means mounting said support separately from said sewing machine; fixed guide means slidably engaging said support; and coupling means connecting said cutting knife support to said cutting knife drive member and providing for relative movement between said support and said drive member.



3,847,098
YARN FEED MODULE FOR TUFTING MACHINE

Wallace W. Hammel, Jr., East Ridge, Tenn., assignor to Card & Co., Inc., Chattanooga, Tenn.
Filed July 23, 1973, Ser. No. 381,866
Int. Cl. D05c *15/32*
U.S. Cl. 112—79 A **9 Claims**

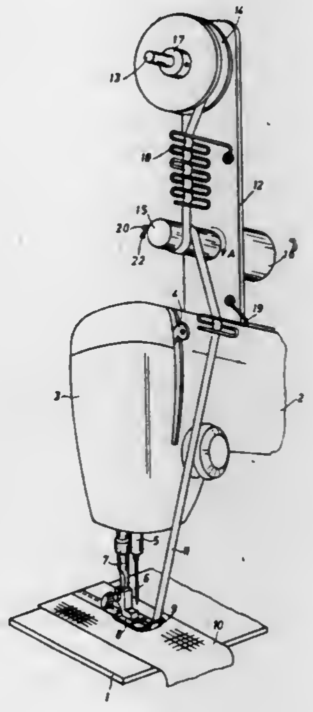


1. In a tufting machine having a plurality of reciprocal needles operative to stitch yarns through a base fabric, a yarn feed mechanism comprising:

a. a drive housing of substantial length having a front wall portion,
b. at least two drive shafts rotatably mounted in said housing,
c. a rotary drive coupling member driven by each of said drive shafts at a speed proportional to the speed of said corresponding drive shaft,
d. a plurality of module frames, each module frame having front and rear end portions and a width substantially less than the length of said drive housing,
e. a yarn feed roll rotatably mounted on each of said module frames,
f. at least two rotary clutch members mounted on each of said module frames,
g. means operatively coupling said rotary clutch members to said yarn feed roll for selective driving of said feed roll,
h. means for selectively actuating only one clutch member at a time,
i. at least two rotary driven coupling members mounted on the rear end portion of each of said module frames, each of said driven coupling members being adapted to register with and drivingly engage a corresponding drive coupling member, in operative position, and to drivingly disengage said drive coupling member in inoperative position,
j. drive transmission means on each of said module frames drivingly connecting each of said driven coupling members to a corresponding clutch member,
k. detachable securing means on each of said module frames for attaching the rear end portion of each of said module frames to the front wall portion of said drive housing for driving engagement of each of said driven coupling members with a corresponding drive coupling member, in operative position, and for detaching the rear end portion of said module frame from said front wall portion for driving disengagement of the driven coupling members on said module frame from said corresponding drive coupling members, in inoperative position, and
l. means for driving each of said drive shafts at a different speed so that each of said rotary clutch members in a module frame is driven at a corresponding different speed.

3,847,099
RIBBON FEEDING ATTACHMENT FOR SEWING MACHINES

Oskar Braun, Kaiserslautern/Pfalz, Germany, assignor to Firma Pfaff Industriemaschinen GmbH, Koenigstrasse, Germany
Filed July 31, 1973, Ser. No. 384,219
Claims priority, application Germany, Aug. 18, 1972, 7230617
Int. Cl. D05b *35/06*
U.S. Cl. 112—152 **9 Claims**



1. An attachment for feeding ribbon-like strips to be treated under a small tensile stress to the stitch forming location

below a foot of a sewing machine, comprising a ribbon supply reel, a delivery roller adjacent said ribbon supply reel, a separate drive motor connected to said delivery roller for rotating said delivery roller at a permanently constant circumferential speed corresponding at least to the maximum possible advance speed of the strip in the machine, means for guiding the ribbon from the ribbon supply reel loosely around said delivery roller in at least one complete and loose loop of at least 360° and following the sense of rotation of the delivery roller and to the sewing machine foot, said delivery roller being driven continuously at least during each sewing operation.

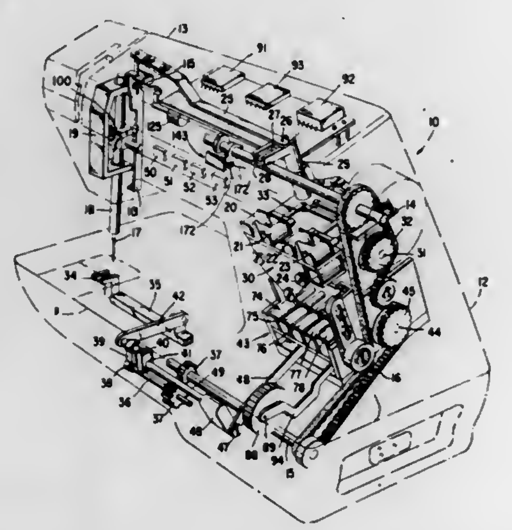
3,847,100
PATTERN SELECTION SYSTEM FOR SEWING MACHINES

Stephen A. Garron, Elizabeth, N.J., assignor to The Singer Company, New York, N.Y.

Filed Jan. 9, 1974, Ser. No. 432,027

Int. Cl. D05b *3/02, 69/10, 55/16*

U.S. Cl. 112—158 E **7 Claims**



1. A sewing machine having stitch forming instrumentalities capable of producing successive stitches in a variety of different stitch patterns and including a needle, a mechanical actuator for imparting repetitive stitch forming cycles of operation to said stitch forming instrumentalities, an electromagnetically influenced actuator operatively connected to said stitch forming instrumentalities for controlling the stitch pattern produced thereby, memory storage means for data regulating the placement of each stitch in a stitch pattern and having the capacity for the storage of separate data relating to each of a plurality of different stitch patterns, operator influenced pattern selection means for rendering effective data stored in said memory storage means relating to any selected one of said plurality of different stitch patterns, a skip stitch mechanism for separating said mechanical actuator from said needle, and means responsive to the operation of said pattern selector means for operating said skip stitch mechanism for one stitch forming cycle of said sewing machine.

3,847,101
SEWING MACHINE HAVING THREAD SEVERING DEVICE

Gunter Tolle, Wendelinusstrasse 15, 752 Bruchsal 4, Germany

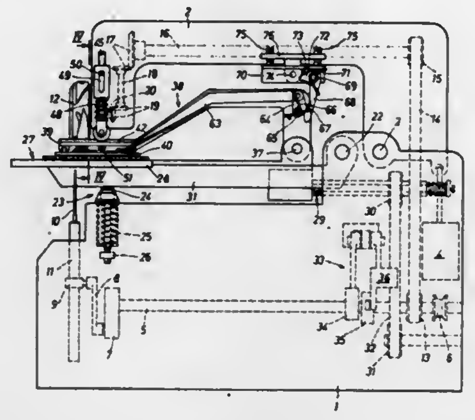
Filed Dec. 20, 1973, Ser. No. 426,605

Claims priority, application Germany, Jan. 2, 1973, 2300042

Int. Cl. D05b *65/02*

U.S. Cl. 112—252 **6 Claims**

1. A sewing machine comprising a machine frame having a workpiece support, a bracket mounted on said frame for pivotal movement upwardly to a rest position and downwardly to an operative position, a needle mounted on said frame for upward and downward reciprocation below said support, a rotatable shuttle mounted on said bracket overlying said needle for cooperative engagement therewith, a clamping arm connected to said bracket for movement therewith and pivoted on said frame over said support and having an end adapted to clamp the workpiece on the support, a thread cutter carried by said bracket and connected to said clamping arm, said clamping arm being movable by upward movement of said bracket to actuate said cutter to sever the thread.



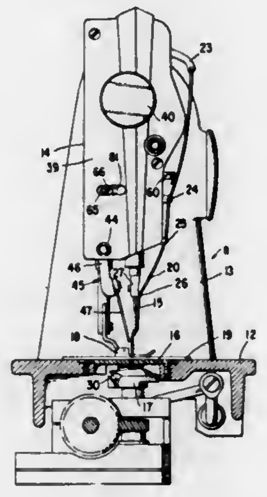
3,847,102
NEEDLE THREAD WIPER AND PULL-BACK MECHANISM FOR SEWING MACHINES

Gerd Rogner, Karlsruhe, Germany, assignor to The Singer Company, New York, N.Y.

Filed Jan. 21, 1974, Ser. No. 435,373

Int. Cl. D05b *65/00, 49/00*

U.S. Cl. 112—252 **3 Claims**



1. In a sewing machine having a work support and a sewing head carried above said work support and fitted with an end cover plate, a loop taker arranged beneath said work support, a thread carrying needle supported within said sewing head for endwise reciprocation through the work support in cooperation with the loop taker in the formation of stitches, a needle thread take-up mechanism arranged in the sewing head, and thread trimming mechanism effective to sever the needle thread beneath said work support, mechanism for withdrawing a severed needle thread above the work support comprising a thread wiping arm pivotally mounted within said sewing head end cover plate to swing in an arc traversing the path of the needle thread between said needle and said work support, an actuator for said thread wiping arm, operating mechanism connecting said thread wiping arm to said actuator for imparting movement in a fixed throw to said thread wiping arm, a thread pull-back lever fulcrummed within said end cover plate to swing in an arc traversing the path of the needle thread between said needle thread take-up mechanism and said needle, an operating link for said thread pull-back lever having a connection with said thread wiper operating mechanism and a pivotal connection with said thread pull-back lever, at least one of said connections being adjustable and accessible through an opening in said sewing head end cover so that a change in the stroke of the thread pull-back lever may be effected from externally of the sewing machine.

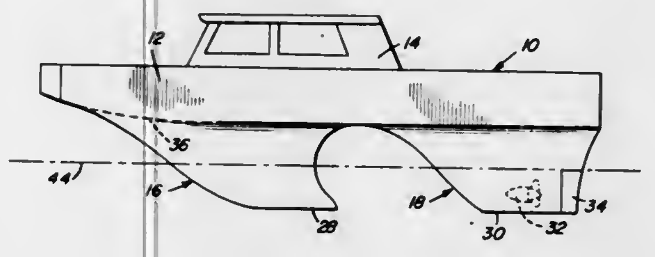
3,847,103
SPLIT HULL DESIGN FOR BOATS

Richard T. Takeuchi, 1651 Ala Moana Blvd., Honolulu, Hawaii 96815

Filed May 4, 1972, Ser. No. 250,325

Int. Cl. B63b *1/18*

U.S. Cl. 114—66.5 R **14 Claims**



1. A boat hull including an upper longitudinally continuous hull section and fixed, longitudinally spaced, front and rear upright, fin shaped and depending displacement-type hull means, the weight of said hull in relation to the displacement of the lower portions of said displacement-type hull means being such that the water line on the hull is disposed at a level intermediate the upper and lower ends of said upright displacement-type hull means, said front and rear hull means both being constructed as integral non-shiftable portions of said hull section and with the upper extremities of said hull means merging smoothly into adjacent surfaces of said hull section, said front hull means including upstanding sharply rearwardly tapered rear extremities extending upwardly from considerably below the waterline to said upper hull section and spaced appreciably forward of the waterline forward extremities of said rear hull means, said rear hull means including upstanding sharply rearwardly tapered rear extremities and said front and rear hull means including forwardly and upwardly inclined forward extremities, at least one of said hull means comprising a pair of laterally spaced depending hull portions, each of said hull portions as well as the other hull means being contoured, in horizontal section, to move through a fluid medium with little resistance from said medium to passage therethrough.

3,847,104
MARINE STERN RUDDER BLADE

Nicolaus Kaufer, Judenbuehlweg 42, D-8700, Wuerzburg, Germany

Filed Dec. 12, 1972, Ser. No. 314,447

Claims priority, application Germany, Dec. 17, 1971, 2162648; July 14, 1972, 2234603; Nov. 2, 1972, 2253571

Int. Cl. B63h *25/06*

U.S. Cl. 114—162 **13 Claims**

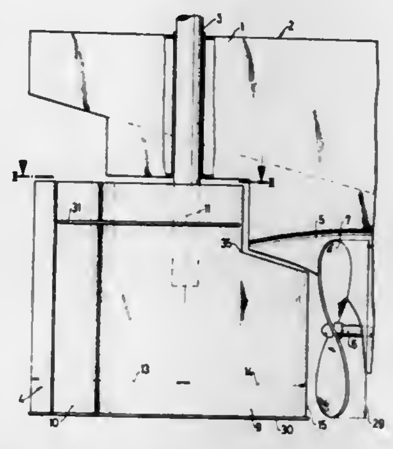
1. A single-blade rudder secured to the stern of a ship for motion about a vertical pivot axis into opposite extreme or hard-about positions, the ship having a screw that generates a screw wash extending parallel to the forward direction of straight-line travel of the ship, the screw having a radius and a rotational outline, the rudder being situated in its entirety rearwardly of said screw in central alignment therewith, comprising in combination:

a. a leading part extending from said pivot axis forwardly thereof and having a horizontally measured length dimension at least as large as the screw radius; and

b. a trailing part extending from said pivot axis rearwardly thereof, said trailing part having

1. a front portion extending from said pivot axis rearwardly thereof and having a horizontally measured length dimension at least as large as the screw radius, whereby a projection of said rotational outline of said screw onto said rudder parallel to said direction is substantially fully within the combined area of said leading part and said front portion of said trailing part in either extreme position of the rudder for receiving the entire screw wash, said leading part and said front portion of said trailing part effecting a first deflection of the screw wash;

2. a rear portion adjoining a rear terminus of said front portion and extending rearwardly thereof, said rear portion including rearwardly divergent lateral wall surfaces for effecting a second deflection of the screw wash subsequent to its said first deflection when said rudder is in either of its extreme positions.



3,847,105
AQUATIC HARVESTER

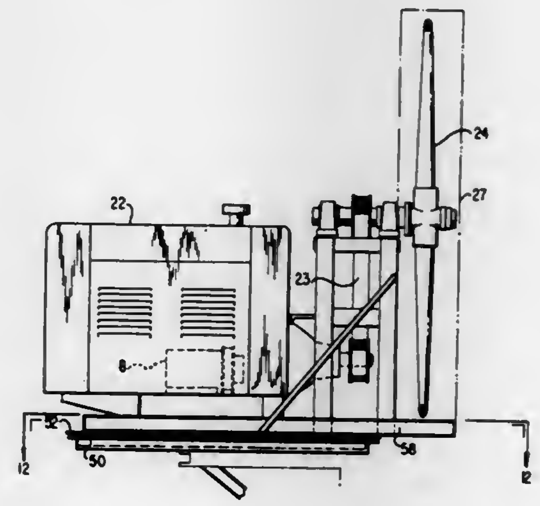
Thomas G. Kelpin, Shreveport, La., assignor to American Waterweed Harvesting Company, Inc., Shreveport, La.

Division of Ser. No. 97,497, Dec. 14, 1970, Pat. No. 3,698,163.

This application Oct. 16, 1972, Ser. No. 297,864

Int. Cl. B60f *3/00*

U.S. Cl. 115—1 C **8 Claims**

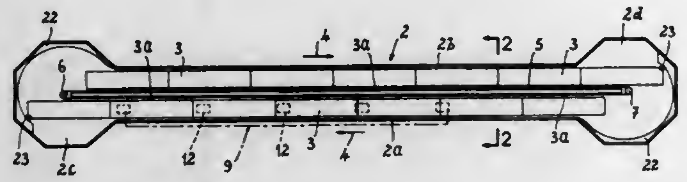


1. An air thrust propulsion and steering system comprising an air propulsion unit having an internal combustion engine and an aerodynamic propeller, and a mounting means for said air propulsion unit comprising a first horizontally disposed annular member secured to the craft to be propelled, a second annular member superimposed upon said first annular member, said second annular member being radially immovable with respect to said first annular member and circumferentially rotatable about a common vertical axis therewith, engine

mounting means secured to said second annular member, and means to selectively rotate said second annular member through an arc of 360°, said first and second annular members being of sufficient diameter to underlie a substantial portion of the propulsion engine and said engine being mounted substantially centered upon said second annular member, said first and second annular members each comprise a horizontally disposed annular-shaped flange and a generally vertically-disposed flange secured to said horizontal flange at a point near the outer circumference thereof, the vertical flange of said second annular member occupying a radially, inwardly contiguous position with respect to the vertical flange of said first annular member, one or more angular bracket members secured to said horizontally disposed annular-shaped flange of said second annular member and depending outwardly and downwardly therefrom to a point below the horizontally dislosed annular-shaped flange of the first annular member, and a roller bearing member attached to the downwardly projecting portion of each bracket member, said roller bearing member being disposed inwardly and passing beneath the horizontally disposed annular-shaped flange of the first annular member.

3,847,106
MATERIAL HANDLING OR TRANSFER EQUIPMENT

Paul Lamberet, Vonnas-Ain, France
Filed Aug. 30, 1973, Ser. No. 393,135
Claims priority, application France, Mar. 29, 1973, 73.12038
Int. Cl. B63b *21/56*
U.S. Cl. 115—7 **9 Claims**

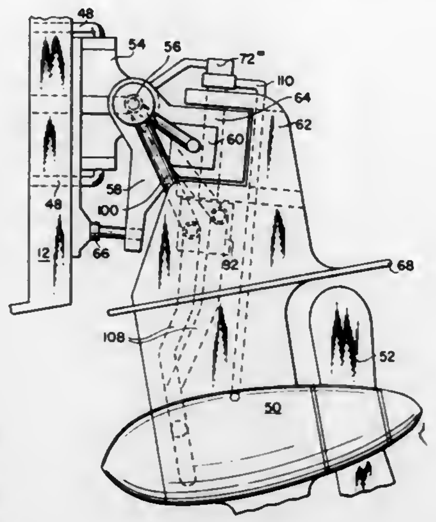


1. In apparatus including a waterway, a plurality of serially arranged floating carriers in said waterway, a cable extending along said waterway and connected to said carriers to move the latter along the waterway, and working stations along the waterway at which retaining influences may be exerted on the movement of said carriers, an improvement comprising longitudinal members on respective of said carriers independently of said cable and extending along said waterway at least at said stations and driving means at said stations for acting on the longitudinal members to advance the carrier along the waterway whereby to avoid transmitting said retaining influences to said cable.

3,847,107
HYDRAULIC MARINE PROPULSION AND GUIDANCE SYSTEM

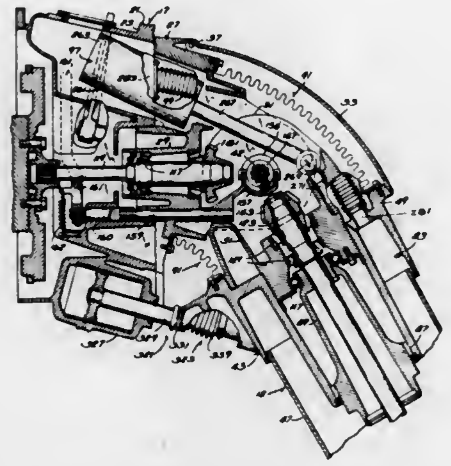
Curt Buddrus, 2522 Hoyes St., Muskogee, Okla. 74401
Filed Feb. 16, 1973, Ser. No. 333,301
Int. Cl. B63h *25/42*
U.S. Cl. 115—35 **10 Claims**

1. A hydraulic propulsion and guidance system for a marine vessel having a transom, comprising:
a fluid pressure generating system within the vessel;
a clevis, means mounting said clevis to the outside of the transom of the vessel and permitting said clevis to rotate in a generally vertical plane about a first axis;
a fluid motor carried by said clevis, means permitting said motor to rotate from side to side with respect to said clevis about a second axis;
dual passage swivel means operatively mounted for movement along said second axis;
single passage swivel means operatively mounted for movement along said first axis; and
rigid fluid conduit means operatively connecting said fluid motor to said dual passage swivel means, fluid conduit means operatively connecting said fluid pressure generating system to said single passage swivel means, and rigid fluid conduit means operatively connecting said single passage swivel means to said dual passage swivel means.



3,847,108
STERN DRIVE UNIT WITH BELLOWS ENCLOSED REVERSING TRANSMISSION AND UNIVERSAL COUPLING STEERING CONTROL

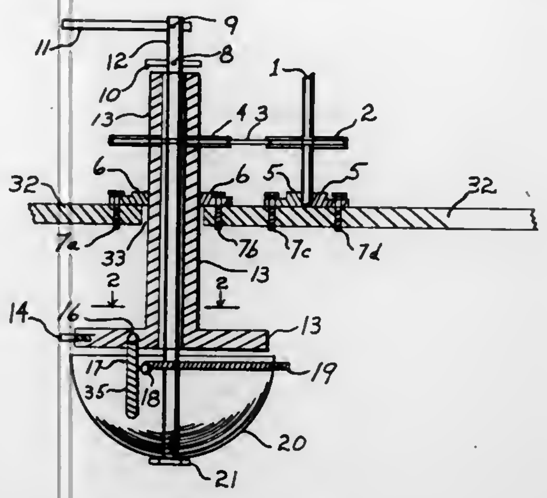
William J. Shimanckas, 2812 Bonnie Brook Ln., Waukegan, Ill. 60085
Filed May 3, 1971, Ser. No. 139,555
Int. Cl. B63h *25/42*
U.S. Cl. 115—35 **29 Claims**



1. A stern drive unit comprising a support adapted to be fixed relative to a boat hull, a housing, means connecting said housing to said support for pivotal movement about a tilt axis which is substantially horizontal when said support is fixed relative to the boat hull, a bellows connected to said support and to said housing, a propulsion leg including a rotatably mounted propeller, means connecting said propulsion leg to said housing for pivotal steering movement about a steering axis perpendicular to said tilt axis, an input shaft extending in said support perpendicularly to said tilt axis, an output shaft journaled in said housing co-axially with said steering axis and in generally co-planar relation to said input shaft and connected to said propeller, a reversing transmission located, at least in part, within said bellows and connected to said input and output shafts for selectively controlling operation of said propeller, and steering means connected to said propulsion leg and extending at least in part within said bellows.

3,847,109
UNDERWATER VANE MOTIVE APPARATUS

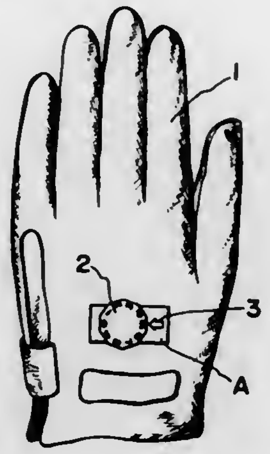
Edwin K. Hillman, Phoenix, Ariz., assignor to Wind-De-Go., Inc., Phoenix, Ariz.
Filed Feb. 5, 1973, Ser. No. 329,313
Int. Cl. B63h *1/08*
U.S. Cl. 115—52 **1 Claim**



1. An underwater vane propulsion device for a boat comprising, a rotatable shaft extending through the hull of said boat, a sleeve housing journaled about said shaft, a pipe journaled into said sleeve housing about midway of said pipe and transverse to the axis of rotation of said sleeve housing, vanes fixed to the ends of said pipe and comprising, a pair of supports on both ends of said pipe and extending from said pipe at right angles with respect to each other, a membrane support member connected between the ends of each pair of said supports, a rod connected between each pair of said supports and slidable therein, a flexible membrane fixed to said rod and said membrane support, biasing means in said pipe for biasing said rod toward said pipe, said underwater vane propulsion device further comprising a drive means connected to said sleeve housing for rotating same, and a housing fixed to an end of said shaft below the waterline and having cam means thereon for controlling the rotation of said pipe.

3,847,110
GOLF SCORE INDICATOR

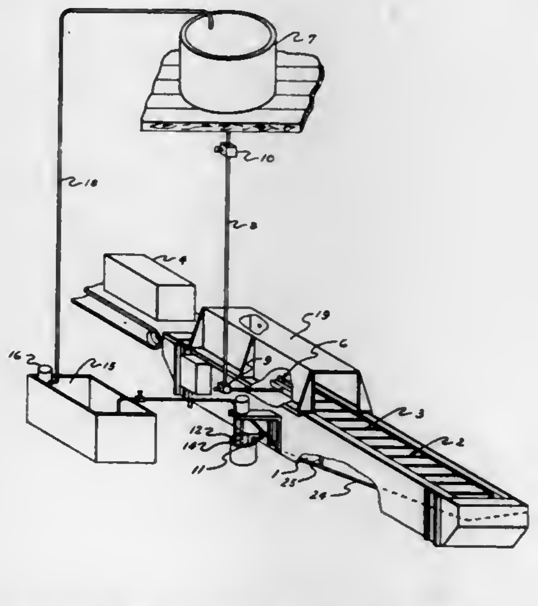
Yukio Inoue, 40-10, Kashirvago 4-chome, 362, Ageo City, Saitama Prefecture, Japan
Filed May 2, 1973, Ser. No. 356,491
Int. Cl. A63b *71/06*
U.S. Cl. 116—120 **1 Claim**



1. A golf score indicator for use with a golf glove comprising: a fabric hook and pile combination including a first member attached to the back of said glove, and a second member having a surface selectively engaged with a corresponding surface on said first member; a rotatable score number indicating disc arranged for rotation on an exposed surface of said second member, said disc having a shaft attached to an under surface thereof at one end thereof, said shaft passing through said second member and having at a second end thereof a planar friction disc mounted thereon, said disc having a friction surface contacting the said surface of said first member, the friction existing between said disc and said first member tending to maintain said score member in given rotational position.

3,847,111
FLOW-COATING APPARATUS

Robert H. Kreutzer, Clarksville, Ind., assignor to General Electric Company, Louisville, Ky.
Filed Sept. 27, 1973, Ser. No. 401,340
Int. Cl. B05b *13/06*
U.S. Cl. 118—2 **4 Claims**



1. An automatic flow-coating apparatus for flow coating a surface of an article with a coating material comprising:
a spray manifold including a plurality of nozzles for providing a continuous upwardly-directed spray of coating material supplied to said nozzle;
a coating material reservoir positioned above said manifold for gravity feeding coating material to said manifold;
a sump below said manifold for collecting coating material flowing from said manifold and means for returning material from said sump to said reservoir;
conveyor means for supporting an article for movement over said manifold and through the sprayed material;
and deflector means movable between a first position and the path of said material flowing from said nozzles and a second position out of the path; and
means responsive to the positioning of said article in a position to be contacted by the sprayed material for moving said deflector means to said second position.

3,847,112
AUTOMATIC HOUSE PAINTER

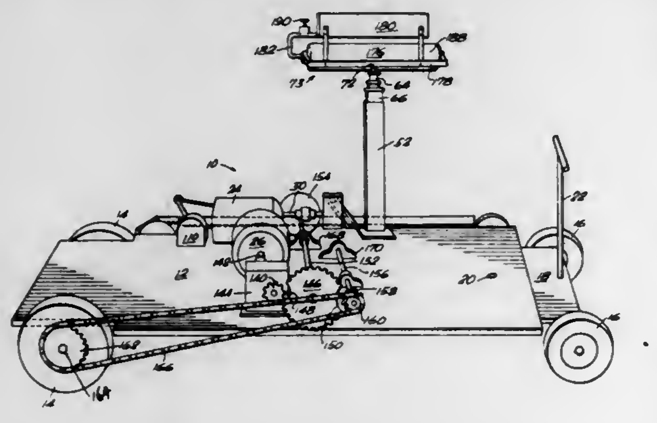
John D. Wise, 99 E. 33rd St., Paterson, N.J. 07514
Division of Ser. No. 887,806, Dec. 24, 1969, Pat. No. 3,611,983. This application July 13, 1971, Ser. No. 162,106
Int. Cl. B05c *5/00, 1/10*
U.S. Cl. 118—7 **11 Claims**

1. An automatic house painter comprising, a mobile truck including a flat bed and wheel means to provide for movement of the truck along the base of a wall being painted;
paint applying means, means for mounting said paint applying means atop said flat bed, paint container means and adjustably controlled automatic paint feed means for supplying the paint to said paint applying means from said paint container means;
means for providing a predetermined set pattern of movement of said paint applying means in the vertical direction whereby paint is applied to the entire area of a surface within the range of operation of said paint applying means, said area being defined by the linear distance

traveled by the truck along the base of the wall being painted and a height defined by said predetermined set pattern of movement of said paint applying means in a vertical direction;

said paint applying means comprising a paint brush assembly and said means for mounting said paint applying means comprising a U-shaped bracket fixed to the upper end of said means for providing a predetermined set pattern of movement of said paint applying means in the vertical direction;

said paint brush assembly comprising a brush drive and paint feed motor fixed to said U-shaped bracket, said motor driving a horizontally disposed worm wheel through a worm gear fixed to said motor shaft, a paint brush having an elongated tubular handle having paint brush bristles extending outwardly from the outer end thereof and a piston extending partially into the inner end thereof, said piston having an outwardly extending portion pivotally and eccentrically connected to said worm wheel in a manner so as to be reciprocally moved, in and out, in the inner end of said elongated tubular handle when said worm wheel is rotated by said drive and feed motor, vertical tubular pivot means mounted in said U-shaped bracket outwardly of said piston, said tubular pivot means interconnecting with and communicating with said tubular handle, a paint supply container receiving the lower end of said vertical tubular means and a first one way check valve in said vertical tubular pivot means whereby paint is drawn upwardly from said paint container through said first one way check valve into said tubular handle during each first 180° of rotation of said worm wheels, a second spring loaded check valve forwardly of said pivot tube which is normally closed during each of said first 180° of rotation, said piston being driven inwardly in the outwardly extending portion of said handle during each second 180° of rotation of said worm wheel closing said first check valve and opening said second check valve to feed the paint drawn into said tubular handle therethrough into said paint brush bristles for application to the surface being painted, each 360° of rotation of said worm wheel imparting one back and forth paint applying movement in a horizontal plane to said paint brush.



3,847,113

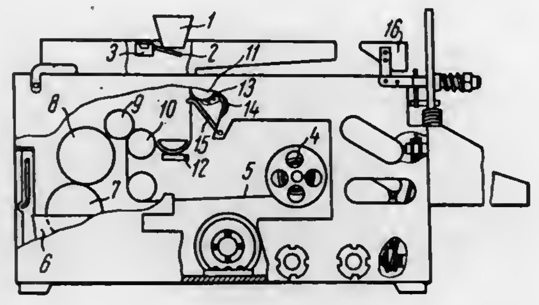
DEVICE FOR RATED PASTING OF INSECT EGGS ON SUBSTRATUM

Sergei Vasilievich Andreev, prospekt Stachek, d. 57, kv. 62, Leningrad; Mikhail Grigorievich Leibenzon, Solnechnogorsky GOM, zavod 4, dom 6, kv. 6, Povarovo; Jry Petrovich Trushin, Dmitrovskoe shosse, 43, kv. 212, Moscow, and Mikhail Sergeevich Luzgin, prospekt Mechnikova, 3, kv. 27, Leningrad, all of U.S.S.R.

Filed Jan. 15, 1973, Ser. No. 323,401

U.S. Cl. 118—40 **6 Claims**

1. A device for rated pasting of insect eggs on a substratum comprising: a roll of the substratum; attachment means for coating the substratum with sticky substance; a bin for the insect eggs; two driving shafts having axles which are mutually parallel and symmetrically-arranged under said bin used to form from the substratum a V-loop which is supplied with the insect eggs from said bin; a limiter restricting the size of the V-loop formed from the substratum located under said shafts and therebetween; a dosing attachment located on said bin; shaking attachment means disposed on one of said driving shafts for shaking the extra eggs off the sticky substratum; and cutting attachment means for cutting the substratum with the eggs pasted on it into predetermined stretches.



3,847,114

APPARATUS FOR VAPOR DEPOSITION AND ION IMPLANTATION

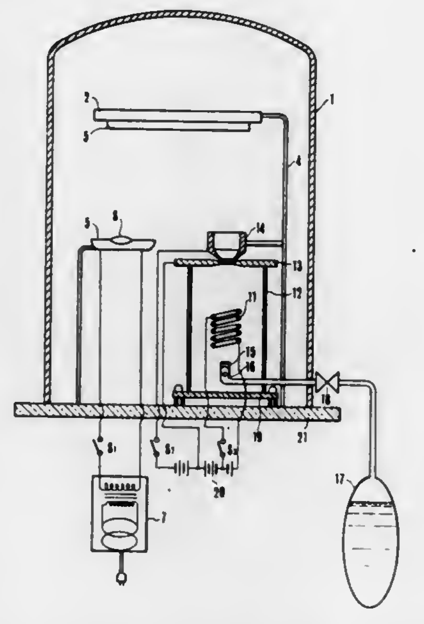
Kentaro Kiyozumi, Ise, Japan, assignor to Ise Electronics Corporation, Ise, Japan

Filed June 1, 1972, Ser. No. 258,568

Claims priority, application Japan, June 9, 1971, 46-41317; July 10, 1971, 46-51238

Int. Cl. C23c *13/12*

U.S. Cl. 118—49.1 **3 Claims**



1. Apparatus for manufacturing an electroluminescence element comprising an evacuated vessel, means to support a substrate formed with an electrode film in said vessel, means to evaporate and vapour deposit a phosphor film onto said electrode film, a source of ions for implantation into said film said source being also contained in said evacuated vessel and including a cylinder, a heater contained in said cylinder which operates to emit electrons, means for holding a solid activator disposed to be heated by said heater, means for admitting gaseous activator to said solid activator and disposed to be heated therewith, a perforated anode electrode closing said cylinder, and a cylindrical extraction electrode arranged to cooperate with said anode electrode to extract ions derived from at least one said activator thereby injecting said ions into said vapour deposited phosphor film, and means for electrically energizing said evaporating means and said source of ions.

3,847,115

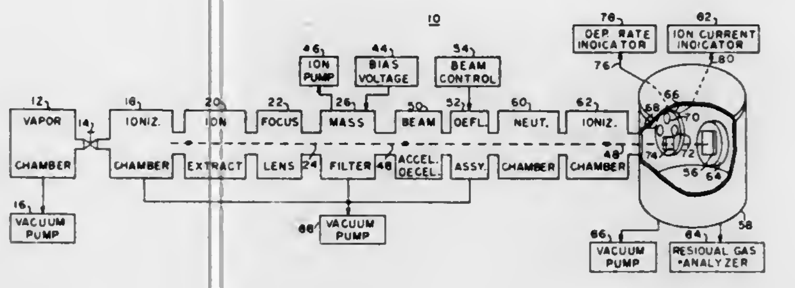
SYSTEM FOR DEPOSITING THIN FILMS

Philip W. Tashbar, Gaithersburg, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 2, 1973, Ser. No. 356,664

Int. Cl. C23c *13/08*

U.S. Cl. 118—49.1 **3 Claims**



1. A system for depositing a thin layer of material on an object comprising:

source means including a vapor chamber having an outlet and means for providing a selected material in vapor form at said outlet;

ionization means for receiving said material in vapor form from said outlet of said vapor chamber and ionizing said material;

mass filter means having a flow path therethrough for passing ionized molcules having a selected mass-to-charge ratio unimpeded along said flow path and removing other ionized molecules from said flow path;

two pairs of spaced, parallel rods wherein a plane symetrically intercepting the longitudinal axis of said rods of a first pair of said rods intersects at a line a plane symetrically interconnecting the rods of the other said pair of rods and said line generally defines said flow path of said mass filter means;

flow control means comprising a source of selectable amplitude voltage of combined direct and radio frequency current, one polarity of said voltage being connected to said first pair of rods and the other polarity of said voltage being connected to said second pair of rods;

whereby a selected amplitude of said voltage is applied to said rods enabling ionized molecules having a selected mass-to-charge ratio to proceed along said flow path and to completely transit said mass filter means and enabling the removal of other molecules from said flow path;

flow control means for receiving ionized molecules from said ionization means and directing them along said flow path of said mass filter;

a deposition chamber adapted to contain an object upon which a selected material is to be deposited; and

flow directional means responsive to the output flow of ionized molecules passed by said mass filter for directing ionized molecules along selected paths into said deposition chamber and onto selected areas of said object;

whereby precisely selected molecules of a material may be deposited on precisely selected areas of a said object.

3,847,116

SPINNER FOR APPLYING DESIGNS TO FABRICS

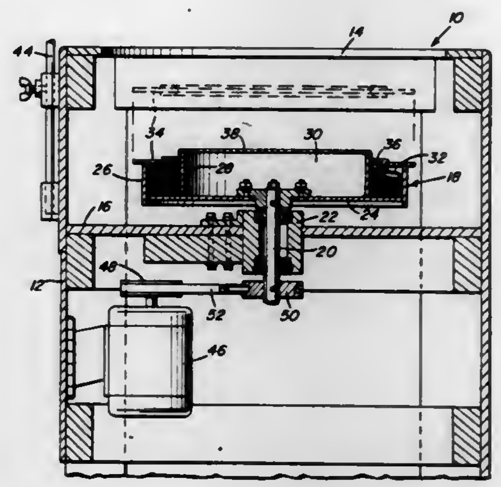
Robert A. Prichard, Mountain Dr., Pleasant Valley, N.Y. 12569

Filed June 3, 1974, Ser. No. 476,162

Int. Cl. B05c *11/12*

U.S. Cl. 118—52 **6 Claims**

1. Spinner apparatus for decorating fabric comprising a turntable unit, said turntable unit including means for receiving and exposing a selected portion of the fabric for reception of decorating liquid thereon, means for enclosing the remaining portions of the fabric for isolation from the decorating liquid, and means for rotatably driving said turntable unit, said means for exposing a selected portion of the fabric including a central chamber defined by a peripheral wall over which the selected portion of the fabric is positioned, said means for enclosing the remaining portions of the fabric including a storage chamber outward of and peripherally about the first-mentioned chamber.



3,847,117

APPARATUS FOR COATING EDGE REGIONS OF PANELS OR BOARDS

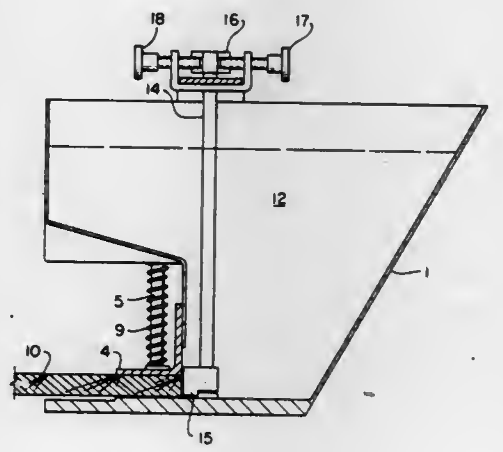
Sven Holger Widigs, Morbyvagen 13, 78 10 Gustafs, and Sven-Olof Lindbergh, Tulpangatan 49, 703 53 Orebro, both of Sweden

Filed May 11, 1972, Ser. No. 252,218

Claims priority, application Sweden, May 11, 1971, 6119/71

Int. Cl. B05c *3/02*

U.S. Cl. 118—407 **5 Claims**



1. Apparatus for coating edge regions of panels or strips, such as chipboards, plywood panels, etc., comprising a container, one side of which is provided with a slit arranged to hold and guide a board or panel to be treated, the slit being limited by a pair of plates adapted to engage the upper and lower faces of the board at least one of said plates being movable and resiliently biased to be pressed against the board, a wiper member located at the outlet end of the slit adjacent the edge of the board, and an applicator member arranged to engage the edge of the board within said container, said applicator member being adjustably mounted to guide the position of the board with respect to the wiper member and the edge of said board to adjust the thickness of the layer applied.

3,847,118
INSTALLATIONS FOR THE COATING OF PARTS BY POWDERING

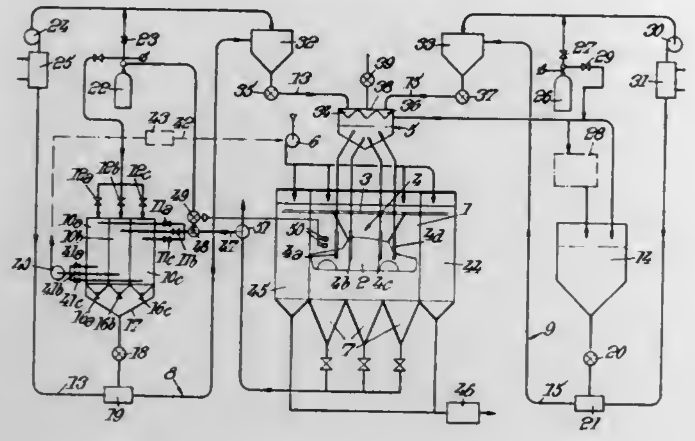
Gerard Ambry, Fontenay-le-Fleury, France, assignor to Air Industries, Courbevoie, France

Filed May 10, 1973, Ser. No. 358,955

Claims priority, application France, May 16, 1972, 72.017453

Int. Cl. G03g *11/00*

U.S. Cl. 118—602 **9 Claims**



1. Installation for the coating of parts by powdering, comprising a powdering enclosure shielding the parts to be coated and powdering means, a distributing device situated close to the powdering enclosure and connected to the powdering means, a recovery system adapted to treat the gas extracted from the powdering enclosure and an input system adapted to introduce into the distributing device a quantity of powder corresponding to a part of that delivered by said distributing device to the abovesaid powdering means, in which installation:

the recovery system comprises a plurality of separating cells traversible by the gas extracted from the powdering enclosure and arranged to retain the powder in suspension in this gas, a first set of valves enabling the selective isolation of one at least of these cells, a second set of valves enabling the injection into the cell thus isolated of a neutral gas for purging this cell of the gas contained in it for completing the clearing and cleaning of this cell and to draw the powder retained in this cell towards a recycling pipe ending at the distributing device, this recycling pipe being traversible by a neutral gas for the pneumatic transport of the powder coming from said cell,

and the input system comprises a reserve for powder communicating with a supply pipe ending at the distributing device, said supply pipe being traversible by a neutral gas for the pneumatic transport of the powder coming from said reserve.

3,847,119
TRANSFER ROLLER ASSEMBLY

Daniel S. Hoffman, and Gilbert E. Koch, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

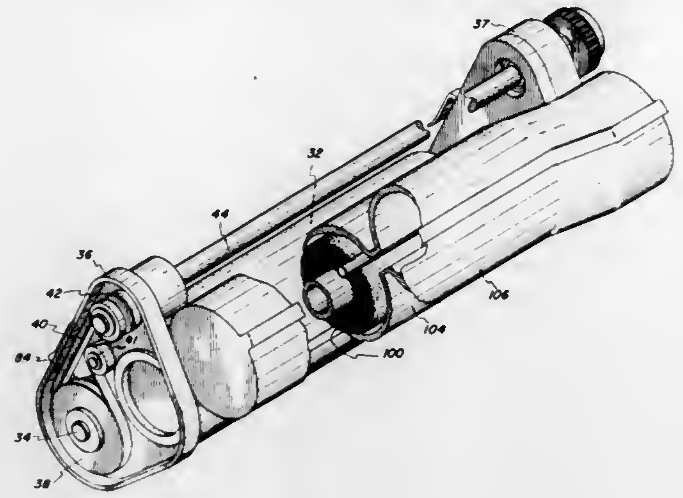
Filed Mar. 27, 1972, Ser. No. 238,045

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 **2 Claims**

1. In an electrostatographic machine having a movable photoconductive member:

a transfer assembly having a transfer roller mounted proximate to said photoconductive member, a rotary cleaning brush mounted adjacent said roller and having bristles in interfering engagement with the surface of said roller, said roller and said brush being mounted to rotate in the same direction, and means for pivotally supporting said assembly so that said roller can be moved into and out of contact with said photoconductive member, said pivotally supporting means permitting said roller and said brush to be moved as a unit.



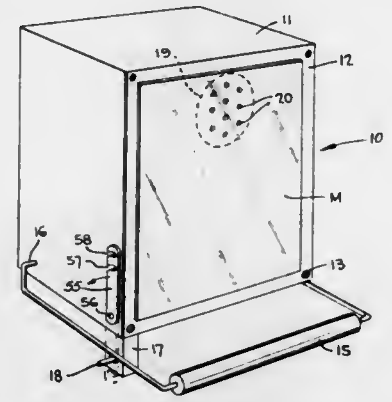
3,847,120
BIRD TRAINING DEVICE

Wade E. Hicks, 4900 Shirley St., Alexandria, Va. 22309

Filed Feb. 23, 1973, Ser. No. 335,011

Int. Cl. A01k *15/00, 31/12*

U.S. Cl. 119—29 **7 Claims**



1. A training device to teach a bird to talk comprising a housing, a sound recording playback unit mounted in said housing, record means having spoken sounds recorded thereon for reproduction by said playback unit, said record means including a magnetic tape formed into an endless band having the spoken sounds recorded thereon for repetition, guiding means positioned adjacent the outer periphery of said housing for carrying said band in an endless path so that said band may be of maximum length, switch means for activating said unit, perch means for the bird mounted on said housing for movement in response to the bird's weight thereon, and means for interconnecting said switch means and said perch whereby to cause switching to the "on" position for activation of said playback unit when the bird is on the perch and playing of the spoken sounds so as to teach the bird to talk.

3,847,121
ANIMAL FEEDER

Arthur P. Ruth, P.O. Box 11037, Houston, Tex. 75016

Filed July 25, 1973, Ser. No. 382,286

Int. Cl. A01k *05/02*

U.S. Cl. 119—51.13 **10 Claims**

1. An animal feed dispenser comprising

a container;

a door in said container having a generally horizontal closed position and an open position, said door defining a feed storage chamber thereabove;

catch means attached to and movable with said door;

a shaft for rotatably mounting said door;

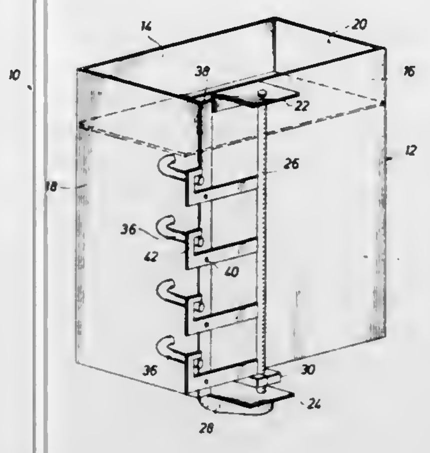
a lead screw;

a travelling nut engaged with said lead screw;

a motor means for rotating said lead screw to advance said nut;

a latch means for latching and releasably holding said catch means to selectively close said door; and,

said latch means being constructed and arranged to form an opening means which receives said catch means, which opening means reaches over said catch means in a manner to hold it against gravity and further including a portion which extends into the path of movement of said travelling nut, and including a pivotal mounting means for said latch means.



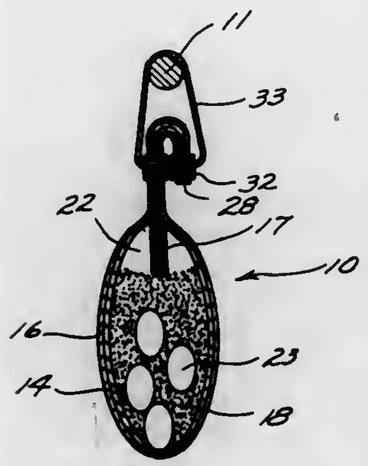
3,847,122
LIVESTOCK INSECTICIDE DISPENSING BAG

Maurice O. Gould, Minden, Nebr., assignor to Agricultural Enterprise, Inc., Fremont, Nebr.

Filed May 14, 1973, Ser. No. 359,786

Int. Cl. A01k *29/00*

U.S. Cl. 119—159 **4 Claims**



1. A livestock insecticide dispensing bag comprising:

a loosely woven plastic inner ply for holding an insecticide in a powdered form;

a plastic outer ply enclosing said inner ply, said plies having common seam lines and forming an open topped bag;

said inner ply and outer ply being permeable to permit the insecticide to sift therethrough when an animal rubs or butts against said outer ply; and

a plurality of rocks disposed in said inner ply in contact with the insecticide to prevent the caking of same.

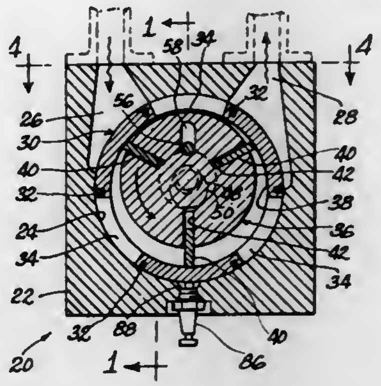
3,847,123
ROTARY FLUID POWER DEVICES

Robert L. Vierling, 10255 S. Hoyne Ave., Chicago, Ill. 60643

Division of Ser. No. 699,652, Jan. 22, 1968, Pat. No. 3,511,584. This application Dec. 22, 1969, Ser. No. 887,082

Int. Cl. F02b *55/14*

U.S. Cl. 123—8.45 **18 Claims**



1. A rotary internal combustion engine,

comprising first means forming a generally cylindrical chamber of substantially circular cross section,

a rotor disposed in said chamber,

second means mounting said rotor for rotation about an axis which is eccentric relative to the axis of said chamber,

a plurality of extensible and retractable vanes mounted on said rotor for engaging the inside of said chamber,

said chamber having at least one set of intake and exhaust ports therein,

orbiting means for causing said rotor and its eccentric axis to orbit in said chamber about the axis thereof,

the rotation and orbiting of said rotor causing the extension and retraction of said vanes,

and at least one fuel activator connecting with said chamber for causing periodic combustion of fuel therein in timed relation to the rotation and orbiting movement of said rotor,

said engine including an odd number of said vanes,

said orbiting means including drive means for causing said rotor to orbit at a speed such that the ratio of the orbiting speed to the rotary speed of said rotor corresponds to the number of vanes,

each fuel activator corresponding with a particular set of said intake and exhaust ports and connecting with said chamber at an intermediate point therebetween,

whereby said engine produces a four-stroke cycle involving intake, compression, power and exhaust strokes,

said drive means comprising elements for orbiting said rotor in the same direction as the direction of rotation of said rotor,

said intake and exhaust ports comprising a number of sets of intake and exhaust ports given by the formula $n - 1/2$ wherein "n" is the number of vanes.

3,847,124
INTERNAL COMBUSTION ENGINE

Louis E. Kramer, 5323 Elk Creek Rd., Madison Township, Butler County, Ohio 45042

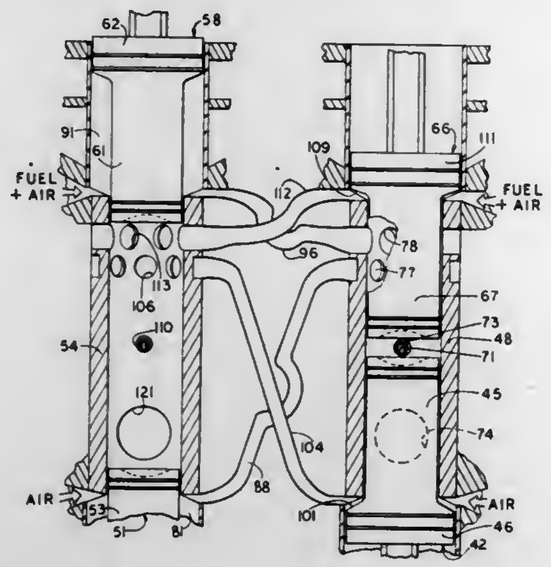
Filed Mar. 30, 1973, Ser. No. 346,705

Int. Cl. F02b *25/08, 75/28*

U.S. Cl. 123—51 B **3 Claims**

1. An internal combustion engine which comprises a pair of central tubes, a pair of pistons associated with each central tube, heads of the pistons operating in the central tubes, each of the pistons including an enlarged body portion, cylinders in which the enlarged body portions of the pistons operate, means for connecting the pistons in each central tube to move toward each other and away from each other in unison and for causing the pistons associated with one central tube to move

toward each other as the pistons associated with the other central tube move away from each other, exhaust ports in the central tubes which are opened when the pistons associated therewith are in a partly retracted position, air-injection openings in the central tubes which are opened when the pistons associated therewith are in a further retracted position, and fuel-injection openings in the central tubes which are opened when the pistons associated therewith are in a still further retracted position, means for connecting the air-injection openings of each central tube with one of the cylinders associated with the other central tube, means for connecting the fuel-injection openings of each central tube with the other of the cylinders associated with the other of the central tubes,



means for permitting air to enter the cylinders which are connected to the air injection openings but for preventing exit of the air therefrom, and means for permitting a fuel-air mixture to enter the cylinders which are connected to the fuel-injection openings and for preventing exit of the fuel-air mixture therefrom, whereby the air is compressed in the cylinders connected to the air-injection openings and is injected into the central tubes after the exhaust openings have been opened to clear the products of combustion from the central tubes, and the air-fuel mixture is compressed in the cylinders connected to the fuel injection openings and is injected into the central tubes after the products of combustion have been cleared therefrom.

3,847,125
CARBURETOR

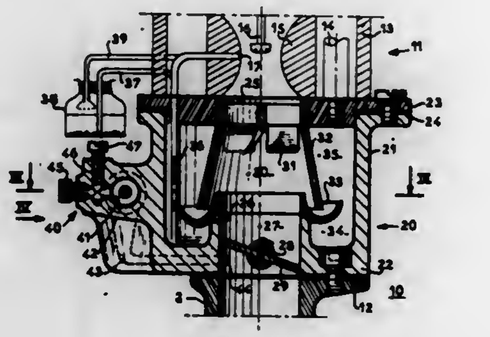
Alfred Andre Malherbe, 81 rue Pasteur, Waziers 59119, France

Filed Jan. 26, 1973, Ser. No. 327,085

Claims priority, application France, Jan. 27, 1972, 72.2727

Int. Cl. F02b *25/06*

U.S. Cl. 123—119 A **17 Claims**



1. Apparatus for supplying a combustion mixture to an internal combustion engine, particularly an automobile engine, subject to anti-pollution regulations comprising:

- a. a principal device designed to supply the engine, while cruising and accelerating, which has located downstream of the conventional means of atomizing fuel in the intake air to the motor, static elements to dry the intake mixture by centrifugal action due to the velocity of flow, and subsequent means to collect and eventually recycle excess fuel and eliminate collected impurities,
- b. an auxiliary device designed to supply the engine, when idling, which contains, in addition to the conventional means of proportioning a mixture of fuel with a small flow of primary air, means of heating the mixture, and of adding to the heated mixture a metered amount of fresh secondary air, and
- c. a control device consisting, in one part of an accelerating butterfly capable of closing off the principal device from the intake to the engine and in another part of an automatic three way valve by which a passage discharging downstream of the aforementioned butterfly is selectively connected to the auxiliary device when the butterfly is not closed, and when the butterfly is closed, and the speed of the engine is above a predetermined limit, to the exhaust of said engine.

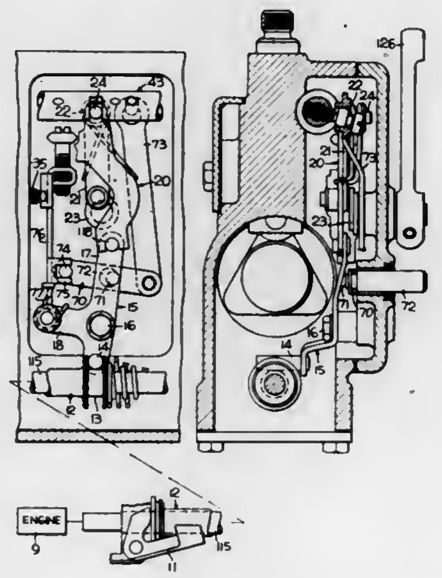
3,847,126
INJECTION TIMING MODULATOR

Alexander Dreisin, Olympia Fields, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 1, 1973, Ser. No. 402,608

Int. Cl. F02m *59/28, 59/20*

U.S. Cl. 123—140 R **10 Claims**



1. A multiple plunger fuel injection pump for an internal combustion engine comprising, a pump housing means defining a plurality of bores, a plunger received in each of said bores and defining a fuel injection pumping chamber, means defining a fuel supply chamber, each of said plungers defining passage means selectively communicating between the supply chamber and the injection pumping chamber for supplying fuel to said injection pumping chamber, a control sleeve mounted for reciprocable and rotational movement about each of said plungers and defining port means with said plunger for controlling the closing and opening of said passage means in said plunger between the supply chamber and the fuel injection pumping chamber, means sequentially reciprocating each of said plungers in said bores for pumping fuel in said fuel injection pumping chamber, a speed responsive device adapted for connection to an engine including a control member moving in response to engine speed, a drive lever defining a drive arm, a timing arm and a quantity control arm, means connecting said drive arm to said control member of said speed responsive device, a control rod connected to each of said control sleeves providing rotational and reciprocating movement of said control sleeves, a quantity control linkage connected between said quantity control arm and said control rod reciprocating said control rod and rotating said control sleeves, a throttle control pivotally connected to said quantity control linkage to modify movement of said control rod in response to movement of said throttle control, a timing linkage connected between said timing arm and said control rod rotating said control rod and reciprocating said control sleeves, a variable fulcrum timing modulation lever in said timing linkage for modifying fuel injection timing, said linkages thereby controlling the quantity, timing and modulation of fuel delivery from said fuel injection pump.

3,847,127
CENTRIFUGAL RPM GOVERNOR FOR FUEL INJECTED INTERNAL COMBUSTION ENGINES

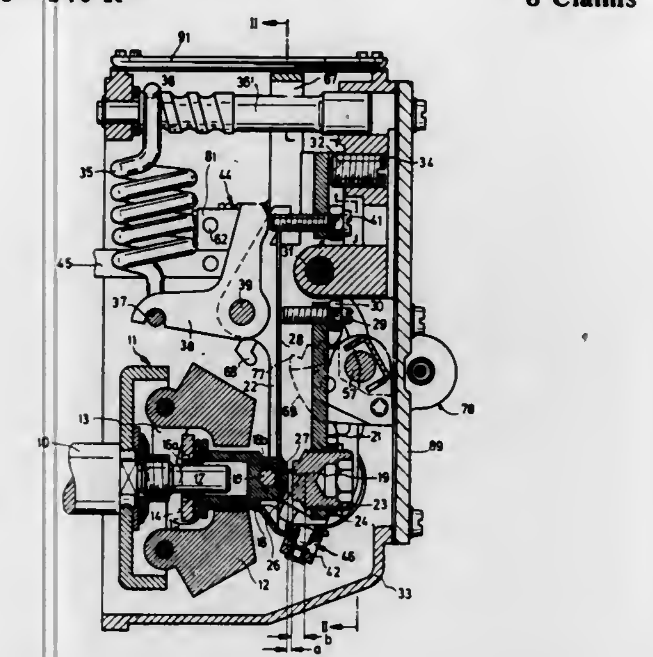
Heinrich Staudt, Markgroningen-Talhausen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 4, 1973, Ser. No. 421,586

Claims priority, application Germany, Dec. 5, 1972, 2259428

Int. Cl. F02d *1/04*

U.S. Cl. 123—140 R **8 Claims**



1. In a centrifugal rpm regulator for fuel injected internal combustion engines, especially diesel engines, including a housing mounting; centrifugal weight means, an adaptor sleeve slidably displaceable under the influence of the centrifugal weight means and as a function of engine rpm, an intermediate lever, a fuel quantity control rod, the adaptor sleeve transmitting the forces associated with its controlled motions resulting from its slidable displacement through the intermediate lever to the fuel quantity control rod for adjusting the fuel quantity delivered by an injection pump used in conjunction with the regulator, an abutment structure which serves to limit the movement of the control rod in the direction of increasing fuel supply, the abutment structure being fixedly connected to the regulator housing and being pivotable as a function of engine rpm to thereby determine the maximum fuel quantity, and means coupling the adaptor sleeve to the abutment structure, the abutment structure having a cam plate including a cam sector that determines the starting excess fuel quantity and also the full load fuel supply quantity, a shaft on which the cam plate is mounted, a cam follower member, and means connecting the cam follower member to the control rod, the cam follower member being adapted to abut the cam sector whenever the maximum fuel supply quantity corresponding to a particular rpm is delivered, the improvement comprising:

- a. a further cam plate, wherein the cam plate of the abutment structure and said further cam plate constitute a first and second cam plate, respectively, said second cam plate being mounted on the shaft mounting the first cam plate to be parallel therewith and rotatable independently thereof, said second cam plate also being adapted to operatively engage with the cam follower member; and
- b. a control apparatus which functions in dependence on the temperature of an operating medium such that when an operating medium temperature is reached which corresponds to an operationally warmed-up engine a portion of the second cam plate blocks the cam sector of the first cam plate from being engaged by the follower member thereby preventing the delivery of a starting excess fuel quantity, and when the operating medium temperature reached is below a temperature which corresponds to an operationally warmed-up engine, the cam follower member abuts the cam sector of the first cam plate so that at least a partial starting excess fuel quantity is delivered.

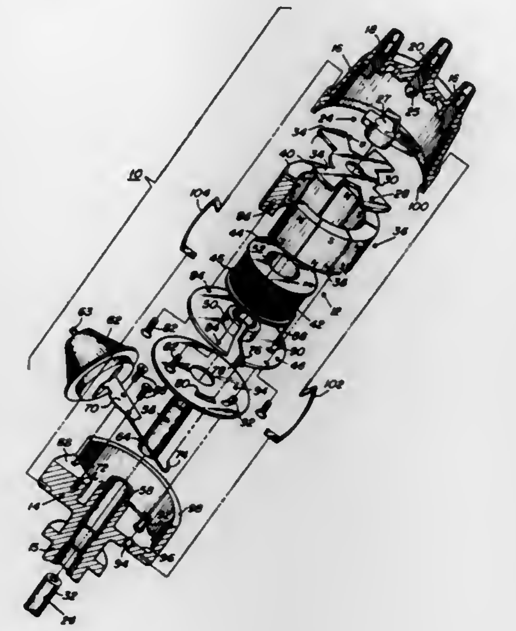
3,847,128
GASOLINE VAPORIZER APPARATUS

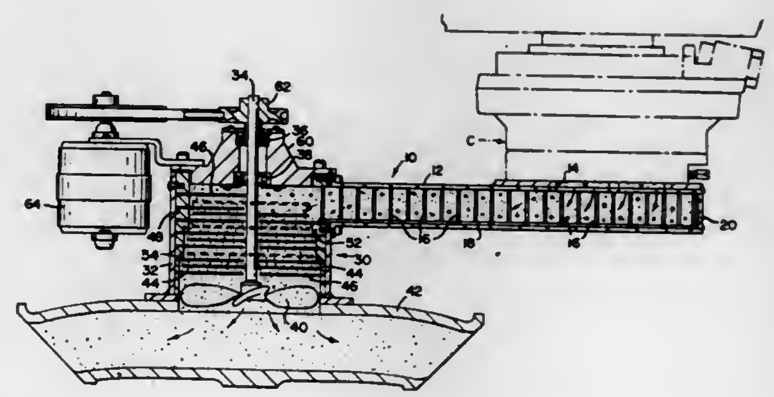
John J. Palotsee, 330 E. Front St., Youngstown, Ohio 44503

Filed Mar. 30, 1973, Ser. No. 346,461

Int. Cl. F02m *29/00*

U.S. Cl. 123—141 **8 Claims**





1. A device for improving the fuel-air mixture for a combustion engine and comprising

- a conduit for connection to a carburetor to receive an air-fuel mix therefrom, said conduit having a number of fingers operatively positioned therein normal to the path of flow of the air-fuel mix to aid in breaking up any liquid fuel particles carried by the air-fuel mixture, and
- a means connected to said conduit to receive the air-fuel mix therefrom and including a vertically positioned housing, a driven center shaft suspended in said housing and having a fan member secured to its lower end to aid in drawing the air-fuel mix down through the housing, a set of radially extending fingers carried by said shaft in axially and circumferentially spaced positions thereon, a second set of fingers secured to said housing and extending radially thereof and positioned axially intermediate the members of the first set of fingers to agitate the air-fuel mixture and further break up any liquid fuel particles; the lower end of said housing being connectable to a manifold of a combustion engine.

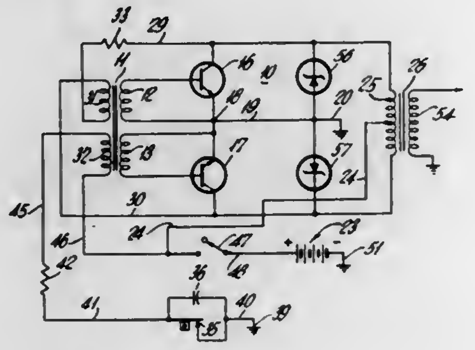
3,847,129
IGNITION SYSTEM UTILIZING A SATURABLE-CORE SQUARE WAVE OSCILLATOR CIRCUIT

Robert Eugene Canup, Chester, Va., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 38,279, May 18, 1970, abandoned. This application Mar. 2, 1973, Ser. No. 337,509

Int. Cl. F02p *3/02*

U.S. Cl. 123—148 E 6 Claims



1. In an ignition system for use with an internal combustion engine having breaker points associated therewith for mechanically determining the timing of initiation of an ignition spark for a cylinder of said engine, wherein said system comprises

a saturable-core square wave oscillator having a fundamental oscillator frequency and employing a saturable-core transformer to provide electromagnetic feedback coupling and providing relatively high frequency electrical energy having continuing duration during oscillation thereof,

means under control of said breaker points for saturating said feedback coupling with steady magnetic flux to stop said oscillator and for cutting off such flux to cause rapid starting of said high frequency energy,

an output transformer having a high turns ratio for supplying energy to said ignition spark,

a pair of transistors, and

circuit means for connecting said transistors to said electromagnetic feedback coupling and to said output transformer,

the improvement comprising said output transformer being tuned to resonate at a harmonic frequency of said fundamental oscillator frequency at no load, and

the magnetic properties of said saturable-core transformer being determined so as to cause an increase in the frequency of said oscillator as the load on said output transformer increases.

3,847,130
ELECTRICAL FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Takeo Miyoshi, Toyota; Kazu Majima; Tetsuo Yamagata, both of Kariya; Susumu Harada, Okazaki, and Motoharu Sueishi, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Aichi-ken and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, both of, Japan

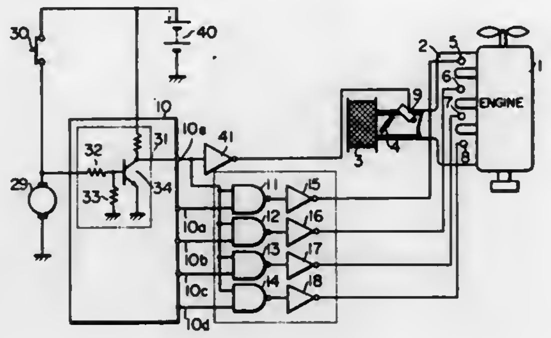
Filed Aug. 22, 1972, Ser. No. 282,663

Claims priority, application Japan, Aug. 23, 1971, 46-64293

Int. Cl. F02n *17/00;* **F02b** *3/00*

U.S. Cl. 123—179 L 6 Claims

1. In an electrical fuel injection system for internal combustion engines wherein the fuel requirement of an engine is electrically computed by an electronic computing circuit so that the regular electromagnetic injection valves are energized to inject the fuel by pulse signals the time width of which corresponds to the fuel requirement, and wherein a starting electromagnetic injection valve is provided to atomize and inject, independently and exclusively of the regular electromagnetic injection valves, an engine starting fuel when starting the engine, the combination comprising a start detector for detecting the start of the engine and for generating an output signal, and a circuit means connected with said start detector for receiving said output signal of said start detector for preventing the operation of the regular electromagnetic injection valves and for energizing only the starting electromagnetic injection valve to thereby provide an atomized fuel to said engine when said engine is starting.



3,847,131
THROTTLE OPERATING MECHANISM FOR CARBURETOR

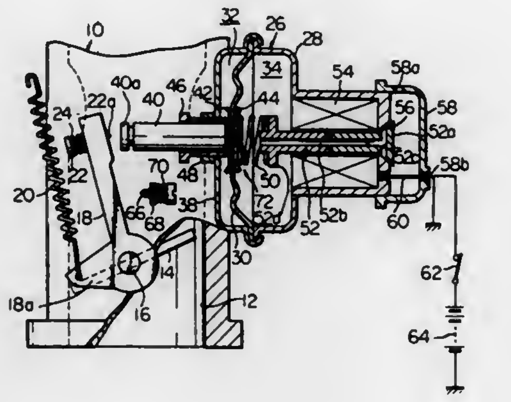
Takashi Hisatomi, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed June 5, 1973, Ser. No. 367,151

Claims priority, application Japan, June 6, 1972, 47-67071

Int. Cl. F02b *77/00*

U.S. Cl. 123—198 DB 7 Claims



1. A throttle operating mechanism for a carburetor of an internal combustion engine, comprising a throttle actuating arm rotatable with a carburetor throttle valve to vary throttle opening and biased in a direction to close said carburetor throttle valve, a diaphragm disposed in a casing to define first and second chambers therein and having a check valve providing communication therebetween, an electromagnetically controlled plunger means connected to one side of said diaphragm and movable therewith, said plunger means having formed therein an air passage communicating with one of said first and second chambers, and an actuating rod connected to the other side of said diaphragm and movable therewith, said throttle actuating arm having an end portion engageable with said actuating rod, said air passage being closed by a valve head formed on said plunger means when the same is moved in one direction whereby movements of said actuating rod and accordingly said diaphragm are dampened whereas, when said plunger means is moved in another direction, said air passage is opened to release dampening effect thereby to allow quick return of said actuating rod.

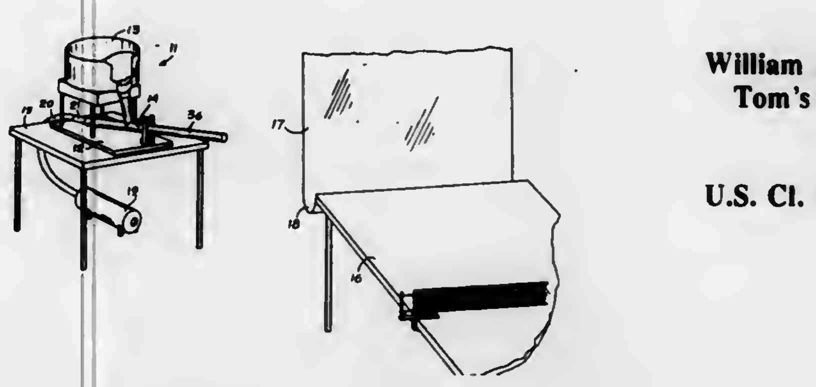
3,847,132
TABLE-TENNIS BALL THROWING MACHINE USING AIR PROPULSION

Milton C. Schatz, 209 N. Fifth St., Eldridge, Iowa 52748

Continuation-in-part of Ser. No. 204,096, Dec. 2, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 397,695

Int. Cl. F41f *1/04*

U.S. Cl. 124—11 R 6 Claims



1. A pneumatic ball-throwing machine comprising:

a ball-propelling tube, one end of said tube being an inlet adapted to be attached to an air-blowing device, the other end of said tube being an outlet pointed in the direction balls are to be thrown, a chute through which balls are to be supplied to said outlet, said chute joining said propelling tube at a point intermediate its ends, a receptacle for balls mounted above said ball-propelling tube, said chute extending from said propelling tube upwardly to an outlet in the bottom of said receptacle, mechanical gating means in the outlet of said receptacle operable repeatedly to permit balls to fall one at a time from said receptacle to said ball-propelling tube,

said mechanical gating means comprising a notched disk, the continuous portion of the edge of said disk extending across said outlet of said receptacle, the edge of said disk having at least one notch, the width of said notch in the circumferential direction of said disk being greater than the diameter of the balls to be served and the depth of the notch from the edge of the disk being sufficient to allow a ball to pass to said chute while said notch is across said outlet of the receptacle, and means for rotating said disk at a predetermined rate to feed balls from said receptacle to said chute at desired intervals.

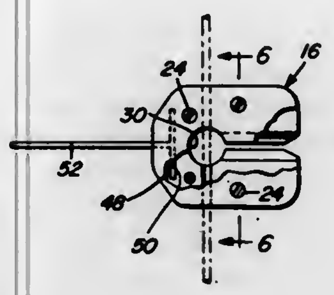
3,847,133
BOWSTRING WITH MOUNTED ARROW NOCK HOLDER

Waldemar K. Awiszus, East Detroit, Mich., assignor to Exacto, Inc., East Detroit, Mo.

Filed June 23, 1972, Ser. No. 265,679

Int. Cl. F41b *5/00*

U.S. Cl. 124—30 R 6 Claims



1. In a combination comprising a bowstring and an arrow nock holder, said holder defining a body including two mating pieces clamped together about said bowstring to prevent shifting along the latter and located in a predetermined selected position thereon, said holder body including front and rear sides, the front side of said holder body having a means formed therein for receiving and frictionally gripping the rear end of an arrow nock therein, said holder body having an additional means extending rearwardly and being formed in the shape of a loop so as to be releasably gripped for drawing the bowstring, said additional means including a forward portion anchored between said mating pieces.

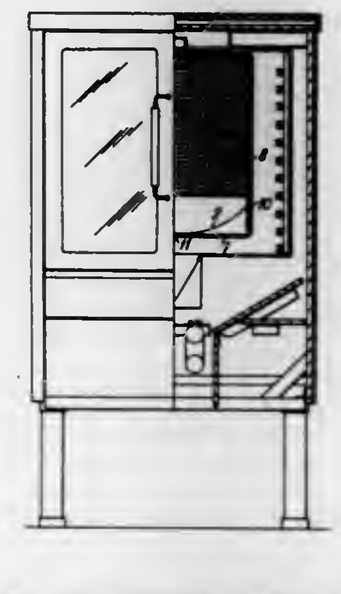
3,847,134
OVENS

William J. W. Booker, London, England, assignor to Oliver Tom's Catering Equipment Limited, London, England

Filed Mar. 1, 1973, Ser. No. 337,180

Int. Cl. F24c *15/32*

U.S. Cl. 126—21 A 1 Claim



1. A forced air oven having means for circulating air therein, a plurality of gas jets being adapted to heat at least an air space below the base of the oven, the air from such space first flowing through channels formed between outer walls of the oven and then escaping through a vent, the means for circulating air being a fan driven by an electric motor, a baffle being mounted at the wall of the oven bearing the fan and being formed of a curved elongate strip member, the baffle being mounted substantially symmetrically of a vertically downwardly extending segment from the centre of the fan, the lower part of the baffle being at a greater radial distance from the centre of the fan than the ends thereof, and in which the baffle is mounted so as to present a main surface area thereof to air expelled radially from the fan, in use of the oven.

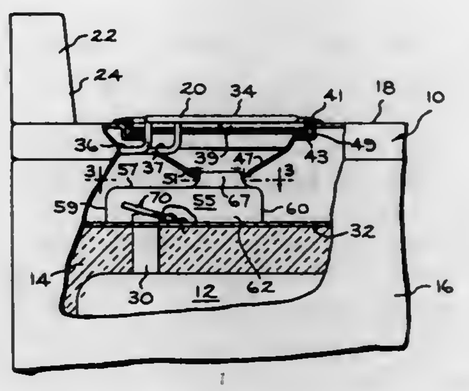
3,847,135
HINGED ADAPTER DUCT FOR OVEN VENT

George R. Sherman, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Feb. 4, 1974, Ser. No. 439,548

Int. Cl. F24c *15/32;* **A21b** *1/00*

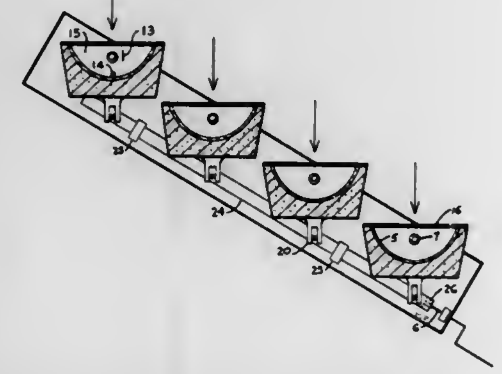
U.S. Cl. 126—21 R 5 Claims



1. The combination of a first vertical oven vent duct, a generally horizontal support surface adjacent the top of the

vent duct, a second vertical duct located above the first duct but horizontally offset therefrom, and a horizontal adapter duct supported from the said support surface and joining the first vertical vent duct and the second vertical duct, the bottom portion of said adapter duct being open, and an offset hinge means connected at one end to the said support surface at a point beneath the second vertical duct and connected at the other end to the adapter duct at a point on the far side of the first vertical vent duct, whereby the adapter duct may be lifted at one end adjacent the second vertical duct which causes the hinge means to swing in an arc thereby raising the adapter duct and causing it to extend generally vertically so that it may be cleaned through its open bottom portion.

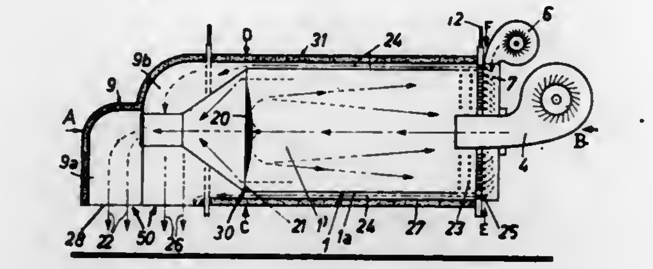
3,847,136
SOLAR WATER-HEATING SYSTEMS
Napoleon Paul Salvail, 830 Margie Dr., Titusville, Fla. 32780
Filed July 27, 1973, Ser. No. 383,194
Int. Cl. F24j *3/02*
U.S. Cl. 126—271 **3 Claims**



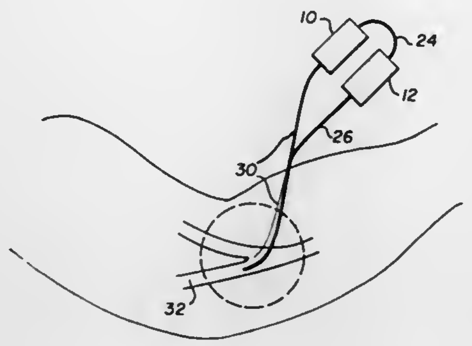
1. In a solar heat collector, a frame comprised of a plurality of fluid transfer tubes in perpendicularity to end support structures; a fluid transfer tube having a stiff self-supportive semicylindrical member mounted thereon; said fluid transfer tube having a bearing supporting the semicylindrical member and allowing rotation of the member about the fluid transfer tube; said bearing also sealing the hollow semicylindrical member; said bearing comprising
- a first bearing piece rigidly attached to the end of a semicylindrical member and extending outwardly therefrom; said first bearing piece being concentrically and rotatably disposed about said tube; and
- a second bearing piece rigidly attached to said support structure also concentrically disposed about said tube; said second bearing piece having an annular recess into which said first bearing piece extends for support thereby, while providing a sealed, low friction bearing surface between said first and second bearing pieces, said first bearing piece being in abutting relationship with the bottom of said annular recess.

3,847,137
MELTING EQUIPMENT FOR MELTING SNOW AND ICE
Oreste Lambertoni, Varese, Italy, assignor to Pages Holding S.A., Luxembourg, Luxembourg
Filed Apr. 2, 1973, Ser. No. 346,810
Int. Cl. E01c *11/24;* **E01h** *5/10*
U.S. Cl. 126—271.2 A **4 Claims**

1. A machine for the melting of snow and ice, said machine comprising an outer sleeve, an inner wall within said outer sleeve and defining therebetween an intermediate chamber, said inner wall being generally cylindrical and defining a combustion compartment, heat producing means at one end of said combustion compartment for directing heated gases axially into said combustion compartment, a pre-compartment at said one end of said outer sleeve in communication with both said intermediate chamber and said combustion compartment for supplying air thereto to externally cool said inner wall and to be utilized within said combustion compartment, and a hood at the opposite end of said outer sleeve for directing heated gases towards ice and snow to be melted, said hood being in communication with said combustion compartment for receiving gases therefrom and with said intermediate chamber for receiving heated gases passing therethrough, the hood member having an outlet opening covered by a heat-resistant perforated plate.



3,847,138
METHOD AND SYSTEM FOR CONTROLLED AUTOMATED ADMINISTRATION OF DRUGS TO PATIENTS
Seymour Gollub, 123 Church St., Teaneck, N.J. 07666
Filed Mar. 14, 1973, Ser. No. 341,229
Int. Cl. A61b *6/00;* **A61m** *5/00*
U.S. Cl. 128—1.1 **21 Claims**

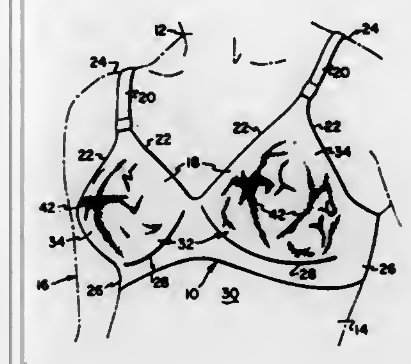


1. A method for monitoring a characteristic of a patient and automatically administering a substance to the patient based on such monitoring, which comprises administering a radioactive substance to a patient, monitoring the radioactivity in said patient and automatically administering a therapeutic drug to the patient, said administering being directly responsive to said monitoring.

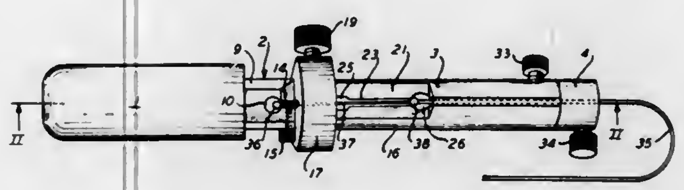
3,847,139
DEVICE FOR AID IN DETECTING BREAST CANCER
Eric Flam, 29 Ainsworth Ave., East Brunswick, N.J. 08816
Filed Apr. 13, 1973, Ser. No. 350,753
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 H **19 Claims**

1. A device for aid in the visual detection of malignant tissue in the breast of a woman, said device comprising:
- a body contoured garment structure including
- a substrate of stretchable conformable material having an obverse surface which can be viewed when the device is worn over the breast and a reverse surface which conforms essentially to the contour of the breast to contact the breast essentially over the breast surfaces to be examined by virtue of the stretchable conformable nature of the material;

- means for affixing the substrate over the breast surfaces to be examined; and
- a temperature-responsive coating on portions of the obverse surface of the substrate constituting a means for enabling the substrate to maintain a stretchable conformable nature while permitting the substrate to remain coated;
- said stretchable conformable material being sufficiently thin to enable the transfer of heat from said breast surfaces to the coating.

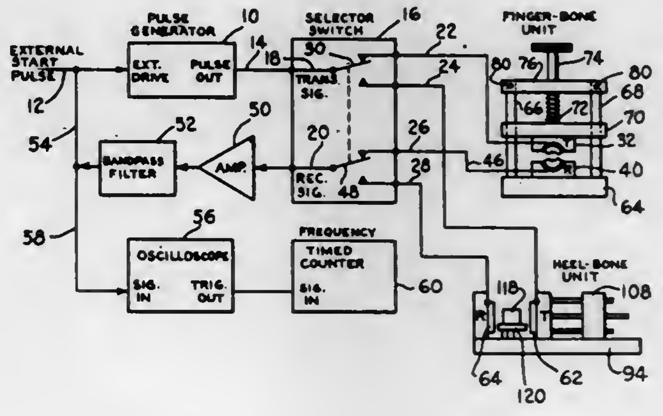


3,847,140
OPERATING HANDLE FOR SPRING GUIDES
Robert J. Ayella, Lutherville, Md., assignor to United States Catheter & Instrument Corporation, Glens Falls, N.Y.
Filed Dec. 16, 1971, Ser. No. 208,583
Int. Cl. A61m *25/00;* **A61b** *05/02*
U.S. Cl. 128—2 M **14 Claims**



1. A handle for a flexible, elongated controllable tip spring guide having a tubular guide body and a core wire projecting from the proximal end of said guide body, said handle comprising:
- a hand grip located at a first, proximal end of the handle, said hand grip having circumferential and axial dimensions such that said hand grip can be held substantially within the palm of the hand of an operator;
- an intermediate assembly rotationally and non-slidably mounted in a generally coaxial relationship with the hand grip, the intermediate assembly including a core having at a first, proximal end thereof a cylindrical end portion rotatably engaged in the distal end of the hand grip, the core further having a middle block portion and a distal rod portion coaxial with the cylindrical end portion, the distal rod portion extending axially of the hand grip, the rod portion being longitudinally grooved, said block portion having a radially disposed hole in the plane of said groove, and said hole being connected to said groove by a slit narrower than the diameter of said hole whereby a lug on the end of one of said guide body and a core wire can be retained within said hole with the core wire passing through said slit and said groove;
- means on the intermediate assembly for retaining the spring guide along the axis of said handle such that the distal end of said spring guide extends beyond the distal end of the rod portion of the core;
- means mounted on said intermediate assembly for rotationally positioning said intermediate assembly; and,
- a slidable carriage slidably and non-rotationally mounted on the intermediate assembly so as to permit axial positioning of said carriage on said assembly, said slidable carriage having means for engaging the other one of said guide body and core wire.

3,847,141
ULTRASONIC BONE DENSITOMETER
James M. Hoop, Hazel Green, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Aug. 8, 1973, Ser. No. 386,789
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 V **5 Claims**



1. An apparatus for measuring the density of a bone structure so as to monitor the calcium content thereof comprising:
- a. A pair of opposed spaced ultrasonic transducers, one acting as a transmitter and the other acting as a receiver;
- b. a clamping means supporting said transducers in spaced relation for accommodating said bone structure to be examined therebetween;
- c. said clamping means including means for positioning said bone structure in a constant orientation with respect to said pair of opposed spaced ultrasonic transducers;
- d. means for regulating the pressure applied by said pair of opposed spaced transducers on said bone structure being examined;
- e. a pulse generator means coupled to said transmitter transducer generating an electric pulse for causing said transmitter transducer to generate an ultrasonic sound wave which is directed through said bone structure to said receiver transducer;
- f. an electrical circuit means coupled between said receiver transducer and said pulse generator for retriggering said pulse generator responsive to said receiver transducer receiving said ultrasonic sound wave; and
- g. frequency indicating means coupled to said circuit means;

whereby the frequency that said pulse generator is retriggered is proportional to the duration that said ultrasonic wave takes to travel through said bone being examined which varies according to the calcium content of said bone being examined.

3,847,142
BLOOD FLOW MEASURING APPARATUS AND METHOD
Redford B. Williams, Jr., 2748 Middleton St., Durham, and John W. Hartwell, Hillsborough, both of N.C., assignors to said Williams, by said Hartwell
Filed Aug. 30, 1973, Ser. No. 393,203
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 F **6 Claims**

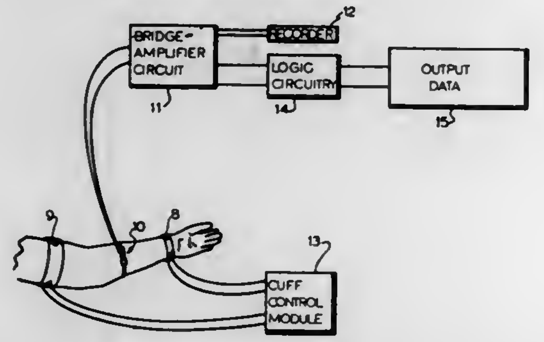
1. A portable apparatus for determining the rate of blood flow in a limb comprising, in combination:

a. first occluding means mountable on the limb for occluding blood flow to the extremity of the limb distal to where said first occluding means is mounted;

b. second occluding means mountable on the limb proximal of said first occluding means for occluding venous outflow from the limb distal to where said second occluding means is mounted while allowing arterial inflow to continue substantially unimpeded;

c. occluding control means connected to said first and second occluding means and adapted to cause said occluding means to occlude in the manner stated;

d. measuring means mountable on the limb between said first and second occluding means and productive of an electrical signal responsive to the change in circumference of said limb between said occluding means when so mounted and when said occluding means are occluding in the respective manner stated;

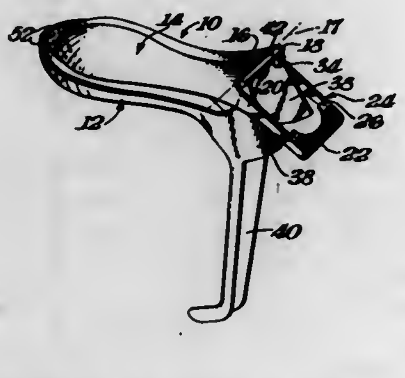


e. electrical analyzing circuit means connected to said measuring means, said analyzing circuit means including logic circuit means for receiving and performing arithmetic operations upon electrical signal inputs, said analyzing circuit means further including means to generate and transmit to said logic circuit means electrical signal inputs representative of the circumference of the limb at the point of application of said measuring means, and representative of a change in circumference of known amount, said logic circuit being adapted to receive and combine said electrical signal from said measuring means over a predetermined time period with said electrical inputs and to convert said electrical signal and inputs to a numerical form representing the rate of blood flow required to produce such change in such period of time; and

f. portable housing means mounting said analyzing circuit and occluding control means and mounting connecting means for connecting said first and second occluding means and said measuring means to the appropriate said analyzing circuit and occluding control means.

3,847,143
SPECULUM

John Cotey, Haddonfield, N.J., and Jean R. Poirier, Frederick, Md., assignors to Medspecs, Inc., Frederick, Md.
Filed May 1, 1973, Ser. No. 356,178
Int. Cl. A61b *1/32*
U.S. Cl. 128—17 **17 Claims**



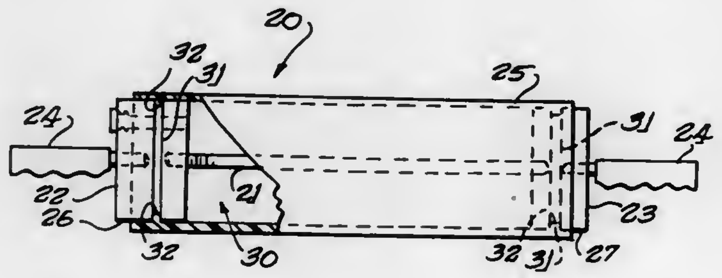
1. A speculum which facilitates the examination of certain body passages comprising:

first and second members each having an elongated blade with a convex outer surface and a rear portion, and

flexible means for pivotal movement of said blades about said rear portions between spread and closed positions, said flexible means being integral with at least one of said members and fixedly interconnected with the other of said members for disposing said members in side-by-side relationship.

3,847,144
REDUCING ROLLER DEVICE

Richard E. Wright, 2212 Locust St., Quincy, Ill. 62301
Filed June 27, 1973, Ser. No. 373,987
Int. Cl. A61h *15/00*
U.S. Cl. 128—57 **2 Claims**



1. A reducing roller device comprising:

a pair of longitudinally spaced parallelly extending flat discs, each disc provided with a circumferally extending groove about its periphery intermediate the sides of the discs;

a pair of handles each disposed centrally of an associated disc in a manner projecting axially outwardly therefrom, one end of each of the handles rotatably connected to the associated disc in a manner permitting rotation of the disc about its axis relative to the handle;

a longitudinally extending elongated supporting shaft interconnecting the innermost confronting side surfaces of the pair of discs for positively retaining the same at a present longitudinal spacing;

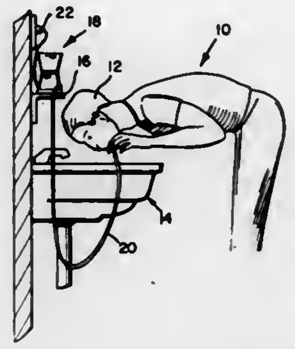
a tubular member of flexible yieldable material adapted to extend between and overlap the periphery of each of the discs, the ends of the tubular member each having an inner diameter of a size and configuration adapted to be placed over the periphery of each disc and secured thereto for effecting rotation of the tubular member about its axis simultaneously with the rotation of each of the discs, the tubular member having an inwardly directed circumferentially extending bead formed about the inner surface thereof near each end thereof and adapted to seat in one of the grooves in the disc to maintain the tubular member thereon; and

whereby the handle members may be grasped in the two hands of an individual with the outer circumference of the tubular member pressed against an individual's skin in a manner to conform to the contours thereof and be rolled thereagainst in a reciprocal manner to assist in elimination of flabby skin conditions and to enhance muscle tone.

3,847,145
NASAL IRRIGATION SYSTEM

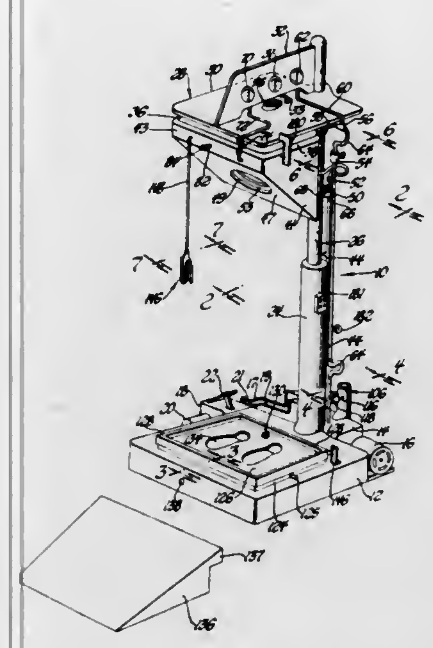
Murray Grossan, 8930 Sepulved Blvd., Beverly Hills, Calif. 90045
Filed Apr. 13, 1973, Ser. No. 350,839
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 **9 Claims**

1. In a system for enhancing the draining of mucopus from a person's sinuses and for expelling it from the nose, the provision of: means for supplying to one nostril, the other nostril being open and the user's face being generally horizontally oriented, a flow of an isotonic saline solution pulsating in pressure between 0 and less than 10 psi at a frequency of at least 100 cycles per minute.



3,847,146
THERAPEUTIC APPARATUS AND METHOD

Walton W. Cushman, 36483 Gloucester, Fraser, Mich. 48026
Filed Dec. 11, 1972, Ser. No. 314,200
Int. Cl. A61h *1/02*
U.S. Cl. 128—75 **27 Claims**

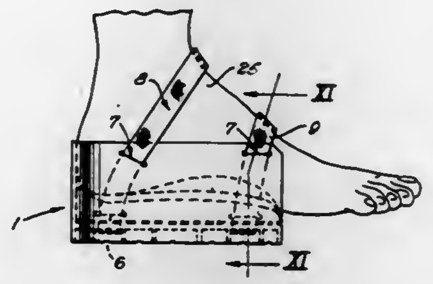


1. A method of traction therapy for a human patient, comprising the steps of establishing a seal about the upper portion of the patient's head, creating a pressure differential across said seal, with the lower pressure above said seal and the higher pressure below said seal, increasing said pressure differential to a value sufficient to cause the higher pressure acting upon the patient's body below said seal to move the patient by his head toward the lower pressure side of said seal thereby causing a traction force to be applied along the spinal column of said patient, and anchoring the patient's lower extremities while applying the pressure differential at the patient's head.

3,847,147
FOOT SUPPORT

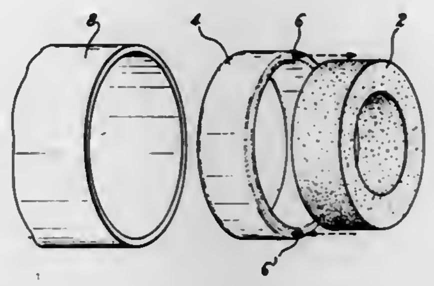
Richard E. Turner, P.O. Box 95, Mineral Wells, Tex. 76067
Filed Apr. 25, 1973, Ser. No. 354,282
Int. Cl. A61f *5/04*
U.S. Cl. 128—83.5 **5 Claims**

1. In a foot support, a receptacle having a bottom wall, an open end, and an upstanding flange extending thereabout; a flexible liner of resilient foam material encased in plastic material disposed in the receptacle, said liner having a flat side and a rounded side; impervious plastic adhered to the flat side; friction discs on the outer surface of the impervious plastic material, said discs being arranged to be pressed against the surface of the wall to retain the liner therein; and means to detachably attach the receptacle and the liner together and extendable about the foot of a wearer to attach same to the foot.



3,847,148
DEVICE FOR PROVIDING HEAT INSULATION AT HIGH TEMPERATURES

Alfonse Peuchmaur, Boulogne, France, assignor to Commissariat A L'Energie Atomique, Paris, France
Filed Sept. 5, 1972, Ser. No. 286,428
Claims priority, application France, Sept. 9, 1971, 71.32546; Dec. 30, 1971, 71.47489
Int. Cl. F16l *59/12*
U.S. Cl. 138—178 **10 Claims**



1. A heat-insulating device for a tubular duct comprising at least one annular element, each of said annular elements including therein a hollow-walled, deformable sleeve, and a cylindrical ring of ceramic material having a low coefficient of thermal expansion, a high elastic limit of compression and a low coefficient of thermal conductivity pressed against the inner surface of the sleeve and means for injecting a fluid under pressure into said sleeve to prestress said ring.

3,847,149
HYGENIC DOUCHE SYSTEM

Jerome L. Murray, 652 First Ave., New York, N.Y. 10016, and Frances R. Gardiner, 43 Park Rd., Sparta, N.J. 07871
Continuation-in-part of Ser. No. 231,336, March 2, 1972, which is a continuation-in-part of Ser. No. 197,848, Nov. 11, 1971, Pat. No. 3,756,230. This application Aug. 31, 1973, Ser. No. 393,660The portion of the term of this patent subsequent to Sept. 4, 1990, has been disclaimed.
Int. Cl. A61m *3/00*
U.S. Cl. 128—225 **8 Claims**

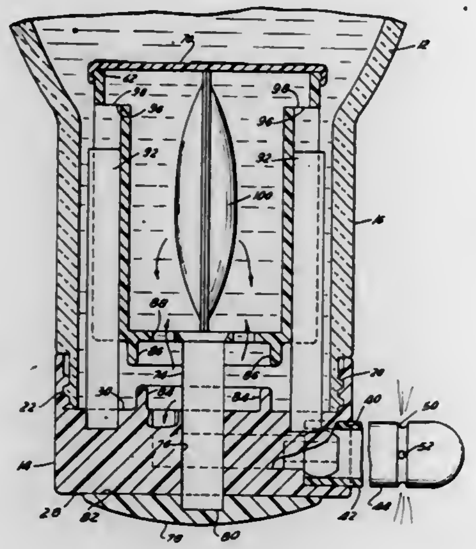
1. A hygienic douche apparatus comprising:

a container open at one end adapted to hold a quantity of liquid,

a closure member for sealing said open end of said container,

means defining a chamber within said container when said closure member is in sealing relationship on said container comprising a housing slidably disposed with respect to said closure member and movable between a first sealed position and an unsealed second position, said chamber adapted to hold a predetermined quantity of a compound capable of generating gas pressure to dispel completely the said quantity of liquid from said container when said compound is contacted by said liquid,

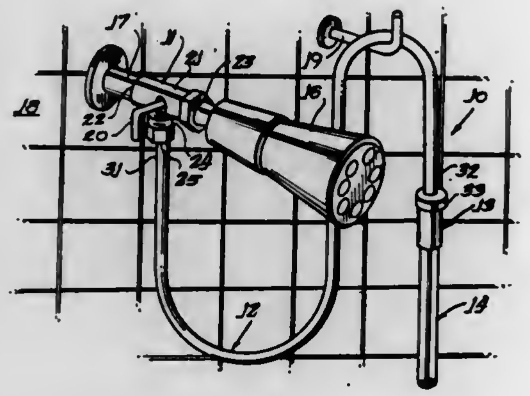
means cooperable with said housing for sealing said chamber to preclude liquid contacting said compound in said chamber comprising cooperable means on said closure and said housing to effectively seal said chamber when said housing is in said first position,



means operable from the exterior of said chamber to move said housing from said first position to said second position to cause liquid within said container to enter said chamber and to contact said compound and generate sufficient gas pressure within said container to dispel the quantity of liquid from said container, and

means affording fluid communication between the interior of said container and the exterior for the passage of said quantity of liquid from said container after said compound is contacted by said liquid.

3,847,150
DOUCHE APPARATUS
Henry Scheuermann, 5800 S.W. 44 Ter., Miami, Fla. 33155
Filed July 30, 1973, Ser. No. 383,723
Int. Cl. A61m *3/00*
U.S. Cl. 128—229 **1 Claim**



1. A douche apparatus intended for use with a shower head assembly comprising:

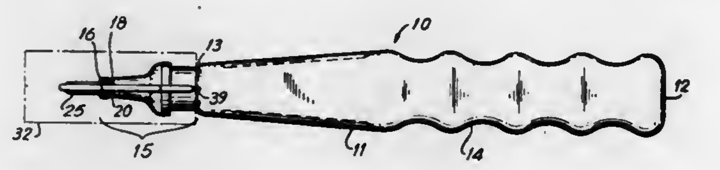
a control valve adapted to be connected intermediate the shower head and a pipe providing a pressure and temperature adjustable source of water to the shower head, the control valve having an inlet opening adapted to be connected to the pipe, a first outlet opening adapted to be connected to the shower head, and a second outlet opening, the valve being operable between a shut off position, a shower position placing the inlet opening in closed communication with the first outlet opening for operation of the shower head, and a douche position placing the inlet opening in fluid communication with the second outlet opening,

a flexible elongated hose like member having one end connected to the second outlet opening of the control valve; an elongated hollow cartridge receiving mixing member having opposed end portions with an accessible inner chamber defined therebetween, the cartridge receiving mixing member being of a cylindrical configuration having a cylindrical body portion defining a cylindrical inner chamber for receiving a cartridge therein, a first end of the receiving member being open and threadedly connected to the opposite end of the hose in a removable manner permitting access to the inner chamber, and placing the chamber in fluid communication therewith, the chamber adapted to receive a water dissolvable chemical disinfectant type cartridge therein, the second end of the receiving member being threaded to receive therein a threaded first end of an applicator nozzle;

a hollow applicator nozzle having a first open end threadedly connected to the second end of the cartridge receiving mixing member and in fluid communication therewith, the applicator nozzle being of an elongated tubular configuration having a closed dome shaped second end of a size and configuration adapted for insertion into the vagina and having a plurality of perforations spaced completely thereabout for dispensing the stream of combined water and dissolved chemical disinfectant solution therethrough; and

a cylindrical cartridge holding member adapted for insertion axially of the cartridge receiving member, the cartridge adapted to be filled with a granular chemical composition for purpose of disinfection, medication and the like, with the opposed ends of the cartridge being closed by circular disc members each having a multiplicity of small diameter openings extending therethrough in a manner to perforate the discs such that water may enter the inner chamber, flow through the cartridge to dissolve and mix with the chemicals therein, with the combined solution of water and chemicals then leaving the cartridge and being dispensed through the applicator nozzle into the vagina area in a manner to flush and treat the same.

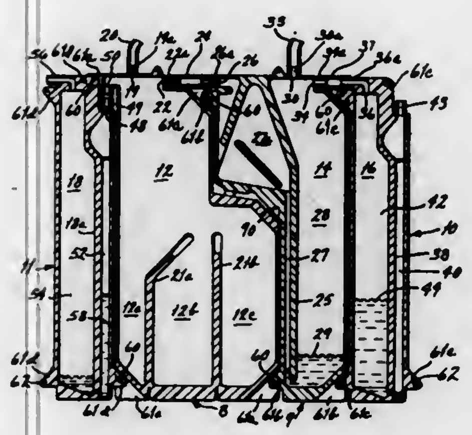
3,847,151
LIQUID DISPENSING DEVICE
Alfred C. D'Alessandro, Marblehead, Mass., and Edwin A. May, Ridgewood, N.J., assignors to International Paper Company, New York, N.Y.
Filed June 4, 1973, Ser. No. 366,469
Int. Cl. A61m *35/00*
U.S. Cl. 128—269 **11 Claims**



1. A liquid dispensing device which comprises:
- a. a hollow handle having a sealed proximal end and a distal end and containing a liquid;
- b. a nozzle mounted on the distal end of said handle and in fluid communication with the interior of said handle, the distal end of said nozzle being sealed, said nozzle including a stress raiser adjacent the sealed end thereof, said stress raiser being defined by a stress concentrating discontinuity in the cross section of said nozzle;
- c. a web secured to said device and extending distally from the point of securement, said web having a substantial planar area for bearing against the interior surface of a sponge mounted thereon;

- d. a sponge disposed upon and substantially surrounding said nozzle and said web; and
- e. means for maintaining said sponge on said web.

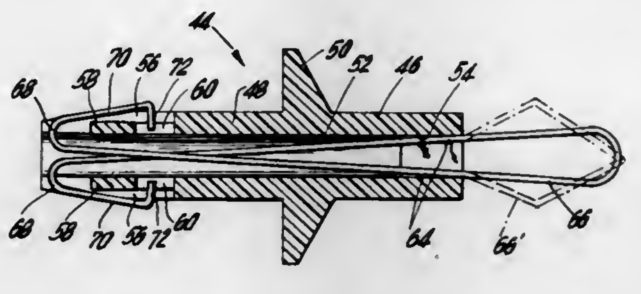
3,847,152
MODULAR THORACIC DRAINAGE DEVICE
Eli Schachet, St. Louis, Mo., assignor to Sherwood Medical Industries, Inc., St. Louis, Mo.
Filed Aug. 6, 1973, Ser. No. 386,130
Int. Cl. A61m *1/04*
U.S. Cl. 128—276 **6 Claims**



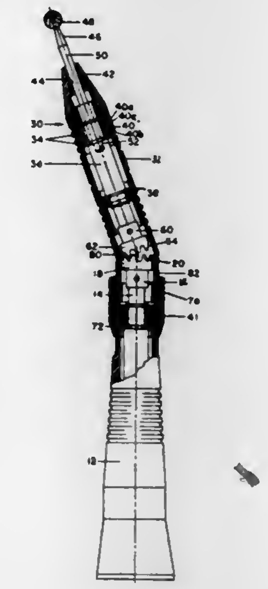
1. A thoracic drainage apparatus comprising first and second hollow plastic members each having an internal chamber, each of said members having integral connector means connecting the chambers of said members in fluid communication with each other, the chamber of said first member having an inlet adapted to be connected in fluid communication with a cavity of a patient for receiving drainage fluid from the cavity, the chamber of said second member being partitioned by an integral wall into first and second channels interconnected at the lower ends thereof for receiving a liquid, a gas outlet, means for connecting a source of negative pressure to said gas outlet, said first channel being connected in fluid communication with the chamber of said first member and said second channel being connected in fluid communication with said gas outlet whereby gas from the cavity can pass through the liquid to the outlet, a third hollow plastic member defining a pressure regulating manometer chamber with an integral wall dividing it into first and second channels interconnected at the lower ends thereof for receiving a liquid, integral connector means on said third member for connecting said first manometer channel in fluid communication with said second channel of second member, said second manometer channel being open to atmosphere whereby said third member is adapted to limit the pressure at the gas outlet, a fourth hollow plastic member having a chamber divided by an integral wall into first and second channels interconnected at the lower ends thereof and adapted to receive a liquid, said first channel of said fourth member having integral connector means for connection with said chamber of said first member, said second channel of said fourth member being connected to atmosphere, and means for locking said members together to prevent separation thereof.

3,847,153
DISPOSABLE PROBE TIP FOR ELECTRO-SURGICAL DEVICE
Bernard Weissman, 225 E. 48th St., New York, N.Y. 10017
Filed Sept. 14, 1973, Ser. No. 397,377
Int. Cl. A61b *17/36;* **A61n** *3/00;* **H05b** *3/40*
U.S. Cl. 128—303.14 **15 Claims**

1. In a hand-held electro-surgical unit having a tubular housing, a nose piece configurated to be mounted on the tubular housing, and a conductive sleeve extending through the nose piece, the improvement comprising a disposable probe tip interchangeably received in the nose piece within the conductive sleeve, said probe tip being formed of an elongate tubular member having a central bore; and a probe tip wire extending through said bore, a first portion of said wire extending beyond one end of said tubular member to an operative position suitable for contacting the human body for treatment thereof, and a second portion of said wire being anchored to said tubular member and projecting in a transverse direction relative to the latter to engage the conductive sleeve when the probe tip is received in the latter.



3,847,154
SURGICAL DRILL WITH DETACHABLE HAND-PIECE
Harald Nordin, Villeneuve, Switzerland, assignor to Edward Weck & Company, Inc., Long Island City, N.Y.
Filed Sept. 22, 1972, Ser. No. 291,421
Int. Cl. A61b *17/16, 17/32*
U.S. Cl. 128—305 **1 Claim**



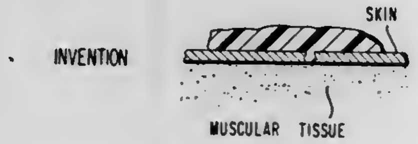
1. A surgical drill of the type comprising:
- a. a hand-piece housing
- b. a compound driven shaft rotatably mounted in said housing having aligned forward and intermediate shaft members, a pinion on said forward shaft member adjacent said intermediate shaft member, a drive gear mounted on said intermediate shaft and member the teeth of which extend outwardly therefrom toward said pinion, said gear and pinion mating in operative driving relation.
- c. a cutting element having a shank releasably connectable to said driven shaft
- d. means to exchangeably and operatively couple said cutting element and said driven shaft which comprises a slotted shaft front-piece having a central opening therein adapted to receive the shank of said cutting element, and a collet adapted to fit over said shank and said front-piece and threadedly engage with said front-piece so as to releasably hold said shank in said shaft
- e. a drive housing including drive means therein having a drive shaft
- f. means to detachably connect said hand-piece housing to said drive housing and

g. means to exchangeably and operatively couple said drive and driven shafts which comprises a clutch member attached to said drive shaft, a claw member on rear end of said intermediate shaft member of said compound driven shaft having cooperating arm members extending therefrom toward said clutch member adapted to mate in operative driving relation when said hand-piece is housing connnected to said drive housing.

3,847,155

METHODS FOR THE ELIMINATION OF SCARS USING COPOLYMER FILMS IN PLACE OF SURGICAL SUTURES

Omar A. Bernaola, Departmento de Fisica, Universidad de Oriente, Cumana Edo Sucre, Venezuela
Filed Jan. 26, 1972, Ser. No. 220,887
Int. Cl. A61b *17/00*
U.S. Cl. 128—334 R **10 Claims**



1. A method of promoting healing of the umbilical cord consisting of:

cleaning said umbilical cord,

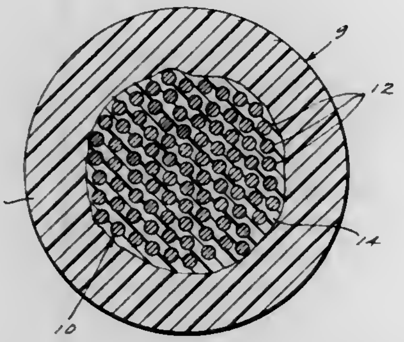
applying a composition comprising an inert solvent and a synthetic resin copolymer composition to said umbilical cord, said synthetic resin copolymer composition consisting essentially of up to 99 percent by weight vinyl chloride, up to 50 percent by weight vinyl acetate and 0 to 20 percent by weight maleic acid, and

vaporizing said solvent whereby a continuous synthetic resin film selected from the group consisting of interpolymers of vinyl chloride, vinyl acetate and maleic acid, copolymers of vinyl chloride and vinyl acetate, mixtures of polyvinyl chloride and said interpolymers, mixtures of polyvinyl acetate and said interpolymers, mixtures of polyvinyl chloride and said copolymers, and mixtures of polyvinyl acetate and said copolymers, is formed enveloping said umbilical cord and promoting the healing thereof.

3,847,156

SUTURE

William P. Trumble, Manchester, Mo., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.
Filed July 17, 1972, Ser. No. 272,619
Int. Cl. A61l *17/00*
U.S. Cl. 128—335.5 **13 Claims**

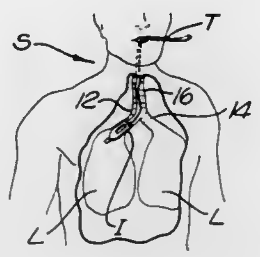


1. A surgical suture comprising a core including a plurality of metallic filaments, an impregnant including a flexible urethane polymer impregnating said core and filling all of the interstices between said filaments for preventing capillary transmission of infectuous fluids along the suture, and an outer flexible plastic coating adhered to said impregnant and having a smooth outer surface.

3,847,157

MEDICO-SURGICAL TUBE

James C. Caillouette, 123 Congress St., Pasadena, and Paul E. Johnson, 111 Congress St., San Marino, both of Calif. 91105
Filed June 18, 1973, Ser. No. 370,900
Int. Cl. A61m *25/00*
U.S. Cl. 128—348 **9 Claims**



1. An externally detectable tube structure for use within living tissue, as to establish an access passage comprising:

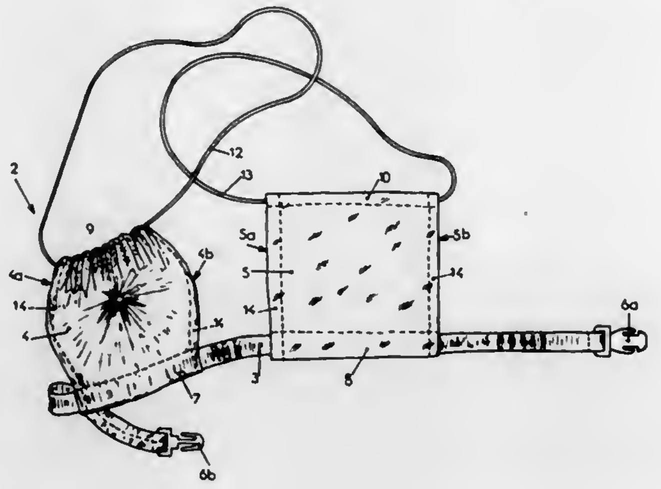
a seamless elongated tube comprising an integral wall of flexible non-fibrous imperforate material for insertion into living tissue; and

a quantity of ferromagnetic material disposed within said wall along a substantial length of said tube for magnetic detection at an external location in relation to said living tissue, said material being flexible in said tube, to accommodate flexibility of said tube.

3,847,158

BRASSIERE

Christian Guidoni, Le Plain Horizon, 69 Chemin du Bois Crefieux la Pape, France
Filed May 8, 1973, Ser. No. 358,439
Int. Cl. A41c *3/00;* **A41d** *7/00*
U.S. Cl. 128—492 **3 Claims**

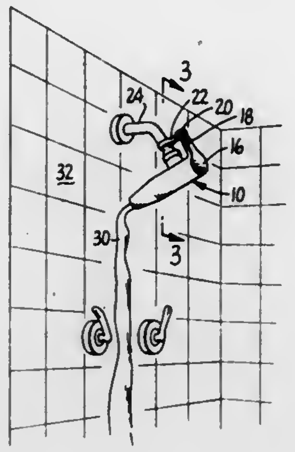


1. A brassiere comprising two rectilinear pieces of fabric, each of said pieces being folded back and secured along two opposite edges to define first and second hems open at each end, a first elongated flexible member extending through said first hem of each piece and adapted to extend about the body of the wearer directly below the breasts, a second elongated flexible member extending through the second hem of one piece and a third elongated flexible member extending through the hem of the other piece, said second and third member being adapted to be secured about the neck of the wearer.

3,847,159

SHOWER HEAD FLOW DIVERTER ATTACHMENT

Tas C. Hofer, 5 Pepper Ln., San Carlos, Calif. 94070
Filed Aug. 6, 1973, Ser. No. 385,869
Int. Cl. B05b *1/26*
U.S. Cl. 239—507 **1 Claim**

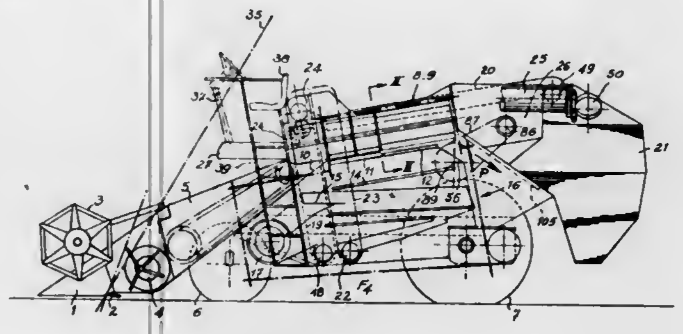


1. A flow diverter device for a shower head comprising an elongated, open-sided deflector and conduit member which is U-shaped in cross-section, which is open along one side for its full length and which has a closed end and an open discharge end, support arm means extending from the closed end of the member past the open side thereof, clamp means attachable to a shower head water supply pipe adjacent a shower head, and a friction hinge connection between said support arm means and said clamp means, said member being thereby adapted to be swung upwardly and away from the shower head to a first or inoperative position and to be swung downwardly and toward the shower head to a first or operative position to at least partially enclose the same and direct the shower head discharge water away from the user and toward the shower compartment wall on which the shower head is located.

3,847,160

CLEANING DEVICE SHIELDING MEANS IN COMBINE HARVESTERS

Frans J. G. C. De Coene, Zedelgem, and Cornelis G. M. Muijs, Sint-Kruis/Brugge, both of Belgium, assignors to Clayson N.V., Zedelgem, Belgium
Filed Oct. 20, 1972, Ser. No. 299,553
Claims priority, application Great Britain, Oct. 25, 1971, 49445/71; Feb. 24, 1972, 8578/72; Oct. 11, 1972, 46854/72; Oct. 11, 1972, 46855/72
Int. Cl. A01f *12/20*
U.S. Cl. 130—27 T **3 Claims**

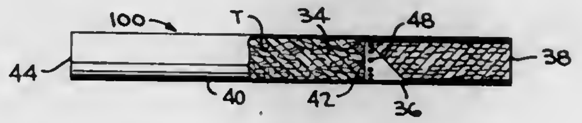


1. In an axial flow combine having a main frame adapted to travel across a field, means for conveying crop material to the frame, means mounted on the frame for threshing and separating said crop material conveyed to said frame, the threshing and separating means extending longitudinally on said frame, means for cleaning said threshed and separated material mounted below said threshing and separating means, wherein the improvement comprises: a protective screen associated with the cleaning means and mounted adjacent and directly below said threshing and separating means to collect and convey said threshed and separated material to the cleaning means and wherein the protective screen is also operative to deflect and direct the draughts of air generated by said threshing and separating means in a forward direction to blow impurities contained in said material in a forward direction.

3,847,161

FILTERED CIGARETTES

David Morgenstern, 38 Beeri St., Tel-Aviv, Israel
Continuation-in-part of Ser. No. 267,975, June 30, 1972, Pat. No. 3,756,250. This application Apr. 20, 1973, Ser. No. 353,105
Int. Cl. A24d *01/04*
U.S. Cl. 131—10.3 **8 Claims**



1. A filtered cigarette comprising:

a. a tobacco section of cylindrical configuration having an upstream end and a downstream end;

b. a tobacco smoke filter having an upstream forward end and a cylindrical mouthpiece rear end; and

c. a wrapper encircling said tobacco section and said filter and having means providing at least one aperture therethrough;

said upstream end of said filter being disposed along a single plane inclined with respect to the longitudinal axis of the cigarette,

the forwardmost portion of said inclined plane being adjacent the downstream end of said tobacco smoke section and rearmost portion of said inclined plane being significantly displaced from said forwardmost portion at a point approximately 180° from said forwardmost portion;

said inclined plane making an angle of about 20° to about 70° measured with respect to a plane perpendicular to the longitudinal axis of the cigarette;

said downstream end portion, said inclined plane, and said wrapper forming an air mixing chamber;

said at least one aperture means being substantially in flow communication between said air mixing chamber and the outside atmosphere.

ERRATUM

For Class 131—17 see:
Patent No. 3,847,326

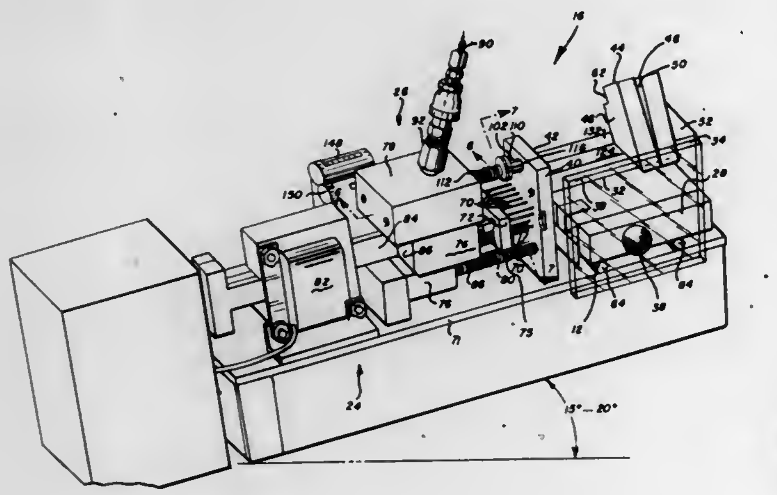
3,847,162

APPARATUS FOR INJECTING A FLUID INTO A PACKAGE OF CIGARETTES

Herbert Seil, Westlake, Ohio, assignor to The Liberty Tool & Die Co., Cleveland, Ohio
Filed Oct. 29, 1973, Ser. No. 410,341
Int. Cl. A24c *05/60*
U.S. Cl. 131—133 **14 Claims**

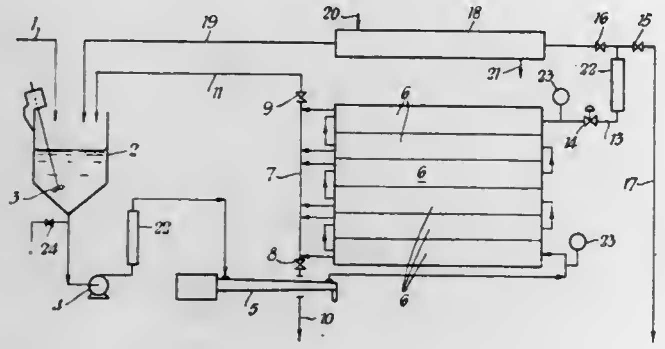
1. An apparatus for simultaneously injecting a fluid into a plurality of positioned articles comprising means for positioning the plurality of articles in a predetermined position, a fluid supply, penetrating means for simultaneously penetrating each of the plurality of positioned articles and directing the flow of fluid from said fluid supply to the interior of the articles, pump means interconnecting said fluid supply and said

penetrating means for measuring a predetermined amount of fluid and directing said predetermined amount of fluid to said penetrating means, and actuating means providing for relative movement of said penetrating means and said plurality of positioned articles having a first condition in which said penetrating means is spaced apart from said plurality of positioned articles and a second condition in which said penetrating means penetrates each of the plurality of positioned articles and directs said predetermined amount of fluid to an interior portion of each of the plurality of articles, said pump means measuring a predetermined amount of fluid from said fluid supply and storing said predetermined amount of fluid therein when said fluid actuating means is in said first condition and exhausting the predetermined amount of fluid therefrom and directing said predetermined amount of fluid to said penetrating means when said actuating means is in said second condition.



3,847,163
METHOD OF MAKING A TOBACCO EXTRACT

David J. Molyneux, Southampton, England, assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.
Filed Feb. 22, 1973, Ser. No. 334,687
Claims priority, application Germany, Mar. 6, 1972, 10311
Int. Cl. A24b *15/08*
U.S. Cl. 131—143 **1 Claim**



1. A method of obtaining a concentrated tobacco extract for use in a smoking article which comprises extracting tobacco with cold water to form a dilute extract, applying the process of reverse osmosis at a pressure within the range of from 39 to 49 kg/cm^2 to the the dilute, aqueous, extract, at a temperature from the freezing point of the extract to about 35°C., using a membrane of cellulose acetate deposited on a support, which membrane is substantially impermeable to the solute components of the dilute extract.

3,847,164
METHOD OF MAKING RECONSTITUTED TOBACCO HAVING REDUCED NITRATES

Charles F. Mattina, Lenox, and William A. Selke, Stockbridge, both of Mass., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Oct. 11, 1973, Ser. No. 405,383
Int. Cl. A24b *03/14, 15/02*
U.S. Cl. 131—143 **4 Claims**

1. A method of making reconstituted tobacco, comprising the steps of:

a. extracting natural tobacco with water to produce a tobacco extract and a fibrous residue.
b. contacting the tobacco extract with an ion retardation resin to remove potassium nitrate from the extract, said resin comprising a cross-linked styrene-divinylbenezene polymer lattice having attached quaternary ammonium groups, interwoven with polymerized acrylic acid,
c. forming the fibrous residue into a paper-like sheet, and
d. recombining the denitrated extract with the fibrous tobacco sheet.

3,847,165
ACIDIC PERMANENT WAVING SOLUTION AND PROCESS FOR ITS USE

Kanu I. Patel, Chatsworth, and Carroll R. Reiss, Los Angeles, both of Calif., assignors to Redken Laboratories, Inc., Van Nuys, Calif.
Filed Aug. 15, 1973, Ser. No. 388,385
Int. Cl. A45d *7/00*
U.S. Cl. 132—7 **25 Claims**

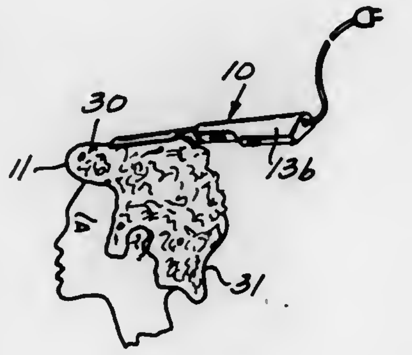
1. A two stage acidic composition for use in waving operations which comprises:

a. a first stage comprising a urea compound selected from the group consisting of urea, methyl urea, ethyl urea and mixtures thereof;
b. a second stage comprising water, a water soluble thiol and a water soluble protein;

the addition of said first stage to said second stage alone or by the addition of water forming a net solution having a pH between about 6.0 and about 6.8, said net solution having a urea compound concentration of from about 1 to about 4 molar; a water soluble thiol concentration of from about 0.8 to about 1.4 molar and a water soluble protein content of from about 2 to 5 percent by weight based on the total weight of the net solution.

3,847,166
HAIR SHAPER

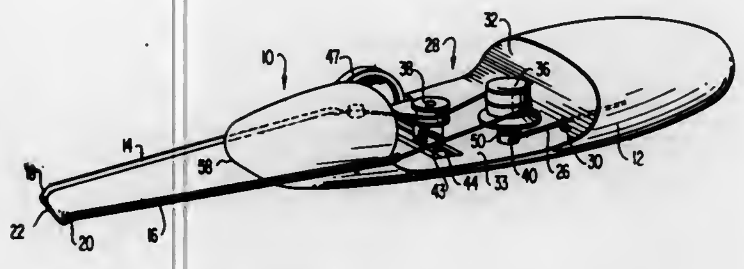
Uriah H. Carr, 8852 S. Michigan Ave., Chicago, Ill. 60619
Filed Aug. 2, 1973, Ser. No. 385,159
Int. Cl. A45d *1/00*
U.S. Cl. 132—9 **10 Claims**



1. A hair styling instrument comprising a hair shaping board, said board having opposed hair contacting and shaping convex and concave surfaces, means intermediate said surfaces for heating both of said surfaces, a handle for said board, said handle being unheated.

3,847,167
FLOSSOMATIC

James J. Brien, Box 348, Napoleonville, La. 70390
Filed June 25, 1973, Ser. No. 373,176
Int. Cl. A61c *15/00*
U.S. Cl. 132—92 R **15 Claims**

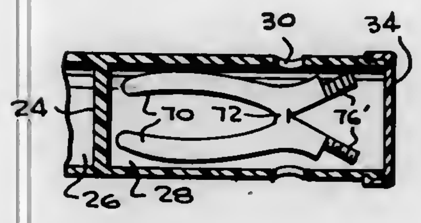


1. A dental floss applicator for cleaning the area between adjacent teeth comprising:

an elongated, hollow handle;
first and second spaced, channel-shaped guide arms mounted on said handle and projecting longitudinally therefrom, the distal portion of said arms adapted to be received in the mouth astraddle the teeth on either side of the area to be cleaned;
releasable means carried by said applicator for retaining a ring of dental floss therein with a segment thereof contained within said handle and another segment extending along the guide arm channel and across the distal end portions of said arms, said releasable means including tension means mounted in said handle for selectively engaging a portion of a dental floss ring when said ring is retained in said handle to develop a predetermined amount of tension thereon;
power drive means mounted in said handle and adapted to be coupled to a segment of a dental floss ring retained therein for imparting reciprocal motion to said dental floss so that when a ring of dental floss is retained in said applicator and said drive means is energized a segment thereof between the ends of said guide arms will be reciprocated relative thereto.

3,847,168
TOOTH CLEANING APPLIANCE

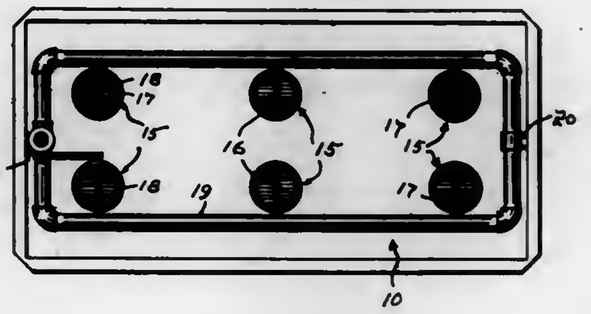
Ulrich R. Schlegel, Bellevue Farms, Rte. 1, Towson, Md. 22186
Filed Aug. 8, 1973, Ser. No. 386,529
Int. Cl. A61c *15/00*
U.S. Cl. 132—92 R **10 Claims**



1. A manually held device for enabling the removal of food particles from the teeth of a user, said device comprising an elongated handle member, a dental floss storage compartment in the interior of said handle member for storing a supply of dental floss, a supply of dental floss in said dental floss storage compartment, a Y-shaped dental floss supporting and tensioning means including first and second spreader arms flaring outwardly from a support stem portion, an implement storage chamber in the interior of said handle member for storing said Y-shaped dental floss supporting and tensioning means, connecting means for removably attaching said support stem to one end of said handle member, a dental floss tensioning pin including a dental floss holding portion engageable with dental floss extending from said Y-shaped means, pin support means in said handle member supporting said dental floss tensioning pin for axial movement between an extended position in which said dental floss holding portion is exposed externally of said handle so that the portions of a length of dental floss extending from said dental floss storage compartment across said spreader arms can be engaged with said dental floss holding portion and an inward floss tensioning position in which the dental floss holding portion is positioned inwardly of said handle so that dental floss engaging said holding portion when said pin is in its extended position is tensioned by movement of said pin to its inward position.

3,847,169
SHRIMP WASHERS

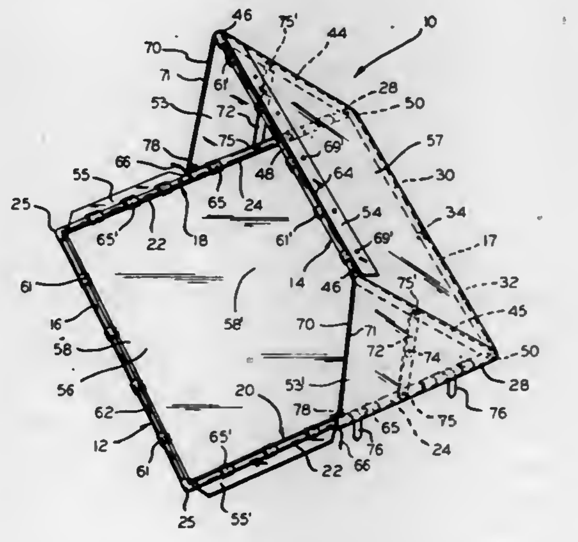
Ralph E. Colson, St. George, Maine
Filed Feb. 15, 1973, Ser. No. 332,620
Int. Cl. B08b *3/02*
U.S. Cl. 134—183 **4 Claims**



1. A batch washer for shrimp comprising a pan having a series of drainage ports in the bottom thereof, a header supported within said pan and including portions defining a field within which a batch of shrimp is to be deposited on the pan bottom, opposed portions of said header having jet-establishing ports spaced lengthwise thereof that are downwardly and inwardly inclined to provide spray directly on the pan bottom, and baffle means centrally positioned within said field on said pan bottom and operable when the header is in communication with a source of water under pressure, to cooperate with the resulting sprays to create such turbulence that the shrimp are freed of eggs, dirt, and mud as they are swirled about, said baffle means including a baffle member for each drainage port removably seated therein and closing it.

3,847,170
COMBINATION PARTIAL TENT AND FULL TENT DEVICE

Robert V. Anderson, 169 Morton St., Hoffman Estates, Ill. 61550
Filed Sept. 15, 1972, Ser. No. 289,213
Int. Cl. A45f *1/00, 1/12*
U.S. Cl. 135—1 R **13 Claims**



1. A combination partial tent and full tent device including: a lower frame having a forward end and a rear end;

means for extending and retracting said rear end to provide respectively an extended-position when the combination is used as a partial tent and a retracted-position when the combination is used as a full tent;

an upper frame having an operative-position inclined upward from the forward end of the lower frame and extending inward toward said rear end, and a storage-position in juxtaposition with said lower frame, said upper frame being in said operative-position when the device is used as said partial tent or said full tent; and

a covering including a first section and a second section, said first section extending across said lower frame and said second section extending across said upper frame when the device is used as a partial tent, the position of at least part of said covering being varied when the device is converted from a partial tent to a full tent.

3,847,171

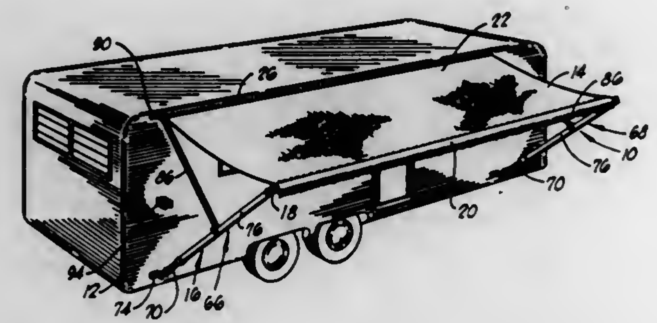
MOTORIZED AWNING CONTROL APPARATUS

Robert M. Akers, and Harold L. Westfall, both of 1536 S. Central, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 108,880, Jan. 22, 1971, Pat. No. 3,779,302. This application May 29, 1973, Ser. No. 364,753

Int. Cl. E04f *10/00*

U.S. Cl. 135—5 AT **9 Claims**



1. Awning control apparatus for connection to a support structure, comprising:

a shaft, having opposite ends and an opening extending a distance axially therethrough intersecting one of the ends thereof;

an awning, having a roll end and a support end, the roll end of the awning connected to the shaft and the support end of the awning connectable to the support structure;

a motor, having a drive shaft extending therefrom, disposed within a portion of the opening in the shaft and the drive shaft extending a distance beyond the end of the shaft intersected via the shaft opening, the motor having a first driven position applying torque to the drive shaft in a direction tending to rotate the shaft in one direction and a second driven position applying torque to the drive shaft in a direction tending to rotate the drive shaft in an opposite direction with respect to the first driven position;

means connected to the shaft and the motor securing the motor to the shaft;

a first support connector having one end portion pivotally connectable to the support structure, generally below the connection between the support structure and the awning;

means connected to the end portion of the first support connector, opposite the end portion of the first support connector connectable to the support structure, and having a portion securedly connecting the drive shaft of the motor to the first support connector, thereby securing the drive shaft in a stationary position relative to the first support connector;

a second support connector having one end portion pivotally connectable to the support structure, generally below the connection between the support structure and the awning;

means having one portion secured to the shaft generally near the end thereof, opposite the end portion of the shaft connected to the motor, and one other portion journally connected to the end of the second support connector, opposite the end portion connectable to the support structure; and

means connected to the motor and having a portion positionable in a forward position positioning the motor in a first driven position rotating the shaft in a storing direction storingly rolling the awning about the shaft and positionable in a reverse position positioning the motor in a second driven position rotating the shaft in a releasing direction releasingly unrolling the awning from the shaft.

3,847,172

FLUID FEED SYSTEMS

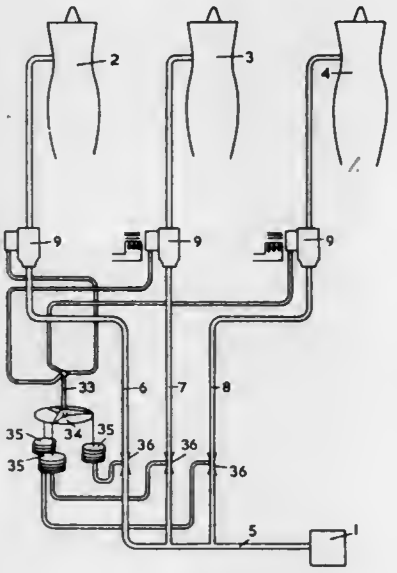
Kenneth Theodore Guy, Ruislip, England, assignor to Lucas Aerospace Limited, Birmingham, England

Filed Mar. 12, 1973, Ser. No. 340,037

Claims priority, application Great Britain, Mar. 10, 1972, 11183/72

Int. Cl. G05d *11/03;* **F16k** *19/00*

U.S. Cl. 137—100 **16 Claims**



1. A fluid feed system for supplying a fluid consumption unit from at least three fluid pressure sources and comprising in combination, branch conduits for connection to said fluid pressure sources respectively, a main conduit to which said branch conduits are connected at their downstream ends, said main conduit in use, being connected to said fluid consumption unit, flow regulating valves in said branch conduits respectively, each flow regulating valve including a flow control element, a piston forming part of each flow regulating valve and to which can be applied a control pressure variable to determine the setting of the flow control element, each flow regulating valve including pressure regulating means for providing the control pressure of the respective valve, a tiltable plate, pressure responsive devices equal in number to the number of branch conduits, said pressure responsive devices being coupled to said plate at equiangularly spaced positions about a central axis, flow detecting means associated with the branch conduits respectively, each flow detecting means providing a sensing pressure representative of the flow rate through the respective branch conduit, passage means through which the sensing pressures produced by the flow detecting means are applied to the pressure responsive devices respectively whereby if the flow rates through the branch conduits are substantially equal the plate will remain in an untilted position but if one or more of the flow rates should vary the plate will be tilted, and control valves equal in number to the number of branch conduits, each control valve including a valve element which is operatively connected to the tiltable plate, each control valve acting when operated by tilting of the plate, to modify one of the aforesaid control pressures, the valve elements being operatively connected to plate at positions such that a reduction or increase in the flow of air in one branch conduit effects adjustment of the flow regulating valve in said one branch conduit, thereby to maintain substantially equal flow rates in said branch conduits.

3,847,173

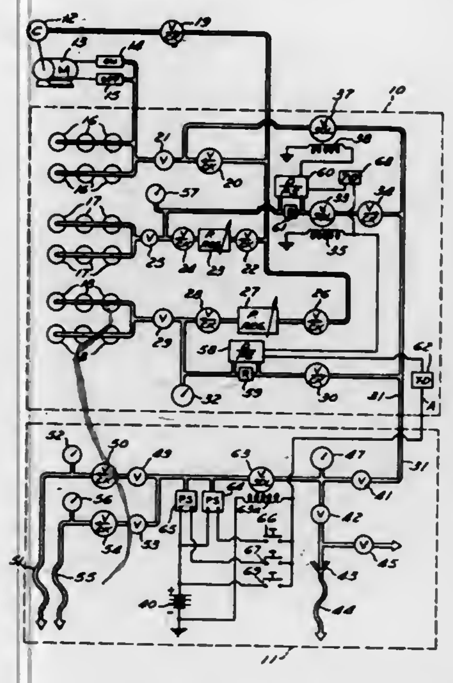
GAS SUPPLY SYSTEM

Robert E. Hill, 325 Hickory Ave., Merritt Island, Fla. 32952

Filed Sept. 13, 1973, Ser. No. 397,067

Int. Cl. F17d *1/02, 3/00*

U.S. Cl. 137—110 **15 Claims**



1. In a gas supply system having a plurality of banks of storage containers which store gas at different pressures and are all connected to a common outlet, means for withdrawing pressurized gas through said outlet first from the bank which is at the lowest pressure, and automatically operable means for withdrawing pressurized gas through said outlet from a second, higher pressure bank of storage containers following its withdrawal from said lowest pressure bank, said automatically operable means comprising a normally closed valve between said higher pressure bank of storage containers and said outlet, and means for opening said valve in response to a pressure drop in said lowest pressure bank to initiate the withdrawal of gas from said higher pressure bank after a time period following the initial withdrawal of gas from said lowest pressure bank,

the improvement wherein said last mentioned means comprises:

means providing a flow restriction between said lowest pressure bank and said outlet;

a differential pressure switch connected across said flow restriction to sense the flow therethrough;

and means responsive to the operation of said differential pressure switch when the flow through said restriction substantially ceases for opening said valve between said higher pressure bank and said outlet.

3,847,174

RADIANT HEAT ABSORBER

Frank B. Doyle, Raymond, Ill. 62560

Filed Feb. 28, 1973, Ser. No. 336,403

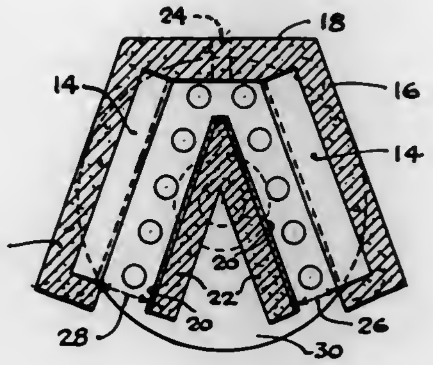
Int. Cl. F16k *49/00*

U.S. Cl. 137—334 **9 Claims**

1. A radiant heat absorber apparatus for use in regulating stations associated with transmission of gases, or the like, wherein condensation and freezing of water vapor occurs on devices employed to regulate said gas flow, which freezing impairs the operation or maintenance of said stations, the apparatus comprosing, in combination:

an array of conduits extending from the discharge orifice of the throttling device associated with said regulating station, said conduits having sufficient capacity to handle the maximum design flow of said regulating device, said array of conduits being placed in ordered, spaced apart relation with respect to each other;

an enclosure extending about said array of conduits, the enclosure having side and top closures and being open at the bottom thereof; and



heating means associated with said enclosure and disposed about said array of conduits to supply heat energy to said conduits, said heating means being arranged in association with the conduits such that all portions of the conduits are exposed to heat energy to elevate the temperature of the conduits in controlled manner to a level above the dew point of the atmosphere in which the apparatus is operating whereby the temperature of the conduits is sufficiently high to avoid accumulation of frozen condensate thereon and wherein the condensate, if formed, is maintained in liquid condition to drop from the conduits through the open bottom of the enclosure.

3,847,175

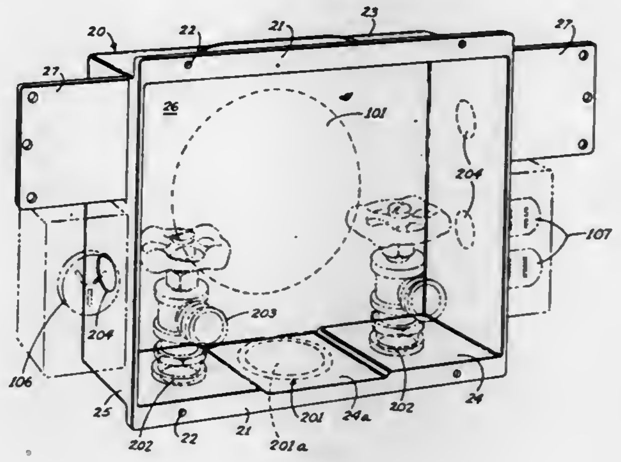
UNIVERSAL INSTALLATION BOX FOR USE IN DRYER VENT SYSTEMS AND IN WATER SUPPLY AND DRAIN SYSTEMS

Kenneth J. Anderson, Hebron, Ky., assignor to Carrcraft Manufacturing Company, Cincinnati, Ohio

Filed Feb. 16, 1973, Ser. No. 333,023

Int. Cl. F16l *5/02*

U.S. Cl. 137—360 **10 Claims**

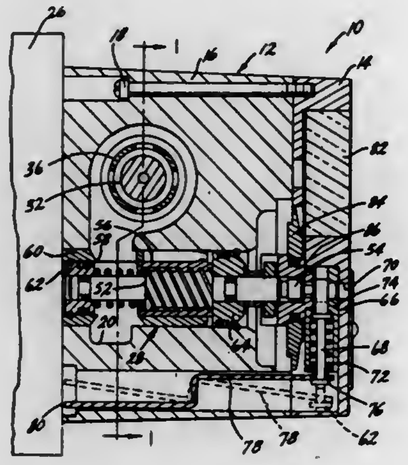


1. A universal box for use selectively with dry-vent and water supply-drain systems; said box having top and bottom walls joined by a pair of side walls and a rear wall, and a

substantially open front; said box including a plurality of knock-outs located in the side, bottom, top and rear walls; a certain, at least, of said knock-outs being removable for the reception in said box of a vent means; and others of said knock-outs being removable for the reception in said box of water supply valve means and drain means; whereby when said box is selected for use in a dryer-vent system only said certain knock-out is removed and whereby when said box is selected for use in a water supply-drain system only said others of said knock-outs are removed; and drain means located in the said bottom wall when the said knock-out for said bottom wall is removed; and including supply valve means located in at least a selected wall when the said knock-out for the said selected wall is removed; said drain means being adapted to receive a hose discharging waste and including a test seal washer, said washer having a top surface and a bottom surface and comprising a blank of relatively stiff material to cover the discharge end of said hose, said blank having a groove in the said top surface and initially extending only part way therethrough and configured to the outer periphery of the discharge end and slightly smaller than said outer periphery, and a plurality of other grooves in the said top surface and extending radially from said first mentioned groove towards but short of the outer periphery of said blank and initially extending only part way through said blank; whereby when all of said grooves are extended clear through said blank, said blank is provided with a central circular opening surrounded by a plurality of gripping segments and said hose may extend through said blank and be gripped by said gripping segments.

3,847,176
TAMPER-PROOF CONTROL VALVE

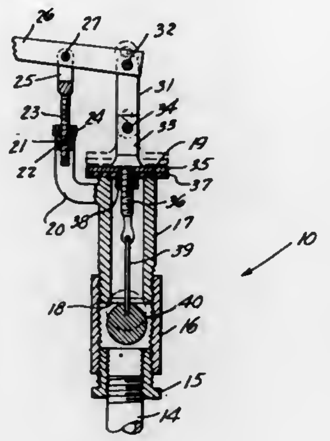
Ronald L. Loup, Clarkston, Mich., assignor to Double A. Products Co., Manchester, Mich.
Filed Sept. 25, 1972, Ser. No. 291,913
Int. Cl. F16k *35/00*
U.S. Cl. 137—382 **16 Claims**



1. A valve adapted to be mounted on hydraulic apparatus for controlling selected characteristics of the hydraulic fluid in said apparatus, comprising a valve body adapted to be mounted on said apparatus, a passageway in said body having an inlet port and an outlet port arranged so that said passageway is in the hydraulic circuit of said apparatus, adjustment means in said passageway for regulating a selected characteristic of the hydraulic fluid in said passageway, said adjustment means being adjustable by a tool inserted into the valve body from a position outside said valve body, and tamper control means in said valve body having a first position preventing insertion of said tool to said adjustment means and a second position wherein said tool can be inserted into position to actuate said adjustment means, said tamper control means being located in said valve body so that access to it for moving it to its second position can be gained only by removal of at least a portion of said valve body from said apparatus.

3,847,177
SAFETY FLOAT VALVE

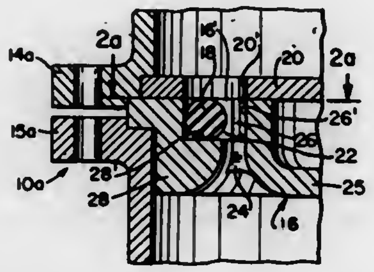
Lorin Lee Morrow, Box 2033, Bayard, N. Mex. 88061
Filed May 18, 1973, Ser. No. 361,564
Int. Cl. F16k *31/24*
U.S. Cl. 137—400 **5 Claims**



1. A safety float valve for maintaining a desired water level in a trough or tank comprising a water conduit extending to the trough or tank, a coupling secured to said conduit within said trough or tank, a pipe nipple secured to the upper end of said coupling and said nipple having a valve seat formed on each end thereof, a lever arm adjustably mounted on said pipe nipple for pivotal movement about a horizontal pivot, a float connected to the outer end of said lever arm, a pair of valves connected to the inner end of said lever arm and positioned for cooperation with the seats at opposite ends of said nipple, said valves being spaced apart a distance greater than the distance between the seats on said valve nipple to permit said valves to engage with their respective seats with the other of said valves disengaged from its seat.

3,847,178
FLUID FLOW REGULATORS

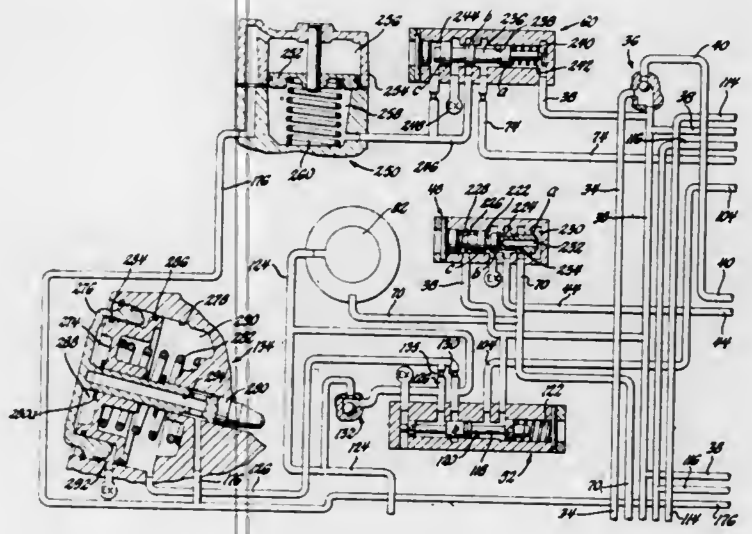
Wolf-Dieter Keppel, Remscheid, Germany, assignor to Mannesmann & Keppel Electronics, Remscheid, Germany
Filed Dec. 8, 1971, Ser. No. 205,842
Claims priority, application Germany, Dec. 10, 1970, 2060751; June 23, 1971, 2131117
Int. Cl. F16k *15/08, 15/14*
U.S. Cl. 137—515.7 **9 Claims**



1. A fluid flow regulator adapted for operative intercalation in a conduit through which flows a medium to be regulated, comprising, in combination: a housing including interengaging inner and outer housing members; said inner member being in the form of a substantially axial core portion; a plurality of intermittent larger and smaller protuberances on said core portion; an elastically deformable sealing member, having a substantially circular cross-section, surrounding said protuberances and constituting flow throttling means in cooperation with said protuberances and also with a seating surface provided on said outer housing member; said sealing member being variably inwardly pressed against said protuberances during the flow of the medium; said core portion having intermittent fluid flow passages between said protuberances and said sealing member; and means for changing the cross-section of said passages and the contact areas in the direction of flow of the medium between said sealing member, on the one hand, and said protuberances and said seating surface, on the other hand, depending on increasing and decreasing differential-pressure values of the medium flow through the regulator, whereby substantially linear contact is made by the outside of said sealing member with said seating surface in the outer housing member, while substantially punctiform contact results by the inside of said sealing member where the latter faces said larger protuberances of the of the inner housing member, but practically no contact by said inside of the sealing member where it faces said smaller protuberances in the absence of the medium flow.

3,847,179
TRANSMISSION CONTROL WITH PRESSURE BOOST SYSTEM

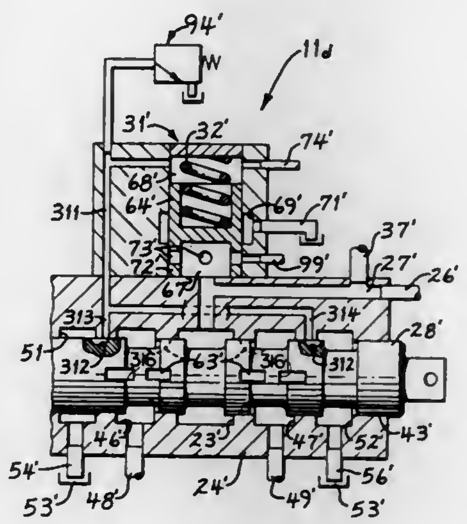
Carl E. Shellman, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 12, 1973, Ser. No. 396,555
Int. Cl. F16k *11/10*
U.S. Cl. 137—596 **3 Claims**



1. A hydraulic transmission control for an engine driven transmission having a plurality of drive conditions including automatic forward drive, manual low and intermediate forward drives, and a reverse drive, said control comprising: a source of fluid pressure; regulator valve means for regulating the pressure level in said control including a single diameter valve bore, a valve spool having spaced equal diameter lands slidably disposed in said valve bore, spring bias means for establishing a minimum pressure level in said control, and single area boost chamber means formed by said spool and bore for receiving a bias pressure for assisting said spring bias means to increase the pressure level in said control; boost passage means for delivering the bias pressure to said single area boost chamber means; manual valve means in fluid communication with said source and being selectively movable for establishing said drive conditions; throttle valve means in fluid communication with said manual valve means for establishing a throttle bias pressure in said control system proportional to engine throttle operation when said manual valve means is positioned for automatic forward drive and reverse drive; reverse boost valve means in fluid communication with said manual valve means and said throttle valve means for establishing a variable reverse bias pressure in said control system when said manual valve means is positioned for reverse drive operation; intermediate boost valve means in fluid communication with said manual valve means for establishing a constant bias pressure in said control system when said manual valve means is positioned for the intermediate or low forward drive operation; and bias pressure passage and valve means in fluid communication with said throttle valve means, said reverse boost valve means, said intermediate boost valve means and said boost passage means for selectively communicating throttle bias pressure, the reverse bias pressure and the constant bias pressure to said single area boost chamber means to change the pressure level in said control when said manual valve means is positioned for automatic forward drive, reverse drive and manual intermediate or low drive respectively.

3,847,180
LOW EFFORT, PROPORTIONAL CONTROL VALVE

Neil W. Kroth; Kenneth R. Lohbauer, and James E. Scheidt, all of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Dec. 23, 1971, Ser. No. 211,333
Int. Cl. F16k *11/00*
U.S. Cl. 137—596.13 **2 Claims**



1. A fluid control circuit for regulating operation of a double-acting hydraulic motor and including a source of fluid under pressure and a control valve body defining a bore, an inlet chamber being in communication with the bore and the source, service chambers being respectively in communication with the control valve bore in axially spaced apart relation on opposite sides of the inlet chamber, drain means also being in communication with the control valve bore in axially spaced apart relation from each service chamber and a spool reciprocably arranged in the control valve bore and having a neutral position wherein the spool blocks the inlet chamber from communication with both service chambers, the spool being movable in opposite directions from its neutral position for respectively communicating the service chambers with the inlet chamber and drain means, metering means being movable with the control valve spool to provide a variable opening between the inlet chamber and the respective service chambers as the spool is moved from its neutral position toward its respective positions providing substantially free communication with the respective service chambers, and comprising

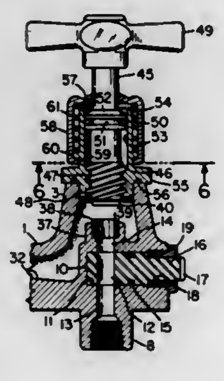
a dump valve forming a bore having one end in free communication with the inlet chamber, a dump spool being movable arranged in the dump valve bore for separating its one end from its other end, the dump valve bore having an opening in communication with drain, the dump spool being movable toward the one end of the dump valve bore to block the inlet chamber from the drain opening and toward the other end of the dump valve bore to communicate the inlet chamber with the drain opening, spring means urging the dump spool toward the one end of the dump valve bore, the spring means being selected to establish a differential pressure between the inlet chamber and each of the respective service chambers when they are communicated by the metering means and to establish the only substantial force tending to urge the dump spool toward the one end of the dump valve bore and limit communication between the inlet chamber and drain opening when the control valve spool is in its neutral position,

means forming passages in said control valve body comprising a branched passage communicating the other end of the dump valve bore with the control valve bore at a location intermediate each service chamber and the adjacent, axially spaced apart drain means, and

regulating means being movable with the control valve spool and in regulating communication with the passages to communicate the other end of the dump valve bore with the respective service chambers when they are placed in communication with the inlet chamber by the control valve spool and to communicate the other end of the dump valve bore with drain when the control valve spool is in its neutral position, the regulating means comprising axially elongated peripheral slots formed in the control valve spool for selectively communicating the branched passages with the respective service chambers and drain chambers.

3,847,181
FAUCET

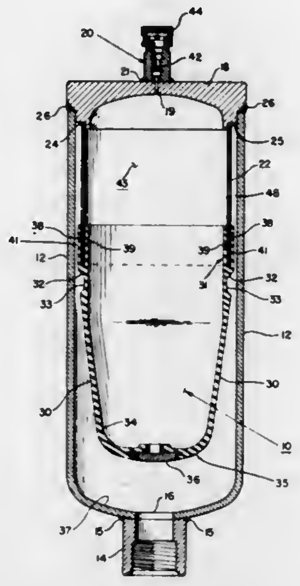
Albert T. Scheiwer, 628 Brown Ave., Erie, Pa. 16502
Filed July 9, 1973, Ser. No. 377,386
Int. Cl. E03c *1/00*
U.S. Cl. 137—613 **7 Claims**



1. A faucet comprising a hollow body having an inlet and an outlet, an opening within the body through which fluid flows from the inlet to the outlet, a plunger coaxial with the opening and movable axially into and out of said body, having one end within the body for closing and opening said opening by axial movement of the plunger toward and away from said opening, said plunger having the other end extending outside the body, a sleeve projecting from the body having a bore coaxial with the plunger with its inner end open to the inside of the body and its outer end open to the outside of the body, sealing means projecting outwardly from the plunger and slidably engaging said bore for closing said outer end of the sleeve, a bonnet having a top wall extending over said outer end of the sleeve and rotatable and slidable on the plunger and limiting movement of the plunger relative to the bonnet in a direction away from said opening, said bonnet having side walls depending around said sleeve, angularly spaced projections on said sleeve and on the side walls of said bonnet, the projections on the bonnet received in the space between the projections on the sleeve, cam surfaces on said projections interengaging by relative rotation of said bonnet and sleeve for camming the bonnet toward said body and for releasably fastening the bonnet to said body, the top wall of said bonnet limiting the movement of the plunger away from said opening when the bonnet is fastened to the said body so that mere release of the fastening of the bonnet to said body allows said plunger to be moved out of said body, and spring means between said bonnet and sleeve for biasing said bonnet out of the body and holding said surfaces in engagement.

3,847,182
HYDRO-PNEUMATIC FLEXIBLE BLADDER ACCUMULATOR

Edward M. Greer, 820 Loma Vista Dr., Beverly Hills, Calif. 90210
Filed June 18, 1973, Ser. No. 371,068
Int. Cl. F16l *55/04*
U.S. Cl. 138—30 **9 Claims**

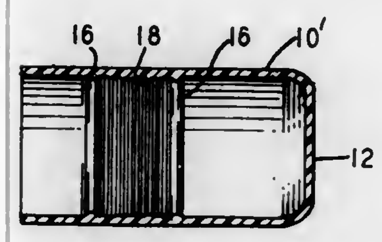


1. A hydro-pneumatic accumulator comprising: an elongated container having a first fluid port on one end and a second fluid port on the other end; an integrally connected tubular elongated member closed by an end cap and mounted at one end of the container and extending into the container and having a length such that its inner end is positioned substantially midway along the length of the container, the outer surface of said tubular member being spaced radially inward from the inner surface of said container providing a heat dissipating space therebetween and aiding in limiting heat transfer during fabrication of the accumulator; and a thimble-shaped bladder of resilient, deformable material mounted on the inner end of said tubular member in said container between the first port and the second port, said bladder having a thickened open mouth end portion, said open mouth end portion having a grooved portion in the bladder, said inner end of said tubular member being secured in said grooved portion of the bladder, with the end portion of the bladder extending over and surrounding the inner end of said tubular member, said thickened open mouth end portion forming a relatively thick outer peripheral band section adjacent the thickened mouth end portion, and an outer peripheral groove between the outer peripheral band section and the thickened open mouth end portion and forming a relatively thin walled peripheral band section therebetween, thereby to cause the bladder to expand to the inner surface of the container in the presence of increased gas pressure through the first fluid port, and to collapse and bend inwardly in the presence of increasing liquid pressure through the second fluid port around the inner end of said tubular elongated member and turn itself inside-out as the liquid pressure increases.

3,847,183
CLOSURE

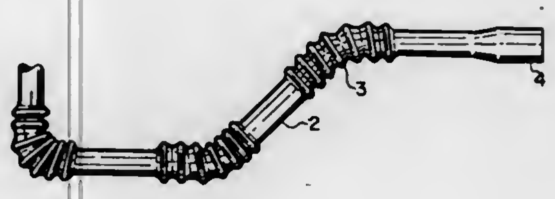
Vincent Edwin Meyer, 114 W. Malden Ln., Monroe, Conn. 06468
Filed Nov. 22, 1972, Ser. No. 308,660
Int. Cl. B65d *59/06*
U.S. Cl. 138—96 R **7 Claims**

1. A closure formed of a polymeric composition exhibiting plastic memory comprising a substantially tubular member having at least one open end and the interior wall provided with a network of protuberances formed integrally with the closure and of the same polymeric composition and being substantially normal to the longitudinal axis of the closure, said closure including said protuberances characterized by being capable of changing dimensions between a heat stable condition and a heat unstable condition.



3,847,184
METAL PIPE WITH SPACED FLEXIBLE PORTIONS

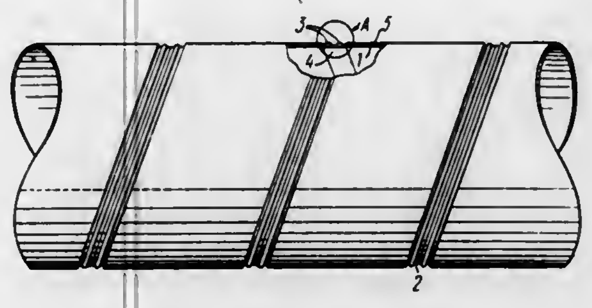
Andrew God, P.O. Box 661, Arlington, Va. 22216
Filed Oct. 5, 1972, Ser. No. 295,215
Int. Cl. F16l *11/16*
U.S. Cl. 138—120 **2 Claims**



1. An integral unitary pipe for the conveyance of a fluid, particularly along a non-linear path, said pipe being of metal and comprising longitudinally alternating cylindrical and flexible portions, each said flexible portion comprising a plurality of corrugations throughout its length whereby the pipe can be shaped at its flexible portions into a non-linear configuration, said cylindrical portions and flexible portions being of substantially the same length, said corrugations each having a 30° pitch with respect to the vertical axis through the apex of the corrugations and extending outwardly of the outer surfaces of the cylindrical portions therebetween such that the flexible portions can be bent at 90° angles with a small radius, one end of said pipe being formed with an enlarged diameter coupling portion, and at least one flexible portion near the end of the pipe and comprising both helical and straight configurations.

3,847,185
PIPELINE FOR USE UNDER CONDITIONS OF CONSIDERABLE VARIATIONS IN TEMPERATURE

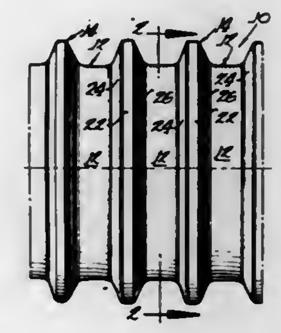
Georgy Vladimirovich Raevsky, Kiev pereulok Mechnikova, 3, kv. 6 Kiev, U.S.S.R.
Filed Apr. 10, 1972, Ser. No. 242,705
Int. Cl. F16l *9/06*, *11/16*
U.S. Cl. 138—122 **4 Claims**



1. A pipeline for use under conditions of substantial variations in temperature, said pipeline comprising a coiled roll blank having lateral edges joined by a weld joint disposed on a helical line along the pipeline, and means for compensating for thermal strains in said pipeline including at least one pair of corrugations formed in the wall of said pipeline along said helical line, one corrugation of said one pair being on each side of said helical line, said weld joint being equidistantly located between said corrugations of said one pair, said corrugations being disposed in a limited transverse region adjacent the lateral edges of the roll blank to form in succession a corrugation section of relatively small axial length and a smooth section of relatively great axial length along said pipeline.

3,847,186
CORRUGATED CONDUIT

William J. Bauer, 422 S. Park, La Grange, Ill. 60525
Division of Ser. No. 784,355, Dec. 17, 1968, Pat. No. 3,731,711. This application Oct. 12, 1972, Ser. No. 297,007
Int. Cl. F16l *9/06*
U.S. Cl. 138—173 **10 Claims**



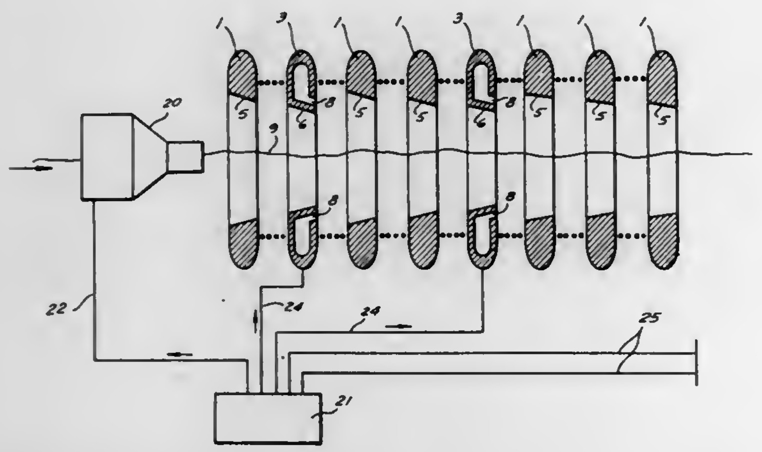
1. Conduit having a corrugated inner surface defining inwardly projecting lands with broad inner crest surfaces each shallowly inclined radially outward at each longitudinal edge thereof, and intervening grooves joining adjacent crests, each of said grooves being defined by side walls and a bottom section, said inner crest surfaces being of substantially greater width than said bottom sections, and said conduit including vortex generating means on said crests comprising inwardly projecting members each having a cross section which is asymmetrical relative to the direction of flow of fluid through said conduit, said inwardly projecting members being disposed at radial and longitudinal spacings providing vortices over substantially the entire inner surface of said conduit during flow of fluid through said conduit.

3,847,187
WEFT INSERTING CHANNEL FOR PNEUMATIC WEAVING MACHINES

Vojtech Buran; Vladimir Horn, both of Brno, and Borivoj Suchanek, Luhacovice, all of Czechoslovakia, assignors to Vyzkummy a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia
Filed July 26, 1972, Ser. No. 275,328
Claims priority, application Czechoslovakia, July 27, 1971, 5472-71
Int. Cl. D03d *47/30*
U.S. Cl. 139—127 P **4 Claims**

1. In a pneumatic weaving machine forming successive sheds, a weft inserting channel for pneumatically inserting weft into the successive sheds, said channel including aligned active and passive sections, said active sections having weft inserting openings of substantially circular cross-section, said active sections each having a directing profile forming at least a part of its weft inserting opening, each of said active sections having a front wall facing in the direction of weft inserting and having discharge openings arranged around said weft inserting opening therein, each of said passive sections having a weft inserting opening of substantially circular cross-section, the weft inserting openings of all of the active and passive sections

lying on a common axis, which is also the axis of the channel, said passive sections being arranged between successive active sections, said passive sections having a directing profile arranged in said weft inserting openings thereof, a pressure air jet weft-inserting nozzle arranged at the rear end of the channel and directing a jet of air in the forward, weft inserting direction, a source of pressure air coupled with said pressure air jet weft-inserting nozzle, a source of additional pressure air coupled with said discharge openings of said active sections,



the radial distance of the directing profile from the common axis of at least one passive section adjacent an active section in the direction of web insertion being no less than the radial distance of imaginary lines connecting tangential points of the directing profile of the following active section with the points of intersection on said front wall of the preceding active section, and the radial distance of said points of intersection from the common axis of the channel being longer than the radial distance of said discharge openings of said active sections.

3,847,188
WOVEN TAPE PROVIDED WITH A LIST HAVING PROTRUDING LOOPS

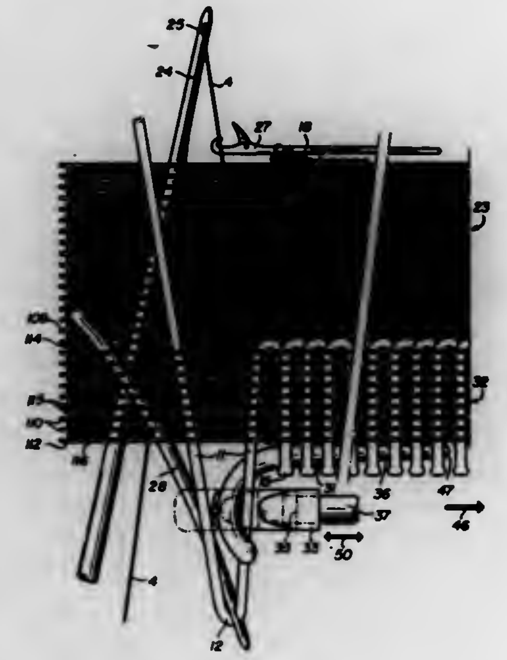
Ulrich Auer, Chene-Bougeries, Geneva, and Andre Nicole, Puplinge, Geneva, Switzerland, assignors to Interbrew S. A., Luxembourg, Luxembourg

Division of Ser. No. 74,744, Sept. 23, 1970, Pat. No. 3,692,068. This application July 17, 1972, Ser. No. 272,572

Claims priority, application Italy, Oct. 9, 1969, 23132/69; Switzerland, Mar. 25, 1970, 4487/70

Int. Cl. D03d *1/00*

U.S. Cl. 139—384 B **2 Claims**



1. A tape comprising a tape body and a list connected with said tape body, and a flattened spiral list thread received in said list and having turns forming loops projecting from an outer edge of the list, said turns having upper and lower shanks, said tape body having a fabric structure of single thickness formed by interwoven double-pick weft threads and warp threads, said list having a fabric structure of double thickness comprising:

a lower strata of warp threads interwoven with said double-pick weft threads and extending below an outer portion of the lower shank of said turns;

an upper strata of warp threads extending above an outer portion of the upper shanks of said turns over the width of the list;

portions of said double-pick weft threads extending from said lower strata between said turns at said outer edge up to said upper strata of warp threads, thence over the warp threads of said upper strata and back to the lower strata at an inner edge of said list; and

portions of the warp threads of said lower strata rising between each lower shank of one turn and the upper shank of a consecutive turn over the portions of said double-pick weft threads overlying said upper strata and back between said shanks to the plane of the lower strata.

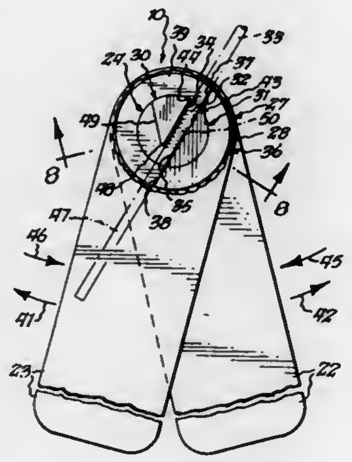
3,847,189
WIRE CUTTING AND BENDING TOOL

Jan J. Guzda, 125 Glenhaven, Amherst, N.Y. 14120

Filed Mar. 20, 1973, Ser. No. 343,001

Int. Cl. B21f *1/00*

U.S. Cl. 140—106 **16 Claims**



1. A bending tool for wire or the like comprising first and second handles, a boss secured to said first handle and having a first convex cylindrical surface, a shell secured to said second handle and journalled for pivotal movement relative to said boss and having a first concave cylindrical surface in engagement with said first convex cylindrical surface, first and second spaced die means on said boss defining a channel therebetween for receiving the first portion of a wire therein, said second die means including a side having a second convex cylindrical surface which is a continuation of said first convex cylindrical surface, a ledge on said shell, said ledge having a second concave cylindrical surface which is a continuation of said first concave cylindrical surface, a bending end on said ledge located so as to move across said channel to engage a second portion of said wire extending beyond said channel to thereby cause said second portion to be bent relative to said first portion by being moved around said first die means, said second concave cylindrical surface of said ledge also being in engagement with said second convex cylindrical surface of said side of said second die means which is opposite to the side thereof which forms a side of said channel, whereby said second die means and said ledge stabilize each other.

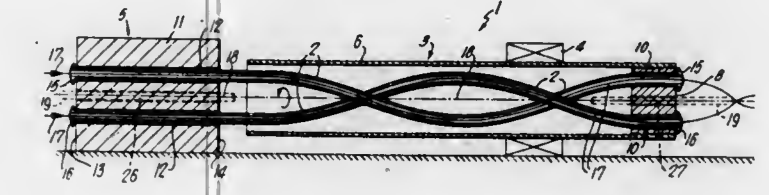
3,847,190
METHOD AND APPARATUS FOR TWISTING WIRES

Glen Robert Forester, Burnaby, British Columbia, Canada, assignor to Phillips Cable Limited, West Brockville, Ontario, Canada

Filed Dec. 19, 1972, Ser. No. 316,542

Int. Cl. B21f *7/00*

U.S. Cl. 140—149 **17 Claims**



1. An apparatus for the continuous production of an electric cable comprising a set of twisted together electric conductor wires in which each wire defines a helical path about the longitudinal axis of the set which reverses periodically in direction in a predetermined manner, which comprises an entrance housing and spaced apart therefrom an exit housing; a plurality of flexible elongated tubular sleeves continuous from end to end of a low friction material; said apparatus having a longitudinal axis about which said wires are twisted through an angle greater than 360°; said sleeves being entrained from end to end between and supported at their ends by said housings; said entrance housing being rigidly mounted and said exit housing being mounted for oscillatory movement about said longitudinal axis of said apparatus to twistingly rotate the sleeves through an angle greater than 360°; and means for continuously feeding electric conductor wires to and through said tubular sleeves as the sleeves are twistably rotated.

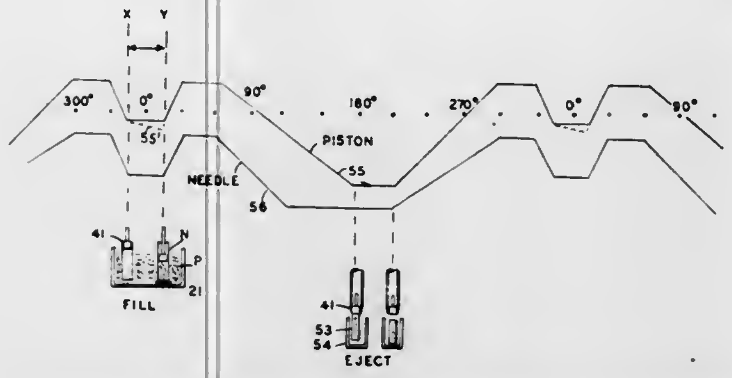
3,847,191
MEANS AND METHODS FOR MEASURING AND DISPENSING EQUAL AMOUNTS OF POWDERED MATERIAL

Theodore F. Aronson, 2108 Sunrise Key Blvd., Fort Lauderdale, Fla. 33304

Continuation of Ser. No. 174,022, Aug. 23, 1971, abandoned. This application Apr. 11, 1973, Ser. No. 350,145

Int. Cl. B65b *1/26*

U.S. Cl. 141—12 **12 Claims**



1. Apparatus for measuring and dispensing a predetermined volume of powdered material, comprising a supply container for powdered material, means for applying suction to powdered material in said supply container to compact said powdered material to a predetermined density, means for maintaining the depth of said powdered material in said supply container at a predetermined level, means including an open ended measuring member and for inserting said measuring member into said compacted and leveled powdered material to a predetermined depth to charge said measuring member with a predetermined volume of said compacted material and means for discharging said predetermined volume of said compacted material from said measuring member.

3,847,192
TREE HARVESTING APPARATUS

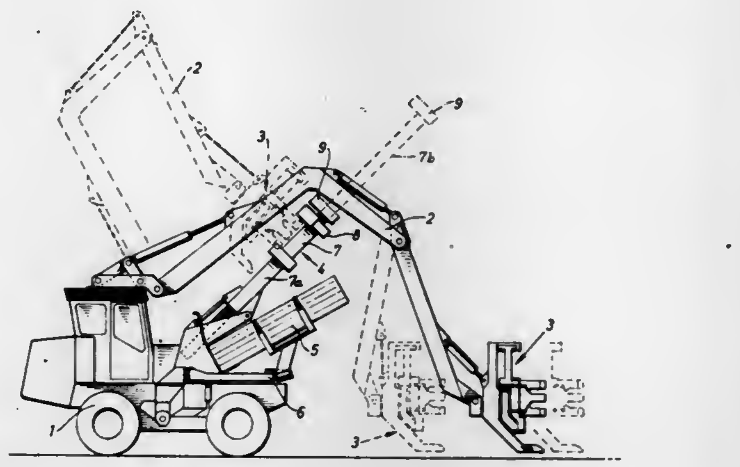
Karl-Gunnar Jorgensen, Solentuna, Sweden, assignor to Logma Aktiebolag, Soderham, Sweden

Filed May 18, 1973, Ser. No. 361,624

Claims priority, application Sweden, May 23, 1972, 006654; May 23, 1972, 006555

Int. Cl. B27c *9/00*

U.S. Cl. 144—34 E **9 Claims**



1. A tree harvesting apparatus comprising a vehicle and a felling assembly supported by said vehicle, said felling assembly including a frame, cutting means for severing a standing tree from its root, said cutting means being mounted on the low portion of said frame, two grapple means, each adapted for grasping and holding a tree close to its thicker end, and movably mounted on said frame side by side and mutually spaced above said cutting means with the center axes of said two grapple means parallel to each other and to the center axis of said cutting means, and means for moving said two grapple means relative to said frame in such a manner that alternatively the one or the other grapple means can be moved to a position immediately above and aligned with said cutting means, each of said two grapple means being mounted on said frame of said felling assembly by means of two mutually parallel and equally long pivot links, each of said links having one end pivoted in said frame about pivot axes perpendicular to and substantially intersecting the center axes of said cutting means, the opposite ends of said links being pivoted in the respective grapple means.

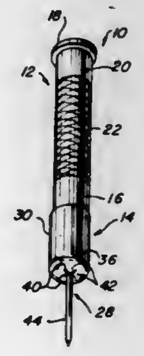
3,847,193
NAIL-SCREW HOLDER

Frank H. Brunstetter, San Antonio, Tex., assignor to Hi-Tor Inventions Corporation, San Antonio, Tex.

Filed June 29, 1973, Ser. No. 374,986

Int. Cl. B25c *3/00*

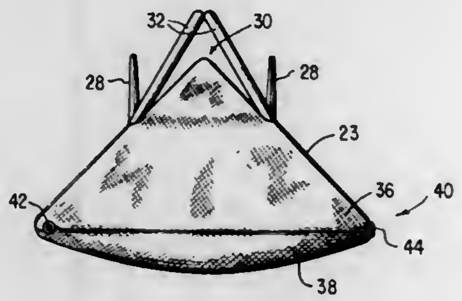
U.S. Cl. 145—46 **8 Claims**



1. A holder for releasably retaining fasteners during driving operations comprising:

a tool engaging portion with leading and trailing ends, and a fastener-head receiving member secured to the leading end of the tool engaging portion, said receiving member including a sleeve in surrounding relation to said tool engaging portion and a flexible membrane across the leading end of said sleeve and spaced from the leading end of the tool engaging portion to define a shallow receptacle therein, said flexible membrane provided with at least one slotted portion forming a self-closing opening therethrough dimensioned for insertion of the head of a fastener into engagement with the leading end of the tool engaging portion, said slotted portion located centrally of said membrane and terminating short of the leading end of said sleeve, the resiliency of the receiving member being such as to grip the fastener and yieldingly maintain it in engagement with the leading end of the tool engaging portion.

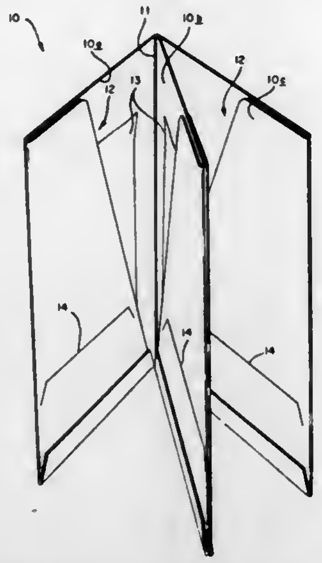
3,847,194
REVERSIBLE MULTI-PURPOSE ARTICLE CARRIER
Rose Corigliano, 123 Brackerridge, San Antonio, Tex. 78209
Filed Jan. 2, 1973, Ser. No. 320,187
Int. Cl. A45c *3/06*
U.S. Cl. 150—28 **8 Claims**



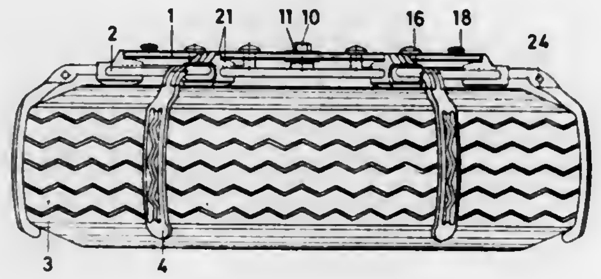
1. An expandable article carrier comprising a generally rectangular panel of flexible material continuous along each of the four sides thereof with material folds defining the bases of four generally triangular panel portions, each of said generally triangular panel portion being of an area equal to substantially one fourth the area of said generally rectangular panel and having an apex remote from said base thereof and legs extending from said apex to said base, said four generally triangular panel portions being infolded along said base defining material folds into overlying relationship to said rectangular panel whereby said legs of adjacent triangular panel portions are contiguous; and attachment means joining portions of said contiguous legs of adjacent triangular panel portions from said base to a point short of said apex.

3,847,195
CHECK WALLET AND BLANK FOR FORMING SAME
Walter J. Tyrseck, Quaker Hill, Conn., assignor to Robertson Paper Box Co., Inc., Montville, Conn.
Filed June 29, 1973, Ser. No. 375,113
Int. Cl. A45c *1/06*
U.S. Cl. 150—39 **8 Claims**

1. A wallet comprising a plurality of panels foldable together along a common hinge line to form the front and rear pages and at least one intermediate page of a book-like container, the intermediate page being comprised of a pair of panels secured together back-to-back, and flaps foldably connected to the panels to form a pocket on each of the pages.



3,847,196
AN ICE AND SNOW ANTI-SLIDING DEVICE, APPLICABLE TO WHEELS OF VEHICLES
Teodosio Diaz Gomez, Paseo de Perez Galdos 14, Santander, Spain
Filed Dec. 19, 1972, Ser. No. 316,482
Claims priority, application Spain, Dec. 20, 1971, 175543; Sept. 9, 1972, 183742
Int. Cl. B60c *27/04*
U.S. Cl. 152—226 **8 Claims**



1. Anti-skid apparatus for use in snow and ice, applicable to vehicle wheels, comprising:

a disc provided with a series of slots having an eccentric portion which inclines from a larger to a smaller diameter, and a radially prolonged portion extending towards the center of the disc and terminating in an enlargement, the whole comprising a single piece;

an independent peripheral ring, concentric with the disc, and of smaller diameter than the wheel;

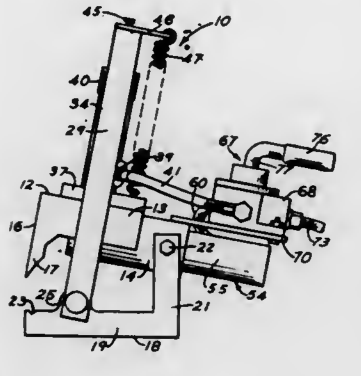
a series of radially disposed guides supported on said peripheral ring equal in number to the number of slots in use on said disc;

a series of cranked arms, equal in number to the guides, having a straight section and an arched section, the straight section being mounted so that it slides radially in the guides of the ring and having at one end a king pin slidably disposed in said slots, said arched section of the arm being joined at the opposite end of said straight section, in order to be coupled over the tread of the wheel, and constituting the anti-skid element, and both the straight and arched sections, being joined in an articulated manner; and

means for rotating said disc relative to said ring whereby said cranked arms are displaced radially.

ERRATUM
For Class 156—293 see:
Patent No. 3,847,199

3,847,197
TIRE BEAD DEMOUNTING APPARATUS
Ivan P. Konen, Fort Benton, Mont., assignor to Konen, Inc., Fort Benton, Mont.
Filed Apr. 16, 1973, Ser. No. 351,149
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.17 **8 Claims**



1. A tire bead demounting apparatus for use in connection with a tire rim having an angular tire retaining section with an interior tire bead bearing surface and an opposite exterior surface, and a tire installed on said rim having a side wall terminating in a bead situated adjacent and in sealing relationship to said interior surface, said apparatus including:

a jaw assembly having a first jaw and a second jaw opposed to and movably connected to the first jaw for movement between an open position wherein said first and second jaws are spaced apart from each other, and a closed position wherein said first and second jaws are relatively closer to each other;

a yoke pivotally connected to the second jaw;

a first hydraulic motor of the type having a cylinder portion and a piston-rod portion movable inwardly and outwardly relative to the cylinder portion to move said jaws from said open position toward said closed position;

one portion of said first hydraulic motor being connected to said yoke, the other portion of said first hydraulic motor being connected to the first jaw whereby upon actuation of the first hydraulic motor the piston-rod portion moves outwardly of the cylinder portion to move the jaws toward the closed position;

said second jaw having a configuration adapted to bear against the exterior surface of the tire retaining section of the tire rim;

said first jaw having a wedge configuration adapted to be lodged between and relatively displace said bead and said interior surface of the tire retaining section of the tire rim when the second jaw is bearing against the exterior surface and said first power means is actuated to move the jaws toward said closed position;

plunger means having a plunger head in alignment with the first jaw and movable with the first jaw toward said closed position;

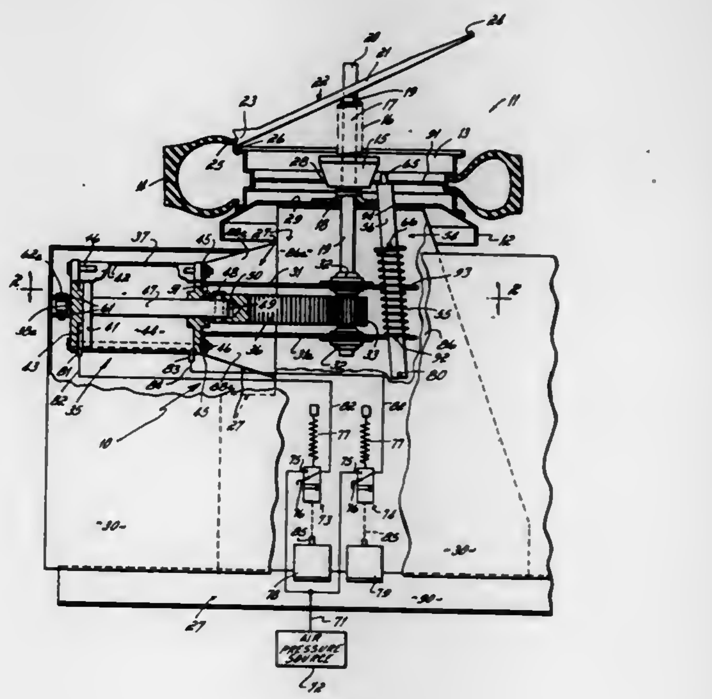
said plunger head being extendible outward from the first jaw toward the tire side wall when the wedge configuration of the first jaw is lodged between said bead and said interior surface of the tire retaining section of the tire rim;

a second hydraulic motor of the type having a cylinder portion and a piston-rod portion movable inwardly and outwardly relative to the cylinder portion, one portion of said second hydraulic motor being connected to the first jaw, the other portion of said second hydraulic motor being connected to the plunger means whereby upon actuation of the second hydraulic motor the piston-rod portion is moved outwardly of the cylinder portion to extend said plunger head outward against said tire side wall when the wedge configuration of the first jaw is lodged between said bead and said interior surface;

valve means operably connected to the first hydraulic motor and the second hydraulic motor for independent actuation of each hydraulic motor;

said valve means having control means successively movable between a first position to actuate the first hydraulic motor, a second position to actuate the second hydraulic motor, and a third position to release both the first and second hydraulic motors.

3,847,198
CENTERPOST DRIVE MECHANISM
William G. Brosene, Jr., Cincinnati, Ohio, assignor to Magnum Automotive Equipment, Inc., Cincinnati, Ohio
Filed Jan. 30, 1973, Ser. No. 328,016
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.24 **7 Claims**



1. A modular centerpost drive mechanism for an automatic tire changer machine, said mechanism being adapted to rotate a centerpost for a tire mount/demount tool to aid in mounting a tire onto and demounting a tire from a wheel, said mechanism including

a rack adapted to drivingly engage a pinion fixed to said centerpost,

a double acting fluid power unit connected to said rack, said power unit being adapted to drive the rack in a positive manner in both forward and reverse directions so as to positively drive said centerpost in both clockwise and counterclockwise directions under an operating workload,

at least one dashpot device connected at one end to said rack and at the other end to said power unit, said dashpot device serving to at least partially control the rates of rotation of said centerpost in both the clockwise and counterclockwise directions regardless of the workload provided to said rack by said power unit, and

fastening means adapted to mount said drive mechanism to said tire changer machine, said fastening means being easily operable to allow removal of said drive mechanism from operative engagement with said machine in modular fashion.

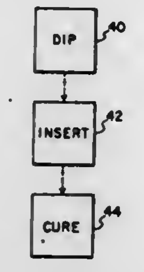
3,847,199
REMOVABLE OVEN DOOR GASKET AND METHOD OF MAKING SAME

Ernie A. Meier, Glen Ellyn, Ill., and Alfred M. Micallef, Ann Arbor, Mich., assignors to K. & M. Rubber co., Elk Grove, Ill.

Division of Ser. No. 217,862, Jan. 14, 1973, Pat. No. 3,765,400. This application May 29, 1973, Ser. No. 364,374

Int. Cl. B29c *19/00*

U.S. Cl. 156—293 **9 Claims**



1. A method of making elastomeric gaskets which are to be used in sealing an oven door to an oven frame, each gasket comprising an elongate elastomeric gasket member having hollow ends and having a metal insert in each hollow end, each insert having a body portion and a securing formation at one end thereof and being assembled in the gasket with the body portion in a hollow end and the securing formation protruding from the gasket, said method comprising:

- a. forming an elongate elastomeric gasket with hollow ends,
  - b. forming a metal insert with a body portion and a securing portion at one end thereof,
- c. coating the body portion of each insert excluding the securing formation with a room temperature vulcanizable adhesive in liquid form,
- d. inserting said body portion into the hollow ends of the elongate gasket member and
- e. curing the resulting assembly in moist heat for substantially more than an hour.

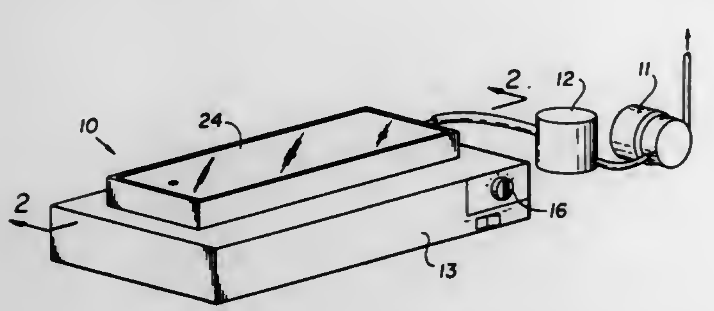
3,847,200
APPARATUS FOR CONCENTRATING LABORATORY SPECIMENS BY EVAPORATION

Reiner H. Kopp, Dix Hills, and Heino H. Holland, Huntington Station, both of N.Y., assignors to Brinkmann Instruments, Inc., Westbury, N.Y.

Filed May 1, 1972, Ser. No. 248,820

Int. Cl. B01d *1/14*

U.S. Cl. 159—16 R **3 Claims**



1. Apparatus for concentrating laboratory specimens by evaporation comprising a base receptacle for a plurality of specimen vessels and including a heat sink having a plurality of individual chambers adapted to have seated therein open vessels containing laboratory specimens, a heat source for the heat sink including means to regulate the temperature thereof, a detachable cover assembly adapted to be seated in substantially air-tight relationship on the base over the chambers, said cover assembly comprising depending side walls including opposing end portions to engage the base in air-tight relationship, at least one rigid horizontal tube member carried by and joined to the opposing side walls and open to the atmosphere through at least one side wall, the tube member passing horizontally over a plurality of said chambers in close proximity thereto and carrying a plurality of downwardly directed air orifices aligned respectively with the plurality of chambers below, and means to establish sub-atmospheric pressure in the closed space whereby air is drawn into the tube member and discharged downwardly in a plurality of jet streams into the respective vessels disposed in the chambers.

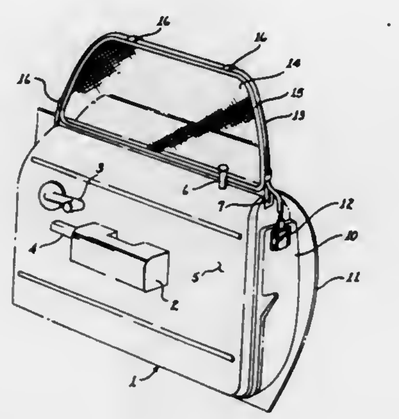
3,847,201
AUTOMOTIVE SUN SCREEN FRAME

Harold Kalish, 7400 Sabino Vista Dr., Tucson, Ariz. 85715

Filed Dec. 13, 1973, Ser. No. 424,357

Int. Cl. E06b *3/30*

U.S. Cl. 160—105 **5 Claims**



1. A selectively detachable apparatus mountable adjacent an extendable automobile window for shading the interior of an automobile; said apparatus comprising in combination:

- A. a pair of brackets, one of said brackets being attached to each end of the automobile door;
- B. a frame mountable within said brackets, said frame extending upwardly from said door and extending generally adjacent the outline of the automobile window when the latter is in the extended position;
- C. a sun screen for filtering the ray of the sun;
- D. frame means for mounting said sun screen; and
- E. strap means for attaching said frame means to said frame; whereby said sun screen is mounted upon the automobile door adjacent the automobile window.

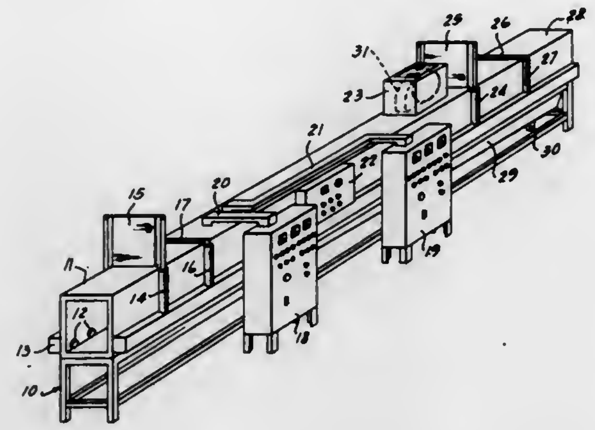
3,847,202
MICROWAVE DEWAXING

Charles D. Vaughn, Canton, and James D. Jackson, Cleveland Heights, both of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Mar. 2, 1973, Ser. No. 337,718

Int. Cl. B22c *17/00*

U.S. Cl. 164—50 **10 Claims**



1. The method of dewaxing a shell mold containing a wax-type pattern therein which comprises incorporating in the mold structure a material having a high loss factor in the frequency range of 300 to 30,000 megahertz and subjecting said mold to radiating microwave energy in said frequency range for a period of time sufficient to liquefy the wax pattern.

3,847,203
METHOD OF CASTING A DIRECTIONALLY SOLIDIFIED ARTICLE HAVING A VARIED COMPOSITION

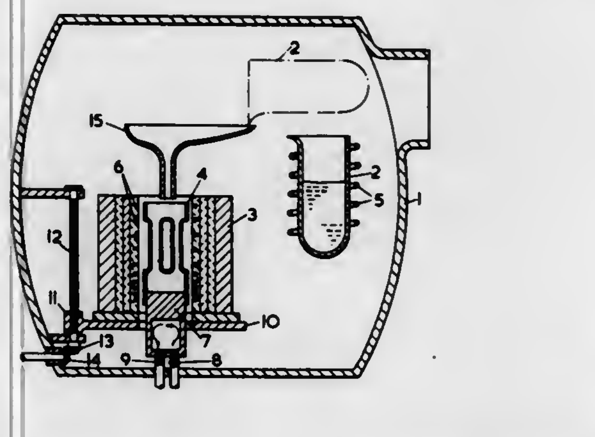
James Edward Northwood, Church Crookham, England, assignor to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Whithall, London, England

Filed June 22, 1972, Ser. No. 265,251

Claims priority, application Great Britain, June 22, 1971, 29125/71

Int. Cl. B22d *25/06*

U.S. Cl. 164—60 **6 Claims**



1. A method of casting a metal article comprising the following steps:

- a. introducing a first molten alloy into a mould having an overflow means until molten alloy overflows into the said overflow means;
- b. progressively cooling the mould to produce controlled crystal growth in the form of a vertical columnar structure in the molten alloy;
- c. introducing a second molten alloy compatible with the first molten alloy into the mould while maintaining the surface of the first alloy in a liquid state; and
- d. progressively cooling the mould to produce controlled growth in the form of a vertical columnar structure in the second molten alloy.

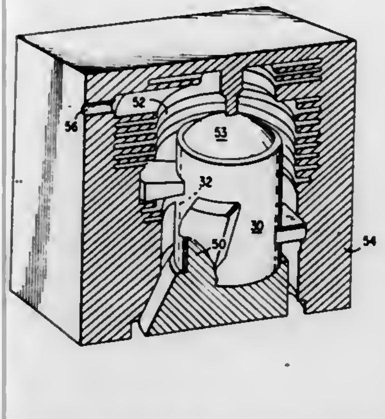
3,847,204
METHOD OF CASTING ALUMINUM CYLINDER

Robert Eugene Frederickson, South Gate, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Mar. 17, 1970, Ser. No. 20,202

Int. Cl. B22d *29/00*

U.S. Cl. 164—132 **14 Claims**



1. A method of molding hollow articles comprising the steps of:

- a. providing a mold having a cavity for forming the outer surface of the article;
- b. providing a core member having an outer surface for forming the inner surface of the article, the outer surface of said core member including a main body portion and at least one protuberance projecting outwardly therefrom;
- c. providing at least a portion of the article forming surface of the core member including said at least one protuberance with an anti-adhering substance layer to prevent fusion between that portion of the core and the article;
- d. locating the core member with in the cavity of the mold to define an article forming space between the outer surface of the core and the inner surface of the mold;
- e. introducing molten die casting material into said article forming space and in surrounding relationship with said at least one protuberance;
- f. cooling the molten material until it solidifies into a cast article with a configuration encapsulating said at least one protuberance;
- g. releasing the solidified cast article from the mold;
- h. machining the main body portion of core from within the cast article leaving only said at least one protuberance remaining, to form a hollow article encapsulating said at least one protuberance of the core;
- i. mechanically impacting the cast article including the encapsulated said at least one protuberance of the core to loosen said encapsulated at least one protuberance free from the hollow article.

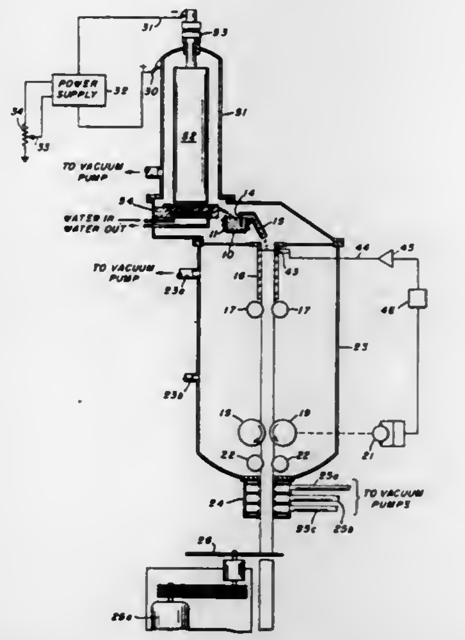
3,847,205
CONTROL APPARATUS FOR CONTINUOUSLY CASTING LIQUID METAL PRODUCED FROM CONSUMABLE ELECTRODES

Ferhun H. Soykan; John S. Huntington, and Falih N. Darmara, all of New Hartford, N.Y., assignors to Special Metals Corporation, New Hartford, N.Y.

Filed Oct. 3, 1972, Ser. No. 294,746

Int. Cl. B22d *17/32*

U.S. Cl. 164—155 **7 Claims**



1. An apparatus for continuously casting prealloyed metal at a predetermined freezing rate to achieve a desired grain structure in the resulting casting, said apparatus comprising: an enclosed chamber having a controlled atmosphere therein, first and second electrodes forming a gap within said enclosed chamber for striking an arc therein, at least one of said electrodes being an ingot and the sole supply of pre-alloyed metal having a composition corresponding to the composition of a pre-alloyed continuous casting to be ultimately formed,

- a power supply connected to said electrodes for melting the electrode of pre-alloyed metal,
- electrode position control means including a drive for adjusting said gap to maintain an arc between said electrodes,

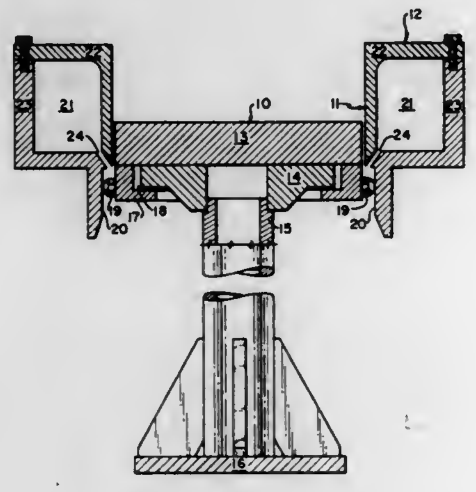
means spaced from said electrode of pre-alloyed metal for collecting liquid metal therefrom to form a homogeneous stream of molten metal within said enclosed chamber,

an open-ended fluid-cooled mold receiving a continuous stream of molten metal from said means for collecting liquid metal and partially solidifying the molten metal to continuously form a partially solidified casting,

adjustable control means to vary the power delivered by said power supply to said electrodes for controllably varying the rate of continuous melting of the pre-alloyed electrode on the basis of a predetermined solidification rate of the pre-alloyed metal by said mold to form said pre-alloyed casting with a desired grain structure, and

means for continuously withdrawing and solidifying the partially solidified casting from said mold for displacement from said chamber.

3,847,206
SELF-CENTERING BOTTOM BLOCK ASSEMBLY
John J. Foye, Livermore, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Filed June 14, 1972, Ser. No. 262,509
Int. Cl. B22d *11/08*
U.S. Cl. 164—274 **4 Claims**



1. In a vertical D.C. casting apparatus for light metals comprising an open-ended D.C. mold and a bottom block assembly adapted to be inserted into said mold prior to casting the improvement comprising

a. a bottom block adapted to be inserted into said mold and having sufficient dimensions to thereby seal the discharge end of said mold;

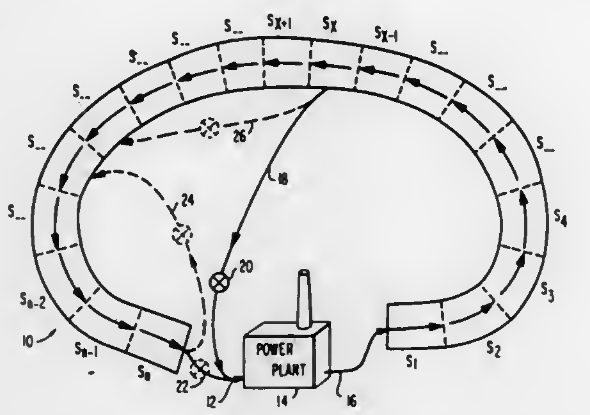
b. a vertically movable member smaller than the bottom block upon which the bottom block is supported, the upper horizontal surfaces of said member adapted for slidable contact with said bottom block;

c. retaining means to loosely lock said bottom block to said support member so as to allow horizontal movement of said bottom block;

d. a plurality of vertically disposed guide surfaces below the bore of said mold and separate therefrom and in a fixed spacial relationship therewith, said guide surfaces being positioned no closer than the projected perimeter of the mold bore and thereby adapted to guide said bottom block into said mold bore; and

e. a plurality of guide means associated with said bottom block which are adapted to ride on said guide surfaces as the bottom block is raised into position within the mold or withdrawn therefrom for aligning said bottom block with respect to said mold and preventing contact between said bottom block and said bore.

3,847,207
METHOD FOR DETERMINING AND CONTROLLING LIQUID COOLING SYSTEM CHARACTERISTICS
Charles W. Weber; C. Olen Rucker; Patrick L. Peavy; Pak-Fat (William) Woo, and James E. Bear, all of Houston, Tex., assignors to Brown & Root, Incorporated, Houston, Tex.
Filed Apr. 26, 1972, Ser. No. 247,703
Int. Cl. G05d *23/00*
U.S. Cl. 165—1 **12 Claims**



1. A method for operating a liquid cooling system including a cooling reservoir having a surface exposed to the atmosphere along at least a portion of a flow path of the reservoir, the method comprising the steps of:

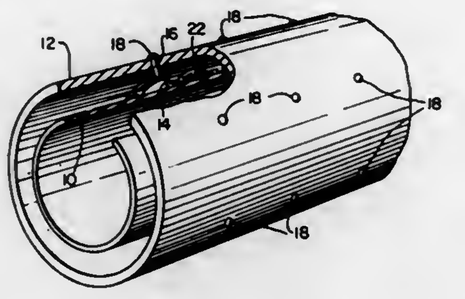
establishing a plurality of reservoir segments each representing specified time intervals and together representing at least a portion of an overall flow pattern of the cooling system;

determining an initial thermal characteristic of at least one of the segments at a first time and at a predetermined location in the cooling system;

at least periodically determining the thermal characteristic of the one segment at successive specified time intervals after said first time; and,

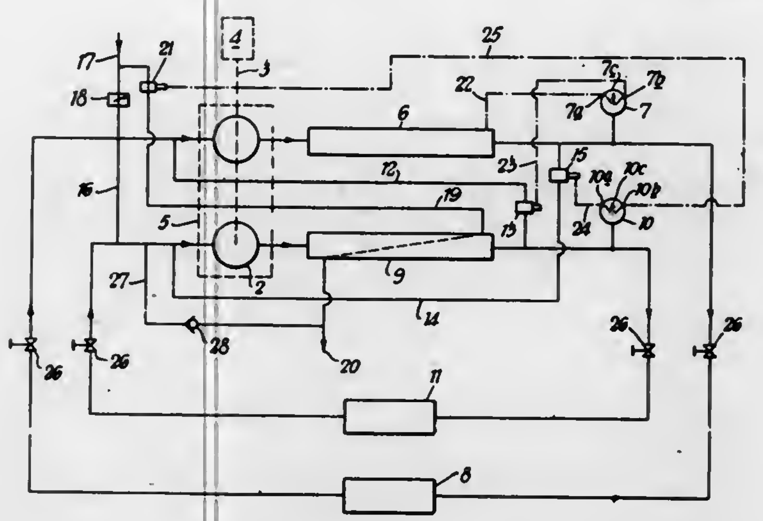
modifying the flow pattern of the cooling system responsively to the determined thermal characteristics of the at least one segment.

3,847,208
STRUCTURAL HEAT PIPE
Stanford Ollendorf, Silver Spring, Md., assignor to The United States of America as represented by the National Aeronautics and Space Administration, Washington, D.C.
Filed Sept. 14, 1973, Ser. No. 397,476
Int. Cl. F28d *15/00*
U.S. Cl. 165—1 **5 Claims**



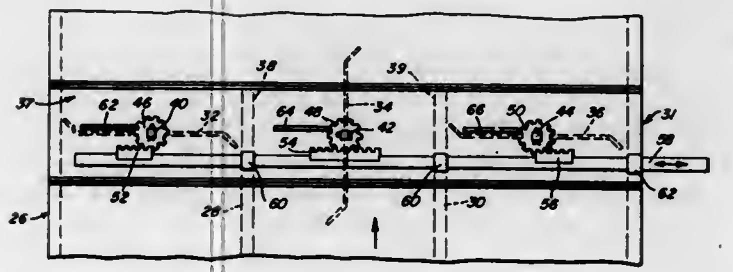
1. A combined structural reinforcing element and heat transfer member being placed between a structural wall of a housing and an outer insulation blanket disposed thereover and spaced apart therefrom, said element comprising a heat pipe, one side of said heat pipe supporting said outer insulation blanket, the opposite side of said heat pipe being connected to said structural wall to thereby provide structural reinforcement therefor, said element being such that heat penetrating through said outer insulation blanket reaches said heat pipe and is drawn off, thereby reducing thermal gradients in said structural wall of the housing.

3,847,209
TEMPERATURE CONTROLLED SYSTEMS
John Robert Mascall, Harrow Weald, England, assignor to Churchill Instrument Company Limited, Greenford, Middlesex, England
Filed Mar. 21, 1973, Ser. No. 343,359
Claims priority, application Great Britain, Apr. 21, 1972, 18598/72
Int. Cl. F25b *29/00;* F28f *1/00*
U.S. Cl. 165—14 **11 Claims**



1. A temperature control system which comprises a fluid heating circuit which includes a first load; said heating circuit having a first pump, fluid heating means and first control means; said first control means being responsive to the temperature of fluid in the heating circuit having predetermined maximum and minimum temperature operative conditions, said first control means being operatively connected to the heating means to actuate the heating means at its minimum temperature operative condition; a fluid cooling circuit which includes a second load; said cooling circuit having a second pump, fluid cooling means and second control means; said second control means being responsive to the temperature of fluid in the cooling circuit and having predetermined maximum and minimum temperature operative conditions, said second control means being operatively connected to the cooling means to actuate the cooling means at its maximum temperature operative condition; and wherein the first control means, when at its maximum temperature operative condition, is arranged to actuate normally closed first valve means which when actuated allows fluid to flow from the cooling circuit into the heating circuit, and the second control means, when at its minimum temperature operative condition is arranged to actuate normally closed second valve means which when actuated allows fluid to flow from the heating circuit into the cooling circuit.

3,847,210
DAMPER SEQUENCER
James E. Wells, Rt. 3, Box 163-A, Pensacola, Fla. 32503
Filed Sept. 14, 1972, Ser. No. 288,984
Int. Cl. F28f *27/02*
U.S. Cl. 165—103 **9 Claims**

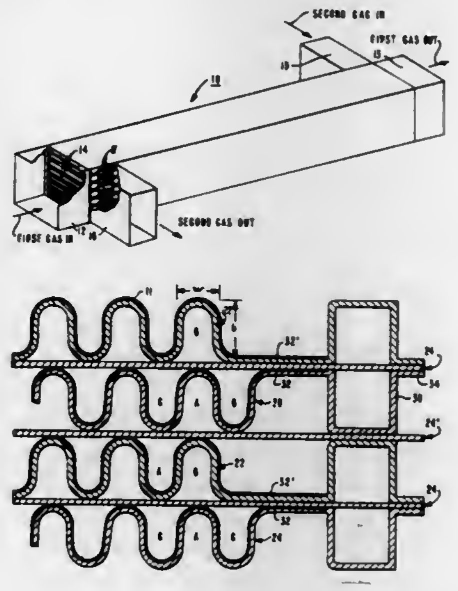


1. A fluid-flow apparatus, comprising, in combination:

a. damper means associated with three fluid-flow paths for moving between a position blocking each flow path and a position unblocking same, two of the paths normally blocked and one of the paths normally unblocked, the damper means including a frame provided with wall portions forming the flow paths, damper elements arranged in the flow paths, and shafts pivotally mounted to the frame, said damper elements mounted on the shafts for pivotal movement therewith,

b. means for selectively moving the damper elements in a predetermined sequence retaining in a blocked position one of the two normally blocked flow paths whenever the other flow path of the pair is in unblocked position, the moving means including pinion gears mounted on said shafts for movement therewith, rack gear segments associated with said pinion gears, and a longitudinal carrier bar mounted on said frame for longitudinal movement with respect thereto, said gear segments mounted on said carrier bar for movement therewith, and a pair of the gear segments arranged for always movably engaging the pinion gear associated with the normally unblocked one of the flow paths and sequentially engaging only one of the other, normally blocked flow paths for obtaining a constant flow from the three paths, the damper element of the flow path associated with the disengaged pinion gear being arranged in a position blocking the flow path associated therewith.

3,847,211
PROPERTY INTERCHANGE SYSTEM FOR FLUIDS
Halbert Fischel, Van Nuys, and Anthony Dichiro, Sun Valley, both of Calif., assignors to Sub-Marine Systems Incorporated, Tarzana, Calif.
Filed Jan. 28, 1969, Ser. No. 794,705
Int. Cl. F28b *3/12*
U.S. Cl. 165—166 **13 Claims**



1. A property interchange system for fluids comprising:

a plurality of corrugated membranes of a material of low conductivity with respect to said property having corrugations lying substantially parallel to a selected longitudinal axis, said membranes being stacked coextensively to define a multilayer laminate body, the corrugations being in-phase relation and the interior space between each successive pair of membranes defining fluid passages substantially separated by said corrugations into separate longitudinal passageways;

first header means communicating with first fluid passage sets between first selected pairs of membranes to pass a first fluid therealong;

second header means communicating with second fluid passage sets between second selected pairs of membranes to pass a second fluid therealong in countercurrent relationship to the first fluid, said first and second selected pairs of membranes alternating across the height of the laminate body, such that different fluids pass on opposite sides of each membrane and property transfer takes place through each membrane;

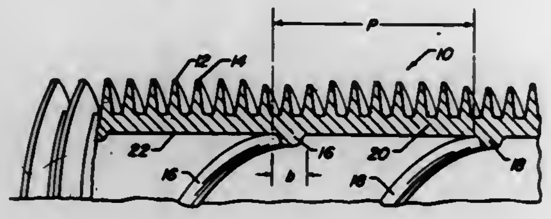
the corrugations of said membranes having a height to width ratio of approximately one, there being in excess of approximately 20 corrugations per inch and each passageway thereby being substantially encompassed by passageways for the other fluid; means laterally disposed relative to the longitudinal axis along said membranes for equalizing the property state of at least one of said fluids at least one region along said longitudinal axis.

3,847,212
HEAT TRANSFER TUBE HAVING MULTIPLE INTERNAL RIDGES

James G. Withers, Jr., Dearborn, Mich., and Klaus K. Rieger, Decatur, Ala., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed July 5, 1973, Ser. No. 376,507
Int. Cl. F28f *1/42*

U.S. Cl. 165—179 **5 Claims**



1. A metal tube having an improved heat transfer rate to or from an internally flowing fluid, characterized in that said tube has at least one integral external helical fin of a predetermined pitch distance and lead angle and a plurality of integral multiple start internal helical ridges extending radially inwardly from the inner wall of the tube, said plurality of internal helical ridges having a lead angle of less than 60° (as measured from a perpendicular to the tube axis) and a pitch distance which is greater than the pitch distance of said at least one external fin but wherein the respective lead angles of said at least one external fin and said plurality of internal ridges are different from each other in magnitude and/or sense, said inner wall of said tube being so shaped as to define, in a longitudinal sectioned profile, an intermediate flat portion between adjacent internal ridges, with said ridges having a ridge cross-sectional profile which includes a pair of side boundaries connecting the flat inner wall portions of the tube intermediate adjacent pairs of ridges and the tips of the ridges, said side boundaries being comprised of concave and convex portions which connect at a point of inflection radially outward from the tip and at a distance from the tip which is less than the height of the ridge.

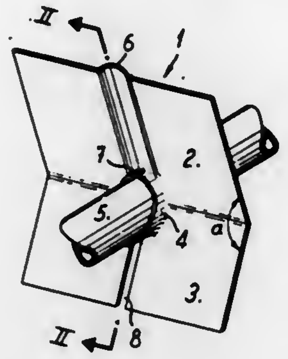
3,847,213
FINNED-TUBE HEAT EXCHANGER

Ernest Stich, Grand Lancy-Geneva, Switzerland, assignor to Urs Dreier-Saner, Kleinlutzel, Frohmatt, Soleure, Switzerland, a part interest

Filed Feb. 14, 1973, Ser. No. 332,438
Claims priority, application Switzerland, Feb. 15, 1972, 2250/72; Apr. 6, 1972, 5080/72; July 27, 1972, 11236/72
Int. Cl. F28f *1/30*

U.S. Cl. 165—181 **5 Claims**

1. A finned-tube heat exchanger comprising a cylindrical conduit and a plurality of thin metal fins spaced apart along the conduit in heat exchange relation therewith, each said fin having a cylindrical collar that bears resiliently against the conduit, each fin being in the form of a dihedral disposed in two planes, the fin having a corrugation therein extending from said cylindrical collar to the edge of the fin, the fin also having a slot therein extending from said cylindrical collar to the edge of said fin, said slot and said corrugation being perpendicular to the intersection of said planes.

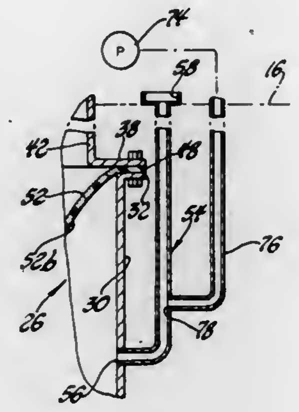


3,847,214
WELL AND PIPELINE CONSTRUCTION

Walton W. Cushman, 36483 Gloucester Dr., Fraser, Mich. 48026

Filed Apr. 13, 1972, Ser. No. 243,570
Int. Cl. E21b *31/00*

U.S. Cl. 166—.5 **1 Claim**



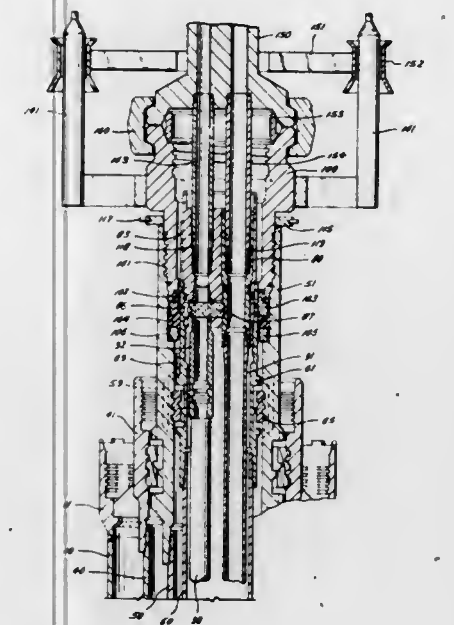
1. A safety shut-off valve for use in combination with a delivery conduit flowing a selected fluid therethrough, comprising a unitary one-piece generally tubular inflatable elastomeric member situated within said delivery conduit, said delivery conduit comprising a well casing, a valve housing serially connected to said well casing, said generally tubular member being axially elongated and having a circular configuration when viewed in a cross-sectional plane transverse and normal to the axis of said tubular member, said tubular member having respective axial ends thereof secured to said valve housing as to be thereby anchored against movement relative thereto, means associated with said tubular member for at times supplying a pressurizing fluid against said tubular member causing said tubular member to inflate substantially uniformly radially inwardly in order to thereby terminate further flow of said selected fluid through said delivery conduit, said means associated with said tubular inflatable member comprising fluid pressure transmitting conduit means having one end in communication with a generally annular space defined generally between said tubular member and said valve housing and having an other end elevationally spaced a substantial distance from said one end, said other end serving as an inlet for the introduction therethrough of said pressurizing fluid, said pressurizing fluid being effective upon entering said annular space to resiliently urge said tubular member to resiliently deflect radially inwardly in a manner whereby an inner passage defined by said resiliently deflecting tubular member continues to progressively reduce in cross-sectional area until such time as sufficient closing pressure is applied by said pressurizing fluid against said tubular member causing complete closure of said inner passage, and passage means having an outlet communicating with said conduit means at a point which is at a relatively low elevational level, said passage means being operatively connectable to a source of air under pressure for delivering said air to said conduit means in order to permit said air to form bubbles in said conduit means to displace from said conduit means any liquid contained in said conduit means comprising said pressurizing fluid.

3,847,215
UNDERWATER WELL COMPLETION METHOD AND APPARATUS

David P. Herd, Houston, Tex., assignor to McEvoy Oilfield Equipment Co., Pittsburgh, Pa.

Division of Ser. No. 103,839, Jan. 4, 1971, Pat. No. 3,800,869, which is a continuation of Ser. No. 792,912, Jan. 22, 1969, abandoned. This application Aug. 13, 1973, Ser. No. 387,915
Int. Cl. E21b *33/035*

U.S. Cl. 166—.6 **32 Claims**



1. A method of suspending at least one string of pipe in a well with only one trip into the well comprising the following steps:

- running a well pipe hanger assembly which suspends the pipe string into the well on at least two handling strings;
  - aligning the well pipe hanger assembly in a predetermined position within the well;
- landing the well pipe hanger assembly within the well;
- locking down the well pipe hanger assembly within the well;
  - testing the seals in the well pipe hanger assembly by pressurizing the handling strings;
- testing the integrity of the packer in the pipe string by monitoring one of the handling strings; and
- removing the handling strings.

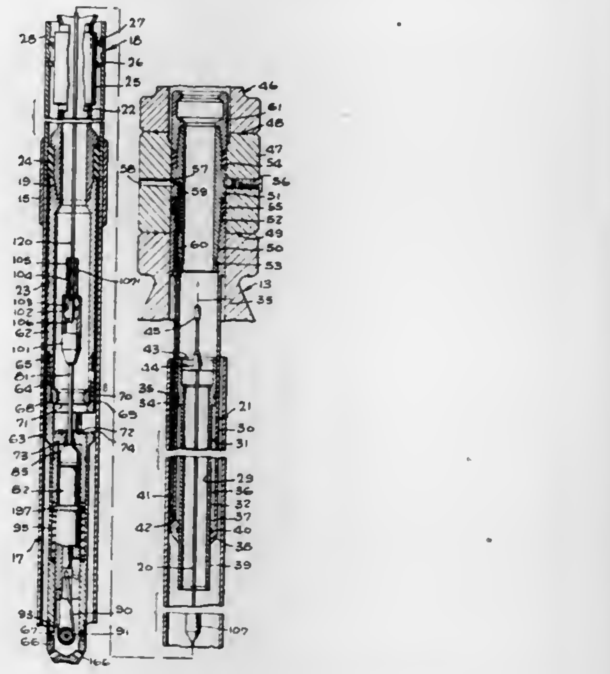
3,847,216
WELL SAFETY VALVE HAVING MECHANISM SHIELDED FROM FLUID FLOW

George I. Boyadjieff, Woodland Hills, and Ben A. Otsap, Encino, both of Calif., assignors to Varco International, Inc., Los Angeles, Calif.

Filed Oct. 29, 1973, Ser. No. 410,417
Int. Cl. E21b *43/12*

U.S. Cl. 166—72 **14 Claims**

1. In well safety apparatus, including a safety valve body to be lowered into a well and located therein, a main valve element movable vertically within said body between open and closed positions, a pilot valve element movable relative to said main valve element between an open position permitting fluid flow through a bleed passage from one side of the main valve element to the other and a closed position closing off such flow, and a member extending upwardly to the surface of the earth for actuating said valve elements; the improvement comprising an operator connectible to said member for actuation thereby and having a portion received within the interior of at least one of said valve elements and movable upwardly relative thereto by upward displacement of said actuating member, and reversing means actuable in response to said upward movement of said portion of said operator which is within said one element to displace said pilot valve element downwardly.

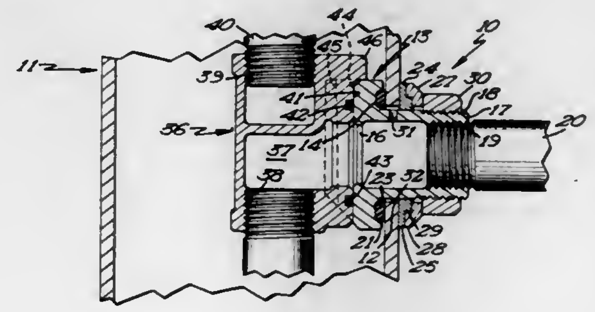


3,847,217
PITLESS WELL ADAPTER

Dean Kramer, 105 Mission Dr., Mason City, Iowa 50401, and Jay D. Crawford, 113 4th St. North, Sheffield, Iowa 50475

Filed June 22, 1973, Ser. No. 372,858
Int. Cl. E21b *33/03;* **F16l** *55/00*

U.S. Cl. 166—85 **4 Claims**



1. A pitless well adapter for attachment to a well casing having an opening therein spaced below the upper end of the casing, comprising:

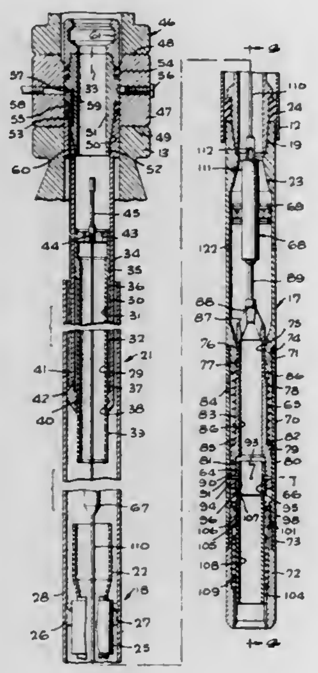
- a mounting member having a front face and a rear face and adapted to be positioned interiorly of the casing against the inner surface thereof, said mounting member having an opening therein and having an annular lip integral with said front face and projecting forwardly therefrom, said mounting member having a pair of vertically extending elongate spaced apart guide elements on the rear face thereof and defining a pair of downwardly tapering guideways on opposite sides of said opening,
- a cylindrical nipple integral with said mounting member and projecting forwardly from the front face thereof through the opening in the casing, said nipple communicating with the opening in the mounting member and having an externally and internally threaded outer end portion, the exter-

nal diameter of said nipple being only slightly less than the diameter of the opening in the casing to define an annular space therebetween, an interconnecting passage extending through the cylindrical wall of the nipple and intercommunicating the interior of the nipple with the annular space,
a coupling member having a passage therethrough and being adapted to be connected in communicating relation with the well pipe,
a pair of vertically extending spaced apart, elongate downwardly tapering guide elements on said coupling member engagable with said guideways on said mounting member to urge said coupling member into fluid sealing relation with the rear face of the mounting member and to intercommunicate the passage of the coupling member with the opening in the mounting member,
an interior annular compressable sealing element positioned around and engaging said nipple and being engaged by said lip of said mounting member, the interior sealing element adapted to be interposed between the front face of the mounting member and the inner surface of the casing to form a seal thereat,
an exterior sealing element positioned around and engaging the nipple and adapted to engage the exterior surface of the casing adjacent the opening therein, said sealing elements cooperating with said nipple and said casing to define an annular pressure passage located between the sealing elements and exteriorly of the nipple,
an annular clamping member corresponding generally in size to the size of said exterior sealing element and engaging the latter,
and an internally threaded clamping nut threadedly engaging the exterior threads on the nipple and urging said clamping member into clamping relation with the exterior sealing element and clamping the mounting member on the casing.

3,847,218
BALL TYPE WELL SAFETY VALVE APPARATUS

George I. Boyadjieff, Woodland Hills, and Ben A. Otsap, Encino, both of Calif., assignors to Varco International, Inc., Los Angeles, Calif.

Filed Oct. 29, 1973, Ser. No. 410,477
Int. Cl. E21b *33/03, 43/12*
U.S. Cl. 166—224 A **17 Claims**

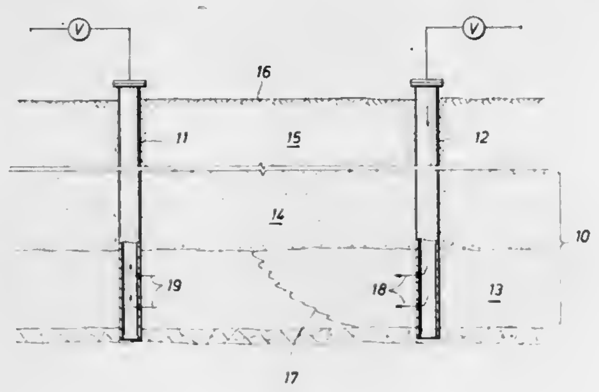


1. In well safety apparatus actuable by an elongated member extending downwardly into a well and movable longitudinally from a location near the surface of the earth: a safety valve unit to be located deep within the well and comprising a body structure having a passage through which production fluid flows upwardly, a ball valve in said body structure containing a passage through which said production fluid can flow, a valve carrier structure mounted for upward and downward movement in the body by said elongated member and to which the ball valve is connected for pivotal movement between an open position in which said passage in the ball valve extends vertically to pass said production fluid and a closed position in which said passage in the ball extends horizontally to block off upward fluid flow past the ball valve, means for pivoting said ball valve from said closed position to said open position in response to upward movement of said valve carrier structure, and an upwardly facing valve seat engageable with said ball valve about an unapertured region thereof in said closed position of the ball valve.

3,847,219
PRODUCING OIL FROM TAR SAND

Kuo H. Wang; Michael Prats, and Don A. Campbell, all of Houston, Tex., assignors to Shell Canada Limited, Toronto, Canada and Shell Explorer Limited, Houston, Tex.

Filed Oct. 3, 1973, Ser. No. 402,930
Int. Cl. E21b *43/00, 43/24*
U.S. Cl. 166—263 **20 Claims**



1. A process for recovering bituminous fluid from a bituminous sand formation which contains at least one water-permeable zone and at least one adjacent, water-impermeable zone and which has been penetrated by at least one injection well and at least one production well, both of which communicate with said water-permeable zone, said process comprising:
a. injecting a hot aqueous fluid into said formation through at least one well while producing fluids at at least one other well to establish a hot, water-permeable channel extending between the injection and production wells;
b. continuing the injection of said hot aqueous fluid at a rate at least sufficient to maintain said bituminous fluid mobility within said channel and to increase the mobility of the bituminous fluid in the bulk of the bituminous sand formation surrounding said path to at least 15 millidarcies per centipoise;
c. reducing the pressure in said formation by increasing the production of fluids at the production well; and
d. recovering bituminous fluid from the fluids produced.

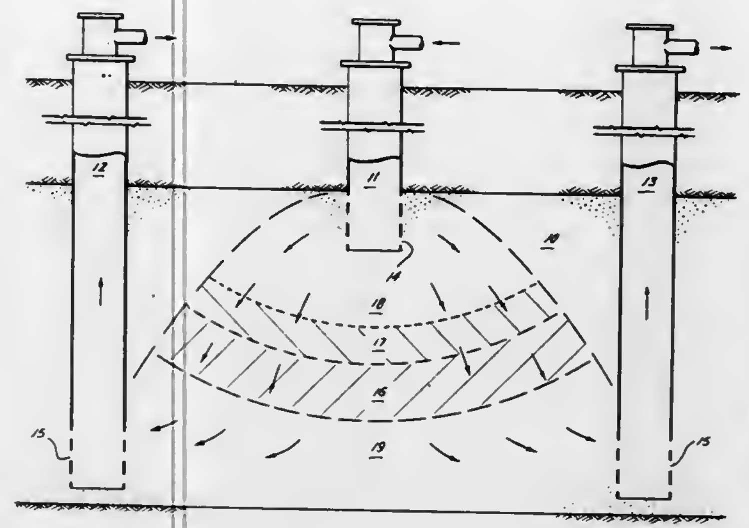
3,847,220
MISCIBLE DISPLACEMENT OF PETROLEUM USING SEQUENTIAL ADDITION OF CARBON DISULFIDE AND A HYDROCARBON SOLVENT

Joseph C. Allen, Bellaire; Jack F. Tate, and Roland B. Stelzer, both of Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed May 4, 1973, Ser. No. 357,407
Int. Cl. E21b *43/16*
U.S. Cl. 166—273 **3 Claims**

1. A process for recovering petroleum from a reservoir comprising:

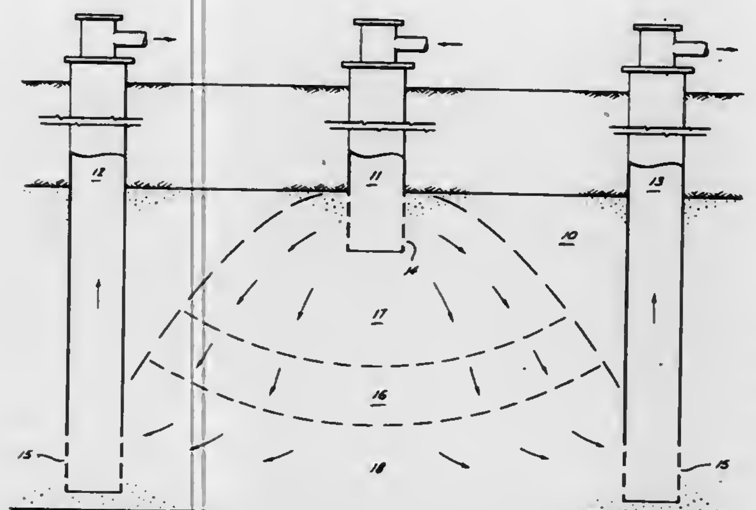
sequentially introducing at least two solvent slugs into the reservoir, a first solvent slug having a density greater than water and a second solvent slug having a density less than water, followed by an aqueous driving fluid wherein the second solvent slug is injected prior to the first solvent slug, and
producing petroleum and solvents at a point below the point of introduction of the solvent slugs.



3,847,221
MISCIBLE DISPLACEMENT OF PETROLEUM USING CARBON DISULFIDE AND A HYDROCARBON SOLVENT

Joseph C. Allen, Bellaire; Jack F. Tate, and Roland B. Stelzer, both of Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed May 4, 1973, Ser. No. 357,415
Int. Cl. E21b *43/16*
U.S. Cl. 166—274 **16 Claims**



1. A process for recovering petroleum from a reservoir comprising:
a. introducing a slug of solvent mixture for the petroleum into the reservoir which solvent has a density equal to or greater than water and comprises carbon disulfide and an aromatic hydrocarbon or aliphatic hydrocarbon,
b. introducing, following the solvent mixture, an aqueous fluid into the reservoir, to force the solvent through the reservoir, and
c. producing the petroleum and solvent at a point below the point of introduction of the solvent.

3,847,222
TREATMENT OF AN UNDERGROUND FORMATION CONTAINING WATER-SENSITIVE CLAYS

William B. Braden, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.

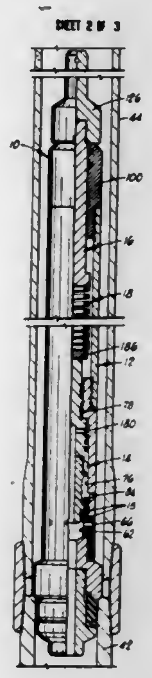
Filed Oct. 29, 1973, Ser. No. 410,721
Int. Cl. E21b *43/24*
U.S. Cl. 166—303 **10 Claims**

1. A method of treating a water-sensitive sandcontaining formation to improve the water permeability of the sand portion which comprises in combination injecting into said formation and into contact with said sand portion thereof, at an elevated temperature and a superatmospheric pressure, steam in an amount sufficient to provide from about 0.1 to about 10 percent by volume thereof per pore volume of said sandy portion of the formation, thereafter injecting into said formation and into contact with the resulting treated sand portion from about 5 to about 20 percent by weight of a guanidine salt in a polar oxygenated aliphatic hydrocarbon solvent, and maintaining said guanidine salt in contact with the sand portion of the formation for a time period sufficient to effect stabilization of said sand portion.

3,847,223
RETRIEVABLE FLUID CONTROL VALVE AND METHOD

Theron A. Scott, Odessa, Tex., and Walter E. Hyde, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed July 27, 1973, Ser. No. 383,238
Int. Cl. E21b *43/25, 43/27*
U.S. Cl. 166—305 R **12 Claims**



1. A retrievable fluid control valve for seating in a seating nipple within a tubing string to control the flow of fluid downwardly through the tubing string in response to fluid pressure applied thereto, comprising:
a valve body having opposite end portions and a longitudinal passageway extending therethrough and having a fluid flow control port and a valve member actuator port formed therein, each port communicating between the passageway and the outer periphery of said valve body;
a valve member slidably disposed within the passageway of said valve body for longitudinal movement therein between a closed position blocking fluid flow between the outer periphery of said valve body and the passageway therethrough and an open position allowing fluid flow between the outer periphery of said valve body and the passageway through the fluid flow control port responsive to fluid pressure acting thereon through the valve member actuator port in said valve body;
means formed on said valve body intermediate one end portion thereof and the fluid flow control port for seating the valve body in the seating nipple;

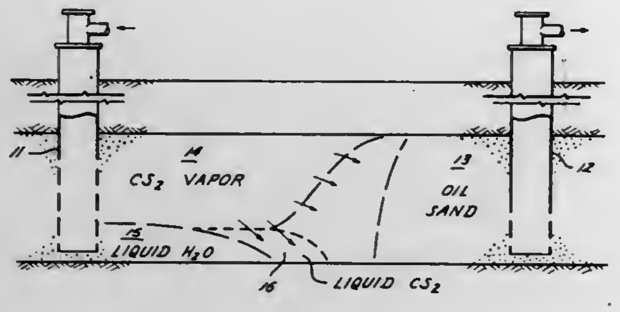
means formed on said valve body for providing a fluid-tight seal between the outer periphery of said valve body and the tubing string intermediate the fluid flow control port and the one end portion thereof;

piston means slidably disposed in the passageway adjacent to the opposite end portion of said valve body and longitudinally movable therein in response to the fluid pressure within the tubing string acting thereon; and

biasing means disposed intermediate said valve member and said piston means for urging said valve member into the closed position in response to the movement of said piston means responsive to the application of fluid pressure to said piston means.

3,847,224
MISCIBLE DISPLACEMENT OF PETROLEUM

Joseph C. Allen, Bellaire, and Jack F. Tate, Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.
Filed May 4, 1973, Ser. No. 357,406
Int. Cl. E21b *43/16*
U.S. Cl. 166—274 **9 Claims**

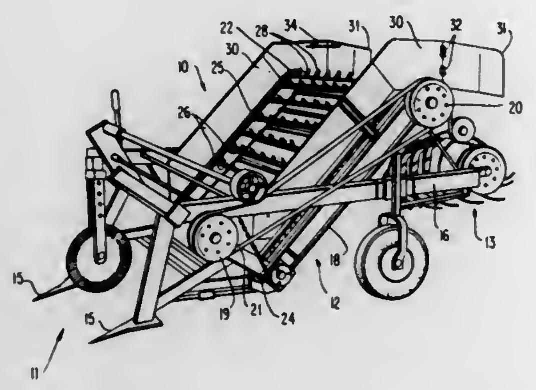


1. A method for recovering petroleum from a reservoir having at least one injection well and one production well penetrating and in communication with the reservoir comprising:

forcing carbon disulfide substantially horizontally through the reservoir with a driving fluid from the injection well to the production well wherein the carbon disulfide is injected in a vaporized state and condensation of the carbon disulfide takes place before it reaches the production well.

3,847,225
PEANUT HARVESTER

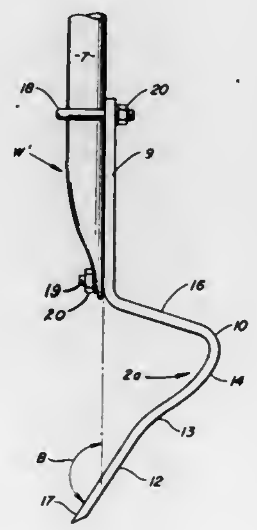
Carroll J. Whitfield, and Jack C. Whitesides, both of Columbus, Ga., assignors to Kelley Manufacturing Co., Columbus, Ga.
Filed Nov. 16, 1972, Ser. No. 307,181
Int. Cl. A01d *29/00*
U.S. Cl. 171—101 **5 Claims**



1. An apparatus for harvesting peanuts including plow means movable forwardly through the ground to unearth peanut plants and an inclined conveyor means behind said plow means for retrieving the plants from the ground and moving the plants in an upward direction and dropping the plants, the combination therewith of inverting apparatus positioned behind and below the upper end of said conveyor means for catching and inverting the plants dropped from said conveyor means comprising a pair of plant propelling means each rotatable about an axis extending laterally of the direction of movement of said apparatus and including a plurality of spaced wall members with noncircular peripheries with the peripheries of said spaced wall members generally forming a hyperboloid as each plant propelling means rotates, a plurality of spaced rods extending generally rearwardly of said conveyor means with portions thereof adjacent said conveyor means extending around the upper portion of each of said plant propelling means and between and below the upper peripheries of said spaced wall members and extending rearwardly from each of said plant propelling means and forming a pair of twisted paths for twisting the plants over and inwardly about their directions of movement away from the conveyor means and rolling the foliage of the plants inwardly between the paths of movement of the plants.

3,847,226
WEEDER

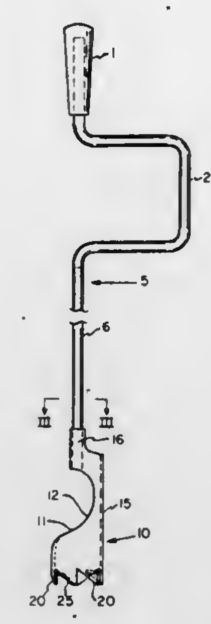
Richard C. Long, 1303 Webb Rd., Lakewood, Ohio 44107
Continuation-in-part of Ser. No. 208,587, Dec. 16, 1971, abandoned. This application Dec. 5, 1973, Ser. No. 421,999
Int. Cl. A01b *1/00*
U.S. Cl. 172—371 **5 Claims**



1. A manually operable weeder tool for removing weeds and their roots from lawns and turf by lifting the weed and root with a divot of the turf and removal of the weed and roots from the divot, comprising a rigid blade (**2**, **2***a*) and an attached handle (**4**, **7**) with overlapping, connecting portions (**8**, **9**) firmly connecting the upper end of the blade and the lower end of the handle, the blade having a forward face intended to face the weed to be pulled and comprising a straight, lower, earth-penetrating tongue portion (**12**) with a tip (**17**) adapted to engage, lift and separate the weed and root from the earth and divot, the said handle (**4**, **7**) being inclined forwardly within the grasp of an operator when the tongue (**12**) of the blade stands vertically, said blade also comprising a step portion (**16**) joined at its forward end to said connecting portion (**8**, **9**) and extending rearwardly toward the operator when the forward face of the blade faces the weed to be pulled, said blade also comprising a fulcrum portion (**14**) joined to said step with a rearwardly disposed rounded juncture (**10**) which forms the bluntly rounded apex of a V-shaped part of the blade comprising the step and fulcrum, said step lying at about right angles to the plane of the tongue (**12**) to facilitate downward entry of said tip and tongue into the earth under foot pressure on the step, said fulcrum having a convex rearward face and sloping downwardly and forwardly from its juncture (**10**) with the step and joining said tongue (**12**) in a curve (**13**) which is concave rearwardly, said fulcrum providing downwardly and forwardly sliding support for the blade tending to move said tip forwardly and upwardly into progressively tighter engagement with the root to lift, or lift and sever, the root after said fulcrum has engaged the earth and has been forced downwardly and forwardly while said handle is pulled rearwardly, said handle being long enough to be within easy grasp of a standing operator whose foot is bearing on the step of the blade.

3,847,227
GARDEN TOOL

Herman A. Myers, 112 No. Liberty, Masontown, Pa. 15461
Filed June 5, 1973, Ser. No. 367,135
Int. Cl. A01b *1/16, 45/02*
U.S. Cl. 172—378 **2 Claims**



1. A hand-operated garden tool for weeding and boring holes in the earth comprising:

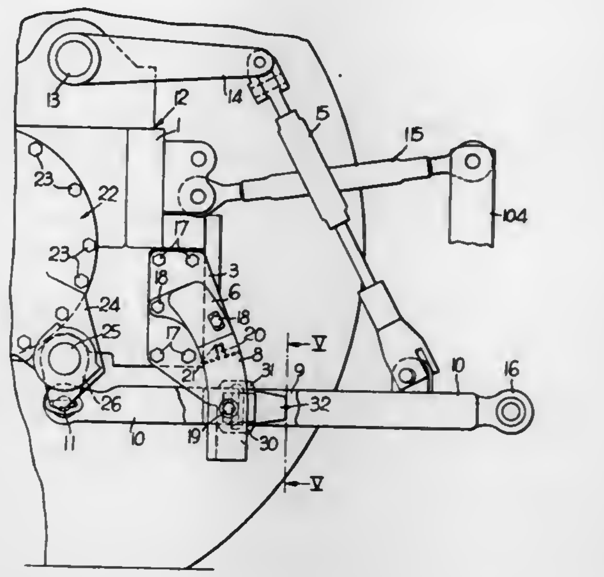
a. an elongated rod shaped member including a handle at one end and an elongated shaft at the other end, said elongated member adapted for rotative movement about its longitudinal axis when rotatably manipulated by the operator;

b. a cylindrical boring bit having a sidewall which defines an open interior, said bit fixedly attached at one end thereof to the end of the shaft, the longitudinal axis of the cylindrical bit aligned with the longitudinal axis of the shaft, said boring bit also including a plurality of teeth depending downwardly from the terminal edge of the sidewall in spaced apart relationship around the perimeter thereof, said teeth comprising a plurality of inclined driving teeth angularly bent toward the open interior of the bit, each of said driving teeth having a leading edge and a trailing edge, said trailing edge being inclined a greater angle, relative to the sidewall of the bit, than the angular inclination of the leading edge and a plurality of longitudinally extending, cutting teeth aligned coextensively with the sidewall of the bit, said driving teeth and said cutting teeth alternately positioned with respect to one another around the perimeter of the sidewall of the boring bit, said sidewall also having a cutout portion positioned above the teeth to permit the removal of weeds and earth from the interior of the bit.

3,847,228
HITCH SWAY LIMITING DEVICE

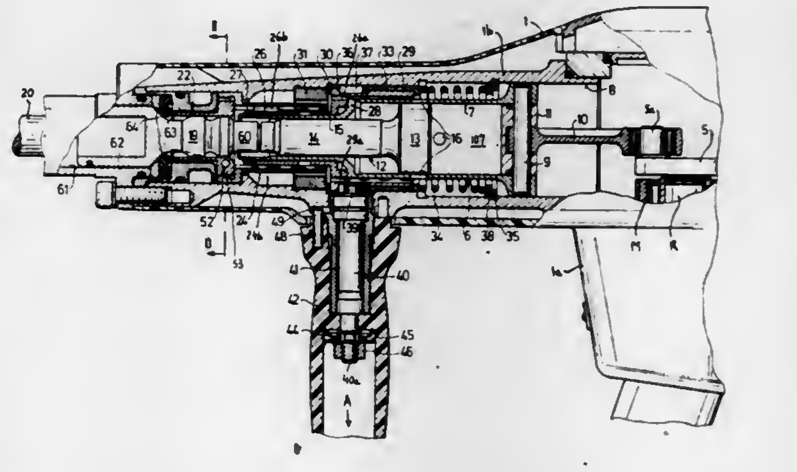
Michael L. Slosiarek, Milwaukee, Wis., and Richard E. Gatch, Gering, Nebr., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Oct. 26, 1970, Ser. No. 84,083
Int. Cl. A01b *59/043*
U.S. Cl. 172—450 **11 Claims**

1. A sway limiting device for a three-point tractor hitch comprising, a vehicle chassis, a pair of laterally spaced brackets mounted on said vehicle chassis, a pair of lower draft arms universally connected to said vehicle chassis and connected to an implement, a two piece sway block with each piece removably mounted on each of said brackets, a reversible wear plate removably mounted on each of said draft arms for selectively engaging each of said sway blocks, said wear plates having predetermined thicknesses defining wear surfaces spaced laterally at predetermined dimensions relative to the lateral mounting surface of said wear plate on said draft arms thereby provide predetermined sway restriction and selectively alternative lateral operating spaces between said draft arms.



3,847,229
PORTABLE IMPACT WRENCH

Karl Wanner, Echterdingen; Wolfgang Schmid, Plattenhardt; Hubertus Karl, Bernhausen, and Jorg Falchle, Bempflingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed May 24, 1973, Ser. No. 363,711
Claims priority, application Germany, June 16, 1972, 2229388
Int. Cl. B25d *11/04*
U.S. Cl. 173—48 **13 Claims**



1. In a portable power tool, particularly in an impact wrench or drill, a combination comprising a housing; drive means provided in said housing and including an output member movable forwardly and rearwardly; a tool holder rotatably and reciprocably mounted in said housing in front of said output member; impeller means provided in said housing and operative to strike against said tool holder in response to forward movements of said output member; and means for normally rotating said tool holder in response to forward movements of said output member, including an input element rotatably surrounding and movable with said output member, blocking means provided in said housing for normally holding said

input element against rotation, an intermediate element rotatably mounted in said housing, said elements having tubular portions telescoped into each other and provided with mating inclined teeth or threads so that the forward and rearward movements of said input element result in rotation of said intermediate element in opposite directions, an output element rotatably mounted in said housing, said tool holder being movable axially relative to and being rotatable with said output element, and one-way clutch means provided between said intermediate element and said output element to rotate said tool holder by way of said output element in response to forward movements of said input element.

3,847,230

SYSTEM FOR DRIVING OBJECTS USING PRESSURE OR TRACTION FORCES

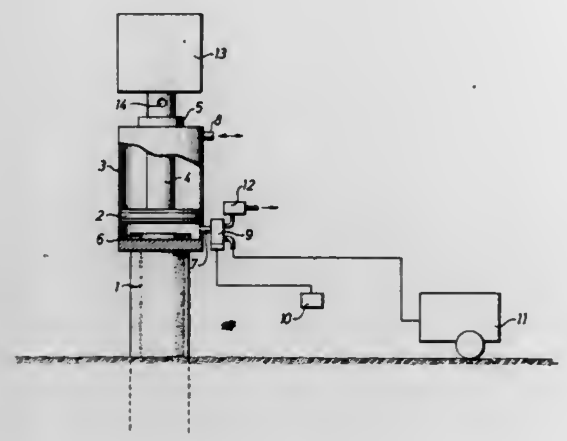
Oskar Vive Elon Blomquist, Enskede, Sweden, assignor to Stabilator Aktiebolag, Bromma, Sweden

Filed Aug. 16, 1972, Ser. No. 280,945

Claims priority, application Sweden, Aug. 26, 1971, 10831/71

Int. Cl. E02d *7/10*

U.S. Cl. 173—127 **4 Claims**



1. An arrangement for driving objects by pressure or traction forces, for instance for pile-driving into the ground, said arrangement comprising: a piston-cylinder driving means including a piston adapted to reciprocate in a cylinder; force transmission means comprising a wall of said cylinder at one end of said driving means for maintaining said driving means by gravity in permanent force transmitting engagement with an object to be driven; an inertial mass associated with said driving means through said piston for developing a force for permanent gravitational transmission to said object; a cylinder space on the side of the piston toward said object for communicating with a source of pulsating supply of driving medium; valve means for opening and closing communication between said cylinder space and said source of pulsating supply for initially raising said inertial mass against the force of gravity and away from said object, for then releasing said inertial mass to enable the same to fall by gravity in the direction of said object, and for then again raising said inertial mass for another driving cycle, so that the gravitational weight and kinetic energy of said inertial mass combine to drive the associated object when said inertial mass moves in the direction of said object under the influence of gravity and impacts against said object through said force transmission means; and a cylinder space on the other side of the piston for communicating with an outlet; whereby, in use, the object to be driven is maintained permanently loaded by a gravitational force including that of said inertial mass and is driven by a pulsating force superposed on said permanent force, including kinetic energy in said inertial mass developed by the gravitational pull on said inertial mass when said valve means enables said inertial mass to fall by gravity and impact against said object.

3,847,231

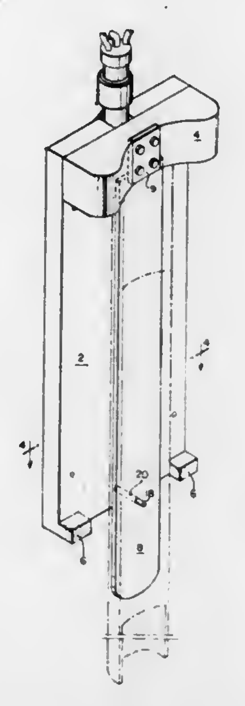
POLE REINFORCEMENT INSTALLATION

James E. Warjone, Seattle, Wash., and Albert C. Wilkison, New Westminster, British Columbia, Canada, assignors to Truckweld Equipment Co., Seattle, Wash.

Filed May 1, 1972, Ser. No. 249,249

Int. Cl. E04h *12/34, 12/20*

U.S. Cl. 173—134 **13 Claims**



1. Driving means for forcing objects into the ground comprising:

hammer means having sufficient weight to impact drive an object into the ground,

fluid-powered cylinder-rod means having a cylinder secured to the hammer means and a rod, said cylinder extending downwardly from the hammer means along a substantial portion of the cylinder length,

means suspending the rod of the cylinder-rod means adjacent to and above the object to be driven,

guide means coupled to the hammer means and in telescopic engagement with the object to assure proper contact with the object to be driven as the hammer falls downwardly, said guide means including a downwardly extending tongue adapted to extend into the interior of a hollow metallic splint and guide the hammer during driving of the splint, said guide means being approximately centrally located on said hammer means and extending downwardly parallel to said cylinder to guide the center of the mass of the hammer means and cylinder approximately along the center line of the splint, and

means providing an intermittent source of fluid under pressure in communication with the cylinder-rod means whereby admission of fluid raises the hammer means and exhaust of fluid allows the hammer means to drop upon the object to be driven for driving the object into the ground.

3,847,232

PNEUMATIC PERCUSSIVE TOOL

Nikolai Alexandrovich Klushin, ulista Narodnaya 1, kv. 23; Petr Avramovich Maslakov, ulitsa Voskhod 7, kv. 42; Viktor Evdokimovich Kilin, ulista Posadochnaya, 44, korpus 2, kv. 40; Oleg Alexandrovich Yankovsky, ulista Soni Morozovoi, 175 A, kv. 95, and Anas Galimovich Galimov, ulista Kuibysheva, 115, kv. 13, all of Sverdlovsk, U.S.S.R.

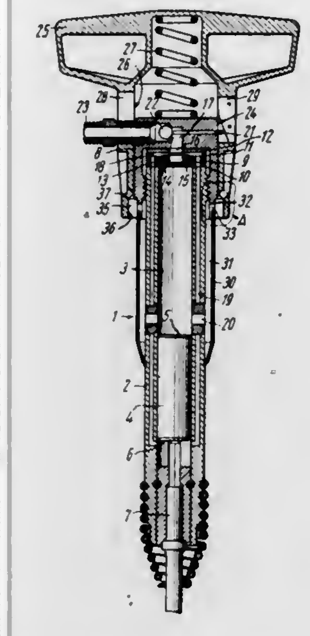
Filed Oct. 3, 1973, Ser. No. 403,007

Claims priority, application U.S.S.R., Oct. 3, 1972, 1834043

Int. Cl. B25d *9/04*

U.S. Cl. 173—168 **2 Claims**

1. A pneumatic percussive tool comprising: a cylinder having an upper end portion and a lower end portion; a hammer disposed in said cylinder for reciprocating movement therewithin under the action of compressed air, therewith to impart blows to a working implement received in the front end portion of said cylinder; air-distribution means, said means being connected to a source of compressed air during the operation of the tool, and disposed in the rear end face of the upper end portion of said cylinder for distributing the compressed air provided from the source; a housing fixedly mounted on the rear end portion of said cylinder, for rigidly holding said air-distribution means to said cylinder, at least one portion of the peripheral surface of the front end of said housing having a different diameter, than the other, while the front end face of said front end of said housing is provided with slots; handle means mounted on said housing and axially movable along the outer surface of said housing between a maximum predetermined forward position and a maximum predetermined rearward position, said handle means being provided on the inner surface of the front end part thereof with at least one portion having a diamter which is greater than that of the surface thereof in contact with said housing, and in the wall of the rear end part of that portion with through passages communicating with atmosphere, said handle means being provided for controlling said tool and permitting communication between said air-distribution means and said source upon movement thereof forwardly along the housing towards said maximum predetermined position into the operative position of the tool; a casing mounted on said cylinder forwardly of the housing, the outside diameter of the rear end portion of the casing being substantially equal to the outside diameter of said portion of said housing, said casing defining together with said cylinder and the front end portion of said housing a manifold for collecting the exhaust air; a shock absorber disposed between said housing and said handle for returning said handle towards said maximum predetermined rearward position into the rearmost inoperative position of the tool and reducing vibration of the handle; said portion of the housing having a diameter smaller than that of the surface of said housing mounting said handle; rear end and front end cavities defined by the axial movement of the handle along the housing towards said maximum predetermined forward position into the foremost operating position, the rear end cavity communicating with said manifold through said slots formed in the front end face of said housing and being defined by said portion of the housing, the inner surface of said handle and the outer surface of the rear end portion of said casing, and said front end cavity communicating with its rear end portion through the front end portion of said rear end cavity, as well as with atmosphere through said passages of the handle, said front end portion also communicating with atmosphere through its open front end portion, which front end portion has a greater cross-sectional area than that of said rear end cavity and is defined by said portion of the handle and the outer surface of said casing so that upon entry of the exhaust air from said manifold into said rear end cavity and into said front end cavity communicated therewith and having a greater cross-sectional area the ambient atmospheric air is sucked in through said passages in the handle walls, whereby the speed of air discharge from said front end cavity is reduced thereby lowering the aerodynamic noise.



3,847,233

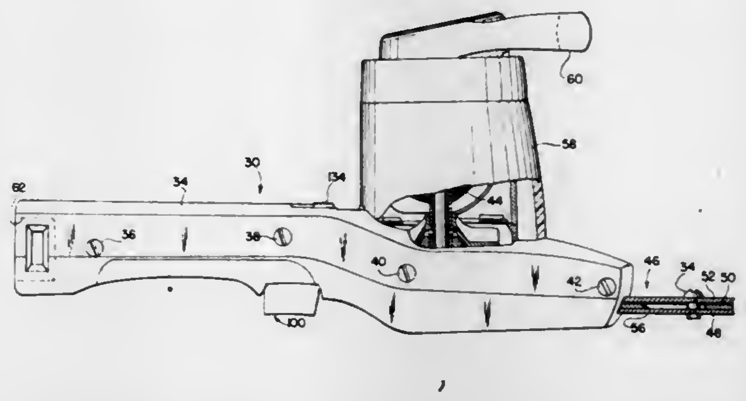
TRIGGER MECHANISM FOR HAND-OPERATED POWER DEVICE PROVIDING AUTOMATIC LOCK-OFF AND MANUAL LOCK-ON OPERATION

Richard Warmath Glover, Joppa; Gordon Frederick Musch, Fork, both of Md., and John A. Summa, Anaheim, Calif., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed June 29, 1973, Ser. No. 375,160

Int. Cl. B23b *45/00*

U.S. Cl. 173—170 **15 Claims**



1. A trigger mechanism for a hand-operated power tool including an electric motor and an on-off switch operatively associated with the motor and normally biased off, comprising:

a trigger manually movable from a first position to a second position to actuate the switch and turn on the motor, said trigger being normally biased toward its first position; and manually operable locking means movable in two distinct modes of movement, said locking means being normally biased toward a first position, cooperatively engageable with said trigger to prevent movement of said trigger from its first position to its second position, and movable in its first mode toward a second position wherein said trigger is manually movable to its second position to actuate the switch, said locking means being cooperatively engageable with said trigger when each is in its second position to permit said locking means to be released without movement to its first position until said trigger is allowed to return to its first position, said locking means being movable in its second mode to a third position cooperatively engageable with said trigger to lock said trigger in its second position to continuously actuate the switch and operate the motor; and

means biasing said locking means out of said third position to permit automatic disengagement of said locking means from said trigger.

3,847,234

PRESSURE RELIEF DEVICE FOR DRILL BIT LUBRICATION SYSTEM

Percy W. Schumacher, Jr., and Henry W. Murdoch, both of Houston, Tex., assignors to Reed Tool Comapny, Houston, Tex.

Continuation-in-part of Ser. No. 258,516, June 1, 1972, abandoned. This application Feb. 7, 1973, Ser. No. 330,412

Int. Cl. E21b *9/08, 9/18, 9/28*

U.S. Cl. 175—228 **11 Claims**

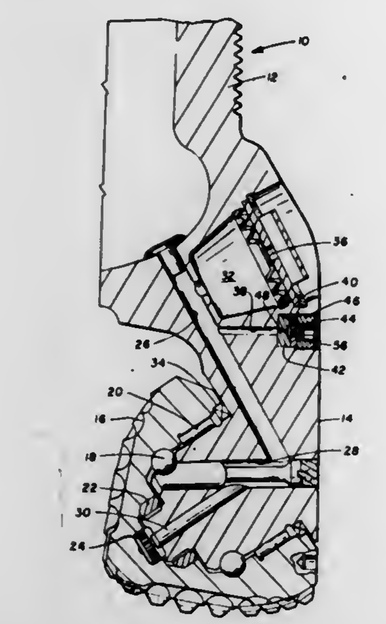
1. A drill bit, comprising

a body,

at least one leg depending from said body,

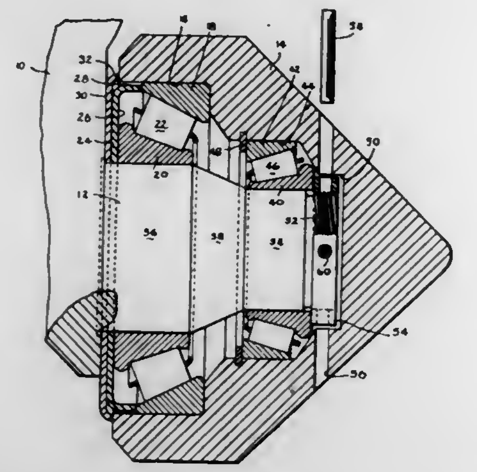
a rotary cutter,

bearing means rotatably mounting said cutter on said leg,
a lubrication reservoir defined in said leg,
means communicating from said reservoir to said bearing means to form a lubrication system,
a compensator diaphragm in communication with said lubrication system,
said compensator diaphragm being exposed to said lubrication system on one side and to the exterior of said leg on the other side to equalize the pressure within said lubrication system with exterior pressure whereby pressure differentials between said lubrication system and the exterior of said leg are minimized, and
normally closed means for relieving response to pressure differentials, excess pressure in said lubrication system to the exterior and excess exterior pressure into said lubrication system.



3,847,235
ROLLING TYPE EXCAVATING TOOL

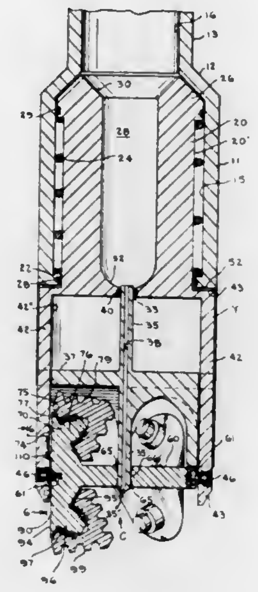
Robert D. Goodfellow, Bedford, Pa., assignor to Kennametal Inc., Latrobe, Pa.
Filed Oct. 10, 1973, Ser. No. 405,091
Int. Cl. F16c *19/14;* **E21b** *9/08;* **E21c** *13/01*
U.S. Cl. 175—372 **16 Claims**



1. In a rolling excavating tool; a support member, a spindle having one end fixed to said support member and projecting angularly therefrom, a cutter body having a blind hole formed therein into which said spindle extends, a first antifriction bearing having an inner race on said spindle adjacent said one end thereof and an outer race in the adjacent end of said blind hole, means stationary with said body abutting said outer race on the end facing away from said support member and means stationary with said spindle abutting the inner race on the end facing said support member, a second antifriction bearing having an inner race on said spindle near the free end thereof and an outer race in said blind hole near the bottom thereof, means stationary on the body abutting the end of the outer race of said second bearing which faces said support member, and a nut threaded on the free end of said spindle and disposed in the bottom of said blind hole and abutting the end of the inner race of said second bearing which faces away from said support member.

3,847,236
DRILL BIT

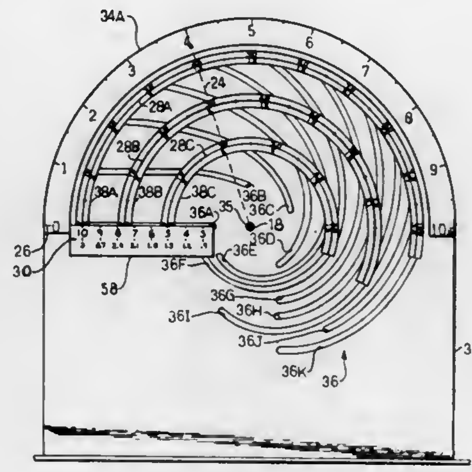
John P. Coalson, 10502 Valley Forge No. 183, Houston, Tex. 77042
Filed June 28, 1973, Ser. No. 374,522
Int. Cl. E21b *9/10*
U.S. Cl. 175—383 **7 Claims**



1. A drill bit comprising:
a housing adapted to be connected to a drill string,
a bit carriage mounted in said housing and having conical drill bits mounted on opposite sides thereof,
means for moving said carriage out of said housing, and
means for rotating said carriage relative to said housing whereby the conical drill bits on either side of said carriage may be exposed for drilling.

3,847,237
COMPUTING MECHANISM

It Bau Huang, No. 199 Chung Shan Rd., Tainan/Taiwan
Filed Oct. 25, 1973, Ser. No. 409,627
Int. Cl. G01g *23/22*
U.S. Cl. 177—25 **5 Claims**

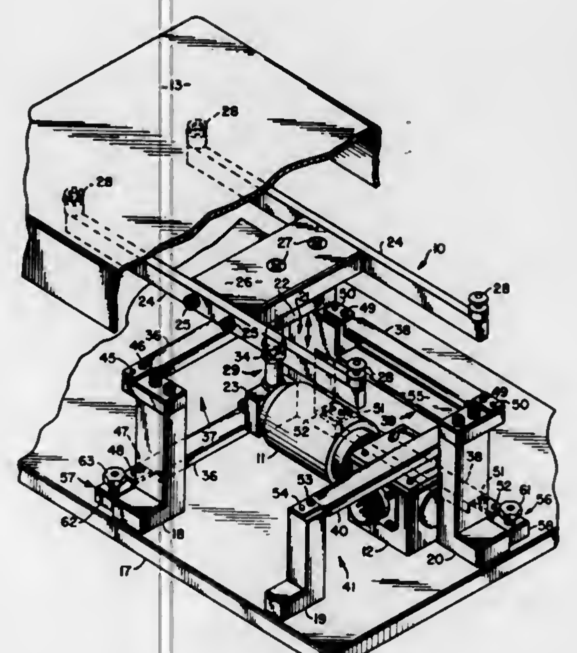


1. A computing mechanism for performing multiplication operations comprising,

pointer means rotatably mounted about an axis of rotation,
a curvilinear multiplicand scale having a center of curvature at the axis of rotation of the pointer means along which scale the pointer is movable,
a radially movable product scale having a center of curvature at the axis of rotation, and
means for radially moving the radially movable product scale in accordance with a selected multiplier,
the product of the multiplicand indicated on the curvilinear multiplicand scale by the pointer means and the selected multiplier being indicated by the pointer means on the radially movable product scale,
a linear multiplier scale extending radially from the axis of rotation and along which said radially movable product scale is movable to the selected multiplier,
a weighing mechanism attached to the pointer for rotation of the pointer in an amount dependent upon the weight of an object being weighed,
said curvilinear multiplicand scale having graduations in units of weight,
said linear multiplier scale having graduations in units of price per unit weight, and
said radially movable product scale having graduations in units of price.

3,847,238
WEIGHING SCALE WITH RESTRICTIVE VERTICAL MOVEMENT

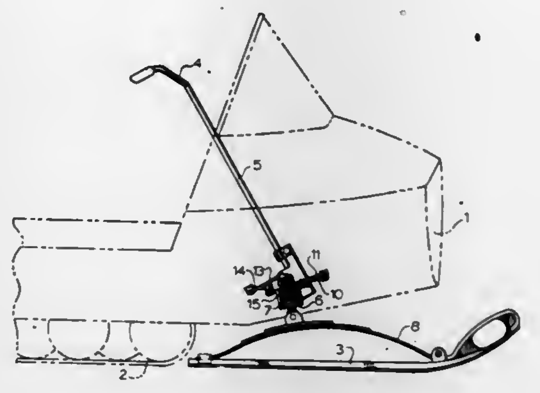
Donivan L. Hall, and Walter E. Kupper, both of Toledo, Ohio, assignors to Reliance Electric Company, Toledo, Ohio
Filed Oct. 18, 1973, Ser. No. 407,659
Int. Cl. G01g *21/24*
U.S. Cl. 177—255 **10 Claims**



1. A weighing scale comprising, in combination, stationary frame means, movable load receiving means having six possible degrees of freedom in space, transducer means for producing weight signals in accordance with force applied to the load receiving means, and check link means connecting the frame and load receiving means for movement of the load receiving means in a substantially vertical path, the check link means consisting of five check links so arranged that five of said six possible degrees of freedom of the load receiving means are constrained leaving the sixth degree of freedom for use in force measurement.

3,847,239
STEERING MECHANISM FOR SELF-PROPELLED VEHICLES

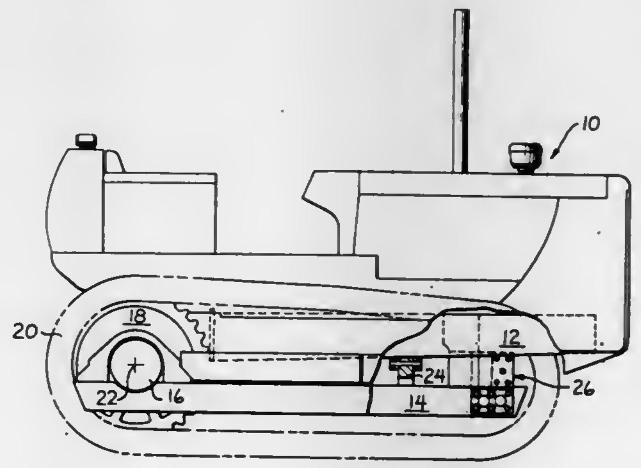
Claud L. Copeland, 13868 Knox, Warren, Mich. 48089
Filed May 8, 1972, Ser. No. 250,950
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R **9 Claims**



1. In a self-propelled vehicle, a body, a support for the body, means for mounting the support on the body so that it may be turned to steer the vehicle and moved rectilinearly crosswise of the vehicle, and means for turning the support to steer the vehicle in one direction and moving the support bodily in the other direction crosswise of the vehicle when it is turned in the first direction.

3,847,240
FORK AND BLADE GUIDE ASSEMBLY

Stephen G. Shoup, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Aug. 25, 1972, Ser. No. 283,726
Int. Cl. B62d *55/08*
U.S. Cl. 180—9.5 **7 Claims**



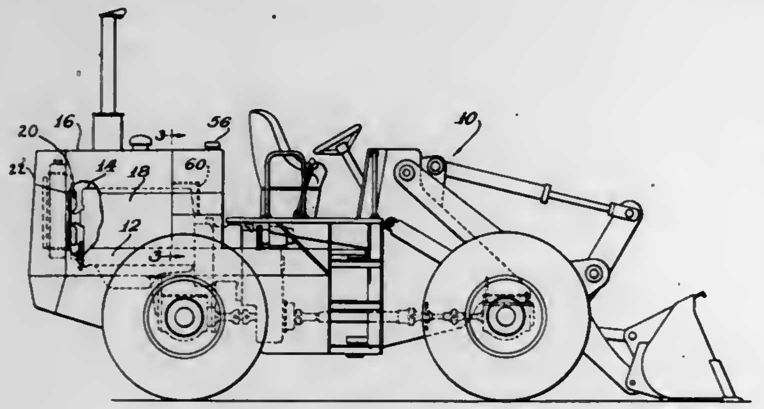
1. In a vehicle having a main frame, a pair of longitudinal roller frames, each pivotally attached at the rear portion thereof relative to the main frame about a transverse pivotal axis, whereby the forward portion of each roller frame may travel in an arcuate path upon such pivoting about said pivotal axis, means associated with the forward portion of each roller frame comprising: a fork member comprising first and second spaced plates fixed relative to one of the main frame and roller frame and disposed generally perpendicular to the pivotal axis of the roller frame; a third plate fixed relative to the other of the vehicle frame or roller frame, disposed generally perpendicular to the pivotal axis of the roller frame and between the first and second plates, the fork member and third plate moving relative to each other upon pivoting of the roller relative to the main frame; the third plate being normally closely spaced from each of the first and second plates under normal vehicle operation, the third plate contacting one of the first and second plates upon relatively great lateral loading of the

roller frame to transfer such lateral load to the main frame; and first and second complementary arcuate surfaces associated with the fork member and third plate respectively, with the radii thereof taken substantially at the pivotal axis of the roller frame, such arcuate surfaces normally closely spaced from each other under normal vehicle operation, such arcuate surfaces allowing such pivoting of the roller frame relative to the main frame, and in contact with each other upon relatively great rearward longitudinal loading of the roller frame to transfer such rearward longitudinal load to the main frame, and wherein the fork member further comprises a spacer plate disposed between the first and second plates to provide the spacing thereof, and the first and second complementary arcuate surfaces are defined by the spacer plate and third plate.

3,847,241
FUEL TANK AND HYDRAULIC RESERVOIR ARRANGEMENT

Thomas M. Cameron, Waukegan, Ill., and John L. Kellogg, Radcliff, Ky., assignors to International Harvester, Chicago, Ill.

Filed May 17, 1973, Ser. No. 361,105
Int. Cl. B60k *15/02*
U.S. Cl. 180—54 R **8 Claims**

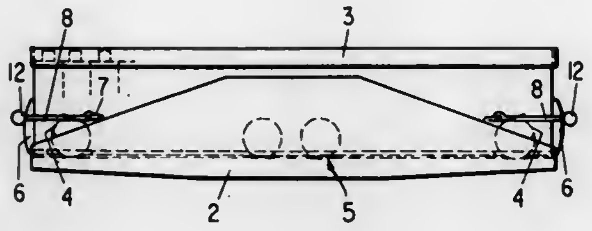


1. A compact arrangement for mounting the fuel tank and hydraulic reservoir on a vehicle comprising:
  a vehicle frame;
  an engine mounted on said frame;
  shroud means partially surrounding the engine and forming a semi-enclosed engine compartment;
  a fan driven by the engine and capable of creating a pressure differential between the compartment and ambient pressures;
  means mounting said fuel tank and said hydraulic reservoir on said frame adjacent said shroud means;
  said tank and reservoir having facing side members;
  said members being spaced apart to form an open channel; one end of said channel communicating with the interior of said compartment and the other end of said channel being exposed to ambient atmosphere; whereby flow of air through the channel is created by said pressure differential to minimize the transfer of heat between said reservoir and said tank.

3,847,242
APPARATUS FOR ANCHORING AN EXCHANGEABLE BATTERY BOX IN THE CARRIAGE OF A BATTERY DRIVEN VEHICLE

Freidhelm Kappei, Am Pfingstanger 9, 3163 Sehnde, Germany
Filed Jan. 2, 1973, Ser. No. 320,199
Claims priority, application Germany, Jan. 5, 1972, 7200321[U]
Int. Cl. B60k *1/04*
U.S. Cl. 180—68.5 **2 Claims**

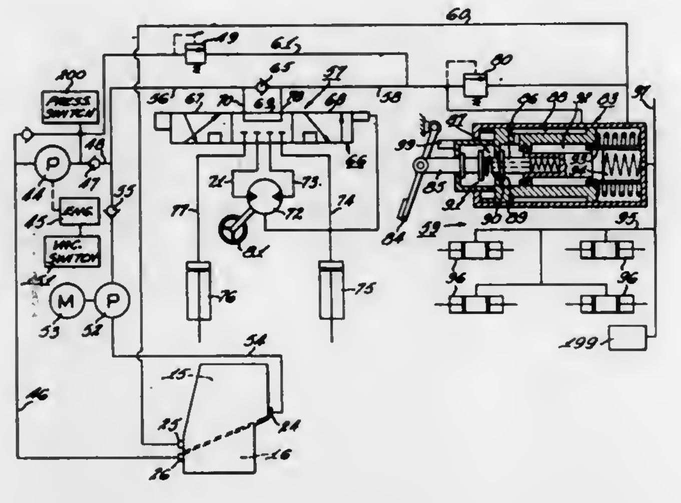
1. Apparatus for anchoring an exchangeable battery box in guiding means provided therefor in a carriage of a battery driven vehicle, said apparatus comprising a plurality of hand-levers each pivotally mounted at one end thereof on one of the carriage and an end portion of the guiding means for the battery box, and a plurality of corresponding abutments each mounted on the other of the carriage and an end portion of the guiding means for the battery box and provided with a raised wedge-like surface, each of the hand-levers carrying at the other end thereof a guiding latch or roller for engaging the raised wedge-like surface of the corresponding abutment and being spring loaded for urging that guiding latch or roller into engagement with that raised wedge-like surface, all of the hand-levers being mounted with sufficient lateral clearance that they can be pivoted out of the path of movement of the battery box when it is being exchanged.



3,847,243
AUXILIARY POWER SYSTEM ON A VEHICLE

John W. Barth, Topeka, Kans., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 27, 1972, Ser. No. 301,655
Int. Cl. B62d *5/06*
U.S. Cl. 180—79.2 R **15 Claims**

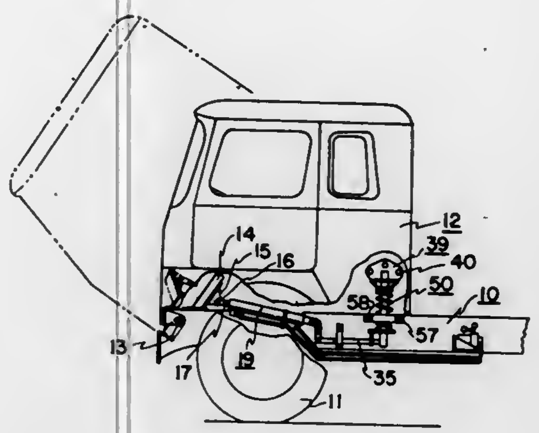


1. A hydraulic system for use on a vehicle comprising a main source of pressurized fluid adapted for being driven by the vehicle engine, an auxiliary source of pressurized fluid, valve means connected between said main source of pressurized fluid and said auxiliary source of pressurized fluid for transmitting pressurized fluid from the source of highest pressure through said system, an electrical circuit including a source of electrical energy, an electric motor driving said auxiliary source of pressurized fluid, an automatically operated switch means including, means connected to said engine normally biasing said automatically operated switch means to an open position when said engine is operating, a manually operated switch means including a brake switch connected in series with said automatically operated switch means, starting means for starting said electric motor to operate said auxiliary source of pressurized fluid when said switch means are closed to thereby provide an auxiliary source of pressurized fluid for maintaining operation of said hydraulic system.

3,847,244
LOCK APPARATUS FOR HOISTABLE VEHICLE STRUCTURES

John B. Fairbanks, Jr., 3927 S. 3030 East, Salt Lake City, Utah 84117

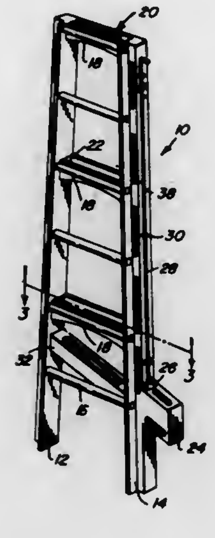
Filed Aug. 17, 1973, Ser. No. 389,348
Int. Cl. B62d *39/00*
U.S. Cl. 180—89 A **8 Claims**



1. In combination, first primary structure having a first locking structure; second primary structure having a second locking structure releasably lockable with said first locking structure, one of said first primary structure and said second primary structure having a reaction member; and lost-motion linkage and hoist means operably connected between said first primary structure and said second primary structure, at said second locking structure, for selectively unlocking said first and second locking structures and lifting said first primary structure relative to said second primary structure, and subsequently for effecting the lowering of said first primary structure and re-locking said first and second locking structures, said lost-motion linkage and hoist means including connection structure provided with a lost-motion slot slideably receiving and reaction member, including pressure cylinder means, and being mechanically coupled to said second locking structure whereby to move the latter to lock and unlock positions relative to said first locking structure.

3,847,245
LADDER FOR PICKING FRUIT OR THE LIKE

Irvin Gulley, Sr., 13629 120th Ln., Largo, Fla. 33540
Filed Mar. 27, 1973, Ser. No. 345,296
Int. Cl. B65g *11/00*
U.S. Cl. 182—49 **8 Claims**

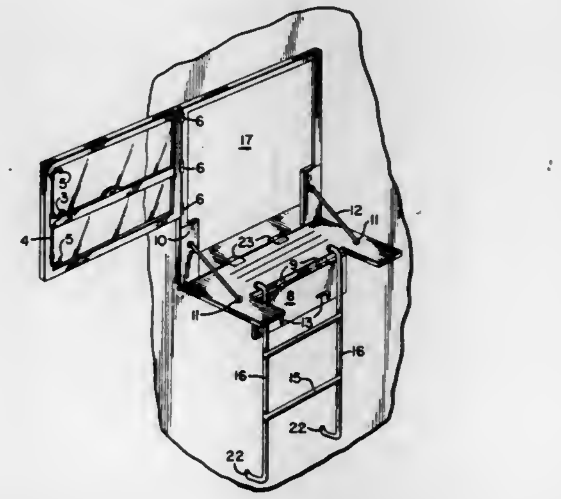


1. A ladder structure for picking tree fruit, or the like, such structure comprising a pair of spaced longitudinal support members, and a plurality of longitudinally spaced fruit-receiving trough members each attached to and extending transversely between said pair of support members, at least one of said support members being of generally tubular construction defining a fruit-handling passageway, each of said trough members communicating with said fruit-handling passageway for the delivery of fruits thereto, both of said pair of longitudinal support members being of generally tubular construction defining a pair of fruit-handling passageways, the opposite transverse ends of each of said trough members communicating with said fruit-handling passageways, respectively, for convenient delivery of fruits thereto.

3,847,246
EMERGENCY FIRE EXIT MEANS

Philip Michael Banner, 28 Oxford Rd., Massapequa, N.Y. 11758

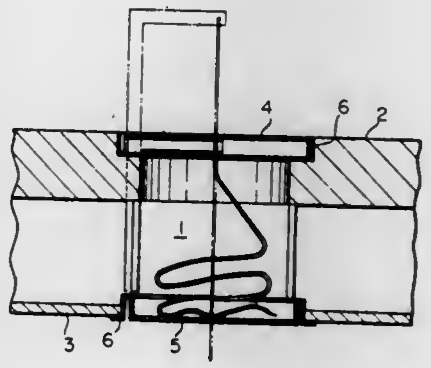
Continuation-in-part of Ser. No. 137,244, April 26, 1971, Pat. No. 3,692,145. This application Aug. 29, 1972, Ser. No. 284,630
Int. Cl. E06c *9/14*
U.S. Cl. 182—78 **13 Claims**



1. A emergency fire exit means comprising in combination a window and fire escape means including a frame, a movable sill, a platform pivotally mounted on said frame, a ladder mounted on said platform, a means for releasing said ladder, a movable trap door mounted in said platform so that when said platform is rotated 90° to an open position said trap door moves 180° and the ladder is released, said emergency fire exit means having signal and emergency safety means.

3,847,247
INDOOR ESCAPE DEVICE

Hiromitsu Naka, No. 39, Oaza Shinmachi, Yashio-shi, Saitama-ken, Japan
Division of Ser. No. 124,304, March 15, 1971. This application Aug. 15, 1973, Ser. No. 388,445
Int. Cl. A62b *1/20*
U.S. Cl. 182—81 **7 Claims**



1. An escape system to be positioned between the floor of one story of a building and the ceiling of a story below the firstmentioned story, said system comprising:

an escape means including a first frame means adapted to be positioned at one end of a hole formed between a slab of the floor of said one story and the slab of the ceiling of said story below said firstmentioned story, and a second frame means adapted to be positioned at the other end of said hole;

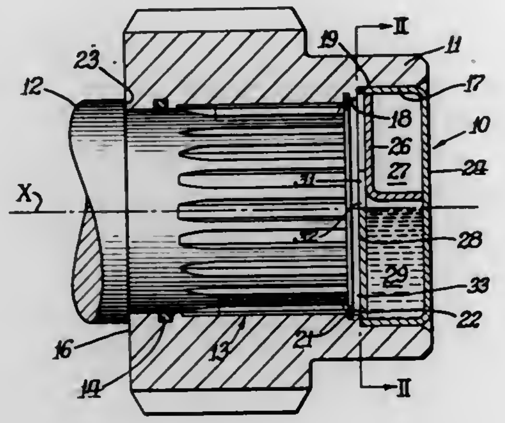
a shell means extending between said first and said second frame means forming an escape passage for an evacuee; a cover member positioned over at least one of said frames for closing the hole when the system is not in use; an escape device device secured adjacent said escape means, said escape device comprising an adjustable guide rod means; and

an escape unit connected to one end of said guide rod, said escape unit being adapted to extend through at least part of said shell means when said cover member is open for use by the evacuee in passing through said escape means.

3,847,248
REPLACEABLE LUBRICATING CARTRIDGE FOR SPLINE CONNECTIONS

Bennett W. Avery, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 23, 1973, Ser. No. 390,877
Int. Cl. F16n *1/00, 9/02*
U.S. Cl. 184—1 R **7 Claims**



1. In combination with a mechanism having an annular member attached to a shaft by a spline connection, the improvement comprising a replaceable lubricating cartridge attached at an inboard side therof to an outboard end of said mechanism, said cartridge comprising a housing defining a chamber therein, partition means disposed in said chamber to divide it into a closed first chamber portion and a second chamber portion adapted to be at least partially filled with a liquid lubricant, and means defining an opening through said partition means on an inboard side of said housing exposing said second chamber portion to said spline connection for communicating lubricant adapted to be retained in said second chamber exteriorly of said cartridge.

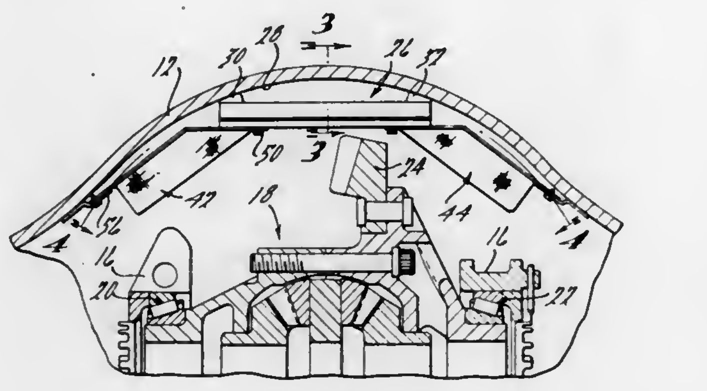
3,847,249
AXLE LUBRICATION SYSTEM

Leo George Oehring, Wyandotte, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Aug. 24, 1972, Ser. No. 283,583
Int. Cl. F16n *7/26*
U.S. Cl. 184—6.12 **7 Claims**

1. In combination in an automotive wheel axle assembly having an axle housing, a differential carrier mounted on said housing, a differential mechanism rotatably mounted on said carrier by spaced bearings, and a ring gear secured to the exterior of said differential mechanism and by which said differential mechanism is driven, said housing and said carrier providing an oil sump in the lower portion of said axle assembly in which said ring gear is immersed and a dome over said ring gear against which oil is centrifugally thrown from said ring gear as said differential mechanism is driven, the improvement comprising:

a. an open top lubricant receptacle suspended in said housing above said ring gear and beneath said dome to collect lubricant thrown from said ring gear and dripping from said dome said receptacle comprising an elongated trough extending longitudinally of said axle housing,



b. said receptacle having at each end of said trough outlets through which collected lubricant can flow by gravity,

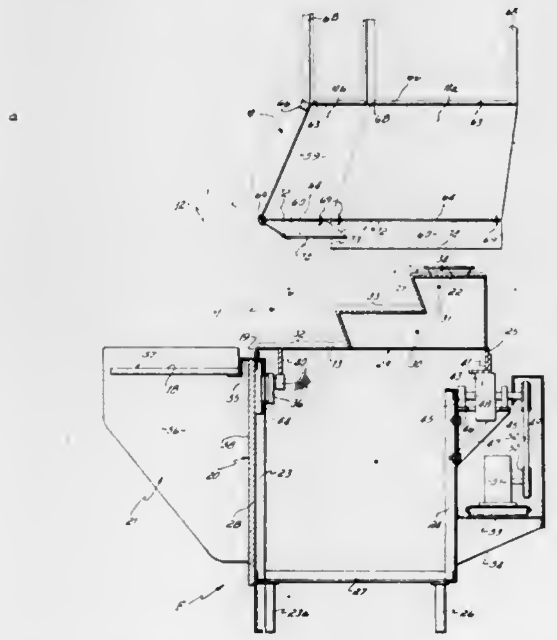
c. oil filter units interposed in the path of flow from said outlets and having their inlets disposed beneath the open ends of said trough,

d. said oil filter units each including a cavity in which separated particles may accumulate without impairing the functioning of the filter unit.

3,847,250
SNEEZE GUARD

Frank Odell Sherrill, Charlotte, N.C., assignor to B/W Metals Company, Inc., Fairfield, Ohio

Filed June 1, 1973, Ser. No. 366,097
Int. Cl. A47f *3/08*
U.S. Cl. 186—1 R **6 Claims**



1. A sneeze guard in combination with a food service counter of the cafeteria type, said counter providing a customer service area and having a main table section with a forward edge and at least one step section rearwardly of said main table section, said sneeze guard comprising

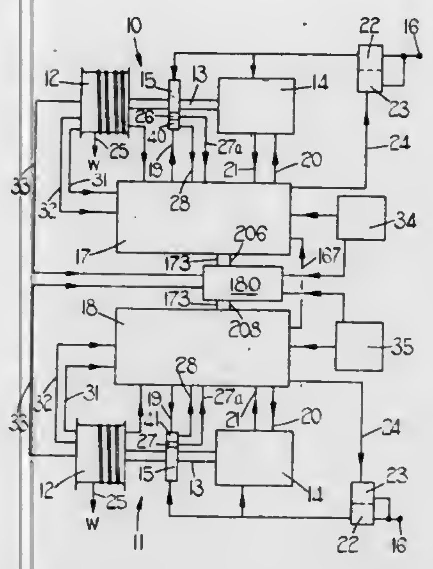
a series of upper sections disposed side-by-side above said counter throughout the length thereof in said counter's customer service area, said sections being fixed in place and presenting an effective single section upper guard, each of said sections being disposed at an angle between about 0° and about 45° with respect to the vertical, and each of said sections having a bottom edge,

a series of lower sections hingedly connected to said upper sections along the bottom edge of said upper sections and positioned in line one with the other, said lower sections being adapted to swing freely relative one to the other, and relative to said upper sections, each of said lower sections having a bottom edge disposed above the forward edge of said counter's main table section a distance that permits an average height adult customer to withdraw a food article positioned on said main table section without touching said lower section, and each lower section being adapted to swing inwardly and away from said customer upon contact with said customer's arm as said customer reaches for a food article on said counter's step section, thereby providing an effective multisectioned swingable lower guard throughout the length of the counter's customer service area.

3,847,251
CONTROL APPARATUS FOR A POWERED HOIST

Peter John Maltby, Codsall; Stanley George Glaze, Brierley Hill; Kenneth Harold Ellis, Wolverhampton; Donald Craven, Wolverhampton, and John Michael Binns, Lichfield, all of England, assignors to Lucas Aerospace Limited, Birmingham, England

Filed Mar. 20, 1973, Ser. No. 343,047
Claims priority, application Great Britain, Mar. 21, 1972, 13213/72
Int. Cl. G05d *17/02*
U.S. Cl. 187—29 R **23 Claims**

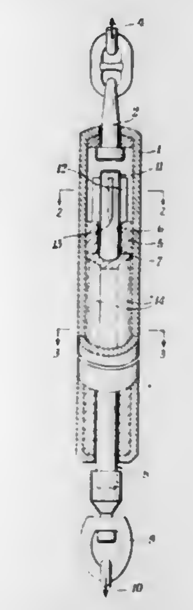


1. A control apparatus for a powered hoist having a winch drum, a motor capable of variable output for driving the drum and a brake for the drum, said control apparatus comprising means for detecting a first torque applied by the drum to the brake when the latter is engaged to arrest the drum, control means for causing a second torque supplied by said driving motor to be increased, brake control means responsive to movement of said drum by said second torque, said brake control means for releasing said brake only when the second torque exceeds the first torque, and further control means, operative only when the brake has been released, for modifying the second torque.

3,847,252
IMPACT-ABSORBING ASSEMBLIES

Massimo Casciola, Via Monte delle Gioie, 34, Rome, Italy
Continuation-in-part of Ser. No. 229,269, Feb. 25, 1972. This application Apr. 24, 1973, Ser. No. 354,016
Int. Cl. F16f *7/12*
U.S. Cl. 188—1 C **18 Claims**

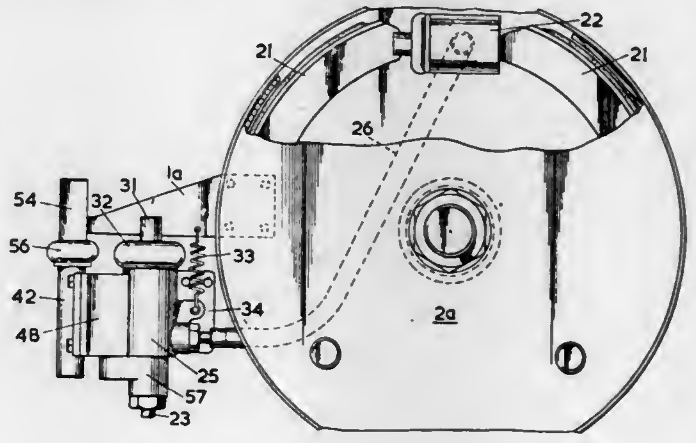
1. In an energy-absorbing assembly, elongated deformable means and elongated deforming means coaxial with and located next to said deformable means for deforming the latter when at least one of said means is displaced with respect to the other in a given direction, along their common axis during absorbing of the energy of a shock, impact, or the like, said deforming means having a deforming portion which occupies a space previously occupied by part of said deformable means upon displacement of said one means in said given direction, displacing means operatively connected with at least said one means for displacing at least one means with respect to the other in said given direction during an energy-absorbing operation, said deformable means having an exposed surface area extending longitudinally of said deformable means and defining at least part of a free space into which said deformable means is transversely extending during deformation of said deformable means by said deforming means, and casing means housing said elongated deformable means and having an exposed surface area directed toward said exposed surface area of said deformable means for defining said free space therewith, said casing means and deformable means directly engaging each other over an area sufficiently great to prevent movement of said casing means and deformable means one with respect to the other, during deformation of said deformable means by said deforming means, as a result of the frictional engagement between said casing means and deformable means.



3,847,253
VEHICLE BRAKING SYSTEMS

Hamilton Nigel Barnes, Sevenoaks, England, assignor to Minister of Technology in Her Brittanic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Millbank, London, S.W.1., England

Division of Ser. No. 71,295, Sept. 11, 1970, Pat. No. 3,735,844. This application May 25, 1973, Ser. No. 363,831
Claims priority, application Great Britain, Sept. 12, 1969, 45141/69
Int. Cl. B60t *8/00*
U.S. Cl. 188—2 A **15 Claims**

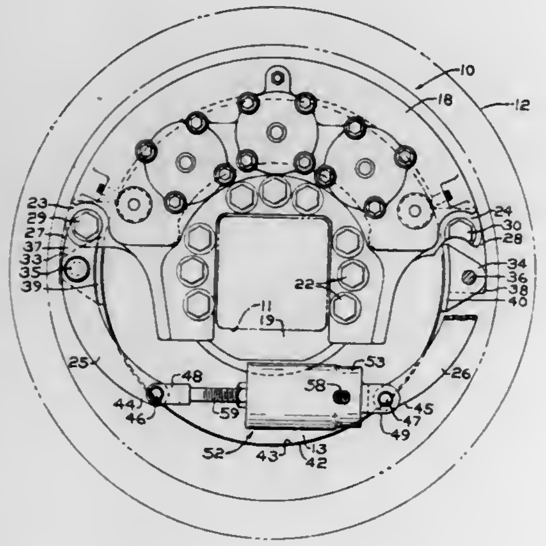


1. A fluid actuated vehicle braking system comprising a brake shoe carrier or back plate mounted for limited rotation

relative to the vehicle chassis; a balancing cylinder fixed relative to the vehicle axle housing; a piston slidable in the balancing cylinder and operatively connected to the back plate, which piston is subjected to fluid pressure during braking and thereby applies to the back plate a torque opposed to that applied thereto by the braking force in conjunction with the adhesion between an associated road wheel and the ground, which opposed torque rotates the back plate rearward with accompanying movement of the piston in the balancing cylinder when the reaction of the back plate is reduced due to loss of wheel to ground adhesion by the incidence of slip; return spring means acting upon the piston in opposition to the fluid pressure and release valve means operable upon said rearward rotation of the back plate to release fluid from the balancing cylinder and from the fluid circuit of the braking system to reduce the pressure therein and to reduce the braking force to restore adhesion between the road wheel and the ground, the reduction of pressure permitting return movement of the piston by action of the return spring to reverse the operation of the release valve means and allow reapplication of the brakes.

3,847,254
PARKING BRAKE

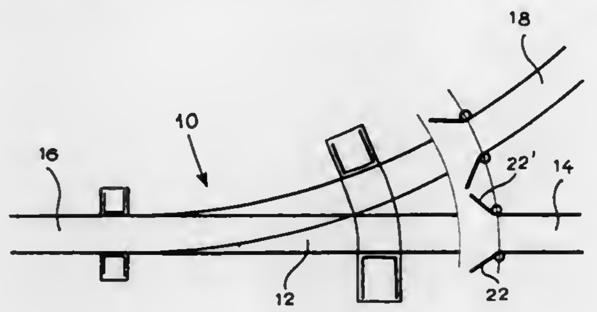
Richard H. Gardner, Pleasant Hill, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Apr. 2, 1973, Ser. No. 346,963
Int. Cl. F16d *63/00*
U.S. Cl. 188—70 R **6 Claims**



1. A parking brake for a caliper brake assembly having a nonrotatable brake head assembly, a rotatable brake disc with an outer circular edge and said brake head assembly extending over said outer circular edge in one sector of the brake assembly, comprising a clamping arm pivotally mounted on and extending away from said brake head assembly, a friction member mounted on said clamping arm and movable with said arm into and out of braking engagement with said outer circular edge of said brake disc in a second sector of the brake assembly, mechanical means connected to said clamping arm for generating a braking force to bias said friction member into braking engagement with said outer circular edge of said brake disc, power means connected to said clamping arm for generating a brake releasing force greater than said braking force of said mechanical means to bias said friction member out of engagement with said outer circular edge of said disc whereby said parking brake is applied by said mechanical means when said power means is released and said parking brake is released when said power means is actuated.

3,847,255
BRIDGE CONNECTOR FOR PHASE CONDUCTOR OF CURRENT COLLECTING SYSTEM

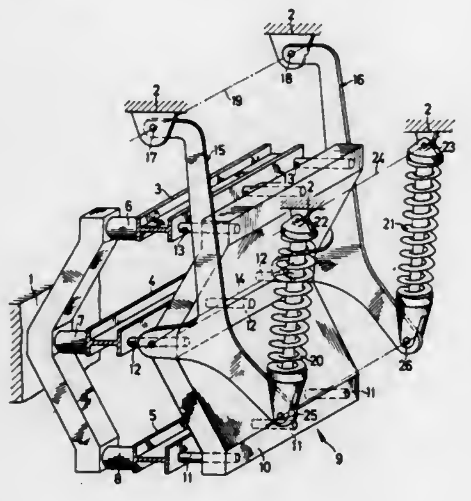
Daniel Laurent, 3 Quai Claude Bernard, Grenoble, and Jean Izoard, 8, Bld. Belledonne, St. Egreve, both of France
Filed Mar. 2, 1973, Ser. No. 337,765
Claims priority, application France, Mar. 15, 1972, 72.9746
Int. Cl. B60m *1/18*
U.S. Cl. 191—38 **6 Claims**



1. Bridge connector means to provide a continuous contact surface for a sliding current collector between the confronting spaced apart end portions of a pair of aligned power supply rails of conducting material having conformably shaped collector-engaging contact surfaces, comprising a bridge rod of conducting material having a collector-engaging contact surface shaped in conformity with the contact surfaces of said rails and adapted to form a through contact surface for said collector in the operative position of said bridge rod, pivot means to pivotally connect one end of said bridge rod to one of said end portions, locking means cooperating with the other of said end portions to position and latch said bridge rod in the operative position thereof, and control means to control the pivoting movement of said bridge rod between the operative and the non-operative positions thereof, said control means comprising linkage means connected to said locking means in such a manner as to cause the latching of said bridge rod after the positioning in the operative position thereof and the unlatching of said bridge rod before the movement thereof towards the inoperative position.

3,847,256
CURRENT COLLECTING SHOE FOR SUSPENSION TYPE VEHICLE

Rudolf Zurek, and Dieter Modersohn, both of Munich, Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Germany
Filed July 20, 1973, Ser. No. 381,038
Claims priority, application Germany, July 20, 1972, 2235723
Int. Cl. B60l *5/38, 5/08*
U.S. Cl. 191—49 **12 Claims**

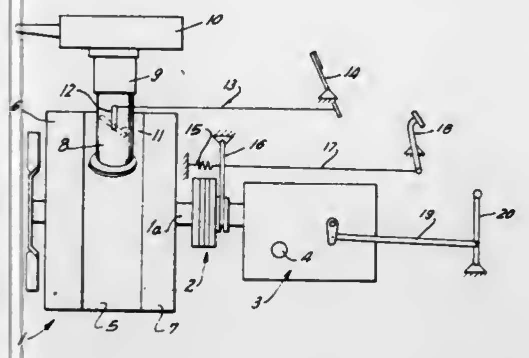


1. A current-pickup system for a track having at least one rail and a vehicle displaceable along said track, said arrangement comprising:

- a contact carrier juxtaposed with said rail and provided with at least one contact engaging same from one side;
- a lever pivotally mounted on said vehicle and engaging said carrier; and
- a spring pivotally connected to said vehicle and to said lever and positioned to urge said carrier toward said rail with a substantially constant force within a range of angular displacement of said lever, said spring being a compression spring and being pivoted to said vehicle at a location spaced from the pivot of said lever and said vehicle whereby an imaginary line between the spring pivots to said vehicle and said lever intersects a circle centered on the middle of a line joining the pivots of said spring and said lever to said vehicle externally of the triangle formed between the pivots of said lever and said spring to said vehicle and the pivot connecting said spring to the lever.

3,847,257
IGNITION SYSTEM FOR ROTARY PISTON COMBUSTION ENGINES OF TROCHOID TYPE

Johannes Steinwart, Schillerstrasse 8, Bad Friedrichshall II, and Karl Feierabend, Ringstrasse 10, Bad Rappenau-Treschklingen, both of Germany
Filed Mar. 9, 1973, Ser. No. 339,963
Claims priority, application Germany, Mar. 10, 1972, 2211517; Nov. 18, 1972, 2256734
Int. Cl. F16d *67/06;* **F02p** *5/04*
U.S. Cl. 192—.062 **14 Claims**

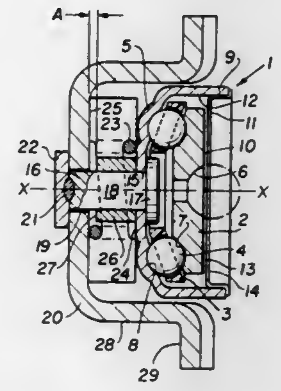


1. An ignition system for a rotary piston internal combustion engine of trochoid type to propel a motor vehicle having a transmission, clutch and a shift gear, and an intake line incorporating a throttle, the ignition system being electrically coupled to at least one spark plug, a high-voltage generator and an interruptor comprising a cam and two contacts arranged in series and being alternately actuated by the cam, three switches connected in series of which the first is closed when the throttle is closed, the second is closed when the transmission is in gear, and the third is closed when the clutch is engaged, means for coupling said first, second and third switch to said throttle, transmission and clutch, respectively, whereby one of said contacts is short circuited when all three switches are closed.

3,847,258
CLUTCH RELEASE MECHANISM

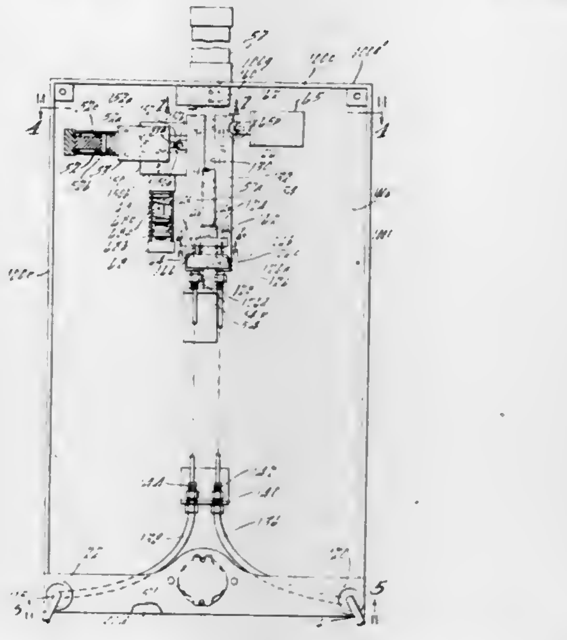
Otto Matyschik, Nudlingen, Germany, assignor to SKF Industrial Trading and Development Company B.V., Amsterdam, Netherlands
Filed May 4, 1973, Ser. No. 357,263
Claims priority, application Germany, May 9, 1972, 174664
Int. Cl. F16d *23/00, 11/08;* **F16c** *19/00*
U.S. Cl. 192—98 **6 Claims**

1. A clutch release mechanism comprising a housing and a bearing assembly, said bearing assembly comprises a nonrotatable race member adapted to be connected to the operating element of the clutch, and a second race member and a plurality of rolling elements located therebetween, a retaining bolt connecting said second race member and said housing, said bolt being fixed with respect to said second race member and extending through a bore in said housing, a coil spring surrounding said bolt and normally urging said second race member and housing apart, and a bushing coaxially arranged with said spring and said bolt to limit the spring travel between said second race member and said housing on depression of said spring.



3,847,259
SAFETY MECHANISM FOR SPECIAL MACHINES AND FIXTURES

Robert W. Williamson, 77 Cedar Acres, Brunswick, Ga. 31520
Filed Apr. 16, 1973, Ser. No. 351,516
Int. Cl. F16p *3/18*
U.S. Cl. 192—131 R **76 Claims**



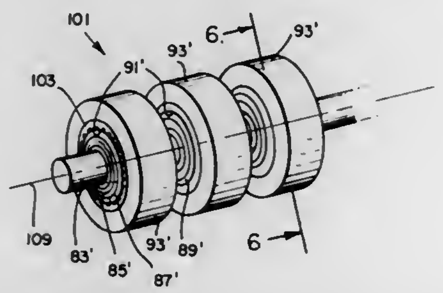
1. A hand restraint safety apparatus for use by an operator of a machine having at least one machine element which moves during each machine operating cycle, said apparatus comprising hand restraint means for the hands of the machine operator, hand restraint moving means operatively coupled with said hand restraint means for controlling the movement of said hand restraint means between a released position which permits at least one of the operator's hands to be disposed in the path of travel of said at least one machine element and a restraining position which prevents both of the operator's hands from being disposed in the path of travel of said at least one machine element and control means for interlocking the machine with said hand restraint moving means comprising means for permitting a machine operating cycle to begin only when said hand restraint means is in the restraining position.

3,847,260
CONVEYER BELT ROLLER

Arthur G. Fowler, 15628 Cordary Ave., Lawndale, Calif. 90260
Continuation-in-part of Ser. No. 202,930, Nov. 29, 1971, abandoned. This application July 9, 1973, Ser. No. 377,736
Int. Cl. B65g *39/04*
U.S. Cl. 193—37 **4 Claims**

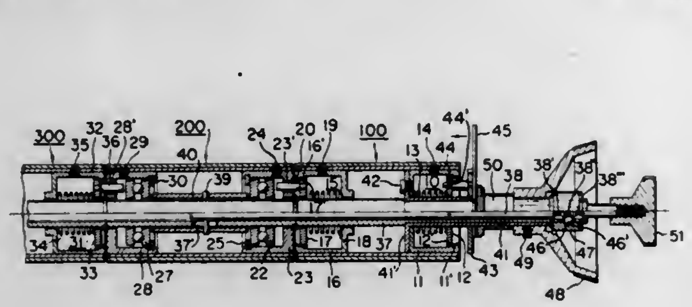
1. An endless conveyer belt roller, comprising:
an elongated roller shaft having supportable shaft ends;

end bearings mounted on said roller shaft adjacent said shaft ends;
an elongated metallic tube mounted on said end bearings to rotate about the longitudinal axis of said roller shaft;
a relatively thick cylinder of solid ceramic material with an inner cylindrical surface and an endless belt-supporting glazed outer cylindrical surface disposed coaxially about said roller shaft; and
mounting means including a resilient sleeve with a pressure deformable ribbed inner surface press fit between said tube and said inner cylindrical surface of said cylinder of solid ceramic material for absorbing shock energy exerted on said cylinder of solid ceramic material.



3,847,261
PLATEN MECHANISM IN WHICH ANGULAR POSITION OF EACH OF A PLURALITY OF PLATEN MEMBERS DISPOSED COAXIALLY MAY BE ADJUSTED INDEPENDENTLY OF OTHERS

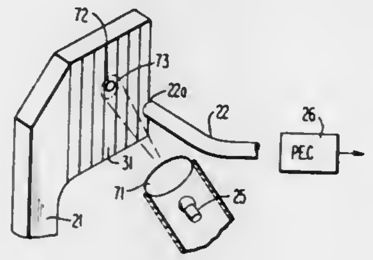
Koh Matsuhisa, Ninomiyamachi, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Nov. 15, 1972, Ser. No. 306,877
Claims priority, application Japan, Nov. 17, 1971, 46-92214
Int. Cl. B41j *15/18*
U.S. Cl. 197—129 **4 Claims**



1. A platen mechanism in which the angular position of each of a plurality of platen members coaxially disposed may be adjusted independently of the other of said platen members, said platen mechanism comprising
- a. a plurality of platen members disposed coaxially,
- b. clutches for individually engaging and disengaging each of said plurality of platen members with each other platen member adjacent thereto, each of said clutches comprising
  - i. a stationary member disposed at one end of one of said plurality of platen members and
  - ii. a movable member disposed at one end of the platen member adjacent to said one platen member in opposed relation with said one end of said one platen member for slidable movement, said movable member being normally spring-biased into engagement with said stationary member but movable away from said stationary member against said spring bias thereby disengaging said clutch,
- c. a hollow shaft extending through said plurality of platen members and said clutches coaxially thereof,
- d. a plunger slidably fitted into said hollow shaft, and
- e. slidable means, connecting to said plunger and slidable over said hollow shaft in response to the shift of said plunger, for causing said clutches to engage or disengage, said slidable means including a pin for connecting said slidable means to said plunger, and said hollow shaft having an axially elongated slot through which said pin extends.

3,847,262
APPARATUS AND ATTACHMENT FOR DERIVING CODED SIGNALS

Leonard James Higgins, Schenectady, N.Y., assignor to Datacq Systems Corporation, Latham, N.Y.
Filed Mar. 14, 1969, Ser. No. 815,247
Int. Cl. B41j *19/00*
U.S. Cl. 197—1 R **55 Claims**



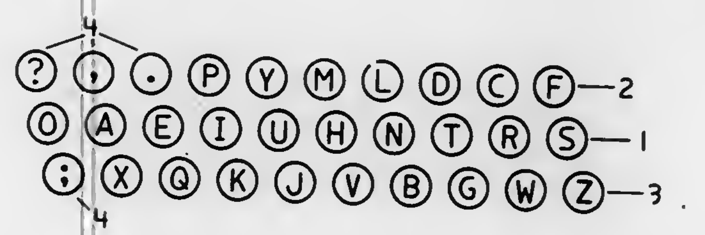
41. An attachment for a conventional typewriter comprising an elongated spacing member designed to be secured to and movable with a conventional typewriter carriage, said spacing member having a line of characteristic alternate light reflecting and non-reflecting marks extending along its length with the marks having a pitch equal to one space of the typewriter.

43. An electro-optical typewriter attachment designed to be secured to a conventional typewriter of the kind having a plurality of key-actuated typeheads that are selectively physically moved to a common printing position during operation, the attachment being secured adjacent the common printing position and comprising a single source of illumination, a light transmitting optical system for directing light from said single source of illumination onto serially arrayed characteristic coded reflecting and non-reflecting patterns formed on respective key-actuated typeheads, a unitary fibre optic bundle including a light receiving branch path for serially receiving light reflected over a single optical path from coded patterns formed on respective key-actuated typeheads and illuminated by the light transmitting optical system, and a single photosensitive element having the light output from the light receiving branch path of the fibre optic bundle directed thereon for converting the intelligence contained in received alternate pulses of reflected light into serially coded electrical signals which are characteristic of the individual characters and markings represented by the keys of the typewriter.

3,847,263
ENGLISH KEYBOARD SCHEME

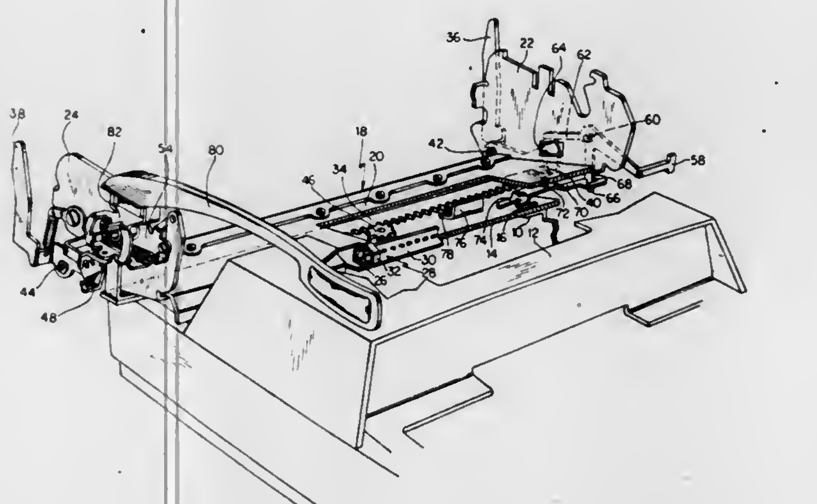
X, Box 1598, Kingston, Ontario, Canada
Filed Mar. 7, 1973, Ser. No. 338,922
Int. Cl. B41j *5/10*
U.S. Cl. 197—100 **2 Claims**

1. A keyboard scheme for use on typewriters or other typographical equipment which has the character keys for letters arranged in a home row, an upper row and a lower row such that the letter keys are adjacent to each other in the following successive and fixed order whether it is from left to right or from right to left: on the home row as follows, O, A, E, I, U, H, N, T, R, and S; on the upper row as follows, P, Y, M, L, D, C, and F such that P is located over the corresponding position of I on the home row and that F is located over the corresponding position of S on the home row; and, on the lower row as follows, X, Q, K, J, V, B, G, W, and Z such that X is located below the corresponding position of A on the home row and that Z is located below the corresponding position of S on the home row.



3,847,264
COLLAPSIBLE LINE SPACE LEVER MECHANISM

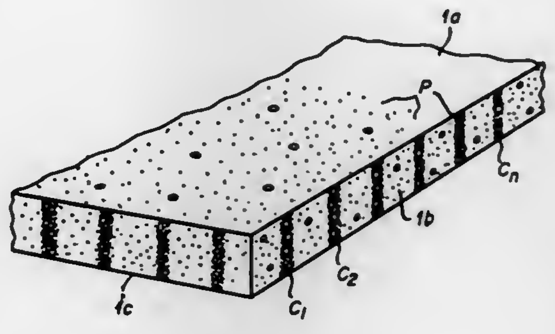
James E. Harmon, Gorton, and Aaron C. Zeamer, Cortland, both of N.Y., assignors to SCM Corporation, New York, N.Y.
Filed Mar. 12, 1973, Ser. No. 340,643
Int. Cl. B41j *19/76*
U.S. Cl. 197—114 R **19 Claims**



1. An improved mechanism for a typewriter having a carriage, an escapement between the carriage and the rest of the typewriter, means for releasing the carriage from the escapement, and a line space lever on the carriage, wherein the improvement comprises means for collapsing the line space lever, means for detaining the line space lever in operating position, and connecting means connected between the carriage release means and the line-space-lever detaining means for releasing the detaining means so that the line space lever can collapse when the carriage release means is actuated to release the carriage from the escapement.

3,847,265
INK RIBBON HAVING AN ANISOTROPIC ELECTRIC CONDUCTIVITY

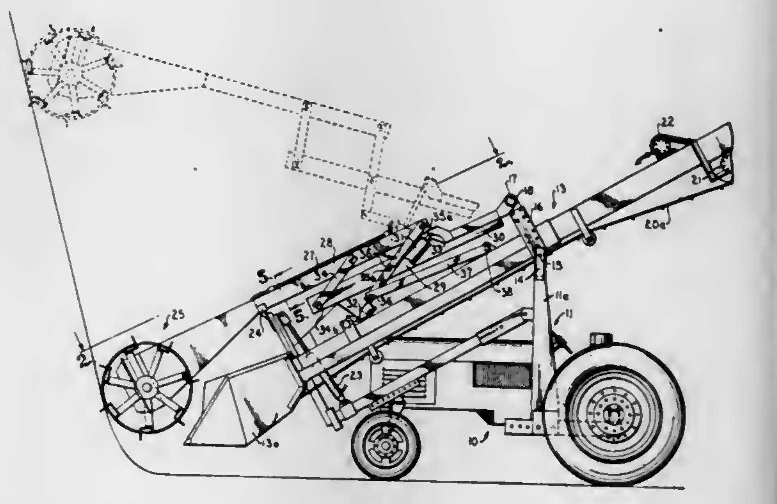
Jacques Ehretsmann, Conches/Geneve; Emile Barbey, Geneve, and Paul Heinzer, Zurich, all of Switzerland, assignors to Battelle Memorial Institute, Carouge/Geneva, Switzerland
Filed Apr. 25, 1973, Ser. No. 354,181
Claims priority, application Switzerland, Apr. 26, 1972, 6235/72
Int. Cl. B41j *31/02*
U.S. Cl. 197—172 **6 Claims**



1. An ink ribbon having an anisotropic electric conductivity in the direction of the thickness of the ribbon, characterized in that said ribbon is formed of a resin containing a plurality of chains of electrically conductive particles extending through the ribbon in the direction of said thickness.

3,847,266
ENSILAGE LOADER WITH AUTOMATICALLY POSITIONED CUTTER REEL

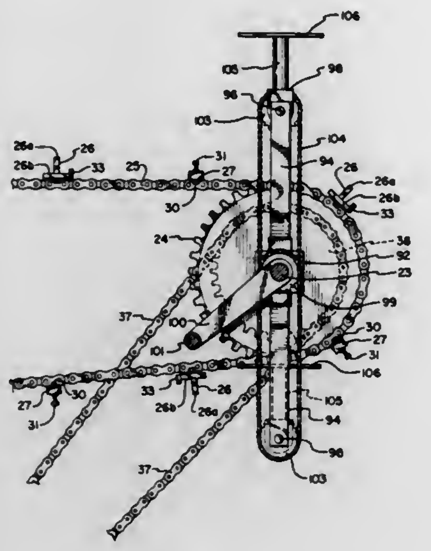
Delbert L. Cox, Garden City, Kans., assignor to Butler Manufacturing Company, Kansas City, Mo.
Filed Apr. 5, 1973, Ser. No. 348,243
Int. Cl. B65g *65/06*
U.S. Cl. 198—9 **2 Claims**



1. In apparatus for removing ensilage from a stack of ensilage, the combination with a conveyor having a receiver adjacent and near the bottom of the stack and a pivotal main boom movable to different elevations above the conveyor, of
an extension boom associated with and forming an extension of said main boom,
an ensilage cutter mounted at the outer end of said extension boom, and
link means interconnecting said extension boom and said main boom for interrelated relative movement therebetween, said link means effecting movement of said extension boom relative to said main boom to vary the radial distance of said cutter from the main boom pivot axis in response to pivotal movement of said main boom.

3,847,267
PICKUP MECHANISM

Dan H. Patten, Jr., 4020 E. Washington St., Phoenix, Ariz. 85034
Division of Ser. No. 245,794, April 20, 1972. This application Apr. 5, 1973, Ser. No. 348,038
Int. Cl. B65g *47/00*
U.S. Cl. 198—20 R **1 Claim**

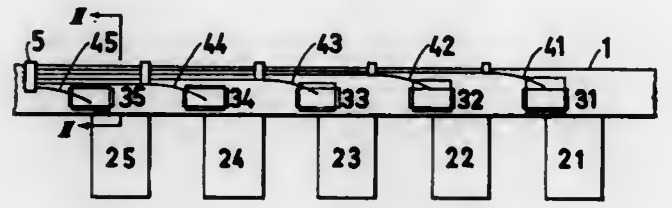


1. A pickup mechanism for use in roof tile fabricating machines and the like comprising
- spaced continuous conveyor means across which items are positioned to be transported;
- support means at opposite sides of the conveyor means;
- a horizontally disposed axle journaled through said support means;
- means for turning said axle;
- a hub centrally secured on said axle;
- a pair of oppositely extending U-shaped brackets having their webs connected to said hub;
- a stub shaft carried by the ends of each said bracket;
- a support rotatably mounted on each said stub shaft;
- a sprocket means connected to each said support;
- a pair of sprockets journaled on said axle;
- a chain trained over each sprocket means on a bearing support and one of said sprockets journaled on the axle; and
- adjustable means for rotating said sprockets journaled on the axle and for fixing their rotational positions with respect to the support means, said adjustable means comprising
- an arm fixed to each sprocket journaled on the axle and extending to the adjacent support means,
- arcuate opening means in each said support means, and
- bolt means extending through said arcuate opening means and threaded into the arm extending thereto to fix the arm to the support means.

3,847,268
IDENTIFICATION DEVICE ON A CONVEYOR BAND

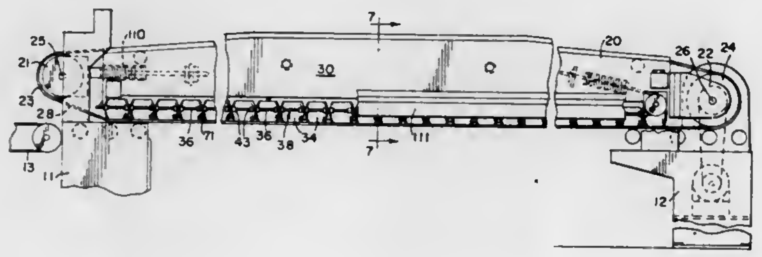
Norman Leroy Duell, Fulton, N.Y., assignor to Societe D'Assistance Technique Pour Products Nestle S.A., Lausanne, Switzerland
Filed June 11, 1973, Ser. No. 368,640
Int. Cl. B65g *43/00*
U.S. Cl. 198—40 **2 Claims**

1. Apparatus for identifying the station origin of a box having lateral and transverse closure flaps delivered with at least its lateral flaps in an open position onto a traveling conveyor from one of a series of delivery stations, said apparatus including: cm
- a corresponding series of parallel rails disposed above and extending longitudinally of said conveyor, said rails further being spaced laterally of said conveyor, the rails being of staggered lengths to have each end associated with a predetermined station, the said end of each rail being curved to define a terminus thereof substantially opposite its respective associated station whereby a lateral flap of a box entering said conveyor from the associated station is caused to engage the correspondingly associated rail to be held between it and an adjacent rail, and
- a corresponding series of swithces disposed downstream of said stations and each having switch actuating means extending between the rail associated therewith and a rail adjacent thereto whereby a box flap held between said associated rail and rail adjacent thereto will operate said switch actuating means during the travel of said box on said conveyor.



3,847,269
MAGNETIC RAIL TYPE CONVEYOR UNIT

Dario Buccicone, Gary, Ind., assignor to Bucciconi Engineering Co., Inc., Gary, Ind.
Filed Sept. 4, 1973, Ser. No. 393,780
Int. Cl. B65g *17/46*
U.S. Cl. 198—41 **25 Claims**



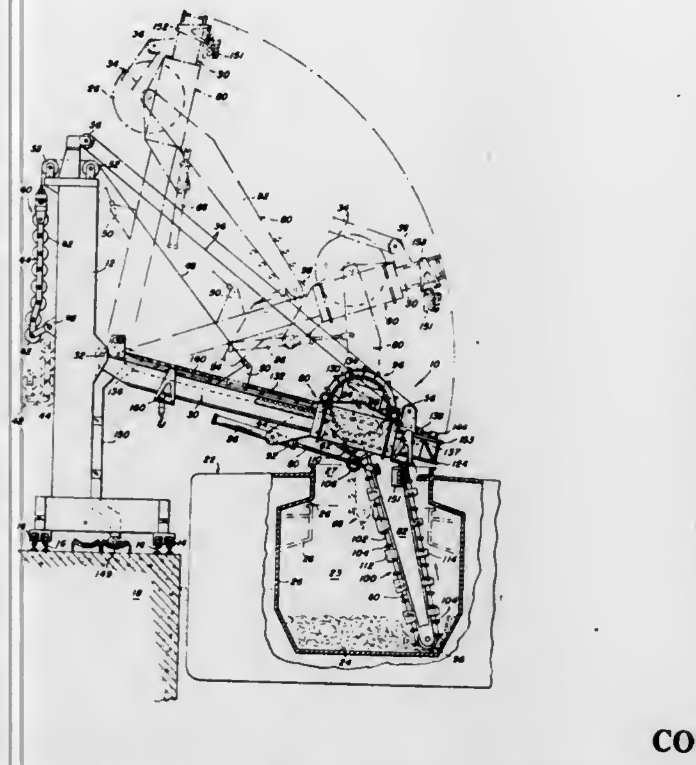
1. A conveyor for metal sheets which comprises an elongate frame having an endless traveling belt member supported on rotatable members mounted at opposite ends of said frame, a plurality of longitudinally spaced magnet assemblies mounted for vertical movement on said frame above the lower run of said belt member, said magnet assemblies including magnets which are operable to exert a magnetic force on a sheet and to hold the same in engagement with the lower surface of said belt member for travel with said belt member, and means extending lengthwise of said frame and connected to said magnet assemblies for suspending said magnet assemblies on said frame, which means is in the form of a cable having a degree of flexibility so as to permit limited movement of said magnet assemblies relative to each other.

3,847,270
MATERIAL DIGGING AND TRANSPORTING APPARATUS

Aubrey C. Briggs, Carnegie, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.
Division of Ser. No. 188,863, Oct. 13, 1971, Pat. No. 3,756,375. This application Jan. 4, 1973, Ser. No. 320,862
Int. Cl. B65g *17/12*
U.S. Cl. 198—140 **7 Claims**

1. A material digging and transporting apparatus for use with bulk material handling apparatus, comprising:

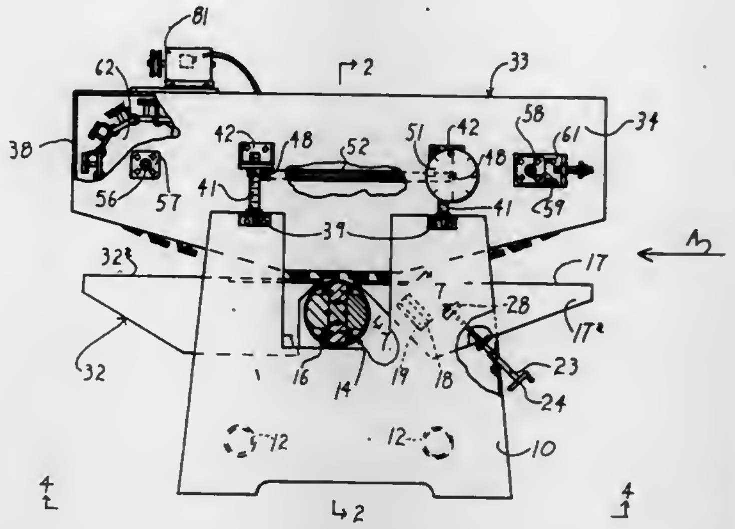
- an elongated rigid bucket elevator ladder frame having an upper mounting structure for attachment to another support member with said ladder frame extending in a generally downward direction from said support member; upper and lower sprockets rotatably supported by said ladder frame, said upper sprocket having a larger diameter than the lower sprocket;
- drive means for rotating said upper sprocket;
- endless chain means forming a closed loop around said sprockets and including spaced buckets being shaped and arranged on said chain means to scoop material as they are advanced past said lower sprocket and to discharge material as they are advanced past the upper sprocket;
- guide means carried by the elongated frame for providing positive guidance for the endless chain means both on the inside and the outside of the loop thereof for a substantial distance along the elongated frame to define ascending and descending runs of said endless chain means between said upper and lower sprockets;
- idler wheel means engaging said endless chain means on an unsupported portion of one run between said guide means and the upper sprocket for guiding the path of said endless chain therebetween; and
- support means connected to the ladder frame and on which said idler wheel means is rotatably mounted, said support means being adjustable to selectively position said idler wheel means along a path substantially transverse to said one run of said endless chain means for adjusting the slack therein to the extent that the endless chain means may be selectively loosened to permit the buckets carried thereby to drag along the material between the lower end of the guide means on the descending run and the lower sprocket.



3,847,271
SANDER WITH IMPROVED FEED MECHANISM

Donnell H. Culley, Jr., P.O. Box 1581, Morristown, Tenn. 37814
Filed Aug. 9, 1973, Ser. No. 387,142
Int. Cl. B65g *19/00*; **B24b** *47/20*
U.S. Cl. 198—168 **4 Claims**

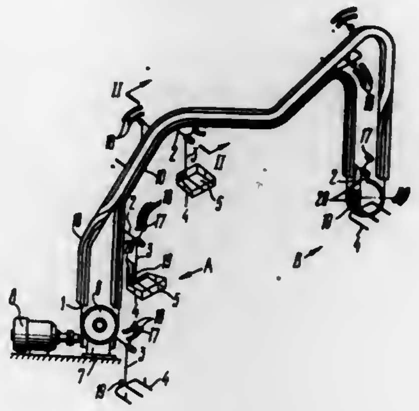
1. For use in feeding work pieces to a planer or the like comprising,
- a. a pair of spaced apart parallel chains supported for travel in unison,
- b. a plurality of transverse members each comprising a pair of parallel portions carried by the chains and spanning the space between them,
- c. a plurality of work piece engaging and feeding assemblies carried by each transverse member, each said assembly comprising:
  1. a member having an enlarged foot-like work piece engaging end,
  2. one of said pair of parallel portions of the transverse members being spaced further from the foot-like work engaging piece end than the other,



  3. rod-like members slidably passing through said portions of the transverse member,
  4. said work piece members being carried on the ends of the rod-like members,
  5. a compression spring surrounding the rod-like members and effective to bias the work piece members toward the work piece, and
  6. pads of friction material on the foot-like work piece engaging end of said work piece members disposed to contact the work piece.

3,847,272
CONVEYOR FOR FORWARDING EITHER BATCHES OR PILES OF NEWSPAPERS

Nikolai Ivanovich Anikanov, Bolshaya Bronnaya ulitsa, 2/6, kv. 6; Leonid Pavlovich Grachev, ulitsa Serafimovicha, 2, kv. 181, both of Moscow; Grigory Iosifovich Zax, ulitsa Mechnikova, 14a, kv. 24, Kiev; Grigory Avramovich Radutsky, 16 Parkovaya ulitsa, 49, korpus 2, kv. 68, Moscow, and Rafail Efimovich Kheifets, Brest-Litovsky prospekt, 162, kv. 30, Kiev, all of U.S.S.R.
Filed Oct. 23, 1973, Ser. No. 408,433
Claims priority, application U.S.S.R., Apr. 13, 1973, 1899751
Int. Cl. B65g *17/20*
U.S. Cl. 198—177 R **5 Claims**



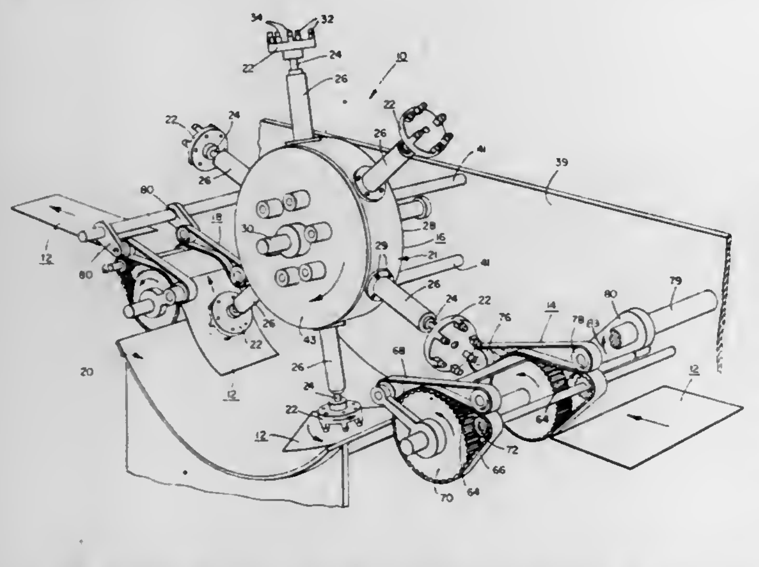
1. A conveyor for forwarding piles of printed signatures such as newspapers, including a closed three-dimensional chain adapted to be advanced; means for effecting advancing of said chain; a plurality of substantially horizontal spindles

uniformly spaced along said chain and carried thereby; a respective plurality of rods mounted on said spindles in a cantilever fashion, platforms for supporting said piles of printed signatures mounted on said rods; a first half-coupling fixed to each said spindle at the area of mounting thereon of the respective one of said rods; a second half-coupling freely rotatable about each said spindle and fixed to the respective one of said rods, said half-couplings being maintained in permanent resilient engagement to retain said respective platforms together with said piles carried thereby against rocking motion, as said chain is being advanced; and means urging said half-couplings into permanent resilient engagement.

3,847,273
TURNING DEVICE FOR FLEXIBLE WEB PRODUCT

Eric S. Buhayar, Swarthmore, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Apr. 2, 1973, Ser. No. 346,934
Int. Cl. B65g *47/24*
U.S. Cl. 198—236 **10 Claims**



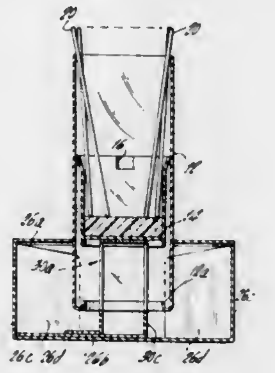
1. An apparatus for turning a moving discrete flexible web product within its own plane, said apparatus including, in seriatim, an inlet conveyor, a turning section and an outlet conveyor, the improvement in which the turning section includes:
  a. a concave, substantially cylindrical support surface for supporting a face of said web product received from said inlet conveyor;
  b. a turning head having web-product engaging means, said turning head being mounted for movement along a path concentric with, and closely spaced to said substantially cylindrical support surface to confine at least a portion of the web product between the web-product engaging means of the turning head and said support surface and to move said web product over said support surface; and
  c. actuating means for rotating said turning head through a predetermined number of degrees about an axis substantially perpendicular to said web product as said turning head moves along said concentric path, whereby said web product is rotated through a predetermined arc within its own plane for delivery to said outlet conveyor.

3,847,274
CAPILLARY TUBE DISPENSING VIAL AND STAND

Sumter R. Inglish, Stamford, Conn., and Walter John May, Queens Village, N.Y., assignors to Propper Manufacturing Co. Inc., Long Island, New York, N.Y.

Continuation-in-part of Ser. No. 135,916, April 21, 1971, abandoned. This application Sept. 21, 1972, Ser. No. 290,990
Int. Cl. B65d *5/50, 5/52, 85/20*
U.S. Cl. 206—44 R **1 Claim**

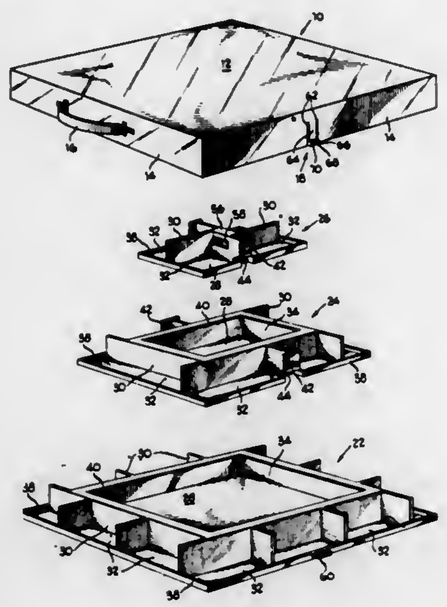
1. In combination, a vial for storing and dispensing capillary tubes comprising an open-end housing with its height greater than twice its diameter and having upper and lower ends, a cup having a cross-section substantially conforming to the cross-section of said housing and being received within said housing for sliding movement therein, the height of said cup being less than one-half the height of said housing, a stop at the lower end of said housing preventing said cup from passing through said lower end, a top closure for said vial adapted to overlay the upper end of said housing, sections of resilient material in the base of said cup and on the underside of said top closure, the spacing between said sections of resilient material when said vial is closed being slightly less than the length of said capillary tubes so that said tubes tightly engage said resilient material when said vial is closed preventing axial and lateral movement of said tubes and reducing breakage during handling, and a stand for said vial, said stand including a support ledge for engaging the lower portion of said housing and for supporting said vial in a substantially upright position and an upstanding projection mounted on said stand adjacent said ledge, said projection being received within the lower end of said housing and passing through said lower end of said housing to engage the lower end of said cup, said cup when in position on said projection being elevated by a height sufficient to cause the upper ends of said tubes to flare radially outwardly, separating individual tubes for easy removal.



3,847,275
TOY AUTOMOBILE CARRYING CASE

Howard J. Morrison, Deerfield, and Donald F. Nix, Hanover Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed July 2, 1973, Ser. No. 375,791
Int. Cl. B65d *11/10, 1/36, 25/04*
U.S. Cl. 206—45 **8 Claims**

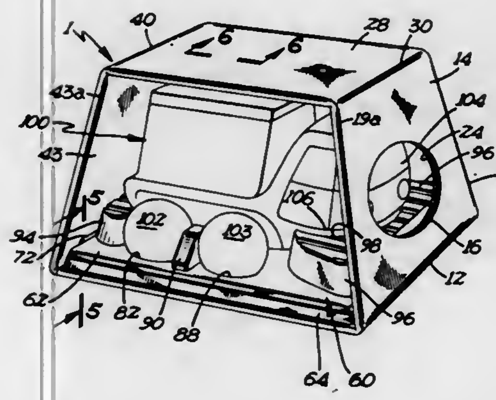


1. A collapsible, compartmented toy-receiving structure, comprising: a plurality of generally planar bases stacked one on top of the other, the size of said bases being progressively smaller from bottom to top, each of said bases including a plurality of upstanding walls in turn defining a plurality of individual toy-receiving compartments, each compartment having an open upper boundary and at least one open side boundary adjacent the periphery of the associated base, all of said bases save for the uppermost base including an upwardly open nesting compartment generally larger than any of said individual toy-receiving compartments and sized to snugly but slidably receive the immediately uppermost and adjacent base; and releasable means whereby each base may be locked at substantially the upper extremity of the nesting compartment on the immediately lowermost base; whereby said structure may be collapsed by manipulation of said releasable means to cause each of said bases to nest and may be expanded and held in place whereby toys received in any of said toy-receiving compartments on any of said bases have their tops and at least one side fully exposed to be viewed.

3,847,276
DISPLAY CONTAINER FOR TOYS

Alphonse C. Lehner, Minneapolis, and Paul E. Boeye, Mound, both of Minn., assignors to Liberity Carton Co., Minneapolis, Minn.

Filed Oct. 2, 1972, Ser. No. 294,314
Int. Cl. B65d *5/04, 5/50, 25/10*
U.S. Cl. 206—45.14 **6 Claims**



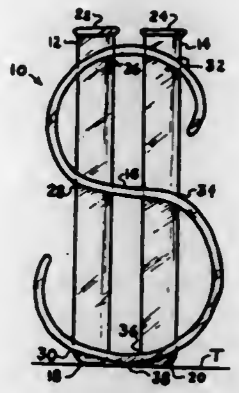
1. A display container comprising:
an elongated, generally rectangular base tray having a top, article receiving surface with retaining means preformed thereon integrally therewith for direct engagement with an article to be housed within the container on top of said base tray;
an elongated fiberboard member having two, normally free, opposite ends wrapped around said tray to a generally rectangular shape to provide a housing open on two sides having a bottom wall underlying and coextensive with said article receiving surface of said base tray and a top wall spaced apart from said bottom wall to accommodate an article therebetween;
a pair of opposed end walls of said fiberboard housing extending between said top and bottom walls in secure restraining engagement with the opposite ends of said tray, and said end walls being hingedly connected to said top wall along fold lines; and
retaining means holding said elongated fiberboard member in said generally rectangular housing shape.

3,847,277
DOLLAR SIGN BANK

Sharon Chilcote Doner, B16 Garden House Apts., 472 E. College Ave., State College, Pa. 16801

Filed Nov. 30, 1972, Ser. No. 310,675
Int. Cl. A44c *21/00;* **B65d** *3/24*
U.S. Cl. 206—.84 **4 Claims**

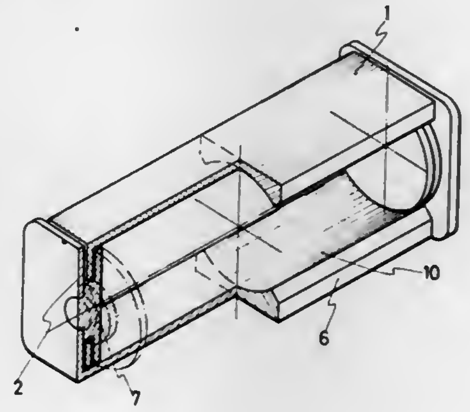
1. A free-standing coin bank comprising first and second tubes having open tops and closed bottoms, and a curved strip having a plurality of apertures therein adjustably holding said first and second tubes upright in parallel-spaced relation with the respective lower ends thereof protruding through the lowermost portion of the curved strip, the curved strip being in the shape of an S, the tubes being spaced in the plane of the S with the tops thereof protruding upward through the upper portion of the S, the overall form comprising a dollar sign, the bottom of the curved strip being effectively flat in transverse section with the lowermost portion thereof position in substantially coplanar relation with the lower ends of the tubes.



3,847,278
CASE-LIKE PURSE

Ildefonso Carrascosa Valles, Botanico Cavanilles 8-7°, Valencia, Spain

Filed Jan. 9, 1973, Ser. No. 322,145
Claims priority, application Spain, Feb. 2, 1972, 176826
Int. Cl. B65d *3/00, 85/58;* **A45c** *1/00*
U.S. Cl. 206—0.82 **1 Claim**



1. A case-like coin purse comprising:
a first elongated piece having opposite substantially disc-shaped ends, each of said ends having perforations therethrough;
a second elongated piece having substantially square-shaped opposite ends, each of said ends having orifices therethrough;
a pair of rollers, one each being fixedly connected to said ends of said second piece at said orifices therein;
each of said rollers and the opposed surface of the respective end of said second piece forming therebetween a circular space;
said first piece being rotatably mounted by said perforations in said ends thereof about said rollers with one of said ends of said first piece being slidable in each of said circular spaces;
the inner surface of each of said first and second pieces being in the form of a longitudinally extending concave recess having a lateral cross-sectional shape corresponding to a 90° arc of a circle having a diameter at least equal to that of the coins to be stored in said purse;
said second piece having a flat outer surface forming a base for said purse;
said first piece being movable with respect to said second piece from a first coin retaining position wherein said recesses oppose each other, to a second coin releasing

position wherein said recesses are adjacent and form a continuous semi-cylindrical cavity, there being longitudinal windows between the edges of said pieces when said first piece is in said first position; and

the exterior shape of said purse when said first piece is in said first position being substantially that of a rectangular parallelepiped with square-shaped opposite ends.

3,847,279

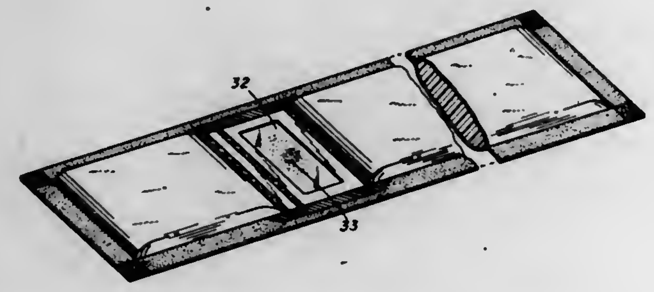
PACKAGE FOR PLURAL REACTABLE COMPONENTS WITH RUPTURABLE ULTRASONIC SEAL

William Herbert Montgomery, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 878,423, Nov. 20, 1969, Pat. No. 3,749,620. This application Mar. 21, 1973, Ser. No. 343,573

Int. Cl. B65d *81/32*

U.S. Cl. 206—219 **1 Claim**



1. A plural compartment mixing package fabricated of

a flexible laminate, at least the inner layer of which is thermoplastic, and which seals to itself on heating and at least one stronger adjacent layer which has a higher melting point,

fabricated into a plurality of separate compartments,

a fluent material in at least one of said compartments and a second material in another compartment, said fluent material and said second material being mixable at a time of use, but being non-compatible on storage,

said laminate being strongly heat-sealed around the periphery of the compartments, and being separably sealed between said compartments wherein:

- a. the separable seal consists of at least three separate ultrasonic seals, forming security compartments between these separate seals which tend to prevent and to show any compromise of security of the ultrasonic seals, between flat undisturbed portions of the laminate, with later formed heat seals overlapping the ends of said ultrasonic seals and in leaktight juxtaposition thereto;
- b. at least part of the laminate forming one such security compartment being transparent, and
- c. a highly colored soluble dye in said one security compartment having said transparent part, whereby it leakage into such compartment occurs, the dye is dissolved, and becomes readily visible.

3,847,280

STERILE PACKAGE FOR CLINICAL THERMOMETERS AND THE LIKE AND METHOD OF MAKING IT

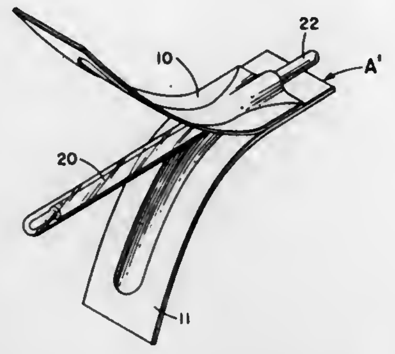
George W. Poncy, Chatham, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation of Ser. No. 77,917, Oct. 5, 1970, Pat. No. 3,732,975, which is a continuation-in-part of Ser. No. 736,218, June 11, 1968, Pat. No. 3,552,558. This application Aug. 31, 1972, Ser. No. 285,255The portion of the term of this patent subsequent to Jan. 5, 1988, has been disclaimed.

Int. Cl. A61b *19/02*

U.S. Cl. 206—306 **5 Claims**

1. A sheath-package for surgical instruments and the like comprising superposed laminations of material formed into two separate layers, the inner layer of each lamination forming a sheath for the reception of an instrument, said sheath having an open end and a closed end, the outer portions of each lamination comprising a cover for said sheath, said laminations being joined together by a seal defining said sheath, said seal between said laminations being constructed so that said outer portions are strippable from said sheath along said seal upon the insertion of an instrument into said sheath.



3,847,281

PACKAGE FOR AMPOULES

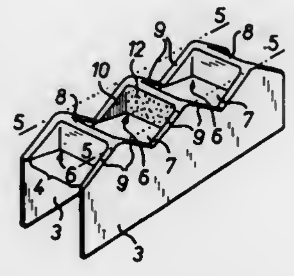
Ernst Vogeli, Hermetschloostrasse 75, CH-8048 Zurich, Switzerland

Filed July 10, 1972, Ser. No. 269,944

Claims priority, application Switzerland, July 8, 1971, 10083/71

Int. Cl. B65d *5/48*

U.S. Cl. 206—437 **8 Claims**



1. A unitary cardboard packing container for receiving small objects, comprising two parallel spaced apart side walls, a middle portion joining said two side walls, said middle portion having a plurality of hollow, V-shaped ribs opening towards the space between said side walls and extending transversely between said side walls, a plurality of substantially hexagonal apertures of the same shape and size between adjacent ribs for receiving objects to be packed, the region of said side walls adjacent said ribs having edges with a zig-zag configuration, and connecting portions for joining said ribs to said zig-zag edges, said connecting portions having substantially a triangular shape and being connected by bending edges to said ribs and to said side walls, said side walls, ribs and connecting portions being formed of a single piece of sheet material.

3,847,282

DISPLAY CARTON

Peter C. Collura, Los Altos, Calif., and Michael Allen Kipp, Glen Ridge, N.J., assignors to Container Corporation of America, Chicago, Ill.

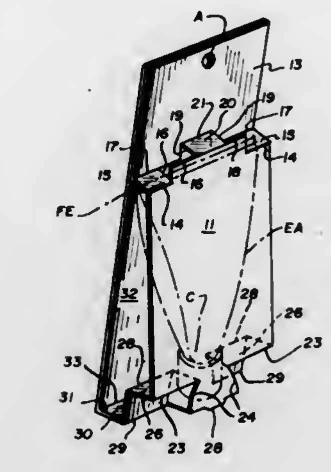
Filed Jan. 2, 1973, Ser. No. 320,474

Int. Cl. B65d *75/08, 5/08*

U.S. Cl. 206—491 **1 Claim**

1. An open end display carton for an elongated article of merchandise such as a collapsible tube or the like having a closure end and an opposite flattened end, said carton being formed from a cut and scored blank of paperboard or the like comprising:

- a. a generally rectangular base panel;
- b. a first end structure foldably connected at one end of said base panel for supporting an end of said tube;
- c. a second end structure foldably connected at the other end of said base panel for supporting the opposite end of said tube;
- d. both of said structures having laterally spaced abutments defined by spaced substantially parallel fold lines to said fold line for having spaced cut lines substantially perpendicular thereto support of the ends of said tube;
- e. a first closing panel foldably connected to said first end structure;
- f. a second closing panel foldably connected to said second end structure;
- g. said second closing panel extending over said base panel in spaced relationship thereto and being secured to said first closing panel.



3,847,283

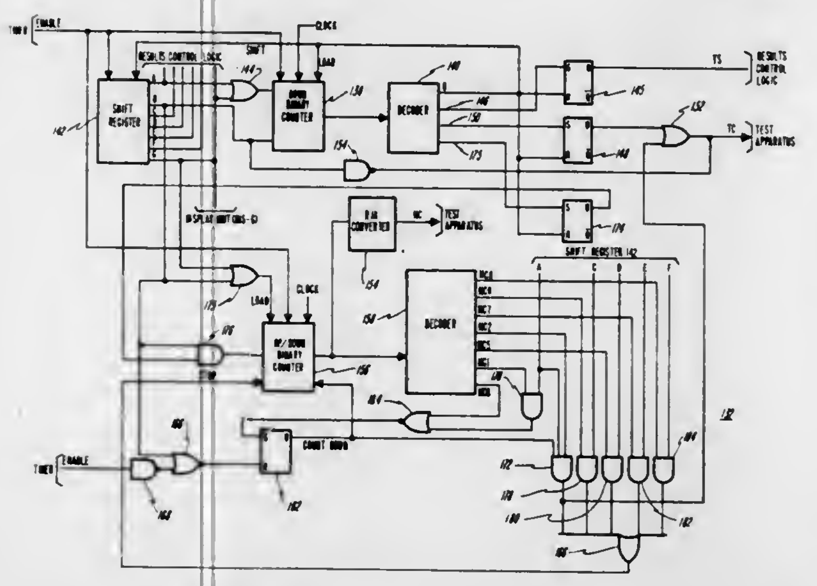
REED SWITCH ANALYZER

Howard J. Squires, 105 Ellingwood Dr., Rochester, N.Y. 14618, and Donald C. Rimlinger, RD 1, Pond Rd., Holcomb, N.Y. 14469

Filed June 4, 1973, Ser. No. 366,938

Int. Cl. B07c *5/00*

U.S. Cl. 209—74 M **14 Claims**



1. A reed switch analyzer to be used in combination with an indexing-type multi-head reed switch machine for testing the characteristics of reed switches against predetermined standards, wherein each reed switch is produced by a particular machine head, comprising:

a test head having pairs of oppositely placed support notches along a horizontal surface thereof, each notch pair defining a station for receiving a reed switch and transport means for simultaneously lifting any reed switches positioned therein from their respective stations and moving them into the next succeeding test stations respectively in synchronism with the indexing of the reed switch machine;

means for loading reed switches into a first station of the test head, one at a time, from the reed switch machine;

test means associated with said test head for performing a different test on the reed switches at different stations;

identification circuit means responsive to signals from said test means for identifying good and bad switches, a good switch being defined as one which has met all test standards and a bad switch being one which has failed to meet at least one test standard, and

discharge means responsive to signals from said identification circuit means for separating the good switches from the bad during unloading, the test means being arranged to perform a concentricity test at one of said stations by pneumatically moving two plungers having aligned cavities in their faces toward one another against the leads of the reed switch in the station, the leads of a good switch being encompassed by both the cavities thereby permitting sufficient travel of both plungers to actuate respective microswitches thereof for providing a signal indicating concentricity.

3,847,284

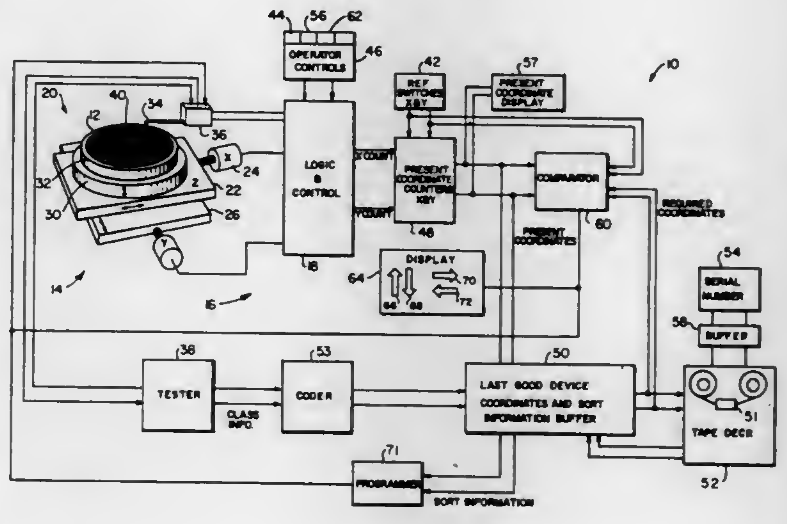
MAGNETIC TAPE DIE SORTING SYSTEM

Mordechai Wiesler, Lexington, and Samuel Havdala, Woburn, both of Mass., assignors to Teledyne, Inc., Hawthorne, Calif.

Filed May 11, 1973, Ser. No. 359,305

Int. Cl. B07c *5/344*

U.S. Cl. 209—81 R **17 Claims**



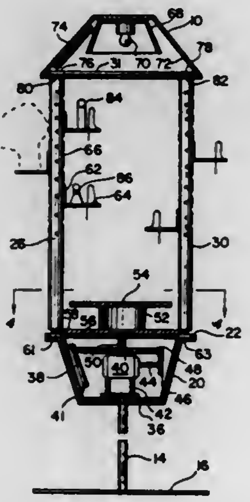
1. A method of sorting semiconductor devices from a wafer of said devices, said method comprising the steps of:

- a. marking said wafer with reference indicia describing a preselected arbitrary reference coordinate position;
- b. mounting said wafer on probe and test means having test probe means and means for recording coded signals on a recording stratum;
- c. registering said test probe means and said reference indicia;
- d. generating a coded signal defining said preselected reference coordinate position as an arbitrary reference coordinate position for said reference indicia;
- e. recording said arbitrary reference coordinate position coded signal on said recording stratum;
- f. probing and testing said wafer by registering said test probe means and selected ones of said devices;
- g. generating coded data signals defining the absolute coordinate position of said selected ones of said devices relative to said arbitrary reference coordinate position for said reference indicia and the characteristics of said devices at said absolute coordinate position;
- h. recording said coded data signals for said selected ones of said devices on said recording stratum;

i. transferring said wafer and recording stratum to transfer means having device removing means and means for reading said recording stratum;
j. registering said device removing means and said reference indicia;
k. synchronizing the position of said device removing means and said reference indicia relative to the position of said test probe means and said reference indicia as defined by said arbitrary reference coordinate position;
l. reading said recorded coded data signals and selectively registering said device removing means and selected ones of said devices having preselected characteristics at selected absolute coordinate positions as defined by said recorded data signals; and
m. removing selected ones of said devices from said wafer according to said recorded coded data signals.

3,847,285
ILLUMINATED DISPLAY STAND FOR WIGS AND COSMETICS

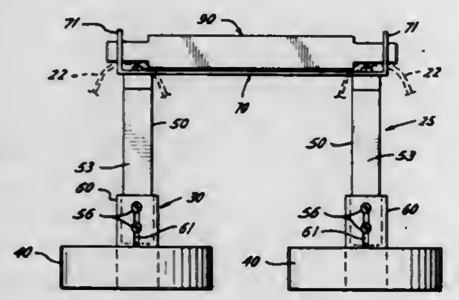
Bernard Leprince, 5921 Onandaga Rd., Bethesda, Md. 20014
Filed July 31, 1973, Ser. No. 384,335
Int. Cl. A47f *5/25*
U.S. Cl. 211—1.5 **13 Claims**



1. An illuminated display stand comprising:
a. a base;
b. drive means supported in said base;
c. a plurality of perforated and vertically extending display rods individually rotatable about their vertical axes while being journaled in said base, said display rods including drive elements engaging said drive means and
d. hook means engaging with the perforations in said display rods and extending laterally thereof as a display support.

3,847,286
HOLDER FOR GASOLINE LANTERN

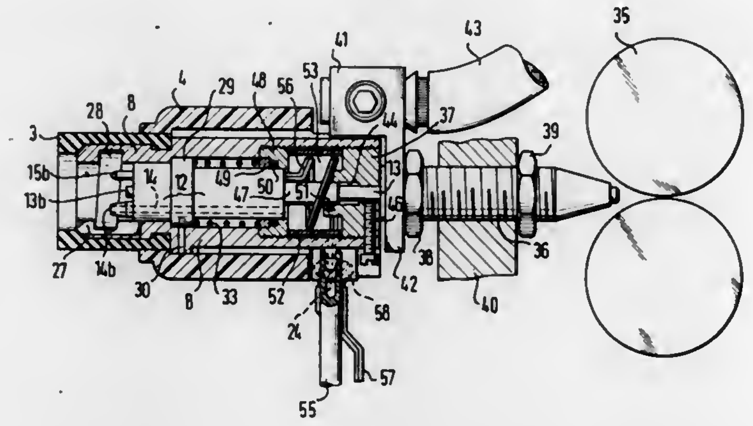
Billy R. Garrett, Fort Worth, Tex. 76134
Filed Jan. 28, 1974, Ser. No. 436,934
Int. Cl. F16m *13/00*
U.S. Cl. 211—13 **2 Claims**



1. In a device for displaying a pair of lighted gasoline lanterns arranged in side by side, spaced apart relation to each other from a small pleasure boat, usually powered by an outboard engine, having gunwales of hollow construction characterized by a broad top surface and having inner and outer wall surfaces extending downwardly from the top surface, the combination of a pair of individual holders, each of which in use supports one lantern, each including a cylindrical receptacle, comparatively short relative to its diameter, which in use is disposed vertically and has the bottom of a lantern received bodily therein, and an elongated metal strip, characterized by its inherent spring tension but soft and easily bent, which is bent substantially 180 degrees intermediate its ends and in use has portions thereof in overlying engagement with the top surface and the adjacent inner and outer wall surfaces of a gunwale, in yieldable, frictional engagement therewith, the last mentioned portion extending downwardly a substantial distance below the top surface and having means removably and adjustably connecting it to the receptacle, to support the receptacle on the gunwale at a predetermined distance below the top thereof, the individual holders of the pair having connecting means, rigidly and removably connected to middle portions of the respective strips and adjustable longitudinally relative thereto, connecting the holders in side by side, spaced apart relation to each other, and detent means integral with the connecting means and coacting therewith for engagement by the bails or handles of a pair of lanterns each having its bottom in place in one of the receptacles.

3,847,287
SINGLE-POLE ELECTRICAL PLUG CONNECTION FOR SHIELDED ARC WELDING APPARATUS

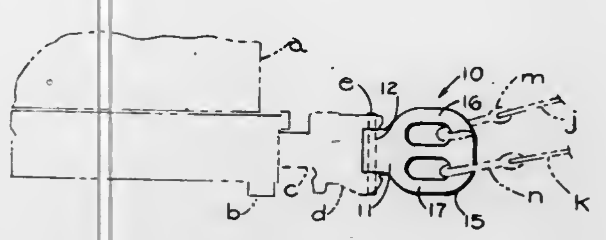
Wilhelm Dinse, Konigsreihe 12, 2000 Hamburg 70, Germany
Continuation-in-part of Ser. No. 277,086, Aug. 1, 1972, abandoned, Continuation-in-part of Ser. No. 277,087, Aug. 1, 1972, abandoned. This application June 1, 1973, Ser. No. 366,183
Claims priority, application Germany, June 3, 1972, 7220830; June 3, 1972, 7220918
Int. Cl. B23k *9/00*
U.S. Cl. 219—130 **11 Claims**



1. A single-pole electrical plug connection for mounting in the base of a mounting plate and through which a fusible endless electrode wire from a feed mechanism, and auxiliary utilities, are supplied for shielded arc welding apparatus, the connection comprising coaxially disposed plug and socket bodies assembled and interlocked by a relative endwise displacement and rotational movement, the plug and socket bodies having interfitting means permitting relative rotation between the plug body and the socket body and about a longitudinally extending axis and said interfitting means drawing said bodies tightly together by reason of such rotation, said plug and socket connection having a pair of guide tubes for the fusible endless electrode wire and arranged centrally in said bodies with connector means for releasably joining the tubes together, an endwise displaceable and rotatable insulated insert in the socket body and having the guide tube of the socket body affixed therein, a spring urging the insulated insert and guide tube toward the plug body to maintain said connector means together, additional connector means in the plug body and in the insulated insert through which auxiliary utilities are supplied, the socket body having an adapter pin secured therein, said pin having a longitudinal wire-carrying bore therethrough in alignment with said guide tubes and also having means for attachment to such a mounting plate and electrode wire feed mechanism.

3,847,288
WINCH LINE HITCH MEMBER FOR DERAILED CARS AND METHOD OF USING SAME

Glenn L. Hulcher, Virden, Ill., assignor to M. L. Hulcher Company, Virden, Ill.
Filed Apr. 18, 1973, Ser. No. 352,253
Int. Cl. B61g *3/00*
U.S. Cl. 213—111 **3 Claims**

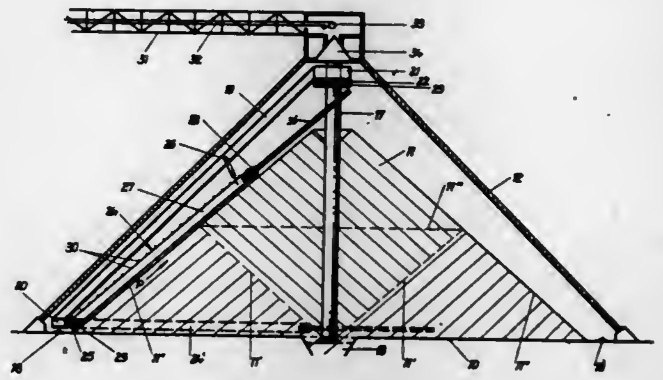


1. For pivotal mounting to the knuckle pin of a derailed railroad car coupler in place of the knuckle normally provided in the forward part of such coupler,
a winch line attachment fixture comprising
a rigid metal hitch member having at its aft end
a lug portion rounded about a vertical axis and whose depth substantially equals the depth provided within such coupler for hinging such knuckle,
a vertical bore through said lug portion along said axis, the bore having a diameter sufficient to receive such knuckle pin, and
a winch attachment portion projecting forwardly from said lug portion, whereby to clear the forward part of such coupler,
said winch attachment portion having, adjacent to said lug portion, a vertical substantially planar portion whose depth is at least equal to the depth of the lug portion and projects forwardly to means to which a plurality of winch lines may be secured to extend divergingly forward,
whereby, as winching forces are applied in varying intensities, to pivotally maintain said planar portion in continuous alignment with the resultant of the horizontal components of winch line forces, thereby to cause said planar portion to resist the vertical resultant thereof in the manner of a cantilever beam.

3,847,289
DEVICE FOR THE REMOVAL OF BULK MATERIAL FROM ROUND, CONE-SHAPED PILES

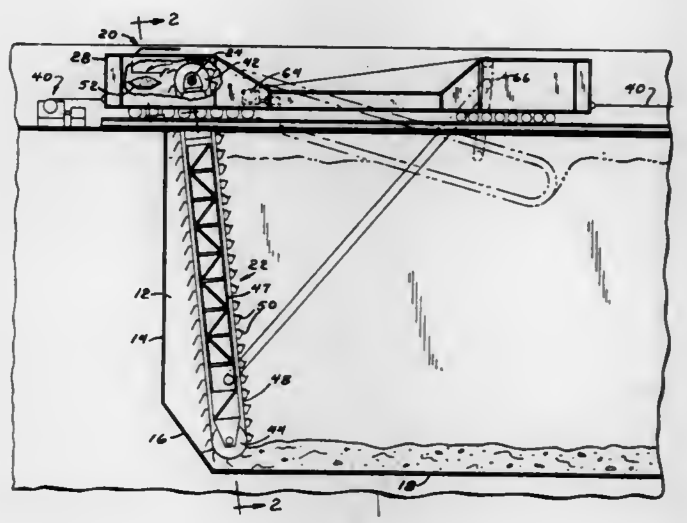
Gerhard Fischer, Dortmund-Kirchhorde, Germany, assignor to Gustav Schade Maschinenfabrik, Dortmund, Germany
Filed June 22, 1973, Ser. No. 372,480
Claims priority, application Germany, June 26, 1972, 2231268
Int. Cl. B65g *65/28*
U.S. Cl. 214—10 **13 Claims**

1. A device for the removal of bulk material from an annular pile through an opening in a support surface beneath the pile and generally in the center thereof comprising, inclined scraper means having lower and upper ends, means supporting said scraper means for rotation about the outer circumferential surface of said pile, said supporting means including center guide means supported above said opening and having an axis generally in alignment with the axis of said opening, circular guide means surrounding said pile on said support surface and generally concentric with the axis of said opening, beam means having a lower end supported by and movable along said circular guide means and an upper end engaged with said center guide means for rotation about the axis thereof, said scraper means including means to engage and displace material in the pile upwardly in the direction from said lower end toward said upper end of said scraper means, means supporting said lower end of said scraper means for pivotal movement of said scraper means in a vertical plane relative to said support surface, and means to pivot said scraper means in said vertical plane.



3,847,290
BULK SHIP UNLOADER

Matthieu Suykens, Belleville, Ontario, Canada, assignor to Borg-Warner (Canada) Ltd., Oakville, Ontario, Canada
Continuation of Ser. No. 217,344, Jan. 12, 1972, abandoned. This application Sept. 26, 1973, Ser. No. 400,988
Int. Cl. B65g *63/00*
U.S. Cl. 214—15 E **1 Claim**

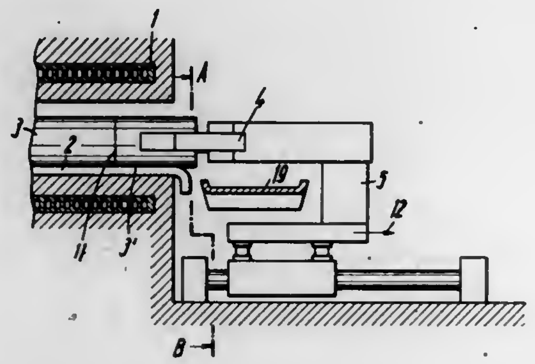


1. Ship mounted apparatus for unloading or reclaiming bulk materials from the hold thereof comprising:
a trolley frame having wheels;
tracks on said ship longitudinally and above said hold for receiving and guiding the wheels of said trolley frame;
means for moving said trolley frame longitudinally of said ship on said tracks;
said trolley frame being greater in length and width than in height above said hold;
a plurality of side-by-side bucket elevator means extending substantially the width of the hold and each comprising a plurality of buckets mounted on a movable means supported on a rigid frame;
each rigid frame being of a width less than its length and the height of said trolley frame and pivotable at one end within said trolley frame between a substantially horizontal position totally within said trolley frame and a vertical position in the hold closely adjacent the bottom thereof;
means to pivot said rigid frames from one position to the other position;

- a transverse extending cross conveyor belt in said trolley frame and movable therewith positioned to receive material from said buckets and to convey said material to the side of said trolley frame, and
- a longitudinal conveyor belt supported by said ship to receive material from said transverse conveyor belt to convey material from said hold.

3,847,291
WORKPIECE GRIPPER HAVING VIBRATING MEANS THEREON

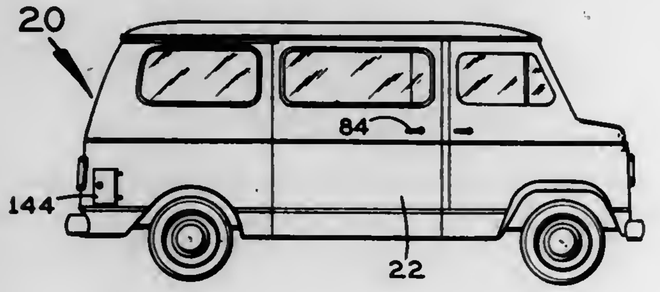
Gerhard Seulen, and Friedrich Scheffler, both of Remscheid, Germany, assignors to AEG-Elotherm GmbH, Remscheid-Hasten, Germany
Filed Jan. 16, 1973, Ser. No. 324,145
Claims priority, application Germany, Mar. 18, 1972, 2213249
Int. Cl. F27b *9/38*
U.S. Cl. 214—27 **10 Claims**



1. In a pusher furnace for inductively heating workpieces to their hot forming temperature before they are ejected at predetermined intervals at the furnace exit, the improvement comprising means for ejecting the fully heated workpieces at the furnace exit including ejecting elements mounted on a holder and adapted to grip the flanks of the workpiece and to withdraw the same in the direction of workpiece advance, said holder being supported so that it can move in a direction normal to the direction of workpiece advance, and a vibrator being coupled to said holder said vibrator preventing fusing of the gripped workpiece with one immediately therebehind.

3,847,292
AUTOMATIC LIFT APPARATUS

Claude E. Williams, 2224 N.W. 6th Ter., Fort Lauderdale, Fla. 33311, and F. Alan Gates, 1109 Orange Isle, Fort Lauderdale, Fla. 33115
Continuation of Ser. No. 260,906, June 8, 1972, abandoned. This application Aug. 8, 1973, Ser. No. 386,725
Int. Cl. B60p *1/44*
U.S. Cl. 214—75 G **1 Claim**

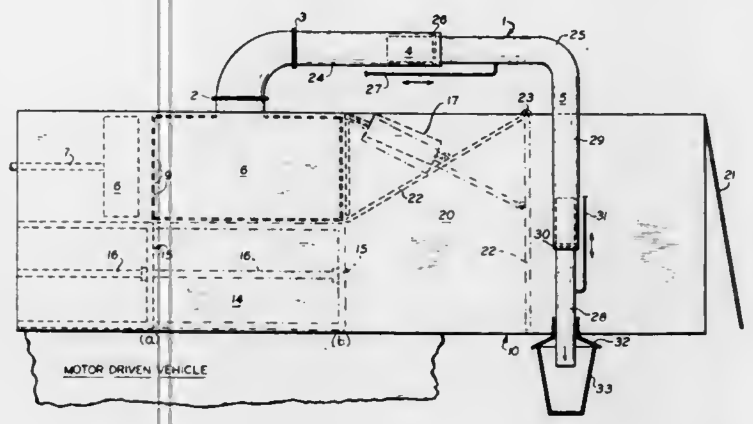


1. In combination,
- an automotive vehicle;
- sliding door means for providing a closure for one side of said vehicle and slidable between an open and closed position;
- a door latch;
- power-operated means for latching said door closed and unlatching said door, a first switch on the outside of the vehicle for selectively actuating said last-mentioned power operated means to latch the door, a second switch on the inside of the vehicle for selectively actuating said last-mentioned power operated means to latch or unlatch the door, said switches being independently operable;
- said power operated means comprising a first reversible electric motor, a driving gear connected to said first electric motor, and a gear segment coupled to and driven by said driving gear, said gear segment operatively connected to said door latch whereby operation of the said first electric motor latches and unlatches said door;
- motor operated means for sliding the unlatched door between closed and open positions, a third switch on the outside of the vehicle for selectively actuating said motor-operated means to slide the door between its closed and open positions, a fourth switch on the inside of the vehicle for selectively actuating said motor-operated means to slide the door between its closed and open positions, said switches being independently operable;
- a support post having a rectangular cross-section mounted in a substantially vertical position on said vehicle adjacent said slidable door means;
- a carriage slidably mounted for vertical movement on said support post, said support post providing a surface upon which said carriage rides; said carriage having four rollers which contact said surface;
- a hydraulic drive means including an electric motor connected between said post and said carriage for raising and lowering said carriage;
- said support post being rotatably supported with respect to said vehicle about a vertical axis;
- a horizontal platform supported by said carriage;
- a horizontal beam extending from said carriage;
- a vertical beam connecting the outermost end of said horizontal beam to the outermost end of said platform;
- a second reversible electric motor;
- a first gear driven by said second electric motor;
- a second gear in engagement with said first gear;
- a pivoted crank connected at one end thereof to said second gear;
- the other end of said pivoted crank being connected to said post for turning said post and said carriage through an angle sufficient to move said carriage into and out of said vehicle;
- a fifth switch on the outside of said vehicle for selectively actuating said second reversible motor to turn said post and carriage, a second switch on the inside of said vehicle for selectively actuating said second reversible motor to turn said post and carriage, said switches being independently operable;
- a seventh switch on the outside of the vehicle for selectively actuating said hydraulic drive means, an eighth switch on the inside of said vehicle for selectively actuating said hydraulic means, said switches being independently operable;
- a ninth switch on said platform for selectively actuating said hydraulic drive means independently of said other switches; and
- a tenth switch on said platform for selectively actuating said reversible motor independently of said other switches.

3,847,293
PNEUMATIC TRASH-GARBAGE PICKUP DEVICE

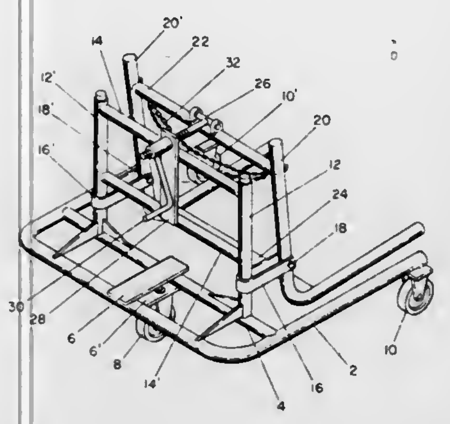
Bruce Theodore Edward Boon, Wayne, N.J., assignor to Eastern Cyclone Industries, Inc., Fairfield, N.J.
Filed Mar. 7, 1973, Ser. No. 338,967
Int. Cl. B65f *3/02*
U.S. Cl. 214—302 **7 Claims**

1. Pneumatic pickup apparatus for collecting solid waste and trash which comprises in combination a motor driven vehicle, a body mounted on said vehicle, a pneumatic conveying conduit extending from the top of said body to solid waste positioned outside said body, a fan positioned within said body adapted to exert a vacuum pressure to move said waste to within said body through said conduit, and compaction means within said body to compact said waste, wherein said waste is positioned within a receptacle, wherein said conduit comprises a telescopic horizontal member and a telescopic vertical member, and wherein movable pressure loaded guides are attached to said vertical member by means of guide channels rigidly affixed along the outer surface of said vertical member, said guides adapted to seat rigidly over the top of said receptacle as the lower end of said vertical member moves downwardly into said receptacle.



3,847,294
DUAL WHEEL REMOVER

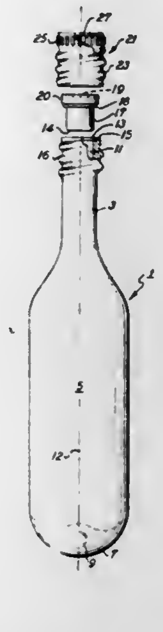
Gordon Leroy Davenport, 1424 5th St., Greeley, Colo. 80631
Filed Mar. 9, 1973, Ser. No. 339,523
Int. Cl. B60b *29/00*
U.S. Cl. 214—332 **5 Claims**



1. A wheel and tire handling device intended for use when mounting or dismounting dual type wheel units from trucks and the like as well as for use in the transportation of such wheel units between different locations, the device comprising a base frame member of a generally U-shaped configuration having a bight portion forming a back surface thereof and having spaced apart forwardly extending leg portions adapted to straddle the lower portion of the wheels to be handled thereby in a transverse manner with respect to the plane of such wheels, a fixed caster wheel mounted to the lower surface of each front end of each leg portion to support the same on a suitable work surface, a pivot caster associated with the bight portion approximately centrally thereof and pivotable about an axis extending normal to the plane of the base frame member for use in steering the device, a pair of upright vertically extending transversely spaced apart post members, each post member associated with one of said leg portions, a transversely extending reinforcing member interconnecting the top portions of said post members, a bracket mounted on each of said post members adjacent the bottom ends thereof and extending in a direction forwardly thereof substantially parallel to the associated leg portions, a cradle comprised of a pair of generally L-shaped transversely spaced apart vertically disposed arm members each having a generally vertical segment and a generally horizontal segment and each interconnected by transversely extending upper and lower cross-piece members, said upper cross-piece member interconnecting said arms adjacent the top end portions of said vertical segments with said lower cross-piece member interconnecting said arms adjacent the point of connection of said horizontal segments to said vertical segments, said horizontal segments projecting forwardly of said base in the direction of said leg portions of said base, said vertical segments each being pivotally connected to an associated one of said brackets by a pivot bolt extending therethrough at a position substantially adjacent the point of connection to said horizontal segment thus providing for rocking pivotal movement of said cradle about said pivot bolts relative to said base frame, and screw thread adjustment means interconnecting said upper cross-piece member of said cradle to said reinforcement brace extending transversely between said upright post members and operable to selectively control the pivoting movement of said cradle whereby said horizontal segments are moved between an elevated and a lowered position for engaging and disengaging from wheels carried thereon.

3,847,295
VESSEL AND SEALING MEMBER STRUCTURES FOR SPARKLING WINES

Walter S. Taylor, Bully Hill Rd. No. 2, Hammondsport, N.Y. 14840
Filed Mar. 31, 1972, Ser. No. 240,095
Int. Cl. B65d *45/30*
U.S. Cl. 215—1 R **8 Claims**



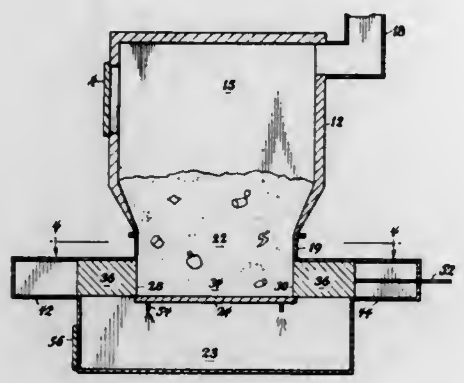
1. A bottle adapted to contain a sparkling type wine under pressure which comprises a rounded bottom portion whereby the bottle is unable to stand upright on a flat surface unassisted, the configuration of the bottle being otherwise so that it normally rests with its longitudinal axis substantially horizontal, a neck portion, a removable stopper including a first cork portion which is received in said neck portion in a state of compression whereby it is adapted to be in contact with and maintained in a moist condition by wine in said bottle when its longitudinal axis is in a substantially horizontal position, said removable stopper also including a stepped second cork portion which bears on and is snugly received in a state of compression in a recess provided around the periphery of said neck portion, a top part composed of a rigid material fixedly connected to said stopper said neck portion threaded on its outer surface, a threaded cap secured to said threaded neck portion and extending at least in part over the top part thereby retaining said cork portions in sealing engagement within said neck portion.

3,847,296
ASH REMOVAL SYSTEM

Richard F. Stockman, Friendship, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Dec. 6, 1973, Ser. No. 422,501
Int. Cl. F23j *1/00*

U.S. Cl. 110—165 R **11 Claims**



1. Apparatus for the combustion of waste material therein comprising a housing that encloses an incinerator chamber superposed over an ash collection chamber, said ash collection chamber including a plane floor and side walls formed to include horizontally disposed slot means, an ash removal ram adjacent the plane floor adapted to extend laterally through said slot means, a void extending vertically through said ram, an ash disposal zone subjacent the ash collection chamber, and means for moving the ram laterally through said slot means to position the void therein intermediate the ash collection chamber and the disposal zone whereby the void in the ram will serve as a passageway for ash moving from the collection chamber to the disposal zone.

ERRATUM

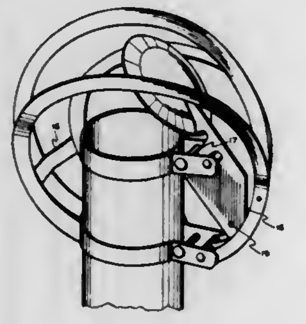
For Class 219—130 see:
Patent No. 3,847,287

3,847,297
RAIN CAP GUARD AND LOCK FOR EXHAUST PIPES

Earl E. Baader, Rt. No. 1, Nelson, Wis. 54756, and Ronald M. Schlosser, Rt. No. 2, Durand, Wis. 54736

Filed Apr. 17, 1972, Ser. No. 244,569
Int. Cl. B65d *25/00;* F16l *35/00*

U.S. Cl. 220—85 P **2 Claims**



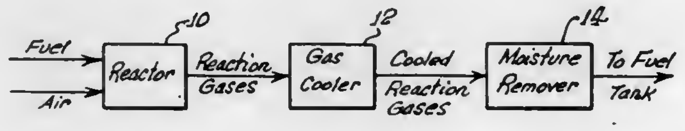
1. A combination rain cap and rain cap guard rail device for engines employing vertical exhaust pipes comprising a first and second assembly adjacent to each other to form a single operating unit, said first assembly comprising a cover, a counterbalance and a first annular bracket, said counterbalance extending perpendicularly to said cover, and having an opening therethrough, said first annular bracket joined to said cover by means of a hinge pin connected through the counterbalance whereby the cover is able to pivot, said first bracket adapted to be attached adjacent an opening of an exhaust pipe, said second assembly comprising a second annular bracket and guard rails, said second annular bracket being spaced below said first annular bracket on said exhaust pipe and having said guard rails extending upwardly from one side of said second annular bracket to encircle said first assembly and connecting at a common point on the other side of said second annular bracket, said rails having aligned holes therethrough and being so arranged that when said cover is in a closed position the opening through the counterbalance is aligned with the holes in said rails.

3,847,298
FUEL TANK INERTING SYSTEM

Mackenzie L. Hamilton, Los Angeles, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Mar. 20, 1972, Ser. No. 235,955
Int. Cl. B65d *25/00*

U.S. Cl. 220—88 B **8 Claims**



1. an inerting system for a fuel tank of a movable vehicle driven by a propulsion engine comprising:

a first heat exchanger having, a catalytic reactor hot side to catalytically react fuel from the tank with heated bleed air from the vehicular propulsion engine to produce oxygen-depleted reaction gases, and a ram air cooled cold side; a second heat exchanger having a hot side to receive reaction gases from the catalytic reactor hot side of said first heat exchanger and a cold side to receive ram air from the fluid stream moving past the vehicle;

means to transfer ram air from the cold side of said second heat exchanger to the cold side of said first heat exchanger;

a third heat exchanger to receive reaction gases from said second heat exchanger, said third heat exchanger cooled by a portion of the fuel from the vehicular fuel tank;

a fourth heat exchanger having a hot side to receive reaction gases from said third heat exchanger;

a cooling turbine to receive reaction gases from the hot side of said fourth heat exchanger and to expand the reaction gases therethrough, said fourth heat exchanger having a cold side to receive the expanded reaction gases from said cooling turbine before the reaction gases are provided to the fuel tank; and

reaction gases pumping means disposed between said cooling turbine and the cold side of said fourth heat exchanger to receive and recirculate a portion of the reaction gases from the cold side of said fourth heat exchanger with the expanded reaction gases from said cooling turbine.

3,847,299
APPARATUS FOR MAKING COMPOST

Arthur Lewis John Page, "St Peter" Walton Hill, Deerhurst, Gloucester, England

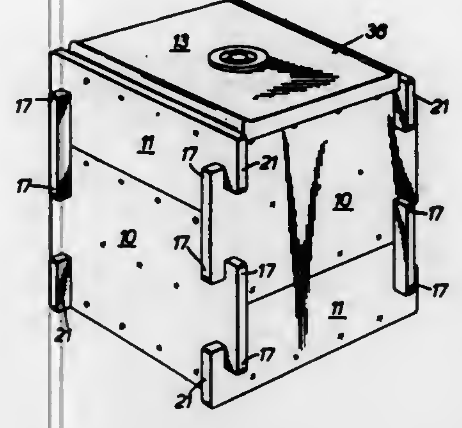
Filed Oct. 13, 1972, Ser. No. 297,295

Claims priority, application Great Britain, Oct. 14, 1971, 47898/71; Apr. 19, 1972, 18142/72

Int. Cl. B65d *25/18*

U.S. Cl. 220—4 F **5 Claims**

1. Composting apparatus comprising a plurality of sections which can be assembled to form a box, the sections being thermal insulators and grooves being formed in the inner faces of the sections in communication with through holes, said box



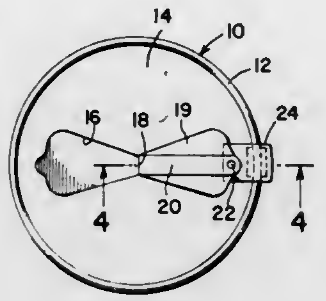
being provided with a pair of lids, namely an inner lid which fits loosely within the side walls of the box and an outer lid which substantially closes the top of the box.

3,847,300
NON DETACHABLE PULL TOP CAN

Lyle E. Waters, Toburon, Calif., assignor to Lawrence Peska Associates, Inc., New York, N.Y.

Filed July 16, 1973, Ser. No. 379,417
Int. Cl. B65d *17/20*

U.S. Cl. 220—269 **8 Claims**



1. A container comprising a sidewall having a rim, a top section extending across said sidewall and having a scoring and a fold, a gripable means secured to said top section for rupturing said top section along said scoring and for folding the resultant ruptured section along said fold towards said rim, and means mounted on said gripable means for frictionally engaging said rim said fold extending parallel to a tangent to said rim at the point of engagement said engaging means comprising a pair of extruded projections for clamping to both sides of said rim, said projections extending parallel to said rim when said ruptured section is fully folded towards said rim whereby said ruptured section can be folded back and secured to said rim without twisting while remaining attached to said container.

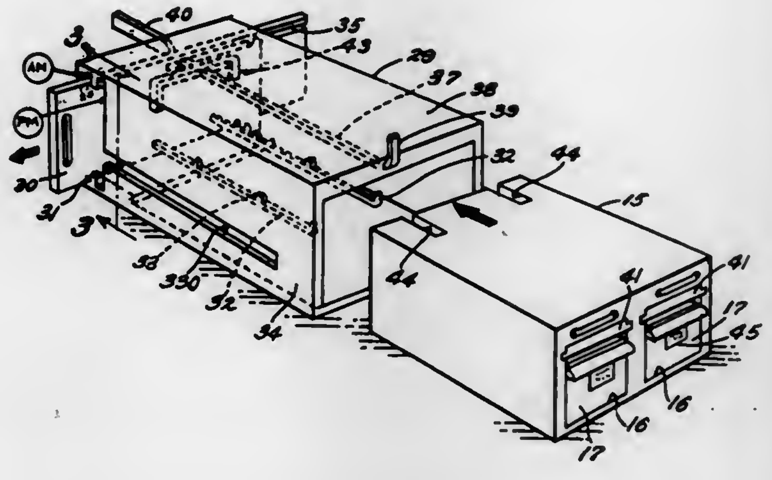
3,847,301
PROGRAMMED ARTICLE DISPENSER

Joseph Denman Shaw, 508 Church St., Brownsville, Pa. 15417

Filed Dec. 19, 1973, Ser. No. 426,339
Int. Cl. G07f *11/40*

U.S. Cl. 221—5 **3 Claims**

1. In a programmed article dispenser:
1. a cabinet containing a number of compartments,
2. a plurality of dispensing units each slidably disposed in a compartment,
3. a number of article containing chambers in each unit,
4. a bottom wall for each unit,
5. a lateral row of spaced apart coding means on the bottom wall adjacent each chamber,
6. a decoding case adapted to slidably receive the cabinet,
7. an indexed selector disposed for intermittent lateral movement within the case,
8. a plurality of fingers mounted on the selector, one to a unit,
9. a spaced series of decoding lugs on each finger, one to each lateral row of coding means,
10. axially moveable coding pins mounted in selected positions along the coding means on the bottom wall of each unit,



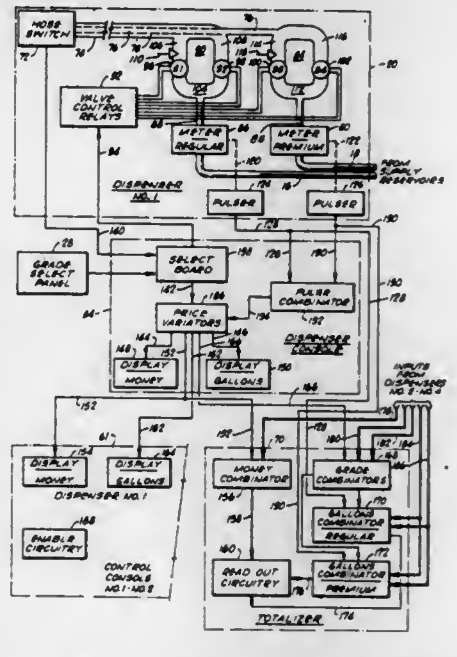
11. stop means on the case limiting sliding movement of the cabinet into the case and positioned to align the decoding lugs on the fingers with the coding means on the bottom wall of the unit,
12. mechanically operated means adapted to actuate the selector to axially move the decoding lugs and coding pins and condition selected units for dispensation,
13. and dispensing means operated by the mechanically operable means adapted to slide selected units out of the cabinet into positions for dispensation of articles from their respective chambers.

3,847,302
GASOLINE DISPENSING SYSTEM

Russell R. Krone, 6613 N. Prospect St., Oklahoma City, Okla. 73111; Donald R. Krone, 10505 Ridgeview Dr., Oklahoma City, Okla. 73120; George E. Buchanan, 2908 N.W. 28th St., Oklahoma City, Okla. 73107, and James F. Noyes, 5817 N.W. 72 St., Oklahoma City, Okla. 73127

Filed Sept. 20, 1972, Ser. No. 290,437
Int. Cl. B67d *5/30*

U.S. Cl. 222—14 **13 Claims**



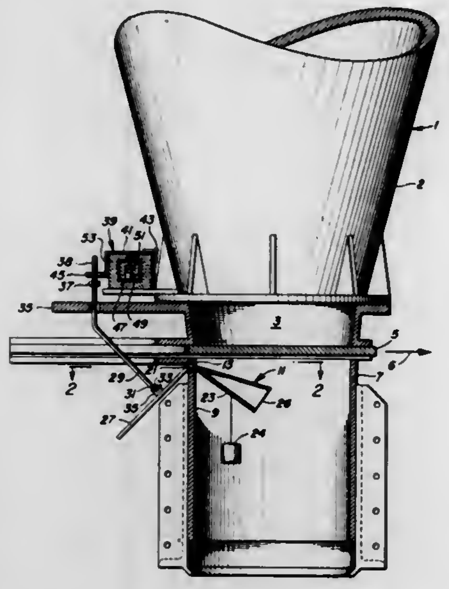
1. A gasoline dispensing system for delivery of regular, premium, and intermediate grades of gasoline from respective regular and premium supply reservoirs, comprising:

dispensing means including gasoline delivery hose;
regular metering means receiving gasoline flow from said regular supply reservoir to deliver flow to said dispensing means;
premium metering means receiving gasoline flow from said premium supply reservoir to deliver flow to said dispensing means; grade selector means providing selection ranging from regular to premium and including intermediate grades
first circuit means generating first electrical pulse output in proportion to the amount of gasoline flow through said regular metering means;
second circuit means generating second electrical pulse output in proportion to the amount of gasoline flow through said premium metering means;
pulse combinator means receiving as input each of said first and second electrical pulse outputs to provide a gallonage pulse output which is proportional to the amount of gasoline flow through said regular and premium metering means;
variator circuit means receiving said gallonage pulse output and generating a gallons output pulse and a money output pulse;
first display circuit means receiving said gallons output pulse to provide visual indication of gallons of gasoline flow; and
second display circuit means receiving said money pulse output to provide visual indication of the cost of gasoline flow through said metering means.

3,847,303
PADDLE SWITCH FOR AUTOMATIC GATE CLOSURE ON HOPPERS

Imre Szendroi, Allentown, and Jenson E. Ehret, Bethlehem, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Nov. 29, 1972, Ser. No. 310,489
Int. Cl. F27d *3/00*
U.S. Cl. 222—66 **4 Claims**

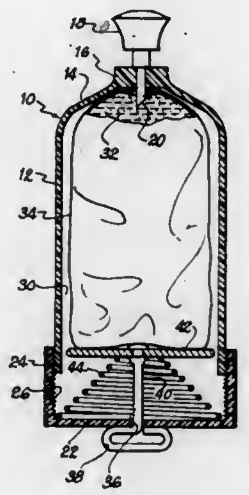


1. In a gravity operated hopper having downwardly converging walls forming a bottom discharge opening and a lower extension directly below said bottom discharge opening the combination with said gravity operated hopper of:
a. a sensing device extending within said lower extension substantially balanced pivotally about a generally horizontal axis;
b. closure means for said bottom discharge opening above said lower extension;
c. said sensing device arranged to be pivoted by material discharged through said bottom opening and to return to a substantially balanced position when said hopper is empty; and
d. switch means operable by said sensing device for closing said closure means when said sensing device is in the substantially balanced position.

3,847,304
BAG-TYPE FLUID AND PASTE DISPENSER

Milton J. Cohen, 9201 Persimmon Tree Rd., Potomac, Md. 20854

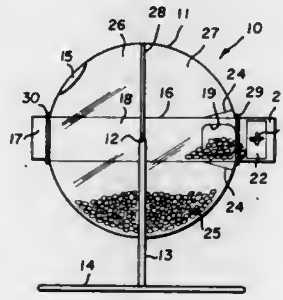
Filed Aug. 13, 1973, Ser. No. 387,704
Int. Cl. B65d *35/56*
U.S. Cl. 222—105 **10 Claims**



1. In a bag-type fluid and paste dispenser comprising a deformable bag and a fluid or paste material to be dispensed within said bag, a rigid housing dimensioned to enclose the filled bag therein, said housing being open at the bottom and closed at the top, a dispensing valve in the top, a hollow needle extending from the dispensing valve into the interior of the housing in position to pierce the bag when the latter is inserted therein, a bottom wall removably connected to the housing to close the open bottom end of the housing, a disc plate dimensioned for axial displacement within the housing between retracted and extended positions of adjustment, means for releasably latching the disc plate in retracted position, means constantly urging said disc plate toward the extended position and means for axial adjustment of the bottom wall in a direction toward or away from the top wall to maintain or increase the force of said urging means on said disc plate thereby to compensate for loss in force on the disc plate as material in the bag is dispensed.

3,847,305
NUT OR CANDY DISPENSER

Robert A. Tobin, 67 Lake Bluff Rd., Rochester, N.Y. 14622
Continuation-in-part of Ser. No. 286,331, Sept. 5, 1972. This application Mar. 28, 1973, Ser. No. 345,730
Int. Cl. B65g *65/48*
U.S. Cl. 222—166 **26 Claims**



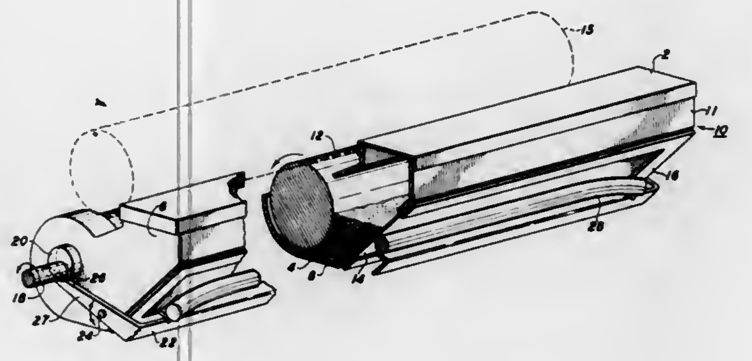
1. A nut or candy dispenser including a pivotally mounted container for holding nuts or candies and comprising:
a. a length of wire formed to support said container and shaped to have a pair of opposite upright regions spaced apart by slightly more than the width of said container;

b. said upright regions of said wire having supports turned inward toward said container;
c. said container fitting between said upright regions of said wire and having means for receiving said supports for supporting said container in a normally upright position from which said container is free to pivot in either direction in a vertical plane between said supports and perpendicular to a line between said supports;
d. means for returning said container to said normally upright position from a pivoted position in either direction in said vertical plane;
e. a tube in said container extending from above the top of said container to below the lowest surface of said container supporting said nuts or candies and forming a discharge passageway;
f. means for closing the bottom of said tube to said nuts or candies;
g. means around an upper region of said tube above said top of said container and means around a lower region of said tube below said lowest surface of said container supporting said nuts or candies for interconnecting said tube and said container, at least one of said interconnecting means being removable for separating said tube from said container;
h. said lower region of said tube adjacent said lowest surface of said containter supporting said nuts or candies having a pair of diametrically opposed openings to admit said nuts or candies from said container into said lower region of said tube;
i. said lower region of said tube between said openings forming a diametrically opposed pair of scoops oriented transversely to said vertical plane between said supports so some of said nuts or candies collected between said scoops when said container is upright are scooped up and directed out of said discharge passageway by one of said scoops when said container pivots in one direction and by another one of said scoops when said container pivots in the other direction; and
j. means for controlling the amount of said nuts or candies scooped up and discharged as said container tilts.

3,847,306
DEVELOPING APPARATUS

Richard Stockton Howell, Webster, and Stuart Evan Hotchkiss, Williamson, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 20, 1970, Ser. No. 39,686
Int. Cl. B65g *65/70*
U.S. Cl. 222—203 **7 Claims**

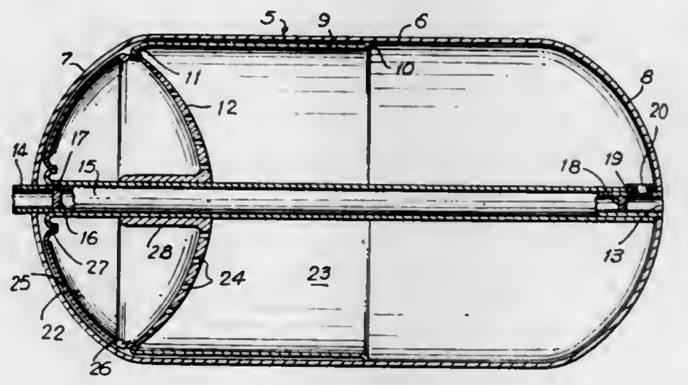


1. A developing assembly comprising:
a. a developing applicator capable of rotation about a first axis;
b. a donor member having an input shaft responsive to motive power to rotate said donor member about a second axis substantially parallel to said first axis; and,
c. a sump housing adapted to contain a quantity of marking particles mounted about said donor member, said sump housing having
1. an opening therein to permit contact between said developing applicator and said donor member,
2. an end plate having an aperture through which said input shaft passes and which permits said shaft to rotate relative to said end plate,
3. a side wall attached to said end plate and having a flexible portion, and
4. means responsive to rotation of said shaft for flexing said flexible portion.

3,847,307
POSITIVE EXPULSION DEVICE FOR FLUIDS

William S. Hosek, Mount Tabor, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed Oct. 10, 1966, Ser. No. 586,008
Int. Cl. B67d *5/54*
U.S. Cl. 222—386.5 **5 Claims**

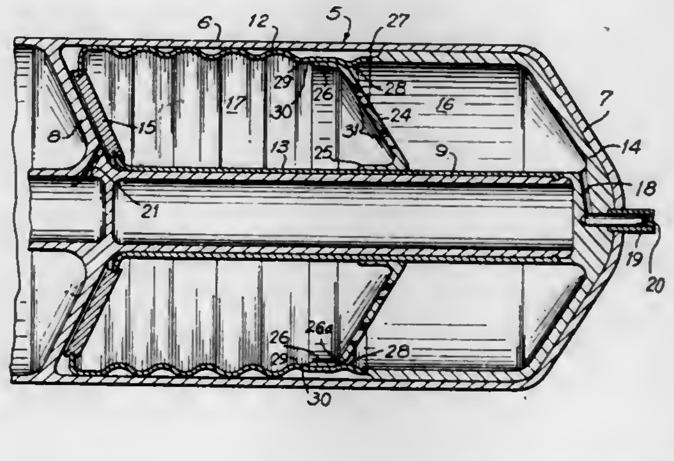


1. In an apparatus for positively expelling fluid from a closed vessel and of the type having a rolling diaphragm with a cylindrical wall of a relatively flexible material, a piston at one end of the diaphragm of a shape to conform to one end of the vessel and means for supplying fluid under pressure to one side of the piston, that improvement which comprises perforations in the piston so that fluid may flow therethrough, a second rolling diaphragm connected to the outer periphery of the piston of a shape to conform to the opposite end of the vessel, and means to control the rolling of the second diaphragm to engage the adjacent side of the piston and form an imperforate lining thereon so that the pressure fluid thereafter acts on the piston to move it bodily from one end of the tank to the other.

3,847,308
ROLLING DIAPHRAGM WITH LATERAL SUPPORT

Ronald Tambor, Maplewood, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed Oct. 10, 1966, Ser. No. 586,011
Int. Cl. B67d *5/54*
U.S. Cl. 222—386.5 **7 Claims**

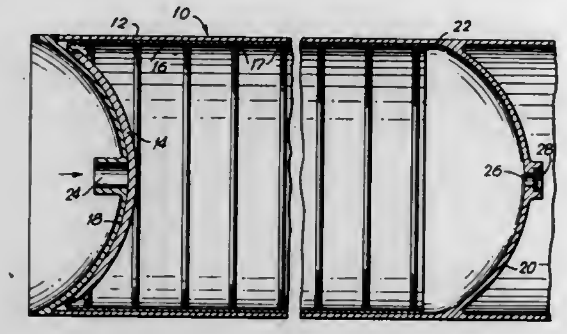


1. Apparatus for positively expelling fluid from a tank of the type having a rolling diaphragm in said tank and comprising a sleeve of flexible material having one end attached, a piston

at its opposite end and adapted to roll back on itself to expel fluid from the tank, the combination with said tank and rolling diaphragm of a transverse strut in said tank separate from the piston and attached end of the rolling diaphragm sleeve and having a peripheral flange engaging the sleeve intermediate its ends to support it against forces tending to buckle it inwardly, and said strut being slidable along the sleeve when engaged by the piston during a rolling operation.

3,847,309
ROLLING DIAPHRAGM CONSTRUCTION

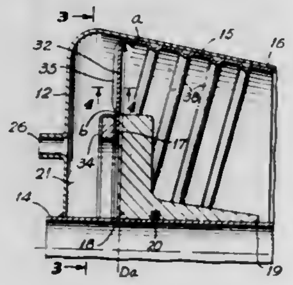
Walter B. Grossman, Fair Lawn, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.
Filed Oct. 10, 1966, Ser. No. 586,599
Int. Cl. B67d *5/54*
U.S. Cl. 222—386.5 **11 Claims**



1. The combination with a liquid expulsion tank having a piston movable therein by a pressurizing medium from one end of the tank to the other to expel the liquid therefrom; of a flexible diaphragm having a continuous wall hermetically sealed at its ends to the peripheral wall of the tank and to the outer periphery of the movable piston, said diaphragm being rollable backwardly within itself by said piston upon liquid expelling movement thereof, and reinforcing means engaging said diaphragm along its length to strengthen it against buckling by the pressurizing medium acting on the piston comprising at least one transversely disposed ring engaging a periphery of said diaphragm and slidable along said diaphragm as the latter is turned inside out.

3,847,310
ROLLING DIAPHRAGM FOR EXPELLING LIQUID FROM TAPERED TANKS

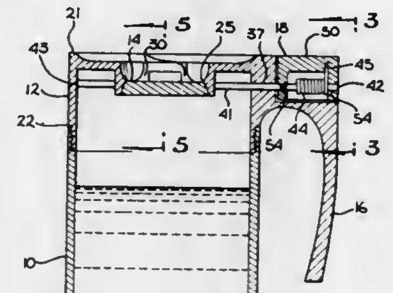
George B. Rabe, Sparta, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.
Filed Dec. 16, 1966, Ser. No. 602,419
Int. Cl. B67d *5/54*
U.S. Cl. 222—386.5 **7 Claims**



1. Apparatus for expelling liquid from a tank of the type comprising a rolling diaphragm in the form of a sleeve having one end attached to the wall of the tank and its opposite end attached to a piston with means for supplying a pressurizing fluid through an inlet port to actuate the piston along the tank and roll the diaphragm attached thereto and expel liquid from the tank through an outlet port, that improvements which comprises providing a piston of smaller diameter than the diameter of the tank, an annular flange at the end of the diaphragm extending radially inward toward and attached to the outer periphery of the piston, and said end flange having indentations therein in the form of ribs extending from the outer periphery of the piston to the outer periphery of the diaphragm to cause the flange to initially buckle forwardly when pressure is applied and draw the outer periphery of the diaphragm inwardly as the flange moves forwardly to control the rolling action of the diaphragm.

3,847,311
PIVOTED CLOSURE FOR A BEVERAGE CUP

Edward Flores, 23690 Summit Dr., Calabasas, and Thomas W. Holmes, 4005 So. Bronson Ave., Los Angeles, both of Calif., assignors to Edward Flores and Thomas H. Holmes, part interest to each
Filed Sept. 13, 1973, Ser. No. 396,834
Int. Cl. A47g *19/22*
U.S. Cl. 222—473 **7 Claims**

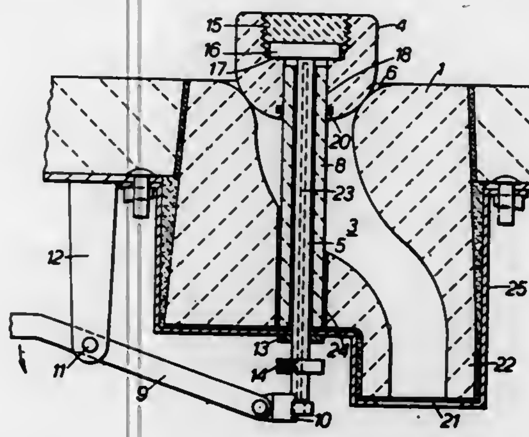


1. An apparatus for a container having a controllable aperture for selectively dispensing the contents from said container comprising:
- a. a cover having an aperture which is disposed on the upper surface of said cover and displaced from the center of said cover, said cover having a pivot bore therein extending through the approximate center of said cover and said cover containing a notch portion disposed on the upper surface of said cover adjacent to said aperture;
- b. a pivot member disposed within said pivot bore;
- c. a pivot mount coupled to said pivot member, said pivot mount being cooperatively engaged within said notch portion;
- d. a lid coupled to said pivot mount and adapted to sealingly engage said aperture, and
- e. a lever means coupled to said pivot member for opening and closing said lid within said aperture, said lever means including a spring member biased so as to cause said lid to pivot downwardly about the axis of said pivot member when said lever means is actuated, thereby disengaging said lid from said aperture.

3,847,312
MOLTEN METAL POURING VALVE HAVING VALVE ACTUATOR EXTENDING THROUGH INCLINED CHANNEL

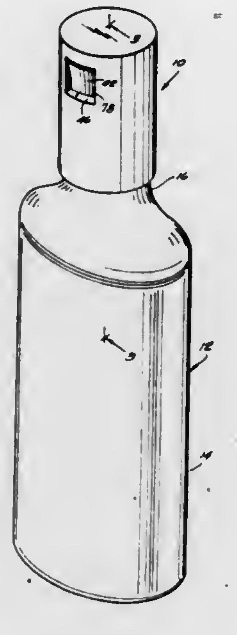
Harry Sidney Marr, and Arnold Chester, both of Sheffield, England, assignors to The British Iron and Steel Research Association, London, England
Filed Apr. 12, 1973, Ser. No. 350,593
Claims priority, application Great Britain, Apr. 17, 1972, 17624/72
Int. Cl. B22d *37/00*
U.S. Cl. 222—501 **6 Claims**

1. Apparatus for pouring molten metal from a receptacle comprising a refractory nozzle adapted to be mounted within the receptacle and having a downwardly extending flow channel for removing molten metal from the receptacle, an upstanding refractory sleeve member secured at its lower end within a bore formed in the refractory nozzle, a refractory stopper head operable to close off the flow channel, a stopper rod mounted within said upstanding refractory sleeve member and extending upwardly through the nozzle and operable to move the head into and out of contact with a nozzle seat formed about the inlet to the flow channel, and means to impart vertical movement to the stopper head relative to the refractory sleeve member, the channel being inclined to the vertical along at least a portion of its length so that the outlet orifice of the flow channel which is formed in the lower surface of the nozzle is set to one side of the stopper rod.



3,847,313
RETRACTABLE TURNSPOUT CLOSURE

Lewis A. Micallef, New York, N.Y., assignor to Leeds and Micallef, New York, N.Y.
Filed Feb. 16, 1973, Ser. No. 332,923
Int. Cl. B67d *3/00*
U.S. Cl. 222—507 **14 Claims**

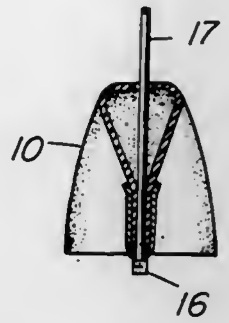


1. A retractable turnspout closure for closing the neck of a container and permitting selective discharge of the container contents, comprising in combination:
- a plug adapted to extend across the opening defined by the neck of the container, said plug including a base having a first vertically extending axis, an opening in said base having a second vertically extending axis, a valve seat forming part of a valve disposed about said opening;
- a rotatable spout having a passage therethrough for cooperating in directing the container contents during discharge therefrom, and a valve member also forming part of the valve adapted to assume a lower first position at which it engages with the valve seat of the plug in closing said opening and prevent the container contents from discharging from the spout passage and a raised second position at which it is spaced from the valve seat to permit the container contents to travel through the opening into the passage and be discharged therefrom;

- a rotatable cap extending over the plug and having an opening through which the spout is adapted to project when said valve is in said raised second position and from which the spout is adapted to be retracted when said valve is in said lower first position;
- contact means in the path of rotation of the spout for contacting the spout and move it from its retracted to its projecting position upon rotation of the cap in one direction; and
- cam and cam follower means for moving the valve member from the lower first position to the raised second position to open the valve when the cap is rotated in said one direction and for moving the valve member from the raised second position to the lower first position to close the valve when the cap is rotated in said other direction the cam and cam follower means including mating ramps on the spout and plug for raising the valve member to open the valve when the spout is rotated from its retracted position to its projected position upon rotation of the cap in one direction, the cam and cam follower means including a ramp projecting downwardly from the interior of the cap for engagement with surfaces of the spout for lowering the valve member to close the valve when the spout is rotated from its projected position to its retracted position upon rotation of the cap in the other direction.

3,847,314
GARMENT SHAPER

John Florian, Bakersfield, Calif., assignor to Mobil Oil Corporation, New York, N.Y.
No Drawing. Filed Nov. 9, 1973, Ser. No. 414,486
Int. Cl. A47j *51/086*
U.S. Cl. 223—98 **1 Claim**



1. A garment shaper and hanger comprising the combination of:
- a. an elongate hollow body of foamed resin having an open bottom edge, side and end walls extending upwardly from said edge to converge at a centrally disposed apex remote from said edge, the length of said side walls being substantially greater than the spacing between said side walls, the outer surfaces of said end walls conforming generally to the configuration of human shoulders; and
- b. a stabilizing and suspending element having a shank extending from a point adjacent said edge midway of said end walls through said apex, a hook at the upper end of said shank above said apex arranged and adapted for suspending the combination and a clip at the lower end of said shank engaging said edge on both sides of said shank and retaining the same in abutting relationship.

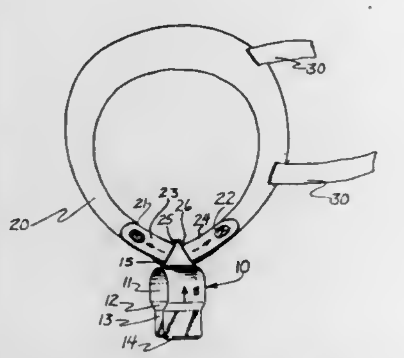
3,847,315
HOLSTER

John E. Bianchi, 1601 Wilt Rd., Fallbrook, Calif. 92028
Filed July 18, 1972, Ser. No. 272,835
Int. Cl. F44c *33/02*
U.S. Cl. 224—2 C **6 Claims**

1. A holster for the carrying of hand guns comprising an elongated generally U-shaped resilient body including a longi-

tudinally extending tunnel like opening conformingly contoured to receive and hold the barrel or slide of a hand gun; said body further including an integral throat portion conformingly contoured to substantially enclose the trigger guard portion leaving the handle and barrel of the hand gun exposed when in position in the holster;

suspension means secured to said body for engaging a shoulder of the wearer and positioning said body in generally inverted U-position in the armpit region of the wearer with the barrel or slide of a hand gun contained therein in a generally horizontal position;



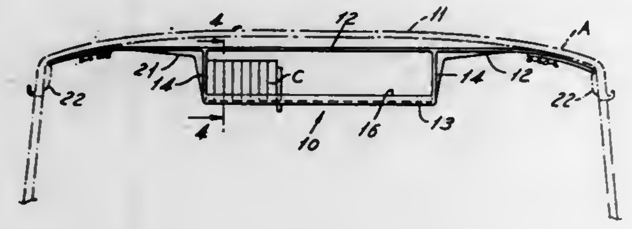
wherein said suspension means includes ring means secured to said body suspending said body from two directions at substantially a 90° angle whereby said holster may be stably positioned in the armpit region;

wherein said ring means comprises a generally triangular shaped ring with one side secured to said body and the two remaining sides constituting support points for said body;

wherein the said one side of said triangular shaped ring is secured to said body in generally parallel alignment with the tunnel like opening in said body whereby the orientation of said opening and the barrel or slide of a hand gun therein is determined by said ring.

3,847,316
ROOFTOP TAPE STORAGE RACK

Robert P. McInnes, 1108 Fairway Dr., Linden, Mich. 48451
Filed Nov. 24, 1972, Ser. No. 309,051
Int. Cl. B60m *7/08*
U.S. Cl. 244—42.1 C **2 Claims**



1. In a rooftop tape storage rack, the combination comprising

a unitary device molded from organic plastic material and comprising a top wall, side walls, end walls and a bottom wall,

at least one of said side walls having a substantially lesser height than said end walls thereby forming an opening therein for receiving tape cartridges, said cartridges being adapted to be held in side-by-side relationship with the side walls adapted to engage the ends of the cartridges,

a slot associated with the bottom wall and extending substantially throughout the length thereof providing a finger receiving opening through which a finger can be inserted to lift the cartridges for ready removal from the opening in said side walls,

laterally extending integral mounting panels extending from said end walls at the area of juncture of said end walls and said top wall,

said laterally extending panels being curved generally downwardly with respect to said top wall,

re-enforcing ribs between said panel portions and said end walls,

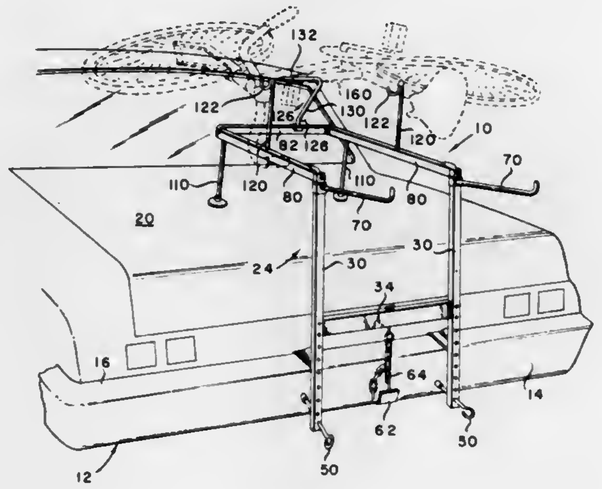
extension panels adjustably mounted on said mounting panels,

and a stop adjustably mounted in said slot in said bottom wall for engaging the cartridges,

means on said extension panels for attaching the device to a vehicle.

3,847,317
AUTOMOBILE BICYCLE RACK

Samuel Joseph Raff, Chevy Chase, Md.; Robert Page Burruss, Jr., Washington, D.C.; Stanley Morris Lebow, Greenbelt, and Stephen Phillips Callahan, Chevy Chase, both of Md., assignors to Quality Engineered Specialty Products, Inc., Greenbelt, Md.
Filed Apr. 20, 1972, Ser. No. 245,726
Int. Cl. B60m *9/10*
U.S. Cl. 224—42.03 B **4 Claims**



1. A bicycle rack adapted for mounting on the rear end of an automobile having a trunk lid and a horizontal bumper with a face portion terminating in an upper and a lower flange, said bicycle rack comprising;

a frame assembly including a pair of spaced parallel supports, a cross piece connecting the two supports and maintaining them in spaced relation,

a bumper engaging and gripping bracket secured to each support and adapted to fit on and engage the upper flange of the bumper,

an adjusting screw threadedly carried by each support below the bumper bracket, said adjusting screw being adapted to engage the bumper below the bumper bracket to control the vertical attitude of its respective support, a rack securing assembly connected to the frame cross piece, said assembly comprising a hook means adapted to engage the lower flange of the bumper and adjustable means connecting the hook to the cross piece to maintain tension between the hook and cross piece to retain the rack on the bumper,

a carrying arm affixed to and extending outwardly from each support to carry one or more bicycles, and

a U-frame assembly connected to the frame assembly, said U-frame assembly comprising:

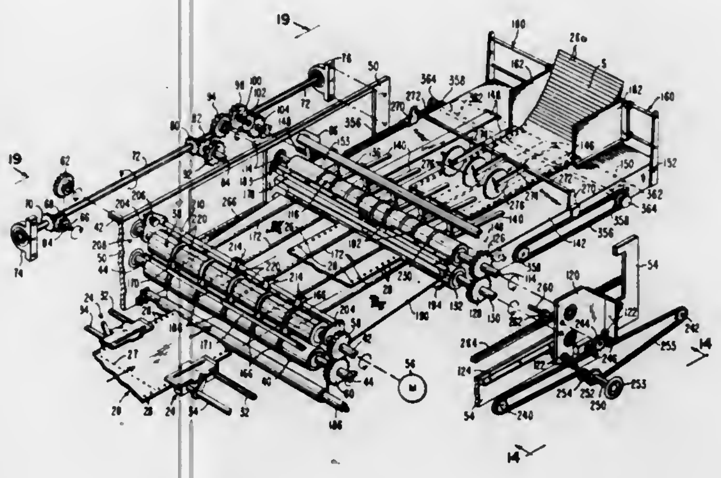
a U-frame having a pair of parallel legs and a curved portion connecting same, means on the legs for connecting same to the frame supports,

a rest connected to and extending downwardly from each leg of the U-frame and adapted to engage the trunk lid, and

a tri-point support means extending upwardly from the U-frame.

3,847,318
BURSTER APPARATUS

Frank V. Parenti, Dayton, and Robert W. Staneck, Springboro, both of Ohio, assignors to The Standard Register Company, Dayton, Ohio
Continuation-in-part of Ser. No. 103,620, Jan. 4, 1971, Pat. No. 3,741,451. This application Oct. 19, 1972, Ser. No. 298,938The portion of the term of this patent subsequent to June 26, 1990, has been disclaimed.
Int. Cl. B26f *3/02*
U.S. Cl. 225—100 **4 Claims**



1. Burster apparatus for successively separating a continuous strip of business forms along longitudinally spaced lines of cross perforations, said apparatus comprising a first set of roll members adapted to receive the strip therebetween, a second set of roll members spaced from said first set of roll members and adapted to receive the strip therebetween, means for driving said first and second sets of roll members for feeding the strip therebetween, said second set of roll members having a peripheral speed greater than the peripheral speed of said first set of roll members to effect separation of adjacent forms at each line of cross perforations located between said sets of roll members, one of the second set of roll members being a lower roll member and having axially spaced peripheral grooves therein, a table member positioned adjacent the lower roll member of the second set of roll members and having an upper surface adapted to receive and support the separated forms which are fed from said second set of roll members, and projection means supported by said table and projecting into at least one of said grooves within said one roll member of said second set of roll members to guide forms from the second set of roll members to the upper surface of the table, the projection means comprising a finger for each of said grooves, and including means for moving said fingers between an extended position projecting into the corresponding said grooves and a retracted position spaced from said second set of roll members.

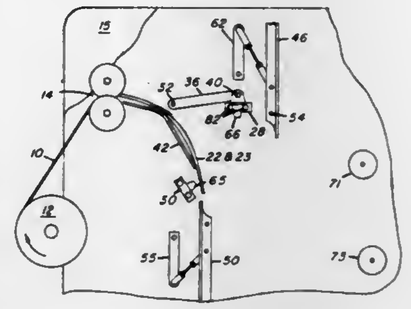
3,847,319
METHOD AND APPARATUS FOR GROUPING AND HANDLING A PLURALITY OF WEBS

Kenneth F. Brandon, Webster, and Thomas J. Perconti, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 27, 1973, Ser. No. 428,937
Int. Cl. B65h *23/30*
U.S. Cl. 226—4 **9 Claims**

1. A web handling apparatus for separating a plurality of flexible, resilient slit webs into discrete groups for movement along separate web paths, said webs extending generally parallel to one another and lying generally in a common plane, said apparatus comprising:

a. first and second opposed support members located transverse to said webs on opposite sides thereof;

b. means for providing relative movement of said support members so that said members are brought together at the plane of said webs;

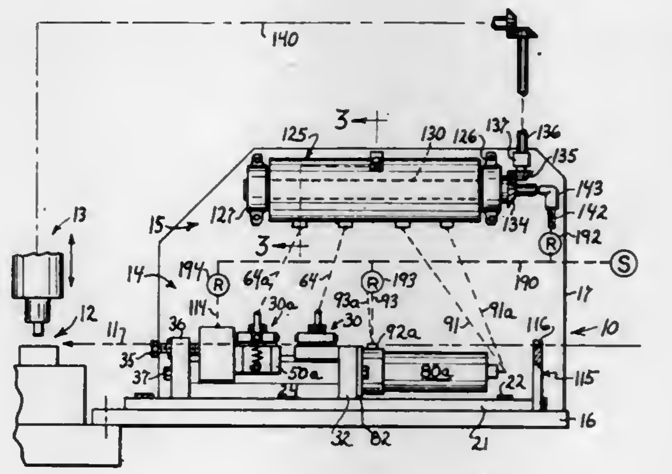


c. said first support including retaining means for engaging and holding a first group of said webs when said support members are brought together; and

d. said second support including retaining means for engaging and holding a second group of said webs when said support members are brought together, said second group of webs being distinct from said first group of webs.

3,847,320
STOCK FEEDER

Albert W. Scribner, 6 Country Club Rd., Darien, Conn. 06820
Continuation of Ser. No. 106,507, Jan. 14, 1971, abandoned. This application Mar. 8, 1972, Ser. No. 232,910
Int. Cl. B65h *17/36*
U.S. Cl. 226—115 **28 Claims**



1. A duplex feeder for intermittently advancing stock into the work station of a punch press or the like: comprising a frame;

a pair of feed slides reciprocally mounted on said frame for movement in indexing and stock feeding directions;

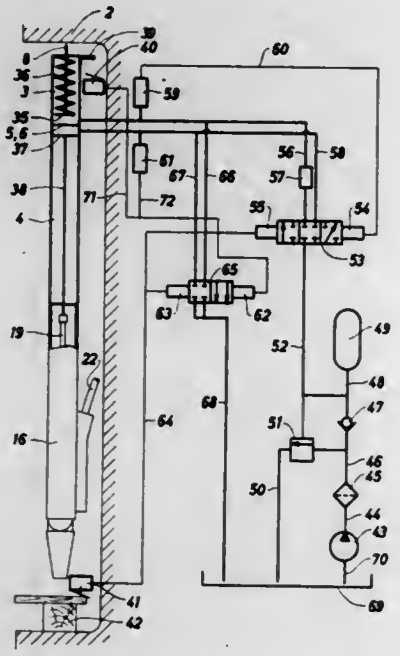
a first pair of fluid motors for respectively actuating said feed slides;

stock gripping means carried by each of said feed slides and being adapted to grip and release the stock to be fed;

a second pair of fluid motors for respectively actuating said stock gripping means;

a rotary fluid pressure distributor arranged and connected to control the operation of said fluid motors, said rotary fluid pressure distributor including an inner valving member having a plurality of arcuately extending grooves formed therein, and an outer valving member having a plurality of apertures formed therein that respectively valvingly cooperate with said grooves in said inner member; means for mounting said inner and outer members for relative rotation, one of said members being adapted to be coupled to a source of fluid pressure whereby relative rotary movement between said members permits said apertures and grooves to control the supply and exhaust of fluid pressure to and from the respective fluid motors; drive means adapted when operated to rotate one of said members relative to the other of said members so that said fluid motors may be actuated in predetermined sequence whereby said feed slides alternately partake of stock feeding strokes; and fluid operated buffer means for cushioning the terminal portions of the respective stock feeding strokes of said feed slides.

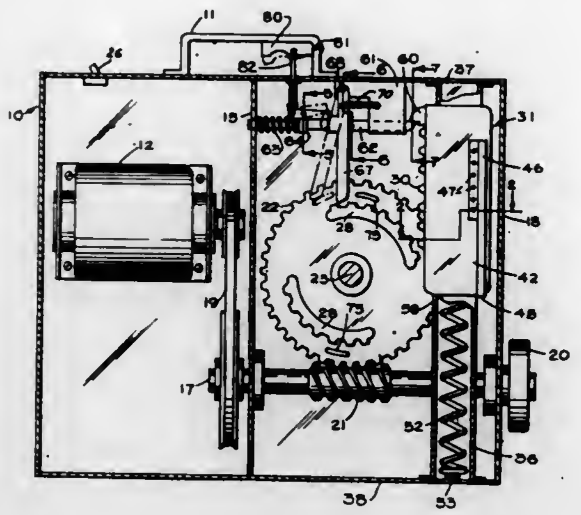
3,847,321
NAILING DEVICE
Rune Kjell Evald Charlez, Tradlyckevagen 84, 432 00 Varberg, Sweden
Filed Aug. 1, 1972, Ser. No. 276,910
Claims priority, application Sweden, Aug. 2, 1971, 9859/71
Int. Cl. B27f *7/02*
U.S. Cl. 227—7 **4 Claims**



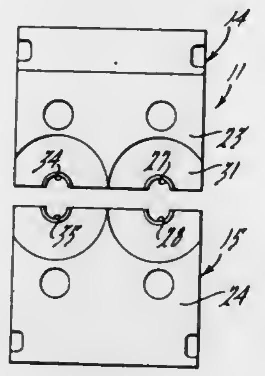
1. A nailing device comprising a stationary holder, a driver, driving means comprising a power unit made up by a first and a second hydraulic cylinder mechanically connected end to end and positioned coaxially to each other with their piston rods extending in opposite directions, means resiliently pressing the piston rod of said first cylinder inwardly of said first cylinder, said second cylinder having its piston rod being positioned for engaging said driver, a nail guide element supported by said second cylinder which guide element will contact the object to be nailed by extension of the piston rod of said first hydraulic cylinder, means for supplying hydraulic pressure medium to said first cylinder for extending its piston rod and pushing said nail guide element against the object to be nailed, control means for causing pressure medium to be supplied to said second cylinder whose piston rod then acts upon the driver only after the nail guide element has contacted the object to be nailed, and control means for preventing said hydraulic pressure medium for leaving said first cylinder during the working movement of said second cylinder.

3,847,322
POWER DRIVEN HAMMER
Howard I. Smith, 2546 Willow Ln., Arnold, Mo. 63010
Filed Sept. 10, 1973, Ser. No. 396,047
Int. Cl. B25c *1/06*
U.S. Cl. 227—132 **12 Claims**

1. In a power hammer: a rotary driving element; a base support; a hammer member slidably mounted on the support for movements from a cocked position in a driving direction; spring means to move the hammer member in the driving direction; releasable latch means on the support and engageable with the hammer member to hold the hammer member in cocked position against the spring means; and latch release means on the support to move the latch means to release position, the latch release means including means driven by the driving element, and manually operable means to connect or disconnect the means driven by the driving element to the latch means to cause the driving element to move the latch means to release position.

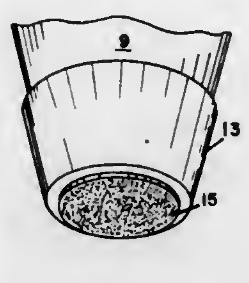


3,847,323
FLASH REMOVAL MECHANISM
William E. Good, Cinnaminson, N.J., and Leonard DiGrasso, Philadelphia, Pa., assignors to Kelsey-Hayes Company, Romulus, Mich.
Filed Jan. 2, 1973, Ser. No. 320,256
Int. Cl. B23k *21/00*
U.S. Cl. 228—3 **5 Claims**



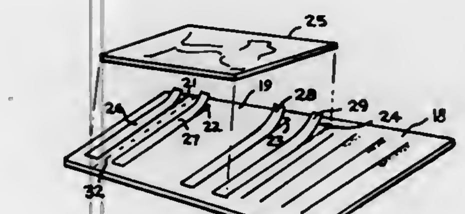
1. A mechanism for effecting welds and for removing flash from the resulting welded workpiece or the like comprising a first pair of dies having facing surfaces adapted to be moved toward and away from each other, said facing surfaces defining a first cavity adapted to grippingly engage a workpiece, and a second pair of dies having facing surfaces adapted to be moved toward and away from each other, said facing surfaces of said second pair of dies defining a second cavity adapted to receive the workpiece, said second cavity being of a larger dimension than the workpiece for receiving the workpiece with a clearance, a cutting surface defined by said second pair of dies around said second cavity thereof, said second pair of dies being reciprocal in the direction of the cavity for bringing said cutting edge into shearing engagement with a workpiece gripped in said first cavity of said first pair of dies and slidably received in said second cavity of said second pair of dies for shearing flash therefrom and third and fourth cavities formed, respectively, by said first and second pairs of dies, said third and fourth cavities being adapted to grippingly engage the workpiece for forming an upset therein in response to reciprocal movement of said pairs of dies.

3,847,324
NONTIPPING, DISPOSABLE DISHWARE
Joseph Uchanski, and Olga Uchanski, both of 2222 N. Monticello Av., Chicago, Ill. 60647
Filed Nov. 24, 1972, Ser. No. 309,477
Int. Cl. A47b *91/00*
U.S. Cl. 229—1.5 H **5 Claims**



1. A non-tipping disposable dishware assembly comprising a first member having a bottom provided with a predetermined shape and adapted to receive food, and a second member adapted to support said first member in an eating position on a supporting surface, said second member having upper and lower supporting structures, said upper supporting structure conformably receiving said bottom of said first member, an adhesive member covering said lower supporting structure, and a strippable member protecting said adhesive member.

3,847,325
POST CARD FOR MAILING A PICTURE
Paul J. Nasalski, 39A Dilla St., Mass. 01757, and Edward L. Robinson, 104 Greenwood Av., Wakefield, Mass. 01880
Filed Feb. 14, 1973, Ser. No. 332,388
Int. Cl. B42d *15/02*
U.S. Cl. 229—92.8 **9 Claims**

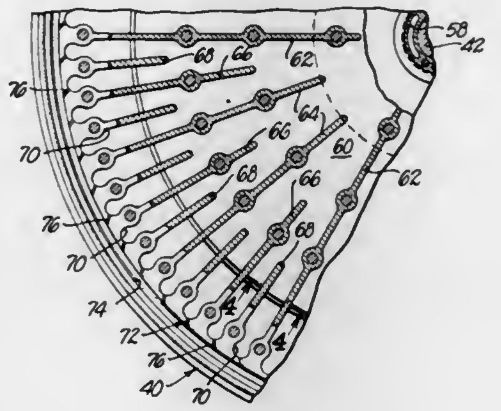


1. A post card for mailing a picture attached to the card comprising,
space on the first side of the card for imprinting an address and applying postage,
space on the second side of the card for attaching the picture,
an adhesive covering at least part of the second side covered with a removable backing material to protect that adhesive until it is used, and
an adhesive covering areas along at least two opposite edges of the first side with a removeable backing material to protect that adhesive until used,
whereby a picture can be attached to the adhesive on the second side of the card and mailed to the addressee who can mount the card with the picture in an album by removing the backing from the first side and affixing the card to the album.

3,847,326
TOBACCO COMPOSITION
Colin James Webster, West Kilbride, Scotland, assignor to Imperial Chemical Industries Limited, London, England
Filed Mar. 18, 1971, Ser. No. 125,811
Claims priority, application Great Britain, Mar. 23, 1970, 13864/70
Int. Cl. A24b *15/04*
U.S. Cl. 131—17 **8 Claims**

1. A smoking mixture comprising as the essential ingredients reconstituted tobacco, pure, fat-free protein, selected from the group consisting of albumin, casein, gelatin, peptone, haemoglobim, wool, maize, wheat, soyabean, and ground nut proteins and a carotene hydrocarbon, the ratio of carotene hydrocarbon to protein being in the range 1:3 to 1:60 and the protein constituting from 0.5 to 25 percent by weight of the smoking mixture.

3,847,327
CENTRIFUGAL SEPARATOR
John W. Erikson, Huntington Beach, and Vitolis Budrys, La Mirada, both of Calif., assignors to Kobe, Inc., Huntington Park, Calif.
Filed June 4, 1973, Ser. No. 366,442
Int. Cl. B04b *1/12*
U.S. Cl. 233—32 **4 Claims**



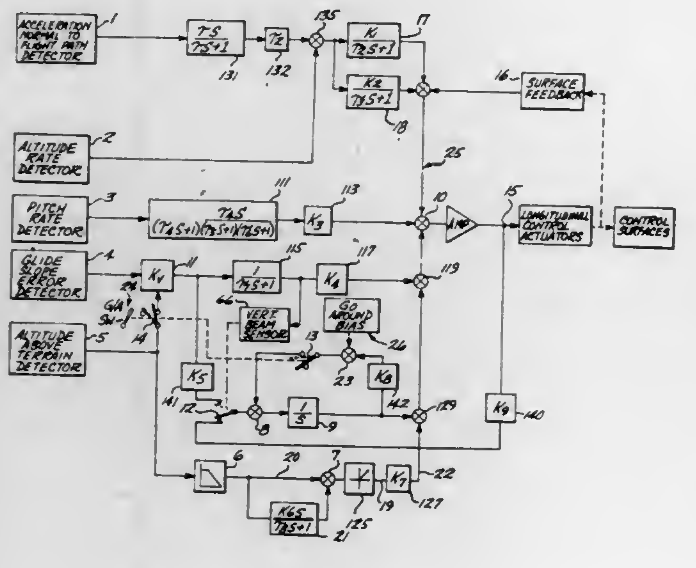
1. In a centrifugal separator for a liquid containing undesirable heavier materials the combination of:
a. an outer housing providing an axis;
b. a rotary casing mounted for rotation in said housing in a predetermined direction about said axis;
c. said casing having a radially central inlet and a radially central outlet;
d. inlet means for delivering a liquid containing undesirable heavier materials to said inlet;
e. outlet means carried by and leading to the exterior of said housing and communicating with said outlet for receiving cleaned liquid;
f. baffles in said casing and dividing said casing into circumferentially spaced compartments; and
g. the peripheral wall of said casing having passage means communicating with said compartments and said housing of a size to permit passage of heavier particles in the liquid, and some of the liquid, outwardly into said housing while causing at least a substantial portion of the liquid to be discharged from said casing through said outlet, said passage means including an annular collecting chamber in said peripheral wall of said casing between the inner and outer peripheries thereof, orifices respectively connecting said compartments to said collecting chamber, and tangential nozzles carried by said casing on the outer periphery thereof and facing rearwardly relative to the direction of rotation of said casing and communicating with said collecting chamber, said orifices extending generally rearwardly from said compartments to said collecting chamber with respect to the direction of rotation of said casing.

ERRATA

For Classes 235—54 thru 244—42 see:
Patents Nos. 3,847,345 thru 3,847,369

3,847,328
AUTOMATIC GO-AROUND CONTROL SYSTEM FOR AIRCRAFT

Robert D. Simpson, and Jimmie H. Boone, both of Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash. Division of Ser. No. 221,958, Jan. 31, 1972, Pat. No. 3,801,049. This application Mar. 19, 1973, Ser. No. 342,345
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 A **13 Claims**

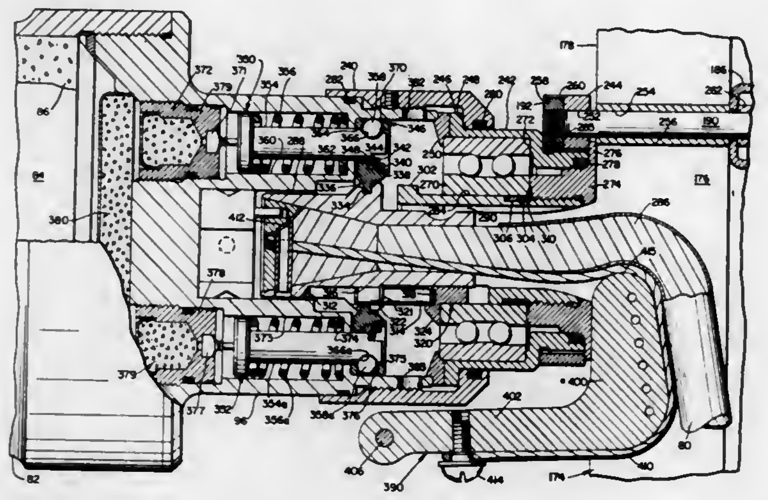

ACCELERATION NORMAL TO FLIGHT PATH DETECTOR
ALTITUDE RATE DETECTOR
PITCH RATE DETECTOR
GLIDE SLOPE ERROR DETECTOR
ALTITUDE ABOVE TERRAIN DETECTOR
SURFACE FEEDBACK
LONGITUDINAL CONTROL ACTUATORS
CONTROL SURFACES
GO AROUND BIAS
1
2
11
15
16
17
18
19
21
22
23
125
127
131
132
135

1. In combination in a pitch axis control system for an aircraft:
first means for providing a first signal representative of the altitude rate of said aircraft:
second means for generating a second signal representative of the desired change in said aircraft altitude rate during a go-around maneuver;
third means including series switching means for coupling said second signal to lag circuit means for producing a third signal representative of commanded change in altitude rate during said go-around;
fourth means for generating a fourth signal representative of the altitude rate of said aircraft at the initiation of said go-around maneuver;
fifth means for combining said first signal, said third signal, and said fourth signal, and wherein said first signal nulls or cancels said third signal and said fourth signal thereby providing a fifth signal representative of the altitude rate error of said aircraft during a go-around manuever.

3,847,329
ROCKET ESCAPE APPARATUS

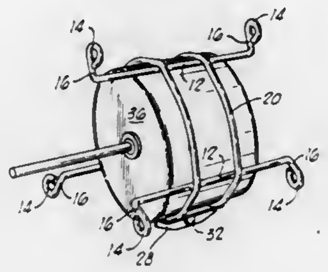
Robert M. Stanley, Denver, Colo., assignor to Stanley Aviation Corporation, Aurora, Colo.
Filed Aug. 31, 1972, Ser. No. 285,254
Int. Cl. B64d *25/10*
U.S. Cl. 244—122 AD **24 Claims**

1. In an apparatus for applying a pulling force to a person or other load, a rocket, an extendible, flexible towline connected to said rocket and providing a motion-transmitting connection between said rocket and said load, means for imparting airborne flight to said rocket in an unignited condition to extend and tension said towline, said towline, upon being extended to a tensioned condition by the unignited airborne flight of said rocket, exerting a pulling force which has a transverse component when the towline assumes a windblown posture and said rocket is at least partially weathercocked into an airstream, said transverse component being directed transversely of the longitudinal axis of said rocket, force direction converting means carried by said rocket for redirecting said transverse force component while the rocket is still at least partially weathercocked into said airstream, and means responsive to the redirected force component and any pull which the tensioned towline exerts axially of the rocket for igniting the fuel of said rocket to cause the rocket to apply a pulling force to said load through the connection provided by the extended towline.



3,847,330
MOTOR MOUNTING BRACKET

Jimmie H. Morrison, 2921 Monitor, Norman, Okla. 73069
Filed Aug. 15, 1973, Ser. No. 388,604
Int. Cl. F16f *15/04*
U.S. Cl. 248—14 **10 Claims**

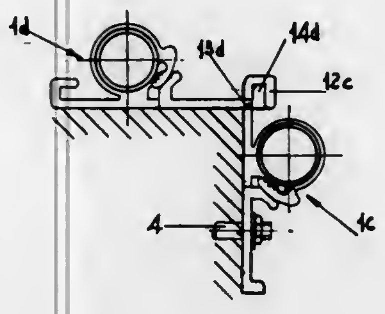


1. A motor mounting bracket comprising:
a plurality of annular bands disposed in substantially parallel planes;
a plurality of spaced, elongated rods extending substantially normal to said annular bands and each secured intermediate its length to each of said bands at points on the inside of the respective annular band whereby said rods are enclosed within said bands;
means at one of the ends of each of said rods for securing said bracket to a supporting structure; and
means for tensioning and constricting said bands to reduce the effective diameter thereof.

3,847,331
CLAMP DEVICE, ADAPTED TO BE ASSEMBLED IN SEQUENCE, FOR SUPPORTING AND RETAINING PIPES, CABLES AND THE LIKE

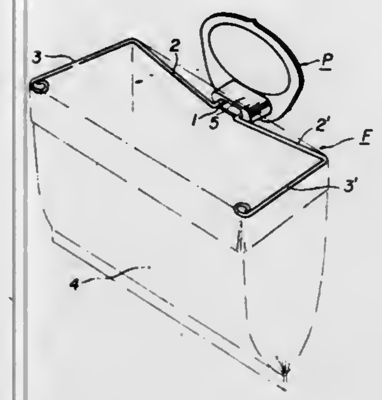
Michele Vallinotto, Strada San Michele 29, Testona-Moncalieri, and Luigi Villata, Via Stazione 6bis, Moncalieri, both of Italy
Filed Oct. 30, 1972, Ser. No. 301,834
Int. Cl. F16l *3/12*
U.S. Cl. 248—74 PB **1 Claim**

1. A thermal plastic clamping device adapted to be assembled in sequence for supporting and retaining pipes, cables and the like, said clamping device comprising, in combination, an elongated base; an aperture in said base for receiving a fastener therethrough whereby said base may be mounted on a support surface; an arcuate, rigid foot integral with said base, said foot having teeth thereon; a deformable clamp integral with said foot and extending from said foot in an arcuate manner for engaging the pipe; a rigid finger-like terminal on said clamp having teeth thereon that are adapted to engage the teeth of said foot; and a counter-element on said base disposed in front of said teeth of said rigid foot for defining a cavity adapted to retain said finger therein, the teeth of said finger being disengageable from the teeth of said foot only by means of a lateral displacement of said finger, said elongated base including an L-shaped hook at one end of said base and having a first member extending perpendicular to said base and a second member extending parallel to said base and a seat formed at the opposite end of said base by a recess extending inwardly of said end and a raised cross member on said opposite end and extending across said end and partially over said recess for receiving the L-shaped hook of the base of a second adjacent clamping device whereby at least two adjacent ones of said clamping devices may be secured to each other in a common plane or either in internal or external angular planes.



3,847,332
HANGER FOR DUST BAG

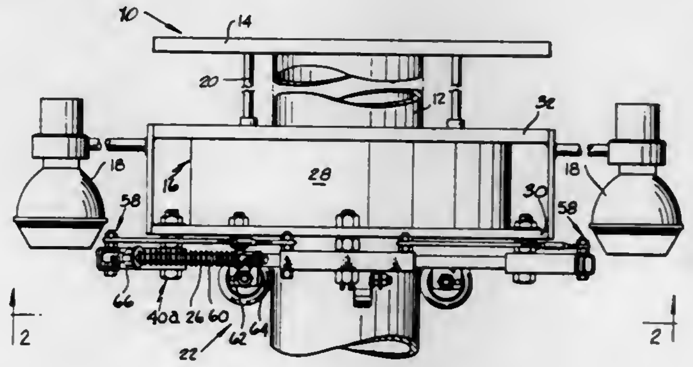
Yasuro Murai, 1-23, Miyoshi-cho, Tokyo, Japan
Filed Dec. 29, 1972, Ser. No. 319,671
Int. Cl. B65b *67/12*
U.S. Cl. 248—99 **2 Claims**



1. A hanger for supporting a foldable-type walled dust bag having an open top end in a vertical position on a wall support, said hanger comprising a horizontally oriented frame body designed and structurally adapted to spread and hold said bag top end unobstructedly open, said frame body being made from a single wire having a bendable, but self-shape-sustaining characteristic and embodying a central, horizontally disposed U-shaped base portion, a pair of members bent outwardly at a substantially right angle and slightly backwardly and upwardly from said U-shaped base portion to form a pair of duplicate side portions, each of said members being bent at a substantially right angle to said side portions in the same direction to form a pair of duplicate longitudinally spaced parallel coplanar arm portions, each of said portions terminating in a coiled tip portion, said side portions and said arm portions with tip portions forming a U-shaped enclosure whereby all three sides of said U-shaped enclosure resiliently urge against the inside wall of the dust bag to hold it firmly in its open position and simultaneously the two free arm portions tend to move outwardly against the inside wall of the dust bag with increasing force as the bag with its contents becomes heavier; a vertical mounting plate having a horizontally disposed cylindrical bore therethrough, the U-shaped base portion of said frame body being fitted and fixedly retained in said cylindrical bore; and means associated with said mounting plate for readily attachably securing said hanger to said wall support.

3,847,333
METHOD AND APPARATUS FOR CENTERING A LUMINAIRE SUPPORT

Robert Dale Zeller, Newark, Ohio, assignor to Johns-Manville Corporation, Greenwood Village, Colo.
Filed Feb. 5, 1973, Ser. No. 329,514
Int. Cl. F21v *21/14*
U.S. Cl. 248—125 **17 Claims**



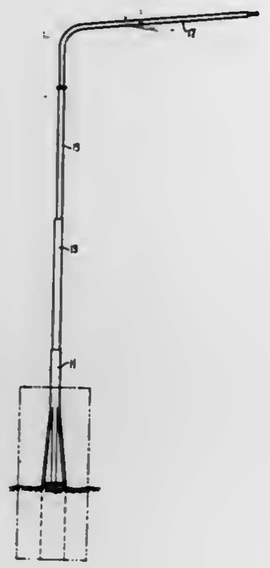
1. An apparatus for maintaining a ring-like object support in a predetermined location around the external surface of a post, said apparatus comprising:
a. a plurality of location maintaining arrangements connected with said object support and movable relative to said support along respective predetermined paths;
b. means connected with said location maintaining arrangements for biasing all of said arrangements in corresponding directions along their respective paths; and
c. a plurality of rod means substantially disposed within a common plane and interconnecting said arrangements to one another such that movement of any one of said arrangements along its predetermined path causes said pluality of rod means to substantially simultaneously move all of said other arrangements along their respective paths in a direction corresponding to the movement of said one arrangement.

3,847,334
STANDARD OR POLE FOR SUPPORTING LIGHT FITTINGS

Rolf Erik Forsberg, and Erik Einar Sparr, both of Mora, Sweden, assignors to AB Wikstrand & Berg, Wibe, Mora, Sweden
Filed May 1, 1973, Ser. No. 356,137
Claims priority, application Sweden, May 9, 1972, 6074/72
Int. Cl. E02d *27/42*
U.S. Cl. 248—158 **10 Claims**

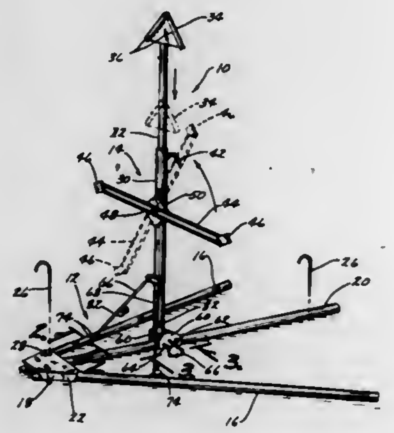
1. A pole or standard for supporting light fittings comprising an upper structure forming a major portion of the length of the pole or standard, said upper structure including a central vertical tubular structure, and a foot formed of a plurality of spaced apart tongues or struts having upper ends terminating

at and united to the lower end of said tubular structure and having lower ends connected to a common base which is of greater horizontal dimension than said tubular structure, said tongues or struts being arranged symmetrically with respect to the axis of said tubular structure and extending downwardly beyond the lower end of the latter and outwardly, whereby said tongues or struts support said tubular structure from said base and provide an assembly which is yieldable to horizontal forces occurring on collision of a vehicle with said tongues or struts.



3,847,335
FOLDABLE PORTABLE SIGN STANDARD

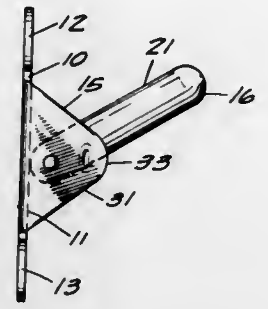
H. Cameron Ross, 203 South St., Audubon, Iowa 50025
Filed Aug. 10, 1973, Ser. No. 387,527
Int. Cl. F16m *11/38*
U.S. Cl. 248—166 **10 Claims**



1. A sign standard comprising, a base including a trio of legs spaced less than ninety degrees apart in an open position and adapted to engage a support surface along their entire length, said legs being pivotally interconnected at one end and adapted to be pivoted together to a closed position wherein said legs extend in parallel engaging relationship to each other,
- an upstanding post pivotally supported on said center leg and said post being adapted to pivot to a lowered position parallel to said trio of legs, and
- a pair of support braces extend from said post to detachable engagement with each of said outer legs when said post is in its upstanding position and said braces pivot to a position parallel with said post when said post is in a lowered position.

3,847,336
RELIEVABLE HANGER FOR CLOTHING AND THE LIKE

Earl L. Morris, and Theodore J. Sally, both of Whittier, Calif., assignors to Acorn Engineering Company, Industry, Calif.
Filed Nov. 20, 1972, Ser. No. 308,236
Int. Cl. F16n *13/00*
U.S. Cl. 248—294 **3 Claims**

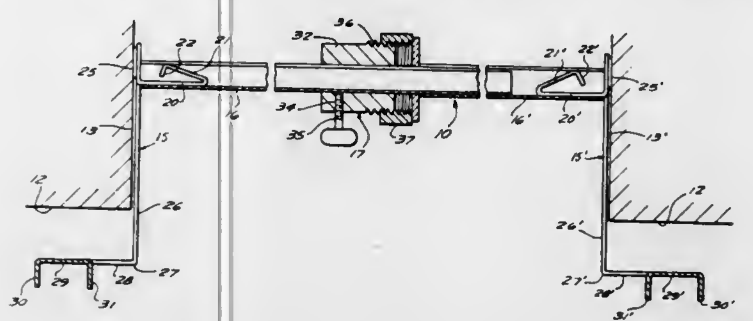


1. A relievable hanger for supporting articles of clothing or the like, comprising:
- an article-supporting arm having a rounded, elongated body and a hole therethrough adjacent one end thereof disposed substantially transverse to the axis of said body;
- a bracket element including a base plate for attachment to a vertical structural element and including a pair of forwardly-projecting, substantially parallel bracket flanges, the distance between said bracket flanges being greater than the cross section of said arm so as to place said bracket flanges in contiguous relationship to said arm to permit said arm to move freely therebetween, and the top and bottom edges of said bracket flanges being formed at angles of not less than substantially forty-five degrees to said base plate and further having a hole in each bracket flange, the centers of which lie on the same centerline, said centerline being disposed substantially transverse to said base plate;
- a journal pin for said arm said pin having a diameter smaller than said hole in said arm and freely movable therein and further being smaller in diameter than said holes in said bracket flanges, one end of said pin being disposed within one of said bracket flange holes and fixedly joined to said bracket flange and the other end being disposed within the other of said bracket flange holes and having a uniform cross-section from within the hole to the extremity of said pin end whereby said pin end is freely movable in longitudinal coaxial relationship to said hole;
- a first blunted shoulder on the inside face of one of said bracket flanges upon which said arm may rest; and
- a second blunted shoulder oppositely disposed from said first blunted shoulder on the inside face of the other of said bracket flanges upon which said arm may rest, wherein said first and second blunted shoulders are rounded and elongated and are substantially parallel to said base plate.

3,847,337
WINDOW SHADE AND CURTAIN BRACKETS AND MOUNTING MEANS THEREFOR

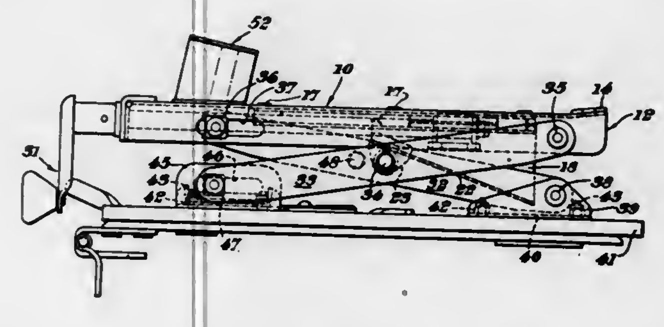
John Patrick, 133-33 Sanford Ave., Flushing, N.Y. 11355, and George J. Durmann, 97 Intervale Ave., South Framingdale, N.Y. 11735
Filed Sept. 24, 1973, Ser. No. 400,069
Int. Cl. A47h *1/14*
U.S. Cl. 248—252 **12 Claims**

1. A compressively mountable bracket assemblage for window frames and like openings comprising plate members adapted to engage opposed vertical surfaces within a window frame or like opening, telescopically interfitting rails extending between said plate members and positioned with respect thereto by protruding spring elements on said plate members adapted to extend into adjacent ends of said telescopic rails, the smaller of said telescopic rails slidably and telescopically receiving a compression unit, said compression unit having a generally cylindrical body part, means for locking said body part in desired positions longitudinally of said smaller rail, a washer-like element are slidably engaging said smaller rail between said body part and the larger telescopic rail, the inner dimension of said washer-like element being such as to provide bearing engagement with the end of said larger rail, and said compression unit further including a collar having threaded engagement with said body part and bearing engagement with said washer-like element, rotation of said collar with respect to said body part developing substantial compressive force between the anchorage point of said body part on the smaller rail and the end of said larger rail to thereby firmly engage said plate members with the opposed vertical surfaces of said window frame or like opening, and said plate members carrying means for the support of conventional coverings for said window or like opening.



3,847,338
ADJUSTABLE HEIGHT SEAT

Albert John Adams, Middlesex, England, assignor to A. W. Chapman Limited, London, England
Filed Feb. 26, 1973, Ser. No. 335,528
Claims priority, application Great Britain, Feb. 26, 1972, 8944/72
Int. Cl. F16m *13/00*
U.S. Cl. 248—419 **3 Claims**



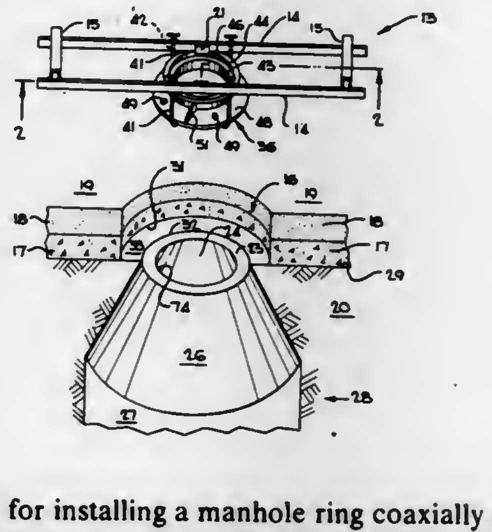
1. An adjustable height seat which includes a seat frame having spaced side members and spaced front and rear members all of which are rigidly connected to one another; two spaced lever pairs disposed parallel to one another in substantially vertical planes, the inner lever of one lever pair being connected to the inner lever of the other lever pair by a torsion rod having non-circular-section ends extending through complementary holes in said inner levers and being rivetted thereto; the levers in each lever pair being pivotally connected to one another in X-configuration by a shaft extending through the two spaced lever pairs, said shaft being spaced from and non-coaxial with said torsion rod; corresponding one ends of corresponding one levers of each lever pair being pivotally rivetted directly to corresponding ones of said seat frame members; corresponding one ends of the corresponding other levers of each lever pair being connected by pin-and-slot connections directly to said corresponding ones of said seat frame members at locations spaced from the rivetting of the ends of said corresponding one levers thereto, the pin being carried by the lever and the slot being formed in the seat frame member; the corresponding other ends of said corresponding one levers of each lever pair having a pin-and-slot connection with bracket members, the pin being carried by the lever and the slot being formed in the bracket member; the corresponding other ends of said corresponding other levers of each lever pair being rivetted to other bracket members which are spaced from the first-mentioned bracket members; two wedge-shaped plates generally vertically disposed in the vicinities of each lever pair and located inwardly of the lever pairs, each of said wedge-shaped plates having vertically separated non-parallel edges with flanges thereon which are substantially normal to the general plane of the plate, the flanges at one of said edges engaging a slide secured to the respective seat frame member and the flanges at the other of said edges engaging a wedge retaining block formed solely of a synthetic resin material having a low coefficient of friction which is supported by said shaft, each of said wedge retaining blocks being formed with a bore for the accommodation of part of said shaft and with a slot at right angle to and spaced above said bore for the guided sliding of ssid flanges at said other edges, each wedge-shaped plate having freedom for sliding movements relative both to said shaft and to said seat frame and being so slidably mounted with the interposition of additional elements of synthetic resin material having a low coefficient of friction between metal parts, said wedge-shaped plates being interconnected centrally by a connecting piece which carries a nut of a screw and nut mechanism, whereby rotation of the screw in the nut will cause displacement of said wedge-shaped plates relative to said shaft and said seat frame to alter the angular relationships between the levers of each lever pair as permitted by said pin-and-slot connections, with resultant adjustment of the spacing between the said bracket members and the seat frame.

ERRATUM

For Class 248—503 see:
Patent No. 3,847,344

3,847,339
APPARATUS FOR INSTALLING MANHOLE RINGS

Lewis E. Farrell, 10804 Ballentrae Way, Rancho Cordova, Calif. 95670
Filed Sept. 25, 1972, Ser. No. 291,989
Int. Cl. E02d *29/12*
U.S. Cl. 249—1 **4 Claims**



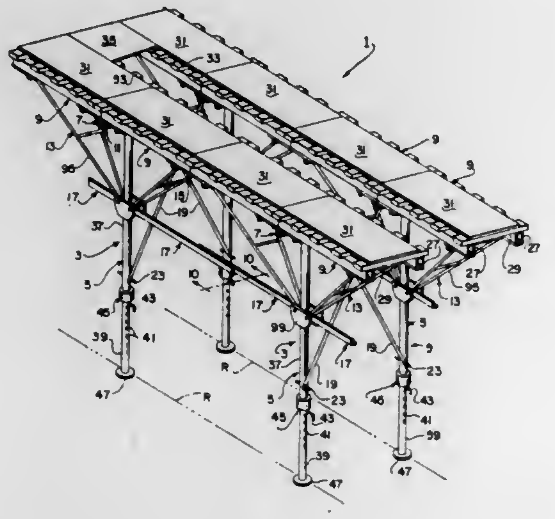
1. A device for installing a manhole ring coaxially with and above the annular support shoulder of a manhole located at the bottom of an opening extending below the surface of an encompassing layer of paving, said device comprising:
- a. an elongated frame capable of spanning the opening when supported on the paving surface;
- b. depending means removably attached to said frame for temporarily supporting the manhole ring above and in coaxial relation to the manhole support shoulder, said depending means including a plurality of J-shaped hooks each having a vertical stem supported at the upper end on said frame and a generally transverse foot on the lower

end, said J-hook being capable of being oriented so that said foot underlies and supports the manhole ring during deposition and setting of the concrete, said stem being separable into an upper portion and a lower portion, said upper portion being removable from said frame after setting of the concrete; and,

c. a collapsible, generally cylindrical shield capable of being expanded into temporary face to face engagement with the inner wall of the manhole ring and the subjacent inner margin of the support shoulder, said shield and said ring defining the inner wall of a generally annular chamber extending radially outwardly to the encompassing wall of paving material, said chamber extending vertically between the support shoulder and the plane of the paving surface, said depending means being detachable from said frame to permit the removal of said frame after concrete deposited in said chamber has set and said shield has been collapsed and separated from said frame.

3,847,340
SHORING FIXTURE FOR POURED CONCRETE CONSTRUCTION

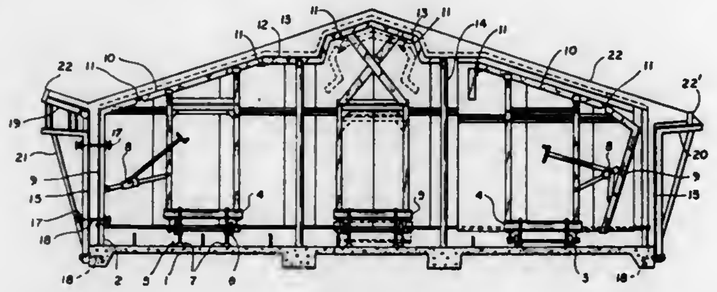
Charles L. Ficken, 107 Miramar Lane, Columbia, Mo. 65201, and John L. Gober, 221 Smith Ave., Kirkwood, Mo. 63122
Filed Feb. 14, 1972, Ser. No. 225,922
Int. Cl. E04g *11/48*
U.S. Cl. 249—18 **18 Claims**



1. A shoring fixture for poured concrete construction or the like comprising:
a post;
a crosshead at the upper end of the post;
a pair of deck sections adapted to be supported in end-to-end abutting relation on the upper end of the post with the abutting ends of the deck sections bearing on said crosshead;
means for detachably securing said abutting ends of said deck sections on said crosshead;
means for bracing the deck sections extending between the post and the deck sections and connected to the deck sections adjacent their outer ends;
each said deck section comprising a pair of spaced apart parallel side beams extending lengthwise of the deck section, a deck panel constituting a pouring surface for the concrete which is to be poured; and
a pair of interconnecting members slidably mounted longitudinally of said side beams for movement between a retracted position in which the outer end of a respective interconnecting member is withdrawn into its respective side beam and an extended position in which its outer end projects out beyond the end of its respective deck section for being received by a respective side beam of an adjacent deck section thereby to rigidly secure said adjacent deck sections together.

3,847,341
COLLAPSIBLE INTERIOR FORM FOR A MONOLITHIC STRUCTURE

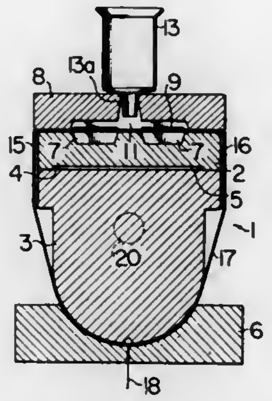
Charles W. Stickler, Jr., Mohnton, Pa., assignor to Gray Tech Industries, Inc., Mohnton, Pa.
Division of Ser. No. 200,060, Nov. 18, 1971, Pat. No. 3,742,102, which is a continuation-in-part of Ser. No. 123,539, March 12, 1971, abandoned. This application June 20, 1973, Ser. No. 371,826
Int. Cl. E04g *11/02*
U.S. Cl. 249—27 **5 Claims**



1. Apparatus comprising a form for pouring concrete to form integrally connected roof and sidewalls of a house, comprising an interior form including a plurality of pivotally interconnected roof and sidewall forming portions, each roof forming portion including a pivotally connected extension, a central roof forming portion with pivotally connected extensions, a plurality of wheeled form carriers, jack means for lifting vertically upwardly said form carriers, one of said carriers being located centrally for lifting and positioning said central roof forming portion and for holding it in confronting relationship with two other carriers located laterally thereof for lifting and positioning the said roof and sidewall forming portions with the roof forming portions slanted upwardly toward the center of the house, positioning linkage means pivotally connected to the sides of said two last mentioned form carriers for pivotally moving said sidewall forming portions from an inwardly retracted angular position to a normal vertical position.

3,847,342
APPARATUS FOR THE PRODUCTION OF RECORDING ELECTRODES OF THE MULTIPLE NEEDLE TYPE

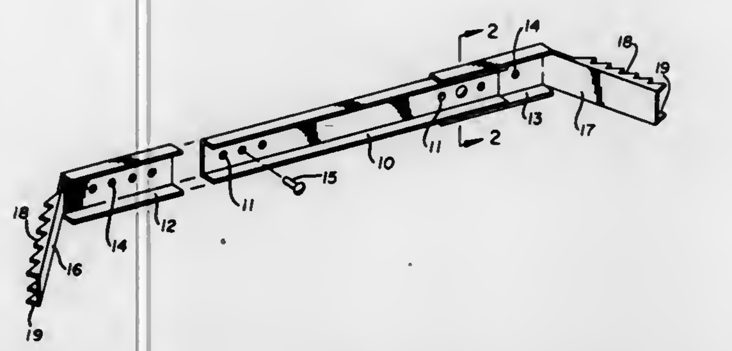
Tadashi Matsuura, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Dec. 7, 1972, Ser. No. 312,941
Claims priority, application Japan, Dec. 16, 1971, 46-102174
Int. Cl. B29c *6/04*
U.S. Cl. 249—85 **6 Claims**



1. An apparatus for the production of recording electrodes of the multiple needle type comprising a lower mold having a planar upper surface and a substantially convex lower surface, said planar upper surface being formed thereon with a plurality of resin receiving rectangular recesses disposed parallel to each other and along the longitudinal axis of the lower mold, said lower mold being adapted to have a wire wound spirally in convolutions on its periphery in predetermined spaced apart relationship, and an upper mold formed on its lower surface with a plurality of shallow rectangular recesses in positions corresponding to those of the resin receiving recesses formed in the lower mold and in its upper portion with at least one resin injecting gate for injecting therethrough a resin into a cavity formed by the rectangular recesses in the upper and lower molds, to thereby embed in resin a plurality of parallel lengths of wire, each length being that part of a convolution of wire wound over the lower mold which is within said cavity, while the remainder of the wire length of the convolution is not embedded in resin.

3,847,343
ADJUSTABLE SELF WEDGING DEVICES FOR SIDE BOARDS IN INGOT MOLDS

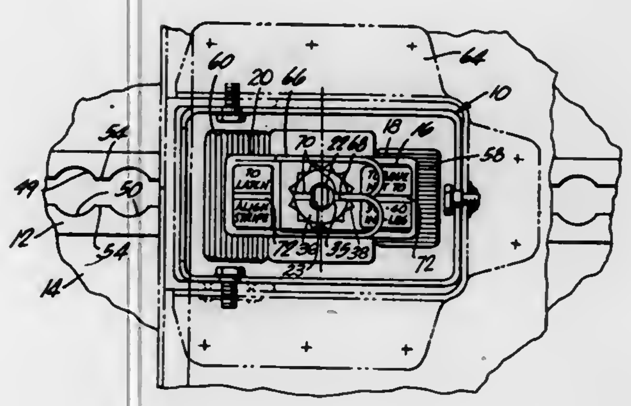
James B. LaBate, Chippewa Park Rd., Beaver Falls, Pa. 15010
Filed Oct. 31, 1973, Ser. No. 411,348
Int. Cl. B22d *7/10*
U.S. Cl. 249—202 **6 Claims**



1. Lengthwise adjustable self wedging devices for side boards in ingot molds comprising a pair of elongated metal members, each of which consists of a central section and a pair of end sections adjustably secured thereto, oppositely disposed angularly positioned distortable end portions on each of said end sections, sharp pointed portions extending outwardly on each of said end portions and arranged to be embedded in said side boards when said self wedging devices are forcibly positioned between said side boards in said ingot mold so as to hold the same in position therein.

3,847,344
TRACK FASTENER

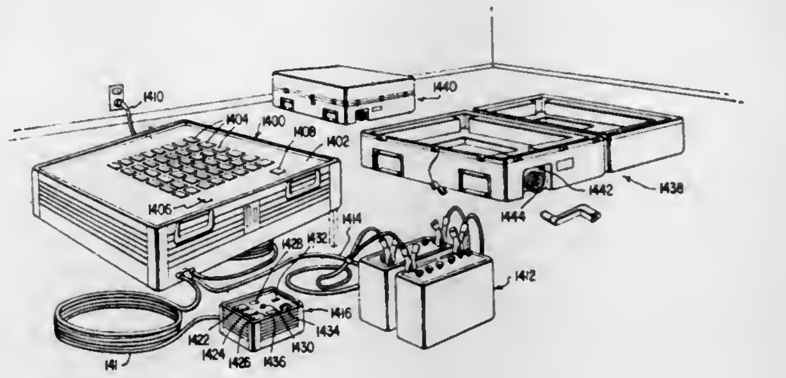
Stanley N. Kulczycki, Redondo Beach, and Edward E. Betts, Costa Mesa, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed Apr. 19, 1971, Ser. No. 134,986
Int. Cl. A44b *17/00;* **A62b** *35/00*
U.S. Cl. 248—503 **2 Claims**



1. A fastener for use with a track in a supporting structure to secure removable structure to the supporting structure, said fastener comprising:
a base including abutment means adapted to engage the track to restrain said fastener from movement in a planar direction, and connection means adapted to connect the removable structure to said fastener;
a stud assembly including a rotatable shaft which extends through said base, said shaft including a lower T-shaped integral end portion adapted to predeterminately engage with the track to fix said fastener from movement at a right angle to said planar direction when said rotatable shaft is rotated a predetermined angle in a predetermined direction, a threaded portion adapted to draw said T-shaped end portion into tight engagement with the track and means to indicate said T-shaped end portion is predeterminately engaged with the track, said connector means including a connector member, said connector being adapted for fastening to the removable structure and having a first serrated connector portion oriented in a first direction and a second serrated connector portion oriented in a second direction; said connector defining an opening between said first and second serrated connector portions through which said T-shaped end portion and said base abutment means extend, a first serrated portion of said base oriented in said first direction, and a second serrated portion of said base oriented in said second direction whereby said first and second serrated portions mate with said first and second serrated connector portions of said connector member to retain and enable adjustment of the removable structure in said planar direction with respect to the supporting structure; and
means threadably engaging said threaded shaft portion and bearing against said base so that when said threadably engaging means are twisted in the predetermined direction and the predetermined angle to engage said T-shaped end portion with the track, said threaded shaft portion draws said T-shaped end portion into tight engagement with the track.

3,847,345
ELECTRONIC VOTING MACHINE

Michael T. Moldovan, Jr.; Charles J. Lindros, both of Lakewood; Lawrence L. Anderson, Jamestown; Robert D. Wescott, Jamestown, and Richard J. Cusimano, Jamestown, all of N.Y., assignors to AVM Corporation, Jamestown, N.Y.
Filed Mar. 23, 1973, Ser. No. 344,411
Int. Cl. G07c *13/00*
U.S. Cl. 235—54 F **72 Claims**



1. In an automatic voting machine having a vote selection panel providing a plurality of voting points, the combination of:
a plurality of normally open switches defining a switch matrix having a plurality of input lines and a plurality of output lines, certain of said switches being located at said voting points and constituting vote selection switches, another of said switches being located remote from said vote selection panel and constituting a vote enabling switch, and a further one of said switches being associated with said voting panel and constituting a voter exit switch;
a plurality of normally inactive indicators defining an indicator matrix having a plurality of first input lines and a plurality of second input lines, one of said indicators being associated with each of said voting points;

a plurality of normally inactive counters defining a counter matrix having a plurality of first input lines and a plurality of second input lines, one of said counters being associated with each of said voting points;

clock means having a plurality of output lines connected to the input lines of said switch matrix and to said first input lines of said indicator matrix and of said counter matrix for sequentially and cyclically activating such input lines; and

logic means connected to the output lines of said switch matrix for cyclically and sequentially activating said second input lines of said indicator matrix in response to actuation of said vote enabling switch and in accord with a pattern of vote selection switches selectively actuated by a voter subsequent to the actuation of said vote enabling switch to activate those indicators corresponding to the voter-selected vote selection switches and for sequentially activating said second input lines of said counter matrix in accord with said pattern in response to actuation of said voter exit switch to activate those counters corresponding to the voter-selected vote selection switches.

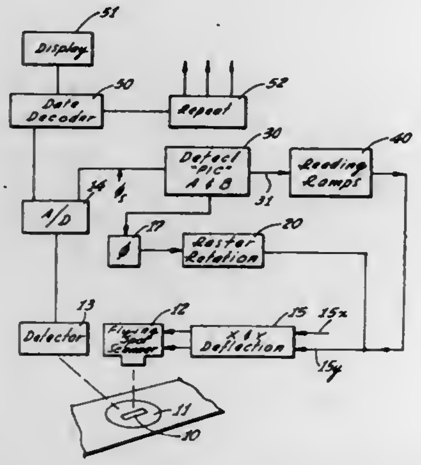
3,847,346
DATA FIELD RECOGNITION AND READING METHOD AND SYSTEM

Volker Dolch, Neu Isenburg, Germany, assignor to Scanner, Inc., Houston, Tex.

Continuation of Ser. No. 284,733, Aug. 30, 1972, abandoned. This application Jan. 21, 1974, Ser. No. 435,358

Int. Cl. G06k *7/00*

U.S. Cl. 235—61.11 E **32 Claims**



1. The method of identifying objects by means of data information, which objects may appear in random position and orientation and at random times in a particular area, comprising:

providing a data field on a surface of the objects which data field is comprised of contrasting data markings arranged in at least one track;

providing to the data field a contrasting line pattern identifying location and orientation of the track in the data field, the pattern including plural lines extending in a first direction, and being spaced in a direction normal to the first direction;

line scanning the particular area in a scanning field for detecting repeatedly a particular signal pattern as resulting from line scanning the particular area when containing a data field with line pattern therein, and when line scanned transverse to the first direction and within an angular range about the said normal direction;

determining the data field portion and orientation as a result of said line scanning when detecting repeatedly said particular signal pattern; and

providing a unique data field scanning pattern on basis of said position and orientation determination for causing said data track to be scanned repeatedly in direction of its extension for reading the data contained in the data field.

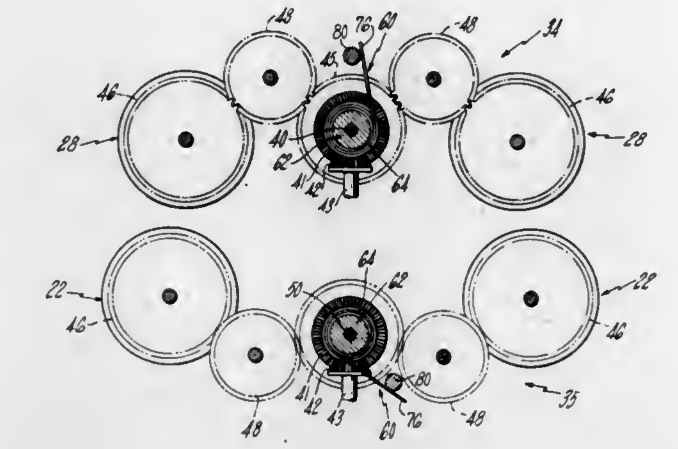
3,847,347
ROTARY DRIVE ANTI-BACKLASH DEVICE

Bruno S. Smilgys, Hartford, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Jan. 11, 1974, Ser. No. 432,577

Int. Cl. G06c *25/00*

U.S. Cl. 235—131 R **9 Claims**



1. In a fluid delivery register for a fluid delivery system having fluid delivery means selectively operable for initiating and terminating the delivery of fluid, a fluid meter for metering the amount of fluid delivered, and a first rotary drive train driven by the meter for operating the register comprising a variator having a rotary input connected to and rotated by the meter in accordance with the volume amount of fluid delivered, a rotary output for operating the register and gear means interconnecting the rotary input and output settable for establishing the unit volume price of the fluid and for rotating the rotary output in accordance with the rotation of the rotary input and the established unit volume price; the register having at least one resettable rotary counter with a plurality of coaxial rotary counter wheels of ascending order, a second rotary drive train connecting the rotary output of the variator with the lowest order counter wheel of said one counter to rotate the counter for registering the cost amount of fluid delivered and disengageable for disengaging the second rotary drive train from said one counter, reset means operable between fluid deliveries for temporarily disengaging each rotary drive train of the register and for resetting the coaxial counter wheels of each resettable rotary counter rotated thereby while the rotary drive train is disengaged, and counter drive anti-backlash means for removing inertia overtravel of each counter upon termination of a fluid delivery, the improvement wherein the counter drive anti-backlash means comprises a friction device connected to said second rotary drive train and having a drum member with an external annular friction surface; a coil spring having a first free end and a second end member, a first helical friction spring section with a plurality of generally helical friction coils extending from the first end, each surrounding and in frictional engagement with said annular friction surface, and a second torsion spring section between the first helical friction spring section and said second end member, and means mounting the drum member and said second end member of the coil spring for rotation in one angular direction of the drum member relative to the coil spring by the second rotary drive train, the helical friction coils of the friction spring section extending generally helically around said annular friction surface from said first end thereof in said one angular direction whereby upon rotation of the second counter drive train during the delivery of fluid, the frictional engagement of each helical coil of the friction spring section with the friction surface assists in angularly deflecting and thereby torsionally loading the torsion spring section and radially expands the friction spring section to reduce its frictional engagement with the annular friction surface.

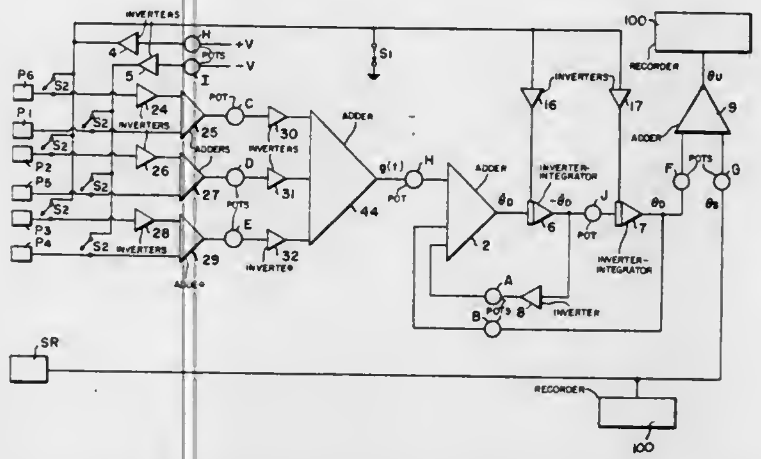
3,847,348
ROLL COMPUTER

Joseph E. Russ, Spencerville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 14, 1973, Ser. No. 415,693

Int. Cl. G06g *7/70*

U.S. Cl. 235—151.3 **6 Claims**



1. A device for determining the unstabilized roll of a ship equipped with a roll tank comprising:

first means for developing a first electrical signal proportional to the difference between the unstabilized roll angle and the stabilized roll angle of the ship;

second means for developing a second electrical signal proportional to the stabilized roll angle of the ship;

third means for adding said first and second signals to produce a third electrical signal proportional to the unstabilized roll angle of the ship, whereby said third signal is indicative of the effectiveness of said roll tank when compared with said second signal.

3,847,349
INTERPOLATORS

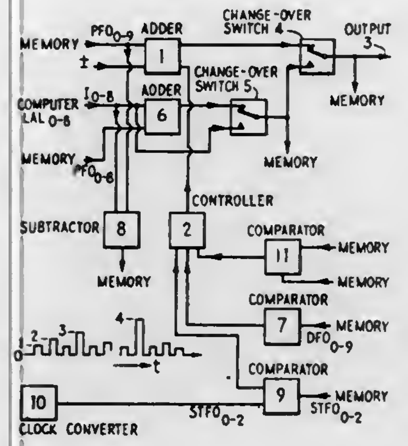
Peter Charles Eastty, London, England, assignor to Electronic Music Studios (London) Limited, London, England

Filed Dec. 21, 1973, Ser. No. 427,269

Claims priority, application Great Britain, Dec. 22, 1972, 59541/72

Int. Cl. G06f *7/38*

U.S. Cl. 235—152 **13 Claims**



1. An interpolating arrangement comprising:

stepping means for interpolating in small steps from an initial value, said stepping means having a control input for receiving signals to initiate respective ones of said small steps;

comparison means having first input means available to receive a reference value dependent upon a predefined real-time duration of an interpolating operation from said initial value to a further value, second input means and an output for transmitting for said stepping means a possibly step-initiating signal when said comparison means senses a predetermined relationship between the values of signals at said first input means and said second input means of said comparison means; and

signal generator means connected to said second input means of said comparison means and being operable to generate a succession of values repeatedly during said predefined duration of said interpolating operation.

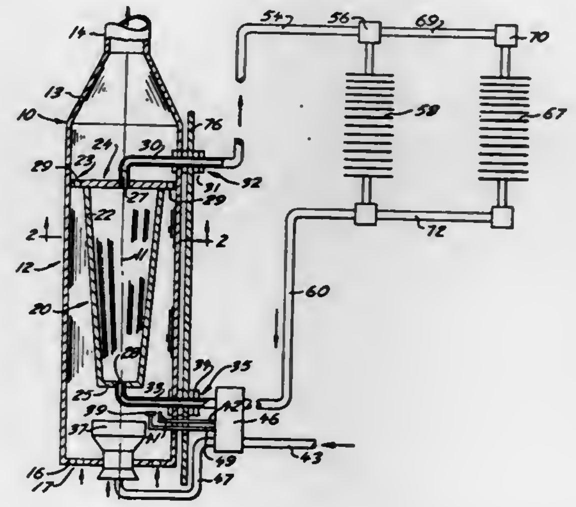
3,847,350
VEHICLE HEATING UNIT

George Scott Thompson, 3457 Victoria Dr., Coquitlam, B.C., Canada

Filed Jan. 2, 1973, Ser. No. 320,321

Int. Cl. F24d *3/00*

U.S. Cl. 237—8 A **5 Claims**



1. A self-contained heating unit for heating a vehicle independently of external electrical power, the unit being adapted to burn a compressed inflammable gas from a pressurized gas supply, heat generated by burning being transferred to the vehicle through a heat emitter in the vehicle, the heating unit including:

a. a cylindrical heater chamber having a upper end having a flue, and a lower end having openings to admit air, the chamber being adapted to be secured vertically to a vehicle body portion,

b. a heater tank to heat liquid, the tank having inlet and outlet ports and being disposed generally centrally within the heater chamber,

c. a liquid delivery pipe communicating with the outlet port and the heat emitter to conduct heated liquid from the tank to the heat emitter,

d. a liquid return pipe communicating with the inlet port and the heat emitter so that the tank receives cooled liquid from the heat emitter,

the heater tank, the pipes and the heat emitter thus forming a closed loop, the heater tank being disposed below the heat emitter so that heated liquid produces a thermo-syphon circulation in the closed loop, the unit further including:

e. a gas burner adapted to heat the liquid in the tank, the burner having a main jet and a pilot jet the jets being positioned closely together, the burner being positioned beneath the heater tank so that the pilot jet is adjacent an opening at the lower end of the heater chamber to facilitate lighting of the pilot jet,

f. a main jet delivery line feeding gas to the main jet,

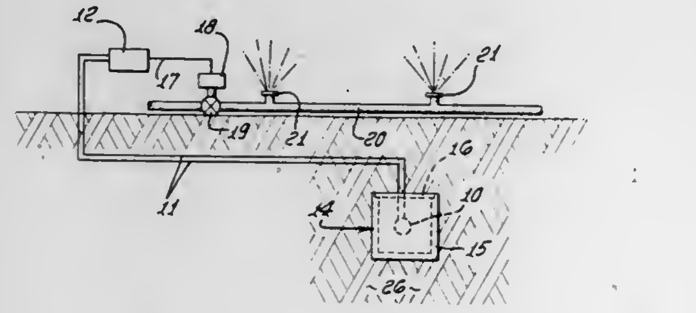
g. a pilot jet delivery line feeding gas to the pilot jet,

h. a gas supply line extending from the gas supply, a manual valve cooperating with the supply line to control gas flow from the supply,

i. an automatic temperature control unit having: an intake connected to the gas supply line to receive gas; a temperature sensing element in the liquid return pipe; a cut-off valve to control entry of gas into the control unit from the gas supply; gas outlets communicating with the main jet delivery line and the pilot jet delivery line respectively, the outlets being controlled by respective valves; a thermocouple adjacent the pilot jet to be heated by the pilot jet, the thermo couple providing electric power to actuate the valves controlling the gas supply to the pilot jet and to the main jet; so that should the pilot light become extinguished when the main jet is not lit the gas supply to both jets is stopped, and if the temperature sensing device indicates excessively high liquid temperature in the return pipe the gas supply to both jets is stopped, and the automatic temperature control unit further including: a casing enclosing the valves aforesaid, the casing embracing the return pipe and the gas supply line so as to provide a compact unit which can be easily fitted to a vehicle and coupled to a heat emitter to provide heating of the vehicle without the use of an external electrical power source, thus permitting operation of the device at temperatures when normal vehicle storage batteries are inoperative.

3,847,351
SOIL MATRIC POTENTIAL SENSOR

Harold W. Hasenbeck, 1524 Almeda st., Pomona, Calif. 91767
Filed June 29, 1973, Ser. No. 374,865
Int. Cl. A01g *25/00*
U.S. Cl. 239—63 **9 Claims**

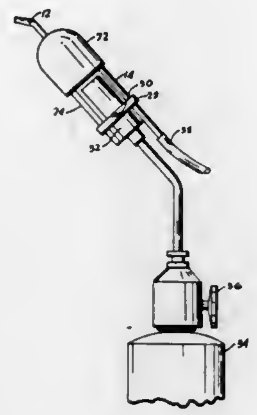


1. In a matric potential sensor for use in underground soil and in combination with an automatic, closed-loop, irrigation control, the combination comprising
  a. a heat diffusion sensor in the form of a solid state, heat diffusion thermistor having an output which varies as a function of changes in heat diffusion from or to the sensor, and
  b. porous granular material in the form of glass beads extending in adjacent, heat transfer relation with the heat diffusion sensor and characterized as capable of absorbing water when pressure in the soil is greater than the porous material and losing water content as the matric potential of the soil increases, thereby providing the required increase or decrease in sensor heat-diffusion.

3,847,352
WELDING APPARATUS

John A. Therrien, Sarnia, Ontario, Canada, assignor to The Raymond Lee Organization, New York, N.Y., a part interest
Filed Aug. 21, 1973, Ser. No. 390,211
Int. Cl. F23d *15/00*
U.S. Cl. 239—133 **2 Claims**

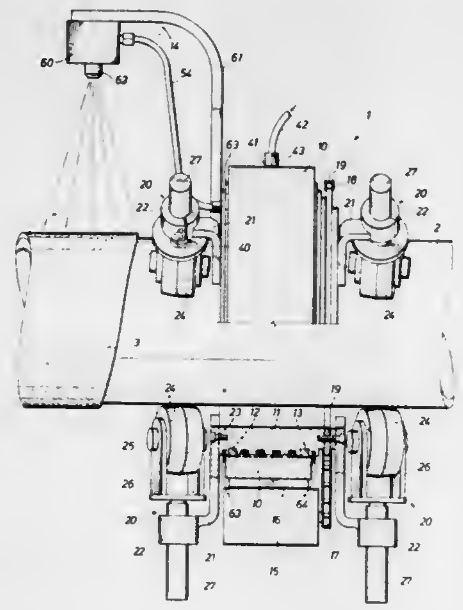
1. Welding apparatus adapted to weld plastics and comprising:
a hollow coil having a discharge tip at one end and an inlet at an opposite end;
first means connected to said opposite end to pass a first gas through said coil under pressure for release through said tip, said first gas being chemically nonreactive with plastics; and



second means to apply heat to said coil to heat the first gas prior to release, said second means including a torch and fuel therefor, said fuel being a second gas.

3,847,353
SPRAY DEVICE FOR COATING THE OUTSIDE OF PIPE

J. Harry Wynne, II, 5300 Pershing Ave., Houston, Tex. 76107
Filed Nov. 14, 1973, Ser. No. 415,827
Int. Cl. B05b *3/18;* **B05c** *5/00;* **B05b** *13/04*
U.S. Cl. 239—184 **10 Claims**



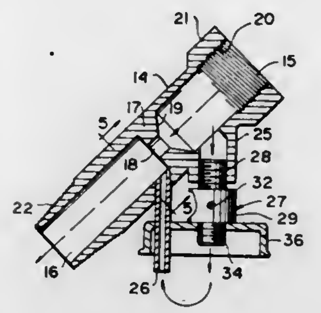
1. A spray device comprising:
an outer body means,
a rotating means which rotates within said outer body means,
bearing means between said outer body means and said rotating means which forms at least one fluid chamber, and
spray means on said rotating means in fluid communication with said chamber.

3,847,354
SHOWER HEAD ADDITIVE DISPENSER

Robert H. Lemond, Rt. No. 1, Box 190, Ellsworth, Mich. 49729
Filed Sept. 20, 1973, Ser. No. 399,102
Int. Cl. B05b *7/32*
U.S. Cl. 239—317 **2 Claims**

1. A shower head additive dispenser comprising an elongated, centrally bored tubular body member having an inlet end for connection to a shower water inlet pipe and an outlet end for connection to a shower head, so that water from the inlet tube to the shower head passes through the bore in the member;

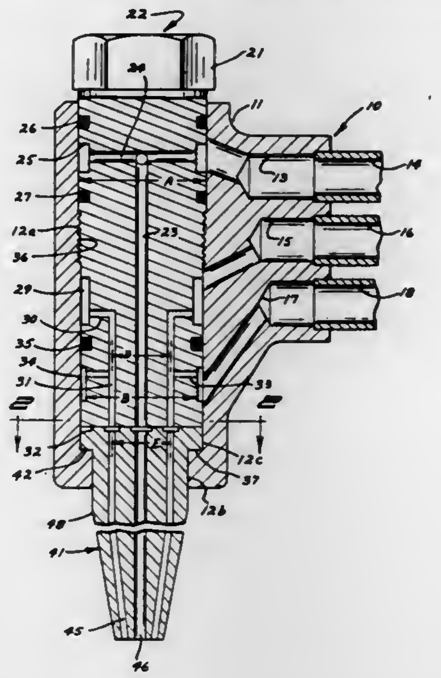
said bore being formed as an inlet portion and an outlet portion separated by a short, annular shoulder located roughly at the middle of the tubular member and with a small diameter opening forming the inner wall of the annular shoulder and connecting the inlet and outlet bore portions;
the central axis of said body member being arranged at an acute angle to the vertical, that is, sloped so that the outlet bore portion slopes and opens downwardly toward the shower head;
the shoulder having a transverse face at the inlet bore side thereof formed in an approximately truncated conical shape, with the small base thereof defining the edge of said small diameter opening,
the shoulder having a planar transverse face at the outlet bore side thereof;
a short inlet diversion tube, and a short outlet diversion tube, each having an upper end joined to the body member and opening into the bore therein, with the tubes being vertically arranged and located at opposite sides of the shoulder and opening into the bore closely adjacent to the opposite sides of the shoulder and at an acute angle to the bore axis with said outlet tube opening directed toward the planar shoulder face;
and each tube having a lower end connected to a cap to which a container is removably fastened, with the lower ends of the two tubes thus communicating with the interior of the container;
and a manually operable control valve located within the tube which opens into the inlet bore portion for controlling the flow of water out of the inlet bore portion and into the container;
whereby bath oils and the like additives may be placed within the container and a controlled part of the water flowing through said body member may be diverted through the container, i.e., around the shoulder and back into the outlet bore portion, to pick up said additive and dispense same mixed with the water flowing through the shower head during operation of the shower.



3,847,355
TORCH APPARATUS

John E. Smith, Lake Elmo, Minn., assignor to Tescom Corporation, Minneapolis, Minn.
Filed Dec. 5, 1973, Ser. No. 421,840
Int. Cl. B05b *7/06*
U.S. Cl. 239—424.5 **12 Claims**

1. Torch head apparatus comprising a torch head having an axially elongated torch head bore that at each end opens outwardly of the torch head, said torch head bore having a first bore portion opening outwardly of the torch head at one end and a reduced diameter bore opening at one end to the first bore portion to define a shoulder facing toward the first bore portion one end and opening at the other end outwardly of the torch head, an axially elongated torch tip having an enlarged diametric portion seatable against said shoulder and a tip portion extending through said reduced diameter bore portion and outwardly from the torch head, and a mixer removably mountable in the first bore portion, said mixer and torch tip having abuttable end surfaces, said mixer and torch head having cooperating means for retaining the mixer in abutting relationship with the torch tip to hold the torch tip against said shoulder, said mixer having a cutting oxygen passageway opening through said mixer surface and a plurality of preheat oxygen-fuel gas passageways opening through said mixer surface radially outwardly of the opening of the mixer cutting oxygen passageway through said mixer surface, said



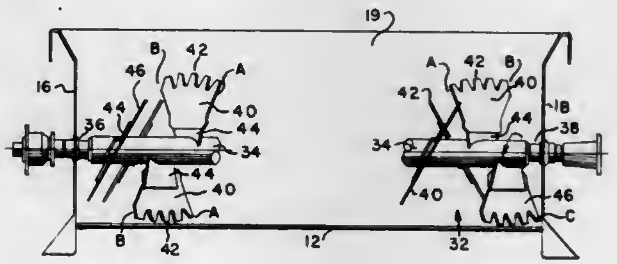
torch head having passageways for conducting cutting oxygen, and preheat oxygen and fuel gas to the respective mixer passageway, and said tip having a cutting oxygen bore opening through said tip surface to the mixer cutting oxygen passageway and oxygen-fuel gas passageways opening to the mixer oxygen-fuel gas passageways.

ERRATUM

For Class 239—507 see:
Patent No. 3,847,159

3,847,356
SCRAPING PADDLES FOR UNLOADING AND SPREADING MECHANISM USED WITH MANURE SPREADERS

Allison W. Blanshine, Lititz, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed May 29, 1973, Ser. No. 364,781
Int. Cl. A01c *23/00*
U.S. Cl. 239—662 **6 Claims**



1. A manure spreader comprising:
a wheeled frame;
an open ended spreader box mounted on said frame;
a conveying device operable with said spreader box to transport stored material along the length of said box to the open end of said box;
a means for unloading and spreading said stored material including a rotatable shaft mounted between the sidewalls of said spreader box and in the immediate vicinity of the opening included in said box, and paddles mounted on said shaft so that upon rotation of the shaft the paddles will move into the material being transported towards

said opening in the box by the conveying device and engage, shread and discharge said material from the box; a scraping means positioned on each side of said unloading and spreading means, said scraping means including at least one of said paddles mounted on said rotatable shaft of said unloading and spreading means and disposed adjacent the sidewalls of the spreader box, each of said paddles having a leading edge which moves closer to the adjacent sidewalls of the spreader box than the trailing edge during the rotation of said scraping means.

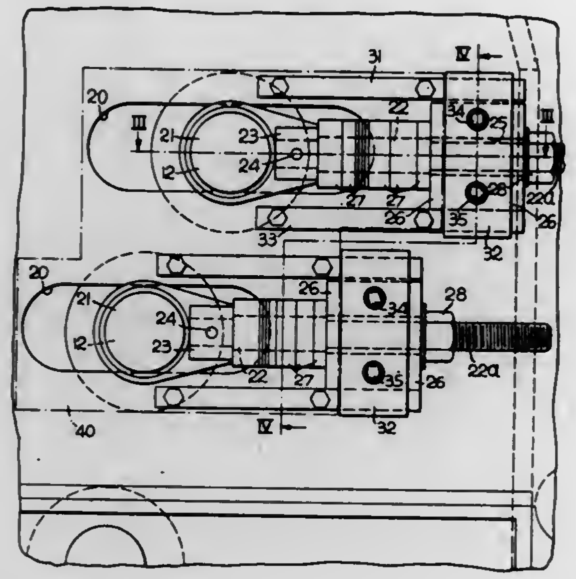
3,847,357
SEPARATION OF COPPER MINERALS FROM PYRITE

David Weston, 34 Parkwood Ave., Toronto, Ontario, Canada
Continuation of Ser. No. 115,709, Feb. 16, 1971, abandoned.
This application June 27, 1973, Ser. No. 374,024
Int. Cl. B03b *1/04*
U.S. Cl. 241—20 **9 Claims**

1. A process for the separation of copper values from copper ores containing pyrite by differential flotation comprising; preparing a copper-pyrite flotation concentrate which is substantially free of slime host rock materials; grinding said copper-pyrite flotation concentrate in the presence of calcium hydroxide; agitation conditioning the thus produced pulp at a pH of at least 12.3 in the presence of a sulf-hydryl collecting agent for a period of time sufficient to depress the pyrite; and then subjecting the resulting pulp to flotation in the presence of a suitable frother to produce a copper concentrate enriched in copper values and impoverished in pyrite, and a tailings impoverished in copper values and enriched in pyrite.

3,847,358
ADJUSTABLE AND YIELDABLE BREAKER BAR SUPPORTS FOR IMPACT CRUSHER

Keith B. Lowe, and William R. Gray, both of Appleton, Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Jan. 16, 1974, Ser. No. 433,881
Int. Cl. B02c *13/31*
U.S. Cl. 241—32 **5 Claims**

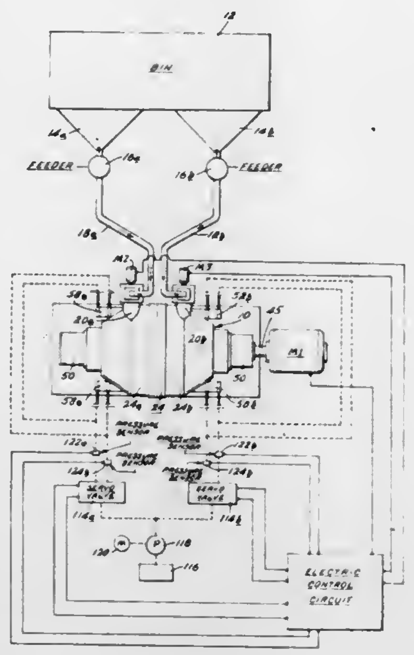


1. An impact crusher having a housing enclosing a rotor carrying hammers arranged to strike and throw input material to disintegrate upon impact with target breaker bars spaced from the rotor, and an improved support assembly for each end of an adjustably positioned target breaker bar having end portions projecting through horizontally extended oblong openings in sidewalls of said housing; and said support assembly comprising:

a. an arm having a bushing at one end connected at a right angle to said projecting bar end portion, with an end of said arm opposite said bushing being threaded and projecting horizontally away from said rotor and beyond said sidewall opening;
b. a shear block with a central bore through which the threaded end portion of the arm projects;
c. a plurality of shims on said arm between said bushing and said shear block;
d. a threaded nut turned on the end of the arm projecting through the shear block and clamping said shims between said bushing and said shear block;
e. a channel fitted over the shear block, having an open end directed horizontally toward and attached to the adjacent housing sidewall to define a box surrounding and holding the shear block against rotation about the arm; and
f. a pair of parallel shear pins arranged in a vertical plane and on opposite sides of the arm, with each shear pin having its ends journaled in said box and a midportion thereof extending through a bore in the shear block to hold the shear block against axial movement within said box unless and until said shear pins are sheared by overload force applied to the supported target bar by such as uncrushable material.

3,847,359
DISC TYPE REFINER WITH AUTOMATIC PLATE SPACING CONTROL

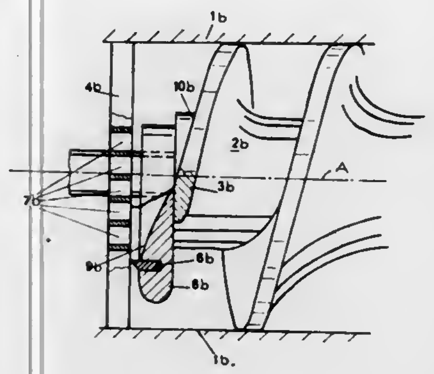
William S. Holmes, South Williamsport; Chester Donald Fisher, and Clifford D. Ihrig, both of Muncy, all of Pa., assignors to Sprout, Waldron & Company, Inc., Muncy, Pa.
Filed Dec. 14, 1973, Ser. No. 424,688
Int. Cl. B02c *7/14*
U.S. Cl. 241—34 **15 Claims**



1. A disc type refiner for the refining of paper pulp and the like comprising a base, a rotor mounted for rotation on said base, a motor for driving said rotor in rotation, a refining surface on said rotor, a non-rotating head on said base, a refining surface on said non-rotating head in juxtaposed relation to said rotor refining surface, means for axially adjusting the position of said non-rotating head to control the spacing of said juxtaposed refining surfaces, feed means for introducing materials to be refined between said refining surfaces, means for monitoring the flow rate of material through said feed means, and means for continuously adjusting the spacing of said refining surfaces in accordance with the flow rate of material through said feed means to provide a constant work input to the material despite fluctuations in the material flow rate.

3,847,360
FOOD CHOPPER

Ludwig Seydelmann, N. Holderlinstrasse, 9, Stuttgart, Germany
Filed Nov. 1, 1972, Ser. No. 302,725
Int. Cl. B02c *18/18, 18/30, 18/36*
U.S. Cl. 241—82.5 **7 Claims**

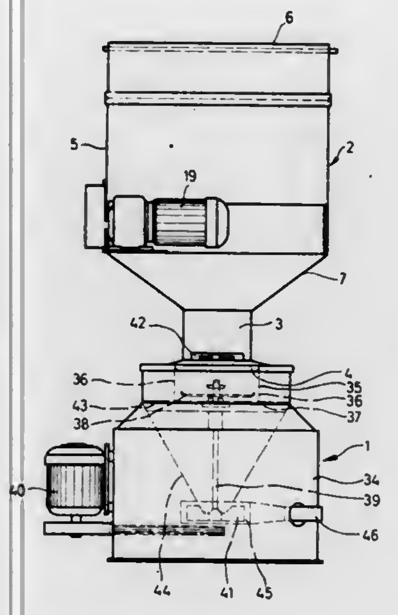


1. A food chopper comprising:

a housing having an elongated feed chamber;
a perforated plate defining one end of said chamber;
a conveyor in said chamber adjacent said plate having a surface directly juxtaposed with and inclined to said plate, said conveyor being rotatable in one sense such that said surface forces food against said plate;
a blade on said conveyor trailing said surface in said sense and sweeping over said plate on rotation for cutting food extending into said plate;
an auger having a worm and rotatable in said chamber about the same axis as said conveyor, said conveyor being between said auger and said plate; and
means for adjusting the extent of projection of said blade from said conveyor toward said plate.

3,847,361
COMMINUTOR FOR BULKY OBJECTS

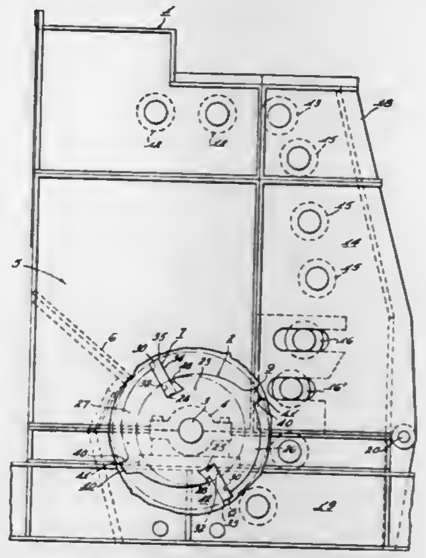
Alois Heger, 7031 Oberjesingen, Wurtenberg, Germany
Filed Jan. 15, 1973, Ser. No. 323,925
Int. Cl. B02c *9/04*
U.S. Cl. 241—152 **20 Claims**



1. A comminutor for bulky objects, particularly objects of porous styrene, comprising a breaker unit having a housing provided with an inlet opening, an outlet opening, at least two transversely spaced parallel rotatable shafts, a plurality of breaker elements mounted on the respective shafts axially spaced therealong and for rotation therewith, a drive coupled with said shafts for rotating the same, and a plurality of projections each insertable between two axially consecutive breaker elements on the respective shafts to different selectable extents, so that objects entering through said inlet opening are broken up into fragments by cooperation of said breaker elements and projections; and a comminuting unit including a casing having an inlet communicating with said outlet opening for receiving said fragments therefrom and an outlet, a container provided with a plurality of apertures and accommodated in said casing intermediate said inlet and outlet thereof, and having a bottom wall, and at least one rotary cutter located within the confines of said container and extending substantially parallel to said bottom wall in close proximity thereof and being mounted for rotation with respect to said container so as to comminute said fragments and expel such comminuted fragments through said apertures to the exterior of said container from where they proceed.

3,847,362
ROTOR FOR IMPACT CRUSHER

Keith B. Lowe, and William R. Gray, both of Appleton, Wis., assignors to Allis-Chalmers Corportion, Milwaukee, Wis.
Filed Jan. 16, 1974, Ser. No. 433,883
Int. Cl. B02c *13/06, 13/28*
U.S. Cl. 241—191 **4 Claims**



1. A four hammer rotor for an impact crusher having a housing enclosing and supporting the rotor, a drive for turning the top of the rotor away from a material inlet opening in the housing, and target members spaced from the rotor opposite the inlet opening for disintegrating input material struck and thrown by the hammers to impact against the target members, with said rotor comprising:

a. an elongated central body portion with a pair of axially extending peripheral slots diametrically opposite each other and two diametrically opposed generally spiral body extensions each projecting progressively farther radially outward beginning at a location which is ahead of one slot in the direction of rotor rotation and reaches maximum radial projection at a terminus defining a face planar with the back wall of the other slot;
b. first and second hammer means each comprising a bar arranged in one of said slots and projectng outwardly thereof with a leading hammer face extending outwardly at least as far as the radially outer edge of said planar face; and
c. third and fourth hammer means located diametrically opposite each other and between the first and second hammer means, and with each of said third and fourth hammer means projecting from one of the rotor body spiral extensions with a leading surface radially shorter

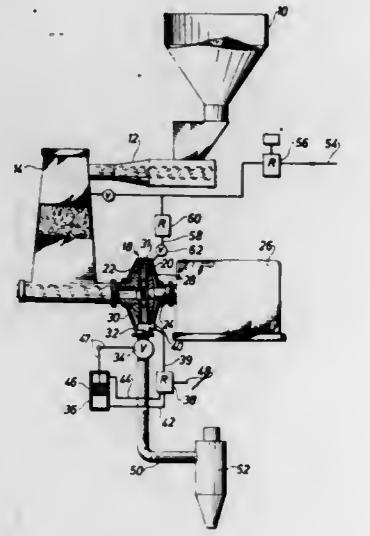
than the hammer faces of the first and second hammer means and having a flat portion substantially perpendicular to the periphery of the spiral extenson, and with the flat portion terminating with a radially outer edge which traces a common circle with radially outer edges of the first and second hammer means upon rotation of the rotor.

3,847,363

DEVICE IN GRINDING APPARATUS FOR VEGETABLE OR FIBROUS MATERIAL

Rolf Bertil Reinhall, 16, Killingevagen S-181, 64 Lindingo 3, Sweden

Filed Oct. 20, 1972, Ser. No. 299,259
Int. Cl. B02c *7/02, 7/17*
U.S. Cl. 241—245 **2 Claims**



1. A grinding apparatus comprising:
- a. a housing;
- b. a pair of grinding discs arranged within said housing defining between them a grinding space for defibering and refining fibrous vegetable material and the like:
- c. means for introducing the raw material into said grinding space;
- d. means for introducing a primary current of steam having a predetermined degree of pressure into said grinding space jointly with the raw material;
- e. an outlet for the discharging of the heated material and steam from said housing;
- f. means for introducing a secondary current of steam having a predetermined lower pressure than the pressure of said primary steam current directly into the housing;
- g. valve means responsive to fluctuations in the pressure in said housing for regulating the rate of discharge of treated material and steam from said outlet.

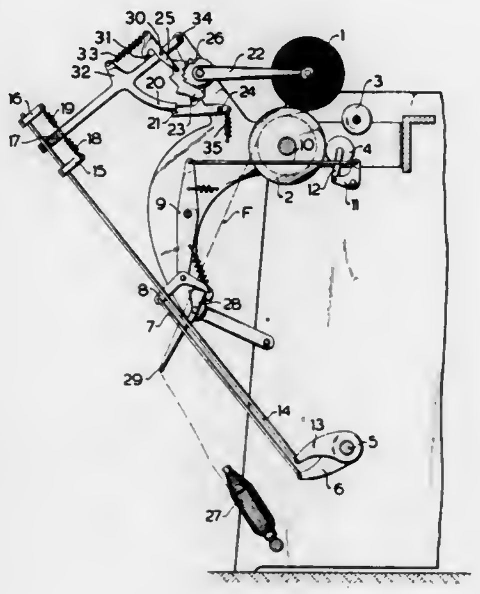
3,847,364

PATTERN DISRUPTION DEVICE FOR CROSSWINDING MACHINES

Joachim Rohner, Rheydt; Wilhelm Maassen, Monchengladbach, and Egon Haberkorn, Leusel, all of Germany, assignors to W. Schlafhorst & Co., Monchengladbach, Germany

Filed June 5, 1972, Ser. No. 259,588
Claims priority, application Germany, June 12, 1971, 2129318
Int. Cl. B65h *54/38*
U.S. Cl. 242—18.1 **3 Claims**

1. In a crosswinding machine, a pattern disruption device, comprising means supporting a crosswinding spool, a rotational member in frictional contact with said spool for effective rotation of said spool, means for intermittently driving said rotational member, and contact varying means for varying the magnitude of the frictional contact between said crosswinding spool and said rotational member while maintaining continuous physical contact between said crosswinding spool and said rotational member, synchronizing means operable to provide that the intermittent drive of said rotational member by said drive means occurs in a predetermined time relationship with the variation in magnitude of the frictional contact between said spool and said rotational member, wherein said synchronizing means operate in counter synchronism so that the magnitude of the frictional contact between said spool and said rotational member increases when said intermittent drive of said rotational member has been interrupted and decreases when said intermittent drive of said rotational member has been restored.

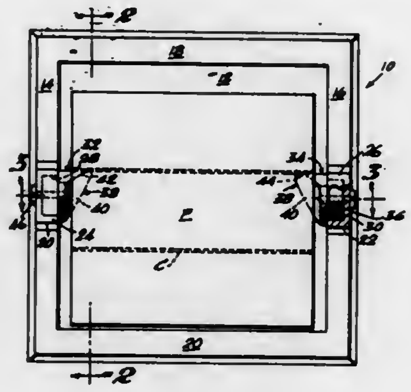


3,847,365

RIGID MEANS TO SUPPORT A ROLL OF TOILET PAPER ON A DISPENSER BRACKET

Jose M. Carol, 1901 N.W. N. River Rd., Miami, Fla. 33125

Continuation-in-part of Ser. No. 107,971, Jan. 20, 1971, abandoned. This application Oct. 18, 1972, Ser. No. 298,605
Int. Cl. A47k *10/16, 10/22*
U.S. Cl. 242—55.2 **5 Claims**



1. Support means for dispensing paper from a roll of toilet paper comprising,
- a rigid wall receptacle adapted to be mounted to a wall and having a front opening mouth sized to receive a portion of a conventional size toilet paper roll therein oriented in an attitude with the axis of the roll extending laterally of the mouth,
- an outwardly extending rigidly supported arm extending outwardly of the receptacle on opposite sides of the mouth,
- a short peg rigidly carried on each of the arms, said pegs being in confronting relation, and defining a support axis for the roll,

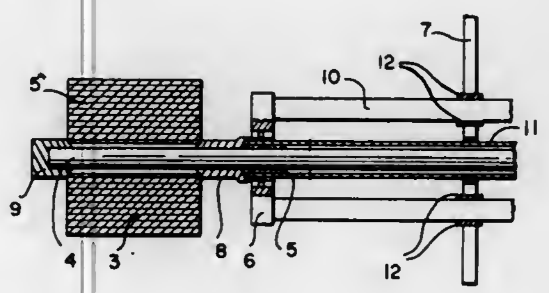
- each peg being beveled to a distal end of reduced cross section relative to the cross section of the proximal end of said peg,
- the terminal ends of said pegs being spaced apart a distance somewhat less than the axial length of a roll of toilet paper, and
- the proximal ends of said pegs being permanently spaced apart a distance greater than the width of a roll of toilet paper, and
- said pegs defining a cam surface between their respective terminal and proximal ends, and
- said pegs being of rigid material to inwardly deform at least one end of a roll of toilet paper forceably wedged between the distal ends of the pegs and into the mouth to be nested in said receptacle and rotatably supported and captivated on said pair of pegs until the diameter of the roll is reduced upon dispensing the paper,
- said dispenser receptacle, rigid support arms and said pegs being formed as an integral unit.

3,847,366

PROCESS FOR THE PREPARATION OF WINDING OPERATIONS AND FOR THE REMOVAL OF ROLLS FROM A WINDING MACHINE

Willi Johann Schmidt, Hahn/Taunus, and Hugo Lumb, Heidesheim, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden, Germany

Continuation-in-part of Ser. No. 166,942, July 28, 1971, abandoned. This application July 5, 1973, Ser. No. 376,591
Claims priority, application Germany, July 29, 1970, 2037623
Int. Cl. B65h *19/02*
U.S. Cl. 242—68.3 **2 Claims**



1. A process for preparing for winding operations which comprises axially displacing a winding shaft a predetermined distance in the direction of the winding area, pushing a winding core onto the winding shaft, securing the winding core against lateral slippage on the winding shaft, and further moving the winding core into final winding position in the winding area.

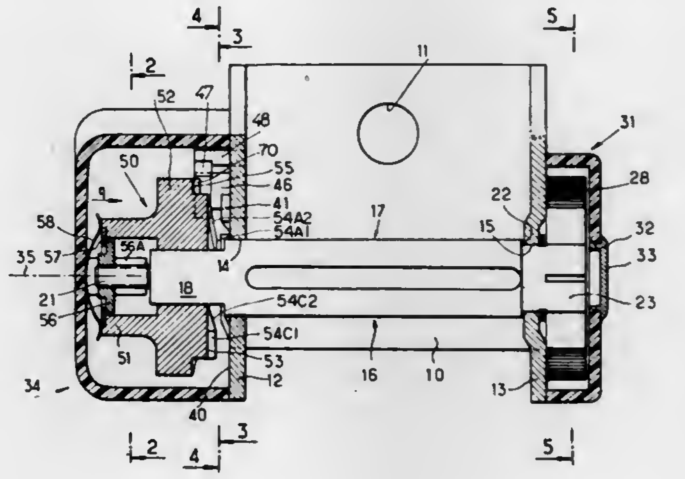
3,847,367

SAFETY BELT REEL WITH BRAKE

Walter Fieni, Paris, France, assignor to Societe Anonyme Francaise Du Ferodo, Paris, France

Filed Mar. 26, 1973, Ser. No. 345,121
Claims priority, application France, Mar. 27, 1972, 72.10664
Int. Cl. B65h *75/48*
U.S. Cl. 242—107.4 **8 Claims**

1. A strap reeling device comprising a frame, a shaft rotatably mounted on said frame, a strap having one extremity attached to said shaft, a biasing spring arranged to bias said shaft in a direction to reel-in said strap, a wheel slidably mounted on said shaft and rotatable therewith, locking teeth on said wheel, matching locking teeth on said frame disposed for engagement by the locking teeth on said wheel, a dog pivotally mounted on said frame and normally interposed between said wheel and frame so as to prevent engagement between said locking teeth on said wheel and said matching locking teeth on said frame thereby to accommodate predetermined reeling out of said strap from an initial wound condition, biasing means reacting between said frame and said wheel and arranged to urge said wheel in an axial direction toward said frame in such manner as to urge said locking teeth toward locking engagement with said matching locking teeth, and camming means on said wheel engageable with said dog and operable to move said dog from its normal position between said wheel and frame thereby to cause engagement of said locking teeth with said matching teeth and to effect locking of said shaft against reeling out in coordination with predetermined rotation of said wheel in its reel-in direction by said biasing spring following reeling out of a predetermined portion of said strap and relaxation of reel-out tension therein.

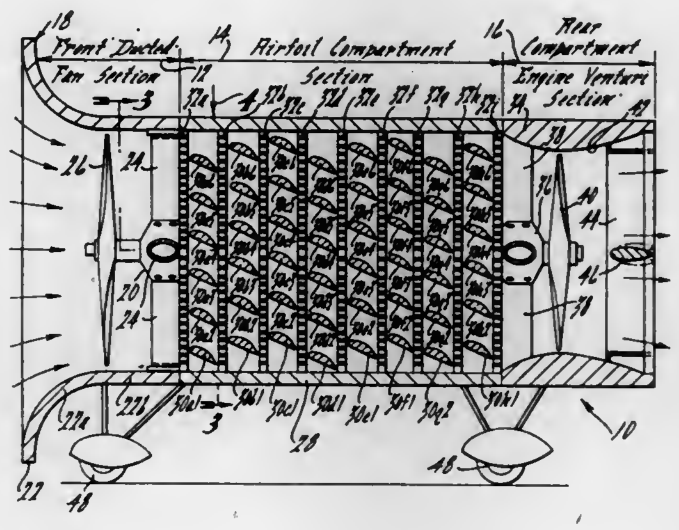


3,847,368

LIFT CELL

Joseph A. Sakal, Jr., 7626 Barnsbury Dr., Union Lake, Mich. 48085

Filed Jan. 4, 1973, Ser. No. 320,886
Int. Cl. B64c *15/00*
U.S. Cl. 244—13 **2 Claims**


18
Front Ducted Fan Section
14
Airfoil Compartment Section
16
Rear Compartment Engine Venturi Section
26
24
20
3
4
38
40
44
42
10
22
22a
28
48

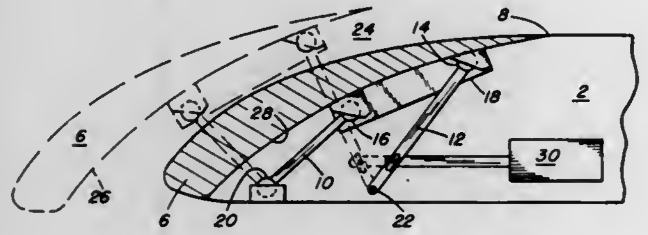
1. In a lift cell having a horizontal longitudinal axis, the combination comprising a straight longitudinally extending enclosure means open at both longitudinal ends, an airfoil section comprising a plurality of airfoils distributed in an array within said enclosure means, each airfoil being disposed in the path of airflow through said enclosure means and being shaped such that longitudinal airflow past the airfoil creates a pressure differential acting on the airfoil to produce lift, and a ducted fan section at the forward end of said enclosure means for drawing air into said enclosure means and forcing

the same through said enclosure means and across the airfoils of said airfoil section to thereby impart lift to each airfoil and hence to the lift cell, said ducted fan section including additional enclosure means continuing longitudinally forwardly from the forward end of said first-mentioned enclosure means, said additional enclosure means having a straight cylindrical section extending forwardly from the forward end of said first-mentioned enclosure means and a flared section flaring radially outwardly in the forward direction from the forward end of said straight cylindrical section, said flared section being shaped to form a contoured aerodynamic surface via which a longitudinally forward thrust is imparted to the lift cell when the ducted fan section is operated to draw air into and through said two enclosure means.

3,847,369
CONTROL SURFACE DEPLOYMENT MECHANISM

Jack C. Phillips, St. Louis, and Donald E. Bennett, Ferguson, both of Mo., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 8, 1973, Ser. No. 339,494
Int. Cl. B64c *9/14*
U.S. Cl. 244—42 R **6 Claims**



1. An airfoil for use with an aircraft, said airfoil comprising: a wing, said wing having a maximum chord length at the root chord, the chord length decreasing in the outboard direction; a slat, having a trailing edge, mounted on said wing and adapted to act as a portion of the outer surface of said wing when in a first stowed position; and

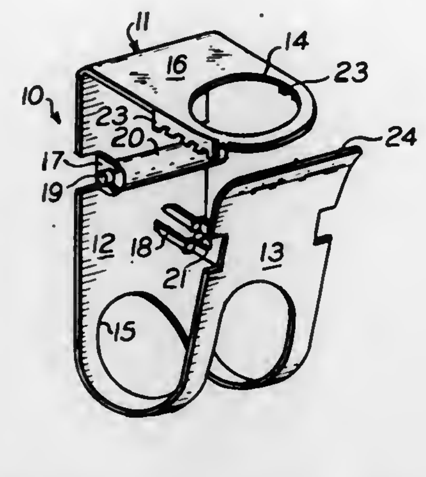
means for moving said slat in a streamwise parallel direction to a second extended position, in which position the trailing edge of said slat overlaps said wing to form a nozzle between said slat and said wing, said slat having the shape of a wedge when viewed from above the wing, the flare of the wedge being configured to provide, at all points, a constant percentage of overlap distance to root chord length and of the extent of the throat of the nozzle to root chord length.

3,847,370
TUBE SERVICING DEVICE

Harvey J. Engelsher, Yonkers, N.Y., assignor to Horizon Industries, Ltd., Bronx, N.Y.

Filed Feb. 16, 1972, Ser. No. 226,782
Int. Cl. F16k *7/06*
U.S. Cl. 251—6 **2 Claims**

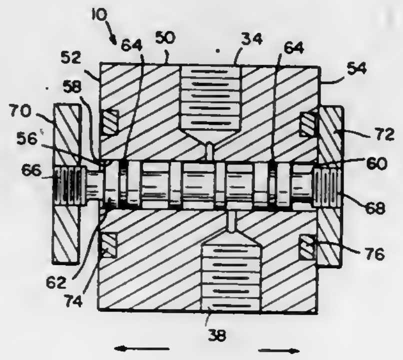
1. A tube servicing device which comprises a frame having a pair of oppositely disposed resiliently flexible legs and a pair of apertures defining an opening to accommodate the lengthwise captive extension between and through said legs of a flexible tube to be serviced, a pair of rollers each connected to a corresponding leg of said frame for rotation relative thereto, said rollers being disposed to pinch the tube when said legs are pushed together and for movement with the frame in pinching rolling contact engagement with the tube to expel by squeegee action material within the tube over the length traversed, guide means on said frame operable to constrain said legs for movement together along a predetermined path and with said rollers held substantially parallel to each other, and catch means on said frame operable to engage the end of one of said legs to selectively retain said legs in a pushed together configuration, said guide means including brackets which support said rollers and have open-ended slots, the slots of the brackets supporting one roller being disposed to engage the opposing roller structure to constrain the movement of said legs when same are pushed together.



3,847,371
SPOOL VALVE

Orien K. Norton, 2011 Elizaville Rd., Lebanon, Ind. 46052; David E. Grimes, 26 Del Mar Dr., Crawfordsville, Ind. 47933, and Ralph A. Sayler, P.O. Box 98, New Market, Ind. 47965

Filed Oct. 30, 1972, Ser. No. 302,113
Int. Cl. F16k *31/08*
U.S. Cl. 251—65 **6 Claims**



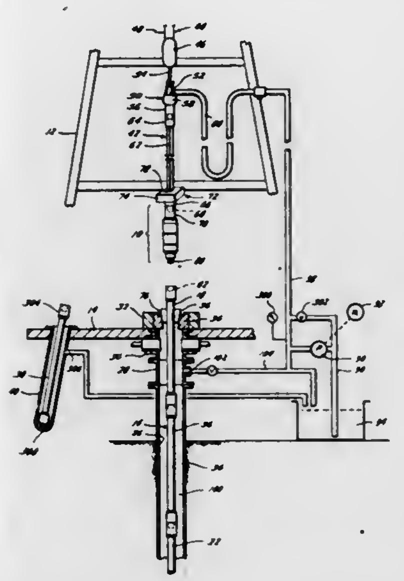
1. In a valve wherein the valve has a body with opposite end walls and a bore extending through said body from one end wall to the other with bore openings in said end walls, and an elongated valve spool carried within and longitudinally reciprocable in said bore between operative positions, the improvement comprising an armature carried by each end of said valve spool externally of any fluid chamber, and a magnet secured in each of said end walls externally of any fluid chamber and in a position to attract the adjacent armature.

3,847,372
DRILLING FLUID SAVER AND SAFETY VALVE

Mason Rawleigh Litchfield, Houston, Tex., assignor to Smith International, Inc., Midland, Tex.

Filed Feb. 26, 1973, Ser. No. 335,489
Int. Cl. F16k *31/54*
U.S. Cl. 251—248 **9 Claims**

1. Drilling fluid saver valve assembly comprising:
a tubular body having a flow axis;
valve closure means mounted within said tubular body for rotation about an axis transverse to said flow axis between an open position permitting fluid flow through said tubular body along said flow axis and a closed position preventing fluid flow through said tubular body along said flow axis;
actuator means rotatable around said flow axis;
drive means connecting said actuator means to said closure means for rotating said valve closure means between said open and closed positions when said actuator means is turned about said flow axis between predetermined positions; and
torque means for transmitting torque between said actuator means and said tubular body about said flow axis, said torque means including a portion carried by said actuator means and a portion carried by said body, said portions being engageable in one relative position of said body and closure means to transmit torque in one direction about said axis and being engageable in another relative position of said body and closure means to transmit torque in the opposite direction about said flow axis, said positions being azimuthally separated by an amount equal to the azimuthal travel of said actuator means relative to said body required to move said closure means between open and closed positions,
said torque means being independent of said drive means, whereby torque can be transmitted between said actuator means and said tubular body without passing through said drive means, thereby avoiding torque strain on said drive means except when the closure is being moved between said open and closed positions.

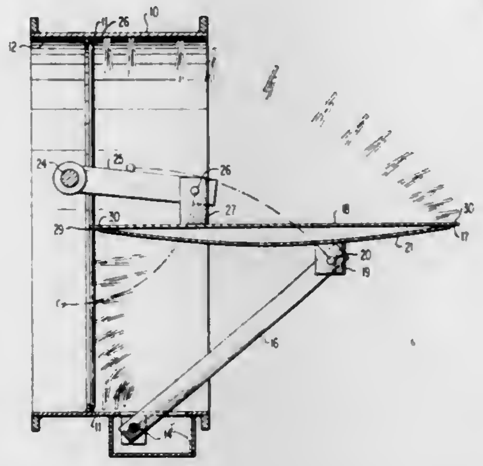


3,847,373
LOUVER VALVE

Donald K. Hagar, Macungie, Pa., assignor to Mosser Industries, Incorporated, Allentown, Pa.

Filed June 26, 1973, Ser. No. 373,797
Int. Cl. F16k *31/52*
U.S. Cl. 251—298 **11 Claims**

1. A louver valve comprising a valve casing having an axis in the direction of the flow of fluid through the valve; a circuitous valve seat protruding from the inner wall of the casing, said seat lying in a plane that is substantially perpendicular to the axis of the casing; a drive shaft journaled in the interior of the casing to one side of the plane of the valve seat; a second shaft journaled in the interior of the casing on the opposite side of said plane of the valve seat from the drive shaft, the line of centers between the axis of said drive shaft and the axis of said second shaft being diagonal to the axis of the casing; a drive arm extending radially from said drive shaft; a slave arm extending radially from said second shaft; a louver positioned within the casing to one side of the plane of the valve seat for opening and closing the valve cooperatively with said seat said louver having a front surface which faces the seat when in closed position, and a rear surface which is opposite the front surface, said front surface of said louver being pivotally connected to the arm of the shaft which is on the opposite side of the plane of the valve seat from the louver, said rear surface of said louver being pivotally connected to the arm of the other shaft; the axes of said drive shaft, said second shaft, said front surface pivot, and said rear surface pivot being substantially parallel to one another and to the plane of the valve seat, said axes lying in longitudinal planes that are substantially parallel to the axis of the casing, said interconnection of said shafts, arms, and louver constituting a four bar linkage that is so arranged that when the drive shaft is rotated in one direction the slave arm rotates in the opposite direction, and that when the valve is in the closed position said longitudinal plane (a) of the axis of the front surface pivot lies in the space between (b) said longitudinal plane of the axis of the rear surface pivot and (c) said longitudinal plane of the axis of that shaft which is positioned on the same side of the valve seat as the louver (hereinafter the "louver side shaft"), said (a) also lying in the space between said (c) and (d) said longitudinal plane of the axis of the shaft that is positioned on the opposite side of the seat from the louver (hereinafter the "non-louver side shaft"), the distance between the axis of the non-louver side shaft and the axis of the front surface pivot being equal to or greater than the sum of (e) the distance between the axis of the non-louver side shaft and the plane of the valve seat and (f) the distance between the axis of the front surface pivot and that edge of the louver which is closest to the plane of the valve seat when the louver is in the open position; the length of the arm of the non-louver side shaft being sufficiently shorter than the distance between the axes of the two said shafts that the louver can be moved from its closed position to an open position where the louver is substantially parallel to the axis of the casing by rotating the drive shaft.



3,847,374
DISASSEMBLABLE VALVE

Herbert Tittelbach, 32 Hauptstr., D-4307 Kettwig/Ruhr, Germany

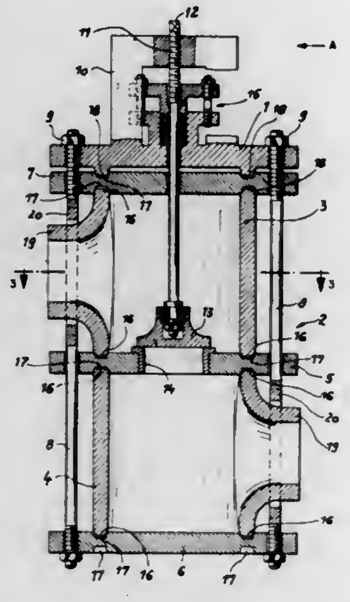
Filed Feb. 6, 1973, Ser. No. 330,066
Claims priority, application Germany, Feb. 7, 1972, 2205620
Int. Cl. F16k *1/04*
U.S. Cl. 251—367 **11 Claims**

1. A disassemblable valve assembly, comprising:
a. a housing including
  1. at least two separately prefabricated tubular portions each defining a fluid flow passage and each having a pair of opposed, flangeless, conically tapered opening edge portions defining tongues, at least one of said portions being a T-shaped portion having an access sleeve located between said edge portions and defining a flow path into the interior of said T-shaped portion,
  2. a spacer plate disposed between said tubular portions, said spacer plate having a valve seat formed therein and defining a fluid passage between said tubular portions,

3. a base plate supporting at least one of said tubular portions; and
4. said spacer plate and said base plate being formed with annular grooves on the sides thereof facing said tongues, said grooves and tongues having corresponding profiles;

b. bolt means releasably fastening together said tubular portions, said spacer plate and said base plate with each said groove receiving and forming a fluid-tight seal with, a respective tongue, at least one of said bolt means comprising an annular member enclosing said access sleeve, said annular member and said sleeve defining in assembly a clearance space; and

c. a valve stem mounted to extend in a sealing manner into one of said tubular portions, said valve stem including a valve disc engageable with said valve seat of said spacer plate.

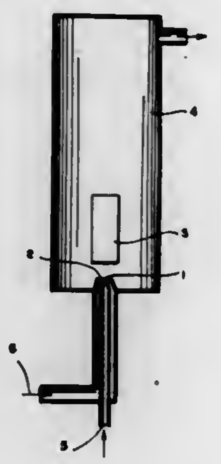


ERRATA

For Classes 88—000 thru 175—700 see:
Patents Nos. 3,847,376 thru 3,847,378

3,847,375
METHOD AND APPARATUS FOR MIXING LIQUIDS

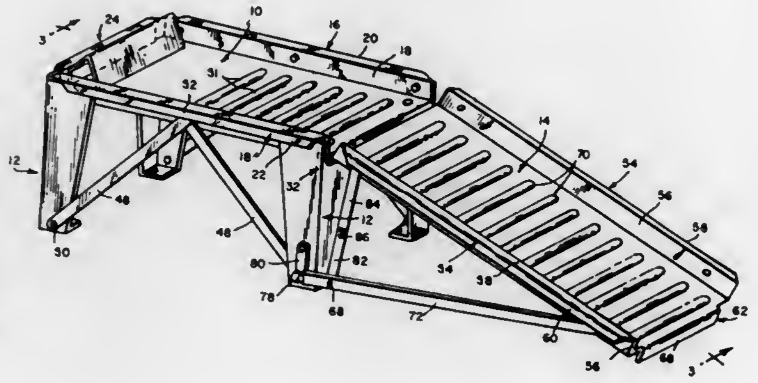
Heribert Kuerten, Mannheim, and Otto Nagel, Neustadt, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany
Filed Oct. 12, 1972, Ser. No. 297,030
Int. Cl. B01f *5/02*
U.S. Cl. 259—4 **11 Claims**



1. A method of rapidly mixing liquids which differ greatly from one another as regards volume and/or density, to form dispersions, emulsions or homogeneous mixtures, wherein one or more jets of a first liquid are passed through a nozzle or nozzles at a velocity of from 5 to 100 m/s into an impulse exchange chamber open at both ends, which is located in a liquid medium, extends longitudinally in the direction in which the jet or jets enter said medium and has a volume equal to one hundredth to one ten-thousandth of the volume of a vessel containing said medium, together with a second liquid to be dispersed, emulsified or mixed with said first liquid, which latter liquid is ejected in the immediate proximity of the orifice of the nozzle providing the propulsive jet, the average hydraulic diameter of the impulse exchange chamber being equal to from two to 20 times the diameter of a theoretical, single nozzle which is equal in cross-sectional area to all of the nozzle orifices present, and its length being equal to from two to 30 times the hydraulic diameter.

3,847,376
PORTABLE VEHICLE RACK

Kenneth W. Binding, Woburn, Mass., assignor to Beatrice Foods Co.,, Chicago, Ill.
Filed Sept. 22, 1972, Ser. No. 291,265
Int. Cl. E02c *3/00;* **G08b** *7/00*
U.S. Cl. 254—88 **9 Claims**

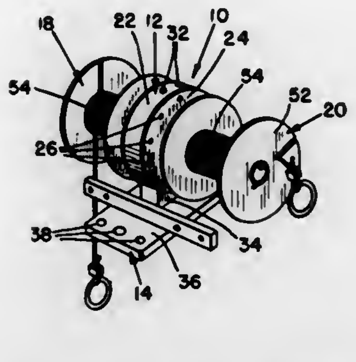


1. A portable vehicle rack comprising a horizontally disposed rack plate reinforced by stiffening means at its longitudinal edges comprising guides at the longitudinal edges, support legs at the corners of the rack plate, diagonally disposed braces connecting the lower ends of the legs to the rack plate, an inclined ramp detachably connected at one end to one end of the ramp plate and adapted to rest at its other end on the floor, and a signalling device for indicating that a vehicle wheel has reached the ramp plate comprising an arm pivotally supported below the rack plate, said arm having bent portion extending upwardly therefrom through a hole in the ramp plate, said arm in repose being adapted to be disposed at right angles to one of the longitudinal sides of the rack plate with the bent portion extending upwardly through the hole, in which position the arm inclines downwardly from its pivot and being adapted to be raised to a horizontal position by pressure of the wheel on the bent portion of the arm as it moves onto the ramp plate, and a flag on the arm.

3,847,377
SAFETY LOWERING DEVICE

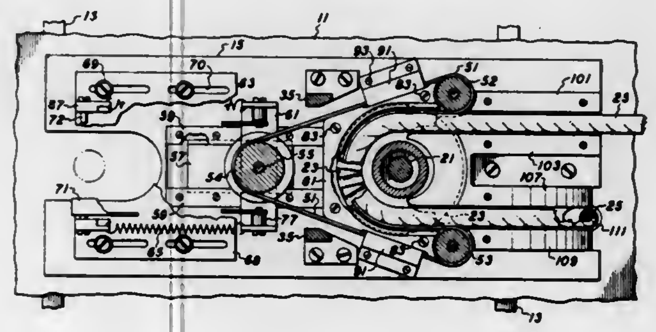
Clarence D. Byrd, Colfax, N.C., assignor to Safety Devices Incorporated, Welcome, N.C.
Filed June 7, 1973, Ser. No. 367,732
Int. Cl. A62b *1/12*
U.S. Cl. 254—158 **9 Claims**

1. Apparatus for controlling the rate of descent of a load comprising, a rotatable shaft, a drum mounted upon said shaft for rotation therewith to wind or pay out a line attached to the drum, support means, a fluid-filled, sealed housing assembly mounted upon said support means, said housing assembly rotatably supporting said shaft, rotor means, including a plurality of vanes, attached to said shaft for rotation therewith and vane engaging cam means projecting within a segment of less than 90° within said housing assembly for displacing said vanes relative to said rotor means upon rotation thereof whereby said vanes are projected radially substantially the same extent during rotation of said rotor means until engagement with said vane engaging cam means.



3,847,378
POWER CAPSTAN FOR ANCHOR ROPE AND THE LIKE

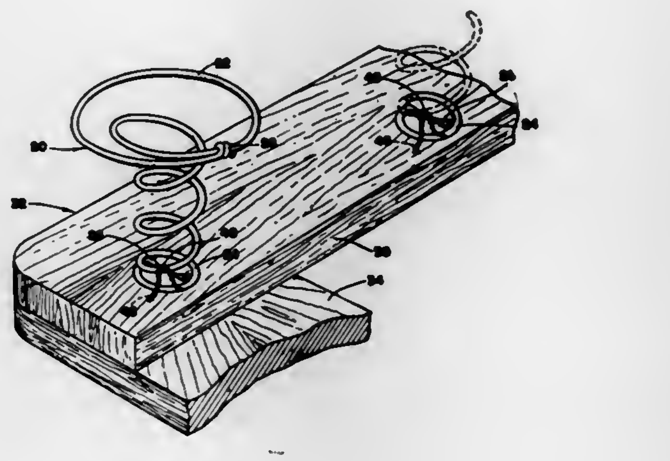
Leonhard J. Roemer, Jr., 27 Forgham Rd., Rochester, N.Y. 14616
Filed July 27, 1973, Ser. No. 383,442
Int. Cl. B66d *1/72*
U.S. Cl. 254—175.7 **5 Claims**



1. Power mechanism for moving an anchor rope of a boat longitudinally by motor power when desired and for allowing free running of the rope longitudinally to permit rapid fall of an anchor attached to the rope when desired, said mechanism comprising a power shaft, a capstan pulley rotatable on said shaft, said capstan pulley having a circumferential groove in which the rope is received throughout a substantial part of the circumference of the capstan pulley, a belt encircling part of the circumference of the capstan pulley and tending to press the rope into said groove, engageable and releasable clutch means for operatively connecting said capstan pulley to said power shaft, means for applying power to said shaft to turn said shaft and said capstan pulley with it while said clutch means is engaged and while said belt presses the rope firmly into said groove, thereby to produce powered longitudinal movement of the rope, a shiftable idler pulley over which the belt runs, spring means tending to shift said idler pulley in a direction to tighten said belt, two members pivoted to each other to form a toggle effective, when straightened, to shift said idler pulley in an opposite direction against the force of said spring means, to loosen said belt, a clutch shifting lever overlying said toggle, and a toggle control member connected to a mid-joint of said toggle and overlying said shifting lever, the parts being so shaped and proportioned that when said shifting lever moves downwardly it disengages said clutch means and concomitantly presses downwardly on the toggle to straighten it, and when said lever moves upwardly it engages said clutch means and concomitantly pulls upwardly on the mid-joint of the toggle to displace it from a straight line position so as to allow said spring means to tighten the belt.

3,847,379
UPHOLSTERY SPRING COIL

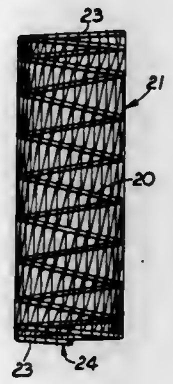
Walter Stumpf, Munster, Ind., assignor to Simmons Company, New York, N.Y.
Continuation of Ser. No. 829,533, June 2, 1969, abandoned. This application Jan. 18, 1972, Ser. No. 218,842
Int. Cl. F16f *3/04*
U.S. Cl. 267—91 **4 Claims**



1. A helical wire coil compression spring for box springs or the like comprising a plurality of convolutions having a helical pitch substantially greater than the thickness of the wire, the end convolutions thereof being substantially normal to the axis of the helix and one of them terminating in a wire portion extending as a chord across the said one end convolution.

3,847,380
DYE SPRING CENTRES

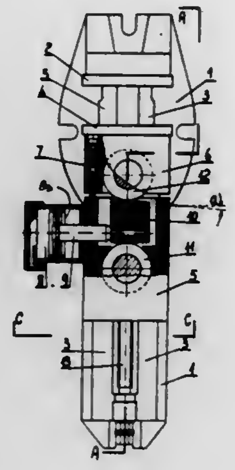
Henry Michael Kearns, "Irgwin" Dumbah Ln., Macclesfield, Great Britain
Filed Feb. 20, 1973, Ser. No. 334,106
Claims priority, application Great Britain, Feb. 25, 1972, 8752/72
Int. Cl. F16f *1/12*
U.S. Cl. 267—179 **6 Claims**



1. An end adapter for a dye spring centre having a terminal helix comprising: a centrally apertured end disc having at one side thereof a pair of concentric flanges defining between them an annular channel for reception therein of the terminal helix of the dye spring centre, a series of spaced-apart locating protrusions disposed in the channel and having progressively increasing effective height for engagement with corresponding portions of the terminal helix of the dye spring between adjacent lacings thereabound for locating the end disc in a plane to which the axis of the dye spring centre is perpendicular.

3,847,381
PNEUMATIC VISE WITH HIGH CLAMPING FORCE

Antonino Riggio, Corso Perrone, 4, 16152 Genova-Cornigliano, Italy
Filed Oct. 18, 1972, Ser. No. 298,598
Claims priority, application Italy, Oct. 26, 1971, 13006/71; Sept. 7, 1972, 12880/72
Int. Cl. B25b *1/18*
U.S. Cl. 269—32 **1 Claim**

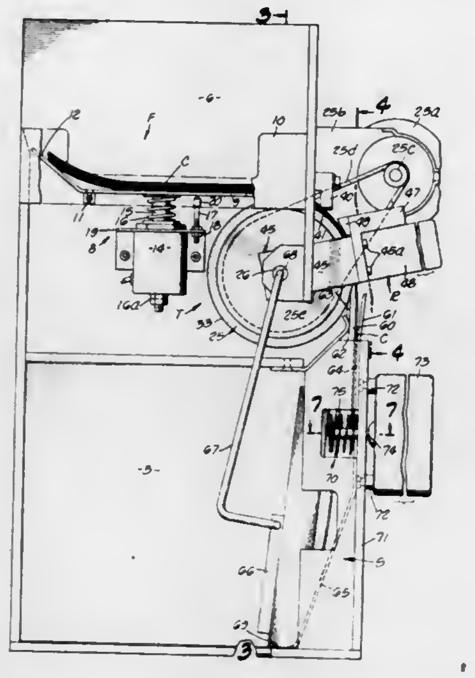


1. A clamping device for exerting substantially large working forces to hold a workpiece, comprising, in combination, a plate, a fixed clamping member and a movable clamping member between which said workpiece is held; a support member for supporting said movable clamping member; a pneumatic piston and stationary cylinder on said support member; a wedge member connected to said piston, said wedge member moving said movable clamping member toward said fixed clamping member when said pneumatic piston is actuated within said stationary cylinder, the working force moving said movable clamping member being inversely proportional to the tangent of the angle of the vertex of the wedge of said wedge member; spring means uring said movable clamping member toward said support member, said wedge member being secured to an end of the piston and being located between said support member and said movable clamping member, said wedge member moving said movable clamping member away from said support member against the bias of said spring means when said piston is actuated, said piston and wedge member moving along a path of travel perpendicular to the path of travel of said movable clamping member; a first roll member rotatable on said movable clamping member with axis of rotation movable with said movable clamping member; a second roll member rotatable on said support member, the axis of rotation of said second roll member being stationary, said wedge member being movable by said piston between said first and second roll members for rotating said roll members when said movable clamping member is forced against said fixed clamping member; adjusting screw means on said plate and connected to said movable clamping member and said support member for moving said movable clamping member and said piston and wedge member, said movable clamping member being movable by said piston and wedge member relative to said screw means, when said screw means is stationary.

3,847,382
CARD HANDLING APPARATUS

James W. McKee, Corona del Mar, Calif., assignor to True Data Corporation
Filed Nov. 15, 1971, Ser. No. 198,722
Int. Cl. B65h *3/34, 29/42*
U.S. Cl. 271—4 **18 Claims**

1. In data card handling apparatus comprising a card feeding station adapted to receive a stack of cards, a reading station having means for reading the cards, a receiver for cards which have been read, transport means for moving cards successively from said feeding station past said reading station to said receiver, and drive means for said transport means, said feeding station having card aligning means engageable by the side edges of the cards in said stack for aligning the cards with said means for reading the cards, and jostling means for agitating the cards, said jostling means including a plate engageable with the stack of cards, said plate extending on a plane normal to said card aligning means, means mounting said plate for card agitating movements, and actuator means for moving said plate towards and away from said stack of cards independently of said drive means, means providing an inclined surface remote from said transport means to feather the stack of cards with the leading edge of the card adjacent to said plate nearest said transport means, and means operable in response to each movement of said plate away from said stack of cards to effect engagement of said leading edge of successive cards by said transport means and transport of the successive cards from said feeding station past said reading station.

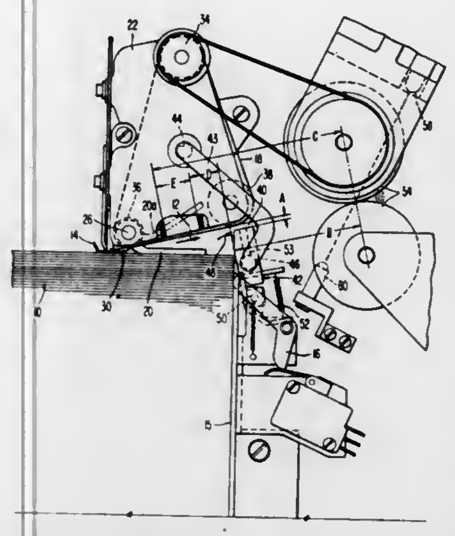


3,847,383
DOCUMENT FEEDING DEVICE

Edward A. Wojtowicz, Bryn Mawr; S. James Lazzarotti, Broomall; James R. Hunter, Chadds Ford, and Robert W. Rodkey, Exton, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.
Filed Nov. 30, 1973, Ser. No. 420,718
Int. Cl. B65h *5/08*
U.S. Cl. 271—11 **9 Claims**

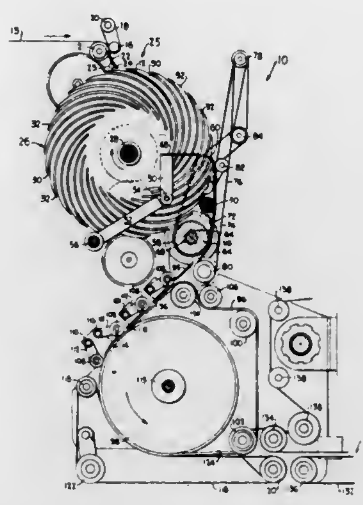
1. A document feeding device comprising:
a feeder vacuum chamber operatively connected to generate an area of low atmospheric pressure adjacent a face portion thereof,
at least a single moving perforated feed belt operatively connected to contiguously traverse said face portion of said feeder vacuum chamber,
a registration wall situated in predetermined angular relationship to the face portion of said feeder vacuum chamber for enabling substantial alignment of the forward edges of the documents prior to their being fed,
a gate member pivotally mounted to provide a substantially coplanar extension of said registration wall, the face portion of said gate member being positioned in close proximity to said moving feed belt and forming therewith a channel through which said documents to be fed are driven by said belt, said gate member acting as a barrier restraint upon a double document to impede its exit from the feeder,
said gate member including additional vacuum chamber means operatively connected to generate an area of low

atmospheric pressure adjacent its face portion, the gate member vacuum force acting as a frictional restraint upon said double document to impede its exit from the feeder, said barrier and frictional restraints being exerted concurrently on said double document by said gate member to effectively prevent the untimely feeding of said double document.



3,847,384
APPARATUS FOR COLLATING SHEET LIKE ELEMENTS

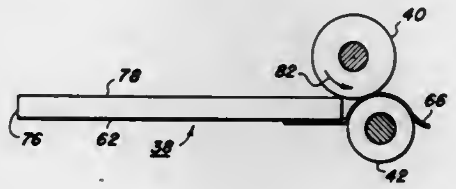
Erwin Bethke, Erkelenz-Keyenberg, Germany, assignor to F. L. Smithe Machine Company, Inc., Duncansville, Pa.
Filed Jan. 30, 1973, Ser. No. 328,135
Int. Cl. B65h *29/66*
U.S. Cl. 271—80 **8 Claims**



1. Apparatus for collating sheet like elements comprising,
first conveyor means for conveying a plurality of sheet like elements in spaced tandem relation at a first preselected linear speed,
second conveyor means for conveying said sheet like elements in lapped relation as a continuous stream for further processing at a second preselected linear speed, said second conveyor means spaced from said first conveyor means,
a collator mechanism positioned adjacent the discharge end of said first conveyor means, said collator mechanism including a plurality of circular spaced disc members having spaced arcuate slots therein, said slots having a configuration of a segment of a spiral,
said plurality of spaced disc members coaxially mounted on a shaft for rotational movement therewith at a preselected peripheral velocity,
means for rotating said plurality of spaced disc members at a higher speed than said first preselected linear speed of said first conveyor means,
stop plate means arranged between said plurality of spaced disc members, said stop plate means terminating within the periphery of said circular spaced disc members, and said collator mechanism arranged to receive said sheet like elements in spaced tandem ralation from said first conveyor means at a first preselected linear speed and said stop plate means arranged to arrest the circular movement of said sheet like elements and move said sheet like elements radially outwardly in said spaced arcuate slots and along the surface of said stop means at a decelerating linear speed to discharge said sheet like elements in lapped relation as a continuous stream at a reduced linear velocity to said second conveyor means for further processing.

3,847,385
SHEET CONTAINER

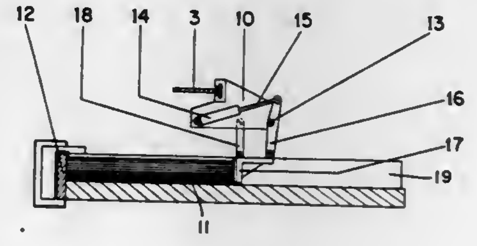
Francis J. Wieloch, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 13, 1972, Ser. No. 306,270
Int. Cl. B65h *3/06, 1/04*
U.S. Cl. 271—121 **5 Claims**



1. An apparatus for separating and feeding successive single sheets from a stack of sheet material, including:
a rotary driven feed roll, said feed roll being adapted to engage the upper surface of successive uppermost sheets in the stack of sheet material;
a retard roll cooperating with said feed roll for seriatim feeding of successive uppermost sheets from the stack;
a base plate defining a generally planar surface for supporting the stack; and
a flexible sheet having one marginal edge portion thereof secured to the leading edge portion of said base plate, said flexible sheet extending in a substantially outwardly direction beyond said base plate and being interposed between said feed roll and said retard roll such that a portion of the upper surface thereof engages the undersurface of successive uppermost sheets advancing from the stack disposed on said base plate.

3,847,386
DEVICE FOR EXACT ANGLE-POSITIONING OF PAPER PILES IN PAPER CUTTERS

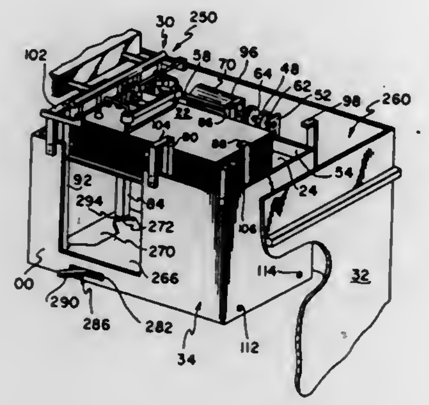
Fritz Kruse, Hannover-Langenhagen, Germany, assignor to H. Wohlenberg Kommanditgesellschaft, Hannover, Germany
Filed Dec. 4, 1970, Ser. No. 95,315
Int. Cl. B65h *31/34, 7/08*
U.S. Cl. 271—171 **1 Claim**



1. A device for the accurate positioning of a paper stack in a paper cutting machine, said device including generally hori-

zontal first support means supporting said stack, generally vertical second support means extending along one extremity of said first support means, a pair of spaced apart parallel stationary guide rails extending perpendicular to said second support means and positioned above the level of said first support means, a movable rail extending between said fixed rails and being perpendicular thereto, said movable rail being located at the height of said fixed rails and having means slidably securing it to each of said fixed rails for slidable movement therealong, and stack positioning means having means slidably securing it to said movable rail for sliding movement therealong between said fixed rails, said stack positioning means including thrust means extending down from the height of said movable rail, said thrust means having a pressure plate extending generally downwardly and pivotally mounted for movement in the direction of said stack to exert a force against said stack in a direction toward said second support means to urge said stack against said second means, and means for causing said pressure plate to move and exert said force.

3,847,387
ADJUSTABLE PAPER STACK GUIDE APPARATUS
Milton W. Sick, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation of Ser. No. 203,959, Dec. 2, 1971, abandoned. This application Apr. 9, 1973, Ser. No. 349,522
Int. Cl. B65h *1/04*
U.S. Cl. 271—171 **7 Claims**



1. Apparatus for operatively positioning any of a plurality of different width stacks of sheet material on a supporting platform to enable the feeding of sheets therefrom, said apparatus comprising:

a. a first elongated guide member operatively associated with such supporting platform and being of uniform cross-section and mounted for rotation about an axis which is parallel to and displaced from the length centerline of said first guide member and which is perpendicular to such supporting platform,

said first guide member having a plurality of engaging means, at least two of which are at differing distances from said axis, (1) for engaging the lateral side of a stack, positioned on such platform, at more than one spaced line of contact to prevent rotation of the first guide member about its axis when one of the engaging means is in engagement with the lateral side of the stack, and (2) for guiding the sheets from such positioned stack during feeding;

b. a second elongated guide member operatively associated with such supporting platform and being similar to said first guide member and mounted for rotation about an axis which is parallel to and displaced from the length centerline of said second guide member and parallel to the length centerline of said first guide member,

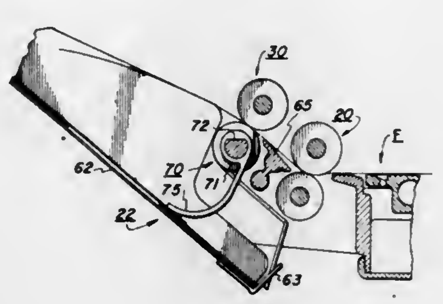
said second guide member having a plurality of engaging means, at least two of which are at differing distances from said axis, (1) for engaging the lateral side of a stack, positioned on such platform, at more than one spaced line of contact to prevent rotation of the second guide member about its axis when one of the engaging means is in engagement with the lateral side of the stack, and (2) for guiding the sheets from such positioned stack during feeding;

c. means operatively coupling said first and second guide members for synchronous rotational movement about the rotational axes thereof to change, by the same amount, the effective distance of the engaging means of said first and second guide members from an imaginary first plane, said first plane being parallel to said axes and to the direction of such feeding of sheets, and equidistant from said axes,

said effective distance being the perpendicular distance between said first plane and imaginary planes lying tangent to the facing engaging means of said first and second guide members, and parallel to said first plane; and

d. means for otating said first and second guide members to determine said effective distance in accordance with any such width.

3,847,388
SHEET STACKING METHOD AND APPARATUS
Thomas Lynch, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 20, 1972, Ser. No. 317,028
Int. Cl. B65h *29/22, 31/34*
U.S. Cl. 271—174 **9 Claims**

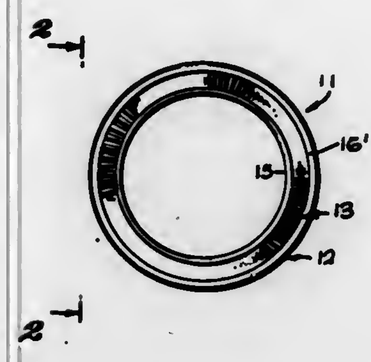


1. A sheet propelling and aligning device comprising:

a sheet collecting tray, said tray including a base means for supporting said sheets and a stop means extending upwardly of said base means;

a rotating means positioned over said tray and said base means for advancing said sheet in a first direction over and past said stop means and into said tray, said rotating means further including propelling means for contacting a downwardly facing side of said sheet during advancement of said sheet in said first direction and for then contacting an upwardly facing side of said sheet delivered into said tray for propelling the entire sheet in a second direction different from said first direction to align said sheet in said tray against said stop means, said propelling means comprising at least one resilient blade member arranged to provide said contact with said upwardly and downwardly facing sides of said sheet and to turn with said rotating means, and extending outwardly of said rotating means in a generally radial direction, said blade member being of sufficient length to contact said base means when no sheets are supported thereon.

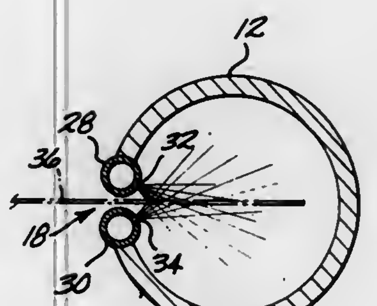
3,847,389
LOW-FRICTION SEAL
William A. Rogers, Costa Mesa, Calif., assignor to Tanner Engineering Co., Wilmington, Calif.
Continuation of Ser. No. 783,868, Dec. 16, 1968, abandoned. This application July 22, 1971, Ser. No. 165,409
Int. Cl. F16j *15/32, 9/00*
U.S. Cl. 277—153 **4 Claims**



1. A composite seal ring comprising:

an annular flexible jacket having a substantially U-shaped cross section defining a first bottom wall member and second and third flat surfaced wall members attached to opposite ends of said first wall member, said third wall member adapted to seal against an external surface; and an annular resilient member having a circular cross section located within said jacket and contacting opposing inner flat parallel surfaces of the second and third wall members inwardly of their free edges, the thickness of the first wall member and the second and third wall members being relatively thin with respect to the diameter of the circular cross section of the annular resilient member, said annular resilient member contacting the inside surface of said second wall member and said surface of said third wall member intermediate the free end of the third wall member and the first wall member for bending of the third wall member, said third wall member having a flat outer surface sloping from said bottom wall outwardly and away from said second wall whereby said third wall member has a thickness that varies from a maximum at the free end thereof to a minimum in the area of its connection to said first wall member and thus providing a flat sealing surface on the third wall member between the region of its contact with said annular resilient member and its free end.

3,847,390
PNEUMATIC SHEET CONVEYOR
John Allen Dixon, Valliant, Okla., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Mar. 21, 1973, Ser. No. 343,604
Int. Cl. B65h *5/22*
U.S. Cl. 271—195 **4 Claims**



1. A pneumatic conveying device for transporting thin flexible sheet material having an upstream inlet end and a downstream outlet end comprising:

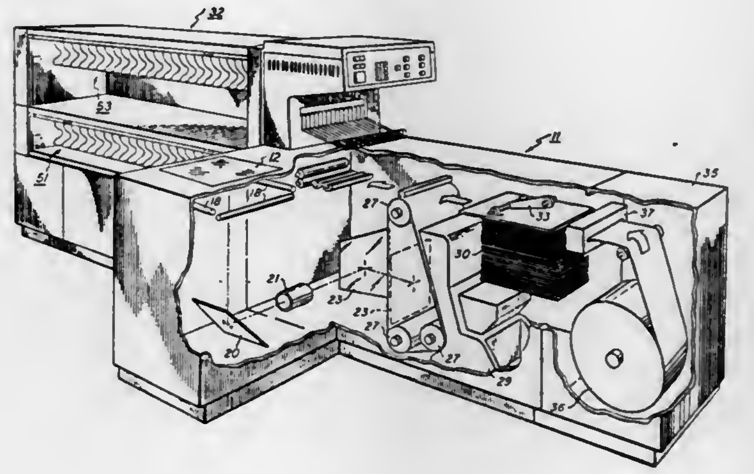
an elongated conduit having a slot along one side thereof extending longitudinally from the inlet end to the outlet end,

means positioned along both edges and substantially the full length of said slot to contain a supply of gas under pressure,

said gas containing means having generally smooth spaced apart continuous surfaces with the space therebetween being greater than the thickness of the sheet material to be conveyed,

a plurality of jet holes positioned in and spaced along the length of said gas containing means and directed inwardly toward the center of said conduit such that gaseous jets are uniformly directed across a plane that extends generally through said slot and the center of said conduit, and at least a portion of said jet holes being uniformly positioned in said gas containing means such that they are skewed in the downstream direction, whereby the gaseous jets exiting from said skewed jet holes tend to cause the sheet material to travel in the downstream direction toward said outlet end.

3,847,391
STACKING CONTROL APPARATUS
William Brant, Rochester, and Richard C. Schenk, West Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Continuation of Ser. No. 146,331, May 24, 1971, abandoned. This application Feb. 20, 1973, Ser. No. 333,817
Int. Cl. B65h *31/00*
U.S. Cl. 271—220 **13 Claims**



1. In sorting apparatus in which sheets are moved along a horizontal path and deflected downwardly into substantially vertical trays, an improved stacking control apparatus comprising:

a roller assembly suspended from the inlet of an associated tray and extending substantially in a vertical direction along the length of the tray, including a frame member and roller means positioned at the lowermost portion of said frame member to receive the downwardly directed sheets, and

a plurality of wire members pivotally supported on the same axis as said roller assembly extending from the top of said tray for guiding the sheets along a predetermined path in the direction of said roller means and impacting the top portion of the sheets to clear the path for the next incoming sheet.

3,847,392

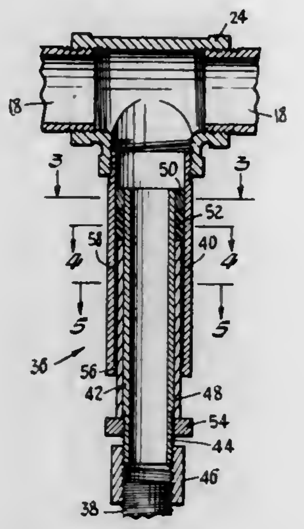
ADJUSTABLE DROP OR RISER NIPPLE

Elwood R. Horwinski, Cheshire, Conn., assignor to CV Industries, Inc., Jacksonville, Fla.

Filed Nov. 8, 1972, Ser. No. 304,845

Int. Cl. A62c *37/08;* A16l *15/02*

U.S. Cl. 285—302 **4 Claims**



1. An extensible and retractable nipple for a building fire protection system to connect a sprinkler head assembly at the underside of a dropped ceiling to a water supply pipe in which water is to be maintained under continuous pressure, said nipple comprising a telescoping inner length and outer length of pipe adapted to depend from such supply pipe, said inner pipe having an exteriorly threaded lower end portion extending from the lower end of said outer pipe and being adapted to threadedly support a sprinkler head assembly having internal threads on its said lower end portion, said inner pipe being movable axially of said outer pipe to permit positioning of such attached sprinkler head assembly in selected positions relative to the distance below such supply pipe of the underside of the dropped ceiling, the upper end portion of said inner pipe being disposed within said outer pipe, the upper end portion of said outer pipe being adapted for connection to the water supply pipe, an elongated locking sleeve telescopingly interposed between said pipes, said sleeve having a lower end at said lower end portion of said inner pipe and an upper end disposed within said outer pipe, said inner pipe upper end including an outward shoulder affixed thereto adjacently above said upper end of said sleeve, a resilient sealing ring disposed between said pipes and in the space between said shoulder and said upper end of said sleeve, nut means threadedly engaged on said threaded lower end portion of said inner pipe above such sprinkler head assembly for moving said locking sleeve axially upwardly to squeeze said ring between said upper end of said sleeve and said shoulder thereby to expand said ring against said pipes to lock said inner pipe against movement with respect to said outer pipe and effect a seal therebetween, said nut means being located on said lower end portion of said inner pipe adjacent such sprinkler head assembly where it is accessible for adjustment below such dropped ceiling when said inner pipe is extended from said outer pipe.

3,847,393

SNAP COUPLING FOR FLUID CONDUITS

Otto Busselmeier, Hebbelstrasse 15, 1528-Ennepetal, Germany

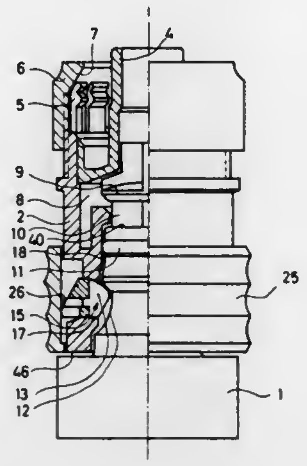
Filed July 25, 1972, Ser. No. 275,080

Claims priority, application Germany, July 30, 1971, 2138103

Int. Cl. F16l *37/12*

U.S. Cl. 285—315 **25 Claims**

1. A snap coupling for fluid conduits, comprising an elongated female coupling element having a wall portion bounding an inner space and provided with apertures communicating with the latter; a male coupling element removably accommodated in said inner space; an actuating element externally surrounding said female coupling element and being shiftable longitudinally thereof from a normal resting position to an operative position; arresting means comprising a plurality of noses each biassed through one of said apertures into said space, pairs of arms extending from said respective noses in opposite directions, each of said arms being configured substantially to resemble one-quarter of a circle and having a free end, pairs of spring portions projecting in mutually opposite directions from said respective nose and being located in a plane which at least substantially parallels the plane of said arm, two arresting elements located at opposite circumferential sides of said female element and each having one of said noses, a pair of said arms and a pair of said spring portions curved in at least substantial conformance with the respective arm, and cooperating abutments provided on said male coupling element and engageable with said noses so as to couple said male and female elements with one another; releasing means for releasing said arresting means, comprising cooperating lever portions on said arresting means and engaging portions engaging said free ends of said arms on said actuating element for effecting pivotal displacement of said noses out of said inner space in response to shifting of said actuating element to said operative positions thereof; and abutment means operative for preventing radial displacement of said arresting means with reference to said coupling elements.



3,847,394

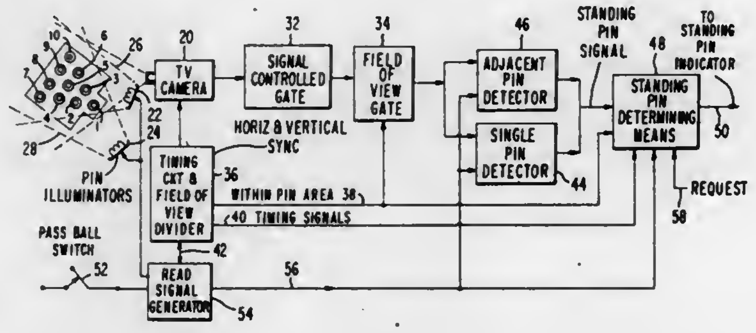
BOWLING PIN DETECTOR

Hugo Logemann, Jr., Concord, and Donald Francis Dion, Burlington, both of Mass., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,550

Int. Cl. A63d *5/04*

U.S. Cl. 273—54 E **33 Claims**



1. An apparatus for detecting and identifying each of a plurality of standing bowling pins disposed anywhere within a given field of view comprising:

pin detecting means including sweep means for sweeping said field of view to generate a pin standing signal for each standing pin regardless of the position of that pin in said field of view,

field of view dividing means for dividing at least a portion of said field of view into a plurality of pin identifying regions and operated in synchronism with said pin detecting means to generate a field of view region identifying signal manifesting each of said regions in accordance with the time position and duration of that region identifying signal with respect to said swept field of view,

standing pin determining means responsive to said pin standing signal and said region identifying signal applied as input signals thereto for generating a signal manifesting both the presence and identification of each of said standing pins when the pin standing signal and region identifying signal occur in time coincidence for that pin then being detected, and

means for applying said region identifying signal and said pin standing signal as said input signals to said determining means.

3,847,395

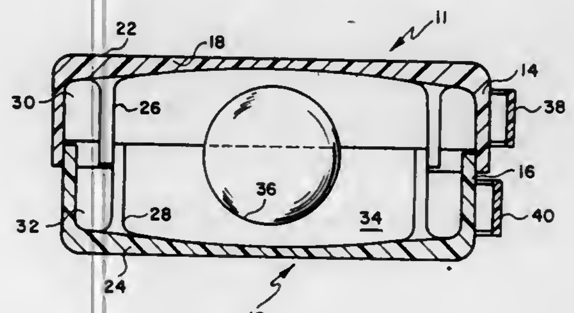
INTERMESHING PADDLES

Ruggero Santilli, 74 Bakerhill Rd., Weston, Mass. 02193

Filed Aug. 22, 1973, Ser. No. 390,588

Int. Cl. A63b *71/00*

U.S. Cl. 273—96 R **6 Claims**



1. A pair of paddles for a paddle game comprising:
a. a first paddle comprising a disc with a depending marginal skirt;
b. a second skirt depending from the interior surface of said disc;
c, a plurality of partially recessed webs bridging the gap between said marginal skirt and said second skirt;
d. a second paddle configured as the first except that it is dimensioned so that complementary oppositely disposed skirts and webs of said paddles mesh with said skirts and webs to form an easily-releaseable force fit, thereby forming a closed compartment; and
e. a handle affixed to the exterior surface of each marginal skirt.

3,847,396

UMPIRES RAY GUN FOR USE IN WEAPON TRAINING SYSTEMS

David William Ashford, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, Hampshire, England

Filed July 26, 1973, Ser. No. 383,026

Claims priority, application Great Britain, July 29, 1972, 35569/72

Int. Cl. F41j *5/02*

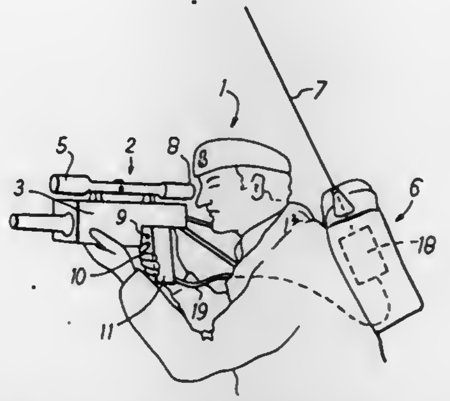
U.S. Cl. 273—101.1 **6 Claims**

1. Apparatus for use with a responsive target forming part of a weapon training system the target being of the type having detecting means for detecting the incidence of electromagnetic radiation modulated in different modes and having transmitting means operably connected to said detecting means for transmitting radio signals in response to said incident radiation, and with a selective circuit connected to receive signals from said detecting means and responsive to a predetermined mode of modulation of said radiation corresponding to a "kill" signal, the apparatus comprising in combination

a support body;

radiation source means mounted on said body for providing a collimated beam of electromagnetic radiation;

modulating means co-operating with said source for modulating said beam in at least first and second modes, said first mode being selected to activate the transmitting means to transmit without activating the "kill" signal selective circuit, and said second mode being selected to activate said selective circuit on the target as a "kill" signal;



manually operable switch means connected to said modulating means for selecting at will each of said modes of modulation; and for causing the beam to be transmitted in said selected mode

aiming means connected to said source and mounted on said body and aligned with said beam for aiming said beam at the target;

radio receiving means for receiving the radio signals transmitted from the target; and

indicating means connected to said receiving means for indicating that the detecting means on the target has detected the incidence of the beam.

3,847,397

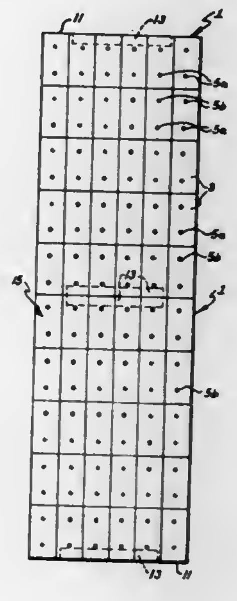
GAME APPARATUS WITH A PAIR OF BOARD MEMBERS AND PLAYING PIECES

George D. Price, Rt. 2, Tilberry Rd., Powell, Tenn. 37849

Filed June 12, 1973, Ser. No. 369,246

Int. Cl. A63f *3/00*

U.S. Cl. 273—131 AD **6 Claims**

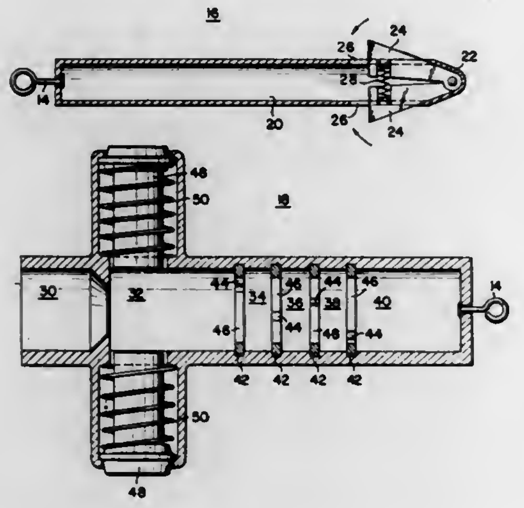


1. A game apparatus comprising a pair of substantially identical board members, each said board member being rectangular in configuration with two of its sides longer than the other two of its sides, each of said board members being

separable and including a joining side which is adapted to be juxtaposed to a corresponding side of the other board member to form a complete playing board assembly, each of said board members having a surface which is divided into a plurality of playing spaces and each space having spaced apart holding means to receive playing tokens, the playing spaces of said board members being positioned adjacent one another to form the entire playing surface of the apparatus when said joining sides are juxtaposed, said joining sides being shorter sides and each including a magnet for retaining the joined sides in juxtaposed position and the playing spaces in a single continuous playing surface, the other shorter side of each board member including a magnet whereby said board members are adapted to be superimposed and joined together for storage.

3,847,398
GAME EMPLOYING WRIST ENGAGING MEANS WITH DISENGAGABLE LATCHES

Donald A. Kidd, 1901 Beach St. No. 8, San Francisco, Calif. 94123
Filed Aug. 1, 1973, Ser. No. 384,472
Int. Cl. A63f *9/08*
U.S. Cl. 273—156 **6 Claims**

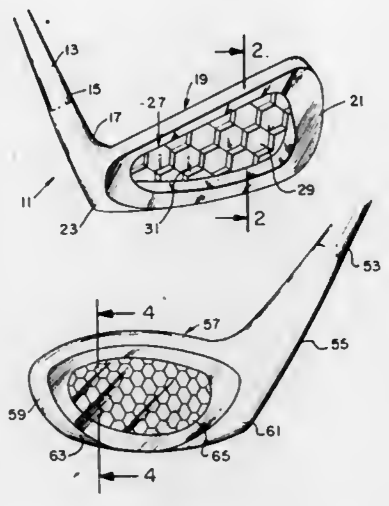


1. In combination:
first and second wrist engaging means; and
first and second detachably engagable cooperating latching devices, each device being engaged with its corresponding means, the first device including an elongated member with oppositely disposed arrow tip half sections normally extended but being retractable into the body of the member, the second device having a cruciform shape with a longitudinal bore in the longitudinal portion and two transverse aligned bores disposed in the opposite sections of the lateral portion of the cruciform shape, said tip half sections engaging the longitudinal bore interior when the two devices are engaged, the second device including a pair of manually operable means, each manually operable means being disposed in a corresponding transverse bore, said pair of manually operable means being operated together to enable the latching devices to become disengaged.

3,847,399
GOLF CLUB WITH UNIT-CELL HEAD CONSTRUCTION

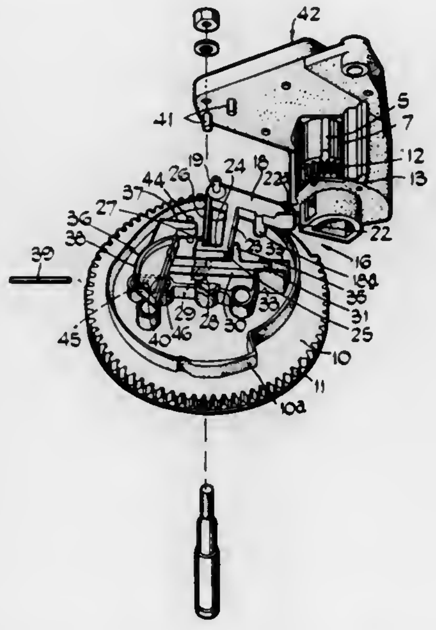
William R. Raymont, 29208 Firthridge Rd., Palos Verdes, Calif. 90274
Filed May 3, 1973, Ser. No. 356,962
Int. Cl. A63b *53/04*
U.S. Cl. 273—167 F **18 Claims**

1. A golf club, comprising:
an elongated shaft having a lower end; and
a head having a hosel in an upper portion thereof, said lower end of said shaft being fixedly disposed in said hosel, said head also having a toe portion and a heel portion and a generally planar high modulus impact face between said toe and heel portions, said head portion having hollow unit-cell structure means disposed therein immediately behind said impact face for broadening the effective hitting area of said impact face while reinforcing and enhancing the stiffness of said impact face, said unit-cell structure means including a plurality of interconnected elongated unit-cells encapsulated by other interconnected elongated unit-cells, each of the unit-cells being defined by boundary cell walls, each boundary cell wall having a cross sectional thickness substantially less than the average of the largest and smallest external cross sectional dimension of the bounded unit cell, said boundary cell walls extending generally rearwardly from and generally perpendicularly to the plane of said impact face.



3,847,400
RECORD PLAYERS

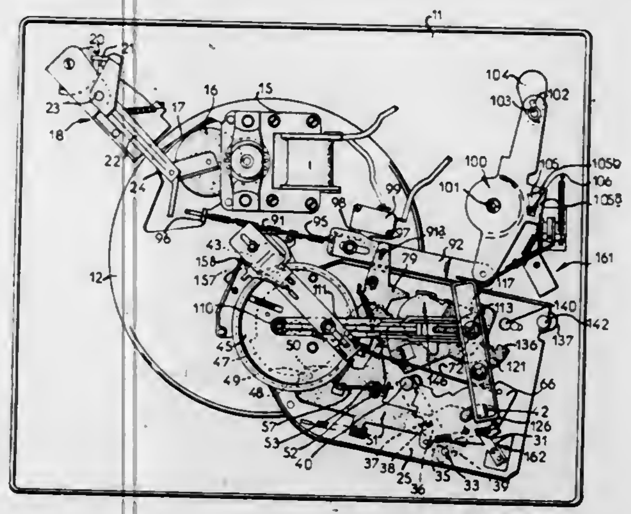
Philip Henry Evans, Stourbridge, England, assignor to Glenburn Engineering Limited, Hamilton, Bermuda
Filed Apr. 20, 1973, Ser. No. 353,013
Claims priority, application Great Britain, Apr. 20, 1972, 18291/72
Int. Cl. G11b *17/02*
U.S. Cl. 274—1 L **7 Claims**



1. A record player for playing disc records, which includes a mechanism for executing a cycle of automatic operations upon completion of the playing of one record, incorporating a driving means for the automatic mechanism in the form of a first gear wheel capable of driving engagement with a second gear wheel rotatable with the turntable, the first gear wheel having a gap in its teeth which, during playing of a record, lies adjacent the second gear wheel so that the first gear wheel remains stationary, drive means being provided comprising a pawl member carried by the first gear wheel and movable into driving engagement with a part associated with the second gear wheel to start movement of the first gear wheel to cause the teeth of the two gear wheels to mesh, whereby the first gear wheel is rotated through a single revolution during which said cycle of automatic operations is executed and returned to its initial position when the gap in the teeth of the first gear wheel again lies opposite the second gear wheel, wherein the pawl member is pivotally mounted on the first gear wheel in relatively friction free pivot means for pivotal movement of an abutment portion of the pawl member into and out of a position for engagement with said part associated with the second gear wheel, an operating member mounted for rectilinear sliding movement relative to the first gear wheel, the pawl member including a mounting portion which engages said operating member on the underside and near the center of gravity thereof to support the operating member, at least substantially wholly, on the pawl member, the operating member having a portion engageable with an actuating means provided on the record player, when the first gear wheel is in said initial position, whereby movement of the actuating means causes movement of the operating member which pivots the pawl member to move said abutment portion into position for engagement with said part of the second gear wheel.

3,847,401
RECORD PLAYERS

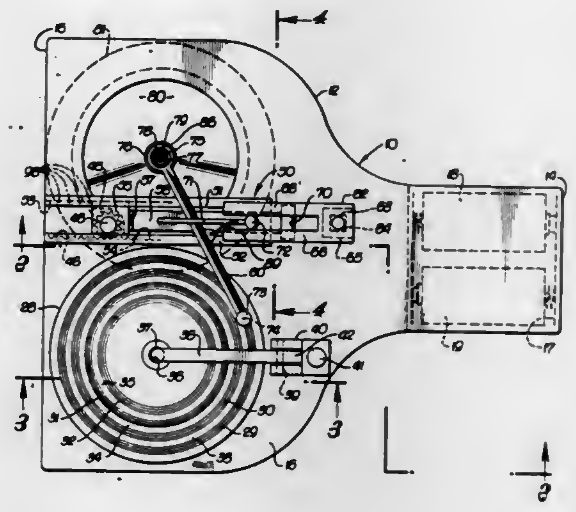
Philip Henry Evans, Wollaston, Stourbridge, England, assignor to Glenburn Engineering Limited, Hamilton, Bermuda
Filed Dec. 4, 1972, Ser. No. 311,636
Claims priority, application Great Britain, Dec. 4, 1971, 56409/71
Int. Cl. G11b *17/16*
U.S. Cl. 274—10 R **14 Claims**



1. An automatic record player for playing disc records of different sizes comrprising a deck plate, a turntable rotatably mounted on the deck plate and driven, in use, by an electric motor, a centre spindle extending upwardly from the centre of the turntable and from which records are fed singly in succession from the bottom of the stack onto the turntable, a pick-up arm, pivotally mounted for movement about a horizontal axis on the upper end of a vertical spindle, the vertical spindle being pivotally mounted for movement about a vertical axis relative to the deck plate, a drive gear rotatably mounted on the deck plate, and means for rotating the drive gear during a record changing cycle, a drive lever, having a first end and a second end, movably mounted on the deck plate, said first end being drivingly connected to the drive gear and said second end being drivingly connected to the vertical spindle to pivot the pick-up arm outwardly and inwardly of the turntable as a result of movement of the drive lever caused by rotation of the drive gear, a selector plate provided on the vertical spindle for rotation therewith, the selector plate having a plurality of abutments angularly spaced apart around the axis of the vertical spindle, a selector latch movable from a first position in which free movement of the selector plate is permitted into a second position for engagement with a desired one of the abutments to limit pivotal movement of the selector plate, the position of the selector latch being adjustable so that it is in a position to engage the appropriate one of the abutments corresponding to the size of record to be played and to thus halt the inward movement of the pick-up arm in the correct position for the size of record to be played, a drive link, separate from the drive lever, one end of the drive link being pivotally connected to the drive gear, about an axis spaced from, and parallel to, the axis of rotation of the drive gear, the other end of the drive link being mounted relative to the deck plate for sliding movement relative thereto and for pivotal movement about an axis, spaced from, and parallel tO, the axis of rotation of the drive gear as a result of rotation of the drive gear, the drive link being operative to raise and lower the pick-up arm on movement of the drive link resulting from rotation of the drive gear, and selector latch drive means being provided on the drive link to move the selector latch between said first and second positions.

3,847,402
PHONO DISC PLAYBACK

James T. Shacklett, 427 S. Manhattan Pl. No. 204B, Los Angeles, Calif. 90005
Filed Dec. 20, 1972, Ser. No. 317,067
Int. Cl. G11b *17/06*
U.S. Cl. 274—14 **11 Claims**



1. A phonograph disc playback device for use with a disc having bands of grooves comprising a frame, a motor actuated turntable on the frame, said frame including a guideway, a carriage slidably mounted on the guideway, a tone arm carried by the carriage and a needle on the tone arm having playing engagement positions relative to the disc, said carriage having a plurality of stations on the guideway corresponding to the respective bands of grooves on the disc, said tone arm having a path of travel on said carriage between start and finish play positions of a selected band, an actuating lever movably mounted on said frame for operation between operating and release positions, said actuating lever being operably connected with said tone arm at said stations, said tone arm being in play position with the needle in contact with the disc at start play position when said actuating arm is in operating position, there being a return mechanism on the carriage operably associated with the tone arm and operable to return the tone arm to start position, and a switch for activating the turntable responsive to movement of the actuating lever when the actuating lever is in operable position, whereby upon each movement of the actuating lever after return of said tone arm to start play position there is a repeat play of the needle on the selected band of the disc.

3,847,403
SEAL FOR A CONVEYOR AXLE OF A TRAVELING GRATE

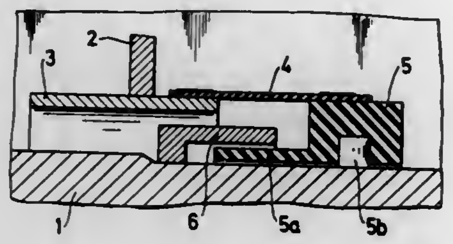
Ingo Thiesler, Neubeckum, and Wilhelm Hackbarth, Ahlen, both of Germany, assignors to Polysius AG, Neubeckum, Germany

Filed Sept. 10, 1973, Ser. No. 395,961

Claims priority, application Germany, Dec. 5, 1972, 7244485

Int. Cl. F16j *15/44*

U.S. Cl. 277—57 **4 Claims**



1. A seal for a rotary conveyor axle comprises a stationary, annular housing encircling said axle and having at least one end thereof terminating short of the corresponding end of said axle; a packing ring encircling said axle and spaced from said one end of said housing, said housing and said packing ring being of substantially the same outside diameter; and an annular, elastic sealing sleeve of substantially uniform wall thickness and having an inside diameter corresponding substantially to the outside diameter of said housing and said packing ring, said sleeve spanning the space between said housing and said packing ring, said housing being fitted into and secured to one end of said sleeve and said packing ring being fitted into and secured to the other end of said sleeve.

ERRATUM

For Class 277—153 see:
Patent No. 3,847,389

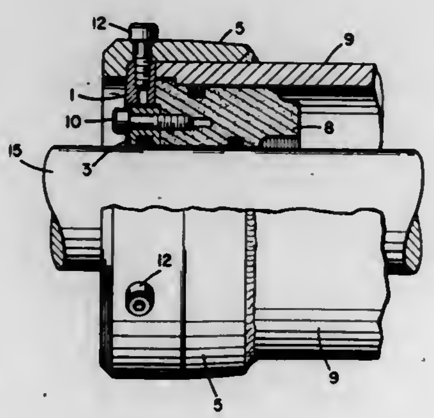
3,847,404
WEDGE LOCK HYDRAULIC CYLINDER HEAD

Salvatore R. Agostino, Jr., Setauket, N.Y., assignor to Edward D. Meyer, Nassau Point, N.Y.

Filed Mar. 27, 1973, Ser. No. 345,367

Int. Cl. F16j *15/00*

U.S. Cl. 277—187 **6 Claims**



1. A hydraulic cylinder head with a locking means comprising
a hydraulic cylinder tube,
a collar on said hydraulic cylinder tube,
a cylinder rod located within said cylinder tube,
a solid packing around said cylinder rod and within said cylinder tube, and
a plurality of wedge-shaped spaced locking members placed between said collar and retaining means, said retaining means being located between said wedge-shaped locking means and said cylinder rod.

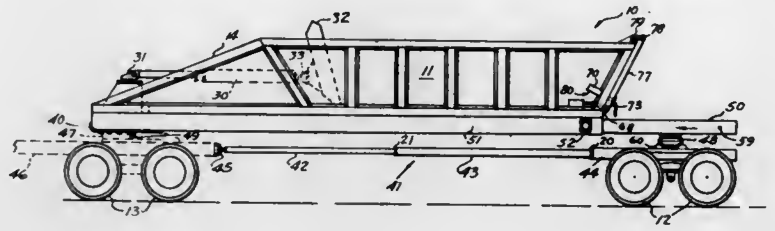
3,847,405
SPREADING AND END SPILL DUMP TRAILER

Arthur W. Pearce, 275 Lk. Desire Dr., N., Renton, Wash. 98055

Filed July 25, 1972, Ser. No. 275,058

Int. Cl. B62d *21/14*

U.S. Cl. 280—34 A **6 Claims**



1. An improved trailer for highway hauling and dumping of materials, comprising:
a. a main load bearing frame member;
b. a load carrying bed fixedly mounted on said load bearing frame member;
c. a sliding frame member telescopically receivable within and extensible from said main frame member;
d. a set of rear bogies;
e. means connecting said rear bogies to said sliding frame member; and
f. means activated from the cab of a tractor pulling said trailer for automatically locking said sliding frame member with respect to said main frame member, in at least two preselected positions, so as to vary the distance between said rear bogies and the front of said trailer; said locking means comprising:
i. an adapter plate secured to said main frame member;
ii. a cylindrical housing fixedly engaged with said adapter;
iii. an orifice in said adapter plate;
iv. an orifice in said main frame member aligned with said orifice in said adapter plate;
v. a plurality of orifices in said sliding frame member for selective alignment with said orifice in said main frame member;
vi. a locking pin disposed within said housing and selectively movable through said orifice in said adapter plate and said aligned orifices in said main frame member and said sliding frame member;
vii. an air ram attached to said locking pin for actuating the same;
viii. spring means normally urging said air ram towards and said pin through said aligned orifices;
ix. air inlet means for admitting air under pressure between said air ram and said adapter plate; and
x. a pneumatic air supply controlled from the cab of said tractor to supply pressurized air to said air inlet means for selectively withdrawing said pin from said aligned orifices.

3,847,406
FOLDING STROLLER

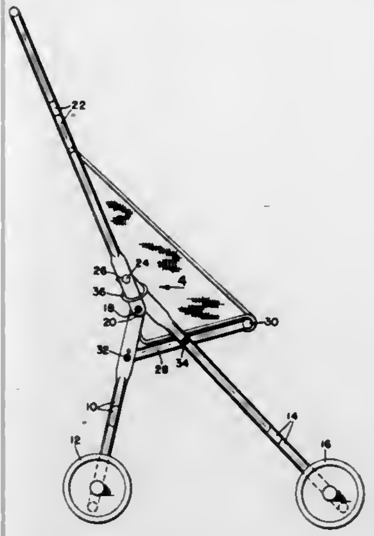
Benjamin K. Burnham, Gardner, Mass., assignor to Thayer, Inc., Gardner, Mass.

Filed Mar. 27, 1973, Ser. No. 345,329

Int. Cl. B62b *11/00*

U.S. Cl. 280—36 B **11 Claims**

1. A folding stroller comprising a front frame, a rear frame, a pusher handle frame, and a seat frame, and wheels on the front and rear frames at corresponding ends thereof, first means for pivotally connecting the end of the front frame opposite the wheels to the pusher handle frame, second means for pivotally connecting the ends of the rear frame opposite the wheels to the pusher handle frame, said second pivot means being spaced from said first pivot means toward said wheels, means pivotally connecting said seat frame to said rear frame and front frame intermediate the ends of respectively said rear and front frame,
and releasable locking means locking the front frame with respect to the pusher handle frame in erected position of the stroller.



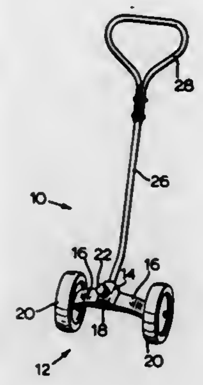
3,847,407
TRACTION DEVICE FOR TRAILERS

Norman Philip Balletto, 181 Van Dusen Blvd., Toronto, Ontario, Canada

Filed May 12, 1972, Ser. No. 240,219

Int. Cl. B62b *1/08*

U.S. Cl. 280—46 **1 Claim**



1. A knock-down traction device for lifting and towing a trailer or the like comprising, a frame member in the form of a narrow strip of material formed to an arch-shaped configuration and having axially aligned passage means at opposite ends thereof, axle means releasably extending through said axially aligned passages of said frame and projecting outwardly therefrom, wheel means releasably mounted on each outwardly projecting end of said axle means, a tubular handle member one end mounted at the apex of said arch-shaped frame member and projecting rearwardly therefrom, a ball-shaped coupling releasably mounted at the apex of said arch-shaped frame, said ball-shaped coupling releasably securing said handle means with respect to said frame, said handle means having a first portion projecting rearwardly from said frame substantially at right angles to a first plane extending through said axle and centrally of the width of said arch-shaped frame member and a second portion projecting rearwardly from said first portion at an angle less than 90° with respect to said first plane in a second plane which projects substantially radially with respect to the axis of said axle means, said handle being movable in an arc between a first position in which said ball-shaped coupling is disposed at ground level on one side of a second plane which extends vertically through the center of the axle to engage a coupling element of a trailer and a second position on the other side of said second plane wherein said second portion of said handle is disposed at ground level, said ball-shaped coupling member being adapted to support a trailer in a stable elevated station when said handle is in said second position.

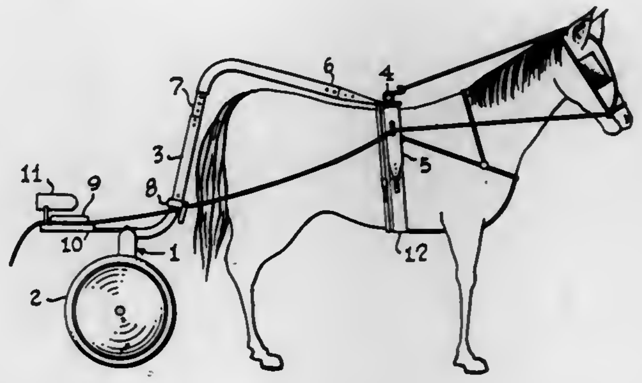
3,847,408
SINGLE SHAFT SULKY

Joseph H. King, 930 John Anderson Dr., Ormond Beach, Fla. 32074

Filed Sept. 13, 1971, Ser. No. 179,931

Int. Cl. B62d *27/04*

U.S. Cl. 280—63 **9 Claims**



1. A sulky for use in harness horse racing, comprising:
arch axle frame means having an elastic axis and having first and second ends;
wheel means secured to each of said first and second ends of said arch axle frame means, the rotational axes of said wheel means being placed aft of the elastic axis of said arch axle frame means to produce a drag-reducing castoring action in said wheel means;
an adjustable seat secured to and extending aft of said arch axle frame means; and
a shaft having a single point connection adapted to be secured to the harness of a horse, said shaft being secured to said arch axle frame means and extending upwardly and forwardly over said horse when said sulky is connected to the horse's harness, said shaft, seat, and arch axle frame means being flexible and having a spring constant to produce a fore and aft motion of said sulky at a frequency which conforms to the gait of the horse.

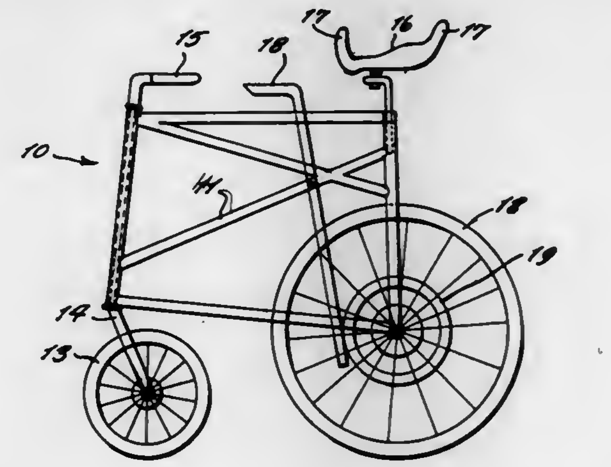
3,847,409
WALK-A-CYCLE

Merle L. Shaffer, R.F.D. No. 1, Turin, Iowa 51059

Filed Aug. 29, 1973, Ser. No. 392,795

Int. Cl. B60p *1/00*

U.S. Cl. 280—87.02 R **1 Claim**

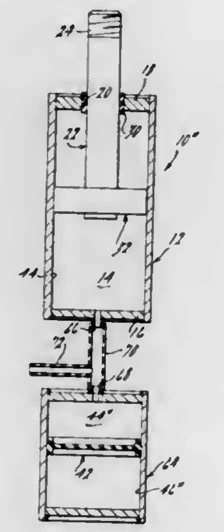


1. In a walk-a-cycle, the combination of a frame supported upon a front and rear wheel and means whereby a rider can

support his weight thereupon while walking with his feet upon a ground, said means comprising a vertically adjustable seat mounted upon said frame so to accommodate all sizes of said riders, said front wheel being steerable, and said walk-a-cycle being able to be braked so to stop, said steerable front wheel being supported at a lower end of a fork which at its upper end is integral with a steering shaft journalled in a front end of said frame, an upper end of said shaft having a normally rearward steering arm, and said fork being normally rearwardly downwardly inclined in camber toward said rear wheel.

3,847,410
LEVELING SYSTEM

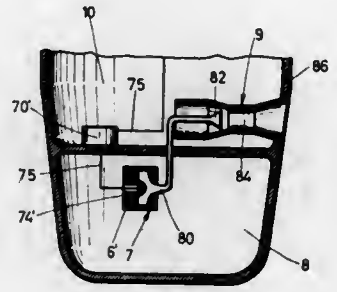
Johan H. Keijzer, Hasselt; Willy R. J. Pierle, Tienen, and G. Van De Voorde, Sint-Martent-Latem, all of Belgium, assignors to Monroe Belgium N.V., Saint-Truiden, Belgium
Filed June 12, 1972, Ser. No. 261,608
Int. Cl. B60g *11/26*
U.S. Cl. 280—124 F **42 Claims**



1. In a leveling system for a vehicle having sprung and unsprung portions,
- at least one leveling strut comprising a cylinder connected at one end to one of the vehicle portions,
- a piston reciprocally mounted within said cylinder and operable at selected equilibrium positions within said cylinder to damp relative movement between the sprung and unsprung vehicle portions,
- a piston rod connected to said piston and projecting from one end of said cylinder and adapted for connection to the other of the vehicle portions,
- said piston rod including means defining a fluid passage therein for communicating damping fluid to and from said cylinder,
- a quantity of damping fluid within said cylinder for damping reciprocal movement of said piston,
- means defining a gas chamber containing a quantity of a compressible gas,
- separating means for separating said gas from said damping fluid, and
- means located remote from said strut and operable in response to attitude changes between the sprung and unsprung vehicle portions for varying the pressure of said gas and thereby change the equilibrium position of said piston within said cylinder and hence predeterminately control the relative attitude between the sprung and unsprung vehicle portions.

3,847,411
VEHICLE ACCIDENT PROTECTION SYSTEM AND METHOD OF PROTECTING PASSENGERS

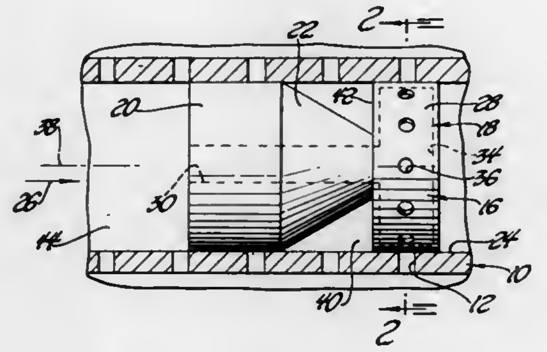
Gunter Herrmann, Ottobrunn-Riemerling, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft Mit Beschrankter Haftung, Munich, Germany
Filed Mar. 21, 1972, Ser. No. 236,711
Claims priority, application Germany, Mar. 30, 1971, 2115302
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **9 Claims**



1. A vehicle for the transportation of persons particularly automobiles having a shock-absorption system, comprising at least one inflatable casing adapted to be installed in the passenger compartment of the automobile, fluid-pressure means, means for sensing an accident condition of the automobile connected between said casing and said fluid-pressure means for initiating the inflation of said casing by means of said fluid-pressure, and pump means having a suction in the passenger compartment and a discharge connected to atmosphere and being connected to said sensing means and said fluid-pressure means and being actionable thereby to produce an underpressure in the passenger compartment at the same time as said casing is inflated.

3,847,412
INFLATING PLUG

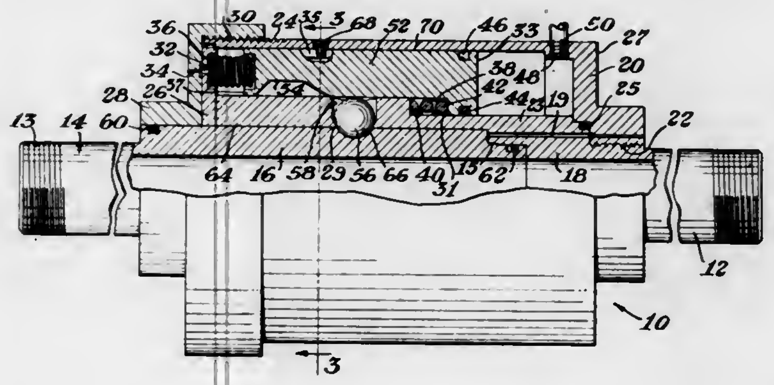
John E. Mattson, 26136 Hampden, Madison Heights, Mich. 48071
Filed June 27, 1972, Ser. No. 266,544
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **9 Claims**



1. In an automotive vehicle cabin having an inflatable bag operable to inflate within the cabin providing a soft bumper and passenger motion restraint responsive to a preselected threshhold of deacceleration of the automotive vehicle, the improvements comprising:
- a tube for conducting gas to the inflatable bag;
- the inflatable bag being wrapped around said tube prior to inflation;
- said tube having apertures for conducting gas from inside the tube to the bag;
- a plug preventing passage of gas through the tube operable to slide through the interior of the tube, allowing passage of gas through the tube; said plug having a hollow portion for conducting gas from aft of the plug to immediately aft of the forward face of the plug and to said bag in an amount and rate substantially less than gas being fed to the bag immediately aft of the plug.

3,847,413
QUICK RELEASE COUPLING

Derrell G. Gurley, New Orleans, La., and James P. Chisholm, Sand Springs, Okla., assignors to The Dow Chemical Company, Midland, Mich.
Filed Oct. 23, 1973, Ser. No. 408,712
Int. Cl. F16l *37/18*
U.S. Cl. 285—316 **4 Claims**

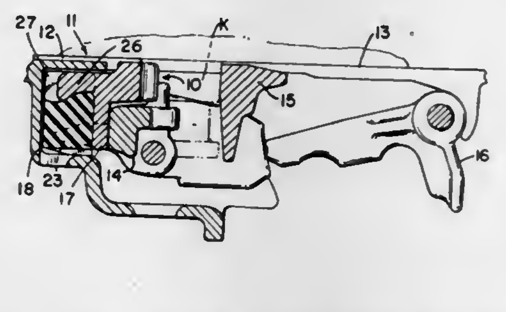


1. Quick release coupling apparatus comprising male and female coupling members, said coupling members each being adapted to be attached at one end to a line member, said female member having an attachment section including inner and outer peripheral tubular walls, closed ends, and an advanceable and retractable generally tubular piston disposed in sealing contact with and within the space defined by said inner and outer walls and closed ends, means for limiting rotary motion of said piston, said inner peripheral wall having an array of bores extending therethrough, said bores being of smaller diameter at the side of said inner peripheral wall which is adapted to receive said male coupling member, said piston having an array of grooves in its inner surface, said grooves being disposed over said bores when said piston is in its retracted position, and a plurality of balls, one of said balls being disposed in each of said bores, the maximum diameter of said balls exceeding the smaller diameter of said bores, remotely controllable hydraulic advancing and spring loaded retracting means for advancing and retracting said piston whereby said grooves therein may be misaligned or aligned with said balls, said male member having an outer peripheral part shaped to mate with the inner peripheral wall of said female part, said outer peripheral part having at least a plurality of depressed surface parts which are aligned with said bores of said female part when said male and female members are mated, the depth of said depressed surface parts being a minor fraction of the diameter of said balls.

3,847,414
FRONT BEARING BLOCK ASSEMBLY FOR TRACTOR FIFTH WHEEL

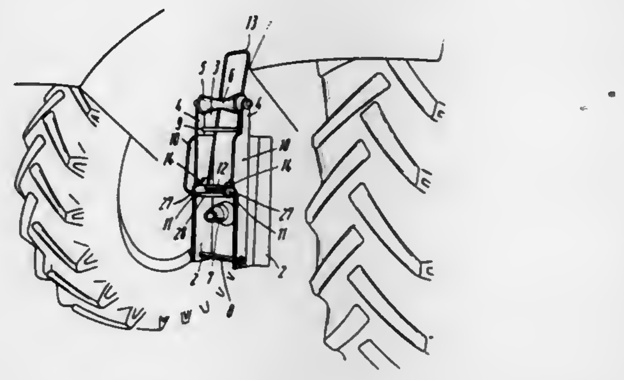
Francis Eli Madura, Whiting, Ind., assignor to AMSTED Industries Incorporated, Chicago, Ill.
Filed Dec. 19, 1973, Ser. No. 425,987
Int. Cl. B62d *53/08*
U.S. Cl. 280—437 **4 Claims**

1. In a fifth wheel assembly having a fifth wheel plate, a rear jaw and an intermediate jaw mounted on said fifth wheel plate for translatory movement between an open and a closed position, and a front bearing block assembly, the improvement wherein said front bearing block assembly comprises a bearing block having a substantially rectangular plate, a front coupling jaw projecting from the upper end of one side of said plate, a shank projecting from the upper end of the other side of said plate, said shank having lengthwise varying cross-sectional areas to provide a necked-in portion along the major portion of the length of said shank and a bulbular-like terminal end, a resilient buffer block having a slot along the upper end thereof receiving said shank, said slot being shaped approximately the same as said shank with the lengthwise cross-sectional areas accommodating said shank being about the same as the corresponding cross-section area of said shank thereby to resiliently grip and retain said shank in said slot.



3,847,415
DEVICE FOR CONNECTING AN AGRICULTURAL IMPLEMENT, MACHINE OR THE LIKE TO A TRACTOR

Hubert Geisthoff, Lohmar/Donrath, Germany, assignor to Jean Walterscheid GmbH, Lohmar/Rhineland, Germany
Filed Sept. 28, 1973, Ser. No. 401,863
Claims priority, application Germany, Sept. 29, 1972, 2247903; Feb. 20, 1973, 2308218
Int. Cl. B60d *1/08*
U.S. Cl. 280—478 R **19 Claims**



1. In a device for connecting an agricultural implement and the like to a tractor vehicle, the combination of a catch bar having its lower end pivotally mounted on the rear of a tractor vehicle and an alignment roller on its upper end, a coupling plate mounted on the implement to be connected, an aligning hook on said coupling plate having an opening engagable with said catch bar alignment roller, and mutually engagable means on said tractor vehicle and coupling plate for locking said coupling plate with respect to said tractor vehicle after connection therebetween.

3,847,416
HYDRAULIC CONTROL CIRCUIT WITH REMOTELY CONTROLLED DUAL PRESSURE RELIEF VALVE

Leon E. Hicks, Joliet; John W. Grant, Pekin; Loyal O. Watts, Mapleton, and Wayne A. Peterson, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Nov. 2, 1973, Ser. No. 412,452
Int. Cl. B60d *1/00*
U.S. Cl. 280—481 **13 Claims**

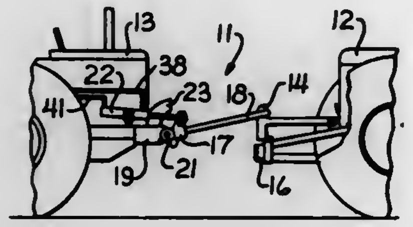
1. A hydraulic control circuit providing for dual pressure operation of a push-pull coupling between two vehicles which are selectively operable in tandem, the coupling including

hook means on one vehicle and a latch member disposed on the other vehicle, a double-acting hydraulic jack regulating movement of the latch member between engagement and disengagement relative to the hook means, the control circuit comprising

a source of fluid under pressure,

a control valve having an inlet passage in communication with the source and a movable spool means for selectively communicating opposite ends of the jack with the inlet passage and a fluid drain respectively,

a pilot operated, dual pressure relief valve communicating the inlet passage to drain, the relief valve normally establishing a relatively low fluid pressure within the inlet passage, and

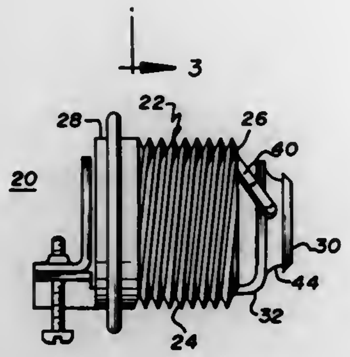


pilot control means operatively responsive to the position of the latch member and in communication with the relief valve, the pilot control means conditioning the pilot operated relief valve for establishing a relatively high fluid pressure within the inlet passage while the jack is being operated to disengage the latch member from the hook means, the pilot control means conditioning the pilot operated relief valve to establish the relatively low fluid pressure within the inlet passage as the latch member approaches a fully retracted position.

3,847,417
ELECTRICAL FITTING

Jaspal S. Bawa, Elizabeth, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed June 22, 1973, Ser. No. 372,467
Int. Cl. H02g *3/06*
U.S. Cl. 285—161 **6 Claims**

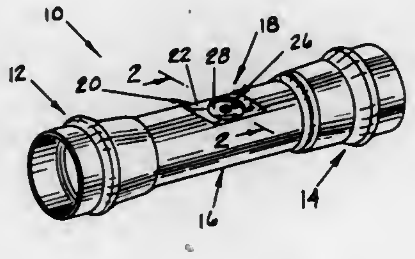


1. An electrical fitting comprising: a generally hollow tubular body member having a given inner diameter, a first end, a second end, and an externally threaded portion extending from said body member first end a given length towards said body member second end; an annular ring having a given inner diameter less than said inner diameter of said body member and having a smooth tapered interior surface having a first portion adjacent said body member first end, said first portion having a convex form converging towards the axis of said annular ring and away from said body member first end, said interior surface having a second portion contiguous with said first portion and flaring outwardly adjacent the end of said annular ring remote from said body member, said annular ring being selectively axially spaced from and disposed generally adjacent said body member first end in coaxial alignment therewith, said annular ring being connected to said body member by a narrow web portion extending between said body member first end and the periphery of said annular ring; said body member, annular ring and web portion being formed integrally from the same material, and at least one tab means connecting said body member first end to the periphery of said annular ring at a point selectively spaced from said web portion to maintain said annular ring in a given position with respect to said body member first end.

3,847,418
PLASTIC PIPE SECTION WITH AN IMPROVED TAP-IN ARRANGEMENT

Ralph Semprevivo; Donald W. Andrews, both of Franklin; Richard L. Clark, Utica, all of Pa., and David W. French, Denison, Tex., assignors to Johns-Manville Corporation, Greenwood Village, Colo.

Filed Dec. 1, 1972, Ser. No. 311,198
Int. Cl. F16l *15/00*
U.S. Cl. 285—219 **3 Claims**



1. A plastic pipe section comprising:

a. a hollow body portion having a curvilinear cross-section;

b. a tap-in outer zone comprising an integral part of and integrally formed in said body portion and having a substantially flat exterior surface and a substantially flat interior surface;

c. a tap-in inner zone surrounded by and integrally formed with said outer zone and defined by a curvilinear periphery, said inner zone being inwardly indented with respect to said interior and exterior surfaces of said outer zone and having substantially flat exterior and interior surfaces; and

d. said tap-in inner zone including an internally threaded open ended passage extending therethrough, said passage providing fluid communication between the interior and exterior of said body portion.

ERRATA

For Classes 285—302 and 285—315 see:
Patents Nos. 3,847,392 and 3,847,393

ERRATUM

For Class 285—316 see:
Patent No. 3,847,413

3,847,419
SEALED TUBE CONNECTORS

Robert S. Brown, Tecumseh, Mich., assignor to Standard Steel Products Corporation, Tecumseh, Mich.

Filed Apr. 5, 1973, Ser. No. 348,054
Int. Cl. F16l *19/00*
U.S. Cl. 285—330 **4 Claims**

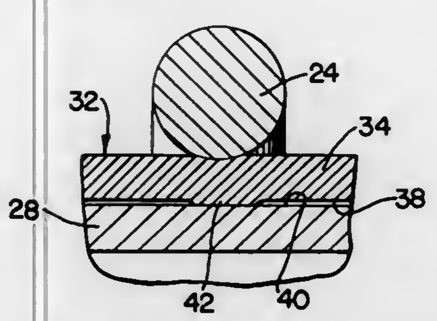
1. A sealed connection for fluid transmitting exhaust tube members comprising:

aligned rigid tubular members one having an enlarged diameter end portion slid over the end of the other tubular member in telescoping engagement;

said rigid tubular members made of metallic material having a sufficiently great hardness to preclude forming a connection therebetween by deforming said enlarged end against the inner end by clamps;

a tubular sleeve member positioned around the enlarged end of said one rigid tubular member and around the adjacent portion of the other rigid tubular member and having sufficiently large end openings permitting sliding engagement around the ends of said rigid tubular members during assembly;

adjustable clamp means positioned near both ends of said sleeve member and having encircling portions therearound producing an even compressive force on the end portions of said sleeve member against said rigid tubular members which acts on the entire 360° circumference of said sleeve member;

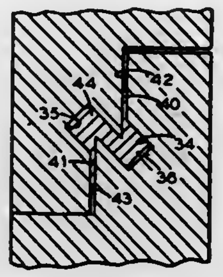


said sleeve member made of a soft and ductile metallic material having a Brinell hardness less than about 150 and said sleeve portions underlying said clamp means being deformed inwardly by said compressive force producing a line seal contact between said sleeve and said rigid tubular member on either side of said adjacent tube end portions thereby sealing the fluid within said tubes.

3,847,420
INDUSTRIAL TECHNIQUE

Ovid Kingsley Seville, Yardley, Pa., assignor to Weston Instruments, Inc., Newark, N.J.

Continuation-in-part of Ser. No. 10,168, Feb. 10, 1970, abandoned. This application June 14, 1971, Ser. No. 152,825
Int. Cl. F16l *17/00*
U.S. Cl. 285—336 **4 Claims**

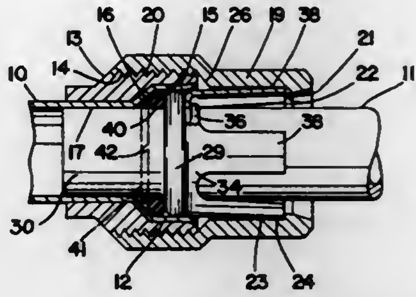


1. A seal comprising a pair of members in telescopic engagement, one of said members having a recess formed therein to receive said other member, said other member having two axially spaced portions formed thereon for sliding engagement with the sides of said recess, said portions being radially separated from each other by a shoulder that defines a common plane, said one member having a generally inwardly opening groove formed at said plane common to said portions and said other member having a generally outwardly opening groove formed therein at said common plane, each of said grooves lying in a plane at an acute angle with the axis of said telescopic engagement, said grooves being axially offset from each other, and a plastically deformable material interposed between said grooves for extrusion into said grooves when said members are telescoped together.

3,847,421
QUICK CONNECT TUBE COUPLING JOINT

John T. Eschbaugh, Chesterland, and David N. Mooney, Chagrin Falls, both of Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Nov. 24, 1972, Ser. No. 308,974
Int. Cl. F16l *19/00*
U.S. Cl. 285—353 **11 Claims**

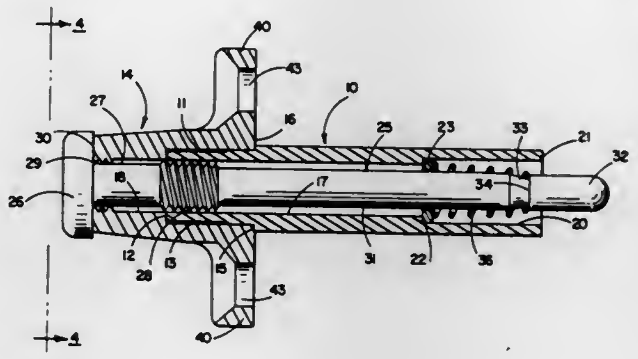


1. A tube coupling joint comprising first and second housing members detachably connected to each other and forming a chamber, one of the members having an opening and a transverse shoulder, a tube having an end portion extending through the opening into said chamber, said tube having a radial shoulder thereon axially inward of said transverse shoulder, a collet positioned completely on one side of said tube shoulder and axially between said shoulders, said collet having a first end portion engaged with one of said shoulders and a second end portion engaged with the other of said shoulders for retaining the tube within said chamber, said collet including a spring finger that carries one of said end portions, said finger being radially deflectable out of engagement with the respective shoulder, and a resilient packing in sealed engagement with said tube and the other of said members, said sealed engagement with said tube being with said tube shoulder and with a cylindrical portion of the tube adjacent said shoulder, and said one member being so constructed as to be freely movable relative to said tube during detachment of said first member from the second member.

3,847,422
FASTENER WITH RETRACTABLE PLUNGER

Bulent Gulistan, Malibu, Calif., assignor to Deutsch Fastener Corp., Los Angeles, Calif.

Filed May 25, 1973, Ser. No. 363,845
Int. Cl. E05c *5/00*
U.S. Cl. 292—60 **2 Claims**



1. A fastening device comprising

a tubular member having

a bore therein,

a counterbore extending inwardly from one end thereof,

a shoulder interconnecting said bore and counterbore,

internal screw threads adjacent the opposite end thereof having a minor diameter less than the diameter of said bore,

and means for attachment to a workpiece,

an annular member adjacent said shoulder, said annular member having an internal diameter less than the diameter of said bore,

a plunger extending through said tubular member, said plunger having

a first surface slidably received in said internal screw threads,

a second surface slidably received in said annular member,

external screw threads intermediate said first and second surfaces,

said external screw threads being meshable with said internal screw threads,

a head exteriorly of the opposite end of said tubular member and engageable therewith, and a shoulder,

and a compression spring interposed between said annular member and said shoulder of said plunger for biasing said plunger in one direction toward an extended position in which said head engages said opposite end of said tubular member and the opposite end of said plunger projects outwardly beyond said one end of said tubular member, said head being manually engageable for moving said plunger in the opposite direction to a retracted position in which said opposite end of said plunger is relatively adjacent said one end of said tubular member and for rotating said plunger to cause said internal and external threads to mesh for holding said plunger in said retracted position.

3,847,423

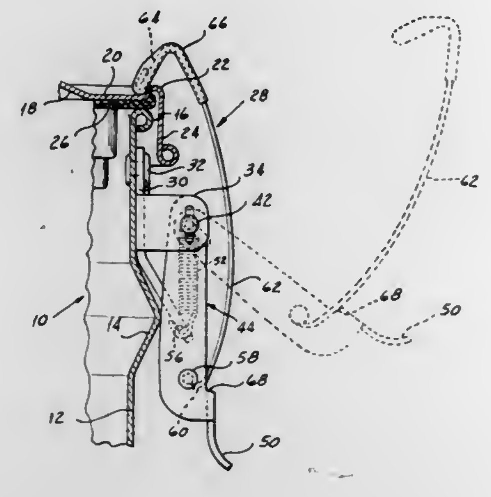
DUAL SPRING ACTION SELF ADJUSTING LATCH

Paul R. Gley, Hillsdale, N.J., assignor to Rexnord, Inc., Milwaukee, Wis.

Filed Apr. 2, 1973, Ser. No. 347,130

Int. Cl. E05c *5/02*

U.S. Cl. 292—113 **7 Claims**



1. A latch assembly for securing a pair of members in assembled relationship along a parting line including in combination, a handle, a pivot pin on said handle, a pair of spaced ears on a first one of said members, said ears being formed with parallel slots for receiving said pivot pin to mount said pivot pin on said one member for limited sliding movement toward and away from said parting line along a line perpendicular to the pin length, a spring biasing said pin for movement along the length of said slots toward corresponding ends thereof, and a draw hook pivotally carried by said handle for movement toward and away from said one member, said handle being movable in one direction from a first position at which said drawhook is remote from said one member to an intermediate position at which said drawhook engages the other member positioned in cooperative relationship to said one member and then movable in the other direction back to said first position to draw said members together in assembled relationship.

3,847,424

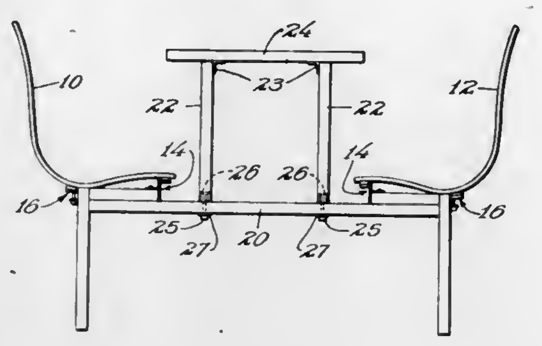
UNIT CONSTRUCTION BOOTHS

Harold R. Nielsen, 615 Centennial Dr., Kenyon, Minn. 55946

Filed Jan. 2, 1973, Ser. No. 320,517

Int. Cl. A47b *83/04*

U.S. Cl. 292—158 **3 Claims**



1. A booth assembly comprising in combination:

a frame structure for supporting a table and two benches;

a pair of benches of similar shape so as to be mutually stackable;

a plurality of thin brackets fastened to the underside of said benches, said brackets having slightly raised portions, said brackets being thin so as to avoid interfering with the stacking of the benches; and

first bracket clip means operable to engage said frame structure and slip between said benches and the raised portions of at least some of said plurality of brackets, said bracket clip means comprising at the front of the bench a first member bolted around said frame structure with a first extension from said member adapted to slide under the raised portion of one of said plurality of brackets and at the rear of the bench a second member shaped to surround the frame structure with a bolt in said second member adapted to thread into a hole in one of said plurality of brackets.

3,847,425

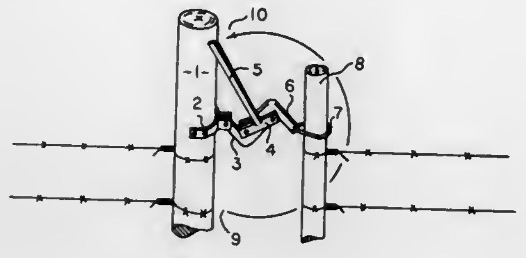
WIRE GATE LATCH

Clair Francis Kirk, 856 Pine St., Wheatland, Wyo. 82201

Filed Sept. 13, 1972, Ser. No. 288,716

Int. Cl. E05c *19/14*

U.S. Cl. 292—247 **1 Claim**



1. A gate device for drawing a movable gatepost to a rigid gatepost, said device comprising, a hinge bracket attached to said rigid gatepost, an upwardly opening V-angle bar pivotally secured to said hinge bracket at one end thereof, a pair of spaced parallel resistance arms, the other end of said V-angle bar pivotally secured between the said parallel resistance arms, a rotating handle attached to each of said resistance arms and extending substantially perpendicularly outwardly therefrom, an inverted downwardly opening V-angle bar, one end of said inverted V-angle bar being pivotally secured between the other end of said resistance arms and a wire loop secured to the other end of said inverted V-angle bar whereby said resistance arms can rotate approximately 180° to move said angle bars toward each other and with an over center action lock the movable gatepost adjacent the rigid gatepost with said wire loop encircling the end of the movable gatepost.

3,847,426

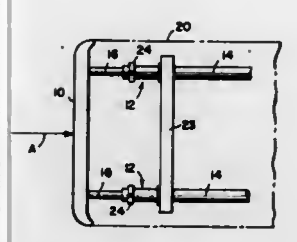
FRANGIBLE BUFFER APPARATUS FOR VEHICLES

Frank J. McGettigan, 426 Kathmere Rd., Havertown, Pa. 19083

Filed Sept. 17, 1971, Ser. No. 181,317

Int. Cl. B60r *19/02;* **B61g** *11/16;* **F16f** *7/12*

U.S. Cl. 293—1 **8 Claims**



1. A bumper apparatus for motor vehicles such as automobiles or the like comprising a bumper, a pair of elongated telescoping members, at least one of said members being tubular and being open at one end and one of said members being connected to said bumper, means for securing the other of said members to the vehicle to extend generally horizontally from the vehicle frame, energy absorbing means arranged to resist the inward movement of said one member relative to said other member in response to the application of an impact load to said bumper, said energy-absorbing means including a crushable cartridge which is reduced in volume in response to said relative movement of said members, means associated with said non-tubular member for delivering said impact load to said cartridge, said cartridge being insertable into and removable from the interior of said tubular member through said open end, and cartridge removing means within said tubular member at the time of application of said impact load for engaging said cartridge to forcefully remove the same from said tubular member when said cartridge removing means is withdrawn from said tubular member.

3,847,427

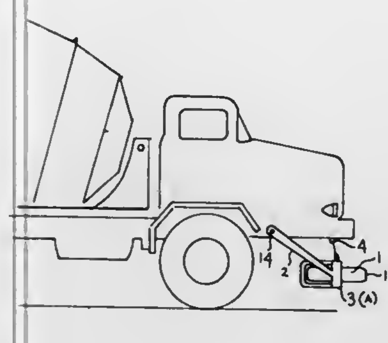
SHIFTABLE SHOCK ABSORBING TIRE BUFFER

Cheston Lee Eshelman, 621 N.E. 30th Ter., Miami, Fla. 33137

Filed Dec. 1, 1972, Ser. No. 311,336

Int. Cl. B60r *19/10;* **B61f** *19/04;* **B61g** *11/12*

U.S. Cl. 293—19 **6 Claims**



1. In an automotive highway vehicle having a front end, a carrier frame, strut members connected at one end to said frame and at the other end being pivotally connected to said vehicle front end, means for rigidly and removably mounting a vehicle wheel and wheel-mounted pneumatic tire in said carrier frame, a wheel and pneumatic tire mounted on said mounting means, and means connecting said vehicle front end and said carrier frame for pivotally moving said carrier frame and wheel and tire between a lowered operative bending position substantially parallel with the highway surface and a higher inoperative storing position non-parallel with the highway surface.

3,847,428

SHOCK ABSORBER

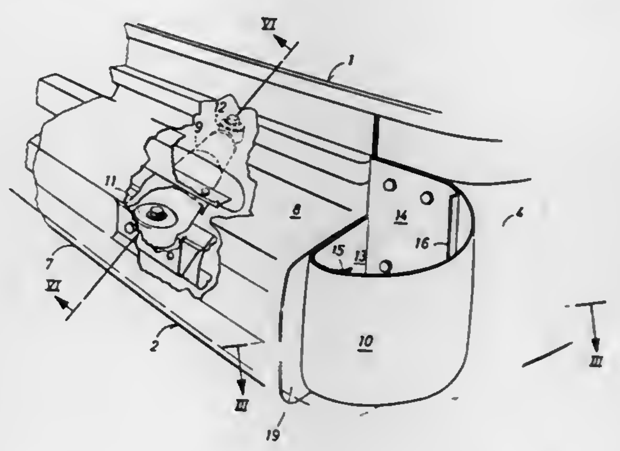
Manfred Uebelstadt, Ingolstadt, Germany, assignor to Audi NSU Auto Union A.G., Ingolstadt, Germany

Filed Aug. 9, 1972, Ser. No. 279,278

Claims priority, application Germany, July 17, 1971, 2135855

Int. Cl. B60r *19/06*

U.S. Cl. 293—96 **5 Claims**



1. A shock-receiving device for motor vehicles, comprising a shock receiver, shock absorbers connected with the central portion of said shock receiver, means having joints connecting the shock absorbers with the motor vehicle and having a vertical swinging axis, said means comprising sheet springs which fix the shock receiver at its end to the motor vehicle, said sheet springs being C-shaped and curved about a vertical axis, and having strips located upon the inner side of said sheet springs as path limiters, the ends of said strips directed toward the inner side of the springs having a greater curvature than that of said springs.

3,847,429

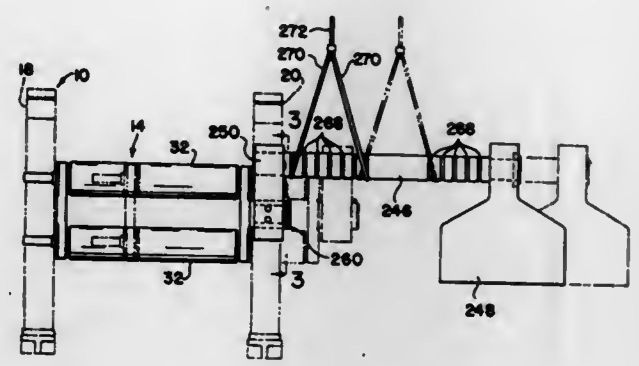
BALANCE BAR FOR HANDLING WRAPPER ROLLS OF A STRIP COILING MACHINE

Norman L. Pim, Salem, Ohio, assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed May 7, 1973, Ser. No. 357,815

Int. Cl. B66c *1/22*

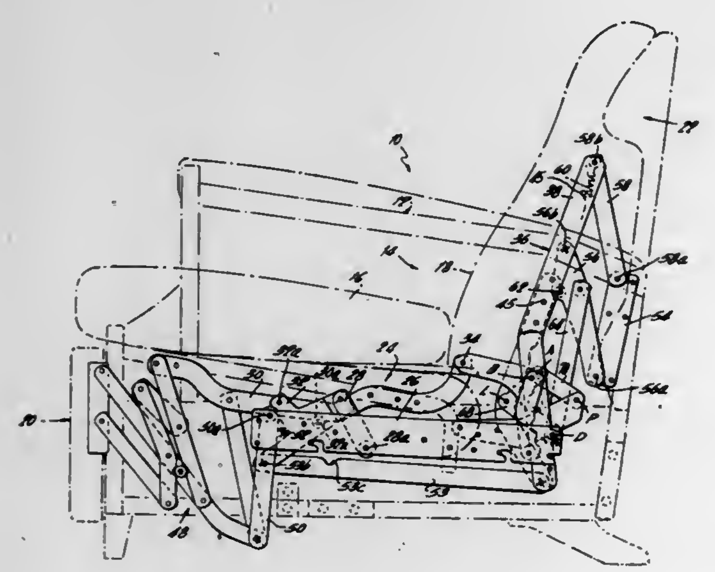
U.S. Cl. 294—67 AA **1 Claim**



1. A balance bar for use in removing and inserting a wrapper roll assembly along a horizontal linear path with respect to a wrapper roll supporting frame of a sheet metal coiling machine, which wrapper roll assembly includes a horizontal projection extending in the direction of said linear path comprising: an arm having opposite ends and an axis extending therebetween, plate means fixed on one end of said arm and extending in a direction laterally of said arm axis, said plate means having an aperture therein for receiving said projection, said aperture having an axis spaced from and parallel to said arm axis, said aperture and projection having mating cross-sectional contours other than circular, weight means secured on said arm and spaced from said one end in the

direction toward the other end of said arm for counterbalancing the weight of said wrapper roll assembly when said arm is supported in suspension between said one end and said weight means, said weight means extending in said lateral direction and having a center of gravity spaced from said arm axis in said lateral direction, said arm being circular in cross section, and a plurality of peripheral grooves axially spaced apart along said arm, a first pair of said grooves denoting locations for balanced horizontal suspension of said arm, plate means and weight means, and a second pair of said grooves denoting locations for balanced horizontal suspension of said arm plate means, weight means and wrapper roll assembly.

3,847,430
RECLINING CHAIR WITH MOVABLE HEADREST
Peter S. Fletcher, 200 N.W. 15th St., Delray Beach, Fla. 33444
Filed Oct. 20, 1972, Ser. No. 299,251
Int. Cl. A47c *1/02*
U.S. Cl. 297—61 **9 Claims**



1. A reclining chair of the multiple movement type having a base, and a body supporting means including a seat and a backrest, body-supporting mounting mechanisms mounting said backrest on said base for movement in a first movement phase from an upright sitting position to an intermediate, tilted sitting position and for further movement in a second movement phase from said intermediate tilting seated position to a fully-reclined position with said backrest moving rearwardly during said first movement phase and turning about a backrest center of rotation during said second movement phase, a legrest, and a legrest guiding mechanism mounting said legrest on said body-supporting means for movement from a retracted position to an extended, leg-supporting position in response to movement of said body-supporting means during said first movement phase;

a headrest mounted on said backrest for movement between a lowered position and a raised head-supporting position in response to movement of said body-supporting means during the said first movement phase;

headrest mounting and guiding means mounting said headrest on said backrest and headrest; and

headrest actuating means effectively interconnected between said backrest, said support and said headrest mounting and guiding means for actuating and control movement of said headrest, said actuating means comprising:

a. a driver lever pivotally mounted on said backrest at a driver lever pivot;

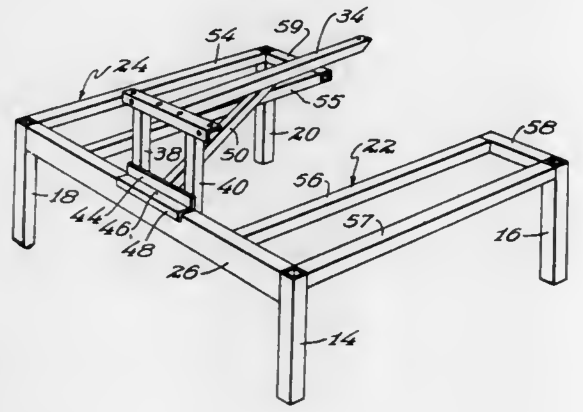
b. an actuating link pivotally connected at one of its ends to said base at a base pivot and at its other end to said driver lever at an actuating pivot;

c. a connecting link pivotally connected at its lower end to said driver lever at a driver pivot and operatively connected at its upper end to said headrest mounting and guiding means;

d. said base pivot of said actuating link being spaced from said backrest center of rotation and located on a line which bisects the angle included between a first line between the location of the actuating pivot when the chair is in the intermediate tilted sitting position and the backrest pivot and a second line between the backrest pivot and the location of the actuating pivot when the chair is in the fully-reclined position; said bisected angle being equal to the angle of rotation of said backrest about said backrest pivot during said second movement phase;

e. the location of the driver lever pivot of the driver lever being along a line which is the perpendicular bisector of a line drawn between the location of the actuating pivot in the upright sitting position and the location of the actuating pivot projected onto the backrest when said actuating pivot is in the intermediate tilted sitting position and with said backrest thereafter translated into its position when in the upright sitting position.

3,847,431
CANTILEVERED BOOTH CONSTRUCTION
Harold R. Nielsen, 615 Centennial Dr., Kenyon, Minn. 55946
Filed Jan. 2, 1973, Ser. No. 320,303
Int. Cl. A47b *39/00*
U.S. Cl. 297—158 **4 Claims**



1. A booth assembly comprising in combination:

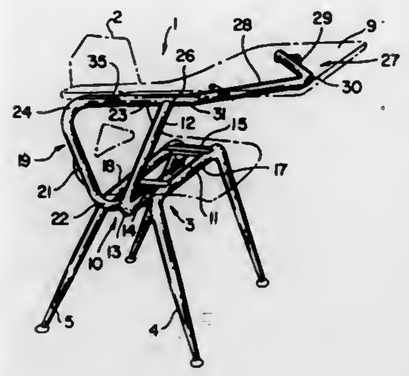
a pair of benches;

a pair of generally rectangular frames, each of said frames supporting one of said benches and each of said frames having two legs extending downward from the portion of the frame supporting the rear of the bench, said frames connected together at their narrow ends by a single cross beam so as to support the benches in a generally parallel facing relationship;

a table positioned between the benches;

a cantilevered bracket assembly for supporting said table, said bracket assembly comprising a first table supporting generally horizontal member extending generally perpendicular from a second table supporting generally horizontal member, two vertical support members extending downward from said second table supporting member to a position alongside the cross beam, and a diagonal brace extending from said first table supporting member to a fastening bracket connected between said two vertical support members, said fastening bracket shaped to fit over said cross beam in a position to hold the table generally level, said fastening bracket comprising a horizontal portion shaped to rest on top of the cross beam and a flanged portion shaped to fit around the back of the cross beam on the side opposite from said vertical members.

3,847,432
CHAIR TABLET ARM SUPPORT
Roy E. Jennings, Temple, Tex., assignor to Royal Seating Corporation, Cameron, Tex.
Filed July 17, 1972, Ser. No. 272,179
Int. Cl. A47b *39/00*
U.S. Cl. 297—160 **3 Claims**



1. In a desk arm chair of the type having an understructure including legs for supporting a seat having a rear a front, and a back projecting upwardly from the rear of the seat, and having a desk arm of substantial size in a plane above the seat, a support structure for supporting the desk arm, said support structure comprising, in combination;

a first cylindrical support tube, said first support tube including

a lower portion below the chair seat and secured to the understructure of the chair, and

an upwardly extending portion

at one side of the seat, joined to the lower portion at a bend and slanting away from the rear of the seat, said upwardly extending portion terminating at an upwardly facing u-shaped end;

a second cylindrical support tube including

a lower portion below the seat and secured to the understructure of the chair,

a first intermediate portion extending upwardly at said one side of the seat, and slanting rearwardly in a direction away from said upwardly extending portion of said first support tube and away from the front of the seat, said first intermediate portion extending upwardly and rearwardly to a location closely adjacent the plane of the back of the seat,

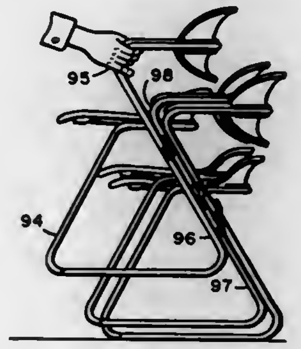
a generally horizontal second intermediate portion, above the level of the seat, joined to the first intermediate portion at a bend and extending over seated in, and abutting said upwardly facing u-shaped end of said upwardly extending portion of said first support tube, and

a front portion extending transversely of the chair, joined to said horizontal portion at a bend closely adjacent to and beyond the location of of engagement of the horizontal intermediate portion with the upwardly extending portion of the first support tube, in a direction away from the rear of the seat, and in a common generally horizontal plane with said horizontal portion, said front portion including a forwardly and inwardly extending portion extending away from the rear of the seat and inwardly of a vertical plane including said one side of the seat, and joined to a rearwardly and outwardly extending portion extending generally toward the rear of the seat and away from said vertical plane including said one side of the seat and having a free end so that said front portion forms a v shaped support cantilevered from said horizontal portion of said second support tube;

weld means securing said upwardly facing end of said upwardly extending portion of said first tube to said horizontal portion of said second tube, whereby said slanting upright portions of said first and second tubes cooperate with said horizontal portion of said second tube to form a rigid inverted generally triangularly shaped upright structure at one side of the chair; and

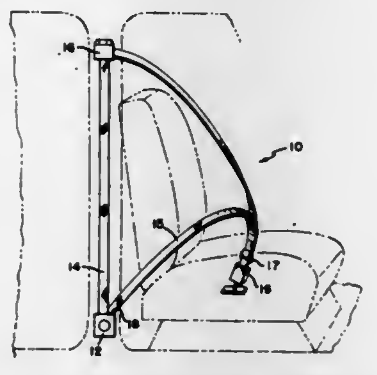
means securing the desk arm to said second support tube along its horizontal and front portions at several locations.

3,847,433
STACKING CHAIR
Hugh C. Acton, Augusta; Robert L. Knapp; Arthur L. Van Ryn, both of Grand Rapids, and Kenneth W. Hozeski, Grandville, all of Mich., assignors to American Seating Company, Grand Rapids, Mich.
Filed July 12, 1973, Ser. No. 378,688
Int. Cl. A47c *3/04*
U.S. Cl. 297—239 **11 Claims**



1. A chair comprising: a frame formed from a continuous piece of tubing and including a horizontal curved portion forming a wrap-around back panel support, said tubing extending horizontally forwardly of said wrap-around portion to provide arm rests, thence extending downwardly and rearwardly to provide inclined arm rest supports and rear leg portions, thence forwardly to provide horizontal floor runners, thence upwardly and rearwardly to provide forward legs and connected at the upper portion of said forward legs to the juncture between said arm rest support and the associated rear leg; a curved, contoured back panel secured to the wrap-around portion of said frame; a seat panel; tubular seat frame means connected to said seat panel for supporting the same; a brace connected to said tubular frame at the upper portion of said forward legs to stabilize said frame and to support said seat when it is in a lowered, occupied position; and means for pivotally connecting said seat frame to said frame whereby said seat panel may be selectively lowered to an occupied position wherein said seat panel is supported by said brace, or raised, thereby permitting an occupant to step between said runners to permit passage of another person down a row.

3,847,434
VEHICLE OCCUPANT RESTRAINT SYSTEM
Per Olaf Weman, Haslah, Germany, assignor to Sigmatex A.G., Basel, Switzerland
Filed May 2, 1973, Ser. No. 356,659
Int. Cl. A62b *35/02;* **B60r** *21/10*
U.S. Cl. 297—389 **17 Claims**



1. A vehicle occupant restraint system comprising:

a retractor mounted adjacent the floor of said vehicle and having seat belting attached thereto, means for retracting said seat belting onto said retractor and for permitting said seat belting to be protracted from said retractor and

bracket means mounted against a surface in said vehicle at a location above the level of said retractor and having means therein to allow said seat belting to pass therethrough, said seat belting extending from said retractor through said bracket means and being extendible from said bracket means to a position remote therefrom such that said seat belting is adapted to extend at least across the shoulder of an occupant,

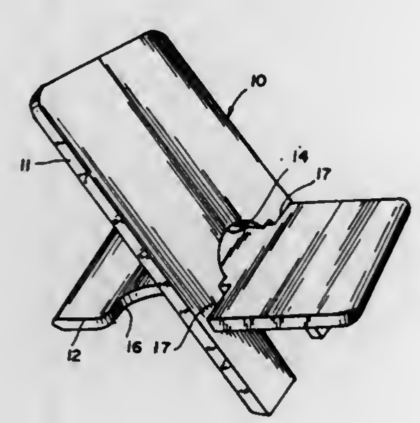
said bracket means including,

locking means movable into a lock position to prevent extension of said seat belting from said bracket means after said seat belting is secured across the shoulder of the occupant,

said bracket means being pivotable in a plane which intersects the plane of said surface.

3,847,435
TWO-PIECE CHAIR

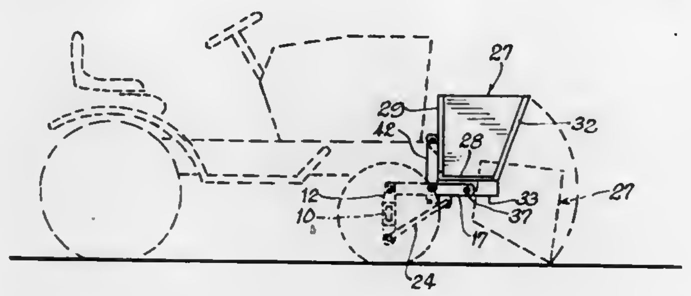
Harvey G. Skinner, Ligonier, Pa., assignor to Westmoreland Plastics Company Division of Vulcan, Inc., Latrobe, Pa.
Filed July 2, 1973, Ser. No. 375,494
Int. Cl. A47c *4/02*
U.S. Cl. 297—443 **4 Claims**



1. A two-piece chair comprising a back-rest element and a seat element adapted for interfitting engagement to form a chair, wherein the improvement comprises a back-rest element made of sheet material of substantially uniform thickness and having a T-slot therein which opens at one end constituting the ground-engaging end thereof, and a seat element made of sheet material of substantially uniform thickness having neck portion of reduced width between the ends thereof, the two elements being interfitted by inserting the neck portion of the seat element within the transverse portion of the T-slot in the back-rest element, and wherein the T-slot of the back-rest element comprises a longitudinally extending slot which opens at the ground-engaging end of the element, a transverse slot intersecting the longitudinally extending slot, and a semi-circular recess on the inward side of the transverse slot having a diameter larger than the width of said longitudinally extending slot, and wherein the neck portion of the seat element has a width narrower than the diameter of the semi-circular recess whereby said seat element may be turned into a position at a right angle to the back-rest element prior to inserting the neck portion into the transverse slot of the T-slot in the back-rest element.

3,847,436
TOTE BOX ATTACHMENT FOR SUBURBAN TYPE TRACTOR

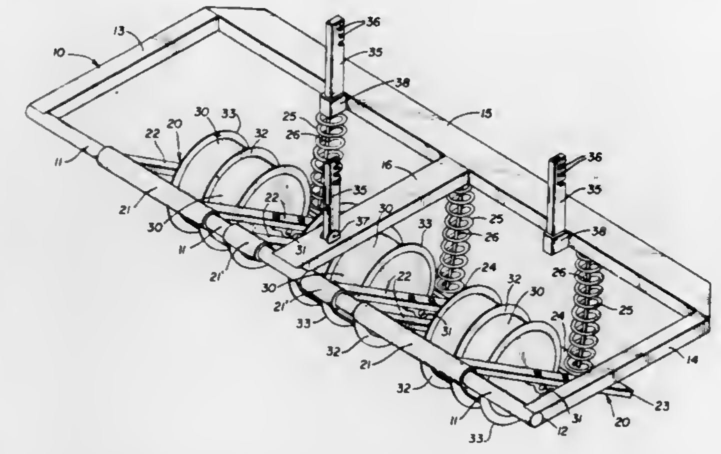
Jay H. Reid, Barrington, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Apr. 4, 1973, Ser. No. 347,786
Int. Cl. B60p *1/28*
U.S. Cl. 298—1 C **3 Claims**



1. In combination with a vehicle having ground engaging wheels and a forward axle, a pair of spaced vertically extending mounting brackets carried on said axle, a supporting frame comprising a pair of spaced parallel arms detachably connected to the upper end of said brackets and extending horizontally and forwardly of said axle, a pair of brace members detachably connected to the lower end of the brackets below the axle and to the forward ends of the arms, a tote box having bottom, rear, side and front walls and pivotally attached to the forward ends of said arms for rocking movement about an axis substantially parallel to the longitudinal axis of the axle, said tote box being unbalanced so as to tilt in a forward direction, a latching element carried on said rear wall, cooperating latching means pivotally supported on said frame, means biasing said latching means to engage said latching element to lock said tote box in an upright position, said latching means being manually operable to effect disengagement from said latching element to permit rocking movement of said tote box to a position where the forward lip of the front wall rests on the ground surface to discharge the contents of the tote box forwardly of the vehicle.

3,847,437
ICE BREAKER ATTACHMENT FOR ROAD MAINTENANCE VEHICLES

Clarence L. Williams, 615 Knight Ave. N., Thief River Falls, Minn. 56701
Filed Dec. 26, 1973, Ser. No. 428,437
Int. Cl. E01h *5/12*
U.S. Cl. 299—25 **8 Claims**



1. An ice breaker attachment for road maintenance vehicles comprising

a. a main frame having a front rail,

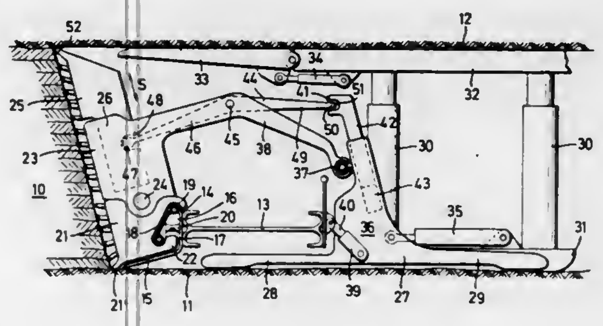
b. a plurality of sub-frames each having a tubular front member pivotally mounted on the front rail of the main frame for rocking movement thereon, a pair of spaced apart parallel side arms connected to the tubular front member, and a cross piece connecting the rear ends of the arms,

c. a roller provided with annular radially extending fins, said roller being rotatably mounted on and between the side arms of a pair, and

d. resilient means between the rear end of the sub-frame and the main frame exerting pressure on the sub-frame and roller mounted thereon.

3,847,438
MINERAL WINNING MACHINE HAVING CONTINUOUS HEIGHT ADJUSTMENT TO ACCOMMODATE VARYING SEAM THICKNESS

Herbert Huttenbrauck, Hillering; Berthold Ostrop, Thunen; Mustafa Soliman, Lunen-Sud, and Helmut Poklekowski, Lunen, all of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany
Filed May 1, 1973, Ser. No. 356,228
Claims priority, application Germany, May 2, 1972, 2221342; May 2, 1972, 2221465
Int. Cl. E21c *27/35*
U.S. Cl. 299—34 **20 Claims**

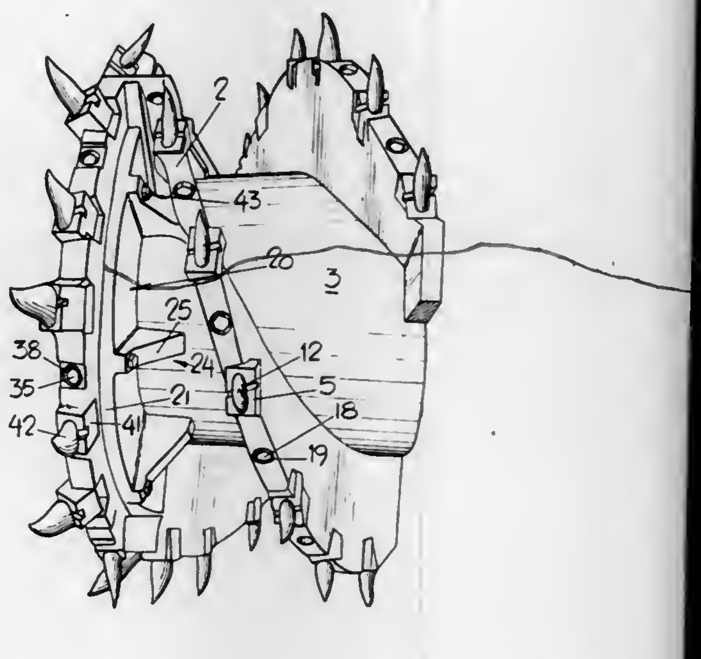


1. A mining installation comprising a conveyor extending alongside a face to be worked, a guide on said conveyor; a planer having a base guided for movement along said guide, a superstructure articulated to said base, and an upper part supported on the superstructure and adjustable relative thereto, said superstructure having an arm extending rearwardly across the conveyor, a guide member extending parallel to said conveyor, along which said arm is adapted to slide, a control member extending generally parallel to said guide member, means carried by said planer and adapted to follow said control member and to adjust the position of said upper part as it varies in position in contact with the control member.

3,847,439
ROTARY COAL CUTTERS WITH WATER JET ORIFICES

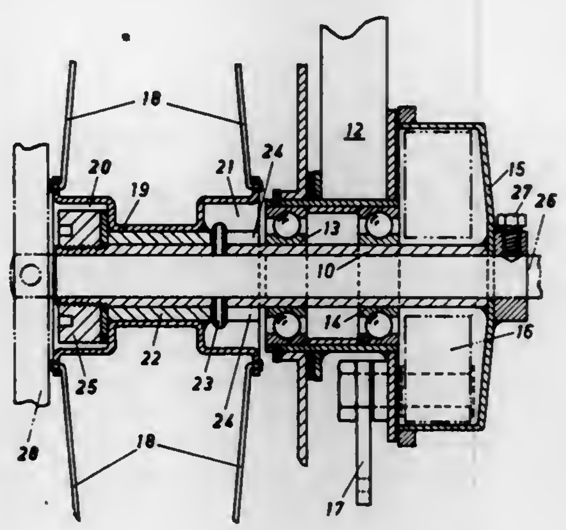
Thomas Jeffrey Allen, Bessacarr Doncaster, England, assignor to Fletcher Sutcliffe Wild Limited, Yorkshire, England
Filed Dec. 11, 1972, Ser. No. 313,870
Claims priority, application Great Britain, Dec. 17, 1971, 58851/71
Int. Cl. E21c *25/10*
U.S. Cl. 299—81 **4 Claims**

1. A rotary coal cutter comprising a drum, a cutting implement mounted on the drum and having a peripheral face adapted for mounting picks in a circle about the drum axis, and a helical guide wall for cut coal mounted co-axially on the drum adjacent the cutting implement, wherein the improvement comprises the cutting implement defining orifices and passages leading from an interior part of the drum to the orifices and wherein the cutting implement includes a plurality of brackets spaced around the drum and serving to mount the implement on the drum, each bracket defining at least one of said passages leading to a corresponding orifice in the bracket.



3,847,440
WHEEL FITTING DEVICE

Bertil Mattsson, Goteborg, Sweden, assignor to HEA Rehab AB, Groteberg, Sweden
Filed May 29, 1973, Ser. No. 364,243
Claims priority, application Sweden, May 30, 1972, 7059/72
Int. Cl. B60b *37/00*
U.S. Cl. 301—1 **4 Claims**

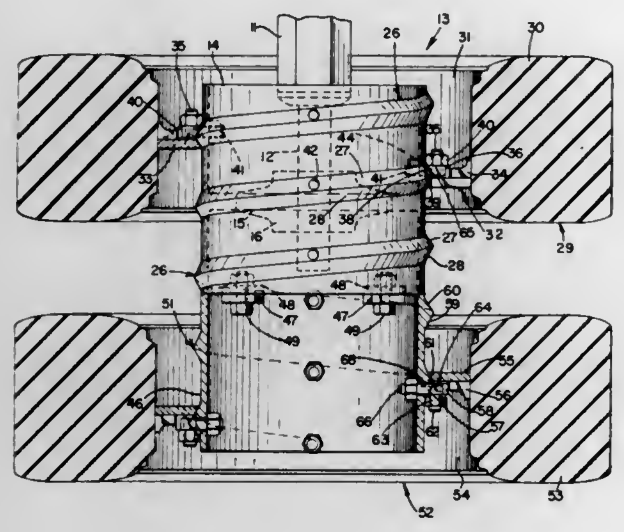


1. A device for fitting a brake-provided wheel in an easily detachable manner to a wheel chair or a similar transport means having a load-carrying body, comprising a bearing assembly mounted to the load-carrying body, a tubular wheel shaft rotatably supported in said bearing assembly, said wheel shaft having opposite ends, a brake mechanism non-rotatably fitted to one end of said tubular wheel shaft, and a wheel hub non-rotatably yet detachably fitted to the opposite end of said tubular wheel shaft.

3,847,441
POWER ADJUSTABLE TRACTOR WHEELS

James Morkoski, Memphis, Tenn., and Louis B. Garriott, Jr., Munster, Ind., assignors to International Harvester Company, Chicago, Ill.

Filed Mar. 4, 1974, Ser. No. 448,104
Int. Cl. B60b *23/12*
U.S. Cl. 301—9 TV **6 Claims**

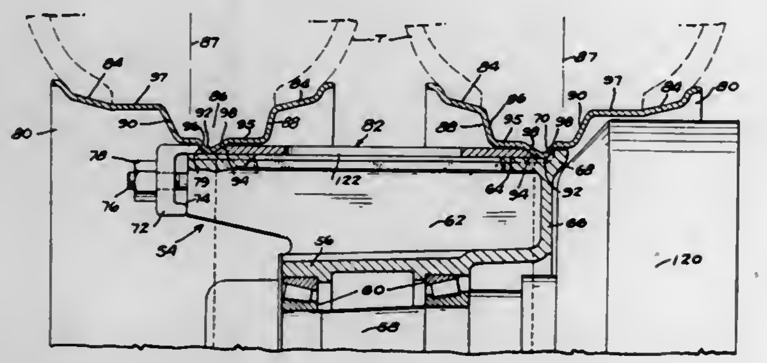


1. An axially adjustable wheel assembly for a vehicle having a driven axle comprising: a tire-carrying rim member, a cylindrical mounting member concentric with said rim member having an external diameter less than the internal diameter of said rim member and an axial length at least as great as that of said rim member and secured to the driven axle for rotation therewith, helically arranged track means on the periphery of said mounting member, complementary helically arranged rail means on said rim member cooperatively engageable with the helical track means on said mounting member to accommodate rotation and simultaneous axial adjustment of said rim member relative to said mounting member, and means for securing the rim member to the mounting member at selected adjusted positions movable in an axial direction and reacting against one of said members to exert a force radially against the other of said members to effectively increase the distance between said members and frictionally lock them together.

3,847,442
DUAL RIM WHEEL STRUCTURE

Lloyd D. Masser, Muskegon, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Dec. 6, 1972, Ser. No. 312,725
Int. Cl. B60b *23/00*
U.S. Cl. 301—13 SM **2 Claims**



1. Dual rim wheel structure which comprises,

two drop center rims each having axially spaced tire bead sets and an intermediate drop center defining a locking angle and an abutment angle disposed in axially opposite directions,

said locking angle and abutment angle extending respectively along a relatively smaller angle and a relatively steeper angle to the axis of said rim,

a wheel having abutment flange means adjacent its axially inward end shaped to fit said abutment angle,

said rims being mounted on said wheels with said abutment angle of one rim engaged against said flange means,

spacing means effective to space said rims axially apart,

and clamp means on said wheel engaging axially against the drop center of the other rim to secure said rims on said wheel,

said wheel having spokes on which said rims and spacing means are mounted, said spacing means having means engaged circumferentially against side portions of at least certain of said spokes to constrain said wheel and spacing means against relative circumferential movement,

said spacing means having shoulder means engaged circumferentially against lug means on said rims to constrain said spacing means and rims against relative circumferential movement,

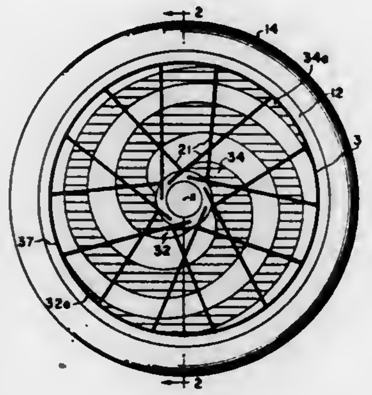
said spacing means having shoulders spaced apart to pass a valve stem from said drop center to an exposed location radially inward thereof,

said shoulder means being provided on said spaced apart portions.

3,847,443
SPOKED WHEEL AND WHEEL ORNAMENT

Francis R. Laurion, 211 Sherman St., Vassar, Mich. 48768

Filed Dec. 29, 1972, Ser. No. 319,699
Int. Cl. B60b *7/02*
U.S. Cl. 301—37 R **7 Claims**



1. In combination;

a wheel for a vehicle, such as a bicycle and the like, comprising:

an annular rim mounting a ground-engaging tire;

a central hub for mounting the wheel on a vehicle for rotation about its axis; and

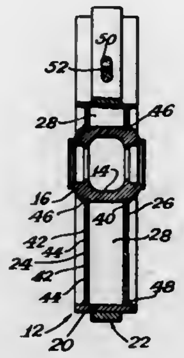
first and second groups of axially offset, circumferentially spaced spokes mounting the hub on said rim; and

a wheel decorating ornament comprising a one-piece, annular sheet of generally planar, flexible material interposed between said axially offset groups of spokes and radially disposed between said rim and said hub, said sheet of material having an axle accommodating opening at its center and one uninterrupted slit extending from said axle accommodating opening to the periphery of said sheet, the stiffness of said material being such that the portions of said sheet immediately adjacent said slit are normally in abutting relation with each other and are normally aligned in the same plane but are freely axially movable relative to each other out of said plane enabling the annular sheet of material to be quickly and easily removed from a position between said axially offset groups of spokes.

3,847,444
WHEEL MANUFACTURE

Ludwig E. Aker, Hamilton, Ontario, Canada, assignor to International Harvester Company, Chicago, Ill.

Division of Ser. No. 276,985, Aug. 1, 1972, Pat. No. 3,762,012. This application June 18, 1973, Ser. No. 371,217
Int. Cl. B60b *3/08*
U.S. Cl. 301—63 DD **6 Claims**



1. Disk wheel, including plural, concealed uniplanar spokes therein, the spokes consisting of individual radially positioned flat bars, and further including, in combination with said spokes:

disks positioned oppositely to one another, and upon opposite sides of the plural uniplanar spokes;

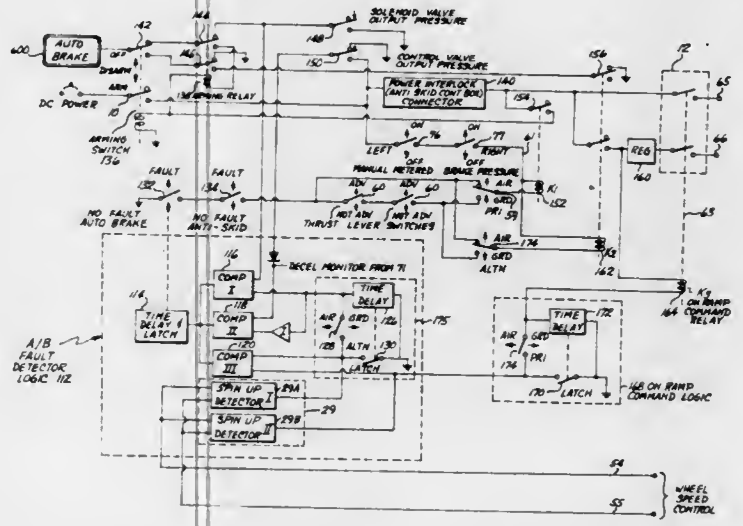
means in a plurality of zones bonding edges of the uniplanar spokes radially to zones of the disks adjacent the inner faces thereof, whereby to rigidify the spokes endwise against buckling out of plane under radial loads imposed on the wheel; and

a rim connected in position to the disks and to the spokes, and fabricated of plural segments, end-to-end connected and bonded into said position contiguously encircling the disks and mutually normal to the spokes concealed therebeneath.

3,847,445
AIRCRAFT AUTOMATIC BRAKING SYSTEM HAVING AUTO-BRAKE CONTROL LOGIC

Sherman M. Bissell; Garrett H. De Vlieg, both of Bellevue, and Johan N. Hopland, Renton, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 12, 1973, Ser. No. 415,058
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 AF **6 Claims**



1. An aircraft automatic braking system comprising in combination:

first means for providing a brake pressure control signal;

automatic braking pressure modulating valve means responsive to said brake pressure control signal for metering automatic braking pressure to first shuttle valve means for application of brakes on one side of the aircraft and second shuttle valve means for application of brakes on the other side of the aircraft;

first manually controlled pressure metering valve means coupled to said first shuttle valve means and second manually controlled pressure metering valve mean coupled to said second shuttle valve means;

shutoff valve means for transmitting hydraulic power to said automatic braking pressure modulating valve means; and automatic brake control logic circuit means including:

arming means for applying D.C. power to said first means, said arming means including arming switch means and arming relay means;

a first arming circuit for energizing a first relay to interrupt holding power to said arming switch means and said arming relay means in response to a disarm signal thereby releasing automatic braking pressure;

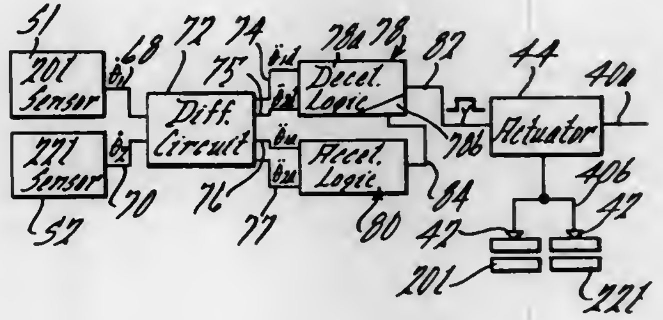
a second arming circuit for energizing a second relay and interrupting power coupled to a third relay in response to said disarm signal thereby releasing automatic braking pressure;

ON-RAMP COMMAND logic circuit means coupled to said third relay for energizing said third relay when said first and second arming circuits are in an armed condition, thereby opening said shutoff valve and enabling said automatic braking pressure valve to regulate automatic braking pressure.

3,847,446
SKID CONTROL SYSTEM FOR TANDEM AXLED VEHICLES

Ronald S. Scharlack, Watertown, Mass., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Dec. 23, 1971, Ser. No. 211,190
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 EB **7 Claims**



1. A skid control system for a pair of tandemly located, proximately spaced, fore and aft wheels of a wheeled vehicle having a pressurized fluid actuated braking system comprising:

control means for detecting the occurrence of an incipient wheel skid condition at at least one of the wheels and providing an output signal in response thereto, said control means including a sensor means located at only one of said fore and aft wheels for providing rotational speed information, and control module means for receiving said information and providing said output signal in response to said information; and common actuating means responsive to said output signal for controlling the pressure to the brakes at both of the fore and aft wheels.

3,847,447
ADAPTIVE BRAKING SYSTEM

James M. Needham, and Delbert R. Elliott, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

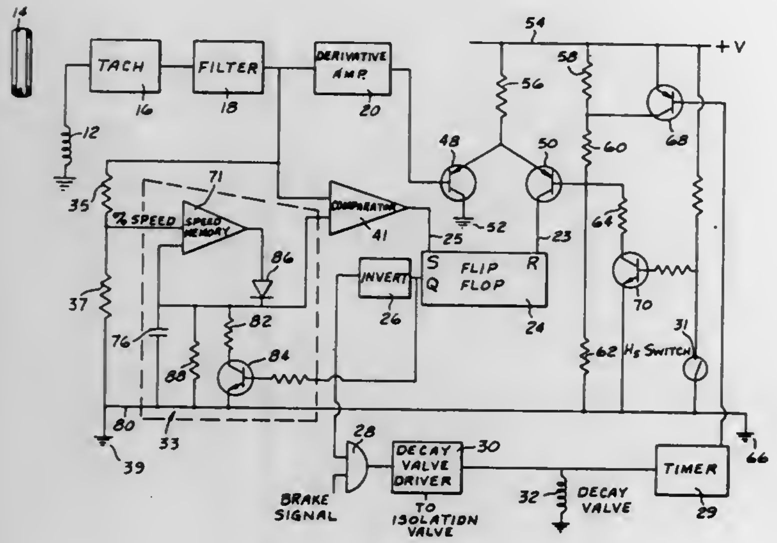
Filed June 15, 1972, Ser. No. 263,518
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 CG **5 Claims**

1. In a wheeled vehicle having a brake for braking a corresponding wheel, an adaptive braking system for controlling

said brake to prevent skidding of said corresponding wheel comprising:

electrically operated valve means for relieving braking pressure in said brake controlling said corresponding wheel to prevent skidding of the latter; and

control means for actuating said valve means including first means for generating a speed signal proportional to the angular velocity of said corresponding wheel, second means for differentiating said speed signal to generate an acceleration signal proportional to acceleration and deceleration of said corresponding wheel, means for generating first and second bias signals having predetermined values which are independent of fluctuations in said speed signal, said acceleration and deceleration signals, and the rate of deceleration of the vehicle, said means for generating said first and second bias signals being responsive to actuation of said valve means to change the values of said first and second bias signals by predetermined amounts which are independent of fluctuations in said speed and acceleration signals and of deceleration of said vehicle, switching means activating said valve means when said acceleration and deceleration signal drops below the value of the corresponding bias signal and terminating said valve means when said acceleration and deceleration signal exceeds the value of the then corresponding bias signal, bias means switchable from a first state to transmit said first bias signal to said switching means to a second state transmitting said second bias signal to said switching means, and means responsive to vehicle deceleration for switching said bias means between said first and second states.



3,847,448

APPARATUS FOR ANTISKID CONTROL OF A HYDRAULIC BRAKE SYSTEM

Toshaiaki Okamoto; Masammi Inada, and Koji Nishida, all of Toyota, Japan, assignors to Aisin Seiki Company Limited, Aichi-ken and Sharp Kabushiki Kaisha (Sharp Corporation), Osaka, both of, Japan

Continuation of Ser. No. 888,297, Dec. 31, 1969, abandoned. This application Oct. 10, 1972, Ser. No. 297,876

Int. Cl. B60t *8/08*

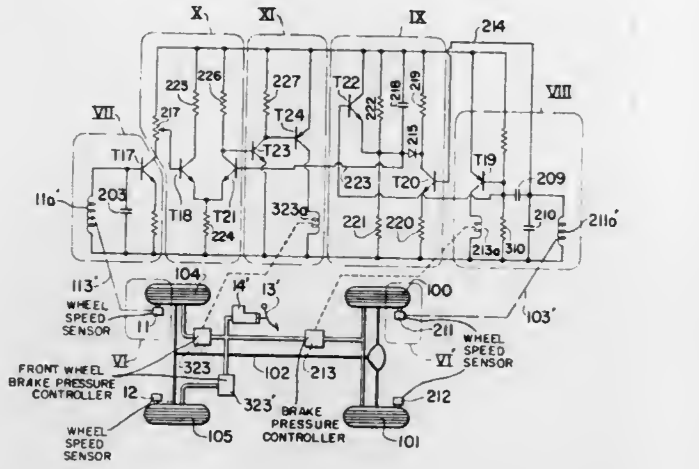
U.S. Cl. 303—21 BE **7 Claims**

1. An apparatus for the antiskid brake control of a plurality of front and rear wheels of a powered and wheeled vehicle, comprising means for sensing the revolutions per unit time of each of said wheels and for issuing output signals responsive to the sensed wheel revolutions, and an actuator for regulating the respective wheel brake pressure in response to said output signals, said apparatus further comprising in combination:

a. a first means for delivery of an electrical voltage in response to the said output signal corresponding to the revolutions of one of the wheels, for providing a wheel decelerating signal thereof;

b. a second means for generating a brake pressure control signal for effecting a pressure control action at the brake means for said one wheel, when said wheel deceleration signal exceeds a predetermined value;

c. a third means comprising a capacitor for accumulation of an output signal corresponding to the revolutions of a pair of wheels, and a discharge circuit for discharging the charge accumulated in said capacitor in response to the acceleration of said one wheel when said brake means for said one wheel is released, thereby establishing a pseudo vehicle speed signal;



d. a fourth means for generating a voltage in response to said output signal from a remaining one of said wheels, thereby providing a wheel speed signal for said remaining wheel;

e. a fifth means for obtaining a comparison signal upon comparing said remaining wheel speed signal with said pseudo vehicle speed signal; and

f. a sixth means for generation of a brake pressure control signal responsive to said comparison signal for control of the brake pressure applied to said remaining vehicle wheel.

3,847,449

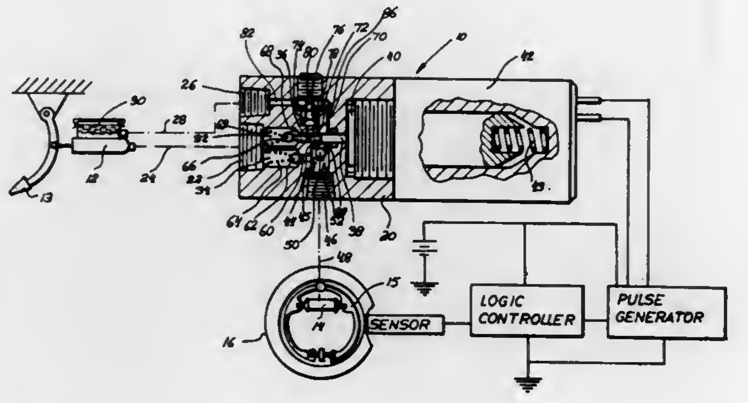
SOLENOID POWERED BRAKE PRESSURE MODULATOR

Carmeli Adahan, 1930 Vine St., No. 303, Berkely, Calif. 97709

Filed June 8, 1973, Ser. No. 368,297

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 F **15 Claims**



1. A brake pressure modulator operable in response to signals of a wheel lock condition and the end of the wheel lock condition for use in a hydraulic brake system having a brake master cylinder, a brake applying cylinder and a reservoir of fluid and comprising: a housing having a fluid inlet port, a fluid outlet port, and a reservoir port adapted to be connected to the master cylinder, brake applying cylinder and reservoir, respectively, valve means for relieving fluid pressure from said outlet port to said reservoir port in response to a first signal of a wheel lock condition, pump means delivering fluid under pressure to said outlet port in response to a second signal at the end of said wheel lock condition, and solenoid means for operating said valve means in response to said first signal and for operating said pump means in response to said second signal.

3,847,450

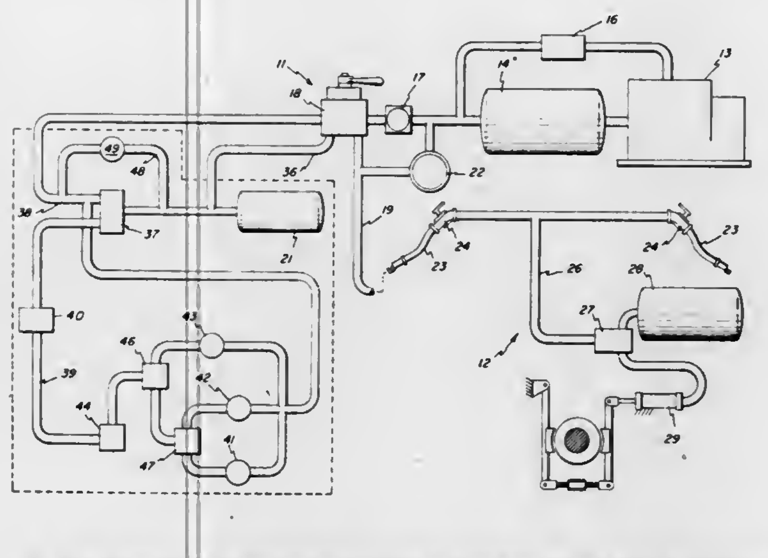
CONTROL APPARATUS FOR AUTOMATIC AIR BRAKE SYSTEMS

Paul T. Ryan, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Dec. 26, 1973, Ser. No. 427,782

Int. Cl. B60t *15/20*

U.S. Cl. 303—81 **12 Claims**



1. An improved pneumatic brake system of the type having a source of compressed air, means for charging to predetermined pressures from the source, both an equalizing reservoir and a brake pipe, equalizing valve means sensitive to the pressure difference between the brake pipe and the equalizing reservoir to exhaust the former to pressure equal to that in the latter, exhaust valve means for selectively exhausting the reservoir to predetermined pressures, and a plurality of brake cylinders operably communicating with the brake pipe to apply brakes in response to pressure reduction therein, wherein the improvement comprises:

a. an exhaust manifold selectively communicating with the equalizing reservoir through the exhaust valve;

b. a plurality of pressure regulators for individual connection to said exhaust manifold, said pressure regulators being preset to various predetermined constant pressures;

c. control valve means for connecting said plurality of pressure regulators, one at a time, to said exhaust manifold so as to allow for the selective regulation of pressure in said exhaust manifold to any one of said predetermined constant pressures, thereby providing a plurality of selected degrees of braking effort to be applied in the system.

3,847,451

FLAT TRACK SHOE WITH TAPERED END RIBS

Allan Leslie Freedy; Calvin Lyle Miller, both of Aurora, and Fred Eugene Simpson, Oswego, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 4, 1972, Ser. No. 311,877

Int. Cl. B62d *55/26*

U.S. Cl. 305—54 **9 Claims**

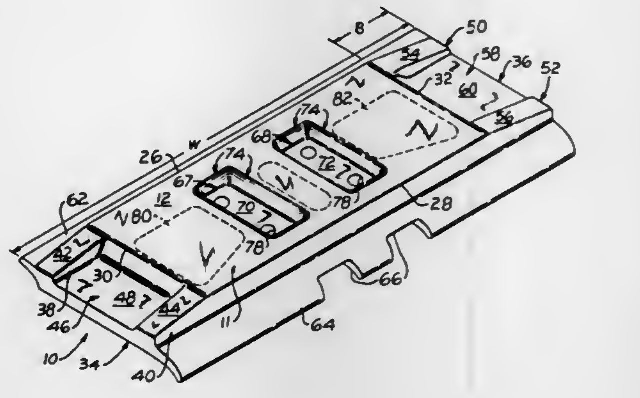
1. A track shoe for a track-type tractor comprising:

a base portion defining a generally flat lower surface defining a forward, a rearward, and a pair of sideward edges;

a pair of end portions extending from the base portion, the lower surfaces of which are angled upwardly from the lower surface of the base portion;

the sideward edges interconnecting the lower surface of the base portion and the lower surfaces of the end portions; the sideward edges being gradually curved and contoured to smoothly connect the lower surface of the base portion with the lower surfaces of the end portions;

each end portion defining a rib, the upwardly angled surface of that end portion comprising the lower surface of said rib;



the forward and rearward edges of the lower surface of the base portion being substantially parallel;

the rib defined by each end portion extending substantially parallel to the forward and rearward edges of the lower surface of the base portion, the rib defined by each end portion further defining an edge portion extending generally continously from one of said forward and rearward edges.

3,847,452

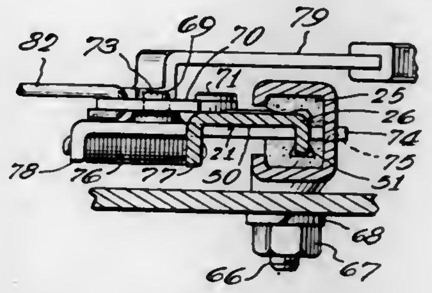
SLIDE MECHANISM WITH RESTRAINTS AGAINST TRANSVERSE MOVEMENT

Arthur J. Harder, Jr., Franklin Park, Ill., assignor to Coach and Car Equipment Corporation, Elk Grove Village, Ill.

Continuation-in-part of Ser. No. 247,681, April 26, 1972. This application Mar. 2, 1973, Ser. No. 337,440

Int. Cl. F16c *17/00, 21/00*

U.S. Cl. 308—6 R **14 Claims**



1. A slide mechanism comprising:

a first member;

a second member;

a bearing element on said first member;

means on said bearing element and on said second member cooperating to mount said second member for sliding movement relative to said bearing element;

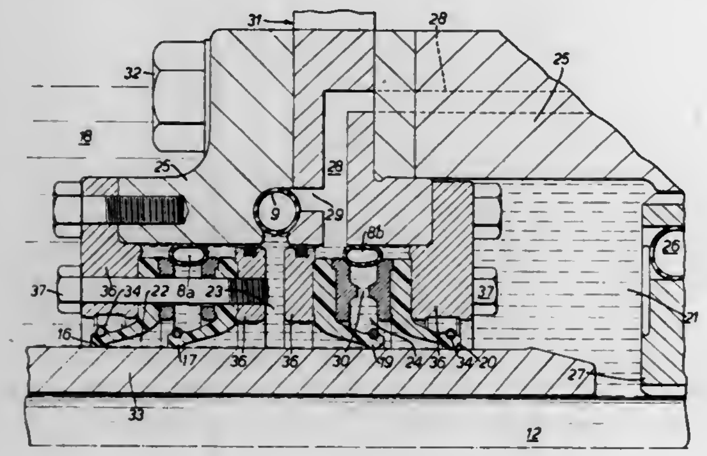
said bearing element comprising means for restraining said second member against movement other than in the direction of said sliding movement;

said bearing element and said second member comprising a planar contacting surface on one of the two and a convex contacting surface on the other of the two;

and means on said bearing element and on said second member cooperating to restrict contact between the two to contact between a convex surface on one of the two and a planar surface on the other of the two at all locations of contact, thereby minimizing friction between the two.

3,847,453
SHAFT ARRANGEMENTS

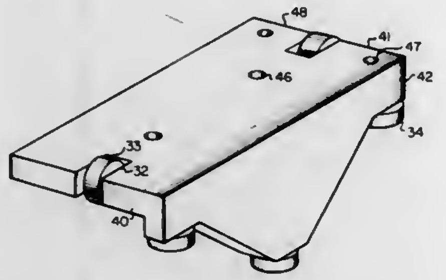
Colin Wray Herbert, 44 High St., Stokesley, England
Filed Jan. 12, 1973, Ser. No. 323,096
Claims priority, application Great Britain, Jan. 13, 1972, 1674/72
Int. Cl. F16c *33/74*
U.S. Cl. 308—36.1 **11 Claims**



1. In combination, a shaft, means defining a liquid chamber surrounding the shaft, a seal controlling the flow of liquid along the shaft to or chamber, the shamber, and an elastic-walled envelope in the chamber defining independently of the seal a gas space for accommodating variations in liquid pressure by change in gas volume.

3,847,454
TRANSLATIONAL MOTION APPARATUS

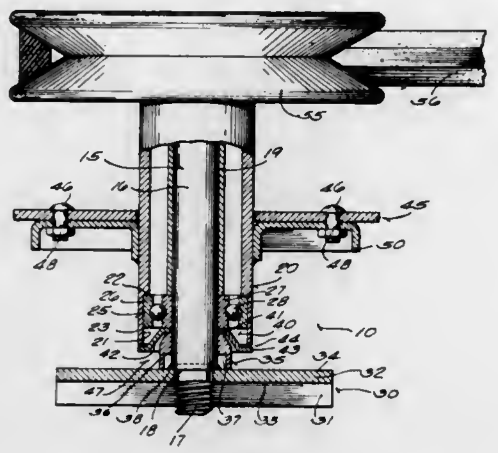
Ivan Pejcha, 428 Montclair Dr., Santa Clara, Calif. 95051
Filed July 11, 1973, Ser. No. 378,096
Int. Cl. F16c *17/00*
U.S. Cl. 308—6 R **10 Claims**



1. Translational motion apparatus comprising:
a base;
a rectangular rail, one of the sides of the rail including a shoulder projection and the other side and the top being substantially planar, said rail being attached to the base by mounting flanges;
a symmetrical carriage having two opposed sides and a top oriented about said rail in substantially inverted-U cross-section;
a plurality of bearings disposed on said carriage with at least two bearings riding on the top of said rail and with at least three of said bearings riding on said other side of the rail and with at least one of said bearings riding on the lower surface of the shoulder projection from said rail; and
moving means for positioning the carriage along the rail.

3,847,455
MOWER BLADE SADDLE ASSEMBLY

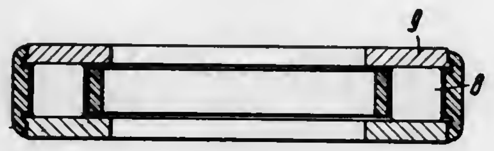
Douglas J. Vandermeulen, Martin, and Siegfried K. Weis, Grand Rapids, both of Mich., assignors to C. L. Frost & Son, Inc., Grand Rapids, Mich.
Filed Nov. 19, 1973, Ser. No. 416,864
Int. Cl. F16c *33/82*
U.S. Cl. 308—187.1 **15 Claims**



1. In a shaft and blade support for a rotary lawnmower including a housing member having bearing means positioned adjacent at least one end thereof, a shaft extending through said housing and supported for rotation in said bearing means, and means on siad shaft adapted for connection to a driving means, the improvement comprising: said shaft having a first diameter portion supported in said bearing means and a second portion of reduced diameter at said one end, the intersection of said first and said second diameters forming an annualr shoulder; a blade support member positioned over said reduced diameter portion into abutment with said shoulder and welded to said shaft about said first diameter; and spacer means on said shaft positioned between said bearing means and said blade support.

3,847,456
CYLINDRICAL ROLLER THRUST BEARING

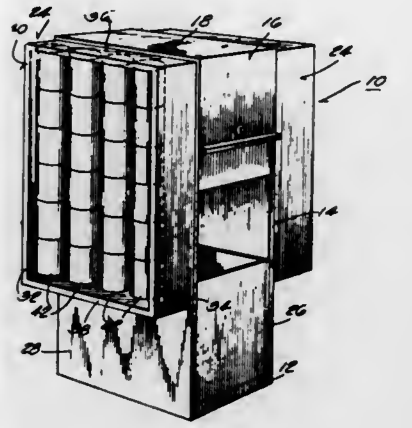
Jorg Schwarzbich, 4801 Hager 38A, Germany
Filed Dec. 1, 1972, Ser. No. 311,281
Claims priority, application Germany, Mar. 16, 1972, 2212621
Int. Cl. F16c *33/46*
U.S. Cl. 308—217 **21 Claims**



1. A cylindrical roller thrust bearing comprising in combination:
a pair of substantially planar discs of about the same size and spaced parallel each to the other with each normal to and positioned about a common axis,
a ring of rollers positioned in a cage member between the discs with each of the rollers arranged radially relative the axis and with the discs providing a raceway for the rollers, each of the discs having a margin,
said bearing cage having an elastically deformable lip surrounding the margin with edges and having an extended condition in which the edges fit snugly over the margins so that the discs and rollers thereby are held in position.

3,847,457
TAMPER PROOF STORAGE AND DISPENSING UNIT FOR CANS OF OIL AND THE LIKE

Roland P. Kleppin, Greenfield, Wis., assignor to Display Corporation International, Milwaukee, Wis.
Filed Aug. 20, 1973, Ser. No. 389,816
Int. Cl. A47b *81/00;* **E05b** *65/46*
U.S. Cl. 312—100 **9 Claims**

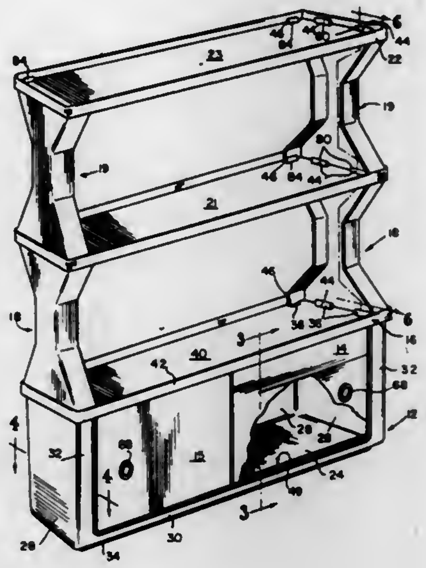


1. A tamper-proof storage and dispensing unit comprising, in combination,
a generally open frame having oppositely facing first and second sides and a depth between said sides,
a plurality of generally elongated members arranged vertically within said frame,
said elongated members being generally U-shaped in transverse cross section and including means to support articles in a stacked condition within the area defined by said U-shaped elongated members,
means mounting each of said elongated members for rotation about a vertical axis between a closed position wherein the open sides of said U-shaped members are directed toward said first side of said frame and an open position wherein said open sides of said U-shaped members are presented to said second frame side,
actuating means connected to said elongated members and operative to rotate said elongated members about said axes to alternatively move said elongated members to said open and closed positions,
means connected to said frame and substantially covering said first side of said frame excpept for an access area through which said actuating means is accessible,
closure means including cabinet means operatively associated with said first side of said frame at said access area and said cabinet means including a cover and means mounting said cover for pivotal movement between open and closed positions to alternately cover and expose said actuating means,
and locking means for locking said actuating means against movement when said actuating means is in a position corresponding to either said open or closed position of said elongated members so that said elongated members cannot be rotated by direct manipulation thereof through said second side of said frame.

3,847,458
STORAGE UNIT

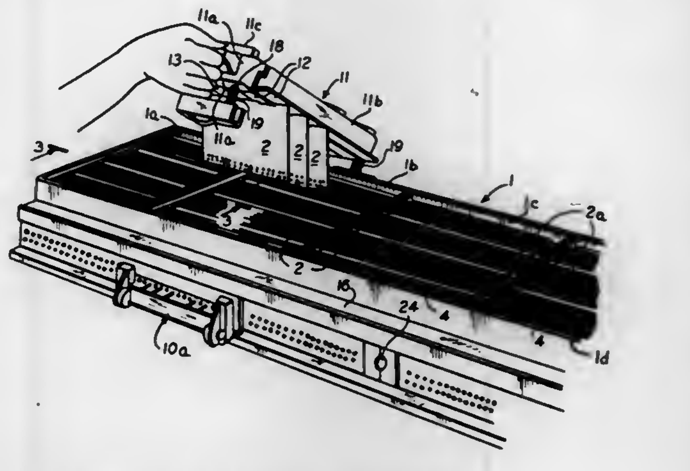
Ralph M. Nowak, Wilbraham, Mass., assignor to Tucker Manufacturing Corporation, Columbus, Ind.
Filed Dec. 26, 1973, Ser. No. 427,924
Int. Cl. A47b *87/00*
U.S. Cl. 312—108 **9 Claims**

1. A storage unit, comprising a cabinet having interconnected bottom, rear, and side walls, a lower track on said bottom wall adjacent the front thereof, a plurality of first hooks on said rear and side walls, a first shelf having a plurality of first slots in which said first hooks are received for mounting said first shelf on the top of said cabinet, an upper track on said first shelf adjacent the front thereof, a pair of doors slidably carried in said upper and lower tracks, a pair of end panels at the opposite ends of said first shelf and projecting upwardly therefrom, each of said end panels having a pair of fingers lockingly received in a pair of said first slots for mounting said end panels on said first shelf, a plurality of second hooks on the upper end of each of said end panels, and a second shelf carried on the upper ends of said end panels, said second shelf having a plurality of second slots formed therein in which said second hooks are received for connecting said second shelf to said end panels.



3,847,459
HANGING FILING-CARD CABINETS

Eduardo Hegedus, and George Hegedus, both of Avenida Thomas Edison, 406/448, Sao Paulo, Brazil
Filed Aug. 24, 1972, Ser. No. 283,357
Int. Cl. A47b *65/00;* **B07c** *5/34*
U.S. Cl. 312—184 **4 Claims**

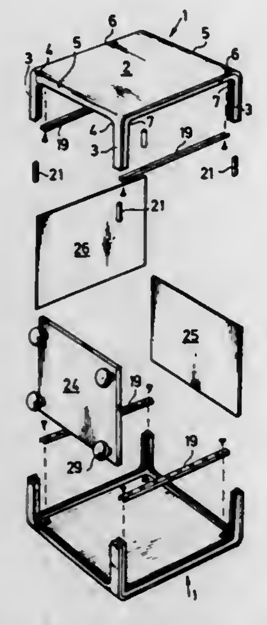


1. A hanging filing card system comprising
a frame including spaced upper rails,
a plurality of magnetic metal hangers having end portions removably supported on said upper rails, each of said end portions including an extreme tip,
a filing card having an upper end secured to each of said metal hangers between said end portions leaving portions of said hangers exposed, thereby hanging freely on said hangers, and having at the bottom a plurality of a group of holes and a plurality of slots open at their lower end, stiletto means inserted selectively into said holes and said slots of said cards, respectively, and
magnetized extractor means including spaced parallel magnetic rails for engaging said metal hangers at said exposed portions for withdrawing cards through which said stilettos pass only through slots, by mutual magnetic attraction of said magnetic rails of said magnetized means and said

metal hangers, and for being moved upwardly from said frame,
said upper rails being substantially of U-shaped cross-section having an innermost supporting section on which said end portions are supported and outermost stop wall slightly spaced from an extreme tip of a corresponding of said end portions when said metal hanger is aligned horizontally, and abutting with said tip in the event a corresponding filing card is tilted, whereby said hangers return to said horizontal alignment,
said innermost supporting sections which support the end portions of each of said hangers, respectively, being lower in height than said stop walls of said upper rails, and
a plurality of rigid separators, disposed between groupings of said cards and including holes at the bottoms corresponding in alignment to the holes in said cards.

3,847,460
PLASTIC FURNITURE

Karl-Adolf Weidt, An Der Alche, Germany, assignor to Fritz Schaffer GmbH, Neukirchen Kreis Siegen, Germany
Filed Dec. 27, 1972, Ser. No. 318,800
Claims priority, application Germany, Dec. 29, 1971, 2165324
Int. Cl. A47b *47/00, 57/08*
U.S. Cl. 312—257 R **17 Claims**

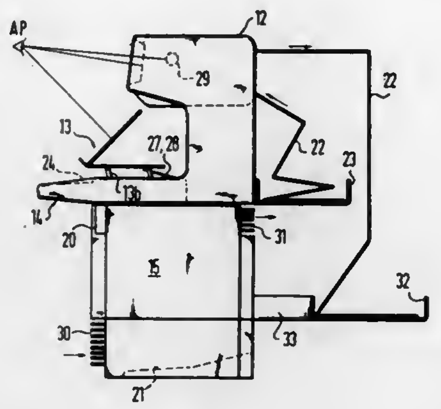


1. A frame for a piece of furniture, comprising a pair of identical structural foam plastic modules, having spaced and opposed rectangular flat panel portions closing the ends of said frame, spaced beam members extending transversely between and interconnecting said panel portions, said beam members having end segments consisting of aligned stump-like legs formed on and in one piece with said panel portions, said stump-like legs forming the entire cross sections of said beam members, means defining grooves on the inner surfaces of the panel portions and continuing along the adjacent inner surfaces of said legs, and filler pieces inserted in aligned grooves of the panel portions and legs for closing remaining sides of said frame.

3,847,461
DATA PROCESSOR

Ernst Moeckl, Stuttgart, Germany, assignor to Nixdorf Computer A.G., Paderborn, Pontanusstr., Germany
Filed Apr. 16, 1973, Ser. No. 351,293
Claims priority, application Germany, Apr. 19, 1972, 2219074
Int. Cl. A47b *77/02*
U.S. Cl. 312—281 **11 Claims**

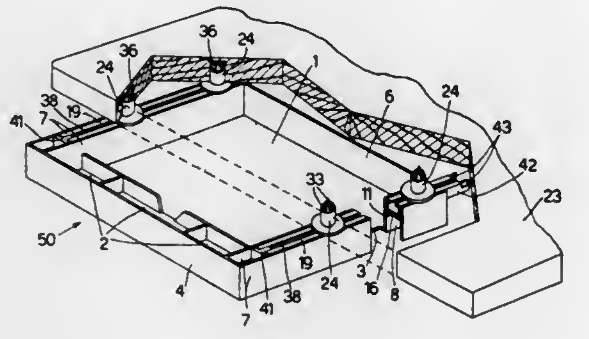
1. A data processing machine comprising a data input area provided with means for feeding data into the machine, a support area provided with means for supporting a document or other member provided with information corresponding to said data, and a display area provided with means for visually



displaying said data, the data input area and the support area being arranged beneath the display area said support area being disposed between the data input area and the display area and rearward of said data input area.

3,847,462
SLIDING DRAWER FOR TABLES AND OFFICE DESKS

Renato Repetti, Forte Dei Marmi, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy
Filed Feb. 5, 1973, Ser. No. 329,921
Claims priority, application Italy, Feb. 10, 1972, 52907/72
Int. Cl. A47b *88/04*
U.S. Cl. 312—330 **4 Claims**



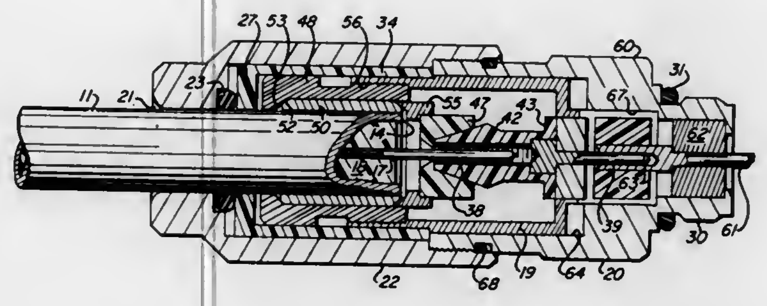
1. A sliding drawer device for tables and office desk comprising a desk plate having a top surface and a bottom surface, said bottom surface housing two pairs of reciprocally parallel blind holes, a drawer assembly including a drawer having two side walls, two guiding section irons, means connecting said side walls to said two guiding sections irons below said two pairs of holes and parallel thereto, respectively, and two pairs of expansion bolts inserted in said blind holes, each of said irons including an upper wall defining a longitudinal slit, and said pair of expansion bolts including a first flange, a screw connected to said first flange, an expandable sleeve surrounding said screw, and a head joined to said screw for compressing said sleeve against said first flange for locking said expandable sleeve in said hole, said head comprising a second flange contacting said bottom surface of said desk plate, a pin projecting from said second flange, and slidably engaging the slit below the upper wall of said section irons and an enlarged portion for slidably guiding said upper wall between said second flange and said enlarged portion of said head to enable the sliding motion of said drawer with respect to said desk plate.

ERRATUM

For Class 333—147 see:
Patent No. 3,846,916

3,847,463
CABLE CONNECTOR APPARATUS

Robert D. Hayward, Phoenix, and James E. Chapman, Glendale, both of Ariz., assignors to Gilbert Engineering Company, Inc., Phoenix, Ariz.
Filed Apr. 11, 1973, Ser. No. 350,073
Int. Cl. H01r *17/04, 39/00*
U.S. Cl. 339—8 P **1 Claim**



1. An assembly for connecting a coaxial cable to a fixed device, said coaxial cable including
an elongate tubular outer conductor, and
an inner conductor wire coaxially located within said tubular outer conductor and spaced therefrom by a dielectric, said connector apparatus comprising a pair of connector assemblies, including:
- a. a connector assembly to be fixedly secured to said coaxial cable including
  - i. a cylindrical outer conductor body having a plurality of contact members extending forwardly therefrom and a screw flight proximate the rear portion thereof,
  - ii. a collet within said outer conductor body and insulated therefrom to receive said inner conductor wire and having a probe extending forwardly therefrom,
  - iii. a collet closer associated with said collet,
  - iv. a compressible sleeve sized to receive said outer conductor, and
  - v. a nut having a bore to receive said cable therethrough and threadedly engageable with said outer conductor body,

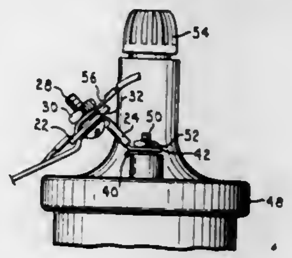
  said nut interacting with said sleeve and said collet closer as said nut is advanced along said screw flight to close said collet about said inner conductor wire and to clamp said sleeve about said outer conductor;
- b. a connector assembly to be fixedly secured to said device including
  - i. an outer conductor body having a first axial bore therein sized to rotationally an frictionally receive said cylindrical outer conductor,
  - ii. a second axial bore within said outer conductor body sized to rotationally and frictionally receive said contact fingers, and
  - iii. a receptacle to rotationally and frictionally receive said probe,

  said receptacle being electrically insulated from said outer conductor body; and
- c. a union nut sized to rotatably encase one of said connector assemblies and engageable with the other of said connector assemblies to maintain said connector assemblies in mechanical and electrical connection.

3,847,464
UNIVERSAL ADAPTOR AND DISCONNECT FOR ACCESSORY IGNITION

Warren K. Pattee, 1200 E. 44th St., Kansas City, Mo. 64110
Filed Feb. 2, 1973, Ser. No. 329,079
Int. Cl. H01r *33/00, 13/50*
U.S. Cl. 339—31 R **8 Claims**

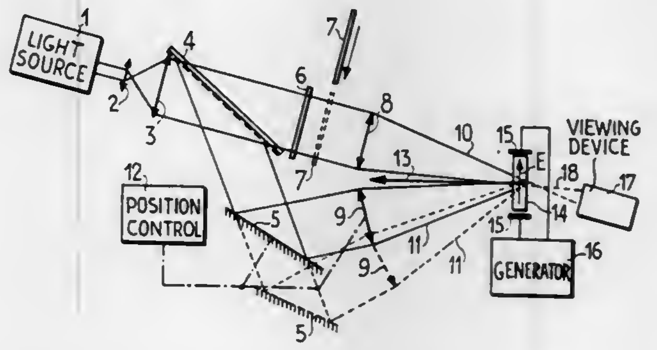
1. An adaptor for connecting accessory electrical apparatus with an ignition coil having a pair of spaced terminals of either the tab type or the post type which are normally engaged by compatible electrical connection means, said adaptor comprising:
a mounting member of insulating material;
a pair of tab-receiving connectors on said member extending in a first direction and spaced apart a distance equal to approximately the spacing between said terminals, said connectors being compatible with said terminals of the tab type;
a pair of connecting posts on said member and extending in a second direction; and
a pair of tab components having first means for mating with said connectors and second means for mating with said



connecting posts, said second means being compatible with said terminals of the post type,
whereby when said adaptor is used with an ignition coil of the tab type said connectors engage the tab terminals of the ignition coil and said tab components adapt said compatible electrical connection means for connection to said connecting posts and when said adaptor is used with an ignition coil of the post type said compatible electrical connection means engage said connecting posts and said tab components adapt the post terminals of the ignition coil for connection to said connectors.

3,847,465
HOLOGRAM FORMATION WITHIN A POLYCRYSTALLINE PHOTO EXCITABLE ELECTRO-OPTIC PLATE

Francois Micheron; Jean Nicolas; Mieczyslax Hildebrandt; Guy Bismuth, and Antonio Hermasin, all of Paris, France, assignors to Thomson-CFS, Paris, France
Filed Nov. 14, 1972, Ser. No. 306,291
Claims priority, application France, Nov. 19, 1971, 71.41541
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **15 Claims**



1. Optical system with photo-induced holographic pattern comprising:
a plate consisting of photoexcitable electro-optic material having a polycrystalline structure, photo-inducing means positioned for irradiating said plate with a pattern of interference fringes, and bias means for generating within the volume of said plate a predetermined uniform state of electrical polarization; said material having a density differing from its theoretical density by less than five thousandths; said predetermined state of electrical polarization being formed during the writing-in and reading

out phases of said pattern of interference fringes; said pattern of interference fringes being constructed from the interaction of two coherent beams having a mean direction of incidence at an angle with the direction of said electrical polarization.

3,847,466
SCANNING ARRANGEMENTS

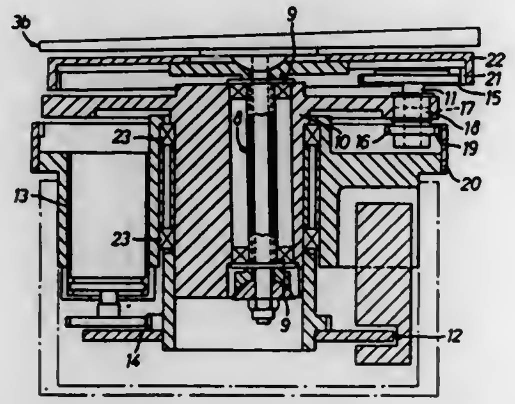
David Patrick Searle Forse, Middlesex, England, assignor to EMI Limited, Hayes, Middlesex, England

Filed Aug. 21, 1973, Ser. No. 390,257

Claims priority, application Great Britain, Sept. 2, 1972, 40815/72

Int. Cl. G02b *17/00*

U.S. Cl. 350—7 **6 Claims**



1. A scanning arrangement including reflector means having a planar reflecting surface arranged to direct received radiation toward detector means, means for rotating the surface in a first direction about an axis inclined to the normal to said surface, and means for causing said axis to precess about a second axis, inclined with respect to both said normal and said first mentioned axis, in a second direction, opposite to said first direction, the rotation and the precession being at substantially the same rate.

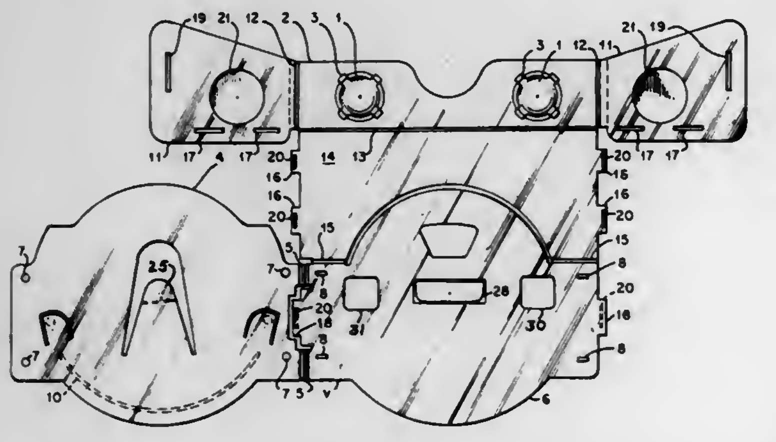
3,847,467
COLLAPSIBLE STEREOSCOPIC VIEWER

Alan Glueck Lewis, West Linn, Oreg., assignor to GAF Corporation, New York, N.Y.

Filed Nov. 1, 1972, Ser. No. 302,888

Int. Cl. G02b *27/22*

U.S. Cl. 350—140 **6 Claims**



1. An improved foldable stereoptic viewer adapted for convenient conversion between an in-use configuration suitable for use with rotatable viewing discs and a folded configuration adapted for compact storage, said viewer being a unitary construction of molded plastic including a plurality of interconnecting elements consisting essentially of:

a. a first body portion containing light transmitting viewing windows disposed in spaced apart relationship therein;

b. a second body portion hinged to and adapted for alignment with said first body portion by means of integrally molded hinge means, said first and second body portions being spaced apart from one another in said aligned position with sufficient clearance therebetween to permit the insertion of a viewing disc therebetween;

c. a top plate foldably connected by integrally molded hinge means to said first body portion and adapted for movement between a folded position adjacent and in the same plane as said body portions and an in-use position extending generally normal to said body portions;

d. a lens plate foldably connected to said top plate by integrally molded longitudinal hinge means extending along the side of said top plate opposite the side thereof hinged to said first body portion, said lens plate having a pair of openings therein at predetermined spaced apart positions therein and being adapted for movement between a folded position adjacent and in the same plane as said top plate and said first and second body portions and an in-use position normal to said top plate and essentially parallel to said body portions at a predetermined distance therefrom;

e. a pair of lenses positioned in said openings in the lens plate;

f. end flap means foldably connected by integrally molded hinge means to said lens plate at the end portions thereof, said end flap means being positioned against said lens plate when in the folded position and extending generally normal thereto and contacting said first body position when said viewer is in its in-use position; and

g. spindle means positioned between said first and second body portions and adapted to rotatably secure the viewing disc positioned between said first and second body portions,

whereby the unitary construction and integrally molded hinge means for folding said plurality of interconnecting elements facilitates the enhanced compactness and utility of said viewer and its adaptability for convenient portability and use.

3,847,468
AMMONIA-TREATED ELECTROCHROMIC (EC) ELECTRODES

Richard Howard Clasen, West Redding, Conn., and Robert Domenico Giglia, Rye, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 7, 1972, Ser. No. 313,082

Int. Cl. G02f *1/36*

U.S. Cl. 350—160 R **7 Claims**

1. A variable light transmission device which comprises two layers, one an ammonia treated imaging persistent electrochromic material, and the other of a counterelectrode separated by an electrolyte layer disposed between a pair of conductive electrodes.

3,847,469
OBJECTIVE-PINHOLE UNIT FOR COHERENT LIGHT

Gregor Antes, Zurich, Switzerland, assignor to Jodon Engineering Associates AG, Wadenswil, Switzerland

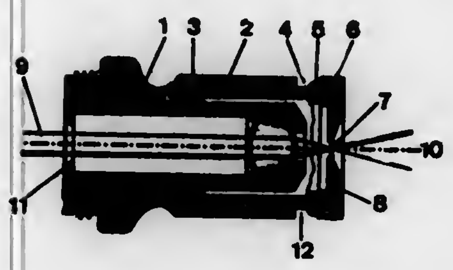
Filed Aug. 29, 1973, Ser. No. 392,785

Claims priority, application Switzerland, Aug. 30, 1972, 12781/72

Int. Cl. G02b *7/02*

U.S. Cl. 350—247 **13 Claims**

1. A lens-pinhole unit for coherent light comprising an objective lens, a support having one end secured to said objective lens, a carrier plate, a diaphragm with a pinhole aperture supported by said plate and a connection between said carrier plate and said support in the form of a hardened synthetic resin layer which positions the pinhole in said diaphragm at the focus of the objective lens.



3,847,470
INDIRECT BINOCULAR OPHTHALMOSCOPE

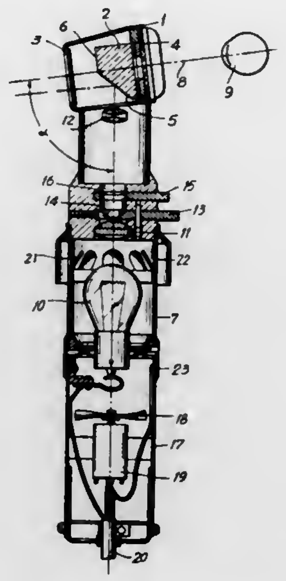
Roland Dederer, Sinsheim; Erwin Jahns, Heidelberg; Herbert Maier, St. Ilgen; Joachim Moser, Sinsheim, and Karl-Heinz Vierling, Bammental, all of Germany, assignors to Eltro GmbH & Co., Heidelberg, Germany

Filed Jan. 12, 1973, Ser. No. 322,973

Claims priority, application Germany, Jan. 19, 1972, 7201864; Jan. 19, 1972, 7201865

Int. Cl. A61b *3/12;* **G02b** *27/02*

U.S. Cl. 351—6 **8 Claims**



1. An indirect manually supported and operated binocular ophthalmoscope including first and second detachably connected modular portions, and a light source in said second modular portion for projecting an illuminating beam into said first modular portion; said first modular portion comprising:

1 a housing having first and second portions; an optical viewing system positioned substantially in the first portion of said housing, said optical system including magnifying lens means positioned between said housing and a patient undergoing examination, a prism including right angle surfaces interposed in the optical axis of said optical viewing system and so positioned within said housing as to receive light reflected from the eyes of a patient undergoing examination and passing said light to a pair of reflecting mirrors, a pair of reflecting mirrors positioned within said housing for receiving reflected light from said prism, a pair of mutually adjustable plate means extending perpendicular to the axis of said optical viewing system, and a pair of oculars mounted respectively one on each of said plate means and being associated in spatially adjustable relationship with said mirrors for receiving light reflected from said mirrors and serving to pass said light into the eyes of an observer; an illuminating system being positioned in the second portion of said housing, said illuminating system including lens and shutter means for directing the illuminating beam from said light source through said second housing portion onto a reflecting surface of said prism, said prism being adapted to reflect said illuminating beam into the eye of a patient; and means on one end of said second housing portion remote from said first housing portion forming a connection to said second modular portion;

2 and said second modular portion comprising an illuminating arrangement including a generally tubular handgrip-forming housing; means on said housing cooperatively engaging said connecting means for detachably fastening said second modular portion to said first modular portion, said housing having a longitudinal axis extending at an acute angle to said optical viewing system; an apertured end closure plate being mounted on the end of said tubular housing remote from the end fastened to said first modular portion; said light source being mounted within said housing; a cooling air circulating means in said housing; and motor drive means for actuating said air circulating means positioned in said housing for drawing a flow of cooling air into said housing through the apertured casing, axially conveying said airflow along said housing past said light source, air circulating means and motor drive means, and venting the heated air from said housing through the apertures in the housing and closure plate.

3,847,471
ROTATING PRISM FOR PROJECTORS

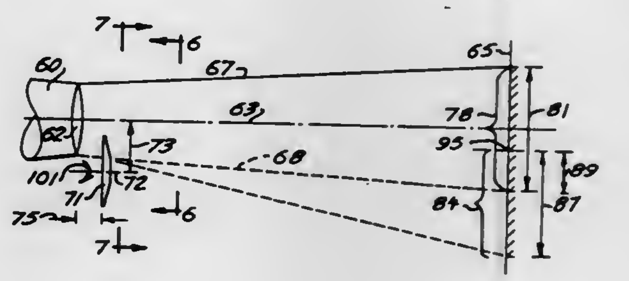
Franz Friedrich Lindner, Suite 1007-777 Cardero St., Vancouver, British Columbia, Canada

Filed Mar. 13, 1973, Ser. No. 340,886

Claims priority, application Canada, Mar. 30, 1972, 138569

Int. Cl. G03b *21/28*

U.S. Cl. 353—81 **10 Claims**



1. An optical apparatus for projecting from a stationary transparency multiple images onto a screen, the images being characterized by a stationary and complete primary image and a plurality of moving and incomplete secondary images displaced from the primary image and occupying a portion of the screen on one side of a cropping line extending across the screen, the secondary images describing a discontinuous orbit about the primary image, the primary image being brighter than the second images, the apparatus including:

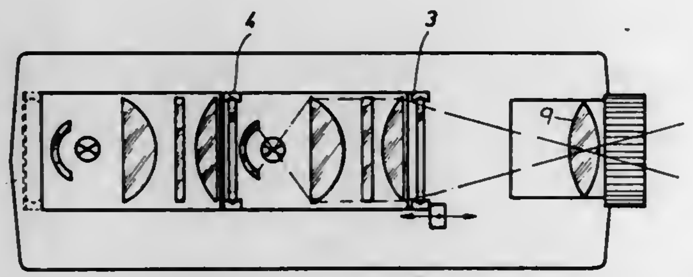
a. a projector being adapted to project an image from the transparency onto the screen, the projector having a projector lens, the projector lens having a focal length and an optical axis,

b. a prism lens having: a first flat face, a convex faceted face, and a central optical axis normal to the first face, the faceted face having a plurality of peripheral facets inclined equally to the first flat face; the prism lens being disposed so that the central optical axis thereof is spaced laterally from the optical axis of the projector lens so that a portion of the prism lens having the peripheral facets overlaps a portion of the projector lens so that a portion of light from the projector lens is intercepted by the prism lens to disperse rays to produce the secondary images, the cropping line defining inner edges of the secondary images and being normal to a line on the screen joining axes of the projector and prism lenses produced to meet the screen; the prism lens being interposed between the screen and projector lens and spaced at a distance from the projector lens less than the focal length of the projector lens; the prism lens being mounted for rotation about the central optical axis thereofk

c. rotating means cooperating with the prism lens adapted to rotate the prism lens about the central optical axis thereof, so as to cause the secondary images to describe the discontinuous orbit about the primary image.

3,847,472
DUAL PHOTOGRAPHIC SLIDE PROJECTOR

Reinhard Sobotta, Mascherode, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany
Claims priority, application Germany, Dec. 6, 1972, 2259651
Filed Nov. 30, 1973, Ser. No. 420,717
Int. Cl. G03b *21/26*
U.S. Cl. 353—94 **16 Claims**



1. A photographic slide projector comprising two projection lens systems situated side by side and having optical axes which are substantially parallel to each other, two slide carriers, one located in the optical axis of each of said projection lens systems, each of said carriers being mounted for movement axially along its respective optical axis between a forward projection position and a rear loading position, and illuminating means for illuminating slides in said carriers when said carriers are in their forward projection positions, the rear loading position of each carrier being spaced rearwardly from its forward projection position by a distance at least as great as the over-all axial length of said illuminating means, so that when one carrier is in its rear position and the other carrier is in its forward position with a slide therein illuminated by said illuminating means, slides may be removed from and inserted in the carrier in the rear position in a direction transversely across the axis of the other carrier in its forward position without interfering with illumination of a slide in the carrier in the forward position.

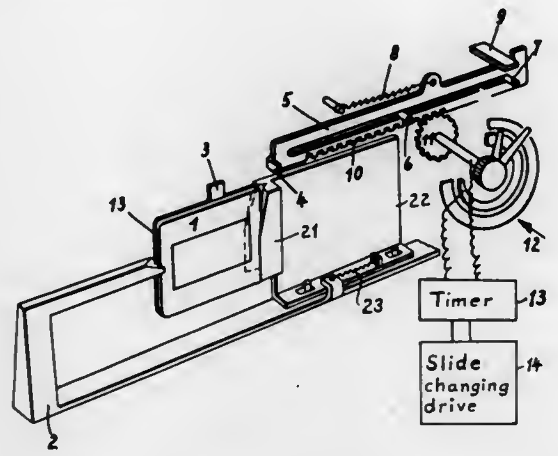
3,847,473
SLIDE PROJECTOR WITH VARIABLE TIMING MEANS FOR SLIDE CHANGE

Reinhard Sobotta, Mascherode, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany
Filed Aug. 1, 1972, Ser. No. 276,962
Claims priority, application Germany, Aug. 6, 1971, 2139406
Int. Cl. G03b *23/02*
U.S. Cl. 353—114 **4 Claims**

1. The combination with a picture slide projector having means for automatically changing slides, of a picture slide assembly having means cooperating with said projector to determine the time interval that the slide assembly remains in projection position in the projector;

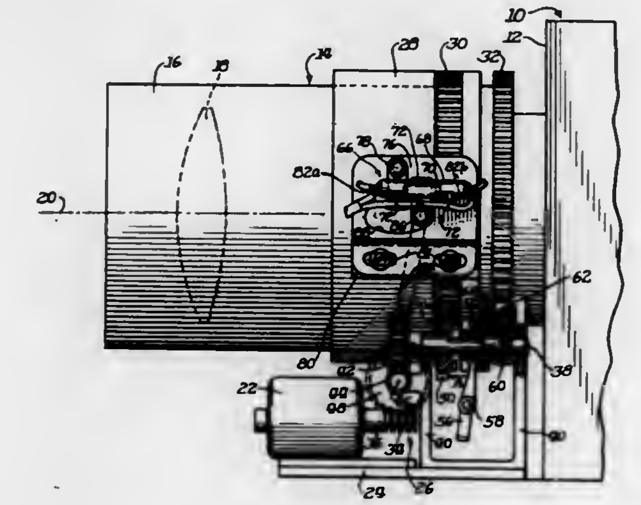
said projector including a slide changing drive, a timer for controlling the length of the time interval during which said drive leaves each slide in projection position before changing to the next slide, and a movable feeler member effective upon movement to adjust said timer to a different time interval;

said picture slide assembly including a conventional slide mount in which a picture slide is held, and a switching element separate from and lying against one face of said slide mount, said switching element having on one edge a protuberance projecting outwardly beyond the corresponding edge of said mount, said element otherwise having substantially the same outline as said mount, said protuberance being in position to engage and move said feeler element of said projector while said picture slide assembly is being moved into projection position in said projector by operation of said means for changing slides.



3,847,474
ELECTRICAL CAMERA FOCUSING MECHANISM

Philip E. Uterhart, Park Ridge, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Jan. 19, 1973, Ser. No. 324,928
Int. Cl. G03b *13/20*
U.S. Cl. 354—168 **3 Claims**



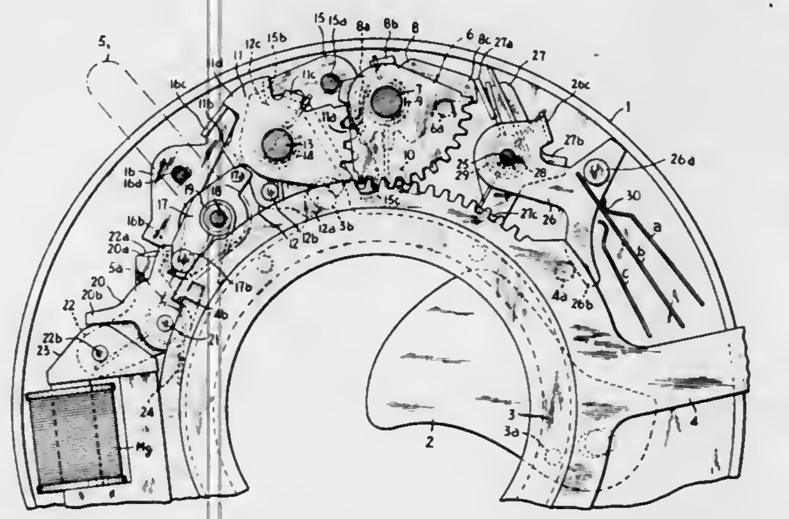
1. In an optical instrument including a housing, focusable objective lens assembly having an optical axis and being supported by said housing, a motor for driving said lens assembly to focusing conditon, and normally incomplete circuit means including switch means connected to said motor and mounted for movement in response to the angular orientation of the optical instrument between a normally "open" position wherein the circuit means is incomplete and a "closed" position wherein said circuit means is complete for driving the lens assembly, the improvement in said switch means comprising: a mercury switch including an elongated enclosure mounted on said housing for movement relative thereto, liquid mercury received within said enclosure and contact means disposed within said enclosure for electrical contact by said mercury, wherein angular movement of said enclosure causes said mercury to move into and out of connecting engagement with said contact means defining said closed and open positions;

a focusing ring rotatably mounted on said housing generally concentric with the axis of the objective lens assembly;

cam means operatively associating said focusing ring and said enclousure for rotating the enclosure about an axis generally perpendicular to said optical axis in response to rotating said focusing ring, said cam means including a generally spiral-shaped slot in said focusing ring and a pin on said enclosure protruding into said slot.

3,847,475
ELECTRIC SHUTTER CONTROL

Kiyoshi Kitai, Tokyo; Yukio Nakamura, Yotsukaido; Hiroaki Ishida, Yoksukaido, and Shinji Nagaoka, Yotsukaiso, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 18, 1974, Ser. No. 434,667
Claims priority, application Japan, Jan. 19, 1973, 48-8931
Int. Cl. G03b *9/08*
U.S. Cl. 354—234 **1 Claim**

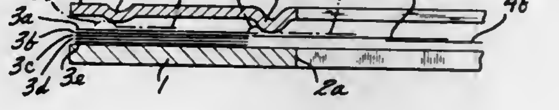


1. An electric shutter comprising, a plurality of shutter blades operable from a closed position to an open position and back to the closed position, an electromagnet controlling closing of the shutter blades at termination of an exposure time, an armature releasably held mechanically to the electromagnet and attracted by said electromagnet when energized, a holding lever releasably applying a biasing force to the armature biasing it against said electromagnet, means comprising a main driving cam for driving the shutter blades to an open and closed position, an intermediate lever having a pressure-applying spring for applying a pressure to bias the armature toward engaging the electromagnet, an armature lever having an armature-lever spring for biasing the armature away from said electromagnet, the pressure-applying spring having a greater force than the force of the armature-lever spring, said main driving cam having means for engaging the intermediate lever and rendering the pressure-applying spring ineffective to apply force to said armature only after said shutter blades have been opened, and means energizing the electromagnet after said shutter blades are opened.

3,847,476
SHUTTER ASSEMBLY HAVING MEANS FOR PREVENTING REBOUNDING OF THE SHUTTER BLADES

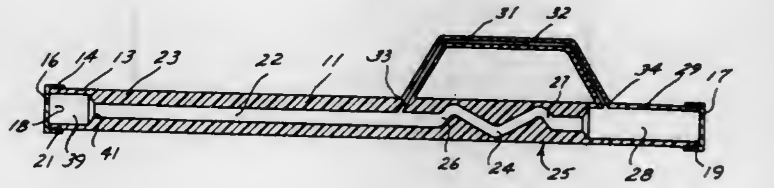
Eiichi Onda, Misato; Mitsuo Koyama, and Tadashi Nakagawa, both of Chiba, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 23, 1973, Ser. No. 390,723
Claims priority, application Japan, Aug. 23, 1972, 47-97667
Int. Cl. G03b *9/20*
U.S. Cl. 354—252 **4 Claims**

1. A shutter assembly for a camera comprising: means defining a shutter aperture; a plurality of actuatable shutter blades actuatable in sequence from one state wherein they close said shutter aperture to a second state wherein they open said shutter aperture and to a third state wherein they again close said shutter aperture thereby defining an exposure; shutter actuating means for sequentially actuating said plurality of shutter blades from one state to said second state and then to said third state; preventing means momentarily engageable with said shutter actuating means during movement of said shutter blades from one of said states to another and coacting with said shutter actuating means for sufficiently attenuating the motion of said shutter blades to prevent rebounding thereof after reaching their intended state, said preventing means comprising at least one fixed projection disposed along the path of travel of said shutter actuating means, and a flexible portion comprising part of said shutter actuating means and slideable over said fixed projection and frictionally engageable therewith to effect resilient flexure of said resilient portion to a degree sufficient to press the shutter blades in a direction for causing said blades to contact each other laterally and to arrest the motion of said shutter blades.



3,847,477
LINEAR LOADING FILM PROCESSING DEVICE

Kenneth W. Haar, Omaha, Nebr., assignor to K. W. Haar & Associates Co., Omaha, Nebr.
Filed Apr. 23, 1973, Ser. No. 353,647
Int. Cl. G03d *17/00*
U.S. Cl. 354—312 **5 Claims**

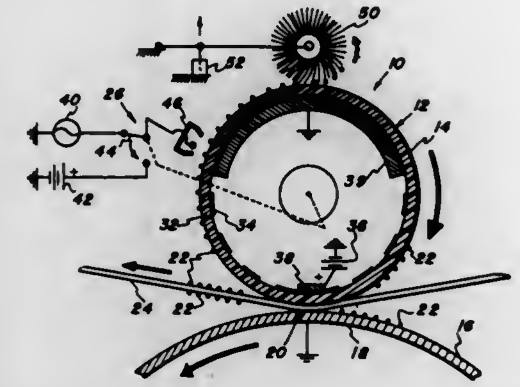


1. A linear loading film processing device for developing an elongated strip of film, said film processing device comprising: an elongated developer tube having a bottom end and a top end, said tube having a chamber formed longitudinally therein which has a lower end exiting the bottom end of said tube and an upper end disposed intermediate said bottom and top ends, said tube having a first cap removably mounted on the top end of said tube and a second cap removably mounted on the bottom end of said tube;

- a light trap having opposed ends disposed in said tube adjacent the upper end of said chamber and having a serpentine passage formed longitudinally therethrough from one end to the other end thereof with the one end of said passage fluidly communicating with the upper end of said chamber;
- a charging passage formed in the top end of said tube and having a first end fluidly communicating with the other end of said serpentine passage and a second end exiting the top end of said tube;
- a film strip holder for holding film wherein the sides of the film do not contact the holder, said holder removably disposed in said chamber between said light trap and the bottom end of said tube, said holder being arcuate in cross-sectional view and having an inwardly facing flange secured to each edge thereof to form a channel with the internal width from edge to edge of the channel being slightly smaller than the transverse width of the film thus causing the film strip to have a transverse bow projecting toward the center of the film strip holder; and
- an interior air vent formed in said tube around said light trap and fluidly communicating with the upper end of said chamber and the first end of said charging passage.

3,847,478
SEGMENTED BIAS ROLL

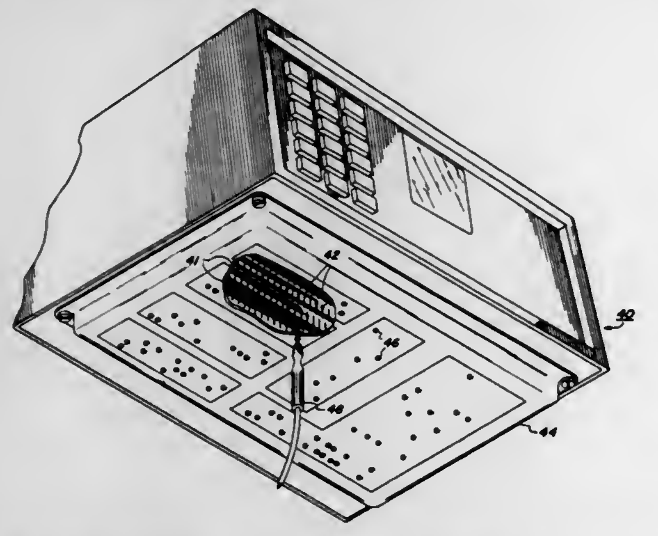
Eugene F. Young, Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 17, 1973, Ser. No. 425,417
Int. Cl. G03g *15/16*
U.S. Cl. 355—3 **6 Claims**



1. In an electrostatographic duplex copying system, wherein one image is transferred from an imaging surface to a transfer member and then is subsequently retransferred to a final support surface at a transfer nip, and wherein another image is transferred from an imaging surface to said same final support surface by said same transfer member:
- wherein said transfer member has an image receiving surface and a multiplicity of electrically discrete conductive strips underlying said image receiving surface;
- transfer bias means for applying an electrical transfer bias to selected ones of said conductive strips only adjacent said transfer nip for said image transfer to said final support surface; and
- selectively operable image charging means for selectively applying an electrical charge to said image receiving surface of said transfer member, at a charging area of said surface substantially spaced away from said transfer nip, independently of said transfer bias means; wherein said image charging means includes A.C. and D.C. corona charging means and switching means for switching between said A.C. and D.C. corona charging means in coordination with movement of said transfer member; where said D.C. corona charging means is for polarity reversal of said one image and said A.C. corona charging means is for charge neutralizing.

3,847,479
COVER FOR WIRE WRAPPED CARD CHASSIS

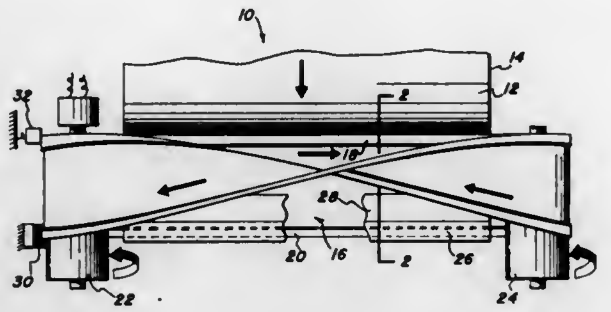
Gerald R. Helbig, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 5, 1972, Ser. No. 312,400
Int. Cl. G03g *15/00*
U.S. Cl. 355—14 **1 Claim**



1. An electrostatic reproduction machine for producing copies of an original having a moving photoreceptor and a plurality of processing devices arranged when activated for producing electrostatic latent images on the photoreceptor for developing the images and for transferring developed images to a moving support material;
- a control system for monitoring machine operations and energizing various machine elements in timed relation relative to the movement of the photoreceptor, said control system including a wire wrapped card chassis having a plurality of upstanding pins thereon,
- a card chassis cover adapted to prevent access to a number of said pins, said cover having a plurality of numbered perforations therein in alignment with selected pins in said wire wrapped card chassis, said perforations being adapted to receive and guide test leads therethrough into engagement with the pins disposed behind said cover in alignment with said perforations for checking proper operation of said reproduction machine while preventing contact between the test leads and adjacent pins and preventing damage to the pins in alignment with said perforations.

3,847,480
CONTINUOUS BLADE CLEANER

Donald J. Fisher, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 12, 1973, Ser. No. 415,270
Int. Cl. G03g *15/00*
U.S. Cl. 355—15 **9 Claims**



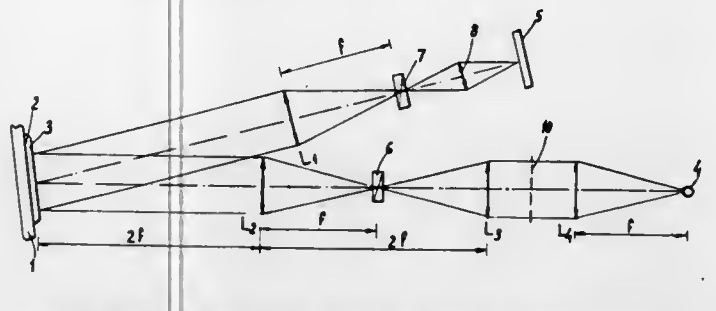
1. In electrostatographic apparatus, the improvement in the cleaning system for cleaning imaging material from an imaging surface with a cleaning blade comprising:
- an endless belt having two opposite edges,
- said edges being adapted to clean said imaging surface;
- support means for continuous motion of said belt including continuously moving a portion of one said edge of said belt transversely across said imaging surface in cleaning engagement with said imaging surface;
- and a mobius twist in said belt spaced from said imaging surface for automatically reversing said one edge of said belt with the other said edge of said belt into cleaning engagement with said imaging surface.

3,847,481
PHOTOELASTIC PROCESSES FOR EXAMINING MECHANICAL STRESSES

Dimitri Paraskevas, Creil; Alain A. L'Hermite; Georges F. Bernard, both of Senlis, and Jacques E. Guinet, Gouvieux, all of France, assignors to Centre Technique des Industries Mecaniques, Senlis, France
Filed Mar. 29, 1973, Ser. No. 345,896
Claims priority, application France, Apr. 27, 1972, 72.10617; May 24, 1972, 72.18422
Int. Cl. G01b *11/18*
U.S. Cl. 356—34 **18 Claims**

1. A device for use in visualization of mechanical stress lines by observation, under a polarized light source, of the double refraction images from a photoelastic material comprising:

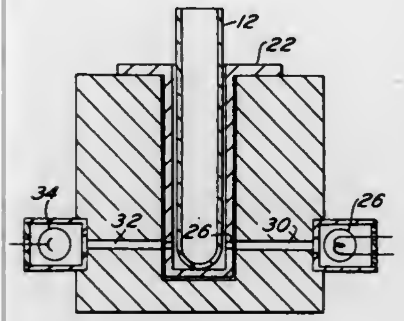
- means defining an optical path between a light source, a photoelastic material to be observed and a screen for receiving the images from said material,
- a polarizer and an analyzer respectively arranged in the optical path between the source and the material, and the material and the screen,



- a grid distant from the material and superimposed on said screen, and
- means for synchronized rotation of the polarizer, the analyzer and the grid relative to the optical path axis to produce a succession of said images at different angular orientations thereof.

3,847,482
APPARATUS FOR DETECTING A CHANGE IN TURBIDITY OF A SOLUTION

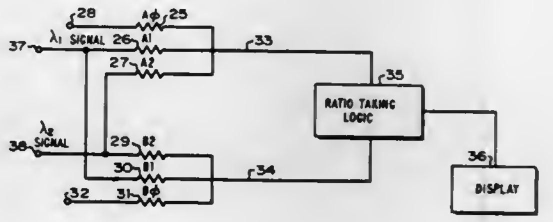
Michael Sokol, Abington, and Frederick M. Kent, Warrington, both of Pa., assignors to Bio/Data Corporation, Hatboro, Pa.
Filed July 10, 1972, Ser. No. 270,375
Int. Cl. G01n *33/16, 21/26*
U.S. Cl. 356—40 **13 Claims**



1. Apparatus for testing blood for the presence of Hemoglobin S, comprising:
- means for receiving a substantially transparent container for holding a predetermined quantity of blood combined with a reagent which produces turbidity in the blood-reagent solution;
- a light source;
- transducer means, said transducer means producing an output signal responsive to light impingent thereon, said transparent container receiving means being mounted between said light source and said transducer means;
- means for passing only variations in the output signal of said transducer means to produce an optical density variation signal;
- means for integrating said optical density variation signal to produce a level signal;
- threshold detector means for detecting when said level signal exceeds a predetermined value and producing an output signal;
- timing means for generating a timing signal a predetermined time after initiation of the test;
- gating means for gating the output signal of said threshold detector in response to said timing signal; and
- indicating means responsive to the output of said gating means for indicating whether or not said threshold detector means detected a level signal of said predetermined value corresponding to the absence or probable presence of Hemoglobin S in the blood being tested.

3,847,483
OPTICAL OXIMETER APPARATUS AND METHOD

Robert F. Shaw, 50 St. Germain, San Francisco, Calif.; David P. Sidlauskas, San Jose, and Donn D. Lobdell, Palo Alto, all of Calif., assignors to Robert F. Shaw, San Francisco, Calif., by said Sidlauskas and Lobdell
Division of Ser. No. 222,579, Feb. 2, 1972, abandoned. This application Sept. 24, 1973, Ser. No. 400,085
Int. Cl. G01n *33/16*
U.S. Cl. 356—41 **24 Claims**



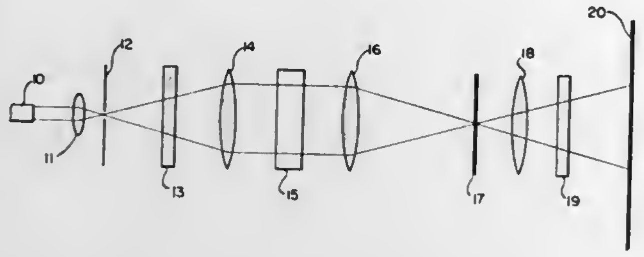
1. Apparatus for determining the oxygen saturation of blood, comprising:
- a plurality of electromagnetic radiation sources operable alternately and cyclically in selected timed sequence to produce electromagnetic radiation in a plurality of different wave bands;
- means coupled to said sources for providing a first optical path between said sources and an optical outlet port remote from said sources which is disposed to communicate with blood;
- detector means for producing electrical signals in response to electromagnetic radiation of each of said different wave bands applied thereto;
- means coupled to said detector means for providing a second optical path between said detector means and an optical inlet port which is disposed to communicate with the blood at a location in close proximity to said optical outlet port;
- signal means coupled to said detector means for producing an electrical signal for each of said radiation wave bands which is representative of the intensity of the radiation received by said detector means at the corresponding wave band;
- source means of first and second reference signals;
- first circuit means connected to receive said electrical signals and said first reference signal for producing a first electrical output as the combination of said electrical signals and first reference signal, each selectively weighted by a first set of coefficients;
- second circuit means connected to receive said electrical signals and said second reference signal for producing a second electrical output as the combination of said electrical signals and said second reference signal, each selectively weighted by a second set of coefficients; and
- means coupled to said first and second circuit means for producing a first output indicative of oxygen saturation of blood as the ratio of the first and second electrical outputs from said first and second circuit means.

3,847,484
SCHLIEREN OPTICAL SYSTEM EMPLOYING A LASER LIGHT SOURCE

Lee Gropper, Los Altos Hills; Douglas H. Durland, and Maurice Galasso, both of Palo Alto, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.
Filed Feb. 28, 1973, Ser. No. 336,557
Int. Cl. G01n *21/46*
U.S. Cl. 356—129 **1 Claim**

1. In a schlieren optical system comprising a source of light and in consecutive order from said source of light, a collimating lens, a condensing lens, a schlieren analyzer, a camera lens, a cylinder lens, and an image screen, the improvement

wherein the source of light is a source of laser light and the system includes a focusing lens and a second cylinder lens between the source of light and the collimating lens of the schlieren system, the focal plane of the focusing lens being at the focal plane of the collimating lens of the schlieren system and the second cylinder lens being located at a point between the collimating lens and the focal plane of the focusing lens.



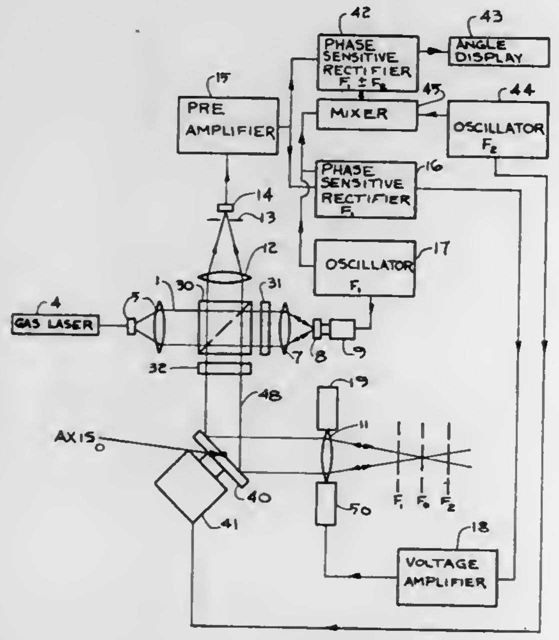
3,847,485
OPTICAL NONCONTACTING SURFACE SENSOR FOR MEASURING DISTANCE AND ANGLE OF A TEST SURFACE

Carl Z. Zanoni, Middletown, Conn., assignor to Zygo Corporation, Middlefield, Conn.

Continuation-in-part of Ser. No. 256,693, May 25, 1972, Pat. No. 3,768,910. This application Aug. 27, 1973, Ser. No. 391,783

Int. Cl. G01b *11/00*

U.S. Cl. 356—167 **6 Claims**



1. An optical noncontacting surface sensor for measuring the distance and angle of a reflecting test surface and a predetermined reference plane comprising (A) a source of radiant energy; (B) means for focusing at least a portion of said radiant energy on the reflecting surface; (C) means for modulating said focusing of said portion of said radiant energy at one desired frequency along its optical path; and (D) means for modulating said focusing of said portion of said radiant energy at a second desired frequency perpendicular to the optical path; (E) means for collecting radiant energy reflected from the test surface onto a single photodetector; (F) means for monitoring the first harmonic of said collected radiant energy at the frequency of modulation of means (C), to obtain information with regard to the direction and amplitude of the distance between the test surface and the reference plane; (G) and means for monitoring one or both of the side-band frequencies of said reflected energy to obtain primary information with respect to the normality, both in magnitude and direction, of the test surface relative to the reference plane.

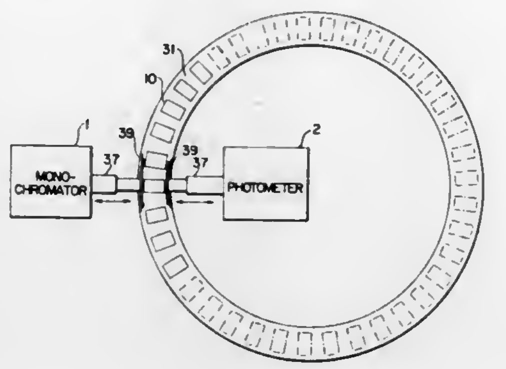
3,847,486
AUTOMATED SPECTROPHOTOMETER APPARATUS AND COMPUTER SYSTEM FOR SIMULATANEOUS MEASUREMENT OF A PLURALITY OF KINETIC REACTIONS

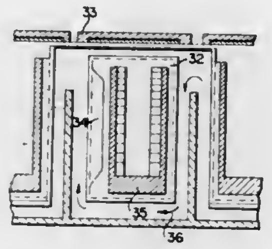
William C. McCabe, 2335 W. 31st St., So. No. E, Wichita, Kans. 67217

Filed June 7, 1972, Ser. No. 260,560

Int. Cl. G01n *21/22*

U.S. Cl. 356—205 **20 Claims**





1. An apparatus for making automated kinetic measurements comprising a standard light source, a standard light sensitive detector and a cuvette wheel assembly disposed between said light source and light sensitive detector, and mounted for rotation about an axle assembly, said cuvette wheel assembly containing a plurality of cuvettes containing the samples to be analyzed, means for rotating the axle assembly, thereby providing the sequential positioning of the samples in the light path of the light source, an idler gear assembly associated with the axle assembly and in synchronous phase with the cuvette wheel assembly, a "peak-picker" means associated with the detector indicating when a sample is in the proper position for recording transmittance readings received by the detector and an electronic computer system associated with the peak-picker means and the idler gear assembly for generating a final digital printout of multiple analytical reaction rate results.

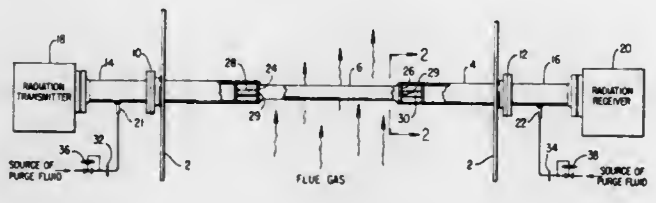
3,847,487
CONSTANT EFFECTIVE SLOT LENGTH LIGHT PIPE

Richard H. Boll, Alliance, Ohio, assignor to Bailey Meter Company, Wickliffe, Ohio

Filed Apr. 9, 1973, Ser. No. 348,876

Int. Cl. G01n *21/12*

U.S. Cl. 356—207 **7 Claims**



1. In a light pipe for producing an in-situ, dimensionally stable, flowing sample of a fluid, the combination comprising: a support pipe having an elongated slot through which the fluid sample flows, means for admitting purge fluid into said support pipe between each end of said slot and the adjacent outer end of said support pipe, and a disc closing said support pipe at each end of said slot provided with an orifice tube having a length at least twice the diameter of the orifice through which the purge fluid is discharged into the fluid flowing through said slot, thereby producing an orderly flow of purge fluid into said flowing fluid and a dimensionally stable sample of the flowing fluid.

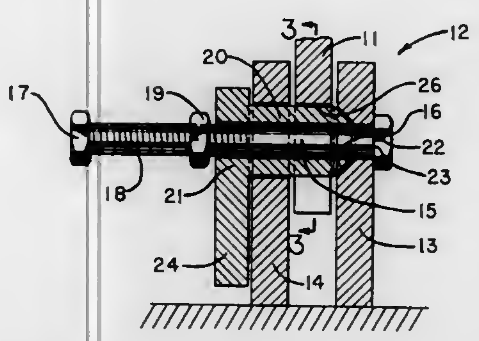
3,847,488
MULTI-PURPOSE RELEASABLE CONNECTOR

Thomas M. Gossage, 70 Jallan Jarak, Singapore, Singapore (28)

Filed Oct. 24, 1972, Ser. No. 300,183

Int. Cl. B25g *3/38*

U.S. Cl. 403—79 **8 Claims**



1. A releasable connector comprising
upstanding and laterally spaced support brackets,
a pin mounted between said support brackets,
a bushing mounted on said pin, and
locking means for normally retaining said bushing in a fixed axial position relative to said pin and for selectively releasing said bushing to permit it to be moved axially a substantial distance relative to said pin,
said locking means comprising a nut threadably mounted on said pin and positioned exteriorly of and closely adjacent to one of said brackets and wherein a first end of said bushing comprises an enlarged head positioned between said nut and said one bracket.

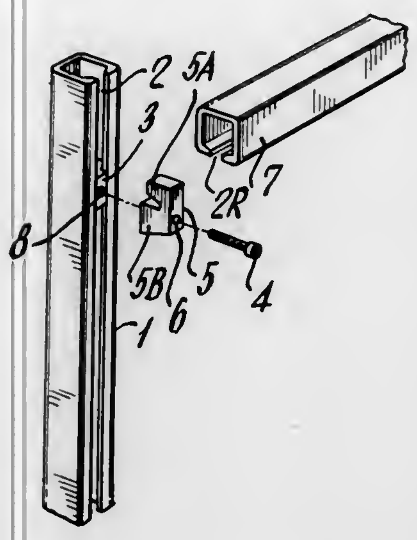
3,847,489
NOVEL FASTENER DEVICE

Robert S. Van Riper, 86 Heights Rd., Ridgewood, N.J. 07050

Filed Aug. 13, 1973, Ser. No. 387,692

Int. Cl. A47f *5/10;* E04h *17/16*

U.S. Cl. 403—110 **3 Claims**



1. A locking device for clamping a rail member to a support member comprising an anchor block and a lock block, said anchor block being adapted to be inserted into a hollow slotted support member and including means on said anchor block for receiving said lock block through said slot, said lock block having a portion thereof adapted to be insertable into a hollow slotted rail member and comprising two main portions, one of said portions being a neck portion having a locking surface and adapted to being disposed within said rail member and the other portion being a lock portion having a locking surface and adapted to be disposed outside of said rail member, fastener means on said lock portion of said lock block communicating with said anchor block, said two locking surfaces being disposed from one another a distance which corresponds substantially to the thickness of the portion of said rail member being clamped to said support member.

3,847,490
BALL JOINT

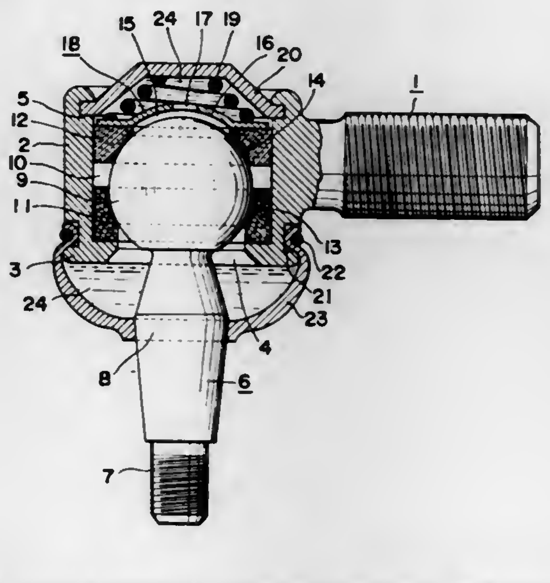
Yasuo Uchida, Hamamatsu, Japan, assignor to Ishikawa Tekko Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1973, Ser. No. 339,373

Claims priority, application Japan, Apr. 28, 1972, 47-43100

Int. Cl. F16c *11/06*

U.S. Cl. 403—140 **5 Claims**



1. A ball joint including synthetic bearings means and including lubricant for prolonging the high temperature operating life of said bearing means, said joint comprising:
a housing;
a stud shaft having a ball formed at one end thereof, said ball being disposed within said housing;
bearing means for rotatably supporting said ball in said housing, said bearing means consisting of a high molecular weight plastic material having ester-type bonds therein; and
a lubricant sealed within said housing, said lubricant consisting of silicone oil and a chemically inert material, said lubricant for minimizing deterioration and prolonging the high temperature operating life, of said bearing means.

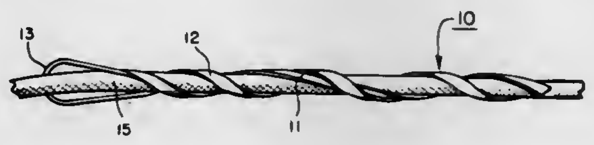
3,847,491
APPLIANCE FOR LINEAR BODIES

James C. Poffenberger, Cleveland Heights, Ohio, assignor to Preformed Line Products company, Cleveland, Ohio

Continuation-in-part of Ser. No. 190,351, Oct. 18, 1971, abandoned. This application Jan. 12, 1973, Ser. No. 323,306

Int. Cl. E16g *11/03*, *11/10*

U.S. Cl. 403—209 **13 Claims**



1. A helically preformed appliance comprising:
a first elongated leg portion helically preformed to a first predetermined pitch length;

a second elongated leg portion helically preformed to a second predetermined pitch length different from said first predetermined pitch length; and

a return bent bight portion joining said first and second leg portions.

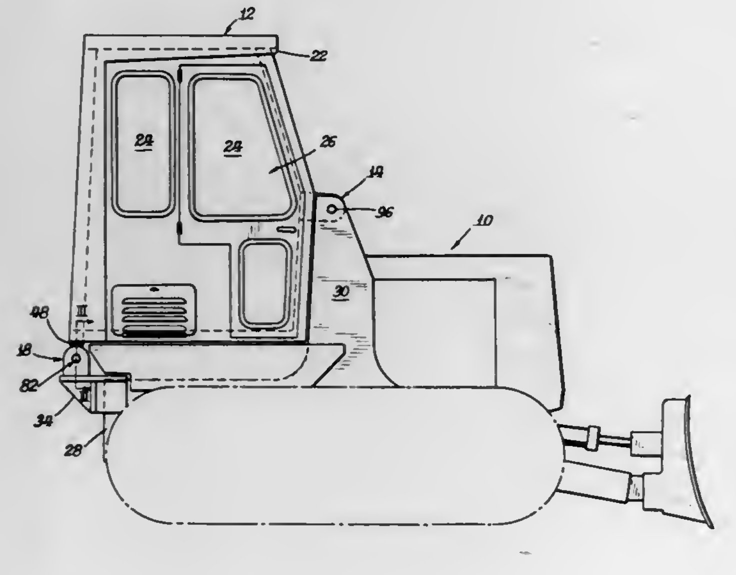
3,847,492
TRACTOR CAB MOUNTING APPARATUS

Robert B. Kennicutt, Morton, and William T. Mounts, Chillicothe, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 8, 1972, Ser. No. 278,731

Int. Cl. F16b 9/00

U.S. Cl. 403—224 **7 Claims**



1. Mounting means comprising:

a. a pair of spaced, generally parallel plates defining axially aligned apertures;

b. an annular lug member defining a lug aperture having (i) a first cylindrical portion of a first radius, (ii) a second cylindrical portion of a second radius greater than said first radius, and (iii) a radial portion interconnecting the first and second lug member aperture cylindrical portions;

c. an annular resilient means having (i) a first external cylindrical portion of a certain radius sized to fit within the lug member first cylindrical portion, (ii) a second external cylindrical portion of a second radius greater than said first resilient means radius to fit within the lug member second cylindrical portion, and (iii) a radial portion interconnecting the first and second resilient means cylindrical portions, one of the lug member aperture cylindrical portions being sized to continuously contact the external resilient means cylindrical portion fitted therein, while the other lug member aperture cylindrical portion is sized to be continuously spaced from the external resilient means cylindrical portion fitted therein, to form an annular gap therebetween, and (iv) defining a bore the axis of which is aligned with the axes of the plate apertures; and,

d. shaft means disposed through the plate apertures and resilient means bore and in contact with such resilient means bore, so that the lug member is movable in directions generally perpendicularly to the axis of the shaft means against the resiliency of one cylindrical portion only of the resilient means for a certain amount of travel, and against the resiliency of both cylindrical portions of the resilient means for additional travel.

3,847,493
DOUBLE CONICAL HUB-TO-SHAFT CONNECTION

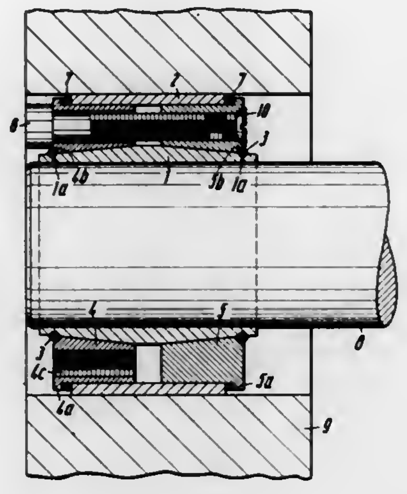
Oskar E. Peter, Brackenheim, and Lothar Peter, Guglingen, both of Germany, assignors to Oskar E. Peter, Brackenheim, Germany, by said Lothar Peter

Filed July 24, 1973, Ser. No. 382,130

Claims priority, application Germany, May 28, 1973, 2327118

Int. Cl. F16d 1/06

U.S. Cl. 403—370 **9 Claims**



1. Double-conical hub-(9)to-shaft (8) connection comprising

an outer sleeve (2) having an outer surface bearing against the inner surface of the hub (9);

an inner sleeve (1) having an inner surface bearing against the outer surface of the shaft (8) the other surface of one of said sleeves being double-conical, with the thicker portion of the cone centrally located, and the other surface of the other sleeve being cylindrical;

a pair or ring-shaped spreader elements (4, 5) having one cylindrical surface fitting against said cylindrical surface in the other sleeve and one conical surface fitting against that conical surface of said one sleeve;

the cone angle of said conical surfaces being greater than the self-binding angle;

the outer end portions of said spread elements (4, 5) being formed with a radially projecting flange (4*a*, 5*a*) projecting towards one of said sleeves;

rings (7) of elastically compressible material being located between the projecting flange (4*a*, 5*a*) of the respective spread element and the respective end surfaces of the adjacent sleeve (2);

a circumferential groove (1*a*) formed in the second of said sleeves, and a compressible spring-ring (3) located in said groove and securing said elements and said sleeves in a normally inseparable assembly.

3,847,494
COUPLING MECHANISM FOR TUBULAR ELEMENTS

Ernest Franklin, 9950 Durant Dr., Beverly Hills, Calif. 90212

Division of Ser. No. 64,964, Aug. 19, 1970, Pat. No. 3,650,427. This application Sept. 30, 1971, Ser. No. 185,094

Int. Cl. F16b 7/00

U.S. Cl. 403—345 **4 Claims**

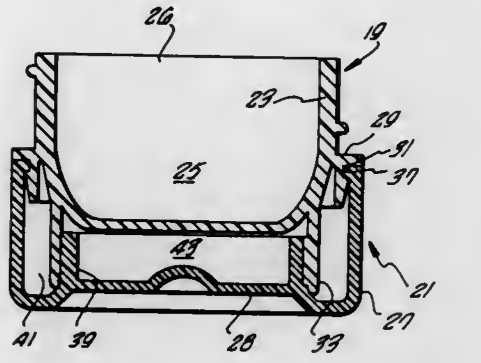
1. A coupling mechanism for permanently coupling together a pair of tubular elements comprising:

a first element having an annular side wall with an annular groove on the outside surface thereof and a second element, the second element also having an annular side wall fitting over the first element side wall, the second element side wall further having an open end surrounding the first element and a flexible continuous closed end;

projection means on the second element extending radially inward and beyond the inside surface of the second element side wall surface to provide a snap-in engagement with the annular groove thereby providing a first securement point between the elements;

means for frictionally interengaging the first and second elements to provide a second securement point with at least two separate contact points between the elements comprising a first tubular splined extension member on the first element having an outside diameter at least slightly smaller than the inside diameter of the first element annular side wall and a second splined tubular extension member on the second element for frictional interengagement with the first tubular splined extension; and

means for increasing the frictional engagement between said splined tubular extension members upon the application of an external load including that portion of the continuous flexible closed end extending between said separate contact points that permits relative movement between the contact points when said external load tends to disengage said projecting means from the annular groove and tends to stress the second element comprising an annular truncated conical portion forming part of said closed end adjacent the second tubular extension member and engaging the end of said first tubular extension member when said projection means is in engagement with said annular groove whereby any relative movement between said contact points increases the frictional interengagement of the extension members beyond the physical strength of at least one element to thereby permanently bond the elements together.



3,847,495
SYMMETRICAL HUB-TO-SHAFT CONNECTION

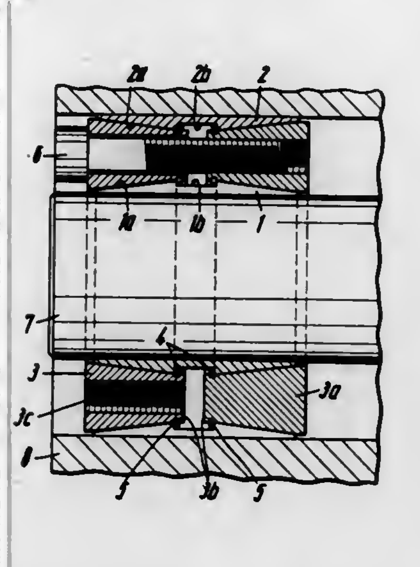
Oskar E. Peter, Guglingen, and Lothar Peter, Brackenheim, both of Germany, assignors to Oskar E. Peter, Brackenheim, Germany

Filed Feb. 8, 1973, Ser. No. 330,744

Claims priority, application Germany, Mar. 4, 1972, 2210491

Int. Cl. F16d 1/06

U.S. Cl. 403—370 **10 Claims**



1. In a hub-to-shaft connection, to interconnect a shaft (7) to a hub (8) having

an axially slit inner sleeve (1) having a cylindrical surface adapted to bear with its inner surface against the shaft (7),

an axially slit outer sleeve (2) having an outer cylindrical surface adapted to bear with its outer surface against the surface of the bore of a hub (8);

the inner sleeve (1) having a central inner region and outer double-conical surfaces (1*a*) extending from said central region and the outer sleeve having a central inner region and inner double-conical surfaces (2*a*) extending from said region;

a pair of axially separated double-conical locking rings (3,3*a*) having inner and outer conical surfaces fitting against one outer conical surface (1*a*) of the inner ring (1) and the inner conical surface (2*a*) of the outer ring (2), respectively, and interposed between the conical surfaces of said inner and outer rings (1,2),

and clamp means (6) engaging said locking rings to move the locking rings towards each other and thus effect sliding movement of the conical surfaces against each other and press the cylindrical surfaces against the shaft and hub, respectively, to concentrically lock the hub and the shaft together,

the inner regions of the conical surfaces of the inner and outer sleeves (1, 2) and the inner facing ends of the locking rings being formed with circumferentially located, radially extending interengaging shoulders (4, 5) and recess means (1*b*, 2*b*).

3,847,496
TRAFFIC NETWORK FOR URBAN SETTLEMENT

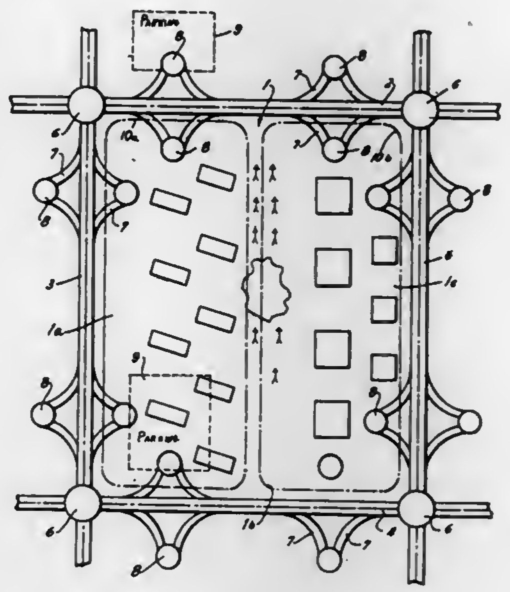
Jerzy G. Stankiewicz, Obkircherg. 38/1/4, 1190 Vienna, Austria

Continuation-in-part of Ser. No. 207,372, Dec. 13, 1971, abandoned. This application Aug. 4, 1972, Ser. No. 277,921

Claims priority, application Austria, Dec. 11, 1970, 11137/70

Int. Cl. E01c 1/00

U.S. Cl. 404—1 **2 Claims**



1. A traffic network comprising a plurality of interchanges between a highway and a plurality of intersecting roadways, said highway peripherally encircling an urban settlement, with off-street parking facilities at a plurality of locations between said interchanges, and local transport means connecting said parking facilities with the interior of said settlement, said local transport means comprising:

at least one rail link with three parallel tracks including a central track and two lateral tracks;

a continuously running passenger carrier on said central track;

a pair of intermittently moving shuttle carriers on said lateral tracks; and several stations each forming a loading platform alongside one of said lateral tracks and an unloading platform alongside the other of said lateral tracks;

said loading platform giving access to one shuttle carrier upon a halting thereof at the station for boarding by waiting passengers, said unloading platform being accessible to arriving passengers on the other shuttle carrier upon a halting of the latter at the station, said shuttle carriers being accelerable to the speed of said continuously running carrier and being provided with docking means for temporarily locking onto said continuously running carrier to facilitate the transfer of passengers therebetween.

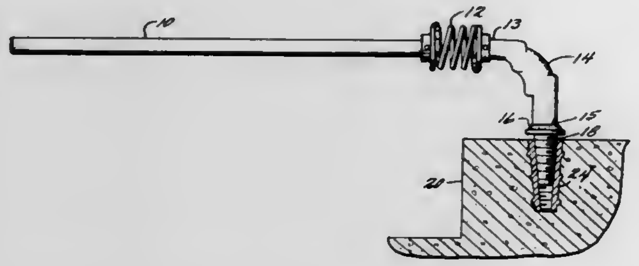
3,847,497
HIGHWAY SAFETY FIN

Perry Gene Guillory, Sr., RT. 2, Box 61-C, Orange, Tex. 77630

Filed Oct. 17, 1972, Ser. No. 298,393

Int. Cl. E01f *9/00*

U.S. Cl. 404—10 **8 Claims**



1. A highway safety fin for use along the edge portions of a roadway to provide an audible signal to warn a driver of a vehicle that he is approaching dangerously close to said edge portion, comprising:

a horizontally protruding rod;

a support member having a horizontally protruding portion and a vertically extending portion which are joined together;

a spring means having one end portion secured to an end of said rod and another end portion secured to said horizontally protruding portion of said support member;

a mounting member having a threaded tapered bottom end portion integral with a protruding head portion frangeably secured to a bottom end portion of said vertically extending portion of said support member; and

an anchor member made of relatively soft material compared to said mounting member, and disposable within a cavity formed in a hard roadway surface edge portion, and having a central tapered bore mated to said threaded tapered bottom portion of said mounting member so as to securably support said rod adjacent a roadway.

3,847,498
COMPACTING DEVICE

Gunnar Grane, Brunnsplan 1A, S-341 00 Ljungby, and Erik Kareby, Fiskebyvagen 10, S-122 47 Enskede, both of Sweden

Filed Jan. 12, 1973, Ser. No. 323,210

Claims priority, application Sweden, Jan. 13, 1972, 346/72

Int. Cl. E01c *19/34*

U.S. Cl. 404—133 **5 Claims**

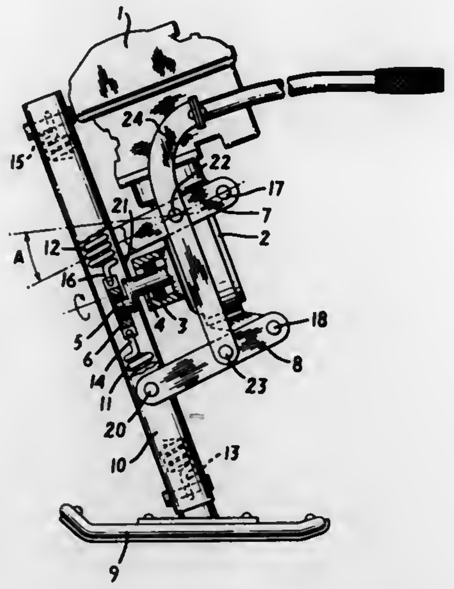
1. A compacting device comprising:

an engine unit having a power output shaft;

a compacting unit including a tamping plate and a structural member affixed to the plate and extending in a generally upward direction from the plate;

mounting means for mounting the engine unit on the structural member of the compacting unit for oscillatory movement of the compacting unit relative to the engine unit, the engine unit being positioned by the mounting means such that the output shaft thereof is located intermediate the ends of the structural member and is oriented with its axis generally transverse to the structural member; and

power transmission means for transmitting power from the engine unit to the compacting unit to establish oscillatory movement of the compacting unit relative to the engine unit, the power transmission means including an eccentric pin connected to the power output shaft of the engine unit for rotation therewith and at least two springs, one end of each spring being pivotally connected directly to the eccentric pin and the other ends of the respective springs being connected under tension to points adjacent opposite ends of the structural member of the compacting unit.



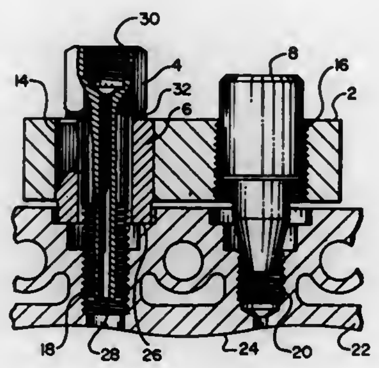
3,847,499
TOOL AND METHOD FOR REAMING AND TAPPING A SPARK PLUG OPENING IN A ROTARY ENGINE HOUSING

Ernest Heyworth, Fullerton, and Phillip Schwartz, Huntington Beach, both of Calif., assignors to Tridair Industries, Redondo Beach, Calif.

Filed Sept. 4, 1973, Ser. No. 394,035

Int. Cl. B23b *35/00, 41/12, 45/14*

U.S. Cl. 408—1 **10 Claims**



1. A tool for preparing a damaged spark plug opening in a rotary engine housing for the receipt of a threaded insert comprising, an alignment block having a first and second opening for respective alignment with undamaged and damaged spark plug openings in communication with a common combustion chamber in said rotary engine, a securing bolt for clamping said alignment block to said housing, said bolt adapted to extend through said first opening of said alignment block and into threaded engagement with said undamaged spark plug opening, said bolt having air conduit means for communication with said combustion chamber, and said alignment block opening having means to receive seriatim a reamer for reaming out damaged threads of said damaged spark plug opening and a tap for tapping new threads in the damaged opening after being reamed.

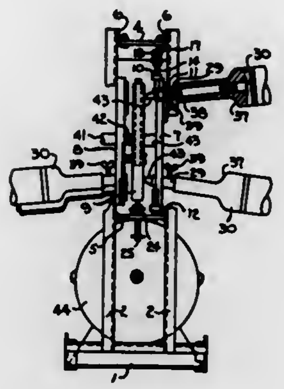
3,847,500
WOOD CHAIR SEAT DRILLING MACHINE

Richard W. Deeter, 4912 W. Ridge Rd., Erie, Pa. 16506

Filed Nov. 7, 1973, Ser. No. 413,642

Int. Cl. B23b *39/16, 41/00*

U.S. Cl. 408—52 **3 Claims**



1. A wood chair seat drilling machine comprising
1. a frame having means for supporting a chair seat blank and for supporting first and second templets on opposite sides of the blank,
2. said first template having a first set of holders for drill means presented to one side of the blank, the position and angular relation of the holders being predetermined relative to said first templet and being unique to said one side of the blank,
3. said second template having a second set of holders for drill means presented to the opposite side of said blank, the position and angular relation of the second set of holders being predetermined relative to said second templet and being unique to said opposite side of the blank,
4. means for fixing in each holder a mounting means for a respective one of said drill means, each of said drill means being movable relative to its mounting means to drill a hole of controlled depth, the position and angular relation of the hole relative to the blank being determined by the holder in which the drill means is mounted,
5. means on one of the templates for clamping said blank against stops on the other template to hold the blank while holes are drilled in both sides of the blank.

3,847,501
DRILL AND TAP ATTACHMENT FOR PIPE CLAMPS

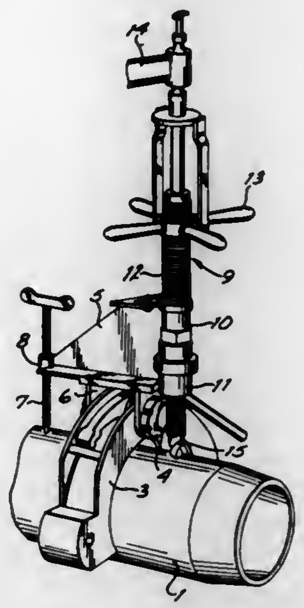
John Trimble Doty, P.O. Box 8368, Long Beach, Calif. 90808

Filed May 29, 1973, Ser. No. 364,493

Int. Cl. B23b *47/00*

U.S. Cl. 408—108 **4 Claims**

1. A drill and tap attachment for a pipe clamp comprising a pair of arcuate shoes engagable with the pipe, means for pivotally attaching the shoes together, a mounting plate overlying the shoes and being supported thereon, a drill and tap means supported on the mounting plate on one side of said shoes, said drill and tap means including means for feeding and driving a drill and tapping tool supported therein relative to the pipe, a screw member threadingly supported on the mounting plate on the other side of the shoes, the axis of said screw member being substantially parallel to the axis of said drill and tap means and in a plane substantially common with the axes of said pivot means and said drill and tap means,



whereby said screw member can be adjusted to engage the pipe to level and stabilize the mounting plate relative to the pipe.

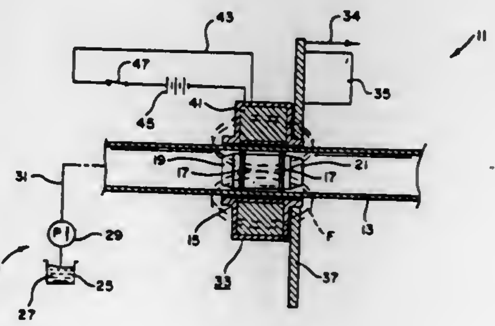
3,847,502
CONVEYING AND FORCE PRODUCING MEANS

Joe A. Isbell, 5299 Mesquite Rd., Memphis, Tenn. 38117

Continuation-in-part of Ser. No. 185,533, Oct. 1, 1971, abandoned. This application Dec. 2, 1972, Ser. No. 317,078

Int. Cl. F01d *1/00*

U.S. Cl. 415—92 **17 Claims**



1. A conveying and force-producing means comprising tube means, at least one inner member movably mounted in said tube means, fluid means for causing fluid to be supplied to said tube means on one end of said inner member to move said inner member, at least one outer member disposed adjacent the exterior of said tube means at a location along the length thereof which is in the proximity of said inner member, magnetic means for magnetically coupling said outer member to said inner member to cause said outer member to move along with said inner member.

3,847,503
CENTRIFUGAL PUMPS FOR PUMPING LIQUIDS

Harry Simister Bottoms, Solihull, England, assignor to Lucas Aerospace Limited, Birmingham, England

Filed Dec. 29, 1972, Ser. No. 319,649

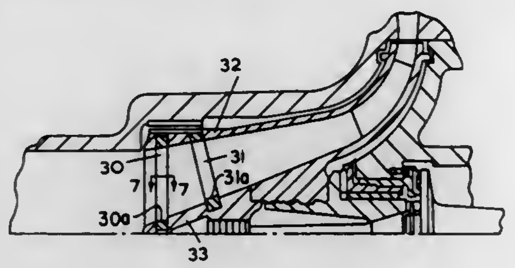
Claims priority, application Great Britain, Oct. 12, 1972, 47074/72; Jan. 12, 1972, 1403/72

Int. Cl. F04d *3/02, 7/00*

U.S. Cl. 415—143 **5 Claims**

1. A centrifugal pump for use in pumping liquids comprising a body defining a pump inlet chamber, a rotor mounted within the body and including a center body member tapering to-

wards said chamber, a shroud member surrounding the center body member and defining therewith a passage of annular section, the internal and external diameters of which increase in one axial direction, vanes interconnecting the shroud member and the center body member at one end of said passage, namely that end thereof at which said diameters are greater,



and a plurality of fingers mounted on at least one of said members, adjacent the opposite end of said passage, said fingers projecting across the passage and being arranged in a plurality of annular rows, said fingers being cylindrical and provided with converging slots of inclined to the axis of the center body member, whereby fingers generate axial flow through slots causing an emulsion of fuel and vapor to form.

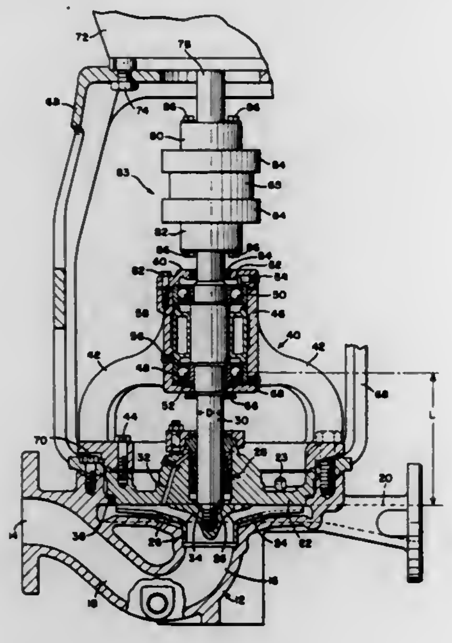
3,847,504
IN-LINE PUMP

Arlin E. Martin, Tipp City, Ohio, assignor to The Duriron Company, Inc., Dayton, Ohio

Filed Dec. 1, 1972, Ser. No. 311,316

Int. Cl. F04d *29/40, 29/42, 29/62*

U.S. Cl. 415—201 **1 Claim**



1. An in-line pump comprising:
- a. a main casing having an inlet and an outlet formed integrally therewith,
- b. said inlet having a substantially horizontal upstream end and a substantially vertical downstream end joined by a smoothly curved elbow,
- c. said outlet being substantially aligned to said upstream end of said inlet,
- d. a cover plate mounted on an upper surface of said casing and defining therewith an impeller chamber,
- e. an impeller received in said impeller chamber for rotation about a substantially vertical axis,
- f. said cover plate having a diameter no smaller then the diameter of said impeller, thereby allowing said impeller to be removed from said impeller chamber when said cover plate is removed from said casing,
- g. an impeller shaft fixed to and extending upwardly from said impeller,
- h. a stuffing box integral with said cover plate and rotatably receiving said impeller shaft,
- i. a bearing housing support including a plurality of upwardly and inwardly curved legs mounted on an upper surface of said cover plate and carrying a bearing housing at their upper ends,
- j. a pair of vertically spaced bearings positioned in said bearing housing and rotatably receiving said impeller shaft,
- k. the impeller shaft overhang and diameter thereof being such that the Index of Deflection of said pump is substantially less than 100,
- l. a motor adapter mounted on said casing separately from said bearing housing support and extending upwardly about said bearing housing spaced outwardly of said bearing housing support,
- m. a motor mounted on said adapter and having a downwardly extending motor shaft aligned with said impeller shaft,
- n. an elastomer coupling interconnecting adjacent ends of said aligned impeller and motor shafts, and
- o. said adapter being of openwork construction and having an inner dimension greater than said diameter of said cover plate, providing access to and permitting removal of said coupling, bearings and bearing housing support, cover plate, impeller and impeller shaft while said motor and motor adapter remain fixed in place with respect to said main casing.

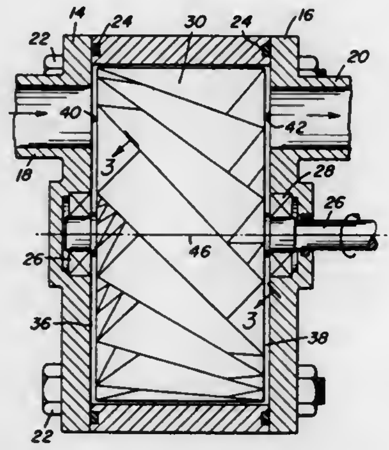
3,847,505
FLOW THROUGH IMPELLERS AND FLUID MACHINES EMPLOYING SAME

David W. Treese, 207 Holmer Rd., Greece, N.Y. 14626

Filed Feb. 20, 1973, Ser. No. 333,815

Int. Cl. F04d *3/00*

U.S. Cl. 415—213 **12 Claims**



1. A rotary impeller through which fluid flows, which comprises:
- a shaft having an axis,
- a generally cylindrical body mounted on said shaft and rotatable therewith,
- a plurality of triangular slots in said body, each of said slots being spaced from said axis and extending in a substantially straight line between the opposite ends of said body, each of said slots having a longitudinal axis and
- each of said slots being disposed with the projection of its longitudinal axis upon said shaft axis in the direction of said fluid flow defining an acute angle.

3,847,506
TURBOMACHINE ROTOR

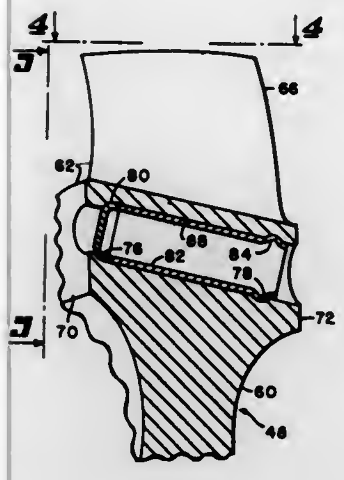
Salvatore Straniti, Orange, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Nov. 29, 1973, Ser. No. 420,204

Int. Cl. F01d *5/08*

U.S. Cl. 416—244 **2 Claims**

1. A one-piece cast turbomachine rotor comprising:
- a central cylindrical hub;
- a plurality of airfoil blades integral with and extending outward from the periphery of said hub at spaced circumferential positions around the rim of said hub, said blades having an acute stagger angle relative to the axis of said hub;
- a plurality of holes in said annular hub, said holes extending generally parallel to the stagger angle line of said blades, said holes each having an annular shoulder of reduced diameter formed adjacent one end thereof, and an annular recess of enlarged diameter adjacent the opposite end thereof;



- a like plurality of continuous slots, each of said slots extending radially outward from a respective hole and through the rim of said hub, said slots also extending in a line parallel to said stagger angle line; and
- a generally cylindrical cup compressed into each of said holes, said cup being closed at one end and having a configuration complementary to said holes whereby said cups are retained in said holes between said shoulders and said recesses.

3,847,507
LIQUID SUPPLY SYSTEM BY PUMP

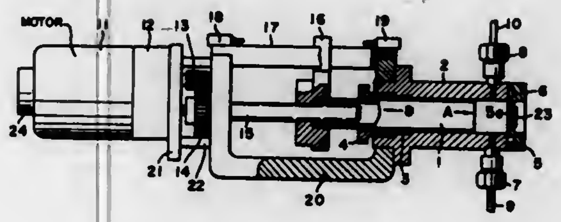
Kazutaka Sakiyama, and Tsutomu Hashimoto, both of Oaza-Tonda-shin-Nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi-ken, Japan

Filed May 17, 1973, Ser. No. 361,139

Claims priority, application Japan, May 17, 1972, 47-48139

Int. Cl. F04b *49/06, 49/00*

U.S. Cl. 417—22 **8 Claims**



1. A system for supplying a liquid at constant pressure comprising:
- a cylinder having an inlet and an outlet,
- a piston reciprocably disposed within said cylinder for drawing liquid into and discharging liquid from said cylinder,
- an electric motor,
- means connecting said motor to said piston to enable said motor to reciprocate said piston,
- means within said cylinder for detecting a pressure change in said cylinder,
- means responsive to said pressure change detecting means for actuating said motor,
- means for detecting the speed of said motor,
- means responsive to said speed detection means for reducing the speed of said motor.

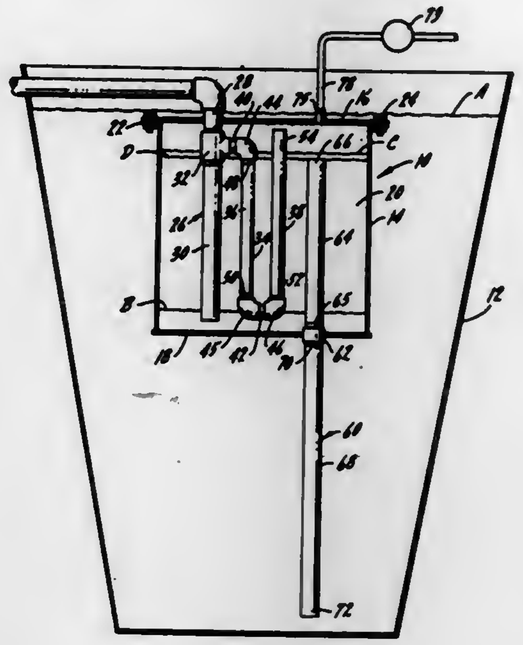
3,847,508
PNEUMATIC PUMP

John E. Mowen, Shawnee, Kans., assignor to Ecodyne Corporation, Chicago, Ill.

Filed Apr. 30, 1973, Ser. No. 355,616

Int. Cl. F04f *1/06;* **F04g** *21/00*

U.S. Cl. 417—118 **4 Claims**



1. A hydraulically controlled and pneumatically powered pumping unit for pumping liquids containing settleable solids from a container, comprising:
- a. a vessel constructed in a substantially air tight manner for receiving liquid thereinto, said vessel being positioned within said container below the normal liquid level in said container;
- b. a gas inlet pipe extending into said vessel through an upper portion thereof for supplying gas thereinto to pressurize said vessel, said gas inlet pipe being in communication with a continuous source of pressurized gas;
- c. a discharge pipe extending into said vessel through an upper portion thereof;
- d. a U-tube positioned within said vessel having a first end in fluid communication with said discharge pipe and a second end in fluid communication with an upper portion of said vessel, said U-tube serving to vent gas therethrough into said discharge pipe when not sealed by liquid confined therein and preventing the passage of gas therethrough when sealed by liquid confined therein; and
- e. an inlet pipe extending through a bottom portion of said vessel, said inlet pipe having an upper end positioned below said first end of said U-tube and a lower end positioned a short distance above the bottom of said container so as to cause agitation on the bottom of the container adjacent said lower end of said inlet pipe when during normal operation of the pump unit liquid is forced out of said vessel and said inlet pipe into said container.

3,847,509
FUEL INJECTION PUMPS FOR I.C. ENGINES

Jean-Claude Bonin, Blois, France, assignor to Roto Diesel, Clichy (Haute-de-Sein), France

Filed Dec. 19, 1972, Ser. No. 316,485

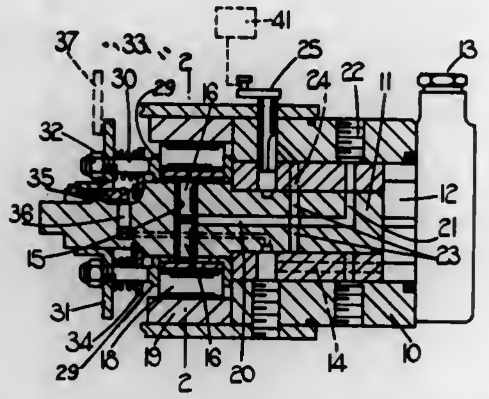
Claims priority, application France, Dec. 22, 1971, 71.46180

Int. Cl. F04b *49/00*

U.S. Cl. 417—214 **27 Claims**

1. In a fuel injection pump for an internal combustion engine having a pair of reciprocable pumping plungers which are moved inwardly to affect a pumping stroke by means of rollers carried by shoes engaging the plungers, the rollers cooperating with cam means, and a leaf stop having end portions in the path of movement of the shoes, the improvement wherein the

contacting surfaces of said shoes and the end portions of said leaf stop are shaped so that relative movement of said shoes and end portions of said leaf stop in an axial direction will effect a variation in the permitted outward movement of said plungers.



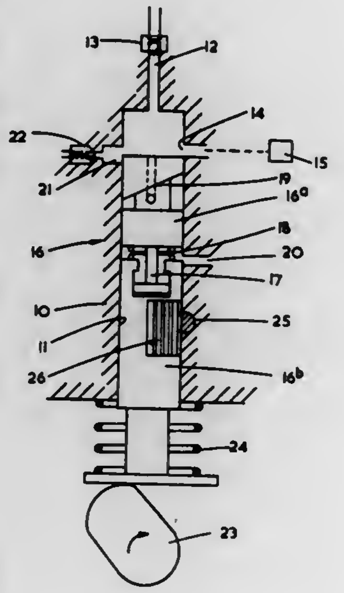
3,847,510
FUEL PUMPS FOR INTERNAL COMBUSTION ENGINES

Ivor Fenne, Greenford, England, assignor to C.A.V. Limited, Birmingham, England

Filed Nov. 26, 1973, Ser. No. 418,848

Int. Cl. F04s *7/04*; **F02m** *39/00*

U.S. Cl. 417—293 **7 Claims**



1. A fuel injection pump for supplying fuel to internal combustion engines, the pump comprising a body part in which is defined a bore, an outlet from one end of the bore, a plunger reciprocably mounted in the bore, cam means for imparting movement to the plunger in a direction inwardly towards said one end of the bore, a filling port formed in the wall of the bore, said filling port being covered by an end of the plunger during inward movement thereof thereby to cause fuel to flow through said outlet, means for moving the plunger in an outward direction, said plunger being divided into two parts, a space between said plunger parts being filled with liquid, the quantity of liquid varying in accordance with the speed at which the pump is driven so that the effective length of the plunger varies, and thereby the instant at which said port is closed by the plunger also varies.

3,847,511
HYDRAULICALLY POWERED TRIPLEX PUMP AND CONTROL SYSTEM THEREFOR

Clinton W. Cole, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Oct. 16, 1973, Ser. No. 406,967

Int. Cl. F04b *17/00, 35/04*

U.S. Cl. 417—342 **3 Claims**

1. A fluid operated triplex pump comprising:

three piston and cylinder pumping assemblies, each operable in a suction, precompression and discharge cycle out of phase with the others;

each of said piston and cylinder assemblies including a power end and a fluid end, and a rod end;

power circuit means for cyclically operating each of said piston and cylinder pumping assemblies in said suction, precompression and discharge cycles;

control fluid circuit means for conditioning said power circuit means to cycle said piston and cylinder pumping assemblies;

said power circuit means comprising:

means for connecting the triplex pump to a power fluid reservoir for providing a source of power fluid;

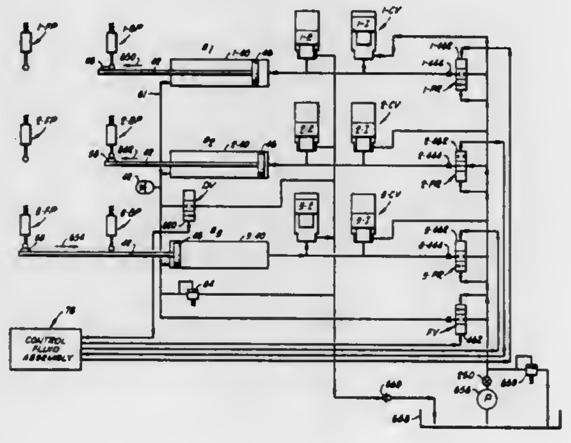
means for connecting the triplex pump to a power fluid pump for delivering pressurized power fluid from said fluid reservoir;

flow regulating means operatively connecting the pressurized fluid delivered by said power fluid pump to said plurality of piston and cylinder assemblies and to said reservoir said flow regulating means including:

a plurality of power circuit valve means, each for selectively placing one of said piston and cylinder pumping assemblies in unrestricted fluid communication with said pressurized power fluid, in restricted fluid communication with a reduced flow of said pressurized power fluid, or in fluid communication with said fluid reservoir;

each of said power circuit valve means comprising:

a power fluid inlet valve body having a power fluid entry passage and a power fluid exit passage;



a power fluid exhaust valve body having a power fluid entry passage and a power fluid exit passage;

precompression valve means having a power fluid entry port, a power fluid output port having a restricted passage, a control fluid pilot port, and means normally blocking the entry port from the output port when control fluid pilot pressure exists in the pilot port;

the power fluid entry passage of said power fluid inlet valve body and the entry port of said precompression valve means being in continuous communication with pressurized power fluid delivered by said power fluid pump;

a common chamber in fluid communication with the power fluid exit passage of said power fluid inlet valve body, and in continuous fluid communication with the power end of a respective one of said piston and cylinder assemblies, with the output port of said precompression valve means, and with the power fluid inlet passage of said power fluid exhaust valve body;

the power fluid exit passage of said power fluid exhaust valve body being in continuous communication with said power fluid reservoir;

the pilot ports of each of said precompression valve means being in control fluid communication with said control circuit means;

power fluid inlet valve means carried by said power fluid inlet valve body for providing selective fluid communication between the power fluid entry passage and the power fluid exit passage of said power fluid inlet valve body; and

power fluid exhaust valve means carried by said power fluid exhaust valve body for providing selective fluid communication between the power fluid entry passage and the power fluid exit passage of said power fluid exhaust valve body.

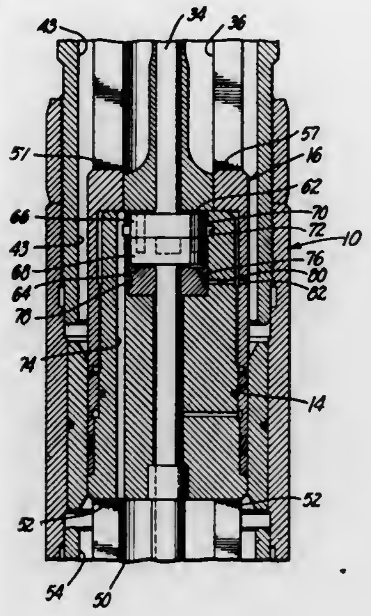
3,847,512
FREE TURBINE PUMP

Francis Barton Brown, La Crescenta, and John W. Erickson, Huntington Beach, both of Calif., assignors to Kobe Inc., Huntington Park, Calif.

Filed June 18, 1973, Ser. No. 370,944

Int. Cl. F04b *17/00*

U.S. Cl. 417—365 **8 Claims**



1. In a turbine pump for a well, the combination of:

a. an axial flow turbine and an axial flow pump interconnected in axially aligned, end-to-end relation with said turbine above said pump;

b. said turbine having a power fluid intake adjacent its lower end, and having a power fluid exhaust adjacent its upper end for spent power fluid;

c. said pump having a well fluid inlet adjacent its lower end, and having a production fluid outlet adjacent its upper end and adjacent said power fluid intake; and

d. means between said power fluid intake and said production fluid outlet for balancing axial thrust forces on said turbine and said pump.

3,847,513
AIR PUMP

Daniel S. Foster, Grosse Pointe Woods, Mich., assignor to W. D. Gale Inc., Detroit, Mich.

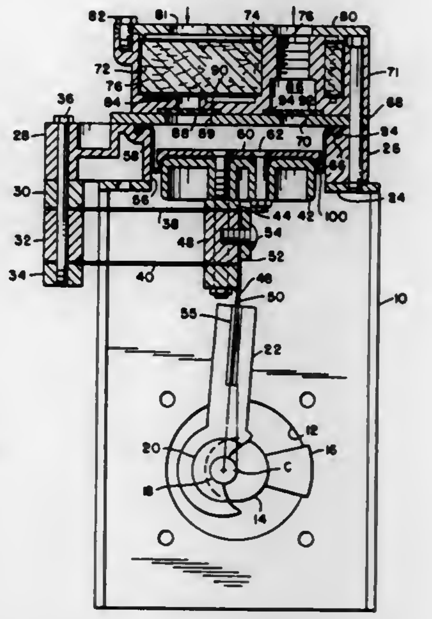
Substitute for Ser. No. 797,761, Feb. 10, 1969, abandoned.

This application Dec. 15, 1971, Ser. No. 132,554

Int. Cl. F04b *21/62*

U.S. Cl. 417—571 **7 Claims**

1. An air pump comprising a chamber, a piston movable in said chamber, inlet and outlet valved passages connecting to said chamber, flexible sealing means connecting the periphery of said piston to said chamber, guide means independent of said chamber for said piston, means for reciprocating said piston in the path determined by said guide means, in which said member is formed by a body having a cylindrical opening therethrough and an annular sealing surface at one end, said flexible sealing means is circular and has a peripheral portion in registration with said sealing surface, said chamber having an end wall in the form of a valve plate, said plate overlying said sealing surface and serving to clamp the peripheral portion of said sealing means against said surface, said body being reversible with respect to the remaining structure, the piston being movable with substantial clearance in the cylindrical opening, and a circular cap selectively attachable to opposite sides of the piston to convert the pump from a pump adapted to deliver air under substantial pressure to a pump adapted to produce a relatively high vacuum.



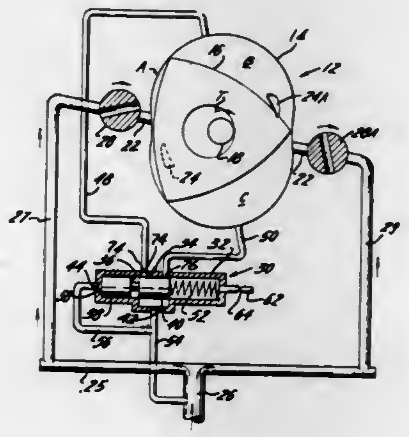
3,847,514
SELF-STARTER SYSTEM FOR SINGLE ROTOR ROTARY EXPANSION ENGINE

Hsin S. Chen, Hasbrouck Heights, and Charles Jones, Hillsdale, both of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Nov. 19, 1973, Ser. No. 416,929

Int. Cl. F01c *1/02*; **F04c** *1/02, 17/02*

U.S. Cl. 418—15 **12 Claims**



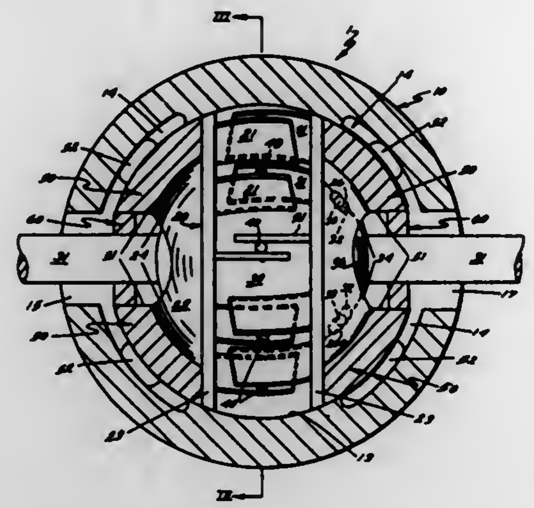
1. A self-starter system for an expansion rotary engine of the planetary rotor type having a rotor within a housing cavity and defining with the housing a plurality of working chambers and in which pressurized driving fluid from a source thereof is conducted through intake ports to said working chambers to rotatively drive the rotor, the self-starter system comprising:

a. a conduit means separate from said intake ports communicating with said source of pressurized fluid and at least one of said working chambers which is substantially fluid tight and against which the pressurized fluid exerts a torque force; and

b. valve means in said conduit means for controlling fluid flow therethrough and responsive to pressurized fluid from said source thereof to move from a closed position to an open position to permit flow of pressurized fluid therethrough and to said at least one working chamber.

3,847,515
VARIABLE DISPLACEMENT GEAR PUMP

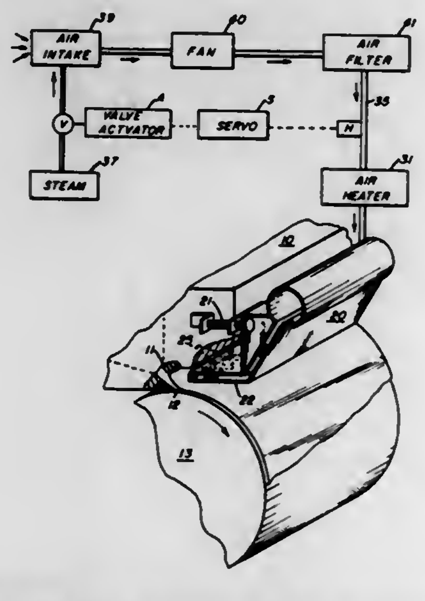
Alan K. Caldwell, Big Rapids, Mich., assignor to Rewop Company, Grand Rapids, Mich.
Filed Mar. 29, 1973, Ser. No. 345,998
Int. Cl. F01c *21/16*
U.S. Cl. 418—16 **50 Claims**



1. A variable displacement pump comprising: a housing having a pair of ports to provide an inlet and an outlet; a pair of generally oppositely disposed rotors rotatably mounted in said housing; each of said rotors including a plurality of vanes, the vanes on one rotor corresponding to those on the other rotor, said corresponding vanes extending towards one another and generally overlapping one another; drive means operatively connected to at least one of said rotors for effecting rotation thereof; means for variably adjusting the angular orientation of at least one of said rotors with respect to the other whereby the displacement of said pump can be varied; means for maintaining generally constant the circumferential distance encompassed by a given pair of said corresponding vanes on the circumference of a circle dividing equally the space between said two rotors whereby, regardless of said angular orientation of said rotors with respect to one another, said vanes do not bind against one another.

3,847,516
APPARATUS FOR EXTRUDING MELTED POLYMERIC THERMOPLASTIC MATERIALS

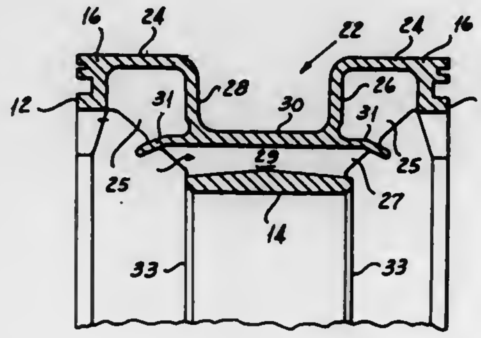
Edward P. Hoffman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Division of Ser. No. 140,087, May 4, 1971, Pat. No. 3,734,984. This application Nov. 24, 1972, Ser. No. 309,330
Int. Cl. B29d *7/02*
U.S. Cl. 425—72 **4 Claims**



1. An apparatus for preventing the occurrence of random die lines in an extruded thermoplastic product comprising in combination:
an extrusion die for a thermoplastic product;
means for directing gas heated to a desired temperature against the thermoplastic product as it leaves said die;
means for supplying said heated gas to said directing means;
means in communication with said supplying means upstream of said directing means for increasing the humidity of said heated gas when it falls below a desired level:
means within said supplying means for sensing the humidity of said heated gas and cooperating with said humidity increasing means.

3,847,517
ROTARY PISTON FOR A ROTARY INTERNAL COMBUSTION ENGINE

Walter L. Hermes, Cedar Grove; Howard R. Corwin, North Caldwell; Murray Berkowitz, Woodcliff Lake, and Harold D. Lamping, Oakland, all of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.
Continuation of Ser. No. 253,319, May 15, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 428,109
Int. Cl. F02b *55/02;* **F01c** *21/06*
U.S. Cl. 418—91 **3 Claims**

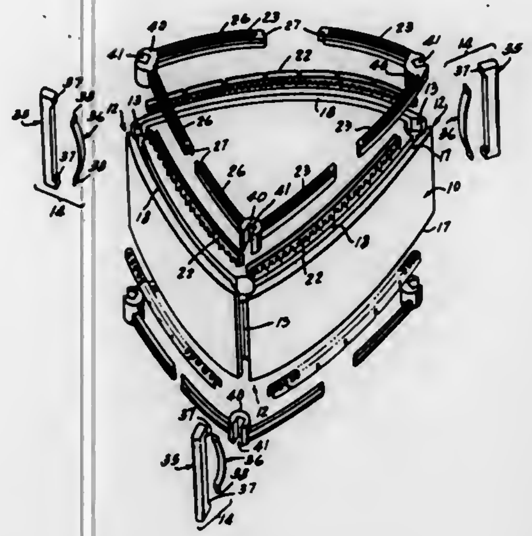


1. A rotor for a rotary piston, internal combustion engine comprising:
- a. a body portion having a hub portion, opposite side faces and a plurality of contiguous flank surfaces spaced radially outward of the hub portion;
- b. said hub portion having opposite end surfaces each of which lie in a plane axially and inwardly spaced from the plane of the associated side face;
- c. a pocket in each of the flank surfaces;
- d. each of said pockets being generally rectangular in shape and having opposite side walls and a bottom wall;
- e. a plurality of ribs circumferentially spaced with respect to the hub portion and radially extending between and interconnecting the flank surfaces along the sides and bottom walls of the pockets and the hub portion;
- f. said ribs defining with the hub portion and the flank surfaces a plurality of axially extending cooling fluid flow passageways adjacent the side and bottom walls of each of the pockets; and
- g. the bottom wall of each pocket has an extension integrally formed with said bottom wall and projecting axially from one side thereof to a point beyond a radial plane containing the end surface of the hub portion adjacent said side of the bottom wall and which extension serves as a baffle for directing cooling fluid into said fluid passageways.

3,847,518
POLYIMIDE HIGH-TEMPERATURE RESISTANT PLASTIC SEALING ELEMENT

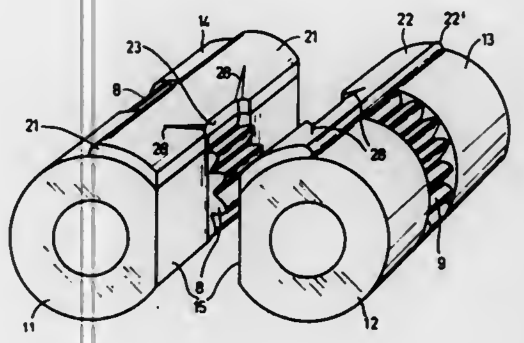
Herbert F. Prasse, Town and Country, and Harold E. McCormick, Ballwin, Mo., assignors to Ramsey Corporation, St. Louis, Mo.
Filed Dec. 18, 1972, Ser. No. 316,226
Int. Cl. F04c *27/00*
U.S. Cl. 418—122 **6 Claims**

1. An apex seal for a rotary type internal combustion engine in which the apex seal effects a seal between an apex of a rotor and a trochoidal inner surface of the rotor housing, said seal having an outer peripheral bearing face of a filler-reinforced, end-capped polyimide resin for sliding contact with said trochoidal inner surface.



3,847,519
GEAR PUMP ARRANGEMENT

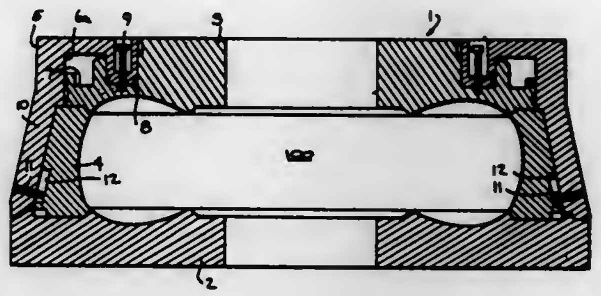
Wilhelm Dworak, Stuttgart, and Wolfgang Talmon, Otisheim, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed June 13, 1973, Ser. No. 369,767
Claims priority, application Germany, Aug. 12, 1972, 2239727
Int. Cl. F01c *19/02*
U.S. Cl. 418—126 **11 Claims**



1. Gear pump arrangement, comprising housing means having an inlet and an outlet for a liquid, and forming a cavity between said inlet and said outlet; two pairs of bearing bodies mounted in said cavity; rotary gear means including a pair of meshing gears between said bearing bodies, and two pairs of shaft portions rotatably supported by said bearing bodies, said gears having opposite inlet and outlet regions communicating with said inlet and outlet; said cavity having an endless inner surface formed with a pair of circumferential channels extending around said gears, respectively, and having first ends communicating with said inlet and second ends located near said outlet region; and two resilient metal strips axially extending across said gears and bearing bodies and having radially inner faces fitting on the outer surfaces of said bearing bodies and on the outer ends of the teeth of said gears, and radially outer faces forming two pressure chambers with said inner surface, communicating with said outlet so that said strips are pressed inward exclusively by high pressure liquid and cooperate with the ends of the teeth of said gears in said outlet region while closing said second ends of said channels whereby said inlet and said outlet are fluid-tightly separated by said strips.

3,847,520
SEGMENTAL MOLD

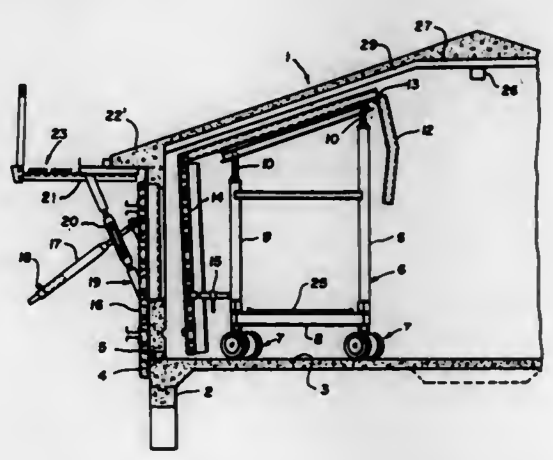
Leon Paul Jean Plumhans, Grivegnee-Liege, Belgium, assignor to Uniroyal A.G., Aachen, Germany
Filed Feb. 26, 1973, Ser. No. 335,831
Int. Cl. B29h *5/02*
U.S. Cl. 425—47 **11 Claims**



1. A segmental mold comprising a pair of annular sidewall-shaping members spaced coaxially opposite one another, means for effecting movement of at least a first of said members axially relative to the second of said members, an annular array of tread-shaping segments concentrically interposed between said members, segment-shifting means movable axially relative to both of said members and operatively associated with said segments for effecting radial movement of the latter from an open annular array wherein said segments are spaced from one another to a closed annular array wherein said segments abut one another, said segment-shifting means including an annular portion defining a pressure chamber which is movable relative to said first of said members, and a fluid-actuated annular piston integral with said first of said members and axially displaceable in said chamber, said piston being commonly engageable annularly with said segments for opening the mold by transmitting an axial force downwardly through said segments and against said second of said members to, thereby, effect (a) an uplift of said segment-shifting means relative to said piston, (b) an axial separation of said segment-shifting means from said second of said members and (c) radial movement of said segments, while the latter are still in axial abutment with both of said members, from said closed annular array to said open annular array.

3,847,521
HINGED ROOF AND SIDEWALL FORMS FOR A MONOLITHIC STRUCTURE

Charles W. Stickler, Jr., Mohnton, Pa., assignor to Grey Tech Industries, Inc., Molinton, Pa.
Continuation-in-part of Ser. No. 200,060, Nov. 18, 1971, Pat. No. 3,742,102, which is a continuation-in-part of Ser. No. 123,539, March 12, 1971, abandoned. This application June 20, 1973, Ser. No. 371,825
Int. Cl. E04g *11/02*
U.S. Cl. 425—62 **8 Claims**



1. A form assembly for simultaneously casting a pair of roof and sidewall portions of a building to form a monolithic struc-

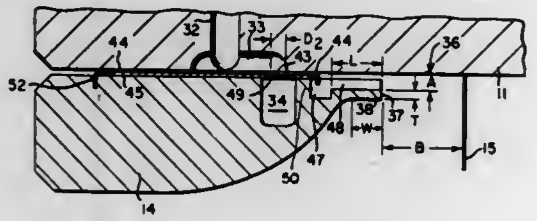
ture, comprising a pair of side by side wheeled, rectangular carriers, each carrier having two corner posts located at the corners farthest from the other carrier and two corner posts of greater height located at opposite corners of the carrier, jacking means connected to each of said corner posts, a pair of interior forms, each supported by one of said carriers and including a roof forming portion supported on the corner posts of the corresponding carrier in slanted position to enable lifting and lowering of said roof forming portion and a sidewall forming portion pivotally connected to one end of said roof forming portion suspended in substantially vertical position, each of said roof forming portions having a pivotal extension means whose end is located substantially at the apex formed by the side by side roof forming portions, means for bridging and supporting said ends of said pivotal extension means in confronting relationship, a second jacking means extending laterally from the lower side portion of each carrier and pivotally connected to the adjacent interior sidewall forming portion to enable pivotal movement of said sidewall forming portion away from a vertical position after casting of the sidewall, and a pair of vertical exterior forms spaced from said sidewall forming portions.

ERRATUM

For Class 425—72 see:
Patent No. 3,847,576

3,847,522
SPINNERET BLANKETING APPARATUS

Robert Sherwood Heckrotte, and John Alexander Scott, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 247,162, April 24, 1972, Pat. No. 3,761,559. This application May 8, 1973, Ser. No. 358,402
Int. Cl. D01d *3/00*
U.S. Cl. 425—72 **8 Claims**



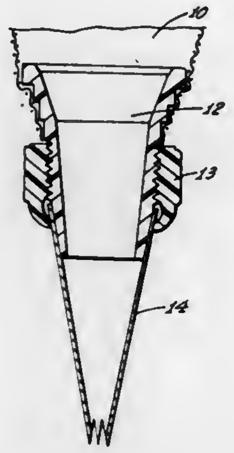
1. An apparatus for melt-spinning filaments comprising: a spinneret assembly containing a spinneret plate having a lower face with orifices through which filaments are extruded, said plate being held in place by a retainer, said retainer having upper and lower surfaces and terminating in a lip at its closest approach to said filaments, said lip having a lower face, said retainer having a plurality of parallel grooves formed in its upper surface, said grooves comprising a manifold passage and a dissipator passage in communication with a gap opening toward said filaments therebeing a plurality of slots of substantially equal area between said manifold passage and said dissipator passage; means for supplying inert gas to said manifold passage; and a means for deflecting inert gas flowing into the dissipator passage, said equal area of said slots having an aggregate area less than the area of said manifold passage.

ERRATUM

For Class 425—143 see:
Patent No. 3,847,503

3,847,523
UNIVERSAL COUPLER FOR CAKE ICING DECORATING TIPS

Douglas R. Parrish, Anaheim, and Richard A. Parrish, Costa Mesa, both of Calif., assignors to Parrish's Cake Decorating Supplies, Inc., Los Angeles, Calif.
Division of Ser. No. 198,340, Nov. 12, 1971, Pat. No. 3,801,247. This application Nov. 8, 1973, Ser. No. 414,180
Int. Cl. A23p *1/00;* **B29f** *3/04*
U.S. Cl. 425—191 **2 Claims**



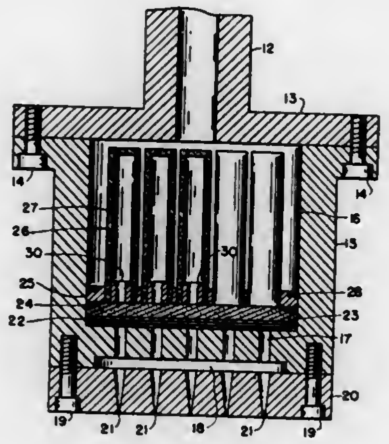
1. A coupler assembly for selectively coupling icing decorating tubes of different sizes to a flexible icing cone having a hole in the lower end thereof, including:

a. a downwardly tapered tubular member having an externally threaded portion and insertable into said cone with said externally threaded portion protruding downwardly through said hole; and

b. first and second nut members respectively having internally threaded portions of the same diameter interchangeably threadable on said externally threaded portion of said tubular member and respectively including first and second bottom edge means of different diameters for holding different sized decorating tubes against the lower end of said tubular member below said externally threaded portion thereof.

3,847,524
SPINNERETTE HEAD ASSEMBLY WITH POROUS METAL FILTER AND SHEAR ELEMENT

Lambert H. Mott, 15 Poplar Hill Dr., Farmington, Conn. 06032
Continuation-in-part of Ser. No. 183,450, Sept. 24, 1971, abandoned. This application Feb. 1, 1973, Ser. No. 328,884
Int. Cl. D01d *3/00*
U.S. Cl. 425—198 **12 Claims**

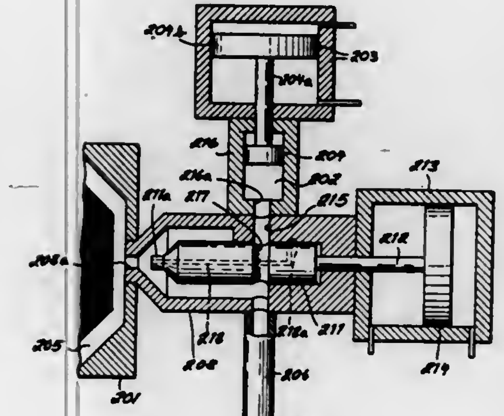


1. In a spinnerette head assembly for the extrusion of synthetic polymer fibers, said assembly having a filter cup containing a central cavity, and a spinnerette disk containing

extrusion apertures, said filter cup having passages leading to the extrusion apertures of said spinnerette disk; filter and shear elements comprising, in combination, an extended area porous metal filter extending into said central cavity having a filter area greater than the cross-sectional area of said cavity, and a porous metal shear element downstream from said filter filtering larger particle sizes than said filter, said shear element providing controlled pressure drop in flow therethrough at least equal to that resulting in flow through said extended area filter.

3,847,525
APPARATUS FOR THE INJECTION MOLDING OF SYNTHETIC-RESIN ARTICLES

Friedrich Bernd Bielfeldt, Aidenried, and Richard Flohrs Richardsen, Seefeld, Oberalting, both of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munchen, Germany
Filed June 21, 1971, Ser. No. 154,792
Claims priority, application Germany, June 26, 1970, 2031657
Int. Cl. B29f *1/05*
U.S. Cl. 425—245 R **2 Claims**



1. An apparatus for the injection molding of articles from a thermoplastic, comprising:

a. a mold assembly having at least one mold cavity;

b. mold-closure means connected with said mold assembly for opening and closing said mold assembly and for maintaining same closed with a mold-closing force;

c. injector means for charging said mold cavity with the thermoplastic;

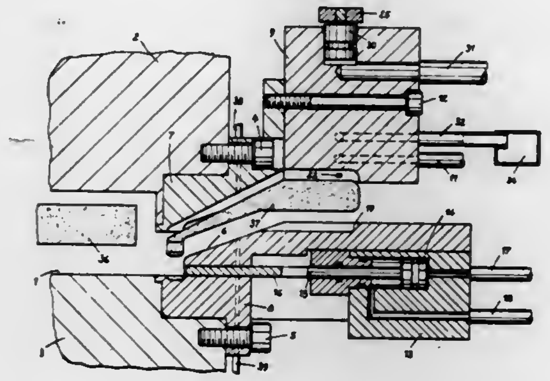
d. means forming an accumulator communicating with said mold cavity;

e. a ram displaceable to feed an accumulated portion of thermoplastic into said mold cavity following contraction of the thermoplastic mass therein after injection of the latter, said mold assembly being formed with a plurality of such mold cavities and said injector means being so constructed and arranged to charge said mold cavities with said thermoplastic in succession, each of said mold cavities being provided with a respective one of such accumulators in communication therewith, and with a respective ram displaceable to feed the respective accumulation of thermoplastic from the respective accumulator into the respective mold;

f. flow-blocking means between said injector means and each of said mold cavities for terminating the flow of thermoplastic to the respective mold cavity and enabling the injector means to charge another mold cavity prior to operation of the ram of the former mold cavity, said flow-blocking means including a valve member provided with a recess affording communication between said injector means and said accumulator, each ram being operable independently of the respective valve member, said recess being a circumferential groove formed on said valve member, said valve member being further provided with a passage interconnecting said accumulator and the respective mold cavities in a closed position of said valve member.

3,847,526
MATERIAL MIXING MOULDING APPARATUS FOR USE WITH A MOULD TO SHAPE A PLASTICS MATERIAL

Bernd Fries, Volkach, Germany, assignor to Ankerwerk Nurnberg GmbH, Nurnberg, Germany
Filed Mar. 10, 1972, Ser. No. 233,474
Claims priority, application Germany, Mar. 16, 1971, 2112535
Int. Cl. B29f *1/03*
U.S. Cl. 425—245 R **11 Claims**



1. A plastics material transfer apparatus for use with a mould comprised of first and second mould sections defining a mould cavity for shaping a plastics material composed of a plurality of liquid constituents, said apparatus comprising:

a body comprised of first and second body sections including means for mounting said first and second body sections on said first and second mould sections, respectively, of said mould whereby said respectively mounted sections separate and close during opening and closing of said mould, said body having formed therein a mixing chamber for mixing said liquid constituents therein and an injection duct in fluid communication with said mould cavity for passing said mixed constituents from said mixing chamber to said mould cavity, said first and second body sections of said body being formed with the line of separation thereof passing through said mixing chamber and said injection duct; and

a movable closure member for closing said injection duct.

ERRATUM

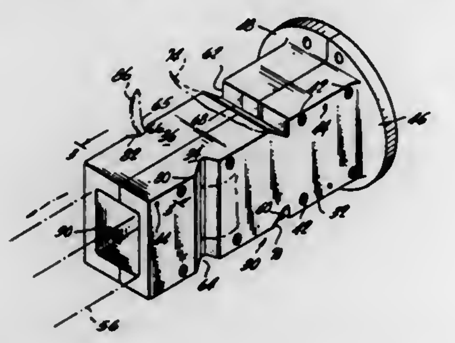
For Class 425—291 see:
Patent No. 3,847,535

3,847,527
PLODDER TRIMMER NOZZLE

Charles F. Fischer, Jersey City, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Oct. 10, 1972, Ser. No. 296,252
Int. Cl. C11d *13/18, 13/28*
U.S. Cl. 425—308 **4 Claims**

1. Plodder trimmer nozzle comprising an elongated hollow housing having an inlet end for receiving levigated soap, said inlet end including fastening means for attaching said nozzle to a soap plodder, an outlet end through which said levigated

mass of soap is extruded, cutting means medially mounted in said housing between said inlet and outlet ends, the interior portion of said housing between said cutting means and said outlet end having lesser inner dimensions than the inner dimensions of said housing at said inlet end.



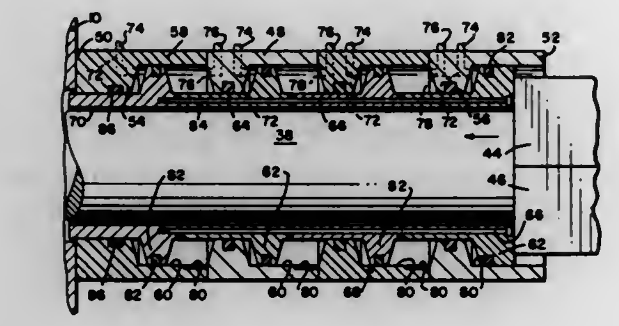
3,847,528
CLAMPING FORCE APPLYING MEANS FOR MOLDING MACHINES

Robert E. Farrell, Nashua, N.H., assignor to Improved Machinery Inc., Nashua, N.H.

Filed Nov. 29, 1972, Ser. No. 310,255

Int. Cl. B29f *1/00*

U.S. Cl. 425—450.1 **2 Claims**



1. In a molding machine, a first platen, a second platen movable towards-and-away from said first platen, a plurality of tie rods associated with one of said platens and longitudinally projecting from said one platen towards the other thereof, gripping means operatively associated with said other platen for gripping said tie rods, said gripping means for each said tie rod comprising a plurality of breech blocks located on the opposite side of said other platen from said one platen and relatively movable for gripping a therebetween said tie rod, and individual clamping force applying means operatively associated with each said tie rod for applying clamping force to a mold between said platens through the tie rod and its respective said breech blocks, each said clamping force applying means comprising means defining a plurality of cylinders aligned with its respective tie rod and on such opposite side of said other platen intermediate said other platen and the respective said breech blocks for the tie rod, the end said cylinder most adjacent to such breech blocks having its end most adjacent to the latter open thereto, a piston in each of said cylinders, said pistons being interconnected to be fluid actuatable towards-and-away from such breech blocks for conjointly applying said clamping force, said pistons being annular and containing openings aligned with the tie rod and dimensioned to permit axial movement of the tie rod through said pistons, the piston in said end cylinder being adapted to apply clamping force through said cylinder open end to such breech blocks upon fluid driving of said piston towards the latter, means for supplying pressure fluid to said cylinders for driving said pistons towards-and-away from such breech blocks, and each said clamping force applying means further comprising by-pass means for by-passing pressure fluid around all of its said pistons, except its said piston in said end cylinder, after a predetermined movement of the pistons for application of clamping force, such by-pass means comprising internal grooves in the walls defining said cylinders constructed to communicate portions of said cylinders on opposite sides of their contained pistons, said grooves being located to prevent fluid flow therethrough during the normal application of clamping force by the pistons and said grooves being at the ends of said cylinders most adjacent to said breech blocks.

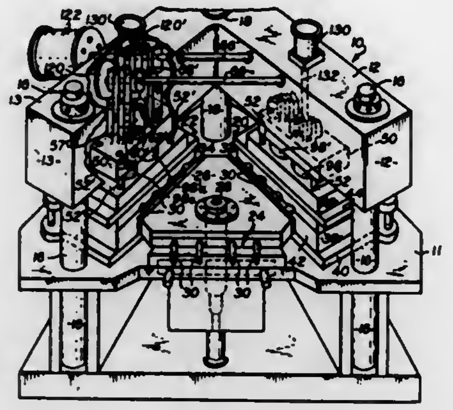
3,847,529
APPARATUS FOR CLAMPING MOLD OF INJECTION MOLDING MACHINE

John J. Farrell, Green Brook, and William Grazine, Piscataway, both of N.J., assignors to Farrell Patent Company, Dunellen, N.J.

Filed Dec. 7, 1972, Ser. No. 312,829

Int. Cl. B29f *1/00*

U.S. Cl. 425—451.2 **23 Claims**



1. A molding machine including in combination a fixed frame, a mold including two parts, one of which is movable toward and from the other to close and open the mold, guide means along which the movable mold part travels, a linkage by which the movable mold part is connected with the fixed frame, the linkage being operable to put the movable mold part in substantially closed position when the linkage reaches its limit of movement in one direction, the linkage including two toggles that fold in opposite directions to balance side thrust of the toggles and to reduce wear of said guide means, each toggle being movable into a substantially straight position by the time the movable mold part reaches substantially closed position, and fluid-operated motor means in position to apply pressure to the mold to hold the mold closed after the linkage reaches its limit of movement whereby the final pressure for closing the mold is exerted after the linkage stops moving.

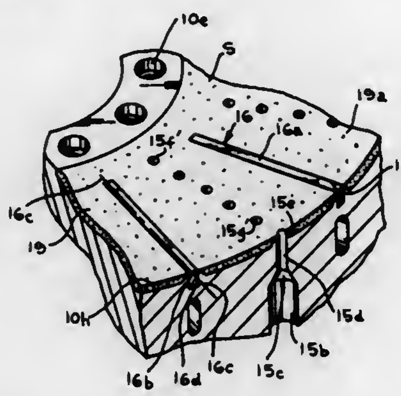
3,847,530
IMPROVED EXTRUSION DIE PLATE

William F. Hamilton, Houston, Tex., assignor to Mallay Corporation

Filed July 19, 1973, Ser. No. 380,726

Int. Cl. B29f *3/04*

U.S. Cl. 425—461 **11 Claims**



1. An extrusion die plate for use in a pelletizing machine for extruding flowable material outwardly where such extruded material is sectioned by rotating knife blades, comprising:

a die plate body having sets of extrusion passageways angularly spaced about said die plate body for passing such flowable material outwardly into engagement with the rotating knife blades;

said die plate body including a die plate face on the discharge side thereof;

said extrusion passageways extending through said die plate body and terminating in nozzle portions protruding from said die plate face such that said die plate face is recessed around said nozzle portions;

a facing material of greater hardness than said die plate body being positioned on said die plate face; and

strips of wear-resistant material mounted with said die plate face between said sets of passageways for increasing the operating life of said extrusion die plate.

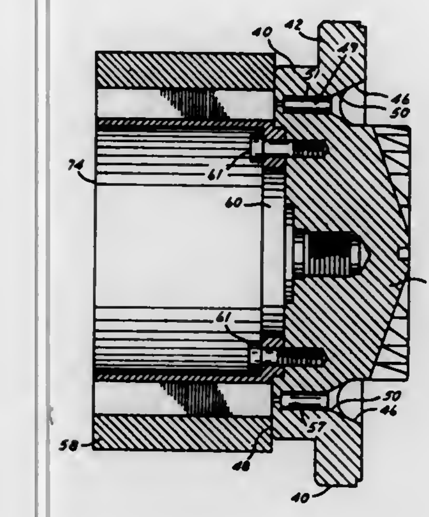
3,847,531
DIE ASSEMBLY FOR FOODSTUFF EXTRUDER

Kenneth H. McComb, 3285 S. Birch St., Denver, Colo. 80227

Filed Aug. 29, 1973, Ser. No. 392,562

Int. Cl. B29f *3/04*

U.S. Cl. 425—464 **5 Claims**



1. A die plate organization for use with an extrusion machine for liquifying and extruding foodstuffs, comprising, in combination:

a. a die plate mounted on an extrusion machine and having a circular array of extrusion orifices extending therethrough and opening into the outer face of said die plate, each outer face orifice opening being X-shaped in configuration;

b. a guide sleeve means secured to the outer face of said die plate, said guide sleeve defining a plurality of substantially square passages corresponding in number to said die plate orifice openings, said square passages each being axially aligned with a corresponding X-shaped die plate orifice, the angular relationship of each said square passage and corresponding orifice being such that the X-shaped die orifice corresponds to the diagonals of the square passage.

3,847,532
APPARATUS FOR FABRICATING BRUSHES HAVING MOLDED ENDS

Edward S. Bischoff, 515 Main St., Old Saybrook, Conn. 06475

Filed Mar. 22, 1972, Ser. No. 236,938

Int. Cl. B29d *31/00*

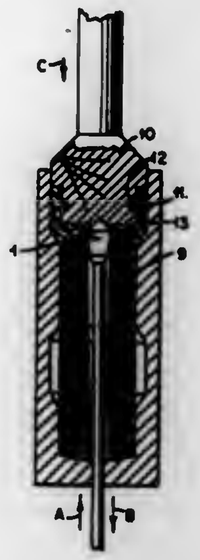
U.S. Cl. 425—500 **19 Claims**

1. Apparatus for fabricating brushes comprising:

a hollow mold defining a cavity therein, said cavity being adapted to receive a plurality of synthetic brush filaments through an open end thereof;

a movable plug member movably inserted substantially longitudinally centrally of said mold, and movable in the longitudinal direction of said filaments; and

means for moving said movable plug member from a first position relative to said cavity for receiving filaments in said mold cavity, to a second position interior of said mold cavity for engaging said filaments with an inner surface of said mold, said filaments received in said mold being of sufficient number and said mold and said plug member being so dimensioned as to tightly press said filaments between said inner surface of said mold and said plug member which effectively separates said mold into first and second inner cavity portions which are isolated from each other and which substantially centrally separates said filaments during fabrication of said brush to form a space void of filaments substantially centrally of the resulting brush, said movable plug member by said tightly pressing said filaments between itself and said inner surface of said mold substantially preventing flow of molten filament material between adjacent pressed portions of said filaments and shielding portions of said filaments in said mold cavity from heat applied to the filament ends in an end portion of said mold cavity.



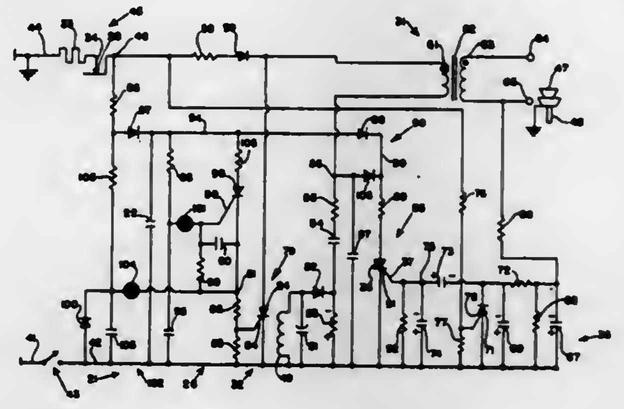
3,847,533
FLAME IGNITION AND SUPERVISION SYSTEM

William J. Riordan, Shrewsbury, Mass., assignor to Walter Kiddle & Company, Inc., Clifton, N.J.

Filed Mar. 12, 1973, Ser. No. 340,448

Int. Cl. F23n *5/12*

U.S. Cl. 431—78 **34 Claims**



1. Circuit apparatus for controlling a fuel burner and comprising:

a power source;

flame responsive means for detecting flame at the burner;

valve means for controlling the flow of fuel to the burner;

energy storage means for receiving and storing electric energy from said power source;

energy transfer means responsive to the detection of flame by said flame responsive means for transferring the energy stored in said energy storage means to said valve means for actuating said valve means to produce fuel flow to the burner; and

limit means for preventing sufficient energy from flowing from said power source directly to said valve means to provide actuation thereof at any time during normal operation of said apparatus.

3,847,534
COMBUSTION APPARATUS

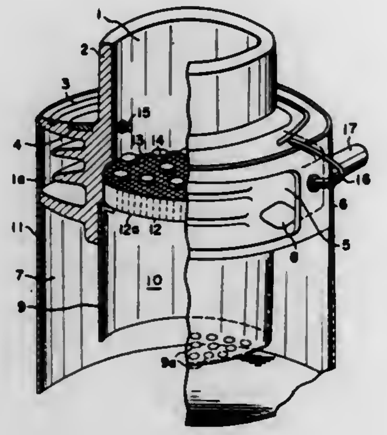
Tamotsu Nomaguchi, Amagasaki; Masatada Sakai, Wakayama, and Toshio Ito, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 22, 1972, Ser. No. 291,350

Claims priority, application Japan, Oct. 18, 1971, 46-82307; Nov. 27, 1971, 46-95675

Int. Cl. F23d *13/14*

U.S. Cl. 431—329 **4 Claims**



1. Combustion apparatus comprising:

a mixing chamber for mixing combustion air and vaporized fuel;

a combustion chamber for burning said mixture of combustion air and vaporized fuel;

a combustion plate, having a plurality of substantially evenly spaced flame holes, disposed between said mixing chamber and said combustion chamber;

a wire net supported on said combustion plate on the combustion chamber side thereof; and

a plurality of discrete flow obstacles having a lower substantially planar surface, being less in number than the number of said flame holes, and substantially evenly spaced apart in a given plane so as to be disposed above only some of said flame holes of said combustion plate to thereby deflect the flow of said gas mixture which passes through said combustion plate from the flame holes obstructed by said flow obstacles substantially laterally into the flow of said gas mixture from flame holes which are unobstructed by said flow obstacles.

3,847,535
METHOD AND APPARATUS FOR EXTRUDING CERAMIC TUBES

John B. Cahoon, Jr., Livermore; John B. Currey, Castro Valley, and Donald L. Emig, Livermore, all of Calif., assignors to The United States of America as represented by the United Atomic Energy Commission, Washington, D.C.

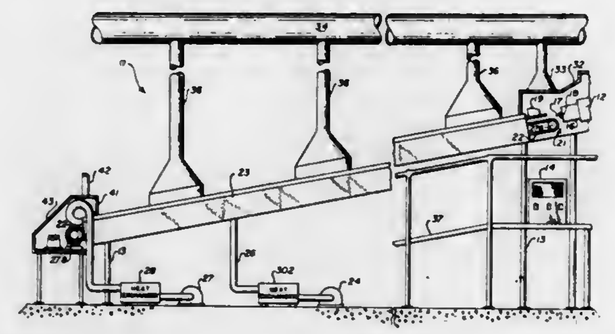
Filed July 6, 1960, Ser. No. 41,218

Int. Cl. A21c *11/10*

U.S. Cl. 425—291 **23 Claims**

1. In an apparatus for cutting the walls of extruded tubing material to a variable depth as it emerges from an extruder, the combination comprising an extruder diaphragm and die, a mandrel extending outwardly from said die, a cutter body defining an aperture mounted over said die and around said mandrel extending from said die, a plurality of cutter blades adjustably mounted in spaced relation around said mandrel onsaid body for simultaneous inward movement transverse to the axis of said mandrel and to a position in close tolerance therewith in a single transverse plane, mean adapted to move said blades inwardly, and means for returning said blades to their initial starting positions.

12. In a method for forming cuts on the exterior surfaces of an extruded ceramic tube, the steps comprising extruding a ceramic tube from an extruder assembly including an extruder diaphragm, die, and extruder mandrel extending exteriorly from said die, rapidly moving a plurality of blades inwardly in simultaneous movement at given intervals in a plane transverse to the direction of extrusion to an adjustable position in close tolerance with the extending end of said mandrel, said blades being initially mounted in spaced relation radially around said extrusion mandrel, said blades being adapted to intercept the surface of said ceramic tube substantially in a single plane transverse to the direction of extrusion, whereby a score completely circumscribing said tube in a single plane is formed, and returning said blades at the conclusion of the inward stroke to its initial position after a swell time coordinated with said extrusion speed, said entire movement and return being adjusted to a period of time rapid enough to form a substantially continuous cut without a notching effect.



16. In the extrusion of moist elongated ceramic members and the subsequent substantial drying of same to rigid brittleness, an improved method for severing the elongated ceramic members into exact lengths and exact dimenssional tolerances comprising the steps of forming the moist extrudable ceramic mix rigid enough to hold its shape when extruded yet plastic enough to flow slightly into depressions when extruded, extruding moist, elongated ceramic member from sai material, circumferentially scoring the surface of the moist extruded member at at least one station therealong at which severance is desired. effecting said substantial drying of the extruded member, and applying a bending stress upon the dried member at said scored station thereby breaking the member proximate the scored station into separate lengths.

3,847,536
RADIANT BURNER OPERATING AT HIGH TEMPERATURE

Louis Lepage, Villiers-Le-Bel, France, assignor to Antargaz Societe Anonyme de Distribution de Gaz Liquides de Petrole, Paris, France

Filed May 3, 1973, Ser. No. 356,903

Claims priority, application France, May 8, 1972, 72.16388

Int. Cl. F23d *13/14*

U.S. Cl. 431—329 **8 Claims**

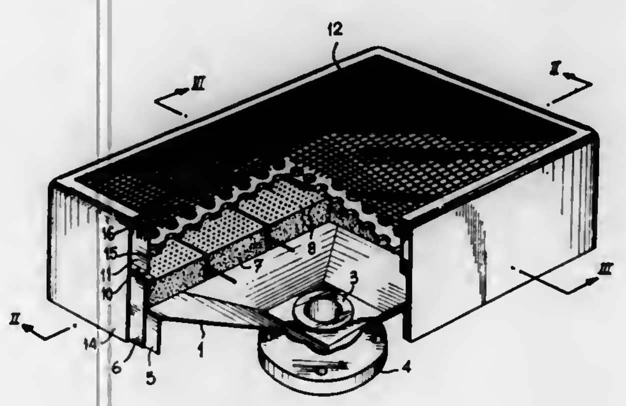
1. A radiant burner for a combustible gaseous mixture comprising:

a box having an inlet for said gaseous mixture and constituting a mixing chamber;

an emission plate opposite to said inlet and delimiting said mixing chamber, said emission plate being constituted by ceramic solid plates drilled of passages having a diameter of between 0.40 to 0.70 mm., said passage being adapted to permit flowing of the gaseous mixture therethrough;

an auxiliary emission means made of a refractory metal drilled with holes of a larger diameter than the passages in said emission plate, said auxiliary emission means surmounting said emission plate and being spaced from the latter by a peripheral frame supported by said box;

and an anti-convection screen spaced from said auxiliary emission means by said peripheral frame.



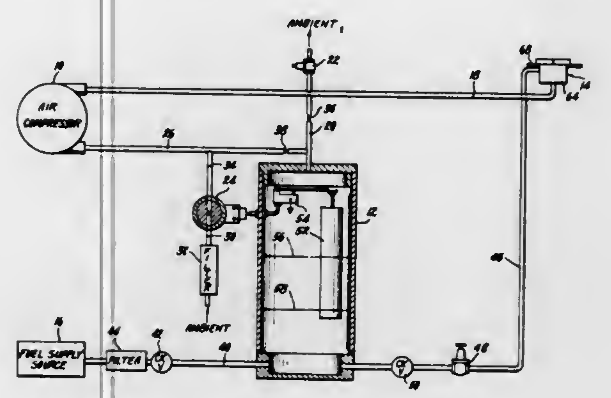
3,847,537
AIR-ATOMIZING FUEL BURNER

Wallace W. Velie, 616 W. 20th St., Upland, Calif. 91786

Filed Aug. 22, 1972, Ser. No. 282,694

Int. Cl. F23d *11/10*

U.S. Cl. 431—347 **21 Claims**



1. An air-atomizing fuel burner system comprising air-atomizing nozzle means for using air under pressure to atomize liquid fuel, air compressor means, means for delivering air under pressure from said air compressor means to said air-atomizing nozzle means, fuel reservoir means for storing liquid fuel, means for supplying liquid fuel to said fuel reservoir means from a remote fuel supply source, means for delivering liquid fuel from said fuel reservoir means to said air-atomizing nozzle means, means for delivering a portion of said air under pressure from said air compressor means to said fuel reservoir means, and means for connecting the vacuum side of said air compressor means to ambient during the burning cycle of said air-atomizing nozzle means and to said fuel reservoir during the reservoir refilling cycle.

3,847,538
REDUCTION KILN HAVING DISTRIBUTION SYSTEM

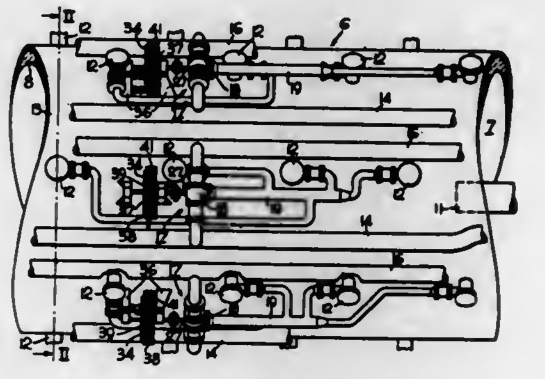
Eugene F. Rossi, Wauwatosa, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Division of Ser. No. 302,606, Oct. 31, 1972, Pat. No. 3,794,483. This application Oct. 1, 1973, Ser. No. 402,111

Int. Cl. F27b *7/06, 7/36*

U.S. Cl. 432—113 **4 Claims**

1. An ore reducing kiln comprising; an elongated rotary cylindrical chamber having a charge of ore to be reduced contained therein; fluid distribution means; a first fluid passage connected in fluid communication to said fluid distribution means; a second fluid passage connected in fluid communication to said fluid distribution means; a nozzle supported by said kiln for rotation with said cylindrical chamber, said nozzle being in fluid communication with said elongated cylindrical chamber and with said fluid distribution means; and control means associated with said fluid distribution means, one of said means supported by said cylindrical chamber for rotation therewith, said control means adapted automatically upon rotation of said cylindrical chamber to operate said fluid distribution means to alternately connect and disconnect said first and second fluid passage means to said nozzle.



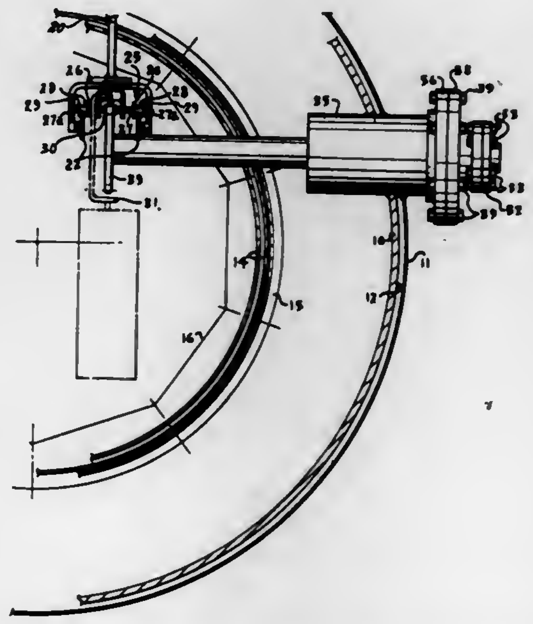
3,847,539
DRIVING MECHANISM FOR VACUUM ELECTRIC FURNACES

Benjamin A. Kreider, Richboro, and William J. Matalsky, Warminster, both of Pa., assignors to Abar Corporation, Feasterville, Pa.

Filed Dec. 3, 1973, Ser. No. 420,796

Int. Cl. F27b *9/14, 11/08*

U.S. Cl. 432—121 **14 Claims**



1. Driving mechanism for use with a vessel having the interior and exterior subject to temperature and pressure differentials comprising

a fixedly mounted housing facing the interior of the vessel, a shaft journaled within said housing in spaced relation thereto for rotation with respect to said housing, and

liquid sealing means interposed between said shaft and said housing for preventing fluid leakage between the interior and the exterior of the vessel and comprising

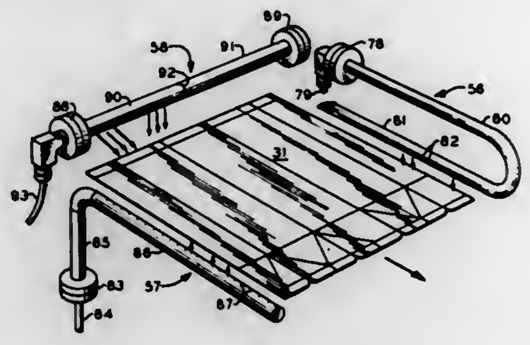
sealing members spaced along said shaft in sealing relation thereto, and

a liquid supply connection communicating with the space between said shaft and said housing for supplying lubricating and sealing liquid between said sealing members.

3,847,540
BLANK HEATING SYSTEM FOR CARTON FORMING MACHINE

Silvio T. Farfaglia, and Ronald E. Bock, both of Fulton, N.Y., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Sept. 7, 1973, Ser. No. 395,035
Int. Cl. F27b *17/00*

U.S. Cl. 432—230 **10 Claims**



1. In a machine for forming a tubular carton from a generally rectangular flat sidewall blank having thermoplastic coating on the upper and lower surfaces thereof and having first and second side margins and top and bottom margins, wherein the sidewall blanks are individually removed from a sidewall blank magazine and conveyed through a heating station to a forming mandrel, the heated sidewall blank is wrapped around the forming mandrel and the overlapping first and second side margins are bonded together, the improvement comprising a first conduit means positioned in said heating station at least generally parallel to and spaced upwardly from the location which would be occupied by the upper surface of the first side margin of one of said blanks in said heating station, said first conduit having orifices therein spaced along the length thereof and directed at the location which would be occupied by said upper surface of said first side margin of the blank in said heating station, a second conduit means positioned in said heating station at least generally parallel to and spaced downwardly from the location which would be occupied by the lower surface of the second side margin of the blank in said heating station, said second conduit means having orifices therein spaced along the length thereof and directed at the location which would be occupied by the lower surface of said second side margin of the blank in said heating station, and means for supplying a hot gas to said first and second conduit means.

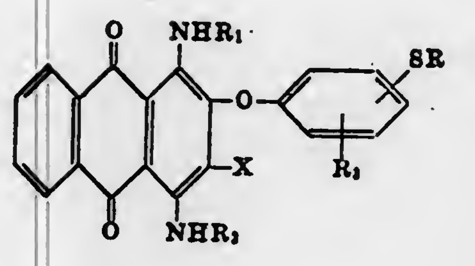
CHEMICAL

3,847,541
1,4-DIAMINO-2-ALKYLTHIOPHENOXY-3-HALOANTHRAQUINONE POLYESTER DYES

Guido Genta, Snyder, N.Y., assignor to American Aniline Products, Inc., Paterson, N.J.
Division of Ser. No. 243,059, April 11, 1972, Pat. No. 3,786,074. This application Aug. 9, 1973, Ser. No. 387,184
Int. Cl. C09b *1/00*

U.S. Cl. 8—39 **5 Claims**

1. A polyester textile material dyed with a compound of the formula



wherein R is methyl or ethyl;

each of R_1, R_2 and R_3 is independently hydrogen or lower alkyl, and

X is chlorine or bromine.

3,847,542
PROCESS FOR PREPARING FROSTED AND MULTICOLORED COTTON PILE FABRICS

Robert J. Harper, Jr., Metairie; Eugene J. Blanchard, New Orleans, and Gloria A. Gautreaux, Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed June 1, 1973, Ser. No. 365,897
Int. Cl. D06p *5/12*

U.S. Cl. 8—66 **6 Claims**

1. A process for producing cotton pile fabrics which are frosted on one side which process comprises:

a. coating the fabric on one side with a crosslinking solution consisting of from about 3 to 20 weight percent of dimethylol ethyleneurea or dimethylol propyleneurea, from about 0.5 to 4.0 weight percent of an acid type catalyst, and from 0.3 to 1.2 weight percent of a thickener such as hydroxyethylcellulose,

b. drying the coated fabric from
 a. at a temperature of about 60° C to 90° C for a period of 3 to 15 minutes,

c. curing the dry fabric from (b) at a temperature from 100° C to 170° C for a period of about 1 minute to 20 minutes,

d. dyeing the fabric from (c) with a reactive cotton dye,

e. hydrolyzing the crosslinking agent and thickener from the fabric using an acidic solution containing 0.4 weight percent (0.1N) hydrochloric acid for a period of 30 seconds to 10 minutes at a temperature from 50° to 90° C.

3,847,543
REDUCING SHRINKAGE OF TEXTILE MATERIALS

Clifford C. Carroll, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Nov. 28, 1972, Ser. No. 310,197
Int. Cl. D06m *3/02, 15/52*

U.S. Cl. 8—127.6 **17 Claims**

1. A process for reducing the shrinkage of a woolen or polyacrylic fiber-containing textile material which comprises impregnating said textile with an aqueous dispersion of a cycloaliphatic polyisocyanate and a polyglycol having a molecular weight between about 300 and 12,000 and having four hydroxyl groups per molecule and four polyoxyalkylene chains including both polyoxyethylene and polyoxypropylene molecules, reacting said polyisocyanate and said polyglycol to render said textile less susceptible to shrinkage and drying said textile, the ratio of isocyanate groups in the polyisocyanate to hydroxyl groups in the polyglycol being between about 2:1 and 3:1.

3,847,544
BARRE REDUCTION PROCESS

Richard G. Quynn, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.
Filed Dec. 22, 1971, Ser. No. 211,052
Int. Cl. D06p *3/24, 3/52*

U.S. Cl. 8—178 **9 Claims**

1. A process for substantially reducing or eliminating thermal barre in a dyed fabric comprising textured synthetic yarns which have different dyeing characteristics caused by thermal variation in the texturing of the yarns, said process comprising dry heating said yarns, after texturing by a process from the group consisting of false-twist, stuffer-box, knife-edge, twist, gear, jet, and knit-deknit and before dyeing, at a temperature about equal to the highest temperature used in texturing the yarns, said dry heating being continued for a time period of from about 0.5 minutes to about 15 minutes until the effects of thermal variation in texturing have been equilibrated and only thereafter dyeing said yarns.

3,847,545
DIAGNOSTIC TEST FOR SICKLE-CELL

Edward Shanbrom, Santa Ana, and Allan L. Louderback, Temple City, both of Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill., by said Louderback
Filed May 18, 1972, Ser. No. 254,584
Int. Cl. G01n *21/06, 33/16*

U.S. Cl. 23—230 B **8 Claims**

1. A reagent for the diagnosis of sickle-cell disease comprising a mixture of an aqueous phosphate buffer solution having a molarity of from about 2 to about 2.5 and a pH of from about 7 to about 7.2, a hemolyzing agent and a reducing agent, said buffer solution additionally containing from about 0.1 to about one mil. per liter of a non-ionic surfactant having a high water solubility and being selected from the group consisting of substances having the general formula $RC_6H_4(OC_2H_4)_nOH$ wherein R is octyl or nonyl and *n* is at least 3.

3,847,546
METHOD AND SYSTEM FOR THERMAL ANALYSIS

Donald G. Paul, Kennett Square, Pa., assignor to Chromalytics Corporation, Unionville, Pa.
Filed Oct. 4, 1972, Ser. No. 294,836
Int. Cl. G01n *25/00, 31/08*

U.S. Cl. 23—230 PC **17 Claims**

1. A system for the thermal analysis of materials comprising: thermal means for subjecting said materials to heat thereby to produce effluent gases,

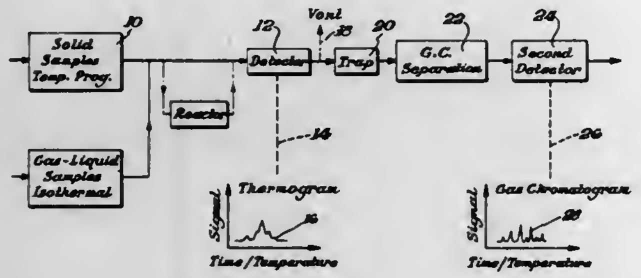
first detector means coupled to said thermal means for measuring a property of said effluent gases,

trap means coupled to said first detector means for storing said effluent gases, first carrier gas means coupled to said thermal means for selectively passing said effluent gases from said thermal means through said first detector means to said trap means,

column means coupled to said trap means for separating said stored gases into their constituent components,

second detector means coupled to said column means for measuring a property of said constituent components, and

additional carrier gas means coupled to said trap means for selectively passing said stored gases from said trap means through said column means and thence, after separation into said constiuent components, through said second detector means, thereby to permit the intermittent analysis of said effluent gases.



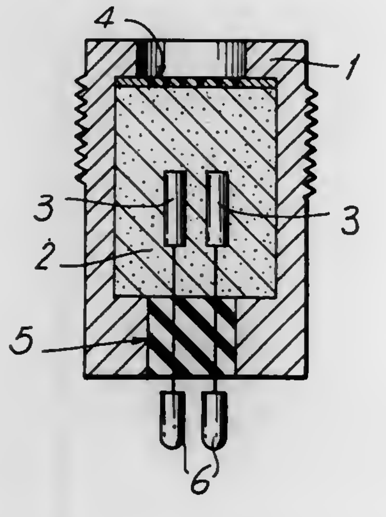
3,847,547
PROCESS AND APPARATUS FOR DETECTING OF THE PRESENCE OF A LIQUID

Jacques Claude Delgendre, Toulon; Alain Rogar Kerrenneur, Paris, and Georges Albert Berton, Toulon, all of France, assignors to Etat Francais, Armies, France

Filed Nov. 24, 1972, Ser. No. 309,596

Int. Cl. G01n *31/00, 33/18*

U.S. Cl. 23—230 L **8 Claims**



1. A process for the prompt detection of the presence of a liquid comprising effecting a fast reaction (B) between two reagents which comprise a pyrotechnical composition, initiating reaction (B) by the thermal effects of a reaction (A) of one of said reagents with the liquid to be detected, and detecting the presence of the liquid by the detection of reaction (B) using electrical means to detect a change in the electrical resistivity within the composition.

3,847,548
DUAL TEMPERATURE TRACER METHOD FOR DETERMINING FLUID SATURATIONS IN PETROLEUM RESERVOIRS

Theodore E. Keller, Yorba Linda, Calif., assignor to Union Oil Company, Los Angeles, Calif.

Filed Dec. 11, 1972, Ser. No. 313,687

Int. Cl. E21b *43/16;* **G01n** *33/24*

U.S. Cl. 23—230 EP **17 Claims**

1. A method for measuring the relative amounts of immiscible fluid phases present in a subterranean formation penetrated by a well in communication therewith and containing at least one mobile fluid phase, which comprises:

injecting a heat exchange fluid at a temperature substantially different than the temperature of the formation to adjust the temperature of the strata to be tested to about that of the injected fluids;

thereafter injecting a carrier fluid through said well and into said formation at the temperature of the injected heat exchange fluid, said carrier fluid being miscible with said mobile fluid and containing a low concentration of (1) at least one first tracer material that partitions between one of the fluid phases in the formation and the carrier fluid to a degree that varies with temperature and (2) at least one second tracer material having a partition coefficient that is independent of temperature;

shutting in said well for a time period sufficient for the injected fluids to come to temperature equilibrium with the formation;

producing said well to recover fluids from said formation;

analyzing said recovered fluids to determine the peak concentrations of said tracer materials in said fluids; and

applying chromatographic principles to determine the relative saturation of fluid phases present in said formation.

3,847,549
METHOD OF GEOCHEMICAL EXPLORATION

Karl S. Schorno, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 12, 1973, Ser. No. 340,357

Int. Cl. C10g *1/02, 1/04;* **G10n** *33/24*

U.S. Cl. 23—230 EP **4 Claims**

1. In a method of geochemical prospecting, the steps comprising:

extracting soluble organic matter from a sample obtained from an organic matter-containing formation in the earth's crust to obtain a rock residue containing insoluble organic matter;

disposing said rock residue containing insoluble organic matter in a noncombustion-supporting environment in the presence of water;

heating said rock residue at a constant elevated temperature for an extended period;

measuring after said heating the amount generated by said heating of soluble organic matter; and

measuring the quantity of extractable organic matter from said rock residue relative to the insoluble organic matter of said original rock to determine the oil generation capability of said formation.

3,847,550
DIFFERENTIAL CHROMATOGRAPHIC METHOD

Charles D. Scott, and W. Wilson Pitt, Jr., both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 27, 1973, Ser. No. 345,420

Int. Cl. G01n *33/16, 33/18, 31/08*

U.S. Cl. 23—230 B **9 Claims**

1. A method for carrying out differential chromatography comprising the steps of:

flowing eluent through at least two substantially identically packed chromatographic columns at substantially the same flow rates;

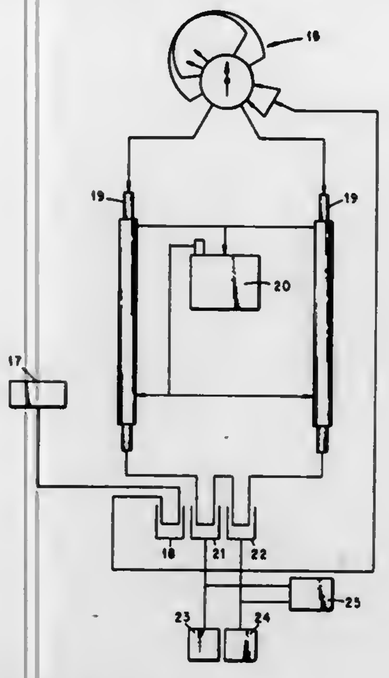
simultaneously introducing substantially equal volumes of samples into the eluent flow streams;

maintaining said columns at substantially the same temperature;

photometrically monitoring the outflow from each column by photometer means;

differentially comparing the output of one photometer with that of another photometer; and

plotting the difference in said outputs so as to produce a differential chromatogram.



3,847,551
STANDARDIZING OF ALCOHOL-CONTENT MEASURING APPARATUS

Donald Hutson, Richmond, Calif., assignor to Cal Detect Inc., Richmond, Calif.

Filed May 18, 1972, Ser. No. 254,401

Int. Cl. G01n *33/16*

U.S. Cl. 23—232 R **5 Claims**

1. A composition for use in standardizing, calibrating, and testing apparatus for determining quantitatively the content of alcohol in gas samples consisting essentially of anhydrous argon and 50 to 5,000 parts per million ethyl alcohol.

3,847,552
ENVIRONMENTAL MONITORING DEVICE AND METHOD

Leonard Douglas Hobgood, Durham, and Jerry Alan Lorenzen, Raleigh, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 23, 1973, Ser. No. 418,321

Int. Cl. G01n *21/12*

U.S. Cl. 23—232 R **4 Claims**

1. A method of simultaneously measuring the quantitative presence of a plurality of gaseous atmospheric pollutants, comprising steps of:

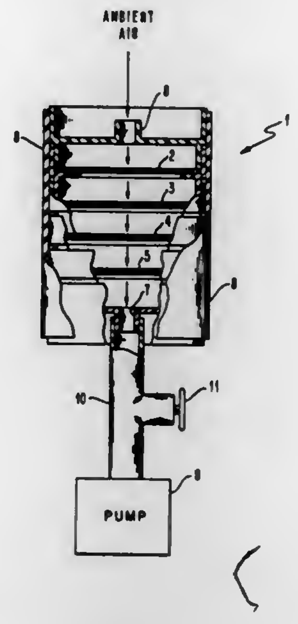
depositing specific dry reagents individually on separate, air permeable substrates for each of said gaseous pollutants whose presence is to be measured;

sealing said substrates in an air tight package and arranged in a stack from top to bottom in an order in which no reagent substrate sensitive to more than one specific pollutant is placed higher in the stack than any substrate which carries a specific reagent for any of the pollutants to which said reagent on said higher substrate is reactive;

opening said package at a location whose degree of pollution from said plurality of gaseous pollutants is to be measured and passing a known volume of ambient atmosphere through said substrates from top to bottom;

resealing said package to prevent further reaction between the atmosphere and said reagents until the reactive products are analyzed;

opening and analyzing the reactive products present on said substrates to determine from the amount of said reactive products present the amount of each of said pollutants present in said known volume of ambient air at said measured location.



3,847,553
TEST FOR A GIVEN CONSTITUENT IN A LIQUID

Bruno J. Verbeck, San Diego, Calif., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 64,090, July 28, 1970, Pat. No. 3,672,845. This application June 23, 1972, Ser. No. 265,645The portion of the term of this patent subsequent to June 27, 1989, has been disclaimed.

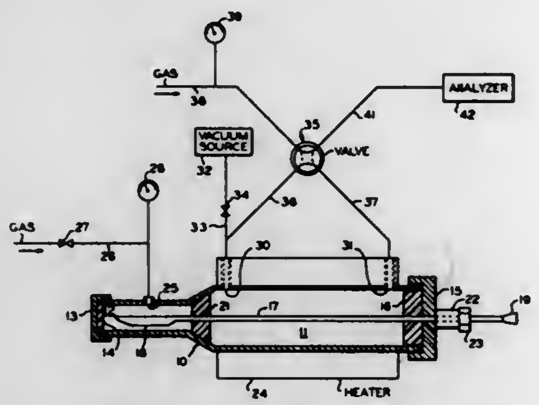
Int. Cl. C12k *1/10;* **G01n** *31/22, 33/16*

U.S. Cl. 23—253 TP **3 Claims**

1. A testing device for determining the presence of a constituent in a liquid, comprising a carrier having uniformly applied over at least a portion of one surface thereof a layer of particulate hydrophilic absorptive material in the form of agglomerates which have been formed by first compressing into a compacted form a mixture of (a) particulate material which has been prepared by first impregnating one portion of particulate hydrophilic absorptive material with a solution of an indicator material which undergoes a color change in response to the presence of a reaction product formed when such constituent is contacted with a composition which reacts with said constituent, and then drying, and (b) particulate material which has been prepared by first impregnating a second portion of particulate hydrophilic absorptive material with a solution comprising said composition, and then drying, and then particulating said compacted form to form agglomerates comprising the two kinds of discrete particles of hydrophilic absorptive material and the product with which said particles have been impregnated.

3,847,554
ANALYSIS OF MATERIALS TO MEASURE VAPORIZABLE COMPONENTS

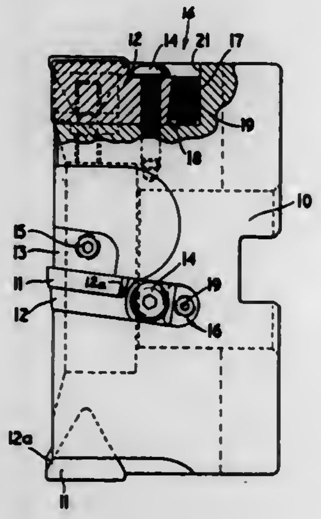
Tsung-Yuan Su, Greenville, S.C., assignor to Phillips Fibers Corporation, Greenville, S.C.
Filed Feb. 5, 1973, Ser. No. 329,559
Int. Cl. G01n *7/16, 33/36*
U.S. Cl. 23—253 PC **3 Claims**



1. Apparatus adapted to be used in the analysis of materials to detect vaporizable components thereof comprising:
- a housing forming first and second chambers, said first chamber having first and second openings therein in spaced relationship with one another, said second chamber having a third opening therein;
- a barrier movably positioned so as to block communication between the two chambers when located in a first position and to permit communication between the two chambers when located in a second position;
- a pan connected to said barrier so as to be located in said second chamber when said barrier is in said first position; means connected to said barrier to move said barrier from said first position to said second position and thereby move said pan into said first chamber; and
- heating means associated with said first chamber to elevate the temperature thereof.

3,847,555
MILLING CUTTERS

John Owen Michael Pegler, Solihull, and Brian Edward George Mapes, both of Tenbury Wells, England, assignors to Richard Lloyd Limited, Birmingham, England
Filed May 25, 1972, Ser. No. 256,857
Claims priority, application Great Britain, June 3, 1971, 18708/71
Int. Cl. B26d *1/12*
U.S. Cl. 29—105 R **15 Claims**



1. A milling cutter comprising:

a. a body,

b. at least one shoe adjustably secured to said body with a first screw means passing through the shoe into said body,

c. a cutting insert located in said shoe, and

d. adjustment means for adjusting the position of the shoe along a direction of movement with respect to the body to vary the extent of projection of the cutting insert from the body,

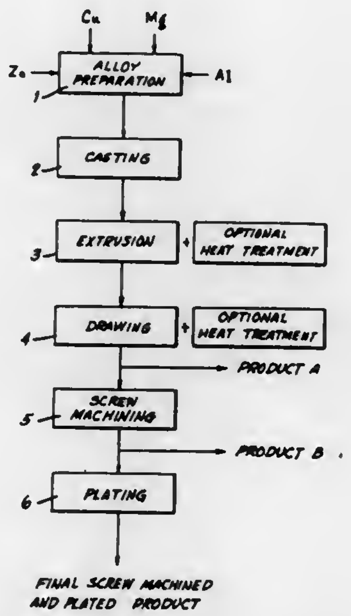
e. said adjustment means including a wedge member and rotatably mounted second screw means,

f. said wedge member being disposed between opposing surfaces located on said body and said shoe,

g. said second screw means being adapted to move the wedge member longitudinally of the screw means when the screw means is rotated whereby the shoe and insert located on the shoe are moved transversely of the second screw means by wedge action against the securing action of the first screw means.

3,847,556
SCREW MACHINING MATERIAL

Edouard Gervais, Montreal, Quebec; Pierre Chollet, Pierrefonds, Quebec, and Robel Ranger, Perrot, Quebec, all of Canada, assignors to Noranda Mines Limited, Toronto, Ontario, Canada
Division of Ser. No. 205,581, Dec. 7, 1971, Pat. No. 3,748,188. This application Feb. 12, 1973, Ser. No. 331,860
Int. Cl. B21c *1/00*
U.S. Cl. 29—187 **8 Claims**

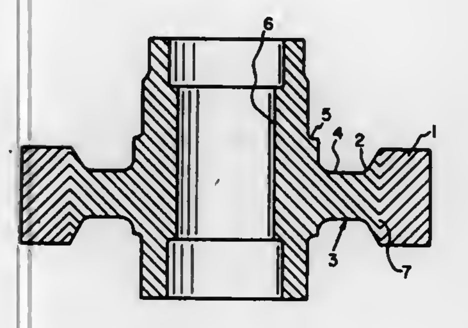


1. Alloy having adequate dimensional stability and chip forming characteristics for screw machining purposes, consisting essentially of 20 to 35 percent by weight aluminum, 4 to 10 percent by weight copper and a positive amount of up to about 0.2 percent by weight magnesium, the rest being zinc apart from incidental impurities.

3,847,557
GEAR BLANKS

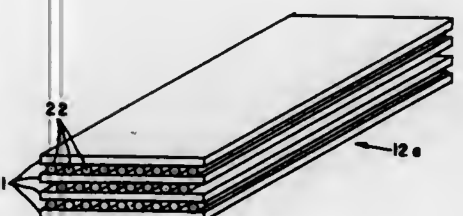
William H. Miller, 877 Valleyview Rd., Pittsburgh, Pa. 15243
Filed Aug. 20, 1973, Ser. No. 389,873
Int. Cl. B22d *13/00*
U.S. Cl. 29—191 **9 Claims**

1. A centrifugally cast bi-metal gear blank consisting of an outer rim of tin bronze, an inner annulus of yellow brass and a diffusion zone between the tin bronze of said outer rim and the yellow brass of said inner annulus, whereby a metallurgical bond exists between the tin bronze of the outer rim and the yellow brass of the inner annulus in the diffusion zone.



3,847,558
TITANIUM-BERYLLIUM REINFORCED MATRICES

Ronald E. Trabocco, Blue Bell, and John J. DeLuccia, Devon, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 24, 1972, Ser. No. 283,434
Int. Cl. B23p *3/20*
U.S. Cl. 29—191.4 **4 Claims**



1. A composite material comprising:
- a plurality of titanium alloy sheets; and
- a plurality of beryllium wires located between all adjacent said sheets and explosively welded to said titanium alloy sheets forming a titanium matrix reinforced with beryllium wherein said beryllium wires have a helical titanium wrapping.

3,847,559
EROSION RESISTANT COMPOSITES

Barry David Reznik, Brooklyn, N.Y., assignor to DeWiant Corporation, Detroit, Mich.
Filed May 28, 1969, Ser. No. 828,702
Int. Cl. B32b *15/00*
U.S. Cl. 29—195 **7 Claims**

1. An erosion resistant metal composite comprising an alloy substrate as its principal component and a coating composition bonded to said substrate, said coating consisting essentially of nickel, chromium, boron, silicon and titanium carbide in the following percentages by weights of said coating composition:

nickel	14% to 80%
chromium	0.5% to 10%
boron	0.2% to 5%
silicon	0.3% to 8%
titanium carbide	6% to 82%

said composite exhibiting erosion resistance at substantially all angles of impact of solids.

3,847,560
CORROSION RESISTANT METALLIC MULTILAYER STRUCTURE

Charles D. Turk, Norwood, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed July 30, 1969, Ser. No. 846,132
Int. Cl. B32b *15/00, 15/18, 15/20*
U.S. Cl. 29—196.3 **2 Claims**

1. A composite corrosion-resistant laminated metallic structure consisting essentially of a core layer of metallic material of selected thickness to be protected against corrosion and at least one multilayer metallic material of relatively much smaller thickness metallurgically bonded to at least one side of said core layer to form an outer surface of said structure protecting said core layer against corrosion, said multilayer material comprising a single layer of a first metal sandwiched between and metallurgically bonded to a pair of other metal layers, said single layer of said first metal in said multilayer material being relatively more anodic and relatively much thicker than either of said pair of other metal layers in said multilayer material.

3,847,561
PETROLEUM MIDDLE DISTILLATE FUEL WITH IMPROVED LOW TEMPERATURE FLOWABILITY

Nicholas Feldman, Woodbridge, N.J., assignor to Exxson Research and Engineering Company, Linden, N.J.
Continuation-in-part of Ser. No. 157,615, June 28, 1971, abandoned. This application June 4, 1973, Ser. No. 366,537
Int. Cl. C10l *1/22*
U.S. Cl. 44—62 **9 Claims**

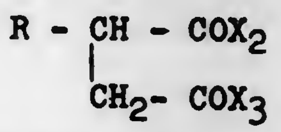
1. A petroleum distillate fuel having a boiling range within the limits of about 250°F. and about 700°F. which has been improved with respect to its low temperature flow properties by adding thereto:

a. about 0.01 to 2.5 wt. percent of a microcrystalline paraffin wax and

b. about 0.005 to 0.5 wt. percent of a fuel-soluble additive component selected from the group consisting of:

   i. a halogenated ethylene-containing polymer having a halogen content of from 1 to 40 wt. percent, and

   ii. a hydrocarbyl succinamic acid material of the formula:



$$\begin{array}{l} R - CH - COX_2 \\ \quad\;\; | \\ \quad\;\; CH_2 - COX_3 \end{array}$$

wherein R is a straight chain aliphatic hydrocarbon having from 0 to 1 site of olefinic unsaturation of from 14 to 40 carbon atoms and attached at a secondary carbon atom to the succinyl group; one of X^2 and X^3 is $-NYY^1$, wherein Y and Y^1 are aliphatic hydrocarbyl groups of from 14 to 40 carbon atoms, the other of X^2 and X^3 is of the formula:

$$-OH(NHY^2Y^3)n$$

wherein *n* varies from 0 to 1, Y^2 and Y^3 are hydrogen, aliphatic hydrocarbon of from 1 to 30 carbon atoms or oxyaliphatic hydrocarbon of from 1 to 30 carbon atoms, and may be taken together with the nitrogen to which they are attached to form a heterocyclic ring of from five to seven annular members.

3,847,562
GAS PRODUCER HAVING ASH REMOVAL PLATES WITH INDIVIDUAL TEMPERATURE SENSING

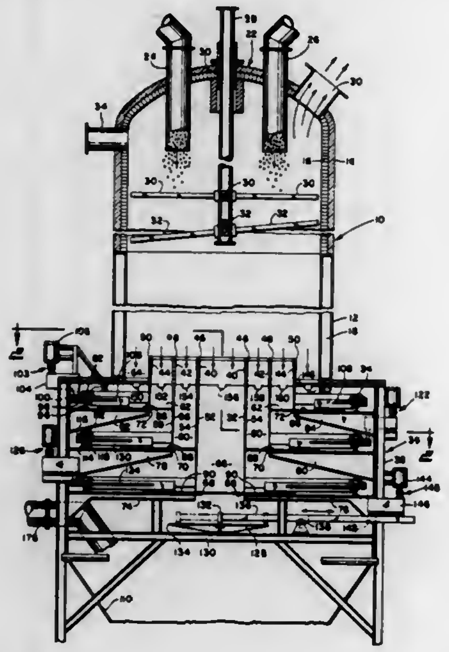
George M. Hamilton, Marlton, N.J., assignor to McDowell-Wellman Engineering Company, Cleveland, Ohio
Filed Jan. 11, 1973, Ser. No. 322,738
Int. Cl. C10j *3/52*
U.S. Cl. 48—76 **6 Claims**

1. A furnace apparatus comprising in combination:

a. a shaft furnace body having a central axis;

b. means for transversely subdividing said furnace into a plurality of zones adjacent the lower end thereof including a plurality of concentrically disposed tubular members having as their common axis the central axis of the shaft furnace;

c. each of said tubular members having adjacent its lower end a horizontal plate for collection of ash from the corresponding zone, said horizontal plates being in axially stepped relation, the plate for the innermost zone being at the lowest step;



d. separate means for removing ash from each of said plates;

e. means in each tubular memuer for sensing temperature;

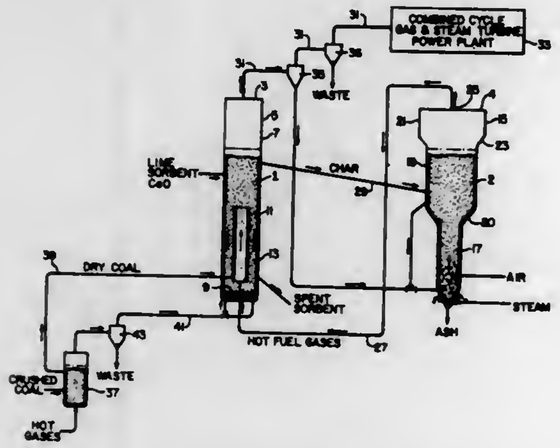
f. and separate means responsive to said temperature sensing means for independently controlling the rate of ash removal from each of said zones, respectively.

3,847,563

MULTI-STAGE FLUIDIZED BED COAL GASIFICATION APPARATUS AND PROCESS

David H. Archer, and Dale L. Keairns, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 2, 1973, Ser. No. 356,665
Int. Cl. C10j *3/68*
U.S. Cl. 48—77 **11 Claims**



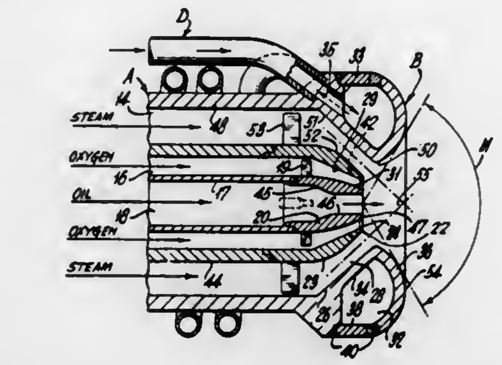
1. Apparatus for completely gasifying coal to provide a gaseous fuel, said apparatus comprising means for devolatilizing coal resulting in the production of char, separate means for totally gasifying the char and separating ash therefrom, said devolatilizing and gasifying means having means disposed therein for fluidizing particulate materials supplied thereto, conduit means connecting said devolatilizing and gasifying means to transfer products therebetween, said devolatilizing means having a tubular member completely immersed in the fluidized particulate material therein, said tubular member being in a substantially upright position to form an annular chamber with said devolatilizing means means for supplying coal to the inside of said tubular member, means for supplying hot gases from said gasifying means to the inside of said tubular member, said tubular member being disposed above the lower end of the devolatilizing means, whereby the influent coal flows upwardly in said tubular member becoming devolatilized to form char, the char flowing downwardly along the outside of the tubular member in said annular chamber and being mixed with the influent coal as said coal flows upwardly within said tubular member to prevent agglomeration of the influent coal.

3,847,564

APPARATUS AND PROCESS FOR BURNING LIQUID HYDROCARBONS IN A SYNTHESIS GAS GENERATOR

Charles P. Marion, Mamaroneck, N.Y., and Blake Reynolds, Riverside, Conn., assignors to Texaco Development Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 5,444, Jan. 23, 1970, Pat. No. 3,743,606, which is a continuation-in-part of Ser. No. 787,885, Dec. 30, 1968, abandoned. This application Nov. 20, 1972, Ser. No. 308,067The portion of the term of this patent subsequent to July 3, 1990, has been disclaimed.
Int. Cl. C07c *1/02*
U.S. Cl. 48—95 **19 Claims**



1. A burner, for introducing a liquid hydrocarbon, a free-oxygen-containing gas, and a temperature moderator into a gas generator in which reaction takes place at a minimum temperature of about 1,200°F. comprising:

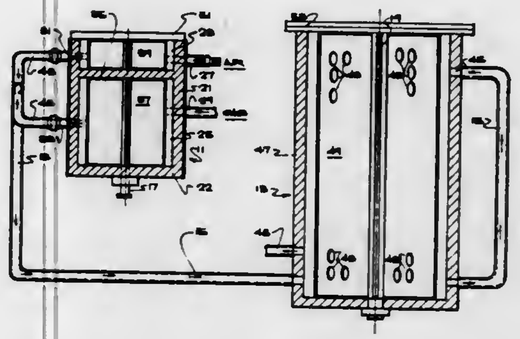
1. a central axial tubular conduit, inlet means at the upstream end of said central conduit, a central discharge nozzle at the downstream end of said central conduit having an inwardly converging tapered outer surface and a single unobstructed circular discharge passage;
2. an intermediate coaxial concentric tubular conduit disposed radially about the outside of said central tubular conduit along its length, inlet means at the upstream end of said intermediate concentric conduit, an intermediate coaxial concentric inwardly converging frusto-conically shaped discharge nozzle with a circular tip at the downstream end of said intermediate concentric conduit, means for positioning said central axial conduit and central discharge nozzle with respect to said intermediate concentric conduit and intermediate discharge nozzle in spaced relationship thereby providing an intermediate annular passage having a single unobstructed inwardly converging intermediate annular discharge passage at the downstream end;
3. an outer coaxial concentric tubular conduit radially disposed about the outside of said intermediate coaxial concentric conduit along its length, inlet means at the upstream end of said outer concentric conduit, an outer coaxial concentric inwardly converging frusto-conically shaped discharge nozzle at the downstream end of said outer concentric conduit, means for positioning said outer concentric conduit and outer discharge nozzle with respect to said intermediate concentric conduit and intermediate discharge nozzle in spaced relationship thereby providing an outer annular passage having an unobstructed inwardly converging annular passage that discharges into a single unobstructed concentric coaxial outwardly diverging central passage at the downstream tip of said burner;
4. a coolant chamber at the downstream tip of said burner comprising an inside section that comprises said outer inwardly converging frusto-conically shaped discharge nozzle of (3), an outside section that extends from and flares out from said inside section and which comprises an outwardly diverging section with an annular face of convex configuration at the outer extremity of the downstream tip of the burner, said outside section being in part the peripheral surface of said outwardly diverging tapered central passage of (3), a collar section joining said inside and outside sections and closing said coolant chamber, and inlet and outlet means for circulating coolant through said coolant chamber; and
5. conduit means in contact with said burner and connected to said inlet and outlet means for passing coolant in direct heat exchange with said burner.

3,847,565

COMBUSTION IMPROVER

Sanders Ford, Jr., Richmond, Calif., assignor to Social Dynamics Inc., Berkeley, Calif.

Filed Mar. 19, 1973, Ser. No. 342,499
Int. Cl. B01f *3/02;* **C10k**
U.S. Cl. 48—180 S **1 Claim**



1. A combustion improver comprising

a powered pump, said pump having a hollow body divided into separate larger and smaller chambers with separate inlet and outlet ports, a shaft rotatably mounted within said body and having a plurality of blades mounted thereon, said blades substantially filling the space between the shaft and the inside diameter in each of said chambers, said larger chamber in said powered pump being approximately three times the volume of said smaller chamber,

a source of compressed air,

a conduit fluidly connecting said source of compressed air to the inlet of said smaller chamber,

a source of pressurized gas,

a conduit fluidly connecting said pressurized gas to said inlet of said larger chamber, whereby, when said shaft is rotated, said blades will rotate in said separate chambers to act upon the gas and air entering into said chambers to force the same through said outlets of said chambers into a common conduit for mixing of the gas and air in a substantially three to one gas to air ratio at substantially the same pressure as the gases entering said chambers, and

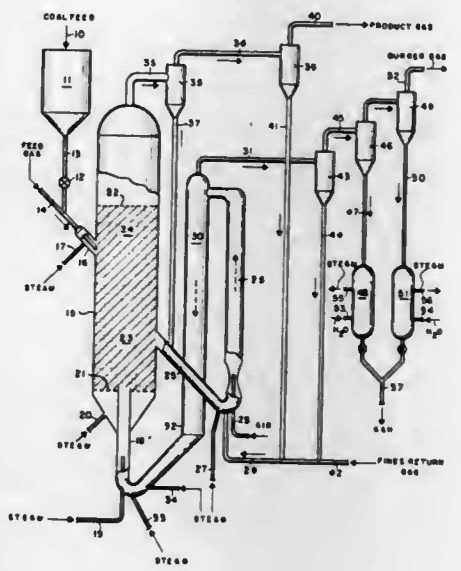
a powered homogenizer fluidly connected to said common conduit for more completely mixing said air and said gas, said homogenizer including a hollow body having a shaft mounted centrally thereof and an outlet port for connection to a gas burner or the like, said shaft having a plurality of blades mounted thereon, and substantially filling the space between the shaft and the inside diameter of said body, said blades having a plurality of bores extending therethrough whereby, when said shaft and said blades are rotated, said gas and said air contained within said homogenizer will be completely and homogeneously mixed.

3,847,566

FLUIDIZED BED GASIFICATION PROCESS WITH REDUCTION OF FINES ENTRAINMENT BY UTILIZING A SEPARATE TRANSFER LINE BURNER STAGE

Edward L. Wilson, Baytown, Tex., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Apr. 12, 1973, Ser. No. 350,668
Int. Cl. C10j *3/00*
U.S. Cl. 48—202 **18 Claims**



1. In a process for the preparation of a product gas by reacting steam with carbonaceous solids in a fluidized bed reaction zone wherein said product gas is taken off overhead from said reaction zone and wherein a stream of solid carbonaceous particles is continuously withdrawn from the said reaction zone and heated by contacting said particles with an oxygen-containing gas in a transfer line burner, the improvement which comprises separating solid fines from said product gas, introducing said fines into said transfer line burner for combusting said fines with said oxygen-containing gas while in the presence of said stream of carbonaceous particles to heat said carbonaceous particles, and thereafter returning the heated carbonaceous particles from said transfer line burner to said reaction zone.

3,847,567

CATALYTIC COAL HYDROGASIFICATION PROCESS

Theodore Kalina, Morris Plains, N.J., and Roger E. Moore, El Paso, Tex., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Aug. 27, 1973, Ser. No. 391,082
Int. Cl. C10j *3/06*
U.S. Cl. 48—202 **12 Claims**

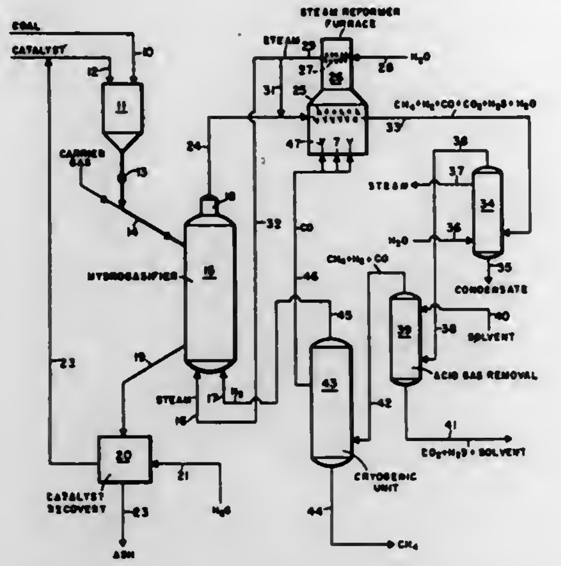
1. A process for the manufacture of methane which comprises:

a. reacting finely divided carbonaceous solids with steam and hydrogen in the presence of an alkali metal catalyst in a hydrogasifier and withdrawing a methanerich gas overhead from said hydrogasifier;

b. reacting said methane-rich gas with steam in a catalytic steam reforming furnace and withdrawing a methane-rich gas of increased hydrogen content from said reforming furnace;

c. treating said gas of increased hydrogen content for the removal of acidic constituents;

d. separating the treated gas into a product methane stream, a hydrogen stream, and a carbon monoxide stream;



e. recycling at least a portion of said hydrogen stream to said hydrogasifier; and

f. burning at least a portion of said carbon monoxide stream as fuel in said steam reforming furnace.

3,847,568

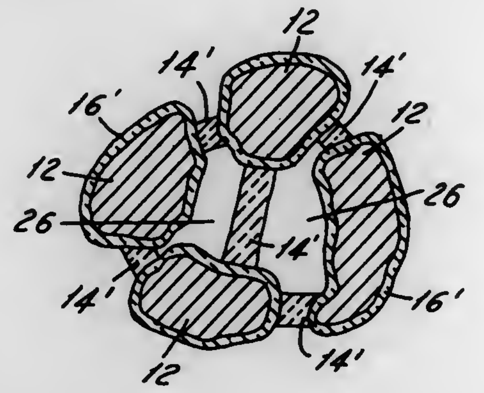
VITRIFIED ABRASIVE ELEMENT

John A. Cihon, and Donald W. Ehmann, both of Owosso, Mich., assignors to MWA Company, Owosso, Mich.

Filed Sept. 18, 1972, Ser. No. 290,128

Int. Cl. B24d *3/14, 3/18*

U.S. Cl. 51—295 **10 Claims**



1. A vitrified abrasive element comprising abrasive grit composed primarily of grains of aluminum oxide (Al_2O_3), a porous ceramic bonding material, and a glass which coats and is bonded to said abrasive grit and is bonded to said ceramic bonding material, said glass having no more than trace amounts of compounds of the R_2O_3 type in which R represents any positive ion.

3,847,569

METHOD OF MAKING A CABLE TYPE SAW

Henry A. Snow, Rindge, N.H., assignor to Helen E. Snow, Rindge, N.H.

Continuation of Ser. No. 171,513, Aug. 13, 1971. This application May 18, 1973, Ser. No. 361,401

Int. Cl. C04b *31/16*

U.S. Cl. 51—309 **3 Claims**

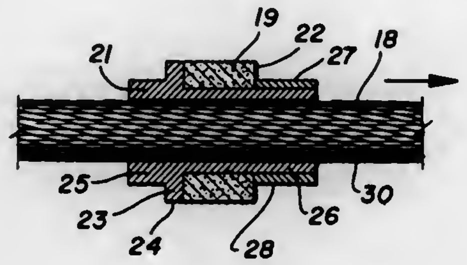
1. A method of forming a cable type saw, comprising the steps of:

a. forming a main body element of malleable metal having two axially adjacent cylindrical portions, one portion having a large diameter and the other portion having a small diameter,

b. placing the body element in a bore in a die, which bore has the same diameter as the said large diameter,

c. placing a powdered abrasive substance in the space between the surface of the bore and the portion of small diameter,

d. pressing the substance in the space axially toward the portion of large diameter, thereby causing a part of the small diameter portion to extend axially beyond the substance,



e. raising the temperature of the pressed substance to produce a solid body,

f. forming a centrally-located axially-directed bore in the body,

g. placing a piece of flexible cable through the bore in the body,

h. placing a collar concentrically over the said part of the small diameter portion, and

i. swaging the collar so that it fixedly engages the body and so that the body fixedly engages the cable.

3,847,570

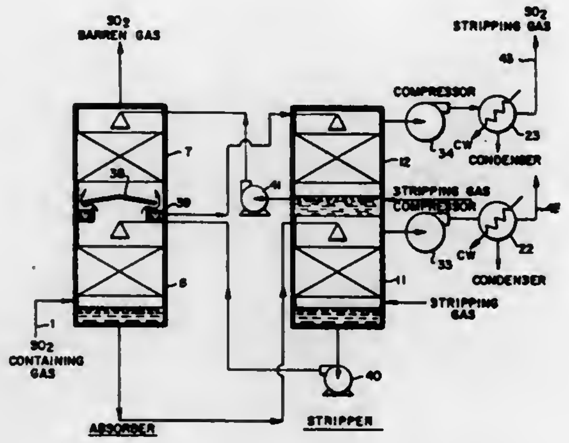
ABSORPTION OF SO_2 FROM A DILUTE GAS AND DESORPTION AT A HIGHER CONCENTRATION IN A STRIPPING GAS AT SUB-ATMOSPHERIC PRESSURE

Arnold Gunther, West Orange, N.J., assignor to Treadwell Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 152,232, June 11, 1971, abandoned, which is a continuation-in-part of Ser. No. 132,752, April 9, 1971, abandoned, which is a continuation-in-part of Ser. No. 860,183, Aug. 13, 1969, abandoned. This application Apr. 30, 1973, Ser. No. 355,809

Int. Cl. B01d *53/14*

U.S. Cl. 55—73 **2 Claims**



1. A process for SO_2 recovery from a gas in which

a. SO_2 is absorbed in aqueous solutions in a sequence of absorption zones, said gas passing from zone to zone of absorption and therefrom to disposal,

b. SO_2 is recovered from said aqueous solutions in a sequence of stripping zones with a fixed stripping gas for each stripping zone under vacuum, passing said stripping gas through each stripping zone to compression, and

c. each of said aqueous solutions is recycled between a zone of absorption and a zone of stripping in corresponding sequence, each aqueous solution recycled from a stripping zone to an absorption zone being at least partially stripped.

3,847,571

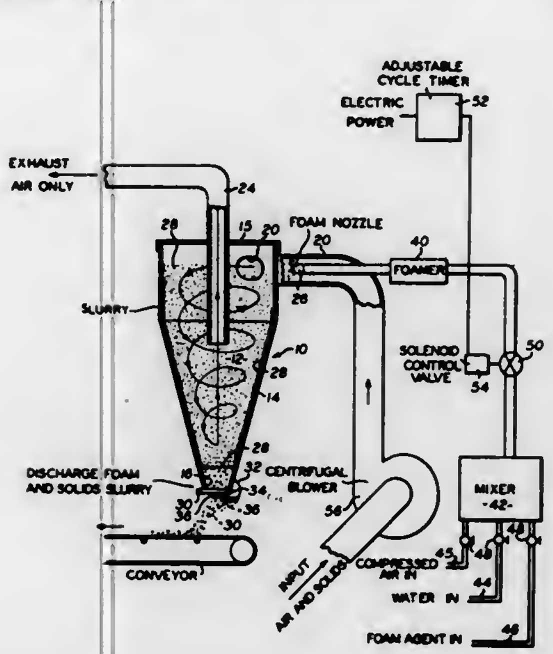
CYCLONE SEPARATOR WITH FOAM SUPPLY

Howard W. Cole, Jr., 12 Vale Dr., Mt. Lakes, N.J. 07046

Filed Sept. 11, 1973, Ser. No. 396,246

Int. Cl. B01d *47/00*

U.S. Cl. 55—87 **12 Claims**



1. A cyclone separator including in combination a chamber, a gas outlet at the upper end thereof and in generally axial alignment with the longitudinal axis of the chamber, but of substantially less cross section than that of the upper end of the chamber, an inlet passage through which particulate-laden gas enters the chamber, said inlet passage being located at the upper part of the chamber and directed generally tangential of the cyclonic separation chamber with a downward component, a nozzle means in position to direct a stream of foam into the gas stream of said inlet passage in a position for the foam to travel with the gas flow down the sides of the separation chamber to coat said sides and retain particulate matter collected from the gas stream, and an outlet at which a slurry of particulate matter and foam collects at the bottom of the chamber and from which the slurry is discharged.

3,847,572

APPARATUS FOR DESULFURIZING FLUE GAS

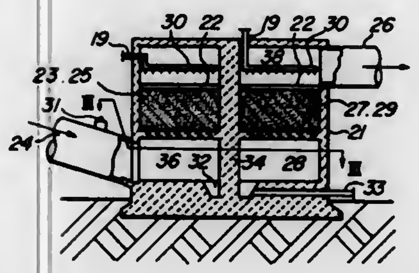
Yukio Hishinuma; Norio Arashi, and Zensuke Tamura, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 3, 1972, Ser. No. 268,453

Claims priority, application Japan, June 14, 1971, 46-51720

Int. Cl. B01d *53/04*

U.S. Cl. 55—179 **10 Claims**



1. An apparatus for desulfurizing flue gas comprising: a column; an adsorbent bed in said column divided into a plurality of compartments; common spaces provided at the upper portions and the lower portions of the column and communicating with each other through the compartments; inlet and outlet common flue ducts communicating with the lower and upper common spaces, respectively; and water sprayers provided at the upper common space above each of the compartments; the upper and lower common spaces being free of valves for individually controlling the flow of flue gas and desulfurized flue gas through respective compartments in said adsorbent bed.

ERRATUM

For Class 55—290 see:
Patent No. 3,847,586

3,847,573

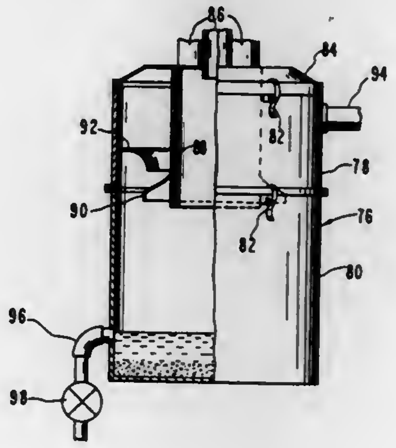
DENTAL OFFICE SYSTEM

Stanton D. Gandrud, 20681 McClellan Rd., Cupertino, Calif. 95014

Continuation-in-part of Ser. No. 122,954, March 10, 1971, abandoned. This application Jan. 28, 1974, Ser. No. 436,943

Int. Cl. B01d *45/08*

U.S. Cl. 55—319 **15 Claims**



1. A dental office vacuum system comprising

a housing,

input means in the top of said housing for accepting at least one input tube,

an open bottomed cylindrical member having its top fixed to said housing so that said input means opens into said member, the area of said cylindrical member relative to the total area of said at least one input tube being great enough to cause the incoming air velocity to decrease sufficiently to allow water vapor to condense,

first baffle means encircling the lower portion of said cylindrical member and attached to said cylindrical member above the open bottom thereof;

second baffle means around the inner wall of said housing and above said first baffle means, said second baffle means extends outward from the interior wall of said housing and curves downward toward said first baffle means,

an output connectible in said housing above said first and second baffle means,

an external vacuum pump operatively connected to said output downstream of said separator,

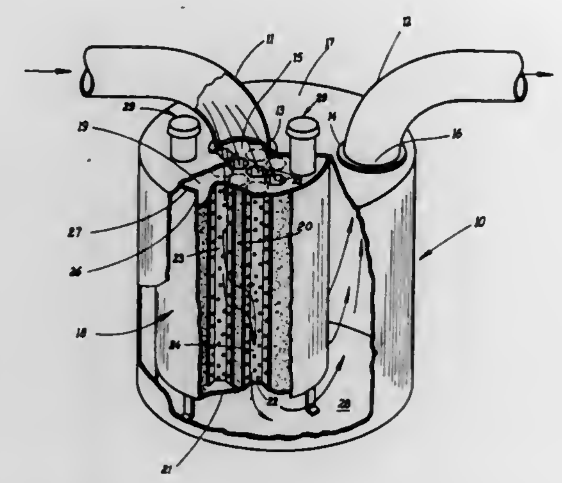
a waste output on the side of said housing below said first and second baffle means whereby said housing below said waste output forms a precious metal collector,

at least one main vacuum line connected to said input means in said housing as an input tube,

an automatic valve means connected to one end of each said main line for providing said continuous air flow through said lines when said vacuum pump is connected to the other end of said output in said housing, and

a plurality of dental handpieces connected through tubes to said main vacuum line at a point between said automatic valve and said separator, said dental handpieces each including a housing having an aperture therethrough and valve means for selectively blocking said aperture.

3,847,574
CHARCOAL FILTER ARRANGEMENT
James F. Fish, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.
Filed Mar. 14, 1973, Ser. No. 341,126
Int. Cl. B01d *53/14*
U.S. Cl. 55—387 **3 Claims**



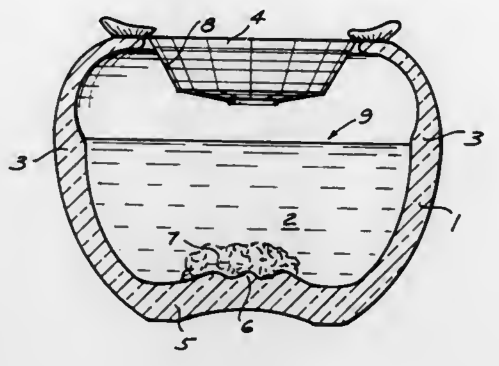
1. A carbon filter for removing gaseous contaminants comprising: a flow-through housing having inlet and outlet connections in flow communication with the interior thereof;

a filter assembly, located within said flow-through housing having a plurality of geometrically shaped flow-through axially extending exit chambers and a plurality of geometrically shaped flow-through axially extending entrance chambers, said entrance chambers being in flow communication with said inlet connection and said exit chambers being in flow communication with said outlet connection, said filter assembly being cylindrical and comprises said plurality of flow-through axially extending exit and entrance chambers positioned equidistant from each other in alternating fashion such that each flow-through entrance chamber is adjacent at least two flow-through exit chambers and each flow exit chamber is adjacent at least two flow-through entrance chambers, said cylindrical filter assembly located within said cylindrical housing additionally comprises a peripheral skirt extending from one end thereof which is sealingly attached to one end of said housing, circumscribing said inlet connection of said housing, to form an inlet plenum in flow communication with said connection and the entrance chamber of said filter assembly;

granulated activated charcoal disposed within the space between said entrance chambers and said exit chambers to form a loosely packed granular charcoal filter bed of uniform flow-through thickness; and

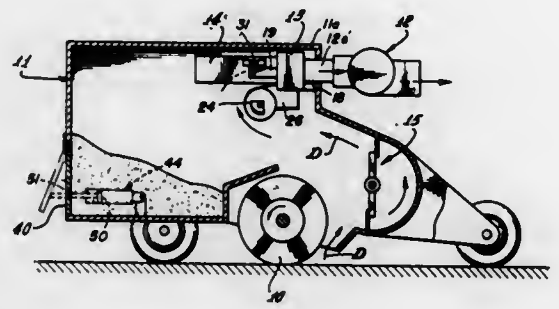
forced-feed charcoal reservoir means extending through the walls of said housing to allow access to said reservoir from outside said housing, said reservoir means containing flowable particulate activated charcoal in flow communication with said charcoal filter bed to keep said bed continuously filled, said forced feed charcoal reservoir means comprises an elongated cylindrical container filled with flowable particulate activated charcoal in flow communication with the filter bed of said filter assembly, said cylindrical container having a removable screw cap, flat solid plate means concentrically positioned therein contactijng said flowable particulate activated charcoal, and spring means abutting said screw cap and biasing said solid plate means against said charcoal in said reservoir to keep constant pressure on said charcoal filter bed of the filter assembly.

3,847,575
AIR FRESHENING ASH TRAY DEVICE
Carol Harding, Mundelein, Ill., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Dec. 11, 1972, Ser. No. 314,153
Int. Cl. B01d *47/02*
U.S. Cl. 55—244 **5 Claims**



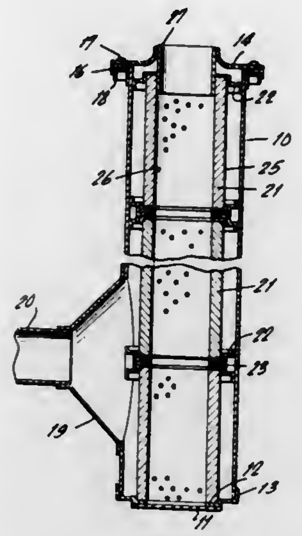
1. An air freshening ash tray device, comprising
a substantially symmetrical glass bowl having an open mouth at the top thereof and curving inwardly at the mouth, said bowl being partially filled with water;
soda at the bottom of the bowl in the water;
a few drops of lightweight oil on the water; and
a wire basket of concentric wire rings of different diameters depending into the bowl mounted on and supported by the bowl at the mouth thereof and spaced from the surface of the water whereby smoke and odors are drawn to the bottom of the bowl.

3,847,576
STREET SWEEPER FILTER SHAKER SYSTEM
Jack O. Oberdank, Corona, Calif., assignor to Wayne Manufacturing Company, Pomona, Calif.
Filed Mar. 27, 1972, Ser. No. 238,417
Int. Cl. B01d *46/04*
U.S. Cl. 55—283 **5 Claims**



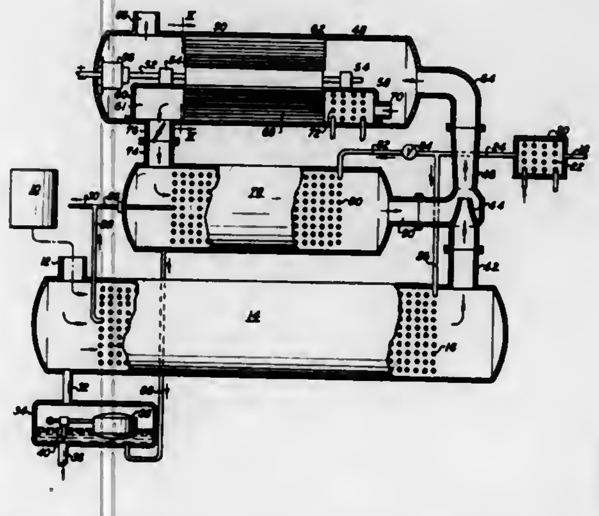
1. In a street sweeper having a dirt receiving chamber having side walls, a manifold in said chamber, an air filter projecting generally horizontally and in cantilever fashion from said manifold, a suction blower connected to the manifold, means for mounting said filter in said chamber for vibratory motion, and a vibrator for vibrating said filter; the improvement wherein said means for mounting said filter for vibratory motion comprises arm means connected to said manifold, pivot means connected to said arm means including a rotatable shaft for mounting to a dirt chamber side wall so as to accommodate oscillation of said manifold about a generally horizontal axis, said vibrator being connected directly to said manifold and being disposed at a position offset from said pivot means operation of said vibrator oscillating said manifold and the projecting filter about the axis of said pivot means.

3,847,577
AIR FILTER
Erik J. Hansen, Ann Arbor, Mich., assignor to Inter-Nation Research Corporation, Ann Arbor, Mich.
Continuation-in-part of Ser. No. 73,714, Sept. 20, 1970, abandoned. This application Feb. 2, 1973, Ser. No. 329,116
Int. Cl. B01d *27/08*
U.S. Cl. 55—385 **7 Claims**



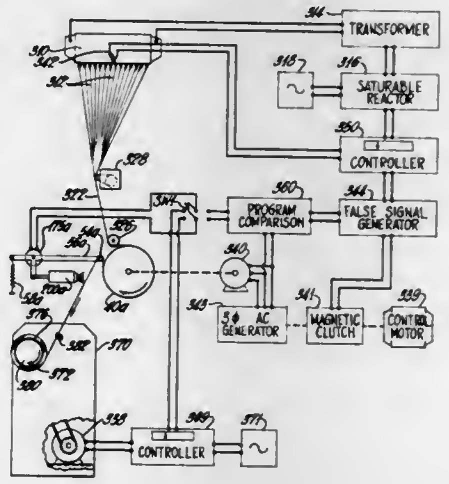
1. An air filter for use with internal combustion engines which comprises a substantially cylindrical housing having a closed bottom and an open top, a filtered air outlet disposed through the cylindrical surface, a top cover having a centrally disposed opening therethrough secured to the top of the housing, a plurality of tubular filter elements having a central opening and a perforated cover extending the length of each filter element, said filter elements being placed one atop the other inside the housing and secured to the bottom wall and to each other, said filter elements being substantially equidistantly spaced from the interior cylindrical walls of the housing, and an intake tube disposed through the centrally disposed opening in the cover such that a portion of the intake tube is disposed within the central opening of the uppermost filter element and the remainder of the intake tube extends upward through the centrally disposed opening in the cover.

3,847,578
APPARATUS FOR DRYING COMPRESSED AIR
Carl Georg Munters, 3, Danderydsvagen, Stocksund, Sweden
Continuation of Ser. No. 669,011, Sept. 20, 1967, abandoned. This application May 6, 1971, Ser. No. 140,934
Claims priority, application Sweden, Mar. 29, 1967, 4313/67
Int. Cl. B01d *53/06*
U.S. Cl. 55—390 **2 Claims**



1. Apparatus for compressing and drying of air comprising a compressor and a condenser, means for cooling the condenser, means for passing warm compressed air to said condenser for condensing moisture therein, a rotary moisture sorption device having a main drying section, a secondary drying section and a regeneration section operative in sequence as said rotary device rotates, means for passing cooled air from which the moisture is condensed from said condenser in a main stream to the main drying section of said rotary sorption device, means for separating a side stream from said main stream, means for heating said side stream, and passing said side stream through said regeneration section for regenerating the same, means for cooling and condensing moisture from the moisture-laden air evolved from said regeneration section and passing said cooled regeneration air to said secondary drying section and means for returning said dried secondary section air and said regeneration air to said main stream.

3,847,579
METHOD OF AND APPARATUS FOR PROCESSING LINEAR ELEMENTS
Walter F. Fulk, Newark, and Phra D. Lyle, Granville, both of Ohio, assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio
Filed Mar. 22, 1973, Ser. No. 343,768
Int. Cl. C03b *37/02;* **B65h** *54/02*
U.S. Cl. 65—11 W **23 Claims**



1. Apparatus for controlling the tension of linear material between material feeding and collecting means, comprising
a. means for collecting linear material into a package;
b. means for delivering the linear material to said collecting means;
c. means for adjusting at least one of the rates of collection and delivery relative to the other of the rates;
d. means for providing a predetermined tension on said linear material between said delivering and collecting means including means for yieldingly biasing said linear material away from a straight path between the delivering and collecting means, and means responsive to the position of said biasing means for adjusting the relative rates of delivery and collection to maintain the desired tension on said linear material; and
e. means for selectively controlling the rate of movement of said biasing means including means responsive to increasing tension for retarding the rate of movement of said biasing means during the final portion of travel in response to increased tension thereby substantially preventing overadjustment of the relative rates of delivery and collection of the linear material and means responsive to decreasing tension for inhibiting the action of said retarding means to enable said biasing means to maintain contact with said linear material to prevent slack from developing in said linear material.

3,847,580

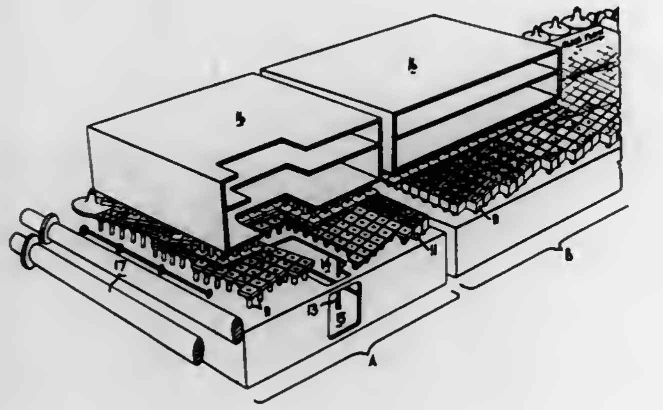
METHOD OF TEMPERING GLASS

George W. Misson, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 40,295, May 25, 1970, abandoned, which is a continuation-in-part of Ser. No. 838,015, June 18, 1969, abandoned, which is a continuation of Ser. No. 596,496, Nov. 23, 1966, abandoned. This application Mar. 21, 1973, Ser. No. 343,306

Int. Cl. C03b *27/00*

U.S. Cl. 65—25 A **4 Claims**



1. An improved method of tempering soda-lime glass in sheet form which comprises,

heating said sheet of glass substantially uniformly throughout its thickness to a temperature approaching its softening temperature,

supporting said sheet of glass on a modular gas support bed affording a relatively high heat transfer coefficient,

applying to said sheet of glass, as it moves edgewise in a first stage of quenching, supporting flows of cooling gas on one side of said sheet of glass and opposing flows on the opposite side that are at a first and relatively high volumetric flow rate of cooling gas per unit of surface-support area until the center plane temperature of said sheet of glass is reduced to below the strain point of the glass and the surface temperature of said sheet of glass is reduced to below the center plane temperature,

and then in a second stage of quenching, applying to said sheet of glass, as it continues to move edgewise, supporting and opposing flows of cooling gas that are at a second and relatively lower volumetric flow rate of cooling gas per unit of surface-support area until the surface and center plane temperatures of said sheet of glass are further reduced to substantially below the strain point of the glass, whereby tempering of the glass is effected with less total power consumption than is required when there is used a single flow rate per unit of surface-support area adequate to obtain the desired degree of temper in said glass.

3,847,581

GLASSMAKING DIAMETER SENSING

Homer D. F. Peters, Sylvania; Robert R. Rough, and William H. Ryan, both of Toledo, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed July 2, 1973, Ser. No. 375,677

Int. Cl. C03b *5/00, 5/14*

U.S. Cl. 65—29 **3 Claims**

1. In the refining of molten glass wherein unrefined molten glass is continuously introduced into one end of an open-ended chamber, the chamber is continuously rotated to form a void and cause the gaseous inclusions to be removed by the action of centrifugal force and the glass is continuously removed from the other end of the chamber, the method of controlling the mass of glass in the rotating chamber which comprises the steps of:

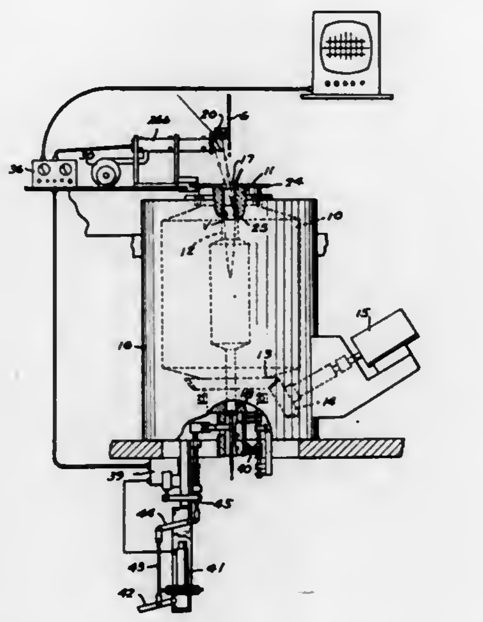
directing a beam of ultraviolet radiant energy at least periodically against a portion of the inner surface of the void formed in the rotating mass of molten glass;

positioning a platinum marker in said chamber adjacent to the wall of the chamber so that the marker is in the path of the rotating glass mass such that varying portions of said marker are exposed to said directed radiant energy beam, the area of said portion of the marker exposed being dependent on the diameter of the void formed in the rotating mass of molten glass;

directing the line of vision of a video camera toward the area of the void and said marker, said area being periodically illuminated by said ultraviolet light radiant energy beam;

producing an image of the illuminated exposed portion of said marker by utilizing a reflected portion from said marker of said directed energy beam;

producing an electrical signal whenever the image of the exposed area of the marker deviates from a standard image by a pre-selected difference; and controlling the amount of molten glass in the chamber in response to said produced electrical signal by moving a chamber orifice blocking device into an orifice blocking position.



3,847,582

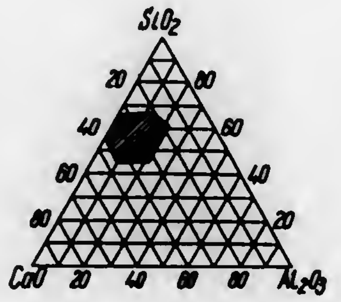
METHOD OF CONTINUOUS FABRICATION OF GLASS-RYSTALLINE MATERIALS WITH RIB CONFIGURATION

Mikhail Ivanovich Kozmin, ul. Shmidta, 31, kv. 6, Konstantinovka Donetskoi oblasti, U.S.S.R.

Continuation-in-part of Ser. No. 148,984, June 1, 1971, abandoned, which is a continuation of Ser. No. 746,386, July 22, 1968, abandoned. This application Nov. 2, 1971, Ser. No. 195,079

Int. Cl. C03b *29/00, 13/00*

U.S. Cl. 65—33 **1 Claim**



1. A method for the continuous fabrication of glass-crystalline material comprising: melting a $CaO\text{-}Al_2O_3\text{-}SiO_2$ system charge suitable for the manufacture of glass-crystalline material; forming the glass material obtained from the melted charge into a strip; producing, in the course of forming, a pattern of intersecting ribs on the lower surface of the strip with the ribs forming on the said surface a square-faced polycaisson structure; crystallizing the formed strip in a lehr by heating the strip to a temperature of 900°–980° while the said strip is advanced on a conveying roller through the lehr, tempering the crystallized strip; said ribs being formed with trapezoidal shape in cross-section, not more than 2 mm in depth and width and spaced at a distance of at least 5 mm between two adjacent ribs by virtue of which the ribs acquire mechanical strength more rapidly in the course of crystallization than the remaining glass material while the polycaisson structure formed by the ribs on the lower surface of the strip tends to impart a degree of rigidity to the latter.

3,847,583

PROCESS FOR THE MANUFACTURE OF MULTI-COMPONENT SUBSTANCES

Helmut Dislich, Mainz-Gonsenheim; Paul Hinz, Mainz-Mombach, and Reinhard Kaufmann, Mainz, all of Germany, assignors to Janaer Glaswerk Schott & Gen., Mainz, Germany

Division of Ser. No. 59,669, July 30, 1970, Pat. No. 3,759,683. This application May 2, 1973, Ser. No. 356,645

Claims priority, application Germany, Aug. 13, 1969, 1941191

Int. Cl. C03c *5/00, 5/06*

U.S. Cl. 65—33 **24 Claims**

1. Process for the production of a glassy, or crystalline multi-component oxide coating on a substrate which comprises: p1 a. dissolving in an organic solvent as a first component at least one of alkali metal compounds and alkali earth metal compounds and as a second component at least one of metal compounds of Groups IB, IIB, III, IV, V, VI, VII A or VIII of the periodic system, maintaining the solution at a temperature and for a time for reaction of said first component with said second component, and formation of a solution containing the reaction product, the proportion of the metal compounds in said organic solution corresponding to the composition of said multi-component oxide coating,

b. coating the substrate with said solution, evaporating solvent from the solvent coating in the presence of moisture, to obtain said reaction product in solid, hydrolzed form, and

c. heating said reaction product in solid, hydrolyzed form to a temperature below the melting point or melting range of said multi-component oxide to form said multi-component oxide coating.

3,847,584

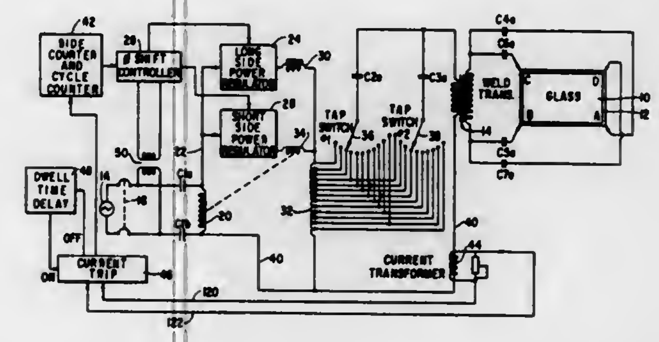
AUTOMATIC VARIABLE PHASE SHIFT CONTROL FOR WELDING GLASS SHEETS

Lloyd Houser, and William G. Jeffries, both of Lincoln, Ill., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 24, 1973, Ser. No. 363,681

Int. Cl. C03b *23/24*

U.S. Cl. 65—40 **24 Claims**



1. In a glass welding apparatus for forming multiple glazed window units, an electrical welding circuit including at least two spaced electrodes adjacent the glass to be welded and regulator means for regulating the current flow between said electrodes and thereby the heating of said glass, said welding circuit comprising:

a source of alternating current power connected through said regulator means to said electrodes;

phase shift means for varying the effective current flow through said regulator means, said phase shift means including automatic phase shift sequencer means connected to said regulator to vary said current flow through said regulator incrementally through a predetermined sequence of current levels whereby the current to said electrodes is automatically varied to heat said glass in accordance with a predetermined and repeatable heating pattern.

3,847,585

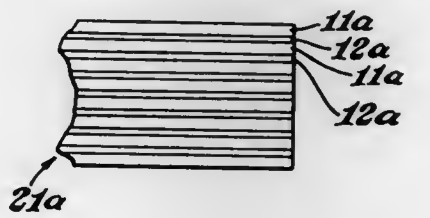
METHOD FOR THE PREPARATION OF MULTILAYER OPTICAL FILTERS

Douglas S. Chisholm, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 8, 1973, Ser. No. 321,792

Int. Cl. C03b *13/00, 5/26*

U.S. Cl. 65—99 A **6 Claims**



1. A method for the preparation of a multilayer optical filter, the steps of the method comprising

providing at least first and second thermoplastic transparent glass compositions,

dividing the first and second glass compositions into first and second substreams,

interdigitating the first and second substreams to provide a single composite stream,

deforming the single composite stream to alternate the shape of the substreams to provide the substreams with a plurality of interfaces, the interfaces being deposited in generally parallel planes which are parallel to a major surface of the composite stream and being separated by a distance from about 0.05 micron to about one micron, with the further limitation that the first and second glass compositions have refractive indices which differ from each other by at least about 0.05.

3,847,586

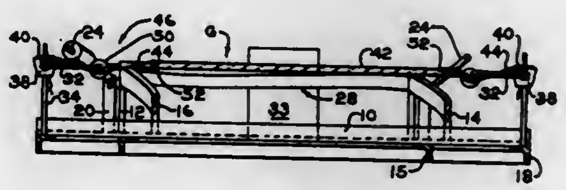
APPARATUS FOR BENDING GLASS SHEETS TO SHARP CURVATURES

Thomas J. Reese, Sarver; George R. Claassen, and Melvin W. Tobin, both of New Kensington, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 18, 1973, Ser. No. 425,918

Int. Cl. C03b *23/02*

U.S. Cl. 65—290 **8 Claims**



1. Apparatus for shaping a glass sheet to a shape including a line of sharp curvature extending from one side edge to the

other of said sheet comprising an outline mold of the skeleton type having an upper shaping surface conforming to the shape desired for said glass sheet after bending, a first electrode located on one side of said mold, a second electrode located on the other side of said mold, means adapted to couple said electrodes to an electrical power source, means for holding a flexible electroconductive ribbon in electroconductive relation to each of said electrodes and in fixed positions outside said mold in a vertical plane extending through said line of sharp bending for supporting said electroconductive ribbon in said vertical plane and across said mold in contact with the upper surface of a glass sheet mounted on said mold for bending, hold-down means located in said vertical plane intermediate one lateral side of said mold and said ribbon holding means to engage the upper surface of said ribbon in said vertical plane between a side of the mold and said ribbon holding means to apply a light downward force against said ribbon to hold said ribbon in contact with the upper surface of said glass sheet along the line of sharp bending as the latter sags, and means disposed in said vertical plane to engage the under surface of said ribbon inward of said position where said hold-down means engages said upper surface of said ribbon to maintain said ribbon in closely spaced relation to said glass sheet edges as the glass sheet sags along said line of sharp bending.

3,847,587
META-THIOCARBAMYL PHENYLENE AMIDES AND UREAS AS HERBICIDES

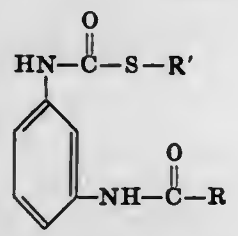
Eugene G. Teach, El Cerrito, and Duane R. Arneklev, Sunnyvale, both of Calif., assignors to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 86,379, Nov. 2, 1970, Pat. No. 3,723,474. This application Dec. 11, 1972, Ser. No. 313,703

Int. Cl. A01n *9/00*

U.S. Cl. 71—88 **30 Claims**

1. A method for controlling the growth of vegetation which comprises applying to the locus wherein control is desired, and herbicidally effective amount of the compound of the formula



in which R′ is alkyl containing from one to six carbon atoms, inclusive, or benzyl and R is alkyl containing from one to ten carbon atoms, inclusive, mono-alkylamino, N,N-di-substituted amino wherein said substituents are independently selected from the group consisting of alkyl containing from one to six carbon atoms, inclusive, alkoxy containing from one to six carbon atoms, inclusive, furfuryl and cycloalkenyl containing from three to seven carbon atoms, inclusive.

3,847,588
THIAZOLES HERBICIDAL

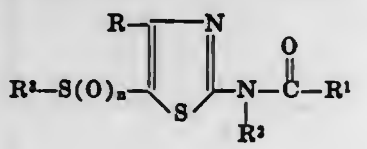
Kurt H. Pilgram, and Richard D. Skiles, both of Modesto, Calif., assignors to Shell Oil Company, New York, N.Y.

Division of Ser. No. 30,367, April 20, 1970, Pat. No. 3,717,651. This application Nov. 7, 1972, Ser. No. 304,423

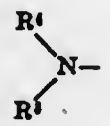
Int. Cl. A01n *9/12*

U.S. Cl. 71—90 **6 Claims**

1. A herbicidal formulation comprising a herbicidally effective amount of a compound of the formula



wherein R represents hydrogen or alkyl of up to four carbon atoms, R^1 is alkyl of two to eight carbon atoms, cyclic alkyl of three to eight carbon atoms optionally substituted by phenyl or cyano, or alkenyl of two to eight carbon atoms optionally containing up to two trifluoromethyl groups; *n* is 0, 1 or 2: R^2 is hydrogen or alkyl of up to four carbon atoms; R^3 is alkyl of one to four carbon atoms or



wherein R^4 and R^5 is each hydrogen or alkyl of one to four carbon atoms, together with an adjuvant therefor.

3,847,589
METHOD OF CONTROLLING PLANT GROWTH WITH 3-SUBSTITUTED LUMAZINES

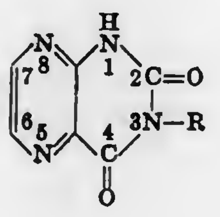
Richard L. Jacobs, Perrysburg, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Division of Ser. No. 867,873, June 26, 1968, Pat. No. 3,732,224, which is a continuation-in-part of Ser. No. 740,045, June 26, 1968, abandoned. This application Mar. 1, 1973, Ser. No. 336,968

Int. Cl. A01n *9/22*

U.S. Cl. 71—92 **5 Claims**

1. A method of controlling plant growth comprising applying to the locus to be protected an effective amount of a compound having the formula



wherein R is selected from the group consisting of alkyl groups having from two to eight carbon atoms, and cycloalkyl groups having from three to 12 carbon atoms.

3,847,590
HERBICIDAL COMPOSITIONS AND METHODS UTILIZING OXIME ETHERS

Adolf Hubele, Riehen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

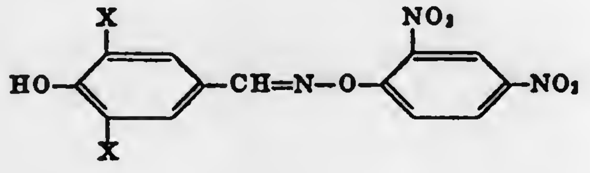
Division of Ser. No. 46,832, June 16, 1970, Pat. No. 3,733,359, which is a continuation-in-part of Ser. No. 521,413, Jan. 18, 1966, abandoned. This application Mar. 8, 1973, Ser. No. 339,251

Claims priority, application Switzerland, Jan. 22, 1965, 915 Switzerland, July 9, 1965, 9630.

Int. Cl. A01n *9/20*

U.S. Cl. 71—121 **4 Claims**

1. A composition for controlling undesired plant growth which comprises (1) as active ingredient, a herbicidically effective amount of a compound of a the formula



wherein X is chlorine, bromine or iodine, and (2) an inert carrier.

3,847,591
LEAD-ZINC FOAMS

Leonard M. Niebylski, Birmingham, and Chester P. Jarema, Detroit, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 155,210, June 21, 1971, Pat. No. 3,790,365, which is a continuation-in-part of Ser. No. 879,915, Nov. 24, 1969, abandoned. This application Nov. 1, 1973, Ser. No. 411,893

Int. Cl. B22d *27/00*

U.S. Cl. 75—20 F **1 Claim**

1. Process for preparing a metal foam from a lead based metal having from 1.5 to 5 weight per cent zinc, said process comprising substantially saturating a molten mass of said metal with CO_2, subsequently adding with stirring from 1.5 to 5 grams of TiH_2 per 100 gram portion of Pb while maintaining the temperature of the mass below about 410°C., subsequently raising the temperature to from about 420°C. to about 475°C. to foam said mass, and quickly cooling the foam thereby produced below its solidification temperature to form a set cellular product.

3,847,592
METHOD FOR ADDING A GRANULAR OR POWDERED REACTION COMPONENT TO A MOLTEN METAL, AS WELL AS AN IMPROVED GRANULAR OR POWDERED REACTION COMPONENT FOR CARRYING OUT A CORRECTIVE REACTION ON A MOLTEN METAL

Jan Schokkenbroek, Alkmaar, Netherlands, assignor to Koninklijke Nederlandsche Hoogovens En Staalfabrieken N. V., Ijmuiden, Netherlands

Filed Feb. 16, 1972, Ser. No. 226,757

Claims priority, application Netherlands, Feb. 25, 1971, 7102540

Int. Cl. C22b *9/12;* **C21c** *7/00*

U.S. Cl. 75—53 **10 Claims**

1. A method for treating a molten metal with a reaction component which is solid at the temperature of the molten metal comprising mixing a dry granular reaction component prior to addition of same to the melt to be treated with a minor amount of a dry and finely powdered solid material capable of reducing the tendency of the reaction component granules to cohere with one another and to form a granular reaction component mixture in which said solid material is intimately dispersed throughout said reaction component insuring that said reaction component will be in a non-agglomerated state, said finely powdered solid material having substantially no effect on the termination of the reaction of said reaction component with the molten metal, and thereafter mixing said formed reaction component mixture with the molten metal to achieve a reaction between said reaction component and the molten metal.

3,847,593
PROCESS FOR REFINING METALS, IN PARTICULAR LIQUID PIG IRON, IN OXYGEN CONVERTERS WITH CONTINUOUS CONTROL OF THE OPERATIVE PROCEDURE

Aldo Ramacciotti, Rome, and Giancarlo Eminian, Taranto, both of Italy, assignors to Centro Sperimentale Metallurgico S.P.A., Rome, Italy

Filed June 29, 1972, Ser. No. 267,694

Claims priority, application Italy, July 13, 1971, 31604/71

Int. Cl. C21c *5/30*

U.S. Cl. 75—60 **1 Claim**

1. In a process for refining liquid pig iron into steel in a liquid bath, comprising blowing a gas containing oxygen onto the bath, and analyzing the gas above the bath; the improvement comprising the steps of predetermining a desired graphical curve of *m* versus time on the basis of at least the actual initial and desired final physical characteristics of the bath, in which

$$m = k\,A + B/Q_O\ ,$$

A being the instantaneous flow rate of the oxygen in said analyzed gas employed for the combustion of C into CO in Nm^3/min., B being the instantaneous flow rate of the oxygen in said analyzed gas used for the combustion of CO to CO_2 in Nm^3/min., and Q_O being the instantaneous flow rate of the total oxygen in said blown gas in Nm^3/min., *k* being a constant; determining at a plurality of time intervals the actual instantaneous values of *m* on the basis of the physical characteristics of gas emitted from the bath; and varying the flow rate of said blown gas so as to decrease the difference between each said actual value of *m* and the predetermined value of *m* at the same said time interval on said graphical curve until physical characteristics close to said desired final physical characteristics of the bath are achieved.

3,847,594
DISINTEGRATION OF SCRAP ALLOYS TO FACILITATE RECOVERY OF NICKEL, COBALT AND COPPER VALUES

Sjaak Johan Van Der Meulen; Bauke Weizenbach; Allan Henry Lee, all of Fort Saskatchewan, Alberta, and Theodore Andrew Kinjerski, Bon Acord, Alberta, all of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 203,834, Dec. 1, 1971, abandoned. This application Nov. 27, 1973, Ser. No. 419,328

Int. Cl. C22b *7/00*

U.S. Cl. 75—63 **5 Claims**

1. A process for causing iron-chromium scrap alloys containing a metal selected from the group consisting of nickel, cobalt and copper of larger than 65 mesh standard Tyler screen in size to disintegrate and to convert to a form from which contained values of at least one of nickel, cobalt and copper may be extracted in a subsequent leaching step said process including the steps of: contacting said scrap alloy with an additive selected from the group comprising alkali metal sulphate and alkali metal sulphite; heating the scrap alloy and the additive to a temperature below the melting point of said scrap alloy and under conditions reducing only with respect to metals whose oxides have energies of formation lower than that of iron in order to cause an exothermic reaction between the scrap alloy and additive with resulting conversion of iron and chromium values to metal oxides and/or metal sulphides; and quenching the reaction product from the preceding step to cause disintegration thereof.

3,847,595
LEAD SMELTING PROCESS

Shou Chu Liang, Spokane, Wash.; Edward Francis Godfrey Milner, Trail, British Columbia, Canada; Gerald Wesley Toop, Trail, British Columbia, Canada, and Ronald Walter Anderson, Trail, British Columbia, Canada, assignors to Cominco Ltd., Vancouver, British Columbia, Canada

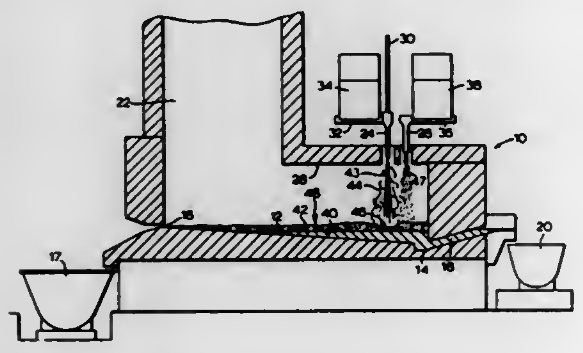
Continuation-in-part of Ser. No. 50,749, June 29, 1970, abandoned. This application May 7, 1973, Ser. No. 357,536

Int. Cl. C22b *13/00*

U.S. Cl. 75—77 **19 Claims**

1. A process for separately recovering lead values and sulphur values from a lead sulphide ore or concentrate without prior sintering which comprises: charging lead sulphide ore or concentrate in particulate form and in admixture with an oxygen-rich gas containing at least about 60 percent oxygen downwardly into and through the combustion zone of a furnace to impinge onto and penetrate the surface of a molten bath therein having lead values in the form of substantially sulphide free lead oxide-containing slag derived from said process, whereby oxidation of said lead sulphide is initiated and sustained to produce lead oxide and sulphur dioxide in a flame in said combustion zone above the area of impingement onto said molten bath and, after such impingement, oxidation

of residual lead sulphide is continued by reaction within the molten slag; supplying in the furnace sufficient oxygen gas in admixture with the ore or concentrate to provide heat of oxidation to maintain said flame at a temperature of at least 1,300°C. and said molten bath at a temperature above 1,100°C., and sufficient total oxygen to maintain at least 35 percent lead as lead oxide in the slag, said heat of oxidation being provided by reaction with said oxygen-rich gas; and withdrawing from said furnace molten material containing lead values low in sulphur content as molten lead oxide-containing slag plus any molten lead that may be formed and gaseous material containing sulphur values and entrained lead oxide fume.



3,847,596
PROCESS OF OBTAINING METALS FROM METAL HALIDES

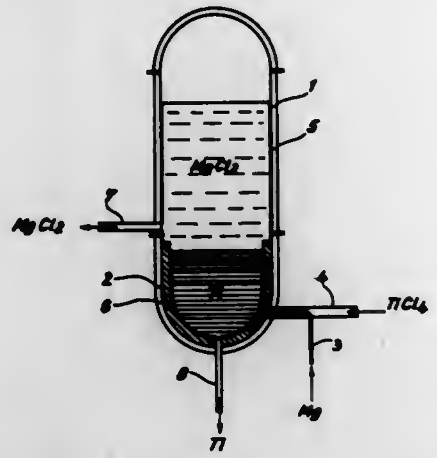
Gerhard W. Holland, and Rudolf Nowak, both of Frankfurt am Main, Germany, assignors to Halomet AG, Basel, Switzerland

Continuation of Ser. No. 801,485, Feb. 24, 1969, abandoned. This application Feb. 22, 1972, Ser. No. 228,331

Claims priority, application Germany, Feb. 28, 1968, 1583920

Int. Cl. C22b *5/00, 9/10, 53/00, 19/02*

U.S. Cl. 75—84.4 **22 Claims**



1. A process for production of a metal capable of being reduced from its halide by reduction thereof with a reducing metal, which comprises:

a. introducing into a reaction zone having a closed vapor space a reducing metal in the molten state and a halide of said metal to be produced;

b. reacting said metal halide and said reducing metal within said zone to obtain in the molten state, as reaction products in separate layers, the metal to be produced and the reducing metal halide;

c. maintaining said reaction at a temperature above the melting point of said metal to be produced and at a vapor pressure which is above one atmosphere and at least at the vapor pressure of said reducing metal halide by feeding into said reaction zone below the surface of the molten mass, additional required amounts of either of said reducing metal and said metal halide; and

d. separately removing said metal produced and said reducing metal halide from said reaction zone.

3,847,597
PROCESS FOR THE COMBINED ELIMINATION AND/OR RECONDITIONING OF CARBURIZING SALT WASTES

Wolfgang Mueller; Bernhard Rodewald, both of Mannheim, and Lothar Witzke, Bruehl, all of Germany, assignors to Th. Goldschmidt A.G., Essen, Germany

Filed Apr. 5, 1973, Ser. No. 348,045

Claims priority, application Germany, July 12, 1972, 2234171

Int. Cl. C22b *7/00*

U.S. Cl. 75—99 **13 Claims**

1. A process for the detoxication and/or reconditioning of wastes produced in the salt carburizing of steel products and which include nitrite and nitrate salts and cyanide and cyanate salts, comprising; mixing a solid fraction of a waste containing cyanide and cyanate salts with a solid fraction of a waste containing nitrite and nitrate salts in a ratio such that the nitrite and nitrate salts are present in excess of the amount necessary to oxidize the cyanide and cyanate salts, and heating said mixture to a temperature above about 150°C for a time sufficient to ignite said mixture.

3,847,598
MERCURY RECOVERY PROCESS

Michael Oliver Coulter, and David Bell, both of Holmes Chapel, near Crewe, England, assignors to BP Chemicals Limited, London, England

Continuation of Ser. No. 212,788, Dec. 27, 1971, abandoned. This application Sept. 20, 1973, Ser. No. 399,057

Claims priority, application Great Britain, Dec. 31, 1970, 61948/70

Int. Cl. C22b *43/00*

U.S. Cl. 75—121 **9 Claims**

1. A process for recovering mercury from aqueous alkaline solutions containing mercury in the form of a soluble inorganic compound which process comprises passing a stream of inert gas through said aqueous alkaline solution at a temperature in the range of 5° to 100°C in the presence of a reducing agent active for the chemical reduction of said inorganic mercury compounds to elemental mercury selected from the group consisting of ferrous sulphate, hydrazine, hydroxylamine, D-glucose, and sodium borohydride, and subsequently recovering the mercury vapor from the inert gas.

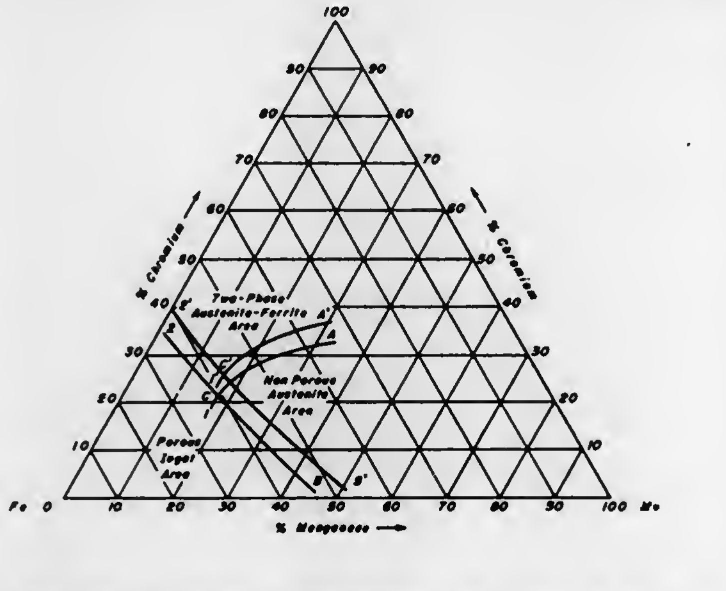
3,847,599
CORROSION RESISTANT AUSTENITIC STEEL

Albert G., Hartline, III: Brackenridge, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Oct. 4, 1973, Ser. No. 403,347

Int. Cl. C22c *39/14, 33/00*

U.S. Cl. 75—122 **8 Claims**



1. An alloy consisting essentially of about 21–45 percent manganese, about 10–30 percent chromium, about 1–5 percent molybdenum, about 0.85–3 percent nitrogen, up to 1 percent carbon, up to 2 percent silicon and the balance iron and residuals wherein the composition is such that:

1. %Cr + %Mo + 0.8(%Mn) − 11.8(%N − 0.1) 28.5
2. 30(%C + %N) + 0.5(%Mn)/%Cr+ %Mo+ 1.5(%Si) 1.5

3,847,600
HIGH TEMPERATURE ALLOY STEEL

Tohru Mimino; Kazuhisa Kinoshita, and Keisuke Hattori, all of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Kawasaki-shi, Kanagawa-ken, Japan

Continuation of Ser. No. 63,623, Aug. 13, 1970, abandoned. This application May 9, 1973, Ser. No. 358,797

Claims priority, application Japan, Aug. 8, 1969, 44-67174

Int. Cl. C22c *39/14, 39/26*

U.S. Cl. 75—126 C **6 Claims**

1. A high temperature alloy steel having high creep rupture strength up to temperatures of about 650° consisting essentially of the following elements in the following weight percentages:

carbon	less than 0.10%
silicon	less than 1.0%
manganese	0.30 - 1.20%
chromium	7 - 10%
molybdenum	0.3 - 1.5%
vanadium	0.1 - 0.3%
niobium	0.15 - 0.50%
boron	up to 0.012%
nitrogen	up to 0.05%

the balance being iron and incidental impurities.

5. A high temperature alloy steel consisting essentially of the following elements in the following weight percentages.

carbon	0.04 - 0.06%
silicon	0.45 - 0.60%
manganese	0.50 - 0.75%
chromium	7.75 - 8.50%
molybdenum	0.9 - 1.00%
vanadium	0.15 - 0.25%
niobium	0.30 - 0.35%
boron	0.007 - 0.008%
nitrogen	0.011 - 0.030%

the balance being iron and incidental impurities.

3,847,601
REDUCED PELLETS FOR MAKING ALLOYS CONTAINING NICKEL AND CHROMIUM

Yohnosuke Itoh, Tokyo; Kozo Yokota, Yokohama; Tetsuya Watanabe, Fujisawa, and Rokuro Matsui, Kawasaki, all of Japan, assignors to Nippon Yakin Kogyo Company Limited, Tokyo, Japan

Filed May 24, 1973, Ser. No. 363,619

Claims priority, application Japan, May 29, 1972, 47-52527

Int. Cl. C22c *33/00;* **C21b** *1/08*

U.S. Cl. 75—130.5 **7 Claims**

1. Reduced pellets for making alloys containing nickel and chromium, consisting essentially of a mixture of 1 part by weight of chrome iron ore, 1 to 10 parts by weight of nickel silicate ore, and at least one reducing agent containing 1.05 to 1.30 gram-atom of carbon per 1 gram-atom of total oxygen which is combined with iron, nickel, chromium and cobalt of the chrome iron ore plus the nickel silicate ore, said mixture having been fired at a temperature of 900°C to 1,400°C to effect reduction and sintering of said ores to bind together said ingredients of the pellets mostly by slag bondage.

3,847,602
COPPER-BASE ALLOY FOR HIGH PRECISION RESISTORS

Boris Vladimirovich Blinov, ulitsa Frunze 4 kv.5, and Vasily Valentinovich Kukhar, 2 Murinsky proezd 15 kv. 34, both of Leningrad, U.S.S.R.

Continuation-in-part of Ser. No. 77,014, Sept. 30, 1970, abandoned. This application Sept. 20, 1973, Ser. No. 399,119

Int. Cl. C22c *9/00, 9/06;* **H01c** *13/00*

U.S. Cl. 75—161 **8 Claims**

1. An alloy especially useful as material for precision resistors, said alloy consisting essentially of between about 8% and about 14% of manganese, between about 6% and about 10% of gallium, and the remainder being copper.

3,847,603
PROCESS FOR PREPARING A SINTERED IRON NEGATIVE PLATE FOR AN ALKALINE STORAGE BATTERY

Masataro Fukuda; Tsutomu Iwaki, and Tadayasu Mitsumata, all of Osaka, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Dec. 19, 1972, Ser. No. 316,543

Claims priority, application Japan, Apr. 3, 1972, 47-32642; Dec. 28, 1971, 46-105736; Dec. 21, 1971, 46-103204

Int. Cl. B22f *1/00, 3/16, 5/00*

U.S. Cl. 75—213 **10 Claims**

1. A method of preparing an iron negative plate for an alkaline storage battery, comprising the steps of:

heating needle-shaped particles of an oxygen-containing iron compound selected from the group consisting of iron (III) oxyhydroxide and γ-type ferric oxide at a temperature range between 700°C and 850°C in hydrogen atmosphere to obtain a sintered body;

pulverizing said sintered body into finely divided particles; tamping said finely divided particles into a mould of desired shape; and

sintering said tamped body at a temperature range between 700°C and 1050°C in hydrogen atmosphere.

ERRATUM

For Class 93—1 see:
Patent No. 3,847,606

3,847,604
ELECTROSTATIC IMAGING PROCESS USING NODULAR CARRIERS

Robert J. Hagenbach, Rochester, and Myron J. Lenhard, Penfield, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 151,995, June 10, 1971, Pat. No. 3,767,598. This application May 7, 1973, Ser. No. 357,988

Int. Cl. G03g *9/02, 13/08*

U.S. Cl. 96—1 SD **12 Claims**

1. An electrostatographic imaging process comprising the steps of forming an electrostatographic latent image on a photoconductive surface and developing said electrostatographic latent image by contacting said photoconductive surface with an electrostatographic developer mixture comprising nodular carrier beads each having a generally spherical shape and a surface characterized by a plurality of small generally rounded nodular particles separated by recesses, said beads having an average size distribution in the range of 50 to 1,000 microns, and between about 95 and at least about 99.5 weight percent, based on the weight of the developer mixture, of said carrier beads relative to said finely divided toner particles electrostatically clinging to said surface of said carrier beads, whereby at least a portion of said finely divided toner particles are attracted to and held on said surface in conformance to said electrostatographic latent image.

3,847,605
PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY

Eiichi Kondo, and Tetsuo Hasegawa, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 4, 1971, Ser. No. 121,187
Claims priority, application Japan, Mar. 9, 1970, 45-20237
Int. Cl. G03g *5/04*
U.S. Cl. 96—1.5 **1 Claim**

1. An organic photoconductive material which comprises 100 parts by weight of a chlorine substituted poly-9-vinylcarbazole containing from about 2–43 percent by weight of chlorine and 10–50 parts by weight of a liquid cumarone resin having an average molecular weight of about 200–300.

3,847,606
PROTECTING PHOTOCONDUCTOR SURFACES

Leon J. Schwartz, Monsey, N.Y.; Gerald M. Spiegel, Jr., Bridgeport, and Leon N. Hecht, Jr., Stamford, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Filed Mar. 8, 1973, Ser. No. 339,084
Int. Cl. G03g *5/04*
U.S. Cl. 96—1.5 **8 Claims**

1. A photoconductive insulating composition comprising a layer of photoconductive insulating material having a mixture of cadmium sulfoselenide and photoconductive zinc oxide for electrostatic imaging and a thin, uniform top coating of polyurethane having a thickness from 0.02 to 0.1 mil closely bonded to and substantially over the entire surface of said photoconductive insulating material.

3,847,607
ORGANIC PHOTOCONDUCTORS SENSITIZED BY FREE RADICAL LIBERATORS AND ORGANIMETALLIC COMPOUNDS

Ichiro Endo, Tokyo, and Teruo Yamanouchi, Fujisawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 111,626, Feb. 1, 1971, Pat. No. 3,765,883. This application May 3, 1973, Ser. No. 356,805
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.6 **40 Claims**

1. An electrophotographic photosensitive member which comprises a support having coated thereon a sensitized layer of photoconductive photosensitive material, said material comprising an organic photoconductive material, a free radical former capable of producing free radicals for sensitizing said organic photoconductive material when uniformly excited by radiation energy and an organometallic compound incapable of liberating free radicals under the exposure used to excite said free radical former, but capable of catalyzing the sensitizing ability of the radical former, said photoconductive photosensitive material having been sensitized by applying said radiation energy uniformly to at least said free radical former and said organometallic compound.

3,847,608
PHOTODECORATING SHEET MATERIAL WITH MATCHED COLORED DESIGNS

Rolf Dessauer, Greenville, Del., and John R. Ellefson, West Chester, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 8, 1972, Ser. No. 278,778
Int. Cl. G03c *5/04, 5/00*
U.S. Cl. 96—27 R **21 Claims**

1. In a process for color decorating sheet material with a design by coating the sheet material with a photosensitive composition capable of generating color subsequent to exposure to activating light, exposing the coated sheet material to activating light, and color stabilizing the resulting design by fixing the coating, the sheet material to be used to form an article by assemblying multiple pieces of the designed sheet material, whereby the pieces are cut from the sheet material in closely-spaced arrangement, the improvement wherein the material is exposed to activating light through a light modulating means which registers at least a portion of the design on a piece cut from the sheet material so as to match with at least one second piece cut from the sheet material with minimum waste.

3,847,609
PHOTOPOLYMER PROCESS FORMING GRAFT POLYMERS IN EXPOSED AREAS

David W. Breslow, and David A. Simpson, both of Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.
Filed Nov. 9, 1972, Ser. No. 305,209
Int. Cl. G03f *7/02*
U.S. Cl. 96—33 **26 Claims**

1. The process of making a photographic image which comprises providing the surface of a polymer film with a photo-oxygenation sensitizer, said film being a film of a polymer containing extralinear olefinic unsaturation of the type in which there is no more than one hydrogen atom on each of the double bond carbons and in which there is at least one allylic hydrogen on at least one of the carbons adjacent to the double bond carbons, exposing selected areas of the sensitized film to light having a wave length of from about 2000 to about 12,000 angstroms in the presence of oxygen, and subjecting the exposed film to contact with a reactant capable of forming a graft polymer structure in the exposed areas of the film.

3,847,610
PHOTOPOLYMERISATION OF ETHYLENICALLY UNSATURATED ORGANIC COMPOUNDS

Urbain Leopold Laridon, Wilrijk; Gerard Albert Delzenne, S-Gravenwezel, and Hugo Karel Peeters, Berchem, all of Belgium, assignors to Gevaert-Agfa, N.V., Mortsel, Belgium
Filed Oct. 9, 1969, Ser. No. 865,191
Claims priority, application Great Britain, Nov. 26, 1968, 56094/68
Int. Cl. G03c *1/70, 1/52*
U.S. Cl. 96—35.1 **14 Claims**

1. A process for the photopolymerisation of ethylenically unsaturated organic compounds, which comprises irradiating with actinic light a composition comprising a photopolymerisable ethylenically unsaturated organic compound and as a photopolymerisation initiator a compound containing at least one diazosulphone group, said compound corresponding to one of the formulae:

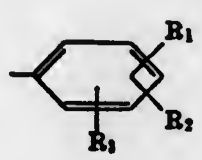
$$X-SO_2-N=N-Y \text{ and}$$
$$X'-SO_2-N=N-Z-N=N-SO_2-X'$$

wherein:

X represents phenyl, naphthyl, or phenyl substituted in ortho, meta or paraposition with respect to the sulphonyl group by alkyl of one to four carbon atoms, carboxyl, amino, dialkylamino wherein the alkyl groups comprise one to four carbon atoms, acylamino wherein the acyl group comprises two to seven carbon atoms, phenylazo or nitrophenylazo;

X′ represents phenyl, aminophenyl or alkylphenyl wherein the alkyl group comprises one to four carbon atoms;

Y represents pyridyl, anthraquinonyl, naphthyl, acridinyl, benzothiazolyl or a group of the formula



wherein:

R_1 represents hydrogen, alkyl of one to four carbon atoms, nitro, alkoxy, of one to four carbon atoms, carboxyl, or sodium sulphonyl, or NR′R″ wherein R′ is hydrogen, alkyl of one to four carbon atoms, phenyl, acyl wherein the acyl group comprises two to seven carbon atoms, p-methoxybenzoyl, p-nitrophenyl, naphthyl, acryloyl, methacryloyl, or dialkylaminophenylcarbamoyl with alkyl groups of one to four carbon atoms; R″ is hydrogen, alkyl of one to four carbon atoms, or phenyl;

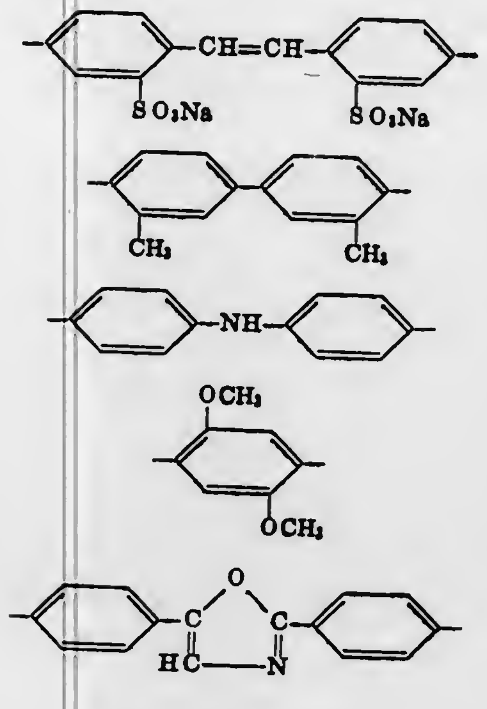
R_2 represents hydrogen, halogen, alkoxy with one or two carbon atoms, alkyl of one or two carbon atoms, or nitro;

R_3 represents hydrogen, halogen, alkoxy with one or two carbon atoms, or alkyl of one or two carbon atoms;

R_1, R_2 and R_3 standing in ortho, meta or paraposition with respect of the diimide group;

and

Z represents a radical of the formulae:

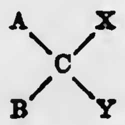


3,847,611
PHOTOGRAPHIC PROCESS FOR FORMING A POSITIVE COLOR IMAGE UTILIZING A PHOTOCHROMIC COMPOSITION CONTAINING A SPIROPYRAN COMPOUND, A PHOTOACTIVATOR AND POLY-N-VINYL- CARBAZOLE

Freddy Ghisleen Van Royen, Wommelgem, and Jozef Willy Van Den Houte, Berchem, both of Belgium, assignors to AGFA-Gevaert, Mortsel, Belgium
Filed Feb. 21, 1973, Ser. No. 334,246
Claims priority, application Great Britain, June 26, 1972, 29917/72
Int. Cl. G03c *5/24, 1/52*
U.S. Cl. 96—48 R **13 Claims**

1. A photographic process for producing a positive color image in a recording material which comprises in intimate admixture:

1. at least one spiropyran compound which is a spirobenzopyran, a spirodinaphthopyran, a spirobenzonaphthopyran, a 1,3,3-trimethylindolinobenzospiropyran, a 1,3,3-trimethylindolinonaphtospiran or a spiropyran containing a condensed anthracene or phenanthrene nucleus; and
2. at least one organic polyhalogen compound that is sensitive to ultraviolet radiation and corresponds to the general formula:



in which:

each of A, B, X and Y is a chlorine, bromine or iodine atom, or

one of A, B, X or Y represents an alkyl group, an aryl group, or an aroyl group, and the remainder chlorine, bromine or iodine, or at least two of A, B, X or Y represent an aromatic acyl group, and the remainder chlorine, bromine or iodine; and

3. within said recording material in working contact with said mixture a polymer of N-vinylcarbazole,

which comprises the steps of:

imagewise exposing said recording material to activating electromagnetic radiation to an extent forming a latent dye image or faintly colored visible dye image,

overall heating the imagewise exposed recording material to such an extent that upon subsequent overall exposure of the heated recording material to infrared radiation optionally mixed with white light a positive color image is formed, and

overall exposing the thus overall heated recording material with infrared radiation optionally mixed with white light producing thereby a positive color image.

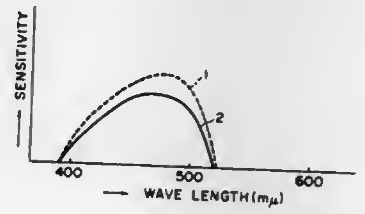
3,847,612
LIGHT-SENSITIVE HEAT-DEVELOPABLE SHEET MATERIAL

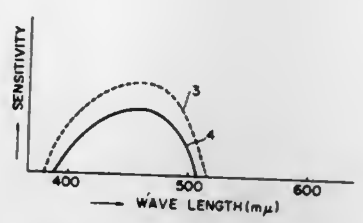
John M. Winslow, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 2, 1973, Ser. No. 329,107
Int. Cl. G03c *1/02*
U.S. Cl. 96—67 **6 Claims**

1. A photosensitive heat-developable sheet material having an image-forming stratum comprising (1) photo-sensitive silver halide catalyst-forming means and (2) heat-sensitive reactant image-forming means including an organic silver salt oxidizing agent and a hindered phenolic reducing agent for silver ion, the oxidation-reduction reaction of which to produce a visible change is accelerated by said catalyst, and (3) as image intensifier material, a mixture of (a) one or more of the compounds phthalic acid, naphthalene-2,3-dicarboxylic acid, or phthalamic acid, and (b) an imidazole.

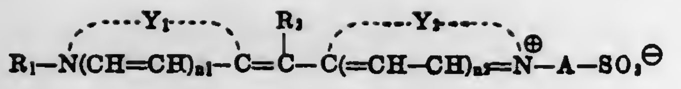
3,847,613
SILVER HALIDE PHOTOSENSITIVE MATERIALS FOR COLOR PHOTOGRAPHY

Kaichiro Sakazume, Tokyo; Eiichi Sakamoto, Hanno; Kiyomitsu Mine, Tokyo; Noboru Fujimori, Tokyo, and Shigemasa Ito, Tokyo, Japan, assignors to Konishiroku Photo Industry Co. Ltd., Tokyo, Japan
Filed Jan. 22, 1973, Ser. No. 325,338
Claims priority, application Japan, Jan. 24, 1972, 47-8300
Int. Cl. G03c *7/32, 1/16*
U.S. Cl. 96—74 **5 Claims**





1. A silver halide photosensitive material for color photography comprising a support and at least three emulsion layers supported thereon; said layers being a red-sensitive emulsion layer, a green-sensitive emulsion layer, and a blue-sensitive emulsion layer: the blue-sensitive emulsion layer containing a sensitizing dye represented by the following formula:



$$R_1-\overset{\curvearrowleft Y_1 \curvearrowright}{N(CH=CH)_{n1}-C}=\overset{R_3}{\overset{|}{C}}-\overset{\curvearrowleft Y_2 \curvearrowright}{C(=CH-CH)_{n2}=\overset{\oplus}{N}}-A-SO_3^{\ominus}$$

Wherein Y_1 and Y_2 each stand for a non-metallic atomic group necessary to form a nitrogen-containing heterocyclic ring nucleus selected from the group consisting of pyrroline, thiazoline, thiazole, benzothiazol, naphthothiazole, selenazole, benzoselenazole, naphthoselenazole, oxazole, benzoxazole, naphthoxozole, imidazole, benzimidazole, pyridine, and quinoline, which nucleus may be substituted by a halogen atom, a lower alkyl group, a lower alkoxy group, or an aryl group, which group may in turn be substituted by halogen, lower alkyl or lower alkoxy; R_1 stands for lower alkyl, hydroxyalkyl, or sulfoalkyl; R_2 is hydrogen or lower alkyl, A designates alkylene,

$-(CH_2)_2-0-(CH_2)_2-$or$-(CH_2)_2 \quad -0 \quad CH_2CH(OH)$ CH_2-; and n_1 and n_2 are each 0 or 1.

3,847,614

DIAZO PHOTOPOLYMER COMPOSITION AND ARTICLE COMPRISING CARBOXYLATED RESIN

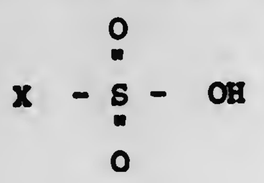
John A. Mattor, Bar Mills, Maine, assignor to Scott Paper Company, Delaware County, Pa.

Continuation-in-part of Ser. No. 180,200, Sept. 13, 1971,. This application Mar. 14, 1973, Ser. No. 341,272

Int. Cl. G03f *7/08*; G03c *1/60*

U.S. Cl. 96—75 **15 Claims**

1. A photopolymer composition comprising a mixture of a solvent soluble, negative-working diazo compound and a cyclic acetal of poly (vinyl alcohol) wherein the diazo compound is the product formed by reacting in an aqueous medium an anionic surfactant or salt thereof and the condensation product of a diphenylamine-4-diazonium salt with formaldehyde, the surfactant corresponding to the formula

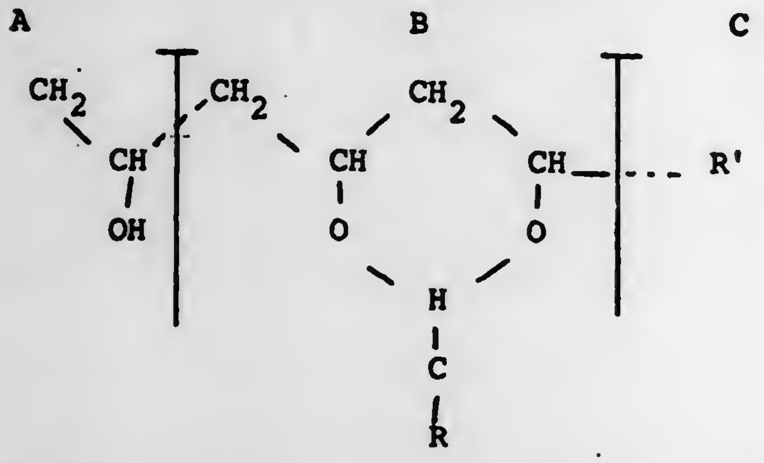


$$X-\underset{\underset{O}{\|}}{\overset{\overset{O}{\|}}{S}}-OH$$

wherein X— is R— or RO— and R is alkyl of more than three carbon atoms, alkyl of more than three carbon atoms interrupted by one or more oxyalkylene groups or alkyl of more than three carbon atoms substituted by phenyl, naphthyl, alkylphenyl, alkylnaphthyl, or alkylphenyl or alkylnaphthyl interrupted by one or more oxyalkylene groups,

or X— is Ar— or ArO— wherein Ar is a phenyl or a naphthyl moiety

and the resinous cyclic acetal of poly(vinyl alcohol) consists essentially of repeating units of the general formula



where R is, in more than half of the groups labelled B, an aromatic moiety taken from the group consisting of benzene and naphthalene, R′ is a carboxyl-containing copolymerizable unit derived from an unsaturated mono-or dicarboxylic acid and the polymer consists of 17 to 65 mole percent of the group labelled A, from greater than zero up to 16 mole percent of the group labelled C and the remainder being the group labelled B.

3,847,615

IMAGE-RECEIVING MATERIAL FOR COLOR DIFFUSION TRANSFER PROCESS

Takashi Yoshida; Shinji Sakaguchi, and Takushi Miyazako, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-shi, Kanagawa, Japan

Filed Mar. 7, 1973, Ser. No. 338,715

Claims priority, application Japan, Mar. 7, 1972, 47-23466

Int. Cl. G03c *1/40*, *7/00*

U.S. Cl. 96—77 **14 Claims**

1. An image-receiving material for a color diffusion transfer process which comprises a support having thereon, in sequence, an acid polymer layer, a neutralization rate-controlling layer, and an image receiving layer, said neutralization rate-controlling layer comprising at least one polymer selected from the homopolymer, the copolymer and the graft polymer of the monomethacrylic acid ester of a polyhydric alcohol or the monoacrylic acid ester of a polyhydric alcohol.

3,847,616

PROCESS AND APPARATUS FOR GELLING A SOL-FORM SUBSTANCE FOR A PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENT AND FOR MELTING SAME

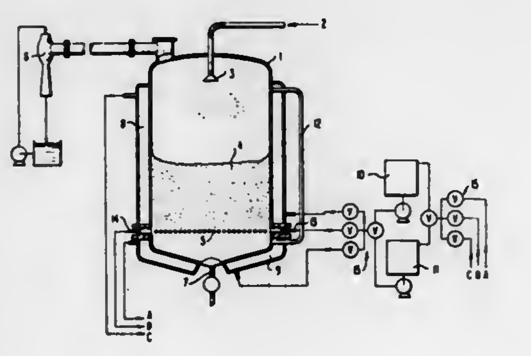
Shiro Kaneko; Sakae Masuda; Motohiro Ujihara, and Yosuke Uchida, all of Minami Ashigara-machi, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan

Filed Feb. 8, 1972, Ser. No. 224,438

Claims priority, application Japan, Feb. 8, 1971, 46-5060

Int. Cl. G03c *1/02*; B01d *1/04*

U.S. Cl. 96—94 R **8 Claims**



1. A process for producing a gel-form of a photographic silver halide emulsion from a sol-form of said emulsion and for melting said gel-form of said emulsion which comprises the steps of:

- a. providing a hurdle-shaped or net-like heat transmitting device capable of supporting said gel-form of said emulsion at the lower portion of a closed vessel;
- b. supplying a cooling medium to said heat transmitting device;
- c. reducing the pressure in said vessel to at least the vapor pressure of water at the temperature at which said sol-form of said emulsion is to be cooled to form said gel-form of said emulsion;
- d. feeding in droplet form said sol-form of said emulsion into said closed vessel thereby to cool and gel said sol-form of said emulsion so as to accumulate on and be supported by said heat transmitting device; and thereafter,
- e. supplying a heating medium to said heat transmitting device, the temperature and quantity of said heating medium being adjusted so as to obtain a required melting temperature and melting rate of said gel-form of said emulsion, thereby causing said gel-form of said emulsion to melt and flow downwardly through said heat transmitting device, and
- f. taking out said melted gel-form of said emulsion from the bottom portion of said closed vessel.

3,847,617

PROCESS OF PREPARING FINE-GRAIN SILVERHALIDE EMULSIONS

Herman A. Philippaerts, Edegem; Robert Joseph Pollet, Vremde, both of Belgium; Wolfgang Muller-Bardorff, Cologne, Germany; Wilhelm Saleck, Schildgen/Bergisch-Gladbach, Germany; Franz Moll, Leverkusen-Steinbuchel, Germany, and Theofiel Hubert Ghys, Kontich, Belgium, assignors to AG-AF-Gevaert, Mortsel, Belgium

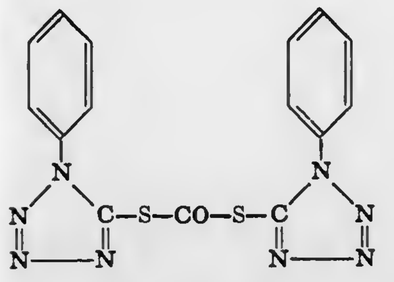
Filed Dec. 1, 1972, Ser. No. 311,161

Claims priority, application Germany, Dec. 9, 1971, 2161044

Int. Cl. G03c *1/02*

U.S. Cl. 96—94 R **5 Claims**

1. Method of preparing a photographic fine-grain silver halide emulsion which comprises the step of precipitating the silver halide in an aqueous hydrophilic colloid medium in the presence of a compound having the formula:



3,847,618

DEVELOPMENT OF PHOTOGRAPHIC SILVER HALIDE MATERIAL

Emiel Alexander Hofman, Mortsel; Leo Pierre De Bie, Kontich, and Jules Robert Berendsen, Deurne, all of Belgium, assignors to AGFA-Gevaert, Mortsel, Belgium

Filed May 18, 1973, Ser. No. 361,576

Claims priority, application Great Britain, May 26, 1972, 25068/72

Int. Cl. G03c *1/06*, *5/30*

U.S. Cl. 96—95 **23 Claims**

1. Method of producing high-contrast images by exposure and development of a photographic lith-type silver halide material comprising a support and a silver halide emulsion layer containing at least about 50 mole percent of silver chloride, at least about 5 mole percent of silver bromide and from 0 to about 5 mole percent of silver iodide, wherein the said photographic lith-type material incorporates hydroquinone as developing agent, and development is effected by treatment of the exposed material with an alkaline development activator in the presence of hydroxylamine or a salt thereof or of a N-monosubstituted hydroxylamine or a salt thereof.

3,847,619

ION-PAIRED COBALTIC COMPLEXES AND PHOTOGRAPHIC ELEMENTS CONTAINING SAME

Vernon Leon Bissonette, Brockport; Rowland George Mowrey, and Richard Calvin Sutton, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 20, 1972, Ser. No. 307,894

Int. Cl. G03c *1/28*

U.S. Cl. 96—108 **35 Claims**

29. A silver halide emulsion comprising a water-insoluble ion pair of a cobalt(III) ion complex ion-paired with an anionic organic acid which has an equivalent weight based on acid groups of at least 70 and less than 800.

3,847,620

METHOD FOR PRODUCING SILVER HALIDE PHOTOGRAPHIC PHOTOSENSITIVE EMULSION

Shigeru Iguchi; Tetsuo Yano, and Tamotu Iwata, all of Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

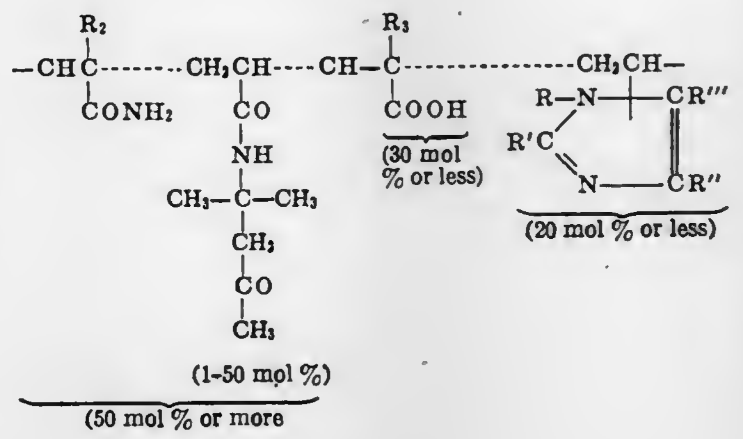
Filed Nov. 14, 1972, Ser. No. 306,382

Claims priority, application Japan, Nov. 15, 1971, 46-91337

Int. Cl. G03c *1/72*

U.S. Cl. 96—114 **3 Claims**

1. In a method for preparing photographic light sensitive silver halide emulsions, the improvement in said method of using in place of gelatin a water soluble synthetic resin of the structure consisting essentially of



where:

R_2 is H or methyl;

R_3 is H or methyl where one of R, R′, R″ and R‴ is replaced by the bond attached to the

$$\underset{|}{CH_2CH}$$

group and the remainder of R, R′, R″ and R‴ are hydrogen, alkyl or hydroxylalkyl.

3,847,621

LASER-SENSITIVE SILVER HALIDE PHOTOSENSITIVE MATERIAL

Yoshio Nishina; Isao Kono; Toshio Kamakura; Hayashi Nakamura; Noboru Fujimori, all of Tokyo, and Eiichi Sakamoto, Hanno, all of Japan, assignors to Konishiroku Photo Industry Co. Ltd., Tokyo, Japan

Filed Nov. 27, 1972, Ser. No. 309,715

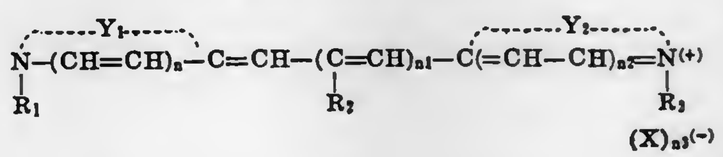
Claims priority, application Japan, Nov. 29, 1971, 46-99195

Int. Cl. G03c *1/14*

U.S. Cl. 96—126 **5 Claims**

1. A quick treatable, laser-sensitive photosensitive material comprising a silver halide emulsion containing 0.1 to 4.0 mole percent of silver iodide, which material contains in an emulsion layer or protective layer

a compound having the general formula (I),

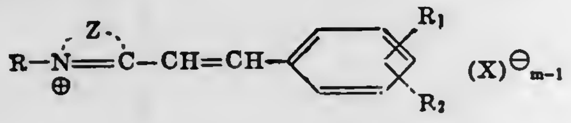


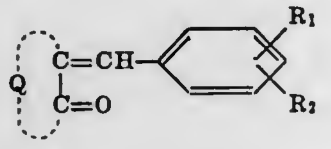
$$\underset{R_1}{\underset{|}{N}}\overset{\curvearrowleft Y_1 \curvearrowright}{-(CH=CH)_n-C}=CH-(\underset{R_2}{\underset{|}{C}}=CH)_{n1}-\overset{\curvearrowleft Y_2 \curvearrowright}{C(=CH-CH)_{n2}=\underset{R_3}{\underset{|}{N}}{}^{(+)}} \quad (X)_{n3}^{(-)}$$

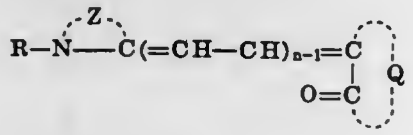
(I)

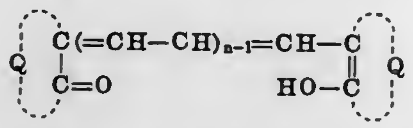
wherein Y_1 and Y_2 are individually a non-metallic atomic group necessary to form a nitrogen-containing heterocyclic ring of benzothiazole, benzoselenazole, naphthothiazole, naphthoselenazole, or quinoline which heterocyclic ring may have been substituted with a halogen atom, or a lower alkyl or lower alkoxyl group; R_1 and R_3 are individually a lower alkyl, carboxyalkyl, sulfoalkyl, hydroxyethyl, benzyl or sulfopropylthioethyl group; R_2 is hydorgen or a lower alkyl group; X is an anion; *n*, and n_2 are individually 0 or 1; n_1 is 1; and n_3 is 0 or 1 and 0 in case an intramolecular salt is formed; and

at least one compound having the general formula (II) to (VIII),

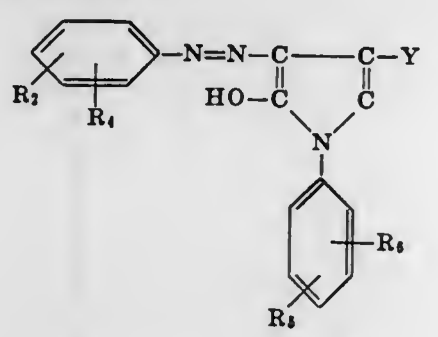

(II)

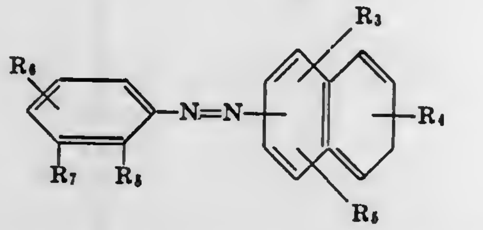

(III)


(IV)

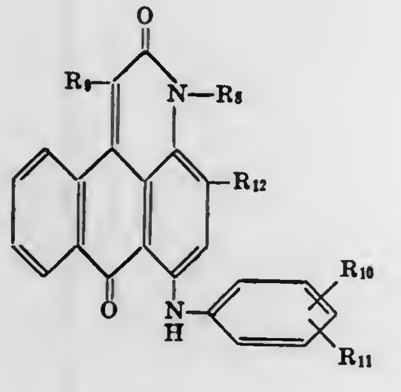

(V)

wherein Z is an atom or group necessary to form a heterocyclic ring of thiazole, benzothiazole, naphthothiazole, oxazole, benzoxazole, naphthoxazole, selenazole, benzoselenazole, naphthoselenazole, 3,3-dialkylindolenine, benzimidazole, thiazoline, pyridine, or quinoline; Q is an atom or group necessary to form a heterocyclic ring of pyrazolone, barbituric acid, thiobarbituric acid, isoxazolone, 3-hydroxythionaphthene or 1,3-indandione; R is a lower alkyl, carboxyethyl, sulfobenzyl, or sulfophenylethyl group; R_1 and R_2 are individually hydrogen or chlorine, or an alkyl, alkoxy, amino, acylamino, alkylamino, dialkylamino or sulfonic group; X is an acid anion; *m* is 1 or 2; and *n* is 1,2 or 3;


(VI)


(VII)

wherein Y is hydrogen, or an alkyl, amino, acylamino or carboxyl group; and R_3, R_4, R_5, R_6, R_7 and R_8 are individually hydrogen or chlorine, or a hydroxy, alkoxy, alkyl, amino, acylamino, alkylamino, sulfonic or carboxyl group, provided that R_7 and R_8 may form a benzene ring, and


(VIII)

wherein R_8 is hydrogen or an alkyl group; R_9 is hydrogen, or an acyl or alkoxycarboxyl group; and R_{10}, R_{11}, and R_{12} are individually hydrogen, or an alkyl or sulfonic group.

3,847,622
POLISH

Eugene H. Brandl, Weehawken, and Neil M. McHugh, Bridgewater, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed May 29, 1973, Ser. No. 364,368

Int. Cl. C08h *9/08*

U.S. Cl. 106—10 **22 Claims**

1. A process for the preparation of a stable water in oil emulsion useful for treating hard surfaces which comprises adding to, whereby intimately contact, an organic solvent composition comprising:

A. from about 0 to 9 percent of organopolysiloxane having a viscosity at 25°C of from about 20 to 15,000 cs,
B. from about 15 to 35 percent of organic solvent having an aniline point of from about −22° to 185°F and a distillation range of from about 190° to 460°F, said solvent being substantially miscible with said organopolysiloxane,
C. an effective amount of a water in oil emulsifier,
D. from about 0.1 to 3 percent of wax, said wax having been added to said solvent (B) in solid, non-molten form each of (A), (C) and (D) being uniformly dispersed through solvent (B),

from about 50 to 84 percent of water in the liquid or frozen state, said liquid water having a temperature no higher than about 105°F, and thereafter adding from about 0 to 9 percent of organopolysiloxane having a viscosity at 25°C of from abut 20 to 15,000 cs, so that the total amount of said polysiloxane presen in the composition ranges from about 0.05 to 9 percent.

3,847,623
OIL FOR USE IN PRINTING INKS

Ivor W. Mills, Media; Glenn R. Dimeler; William A. Atkinson, Jr., both of West Chester, all of Pa., and James P. Hoffman, Yabucoa, P.R., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 850,778, Aug. 18, 1969, Pat. No. 3,654,127. This application June 21, 1972, Ser. No. 240,810

Int. Cl. C09d *11/00*

U.S. Cl. 106—32 **11 Claims**

1. A hydrogenated petroleum oil, useful as an ink oil, which contains from 30–65 weight % of gel aromatics, has a viscosity in the range of 8100–12,000 SUS at 100°F. and which by Engler distillation has a 5% point of at least 825°F., a 50 % point of at least 925°F. and a 90% point of at least 975°F., said oil having an ASTM D-1500 initial color no greater than 2.5, an ASTM D-92 flash point of at least 500°F and a viscosity-gravity constant in the range of 0.84–0.92.

3,847,624
FLUOROPHOSPHATE OPTICAL GLASS

Heinz Broemer, Hermannstein, and Norbert Meinert, Wetzlar, both of Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany

Filed June 4, 1973, Ser. No. 366,292

Claims priority, application Germany, June 26, 1972, 2231238

Int. Cl. C03c *3/18, 3/00*

U.S. Cl. 106—47 Q **5 Claims**

1. A fluorophosphate glass produced by melting a mixture of glass components consisting of

a. 2.7 mol percent of an alkali metal metaphosphate;
b. 6.5 mol percent of alkaline earth metal metaphosphates composed of
   4.4 mol percent of magnesium metaphosphate,
   1.0 mol percent of calcium metaphosphate, and
   1.1 mol percent of barium metaphosphate;
c. 4.0 mol percent of aluminum metaphosphate;
d. 8.2 mol percent of an alkali metal hydrogen fluoride;
e. 51.8 mol percent of alkaline earth metal fluorides composed of
   9.9 mol percent of magnesium fluoride,
   23.8 mol percent of calcium fluoride,
   8.7 mol percent of strontium fluoride, and
   9.4 mol percent of barium fluoride; and
f. 26.8 mol percent of aluminum fluoride.

3,847,625
LEAD FREE GLASS COMPOSITION

Cyril Francis Drake, Harlow, and Robert Walter James Amos, New Barnet, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 14, 1972, Ser. No. 280,398

Int. Cl. C03c *3/00*

U.S. Cl. 106—52 **3 Claims**

1. A lead-free glass composition of the type containing silicon, manganese, and a quantity of alkali metal and wherein the surface is rendered electrically conductive by oxidation, the composition comprising in combination:

40 — 67 mole percent SiO_2;
12 — 27 mole percent MnO;
5 — 20 mole percent $Na_2O + K_2O$;
5 — 20 mole percent CaO + MgO; and
0 — 3 mole percent Al_2O_3,

the composition containing not more than 40 mole percent in aggregate of oxides of manganese, calcium, and magnesium.

3,847,626
GLASS COMPOSITIONS, FIBERS AND METHODS OF MAKING SAME

Thomas D. Erickson, Newark, and Warren W. Wolf, Reynoldsburg, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 298,702, Oct. 18, 1972,. This application Mar. 19, 1973, Ser. No. 340,985

Int. Cl. C03c *13/00*

U.S. Cl. 106—50 **6 Claims**

1. A boron and fluorine free fiberizable glass, consisting essentially of, by weight, 54.5 to 60 percent SiO_2, 9 to 14.5 percent Al_2O_3, 17 to 24 percent CaO, 3 to 5 percent TiO_2 and 1.5 to 4.5 percent MgO and having a liquidus temperature of about 2,200°F. or less and having a viscosity of log 2.5 poises at 2,450°F. or less.

3,847,627
GLASS COMPOSITIONS, FIBERS AND METHODS OF MAKING SAME

Thomas D. Erickson, Newark, and Warren W. Wolf, Reynoldsburg, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 298,702, Oct. 18, 1972,. This application Mar. 19, 1973, Ser. No. 340,982

Int. Cl. C03c *13/00*

U.S. Cl. 106—50 **8 Claims**

1. A boron and fluorine free fiberizable glass composition having a liquidus temperature of 2,200° F. or less and having a viscosity of log 2.5 poises at 2,450° F. or less and having less than the equivalent of 1 weight percent, total, of Na_2O, K_2O and Li_2O, calculated as Na_2O, consisting essentially by weight of 54.5 to 60% SiO_2, 9 to 14.5% Al_2O_3, 17 to 24% CaO, 2 to 3.5% TiO_2, 1.5 to 4% MgO and 1 to 6% RO, wherein R is selected from the group consisting of Zn, Sr and Ba, and the amount of RO is calculated as ZnO.

3,847,628
METAL-TO-GLASS JOINT

Otar Egorovich Modebadze, ulitsa Merkviladze, 2/49, Tbilisi, U.S.S.R.

Filed Apr. 9, 1973, Ser. No. 349,671

Int. Cl. C03c *3/30, 3/10*

U.S. Cl. 106—52 **1 Claim**

1. A gold-to-glass joint containing silicon dioxide, 60 to 62 mol. percent; aluminum oxide, 0.5 to 1 mol. percent; zirconium dioxide, 0.5 to 1.5 mol. percent; strontium oxide, 5 to 7 mol. percent; sodium oxide, 18.5 to 20.5 mol. percent; potassium oxide, 4.5 to 6.5 mol. percent; tungsten trioxide, 1.5 to 2 mol. percent; lanthanum oxide, 0.2 to 0.25 mol. percent and calcium oxide, 6 to 8 mol. percent.

3,847,629
REFRACTORIES

Nigel Austin Hill, Stourport-on-Severn, England, assignor to Morgan Refractories Limited, Neston, Wirral, England

Filed Sept. 1, 1972, Ser. No. 285,649

Claims priority, application Great Britain, Sept. 17, 1971, 43396/71

Int. Cl. C04b *35/10*

U.S. Cl. 106—65 **3 Claims**

1. A plasticized mouldable alumina-base composition hardenable on firing to give a refractory, and consisting essentially of an alumina aggregate, a plasticizer, and a water-insoluble chromium phosphate as a bonding agent for the alumina, said phosphate forming 0.5 to 10 percent by weight of the composition.

3,847,630
METHOD FOR THE PRODUCTION OF WATER-PERMEABLE POROUS CONCRETE

Josef Compernass, Nieder-Liebersbach; Eberhard Grunberger, Dusseldorf-Wersten, and Friedo Eberhard Schmidt, Mannheim-Freudenheim, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

Continuation-in-part of Ser. No. 79,666, Oct. 9, 1970, abandoned. This application Oct. 27, 1972, Ser. No. 301,380

Claims priority, application Germany, Oct. 22, 1969, 1953158; Oct. 22, 1969, 1953159

Int. Cl. C04b *7/02*

U.S. Cl. 106—90 **16 Claims**

1. A method for the production of a water-permeable porous concrete comprising the steps of mixing a concrete mixture containing

a. granular mineral aggregates consisting essentially of a uniform grain fraction in the range of 3 to 30 mm with a tolerance range of 4 to 15 mm.,
b. hydraulic cement in the prescribed amount according to the job specifications,
c. a macromolecular water-soluble compound in an amount of from 0.05 to 2 percent by weight based on the cement, said macromolecular water-soluble compound being selected from the group consisting of plant gums, starch products, cellulose ethers and synthetic polymers, and
d. water in such an amount that the water-cement ratio is between 0.32 and 0.48 whereby said concrete mixture is sprayable, and placing said concrete mixture by spraying.

3,847,631
APPARATUS FOR AND METHOD OF RETREADING TIRES

Kenneth T. MacMillan, Macon, Ga., assignor to MacMillan Mold Company, Inc., Macon, Ga.

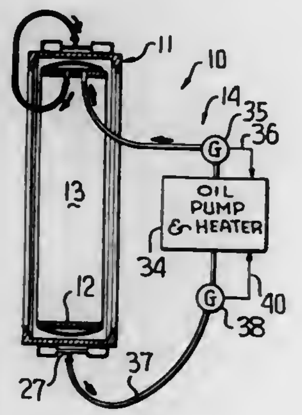
Continuation of Ser. No. 81,342, Oct. 16, 1970, abandoned. This application Feb. 9, 1973, Ser. No. 331,183

Int. Cl. B29h *5/04, 17/36*

U.S. Cl. 156—96 **21 Claims**

1. Apparatus for retreading tires comprising means defining a generally annular chamber adapted to receive at least the

tread portion of the tire to be retreaded, means defining a generally annular back-up member in internal telescopic relationship to said chamber means, a generally annular flexible bladder in external telescopic relationship to said back-up member, means for introducing and removing liquid into and from said bladder, a source of noncompressible, nonexpandable, noncombustible liquid, a closed liquid circuit including said source and bladder, said closed liquid circuit further including a high pressure pump for pressurizing said liquid and circulating the same through said closed liquid circuit, and means for heating said liquid to a temperature appreciably above ambient whereby a tire in said chamber means is cured under the influence of the heated and pressurized liquid in said bladder.



3,847,632

MASONRY MATERIAL

Helmer L. Blengsli, Mobile, Ala., assignor to Tekology Corporation, Palisades Park, N.J.

Continuation-in-part of Ser. No. 51,675, July 1, 1970, Pat. No. 3,701,671. This application Oct. 30, 1972, Ser. No. 302,289

Int. Cl. C04b *7/02*

U.S. Cl. 106—97 **4 Claims**

1. A shaped masonry article in the form of a brick, building block or tile comprised of the reaction product obtained by molding, at a pressure of at least 500 psi, a mixture comprised of

a. 85 - 97 parts by weight of an aggregate having a particle size not exceeding U.S. Standard Mesh 8, said aggregate containing at least 50 percent by weight of Bahamian aggregate, with the remainder of said aggregate being a granular, substantially non-porous, inorganic aggregate;

b. 3 - 15 parts by weight of a hydraulic cement; and

c. water in an amount sufficient to substantially completely hydrate the hydraulic cement and thereafter curing the resulting molded shaped article under ambient conditions in the presence of sufficient moisture so as to prevent dehydration until the hydraulic cement is substantially completely hydrated.

3,847,633

BUILDING MATERIAL FOR MODULAR CONSTRUCTION

Andras Race, Chicago, Ill., assignor to Robert L. Litvin, Chicago, Ill. and Louis L. Marino, Chicago, Ill., part interest to each

Filed Apr. 10, 1972, Ser. No. 242,802

Int. Cl. C04b *7/02*

U.S. Cl. 106—98 **2 Claims**

1. An improved building material which is moldable to provide members adapted for assembly at a construction site and includes portland cement and lightweight perlite aggregate wherein the improvement comprises said material: being inorganic; further including vermiculite, soluble sodium silicate, plaster of paris, fly ash, and short strands of fiberglass; consisting essentially, in weight percent of: between about 40-55% portland cement, between about 11-7 percent plaster of paris, between about 11-7% fly ash, between about 6-4 percent vermiculite, between about 24-19 percent perlite, about 5 percent fiberglass, and about 3 percent sodium silicate; and being characterized as: non-toxic non-fuming and fire-retardant when heated or exposed to flames, having a density in the range of 26 pounds per cubic foot, being moldable to shapes including interior wall panels, and adapted for on-site fabrication.

3,847,634

SYNTHETIC LIGHTWEIGHT BUILDING MATERIAL

Ronald C. Vickery, 410 S. Main St., Hudson, Fla. 33568

Filed Mar. 12, 1973, Ser. No. 340,182

Int. Cl. C04b *11/00*

U.S. Cl. 106—109 **10 Claims**

1. A synthetic lightweight building material composition having a compressive strength of about 3,000 to 5,000 pounds per square inch consisting essentially of 1 to 25 percent by weight particulate siliceous material and 2 to 10 percent by weight lime, the remainder comprising a gypsum-type residue selected from a group consisting of phosphogypsum and fluorogypsum, said residue containing as an essential constituent calcium sulfate, said composition being combined with sufficient water to form a slurry wherein the silica constituent of said siliceous material reacts to form complex calcium silicates for producing calcium silicate crystals which act as a binder upon obtaining a hydraulic set.

3,847,635

THIXOTROPIC CEMENTITIOUS COMPOSITION AND PROCESS

Robert G. Lange, Bensenville, Ill., and Walter D. Kobeski, Malcolm Springs, W. Va., assignors to United States Gypsum Company, Chicago, Ill.

Filed July 18, 1973, Ser. No. 380,521

Int. Cl. C04b *11/00*

U.S. Cl. 106—110 **12 Claims**

1. A process for imparting thixotropic characteristics to dilatant cementitious masses of alpha calcium sulfate hemihydrate-portland cement and minor amounts of a dispersing agent comprising the step of adding to the cementitious mass a minor amount by weight of magnesium sulfate.

3,847,636

ABSORBENT ALLOY FIBERS OF SALTS OF CARBOXYALKYLATED STARCH AND REGENERATED CELLULOSE

Frederick R. Smith, Wilmington, Del., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 259,943, June 5, 1972, abandoned. This application Apr. 20, 1973, Ser. No. 352,933

Int. Cl. C08b *21/22, 21/30*

U.S. Cl. 106—168 **7 Claims**

1. An absorbent alloy fiber comprising a regenerated cellulose matrix containing a salt of carboxyalkylated starch uniformly dispersed therein, said regenerated cellulose being a major proportion of the fiber mass.

3,847,637

STABLE WAX SIZING COMPOSITION AND METHOD OF SIZING CELLULOSIC FIBER PRODUCTS

Myron Michael Luszczak, Palatine, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Feb. 26, 1973, Ser. No. 336,138

Int. Cl. C08h *9/06*

U.S. Cl. 106—271 **7 Claims**

1. A stable, aqueous wax emulsion sizing composition consisting essentially of:

a. a continuous aqueous phase;

b. a dispersed waxy material phase containing up to about 45 percent by weight, based on the weight of the composition, of scale wax;

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c. about 10-15 percent by weight, based on the weight of the waxy material, of clay; and

d. an amount of sulfuric acid effective to facilitate emulsification of said wax.

3,847,638

HYDRATED METAL OXIDE DEPOSITION

George O. Suman, Jr.; Edwin A. Richardson, both of Houston, and Ronald F. Scheuerman, Bellaire, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 221,401, Jan. 27, 1972, Pat. No. 3,756,315. This application Feb. 12, 1973, Ser. No. 331,940

Int. Cl. C09k *3/00*

U.S. Cl. 106—287 SS **7 Claims**

1. A treating liquid-forming additive for forming a hydrated metal oxide-depositing treating liquid when mixed with water comprising:

at least one amphoteric metal or amphoteric metal compound that is capable of interacting with a basic aqueous liquid to form an aqueous solution of a hydroxy complex of the amphoteric metal from which solution a hydrated metal oxide can be precipitated;

at least one basic compound that is capable of increasing the pH of an aqueous liquid to a pH at which the solution of said hydroxy complex is formed; and

at least one pH reducing reactive compound that is capable of dissolving in the basic aqueous solution of said hydroxy complex and subsequently reducing the pH of the solution to one at which a hydrated metal oxide of the amphoteric metal is precipitated.

3,847,639

CERAMIC COLOR BODIES

Arno Broll, Rothenbergen; Hermann Beyer, Grossauheim; Herbert Mann, Dornigheim, and Eugen Meyer-Simon, Frankfurt, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfort (Main), Germany

Filed May 1, 1973, Ser. No. 356,166

Claims priority, application Austria, May 5, 1972, 3969/72; May 5, 1972, 3970/72

Int. Cl. C08h *17/02*

U.S. Cl. 106—288 B **24 Claims**

1. A plural phase ceramic pigment comprising as an outer phase clear crystals of glaze stable material selected from the group consisting of ZrO_2, $ZrSiO_4$, SnO_2, CeO_2, $CePO_4$, Al_2O_3, (Zn, Mg, Co, Ni) $(Al, Cr, Fe)_2O_4$ and $CaSnSiO_5$ and having enclosed therein a member of the group consisting of (1) an inorganic water free colored chalcogenide of zinc, cadmium or mercury or mixed crystals of these chalcogenides wherein the chalcogen has an atomic weight of 32 to 128, (2) PbS, (3) titanium yellow (4) Thenard's blue as a discrete inner phase.

3,847,640

TITANIUM PIGMENT SLURRIES FOR PREPARATION OF LATEX-BASE COATING COMPOSITIONS

John M. Daubenspeck, Westfield, and Bernard Holton Jett, Redbank, both of N.J., assignors to A. L. Industries, Inc., New York, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,939

Int. Cl. C09c *1/36*

U.S. Cl. 106—300 **2 Claims**

1. An aqueous titanium dioxide pigment slurry having a solids content from 60 to 65 percent on a slurry weight basis, said slurry being adaptable for use in latex paints and comprising a dispersing agent in an amount from 0.2 to 0.7 percent on pigment weight basis and a titanium dioxide pigment, said pigment in said slurry having a post treatment coating consisting of from 5 to 8 percent hydrous silicon oxide, from 3 to 5.2 percent hydrous aluminum oxide and from 0 to 2 percent hydrous titanium oxide, thereby producing a coated titanium dioxide pigment having an oil absorption of from 36 to as high as 46.

3,847,641

WAX EMULSIONS FOR CONTROLLING TRANSPIRATION IN PLANTS

Donald R. Cushman, Wenonah; Edward A. Oberright, Woodbury, both of N.J., and Roy T. Edwards, deceased, late of Mullica Hill, N.J. (by Katherine S. Edwards, legal representative), assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 256,997, May 25, 1972, Pat. No. 3,791,839, which is a continuation-in-part of Ser. No. 60,957, July 2, 1970, abandoned, which is a division of Ser. No. 639,041, May 17, 1967, abandoned. This application Oct. 18, 1973, Ser. No. 407,705

Int. Cl. A01n *5/00*

U.S. Cl. 117—3 **7 Claims**

1. A method for controlling transpiration in plants which comprises applying to the plant surface a wax emulsion composition consisting essentially of, by weight, from about 15 to about 40 percent paraffin wax; from about 5 to about 30 percent petrolatum; from about 2 to about 10 percent of at least one emulsifier selected from the group consisting of non-ionic and anionic emulsifiers; and water in an amount sufficient to form the emulsion.

3,847,642

METHOD FOR TRANSFERRING ELECTROSTATOGRAPHICALLY FORMED IMAGES

Warren L. Rhodes, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 20, 1972, Ser. No. 219,410

Int. Cl. G03g *13/14, 13/16, 13/22*

U.S. Cl. 117—17.5 **17 Claims**

1. An electrostatographic imaging process comprising

providing an imaging member carrying an electrostatic latent image, said imaging member comprising a layer of an organic film forming material having a thickness of from about 2 microns to about 25 microns overlying an electrostatographic imaging surface, said organic material having a resistivity above about 10^{10} ohm-cm, a melting point between about 25°C and about 95°C and a viscosity at its melting point of from about 10 to about 200 centipoises;

developing said electrostatic latent image to form a visible image; and

transferring said developed image to a receiving member by bringing said receiving member into contact with the surface of said imaging member carrying said developed image and separating said receiving member from said imaging member, wherein said organic material is in a liquefied state during said step of transferring and said receiving member comprises a material capable of being wet by said liquefied organic material, wherein said organic material layer splits during said step of transferring with a portion of said layer remaining on said imaging member and a portion of said layer accompanying said developed image to said receiving member.

3,847,643

SURFACE TREATMENT OF FLUORESCENT LAMP BULBS AND OTHER GLASS OBJECTS

Edward E. Hammer, Mayfield Village, and William C. Martyny, Lyndhurst, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

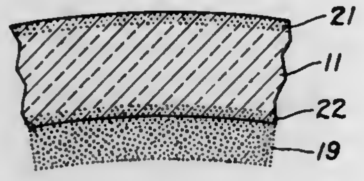
Filed Jan. 22, 1973, Ser. No. 325,431

Int. Cl. H01j *1/62, 63/04*

U.S. Cl. 117—33.5 L **11 Claims**

1. A method of treating glass, comprising the steps of applying to the glass surface a mixture containing aluminum-s-butoxide and tetrabutyl titanate and a material selected from the group consisting of tri-n-butyl borate and tri-n-butyl antimonite and a mixture thereof, and heating said glass and mixture to a temperature of at least 400° C, the amount of

aluminum-s-butoxide in said mixture being sufficient to cause excess aluminum oxide to be produced and causing said mixture to chemically react with said glass during said heating step.



3,847,644
IMAGING BY PHASE AGGREGATION FROM BLOCK COPOLYMERS

Peter Franklin Erhardt, Webster, and Irwin Andrew Wiehe, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 24, 1972, Ser. No. 309,384
Int. Cl. B41m *5/00*

U.S. Cl. 117—36.7 **8 Claims**

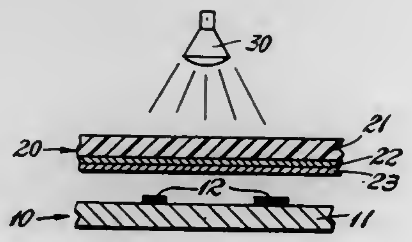
1. A heat-sensitive, dry, non-tacky recording material comprised of a substrate having a uniform coating, said coating comprising a film forming block copolymer which upon imagewise exposure to intense energy radiation undergoes phase separation in the exposed areas giving rise to submicron spherical domain structures, thereby to provide a visible contrast with the surrounding unexposed areas.

3,847,645
THERMOGRAPHIC COPY SHEETS AND PROCESS

Peter De Laurentis, Massapequa, and Douglas A. Newman, Glen Cove, both of N.Y., assignors to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Continuation of Ser. No. 81,737, Oct. 19, 1970, abandoned. This application Nov. 24, 1972, Ser. No. 309,343
Int. Cl. B41m *5/18*

U.S. Cl. 117—36.9 **8 Claims**



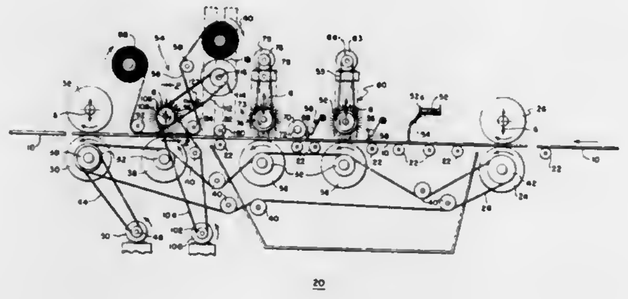
1. Heat-sensitive copy film for projection transparency use comprising a thin clear plastic film foundation having thereon two superposed clear resinous layers which do not melt under conditions of use, one layer comprising a substantially-colorless acid-sensitive dye precursor dissolved in a resinous binder from the group consisting of vinyl chloride polymers and mixtures of vinyl chloride polymers and of vinylidene chloride polymers with from about 25 percent up to 95 percent by weight of another compatible modifying resin, and the other layer consisting essentially of a substantially-colorless heat-vaporizable aromatic acid dissolved in an alcohol-soluble resinous binder comprising a mixture of cellulose acetate butyrate and polyvinyl butyral, which mixture is substantially incompatible with the resinous binder material of the said one layer.

3,847,646
METHOD OF MAKING DECORATIVE PANELS

Lyn R. Daunheimer, Batavia, and William M. Irvine, Lombard, both of Ill., assignors to Masonite Corporation, Chicago, Ill.

Filed Sept. 11, 1972, Ser. No. 287,682
Int. Cl. B44d *5/10*

U.S. Cl. 117—37 R **7 Claims**



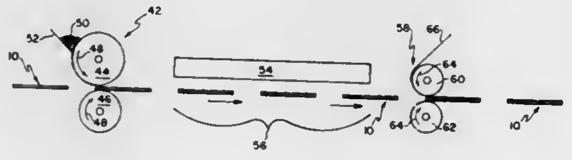
1. A method of decorating the surface of a building panel comprising the steps of flowing liquid stain onto said surface, spreading said stain over said surface, and wiping said stain by the application of woven fabric biased against said surface by a rotating brush, said brush including bristles having free outer ends moving relatively against the back side of said fabric to bias the same into wiping contact with said stain, said bristles positioned for random penetration of the openings in said woven fabric during rotation.

3,847,647
PROCESS OF APPLYING ADHESIVE TO A FLOOR COVERING

Jurgen F. Bahlo, Cherry Hill, N.J., assignor to General Felt Industries, Inc., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 131,019, April 5, 1971, Pat. No. 3,704,197. This application Nov. 22, 1972, Ser. No. 308,811
Int. Cl. B41c *1/18*

U.S. Cl. 117—38 **4 Claims**



1. A process of applying adhesive to a floor covering having a foam backing of 8.5–19 pound/cubic foot density and a traffic bearing layer bonded to the foam backing having a delamination strength of 1.0–2.25 pound/inch, the process comprising the steps of

applying an effective amount of a liquid adhesive to the foam backing in a multiplicity of discrete portions each having an area of less than about .01 square inches and separated from the next adjacent portion by a non-adhesive area, the portions aggregating less than about 50 percent of the area of the foam backing; and

solidifying the adhesive to produce a release strength for the floor covering between .1–.9 pound/inch.

3,847,648
PLATING PRE-TREATMENT IN ACRYLONITRILE BUTADIENE STYRENE

William R. Vincent, and Ismat A. Abu-Isa, both of Birmingham, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 29, 1972, Ser. No. 310,653
Int. Cl. C23c *17/00*

U.S. Cl. 117—47 A **2 Claims**

1. A method of metalizing acrylonitrile-butadiene-styrene surface including the steps of:

contacting said surface with a conditioning and activating solution for preparing the surface to uniformly accept an adherent metal deposit, said solution consisting essentially of in 1 liter thereof about 35 to about 75 cubic centimeters of methyl ethyl ketone to insure uniform coverage of the surface without producing a blistered deposit, about 5 to about 100 cubic centimeters of concentrated sulfuric acid to increase adhesion of the metal deposit to the surface, up to about 5.6 to 10^{-4} moles of ketopalladium complex formed by the reaction of palladium chloride with methyl ethyl ketone to activate said surface and the balance methyl alcohol; and

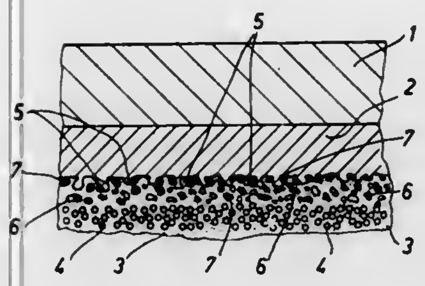
contacting said surface with a reducing solution of a reducible compound of a coating metal to electrolessly deposit said coating metal uniformly and adherently onto said surface.

3,847,649
PROCESS FOR DEPOSITING A METAL LAYER UPON A PLASTIC

Vladimir Sova, Mellingen, Switzerland, assignor to Brown, Boveri & Cie, Baden, Switzerland

Filed Mar. 9, 1973, Ser. No. 339,935
Claims priority, application Switzerland, Mar. 16, 1972, 3929/72
Int. Cl. C23c *17/00*

U.S. Cl. 117—47 A **12 Claims**



1. A process for the deposition of a metal layer onto a plastic body which comprises:

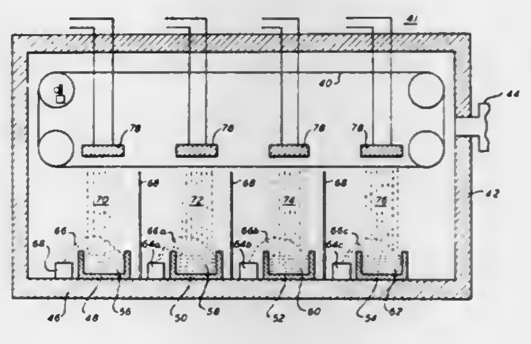
a. admixing a solvent, acid, or base soluble particulate filler, and a catalytically inactive reduceable Group VIII or IB metal salt of the Periodic Table into a curable polymeric resin composition selected from the group consisting of epoxy resins, olefin resins, carbonate resins, acrylic resins, formaldehyde resins, and polyester resins;
b. applying heat so as to effect curing of said polymeric resin composition to form a plastic body, and to simultaneously reduce said metal salt to an active catalytic state for subsequent electroless deposition;
c. removing at least one surface layer of said cured composition so as to expose a portion of said soluble filler and said reduced metal salt; and
d. desolving out said exposed filler under conditions which do not dissolve said cured polymeric resin and subjecting said treated surface to an electroless deposition from an electroless deposition bath by the catalytic activity of said reduced metal salt.

3,847,650
FLASHLAMP WITH IMPROVED COMBUSTION FOIL AND METHOD OF MAKING SAME

Eric Gregory, Bernardsville; William G. Marancik, Basking Ridge, and Walter J. Shattes, Bloomfield, all of N.J., assignors to Airco Inc., Montvale, N.J.

Division of Ser. No. 178,978, Sept. 9, 1971, Pat. No. 3,749,547. This application Jan. 26, 1973, Ser. No. 326,632
Int. Cl. B44d *1/16;* **C23c** *13/02*

U.S. Cl. 117—71 M **9 Claims**



1. A method for producing a combustible composite foil suitable for use in flashbulbs, comprising the steps of:

vapor depositing on a stainless steel substrate in a vacuum furnace a layer of combustible non-pyrophoric material wherein said material is selected from the group consisting of aluminum, hafnium, magnesium and mixtures and alloys thereof;

vapor depositing a layer of combustible pyrophoric material of yttrium on said non-pyrophoric layer; and

protecting the exposed surface of the pyrophoric material by forming a protective layer thereon wherein said layer is selected from the group consisting of yttrium oxide or a layer of the non-pyrophoric material before said composite foil is removed from said vacuum furnace.

3,847,651
PROCESS FOR PROVIDING AN OPAQUE WATERPROOF PROTECTIVE COATING FILM ON A SUBSTRATE

Harold William Holden, and Henry Peter Schreiber, both of, Mont-Saint-Hilaire, Quebec, Canada, assignors to Canadian Industries Limited, Montreal, Province of Quebec, Canada

Filed Mar. 26, 1973, Ser. No. 344,613
Claims priority, application Canada, Apr. 14, 1972, 140449
Int. Cl. B44d *1/14*

U.S. Cl. 117—72 **4 Claims**

1. A process for preparing an opaque waterproof protective coating film which comprises the steps of

a. applying to the surface of a substrate a composition consisting essentially of a gellable film-forming polymer and a mixed solvent for said polymer comprising at least two miscible liquids, one of the liquids being a non-solvent for said polymer and having a volatility substantially less than that of the other liquid or liquids of the solvent, the proportion of non-solvent in the solvent mixture being such that during evaporation of the solvent the polymer is precipitated forming an open-celled porous continuous coating on the substrate,
b. eliminating the solvent from the composition, thus forming on the substrate a microporous opaque open-celled coating that absorbs water,
c. applying to the coating on the substrate a solution of a non-polar polymer selected from the group consisting of ethylene-propylene diene terpolymer rubbers, styrene-butadiene rubbers, butyl rubber, ethylene-vinyl acetate copolymers, polystyrene, and vinylidene chloride-acrylonitrile copolymers containing from 0.05 to 6.0

percent by weight of the non-polar polymer dissolved in a non-aqueous solvent that is not a solvent for the film-forming polymer, and

d. eliminating the solvent from the non-polar polymer to form a waterproof coating on the surface of the substrate.

3,847,652

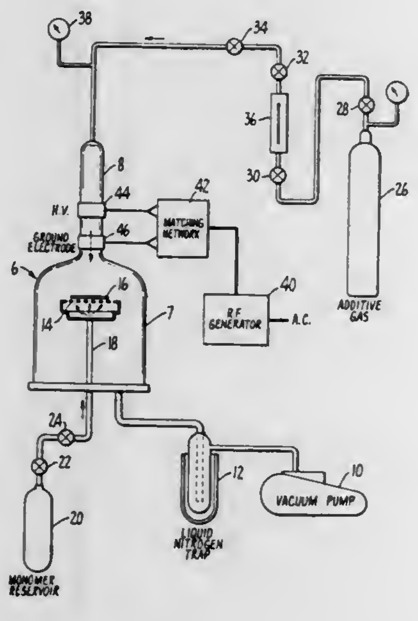
METHOD OF PREPARING WATER PURIFICATION MEMBRANES

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; John R. Hollahan, 760 De Haro St., San Francisco, Calif. 94107, and Theodore Wydeven, 1130 Revere Dr., Sunnyvale, Calif. 94087

Filed Dec. 8, 1972, Ser. No. 313,389

Int. Cl. C08f *1/22, 3/34, 3/00*

U.S. Cl. 117—93.1 GD **11 Claims**



1. A process for making a reverse osmosis membrane for desalination of water comprising the steps of:

a. disposing a microporous substrate in an enclosed space,
b. generating a plasma of an inert gas within said enclosed space,
c. directing symmetrically a gaseous stream of an unsaturated organic compound including at least one allyl group toward and around said substrate, and
d. directing the said plasma symmetrically and countercurrently toward said gaseous stream and said substrate, whereby the said unsaturated organic compound is polymerized with the aid of the plasma and deposited on the said substrate as a uniform polymer film to form the reverse osmosis membrane.

3,847,653

METHOD AND APPARATUS FOR FABRICATING COMPOSITE CERAMIC MEMBERS

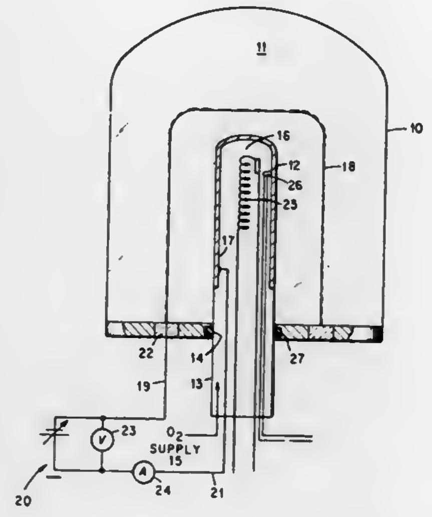
Prodyot Roy, Saratoga; James L. Simpson, San Jose, and Edward A. Aitken, Danville, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 27, 1972, Ser. No. 301,411

Int. Cl. C23c *11/08*

U.S. Cl. 117—93 **4 Claims**

1. A method of fabricating composite ceramic members comprising the step of: simultaneously depositing ThO_2: 15 percent Y_2O_3 on a sintered stabilized zirconia member composed of ZrO_2:15 percent CaO by decomposition of gaseous $ThCl_4$ and YCl_3, and by reacting with oxygen gas migrated through the member under an electrical potential gradient.



3,847,654

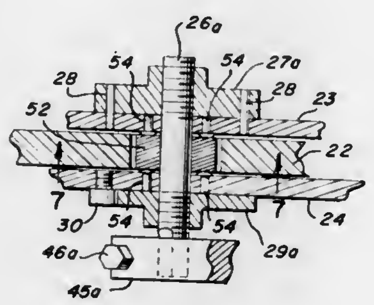
SUBSTRATE BONDED WITH VINYL DISPERSION TEXTURED COATING

Harlan E. Althouse, Pontiac; Fremont L. Scott, Birmingham, both of Mich., and Gordon E. Cole, Jr., Greenwich, Conn., assignors to M & T Chemicals Inc., New York, N.Y.

Division of Ser. No. 44,625, June 8, 1970, Pat. No. 3,723,379. This application Sept. 22, 1972, Ser. No. 291,387

Int. Cl. C03c *25/02*

U.S. Cl. 117—123 D **8 Claims**



1. An article having a textured selfadhering coating bonded to a substrate, said self-adhering coating composition containing:

a. 16.0 – 34.2 parts by weight of a first vinyl resin having a relative viscosity of 1.98 – 2.35; a molecular weight of about 75,000 – 101,000, and an average particle size of about 0.5 – 7.0 microns;
b. 3.8 – 24.0 parts by weight of a second halogen-containing resin having a specific viscosity of about 0.50, an inherent viscosity of about 1.20, a molecular weight average of about 127,000, and a particle size of at least 7.0 microns to 177 microns;
c. 1.0 – 7.6 parts by weight of a vinyl solution resin with reactive sites having a vinyl chloride content of 75.0 to 91.5 percent copolymerized with at least one member selected from the group consisting of vinyl acetate, vinylidene chloride, or an ester of maleic acid, and having an inherent viscosity of about 0.34 – 0.46;
d. 0.2 – 3.8 parts by weight of a liquid epoxy resin having a viscosity of about 10,000 – 20,000 centipoises and an epoxy equivalent weight of about 180 – 220;
e. 1.2 – 14.7 parts by weight of an aminoplast resin;
f. 17 – 30.4 parts by weight of a plasticizer;
g. about 0.0 – 15.3 parts by weight of a solvent-diluent which when present cooperates with plasticizers to dissolve the third vinyl resins (c), the liquid epoxy resin (d), and the aminoplast resin (e) but does not gel or dissolve either the first vinyl resin (a), or the second halogen-containing resin (b) at temperatures of about 20°– 35°C.; and wherein the first vinyl resin (a) and the second resin (b) are incompletely soluble in plasticizer (f) at temperatures of 20°–35°C. and wherein plasticizer (f) is capable of completely solubilizing the third vinyl resin solution (c);
h. 3.0 – 23.7 parts by weight of pigments and/or fillers; and optionally,
i. 1.6 – 2.5 parts by weight of at least one polyvinyl chloride stabilizer, wherein the total parts by weight of ingredients (a) – (i) amounts to 100 parts.

3,847,655

FAST COLORING OF GLASS FIBERS AND GLASS FABRICS

Harry W. Crimmel, Warwick; Emanuel G. Terezakis, Cumberland, and Phyllis A. Sutula, Woonsocket, all of R.I., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 7, 1972, Ser. No. 313,036

Int. Cl. C03c *25/02*

U.S. Cl. 117—126 GQ **24 Claims**

1. A method of coloring glass fibers, comprising: wetting the surface of glass fibers with a polar water miscible organic solvent that carries an organic water insoluble coloring agent therein; neutralizing the polarity of said polar organic solvent in situ on said fibers with water and extracting said polar organic solvent from the wetted surface of said fibers with the water leaving said water insoluble coloring agent as a thin tight coating on the surface of said fibers; and fixing said coating of coloring agent in situ on the surface of said fibers.

3,847,656

METHOD OF COATING OR BONDING METALS

Hans Baumann; Rudolf Glaser, and Peter Bauer, all of Ludwigshafen, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen/Rhine, Germany

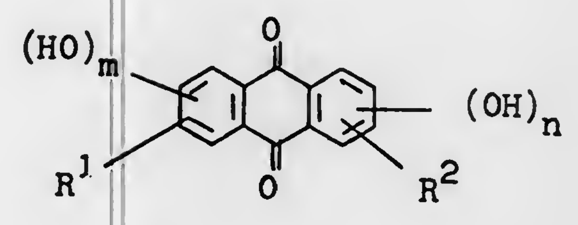
Filed July 17, 1973, Ser. No. 379,986

Claims priority, application Germany, July 18, 1972, 2235141

Int. Cl. B32b *15/08;* **C08f** *1/84*

U.S. Cl. 117—132 C **2 Claims**

1. A method of coating a material selected from the group consisting of copper, brass, zinc, iron and steel or of bonding said metals to each other or to plastics materials using an adhesive, said materials being bonded or coated with said adhesive at a temperature which is above the melting point of the adhesive used and which adhesive essentially consists of a mixture of an ethylene copolymer containing from 0.5 to 30 percent by weight of copolymerized units of an ethylenically unsaturated carboxylic acid with from 0.01 to 5 percent by weight of said ethylene copolymer of a compound having the formula:



wherein

n is equal to 1, 2 or 3 and
m is equal to 0, 1 or 2 and
R^1 and R^2 denotes H, Cl, Br, NO_2, SO_3H, COOH, phenoxy, alkyl, NH_2 or NHR^3 and
R^3 denotes alkyl or aryl.

3,847,657

HYDROPHOBIC AND OLEOPHOBIC FINISH

Martin Rieber, Schonberg, Taunus, and Wilhelm Loffler, Kelkheim, Taunus, both of Germany, assignors to Farbwerke Hoechst Atkiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

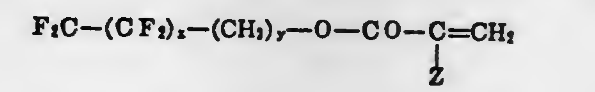
Filed Oct. 17, 1972, Ser. No. 298,457

Claims priority, application Germany, Oct. 18, 1971, 2151755

Int. Cl. D06m *15/38*

U.S. Cl. 117—135.5 **19 Claims**

1. A process for rendering polyester materials for fibers and foils water- and oil repellant which comprises contacting said material with a mixture of a fluoroalkyl acrylate or methacrylate and tetrachloroethane and effecting a graft polymerization or polymerization or both of these reactions by addition of an effective amount of a free radical generating catalyst, wherein said fluoroalkyl acrylate or methacrylate has the formula



$$F_3C{-}(CF_2)_x{-}(CH_2)_y{-}O{-}CO{-}\underset{\substack{| \\ Z}}{C}{=}CH_2$$

in which x is a number of 2 to 17, y is a number of zero to 4 and Z is hydrogen or methyl and wherein from 0.1% to 10% referred to the weight of the polyester of said fluoroalkyl compound are added onto the polyester material.

3,847,658

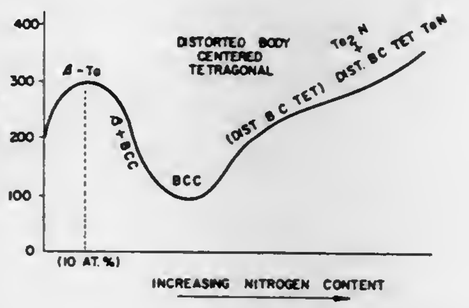
ARTICLE OF MANUFACTURE HAVING A FILM COMPRISING NITROGEN-DOPED BETA TANTALUM

Henry Yasuo Kumagai, Lower Macungie Twsp., Lehigh County, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 217,876, Jan. 14, 1972, Pat. No. 3,723,838. This application Dec. 15, 1972, Ser. No. 315,758

Int. Cl. C23c *13/02;* **H01g** *1/01*

U.S. Cl. 117—201 **4 Claims**



1. An article of manufacture which comprises a non-conductive substrate having a film comprising nitrogen-doped beta tantalum wherein nitrogen is present in an amount ranging from about 0.1 atomic percent to about 10 atomic percent nitrogen.

3,847,659

PROCESS FOR PRODUCING PLASTIC ARTICLES HAVING TRANSPARENT ELECTROCONDUCTIVE COATINGS

Shigenobu Sobajima; Norio Takagi, and Kiyoshi Chiba, all of Tokyo, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Nov. 7, 1972, Ser. No. 304,482

Claims priority, application Japan, Nov. 13, 1971, 46-90770

Int. Cl. H05b *33/23;* **C23c** *11/00*

U.S. Cl. 117—211 **15 Claims**

1. A method for preparing a transparent electrically conductive article which comprises forming a gray to black color coating of lower oxides of indium on the surface of a plastic material by vacuum evaporation using indic oxide as an evaporating source at a pressure lower than 5×10^{-4}mmHg while

maintaining the temperature of the evaporating source at 1,300° to 2,000°C., and thereafter oxidizing said coating until the coating becomes transparent so that the transmittance of 600 nonameters light through the coating reaches 60 to 95 percent.

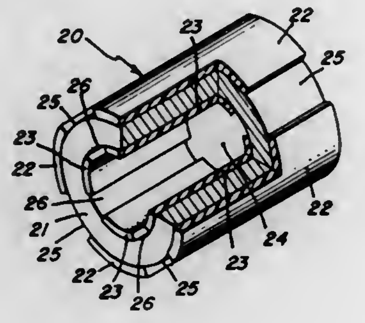
3,847,660
BI-POLAR ACRIVATING PARTICLES FOR ELECTRODEPOSITION PROCESS

Steve Eisner, Schenectady, N.Y., assignor to Norton Company, Troy, N.Y.

Division of Ser. No. 147,409, May 27, 1971, Pat. No. 3,699,017. This application May 31, 1972, Ser. No. 258,421

Int. Cl. B44d *1/18, 1/34*

U.S. Cl. 117—212 **4 Claims**



1. A bi-polar conductive particle for use in electrochemical processes which comprises:
   a. a conductive metal core member; and
   b. a hard, non-conductive sheath completely encapsulating said core member except at diametrically opposed openings therein which permit contact between such conductive core and a liquid electrolyte when the particle is immersed in such electrolyte;
   c. said core member being recessed at said openings in said non-conductive sheath.

3,847,661
ELECTROSTATIC IMAGING PAPER

Andrew William Hill, Great Missenden, and Paul Donald Sims, Hazlemere, both of England, assignors to Wiggins Teape Research & Development Limited, London, England

Filed Dec. 12, 1972, Ser. No. 314,435

Claims priority, application Great Britain, Dec. 20, 1971, 59082/71

Int. Cl. B44d *1/16;* **G03g** *5/04*

U.S. Cl. 117—218 **23 Claims**

1. An electrostatic imaging paper comprising an electrically conductive base paper having on one side thereof a continuous coating of dielectric material, said dielectric material coating being of a polymeric material deposited from an aqueous dispersion which has a minimum film-forming temperature not greater than 30°C and wherein said polymeric material is selected from the group consisting of polyolefins, substituted polyolefins and condensation polymers.

3,847,662
APPARATUS AND METHOD FOR SONIC CLEANING OF HUMAN TEETH

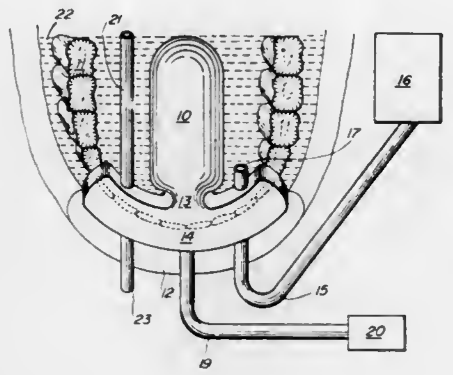
Frank Massa, Cohasset, Mass., assignor to Massa Division, Dynamics Corporation of America, Hingham, Mass.

Filed June 28, 1972, Ser. No. 267,007

Int. Cl. B08b *7/02;* **B01j** *1/12*

U.S. Cl. 134—1 **16 Claims**

1. An apparatus for sonically cleaning natural human teeth comprising an electroacoustic transducer means shaped and dimensioned to fit inside the mouth cavity behind the teeth and be sealed therein by the lips, support means associated with said transducer means and shaped to be held clamped between the front teeth while said transducer is sealed inside the mouth cavity by the lips, liquid conveyor means attached to said support means to enable passage of a liquid into the entirety of the mouth cavity with the face pointing downwardly, said liquid being conveyed into the mouth cavity through said support means, and means for driving said electroacoustic transducer to generate sonic energy in the liquid submerging the transducer inside said mouth cavity.



3,847,663
CLEANING OF METALS WITH COMPOSITIONS CONTAINING ALKALI METAL SILICATE AND CHLORIDE

Gary Allen Shumaker, Mentor, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 58,182, July 24, 1970, abandoned. This application July 19, 1972, Ser. No. 273,253

Int. Cl. C23g *1/14*

U.S. Cl. 134—2 **6 Claims**

1. A method for cleaning the surface of metals during processing thereof which comprises contacting said surface at a temperature of about 50°-100°C. with an aqueous cleaning composition in the liquid state wherein the active ingredients comprise water-soluble alkali metal silicate and alkali metal chloride, the weight ratio of said silicate to said chloride being between about 4:1 and 10:1.

3,847,664
FIBERGLASS RECLAIMING

Jean J. O. Gravel, 435 Norman St., Montreal, Quebec, Canada (645)

Filed Mar. 22, 1973, Ser. No. 343,762

Int. Cl. C03b *29/00;* **C03c** *25/00*

U.S. Cl. 134—2 **8 Claims**

1. A method of removing organic binder material from the surface of randomly oriented glass fibers forming a bulk material which method comprises removing oxygen from the interstices of said bulk material and passing a gaseous mixture containing oxygen and water vapour through said bulk material so as to contact the surfaces of said glass fibers at a temperature in the range of 800°F to 1,200°F which is at least sufficient to cause oxidation and gasification of the organic binder material which temperature is below the incipient fusion of the glass fibers; said gaseous mixture being prepared by injecting a water spray into the flame of gas burning furnace, said gaseous mixture also including gases which are non-reactive with said binder; the relative proportions of water vapour and oxygen in said gaseous mixture being selected to maintain said temperature in the aforesaid range, said gaseous mixture containing 1 to 4 percent by weight of oxygen and 30 to 50 percent by weight of water vapour.

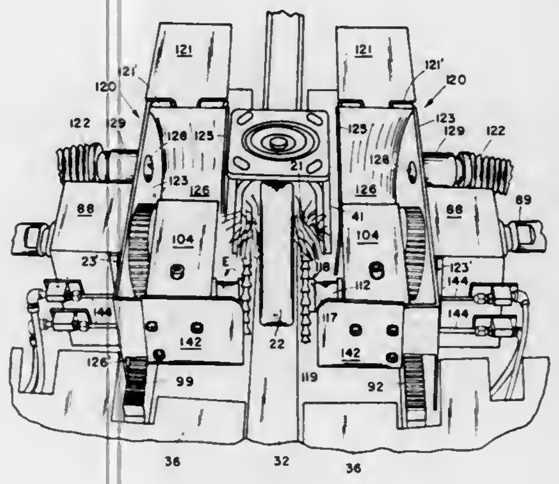
3,847,665
METHOD AND APPARATUS FOR REMOVING FILAMENTS FROM THE AXLE OF A CASTER

Henry J. Quint, Grandville, Mich., assignor to Rapistan Incorporated, Grand Rapids, Mich.

Filed May 4, 1973, Ser. No. 357,246

Int. Cl. B08b *1/04;* **B60s** *1/68*

U.S. Cl. 134—6 **24 Claims**



1. A method of removing material accumulated around the axle of a caster between the caster frame and wheel comprising the steps of:
   providing guide means for receiving a caster wheel;
   positioning the caster on the guide means to align the caster in predetermined orientation;
   providing material removal means;
   clamping the caster in the aligned position on the guide means; and
   circumscribing an arcuate portion of the axle of the caster with the removal means spaced at a predetermined distance from the axis of the caster axle sufficient to remove the accumulated material.

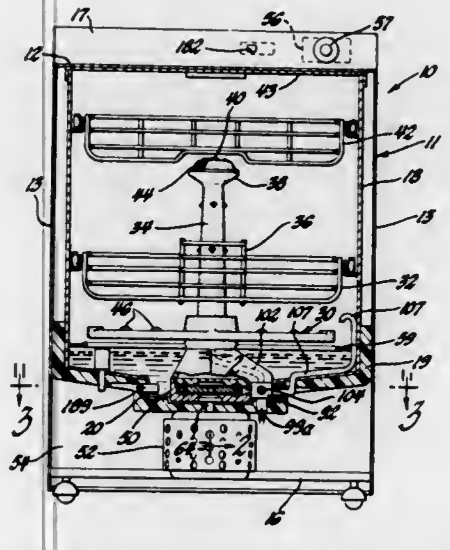
3,847,666
WATER HEATING SYSTEM FOR A DISHWASHER

James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 24, 1973, Ser. No. 363,590

Int. Cl. B08b *3/02*

U.S. Cl. 134—57 D **3 Claims**



1. A dishwasher including walls enclosing a dishwashing chamber and defining an access opening, a door for enclosing said dishwashing chamber, means for spraying in said chamber, means for supporting dishes in exposed relationship to said spray means, one of said walls forming a sump below said support means, a regenerative pump assembly having an inlet fluidly connected to said sump and an outlet fluidly connected to a valve, said pump having a housing enclosing a circular channel between said pump inlet and said pump outlet; an impeller rotated within said pump housing by an electric drive motor, said impeller having a plurality of turbine buckets formed along its peripheral edge which are movable through said circular channel as said impeller rotates for passing fluid between said inlet and said outlet and for heating the fluid in said annular channel by the impact of said moving buckets upon the fluid; said valve having outlets operative in response to control means for circulating fluid flow from said pump outlet to said spray means and to said sump for return to said pump; said valve sump outlet being in the form of a restricted passage to throttle its discharge whereby upon said control means causing said pump outlet to be connected to said restricted passage to increase the amount of work expended by said pump upon the fluid in said pump thereby raising the temperature of the fluid in said buckets before its recirculation to said sump.

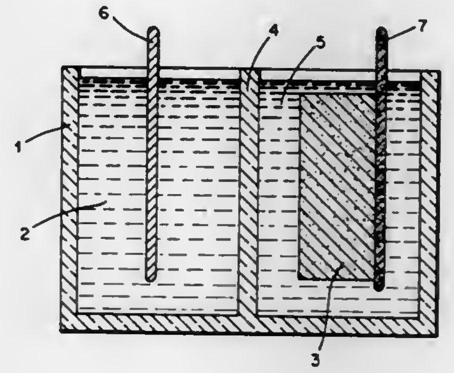
3,847,667
ALKALI METAL-POROUS CONDUCTIVE CARBON BATTERY HAVING A MOLTEN ALKALI METAL CHLORALUMINATE ELECTROLYTE

John J. Werth, Princeton, N.J., assignor to ESB Incorporated, Philadelphia, Pa.

Filed Sept. 26, 1972, Ser. No. 292,281

Int. Cl. H01m *43/00*

U.S. Cl. 136—6 FS **13 Claims**



1. A secondary battery comprising in combination:
   a. a molten alkali metal anode;
   b. a cathode comprising conductive porous carbon;
   c. a solid member separating the anode and the cathode, said member being selectively-ionically-conductive with respect to cations of said molten alkali metal anode; and
   d. a molten alkali metal chloraluminate electrolyte on the cathode side of the solid member, wherein the alkali metal of the anode is also present in the alkali metal chloraluminate.

3,847,668
ALKALINE ACCUMULATOR OPERATED IN GAS-TIGHTLY SEALED CONDITION

Gunter Kramer, and Helmut Glaser, both of Kelkheim/Ts., Germany, assignors to Varta Aktiengesellschaft, Kelkheim/-Taunus, Germany

Filed Nov. 14, 1972, Ser. No. 306,277

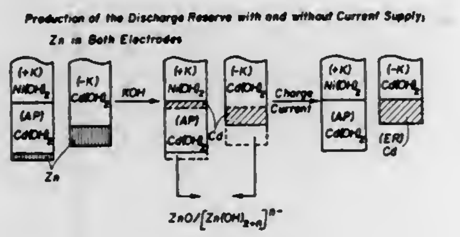
Claims priority, application Germany, Nov. 15, 1971, 2156554

Int. Cl. H01m *35/00*

U.S. Cl. 136—6 G **4 Claims**

1. In an accumulator of the alkaline type permanently sealed against gas and moisture, a negative electrode having a charge reserve and a discharge reserve, a positive electrode containing positive active mass and antipolar matter, and an oxidation product of zinc, said oxidation product being formed by introducing into the accumulator prior to sealing,

metallic zinc as a reducing agent conductively connected to said antipolar matter of said positive electrode, which zinc together with said alkaline electrolyte effect reaction and reduction of a portion of the antipolar matter of the positive electrode, said discharge reserve of the negative electrode being formed by charging the electrodes to oxidize said reduced portion of the antipolar matter of the positive electrode and to form simultaneously a discharge reserve of the negative electrode.



3,847,669
REDUCED MERCURY CONTAINING ZINC ALKALINE CELLS

Sam C. Paterniti, Lakewood, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 185,864, Oct. 1, 1971, abandoned. This application Aug. 3, 1973, Ser. No. 385,309

Int. Cl. H01m *41/00*

U.S. Cl. 136—30 **7 Claims**

1. A galvanic cell having a zinc anode, a manganese dioxide cathode and an alkaline electrolyte, said zinc anode containing less than 8 percent mercury based on the weight of the zinc anode, said cell also containing an ethylene oxide polymer selected from the group consisting of diethylene glycol, triethylene glycol, polyethylene glycol having an average molecular weight of from about 190 to about 7,000, C_4 and lower alkyl ethers thereof and C_4 and lower alkanoate esters thereof, said ethylene oxide polymer and said mercury in combination providing an improved storage stability under comparable conditions for said cell as provided by a cell otherwise identical but containing the same quantity of mercury in the absence of said ethylene oxide polymer.

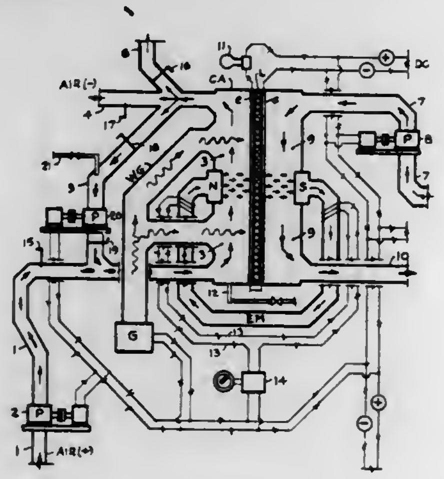
3,847,670
FUEL CELLS USING ELECTROMAGNETIC WAVES

Carsten Ingeman Johnsen, 26 Le Brun, Arendal, Norway

Filed Feb. 28, 1968, Ser. No. 708,994

Int. Cl. H01m *27/02*

U.S. Cl. 136—86 R **2 Claims**



1. in the process for generating electricity which comprises passing an ionized oxidant through the first passage of a producing fuel cell while a fuel is passed through its second passage separated from the first passage by an electrolytic barrier installed between electrodes connected to an external circuit and electrical load; the method enhancing electricity output of fuel cells which includes a first step effecting an intimate association of oxidant ions migrating through the electrolytic barrier on the one hand and advancing waves of electromagnetic origin possessing momentum, appropriate frequencies as well as accompanied with radiation, on the other hand; and a second step orienting the fuel passages and the advancing waves relatively to each other such that the migrating ions and the advancing waves move in the same direction, the advancing waves impinging on the migrating ions thereby augmenting the velocities of said ions and transporting added masses of ions per unit of time through the electrolytic barrier to the fuel cell fuel passage engaging and reacting therein with available fuel entities intensifying and broadening exothermic reactions carried out electrochemically; followed by a third step whereby electrons from electrical charges liberated via said reactions from the additionally transported ions are absorbed by and yielded from respective fuel cell electrodes, external circuit and coupled load in a manner identical with similar absorption and yielding of electrons taking place simultaneously as results of normal activities in conventional producing fuel cells; the said several steps effecting substantial enhancement of electrical output of fuel cells.

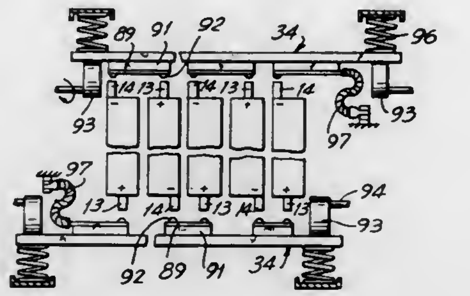
3,847,671
HYDRAULICALLY-REFUELABLE METAL-GAS DEPOLARIZED BATTERY SYSTEM

Angelo F. Leparulo, North Caldwell, and Charles Grun, Matawan, both of N.J., assignors to Electromedia Inc., Summit, N.J.

Filed Apr. 13, 1973, Ser. No. 351,063

Int. Cl. H01m *27/00, 31/00*

U.S. Cl. 136—86 A **20 Claims**



1. A hydraulically refuelable battery system, each cell in the battery of said system comprising bottom and side walls, a negative grid, a positive gas electrode opposed to said grid, a separator between said grid and said positive gas electrode, said negative grid forming with said separator and said side and bottom walls of said cell an anode compartment, first port means above each cell for introducing electrolyte and active metal powder as a slurry in electrolyte into each of said compartments, second port means proximate the bottom of each cell for removing electrolyte and solid discharge products from each cell, first manifold means, first branch tubes connecting said first manifold means with each of said first port means, second manifold means, second branch tubes connecting said second manifold means with each of said second port means, first coupling means for connecting said first manifold means to an external stationary source of electrolyte and active metal powder whereby electrolyte and electrolyte carrying suspended powder as a slurry may be transferred through said first manifold means, said first branch tubes and said first port means to each of said cells, second coupling means for connecting said second manifold means to an external receiver whereby any contents of said cells may be transferred and flushed through said second port means, said second branch tubes and said second manifold means to an external receiver, drain means in said second manifold, whereby conductive electrolyte and suspended metal powder may be drained from said second manifold for preventing undesired electric current therethrough, first valve means in each of said second branch tubes, said second branch tubes and said second manifold having therein portions of electrically insulative material between said first valve means for preventing conduction of electricity therebetween, conduit means in said battery for bringing depolarizing gas to the positive gas electrodes of all cells, switching means for electrically disconnecting all cells from each other during transfer of electrolyte and slurry to and from said battery, said cells being dimensioned to hold the entire quantity of active metal powder to be used by said cells between successive couplings to said external stationary source of active metal powder, thereby making it possible to reactivate an at least partly discharged battery by emptying same of discharge products and electrolyte and refilling the cells of said battery with a slurry of active metal powder suspended in electrolyte, which greatly reduces the time involved for reactivating a battery while avoiding the danger of shorting between opposed electrodes which arises when it is attempted to reduce metal ions to metal electrochemically in a cell used for discharge.

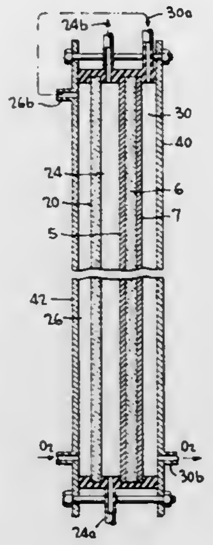
3,847,672
FUEL CELL WITH GAS SEPARATOR

John C. Trocciola, Glastonbury, and Myles A. Walsh, III, Vernon, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Aug. 18, 1971, Ser. No. 172,652

Int. Cl. H01m *27/14*

U.S. Cl. 136—86 C **9 Claims**



1. A fuel cell system comprising a fuel cell including an anode, a cathode, and an electrolyte constructed and arranged in operative association with a gaseous carbon dioxide separator including a salt tile comprising an admixture of an alkali or alkaline earth oxide and an alkali or alkaline earth carbonate having two opposed surfaces, means for bringing a reform gas in contact with one opposed surface of said salt tile, means for bringing a sweep gas in contact with the second opposed surface of said salt tile, and means for providing said reform gas after contacting said one opposed surface of said salt tile to said anode.

3,847,673
HYDRAZINE CONCENTRATION SENSING CELL FOR FUEL CELL ELECTROLYTE

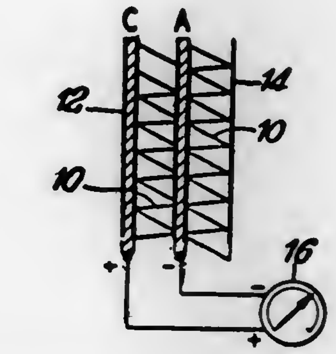
Karl V. Kordesch, Lakewood, and Milton B. Clark, North Royalton, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 22, 1968, Ser. No. 754,560

Int. Cl. H01m *27/00*

U.S. Cl. 136—86 B **6 Claims**

1. A hydrazine sensing cell for monitoring the concentration of hydrazine dissolved in a fuel cell electrolyte which comprises a depolarized cathode, the surface of which is in contact with said hydrazine-containing electrolyte, a hydrazine anode in contact with said hydrazine-containing electrolyte, means for measuring changes in the open circuit voltage of said cell and means for adding hydrazine to said electrolyte in response to a decrease in said open circuit voltage.



3,847,674
VOLTAIC CELL WITH FUSED COPPER SULFIDE CATHODE

Matthew Roland Kegelman, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 229,569, Feb. 25, 1972, , which is a continuation-in-part of Ser. No. 26,762, April 8, 1970,. This application May 10, 1973, Ser. No. 358,859

Int. Cl. H01m *17/02*

U.S. Cl. 136—100 **3 Claims**

1. In a voltaic cell comprising an anode selected from the group of lithium, sodium, potassium, beryllium, magnesium and calcium, a copper sulfide cathode and an electrolyte which is non-reactive toward other cell components and has a conductivity of at least 10^{-3} ohm^{-1} cm^{-1} the improvement comprising a porous cathode structure consisting essentially of fused copper sulfide and having a porosity of at least 40% and a resistivity of less than 0.5 ohm-cm.

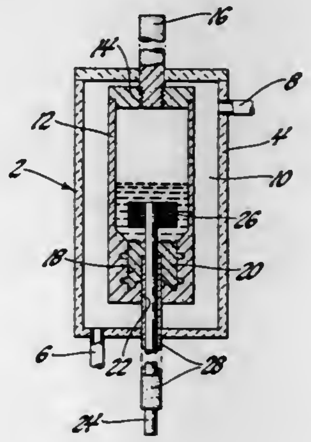
3,847,675
INSULATING SEAL FOR MOLTEN SALT BATTERY

Ram A. Sharma, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1972, Ser. No. 309,959

Int. Cl. H01m *1/02*

U.S. Cl. 136—133 **2 Claims**



1. In a high temperature electro-chemical cell, having a chamber containing electrolyte, an electrode for one of the cell's reactants contacting said electrolyte, a counterelectrode for another of the cell's reactants contacting said electrolyte and spaced apart from said electrode through said electrolyte, and an electrolyte-tight insulating seal electrically isolating said electrode from said counterelectrode and defining part of said chamber, the improvement comprising: said seal consisting essentially of solid lithium fluoride and a means for miti-

gating the effects of lithium fluoride's thermal expansion properties; and said electrolyte comprising a mixture of lithium fluoride and a salt which when fused ionically conducts the cell's current, wherein the lithium fluoride present in the electrolyte is sufficient to substantially saturate the fused salt and the fused salt has a decomposition potential less than said lithium fluoride.

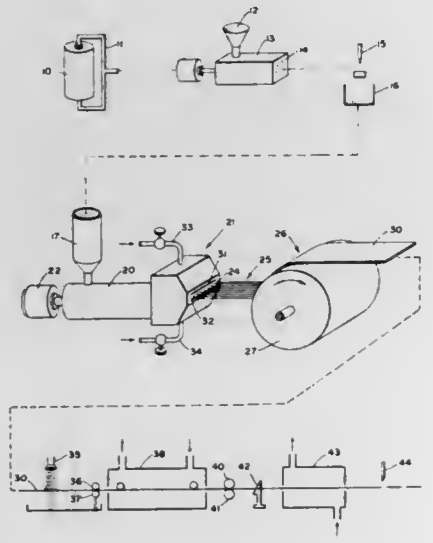
3,847,676
BATTERY SEPARATOR MANUFACTURING PROCESS

Nigel Innes Palmer, Lexington; Nathan Sugarman, Needham, and Don O'Neil Grammer, Scituate, all of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Dec. 21, 1972, Ser. No. 317,108

Int. Cl. H01m *3/02*

U.S. Cl. 136—148 **10 Claims**



1. A method of producing a battery separator from polymeric resin having a degree of undesirable hydrophobia, solid below 180°F, extrudable as a hot melt and resistant to degradation by at least either acids or alkalies comprising forming a mixture of said polymeric resin and a wetting agent, extruding said mixture as a hot plastic through die openings and forming fibers containing said wetting agent therein, coating said fibers with a second wetting agent and blooming the first said wetting agent.

ERRATUM

For Class 145—2 see:
Patent No. 3,847,679

3,847,677
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

Tadashi Takeda, Touyo; Yukiyoshi Nakazawa, Tokyo, and Hiroshi Ikeda, Yamanashi-ken,, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 24, 1973, Ser. No. 326,493

Claims priority, application Japan, Jan. 24, 1972, 47-8351

Int. Cl. H01l *7/54*

U.S. Cl. 148—1.5 **7 Claims**

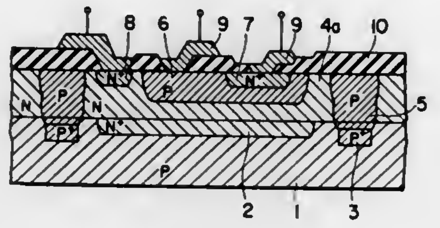
1. In a method of manufacturing a semiconductor device, the improvement comprising the steps of:

a. implanting an impurity into at least one prescribed portion of a semiconductor substrate of a first conductivity type to form at least one buried layer of said first conductivity type, said buried layer having a greater impurity concentration than that of said substrate while being non-contiguous to a principal surface of said substrate;

b. epitaxially growing a semiconductor layer of a second conductivity type, opposite said first conductivity type, on said principal surface of said substrate; and

c. selectively diffusing an impurity into said semiconductor layer to form a first diffusion layer of said first conductivity type in said semiconductor layer which diffuses to a depth to become contiguous with a second diffusion layer which has formed from the outdiffusion of the impurity in said at least one prescribed portion of said substrate through said substrate and into said semiconductor layer formed on the principal surface thereof,

thereby forming an inactive isolation region extending through said semiconductor layer.



3,847,678
HELICAL STEEL SPRING AND METHOD

Samuel T. Furr, Emmaus, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Nov. 16, 1972, Ser. No. 307,282

Int. Cl. C21d *9/02, 7/14;* **C22c** *39/44*

U.S. Cl. 148—2 **2 Claims**

1. A quenched and tempered helical spring, hot-formed from as-rolled bar stock, characterized by a hardness between about R_c48 and R_c52 and a high resistance to load loss as exemplified by a Bauschinger Twist/Permanent Set Ratio between about 0.85 and 1.10, and consisting essentially of, by weight, about 0.76 to 0.91 percent carbon, about .75 to 1.00 percent manganese, about 0.70 to 1.10 percent silicon, about 0.25 to 0.40 percent chromium, with the balance iron and incidental impurities.

3,847,679
DIRECTIONAL EUTECTOID COMPOSITES BY SOLID-STATE UP-TRANSFORMATION

James D. Livingston, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 15, 1973, Ser. No. 416,255

Int. Cl. C22c *19/00, 39/20*

U.S. Cl. 148—2 **2 Claims**

1. A process for producing a solid composite of at least two different metal phases with one phase in the form of substantially uniform parallel lamellae, rods or fibers passing through a matrix of the second or other phases which comprises providing an alloy which forms at an elevated temperature a single solid phase that decomposes eutectoidally when cooled through a eutectoid temperature to form at least two solid phases, said alloy having a decomposition temperature varying with velocity of motion down a temperature gradient, heating said alloy to a temperature above its eutectoid temperature to form said single solid phase, quenching the resulting single solid phase alloy to retain said phase at about room temperature, unidirectionally raising the temperature of the resulting quenched single solid phase alloy through a thermal gradient of at least 50°C per cm. at a velocity of transformation which on reaching transformation temperature directionally transforms said quenched solid to produce an aligned solid composite of at least two phases wherein one of said phases is aligned in the form of substantially uniform lamellae, fibers or rods substantially parallel to each other and to the thermal gradient, said transformation temperature being a minimum of 20°C below said decomposition temperature when said velocities are equivalent in the range from a minimum velocity up to 75 percent of the maximum velocity of transformation to produce said aligned solid composite.

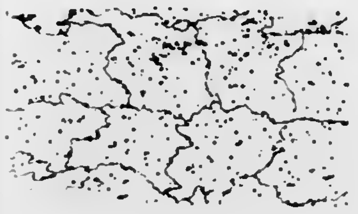
3,847,680
DISPERSION STRENGTHENED METALS AND ALLOYS AND PROCESS FOR PRODUCING SAME

David A. W. Fustukian; Bud W. Kushnir, both of Edmonton, Alberta; Leon F. Norris, and Robert W. Fraser, both of Fort Saskatchewan, Alberta, all of Canada, assignors to Sherritt Gordon Mines Limited, Ontario, Canada

Continuation-in-part of Ser. No. 25,135, April 2, 1970, abandoned. This application Nov. 1, 1972, Ser. No. 302,807

Int. Cl. B22f *3/24;* **C21d** *1/26*

U.S. Cl. 148—11.5 F **19 Claims**



1. A process for producing wrought dispersion strengthened nickel, cobalt and alloys of these metals with each other and with chromium which comprises providing a sintered workpiece formed from a powder composition containing uniformly dispersed submicron refractory oxide particles and one or more of said metals in the proportion desired in the final wrought product, said workpiece having a grain structure characterized by the presence of a substantial proportion of small grains whose greatest diameter is less than 30 microns, hot working said workpiece to effect a cross-sectional area reduction at least sufficient to ensure consolidation of the workpiece to substantially full density and to effect at least a 15 percent reduction in cross-sectional area of the densified workpiece, maintaining the temperature of said workpiece at an elevated temperature below its melting temperature but no lower than the minimum temperature at which dynamic recrystallization occurs in the microstructure of said workpiece at least while effecting the final 15 percent reduction in cross-sectional area of the fully densified workpiece, heat treating said hot worked workpiece at a temperature below its melting temperature but sufficiently high and for a period of time sufficient to cause recrystallization and growth of large equiaxed grains in the workpiece microstructure.

3,847,681
PROCESSES FOR THE FABRICATION OF 7000 SERIES ALUMINUM ALLOYS

Jeffrey Waldman, Huntingdon Valley; Harry V. Sulinski, Philadelphia, and Harold Markus, Huntingdon Valley, all of Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 9, 1973, Ser. No. 414,564

Int. Cl. C22f *1/04*

U.S. Cl. 148—11.5 A **17 Claims**

1. A commercially feasible, intermediate thermal mechanical treatment for 7,000 series aluminum alloys for improving ductility and fracture toughness thereof without concomitant reduction in their strengths, said treatment being applicable to as-cast ingot alloy or wrought alloy, plate or sheet, said treatment steps comprising

prehomogenizing said alloy at 860°F for 8 to 48 hours to dissolve the interdendritic networks of Zn—Mg—and Cu—bearing compounds and to precipitate Cr out of solution, slowly cooling said prehomogenized alloy to 775°F in about 3 hours,

annealing said cooled prehomogenized alloy at 775°F for 3 to 5 hours; slowly cooling said annealed alloy to a temperature range of about 450° to 500°F and holding at said temperature range for 4 hours to precipitate the Zn, Mg and Cu out of solution as coarse compounds to render the alloy amenable to plastic deformation,

plastically deforming said stabilized alloy at least 50 percent at a temperature from ambient to 500°F to generate sufficient stored energy therewithin to enable recrystallization of said stabilized alloy into a fine grained structure, and

rapidly recrystallizing and homogenizing said deformed alloy at a temperature ranging between 860° to 900°F for 24 to 48 hours to provide said deformed alloy with a fine grained recrystallized structure.

3,847,682
METHOD OF STRENGTHENING LOW CARBON STEEL AND PRODUCT THEREOF

Rollin E. Hook, Dayton, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed Nov. 14, 1972, Ser. No. 306,390

Int. Cl. C21d *9/48*

U.S. Cl. 148—12.1 **21 Claims**

1. A method of increasing the yield strength of a low carbon steel sheet stock, which comprises:

providing a deep drawing quality steel containing from about 0.002 percent to about 0.015 percent carbon, up to about 0.012 percent nitrogen, up to about 0.08 percent alluminum, and a nitride-forming element chosen from the group consisting of titanium, columbium, zirconium, and mixtures thereof, in amounts such that titanium in solution is from about 0.02 to about 0.2 percent, columbium in solution is from about 0.025 percent to about 0.3 percent, and zirconium in solution is from about 0.025 percent to about 0.3 percent; all percentages being by weight;

reducing said steel to final thickness; and heating the resulting sheet stock in an atmosphere comprising ammonia and hydrogen at a temperature between 1,100° and 1,350°F for a period of time sufficient to cause reaction of said nitride-forming element with the nitrogen of said ammonia to form small, uniformly dispersed nitrides, whereby to increase the average yield strength of said sheet stock to a minimum of 60 ksi, the concentration of ammonia in said atmosphere ranging between about 2 percent and 10 percent by volume and being insufficient, at the temperature and time involved, to permit formation of iron nitride.

3,847,683
PROCESSES FOR PRODUCING NOVEL STEELS

Aiyaswami Suryanarayan Sastri, Stow, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 194,166, Nov. 1, 1971, Pat. No. 3,756,865. This application Feb. 16, 1973, Ser. No. 332,917

Int. Cl. C21d *1/78;* **C22c** *39/30, 39/32*

U.S. Cl. 148—12.3 **11 Claims**

1. A process for making steel which in its finished form is mainly austenitic, has hardnesses which are at least comparable to high carbon martensitic steel, and has improved temper-resistance, said process comprising (*a*) heating a steel comprising from about 7 to 30 percent manganese and 0.6 to about 1.4 percent carbon to at least the austenitizing temperature for a sufficient time to make it fully austenitic and to dissolve sufficient carbides so as to depress the Ms temperature of said steel sufficiently below room temperature that the steel will remain mainly in the austenitic form when it is both cooled to room temperature and subsequently cold-worked; (*b*) cold-working said steel and thereafter (*c*) age-hardening said steel.

3,847,684
METHOD OF QUENCHING ZIRCONIUM AND ALLOYS THEREOF

Darryl D. Amick, Albany, Oreg., assignor to Teledyne Wah Chang Albany, Albany, Oreg.

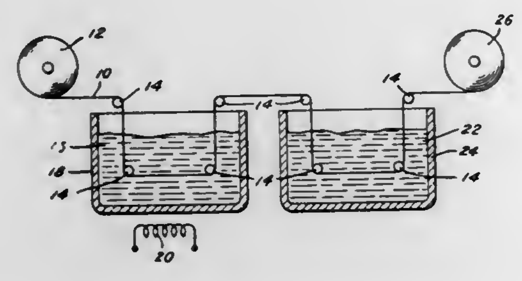
Filed Sept. 20, 1973, Ser. No. 399,130
Int. Cl. C22f *1/18*
U.S. Cl. 148—20.6 2 Claims

1. In a method of heat treating zirconium and its alloys by quenching from the beta phase temperature range followed by subjecting the material to an alpha range temperature treatment; wherein the improvement, comprises conducting said quenching step by immersing the material in water maintained at a temperature of at least about 140°F.

3,847,685
OXIDE COATED METAL DISCS AND METHOD OF MAKING THE SAME

Robert Baboian, North Attleboro, Mass., and Peter O. Fiore, Cumberland, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 11, 1970, Ser. No. 10,533
Int. Cl. C23f *7/02*
U.S. Cl. 148—31.5 9 Claims

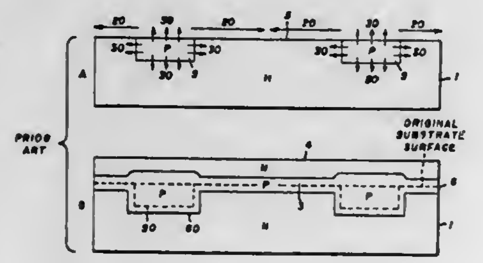


1. A method for making an improved snap-acting element comprising the steps of providing a metal material having at least one surface layer thereof formed of a material selected from the group consisting of the metals and alloys set forth in Table I, said surface layer being free of oxide scale, and immersing said metal material in an oxidizing bath comprising fused alkali metal hydroxide for forming an abrasion-resistant metal oxide coating on said surface layer, and deforming said metal material to provide said metal material with a portion of dished configuration for forming a snap-acting element.

3,847,686
METHOD OF FORMING SILICON EPITAXIAL LAYERS

Leonard Stein, Dewitt, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 40,903, May 27, 1970, abandoned. This application Feb. 15, 1973, Ser. No. 332,774
Int. Cl. H01l *7/36;* **C23c** *11/00;* **H01l** *5/00*
U.S. Cl. 148—175 10 Claims

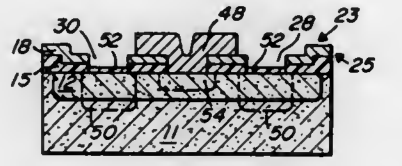


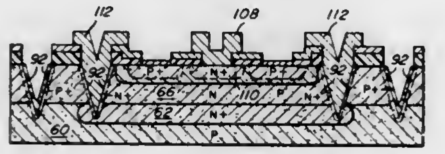
1. An improved method of forming a silicon epitaxial layer on one major surface of a silicon semiconductor body including a modified conductivity region having prearranged boundaries, without significantly disturbing the location of said boundaries, comprising preconditioning said surface to receive said epitaxial layer by heating the silicon body in hydrogen to a temperature not exceeding 1,000°C for between 5 to 30 minutes to remove extraneous matter therefrom, and immediately following such preconditioning depositing from a silicon source selected from the group of silicon tetrachloride and silane an epitaxial layer of silicon on said surface while maintaining said semiconductor body at a temperature not exceeding 1,000°C.

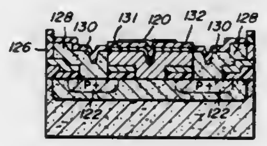
3,847,687
METHODS OF FORMING SELF ALIGNED TRANSISTOR STRUCTURE HAVING POLYCRYSTALLINE CONTACTS

Uryon S. Davidsohn, deceased, late of Phoenix, Ariz., and Amil J. Ajamie, administrator, Phoenix, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 15, 1972, Ser. No. 306,762
Int. Cl. H01l *7/44*
U.S. Cl. 148—187 12 Claims







1. A process for forming a silicon semiconductor device having a first region of one conductivity type, a closely spaced second region of another conductivity type and a contact to the second region, which are all self-aligned with each other, to facilitate the manufacture of an electrical device having a small geometry in semiconductor material with a surface, the process comprising:

- forming a first mask on the surface of the semiconductor material, said first mask having at least a first opening which exposes a selected area of the surface of the semiconductor material through which diffusant forming the first region is to enter and a second opening through which diffusant forming the second region is to enter, said step of forming said first mask includes the steps of forming a first silicon dioxide layer and a first silicon nitride layer, one on top of the other;
- forming polycrystalline silicon contacting material in at least said second opening and on said first mask;
- forming a second mask overlying said contacting material in said second opening;
- diffusing first diffusant through said first opening of said first mask to form the first region of the one conductivity type, said second mask preventing said first diffusant from entering said semiconductor material through said second opening; and
- closing said first opening in said first mask and removing said second mask from said second opening and diffusing second diffusant through said contacting material and said second opening and into said semiconductor material to form said second region of the other conductivity type and the contact therefor, said first mask preventing the second diffusant from otherwise entering the semiconductor material.

ERRATUM

For Class 152—209 see:
Patent No. 3,847,698

3,847,688
SYSTEM FOR ETCHING CERAMIC SURFACES AND THE LIKE

Leland O. Gillice, Auburn, Calif., assignor to Alpha-O Corporation, Reno, Nev.

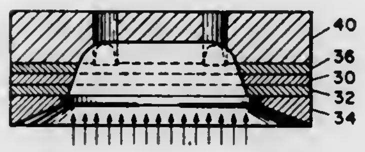
Filed Mar. 5, 1973, Ser. No. 337,874
Int. Cl. B44c *1/22*
U.S. Cl. 156—2 4 Claims

1. A system of etching ceramic surfaces and the like including the method characterized by the application to the treated surface of an aqueous solution of hydrofluoric acid, ethylene oxide and nonylphenol, continuing the contact on the treated surface for a period of time sufficient to etch the surface; and thereafter flushing away the solution in order to terminate the contact.

3,847,689
METHOD OF FORMING APERTURE PLATE FOR ELECTRON MICROSCOPE

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by, and Klaus Heinemann, 1178 Maraschino Dr., Sunnyvale, Calif. 94087

Division of Ser. No. 221,670, Jan. 28, 1972, abandoned. This application June 28, 1973, Ser. No. 374,424
Int. Cl. C23f *1/02*
U.S. Cl. 156—7 5 Claims



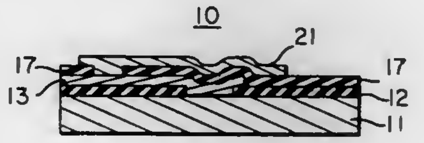
1. A method of forming an objective aperture plate for an electron microscope having an annular aperture, comprising the steps of:

- disposing an annular aperture in the condenser aperture plane to form a hollow cone of electrons;
- disposing a first metallic layer in the objective aperture plane of the focused microscope and in the path of said electrons to cause a contamination layer of residual gas molecules to form on first said metallic layer in the area illuminated by said electrons;
- disposing a second metallic layer over that portion of the surface of the first metallic layer which is not covered by the contamination layer; and
- etching the composite structure on the side opposite said second metallic layer to a depth transcending said first metallic layer and said contamination layer.

3,847,690
METHOD OF PROTECTING AGAINST ELECTROCHEMICAL EFFECTS DURING METAL ETCHING

James F. Campbell, Jr.; Arthur E. Engvall, both of Sunnyvale, and Arthur E. Lewis, Los Altos, all of Calif., assignors to Fairchild Camera and Instrument Corporation, Syosset, N.Y.

Continuation of Ser. No. 135,442, April 19, 1971, , which is a continuation of Ser. No. 740,935, June 28, 1968, abandoned. This application Oct. 24, 1973, Ser. No. 409,126
Int. Cl. H01l *7/00*
U.S. Cl. 156—13 1 Claim



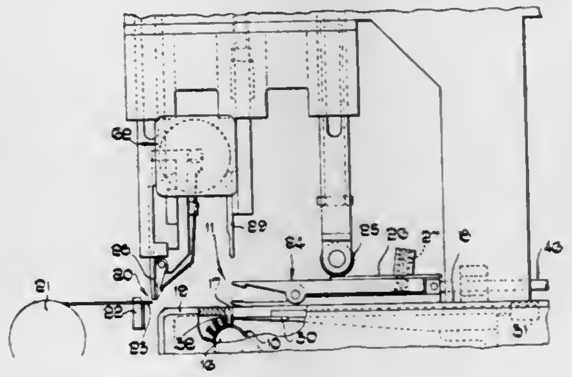
1. In the method of etching portions of a metal layer formed only on the front surface of a slice of semiconductor material containing current conducting paths from its back surface to its front surface, said metal layer being separated in places from said semiconductor material by insulation and the etchant used being selected to substantially etch only the metal layer, comprising the steps of masking said metal layer and etching away the unmasked portions of said metal layer, the improvement comprising the steps of:

- placing an insulation resistant to the etching solution on the edges and back side of said slice prior to submerging said slice in an etching solution, submerging the insulation coated slice in the etchant solution for removing the unmasked portions of the metal layer, and removing said slice from the etchant solution, said insulation preventing the formation of any electrochemical effects between the material to be etched and the substrate.

3,847,691
PILE FABRICS AND METHODS AND APPARATUS FOR THE PRODUCTION THEREOF

Herbert Henry Currell, Stourport-on-Severn, England, assignor to Bond Werth Limited, Worcestershire, England

Filed Jan. 22, 1973, Ser. No. 325,800
Claims priority, application Great Britain, Jan. 21, 1972, 2930/72
Int. Cl. D04h *1/58;* **B32b** *5/08*
U.S. Cl. 156—72 7 Claims



1. A method of producing a pile fabric comprising the steps of:

- a. feeding a preformed ground member with an adhesive coating thereon along a path through a tuft attaching station,
- b. feeding a row of tuft-forming lengths of pile yarn to said station from a source of pile yarn presenting yarn ends in a row,
- c. pressing a first part of each tuft-forming length in a direction towards said ground member through a slot defined

by constraining means and into the adhesive coating while retaining a further part of each tuft-forming length in said slot to constrain said further part to have an upstanding relation with respect to the ground member,
d. subsequently displacing said further part relative to the constraining means from said slot, and
e. advancing the ground member along said path relative to the constraining means.

3,847,692
METHOD AND APPARATUS FOR MAKING PILE FABRICS FROM A BLOCK OF PILE YARNS

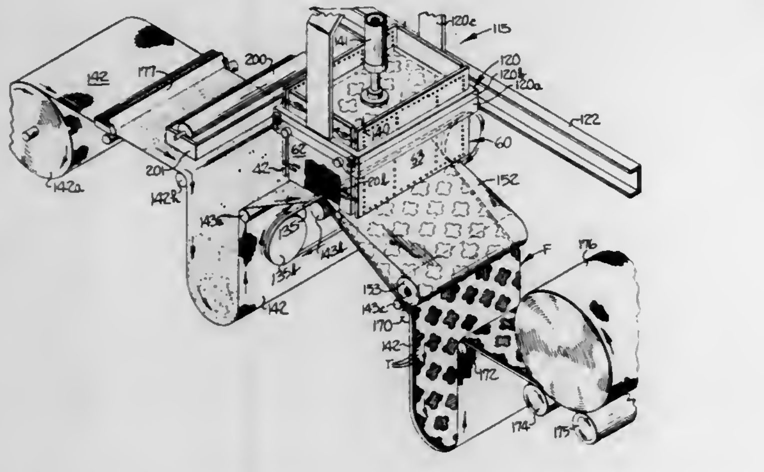
Emanuele Bondi, Milan, Italy, assignor to Fieldcrest Mills, Inc., Eden, N.C.

Continuation-in-part of Ser. Nos. 54,751, July 14, 1970, abandoned, and Ser. No. 316,740, Dec. 20, 1972,. This application May 25, 1973, Ser. No. 363,832

Claims priority, application Italy, July 24, 1969, 20100/69; Dec. 12, 1969, 25744/69

Int. Cl. B32b *5/00, 31/12, 31/18*

U.S. Cl. 156—72 **42 Claims**



1. A method of making pile fabrics such as carpets, rugs and the like from a block of substantially parallel pile yarns in an open-ended container, which comprises incrementally feeding the pile yarns parallel to their axes from the container in successive increments of an amount equal to the desired length of pile, progressively severing the pile yarns transversely of their axes following each successive incremental feeding of the pile yarns from the container while progressively depositing the severed pile yarns onto an adhesive-coated backing to connect the severed pile yarns to the backing, and while advancing the backing relative to the block of pile yarns.

3,847,693
BUOYANT HOSE AND METHOD FOR MAKING SAME

Piero Ghersa; Flavio Torghele, and Cesare Laberinti, all of Milan, Italy, assignors to Industrie Pirelli S.P.A., Milan, Italy

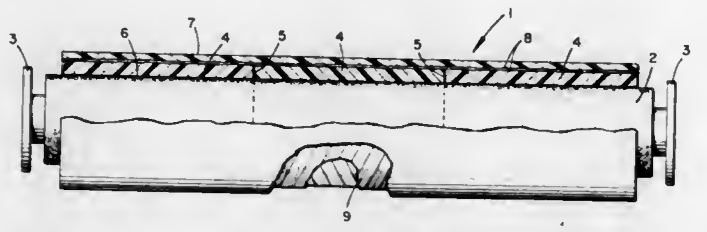
Division of Ser. No. 159,763, July 6, 1971, Pat. No. 3,773,090. This application July 24, 1973, Ser. No. 382,073

Claims priority, application Italy, Feb. 12, 1971, 20456/71

Int. Cl. B32b *5/18*

U.S. Cl. 156—79 **4 Claims**

1. A method for applying a buoyant sleeve around a hose member so as to render said member buoyant in water, comprising:
a. fitting a plurality of prefabricated annular bodies of cellular high polymer material around a hose member, with said bodies being arranged in axial succession, their radial end surfaces abutting each other and their inner annular surfaces in contact with the outer surfaces of said hose member, said bodies being free of the surface skin which is common to cellular high polymer material;
b. applying an adhesive agent to said end surfaces and to said annular inner surfaces to thereby, respectively, adhesively join said bodies together and anchor same to said hose member;
c. applying a reinforcing sheer fabric around said bodies;



and
d. applying a polyurethane forming liquid reaction mixture at room temperature continuously around said fabric and permitting said mixture to react to form a unitary continuous outer layer of polyurethane around said fabric.

3,847,694
METHOD OF JOINING SYNTHETIC-RESIN TUBES

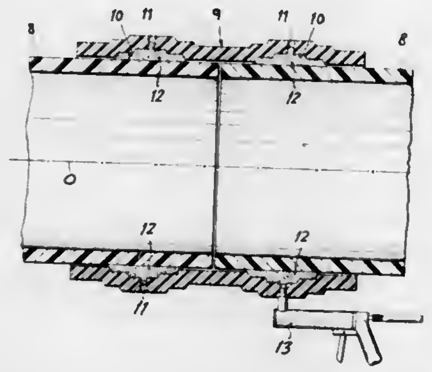
Albert Stewing, Barbarastr. 56, 427 Dorsten, Germany

Filed Feb. 13, 1973, Ser. No. 332,227

Claims priority, application Germany, Feb. 15, 1972, 2207059; Feb. 15, 1972, 2207060

Int. Cl. B29c *27/00*

U.S. Cl. 156—86 **2 Claims**



1. In a method of forming a joint between a tube and a sleeve of thermoplastic synthetic resin, especially hard polyvinyl chloride, in which the sleeve is heat-shrunk onto a portion of the tube surrounded by the sleeve after the tube has been inserted into the sleeve with clearance therebetween, the improvement wherein:
at least said sleeve is formed with a circumferential inwardly open corrugation defining an annular chamber around the tube at said portion;
the heat required for shrinking said sleeve onto said tube is supplied by injecting a heated flowable molten adhesive into said chamber under pressure; and
said adhesive is compressed against said tube by said sleeve upon the shrinkage thereof.

ERRATUM

For Class 156—96 see:
Patent No. 3,847,631

3,847,695
RIMLESS RECAPPING APPARATUS UTILIZING BALANCED AIR PRESSURES

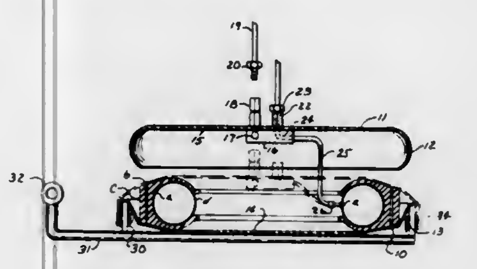
Jerome A. Gross, 6304 S. Rosebury, St. Louis, Mo. 63105

Filed June 28, 1973, Ser. No. 374,675

Int. Cl. B29h *5/04, 17/36*

U.S. Cl. 156—96 **8 Claims**

1. For use in a pressurizable chamber for vulcanizing a pre-formed tread strip to a tire casing containing an unvalved inner tube without any air inlet connection from outside the chamber,
evacuable membrane apparatus comprising
enveloping membrane means having upper and lower portions terminating in outer margins at which the membrane means is adapted to be sealed and having central portions which extend opposite each other to enclose the central circular space between the beads of such casing, an air evacuation outlet extending through said membrane means and having outwardly thereof check valve means to maintain vacuum between the membranes, and
inner tube pressure-balancing means including
an inflation inlet extending through said membrane means and having outwardly thereof an inlet connection and communicating through said membrane means to a pressure hose extending to an inner end coupling connectable to such inner tube,
whereby, after the inflated rounding of such inner tube and subsequent evacuation of such central space, to provide pressure within such inner tube balancing increases and decreases of pressure within such chamber.



3,847,696
PROCESS FOR MAKING LIGHT CONDUCTING PLATES

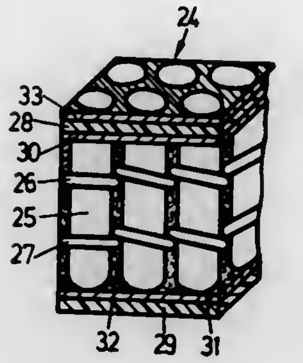
Lorenz Ortner, Frauenaurach; Karl-Georg Heinzelmann; Bernd Conrad, both of Erlangen, and Joachim Dierker, Buckenhof, all of Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed July 15, 1971, Ser. No. 162,918

Claims priority, application Germany, Aug. 27, 1970, 2042408

Int. Cl. B24b *1/00*

U.S. Cl. 156—154 **5 Claims**



1. A process for making light-conducting plates particularly suitable for use in inlets of gamma cameras, said process comprising placing next to each other a plurality of transparent rods and locating between said rods distance holders consisting of wires of deformable material having a thickness greater than the length of the light wave to be transmitted, pressing together said rods and said wires, fixing by a casting mass at least one end of each of said rods, grinding and polishing said ends, removing said casting mass and the grinding and polishing means, then applying a foil to at least one front surface of the produced light-conducting plate, said foil having a thickness of 20 to 100μ and filling spaces remaining between said rods with particles of a granulate, said particles having a large diameter relatively to the length of said light wave.

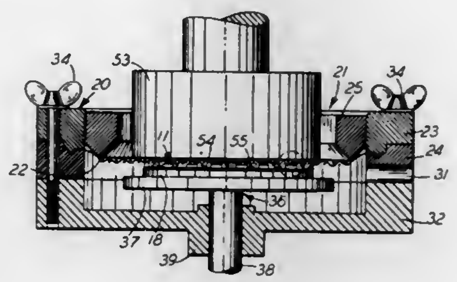
3,847,697
ARTICLE TRANSFER METHOD

Charles R. Baker, Whitehall, and Robert L. Moore, Emmaus, both of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,161

Int. Cl. B32b *31/00*

U.S. Cl. 156—155 **7 Claims**



1. A method of handling an array of articles, comprising:
forming a bond between the array and a support to secure the array to such first support;
clamping a second support to the side of the first support having the array bonded thereto to hold the array between the supports;
dissolving the bond between the array and the first support while continuing to clamp the array between the supports;
introducing a liquid substance interstitially between the supports;
hardening the substance to bond the array to the supports and to fix the positions of the articles within the array with respect to each other in such substance;
unclamping the supports; and
liquefying a portion of the substance adjacent the first support to release the first support from the array while maintaining another portion of the substance adjacent the second support in its hardened condition to retain the array bonded to the second support.

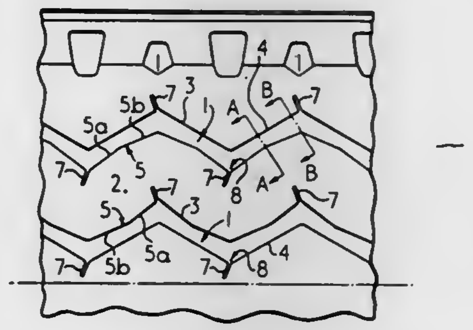
3,847,698
PNEUMATIC TIRES

Arthur S. Ravenhall, Solihull, England, assignor to Dunlop Limited, London, England

Continuation-in-part of Ser. No. 50,014, May 5, 1969, abandoned. This application Oct. 10, 1972, Ser. No. 295,906

Int. Cl. B60c *11/06*

U.S. Cl. 152—209 R **12 Claims**



1. A pneumatic tire provided with a tread pattern having at least one generally circumferentially extending groove having limbs of substantially zig-zag or undulating plan form, a junction being formed between the ends of adjacent limbs, the width at the mouth of the groove adjacent to at least some of said junctions, at each end of at least some of said limbs, being greater than the groove mouth width intermediate at least some of said junctions, the change from wider to narrower width being graduated wherein each limb of the zig-zag groove has one wall which is substantially linear, when viewed in plan, and an opposed wall which is substantially non-linear when viewed in plan.

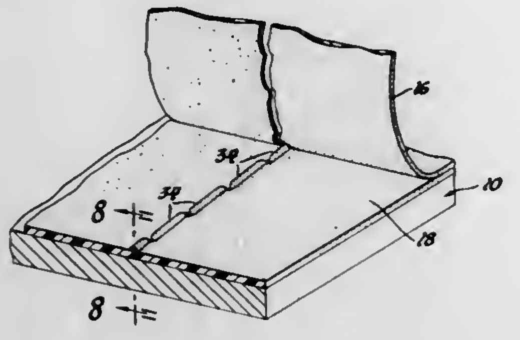
3,847,699
METHOD OF FORMING SIMULATED STITCHES

Donald L. Shaw, North Syracuse, N.Y., and Lawrence D. McLaughlin, Warren, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 8, 1972, Ser. No. 304,860

Int. Cl. B32b *31/18, 31/20*

U.S. Cl. 156—251 **3 Claims**



1. A method of forming simulated stitching on a base sheet of thermoplastic material, comprising the steps of positioning a cover sheet of thermoplastic material onto said base sheet of thermoplastic material, cutting a plurality of discrete elongated stitch sections in said cover sheet, simultaneously forming a plurality of equally spaced apertures in said base sheet and embedding the adjacent end portions of each pair of adjacent stitch sections into one of the apertures formed in said base sheet, bonding each stitch section along its length to said base sheet, and removing the cover sheet from the base sheet so as to reveal the simulated stitches.

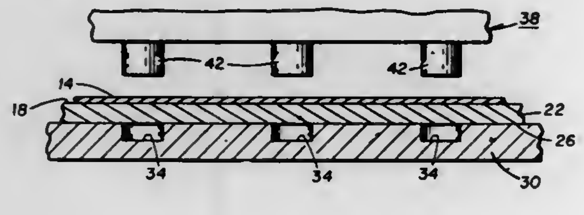
3,847,700
METHOD OF FORMING A MAGNET PATTERN ON MAGNETIC MEMORY CIRCUIT CARDS

Ajay P. Dalal, Chicago; Paul F. Elarde, Naperville, and Frank A. Klasek, La Grange Park, all of Ill., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 17, 1972, Ser. No. 307,717

Int. Cl. B32b *3/00;* **B41m** *3/08*

U.S. Cl. 156—252 **5 Claims**



1. In a method of compressively securing a pattern of magnetic material wafers in a surface of a malleable substrate having a magnetic permeability which is insignificant with respect to the permeability of the wafers:

overlying a sheet of magnetic material in direct contact with a first surface of the substrate;

positioning the opposite surface of the substrate on a rigid die having a plurality of apertures formed therein in accordance with the wafer pattern, and

striking at ambient temperature the sheet of magnetic material with a punch to remove a plurality of wafers of magnetic material from the sheet, to displace the material of the substrate and embed the wafers into the first surface of the substrate and to secure the wafers therein by deforming the substrate to compressively surround the edges of the wafers, the apertures in the die receiving extruded portions of the opposite surface of the substrate beneath the wafers as the wafers are embedded into the first surface thereof.

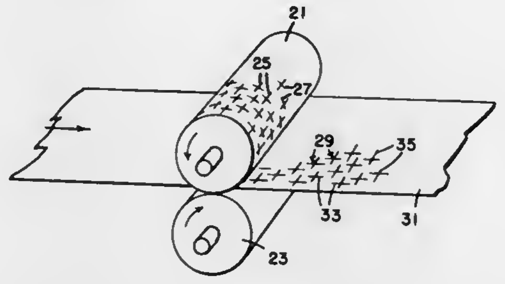
3,847,701
METHOD OF MAKING FORAMINOUS STRUCTURES

Theodore H. Fairbanks, Liverpool, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Feb. 16, 1970, Ser. No. 11,510

Int. Cl. B32b *31/00*

U.S. Cl. 156—259 **7 Claims**



1. A method of making a foraminous structure including the steps of providing a web material with rows of like, equally spaced cross-cuts, each of the cross-cuts comprised of a pair of slits of equal length crossing substantially centrally of and at right angles to each other and arranged with ends thereof located along a common line passing through the ends of slits of an adjacent cross-cut, and pivoting as integral units portions of the web material which extend between adjacent cross-cuts by urging the same about axes which are generally coincident with the common lines passing through the ends of slits of the adjacent cross-cuts between which the respective portions of the web material extend.

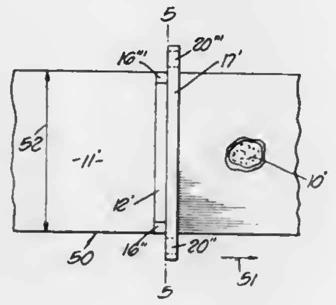
3,847,702
PROCESS FOR MANUFACTURE OF INTEGRAL DIAPER WAIST BAND FASTENER

John Leslie Jones, Sr., 1070 Glen Oaks Blvd., Pasadena, Calif. 91105

Division of Ser. No. 867,505, Oct. 20, 1969, Pat. No. 3,610,244. This application Oct. 4, 1971, Ser. No. 185,936

Int. Cl. B32b *31/00*

U.S. Cl. 156—265 **1 Claim**



1. A process for manufacture of single use, disposable, integral baby diapers comprising:

a. forming a waist band stock sheeting of the required web width, having two waist band adhesive securing means disposed on one web face, at opposed web width edges of said sheeting;

b. disposing a first waist band stock sheeting supply of the required web width and a second waist band stock sheeting supply of the required web width symmetrically parallel, with respect to each aforesaid web width, across the diaper web width of a moving diaper production line;

c. severing a narrow waist band from each of said first waist band stock sheeting supply and said second waist band stock sheeting supply;

d. disposing said narrow bands from each of said first waist band stock sheeting and said second waist band stock sheeting symmetrically with respect to said diaper web width and said narrow bands web widths, and in their respective permanent band positions on said diaper web width;

e. bonding said narrow bands to said diaper web width, at spaced diaper length intervals; and

f. completely severing said diaper web width at said spaced diaper lengths to provide diapers having a first waist band and a second waist band.

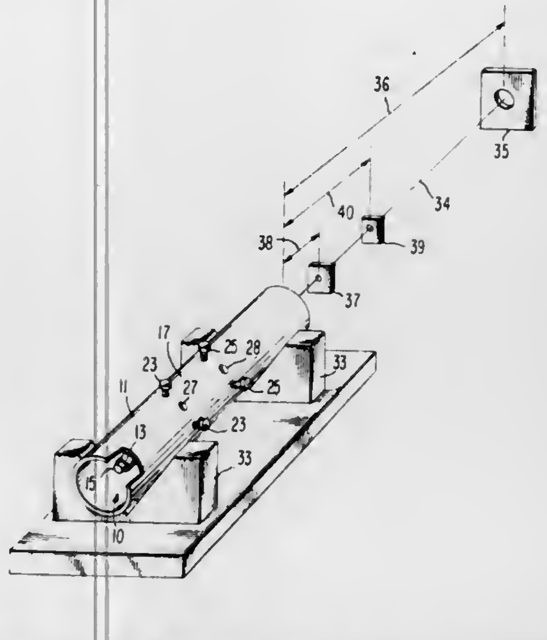
3,847,703
METHOD OF ALIGNING A LASER TUBE WITHIN AN ENVELOPE

Donald Bernard Kaiser, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 31, 1973, Ser. No. 393,624

Int. Cl. B32b *31/06*

U.S. Cl. 156—294 **4 Claims**



1. A method of aligning a laser device comprising a laser tube within a solid-wall cylindrical envelope using a cylindrical fixture having the same size inside diameter as said envelope and including tube adjustment means thereon, said method comprising the steps of

a. aligning the laser tube within the cylindrical fixture using the adjustment means therein,

b. then forming spaced pads of a cured elastomer adhesive material between said tube and said fixture, said pads being adherent to said tube and nonadherent to said fixture,

c. then removing said tube with said pads adhered thereto from said fixture,

d. and then inserting said tube with said adherent pads thereon within the solid-wall cylindrical envelope to a desired longitudinal location.

3,847,704
APPARATUS FOR FABRICATION PRICE SHIELDS OR THE LIKE CONSISTING OF A PRICE TAG OR LABEL PRINTED BY A BALANCE AND A LABEL SUPPORT

Max Lehner Stirnemann, Haupt Strasse 1001, 5722 Granichen, Switzerland

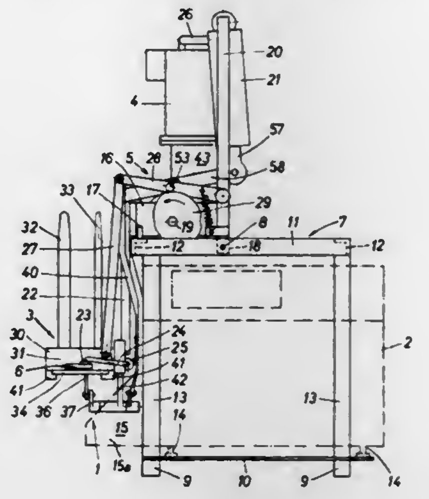
Division of Ser. No. 110,159, Jan. 27, 1971, Pat. No. 3,811,985. This application Apr. 30, 1973, Ser. No. 355,918

Claims priority, application Switzerland, Feb. 2, 1970, 1451/70

Int. Cl. B32b *31/20*

U.S. Cl. 156—364 **10 Claims**

1. An apparatus for the fabrication of price shields or the like composed of a price label printed by a balance and a label support, comprising mechanism for delivering individual label supports to a bonding location for price labels printed by a balance, a balance with means for printing labels having price information thereon, said balance including means for conveying said printed labels to said bonding location, means associated with said mechanism for affixing said label supports to said printed labels, a substantially U-shaped frame means incorporating a first leg means and a second leg means, means for displaceably mounting said mechanism at said first leg means for movement in the direction of the height of said first leg means, shaft means about which said mechanism is pivotably mounted, said second leg means of said frame means



comprising a support surface for a balance, said first and second leg means defining therebetween a compartment for accommodating said balance, said balance arranged in said compartment, and barrier means for preventing the conveying of a label support to said bonding location in the absence of a price label at said bonding location.

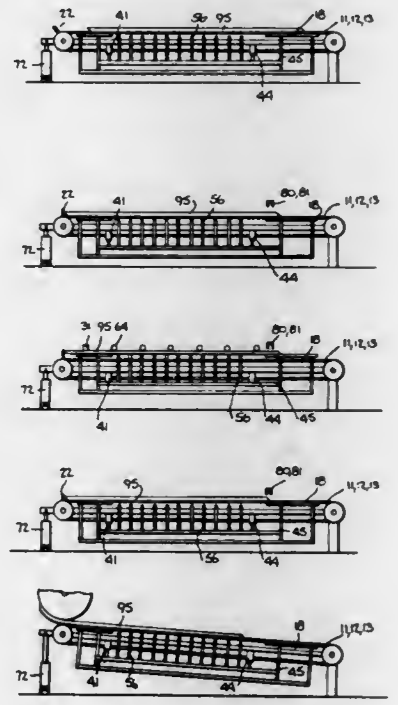
3,847,705
APPARATUS FOR CONVEYING A TIRE TREAD

William Charles Habert, Fraser, and Charles Edward Todd, Detroit, both of Mich., assignors to Uniroyal, Inc., New York, N.Y.

Filed Jan. 22, 1973, Ser. No. 325,693

Int. Cl. B29h *17/02, 5/04;* **B29c** *17/02*

U.S. Cl. 156—405 **9 Claims**



1. Apparatus for conveying a tire tread and for changing the length of the tire tread comprising:

conveyor means for transporting a tire tread;

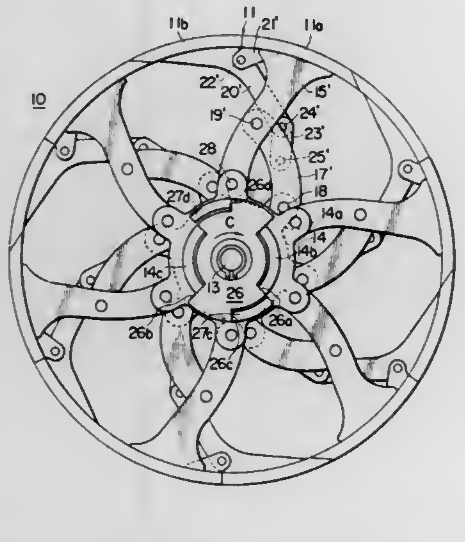
means for fixedly positioning one end portion of said tread lengthwise with respect to said conveyor means;

means having members spaced along said conveyor means for lifting said tread from said conveyor means with said members engaging said tread at spaced points therealong;

means for driving said members along said conveyor means and including resilient means separating said members for substantially simultaneously displacing said members along said conveyor means relative to each other and relative to said one end portion of said tread to displace said points of engagement of said members with said tread relative to each other and relative to said one end portion of said tread, thereby changing the length of said tread.

3,847,706
COLLAPSIBLE TIRE BUILDING DRUM

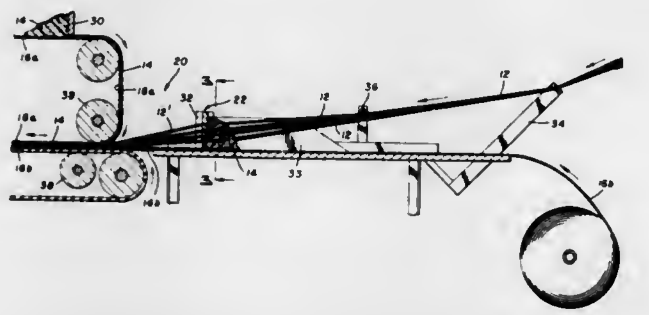
Toshinori Yabe, Tokyo, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Feb. 22, 1973, Ser. No. 334,881
Int. Cl. B29h *17/16*
U.S. Cl. 156—417 **1 Claim**



1. A collapsible tire building drum, which comprises:
a drive shaft adapted to be rotatable about a building drum axis;
a drive sleeve journaled on said drive shaft;
a first series of arcuate drum segments each having a trailing edge;
a second series of arcuate drum segments disposed in sequential circumferential alternation with the arcuate drum segments of said first series, each segment of said second series being hinged to its next preceding drum segment of said first series at the trailing edge of said next preceding drum segment, said drum segments collectively defining a tire building drum surface;
a linkage mechanism including a first plurality of link arms each having one end fixedly connected to one of said first series of arcuate drum segments and the other end pivotally connected to said drive shaft, a second plurality of link arms each having one end pivotally connected to said drive sleeve and the other end pivotally connected to an intermediate portion of a corresponding one of said first link arms, a third plurality of link arms each having one end fixedly connected to one of said second series of arcuate drum segments, and a fourth plurality of link arms each having one end pivotally connected to the other end of a corresponding one of said third link arms and the other end pivotally connected to an intermediate portion of a corresponding one of the second link arms;
an annular stop member journaled on said drive sleeve;
an additional linkage mechanism including a first plurality of additional link arms each having one end rigidly connected to one of said first series of arcuate drum segments and the other end pivotally connected to said stop member, a second plurality of additional link arms each having one end pivotally connected to said drive sleeve and the other end pivotally connected to an intermediate portion of a corresponding one of said first additional link arms, a third plurality of additional link arms each having one end rigidly connected to one of said second series of arcuate drum segments, and a fourth plurality of additional link arms each having one end pivotally connected to the other end of a corresponding one of said third additional link arms and the other end pivotally connected to an intermediate portion of a corresponding one of said second additional link arms;
a central axle on which said drive shaft is journaled; and
a contoured hub member mounted on said central axle and connected to said drive sleeve, said hub member being engageable with said stop member so that angular rotation is limited to a predetermined extent, whereby said tire building drum can be collapsed, without scratching the peripheral surface of the building drum and without any interference between the parts of the building drum to provide high durability, by rotation of said drive sleeve with respect to said drive shaft to radially retract said first and second series of drum segments into a collapsed drum state with each of said second series of drum segments overlying, in regular shingled array, its next succeeding segment of said first series of drum segments whereas opposite rotation thereof radially extends said first and second series of drum segments to an expanded drum state.

3,847,707
LAMINATING APPARATUS HAVING DUAL DOCTOR BLADE

Raymond W. Meyer, Tallmadge; Francis R. McGranghan, Stow, and Dale K. Evans, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio
Division of Ser. No. 287,186, Sept. 7, 1972,. This application Mar. 15, 1974, Ser. No. 451,637
Int. Cl. B65h *49/00*
U.S. Ci. 156—436 **9 Claims**

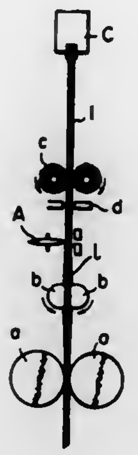


1. In a laminating apparatus the improvement comprising:
- a. a horizontally arranged table support;
- b. means to feed continuous sheet across said table;
- c. a vertically disposed doctor blade in operative association with said table and supported by sidewall members whereby said blade, walls, substrate and table form a trough for containing a resin material to be coated onto said moving sheet and the bottom edge of said blade doctors said coating;
- d. said blade having at least one orifice extending through an intermediate portion thereof and below the level of said resin; and
- e. means feeding a plurality of continuous fibers through said resin and subsequently through said at least one orifice whereby to produce a continuous length of substantially uniformly coated and formed bundle of fibers.

3,847,708
APPARATUS FOR MAKING BAGS FROM SOFT TAPES OF SYNTHETIC RESINS

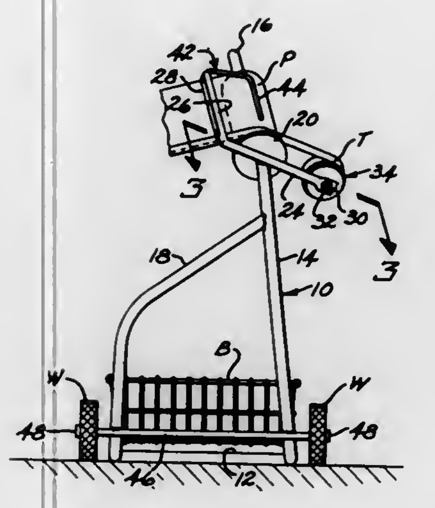
Shizuo Takahashi, Abiko; Yoshio Kobayashi, Nagareyama, and Toshio Hosogai, Tokyo, all of Japan, assignors to Tokyo Automatic Machinery Works, Ltd., Tokyo, Japan
Filed Oct. 10, 1972, Ser. No. 296,014
Int. Cl. B31b *1/10;* **B65b** *43/04*
U.S. Cl. 156—510 **3 Claims**

1. An apparatus for making bags of a soft two-ply tape by delivering the tape upwardly in the vertical direction and sealing and cutting the tape while it is maintained in the erect state, said apparatus comprising
a pair of feed rollers for delivering the tape upwardly in the vertical direction,
a frill-imparting means disposed above said feed rollers to increase the toughness of the tape by imparting frills to the tape delivered by said feed rollers in its longitudinal direction,
a cutting device for cutting the tape disposed above said frill-imparting means,
a sealing device for sealing the tape disposed above said cutting device, and
a pair of rotating brushes disposed above said sealing device for nipping the tape frilled by said frill-imparting means to apply tension thereto.



3,847,709
FUNCTIONAL STAND FOR ROLL MATERIALS

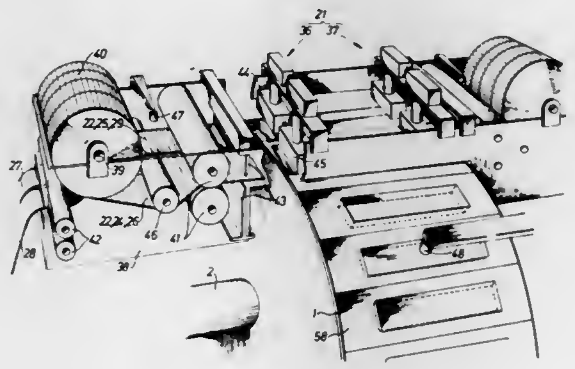
Marcus Martin, 1570 E. Hurd Rd., Monroe, Mich. 48167
Filed Nov. 13, 1972, Ser. No. 306,000
Int. Cl. B32b *31/00;* **B31f** *5/06*
U.S. Cl. 156—510 **6 Claims**



1. A portable stand for roll materials comprising: a stand formed of a tube having an upper end which extends upwardly and outwardly at an incline free and clear of surrounding structure to receive a roll of paper slid over the end of the tube, a stop plate surrounding said upwardly and outwardly inclined portion of the tube and spaced from its end by a distance to receive the roll of paper, said upwardly and outwardly inclined free end being at such an angle that gravity holds a roll of paper when telescoped over said end against said stop plate, an L-shaped bracket having an upstanding leg generally parallel to said upper end of said tube and positioned to one side of said tube and its other leg extending transversely across said tube, and a spindle on said bracket on the opposite side of said tube from said upstanding leg of said bracket, said spindle being positioned to support a roll of masking tape generally centered with respect to the lower edge of a roll of paper in abutment with said stop plate, and whereby masking tape from the roll of masking tape can be stuck generally centered on the bottom edge of the roll of paper placed on said end of said tube and will be automatically applied in a position projecting from the edge of the paper as the paper is pulled from the roll.

3,847,710
APPARATUS FOR APPLYING SECURING TABS TO DIAPERS, SANITARY TOWELS, COMPRESSES AND SIMILAR ABSORBENT BODIES

Nils Verner Blomqvist, Domsjoverken, and Per Borje Hagg, Ornskoldsvik, both of Sweden, assignors to Mo och Domsjo AB, Ornskoldsvik, Sweden
Filed Apr. 26, 1972, Ser. No. 247,653
Int. Cl. B32b *31/20, 31/10*
U.S. Cl. 156—511 **8 Claims**



1. Apparatus for applying securing tabs to absorbent products conveyed successively as single units attached together in a long strip, said securing tabs being coated on one side with adhesive and having an easily removable protective sheet on the adhesive, comprising, in combination, means for conveying a long strip of absorbent products in one direction; means for conveying securing tabs having an adhesive on one surface continuously and successively in two parallel rows on each side of the strip of absorbent products, each row moving in a direction substantially at a right angle to the strip, at a level higher than and parallel to the strip, with adhesive surfaces turned downward; means for removing a portion of the protective sheet from the adhesive surfaces of the securing tabs in each row to expose such portions of the adhesive surface; means for separating each securing tab from its respective row of securing tabs; and means for applying the exposed adhesive surfaces of the separated securing tabs in pairs to the absorbent products and the portion of the tabs still having a protective sheet thereon extending beyond the corresponding edge of the respective absorbent products.

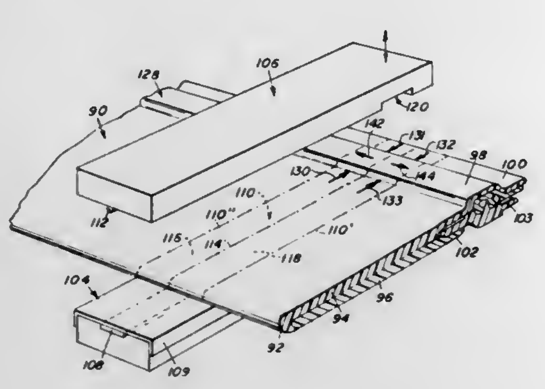
3,847,711
HEAT-SEALING SYSTEM FOR PLASTIC CONTAINERS

H. Keith Howard, Ulysses, Kans., assignor to Uly-Pak, Inc., Ulysses, Kans.
Filed Feb. 11, 1972, Ser. No. 225,430
Int. Cl. B30b *15/34;* **B32b** *31/18*
U.S. Cl. 156—515 **25 Claims**

1. An apparatus for forming a plastic bead seal at the end of an openable and reclosable fastener which is located on opposite edges of a plastic sheet, which apparatus comprises:
a. sealing means for supporting the fastener end and a regional area of the plastic sheet adjacent the fastener end during the formation of the plastic bead seal,
- b. pressure means for applying pressure to the fastener end and to said regional area of the plastic sheet adjacent the fastener end, said pressure means and said sealing means being movable toward each other to engage opposite surfaces of the plastic sheet,
- c. means for heating to a plastic flowable condition the

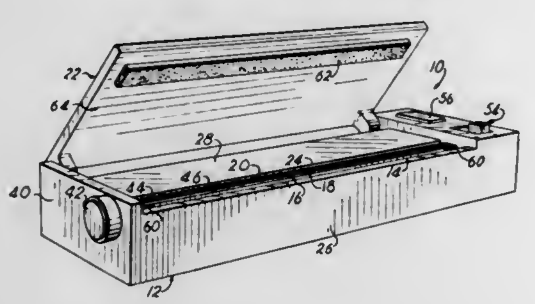
fastener end and said regional area of the plastic sheet, and

d. a channel in at least one of said sealing and pressure means for engagement with the fastener end and adapted to straddle and slightly pinch the fastener end when said pressure means and sealing means are in engagement with the plastic sheet.



3,847,712
BAG SEALING APPARATUS

Robert G. Hubbard, Overland Park, Kans., assignor to Dazey Products Company, Kansas City, Mo.
Filed Aug. 14, 1972, Ser. No. 280,458
Int. Cl. B30b *15/34;* B44b *5/00;* H05b *1/00*
U.S. Cl. 156—583 12 Claims



1. Apparatus for sealing the open end of plastic bags or the like, comprising:

a base;

an elongate member of heat-conductive material having a pair of differently configured surfaces, each of said surfaces being of length and configuration for continuous and uninterrupted spanning engagement with one side of a plastic bag or the like adjacent the open end thereof;

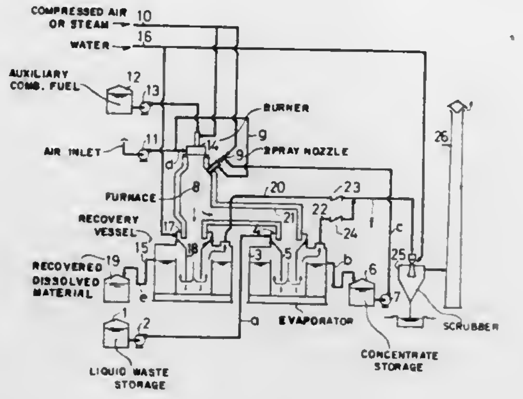
means rotatably mounting said member on said base for selective positioning of either of said surfaces in a disposition permitting said continuous, uninterrupted spanning engagement with said bag or the like;

means for heating said surfaces along the entire length thereof;

bag-engaging elongate pressure means at least as long as said bag-engaging lengths of said surfaces and shiftably mounted on said base for movement toward and away from the latter, said pressure means having a bag-engaging surface of generally planar configuration for continuous, uninterrupted spanning engagement with the other side of said bag or the like, oppositely to the zone of engagement between the latter and a selected one of said surfaces of said member.

3,847,713
METHOD AND APPARATUS FOR TREATMENT OF LIQUID WASTES

Mikio Akune, Yokosuka; Kokichi Yoshii, Shibukawa, and Tadashi Yamauchi, Kawasaki, all of Japan, assignors to Nittelsu Chemical Engineering Co., Ltd., Cheyoda-ku, Japan
Filed June 3, 1971, Ser. No. 149,667
Claims priority, application Japan, June 6, 1970, 45-48852
Int. Cl. B01d *1/14, 47/00, 1/16, 1/00*
U.S. Cl. 159—4 A 3 Claims



1. A method for treating liquid waste, which comprises the steps of

a. providing a liquid waste containing a mixture of organic and inorganic or organo-metallic materials, said materials after complete combustion producing an alkalimetal containing ash;

b. concentrating said waste in an evaporator;

c. injecting and atomizing the thus concentrated waste into a vertical furnace through a spray nozzle at the upper portion of said furnace;

d. combusting said injected and atomized waste in said vertical furance at least above 800° C and above the fusionn temperature of the thus produced ash;

e. introducing combustion gases evolved from said vertical furnace into contact with boiling water in a recovery vessel to dissolve and recover said molten ash immediately in the form of solution or slurry;

f. passing combustion gases into said evaporator to utilize the heat contained in said combustion gases.

3,847,714
METHOD AND APPARATUS FOR HEAT TREATING LIQUEFORM MATERIALS

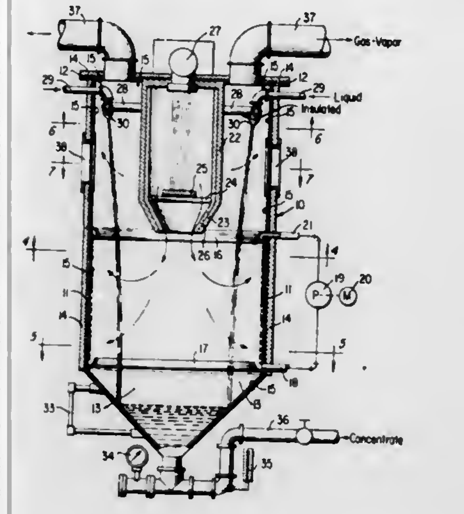
Elmer S. Davies, and Monte R. Edwards, both of Takoma Park, Md., assignors to Dasi Industries, Inc., Silver Spring, Md.
Filed June 15, 1972, Ser. No. 263,132
Int. Cl. B01d *1/16, 1/22;* F26b *3/12*
U.S. Cl. 159—4 A 5 Claims

1. A method of heat treating liqueform materials to vaporize therefrom volatile constituents thereof which includes the steps of

a. forming without preheating a relatively thin, annular downwardly flowing curtain or predetermined height of said liqueform material within and surrounded by a vertically-positioned vessel having its inner wall spaced outwardly from the outer surface of said curtain to provide a space therebetween, and providing said vessel with a discharge opening at the upper portion thereof in communication with said space, and with a discharge opening at the bottom of said vessel;

b. projecting downwardly within the confines of the lower portion of said curtain and laterally through said curtain throughout the height thereof, the products of combustion from a burner and combustion chamber assembly mounted in the upper portion of said vessel coextensive with the upper portion of said curtain, and discharging the combustion products downwardly below the upper end of the curtain and substantially above the lower end thereof, at a relatively high temperature sufficient to vaporize the volatile constituents of said curtain and at a relatively low pressure just sufficient to cause said products of combustion to traverse the height of said curtain but not to impinge with any substantial velocity upon non-volatile constituents in the bottom of the vessel;

c. discharging the vapors formed from the volatile constituents of said curtain from the space surrounding said curtain and through the discharge opening at the upper portion of said vessel and discharging the non-vaporized remainder of said curtain of said liqueform material through the discharge opening at the bottom of said vessel;



d. retaining a relatively small amount of the unvaporized remainder of said liqueform material in the bottom portion of said vessel above said bottom discharge opening to form a liquid seal above said bottom discharge opening; and

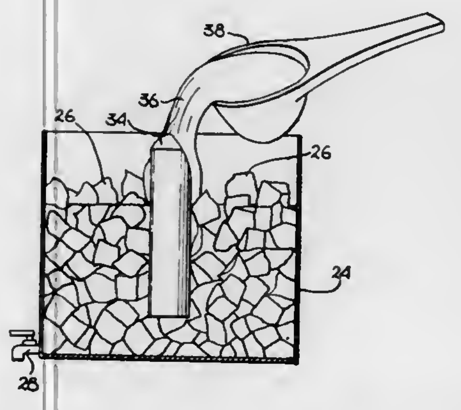
e. insulating the burner and combustion chamber and concentrically spacing the burner and combustion chamber from the curtain to prevent preheating of the liqueform material before it is formed into a curtain.

ERRATUM

For Class 160—240 see:
Patent No. 3,847,908

3,847,715
DECORATIVE CASTINGS AND METHOD OF FABRICATION THEREOF

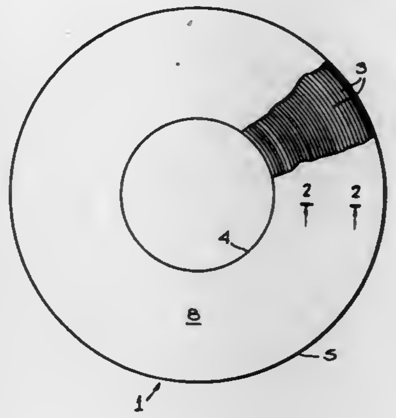
Raymond F. Goodspeed, Garden Grove, Calif., assignor to Teledyne, Inc., d/b/a Teledyne Casting, Los Angeles, Calif.
Filed May 22, 1973, Ser. No. 362,930
Int. Cl. B22d *25/02*
U.S. Cl. 161—7 13 Claims



1. A method of casting decorative items comprising the steps of preparing a bed of pieces of ice, pouring molten metal onto said bed, and allowing said molten metal to solidify as it runs between said pieces of ice.

3,847,716
DOILY FOR REINFORCING THE WALL OF A FLEXIBLE WALLED LIQUID CONTAINER

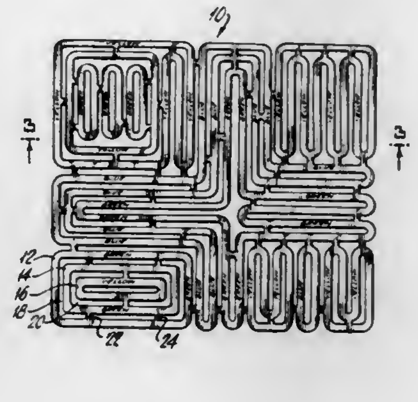
Robert E. Dorsch, South Bend, Ind., assignor to Uniroyal, Inc., New York, N.Y.
Division of Ser. No. 179,290, Sept. 10, 1971, Pat. No. 3,750,730. This application Feb. 28, 1973, Ser. No. 336,669
Int. Cl. B37b *1/04;* B65d *41/00;* D04h *3/02*
U.S. Cl. 161—35 9 Claims



1. As an article of manufacture, a reinforcing doily adapted for use in reinforcing the wall of a flexible walled liquid container in the area surrounding a fitting, said doily comprising an annular sheet of curable but uncured polymeric material having a central opening and a plurality of closely adjacent substantially concentric annular turns of substantially inextensible reinforcing material disposed in the plane of said sheet.

3,847,717
ARMATURE FOR HAND-WEAVING AN ARTICLE OF A DEFINITE PATTERN OR DESIGN

Morton D. Kass, 31 Walkins Pl., New Rochelle, N.Y. 10801
Filed Aug. 7, 1972, Ser. No. 278,399
Int. Cl. B32b *3/10, 7/08*
U.S. Cl. 161—37 13 Claims



1. An armature formed in a pattern by:
1. a plurality of members;
2. a plurality of channels separating adjacent members and adjacent portions of each member; and
3. a plurality of connectors integrally formed with said adjacent members and crossing said channels to join said adjacent members.

3,847,718

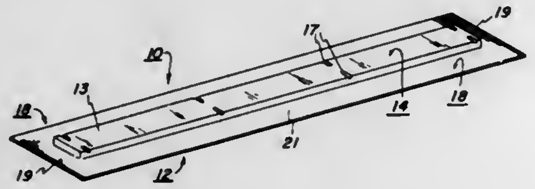
ADHESIVE BINDING MEANS FOR EDGE BINDING ASSEMBLED PAGES TOGETHER IN BOOK FASHION

Donald W. Watson, Arlington Heights, Ill., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 1, 1971, Ser. No. 194,446

Int. Cl. B32b *3/10;* **B37b** *3/04;* **B42d** *3/02*

U.S. Cl. 161—39 **14 Claims**



1. Means for edge binding pages together in book fashion comprising:

a substrate of formable material, said substrate having a minimum width greater than the thickness of the book to be bound to permit said substrate to overlay not only the book end but also at least that portion of the outer pages of said book immediately adjoining said book end;

a first relatively thick heat activated low tack adhesive on one face of said substrate and substantially along the centerline thereof, said first adhesive being smaller in size than said substrate and arranged in a generally longitudinal stripe formation such that uncovered portions of said substrate project therebeyond at least along the sides of said first adhesive stripe;

said first adhesive stripe being of a width sufficient to accommodate the thickness of the pages to be bound; and a second relatively thin adhesive on said substrate uncovered portions at least along each side of said first adhesive stripe whereby to form a pair of second adhesive stripe formations flanking said first adhesive stripe, said second adhesive consisting of a relatively high tack adhesive.

3,847,719

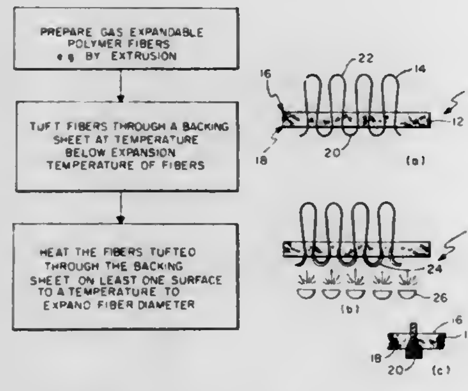
TUFTED CARPET WITH GAS-EXPANDABLE PILE AND METHOD

Richard P. Crowley, 23 Salem Road, Wellesley Hills, Mass. 02110

Continuation-in-part of Ser. No. 125,335, March 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 25,275, April 12, 1970, Pat. No. 3,694,873, which is a continuation-in-part of Ser. No. 872,498, Oct. 30, 1969, Pat. No. 3,686,046. This application Dec. 26, 1972, Ser. No. 317,923

Int. Cl. D05c *15/04*

U.S. Cl. 161—65 **23 Claims**


PREPARE GAS EXPANDABLE POLYMER FIBERS e.g. BY EXTRUSION
TUFT FIBERS THROUGH A BACKING SHEET AT TEMPERATURE BELOW EXPANSION TEMPERATURE OF FIBERS
HEAT THE FIBERS TUFTED THROUGH THE BACKING SHEET ON LEAST ONE SURFACE TO A TEMPERATURE TO EXPAND FIBER DIAMETER
22
14
16
10
12
18
20
(a)
10
24
26
(b)
16
12
18
20
(c)

1. A product which comprises a backing sheet and a plurality of expanded cellular polymeric fibers secured to the backing sheet, the fibers providing a fibrous face surface, the fibers in the backing sheet secured thereto by the contact and the compression of at least a part of the outer surface of the cellular polymeric fibers against the material in the backing sheet.

3,847,720

UPHOLSTERY ARTICLES AND PROCESS FOR THEIR MANUFACTURE

Cesare Laberinti, Milan, Italy, assignor to Industrie Pirella S.p.A., Milan, Italy

Filed Dec. 8, 1970, Ser. No. 96,265

Claims priority, application Italy, Dec. 24, 1969, 26274/69

Int. Cl. B32b *3/26*

U.S. Cl. 161—159 **2 Claims**

1. An upholstery article of expanded polyurethane molded in a shape of any desired configuration, constituted of an inner core of said polyurethane and of a preformed polyurethane skin which is mechanically resistant and which presents an appealing appearance, wherein said skin is microporous and is directly joined to said inner core by chemical bond, has cells uniformly distributed within its thickness in a fine cellular structure, said cells being for the most part not intercommunicating with one another, and having a diameter smaller than 0.02 mm, the visible surface of said skin being substantially continuous and waterproof and the value of the density range of said skin being between 0.4 and 0.8 g/cm^3, said skin being further characterized by having a pleasing softness to the touch and a thickness of no more than 3mm.

3,847,721

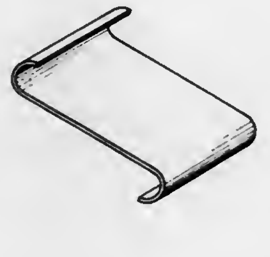
HEAT RECOVERABLE ARTICLES AND METHODS THEREFOR

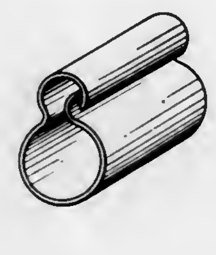
Joseph H. Evans, Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Apr. 2, 1971, Ser. No. 130,730

Int. Cl. B32b *3/04*

U.S. Cl. 161—108 **14 Claims**





1. An article having a molecularly oriented unitary polymeric layer which has been differentially annealed while restrained against dimensional change by heating said layer at a temperature and for a time sufficient to provide an anisotropic gradient from a first to a second primary face of said layer through the thickness thereof and thereafter crosslinked chemically or by irradiation, the resulting crosslinked article being involutely heat recoverable to an overlapping, generally cylindrical configuration.

3,847,722

IMPREGNATED MATERIALS FOR LEAK PREVENTION

John F. Kistner, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 27, 1972, Ser. No. 221,295

Int. Cl. B32b *3/10, 27/40;* **E02d** *37/00*

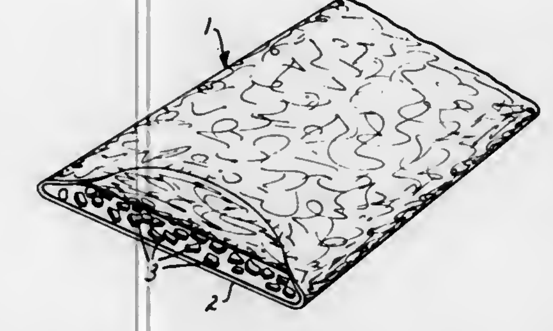
U.S. Cl. 161—109 **3 Claims**

1. A deformable, permeable substrate comprising expanded vermiculite enclosed in a non-woven web envelope, said vermiculite being impregnated with a hydrophilic prepolymer, said prepolymer being a water-miscible isocyanate-terminated prepolymer having a plurality of oxyethylene units and the formula:

$$Y_1-[(CH_2CH_2O)_0-CONH-R-(NCO)_p]_z$$

where Y_1 is an active hydrogen-free residue of a polyhydroxyalkane, $(CH_2CH_2O)_0$ is a hydrophilic polyoxyethylene chain, 0 is the number of oxyethylene units in said chain, 0 being

from about 15 to 50, R is an aromatic nucleus, *p* is an integer equal to *q*-1, where *q* is the number of isocyanate moieties of a polyisocyanate precursor, and *z* is a number equal to the hydroxyl functionality of said polyhydroxyalkane.



3,847,723

FLAME RETARDANT BUTYL RUBBER

Eduard P. Babayan, Huntington Beach, Calif., assignor to Hitco, Irvine, Calif.

Filed Apr. 25, 1973, Ser. No. 354,257

Int. Cl. C08d *11/04;* **C08j** *1/36*

U.S. Cl. 161—160 **12 Claims**

1. A flame retardant, curable, elastomeric composition comprising in combination:

a liquid alkylene-diene copolymer;

an effective amount of a curing agent for the copolymer; and

a combination of flame retardant agents comprising a combination of 10–40 parts of hexabromobenzene, 0–20 parts of a chlorinated paraffin containing 40–70 percent chlorine and 5–25 parts of antimony trioxide on the basis of 100 parts of said copolymer.

3,847,724

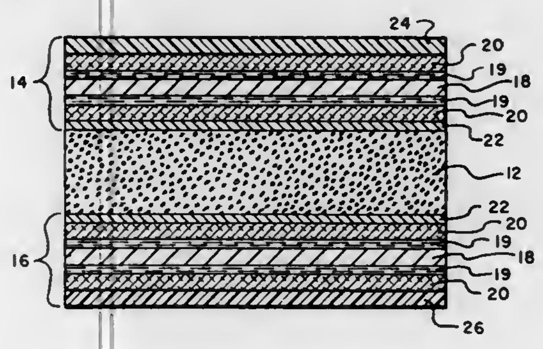
NON-BLOCKING FOAMED POLYMERIC LAMINATE AND METHOD

Thomas J. Powers, 17 Jana Drive, and Shelton J. Jones, 2709 Indian Mound Blvd., both of Monroe, La. 71201, assignor to Olinkraft, Inc., West Monroe, La.

Continuation-in-part of Ser. No. 253,051, May 15, 1972, abandoned. This application Feb. 20, 1974, Ser. No. 443,951

Int. Cl. B32b *3/26*

U.S. Cl. 161—161 **11 Claims**



1. A fire resistant, non-blocking low density laminated structure comprising a polymeric foam core sandwiched between two layers of coated paper, each paper layer comprising an inner layer of metallic foil adhesively fixed to one side of the paper and an outer layer of metallic foil adhesively fixed to the other side of the paper and with the innermost layers of metallic foil being primed with an adhesive coating to promote adhesion to the polymeric core, the outermost side of one outer metallic foil being primed with a coating dissimilar from the outermost side of the other outer metallic foil, one of the outermost coatings comprising a vinyl chloride/vinyl acetate coating and the other of the outermost coatings comprising a nitrocellulose coating, the dissimilar outermost coatings functioning to allow similar laminated structures to be stacked on top of each other so that the dissimilar coatings are in juxtaposition thereby preventing the structures from adhering to each other.

3,847,725

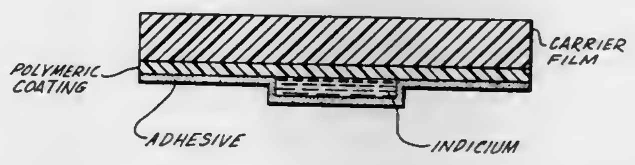
DRY TRANSFER MATERIALS

Walter L. Hochner, Arcadia, Calif., assignor to Avery Products Corporation, San Marino, Calif.

Filed Nov. 28, 1969, Ser. No. 880,541

Int. Cl. C09j *7/02*

U.S. Cl. 161—167 **9 Claims**



1. A dry transfer material comprising a carrier sheet including a solvent-inert, substantially non-extensible, highly crosslinked polymeric surface, indicia forming a film printed on said surface, and a dry elastomeric pressure sensitive adhesive extending over the indicia and the polymeric surface.

3,847,726

VIBRATION-DAMPING SHEET METAL LAMINATES

Wilhelm Becker; Peter Osse, both of Hamburg; Richard Gutte, Oststeinbek, and Friedrich Hochbach, Glinde, all of Germany, assignors to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany

Filed Apr. 24, 1972, Ser. No. 246,921

Claims priority, application Switzerland, Apr. 23, 1971, 5926/71

Int. Cl. B32b *15/08, 27/38;* **C08j** *5/00*

U.S. Cl. 161—186 **8 Claims**

1. Vibration-damping sheet metal laminates prepared by a method which comprises applying to metal sheets at room temperature an adhesive composition comprising

a. an epoxy compound having more than one 1,2-epoxy group per molecule,

b. a poly-ether amine, which is the condensation product of
a polyoxypropyleneamine
a phenol and
an aldehyde,

c. a heterocyclic amine and

d. a phenol, then joining the sheets together and first curing at room temperature with subsequent heat treatment, wherein the adhesive composition contains 20–130 percent by weight of component (b), 1–40 percent by weight of component (c) and 2–15 percent by weight of component (d), all percentages being relative to the amount of component (a), with the proviso that the epoxy resin (a) and the curing agents (b), (c) and (d) are contained in an equivalent ratio.

3,847,727

RUBBER-METAL ADHESION USING HALOGENATED QUINONE AND RESORCINOL-ALDEHYDE CONDENSATION PRODUCT

Robert W. Kindle, Cheshire; Robert R. Barnhart, and Philip T. Paul, both of Naugatuck, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 131,470, April 5, 1971, Pat. No. 3,728,192. This application Jan. 22, 1973, Ser. No. 325,478

Int. Cl. B32b *15/02, 15/06*

U.S. Cl. 161—215 **7 Claims**

1. A laminate of a reinforcing element having a metal surface and a vulcanized rubber composition containing a halo-

genated quinone and a condensation product of resorcinol and an aldehyde selected from the group consisting of alkyl aldehydes having one to four carbon atoms and benzaldehyde.

3,847,728
RESINOUS COMPOSITIONS HAVING IMPROVED GAS PERMEATION RESISTANCE AND MOLDED STRUCTURES THEREOF

Sadao Hirata, Yokohama; Muneki Yamada, and Akira Kishimoto, both of Tokyo, all of Japan, assignors to Toyo Seikan Kaisha Limited, Tokyo, Japan

Filed May 31, 1972, Ser. No. 258,428

Int. Cl. B32b *27/08*

U.S. Cl. 161—252 **11 Claims**

1. A molded structure, said molded structure having been formed by means of extrusion molding from a molten mixture containing (A) a polyolefin and (B) a saponified product of an ethylene-vinyl acetate copolymer having an ethylene content of 25 to 50 mole percent and a degree of saponification of at least 96 percent at a weight ratio of A : B ranging from 95 : 5 to 75 : 25, said molded structure having a layer structure in which the polymer composition is different in the thickness direction but substantially identical in the plane direction and every two adjacent layers are bonded to each other without any intermediate bonding layer of an adhesive, said layer structure consisting essentially of (a) at least one layer in which the saponified ethylene-vinyl acetate copolymer is predominantly distributed, (b) at least one layer in which the polyolefin is predominantly distributed, and (c) at least one layer which comprises the saponified ethylene-vinyl acetate copolymer and the polyolefin in amounts substantially the same as the average content of the ethylene-vinyl acetate copolymer and the polyolefin of layers (a) and (b), said layer (c) intervening between said layer (a) and layer (b) to bond them integrally, said layer structure providing an improved gas permeation resistance, and wherein when said molded structure is divided in three layers in the thickness direction, at least one layer (a) contains the ethylenevinyl acetate copolymer saponified product in an amount expressed by following formula

$M_1 = m_1 X$

wherein X is the average content (percent by weight) of the ethylene-vinyl acetate copolymer saponified product in said molded structure, m_1 is a number of from 1.2 to 4, and M_1 is the content (percent by weight) of the ethylene-vinyl acetate copolymer saponified product in said layer. and at least one layer (b) contains the ethylene-vinyl acetate copolymer saponified product in an amount expressed by the following formula

$M_2 = m_2X$

wherein X is as defined above, m_2 is a number of from 0 to 0.9, and M_2 is the content (percent by weight) of the ethylene-vinyl acetate copolymer saponified product in said layer.

3,847,729
DEEP-DRAWABLE PLASTIC COMPOSITE COMPRISING PLASTIC FILM ON FIBROUS SUPPORT

Ludwig Hartmann, Oberflockenbach, Germany, assignor to Carl Freudenberg, Weinheim, Germany

Division of Ser. No. 514,026, Dec. 15, 1965, Pat. No. 3,523,149. This application Jan. 15, 1970, Ser. No. 3,129

Claims priority, application Germany, Dec. 23, 1964, 44788

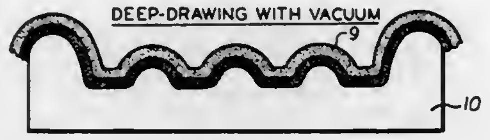
Int. Cl. B29c *17/04*

U.S. Cl. 161—256 **11 Claims**

1. Deep-drawable composite comprising:

a. a plastic film of deep-drawable plastic,

b. a non-woven fleece consisting essentially of partially drawn and further drawable filaments which are drawable



upon deep-drawing of the plastic film,

c. said plastic film coating said fleece.

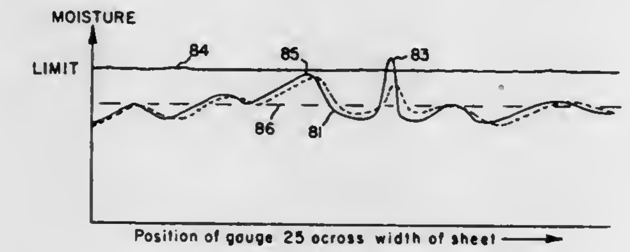
3,847,730
PEAK RESPONSIVE CONTROL SYSTEM AND METHOD

George I. Doering, Columbus, Ohio, assignor to Industrial Nucleonics Corporation, Columbus, Ohio

Continuation of Ser. No. 726,439, May 3, 1968, abandoned. This application Mar. 30, 1973, Ser. No. 346,295

Int. Cl. D21f *7/00*

U.S. Cl. 162—198 **17 Claims**



1. A system for controlling a property of an output of a sheet processor comprising gauge means monitoring the property for deriving a signal that is a replica of property variations of the output, means for scanning the gauge in a direction between edges of the sheet, means responsive to the signal replica for selecting the peak value of the property derived from at least one scan of the gauge means in a direction between the edges, said selected peak value being the peak value which is displaced by the greatest extent from a nominal value for the property over the scan, means responsive to said selecting means for controlling the processor in response to a comparison of the selected peak value with a predetermined limit value for the property so that the selected peak value is controlled to approach said limit value, said control means including means for controlling the processor by an amount indicative of the deviation of the selected peak value from the predetermined limit value.

3,847,731
TWIN WIRE PAPER MAKING METHOD IN WHICH CONTROLLED DEWATERING IN TAPERING GAP CAUSES SUSPENSION TO MOVE AT SPEED OF WIRES

Hanns F. Arledter, Andritzer Reichsstrasse 122, 8046 Graz St. Viet, Austria

Filed Nov. 12, 1971, Ser. No. 198,304

Claims priority, application Austria, Nov. 16, 1970, 10273/70

Int. Cl. D21f *1/00*

U.S. Cl. 162—203 **8 Claims**

1. A paper making method in which at at least 30% of the forming of a continuous sheet is effected by dewatering a fiber suspension in a tapered gap defined by a pair of traveling wires, the method comprising the steps of

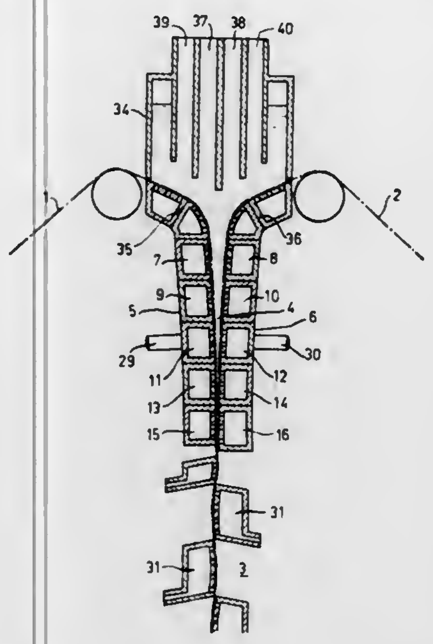
a. establishing and maintaining, in a region adjacent the gap inlet, a volume of fiber suspension which is under pressure, has uniform consistency, and is in a turbulent state, b. said pressure being such as to cause suspension to flow into the gap at the speed of the wires;

c. causing the wires to pass in contact with suspension in said region immediately before they define said gap;

d. withdrawing liquid from the suspension in said region

through each wire by suction to thereby cause deposition of fibers on the wires and effect partial formation of the sheet;

e. withdrawing liquid from the suspension in the gap through each of the wires by suction applied in each of a series of separate zones positioned along the path of travel of the wire, whereby the consistency of the suspension increases gradually as the suspension travels through the gap and a sheet is formed therefrom between the two wires; and



f. setting the degree of suction dewatering effected in each zone so that the quantity of liquid in the suspension decreases from zone-to-zone in the direction of wire travel proportionally to the width of the gap, and the suspension is caused to move through the gap at essentially the speed of the wires and without being subjected to appreciable mechanical pressing by the wires.

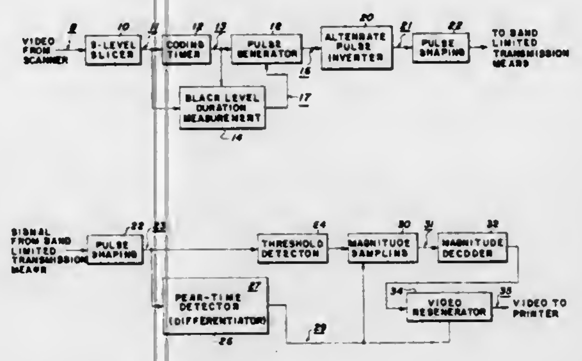
3,847,732
SEMI-ENCODED FACSIMILE TRANSMISSION

Donald A. Perreault, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 6,869, Jan. 29, 1970, abandoned. This application Sept. 15, 1972, Ser. No. 289,510

Int. Cl. H04n *7/12*

U.S. Cl. 178—6 **14 Claims**



1. Apparatus for encoding a two-level non-synchronous video signal to achieve a reduced transmission time, without sacrificing resolution, given a limited bandwidth channel for said video signal, said apparatus comprising:

a. pulse generating means for supplying a train of pulses, each of said pulses corresponding to a transition of said video signal from a first level to a second level, each pulse in said pulse train occurring at a predetermined point in time relative to a corresponding one of said transitions; and

b. means for adjusting the amplitude of each of said pulses to be dependent on the interval of time separating the transition corresponding to said each of said pulses from the next succeeding transition of said video signal from said second level back to said first level.

3,847,733
NUCLEAR REACTOR WITH INTEGRATED HEAT EXCHANGER

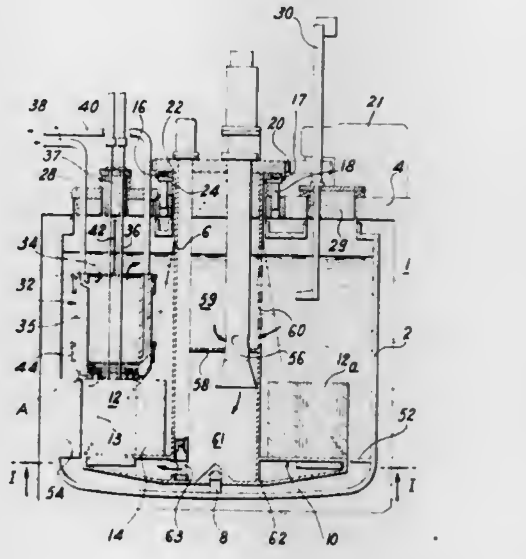
Edmond Ventre, Le Vesinet, France

Filed July 13, 1971, Ser. No. 162,216

Claims priority, application France, Aug. 5, 1970, 70.28939

Int. Cl. G21c *15/00, 19/20*

U.S. Cl. 176—28 **9 Claims**



1. A nuclear reactor of the integrated heat-exchanger type comprising a leak-tight enclosure, a number of reactor cores disposed in a circle in said enclosure, a supporting platform for said cores, a fuel-handling device mounted above one of said cores in said enclosure, a heat-exchanger in said enclosure suspended above each of the others of said cores, a central column rigidly fixed to said enclosure, a system outside said enclosure for rotating said column about its axis and for rotating said reactor cores from a position beneath a heat-exchanger to a position beneath said fuel-handling device, vertical jacks supporting said column on said enclosure and for raising and lowering said platform and said reactor cores with respect to said heat-exchangers, fuel elements in said cores, heads for said fuel-elements, a neutron shield fixed beneath each of said heat-exchangers and opening through said shield receiving said heads when said platform is raised.

3,847,734
TUBULAR CONNECTOR ASSEMBLY OF A NUCLEAR REACTOR CHARGE MACHINE

Hans Schwarz, Nussbaumen, Switzerland, assignor to Aktiengesellschaft Brown, Boverl & Cie, Baden, Switzerland

Filed Mar. 21, 1972, Ser. No. 236,611

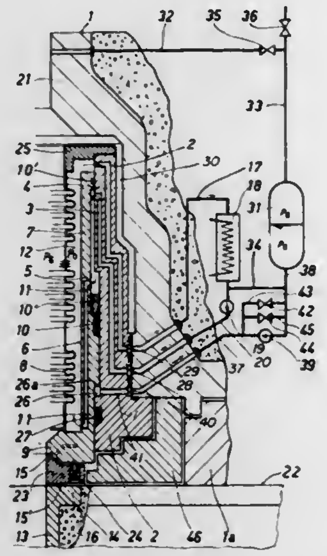
Claims priority, application Switzerland, Mar. 25, 1971, 4408/71

Int. Cl. G21c *19/22*

U.S. Cl. 176—31 **7 Claims**

1. A tubular connector assembly component of a charging machine for a nuclear reactor and which is adapted to be located on and movable over a platform of the reactor into alignment with and for connection to the ends of individual stand pipes for the purpose of exchanging fuel or moderator components which are introduced into the core of the reactor through the stand pipes, said tubular connector assembly comprising a cylinder, an annular piston including a crown and a skirt arranged for sliding movement into and out of one end of said cylinder, a cylindric open-ended bellows unit disposed concentric with and interiorly of said annular piston,

one end of said cylindric bellows unit being secured to said piston crown and the opposite end of said bellows unit being secured at the other end of said cylinder thereby to form an annular chamber between the bellows unit and the surrounding piston and cylinder wall, and means for admitting a pressurized fluid medium into said annular chamber to extend said bellows unit and advance said piston and to seat the annular crown thereof onto the end of a stand pipe thereby to establish a charging passageway for the stand pipe leading through said open-ended bellows unit and the other end of said cylinder into the interior of said charging machine, said pressurized fluid medium admitting means including inlet and outlet ports to and from said cylinder, and a fluid circulating system connected to said ports, said circulating system including a pump and a heat exchanger for extracting heat from the fluid medium and which is transferred to the connector assembly from hot reactor cooling gas flowing therethrough.



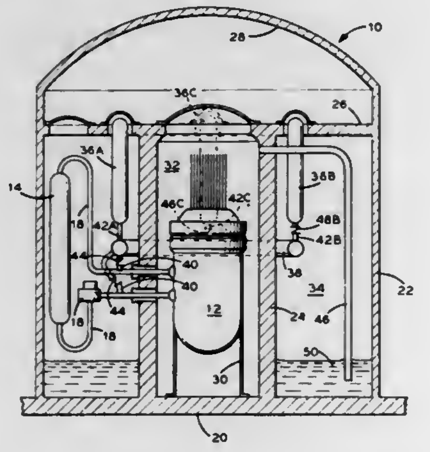
3,847,735
NUCLEAR REACTOR SAFETY SYSTEM

Donald C. Schluderberg, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.

Continuation of Ser. No. 53,753, July 10, 1970, abandoned. This application Dec. 12, 1972, Ser. No. 314,483

Int. Cl. G21c *15/18*

U.S. Cl. 176—38 2 Claims



1. In combination with a nuclear reactor, a pressurized primary coolant system comprised of a plurality of primary coolant loops operatively connecting the reactor to heat exchanger means, a containment structure housing said reactor, heat exchanger and coolant system, the improvement comprising an apparatus located within the containment structure for suppressing the buildup of vapor pressure therein including a plurality of tanks, a header operatively associated with the tanks, a cooling fluid being stored in said header and tanks, the header being disposed in open fluid communication with one of said tanks and in fluid receiving relation with the remaining tanks, each of the tanks containing a gas at superatmospheric pressure for pressurizing the fluid stored therein and in said header, the fluid pressure being different in each of the tanks and lower than the primary coolant operating pressure, the fluid pressure in said one tank and header being higher than that of the remaining tanks, a separate connector flow connecting each of the tanks to said header, a first check valve disposed in each of the connectors associated with the remaining tanks, said first check valve being normally closed by the fluid pressure in the header, a plurality of conduits flow connecting the header with said primary coolant loops, each of said conduits entering the system at a different location, a second check valve disposed in each of the conduits, said second check valve being normally closed by the primary coolant operating pressure, said second check valve becoming open when the primary coolant pressure decreases to the level corresponding to the fluid pressure in said one tank and header, and said first check valve becoming open when the primary coolant pressure decreases to the level corresponding to the fluid pressure in the tank associated therewith.

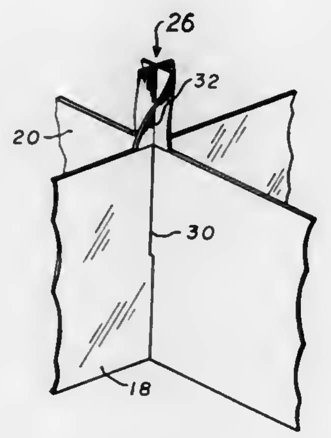
3,847,736
FLOW TWISTER FOR A NUCLEAR REACTOR

Frank Bevilacqua, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 24, 1972, Ser. No. 220,213

Int. Cl. G21c *3/34*

U.S. Cl. 176—78 9 Claims



1. A grid structure for a nuclear reactor fuel assembly containing a plurality of elongated fuel elements each having a longitudinal axis and arranged in a generally parallel array with provision for a coolant flow along said elements, said grid structure comprising intersecting cross members intersecting at, and defining, cross member intersections and forming openings through which the fuel elements are adapted to extend and through which coolant flow in the reactor may pass, flow twisters integral with said grid structure at said intersections of said intersecting cross members and extending outwardly therefrom to a free end in a direction generally parallel to the longitudinal axis of said fuel elements, each twister comprising at least one tab having four outwardly extending arms with surfaces substantially extending from said cross member intersection to said free end, said tab having a cruciform cross section with a longitudinal centerline substantially parallel with the longitudinal axis of said fuel elements and being twisted about said longitudinal centerline to provide a plurality of spiral flow directing surfaces.

ERRATUM

For Class 178—6 see:
Patent No. 3,847,732

3,847,737
INACTIVATION OF MYXOVIRUSES AND METHOD OF PREPARING A VACCINE THEREFROM

Alexander David Kanarek, 183-193 Euston Rd., London, England

Continuation-in-part of Ser. No. 441,835, March 22, 1965, abandoned. This application June 11, 1968, Ser. No. 736,006

Int. Cl. C12k *7/00, 5/00*

U.S. Cl. 195—1.4 7 Claims

1. A method for inactivating myxoviruses without significant loss of antigenic activity, which comprises contacting the myxoviruses in an aqueous suspension at a PH between pH 6 and pH 8 in the presence of at least about 0.05 percent w/v of a surface active agent selected from the class consisting of polyoxyethylene sorbitan mono-oleate, polyoxyethylene ether of partial lauric acid ester, polyoxyethylene ether of palmitic acid ester, and polyoxyethylene ether of stearic acid ester which have molecular weights in the range of 1,200 to 1,320, with an organic solvent selected from the class consisting of chlorinated lower hydrocarbon having from 2 to 5 carbon atoms and chlorinated and fluorinated lower hydrocarbon having from 2 to 5 carbon atoms, the solvent being liquid at room temperature so as to form an organic layer and an aqueous layer, and separating the aqueous layer from the organic layer after a mixing time of about 1 hour.

3,847,738
BLOOD COLLECTION AND PRESERVATION UNIT

Jon M. Brake, Burbank, and Fred H. Deindoerfer, Northridge, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Nov. 1, 1971, Ser. No. 194,652The portion of the term of this patent subsequent to Nov. 12, 1991, has been disclaimed.

Int. Cl. A61k *27/00*

U.S. Cl. 195—1.8 4 Claims

1. A blood collection and storage unit, including container means having a storage volume for receiving and storing a corresponding volume of blood, and aqueous preservative solution means admixable with blood stored in said container means, wherein the improvement comprises having present in said preservative solution means for admixture with the stored blood an amount of dihydroxyacetone (DHA) equal to 5 to 100 millimoles (mM) of DHA per liter of said container storage volume.

3,847,739
CULTIVATION OF MICRO-ORGANISMS ON A FEEDSTOCK CONSISTING AT LEAST IN PART OF STRAIGHT CHAIN HYDROCARBONS

Alfred Champagnat, Courbevoise, and Bernard Maurice Laine, Lavern, both of France, assignors to The British Petroleum Company Limited, London, England

Continuation of Ser. No. 69,474, Sept. 3, 1970, abandoned, which is a continuation of Ser. No. 845,662, July 10, 1969, abandoned, which is a continuation of Ser. No. 546,607, May 2, 1966, abandoned. This application May 21, 1973, Ser. No. 362,063

Int. Cl. C12b *1/00*

U.S. Cl. 195—28 R 19 Claims

1. A process which comprises cultivating a straight chain paraffinic hydrocarbon-consuming micro-organism in the presence of a feedstock consisting at least in part of a straight chain hydrocarbon, recovering a fraction comprising the micro-organism and at least some aqueous medium and residual hydrocarbon, mixing said fraction with a surface active agent and treating the mixture to recover (a) a washed fraction comprising the micro-organism together with an aqueous phase and some residual hydrocarbon fraction and (b) a hydrocarbon fraction of reduced content of straight chain paraffins or which is free of normal paraffins; the said washed fraction being treated by solvent extraction for the removal, at least in part, from the micro-organism of lipids together with hydrocarbons associated with said micro-organism.

3,847,740
PROCESS FOR THE PRODUCTION OF LEVULOSE-BEARING SYRUPS

Robert E. Heady, Park Forest, and William A. Jacaway, Jr., Downers Grove, both of Ill., assignors to CPC International, Inc., Englewood Cliffs, N.J.

Continuation-in-part of Ser. No. 294,397, Oct. 2, 1972,. This application Sept. 28, 1973, Ser. No. 401,757

Int. Cl. C12b *1/00;* **C12c** *11/33*

U.S. Cl. 195—31 F 22 Claims

1. A stabilized xylose isomerase enzyme preparation comprising a cell free xylose isomerase enzyme sorbed on particulate basic magnesium carbonate.

3,847,741
TEMPERATURE-PROGRAMMED PROCESS FOR THE PRODUCTION OF LEVULOSE-BEARING SYRUPS

Robert E. Heady, Park Forest, and William A. Jacaway, Jr., Downers Grove, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Oct. 2, 1972, Ser. No. 294,397

Int. Cl. C12b *1/00*

U.S. Cl. 195—31 F 25 Claims

1. An enzymatic isomerization process for the conversion of dextrose to levulose, comprising:

in an initial operating phase, subjecting a solution containing dextrose to the action of a xylose isomerase enzyme preparation at an operating temperature of at least 50° C., but not more than 70° C., then

increasing the temperature to a value that is at least 5° higher than the temperature during the initial operating phase, and continuing the isomerization process at said increased temperature.

3,847,742
PROCESS FOR DEACETOXYCEPHALOSPORIN C

Calvin E. Higgens, R.R. 1, Indianapolis, Ind. 46727, and Robert L. Hamill, RR I, New Ross, Ind.

Continuation-in-part of Ser. Nos. 247,608, April 26, 1972, abandoned, and Ser. No. 247,667, April 26, 1972, abandoned, and Ser. No. 247,668, April 26, 1972, abandoned, and Ser. No. 247,669, April 26, 1972, abandoned. This application Apr. 9, 1973, Ser. No. 348,341

Int. Cl. C12d *9/04*

U.S. Cl. 195—36 R 11 Claims

1. A method for producing deacetoxycephalosporin C which comprises cultivating in an aqueous nutrient culture medium under submerged aerobic fermentation conditions a penicillin N producing microorganism belonging to the genera Cephalosporium, Emericellopsis, Scopulariopsis, Paecilomyces or Diheterospora until a substantial amount of deacetoxycephalosporin C is produced by said microorganism in said culture medium and isolating deacetoxycephalosporin C from said culture medium.

3,847,743
ENZYMES BOUND TO CARBONYL POLYMERS

Peter Salvatore Forgione, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

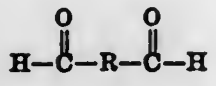
Division of Ser. No. 174,549, Aug. 24, 1971, Pat. No. 3,770,700. This application Jan. 12, 1973, Ser. No. 323,001

Int. Cl. C07g *7/02*

U.S. Cl. 195—63 10 Claims

1. A cross-linked polymer consisting essentially of the reaction product of (1) a sulfited aldehyde or ketone polymer

produced from a vinyl monomer and (2) a dialdehyde having the formula



$$H-\overset{O}{\overset{\|}{C}}-R-\overset{O}{\overset{\|}{C}}-H$$

wherein R is a $(CH_2)_x$ radical, x being 0–18, inclusive, an unsubstituted cyclic aliphatic group of 4–10 carbon atoms, inclusive, or an unsubstituted arylene group of 6–12 carbon atoms, inclusive, having a catalytically active enzyme covalently bound thereto.

3,847,744

METHOD OF PRODUCING ELASTASES BY BACTERIA

Isamu Shiio; Hachiro Ozaki, and Tsuyoshi Nakamatsu, all of Kanagawa, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Dec. 11, 1972, Ser. No. 313,816

Claims priority, application Japan, Dec. 14, 1971, 47-2719

Int. Cl. C12d *13/10*

U.S. Cl. 195—65 **2 Claims**

1. A method of producing elastase which comprises culturing an elastase-producing strain of *Flavobacterium immotum*, *Flavobacterium incertum*, or *Flavobacterium pulchlum* on an aqueous nutrient medium containing assimilable sources of carbon and nitrogen, inorganic salts and minor organic nutrients until elastase accumulates in said medium, and recovering the accumulated elastase.

3,847,745

PREPARATION OF WATER-INSOLUBLE BIOLOGICALLY ACTIVE MATERIALS

Rolf Axen, Upplands Ballinge; Per Vretblad, and Jerker Olof Porath, both of Uppsala, all of Sweden, assignors to Exploaterings Aktiebolaget T.B.F., Uppsala, Sweden

Continuation of Ser. No. 98,027, Dec. 14, 1970, abandoned. This application Mar. 20, 1973, Ser. No. 343,183

Claims priority, application Sweden, Dec. 18, 1969, 17508/69; Apr. 8, 1970, 4781/70

Int. Cl. C07g *7/02*

U.S. Cl. 195—68 **3 Claims**

1. A method of preparing a water-insoluble biologically active polymeric material which comprises admixing in an aqueous medium at least three substances of which at least one is an insoluble organic, hydrophilic polymer and at least one other is a biologically active water-soluble organic substance and a third is an isonitrile group-containing compound, said biologically active water-soluble organic substance being selected from the group consisting of enzymes and hormones, said polymer being selected from the group consisting of cross-linked dextran, agarose, polyacrylamide, polymethylmethacrylate, and derivatives thereof, at least one of said at least three substances containing an anion, at least one of said at least three substances containing a primary or secondary amino group, at least one of said at least three substances other than said water-soluble organic substance containing aldehyde or ketone, reacting said at least three substances to form a said water-insoluble polymeric material wherein said water-soluble organic substance is coupled to said polymer by said isonitrile group-containing compound, and separating said water-insoluble polymeric material from the aqueous medium.

3,847,746

COMPOSITION OF MATTER AND PROCESS

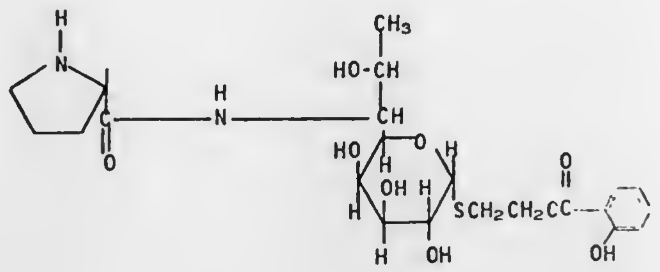
Alexander D. Argoudelis, Portage, and John H. Coats, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 261,724, June 12, 1972,. This application Dec. 13, 1973, Ser. No. 424,623

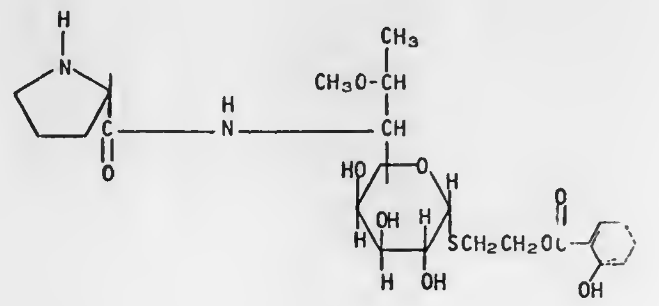
Int. Cl. C12d *9/00*

U.S. Cl. 195—80 R **5 Claims**

1. A process for preparing the antibiotic N-demethyl-7-0-demethylcelesticetin having the structural formula:



and the antibiotic N-demethylcelesticetin having the structural formula:



which comprises cultivating Streptomyces caelestis strain 22218*a*, having the cultural characteristics of culture deposit NRRL 5481, in an aqueous nutrient medium under aerobic conditions until substantial antibiotic activity is imparted to said medium by the production of N-demethyl-7-0-demethylcelesticetin and N-demethylcelesticetin.

3,847,747

PROCESS FOR PRODUCING CHLORAMPHENICOL ANALOGS

Takeo Suzuki; Fusao Tomita; Hirofumi Nakano, and Haruo Honda, all of Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Apr. 3, 1973, Ser. No. 347,399

Claims priority, application Japan, Apr. 5, 1972, 47-33483

Int. Cl. C12d *13/00*

U.S. Cl. 195—96 **17 Claims**

1. A process for producing chloramphenicol analogs, which comprises culturing a bacterium capable of producing chloramphenicol analogs belonging to the genus *Corynebacterium* or *Nocardia* and having a resistance to chloramphenicol or its analogs in a nutrient medium and recovering the chloramphenicol analogs from the resulting culture liquor.

3,847,748

FERMENTATION METHOD AND APPARATUS

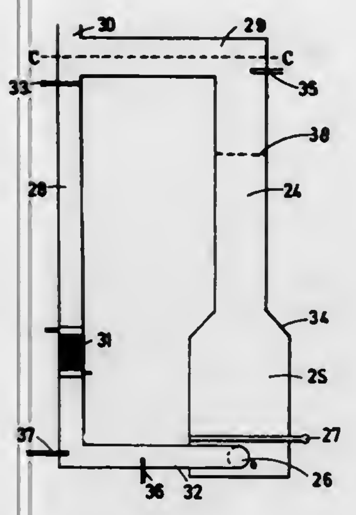
Malcolm Ritchie Gibson; Frank Cornelius Roesler; Stuart Raymond Leslie Smith, and Frank Peter Maslen, all of Norton, England, assignors to Imperial Chemicals Industries, Limited, London, England

Filed July 12, 1971, Ser. No. 161,787

Claims priority, application Great Britain, July 21, 1970, 35285/70

Int. Cl. C12b *1/14*

U.S. Cl. 195—109 **19 Claims**



1. A method for the aerobic fermentation of a substrate by microorganisms capable of utilizing the substrate for growth, comprising the steps of continuously circulating fermentation medium comprising the substrate and microorganisms through a system having a compartment of ascending flow and a compartment of descending flow, connected at their upper and lower ends, admitting an oxygen-containing gas to the lower end of the ascending flow compartment to provide a hydrostatic pressure difference at the lower ends of the two compartments so as to cause said medium to circulate between two regions having different hydrostatic pressures, and controlling the velocity of the liquid circulation by sparging oxygen-containing gas to the upper part of the compartment of descending flow, the amount of gas thus admitted to said compartment of descending flow being less than the amount of gas admitted to said compartment of ascending flow, the gas admitted to said system being the sole essential means for stirring and circulating said medium and the dimensions of the system being such that in the ascending flow compartment the medium is transported continuously and rapidly between a lower region of higher hydrostatic pressure, in which oxygen is absorbed, and an upper region at a lower hydrostatic pressure, in which carbon dioxide produced during fermentation is desorbed, at a rate such that the carbon dioxide liquid phase partial pressure to which the microorganisms are subjected is within the range tolerable to the microorganisms.

3,847,749

APPARATUS AND METHOD FOR RAPID HARVESTING OF ROLLER CULTURE SUPERNATANT FLUID

Ralph E. Smith, and Frank E. Kozoman, both of Durham, N.C., assignors to Duke University, Inc., Durham, N.C.

Filed July 9, 1973, Ser. No. 377,806

Int. Cl. C12b *1/00*

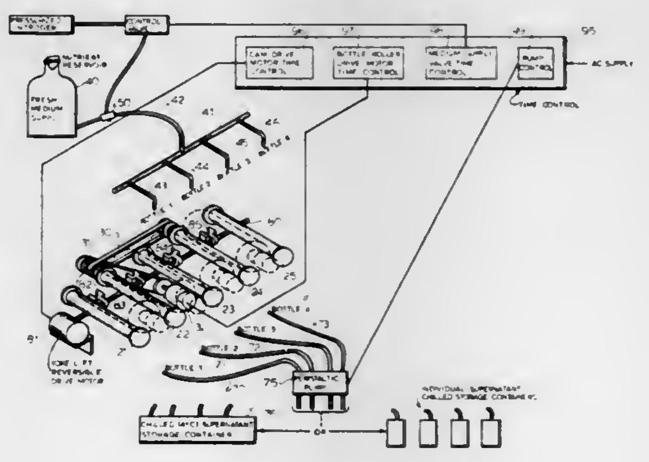
U.S. Cl. 195—127 **4 Claims**

1. In a roller tissue culture apparatus of the type having a plurality of parallel rollers, means to drive at least some of the rollers while others of the rollers are idled, a plurality of culture bottles adapted to be placed on the rollers and to be turned by the driven rollers and to in turn rotate the idled rollers, said bottles each having a swivel cap adapted to mount influent, effluent, and gas inlet-exhaust pipes, having a nutrient supply, piping connecting said nutrient supply to respective bottle influent pipes and with valve means to control the flow of said nutrient to said influent pipes whereby to control the flow of nutrient to said bottles, the improvement comprising:

a. tilting means provided below each of said bottles and operable to engage, gradually raise and tilt each of said bottles simultaneously in some predetermined angular amount while at least a portion of each of said bottles remains on its respective said rollers, being adapted to hold each of said bottles in said tilted position for some predetermined time and then to lower said bottles back to their normal position on said rollers;

b. electrical operator means connected to said tilting means for operating said tilting means and energizable in one mode to cause said tilting means to gradually raise and tilt said bottles, in another mode to cause said tilting means to hold said bottles tilted and in a third mode to cause said tilting means to gradually lower said bottles and restore said bottles to their normal position on said rollers;

c. a swivel cap like piping arrangement in each said bottle including an influent pipe connected to receive nutrient from said supply and to discharge the same through a section of said influent pipe within the respective said bottle, a gas inlet-exhaust pipe having one end communicating with the interior of said bottle and an opposite end communicating with the environment external of the respective said bottle and having an effluent pipe with one end terminating proximate the forward end of the respective bottle and adjacent the interior surface thereof;



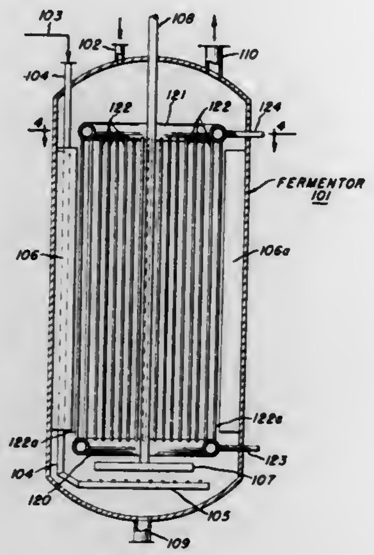
d. a plurality of effluent piping means connected to said respective said swivel cap effluent pipes at one end and to suitable chilled supernatant storage container means at the opposite end;

e. pumping means connected to and operative on said effluent drain pipes to pump fluids from said bottles to said storage container means; and

f. electrical timing control means connected to said operator means, said pumping means, said nutrient supply valve means and said roller drive means whereby said bottles once filled with a predetermined amount of said nutrient may be caused to be rotated for a predetermined time, be stopped, be tilted, be held in a tilted position, be drained of the supernatant fluids in said bottles, be replenished with said nutrient, be gradually lowered to the normal position on said rollers and then again be rotated on said rollers, to repeat the cycle on some predetermined sequence whereby the supernatant fluid and its contents in said bottles may be automatically harvested in said storage container means according to said sequence.

3,847,750
AEROBIC FERMENTATION APPARATUS

John A. Ridgway, Jr., LaPorte, Ind.; Terry A. Lappin, Palos Heights; Benny Moses Benjamin, Chicago, both of Ill.; Joseph B. Corns, Munster, Ind., and Cavit Akin, Oakbrook, Ill., assignors to Standard Oil Company, Chicago, Ill.
Division of Ser. No. 85,334, Oct. 30, 1970, abandoned. This application Mar. 7, 1973, Ser. No. 338,751
Int. Cl. C12b *1/00*
U.S. Cl. 195—142 **3 Claims**

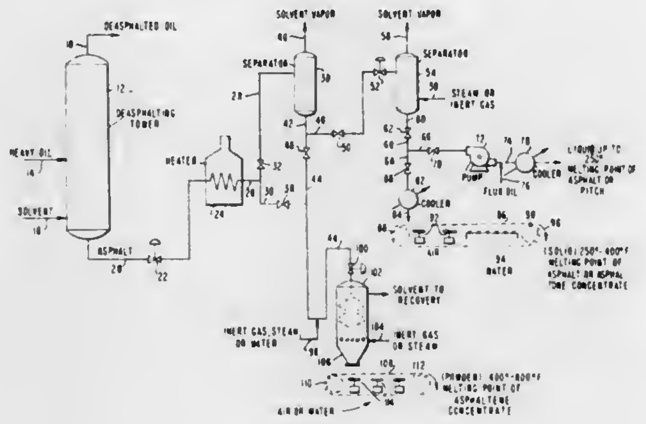


1. In a continuous aerobic fermentation apparatus, including a vertical cylindrical fermentor vessel, an internal cooling apparatus in combination therewith, said cooling apparatus comprising,

- a. a top circular header pipe disposed horizontally within an upper section of the fermentor vessel;
- b. a bottom circular header pipe, aligned axially with and having substantially the same mean diameter as the top header pipe, disposed horizontally within a lower section of the fermentor vessel;
- c. a plurality of connector pipes, disposed vertically in a spaced relationship and severally attaching the bottom circular header pipe to the top circular header pipe, being arranged in parallel rows along the circumference described by the circular header pipes in sufficient number to provide a total cross-section area substantially equal to the cross-section area of either of the header pipes;
- d. an inlet pipe, extending horizontally through the fermentor vessel wall in sealed relation thereto in the plane of the bottom header pipe and attached at one end to the header pipe;
- e. an exit pipe, attached at one end to the top circular header pipe and extending horizontally therefrom and passing through the fermentor vessel wall in sealed relation therewith; and
- f. pumping and compressing means located externally of the fermentor vessel and attached externally thereof to the extended ends of both the inlet pipe and the exit pipe, in order to provide a continuously flowing system for containment of coolant liquid and vapor phases, whereby efficient indirect heat exchange is effected with a fermentation liquor contained in the sections of the fermentor vessel and surrounding the internal cooling apparatus, so that a substantially constant temperature is maintained within the fermentation liquor throughout the course of the aerobic fermentation processing; and said fermentor vessel comprising,
  1. an air inlet and outlet means attached to the top section;
  2. an agitator means located directly below the bottom circular header pipe;
  3. an air sparger means attached to the air entry means within the bottom section and situated directly beneath the agitator means;
  4. a nutrient inlet means attached to the top section;
  5. a fermentation broth outlet means attached to the bottom section; and
  6. two vertical baffle means located along the interior wall of the vessel on either side of the internal cooling apparatus.

3,847,751
RECOVERY AND HANDLING OF ASPHALT CONTAINING A HIGH CONCENTRATION OF ASPHALTENE

Rino L. Godino, Livingston, and Oliver Morfit, Green Village, both of N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.
Filed June 12, 1973, Ser. No. 369,338
Int. Cl. B01d *11/00;* **C10g** *21/00*
U.S. Cl. 196—155 **2 Claims**



1. An appratus for treating the mixture of asphalt and solvent leaving a deep deasphalting tower comprising:

a heater for heating said mixture to at least approximately 600°F;
a separator for separating solvent from said mixture;
a spray tower for spraying asphalt through gas;
a moving cooled surface for receiving the asphalt particles sprayed through said spray tower;
a cooler;
a second cooled belt for receiving asphalt; and
conduit connecting said heater with said separator and said separator with said cooler;
a second conduit path connecting said heater with said spray tower;
a first valve in said first conduit path; and
a second valve in said second conduit path;
whereby when said first valve is closed, asphalt will flow from said heater to said spray tower where said asphalt will be separated into small particles and said solvent will separate from said asphalt into the form of vapor with said solidified particles falling onto said first cooled belt as powder or asphalt pellets having a high concentration of asphaltene and when said second valve is closed and said first valve is open, asphalt will flow through said separator and said cooler onto said first cooled belt to produce asphalt flakes high in asphaltene concentration.

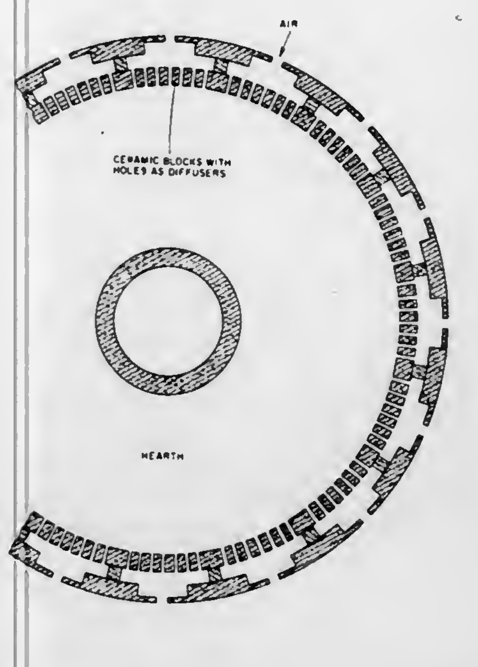
3,847,752
AIR DIFFUSION IN ROTARY HEARTH CALCINER

Thaddeus J. Oleszko, Hoeckstr. F, and Walter H. Groschel, Heckenbergstr. 46, both of 8263 Burghausen, Germany
Filed Sept. 27, 1972, Ser. No. 292,699
Int. Cl. C10b *21/20*
U.S: Cl. 201—32 **5 Claims**

1. In a method for operating a rotary hearth furnace in which combustible material containing volatiles is deposited on a hearth at a deposit point and is moved across said hearth to an exit point and wherein said volatiles are at least partially burned by contacting with air to form a combustion zone

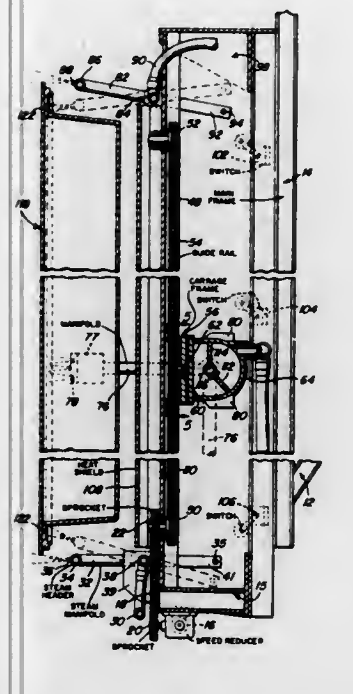
within a furnace chamber at a temperature above the ignition point of the said volatiles, whereby heat is radiated from said combustion zone to said bed of material on said hearth, the improvement comprising in combination introducing said air through diffused outlets, in a substantially horizontal plane at an elevation substantially above the height of said hearth by:

- a. introducing said air in an amount equivalent to from about 0.75 to about 1.25 times the amount necessary to oxidize said volatiles,
- b. diffusing said air to a velocity of from about 1 to about 30 feet per second as measured within said furnace chamber about 2 feet in front of said outlets, and
- c. introducing said air within a substantially horizontal zone located from about 6 to about 36 inches above the top of said coke bed.



3,847,753
COKE OVEN DOOR AND JAMB CLEANERS

William R. Baird, Sturgis, and Kenneth O. Sutton, Morganfield, both of Ky., assignors to Saturn Machine & Welding Co., Inc., Sturgis, Ky.
Filed Mar. 2, 1973, Ser. No. 337,303
Int. Cl. C10b *43/04;* **B08b** *3/00*
U.S. Cl. 202—241 **4 Claims**

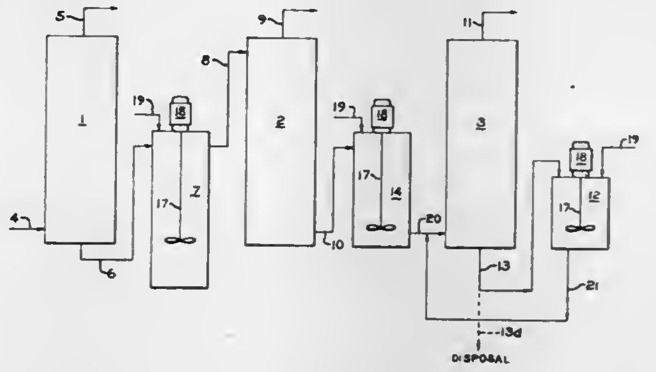


1. Apparatus for cleaning sealing surfaces of a door assembly for a coke oven, comprising, in combination:

- a. first header means for cleaning sealing surfaces at a one end of a member to be cleaned;
- b. second header means for cleaning sealing surfaces at another end of the member to be cleaned;
- c. a carriage arranged for movement along a path between the first and second header means;
- d. third header means mounted on the carriage for movement therewith;
- e. means associated with the first, second, and third header means for swinging the first and second header means about respective pivots arranged perpendicularly to the path of movement of the carriage and parallel to the door assembly whenever the carriage is adjacent the first and second header means;
- f. a frame having spaced ends, a guide rail mounted on the frame and arranged extending between the ends of the frame, the carriage arranged engaging the guide rail, and means for moving the carriage along the guide rail between the first and second header means, the first, second, and third header means being steam directing headers, the first and second header means being pivotally mounted on the frame adjacent respective ends thereof, and the path of movement of the carriage being a vertical linear path; and
- g. means actuated by the third header means for intermittently and alternately supplying steam to the first and second header means whenever the carriage is adjacent same.

3,847,754
RECOVERY OF GLYCOLS FROM MIXED GLYCOL COMPOSITION BY DISTILLATION WITH ACID TREATMENT

John M. Oliver, Vidor, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 60,592, Aug. 3, 1970, abandoned. This application Jan. 30, 1973, Ser. No. 327,901
Int. Cl. C07c *43/10;* **B01d** *3/34*
U.S. Cl. 203—34 **17 Claims**

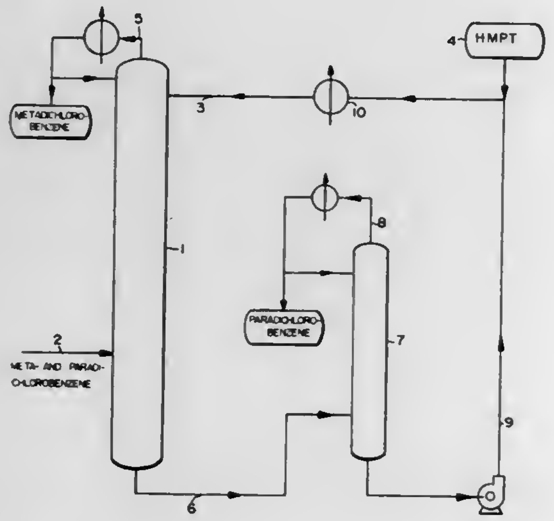


1. A method of recovering monoethylene glycol, diethylene glycol and triethylene glycol from mixed glycol feed comprising monoethylene glycol, diethylene glycol and triethylene glycol, comprising distilling the mixed glycol feed to provide an overhead product of monoethylene glycol and a monoethylene glycol bottoms product of predominantely diethylene glycol and triethylene glycol, adjusting the pH of said bottoms product with acidic material to between about 6 and about 8.5, distilling under reduced pressure so-adjusted bottoms product to provide a diethylene glycol overhead product and a diethylene glycol bottoms product of predominantly triethylene glycol, adjusting the pH of said diethylene glycol bottoms product with acidic material to between about 6 and about 8.5 and distilling under reduced pressure so-adjusted bottoms to provide an overhead product of triethylene glycol.

3,847,755

SEPARATION OF DICHLOROBENZENE ISOMERS BY EXTRACTIVE DISTILLATION WITH AN APROTIC POLAR SOLVENT

Rene Chanel, Pont De Claix; Bernard Alexandre, Claix; Jean-Claude Leroi, Villeurbanne, and Jacques Billion, Miribel, all of France, assignors to Rhone-Progil, Paris, France
Filed June 4, 1973, Ser. No. 367,009
Claims priority, application France, June 30, 1972, 72.24576
Int. Cl. C07c *25/08*; **B01d** *3/40*
U.S. Cl. 203—57 **8 Claims**



1. A process for separating paradichlorobenzene from metadichlorobenzene starting with a mixture of chlorinated benzenes including predominantly said paradichlorobenzene and metadichlorobenzene, comprising:

isolating metadichlorobenzene from said mixture by extractive distillation carried out by dissolving said mixture in at least one aprotic polar organic solvent selected from the group consisting of solvents having both a dielectric constant higher than 20 and a dipolar moment higher than 3.0 Debye, and withdrawing metadichlorobenzene as the distillate and paradichlorobenzene with said aprotic polar organic solvent as the bottoms; and

separating the paradichlorobenzene from said aprotic polar organic solvent by distillation, said paradichlorobenzene being withdrawn as distillate and said aprotic polar organic solvent being withdrawn as bottoms.

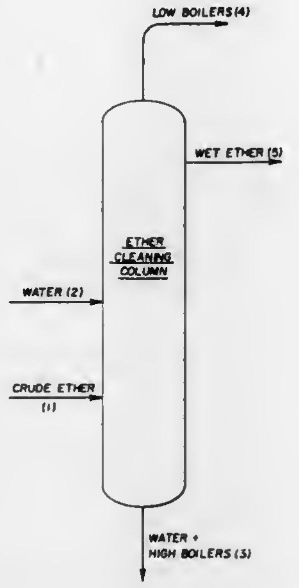
3,847,756

RECOVERY OF DIETHYL ETHER FROM AN OLEFIN HYDRATION PRODUCT STREAM BY EXTRACTIVE DISTILLATION WITH WATER

Max Statman, Longview, and Ralph E. Page, Jr., White Oak, both of Tex., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 9, 1972, Ser. No. 305,199
Int. Cl. B01d *3/10*
U.S. Cl. 203—92 **7 Claims**

1. A process for purification of diethyl ether which comprises:

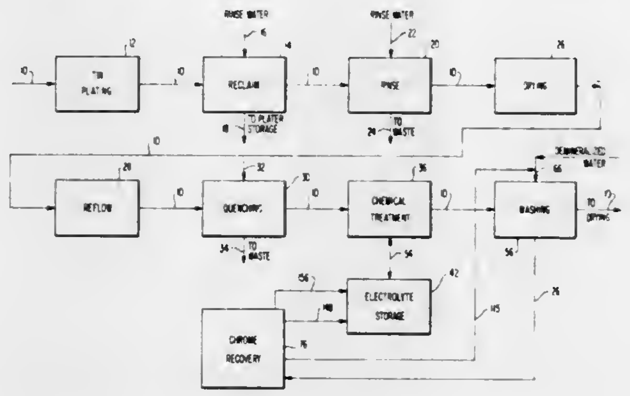
1. feeding an impure stream comprising diethyl ether, ethyl alcohol, water, butene, secondary butanol and other impurities normally associated with crude diethyl ether into an extractive distillation column at a point about one-third of the way, in terms of theoretical distillation trays, up from the bottom of the column;
2. feeding a quantity of water about equal to from about 75 percent to about 300 percent of the quantity of the crude feed stream into the column at a point about two-thirds of the way, in terms of theoretical distillation trays, up the column from the bottom; and
3. recovering a substantially pure stream of wet diethyl ether from a point about five-sixths of the way, in terms of theoretical distillation trays, up the column from the bottom.



3,847,757

RECOVERING CHROMIUM VALUES FOR STABILIZATION OF TIN-PLATE SURFACES

Robert B. Smith, Crown Point, Ind., assignor to National Steel Corporation, Pittsburgh, Pa.
Filed June 4, 1973, Ser. No. 366,545
Int. Cl. C23f *13/00*; **C23b** *5/16*; **C01g** *37/00*
U.S. Cl. 204—40 **16 Claims**



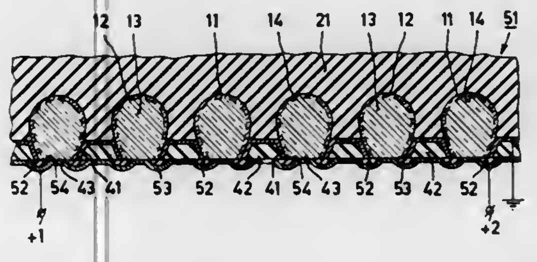
1. Method of recovering hexavalent chromium from solution wetting tin plate surfaces after electrochemical treatment utilizing as an electrolyte an acidic aqueous solution comprising sodium dichromate, comprising the steps of

a. washing said surfaces to recover an aqueous solution containing cations and anions including anions containing hexavalent chromium;
b. treating aqueous solution recovered from said washing step with cation exchange resin in a cation exchange zone to replace cations with hydrogen ions to produce an aqueous effluent containing hydrogen ions and anions including anions containing hexavalent chromium;
c. treating said effluent with anion exchange resin in an anion exchange zone to replace anions with hydroxyl ions thereby recovering hexavalent chromium in the resin in said anion exchange zone and producing a demineralized water effluent;
d. regenerating the resin in said anion exchange zone to produce an effluent from said anion exchange zone comprising an aqueous solution containing sodium ions and anions containing hexavalent chromium;
e. treating effluent from step (d) with cation exchange resin in a cation exchange zone to replace cations with hydrogen ions and produce an effluent and passing the produced effluent into an electrolyte storage zone;
f. passing effluent from step (d) into the electrolyte storage zone without an intermediate cation exchange treatment.

3,847,758

METHOD OF MANUFACTURING AN ELECTRODE SYSTEM

Ties Siebolt Te Velde, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.
Filed Feb. 12, 1973, Ser. No. 331,993
Claims priority, application Netherlands, Feb. 19, 1972, 7202215
Int. Cl. C23b *5/48, 11/00*; **B01k** *5/02*
U.S. Cl. 204—15 **8 Claims**

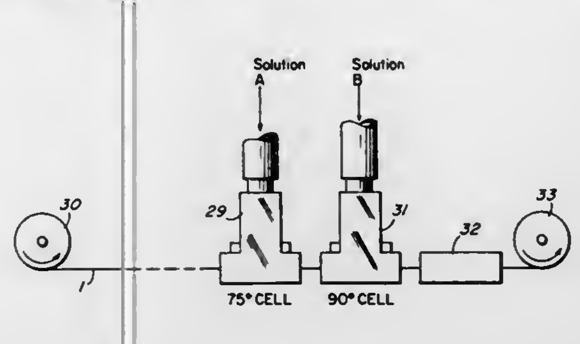


1. A method of manufacturing an electrode system having a monograin layer, in which grains of a semiconductor material with enveloping layers and cores of opposite conductivity types are embedded in a layer of binder in a substantially monograin layer over a part of the layer thickness, a first electrode layer for contacting the enveloping layers of the grains is deposited on one side of the monograin layer with free grain surfaces, a material-removing treatment is used in which parts of the cores of the grains and parts of the enveloping layers of the grains are exposed, after which in a succeeding process step insulating material is provided on the exposed parts and a second electrode layer for contacting the cores of the grains is deposited, characterized in that in said process step the insulating material is selectively provided on the exposed parts of the enveloping layers of the grains and on edges of the exposed parts of the cores of the grains adjoining the junctions and parts of the cores of the grains not covered during the provision of the insulating material are then contacted by depositing the second electrode layer.

3,847,759

METHOD OF MAKING A MAGNETIC MEMORY DEVICE

Emil Toledo, Natick, Mass., assignor to Raytheon Company, Lexington, Mass.
Division of Ser. No. 93,333, Nov. 27, 1970, Pat. No. 3,736,576.
This application Nov. 8, 1972, Ser. No. 304,692
Int. Cl. C23b *5/50, 5/58*
U.S. Cl. 204—28 **4 Claims**



1. The method of forming a magnetic coating comprising an alloy of iron-nickel-cobalt on a conductive substrate which has an anisotropic field characteristic adjacent the surface of said substrate which is substantially higher than the anistropic field characteristic of said coating adjacent the outer surface thereof comprising the steps of:

a. immersing said substrate in a plating electrolyte containing iron, nickel and cobalt salts and in which the cobalt salt concentration is sufficiently high to deposit an iron-nickel-cobalt alloy containing five percent or more of cobalt onto said substrate;
b. passing a plating current through said electrolyte to said substrate;
c. initially producing a flow of said electrolyte past the surface of said substrate at a first velocity;
d. subsequently producing a velocity of flow of said electrolyte past the surface of said substrate at a second velocity, said second velocity being greater than said first velocity and producing an iron-nickel-cobalt alloy coating comprising 5 percent or more cobalt having an anisotropic field characteristic on the order of 6 oersteds or higher deposited on said substrate during said initial period and a region of said coating having an anisotropic field characteristic of 4 oersteds or lower deposited on said substrate in the subsequent period.

3,847,760

METHOD OF IMPROVING THE CORROSION PROTECTION OF DECORATIVE CHROME PLATED ARTICLES

Thomas Paul Malak, Garfield Heights, Ohio, assignor to Kewanee Oil Company, Bryn Mawr, Pa.
Continuation of Ser. No. 150,922, June 8, 1971, abandoned. This application Jan. 18, 1973, Ser. No. 324,719
Int. Cl. C23f *17/00*; **C23b** *5/20*
U.S. Cl. 204—35 R **7 Claims**

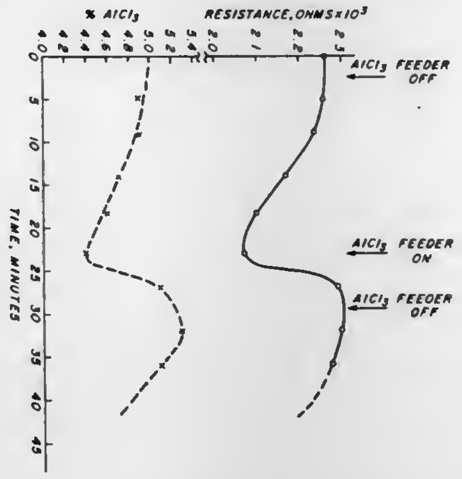
1. The process of developing micropores in a layer of decorative chromium overlying a layer of conductive metal electrodeposited over a metallic or non-metallic article comprising

a. placing the article in a bed of solid particulate material, and
b. causing the particles in the bed to contact the surface of the chromium layer so as to develop at least 3000 micropores per square inch in said layer without causing appreciable visible dulling of the chromium.

3,847,761

BATH CONTROL

Warren E. Haupin, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Apr. 6, 1972, Ser. No. 241,607
Int. Cl. C22d *3/12*
U.S. Cl. 204—67 **10 Claims**



1. A method for operating a cell for the electrolytic production of aluminum from aluminum chloride which comprises: adding aluminum chloride to the cell in response to an increase in bath conductivity signifying a depletion of aluminum chloride in the cell whereby damage to the cathode by undesired electrolysis of other ingredients in the cell is avoided.

3,847,762
PROCESS USING SILICATE TREATED ASBESTOS DIAPHRAGMS FOR ELECTROLYTIC CELLS

Franklin Strain, Pittsburgh, Pa., assignor to PPG Industries Inc., Pittsburgh, Pa.

Filed Mar. 21, 1973, Ser. No. 343,600
Int. Cl. B01k *3/10;* **C01d** *1/06*
U.S. Cl. 204—98 **6 Claims**

1. In a method of conducting electrolysis in a diaphragm cell wherein a sodium chloride brine is fed into the anolyte chamber of said cell and the electrolyte within said anolyte chamber passes through a diaphragm of said cell to a catholyte chamber whereby a product containing sodium hydroxide and sodium chloride is recovered from said catholyte chamber, the improvement which comprises: depositing on an electrolyte permeable asbestos mat 0.01 to 5.0 grams per square foot of diaphragm of a water soluble silicate having the empirical formula

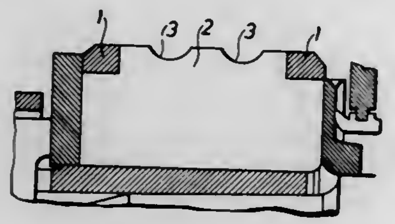
$$(Me_2O)_m(SiO_2)_n$$

where Me is chosen from the group consisting of lithium, sodium, and potassium, and the ratio of m to n is from about 1:1 to about 1:10, to a depth of at least 0.08 inch into said asbestos mat, contacting said diaphragm with an aqueous acidic media to convert said silicate to an amorphous, anolyte resistant, hydrated silica, and conducting electrolysis in said cell.

3,847,763
METHOD OF REDUCING WEAR OF A CEMENTED CARBIDE ROLL

Tore Rolf Svensson, Hagersten; Kjell Erik Fundell, Danderyd; Karl Sven Gustave Ekemar, Saltsjo-Boo; Bengt Anders Lind, Alvsjo, and Udo Fischer, Vallinby, all of Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Jan. 23, 1973, Ser. No. 325,999
Claims priority, application Sweden, Jan. 31, 1972, 10452/72
Int. Cl. C23f *13/00;* **B01b** *27/00*
U.S. Cl. 204—148 **2 Claims**



1. Method of reducing the wear in a roll of cemented carbide during hot rolling of metal at very high speed and severe strain, which consists in providing the roll with electrochemical cathodic protection by using the available cooling water as electrolyte and, as anode, at least one ring formed of a metallic material having a significantly lower electrochemical potential than that of the cemented carbide, said ring being applied on the periphery of the roll and so formed that its outer diameter is the same as the diameter of the roll.

3,847,764
SECONDARY RECOVERY PROCESS UTILIZING BRINE ELECTROLYZED TO REMOVE HYDROGEN SULFIDE

Vernon H. Schievelbein; Leonard A. Shankle, both of Houston, Tex., and Herbert N. Wade, Riverside, Conn., assignors to Texaco Inc., New York, N.Y.

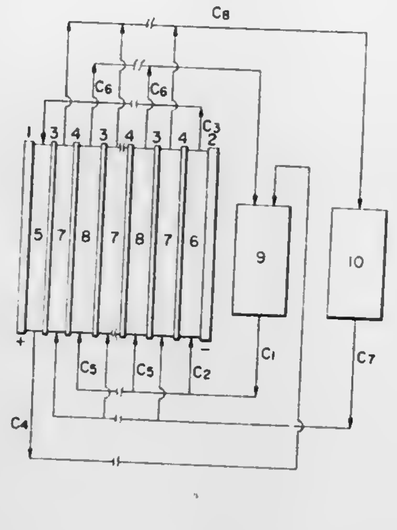
Division of Ser. No. 216,190, Jan. 7, 1972, Pat. No. 3,789,586. This application June 11, 1973, Ser. No. 368,809
Int. Cl. C02c *5/12*
U.S. Cl. 204—149 **1 Claim**

1. A process for treating brine containing hydrogen sulfide which comprises subjecting the said brine to electrolysis to form sodium hypochlorite whereby reaction with the said hydrogen sulfide yields brine with a substantially reduced hydrogen sulfide content.

3,847,765
METHOD FOR THE TREATMENT OF CYANIDE-CONTAINING WASTES

Taiko Uno, and Kohei Uosaki, both of Ibaraki-ken, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Claims priority, application Japan, Dec. 20, 1972, 47-127245; Japan, Dec. 20, 1972, 47-127246
Filed Dec. 4, 1973, Ser. No. 421,637
Int. Cl. C02c *5/12;* **B01d** *13/02*
U.S. Cl. 204—151 **7 Claims**



1. A method for the treatment of cyanide-containing wastes, which comprises passing a part of cyanide-containing waste from a cyanide-containing waste storage tank in series through a cathode compartment composed of a cathode and cation exchange membrane and an anode compartment composed of an anode and anion exchange membrane and then recirculating to the cyanide-containing waste storage tank, simultaneously passing the other part of cyanide-containing waste in parallel through a plurality of concentration compartments partitioned by a plurality of anion exchange membranes and cation exchange membranes arranged alternately and then recirculating to the cyanide-containing waste storage tank, and simultaneously passing a solution of an alkali metal chloride or alkaline earth metal chloride from an alkali metal chloride or alkaline earth metal chloride solution storage tank in parallel through a plurality of dilution compartments partitioned by a plurality of anion exchange membranes and cation exchange membranes arranged alternately and then recirculating to the alkali metal chloride or alkaline earth metal chloride solution storage tank.

3,847,766
PROCESSES FOR THE TREATMENT OF CRUDE CALCIUM SULFATE TO RENDER IT SUITABLE FOR CONVERSION TO PLASTER OF PARIS

Gerhard Klaus, Bad Grund, Germany, assignor to Fels-Werke Peine-Salzgitter GmbH, Goslar, Germany

Filed Apr. 12, 1973, Ser. No. 350,468
Claims priority, application Germany, Apr. 20, 1972, 2219223
Int. Cl. B01j *1/12;* **G01f** *11/46*
U.S. Cl. 204—157.1 S **3 Claims**

1. A process for the treatment of a synthetic crude gypsum containing water-soluble phosphates and water-soluble silicofluorides to reduce its contents of such water-soluble phosphates and water-soluble silicofluorides before dehydration, which process comprises adding calcium hydroxide to the synthetic crude gypsum and thereafter subjecting the mixture to tribochemical treatment.

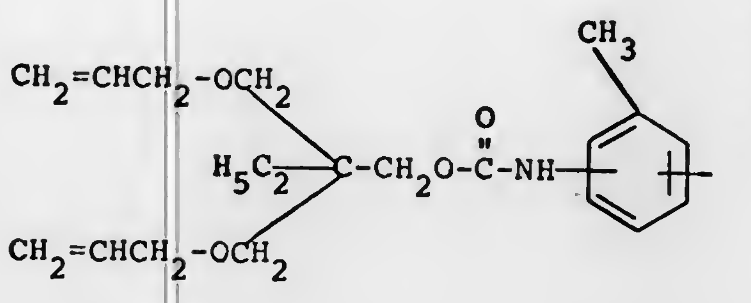
3,847,767
METHOD OF PRODUCING A SCREEN PRINTABLE PHOTOCURABLE SOLDER RESIST

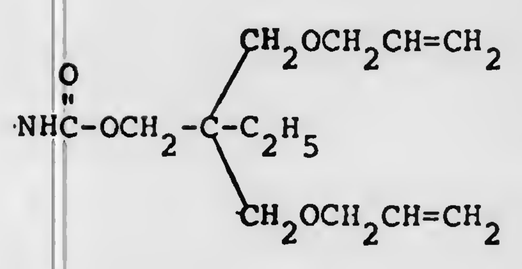
Harold A. Kloczewski, Pasadena, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Mar. 13, 1973, Ser. No. 340,870
Int. Cl. B01j *1/10;* **G03c** *1/70*
U.S. Cl. 204—159.14 **1 Claim**

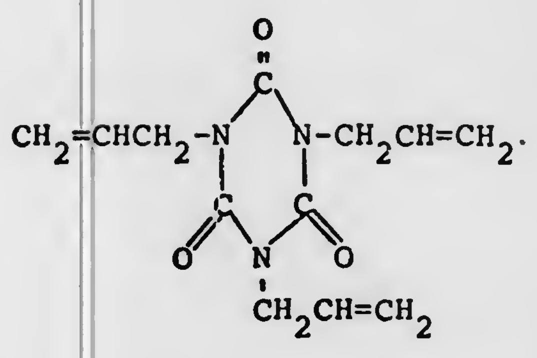
1. A process for preparing a screenable liquid photocurable solder resist ink from a low molecular weight photocurable composition which comprises admixing

1. a polyene selected from the group consisting of





, and



2. Up to 20 percent of a polythiol sufficient to react stoichiometrically with said polyene
3. 3 to 20 parts by weight based on the weight of (1) and (2) of silicone oil and
4. 0.05 to 10 parts by weight based on the weight of (1) and (2) of a photocuring rate accelerator, subjecting said admixture to actinic radiation at a dose of 0.0004 to 6.0 watts/cm.^{2} for a period sufficient to react substantially all of the polythiol present with a portion of the polyene whereby the viscosity of the irradiated admixture is increased and thereafter in the absence of actinic radiation adding additional polythiol to the irradiated admixture in an amount sufficient to cause at least 50 percent of the polyene based on the total initial unreacted content to react with said added polythiol thereby forming a screenable photocurable solder resist ink having a viscosity in the range of 5,000–200,000 centipoises.

3,847,768
RADIATION-CURABLE COATING COMPOSITION

Tsutomu Maruyama, Hiratsuka, Japan, assignor to Kansai Paint Company, Limited, Hyogo-ken, Japan

Filed June 4, 1971, Ser. No. 150,219
Claims priority, application Japan, June 8, 1970, 45-48699
Int. Cl. C08f *1/16, 27/00*
U.S. Cl. 204—159.14 **5 Claims**

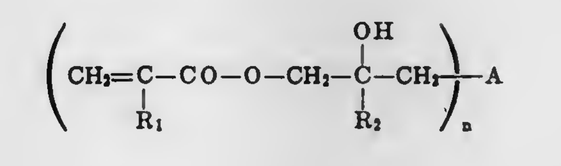
1. In a process of curing a coating composition containing a resin composition having ethylenically unsaturated bonds selected from the group consisting of unsaturated polyester resin, unsaturated acrylic resin, unsaturated epoxy resin and polybutadiene resin, by applying high energy ionizing radiation thereto at a dosage rate sufficient to cure the resin, the improvement which comprises employing as a radiation-cure accelerator from 1–40 percent by weight of at least one compound having the formula $M(NH_4)PO_4 \cdot nH_2O$ in said coating composition wherein M is an element selected from the group consisting of magnesium, calcium and strontium, and n is zero or a positive integer from 1 to 10, in admixture with said resin composition.

3,847,769
PROCESS FOR CURING HYDANTOIN-CONTAINING POLYACRYLATES WITH IONISING RADIATION

Peter Garth Garratt, Wallisellen; Juergen Habermeier, Pfeffingen; Daniel Porret, Binningen; Ernst Leumann, and Paul Zuppinger, both of Arlesheim, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

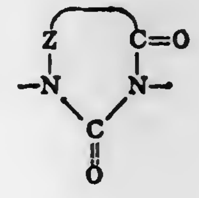
Filed Jan. 13, 1972, Ser. No. 217,669
Claims priority, application Switzerland, July 9, 1971, 10123/71
Int. Cl. C08d *1/00;* **C08f** *1/16*
U.S. Cl. 204—159.22 **14 Claims**

1. Process for curing polyacrylates by means of ionizing rays selected from accelerated electron rays in the dosage of from 0.5 to 7 Megarads and gamma radiation in the dosage of from 0,25 to 1.25 Megarads, said dosages producing nontacky films characterized in that compounds of the formula I



$$\left(CH_2=\underset{R_1}{\underset{|}{C}}-CO-O-CH_2-\overset{OH}{\overset{|}{\underset{R_2}{\underset{|}{C}}}}-CH_2-\right)_n A \qquad (I)$$

wherein R_1 and R_2 independently of one another each represent a hydrogen atom or the methyl group, *n* denotes the number 2 or 3 and A denotes an organic radical which contains at least one grouping



in which Z denotes a divalent radical which is required to complete a five-membered or six-membered, unsubstituted or substituted, heterocyclic ring, are irradiated.

3,847,770

PHOTOPOLYMERIZABLE COMPOSITIONS PREPARED FROM BETA HYDROXY ESTERS AND POLYITACONATES

Sol B. Radlowe, Chicago; Abraham Ravve, Lincolnwood, and Kenneth H. Brown, Chicago, all of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 242,793, April 10, 1972, Pat. No. 3,804,735. This application Nov. 12, 1973, Ser. No. 424,150

Int. Cl. C08d *1/00;* **C08f** *1/16*

U.S. Cl. 204—159.23 **16 Claims**

1. An ultraviolet polymerizable printing ink comprised of a coloring compound in a vehicle comprised of

i. about 30 to about 55 percent by weight of a beta-hydroxy ester prepared from a reaction mixture comprised of a polyepoxide containing at least two reactive epoxy groups and an alpha, beta-ethylenically unsaturated monocarboxylic acid having 3 to 6 carbon atoms,

ii. 2 to 10 percent by weight of polyitaconate prepared from a reaction mixture comprised of a polyepoxide containing at least two reactive epoxy groups and itaconic acid,

iii. about 40 to about 70 percent by weight of a polyacrylate prepared from a polyhydric alcohol having 2 to 6 hydroxyl groups and an alpha, beta-ethylenically unsaturated monocarboxylic acid having 3 to 6 carbon atoms and

iv. about 0.1 to about 5.0 percent by weight of a photosensitizer.

3,847,771

UV AND LASER CURING OF PIGMENTED POLYMERIZABLE BINDERS

Vincent Daniel McGinniss, Middleburgh Heights, Ohio, assignor to SCM Corporation, Cleveland, Ohio

Filed Mar. 30, 1973, Ser. No. 346,351

Int. Cl. C08d *1/00, 1/16;* **C08f** *1/20, 29/00, 45/02, 45/66*

U.S. Cl. 204—159.24 **6 Claims**

3. An ultraviolet, photopolymerizable pigmented binder system for use an an opacified film, comprising:

a pigmented binder system comprising opacifying pigment and ethylenically unsaturated binder wherein said pigmented binder system contains about 0.05 to 2 weight parts of opacifying pigment per 1 weight part of said ethylenically unsaturated binder;

said binder system containing by weight about 0.5% to 3% of 2,2'-dithiobis-(benzothiazole), 0.1% to 2% of an aromatic carbonyl compound selected from the group consisting of aromatic amino ketone and aromatic phenyl ketone, and at least 0.5% of an aromatic photosensitizer selected from the group consisting of aromatic aldehydes and aromatic ketones different from said aromatic carbonyl compounds.

3,847,772

SELECTIVE ELCTRODIALYSIS OF CATIONS

Toshikatsu Sata; Masakatsu Nishimura, both of Tokuyama, and Ryuji Izuo, Kudamatsu, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi-ken, Japan

Filed May 21, 1973, Ser. No. 362,455

Claims priority, application Japan, May 22, 1972, 47-49871

Int. Cl. B01d *13/02*

U.S. Cl. 204—180 P **8 Claims**

1. In a method of electrodialyzing seawater containing two or more classes of cations of differing valences, using a cation-exchange membrane, the improvement which comprises using a cation-exchange membrane in which a cationic substance has been caused to be present on and near the surface thereof and adjusting the pH of the seawater to a range of from about 2.5 to 8.0, thereby to selectively electrodialyze the cations of lower valence.

3,847,773

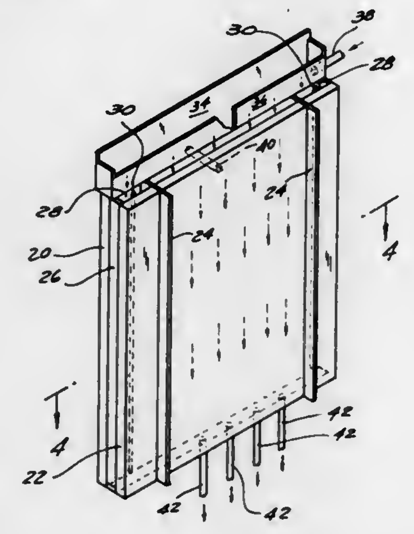
METHOD AND APPARATUS FOR CURTAIN ELECTROPHORESIS

Lloyd R. Snyder, Yorktown Heights, N.Y., assignor to Technicon Instruments Corporation, Tarryton, N.Y.

Filed June 11, 1973, Ser. No. 369,016

Int. Cl. B01k *5/00*

U.S. Cl. 204—180 R **4 Claims**



1. In a method of curtain electrophoresis, wherein a sample is introduced into a sheathed curtain of buffer solution in an electric field for separation of at least one sample constituent by differential migration, which constituent forms a sample band laterally displaced with reference to the remainder of the sample when exiting from the curtain; the improvement of deenergizing the electric field during the interval that the sample is introduced into the curtain and again during the interval that the sample band exits from the curtain.

3,847,774

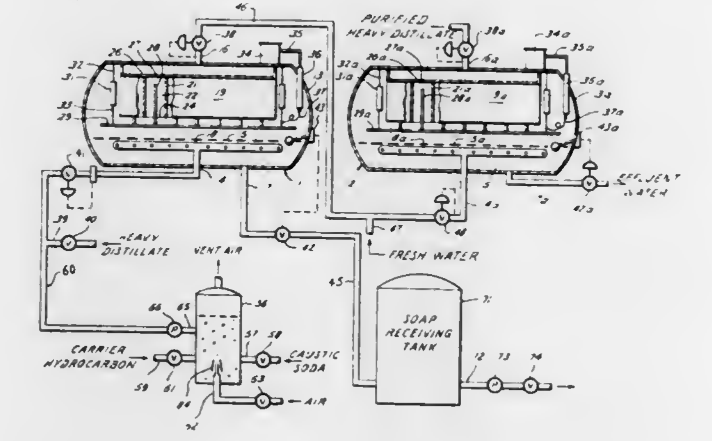
PURIFICATION OF PETROLEUM DISTILLATES CONTAINING NAPHTHENIC ACIDS

William Grant Jarrell, Bellaire, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed June 22, 1973, Ser. No. 372,726

Int. Cl. B03c *5/00*

U.S. Cl. 204—190 **10 Claims**



1. A process for purifying a heavy petroleum distillate containing naphthenic acids comprising:

a. providing a carrier hydrocarbon substantially free of soap-producing quantities of naphthenic acids and compatible with the heavy petroleum distillate;

b. dispersing an aqueous alkali metal hydroxide into the carrier hydrocarbon wherein said aqueous alkali metal hydroxide resides within the carrier hydrocarbon as a uniform dispersion of fine droplets in a hydrocarbon-continuous emulsion;

c. introducing a first stream of the heavy petroleum distillate and a second stream of the carrier hydrocarbon from step (b) into a common conduit;

d. passing the first and second streams from the common conduit through a mixing means for dispersing the carrier hydrocarbon uniformly throughout the first stream of heavy petroleum distillate containing naphthenic acids; and

e. subjecting the first and second streams, immediately after mixing, and before any significant phase separation occurs, to an electrical field to separate a purified heavy hydrocarbon distillate phase from an aqueous mixture of excess alkali metal hydroxide and the alkali metal hydroxide salts of naphthenic acids, and said purified heavy hydrocarbon distillate stream containing the carrier hydrocarbon.

3,847,775

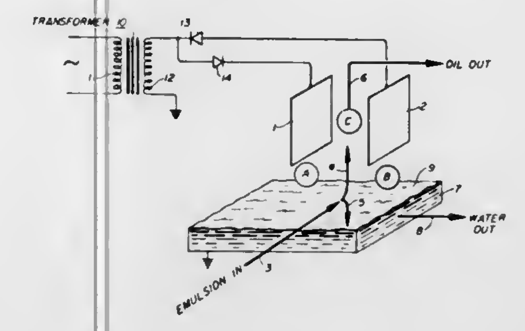
PROCESS FOR ELECTRICAL COALESCING OF WATER

Floyd L. Prestridge, Tulsa, Okla. 74101, assignor to Combustion Engineering, Inc., New York, N.Y.

Division of Ser. No. 197,400, Nov. 10, 1971, Pat. No. 3,772,180. This application Feb. 20, 1973, Ser. No. 333,903

Int. Cl. B01d *13/02;* **B03c** *5/02*

U.S. Cl. 204—191 **5 Claims**



1. A process for coalescing water which is dispersed in the form of droplets throughout a second liquid, including,

passing a mixture of a liquid and water droplets dispersed throughout the liquid through an electrostatic field,

generating the electrostatic field with two sources of D.C. voltages, each source being periodically applied to one of two spaced electrodes,

forming a body of water droplets coalesced by the electrostatic field and gravitated below the electrodes,

withdrawing water from the body while maintaining a predetermined level for the body below the electrodes,

connecting the body to the reference common to the two sources,

and withdrawing from the field the liquid from which the water droplets are gravitated.

3,847,776

METHOD OF PREPARING A PATTERN OF A LAYER OF REFRACTORY METAL BY MASKING

Bernard Bourdon, Gometz-le-Chatel; Claudy Duong, Breuillet, and Pierre Coppier, Cachan, all of France, assignors to Societe Generale de Constructions Electriques et Mecaniques (Alsthom), Paris, France

Filed Mar. 1, 1972, Ser. No. 230,929

Claims priority, application France, Mar. 5, 1971, 71.07862; Dec. 6, 1971, 71.43790

Int. Cl. C23c *15/00*

U.S. Cl. 204—192 **15 Claims**

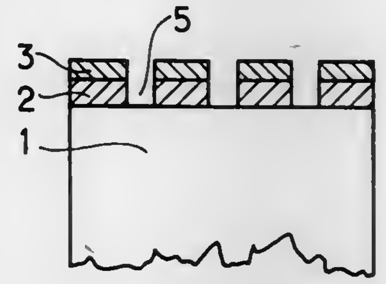
1. A method of preparing a pattern of a layer of refractory metal on a substrate by masking, comprising:

applying the refractory metal on the substrate as a continuous layer;

covering the continuous layer of refractory material with a continuous protective layer of a material substantially more resistant to ion bombardment than said refractory metal;

photolithographically applying a mask on said protective layer corresponding to said pattern;

chemically etching said protective layer with an etchant to which said refractory metal is resistant, to expose said refractory metal in selected areas;



exposing said refractory metal and said protective layer to ion bombardment in an ionized gaseous medium to remove said refractory metal in said selected areas, and dissolving the remainder of said protective layer with a reagent which is inert with respect to the underlying refractory metal.

3,847,777

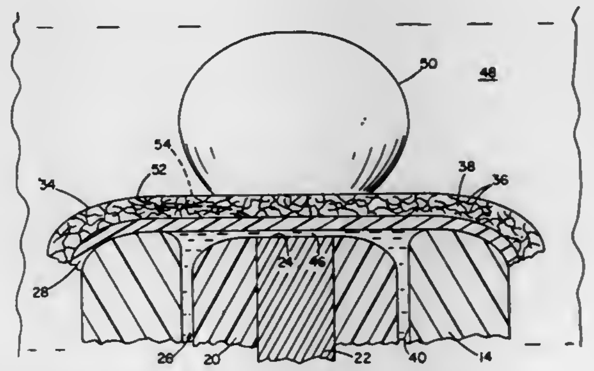
ELECTROCHEMICAL ANALYZER

Ihsan A. Haddad, Bedford, and William M. Krebs, Waltham, both of Mass., assignors to Instrumentation Laboratory, Inc., Lexington, Mass.

Filed May 8, 1972, Ser. No. 251,287

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 P **15 Claims**



1. An electrochemical analyzer comprising:

two electrodes spaced apart from each other,

an electrolyte in the space between said electrodes, and a composite membrane structure over the surface of one of said electrodes, said composite structure having a surface area substantially larger than the area of said surface of said electrode and comprising

a selectively permeable layer separated from said electrode surface by a thin layer of said electrolyte,

and a layer of hydrophobic material in overlying engagement with said selectively permeable layer, said layer of hydrophobic material having porosity that allows substantially unimpeded gaseous flow in both the lateral and longitudinal directions.

3,847,778

AIR-FUEL RATIO SENSOR

John W. Riddel, Fenton, Mich., assignor to General Motors Corporation, Detroit, Mich.

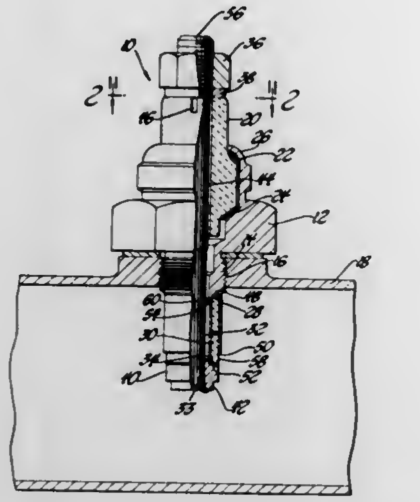
Filed Nov. 26, 1973, Ser. No. 418,824

Int. Cl. G01n *27/46;* **F02m** *7/00*

U.S. Cl. 204—195 S **2 Claims**

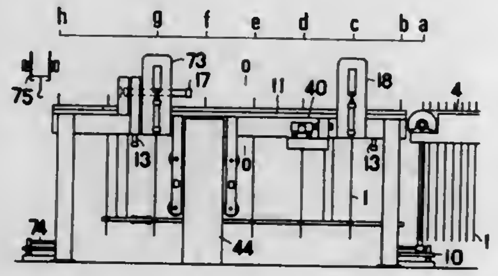
1. An exhaust gas sensor for measuring the relative presence of oxygen in the exhaust gas comprising: a hollow outer metal shell having a body section that is adapted to be mounted in

an exhaust system, insulator means secured within said hollow metal shell, said body section having a shoulder thereon that is adapted to hold one end of a hollow cylindrical zirconia cell in fixed position, fastener means that includes a bolt portion also having a similar shoulder thereon in alignment with the shoulder on said body section to hold the other end of the zirconia cell, said fastener means extends through said zirconia cell, said insulator means, and said hollow outer metal shell, and is held in fixed position against the top of said insulator means by a securing means to create a seal between said zirconia cell, said body section, and said fastener means to prevent exhaust gases from entering the interior of the zirconia cell, the bolt portion of said fastener means being smaller in diameter than the inside diameter of said insulator, said outer shell, and said zirconia cell, to permit air to enter into said zirconia cell from an opening in said insulator means, said zirconia cell having a platinum coating on the inside surface and extending over onto an end surface thereof to form an inner electrode, a platinum coating on the outside surface of said zirconia cell and extending over onto the other end surface thereof to form an outer electrode, the inside and outside surface of said zirconia cell being uncoated at a section adjacent the ends of said zirconia cell to thereby insulate the inner electrode from the outer electrode, one of said electrodes and said metal shell forming a first contact means and the other of said electrodes and said fastener means forming a second contact means.



3,847,779
AUTOMATIC APPARATUS FOR STRIPPING DEPOSITED METAL FROM A CATHODE PLATE IN ELECTROWINNING PROCESS

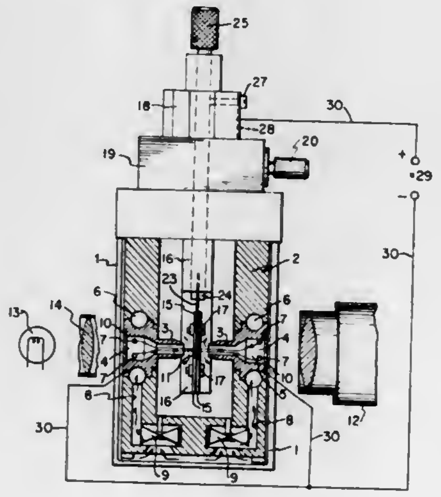
Kunio Sekine; Yukio Kamata, and Yoshio Yamaishi, all of Kosaka-machi, Japan, assignors to The Dowa Mining Co., Ltd., Tokyo, Japan
Filed Oct. 26, 1972, Ser. No. 301,219
Int. Cl. B65g *49/00*
U.S. Cl. 204—198 8 Claims



1. Apparatus for stripping deposited metal from a cathode plate in an electrolytic metal winning process comprising: a cathode plate of the type having a cathode holder mounted thereon; means for advancing said cathode plate to a plurality of operating stations, said advancing means including a device movable between an elevated position and a lowered position which slidably reciprocates to a distance corresponding to the distance between any two stations, said device releaseably carrying said cathode plate when in said elevated position and releasing said cathode plate at one of said operating stations when brought to said lowered position, and means for holding said cathode plate at said operating station against lateral and downward movements; means at one operating station for turning said cathode holder to expose an edge portion between said cathode plate and the deposited metal; preliminary stripping means located at another station, said preliminary stripping means having scraper elements insertable between said cathode plate and the deposited metal at said edge portion to partially separate said deposited metal from said cathode plate; and a main stripping means located at another station, said main stripping means having a scraper blade insertable between the partially separated cathode plate and deposited metal and movable relative to said cathode plate and deposited metal to effect complete separation of said deposited metal from said cathode plate.

3,847,780
DEVICE FOR THINNING TECHNICAL AND MICROSCOPIC SPECIMENS UNDER LAMINAR FLOW CONDITIONS

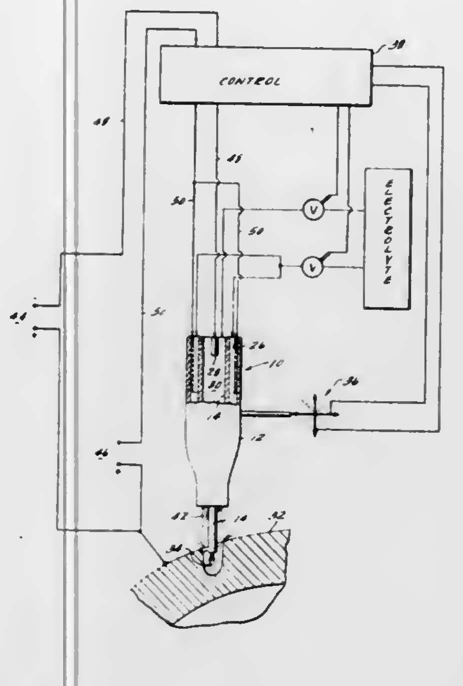
Peter Burck, Dresden, Germany, assignor to VEB Rathenower Optische Werke, Rathenow, Germany
Filed July 24, 1972, Ser. No. 274,752
Int. Cl. B23p *1/04*; B08b *3/02*
U.S. Cl. 204—224 R 14 Claims



1. A device for selective chemical and electrochemical thinning of respective non-metallic and metallic, technical and microscopic specimens under laminar flow conditions of the applied electrolyte, the device having at least one jet nozzle directed toward the specimen so as to apply the electrolyte to its surface to be thinned and optionally perforated, the specimen being held in at least one mask, the device comprising, in combination, a wide-lumen jet tube associated with each said at least one jet nozzle, a central jet space being provided in an area adjoining said mask and tapering inwardly in the direction of exit of said jet tube, an annular channel surrounding said jet space, at least four symmetrically disposed overflow channels between said annular channel and the associated jet space, and pump means for conveying the electrolyte to said annular channel, by the intermediary of a supply channel, the arrangement of said annular channel and said at least four overflow channels between said at least one jet nozzle and said pump means providing means for producing controlled laminar flow of the electrolyte, with the absence of a direct supply between said at least one jet nozzle and said pump means making for the laminar flow conditions without drift and turbulence.

3,847,781
APPARATUS FOR ELECTROLYTIC MATERIAL REMOVAL

Guy Bellows, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio
Division of Ser. No. 245,374, April 19, 1972, Pat. No. 3,764,510. This application May 25, 1973, Ser. No. 364,087
Int. Cl. B23p *1/04*; B01k *3/04*
U.S. Cl. 204—224 M 3 Claims



1. Apparatus for removing material electrolytically from a conductive workpiece, the apparatus including electrical power supply means, electrolyte supply means to supply electrolyte between the electrodes and the workpiece and positioning means to position a cathode-tool in opposed relationship with the workpiece, comprising:

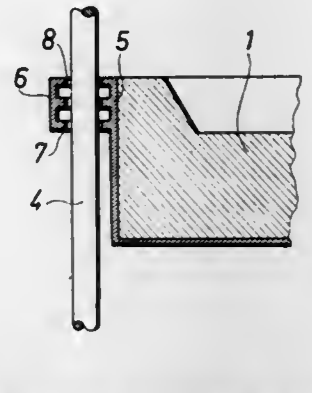
a cathode-tool comprising:
- a. inner and outer electrolyte guide members, each having walls defining a hollow interior, and electrolyte inlet and an electrolyte discharge port;
- b. the inner member being smaller than the outer member, having dielectric walls and located within the hollow interior of the outer member in spaced apart relationship to define therebetween an electrolyte passage;
- c. the electrolyte discharge ports of the members being located to discharge electrolyte in substantially the same direction;
- d. a radiusing electrode in the electrolyte passage; and
- e. a cutting electrode in the hollow interior of the inner member;
- f. the radiusing and cutting electrodes being electrically isolated one from the other;

means to supply power from the electrical supply means independently to the radiusing electrode and to the cutting electrode so that each of such electrodes is cathodic with respect to the workpiece when power is applied, the electrical power to the cutting electrode being sufficient to create in the electrolyte between the cutting electrode and the workpiece a condition at least of incipient glow; and

control means to schedule the supply of power independently to each electrode so that the radiusing electrode is activated in timed relationship to the cutting electrode.

3,847,782
BUSBAR SYSTEM FOR ELECTROLYSIS CELLS

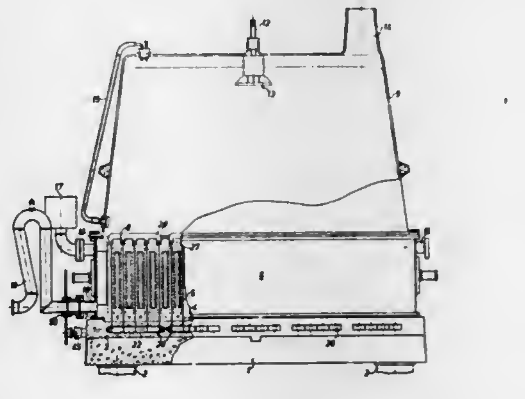
Erno Kolosy, Budapest, Hungary, assignor to Aluterv Aluminiumipari Tervezo Vallalat, Budapest, Hungary
Filed Mar. 4, 1970, Ser. No. 16,429
Claims priority, application Hungary, Mar. 24, 1969, AU 213
Int. Cl. C22d *1/02*, *3/02*
U.S. Cl. 204—267 2 Claims



1. In a busbar system including a plurality of crosswise disposed electrolysis cells juxtaposed in a row, each of said cells having an anode and a cathode disposed below the anode, and electrical connecting means, the improved electrical connecting means comprising electrical conductors electrically connecting the cathode of each electrolysis cell to the anode of an adjacent electrolysis cell of said plurality of crosswise juxtaposed cells, each of said conductors having a section located below the cathode and following a straight line in a horizontal projection, at least three of said conductors being arranged on each side of each cathode, each of said electrical connecting means being formed in its full length of a single coherent flexible piece which consists of several components that are clamped together into several bundles, each cathode including a shell having a flange portion having openings corresponding in number to the number of connecting means at each cell, each one of said connecting means extending through an opening in said flange portion.

3,847,783
ELECTROLYTIC CELL AND METHOD OF ASSEMBLING SAME

Umberto Giacopelli, I - Rosignano-Solvay/Livorno, Italy
Filed Mar. 15, 1973, Ser. No. 341,764
Claims priority, application Belgium, Mar. 20, 1972, 115282
Int. Cl. B01k *3/00*
U.S. Cl. 204—275 15 Claims



1. An electrolytic cell comprising a plurality of cathodes alternating with a plurality of generally vertical metal anode plates over a pedestal, said anode plates having each coated thereon an active layer containing a platinum group metal or metal compound, current supply means to said anode plates, comprising an array of generally horizontal metal bars, each bar extending between the lower ends of a neighboring pair of

anode plates, and clamping means to clamp said anode plates and metal bars together to form an anode assembly, said metal bars, lower ends of the anode plates and clamping means being embedded and sealed in a monolithic mass of electrically and thermally non-conducting rigid material, whereby said mass forms at least part of the aforesaid pedestal and retains the anode plates vertically and laterally.

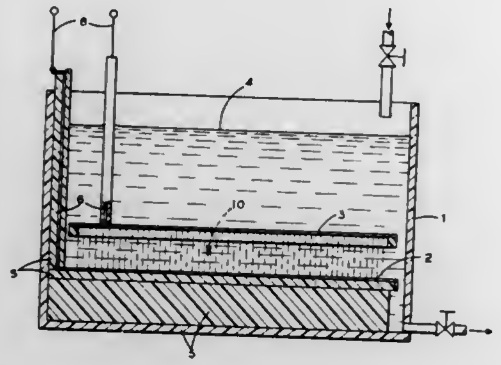
3,847,784
POROUS CADMIUM ANODE AND A METHOD OF FORMING IT, AND A PRIMARY CELL USING THE ANODE

Franciszek Przybyla, Toronto, Ontario, Canada, assignor to Mallory Battery Company of Canada Limited, Clarkson, Ontario, Canada

Filed July 28, 1972, Ser. No. 276,216

Int. Cl. B01k *3/06;* **C23b** *5/48*

U.S. Cl. 204—292 **6 Claims**



1. A method of forming an anode consisting essentially of cadmium powder of improved electrochemical activity, wherein the cadmium powder is in the form of needles and dendrites and is of substantially uniform particle size, said method comprising the steps of:

electrodepositing a cadmium powder from a solution containing cadmium ions in a concentration ranging from 0.05 to 0.18 gram ions per liter of Cd^{++} dissolved in a supporting electrolyte, said solution disposed above a horizontal anode and a horizontal collecting cathode, said anode parallel to said cathode;

increasing the cathodic deposition current density at said horizontal collecting cathode from a minimum value of not less than eighty milliamperes per square centimeter to a maximum value of not more than 400 milliamperes per square centimeter during a predetermined interval of deposition;

collecting and washing said cadmium powder; and

applying sufficient pressure to said cadmium powder at ambient temperature to form a porous self-supporting cadmium anode, of from 55 percent to 80 percent porosity.

3,847,785
ELECTROPHORESIS APARATUS

William B. Allington, Lincoln, Nebr., assignor to Instrumentation Specialties Company, Lincoln, Nebr.

Filed Feb. 14, 1972, Ser. No. 226,016

Int. Cl. B01k *5/00*

U.S. Cl. 204—299 **23 Claims**

1. Apparatus for electrophoresis of a mixture of different molecular species comprising:

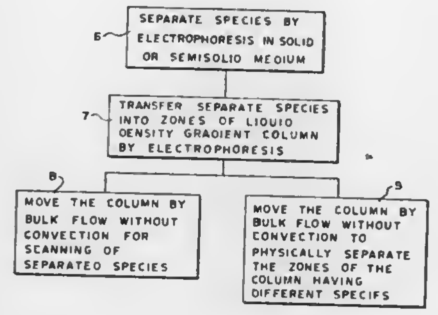
a first anticonvection medium;

a second anticonvection medium;

electric means for substantially separating by electrophoresis at least some of said different molecular species in said first anticonvection medium and for moving said separated molecular species by electrophoresis into said second anticonvection medium;

said second anticonvection medium differing from said first anticonvection medium at least by being more capable of bulk flow, whereby the collection of the separated molecular species is facilitated;

scanning means for locating said different molecular species in said second anticonvection medium; and


6
SEPARATE SPECIES BY ELECTROPHORESIS IN SOLID OR SEMISOLID MEDIUM
7
TRANSFER SEPARATE SPECIES INTO ZONES OF LIQUID DENSITY GRADIENT COLUMN BY ELECTROPHORESIS
8
MOVE THE COLUMN BY BULK FLOW WITHOUT CONVECTION FOR SCANNING OF SEPARATED SPECIES
9
MOVE THE COLUMN BY BULK FLOW WITHOUT CONVECTION TO PHYSICALLY SEPARATE THE ZONES OF THE COLUMN HAVING DIFFERENT SPECIFS

conduit means communicating with the bottom of said second anticonvection medium for introducing a movable support means to move said second anticonvection medium with respect to said scanning means.

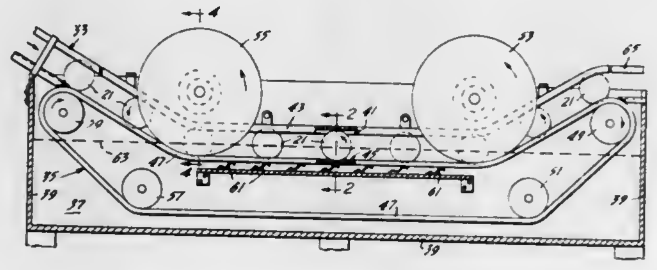
3,847,786
ROLL-THROUGH METHOD AND APPARATUS FOR ELECTROCOATING CAN ENDS

LeRoy Landauer; Edward Leroy Blakslee, both of Crystal Lake; Benjamin Ichak Abraham, Chicago, and Gilbert Stieglitz, Trout Valley, all of Ill., assignors to American Can Company, Greenwich, Conn.

Division of Ser. No. 128,972, March 29, 1971, Pat. No. 3,759,810. This application Jan. 31, 1973, Ser. No. 328,435

Int. Cl. C23b *5/68*

U.S. Cl. 204—300 **4 Claims**



1. Apparatus for electrocoating round, metal parts having raw edges with a resinous, organic coating, comprising:

a tank for an electrocoating bath containing said resinous, organic coating material;

a stationary, charged, electrode rail situated so as to be above said electrocoating bath; and

a non-conducting, moving guide member located so as to be immersed in said bath, said rail and guide member each having aligned grooves for rolling said parts.

3,847,787
DEVICE FOR SUPPLYING DRINKING WATER

Toshio Okazaki; Nobuko Karasawa; Tatsuo Okazaki; and Masako Arai, all of Fukuokachoni, Japan, assignors to Okazaki Manufacturing Company Limited, Tokyo, Japan

Filed Aug. 16, 1972, Ser. No. 281,046

Claims priority, application Japan, Aug. 19, 1971, 46-63201; Dec. 30, 1971, 46-2394; Feb. 29, 1972, 47-20865

Int. Cl. C02b *1/82*

U.S. Cl. 204—301 **7 Claims**

1. A device for supplying cation drinking water comprising:

a negative electrode chamber having a negative electrode,

a positive electrode chamber having a positive electrode,

a porous partition for communicating said chambers and through which cation particles are carried to said negative electrode chamber and anionic particles are carried to said positive electrode chamber by ionization current applied to the electrodes,

a tank disposed under said negative electrode chamber in order to hold a water body including a plurality of said cation particles,

a valve system disposed between the tank and said negative electrode chamber,

supply means for supplying natural water to both of said electrode chambers,

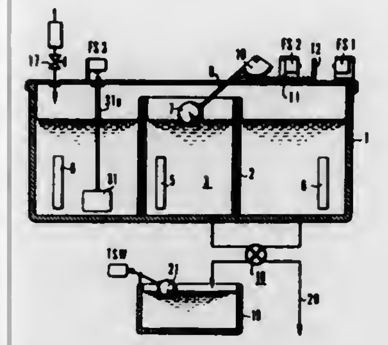
a first float member positioned in said tank,

a first switch means for switching in response to the action of said first float member when said first float member is lowered to a predetermined level due to use of the water body in said tank and actuating said supply means to supply natural water to both of said electrode chambers, operatively,

a second float member positioned in at least one of said electrode chambers,

a second and third switch means operatively connected to said second float member for switching in response to the action of said second float member when said second float member is moved to a first and second determined levels, respectively, in such a manner that both said chambers are filled with natural water until the water level of said at least one electrode chamber rises to said first level actuating said second switch means for terminating the supply of natural water to said electrode chambers, and the ionization being continued until the water level as a result of electro osmosis reaches said second level in said at least one of said electrode chambers actuating said third switch means for terminating the ionization current and communicating said negative electrode chamber with said tank by means of said valve system, and

an automatic control system including: a switch control means for starting a cycle operation by a signal from said first switch means when said first float member is lowered to said predetermined level and actuating said supply means so as to cause said electrode chambers to fill with said natural water; means for actuating said supply means in reverse so as to stop the supply of said natural water by a signal from said second switch means when the water level in said at least one electrode chamber reaches said first determined level; means for starting the said ionization current to the electrodes; means for stopping said ionization current by a signal from the second switch means when the water level in said at least one electrode chamber reaches said second level due to the electroosmosis and means for actuating the valve system so as to communicate said negative electrode chamber with said tank thereby to finish the cycle operation.



3,847,788
ELECTROGEL APPARATUS FOR REMOVING ELECTROLYTES AND CONCENTRATING THE SAME FROM AN AQUEOUS SOLUTION

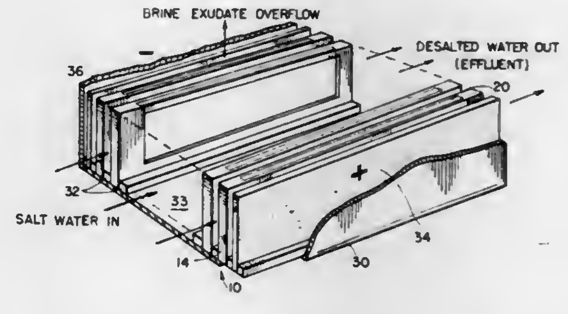
Richard A. Wallace, 43 Kingscote Gardens, Brooklyn, N.Y. 94305

Division of Ser. No. 23,311, March 27, 1970, Pat. No. 3,718,559. This application Dec. 13, 1972, Ser. No. 314,849

Int. Cl. B01d *13/02*

U.S. Cl. 204—301 **7 Claims**

1. An apparatus for simultaneously removing and concentrating electrolytes from aqueous solutions containing the same, comprising at least one electrolyte removal and concentrating unit which comprises an inorganic oxide gel core encased within an open module having a bottom wall, a pair of parallel opposing sides and a pair of parallel opposing end walls, said opposing sides further comprising a cation-permeable membrane and an anion-permeable membrane, respectively, and a source of an appliable electrical field.



ERRATUM

For Class 206—92 see:
Patent No. 3,847,756

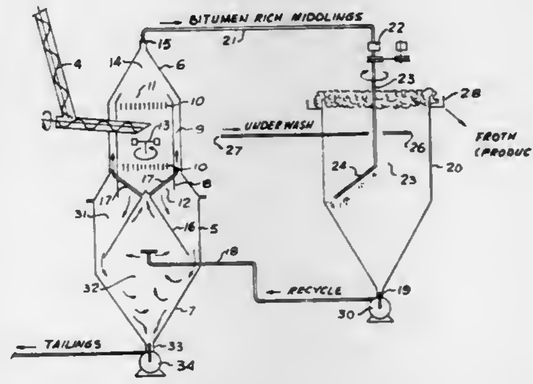
3,847,789
TWO STAGE SEPARATION SYSTEM

Lubomyr M. O. Cymbalisty, Edmonton, Alberta, Canada, assignor to Canada-Cities Service Ltd.; Imperial Oil Limited; Atlantic Richfield Canada Ltd. and Gulf Oil Canada Limited, part interest to each

Filed May 29, 1973, Ser. No. 364,343

Int. Cl. C10g *1/04*

U.S. Cl. 208—11 **2 Claims**



1. A method for separating bitumen from an aerated tar sand — water slurry containing bitumen and coarse and fine solids particles, comprising the steps of:

a. introducing the slurry into a first vessel, having a downwardly converging conical wall having a bottom outlet;

b. settling substantially all the coarse solids particles into the bottom end of the first vessel;

c. removing the coarse solids particles from the first vessel through its bottom outlet;

d. floating the major portion of the bitumen to the upper end of the first vessel;

e. transferring the floated bitumen, together with some fine solids particles and water, into a second vessel;

f. floating the bulk of the transferred bitumen to the upper surface of the contents of the second vessel to form a bitumen froth;

g. recovering the bitumen froth from the second vessel; and

h. withdrawing a stream comprising water, fine solids particles, and a minor amount of the transferred bitumen from the bottom end of the second vessel.

3,847,790

TWO STAGE UREA DEWAXING PROCESS

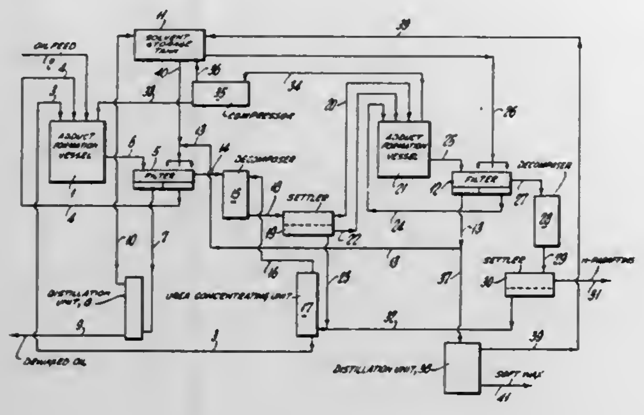
Joachim Putz, Offenthal, Germany, assignor to Edeleanu Gesellschaft mbH, Frankfurt, Germany

Filed July 24, 1972, Ser. No. 274,714

Claims priority, application Germany, July 31, 1971, 2138428

Int. Cl. C07b *21/00*

U.S. Cl. 208—25 **11 Claims**



1. In a two stage urea dewaxing process for the simultaneous production of high purity normal paraffins and dewaxed mineral oil from a mineral oil feedstock containing normal paraffins and a lesser quantity of isoparaffins where, in each stage, an adduct of urea and normal paraffins is formed from admixtures of normal paraffins, aqueous urea solution and the wash filtrate from that stage comprising an oil solvent, the adduct-forming mixture is separated into a liquid stream and the solid adduct, the liquid stream is utilized as a wash stream in the other stage or is processed to recover dewaxed oil, the adduct is washed with a wash stream comprising oil solvent and the adduct is decomposed to produce a normal paraffin-containing stream and an aqueous urea stream, the improvement which comprises:

a. forming the adduct for the first stage with sufficient urea to form an adduct of substantially all of the normal paraffins together with a portion of the isoparaffins in the feedstock, the adduct being formed from an admixture comprising the feedstock, a first aqueous urea solution and the first stage wash filtrate from step (d),

b. separating the adduct of step (a) from the admixture of step (a) to yield a first stage primary filtrate and a first stage adduct,

c. recovering dewaxed oil and oil solvent from the first stage primary filtrate,

d. washing the first stage adduct with a wash stream comprising oil solvent producing a first stage wash filtrate,

e. decomposing the washed first stage adduct to form a feed stream for the second stage comprising normal paraffins and isoparaffins and a second aqueous urea solution,

f. forming the adduct for the second stage from the feed stream for the second stage and a limited quantity of urea to form an adduct of normal paraffins substantially free of isoparaffins, the adduct being formed from an admixture comprising the feed stream for the second stage, a portion of the second aqueous urea solution, and the second stage wash filtrate from step (h),

g. separating the adduct of step (f) from the admixture of step (f) to yield a second stage primary filtrate and a second stage adduct,

h. washing the second stage adduct with a wash stream comprising fresh oil solvent producing a second stage wash filtrate,

i. decomposing the washed second stage adduct to form a normal paraffin-containing stream and a third aqueous urea solution, and

j. recovering normal paraffins from the normal paraffin-containing stream.

3,847,791

PROCESSS FOR THE PRODUCTION OF NORMAL PARAFFINS BY UREA DEWAXING OF MINERAL OIL DISTILLATES

Max Kunert, Neu-Wulmstorf, and Lothar Sandhack, Rheurdt, both of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

Filed Apr. 25, 1973, Ser. No. 354,284

Claims priority, application Germany, Apr. 27, 1972, 2220594

Int. Cl. C10g *43/04*

U.S. Cl. 208—25 **7 Claims**

1. In a process for the recovery of n-paraffins from mineral oil distillates comprising reacting the mineral oil, diluted with an organic solvent, at a temperature of 20° to 40°C, with an aqueous or alcoholic urea solution saturated at elevated temperature to form solid n-paraffin-urea adducts, separating the adducts from the dewaxed mineral oil solution, washing the adducts with an organic solvent and decomposing the washed adducts by organic solvent extraction or by the influence of heat, water and/or said organic solvent, the improvement which comprises diluting the mineral oil distillate charge material in the adduct-forming step with an organic solvent which is a solvent mixture consisting essentially of from about 70 to 95 volume percent of a C_5–C_6 hydrocarbon and of from about 30 to 5 volume percent of methylisobutylketone.

3,847,792

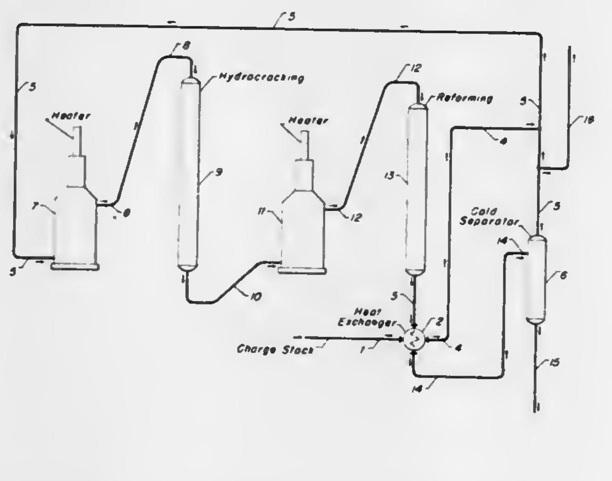
HIGH OCTANE MOTOR FUEL PRODUCTION

Charles V. Berger, Western Springs, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 237,776, March 24, 1972, abandoned. This application Oct. 10, 1973, Ser. No. 405,348

Int. Cl. C10g *37/10*

U.S. Cl. 208—60 **7 Claims**



1. A process for the production of a high octane motor fuel which comprises the steps of:

a. reacting naphtha boiling range hydrocarbons, containing cyclic components, with hydrogen, in a first reaction zone, in contact with a first catalytic composite of a Group VIII noble metal component and a zeolitic aluminosilicate carrier material and at a temperature in the range of about 350°F. to about 800°F. and a pressure from about 100 to about 400 psig.;

b. reacting the resulting first reaction zone effluent, without intermediate separation thereof, in a second reaction zone, in contact with a second catalytic composite comprising platinum and alumina, at a temperature in the range of about 800°F. to about 1,100°F. and a pressure of from 100 to about 400 psig., said temperature and pressure selected to convert naphthenes to aromatic hydrocarbons; and,

c. recovering said high octane motor fuel from the resulting second reaction zone effluent.

3,847,793

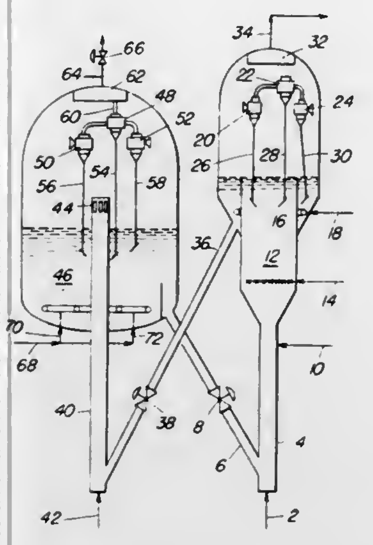
CONVERSION OF HYDROCARBONS WITH A DUAL CRACKING COMPONENT CATALYST COMPRISING ZSM-5 TYPE MATERIAL

Albert B. Schwartz, Philadelphia, Pa., and Harry A. McVeigh, Somerdale, N.J., assignors to Mobil Oil Company, New York, N.Y.

Filed Dec. 19, 1972, Ser. No. 316,633

Int. Cl. C10g *11/18, 37/02;* **B01j** *11/68*

U.S. Cl. 208—70 **11 Claims**



1. In a process for converting hydrocarbons in the pressence of fluidized catalyst particles and regeneration of the catalyst particles the method for improving the production of high octane gasoline boiling range materials, which comprises

a. circulating in the hydrocarbon conversion catalyst regeneration process a catalyst composition comprising a mixture of a large pore size crystalline aluminosilicate cracking component in combination with a ZSM-5 type of crystalline aluminosilicate,

b. contacting regenerated catalyst as a suspension under elevated temperature cracking conditions within the range of 1,000° F. to 1,400° F. initially with a hydrocarbon feed boiling above gasoline end point material up to about 1,100° F. in the initial portion of a riser conversion zone and then with a higher coke producing hydrocarbon feed in a downstream portion of the riser conversion zone under conditions to selectively coke deactivate substantially only the large pore component of the catalyst,

c. passing the suspension with coke deactivated large pore crystalline cracking component in combination with the ZSM-5 component upwardly into the lower portion of a dense fluid bed of said catalyst maintained at a temperature in the range of 900° F. up to about 1,100° F.,

d. recovering hydrocarbon products of conversion from said dense fluid catalyst bed enriched in gasoline boiling range materials by ZSM-5 conversion of gasiform olefinic hydrocarbons, and

e. passing catalyst from said fluid bed through catalyst stripping and regeneration before return in a heated condition to the riser hydrocarbon conversion zone.

3,847,794

SULFUR-FREE REFORMING WITH A PLATINUM-TIN CATALYST

Richard E. Rausch, Mundelein, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. Nos. 201,576, Nov. 23, 1971, Pat. No. 3,745,112, and Ser. No. 807,910, March 17, 1969, Pat. No. 3,740,328. This application May 29, 1973, Ser. No. 364,577The portion of the term of this patent subsequent to July 10, 1990, has been disclaimed.

Int. Cl. C10g *35/08*

U.S. Cl. 208—88 **15 Claims**

1. A process for catalytically reforming a substantially sulfur-free gasoline fraction, which process comprises contacting the gasoline fraction and a substantially sulfur-free hydrogen stream at reforming conditions with a substantially sulfur-free catalyst comprising a combination of a platinum group component, a tin component and a halogen component with a porous carrier material, wherein the components are present in amounts sufficient to result in the catalyst containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, 0.01 wt. % to about 5 wt. % tin and about 0.1 to about 3.5 wt. % halogen, wherein the tin component is uniformly dispersed throughout the porous carrier material in a particle size which is less than 100 Angstroms in maximum dimension, wherein substantially all of the platinum group component is present in the catalyst as an elemental metal and wherein substantially all of the tin component is present in the catalyst in an oxidation state above that of the elemental metal.

3,847,795

HYDROCRACKING HIGH MOLECULAR WEIGHT HYDROCARBONS CONTAINING SULFUR AND NITROGEN COMPOUNDS

Robert W. Rieve, Springfield, and Harold Shalit, Drexel Hill, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 13, 1973, Ser. No. 351,075

Int. Cl. C10g *13/08*

U.S. Cl. 208—108 **8 Claims**

1. A method of hydrocracking high molecular weight hydrocarbons containing sulfur and nitrogen compounds which comprises contacting said hydrocarbons at temperatures in the range of from 400° to 1,200° F. at pressures in the range of from 100 psig to 5,000 psig with from 100 to 5,000 standard cubic feet of hydrogen per barrel of hydrocarbon charge in the presence of a catalyst soluble in said hydrocarbons at said temperatures, said catalyst being produced from a mixture of aluminum chloride and palladium chloride wherein in the palladium chloride-aluminum chloride catalyst the palladium ranges from 0.001 to 1.0 weight per cent based on the weight of the hydrocarbon charge and the aluminum chloride ranges from 0.005 to 10.0 weight per cent based on the weight of the hydrocarbon charge with the molar ratio of aluminum chloride to palladium chloride being at least 2:1.

3,847,796

HYDROCRACKING PROCESS FOR THE PRODUCTION OF LPG

Lee Hilfman, Mount Prospect; Ernest L. Pollitzer, Skokie, and Edward Michalko, Chicago, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 15, 1973, Ser. No. 341,442

Int. Cl. C10g *13/02*

U.S. Cl. 208—111 **6 Claims**

1. A hydrogen-consuming process for selectively producing LPG from a hydrocarbon charge stock boiling below about 600°F., which comprises contacting said charge stock and hydrogen with a catalyst comprising a Group VIII metal component combined with an alumina carrier material containing a uniform distribution of about 20 to about 30 weight percent of finely divided mordenite particles at hydrocracking conditions including a pressure of about 300 to about 1800 psig., a temperature of about 600°F. to about 850°F., a LHSV of about 1 to about 10 $hr.^{-1}$ and a hydrogen circulation rate of about 5000 SCFB to about 15,000 SCFB based on fresh charge stock, said catalyst having been prepared by commingling said mordenite with an aluminum halide sol, gelling the resultant mixture and then calcining the gelled mixture.

3,847,797

VISBREAKING A HEAVY HYDROCARBON FEEDSTOCK IN A REGENERABLE MOLTEN MEDIUM

Israel S. Pasternak; John J. Dugan, and James P. Higgins, all of Sarnia, Ontario, Canada, assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 186,770, Oct. 5, 1971, abandoned. This application Aug. 14, 1972, Ser. No. 280,181

Int. Cl. C10g *11/02*

U.S. Cl. 208—114 **17 Claims**

1. A process for converting a heavy hydrocarbon feedstock to lighter hydrocarbon materials which comprises contacting said feedstock with a regenerable molten medium containing an alkaline reagent selected from the group consisting of alkali metal oxides, hydroxides and mixtures thereof, and alkali metal oxides, hydroxides and mixtures thereof in combination with alkaline earth metal oxides, hydroxides and mixtures thereof and a glass-forming oxide wherein the mole ratio of the alkaline reagent, expressed as the oxide thereof, to the glass-forming oxide is about 1.5 to about 3 at a temperature in the range of from about the melting point of said medium to less than about 1,200°F. for a time sufficient to form lighter hydrocarbon materials.

3,847,798

OXIDATION AND DESULFURIZATION OF A HYDROCARBON MATERIAL

Jin Sun Yoo, South Holland, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Filed June 5, 1972, Ser. No. 259,946

Int. Cl. C10g *27/04, 23/12*

U.S. Cl. 208—209 **16 Claims**

1. In a desulfurization process for producing a hydrocarbon material of reduced sulfur content wherein at least a portion of the sulfur in a sulfur-containing hydrocarbon material at least a major portion of which boils above about 550°F., is preferentially oxidized by contacting said sulfur-containing hydrocarbon material with active oxygen in the form of an oxidant selected from the group consisting of organic peroxides, organic hydroperoxides, organic peracids, hydrogen peroxide and mixtures thereof, the improvement which comprises heating said oxidized sulfur-containing hydrocarbon material with at least one hydrocarbon hydrogen donor component capable of transferring hydrogen to said oxidized material under conditions such that hydrogen is transferred from at least a portion of said component to form hydrogen sulfide without the addition of a catalyst, said heating occurs at a temperature in the range from about 500°F. to about 1350°F. and such that for each 100 parts of said oxidized sulfur-containing hydrocarbon material from about 5 parts to about 2000 parts of hydrocarbon hydrogen donor component are present, and thereafter recovering from said heating a hydrocarbon material of reduced sulfur content.

3,847,799

CONVERSION OF BLACK OIL TO LOW-SULFUR FUEL OIL

William H. Munro, Lincolnshire, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 10, 1972, Ser. No. 296,385

Int. Cl. C10g *31/14*

U.S. Cl. 208—210 **6 Claims**

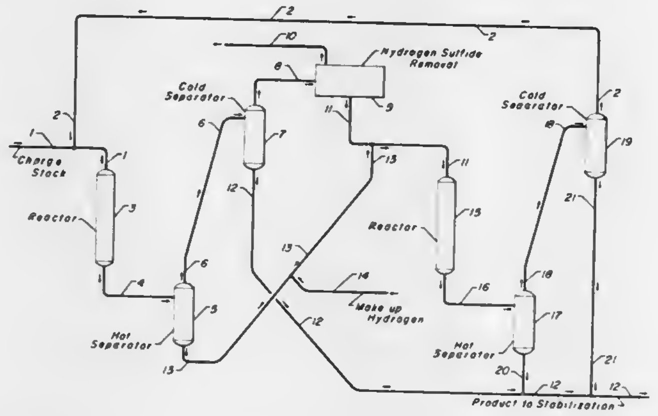
1. A process for producing a fuel oil, containing less than about 1.0 percent by weight of sulfur, from a sulfurous black oil charge stock, which process comprises the steps of:

a. reacting said charge stock with an impure hydrogen gas containing hydrogen sulfide, in a first catalytic reaction zone, at desulfurization conditions selected to convert lower boiling sulfurous compounds into hydrogen sulfide and hydrocarbons;

b. separating at least a portion of the resulting first reaction zone effluent, in a first separation zone, at substantially the same temperature and pressure, to provide a first principally vaporous phase and a first principally liquid phase;

c. separating at least a portion of said first vaporous phase, in a second separation zone, at substantially the same pressure and a temperature in the range of about 60°F. to about 140°F., to provide a second principally vaporous phase and a second principally liquid phase;

d. removing hydrogen sulfide from said second vaporous phase, and reacting at least a portion of the remaining relatively pure hydrogen with at least a portion of said first liquid phase, in a second catalytic reaction zone, at desulfurization conditions selected to convert additional sulfurous compounds into hydrogen sulfide and hydrocarbons;



e. separating the resulting second reaction zone effluent, in a third separation zone, at substantially the same pressure and temperature, to provide a third principally vaporous phase and a third principally liquid phase;

f. separating at least a portion of said third vaporous phase, in a fourth separation zone, at substantially the same pressure and a temperature in the range of about 60°F. to about 140°F., to provide a fourth principally vaporous phase containing hydrogen and hydrogen sulfide and a fourth principally liquid phase;

g. recycling at least a portion of said fourth vaporous phase to said first reaction zone as said impure hydrogen gas; and,

h. recovering said fuel oil from said second, third and fourth liquid phases.

3,847,800

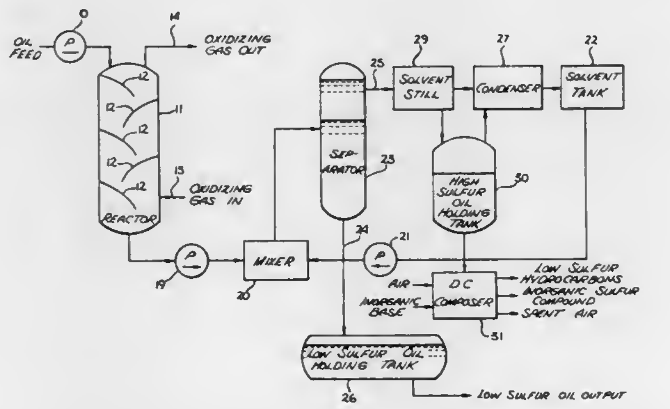
METHOD FOR REMOVING SULFUR AND NITROGEN IN PETROLEUM OILS

Eugene Daniel Guth, Palos Verdes, and Arthur F. Diaz, University City, both of Calif., assignors to KVB Engineering, Inc., Justin, Calif.

Filed Aug. 6, 1973, Ser. No. 385,894

Int. Cl. C10g *19/08*

U.S. Cl. 208—236 **31 Claims**



1. The method of reducing sulfur and nitrogen compound concentrations in petroleum oil which comprises:

a. exposing petroleum oil to an oxidizing gas containing one or more oxides of nitrogen chosen from the following list: NO_2, N_2O_3, N_2O_4, N_2O_5, whereby sulfur and nitrogen compounds in said petroleum oil will be oxidized:

b. mixing said petroleum oil with a solvent selected from the group consisting of methanol, methanol-water mixtures, methanol-ethanol-water mixtures and methanol-inorganic salt solutions, said solvent being substantially immiscible with said oil but being a solvent for said oxidized sulfur compounds, said oxidized sulfur compounds dissolving in said solvent; and

c. separating said oil from said solvent solution.

3,847,801

PROCESS FOR SEPARATING HYDROCARBON

William R. Moser, Westfield, N.J., assignor to Exxon Research Engineering Company, Linden, N.J.

Filed Dec. 27, 1972, Ser. No. 318,876

Int. Cl. B01d *17/00*

U.S. Cl. 208—308 **5 Claims**

1. A process for the selective separation of constituents contained in a non-olefinic liquid hydrocarbon mixture, said constituents being selected from the group consisting of normal paraffins, isoparaffins, naphthenes, and aromatic compounds, said method comprising the steps of:

1. contacting said liquid mixture with a purified stream containing only NO at a temperature and pressure sufficient to cause a reaction between the NO and at least one of said constituents contained in said mixture to form a nitrated compound;
2. isolating the nitrated compound resulting in Step 1 and leaving behind an effluent;
3. successively repeating Steps 1 and 2 until
   a. the nitrated product which results is that of the constituent in said effluent which has the highest order of reacting with said NO and whose parent hydrocarbon can be recovered by catalytic hydrogenation, or
   b. the effluent comprises substantially a single, uncomplexed consitiuent and recovering the said particular constituent by flash distillation from the product from Step 3(a).

3,847,802

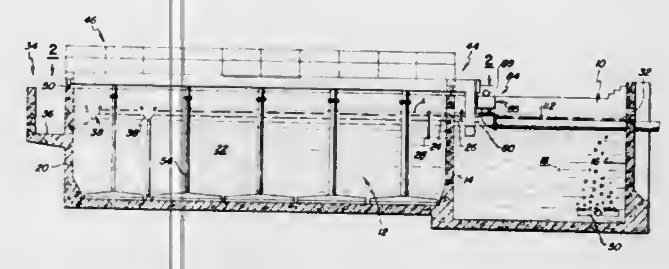
METHOD AND APPARATUS FOR TREATING WASTE MATERIAL

Arthur A. Lemke, Evanston, Ill., assignor to FMC Corporation, Chicago, Ill.

Filed Apr. 19, 1973, Ser. No. 352,544

Int. Cl. C02c *1/08*

U.S. Cl. 210—7 **17 Claims**



1. Apparatus for treating aqueous waste material comprising an aeration tank and a settling tank having a common wall, said settling tank having a tank floor; means defining ports adjacent the upper end of said wall to allow waste material including liquid and aerated sludge to flow from said aeration tank to said settling tank, said aerated sludge settling to the tank floor; and withdrawal means movable along the settling tank floor for withdrawing settled aerated sludge from the tank floor and returning the sludge to said aeration tank, said withdrawal means including a vertical conduit in said aeration tank with an open end of said conduit located below the ports in said common wall; and means cooperating with said vertical conduit to periodically divert sludge for collection outside said aeration tank, said means cooperating with said vertical conduit including means for closing said open end of said conduit, overflow means in said withdrawal means through which said sludge flows when said open end is closed and collection means for receiving the sludge flowing through said overflow means.

3,847,803

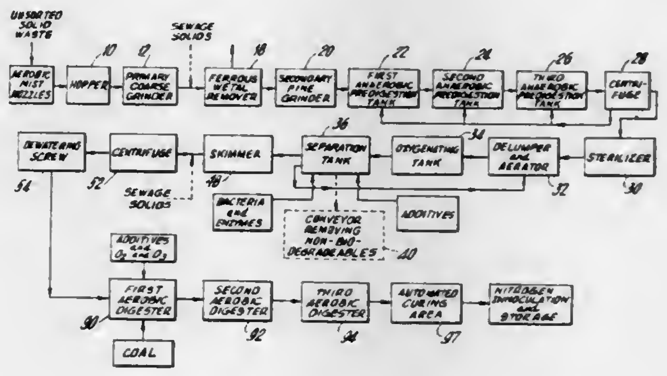
PROCESS FOR SEPARATING AND CONVERTING WASTE INTO USEABLE PRODUCTS

Pliny Fisk, Amazon Rd. & Dale St., Mohegan Lake, N.Y. 10547

Filed Mar. 22, 1973, Ser. No. 343,855

Int. Cl. C02c *1/02*

U.S. Cl. 210—8 **22 Claims**



1. A process for separating the biodegradeable and non-biodegradeable material from waste, comprising the steps of:
grinding unsorted waste into particulate form;
anaerobically treating the unsorted waste particles;
sterilizing the anaerobically treated particles;
mixing the sterilized particles with an aerobic and enzyme activated liquid to form a slurry;
inducing the slurry to flow;
controlling the temperature and pH of the moving slurry to cause fermentation;
permeating the moving slurry with oxygenating gases to aid in fermentation and in causing the biodegradeable material to rise to the surface of the moving slurry and form a froth;
removing the biodegradeable froth from the top of the slurry; and
collecting the non-biodegradeable material which settles out.

3,847,804

PROCESS OF TREATING WOOL-SCOURING LIQUOR AND CENTRIFUGE EFFLUENT

Joseph Del Pico, Brockton, Mass., assignor to Abcor, Inc., Cambridge, Mass.

Filed Feb. 20, 1973, Ser. No. 333,808

Int. Cl. B01d *13/00*

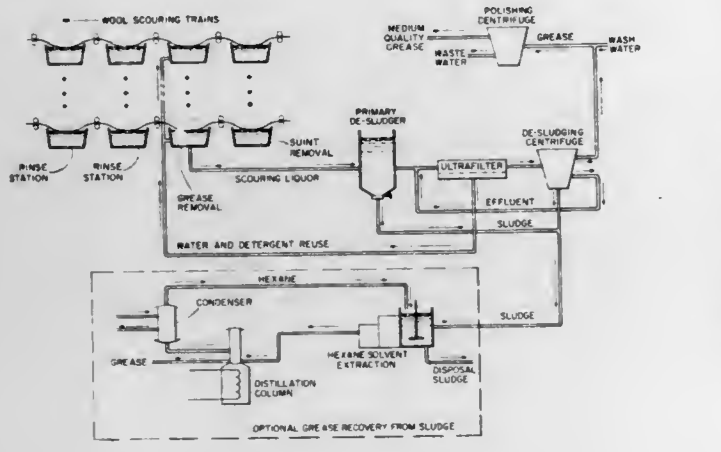
U.S. Cl. 210—23 **16 Claims**

1. A process for the treatment of emulsion-scouring liquor containing a wool-grease-in-water emulsion, which process comprises in combination:

a. introducing the emulsion-scouring liquor into a membrane unit characterized by a semipermeable membrane adapted to prevent the passage of the wool-grease-in-water emulsion and suspended material, and to permit the passage of water;

b. introducing the emulsion-scouring liquor into an emulsion-concentrate fraction containing the wool grease and a permeate fraction essentially free of wool grease, emulsion and suspended particles, the separation of the emulsion-scouring liquor carried out at a temperature sufficient to maintain during the separation step a liquid-

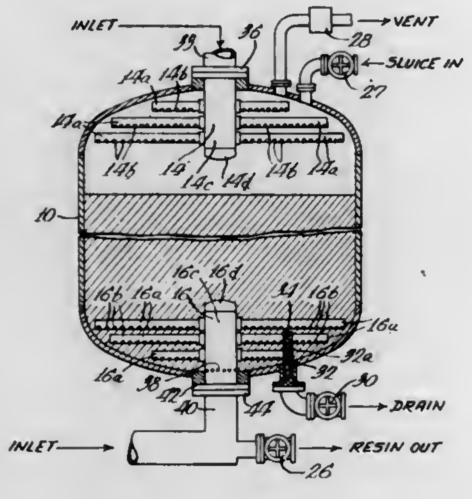
liquid emulsion rather than a solid-liquid emulsion of the wool grease in the aqueous emulsion-scouring liquor; and



c. recovering the wool grease from the emulsion-concentrate fraction.

3,847,805
ION EXCHANGE VESSEL

Richard K. Voedisch, Rockford, Ill., assignor to Illinois Water Treatment Company, Rockford, Ill.
Filed Dec. 7, 1972, Ser. No. 313,145
Int. Cl. B01d *15/04*
U.S. Cl. 210—33 **5 Claims**



1. An ion exchange vessel containing ion exchange resin comprising a distribution means, liquid supply means connected to said distribution means for providing upward service flow, a collection means positioned above said distribution means, liquid supply means connected to said collection means for selectively providing downward liquid flow, said distribution means comprising unscreened apertured distribution means for both supplying said upward service flow and for removing resin from said vessel when said downward liquid flow is being selectively provided through said vessel and draining means comprising a screened lower drain for selectively draining liquid from said vessel without the removal of any substantial amount of resin from said vessel, said distribution means comprises a hollow hub which protrudes upwardly through the center of the bottom of said vessel and a plurality of hollow radially extending unscreened apertured laterals which are in fluid communication with said hub, said hub having a plurality of unscreened holes therein which extend circumferentially around said hub adjacent the area where said hub protrudes through the bottom of said vessel.

3,847,806
METHOD FOR TREATING SLUDGE FORMED IN CITY SEWAGE SYSTEMS

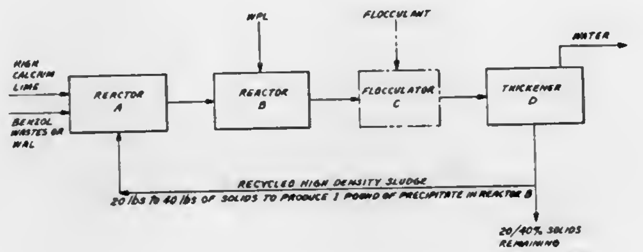
Tadaharu Kuroiwa; Yukio Isayama; Akira Yokota; Tsukasa Kamio; Kazuhiko Jinnai; Eiichi Abe; Kunio Kimura, all of Tosu; Morihisa Hioki, Kagoshima, and Hisataka Noguchi, Hachioji, all of Japan, assignors to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan
Filed Mar. 8, 1973, Ser. No. 339,132
Claims priority, application Japan, Mar. 21, 1972, 47-28308
Int. Cl. B01d *37/02*
U.S. Cl. 210—45 **10 Claims**

1. A method of improving the filtration of sewage sludge and recovering a useful product therefrom which comprises the steps of:

1. mixing sewage sludge with unfoamed foamable granular volcanic ash particles, in a weight ratio of about 3–10:1 relative to the dry weight of said sludge, said volcanic ash particles having a diameter of about 20μ–0.6 mm,
2. filtering the resultant mixture,
3. incinerating the filtered mixture to foam said volcanic ash particles, and
4. recovering the incinerated product.

3,847,807
REMOVAL OF CYANIDE AND COLOR BODIES FROM COKE PLANT WASTEWATER

Stewart T. Herman, Hellertown, and Russel J. Horst, Bethlehem, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.
Filed Mar. 21, 1973, Ser. No. 343,598
Int. Cl. C02b *1/30;* **C02c** *5/02*
U.S. Cl. 210—46 **3 Claims**

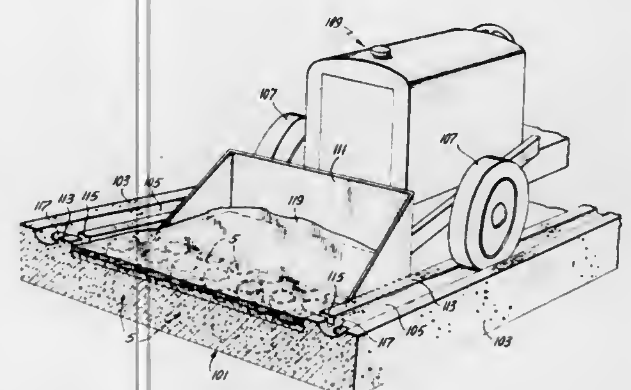

HIGH CALCIUM LIME
BENZOL WASTES OR WAL
REACTOR A
WPL
REACTOR B
FLOCCULANT
FLOCCULATOR C
THICKENER D
WATER
RECYCLED HIGH DENSITY SLUDGE
20 lbs to 40 lbs OF SOLIDS TO PRODUCE 1 POUND OF PRECIPITATE IN REACTOR B
20/40% SOLIDS REMAINING SLUDGE TO WASTE

1. A process for removing cyanides and complex organic compounds which color liquid wastes from coke oven wastewaters, comprising:

a. mixing high calcium lime, the wastewater to be purified and a major portion of the high density sludge formed in step (e) in a first reactor forming a first mix having a pH of between about 10.0 to about 12.0,
b. transferring the first mix from the said first reactor to a second reactor,
c. mixing a solution selected from the group consisting of acid mine drainage and waste pickle liquor, which solution contains iron values into the first mix in the second reactor to form a second mix having a pH of between about 9.0 to about 10.0 and precipitating a major portion of the cyanides and complex organic compounds originally present in the wastewater being purified,
d. flocculating the precipitate formed in step (c),
e. passing the second mix containing flocculated precipitate of step (d) to a settling means wherein the flocculated precipitate settles out as a high density sludge and clarified water is decanted from the settling means, and
f. recycling back to the first reactor from about 20 pounds to 40 pounds of the high density sludge formed in step (e) for every pound of new precipitate formed in step (c).

3,847,808
METHOD AND APPARATUS FOR TREATING SLUDGE

Guenter Spohr, 3473 Manassas Ct., Davidsonville, Md. 21035
Filed Mar. 27, 1973, Ser. No. 345,258
Int. Cl. B01d *23/24*
U.S. Cl. 210—66 **11 Claims**

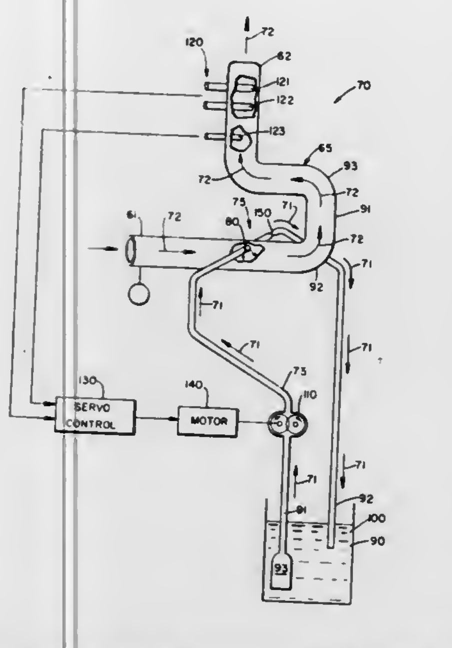


1. A sludge drying bed comprising:

a. a block of material having a top surface and being capable of supporting a heavy load thereon and having a plurality of openings extending therethrough,
b. a cartridge positioned in each opening and filter material positioned in each cartridge, openings.
c. the tops of said cartridges extending at least close to but no higher than the top surface of said block,
d. said cartridge further being substantially open at the top and sufficiently closed at the bottom to retain the filter material therein, and openings in said bottom whereby water and the like can drain therethrough,
e. an outer peripheral edge extending substantially above the top of the cartridges to retain sludge and water therein, and a slot in said peripheral edge whereby bound water can flow off the retained sludge, and
f. means for scraping the sludge off said block without disturbing the filter material in said cartridges.

3,847,809
PROPORTIONING SYSTEM

J. David Kopf, Tujunga, Calif., assignor to David Kopf System, Tujunga, Calif.
Filed July 3, 1972, Ser. No. 268,308
Int. Cl. B01d *31/00, 13/00*
U.S. Cl. 210—22 **12 Claims**

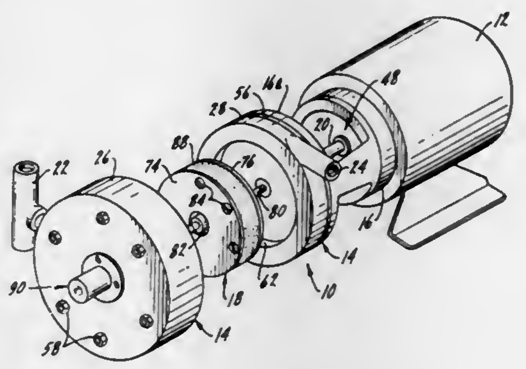


1. A method for use in hemodialysis of forming a dialysate by mixing predetermined amounts of a fluid in a flow stream and maintaining the ratio of fluid in said flow stream for various flow rates, comprising the following steps:

constantly recirculating a first fluid along a first flow stream,
passing a second fluid through a conduit to form a second flow stream,
diverting a regulated amoung of said constantly recirculating first fluid at a preselected discharge point and discharging the same into said second flow stream at said discharge point while maintaining the constant recirculation of the remainder of said first fluid in said first flow stream,
allowing said first and second fluids to mix,
measuring the proportion of said first fluid and said second flow stream at a point downstream from which the fluids have been mixed, and
adjusting the rate at which said first fluid is discharged into said second flow stream.

3,847,810
APPARATUS FOR SEPARATING OIL FROM WATER AND MEASURING THE AMOUNT OF OIL SO SEPARATED

Angelo C. Tulumello, 18508 Lorrence Ave., Apt. 2E, Lansing, Ill. 60438
Filed May 4, 1973, Ser. No. 357,506
Int. Cl. E02b *15/04*
U.S. Cl. 210—96 **12 Claims**



1. Apparatus for separating oil and water comprising a chamber,

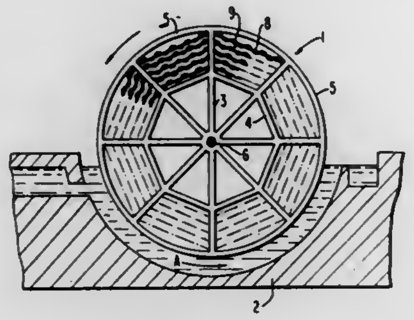
rotor means in the chamber including an absorber means which selectively absorbs oil, in conductive means,
inlet means in said chamber means for introducing oil-water mixture into the said chamber,
outlet means in said chamber near the periphery of the rotor means for removing separated water from the chamber, and
means for revolving said rotor means to establish a centrifugal force-field in said chamber which separates the oil from water, pulling the oil to the center of the rotor means and pushing separated water to the periphery of the rotor means and out the outlet means, and
circuit means coupled to the conductive means in said rotor means, said circuit means measuring capacitance across said conductive means.

3,847,811
APPARATUS FOR BIOLOGICALLY PURIFYING EFFLUENT

Adolf Friedrich Johann Conrad Stengelin, deceased, late of P.O. Box 519, Obere Vorstadt, 21, Tuttlingen, Germany; Volker Stengelin, and Jorg Stengelin, heirs, both of P.O. Box 519, Obere Vorstadt, 21, Tuttlingen, Germany
Continuation-in-part of Ser. No. 884,614, Dec. 12, 1969, abandoned. This application Dec. 13, 1972, Ser. No. 314,531
Claims priority, application Germany, Dec. 17, 1968, 1815001
Int. Cl. C02c *1/02;* **B01d** *21/00*
U.S. Cl. 210—150 **10 Claims**

1. A trickling filter for biologically purifying effluent by means of aerobic microorganisms, comprising a horizontal rotatable shaft, a plurality of self-supporting filter sections annularly arranged side-by-side in fixed relation to and spaced

from said shaft in a single vertical plane, multiple passage means in each section defining tortuous flow paths providing surfaces of increased area through which passage means the effluent can penetrate and drain away, and means for supporting and rotating said shaft so that said sections successively enter and leave said effluent, the longitudinal axes of the passage means extending in planes parallel to planes substantially tangential to the circumference of the filter and substantially transverse to planes through the axis of rotation of the filter.



3,847,812

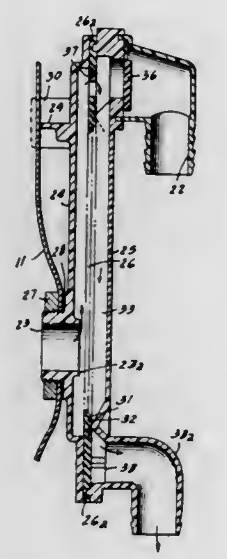
INTEGRAL SELF-CLEANING FILTER AND SIDE CHECK VALVE FOR AUTOMATIC WASHER

William Ohmann, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Division of Ser. No. 238,890, March 28, 1972,. This application Mar. 29, 1973, Ser. No. 346,059

Int. Cl. B01d *29/38*

U.S. Cl. 210—108 5 Claims



1. A pressure responsive self-cleaning filter comprising a pair of rigid body members,

- means releasably clamping together said body members at their peripheries,
- one of said body members defining an inlet circumscribed by edges forming a valve seat,
- a flexible diaphragm clamped between said body members at its periphery,
- passage means forming a fluid passageway from one side of the diaphragm to the other,
- the other of said body members having ribbed baffles thereon facing said diaphragm, and having a drain outlet formed therein,
- and a port arranged to be connected to a source of fluid pressure which periodically changes from positive to negative,
- said baffles cooperating with one side of said diaphragm to provide a filtering maze for liquid passing therebetween when negative pressure appears at said port during a filtering cycle,
- said diaphragm being deformable into engaging relation with said valve seat thereby to close said inlet when positive pressure is present at said port during a pump-out cycle, and
- means for substantially preventing flow through said drain outlet during the filtering cycle and permitting flow through said drain outlet during the pump-out cycle.

3,847,813

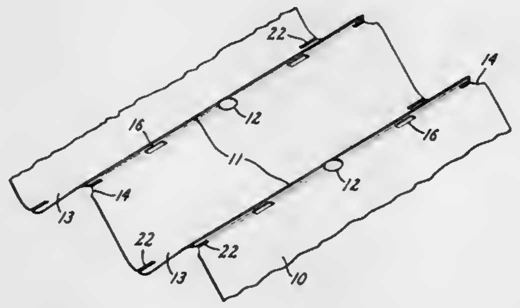
COALESCING PLATE FOR FLUID MIXTURE PLATE SEPARATOR

Joseph L. Castelli, Wayne, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Dec. 27, 1972, Ser. No. 318,725

Int. Cl. B01d *21/10*

U.S. Cl. 210—232 5 Claims



1. A coalescing plate for a fluid mixture plate separator comprising:

- a plurality of crests separated by depressions forming transverse corrugations;
- spaced bleed holes in the crests of the corrugations;
- spacing means including a projection integral with and extending from a first surface of said plate to space it from a similar plate; and
- receptacle means including a slot in a second surface of said plate positioned opposite said projection and being adapted to receive a projection from a similar plate;
- whereby a plurality of said plates may be positioned in stacked relationship, the projections being received by corresponding slots so that the transverse corrugations of each plate are spaced at all points from the transverse corrugations of adjacent plates.

3,847,814

GREASE INTERCEPTOR

Rai Reiji Adachi, Scarborough, Ontario, Canada, assignor to Sarco Canada Limited, Agincourt, Ontario, Calif.

Filed Feb. 26, 1973, Ser. No. 335,819

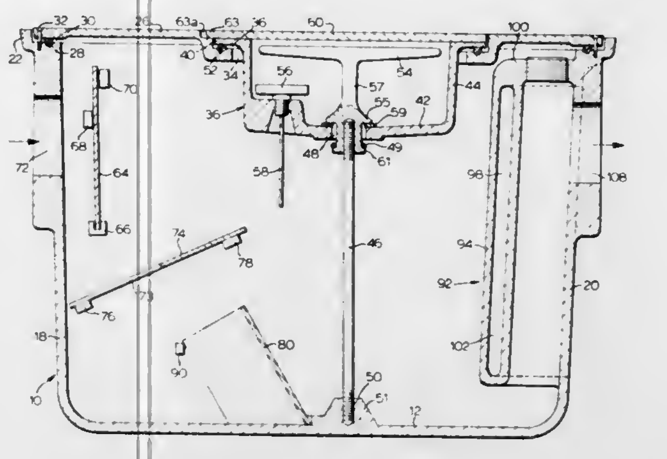
Claims priority, application Canada, Mar. 2, 1972, 136,022

Int. Cl. B01d *21/02*

U.S. Cl. 210—237 5 Claims

1. An interceptor for treating grease in water comprising: a tank having an inlet end and an outlet end, a plurality of baffles disposed within the tank to control the flow of water through the tank for effecting a separation of grease from water by gravity, means at the tank outlet end for retaining separated grease within the tank, a lid for closing said tank, means for securing said lid peripherally to the tank to effect a liquid-tight and gas-tight seal therebetween, said lid having a circular opening and an annular recess formed in its upper surface about the circular opening, a cover-well having a circular side wall with closed bottom and a flanged rim formed on the side wall adapted to seat in said lid opening on the annular recess, and means for securing the cover-well tightly to the tank to effect a liquid-tight and gas-tight seal therebetween and to secure the central portion of the lid to the tank comprising a bolt and handle assembly, said bolt being fastenable to an underlying portion of the tank and said handle

having a shank portion extensible through an opening in the cover-well adapted to be threaded onto said bolt, an annular shoulder formed on the handle shank having a diameter greater than the diameter of the opening in the cover-well whereby the shoulder tightly abuts the cover-well upon fastening of the bolt and handle assembly to the tank, an annular ridge formed on the shank portion extensible through the cover-well opening, and an O-ring seated on said shank portion against the ridge adapted to abut the underside of the cover-well whereby the cover-well can be raised from the lid by release of the handle from the bolt and raising of the handle.



3,847,815

SCOOP FOR COLLECTING A LAYER OF POLLUTING MATERIAL ON WATER SURFACES

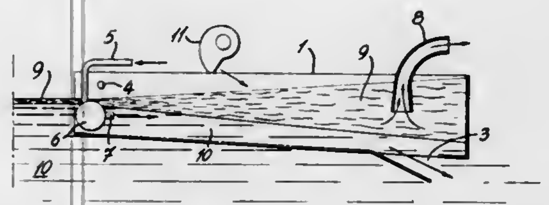
Lucien Chastan-Bagnis, 21 Avenue Isola Bella, 06400 Cannes, France

Filed Jan. 31, 1973, Ser. No. 328,310

Claims priority, application France, Feb. 4, 1972, 72.05078

Int. Cl. E02b *15/04*

U.S. Cl. 210—242 3 Claims



1. A device for collecting hydrocarbons, and other polluting agents floating on the surface of a body of water, comprising: a scoop member defining a compartment having a bottom wall, a rear wall, rearwardly converging side walls and an open front;

- a water discharge opening in said bottom wall adjacent said rear wall;
- means in said open front for directing jets of water rearwardly generally parallel to said bottom wall below but adjacent the surface of said body of water to thereby direct laminar flow of water and pollutants to the rear of said compartment whereby said pollutants accumulate in a thick layer adjacent said rear wall; and
- means on said device, adjacent the rear thereof, for removing pollutants from said thick layer.

3,847,816

POLLUTION SUCTION WATER SWEEPER

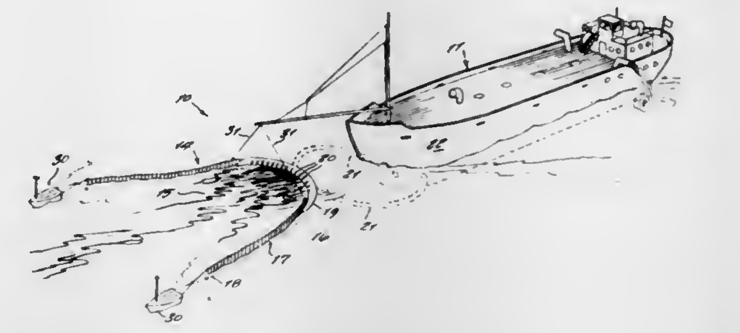
James DiPerna, 85 Foxhill Ter., Staten Island, N.Y. 10305

Filed Mar. 7, 1973, Ser. No. 339,381

Int. Cl. E02b *15/04*

U.S. Cl. 210—242 1 Claim

1. In a pollution suction water sweeper, the combination of a ship, tugs, and a floating harvesting ring in front of said ship, and means to collect oil from a sea surface, said means comprising intake lines extending from said ring to an oil collection tank system located inside a hold of said ship, said ring comprising an elongated assembly which at its opposite ends comprises a flexible empty accordian-like hose that includes a weighed apron, and a central portion with a front side and a rear side between said hoses comprising a skimmer consisting of a hose with the interior of said hose connected to said intake lines, said skimmer hose having a plurality of spaced apart, transverse extending vertically slitted openings that are located on said front side of said skimmer hose so to admit said oil to the interior of said central hose portion, the ends of said harvesting ring being connected to director tugs in front of said ship and which tugs pull said ring ends in a forward direction, said tugs being guided by electronic signals from a control station within said ship, said collection tank system comprising a series of tanks through which a collected mixture of sea water and oil is progressively passed in series whereby oil may be collected therein and separated water discharged from said tanks by pump means.



3,847,817

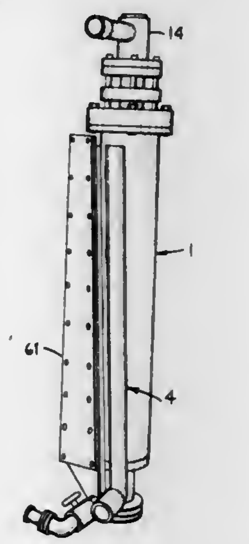
FILTER UNIT HAVING A GENERALLY CYLINDRICAL FILTER ELEMENT SUPPORTED ON BEARINGS

Ronald D. Jarman, Brady Township, Kalamazoo City, Mich. 49097, assignor to Dover Corporation, Portage, Mich.

Filed Dec. 4, 1972, Ser. No. 311,789

Int. Cl. B01d *33/00*

U.S. Cl. 210—297 18 Claims



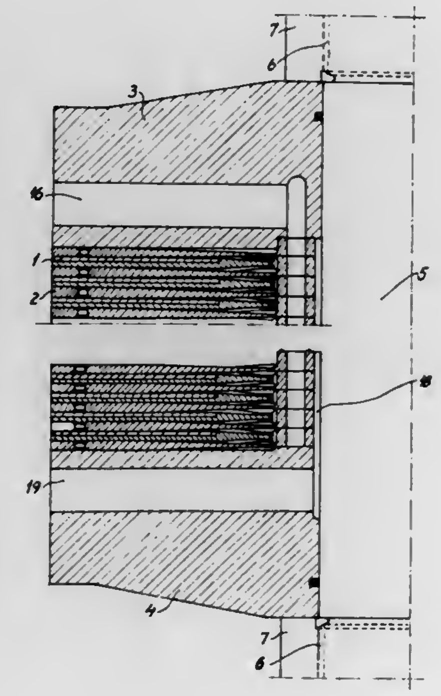
1. In a self-cleaning filter unit for removing solid material from a liquid to be filtered, the combination comprising:

- a housing and a solids receptacle communicating with said housing; a filter element within said housing, said housing and filter element being relatively rotatable;
- inlet means introducing liquid into said housing externally of said filter element and means for withdrawing filtrate from within said filter element;
- a filtrate deflector within said filter element and aligned on a nondiametric chord of said filter element, said deflector being fixedly located with respect to said housing and receptacle, and means relatively rotating siad filter element and deflector for deflecting a cleaning flow of fil-

trate from within the filter element radially outwardly therethrough toward a discrete location fixed with respect to said receptacle.

3,847,818
APPARATUS FOR SEPARATING FLUIDS INTO TWO FRACTIONS BY MEANS OF SEMIPERMEABLE MEMBRANES

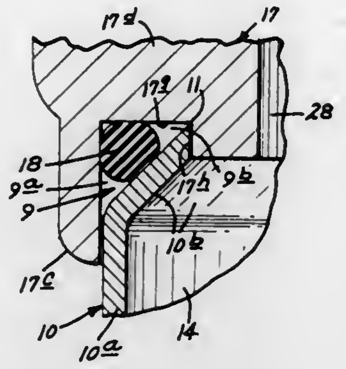
Rud Frik Madsen; Ole Jentoft Olsen, and Mogens Martin Stenseng, all of Nakskov, Denmark, assignors to Aktieselskabet De Danske Sukkerfabrikker, Copenhagen K., Denmark
Filed Feb. 2, 1973, Ser. No. 329,195
Claims priority, application England, Feb. 2, 1972, 4972/72
Int. Cl. B01j *31/00*
U.S. Cl. 210—321 **3 Claims**



1. An apparatus for separating fluids into two fractions by means of semipermeable membranes comprising a stack of alternating guide plates and membrane supports, each membrane support supporting a semipermeable membrane on each side of the support so as to form flow passages extending parallel to the membrane surfaces, each of said guide plates being provided with apertures extending through the guide plates, liquid inlet means and liquid outlet means communicating with said flow passages extending parallel to the membrane surfaces and means for collecting and discharging liquid passing through said membranes, characterized in that the stack of guide plates and membrane supports comprises a longitudinally extending duct spaced apart from the apertures of the guide plates, and that each guide plate comprises at least one sealing member located within said longitudinally extending duct, said sealing members being mounted so as to form at least two longitudinally extending flow passages, one of said longitudinally extending flow passages being connected to the liquid inlet means, and the second longitudinally extending flow passage being connected to the liquid outlet means, some of said sealing members comprising supply channels connecting the first longitudinally extending flow passage with a flow passage extending parallel to the membrane surfaces and some sealing members comprising discharge channels connecting a flow passage extending parallel to the membrane surfaces with the said second longitudinally extending flow passage.

3,847,819
SEAL FOR FLUID FILTER

Robert L. Firth, Minneapolis, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.
Continuation-in-part of Ser. No. 304,959, Nov. 9, 1972. This application Feb. 26, 1973, Ser. No. 327,738
Int. Cl. B01d *27/10;* **F16j** *15/48*
U.S. Cl. 210—444 **3 Claims**



1. A fluid filter, comprising:

a. a filter housing of relatively light material susceptible to flexing under pressure having a cylindrical main wall portion, and an inwardly sloping end wall portion terminating in a circular edge defining a circular open end smaller in diameter than the diameter of the main wall portion, and bottom wall means at the opposite end to thereby define a filter chamber;

b. a non-flexible cover member mounted on the open end, having an annular bottom web portion engaging said circular edge, said cover member having a depending peripheral flange portion that extends over the sloping end wall portion and over part of the main wall portion to define an annular sealing chamber between the cover member and the sloping end wall portion, said sealing chamber being generally triangular in cross-section;

c. a tubular filter element mounted in said filter chamber;

d. a first fluid passageway in said cover member leading to the interior of the filter element and a second fluid passageway in said cover member leading to the filter chamber exterior of the filter element;

e. a flexible, O-ring type seal in said sealing chamber having portions thereof in contact with said cover member and said sloping end wall portion to provide therewith a fluid tight seal between the housing and cover member;

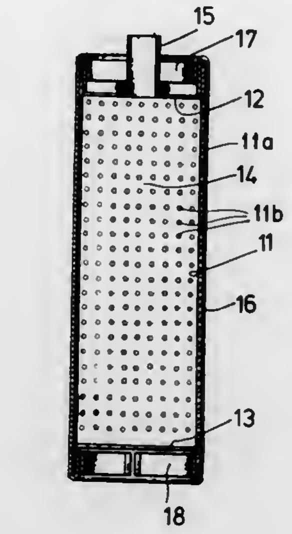
f. an annular groove formed in said web portion, having an outer peripheral wall formed by the peripheral flange portion, and an inner peripheral wall concentric therewith, said end wall portion having said circular edge positioned in said groove adjacent said inner peripheral wall; and

g. elongated clamping means connected to the cover member and to the bottom wall means at the opposite end of the housing to hold the cover member on the housing.

3,847,820
FILTERING APPARATUS

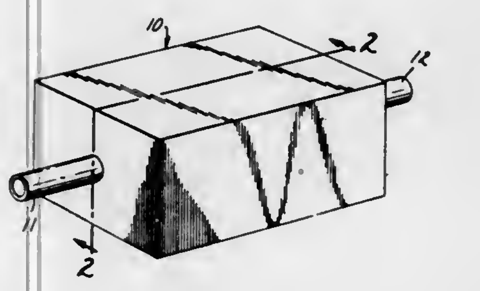
Derek Bernard Purchas, Holmcroft Heathside Park Rd., Holmcroft, England
Filed Apr. 11, 1973, Ser. No. 350,115
Claims priority, application Great Britain, May 17, 1972, 023069/72
Int. Cl. B01d *29/04*
U.S. Cl. 210—457 **8 Claims**

1. A filtering apparatus comprising a rigid tube having a planar outer circumferential surface and a plurality of holes therethrough along the length thereof, imperforate end walls in said tube inwardly from the ends thereof and tightly secured thereto to provide a filtered fluid chamber, a duct extending from one of said end walls communicating with said chamber to drain filtered fluid therefrom, a sheet of filter paper having a length greater than the circumference of the tube and a height greater than the length of the tube wrapped around said tube with one edge overlapping the other edge and having the top and bottom ends folded into the ends of the tube beyond the end walls, and split resilient clamping bands in the folded ends of the filter paper pressing the paper against the tube to lock the paper in tubular form around the tube whereby fluid being filtered will pass through the tubular wrapped paper pressing it against the planar surface of the rigid tube and also pressing together the overlapped edges of the paper.



3,847,821
SEPARATOR FOR REMOVING A DISPERSED LIQUID PHASE FROM A CONTINUOUS LIQUID PHASE

Dennis L. Krueger, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 19, 1973, Ser. No. 407,965
Int. Cl. B01d *25/16*
U.S. Cl. 210—488 **20 Claims**



1. A separator for treating a liquid to remove a dispersed liquid phase from a continuous liquid phase comprising (1) a housing having an inlet, an outlet, and a separation chamber between the inlet and outlet through which liquid being treated passes; and (2) a separator element that tightly occupies the inside of the separation chamber and comprises a plurality of discrete sections of coalescing and sorbing media interspersed in intimate contact with one another; the coalescing media having less resistance to liquid flow than the sorbing media, and extending longitudinally through the separator element so as to establish substantially continuous thin minimal-pressure-drop channels for liquid being treated, and directing dispersed liquid phase to the interface of the coalescing and sorbing media; and the sorbing media being wetted by the dispersed liquid phase in preference to being wetted by the continuous liquid phase, whereby the dispersed liquid phase is sorbed into the sorbing media.

3,847,822
ASYMMETRIC MEMBRANE OF POLYVINYL PYRROLIDONE-CELLULOSE ACETATE BLENDS FOR USE AS HEMODIALYSIS MEMBRANES

Harry F. Shuey, El Monte, Calif., assignor to the United States of America as represented by the Secretary, Department of Health, Education, and Welfare
No Drawing. Filed May 24, 1972, Ser. No. 256,512
Int. Cl. B01d *13/00, 39/16*
U.S. Cl. 210—500 **4 Claims**

1. An asymmetric hemodialysis membrane comprising a homogeneous mixture of polyvinyl pyrrolidone and cellulose acetate, said membrane being permeable to inulin and essentially impermeable to albumin.

3,847,823
OVERBASED HIGH PLUS LOW MOLECULAR WEIGHT SULFONATE WATERFLOOD ADDITIVE

Charles R. Clark, M. Duane Gregory, Oliver C. Kerfoot, and Fred C. Veatch, Ponca City, Okla., Delmar D. Krehbiel, Lubbock, Tex., and Carl D. Kennedy, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
No Drawing. Filed Feb. 26, 1973, Ser. No. 335,995
Int. Cl. C09k *3/00;* **E21b** *43/25*
U.S. Cl. 252—8.55 D **4 Claims**

1. A composition comprising an overbased mixture comprising a water-soluble alkali metal hydrocarbon sulfonate plus an oil-soluble alkali metal hydrocarbon sulfonate plus a base component which is an alkali metal hydroxide; the anionic waterflood additive being sufficiently overbased that the ratio: "weight of excess base component/weight of sulfonate" is about 0.03 to about 2.0.

3,847,824
SOLID STICK LUBRICANT FOR TAPPING HOLES

Michael James Marchitto, 6550 SW. 10th St., and Vincent James Landriscina, Jr., 721 SW. 64th Way, both of Pembroke Pines, Fla. 33023
Filed Mar. 13, 1970, Ser. No. 19,323
Int. Cl. C10m *5/12, 5/18, 5/24*
U.S. Cl. 252—12 **10 Claims**

1. A solid lubricant composition comprising a blended admixture of a major proportion of mineral lubricating oil, a minor proportion of the additive compounds: lead naphthenate, tricresyl phosphate and o-dichlorobenzene, each of said additive compounds being present in an amount of at least 0.1 percent by weight and sufficient amounts of hydrocarbon wax and higher fatty acid to provide a solid composition.

3,847,825
PARTIALLY CARBONIZED ORGANIC POLYMERS AS MATRICES FOR SELF-LUBRICATING FILMS AND COMPOSITES

Melvin T. Lavik and Ronald D. Hubbell, Kansas City, Mo., assignors to Midwest Research Institute, Kansas City, Mo.
No Drawing. Filed Nov. 8, 1972, Ser. No. 304,720
Int. Cl. C10m *7/06, 7/16, 7/18*
U.S. Cl. 252—12 **14 Claims**

1. A solid lubricant composition comprising a non-brittle, partially carbonized organic polymer which has been cured and pyrolyzed to a glasslike carbon, and particulate, solid phase lubricating pigments dispersed throughout,

the weight ratio of the lubricating pigments to the non-brittle, partially carbonized polymer being such as to provide said composition with a relatively low friction coefficient and long wear life,

said non-brittle, partially carbonized polymer having been formed by curing said polymer admixed with said lubricating pigments to an infusible, cross-linked state, and then pyrolyzing the cured admixture by heating the same to temperatures above the curing temperature in the range of from approximately 300°

C. to 1000° C. for a period of at least about three hours and sufficient to cause partial carbonization of the polymer and conversion to a glasslike carbon.

3,847,826
ANTIFRICTION COMPOSITION

Pavel Mikhailovich Ivanov, ulitsa Komsomola 5/7, kv. 7, Leningrad, U.S.S.R.

No Drawing. Filed Nov. 2, 1973, Ser. No. 412,436

Int. Cl. C10m *7/06, 7/28*

U.S. Cl. 252—12 **2 Claims**

1. An antifriction composition comprising polytetrafluoroethylene and copper sulphide wherein the copper sulphide is present from a small effective amount up to 52% by weight of the polytetrafluoroethylene.

3,847,827
CYCLIC SULFUR-CHLORINATED OIL AND PROCESS OF MAKING

Robert L. Dinsmore, Long Beach, and Herbert D. Ivey, Pasadena, Calif., assignors to Lubrication Company of America, Los Angeles, Calif.

No Drawing. Filed Sept. 10, 1973, Ser. No. 395,741

Int. Cl. C10m *1/38*

U.S. Cl. 252—48.8 **11 Claims**

1. A process which comprises reacting a normally liquid sulfur halide with an oil obtained from the cracking of petroleum said oil, containing as a major ingredient polynuclear aromatics and boiling between 350 and 800° F. and having separated therefrom by sulfuric acid treatment the majority of impurities which form a permanent sludge when reacted with a normally liquid sulfur halide, and separating any resulting precipitate and hydrogen halide formed therefrom to leave a stable and homogeneous cyclic oil having anti-weld properties, characterized by lack of offensive odor and containing up to about 20% total sulfur and up to about 5% total chlorine.

3,847,828
WORKING OF NON-FERROUS METALS

Edwin J. Latos, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed May 14, 1973, Ser. No. 360,264

Int. Cl. C10m *1/20, 1/24*

U.S. Cl. 252—56 R **6 Claims**

1. In the working of zirconium or a zirconium alloy which is predominantly zirconium in movable contact with another metal, the improvement which comprises lubricating the contacting surfaces of said zirconium or alloy and metal with lubricating amounts of a water-soluble polyglycol having a molecular weight of at least about 400.

3,847,829
CRYSTALLINE BISMUTH-CONTAINING OXIDES

Robert J. Bouchard, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 10, 1973, Ser. No. 387,479

Int. Cl. H01b *3/02*

U.S. Cl. 252—63.5 **10 Claims**

1. The crystalline bismuth-containing oxides of the formula

$$Bi_{2-x}M_xM'_{2-y}M''_yO_{7-z}$$

wherein

M is a rare earth metal of atomic number 57–71, lead, cadmium or ytrrium,
M′ is iron, gallium, or indium,
M″ is antimony, tantalum, or niobium,
x is a number in the range 0 to 1,
y is a number in the range 1 to 1.5, and
z is a number in the range 0 to 0.5.

3,847,830
STABILIZING PEROXYGEN COMPOUNDS BY ENVELOPING IN A WATER-DISPERSIBLE LAYER

Selwyn Donald Williams, Northwich, John Philip Leaver, Lymm, and David Abbott, Welwyn Garden City, England, assignors to Laporte Industries Limited, London, England

No Drawing. Filed Jan. 17, 1972, Ser. No. 218,574

Claims priority, application Great Britain, Jan. 27, 1971, 3,240/71

Int. Cl. C11d *7/54*

U.S. Cl. 252—186 **12 Claims**

1. A peroxygen-containing composition consisting essentially of a particulate normally unstable peroxygen compound and a water dispersible layer of from 1% to less than 15% by weight, based on the weight of the layer and of the peroxygen compound, of a solid water-insoluble compound selected from the group consisting of (1) fatty acids of greater than 8 carbon atoms, (2) alkanolamides of fatty acids of at least 8 carbon atoms, (3) glycerol esters of fatty acids of at least 8 carbon atoms, (4) long-chain aliphatic hydrocarbon alcohols, and (5) paraffin waxes, the layer enveloping the particles of peroxygen compound and at least partially stabilising them to decomposition.

3,847,831
CATALYST FOR PREPARING UNSATURATED NITRILES

Hendrik Bruins Slot and John W. Geus, Geleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed Sept. 29, 1970, Ser. No. 76,438

Claims priority, application Netherlands, Sept. 30, 1969, 6914739; Nov. 21, 1969, 6917539; Mar. 4, 1970, 7003066

Int. Cl. B01j *11/22*

U.S. Cl. 252—470 **8 Claims**

1. A process for the preparation of a catalyst system containing oxides of bismuth, molybdenum and iron which consists essentially in carrying out the steps of:

(A) forming an aqueous acid solution containing ions of bismuth, and ions of iron in an atomic ratio no greater than 0.4:1 relative to said bismuth ions, and an aqueous alkaline solution, injecting one of said solutions into the other while maintaining the pH of the resulting aqueous solution at a virtually constant value of at least about 7 whereby a precipitate of compounds of said ions is formed, and separating said precipitate from said resulting aqueous solution;

(B) forming a suspension of said precipitate in an aqueous medium, adjusting the pH of said suspension to a value of between about 2.5 and 7, and while heating and agitating said suspension, and maintaining the pH of said suspension at a value of greater than about 2.5, introducing an aqueous solution of ammonium molybdate into said suspension in an amount in excess of a molybdenum to bismuth atomic ratio of about 1:1 by an amount of molybdenum stoichiometrically equivalent to the quantity of iron precipitated in step (A), and at a rate no greater than 0.1 gram mole of MoO_4 per liter of suspension per hour, thereafter heating said suspension at or near the boiling temperature for a period of at least 6 hours whereby substantially all of said molybdenum is taken up by said precipitate.

3,847,832
PROCESS FOR MICROENCAPSULATING HYDROPHOBIC OIL DROPLETS AND PRODUCT OF SAID PROCESS

Hiroharu Matsukawa and Keiso Saeki, Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed June 1, 1971, Ser. No. 148,902

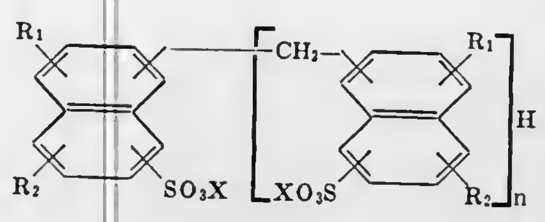
Claims priority, application Japan, June 1, 1970, 45/47,036

Int. Cl. B44d *1/44;* **B01j** *13/02*

U.S. Cl. 252—316 **7 Claims**

1. In a process of microencapsulating hydrophobic oil droplets by complex coacervation comprising the steps of providing an oil-in-water emulsion of hydrophobic oil droplets an aqueous solution of at least two hydrophilic colloid materials having opposite electric charges, at least one of the colloids being gellable, causing coacervation of the colloid materials by diluting the emulsion with water and/or adjusting its pH, gelling the encapsulating complex colloid material by cooling and prehardening the gelled material prior to hardening by adjusting the pH of the system to the alkali side by introducing therein an alkali agent and a hardening agent, the improvement which comprises adding a condensation product of a naphthalenesulfonic acid and formaldehyde to said hydrophilic colloid materials at a stage before said prehardening step,

said condensation product of said naphthalenesulfonic acid and formaldehyde having the following structural formula:



wherein R_1 and R_2 each represent a member selected from the group consisting of a hydrogen atom and an alkyl group having from 1 to 18 carbon atoms; X represents a member selected from the group consisting of a hydrogen atom and an alkali metal; and n represents a degree of polymerization ranging from 1 to 12,

said condensation product being employed in an amount between $\frac{1}{200}$ and $\frac{1}{30}$ of the total amount of said hydrophilic colloid materials.

3,847,833
FLEXIBLE ACTIVATED CARBON FIBERS MANUFACTURED FROM SALT IMPREGNATED CELLULOSIC FIBERS

Alan Bailey and Frederick Arthur Pomroy Maggs, Salisbury, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of Great Britain and Northern Ireland, London, England

No Drawing. Continuation-in-part of abandoned applications Ser. No. 1,556, Jan. 8, 1970, and Ser. No. 1,557, Jan. 8, 1970. This application Feb. 4, 1972, Ser. No. 223,782

Claims priority, application Great Britain, Jan. 8, 1969, 1,147/69, 1,148/69, 1,149/69

Int. Cl. C01b *31/08*

U.S. Cl. 252—425 **17 Claims**

1. A process for the production of a strong, flexible, highly activated fibrous carbon having a breaking strength of at least 30,000 p.s.i., a carbon tetrachloride sorbency of at least 50% by weight and sufficiently flexible to fold back upon itself without fracture around a radius of curvature of 0.5 mm., from a fibrous cellulosic material, said process comprising:

contacting the said fibrous cellulosic material with an aqueous solution containing between 1–30% by weight of at least one impregnant selected from the group consisting of halides of zinc, aluminum, barium, calcium, magnesium and iron to impregnate the fibrous carbohydrate material with between 0.1 and 10% by weight of the said impregnant cations,

drying the impregnated fibrous cellulosic material at a temperature in the range of 100° to 140° C.,

flexing the fibres of the dried material to restore a major proportion of any flexibility lost during the impregnation and drying of the fibrous cellulosic material,

carbonizing the material by heating in an inert atmosphere to a carbonizing temperature through the critical decomposition temperature range which extends for between 40° C. and 80° C. within the temperature limits 70° C. and 300° C. and maintaining the temperature within the said critical temperature range for a time which is at least fifteen minutes for a critical temperature range of 40° C. increasing progressively to at least thirty minutes for a critical temperature range of 80° C., and

activating the carbonized material by contact at an activation temperature between 600° C. and 1000° C. with an activating gas selected from the group consisting of steam and carbon dioxide until the activate has a carbon tetrachloride sorbency of at least 50% by weight.

3,847,834
STABILIZED COMPLEXES OF ALKALI METAL AND ORGANIC COMPOUND AND METHOD FOR THEIR PREPARATION

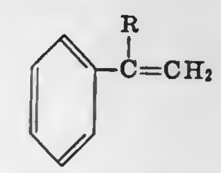
Kent S. Dennis, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 24, 1973, Ser. No. 409,339

Int. Cl. C07f *1/04*

U.S. Cl. 252—43 R **12 Claims**

1. A method of producing a complex of an organic compound of the formula



wherein R is phenyl or an alkyl having up to 4 carbon atoms and an alkali metal selected from the group consisting of sodium, potassium, rubidium, and cesium comprising contacting the organic compound and the alkali metal in a proportion of between about 0.5 and about 2 gram atomic weights of alkali metal per gram molecular proportion of organic compound at a temperature of between about 0° and about 50° C. in a solvent system comprising a major amount of hydrocarbon and a minor amount of ethylene glycol dimethyl ether.

3,847,835
PROCESS FOR MANUFACTURING A CATALYST, THE RESULTING CATALYST AND ITS USE IN A PROCESS FOR HYDROGENATING HYDROCARBONS

Jean Cosyns, Nanterre, France, assignor to Institut Francais du Petrole, des Carburants et Lubrifiants

Continuation-in-part of abandoned application Ser. No. 208,167, Dec. 15, 1971. This application May 1, 1973, Ser. No. 356,169

Claims priority, application France, Dec. 16, 1970, 7045509

Int. Cl. B01j *11/74*

U.S. Cl. 252—439 **12 Claims**

1. In a process for manufacturing a catalyst consisting essentially of an alumina carrier having a specific surface

of 120–500 m.²/g. and a pore volume of 0.2–0.9 cc./g. nickel sulfide or cobalt sulfide, and a sulfide of a group VIA metal, said sulfides being present in catalytic amounts, which process comprises impregnating the alumina carrier with a solution of compounds of said metals which form metallic oxides upon calcining; calcining the impregnated carrier; and sulfiding resultant calcined catalyst with a gas containing hydrogen sulfide, the improvement in said impregnating and calcining steps of: (1) impregnating said catalyst with a solution consisting essentially of a nickel or cobalt compound capable of forming an oxide upon calcining, drying and then calcining the impregnated product in the presence of air at 700–850° C.; and (2) impregnating resultant calcined product from step (1) with a solution consisting essentially of catalytic quantities of (a) a nickel of cobalt compound capable of forming an oxide upon calcining and (b) a compound of a group VIA metal capable of forming an oxide upon calcining, drying and then calcining the resultant impregnated product in air at 400–600° C., the amount of nickel or cobalt oxide incorporated in the carrier in the first step being sufficient to improve the stability of the catalyst so that the combination of steps (1) and (2) yields a catalyst having a higher stability during hydrogenation of diolefins than a corresponding catalyst prepared without the first high temperature calcining step.

3,847,836

NICKEL-URANIUM CATALYST

Thomas Nicklin, 39A Rochdale Road, Middleton, Manchester, England, and Frederick Farrington, Flat 4, Stanton St., Stretford, Lancashire, England

Continuation of application Ser. No. 8,359, Feb. 3, 1970, which is a continuation-in-part of application Ser. No. 651,116, July 5, 1967, which in turn is a continuation-in-part of application Ser. No. 432,899, Feb. 15, 1965, all now abandoned. This application July 11, 1972, Ser. No. 270,850

Int. Cl. B01j *11/06, 11/22*

U.S. Cl. 252—465 **7 Claims**

1. A catalyst composition suitable for use in the reforming of hydrocarbons with steam at an elevated temperature, which catalyst composition comprises:

(1) at least one member selected from the group consisting of nickel and nickel oxide,

(2) at least one member selected from the group consisting of uranoso-uranic oxide (U_3O_8) and uranium trioxide (UO_3), and

(3) a carrier,

the composition containing uranium, calculated as uranoso-uranic oxide or uranium trioxide, in an amount of from 5 to 30 percent based on the total weight of the catalyst composition, the ratio of uranium to nickel present in the catalyst composition, in the reduced form, being from about 0.45 to about 0.76:1, said catalyst composition having been produced in its oxidized form by impregnating the carrier with a solution of uranium and nickel salts and calcining said salts to the oxides.

3,847,837

CARBON DIOXIDE ABSORBENT GRANULES

Daniel A. Boryta, Downingtown, Pa., assignor to Foote Mineral Company, Exton, Pa.

No Drawing. Filed Apr. 25, 1972, Ser. No. 247,458

Int. Cl. B01j *11/00, 11/22, 11/32*

U.S. Cl. 252—468 **2 Claims**

1. Solid, particulate carbon dioxide absorbent granules selected from the group consisting of lithium hydroxide, barium hydroxide, calcium hydroxide, sodium hydroxide, lithium peroxide, sodium peroxide, lithium oxide, potassium superoxide and calcium oxide having finely-divided, non-hygroscopic metal oxide particles selected from the group consisting of titanium dioxide, zinc oxide, nickel oxide, stannic oxide, manganese sesquioxide, cobaltic oxide, lead oxide, ferric oxide, tungstic acid and chromic oxide adhering to the surface of said granules to render them substantially dust-free without substantially inhibiting the ability of the granules to absorb carbon dioxide, prepared by admixture of said absorbent granules with said non-hygroscopic metal oxide particles, said granules having adhering to the surface thereof from about 1 to about 25%, by weight, based on the combined weight of the carbon dioxide absorbent granules and adhering particles, of said metal oxide particles.

3,847,838

ANTISTATIC DISPERSION COMPRISING AT LEAST TWO KINDS OF ORGANIC SOLVENTS

Teiji Habu, Kyusaku Yoshida, and Kazuo Takahashi, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Chuo-ku, Tokyo, Japan

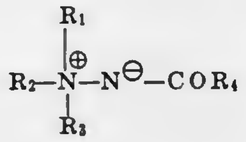
No Drawing. Filed Apr. 11, 1972, Ser. No. 243,449

Claims priority, application Japan, Apr. 17, 1971, 46/23,826

Int. Cl. G03c *1/82*

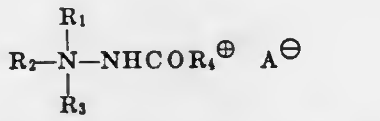
U.S. Cl. 252—500 **5 Claims**

1. An antistatic dispersion which comprises a protective colloid solution havnig dispersed therein a solution of an antistatic agent in at least two kinds of water-immiscible organic solvents having a lower specific gravity than the protective colloid substance, one kind of said solvents being selected from the Group A consisting of organic solvents of the phthalate, pyrrolidone and phosphate types and the other being selected from Group B consisting of benzyl alcohol, n-octyl alcohol, 2-ethylhexyl alcohol, n-decanol, heptadecanol, and glycerol wherein the antistatic agent is a compound selected from the group consisting of antistatic compounds having the general formulas



$$R_2-\underset{R_3}{\overset{R_1}{\overset{\oplus}{N}}}-N^{\ominus}-COR_4$$

and



$$R_2-\underset{R_3}{\overset{R_1}{N}}-NHCOR_4^{\oplus}\quad A^{\ominus}$$

wherein R_1, R_2 and R_3 individually mean an alkyl or aralkyl group; R_4 is an alkyl group, an aryl group or a hetero ring; and A is a halogen atom or a group XO_4 or BX_4 where X is halogen.

ERRATUM

For Class 252—522 see:
Patent No. 3,847,975

3,847,839

ALKOXYLATED FURFURYL ALCOHOL STRIPPING COMPOSITION AND METHOD

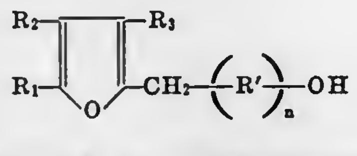
Donald P. Murphy, Madison Heights, and Henry Valatka, Detroit, Mich., assignors to Oxy Metal Finishing Corporation, Warren, Mich.

No Drawing. Filed Jan. 17, 1973, Ser. No. 324,281

Int. Cl. C11d *7/06, 7/32*

U.S. Cl. 252—544 **12 Claims**

1. A concentrate composition useful in paint stripping, consisting essentially of about 3–50 wt. percent of an accelerator consisting essentially of an alkoxylated furfuryl alcohol having the formula:



wherein R_1, R_2 and R_3 are independently selected from the group consisting of H, halogen and alkyl groups having not more than 6 carbon atoms; *n* is an integer not exceeding 2; and R′ is an alkoxy group having not more than 4 carbon atoms and about 50–97 wt. percent of an inorganic alkaline material containing a major portion of an alkali metal hydroxide.

3,847,840

MANUFACTURE OF ION-EXCHANGING SHAPED ARTICLES

Gerhard Kanig, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed July 30, 1973, Ser. No. 383,893

Claims priority, application Germany, Aug. 2, 1970, P 22 37 953.9

Int. Cl. C08f *41/12*

U.S. Cl. 260—2.1 E **1 Claim**

1. A process for the manufacture of microporous ion-exchanging shaped articles which comprises mixing together (a) a polyolefin selected from the group consisting of polyethylene, polypropylene, polybutene-1, poly-4-methyl-1-pentene, polyisobutylene, a nethylene/propylene copolymer, an ethylene/butene-1 copolymer, an ethylene/isobutylene copolymer and mixtures thereof, (b) the particulate crosslinked polymer obtained by polymerizing a monomer selected from the group consisting of styrene, a styrene derivative, acenaphthylene and mixtures thereof in emulsion or suspension in the presence of an aromatic divinyl compound selected from the group consisting of 1,2-divinylbenzene, 1,3-divinylbenzene, 1,4-divinylbenzene and mixtures thereof and (c) an inert solvent of low volatility, processing the resulting mixture into a shaped article, removing said solvent of low volatility therefrom and introducing ion-exchanging groups into said shaped article.

3,847,841

THIOSEMICARBAZIDO HEAVY METAL ADSORBING RESINS

Kensuke Motani, Akihiko Nakahara, and Nobuyuki Kuramoto, Tokuyama, Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi-ken, Japan

No Drawing. Filed Mar. 7, 1973, Ser. No. 339,382

Claims priority, application Japan, Mar. 11, 1972, 47/24,424, 47/24,425, 47/24,426, 47/24,427

Int. Cl. C08f *27/06, 27/08*

U.S. Cl. 260—2.2 R **2 Claims**

1. A heavy metal adsorbing resin consisting essentially of a polymer comprising:

A. a backbone polymer selected from at least one of polystyrene, polyvinyl chloride, a copolymer of vinyl chloride with another copolymerizable monomer, a graft copolymer of a rubbery substance to which vinyl chloride has been grafted, and a chlorinated polyolefin; and

B. a moiety attached to the backbone polymer which is selected from at least one thiosemicarbazide of the group consisting of —NHNHCSNHR and —NHCSNHNHR, wherein R is a hydrogen atom, alkyl moiety, aryl moiety, or acyl moiety.

3,847,842

METAL-CHELATING AND SOLVENT-RESISTANT FILAMENTARY STRUCTURE AND PROCESS FOR ITS PRODUCTION

Hideaki Suzuki and Haruo Togawa, Tokyo, and Akira Omori and Naoki Yamamoto, Sagamihara, Japan, assignors to Teijin Limited, Osaka, Japan

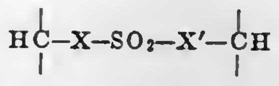
No Drawing. Filed June 26, 1973, Ser. No. 373,895

Claims priority, application Japan, June 30, 1972, 47/65,020

Int. Cl. C08f *27/06*

U.S. Cl. 260—2.2 R **6 Claims**

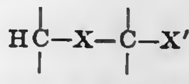
1. A solvent-resistant filamentary structure comprising at least 20% by weight of aromatic nuclear structural units derived from an aromatic monovinyl monomer, 2 to 40 out of 100 of said aromatic nuclear structural units being cross-linked by crosslinkages of the following formula (I)



$$H\underset{|}{\overset{|}{C}}-X-SO_2-X'-\underset{|}{\overset{|}{C}}H \tag{I}$$

wherein X and X′ are the same or different and each represent aromatic nuclear structural units derived from an aromatic monovinyl monomer,

said filamentary structure not containing a crosslinkage expressed by the formula



$$H\underset{|}{\overset{|}{C}}-X-\underset{|}{\overset{|}{C}}-X'$$

wherein X is the same as defined above and X′ is the same as defined above or a hydrogen atom,

and the remainder of said aromatic nuclear structural units, either partly or wholly, having incorporated therein a metal-chelating group.

3,847,843

THERMOSTABILIZERS

Franz-Josef Dany, Erftstadt Lechenich, Joachim Wortmann, Hurth, Joachim Kandler, Erftstadt Lechenich, and Jürgen Laubner, Erftstadt Liblar, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Jan. 4, 1973, Ser. No. 320,880

Claims priority, application Germany, Jan. 7, 1972, P 22 00 750.7

Int. Cl. C08g *22/44, 51/58*

U.S. Cl. 260—2.5 BB **5 Claims**

1. A process for stabilizing flame-proofing agent containing phosphorus and halogen in the production of polyurethane foam plastics, which comprises adding to a polyurethane foam forming reaction mixture having said flame-proofing agent therein at least one stabilizer selected from the group consisting of oleic acid ethylester, maleic acid dimethylester, dodecene-(1), oleyl alcohol and soy oil.

3,847,844

PROCESS FOR MAKING FIRE-RETARDANT POLYURETHANE FOAM USING CRUDE 4,4,4-TRICHLORO-1,2-EPOXYBUTANE

Stephen Fuzesi, Hamden, Conn., Milton Lapkin, Sudbury, Mass., and Roger J. Polak, Severna Park, Md., assignors to Olin Corporation

No Drawing. Continuation-in-part of application Ser. No. 113,761, Feb. 8, 1971, which is a continuation-in-part of application Ser. No. 872,359, Oct. 29, 1969, which in turn is a continuation-in-part of application Ser. No. 648,228, June 23, 1967, all now abandoned. This application Oct. 23, 1973, Ser. No. 408,637

Int. Cl. C08g *22/46, 22/16*

U.S. Cl. 260—2.5 AS **15 Claims**

1. In a process for preparing a polyurethane foam by reacting a polyether polyol with an organic polyisocyanate in the presence of a reaction catalyst and a foaming agent, said polyether polyol comprising the product of reacting 4,4,4, - trichloro - 1,2 - epoxybutane with a mixture of (1) dextrose and (2) water, a polyhydric aliphatic alcohol or a mixture of water and a polyhydric aliphatic alcohol, the improvement which comprises using said epoxybutane as a crude material having no more than about 5% by weight of volatile components and containing from about 15 to about 42% by weight of impurities and correspondingly from about 85 to about 58% of said epoxybutane, said crude epoxybutane being prepared by a process consisting essentially of

(a) reacting, at a temperature from about 35 to about 62° C., 4,4,4-trichloro-2-halobutanol with an aqueous solution of an alkali metal hydroxide or an alkaline earth metal hydroxide, said aqueous solution being employed in a sufficient proportion to provide at least a stoichiometric amount of hydroxide which is required to react with said 4,4,4, - trichloro - 2 -

halobutanol, thereby forming a two-phase reaction product mixture, namely, an aqueous phase and a non-aqueous phase containing said crude epoxybutane, and

(b) separating said two phases and recovering said crude epoxybutane.

3,847,845

SEPARATION AND PURIFICATION OF THE SAPONIFIED ETHYLENE-VINYL ACETATE INTERPOLYMERS

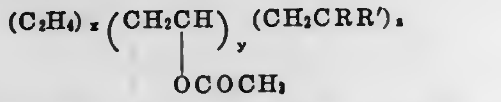
Rentaro Tada, Kenji Sato, and Kinichi Nishioka, Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 55,618, July 16, 1970. This application June 5, 1973, Ser. No. 367,288

Int. Cl. C08f *47/08*

U.S. Cl. 260—2.5 M **7 Claims**

1. A method of separating and purifying a saponified ethylene-vinyl acetate interpolymer from a substantially anhydrous solution containing 25 to 50 weight percent of said interpolymer which is obtained by saponification of an ethylene-vinyl acetate interpolymer having the general formula:



$$(C_2H_4)_x\Big(\underset{\textstyle |\atop \textstyle OCOCH_3}{CH_2CH}\Big)_y(CH_2CRR')_z$$

wherein R is hydrogen or methyl, R′ is —COOR, —C_6H_5, —Cl, —CN, methyl or vinyl; the ratio of $(Y+Z):X$ is within the range of 1.5:1 to 3:1 and the ratio $Z:Y$ is within the range of 0:1 to 0.1:1 under substantially anhydrous conditions and in the presence of methanol with 0.005 to 0.5 mols of an alkaline catalyst, based on the mol concentration of acetic acid radical in the interpolymer, the degree of saponification being at least 90 mol percent, which comprises:

(a) admixing water with said substantially anhydrous solution in an amount of at least 5 weight percent of the interpolymer up to an amount which does not cause gelation and separation of saponified interpolymer in said solution at the temperature of said solution, to produce an aqueous methanol solution having 15 to 45 weight percent of said saponified interpolymer,

(b) shaping said solution of saponified interpolymer into a sheet or strand of 1–10 mm. thickness and bringing said sheet or strand into contact with an aqueous coagulating bath to form a gelled microporous sheet or strand,

(c) washing said gelled microporous sheet or strand to remove the remaining alkaline catalyst and acetic acid salt produced during saponification, and

(d) drying said washed microporous sheet or strand.

3,847,846

COMPOSITION FOR PREPARING ELECTROCONDUCTIVE RESINS

Kiyohiko Asada, Hiratsuka, Japan, assignor to Kansai Paint Co., Ltd.

No Drawing. Filed June 13, 1972, Ser. No. 262,293

Claims priority, application Japan, July 1, 1971, 46/47,692

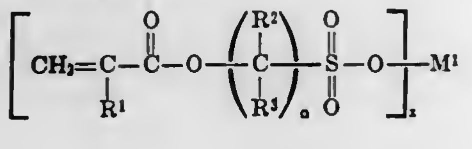
Int. Cl. C08f *3/50*

U.S. Cl. 260—13 **13 Claims**

1. A composition for preparing electroconductive resin which comprises:

(a) one or more members selected from the group consisting of:

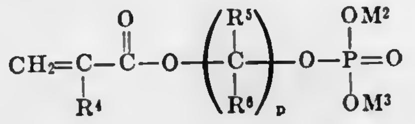
(I) compounds represented by the following general formula:



$$\left[CH_2{=}\underset{\textstyle R^1}{C}-\overset{\textstyle O}{\overset{\|}{C}}-O-\left(\underset{\textstyle R^3}{\overset{\textstyle R^2}{C}}\right)_n-\underset{\textstyle O}{\overset{\textstyle O}{S}}-O\right]_x-M^1$$

in which R^1 is a hydrogen atom or a methyl group; each of R^2 and R^3 is a hydrogen or halogen atom; n is an integer from 1 to 5; x is an integer from 1 to 3; and M^1 is a hydrogen atom, Na, Li, K, Ag, Cu, Mg, Ca, Zn, Ba, Al, ammonium or amine,

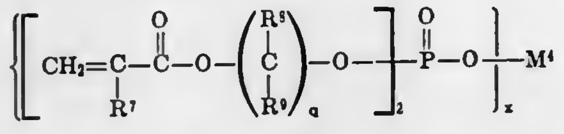
(II) compounds represented by the following general formula:



$$CH_2{=}\underset{\textstyle R^4}{C}-\overset{\textstyle O}{\overset{\|}{C}}-O-\left(\underset{\textstyle R^6}{\overset{\textstyle R^5}{C}}\right)_p-O-\underset{\textstyle OM^3}{\overset{\textstyle OM^2}{P}}{=}O$$

in which R^4 is a hydrogen atom or a methyl group; each of R^5 and R^6 is a hydrogen or halogen atom; p is an integer from 1 to 4; and each of M^2 and M^3 is a hydrogen atom, Na, Li, K, Ag, ammonium or amine, and

(III) compounds represented by the following general formula:



$$\left\{\left[CH_2{=}\underset{\textstyle R^7}{C}-\overset{\textstyle O}{\overset{\|}{C}}-O-\left(\underset{\textstyle R^9}{\overset{\textstyle R^8}{C}}\right)_q-O-\right]_2\overset{\textstyle O}{\overset{\|}{P}}-O\right\}_x-M^4$$

in which R^7 is a hydrogen atom or a methyl group; each of R^8 and R^9 is a hydrogen or halogen atom; q is an integer from 1 to 4; x is an integer from 1 to 3; and M^4 is a hydrogen atom, Na, Li, K, Ag, Cu, Mg, Ca, Zn, Ba, Al, ammonium or amine, and

(B) compounds which contain vicinal epoxy groups in the molecules.

3,847,847

PROCESS FOR PREPARING PIGMENTED ACRYLIC DISPERSION LACQUER COATING COMPOSITIONS BY USING CELLULOSE ACETATE BUTYRATE RESIN

Gary W. Orvis, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 22, 1972, Ser. No. 317,379

Int. Cl. C08b *21/08;* **C09d** *3/14, 3/80*

U.S. Cl. 260—17 R **9 Claims**

1. An improved process for preparing a pigmented acrylic resin dispersion lacquer coating composition which comprises the following steps:

(1) blending together the following constituents to form a pigment/polymer blend

15–50% by weight of a pigment;

15–35% by weight of cellulose acetate butyrate having a butyryl content of about 30–55% by weight and a viscosity at 25° C. of about 0.5–5 seconds measured according to ASTM D–1343–56;

15–55% by weight of a film-forming acrylic resin; and

0–20% by weight of an organic plasticizer for said acrylic resin;

(2) heating the pigment/polymer blend prepared in step (1) to about 30–110° C. while mixing and applying a vacuum of at least 20 inches of mercury to form a powder;

(3) mixing the powder under high shear conditions by charging the powder into a two roll mill having one hot roll at about 65–125° C. and a cold roll at about 0–30° C. for about 5–40 minutes while applying 75–400 foot pounds per gram of charge per minute to form pigment chips;

(4) forming a mill base having a solids content of about 20–60% by weight, by dissolving the chips prepared in step (3) in an organic solvent for the chips; and

(5) blending the mill base prepared in step (4) with an acrylic resin dispersion lacquer coating composition comprising 10–60% by weight of a film-forming

binder of an acrylic resin dispersed in an organic liquid to form a pigmented coating composition having a pigment to binder ratio of about 2:100 to about 70:100;

wherein said acrylic resin comprises

a graft copolymer having a backbone (A) and one or more side chains (B), the backbone (A) being a polymeric segment of units (a) and up to 15% by weight of units (b), said (b) units providing available active grafting sites for graft polymerization, and each side chain (B) above being a polymeric segment, (A) and (B) being different from each other, and (a) and (B) each being composed of at least 50% by weight of units of esters of acrylic, methacrylic and/or ethacrylic acid; and

wherein the graft copolymer is selected from the group consisting of

a copolymer prepared by polymerizing methyl methacrylate/allyl methacrylate/diethylamino methacrylate/2-ethyl hexyl acrylate to form a graft copolymer in which the (a) monomer units of the (A) segment consist of methyl methacrylate; and (b) monomer units of (A) segment consist of allyl methacrylate and diethylaminoethyl methacrylate, and the monomer units of (B) segment consists of 2-ethylhexyl acrylate; and

a copolymer prepared by polymerizing methyl methacrylate/isodecyl methacrylate/methacrylic acid/acrylonitrile to form graft copolymer in which the (a) monomer units of the (A) segment consist of methyl methacrylate, isodecyl methacrylate, methacrylic acid, and (b) monomer units of the (A) segment consist of allyl methacrylate and monomer units of the (B) segment consist of acrylonitrile.

3,847,848

TWO-PART ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER COMPOSITIONS

Melvin D. Beers, Ballston Lake, N.Y., assignor to General Electric Company

No Drawing. Filed Dec. 4, 1972, Ser. No. 311,487

Int. Cl. C08g *51/72*

U.S. Cl. 260—18 S **28 Claims**

1. A room temperature vulcanizable silicone rubber composition suitable for molding applications with deep section cure and knotty tear comprising:

(a) a base linear fluid organopolysiloxane containing terminal silicon-bonded hydroxy groups and having a viscosity of 1000 to 10,000,000 centipoise when measured at 25° C., the organic groups of said organopolysiloxane being selected from the class consisting of (I) a monomeric organo silicate corregenated monovalent hydrocarbon radicals, and cyanoalkyl radicals,

(b) from 1 to 15% by weight of a silicate based on the linear organopolysiloxane selected from the class containing of (I) a monomeric organo silicate corresponding to the general formula,

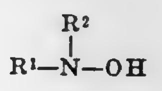
$$(R^5O)_3SiR^6$$

where R^5 is a radical selected from the class consisting of monovalent hydrocarbon radicals, halogenated monovalent hydrocarbon radicals and cyanoalkyl radicals, R^6 is selected from the class consisting of alkyl, haloalkyl, aryl, haloaryl, alkenyl, cycloalkyl, cycloalkenyl, cyanoalkyl, alkoxy and aryloxy radicals and (II) a liquid partial hydrolysis product of the aforementioned organosilicate,

(c) from 0.1 to 5% by weight based on the linear organopolysiloxane of a catalyst which is a metallic salt of an organic monocarboxylic or dicarboxylic acid in which the metal ion is selected from the class consisting of lead, tin, zirconium, antimony, iron, cadmium, barium, calcium, titanium, bismuth and manganese, and

(d) from 5% to 300% by weight based on the linear organopolysiloxane of a treated silica filler product prepared by intimately contacting per 100 parts of said silica filler having a surface area of at least 20 square meters per gram and containing from 0.2 to 2.0% by weight of moieties selected from the class consisting of hydroxyl groups, water and mixtures thereof with

(1) from ½ part to 5 parts of a hydroxyl amine having the formula,



$$R^1-\underset{}{\overset{\textstyle R^2}{\overset{|}{N}}}-OH$$

(2) from 2 to 25 parts of a cyclic siloxane of the formula,

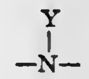
$$(R_2{}^3SiO)_n$$

and

(3) from 1 to 20 parts of a silyl nitrogen compound of the formula,

$$(R_3{}^4Si)_aX$$

wherein the above additives are simultaneously contacted with said filler at a temperature in the range of 100 to 180° C. and (II) removing residual amounts of said additives from the filler, when R^1 is selected from the class consisting of monovalent hydrocarbon radicals, R^2, R^3 and R^4 are all selected from the class consisting of hydrogen, monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals, n varies from 3 to 4, a is a whole number that varies from 1 to 2, X is selected from the class consisting of —NR^5Y, —$ONR_2{}^5$, and



$$-\overset{\textstyle Y}{\overset{|}{N}}-$$

where R^5 is selected from monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals and Y is selected from hydrogen and R^5 radicals.

3,847,849

WATER SOLUBLE RESINS AND PROCESS FOR THE PREPARATION THEREOF

Heinrich Lackner, Graz, Austria, assignor to Vianova-Kunstharz, A.G., Vienna, Austria

No Drawing. Filed Jan. 16, 1968, Ser. No. 698,108

Claims priority, application Austria, Jan. 19, 1967, A 541/67

Int. Cl. C08g *37/16, 37/32, 53/18*

U.S. Cl. 260—19 EP **25 Claims**

1. A process for producing water soluble synthetic resins comprising the steps:

(A) forming a water insoluble epoxy-free precondensate having reactive hydroxyl groups by reacting at an elevated temperature;

(1) a polyepoxide having an ether linkage and a maximum of two epoxide groups per molecule, said polyepoxide having a molecular weight of from 200 to 3,000.

(2) a heat reactive compound comprising a thermosetting material having a reactive hydroxyl group to preferentially react with said epoxide group selected from the group consisting of phenolic resins, aminoplast resins which are aldehyde condensation products of melamine, guanamines, urea, unetherified or etherified with mono- or polyhydric alcohols, and etherified and non-etherified methylol compounds of acryl amide and methacryl amide polymers,

(B) thereafter reacting the precondensate formed in (A) with a polycarboxylic acid having at least two carboxyl groups per molecule or anhydrides of said acid, the weight ratio between the precondensate and the polycarboxylic acid being sufficient to produce a reactive product having an acid number of from about 40 to 150;

(C) solubilizing the water insoluble reaction product of (B) by adding a nitrogen base thereby neutralizing the free carboxyl groups.

3,847,850
INK BINDER

Albert Rudolphy, Wiesbaden-Biebrich, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
No Drawing. Continuation of abandoned application Ser. No. 887,766, Dec. 23, 1969. This application Aug. 28, 1972, Ser. No. 284,066
Int. Cl. C08g *37/16, 37/20*
U.S. Cl. 260—20 12 Claims

1. A printing ink binder comprising the reaction product of (a) an oil modified alkyd resin derived from at least one of the phthalic acids selected from the group consisting of isophthalic acid, o-phthalic acid, and terephthalic acid, and from a mono- or polyhydric alcohol having up to 24 carbon atoms, said alkyd resin containing at least 60% by weight of at least one fatty acid or a drying or semi-drying oil; (b) a novolak having a melting point of at least 100° C.; and (c) a drying or semi-drying oil.

3,847,851
THERMOSETTING SYNTHETIC POLYMER DISPERSIONS AND PROCESS FOR PRODUCTION THEREOF

Hideyoshi Tugukumi, Sakai-shi, and Mitsuhiro Matsuda, Tondabayashi-shi, Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaki-shi, Japan
Filed June 13, 1973, Ser. No. 369,765
Claims priority, application Japan, June 16, 1972, 47/60,215, 47/60,216
Int. Cl. C08f *45/28;* **C09d** *3/48*
U.S. Cl. 260—22 CB 10 Claims

1. A thermosetting synthetic polymer dispersion comprising a mixture of

(I) a synthetic polymer dispersion comprising particles of a copolymer formed from (A) a copolymerizable ethylenically unsaturated monomer and (B) a copolymerizable ethylenically unsaturated monomer having a chemically reactive cross-linking group and a protective layer formed around said copolymer particles, which is composed of a stabilizer (i) having a component compatible with said copolymer or beng chemically bonded thereto and (ii) being solvated in an organic liquid having no polarity or a low polarity, said copolymer particles being stably dispersed in the organic liquid by said protective layer and having an average particle size of 0.1 to 10μ, and

(II) a synthetic polymer dispersion comprising particles of a copolymer formed from (A) a copolymerizable ethylenically unsaturated monomer and (C) a copolymerizable ethylenically unsaturated monomer having a complementary, chemically reactive cross-linking group capable of reacting with the chemically reactive cross-linking group of the particles in dispersion (I) and a protective layer formed around said copolymer particles, which is composed of a stabilizer (i) having a component compatible with said copolymer or being chemically bonded thereto and (ii) being solvated in an organic liquid having no polarity or a low polarity, said copolymer particles being stably dispersed in the organic liquid by said protective layer and having an average particle size of 0.1 to 10μ.

3,847,852
OUTDOOR DEGRADABLE HYDROCARBON PLASTIC

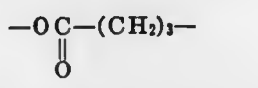
Roy A. White, Somers, Conn., and Stanley A. Margosiak, Springfield, Mass., assignors to De Bell & Richardson, Inc., Enfield, Conn.
No Drawing. Filed Aug. 23, 1972, Ser. No. 282,946
Int. Cl. C08f *45/04, 45/14*
U.S. Cl. 260—23 H 6 Claims

1. An ultraviolet degradable plastic article consisting essentially of:

(a) 100 parts by weight of hydrocarbon resin consisting of at least 65% of the monomers propylene, butylene, pentene or hexene content, said resin being a homopolymer of one of said monomers, an interpolymer of two or more of said monomers, or an interpolymer of one or more of said monomers with up to 35% ethylene;

(b) from a minimum in the range of 0.1 to 1 part to a maximum in the range of 8–15 parts by weight of a U.V. sensitizer-promoter selected from the group consisting of

(1) Oxides of the elements silicon, tin, lead, aluminum, bismuth, antimony and magnesium; and oxides of said elements dispersed by fatty or rosin acid;
(2) Silicates of Group IIA of the Periodic Table; silicates of aluminum, bismuth, antimony, tin, and lead; and silico aluminates of Group IA;
(3) Sulfates of barium, strontinum, calcium and lead; and basic sulfates of bismuth and antimony;
(4) Carbonates of Group IIA; and carbonates of aluminum, tin, lead, bismuth and antimony;
(5) Phosphates of Group IIA; and phosphates of aluminum, tin, lead, bismuth and antimony;
(6) Fatty acid metal salts wherein the metal is aluminum, tin, lead, antimony, bismuth or a metal of Group IIA or Group IIB of the Periodic Table, and the fatty moiety is oleic acid or an acid moiety of the formula


$$-\mathrm{O}\underset{\underset{\mathrm{O}}{\|}}{\mathrm{C}}-(\mathrm{CH}_2)_3-$$

$(\mathrm{CH}_2)_{1-18}\mathrm{H}$; or hydroxystearic acid;

said minimum quantity being 1 part by weight for said groups (1) to (5) and sufficient to provide a surface area per 100 grams of resin of at least 10 m.^{2}, and being 0.1 parts by weight for said group (6);

said maximum quantity of group (6) being 15 parts by weight and of group (1) to (5) being determined by the U.V. screening power of said sensitizer-promotor as determined from the refractive index according to the formula:

$$15-17.1\text{ (refractive index minus 1.7) times }\frac{\text{(thickness of article in thousandths of an inch)}}{0.020};$$

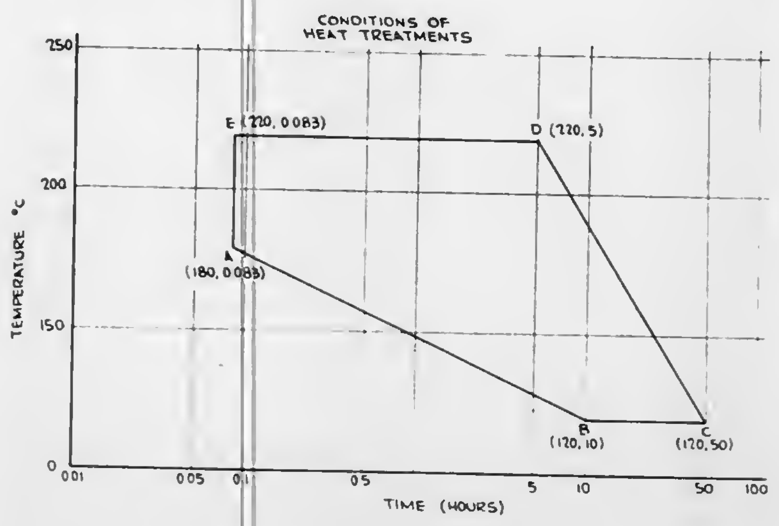
said sensitizer-promoter having a very fine particle size no greater than 3.4μ and sufficiently fine to provide an external surface area no less than 0.7 m.^{2}/gm. of said sensitizer-promoter, and—for members of the groups (1) to (5) having a refractive index greater than 1.564—sufficiently fine so that the surface area of the sensitizer-promoter particles is at least equal to

$$A=10^{2.44\text{ (refractive index minus 1.564)}}\text{m.}^2\text{/gm.};$$

and wherein said article is essentially U.V. transparent and has a maximum thickness of about 80 mils.

3,847,853
PROCESS FOR THE PREPARATION OF VINYL CHLORIDE RESINS HAVING GOOD THERMAL STABILITY

Tsunao Suzuki, Yokohama, Mitsushi Senuma, Chigasaki, Ichiro Takakura, Yokohama, and Toshio Masuda, Tokyo, Japan, assignors to Nippon Zeon Company, Ltd., Tokyo, Japan
Continuation-in-part of application Ser. No. 102,882, Dec. 30, 1970. This application Oct. 24, 1972, Ser. No. 300,111
Claims priority, application Japan, Dec. 30, 1969, 45/105,484
Int. Cl. C08f *3/30, 45/58*
U.S. Cl. 260—23 XA 5 Claims



1. A process for the preparation of vinyl chloride resins having excellent thermal stability, which comprises:

(A) heat treating a vinyl chloride resin with 30 to 1,000 parts by weight per 100 parts by weight of the vinyl chloride resin of at least one compound selected from the group consisting of water, methanol, ethanol, propanol, butanol, pentanol, hexanol, ethylene glycol, propylene glycol, and glycerine, under the temperature and time conditions shown in the accompanying drawing by a pentagonal region formed by connecting points A, B, C, D, and E, wherein

(1) point A represents a temperature of 180° C. and a time of 0.083 hours,
(2) point B represents a temperature of 120° C. and a time of 10 hours,
(3) point C represents a temperature of 120° C. and a time of 50 hours,
(4) point D represents a temperature of 220° C. and a time of 5 hours,
(5) point E represents a temperature of 220° C. and a time of 0.083 hours, and

(B) thereafter removing the compound or mixture of compounds from the reaction system.

3,847,854
PREFERENTIAL PLASTICIZATION OF IONOMETRIC COMPOUNDS

Nathan H. Canter, Edison, and Donald J. Buckley, Sr., Plainfield, N.J., assignors to Esso Research and Engineering Company
No Drawing. Continuation of abandoned application Ser. No. 103,902, Jan. 4, 1971. This application July 27, 1973, Ser. No. 383,350
Int. Cl. C08d *11/02*
U.S. Cl. 260—23.7 M 14 Claims

1. A composition of matter consisting essentially of an ionically cross-linked sulfonated elastomeric polymer in combination with a preferential plasticizer, said plasticizer being dispersible in but not completely molecularly soluble in said polymer, being liquid during processing of said polymer, having a melting point at least 25° above the contemplated use temperature of said polymer and not more than 50° below a preselected processing temperature for said polymer and having at least one functional constituent which exhibits a bond moment whose absolute value is at least 0.6 Debyes wherein said functional constituent may be independently selected from the group consisting of C—O, P—O, S—H, C—Cl, C—Br, C—F, C—I, S=O, and N—O; provided, however, where said preferential plasticizer is a volatile plasticizer said plasticizer is normally liquid at ambient temperatures and has a boiling point with an upper limit in the range of about 120° to about 190° C. and it is incorporated into the composition at about 0.25 to about 15 wt. percent based on the ionically cross-linked polymer and where the preferential plasticizer is a non-volatile plasticizer it is incorporated into the composition at about 0.5 to about 4 wt. percent based on the ionically cross-linked polymer.

3,847,855
WATER-BORNE LATICES

Thomas Larry Dawson, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Dec. 7, 1972, Ser. No. 312,898
Int. Cl. C08c *11/72;* **C08d** *9/14*
U.S. Cl. 260—23.7 A 12 Claims

1. In a process for the production of water-based latices of copolymers of hard monomers and soft monomers useful as coating compositions, the steps of homogenizing an aqueous mixture consisting essentially of (i) said monomers, (ii) a monomer-soluble initiator and (iii) an anionic ammonium salt of a fatty acid of from 10 to 26 carbon atoms as the fugitive type surfactant at a temperature below the polymerization temperature of said mixture, heating and stirring said homogenized aqueous mixture at a polymerization temperature sufficient to cause said monomers to undergo polymerization, and recovering the copolymer latex; said hard monomer being a monomer whose homopolymer has a glass transition temperature greater than 40° C. and said soft monomer being a monomer whose homopolymer has a glass transition temperature less than 40° C.

3,847,856
PAPER COATING COMPOSITIONS

Gerhart Hermann Mueller, 7 An der Froschlache, and Kurt Wendel, 8 Beethovenstrasse, both of 6700 Ludwigshafen, Germany
No Drawing. Filed Sept. 25, 1972, Ser. No. 291,660
Int. Cl. C08f *29/50, 33/08*
U.S. Cl. 260—29.6 RB 6 Claims

1. An aqueous paper coating composition containing, for every 100 parts by weight of finely divided pigment, from 2 to 25 parts by weight of a synthetic binder comprising polymers of monovinyl aromatic monomers and acrylates of C_{1-12} non-tertiary alkanols and/or methacrylates of C_{4-12} alkanols, wherein the binder consists of

(A) a mixture of

(a) an emulsion polymer of from 65 to 100% by weight of a mixture of monovinyl aromatic monomers and from 0 to 20% by weight of said monomers of acrylonitrile, from 0 to 35% of acrylates and/or methacrylates and from 0 to 10% by weight of olefinically unsaturated monomers containing reactive groups selected from the group consisting of monoethylenically unsaturated carboxylic acids containing 3 to 5 carbon atoms, their mono- and di-N-alkylamides, N-methylolamides, etherified N-methylolamides, maleic half esters and itaconic half esters, and

(b) an emulsion polymer of from 80 to 100% by weight of acrylates and/or methacrylates, from 0 to 20% by weight of monovinyl aromatic monomers and/or acrylonitrile and from 0 to 10% by weight of olefinically unsaturated monomers containing reactive groups selected from the group consisting of monoethylenically unsaturated carboxylic acids containing 3 to 5 carbon atoms, their mono- and di-N-alkylamides, N-methylolamides, etherified N-methylolamides, maleic half esters and itaconic half esters, and/or

(B) a polymer (c) which has been prepared in two stages and wherein monomers of polymer (b) or (a) have been emulsion polymerized in an aqueous dispersion of a polymer (a) or (b) respectively in the same quantities as those used in the manufacture of said polymers (b) or (a),

the proportions of polymer (a) and polymer (b) and the proportions of the first and second stages of polymer (c) being such that the total quantities of monomers used are equal to the amounts of said monomers contained in a conventionally prepared random copolymer having a glass temperature of from −20° to +30° C.

3,847,857

STAIN RESISTANT COATING COMPOSITION

Thomas H. Haag, Feasterville, and Benjamin B. Kine, Elkins Park, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 263,375, June 5, 1972, which is a continuation-in-part of application Ser. No. 49,190, June 23, 1970, which in turn is a continuation-in-part of application Ser. No. 679,973, Nov. 2, 1967, all now abandoned. This application Nov. 5, 1973, Ser. No. 412,846

Int. Cl. C09d *3/74*

U.S. Cl. 260—29.6 RW **25 Claims**

1. An aqueous coating composition comprising

(1) a binder of a stable aqueous dispersion of a water-insoluble addition polymer, the dispersed particles of which have a size in the range of 0.05 to 1.0 microns, selected from vinyl ester polymers, acrylic and methacrylic ester polymers or vinylhydrocarbon polymers and

(2) from about 1 to 50% by weight, based on the weight of binder, of

(A) a sedimentation stably dispersed, cross-linked, water-insoluble vinyl addition emulsion copolymer, having a particle size in the range of 0.05 to 0.3 microns, of a mixture of

(a) from about 5 to 70% by weight of one or more monoethylenically unsaturated monomers containing an amine or quaternary ammonium group in base form,

(b) from about 1 to 50% by weight of one or more cross-linking polyethylenically unsaturated monomers having at least two non-conjugated points of ethylenic unsaturation and

(c) from 0 to about 89% by weight (to make 100%) of at least one monoethylenically unsaturated monomer of neutral or nonionic character or

(B) a sedimentation stably dispersed, water-insoluble linear or cross-linked vinyl addition emulsion copolymer, having a size in the range 0.05 to 0.3 microns, of a mixture of

(a) from about 5 to 70% by weight of one or more monoethylenically unsaturated monomers containing an amine or quaternary ammonium group in salt form, the counterions of the salt being derived from boron, chromium, molybdenum or tungsten,

(b) from 0 to 50% by weight of one or more cross-linking polyethylenically unsaturated monomers having at least two non-conjugated points of ethylenic unsaturation, and the balance

(c) to make 100%, of one or more monoethylenically unsaturated monomers of neutral or nonionic character, the non-volatile content of the composition being from about 30 to 70% by weight.

3,847,858

CEMENTITIOUS COMPOSITIONS AND METHODS

Louis H. Eilers, Inola, and Christ F. Parks, Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Application July 12, 1971, Ser. No. 161,875, now Patent No. 3,746,725, which is a continuation-in-part of application Ser. No. 17,290, Mar. 6, 1970, now Patent No. 3,624,018, which in turn is a continuation of application Ser. No. 486,530, Sept. 10, 1965, now Patent No. 3,511,313. Divided and this application Nov. 21, 1972, Ser. No. 308,490

Int. Cl. C08f *45/34*

U.S. Cl. 260—33.2 R **6 Claims**

1. A composition of matter which comprises a liquid slurry of (a) from about 0.1 to about 2 parts by weight of a water-soluble carbamoyl polymer per part by weight of a liquid, gel forming organo solvent therefor composed of a liquid organic non-solvent for the polymer selected from the group consisting of propylene glycol, water-miscible alkylene oxide polymers having molecular weight up to about 600 and water-miscible alkyl and aryl ethers of the polymers wherein the etherifying moiety contains from 1 to 12 carbons and (b) at least about 0.05 part by weight per part by weight of the non-solvent, of an organic solvent for the polymer, the amount of the latter being sufficient to render the liquid mixture a solvent for the polymer, said organic solvent being pentaerythritol.

3,847,859

RAPID-SETTING POLYURETHANES CONTAINING SUBSTITUTED HYDROXYL-CONTAINING AROMATIC COMPOUNDS AS MODIFIERS

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 29, 1973, Ser. No. 392,591

Int. Cl. C08g *51/34*

U.S. Cl. 260—33.4 UR **8 Claims**

1. A solid, rigid, non-cellular urethane polymer having a density of at least about 1 gram/cc. resulting from admixture of the components of a composition comprising

A. an active hydrogen-containing component selected from

(1) a polyether polyol having a hydroxyl equivalent weight of between about 75 and about 230 and containing from 3 to about 8 hydroxyl groups per molecule,

(2) a dihydroxyl-containing compound having a hydroxyl equivalent weight of less than about 250, and

(3) mixtures thereof;

B. an organic polyisocyanate;

C. a modifier component which moderates the reaction between Components (A) and (B) without substantial reaction therewith comprising

(1) 50–100% by weight of, as a modifier, a substituted aromatic compound containing at least one aromatic hydroxyl group and at least one substituent which contains at least 3 carbon atoms attached to each irng containing an aromatic hydroxyl group or mixtures thereof; and

(2) 0–50% by weight of a co-modifier selected from

(a) organic liquid compounds having a boiling point above about 150° C.,

(b) liquid halogenated aliphatic compounds containing a hydroxyl group and having a boiling point of less than about 150° C., or

(c) mixtures thereof;

D. a non-amine catalyst for urethane formation; wherein components (A) and (B) are present in quantities such that the NCO:OH ratio is from about 0.8:1 to about 1.5:1; the quantities of component (C) being from about 10 to about 50 percent by weight based upon the combined weight of components (A), (B) and (C); with the provision that when component (A–2) is employed as the sole component of (A) then component (B) has a functionality of at least about 2.5; and when component (A–1) is an amine initiated polyol and is employed as the sole component of component (A), then component (D) need not be present; and wherein said polymer can be demolded within less than about 5 minutes, without the application of an external source of heat, after admixture of the components of said composition.

3,847,860

ADHESIVE AGENTS COMPRISING PHENOLIC RESINS AND A MIXTURE OF SILANES

Claus-Dieter Seiler, Rheinfelden, Hans-Joachim Vahlensieck, Wehr, Baden, and Hans Junger, Troisdorf, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, West Germany

No Drawing. Continuation of abandoned application Ser. No. 90,214, Oct. 29, 1970. This application May 8, 1973, Ser. No. 358,752

Claims priority, application Germany, Oct. 29, 1969, P 19 54 354.5

Int. Cl. C08g *51/04;* **C08k** *1/02*

U.S. Cl. 260—38 **15 Claims**

1. A composite shaped article consisting essentially of an inorganic material having an oxidic surface containing an hydroxyl group and a mixture of at least two distinct silanes, one of which is an aminopropyltrialkoxysilane and another of which is bis-aminopropyltrialkoxysilane or tris-aminopropyltrialkoxysilane, the alkyl group of said silanes having 1 to 3 carbon atoms therein which each silane contributing at least 5 weight percent to the mixture, said composite article containing a thermo or cold setting phenolic resin or thermo or cold setting phenolic resin modified by urea or thermo or cold setting phenolic resin modified by a furan compound selected from the group consisting of furfuryl alcohol and furfural.

3,847,861

POLYETHYLENE TEREPHTHALATE

Theodore Largman, Morristown, and Herman Stone, Convent Station, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 180,516, Sept. 14, 1971. This application Mar. 12, 1973, Ser. No. 340,636

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 R **12 Claims**

1. A composition comprising:

(a) polyethylene terephthalate

(b) from 0.5 to 10 weight percent of finely particulate red phosphorus

(c) from 2.0 to 5.0 weight percent of a metal oxide selected from the group consisting of MgO, TiO_2, ZnO, MoO_3, Al_2O_3, Zr_2O_3, Cr_2O_3, Wo_2O_3, B_2O_3, MnO_2, CdO, SnO, Pb_2O_3, Bi_2O_3, Sb_2O_5.

3,847,862

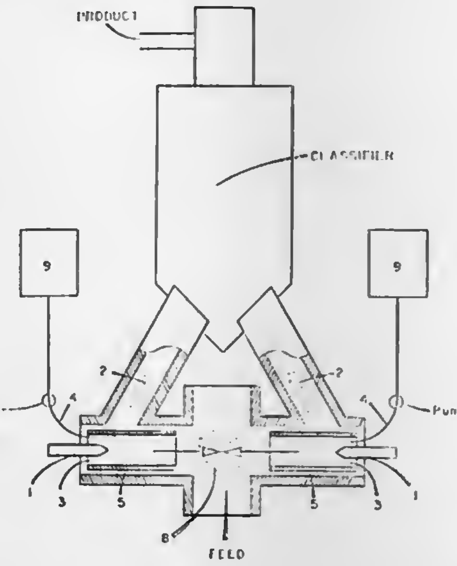
RUBBER COMPOSITIONS CONTAINING FINELY DIVIDED CARBON TREATED WITH METHANOL

William W. Gotshall, Orchard Lake, Mich., assignor to Marathon Oil Company, Findlay, Ohio

Application Aug. 10, 1970, Ser. No. 62,688, which is a continuation-in-part of application Ser. No. 666,011, Sept. 7, 1967. Divided and this application Mar. 24, 1972, Ser. No. 237,818

Int. Cl. C08c *11/18*

U.S. Cl. 260—41.5 R **4 Claims**



1. Vulcanizable rubber formulations containing at least 10% by weight of finely divided carbon product produced by a process comprising comminuting coke in a non-oxidizing atmosphere to an average particle size below about 2.5 microns and contacting it with from about 0.1 to about 10% based on the weight of the coke, of methanol during or after said comminuting, wherein the finely divided coke particles are thereafter protected from oxidation until compounded with said polymeric materials.

3,847,863

THERMOSET MOLDING POWDERS EMPLOYING GLYCIDYL METHACRYLATE-FUNCTIONAL POLYMERS AND MONOMERIC ANHYDRIDE CROSSLINKING AGENTS AND MOLDINGS THEREOF

Santokh S. Labana, Dearborn Heights, and Ares N. Theodore, Farmington, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Continuation of abandoned application Ser. No. 209,346, Dec. 17, 1971. This application Feb. 15, 1974, Ser. No. 443,184

Int. Cl. C08f *45/10*

U.S. Cl. 260—42.18 **24 Claims**

1. A molding powder which comprises a particulate, intimate mixture of

(a) a copolymer

(1) consisting of about 15 to about 40 weight percent glycidyl methacrylate, about 10 to about 30 weight percent methacrylonitrile, and a remainder consisting essentially of methyl methacrylate, and

(2) having an average molecular weight in the range of about 1,500 to about 16,000, with less than 5 percent of the molecules of such copolymer having a molecular weight below 1,000, a softening point above 25° C., and epoxide groups in its molecular structure resultant of inclusion of said glycidyl methacrylate as a constituent monomer thereof, and

(b) a monomeric anhydride present in an amount which provides about 0.5 to about 1.5 anhydride groups per each epoxy group in the molding powder.

3,847,864

FIRE RESISTANT ACRYLONITRILE POLYMER ARTICLES CONTAINING SUBMICRON ANTIMONY OXIDE PARTICLES

John Donald Chase, Stamford, and Robert Louis Potter, Wilton, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 91,573, Nov. 20, 1970, now Patent No. 3,743,708. This application Feb. 12, 1973, Ser. No. 331,409

Int. Cl. C08f *45/56, 45/58*

U.S. Cl. 260—45.75 B **3 Claims**

1. An acrylonitrile polymer fiber containing an average of at least about 50% acrylonitrile in the polymer molecule and up to 50% by weight of a halogen containing material known to impart fire resistance to polyacrylonitrile articles, and further containing antimony oxide particles in an amount of from 1% to 20% by weight of the total weight of said fiber, characterized in that said antimony oxide has an average particle diameter ranging from about 100 A. to about 300 A., whereby a lustre index of said fiber above 30% is obtained.

3,847,865

USE OF ALUMINA TRIHYDRATE IN A POLYMETHYL METHACRYLATE ARTICLE

Ray B. Duggins, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 248,577, Apr. 28, 1972, which is a continuation-in-part of application Ser. No. 3,524, Jan. 16, 1970, both now abandoned. This application Sept. 26, 1973, Ser. No. 401,074

Int. Cl. C08f *45/04*

U.S. Cl. 260—42.52 **1 Claim**

1. In a simulated marble article formed from: a first material comprising a first polymer of methyl methacrylate in which is distributed and suspended at least one relatively smaller elongated substantially continuous coherent, independent mass of a second material comprising a polymer of methyl methacrylate and having a pigmentation differing from that of said first material, said smaller mass being disposed in a predetermined, repetitive, reproducible, irregular, three-dimensional configuration throughout said article, and between 20–85% by weight of an inorganic additive; the improvement wherein said inorganic additive is alumina trihydrate and said article is translucent to the point where differences in pigmentation other than differences in pigmentation on the surface of said article are apparent and contribute to the marbleizing effect.

3,847,866

BIS-(P-HYDROXYPHENYL) ALKYLPHOSPHONIC ACID ESTERS

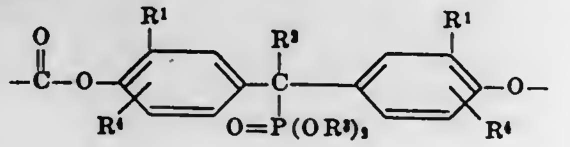
Hellmut F. I. Bredereck, 149 Zeppelin St., 7000 Stuttgart, Germany; Miltiadis I. Iliopulos, 1503 28th St., Vienna, W. Va. 26101; and Horst F. Wieder, 2300 Amy Ave., Kingsport, Tenn. 37664

No Drawing. Application Jan. 14, 1970, Ser. No. 2,938, now Patent No. 3,702,879, which is a continuation-in-part of abandoned application Ser. No. 471,465, July 12, 1965. Divided and this application Nov. 13, 1972, Ser. No. 305,878

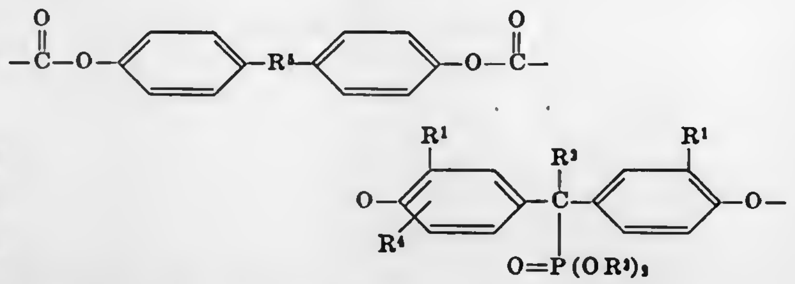
Int. Cl. C08g *17/13*

U.S. Cl. 260—47 XA **1 Claim**

1. A film forming polymer selected from the group consisting of polymers consisting essentially of the recurring group



wherein R^1 is hydrogen, halogen, alkyl, or haloalkyl, R^2 is alkyl, haloalkyl, cycloalkyl, halocycloalkyl, arylalkyl, haloarylalkyl, aryl, or haloaryl; R^3 is hydrogen, alkyl, haloalkyl, alkenyl, cycloalkyl, halocycloalkyl, arylalkyl, haloarylalkyl, aryl, or haloaryl; R^4 is hydrogen, halogen, hydroxy, alkyl, haloalkyl, cycloalkyl, halocycloalkyl, arylalkyl, haloarylalkyl, aryl, or haloaryl, and said R groups contain up to 26 carbon atoms, and polymers consisting essentially of the recurring group



where R^1, R^2, R^3, and R^4 are as defined above and R_5 is alkylene.

3,847,867

POLYETHERIMIDES

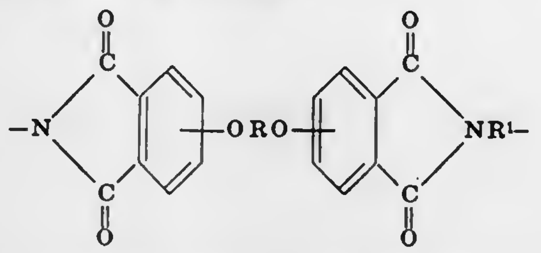
Darrell R. Heath, Pittsfield, Mass., and Joseph G. Wirth, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 108,151, Jan. 20, 1971, now Patent No. 3,787,475. This application Dec. 29, 1972, Ser. No. 319,327

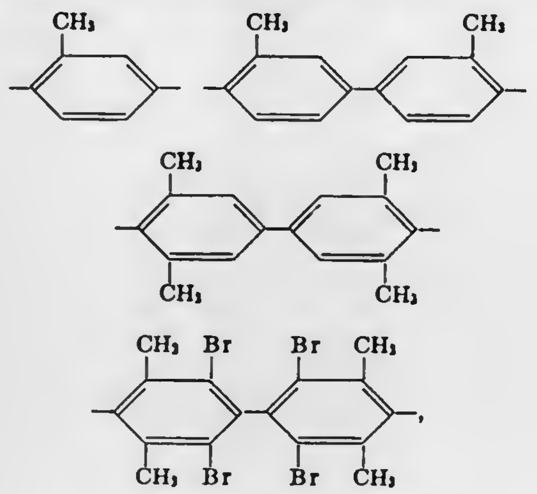
Int. Cl. C08g *20/32*

U.S. Cl. 260—47 CP **30 Claims**

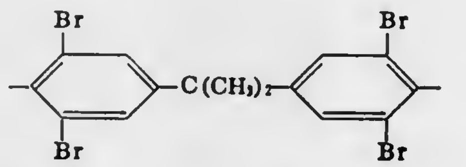
1. Polyetherimide consisting essentially of chemically combined units of the formula,



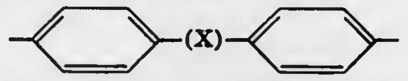
where R is a member selected from the class consisting of (a) the following divalent organic radicals:



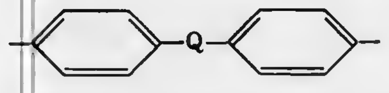
and



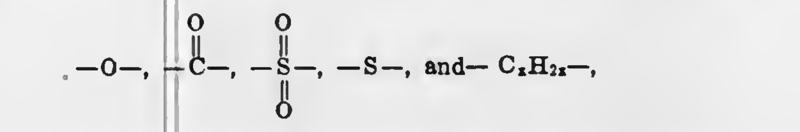
and (b) divalent organic radicals of the general formula,



where X is $-C_yH_{2y}-$, y is a whole number equal to from 1 to 5 inclusive, and R^1 is a divalent organic radical selected from the class consisting of (a) aromatic hydrocarbon radicals having from 6–20 carbon atoms and halogenated derivatives thereof, (b) alkylene radicals and cycloalkylene radicals having from 2–20 carbon atoms, (c) $C_{(2-8)}$ alkylene terminated polydiorganosiloxane, and (d) divalent radicals included by the formula,



where Q is a member selected from the class consisting of



$$-\mathrm{O}-,\ -\overset{\overset{\mathrm{O}}{\|}}{\mathrm{C}}-,\ -\underset{\underset{\mathrm{O}}{\|}}{\overset{\overset{\mathrm{O}}{\|}}{\mathrm{S}}}-,\ -\mathrm{S}-,\ \text{and}-\mathrm{C}_x\mathrm{H}_{2x}-,$$

and x is a whole number equal to from 1 to 5 inclusive.

3,847,868

POLYOXETANES WHICH CAN BE USED IN PEPTIDE SYNTHESIS

Jean Bouchaudon, Essonne, Guy Bourat, Hauts-de-Seine, and Rodolphe Margraff, Essonne, France, assignors to Rhone-Poulenc S.A., Paris, France

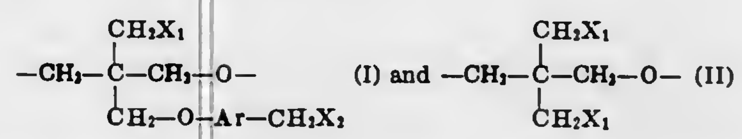
No Drawing. Filed Feb. 23, 1973, Ser. No. 335,177

Claims priority, application France, Feb. 28, 1972, 7206696

Int. Cl. C08g *23/04*

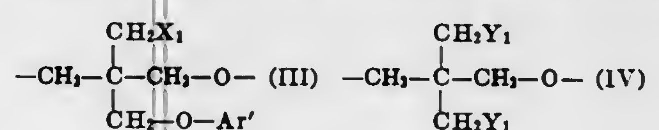
U.S. Cl. 260—47 R **9 Claims**

1. A polyoxetane which consists essentially of a plurality of units of the formula:



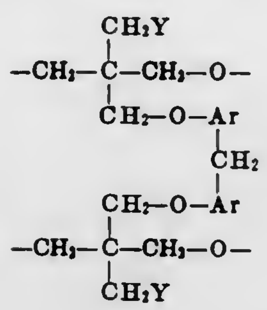
$$-\mathrm{CH_2}-\underset{\underset{\mathrm{CH_2-O-Ar-CH_2X_2}}{|}}{\overset{\overset{\mathrm{CH_2X_1}}{|}}{\mathrm{C}}}-\mathrm{CH_2}-\mathrm{O}-\quad \text{(I) and}\quad -\mathrm{CH_2}-\underset{\underset{\mathrm{CH_2X_1}}{|}}{\overset{\overset{\mathrm{CH_2X_1}}{|}}{\mathrm{C}}}-\mathrm{CH_2}-\mathrm{O}-\quad \text{(II)}$$

and, optionally, of units of at least one of the formulae:



$$-\mathrm{CH_2}-\underset{\underset{\mathrm{CH_2-O-Ar'}}{|}}{\overset{\overset{\mathrm{CH_2X_1}}{|}}{\mathrm{C}}}-\mathrm{CH_2}-\mathrm{O}-\quad \text{(III)}\quad -\mathrm{CH_2}-\underset{\underset{\mathrm{CH_2Y_1}}{|}}{\overset{\overset{\mathrm{CH_2Y_1}}{|}}{\mathrm{C}}}-\mathrm{CH_2}-\mathrm{O}-\quad \text{(IV)}$$

and



(V)

in which:

each of X_1 and X_2, which may be identical or different, represents a chlorine or bromine atom,

Y is as defined under X_1 or represents a radical of formula: $-O-Ar-CH_2X_2$ or $-O-Ar'$,

each of the Y_1 radicals, which may be identical or different, represents a $-O-Ar'$ or $-O-Ar-CH_2X_2$ radical,

Ar represents a divalent aromatic radical, the two free valencies of which are carried by carbon atoms of one or two aromatic benzene rings, and

Ar' represents the radical —ArH,

the units (I) to (V) being connected to one another via the oxygen atom with a free valency of one of the units and a methylene group with a free valency of the adjacent unit.

3,847,869

METHOD FOR PREPARING POLYETHERIMIDES

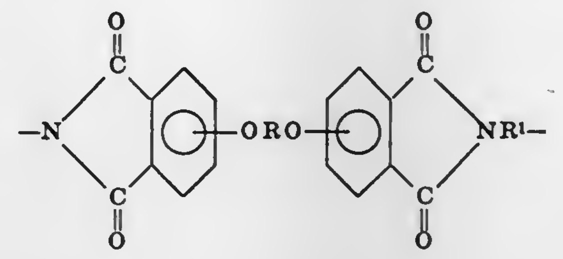
Frank J. Williams III, Scotia, N.Y., assignor to General Electric Company

No Drawing. Filed Sept. 28, 1973, Ser. No. 401,865

Int. Cl. C08g *20/00, 25/00*

U.S. Cl. 260—47 CZ **4 Claims**

1. A method for making polyetherimide consisting essentially of chemically combined units of the formula

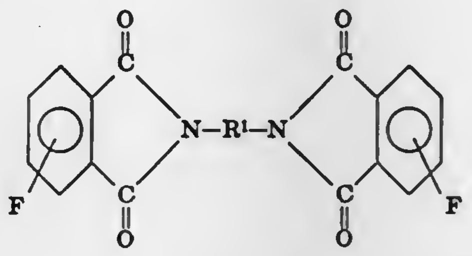


which comprises

(1) effecting reaction between substantially equal molar amounts of an alkali metal salt of a dihydric phenol of the formula,

MOROM,

and a bisimide of the formula,

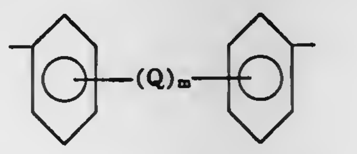


in the presence of a dipolar aprotic organic solvent at a temperature of up to about 100° C.,

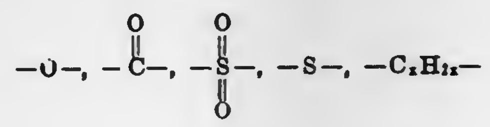
(2) thereafter effecting the precipitation of the polyetherimide from the mixture of (1),

(3) and recovering the polyetherimide from the mixture of (2),

where R is a divalent aromatic organic radical having from about 6–30 carbon atoms, R^1 is a divalent organic radical selected from the class consisting of (a) aromatic hydrocarbon radicals having from 6–20 carbon atoms and halogenated derivatives thereof, (b) alkylene radicals, $C_{(1-8)}$ alkylene terminated polydiorganosiloxane, cyclo-alykylene radicals having from 3–20 carbon atoms, and (c) divalent radicals included by the formula,



where Q is a member selected from the class consisting of



$$-\mathrm{O}-,\ -\overset{\overset{\mathrm{O}}{\|}}{\mathrm{C}}-,\ -\underset{\underset{\mathrm{O}}{\|}}{\overset{\overset{\mathrm{O}}{\|}}{\mathrm{S}}}-,\ -\mathrm{S}-,\ -\mathrm{C}_x\mathrm{H}_{2x}-$$

and x is a whole number from 1 to 5 inclusive, m is 0 or 1, and M is an alkali metal ion.

3,847,870

METHOD FOR MAKING POLYETHERIMIDES

Tohru Takekoshi, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

No Drawing. Filed Nov. 23, 1973, Ser. No. 418,381

Int. Cl. C08g *20/32*

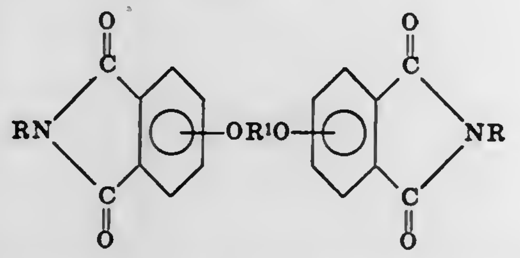
U.S. Cl. 260—47 CP **11 Claims**

1. A method for making a polyetherimide which comprises

(1) effecting the distillation of organic amine of the formula

$$RNH_2$$

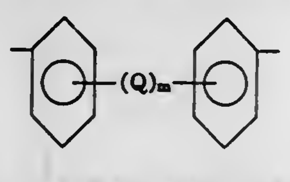
from a melt consisting essentially of a mixture of bisimide of the formula



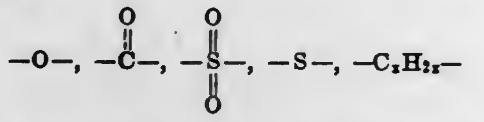
and at least an equal molar amount of such bisimide of an organic diamine of the formula

$$NH_2—R^2—NH_2$$

in the presence of an effective amount of a catalyst, selected from the class consisting of an alkali metal, a basic alkali metal compound, an alkaline earth metal and a basic alkaline earth metal compound, where the vapor pressure of the organic amine is greater under atmospheric conditions than the vapor pressure of the organic diamine, where R is a monovalent $C_{(2-20)}$ organic radical selected from $C_{(2-8)}$ alkyl radicals and $C_{(6-20)}$ aromatic radicals, R^1 is selected from $C_{(6-30)}$ aromatic radicals, and R^2 is a divalent organo radical selected from the class consisting of (a) aromatic hydrocarbon radicals having from 6–20 carbon atoms and halogenated derivatives thereof, (b) alkylene radicals, $C_{(2-8)}$ alkylene terminated polydiorganosiloxane cyclo-alkylene radicals having from 2–20 carbon atoms, and (c) divalent radicals included by the formula,



where Q is a member selected from the class consisting of



$$—O—,\ —\overset{O}{\overset{\|}{C}}—,\ —\underset{\underset{O}{\|}}{\overset{\overset{O}{\|}}{S}}—,\ —S—,\ —C_xH_{2x}—$$

and *x* is a whole number from 1 to 5 inclusive, and *m* is 0 or 1.

3,847,871

POLYMERS AND COPOLYMERS OF 1-FERROCENYL-1,3-BUTADIENE

William D. Stephens, 8912 Willow Hill Drive SE.; and T. Chade Willis, 2020 Golf Road, Apt. 325, both of Huntsville, Ala. 35802; and Charles S. Combs, 669 Larkwood, Holland, Mich. 49423

No Drawing. Filed May 11, 1972, Ser. No. 252,390

Int. Cl. C08f *25/00*

U.S. Cl. 260—63 BB **16 Claims**

1. As a composition of matter, homopolymers of 1-ferrocenyl-1,3-butadiene prepared by reacting 1-ferrocenyl-1,3-butadiene with a catalyst, in the presence of a solvent, at a temperature of from about −79° to 90° C., for a period of from about 1 minute to 4 hours.

3,847,872

WATER WHITE POLYIMIDE POLYMER PREPARED FROM DI(AMINOMETHYL)-DIALKYLADAMANTANES

Robert M. Thompson, Wilmington, Del., assignor to Sun Ventures, Inc., St. Davids, Pa.

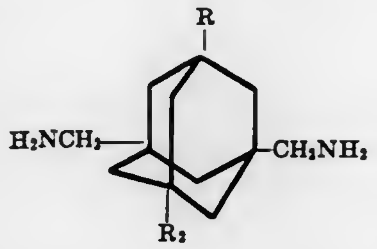
No Drawing. Continuation-in-part of application Ser. No. 191,700, Oct. 22, 1971. This application May 10, 1973, Ser. No. 359,173

Int. Cl. C08g *20/32*

U.S. Cl. 260—65 **14 Claims**

1. Method for the preparation of a solid polyimide polymer comprising:

(a) contacting essentially equal mole amounts of a dianhydride selected from the group consisting of dianhydride of 1,2,4,5-benzene-tetracarboxylic acid and 3,4,3′,4′ - benzophenonetetracarboxylic dianhydride and a dialkyladamantane diamine of the following structure:



where each of R_1 and R_2 is alkyl radical having 1–10 carbon atoms in the presence of a suitable polar organic solvent at a temperature of 0° C.–30° C., and maintaining said contacting until the desired viscosity is obtained; afterwards,

(b) removing said solvent at a temperature below the condensation temperature of the resulting polyimic acid; and after removal,

(c) heating the polyimic acid to a temperature of about 150° C.–500° C. until condensation is completed; whereby resulting solid polyimide is clear and water white.

3,847,873

PROCESS FOR THE PREPARATION OF AROMATIC POLYESTERS

Peter Frederick Jackson and Arthur Morris, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

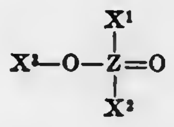
No Drawing. Filed Nov. 1, 1972, Ser. No. 302,672

Claims priority, application Great Britain, Nov. 12, 1971, 52,596/71

Int. Cl. C08g *17/015*

U.S. Cl. 260—75 R **12 Claims**

1. In a process for the production of highly polymeric polyester by polycondensation of a polycondensable material at least 85 mole percent of which consists of at least one bis(dihydric alcohol) ester of an aromatic dicarboxylic acid, or an oligomer thereof, the improvement comprising the employment as catalyst of a catalytic amount of a composition consisting essentially of a metallic component and an organic component, the metallic component being a metal oxide or a metal salt containing a weakly acidic anion, said metal is selected from the group consisting of zinc, manganese, aluminum, lanthanum, cobalt, calcium and cadmium, and the organic component being a simple or polymeric compound of the structure



$$X^3—O—\underset{\underset{X^2}{|}}{\overset{\overset{X^1}{|}}{Z}}=O$$

where X^1 is —R or —OR, X^2 is —R, X^3 is —H or —R, Z is an atom of a Group Vb element of the Periodic Table having an atomic number greater than 7, and each R,

which may be the same or different, is a monovalent hydrocarbon group, wherein the molecular weight of at least one of the groups R attached directly to the atom Z is greater than 145.

3,847,874

POLYURETHANE COMPOSITION BASED ON EPOXIDE-MODIFIED LINEAR POLYESTER

Yoichi Murakami and Hikaru Watanabe, Amagasaki, Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

No Drawing. Filed Nov. 14, 1972, Ser. No. 306,284

Claims priority, application Japan, Jan. 22, 1970, 45/5,436

Int. Cl. C08g *22/10*

U.S. Cl. 260—77.5 AN **4 Claims**

1. A resin composition consisting essentially of the reaction product of

A. a polyisocyanate, present in from 1 to 40 parts by weight, with

B. a polyfunctional linear polyester having an average molecular weight of at least about 6,000, and present in from 99 to 60 parts by weight, said polyester consisting essentially of the ring-opening esterification reaction product at not over 200° C. of

(1) a linear polyester consisting essentially of the reaction product of

(a) a saturated aliphatic or aromatic dicarboxylic acid or the C_{1-4} alkyl esters thereof, with

(b) a saturated aliphatic or alicyclic dihydric alcohol,

said linear polyester having an average molecular weight of from about 1,000 to about 8,000 and a ratio of terminal carboxyl groups to terminal hydroxyl groups of at least 1, with

(2) a diepoxide, the ratio of epoxy groups to terminal carboxyl groups being from 0.5 to 2.

3,847,875

POLYAMIDES FROM HEPTADECANE DICARBOXYLIC ACID AND HETEROCYCLIC POLYAMINE

Manfred Drawert, Werne, and Eugen Griebsch, Unna, Germany, assignors to Schering AG, Berlin and Burgkamen, Germany

No Drawing. Filed Sept. 20, 1972, Ser. No. 290,438

Claims priority, application Germany, Sept. 28, 1971, P 21 48 264.4

Int. Cl. C08g *20/20*

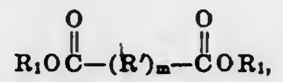
U.S. Cl. 260—78 R **3 Claims**

1. A polyamide resin consisting essentially of the polymeric condensation product of substantially equivalent amounts of

(1) an aliphatic dicarboxylic acid component consisting essentially of

(a) an isomeric mixture of 1,8- and 1,9-heptadecane dicarboxylic acids and

(b) mixtures of (a) with a codicarboxylic acid of the formula



$$R_1O\overset{\overset{O}{\|}}{C}—(R')_m—\overset{\overset{O}{\|}}{C}OR_1,$$

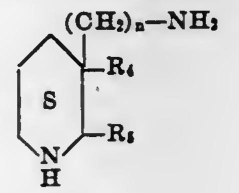
wherein R′ is a divalent aliphatic group having 1 to 12 carbon atoms, R_1 is hydrogen or an aliphatic hydrocarbon group having up to 8 carbon atoms, and *m* is 0 or 1, said codicarboxylic acid being present in said mixtures in an amount up to 9 equivalent parts per equivalent part of heptadecane dicarboxylic acid, and

(2) a diamine or polyamine component consisting essentially of

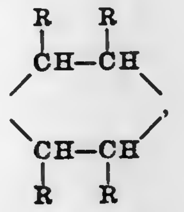
(a) at least one heterocyclic diamine or polyamine selected from the group consisting of

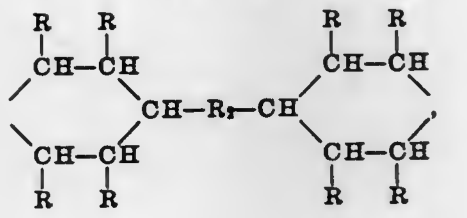
(i) amines of the formula X—N=A=NH and

(ii) amines of the formula

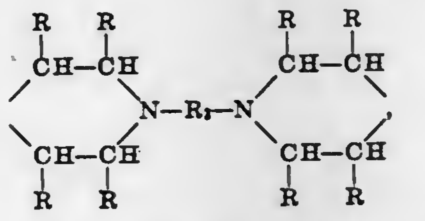


wherein A is





or



X is hydrogen or $—R''NH_2$ and R″ is alkylene having 1 to 6 carbon atoms; R_2 is alkylene having 1 to 8 carbon atoms; R_3 is alkylene having 2 to 12 carbon atoms; R is hydrogen or alkyl having 1 to 4 carbon atoms; R_4 is hydrogen or alkyl having 1 to 4 carbon atoms; R_5 is hydrogen or methyl; and *n* is 1 or 3; and

(b) mixtures of (a) with an aliphatic codiamine of the formula $H_2—N—R_6—NH_2$, wherein R_6 is an aliphatic hydrocarbon group having 2 to 20 carbon atoms, said codiamine being present in an amount up to 9 equivalent parts per equivalent part of heterocyclic diamine or polyamine.

3,847,876

PREPARATION OF POLYAMIDES BY POLYMERIZATION OF A DINITRILE, A DIAMINE AND WATER IN THE PRESENCE OF CONTROLLED AMOUNTS OF AMMONIA

Olav T. Onsager, Waldwick, N.J., assignor to Halcon International Inc., New York, N.Y.

Filed July 6, 1972, Ser. No. 269,339

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R **32 Claims**

1. A process for producing a saturated aliphatic polycarbonamide which comprises the steps of:

(a) forming an aqueous mixture of a saturated aliphatic diamine and a saturated aliphatic dinitrile in substantially equimolar ratio, the mixture containing 20 to 95% by weight of water based upon the total of diamine, dinitrile and water,

(b) heating the mixture in a first stage in a substantially closed reaction zone at autogenous or higher pressure up to about 2000 p.s.i.g. and at a temperature of 200 to 260° C., until at least 80% of the dinitrile has reacted, said reaction zone having an average content of ammonia of at least 1% by weight in the liquid phase contained in said zone,

(c) heating the mixture in a second stage while reducing said pressure to a lower pressure than the pressure prevailing in step (b), but said lower pressure being sufficient to maintain an average content of ammonia in the second stage reaction zone of at least 0.1% by weight in the liquid phase, and being not less than about atmospheric pressure, said heating in the second stage being continued until at least 90% of the dinitrile has reacted, and

(d) heating the reaction mixture from step (c) at a substantially constant temperature within the range of 260 to 300° C. and at substantially atmospheric pressure or below while venting in order to eliminate residual water and ammonia, said heating in step (d) being sufficient to provide a polyamide having an intrinsic viscosity suitable for fiber formation.

3,847,877

TRANSPARENT, THERMOPLASTICALLY FORMABLE COPOLYAMIDES FROM BIS(4 - AMINO CYCLOHEXYL)METHANE-AROMATIC DICARBOXYLIC ACID ϵ-CAPROLACTAM

Werner Nielinger, Hans Rudolph, Rolf Dhein, and Kurt Schneider, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 1, 1972, Ser. No. 311,371

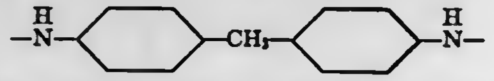
Claims priority, application Germany, Dec. 2, 1971, P 21 59 803.8

Int. Cl. C08g *20/12, 20/20*

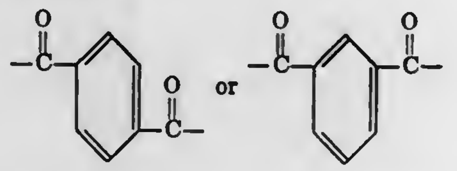
U.S. Cl. 260—78 L **10 Claims**

1. Transparent, organic solvent resistant thermoplastically formable copolyamides, obtained by polycondensation of bis-(4-amino cyclohexyl)-methane, at least one aromatic dicarboxylic acid and ϵ-caprolactam, with a relative solution viscosity of at least 1:5 as measured in a 1% m-cresol solution at 25° C. consisting of:

(1) from 70 to 35% by weight of equimolar quantities of amino units (a) of the general formula

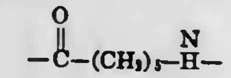


and of aromatic dicarboxylic acid units (b) of the general formula



and

(2) from 30 to 65% by weight of lactam units (c) of the general formula



$$-\overset{O}{\overset{\|}{C}}-(CH_2)_5-\overset{N}{H}-$$

3,847,878

PROCESS FOR PREPARATION OF POLYAMIDE-IMIDES AND SHAPED ARTICLES OF SAME

Robert B. Hanson, Kendall, and James R. Stephens, Naperville, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Apr. 9, 1973, Ser. No. 348,868

Int. Cl. C08g *20/32*

U.S. Cl. 260—78 TF **12 Claims**

1. A process for preparing high molecular weight polyamide-imide polymers having film-forming properties which process comprises first condensing trimellitic anhydride and a primary diamine in a mole ratio of about 1 to 0.55 to about 1 to 0.95 at a temperature of about 210° C. to about 250° C. to give a low molecular weight prepolymer having the carboxylic acid anhydride groups reacted with the diamine and a portion of the carboxylic acid groups reacted with the diamine leaving the remaining carboxylic acid groups unreacted [an excess of trimellitic anhydride moieties] and second further condensing this prepolymer with about 0.45 to about 0.75 moles to about 0.05 to about 0.35 moles of a diisocyanate for each mole of trimellitic anhydride in an inert solvent at a temperature of about 25° C. to about 150° C.

3,847,879

N-(THIO)DIAMIDES

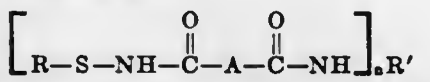
Kamel Boustany and John P. Vander Kooi, Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Original application July 30, 1970, Ser. No. 59,719. Divided and this application Nov. 2, 1972, Ser. No. 303,131

Int. Cl. C08c *11/54;* **C08d** *9/00;* **C08f** *27/06*

U.S. Cl. 260—79.5 B **10 Claims**

1. A process for inhibiting premature vulcanization of a vulcanizable diene rubber containing sulfur or sulfur vulcanizing agent which comprises incorporating therein in an amount effective to inhibit premature vulcanization a compound of the formula



$$\left[R-S-NH-\overset{O}{\overset{\|}{C}}-A-\overset{O}{\overset{\|}{C}}-NH\right]_n R'$$

wherein R is alkyl, aryl, aralkyl, alkaryl or cycloalkyl; R' is primary alkyl, secondary alkyl, cycloalkyl, aralkyl or alkenyl when *n* is one and alkylene when *n* is two; A is alkylene, alkenylene or arylene.

3,847,880

METHOD FOR VULCANIZING RUBBER WITH BIS-SULFENAMIDE ACCELERATORS

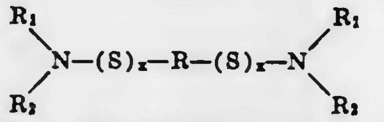
Chester D. Trivette, Jr., and John P. Vander Kooi, Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Jan. 29, 1973, Ser. No. 327,469

Int. Cl. C08c *11/54;* **C08f** *27/06*

U.S. Cl. 260—79.5 B **7 Claims**

1. The process of accelerating the vulcanization of sulfur-vulcanizable diene rubber which comprises heating said rubber and sulfur vulcanizing agent with an accelerating amount of a compound of the formula



in which R_1 and R_2 independently are alkyl of 1–8 carbon atoms, aralkyl of 7–10 carbon atoms, cycloalkyl of 5–8 carbon atoms or R_1 and R_2 together with the nitrogen atom form a heterocycle of 4–8 carbon atoms, *x* is one or two, R contains 1–24 carbon atoms and is alkylene, arylene, cycloalkylene, or T–T' where T and T' are different radicals selected from the group consisting of alkylene, arylene, and cycloalkylene.

3,847,881

STRESS-CRACK RESISTANT ETHYLENE-PERHALOETHYLENE COPOLYMERS

Max M. Mueller, Morristown, and Swayambu Chandrasekaran, East Orange, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Apr. 30, 1973, Ser. No. 355,828

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.77 **8 Claims**

1. Solid copolymers of from about 40 to 60 mol percent of ethylene, from about 40 to 60 mol percent of halogenated comonomer selected from the group consisting of tetrafluoroethylene, chlorotrifluoroethylene and mixtures thereof and from 0.1 to 10 mol percent, based on the mols of halogenated comonomer, of 3,3,3-trifluoro-2-trifluoromethyl propene.

3,847,882

HYDROXY-TERMINATED COPOLYMERS OF BUTADIENE AND ACRYLATES

Mart G. Baldwin, Newtown, Pa., and Samuel F. Reed, Jr., Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Original application Nov. 25, 1969, Ser. No. 886,605. Divided and this application Aug. 19, 1971, Ser. No. 173,282

Int. Cl. C08f *15/02*

U.S. Cl. 260—83.5 **2 Claims**

1. The hydroxy-terminated copolymers of butadiene and ferrocenyl methyl acrylate prepared by reacting ferrocenyl methyl acrylate and a suitable polymerization initiator in an inert organic solvent with butadiene at a reaction temperature and for a reaction time period sufficient for said reaction to take place after which solvent removal is effected and said copolymers are dried at a suitable drying temperature while under reduced pressure; said initiator being selected from azo-bis-(2-methyl - 5 - hydroxyvaleronitrile), azo-bis-(2 - methyl - 3 - hydroxypropionitrile), and azo-bis(hydroxyethyl - 2 - methyl propionate); said inert organic solvent being selected from toluene, dioxane, and dimethyl formamide; said reaction temperature being in the range of about 60° C. to about 80° C.; said reaction time being from about 24 hours to about 120 hours; said drying is accomplished at a suitable temperature in the range of about 70° C. to about 75° C. and said reduced pressure is in the range of about 1 millimeter; said copolymers being characterized by a molecular weight in the range from about 1000 to about 10,000, hydroxy-end group content of about 0.1 weight percent to about 2.5 weight percent, and an iron content of about 0.74 percent weight percent to about 12.0 weight percent.

3,847,883

METHOD OF PREPARING POLYMERS UTILIZING AS CATALYSTS HYDROCARBON-SOLUBLE COMPLEXES OF AN ORGANOMAGNESIUM COMPOUND WITH A GROUP I ORGANOMETALLIC COMPOUND

Conrad W. Kamienski, Gastonia, N.C., and Jerome F. Eastham, Memphis, Tenn., assignors to Gulf Resources & Chemical Corporation, Houston, Tex.

No Drawing. Original application July 23, 1970, Ser. No. 57,820, now Patent No. 3,742,077. Divided and this application Aug. 30, 1972, Ser. No. 285,067

Int. Cl. C08f *1/28, 1/32, 19/08*

U.S. Cl. 260—83.7 **12 Claims**

1. In a method of preparing polymers, by polymerizing at least one conjugated diene monomer, the improvement which consists in the utilization, as the catalyst, in a hydrocarbon solvent solution, of a complex of (i) at least one organomagnesium compound with (ii) at least one organometallic compound in which the metal is a Group I metal, the organo radicals of said (i) and (ii) compounds being C_2–C_{14} hydrocarbon radicals selected from the group of alkyl, cycloalkyl, aryl, alkylaryl, cycloalkylaryl, heterocyclic, ethylenically unsaturated organo radicals, alkylene and polyenes.

3,847,884

ACRYLONITRILE (CO)POLYMERS CONTAINING ANTISTATIC AGENTS

Edward Radlmann and Gunther Nischk, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

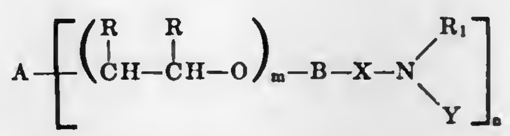
No Drawing. Filed Apr. 20, 1973, Ser. No. 353,019

Claims priority, application Germany, Apr. 21, 1972, P 22 19 532.0

Int. Cl. C08f *3/76, 15/02, 15/22*

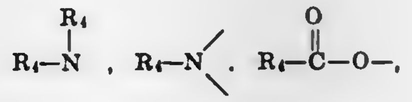
U.S. Cl. 260—85.5 R **6 Claims**

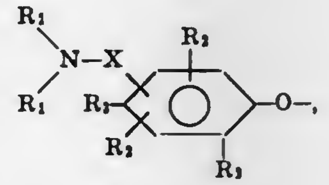
1. Composition comprising acrylonitrile homopolymer or copolymer, and as antistatic additive 1–20% by weight, based on the total quantity of the composition a compound of the formula

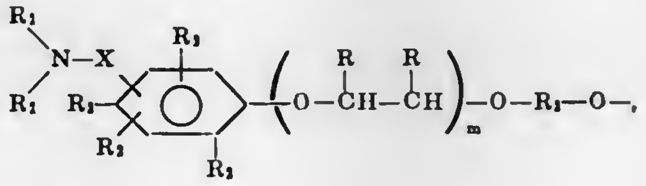


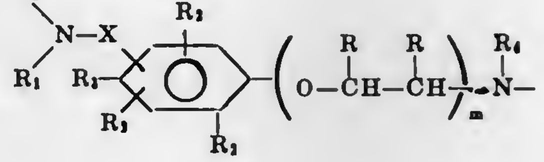
in which

m is an integer of from 1–150;
n is 1 or 2;
A is R_4—O—,









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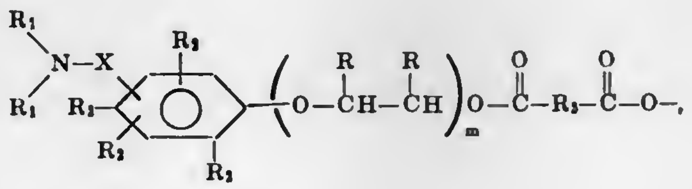
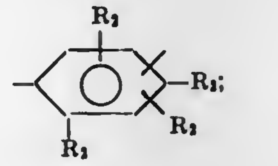
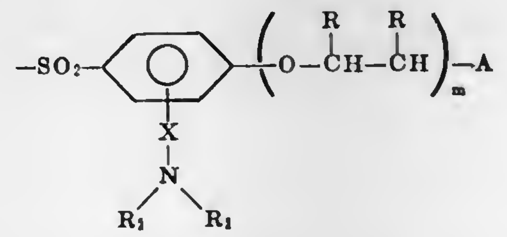


B is an alkylene radical with 1 or 2 carbon atoms or an arylene radical of the formula



R is hydrogen or methyl;
R_1 is a straight or branched chain alkyl radical containing 1–20 carbon atoms or an aryl radical;
R_2 is hydrogen, alkyl containing 1–6 carbon atoms, fluorine, chlorine, bromine or iodine;
R_3 is hydrogen, NH_2, NO_2, CN, CF_3, Cl or



R_4 is alkyl radical containing 1–30 carbon atoms, an aryl, alkyl-aryl or arylalkyl radical;

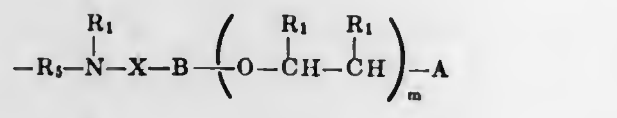
R_5 is a straight or branched chain alkylene radical containing 1–30 carbon atoms;

X is

$$-\overset{O}{\overset{\|}{C}}-$$

or $—SO_2—$; and

Y is a straight or branched chain alkyl radical containing 1 to 20 carbon atoms or an aryl radical; or where $n=1$, a radical of the formula



$$-R_5-\overset{R_1}{\overset{|}{N}}-X-B-\left(O-\overset{R_1}{\overset{|}{C}}H-\overset{R_1}{\overset{|}{C}}H\right)_m-A$$

3,847,885

DEWATERING ACRYLONITRILE POLYMERS

James Bruce Peeso, Jr., Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 21, 1973, Ser. No. 362,121

Int. Cl. C08f *3/76, 15/02, 15/22*

U.S. Cl. 260—85.5 R **5 Claims**

1. A process for dewatering acrylonitrile polymer crumb containing at least about 50% combined acrylonitrile produced by polymerizing acrylonitrile, alone or with other monoethylenically unsaturated comonomers copolymerizable therewith, in an aqueous medium comprising:

(a) heating an aqueous slurry of said acrylonitrile polymer crumb, said slurry containing sufficient water to ensure that said slurry remains easily flowable, to a temperature above the minimum melting temperature of said polymer in the presence of water but not more than about 20° C. above said minimum melting temperature for a time sufficient for melting to occur while under a pressure at least equal to the vapor pressure of water at the slurry temperature and while agitating said slurry sufficiently to prevent substantial coalescence of said polymer;

(b) then cooling said slurry to below said minimum melting temperature while continuing to agitate said slurry sufficiently to prevent substantial coalescence of said polymer particles; and

(c) thereafter separating the resultant polymer particles from the excess liquid of the slurry.

3,847,886

METHOD OF PREPARING SMALL PARTICLES OF A SOLID POLYMER

Harry W. Blunt, Hockessin, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 254,294, May 17, 1972. This application Feb. 21, 1973, Ser. No. 334,344

Int. Cl. C08f *3/30, 3/56, 3/68*

U.S. Cl. 260—89.1 **5 Claims**

1. A method of preparing spherical small particles of a normally solid, water-insoluble vinyl polymer selected from the class consisting of acrylic polymers, poly(vinyl chloride) and poly(vinyl acetate), which process comprises:

(a) dissolving said polymer in a water-immiscible, polar organic solvent;

(b) emulsifying the resultant solution in water, forming an oil-in-water emulsion;

(c) adding to said oil-in-water emulsion a water-immiscible organic liquid which is miscible with the organic solvent but which is a nonsolvent for the polymer; and

(d) recovering polymer particles from the resultant mixture of liquids.

3,847,887

PROCESS FOR PREPARING HYDROXY DERIVATIVES OF FLUORINATED POLYMERS

William R. Siegart, Poughkeepsie, N.Y., William D. Blackley, Lake Elmo, Minn., and Harry Chafetz, Poughkeepsie, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Original application June 21, 1972, Ser. No. 265,030. Divided and this application July 9, 1973, Ser. No. 377,475

Int. Cl. C08f *7/04, 27/02, 27/00*

U.S. Cl. 260—93.5 A **4 Claims**

1. A method for preparing an organic hydroxy compound derivative of a fluorinated polymer which comprises reacting at 50 to 200° C. a fluorinated polymer from the group consisting of

(1) a fluorinated polystyrene having the empirical formula $(C_{16}H_3F_{25})_x$ in which x has a value from 3 to 5, and

(2) a fluorinated polypropylene having the empirical formula $(C_3HF_5)_x$ in which x has a value from 20 to 40, with a compound having the formula ROH in which R is a hydrocarbyl radical having from 2 to 30 carbon atoms, in the presence of a catalyst selected from the group consisting of:

  (1) a tertiary amine having the formula R_3N in which R is an aliphatic radical having from 1 to 30 carbon atoms, and,

  (2) an alkali metal salt having the formula ROM in which M represents an alkali metal and R has the value noted above, said reaction being conducted using about one moiety of said organic hydroxy compound and two moieties of said tertiary amine or alkali metal salt catalyst for each hydrogen atom in said fluorinated polymer.

3,847,888

ULTRA-HIGH MOLECULAR WEIGHT POLYETHYLENE MOLDING POWDER AND MOLDING PROCESS

Eugene R. Baumgaertner, Florham Park, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Dec. 1, 1972, Ser. No. 311,062

Int. Cl. C08f *29/04, 47/02*

U.S. Cl. 260—94.9 GD **8 Claims**

1. Molding powder of ultra-high molecular weight linear polyethylene, having molecular weight of at least 1×10^6 and density of 0.92 to 0.99, free-sinterable above its crystalline melting point after molding under pressure of at least 2,000 p.s.i. to form a solid article having tensile strength of at least 4,000 p.s.i. and elongation of at least 200 percent, comprising particles of less than 100 micron mean particle size having distribution function of less than 0.80.

3,847,889

PROTEIN SEPARATION BY INSOLUBLE, AMPHOTERIC ION EXCHANGERS

Linda Fryklund and Jerker Olof Porath, Uppsala, Sweden, assignors to Exploaterings Aktiebolaget T.B.F., Uppsala, Sweden

Continuation of application Ser. No. 96,735, Dec. 10, 1970. This application Mar. 30, 1973, Ser. No. 346,619

Claims priority, application Sweden, Dec. 22, 1969, 17,721/69

Int. Cl. C07g *7/00*

U.S. Cl. 260—112 R **5 Claims**

1. A dipole-ion-exchange chromatographic method of separating different types of proteins and peptides from each other comprising passing a solution of polyelectrolytes selected from the group consisting of proteins and peptides, through a bed of an amphoteric adsorbent, said adsorbent comprising an insoluble, organic hydroxyl-containing, hydrophilic polymer containing both basic, nitrogen-containing groups and carboxylate groups in the same molecule, where the proportion between the basic and the acid groups is simple and stoichiometric, said polymer being the reaction product of an amino acid or an amino acid derivative and an insoluble organic hydroxyl-containing hydrophilic carbohydrate polymer, whereby said polyelectrolytes will migrate at different speeds depending on the strength of the reciprocal interaction between the polyelectrolyte and the substituents in said adsorbent, and are selectively adsorbed by said adsorbent.

3,847,890

ACIDIC MONOSACCHARIDE-SUBSTITUTED PROTEINS

Allan M. Green, P.O. Box 18038, Cleveland Heights, Ohio 44118 and Jack Pensky, 7560 Chagrin Road Falls, Chagrin Falls, Ohio 44022

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,541

Int. Cl. A61k *17/02;* **C07c** *103/52;* **C07g** *7/00*

U.S. Cl. 260—112.5 **1 Claim**

1. An acidic monosaccharide-substituted protein selected from the group consisting of N-acetylneuraminyl insulin (bovine), N-acetylneuraminyl insulin (porcine), N-acetylneuraminyl human serum albumin, N-acetylneuraminyl bovine serum albumin, N-acetylneuraminyl human growth hormone, gluconyl insulin (bovine); gluconyl insulin (porcine), gluconyl human serum albumin, and gluconyl human growth hormone wherein the substitution occurs at an available α-amino or ε-amino group.

3,847,891

SEPARATION OF SECRETIN AND CHOLECYSTOKININ-PANCREOZYMIN FROM MIXTURE THEREOF

Shinro Tachibana, Narashino, Japan, assignor to Eisai Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1973, Ser. No. 352,240

Int. Cl. A61k *27/00;* **C07c** *103/52*

U.S. Cl. 260—112.5 **16 Claims**

1. A process for the separation of secretin and cholecystokinin-pancreozymin from a mixture thereof, comprising

(a) contacting the mixture in aqueous solution at a pH ranging from about 9 to about 12, with an anion-exchange resin to cause selective adsorption of cholecystokinin-pancreozymin on said resin and reserving the remaining aqueous solution;

(b) eluting the cholecystokinin-pancreozymin from said resin by contacting it with an aqueous eluting medium at pH lower than 9: and

(c) recovering the cholecystokinin-pancreozymin from the eluate of step (b) and recovering the secretin from the aqueous solution obtained from step (a), which solution contains the secretion not adsorbed by said resin.

3,847,892

OCTAPEPTIDE SOLID PHASE-FRAGMENT PROCESS AND PENTAPEPTIDE INTERMEDIATES

Su-San Wang, Bloomfield, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed June 29, 1973, Ser. No. 375,199

Int. Cl. C07c *103/52;* **C07g** *7/00*

U.S. Cl. 260—112.5 **6 Claims**

1. Benzyloxycarbonyl - glycyl-L-phenylalanyl-L-phenylalanyl-O-benzyl-L-tyrosyl-O-benzyl-L-threonine.

3,847,893

PROCESS FOR THE PREPARATION OF INSULIN DERIVATIVES CROSS-LINKED BY A DICARBOXYLIC ACID GROUP AT THE AMINO A–1 GLYCINE AND AMINO B–29 LYSINE

Dietrich Brandenburg, Schmithof, uber Aachen, and Walter Puls, Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

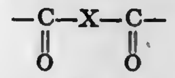
Filed Feb. 16, 1973, Ser. No. 333,366

Claims priority, application Germany, Mar. 1, 1972, P 22 09 836.8

Int. Cl. A61k *17/04;* **C07c** *103/52;* **C07g** *7/00*

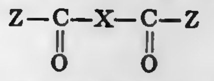
U.S. Cl. 260—112.7 **9 Claims**

1. A process for the preparation of a bifunctionally crosslinked insulin derivative in which the amino group of the A–1 glycine is linked to the ε-amino group of the B–29 lysine by a bridge of the formula:



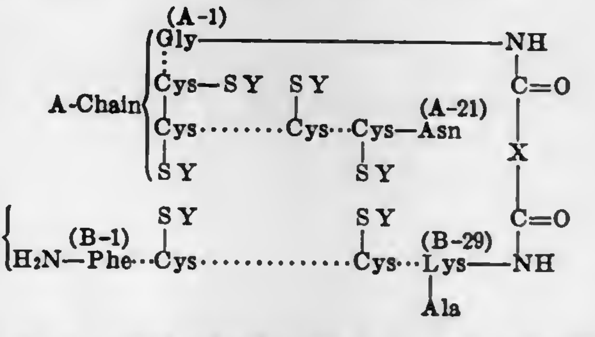
$$-\underset{O}{\underset{\|}{C}}-X-\underset{O}{\underset{\|}{C}}-$$

in which X is a carbon-carbon bond, alkylene of 1 to 15 carbon atoms, or alkylene of 1 to 15 carbon atoms wherein 1 carbon atom is replaced by sulphur, oxygen or imino, said alkylene being unsubstituted or substituted by one or two hydrophilic groups which comprises the steps of reacting the insulin A-chain in which the four free mercapto groups have been protected, with an activated derivative of a dicarboxylic acid of the formula:



$$Z-\underset{O}{\underset{\|}{C}}-X-\underset{O}{\underset{\|}{C}}-Z$$

in which X is as above defined and Z is a suitable acid activating group, to produce an insulin A-chain derivative monofunctionally substituted on the amino group of the A–1 glycine, reacting said derivative with an insulin B-chain in which the two free mercapto groups have been protected, to yield a compound of the formula:



in which X is as above defined and Y is the mercapto protecting group, removing the mercapto protecting groups, and oxidizing the mercapto groups in an aqueous alkaline medium to form disulfide bonds.

3,847,894

ARYL-AZO-PYRIDONE COMPOUNDS CONTAINING A SUBSTITUTED PYRIMIDINE OR TRIAZINE GROUP

Denis Robert Annesley Ridyard, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

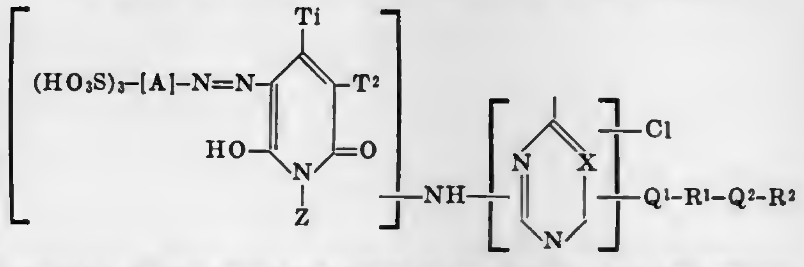
No Drawing. Filed Apr. 25, 1972, Ser. No. 247,321

Claims priority, application Great Britain, Apr. 29, 1971, 12,121/71

Int. Cl. C09b *29/36*

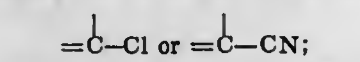
U.S. Cl. 260—153 **3 Claims**

1. A water-soluble monoazo dyestuff of the formula



wherein A represents benzene or naphthalene; Z represents hydrogen, lower alkyl, hydroxyethyl, cyclohexyl or phenyl; T^1 represents hydrogen, hydroxyl or lower alkyl;

T^2 represents hydrogen, lower alkyl, carbamoyl or cyano; Z represents lower alkyl or phenyl; the —NH— group is directly attached to A or to Z; X represents =N—,



$=\overset{|}{C}—Cl$ or $=\overset{|}{C}—CN$;

Q^1 represents oxygen, sulphur or —NH—; Q^2 represents oxygen or a direct bond; R^1 represents ethyleen, phenylene or cyclohexylene; and R^2 represents alkyl having 2–15 carbon atoms, benzyl, phenyl or cyclohexyl, such that R^1 and R^2 together contain at least 8 carbon atoms.

3,847,895

SUBSTITUTED SULFOPHENYL-AZO-NAPHTHYL-AZO-ANILIDE COMPOUNDS

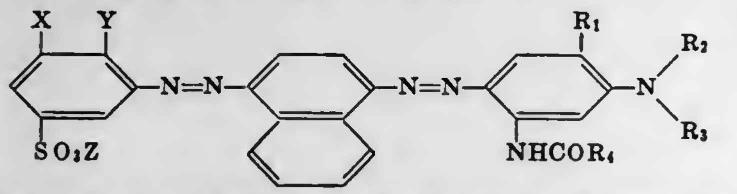
William H. Armento, Albany, N.Y., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed Sept. 30, 1971, Ser. No. 185,342

Int. Cl. C09b *31/04*

U.S. Cl. 260—187 **10 Claims**

1. A compound having the formula:



wherein R_1 is hydrogen or lower alkoxy; R_2 is hydrogen, lower alkyl, chlorolower alkyl, bromolower alkyl, or hydroxylower alkyl; R_3 is lower alkyl, chlorolower alkyl, bromolower alkyl, or hydroxylower alkyl; R_4 is lower alkyl of 1 to 6 carbon atoms or phenyl; Z is hydrogen or an alkali metal; one of X and Y is hydrogen and the other is hydrogen, chlorine, bromine, hydroxy, cyano, lower alkyl or lower alkoxy.

3,847,896

ERYTHROMYCIN-2-THIOL ESTERS AND PROCESS

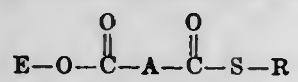
Anthony A. Sinkula, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Apr. 9 1973, Ser. No. 349,373

Int. Cl. C07c *129/18*

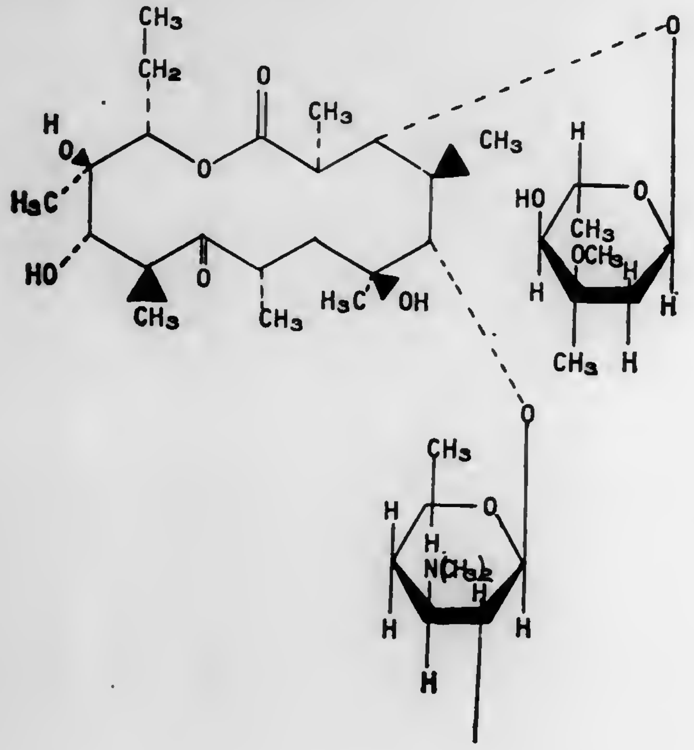
U.S. Cl. 260—210 E **21 Claims**

1. A compound selected from those of formula:



$$E—O—\overset{O}{\overset{\|}{C}}—A—\overset{O}{\overset{\|}{C}}—S—R$$

and the pharmaceutically acceptable acid addition salts thereof wherein A is selected from alkylene and alkenylene having in each instance from 2 to 4 carbon atoms inclusive; R is hydrocarbyl and E represents the monovalent moiety of formula:



3,847,897

MICROCRYSTALLINE CHITIN

Howard J. Dunn, Lomita, and M. Paul Farr, San Pedro, Calif., assignors to Ralston Purina Company, St. Louis, Mo.

No Drawing. Filed Sept. 7, 1971, Ser. No. 178,457

Int. Cl. C07c *95/04*

U.S. Cl. 260—211 R **10 Claims**

1. A composition of matter consisting essentially of: an aqueous, stable thixotropic dispersion of microcrystalline chitin in an amount of at least about 0.5% by weight of said dispersion, said dispersion having a pH above 4.0.

3,847,898

N^4-TRIHALOETHOXY CARBONYL ARABINOFURANOSYL CYTOSINE 5'-ESTERS

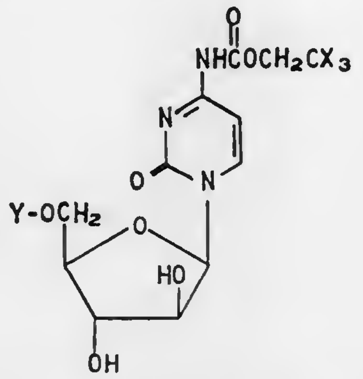
Robert C. Kelly, William J. Wechter, and Duane T. Gish, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 828,380, May 27, 1969. This application Feb. 16, 1970, Ser. No. 11,826

Int. Cl. C07d *51/52*

U.S. Cl. 260—211.5 R **12 Claims**

1. A compound having the following structure:



in which X is bromine or chlorine and Y is a member of the group consisting of hydrogen, trityl, and an organic carboxylic acyl radical.

3,847,899

METHOD FOR MANUFACTURE OF CITRUS BIOFLAVONOIDS

William G. Mitchell, Dade City, Fla., assignor to Lykes Pasco Packing Co., Dade City, Fla.

No Drawing. Filed Jan. 15, 1971, Ser. No. 106,924

Int. Cl. C07g *17/00*

U.S. Cl. 260—236.5 **5 Claims**

1. A method for extracting citrus bioflavonoids from citrus molasses, said method comprising:

(a) extracting said molasses with an organic solvent for flavanone glycosides;

(b) concentrating the resultant extract;

(c) precipitating the bioflavonoid constituents in said extract with a lead salt under alkaline conditions;

(d) removing the resultant precipitate by filtration;

(e) acidifying said precipitate with phosphoric acid, thereby dissolving said bioflavonoids and forming a lead phosphate complex precipitate;

(f) separating said lead phosphate complex precipitate by filtration and discarding said lead phosphate complex precipitate;

(g) removing all trace of lead from the remaining bioflavonoid-containing filtrate by adding excess soluble sulfide thereto; and

(h) concentrating the resultant lead-free bioflavonoid solution.

3,847,900

LABILE ESTERS OF α-ISOCYANOBENZYLPENICILLIN AS CHEMICAL INTERMEDIATES

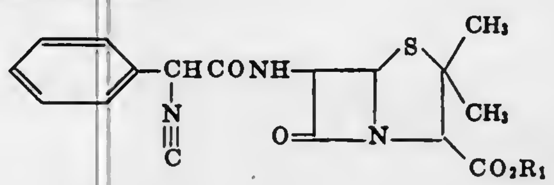
Timothy H. Cronin, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Nov. 10, 1972, Ser. No. 305,593

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **9 Claims**

1. A compound selected from the group of penicillins having the formula:



wherein R_1 is selected from the group consisting of 1-alkanoyloxymethyl wherein said alkanoyloxy contains from 2 to 5 carbon atoms; phenacyl; benzyl and substituted benzyl wherein said substituent is selected from the group consisting of 4-bromo, 4-nitro and 3,5-di-*t*-butyl-4-hydroxy; bis(4-methoxyphenyl)methyl; trimethylsilyl; and benzylideneimino.

3,847,901

3-ALKENYL SUBSTITUTED RIFAMYCIN SV COMPOUNDS

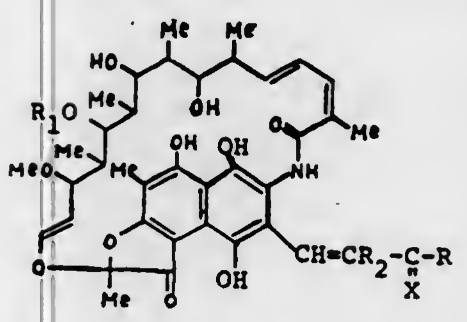
Renato Cricchio, Varese, Italy, assignor to Gruppo Lepetit S.p.A., Milan, Italy

No Drawing. Filed Dec. 22, 1972, Ser. No. 317,732

Int. Cl. C07d *99/02, 99/04*

U.S. Cl. 260—239.3 P **12 Claims**

1. A 3-alkenyl rifamycin SV compound of the formula



wherein R represents hydrogen, alkyl of from 1 to 8 carbon atoms or phenyl-lower alkyl, R_1 represents hydrogen or acetyl, R_2 represents hydrogen or lower alkyl, X represents oxygen, imino, substituted imino, oximino, substituted oximino, hydrazono or substituted hydrazono, said lower alkyl groups containing from 1 to 4 carbon atoms and said substituted imino, (a), oximino, (b), and hydrazono groups, (c), having the hydrogen member substituted respectively, by (a) dimethylaminopropyl or alpha - methyl - benzyl, (b) ethyl, propyl, butyl, octyl, propenyl, propynyl, dipropylmethyl, diphenylmethyl, benzyl, phenethyl, phenylpropyl, phenoxyethyl, carboxyethyl, pyridylethyl, phenoxyethyl or geranyl, or (c) methyl, ethyl, dimethyl, diethyl, dipropyl, phenylpropyl, hydroxyethyl, di - (2 - hydroxyethyl), (diethylamino)-ethyl, benzyl, phenylpropyl, propenyl, cinnamyl, (N-methyl, - N - phenyl), (N - methyl, N - benzyl) or phenyl group and further characterized in that in the substituted hydrazono group, the substituents on the nitrogen atom also may form a heterocyclic ring of the group consisting of piperazine, 4 - methyl - 1 - piperazine, morpholine, piperidine, heptamethyleneimine, octamethyleneimine or 3,8 - diazabicyclo(3,2,1)octane; and the 16,17; 18,19; and 28,29-hexahydro derivatives of said alkenyl compounds.

3,847,902

PREPARATION OF CAPROLACTAM AND DICYCLOHEXYL KETONE

Alberto Santambrogio, Corsico, and Emilio Perrotti, San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

No Drawing. Continuation of abandoned application Ser. No. 159,539, July 2, 1971. This application Jan. 10, 1973, Ser. No. 322,481

Claims priority, application Italy, July 2, 1970, 26,875/70

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 A **3 Claims**

1. The method of preparing, as end products, caprolactam and dicyclohexyl ketone wherein an alkali metal salt of ε-cyclohexyl amidocaproic acid is pyrolyzed by heating to a temperature in the range of 300–500° C. and a distillate containing said end products is recovered.

3,847,903

METHOD FOR EXTRACTING AND ISOLATING RIFAMYCIN O FROM FERMENTATION BROTHS OF RIFAMYCINS

Carlo Turolla, Milan, Giovanni Bonfanti, Sesto San Giovanni, and Carmine Pasqualucci, Milan, Italy, assignors to Archifar Industrie Chimiche del Trentino S.p.A., Trento, Italy

No Drawing. Filed Mar. 1, 1973, Ser. No. 337,119

Int. Cl. C07d *41/00*

U.S. Cl. 260—239.3 P **4 Claims**

1. A method for extracting and isolating Rifamycin O from a fermentation broth of rifamycin containing Rifamycin B comprising:

filtering said broth to obtain a clear liquid;

bringing said clear liquid to a temperature within 15–25° C., and to a pH within 4.0–7.5;

treating said clear liquid with an oxidizing agent selected from the group consisting of sodium nitrite, sodium persulphate, and hydrogen peroxide to convert said Rifamycin B to Rifamycin O, a precipitate insoluble in the treated clear liquid; and

separating said precipitated Rifamycin O from the treated clear liquid.

3,847,904

METHOD OF PREPARING 5,6-DIHYDRO-11-MORPHANTHRIDONES

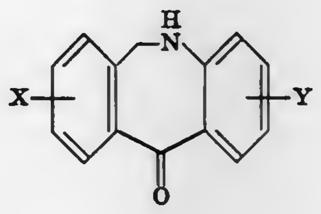
Alexander E. Drukker, Milwaukee, and Claude I. Judd, Mequon, Wis., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Oct. 5, 1972, Ser. No. 295,130

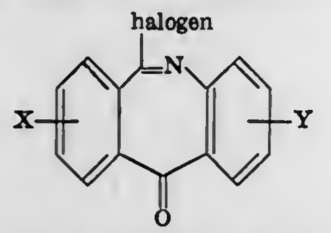
Int. Cl. C07d *41/08*

U.S. Cl. 260—239 D **4 Claims**

1. The method of preparing compounds of the formula



wherein X and Y are selected from hydrogen, lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms, halo, trifluoromethyl, amino or sulfonylamido, which comprises dissolving a compound of the formula



in which X and Y are as defined, in an unreactive solvent selected from an ether or ester and reacting said compound with hydrogen under a pressure of about 60 lbs. p.s.i. at about 25° C. in the presence of a hydrogen halide receptor and a catalyst selected from Raney nickel or palladium-on-carbon.

3,847,905
1,5-BENZODIAZEPINE DERIVATIVES

Oskar Bub, Ludwigshafen, Ludwig Friedrich, Mannheim, Hans-Peter Hofmann, Ludwigshafen, Horst Kreiskott, Wachenheim, and Frank Zimmermann, Mannheim, Germany, assignors to Knoll A.G. Chemische Fabriken, Ludwigshafen (Rhine), Germany

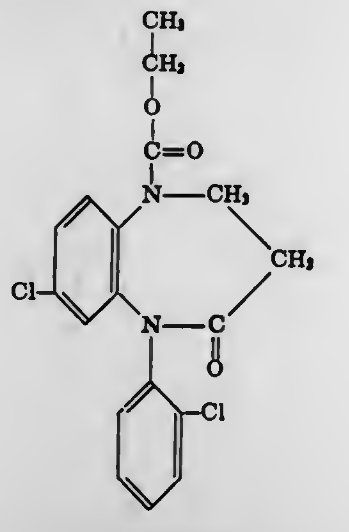
No Drawing. Filed Oct. 29, 1971, Ser. No. 193,972

Claims priority, application Germany, Oct. 28, 1970, P 20 52 840.9, P 20 52 841.0; July 2, 1971, P 21 33 065.4

Int. Cl. C07d *53/04*

U.S. Cl. 260—239.3 B **6 Claims**

1\.



3,847,906
PROCESS FOR THE MANUFACTURE OF β-(3-OXO-7α-ACETYLTHIO-17β-HYDROXY-4-ANDROSTEN-17α-YL)-PROPIONIC ACID γ-LACTONE

Kurt Radscheit, Kelkheim, Taunus, Ulrich Stache, Hofheim, Taunus, and Richard Brodersen, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Oct. 3, 1973, Ser. No. 403,040

Claims priority, application Germany, Oct. 5, 1972, P 22 48 834.2

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 C **4 Claims**

1. A process for the manufacture of β-(3-oxo-7α-acetylthio-17β-hydroxy-4-androsten-17α-yl)-propionic acid γ-lactone, which comprises oxidizing β-(3β,17β-dihydroxy-5-androsten-17α-yl)-propionaldehyde ethylene acetal according to the Oppenauer method, dehydrogenating the β-(3-oxo - 17β - hydroxy-4-androsten-17α-yl)-propionaldehyde ethylene acetal obtained with chloranil in methanol with simultaneous cyclization, reacting the β-(3-oxo-17β-hydroxy - 4,6 - androstadien-17α-yl)-propionaldehyde cyclohemiacetal methyl glycoside thus obtained with thio-acetic acid and oxidizing the 3-(3′-oxo-7′α-thio-acetyl-17′β-hydroxy-4′-androsten-17′α-yl) - propionaldehyde cyclohemiacetal 1-thioacetate with chromic acid to yield the corresponding γ-lactone.

3,847,907
NOVEL N-(OXIDOALKYL) ANILINES

Ladislav Dolejs, Letohradska 56, 7; Zuzana Machkova, Mezibranska 7, 1; Pavel Beran, Nar. obrany 7, 6; Jitka Kahovcova, ul. P. Rezka 3, 4; Karel Slama, 674 Na cervenem vrchu, 6; and Frantisek Sorm, 9 Korejska, 6, all of Prague, Czechoslovakia

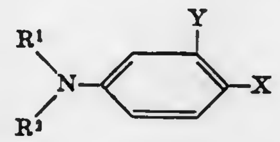
No Drawing. Filed Apr. 15, 1971, Ser. No. 134,460

Claims priority, application Czechoslovakia, May 5, 1970, 3,123/70

Int. Cl. C07d *1/00*

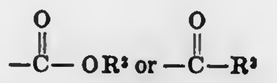
U.S. Cl. 260—240 H **16 Claims**

1. A compound selected from those of the following formula I:



wherein,

X is

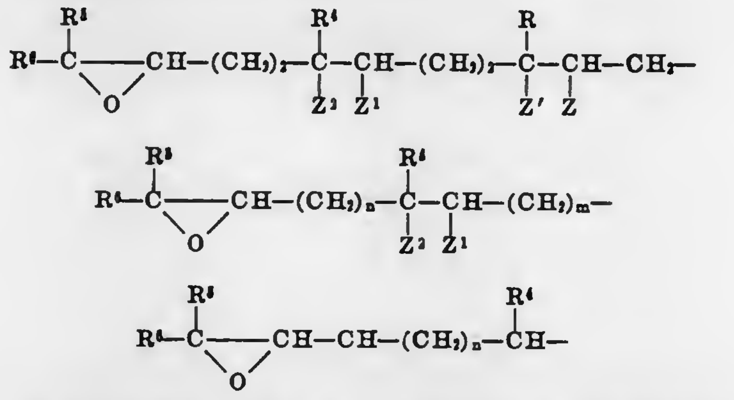


$$-\overset{\overset{\large O}{\|}}{C}-OR^3 \text{ or } -\overset{\overset{\large O}{\|}}{C}-R^3$$

in which R^3 is hydrogen, lower alkyl, benzyl, phenethyl, methylbenzyl, naphthylmethyl, phenyl, naphthyl or methylphenyl,

Y is hydrogen, or together with X, forms the methylenedioxy bridge;

R^1 is one of the groups A, B or C:



in which each of R, R^4, R^5 and R^6 is hydrogen or lower alkyl; Z is hydrogen and Z′ is hydrogen, or together with Z, a carbon-carbon bond or oxido; Z^1 is hydrogen and Z^2 is hydrogen, or together with Z^1, a carbon-carbon bond oxido;

R^2 is hydrogen, lower alkyl, or a carboxylic acyl group containing one to six carbon atoms, or one of the groups A, B or C;

m is the positive integer one or two; and

n is the positive integer two or three.

3,847,908
6-STYRYLPYRAZOLO[3,4-d]PYRIMIDINONES AND PYRIMIDINES

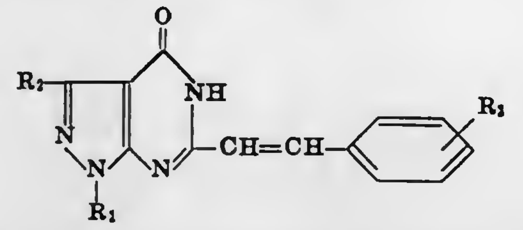
Hermann Breuer and Uwe D. Treuner, Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Mar. 5, 1973, Ser. No. 337,807

Int. Cl. C09d *23/14*

U.S. Cl. 260—240 D **13 Claims**

1. A compound of the formula



wherein R_1 is lower alkyl, cyclo-lower alkyl or phenyl-lower alkyl; R_2 is hydrogen or lower alkyl and R_3 is hydrogen, lower alkyl, halogen or trifluoromethyl.

3,847,909
WATER-INSOLUBLE AZLACTONE DYESTUFFS AND PROCESS FOR PREPARING THEM

Rudolf Schickfluss, Frankfurt am Main, and Willi Steckelberg, Hofheim Taunus, Germany, assignors to Farbwerk Hoechst Aktiengesellschaft vormals Meister

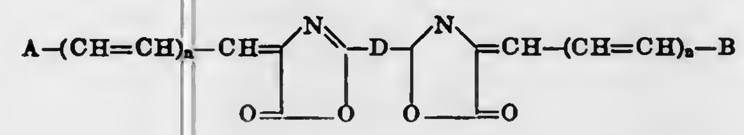
No Drawing. Filled May 24, 1973, Ser. No. 363,416
Lucius & Bruning, Frankfurt am Main, Germany

Claims priority, application Germany, May 26, 1972, P 22 25 546.5

Int. Cl. C09b *23/00*

U.S. Cl. 260—240 F **7 Claims**

1. Water insoluble azlactone dyestuffs of the formula



wherein A and B each represent phenyl, lower alkylphenylene, lower alkoxy-phenylene, chlorophenylene, bromophenylene, methylenedioxy- phenylene or naphthyl, D represents phenylene, chlorophenylene, bromophenylene, biphenylene or naphthylene, and *n* represents 0 or 1.

3,847,910
FUSED-s-TRIAZINE-DIONES

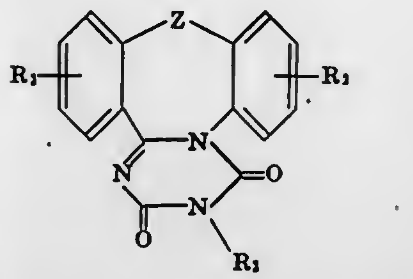
Robert Bruce Moffett, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Mar. 12, 1973, Ser. No. 339,613

Int. Cl. C07d *57/34*

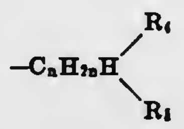
U.S. Cl. 260—248 NS **6 Claims**

1. A compound of the formula



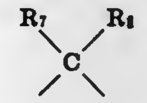
I

wherein R_1 and R_2 are selected from the group consisting of hydrogen, bromine, chlorine, fluorine, lower alkyl of 1 through 3 carbon atoms, lower alkoxy of 1 through 3 carbon atoms, lower alkylthio of 1 through 3 carbon atoms, lower alkylsulfonyl of 1 through 3 carbon atoms, lower dialkylamino having lower alkyl moieties of 1 through 3 carbon atoms, lower alkanoylamido having lower alkanoyl moieties of 1 through 3 carbon atoms, trifluoromethyl, cyano and nitro; R_3 is selected from the group consisting of hydrogen, lower alkyl of 1 through 3 carbon atoms, lower alkenyl of 3 through 4 carbon atoms, $—C_n—H_{2n}—O—$ lower alkyl wherein *n* is 2 through 6 and lower alkyl is of 1 through 3 carbon atoms, carboalkoxy having a lower alkyl moiety of 1 through 3 carbon atoms and



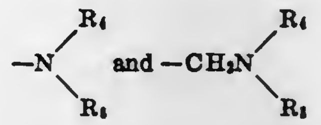
$$-C_nH_{2n}H\begin{matrix} ^{\diagup R_4} \\ _{\diagdown R_5} \end{matrix}$$

wherein *n* has the same meaning as above and R_4 and R_5 have the same meaning as R_3, above, except carboalkoxy, and R_4 and R_5 when taken together with —N< is a saturated heterocyclic amino radical selected from the group consisting of pyrrolidino, piperidino, hexamethylenimino, morpholino, thiomorpholino, piperazino, 4-lower alkylpiperazino wherein lower alkyl is of 1 through 3 carbon atoms and their counterparts having lower alkyl substituent(s) of 1 through 3 carbon atoms; Z is selected from the group consisting of O, S,



$$\begin{matrix} R_7 & & R_8 \\ & \diagdown C \diagup & \\ & \diagup \quad \diagdown & \end{matrix}$$

and $>N—R_9$ wherein R_7, R_8 and R_9 have the same meaning as R_3, above, except carboalkoxy, and R_7 in addition includes



$$-N\begin{matrix} ^{\diagup R_4} \\ _{\diagdown R_5} \end{matrix} \text{ and } -CH_2N\begin{matrix} ^{\diagup R_4} \\ _{\diagdown R_5} \end{matrix}$$

wherein R_4 and R_5 have the same meaning as above; and a pharmacologically acceptable acid addition salt thereof.

3,847,911
NOVEL SUBSTITUTED (NITROFURYLACRYLIDENE) HYDRAZINES WITH ANTIBACTERIAL PROPERTIES

Etienne Szarvasi, Charbonnieres-les-Bains, and Louis Fontaine, Lyon, France, assignors to Li[illegible], Lyonnaise Industrielle Pharmaceutique, Lyon, France

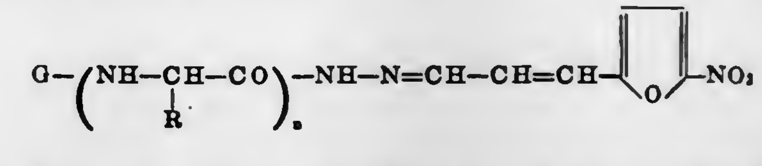
No Drawing. Filed Jan. 5, 1972, Ser. No. 215,677

Claims priority, application France, Jan. 7, 1971, 7100283

Int. Cl. C09b *23/00*

U.S. Cl. 260—240 A **14 Claims**

1. A substituted (nitrofuryl acrylidene) hydrazine represented by the formula:



in which *n*=1 or 0; G is a member of the group consisting of thenoyl, nitrothenoyl and carbobenzoxy radicals; and R, when *n*=1 is a member of the group consisting of hydrogen and methyl, butyl, isobutyl, δ-(2-furoyl)aminobutyl, benzyl, hydroxymethyl and p-hydroxybenzyl radicals.

3,847,912
NOVEL - 5 - NITROFURFURALDEHYDE DERIVATIVES AND PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

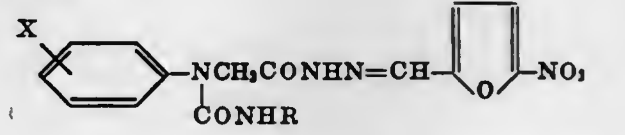
Shankar Somasekhara and Dinesh Maganlal Desai, Wadi Wadi, Baroda, India, assignors to Karamchand Premchand Private Limited, Ahmedabad, Gujarat State, India

No Drawing. Filed Jan. 12, 1973, Ser. No. 323,025

Int. Cl. C09b *23/00*

U.S. Cl. 260—240 A **9 Claims**

1. Novel 5-Nitrofurfuraldehyde derivatives of the general formula I



I

wherein X is hydrogen, methyl or methoxy and R is amino or 5-nitrofurfuralimino group.

3,847,913
CEPHALOSPORANIC ACID ESTERS

Wagn Ole Gudtfredsen, Vaerlose, Denmark, assignor to Lovens Kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark

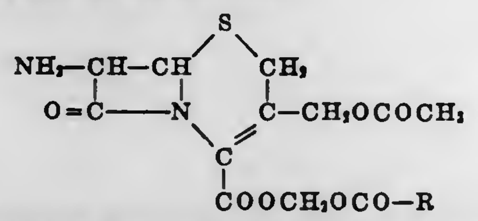
No Drawing. Original application Jan. 28, 1969, Ser. No. 794,751, now Patent No. 3,655,658. Divided and this application Dec. 9, 1971, Ser. No. 206,565

Claims priority, application Great Britain, Jan. 30, 1968, 4,821/68

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **2 Claims**

1. A compound of the formula:



or a hydrochloride thereof wherein R is a lower alkyl radical.

3,847,914
4-AMINO-1,2,4-TRIAZINE-5-ONE, AND A PROCESS FOR THEIR PRODUCTION

Karlfried Dickore, Leverkusen, Wilfried Draber, Wuppertal-Elberfeld, and Ludwig Eue, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

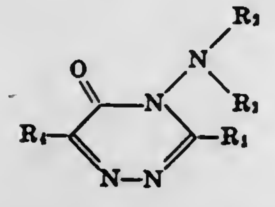
No Drawing. Filed Feb. 9, 1972, Ser. No. 224,966

Claims priority, application Germany, Feb. 18, 1971, P 21 07 757.6

Int. Cl. C07d *55/10*

U.S. Cl. 260—248 AS **30 Claims**

1. 4-Amino-1,2,4-triazine-5-one compound of the formula:



in which

R_1 and R_4, which may be the same or different, are hydrogen, alkyl of from 1 to 6 carbon atoms, trifluoromethyl, cycloalkyl of from 3 to 12 ring carbon atoms, phenyl, halophenyl, trifluoromethylphenyl, nitrophenyl, alkylthiophenyl, alkylsulfonylphenyl, cyanalkyl, alkoxyalkyl, alkylphenyl or alkoxyphenyl of from 1 to 4 carbon atoms in the alkyl or alkoxy moiety, or phenylalkyl of from 1 to 3 carbon atoms in the alkyl moiety,

R_2 is hydrogen or alkyl of from 1 to 4 carbon atoms; and

R_3 is hydrogen, alkyl from 1 to 4 carbon atoms, phenyl, haloalkyl, trifluoromethylalkyl, hydroxyalkyl, or phenylalkyl of from 1 to 3 carbon atoms in the alkyl moiety, or alkylphenyl, alkoxyphenyl or alkylmercaptophenyl of from 1 to 4 carbon atoms in the alkyl moiety.

3,847,915
BIS-TRIAZINE TEXTILE SOFTENERS

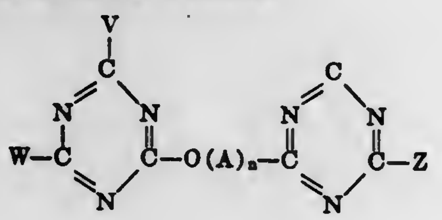
David Paul Bishop and Ronald Meredith Morris, Wirral, England, assignors to NV International Octrooimaatschappij "Octropa," Rotterdam, Netherlands

No Drawing. Filed Mar. 9, 1972, Ser. No. 233,343

Int. Cl. C07d *55/50*

U.S. Cl. 260—248 CS **4 Claims**

1. A compound of the formula:



in which A represents a member selected from the group consisting of ethenoxy, propenoxy, 1,2 butenoxy and 2,3 butenoxy groups and mixtures therefore, VWYZ represent members selected from the group consisting of halogen, —OH, NRR_1 and —OR_1, providing that at least one of VWYZ is selected from the group consisting of —OR_1 and —NRR_1 groups, R represents a member selected from the group consisting of hydrogen, C_{12}–C_{30} linear alkyl and C_{12}–C_{30} branched chain alkyl groups, R_1 represents a member selected from the group consisting of C_{12}–C_{30} linear and C_{12}–C_{30} branched chain alkyl groups, $n=4$–35.

3,847,916
FLUOROCARBON TRIAZINE COMPOUNDS

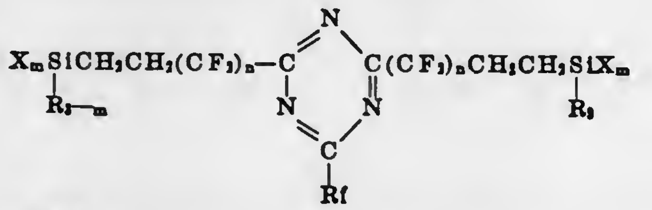
Yung Ki Kim and Ogden R. Pierce, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Original application June 13, 1968, Ser. No. 733,833, now Patent No. 3,532,696, dated Oct. 6, 1970. Divided and this application Apr. 3, 1970, Ser. No. 25,579

Int. Cl. C07d *55/50*

U.S. Cl. 260—248 CS **3 Claims**

1. A compound of the formula



where

R_f is a polyfluorinated alkyl radical of no more than 12 carbon atoms,

X is a hydrogen atom, the hydroxy group or a hydrolyzable group,

R is a monovalent hydrocarbon radical of no more than 30 carbon atoms or a ACH_2CH_2— radical in which A is a perfluoroalkyl radical of no more than 10 carbon atoms;

n has a value of from 1 to 10 inclusive, and

m has a value of from 1 to 3 inclusive.

3,847,917
AMINO DERIVATIVES OF N-HETEROCYCLICS

Helmut Vorbruggen, Berlin, Germany, assignor to Schering Aktiengesellschaft, Berlin, Germany

No Drawing. Filed Dec. 18, 1972, Ser. No. 315,820

Claims priority, application Germany, Dec. 18, 1971, P 21 63 873.3

Int. Cl. C07d *55/22*

U.S. Cl. 260—249.6 **9 Claims**

1. A process for preparing amino derivatives of an aromatic N-heterocyclic compound of 5–15 members containing a total of 1–7 hetero atoms which, in addition to the nitrogen atoms, can be nitrogen, oxygen or sulfur, which comprises:

(a) silylating an N-heterocyclic compound selected from the group consisting of oxazoles, imidazoles, pyridines, quinolines, isoquinolines, pyridazines, pyrimidines, pyrazines, triazines, purines, acridines, pteridines, benzopteridines and indolenines bearing at least one of a ring hydroxy and a ring mercapto group, to form a corresponding O-silyl or S-silyl derivative, respectively; and

(b) reacting the resultant silyl derivative, in contact with a catalytic amount of a Lewis acid, with ammonia or with a primary or secondary amine or a salt of said amine together with 1–2 moles of tertiary amine base per mole of said salt, to split off the O-silyl and S-silyl groups and form the corresponding amino derivative of said aromatic N-heterocyclic compound.

3,847,918
S-TRIAZOLO[1,5-c]QUINAZOLIN-7(6H)-ONES

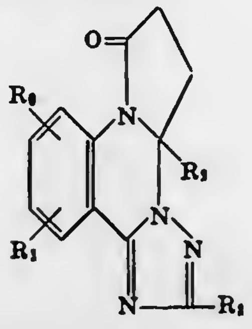
Faizulla G. Kathawala, West Orange, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed May 17, 1973, Ser. No. 361,270

Int. Cl. C07d *51/42*

U.S. Cl. 260—256.4 F **8 Claims**

1. A compound of the formula



where

R_0 and R_1 each independently represent hydrogen, halo having an atomic weight of 19 to 36, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, nitro or trifluoromethyl, provided that when one of R_1 and R_0 is nitro or trifluoromethyl, the other is hydrogen,

R_2 is alkyl of 1 to 4 carbon atoms, and

R_3 is hydrogen or alkyl of 1 to 4 carbon atoms,

or a pharmaceutically acceptable acid addition salt thereof.

3,847,919
TRIAZOLOPYRIMIDO ISOQUINOLINONE DERIVATIVES

Philip Knowles, Rayleigh, Stuart Malcolm Marshall, Stanford-le-Hope, David Lord Pain, Upminster, and Kenneth Robert Harry Wooldridge, Brentwood, England, assignors to May & Baker Limited, Dagenham, Essex, England

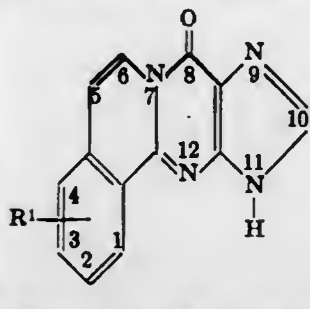
No Drawing. Filed Nov. 16, 1972, Ser. No. 307,173

Claims priority, application Great Britain, Dec. 13, 1971, 57,855/71

Int. Cl. C07d *51/46*

U.S. Cl. 260—256.4 F **9 Claims**

1. An isoquinoline derivative of the formula:



wherein R^1 represents hydrogen, or alkyl or alkoxy of 1 through 10 carbon atoms or benzyl on the carbon atom in the 1-, 2-, 3-, 4- or 5-position of the formula, and pharmaceutically acceptable salts thereof.

3,847,920
3-SUBSTITUTED PYRIMIDO[4,5-b]INDOLES

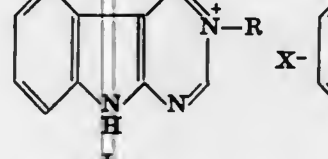
Sylvester Klutchko, Hackettstown, and Max von Strandtmann, Rockaway Township, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed May 17, 1973, Ser. No. 361,365

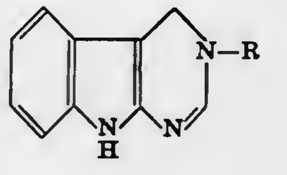
Int. Cl. C07d *51/42*

U.S. Cl. 260—256.4 F **9 Claims**

1. A member selected from the group consisting of compounds of the formulas:



I



II

wherein R is a member selected from the group consisting of alkyl, dialkylaminoalkyl, monohydroxyalkyl in which alkyl has 1 to 7 carbon atoms, phenyl, alkylphenyl having a total of 7 to 10 carbon atoms, N-oxide, carboxymethyl, carboxymethyl anion, and X is chloro or bromo or nonexistent in the case of zwitterions.

3,847,921
PHARMACOLOGICALLY ACTIVE 3-PIPERAZINYL-CARBONYLOXY - 2 - PYRIDYL-ISOINDOLIN-1-ONES

Claude Cotrel, Choisy le Roi, Claude Jenmart, Brunoy, and Mayer Naoum Messer, Bievres, France, assignors to Rhone-Poulenc S.A., Paris, France

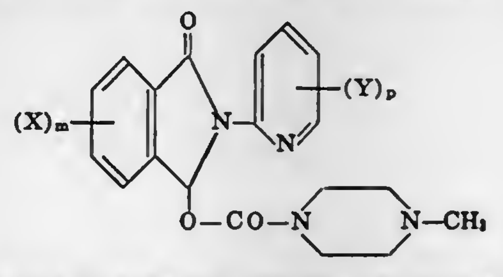
No Drawing. Filed Aug. 18, 1971, Ser. No. 172,929

Claims priority, application France, Aug. 19, 1970, 7030393; Nov. 25, 1970, 7042342; June 28, 1971, 7123465

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 BC **6 Claims**

1. An isoindoline derivative of the formula:



wherein X and Y are each chlorine, bromine, methyl o nitro, and *m* and *p* are each 0 or 1, and non-toxic pharmaceutically acceptable acid addition salts thereof.

3,847,922
1,1,1-TRICHLORO-2-AMIDO-2-PIPERAZINO-ETHANES AND SALTS THEREOF

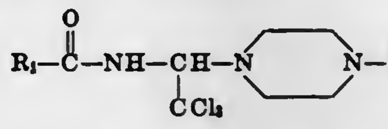
Walter Ost, Klaus Thomas, and Dietrich Jerchel, Ingelheim am Rhein, Germany, assignors to C. H. Boehringer Sohn, Ingelheim am Rhein, Germany

No Drawing. Continuation-in-part of application Ser. No. 71,262, Sept. 10, 1970, now Patent No. 3,707,477, dated Dec. 26, 1972. This application Sept. 15, 1972, Ser. No. 289,751

Int. Cl. C07d *51/64*

U.S. Cl. 260—268 R **2 Claims**

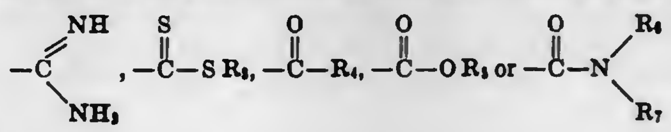
1. A compound of the formula



wherein

R_1 is hydrogen, alkyl of 1 to 7 carbon atoms, allyl or ethoxy, and

R_2 is hydrogen, methyl, phenyl, monochloro-phenyl, pentachloro-phenyl, nitroso, cyano, β-hydroxy-ethyl



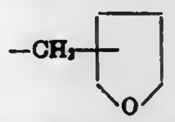
$$-C(=NH)NH_2,\ -C(=S)-SR_5,\ -C(=O)-R_4,\ -C(=O)-OR_5 \text{ or } -C(=O)-N(R_6)R_7$$

where

R_3 is hydrogen, or one equivalent of a sodium, potassium, ammonium, zinc, copper(II) or manganese (II) cation,

R_4 is hydrogen, alkyl of 1 to 4 carbon atoms, monochloro-, dichloro- or trichloro-methyl, phenyl or (2,4-dichlorophenoxy)-methyl,

R_5 is hydrogen, alkyl of 1 to 3 carbon atoms, monohalo-, dihalo- or trihalo-ethyl, β-methoxy-ethyl, cyclohexyl, allyl, phenyl or



R_6 is hydrogen, methyl, allyl or phenyl, and

R_7 is hydrogen or methyl,

or an acid addition salt thereof.

3,847,923
N-[1-(3-CYANO-3,3-DIPHENYLPROPYL)-4-PHENYLPIPERIDINE - 4-CARBONYLOXY] SUCCINIMIDE AND GLUTARIMIDE

Eunice M. Kreider, Chicago, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Dec. 15, 1971, Ser. No. 208,442

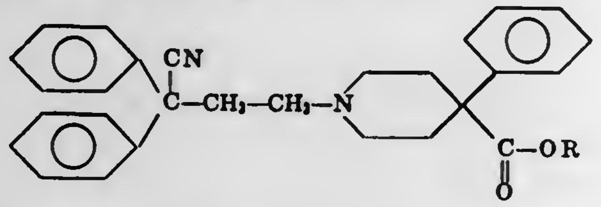
Claims priority, application Great Britain, Dec. 16, 1970, 59,686/70

The term of this patent subsequent to Feb. 5, 1991, has been disclaimed

Int. Cl. C07d *29/32*

U.S. Cl. 260—281 **6 Claims**

1. A compound selected from the group consisting of compounds of the formula



and the acid addition salts thereof, wherein R represents a succinimido or glutarimido radical.

3,847,924
CERTAIN SCOPOLAMMONIUM COMPOUNDS

Satoru Tanaka and Kazunori Hashimoto, Tokyo, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

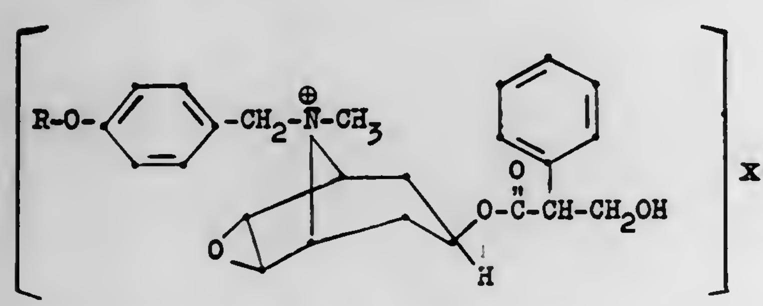
No Drawing. Filed May 31, 1973, Ser. No. 365,728

Claims priority, application Japan, June 12, 1972, 47/57,633

Int. Cl. C07d *43/06*

U.S. Cl. 260—292 **3 Claims**

1. Scopolammonium quaternary salts represented by the formula:



wherein R is a lower alkyl group and X is a halogen atom.

3,847,925
BENZENESULFONYL SEMICARBAZIDES

Laszlo Beregi, Boulogne, Pierre Hugon, Rueil-Malmaison, Pierre Desnoyers, Fontenay Aux Roses, and Jacques Duhault, Chatou, France, assignors to Societe en nom collectif "Science et Cie, Societe Francaise de Recherche Medicale, Suresnes, France

No Drawing. Filed June 29, 1972, Ser. No. 267,445

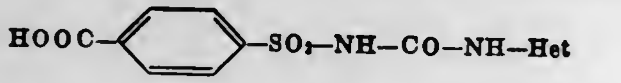
Claims priority, application Great Britain, July 15, 1971, 33,203/71

Int. Cl. C07d *29/34*

U.S. Cl. 260—293.73 **5 Claims**

1. A compound selected from the group consisting of:

(A) benzenesulfonyl semicarbazides of the formula:



wherein Het is selected from the group consisting of pyrrolidinyl, piperidinyl, methylpiperidinyl, dimethylpiperidinyl, and azacycloheptyl each of them bonded to the —NH— group by its nitrogen atom; and

(B) physiologically tolerable basic addition salts thereof.

3,847,926
PROCESS FOR THE PRODUCTION OF DIPHENOXYLATE, ITS DERIVATIVES AND ITS SALTS USING AN AQUEOUS DMF SOLVENT SYSTEM

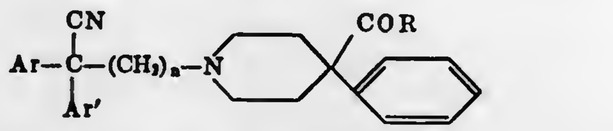
Humberto Flores Beltran, Mexico, Mexico, assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed July 20, 1972, Ser. No. 273,416

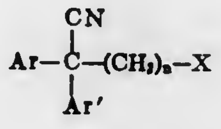
Int. Cl. C07d *29/32*

U.S. Cl. 260—293.75 **9 Claims**

1. In a process for the production of compounds of the following structural formula

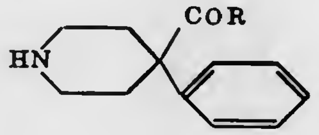


and their pharmaceutically acceptable salts wherein n is 2 or 3, Ar and Ar′ are aryl radicals of less than 9 carbon atoms and R is a lower alkyl, lower alkyloxy or a lower alkenyloxy radical containing 1 to 6 carbon atoms or a cyclopentyloxy, cyclohexyloxy or phenylalkyloxy radical, cyclopentyloxy, cyclohexyloxy or phenylalkyloxy radical, the improvement which comprises condensing a compound of the formula



$$\mathrm{Ar}-\overset{\mathrm{CN}}{\underset{\mathrm{Ar'}}{\overset{|}{\underset{|}{\mathrm{C}}}}}-(\mathrm{CH_2})_n-\mathrm{X}$$

wherein Ar, Ar′ and n are as defined above and X is chloro or bromo with a compound of the formula



wherein R is as defined above in a solvent system consisting essentially of water and dimethylformamide.

3,847,927
SULFUR-CONTAINING HYDROXYPYRIDONES

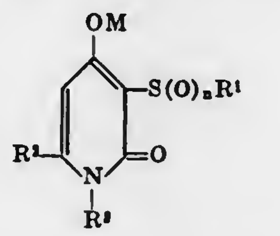
Joseph E. Dunbar, Robert F. Harris, and James R. McCarthy, Jr., Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 20, 1972, Ser. No. 316,724

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 F **13 Claims**

1. A compound represented by the formula



wherein M represents hydrogen or an alkali metal, R^1 represents C_1–C_4 alkyl, isopentyl and linear alkyl having up to 20 carbon atoms, phenyl, halophenyl, nitrophenyl, 2-(lower alkylthio)ethyl, allyl, benzyl or lower alkylphenyl, R^2 represents hydrogen or lower alkyl, R^3 represents hydrogen or lower alkyl and n represents an integer from 0 to 2.

3,847,928
CERTAIN ETHERS, ESTERS OR NON-TOXIC ACID ADDITION SALT DERIVATIVES OF 2,2-DI- AND 2,2,3 - TRI-LOWER ALKYL CHROMAN- AND CHROMEN-OLS

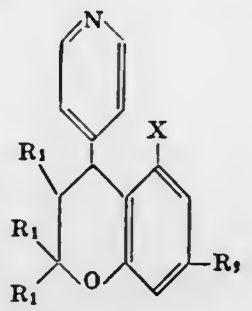
Raj Kumar Razdan, Belmont, Mass., and William R. Thompson, Ithaca, N.Y., assignors to Beecham Group Limited, Brentford, Middlesex, England

No Drawing. Application June 9, 1971, Ser. No. 151,578, now Patent No. 3,726,883, dated Apr. 10, 1973, which is a continuation-in-part of application Ser. No. 36,466, May 11, 1970, which is a continuation-in-part of application Ser. No. 1,543, Jan. 8, 1970, which is a continuation-in-part of application Ser. No. 866,743, Oct. 15, 1969, which in turn is a continuation-in-part of application Ser. No. 630,808, Apr. 14, 1967, all now abandoned. Divided and this application Oct. 25, 1972, Ser. No. 300,443

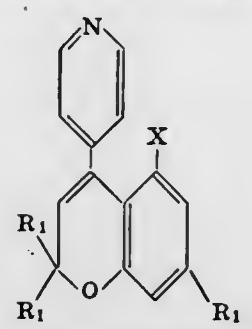
Int. Cl. C07d *31/34*

U.S. Cl. 260—295 F **15 Claims**

1. A member of the group consisting of a compound having the formula:



and a compound having the formula:



and a non-toxic acid addition salt thereof, wherein

R_1 is lower alkyl having 1 to 6 carbon atoms,

R_2 is straight chain alkyl having 1 to 20 carbon atoms, 2-heptyl, methyloctyl, or cycloalkyl-lower-alkyl, the cycloalkyl part having 3 to 8 carbon atoms, and

X is lower alkoxy or straight chain alkanoyloxy of 2 to 20 carbon atoms, benzoyloxy, naphthoyloxy, phosphate, carbonate, malonate, succinate, citrate, phosphate, hemisuccinate, or lower alkyl carbonate, exclusive of amino acid esters.

3,847,929
HYDROXY OR ALKOXY DERIVATIVES OF 5-HALO-1H-PYRAZOLO[3,4-b]PYRIDINES

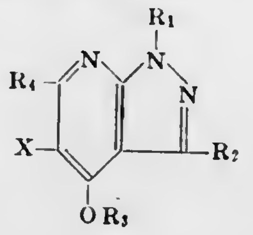
Theodore Denzel, Nurnberg, and Hans Hoehn, Tegernheim, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Mar. 16, 1973, Ser. No. 342,020

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 H **12 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen, methyl, ethyl, phenyl, benzyl or phenethyl;

R_2 is hydrogen methyl or ethyl;

R_3 is hydrogen, lower alkyl, phenyl, phenyl-lower alkyl, di-lower alkylamino-lower alkyl, lower alkylmercapto-lower alkyl or lower alkoxy-lower alkyl;

R_4 is hydrogen, methyl, ethyl or phenyl, and X is halogen,

and physiologically acceptable acid addition salts thereof.

3,847,930
HYDROXYARYL-TETRAMENTHYL-DEHYDROPIPERIDINES

Donald Richard Randell, Stockport, and Malcolm John Smith, Marple, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

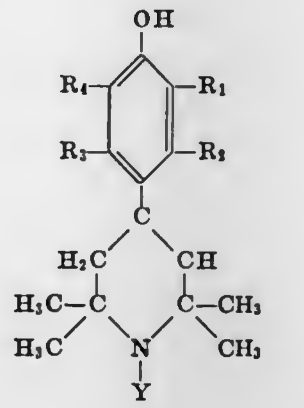
No Drawing. Filed Nov. 28, 1972, Ser. No. 310,181

Claims priority, application Great Britain, Nov. 30, 1971, 55,419/71; July 14, 1972, 32,947/72

Int. Cl. C07d *31/28*

U.S. Cl. 260—297 R **6 Claims**

1. A compound having the formula



wherein

R_1 and R_4 are selected from hydrogen, methyl, ethyl, n-propyl, isopropyl, sec-butyl, t-butyl, 1,1-dimethylpropyl, 1,1-dimethylbutyl, 2-octyl, cyclohexyl, 1-methylcyclohexyl, benzyl, α,α-dimethylbenzyl and phenyl,

R_2 and R_3 are hydrogen, methyl or ethyl groups and

Y is hydrogen, O or methyl.

3,847,931
OXADIAZOLIDINE-3,5-DIONES

Bernd Zeeh, Ludwigshafen, Wolfgang Rohr, Mannheim, Karl-Heinz Koenig, Frankenthal, and Adolf Fischer, Mutterstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Jan. 26, 1972, Ser. No. 221,064

Claims priority, application Germany, Feb. 5, 1971, P 21 05 378.1

Int. Cl. C07d *85/52*

U.S. Cl. 260—307 B **4 Claims**

1. A substituted 1,2,4-oxadiazolidine-3,5-dione selected from the group consisting of 2-(m-3-methylpentyn-(1)-yl-(3)-carbamoyloxyphenyl) - 4 - methyl-1,2,4-oxadiazolidine-3,5-dione; 2 - (m-3-methylbuten-(1)-yl-(3)-carbamoyloxyphenyl)-4-methyl-1,2,4-oxadiazolidine - 3,5 - dione; and 2 - (m - 3 - methylbutyn-(1)-yl-(3)-carbamoyloxyphenyl)-4-methyl-1,2,4-oxadiazolidine-3,5-dione.

3,847,932

BENZIMIDAZOLE COMPOUNDS AND PESTICIDAL PREPARATIONS CONTAINING THEM

Stefan Janiak, Basel, and Otto Rohr, Therwil, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 769,699, Oct. 22, 1968, now Patent No. 3,652,580, dated Mar. 28, 1972. This application Jan. 10, 1972, Ser. No. 216,782

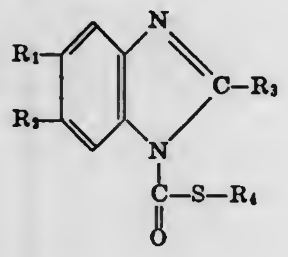
Claims priority, application Switzerland, Oct. 26, 1967, 15,005/67

The term of this patent subsequent to Mar. 28, 1989, has been disclaimed

Int. Cl. C07d *49/38*

U.S. Cl. 260—309.2 **4 Claims**

1. A benzimidazole compound of the formula



wherein R_1, and R_2 may be identical or different and are hydrogen, halogen, lower alkyl, nitro or trifluoromethyl, R_3 is hydrogen, lower alkyl or cycloalkyl of 3 to 6 carbon atoms, and R_4 is lower alkyl, phenyl, phenyl mono- or disubstituted by halogen, lower alkyl or nitro, or benzyl.

3,847,933

ACID CATALYZED ALKYLATION OF HYDANTOIN

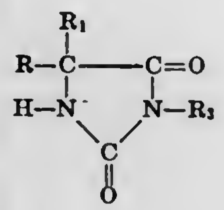
William E. Tyler III, Berkeley Heights, N.J., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 96,643, Dec. 9, 1970. This application Sept. 18, 1972, Ser. No. 289,866

Int. Cl. C07d *49/32*

U.S. Cl. 260—309.5 **7 Claims**

1. A process for the production of a 1-alkylated hydantoin which comprises reacting an olefin of from 3 to 8 carbon atoms and a hydantoin, said hydantoin having the formula:



wherein R and R_1 are selected from the group consisting of hydrogen, lower alkyl, benzyl and phenyl, and R_3 is selected from the group consisting of hydrogen, lower alkyl and benzyl, in the presence of a strong acid selected from the group consisting of sulfuric acid, phosphoric acid, fluorosulfonic acid, phosphoric acid, BF_3, hydrofluoric acid and hydrochloric acid, and said acid being present in an amount sufficient to at least partially dissolve said hydantoin and maintain the reaction in a fluid state, at a temperature in the range from about —75° C. to about 25° C.

3,847,934

7-[IMIDAZOLINYL-(2)-AMINO]-INDAZOLES

Peter Neumann, Bern, Switzerland, assignor to Wander Ltd. (also known as Wander AG), Bern, Switzerland

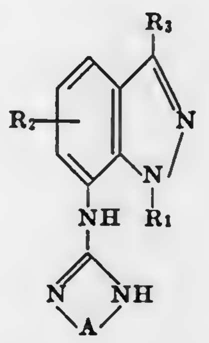
No Drawing. Filed Nov. 29, 1972, Ser. No. 310,204

Claims priority, application Switzerland, Dec. 1, 1971, 17,453/71; Oct. 12, 1972, 14,893/72

Int. Cl. C07d *49/34*

U.S. Cl. 260—309.6 **23 Claims**

1. A compound of the formula



where

R_1 is hydrogen or alkyl of 1 to 3 carbon atoms,
R_2 is hydrogen, fluorine, chlorine, bromine or alkyl, alkoxy or alkylthio each of 1 to 3 carbon atoms,
R_3 is hydrogen, fluorine, chlorine, bromine, alkyl or alkoxy each of 1 to 3 carbon atoms or hydroxy, and
A is dimethylene, hydroxydimethylene or dimethylene mono-substituted by alkyl of 1 to 3 carbon atoms,

or a pharmaceutically acceptable acid addition salt thereof.

3,847,935

5-SUBSTITUTED 1-(3H,1,4-BENZODIAZEPIN-2-YL)-2-IMIDAZOLIDINONES

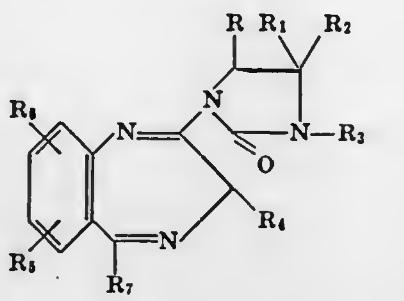
Robert Bruce Moffett, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Apr. 12, 1972, Ser. No. 243,471

Int. Cl. C07d *53/06*

U.S. Cl. 260—309.7 **7 Claims**

1. A compound of the formula



wherein R, R_1 and R_2 are each selected from the group consisting of hydrogen and lower alkyl of 1 to 3 carbon atoms, inclusive; R_3 is selected from the group consisting of hydrogen, lower alkyl of 1 to 4 carbon atoms, inclusive, and lower alkenyl of 3 to 4 carbon atoms, inclusive; R_4 is selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, hydroxy, acetoxy and propionoxy; R_5 is hydrogen; R_6 is selected from the group consisting of hydrogen and halogen; and R_7 is selected from the group consisting of phenyl, mono-halophenyl, 2-pyridyl and 4-pyridyl.

3,847,936

O,O-DIALKYL-O-[1,2-DIAZOLIDIN-ONES-5-YL-3]-THIONOPHOSPHATES

Heinrich Adolphi, Limburgerhof, Wolfram Dietsche, Altrip, Franz Merger, Frankenthal, Peter Beutel, Mannheim, and Rolf Huber, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

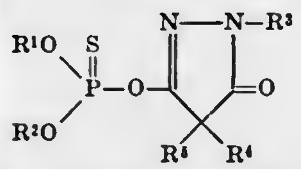
No Drawing. Filed Dec. 7, 1972, Ser. No. 312,974

Claims priority, application Germany, Dec. 18, 1971, P 21 63 063.7

Int. Cl. C07f *9/16*

U.S. Cl. 260—310 A **6 Claims**

1. A dialkylthionophosphoric ester of the formula



where R^1 and R^2 are identical or different and each denotes lower alkyl, R^3 denotes hydrogen, lower alkyl, phenyl or chlorophenyl, R^4 and R^5 are identical or different and each denotes lower alkyl, lower alkoxymethyl, lower alkoxyethyl, or together denote lower alkoxymethylene or pentamethylene.

3,847,937

PROCESS FOR THE PREPARATION OF INDOLES

Pietro Moggi and Ugo Romano, Milan, Italy, assignors to Snam Progetti S.p.A., Milan, Italy

No Drawing. Filed May 12, 1972, Ser. No. 252,885

Claims priority, application Italy, May 13, 1971, 24,466/71

Int. Cl. C07d *27/56*

U.S. Cl. 260—319.1 **8 Claims**

1. A process for preparing indole by pyrolysis, comprising subjecting 1,1′-diphenylaminoethane to a temperature of about 500° C. to about 700° C. for a time from about 2 to about 5 seconds.

3,847,938

BENZENE-SULFONYL SEMICARBAZIDES AND PROCESS FOR PREPARING THEM

Helmut Weber, Frankfurt am Main, Walter Aumüller, Kelkheim, Taunus, Rudi Weyer, Frankfurt am Main, Karl Muth, Kelkheim, Taunus, and Kurt Stach, Mannheim-Waldhof, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

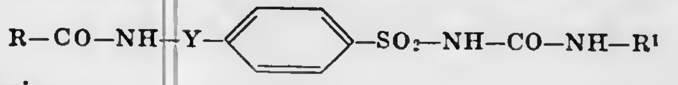
No Drawing. Original application Aug. 7, 1968, Ser. No. 750,747, now Patent No. 3,705,151, dated Dec. 5, 1972. Divided and this application June 2, 1972, Ser. No. 259,299

Claims priority, application Germany, Aug. 12, 1967, F 53,221

Int. Cl. C07d *27/48*

U.S. Cl. 260—326.1 **4 Claims**

1. A benzene-sulfonyl semicarbazide of the formula



wherein

R represents
- (a) phenyl which may carry one or two substituents selected from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, lower alkenoxy, lower alkoxyalkoxy, acetyl, halogen, trifluoro-methyl, or the methylene-dioxy group.
- (b) thienyl which may carry one or two substituents selected from the group consisting of halogen, lower alkyl, lower alkoxy, lower alkenyloxy, lower alkoxyalkoxy, phen-loweralkoxy, or polymethylene chain containing from 3 to 4 carbon atoms, linked at its two ends to the thienyl group,

Y represents $—CH_2—CH_2—$, $—CH_2—CH—(CH_3)—$ or $—CH—(CH_3)—CH_2—$,

R^1 represents 4,7-endoalkylene-hexahydro-iso-indoline or 4,7-endoalkylene-tetrahydro-iso-indoline, having 1 to 2 carbon atoms in the endoalkylene group, in the case of tetrahydrocompounds the double linkage being in 5,6-position; 4,7-endocyclobutylene-hexahydro-iso-indoline; 4,7-endocyclobutylene-Δ^5-tetrahydro-iso-indoline; 4,7-endocyclopropylene-Δ^5 - tetrahydro-iso-indoline; or 4,7-endocyclopropenylene-hexahydro-iso-indoline; and salts thereof formed from pharmaceutically acceptable bases.

3,847,939

3,5-DICHLOROPHENYLCARBAMYL PYRROLIDINE

Alexander Mihailovski, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Mar. 13, 1972, Ser. No. 234,334

Int. Cl. C07d *27/02*

U.S. Cl. 260—326.4 **1 Claim**

1. 3,5-dichlorophenylcarbamylpyrrolidine.

3,847,940

AMINOETHANESULFONYL DERIVATIVES AND THEIR PRODUCTION

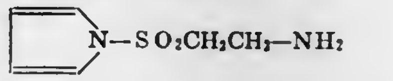
Shun-ichi Naito, 35 Murasakino Kamitoridacho, Kita-ku, Kyoto, Japan

No Drawing. Original application July 19, 1971, Ser. No. 164,007, now Patent No. 3,743,647. Divided and this application Dec. 1, 1972, Ser. No. 311,276

Int. Cl. C07d *27/24*

U.S. Cl. 260—326.9 **2 Claims**

1. A compound of the formula:



and the pharmaceutically acceptable acid addition salts thereof.

3,847,941

5-HYDROXYTRYPTOPHAN ALPHA-KETO-GLUTARATE AND ITS DERIVATIVES

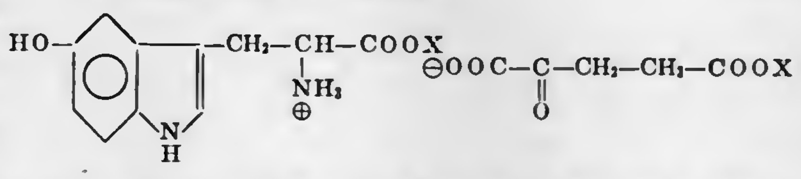
Miguel Fernandez Brana and Christobal Martinez Roldan, Madrid, Spain, assignors to Laboratorios Made, S.A., Madrid, Spain

No Drawing. Filed June 11, 1973, Ser. No. 368,829

Int. Cl. C07d *27/00, 27/56*

U.S. Cl. 260—326.14 **1 Claim**

1. A compound of the formula:



in which X is hydrogen, alkali or alkaline earth metals, or basic organic radical compounds.

3,847,942

NOVEL SUBSTITUTED THIETANES AND THEIR PREPARATION

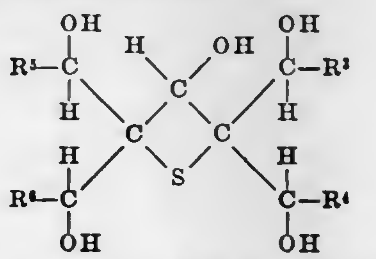
James N. Kellen and Peter E. Throckmorton, Lake, Minn., assignors to Ashland Oil, Inc., Ashland, Ky.

No Drawing. Continuation of application Ser. No. 622,429, Mar. 13, 1967. This application Aug. 3, 1972, Ser. No. 277,757

Int. Cl. C07d *61/00*

U.S. Cl. 260—327 R **6 Claims**

1. A compound having the formula:



wherein R^3, R^4, R^5, and R^6 are hydrogen alkyl, furyl or phenyl.

3,847,943
PREPARING ANETHOLE TRITHIONE USING SULFOLANE SOLVENT

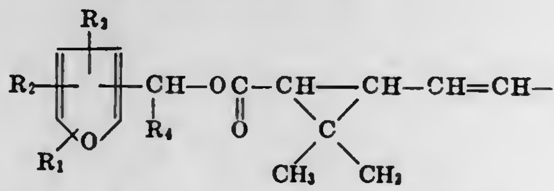
Paul F. Warner, Phillips, Tex.
(% Phillips Petroleum Co., Bartlesville, Okla. 74004)
No Drawing. Filed Sept. 8, 1972, Ser. No. 287,248
Int. Cl. C07d *71/02*
U.S. Cl. 260—327 C **3 Claims**

1. A process for the preparation of anethole trithione which comprises reacting anethole with sulfur at an elevated temperature of the order of 350 to 450° F. in the presence of sulfolane as a solvent.

3,847,944
PROPENYLCYCLOPROPANECARBOXYLATES

Nobuo Ohno and Nobushige Itaya, Ikeda, Toshio Mizutani and Shigeyoshi Kitamura, Toyonaka, Takashi Matsuo, Amagasaki, and Yositosi Okuno, Toyonaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
No Drawing. Filed Dec. 27, 1971, Ser. No. 212,637
Claims priority, application Japan, Dec. 25, 1970, 45/129,006; May 12, 1971, 46/32,027; July 5, 1971, 46/49,739
Int. Cl. C07d *5/16*
U.S. Cl. 260—332.2 R **7 Claims**

1. A compound of the formula

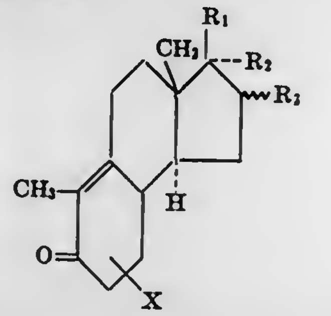


wherein propenyl group on the cyclopropane ring is cis or trans configuration regarding the double bond, and R_1 is a C_1–C_3 alkyl, allyl, propargyl, benzyl, thenyl. furylmethyl, phenoxy or lower alkyl-substituted benzyl, thenyl, furylmethyl or phenoxy, R_2 and R_3 are hydrogen or methyl respectively, or R_1 and R_2 are bonded at respective ends of the adjacent two groups to form a C_3–C_4 poylmethylene group, R_4 is hydrogen, lower alkyl, lower alkenyl or lower alkinyl.

3,847,945
PROCESSES FOR THE PREPARATION OF DESA-ANDROST - 9-EN-5-ONES AND DESA-PREGN-9-EN-5-ONES

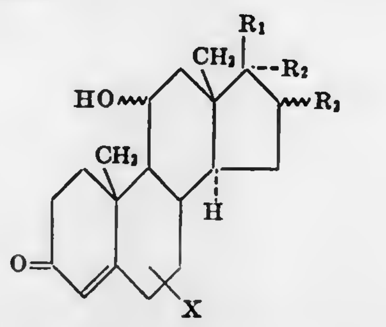
Milan Radoje Uskokovic, Upper Montclair, N.J., assignor to Hoffmann-La Roche, Inc., Nutley, N.J.
No Drawing. Application Oct. 20, 1965, Ser. No. 499,094, now Patent No. 3,574,761, dated Apr. 13, 1971, which is a continuation-in-part of application Ser. No. 400,206, Sept. 29, 1964, now Patent No. 3,412,107. Divided and this application June 17, 1968, Ser. No. 737,329
Int. Cl. C07d *11/00*
U.S. Cl. 260—338 **12 Claims**

1. A process for the preparation of a desA-androst-9-en-5-one of the formula:



wherein R_1 is hydroxy, lower alkanoyloxy, carboxyloweralkanoyloxy, benzoyloxy, tetrahydropyranyloxy, benzyloxy, benzhydryloxy, trityloxy, allyloxy, or lower alkoxy-lower alkoxy; R_2 is hydrogen or lower alkyl; R_1 and R_2 taken together are selected from the group consisting of (17β-OH,17α-lower alkanoic acid lactone), lower alkylenedioxy and oxo; R_3 is hydrogen, lower alkyl, hydroxy, lower alkanoyloxy, carboxyloweralkanoyloxy, benzoyloxy, tetrahydropyranyloxy, benzyloxy, benzhydryloxy, trityloxy, allyloxy, or lower alkoxy-lower alkoxy; and X is a substituent in the 6- or 7-position selected from the group consisting of hydrogen, lower alkyl, lower alkylthio, lower alkanoylthio and halogen;

comprising esterifying an 11-hydroxy-androst-4-en-3-one having the formula:



wherein R_1, R_2, R_3 and X are as above;

to form a leaving group in the 11-position selected from the group consisting of toluene sulfonate, lower alkyl sulfonate and nitrophenyl sulfonate; subjecting the resulting androst-4-en-3-one with the leaving group in the 11-position to oxidative ring opening to form the corresponding 5 - oxo - 11 - (leaving group)-3,5-secoA-norandrostan-3-oic acid; forming an alkali metal salt of said acid; and pyrolyzing said alkali metal salt by heating said alkali metal salt to a temperature of about 200° C. to about 350° C. to form said desA-androst-9-en-5-one.

3,847,946
HYDROGENATION

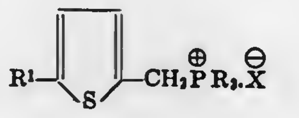
Marvin M. Johnson and Donald C. Tabler, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Original application Apr. 2, 1970, Ser. No. 25,239, now Patent No. 3,676,332. Divided and this application Mar. 9, 1972, Ser. No. 233,294
Int. Cl. C07d *63/02*
U.S. Cl. 260—329.3 **13 Claims**

1. A process for selectively hydrogenating the ring unsaturation of heterocyclic sulfur-containing compounds contained in a hydrocarbon feedstream which comprises contacting said feedstream with hydrogen and a molybdenum-arsenic catalyst consisting essentially of about 2 to 20 weight percent molybdenum and a molybdenum to arsenic weight ratio of about 1:1 to about 5:1 and an inorganic oxide support under hydrogenation conditions, said catalyst having been reduced with hydrogen prior to said contacting.

3,847,947
QUATERNARY THENYL PHOSPHONIUM SALTS

Peter F. Epstein, Prairie Village, Kans., assignor to Chemagro Corporation
No Drawing. Continuation of abandoned application Ser. No. 18,745, Mar. 11, 1970. This application July 3, 1972, Ser. No. 268,321
Int. Cl. C07d *63/14*
U.S. Cl. 260—332.5 **7 Claims**

1. A 2-thenyl-phosphonium salt of the formula



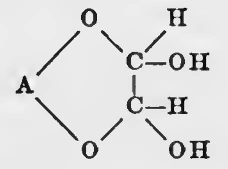
in which

R^1 is halo,
R each individually is butyl, and
X is a monovalent anion selected from the group consisting of halide, thiocyanate, nitrate, O,O-diethyldithiophosphate, O-ethyl xanthate and N,N-dimethyl dithiocarbamate.

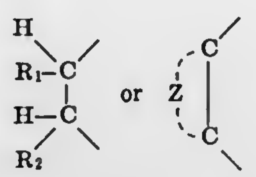
3,847,948
PROCESS FOR THE PREPARATION OF NOVEL DIHYDROXY-1,4-DIOXANES

Nobuo Yamamoto, Minami-Ashigara-machi, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Continuation-in-part of abandoned application Ser. No. 850,673, Aug. 15, 1968. This application June 4, 1971, Ser. No. 150,164
Claims priority, application Japan, Aug. 17, 1968, 43/58,799
Int. Cl. C07d *15/12, 15/18*
U.S. Cl. 260—340.3 **15 Claims**

1. A dihydroxy-1,4-dioxane compound represented by the following formula:



wherein A represents



and wherein R_1 represents hydrogen, alkyl of from 1 to 18 carbon atoms, monohaloalkyl of from 1 to 8 carbon atoms, alkoxyalkyl having a total number of from 2 to 13 carbon atoms, phenyl or phenoxyalkyl having a total number of from 7 to 18 carbon atoms; R_2 represents alkyl of from 1 to 18 carbon atoms, monohaloalkyl of from 1 to 8 carbon atoms, alkoxyalkyl having a total number of from 2 to 13 carbon atoms, phenyl or phenoxyalkyl having a total number of from 7 to 18 carbon atoms; and Z represents carbon-to-carbon chain of 4 carbon atoms to form a non-substituted or mono-substituted aromatic carbon ring of 6 carbon atoms, the substituent on said ring being alkyl of from 1 to 5 carbon atoms.

3,847,949
MACROCYCLIC HETERO IMINE COMPLEXING AGENTS

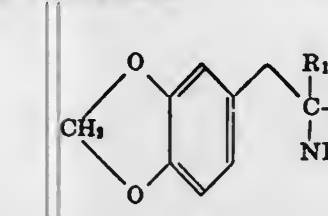
Charles John Pedersen, Salem, N.J., and Marilyn H. Bromels, Talleyville, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Jan. 8, 1973, Ser. No. 321,575
Int. Cl. C07d *19/00*
U.S. Cl. 260—340.3 **1 Claim**

1. 5,6,14,15 - dibenzo - 4,7,13,16 - tetraoxa - 1,10 - diazacyclooctadeca-5,14-diene.

3,847,950
α,α-DIALKYLPHENETHYLAMINE DERIVATIVES

John T. Suh, Mequon, and Thomas M. Bare, Milwaukee, Wis., assignors to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Filed Sept. 28, 1972, Ser. No. 293,126
Int. Cl. C07d *13/10*
U.S. Cl. 260—340.5 **3 Claims**

1. A compound selected from the class consisting of a compound of the formula

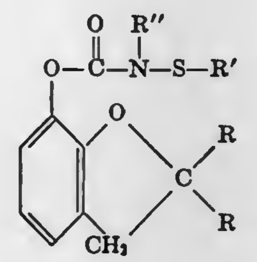


in which R_1 and R_2 are lower alkyl, and pharmaceutically acceptable salts thereof.

3,847,951
INSECTICIDAL N-THIO-SUBSTITUTED CARBAMATES OF DIHYDROBENZOFURANOLS

Gustave K. Kohn, Berkeley, Calif., and Melancthon S. Brown, deceased, late of Berkeley, Calif., by Gustave K. Kohn, special administrator of the estate of said Melancthon S. Brown, assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Continuation-in-part of abandoned applications Ser. No. 235,796 and Ser. No. 235,797, both Mar. 17, 1972, which are continuation-in-parts of application Ser. No. 230,117, Feb. 28, 1972, now Patent No. 3,792,169, which is a division of application Ser. No. 855,421, Sept. 4, 1969, now Patent No. 3,663,594, which in turn is a continuation-in-part of abandoned application Ser. No. 764,299, Oct. 1, 1968. This application Dec. 21, 1972, Ser. No. 317,317
Int. Cl. C07d *5/32*
U.S. Cl. 260—346.2 **13 Claims**

1. A compound of the formula



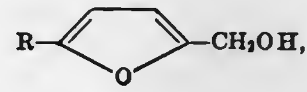
wherein

R and R″ individually are hydrogen or alkyl of 1 to 4 carbon atoms;
R′ is alkyl of 1 to 12 carbon atoms, alkenyl of 2 to 12 carbon atoms, monocyclic or bicyclic aryl of 6 to 10 carbon atoms, alkyl of 2 to 12 carbon atoms substituted with 1 to 5 fluorine, chlorine or bromine atoms, alkenyl of 2 to 12 carbon atoms substituted with 1 to 5 fluorine, chlorine or bromine atoms, or monocyclic or bicyclic aryl of 6 to 10 carbon atoms substituted with 1 to 5 fluorine, chlorine or bromine atoms, or 1 to 2 nitro groups.

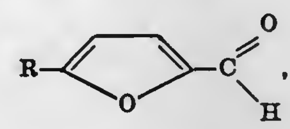
3,847,952
PROCESS FOR PRODUCING ALCOHOLS OF THE FURAN SERIES

Vladimir Alexandrovich Smirnov, ul. B. Khmelnitskogo 151, kv. 21, Novocherkassk, U.S.S.R.; Vladimir Grigorievich Kulnevich, ulitsa Sadovaya 214, kv. 2; and Galina Nikolaevna Soltovets, 4 proezd Krupskoi 4, kv. 51, both of Krasnodar, U.S.S.R.; and Dmitry Platonovich Semchenko, ulitsa B. Khmelnitskogo 147, Novocherkassk, U.S.S.R.
No Drawing. Continuation of abandoned application Ser. No. 777,194, Nov. 19, 1968. This application June 28, 1971, Ser. No. 157,608
Int. Cl. C07d *5/20*
U.S. Cl. 260—347.8 **7 Claims**

1. A method of producing an alcohol of the furan series having the formula:



wherein R is H, CH_3, CH_2OH, Cl or Br, said method comprising feeding an aqueous solution of an aldehyde of the furan series having the formula:



wherein R is defined above and containing from 2 to 5% by wt. of an inorganic or organic acid onto an amalgam of an alkali metal of 0.1–3.0 N concentration at a rate providing decomposition of the amalgam of from 800 to 3000 a./m.^{2} while saturating the aldehyde solution with carbon dioxide to neutralize alkali developed during amalgam decomposition.

3,847,953
ANTHRAQUINONE DERIVATIVES

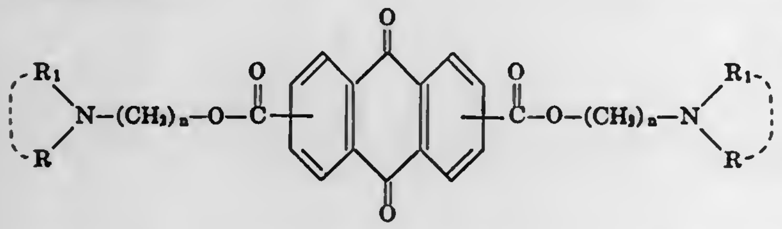
Arthur D. Sill, Cincinnati, Ohio, and Robert W. Fleming, Ann Arbor, Mich., assignors to Richardson-Merrell Inc., New York, N.Y.

No Drawing. Filed Dec. 21, 1972, Ser. No. 317,239

Int. Cl. C07c *93/20*

U.S. Cl. 260—376 **6 Claims**

1. A bis-basic ester of anthraquinone having the general formula:



wherein n is an integer of from 2 to 6; R and R_1 are each selected from the group consisting of hydrogen, lower alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms, alkenyl having from 3 to 6 carbon atoms in which the unsaturation is in a position other than in the 1-position of the alkenyl group, and when R and R_1 are taken together with the nitrogen atom to which they are attached represent the pyrrolidinyl, piperidino or morpholino radicals; and the pharmaceutically acceptable acid addition salts thereof.

3,847,954
3-OXYGENATED 23-DI(LOWER ALKYL)AMINO-22-METHYL-24-NORCHOLA-4/5,20(22)-DIENES AND INTERMEDIATES

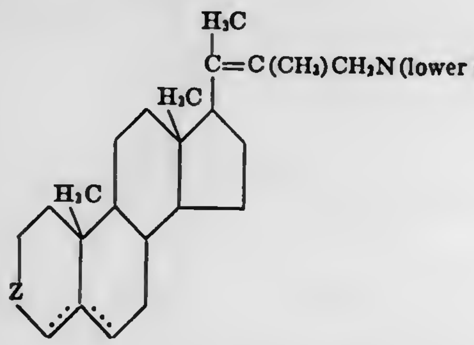
George R. Lenz, Glenview, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed July 30, 1973, Ser. No. 383,764

Int. Cl. C07c *169/32, 169/34*

U.S. Cl. 260—397.1 **14 Claims**

1. A compound of the formula



wherein Z represents β-(lower alkanoyloxy)methylene, β-hydroxymethylene, or carbonyl and the dotted line denotes Δ^4 unsaturation when Z represents carbonyl and Δ^5 unsaturation otherwise.

3,847,955
1,24,25-TRIHYDROXYCHOLECALCIFEROL

Hector F. De Luca, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

No Drawing. Filed July 16, 1973, Ser. No. 379,621

Int. Cl. C07c *169/48, 171/08*

U.S. Cl. 260—397.2 **1 Claim**

1. 1,24,25-trihydroxycholecalciferol.

ERRATUM

For Class 260—404 see:
Patent No. 3,847,047

3,847,956
2-HYDROPEROXYCARBOXYLIC ACIDS AND THEIR PREPARATION

Leonard S. Silbert, Philadelphia, Philip E. Pfeffer, Warrington, and Dolores A. Konen, Philadelphia, Pa., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Apr. 6, 1973, Ser. No. 348,554

Int. Cl. C08h *17/36*

U.S. Cl. 260—413 **18 Claims**

1. A process for the preparation of 2-hydroperoxycarboxylic acids comprising adding slowly to oxygen-saturated ethyl ether at about −80° C a dianion solution of an aliphatic carboxylic acid, warming the reaction mixture to about −10° C, acidifying the mixture with dilute hydrochloric acid and extracting out the 2-hydroperoxycarboxylic acid with ethyl ether.

3,847,957
CHROMYL BIS-(TRIORGANOTITANATES) AND RELATED COMPOUNDS

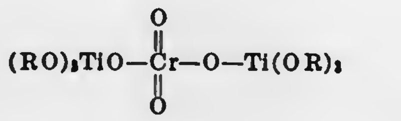
David E. Boone, Downers Grove, Ill., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Original application Mar. 24, 1972, Ser. No. 237,922, now Patent No. 3,752,795. Divided and this application Feb. 20, 1973, Ser. No. 334,009

Int. Cl. C07f *7/28*

U.S. Cl. 260—429.5 **6 Claims**

1. A compound of the formula:



$$(RO)_3TiO-\underset{\underset{\textstyle O}{\|}}{\overset{\overset{\textstyle O}{\|}}{Cr}}-O-Ti(OR)_3$$

wherein R is a hydrocarbon radical selected from the group consisting of alkyl, alkaryl, aryl and cycloalkyl radicals.

3,847,958
FERROCENE-CONTAINING MONOMERS

Travis E. Stevens and Samuel F. Reed, Jr., Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Original application July 31, 1969, Ser. No. 849,254. Divided and this application May 18, 1971, Ser. No. 144,283

Int. Cl. C07f *15/02*

U.S. Cl. 260—439 CY **3 Claims**

1. A polymerizable monomer selected from pentaerythritol methacrylate tris (ferrocenoate) and pentaerythritol acrylate tris (ferrocenoate).

3,847,959
PROCESS OF PREPARING A ZEROVALENT NICKEL COMPLEX WITH ORGANIC PHOSPHORUS COMPOUNDS

Howard E. Shook, Jr., Orange, Tex., and John B. Thompson, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 25, 1972, Ser. No. 300,823

Int. Cl. C07f *15/02*

U.S. Cl. 260—439 R **12 Claims**

1. A process for preparing a zerovalent complex of nickel with an organic phosphorus compound of the formula PZ_3 wherein Z is OR and R is a hydrocarbyl aryl radical having up to 18 carbon atoms which comprises

(a) contacting nickel chloride with a reactant mixture consisting essentially of an organic nitrile of the group consisting of 3-pentenenitrile, 4-pentenenitrile, adiponitrile, methylglutaronitrile, and ethylsuccinonitrile and a zinc halide of the group consisting of zinc chloride, zinc bromide and zinc iodide, the zinc halide being present in an amount to provide a mole ratio of zinc halide with respect to nickel chloride to be dissolved of at least 2, and agitating the resulting mixture at a temperature in the range of 25–140° C. to effect a desired degree of solution of nickel chloride in the reactant mixture and (b) thereafter contacting the dissolved nickel chloride with the organic phosphorus compound PZ_3 and a finely-divided reducing metal which is more electropositive than nickel in the reactant mixture containing PZ_3 and maintaining the reactant mixture at a temperature in the range of 60–115° C. to produce the zerovalent nickel complex of PZ_3.

3,847,960
ORGANIC COMPOUNDS

Lajos Avar, Binningen, Basel-Land, Kurt Hofer, Munchenstein, Basel-Land, and Martin Preiswerk, Basel, Switzerland, assignors to Sandoz Ltd., also known as Sandoz AG, Basel, Switzerland

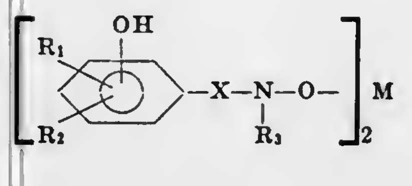
No Drawing. Filed Apr. 9, 1973, Ser. No. 349,641

Claims priority, application Switzerland, Apr. 13, 1972, 5,481/72

Int. Cl. C07j *15/04, 1/08, 3/06*

U.S. Cl. 260—439 R **19 Claims**

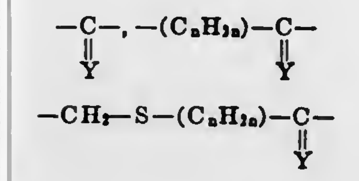
1. A compound of formula I,



I

in which

- R_1 signifies a tertiary alkyl radical of 4 to 14 carbon atoms or a tertiary cycloalkyl radical of up to 14 carbon atoms and containing 5 to 7 ring carbon atoms, which tertiary alkyl radical or tertiary cycloalkyl radical is in an ortho position to the hydroxyl group,
- R_2 signifies a hydrogen atom, an alkyl radical of 1 to 20 carbon atoms, an alkoxy radical of 1 to 20 carbon atoms, a cycloalkylalkyl radical of up to 20 carbon atoms, an aralkyl of up to 20 carbon atoms, a cycloalkyl radical, an alkylcycloalkyl radical of up to 20 carbon atoms, an unsubstituted phenyl radical or a phenyl radical substituted by 1 or 2 alkyl radicals of 1 to 6 carbon atoms, any cycloalkyl moiety or radical having 5 to 7 ring carbon atoms,
- R_3 signifies a hydrogen atom, an alkyl radical of 4 to 8 carbon atoms, an unsubstituted phenyl or naphthyl radical or a phenyl or naphthyl radical substituted by up to 2 alkyl radicals of 1 to 6 carbon atoms or by up to two halogen atoms, cyano or nitro groups,
- X signifies



$$-\underset{\underset{\textstyle Y}{\|}}{C}-,\ -(C_nH_{2n})-\underset{\underset{\textstyle Y}{\|}}{C}-$$

$$-CH_2-S-(C_nH_{2n})-\underset{\underset{\textstyle Y}{\|}}{C}-$$

or

where

- Y signifies an oxygen or sulphur atom and
- n signifies 1, 2, 3, 4, 5 or 6, and
- M signifies a divalent nickel, zinc, copper or manganese ion.

3,847,961
FLUOROALIPHATICTHIOMETHYLSILOXANES

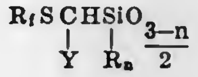
Robert J. Koshar, Village of Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Apr. 2, 1973, Ser. No. 346,992

Int. Cl. C07f *7/08*

U.S. Cl. 260—448.2 N **18 Claims**

1. An organosiloxane containing at least one unit of the formula



$$R_fS\underset{\underset{\textstyle Y}{|}}{C}H\underset{\underset{\textstyle R_n}{|}}{Si}O_{\frac{3-n}{2}}$$

wherein

- R_f is a highly fluorinated monovalent fluoroaliphatic radical having 1 to 18 carbon atoms,
- R is an organic radical selected from methyl, ethyl, and phenyl groups,
- Y is selected from methyl, chloromethyl, phenyl, R_fS, R_fCH_2, chlorine and hydrogen, and
- n is 0–2,

the remaining groups in the organosiloxane being siloxy groups containing only methyl, ethyl, or phenyl groups bonded to silicon.

3,847,962
PROSTAGLANDINS AND PROCESS AND INTERMEDIATES THEREFOR

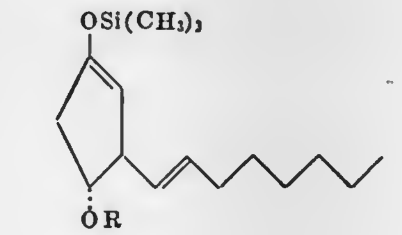
John W. Patterson, Mountain View, and John H. Fried, Palo Alto, Calif., assignors to Syntex (U.S.A.) Inc.

No Drawing. Original application May 12, 1972, Ser. No. 252,721. Divided and this application Oct. 10, 1973, Ser. No. 404,857

Int. Cl. C07f *7/18*

U.S. Cl. 260—448.8 R **7 Claims**

1. The *dl* compounds of the formula:



wherein R is $-CH_2CH_2Cl$ or $-C(CH_3)_2O(CH_2)_xCH_3$ in which x is 0, 1, 2 or 3.

3,847,963
METHANATION PROCESSES

Jean-Marc Lalancette, Sherbrooke, Quebec, Canada, assignor to Ventron Corporation, Beverly, Mass.

Filed Feb. 1, 1973, Ser. No. 328,723

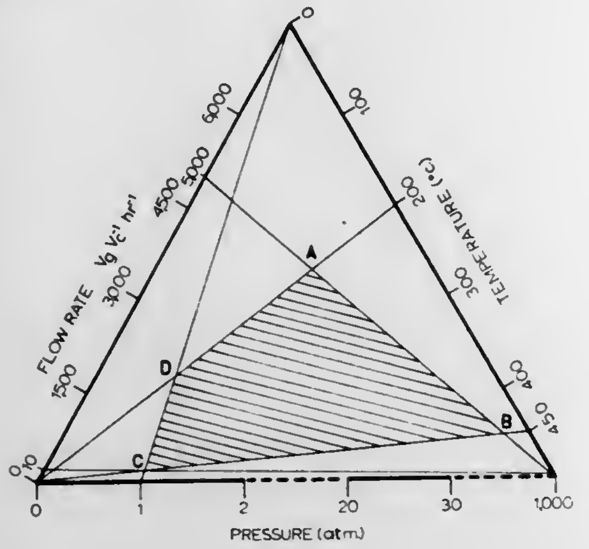
Int. Cl. C07c *27/06*

U.S. Cl. 260—449 M **11 Claims**

1. A single stage process for producing methane substantially devoid of any carbon oxide from a gaseous mixture of hydrogen and at least one carbon oxide which comprises:

(a) heating said gaseous mixture to a temperature within the range of 200 to 450° C., and

(b) passing said gaseous mixture at a flow rate of from 10 to 500 $V_g\ V_c^{-1}$ hr.$^{-1}$ and under a pressure of as low as one atmosphere in contact with a catalyst composition consisting essentially of a transition metal catalyst intercalated within the crystals of a crystallized carbon graphite, the carbon atoms having a definite planar alignment and wherein the transition metal is in the metallic state having a zero valence, and is selected from the group consisting of nickel, palladium and platinum,



thereby to produce methane gas substantially devoid of any carbon oxide.

3,847,964
MANUFACTURE OF PERFLUOROCARBOXYLIC ACID NITRILES

Eckhard Hetzel, Frankenthal, and Olaf Korpiun, Heidelberg, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Feb. 26, 1973, Ser. No. 335,818
Claims priority, application Germany, Feb. 25, 1972, P 22 08 923.2
Int. Cl. C07c *121/12*
U.S. Cl. 260—465.2 **5 Claims**

1. An improved process for the manufacture of perfluorocarboxylic acid nitriles by reacting perfluorocarbonamides with phosphorus pentoxide at elevated temperatures, the improvement which comprises reacting in a reaction zone a perfluorocarbonamide with phosphorus pentoxide in the gas phase at temperatures of from 450° to 600° C. at a ratio in the reaction mixture of 1–10 moles of phosphorus pentoxide per mol of perfluorocarbonamide with a residence time of 2–20 seconds in said reaction zone, and using nitrogen as an inert carrier gas for the perfluorocarbonamide and the phosphorus pentoxide.

3,847,965
PROCESS FOR PREPARING ACRYLONITRILE BY THE AMMOXIDATION OF PROPYLENE USING A METAL OXIDE COMPOSITION OF ANTIMONY-TIN-COPPER-IRON AND AN ADDITIONAL METAL

Edward James Gasson, Dollar, Stanley Frederic Marrian, Aberdour, and Thomas Charles Krosnar, Polmont, Scotland, assignors to BP Chemicals International Limited, London, England

No Drawing. Filed Mar. 12, 1973, Ser. No. 339,999
Claims priority, application Great Britain, Mar. 17, 1972, 12,607/72
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.3 **10 Claims**

1. A process for the production of acrylonitrile which comprises reacting at an elevated temperature in the vapor phase, propylene, molecular oxygen and ammonia over a catalyst which is an oxide composition essentially consisting of antimony, tin, copper, iron and an additional metal selected from the group consisting of beryllium, magnesium, calcium, zinc, strontium, cadmium, and barium, said catalyst having been heat treated, before use, at a temperature between 550° and 1100° C. in a molecular oxygen-containing gas.

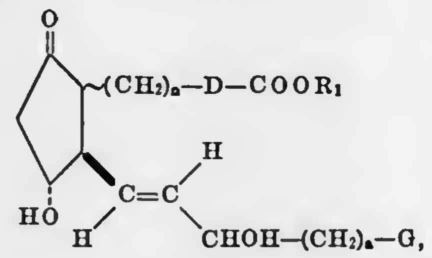
3,847,966
PROSTAGLANDIN E_1, F_1, AND A_1 ANALOGS

John E. Pike, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

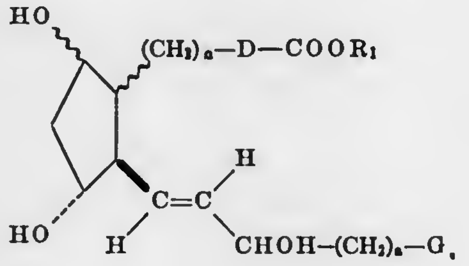
No Drawing. Continuation-in-part of application Ser. No. 168,455, Aug. 2, 1971, which is a division of application Ser. No. 748,158, July 29, 1968, both now abandoned. This application Jan. 16, 1973, Ser. No. 324,026
Int. Cl. C07c *61/32, 61/36, 69/74*
U.S. Cl. 260—468 D **17 Claims**

1. An optically active compound of the absolute configuration of natural PGE_1 or a racemic compound with the formula:

IV

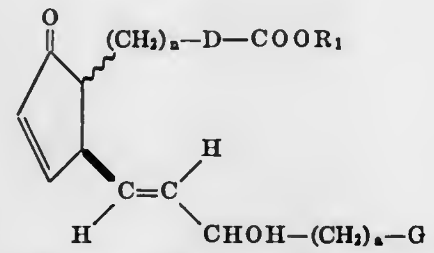


V



or

VI



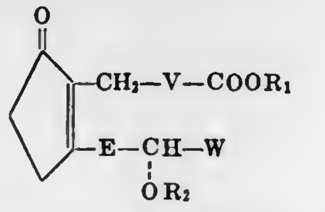
wherein *n* is 1 to 6 and *a* is zero to 4; wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one to 3 chloro or alkyl of one to 4 carbon atoms, inclusive; wherein D is ethylene substituted by one or 2 fluoro; wherein G is 3,3,difluorobutyl, 4,4-difluorobutyl, 4,4,4-trifluorobutyl, 3,3,4,4-tetrafluorobutyl, or 3,3,4,4,4-pentafluorobutyl; and wherein ~ indicates attachement of the group to the ring in alpha or beta configuration, and pharmacologically acceptable salts thereof when R_1 is hydrogen.

3,847,967
15-LOWER ALKOXY PGB COMPOUNDS

Frank H. Lincoln, Jr., 5235 Ridgebrook Drive, Portage, Mich. 49081, John E. Pike, 2312 Lorraine Ave., and Gilbert A. Youngdale, 1702 Greenbriar Drive, both of Kalamazoo, Mich. 49008

No Drawing. Original application May 4, 1971, Ser. No. 140,251, now abandoned. Divided and this application Jan. 26, 1973, Ser. No. 326,911
Int. Cl. C07c *61/36, 69/74*
U.S. Cl. 260—468 D **9 Claims**

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein E is —CH_2CH_2— or

trans-CH=CH—;

wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, or a pharmacologically acceptable cation; wherein R_2 is alkyl of one to 5 carbon atoms, inclusive; wherein V is either —$(CH_2)_5$— or cis-CH=CH—$(CH_2)_3$—, provided that E is —CH_2CH_2— only when V is —$(CH_2)_5$—; and wherein W is 1-pentyl or cis 1-pent-2-enyl provided that W is cis 1-pent-2-enyl only when E is trans

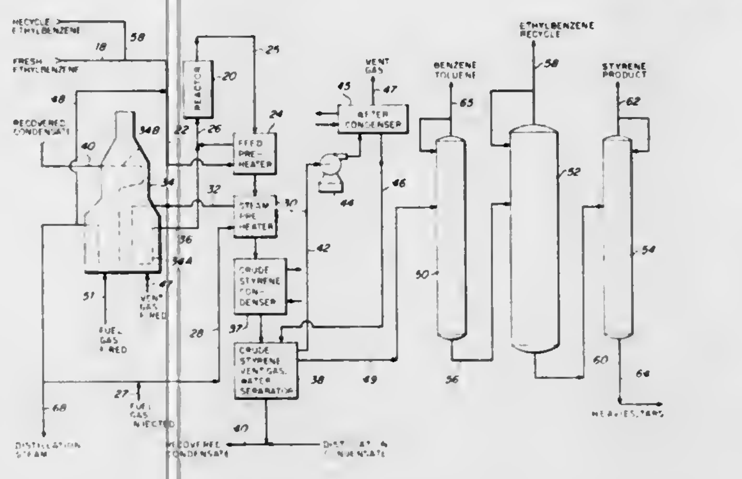
—CH=CH—

and V is —CH=CH—$(CH_2)_3$—.

3,847,968
METHOD OF PRODUCING STYRENE

Richard E. Hughes, Belmont, Mass., assignor to The Badger Company, Inc., Cambridge, Mass.

Filed July 30, 1973, Ser. No. 383,584
Int. Cl. C07c *5/18, 15/20*
U.S. Cl. 260—669 R **16 Claims**



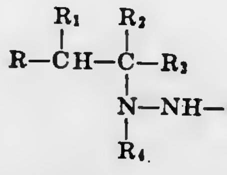
1. In a process involving dehydrogenation of ethylbenzene in the presence of steam in a dehydrogenation reactor at elevated temperature to produce styrene, the improvement comprising introducing a quantity of combustible fuel gas at an elevated temperature into the dehydrogenation reactor as a heat source, and thereby reducing the steam requirements of said process.

3,847,969
DIASTEREOMERS OF ESTERS AND SALTS OF α-HYDRAZINO-β-(PHENYL)PROPIONIC ACID

Sandor Karady, Elizabeth, Seemon H. Pines, Murray Hill, Manuel G. Ly, Edison, and Meyer Sletzinger, North Plainfield, N.J., assignors to Merck & Co. Inc., Rahway, N.J.

No Drawing. Original application June 24, 1970, Ser. No. 49,542, now Patent No. 3,718,678. Divided and this application Nov. 15, 1971, Ser. No. 199,060
Int. Cl. C07c *109/10*
U.S. Cl. 260—471 A **3 Claims**

1. A diastereomer of a compound of the formula



$$R-\underset{}{\overset{R_1}{\overset{|}{C}}}H-\underset{\underset{R_4}{\overset{|}{N}}-NH-R_5}{\overset{R_2}{\overset{|}{C}}}-R_3$$

wherein

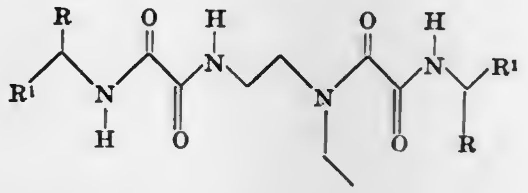
R is a 3,4-disubstituted phenyl radical wherein the substituents are acetoxy;
R_1 and R_2 are hydrogen or lower alkyl;
R_3 is —COOlower alkyl or —COOcation; and
R_4 and R_5 are hydrogen, benzoyl or lower alkanoyl with at least one group being hydrogen with an optically active acid selected from the group consisting of camphoric acid, dibenzoyltartaric acid, ditolyltartaric acid, malic acid, α-methyl-α-phenylacetic acid, and atrolactic acid.

3,847,970
CERTAIN NON-TERPENOID JUVENILE HORMONE MIMICKING COMPOUNDS

Ferenc Marcus Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

No Drawing. Filed Jan. 28, 1974, Ser. No. 437,128
Int. Cl. C07c *101/26, 103/14*
U.S. Cl. 260—482 P **5 Claims**

1. A compound of the formula



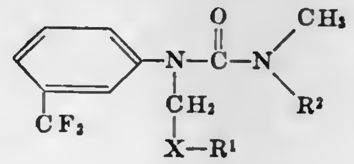
in which R is alkyl having 1 to 4 carbon atoms and R^1 is alkyl having 1 to 4 carbon atoms with the proviso that R and R^1 taken together have no more than 6 carbon atoms.

3,847,971
SUBSTITUTED m-TRIFLUOROMETHYLPHENYLUREA DERIVATIVES

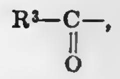
Karl-Heinz Koenig, Frankenthal, Rudolf Kolbinger, Speyer, and Adolph Fischer, Mutterstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Jan. 5, 1972, Ser. No. 215,664
Claims priority, application Germany, Jan. 15, 1971, P 21 01 698.8
Int. Cl. C07c *127/20, 127/22, 153/07*
U.S. Cl. 260—490 **2 Claims**

1. A substituted m-trifluoromethylphenylurea derivative of the formula



where R^1 denotes the radical



$$R^3-\underset{\underset{O}{\|}}{C}-,$$

R^3 denotes lower alkyl, phenyl or benzyl, X denotes oxygen, and R^2 denotes alkyl of 1 to 3 carbon atoms, methoxy or hydrogen.

3,847,972
PRODUCTION OF VINYL ACETATE

Naoya Kominami, Tokyo, Hitoshi Nakajima, Ageo, Nobuhiro Tamura, Tokyo, and Kusuo Ohki, Yamatomachi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of application Ser. No. 733,284, May 31, 1968. This application June 17, 1971, Ser. No. 154,009
Claims priority, application Japan, June 12, 1967, 42/37,112
Int. Cl. C07c *67/04*
U.S. Cl. 260—497 A **4 Claims**

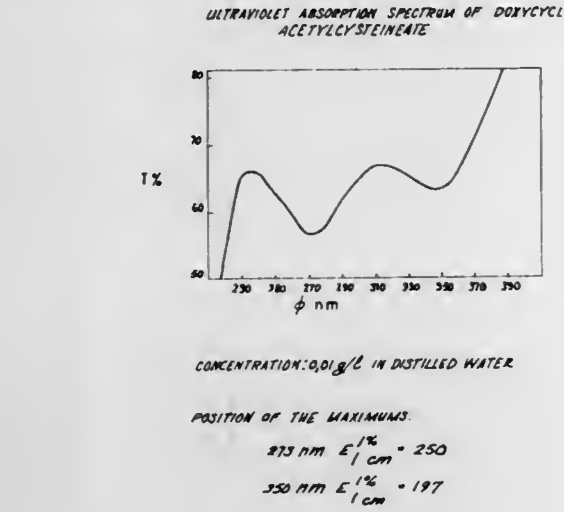
1. In a process for producing vinyl acetate wherein a gas mixture containing ethylene, acetic acid, and molecular oxygen is reacted in a catalytic gas phase reaction at a temperature of 50° to 300° C. in the presence of a catalyst composition consisting essentially of metallic palladium used together with copper, and supported on an inert carrier, said composition containing potassium bromide in a ratio of 0.1–100:1 based on the amount of palladium, whereby the catalyst life is increased and the catalyst is more easily regenerated for reuse.

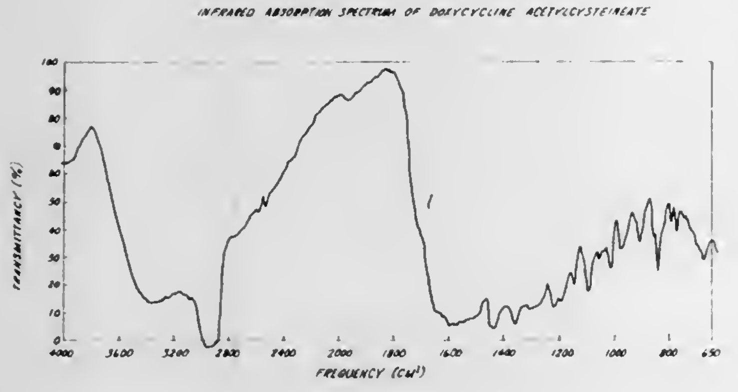
3,847,973

DOXYCYCLINE ACETYLCYSTEINEATE

Luis Socias Vinals, Bilbao, Jose Rodriguez Blanco, Las Arenas, and Francisco Javier Ugalde Fernandez, Bilboa, Spain, assignors to Fabrica Espanola de Productos Quimicos y Farmaceuticos S.A., Lamiaco (Province of Vizcaya), Spain

Filed May 30, 1972, Ser. No. 258,082
Claims priority, application Spain, June 11, 1971, 392,136
Int. Cl. C07c ***103/19***
U.S. Cl. 260—501.12 1 Claim





1. Doxycycline acetylcysteinate.

3,847,974

CONTINUOUS PRODUCTION OF ANTHRANILIC ACID

Hans-Juergen Sturm, Gruenstadt, Fritz Erdmann Kempter, Frankenthal, and Herbert Armbrust, Gruenstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Oct. 6, 1970, Ser. No. 78,622
Int. Cl. C07c ***101/54***
U.S. Cl. 260—518 R 9 Claims

1. A process for the continuous production of anthranilic acid which comprises reacting a starting compound selected from the group consisting of the alkali metal salts of phthalamic acid and phthalimic acid in an aqueous medium in a plurality of stages, the first reaction stages for converting the starting compound into the alkali metal salt of phenyl isocyanate-2-carboxylic acid being carried out under substantially adiabatic conditions while substantially avoiding any backmixing, the resulting reaction mixture being immmediately withdrawn from the reaction zone of said first stages and then supplied substantially without backmixing to the reaction zone of at least one subsequent stage for hydrolysis and decarboxylation of said phenyl isocyanate-2-carboxylic acid into anthranilic acid, a reducing agent selected from the group consisting of sodium borohydride, lithium triethoxy aluminum hydride, sodium sulfide, sodium hydrogen sulfide, ammonium sulfide, sulfurous acid, sulfur dioxide, sodium dithionite, sodium thiosulfate, sodium formaldehyde sulfoxylate, thiourea dioxide, hydrazine and its salts, glucose, sodium sulfite and sodium bisulfite being added to the reaction mixture withdrawn from the reaction zone of said first stages and before the reaction has been completed.

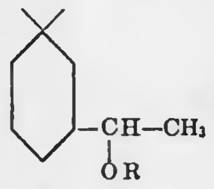
3,847,975

PERFUME COMPOSITIONS CONTAINING SUBSTITUTED CYCLOHEXANE COMPOUNDS

John B. Hall, Rumson, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

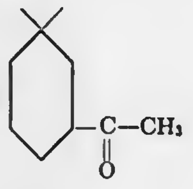
No Drawing. Continuation-in-part of abandoned application Ser. No. 862,023, Sept. 29, 1969, which is a division of application Ser. No. 573,882, Aug. 22, 1966, now Patent No. 3,487,102. This application Aug. 16, 1971, Ser. No. 172,252
Int. Cl. C11b ***9/00***
U.S. Cl. 252—522 5 Claims

1. A perfume composition comprising a fragrance imparting amount of a compound selected from the group consisting of compounds having the formulas



I.

and



II.

where R is an acyl group containing no more than 4 carbon atoms as an active fragrance ingredient and an auxiliary perfume adjuvant.

3,847,976

YIELD OF TRIMELLITIC ACID IMPROVED BY PHTHALIC ANHYDRIDES OR ITS PRECURSORS

George E. Kuhlmann, Downers Grove, Ill., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Dec. 20, 1972, Ser. No. 316,859
Int. Cl. C07c ***51/20, 63/32, 63/02***
U.S. Cl. 260—524 R 3 Claims

1. A method of improving trimellitic acid yield by air oxidation of pseudocumene in the presence of a liquid phase acetic acid solution of heavy metal oxidation catalyst and bromine, which method consists essentially of conducting such oxidation also in the presence of oxidation promoting amounts of phthalic anhydride, o-phthalic acid or o-xylene.

3,847,977

PURIFICATION PROCESS FOR AROMATIC ACIDS

Richard V. Norton, Wilmington, Del., assignor to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed June 19, 1972, Ser. No. 263,809
Int. Cl. C07c ***51/42, 63/36, 63/38***
U.S. Cl. 260—525 12 Claims

1. A process for purification of an aromatic acid containing color and nitrogen impurities selected from the group of poly acids of the benzene series and mono- and poly acids of the naphthalene series and obtained by the hydrolysis of nitriles, which comprises extracting said impure acid with a three phase heterogeneous system consisting essentially of an aqueous solution of acetic acid, a liquid aromatic hydrocarbon having from six to nine carbon atoms, and aromatic acid; the aqueous acetic acid solution containing from about 40% to about 65% by weight of water, the weight ratio of aqueous extractant solution to aromatic hydrocarbon being from about 3.75:1 to about 20:1, from about 15% to about 90% by weight of the aromatic acid being in the solid phase, and said extraction being made to occur in a closed system at a temperature of between about 200° and about 250° C.

3,847,978

PERFLUORINATED LINEAR POLYETHERS HAVING REACTIVE TERMINAL GROUPS AT BOTH ENDS OF THE CHAIN AND PROCESS FOR THE PREPARATION THEREOF

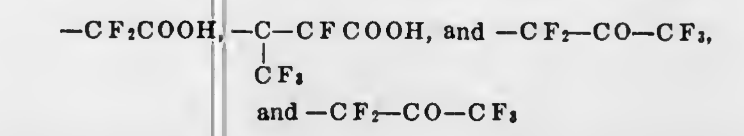
Dario Sianesi and Gerardo Caporiccio, Milan, and Domenico Mensi, Breno, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Continuation-in-part of abandoned application Ser. No. 787,309, Dec. 26, 1968. This application June 18, 1969, Ser. No. 834,486
Claims priority, application Italy, July 1, 1968, 817,809/68
Int. Cl. C07c ***59/22***
U.S. Cl. 260—535 H 25 Claims

1. Bifunctional perfluorinated polyethers and mixtures thereof, having chemically reactive terminal groups at both ends of the chain, said polyethers having from 1 to 100 repeating units selected from the group consisting of —C_3F_6O—, —C_2F_4O—, and —CF_2O—, wherein C_3F_6 and C_2F_4 are perfluoroalkylene units derived from the opening of the double bond of a hexafluoropropylene and of a tetrafluoroethylene molecule, respectively, the different oxyperfluoroalkylene units having a random distribution along the chain, there being no more than 50 of any one of said species of repeating units, said —CF_2O— repeating units being present only when either or both of said —C_2F_4O— and C_3F_6O— repeating units are present, said —C_2F_4O —units being present only when said —CF_2O— units are also present, said C_3F_6O— units being present only when either said —CF_2O— units are also present or when said polyether contains a

—CF_2—CO—CF_3

terminal group bonded to said chain through an ether oxygen, said polyether having terminal groups bonded to said chain through an ether oxygen, said terminal groups being selected from the group consisting of



$$\begin{gathered}-CF_2COOH, \underset{\displaystyle CF_3}{\underset{|}{-C}}-CFCOOH, \text{ and } -CF_2-CO-CF_3, \\ \text{and } -CF_2-CO-CF_3\end{gathered}$$

at least one of the latter two terminal groups being present when —C_6F_6O— repeating units are present, with the further proviso that when said —CF_2CO—CF_3 terminal group is present, one of said other two terminal groups is also present, and the corresponding acyl halides, lower alkyl esters and metal salts.

3,847,979

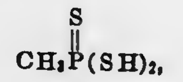
ADDITION OF SULFUR TO ALKYLDIHALOGENPHOSPHINE

James C. Richards, 160 Alpine Trail, Sparta, N.J. 07871, and Edward B. Trescott, 5407 Forge Road, Whitemarsh, Md. 21162

No Drawing. Continuation-in-part of application Ser. No. 8,694, Feb. 4, 1970. This application Aug. 18, 1972, Ser. No. 281,679
Int. Cl. C07f ***9/42***
U.S. Cl. 260—543 P 3 Claims

1. A method for the addition to sulfur to methyl dichlorophosphine comprising the steps of:

reacting methyl dichlorophosphine with a recycled hydrolized reactant product,



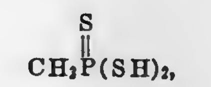
$$CH_3\overset{\displaystyle S}{\overset{\|}{P}}(SH)_2,$$

in the presence of phosphorous trichloride,

continuously introducing chlorine gas during said reaction,

maintaining said reaction under reflux condition of said phosphorous trichloride to produce methyl dichlorophosphine sulfide and hydrchloric acid,

reacting a portion of said methyl dichlorophosphine sulfide with a gaseous hydrogen sulfide in the presence of a hexane of methylene chloride to produce said hydrolized reactant product,



$$CH_3\overset{\displaystyle S}{\overset{\|}{P}}(SH)_2,$$

and hydrochloric acid,

separating said hydrochloric acid, and

recycling said hydrolized reactant product for reaction with said methyl dichlorophosphine in accordance with the first step of the method.

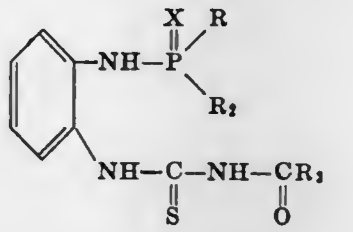
3,847,980

PHOSPHORYLATED THIOUREA COMPOSITIONS

Alexander Mihailovski, Berkeley, and Don R. Baker, Orinda, Calif., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Dec. 29, 1971, Ser. No. 213,714, now Patent No. 3,767,734. Divided and this application Feb. 26, 1973, Ser. No. 336,110
Int. Cl. C07c ***157/06***
U.S. Cl. 260—552 R 2 Claims

1. Compounds corresponding to the generic formula:



wherein X is selected from the group consisting of oxygen and sulfur, R and R_1 are the same or different and are lower alkyl and R_2 is lower alkyl.

3,847,981

MONOALKYLATION OF UREA

David E. Morris, Kenmore, and Francis R. Smith, Buffalo, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Filed June 25, 1971, Ser. No. 157,053
Int. Cl. C07c ***127/14***
U.S. Cl. 260—553 R 4 Claims

1. In a process for the preparation of a N-t-alkyl urea by the reaction of a tertiary mono-olefin and urea in the presence of an acid catalyst, the improvement which consists essentially of:

- (a) premixing said urea with about 1.2–2.0 moles of 70–90% sulfuric acid per mole of urea while maintaining the temperature below 70° C.; and
- (b) contacting with agitation said urea-acid mixture with about 0.8–1.5 moles of said olefin per mole of urea at autogeneous pressure at a temperature of about 20°–50° C. for at least about two hours.

3,847,982
OXYGENATED N-BENZOYL-N,2,3,3-TETRAMETHYL-*EXO*-2-NORBORNANAMINES

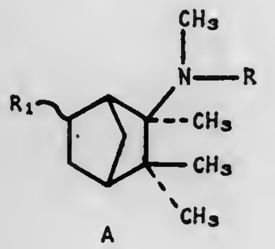
Milton E. Herr, Kalamazoo, Herbert C. Murphy, Hickory Corners, and Gunther S. Fonken, Charleston Township, Kalamazoo County, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application July 15, 1970, Ser. No. 55,272, now Patent No. 3,717,650. Divided and this application Nov. 24, 1972, Ser. No. 309,413

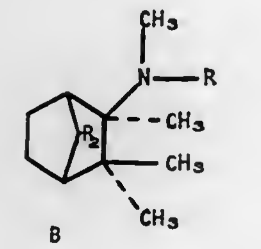
Int. Cl. C07c *103/22*

U.S. Cl. 260—558 R **12 Claims**

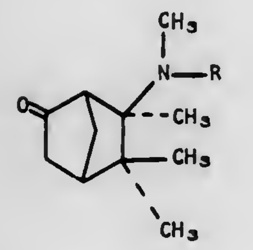
1. A compound of the formula A, B, C or D:



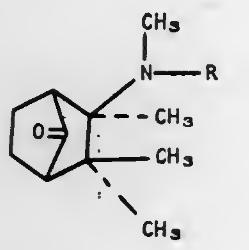
A



B



C



D

wherein R is benzoyl and R_1 and R_2 are each hydroxy or methoxy.

3,847,983
NAPHTHANILIDE DERIVATIVES AND PROCESS FOR PRODUCING THE SAME

Teruo Kobayashi and Taiichi Nishimura, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

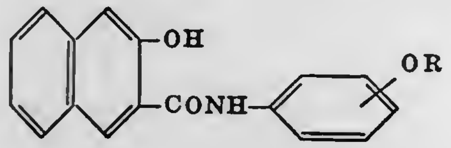
No Drawing. Filed Oct. 5, 1972, Ser. No. 295,328

Claims priority, application Japan, Oct. 8, 1971, 46/79,187

Int. Cl. C07c *103/26*

U.S. Cl. 260—560 **4 Claims**

1. A naphthanilide derivative of the formula:



wherein R represents a substituent selected from the group consisting of acetyl, propionoyl, benzenesulfonyl, benzyl and benzoyl groups, and p-toluenesulfonyl at the ortho or meta position.

3,847,984
PROCESS FOR THE PREPARATION OF CYCLOPROPYLMETHYL ALKYL AMINES

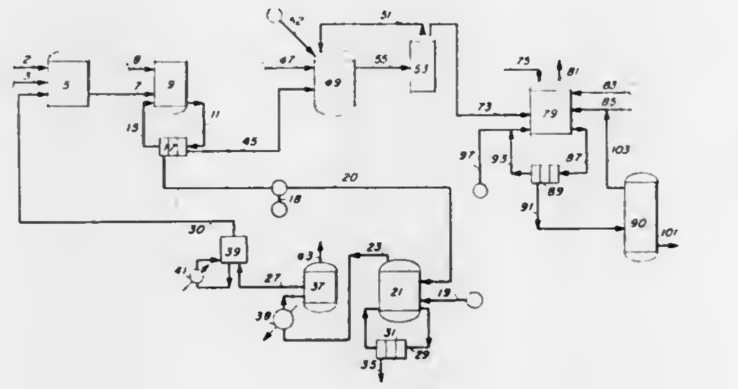
Jerome Linder and Lester L. Maravetz, Westfield, George N. Schmit, Scotch Plains, and Neil F. Newman, Matawan, N.J., assignors to Esso Research and Engineering Company

Original application Aug. 28, 1970, Ser. No. 67,809, now Patent No. 3,739,025. Divided and this application May 18, 1973, Ser. No. 361,728

Int. Cl. C07c *87/34*

U.S. Cl. 260—563 R **6 Claims**

1. A method for preparing either a cyclopropylmethyl alkyl amine or cyclopropylmethyl alkyl amine optionally substituted with a C_1–C_4 alkyl group on the cyclopropyl ring, said method comprising the steps of reacting either a cyclopropylmethyl amine or a cyclopropylmethyl amine optionally substituted with a C_1–C_4 alkyl group on the cyclopropyl ring, with either an aldehyde or ketone or alcohol in the presence of a base to form either an N-alkylidene cyclopropylmethyl amine or an N-alkylidene cyclopropylmethyl amine optionally substituted with a C_1–C_4 alkyl group on the cyclopropyl ring, said base being one selected from the group consisting of alkali and alkaline earth metal hydroxides; separating the hydroxide layer from an organic layer containing the said N-alkylidene cyclopropylmethyl amine; treating the said N-alkylidene cyclopropylmethyl amine with hydrogen in the presence of a catalyst at a temperature of from about 0° C. to the boiling point of the reaction mixture and a pressure of from about 1 to 300 atmospheres, said catalyst being one selected from the group consisting of rhodium supported on carbon, copper supported on a siliceous support, copper supported on alumina, and platinum supported on calcium carbonate.



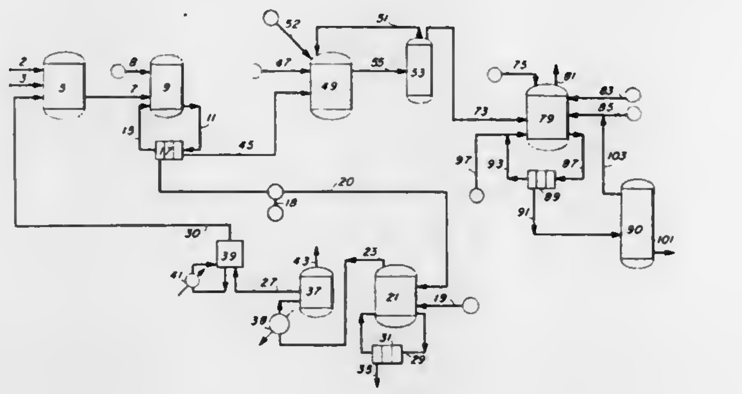
3,847,985
PROCESS FOR THE PREPARATION OF CYCLOPROPYLMETHYL ALKYL AMINES

Jerome Linder and Lester L. Maravetz, Westfield, George M. Schmit, Scotch Plains, and Neil F. Newman, Matawan, N.J., assignors to Esso Research and Engineering Company

Original application Aug. 28, 1970, Ser. No. 67,809, now Patent No. 3,739,025. Divided and this application May 18, 1973, Ser. No. 361,729

Int. Cl. C07c *87/34*

U.S. Cl. 260—563 R **2 Claims**



1. A method for preparing either cyclopropylmethyl alkyl amines or cyclopropylmethyl alkyl amines optionally substituted with a C_1–C_4 alkyl group on the cyclopropyl ring, said method comprising the steps of reacting either an allylic chloride or an allylic chloride optionally substituted with C_1–C_4 alkyl group with hydrogen bromide in the presence of a free radical catalyst thereby forming either anti-Markownikoff 1-bromo-3-chloropropane or 1-bromo-3-chloropropane optionally substituted with C_1–C_4 alkyl groups; contacting the said bromo-chloropropane with a metal cyanide to form either a gamma-chloronitrile or a gamma-chloronitrile optionally substituted with C_1–C_4 alkyl groups; reacting the said nitrile with alkali hydroxide to form either a cyclopropyl cyanide or a cyclopropyl cyanide optionally substituted with C_1–C_4 alkyl groups, hydrogenating said cyclopropyl cyanide in the presence of a metal hydrogenation catalyst at a temperature of from 0°–100° C. and a pressure of from 1 to 300 atmospheres; reacting said hydrogenated cyclopropyl cyanide with either a halide or a ketone to form either N-alkylidene cyclopropylmethyl amine or N-alkylidene cyclopropylmethyl amine optionally substituted with C_1–C_4 alkyl groups on the cyclopropyl ring, in the presence of a base, said base being one selected from the group consisting of alkali and alkaline earth metal hydroxides; separating the alkali metal hydroxide layer from an organic layer containing the said N-alkylidene cyclopropylmethyl amine; treating the said N-alkylidene cyclopropylmethylamine with hydrogen in the presence of a catalyst selected from the group consisting of rhodium supported on carbon, copper supported on silica, copper supported on alumina and platinum supported on calcium carbonate at a temperature ranging from 0° C. to the boiling point of the hydrogenation reaction mixture and at a pressure ranging from 1 to 300 atmospheres.

3,847,986
SUBSTITUTED PHENYLTHIOAMIDINES

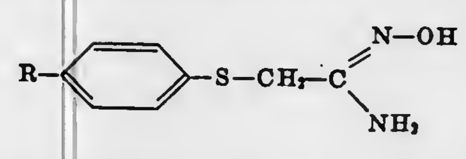
Earl R. Bockstahler, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application May 30, 1973, Ser. No. 257,940, now Patent No. 3,775,478. Divided and this application Sept. 27, 1973, Ser. No. 401,475

Int. Cl. C07c *123/00*

U.S. Cl. 260—564 G **2 Claims**

1. A substituted phenylthio amidine compound of the formula:



wherein R represents halo or a salt thereof with a pharmaceutically acceptable acid.

3,847,987
PHENYLHYDRAZONE DERIVATIVES

Roger Boesch, Vitry-sur-Seine, France, assignor to Rhone-Poulenc S.A., Paris, France

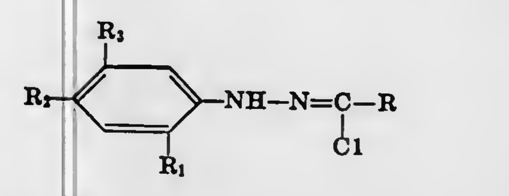
No Drawing. Filed May 24, 1973, Ser. No. 363,651

Claims priority, application France, May 26, 1972, 7218895; Mar. 19, 1973, 7309754

Int. Cl. C07c *109/14*

U.S. Cl. 260—506 B **10 Claims**

1. A phenylhydrazone derivative of the formula:



wherein R represents alkyl of 1 through 4 carbon atoms, and two of the symbols R_1, R_2 and R_3 represent halogen and the third represents halogen or nitro.

3,847,988
SUBSTITUTED IMIDATES

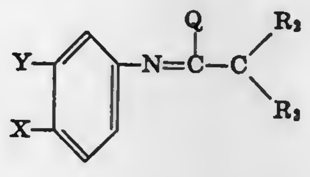
Elijah H. Gold, West Orange, N.J., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 211,780, Dec. 23, 1971. This application June 20, 1973, Ser. No. 371,800

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 D **4 Claims**

1. A compound of the formula:



wherein Q is chloro or bromo, R_2 and R_3 each are straight or branched chain alkyl radicals having up to 5 carbon atoms or when taken together with the carbon atom to which they are attached are cycloalkyl having up to 5 carbon atoms, and X is a member of the group consisting of nitro, trifluoromethyl and halogen and Y is a member of the group consisting of hydrogen, halogen, nitro, lower alkyl, hydroxy, lower alkoxy, lower alkanoyloxy, lower alkanoyl, polyfluoroloweralkoxy, lower carbalkoxy, polyfluorolower alkyl, trifluoromethylthio, trifluoromethylsulfonyl and trifluoromethylsulfoxy.

3,847,989
EXOTHERMIC CATALYTIC HYDROGENATION OF ORGANIC COMPOUNDS IN A LIQUID REACTION MEDIUM

Rolf Platz, Mannheim, Otto Nagel, Hambach, and Werner Fuchs, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Sept. 17, 1969, Ser. No. 858,808

Claims priority, application Germany, Sept. 19, 1968, P 17 93 452.0

Int. Cl. C07b *1/00*

U.S. Cl. 260—570.9 **4 Claims**

1. A process for carrying out an exothermic catalytic hydrogenation with molecular hydrogen of a carbon-carbon triple or double bond, an aromatic ring, a carbonyl group, a nitro group, a nitrile group, an oxime group, an aminoxide group, an acid chloride group, a benzyl ester group, or a benzyl ether group of an organic compound in an exothermic reaction in a body of liquid having suspended or dissolved therein a solid, finely divided hydrogenation catalyst of a catalytic metal selected from the group consisting of platinum, palladium, rhodium, ruthenium, nickel and cobalt, which comprises withdrawing a portion of said liquid from said body, recycling the withdrawn portion by introducing the latter through a first nozzle into said body of liquid at a point below the surface of said body and into a small cylindrical tube immersed in said body and having an inlet, introducing hydrogen through another nozzle in said body of liquid and into said inlet opening, the recycled liquid having a velocity of 5–100 meters per second at its point of introduction into said body, the ratio of the volume of the recycled liquid to the volume of hydrogen introduced through their respective nozzles being from 1:5 to 1:01, the exothermic hydrogenation action occurring in said cylindrical tube as the hydrogen and liquid jet from the inlet opening of said tube and through said tube, inducing by the jetting action of said liquid in said body of liquid in said cylindrical tube a circulation of additional liquid drawn through said cylindrical tube in an amount of about 10 to 100 times the amount of the recycled liquid supplied through said first nozzle, said additional liquid so drawn dissipating immediately the heat of the exothermic hydrogenation action

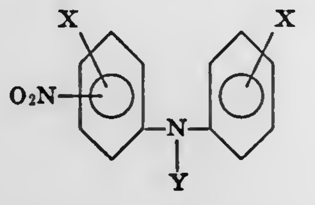
in said cylindrical tube, and the inlet opening of said tube having a mean diameter of 2 to 20 times the mean diameter of said first nozzle and the cylindrical tube having a length of 3 to 30 times its hydraulic diameter.

3,847,990

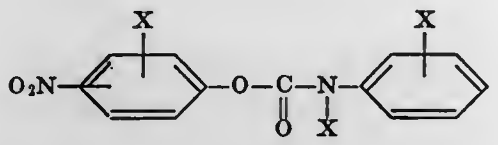
PROCESS FOR THE PRODUCTION OF NITRODIPHENYL AMINE DERIVATIVES

Johannes Blahak, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Sept. 26, 1972, Ser. No. 292,445
Claims priority, application Germany, Sept. 28, 1971, P 21 48 223.5
Int. Cl. G07c *87/60*
U.S. Cl. 260—576 **13 Claims**

1. A process for the production of a nitrodiphenyl amine of the formula



wherein each X, which may be the same or different, is hydrogen, alkyl or cycloalkyl having up to 6 carbon atoms, halogen or nitro and Y is hydrogen or alkyl or cycloalkyl having up to 6 carbon atoms, wherein a urethane of the formula



wherein X and Y are as aforesaid, is decarboxylated by heating in the presence of a catalytic amount of a strong base selected from the group consisting of alkali metal salts or organic acids, alkali metal carbonates, alkali metal oxides and alkali metal hydroxides at a temperature of 110 to 250° C.

3,847,991

PROCESS FOR THE PREPARATION OF ETHAMBUTOL[2,2'-(ETHYLENE DIAMINO)-DI-BUTANE-1-OL]

Luigi Bernardi, Maurizio Foglio, and Aldemio Temperilli, Milan, Italy, assignors to Farmitalia Societa Farmacutici Italia, Milan, Italy
No Drawing. Filed Dec. 26, 1972, Ser. No. 317,936
Claims priority, application Italy, Dec. 30, 1971, 33,117/71
Int. Cl. C07c *91/12*
U.S. Cl. 260—584 R **6 Claims**

1. A method for making ethambutol, (+)-2,2'-(ethylendiimino)-di-butan-1-ol, comprising reacting 1,2-epoxy-3-butene with phosgene at a temperature of from about —40° C. to room temperature to form 2-chloro-3-buten-1-ol chloroformate; reacting at a temperature not in excess of room temperature said chloroformate with a benzylamine of the formula $R—C_6H_4—CH_2—NH_2$, wherein R is H, methyl, halogen, nitro or amino, to form a 2-chloro-3-buten-1-ol N-benzylurethane; reacting said N-benzylurethane with an alkali hydroxide to form 2-benzylamino-3-buten-1-ol; resolving said 2-benzylamino-3-buten-1-ol into its optical antipodes; reacting the (+) form with a 1,2-dihalo-ethane or 1,2-ditosyloxy-ethane to form the product (+)-2,2'-(N,N'-di-benzyl-ethylendiimino) - di-3-buten-1-ol; and hydrogenating said product to form ethambutol.

3,847,992

PARTIALLY AMINATED POLYOXYALKYLENE POLYOLS

Philip Hotchkiss Moss, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.
No Drawing. Filed Mar. 12, 1973, Ser. No. 339,987
Int. Cl. C07c *89/00, 91/04*
U.S. Cl. 260—584 B **6 Claims**

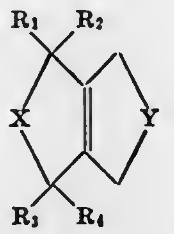
1. A partially aminated polyoxyalkylene polyol having a functionality of from 2 to 8 and a hydroxyl number of about 20 to about 60 wherein the reactive groups of said partially aminated polyol comprise from about 15 percent to about 55 percent amine groups and from about 45 percent to about 85 percent primary hydroxyl groups.

3,847,993

ALLYLIC OXIDATION OF BICYCLIC HYDROCARBONS TO ALCOHOLS AND KETONES

John B. Hall, Rumson, and Lekhu Kewalram Lala, Edison, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.
No Drawing. Filed June 21, 1971, Ser. No. 155,327
Int. Cl. C07c *45/02*
U.S. Cl. 260—586 P **8 Claims**

1. A process for allylic oxidation which comprises reacting a bicyclic compound having the formula:



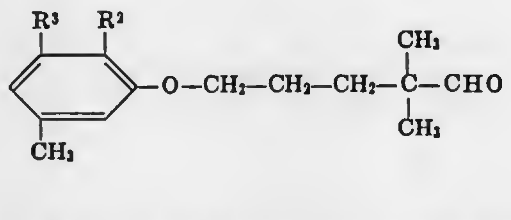
wherein R_1, R_2, R_3, and R_4 are lower alkyl of one to three carbon atoms, X is $—CHR_5—$ or $—CHR_5—CHR_6—$, Y is $—CHR_7—$ or $—CHR_7—CHR_8—$, and R_5, R_6, R_7 and R_8 are hydrogen or lower alkyl of one to three carbon atoms, with oxygen in the presence of a metal organic catalyst which is an acetate, propionate, naphthenate or acetonyl acetonate of nickel, cobalt, copper or manganese at a temperature from 50° to 150° C. to provide a product, said product composed of a mixture of compounds having a carbonyl or carbinol group adjacent to the double bond on the Y-containing ring, and recovering the compounds.

3,847,994

2,2-DIMETHYL-5-(ARYLOXY)-VALERALDEHYDES

Paul L. Creger and Winifred A. Neuklis, Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.
No Drawing. Original application Mar. 30, 1970, Ser. No. 24,000, now Patent No. 3,707,566. Divided and this application Aug. 25, 1972, Ser. No. 283,864
Int. Cl. C07c *47/56*
U.S. Cl. 260—600 **3 Claims**

1. A compound of the formula



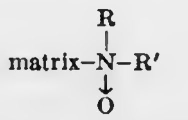
where one of R^2 and R^3 is hydrogen; and the other of R^2 and R^3 is methyl.

3,847,995

PROCESS OF PURIFYING ALDEHYDES

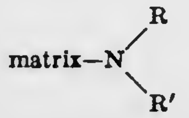
Robert Winn Walker, Fort Washington, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.
No Drawing. Original application Aug. 19, 1969, Ser. No. 851,456, now Patent No. 3,749,684. Divided and this application May 3, 1971, Ser. No. 139,906
Int. Cl. C07c *47/04, 47/12*
U.S. Cl. 260—601 R **2 Claims**

1. A process for removing acidic compounds from an aqueous solution of an aldehyde selected from the group consisting of formaldehyde and glyoxal, which comprises contacting said solution with a resin having weak base anion exchange properties, said resin being a crosslinked ion exchange or adsorbent polymeric resin matrix having a plurality of functional groups selected from aliphatic or nonheterocyclic aromatic tertiary amine oxide groups and aliphatic or non-heterocyclic aromatic tertiary amine groups, wherein at least about 5% to 100% of said functional groups are tertiary amine oxide groups, said tertiary amine oxide groups having the formula



$$\text{matrix}-\overset{R}{\underset{\overset{\downarrow}{O}}{N}}-R'$$

wherein R and R' are the same or different alkyl, aryl, alkaryl, or aralkyl groups, or wherein R and R' can be taken together to form a saturated heterocyclic ring with the attached nitrogen atom, or wherein R and R' can be joined with an R or R' in another tertiary amine oxide or tertiary amine group through an alkylene or alkyleneamino chain, and wherein said tertiary amine groups have the formula



wherein R and R' are as defined above.

3,847,996

PROCESS FOR PREPARATION OF CARBONYL COMPOUNDS AND ISOBUTYLENE FROM OLEFINS AND T-BUTYL ALCOHOL

Frederick F. Caserio, Jr., Laguna Beach, and Glenn M. Nakaguchi, Fullerton, Calif., assignors to Atlantic Richfield Company, Philadelphia, Pa.
No Drawing. Continuation of abandoned application Ser. No. 708,774, Feb. 28, 1968. This application June 9, 1971, Ser. No. 151,528
Int. Cl. C07c *45/02*
U.S. Cl. 260—604 AC **4 Claims**

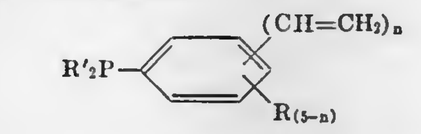
1. The process for preparing alkanols and alkanones comprising reacting an olefin selected from the group consisting of ethylene propylene and butylene under effectively anhydrous conditions, and at temperature of 50°–150° C., with $PdCl_2$ and t-butyl alcohol to form alkanols, alkanones and isobutylene.

3,847,997

HYDROFORMYLATION PROCESS AND CATALYST

James D. Allen, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed June 12, 1969, Ser. No. 832,729
Int. Cl. C07c *45/08, 45/10*
U.S. Cl. 260—604 HF **12 Claims**

1. In a hydroformylation process in which an olefin is reacted with carbon monoxide and hydrogen under hydroformylation conditions; the improvement which comprises carrying out the reaction under hydroformylation conditions in the presence of a catalyst produced by contacting a solid phosphorus-containing polymer of at least one phosphine of the formula



wherein each R is hydrogen or an alkyl group having 1 to 4 carbon atoms, the total number of carbon atoms in all of the R substituents being 12 or less, each R' is a hydrocarbyl radical selected from alkyl, cycloalkyl, aryl and combinations thereof, said hydrocarbyl radical containing 1 to 20 carbon atoms, and *n* is 1 to 3, with at least one metal carbonyl of the group consisting of cobalt, rhodium, ruthenium, platinum and palladium, said metal being present in an amount in the range of 0.2 to 20 millimoles of metal per 5 grams of polymer support.

3,847,998

PREPARATION OF BERYLLIUM BIS(DIHYDROCARBYL BOROHYDRIDE)

Lawrence H. Shepherd, Jr., and Paul Kobetz, Baton Rouge, and Roy J. Laran, Greenwell Springs, La., and Robert W. Johnson, Jr., Savannah, Ga., assignors to Ethyl Corporation, New York, N.Y.
No Drawing. Original application Jan. 27, 1965, Ser. No. 430,237. Divided and this application Nov. 18, 1965, Ser. No. 537,576
Int. Cl. C07d *105/02*
U.S. Cl. 260—606.5 B **2 Claims**

1. Process for the preparation of beryllium bis(dihydrocarbyl borohydride) of the general formula

$$Be(BR_2H_2)_2,$$

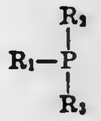
wherein R represents a radical selected from the group consisting of alkyl, monocyclic cycloalkyl and monocyclic aryl radicals containing from 1 to about 10, 5 to about 10 and 6 to about 10 carbon atoms, respectively, which comprises adding a dihydrocarbyl beryllium compound of the general formula R_2Be to a minor excess of a tetraorganodiborane of the general formula $R_4B_2H_2$, said addition being carried out at a temperature in the range of from about 0 to about 110° C., maintaining the reaction mixture at said temperature for a period ranging from less than 0.25 to more than 24 hours, sufficient to assure the substantial completion of the reaction and recovering the beryllium bis(dihydrocarbyl borohydride) from the reaction mixture.

3,847,999

PREPARATION OF TRIARYL PHOSPHINES

John Nicholson Gardner, Garrison, N.Y., and Josef Kochling, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Filed Sept. 21, 1973, Ser. No. 399,597
Int. Cl. C07f *9/50*
U.S. Cl. 260—606.5 P **9 Claims**

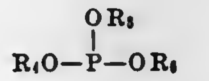
1. A process for producing a phosphine of the formula:



$$R_1-\overset{R_2}{\underset{R_3}{P}}$$

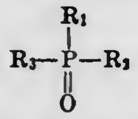
wherein R_1, R_2 and R_3 are independently selected from the group consisting of lower alkyl, aryl or cyclo lower alkyl;

comprising reacting a phosphite of the formula:



$$R_4O-\overset{OR_5}{P}-OR_6$$

wherein R_4, R_5 and R_6 are independently aryl;
with a phosphine oxide of the formula:



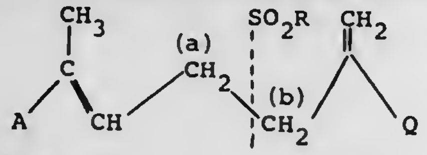
$$R_3-\overset{\overset{\large R_1}{|}}{\underset{\underset{\large O}{\|}}{P}}-R_2$$

wherein R_1, R_2 and R_3 are as above;
at a temperature of at least 150° C. for a period of at least ½ hour.

3,848,000
METHYLENE-SULPHONES FROM THE TERPENE SERIES

Pierre Chabardes, Lyon, Marc Julia, Paris, and Albert Menet, La Mulatiere, France, assignors to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed Feb. 1, 1973, Ser. No. 328,612
Claims priority, application France, Feb. 4, 1972, 7203805; Apr. 10, 1972, 7212479; Oct. 6, 1972, 7235485
Int. Cl. C07c *147/04*
U.S. Cl. 260—607 A **12 Claims**

1. A sulphone corresponding to the general formula:



(I)

in which –

the sulphonyl group replaces the hydrogen atom on carbon atom (*a*) or (*b*),
R represents an alkyl, alkyl-phenyl or phenyl radical wherein the alkyl has from 1 to 4 carbon atoms;
Q represents hydrogen, methyl or vinyl;
A represents
- (a) a hydrocarbon radical containing $5n+1$ carbon atoms (n being an integer of 1 to 8),
- (b) a methyl radical, which is unsubstituted or substituted by a halogen atom or a sulphide or sulphone group, or
- (c) a primary alcohol group $—CH_2OH$.

3,848,001
PURIFICATION OF BETA-NAPHTHOL BY EXTRACTIVE CRYSTALLIZATION

John Peter Dundon, Branchburg Township, N.J., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Dec. 21, 1972, Ser. No. 317,463
Int. Cl. C07c *37/28*
U.S. Cl. 260—621 B **2 Claims**

1. A method of treating beta-naphthol to separate therefrom alpha-naphthol, present in an amount of from about 1 to about 3 percent therein, comprising (1) forming a mixture of the beta-naphthol, in molten form, and water at a temperature above 90° C., (2) cooling the mixture, with continuous stirring, over the range of from about 90° C. to about 80° C. and over a period of at least about 30 seconds to effect crystallization of the beta-naphthol and extraction of alpha-naphthol into the water, and (3) filtered off the beta-naphthol crystals.

3,848,002
PROCESS FOR THE PRODUCTION OF P-NITROPHENOLS

Jon Weis and Bjarne Skinhøj Pedersen, Harboør, Denmark, assignors to A/S Cheminova, Lemvig, Denmark
No Drawing. Filed Aug. 2, 1972, Ser. No. 277,215
Claims priority, application Denmark, Aug. 12, 1971, 3,941/71
Int. Cl. C07c *79/24*
U.S. Cl. 260—622 R **22 Claims**

1. A process for the production of p-nitrophenols which comprises
- (a) mixing (1) a nitrite of the formula R.O.NO, in which R is an alkyl group having 1–6 carbon atoms with (2) phenols selected from the group consisting essentially of phenol, m-cresol and a mixture of m- and p-cresol in an acidic aqueous medium which is an aqueous solution of a strong acid at temperatures ranging from −20° to 20° C. to form a precursor p-nitrosophenol; and
- (b) treating the p-nitrosophenol with nitric acid in the presence of an alcohol of the formula R^1OH, in which R^1 is an alkyl group having 1–6 carbon atoms, at temperatures ranging from about −10° to 25° C.; and
- (c) recovering a p-nitro-phenol.

3,848,003
HYDROGENOLYSIS OF CARBOXYLIC ACIDS WITH COBALT CATALYSTS

Frank G. Mesich, John A. Bedford, and Edward F. Dougherty, Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.
No Drawing. Continuation of abandoned application Ser. No. 50,312, June 26, 1970. This application June 8, 1973, Ser. No. 368,407
Int. Cl. C07c *31/02, 31/20*
U.S. Cl. 260—635 D **6 Claims**

1. In a process for effecting the hydrogenolysis of a carboxy-substituted feedstock consisting essentially of at least one member selected from the group consisting of carboxyalkanes, hydroxycarboxyalkanes, dicarboxyalkanes, and epsilon-caprolactone to a corresponding hydroxymethyl-substituted derivative of said feedstock by continuously passing hydrogen, along with said feedstock in a liquid reaction medium consisting essentially of said feedstock and water through a reaction vessel maintained under a hydrogen pressure of at least about 225 atmosphere absolute and at a temperature of about 180° C. to about 300° C. and containing a solid catalyst the surface of which consists essentially of catalytically active metallic cobalt, the improvement which comprises:

maintaining the activity of said catalyst and also maintaining a cobalt coating on those internal surfaces of said vessel which are normally wetted by said liquid reaction medium during the course of said hydrogenolysis by introducing into said reaction vessel, along with said feedstock and reaction medium, an aqueous solution containing a cobalt salt of a lower carboxylic acid whereby said cobalt salt is reduced and metallic cobalt is deposited on the internal surfaces of the reactor and on the catalysts.

3,848,004
STABILIZED 1,1,1-TRICHLOROETHANE COMPOSITION

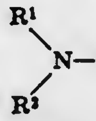
Seiichi Katsuragawa, Saitama-ken, and Teruo Fujinaga, Yokohama, Japan, assignors to Central Glass Co., Ltd., Yamaguchi-ken, Japan
No Drawing. Filed Dec. 21, 1971, Ser. No. 210,542
Claims priority, application Japan, Dec. 26, 1970, 45/118,604
Int. Cl. C07c *17/42*
U.S. Cl. 260—652.5 R **2 Claims**

1. A stabilized composition consisting essentially of 1,1,1-trichloroethane and, as a stabilizer therefore, 0.1–5.0 weight percent of 1,4-dioxane, 0.01–1.0 weight percent of acrylonitrile, 0.05–3.0 weight percent of ethyl acetate and 0.1–3.0 weight percent of nitromethane.

3,848,005
INHIBITION OF IRON-CATALYZED DEHYDROCHLORINATION OF ALKYL CHLORIDES

Henry W. Sullivan, Houston, Tex., assignor to Shell Oil Company
No Drawing. Filed Nov. 15, 1972, Ser. No. 306,964
Int. Cl. C07c *17/40, 17/42*
U.S. Cl. 260—652.5 R **2 Claims**

1. A stabilized composition to inhibit the dehydrochlorination of alkyl chlorides of 3 to 20 carbon atoms at a temperature ranging from about 100° C. to about 250° C., catalyzed by the presence of small quantities of ferric ion, consisting essentially of alkyl chlorides of 3 to 20 carbon atoms, ferric ions and a lower alkanol solution, wherein the lower alkanol is selected from the class consisting of methanol, ethanol, propanol or isopropanol, of a partial amide of derivatives of ethylene diamine tetraacetic acid, said partial amide formed by the reaction of one mole of ethylene diamine tetraacetic acid with at least two moles of a lower alkyl amine of the formula



wherein R^1 represents methyl, ethyl, propyl, isopropyl or butyl and R^2 is hydrogen or any of the moieties described for R^1 in a lower alkanol solvent selected from the class consisting of methanol, ethanol, propanol or isopropanol at a temperature of about 50° C. to about 200° C. wherein said partial amide is present in a molar quantity which is equal to the moles of ferric ion present and wherein the lower alkanol solution of the partial amide of ethylene diamine tetraacetic acid contains from about 25% by weight to about 75% by weight lower alkanol solvent based on the total weight of solution.

3,848,006
PARAFFIN HALOGENATION PROCESS

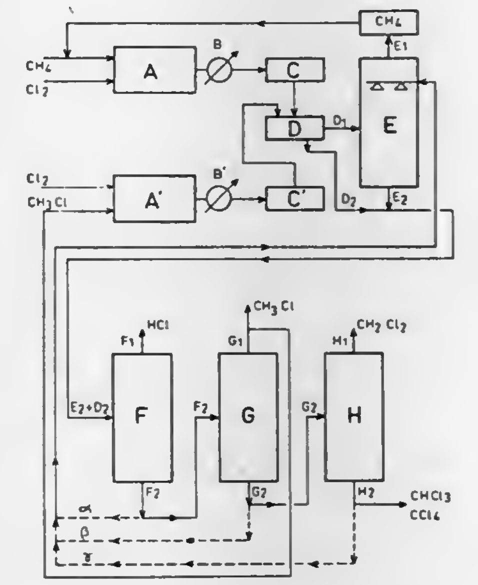
Allen K. Sparks, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Continuation-in-part of application Ser. No. 803,057, Feb. 27, 1969. This application June 21, 1972, Ser. No. 265,092
Int. Cl. C07c *17/00*
U.S. Cl. 260—660 **4 Claims**

1. In a process for the thermal halogenation of a feed stock containing a C_8–C_{18} n-paraffin by reaction of said feed stock in liquid phase with chlorine or bromine, wherein carbonyl- and hydroxyl-containing hydrocarbonaceous compounds formed by air oxidation of said paraffin are present in said feed stock in concentrations of about 0.001 to 1.0 wt. percent, the improvement which comprises removing from said feed stock, prior to said thermal halogenation, at least a portion of said carbonyl- and hydroxyl-containing compounds by contact of the feed stock with a solid sorbent of dehydrated silica gel or activated alumina capable of selectively sorbing said compounds from the feed stock, whereby to increase the rate of halogenation of said n-paraffin.

3,848,007
PRODUCTION OF METHYLENE CHLORIDE

Luigi Forlano, Ferrara, Italy, assignor to Solvay & Cie, Brussels, Belgium
Filed Mar. 10, 1971, Ser. No. 122,903
Claims priority, application Belgium, Mar. 12, 1970, 86,301
Int. Cl. C07c *17/10*
U.S. Cl. 260—662 R **9 Claims**

1. A process for producing methylene chloride comprising the steps of
- (a) chlorinating methane at a temperature between 200 and 500° C., the molar ratio of chlorine to methane to be chlorinated being between 0.2 and 0.4;
- (b) partially condensing the products of step (a) at a temperature between −15 and −50° C. and pressure of up to 15 atmospheres to form a gas phase containing methane, hydrogen chloride and a minor proportion of chlorinated methanes and a liquid phase comprising chlorinated methanes and hydrogen chloride;
- (c) absorbing hydrogen chloride from said gas phase obtained in step (b) by washing at a temperature between −10 and −50° C. and a pressure of up to 15 atmospheres with a liquid mixture of chlorinated methanes in a proportion of 3 to 6 moles of chlorinated methane per mole of hydrogen chloride present in the products of chlorinating step (a) to give a liquid phase enriched in hydrogen chloride and a gas phase containing methane;
- (d) recycling said gas phase from step (c) to chlorinating step (a);
- (e) combining said liquid phase from step (b) with said liquid phase resulting from step (c) to give a liquid mixture;
- (f) separating the liquid mixture from step (e) in a hydrogen chloride distillation column to give dry gaseous hydrogen chloride as an overhead fraction and a liquid mixture of chlorinated methanes as a bottom fraction;

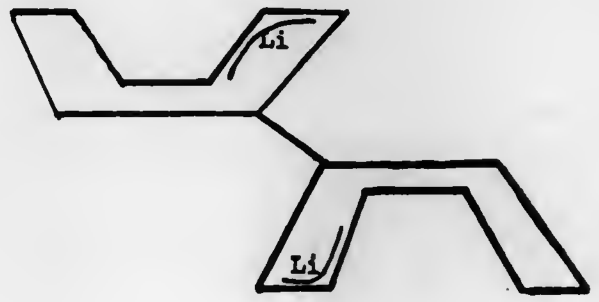


- (g) using part of said liquid bottom fraction from step (f) as the liquid mixture of chlorinated methanes in absorbing step (c);
- (h) distilling the other part of said liquid bottom fraction from step (f) to separate a liquid mixture of chlorinated methanes comprising methylene chloride, chloroform and tetrachloromethane as a bottom fraction and to separate the methyl chloride as an overhead fraction; and
- (i) distilling said liquid mixture from step (h) to recover methylene chloride therefrom.

3,848,008
DILITHIUM INITIATORS FROM CERTAIN CONJUGATED DIENES YIELDING DELOCALIZED CHAIN ENDS

Lewis J. Fetters, Akron, Ohio, assignor to First National City Bank, New York, N.Y.
No Drawing. Filed Nov. 26, 1971, Ser. No. 202,662
Int. Cl. C07f *1/02*
U.S. Cl. 260—665 R **6 Claims**

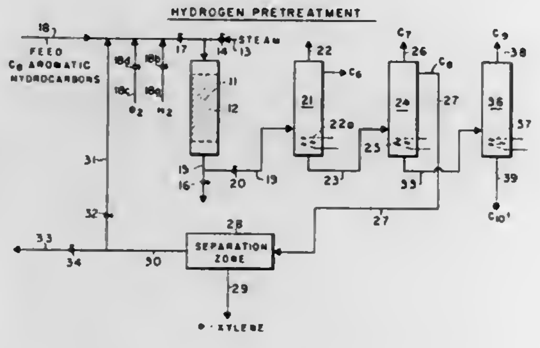
1. A dialkali metal adduct (dimer) of 1,3-cyclooctadiene having the formula



3,848,009
ISOMERIZATION OF POLYMETHYLBENZENES

Edward F. Wadley and Robert D. Wesselhoft, Baytown, Tex., assignors to Esso Research and Engineering Company

Filed Dec. 16, 1970, Ser. No. 98,524
Int. Cl. C07c ***5/24, 15/08***
U.S. Cl. 260—668 A **16 Claims**



1. A method for producing a selected dimethylbenzene from a mixture of isomers of said selected dimethylbenzene containing ethylbenzene wherein the ratio of dimethylbenzene isomers is other than an equilibrium ratio which comprises contacting said dimethylbenzene mixture at a temperature from about 700° F. to about 950° F. in the vapor phase at a feed rate of about 1.0 to 10.0 v./v./hour the presence of the hydrogen at a hydrogen-to-oil mol ratio of about 6.0 to about 10 to 1 with a molybdenum oxide of offretite having the formula

$$(KCa(Al_3Si_3O_{16})\cdot 6H_2O)$$

catalyst, said offretite having been treated with ammonium salt and heated to form the hydrogen form followed by cooling and impregnation with ammonium molybdate to form on drying said molybdenum oxide on offretite catalyst, to form an isomerized product containing ethylbenzene and recovering said selected dimethylbenzene from said isomerized product.

3,848,010
CATALYTIC VINYLATION OF AROMATIC COMPOUNDS

George M. Intille, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 1, 1972, Ser. No. 277,003
Int. Cl. C07c ***3/52, 15/10, 15/14***
U.S. Cl. 260—668 R **6 Claims**

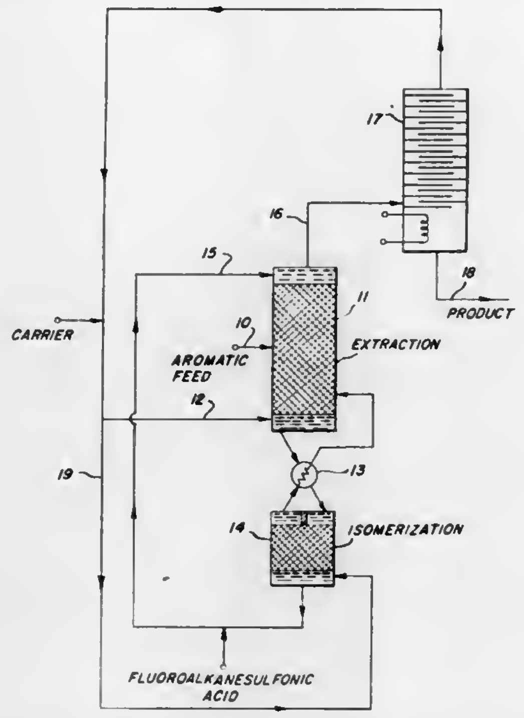
1. A process for coupling an aromatic compound having a maximum of one alkyl or alkenyl group having up to two carbon atoms attached to the aromatic ring with an olefinic compound having a maximum of one alkyl group having up to two carbon atoms attached to one of the doubly bonded carbon atoms comprising reacting said compounds with oxygen in the presence of a catalyst system comprising a mercury, thallium or lead salt, a Group VIII metal salt and a redox agent.

3,848,011
SEPARATION AND ISOMERIZATION OF ALKYL-SUBSTITUTED AROMATIC COMPOUNDS USING FLUOROALKANESULFONIC ACIDS

David A. McCaulay, Homewood, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Dec. 29, 1972, Ser. No. 319,549
Int. Cl. C07c ***5/24, 7/10***
U.S. Cl. 260—668 A **10 Claims**

1. A process to extract the most basic methyl-substituted aromatic compound from a mixture comprising methyl-substituted aromatic compound isomers which comprises intimately contacting said mixture at about ambient temperature with at least one fluoroalkanesulfonic acid of formula RCF_2SO_3H wherein $R=Cl, F, CF_3, CF_2Cl, C_2F_5, CF_3CFCl, C_3F_7$, or C_4F_9 and subsequently separating said acid from said mixture, said mixture after said contacting containing proportionately less of said most basic compound than said mixture prior to said contacting.



3,848,012
ALKYLATION PROCESS

Fred Applegath, Texas City, Louis E. Du Pree, Jr., Hitchcock, Alistair C. MacFarlane, Texas City, and Jacques D. Robinson, Alvin, Tex., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 26, 1973, Ser. No. 400,999
Int. Cl. C07c ***3/56, 3/62***
U.S. Cl. 260—671 R **8 Claims**

1. A continuous process for the production of ethylbenzene which comprises simultaneously introducing benzene, ethylene and $AlCl_3$ catalyst into a first reaction zone maintained at a temperature from 140 to 200° C. and a pressure sufficient to maintain the reactants substantially in the liquid phase wherein the residence time is at least 15 minutes, the amount of $AlCl_3$ being in the range from about 0.0010 to about 0.0025 mole per mole of ethylene, the ethylene being added at a rate from about 300 to about 1500 moles per hour per mole of accumulated $AlCl_3$, and the *E/B* ratio being in the range from 0.3 to 0.9, continuously removing the reaction product from said first reaction zone and introducing it into a second reaction zone, maintaining it therein for a period of at least 15 minutes at a temperature from about 140° to about 200° C., continuously removing the reaction product from said second reaction zone, and recovering ethylbenzene therefrom.

3,848,013
METHOD FOR PRODUCING BENZENE, TOLUENE AND POLYMETHYL BENZENES

Naoya Kominami and Kiyoshi Kitamura, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Continuation-in-part of application Ser. No. 222,382, Jan. 31, 1971, which is a continuation of application Ser. No. 63,318, Aug. 12, 1970, both now abandoned. This application Aug. 24, 1972, Ser. No. 283,561
Claims priority, application Japan, Aug. 14, 1969, 44/63,852; Aug. 25, 1969, 44/66,502
Int. Cl. C07c ***3/58***
U.S. Cl. 260—672 R **6 Claims**

1. A method for producing benzene, toluene and polymethyl benzenes which comprises contacting a feed stock

comprising mainly aromatic hydrocarbons having at least 9 carbon atoms and at least one nuclear substituent containing at least two carbons atoms in the vapor phase at an elevated temperature with a catalyst comprising magnesium silicofluoride treated active alumina containing from about 0.01% to 10% fluorine and from about 0.01% to 10% magnesium by weight based on the total weight.

3,848,014
CATALYTIC STEAM DEALKYLATION

Masao Uchiyama and Shoichiro Mori, Ami, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan

No Drawing. Filed Dec. 19, 1972, Ser. No. 316,503
Claims priority, application Japan, Dec. 29, 1971, 47/3,446; Sept. 22, 1972, 47/95,339
Int. Cl. C07c ***3/58***
U.S. Cl. 260—672 R **6 Claims**

1. A process for catalytic steam dealkylation of alkyl aromatic hydrocarbon which comprises causing an alkyl aromatic hydrocarbon to contact, in the presence of steam, a catalyst supported by a carrier, said catalyst comprising rhodium in a quantity of from 0.05 to 5.0 percent by weight with respect to the carrier and at least one oxide of a Group III*b* metal of the Periodic Table in a quantity of from 0.05 to 20 percent by weight with respect to the carrier.

3,848,015
PROCESS FOR THE PRODUCTION OF DIMERS AND TRIMERS OF CONJUGATED DIENES

Gunther Wilke and Ernst Willi Muller, both of Kaiser-Wilhelm-Platz 1, Mulheim (Ruhr), Germany

No Drawing. Continuation of abandoned application Ser. No. 128,601, Dec. 17, 1970, which is a division of application Ser. No. 532,900, Mar. 9, 1966, which is a continuation-in-part of applications Ser. No. 76,520, Dec. 19, 1960, Ser. No. 104,221, Apr. 20, 1961, and Ser. No. 203,753, June 20, 1962, and a continuation-in-part of application Ser. No. 555,203, June 3, 1966, which in turn is a continuation of application Ser. No. 203,753, June 20, 1962, all now abandoned. This application June 25, 1973, Ser. No. 373,525
Claims priority, application Germany, Dec. 22, 1959, St 15,930; Apr. 28, 1960, St 16,427; June 30, 1961, St 18,017
Int. Cl. C07c ***11/00***
U.S. Cl. 260—677 R **2 Claims**

1. 5-methyl-heptatri-1,3,6-ene.

3,848,016
PRODUCTION OF CRACKED GASES FROM LIQUID HYDROCARBON

Hisashi Kono, Kenji Terai, Takazumi Niwa, Masahiko Kitajima, Morihiko Sawada, Kohei Ninomiya, and Shigeyuki Nakai, Ube, Japan, assignors to Ube Industries, Ltd., Ube-shi, Yamaguchi-ken, Japan

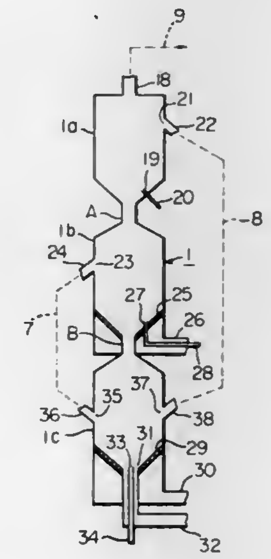
Filed Mar. 16, 1973, Ser. No. 341,994
Claims priority, application Japan, Apr. 7, 1972, 47/34,453
Int. Cl. C07c ***3/30***
U.S. Cl. 260—683 R **23 Claims**

1. In a process for cracking liquid hydrocarbon into gases in a fluidized bed of solid particles, the improvement comprising;

(a) forming a unitary fluidized bed of solid particles having a central zone for cracking a starting liquid hydrocarbon to cracked gases, an upper zone for quenching said cracked gases, and a lower zone for cracking liquid hydrocarbon recovered from said cracked gases, said central zone communicating with said lower zone and said upper zone through narrow passages or neck zones formed therebetween;

(b) spraying said starting liquid hydrocarbon and a first portion of steam as a fluidizing gas into central zone, while passing a second portion of steam, cracked gases from recovered liquid hydrocarbon, hereinafter described, and entrained solid particles from said lower zone into said central zone from the bottom thereof through said narrow neck zone, thereby cracking said starting liquid hydrocarbon in said central zone to gases;

(c) spraying a liquid hydrocarbon selected from the group consisting of a said starting liquid hydrocarbon and said recovered liquid hydrocarbon into said upper zone, while passing a second gas mixture comprised of said first and second portions of steam, said cracked gases and entrained solid particles from said central zone into said upper zone from the bottom thereof through said narrow neck zone, whereby said cracked gas mixture is quenched and a portion of the carbon, tar and heavy oil fractions which are contained in said cracked gas mixture adhere to said entrained solid particles;



(d) removing said cracked gas mixture from said upper zone and treating said cracked gas mixture to separate said carbon, tar and heavy oil fractions, which comprise the recovered liquid hydrocarbon, referenced hereinbefore, to be fed to said bed, while a portion of said entrained solid particles are removed from said upper zone and recycled to said lower zone; and

(e) feeding oxygen, said second portion of steam as a fluidized gas and said recovered liquid hydrocarbon into said bottom of said lower zone to fluidize said solid particles throughout and partially burn said recovered liquid hydrocarbon, thereby cracking said recovered liquid hydrocarbon to said cracked gases.

3,848,017
THERMAL CRACKING OF HYDROCARBONS IN THE PRESENCE OF ADDED SULFUR COMPOUNDS AND NITRIC OXIDE

Harold Shalit, Drexel Hill, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

No Drawing. Filed Sept. 24, 1973, Ser. No. 400,482
Int. Cl. C07c ***3/30***
U.S. Cl. 260—683 R **11 Claims**

1. A method for the thermal cracking of mixtures of normally liquid hydrocarbons having at least 5 carbon atoms in the molecule characterized by increased conversion to lower molecular weight products and decreased production of products boiling in the same range as said normally liquid hydrocarbon charge mixture which comprises adding sulfur, a sulfur compound selected from the group consisting of carbon disulfide, carbonyl sulfide, am-

monium sulfide, mercaptans, alkyl sulfides, alkyl disulfides or mixtures thereof together with nitric oxides to a vaporized stream of said normally liquid hydrocarbon charge mixture, thereafter subjecting the resulting sulfur and nitric oxide-containing hydrocarbon stream to thermal cracking conditions and recovering the thermally cracked products.

3,848,018

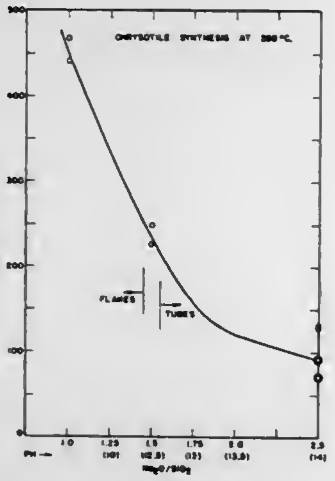
HYDROISOMERIZATION OF NORMAL PARAFFINIC HYDROCARBONS WITH A CATALYST COMPOSITE OF CHRYSOTILE AND HYDROGENATION METAL

Harry E. Robson, Baton Rouge, La., assignor to Esso Research and Engineering Company

Application Mar. 9, 1972, Ser. No. 233,368, which is a division of application Ser. No. 68,324, Aug. 31, 1970, now Patent No. 3,729,429. Divided and this application Aug. 24, 1973, Ser. No. 391,461

Int. Cl. C07c *5/30*

U.S. Cl. 260—683.65 **9 Claims**



1. A process for the hydroisomerization of normal paraffinic hydrocarbons to produce products enriched in iso-paraffin content for octane improvement comprising contacting feeds containing said hydrocarbons, in the presence of added hydrogen, at temperatures ranging from about 120° C. to about 260° C., and pressures ranging from about 150 to about 750 p.s.i., with a catalyst composite comprising chrysotile combined with a hydrogenation metal.

3,848,019

CATALYTIC CONVERSION OF HYDROCARBONS USING A RHENIUM-ALUMINA CATALYST

John W. Myers, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Original application Dec. 24, 1970, Ser. No. 101,419, now Patent No. 3,726,810. Divided and this application Dec. 14, 1972, Ser. No. 314,960

Int. Cl. C07c *5/24*

U.S. Cl. 260—683.68 **10 Claims**

1. A catalytic isomerization process comprising contacting a hydrocarbon feedstream containing paraffins or naphthenes or mixtures thereof in a contacting zone with an active rhenium-containing alumina catalyst said catalyst consisting essentially of alumina and from 0.01 to 5 weight percent rhenium prepared by heating the rhenium-containing alumina at a temperature in the range of 400 to 1500° F. in a dry ambient and thereafter treating the heated rhenium-containing alumina with at least one anhydrous treating agent selected from the group consisting of Cl_2, HCl, HBr, Br_2, and the Cl and Br derivatives of methane at a temperature of 400 to 1500° F. for at least 10 minutes.

3,848,020

PROCESS FOR PRODUCING HOMO- AND COPOLYMERS OF CYCLIC ACETALS

Karlheinz Burg, Langenhain, Taunus, and Helmut Schlaf, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

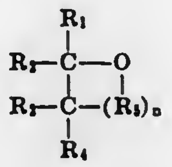
No Drawing. Filed Aug. 17, 1972, Ser. No. 281,559

Claims priority, application Germany, Aug. 19, 1971, P 21 41 600.2

Int. Cl. C08g *1/04, 1/20*

U.S. Cl. 260—823 **5 Claims**

1. In a process for producing moldable homopolymers of trioxane or copolymers comprising a major amount of units derived from trioxane and a minor amount of units derived from a linear acetal of an α,ω-diol or a cyclic acetal of the formula



$$\begin{array}{l} \quad R_1 \\ \quad | \\ R_2-C-O \\ \quad |\quad\ | \\ R_3-C-(R_5)_n \\ \quad | \\ \quad R_4 \end{array}$$

wherein R_1, R_2, R_3 and R_4 may be the same or different represent hydrogen or an alkyl group which can be halogen-substituted, R_5 represents an oxymethylene radical which can be substituted by an alkyl or halogen-substituted alkyl group, and *n* is 1 to 3, or when *n* is 1, R_5 can be the radical $-(O-CH_2CH_2)_m-OCH_2-$ wherein *m* is 1 to 3, at a temperature between the melting point and boiling point of the monomer or monomer mixture in the presence of a protonic acid, the improvement which consists in using an anhydrous perfluoroalkyl sulfonic acid with 1 to 18 carbon atoms as the protonic acid.

3,848,021

THERMOPLASTIC MOLDING COMPOSITION ON THE BASIS OF POLY(OXYMETHYLENES)

Gunter Sextro, Naurod, Taunus, and Karlheinz Burg, Langenhain, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Aug. 22, 1972, Ser. No. 282,720

Claims priority, application Germany, Aug. 23, 1971, P 21 42 091.7

Int. Cl. C08g *37/02*

U.S. Cl. 260—823 **10 Claims**

1. Process for the manufacture of a thermoplastic molding composition on the basis of poly(oxymethylenes), which comprises mixing

(a) from 99.9 to 80 weight percent of a linear poly (oxymethylene), which may contain up to 20 weight percent, relative to the said poly(oxymethylene), of oxyalkylene groups having from 2 to 8 adjacent carbon atoms, and

(b) from 0.1 to 20 weight percent of a poly(oxymethylene) containing from 0.1 to 30 weight percent, relative to the said poly(oxymethylene), of polyether segments derived from cyclic ethers having 3 to 5 ring members and having a number average molecular weight of at least 500, and up to 20 weight percent of oxyalkylene groups having from 2 to 8 adjacent carbon atoms,

each of the components being in a pulverulent or granulated form at a temperature below 100° C., and subsequently melting and homogenizing the mixture in a mixing device at a temperature of from 150° to 250° C., and then removing it from the mixing device.

3,848,022

WATER-SOLUBLE OR INHERENTLY WATER-DISPERSIBLE CONDENSATION PRODUCTS WHICH CROSS LINK WITH HEATING AND THE USE OF THESE CONDENSATION PRODUCTS AS CURING AGENTS FOR ORGANOPOLYSILOXANES

Willy Bernheim, Diedorf, near Augsburg, and Hans Deiner, Neusass, near Augsburg, Germany, assignors to Chemische Fabrik Pfersee GmbH, Augsburg, Germany

No Drawing. Original application July 13, 1970, Ser. No. 54,590, now Patent No. 3,372,502. Divided and this application Jan. 2, 1973, Ser. No. 320,687

Claims priority, application Germany July 19, 1969, P 19 36 886.6

Int. Cl. C08g *45/16*

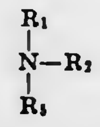
U.S. Cl. 260—824 EP **4 Claims**

1. A process of curing organopolysiloxanes selected from the group consisting of dialkyl polysiloxanes, alkyl hydrogen polysiloxanes and mixtures thereof with water-soluble or inherently water-dispersible condensation products as curing agents comprising adding to the organopolysiloxanes an effective amount of a condensation product obtained by reacting by heating a mixture consisting of

(a) about 1 mole of a compound selected from the group consisting of urea, guanidine, acetoguanadine, cyanamide, dicyandiamide, melamine, alkyl guanamines, aryl guanamines, ethylene urea, propylene urea and biuret;

(b) about 0.25–2.5 moles of an epoxy resin compound containing in the molecule on the average more than one epoxy group; and

(c) about 0.1–2 moles of an amine of the general formula



$$\begin{array}{l} R_1 \\ | \\ N-R_2 \\ | \\ R_3 \end{array}$$

wherein R_1 is an alkyl group having 2–4 carbon atoms or an alkanol having 2–5 carbon atoms, R_2 and R_3 are independently selected from hydrogen, an alkyl group having 1–4 carbon atoms or an alkanol having 2–5 carbon atoms, and said amine of the general formula has at least two reactive hydrogen atoms present in the molecule and terminating the reaction by the addition of a volatile acid and water to form condensation products, drying and curing.

3,848,023

ANTISTATIC COMPOSITION AND FIBER MADE THEREFROM

William M. Baggett and Ullman C. Garrett, Jr., Pensacola, and Rupert J. Snooks, Jr., Gulf Breeze, Fla., assignors to Monsanto Company, St. Louis, Mo.

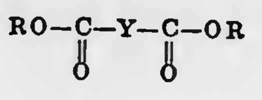
No Drawing. Filed Feb. 22, 1973, Ser. No. 334,523

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 PG **7 Claims**

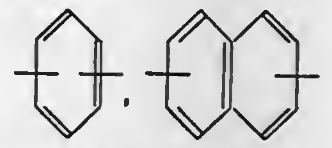
1. An antistatic composition of matter comprising a high molecular weight fiber-forming polycarbonamide wherein the recurring carbonamide linkages are an integral part of the polymer chain, said polycarbonamide being either a copolymer of at least two different polycarbonamide-forming substances or a melt blend of at least two different polycarbonamide polymers, said polycarbonamide being composed of about 6–24 weight percent aromatic nuclei and a high molecular weight poly(alkylene ether) as a distinct phase in the form of small elongated particles from 1 to 15 percent based on the weight of the composition formed by the ester interchange reaction of

(a)



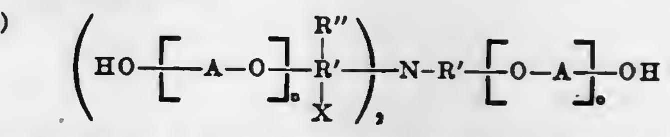
$$RO-\underset{\underset{O}{\|}}{C}-Y-\underset{\underset{O}{\|}}{C}-OR$$

wherein R is an alkyl radical of 1 to 4 carbon atoms and Y is a divalent organic radical selected from the group consisting of



and a linear or branched alkylene radical of 1 to 20 carbon atoms; and

(b)



$$\left(HO-\left[-A-O-\right]_n-\underset{\underset{X}{|}}{\overset{\overset{R''}{|}}{R'}}-\right)_2N-R'-\left[-O-A-\right]_n-OH$$

wherein R′ is a linear or branched C_2–C_4 alkylene radical, R″ is a C_{12}–C_{24} alkyl radical, A is a linear or branched C_2–C_4 alkylene radical, the sum of the *n*'s is about 25 to 75, X is hydrogen or an alkyl radical of 1 to 4 carbon atoms; and the mol ratio of (a) to (b) is from about 1:9 to about 1:1.

3,848,024

COATING COMPOSITIONS OF POLYESTERURETHANES, CARBOXY CONTAINING COPOLYMERS AND POLYISOBUTYLENE

Eduard Muck, Otrokovice, Jaroslav Strachota, Moravou, and Josef Horak, Gottwaldov, Czechoslovakia, assignors to Statni Vyzkumny ustav Kozedelny, Gottwaldov, Czechoslovakia

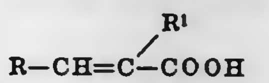
No Drawing. Continuation of application Ser. No. 118,572, Feb. 24, 1971. This application Nov. 21, 1972, Ser. No. 308,322

Claims priority, application Czechoslovakia, Mar. 5, 1970, 1,481/70

Int. Cl. C08g *41/04*

U.S. Cl. 260—859 **9 Claims**

1. A polyurethane based elastomeric coating and impregnating composition consisting essentially of (a) a linear thermoplastic polyester-urethane elastomer having a Shore Hardness reading of about 80–90, (b) about an equimolar amount based on the repeating unit of said elastomer of a copolymer of (1) a monomer selected from the group consisting of an alpha,beta-unsaturated polycarboxylic acid having the formula



$$R-CH=\overset{\overset{R^1}{/}}{C}-COOH$$

wherein R′ is hydrogen, methyl, phenyl or carboxyl and R^1 is hydrogen, methyl or methylcarboxyl, an alkali salt of said acid, an ammonium salt of said acid, a lower alkyl monoester of said acid, an anhydride of said acid, a monoamide of said acid and a mononitrile of said acid with (2) a monomer selected from the group consisting of lower olefins, lower diolefins, chloroprene, styrene, stilbene, isostilbene, vinyl alcohol, vinyl acetate, vinyl lower alkyl ethers, alkyl acetate, lower alkyl acrylates and methacrylates, acrylonitrile and methacrylonitrile, wherein components (1) and (2) of the copolymer are present in mol ratios of 15:85 to 50:50, and (c) an organic solvent medium for the elastomer (a) and the copolymer (b) having dispersed therein 4.0% to 50% polyisobutylene based on the weight of the elastomer (a) and the copolymer (b).

3,848,025

GRAFTED ETHYLENE POLYMERS

Heinrich Alberts, Cologne, and Herbert Bartl, Odenthal-Hahnenberg, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 10, 1972, Ser. No. 296,050

Claims priority, application Germany, Oct. 14, 1971, P 21 51 237.8

Int. Cl. C08f *15/00*

U.S. Cl. 260—878 R **8 Claims**

1. A process for the production of a graft polymer which comprises polymerizing, in the presence of a radi-

cal former in homogeneous or heterogeneous phase, a monomer mixture of

(a) acrylonitrile, methacrylonitirle or a mixture thereof,
(b) at least one mono-olefin having from 2 to 18 carbon atoms, and
(c) 0 to 50% by weight, based on the total monomers, of at least one member selected from the group consisting of acrylic acid and methacrylic acid esters having from 1 to 18 carbon atoms in the alcohol moiety, methacrylamide, acrylic acid and methacrylic acid,

in the presence of a homopolymer of ethylene or a copolymer of ethylene with (i) an organic vinyl ester or with (ii) an α,β-mono-olefinically unsaturated carboxylic acid or a derivative thereof, said acids having 2 to 4 non-carboxyl carbon atoms.

3,848,026

RUBBERY VULCANIZABLE COMPOSITION

Toshio Yoshimoto, Takaaki Imamura, Kazuo Tanaka, and Arata Miyagi, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

No Drawing. Application Aug. 19, 1970, Ser. No. 64,959, now Patent No. 3,798,190, which is a continuation-in-part of abandoned application Ser. No. 677,731, Oct. 24, 1967. Divided and this application Sept. 11, 1973, Ser. No. 396,132

Claims priority, application Japan, Nov. 3, 1966, 41/72,485

Int. Cl. C08d *9/08;* **C08f** *29/12*

U.S. Cl. 260—888 **2 Claims**

1. As a new composition of matter, a rubbery vulcanizable composition comprising a blend of (a) at least one of polymers selected from the group consisting of butyl rubber and ethylene-propylene terpolymer and (b) from 5 to 95 parts by weight of a hydrogenated copolymer per 100 parts by weight of said blend, said hydrogenated copolymer having secondary transition temperature over −100° C. and polymeric monomer units which consist of

(1) styrenic units of from 5 to 60 percent by weight,
(2) butadiene units of more than 2 percent by weight, and
(3) hydrogenated conjugated diolefinic units of more than 10 percent by weight, wherein the styrenic units are randomly distributed in the polymeric monomer units.

3,848,027

METHOD OF PREPARING WATER-DISPERSIBLE POLYOLEFIN FIBERS AND PRODUCT FORMED THEREFROM

Dennis L. Forbess, Vancouver, William A. Kindler, Jr., Camas, and Rueben A. Marti, Vancouver, Wash., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 168,383, Aug. 2, 1971. This application Feb. 26, 1973, Ser. No. 335,965

Int. Cl. C08f *29/12, 47/00*

U.S. Cl. 260—897 B **13 Claims**

1. A method of forming water-dispersible polyolefin fibers comprising vaporizing solvent from an aqueous mass of solvent-containing polyolefin fibers, in the presence of between about 0.1% and about 10% by weight polyvinyl alcohol based on the dry weight of the fibers.

3,848,028

PERMANENTLY ANTISTATIC ACRYLONITRILE POLYMERS CONTAINING A MERCAPTO POLYETHER

Helmut Engelhard, Leverkusen, Gunter Blankenstein, Stommeln, and Ulrich Reinehr, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 8, 1973, Ser. No. 386,509

Claims priority, application Germany, Aug. 8, 1972, P 22 38 940.8

Int. Cl. C08f *29/56*

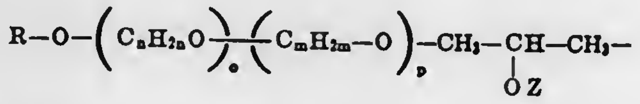
U.S. Cl. 260—898 **4 Claims**

1. A permanently antistatic acrylonitrile polymer consisting of a mixture of polyacrylonitrile or an acrylonitrile copolymer containing at least 70% by weight of acrylonitrile and as an antistatic agent, 0.5 to 15% by weight, based on the total mixture, of a mercapto polyether of the formula

X—S—Y

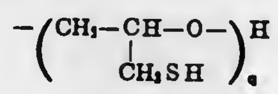
in which

X represents the group



$$R-O-(C_nH_{2n}O)_o-(C_mH_{2m}-O)_p-CH_2-\underset{\displaystyle OZ}{\underset{|}{CH}}-CH_2-$$

R represents a member selected from the group consisting of C_{1-30}-alkyl, cycloalkyl, C_{3-30}-alkenyl, aryl, polyaryl, alkaryl or aralkyl,
n represents an integer of from 2 to 4,
m represents an integer of from 2 to 4,
o represents O or is an integer of from 1 to 40,
p represents an integer of from 4 to 40,
Z represents hydrogen or



$$-\left(CH_2-\underset{\displaystyle CH_2SH}{\underset{|}{CH}}-O-\right)_qH$$

wherein

q represents an integer of from 1 to 10 and
Y represents hydrogen, the group X or an ionic valency of a monovalent to trivalent cation.

3,848,029

TRIMETHYLOLALKANE DI-ALLYL ETHER-ESTER COATING COMPOSITIONS

Edward Davis Watkins, La Grange, Ky., assignor to Celanese Coatings & Specialties Company, New York, N.Y.

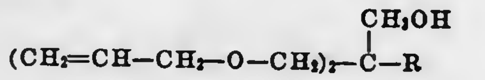
No Drawing. Filed Nov. 1, 1973, Ser. No. 412,372

Int. Cl. C08f *29/24*

U.S. Cl. 260—899 **7 Claims**

1. A coating composition comprising:

A. about 10 to about 75% by weight of a polyvinyl chloride polymer containing from about 60 to 100% by weight of vinyl chloride units and 40 to 0% of monoethylenically unsaturated monomer units, said monomers being copolymerizable with the vinyl chloride monomer; and
B. about 90% to about 25% by weight of the reaction product of a diallyl ether compound having the general formula



$$(CH_2{=}CH-CH_2-O-CH_2)_2-\overset{\displaystyle CH_2OH}{\overset{|}{C}}-R$$

wherein R is methyl or ethyl and a polycarboxylic acid having from 2 to 4 unreacted polycarboxyl (or corresponding anhydride) groups.

3,848,030

OPTICAL ISOMERS OF BINAPHTHYL-PHOSPHORIC ACIDS

Rene Viterbo and Jean Jacques, Paris, France, assignors to Richardson-Merrell S.p.A., Naples, Italy

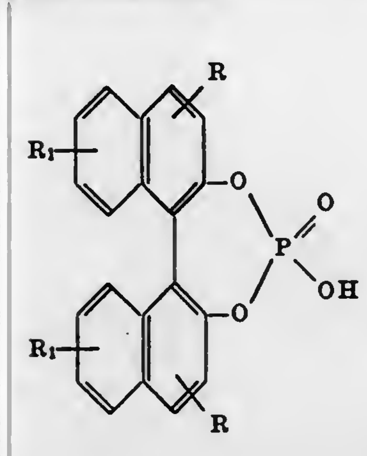
No Drawing. Filed Mar. 10, 1972, Ser. No. 233,793

Claims priority, application Italy, Mar. 18, 1971, 49,167/71

Int. Cl. C07f *9/12*

U.S. Cl. 260—936 **8 Claims**

1. The essentially pure single optical isomer of a compound of the structural formula



in which R and R_1 are symmetrical and independently hydrogen, halogen, lower alkyl of 1 to 8 carbon atoms inclusively or nitro, and their corresponding bi-4,5,6,7-tetrahydronaphthyl compounds essentially free of the corresponding isomer.

3,848,031

O-ALKYL-O-CYCLOHEXYL - S - ALKYL-, HALO-ALKYL- OR ALKENYL-PHOSPHOROTHIOLATES

Shigeo Kishino, Yasuo Yamada, Yoshio Kurahashi, and Toyohiko Kume, Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

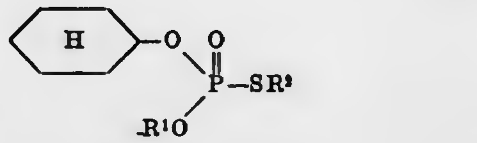
No Drawing. Filed Aug. 16, 1972, Ser. No. 281,252

Claims priority, application Japan, Aug. 18, 1971, 46/62,276

Int. Cl. A01n *9/36;* **C07f** *9/16*

U.S. Cl. 260—956 **9 Claims**

1. An organic O-alkyl-O-cyclohexyl-phosphorothiolate of the formula:



(I)

wherein

R^1 is alkyl of 1 to 6 carbon atoms, and
R^2 is alkyl, haloalkyl or alkenyl of 1 to 6 carbon atoms, or propargyl.

3,848,032

PROCESS FOR PREPARING PHOSPHORUS-CONTAINING ACIDS

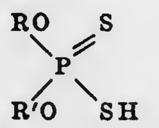
William Monroe Le Suer, Cleveland, and Horton Dunn, Jr., Euclid, Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Filed Dec. 8, 1972, Ser. No. 313,306

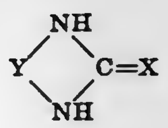
Int. Cl. C07f *9/08*

U.S. Cl. 260—981 **9 Claims**

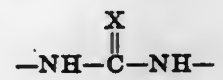
1. In the process for preparing phosphorodithioic acids of the formula



wherein R and R′ are each independently selected from hydrocarbyl and substituted hydrocarbyl groups by contacting (A) at least one hydroxy compound of the formula ROH or R′OH, where R and R′ are as defined above, with (B) phosphorus pentasulfide, the improvement therein comprising reacting (A) and (B) in the presence of a catalytically effective amount of at least one nitrogen-containing compound selected from the class consisting of

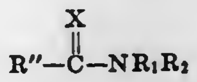


wherein X is oxygen or divalent sulfur and Y is an alkylene radical of two to seven carbon atoms which, with the



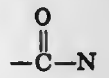
$$-NH-\overset{\displaystyle X}{\overset{\|}{C}}-NH-$$

group forms a 5-, 6-, or 7-membered ring, and



$$R''-\overset{\displaystyle X}{\overset{\|}{C}}-NR_1R_2$$

wherein X is oxygen or divalent sulfur, R″ is H, NH_2— alkyl of up to twenty carbon atoms, hydrocarbon aryl groups of up to twenty carbon atoms, and each of R_1 and R_2 are independently H, lower alkyl, or lower alkenyl with the proviso that one of R_1 and R_2 together with R″ and



$$-\overset{\displaystyle O}{\overset{\|}{C}}-N$$

the group can form a 5-, 6-, or 7-membered lactam.

3,848,033

PROCESS FOR PREPARING AGGREGATES

James L. Callahan, Bedford Heights, Arthur F. Miller, Cleveland, and Wilfrid G. Shaw, Lyndhurst, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed July 13, 1972, Ser. No. 271,387

Int. Cl. B29d *23/00*

U.S. Cl. 264—13 **9 Claims**

1. A process for preparing aggregates comprising

(a) preparing a slurry, said slurry comprising a suspending liquid and distinct particles of a first solid suspended in said liquid;
(b) preparing a particle bed consisting of particles of a second solid;
(c) forming droplets of said slurry; and
(d) dropping said droplets of said slurry into said particle bed under conditions where said suspending liquid is at least partially removed from the slurry droplet to form an aggregate of said distinct particles of said first solid.

3,848,034

METHOD OF APPLYING REFRACTORY COVERING TO SKID RAIL

Frank W. Schaefer, 1678 Cory Drive, Dayton, Ohio 45406

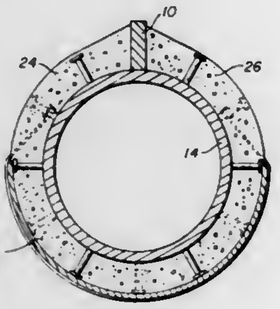
Filed June 7, 1972, Ser. No. 260,372

Int. Cl. F27d *1/16*

U.S. Cl. 264—30 **2 Claims**

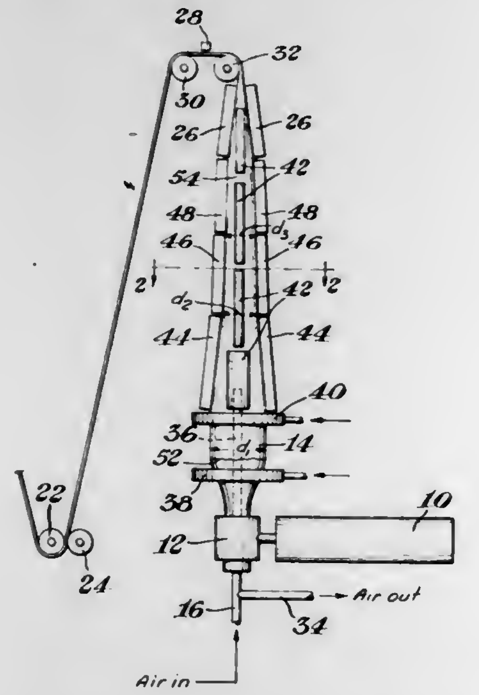
1. In a method of applying low slump refractory material to form an insulating covering on a length of substantially horizontal skid rail cooling pipe having anchoring structure projecting therefrom, the molding of a first section of refractory material in situ around a lower portion of predetermined length of said cooling pipe in surrounding relation to at least a portion of said anchoring structure including the steps of taking a substantially

rigid form having a trough, laying a sheet of flexible material against the upper face of said trough, placing the refractory material mix in said trough, advancing said form toward said length of cooling pipe to bring the refractory material mix into engagement with said portion of said anchoring structure, vibrating said form at relatively high speed to permit said form to be easily moved toward said length of cooling pipe and to cause said refractory material mix to completely surround said portion of said anchoring structure, moving said form toward said length of pipe until the refractory material mix is engaged therewith, securing said sheet to said length of cooling pipe, and removing said form whereby said refractory material mix is permitted to continue to harden while held by said sheet, whereby all of the aforementioned steps may be repeated on adjacent lengths of cooling pipe using said form.



3,848,035
PROCESS OF MANUFACTURE OF FILM HAVING THICKENED PROFILES THEREIN

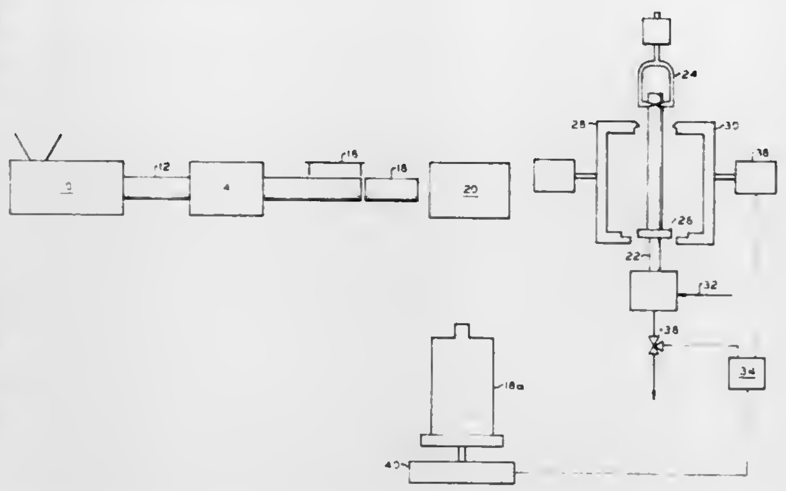
Raymond D. Behr, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of abandoned application Ser. No. 99,782, Dec. 21, 1970. This application Jan. 3, 1972, Ser. No. 214,753
Int. Cl. B29d *7/22, 23/04*
U.S. Cl. 264—40 **2 Claims**



1. In a method of manufacturing film, the steps of:
(a) continuously extruding a seamless tube of film while providing pressure internally to the tube, and then collapsing the moving tube at an area remote from the point of extrusion;
(b) integrally extruding with the tube, a first thickened profile of a general type defining a continuous gap the width of which is sensitive to hoop tension in the tube during a period in its manufacture, and at least a second thickened profile spaced circumferentially from the gap defining profile and adapted to be interlockingly receivable in said gap by means of cooperating sizing and configuration between the profiles, said profiles extending continuously in the direction of extrusion along the inner surface of the tube;
(c) passing the moving tube between opposed, spaced apart flattening means, said flattening means being adapted to partially flatten the tube over a substantial part of the region existing between the film frost line and the frost line of said thickened profiles; and
(d) controlling the ultimate width of said gap through means of controlling the spacing between said flattening means and thus the degree of flattening effect applied thereby to the tube.

3,848,036
DELAYED VENTING IN PRODUCTION OF ORIENTED HOLLOW ARTICLES

Charles L. Seefluth, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Oct. 24, 1972, Ser. No. 299,722
Int. Cl. B29c *17/07*
U.S. Cl. 264—40 **9 Claims**



1. In a method for forming oriented closed end hollow articles comprising heating a thermoplastic parison to orientation temperature, expanding said parison out against a mold formed by two mold parts while said parison is at said orientation temperature, by the introduction of internal fluid pressure, venting said thus formed hollow article to relieve said pressure and opening said mold parts enclosing said thus formed hollow article to remove same, the improvement comprising: opening said mold parts at a time after said venting is begun, which time is less than the time required for said venting to be complete, the volume of said hollow articles being measured and the time interval between said beginning of venting and said opening of said mold parts being adjusted in response to the amount said measured volume is different from a predetermined value to achieve a desired volume.

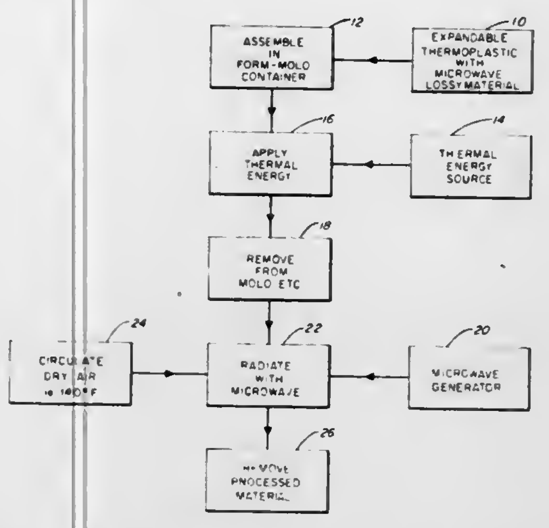
3,848,037
METHODS OF PRODUCING OIL-FREE AND WAX-FREE SURFACES ON POLYURETHANE MOLDINGS

Robert Charles Harper, Loveland, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
No Drawing. Continuation-in-part of abandoned application Ser. No. 881,926, Dec. 3, 1969. This application Dec. 15, 1972, Ser. No. 315,286
Int. Cl. B28b *7/38;* **B29c** *1/04;* **B29d** *27/00*
U.S. Cl. 264—46.4 **9 Claims**

1. A process for producing polyurethane moldings having surfaces free of adhesion inhibiting mold release agent comprising the steps of:
(a) overcoating a mold, which has been coated with a hydrophobic mold-release agent, with a continuous, solid barrier layer of a water-soluble film forming material reactive with isocyanate groups;
(b) passing into the mold a polyurethane molding composition containing reactive isocyanate groups;
(c) polymerizing said polyurethane molding composition in contact with said barrier layer material containing a plurality of moieties reactive with isocyanate groups;
(d) removing the resultant molding; and
(e) washing the surface of said molding with water to substantially remove said water-soluble barrier layer.

3,848,038
DRYING EXPANDED PLASTIC WITH MICROWAVE ENERGY

Edward C. Dench, Annisquam, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed June 4, 1973, Ser. No. 366,959
Int. Cl. B29c *19/02;* **B29h** *5/26;* **H05b** *9/06*
U.S. Cl. 264—51 **1 Claim**



1. A method of processing expandable plastic material principally of a polystyrene composition comprising the steps of:
mixing microwave energy absorbing material selected from the group including carbon, graphite, magnetite, barium titanate and lossy ferrites with said plastic material;
placing said mixed plastic and additive materials in a mold to provide the desired expanded object configuration;
heating said mold by a moisture laden atmosphere to cause expansion of said material within said mold;
removal of said expanded foamed plastic material object from said mold;
radiating said removed expanded foamed plastic material object with microwave energy a sufficient time to diffuse residual interstitial moisture to the surface; and
simultaneously circulating a drying medium over said object to remove substantially all of the surfaced moisture.

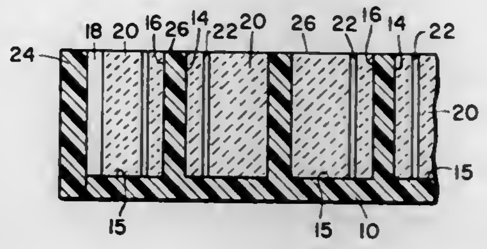
3,848,039
METHOD OF MAKING PATTERNED LAYERS

Ernst Schneppenhorst, Krefeld, and Ferdinand Leifeld, Hasenheide, West Germany, assignors to Textilausrustungs-Gesellschaft Schroers & Co., and Eduard Kusters Machinenfabrik, both of Krefeld, Germany
No Drawing. Filed Dec. 3, 1971, Ser. No. 204,622
Claims priority, application Germany, Dec. 5, 1970, P 20 59 936.4
Int. Cl. B29c *21/00*
U.S. Cl. 264—73 **9 Claims**

1. A process for coating a textile web with a curable polymeric material in a random color pattern, comprising: applying a liquid film to a moving, inert carrier web, said liquid film consisting of a solvent for said polymeric material; applying to said liquid film a low-viscosity colored mxture of said polymeric material in a solvent therefor to form a discontinuous, random pattern of said colored mixture; curing said polymeric material, while keeping a random pattern; forming over said random pattern a continuous layer of a polymeric material and applying a textile web to said continuous layer; curing said continuous layer in contact with said textile web to form a coated textile product and removing the inert carrier from said coated textile product.

3,848,040
APPARATUS AND METHOD FOR FORMING SLI CAST BODIES WITH CAVITIES

James O. Confer, Tioga, Pa., and George D. McTaggart Corning, N.Y., assignors to Corning Glass Works Corning, N.Y.
Filed Apr. 17, 1969, Ser. No. 817,095
Int. Cl. B28b *1/26, 7/18, 7/34;* **C04b** *33/28, 33/32*
U.S. Cl. 264—86 **9 Claims**



1. A mold assembly for forming a slip cast body with a cavity or cavities and from a slip of particulate inorganic material in volatile vehicle, which assembly comprises
an open-top, vehicle-absorbent mold,
at least one segmentally removable, vehicle-obsorbent, composite core means in said mold and extending to the open-top thereof with an uppermost portion of the external surface of said core means adapted to be exposed at the upper external surface of said body formed in said mold, substantially the remaining portion of the external surface of said core means cooperating with said mold to define a mold cavity and constituting a cavity-forming surface for said body, said core means made of at least one of each of first and second segments that are rigidly united together,
said first segment or segments being organic polymer foam,
said second segment or segments being plaster cast and hardened in contact with said foam,
portions of said first and second segments forming said external surface, including said uppermost portion and said cavity-forming surface, the part of said cavity-forming surface formed by said second segment or segments being greater in area than the remaining part thereof formed by said first segment or segments,
said second segment or segments being movable, upon removal of said foam when formed cavity-defining surface portions of said body have developed self-sustaining shape, into space theretofore occupied by said foam and away from said surface portions so that said second segment or segments are readily removable from said cavity or cavities in said formed body.

3,848,041

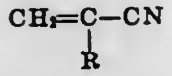
COLOR STABILIZATION OF ARTICLES FABRICATED FROM NITRILE POLYMERS

Domas Adomaitis, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

No Drawing. Filed June 22, 1972, Ser. No. 265,373

Int. Cl. B29c *17/07;* **B29f** *3/03;* **C08f** *45/00*
U.S. Cl. 264—98 **14 Claims**

1. A method for inhibiting color change in hollow containers blow molded from a thermoplastic nitrile resin comprised of (1) 60 to 99 percent by weight of an alpha, beta-olefinically unsaturated mononitrile having the structure



$$CH_2{=}C(R){-}CN$$

wherein R is selected from the group consisting of a lower alkyl group having to 1 to 4 carbon atoms and a halogen and (2) 1 to 40 percent by weight of at least one other olefinically unsaturated monomer copolymerizable with the mononitrile, which method comprises

humidifying the nitrile resin to a moisture content of between 0.2 to 0.6% by weight

extruding the humidified resin to form a tubular expansible parison and then expanding the parison to form the hollow article.

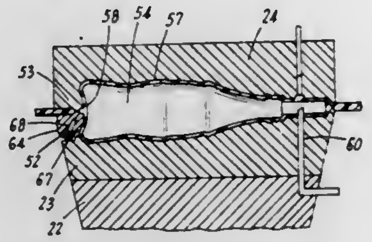
3,848,042

METHOD FOR BLOW MOLDING CONTAINERS HAVING RAISED BOTTOM WALL PORTIONS

Richard K. Shelby, Chicago, Ill., assignor to Monsanto Company, St. Louis, Mo.

Original application Dec. 30, 1970, Ser. No. 102,783, now Patent No. 3,718,416, dated Feb. 27, 1973. Divided and this application June 14, 1972, Ser. No. 262,750

Int. Cl. B29c *7/00, 17/07*
U.S. Cl. 264—99 **2 Claims**



1. In a blow molding process for forming a container having a raised bottom wall by expanding a thermoplastic parison against the surface of a chamber defined by portions of partible blow mold sections when in closed position, and then moving at least a portion of the chamber surface defining the raised bottom wall away from the chamber to facilitate removing the container from the chamber, the improvement which comprises moving said sections toward and away from each other perpendicular to the axis of a circular path in a vertical plane to close and open such sections as they traverse said path, drawing a portion of the container bottom wall across a movably mounted corresponding portion of the chamber surface which defined said bottom wall portion, during opening of said partible sections to urge said corresponding portion of the chamber surface out of the way of the bottom wall portion as the container is being extracted from the mold section containing said movably mounted chamber surface portion, and then moving said chamber surface portion in the opposite direction under the influence of gravity only to a container-forming position at a predetermined position on said circular path prior to closing said sections.

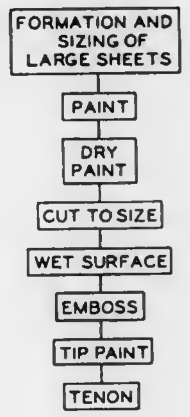
3,848,043

METHOD OF MAKING CUT-IN-REGISTER CEILING TILE

John R. Garrick, Lititz, and Ernest B. Waters, Jr., Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Continuation of abandoned application Ser. No. 155,417, June 22, 1971. This application Apr. 17, 1973, Ser. No. 352,026

Int. Cl. B29j *5/04*
U.S. Cl. 264—134 **4 Claims**



1. A process for making ceiling tiles which are approximately one foot square with a pattern on each tile which must be in registry with the pattern on adjacent tiles to form an overall pattern, the steps comprising, applying a paint coating to a board structure which is several square feet in size, cutting said board structure into a plurality of tile units of approximately one square foot, wetting the surface of the painted surface, then embossing on the tile unit an embossed pattern which is accurately positioned relative to the edges of the tile unit, said embossing step is carried out by the use of a punch press with a heated embossing structure, said embossing being accurately positioned so that a plurality of adjacent tile units will have their individual patterns in registry with the pattern of adjacent tile units, and then providing the tile units with an edge structure means to hold the tile units mounted in position in a ceiling.

3,848,044

CURED PHENOL-FORMALDEHYDE FIBERS AND METHOD FOR THE PRODUCTION THEREOF

Yoshichi Hagiwara, Katunobu Sato, Hideo Komatsu, Sadao Yuguchi, Nobuo Yoshizumi, Kenya Nagai, Hiromu Takeda, and Sei-Ichiro Ohnishi, Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Sept. 30, 1971, Ser. No. 185,063

Claims priority, application Japan, Oct. 2, 1970, 45/85,934; Dec. 23, 1970, 45/115,764; Apr. 13, 1971, 46/22,734; May 4, 1971, 46/28,911

Int. Cl. B28b *3/20;* **C08g** *5/06*
U.S. Cl. 264—176 F **10 Claims**

1. The process for the manufacture of a cured cross-linked fiber from a phenol-formaldehyde resin comprising melt spinning a resin composition comprised of a curable novolac resin having a pH of at least 4 and a melt viscosity of 300–5,000 poise and a member selected from the group consisting of tetraoxymethylene, trioxane and mixture thereof and curing the obtained uncured resin fiber in the presence of an acid catalyst to provide said cured fiber.

3,848,045

PRE-FABRICATED GEL COATS

Stanley Oswitch, University Heights, and Kevin K. Kipp, Cleveland Heights, Ohio, assignors to Ferro Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of application Ser. No. 199,752, Nov. 17, 1971, now Patent No. 3,770,690, which is a continuation of abandoned application Ser. No. 43,213, June 3, 1970. This application Aug. 6, 1973, Ser. No. 385,793

Int. Cl. B29d *3/00;* **C08g** *51/04*
U.S. Cl. 264—255 **11 Claims**

1. A process for molding a product from a curable, moldable resin composition in a mold therefor, comprising:

(a) lining said mold with a dry, flexible prefabricated gel coat comprising a layer of a partially cured, curable, epoxy resin formed by reacting an epoxy resin having a molecular weight in the range of 350 to 950 and an epoxy equivalent in the range 150 to 550 with a polydibasic acid polyanhydride having at least four anhydride repeating units in a polymer chain, and a fibrous reinforcing medium of thermoplastic resin compatible with the epoxy resin, said epoxy resin containing in parts by weight 50–85 parts of said polydibasic acid polyanhydride, 10–25 parts of fumed alumina, and 0.5–5 parts of an accelerator per 100 parts of said resin;

(b) adding to said mold a moldable resin composition selected from the group consisting of epoxy resins and polyester resins;

(c) heating the dry gel coat to soften the thermoplastic fibers and partially cured epoxy resin of the gel coat, flowing and shaping the softened thermoplastic fibers and partially cured epoxy resin to a desired shape determined by the mold; and

(d) finally curing the partially cured epoxy resin of the gel coat.

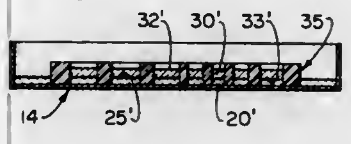
3,848,046

METHOD OF MANUFACTURING A SIMULATED STAINED GLASS ARTICLE

Michael W. Machet, 3717 Mariana Way, Santa Barbara, Calif. 93105

Filed July 26, 1972, Ser. No. 275,251

Int. Cl. B29c *9/00*
U.S. Cl. 264—279 **8 Claims**



1. A method of manufacturing a simulated textured stained glass article comprising the steps of:

pouring a liquid, water soluble gel substance into a mold to form a thin gel layer on the bottom of the mold,

sprinkling a dry powdered, liquid soluble absorbent onto the top surface of the gel substance before the substance gels to produce a textured surface on said gel layer as it hardens;

permitting water from said top surface of said gel layer to be absorbed by said absorbent while said layer hardens to cause said absorbent to swell and merge into the gel surface and produce an irregular textured surface on said gel layer;

pouring a glass simulating plastic material in liquid form onto said textured surface after hardening of said gel layer and allowing said material to harden while receiving the impression of said textured surface on one side; and

removing said hardened gel substance from said plastic material by dissolving such in water to produce the finished article.

3,848,047

BRASSIDOYL PROPYLENE GLYCOL HYDROGEN SUCCINATE

Paul Selden, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Original application Dec. 29, 1970, Ser. No. 102,525, now Patent No. 3,694,215. Divided and this application June 7, 1972, Ser. No. 260,689

Int. Cl. A23d *5/00;* **C07c** *69/40*
U.S. Cl. 260—404.8 **1 Claim**

1. Brassidoyl propylene glycol hydrogen succinate.

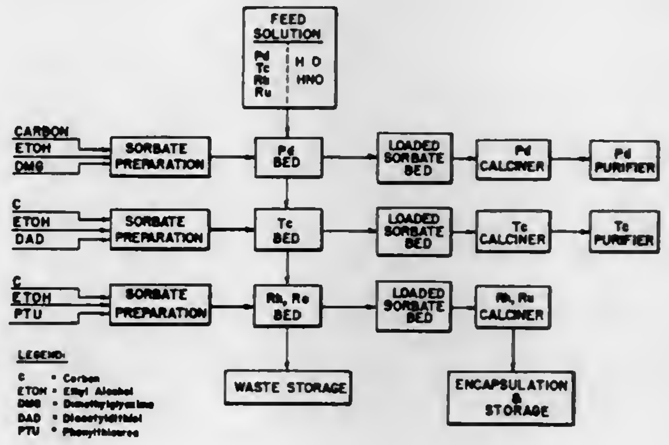
3,848,048

RECOVERY OF FISSION-PRODUCED TECHNETIUM, PALLADIUM, RHODIUM AND RUTHENIUM

Raymond H. Moore, Richland, Wash., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed July 12, 1973, Ser. No. 378,471

Int. Cl. C01g *55/00, 57/00*
U.S. Cl. 423—22 **5 Claims**



1. A method for recovering palladium, technetium, and rhodium and ruthenium values from an aqueous acid feed solution containing these and other values and from each other comprising: contacting the feed solution with a first bed of carbon, said bed having adsorbed thereon dimethylglyoxime, whereby only the palladium is chelated and is retained on the first bed, contacting the feed solution with a second bed of carbon, said second bed having adsorbed thereon a chelating agent selected from the group consisting of diacetyl dithiol and diacetyltoluene-3,4-dithiol, whereby only technetium is chelated and remains on the bed, contacting the feed solution with a third bed of carbon, said bed having adsorbed thereon a chelating agent selected from the group consisting of 8-mercaptoquinoline and phenylthiourea, whereby only the rhodium and ruthenium are chelated and remain on the bed, and recovering the values from the carbon beds.

3,848,049

PROCESS FOR PRODUCING HIGH PURITY MOLYBDENUM OXIDE AND AMMONIUM MOLYBDATE

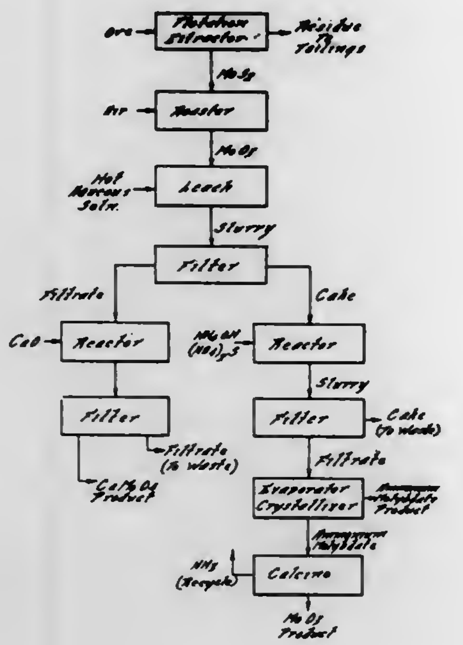
Richard A. Ronzio, Golden, Colo., Herbert Kay, New York, N.Y., and John D. Vincent, Golden, Colo., assignors to American Metal Climax, Inc.

Filed Jan. 27, 1972, Ser. No. 221,257

Int. Cl. C01g *39/00*
U.S. Cl. 423—54 **11 Claims**

1. A process for producing a high purity molybdenum product which comprises the steps of extracting a molybdenite ore to produce a particulated concentrate having

an average particle size of less than about 200 mesh and consisting predominantly of MoS_2, oxidizing said concentrate to convert substantially all of the MoS_2 to molybdenum oxide, contacting the oxidized said concentrate with an aqueous leach solution at a temperature ranging from about 10° C. up to 100° C. forming a slurry containing up to about 50% solids for a period of time sufficient to extract at least a portion of the contaminating metals including copper, potassium, magnesium, aluminum, sodium and iron from said concentrate, contacting said aqueous leach solution with a cation exchange resin for adsorbing the extracted said contaminating metals from said solution in the form of a loading on said resin, separating the aqueous leached said concentrate from the loaded said resin and said aqueous leach solution, contacting the separated said concentrate with an aqueous ammoniacal leach solution at a temperature ranging from about 25° C. up to about 100° C. and containing about 5% to about 30% ammonia for a period of time sufficient to convert substantially all of said molybdenum oxide therein to a soluble ammonium molybdate compound, separating the remaining solid residue from said ammoniacal leach solution and thereafter crystallizing said solution and recovering a high purity ammonium molybdate product.



3,848,050

PROCESS OF PREPARING MOLYBDENUM TRIOXIDE BY SUBLIMATION

Emile Joseph Jemal, 67 Davenport Road, Yonkers, N.Y. 10710

Filed July 5, 1972, Ser. No. 269,064

Int. Cl. C01g *39/00*

U.S. Cl. 423—59 **6 Claims**

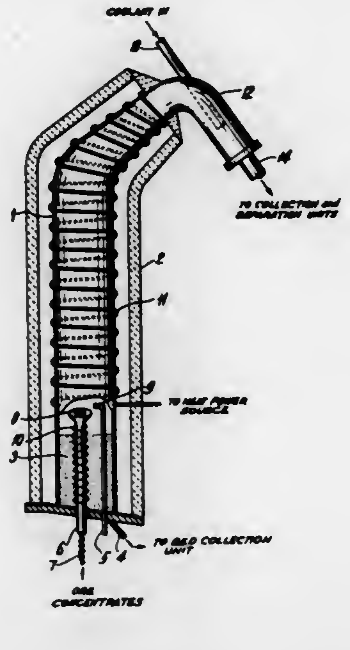
1. A process of preparing molybdenum trioxide of high purity from molybdenum-bearing ore concentrates, which comprises:

(a) continuously introducing in the lower region of a sealed reactor a molybdenum-bearing ore concentrate having a particle size smaller than about 20 mesh;

(b) continuously and separately introducing into the said lower region of said reactor through a separate inlet a stream of oxidizing gas at a temperature of from ambient to about 400° F.;

(c) contacting in said lower region said concentrate with said oxidizing gas at a temperature of about 1600–1700° F. to cause oxidation and substantially instantaneous sublimation of the molybdenum values to molybdenum trioxide;

(d) maintaining the reactor at a temperature sufficient to cause the molybdenum trioxide to rise toward the upper region in the reactor, wherein the non-sublimable components of the concentrate fall to the bottom of the reactor to maintain a gas-seal therein and are removed therefrom by mechanical means at such a rate as to maintain a substantially constant level at the bottom of the reactor;



(e) contacting the sublimed molybdenum trioxide in said upper region with a coolant medium comprising liquid sulfur dioxide or molybdenum pellets to cause condensation of the sublimate; and

(f) separating the condensed molybdenum trioxide from un-condensable gases associated therewith.

3,848,051

PROCESS FOR THE PRODUCTION OF TITANIUM TETRACHLORIDE

Robert J. Mas, Thann, and Andre Louis Michaud, Vieux Thann, France, assignors to Fabriques de Produits Chimiques de Thann et de Mulhouse, Thann, France

Continuation of application Ser. No. 664,665, Aug. 31, 1967. This application June 4, 1970, Ser. No. 43,598

Claims priority, application France, Sept. 6, 1966, 75,419

Int. Cl. C01g *23/04*

U.S. Cl. 423—79 **4 Claims**

1. In a process for the continuous production of titanium tetrachloride, wherein a finely divided bed of a titanium mineral and coke is maintained in a reactor, chlorine containing gas is introduced continuously into the lower portion of said bed so as to maintain the solids in said bed in a fluidized state and continuously to react with them, thus producing gaseous reaction products including titanium tetrachloride vapor, and a continuous stream of such gaseous reaction products with solid fines entrained therein is conducted from an upper region of the reactor into a separator in which solid fines are continuously separated and collected from said stream, the improvement which comprises continuously passing the fines collected by said separator directly back into the reactor by gravity flow thereof through a downwardly extending conduit that opens into said reactor at a level therein where the gases therein consist substantially entirely of said gaseous reaction products, while passing continuously from the reactor through said conduit, countercurrent to the returning fines, a limited flow of said gases sufficient to prevent clogging of said conduit by said fines.

3,848,052

PROCESS FOR THE PREPARATION OF STANNIC CHLORIDE

Elbert M. De Forest, Wichita, Kans., and Lewis A. St. Cyr, Thornton, and Loren H. Young, Northglenn, Colo., assignors to Vulcan Materials Company, Birmingham, Ala.

No Drawing. Filed May 17, 1973, Ser. No. 361,341

Int. Cl. C01g *19/08*

U.S. Cl. 423—96 **4 Claims**

1. Process for the preparation of stannic chloride by chlorination of tin metal, comprising the steps of:

(a) providing a body of molten tin in a reaction zone;

(b) introducing chlorine gas into said molten tin body to react with the tin to form stannic chloride;

(c) maintaining the molten tin at a substantially steady temperature which is above the boiling point of stannic chloride and between about 235° and about 350° C. by introducing liquid stannic chloride into said molten tin body simultaneously with and substantially at the same point as the chlorine gas at a rate and in an amount sufficient to absorb excess heat of reaction by the stannic chloride becoming heated and vaporized;

(d) recovering stannic chloride vapor; and

(e) condensing the vapor to produce liquid stannic chloride.

3,848,053

ALKYL ALUMINUM DISPOSAL METHOD

Luke J. Governale, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Filed July 26, 1973, Ser. No. 382,726

Int. Cl. C01f *1/100, 7/04, 7/16*

U.S. Cl. 423—115 **17 Claims**

1. A method of recovering aluminum from a composition containing an alkyl aluminum compound, said method comprising reacting said composition with an aniline to form an aluminum anilide, hydrolyzing said aluminum anilide with aqueous base, and reacting the hydrolyzed product with an alkaline earth metal base to precipitate an alkaline earth metal aluminate in a recoverable form.

3,848,054

RECOVERY OF COBALT VALUES FROM THE LEACHED ORE TAILINGS OF A CONVENTIONAL AMMONIACAL LEACHING PROCESS

Tadeusz Karol Wiewiorowski, New Orleans, La., assignor to Freeport Minerals Company, New York, N.Y.

Filed June 2, 1972, Ser. No. 259,082

Int. Cl. C01g *1/12, 51/00, 53/00;* **C22b** *3/00, 7/00*

U.S. Cl. 423—140 **4 Claims**

1. A method for recovering cobalt values present in the leached ore tailings of an ammoniacal leaching process which comprises:

(a) treating a slurry containing a solid phase comprising the solids fraction of said leached ore tailings containing about 0.02 to 0.15 percent by weight cobalt and about 0.1 to 0.6 percent by weight nickel, and a liquid phase comprising an aqueous ammoniacal solution having a pH above 7, with sulfite ions in an amount sufficient to solubilize cobalt values present in said solid phase into said ammoniacal solution;

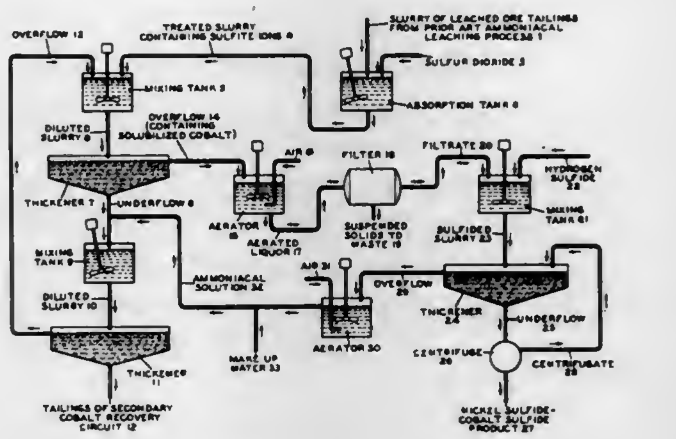
(b) blending the treated slurry prepared in step (a) with additional aqueous ammoniacal solution having a pH above 7 to thereby dilute said slurry;

(c) separating the diluted slurry prepared in step (b) into a first stream depleted in solids and a second stream enriched in solids;

(d) treating said first stream prepared in step (c) with an oxygen-containing gas in an amount sufficient to destroy residual sulfite ions present in said first stream;

(e) separating the solid phase of the first stream prepared in step (c) from the liquid phase of said first stream;

(f) treating the solids depleted, gas-treated liquid phase from step (e) with a sulfiding agent in an amount sufficient to precipitate solubilized cobalt and nickel values contained in said liquid phase as a mixed precipitate of cobalt sulfide and nickel sulfide having a nickel to cobalt weight ratio of about 0.5 to 2;



(g) separating the slurry of said liquid phase and cobalt sulfide-nickel sulfide precipitate prepared in step (f), after the precipitation of step (f) is completed, into a first stream depleted in solids and a second stream enriched in solids, and withdrawing said second stream containing the desired cobalt values as cobalt sulfide from the process;

(h) treating the solids depleted first stream prepared in step (g) with an oxygen-containing gas in an amount sufficient to destroy residual sulfide ions present in said first stream;

(i) adding make-up water to said first stream prepared in step (g), when required and mixing said first stream with the second stream prepared in step (c) to thereby dilute said second stream;

(j) separating the diluted stream prepared in step (i) into a first stream depleted in solids and a second stream enriched in solids, said second stream constituting the tailings of said method; and

(k) returning the first stream produced in step (j) for blending with the treated slurry prepared in step (a), said returned stream serving as said additional aqueous ammoniacal solution of step (b).

3,848,055

EXTRACTION OF STRONTIUM VALUES FROM CELESTITE

Allan C. Kelly, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

No Drawing. Filed July 13, 1973, Ser. No. 379,125

Int. Cl. C22b *3/00, 29/00;* **C01f** *1/00, 11/00*

U.S. Cl. 423—158 **10 Claims**

1. Method of producing strontium hydroxide from strontium sulfate comprising:

(a) reacting a finely divided celestite with sufficient aqueous sodium hydroxide solution to form a slurry, the solution containing sufficient NaOH to maintain a concentration of at least 10 g./l. NaOH after reac-

tion of the sodium hydroxide in the solution with the celestite to form strontium hydroxide, the reaction being carried out at a temperature below the boiling point of water;
(b) separating the solid material resulting from step (a) from the aqueous solution;
(c) washing the solid material separated in step (b) to dissolve and remove any solid sodium sulfate present; said washing being conducted at a temperature of not greater than that of the reaction of step (a);
(d) dissolving the strontium hydroxide in the washed solid material produced in step (c) in water at a temperature of at least 90° C.;
(e) separating the strontium hydroxide solution produced in step (d) from the remaining solids; and
(f) recovering strontium values from the separated solution.

3,848,056

MOLTEN ALKALINE ALKANOIC MIXTURES FOR ABSORPTION OF SULFUR OXIDES

Anthony G. Fonseca, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Sept. 5, 1972, Ser. No. 286,496

Int. Cl. B01d *47/00;* **C01b** *17/00;* **B01j** *9/04, 9/08, 9/12, 9/16, 9/20*

U.S. Cl. 423—210.5 **8 Claims**

1. A method for removing sulfur oxides from gaseous streams comprising: contacting said gaseous streams with a molten mixture having a pH from about 7.0 to about 10.0 and containing from about 10 to about 99 weight percent metal alkanoate, wherein said metal is selected from the group consisting of sodium, potassium, lithium and magnesium, and wherein the alkyl moiety of said alkanoate contains from 1 to about 4 carbon atoms; and from about 1 to about 90 weight percent of an alkaline material selected from the group consisting of metal hydroxides, metal carbonates, metal bicarbonates and combinations thereof wherein said metal is selected from the group consisting of sodium, potassium, lithium and magnesium thereby selectively absorbing sulfur oxides and recovering a gaseous stream having a reduced sulfur oxide content.

3,848,057

METHOD AND COMPOSITION FOR REMOVING ACIDIC CONTAMINANTS FROM GASES

Frederic Leder, Elizabeth, David W. Savage, Summit, and Adam L. Shrier, Montclair, N.J., assignors to Exxon Research and Engineering Company

No Drawing. Filed Oct. 1, 1971, Ser. No. 185,898

Int. Cl. B01d *53/16, 53/34*

U.S. Cl. 423—223 **11 Claims**

1. A process for removing acid gases from a gaseous mixture, said acid gases being selected from the group consisting of CO_2, H_2S, HCN, CS_2, COS, SO_2 and oxidation products and sulfides of methane, ethane, propane and butane which comprises contacting said mixture with a solution, said solution comprising 5 to 40 wt. percent of an alkali metal salt, said salt selected from the group consisting of potassium carbonate and sodium carbonate and a synergistic promoter system comprising at least about 2 wt. percent of an amine, said amine being selected from the group consisting of piperidine, derivaties of piperidine, 1,6-hexanediamine and derivatives of 1,6-hexanediamine and boric acid, and said boric acid being present in the amount of from 0.5 to 5 moles of boric acid per mole of amine, at a temperature of 25 to 200° C., and a pressure of 5 to 2,000 p.s.i.g. and maintaining said solution in a single phase during said contacting wherein at least a portion of said acid gas is absorbed by said solution.

3,848,058

PURIFICATION OF GASEOUS STREAMS CONTAINING SULFUR DERIVATIVES

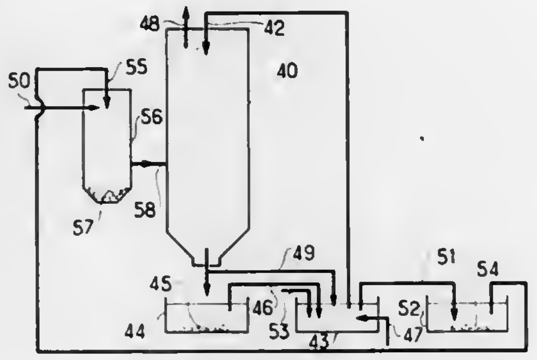
Pierre Poncet, Lyon, and René Trempu, Versailles, France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcates, Paris, France

Filed May 28, 1971, Ser. No. 147,933

Claims priority, application France, Aug. 5, 1970, 7028877; Feb. 19, 1971, 7105765

Int. Cl. B01d *53/34*

U.S. Cl. 423—242 **3 Claims**



1. A continuous process for purifying a gaseous stream derived from fuel combustion and containing sulfur dioxide by removing therefrom substantially all of the sulfur dioxide by a process which comprises:
(1) feeding the impure gas stream into a first zone;
(2) contacting said impure gas stream at a temperature of about 130 to 180° C., in said first zone, with a concentrated aqueous solution consisting essentially of ferric sulfate to at least partially dehydrate said concentrated aqueous solution, to remove a substantial portion of solid particles from said impure gas stream and to bring the temperature of said impure gas stream to 45 to 60° C.;
(3) feeding the resulting gaseous stream from step (2) into a second zone;
(4) countercurrently contacting said resulting gas stream in said second zone with a first aqueous solution consisting essentially of ferric sulfate to form a second aqueous solution containing sulfuric acid and ferrous sulfate and a purified gas stream substantially free of sulfur dioxide;
(5) separating said second aqueous solution into a first and a second portion;
(6) adding iron or an iron compound to only said first portion in an amount sufficient to neutralize the sulfuric acid contained therein to form a third aqueous solution consisting essentially of ferrous sulfate;
(7) combining said third aqueous solution and said second portion and oxidizing the combined aqueous solution by contacting said combined aqueous solution with a gas consisting of air only, said oxidation being conducted in the presence of sulfuric acid due to the sulfuric acid remaining in said second portion;
(8) withdrawing a portion of the resulting oxidized aqueous solution as a concentrated aqueous solution consisting essentially of ferric sulfate and feeding it to said first zone as said concentrated solution consisting essentially of ferric sulfate; and
(9) feeding the remaining portion of the resulting oxidized aqueous solution to said second zone as said first aqueous solution consisting essentially of ferric sulfate; and
(10) repeating steps (1) through (9) to obtain a continuous process.

3,848,059

INORGANIC MICROSPHERES BY A DOUBLE EMULSION TECHNIQUE

Modesto Erneta, Princeton Junction, N.J., assignor to N L Industries, Inc., New York, N.Y.

No Drawing. Filed Dec. 22, 1972, Ser. No. 317,676

Int. Cl. C01f *5/00, 5/24, 5/40, 7/00, 7/74, 11/00, 11/18, 11/46*

U.S. Cl. 423—327 **1 Claim**

1. A method for preparation of spheroidal shaped reticulated microparticles of a water insoluble inorganic salt which comprises forming a water-in-oil emulsion containing a water soluble inorganic salt in the water droplets of said water-in-oil emulsion, forming a second water-in-oil emulsion containing another water soluble inorganic salt in the water droplets of said second water-in-oil emulsion, mixing the two water-in-oil emulsions, said water droplets containing the two water soluble salts, contacting one another and said salts immediately reacting with one another to form double decomposition products in which one salt product is water insoluble and the other salt product is water soluble, separating the oil portion from said water droplets containing the double decomposition products, removing the water soluble salt in the water droplets from said water insoluble salt, and drying said water insoluble salt; the cation portion of said water insoluble salt selected from the group consisting of magnesium, calcium, strontium, barium and aluminum and the anion portion of said salt selected from the group consisting of silicate, carbonate and sulfate.

3,848,060

BROMOCINNAMALDEHYDE AS AN INSECT REPELLENT

Goro Izawa, 7–9, 6-chome, Zushi, and Tamio Nishimura, 4063–3 Ikuta, Kawasaki, both of Kanagawa-ken, Japan

No Drawing. Filed July 16, 1973, Ser. No. 379,727

Int. Cl. A01n *9/24*

U.S. Cl. 424—333 **6 Claims**

1. A method for repelling insects from an inanimate object which comprises exposing said object to the vapor of an insect repelling amount of α-bromocinnamaldehyde.

3,848,061

PROCESS FOR PREPARING CONCENTRATED FLUOROSILICIC ACID

Wolfgang Laue and Eckehard Schreiber, Waltrop, and Friedrich Heyenga, Lunen, Germany, assignors to Firma Gewerkschaft Victor Chemische Werke, Castrop Rauxel, Germany

Filed July 15, 1971, Ser. No. 162,787

Claims priority, application Germany, July 16, 1970, P 20 35 300.8

Int. Cl. C01b *7/00, 33/00, 33/12*

U.S. Cl. 423—341 **5 Claims**

1. A process for preparing a concentrated aqueous solution of fluorosilicic acid containing at least 28% by weight of fluorosilicic acid from a dilute solution containing at most 20% by weight of fluorosilicic acid and simultaneously recovering hydrogen fluoride and silicon tetrafluoride from a gaseous mixture containing the same, such as the mixture that is formed in recovering hydrogen fluoride from aqueous solutions of fluorosilicic acid by means of a polyglycol, which process comprises the following steps: (a) passing into a heated reaction zone a stream of a gaseous mixture containing hydrogen fluoride and silicon tetrafluoride together with a stream of hot dilute aqueous fluorosilicic acid, (b) maintaining the said reaction zone at such a temperature above the boiling point of water that a substantial proportion of the silicon tetrafluoride therein in hydrolyzed to form fluorosilicic acid and silica, (c) continuously withdrawing the stream of water vapor containing residual small proportions of hydrogen fluoride and silicon tetrafluoride that are volatilized in said reaction zone, and passing the said stream from the reaction zone to a rectification zone that is maintained at such a temperature as to distill off water vapor free from hydrogen fluoride and silicon tetrafluoride while retaining therein a distilland consisting of fluorosilicic acid having a higher concentration than the dilute solution that was initially passed into the said reaction zone, (d) continuously withdrawing a slurry of silica and concentrated fluorosilicic acid from the said reaction zone and passing the said slurry in heat-exchange relationship with the stream of dilute aqueous fluorosilicic acid that is being passed into the said heated reaction zone and continuously separating the silica from the said slurry and recovering therefrom the concentrated fluorosilicic acid containing at least 28% by weight of fluorosilicic acid, (e) continuously withdrawing from the said rectification zone water vapor free from hydrogen fluoride and silicon tetrafluoride that is volatilized therein, (f) continuously passing such amounts of hydrogen fluoride into the said rectification zone as to prevent the formation of silica therein by hydrolysis of any residual amounts of silicon tetrafluoride that are present therein, and (g) continuously withdrawing portions of the distilland consisting of concentrated fluorosilicic acid from the said rectification zone and passing them to the said heated reaction zone.

3,848,062

PREPARATION OF MONOTUNGSTEN CARBIDE

Roger A. Steiger, Canal Fulton, and William L. Wilson, Barberton, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 17, 1972, Ser. No. 227,049

Int. Cl. C01b *31/34;* **C22c** *29/00*

U.S. Cl. 423—440 **15 Claims**

1. In the process of producing tungsten carbide by vapor phase reaction of a volatile tungsten compound with a vaporous source of carbon at from about 300° C. to about 3000° C. in a reaction zone, the improvement which comprises the steps of introducing into said reaction zone the volatile tungsten compound and the source of carbon in amounts sufficient to provide therein at least one atom of carbon for each atom of tungsten, withdrawing from the reaction zone solid tungsten carbide product having ditungsten carbide as its principal component, and calcining the solid tungsten carbide product at from about 500° C. to about 1500° C. and for a time sufficient to produce monotungsten carbide as the principal component of the tungsten carbide product.

3,848,063

PROCESS FOR THE MANUFACTURE OF HIGH-PURITY LITHIUM HEXAFLUOROARSENATE

Raybon C. Cannon, Tucker, and Robert A. Wiesboeck, Stone Mountain, Ga., assignors to United States Steel Corporation

No Drawing. Filed Aug. 16, 1973, Ser. No. 389,602

Int. Cl. C01b *27/00;* **C01d** *11/02*

U.S. Cl. 423—464 **6 Claims**

1. Method of purifying lithium hexafluoroarsenate comprising adding impure lithium hexafluoroarsenate containing as impurities $HAsF_5OH$, $HAsOF_4$, $HAsO_2F_2$, H_2AsO_3F and HF to aqueous lithium hydroxide, heating the mixture to 80–100° C. to cause decomposition and precipitation of impurities, adding to the mixture lithium hydroxide to maintain the pH thereof at least at 10.5 and to cause further decomposition and precipitation of impurities, thereafter reducing the pH to from 7.5 to 9.0 by adding HF, separating the precipitates from the lithium hexafluoroarsenate, cooling the liquid thereform to 0–25° C. to precipitate lithium hexafluoroarsenate trihydrate,

and drying the lithium hexafluoroarsenate under vacuum at a temperature not exceeding 100° C. and with a dry inert sweep gas.

3,848,064

PRODUCTION OF SULFUR TETRAFLUORIDE FROM SULFUR CHLORIDES AND FLUORINE

Wilfried Becher, Ilten, and Joachim Massonne and Wilhelm Pohlmeyer, Hannover, Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

No Drawing. Filed Apr. 12, 1973, Ser. No. 350,416

Claims priority, application Germany, Apr. 14, 1972, P 22 17 971.1

Int. Cl. C01b *17/45*

U.S. Cl. 423—469 **18 Claims**

1. A process for the continuous manufacture of sulfur tetrafluoride comprising:

(1) reacting in a reaction zone, sulfur chloride of the formula S_xCl_2 with gaseous fluorine at a temperature of about 50 to about 130° C. to form sulfur tetrafluoride and sulfur dichloride, (2) reacting said sulfur dichloride with sulfur to form S_xCl_2, returning to said reaction zone said sulfur dichloride of the formula S_xCl_2 formed in step (2) and (3) collecting said sulfur tetrachloride, said x having a value of about 1.1 to about 6.0.

3,848,065

METHOD FOR PRODUCING HYDROGEN IODIDE

Frank E. Paulik, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,686

Int. Cl. C01b *7/18*

U.S. Cl. 423—487 **4 Claims**

1. A process for producing aqueous hydrogen iodide which comprises reacting hydrogen and iodine in water at a temperature from about 70° to about 125° C. and a pressure from about 50 to about 80 p.s.i.g. in contact with a catalyst consisting essentially of a metal selected from the group consisting of rhodium and ruthenium supported on an inert material, the amount of metal in said catalyst being in the range from about 0.00001 mole to about 0.01 mole per mole of iodine.

3,848,066

PROCESS FOR PREPARING CRYSTALLINE MAGNESIUM FLUORIDE

Clarence D. Vanderpool and Martin B. MacInnis, Towanda, Pa., assignors to GTE Sylvania Incorporated

No Drawing. Filed Nov. 15, 1973, Ser. No. 415,993

Int. Cl. C01f *5/28*

U.S. Cl. 423—490 **5 Claims**

1. A process suitable for producing crystalline magnesium fluoride comprising:

(a) forming a reaction mixture consisting essentially of ammonium bifluoride, an aqueous solution of ammonium hydroxide and magnesium carbonate, said ammonium bifluoride and ammonium hydroxide being in stoichiometric excess of said magnesium carbonate;

(b) heating the foregoing mixture at a temperature of at least about 60° C. for a time sufficient to form an intermediate solid complex;

(c) separating said complex from the aqueous phase;

(d) drying said complex at a temperature of at least about 100° C. and

(e) heating the dried complex to at least about 350° C. to form magnesium fluoride.

3,848,067

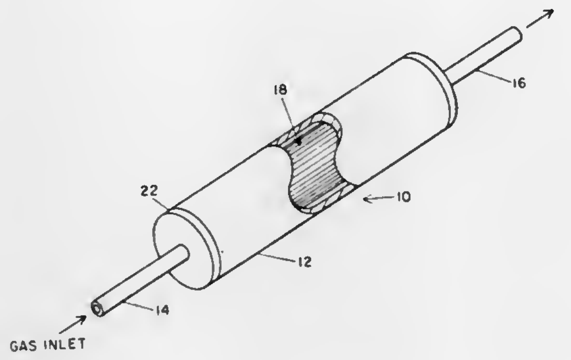
METHOD OF AND FILTER FOR REMOVING TRITIUM FROM INERT GASES

Martin H. Cooper, Monroeville, Pa., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed July 12, 1972, Ser. No. 270,884

Int. Cl. B01d *53/34;* **B01j** *11/22*

U.S. Cl. 423—248 **4 Claims**



1. A method of removing tritium from an inert gas comprising the step of passing said gas into contact with solid yttrium plated with nickel at a temperature within the range of 1000–1400° F., the latter to prevent interfering corrosion of said yttrium while permitting the tritium to diffuse through and react with said yttrium.

3,848,068

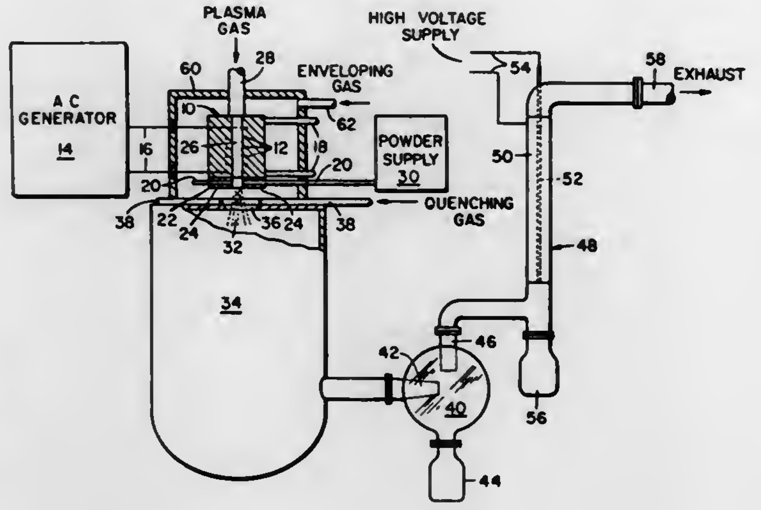
METHOD FOR PRODUCING METAL COMPOUNDS

Dale W. Rice, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Apr. 21, 1971, Ser. No. 135,973

Int. Cl. C01b *33/18;* **C01f** *7/02;* **C01g** *21/02, 23/04, 25/02, 27/02, 37/02, 49/06*

U.S. Cl. 423—335 **5 Claims**



1. A method for producing a particulate metal oxide comprising the steps of

providing an induction-coupled plasma torch,

introducing a plasma gas into said torch, said plasma gas containing up to 100 percent of oxygen on a free-element basis, the balance of said plasma gas being substantially inert with respect to said metal,

initiating a plasma stream,

introducing in particulate form into said plasma stream at least one metal selected from the group consisting of chromium, lead, magnesium, niobium, silicon, titanium, zirconium, aluminum, and iron, said plasma stream having an enthalpy sufficient to vaporize said metal,

enveloping said plasma stream with a gas containing up to 100 percent of oxygen on a free-element basis, the balance of the enveloping gas being substantially inert with respect to said metal and the plasma gas,

vaporizing the metal particles,

reacting the metal vapors with said oxygen, the amount of oxygen present being at least sufficient for stoichiometric reaction with said metal,

quenching the resulting metal oxide in a stream of gas containing up to 100 percent of oxygen on a free-element basis, the balance of said quenching stream of gas being substantially inert with respect to said resulting metal oxide and said plasma gas, said resulting metal oxide being in finely divided form and being substantially free of any anionic impurity,

separating particles of said finely divided metal oxide up to about 0.5 μm. in size from said quenching stream, and

collecting said separated particles of said metal oxide.

3,848,069

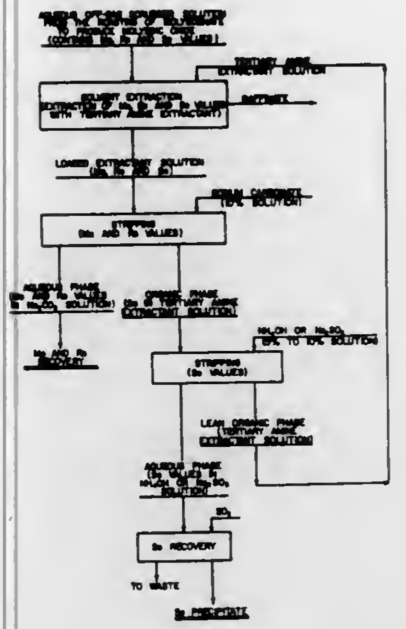
PROCESS FOR RECOVERING SELENIUM VALUES FROM AQUEOUS SOLUTIONS CONTAINING MOLYBDENUM, RHENIUM AND SELENIUM VALUES

Curtis D. Carey and Ronald N. Platzke, Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Nov. 14, 1972, Ser. No. 306,210

Int. Cl. C01b *19/00;* **C22b** *49/00, 61/00*

U.S. Cl. 423—508 **6 Claims**


TERTIARY AMINE EXTRACTANT SOLUTION
SOLVENT EXTRACTION
RAFFINATE
LOADED EXTRACTANT SOLUTION
SODIUM CARBONATE (10% SOLUTION)
STRIPPING (Mo AND Re VALUES)
AQUEOUS PHASE
ORGANIC PHASE
Mo AND Re RECOVERY
STRIPPING (Se VALUES)
LEAN ORGANIC PHASE TERTIARY AMINE EXTRACTANT SOLUTION
AQUEOUS PHASE
SO2
Se RECOVERY
TO WASTE
Se PRECIPITATE

1. A process for recovering selenium values from an aqueous solution containing selenium, molybdenum, and rhenium values, comprising the steps of:

(a) Intimately contacting such an aqueous solution with a tertiary amine extractant solution to extract the selenium, molybdenum, and rhenium therefrom;

(b) Contacting the tertiary amine solution from step (a) with an aqueous solution containing an effective amount of sodium carbonate to selectively strip the molybdenum and rhenium values therefrom;

(c) Thereafter, contacting the stripped tertiary amine solution from step (b) with an aqueous stripping solution of ammonium hydroxide or sodium sulfite to strip the selenium values therefrom; and

(d) Recovering the selenium values from the aqueous stripping solution from step (c).

3,848,070

METHOD FOR PRODUCING CALCIUM SULFITE SEMIHYDRATE

Mitsuo Onozuka, Koki Nomoto, Kinji Iida, and Tomijiro Morita, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Oct. 3, 1972, Ser. No. 294,599

Claims priority, application Japan, Oct. 5, 1971, 46/78,126

Int. Cl. C01b *17/00*

U.S. Cl. 423—512 **2 Claims**

1. A method for producing calcium sulfite semihydrate in crystal form, in which the crystal has a size range of from 1 to 100 microns (a short axis of 1 to 30 microns, and a long axis of 5 to 100 microns), said method comprising the steps of preparing an aqueous mixture of acidic alkali metal sulfite and alkali metal sulfite, and adding to and reacting with said aqueous mixture calcium carbonate, while maintaining the following reaction conditions:

a. concentration of the alkali metal salt (molar ratio of acidic metal sulfite to alkali metal sulfite being in a range of from 0.1 to 5.0) percent by weight	2 to 30
b. pH value of the reaction system	5.5 to 7.8
c. reaction temperature ° C	40 to 80

3,848,071

PROCESS FOR REDUCING THE TOTAL SULFUR CONTENT OF CLAUS OFF-GASES

Willem Groenendaal, The Hague, Netherlands, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Mar. 9, 1972, Ser. No. 233,281

Claims priority, application Netherlands, Mar. 29, 1971, 7104155

Int. Cl. C01b *17/16*

U.S. Cl. 423—574 **10 Claims**

1. In a process for decreasing the total sulfur content of hydrogen sulfide and sulfur dioxide-containing off-gases from a Claus process wherein the Claus off-gases are passed with a hydrogen or carbon-monoxide-containing reducing gas over a metal catalyst whereby sulfur dioxide is reduced to hydrogen sulfide and the hydrogen sulfide is subsequently removed with the use of a hydrogen sulfide-selective adsorbent or absorbent, the improvement which comprises: adding hydrocarbon or carbon dioxide and air to the feed of said Claus process in an amount sufficient to form in the off-gas from said process substantially all of the reducing gas required to effect reduction of sulfur dioxide to hydrogen sulfide in the presence of said metal catalyst.

ELECTRICAL

ERRATUM

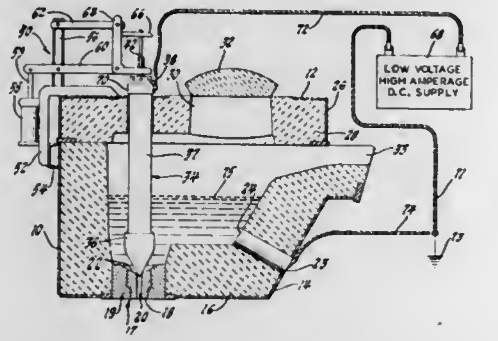
For Class 424—333 see:
Patent No. 3,848,060

3,848,072
HEATED MOLTEN METAL POURING LADLE

Thomas L. Dershem, Defiance, and Charles F. Renn, Bryan, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 8, 1972, Ser. No. 250,989
Int. Cl. F27d *3/14*

U.S. Cl. 13—20 **4 Claims**



1. A ladle comprising refractory walls including a base and a lid defining a substantially enclosed chamber for holding molten metal and having a bottom pour spout in said base,
- a refractory stopper rod disposed within said chamber for partial immersion in said molten metal having a lower end for opening and closing said pouring spout and an upper end extending through said lid externally of said chamber and means for operating said stopper rod,
- refractory electrode means sealingly extending through said ladle wall adapted for contacting the molten metal within said chamber,
- electrical contact means associated with said electrode and said stopper rod externally of said chamber for connecting said stopper rod in an electrical circuit, at least the portion of said stopper rod above said molten metal level containing carbon in amounts so that the stopper rod above the molten metal level is operative to function as an electrical resistance heater in said electrical circuit.

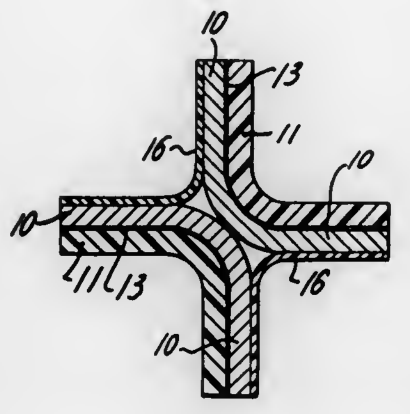
3,848,073
SHIELDING TAPES

Herbert D. Simons, Long Valley, N.J., and Frank E. Timmons, Richmond, Ind., assignors to Sun Chemical Corporation, New York, N.Y.

Division of Ser. No. 323,950, Jan. 15, 1973. This application Aug. 20, 1973, Ser. No. 389,893
Int. Cl. H01b *11/06*

U.S. Cl. 174—36 **2 Claims**

1. A shielding tape comprising in combination (a) a thin elongated flexible film of material having relatively high electrical resistance insulation characteristics and (b) a thin elongated flexible foil of material having relatively low electrical resistance characteristics and having one surface thereof bonded to one surface of said film (a) and being coextensive therewith, said shielding tape being folded along a longitudinally extending crease, thereby to be doubled in thickness, said thin foil (b) having a thin layer of bonding material disposed on the surface thereof which is opposite to its said one surface bonded to said film (a), whereby a foil-to-foil connection is made by said thin layer of bonding material.

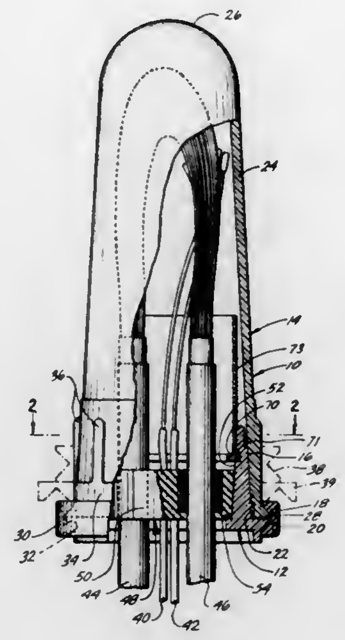


3,848,074
TERMINAL AND SPLICE ENCLOSURE FOR CABLE INSTALLATIONS

William H. Channell, 122 Oak Tree Dr., Glendora, Calif. 91740

Filed Apr. 13, 1973, Ser. No. 351,106
Int. Cl. H02g *9/02;* **F16j** *15/10*

U.S. Cl. 174—38 **4 Claims**



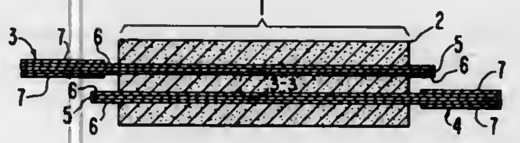
1. A cable terminal and splice enclosure comprising a housing having an opening, a terminal base removably secured in the opening in the housing, the terminal base having an elongated opening therethrough, a flexible grommet having openings therethrough for receiving the cables to be spliced, the grommet being seated in said elongated opening in the terminal base, locking means retaining the grommet in the elongated opening, and a flexible sealing ring, the housing having a lip around the opening therein and the base having a cooperating lip engaging the lip on the housing, the flexible sealing ring having a groove receiving the lip of the housing and lip of the base and thereby retaining the base in position and sealing the connection between the base and the housing.

3,848,075
METHOD FOR SPLICING COMPOUND SUPERCONDUCTORS

Jack A. Yoo, Sunnyvale, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Dec. 27, 1971, Ser. No. 212,467
Int. Cl. H02g *15/08*

U.S. Cl. 174—94 **11 Claims**



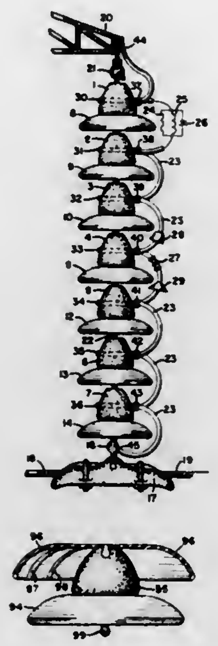
1. In a method for splicing high field compound superconductors the steps of, exposing surface portions of said superconductors to be spliced, assembling a layer of particulate material containing the constituent elements of a high field compound superconductor between said exposed surface portions to be spliced, and heating the assembly in the presence of an organic vapor to react the constituent elements of the compound superconductor to form a high field compound superconductive bridge between the member portions being spliced.

3,848,076
SUPPLEMENTAL INSULATION WITH BYPASS IMPEDANCE FOR ELECTRICAL LINES

Henry Greber, 225 W. 80th St., Apt. 8-D, New York, N.Y. 10024

Filed Dec. 17, 1973, Ser. No. 425,686
Int. Cl. H01b *17/48, 17/50*

U.S. Cl. 174—141 R **4 Claims**



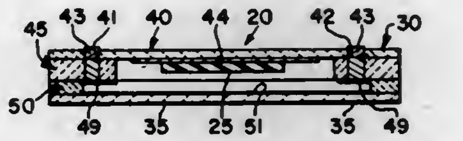
1. In combination, a metallic supporting structure, an insulator assembly consisting of metallic and insulating parts supported by said metallic supporting structure, and a conductor attached to said insulator assembly; a bypass impedance consecutively electrically connected to said metallic supporting structure, to all metallic parts of said insulator assembly, and to said conductor; and a portion of said metallic supporting structure as well as all of said metallic parts of said insulator assembly and a length of said conductor being covered with supplemental insulation, so that no electrical connection between any of said metallic supporting structure, said metallic parts of said insulator assembly, and said conductor exists, except through said bypass impedance.

3,848,077
PACKAGE FOR ELECTRONIC SEMICONDUCTOR DEVICES

Marcus E. Whitman, 482 Cheyenne Ln, San Jose, Calif. 95123

Filed Oct. 16, 1970, Ser. No. 81,310
Int. Cl. H05k *5/00*

U.S. Cl. 174—52 S **3 Claims**



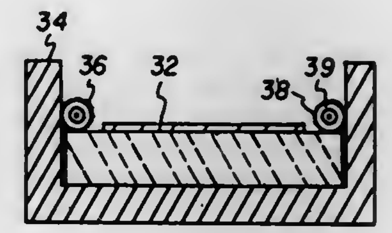
1. A package for an electronic semiconductor device comprising:
- a. a ceramic base with a metal pad on which the semiconductor device is seated with the terminals thereof at an elevated position;
- b. first ceramic wall means on said base formed with a cavity therein for receiving the semiconductor device;
- c. second ceramic wall means on said first ceramic wall means, said second ceramic wall means being formed with a cavity of greater dimension than said cavity of said first ceramic wall means, said second cermaic wall means being seated on said first ceramic wall means to form a shoulder on said first ceramic wall means;
- d. metallic conductor tabs disposed on said shoulder of said first ceramic wall means, said metallic conductor tabs being directed transversely for establishing electrical connections with the terminals of the semiconductor device;
- e. metallic conductors disposed perpendicularly to said transversely directed conductor tabs and extending through said first ceramic wall means and said base in contact with said conductor tabs respectively for establishing electrical connections between said conductor tabs respectively and electrical connections to said package; and
- f. a cover hermetically sealed to said second ceramic wall means for encapsulating the semiconductor device within said package.

3,848,078
HYBRID ELECTRONIC CIRCUIT EMPLOYING MESHED SUPPORT

Joseph M. Guillot, Jr., Dallas, Tex., assignor to Collins Radio Company, Dallas, Tex.

Filed Sept. 12, 1973, Ser. No. 396,653
Int. Cl. H05k *5/00*

U.S. Cl. 174—52 S **4 Claims**



1. A hybrid electronic circuit comprising a ceramic substrate having a circuit pattern defined thereon and solder pads defined near peripheral portions thereof; a metal carrier including a cavity receiving said substrate and having solder pads defined on interior surfaces thereof; and meshed support means soldered to said solder pads of said substrate and to said solder pads of said carrier thereby physically attaching said substrate to said carrier within said cavity.

3,848,079

POINTED CIRCUITS WITH CRYSTALLIZED GLASS LOW K CROSSOVER DIELECTRICS

Rajnikant Babubhai Amin, Valencia, Calif., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 262,491, June 14, 1972, Pat. No. 3,785,837. This application July 19, 1973, Ser. No. 380,600
Int. Cl. H05k *1/02*
U.S. Cl. 174—68.5 **3 Claims**

1. A dense, lead-free crossover dielectric interposed between two conductor patterns on a dielectric substrate, said crossover dielectric consisting essentially of 20–48 percent by weight crystals in a glassy matrix, said crystals consisting essentially of celsian as the major phase in addition to lesser amounts of sphene and zinc orthosilicate; said crossover dielectric being the fired product of a lead-free crystallizable glass composition consisting essentially of, by weight, approximately

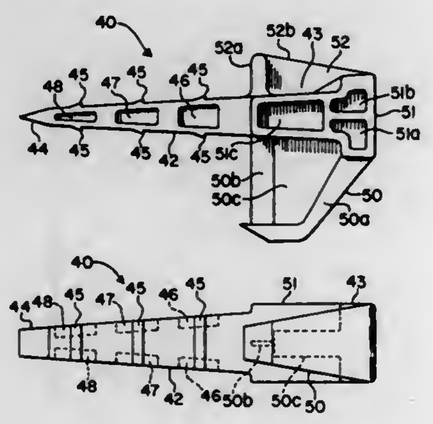
25–40%	SiO_2
5–15%	TiO_2
7–12%	Al_2O_3
10–30%	BaO
10–20%	ZnO
2–10%	CaO
2–8%	B_2O_3
0–2%	MgO
0–4%	Bi_2O_3

the total of BaO and ZnO being 30–40 percent of the glass composition.

3,848,080

GROUND WIRE CLIP

Bradley J. Schmidt, East Dundee, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 394,691, Sept. 6, 1973, abandoned. This application Mar. 14, 1974, Ser. No. 451,326
Int. Cl. H01b *17/00;* **F16b** *15/02, 15/06*
U.S. Cl. 174—164 **4 Claims**

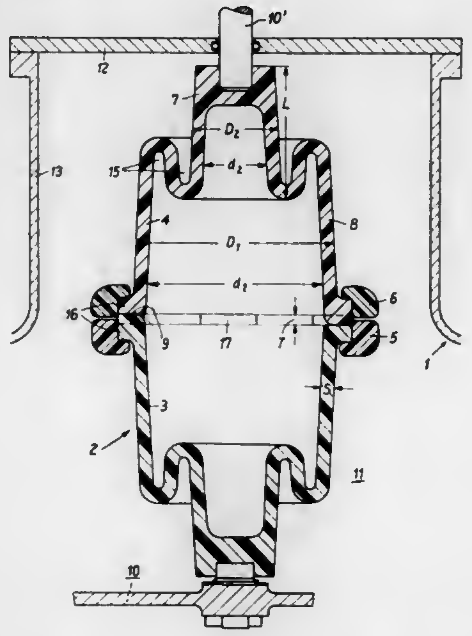


1. A clip capable of being hammer-driven into a wooden pole to hold a ground wire against said pole, said clip comprising an integral elongated shank portion and a head portion of an electrically nonconductive plastic material, said shank portion being substantially rectangular in transverse cross-section and the side walls thereof tapering from said head portion to a chisel point at the other end thereof, a plurality of barbs on two opposite side walls of said shank portion, said barbs on each of said two opposite side walls arranged in a spaced apart relationship longitudinally of said shank portion and each of said barbs extending substantially completely transversely across said side walls, a plurality of recesses in the other two opposite side walls of said shank portion, said recesses arranged in a spaced apart relationship longitudinally of said shank portion and spanning said barbs to render at least the ends of said barbs deflectable inwardly of said shank portion, said head portion including a central driving section in axial alignment with said shank portion and a hook section and a stop section, said hook and stop sections arranged on opposite sides of said driving section and extending transversely outwardly of said clip, said stop section including a shoulder extending outwardly of said clip and terminating in a transverse plane substantially including the longitudinally inner end of said head portion and an integral web perpendicularly arranged between said shoulder and one side of said driving section, said hook section comprising a hook portion directed outwardly from the head end of said driving section and longitudinally of said driving section and frangible web means integrally interconnected between said driving section and said hook portion.

3,848,081

HOLLOW HIGH-VOLTAGE ELECTRIC INSULATOR

Willi Olsen, and Klaus Schlosser, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Muchen, Germany
Continuation of Ser. No. 279,386, Aug. 10, 1972, abandoned. This application Nov. 19, 1973, Ser. No. 416,797
Claims priority, application Germany, Aug. 19, 1971, 2142119
Int. Cl. H01b *17/14*
U.S. Cl. 174—209 **5 Claims**



1. A hollow high-voltage electric insulator comprising a pair of shells made of electrically insulating material, each shell being symmetrical about its axis and formed by a wall having a thickness that is small as compared to the shell's cross-sectional extent; wherein the improvement comprises each shell being formed with two sections of substantially different cross-sectional extents with the section having the smaller of said extents partially projecting into the other of said sections for a portion of the latter's length and radially connecting therewith, the outer end of said section having the smaller cross-sectional extent being closed and formed for permitting connection therewith and the other of said sections on its outer end having a radially extending peripheral flange for permitting connection therewith, said pair of shells being interconnected with their said flanges together.

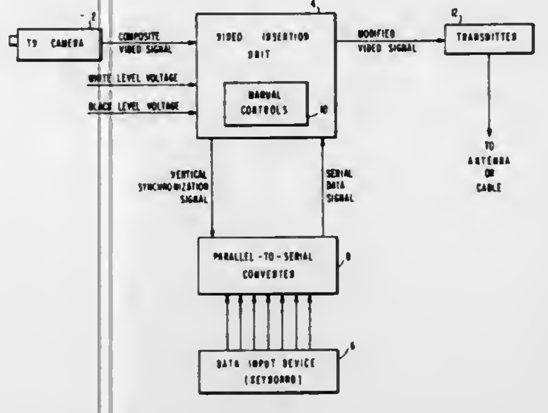
3,848,082

SYSTEM FOR TRANSMITTING AND UTILIZING SUPPLEMENTAL DATA VIA TELEVISION SYSTEMS

George D. Summers, Bethesda, Md., assignor to Atlantic Research Corporation, Alexandria, Va.
Filed Jan. 16, 1973, Ser. No. 324,166
Int. Cl. H04n *7/00*
U.S. Cl. 178—5.6 **13 Claims**

1. A system for transmitting and receiving a supplemental data signal with a normal video signal, said system comprising.

a. transmitter means for transmitting said supplemental data signal and said video signal as a modified video signal, said transmitter means comprising:
   i. television camera means for producing said normal video signal in accordance with the image in the field of view of said camera means,
   ii serial data generator means for generating said supplemental data signal in coded form,
   iii video insertion means connected to said camera means and said data generator means for receiving said ordinary video signal and said coded supplemental data signal and for producing said modified video signal, and
   iv a transmitter for transmitting said modified video signal; and

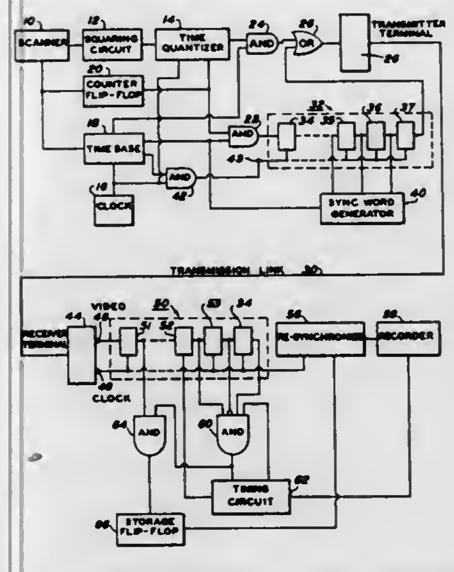


b receiver means for receiving said modified video signal, said receiver means comprising:
   i television receiver means for displaying said modified video signal such that said coded supplemental data signal occupies a portion of the field of said normal video signal,
   ii optical transducer means for detecting said supplemental data signal;
   iii decoding means connected to said optical transducer means for decoding said supplemental data signal, and
   iv output means coupled to said optical transducer means and said decoding means, for producing an output indicative of said supplemental data signal.

3,848,083

STAGGERED SCAN FACSIMILE

Stephen E. Townsend, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Continuation of Ser. No. 423,061, Jan. 4, 1965, abandoned. This application Dec. 18, 1972, Ser. No. 316,309
Int. Cl. H04n *1/32*
U.S. Cl. 178—6 **17 Claims**

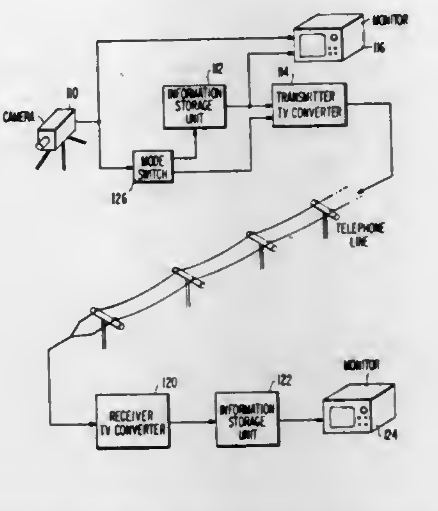


1. The method of transmitting visual information comprising forming a signal by serially sampling an attribute of an original image at a sequence of uniformly spaced sampling positions disposed in lines, and staggering said sampling positions from line to line, while retaining the serial relationship of said samples.

3,848,084

STORAGE TUBE CONTROL APPARATUS FOR A TELEPHONE IMAGE TRANSMISSION SYSTEM

William E. Rodda, Trenton, N.J., and Denis Peter Dorsey, Levittown, Pa., assignors to RCA Corporation, New York, N.Y.
Filed Mar. 23, 1973, Ser. No. 344,067
Claims priority, application Great Britain, Apr. 24, 1972, 19022/72
Int. Cl. H04n *5/02, 7/12*
U.S. Cl. 178—6.8 **7 Claims**



1. In a telephone image transmission system of the type wherein a television camera, a display device and an audio communications link are interconnectable with a storage tube for transmitting television picture information signals representative of object images to a remote receiver location and in which said display device, said communications link and said storage tube are also interconnectable to reproduce television picture information signals representative of object images received by it from a remote transmitter location, the combination therewith of:

first means operative to intercouple the television camera, said storage tube and said audio communications link in the order named when said system is to transmit television picture information signals representative of object images;

second means for applying vertical deflection signals of a first scanning rate to said storage tube when said first means is operative to write said picture information signals into storage, and for applying vertical deflection signals of a second scanning rate to said storage tube when said first means is operative to read said picture information signals out of storage and onto said audio communications link;

third means operative to intercouple said audio communications link, said storage tube and said display device in the order named when said system is to reproduce television picture information signals representative of object images received by it from a remote transmitter location;

fourth means for applying vertical deflection signals of a third scanning rate to said storage tube when said third means is operative to write said picture information signals received along said audio communications link into storage, and for applying vertical deflection signals of a fourth scanning rate to said storage tube when said third means is operative to read said picture information signals out of storage for application to said display device;

fifth means operative to couple said storage tube with said television camera and said audio communications link when said system is to transmit television picture information signals representative of moving object images and to decouple said storage tube from the interconnections between said television camera and said audio communications link when said system is to transmit television picture information signals representative of stationary object images;

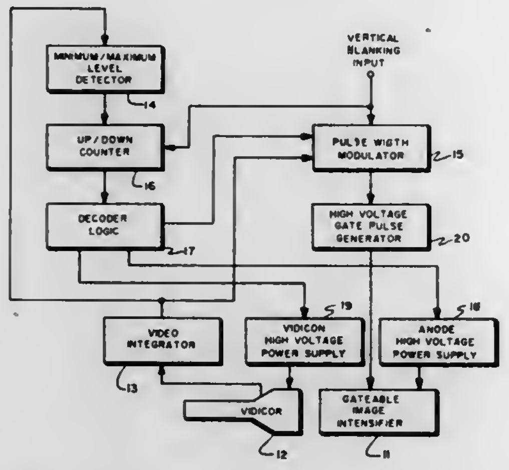
wherein said first and said fourth scanning rates are substantially equal, wherein said second means applies vertical deflection signals of a fifth scanning rate to said television camera when said fifth means is operative in the decoupling of said storage tube, and wherein said fourth means applies vertical deflection signals of a reduced scanning rate to said storage tube when said fifth means is operative in said decoupling mode to write said television picture information signals representative of stationary object images into storage at a rate substantially equal to said fifth scanning rate.

3,848,085

LOW LIGHT LEVEL TELEVISION CAMERA

Peter W. Van Atta, Woodbridge, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 7, 1973, Ser. No. 386,485
Int. Cl. H04n *5/14*
U.S. Cl. 178—7.2 **6 Claims**


MINIMUM/MAXIMUM LEVEL DETECTOR
14
UP/DOWN COUNTER
16
DECODER LOGIC
17
VERTICAL BLANKING INPUT
PULSE WIDTH MODULATOR
15
HIGH VOLTAGE GATE PULSE GENERATOR
20
19
18
VIDEO INTEGRATOR
VIDICON HIGH VOLTAGE POWER SUPPLY
ANODE HIGH VOLTAGE POWER SUPPLY
13
VIDICON
GATEABLE IMAGE INTENSIFIER
12
11

1. A low light-level television camera capable of operating over a wide range of input light levels and comprising:

a cascaded gateable image intensifier and vidicon;

means for generating an average signal level output from the vidicon;

means responsive to said vidicon average signal output for generating a stepped gain control corrective signal;

power supplies associated with said image intensifier and vidicon, said power supplies having means for providing stepped gain voltage change to the image intensifier and vidicon in response to said corrective signal, thereby providing wide range coarse gain control; and

means responsive to a signal indicative of said stepped voltage change and to the average signal level output for producing a variable pulse width signal input to said gateable image intensifier, whereby wide range fine gain control of said camera is obtained.

3,848,086

PICTURE INFORMATION DISPLAY DEVICE

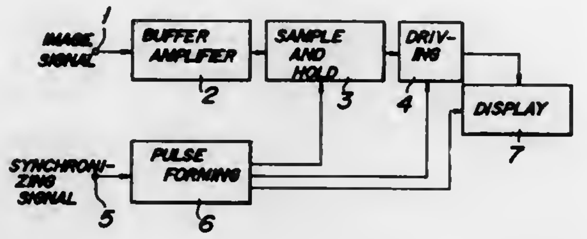
Hiroki Ikeda; Teruo Hirashima; Tetsuo Sakai; Soichi Iwamura; Iwao Ohishi, and Takashi Fujio; Takeo Kamegaya, all of Tokyo, Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Filed Sept. 12, 1972, Ser. No. 288,435
Claims priority, application Japan, July 17, 1971, 46-71729
Int. Cl. H04n *5/66*
U.S. Cl. 178—7.3 D **3 Claims**

1. A picture information display device comprising:

a gas discharge display device of a self-scanned panel display type having a separate display function and scanning function, said discharge display device not being provided with an inherent memory;

an analog sample and hold circuit including a plurality of sample and hold units, each said unit having a memory capacitor and an MOS transistor gate driven by an *n*-bit shift register having n output terminals which are integrated on a semiconductor substrate for sampling and holding a picture information signal, which includes half-tone of the picture, for each picture element;



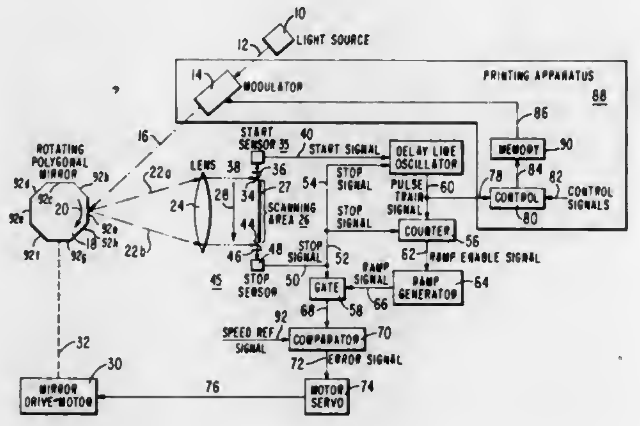
a means for effecting luminance modulation of each line of said gas discharge display device by continuously controlling gas discharge current according to the picture information signal sampled by said analog sample and hold circuit corresponding to the respective picture element and stored in said memory capacitor for reproduction of said picture information signal; and a means for reproducing said picture information signal from serial to parallel format by sequentially displaying said line of the gas discharge display device in line at a time format by use of said analog sample and hold circuit.

3,848,087

OPTICAL SCANNER CONTROL SYSTEM

Ross Michael Carrell, Cinnaminson, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 29, 1973, Ser. No. 410,564
Int. Cl. G08b *5/36*
U.S. Cl. 178—7.6 **7 Claims**



1. In a scanning system wherein a polygonal mirror is rotational driven by a motor to scan a reflected light beam across a scanning area having a leading edge and including optical signal processing means for processing signals manifesting optical information relating to said scanning light beam of the type operating under the control of timing signals the improvement comprising:

start detection means for producing a start signal when said light beam is deflected over said leading edge of said scanning area;

stop detection means for producing a stop signal when said light beam is deflected over a location after said beginning;

oscillator means responsive to said start signal and said stop signal for producing a pulse train signal starting when said start signal is received and ending when said stop signal is received;

said pulse train being coupled to said optical signal processing means to form said timing signals to thereby initiate the operation of said optical signal processing means;

means responsive to said pulse train signal for generating a ramp signal whose magnitude increases with time when a predetermined number of pulses in said pulse train signal have been received by said ramp generating means;

means responsive to said stop signal and said ramp signal for comparing said ramp signal to a predetermined reference signal when said stop signal is received to produce an error signal; and

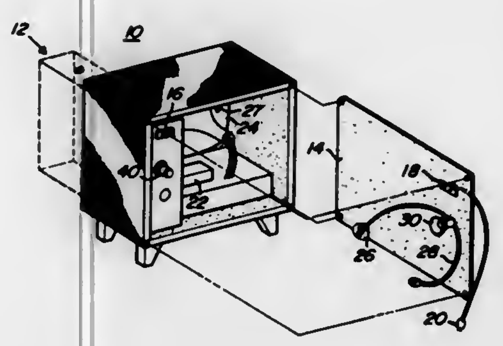
motor servo means responsive to said error signal and coupled to said motor for changing the speed of said motor in accordance with said error signal to null said error signal.

3,848,088

HIGH VOLTAGE CONNECTOR ARRANGEMENT

John Edward Bentz, Glendale Heights, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Sept. 28, 1973, Ser. No. 401,763
Int. Cl. H01j *29/02*
U.S. Cl. 178—7.9 **8 Claims**



1. Electrical connector apparatus for making and breaking high voltage connection between elected circuit components, comprising in combination:

a funnel-shaped connector of insulating material having anti-corona means and resilient spring means mounted within the base thereof and forming a high voltage terminal point;

lead means attached to said high voltage terminal point; and an elongated circuit element for supplying high voltage to said terminal point, said element having a forward portion for engagement with said anti-corona means and compressing said spring means,

said circuit element further including a guide ring thereabout for making a sliding fit within said funnel-shaped connector body to effect self-alignment for said circuit element,

said compressed spring means providing less than zero extraction force for said elongated circuit element breaking high voltage connection.

3,848,089

APPARATUS AND METHOD FOR AUTOMATICALLY DIGITIZING LINE PATTERNS

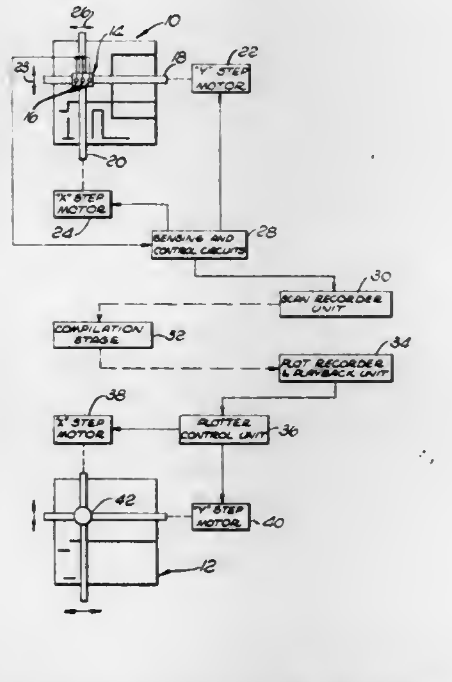
Richard F. Stewart, 13027 Sky Valley Rd., Los Angeles, Calif. 90049

Filed May 21, 1973, Ser. No. 362,393
Int. Cl. G08c *21/00*
U.S. Cl. 178—18 **12 Claims**

1. A method for automatically deriving digital signals representative of an orthogonal line pattern comprising:

sequentially scanning said line pattern with repetitive longitudinal scans in each orthogonal direction to sense the presence of line segments at selected longitudinal positions along at least three adjacent parallel scan paths simultaneously with each scan being transversely shifted relative to said line pattern in a predetermined indexing sequence to longitudinally scan each succeeding set of three adjacent parallel scan paths forming an orthogonal grid pattern overlying said line pattern;

separately detecting opposite ends of each line segment of said line pattern to generate a first detection signal only when a line segment is detected during each scan in coincident longitudinal positions in at least two adjacent scan paths but not in another path adjacent thereto on one side and to generate a second detection signal only when a line segment is detected during each scan in coincident longitudinal positions in at least two adjacent



scan paths but not in another path adjacent thereto on the side opposite said one side;

continuously maintaining first and second digital values indicative of the instantaneous longitudinal and transverse locations respectively of the successive positions being scanned in at least one of said scan paths; and

providing a set of digital information output signals indicative of said first and second digital values during each scan only when either of said first or second detection signals is generated and providing a first or second identification signal indicative of said first or second detection signal,

whereby said digital information output signals generated during scanning represent the orthogonal line pattern relative to said grid pattern.

3,848,090

WALL HANGING SPEAKER SYSTEM

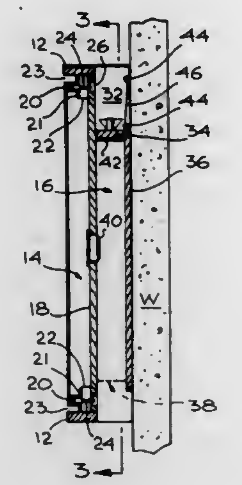
Jeremiah Walker, 1540 S. Wilton Pl., Los Angeles, Calif. 90019

Filed Nov. 18, 1971, Ser. No. 199,867
Int. Cl. H04r *5/02*
U.S. Cl. 179—1 E **11 Claims**

1. A loudspeaker system, comprising in combination:

an acoustically sealed chamber in front of an acoustically open chamber and adjacent thereto;

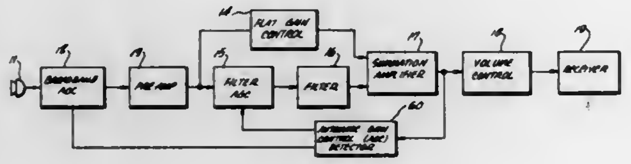
at least one loudspeaker mounted partly in one chamber and partly in the other chamber and facing into said open chamber, the two chambers having a common partition wall mounting said loudspeaker, the open chamber having a wall opposite the partition wall which closes the rear side of the open chamber; and a flexible acoustically sealed member covering the front side of said sealed chamber remote from the loudspeaker and on the opposite side of the sealed chamber from the open chamber, said flexible member being adapted to vibrate in response to vibrations of the loudspeaker.



3,848,091

METHOD OF FITTING A PROSTHETIC DEVICE FOR PROVIDING CORRECTIONS OF AUDITORY DEFICIENCIES IN AURALLY HANDICAPPED PERSONS

William P. Stearns, Scottsdale, and Barry S. Elpern, Phoenix, both of Ariz., assignors to John L. Holmes, Scottsdale, Ariz.
Filed Apr. 12, 1973, Ser. No. 350,377
Int. Cl. H04r *25/00*
U.S. Cl. 179—1 N **14 Claims**



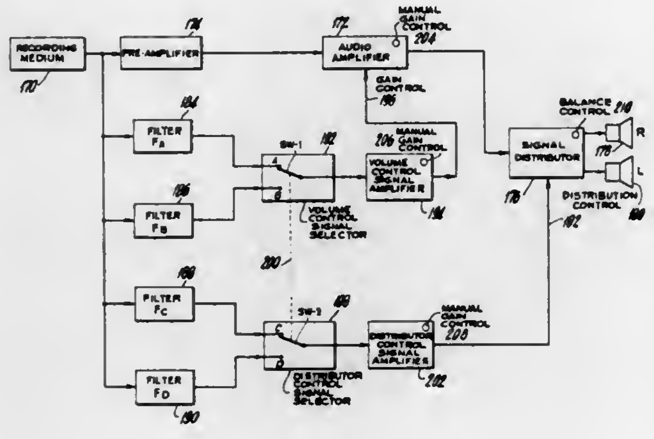
1. A method of fitting a prosthetic device having a single filter and a flat gain control by-passing said filter for providing corrections of auditory deficiencies in an aurally handicapped subject comprising the steps of:

1. determining absolute threshold information over a predetermined audio range for a pure tone as a function of frequency;
2. determining information over a predetermined audio range for tone discomfort level of a pure tone as a function of frequency;
3. providing the subject with an output from a master prosthetic device including a general filter network over a general range of acuity deficiency of the subject as determined by the results of step 1 and step 2, said general filter network including a plurality of individual filter networks;
4. providing the subject with a choice as to the better perception of continuous discourse between discourse at the output of the master device when the master device is set at different individual filter networks;
5. determining the best individual filter network to provide corrections of auditory deficiencies in the aurally handicapped subject in response to the results of step 4, and
6. choosing the prosthetic device having a single filter with the said characteristics of said individual filter network.

3,848,092

SYSTEM FOR ELECTRONIC MODIFICATION OF SOUND

Ramzi A. Shamma, 610 W. 116th St., New York, N.Y. 10027
Continuation-in-part of Ser. No. 191,632, Oct. 22, 1971, abandoned, which is a continuation of Ser. No. 74,869, Sept. 23, 1970, abandoned, which is a continuation of Ser. No. 701,987, Jan. 31, 1968, abandoned. This application July 2, 1973, Ser. No. 375,366
Int. Cl. H04c *3/12*
U.S. Cl. 179—1 VL **8 Claims**

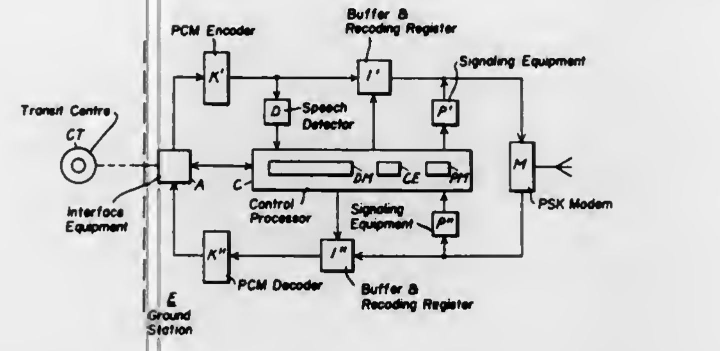


1. A system for modifying a sound program comprising means for providing an audio signal; means for amplifying said audio signal and presenting the same as an output signal; signal distributing means connected to said amplifying means for dividing said output signal into two parts; a first speaker connected to said signal distributing means for receiving one of said output signal parts; a second speaker spaced from said first speaker and connected to said signal distributing means for receiving the other of said output signal parts, said signal distributing means including means for increasing the relative amplitude of one of said parts while decreasing the relative amplitude of the other of said parts; said audio signal providing means comprising a recording medium having a program signal within the audio frequency range and a first control signal having a first frequency outside of the audio frequency range and having a first preselected and varying amplitude pattern corresponding to a first desired relative distribution of said output signal between said speakers, and a second control signal at a second frequency outside the audio frequency range and different than said first frequency and having a second preselected and varying amplitude pattern different than that of said first control signal and corresponding to a second desired relative distribution of said output signal between said speakers, said first and second control signals being superimposed on said program signal and recorded on a common recording path on said recording medium as said program signal; and means operatively interposed between said recording medium and said signal distributing means for separating said first and second control signals from said program signal and for coupling said control signals to said signal distributing means, said signal distributing means further including means for selectively applying only one of said first and second control signals to said amplitude decreasing and increasing means, said signal distributing means being responsive to the amplitude of said one of said control signals to vary the relative amplitudes of said parts of said output signal in accordance with the varying amplitude patterns of said one of said control signals, whereby a controlled shifting movement of the apparent sound between said first and second speakers is created.

3,848,093

APPARATUS AND METHOD FOR INCREASING THE TRANSMISSION CAPACITY OF A TIME DIVISION SYNCHRONOUS SATELLITE TELECOMMUNICATION SYSTEM

Nils Herbert Edstrom, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Feb. 28, 1973, Ser. No. 336,402
Claims priority, application Sweden, Mar. 22, 1972, 3661/72
Int. Cl. H04j *5/00*
U.S. Cl. 179—15 AS **2 Claims**



1. In a time division synchronous satellite telecommunication system having a satellite transponder, a plurality interruptions, ground stations, a plurality of international transit centers each connected to one of the ground stations, speech signal communication between international transit centers taking place during time slots allocated from a plurality of time slots, each of the ground stations having a control processor, all of the control processors being in continuous connection with each other and continuously assigning time slots from a first subset of the plurality of time slots to at least some of the ground stations in response to their varying demands for transmission capacity and for assigning to each of the ground stations a fixed number of time slots from a second subset of the plurality of time slots regardless of the demands for transmission capacity, each of the ground stations of a subset of the ground stations having transmission apparatus which includes means for detecting temporary interruptions in the receipt of speech signals from its associated international transit center which is assigned a time slot from the second subset and, during such temporary interrutions, transmitting during the related time slots such speech signals from its associated international transit center which are waiting for transmission service, the method of increasing the transmission capacity of such a system comprising the steps of periodically determining in at least one of the ground stations the number of time slots from the first subset available for assignment, when the number is less than a first value initiating a frozen state of the system wherein the continuous assignment of time slots is interrupted and the ground stations of the subset of ground stations upon temporary interruptions in the receipt of speech signals from their associated international transit centers transmit during the associated time slots from the first as well as from the second subset such speech signals from their associated international transit centers which are waiting for transmission service, and when the number of free time slots changes from the first value to a second and greater value reverting the state of the system to the normal state wherein the continuous assignment of time slots is carried out.

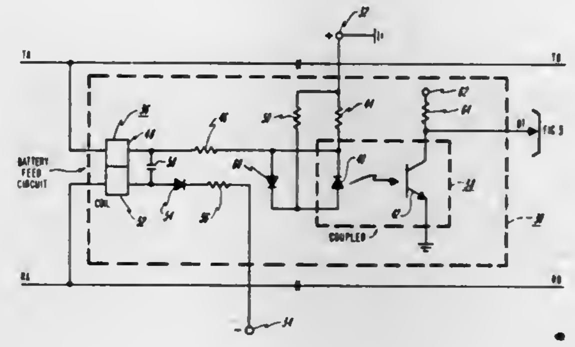
3,848,094

TELEPHONE BATTERY FEED CIRCUIT

Stanley L. Russell, Webster, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.
Filed Dec. 29, 1972, Ser. No. 319,243
Int. Cl. H04m *3/22*
U.S. Cl. 179—18 FA **11 Claims**

1. A battery feed circuit for connection by telephone switching equipment to a telephone set for providing power thereto and for detecting supervisory signals therefrom, said battery feed comprising:

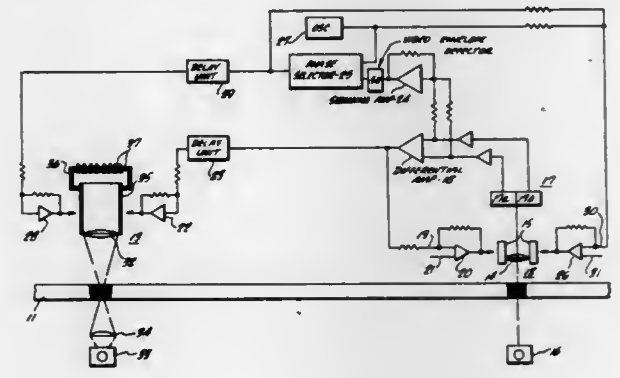
- a first pair of terminals for connection to a direct current power supply;
- a second pair of terminals for connection to the telephone switching equipment;
- a semiconductor device including an input circuit having a radiation source that generates photon radiation, the intensity of which is a function of current flow therethrough, and an output circuit having a radiation sensitive device, the impedance of which is a function of the intensity of the radiation from said source, said input and output circuit being electrically isolated;
- impedance means, having a direct current path therethrough, and exhibiting a substantially higher impedance to audio frequency current than to direct current, for blocking audio current to said first pair of terminals;
- direct current circuit means for connecting said first pair of terminals to said second pair of terminals through said impedance means to provide a direct current path therebetween, and
- said input circuit being connected between said impedance means and said first pair of terminals so that said semiconductor device provides signals indicating the conductive and non-conductive conditions of said direct current path.



3,848,095

THREE DIMENSIONAL ELECTRO-OPTICAL RETRIEVAL SYSTEM

Peter G. Wohlmut, Palo Alto, and Frank D. Neu, Castro Valley, both of Calif., assignors to I/O Metrics Corporation, Sunnyvale, Calif.
Filed Dec. 20, 1972, Ser. No. 316,661
Int. Cl. G11b *7/08, 21/10*
U.S. Cl. 179—100.3 V **20 Claims**



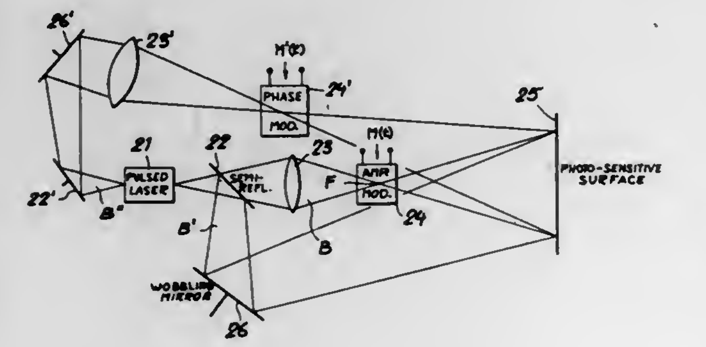
1. A three dimensional electro-optical retrieval system for retrieval of information from any one of a plurality of layers of a recording media comprising;

- means for receiving a multi-layered recording media having information on a track on at least one of a plurality of layers;
- a first adjustable electro-optical system;

first means for electro-optically positioning said first adjustable electro-optical system relative to the lateral and normal locations of the desired information;
a second adjustable electro-optical system;
second means for electro-optically positioning said second adjustable electro-optical system, after a predetermined delay, relative to the lateral and normal locations of the desired information in response to said first means, said second adjustable electro-optical system capable of electro-optically sensing the desired information; and
means for driving the desired information location of the recording media in the desired track direction past said first adjustable electro-optical system at a first time and past said second adjustable electro-optical system the predetermined delay after the first time.

3,848,096
METHOD OF AND MEANS FOR HOLOGRAPHICALLY RECORDING AND REPRODUCING INFORMATION

Hans Marko, Grafelfing, Germany, assignor to Krone GmbH, Berlin, Germany
Continuation-in-part of Ser. No. 133,134, April 12, 1971, abandoned. This application Aug. 10, 1973, Ser. No. 387,283
Int. Cl. G11b *7/00;* G02b *27/00;* H04n *5/84*
U.S. Cl. 179—100.3 G **16 Claims**

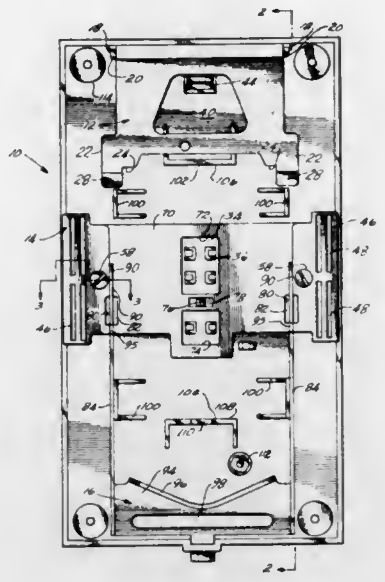


1. A method of holographically recording and reproducing information, comprising the steps of:
projecting upon a photographic surface and defocused beam of coherent light carrying photographically recordable information;
superimposing upon said beam a first bundle of reference light rays trained upon said surface, said light rays and said beam having the same wavelength and being pulsed in step with each other;
subjecting said bundle to modulation varying with time as an orthogonal function;
developing the resulting latent image on said surface; and
detecting said information by illuminating the developed image on said surface by a second bundle of reference light rays of the wavelength of said first bundle and subjected to modulation varying as the same orthogonal function of time.

3,848,097
TELEPHONE WALL MOUNT

Council A. Tucker, Los Angeles, Calif., assignor to American Telecommunications Corporation, El Monte, Calif.
Filed Apr. 9, 1973, Ser. No. 348,955
Int. Cl. H04m *1/11*
U.S. Cl. 179—146 R **12 Claims**

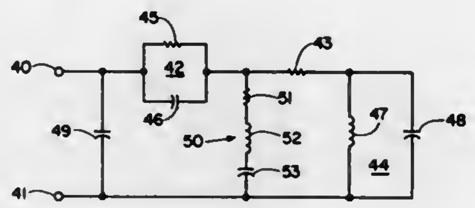
1. An improved wall mount to mount a telephone on a wall and connect the telephone to a telephone outlet on the wall, the outlet having a jack and a magnetic striker plate, the mount comprising:
a. a base having a face adapted to mount a wall telephone;
b. means in the base for mounting a plug for the electrical connection of the telephone with the jack of the telephone outlet;
c. magnet means in the base to rigidly attach the base to the magnet striker plate of the outlet;
d. guide means in the base to cooperate with the outlet for horizontally and vertically positioning the mount during its installation on the outlet;



e. means for transferring the weight of the wall mount and telephone to the outlet; and
f. means for removing the mount from the outlet.

3,848,098
TELEPHONE HYBRID TRANSFORMER BALANCE NETWORK

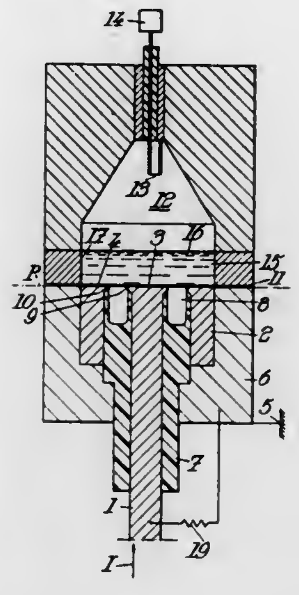
John Fowler Pinel, Kanata, Ontario, Canada, assignor to Bell-Northern Research Ltd., Ottawa, Ontario, Canada
Filed Dec. 13, 1973, Ser. No. 424,277
Int. Cl. H04b *1/52*
U.S. Cl. 179—170 D **4 Claims**



1. In a balance network for a telephone two-wire to four-wire hybrid transformer having its two-wire port connected to an inductively loaded telephone line, said network comprising:
a series connected combination of:
a first network including a resistor and capacitor connected in shunt for low audio frequency shaping, a resistor approximating in combination the resistance of the telephone line near end section, and a third network including an inductor and capacitor connected in shunt for high audio-frequency shaping; and
a capacitor connected in shunt with said series connected combination to approximate in combination the capacitance of said telephone line;
the improvement comprising:
a series resonant inductor-capacitor-resistor connected in shunt with the series combination of said resistor and said shunt resonant inductor-capacitor, and coacting with the balance of the network components to provide an improved impedance match with the telephone line at low audio frequencies.

3,848,099
CIRCUIT BREAKERS FOR HEAVY CURRENTS

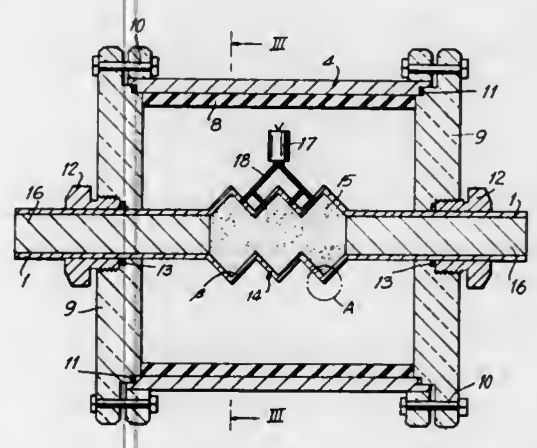
Rioux Christian, Antony, and Damidau Francoise, Cachan, both of France, assignors to Agence Nationale De Valorisation De La Recherche (Anvar), Paris, France
Filed May 31, 1972, Ser. No. 258,448
Claims priority, application France, June 3, 1971, 71.20225
Int. Cl. H01h *35/00*
U.S. Cl. 200—61.08 **13 Claims**



1. Rapid circuit breaker for a heavy electric current comprising: two parallel conductors one of which surrounds the other, connected respectively to two portions forming the conducting line to be broken and having both one axial end in a same transverse plane P, an insulating sleeve interposed radially between these two elements and hollowed on this side of the plane P by an annular cup open in the direction of this plane, a conducting plate applied on the concentric terminal bearing surfaces, of the two conducting elements, situated in the plane P, and means for suddenly generating a high pressure on the outer surface of the plate at the desired moment for breaking the current so as to cut out or burst this plate annularly between the two conductor elements and project the cut out or burst portion towards the bottom of the cup.

3,848,100
EXPLOSIVE CIRCUIT-BREAKER

Konstantin Isaakovich Kozorezov, Universitetsky prospekt, 1, korpus 1, kv. 29; Vitaly Vasilievich Semchenko, ulitsa 26 Bakinskikh Komissarov, 8, korpus 3, kv. 32, and Georgy Ivanovich Mikhailu, ulitsa Volgina, 23, korpus 1, kv. 52, all of Moscow, U.S.S.R.
Filed Sept. 10, 1973, Ser. No. 396,127
Int. Cl. H01h *39/00*
U.S. Cl. 200—61.08 **1 Claim**



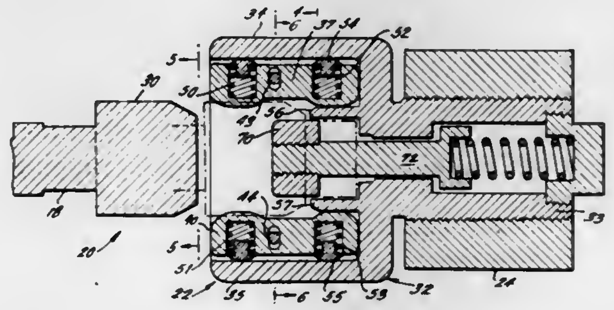
1. An explosive circuit-breaker comprising, in combination: a housing made from a strong material, a hollow conductor passing inside and insulated from said housing, an explosive charge disposed inside said conductor within its section located inside said housing to break said conductor and a detonator to activate the explosive charge, wherein the destructible section of the conductor is made in the form of a corrugated tube and the insulation housing is essentially hermetic with an evacuated inner space, the residual pressure P (mm Hg) and the dimensions of the housing and of the conductor complying with the following relationships:

$$P \qquad 0.05/(R_1-R_2) \text{ and } R_1 \qquad 3R_2,$$

where
R_1 — inner radius of the insulation housing, centimeters;
R_2 — outer radius of the destructible section of the conductor, centimeters.

3,848,101
ELONGATED JAW CONTACT FOR OIL CIRCUIT BREAKER DISCONNECT CONTACT

Elmer T. Eberhard, Tahoe City, and Henry G. Meier, Glendale, both of Calif., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.
Filed Sept. 26, 1969, Ser. No. 861,300
Int. Cl. H01h *33/68*
U.S. Cl. 200—150 R **6 Claims**



1. A contact structure for a circuit interrupter; said circuit interrupter comprising an oil circuit breaker having: first and second interrupter structures, first and second elongated movable contacts movable along the axes of said first and second interrupter structures, respectively, and between interrupter contact open and closed positions, a conductive cross-bar, first and second isolation contact means on said conductive cross-bar movable between engagement and disengagement with respect to the bottom of said first and second elongated movable contacts, respectively, an oil-filled tank for receiving said first and second interrupter structures, and operating means for moving said cross-bar and said first and second elongated movable contacts along said axes of said first and second interrupter structures; the improvement which comprises the construction of at least said first isolation contact means to permit lateral movement of said bottom of said first elongated contact while maintaining contact with said first isolation contact means responsive to lateral movement of at least one of said first or second interrupter structures in the plane formed by the axes of said interrupter structures; said first isolation contact means comprising a jaw-type contact having opposing elongated contact surfaces disposed in spaced parallel planes which each extend in said lateral direction and receiving side surfaces adjacent said bottom of said first elongated contact between said opposing surfaces and in high pressure sliding contact; said bottom of said first elongated contact being laterally slidable within said jaw-type contact.

3,848,102

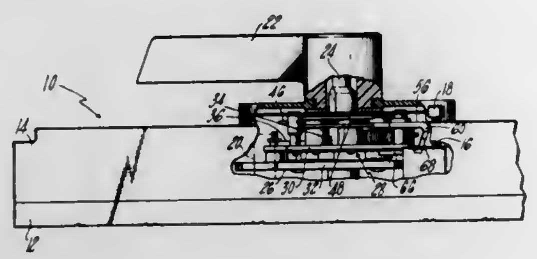
ELECTRIC CIRCUIT BREAKER WITH AUXILIARY TRIP MECHANISM

Charles L. Jencks, Avon, and Frank H. Murphy, West Hartford, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed July 30, 1973, Ser. No. 383,554

Int. Cl. H01h *3/32*

U.S. Cl. 200—153 L **10 Claims**



1. In an electric circuit breaker having a circuit closing mechanism including a cam movable along a predetermined path to effect a closed circuit condition across the breaker, drive means movable in opposite pivotal directions and operatively connected to the cam upon movement in one direction to drive the cam in said one direction along said path, and a tripping mechanism including a manual trip actuator for opening the circuit controlled by the breaker, the combination including an auxiliary trip actuating mechanism operatively associated with said drive means for operating the tripping mechanism comprising a trip drive member connected to said drive means for conjunctive movement in opposite pivotal directions and a trip arm mounted for pivotal movement between a retracted position and a tripping position, the trip drive member engaging said trip arm upon movement with said drive means in a direction opposite said one direction to drive the trip arm toward it tripping position when the breaker is in a closed circuit condition to initiate tripping of the breaker.

3,848,103

THERMO-SIPHONIC COOLING CIRCUIT AND CIRCUIT BREAKER

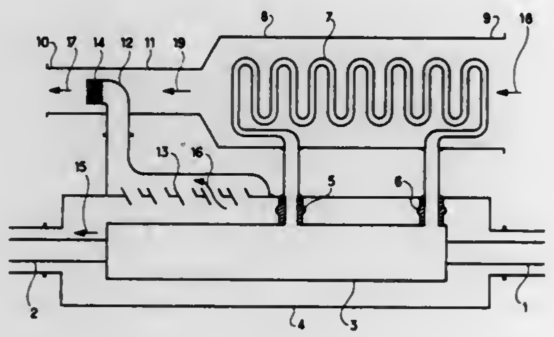
Edmond Thuries, Pusignan, France, assignor to Delle-Alsthom, Villeurbanne, France

Filed Sept. 7, 1973, Ser. No. 395,115

Claims priority, application France, Sept. 8, 1972, 72.31901

Int. Cl. H01h *1/62, 1/64*

U.S. Cl. 200—289 **4 Claims**



1. In a power station switch having a high rated current and which comprises:

a closed cut-out chamber containing a gas under pressure, said chamber being situated within a protective casing with a first cooling air flow passing between said chamber and said casing to provide for cooling of said chamber,

a radiator type heat exchanger external to said casing and in closed fluid loop connection with said chamber for circulating said gas under pressure therebetween, an enclosure surrounding said radiator type heat exchanger and defining with said heat exchanger a second cooling air flow path passing therethrough and across said heat exchanger to remove heat therefrom, the improvement comprising:

means for drawing off a portion of said first air flow from said casing, downstream of the initial contact area of said first cooling air flow with said chamber and after heating thereof, and

means for using the heated drawn off air for setting in motion a second air flow within said second cooling air flow path, around said radiator type heat exchanger.

3,848,104

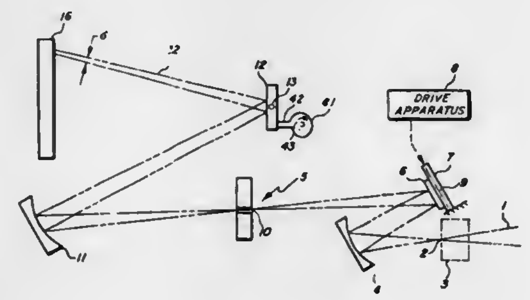
APPARATUS FOR HEAT TREATING A SURFACE

Edward V. Locke, Rockport, Mass., assignor to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed Apr. 9, 1973, Ser. No. 349,419

Int. Cl. B23k *9/00;* **H01s** *3/00*

U.S. Cl. 219—121 L **12 Claims**



1. In a laser system, means for changing the intensity profile across an output laser beam to a different controlled intensity profile comprising:

a. reflective means for receiving and reflecting an output laser beam having a given intensity profile;

b. means for spacially oscillating said reflective means over a given reflector spacial path at a predetermined rate whereby an output laser beam reflected by said reflecting means is spacially oscillated over a laser beam path; and

c. means having a blocking aperture for blocking at least a portion of said spacially oscillated laser beam whereby the average radiation intensity at points along the unblocked portion of said laser beam path of said spacially oscillated laser beam exiting from said aperture define said controlled intensity profile.

3,848,105

COOKING TIME ADJUSTING ARRANGEMENT FOR USE IN ELECTRONIC OVEN

Fumiko Mori, Osaka, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Apr. 2, 1973, Ser. No. 346,795

Claims priority, application Japan, Apr. 6, 1972, 47-41112[U]; Apr. 6, 1972, 47-41113[U]

Int. Cl. H05b *9/06*

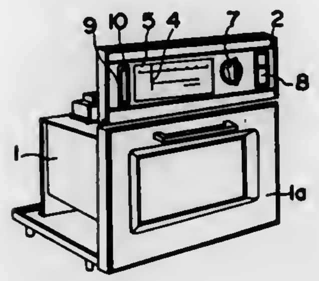
U.S. Cl. 219—10.55 **22 Claims**

1. A cooking time adjusting arrangement for use in an electronic oven, said arrangement being utilized in an electronic oven including an oven-defining structure having an access opening, means positioned for generating high frequency energy toward the interior of said oven-defining structure and a hingedly supported door for selectively covering the access opening of said oven-defining structure, said adjusting arrangement comprising:

a timer device having an operating shaft for setting the timer to any desired operating period, said means for generating high frequency energy being operatively coupled to said timer device and operating during said operation period;

an instrument panel having a front and back and positioned on said oven-defining structure and having a window portion and an aperture therein, said timer device being positioned adjacent the back of said panel and said operating shaft of said timer extending through said aperture; a movable pointer needle, operatively coupled to said operating shaft and positioned to move along said window portion for indicating the operating time of said means for generating high frequency energy; and

display means positioned behind said window portion for visually representing various information relating to menus, corresponding cooking times and operating time, said display means comprised of a rotatable drum, the peripheral surface thereof having said information thereon.



3,848,106

APPARATUS FOR HEATING BY MICROWAVE ENERGY

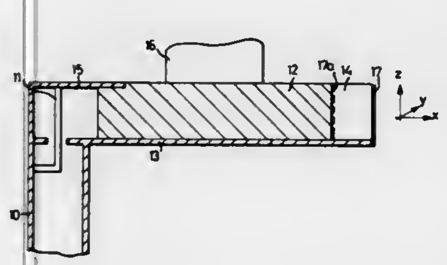
Benny Berggren, Spanga; Goran Boling, Taby, both of Sweden, and Marshall N. Dickler, assignors to Stiftelsen Institutet for mikrovagsteknik vid Tekniska Hogskolan 1 Stockholn, Stockholm, Sweden

Filed May 23, 1973, Ser. No. 362,912

Claims priority, application Sweden, May 29, 1972, 7014/72

Int. Cl. H05b *9/06*

U.S. Cl. 219—10.55 **9 Claims**



1. An apparatus for heating material by microwave energy comprising, a distribution element for receiving the microwave energy and coupling the microwave energy to the material to be heated, said distribution element including a dielectric material having low energy losses and having a dielectric constant exceeding the dielectric constant of air, said dielectric material having a substantially constant cross-sectional thickness at successive points therealong in the direction of propagation of the microwave energy therethrough, said dielectric material further having a thickness for maintaining the phase velocity of said microwave energy therethrough lower than the velocity of light in air, and having a thickness range for maintaining only the basic resonant mode of microwave energy in said dielectric material whereby the microwave energy will be concentrated within and adjacent to said dielectric material, in the immediate vicinity of the material to be heated.

3,848,107

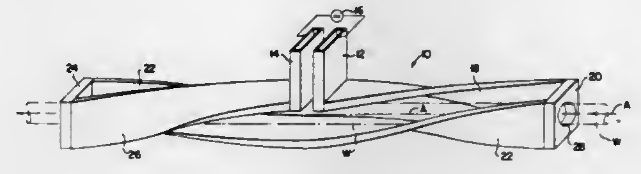
INDUCTOR FOR HEATING ELONGATED METAL WORKPIECES

John C. Lewis, Wentworth, Ontario, Canada, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Dec. 26, 1973, Ser. No. 428,413

Int. Cl. H05b *5/08*

U.S. Cl. 219—10.79 **13 Claims**



1. An inductor for inductively heating an elongated metal workpiece having an axis, said inductor having an axis of orientation coinciding with the axis of a workpiece disposed in magnetically coupled relationship therewith, said inductor comprising a continuous conductor having opposite ends connectable across a source of alternating current, and said conductor including first and second helical portions extending about said axis of orientation, said helical portions being of the same hand of lay and substantially diametrically opposed with respect to said axis of orientation.

3,848,108

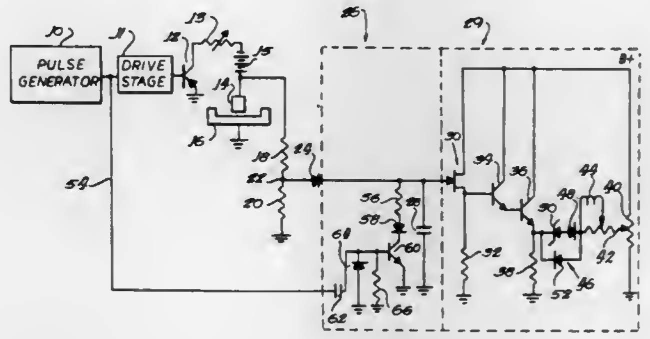
SERVO FEED CONTROL FOR ELECTRICAL DISCHARGE MACHINING

Eiichi Takarada, Rockford, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed Nov. 1, 1973, Ser. No. 411,684

Int. Cl. B23k *9/16*

U.S. Cl. 219—69 G **4 Claims**



1. In an electrical discharge machining apparatus having pulsing means for delivering intermittent erosive electrical discharges across a dielectric coolant-filled gap between a tool electrode and a workpiece, and further having feed control means for providing relative movement between said electrode and said workpiece; the improvement comprising a servo feed control circuit having an energy storage network connected across said gap, said energy storage network including means for storing a voltage that is proportional to the peak voltage imposed across said gap, and control circuitry for causing said feed control means to operate in response to said stored voltage, said energy storage network further including means for discharging said storage means in response to the output of said pulsing means, thereby discharging said storage means prior to the imposition of the next machining pulse across said gap.

3,848,109

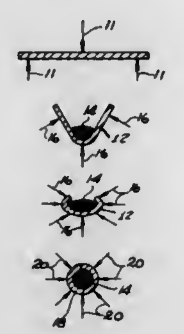
ARC WELDING PROCESS AND ELECTRODE FOR STAINLESS STEEL

Albert J. Zvanut, Whittier, Calif., assignor to Stoody Company, Santa Fe Springs, Calif.

Continuation of Ser. No. 119,642, March 1, 1971, abandoned, which is a division of Ser. No. 879,045, Nov. 24, 1969, Pat. No. 3,585,352, which is a continuation-in-part of Ser. No. 777,405, Nov. 20, 1968, abandoned. This application Feb. 26, 1973, Ser. No. 335,977

Int. Cl. B23k *35/22*

U.S. Cl. 219—146 3 Claims



1. A tubular composite self-shielded arc welding electrode comprising a metallic outer sheath and a core within and enclosed by the sheath, the electrode containing chromium and nickel in sum in an amount equal to at least 29.3 weight percent of the weight of the electrode whereby to produce a high-alloy deposit of chromium-nickel stainless steel, the core comprising 16.67 percent to 60 percent of the electrode weight and consisting essentially of the following listed components in the specified weight percentages of the electrode: from about 1 percent to about 7 percent of a slag forming material including a slag-forming first component and a derivative of a metal having an oxide form when molten different from said first component and soluble in the slag, from 1.0–2.67 percent of calcium fluoride, 1.5 percent manganese, from 1.1 to 2 percent silicon, and from 10 to 30 percent of other metal-bearing materials selected from the group consisting of metals, metal alloys and ferroalloys.

3,848,110

PORTABLE ELECTRIC GRILL APPLIANCE

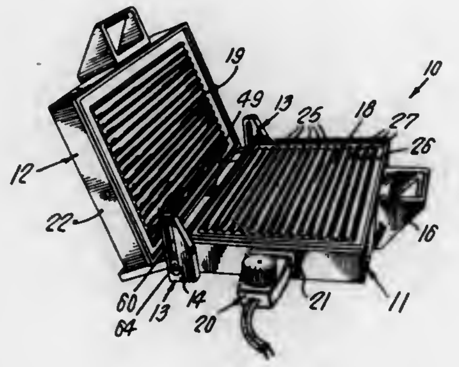
Andre N. Giguere, and Rheal A. Thibodeau, both of Beauceville, Quebec, Canada, assignors to Marie Martle Poulin Giguere and Agathe Cote Thibodeau, both of Beauceville, Quebec, Canada

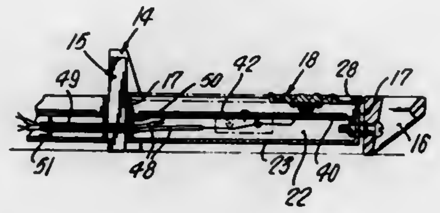
Filed July 25, 1973, Ser. No. 382,317

Int. Cl. H05b *3/06*

U.S. Cl. 219—525 10 Claims

1. A portable electric grill appliance comprising a lower and upper grill chassis, each said grill chassis having a bottom wall, side walls about said bottom wall and a grill plate of heat conductive material defining an upper wall; a resistive heating element secured within a channel provided on the underface of said grill plate of each said chassis whereby a substantial portion of said heating element will be encased in said grill plate to minimize heat radiation in the area between said chassis bottom wall and said grill plate, a hinge connecting said lower and upper chassis along one of their side walls to permit said upper chassis to be displaced through an arc from a position where both said grill plates lie side-by-side in a common horizontal plane to a further position where both said grill plates face each other in substantial juxtaposition to a further position where at least the lower grill plate is accessible, said hinge having a channel member secured to each end walls of said bottom chassis adjacent the end edge of a side wall and extending above said lower chassis grill plate, an elongated connector member secured to a side wall of said upper chassis near each end edge thereof and extending above said upper chassis grill plate to define a connecting end, said channel members and said connector members extending above said lower and upper chassis bottom wall to constitute support legs, a further leg secured to each said lower and upper chassis and located centrally of the side wall remote from the hinge, said support legs and further leg supporting the bottom wall of each said chassis above a common horizontal plane, and support means for supporting each said chassis bottom wall above said common horizontal plane when resting thereon.





3,848,111

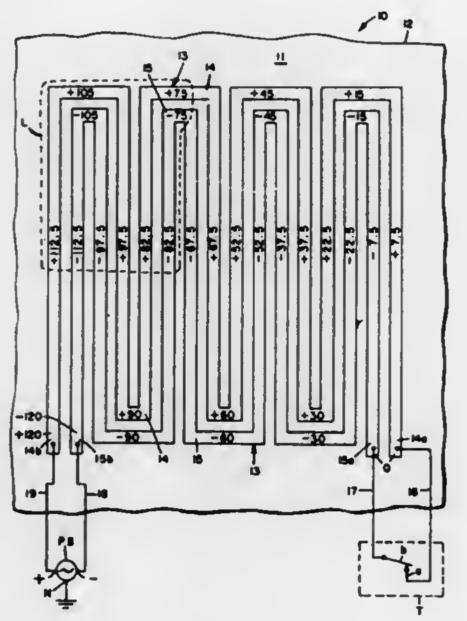
ELECTRICAL HEATING UNIT

Harold A. Brouneus, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sept. 24, 1973, Ser. No. 400,217

Int. Cl. H05b *3/16, 3/74*

U.S. Cl. 219—543 6 Claims



1. An electrical heating unit comprising;

A. a panel of a glassy material,

B. a 240 volt heating element including a pair of first and second electrical resistance conductors in physical contact with a surface of said panel in a selected area of such panel and extending over such surface in first and second sinuous paths paralleling each other throughout the lengths thereof,

C. first circuit means including a single set of normally closed and thermally actuated contacts for connecting first adjacent ends of said conductors with each other, and

D. second circuit means for connecting the second adjacent ends of said first and second conductors with first and second opposite terminals, respectively, of a commercial 240 volt source of alternating current.

3,848,112

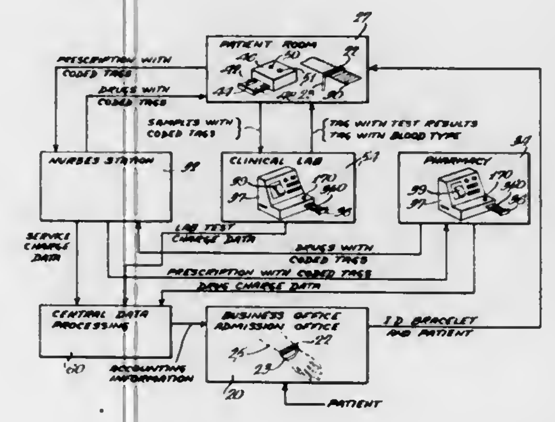
IDENTIFICATION SYSTEM

Theodore E. Weichselbaum, St. Louis, and Jack L. Wilhelmson, Fenton, both of Mo., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.

Division of Ser. No. 94,452, Dec. 2, 1970,. This application Sept. 11, 1972, Ser. No. 287,925

Int. Cl. G06k *5/00, 7/08*

U.S. Cl. 235—61.7 R 2 Claims



1. In an identification system for relating items with patients, cross-check means for insuring that an identifying item corresponds to an identified patient, comprising:

first identification tag means adapted to be dispensed from bracelet means attached to a single patient;

said first identification tag means carrying thereon magnetic means having a plurality of magnetic fields arranged to form a unique magnetic code for identifying a single patient;

second identification tag means adapted to be dispensed from the bracelet means and carrying thereon magnetic means having a plurality of magentic fields corresponding to the plurality of magnetic fields carried by said first identification tag means to form the unique magnetic code thereon;

means for removably attaching said second identification tag means to an item which is to be associated with said single patient;

and reader means for comparing the unique codes of said first and second identification tag means comprising plate means mounted for movement along a predetermined path between first and second positions, first and second input receptacles for respectively receiving said first and second identification tag means, said receptacles being disposed on said plate means for simultaneous movement therewith, first and second magnetic read heads disposed adjacent said path for respective association with said first and second input receptacles, energy storage means coupled to said plate means for storing energy in response to movement of said plate means from said first position to said second position, said plate means being movable from said second position to said first position by the energy stored in said storage means for moving said first and second identification tag means relative to said first and second read heads to produce a first series of signals corresponding to the unique magnetic code of said first identification tag means and a second series of signals corresponding to the unique magnetic code of said second identification tag means, circuitry means responsive to said first and second series of signals for producing a signal comparison, and means responsive to said signal comparison to provide a match indication when the magnetic codes of said first and second identification tag means are identical.

3,848,113

APPARATUS AND METHOD FOR TRANSFERRING A VALUE FROM A COUNTER AND FOR CLEARING THE COUNTER

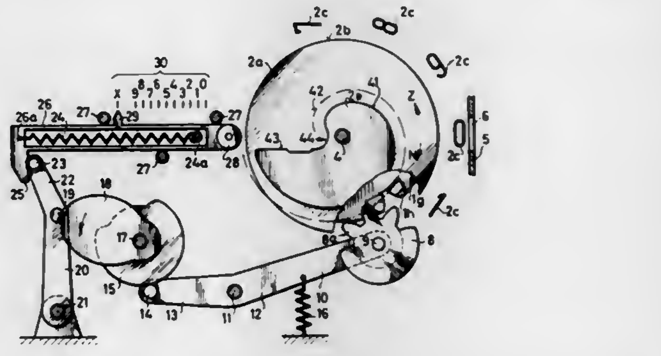
Heinz Kelch, Buchenberg, and Helmuth Mueller, St. Georgen, both of Germany, assignors to Kienzle Apparate G.m.b.H., Villingen/Schuartuald, Germany

Continuation of Ser. No. 309,508, Nov. 24, 1972, abandoned. This application Aug. 30, 1973, Ser. No. 393,142

Claims priority, application Germany, Nov. 24, 1971, 2158111

Int. Cl. G06c *15/42*

U.S. Cl. 235—61 PD 18 Claims



1. Apparatus for transferring a value from a counter and for clearing the counter, comprising an ordinal series of counter wheels rotatable about an axis; a cam connected with each counter wheel for movement therewith and having a cam track with successive analog cam track portions representing the digital angular positions of the respective counter wheel, respectively, and decreasing in one direction; sensing means for each cam, biassed toward the respective cam track; control means for simultaneously retracting said sensing means to a position of rest, and for releasing said sensing means for biassed movement to a value transfer position abutting and pressing against the cam track portion representing a value stored in the respective counter wheel so that the respective cam is urged to move in said one direction to a clearing position; value representing means operated by each sensing means in said value transfer position to represent the value sensed by said sensing means in said value transfer position; and blocking means for blocking rotation of each counter wheel, and controlled by said control means to release said counter wheels after operation of said value representing means so that said biassed sensing means move said cams to said clearing position in which said counter wheels are cleared.

3,848,114

CONTROL SYSTEM FOR PROVIDING A SPIRAL FLIGHT PATH TO A RADIO BEACON

Curtis M. Campbell, Phoenix, and Ronald J. Miller, Glendale, both of Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 12, 1972, Ser. No. 217,617

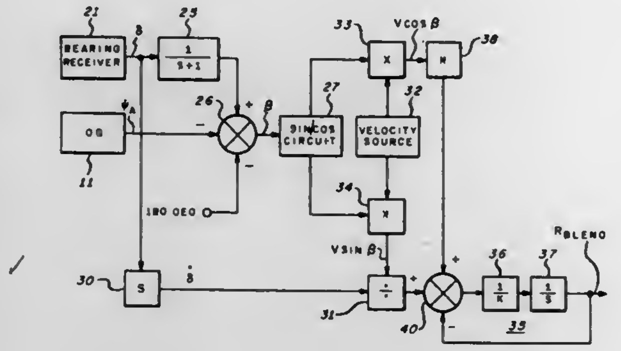
Int. Cl. G06g *7/78*

U.S. Cl. 235—150.26 7 Claims

1. A flight control system for guiding an aircraft having a heading command system along a predetermined curved flight path to a position marked by a radio transmitter comprising

relative bearing receiver means responsive to said radio transmitter output for providing a signal proportional to the bearing of said aircraft to said position,

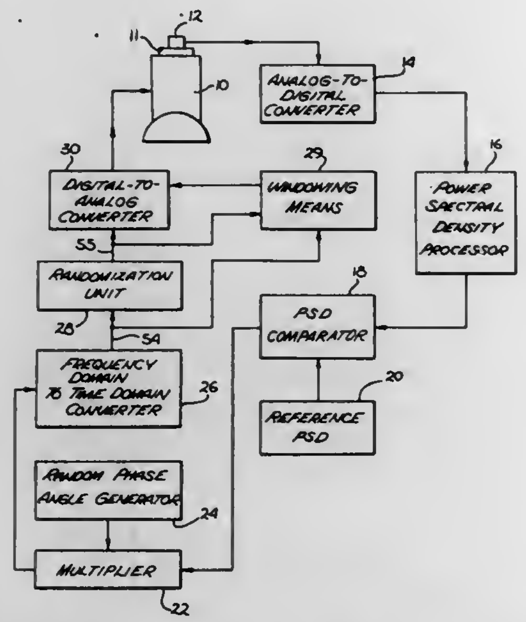
bias signal means which provides a signal proportional to a desired value of bearing between said aircraft and said position,
direction sensing means for providing a signal proportional to the heading of said aircraft with respect to a specific reference direction,
first summation means coupled to said receiver means and said bias signal means for providing a difference relative bearing signal,



second summation means coupled to said first summation means and said direction sensing means for providing a heading output signal which is a function of said difference relative bearing signal,
integrating means coupled to said first summation means for producing a leading relative bearing signal,
third summation measn coupled to said integrating means and said second summation means for providing an output heading reference signal, and
means supplying said heading reference signal to said heading command system.

3,848,115
VIBRATION CONTROL SYSTEM

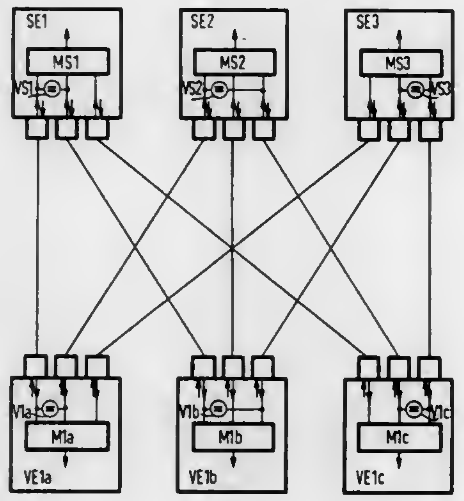
Edwin A. Sloane, and Charles L. Heizman, both of Los Altos, Calif., assignors to Time/Date Corporation, Palo Alto, Calif.
Filed Oct. 19, 1973, Ser. No. 408,181
Int. Cl. G01n *29/00;* **G06f** *15/34*
U.S. Cl. 235—151 15 Claims


12
11
10
ANALOG-TO-DIGITAL CONVERTER
14
30
DIGITAL-TO-ANALOG CONVERTER
29
WINDOWING MEANS
16
POWER SPECTRAL DENSITY PROCESSOR
55
RANDOMIZATION UNIT
28
54
18
PSD COMPARATOR
FREQUENCY DOMAIN TO TIME DOMAIN CONVERTER
26
20
REFERENCE PSD
RANDOM PHASE ANGLE GENERATOR
24
MULTIPLIER
22

1. A vibration control system for generating a control signal comprising:
sensing means for sensing the movement of a specimen;
a first converting means for converting at least one frame of information from said sensing means to the frequency domain;
comparator means for comparing said converted frame of information with a predetermined spectrum and for providing a comparison frame of data representative of said comparison, coupled to said first converting means;
a generator for generating a random signal;
combining means for combining said random signal with said frame of data coupled to said generator and said comparator means;
a second converting means for converting the output of said combining means to the time domain and for providing a control frame of information, coupled to said combining means; and
randomization means coupled to said second converting means for randomizing said control frame such that said control frame may be repeatedly used as said control signal for said vibration control signal.

3,848,116
DATA PROCESSING SYSTEM HAVING TRIPLEXED SYSTEM UNITS

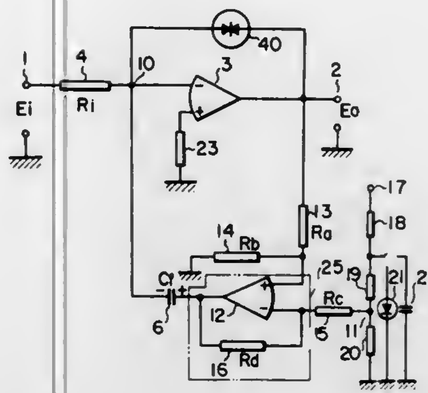
Hans-Ulrich Moder, and Gunter Grossman, both of Munchen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Jan. 5, 1973, Ser. No. 321,271
Claims priority, application Germany, Jan. 18, 1972, 2202231
Int. Cl. G06f *11/08*
U.S. Cl. 235—153 AE 3 Claims



1. Circuit for detecting malfunctioning system units of a data processing system, said system units being processing units and storage means, said system units being interconnected to provide redundancy in case of malfunction, the arrangement comprising:
standard data connection means through which each said processing unit is connected to each said storage means, the number of standard data connection means on one said system unit corresponding to the number of others of said system units to which said one system unit is connected,
comparator means connected after each said standard data connection for incoming data traffic, each said comparator being connected to two standard connection units of a said standard data connection, and
majority logic circuit means connected after each said standard data connection means in each said system unit, each said majority logic circuit being connected to all of the standard connection units in a system unit,
whereby each said comparator evaluates data received at two standard connections of a said standard data connection means and each said majority logic circuit evaluates data received at all of the standard connection units of a said standard connection means.

3,848,117
ELECTRONIC ANALOG OPERATIONAL CIRCUIT

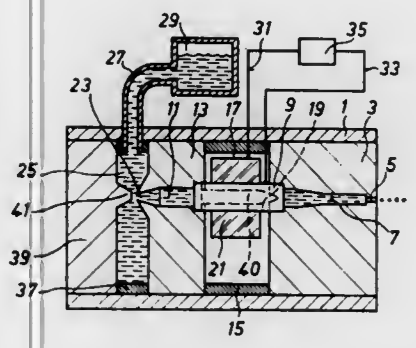
Tadayoshi Saito, Hitachi; Kiyoshi Miura, Ibaraki-ken, and Yoshiyuki Nakano, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 6, 1973, Ser. No. 348,501
Claims priority, application Japan, Apr. 7, 1972, 47-25615; Dec. 13, 1972, 47-124379
Int. Cl. G06g *7/18*
U.S. Cl. 235—193 26 Claims



1. An electronic analog operational circuit comprising an input circuit for receiving a signal voltage, a first operational amplifier having a substantially infinite gain to which a signal voltage is supplied through the input circuit, means for summing the output voltage of the first operational amplifier and the output voltage of a bias means, and a feedback circuit having at least a polarized capacitor for feeding the output voltage of the summing means back to the input terminal of the first operational amplifier, in which the bias means includes means for generating a predetermined voltage such that the polarity of the voltage applied across the polarized capacitor is in accordance with that of the capacitor over the entire range of the output of the first operational amplifier.

3,848,118
JET PRINTER, PARTICULARLY FOR AN INK EJECTION PRINTING MECHANISM

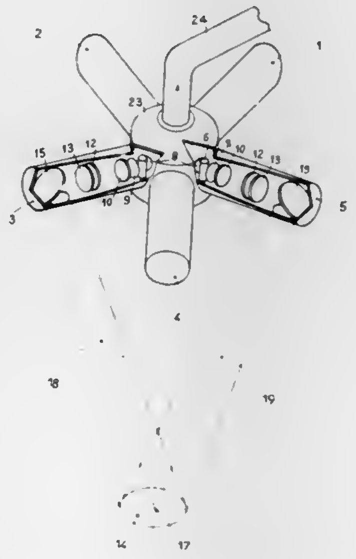
Eilt-Heyo Rittberg, Wilhelmshaven, Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany
Filed Mar. 5, 1973, Ser. No. 338,683
Claims priority, application Germany, Mar. 4, 1972, 2210512
Int. Cl. B05b *1/08*
U.S. Cl. 239—101 12 Claims



1. In a jet printer including a compression chamber having one end, arranged to face the surface to be printed, provided with a discharge nozzle and its other end provided with an inlet for the printing liquid coming from a reservoir, and an exciter system arranged to vary the volume of the chamber in brief pressure surges, the improvement comprising a fluidic component constituted by a nozzle and an associated impact plate disposed at the printing liquid inlet to said chamber and constituting a non-reciprocal flow element presenting a resistance to flow of liquid which has a higher value for flow in the direction from said chamber toward the reservoir than in the opposite direction.

3,848,119
LIGHTING PROJECTOR

Andre Masson, Saint Heand(Loire), and Jack Joubert, Montluel(Ain), both of France,, assignors to Establissements Pierre Angenieux, Paris, France
Filed July 16, 1973, Ser. No. 379,577
Claims priority, application France, July 27, 1972, 72.65808
Int. Cl. A61b *1/06*
U.S. Cl. 240—1.4 5 Claims



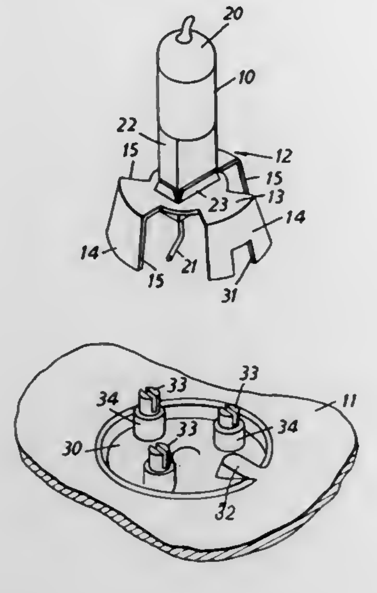
1. A lighting projector, particularly for operating room use, comprising a star-shaped arrangement including a plurality of basic elements, disposed circumferentially at intervals from a common center, said basic elements each comprising a light source for producing a light beam, a frosted zone in close proximity to said light source and illuminated by said light source, a wide-apertured optical condensing system in the path of said light beam for concentrating said beam onto an intense beam of relatively narrow cross-section, and a concave mirror located opposite said condensing system and reflecting at least a portion of said light beam, and a reflecting mirror, and an optical element in the path of said intense beam and forming the image of said frosted zone on a plane field of illumination.

3,848,120
LIGHT BULB AND REFLECTOR ASSEMBLY

Kenneth Roy Wolfe; Frank Woodward, and Arthur Samuel Vause, all of London, England, assignors to Thorn Electrical Industries Limited, London, England
Filed Oct. 18, 1973, Ser. No. 407,558
Int. Cl. F21m *3/02*
U.S. Cl. 240—41 BM 7 Claims

1. In a lighting unit having a reflector and a light bulb supported in spaced relation to the reflecting surface of the reflector, said light bulb having a press seal at one end thereof, the improvement comprising a support member having a web portion, said press seal extending through and being held by said web portion and said web portion extending outwardly from the press seal, and a flange portion extending from the

periphery of the web portion towards the reflector, and a depression in the reflecting surface of the reflector, said flange



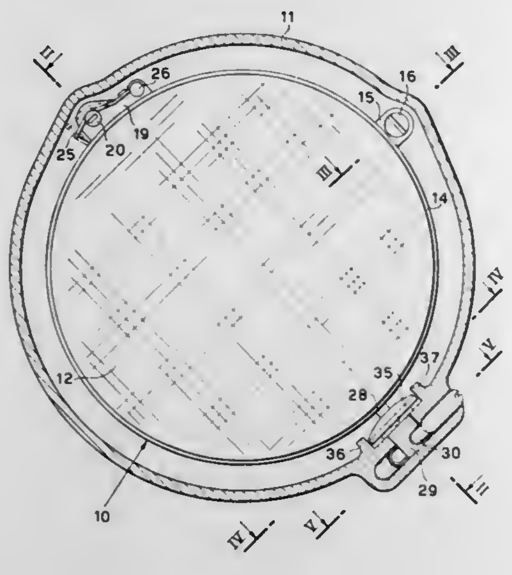
portion of the support member mating with the depression to locate the bulb in the said spaced relation.

3,848,121

HEADLAMP FOR MOTOR VEHICLES

Ivo Colucci, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Filed June 14, 1973, Ser. No. 370,057
Claims priority, application Italy, June 22, 1972, 24046/72
Int. Cl. F21v *7/00*
U.S. Cl. 240—41.6 8 Claims



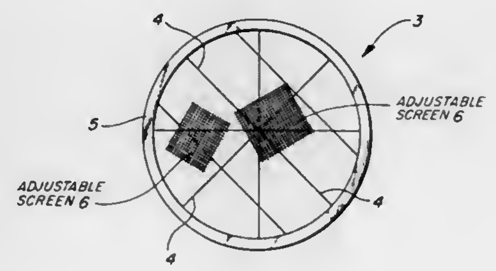
1. Apparatus for supporting a headlamp in a seating of a motor vehicle to enable manual adjustment of the position of the headlamp, said apparatus comprising three support means connecting the headlamp to the seating, said three support means being positioned at the apices of a triangle which lies in a plane substantially perpendicular to the light beam from the headlamp, a first and second of said support means being on one side of said triangle which is substantially horizontal, the first and third of said support means being on a second side of said triangle which is substantially vertical, said first support means comprising a mounting member securing the headlamp to the seating such that the headlamp is pivotable thereat, said second mounting means comprising an aiming screw adjustably connecting the headlamp to the seating to pivotably displace the headlamp about said vertical side of said triangle, said third mounting means comprising a threaded member engaging said headlamp and displaceable in opposite directions to rotate the headlamp about said horizontal side of said triangle, actuator means threadably engaging said threaded member to move the same in either of said opposite directions by turning said actuator means, and means supporting said actuator means for displacement between first and second positions to carry said threaded member therewith and produce rotation of the headlamp about said horizontal side of the triangle, said first and second positions corresponding to two respective predetermined load conditions of the motor vehicle.

3,848,122

ADJUSTABLE LIGHT DIFFUSER FOR AN OPTICAL PROJECTION SYSTEM

Walter A. Hutchison, III, Webster, N.Y., assignor to Itek Corporation, Lexington, Mass.

Filed Sept. 13, 1973, Ser. No. 396,917
Int. Cl. F21v *11/14*
U.S. Cl. 240—46.51 12 Claims



1. An adjustable light diffuser comprising:

a. a support frame;

b. at least two thin elongated screen support members suspended from said support frame; and

c. at least one adjustable screen, having orifices formed therein, for attenuating light from a source positioned on one side of said light diffuser, said screen being mounted upon said elongated support members by having said elongated support members pass through said orifices so that said screen may be readily moved about said elongated screen support members.

3,848,123

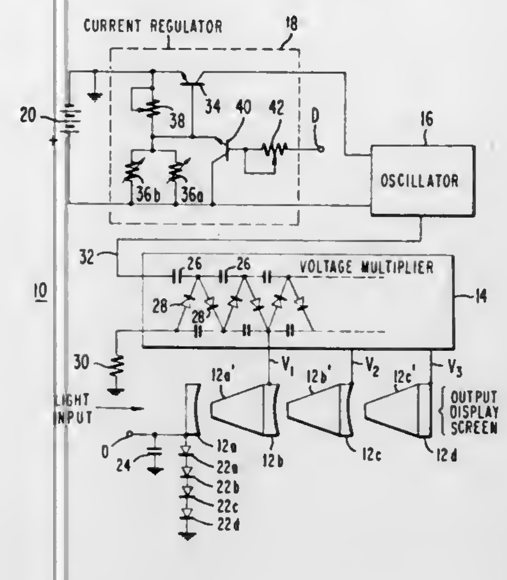
AUTOMATIC BRIGHTNESS CONTROL FOR IMAGE INTENSIFIER TUBE

William Andrew Parker, Lancaster, and Robert A. Kryder, Strasburg, both of Pa., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 346,673, March 30, 1973, abandoned. This application Nov. 26, 1973, Ser. No. 418,920
Int. Cl. H01j *31/50, 39/12*
U.S. Cl. 250—213 VT 14 Claims

1. In an image brightness control system for an image intensifier tube of the type comprising: an image intensifier tube having a photocathode input electrode emitting electrons in response to the intensity of light applied thereto and a phosphor display screen output electrode providing an image display in accordance with said electrons impinging thereon; a voltage multiplier applying a direct voltage between said input and output electrodes for accelerating said electrons and directing said accelerated electrons to said display screen for increasing the brightness of said image; an oscillator circuit applying an alternating voltage to said voltage multiplier, a direct current source; and current-limiting means coupled between said direct current source and said oscillator to limit the direct current supplied to said oscillator from said direct current source to a predetermined current level for limiting the brightness of said image displayed on said screen; the improvement therewith comprising:

a nonlinear current sensing means coupled between said photocathode input electrode and said direct current source for developing a signal voltage which is substantially proportional to logarithmic changes of photocurrent in said image intensifier tube; and



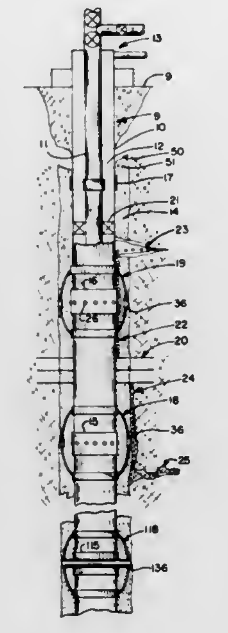
means coupling said current-limiting means to said current sensing means and responsive to said signal voltage for controlling said current-limiting means to provide a substantially constant current source to said oscillator at input light intensity levels below a predetermined level, and to provide current varying in accordance with the current demand of said image intensifier tube at input light intensity levels exceeding said predetermined level.

3,848,124

METHOD AND APPARATUS FOR DETERMINING COMMUNICATION OF A PERFORATED ZONE WITH A SECOND ZONE

Roy R. Vann, P.O. Box 38, Artisia, N. Mex. 88210

Continuation-in-part of Ser. No. 109,381, Jan. 25, 1971, Pat. No. 3,710,114. This application Dec. 15, 1972, Ser. No. 315,605The portion of the term of this patent subsequent to Jan. 9, 1990, has been disclaimed.
Int. Cl. G01v *5/00*
U.S. Cl. 250—260 18 Claims



1. In a borehole having a casing cemented therein with the cement filling the annulus between the casing and the borehole wall, wherein the casing and cement have been perforated adjacent a potential production zone; the method of locating the presence of passageways formed externally of the casing and longitudinally of the borehole comprising the steps of:

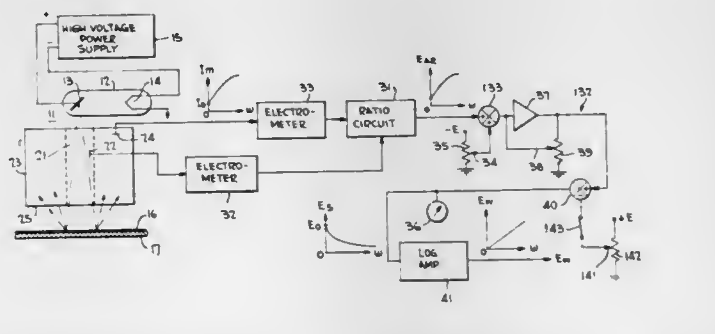
1. placing a first isotope uphole and a second isotope downhole of the perforations, said isotopes having a known half-life, said isotopes being placed at the interface formed between the cement and the casing wall;
2. analyzing the borehole near the perforated zone to determine the translocation of either of the isotopes to thereby determine the length and direction of any passageway which may be found, and to determine the location of the passageway with respect to the perforated zone.

3,848,125

COATING THICKNESS GAUGE

Orval L. Utt, and Howard J. Evans, both of Columbus, Ohio, assignors to Industrial Nucleonics Corporation, Columbus, Ohio

Filed Sept. 20, 1971, Ser. No. 181,836
Int. Cl. G01n *23/22*
U.S. Cl. 250—272 17 Claims



1. Apparatus for measuring the thickness of a metal coating on a metal substrate comprising a source of radiation irradiating the coating and substrate, said source of radiation causing the coating and substrate to fluoresce and emit energy at different energy levels, a detector responsive to the energy from the coating and substrate for deriving an output signal having a first finite, nonzero value for a coating thickness of zero and varying as a substantially increasing exponential function to a second value for a predetermined coating thickness, said output signal decreasing in value for coating thicknesses greater than the predetermined thickness, means responsive to the output signal for converting the output signal into substantially an exponentially decreasing indication in a range from zero to the predetermined thickness, said converting means including: means offsetting the output signal by an amount so that the indication has a first fixed value for a finite coating thickness within the range, and means for multiplying the output signal to control the slope magnitude of the exponential indication so that the output indication has a second fixed value for a zero thickness coating layer.

3,848,126

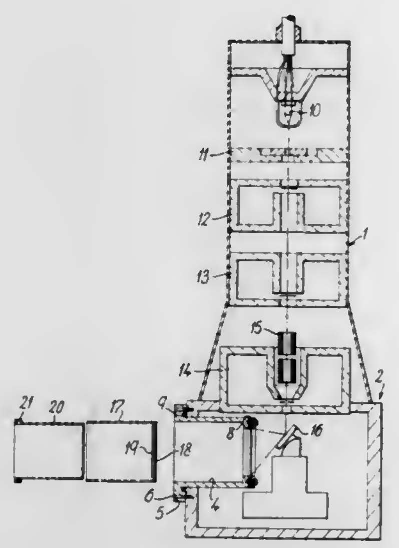
RECORDING OF KOSSEL LINES

Norman Swindells, Wallasey, and Michael Bevis, Wirral, both of England, assignors to National Research Development Corporation, London, England

Filed June 20, 1973, Ser. No. 371,724
Claims priority, application Great Britain, July 7, 1972, 31961/72
Int. Cl. H01j *37/26*
U.S. Cl. 250—272 5 Claims

1. Apparatus for recording Kossel lines produced by irradiating a crystalline specimen with a beam of fundamental particles comprising mounting means for mounting the specimen in the path of the beam of fundamental particles so as to generate divergent X-rays from a point source within the

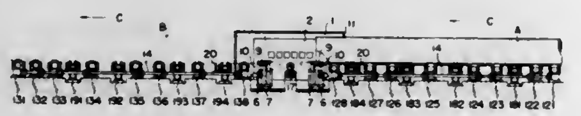
specimen which fulfill the Bragg laws, a planar recording medium, means for mounting said planar recording medium parallel to the beam of fundamental particles and spaced from the specimen whereby the divergent X-rays form Kossel lines on said planar recording medium.



3,848,127
X-RAY EXAMINATION SYSTEM FOR EXAMINING THE WELDED PORTIONS AT BOTH ENDS OF STEEL PIPES

Seiji Fujii; Kunio Matsui; Shigeru Sato, all of Fukuyama; Keijiro Ito, Osaka; Takashi Koizumi; Shozo Tsuboyama, both of Kyoto, and Hiroyuki Watanabe, Otsu, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo; Shimadzu Seisakusko Ltd., Kyoto-shi and Shimadzu Metal Industries Ltd., Otsu-shi, all of, Japan

Filed Sept. 25, 1973, Ser. No. 400,549
Int. Cl. G01n *23/00*
U.S. Cl. 250—321 **4 Claims**

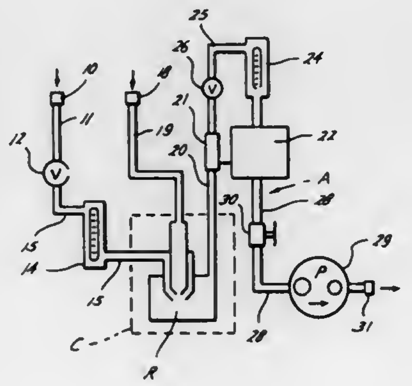


1. An X-ray examination system for examining the welded portions at both ends of steel pipes by X-ray penetration and photographing which comprises an examination chamber provided with two X-ray penetration devices; a first roller conveyor line formed of a plurality of roller stands capable of jointly feeding a steel pipe being examined to the examination chamber and disposed on one side of the examination chamber; a first turning roller assembly comprising a plurality of turning roller stands provided at a suitable point between the respective roller stands of the first roller conveyor line in alignment with said roller stands so as to rotate a steel pipe in the circumferential direction; a first automatic welded seam detector for detecting the welded portion of the forward end of a steel pipe while being rotated by the first turning roller assembly and stopping the rotating steel pipe at a prescribed peripheral angle; a second roller conveyor line formed of a plurality of roller stands aligned with those of the first roller conveyor line, and disposed on the opposite side of the examination chamber so as to send further a steel pipe having the welded portion at its forward end already examined in the direction in which the steel pipe leaves the examination chamber; a second turning roller assembly comprising a plurality of turning roller stands each located at a suitable point between the respective roller stands of the second roller conveyor line in alignment with said roller stands so as to rotate a preceding steel pipe now brought to the opposite side of the examination chamber in the circumferential direction; a second automatic welded seam detector for detecting the welded portion of the rear end of the preceding steel pipe placed on said opposite side while the steel pipe is rotated by the second turning roller assembly so as to bring the rotating steel pipe to rest at a prescribed peripheral angle; and a control chamber annexed to the examination chamber for remote control so as to operate the first and second roller conveyor lines, attach one of the X-ray penetration devices of the examination chamber to the welded portion of the forward end of a succeeding steel pipe brought to the examination chamber by traveling on the first roller conveyor line and fit the order X-ray penetration device to the welded portion of the rear end of the preceding steel pipe already brought to the opposite side of the examination chamber.

3,848,128
CONTROL CHAMBER APPARATUS FOR POLLUTANT DETECTORS

Robert D. McMillan, Jr., Houston, Tex., assignor to McMillan Electronics Corporation

Filed June 30, 1972, Ser. No. 268,136
Int. Cl. G01t *1/20*
U.S. Cl. 250—336 **10 Claims**



1. A control chamber apparatus for a pollutant detector for chemiluminescent detection of pollutants by reacting a reagent with a sample to determine the amount of pollutant therein, comprising:

a. reaction chamber means for receiving the reagent and the sample;
b. photometric circuit means for measuring the reaction between the reagent and the sample in said reaction chamber means;
c. canister means for housing both said reaction chamber means and said photometric means therein; and
d. control means for regulating temperature in said canister means to thereby regulate the temperature of said reaction chamber means and photometric circuit means wherein detection conditions are stabilized for accurate determination of the amount of pollutant.

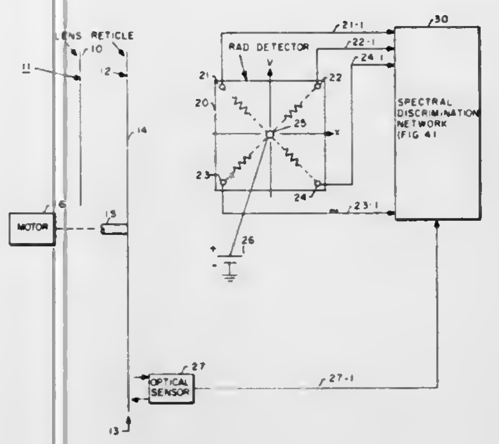
3,848,129
SPECTRAL DISCRIMINATING RADIATION DETECTION APPARATUS

Burton D. Figler, Winthrop, and Theodore J. Nussdorfer, Lexington, both of Mass., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Aug. 24, 1973, Ser. No. 392,164
Int. Cl. G01t *1/16*
U.S. Cl. 250—339 **6 Claims**

1. Radiation detection apparatus for discriminating between radiations which have different spectral distributions; said apparatus comprising:

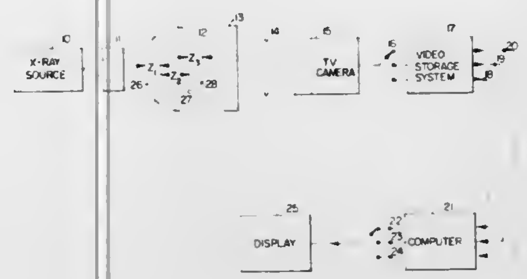
an optical device for collecting incident radiations and focusing same;
a filter for filtering the collected and focused radiations;
a detector element for converting the filtered radiations into an electrical signal;
said filter including
a. a revolving reticle for spatially filtering the collected radiations;
b. first and second bandpass spectral filters which pass radiations of long and relatively short wavelength, respectively, said spectral filters being so arranged on said reticle and said detector element being so located that the detector element receives filtered radiation from the first and second filters during first and second portions, respectively, of a reticle revolution;
means for producing first and second sampling signals during said first and second reticle revolution portions, respectively;
means responsive to the first and second sampling signals to convert said electrical signal produced by the detector element into first and second sequences of signal samples indicative of long and short wavelength filtered radiation, respectively;
means for comparing the first and second sequences of signal samples with one another to produce a comparison signal; and
means for producing a target signal when the amplitude of said comparison signal at least equals a predetermined value.



3,848,130
SELECTIVE MATERIAL X-RAY IMAGING SYSTEM

Albert Macovski, 4100 Mackay Dr., Palo Alto, Calif. 94306

Filed June 25, 1973, Ser. No. 373,465
Int. Cl. G01t *1/20*
U.S. Cl. 250—369 **15 Claims**

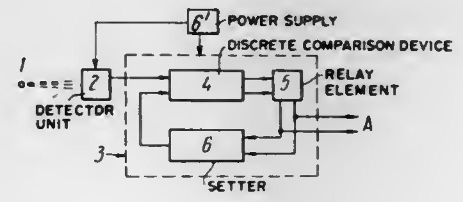


1. Apparatus for providing a plurality of processed x-ray images represening specific materials in an object comprising:
a plurality of sources each having a different x-ray energy spectrum;
means for recording a plurality of images each representing the different x-ray energy spectrum transmitted through the object with the number of recorded images being at least as great as the number of processed images;
means for scanning each of the plurality of recorded images to generate a plurality of scanned signals;
a computer for processing the plurality of scanned signals to generate the plurality of processed signals represent specific materials in the object; and
mean for displaying the processed signals whereby processed x-ray images are formed representing specific materials in the object.

3,848,131
RADIOACTIVE RADIATION DETECTION SYSTEM

Vladimir Nikolaevich Pozdnikov, ulitsa Kveles, 15, korpus 1, kv. 46; Oleg Leonidovich Sazonov, ulitsa Moskovskaya, 285, korpus 5, kv. 79; Iegoshua Mikhailovich Taxar, ulitsa Moskovskaya, 254, korpus 6, kv. 4; Edgar Rikhardovich Tesnavs, ulitsa Moskovskaya, 285, korpus 5, kv. 82; Vladimir Alexandrovich Yanushkovsky, ulitsa Vilisa, Latsisa, 2a, kv. 46; Alexandr Pavlovich Gavrilov, ulitsa Gospitalnaya, 29, kv. 5; Valentin Petrovich Korkonosov, prospekt Komarova, 23, kv. 72; Alexei Vasilievich Peresypkin, ulitsa Grivas, 11, korpus 32, kv. 14, all of Riga, and Eduard Parfentievich Shapovalov, stantsiya Priedaine, prospekt Lielais, 8, kv. 4, Jurmala, all of U.S.S.R.

Filed Aug. 16, 1972, Ser. No. 281,009
Int. Cl. G01t *1/16*
U.S. Cl. 250—388 **9 Claims**



1. A radioactive radiation detection device comprising: a detector unit registering ionizing radiation and converting said ionizing radiation into electric pulses; an electronic relay unit coupled electrically to said detector unit; a discrete comparision device in said electronic-relay unit and having two outputs and two inputs a first one of which is connected to said detector unit producing a statistical series of pulses; a relay element having two inputs and two outputs serving as the output of said device, the inputs of said relay element being connected to the outputs of said discrete comparison device; a setter of threshold frequencies of a regular series of electric pulses in said electronic unit and having two inputs and one output, said setter having two frequency thresholds, said threshold frequency setter having two inputs connected to said two outputs of said relay element and having its output connected to the second input of said discrete comparison device whereby said device acquires a first or second state depending on the ratio between the frequencies of the statistical and regular series of said pulses.

3,848,132
PATIENT ROTATOR AND METHOD OF CONDUCTING X-RAY STUDIES

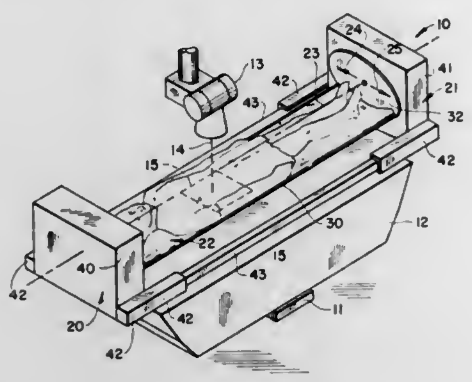
Anthony J. Foderaro, Cuyahoga, Ohio, assignor to Picker Corporation, Cleveland, Ohio

Filed Dec. 20, 1972, Ser. No. 316,812
Int. Cl. G03b *41/16*
U.S. Cl. 250—439 **25 Claims**

1. A patient rotator for rotating a patient while maintaining a center of interest within the patient along an examination axis as the patient is rotated, comprising:

a. a supporting structure;
b. a patient support adapted to receive and support a patient;

c. mounting means mounting said support on said structure such that said support is rotatable about a longitudinal axis of rotation while said axis of rotation is shiftable laterally of the examination axis; and



d. control means coupled to said mounting means for laterally shifting said axis of rotation relative to said examination axis during rotation of said support as is required to maintain a preselected center of interest within the patient in alignment with the examination axis.

3,848,133
ROLL FILM RADIOGRAPHIC CASSETTE

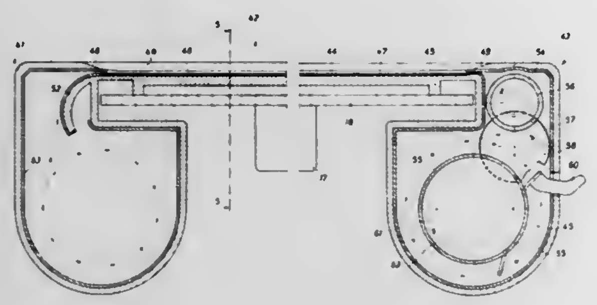
Marie Jean Blanc, Rueil, France, and Emile Frans Stievenart, Hoboken, Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Continuation of Ser. No. 138,997, April 30, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 331,373

Claims priority, application Great Britain, Apr. 1, 1970, 21146/70

Int. Cl. G03b *17/26*

U.S. Cl. 250—469 **5 Claims**



1. A radiographic film cassette for use in mastography by means of penetrating radiation comprising a first housing formed of radiation opaque material for holding a supply roll of radiographic film, a second housing formed of radiation opaque material for holding a roll of exposed film, a take-up roller rotatably mounted in said second housing for winding said roll of exposed film thereon, each such housing having an opening slit therein for the passage of the film, an interconnecting throat-like rigid frame of radiation opaque material extending between said housing and including two closely spaced side walls defining a narrow generally rectilinear film passageway communicating at its opposite ends with said housing openings, said throat-like frame having an opening in one side wall between said housings to define an exposure frame for a section of the film in said passageway and carrying on the other side wall facing said opening in intensifying screen at least the size of and aligned with said opening, a thin radiation permeable, actinic light impermeable film of generally stretchable material covering said opening, and adapted to yield under pressure to press the film against the screen, manually operable rotating means accessible exteriorly of said second housing for rotating said take-up roller to advance film from said supply roll through the passageway in said throat-like frame, and exteriorly releasable stop means effective to halt film movement after a predetermined distance including a friction roller within said second housing in frictional engagement with said film.

3,848,134
FILM DISPLACEMENT DEVICE FOR X-RAY APPARATUS

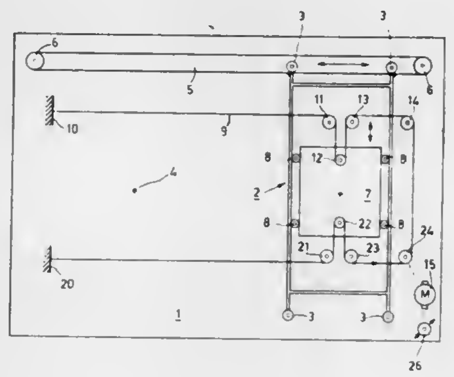
Kurt Gieschen, and Walter Schmidemann, both of Hamburg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 25, 1973, Ser. No. 363,838

Claims priority, application Germany, May 31, 1972, 2226473

Int. Cl. G01n *21/34*

U.S. Cl. 250—471 **7 Claims**



1. In an X-ray apparatus including a base and a carriage for carrying a film, the improvement in combination therewith of means for displacing said carriage comprising a frame which is linearly displaceable on said base in a first direction, said carriage being carried by said frame and being displaceable linearly on said frame in a second direction normal to said first direction, first drive means for moving said carriage in said second direction comprising a system of pulleys and a cord of fixed length extending about said pulleys with ends of the cord fixedly secured on said base at first and second fixed points, said pulleys including a stationary pulley means fixed on said base, first and second carriage pulleys on said carriage, and first and second pairs of frame pulleys on said frame, one pair generally adjacent each of said carriage pulleys, said cord formed as a principal loop extending from said first fixed point to said stationary pulley means and back to said second fixed point, said cord further formed into two secondary loops, each situated along the principal loop intermediate one end of the cord and said stationary pulley means, wherein said cord from said first fixed point extends to one of the pulleys of said first pair of frame pulleys, then to the first carriage pulley, then to the other of said first pair of frame pulleys, then to said stationary pulley means, then to one of the pulleys of said second pair of frame pulleys, then to the second carriage pulley, to the remaining frame pulley, and then to the second fixed point, said drive means further comprising motor means for displacing a portion of said cord extending between said two carriage pulleys for moving the carriage in said second direction.

3,848,135
RADIATION SOURCE HOLDER

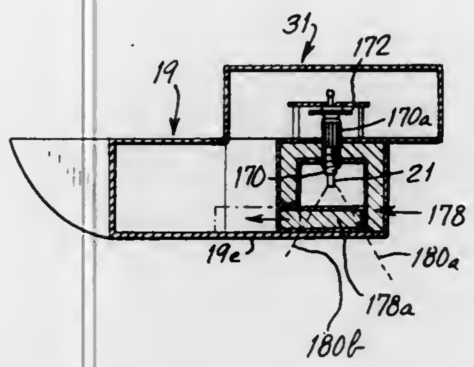
Thomas E. Reim, Willowick; Jerry J. Pollack, Brookpark, and Robert A. Kemmerling, Cleveland, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Division of Ser. No. 720,057, April 10, 1968, abandoned. This application Oct. 29, 1970, Ser. No. 85,247

Int. Cl. G21h *5/00*

U.S. Cl. 250—496 **1 Claim**

1. A plow for holding a source of radiation for acting upon a granular material, comprising a flat-bottomed housing for containing the source of radiation, said housing having a forwardly directed wedge-shaped and flat-bottomed front portion toward which the material is directed in a stream of material for dividing the material so that it passes on both sides of and underneath the housing, said wedge-shaped portion being forwardly terminated in a prow extending forwardly toward the material applied to the plow, said prow comprising a vertically disposed plate curved on a leading edge thereof from the upper part of its forward end down to the lower part of its rearward end to permit the material to pass by both sides of and underneath the housing.



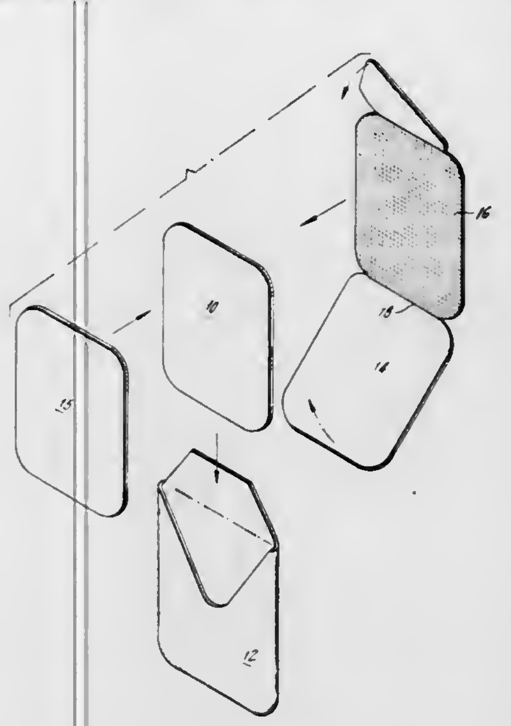
3,848,136
APPLICATION OF DIMENSION INDICIA TO X-RAY EXPOSURE

Leslie W. Seldin, 40 E. 66th St., New York, N.Y. 10021

Filed Apr. 20, 1973, Ser. No. 353,204

Int. Cl. G03b *41/16*

U.S. Cl. 250—476 **18 Claims**



1. An X-ray film package for applying dimension indicia on the developed X-ray film, comprising:

a sealable, light excluding, thin envelope, having a pocket defined therein and having a first surface;

an X-ray film having a first surface which is to be exposed to X-radiation; said film being positioned in said envelope pocket and said film first surface facing said first surface of said envelope; said envelope first surface being comprised of X-radiation transparent material;

X-radiation opaque material arranged to define dimension indicia and supported in position near said film first surface and on the side of said first film surface that faces toward an X-ray source;

whereby exposure of said X-ray film package to X-radiation impinged upon said envelope first surface produces a photographic image of the dimension indicia on said film first surface.

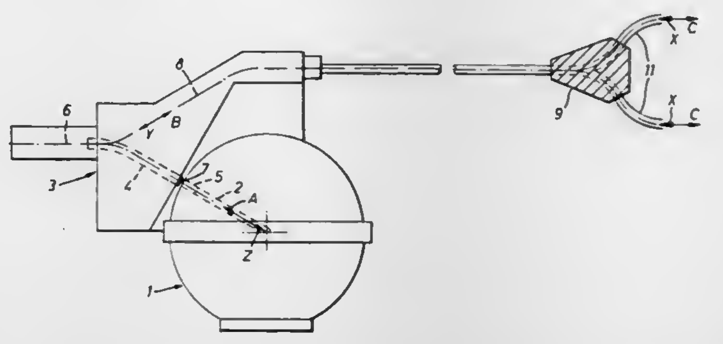
3,848,137
HANDLING OF RADIO-ACTIVE SOURCES

Jack Ellis, London, England, assignor to Sidney Geoffrey Young, London, England

Filed Apr. 9, 1973, Ser. No. 348,896

Int. Cl. G21f *5/00*

U.S. Cl. 250—497 **7 Claims**



1. A method of handling an isotope capsule carried at the end of a radio-active source holder, comprising retracting the source holder from one position into a curved passage of a guide member through an inlet at one end of the passage, turning the guide member through an angle of less than 360° about the central axis of the other end of the passage, and then ejecting the source holder through the inlet into a different position.

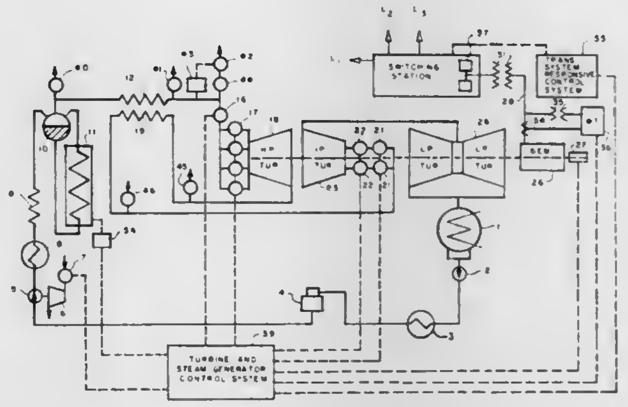
3,848,138
METHOD OF EFFECTING FAST TURBINE VALVING FOR IMPROVEMENT OF POWER SYSTEM STABILITY

Robert H. Park, Brewster, Mass., assignor to Fast Load Control Inc., Brewster, Mass.

Continuation-in-part of Ser. No. 244,594, April 12, 1972. This application Aug. 15, 1973, Ser. No. 388,619

Int. Cl. F01k *13/02*

U.S. Cl. 290—40 **16 Claims**



1. In a steam-electric installation which incorporates a reheater, power operated relief valves located ahead of the high pressure turbine, which are so controlled as to open and discharge steam to atmosphere when pressure ahead of the valve or valves exceeds a preset value that is less than that at which the turbine's high pressure safety valves are set to open, and to reclose when pressure falls below a preset value which exceeds normal operating pressure ahead of the turbine, which installation is part of a power system which includes a plurality of prime mover driven generators, which generators are interconnected by a plurality of transmission circuits, the method of employing fast turbine valving as a way to avoid development of system instability as a consequence of stability endangering events of a type adapted to cause the generator of the said installation to experience a sudden at least momentary reduction of load, which comprises the steps of,

1. providing within the turbine and steam generator control system, for response to a fast valving initiation signal

input by bringing into effect preprogrammed jointly effected processes of,

a. intercept valve closure effected fast enough to have a favorable effect on generator rotor first swing stability, and control valve repositioning plus intercept valve reopening so effected as to cause turbine driving power subsequent to generator rotor first forward swing to hold below a preset value that is less than the driving power that applied prior to the event that brought about development of the signal,

b. runback of rate of steam production within the steam generator to a value that will cause termination of the discharge of steam through said power operated relief valves that will at first take place, with provision so that said runback is effected rapidly enough to avoid overheating of the reheater,

2. providing in a preprogrammed manner so that a fast valving signal is generated and transmitted as an input to the turbine and steam generator control system on the occurrence of certain types of events that endanger preservation of system stability.

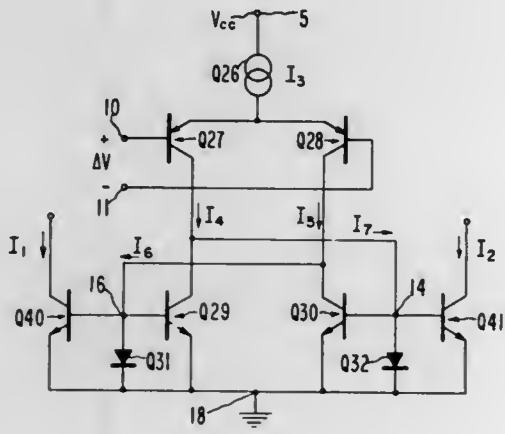
3,848,139
HIGH-GAIN COMPARATOR CIRCUIT

James G. Holt, Jr., Mountain View, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Sept. 14, 1973, Ser. No. 397,494

Int. Cl. H03k *5/20*

U.S. Cl. 307—235 R **7 Claims**



1. A high-gain comparator circuit producing first and second bilevel output signals in response to differences in magnitude of first and second input signals, said circuit comprising:

a. a current source means coupled to a first reference potential for producing a substantially constant current I_3;

b. first and second switching means coupled to said source means for passing variable currents I_4 and I_5, respectively, wherein $I_3 = I_4 + I_5$, each of said first and second switching means possessing an output terminal, and each possessing a control input terminal for receiving a respective one of said first and second input signals;

c. third and fourth switching means having input terminals coupled to the output terminals of said first and second switching means for receiving said currents I_4 and I_5, respectively, each of said third and fourth switching means possessing an output terminal coupled to a second reference potential and each possessing a control input terminal cross-coupled to the output terminals of said second and first switching means, respectively;

d. first means coupled between the control input terminal of said third switching means and said second reference potential for developing said first bilevel output signal in response to said current I_5, wherein said first bilevel output signal controls shunting of said current I_4 through said third switching means to said second reference potential; and

e. second means coupled between the control input terminal of said fourth switching means and said second reference potential for developing said second bilevel output signal in response to said current I_4, wherein said second bilevel output signal controls shunting of said current I_5 through said fourth switching means to said second reference potential.

3,848,140
CONTROL CIRCUIT FOR THYRISTORS

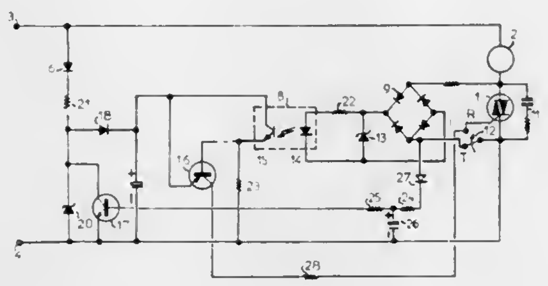
Georges Roger Guermeur, Belfort, and Daniel Seigneur, Bethoncourt, both of France, assignors to Societe Industrielle Honeywell Bull (Societe anonyme), Paris, France

Filed Dec. 26, 1972, Ser. No. 317,895

Claims priority, application France, Dec. 28, 1971, 71.47027

Int. Cl. H03k *17/00*

U.S. Cl. 307—252 **12 Claims**



1. Control circuit for the trigger of a thyristor or triac by detection of the zero passage through zero of the voltage applied to its terminals, characterized in that a rectifier circuit is linked to the terminals of the thyristor and is connected to a photoelectric-emission diode of a photocoupler which controls a first transistor by sending a signal to the trigger of the thyristor at the moment of the passage through zero of the voltage, the feed voltage of the aforementioned transistor being from the terminals of a Zener diode whose anode is linked to one of the feed conductors and the cathode of a second conductor over a resistor and a diode, a second transistor whose base is tied to the rectifier being mounted in parallel on the Zener diode.

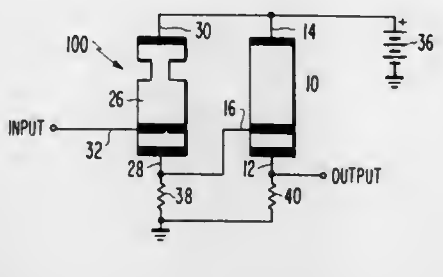
3,848,141
SEMICONDUCTOR DELAY LINES USING THREE TERMINAL TRANSFERRED ELECTRON DEVICES

Fred Sterzer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,862

Int. Cl. H03k *17/26*

U.S. Cl. 307—293 **15 Claims**



1. A semiconductor delay line comprising:

a. a first transferred electron device having input, output and third terminals, said device generating an output signal in response to a predetermined D.C. bias voltage coupled to said first device third terminal and an input signal having a predetermined waveform coupled to said first device input terminal, said first device output signal having a nonuniform current characteristic;

b. an active element having input and output terminals;

c. means for biasing said transferred electron device at a voltage above its domain sustaining voltage and below its threshold voltage;

d. means for biasing said active element below its triggering threshold; and

e. means for coupling said first device output signal from said first device output terminal to said input terminal of said active element whereby said active element will be triggered by said transferred electron device into generating an active element output electrical signal having said input signal waveform following a delay determined by said nonuniform current characteristic of said transferred electron device output signal, said biasing means for said transferred electron device and said threshold level of said active element.

3,848,142
ENVELOPE SIGNAL FORMING CIRCUIT

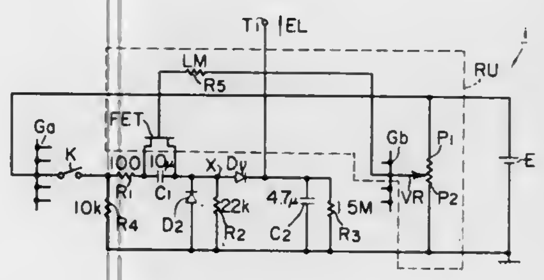
Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Mar. 20, 1973, Ser. No. 343,048

Claims priority, application Japan, Mar. 22, 1972, 47-28721; Mar. 22, 1972, 47-28722

Int. Cl. H03k *17/28*

U.S. Cl. 307—294 **1 Claim**



1. In an improved envelope signal forming circuit having a first charge-discharge capacitor, a diode, a second charge-discharge capacitor connected through said diode to said first charge-discharge capacitor, a first charge resistor connected in parallel to a series circuit consisting of said diode and said second charge-discharge capacitor, and a second discharge resistor connected in parallel to said second charge-discharge capacitor for producing as an envelope signal the voltage of said second charge-discharge capacitor, the improvement which comprises:

a field-effect transistor to control the envelope signal having a decaying waveform, said field-effect transistor having its drain and source electrodes directly connected across said first charge-discharge capacitor; and

a control voltage setting device comprising a variable resistor and a power source connected in parallel thereto, the wiper arm of said variable resistor being connected to the gate electrode of said field-effect transistor, the resistence of said field-effect transistor being controlled by the voltage set by said variable resistor to control the envelope signal.

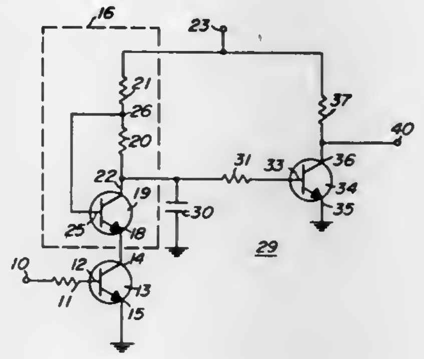
3,848,143
SELF-COMPENSATED AMPLIFIER CIRCUIT

Raymond J. Millington, and John R. Rexek, both of Coral Springs, Fla., assignors to Motorola, Inc., Franklin Park, Ill. Continuation of Ser. No. 198,594, Nov. 15, 1971, abandoned. This application Mar. 12, 1973, Ser. No. 340,851

Int. Cl. H03k *1/14*

U.S. Cl. 307—297 **9 Claims**

1. A semiconductor amplifier operable over the voltage range of a one cell battery and having a DC output voltage which varies inversely with the voltage applied by the one cell battery, said amplifier including in combination, a first transistor having base, emitter and collector electrodes, means coupling said emitter electrode to a reference potential, first resistance means having a first terminal coupled to said collector electrode and a second terminal, second resistance means having a first terminal coupled to said first resistance means second terminal and forming a first junction thereat, and a second terminal adapted to be coupled to the one cell battery, means coupling said base electrode to said first junction for providing a bias voltage at said base electrode substantially the same as the voltage at said first junction, and for maintaining a constant voltage at said first junction over the voltage range of the one cell battery, output circuit means coupled to said collector electrode, said collector electrode developing said output voltage thereat, said output voltage being less than the bias voltage at said base electrode and varying inversely with the voltage of the one cell battery.



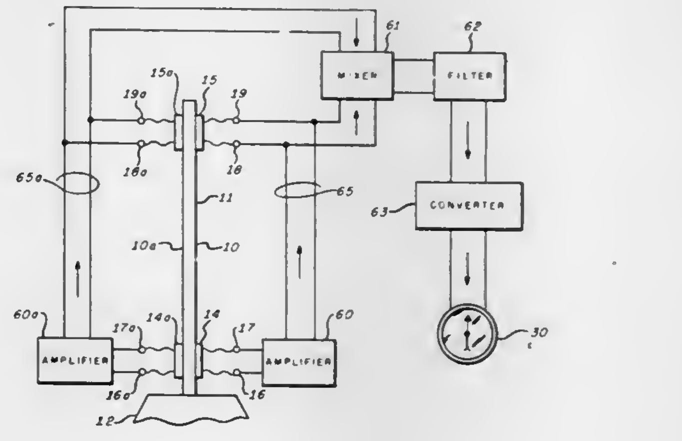
3,848,144
ACOUSTIC DELAY SURFACE WAVE MOTION TRANSDUCER SYSTEMS

Lloyd R. Schissler, Jamaica Plain, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 11, 1973, Ser. No. 350,274

Int. Cl. H01v *7/00*

U.S. Cl. 310—8.1 **15 Claims**



1. Transducer means comprising:

flexure means having first and second opposed flexible surface layer means for separately propagating respective acoustic waves along first and second respective predetermined paths therein,

first and second exciter means for exciting and propagating said respective first and second acoustic waves along said respective predetermined paths,

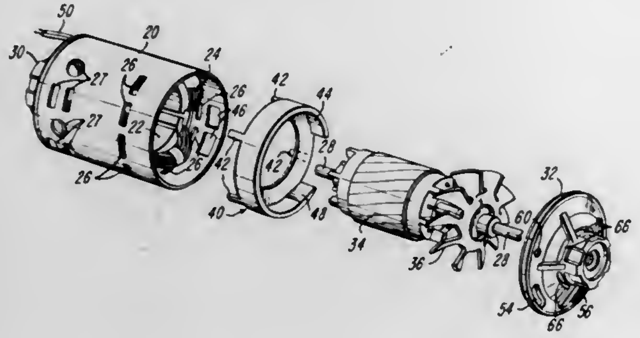
first and second receiver means along said respective predetermined paths for receiving and converting said acoustic waves into electric signals,

first and second respective feed back means for coupling said first receiver means to one of said first exciter means and for coupling said second receiver means to second exciter means for forming respective first and second self-resonant closed loop circuit means oscillating at different respective first and second odd multiples of a predetermined frequency, and

signal processor means jointly responsive to said first and second closed loop circuit means for deriving a measure of the flexure of said flexure means.

3,848,145
ELECTRIC MOTOR VENTILATION

Robert W. Goebel, and George R. Marous, both of Springfield, Ohio, assignors to Robbins & Myers, Inc., Springfield, Ohio
Filed Jan. 22, 1973, Ser. No. 325,229
Int. Cl. H02k *9/06*
U.S. Cl. 310—60 **4 Claims**

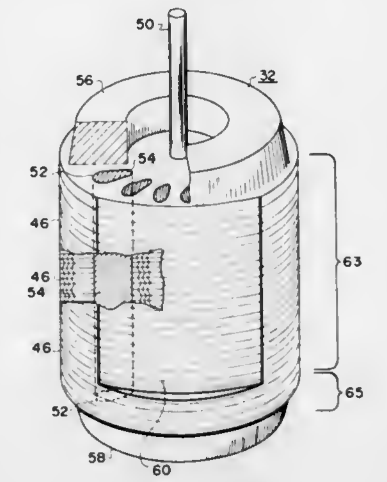


1. In an electric motor adapted for use within the cabinet of a business machine and including a shell supporting a stator, a rotor extending through said stator and including a rotor shaft, a set of end bells mounted on the end portions of said shell and confining bearings for rotatably supporting said shaft, an air exhaust opening within one end portion of said shell, and a centrifugal fan mounted on said rotor shaft within said one end portion of said shell between said stator and one of said end bells, the improvement comprising an annular radial baffle wall positioned within said shell between said stator and said fan and defining a first air inlet on one axial end of said fan, a substantially cylindrical shroud extending around said fan and having a peripheral opening aligned with said air exhaust opening within said shell, said cylindrical shroud and said radial baffle wall being integral and forming a unit within said shell, said one end bell defining another air inlet opening on the opposite axial end of said fan, and said one end bell also defining an air exhaust opening disposed radially outwardly of said air inlet opening within said one end bell to effect improved cooling and ventilating of said motor and said cabinet.

3,848,146
AC MOTOR

John Allen Tourtellot, Indianapolis, and Frederick Roland Stave, Oaklandon, both of Ind., assignors to RCA Corporation, New York, N.Y.
Continuation of Ser. No. 240,037, March 31, 1972, abandoned. This application Aug. 6, 1973, Ser. No. 385,667
Int. Cl. H02k *19/14*
U.S. Cl. 310—163 **3 Claims**

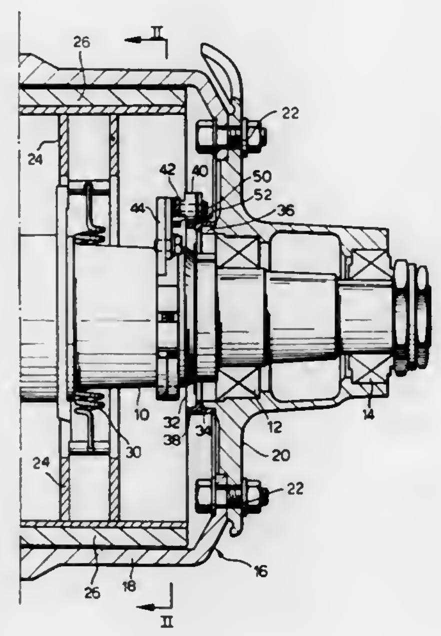
1. A synchronous motor comprising:
a stator having a pair of poles;
means for producing a rotating single phase magnetic field between said poles;
a rotor rotatably mounted on an axis between said poles, said rotor including a plurality of washer-like members each having a plurality of annularly disposed openings;
said plurality of washer-like members disposed with corresponding openings in registration;
a squirrel-cage assembly including end members and portions extending through said washer openings, said assembly being formed of a cast conductive metal having said end members integrally formed with said portions extending through said washer openings; and
said rotor having only first and second groups of said washer-like members with the peripheral shape of each group defining a differing outer surface contour of said rotor, each of the members of said first group including arcuate peripheral portions concentric with said rotation axis interconnected by further peripheral portions in non-concentric and non-radial relation with said rotation axis,



and each of the members of said second group having all peripheral portions arcuate and substantially concentric with said rotation axis to provide starting torque for said motor, and said concentric and non-concentric peripheral portions of all of said first group members being disposed with corresponding peripheral surfaces in registration.

3,848,147
ANGULAR VELOCITY DETECTOR

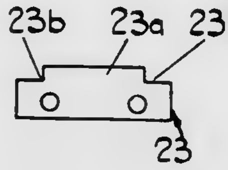
Giovanni Anselmino, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy
Filed Dec. 13, 1972, Ser. No. 314,640
Claims priority, application Italy, Dec. 14, 1971, 071085/71
Int. Cl. H02k *19/24*
U.S. Cl. 310—168 **2 Claims**



1. A vehicle wheel hub and axle assembly comprising a fixed axle, roller bearings mounted on said axle, a wheel hub supported on said bearings for rotation about the axle, and an angular velocity detector including a tone wheel mounted on said hub and an electromagnetic pickup mounted on said axle wherein said hub has an integral rim provided with a cylindrical and a lateral annular face and said tone wheel is in the form of a ring having a plurality of teeth located on the radially outer surface of the ring, a radially inner cylindrical surface seating on the cylindrical surface of the hub and a radially inwardly projecting flange having a lateral annular face abutting the lateral annular face on the rim of the wheel hub, said assembly further comprising means for fixedly attaching said electromagnetic pickup to said axle comprising first and second arcuate half-shells shaped to fit over said axle, bolting means for bolting said first and second arcuate half-shells together and means for mounting said electromagnetic pickup on one of said arcuate half-shells.

3,848,148
STARTER MOTORS

Ronald Wilson, Birmingham, England, assignor to The Lucas Electrical Company Limited, Birmingham, England
Filed Nov. 7, 1973, Ser. No. 413,455
Claims priority, application Great Britain, Nov. 10, 1972, 51994/72
Int. Cl. H02k *1/06;* **F02n** *11/02*
U.S. Cl. 310—209 **4 Claims**

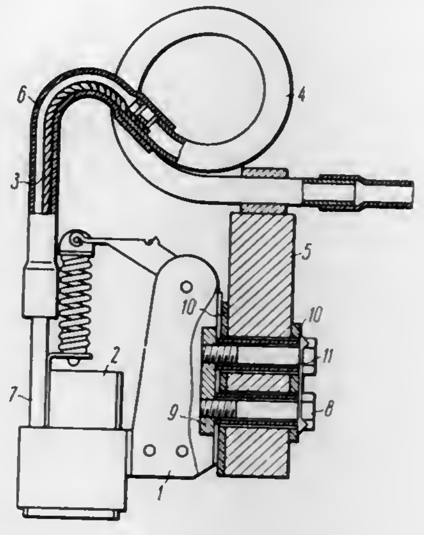


1. A starter motor, for an internal combustion engine, comprising an electric motor, a shaft rotatable by said motor and carrying a pinion gear wheel, the pinion gear wheel being rotatable with said shaft and being movable axially relative to the shaft between a rest position and an operative position, and an electromagnet including an armature coupled to the pinion gear wheel said armature and said pinion gear wheel being movable axially relative to said shaft, a plurality of electromagnetic poles equi-angularly spaced around the axis of said shaft in a plane at right angles to said axis and spaced apart by an amount such that the armature can enter between the poles, the poles being spaced from the armature, in the rest position thereof, in the direction of movement of the armature relative to the shaft, each pole being shaped so that the surface of each pole presented to the armature in the rest position of the armature includes regions spaced from the armature by different distances in the direction of movement and the armature, and equally spaced from said shaft in a radial direction, a member magnetically interconnecting the poles, and an electromagnet winding associated with the poles so that when energised the winding induces a flow of magnetic flux between the poles and the armature, within the armature at right angles to its direction of movement, and between the poles, by way of said member, so that the armature is attracted to the poles, the arrrangement of said regions of the pole surfaces being chosen to achieve a predetermined attraction between the poles and the armature during the movement of the armature towards the poles.

3,848,149
ELECTRIC MACHINE ROTOR CURRENT COLLECTING DEVICE

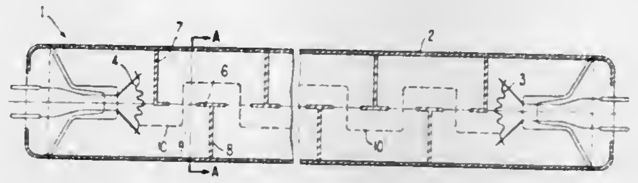
Aron Beniaminovich Shapiro, Basseinaya ulitsa, 53, kv.71; Vladimir Pavlovich Chernyavsky, Pulkovskaya ulitsa, 17, kv. 185, and Ibragim Akhmedovich Kadi-Ogly, Tallinskoe shosse, 66, kv. 180, all of Leningrad, U.S.S.R.
Filed Nov. 8, 1972, Ser. No. 304,830
Int. Cl. H02k *13/12*
U.S. Cl. 310—229 **4 Claims**

1. An electric machine rotor current-collecting device comprising electric brushes sliding over the machine slip rings, current-collecting buses and current leads connecting the electric brushes with the current-collecting buses, the electrical resistance of each current load being substantially equal to the electrical resistance of the electric brush wiping contact at the rated current of said brush, said brush current leads being made of a flexible steel conductor and enclosed in pipes of resilient insulating material through which a liquid coolant flows.



3,848,150
DISCHARGE LAMP WITH BAFFLE PLATES

Andre Marc Victorin Taxil, Rueil-Malmaison, and Raymond Claude Emile Boucher, La Garenne Colombes, both of France, assignors to ITT Industries, Inc., New York, N.Y.
Filed Mar. 14, 1973, Ser. No. 341,004
Int. Cl. H01j *61/10*
U.S. Cl. 313—204 **8 Claims**



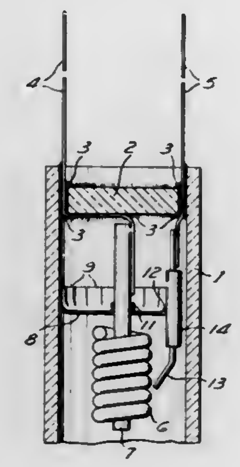
1. A metal-vapor discharge lamp comprising a longitudinal envelope having a metal-vapor therein, electrodes at opposite ends of said envelope, a longitudinal baffle plate dividing said envelope into upper and lower spaces connected through apertures in said plate, and a plurality of lateral baffle plates supported in said envelope between said electrodes forming a lengthened meandering discharge path through said vapor.

3,848,151
CERAMIC ENVELOPE LAMP HAVING METAL FOIL INLEADS

Charles I. McVey, Shaker Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed Oct. 23, 1973, Ser. No. 408,523
Int. Cl. H01j *61/36*
U.S. Cl. 313—217 **10 Claims**

1. An electric discharge lamp comprising:
an envelope formed of crystalline alumina ceramic tubing;
ceramic closure pieces at the ends of the tubing sealed in place by a fused sealing material;
a light-emitting filling within said envelope and electrodes in the ends thereof;

and inleads connected to said electrodes and comprising thin metal foils extending through narrow apertures next to the ceramic closure pieces, said foils being wetted by and embedded in said sealing material.



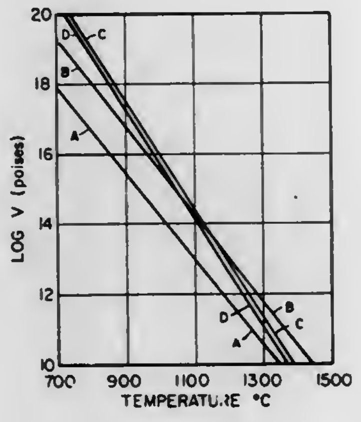
3,848,152
ELECTRIC LAMP HAVING A FUSED SILICA GLASS ENVELOPE

Peter C. Schultz, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed June 6, 1972, Ser. No. 260,100

Int. Cl. H01j *5/04*

U.S. Cl. 313—221 **3 Claims**



1. An electric lamp capable of operation at a temperature of 800°-1150°C. under an internal pressure of up to 100 atmospheres comprising a light source within a glass envelope, said glass envelope being colorless and ultraviolet absorbing and consisting essentially of a high purity fused silica glass containing, as an additive to its composition on a cation mole percent basis, 0.01-1.0% of an oxide selected from the group consisting of SnO_2, GeO_2, Fe_2O_3, WO_3, MoO_3, and Ta_2O_5.

3,848,153
ELONGATED ELECTRON-EMISSION CATHODE ASSEMBLY AND METHOD

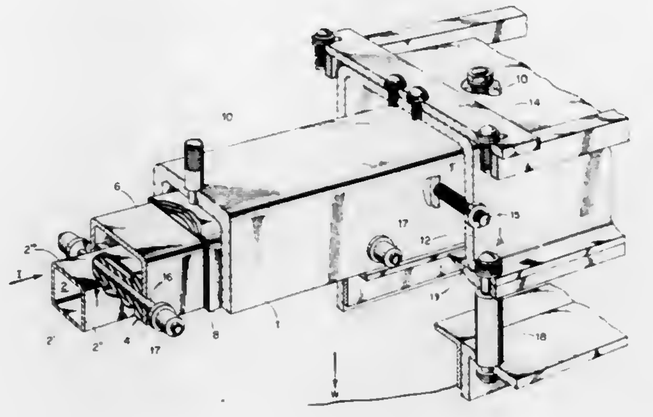
Bertram S. Quintal, Peabody, and Derek J. Maynard, Danvers, both of Mass., assignors to Energy Sciences Inc., Burlington, Mass.

Division of Ser. No. 256,887, May 25, 1972, Pat. No. 3,745,396. This application Mar. 30, 1973, Ser. No. 346,324

Int. Cl. H01j *19/06*

U.S. Cl. 313—346 **3 Claims**

1. A method of producing an elongated cathodic electron emission, that comprises, heating the wall portions of a tubular conductive member to electron-emission temperature, reflecting the heat radiated by all of the wall portions of the tubular member except one continuously back upon such wall portions exposing said one wall portion to emit electrons therefrom, preventing said tubular member from sagging and otherwise distorting under said heating and reflected heat to provide a substantially uniform elongated electron emission, and expanding such electron emission into a substantially uniform wider electron beam curtain.



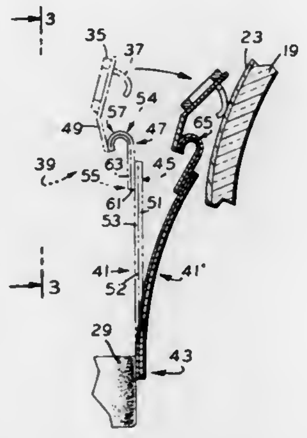
3,848,154
CATHODE RAY TUBE ANTENNA GETTER STRUCTURE COMPRISING PERMANENT PHASE TRANSFORMATION BIMETALLIC MATERIAL

Robert J. Bowes, Seneca Falls, N.Y., and Donald R. Kerstetter, Emporium, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Dec. 13, 1973, Ser. No. 424,411

Int. Cl. H01j *19/70, 29/00*

U.S. Cl. 313—481 **11 Claims**



1. In a cathode ray tube having a longitudinal axis therethrough and an encompassing envelope strucutre integrally formed of a neck portion with an electron generating means spatially positioned therein, and infundibular portion, and a viewing panel having a cathodoluminescent screen disposed on the interior surface thereof, a heat deformable antenna getter structure formed to achieve predetermined positioning of the getter container relative to the interior surface of the envelope, said structure comprising:

a longitudinal positioning member formed of a strip of alpha bilaminate metallic material of predetermined flexure performance having aft and fore attachment areas, said aft attachment area being substantially terminally affixed to said electron generating means and said fore attachment areas being positioned between said longitudinal axis and said infundibular portion, said alpha bilaminate material being formed of a first lamina of an alpha active alloy material metallurgically bonded along a common interface to a second lamina of an alpha passive alloy material, said alpha active alloy material upon being subjected to an alpha predetermined temperature undergoes a metallurgical phase transformation effecting a set volume change thereof, said alpha passive material remaining in a substantially stable single metallurgical phase state throughout a temperature range wherein said alpha predetermined temperature is included, said positioning member having a formed primary shape effected prior to tube assembly, the alpha active lamina portion of said primary shaped positioning member upon reaching an alpha predetermined temperature during tube processing transforms to said metallurgical phase thereby imparting an arcuate movement to the positioning member in a direction radially outward from said axis producing a resultant flexure therein to effect a set secondary structural shape and movement of the positioning member toward the infundibular portion of said envelope;

a terminal getter orientation means affixed to the fore attachment area of said bilaminate positioning member, said orientation means being formed of a strip of beta bilaminate metallic material of predetermined flexure performance having proximal and distal ends of which said proximal end is affixed to the fore attachment area of said positioning member, said beta bilaminate material being comprised of first and second laminae of beta active and beta passive alloy materials respectively, said beta active material having a beta metallurgical phase transformation temperature higher than that of the alpha active lamina in said alpha bilaminate material, said terminal orientation means being discretely shaped to effect a configurative change from a primary to a secondary shaping thereby providing a related arcuate movement of said orientation means relative to said positioning member during getter vaporization processing;

a getter container associated with said terminal positioning means in a manner oriented to direct vaporized material substantially toward the interior of said tube; and

contact means associated with said terminal positioning means relative to the distal end thereof oriented toward the wall of said envelope to effect contact therewith during tube processing.

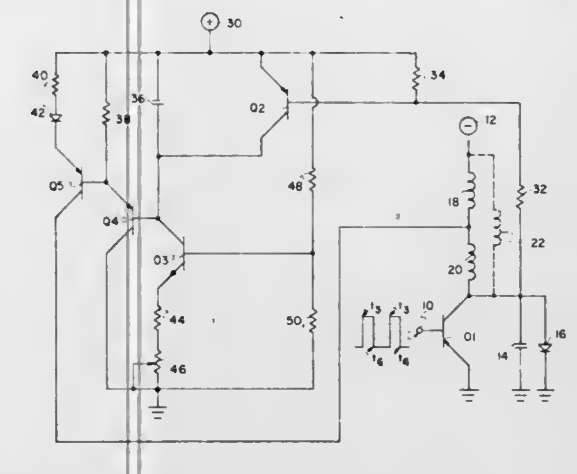
3,848,155
CRT LINEAR SWEEP CONTROL CIRCUIT

Robert J. Titus, and William J. Kelly, both of Sauquoit, N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,540

Int. Cl. H01j *29/70*

U.S. Cl. 315—27 TD **4 Claims**



1. A sweep circuit for causing a linear sweep current to flow through a deflecting coil comprising means for applying a step voltage across said coil to initiate each sweep waveform, the main sweep current which flows through the coil responsive to the application of said step voltage being non-linear toward the end of the sweep waveform as a result of resistance in the coil circuit, and means for generating a ramp current and injecting it into said coil in the same direction as said main sweep current during each sweep waveform starting at a time when the main sweep current tends to become substantially non-linear such that the total current through said coil during each complete sweep rises substantially linearly, further including means for generating retrace pulses, means for initiating the operation of said ramp current generating means responsive to the generation of a retrace pulse, means for delaying the generation of said ramp current after the initiation of the operation of said ramp generating means for a substantial time interval after the start of each main sweep current waveform until said main sweep current waveform tends to become substantially non-linear.

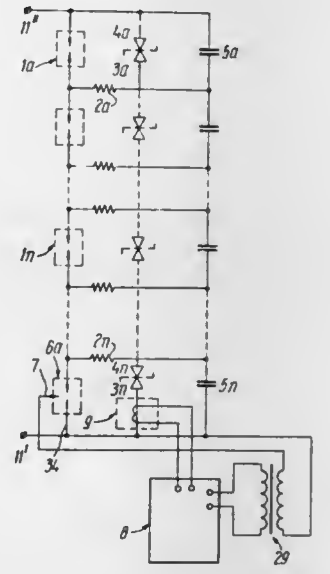
3,848,156
SURGE ARRESTOR FOR HIGH VOLTAGE ELECTRIC POWER APPLICATIONS

Jury Georgievich Tolstov, Kutuzovsky prospekt, 2/1, kv. 214, Moscow; Vladimir Efremovich Skorovarov, ulitsa Tsiolkovskogo, 2, kv. 5, Dolgoprudny Moskovskoi oblasti; Boris Ilich Grinshtein, Nagatinskaya naberezhnava, 64, kv. 80, Moscow; Valentina Gavrilovna Stepanova, 2 Kozhevnichesky pereulok, 3, kv. 4, Moscow; Ivan Pavlovich Bashkatov, ulitsa Lobachevskogo, 8, kv. 21, Moscow; Jury Danilovich Vinitsky, ulitsa Chertanovskaya 39, korpus 2, kv. 56, Moscow; Valery Ottovich Balyasinsky, ulitsa 14 Parkovaya, 6, kv. 24, Moscow, and Valery Pavlovich Shmurov, ulitsa Vvedenskogo, 13, korpus 1, kv. 321, Moscow, all of U.S.S.R.

Continuation of Ser. No. 255,272, May 22, 1972, abandoned. This application July 2, 1973, Ser. No. 375,678

Int. Cl. H02h *7/24*

U.S. Cl. 315—36 **5 Claims**



1. A surge arrestor for protecting apparatus in high-voltage electric power applications, comprising: at least one string of at least two avalanche diodes connected in series opposition, said at least one string serving for limiting voltage across the electric apparatus being protected;

at least one uncontrolled discharge device;

at least one controlled discharge device having an ignitor and being governed by a current sensor and connected in series configuration with said at least one uncontrolled discharge device to form an additional string, said discharge devices protecting the strings of avalanche diodes connected in series opposition from excessive power dissipation;

a decoupler connected between said at least one string and each of said discharge devices so that said string is in shunt with said discharge devices;

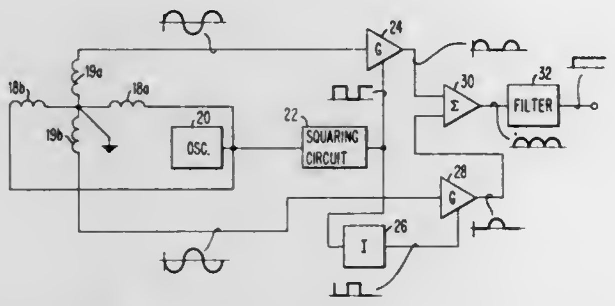
a capacitor connected in shunt with each discharge device of said additional string;

a current sensor having an output and connected in series with said at least one string of avalanche diodes;

a control unit having an input and output and connected to said at least one controlled discharge device with said input connected to the output of said current sensor and said output coupled through a pulse transformer to said ignitor, said controlled discharge device initiating discharge of all uncontrolled discharge devices connected in series configuration thereacross when said control unit sends a trigger signal to said controlled discharge device.

3,848,157
BRUSHLESS DC-TACHOMETER

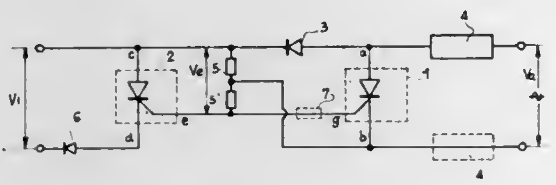
Josef F. Kripl, deceased, late of Binghamton, N.Y. (by Maria A. Kripl, executrix), assignor to International Business Machine Corporation, Armonk, N.Y.
Filed Oct. 11, 1972, Ser. No. 296,735
Int. Cl. H02k *17/42*
U.S. Cl. 317—5 **3 Claims**



1. A device for sensing the rotational direction and speed of a rotatable member comprising
a signal generator having
a non-magnetic conductive rotor attached for rotation by said rotatable member; a pair of input windings proximate said rotor; a pair of output sense windings in quadrature with said input windings proximate said conductive rotor,
said output sense windings being electromagnetically coupled to said input windings solely through said rotor,
said output sense windings providing a pair of alternating output signals during rotation of said rotatable member having a phase relation and amplitude dependent on the direction and speed of rotation of said rotor;
energizing means connected to said input windings for applying an alternating energizing current of predetermined frequency and amplitude to said input windings;
and circuit means synchronized by said energizing means for converting said pair of alternating output signals from said output windings to a single unidirectional signal having a polarity and amplitude related to the direction and speed of said rotor.

3,848,158
STATIC RELAYS SYNCHRONIZED ON THE PASSAGE TO ZERO

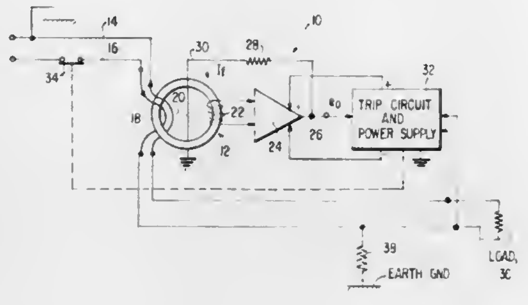
Guy H. Dumas, Paris, France, assignor to Silec-Semi-Conducteurs, Paris, France
Filed June 7, 1973, Ser. No. 367,938
Claims priority, application France, Nov. 29, 1972, 72.42444
Int. Cl. H02h *7/22*
U.S. Cl. 317—11 A **10 Claims**



1. A solid-state, static relay circuit comprising:
a pair of power terminals adapted to be connected in series with a load and a source of alternating or rectified alternating supply voltage,
first controllably conductive semiconductor means having a pair of main electrodes and a control electrode, said pair of main electrodes being connected to said pair of power terminals,
second controllably conductive semiconductor means having a pair of main electrodes and a control electrode, said control electrode and one of said main electrodes of said second controllably conductive semiconductor means being connected to said control electrode and one of said main electrodes of said first controllably conductive semiconductor means, and
a pair of control terminals adapted to be connected to a control signal source and being connected to said pair of main electrodes of said second controllably conductive semiconductor means,
whereby said static relay circuit can be triggered only when a control signal is provided at said pair of control terminals and said supply voltage passes through approximately zero or is lower than a threshold value which is related to the amplitude of said control signal.

3,848,159
GROUND FAULT DETECTOR CIRCUIT WITH FEEDBACK TO SENSOR

Dudley D. Nye, Jr., and Daniel J. Eisenstadt, both of Fort Lauderdale, Fla., assignors to Airpax Electronics Incorporated, Cambridge, Md.
Filed June 18, 1973, Ser. No. 370,754
Int. Cl. H02h *3/28*
U.S. Cl. 317—18 D **19 Claims**



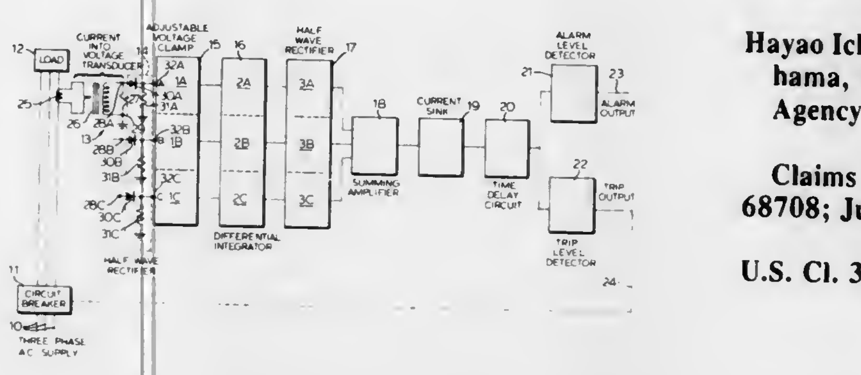
1. Apparatus for detecting ground faults between one of a plurality of transmission lines and earth-ground comprising:
a magnetically permeable core surrounding the transmission lines for generating a magnetic flux proportional to a current differential between the transmission lines; means coupled to said core for producing a signal having an amplitude related to said magnetic flux; and means responsive to said signal for generating a flux opposing said differential current induced flux, the amplitude of said signal being proportional to said current differential with core permeability characteristics being substantially removed.

3,848,160
CIRCUIT FOR DETECTING PHASE UNBALANCE IN A THREE PHASE SUPPLY

David Richard Boothman, Ennismore, and David Walter Nutt, Peterborough, Ontario, both of Canada, assignors to Canadian General Electric Company, Limited, Toronto, Ontario, Canada
Filed May 21, 1973, Ser. No. 362,366
Int. Cl. H02h *3/26*
U.S. Cl. 317—27 R **9 Claims**

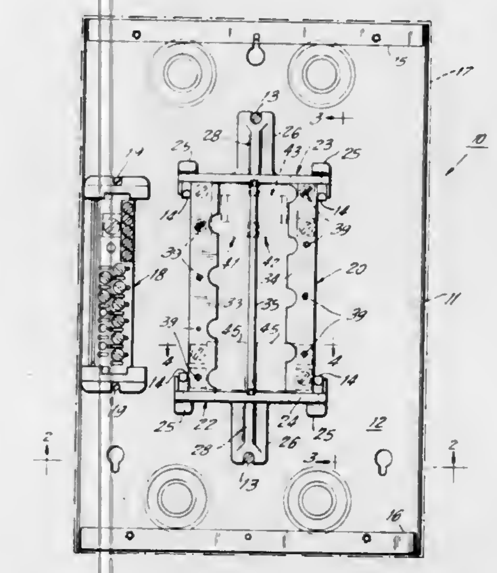
1. A circuit for detecting the largest of three electric signals of like polarity comprising three differential integrating circuits, each circuit having two inputs and one output; means for applying two different ones of said three signals to the

respective inputs of each integrating circuit, each one of said integrating circuits integrating the difference between its input signals and giving an output signal proportional to this difference; means for selecting signals of the same polarity from said output signals; means for summing all said selected signals and outputting a voltage representative of the algebraic sum thereof; and means for detecting the signal level of the sum of said selected signals.



3,848,161
PANELBOARD WITH PROVISION FOR OPTIONAL USE WITH MAIN BREAKER OR MAIN LUGS WITH SPACED INSULATORS SUPPORTING MAIN BUS BARS

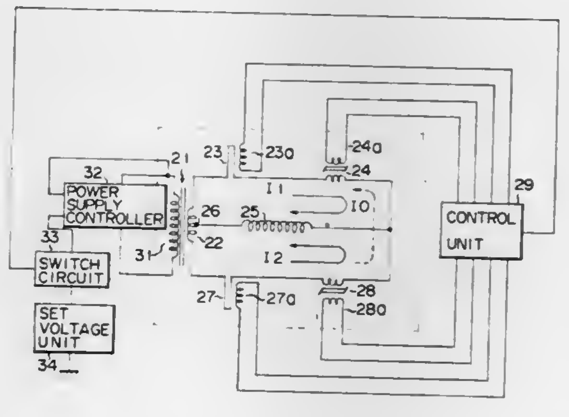
Ralph C. Clement, Bellefontaine, Ohio, assignor to I-T-E Imperial Corporation, Spring House, Pa.
Filed Sept. 5, 1973, Ser. No. 394,442
Int. Cl. H02b *1/04*
U.S. Cl. 317—119 **6 Claims**



1. An electric distribution panel including a relatively shallow panlike housing; first and second inulsator members of substantially equal size and shape mounted in spaced relation to the rear wall of said housing and extending forward therefrom; first and second elongated main conductors extending generally parallel to each other in a common plane parallel to said rear wall; each of said insulator members including a plurality of recesses wherein the ends of the conductors are entered to provide the sole support operatively mounting the conductors to the insulator means; a circuit breaker locating and supporting rib positioned between said main conductors with the ends of said rib being supported by said insulator members; each of said main conductors, at locations spaced along the length thereof, being provided with means defining circuit breaker connecting points; each of said insulator members including first and second guide apertures positioned in the vicinity of the respective first and second main conductors and slightly forward thereof to direct energizing cables for said panel to cable receiving openings of main lug means positioned inboard of the insulating members and connected to those of said connecting points at the ends of said conductors.

3,848,162
METHOD AND APPARATUS FOR CHARGING A SUPERCONDUCTIVE COIL

Hayao Ichikawa, Yokosuka, and Shinhachi Utsunomiya, Yokohama, both of Japan, assignors to The President of the Agency of Industrial Science and Technology, Tokyo, Japan
Filed July 11, 1973, Ser. No. 378,194
Claims priority, application Japan, July 11, 1972, 47-68708; July 11, 1972, 47-68709
Int. Cl. H01f *7/18*
U.S. Cl. 317—123 **11 Claims**



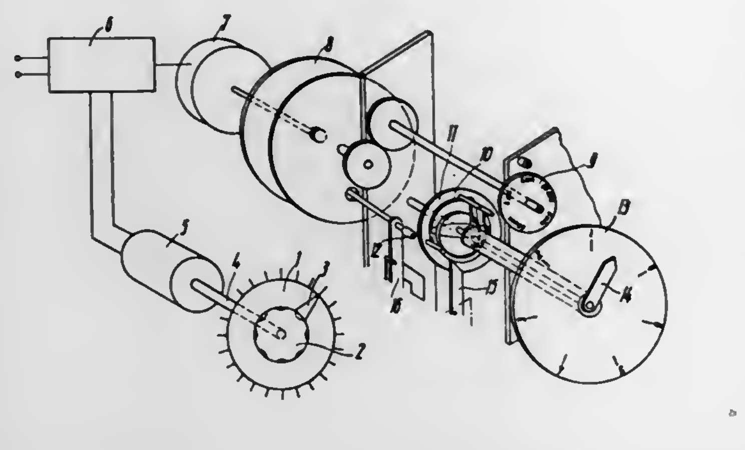
1. A method for charging a superconductive coil in a flux pump circuit provided in a very low temperature atmosphere and including a power source transformer and a first and a second circuit provided on the secondary winding side of the power source transformer and each led through a respective control switch to a superconductive coil, comprising the steps of:
during one half cycle, applying a rectangular wave voltage to a primary winding of the power source transformer in such a state that a control switch of the first circuit is turned ON and a control switch of the second circuit is turned OFF;
turning ON the second circuit when the power source transformer is saturated to cause the primary winding voltage to be reduced to zero;
applying a small opposite polarity voltage to the primary winding to cause a short-circuit current opposite in direction to electric current through the first circuit to be generated;
operating the control switch of the first circuit when the current of the first circuit is reduced to be zero; and supplying zero voltage to the primary winding for a predetermined time period equal at shortest to the time necessary for the control switch to complete its operation;
the other half cycle being identical with said one half cycle except the polarity is opposite; and
said steps being repeated so that charging current through the superconductive coil is cumulatively added.

3,848,163
TIMING RELAY

Helmut Schleicher, Berlin, Germany
Filed Nov. 12, 1970, Ser. No. 88,941
Claims priority, application Germany, Nov. 12, 1969, 1957911
Int. Cl. H01h *47/18*
U.S. Cl. 317—141 R **3 Claims**

1. In a timing relay designed for minimizing error in the operation of said relay comprising, a timing relay, a direct current motor coupled to said relay to provide for its actuation, a potentiometer electrically connected to said motor to control its speed of revolution, said relay incorporating time

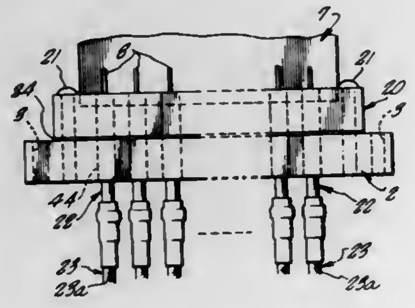
setting means to provide for adjustment in a timed opeation, and adjusting means connecting to said potentiometer and



which is capable of being set to regulate the speed of said motor in relation to the timing period set for operation of said relay.

3,848,164
CAPACITIVE ELECTRICAL CONNECTORS

Richard F. Otte, Los Altos, Calif., assignor to Raychem Corporation, Menlo Park, Calif.
Filed July 11, 1972, Ser. No. 270,812
Int. Cl. H01g *1/035*
U.S. Cl. 317—256 **9 Claims**



1. An electrical connector for providing a make-and-break connection between first electrical apparatus having a first set of electrical signal conductors, at least one of which comprises a common voltage node of said first electrical apparatus, and second electrical apparatus having a second set of electrical signal conductors, at least one of which comprises a common voltage node of said second electrical apparatus, comprising first electrically conductive block means for electrical connection to the voltage node of said first electrical apparatus,

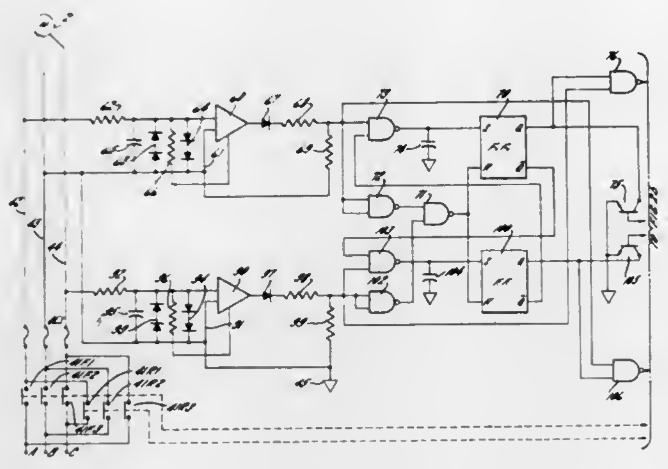
second electrically conductive block means including means for electrical connection to the voltage node of said second electrical apparatus,

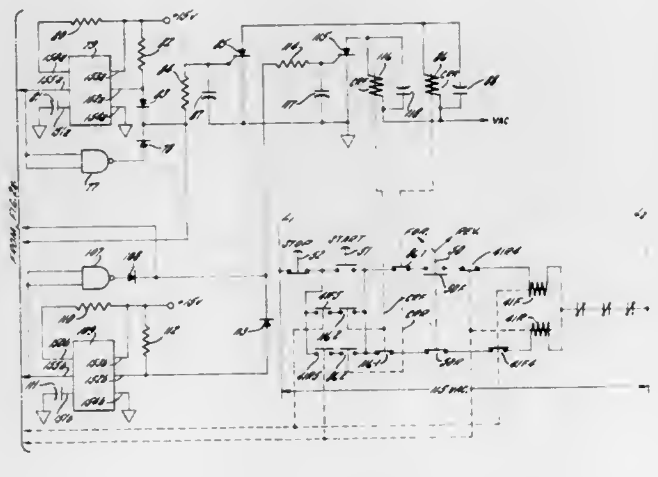
said first and second block means being physically mounted together with adjacent surfaces thereof separated only by a dielectric but closely contiguous to one another and forming a capacitance for providing capacitive coupling for carrying an alternating current signal from the voltage node of said second electrical apparatus to the voltage node of said first electrical apparatus, and at least another of the first signal conductors being electrically connected to at least another of the second signal conductors when said first and second block means are so mounted together, and

coupling means electrically connecting together said first and second block means for providing a direct current path therebetween.

3,848,165
BIDIRECTIONAL ZERO SPEED SWITCH

Francis E. Heiberger, Elmhurst, Ill., assignor to Danly Machine Corporation, Chicago, Ill.
Filed Oct. 25, 1973, Ser. No. 409,437
Int. Cl. H02p *1/40*
U.S. Cl. 318—207 R **6 Claims**



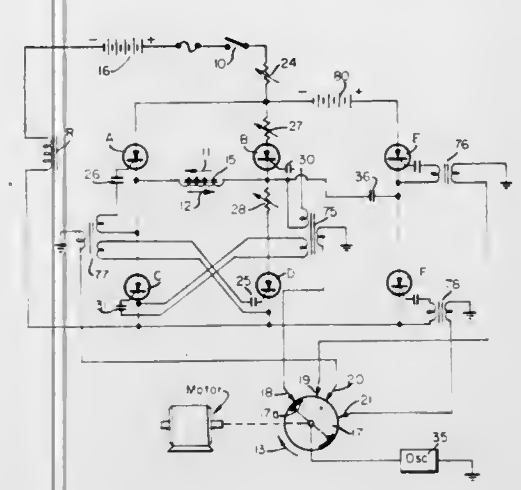


1. In a control circuit for a reversible polyphase a.c. induction motor having supply lines for providing polyphase voltage to the motor, the combination comprising a plurality of sensing means for sensing the voltage on the motor supply lines resulting from the applied voltage and the generator action of the motor and in response thereto emitting a plurality of output signals, logic means for comparing the relative phase of the plurality of output signals thereby to determine the presence and direction of motor rotation, and interlocking means responsive to the logic circuitry for selectively interrupting the motor control circuit thereby to allow voltage to cause either direction of rotation to be applied to the motor while at rest, but to allow voltage to be applied to the motor while coasting only if that voltage will cause the motor to continue in its direction of coast.

3,848,166
SILICON CONTROLLED RECTIFIER TYPE INVERTER FOR ELECTRIC MOTORS

Joseph Jamieson, Plantation, Fla., assignor to Louis W. Parker, Ft. Lauderdale, Fla.
Filed Jan. 22, 1973, Ser. No. 325,785
Int. Cl. H02p *5/28, 7/40*
U.S. Cl. 318—227 **14 Claims**

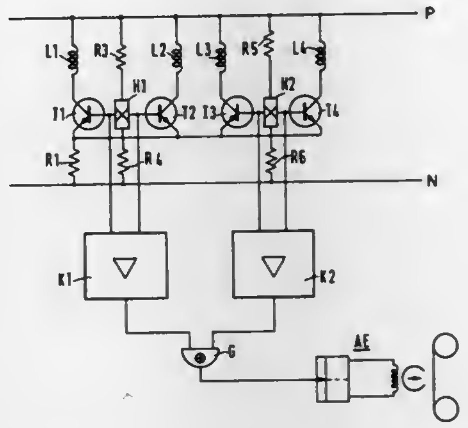
1. In combination, an electric motor having a rotor and at least one stator coil, a bridgetype current inverter connected to said motor, said inverter comprising first and second pairs of silicon controlled rectifiers connected to said stator coil of said motor, said first pair of rectifiers being poled in like direction to one another and in opposite direction to said second pair of rectifiers relative to said stator coil whereby conduction of said first pair of rectifiers effects current flow via said first pair in a first direction through said stator coil and conduction of said second pair of rectifiers effects current flow via said second pair in the opposite direction through said stator coil, said reversals in stator coil current flow direction cooperating with said rotor to produce a torque between said stator coil and rotor operative to effect rotary movement of said rotor, first control means coupled to each of the rectifiers in said first and second pairs of rectifiers for rendering alternate ones of said pairs of rectifiers conductive during alternate mutually exclusive periods of time, second control means operative during time intervals between said periods of time for shutting off the conducting pair of said rectifiers, said second control means including a capacitor, and selectively operable switch means for connecting said capacitor across one of the rectifiers in the conducting pair of said rectifiers, said first and second control means comprising a rotary commutator connected to the rotor of said motor and driven thereby, said commutator having a plurality of outputs which are energized at a rate and in a sequence determined by the rotation of said motor rotor, and means coupling said plurality of sequentially energized outputs to said switch means and to the gate electrodes of each of the rectifiers in said first and second pairs of rectifiers in a predetermined sequence to control the operating states of said switch means and rectifiers.



3,848,167
ARRANGEMENT FOR GENERATING A CLOCK FREQUENCY SIGNAL FOR RECORDING INFORMATION ON A DATA CARRIER

Dieter Ratschmeier, Schwaig; Reinhard Stark, and Jurgen Wenk, both of Nurnberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed June 27, 1972, Ser. No. 266,642
Claims priority, application Germany, July 1, 1971, 2132783
Int. Cl. G11b *5/00;* **H03k** *3/69*
U.S. Cl. 318—254 **4 Claims**

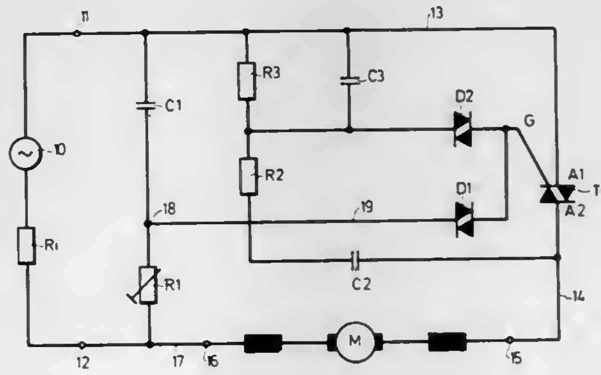
1. Arrangement for generating a clock frequency signal for recording digital information on a data carrier such as a magnetic tape or the like driven by a brushless direct-current drive motor having a permanent magnet rotor, a stator winding and electronic circuit means for inducing voltages in the stator winding in dependence upon the changing position of the rotor to produce a rotating stator field, the arrangement comprising monitoring means connected to the electronic circuit means for providing a first signal varying in correspondence to the rotating stator field, and signal conversion means connected to said monitoring means for converting said first signal into said clock frequency signal synchronized to the speed of rotation of the rotor, said clock frequency signal



alternately assuming one of two values, the time of transisition between said values being negligible.

3,848,168
SPEED CONTROL SYSTEM FOR A-C SUPPLIED UNIVERSAL MOTORS

Friedrich Hornung, Stuttgart, Germany, assignor to Robert Bosch GmbH, Gerlingen-Schillerhohe, Germany
Filed May 3, 1973, Ser. No. 356,968
Claims priority, application Germany, June 19, 1972, 2229694
Int. Cl. H02p *7/62*
U.S. Cl. 318—331 **14 Claims**



1. Speed control system for a-c supplied series wound commutator universal motors (M) comprising:

controllable semiconductor switching means (Th) connectable for each half phase of the a-c supplied to the motor; means triggering said switching means (Th) selectively at a first fixed, preset phase angle ($\phi 1$) or at a second fixed, preset phase angle ($\phi 2$), wherein said second phase angle is greater than said first phase angle ($\phi 2 > \phi 1$);

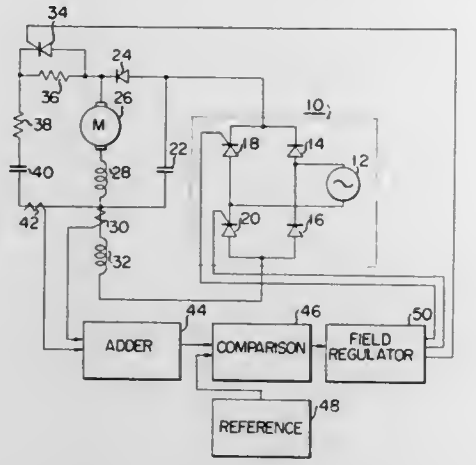
and means connected to the motor and sensitive to motor loading, controlling said triggering means to trigger said semiconductor switching means, selectively, at said first preset phase angle ($\phi 1$) or said second preset phase angle ($\phi 2$), to provide trigger pulses to the controllable semiconductor switching means (Th), statistically distributed, in time, in accordance with loading on the motor.

3,848,169
DYNAMIC BRAKING CONTROL

Tetsumasa Asano; Takaaki Soga, and Mitsuro Kitano, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 16, 1973, Ser. No. 351,586
Claims priority, application Japan, Apr. 18, 1972, 47-38865
Int. Cl. H02p *3/14*
U.S. Cl. 318—376 **6 Claims**

1. A control system for controlling dynamic braking of a dc motor, comprising, in combination, a dc motor including an

armature and a field winding, excitation means for separately exciting said field winding of the dc motor, first sensor means for sensing a current flowing through said field winding to derive a first electrical quantity representative of the sensed magnitude of the current, second sensor means for sensing a voltage induced across said armature to derive a second electrical quantity representative of the sensed magnitude of the voltage, a adder means connected to said first and second sensor means to form the sum of said first and second electrical quantities, field regulator means electrically coupled to said adder means to control said excitation means to regulate the current flowing through said field winding to maintain the sum of said first and second electrical quantities from said adder means constant, and said second sensor means comprising means to derive an electrical quantity representative of a sensed magnitude of a rotational speed of the dc motor.



3,848,170

CONTROL SYSTEM FOR MOTOR-GENERATOR SET

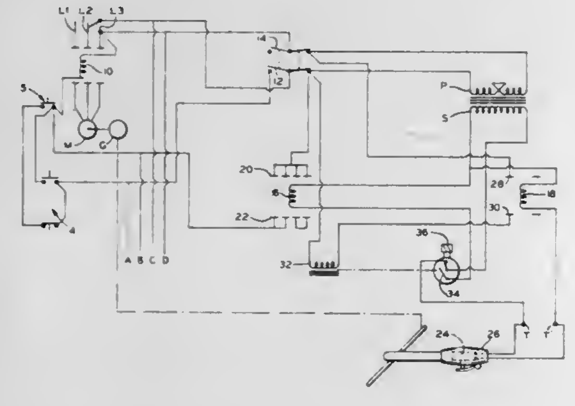
David Ocampo Morales, Benito Diaz de Gamarra nr. 37, Circuit, Oradores, Ciudad Satelite, Mexico

Filed Jan. 11, 1973, Ser. No. 322,743

Claims priority, application Mexico, Oct., 1972, 139273

Int. Cl. B23k *9/10*

U.S. Cl. 318—487 **1 Claim**



1. In a control system for a motorgenerator set: a high voltage system for energizing said motor, a low voltage system for controlling the connection of said high voltage system to said motor and including a manual switch, said manual switch being operable upon actuation to connect said high voltage system to said motor, and time delay means operable upon release of said manual switch to maintain the connection of said high voltage system to said motor for a predetermined period of time; said high voltage system comprising a source of power, a first contactor between said source and said motor and having a first coil operable when energized to connect said source to said motor, a second contactor having a second coil operable when energized to cause energization of said first coil, a step down transformer having a primary side connected to said source and having a secondary side, said low voltage system including said secondary side of said transformer, said time delay means comprising a timer having a blade between said second coil and the secondary side of said transformer operable when closed to connect said secondary side of the transformer to said second coil, said timer having a coil operable when energized to close said blade, means for causing said blade to remain closed for a predetermined time after said timer coil is deenergized, a third contactor connected to said timer coil and having a third coil operable when energized to cause energization of said timer coil, and said manual switch being connected to said third coil and operable when actuated to cause energization of said third coil.

3,848,171

ARRANGEMENT FOR THE OPTIMUM SETTING OF THE ROTOR BLADES OF WATER TURBINES

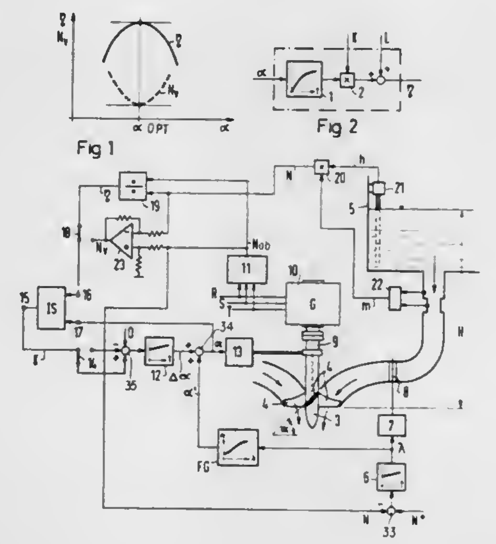
Winfried Speth, and Fritz Loffelmann, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munchen, Germany

Filed Dec. 29, 1972, Ser. No. 319,733

Claims priority, application Germany, Dec. 30, 1971, 2165635

Int. Cl. G05b *11/32*

U.S. Cl. 318—561 **5 Claims**



1. In a water turbine, apparatus for optimizing the turbine efficiency comprising:

a. means to develop a first output signal representative of power output by the turbine;

b. means to develop a second output signal representative of power input;

c. means to develop from said first and second signals a third signal representing one of the efficiency and power loss of the turbine;

d. means having as one input one said third signal and as a second input, a fourth signal representing the angle of the rotor blade setting to develop a fifth signal representing the gain factor within the turbine; and

e. means, having said fifth signal as an input, to control the turbine blade setting such as to cause said gain factor to become zero.

3,848,172

YAW DAMPER SYNCHRO SYSTEM FOR AIRCRAFT

Ronald E. Thomas, Phoenix, Ariz., assignor to Sperry Rand Corporation, Great Neck, N.Y.

Filed Aug. 30, 1972, Ser. No. 284,781

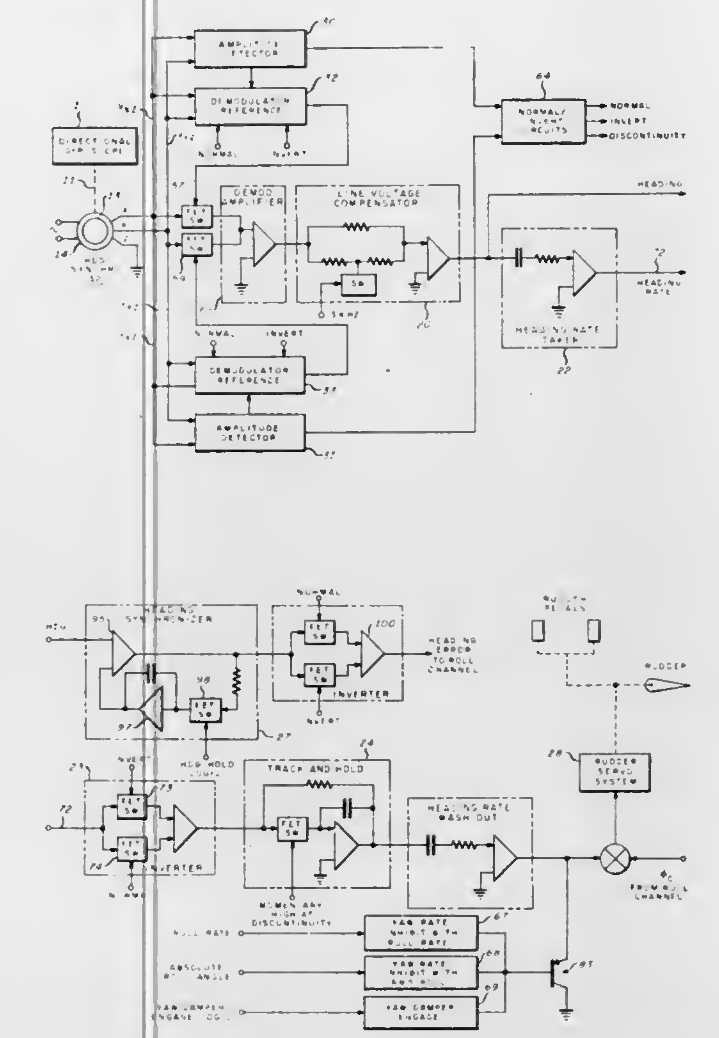
Int. Cl. G05d *1/08;* **B64c** *13/18*

U.S. Cl. 318—586 **14 Claims**

1. In a lateral axis control system for an aircraft automatic flight control system, the combination comprising

a stable directional reference means,

means including a synchro control transformer having a rotor part positioned by said reference means and a stator part fixed to the aircraft and switching, demodulating and inverting means controlled by the relative positions of said rotor and stator parts for providing a continuous triangular wave d.c. signal voltage having substantially linear leading and trailing edge sectors corresponding to variations in aircraft heading between substantially plus and minus thirty degree sectors of aircraft heading and points of discontinuity at the leading and trailing edge junctions of said triangular wave,



means responsive to said d.c. signal for deriving a signal proportional to the slope of said leading and trailing edge sectors and thereby proportional to the rate of change of aircraft heading, and

means responsive to said switching means for tracking and holding the value of said rate signal at said points of discontinuity for a predetermined time interval whereby to eliminate any rate signal transients at said points of discontinuity.

3,848,173

STORAGE BATTERY CHARGING APPARATUS

Alfred Max Hase, 6 Manorwood Rd., Scarborough, Ontario, Canada

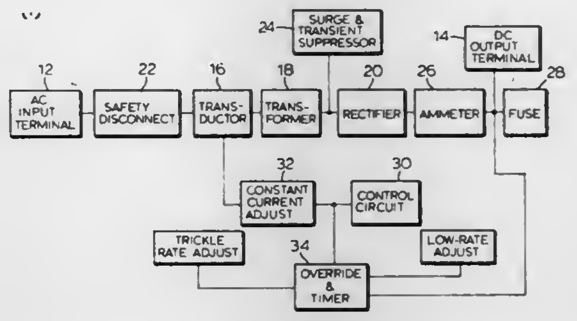
Filed Nov. 8, 1972, Ser. No. 304,858

Int. Cl. H02j *7/04*

U.S. Cl. 320—23 **9 Claims**

1. In a storage battery charging apparatus which is adapted at its input for connection to a source of electrical energy, and at its output to the terminals of a storage battery; said apparatus including controllable synchronous switch means adapted to control the rate of electrical energy input; said apparatus having a multirate charging current output program, including a high charging rate at the beginning of the program, a controlled and tapered transition from high to low charging rate, and a continuous trickle charging rate at the end of the program until the battery is disconnected or the charging program terminated; said high charging rate and said trickle charging rate each having a substantially constant current output; the improvement comprising a control circuit and an override and timer circuit, where:

a. said control circuit includes means to initiate operation of a taper charge mode of operation of said battery charger apparatus when the terminal voltage of the battery reaches a predetermined level, said control circuit including means to drive said controllable synchronous switch so as to reduce the rate of electrical energy input by controlling the operating period of said synchronous switch, in order to maintain the output voltage of said battery charger apparatus constant at said predetermined level until such time as the controlled operation period of said synchronous switch reduces to a perdetermined minimum period, or until expiration of a predetermined amount of time from the beginning of the charging program as determined by said override and timer circuit; and



b. said override and timer circuit includes means for monitoring and overriding the control circuit, including

  i. a driven time-switch whose operation is initiated at the beginning of said charging program;

  ii. first current control means made operable at the beginning of said charging program to maintain said output current at a first predetermined value;

  iii. first override means made operable by said time-switch at a first predetermined time during said charging program to override said control circuit if the output current of said apparatus is higher than a second predetermined value which is lower than said first predetermined value, so as to reduce said output current to said second predetermined value; and

  iv. second override means made operable by said time-switch to override said control circuit at a second predetermined time which is later than said first time during said charging program, to reduce said output current to said continuous trickle charging rate

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3,848,174

HIGH VOLTAGE SOLID-STATE RECTIFIER SYSTEM

Chester C. Thompson, Roslyn Heights; Severt E. Olsen, Staten Island, and Raymond J. Loby, Plainview, all of N.Y., assignors to Radiation Dynamics, Inc., Westbury, L.I., N.Y.

Filed May 21, 1973, Ser. No. 362,060

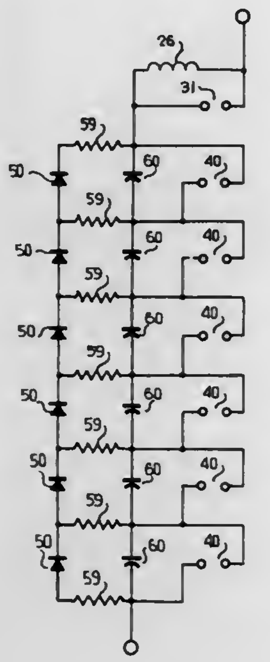
Int. Cl. H02m *1/18*

U.S. Cl. 321—11 **20 Claims**

1. A high voltage solid-state rectifier assembly, comprising: an array of multiple series-connected solid state diodes, said array being divided into groups of said series-connected diodes;

a plurality of electrically conductive shield sections, each housing a respective group of said diodes, said shield sections being electrically isolated from one another and arranged end to end, each shield section being arranged to overlap the shield section adjacent thereto to provide radio frequency shielding for said array and to form a capacitance element between adjacent shield sections, the capacitive elements between successive shield sections forming a series capacitance chain along the length of said array; and

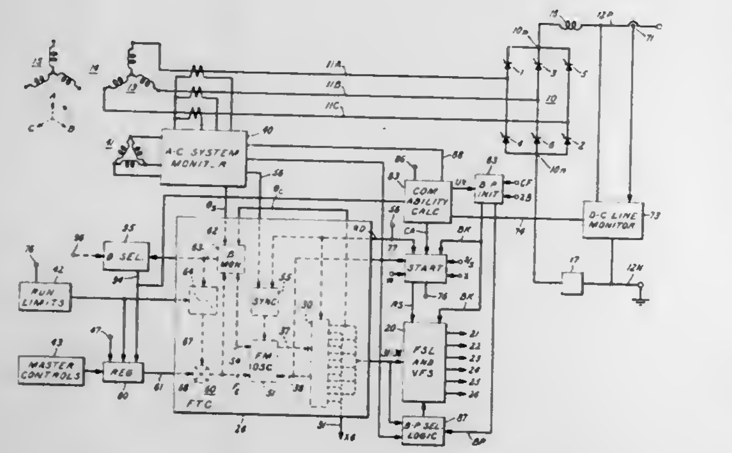
a plurality of resistive elements, each connected between a respective group of said diodes and the shield section housing that group of said shield sections to provide a graded potential along said shield sections.



3,848,175
STARTING INHIBIT SCHEME FOR AN HVDC CONVERTER

Donald M. Demarest, Wallingford, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Oct. 24, 1973, Ser. No. 409,210
Int. Cl. H02h *7/14*
U.S. Cl. 321—11 **20 Claims**



1. For automatically starting or restarting an HVDC electric power converter comprising a plurality of controllable electric valves connected in a bridge configuration between first and second sets of power conductors, said first set of conductors being associated with a polyphase alternating voltage network and said second set being adapted to conduct direct current which periodically is commutated from one valve to another upon firing said valves in a predetermined normal sequence during each cycle of alternating voltage when the converter is running, said converter including means for cyclically firing said valves in said sequence and at a firing angle that can vary within a permissible range as a function of a variable control signal, the improvement comprising:

a. blocking means effective when not disabled for causing the firing means to idle, in which state said cyclic valve firings are suspended;

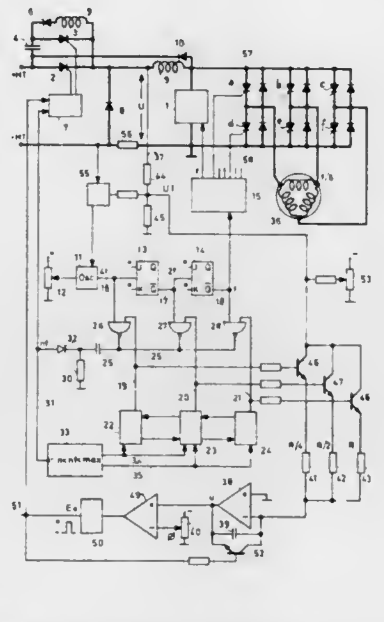
b. starting means operative in response to certain conditions for disabling said blocking means, whereupon said firing means is allowed to start or to restart the converter; and

c. means coupled to said first and second sets of conductors and to said firing means for calculating the commutating ability of the converter and for inhibiting operation of said starting means if said commutating ability is insufficient to ensure successful commutation once the converter is running.

3,848,176
CONTROL CIRCUIT FOR AN INVERTER WITH A VARIABLE OUTPUT VOLTAGE AND FREQUENCY

Marcel Etter, 3 bis, chemin des Pontets, Geneva, Switzerland

Filed Mar. 26, 1973, Ser. No. 344,528
Claims priority, application Switzerland, Mar. 30, 1972, 4794/72
Int. Cl. H02m *7/52*
U.S. Cl. 321—18 **8 Claims**

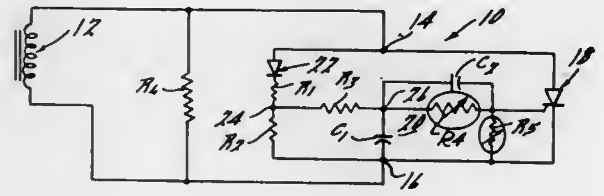


1. Control circuit for an inverter with a variable voltage and output frequency, in which the variation of amplitude of the output voltage is provided by a chopper of the supply voltage, including means of controlling the frequency of the chopper and the output frequency, characterized by the fact that the frequency of the chopper is a multiple of the inverter frequency, the means for controlling the frequency of the chopper being set so as to modify automatically said multiple when the frequency of the chopper leaves a predetermined range.

3,848,177
REGULATING CIRCUIT

George E. Gynn, Fort Wayne, Ind., assignor to Syncro Corporation, Oxford, Mich.

Division of Ser. No. 244,778, April 17, 1972. This application Apr. 26, 1973, Ser. No. 354,662
Int. Cl. H02p *9/26*
U.S. Cl. 322—73 **4 Claims**



1. A method for calibrating a regulating circuit for a permanent magnet alternator utilizing an SCR having a gate electrode comprising the steps of:

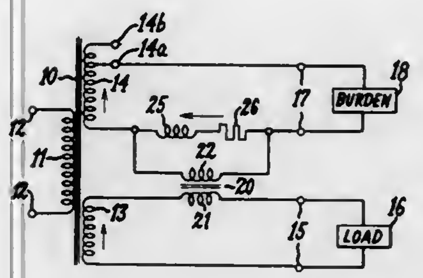
depositing a resistive film which connects with said gate electrode having a temperature coefficient of resistance which is selected in accordance with the firing sensitivity of said SCR; and

adjusting the value of said resistor generally at a predetermined temperature of said SCR by removal of a portion of said resistive film so as to increase the resistance of said resistive film so that said SCR fires substantially at a predetermined gate signal level at said predetermined temperature.

3,848,178
COMBINED POWER AND INSTRUMENT POTENTIAL TRANSFORMER

Louis W. Marks, Pittsfield, Mass., assignor to General Electric Company

Filed Dec. 9, 1971, Ser. No. 206,549
Int. Cl. G05f *7/00;* **G01r** *19/16*
U.S. Cl. 323—6 **4 Claims**



1. A combined power and instrument potential transformer comprising a magnetizable core, a single high voltage primary winding on said core having a pair of input terminals, an instrument secondary winding on said core adapted to supply across a pair of output terminals a low voltage proportional in magnitude and similar in phase to voltage applied to said input terminals, a power secondary winding on said core having opposite ends connected to a pair of load terminals, a current transformer having a primary winding connected in series circuit relation with said power secondary winding across said load terminals and including a secondary compensating winding, a compensating impedance connected across said secondary compensating winding, and means connecting said compensating impedance in series circuit relation with said instrument secondary winding between said output terminals, said compensating impedance being so connected that voltage drop thereacross resulting from current in said secondary compensating winding is in aiding voltage relation with voltage induced in said instrument secondary winding by flux in said core.

3,848,179
POWER SUPPLYING DEVICE

Takashi Kayama, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sept. 21, 1973, Ser. No. 399,303
Claims priority, application Japan, Sept. 22, 1972, 47-95342
Int. Cl. G05f *1/00*
U.S. Cl. 323—22 T **5 Claims**

1. A power supplying device comprising:

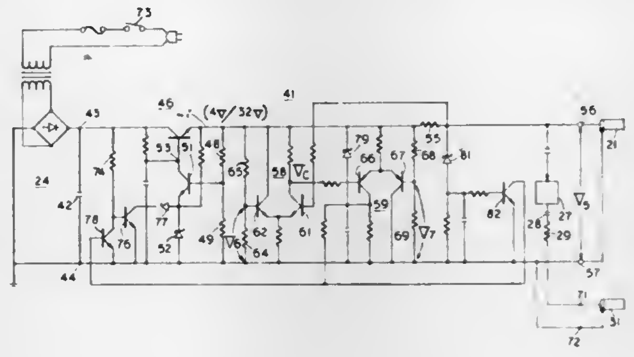
A. power supply output terminals;

B. a voltage source;

C. a voltage regulator connected to said source to be energized thereby and comprising voltage regulator output circuit;

D. an impedance connecting said output circuit to said output terminals; and

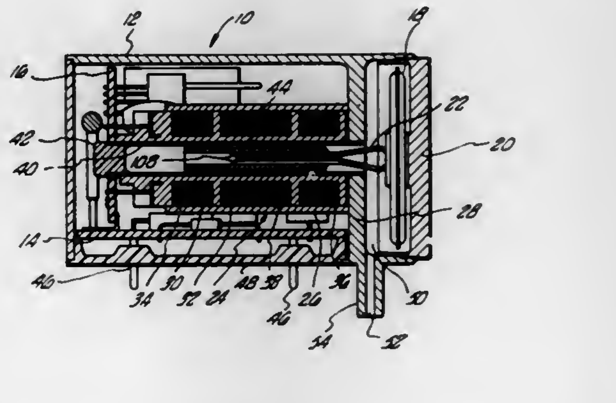
E. a comparison circuit to compare the voltage across said output terminals with a voltage in said output circuit to obtain a voltage ratio in said comparison circuit, said comparison circuit being connected to said regulator to control the operation thereof to keep the voltage across said output terminals low when the voltage ratio in said comparison circuit differs from a predetermined value.



3,848,180
PRESSURE TRANSDUCER

Joseph L. Jonke, Anaheim, and Richard N. Clarke, Santa Ana, both of Calif., assignors to Gulton Industries, Inc., Metuchen, N.J.

Filed Jan. 17, 1973, Ser. No. 324,549
Int. Cl. G01r *33/00*
U.S. Cl. 323—51 **11 Claims**



1. A method for temperature compensating a plurality of like temperature compensated pressure transducers, each of the type having

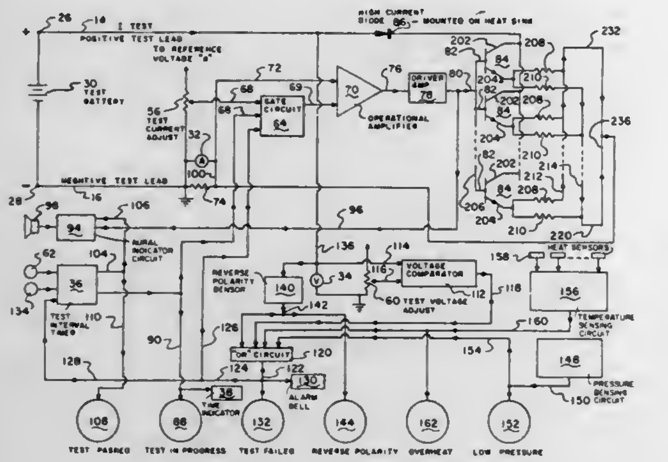
a linear variable differential transformer having a primary winding, a first secondary winding, a second secondary winding and a drive winding and whose output signal magnitude varies with temperature; a series capacitor of a value preselected to provide a series resonant circuit with the secondary windings of a selected frequency; an oscillator for excitation of the primary winding of the transformer and including a frequency control resistor for determining the nominal output frequency of the oscillator; means connecting the first secondary winding, the second secondary winding and the series capacitor in series to form said series resonant circuit; a demodulator of the voltage doubler type including the drive winding; and means for applying the series resonant circuit output to the demodulator to produce an output signal in response to primary winding excitation,

in which, for a first one of said plurality of transducers, the two resistance values of the frequency control resistor which produce oscillator frequencies corresponding at a given pressure to the peak output signal and the output signal having minimum variation with temperature for the first transducer have been determined, comprising:

energizing other of the remainder of said transducers at a given pressure at a plurality of frequency control resistor resistance values to determine the resistance of frequency control resistances for said transducers which produce peak transducer outputs at the given pressure; and connecting in the oscillators of said transducers frequency control resistors whose resistances are reduced from their peak output resistance values by approximately the difference in resistance between the peak and minimum variation resistances of the first one of said transducers.

3,848,181
BATTERY TESTER WITH AN IMPROVED LOAD CIRCUIT

James O. Hebert, Jr., Box 1193, and Donald F. Fitzgerald, Box 791, both of Mississippi State, Miss. 39762
Filed Sept. 18, 1973, Ser. No. 398,489
Int. Cl. Goln *27/46*
U.S. Cl. 324—29.5 **14 Claims**



1. An electrical load circuit for a battery tester for testing batteries having positive and negative terminals and wherein the load current that is allowed to pass through the battery is sensed and controlled, comprising:

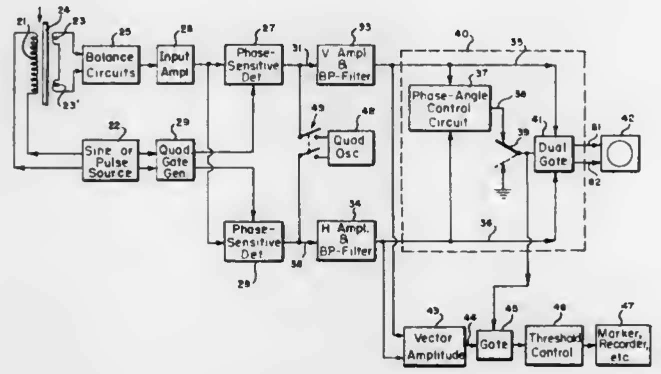
a. a plurality of test leads, each lead having attached thereto a terminal battery connector;
b. reverse current means, associated with one of the test leads, for preventing a reverse flow of current;
c. a plurality of power transistors, associated with the test leads, said power transistors being connected in parallel to each other and in series with the reverse current means;
d. at least a first bus structure associated with the power transistors;
e. at least a second bus structure associated with the power transistors and electrically insulated at its one end from the first bus structure and electrically connected through its other end to the first bus structure, the bus structures also being electrically connected to one of the test leads; and
f. at least two emitter bias resistors being connected at a common point to the emitters of each power transistor, the opposite end of one bias resistor being connected to the first bus and the opposite end of the other bias resistor being connected to the second bus.

3,848,182
APPARATUS FOR LIMITING PHASE-ANGLE RESPONSE RANGE, PARTICULARLY IN EDDY CURRENT TESTING APPARATUS

James Gerner, Elmhurst, and Peter J. Suhr, Garden City, both of N.Y., assignors to Magnetic Analysis Corporation, Mt. Vernon, N.Y.
Filed Aug. 15, 1973, Ser. No. 388,568
Int. Cl. G01r *33/12*
U.S. Cl. 324—40 **6 Claims**

1. In eddy current testing apparatus including test coil means energized to induce eddy currents in an object under test and producing an output signal whose amplitude and phase change with variations in the object, means for limiting the range of phase angles within which signals are supplied to an output circuit for indication or classifying which comprises

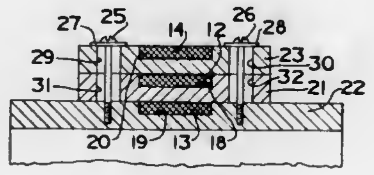
a. means for producing quadrature signal components of said output signal,
b. adjustable sine-cosine multiplying means for receiving said quadrature signal components and multiplying the components by respective sine and cosine functions to yield respective signals of substantially equal amplitude at a phase angle of the quadrature signal components depending on the setting of the multiplying means,
c. combining means responsive to said respective signals for yielding an output of minimum value when the signals are of substantially equal amplitude and of progressively greater value as the signals become unequal,



d. threshold means responsive to the output of said combining means for producing a gate signal when the output lies within a range corresponding to a limited phase angle range of said quadrature components,
e. a gate circuit having an input supplied with a signal corresponding to at least one of said quadrature signal components and having an output,
f. means for supply said gate signal to said gate circuit to limit the output thereof to signals lying within a restricted range of phase angles,
g. and means for supplying the output of said gate circuit to indicating or classifying means.

3,848,183
EDDY CURRENT TESTING SYSTEM HAVING CONCENTRIC COILS, ONE BEING MOVABLE FOR BALANCING

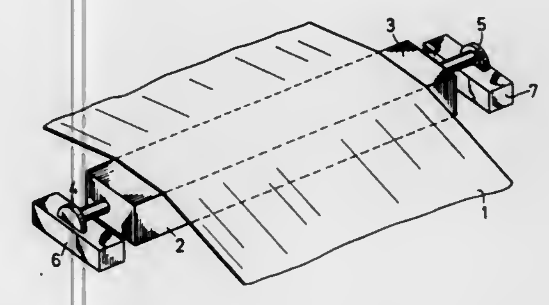
Heino Puidak, Hoffman Estates, Ill., assignor to Magnaflux Corporation, Chicago, Ill.
Filed Apr. 20, 1973, Ser. No. 352,916
Int. Cl. G01r *33/12*
U.S. Cl. 324—40 **4 Claims**



1. In an eddy current testing system for measuring characteristics of a specimen, a test coil unit arranged to receive the specimen therein, said test coil unit comprising coil form means including first, second and third annular forms each having an annular slot in the outside surface thereof, said forms being concentric and in radial alignment with said first form being fitted inside said third form and with said third form being fitted inside said second form, first and second windings in said annular slots of said first and second forms and having approximately the same axial and radial dimensions, wire sizes and members of turns, a third winding in said annular slot of said third form, an AC source connected to said third winding to develop AC voltages in said first and second windings, one of said first and second forms being adjustably positionable in an axial direction relative to the other to a position such as to equalize the instantaneous voltages developed in said first and second windings with no specimen disposed in said coil unit, and locking means for fixing said one of said forms in said position, and measuring means directly connected to said first and second windings to measure instantaneous differences in the voltages developed across said windings.

3,848,184
METAL SENSING APPARATUS WITH A PROTECTIVE COVER OF A GROUNDED CONDUCTIVE PLASTIC MATERIAL TO PREVENT ACCUMULATION OF ELECTRICAL CHARGES

Ludwig Zerle, Mering, and Klaus Scharm, Augsburg, both of Germany, assignors to Firma Erhardt & Leimer KG, Augsburg, Germany
Filed June 1, 1973, Ser. No. 365,966
Claims priority, application Germany, June 7, 1972, 2227627
Int. Cl. G01r *33/00, 33/12*
U.S. Cl. 324—41 **9 Claims**

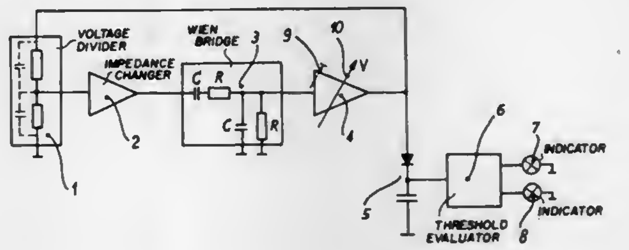


1. In a sensing system for detecting metallic objects of the type having a beam shaped sensor head containing detector coil means and a protective cover over the coil means, whereby foreign metallic objects passed over the cover are detected by the coil means; the improvement wherein said beam shaped sensor head is comprised of a carrier plate, said coil means being mounted on said carrier plate, said cover being of an electrically conducting synthetic material, the edges of said cover being bonded to said carrier plate, and means grounding said cover, said cover having a resistivity that prevents accumulation of electrical charges on said cover without impairing the detecting function of said coil means.

3,848,185
CIRCUIT ARRANGEMENT FOR DETERMINING THE VOLTAGE FRACTION RATIO OF A VOLTAGE DIVIDER

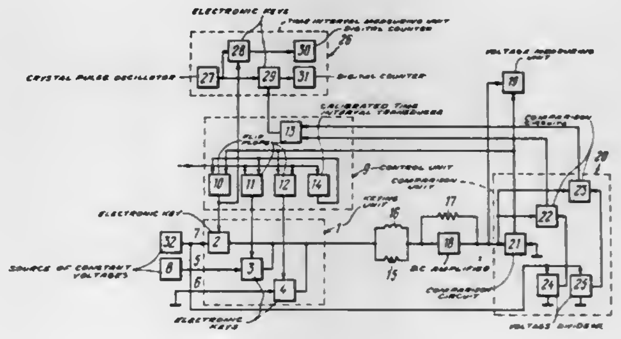
Michael Hentschel, Waldhausen, Germany, assignor to Sina Aktiengesellschaft fur Instrumentierung und Automatik, Zurich, Switzerland
Filed Aug. 1, 1973, Ser. No. 384,420
Claims priority, application Switzerland, Aug. 4, 1972, 11555/72
Int. Cl. G01r *27/00*
U.S. Cl. 324—57 R **26 Claims**

1. A circuit arrangement for determining the ratio of a voltage divider including two impedances joined at a junction and said impedances including reactance components and including resistance components at least one of which can be varied to represent a physical magnitude, said circuit arrangement comprising an oscillator circuit including an oscillation amplifier, a feedback loop coupled between an input and the output of the amplifier and contributing attenuation to the general attenuation included in the oscillator circuit, and said loop having said voltage divider inserted as an attenuator in the feedback loop, means for adjusting the gain of the amplifier to a level at which oscillation is sustained by overcoming said general circuit attenuation and the attenuation of said voltage divider, and indicator means coupled to said amplifier output and operative to indicate the state of oscillation or non-oscillation of the oscillator circuit.



3,848,186
METHOD OF MEASURING PARAMETERS OF COMPLEX ELECTRIC CIRCUIT AND DEVICE FOR EFFECTING SAME

Alexandr Ivanovich Martyashin, ulitsa Kirova, 69, kv. 59; Andrei Elizarovich Morozov, ulitsa Uritskogo, 44/10, kv. 62; Eduard Konstantinovich Shakhov, ulitsa Gladkova, 13, kv. 5, and Viktor Mikhailovich Shlyandin, ulitsa Lermontova, 12, kv. 17, all of Penza, U.S.S.R.
Filed Aug. 24, 1973, Ser. No. 391,315
Int. Cl. G01r *27/00*
U.S. Cl. 324—57 R **12 Claims**

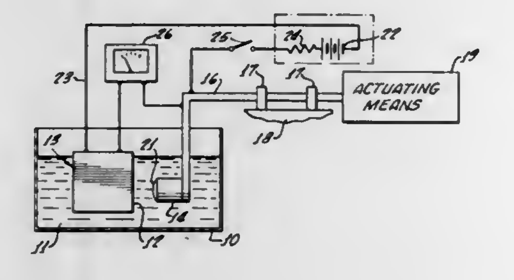


1. A method of measuring the parameters of a complex electric circuit, comprising the steps of applying a constant voltage directly across its input in case the components thereof are connected in parallel; comparing the current flowing through the complex electric circuit in case the components thereof are connected in parallel, with two reference currents, one with the lesser value exceeding the constant component of said current; measuring the time interval between the instants said current equals said two reference currents; reversing the polarity of said constant voltage after a calibrated time interval which exceeds the value of the time component of the complex electric circuit counting from the instant said constant voltage is applied to said circuit; measuring another time interval counting from said instant of reversing the polarity of said constant voltage until the instant the current flowing through said complex electric circuit attains a value approximately equal to zero; cutting off said constant voltage supply; measuring the current flowing through the complex electric circuit, depending on whose value, in conjunction with the two measured time intervals, the parameters of the complex electric circuit are determined.

3,848,187
METHOD OF DETECTING THE ONSET OF FORMATION OF ADHERENT PRECIPITATES ON SURFACES IMMERSED IN LIQUIDS, AND OF CONTROLLING THE FORMATION OF SUCH PRECIPITATES

Gilson H. Rohrback, Whittier, and Elmond A. Holmes, Fullerton, both of Calif., assignors to Magna Corporation, Santa Fe Springs, Calif.

Filed Feb. 26, 1973, Ser. No. 335,676
Int. Cl. G01r *27/02*
U.S. Cl. 324—65 CR **41 Claims**



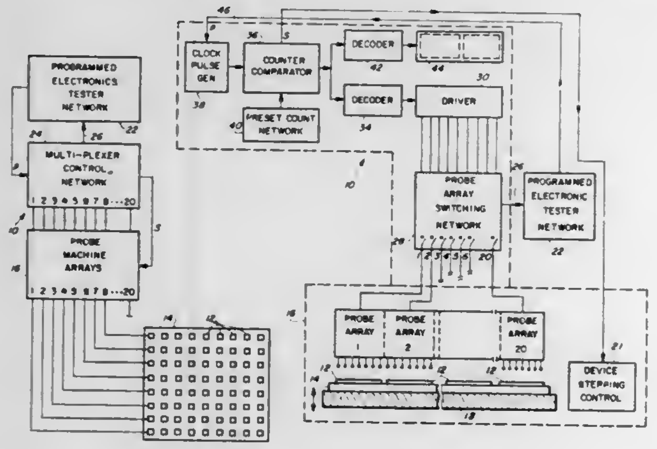
1. A method of detecting the deposition, onto a surface, of adherent scale or other adherent substance, which method comprises the steps of:

- a. exposing an electrically conductive surface to a liquid of a type which, under at least some conditions, will deposit at least a partial coating onto a surface exposed to said liquid,
- b. detecting an increase in the electrical contact resistance at said surface after it has been thus exposed,
  - said detection of said increase in electrical contact resistance including the step of engaging with said surface a contact element and determining the electrical contact resistance between said surface and said contact element,
  - said increase in electrical contact resistance indicating that adherent substance has deposited from said liquid onto at least part of said surface, and
- c. employing said detected increase in electrical contact resistance as an indication of the deposition of adherent substance from said liquid onto said surface.

3,848,188
MULTIPLEXER CONTROL SYSTEM FOR A MULTI-ARRAY TEST PROBE ASSEMBLY

Frank J. Ardezzone, Santa Clara, and Milton M. Silverstein, San Jose, both of Calif., assignors to Probe Rite, Inc., Santa Clara, Calif.

Filed Sept. 10, 1973, Ser. No. 395,978
Int. Cl. G01r *17/12*
U.S. Cl. 324—73 AT **10 Claims**



1. A multiplexer control system for controlling the interconnection of electronic test equipment with a multiple of electronic test probe arrays comprising, in combination:

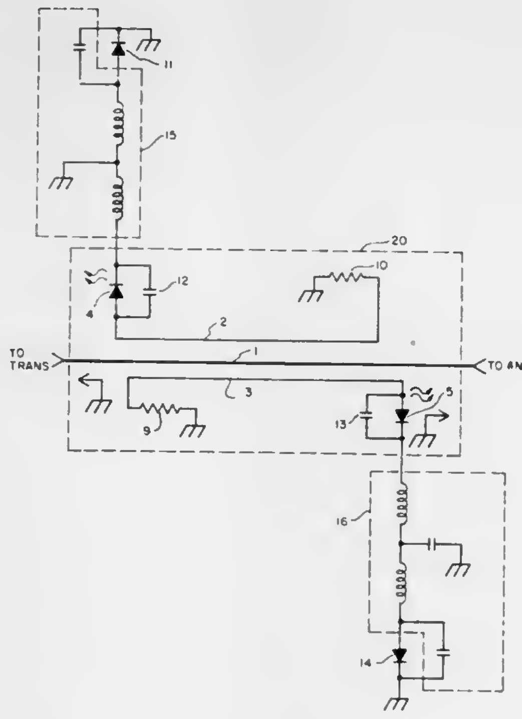
an electronic device probing station for receiving a multiple of miniature electronic devices to be tested, a probe head assembly of a plurality of individual probe arrays, each of said arrays being arranged in a common pattern compatible with the pad pattern of the devices to be tested, and a device stepping control for controlling the positioning of devices relative to said arrays;

a multiplexer control signal generator means interconnected with said device stepping control and including a stepping switch for individual interconnection of each of said individual probe arrays with a terminal means for interconnection with electronic test equipment, said multiplexer signal generator means being adapted for generating control signals to said stepper switch and to said device stepping control responsive to the number of devices aligned for simultaneous interface contact with the probe arrays, said control signals including a first command signal to the stepping control to control alignment of a set of devices relative to the probe arrays and interface contact of said aligned devices with said probe arrays and a second command signal train for successively actuating said stepping switch to provide successive interconnection of the individual arrays with said electronic test equipment.

3,848,189
QUALITATIVE RF OUTPUT-REFLECTED POWER INDICATOR

William T. Pope, Rd. 1 Maple Ln., Lee Center, N.Y. 13363

Filed Mar. 26, 1973, Ser. No. 345,193
Int. Cl. G01r *21/04, 27/02*
U.S. Cl. 324—95 **3 Claims**



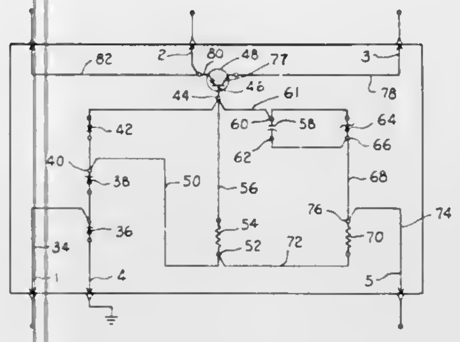
1. An RF directional coupler and forward- and reflected-power indicator for radio frequency transmitters and transmission lines comprising:

- a main conductor of RF current of a lineal shape having a transmitter end and an antenna end;
- a first pick-up conductor parallel and proximate and thereby coupled to said main conductor by distributed inductance and capacitance;
- a second pick-up conductor parallel and proximate and thereby coupled to said main conductor by distributed inductance and capacitance;
- a light emitting diode electrically connected to said first pick-up conductor at the transmitter end;
- a load resistor electrically connected to said first pick-up conductor at the antenna end and to a ground connection;
- a light emitting diode electrically connected to said second pick-up conductor at the antenna end;
- a load resistor electrically connected to said second pick-up conductor at the transmitter end and to a ground connection;
- a rectifying diode electrically connected to each of said light emitting diodes and to a ground connection; and
- an RF bypass capacitor electrically connected across each of said light emitting diodes.

3,848,190
SIGNAL CONDITIONER TEST SET

Walter H. Houck, Titusville, and Jon D. Stigberg, Eau Gallie, both of Fla., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 30, 1973, Ser. No. 346,372
Int. Cl. G01r *31/22, 27/26*
U.S. Cl. 324—158 T **4 Claims**



1. A system for testing components contained in a signal producing module having a transistor with base, emitter and collector electrodes, first, second and third pins coupled to said electrodes respectively, a fourth pin coupled to one side of a capacitor while the other side of said capacitor is connected to said base electrode of said transistor, said system comprising:

- A. a housing having a front panel,
- B. first, second, third and fourth sockets adapted for receiving a correspondingly numbered pin of said module for testing said module,
- C. a variable resistance load having a first terminal connected to ground,
- D. switch means having a first and second operable position,
- E. said switch means when in said first operable position coupling a second terminal of said variable resistance load to said emitter electrode of said transistor by means of the second socket,
- F. a signal generating circuit coupled between a reference terminal connected to ground and said third socket for applying a signal to said collector electrode of said transistor, said signal generator also having means for applying a second signal between said first terminal and said reference terminal,
- G. an oscilloscope having a reference terminal connected to ground and a testing terminal,
- H. means for connecting said testing terminal of said oscilloscope to said second socket when said switch means is in said first operable position for producing a picture of the wave form appearing at said emitter electrode, and
- I. said switch means when in said second operable position connecting said second terminal of variable resistance load to said one side of said capacitor by means of the fourth socket and to said testing terminal of said oscilloscope for testing the operability of said capacitor.

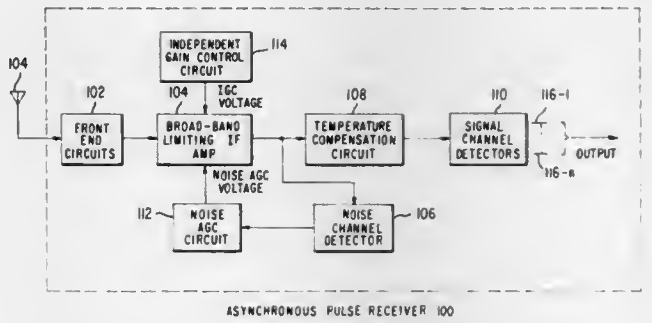
ERRATUM

For Class 325—53 see:
Patent No. 3,848,193

3,848,191
ASYNCHRONOUS PULSE RECEIVER

Leonard Hugo Anderson, Sun Valley, Calif., assignor to RCA Corporation, New York, N.Y.

Filed July 7, 1972, Ser. No. 269,537
Int. Cl. H04b *1/16*
U.S. Cl. 325—326 **14 Claims**



1. An asynchronous pulse receiver for receiving and utilizing as a signal a stream of asynchronously-occurring pulses each consisting of a frequency burst of radiowave energy having a given relatively short duration, the distribution of amplitudes among successive pulses of said stream varying over a relatively large dynamic range; said receiver comprising:

- a. first means responsive to the receipt of said received stream for forwarding said pulses thereof as an output therefrom;
- b. a broad-band, amplitude-limiting, gain-controlled radiowave amplifier having said output of said first means applied as an input thereto, said radio-wave amplifier having a frequency passband sufficiently broad to substantially preserve said short duration of each of said received pulses of said stream passed therethrough, said radiowave amplifier limiting only in response to a received pulse of said stream having an amplitude in an upper portion of said dynamic range being passed therethrough, said radio-wave amplifier producing an output having an asynchronously-occurring pulse signal component and a noise component in response to said received stream of pulses being applied as a signal input thereto from said first means;
- c. signal-utilization means which is responsive to said entire signal component of the output from said radio-wave amplifier;
- d. noise-responsive means for deriving an AGC voltage having a magnitude in accordance with only the average intensity of noise applied as an input thereto, said AGC voltage being fed back to said radio-wave amplifier to control the gain of said radio-wave amplifier in accordance with the magnitude thereof, and
- e. second means for applying the output of said radio-wave amplifier as an input to said signal-utilization means and as an input to said noise-responsive means.

3,848,192
DRIFT COMPENSATED DOCUMENT SENSING SYSTEM

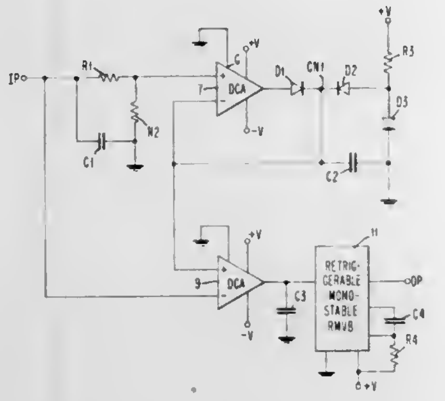
Leonard J. Wallace, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1973, Ser. No. 424,498
Int. Cl. H03k *17/00*
U.S. Cl. 328—1 **5 Claims**

1. A document sensing system comprising, in combination, a document sensor which produces an electrical sensor output signal proportional to the area of the sensor which is affected by the presence of a document,

- a voltage divider connected to said sensor to receive the sensor output signal therefrom and having an output terminal at which a predetermined portion of said sensor output signal appears,

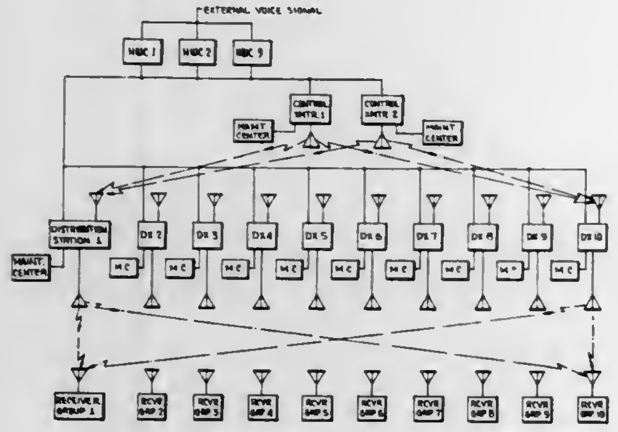
positive peak follower means having an input connected to the output terminal of said voltage divider means and having an output terminal at which appears a voltage proportional to the positive peak values of the predetermined portion of said sensor output signal,
a fixed minimum threshold voltage source,
a voltage storage device,
a first circuit node connected to he output terminal of said peak follower means, to said fixed voltage source and to said voltage storage device to thereby provide at said node a composite threshold voltage,



voltage comparison means connected to said first circuit node and to said sensor output to provide a comparison output signal, when said sensor output exceeds said composite threshold voltage; and
delay means having an input terminal connected to output of said comparison means and having an output terminal which provides an output signal which is terminated at a predetermined time following the termination of an input signal.

3,848,193
NATIONWIDE SYSTEM FOR SELECTIVELY DISTRIBUTING INFORMATION

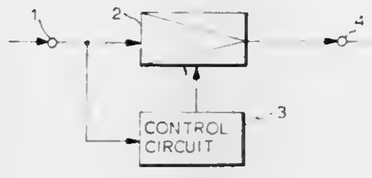
Robert B. Martin, Arlington, Va., and Carl T. Jones, Temple Hills, Md., assignors to Gautney & Jones Communications, Inc., Falls Church, Va.
Filed Dec. 15, 1972, Ser. No. 315,649
Int. Cl. H04h *1/00, 1/08*
U.S. Cl. 325—53 19 Claims



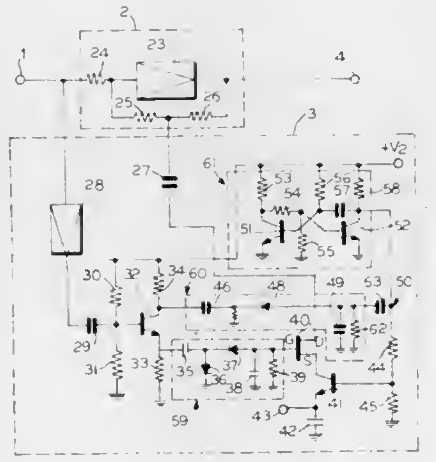
1. A national warning system comprising:
a plurality of geographically spaced warning centers, each including means for controlling the operation of said system;
control means for at all times restricting system control to no more than one of said warning centers at a time;
a plurality of distribution stations located in respective geographic regions;
radio transmitter means located at each distribution station and cable of broadcasting a signal throughout the geographic region in which said each distribution station is located,
command means located at each warning center, and means for actuating said command means only when that warning center is in control of the system, for said command means transmitting command signals initiating broadcast of a signal from selected ones of said radio transmitter means, said radio transmitter means being ultimately controlled by said command means at each warning center in control of said system.

3,848,194
AUTOMATIC GAIN CONTROL CIRCUIT

Katsutoshi Nishimura, and Kiyoji Fujisawa, both of Osaka, Japan, assignor to Matsushita Electric Co., Limited, Osaka, Japan
Filed July 16, 1973, Ser. No. 379,334
Int. Cl. H03g *3/30*
U.S. Cl. 330—29 3 Claims



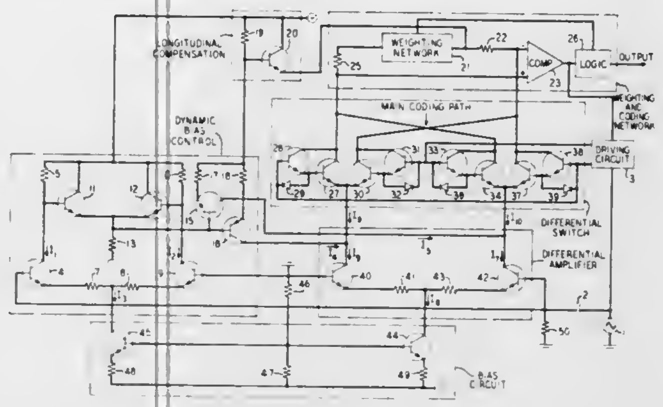
(PRIOR ART)



1. An automatic gain control circuit comprising an input terminal to which an input signal is applied, an output terminal, a variable gain control means connected between said input terminal and said output terminal and having a control terminal, and a variable impedance means which is coupled to said variable gain control means and controls the gain thereof according to a d.c. control signal applied to said control terminal thereof, said variable impedance means being comprised of an amplifier means coupled to said input terminal and which provides first and second output signals, a first smoothing circuit, a first rectifier means connected between said amplifier means and said first smoothing circuit for receiving said first output signal from said amplifier means and producing a control signal through said first smoothing circuit, a second smoothing circuit, and a second rectifier means connected between said amplifier means and said second smoothing circuit for receiving said second output signal from said amplifier means and producing a control signal through said second smoothing circuit wherein said variable gain control means is an operational amplifier having an input resistor and two feedback resistors connected in series, a feedback capacitor, the junction point of said feedback resistors being coupled to said variable impedance means through said feedback capacitor, said variable impedance means including a field effect transistor, the drain of which is coupled to said junction point and the gate of which is coupled to the output of said first rectifier means, a switching transistor having a collector connected to the source of said field effect transistor, said switching transistor acting as a switch inserted between the source of said field effect transistor and ground, said switching transistor having the base coupled to said second rectifier for being controlled thereby, said amplifier means including a transistor, the emitter of which is connected to said first rectifier means and the collector of which is connected to said second rectifier means, and said second rectifier means further including a switching time control circuit triggered by said second rectifier means and which controls said switching transistor.

3,848,195
DIFFERENTIAL AMPLIFIER WITH DYNAMIC BIASING

Frederick John Kiko, Sheffield Village, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Mar. 12, 1973, Ser. No. 340,587
Int. Cl. H03f *3/68*
U.S. Cl. 330—30 D 12 Claims

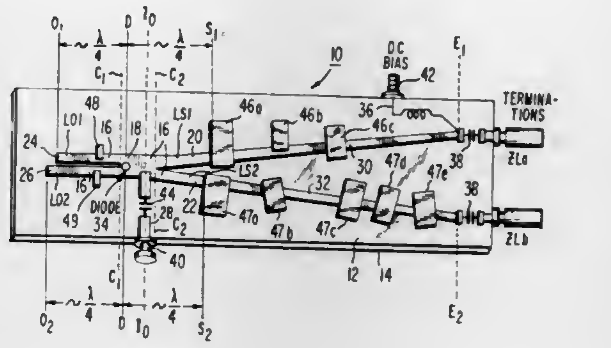


1. A dynamically biased amplifier comprising first and second transistors, d.c. biasing means connected with the base and emitter electrodes of each of said first and second transistors for operation as a differential amplifier, the base electrode of at least one of said first and second transistors being additionally connected to an input signal to be differentially amplified, a source of bias potential, means for connecting the collector-emitter paths of said first and second transistors in parallel and for connecting the parallel combination to said source of bias potential thereby providing currents to the collector-emitter paths of said first and second transistors, dynamic biasing means connected to said source of bias potential and to the collector-emitter paths of each of said first and second transistors to provide additional currents to the collector-emitter paths of said first and second transistors, and means connecting said dynamic biasing means to said input signal to control the magnitude of the additional current supplied to the collector-emitter paths of said first and second transistors in accordance with the magnitude of the input signal.

3,848,196
BROADBAND TRAPATT DIODE AMPLIFIER

Hirohisa Kawamoto, Kendall Park, N.J.; Elmer Lawrence Allen, Jr., Philadelphia, Pa., and Sherman Weisbrod, Trenton, N.J., assignors to RCA Corporation, New York, N.Y.
Filed Nov. 8, 1973, Ser. No. 413,825
Int. Cl. H03b *7/14*
U.S. Cl. 330—34 13 Claims

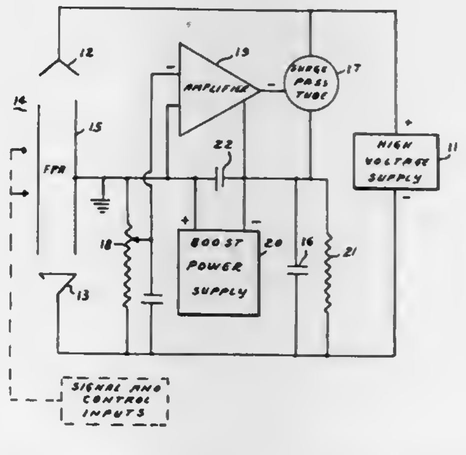
1. A microwave trapatt diode amplifier operative over a desired band of microwave frequency, comprising:
a. transmission line circuit means having a plurality of electrically connected transmission line sections of predetermined RF electrical length along which microwaves propagate including:
  1. a common line section having a first and a second end,
  2. three or more furcate line sections electrically connected across and extending from the ends of the common line section, at least one of said furcate line sections extending from each end thereof,
  3. RF shorting means for shorting the furcate line sections extending from the first end of said common line section;
b. a trapatt diode electrically shunt connected across said common line section at an intermediate point along its sectional length,
c. input and output coupling means electrically shunt connected across said common line section at an intermediate point along its sectional length for respectively introducing a microwave input signal and extracting an amplified output signal thereof,
d. resistance load connection means for each of said RF shorted furcate line sections,



e. means for introducing a bias signal across said trapatt diode,
f. said shorted and non-shorted sections forming constituent length pair combinations of substantially quarter-wavelength RF electrical lengths which extend from the intermediate point of connection of said trapatt diode to the RF electrical ends of various ones of said furcate line sections and along which said microwaves are confined to propagate, wherein various ones of said constituent length pair combinations cooperate to provide slightly differing predetermined delays to propagating microwaves to provide a plurality of constituent amplification frequency peaks whereby broadbanding frequency amplification may be achieved.

3,848,197
BOOST-SURGE POWER SUPPLY

Bruce Boyd, Ellicott City; Peter G. Espersen, Glen Burnie, and Lewis S. Heyser, Sr., Linthicum, all of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Apr. 9, 1973, Ser. No. 349,903
Int. Cl. H03f *3/54*
U.S. Cl. 330—44 1 Claim



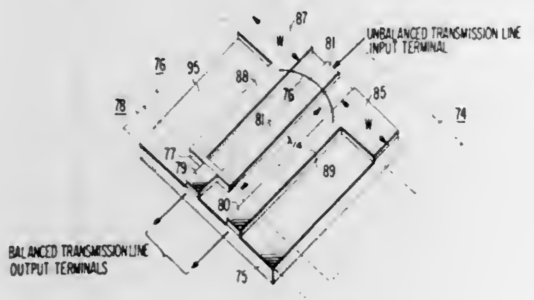
1. A boost surge power supply system for a high power transmitting final power amplifier tube the said tube having a

collector electrode connection, a body electrode connection, a cathode electrode connection, a nominal operating voltage potential between the said anode connection and said cathode connection, and a nominal operating voltage potential between the said cathode connection and the said body connection, the said boost surge power supply comprising:

a. a floating direct current high voltage source having a relative positive potential connected to the said collector connection of the final power amplifier tube and a relative negative potential connected to the said cathode connection of the final power amplifier tube; the said high voltage being the said nominal operating voltage potential between these electrodes;
b. a body capacitor having a determined capacitance and a resistance connected in parallel with the said body capacitor providing RC time constant;
c. a boost power supply including a storage capacitor, the said storage capacitor having a capacitance at least ten times the capacitance of the said body capacitor, and the said boost power supply and said storage capacitor providing a larger RC recharge time constant than the said determined RC time constant of the said body capacitor and parallel connected resistance;
d. means for connecting the said body capacitor and the said storage capacitor in series relationship between the said cathode electrode connection and the said body electrode connection of the final power amplifier tube;
e. means for sensing the voltage potential between the said body electrode connection and the said cathode electrode connection of the final power amplifier tube and providing a control signal;
f. a surge pass tube having at least a cathode, a grid, and a plate electrode and a hold-off voltage capability at least one-third the magnitude of the said nominal operating voltage potential between the said cathode connection and the said body connection;
g. means for connecting the said plate electrode of the said surge pass tube to the positive potential of the said high voltage source;
h. means including an amplifier for connecting the said control signal to the grid of the said surge pass tube; and
i. means for connecting the said cathode of the surge pass tube and the said body capacitor to provide a series relationship of the said surge pass tube and the said body capacitor across the said high voltage source.

3,848,198
MICROWAVE TRANSMISSION LINE AND DEVICES USING MULTIPLE COPLANAR CONDUCTORS

Robert Eugene De Brecht, Cranbury, and Louis Sebastian Napoli, Hamilton Square, both of N.J., assignors to RCA Corporation, New York, N.Y.
Division of Ser. No. 315,087, Dec. 14, 1972, Pat. No. 3,798,575. This application Sept. 27, 1973, Ser. No. 401,553
Int. Cl. H03f *3/60*
U.S. Cl. 330—56 **3 Claims**


87
W
81
UNBALANCED TRANSMISSION LINE INPUT TERMINAL
76
95
88
76
78
85
74
81
W
λ/4
77
79
89
80
BALANCED TRANSMISSION LINE OUTPUT TERMINALS
75

1. Apparatus for amplifying electromagnetic energy over a predetermined band of frequencies comprising:

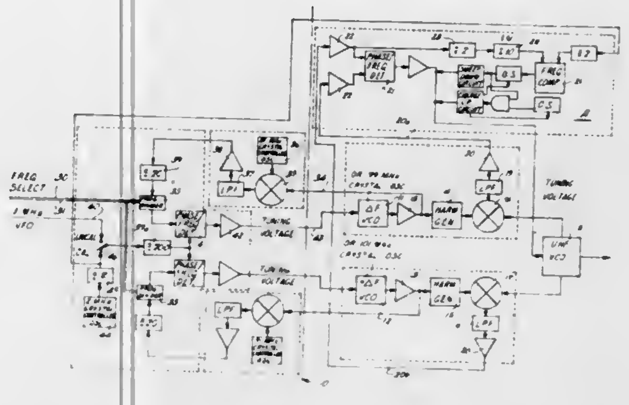
a dielectric substrate having a predetermined dielectric constant;
an input circuit having first, second and third coplanar strip-like conductors each having input and output ends and predetermined widths and lengths adjacent to one surface of said dielectric substrate, said first conductor having one edge separated from an adjacent edge of said second conductor by a first predetermined gap and an edge opposite said one edge separated from an adjacent edge of said third conductor by a second predetermined gap;
means for establishing a predetermined D.C. potential at said input ends respectively of said second and third conductors of said input circuit, whereby said first, second and third conductor input ends, said dielectric constant and said first and second predetermined gaps form an unbalanced transmission line input terminal:
means for connecting said output ends of said second and first conductors of said input circuit, whereby said first and second conductor output connected ends, said third conductor output end, said dielectric constant and said first and second predetermined gaps form a balanced transmission line input terminal;
an output circuit having first, second and third coplanar strip-like conductors each having input and output ends and predetermined widths and lengths adjacent to one surface of said substrate, said first conductor of said output circuit being separated from an adjacent edge of said second conductor by a first predetermined gap and an edge opposite said one edge separated from an adjacent edge of said third conductor by a second predetermined gap;
means for establishing a predetermined D.C. potential at said output ends of said second and third conductors of said output circuit, whereby said first, second and third conductor output ends of said output circuit, said dielectric constant, and said first and second predetermined gaps of said output circuit form an unbalanced transmission line input terminal;
means for connecting said input ends of said second and first conductors of said output circuit, whereby said first and second conductor input connected ends of said output circuit, said third conductor input end, said dielectric constant and said first and second predetermined gaps of said output circuits form a balanced transmission line input terminal;
a first electromagnetic energy amplifying device having a first electrode coupled to said third conductor output end of said input circuit, a second electrode coupled to said third conductor input end of said output circuit and a third electrode at said predetermined D.C. potential;
a second electromagnetic energy amplifying device having a first electrode coupled to said first and second conductor output connected ends of said input circuit, a second electrode coupled to said first and second conductor input connected ends of said output circuit and a third electrode at said d.c. potential.

3,848,199
FREQUENCY GENERATING DEVICE UTILIZING A PHASE LOCKED LOOP INCLUDING A VOLTAGE CONTROL OSCILLATOR

Charles L. Weber, Chanute, Kans., assignor to Kustom Electronics, Inc., Chanute, Kans.
Continuation of Ser. No. 213,948, Dec. 30, 1971, abandoned. This application Nov. 16, 1973, Ser. No. 416,412
Int. Cl. H03b *3/04*
U.S. Cl. 331—2 **6 Claims**

1. A signal generating device for generating a plurality of test signals for avionics equipment, the device comprising:

a voltage controlled oscillator (VCO) having a frequency control input and an output corresponding to said test signals, and phase locked loop means interconnected with said VCO control input for setting said VCO output frequency to a value equal to a predetermined integral multiple of the average value of at least two loop input reference frequencies, the phase locked loop comprising:
a first harmonic signal mixer means for generating a first loop input reference frequency and for utilizing same to produce a first plurality of difference frequencies by producing a plurality of harmonics of said first loop input reference frequency and mixing said harmonics with said VCO frequency,
a second harmonic signal mixer means for generating a second loop input reference frequency having a frequency greater than said first loop input reference frequency and for utilizing said second loop input reference frequency to produce a second plurality of difference frequencies by producing a plurality of harmonics of said second loop input reference frequency and mixing said last mentioned harmonics with said VCO frequency,

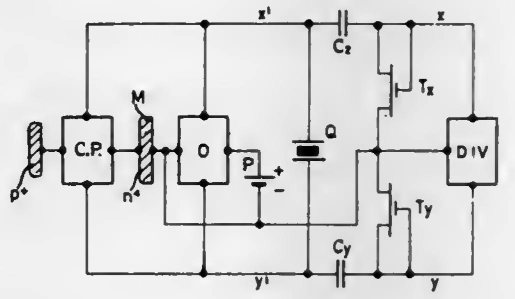


first low pass filter means interconnected with said first harmonic signal mixer means for filtering said first plurality of difference frequencies, said filter means having an output,
second low pass filter means interconnected with said second harmonic signal mixer means for filtering said second plurality of difference frequencies, said second filter means having an output, and
phase comparator means for comparing said first filter means output with said second filter means output, said phase comparator means interconnected to said VCO frequency control input and operable to lock said VCO to a predetermined frequency such that the frequency of said first filter means output is the same as the frequency of said second filter means output.

3,848,200
ASSEMBLY COMPRISING A QUARTZ OSCILLATOR DELIVERING TWO-PHASE PERIODIC SIGNALS AND A DIVIDER FOR THE FREQUENCY OF SAID SIGNALS

Jakob Luscher, 20b Route de Drize, Carouge/Geneve, Switzerland
Filed July 20, 1973, Ser. No. 380,970
Claims priority, application Switzerland, July 21, 1972, 10985/72
Int. Cl. H03b *5/36*
U.S. Cl. 331—51 **2 Claims**

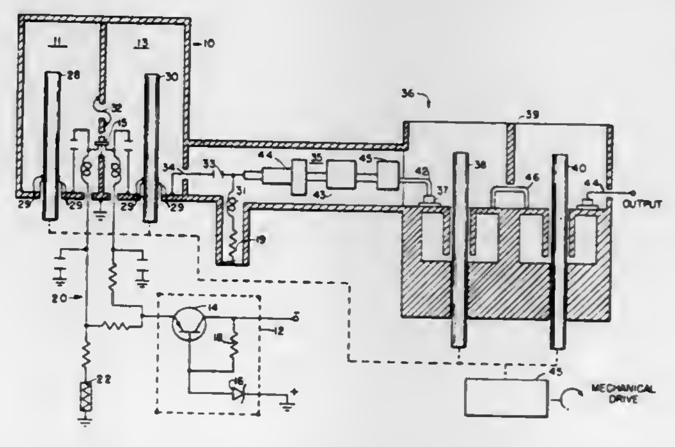
1. Assembly comprising a quartz oscillator delivering two-phased periodic signals and a divider for the frequency of said signals, characterized by the fact that the divider is formed of a shift register which is in integrated form and comprises a plurality of links connected one behind the other, the first of which is arranged behind the last so as to form a closed loop, these links being controlled by the said oscillator alternately from both ends thereof, by the fact that the oscillator and the register are coupled to each other in such a manner that the capacitor change associated with the input capacitance of the register constitutes a part of the capacitive charge of the said oscillator, and finally by the fact that it comprises, arranged at least at one point of said closed loop, means to form a characteristic signal of the passage at said point of any electric charge whose value is at least equal to a predetermined lower



value, means for increasing the value of such a charge up to a ceiling value, and means for removing from said endless loop any charge whose value does not reach said predetermined lower value, the said assembly comprising furthermore means for biasing the crystal in which the components of the said register are integrated.

3,848,201
TURNABLE SOLID STATE LOCAL OSCILLATOR

Adolph Presser, Kendall Park, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 18, 1971, Ser. No. 189,822
Int. Cl. H03b *3/04*
U.S. Cl. 331—76 **4 Claims**



1. In a wide band tunable power supply the combination comprising:

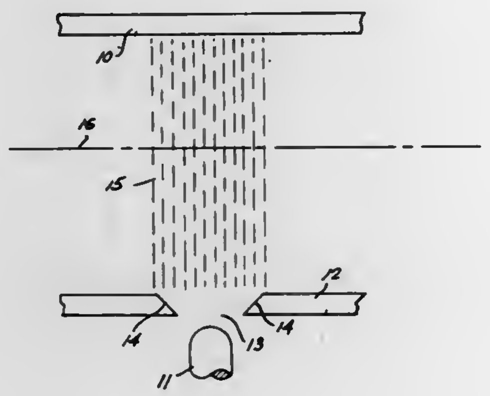
a. a transistor oscillator,
b. a two section constant Q, wide band coaxial filter tunable over the n-th harmonic frequency range of said oscillator,
c. a step recovery diode connected in series in the input loop of said coaxial filter,
d. impedance matching network means coupling the output of said transistor oscillator to said input loop of said coaxial filter.

3,848,202
TRANSVERSE EXCITATION SYSTEM FOR GAS LASER USING THREE ELECTRODES

Graham Everett Hyne, Ste. Foy, Quebec, Canada, assignor to The Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada
Filed May 23, 1972, Ser. No. 256,044
Claims priority, application Canada, Sept. 13, 1971, 122687
Int. Cl. H01s *3/22*
U.S. Cl. 331—94.5 PE **14 Claims**

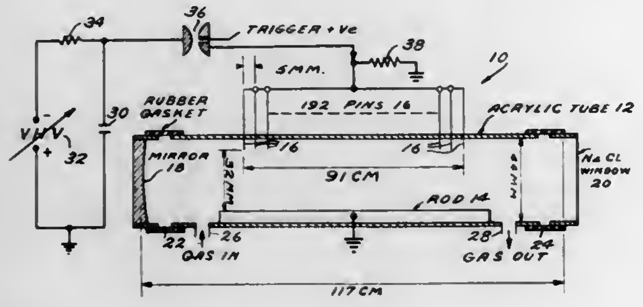
1. In a gas laser having a population inversion region for containing an active laser gas and having a longitudinal axis

and means including a three electrode structure for the transverse excitation of the laser gas in said region for creating said population inversion, the improvement wherein
 said electrode structure comprises:
 an anode extending parallel to said longitudinal axis in said region,
 at least one uninsulated metal cathode pin positioned on the opposite side of said longitudinal axis from said anode and longitudinally extending in a direction toward said anode,



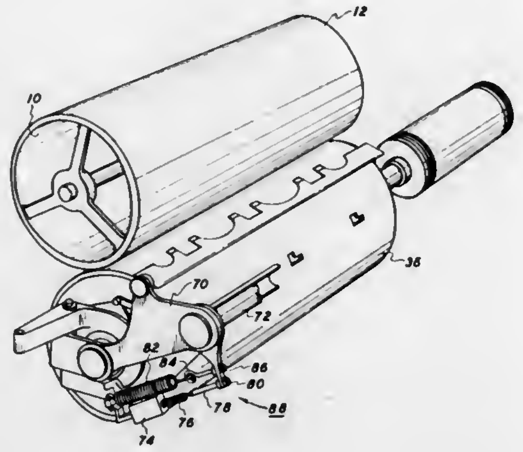
 a plasma forming electrode positioned fully between said anode and cathode pin and having an opening formed substantially in alignment with the longitudinally projecting cathode pin,
 said plasma forming electrode being positioned on the same side of said longitudinal axis as said cathode pin,
 the spacing between the cathode pin and the edges of the opening in said plasma forming electrode being much less than the distance between the plasma forming electrode and the anode, and wherein
 said population inversion means includes means for applying a high voltage pulse across said anode and cathode pin to cause a discharge between the cathode pin and plasma forming electrode and current limiting impedance between said plasma forming electrode and said anode operative in conjunction with said spacing between said cathode pin and the edges of the opening in said plasma forming electrode and the potential difference between said plasma forming electrode and anode resulting from said high voltage pulse for causing solely a diffuse plasma discharge between said plasma forming electrode and anode to excite said laser gas.

3,848,203
TEA LASER
Martin M. Hale, 20 Pere Jogues, Loretteville, and Kenneth A. Laurie, 1035 Blvd. Pie XII, Apt. 108, Ste. Foy, Quebec, both of Canada
Filed Nov. 3, 1972, Ser. No. 303,344
Int. Cl. H01s *3/09*
U.S. Cl. 331—94.5 **11 Claims**



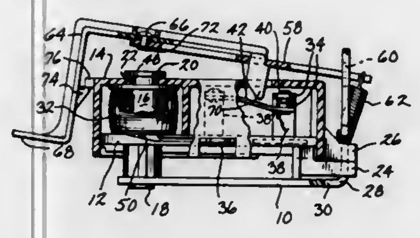
1. A pulsed TEA laser comprising:
an elongated cavity having a longitudinal optical axis,
 first and second spaced electrode means positioned on opposite sides of said optical axis, means for introducing gas into said cavity between said electrode means,
 said first electrode means including a multiplicity of spaced pin electrodes each of which are positioned to cooperate with said second electrode means,
 storage condenser means,
 means for charging said condenser means to a voltage of about 40 kilovolts,
 means connecting said condenser means across said electrode means including switch means directly connecting said condenser means to each of said pin electrodes for applying said condenser voltage across said first and second electrode means for up to only one half microsecond to cause uniform shower discharges from each of said pin electrodes to said second electrode means, said gas being a mixture including carbon dioxide and helium with helium being at least 62 percent and less than 80 percent of the mixture by volume.

3,848,204
PRESSURE ADJUSTABLE ELECTROPHOTOGRAPHIC PRINTING MACHINE TRANSFER APPARATUS
Vaidevutis C. Draugelis, Rochester; Franklin S. Reese, Victor, and John W. Wagner, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Sept. 21, 1973, Ser. No. 399,578
Int. Cl. G03g *15/16*
U.S. Cl. 355—3 R **6 Claims**



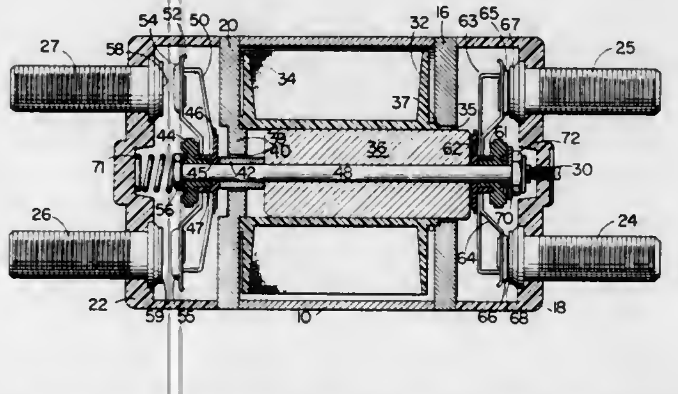
1. An apparatus for transferring a developed image of electrostatically charged particles from an image bearing member to a sheet of support material, including:
 a frame;
 a yoke mounted pivotably on said frame;
 a transfer drum mounted rotatably in said yoke and arranged to have the sheet of support material secured releasably thereon for movement in a recirculating path therewith;
 resilient means for applying a moment to said yoke arranged to balance the moment applied thereon by said transfer drum;
 means for generating a substantially constant potential difference between said transfer drum and the image bearing member;
 solenoid means operatively associated with said yoke and arranged to move said transfer drum from an inoperative position spaced from the image bearing member to an operative position in contact therewith, whereby the potential difference between said transfer drum and the image bearing member attracts the developed image of charged particles from the image bearing member to the sheet of support material secured to said transfer drum; and
 means for controlling the force applied at contact between said transfer drum and the image bearing member to effect efficient transfer of the developed image of electrostatically charged particles.

3,848,205
KICK-OUT SWITCH AND BUZZER
Spencer C. Schantz, 16608 W. Rogers Dr., New Berlin, Wis., and William R. Berry, Menomonee Falls, Wis., assignors to said Schantz, by said Berry
Continuation-in-part of Ser. No. 306,527, Nov. 15, 1972. This application Oct. 1, 1973, Ser. No. 402,518
Int. Cl. H01h *50/02*
U.S. Cl. 335—128 **13 Claims**



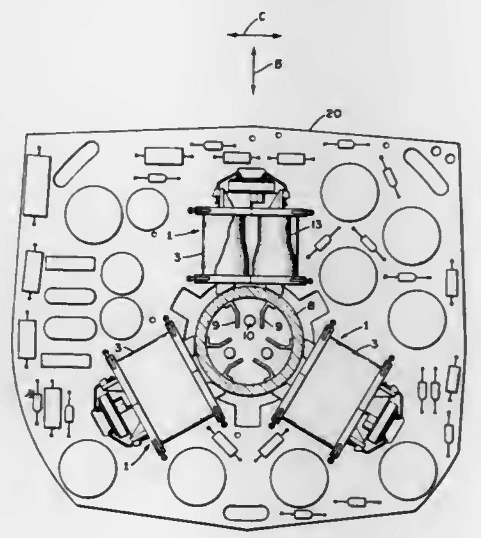
1. In an electric switch having a magnetic frame, having a magnetic pole piece mounted on said frame, having an electric coil for said pole piece, having a first electric terminal coupled to one end of said coil, having a second electric terminal coupled to the other end of said coil, having first and second contact-supporting arms attached respectively to said first and second terminals, having first and second electric contacts mounted on said contact-supporting arms, one of said contact-supporting arms being flexible for relative movement toward and away from the other to open and close the contacts, and having actuating means engageable with said flexible contact-supporting arm for moving it to open and close the contacts, the improvement comprising a base member attached to said frame and forming a common support for said coil, terminals, contact-supporting arms and contacts, said base member being made of an electric insulating material and having an upstanding bobbin projecting therefrom provided with an axial bore through which said pole piece extends, and said coil being wound around said bobbin, and said base member having two pockets each receiving a portion of an electric terminal to support the terminal and the electric contact attached thereto.

3,848,206
ELECTROMAGNETIC SOLENOID WITH IMPROVED CONTACT ANTIBOUNCE MEANS
Robert E. Prouty, and James J. Smith, both of Logansport, Ind., assignors to Essex International, Inc., Fort Wayne, Ind.
Filed July 18, 1973, Ser. No. 380,502
Int. Cl. H01h *3/60*
U.S. Cl. 335—193 **2 Claims**



1. In an electromagnetic switch having a housing, an electromagnetic actuator including a coil with a central bore, a plunger armature reciprocable within said coil bore between actuated and unactuated positions in response to energization and deenergization of said coil, a pair of spaced fixed contacts in said housing, contact carrier means rigidly connected to and movable conjointly with said plunger armature, flexible bridging contact means slidably carried by said contact carrier means for limited relative movement thereon and arranged to engage said fixed contacts when said plunger armature is at the unactuated position, a spring member carried by said contact carrier means and biasing said bridging contact means toward said fixed contacts, and spring means biasing said plunger armature and contact carrier means to said unactuated position, wherein the improvement comprises in combination therewith:
 an adjustable stop member on said housing disposed adjacent one end of said plunger armature to effectively limit the extent of movement of said plunger armature in the direction toward said unactuated position; and
 said stop member being adjusted to allow movement of said plunger armature and said contact carrier means from said actuated position to said unactuated position until said fixed contacts are engaged by said flexible bridging contact means and thereafter an additional predetermined distance which limits the sliding and flexing movement of said flexible bridging contact means to a value that results in minimum bounce of the flexible contact means upon deenergization of said coil.

3,848,207
MOUNTING ASSEMBLY FOR A CONVERGENCE COIL
Robert William Bussey, Crystal Lake, and John Glenn Powers, Wilmette, both of Ill., assignors to TRW, Inc., Elk Grove Village, Ill.
Filed Feb. 1, 1974, Ser. No. 438,757
Int. Cl. H01f *7/00*
U.S. Cl. 335—210 **14 Claims**

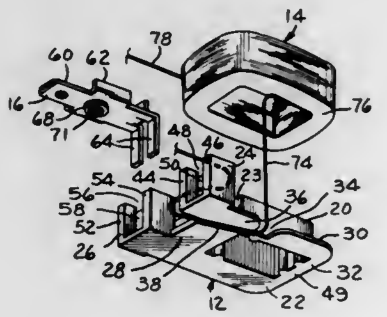


1. A convergence assembly for use with a cathode ray tube and for mounting on a printed circuit board comprising;
 a supporting structure having a lower portion for mounting proximate to a cathode ray tube neck and an upper portion for mounting radially distant from a cathode ray tube neck,
 magnetic flux producing means contained by the supporting structure,
 mounting means including a lower mounting lug pair extending from the lower portion of the supporting means which is resilient in the radial and skew directions and substantially rigid in the axial direction of a cathode ray tube neck and having a mounting portion for inserting into a printed circuit board, and
 an upper mounting lug pair extending from the upper portion of the supporting means which is resilient in the radial direction of a cathode ray tube neck and having a mounting portion for inserting into a printed circuit board,
 whereby upon assembly to a cathode ray tube neck the convergence assembly being mounted on a printed circuit board will be slightly movable with respect to the printed

circuit board in the radial direction and slightly movable in the skew direction only at its portion near to the cathode ray tube and will be immovable in the axial direction.

3,848,208
ENCAPSULATED COIL ASSEMBLY

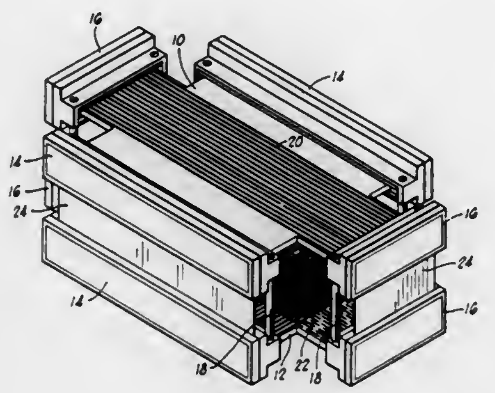
Carlyle Steven Dawson, Normal, and Dorsey Lorraine Hardman, Lexington, both of Ill., assignors to General Electric Company, New York, N.Y.
Filed Oct. 19, 1973, Ser. No. 407,791
Int. Cl. H01f *27/30*
U.S. Cl. 336—96 4 Claims



1. An encapsulated coil assembly comprising:
a. an electrically insulative support including a main portion, a flanged portion extending from said main portion, and first and second terminal receiving sections, said flanged portion comprising top, bottom and first and second side sections having a first surface contiguous with said main portion and a second surface opposite said first surface, said first side section having an opening extending between said first and second surfaces and a slot within said second surface, the slot extending from said bottom section at a point adjacent said first terminal receiving section to the opening in said first side section at a point adjacent said main portion, each of said first and second terminal receiving sections extending from said bottom section and having a channel extending completely therethrough in a direction from the top section to the bottom section of said flanged portion;
b. first and second terminal members positioned within said first and second terminal receiving sections respectively;
c. a coil winding surrounding said main portion, said winding including a first turn, a last turn, a start wire portion and a terminating wire portion, said start wire portion extending from said first terminal, through the channel in said first terminal receiving section to within the slot in the second surface of said flanged portion, then through the opening in said flanged portion to said main portion and the beginning of said first turn of said coil winding, said terminating wire portion extending from the end of said last turn of coil winding to said second terminal member; and
d. encapsulating material surrounding said coil and said support, whereby during the encapsulation of said coil assembly, and while said encapsulating material is flowing in the direction from said top section toward said bottom section of said flanged portion and through the channel in said first terminal receiving section, sufficient pressure is applied to said start wire to insure firm placement of said start wire within the slot in the second surface of said flanged portion after completion of the encapsulation of said coil assembly.

3,848,209
MAGNETIC FIELD COIL ASSEMBLY FOR A MAGNETIC BUBBLE DOMAIN DEVICE

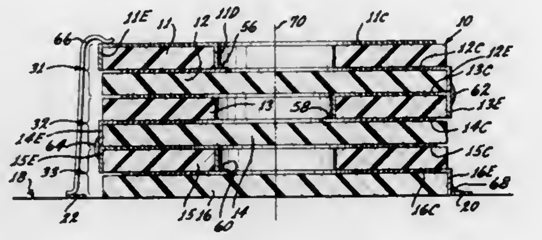
Fred S. Lee, and Jonas K. Vysniauskas, both of Oklahoma City, Okla., assignors to Honeywell Information Systems Inc., Waltham, Mass.
Filed Jan. 2, 1974, Ser. No. 430,366
Int. Cl. H01f *27/30*
U.S. Cl. 336—188 4 Claims



1. An orthogonal coil assembly for establishing a propogation field for magnetic bubble domains comprising:
a. first and second generally rectangular planar boards, each having orthogonal sets of parallel conductors extending across the major surfaces;
b. four generally rectangular interconnecting sheets, each having a set of parallel conductors extending across its surface, the conductors on said interconnecting sheets being spaced at the same intervals as the conductors on said planar boards; and
c. a plurality of removable connectors for securing the conductors at the edges of said planar boards in registration with the conductors at the edges of said interconnecting sheets to form orthogonal sets of electrically conducting coils.

3,848,210
MINIATURE INDUCTOR

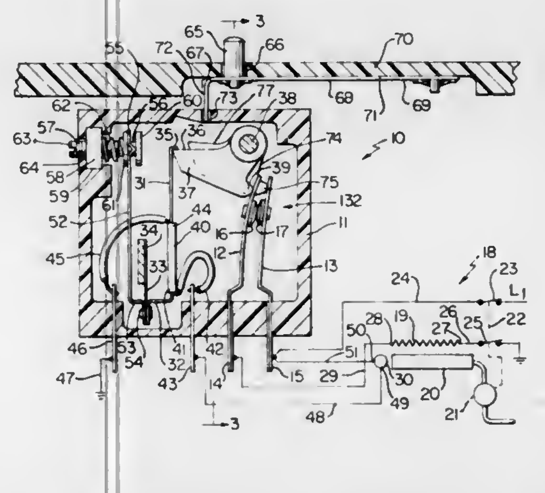
Darrel Felkner, Playa Del Rey, Calif., assignor to Vangaurd Electronics Company, Inc., Inglewood, Calif.
Filed Dec. 11, 1972, Ser. No. 313,647
Int. Cl. H01f *27/30*
U.S. Cl. 336—200 3 Claims



1. An inductor comprising:
a plurality of plates of ferromagnetic material arranged in a stack, alternate plates of said stack having central holes extending completely therethrough; and
a plurality of coils disposed on said plates, each coil forming a spiral extending in substantially a plane on a face of a plate, and the coils on pairs of adjacent plates being wound in opposite directions of spiralling, the coils on the plates that have central holes extending over the edges of the holes and along the walls of the holes and the coil portions lying on the hole walls being integral with the coil portions that extend in a spiral on the face of the plate;
a plurality of first connector means, each including a quantity of conductive material joined to a coil portion that lies on the wall of a plate hole and joined to the center portion of a coil on an adjacent plate; and
a plurality of second connector means, each interconnecting the outer portions of the coils which lie on two plates whose coil center portions are unconnected to each other.

3,848,211
ELECTRICAL SWITCH CONSTRUCTION AND AN ELECTRICAL CONTROL SYSTEM UTILIZING THE SAME OR THE LIKE

William J. Russell, Milford, Conn., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Dec. 14, 1973, Ser. No. 421,525
Int. Cl. H01h *71/16*
U.S. Cl. 337—64 20 Claims

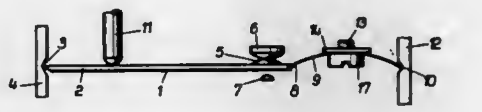


1. An electrical switch construction comprising a housing means, a pair of movable spring blades carried by said housing means and respectively having contact means normally placed out of contact with each other by the normal bias of said switch blades, a pair of cams rotatably carried by said housing means and being respectively engageable with said switch blades, one of said cams when in one position relative to said housing means being adapted to hold its respective switch blade into electrical contact with the other switch blade to complete an electrical circuit therebetween, the other of said cams when in one position thereof relative to said housing means being adapted to hold its respective switch blade out of contact with the other switch blade even though said one cam is in its said one position thereof to thereby prevent completion of said electrical circuit, a movable actuator carried by said housing means and being adapted to simultaneously engage said cams and move the same to said respective one positions thereof, and latch means for holding said one cam in said one position thereof.

3,848,212
SNAP-ACTION SWITCH ASSEMBLY

Hans Schwarm, Katzwang, Nurnberg, Germany, assignor to Eberle Werke KG, Nurnberg, Germany
Filed Nov. 16, 1973, Ser. No. 416,474
Claims priority, application Germany, Dec. 14, 1972, 2261039
Int. Cl. H01h *13/36*
U.S. Cl. 337—67 8 Claims

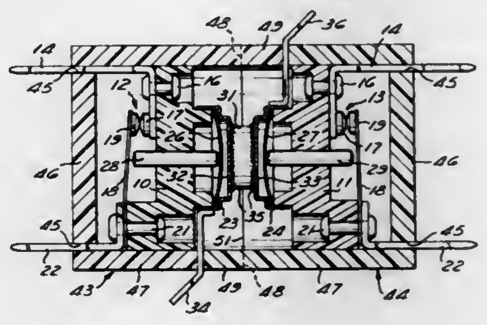
1. A snap-action switch assembly comprising, in combination:
a first support member;
an elongate arm projecting from said first support member and having a first end portion thereof supported by said first support member;
a second support member;
an elongate spring member interconnecting said second support member and said arm to exert a compressive force on said arm;
spring adjuster means supported on a substantially central portion of said elongate spring member and being selectably presettable to vary the magnitude of said compressive force; and



electrical contact means mounted next adjacent a portion of said arm spaced from said first end portion and actuatable by angular displacement of the end portion of said arm opposite said first end portion.

3,848,213
TIME DELAY RELAY

Donald J. Schmitt, Mansfield, Ohio, assignor to Therm-O-Disc Incorporated, Mansfield, Ohio
Filed Oct. 15, 1973, Ser. No. 406,539
Int. Cl. H01h *71/22*
U.S. Cl. 337—107 13 Claims



1. A relay comprising
A. an electric heater,
B. a first assembly positioned on one side of said heater,
C. a second assembly positioned on the opposite side of said heater,
D. each assembly including,
a. a disc retainer,
b. a bimetal snap disc supported by said retainer,
c. and a switch operated by said snap disc,
E. each retainer being formed of a material having good electrical conducting properties and good heat conducting properties,
F. said retainers engaging opposite sides of said heater and providing the electric connection for energizing said heater,
G. said retainers also providing the principal heat flow path between said heater and the associated disc.

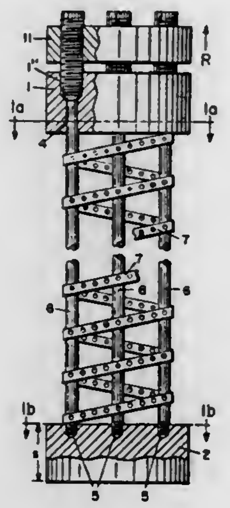
3,848,214
METHOD OF ASSEMBLING ELECTRIC HIGH-VOLTAGE FUSES AND SUBASSEMBLY THEREFOR

Erwin Salzer, Waban, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.
Filed July 9, 1971, Ser. No. 161,089
Int. Cl. H01h *85/04*
U.S. Cl. 337—158 15 Claims

1. A method of assembling electric high-voltage fuses including the steps of
a. providing each of a pair of cylindrical terminal plugs with axially extending bores circular in cross-section arranged to establish a pattern in the shape of a polygon in each of said pair of terminal plugs;
b. threading a plurality of rods through said plurality of bores in one of said pair of terminal plugs, establishing

firm engagement of the ends of said plurality of rods remote from said one of said pair of terminal plugs inside said plurality of bores in the other of said pair of terminal plugs and maintaining a fixed spacing between said pair of terminal plugs by means of said plurality of rods;

c. winding a fusible element substantially helically around the portion of said plurality of rods situated between the axially inner end surfaces of said pair of terminal plugs and conductively connecting each end of said fusible element to one of said pair of terminal plugs;



d. inserting the squirrel-cage-like structure formed by said pair of terminal plugs and said plurality of rods with said fusible element thereon into a tubular casing and affixing said pair of terminal plugs to said casing; and thereafter

e. filling said casing with a pulverulent arc-quenching filler through a filling aperture in said pair of terminal plugs and removing said plurality of rods from said fusible element and from the space inside said casing through said plurality of bores in said one of said pair of terminal plugs.

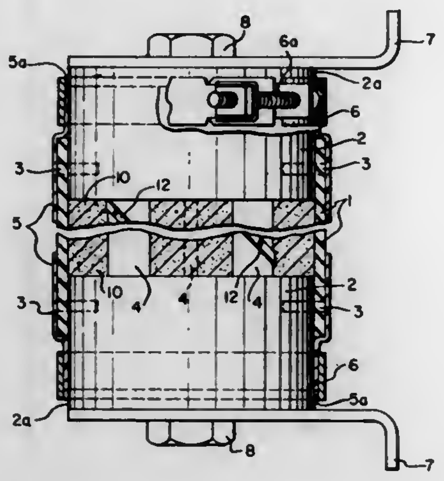
3,848,215
FLUID-TIGHT ELECTRIC FUSE

Frederick J. Kozacka, South Hampton, N.H., and Erwin Salzer, Waban, Mass., assignors to The Chase-Shawmut Company, Newburyport, Mass.

Filed Nov. 9, 1973, Ser. No. 414,307

Int. Cl. H01h ***85/14***

U.S. Cl. 337—246 **5 Claims**



1. An electric fuse including a cylindrical casing of electric insulating material, a pulverulent arc-quenching filler inside of and in engagement with said casing, metallic plug terminals having an outer diameter equal to the inner diameter of said casing plugging the ends of said casing, fusible element means inside said casing immersed in said pulverulent arcquenching filler conductively interconnecting said pair of plug terminals and a fluid-tight single piece sleeve of heat-shrinkable and heat-shrunk substance mounted under stress upon said casing wherein the improvement comprises

a. cylindrical coaxial extensions on and integral with said plug terminals projecting axially beyond said casing to the outside of said casing, said extensions having an outer diameter substantially equal to the inner diameter of said casing so that the extent of shrinkage required to mount said sleeve tightly on said casing and to mount said sleeve tightly on said extensions is substantially equal; and

b. annular metal clamps having adjustment screws for varying the extent of the periphery thereof mounted on said extensions and on portions of said sleeve extending beyond said casing and overlapping said extensions, said annular metal clamps clamping said portions of said sleeve against said extensions.

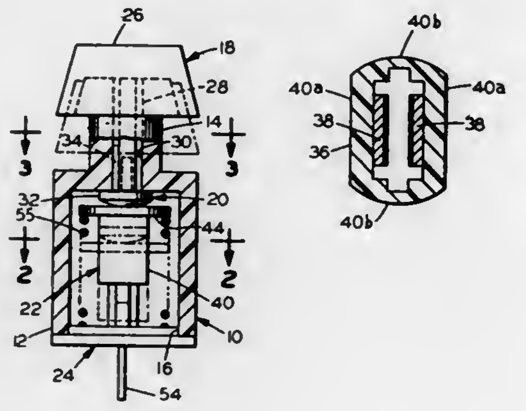
3,848,216
SOLID STATE KEYBOARD SWITCH

John G. Gamble, 24 Forest Hill Dr., Simsbury, Conn. 06070

Filed Oct. 9, 1973, Ser. No. 404,485

Int. Cl. H01c ***7/16***

U.S. Cl. 338—32 H **10 Claims**



1. A solid state switch operable for accomplishing an electrical switching function comprising:

a. housing means having a plurality of side walls interconnected to form a hollow chamber therebetween;

b. externally accessible terminal means supported on said housing means operable for connecting the solid state switch in electrical circuit relation in an electrical circuit;

c. guide means mounted on said housing means and extending inwardly into said hollow chamber;

d. a field sensitive switching element mounted on said guide means operable in response to exposure to changes in magnetic flux density to produce corresponding electrical outputs;

e. magnetic actuator means supported in said hollow chamber of said housing means and having an opeing formed at least partially therethrough for receiving at least a portion of said guide means therewithin, said magnetic actuator means including magnetic means positioned thereon with at least a portion of said magnetic means located on either side of said opening in said magnetic actuator means, said magnetic means comprising at least two cross coupled magnetic pole pairs operable to produce a standing magnetic wave; and

f. force applying means operatively connected to said magnetic actuator means and actuatable for producing relative movement between said magnetic actuator means and said guide means wherein when said guide means in response to actuation of said force applying means occupies a first position relative to said opening in said magnetic actuator means said magnetic means bears a first relationship to said field sensitive switching element thereby exposing said field sensitive switching element to a first level of magnetic flux density to establish a first operating condition of said field sensitive switching element thereby causing a first form of output to be provided from the solid state switch, and when said guide means in response to the unactuation of said force applying means occupies a second position relative to said opening in said magnetic actuator means said magnetic means bears a second relationship to said field sensitive switching element thereby exposing said field sensitive switching element to a second level of magnetic flux density to establish a second operating condition of said field sensitive switching element thereby causing a second form of output to be provided from the solid state switch.

3,848,217
MAGNETORESISTIVE DEVICES AND TRANSDUCERS

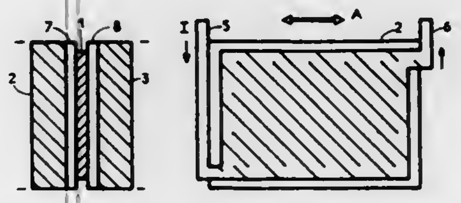
Jean-Pierre Lazzari, Villiers Saint Frederic, France, assignor to Compagnie Internationale Pour L'Informatique, Versailles, France

Filed Dec. 15, 1972, Ser. No. 315,476

Claims priority, application France, Dec. 22, 1971, 71.46103

Int. Cl. H01c ***7/16***

U.S. Cl. 338—32 R **5 Claims**



1. A magnetoresistive device comprising:

a layer of magnetoresistive anisotropic material, having an easy axis of magnetization at substantially 45° to the direction of electrical current flow therethrough;

a pair of layers of high permeability magnetic material, thicker than and sandwiched around said magnetoresistive layer; and

electrically insulating films one positioned between each magnetoresistive and magnetic layers respectively to effect magnetostatic coupling between said magnetoresistive and magnetic layers.

3,848,218
HUMIDITY SENSING ELEMENT

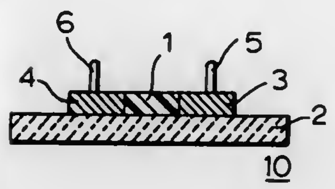
Takashi Wakabayashi, C-301, 8, Misawa-cho, Ibaragi, and Kanji Sugihara, 17-1 8-chome, Korigaoka, Hirakata, both of Japan

Filed Sept. 7, 1973, Ser. No. 394,999

Claims priority, application Japan, Sept. 20, 1972, 47-94738

Int. Cl. H01c ***13/00***

U.S. Cl. 338—35 **9 Claims**



1. A humidity sensing element comprising a humidity sensitive film which has finely divided conductive particles dispersed in a resin consisting essentially of a reaction product of a chlorine containing polymer and a polyamide resin, and two electrodes applied to said humidity sensitive film.

3,848,219
VARIABLE RESISTOR

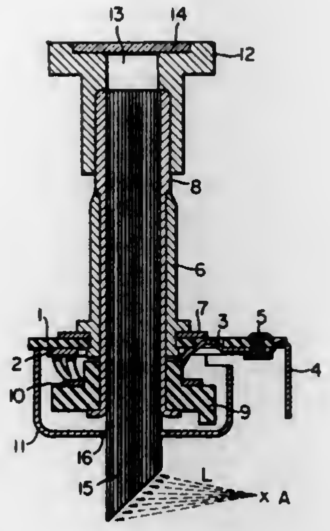
Shunzo Oka, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 26, 1972, Ser. No. 318,642

Claims priority, application Japan, Dec. 29, 1971, 47-000242; Mar. 14, 1972, 47-030908

Int. Cl. H01c ***1/00***

U.S. Cl. 338—119 **2 Claims**



1. A variable resistor comprising a base plate of an insulating material, a resistor mounted on the base plate, bearing means secured to the base plate, a hollow operating shaft journalled by the bearing means, a brush mount supporting a brush for sliding contact with the resistor, a contact element which is in contact with the brush, and a bundle of optical fiber elements disposed in the hollow operating shaft having an obliquely cut end adjacent to light generating means.

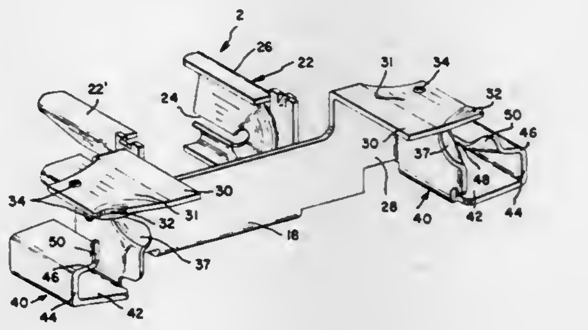
3,848,220
ELECTRICAL CONNECTING DEVICE FOR SERVICE OUTLET

Robert Houston Frantz, Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 31, 1973, Ser. No. 365,780

Int. Cl. H01r ***27/02***

U.S. Cl. 339—32 R **3 Claims**



1. An electrical receptacle terminal intended for use in an electrical service receptacle, said terminal having an elongated buss section extending in a third plane and having a socket portion at each end of said buss section, each of said socket portions being adapted to receive a blade in either of two orientations, each of said socket portions comprising:

a web section extending in a said third plane, first and second contact portions,

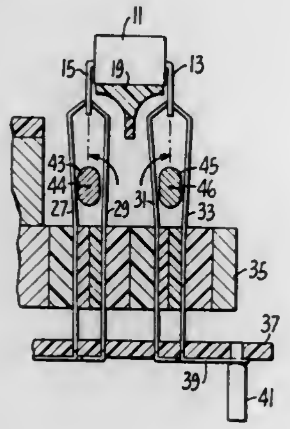
said first contact portion comprising a plate-like section extending in a first plane which extends normally of said third plane, said second contact portion comprising a plate-like section in a second plane which extends normally of said first and third planes, said second contact portion having one edge which extends parallel to, and is spaced from, said first contact plate-like section, whereby said blade is adapted to be inserted between said one edge and said surface of said first contact portion when said blade is parallel to said first plane,

a generally channel-shaped extension on said second contact portion, said extension having one sidewall extending from a second edge of said second contact portion which is on the opposite side thereof from said first edge, said channel-shaped extension having a channel web which is parallel to, and spaced from, said second contact portion and having a second sidewall which extends towards said second contact portion, said second sidewall having a free edge which is spaced from said second contact portion whereby, a blade terminal oriented in said second plane can be inserted between said second edge and said second contact portion.

3,848,221
CONTACT ASSEMBLY UTILIZING FLEXIBLE CONTACTS FOR PINS OF INTEGRATED CIRCUITS

Robert E. Lee, Jr., Mountain View, Calif., assignor to International Production Technology Corporation, Sunnyvale, Calif.

Filed Mar. 7, 1973, Ser. No. 338,966
Int. Cl. H01r *13/62*
U.S. Cl. 339—74 R **9 Claims**



1. An integrated circuit test contractor, comprising:

an elongated track held fixed with respect to a frame to provide a top surface for support of integrated circuit packages to be moved therealong,

first and second elongated cams being eccentric in cross-section with narrow and wide dimensions and rotatable about first and second axes that are fixed with respect to the frame and parallel to said track, said first axis being positioned on one side of the track and said second axis being positioned along an opposite side of said track,

first, second, third and fourth rows of flexible electrically conductive contacts held parallel to said track by rigid attachment of one end of each contact to said frame, the other end of each contact being freely permitted to flex in a path below said support top surface,

said first and second rows of contacts being on opposite sides of said first cam with their free ends extending above said first cam and normally extending inward over said first axis when said first cam is positioned with its narrow dimension between said rows, said first and second rows of contacts being flexed outward when the first cam is positioned with its wide dimension between said rows,

said third and fourth rows of contacts being on opposite sides of said second cam with their free ends extending above said second cam and normally extending inward over said second axis when said second cam is positioned with its narrow dimension between said rows, said third and fourth rows of contacts being flexed outward when the second cam is positioned with its wide dimension between said rows,

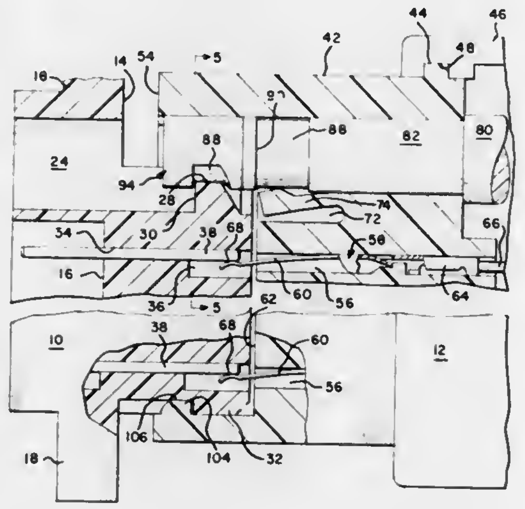
resilient means normally holding said cams in a position with each of the first and second cams having their wide dimension positioned between their respective rows of contacts, whereby the free ends of the contacts are normally spread apart, and

means acting against said resilient means for simultaneously rotating each of said first and second cams to position their narrow dimension between their respective rows of contacts, whereby the free ends of said contacts are closed toward each other.

3,848,222
ZERO ENTRY CONNECTOR SYSTEM

Linn Stephen Lightner, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed July 18, 1973, Ser. No. 380,316
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 M **29 Claims**



1. A low entry force electrical connector system comprising:

a first connector member having a plurality of passive contacts, each said passive contact having a contacting surface and being secured in individual bores in said first connector member;

a second mating connector member having a like plurality of active contacts, each of said active contacts being secured in individual bores in said second connector member and having a contacting surface extending from said bores,

each of said active contacts in said second connector member being associated with a passive contact in said first connector member and being overlappingly spaced apart from said associated contact when said connector members are initially mated;

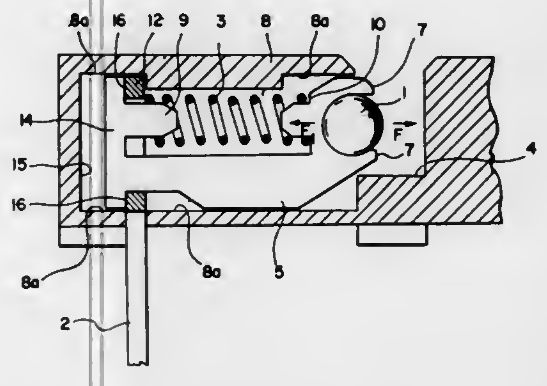
cam means rotatably mounted on one of said contact carrying connector members and adapted to act directly on the other of said contact carrying connector members to cause relative transverse movement between said members,

whereby said connector members are initially mated without said contacts engaging and said contacts are brought into engagement by the relative transverse movement resulting from actuating said cam means.

3,848,223
CONNECTOR FOR PRINTED CIRCUIT BOARDS

Lucien Leon Pechard, Dole, France, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Apr. 16, 1973, Ser. No. 351,537
Claims priority, application France, Apr. 20, 1972, 72.14060
Int. Cl. H05k *1/07*
U.S. Cl. 339—176 MP **5 Claims**



1. A connector for establishing a respective electrical connection to each of a plurality of spaced contacts carried by and adjacent one edge of a printed circuit board comprising: a body member having a groove extending longitudinally along said body member for receiving said spaced contacts and the one edge of said printed circuit board;

a ball contact for each spaced contact;

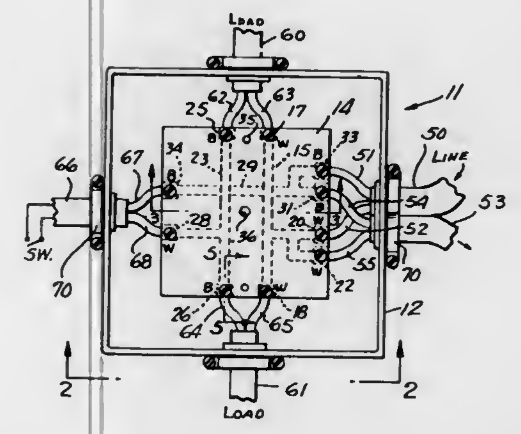
a carrier member for each ball contact carrying the respective ball contact for rotation about the center of the respective ball contact and for movement with the respective carrier member transversely to said groove for enabling each ball contact to be moved into said groove for engaging a respective spaced contact on said printed circuit board; and

means for biasing each carrier member and the respective ball contact carried by each carrier member toward said groove with the spherical configuration of each ball contact projecting into said groove for engaging a respective one of the spaced contacts on the printed circuit board in response to the receipt of said spaced contacts and the one edge of said printed circuit board in said groove.

3,848,224
PRE-WIRED SWITCH BOX

Carlo Olivero, 66 Saunder St., Dalzell, Ill. 61320

Filed June 15, 1973, Ser. No. 370,317
Int. Cl. H01r *9/00*
U.S. Cl. 339—198 E **6 Claims**

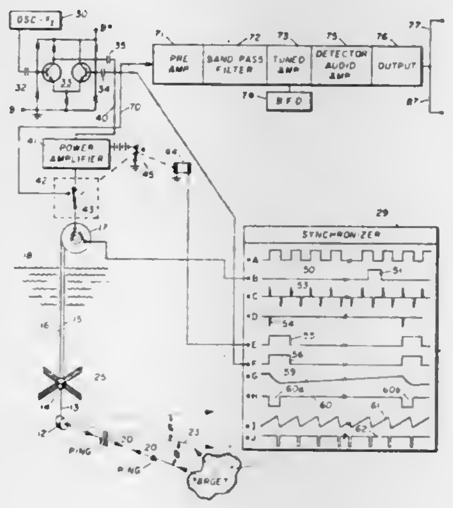


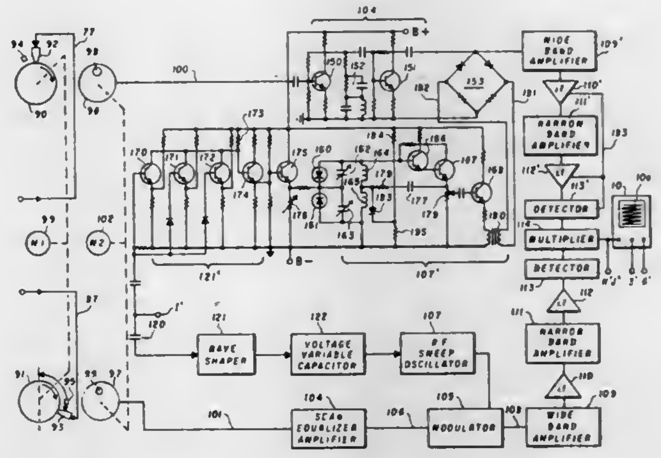
1. In combination, a switch wiring device comprising an insulating body member provided respectively with a pair of supply line terminals, a pair of load terminals and a pair of switch terminals, a first conductor bar in said body member directly connecting one of the line terminals to one of the load terminals, a second conductor bar in said body member connecting the other line terminal to one switch terminal, a third conductor bar in said body member connecting the remaining switch terminal to the remaining load terminal, a pair of power supply wires detachably connected to said supply line terminals, and a switch having a pair of connecting wires detachably connected to said switch terminals, wherein the terminals comprise apertured binding posts provided with wire-clamping screws, wherein said binding posts are integrally formed on the conductor bars, wherein the second conductor bar extends transverse to the first conductor bar in the body member and is spaced therefrom, and wherein the binding posts are located substantially at the edges of the body member and are substantially flush therewith.

3,848,225
CORRELATION SONAR

Alvin E. Armstrong, Dallas, and Kenneth R. Slater, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 16, 1961, Ser. No. 153,781
Int. Cl. G01s *9/68, 7/62*
U.S. Cl. 340—3 R **4 Claims**





1. In sonic ranging the method which comprises at a sending-receiving station transmitting a first pulse having a predominant frequency in the upper sonic range, in the time interval following said first pulse sensing acoustic vibrations returning to sending-receiving station to produce a received signal which includes components representative of echoes of said pulse, the frequency of which is modified relative to the frequency of said pulse in dependence upon the relative velocities between said sending station and any object producing said echoes, producing at least two separate recordings of said received signal, reproducing the recorded signals, generating a pair of high frequency signals each representative of said received signal with the first high frequency signal shifted in

time relative to the second high frequency signal by an amount of the order of one-half the duration of said pulse to bring into time coincidence different time segments of the echo components, generating a timing function which repeatedly varies monotonically from a predetermined level occurring in known time relation to the instant of transmission of said pulse, generating a reference signal which varies in frequency dependence upon said timing function, mixing said reference signal with both of the first and second high frequency signals to produce side band components, detecting said side band components to produce a pair of output signals, and generating a signal from the product of said pair of output signals.

3,848,226

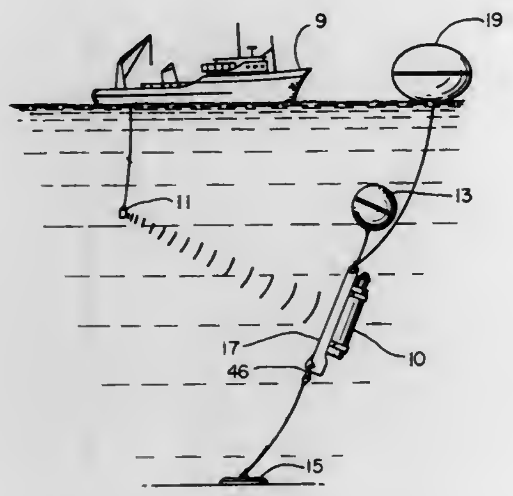
HIGH CAPACITY UNDERWATER ACOUSTIC RELEASE

George R. Perez, Alexandria, Va., assignor to AMF Incorporated, White Plains, N.Y.

Filed Apr. 17, 1973, Ser. No. 352,023

Int. Cl. B66c *1/34*

U.S. Cl. 340—5 R **9 Claims**



1. An underwater release mechanism for releasing a load in response to an acoustic command signal comprising:
- a. an elongated housing containing an acoustic receiver for detecting said command signal;
- b. a pair of evenly spaced support plates disposed longitudinally of said housing and at least coextensive therewith, said support plates being removably coupled to the side walls of said housing by clamp means and having a portion extending beyond one end of said housing for releasably supporting the load to be released;
- c. a release linkage pivotally mounted between said side plates in said portion extending beyond said one end of said housing, said release linkage including a pelican hook pivotally mounted about an axis passing through said support plates and having a hook portion for releasably supporting said load, said hook portion being offset from the axis of said pelican hook, and release arm means pivotally mounted between said plates between said pelican hook and said one end of said housing for preventing said pelican hook from rotating; and
- d. actuating means disposed in said one end of said housing for rotating said release arm means to thereby permit said pelican hook to rotate in response to the detection of a command signal by said acoustic receiver.

3,848,227

MAGNETIC LIGHT ASSEMBLY

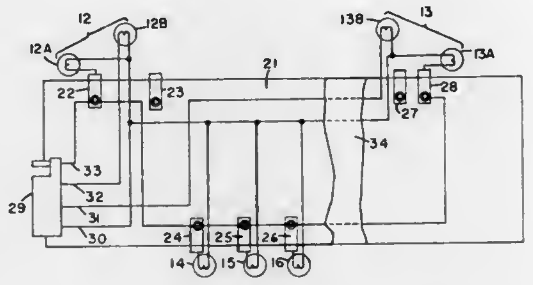
Leon E. Helm, Villa Grove, Ill. 61956

Filed Sept. 18, 1972, Ser. No. 290,231

Int. Cl. B60q *1/26*

U.S. Cl. 340—74 **2 Claims**

1. An apparatus comprising:
- a flat elongated magnetic member constructed of resilient permanent magnetic material which will conformingly and magnetically attach to a curved metal surface;
- a plurality of electrical wires mounted across said member; and,
- an elongated flexible covering secured to said member sandwiching and holding said wires between said member and said covering;
- a bracket fixedly mounted to said member;
- a first electrical light mounted to said bracket and electrically connected to said wires and wherein said member and said covering are adhesively secured together;
- a first metal fastener mounting said bracket to said member and electrically connected directly to one of said wires; and wherein:



- said bracket is metal with said light electrically connected to and across said bracket and another of said wires;
- a second electric light mounted to said bracket, said second electrical light being electrically connected across two of said wires;
- said first fastener is a first rivet extending through said first bracket and said member with opposite enlarged first ends and with said one wire gripped between one of said ends and said bracket;
- said wire is uninsulated when gripped by said first rivet;
- said first light and said second light are respectively vehicle stop and turn signal lights and further comprising:
- a plurality of additional vehicle brake lights mounted to said member and electrically connected to said one wire and to at least one other of said wires.

3,848,228

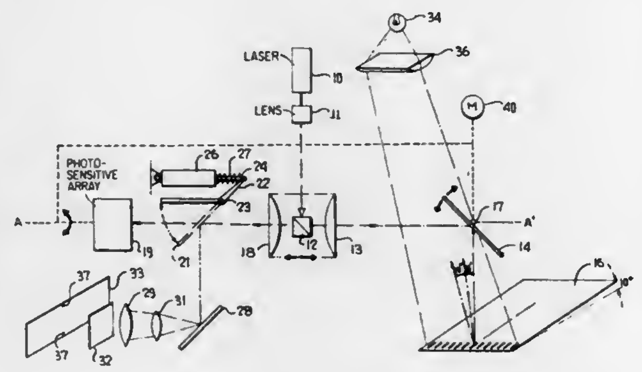
VISUAL DISPLAY OF UNRECOGNIZABLE CHARACTERS IN OPTICAL CHARACTER RECOGNITION MACHINES

John H. MacNeill, Indialantic, Fla., assignor to Optical Business Machines, Inc., Melbourne, Fla.

Filed June 7, 1973, Ser. No. 367,880

Int. Cl. G06k *9/02*

U.S. Cl. 340—146.3 F **7 Claims**



1. In an optical character recognition system intended to recognize characters arranged in at least one row by sequentially examining successive characters and including a source of a beam of light, means for projecting the beam of light onto characters to be recognized and including further means for causing the beam of light to sweep sequentially across the characters in a row, optical image sensing means, means including said further means for directing light reflected from such characters along an optical path to said sensing means, a viewing system characterized by,
- a second optical path including means selectively operable to divert light directed toward the sensing means into said second optical path,
- a viewing screen,
- said second optical path focusing said diverted light on said viewing screen, and
- a further source of light for illuminating the characters in a row when light is diverted into said second optical path.

3,848,229

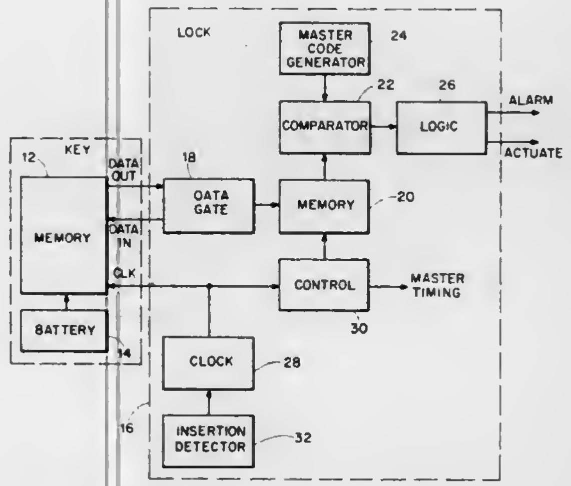
ELECTRONIC LOCK SYSTEM

Robert R. Perron, Beverly, and John T. Fowler, Winthrop, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Continuation of Ser. No. 132,671, April 9, 1971, abandoned. This application July 20, 1972, Ser. No. 273,529

Int. Cl. H04q *9/00*

U.S. Cl. 340—149 A **23 Claims**



1. An electronic lock system comprising:
- a key including a structural member adapted for engagement with an associated lock and an electronic data memory therein having a plurality of interconnected stages operative to store an electrically alterable multiple bit key code and terminal means for coupling said key to an associated lock by which said key code can be conveyed from said electronic data memory in response to a clock signal;
- a lock adapted for operation with said key and including a receptacle for receiving the structural member of said key in operative engagement therewith;
- an electronic data memory for storing a multiple bit master code;
- means for comparing said key code stored in said key data memory with said master code stored in said master code memory;
- clock means for providing a clock signal to said key data memory to cause readout of said key code to said comparison means for comparison of said key code with said master code;
- said comparison means being operative to provide an output indication upon receipt of a key code from said key data memory corresponding to said master code; and
- logic means receiving said output indication from said comparison means and operative in response thereto to provide an output signal.

3,848,230

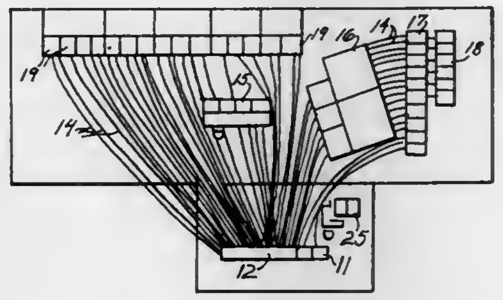
INFORMATION TRANSMISSION SYSTEM

John F. Rehm, Bowie, and Evan E. M. Lloyd, Columbia, both of Md., assignors to The Singer Company, Binghamton, N.Y.

Filed June 15, 1973, Ser. No. 370,456

Int. Cl. H04q *5/24*

U.S. Cl. 340—163 **17 Claims**



1. A system for transmitting information which is originally in both digital form and analog form between a central unit and several widely spaced peripheral units, said system comprising a primary communication path connecting said central unit to all of said peripheral units in parallel, means at said central unit and at each of said peripheral units for converting information to be transmitted over said primary communication path into digital form so that digital information only is carried by said primary communication path, means located at least at each of said peripheral units for converting that information which is transmitted over said primary path and which is intended for analog devices from digital form into the appropriate analog form for said devices, and means for directing information intended for a particular unit to that unit alone.

3,848,231

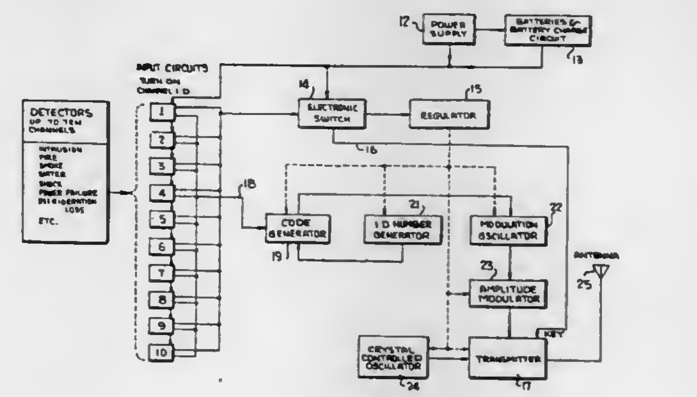
ALARM SYSTEM UTILIZING PULSE POSITION MODULATION AND DUAL CONDUCTOR SENSOR

Thomas S. Wootton, El Paso, Tex., assignor to Baldwin Electronics, Inc., Little Rock, Ark.

Division of Ser. No. 103,203, Dec. 31, 1970, Pat. No. 3,689,888. This application July 24, 1972, Ser. No. 274,250

Int. Cl. G08b *13/08;* **H04q** *1/42*

U.S. Cl. 340—164 R **8 Claims**

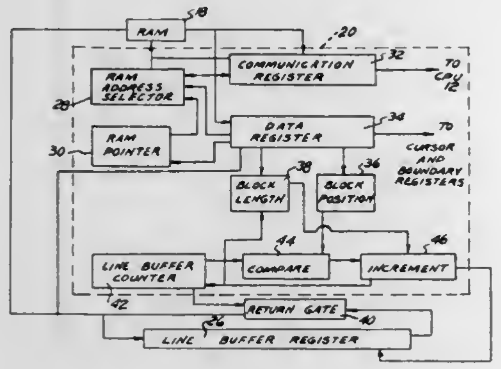


1. A central station for receiving from any one of several peripheral stations transmitted data indicative of the occurrence of any one of several conditions at the peripheral station, said transmitted data including repetitive identical frames of data, each of said frames including piural signals defining channels at least some of which are indicative of the identity of the transmitting station and at least one of which is indicative of the condition occurring at the transmitting station, one of the channels of each frame containing an identifiable pulse, said central station comprising, in combination common receiver means for receiving said data frames from

said several peripheral stations, first means for selecting the channel of each received data frame containing said identifiable pulse, second means for determining the time duration of each channel by measuring the time interval between corresponding portions of adjacent signals of said received data, third means responsive to said first and second means for determining the identity of the transmitting peripheral station and the condition occurring at the station from the time durations of said channels, and fourth means responsive to said third means for indicating the identity of the transmitting peripheral station and the condition occurring at the station.

3,848,232
INTERPRETIVE DISPLAY PROCESSOR

Jerome E. Leibler, Milford; Carl J. Bloch, Ann Arbor; Marvin Preston, IV, Ann Arbor, and Mark D. Weiser, Ann Arbor, all of Mich., assignors to Omnitext, Inc., Ann Arbor, Mich.
Filed July 12, 1973, Ser. No. 378,751
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **26 Claims**



1. A text display processor comprising: means for storing a plurality of digital signals representative of a plurality of strings of text characters in addressable form; means for storing a plurality of digital signals representative of display commands each defining a section of said stored strings of text characters by address and the position of said characters are to occupy in the display in addressable form; a register for storing signals representative of contiguous sections of text to be displayed; means for filling said register with certain of said digital signals representative of strings of text characters from said means for storing text character signals under control of a plurality of said stored display commands; a display means; and means for writing characters on said display means under control of the contents of said register.

3,848,233
METHOD AND APPARATUS FOR INTERFACING WITH A CENTRAL PROCESSING UNIT

Amram Zvi Lotan, Holon, Israel, and Dixson Teh-Chao Jen, Monore, Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.
Filed Nov. 1, 1971, Ser. No. 194,677
Int. Cl. G03f *3/04*
U.S. Cl. 340—172.5 **19 Claims**

1. A unit for controlling the transfer of information between a plurality of data bearing lines, which lines are scanned in a predetermined sequence, and a central processing unit (CPU), said information having at least two different priority levels, said unit comprising:

means for indicating the data bearing line being scanned at any given time;

means for detecting the priority level of each item of information applied to said unit;

means responsive to said detecting means for informing the CPU of the availability of information at the detected priority level;

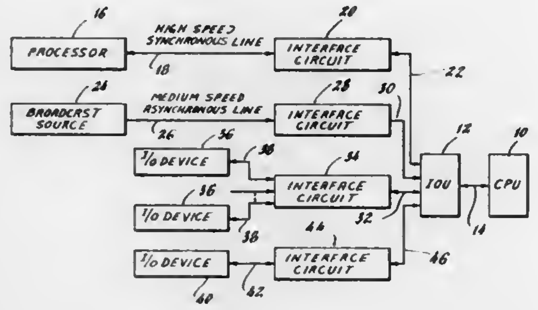
an addressable memory, said memory having an area allocated to each of said priority levels;

input means for indicating the address in said memory at which the next item of information at each of said priority levels is to be stored;

means responsive to said detecting and input indicating means for storing each applied item of information in said memory;

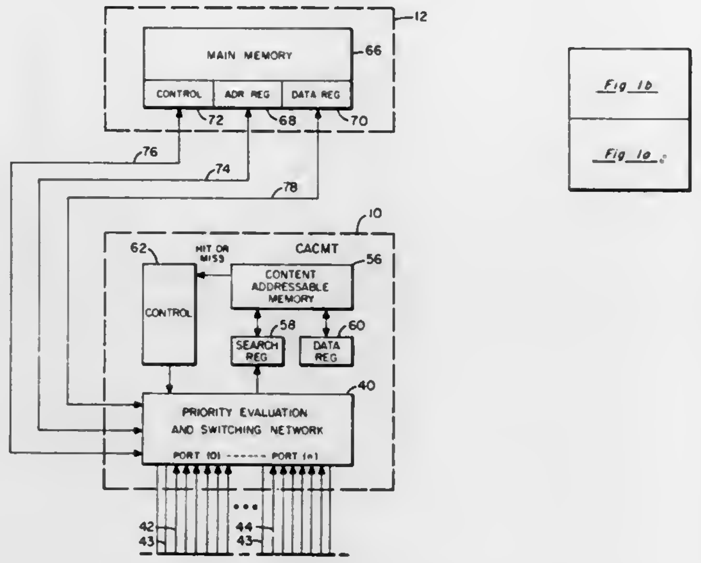
output means for indicating the address in said memory at which is stored the next item of information at each of said priority levels to be transferred to said CPU; and

means responsive at least in part to said informing means and said output means for transferring an item of information from said memory to said CPU.



3,848,234
MULTI-PROCESSOR SYSTEM WITH MULTIPLE CACHE MEMORIES

Thomas Richard MacDonald, Shoreview, Minn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Apr. 4, 1973, Ser. No. 347,970
Int. Cl. G06f *7/28, 13/08;* **G05b** *13/02*
U.S. Cl. 340—172.5 **14 Claims**



1. In a multi-processor type digital computing system, the combination comprising:

a. a plurality of individual requestor units, each including addressing means for fetching instructions to be executed and executing means for processing data in a sequence of operations in accordance with said instructions;

b. a corresponding plurality of relatively low capacity, high cycle time cache memory units, each unit individually connected to a different one of said requestor units for storing at addressable locations therein a limited number of blocks of information words including operands and instructions to be processed, each said cache memory unit including means responsive to said addressing means for determining whether information sought by its respective requestor unit is available therein;

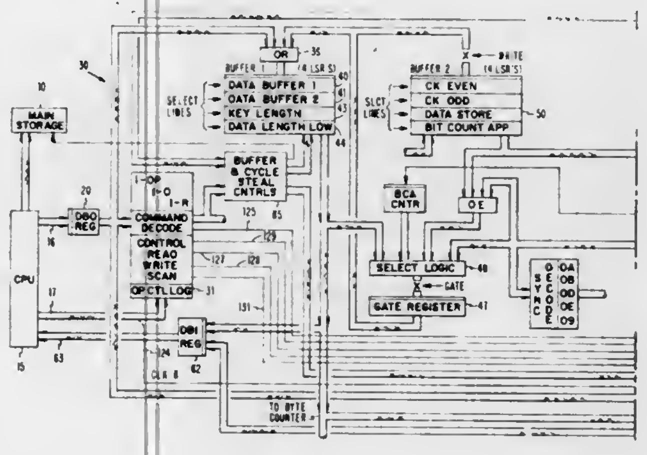
c. a relatively large capacity low cycle time main memory unit for storing at addressable locations therein a complete complement of blocks of information words usable in the system;

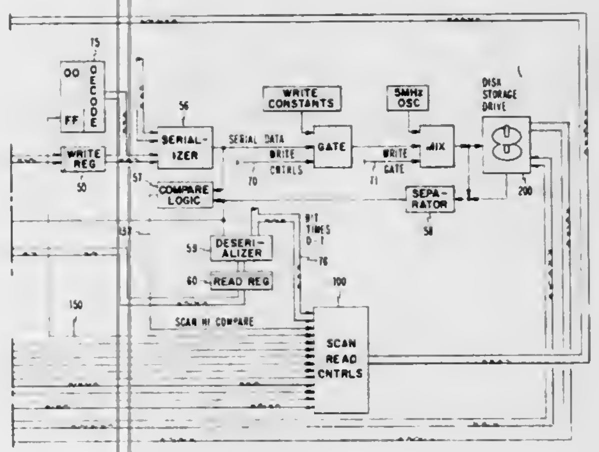
d. a content addressable cache management table connected intermediate said main memory and said plurality of cache memory units for storing a status control word for each block of information words currently stored in said plurality of said cache memory units, said status control words being referenced by a given requestor unit in order to access said main memory when information sought is not available in its associated cache memory unit;

e. means for updating the status control word corresponding to a given block in one of said cache memory units at least the first time in said sequence of operations that a change is made in the information words stored in said given block in said one cache memory unit.

3,848,235
SCAN AND READ CONTROL APPARATUS FOR A DISK STORAGE DRIVE IN A COMPUTER SYSTEM

David Otto Lewis, and Thomas Howard Miller, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 24, 1973, Ser. No. 409,215
Int. Cl. G06f *3/06, 13/04*
U.S. Cl. 340—172.5 **13 Claims**





1. In a computer system including main storage, a central processing unit, a disk storage drive, a disk storage drive attachment for connecting said disk storage drive to said central processing unit, the improvement comprising,

means for reading bytes of data from a disk data field in said disk storage drive containing data to be entered into said main storage,

means for reading bytes of data from a scan field in main storage having a search key with the remaining bytes therein set to a predetermined coded value distinguishable from said search key,

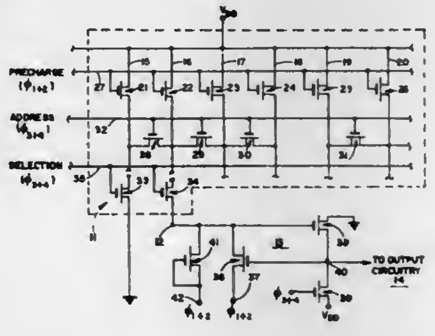
compare means for comparing bytes of data read from said scan field with bytes of data read from said disk data field and indicating a compare condition,

decoding means responsive to the first byte of said scan field having said predetermined coded value distinguishable from said search key for generating a mode switching signal, and

means responsive to said mode switching signal and a compare condition for transferring bytes of data read from said disk data field to said scan field in main storage.

3,848,236
THRESHOLD CIRCUIT

Bruce L. Troutman, Buena Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed May 11, 1973, Ser. No. 359,573
Int. Cl. G11c *7/00*
U.S. Cl. 340—173 R **2 Claims**



1. In a semiconductor memory system including a memory having address locations for storage of binary information thereat, and means for retrieving information from a desired address location for readout at a data node by precharging said data node to a first voltage level during a precharge interval and discharging said data node to a second voltage level along a primary discharge path through said memory during an evaluation interval as a function of the binary state of information stored at said desired address location, the improvement comprising:

shunt means providing a controlled, secondary discharge path for speeding the discharge of said data node, said shunt means including a shunt field effect transistor having the source-drain path thereof connected between said data node and a voltage source and having a control electrode connected to receive a control voltage in response to the discharging of said data node, said control voltage serving to turn on said shunt field effect transistor to complete said secondary discharge path and thereby decrease the time required to discharge said data node; and wherein

said voltage source connected to said shunt field effect transistor is a clock voltage source which assumes said first voltage level during said precharge interval and assumes said second voltage level during said evaluation interval, whereby said voltage source, if said shunt field effect transistor is conductive during said precharge interval, prevents premature discharge of said data node while contributing to the actual precharge thereof.

3,848,237
HIGH SPEED MOS RANDOM ACCESS READ/WRITE MEMORY DEVICE

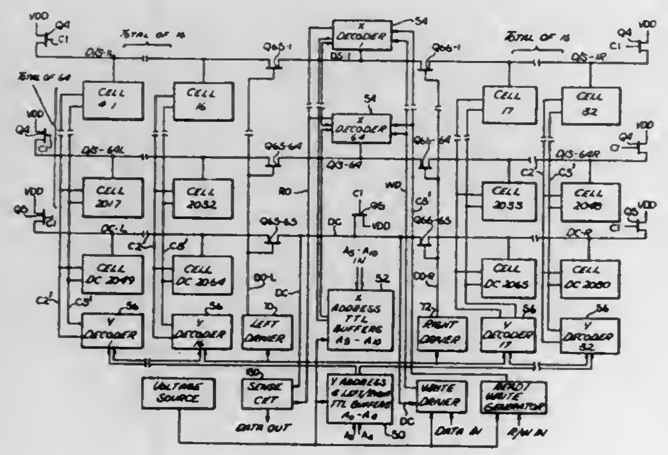
Michael Geilhufe, Los Gatos, and Rustam Jehangir Mehta, Sunnyvale, both of Calif., assignors to Advanced Memory Systems, Sunnyvale, Calif.
Filed Feb. 20, 1973, Ser. No. 334,140
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **32 Claims**

1. In an MOS semiconductor memory,

a plurality of memory cell means arranged in rows and columns, each said memory cell means having a dynamic storage node and being a means coupled to a data sense line for that row and responsive to a decoded first clock signal for that column to set said data sense line to a logic state opposite the logic state of its said storage node, and responsive to a decoded second clock signal for that column for setting the state of said data sense line into said storage node;

a plurality of data control cell means, each said data control cell means being in one of said columns, each said data control cell means having a dynamic storage node and being a means coupled to a data control line and being responsive to a decoded first clock signal for that column to set a data sense line to a logic state opposite the logic state of its said storage node, and responsive to a decoded second clock signal for that column for setting the state of said data sense line into said storage node;

a plurality of TTL buffer means, each said TTL buffer means being a means for receiving a plurality of TTL address logic signals and presenting, as outputs thereof, the equivalent MOS compatible logic signals and the inverse thereof;



a plurality of X decoder means, each said X decoder means being associated with a row of said memory cell means and being a means for receiving a unique combination of outputs from a first group of said TTL buffer means and for coupling said data sense line for that row to a read output line following the occurrence of a specific and unique combination of inputs to said first group of TTL buffer means;

a plurality of Y decoder means, each said Y decoder means being associated with a column of said memory cell means and said data control cell in said column, and being a means for receiving a unique combination of outputs from a second group of said TTL buffer means and for coupling said first clock signal and said second clock signal, as said decoded first clock signal and said decoded second clock signal, to all said cells in the respective column following the occurrence of a specific and unique combination of inputs to said second combination of TTL buffer means; and

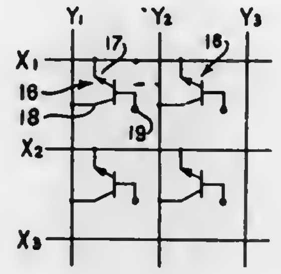
sensing means for sensing the states of said read output line and said data control line and for providing a logic data output signal which is a first logic state signal when said read output line and said data control line is in the same state, and is a second logic state when said read output line and said data control line are in opposite states.

3,848,238
DOUBLE JUNCTION READ ONLY MEMORY
Joseph D. Rizzi, Los Gatos, and Lloyd D. Fagan, Santa Clara, both of Calif., assignors to Intersil Incorporated, Cupertino, Calif.

Division of Ser. No. 97,492, Dec. 14, 1970, Pat. No. 3,733,690, which is a continuation-in-part of Ser. No. 54,531, July 13, 1970, abandoned. This application Apr. 18, 1973, Ser. No. 352,233

Int. Cl. G11c *17/00, 11/36*

U.S. Cl. 340—173 SP **3 Claims**



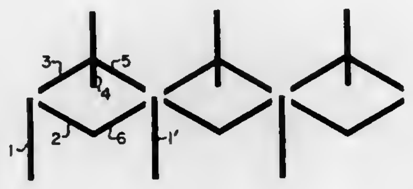
1. An improved integrated circuit READ ONLY MEMORY matrix comprising a single die of semiconducting material having a plurality of transistors formed therein with an insulating layer on an upper surface of the die having openings therethrough to emitter and base regions of each transistor, a plurality of electrical conductors upon the insulating layer with each conductor engaging the emitter of aligned transistors by extension through openings in said layer into ohmic contact with the emitter regions, said conductors forming matrix columns, a plurality of highly doped buried collector regions in said die below the transistor base regions therein and extending across a plurality of transistors including one of each column to form matrix rows, the collector region of each matrix row extending between the transistors of such row in laterally displaced relation to the base regions of the transistors with portions of the collector region extending laterally beneath the edge of base regions furthest from the emitter region of the same transistor, and a low resistance path disposed at the surface of said die beneath said layer across the base-emitter transistor junction of selected transistors to form a programmed memory.

3,848,239
MAGNETIC BUBBLE PROPAGATION
Richmond B. Clover, Jr., Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 26, 1973, Ser. No. 345,050

Int. Cl. G11c *11/14, 19/00*

U.S. Cl. 340—174 TF **4 Claims**



1. A pattern of elements fabricated from a highly permeable magnetic material for use in conjunction with a rotating magnetic field to propagate magnetic bubbles in a magnetic material, said pattern comprising a periodic array of elements, each period of the array comprising a first linear element, first and second oppositely facing chevron-like elements, both of said chevron-like elements positioned adjacent to the same end of the first linear element and having a common axis of symmetry aligned parallel to the first linear element, and a second linear element positioned along this common axis of symmetry and intersecting the first chevron-like element.

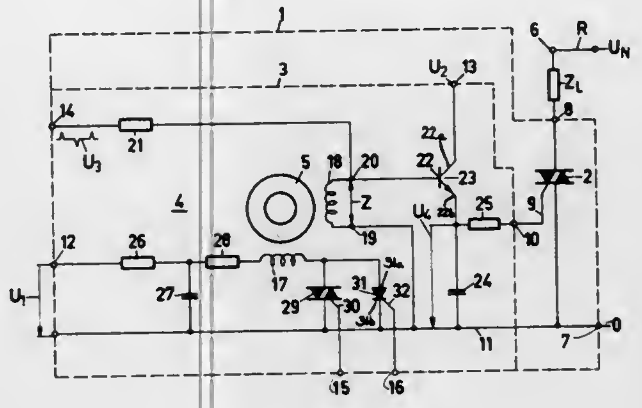
3,848,240
STORAGE SWITCH ARRANGEMENT
Eduard Baumann, Uster, Switzerland, assignor to Zellweger AG, Uster, Switzerland

Filed Mar. 26, 1973, Ser. No. 345,016

Claims priority, application Switzerland, Apr. 26, 1972, 6154/72

Int. Cl. G11c *11/06*

U.S. Cl. 340—174 R **7 Claims**



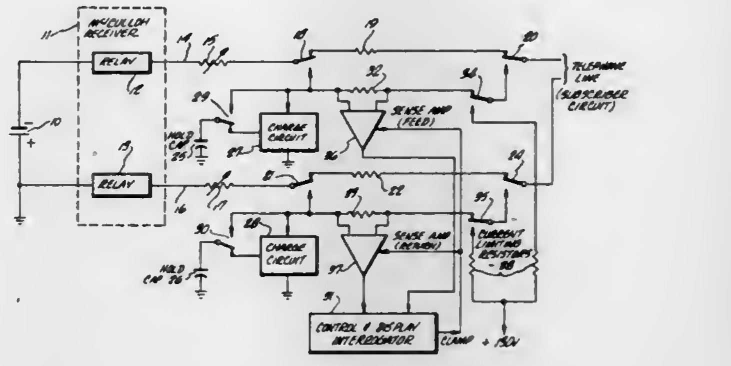
1. A storage switch arrangement comprising a storage switch system incorporating an electronic switch element, a control mechanism operatively associated with the electronic switch element for at least temporarily storing the switching state of the storage switch system, a storage containing magnetizable material provided for said control mechanism, said storage retaining its storage state at least for a certain time duration even upon interruption of the power supply for the storage switch arrangement, said electronic switch element defining a first electronic switch element which is arranged in series with a load impedance, said electronic switch element having a control electrode, said control mechanism having an output, said control electrode being connected with the output of the control mechanism, a supply of AC-voltage, a collecting rail, said control mechanism embodying a voltage divider coupled with the AC-voltage supply and the collecting rail, said voltage divider comprising a resistor and an impedance, said impedance being formed by a reading coil on a core and which core can be magnetized and demagnetized and constituting said storage, a reading coil, said core being operatively associated with the reading coil, a transistor having a control input, the voltage divider having a voltage divider junction, said voltage divider junction being electrically coupled with the control input of said transistor, a DC-voltage supply said transistor further having a collector and an emitter, the collector of the transistor being connected with said DC-voltage supply, a capacitor, the emitter of such transistor being connected with one pole of the capacitor and the other pole of the capacitor being connected with the collecting rail, and wherein said emitter is also galvanically connected with the output of said control mechanism, a further DC-voltage supply, a recording- and erasing coil operatively associated with the magnetizable core, said recording- and erasing coil being arranged in a current circuit connected with a terminal leading to said further DC-voltage supply, said recording- and erasing coil being selectively connectable via a second switching element which passes current in both directions and via a third switching element which passes current only in one direction with the collecting rail, said second switching element receiving control pulses for the switching-in of the storage switch system and the third switching element receiving control pulses for switching-off of said first electronic switch element and therefore the storage switch system.

3,848,241
TEST AND INTEGRITY EQUIPMENT FOR A MCCULLOH SYSTEM
Tom W. LeNay, Encino, and Donald L. Hadden, Fountain Valley, both of Calif., assignors to Baker Industries, Inc., Parsippany, N.J.

Filed Mar. 15, 1973, Ser. No. 341,540

Int. Cl. G08b *13/00, 29/00*

U.S. Cl. 340—214 **10 Claims**


McCULLOH RECEIVER
RELAY
RELAY
TELEPHONE LINE (SUBSCRIBER CIRCUIT)
CHARGE CIRCUIT
CHARGE CIRCUIT
CONTROL & DISPLAY INTERROGATOR

1. In a McCulloh circuit having a feed line and a return line including a DC voltage source powering a McCulloh receiver at a central station and a plurality of McCulloh transmitters with their associated set contacts located at subscriber locations, a test system therefore comprising;

an interrogation means releasably connected at the central station in the feed line and the return line to maintain the normal current in the McCulloh circuit when connected therein, said interrogation means including means for generating a command signal of the opposite polarity of a McCulloh alarm signal and means for receiving a reply signal; and

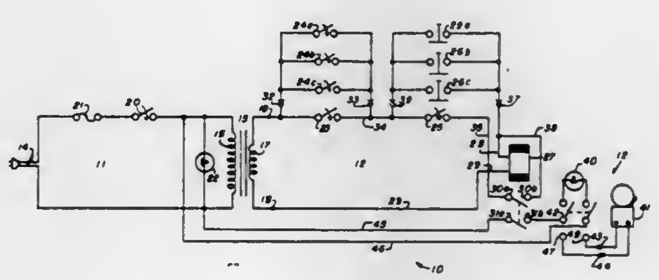
a plurality of receiver units, each of said receiver units connected in series with a McCulloh transmitter and its associated set contacts at various subscriber locations, each of said receiver units including means for receiving the command signal and means for sequentially responding with a reply signal to said interrogation means without interfering with reception of McCulloh alarm signals.

3,848,242
BURGLAR ALARM SYSTEM WITH SELECTABLE LATCHING MODE
Antoino C. Campagna, 6139 Imogene, Houston, Tex. 77035

Filed Nov. 29, 1972, Ser. No. 310,657

Int. Cl. G08b *13/08*

U.S. Cl. 340—274 **3 Claims**



1. An alarm system comprising:

a. an alarm circuit including a signal means; and

b. a normally open triggering circuit including one ore more trigger switches attached to a door, window or the like of a protected premises and adapted to close on the movement of said door, window or the like;

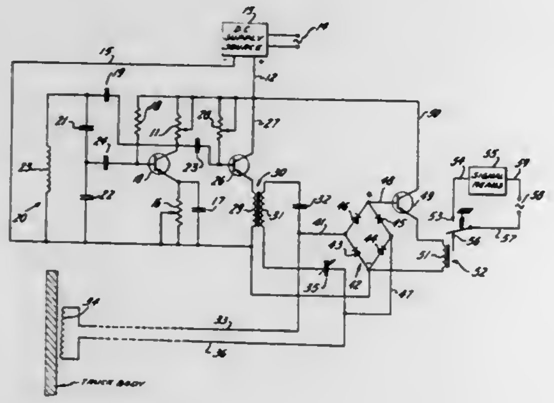
c. said triggering circuit including a relay actuatable on the closing of any of said trigger switches and having contacts in said alarm circuit closeable on actuation of said relay to activate said signal means;

d. said triggering circuit including a switch selectively positional between a closed position, in which said positionable switch is connected, through contacts in said relay, in parallel with said trigger switches, upon said actuation of said relay, to latch-in said relay and an open position which prevents said relay from being locked in but which allows said actuation of said relay and said activation of said signal means as long as one of said trigger switches is closed;

e. said triggering circuit including at least one activator switch internally of said premises and at least one activator switch externally of said premises to allow remote activation and deactivation of said triggering circuit.

3,848,243
INDUCTIVE REACTANCE PROXIMITY ALARM SYSTEM FOR BULKY MOVABLE OBJECTS

Hans A. Schirmer, 20 Westside Ave., Bergenfield, N.J. 07621
Filed Feb. 9, 1973, Ser. No. 330,978
Int. Cl. G08b *13/22*
U.S. Cl. 340—280 **13 Claims**



1. An alarm system for protecting movable objects having at least a metallic portion comprising

oscillator means in a protected location remote from the object to be protected;

tuneable circuit means coupled to said oscillator means for energization thereby, said circuit means having

movable inductive sensing coil means adapted to be mounted on the metallic portion of the movable object to be protected, so that the proximity of said coil means to the metallic portion of the object determines the inductive reactance of the coil means, and

tuning means in said protected location for tuning said circuit means to a predetermined resonant or non-resonant operating condition with said coil means mounted on the metallic portion of the object, so that removal of the coil means from the metallic portion of the object causes the inductive reactance of the coil means to change and said circuit means to be detuned;

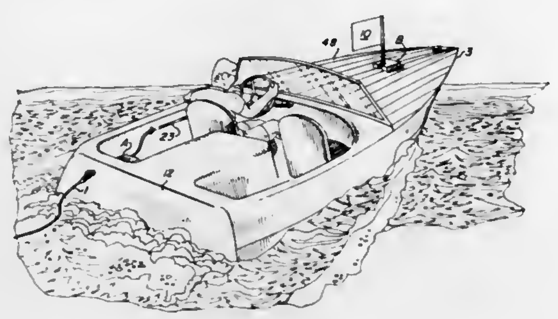
mounting means for removably mounting said sensing coil means on the metallic portion of the object to be protected;

detector means in said protected location coupled to said tuneable circuit means for producing an output signal in response to a change in the inductive reactance of said coil means; and

alarm signal means in said protected location coupled to said detector means for producing an alarm signal in response to said detector means output signal.

3,848,244
WATER SKIER'S SAFETY DEVICE

John S. Young, and James Goodwin, both of P.O. Box 13544, Phoenix, Ariz. 85002
Filed July 10, 1972, Ser. No. 270,550
Int. Cl. G08c *5/00*
U.S. Cl. 340—286 **8 Claims**



1. For installation on a small watercraft used to tow a water skier and including a transom at the stern end and a deck covering the bow portion of said watercraft, a safety device comprising activating apparatus mounted on said transom and flag raising mechanism mounted on said deck, said activating mechanism comprising:

a. an eyebolt presenting an eye externally of said transom to which a towline is connected, and a shank extending inwardly of said transom;

b. a housing secured to said transom and receiving said shank, with the shank being reciprocal in the housing;

c. a spring abutment on said shank;

d. an expansion coil spring about said shank and interposed between said transom and said abutment, and

e. means on said housing engageable by said shank to render said flag raising mechanism operable;

said flag raising mechanism comprising:

f. a housing secured to said deck and presenting end and side walls;

g. a shaft rotatably mounted between said side walls;

h. a flagpole having one end drivably connected to said shaft and carrying a flag at its other end, said flagpole being adapted to assume a substantially horizontal position along said deck or a vertical position, and

i. operative connections between said means on the housing of said activating apparatus and said shaft to cause rotation of said shaft upon engagement of said means by the shank of said eyebolt to swing said flagpole into a vertical position.

3,848,245
QUENCHED PHOTOLUMINESCENT DISPLAYS AND A POWER CIRCUIT LATCHING MEANS THEREFORE

Robert Marshall, Hickory Hills, Ill., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Continuation-in-part of Ser. No. 885,239, Dec. 15, 1969. This application Jan. 15, 1970, Ser. No. 3,130
Int. Cl. G08b *5/36*
U.S. Cl. 340—324 R **17 Claims**

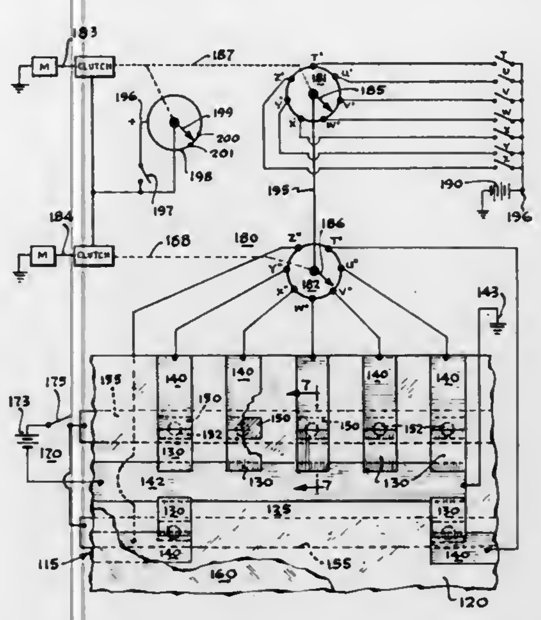
1. A photoluminescent display device, comprising in combination:

a member having a display surface supporting photoluminescent material susceptible of excitation by electromagnetic energy to produce visible light;

means for directing electromagnetic radiation towards said display surface to excite luminescence of said photoluminescent material;

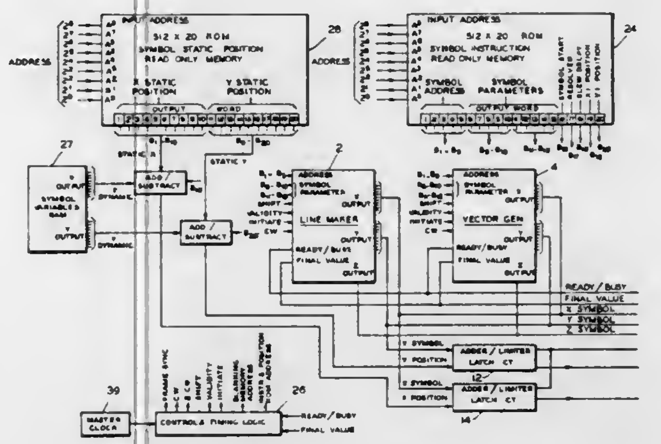
and heating means underlying selected areas of said photoluminescent material for quenching the luminescence thereof to define a desired display pattern thereon;

wherein the improvement comprises heat-actuated switch means in thermal contact with said heating means and in electrical communication with an energy source and with said heating means, said switch means being actuated, by momentary increase of the temperature of said heating means to quenching temperature, to "on" state, wherein it feeds sufficient energy from said source to maintain said heating means at quenching temperature.



3,848,246
CALLIGRAPHIC SYMBOL GENERATOR USING DIGITAL CIRCUITRY

Kenneth J. Kendall, Fairfield; Carmen M. Telleri, Cranford, and Leonard W. Laniewski, Verona, all of N.J., assignors to The Bendix Corporation, Teterboro, N.J.
Filed June 14, 1971, Ser. No. 152,927
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **9 Claims**



1. A symbol generator comprising:

a first memory device for storing symbol description instructions and for providing first digital signals identifying a partcular type of symbol and second signals indicative of symbol parameter data;

a second memory device for storing symbol position instructions and for providing first digital signals which define the position of the symbol relative to one axis and second digital signals which define the position of the symbol relative to another axis normal to the one axis;

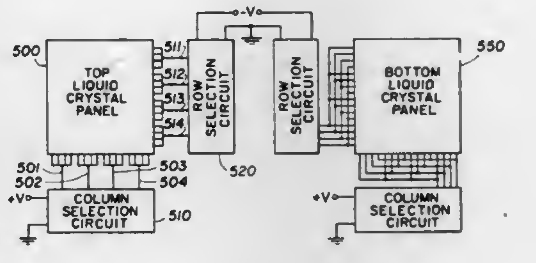
a plurality of symbol makers connected to the first instruction memory device and controlled by the first and second digital signals therefrom for providing digital symbol description signals;

means for combining the first and second digital signals from the second memory device and the digital description signals; and

means connected to the combining means for converting the combined digital signals to analog signals.

3,848,247
MULTI-DIMENSIONAL LIQUID CRYSTAL ASSEMBLY ADDRESSING SYSTEM

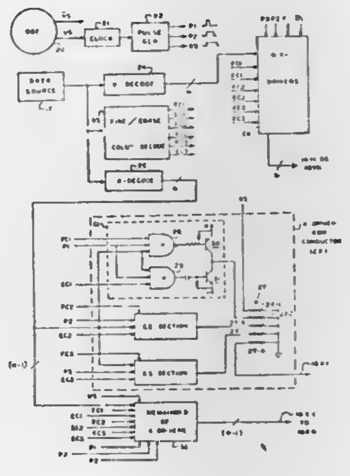
Solomon Sherr, Hartsdale, N.Y., assignor to North Hills Electronics, Inc., Glen Cover, N.J.
Filed Feb. 7, 1973, Ser. No. 330,227
Int. Cl. G02f *1/16*
U.S. Cl. 340—324 M **18 Claims**



1. A multi-dimensional matrix addressing system, comprising an assembly of liquid crystal units, each containing an array of selectable segments which exhibit discrete light transmitting characteristics in accordance with the presence or absence of stimulation, said units being physically arranged relative to each other to produce a predetermined relationship between their segment arrays, first means for stimulating selected segments of a first unit to exhibit one of said discrete characteristics, second means for stimulating a greater number of selected segments of a second unit to exhibit said one of the discrete characteristics, the stimulated segments of said second unit being physically disposed to correspond only partially to those selected in said first unit.

3,848,248
GASEOUS DISCHARGE DEVICE

Alfred J. MacIntyre, Jr., Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.
Continuation-in-part of Ser. No. 225,249, Feb. 10, 1972, abandoned. This application Apr. 5, 1973, Ser. No. 348,413
Int. Cl. H05b *37/00*
U.S. Cl. 340—324 M **30 Claims**



1. Display apparatus comprising,

a number of electroformed, ionizable gas filled beads supportably mounted as a layer between first and second sets of conductors in sandwich fashion, the conductor sets being arranged in crossing relationship to form in said layer a plurality of conductor crosspoint or volumes, each containing at least one of the beads; and

means including said conductors for selectively ionizing and deionizing the gas contained in the beads in selected crosspoint volumes.

3,848,249

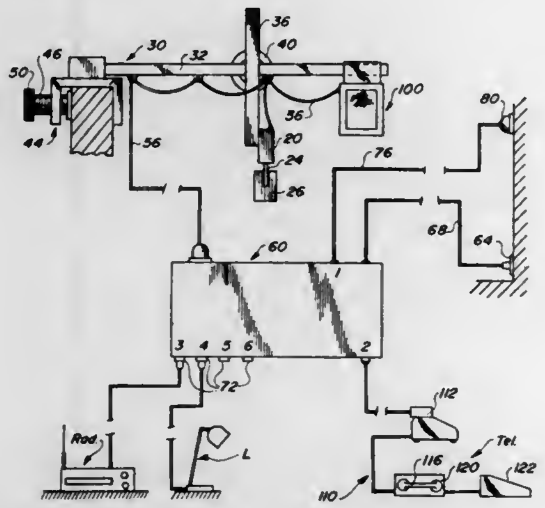
APPARATUS ACTUATING AND NURSE CALL SYSTEM

Shmuel Meiri, Skokie, Ill., assignor to Northwestern University, Evanston, Ill.

Filed Aug. 14, 1973, Ser. No. 388,105

Int. Cl. G09b *3/02*

U.S. Cl. 340—325 **4 Claims**



1. A switching and display mechanism comprising, in combination,

single switch means for closing and for opening a pair of electrical contacts associated therewith, thereby to complete and to break an electrical circuit,

means for adjustably supporting said switch means near a patient,

visual display means for sequential presentation, for a finite time interval each, of a series of reference symbols, each said symbols being correlated with a particular selectable apparatus to be controlled by said switch means,

a switching mechanism for selectively energizing a particular apparatus,

electrical means interconnecting said display means with said switch means and with said switching mechanism,

whereby actuation of said single switch means during the appearance of any and each particular selectable symbol is effective to switch "on" and "off" apparatus correlated with each specific reference symbol displayed.

3,848,250

OPTICAL CHARACTER-DISPLAYING APPARATUS USING LIQUID CRYSTALS

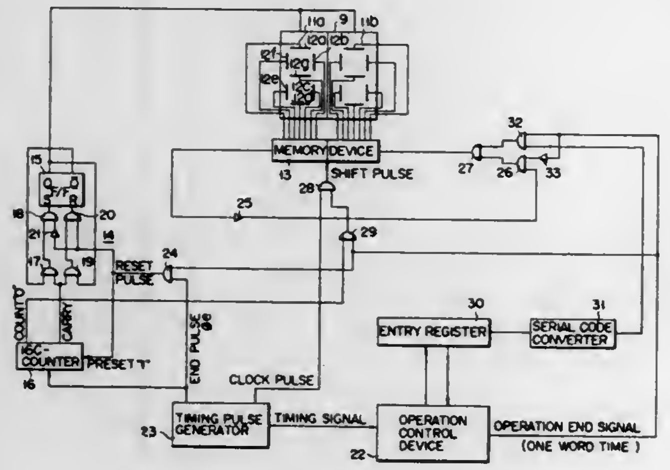
Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Aug. 20, 1973, Ser. No. 390,179

Claims priority, application Japan, Aug. 25, 1972, 47-85079

Int. Cl. G08b *5/36*

U.S. Cl. 340—336 **1 Claim**



1. An optical character-displaying apparatus using liquid crystals which comprises liquid crystal display devices each including a plurality of segmental liquid crystal display electrodes and a common electrode thereto; a memory device having as many bits as the segmental liquid crystal display electrodes of the display devices; an inverter connected between the input and output terminals of the memory device so as to invert the polarity of signals supplied to said inverter; a shift controlling device for supplying shift pulses to the memory device for the prescribed period in which the signals stored in the memory device have their polarity inverted by the inverter and then are shifted through the memory device; and switching signal generating means for changing the potential of the common electrode according to the inverted potential of the plural segmental liquid crystal display electrodes in synchronization with the shift pulse generated by the shift controlling device.

3,848,251

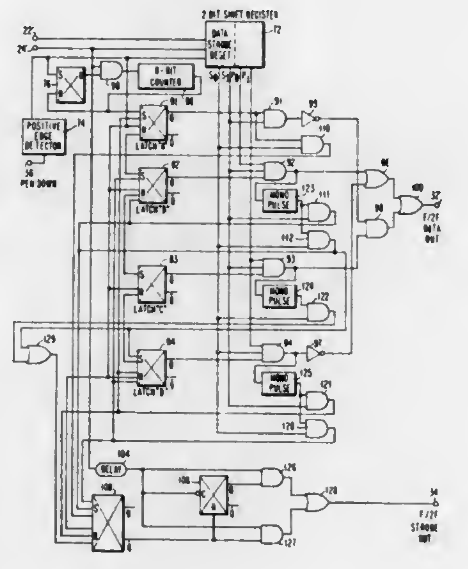
LOGICAL CIRCUITRY FOR RECOVERING RPM DECODED PRM RECORDED DATA

Dwight George Allmon; Pedro Lee, both of San Jose, and Charles Walter Coker, Jr,, Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 2, 1973, Ser. No. 376,032

Int. Cl. H04l *3/00*

U.S. Cl. 340—347 DD **18 Claims**



1. Logical circuitry for recovering pulse rate modulation recorded data from the output of retrospective pulse modulation decoding apparatus used in recovering said recorded data, comprising

a data input terminal and a strobe input terminal to which data and strobe outputs of said decoding apparatus are applied;

a data output terminal and

a strobe output terminal to which pulse rate modulation data and strobe information are delivered;

a plurality of bistable flip-flop circuits each having input, output and resetting potential terminals;

at least one logical gating circuit having one input terminal connected to one of said output terminal of one of said flip-flop circuits, at least one other input terminal to which data information is applied and an output terminal connected to the first said data output terminal;

a plurality of logical gating circuits having one input terminal of one gating circuit coupled to the first said strobe input terminal one input terminal of another logical gating circuit, the remaining input terminals of said plurality of logical gating circuits being coupled to said flip-flop and said logical gating circuits, and the output terminal of one of said plurality of logical gating circuits being connected to said strobe output terminals; and

a counting circuit having an input terminal connected to said strobe input terminal and having an output terminal, a latching circuit having an input terminal connected to the output terminal of said counting circuit and an output terminal connected to one of said flip-flop circuits for reciprocating the latter at a predetermined count of said counting circuit.

3,848,252

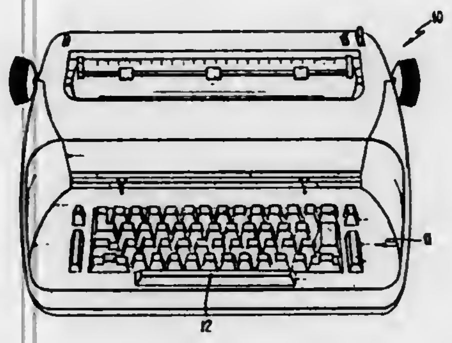
MAGNETIC KEYBOARD

Harry C. Chang, Chelsea; Richard J. Strnad, and Raymond D. Suelflow, both of Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 18,567, March 11, 1970, abandoned. This application Feb. 24, 1972, Ser. No. 228,977

Int. Cl. G06f *3/02*

U.S. Cl. 340—365 L **3 Claims**



1. A keyboard comprising

a plurality of manually operable keys,

a frame,

means movably mounting said keys to said frame,

a plurality of Hall-effect devices each associated with a respective one said keys for providing a change in voltage in response to a change in the magnetic flux density in the region of said Hall-effect device,

a plurality of sources of magnetic flux each associated with a respective one of said Hall-effect devices,

said magnetic flux extending from each of said sources to its respective Hall-effect device,

each of said keys having a ferromagnetic member connected thereto and movable from a first position to a second position in response to manual operation of said key,

the magnitude of the flux density at said respective Hall-effect device being responsive to the position of said ferromagnetic member,

a plurality of differential amplifiers each having input nodes connected across a respective one of said Hall-effect devices so as to amplify said voltage change provided in response to said change in magnetic flux density, and

a plurality of trigger circuits each connected in cascade to a respective one of said differential amplifiers so as to convert the analog output signal of the respective differential amplifier to a binary digital signal.

3,848,253

SIDE LOOKING PULSE RADAR SYSTEM

Jean Genuist, and Guy Le Parquier, Paris, France, assignors to Thomson-CSF, Paris, France

Continuation-in-part of Ser. No. 831,284, June 6, 1966, abandoned. This application June 13, 1972, Ser. No. 262,370

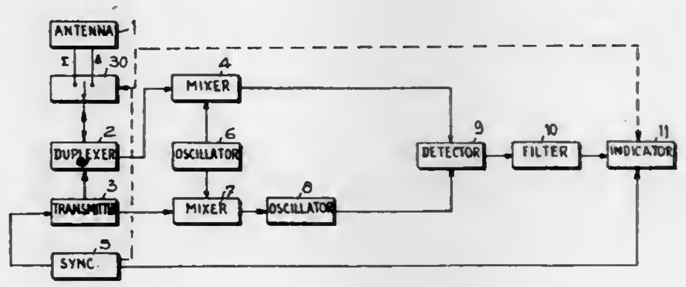
Claims priority, application France, June 18, 1968, 68.155437

Int. Cl. G01s *3/52, 9/42*

U.S. Cl. 343—5 CM **4 Claims**

1. A side looking airborne radar system, for exploring the space laterally with respect to the displacement direction of the aircraft, for producing information signals relative to targets moving with respect to the ground, comprising in combination:

simultaneous lobing aerial means for producing a radiation pattern having two lobes with respective axes symmetrical with each other with respect to a plane which is substantially normal to said displacement direction and having a nil gain along said plane,



transmitting means coupled to said aerial means for transmitting electromagnetic energy toward targets within said lobes, and

receiving means coupled to said aerial means for receiving energy reflected from said targets within said lobes and including coherent detection means connected to said receiving means for receiving and detecting said received energy and low pass filtering means connected to said coherent detecting means for receiving the detected energy and for delivering said information signals corresponding to zero Doppler frequency received signals.

3,848,254

METHOD FOR LOCATING VEHICLES

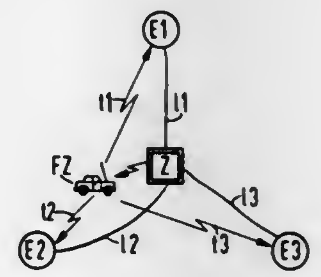
Klaus Drebinger, Munich, and Peer Thilo, Grosshesselohe, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 14, 1972, Ser. No. 262,626

Claims priority, application Germany, July 28, 1971, 2137846

Int. Cl. G08g *5/00*

U.S. Cl. 343—112 R **22 Claims**



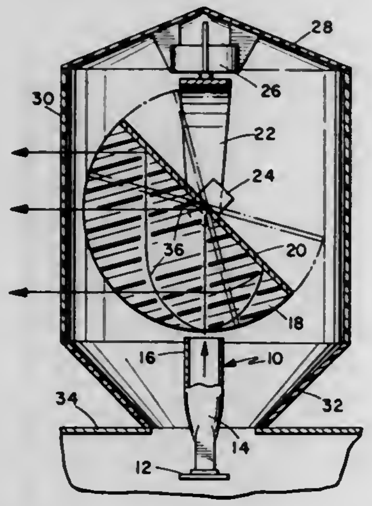
1. A method for locating surface vehicles, particularly in a city area, in which the vehicle to be located transmits a measuring radio signal which is received by a plurality of differently located radio receiving stations, comprising the steps of transmitting from such vehicle, for each location operation, a plurality of measuring signals of relatively low frequency, modulated on a relatively high frequency carrier, receiving such measuring signals by a plurality of receiving stations, greater in number than the minimum number required to define a location, demodulating the received signals in the respective receiving stations, conducting the demodulated signals over respective fixed, corresponding low frequency lines to a central station, deriving correction values by similarly transmitting like measuring signals from a fixed location with known distances to the respective receiving stations, transmitting the corresponding demodulated low frequency

signals from the respective receiving stations to the central station, utilizing thereat corrections derived therefrom to effect corrections in transmission of the corresponding demodulated signals between the central and receiving stations, utilizing the average of a plurality of received corresponding low frequency signals from the respective receiving stations to determine, in the central station by means of a phase comparison, respective transit time differences of the measuring signal on its path towards respective different pairs of receiving stations, and effecting an electronic computation to drive a location-defining point by hyperbolic intersection, thereby determining the location of the vehicle.

3,848,255
STEERABLE RADAR ANTENNA

Philip N. Migdal, La Mesa, Calif., assignor to Teledyne, Inc., San Diego, Calif.

Filed Mar. 22, 1973, Ser. No. 343,819
Int. Cl. H01q *3/12, 15/08*
U.S. Cl. 343—761 **3 Claims**

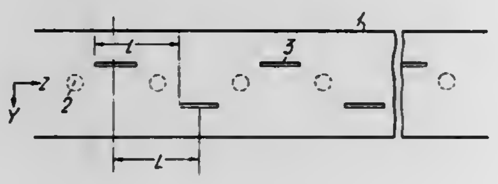


1. A steerable radar antenna comprising:
a drive assembly;
a reflector having a generally hemispherical lens with the substantially planar surface thereof mounted on the reflective surface of said reflector, said reflector and lens comprising a unit operated by said drive assembly; and
at least one stationary feed disposed adjacent to the generally hemispherical surface of said lens and capable of coupling RF energy to said lens.

3,848,256
WAVEGUIDE ANTENNA

George Frederick Craven, Harlow, Essex, and George Alfred Hockham, Takeley, Essex, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Claims priority, application Great Britain, Dec. 14, 1972, 57690/72
Filed Dec. 10, 1973, Ser. No. 423,344
Int. Cl. H01q *13/10*
U.S. Cl. 343—768 **7 Claims**

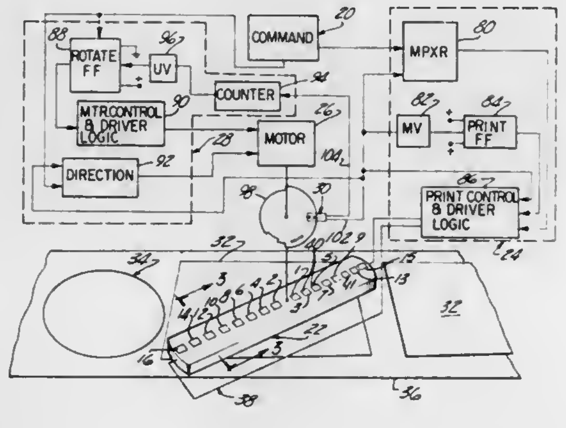


1. A frequency scanning waveguide antenna comprising:
a waveguide having a longitudinal axis, said waveguide being evanescent over the operating frequency band of said antenna;
a plurality of capacitive elements within said waveguide each said element spaced apart from adjacent elements by a predetermined distance *l* and adjusted to provide a conjugate match condition for evanescent mode resonance; and
a plurality of longitudinal radiating slots in the wall of said waveguide, each of said slots located midway between adjacent ones of said capacitive elements.

3,848,257
DEVICE FOR PRINTING CODED LABELS AND THE LIKE

James R. Moss, Mt. Clemens, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 23, 1973, Ser. No. 418,722
Int. Cl. G01d *1/00*
U.S. Cl. 346—49 **17 Claims**



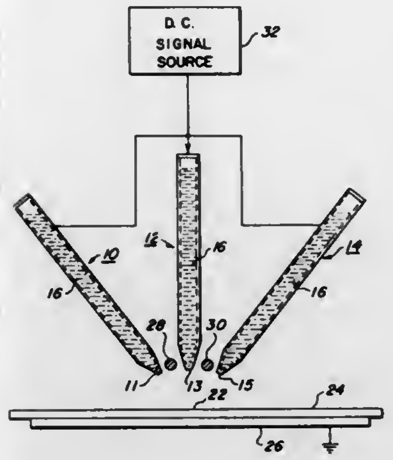
1. A device for printing labels, each with selected coding comprising command means supplying command signals with the select coding, printing means revolvably positioned opposite the labels and operable in response to the print command signals to print a label with the selected coding during a print cycle thereof, reversible motor means arranged to rotate the printing means in opposite directions during each successive print cycle, sensing means responsive to the position of the printing means and operaive to develop motor control signals and print cycle signals, the motor means being operable in response to the command signals to start rotating the printing means and in response to the control print cycle signals to rotate the printing means in one of the opposite directions for a predetermined angular amount, the printing means being operable in response to the print cycle signal to print the selected coding for a certain portion of the rotation thereof by the motor means.

3,848,258
MULTI-JET INK PRINTER

John F. Mahoney, South Pasadena, and Julius Perel, Altadena, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1973, Ser. No. 392,913
Int. Cl. G01d *15/18*
U.S. Cl. 346—140 **7 Claims**

1. A fluid printer for writing on a record medium comprising:
an array of a plurality of fluid-containing nozzles each having a capillary tip, the array being oriented such that a projection of the longitudinal axes of said nozzles converge toward an area of said record medium,
first means for maintaining the voltage of said record medium at a reference value,
second means for selectively supplying voltage pulses of the same polarity to the fluid contained in said nozzles, said voltage pulses having a peak value different from said reference value,
an electrode disposed between adjacent pairs of said nozzles in the vicinity of said capillary tips of said nozzles, and
third means for applying to said electrodes a voltage intermediate said peak value and said reference value thereby to allow fluid drops from said capillary tips to converge toward said area of said record medium even though the drops have the same polarity due to voltage pulses of the same polarity being applied to the fluid contained in said nozzles.



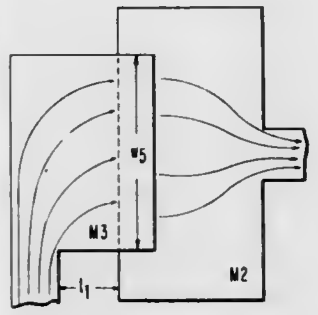
ERRATUM

For Class 355—3 see:
Patent No. 3,848,204

3,848,259
MULTICONTROL LOGIC GATE DESIGN

Dennis J. Herrell, Somers, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1973, Ser. No. 411,123
Int. Cl. H01l *11/00, 3/00*
U.S. Cl. 357—5 **19 Claims**

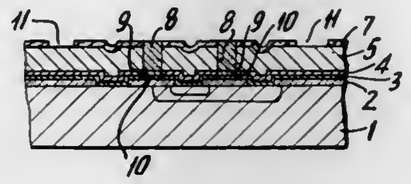


1. A Josephson tunnelling device comprising first and second superconductors having a tunnel barrier therebetween which is sufficiently thin to allow Josephson tunnelling current therethrough, means for producing magnetic fields which intercept said Josephson tunnelling device and establish screening currents therein, and means for causing said screening current to distribute through said tunnel barrier in substantially the same pattern as said Josephson tunnelling current distributes through said tunnel barrier.

3,848,260
ELECTRODE STRUCTURE FOR A SEMICONDUCTOR DEVICE HAVING A SHALLOW JUNCTION AND METHOD FOR FABRICATING SAME

Hideo Tsunemitsu, and Hiroshi Shiba, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Nov. 13, 1972, Ser. No. 305,673
Claims priority, application Japan, Nov. 15, 1971, 46-91405
Int. Cl. H01l *5/00*
U.S. Cl. 357—71 **4 Claims**

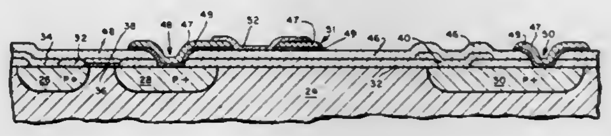


1. A semiconductor device comprising a semiconductor substrate, a silicon oxide film selectively formed over a major surface of said substrate, a first layer of a first metal capable of maintaining good ohmic contact with the semiconductor material of said substrate, a second layer of a second metal formed over said first layer, said second metal forming an alloy reaction with the semiconductor material of said substrate at higher temperatures than said first metal layer, and a third layer of conductive metal formed over said second layer, portions of said first, second, and third layers being selectively anode-oxidized to form a pattern of aligned insulating regions, the unoxidized portions of said first, second, and third metal layers forming an electrode structure, the surface of said third layer being coated with an anode-oxidizing film of the metal of said third layer except for a selected portion thereof which is provided for electrical connection to said electrode structure, the surface of said anode-oxidizing film coating said third layer being substantially flush with the surface of said aligned insulating regions, and said insulating regions and said electrode structure completely covering said silicon oxide film.

3,848,261
MOS INTEGRATED CIRCUIT STRUCTURE

Donald E. Romeo, Torrance, and Neil P. Burcham, Rolling Hills, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 264,049, June 19, 1972, abandoned. This application Nov. 28, 1973, Ser. No. 419,840
Int. Cl. H01l *29/46*
U.S. Cl. 357—71 **4 Claims**



1. An integrated circuit structure, comprising:
a semiconductor substrate of one semiconductivity type:
first, second and third diffused semiconductor regions spaced from each other in said substrate and each being of opposite semiconductivity type relative to said substrate;
a first dielectric layer on said substrate;
a first metallization layer of aluminum on said first dielectric layer and having a first portion extending through said dielectric layer to form a source contact with said first diffused semiconductor region, a second portion extending over the gap between said first and second diffused

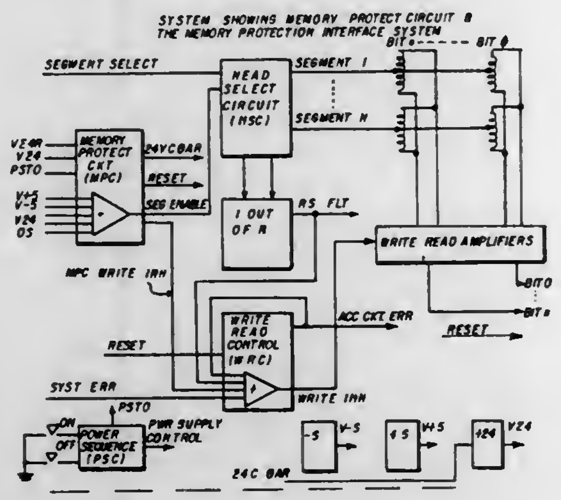
semiconductor regions to form a gate, and a third portion extending through said dielectric layer to make ohmic contact with said third diffused semiconductor region;

a second dielectric layer on said first dielectric layer and said first metallization layer;

a second metallization layer of gold on said second dielectric layer and having a first portion extending through both said dielectric layers to form a drain contact with said second diffused semiconductor region, a second portion spaced from said first portion thereof, and a third portion extending through both said dielectric layers and forming ohmic contact with said third diffused semiconductor region at a location spaced from the third portion of said first metallization layer, said third diffused semiconductor region forming a conductive path between the third portions of said first and second metallization layers, respectively; and

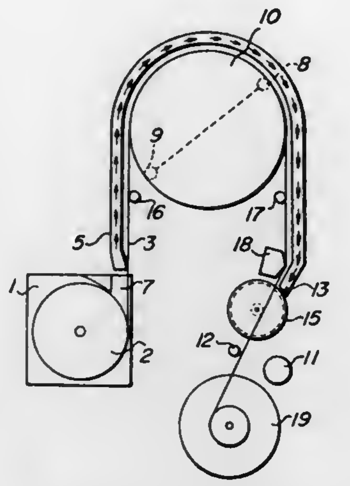
a layer of variable impedance electromagnetic radiation responsive detector material on said second dielectric layer extending between said first and second portions of said second metallization layer and in contact therewith, said detector material being selected from the group consisting of lead sulfide and lead selenide.

3,848,262
DRUM MEMORY PROTECT ARRANGEMENT
Richard J. Belcastro, Schaumburg, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Apr. 6, 1973, Ser. No. 348,542
Int. Cl. G11b *19/04*
U.S. Cl. 360—60 **5 Claims**



1. In a rotating memory system having a rotating memory and having write and read head means, first power means for driving the rotating memory, second power means for powering the head means, third power means for inhibiting the write and read means and fourth power means for enabling said write and read head means, a memory protect circuit means operated upon application of said first power means to thereafter enable said second and third power means said memory protect circuit means further including power level monitor means operated to provide an output upon any one of said power means going out of range to first disable said fourth power means, and monitor means for sensing the speed of said rotating memory and for providing an output corresponding to said speed to enable said fourth power means so that said fourth power means enables said write and read head means in response to said monitoring means sensing certain rotating memory speeds.

3,848,263
RECORDING AND REPRODUCING SYSTEM WITH AUTOMATIC TAPE THREADING
Tadashi Nagaoka, Nishinomiya, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sept. 26, 1972, Ser. No. 292,323
Int. Cl. G11b *15/66, 15/26*
U.S. Cl. 360—83 **5 Claims**



1. In a magnetic recording or reproducing system including a pay-off reel having a winding of magnetic tape whose leading end is attached to a leader tape having a rigidity and width greater than that of the magnetic tape; means for rotating said pay-off reel to transport said leader tape, means for defining a magnetic tape traveling way of a circular arc like form, a take-up reel for taking up the leader tape and magnetic tape, a leader tape guide means disposed along and outside of said circular arc traveling way and having along its length a first slot for sliding therethrough said leader tape, said leader tape guide means having an opening along said length and inside of said tape guide means to face said traveling way, said opening having a width greater than the magnetic tape but smaller than said leader tape whereby the latter must travel through said first slot but the former can be brought thereout, and said guide means having one end portion positioned in the vicinity of said pay-off reel and the other end portion positioned in the vicinity of said takeup reel for receiving said leader tape or sending the same out of said first slot, said traveling way dedining means including guide posts and magnetic heads positioned opposite to said opening to be in contact with the magnetic tape brought out through said opening; the improvement comprising means for changing the way of tape travel, said changing means having an outer peripheral surface portion shaped with a small curvature, said surface portion further having a second slot portion of width greater than the magnetic tape but smaller than said leader tape, said changing means being positioned with said surface portion positioned in the vicinity of said other end portion and opposite to the opening of said guide means, said changing means projecting outside of said magnetic tape traveling way and with said small curvature portion positioned on the way of travel of said leader tape sliding through said first slot for guiding said leader tape, wherein when said leader tape comes out of said first slot of said guide means and is guided on said small curvature portion the magnetic tape is caused to go out through said opening of said guide means to travel on said magnetic tape traveling way.

3,848,264
MAGNETIC TAPE CARTRIDGE CHANGER
Charles T. Wilson, 121 N. Fountain, Wichita, Kans. 67208
Filed June 8, 1973, Ser. No. 368,303
Int. Cl. G11b *21/12, 23/08*
U.S. Cl. 360—92 **10 Claims**

1. An improved magnetic tape cartridge changer comprising:

a supporting frame;

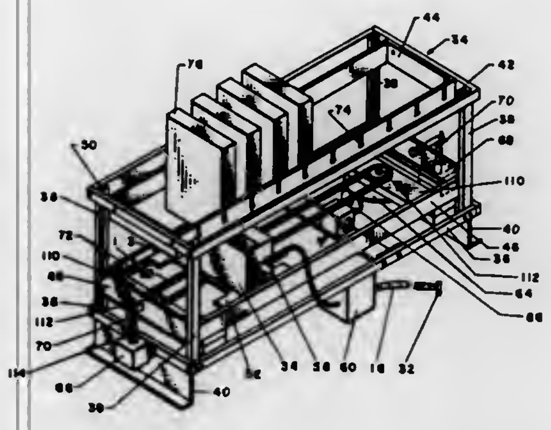
a means coupled to said frame for mounting a plurality of tape cartridges substantially parallel and spaced apart along a linear axis;

a plurality of tape cartridges positioned within said tape cartridge mounting means;

a tape transducer and tape drive means;

a carriage frame vertically movably mounted to said supporting frame, said transducer and tape drive means horizontally movably mounted to said carriage;

means coupled to said supporting frame for moving said transducer and tape drive means horizontally within said carriage, whenever said carriage is in a predetermined position;



resilient means for holding said carriage and said transducer and tape drive means into operable engagement with one of said plurality of tape cartridges;

drive means for moving said carriage and said transducer and tape drive means vertically out of engagement with one of said plurality of tape cartridges;

power source;

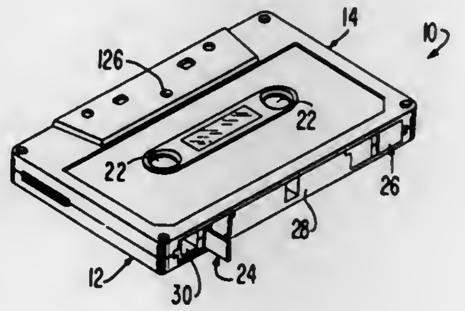
a plurality of contacts spaced apart and connected to said carriage frame, each of said contacts being aligned with a different one of said plurality of tape cartridges and disposed linearly in a direction of movement horizontally of said transducer and tape drive means;

a movable contact connected to and movable with said transducer and tape drive means and engageable with said plurality of carriage frame contacts;

multiple position selector switch; and

a selector circuit means connected to said selector switch, said carriage drive means, said horizontal moving means for transducer and tape drive means, said power source, said plurality of frame contacts, said movable contact, whereby the predetermined tape cartridge may be engaged operably with said transducer utilizing predetermined positions within the selector switch which are identifiable with corresponding predetermined tape cartridges.

3,848,265
TAPE CASSETTE
Paul J. Biery, San Jose; Vernon R. Schwartz, Cupertino, and Roger N. J. Tregear, San Jose, all of Calif., assignor to Information Terminals Corp., Mountain View, Calif.
Filed July 31, 1972, Ser. No. 276,633
Int. Cl. G11b *23/10, 23/28*
U.S. Cl. 360—132 **7 Claims**

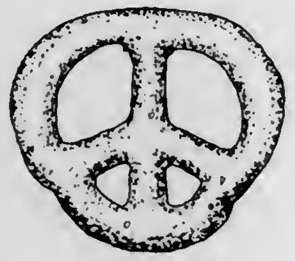


1. In a tape cassette: a housing having a wall provided with a hole therethrough for receiving a sensor pin; a tab for blocking said hole to prevent the insertion of the sensor pin therein; means mounting the tab on the shell for rotation from a first position out of closing relationship to the hole to a second position in closing relationship to said hole, whereby the latter can be selectively blocked; and means engageable with the outer peripheral edge of said tab for releasably holding the same in either of said positions.

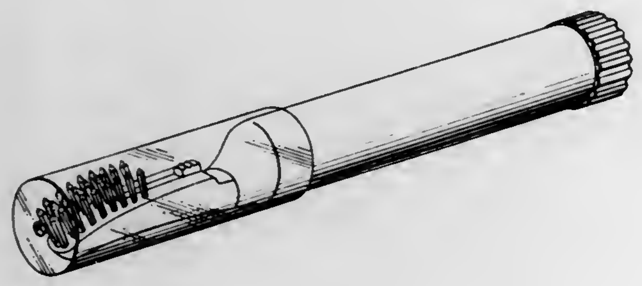
DESIGNS

NOVEMBER 12, 1974

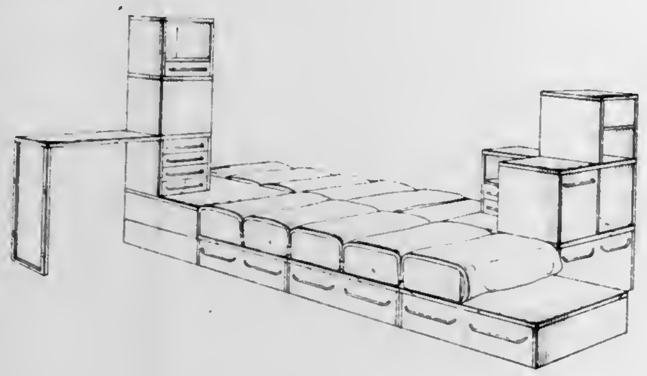
233,573
EXPANDED CEREAL FOOD PRODUCT
Stylianos A. Topalis, 1407 Barberry Lane,
Mount Prospect, Ill. 60056
Filed Dec. 8, 1972, Ser. No. 313,555
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—1



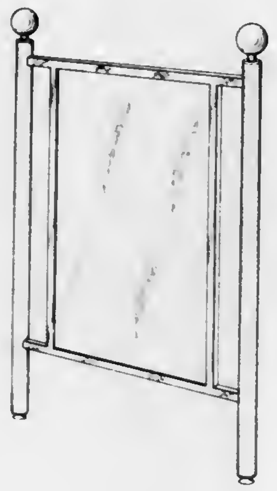
233,574
FOUNTAIN TOOTHBRUSH
Jack Reitknecht, 210 E. Broadway H-503,
New York, N.Y. 10002
Filed Jan. 26, 1973, Ser. No. 326,671
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—18



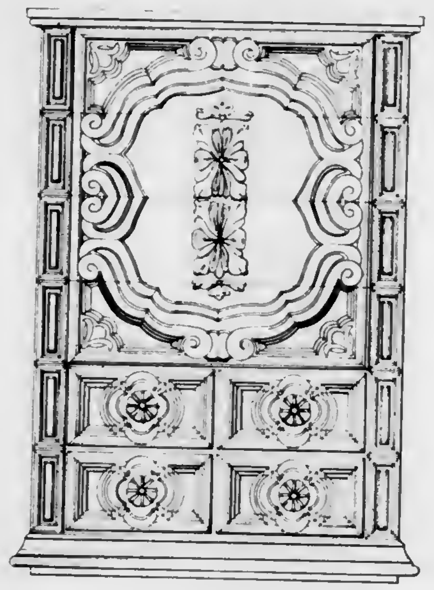
233,575
COMBINED WORK DESK, BED AND MULTIPLE STORAGE UNIT
Walter Mueller, Zurich, Heinrich Gerhard, Haggendorf, and Dieter Stierli, Basel, Switzerland, assignors to Interluebke Gebr. Luebke KG, Wiedenbruck, Germany
Filed Jan. 11, 1973, Ser. No. 322,704
Claims priority, application Germany July 12, 1972
Term of patent 3½ years
Int. Cl. D6—*04*
U.S. Cl. D6—4



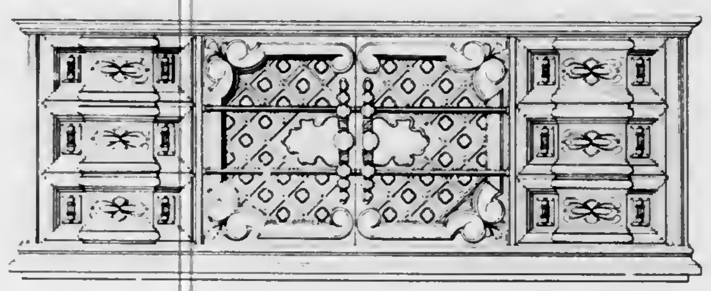
233,576
END SUPPORT FOR A GARMENT DISPLAY RACK
Maurice Cohen, 3580 NW. 52nd St.,
Miami, Fla. 33142
Filed Aug. 14, 1972, Ser. No. 280,583
Term of patent 14 years
Int. Cl. D20—*02;* D6—*06*
U.S. Cl. D6—85



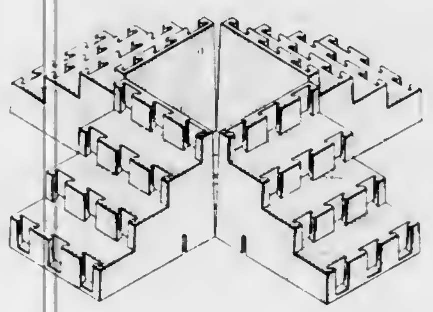
233,577
CHEST OF DRAWERS OR THE LIKE
Huey T. Keller, High Point, N.C., assignor to Gillespie Furniture Company, Los Angeles, Calif.
Filed Feb. 1, 1973, Ser. No. 328,607
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154



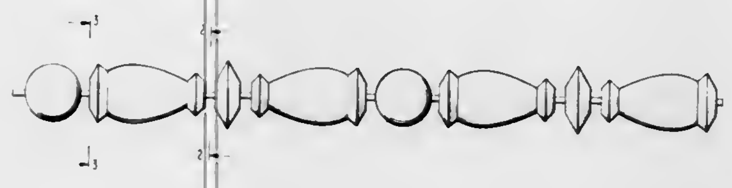
233,578
DRESSER OR THE LIKE
Huey T. Keller, High Point, N.C., assignor to Gillespie Furniture Company, Los Angeles, Calif.
Filed Feb. 1, 1973, Ser. No. 328,610
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154



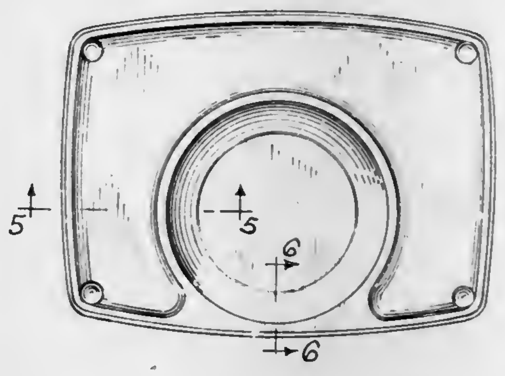
233,579
TOOTHBRUSH DISPLAY STAND
Per Lindbo, Oslo, Norway, assignor to A/S W. Jordan Borste & Penselfabrik, Oslo, Norway
Filed Jan. 11, 1973, Ser. No. 322,888
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—188



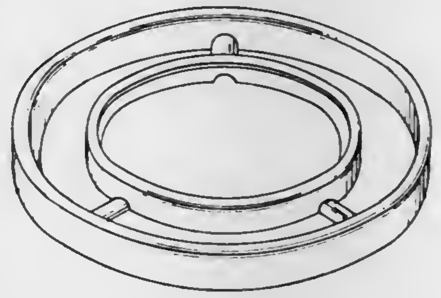
233,580
STRAND OF BEADS FOR A CURTAIN ELEMENT OR THE LIKE
Irving Levine, 5212 Weller Drive,
Woodland Hills, Calif. 91364
Filed Oct. 30, 1969, Ser. No. 19,843
Term of patent 14 years
The term of this patent subsequent to Apr. 12, 1984, has been disclaimed
Int. Cl. D6—*10*
U.S. Cl. D6—205



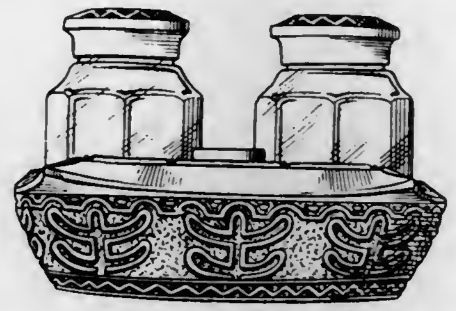
233,581
CAFETERIA SERVICE TRAY
John A. Bridges and Gary C. Degrow, Nashville, Tenn., assignors to Aladdin Industries, Incorporated, Chicago, Ill.
Original design application Nov. 13, 1972, Ser. No. 305,803, now Patent No. 231,424, dated Apr. 23, 1974. Divided and this application Jan. 10, 1974, Ser. No. 432,352
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—38



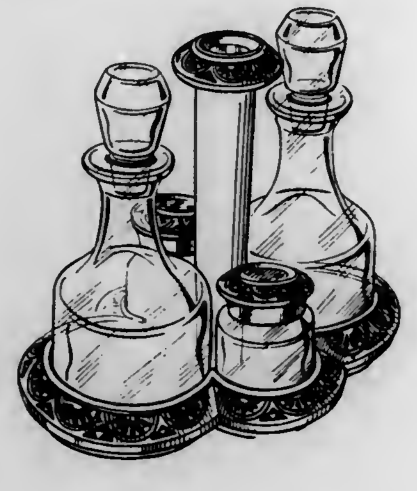
233,582
COMBINED SPOON REST AND SCRAPER FOR A JAR OR THE LIKE
Gary S. Palumbo, 377 Wyoming Ave.,
Millburn, N.J. 07041
Filed Mar. 19, 1973, Ser. No. 342,588
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—39



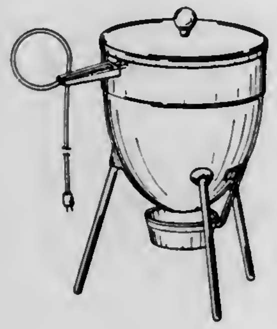
233,583
COMBINED CONDIMENT SHAKER SET AND TRAY THEREFOR
Augusto Salviato, Corso Mario Abbiate 110, Vercelli, Italy
Filed June 11, 1973, Ser. No. 368,891
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—55



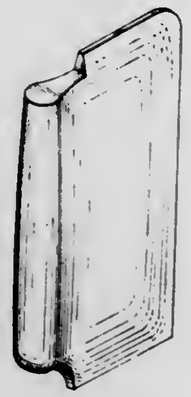
233,584
COMBINED CONDIMENT SET AND TRAY THEREFOR
Augusto Salviato, Corso Mario Abbiate 110, Vercelli, Italy
Filed July 23, 1973, Ser. No. 382,098
Claims priority, application Italy Apr. 30, 1973
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—55



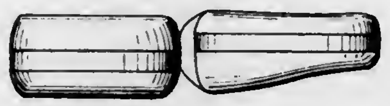
233,585
COOKER
Robert W. Thomas, Wichita, Kans., assignor to William D. Devore and R. A. Devore, Wichita, Kans.
Continuation-in-part of design application Ser. No. 196,254, Nov. 5, 1971, now Patent No. 229,625, dated Dec. 18, 1973. This application Feb. 12, 1973, Ser. No. 331,551
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—94



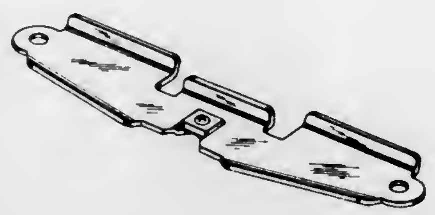
233,586
SCRAPER OR THE LIKE
Theodore J. Kopp, 9720 227th Place SE., Edmonds, Wash. 98020
Filed Sept. 17, 1973, Ser. No. 397,895
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—181



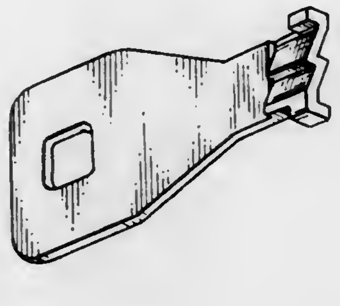
233,587
SCISSORS
Italo Marco Laurenti, 8200 Kennedy Blvd. E., North Bergen, N.J. 07047
Filed Jan. 28, 1974, Ser. No. 436,855
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—57



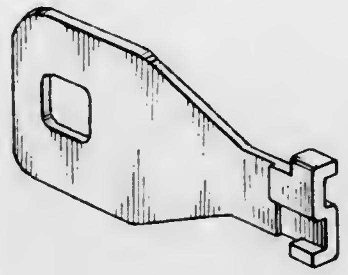
233,588
GARDEN TOOL SHARPENER
Carl C. Stoutenberg, Avon, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Jan. 8, 1973, Ser. No. 321,863
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—91



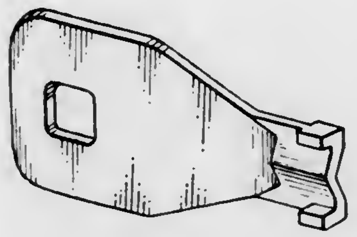
233,589
KEY FOR AN AXIAL TUMBLER-TYPE LOCK
William J. Kerr, Glenview, Ill., assignor to Chicago Lock Co., Chicago, Ill.
Filed Oct. 1, 1973, Ser. No. 402,037
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—136



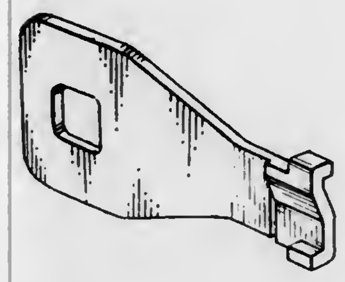
233,590
KEY FOR AN AXIAL TUMBLER-TYPE LOCK
William J. Kerr, Glenview, Ill., assignor to Chicago Lock Co., Chicago, Ill.
Filed Oct. 1, 1973, Ser. No. 402,038
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—136



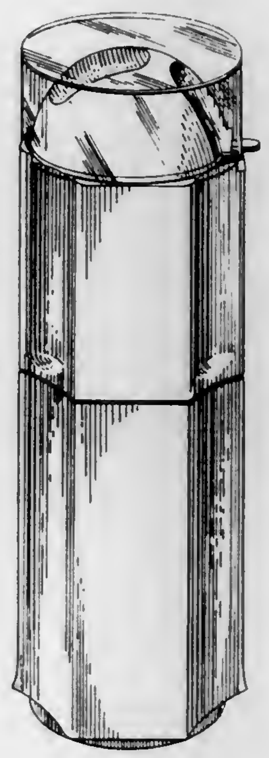
233,591
KEY FOR AN AXIAL TUMBLER-TYPE LOCK
William J. Kerr, Glenview, Ill., assignor to Chicago Lock Co., Chicago, Ill.
Filed Oct. 1, 1973, Ser. No. 402,039
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—136



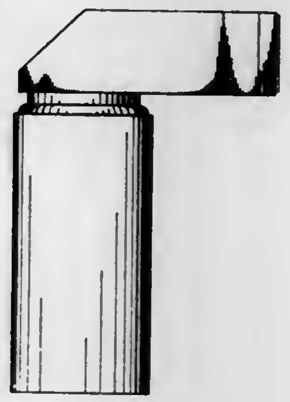
233,592
KEY FOR AN AXIAL TUMBLER-TYPE LOCK
William J. Kerr, Glenview, Ill., assignor to Chicago Lock Co., Chicago, Ill.
Filed Oct. 1, 1973, Ser. No. 402,375
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—136

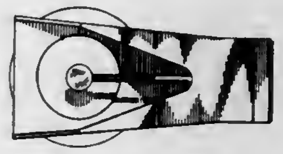


233,593
COMBINED RECHARGEABLE DISPENSING CONTAINER AND OVERCAP THEREFOR
William Horvath, Chatham, N.J., assignor to Thiokol Corporation, Bristol, Pa.
Filed Apr. 27, 1973, Ser. No. 355,249
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—8



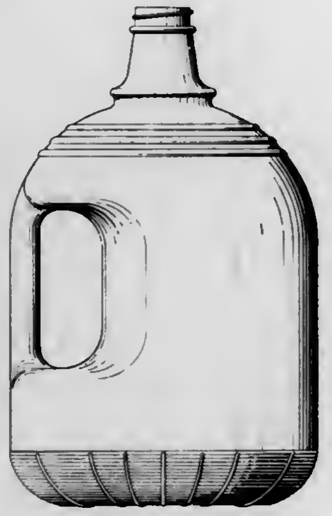
233,594
COMBINED FLUIDS CONTAINER AND APPLICATOR
Lowell T. Fears, Memphis, Tenn., assignor to D'Sal Products, Inc., Memphis, Tenn.
Filed Dec. 20, 1972, Ser. No. 317,085
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—10





233,595
BOTTLE

**John R. Sinding, 613 Richards Road,
Wayne, Pa. 19087
Filed June 5, 1973, Ser. No. 367,272
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—39**

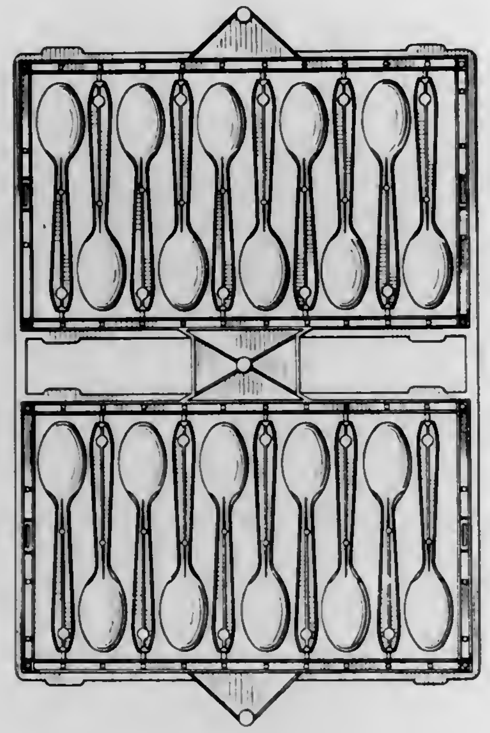


ERRATUM

For Class D9—188 see:
Patent No. D. 233,579

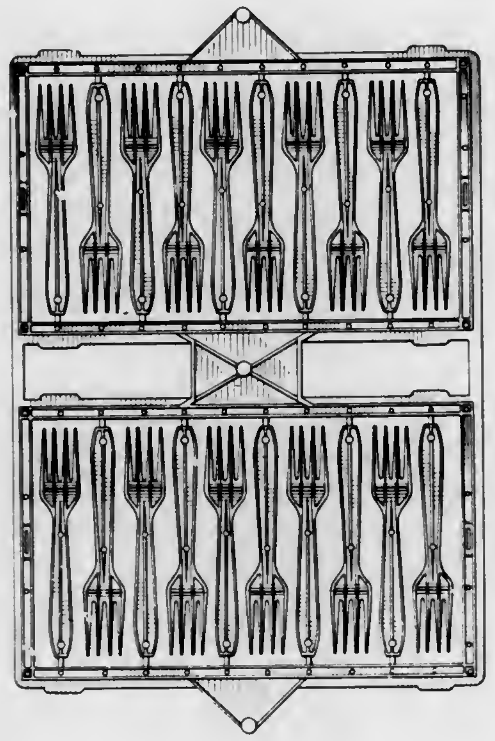
233,596
PACKAGE OF SPOONS OR THE LIKE

**Samuel R. Davis, Jr., and Harry A. Watson, Federalsburg, Md., assignors to Ipco Hospital Supply Corporation, Valhalla, N.Y.
Filed June 29, 1972, Ser. No. 267,366
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—193**



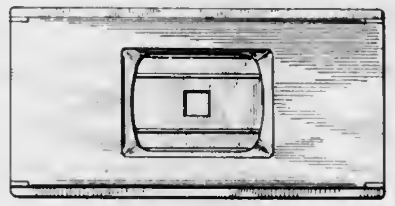
233,597
PACKAGE OF FORKS OR THE LIKE

**Samuel R. Davis, Jr., and Harry A. Watson, Federalsburg, Md., assignors to Ipco Hospital Supply Corporation, Valhalla, N.Y.
Filed Sept. 13, 1972, Ser. No. 288,695
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—193**



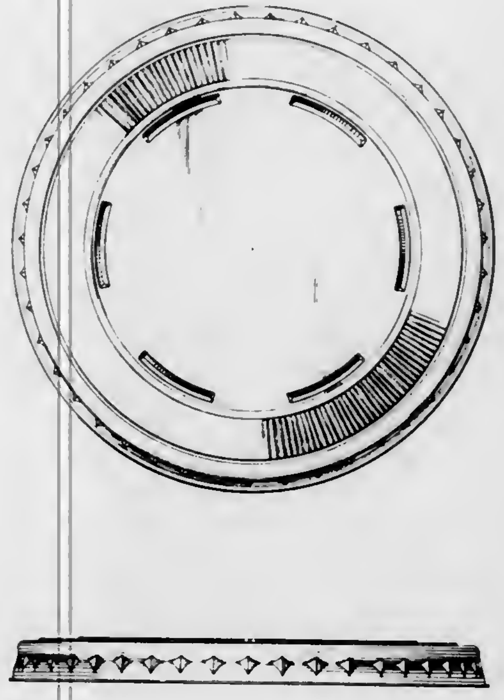
233,598
RAZOR BLADE DISPENSER

**Martin Glaberson, Stratford, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Dec. 26, 1972, Ser. No. 318,073
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224**



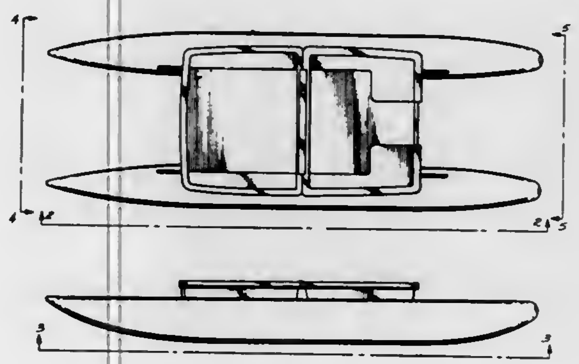
233,599
LID FOR A PACKAGING CONTAINER OR THE LIKE

**Paul Davis, Swampscott, Mass., assignor to Sweetheart Plastics, Inc., Wilmington, Mass.
Filed June 28, 1973, Ser. No. 374,688
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—267**



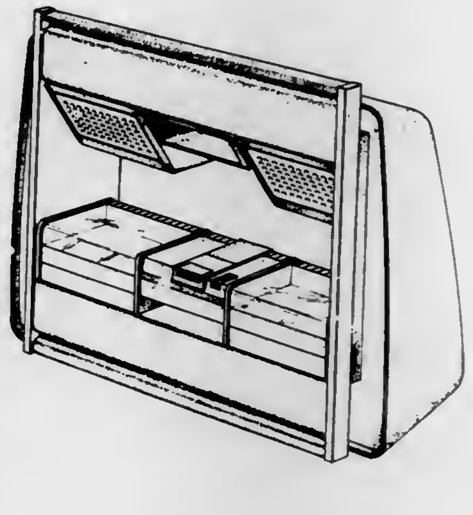
233,600
PONTOON BOAT

**Dag C. G. Forssell, Manhattan Beach, and Henry J. Folson, Redondo Beach, Calif., assignors to Vector Company, Manhattan Beach, Calif.
Filed Oct. 12, 1972, Ser. No. 296,783
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—62**



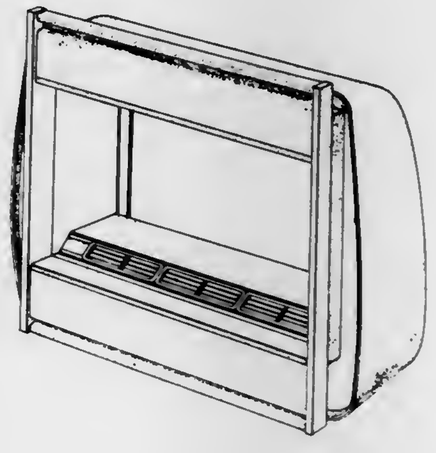
233,601
PREFABRICATED BUILDING UNIT FOR AUDIO AND/OR VISUAL EQUIPMENT

**Tadashi Hanaoka, Kawasaki, Isao Kaneko, Tokyo, and Iwao Shiina, Yamato, Japan, assignors to Misawa Homes Co., Ltd., Tokyo, Japan
Filed Nov. 6, 1972, Ser. No. 303,810
Claims priority, application Japan Sept. 19, 1972
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 R**

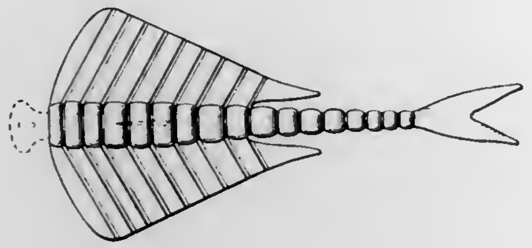


233,602
PREFABRICATED BUILDING VENTILATION UNIT

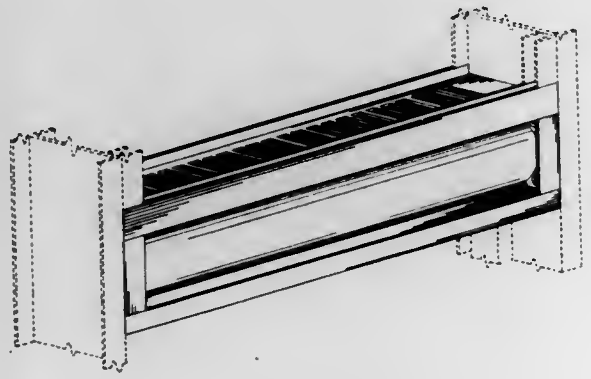
**Tadashi Hanaoka, Kawasaki, Isao Kaneko, Tokyo, and Iwao Shiina, Yamato, Japan, assignors to Misawa Homes Co., Ltd., Tokyo, Japan
Filed Nov. 6, 1972, Ser. No. 303,811
Claims priority, application Japan Sept. 19, 1972
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 R**



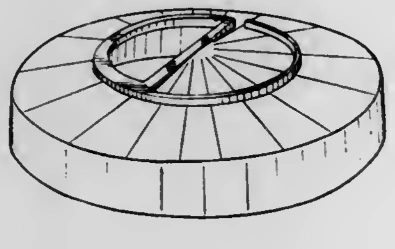
233,603
FISHING LURE
Judson R. Bray, Rte. 1, Box 77, and Freddie L. Bray, Rte. 1, Box 76e, both of Lexington, Mo. 64067
Filed Feb. 14, 1973, Ser. No. 332,244
Term of patent 7 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



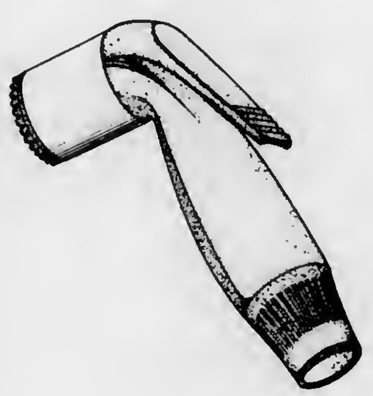
233,604
VENTILATOR UNIT
Ronald J. Weber and Wesley J. Higgins, Wausau, Wis., assignors to Wausau Metals Corporation, Wausau, Wis.
Filed Jan. 12, 1973, Ser. No. 322,932
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151



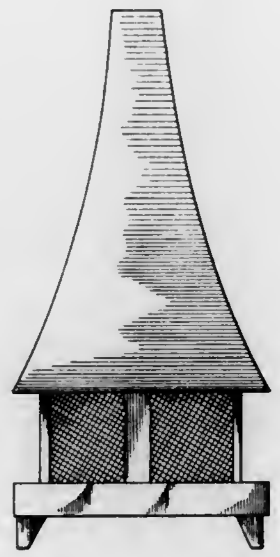
233,605
ROOF-HOOD FOR A VENTILATION TWIN-DUCT
Jorgen Holt, Naestved, Christian Videmark, Haslev, and Palle Hein Christiansen, Naestved, Denmark, assignors to Nordisk Ventilator Co. Aktieselskab, Naestved, Denmark
Filed Dec. 8, 1972, Ser. No. 313,419
Claims priority, application Denmark June 9, 1972
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163



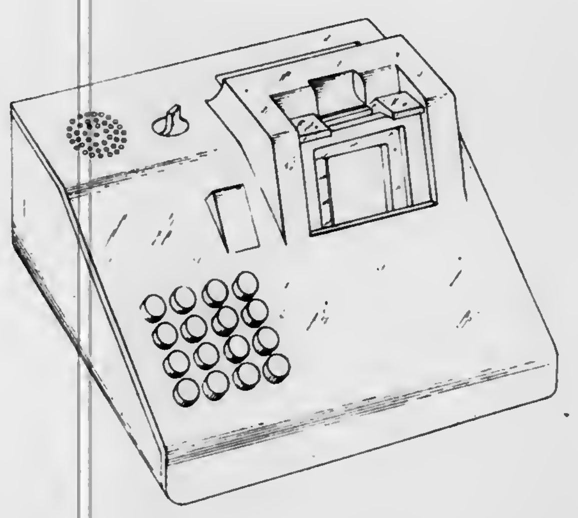
233,606
SPRAY HEAD
Jack Rauh, Hacienda Heights, Calif., assignor to Modern Faucet Manufacturing Company, Los Angeles, Calif.
Filed Dec. 8, 1972, Ser. No. 313,604
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—37



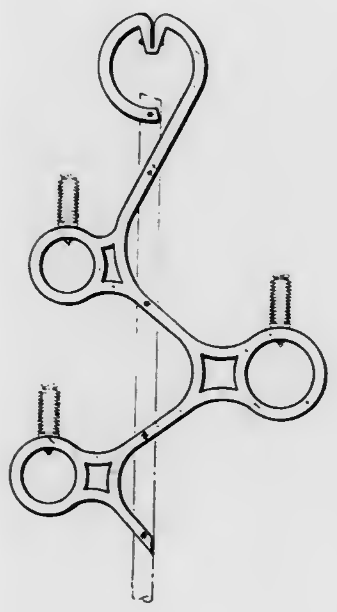
233,607
FIREPLACE
Leonard Eric Welk, R.R. 2, Eganville, Ontario, Canada
Filed Mar. 7, 1973, Ser. No. 338,729
Claims priority, application Canada Sept. 26, 1972
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



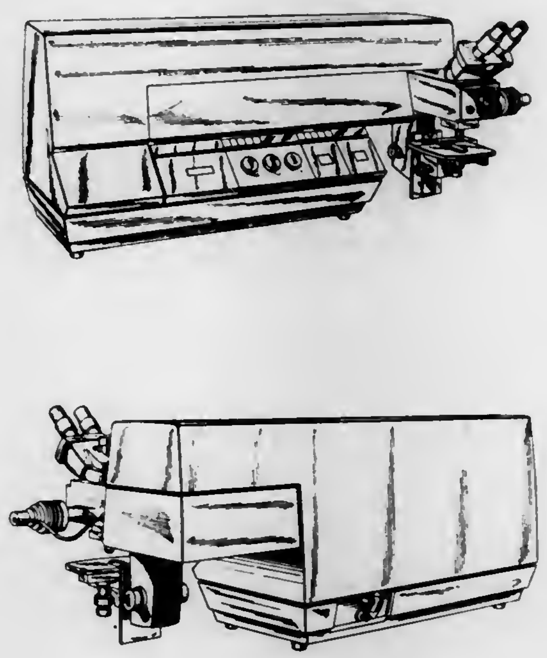
233,608
NUMERIC INPUT/AUDIO OUTPUT MULTIFUNCTION CONSOLE OR THE LIKE
Ronald I. Conway, Port Ewen, Robert V. Jones, Kingston, John J. Natoli, Woodstock, and John V. Stram, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 16, 1973, Ser. No. 379,880
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



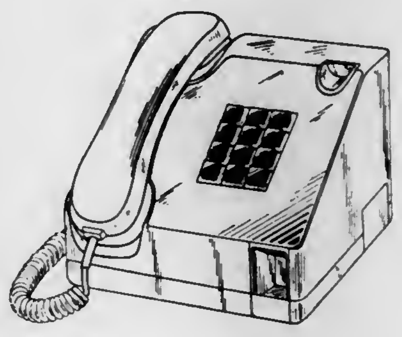
233,609
UTILITY POLE CROSSARM
Edwin B. Spaeth, Jr., 1016 Ward Lane, Blytheville, Ark. 72315
Filed Mar. 12, 1973, Ser. No. 340,350
Term of patent 14 years
Int. Cl. D13—*03;* D8—*08*
U.S. Cl. D26—12



233,610
MICROSCOPE LASER
Gregory F. Fossella, Marshfield, and Peter K. Rhoads, Stow, Mass., assignors to American Optical Corporation, Southbridge, Mass.
Filed Mar. 26, 1973, Ser. No. 344,818
Term of patent 14 years
Int. Cl. D14—*99;* D16—*06*
U.S. Cl. D26—14 L



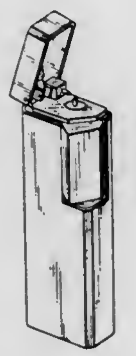
233,611
TELEPHONE SUBSCRIBER SET OR SIMILAR ARTICLE
Herbert Kramer, Furstenfeldbruck, and Tonis Kao, Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Sept. 26, 1973, Ser. No. 400,805
Claims priority, application Germany Mar. 26, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



233,612
CIGARETTE LIGHTER

Nobuyoshi Moriya, Urawa, Japan, assignor to Mansei Kogyo Kabushiki Kaisha, Saitama, Japan
Filed Mar. 14, 1973, Ser. No. 341,123
Term of patent 14 years
Int. Cl. D27—*05*

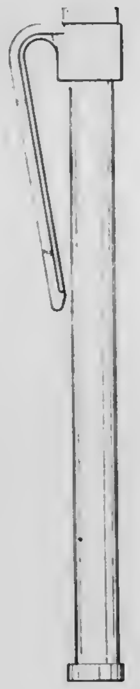
U.S. Cl. D27—42



233,613
GOLF TEE CONTAINER

Claude E. Hand III, 5325 Donald St.,
Eugene, Oreg. 97405
Filed Oct. 24, 1972, Ser. No. 299,826
Term of patent 14 years
Int. Cl. D21—*02*

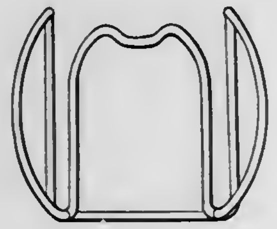
U.S. Cl. D34—5 GT



233,614
TENNIS BALL HOLDER

William C. Kinard, 3710 Alder Lane,
Pasadena, Calif. 91107
Filed Nov. 3, 1972, Ser. No. 303,638
Term of patent 14 years
Int. Cl. D21—*02*

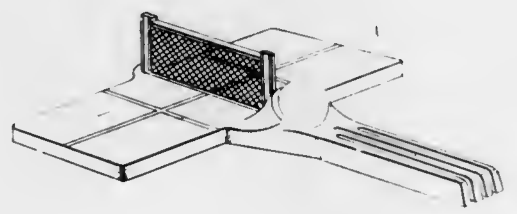
U.S. Cl. D34—5 ST



233,615
PADDLE AND BALL TOY

Albert Stubbmann, Franklin Lakes, N.J., and Marie Louise Farber, New York, N.Y., assignors to Kohner Bros, Inc., East Paterson, N.J.
Filed Jan. 19, 1973, Ser. No. 324,950
Term of patent 14 years
Int. Cl. D21—*01*

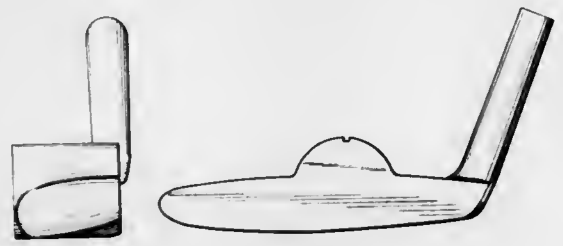
U.S. Cl. D34—5 SP



233,616
GOLF PUTTER HEAD

Ralph J. Verzillo, 68 Franklin St.,
Westerly, R.I. 02891
Filed Mar. 21, 1973, Ser. No. 343,194
Term of patent 14 years
Int. Cl. D21—*01*

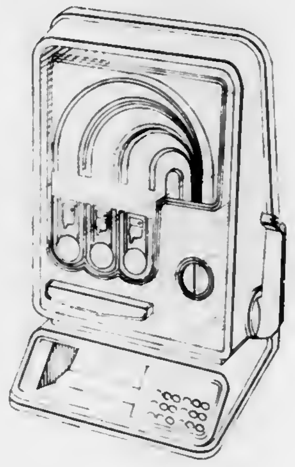
U.S. Cl. D34—5 GH



233,617
GAME CABINET

Marvin I. Glass, Chicago, Ill., Paul J. Ishikawa, South Pasadena, Calif., and John A. Vernon, Bay Shore, L.I., N.Y., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Apr. 16, 1973, Ser. No. 351,573
Term of patent 14 years
Int. Cl. D21—*01*

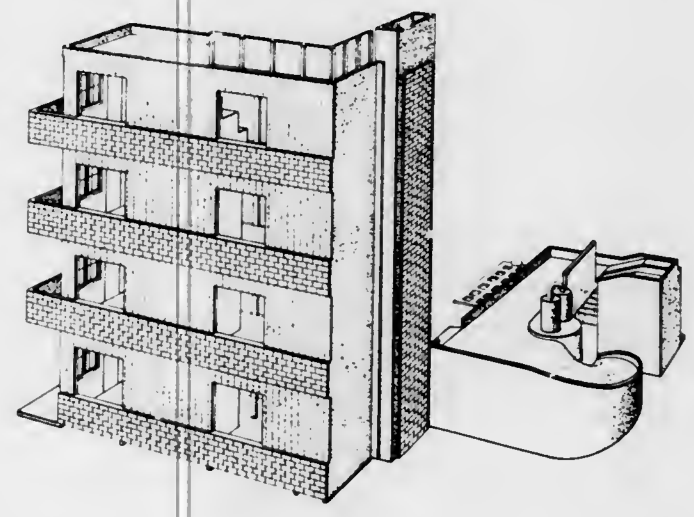
U.S. Cl. D34—5 FF



233,618
COMBINED TOY APARTMENT HOUSE AND GARAGE

Jay Smith III, Pacific Palisades, and Anson Sims, Northridge, Calif., assignors to California R & D Center, Pacific Palisades, Calif.
Filed Oct. 19, 1972, Ser. No. 299,156
Term of patent 3½ years
Int. Cl. D21—*01*

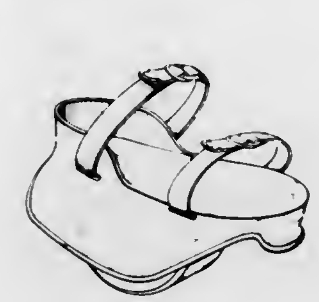
U.S. Cl. D34—15 LL



233,619
ROLLER SKATE

Charles B. Kelling, 195 East 2nd North,
Moab, Utah 84532
Filed Feb. 20, 1973, Ser. No. 333,888
Term of patent 14 years
Int. Cl. D21—*02*

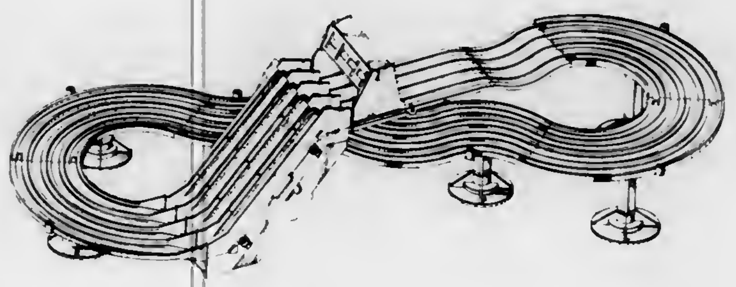
U.S. Cl. D34—14 C



233,620
TOY RACE TRACKWAY

Yoshizo Seki, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan
Filed Nov. 8, 1972, Ser. No. 304,802
Term of patent 14 years
Int. Cl. D21—*01*

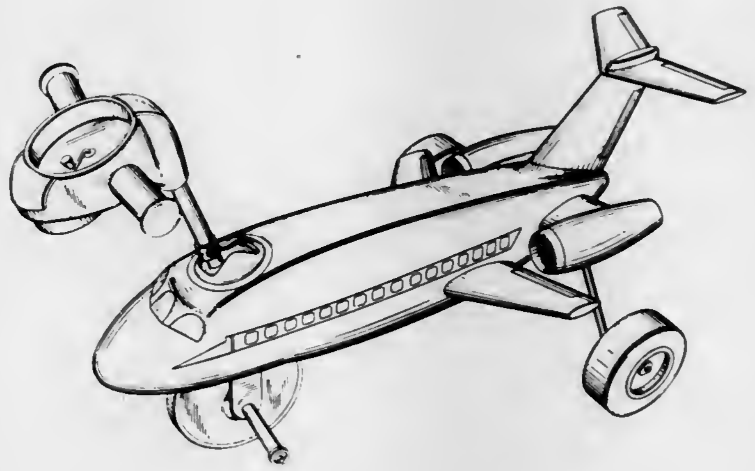
U.S. Cl. D34—15 A



233,621
RIDING VEHICLE

Laurie Jay Campbell, Robert T. Auer, Calvin S. Cook, and Raymond J. Lohr, Erie, Pa., assignors to Louis Marx & Co., Inc.
Filed Apr. 4, 1973, Ser. No. 347,735
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—15 AJ



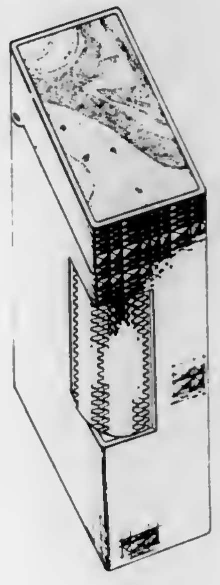
ERRATUM

For Class D45—32 see:
Patent No. D. 233,623

233,622
CIGARETTE LIGHTER

Stanley F. Gomersall, Stanmore, England, assignor to Alfred Dunhill Limited, London, England
Filed Nov. 30, 1970, Ser. No. 26,303
Term of patent 7 years
Int. Cl. D27—*05*

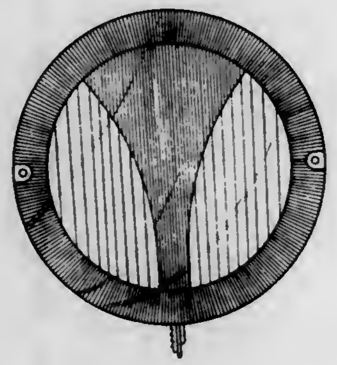
U.S. Cl. D48—27 R



233,623
LAMP SET FOR MOTORCYCLES OR THE LIKE

Eugenio Pagani, Milan, Italy, assignor to F. LLI Pagani S.p.A., Milan, Italy
Filed Mar. 2, 1973, Ser. No. 337,600
Claims priority, application Italy Sept. 4, 1972
Term of patent 14 years
Int. Cl. D26—*06*

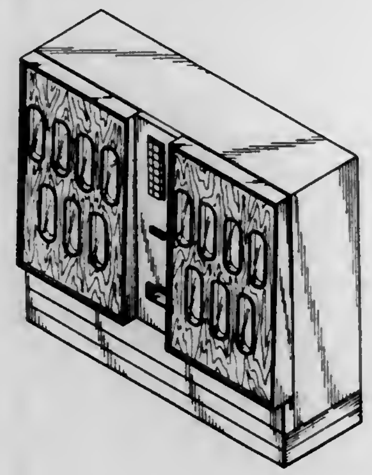
U.S. Cl. D48—32 R



233,624
VENDING MACHINE

Darla R. Mandell, Houston, Tex., assignor to Marrick Industries Inc., Houston, Tex.
Filed Feb. 23, 1973, Ser. No. 335,049
Term of patent 3½ years
Int. Cl. D20—*01*

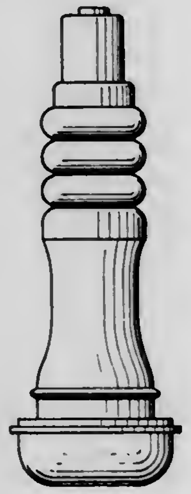
U.S. Cl. D52—3 R



233,625
FLUID PRESSURE TESTING APPARATUS

Gary R. Bluem, 7980 Wynnwood Road, Minneapolis, Minn. 55427
Filed June 4, 1973, Ser. No. 366,487
Term of patent 14 years
Int. Cl. D10—*04*

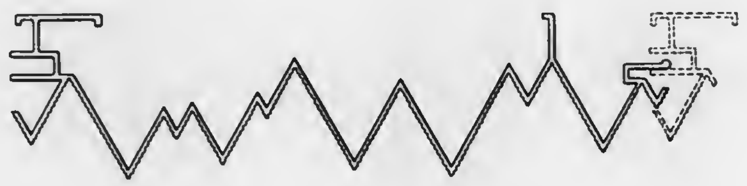
U.S. Cl. D52—6 R



233,626
ARCHITECTURAL PANEL

Marvin H. Williams, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Apr. 5, 1972, Ser. No. 241,493
Term of patent 14 years
Int. Cl. D25—*01*

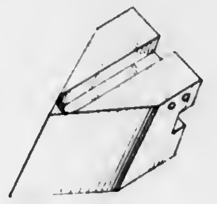
U.S. Cl. D54—2 A



233,627
TOOLHOLDER

George A. Waddell, 35 S. Groesbeck Highway, Apt. 161, Mount Clemens, Mich. 48043
Filed Feb. 26, 1973, Ser. No. 335,457
Term of patent 14 years
Int. Cl. D15—*09*

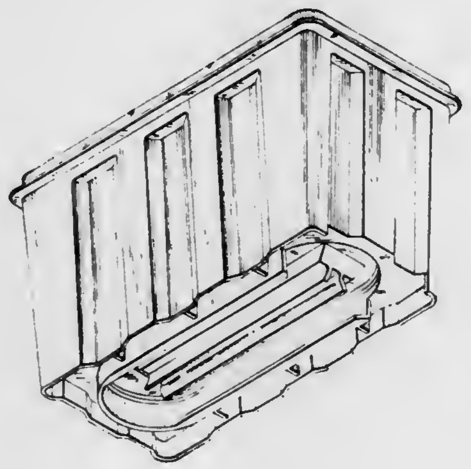
U.S. Cl. D54—6



233,628
APERTURE CARD CARTRIDGE AND CLOSURE THEREFOR

Walter B. Dunning, Dale S. Endter, William G. McDonald, and Arthur C. Rissberger, Jr., Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 7, 1972, Ser. No. 304,447
Term of patent 14 years
Int. Cl. D16—*99*

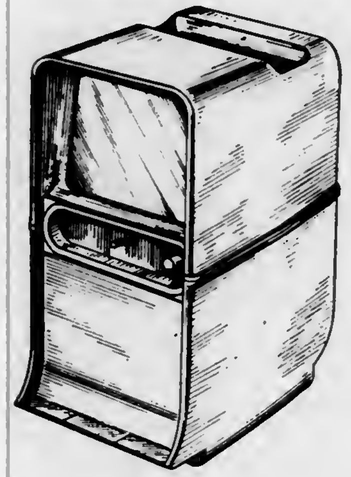
U.S. Cl. D61—1 S



233,629
PICTURE VIEWER

Robert W. Johnson, 52 Hedge Road, Levittown, Pa. 19056, and Henry Leong, 6 Waller Court, Kendall Park, N.J. 08824
Filed Apr. 4, 1973, Ser. No. 348,123
Term of patent 14 years
Int. Cl. D16—*03*

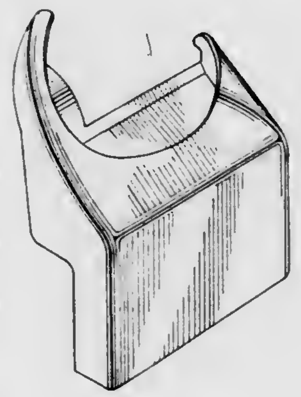
U.S. Cl. D61—1 N



233,630
LOOSE HAIR COLLECTING ATTACHMENT FOR FUR SEWING MACHINE

Fred L. Olday, Box 1255, Scranton, Pa. 18501
Filed Feb. 16, 1973, Ser. No. 333,390
Term of patent 14 years
Int. Cl. D15—*06*

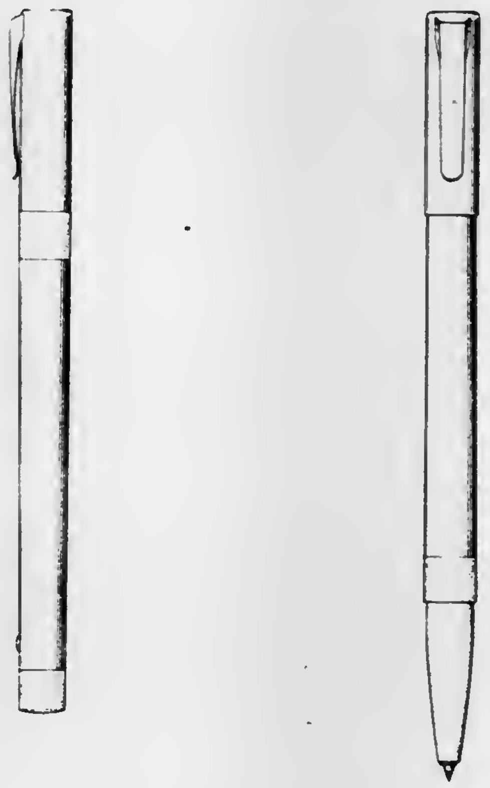
U.S. Cl. D70—2 B



233,631
MARKING PEN

Eugene Defores, Nantes, France, assignor to Societe le Foyer, Paris, France
Filed June 25, 1973, Ser. No. 372,812
Claims priority, application France Dec. 28, 1972
Term of patent 14 years
Int. Cl. D19—*06*

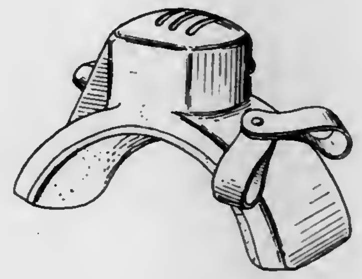
U.S. Cl. D74—17 B



233,632
ELECTRICALLY CURVED HAIR VIBRATOR

Norman Kirk, 9 Rosedale Ave., Montclair, N.J. 07042
Filed Jan. 30, 1974, Ser. No. 437,846
Term of patent 14 years
Int. Cl. D28—*03;* D24—*99*

U.S. Cl. D83—1 S



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF NOVEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A/S Cheminova: *See—*
  - Weis, Jon; and Pedersen, Bjarne Skinhoj, 3,848,002.
- AAI Corporation: *See—*
  - Monson, Franklin A.; and Mueller, Kenneth E., 3,846,878.
- AB Wikstrand & Berg: *See—*
  - Forsberg, Rolf Erik; and Sparr, Erik Einar, 3,847,334.
- Abar Corporation: *See—*
  - Kreider, Benjamin A.; and Matalsky, William J., 3,847,539.
- Abbott, David: *See—*
  - Williams, Selwyn Donald; Leaver, John Philip; and Abbott, David, 3,847,830.
- Abcor, Inc.: *See—*
  - Del Pico, Joseph, 3,847,804.
- Abe, Eiichi: *See—*
  - Kuroiwa, Tadaharu; Isayama, Yukio; Yokota, Akira; Kamio, Tsukasa; Kinnai, Kazuhiko; Abe, Eiichi; Kimura, Kunio; Hioki, Morihisa; and Noguchi, Hisataka, 3,847,806.
- Abraham, Benjamin Ichak: *See—*
  - Landauer, LeRoy; Blakslee, Edward Leroy; Abraham, Benjamin Ichak; and Stieglitz, Henry Gilbert, 3,847,786.
- Abu-Isa, Ismat A.: *See—*
  - Vincent, William R.; and Abu-Isa, Ismat A., 3,847,648.
- ACF Industries, Incorporated: *See—*
  - Holt, Jan D., 3,847,091.
- Acme General Corporation: *See—*
  - Brydole, Robert, 3,846,867.
  - Brydolf, Robert, 3,846,868.
- Acorn Engineering Company: *See—*
  - Morris, Earl L.; and Sally, Theodore J., 3,847,336.
- Acton, Hugh C.; Knapp, Robert L.; Van Ryn, Arthur L.; and Hozeski, Kenneth W., to American Seating Company. Stacking chair. 3,847,433, Cl. 297-239.000.
- Adachi, Rai Reiji, to Sarco Canada Limited. Grease interceptor. 3,847,814, Cl. 210-237.000.
- Adachi, Takeshi, to Nippon Gakki Seizo Kabushiki Kaisha. Envelope signal forming circuit. 3,848,142, Cl. 307-294.000.
- Adahan, Carmeli. Solenoid powered brake pressure modulator. 3,847,449, Cl. 303-21.00f.
- Adams, Albert John, to Chapman, A. W., Limited. Adjustable height seat. 3,847,338, Cl. 248-419.000.
- Adolphi, Heinrich; Dietsche, Wolfram; Merger, Franz; Beutel, Peter; and Huber, Rolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. O,O-dialkyl-O-[1,2-diazolidin-ones-5-yl-3]-thionophosphates. 3,847,936, Cl. 260-310.00a.
- Adomaitis, Domas, to Continental Can Company, Inc. Color stabilization of articles fabricated from nitrile polymers. 3,848,041, Cl. 264-98.000.
- Advanced Memory Systems,: *See—*
  - Geilhufe, Michael; and Mehta, Rustam Jehangir, 3,848,237.
- Advanced Products Pty. Limited: *See—*
  - Ifield, Richard Joseph, 3,847,061.
- AEG-Elotherm GmbH: *See—*
  - Seulen, Gerhard; and Scheffler, Friedrich, 3,847,291.
- Agence Nationale de Valorisation de la Recherche (Anvar): *See—*
  - Christian, Rioux; and Francoise, Damidau, 3,848,099.
- Agency of Industrial Science and Technology: *See—*
  - Fukuda, Masataro; Iwaki, Tsutomu; and Mitsumata, Tadayasu, 3,847,603.
- Agfa-Gevaert: *See—*
  - Hofman, Emiel Alexander; De Bie, Leo Pierre; and Berendsen, Jules Robert, 3,847,618.
  - Philippaerts, Herman A.; Pollet, Robert Joseph; Muller-Bardorff, Wolfgang; Saleck, Wilhelm; Moll, Franz; and Ghys, Theofiel Hubert, 3,847,617.
  - Van Royen, Freddy Ghisleen; and van den Houte, Jozef Willy, 3,847,611.
- Agfa-Gevaert N.V.: *See—*
  - Blanc, Marie Jean; and Stievenart, Emile Frans, 3,848,133.
- Agostino, Salvatore R., Jr., 10% to Meyer, Edward D. Wedge lock hydraulic cylinder head. 3,847,404, Cl. 277-187.000.
- Agricultural Enterprises, Inc.: *See—*
  - Gould, Maurice O., 3,847,122.
- Air Industrie: *See—*
  - Ambry, Gerard, 3,847,118.
- Air Preheater Company, Inc. The: *See—*
  - Stockman, Richard F., 3,847,296.
- Airco Inc.: *See—*
  - Gregory, Eric; Marancik, William G.; and Shattes, Walter J., 3,847,650.
- Airpax Electronics Incorporated: *See—*
  - Nye, Dudley D., Jr.; and Eisenstadt, Daniel J., 3,848,159.
- Aisin Seiki Company Limited: *See—*
  - Okamoto, Toshaiaki; Inada, Masammi; and Nishida, Koji, 3,847,448.
- Aitken, Edward A.: *See—*
  - Roy, Prodyot; Simpson, James L.; and Aitken, Edward A., 3,847,653.
- Ajamie, Amil J.: *See—*
  - Davidsohn, Uryon S., 3,847,687.
- Ajax Flexible Coupling Co., Inc.: *See—*
  - Draggett, Henry A., 3,847,070.
- Ajinomoto Co., Inc.: *See—*
  - Shiio, Isamu; Ozaki, Hachiro; and Nakamatsu, Tsuyoshi, 3,847,744.
- Aker, Ludwig E., to International Harvester Company. Wheel manufacture. 3,847,444, Cl. 301-63.0dd.
- Akers, Robert M.; and Westfall, Harold L. Motorized awning control apparatus. 3,847,171, Cl. 135-5.0at.
- Akin, Cavit: *See—*
  - Ridgway, John A., Jr.; Lappin, Terry A.; Benjamin, Benny Moses; Corns, Joseph B.; and Akin, Cavit, 3,847,750.
- Aktiengesellschaft Brown, Boveri & Cie: *See—*
  - Schwrrz, Hans, 3,847,734.
- Aktieselskabet de Danske Sukkerfabrikker: *See—*
  - Madsen, Rud Frik; Olsen, Ole Jentoft; and Stenseng, Mogens Martin, 3,847,818.
- Akune, Mikio; Yoshii, Kokichi; and Yamauchi, Tadashi, to Nittelsu Chemical Engineering Co. Ltd. Method and apparatus for treatment of liquid wastes. 3,847,713, Cl. 159-4.00a.
- Albertassi, James H.: *See—*
  - Tufts, Wesley H.; and Albertassi, James H., 3,846,847.
- Alberts, Heinrich; and Bartl, Herbert, to Bayer Aktiengesellschaft. Grafted ethylene polymers. 3,848,025, Cl. 260-878.00r.
- Albrecht, Ernst; and Hubele, Klaus, to Pfaff Industriemaschinen GmbH. Ribbon feeding device in buttonhole sewing machines. 3,847,096, Cl. 112-65.000.
- Alexandre, Bernard: *See—*
  - Chanel, Rene; Alexandre, Bernard; Leroi, Jean-Claude; and Billion, Jacques, 3,847,755.
- Alfa Romeo S.p.A.: *See—*
  - Colucci, Ivo, 3,848,121.
- Allegheny Ludlum Industries, Inc.: *See—*
  - Hartline, Albert G., III, 3,847,599.
- Allen, Elmer Lawrence, Jr.: *See—*
  - Kawamoto, Hirohisa; Allen, Elmer Lawrence, Jr.; and Weisbrod, Sherman, 3,848,196.
- Allen, James D., to Phillips Petroleum Company. Hydroformylation process and catalyst. 3,847,997, Cl. 260-604.0hf.
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- Allen, Thomas Jeffrey, to Wild, Fletcher Sutcliffe, Limited. Rotary coal cutters with water jet offices. 3,847,439, Cl. 299-81.000.
- Allied Chemical Corporation: *See—*
  - Baumgaertner, Eugene R., 3,847,888.
  - Largman, Theodore; and Stone, Herman, 3,847,861.
  - Mueller, Max B.; and Chandrasekaran, Swayambu, 3,847,881.
- Allievi, Joseph. Clam, oyster and nut cracker. 3,846,908, Cl. 30-120.100.
- Allington, William B., to Instrumentation Specialties Company. Electrophoresis method and apparatus. 3,847,785, Cl. 204-299.000.
- Allis-Chalmers Corporation: *See—*
  - Barth, John W., 3,847,243.
  - Dreisin, Alexander, 3,847,126.
  - Lowe, Keith B.; and Gray, William R., 3,847,358.
  - Lowe, Keith B.; and Gray, William R., 3,847,362.
  - Rossi, Eugene F., 3,847,538.
- Allis-Chalmers Manufacturing Company: *See—*
  - Slosiarek, Michael L.; and Gatch, Richard E., 3,847,228.
- Allmon, Dwight George; Lee, Pedro; and Coker, Charles Walter, Jr., to International Business Machines Corporation. Logical circuitry for recovering RPM decoded PRM recorded data. 3,848,251, Cl. 340-347.0dd.
- Alpha-O Corporation: *See—*
  - Gillice, Leland O., 3,847,688.
- Althouse, Harlan E.; Scott, Fremont L.; and Cole, Gordon E., Jr., to M&T Chemicals Inc. Substrate bonded with vinyl dispersion textured coating. 3,847,654, Cl. 117-123.00d.

- Aluminum Company of America: *See*—
  - Haupin, Warren E:, 3,847,761.
- Aluterv Aluminiumipari Tervezo Vallalat: *See*—
  - Kolosy, Erno, 3,847,782.
- Ambry, Gerard, to Air Industrie. Installations for the coating of parts by powdering. 3,847,118, Cl. 118-602.000.
- American Air Filter Company, Inc.: *See*—
  - Fish, James F., 3,847,574.
- American Aniline Products, Inc.: *See*—
  - Genta, Guido, 3,847,541.
- American Can Company: *See*—
  - Landauer, LeRoy; Blakslee, Edward Leroy; Abraham, Benjamin Ichak; and Stieglitz, Henry Gilbert, 3,847,786.
- American Cyanamid Company: *See*—
  - Chase, John Donald; and Potter, Robert Louis, 3,847,864.
  - Clasen, Richard Howard; and Giglia, Robert Domenico, 3,847,468.
  - Dundon, John Peter, 3,848,001.
  - Forgione, Peter Salvatore, 3,847,743.
  - Montgomery, William Herbert, 3,847,279.
  - Peeso, James Bruce, Jr., 3,847,885.
- American Filtrona Corporation: *See*—
  - Berger, Richard M., 3,847,064.
- American Hospital Supply Corporation: *See*—
  - Brake, Jon M.; and Deindoerfer, Fred H., 3,847,738.
- American Metal Climax, Inc.: *See*—
  - Ronzio, Richard A.; Kay, Herbert; and Vincent, John D., 3,848,049.
- American Seating Company: *See*—
  - Acton, Hugh C.; Knapp, Robert L.; Van Ryn, Arthur L.; and Hozeski, Kenneth W., 3,847,433.
- American Telecommunications Corporation: *See*—
  - Tucker, Council A., 3,848,097.
- American Waterweed Harvesting Company, Inc.: *See*—
  - Kelpin, Thomas G., 3,847,105.
- AMF Incorporated: *See*—
  - Perez, George R., 3,848,226.
- Amick, Darryl D., to Teledyne Wah Chang Albany. Method of quenching zirconium and alloys thereof. 3,847,684, Cl. 148-20.600.
- Amin, Rajnikant Babubhai, to Du Pont de Nemours, E. I., and Company. Printed circuits with crystallized glass low K crossover dielectrics. 3,848,079, Cl. 174-68.500.
- Amos, Robert Walter James: *See*—
  - Drake, Cyril Francis; and Amos, Robert Walter James, 3,847,625.
- AMP Incorporated: *See*—
  - Frantz, Robert Houston, 3,848,220.
  - Lightner, Linn Stephen, 3,848,222.
  - Parsons, Stuart L.; and Kloth, James Albert, 3,846,894.
- Amsted Industries Incorporated: *See*—
  - Love, Robert B.; and Radwill, Robert P., 3,847,090.
  - Madura, Francis Eli, 3,847,414.
  - Takarada, Eiichi, 3,848,108.
- Anderson, James Hilbert. Geothermal plant cleaning system. 3,846,986, Cl. 60-641.000.
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  - Fries, Bernd, 3,847,526.
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  - Sturm, Hans-Juergen; Kempter, Fritz Erdmann; and Armbrust, Herbert, 3,847,974.
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  - Garrick, John R.; and Waters, Ernest B., Jr., 3,848,043.
- Arneklev, Duane R.: *See*—
  - Teach, Eugene G.; and Arneklev, Duane R., 3,847,587.
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  - Kominami, Naoya; Nakajima, Hitoshi; Tamura, Nobuhiro; and Ohki, Kusuo, 3,847,972.
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- Asahi Kaser Kogyo Kabushiki Kaisha: *See*—
  - Okawa, Isao, 3,846,949.
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  - Kellen, James N.; and Throckmorton, Peter E., 3,847,942.
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  - Mills, Ivor W.; Dimeler, Glenn R.; Atkinson, William A., Jr.; and Hoffman, James P., 3,847,623.
- Atlantic Research Corporation: *See*—
  - Summers, George D., 3,848,082.
- Atlantic Richfield Canada Ltd.: *See*—
  - Cymbalisty, Lubomyr M. O., 3,847,789.
- Atlantic Richfield Company: *See*—
  - Burt, Glenn R.; Condo, Albert C.; and Knight, George R., 3,846,989.
  - Caserio, Frederick F., Jr.; and Nakaguchi, Glenn M., 3,847,996.
  - Rieve, Robert W.; and Shalit, Harold, 3,847,795.
  - Shalit, Harold, 3,848,017.
  - Yoo, Jin Sun, 3,847,798.
- Audio Synthesisers Limited: *See*—
  - Freeman, Kenneth, 3,847,050.
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- Aumuller, Walter: *See*—
  - Weber, Helmut; Aumuller, Walter; Weyer, Rudi; Muth, Karl; and Stach, Kurt, 3,847,938.
- Auti Nsu Auto Union A.G.: *See*—
  - Uebelstadt, Manfred, 3,847,428.
- Automobiles Peugeot: *See*—
  - Roger, Yves, 3,847,056.
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- Avco Corporation: *See*—
  - Straniti, Salvatore, 3,847,506.
- Avco Everett Research Laboratory, Inc.: *See*—
  - Locke, Edward V., 3,848,104.
- Avery, Bennett W., to Caterpillar Tractor Company. Replaceable lubricating cartridge for spline connections. 3,847,248, Cl. 184-1.00r.

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  - Hochner, Walter L., 3,847,725.
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  - Sherrill, Frank Odell, 3,847,250.
- Baader, Earl E.; and Schlosser, Ronald M. Rain cap guard and lock for exhaust pipes. 3,847,297, Cl. 220-85.00p.
- Babayan, Eduard P., to Hitco. Flame retardant butyl rubber. 3,847,723, Cl. 161-160.000.
- Babcock & Wilcox Company, The: *See*—
  - Schluderberg, Donald C., 3,847,735.
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- Badger Company, Inc., The: *See*—
  - Hughes, Richard E., 3,847,968.
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  - Adolphi, Heinrich; Dietsche, Wolfram; Merger, Franz; Beutel, Peter; and Huber, Rolf, 3,847,936.
  - Hetzel, Eckhard; and Korpiun, Olaf, 3,847,964.
  - Kanig, Gerhard, 3,847,840.
  - Koenig, Karl-Heinz; Kolbinger, Rudolf; and Fischer, Adolf, 3,847,971.
  - Kuerten, Heribert; and Nagel, Otto, 3,847,375.
  - Platz, Rolf; Nagel, Otto; and Fuchs, Werner, 3,847,989.
  - Sturm, Hans-Juergen; Kempter, Fritz Erdmann; and Armbrust, Herbert, 3,847,974.
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- Bailey, David C., to General Electric Company. Speed control mechanism. 3,847,027, Cl. 74-190.000.
- Bailey Meter Company: *See*—
  - Boll, Richard H., 3,847,487.
- Baird, William R.; and Sutton, Kenneth O., to Saturn Machine & Welding Co., Inc. Coke oven door and jamb cleaners. 3,847,753, Cl. 202-241.000.
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- Baker, Don R.: *See*—
  - Mihailovski, Alexander; and Baker, Don R., 3,847,980.
- Baker Industries, Inc.: *See*—
  - LeNay, Tom W.; and Hadden, Donald L., 3,848,241.
- Bakermans, Fransiscus Cornelius; and Thoms, William Charles, to Du Pont de Nemours, E. I., and Company. Terminal block assembly apparatus. 3,846,896, Cl. 29-203.0dt.
- Baldwin Electronics, Inc.: *See*—
  - Wootton, Thomas S., 3,848,231.
- Baldwin, Guy N. Rotary fluid motor. 3,846,987, Cl. 60-690.000.
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- Balletto, Norman Philip. Traction device for trailers. 3,847,407, Cl. 280-46.000.
- Balleux, Willem: *See*—
  - Taeymans, Alois; Dumont, Georges; and Balleux, Willem, 3,847,094.
- Balyasinsky, Valery Ottovich: *See*—
  - Tolstov, Jury Georgievich; Skorovarov, Vladimir Efremovich; Grinshtein, Boris Ilich; Stepanova, Valentina Gavrilovna; Bashkatov, Ivan Pavlovich; Vinitsky, Jury Danilovich; Balyasinsky, Valery Ottovich; and Shmusrov, Valery Pavlovich, 3,848,156.
- Banchi, Natale. Swimming pool. 3,846,850, Cl. 4-172.190.
- Banner, Philip Michael. Emergency fire exit means. 3,847,246, Cl. 182-78.000.
- Barbee, Wilford A., to Iowa Beef Processors, Inc. Method of washing tripe. 3,846,869, Cl. 17-43.000.
- Barbey, Emile: *See*—
  - Ehretsmann, Jacques; Barbey, Emile; and Heinzer, Paul, 3,847,265.
- Bare, Thomas M.: *See*—
  - Suh, John T.; and Bare, Thomas M., 3,847,950.
- Barnes, Hamilton Nigel, to United Kingdom of Great Britain and Northern Ireland, Minister of Technology in Her Britannic Majesty's Government of the. Vehicle braking systems. 3,847,253, Cl. 188-2.00a.
- Barnhart, Robert R.: *See*—
  - Kindle, Robert W.; Barnhart, Robert R.; and Paul, Phillip T., 3,847,727.
- Barth, John W., to Allis-Chalmers Corporation. Auxiliary power system on a vehicle. 3,847,243, Cl. 180-79.20r.
- Bartizal, John J., Jr. Folding machine roller. 3,846,884, Cl. 29-127.000.
- Bartl, Herbert: *See*—
  - Alberts, Heinrich; and Bartl, Herbert, 3,848,025.
- Barton-King Systems Corporation: *See*—
  - Lambert, Harry, 3,846,944.
- BASF Aktiengesellschaft: *See*—
  - Baumann, Hans; Glaser, Rudolf; and Bauer, Peter, 3,847,656.
- Bashkatov, Ivan Pavlovich: *See*—
  - Tolstov, Jury Georgievich; Skorovarov, Vladimir Efremovich; Grinshtein, Boris Ilich; Stepanova, Valentina Gavrilovna; Bashkatov, Ivan Pavlovich; Vinitsky, Jury Danilovich; Balyasinsky, Valery Ottovich; and Shmusrov, Valery Pavlovich, 3,848,156.
- Bass, Sidney: *See*—
  - Hill, Allen D.; Bass, Sidney; and Rich, Hubert A., 3,846,933.
- Bates, Bruce L., to Phillips Petroleum Company. Cryogenic extraction process for natural gas liquids. 3,846,993, Cl. 62-23.000.
- Battelle Memorial Institute: *See*—
  - Ehretsmann, Jacques; Barbey, Emile; and Heinzer, Paul, 3,847,265.
- Bauer, Felix; and Valdenaire, Claude. Refuse incinerator. 3,847,095, Cl. 110-14.000.
- Bauer, Peter: *See*—
  - Baumann, Hans; Glaser, Rudolf; and Bauer, Peter, 3,847,656.
- Bauer, William J. Corrugated conduit. 3,847,186, Cl. 138-173.000.
- Baumann, Eduard, to Zellweger AG. Storage switch arrangement. 3,848,240, Cl. 340-174.00r.
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- Baumgaertner, Eugene R., to Allied Chemical Corporation. Ultra-high molecular weight polyethylene molding powder and molding process. 3,847,888, Cl. 260-94.9gd.
- Baurle, Horst: *See*—
  - Ital, Gunter; and Baurle, Horst, 3,847,057.
- Baut, Jacques; and Journee, Paul. Windscreen wiper frame. 3,846,864, Cl. 15-250.042.
- Bawa, Jaspal S., to Thomas & Betts Corporation. Electrical fitting. 3,847,417, Cl. 285-161.000.
- Baxter Laboratories, Inc.: *See*—
  - Shanbrom, Edward; and Louderback, Allan L. (said Louderback assor. to), 3,847,545.
- Bayer Aktiengesellschaft: *See*—
  - Alberts, Heinrich; and Bartl, Herbert, 3,848,025.
  - Blahak, Johannes, 3,847,990.
  - Brandenburg, Dietrich; and Puls, Walter, 3,847,893.
  - Dickore, Karlfried; Draber, Wilfried; and Eue, Ludwig, 3,847,914.
  - Engelhard, Helmut; Blankenstein, Gunter; and Reinehr, Ulrich, 3,848,028.
  - Kishino, Shigeo; Yamada, Yasuo; Kurashashi, Yoshio; and Kume, Toyohiko, 3,848,031.
  - Nielinger, Werner; Rudolph, Hans; Dhein, Rolf; and Schneider, Kurt, 3,847,877.
  - Radlmann, Edward; and Nischk, Gunther, 3,847,884.
- Bear, James E.: *See*—
  - Weber, Charles W.; Rucker, C. Olen; Peavy, Patrick L.; Woo, Pak-Fat (William); and Bear, James E., 3,847,207.
- Beatrice Foods Co.: *See*—
  - Binding, Kenneth W., 3,847,376.
- Becher, Wilfried; Massonne, Joachim; and Pohlmeyer, Wilhelm, to Kali-Chemie Aktiengesellschaft. Production of sulfurtetrafluoride from sulfur chlorides and fluorine. 3,848,064, Cl. 423-469.000.
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- Beck, Henry E.; and Peterson, Wayne A., to Caterpillar Tractor Company. Dual control valve assembly. 3,847,059, Cl. 91-413.000.
- Becker, Walter: *See*—
  - Weglage, David E., 3,846,900.
- Becker, Wilhelm; Osse, Peter; Gutte, Richard; and Hochbach, Friedrich, to Reichhold-Albert Chemie Aktiengesellschaft. Vibration-damping sheet metal laminates. 3,847,726, Cl. 161-186.000.
- Beckman Instruments, Inc.: *See*—
  - Gropper, Lee; Durland, Douglas H.; and Galasso, Maurice, 3,847,484.
- Bedford, John A.: *See*—
  - Mesich, Frank G.; Bedford, John A.; and Dougherty, Edward F., 3,848,003.
- Beecham Group Limited, mesne: *See*—
  - Razdan, Raj Kumar; and Thompson, William R., 3,847,928.
- Beer, Carl; and Beer, Steven Vincent. Fatless frying pan. 3,847,068, Cl. 99-425.000.
- Beer, Steven Vincent: *See*—
  - Beer, Carl; and Beer, Steven Vincent, 3,847,068.

- Beers, Melvin D., to General Electric Company. Two-part room temperature vulcanizable silicone rubber compositions. 3,847,848, Cl. 260-18.00s.
- Beever, Elmer R.; Shima, Rindge; and Zebus, Paul P., to Rockwell International Corporation. Simulation and measurement apparatus. 3,847,024, Cl. 73-432.0sd.
- Behr, Raymond D., to Dow Chemical Company, The. Process of manufacture of film having thickened profiles therein. 3,848,035, Cl. 264-40.000.
- Belanger, Inc.: *See—*
  - Belanger, James A., 3,846,942.
- Belanger, James A., to Belanger, Inc. Rotary finishing wheels. 3,846,942, Cl. 51-334.000.
- Belardi, Richard J.: *See—*
  - Ho, Ernest C.; Reissmueller, Karl H.; and Belardi, Ricnard J., 3,846,971.
- Belcastro, Richard J., to GTE Automatic Electric Laboratories Incorporated. Drum memory protect arrangement. 3,848,262, Cl. 360-60.000.
- Belgonucleaire: *See—*
  - Taeymans, Alois; Dumont, Georges; and Balleux, Willem, 3,847,094.
- Bell & Howell Company: *See—*
  - Uterhart, Philip E., 3,847,474.
- Bell, David: *See—*
  - Coulter, Michael Oliver; and Bell, David, 3,847,598.
- Bell Telephone Laboratories, Incorporated: *See—*
  - Kiko, Frederick John, 3,848,195.
- Bell-Northern Research Ltd.: *See—*
  - Pinel, John Fowler, 3,848,098.
- Bellows, Guy, to General Electric Company. Apparatus for electrolytic material removal. 3,847,781, Cl. 204-224.00m.
- Beltran, Humberto Flores, to Searle, G. D., & Co. Process for the production of diphenoxylate, its derivatives and its salts using an aqueous DMF solvent system. 3,847,926, Cl. 260-293.750.
- Ben Kahn Furs Corporation: *See—*
  - Graf, Ernest, 3,846,844.
- Bendix Corporation, The: *See—*
  - Kendall, Kenneth J.; Telleri, Carmen M.; and Laniewski, Leonard W., 3,848,246.
  - Moss, James R., 3,848,257.
  - Needham, James M.; and Elliott, Delbert R., 3,847,447.
- Benjamin, Benny Moses: *See—*
  - Ridgway, John A., Jr.; Lappin, Terry A.; Benjamin, Benny Moses; Corns, Joseph B.; and Akin, Cavit, 3,847,750.
- Bennett, Donald E.: *See—*
  - Phillips, Jack C.; and Bennett, Donald E., 3,847,369.
- Bentz, John Edward, to Motorola, Inc. High voltage connector arrangement. 3,848,088, Cl.178-7.900.
- Beran, Pavel: *See—*
  - Dolejs, Ladislav; Machkova, Zuzana; Beran, Pavel; Kahovcova, Jitka; Slama, Karel; and Sorm, Frantisek, 3,847,907.
- Beregi, Laszlo; Hugon, Pierre; Desnoyers, Pierre; and Duhault, Jacques, to Societe en nom collectif "Science et Cie," Societe Francaise de Recherche Medicale. Benzenesulfonyl semicarabazides. 3,847,925, Cl. 260-293.730.
- Berendsen, Jules Robert: *See—*
  - Hofman, Emiel Alexander; De Bie, Leo Pierre; and Berendsen, Jules Robert, 3,847,618.
- Berger, Charles V., to Universal Oil Products Company. High octane motor fuel production. 3,847,792, Cl. 208-60.000.
- Berger, Richard M., to American Filtrona Corporation. Tobacco Smoke filter. 3,847,064, Cl. 93-1.00c.
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- Bergles, Eduard, to Fichtel & Sachs AG. Leaf spring biased derailleur arrangement. 3,847,028, Cl. 74-217.00b.
- Berkowitz, Murray: *See—*
  - Hermes, Walter L.; Corwin, Howard R.; Berkowitz, Murray; and Lamping, Harold D., 3,847,517.
- Bernaola, Omar A. Methods for the elimination of scors using copolymer films in place of surgical sutures. 3,847,155, Cl. 128-334.00r.
- Bernard, Georges F.: *See—*
  - Paraskevas, Dimitri; L'Hermite, Alain A.; Bernard, Georges F.; and Guinet, Jacques E., 3,847,481.
- Bernardi, Luigi; Foglio, Maurizio; and Temperilli, Aldemio, to Formitalia Societa Formaceutici Italia. Process for the preparation of ethambutol [2,2'-(ethylene diamino)di-butane 1-ol]. 3,847,991, Cl. 260-584.00r.
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- Berriman, Lester P.: *See—*
  - Englert, Robert D.; and Berriman, Lester P., 3,846,845.
- Berry, William R.: *See—*
  - Schantz, Spencer C.; and Berry, William R., 3,848,205.
- Berton, Georges Albert: *See—*
  - Delgendre, Jacques Claude; Kerrenneur, Alain Rogar; and Berton, Georges Albert, 3,847,547.
- Bethke, Erwin, to Smithe, F. L., Machine Company, Inc. Apparatus for collating sheet like elements. 3,847,384, Cl. 271-80.000.
- Bethlehem Steel Corporation: *See—*
  - Furr, Samuel T., 3,847,678.
  - Herman, Stewart T.; and Horst, Russel J., 3,847,807.
  - Szendroi, Imre; and Ehret, Jenson E., 3,847,303.
- Betts, Edward E.: *See—*
  - Kulczycki, Stanley N.; and Betts, Edward E., 3,847,344.
- Beutel, Peter: *See—*
  - Adolphi, Heinrich; Dietsche, Wolfram; Merger, Franz; Beutel, Peter; and Huber, Rolf, 3,847,936.
- Bevilacqua, Frank, to Combustion Engineering, Inc. Flow twister for a nuclear reactor. 3,847,736, Cl. 176-78.000.
- Bevis, Michael: *See—*
  - Swindells, Norman; and Bevis, Michael, 3,848,126.
- Beyer, Hermann: *See—*
  - Broll, Arno; Beyer, Hermann; Mann, Herbert; and Meyer-Simon, Eugen, 3,847,639.
- Bialobrzeski, Walter. Vehicle mounted insect exterminator. 3,846,932, Cl. 43-138.000.
- Bianchi, John E. Holster. 3,847,315, Cl. 224-2.00c.
- Bielfeldt, Friedrich Bernd; and Richardsen, Richard Flohrs, to Krauss-Maffei Aktiengesellschaft. Apparatus for the injection molding of synthetic-resin articles. 3,847,525, Cl. 425-245.00r.
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- Bigelow-Stanford, Inc.: *See—*
  - Sheehan, Richard W.; Parlin, David B.; Jamrogowicz, Harry F.; and Patterson, John A., 3,846,968.
- Billion, Jacques: *See—*
  - Chanel, Rene; Alexandre, Bernard; Leroi, Jean-Claude; and Billion, Jacques, 3,847,755.
- Binding, Kenneth W., to Beatrice Foods Co. Portable vehicle rack. 3,847,376, Cl. 254-88.000.
- Binns, John Michael: *See—*
  - Maltby, Peter John; Glaze, Stanley George; Ellis, Kenneth Harold; Craven, Donald; and Binns, John Michael, 3,847,251.
- Bio/Data Corporation: *See—*
  - Sokol, Michael; and Kent, Frederick M., 3,847,482.
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- Blackley, William D.: *See—*
  - Siegart, William R.; Blackley, William D.; and Chafetz, Harry, 3,847,887.
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  - Landauer, LeRoy; Blakslee, Edward Leroy; Abraham, Benjamin Ichak; and Stieglitz, Henry Gilbert, 3,847,786.
- Blanc, Marie Jean; and Stievenart, Emile Frans, to Agfa-Gevaert N.V. Roll film radiographic cassette. 3,848,133, Cl. 250-469.000.
- Blanchard, Eugene J.: *See—*
  - Harper, Robert J., Jr.; Blanchard, Eugene J.; and Gautreaux, Gloria A., 3,847,542.
- Blanco Rodriguez, Jose: *See—*
  - Vinals Socias, Luis; Blanco Rodriguez, Jose; and Fernandez Ugalde, Francisco Javier, 3,847,973.
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  - Engelhard, Helmut; Blankenstein, Gunter; and Reinehr, Ulrich, 3,848,028.
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  - Grutter, Walter, 3,847,030.
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  - Farfaglia, Silvio T.; and Bock, Ronald E., 3,847,540.
- Bockstahler, Earl R., to Dow Chemical Company, The. Substituted phenylthioamidines. 3,847,986, Cl. 260-564.00g.
- Boehringer, C. H., Sohn: *See—*
  - Ost, Walter; Thomas, Klaus; and Jerchel, Dietrich, 3,847,922.
- Boeing Company, The: *See—*
  - Bissell, Sherman M.; De Vlieg, Garrett H.; and Hopland, Johan N., 3,847,445.
  - Simpson, Robert D.; and Boone, Jimmie H., 3,847,328.
- Boesch, Roger, to Rhone-Poulenc S.A. Phenylhydrazone derivatives. 3,847,987, Cl. 260-566.00b.
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  - Lehner, Alphonse C.; and Boeye, Paul E., 3,847,276.
- Boling, Goran: *See—*
  - Berggren, Benny; and Boling, Goran, 3,848,106.
- Boll, Richard H., to Bailey Meter Company. Constant effective slot length light pipe. 3,847,487, Cl. 356-207.000.
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  - Currell, Herbert Henry, 3,847,691.
- Bondi, Emanuele, to Fieldcrest Mills, Inc. Method and apparatus for making pile fabrics from a block of pile yarns. 3,847,692, Cl. 156-72.000.
- Bonfanti, Giovanni: *See—*
  - Turolla, Carlo; Bonfanti, Giovanni; and Pasqualucci, Carmine, 3,847,903.
- Bonin, Jean-Claude, to Roto Diesel. Fuel injection pumps for I.C. engines. 3,847,509, Cl. 417-214.000.
- Booker, William J. W., to Oliver Tom's Catering Equipment Limited. Ovens. 3,847,134, Cl. 126-21.00a.
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- Boone, Jimmie H.: *See—*
  - Simpson, Robert D.; and Boone, Jimmie H., 3,847,328.
- Boothman, David Richard; and Nutt, David Walter, to Canadian General Electric Company, Limited. Circuit for detecting phase unbalance in a three phase supply. 3,848,160, Cl. 317-27.00r.
- Borg-Warner (Canada) Ltd.: *See—*
  - Suykens, Matthieu, 3,847,290.
- Boryta, Daniel A., to Foote Mineral Company. Carbon dioxide absorbent granules. 3,847,837, Cl. 252-468.000.
- Bosch, Robert, G.m.b.H.: *See—*
  - Dworak, Wilhelm; and Talmon, Wolfgang, 3,847,519.
  - Hornung, Friedrich, 3,848,168.
  - Ital, Gunter; and Baurle, Horst, 3,847,057.
  - Rometsch, Werner; and Veil, Karl, 3,846,982.
  - Staudt, Heinrich, 3,847,127.
  - Wanner, Karl; Schmid, Wolfgang; Karl, Hubertus; and Falchle, Jorg, 3,847,229.
- Boshold, Raymond F., to Wean United, Inc. Turntable apparatus for presses. 3,847,075, Cl. 100-223.000.
- Botting, Albert L. Sheath for curling broom. 3,846,862, Cl. 15-210.00r.
- Bottoms, Harry Simister, to Lucas Aerospace Limited. Centrifugal pumps for pumping liquids. 3,847,503, Cl. 425-143.000.
- Bouchard, Robert J., to Du Pont de Nemours, E. I., and Company. Crystalline bismuth-containing oxides. 3,847,829, Cl. 252-63.500.
- Bouchaudon, Jean; Vourat, Guy; and Margrafe, Rodolphe, to Rhone-Poulenc S.A. Polyoxetanes which can be used in peptide synthesis. 3,847,868, Cl. 260-47.00r.
- Boucher, Raymond Claude Emile: *See—*
  - Taxil, Andre Marc Victorin; and Boucher, Raymond Claude Emile, 3,848,150.
- Bourdon, Bernard; Duong, Claudy; and Coppier, Pierre, to Societe Generale de Constructions Electriques et Mecaniques (Alsthom). Method of preparing a pattern of a layer of refractory metal by masking. 3,847,776, Cl. 204-192.000.
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- BP Chemicals International Limited: *See—*
  - Gasson, Edward James; Marrian, Stanley Frederic; and Krosnar, Thomas Charles, 3,847,965.
- Braden, William B., Jr., to Texaco Inc. Treatment of an underground formation containing water-sensitive clays. 3,847,222, Cl. 166-303.000.
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- Breslow, David W.; and Simpson, David A., to Hercules Incorporated. Photopolymer process forming graft polymers in exposed areas. 3,847,609, Cl. 96-33.000.
- Breuer, Hermann; and Treuner, Uwe D., to Squibb, E. R., & Sons, Inc. 6-Styrylpyraz olo(3,4-D)pyrimidinones and pyrimidines. 3,847,908, Cl. 260-240.00d.
- Bridgestone Tire Company Limited: *See—*
  - Yabe, Toshinori, 3,847,706.
  - Yoshimoto, Toshio; Imamura, Takaaki; Tanaka, Kazuo; and Miyagi, Arata, 3,848,026.
- Brien, James J. Flossomatic. 3,847,167, Cl. 132-92.00r.
- Briggs, Aubrey C., to Drano Corporation. Material digging and transporting apparatus. 3,847,270, Cl. 198-140.000.
- Bringewald, August R., to Bringewald Process Corporation. Apparatus and method for applying pressure and die and method for forming a part. 3,847,004, Cl. 72-184.000.
- Bringewald Process Corporation: *See—*
  - Bringewald, August R., 3,847,004.
- Brinkmann Instruments, Inc.: *See—*
  - Kopp, Reiner H.; and Holland, Heino H., 3,847,200.
- British Iron and Steel Research Association, The: *See—*
  - Marr, Harry Sidney; and Chester, Arnold, 3,847,312.
- British Petroleum Company Limited, The: *See—*
  - Champagnat, Alfred; and Laine, Bernard Maurice, 3,847,739.
- Brodersen, Richard: *See—*
  - Radscheit, Kurt; Stache, Ulrich; and Brodersen, Richard, 3,847,906.
- Broemer, Heinz; and Meinert, Norbert, to Leitz, Ernst, GmbH. Fluorophosphate optical glass. 3,847,624, Cl. 106-47.00q.
- Broll, Arno; Beyer, Hermann; Mann, Herbert; and Meyer-Simon, Eugen, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Ceramic color bodies. 3,847,639, Cl. 106-288.00b.
- Bromels, Marilyn H.: *See—*
  - Pedersen, Charles John; and Bromels, Marilyn H., 3,847,949.
- Brosene, William G., Jr., to Magnum Automotive Equipment, Inc. Centerpost drive mechanism. 3,847,198, Cl. 157-1.240.
- Brouneus, Harold A., to Corning Glass Works. Electrical heating unit. 3,848,111, Cl. 219-543.000.
- Brown & Root, Incorporated: *See—*
  - Weber, Charles W.; Rucker, C. Olen; Peavy, Patrick L.; Woo, Pak-Fat (William); and Bear, James E., 3,847,207.
- Brown & Williamson Tobacco Corporation: *See—*
  - Molyneux, David J., 3,847,163.
- Brown, Boveri & Company: *See—*
  - Sova, Vladimir, 3,847,649.
- Brown, Dorian W. Applicator for applying a lubricant and de-icer to a fishing line. 3,846,930, Cl. 43-25.000.
- Brown, Francis Barton; and Erickson, John W., to Kobe, Inc. Free turbine pump. 3,847,512, Cl. 417-365.000.

- Brown, Kenneth H.: *See—*
  - Radlowe, Sol B.; Ravve, Abraham; and Brown, Kenneth H., 3,847,770.
- Brown, Melancthon S.: *See—*
  - Kohn, Gustave K.; and Brown, Melancthon S., 3,847,951.
- Brown Oil Tools, Inc.: *See—*
  - Bufkin, Stephen L., 3,847,040.
- Brown, Robert S., to Standard Steel Products Corporation. Sealed tube connectors. 3,847,419, Cl. 285-330.000.
- Brownbill, Thomas Duncan. Variable throw rocker. 3,847,007, Cl. 72-393.000.
- Brunstetter, Frank H., to Hi-Tor Inventions Corporation. Nail-screw holder. 3,847,193, Cl. 145-46.000.
- Bryant, Robert G., to Gem Industries, Inc. Safety trip lock for cribs. 3,846,854, Cl. 5-100.000.
- Brydole, Robert, to Acme General Corporation. Hinge for door with hollow stile. 3,846,867, Cl. 16-181.000.
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- Buccicone, Dario, to Buccicone Engineering Co., Inc. Magnetic rail type conveyor unit. 3,847,269, Cl. 198-41.000.
- Buccicone Engineering Co., Inc.: *See—*
  - Buccicone, Dario, 3,847,269.
- Buchanan, George E.: *See—*
  - Krone, Russell R.; Krone, Donald R.; Buchanan, George E.; and Noyes, James F., 3,847,302.
- Buckley, Donald J., Sr.: *See—*
  - Canter, Nathan H.; and Buckley, Donald J., Sr., 3,847,854.
- Buddrus, Curt. Hudraulic marine propulsion and guidance system. 3,847,107, Cl. 115-35.000.
- Budrys, Vitolis: *See—*
  - Erickson, John W.; and Budrys, Vitolis, 3,847,327.
- Bufkin, Stephen L., to Brown Oil Tools, Inc. Torque limit means for powered pipe wrench means. 3,847,040, Cl. 81-57.180.
- Buhayar, Eric S., to Scott Paper Company. Turning device for flexible web product. 3,847,273, Cl. 198-236.000.
- Bunker Ramo Corporation: *See—*
  - Lotan, Amram Zvi; and Jen, Dixson Teh-Chao, 3,848,233.
  - Pechard, Lucien Leon, 3,848,223.
- Bunker-Ramo Corporation, The: *See—*
  - Marshall, Robert, 3,848,245.
- Buran, Vojtech; Horn, Vladimir; and Suchanek, Borivoj, to Vyzkumny a vyvojovy ustav Zavodu vseobechneho strojirenstvi. Weft inserting channel for pneumatic weaving machines. 3,847,187, Cl. 139-127.000.
- Burcham, Neil P.: *See—*
  - Romeo, Donald E.; and Burcham, Neil P., 3,848,261.
- Burck, Peter, to VEB Rathenower Optische Werke. Device for thinning technical and microscopic specimens under laminar flow conditions. 3,847,780, Cl. 204-224.00r.
- Burg, Karlheinz: *See—*
  - Sextro, Gunter; and Burg, Karlheinz, 3,848,021.
- Burg, Karlheinz; and Schlaf, Helmut, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for producing homo- and compolymers of cyclic acetals. 3,848,020, Cl. 260-823.000.
- Burkin, Jury Alexandrovich; and Seleznev, Jury Emelyanovich. Mechanism for feeding and fixing magnetic cores in a memory matrix interweaving device. 3,846,893, Cl. 29-203.0mm.
- Burlington Industries, Inc.: *See—*
  - Quynn, Richard G., 3,847,544.
- Burnett, George E. Eraser for ball point pen. 3,846,866, Cl. 15-425.000.
- Burnham, Benjamin K., to Thayer, Inc. Folding stroller. 3,847,406, Cl. 280-36.00b.
- Burroughs Corporation: *See—*
  - Wojtowicz, Edward A.; Lazzarotti, James; Hunter, James R.; and Rodkey, Robert W., 3,847,383.
- Burruss, Robert Page, Jr.: *See—*
  - Rafe, Samuel Joseph; Burruss, Robert Page, Jr.; Lebow, Stanley Morris; and Callahan, Stephen Phillips, 3,847,317.
- Burt, Glenn R.; Condo, Albert C.; and Knight, George R., to Atlantic Richfield Company. Insulated embankment design techniques. 3,846,989, Cl. 61-.500.
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- Busselmeier, Otto. Snap coupling for fluid conduits. 3,847,393, Cl. 285-315.000.
- Bussey, Robert William; and Powers, John Glenn, to TRW, Inc. Mounting assembly for a convergence coil. 3,848,207, Cl. 335-210.000.
- Butler Manufacturing Company: *See—*
  - Cox, Delbert L., 3,847,266.
- Byrd, Clarence D., to Safety Devices Incorporated. Safety lowering device. 3,847,377, Cl. 254-158.000.
- Cahoon, John B., Jr.; Currey, John B.; and Emig, Donald L., to United States of America, Atomic Energy Commission. Method and apparatus for extruding ceramic tubes. 3,847,535, Cl. 425-291.000.
- Caillouette, James C.; and Johnson, Paul E. Medico-surgical tube. 3,847,157, Cl. 128-348.000.
- Cal Detect, Inc.: *See—*
  - Hutson, Donald, 3,847,551.
- Caldwell, Alan K., to Rewop Company. Variable displacement gear pump. 3,847,515, Cl. 418-16.000.
- Callahan, James L.; Miller, Arthur F.; and Shaw, Filfrid G., to Standard Oil Company, The. Process for preparing aggregates. 3,848,033, Cl. 264-13.000.
- Callahan, Stephen Phillips: *See—*
  - Rafe, Samuel Joseph; Burruss, Robert Page, Jr.; Lebow, Stanley Morris; and Callahan, Stephen Phillips, 3,847,317.
- Cameron, Thomas M.; and Kellogg, John L., to International Harvester. Fuel tank and hydraulic reservoir arrangement. 3,847,241, Cl. 180-54.00r.
- Campagna, Antoino C. Burglar alarm system with selectable latching mode. 3,848,242, Cl. 340-274.000.
- Campagnie Internationale Pour l'Informatique: *See—*
  - Lazzari, Jean-Pierre, 3,848,217.
- Campbell, Curtis M.; and Miller, Ronald J., to Sperry Rand Corporation. Control system for providing a spiral flight path to a radio beacon. 3,848,114, Cl. 235-150.260.
- Campbell, Don A.: *See—*
  - Wang, Kuo H.; Prats, Michael; and Campbell, Don A., 3,847,219.
- Campbell, James F., Jr.; Engvall, Arthur E.; and Lewis, Arthur E., to Fairchild Camera and Instrument Corporation. Method of protecting against electrochemical effects during metal etching. 3,847,690, Cl. 156-13.000.
- Canada-Cities Service Ltd.: *See—*
  - Cymbalisty, Lubomyr M. O., 3,847,789.
- Canadian General Electric Company, Limited: *See—*
  - Boothman, David Richard; and Nutt, David Walter, 3,848,160.
- Canadian Industries Limited: *See—*
  - Holden, Harold William; and Schreiber, Henry Peter, 3,847,651.
- Cannon, Raybon C.; and Wiesboeck, Robert A., to United States Steel Corporation. Process for the manufacture of high-purity lithium hexafluoroarsenate. 3,848,063, Cl. 423-464.000.
- Canon Kabushiki Kaisha: *See—*
  - Endo, Ichiro; and Yamanouchi, Teruo, 3,847,607.
  - Kondo, Eiichi; and Hasegawa, Tetsuo, 3,847,605.
- Canter, Nathan H.; and Buckley, Donald J., Sr., to Esso Research and Engineering Company. Preferential plasticization of ionometric compounds. 3,847,854, Cl. 260-23.70m.
- Canup, Robert Eugene, to Texaco Inc. Ignition system utilizing a saturable-core square wave oscillator circuit. 3,847,129, Cl. 123-148.00e.
- Caporiccio, Gerardo: *See—*
  - Sianesi, Dario; Caporiccio, Gerardo; and Mensi, Domenico, 3,847,978.
- Card & Co. Inc.: *See—*
  - Hammel, Wallace W., Jr., 3,847,098.
- Carey, Curtis D.; and Platzke, Ronald N., to Kennecott Copper Corporation. Process for recovering selenium values from aqueous solutions containing molybdenum, rhenium and selenium values. 3,848,069, Cl. 423-508.000.
- Carol, Jose M. Rigid means to support a roll of toilet paper on a dispenser bracket. 3,847,365, Cl. 242-55.200.
- Carr, Uriah H. Hair shaper. 3,847,166, Cl. 132-9.000.
- Carrcraft Manufacturing Company: *See—*
  - Anderson, Kenneth J., 3,847,175.
- Carrell, Ross Michael, to RCA Corporation. Optical scanner control system. 3,848,087, Cl. 178-7.600.
- Carroll, Clifford C., to Deering Milliken Research Corporation. Reducing shrinkage of textile materials. 3,847,543, Cl. 8-127.600.
- Cartaya, Guillermo Hernandez: *See—*
  - Lam, Lucilo; and Cartaya, Guillermo Hernandez, 3,846,914.
- Casciola, Massimo. Impact-absorbing assemblies. 3,847,252, Cl. 188-1.00c.
- Case, Derek Frank, to International Computer Limited. Methods of manufacturing magnetic transducing heads. 3,846,906, Cl. 29-603.000.
- Case-Shawmut Company, The: *See—*
  - Kozacka, Frederick J.; and Salzer, Erwin, 3,848,215.
- Caserio, Frederick F., Jr.; and Nakaguchi, Glenn M., to Atlantic Richfield Company. Process for preparation of carbonyl compounds and isobutylene from olefins and t-butyl alcohol. 3,847,996, Cl. 260-604.0ac.
- Cashin Systems Corporation: *See—*
  - Divan, William J., 3,846,957.
  - Divan, William J., 3,846,958.
- Casio Computer Co., Ltd.: *See—*
  - Kashio, Toshio, 3,848,250.
- Castelli, Joseph L., to General Electric Company. Coalescing plate for fluid mixture plate separator. 3,847,813, Cl. 210-232.000.
- Caterpillar Tractor Company: *See—*
  - Avery, Bennett W., 3,847,248.
  - Beck, Henry E.; and Peterson, Wayne A., 3,847,059.
  - Freedy, Allan L.; and Risk, Norman E., 3,846,983.
  - Freedy, Allan Leslie; Miller, Calvin Lyle; and Simpson, Fred Eugene, 3,847,451.
  - Hicks, Leon E.; Grant, John W.; Watts, Loyal O.; and Peterson, Wayne A., 3,847,416.
  - Kennicutt, Robert B.; and Mounts, William T., 3,847,492.
  - Kroth, Neil W.; Lohbauer, Kenneth R.; and Scheidt, James E., 3,847,180.
  - Shoup, Stephen G., 3,847,240.
- Catlos, Peter V.; and Somann, Gert, to Ferplas Industries Limited. Buckle-strap belt. 3,846,875, Cl. 24-200.000.

- C.A.V. Limited: *See—*
  - Fenne, Ivor, 3,847,510.
- Cavins Co., The: *See—*
  - Spiri, Willy H., 3,846,877.
- Celanese Coatings & Specialties Company: *See—*
  - Watkins, Edward Davis, 3,848,029.
- Celanese Corporation: *See—*
  - Mesich, Frank G.; Bedford, John A.; and Dougherty, Edward F., 3,848,003.
- Centenary Central, Inc.: *See—*
  - Miller, Orville C., 3,847,036.
- Central Glass Co., Ltd.: *See—*
  - Katsuragawa, Seiichi; and Fujinaga, Teruo, 3,848,004.
- Centre Technique des Industries Mecaniques: *See—*
  - Paraskevas, Dimitri; L'Hermite, Alain A.; Bernard, Georges F.; and Guinet, Jacques E., 3,847,481.
- Centro Sperimentale Metallurgico S.p.A.: *See—*
  - Ramacciotti, Aldo; and Eminian, Giancarlo, 3,847,593.
- Chabardes, Pierre; Julia, Marc; and Menet, Albert, to Rhone-Poulenc S.A. Methylene-sulphones from the terpene series. 3,848,000, Cl. 260-607.00a.
- Chafetz, Harry: *See—*
  - Siegart, William R.; Blackley, William D.; and Chafetz, Harry, 3,847,887.
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- Chandrasekaran, Swayambu: *See—*
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  - Adams, Albert John, 3,847,338.
- Chapman, James E.: *See—*
  - Hayward, Robert D.; and Chapman, James E., 3,847,463.
- Charlez, Rune Kjell Evald. Nailing device. 3,847,321, Cl. 227-7.000.
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  - Salzer, Erwin, 3,848,214.
- Chastan-Bagnis, Lucien. Scoop for collecting a layer of polluting material on water surfaces. 3,847,815, Cl. 210-242.000.
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  - Epstein, Peter F., 3,847,947.
- Chemische Fabrik Pfersee GmbH. *See—*
  - Bernheim, Willy; and Deiner, Hans, 3,848,022.
- Chen, Hsin S.; and Jones, Charles, to Curtiss-Wright Corporation. Self-starter system for single rotor expansion engine. 3,847,514, Cl. 418-15.000.
- Chernyavsky, Vladimir Pavlovich: *See—*
  - Shapiro, Aron Beniaminovich; Chernyavsky, Vladimir Pavlovich; and Kadi-Ogly, Ibragim Akhmedovich, 3,848,149.
- Chester, Arnold: *See—*
  - Marr, Harry Sidney; and Chester, Arnold, 3,847,312.
- Chevron Research Company: *See—*
  - Kohn, Gustave K.; and Brown, Melancthon S., 3,847,951.
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- Chisholm, Douglas S., to Dow Chemical Company, The. Method for the preparation of multilayer optical filters. 3,847,585, Cl. 65-99.00a.
- Chisholm, James P.: *See—*
  - Gurley, Derrell G.; and Chisholm, James P., 3,847,413.
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  - Holt, Jorgen; Videmark, Christian; and Christiansen, Palle Hein, 3,847,065.
- Chromalytics Corporation: *See—*
  - Paul, Donald G., 3,847,546.
- Churchill Instrument Company Limited: *See—*
  - Mascall, John Robert, 3,847,209.
- Ciba-Geigy AG: *See—*
  - Garratt, Peter Garth; Habermeier, Juergen; Porret, Daniel; Leumann, Ernst; and Zuppinger, Paul, 3,847,769.
  - Hubele, Adolf, 3,847,590.
  - Janiak, Stefan; and Rohr, Otto, 3,847,932.
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  - Randell, Donald Richard; and Smith, Malcolm John, 3,847,930.
- Cihon, John A.; and Ehmann, Donald W., to MWA Company. Vitrified abrasive element. 3,847,568, Cl. 51-295.000.
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  - Harper, Robert Charles, 3,848,037.
- Claassen, George R.: *See—*
  - Reese, Thomas J.; Claassen, George R.; and Tobin, Melvin W., 3,847,586.
- Clark, Charles R.; Gregory, M. Duane; Kerfoot, Oliver C.; Veatch, Fred C.; Krehbiel, Delmar D.; and Kennedy, Carl D., to Continental Oil Company. Overbased high plus low molecular weight sulfonate waterflood additive. 3,847,823, Cl. 252-8.55d.
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  - Kordesch, Karl V.; and Clark, Milton B., 3,847,673.
- Clark, Richard L.: *See—*
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- Clarke, Richard N.: *See—*
  - Jonke, Joseph L.; and Clarke, Richard N., 3,848,180.
- Clarke, Robert E. Combination of a knife and sharpener. 3,846,909, Cl. 30-138.000.
- Clasen, Richard Howard; and Giglia, Robert Domenico, to American Cyanamid Company. Ammonia-treated electrochromic (EC) electrodes. 3,847,468, Cl. 350-160.00r.
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  - De Coene, Frans J. G. C.; and Muijs, Cornelis G. M., 3,847,160.
- Clement, Ralph C., to I-T-E Imperial Corporation. Panelboard with provision for optional use with main breaker or main lugs with spaced insulators supporting main bus bars. 3,848,161, Cl. 317-119.000.
- Clover, Richmond B., Jr., to Hewlett-Packard Company. Magnetic bubble propagation. 3,848,239, Cl. 340-174.0tf.
- Coach and Car Equipment Corporation: *See—*
  - Harder, Arthur J., Jr., 3,847,452.
- Coalson, John P. Drill bit. 3,847,236, Cl. 175-383.000.
- Coats, John H.: *See—*
  - Argoudelis, Alexander D.; and Coats, John H., 3,847,746.
- Cogar Corporation: *See—*
  - Titus, Robert J.; and Kelly, William J., 3,848,155.
- Cohen, Milton J. Bag-type fluid and paste dispenser. 3,847,304, Cl. 222-105.000.
- Coker, Charles Walter, Jr.: *See—*
  - Allmon, Dwight George; Lee, Pedro; and Coker, Charles Walter, Jr., 3,848,251.
- Cole, Clinton W., to Halliburton Company. Hydraulically powered triplex pump and control system therefor. 3,847,511, Cl. 417-442.000.
- Cole, Gordon E., Jr.: *See—*
  - Althouse, Harlan E.; Scott, Fremont L.; and Cole, Gordon E., Jr., 3,847,654.
- Cole, Howard W., Jr. Cyclone separator with foam supply. 3,847,571, Cl. 55-87.000.
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  - Brandl, Eugene H.; and McHugh, Neil M., 3,847,622.
  - Drukker, Alexander E.; and Judd, Claude I., 3,847,904.
  - Fischer, Charles F., 3,847,527.
  - Suh, John T.; and Bare, Thomas M., 3,847,950.
- Collins Radio Company: *See—*
  - Guillot, Joseph M., Jr., 3,848,078.
- Collura, Peter C.; and Kipp, Michael Allen, to Container Corporation of America. Display carton. 3,847,282, Cl. 206-491.000.
- Colson, Ralph E. Shrimp washers. 3,847,169, Cl. 134-183.000.
- Colucci, Ivo, to Alfa Romeo S.p.A. Headlamp for motor vehicles. 3,848,121, Cl. 240-41.600.
- Columbia Broadcasting System, Inc.: *See—*
  - Chaffee, William H.; Rubio, Alfred M.; and Lorenz, Richard L., 3,846,888.
- Columbia Marking Tools, Inc.: *See—*
  - Krembel, Frank, Jr., 3,847,078.
- Columbia Ribbon & Carbon Manufacturing Co., Inc.: *See—*
  - De Laurentis, Peter; and Newman, Douglas A., 3,847,645.
- Columbus McKinnon Corporation: *See—*
  - Schreyer, Kenneth D., 3,846,978.
- Comas, Jorge Rectoret. Mechanism for actuating pattern or control drums in knitting machines, and knitting machines incorporating the same. 3,846,996, Cl. 66-50.00b.
- Combs, Charles S.: *See—*
  - Stephens, William D.; Willis, T. Chade; and Combs, Charles S., 3,847,871.
- Combustion Engineering, Inc.: *See—*
  - Bevilacqua, Frank, 3,847,736.
  - Gilbert, Lyman Francis, 3,847,092.
  - Prestridge, Floyd L., 3,847,775.
- Cominco Ltd.: *See—*
  - Liang, Shou Chu; Milner, Edward Francis Godfrey; Toop, Gerald Wesley; and Anderson, Ronald Walter, 3,847,595.
- Commissariat a l'Energie Atomique: *See—*
  - Peuchmaur, Alphonse, 3,847,148.
- Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
  - Poncet, Pierre; and Trempu, Rene, 3,848,058.
- Compernass, Josef; Grunberger, Eberhard; and Schmidt, Friedo Eberhard, to Henkel & Cie GmbH. Method for the production of water-permeable porous concrete. 3,847,630, Cl. 106-90.000.
- Condo, Albert C.: *See—*
  - Burt, Glenn R.; Condo, Albert C.; and Knight, George R., 3,846,989.

- Confer, James O.; and McTaggart, George D., to Corning Glass Works. Apparatus and method for forming slip cast bodies with cavities. 3,848,040, Cl. 264-86.000.
- Connell, Gordon Sidney, to Formflo Limited. Forming rolls. 3,846,999, Cl. 72-68.000.
- Conrad, Bernd: *See*—
  - Ortner, Lorenz; Heinzelmann, Karl-Georg; Conrad, Bernd; and Dierker, Joachim, 3,847,696.
- Container Corporation of America: *See*—
  - Collura, Peter C.; and Kipp, Michael Allen, 3,847,282.
- Continental Can Company, Inc.: *See*—
  - Adomaitis, Domas, 3,848,041.
  - Radlowe, Sol B.; Ravve, Abraham; and Brown, Kenneth H., 3,847,770.
- Continental Oil Company: *See*—
  - Clark, Charles R.; Gregory, M. Duane; Kerfoot, Oliver C.; Veatch, Fred C.; Krehbiel, Delmar D.; and Kennedy, Carl D., 3,847,823.
  - Fonseca, Anthony G., 3,848,056.
- Cooksey, William Harold, to Lucas, Joseph, (Industries) Limited. Vacuum operable units for ignition distributors. 3,847,063, Cl. 92-100.000.
- Cooper, Martin H., to United States of America, Atomic Energy Commission. Method of and filter for removing tritium from inert gases. 3,848,067, Cl. 423-248.000.
- Copeland, Claud L. Steering mechanism for self-propelled vehicles. 3,847,239, Cl. 180-5.00r.
- Coppier, Pierre: *See*—
  - Bourdon, Bernard; Duong, Claudy; and Coppier, Pierre, 3,847,776.
- Corigliano, Rose. Reversible multi-purpose article carrier. 3,847,194, Cl. 150-28.000.
- Corning Glass Works: *See*—
  - Brouneus, Harold A., 3,848,111.
  - Confer, James O.; and McTaggart, George D., 3,848,040.
  - Rice, Dale W., 3,848,068.
  - Schultz, Peter C., 3,848,152.
- Corns, Joseph B.: *See*—
  - Ridgway, John A., Jr.; Lappin, Terry A.; Benjamin, Benny Moses; Corns, Joseph B.; and Akin, Cavit, 3,847,750.
- Corwin, Howard R.: *See*—
  - Hermes, Walter L.; Corwin, Howard R.; Berkowitz, Murray; and Lamping, Harold D., 3,847,517.
- Cosham, Michael A.; and Marx, Dieter O., to Microsystems International Limited. Dual-in-line package extraction tool. 3,846,895, Cl. 29-203.00h.
- Cosyns, Jean, to Institut Francais de Petrole, des Carburants et Lubrifiants. Process for manufacturing a catalyst, the resulting catalyst and its use in a process for hydrogenating hydrocarbons. 3,847,835, Cl. 252-439.000.
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- Coulter, Michael Oliver; and Bell, David, to PB Chemicals Limited. Mercury recovery process. 3,847,598, Cl. 75-121.000.
- Cox, Delbert L., to Butler Manufacturing Company. Ensilage loader with automatically positioned cutter reel. 3,847,266, Cl. 198-9.000.
- CPC International, Inc.: *See*—
  - Heady, Robert E.; and Jacaway, William A., Jr., 3,847,740.
  - Heady, Robert E.; and Jacaway, William A., Jr., 3,847,741.
- Craven, Donald: *See*—
  - Maltby, Peter John; Glaze, Stanley George; Ellis, Kenneth Harold; Craven, Donald; and Binns, John Michael, 3,847,251.
- Craven, George Frederick; and Hockham, George Alfred, to International Standard Electric Corporation. Waveguide antenna. 3,848,256, Cl. 343-768.000.
- Crawford, Jay D.: *See*—
  - Kramer, Dean; and Crawford, Jay D., 3,847,217.
- Creative Building Systems: *See*—
  - Hodess, Paul T., 3,846,953.
- Creger, Paul L.; and Neuklis, Winifred A., to Parke, Davis & Company. 2,2-Dimethyl-5-(aryloxy)-valeraldehydes. 3,847,994, Cl. 260-600.000.
- Cricchio, Renato, to Gruppo Lepetit S.p.A. Alkenyl substituted rifamcyin SV compounds. 3,847,901, Cl. 260-239.30p.
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- Criner, Joseph C., to Kyle Incorporated. Bell wire expander. 3,847,005, Cl. 72-393.000.
- Cronin, Timothy H., to Pfizer, Inc. Labile esters of alpha-isocyanobenzylpenicillin as chemical intermediates. 3,847,900, Cl. 260-239.100.
- Crowley, Richard P. Tufted carpet with gas-expandable pile and method. 3,847,719, Cl. 161-65.000.
- Crown Zellerbach Corporation: *See*—
  - Forbess, Dennis L.; Kindler, William A., Jr.; and Marti, Rueben A., 3,848,027.
- Csepeli Szerszamgepgyar: *See*—
  - Toth, Ivan, 3,847,033.
- Culley, Donnell H., Jr. Sander with improved feed mechanism. 3,847,271, Cl. 198-168.000.
- Currat, Emile, to Etampes et Mecanique L. Serafini. Wristlet at least partially made of elements articulated to each other. 3,846,977, Cl. 59-80.000.
- Currell, Herbert Henry, to Bond North Limited. Pile fabrics and methods and apparatus for the production. 3,847,691, Cl. 156-72.000.
- Currey, John B.: *See*—
  - Cahoon, John B., Jr.; Currey, John B.; and Emig, Donald L., 3,847,535.
- Curtiss-Wright Corporation: *See*—
  - Chen, Hsin S.; and Jones, Charles, 3,847,514.
  - Hermes, Walter L.; Corwin, Howard R.; Berkowitz, Murray; and Lamping, Harold D., 3,847,517.
- Cushman, Donald R.; Oberright, Edward A.; and Edwards, Roy T.; deceased (by Edwards, Katherine S.; legal representative), to Mobil Oil Corporation. Wax emulsions for controlling transpiration in plants. 3,847,641, Cl. 117-3.000.
- Cushman, Walton W. Therapeutic apparatus and method. 3,847,146, Cl. 128-75.000.
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  - Moldovan, Michael T., Jr.; Lindros, Charles J.; Anderson, Lawrence L.; Wescott, Robert D.; and Cusimano, Richard J., 3,847,345.
- CV Industries, Inc.: *See*—
  - Horwinski, Elwood R., 3,847,392.
- Cymbalisty, Lubomyr M. O., 30% to Canada-Cities Service Ltd., 30% to Atlantic Richfield Canada Ltd. and 10% to Gulf Oil Canada Limited. Two stage separation system. 3,847,789, Cl. 208-11.000.
- Dahlgren, Harold P. Method of printing sheets. 3,847,079, Cl. 101-426.000.
- Dai Nippon Toryo Co., Ltd.: *See*—
  - Tugukuni, Hideyoshi; and Matsuda, Mitsuhiro, 3,847,851.
- Daida Keor Kabushiki Kaisha: *See*—
  - Hitomi, Keiichi; Takagi, Kachio; Nomura, Seinosuke; and Okada, Sadayuki, 3,846,970.
- Dainippon Ink and Chemicals, Inc.: *See*—
  - Murakami, Yoichi; and Watanabe, Hikaru, 3,847,874.
- Dalal, Ajay P.; Elarde, Paul F.; and Klasek, Frank A., to Western Electric Company Incorporated. Method of forming a magnet pattern on magnetic memory circuit cards. 3,847,700, Cl. 156-252.000.
- D'Alessandro, Alfred C.; and May, Edwin A., to International Paper Company. Liquid dispensing device. 3,847,151, Cl. 128-269.000.
- Dallen, John A., to Standard Products Company, The. Glazing system. 3,846,948, Cl. 52-400.000.
- Danly Machine Corporation: *See*—
  - Heiberger, Francis E., 3,848,165.
  - Wiersma, Henry R., 3,847,009.
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- Darmara, Falih N.: *See*—
  - Soykan, Ferhun H.; Huntington, John S.; and Darmara, Falih N., 3,847,205.
- Darrah, Arthur F.: *See*—
  - Quinlan, Joseph B.; and Darrah, Arthur F., 3,847,081.
- Dasi Industries, Inc.: *See*—
  - Davies, Elmer S.; and Edwards, Monte R., 3,847,714.
- Datacq Systems Corporation: *See*—
  - Higgins, Leonard James, 3,847,262.
- Daubenspeck, John M.; and Jett, Bernard Holton, to N L Industries, Inc. Titanium pigment slurries for preparation of latex-base coating compositions. 3,847,640, Cl. 106-300.000.
- Daunheimer, Lyn R.; and Irvine, William M., to Masonite Corporation. Method of making decorative panels. 3,847,646, Cl. 117-37.00r.
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- Davis, Robert E.: *See*—
  - Thorn, Herbert; and Davis, Robert E., 3,846,934.
- Davis, Robert T., to True Temper Corporation. Shear bumper. 3,846,910, Cl. 30-271.000.
- Dawson, Carlyle Steven; and Hardman, Dorsey Lorraine, to General Electric Company. Encapsulated coil assembly. 3,848,208, Cl. 336-96.000.
- Dawson, Thomas Larry, to Union Carbide Corporation. Water-borne latices. 3,847,855, Cl. 260-23.70a.
- Dayco Corporation: *See*—
  - Ray, Robert L., 3,847,029.
- Dazey Products Co.: *See*—
  - McNair, Samuel L., 3,846,848.
- Dazey Products Company: *See*—
  - Hubbard, Robert G., 3,847,712.
- De Bell & Richardson, Inc.: *See*—
  - White, Roy A.; and Margosiak, Stanley A., 3,847,852.
- De Bie, Leo Pierre: *See*—
  - Hofman, Emiel Alexander; De Bie, Leo Pierre; and Berendsen, Jules Robert, 3,847,618.

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- De Luccia, John J.: *See*—
  - Trabocco, Ronald E.; and De Luccia, John J., 3,847,558.
- De Vlieg, Garrett H.: *See*—
  - Bissell, Sherman M.; De Vlieg, Garrett H.; and Hopland, Johan N., 3,847,445.
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- Deering Milliken Research Corporation: *See*—
  - Carroll, Clifford C., 3,847,543.
- Deeter, Richard W. Wood chair seat drilling machine. 3,847,500, Cl. 408-52.000.
- DeForest, Elbert M.; St. Cyr, Lewis A.; and Young, Loren H., to Vulcan Materials Company. Process for the preparation of stannic chloride. 3,848,052, Cl. 423-96.000.
- Deindoerfer, Fred H.: *See*—
  - Brake, Jon M.; and Deindoerfer, Fred H., 3,847,738.
- Deiner, Hans: *See*—
  - Bernheim, Willy; and Deiner, Hans, 3,848,022.
- Del Pico, Joseph, to Abcor, Inc. Process of treating wool-scouring liquor and centrifuge effluent. 3,847,804, Cl. 210-23.000.
- Delgendre, Jacques Claude; Kerrenneur, Alain Rogar; and Berton, Georges Albert, to Etat Francais. Process and apparatus for detecting of the presence of a liquid. 3,847,547, Cl. 23-230.001.
- Delle-Alsthom: *See*—
  - Thuries, Edmond, 3,848,103.
- DeLuca, Hector F., to Wisconsin Alumni Research Foundation. 1,24,25-Trihydroxycholecalciferol. 3,847,955, Cl. 260-397.200.
- Delzenne, Gerard Albert: *See*—
  - Laridon, Urbain Leopold; Delzenne, Gerard Albert; and Peeters, Hugo Karel, 3,847,610.
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- Desai, Dinesh Maganlal: *See*—
  - Somasekhara, Shankar; and Desai, Dinesh Maganlal, 3,847,912.
- Desnoyers, Pierre: *See*—
  - Beregi, Laszlo; Hugon, Pierre; Desnoyers, Pierre; and Duhault, Jacques, 3,847,925.
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- Deutsch Fastener Corporation: *See*—
  - Gulistan, Bulent, 3,847,422.
- Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
  - Broll, Arno; Beyer, Hermann; Mann, Herbert; and Meyer-Simon, Eugen, 3,847,639.
- Deutsche Texaco Aktiengesellschaft: *See*—
  - Kunert, Max; and Sandhack, Lothar, 3,847,791.
- DeWiant Corporation: *See*—
  - Reznik, Barry David, 3,847,559.
- Dhein, Rolf: *See*—
  - Nielinger, Werner; Rudolph, Hans; Dhein, Rolf; and Schneider, Kurt, 3,847,877.
- Di Perna, James. Pollution suction water sweeper. 3,847,816, Cl. 210-242.000.
- Diaz, Arthur F.: *See*—
  - Guth, Eugene Daniel; and Diaz, Arthur F., 3,847,800.
- Dichiro, Anthony: *See*—
  - Fischel, Halbert; and Dichiro, Anthony, 3,847,211.
- Dickore, Karlfried; Draber, Wilfried; and Eue, Ludwig, to Bayer Aktiengesellschaft. 4-Amino-1,2,4-triazine-5-one, and a process for their production. 3,847,914, Cl. 260-248.0as.
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  - Ortner, Lorenz; Heinzelmann, Karl-Georg; Conrad, Bernd; and Dierker, Joachim, 3,847,696.
- Dietsche, Wolfram: *See*—
  - Adolphi, Heinrich; Dietsche, Wolfram; Merger, Franz; Beutel, Peter; and Huber, Rolf, 3,847,936.
- Digrasso, Leonard: *See*—
  - Good, William E.; and Digrasso, Leonard, 3,847,323.
- Dimeler, Glenn R.: *See*—
  - Mills, Ivor W.; Dimeler, Glenn R.; Atkinson, William A., Jr.; and Hoffman, James P., 3,847,623.
- Dinse, Wilhelm. Single-pole electrical plug connection for shielded arc welding apparatus. 3,847,287, Cl. 219-130.000.
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- Dion, Donald Francis: *See*—
  - Logemann, Hugo, Jr.; and Dion, Donald Francis, 3,847,394.
- Dislich, Helmut; Hinz, Paul; and Kaufmann, Reinhard, to Jenaer Glaswerk Schott & Gen. Process for the manufacture of multi-component substances. 3,847,583, Cl. 65-33.000.
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  - Kleppin, Roland P., 3,847,457.
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  - Firth, Robert L., 3,847,819.
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  - Rodda, William E.; anJ Dorsey, Denis Peter, 3,848,084.
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  - Loup, Ronald L., 3,847,176.
- Dougherty, Edward F.: *See*—
  - Mesich, Frank G.; Bedford, John A.; and Dougherty, Edward F., 3,848,003.
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  - Jarman, Ronald D., 3,847,817.
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  - Behr, Raymond D., 3,848,035.
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  - Chisholm, Douglas S., 3,847,585.
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  - Eilers, Louis H.; and Parks, Christ F., 3,847,858.
  - Gurley, Derrell G.; and Chisholm, James P., 3,847,413.
  - Olstowski, Franciszek, 3,847,859.
- Dow Corning Corporation: *See*—
  - Kim, Yung Ki; and Pierce, Ogden R., 3,847,916.
- Dowa Mining Co., Ltd., The: *See*—
  - Sekine, Kunio; Kamata, Yukio; and Yamaishi, Yoshio, 3,847,779.
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- Draber, Wilfried: *See*—
  - Dickore, Karlfried; Draber, Wilfried; and Eue, Ludwig, 3,847,914.
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- Dreier-Saner, Urs: *See*—
  - Stich, Ernest, 3,847,213.
- Dreisin, Alexander, to Allis-Chalmers Corporation. Injection timing modulator. 3,847,126, Cl. 123-140.00r.

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  - Amin, Rajnikant Babubhai, 3,848,079.
  - Bakermans, Fransiscus Cornelius; and Thoms, William Charles, 3,846,896.
  - Bouchard, Robert J., 3,847,829.
  - Dessauer, Rolf; and Ellefson, John R., 3,847,608.
  - Duggins, Ray B., 3,847,865.
  - Heckrotte, Robert Sherwood; and Scott, John Alexander, 3,847,522.
  - Kegelman, Matthew Roland, 3,847,674.
  - Mattis, Weat Carl, 3,846,955.
  - McKay, Jerry Bruce, 3,846,969.
  - Orvis, Gary W., 3,847,847.
  - Pedersen, Charles John; and Bromels, Marilyn H., 3,847,949.
  - Shook, Howard E., Jr.; and Thompson, John B., 3,847,959.
- Duell, Norman Leroy, to Societe d'Assistance Technique Pour Products Nestle S.A. Identification device on a conveyor band. 3,847,268, Cl. 198-40.000.
- Dugan, John J.: *See—*
  - Pasternak, Israel S.; Dugan, John J.; and Higgins, James P., 3,847,797.
- Duggins, Ray B., to Du Pont de Nemours, E. I., and Company. Use of alumina trihydrate in a polymethyl methacrylate article. 3,847,865, Cl. 260-42.520.
- Duhault, Jacques: *See—*
  - Beregi, Laszlo; Hugon, Pierre; Desnoyers, Pierre; and Duhault, Jacques, 3,847,925.
- Duke University, Inc.: *See—*
  - Smith, Ralph E.; and Kozoman, Frank E., 3,847,749.
- Dumas, Guy H., to Silec-Semi-Conducteurs. Static relays synchronized on the passage to zero. 3,848,158, Cl. 317-11.00a.
- Dumont, Georges: *See—*
  - Taeymans, Alois; Dumont, Georges; and Balleux, Willem, 3,847,094.
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- Dundon, John Peter, to American Cyanamid Company. Purification of beta-naphthol by extractive crystallization 3,848,001, Cl. 260-62.00b.
- Dunlop Limited: *See—*
  - Ravenhall, Arthur S., 3,847,698.
- Dunn, Elman R., to Litton Industries, Inc. Double disc grinder. 3,846,940, Cl. 51-118.000.
- Dunn, Horton, Jr.: *See—*
  - Lesuer, William Monroe; and Dunn, Horton, Jr., 3,848,032.
- Dunn, Howard J.; and Farr, M. Paul, to Ralston Purina Company. Microcrystallin chitin. 3,847,897, Cl. 260-211.00r.
- Duo-Mode Electric Transport System, Inc.: *See—*
  - Rypinski, Albert B., 3,847,085.
- Duong, Claudy: *See—*
  - Bourdon, Bernard; Duong, Claudy; and Coppier, Pierre, 3,847,776.
- DuPree, Louis E., Jr.: *See—*
  - Applegath, Fred; DuPree, Louis E., Jr.; MacFarlane, Alistair C.; and Robinson, Jacques D., 3,848,012.
- Duriron Company, Inc., The: *See—*
  - Martin, Arlin E., 3,847,504.
- Durland, Douglas H.: *See—*
  - Gropper, Lee; Durland, Douglas H.; and Galasso, Maurice, 3,847,484.
- Durmann, George J.: *See—*
  - Patrick, John; and Durmann, George J., 3,847,337.
- Dusch, Albert; and Hintzen, Peter, to PFAFF Industriemashiener G.m.b.H. Device for making braid openings in cutout pieces of garments. 3,847,097, Cl. 112-68.000.
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- Dynamit Nobel Aktiengesellschaft: *See—*
  - Seiler, Claus-Dieter; Vahlensieok, Hans-Joachim; and Junger, Hans, 3,847,860.
- Eastern Cyclone Industries, Inc.: *See—*
  - Boon, Bruce Theodore Edward, 3,847,293.
- Eastham, Jerome F.: *See—*
  - Kamienski, Conrad W.; and Eastham, Jerome F., 3,847,883.
- Eastman Kodak Company: *See—*
  - Bissonette, Vernon Leon; Mowrey, Rowland George; and Sutton, Richard Calvin, 3,847,619.
  - Brandon, Kenneth F.; and Perconti, Thomas J., 3,847,319.
  - Sick, Milton W., 3,847,387.
  - Statman, Max; and Page, Ralph E., Jr., 3,847,756.
- Eastman-Kodak Company: *See—*
  - Hoffman, Edward P., 3,847,516.
- Eastty, Peter Charles, to Electronic Music Studios (London) Limited. Interpolators. 3,847,349, Cl. 235-152.000.
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- Eberle Werke KG: *See—*
  - Schwarm, Hans, 3,848,212.
- Eckels, Robert E. Remote rock breaking method apparatus therefor. 3,847,080, Cl. 102-27.00r.
- Ecodyne Corporation: *See—*
  - Mowen, John E., 3,847,508.
- Edeleanu Gesellschaft mbH: *See—*
  - Putz, Joachim, 3,847,790.
- Edstrom, Nils Herbert, to Telefonaktiebolaget LM Ericsson. Apparatus and method for increasing the transmission capacity of a time division synchronous satellite telecommunication system. 3,848,093, Cl. 179-15.0as.
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  - Cushman, Donald R.; Oberright, Edward A.; and Edwards, Roy T., 3,847,641.
- Edwards, Monte R.: *See—*
  - Davies, Elmer S.; and Edwards, Monte R., 3,847,714.
- Edwards, Roy T.: *See—*
  - Cushman, Donald R.; Oberright, Edward A.; and Edwards, Roy T., 3,847,641.
- Eggers, Edward T.: *See—*
  - Mast, Aquila D.; Eggers, Edward T.; and Hyman, Myles, 3,847,073.
- Ehmann, Donald W.: *See—*
  - Cihon, John A.; and Ehmann, Donald W., 3,847,568.
- Ehret, Jenson E.: *See—*
  - Szendroi, Imre; and Ehret, Jenson E., 3,847,303.
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- Eisai Co., Ltd.: *See—*
  - Tachibana, Shinro, 3,847,891.
  - Tanaka, Satoru; and Hashimoto, Kazunori, 3,847,924.
- Eisenstadt, Daniel J.: *See—*
  - Nye, Dudley D., Jr.; and Eisenstadt, Daniel J., 3,848,159.
- Eisner, Steve, to Norton Company. Bi-polar acrivating particles for electrodeposition process. 3,847,660, Cl. 117-212.000.
- Ekemar, Karl Sven Gustave: *See—*
  - Svensson, Tore Rolf; Fundell, Kjell Erik; Ekemar, Karl Sven Gustave; Lind, Bengt Anders; and Fischer, Udo, 3,847,763.
- Ekholm, Tommy Ludvig Wilhelm: *See—*
  - Obermark, Herbert Mauritz, 3,846,915.
- Ekman, Erik Gunnar: *See—*
  - Obermark, Herbert Mauritz, 3,846,915.
- Elarde, Paul F.: *See—*
  - Dalal, Ajay P.; Elarde, Paul F.; and Klasek, Frank A., 3,847,700.
- Electricite de France (Service National): *See—*
  - Ventre, Edmond, 3,847,733.
- Electromedia, Inc.: *See—*
  - Leparulo, Angelo F.; and Grun, Charles, 3,847,671.
- Electronic Music Studios (London) Limited: *See—*
  - Eastty, Peter Charles, 3,847,349.
- Elg, Carl L. Apparatus for removing flanged cup bearings from heavy duty universal joints. 3,846,891, Cl. 29-201.00r.
- Ellefson, John R.: *See—*
  - Dessauer, Rolf; and Ellefson, John R., 3,847,608.
- Elliott, Delbert R.: *See—*
  - Needham, James M.; and Elliott, Delbert R., 3,847,447.
- Ellis, Jack, to Young, Sidney Geoffrey. Handling of radio-active sources. 3,848,137, Cl. 250-497.000.
- Ellis, Kenneth Harold: *See—*
  - Maltby, Peter John; Glaze, Stanley George; Ellis, Kenneth Harold; Craven, Donald; and Binns, John Michael, 3,847,251.
- Elpern, Barry S.: *See—*
  - Stearns, William P.; and Elpern, Barry S., 3,848,091.
- Elsten, Walter: *See—*
  - Molitor, Edwin A.; Elsten, Walter; and Sergent, Enoch A., 3,846,961.
- Eltro GmbH & Co: *See—*
  - Dederer, Roland; Jahns, Erwin; Maier, Herbert; Moser, Joachim; and Vierling, Karl-Heinz, 3,847,470.
- EMI Limited: *See—*
  - Forse, David Patrick Searle, 3,847,466.
- Emig, Donald L.: *See—*
  - Cahoon, John B., Jr.; Currey, John B.; and Emig, Donald L., 3,847,535.
- Eminian, Giancarlo: *See—*
  - Ramacciotti, Aldo; and Eminian, Giancarlo, 3,847,593.
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- Energy Sciences Inc.: *See—*
  - Quintal, Bertram S.; and Maynard, Derek J., 3,848,153.
- Engelhard, Helmut; Blankenstein, Gunter; and Reinehr, Ulrich, to Bayer Aktiengesellschaft. Permanently antistatic acrylonitrile polymers containing a mercapto polyether. 3,848,028, Cl. 260-898.000.
- Engelhard Minerals & Chemicals Corporation: *See—*
  - Pfefferle, William C., 3,846,979.
- Engelsher, Harvey J., to Horizon Industries, Ltd. Tube servicing device. 3,847,370, Cl. 251-6.000.
- Englert, Robert D.; and Berriman, Lester P., to Koratron Company, Inc. Process of curing chemically treated cellulosic fabric. 3,846,845, Cl. 2-243.00r.

- Engvall, Arthur E.: *See—*
  - Campbell, James F., Jr.; Engvall, Arthur E.; and Lewis, Arthur E., 3,847,690.
- Enviro-Gro, Inc.: *See—*
  - Meyers, Edward F., 3,846,954.
- Epstein, Peter F., to Chemagro Corporation. Quaternary thenyl phosphonium salts. 3,847,947, Cl. 260-332.500.
- Erhardt & Leimer KG, Firma: *See—*
  - Zerle, Ludiw; and Scharm, Klaus, 3,848,184.
- Erhardt, Peter Franklin; and Wiehe, Irwin Andrew, to Xerox Corporation. Imaging by phase aggregation from block copolymers. 3,847,644, Cl. 117-36.700.
- Erickson, John W.: *See—*
  - Brown, Francis Barton; and Erickson, John W., 3,847,512.
- Erickson, John W.; and Budrys, Vitolis, to Kobe, Inc. Centrifugal separator. 3,847,327, Cl. 233-32.000.
- Erickson, Thomas D.; and Wolf, Warren W., to Owens-Corning Fiberglas Corporation. Glass compositions, fibers and methods of making same. 3,847,626, Cl. 106-50.000.
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- Erickson, Wayne K., to Phillips Petroleum Company. Filament crimping. 3,846,881, Cl. 28-72.140.
- Erneta, Modesto, to N L Industries, Inc. Inorganic micropheres by a double emulsion technique. 3,848,059, Cl. 423-327.000.
- Errett, Carl G. Apparatus for adjusting fuel delivery in diesel injectors. 3,847,011, Cl. 72-477.000.
- ESB Incorporated: *See—*
  - Werth, John J., 3,847,667.
- Eschbaugh, John T.; and Mooney, David N., to Parker-Hannifin Corporation. Quick connect tube coupling joint. 3,847,421, Cl. 285-353.000.
- Escher Wyss Aktiengesellschaft: *See—*
  - Biondetti, Mario, 3,846,883.
- Eshelman, Cheston Lee. Shiftable shock absorbing tire buffer. 3,847,427, Cl. 293-19.000.
- Espersen, Peter G.: *See—*
  - Boyd, Bruce; Espersen, Peter G.; and Heyser, Lewis S., Sr., 3,848,197.
- Essex International, Inc.: *See—*
  - Prouty, Robert E.; and Smith, James J., 3,848,206.
- Esso Research and Engineering Company: *See—*
  - Canter, Nathan H.; and Buckley, Donald J., Sr., 3,847,854.
  - Linder, Jerome; Maravetz, Lester L. M.; Schmit, George N.; and Newman, Neil F., 3,847,984.
  - Linder, Jerome; Maravetz, Lester L.; Schmit, George M.; and Newman, Neil F., 3,847,985.
  - Robson, Harry E., 3,848,018.
  - Tyler, William E., III, 3,847,933.
  - Wadley, Edward F.; and Wasselhoft, Robert D., 3,848,009.
- Eta A.G. Ebauches-Fabrik: *See—*
  - Giger, Urs, 3,846,974.
- Etablissements Pierre Angenieux: *See—*
  - Masson, Andre; and Joubert, Jack, 3,848,119.
- Etampes et Mecanique L. Serafini: *See—*
  - Currat, Emile, 3,846,977.
- Etat Francais: *See—*
  - Delgendre, Jacques Claude; Kerrenneur, Alain Rogar; and Berton, Georges Albert, 3,847,547.
- Ethyl Corporation: *See—*
  - Governale, Luke J., 3,848,053.
  - Niebylski, Leonard M.; and Jarema, Chester P., 3,847,591.
  - Shepherd, Lawrence H., Jr.; Kobetz, Paul; Laran, Roy J.; and Johnson, Robert W., Jr., 3,847,998.
- Etter, Marcel. Control circuit for an inverter with a variable output voltage and frequency. 3,848,176, Cl. 321-18.000.
- Eue, Ludwig: *See—*
  - Dickore, Karlfried; Draber, Wilfried; and Eue, Ludwig, 3,847,914.
- Evans, Dale K.: *See—*
  - Meyer, Raymond W.; McGranghan, Francis R.; and Evans, Dale K., 3,847,707.
- Evans, Howard J.: *See—*
  - Utt, Orval L.; and Evans, Howard J., 3,848,125.
- Evans, Joseph H., to Raychem Corporation. Heat recoverable articles and methods therefor. 3,847,721, Cl. 161-108.000.
- Evans, Philip Henry, to Glenburn Engineering Limited. Record players. 3,847,400, Cl. 274-1.001.
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- Exacto, Inc.: *See—*
  - Awiszus, Waldemar K., 3,847,133.
- Exploaterings Aktiebolaget T.B.F.: *See—*
  - Axen, Rolf; Vretblad, Per; and Porath, Jerker Olof, 3,847,745.
- Exploratering Aktiebolaget T.B.F.: *See—*
  - Fryklund, Linda; and Porath, Jerker Olof, 3,847,889.
- Exxon Research and Engineering Company: *See—*
  - Feldman, Nicholas, 3,847,561.
  - Kalina, Theodore; and Moore, Roger E., 3,847,567.
  - Leder, Frederic; Savage, David W.; and Shrier, Adam L., 3,848,057.
  - Pasternak, Israel S.; Dugan, John J.; and Higgins, James P., 3,847,797.
  - Wilson, Edward L., 3,847,566.
- Exxon Research Engineering Company: *See—*
  - Moser, William R., 3,847,801.
- Fabrica Espanola de Productos Quimicos of Farmaceuticos S.A.: *See—*
  - Vinals Socias, Luis; Blanco Rodriguez, Jose; and Fernandez Ugalde, Francisco Javier, 3,847,973.
- Fabriques de Produits Chimiques de Thann et de Mulhouse: *See—*
  - Mas, Robert J.; and Michaud, Andre Louis, 3,848,051.
- Fagan, Lloyd D.: *See—*
  - Rizzi, Joseph D.; and Fagan, Lloyd D., 3,848,238.
- Fairbanks, John B., Jr. Lock apparatus for hoistable vehicle structures. 3,847,244, Cl. 180-89.00a.
- Fairbanks, Theodore H., to FMC Corporation. Method of making foraminous structures. 3,847,701, Cl. 156-259.000.
- Fairchild Camera and Instrument Corporation: *See—*
  - Campbell, James F., Jr.; Engvall, Arthur E.; and Lewis, Arthur E., 3,847,690.
  - Holt, James G., Jr., 3,848,139.
- Falchle, Jorg: *See—*
  - Wanner, Karl; Schmid, Wolfgang; Karl, Hubertus; and Falchle, Jorg, 3,847,229.
- Farbwerk Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
  - Sehiekfluss, Rudolf; and Steckelberg, Willi, 3,847,909.
- Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
  - Burg, Karlheinz; and Schlaf, Helmut, 3,848,020.
  - Radscheit, Kurt; Stache, Ulrich; and Brodersen, Richard, 3,847,906.
  - Rieber, Martin; and Loffler, Wilhelm, 3,847,657.
  - Sextro, Gunter; and Burg, Karlheinz, 3,848,021.
  - Weber, Helmut; Aumuller, Walter; Weyer, Rudi; Muth, Karl; and Stach, Kurt, 3,847,938.
- Farfaglia, Silvio T.; and Bock, Ronald E., to Phillips Petroleum Company. Blank heating system for carbon forming machine. 3,847,540, Cl. 432-230.000.
- Farr, M. Paul: *See—*
  - Dunn, Howard J.; and Farr, M. Paul, 3,847,897.
- Farrell, John J.; and Grazine, William, to Farrell Patent Company. Apparatus for clamping mold of injection molding machine. 3,847,529, Cl. 425-451.200.
- Farrell, Lewis E. Apparatus for installing manhole rings. 3,847,339, Cl. 249-1.000.
- Farrell Patent Company: *See—*
  - Farrell, John J.; and Grazine, William, 3,847,529.
- Farrell, Robert E., to Improved Machinery Inc. Clamping force applying means for molding machines. 3,847,528, Cl. 425-450.100.
- Farrington, Frederick: *See—*
  - Nicklin, Thomas; and Farrington, Frederick, 3,847,836.
- Fast Load Control Inc.: *See—*
  - Park, Robert H., 3,848,138.
- Feierabend, Karl: *See—*
  - Steinwart, Johannes; and Feierabend, Karl, 3,847,257.
- Feldman, Nicholas, to Exxon Research and Engineering Company. Petroleum middle distillate fuel with improved low temperature flowability. 3,847,561, Cl. 44-62.000.
- Feldmann, Fritz, to Pacific Technica Corporation. Spin stabilized, discarding sabot projectile. 3,847,082, Cl. 102-93.000.
- Felkner, Darrel, to Vanguard Electronics Company, Inc. Miniature inductor. 3,848,210, Cl. 336-200.000.
- Fels-Werke Peine-Salzgitter GmbH: *See—*
  - Klaus, Gerhard, 3,847,766.
- Fenne, Ivor, to C.A.V. Limited. Fuel pumps for internal combustion engines. 3,847,510, Cl. 417-293.000.
- Fernandez Ugalde, Francisco Javier: *See—*
  - Vinals Socias, Luis; Blanco Rodriguez, Jose; and Fernandez Ugalde, Francisco Javier, 3,847,973.
- Ferplas Industries Limited: *See—*
  - Catlos, Peter V.; and Somann, Gert, 3,846,875.
- Ferro Corporation: *See—*
  - Oswitch, Stanley; and Kipp, Kevin K., 3,848,045.
- Ferry-Morse Seed Company: *See—*
  - Johnson, Carl W., 3,846,956.
- Fetters, Lewis J., to First National City Bank. Dilithium initiators from certain conjugated dienes yielding delocalized chain ends. 3,848,008, Cl. 260-665.00r.
- Fiat Societa per Azioni: *See—*
  - Anselmino, Giovanni, 3,848,147.
- Fichtel & Sachs AG: *See—*
  - Bergles, Eduard, 3,847,028.
- Ficken, Charles L.; and Gober, John L. Shoring fixture for poured concrete construction. 3,847,340, Cl. 249-18.000.
- Fieldcrest Mills, Inc.: *See—*
  - Bondi, Emanuele, 3,847,692.
- Fieni, Walter, to Societe Anonyme Francaise du Ferodo. Safety belt reel with brake. 3,847,367, Cl. 242-107.400.
- Figler, Burton D.; and Nussdorfer, Theodore J., to Sanders Associates, Inc. Spectral discriminating radiation detection apparatus. 3,848,129, Cl. 250-339.000.
- Findhammer, Carl Fridriech Johan: *See—*
  - Michels, Albertus Peter Johannes; Gasseling, Franciscus Wilhelmus Engelbert; and Findhammer, Carl Fridriech Johan, 3,846,985.
- Fiore, Peter O.: *See—*
  - Baboian, Robert; and Fiore, Peter O., 3,847,685.
- First National City Bank: *See—*
  - Fetters, Lewis J., 3,848,008.

Firth, Robert L., to Donaldson Company, Inc. Seal for fluid filter. 3,847,819, Cl. 210-444.000.
Fischel, Halbert; and Dichiro, Anthony, to Sub-Marine Systems Incorporated. Property interchange system for fluids. 3,847,211, Cl. 165-166.000.
Fischer, Adolf: *See—*
  Koenig, Karl-Heinz; Kolbinger, Rudolf; and Fischer, Adolf, 3,847,971.
  Zeeh, Bernd; Rohr, Wolfgang; Koenig, Karl-Heinz; and Fischer, Adolf, 3,847,931.
Fischer, Arthur. Hip joint prosthesis. 3,846,846, Cl. 3-1.000.
Fischer, Charles F., to Colgate-Palmolive Company. Plodder trimmer nozzle. 3,847,527, Cl. 425-308.000.
Fischer, Gerhard, to Gustav Schade Maschinenfabrik. Device for the removal of bulk material from round, cone-shaped piles. 3,847,289, Cl. 214-10.000.
Fischer, Udo: *See—*
  Svensson, Tore Rolf; Fundell, Kjell Erik; Ekemar, Karl Sven Gustave; Lind, Bengt Anders; and Fischer, Udo, 3,847,763.
Fish, James F., to American Air Filter Company, Inc. Charcoal filter arrangement. 3,847,574, Cl. 55-387.000.
Fisher, Chester Donald: *See—*
  Holmes, William S.; Fisher, Chester Donald; and Ihrig, Clifford D., 3,847,359.
Fisher, Donald J., to Xerox Corporation. Continuous blade cleaner. 3,847,480, Cl. 355-15.000.
Fisk, Pliny. Process for separating and converting waste into useable products. 3,847,803, Cl. 210-8.000.
Fitzgerald, Donald F.: *See—*
  Hebert, James O., Jr.; and Fitzgerald, Donald F., 3,848,181.
Flam, Eric. Device for aid in detecting breast cancer. 3,847,139, Cl. 128-2.00h.
Fleming, Robert W.: *See—*
  Sill, Arthur D.; and Fleming, Robert W., 3,847,953.
Fletcher, Peter S. Reclining chair with movable headrest. 3,847,430, Cl. 297-61.000.
Flores, Edward: *See—*
  Flores, Edward; and Holmes, Thomas W., 3,847,311.
Flores, Edward; and Holmes, Thomas W., 15% each to Flores, Edward and Holmes, Thomas W. Pivoted closure for a beverage cup. 3,847,311, Cl. 222-473.000.
Florian, John, to Mobil Oil Corporation. Garment shaper. 3,847,314, Cl. 223-98.000.
FMC Corporation: *See—*
  Fairbanks, Theodore H., 3,847,701.
  Goodley, George F., 3,847,071.
  Lemke, Arthur A., 3,847,802.
  Smith, Frederick R., 3,847,636.
Foderaro, Anthony J., to Picker Corporation. Patient rotator and method of conducting X-ray studies. 3,848,132, Cl. 250-437.000.
Foglio, Maurizio: *See—*
  Bernardi, Luigi; Foglio, Maurizio; and Temperilli, Aldemio, 3,847,991.
Foll, Gerhard; and Lahm, Heinrich, to Index-Werke KG Hahn & Tessky. Tool support for use in machine tools particularly in turning machines. 3,846,880, Cl. 29-3.00g.
Fonken, Gunther S.: *See—*
  Herr, Milton E.; Murray, Herbert C.; and Fonken, Gunther S., 3,847,982.
Fonseca, Anthony G., to Continental Oil Company. Molten alkaline alkanoic mixtures for absorption of sulfur oxides. 3,848,056, Cl. 423-210.500.
Fontaine, Louis: *See—*
  Szarvasi, Etienne; and Fontaine, Louis, 3,847,911.
Foote Mineral Company: *See—*
  Boryta, Daniel A., 3,847,837.
Forbess, Dennis L.; Kindler, William A., Jr.; and Marti, Rueben A., to Crown Zellerbach Corporation. Method of preparing water-dispersible polyolefin fibers and product formed therefrom. 3,848,027, Cl. 260-897.00b.
Ford Motor Company: *See—*
  Labana, Santokh S.; and Theodore, Ares N., 3,847,863.
Ford, Sanders, Jr., to Social Dynamics Inc. Combustion improver. 3,847,565, Cl. 48-180.00s.
Forester, Glen Robert, to Phillips Cable Limited. Method and apparatus for twisting wires. 3,847,190, Cl. 140-149.000.
Forgione, Peter Salvatore, to American Cyanamid Company. Enzymes bound to carbonyl polymers. 3,847,743, Cl. 195-63.000.
Forlano, Luigi, to Solvay & Cie. Production of methylene chloride. 3,848,007, Cl. 260-662.00r.
Formflo Limited: *See—*
  Connell, Gordon Sidney, 3,846,999.
Formitalia Societa Formaceutici Italia: *See—*
  Bernardi, Luigi; Foglio, Maurizio; and Temperilli, Aldemio, 3,847,991.
Forsberg, Rolf Erik; and Sparr, Erik Einar, to AB Wikstrand & Berg. Standard or pole for supporting light fittings. 3,847,334, Cl. 248-158.000.
Forse, David Patrick Searle, to EMI Limited. Scanning arrangements. 3,847,466, Cl. 350-7.000.
Forthmann, Frederick F., Jr. Strip material packing apparatus. 3,846,960, Cl. 53-163.000.
Foster, Anthony, to Koppers Company, Inc. Refuse burner apparatus. 3,847,093, Cl. 110-8.00c.
Foster, Daniel S., to Gale, W. D., Inc. Air pump. 3,847,513, Cl. 417-571.000.
Foster Wheeler Corporation: *See—*
  Godino, Rino L.; and Morfit, Oliver, 3,847,751.
Fouche, Michel. Device for automatically coupling and uncoupling the gondolas of a fun fair ride. 3,847,084, Cl. 104-20.000.
Fowler, Arthur G. Conveyer belt roller. 3,847,260, Cl. 193-37.000.
Fowler, John T.: *See—*
  Perron, Robert R.; and Fowler, John T., 3,848,229.
Fox, Elmer E. Duct joining tool. 3,847,037, Cl. 81-5.10r.
Foye, John J., to Kaiser Aluminum & Chemical Corporation. Self-centering bottom block assembly. 3,847,206, Cl. 164-274.000.
Frackowiak, Anthony J.: *See—*
  Woods, Glenn; and Frackowiak, Anthony J., 3,846,887.
Francoise, Damidau: *See—*
  Christian, Rioux; and Francoise, Damidau, 3,848,099.
Franklin, Ernest. Two piece double walled container. 3,847,494, Cl. 403-345.000.
Frantz, Robert Houston, to AMP Incorporated. Electrical connecting device for service outlet. 3,848,220, Cl. 339-32.00r.
Fraser, Robert W.: *See—*
  Fustukian, David A. W.; Kushnir, Bud W.; Norris, Leon F.; and Fraser, Robert W., 3,847,680.
Frederickson, Robert Eugene, to McCulloch Corporation. Method of casting aluminum cylinder. 3,847,204, Cl. 164-132.000.
Freedy, Allan L.; and Risk, Norman E., to Caterpillar Tractor Company. Hydraulic fluid reservoir pressurization arrangement. 3,846,983, Cl. 60-478.000.
Freedy, Allan Leslie; Miller, Calvin Lyle; and Simpson, Fred Eugene, to Caterpillar Tractor Company. Flat track shoe with tapered end ribs. 3,847,451, Cl. 305-54.000.
Freeman, Kenneth, to Audio Synthesisers Limited. Electronic organ with plural master oscillators and plural vibrato oscillators for each note. 3,847,050, Cl. 84-1.250.
Freeport Minerals Company: *See—*
  Wiewiorowski, Tadeusz Karol, 3,848,054.
French, David W.: *See—*
  Semprevivo, Ralph; Andrews, Donald W.; Clark, Richard L.; and French, David W., 3,847,418.
Freudenberg, Carl: *See—*
  Hartmann, Ludwig, 3,847,729.
Fried, John H.: *See—*
  Patterson, John W.; and Fried, John H., 3,847,962.
Friedrich, Ludwig: *See—*
  Bub, Oskar; Friedrich, Ludwig; Hofmann, Hans-Peter; Kreiskott, Horst; and Zimmermann, Frank, 3,847,905.
Fries, Bernd, to Ankerwerk Nurnberg GmbH. Material mixing moulding apparatus for use with a mould to shape a plastics material. 3,847,526, Cl. 425-245.00r.
Frost, C. L., & Son, Inc.: *See—*
  Vandermeulen, Douglas J.; and Weis, Siegfried K., 3,847,455.
Frushour, George Victor; and Nafziger, Marvin Lee, to Lilliston Corporation. Peanut harvesting machine. 3,846,964, Cl. 56-16.600.
Fryklund, Linda; and Porath, Jerker Olof, to Exploratering Aktiebolaget T.B.F. Protein separation by insoluble, amphoteric ion exchangers. 3,847,889, Cl. 260-112.00r.
Fuchs, Werner: *See—*
  Platz, Rolf; Nagel, Otto; and Fuchs, Werner, 3,847,989.
Fuji Photo Film Co., Ltd.: *See—*
  Kaneko, Shiro; Masuda, Sakae; Ujihara, Motohiro; and Uchida, Yosuke, 3,847,616.
  Kobayashi, Teruo; and Nishimura, Taiichi, 3,847,983.
  Matsukawa, Hiroharu; and Saeki, Keiso, 3,847,832.
  Yamamoto, Nobuo, 3,847,948.
  Yoshida, Takashi; Sakaguchi, Shinji; and Miyazako, Takushi, 3,847,615.
Fujii, Seiji; Matsui, Kunio; Sato, Shigeru; Ito, Keijiro; Koizumi, Takashi; Tsuboyama, Shozo; and Watanabe, Hiroyuki, to Nippon Kokan Kabushiki Kaisha, Shimadzu Seisakusho Ltd. and Shimadzu Metal Industries Ltd. X-ray examination system for examining the wlded portions at both ends of steel pipes. 3,848,127, Cl. 250-321.000.
Fujimori, Noboru: *See—*
  Nishina, Yoshio; Kono, Isao; Kamakura, Toshio; Nakamura, Hayashi; Fujimori, Noboru; and Sakamoto, Eiichi, 3,847,621.
  Sakazume, Kaiichiro; Sakamoto, Eiichi; Mine, Kiyomitsu; Fujimori, Noboru; and Ito, Shigemasa, 3,847,613.
Fujinaga, Teruo: *See—*
  Katsuragawa, Seiichi; and Fujinaga, Teruo, 3,848,004.
Fujio, Takashi: *See—*
  Ikeda, Hiroaki; Hirashima, Teruo; Sakai, Tetsuo; Iwamura, Soichi; Ohishi, Iwao; Fujio, Takashi; and Kamegaya, Takeo, 3,848,086.
Fujisawa, Kiyoji: *See—*
  Nishimura, Katsutoshi; and Fujisawa, Kiyoji, 3,848,194.
Fukuda, Masataro; Iwaki, Tsutomu; and Mitsumata, Tadayasu, to Agency of Industrial Science and Technology. Process for preparing a sintered iron negative plate for an alkaline storage battery. 3,847,603, Cl. 75-213.000.
Fulk, Walter F.; and Lyle, Phra D., to Owens-Corning Fiberglas Corporation. Method of and apparatus for processing linear elements. 3,847,579, Cl. 65-11.00w.
Fundell, Kjell Erik: *See—*
  Svensson, Tore Rolf; Fundell, Kjell Erik; Ekemar, Karl Sven Gustave; Lind, Bengt Anders; and Fischer, Udo, 3,847,763.

Furr, Samuel T., to Bethlehem Steel Corporation. Helical steel spring and method. 3,847,678, Cl. 148-2.000.
Fustukian, David A. W.; Kushnir, Bud W.; Norris, Leon F.; and Fraser, Robert W., to Gordon, Sherritt, Mines Limited. Dispersion strengthened metals and alloys and process for producing same. 3,847,680, Cl. 148-11.50f.
Fuzesi, Stephen; Lapkin, Milton; and Polak, Roger J., to Olin Corporation. Process for making fire-retardant polyurethane foam using crude 4,4,4-trichloro-1,2-epoxybutane. 3,847,844, Cl. 260-2.5as.
GAF Corporation: *See—*
  Armento, William H., 3,847,895.
  Lewis, Alan Glueck, 3,847,467.
Galasso, Maurice: *See—*
  Gropper, Lee; Durland, Douglas H.; and Galasso, Maurice, 3,847,484.
Gale, W. D., Inc.: *See—*
  Foster, Daniel S., 3,847,513.
Galimov, Anas Galimovich: *See—*
  Klushin, Nikolai Alexandrovich; Maslakov, Petr Avramovich; Kilin, Viktor Evdokimovich; Yankovsky, Oleg Alexandrovich; and Galimov, Anas Galimovich, 3,847,232.
Gamble, John G. Solid state keyboard switch. 3,848,216, Cl. 338-32.00h.
Gandrud, Stanton D. Dental office system. 3,847,573, Cl. 55-319.000.
Gardiner, Frances R.: *See—*
  Murray, Jerome L.; and Gardiner, Frances R., 3,847,149.
Gardner, John Nicholson; and Kochling, Josef, to Hoffmann-La Roche Inc. Preparation of triaryl phosphines. 3,847,999, Cl. 260-606.50p.
Gardner, Richard H., to Goodrich, B. F., Company, The. Parking brake. 3,847,254, Cl. 188-70.00r.
Garratt, Peter Garth; Habermeier, Juergen; Porret, Daniel; Leumann, Ernst; and Zuppinger, Paul, to Ciba-Geigy AG. Process for curing hydantoin-containing polyacrylates with ionising radiation. 3,847,769, Cl. 204-159.220.
Garrett, Billy R. Holder for gasoline lantern. 3,847,286, Cl. 211-13.000.
Garrett Corporation, The: *See—*
  Hamilton, MacKenzie L., 3,847,298.
Garrett, Ullman C., Jr.: *See—*
  Baggett, William M.; Garrett, Ullman C., Jr.; and Snooks, Rupert J., Jr., 3,848,023.
Garrick, John R.; and Waters, Ernest B., Jr., to Armstrong Cork Company. Method of making cut-in-register ceiling tile. 3,848,043, Cl. 264-134.000.
Garriott, Louis B., Jr.: *See—*
  Morkoski, James; and Garriott, Louis B., Jr., 3,847,441.
Garrison, Harold Keith, to Hesston Corporation. Loose hay wagon. 3,847,072, Cl. 100-35.000.
Garron, Stephen A., to Singer Company, The. Pattern selection system for sewing machines. 3,847,100, Cl. 112-158.00e.
Gasseling, Franciscus Wilhelmus Engelbert: *See—*
  Michels, Albertus Peter Johannes; Gasseling, Franciscus Wilhelmus Engelbert; and Findhammer, Carl Fridriech Johan, 3,846,985.
Gasson, Edward James; Marrian, Stanley Frederic; and Krosnar, Thomas Charles, to BP Chemicals International Limited. Process for preparing acrylonitrile by the ammoxidation of propylene using a metal oxide composition of antimony - tin - copper - iron and n additional metal. 3,847,965, Cl. 260-465.300.
Gatch, Richard E.: *See—*
  Slosiarek, Michael L.; and Gatch, Richard E., 3,847,228.
Gates, F. Alan: *See—*
  Williams, Claude E.; and Gates, F. Alan, 3,847,292.
Gautney & Jones Communications, Inc.: *See—*
  Martin, Robert B.; and Jones, Carl T., 3,848,193.
Gautreaux, Gloria A.: *See—*
  Harper, Robert J., Jr.; Blanchard, Eugene J.; and Gautreaux, Gloria A., 3,847,542.
Gavrilov, Alexandr Pavlovich: *See—*
  Pozdnikov, Vladimir Nikolaevich; Sazonov, Oleg Leonidovich; Taxar, Iegoshua Mikhailovich; Tesnavs, Edgar Rikhardovich; Yanushkovsky, Vladimir Alexandrovich; Gavrilov, Alexandr Pavlovich; Korkonosov, Valentin Petrovich; Peresypkin, Alexei Vasilievich; and Sapovalov, Eduard Parfentievich, 3,848,131.
Geffen, Hyman. Display writing instrument. 3,846,927, Cl. 40-334.000.
Geilhufe, Michael; and Mehta, Rustam Jehangir, to Advanced Memory Systems,. High speed MOS random access read/write memory device. 3,848,237, Cl. 340-173.00r.
Geisthoff, Hubert, to Walterscheid, Jean, GmbH. Device for connecting an agricultural implement, machine or the like to a tractor. 3,847,415, Cl. 280-478.00r.
Gem Industries, Inc.: *See—*
  Bryant, Robert G., 3,846,854.
General Electric Company: *See—*
  Bailey, David C., 3,847,027.
  Beers, Melvin D., 3,847,848.
  Bellows, Guy, 3,847,781.
  Castelli, Joseph L., 3,847,813.
  Dawson, Carlyle Steven; and Hardman, Dorsey Lorraine, 3,848,208.
  Demarest, Donald M., 3,848,175.
  Gross, Donald F., 3,846,899.
  Hammer, Edward E.; and Martyny, William C., 3,847,643.
  Heath, Darrell R.; and Wirth, Joseph G., 3,847,867.
  Jencks, Charles L.; and Murphy, Frank H., 3,848,102.
  Kreutzer, Robert H., 3,847,111.
  Livingston, James D., 3,847,679.
  Marks, Louis W., 3,848,178.
  McVey, Charles I., 3,848,151.
  Ryan, Paul T., 3,847,450.
  Sherman, George R., 3,847,135.
  Stein, Leonard, 3,847,686.
  Takekoshi, Tohru, 3,847,870.
  William, Frank J., III, 3,847,869.
General Felt Industries, Inc.: *See—*
  Bahlo, Jurgen F., 3,847,647.
General Motors Corporation: *See—*
  Dershem, Thomas L.; and Renn, Charles F., 3,848,072.
  Jacobs, James W., 3,847,666.
  Riddel, John W., 3,847,778.
  Sharma, Ram A., 3,847,675.
  Shaw, Donald L.; and McLaughlin, Lawrence D., 3,847,699.
  Shellman, Carl E., 3,847,179.
  Vincent, William R.; and Abu-Isa, Ismat A., 3,847,648.
General Tire & Rubber Company, The: *See—*
  Meyer, Raymond W.; McGranghan, Francis R.; and Evans, Dale K., 3,847,707.
Genova Products: *See—*
  Pepper, Kenneth V., 3,846,851.
Genta, Guido, to American Aniline Products, Inc. 1,4-Diamino-2-alkylthiophenoxy-3-haloanthraquinone polyester dyes. 3,847,541, Cl. 8-39.000.
Genuist, Jean; and Le Parquier, Guy, to Thomson-CSF. Side looking pulse radar system. 3,848,253, Cl. 343-5.0cm.
Gerner, Heinz; and Merkel, Rudolf, to Werkzeugmaschinenfabrik Adolf Waldrich Coburg. Control for a lifting mechanism for a hydraulic copy device on machine tools. 3,846,941, Cl. 51-165.890.
Gerner, James; and Suhr, Peter J., to Magnetic Analysis Corporation. Apparatus for limiting phase-angle response range, particularly in eddy current testing apparatus. 3,848,182, Cl. 324-40.000.
Gervais, Edouard; Chollet, Pierre; and Ranger, Robel, to Noranda Mines Limited. Screw machining material. 3,847,556, Cl. 29-187.000.
Geus, John W.: *See—*
  Slot, Hendrik Bruins; and Geus, John W., 3,847,831.
Gevaert-Agfa N.V.: *See—*
  Laridon, Urbain Leopold; Delzenne, Gerard Albert; and Peeters, Hugo Karel, 3,847,610.
Gewerkschaft Eisenhutte Westfalia: *See—*
  Huttenbrauck, Herbert; Ostrop, Berthold; Soliman, Mustafa; and Polkekowski, Helmut, 3,847,438.
Gewerkschaft Victor Chemische Werke, Firma: *See—*
  Laue, Wolfgang; Schreiber, Eckehard; and Heyenga, Friedrich, 3,848,061.
Ghersa, Piero; Torghele, Flavio; and Laberinti, Cesare, to Industrie Pirelli S.p.A. Buoyant hose and method for making same. 3,847,693, Cl. 156-79.000.
Ghys, Theofiel Hubert: *See—*
  Philippaerts, Herman A.; Pollet, Robert Joseph; Muller-Bardorff, Wolfgang; Saleck, Wilhelm; Moll, Franz; and Ghys, Theofiel Hubert, 3,847,617.
Giacopelli, Umberto. Electolytic cell and method of assembling same. 3,847,783, Cl. 204-275.000.
Gibson, Malcolm Ritchie; Roesler, Frank Cornelius; Smith, Stuart Raymond Leslie; and Maslen, Frank Peter, to Imperial Chemicals Industries Limited. Fermentation method and apparatus. 3,847,748, Cl. 195-109.000.
Gieschen, Kurt; and Schmidemann, Walter, to U.S. Philips Corporation. Film displacement device for X-ray apparatus. 3,848,134, Cl. 250-471.000.
Giger, Urs, to Eta A.G. Ebauches-Fabrik. Motor-barrel watch movement. 3,846,974, Cl. 58-87.000.
Giglia, Robert Domenico: *See—*
  Clasen, Richard Howard; and Giglia, Robert Domenico, 3,847,468.
Giguere, Andre N.; and Thibodeau, Rheal A., to Giguere, Marie Marthe Poulin and Thibodeau, Rose Agathe Cote. Portable electric grill appliance. 3,848,110, Cl. 219-525.000.
Giguere, Marie Marthe Poulin: *See—*
  Giguere, Andre N.; and Thibodeau, Rheal A., 3,848,110.
Gilbert Engineering Company, Inc.: *See—*
  Hayward, Robert D.; and Chapman, James E., 3,847,463.
Gilbert, Lyman Francis, to Combustion Engineering, Inc. Automatic bed level control for furnaces. 3,847,092, Cl. 110-7.00r.
Gillette Company, The: *See—*
  Sastri, Aiyaswami Suryanarayan, 3,847,683.
Gillice, Leland O., to Alpha-O Corporation. System for etching ceramic surfaces and the like. 3,847,688, Cl. 156-2.000.
Gish, Duane T.: *See—*
  Kelly, Robert C.; Wechter, William J.; and Gish, Duane T., 3,847,898.
Glaser, Helmut: *See—*
  Kramer, Gunter; and Glaser, Helmut, 3,847,668.
Glaser, Rudolf: *See—*
  Baumann, Hans; Glaser, Rudolf; and Bauer, Peter, 3,847,656.
Glass, Marvin, & Associates: *See—*
  Morrison, Howard J.; and Nix, Donald F., 3,847,275.
Glaze, Stanley George: *See—*

Maltby, Peter John; Glaze, Stanley George; Ellis, Kenneth Harold; Craven, Donald; and Binns, John Michael, 3,847,251.

- Glenburn Engineering Limited: *See—*
  - Evans, Philip Henry, 3,847,400.
  - Evans, Philip Henry, 3,847,401.
- Gley, Paul R., to Rexnord, Inc. Dual spring action self adjusting latch. 3,847,423, Cl. 292-113.000.
- Glover, Richard Warmath; Musch, Gordon Frederick; and Summa, John A., to Black and Decker Manufacturing Company, The. Trigger mechanism for hand-operated power device providing automatic lock-off and manual lock-on operation. 3,847,233, Cl. 173-170.000.
- Gober, John L.: *See—*
  - Ficken, Charles L.; and Gober, John L., 3,847,340.
- God, Andrew. Metal pipe with spaced flexible portions. 3,847,184, Cl. 138-120.000.
- Godino, Rino L.; and Morfit, Oliver, to Foster Wheeler Corporation. Recovery and handling of asphalt containing a high concentration of asphaltene. 3,847,751, Cl. 196-155.000.
- Godtfredsen, Wagn Ole, to Lovens Kemiske Fabrik Produktionsaktieselskab. Cephalosporanic acid esters. 3,847,913, Cl. 260-243.00c.
- Goebel, Robert W.; and Marous, George R., to Robbins & Myers, Inc. Electric motor ventilation. 3,848,145, Cl. 310-60.000.
- Gold, Elijah H., to Schering Corporation. Substituted imidates. 3,847,988, Cl. 260-566.00b.
- Gollub, Seymour. Method and system for controlled automated administration of drugs to patients. 3,847,138, Cl. 128-1.100.
- Gomez, Teodosio Diaz. Ice and snow anti-sliding device, applicable to wheels of vehicles. 3,847,196, Cl. 152-226.000.
- Good, Paul F., to Speedco, Inc. Bulk-loading apparatus. 3,846,959, Cl. 53-61.000.
- Good, William E.; and Digrasso, Leonard, to Kelsey-Hayes Company. Flash removal mechanism. 3,847,323, Cl. 228-3.000.
- Goodfellow, Robert D., to Kennametal Inc. Rolling type excavating tool. 3,847,235, Cl. 175-372.000.
- Goodley, George F., to FMC Corporation. Strapping machine feed. 3,847,071, Cl. 100-32.000.
- Goodrich, B. F., Company, The: *See—*
  - Gardner, Richard H., 3,847,254.
- Goodspeed, Raymond F., to Teledyne, Inc.; d/b/a Teledyne. Decorative casting and method of fabrication thereof. 3,847,715, Cl. 161-7.000.
- Goodwin, James: *See—*
  - Young, John S.; and Goodwin, James, 3,848,244.
- Gordon, Sherritt, Mines Limited: *See—*
  - Fustukian, David A. W.; Kushnir, Bud W.; Norris, Leon F.; and Fraser, Robert W., 3,847,680.
  - Van der Meulen, Sjaak Johan; Weizenbach, Bauke; Lee, Allan Henry; and Kinjerski, Theodore Andrew, 3,847,594.
- Gorham; a division of Textron Inc.: *See—*
  - Sebring, Burr, 3,846,902.
- Gossage, Thomas M. Multi-purpose releasable connector. 3,847,488, Cl. 403-79.000.
- Gotshall, William W., to Marathon Oil Company. Rubber compositions containing finely divided carbon treated with methanol. 3,847,862, Cl. 260-41.50r.
- Gould, Maurice O., to Agricultural Enterprises, Inc. Livestock insecticide dispensing bag. 3,847,122, Cl. 119-159.000.
- Governale, Luke J., to Ethyl Corporation. Alkyl aluminum disposal method. 3,848,053, Cl. 423-115.000.
- Grace, W. R., & Company: *See—*
  - Kloczewski, Harold A., 3,847,767.
  - Palmer, Nigel Innes; Sugarman, Nathan; and Grammer, Don O'-Neil, 3,847,676.
- Grachev, Leonid Pavlovich: *See—*
  - Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,847,272.
- Graf, Ernest, to Ben Kahn Furs Corporation. Reversible fur garment. 3,846,844, Cl. 2-93.000.
- Grammer, Don O'Neil: *See—*
  - Palmer, Nigel Innes; Sugarman, Nathan; and Grammer, Don O'-Neil, 3,847,676.
- Grane, Gunnar; and Kareby, Erik. Compacting device. 3,847,498, Cl. 404-133.000.
- Grant, John W.: *See—*
  - Hicks, Leon E.; Grant, John W.; Watts, Loyal O.; and Peterson, Wayne A., 3,847,416.
- Gravel, Jean J. O. Fiberglass reclaiming. 3,847,664, Cl. 134-2.000.
- Gray Tech Industries, Inc.: *See—*
  - Stickler, Charles W., Jr., 3,847,341.
- Gray, William R.: *See—*
  - Lowe, Keith B.; and Gray, William R., 3,847,358.
  - Lowe, Keith B.; and Gray, William R., 3,847,362.
- Grazine, William: *See—*
  - Farrell, John J.; and Grazine, William, 3,847,529.
- Green, Allan M.; and Pensky, Jack. Acidic monosaccharide-substituted proteins. 3,847,890, Cl. 260-112.500.
- Green, Talmage O., to Snap-on Tools Corporation. Automatic release wrench of the preset type. 3,847,038, Cl. 81-52.40r.
- Greer, Edward M. Hydro-pneumatic flexible bladder accumulator. 3,847,182, Cl. 138-30.000.
- Gregory, Eric; Marancik, William G.; and Shattes, Walter J., to Airco Inc. Flashlamp with improved combustion foil and method of making same. 3,847,650, Cl. 117-71.00m.
- Gregory, M. Duane: *See—*
  - Clark, Charles R.; Gregory, M. Duane; Kerfoot, Oliver C.; Veatch, Fred C.; Krehbiel, Delmar D.; and Kennedy, Carl D., 3,847,823.
- Grey Tech Industries, Inc.: *See—*
  - Stickler, Charles W., Jr., 3,847,521.
- Griebsch, Eugen: *See—*
  - Drawert, Manfred; and Griebsch, Eugen, 3,847,875.
- Grimes, David E.: *See—*
  - Norton, Orien K.; Grimes, David E.; and Sayler, Ralph A., 3,847,371.
- Grinshtein, Boris Ilich: *See—*
  - Tolstov, Jury Georgievich; Skorovarov, Vladimir Efremovich; Grinshtein, Boris Ilich; Stepanova, Valentina Gavrilovna; Bashkatov, Ivan Pavlovich; Vinitsky, Jury Danilovich; Balyasinsky, Valery Ottovich; and Shmusrov, Valery Pavlovich, 3,848,156.
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  - Moder, Hans-Ulrich; and Grossmann, Gunter, 3,848,116.
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  - Leparulo, Angelo F.; and Grun, Charles, 3,847,671.
- Grunberger, Eberhard: *See—*
  - Compernass, Josef; Grunberger, Eberhard; and Schmidt, Friedo Eberhard, 3,847,630.
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  - Cricchio, Renato, 3,847,901.
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- GTE Automatic Electric Laboratories Incorporated: *See—*
  - Belcastro, Richard J., 3,848,262.
- GTE Sylvania Incorporated: *See—*
  - Bowes, Robert J.; and Kerstetter, Donald R., 3,848,154.
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  - Paraskevas, Dimitri; L'Hermite, Alain A.; Bernard, Georges F.; and Guinet, Jacques E., 3,847,481.
- Gulf Oil Canada Limited: *See—*
  - Cymbalisty, Lubomyr M. O., 3,847,789.
- Gulf Resource & Chemical Corporation: *See—*
  - Kamienski, Conrad W.; and Eastham, Jerome F., 3,847,883.
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  - Jonke, Joseph L.; and Clarke, Richard N., 3,848,180.
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- Gutte, Richard: *See—*
  - Becker, Wilhelm; Osse, Peter; Gutte, Richard; and Hochbach, Friedrich, 3,847,726.
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  - Dooley, Ronald M.; and Haas, John W., 3,846,849.
- Haas, K. W , & Associates Co.: *See—*
  - Haar, Kenneth W., 3,847,477.
- Haberkorn, Egon: *See—*
  - Rohner, Joachim; Maassen, Wilhelm; and Haberkorn, Egon, 3,847,364.
- Habermeier, Juergen: *See—*
  - Garratt, Peter Garth; Habermeier, Juergen; Porret, Daniel; Leumann, Ernst; and Zuppinger, Paul, 3,847,769.
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- Hack, Heinrich, to Schenck, Carl, Maschinenfabrik GmbH. Apparatus for controlling the weight correction of workpieces prior to finish-machine. 3,847,055, Cl. 90-14.000.
- Hackbarth, Wilhelm: *See—*
  - Thiesler, Ingo; and Hackbarth, Wilhelm, 3,847,403.
- Haddad, Ihsan A.; and Krebs, William M., to Instrumentation Laboratory, Inc. Electrochemical analyzer. 3,847,777, Cl. 204-195.00p.
- Hadden, Donald L.: *See—*
  - LeNay, Tom W.; and Hadden, Donald L., 3,848,241.
- Hagar, Donald K., to Mosser Industries, Incorporated. Louver valve. 3,847,373, Cl. 251-298.000.
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- Hagg, Per Borje: *See—*
  - Blomqvist, Nils Verner; and Hagg, Per Borje, 3,847,710.
- Hagiwara, Masaki: *See—*
  - Suzuki, Akira; Hagiwara, Masaki; and Teraoka, Nobuhiro, 3,847,002.
- Hagiwara, Yoshichi; Sato, Katunobu; Komatsu, Hideo; Yuguchi, Sadao; Yoshizumi, Nobuo; Nagai, Kenya; Takeda, Hiromu; and Ohnishi, Sei-Ichiro, to Toray Industries, Inc. Cured phenol-formaldehyde fibers and method for the production thereof. 3,848,044, Cl. 26-176.00f.
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  - Onsager, Olav T., 3,847,876.
- Hale, Martin M.; and Laurie, Kenneth A. Tea laser. 3,848,203, Cl. 331-94.500.
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  - Cole, Clinton W., 3,847,511.
  - Scott, Theron A.; and Hyde, Walter E., 3,847,223.
- Halomet AG: *See—*
  - Holland, Gerhard W.; and Nowak, Rudolf, 3,847,596.
- Hamill, Robert L.: *See—*
  - Higgens, Calvin E.; and Hamill, Robert L., 3,847,742.
- Hamilton, George M., to McDowell-Wellman Engineering Company. Gas producer having ash removal plates with individual temperature sensing. 3,847,562, Cl. 48-76.000.
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- Harada, Susumu: *See—*
  - Miyoshi, Takeo; Majima, Kazu; Yamagata, Tetsuo; Harada, Susumu; and Sueishi, Motoharu, 3,847,130.
- Harder, Arthur J., Jr., to Coach and Car Equipment Corporation. Slide mechanism with restraints against transverse movement. 3,847,452, Cl. 308-6.00r.
- Harding, Carol, 20% to Lee, Raymond, Organization, Inc., The. Air freshening ash tray device. 3,847,575, Cl. 55-244.000.
- Hardman, Dorsey Lorraine: *See—*
  - Dawson, Carlyle Steven; and Hardman, Dorsey Lorraine, 3,848,208.
- Harmon, James E.; and Zeamer, Aaron C., to SCM Corporation. Collapsible line space lever mechanism. 3,847,264, Cl. 197-114.00r.
- Harper, James G., to Texas Instruments Incorporated. Assembly method for semiconductor chips. 3,846,905, Cl. 29-589.000.
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- Harris, Robert F.: *See—*
  - Dunbar, Joseph E.; Harris, Robert F.; and McCarthy, James R., Jr., 3,847,927.
- Hartline, Albert G., III, to Allegheny Ludlum Industries, Inc. Corrosion resistant austenitic steel. 3,847,599, Cl. 75-122.000.
- Hartmann, Ludwig, to Freudenberg, Carl. Deep-drawable plastic composite comprising plastic film on fibrous support. 3,847,729, Cl. 161-256.000.
- Hartwell, John W.: *See—*
  - Williams, Redford B., Jr.; and Hartwell, John W., 3,847,142.
- Hase, Alfred Max. Storage battery charging apparatus. 3,848,173, Cl. 320-23.000.
- Hasegawa, Tetsuo: *See—*
  - Kondo, Eiichi; and Hasegawa, Tetsuo, 3,847,605.
- Hasenbeck, Harold W. Soil matric potential sensor. 3,847,351, Cl. 239-63.000.
- Hashimoto, Kazunori: *See—*
  - Tanaka, Satoru; and Hashimoto, Kazunori, 3,847,924.
- Hashimoto, Tsutomu: *See—*
  - Sakiyama, Kazutaka; and Hashimoto, Tsutomu, 3,847,507.
- Hattori, Keisuke: *See—*
  - Mimino, Tohru; Kinoshita, Kazuhisa; and Hattori, Keisuke, 3,847,600.
- Hauni-Werke Korber & Co. K.G.: *See—*
  - Rudszinat, Willy, 3,847,044.
- Haupin, Warren E., to Aluminum Company of America. Bath control. 3,847,761, Cl. 204-67.000.
- Havdala, Samuel: *See—*
  - Wiesler, Mordechai; and Havdala, Samuel, 3,847,284.
- Hayashi, Masataka: *See—*
  - Matsumura, Sakujiro; Yamamura, Tadashi; Ogura, Akira; and Hayashi, Masataka, 3,846,965.
- Hayward, Robert D.; and Chapman, James E., to Gilbert Engineering Company, Inc. Cable connector apparatus. 3,847,463, Cl. 339-8.00p.
- Hea Rehab AB: *See—*
  - Mattsson, Bertil, 3,847,440.
- Heady, Robert E.; and Jacaway, William A., Jr., to CPC International, Inc. Process for the production of levulose-bearing syrups. 3,847,740, Cl. 195-31.00f.
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  - Schwartz, Leon J.; Spiegel, Gerald M., Jr.; and Hecht, Leon N., Jr., 3,847,606.
- Heckrotte, Robert Sherwood; and Scott, John Alexander, to Du Pont de Nemours, E. I., and Company. Spinneret blanketing apparatus. 3,847,522, Cl. 425-72.000.
- Hegedus, Eduardo; and Hegedus, George. Hanging filing-card cabinets. 3,847,459, Cl. 312-184.000.
- Hegedus, George: *See—*
  - Hegedus, Eduardo; and Hegedus, George, 3,847,459.
- Heger, Alois. Comminutor for bulky objects. 3,847,361, Cl. 241-152.000.
- Heiberger, Francis E., to Danly Machine Corporation. Bidirectional zero speed switch. 3,848,165, Cl. 318-207.00r.
- Heidelberger Druckmaschinen AG: *See—*
  - Kuhnert, Hans, 3,846,904.
- Heinemann, Klaus: *See—*
  - United States of America, National Aeronautics and Space Administration, 3,847,689.
- Heinzelmann, Karl-Georg: *See—*
  - Ortner, Lorenz; Heinzelmann, Karl-Georg; Conrad, Bernd; and Dierker, Joachim, 3,847,696.
- Heinzer, Paul: *See—*
  - Ehretsmann, Jacques; Barbey, Emile; and Heinzer, Paul, 3,847,265.
- Heizman, Charles L.: *See—*
  - Sloane, Edwin A.; and Heizman, Charles L., 3,848,115.
- Helbig, Gerald R., to Xerox Corporation. Cover for wire wrapped card chassis. 3,847,479, Cl. 355-14.000.
- Helm, Leon E. Magnetic light assembly. 3,848,227, Cl. 340-74.000.
- Hemens, James Frederick, to Teleflex Limited. Control devices. 3,847,034, Cl. 74-491.000.
- Henkel & Cie GmbH: *See—*
  - Compernass, Josef; Grunberger, Eberhard; and Schmidt, Friedo Eberhard, 3,847,630.

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- Hercules Incorporated: *See—*
  - Blunt, Harry W., 3,847,886.
  - Breslow, David W.; and Simpson, David A., 3,847,609.
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- Hesston Corporation: *See—*
  - Garrison, Harold Keith, 3,847,072.
- Hetzel, Eckhard; and Korpiun, Olaf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of perfluorocarboxylic acid nitriles. 3,847,964, Cl. 260-465.200.
- Hewlett-Packard Company: *See—*
  - Clover, Richmond B., Jr., 3,848,239.
- Heyenga, Friedrich: *See—*
  - Laue, Wolfgang; Schreiber, Eckehard; and Heyenga, Friedrich, 3,848,061.
- Heyser, Lewis S., Sr.: *See—*
  - Boyd, Bruce; Espersen, Peter G.; and Heyser, Lewis S., Sr., 3,848,197.
- Heyworth, Renest; and Schwartz, Phillip, to Tridair Industries. Tool and method for reaming and tapping a spark plug opening in a rotary engine housing. 3,847,499, Cl. 408-1.000.
- Hi-Tor Inventions Corporation: *See—*
  - Brunstetter, Frank H., 3,847,193.
- Hicks, Leon E.; Grant, John W.; Watts, Loyal O.; and Peterson, Wayne A., to Caterpillar Tractor Company. Hydraulic control circuit with remotely controlled dual pressure relief valve. 3,847,416, Cl. 280-481.000.
- Hicks, Wade E. Bird training device. 3,847,120, Cl. 119-29.000.
- Higgens, Calvin E.; and Hamill, Robert L. Process for deacetoxycephalosporin C. 3,847,742, Cl. 195-36.00r.
- Higgins, James P.: *See—*
  - Pasternak, Israel S.; Dugan, John J.; and Higgins, James P., 3,847,797.
- Higgins, Leonard James, to Datacq Systems Corporation. Apparatus and attachment for deriving coded signals. 3,847,262, Cl. 197-1.00r.
- Hildebrandt, Mieczyslax: *See—*
  - Micheron, Francois; Nicolas, Jean; and Hildebrandt, Mieczyslax, 3,847,465.
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- Hintzen, Peter: *See—*
  - Dusch, Albert; and Hintzen, Peter, 3,847,097.
- Hinz, Paul: *See—*
  - Dislich, Helmut; Hinz, Paul; and Kaufmann, Reinhard, 3,847,583.
- Hioki, Morihisa: *See—*
  - Kuroiwa, Tadaharu; Isayama, Yukio; Yokota, Akira; Kamio, Tsukasa; Kinnai, Kazuhiko; Abe, Eiichi; Kimura, Kunio; Hioki, Morihisa; and Noguchi, Hisataka, 3,847,806.
- Hirashima, Teruo: *See—*
  - Ikeda, Hiroaki; Hirashima, Teruo; Sakai, Tetsuo; Iwamura, Soichi; Ohishi, Iwao; Fujio, Takashi; and Kamegaya, Takeo, 3,848,086.
- Hirata, Sadao; Yamada, Muneki; and Kishimoto, Akira, to Toyo Seiken Kaisha Limited. Resinous compositions having improved gas permeation resistance and molded structures thereof. 3,847,728, Cl. 161-252.000.
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  - Hishinuma, Yukio; Arashi, Norio; and Tamura, Zensuki, 3,847,572.
  - Saito, Tadayoshi; Miura, Kiyoshi; and Nakano, Yoshiyuki, 3,848,117.
  - Takeda, Tadashi; Nakazawa, Yukiyoshi; and Ikeda, Hiroshi, 3,847,677.
- Hitco: *See—*
  - Babayan, Eduard P., 3,847,723.
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  - Becker, Wilhelm; Osse, Peter; Gutte, Richard; and Hochbach, Friedrich, 3,847,726.
- Hochner, Walter L., to Avery Products Corporation. Dry transfer materials. 3,847,725, Cl. 161-167.000.
- Hockham, George Alfred: *See—*
  - Craven, George Frederick; and Hockham, George Alfred, 3,848,256.
- Hodess, Paul T., to Creative Building Systems. Beams for hyperbolic paraboloid roofs. 3,846,953, Cl. 52-745.000.
- Hoechst Aktiengesellschaft: *See—*
  - Rudolphy, Albert, 3,847,850.
- Hoehn, Hans: *See—*
  - Denzel, Theodor; and Hoehn, Hans, 3,847,929.
- Hofer, Kurt: *See—*
  - Avar, Lajos; Hofer, Kurt; and Preiswerk, Martin, 3,847,960.
- Hofer, Tas C. Shower head flow diverter attachment. 3,847,159, Cl. 239-507.000.
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  - Mills, Ivor W.; Dimeler, Glenn R.; Atkinson, William A., Jr.; and Hoffman, James P., 3,847,623.
- Hoffmann-La Roche Inc.: *See—*
  - Gardner, John Nicholson; and Kochling, Josef, 3,847,999.
  - Uskokovic, Milan Radoje, 3,847,945.
  - Wang, Su-San, 3,847,892.
  - Ziedonis, Janis Gunars, 3,847,016.
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- Hofmann, Hans-Peter: *See—*
  - Bub, Oskar; Friedrich, Ludwig; Hofmann, Hans-Peter; Kreiskott, Horst; and Zimmermann, Frank, 3,847,905.
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- Hollahan, John R.: *See—*
  - United States of America, National Aeronautics and Space Administration, 3,847,652.
- Holland, Gerhard W.; and Nowak, Rudolf, to Halomet AG. Process of obtaining metals from metal halides. 3,847,596, Cl. 75-84.400.
- Holland, Heino H.: *See—*
  - Kopp, Reiner H.; and Holland, Heino H., 3,847,200.
- Holman, William G., to Royal Appliance Mfg. Co. Attachment clip for suction cleaner brush. 3,846,865, Cl. 15-392.000.
- Holmes, John L., mesne: *See—*
  - Stearns, William P.; and Elpern, Barry S., 3,848,091.
- Holmes, Thomas W.: *See—*
  - Flores, Edward; and Holmes, Thomas W., 3,847,311.
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- Holt, Jan D., to ACF Industries, Incorporated. Inflatable dunnage. 3,847,091, Cl. 105-468.000.
- Holt, Jorgen; Videmark, Christian; and Christiansen, Palle Hein, to Nordisk Ventilator Co. A/S. Ventilation system. 3,847,065, Cl. 98-33.000.
- Homes, Elmond A.: *See—*
  - Rohrback, Gilson H.; and Homes, Elmond A., 3,848,187.
- Honda, Haruo: *See—*
  - Suzuki, Takeo; Tomita, Fusao; Nakano, Hirofumi; and Honda, Haruo, 3,847,747.
- Honeywell Information Systems, Inc.: *See—*
  - Lee, Fred S.; and Vysniauskas, Jonas K., 3,848,209.
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  - Woods, Glenn; and Frackowiak, Anthony J., 3,846,887.
- Hopland, Johan N.: *See—*
  - Bissell, Sherman M.; De Vlieg, Garrett H.; and Hopland, Johan N., 3,847,445.
- Horak, Josef: *See—*

  - Muck, Eduard; Strachota, Jaroslav; and Horak, Josef, 3,848,024.
- Horizon Industries, Ltd.: *See—*
  - Engelsher, Harvey J., 3,847,370.
- Horn, Vladimir: *See—*
  - Buran, Vojtech; Horn, Vladimir; and Suchanek, Borivoj, 3,847,187.
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  - Herman, Stewart T.; and Horst, Russel J., 3,847,807.
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  - Takahashi, Shizuo; Kobayashi, Yoshio; and Hosogai, Toshio, 3,847,708.
- Hotchkiss, Stuart Evan: *See—*
  - Howell, Richard Stockton; and Hotchkiss, Stuart Evan, 3,847,306.
- Houck, Walter H.; and Stigberg, Jon D., to United States of America, National Aeronautics and Space Administration. Signal conditioner test set. 3,848,190, Cl. 324-158.00t.
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  - Acton, Hugh C.; Knapp, Robert L.; Van Ryn, Arthur L.; and Hozeski, Kenneth W., 3,847,433.
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  - Block, Marshall H.; Hubbard, Gerald L.; and Podolor, Donald E., 3,846,931.
- Hubbard, Robert G., to Dazey Products Company. Bag sealing apparatus. 3,847,712, Cl. 156-583.000.
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  - Lavik, Melvin T.; and Hubbell, Ronald D., 3,847,825.
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  - Albrecht, Ernst; and Hubele, Klaus, 3,847,096.
- Huber, Rolf: *See—*
  - Adolphi, Heinrich; Dietsche, Wolfram; Merger, Franz; Beutel, Peter; and Huber, Rolf, 3,847,936.
- Hughes Aircraft Company: *See—*
  - Hansen, Siegfried, 3,846,950.
  - Ho, Ernest C.; Reissmueller, Karl H.; and Belardi, Richard J., 3,846,971.
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  - Beregi, Laszlo; Hugon, Pierre; Desnoyers, Pierre; and Duhault, Jacques, 3,847,925.
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- Hultberg, Richard M. Dynamic tire balancing method and apparatus. 3,847,025, Cl. 73-460.000.
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  - Wojtowicz, Edward A.; Lazzarotti, James; Hunter, James R.; and Rodkey, Robert W., 3,847,383.
- Huntington, John S.: *See—*
  - Soykan, Ferhun H.; Huntington, John S.; and Darmara, Falih N., 3,847,205.
- Hutchison, Walter A., III, to Itek Corporation. Adjustable light diffuser for an optical projection system. 3,848,122, Cl. 240-46.510.
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- Hyde, Walter E.: *See—*
  - Scott, Theron A.; and Hyde, Walter E., 3,847,223.
- Hyman, Myles: *See—*
  - Mast, Aquila D.; Eggers, Edward T.; and Hyman, Myles, 3,847,073.
- Hyne, Graham Everett, to Minister of National Defence of Her Majesty's Canadian Government. Transverse excitation system for gas laser using three electrodes. 3,848,202, Cl. 331-94.5pe.
- I-T-E Imperial Corporation: *See—*
  - Clement, Ralph C., 3,848,161.
  - Eberhard, Elmer T.; and Meier, Henry G., 3,848,101.
- I/O Metrics Corporation: *See—*
  - Wohlmut, Peter G.; and Neu, Frank D., 3,848,095.
- Ichikawa, Hayao; and Utsunomiya, Shinhachi, to Industrial Science and Technology, The President of the Agency of. Method and apparatus for charging a superconductive coil. 3,848,162, Cl. 317-123.000.
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  - Thorn, Herbert; and Davis, Robert E., 3,846,934.
- Ifield, Richard Joseph, to Advanced Products Pty. Limited. Controls for variable pumps or motors. 3,847,061, Cl. 91-497.000.
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- Ihrig, Clifford D.: *See—*
  - Holmes, William S.; Fisher, Chester Donald; and Ihrig, Clifford D., 3,847,359.
- Iida, Kinji: *See—*
  - Onozuka, Mitsuo; Nomoto, Koki; Iida, Kinji; and Morita, Tomijiro, 3,848,070.
- Ikeda, Hiroaki; Hirashima, Teruo; Sakai, Tetsuo; Iwamura, Soichi; Ohishi, Iwao; Fujio, Takashi; and Kamegaya, Takeo, to Nippon Hoso Kyokai. Picture information display device. 3,848,086, Cl. 178-7.30d.
- Ikeda, Hiroshi: *See—*
  - Takeda, Tadashi; Nakazawa, Yukiyoshi; and Ikeda, Hiroshi, 3,847,677.
- Iliopulos, Miltiadis I.: *See—*
  - Bredereck, Hellmut F. I.; Iliopulos, Miltiadis I.; and Wieder, Horst F., 3,847,866.
- Illinois Tool Works, Inc.: *See—*
  - Schmidt, Bradley J., 3,848,080.
- Illinois Water Treatment Company: *See—*
  - Voedisch, Richard K., 3,847,805.
- Imamura, Takaaki: *See—*
  - Yoshimoto, Toshio; Imamura, Takaaki; Tanaka, Kazuo; and Miyagi, Arata, 3,848,026.
- Imperial Chemical Industries Limited: *See—*
  - Jackson, Peter Frederick; and Morris, Arthur, 3,847,873.
  - Ridyard, Denis Robert Annesley, 3,847,894.
  - Webster, Colin James, 3,847,326.
- Imperial Chemicals Industries Limited: *See—*
  - Gibson, Malcolm Ritchie; Roesler, Frank Cornelius; Smith, Stuart Raymond Leslie; and Maslen, Frank Peter, 3,847,748.
- Improved Machinery Inc.: *See—*
  - Farrell, Robert E., 3,847,528.
- Inada, Masammi: *See—*
  - Okamoto, Toshaiaki; Inada, Masammi; and Nishida, Koji, 3,847,448.
- Index-Werke KG Hahn & Tessky: *See—*
  - Foll, Gerhard; and Lahm, Heinrich, 3,846,880.
- Industrial Nucleonics Corporation: *See—*
  - Doering, George I., 3,847,730.
  - Utt, Orval L.; and Evans, Howard J., 3,848,125.
- Industrial Science and Technology, Director General of the Agency of: *See—*
  - Kuroiwa, Tadaharu; Isayama, Yukio; Yokota, Akira; Kamio, Tsukasa; Kinnai, Kazuhiko; Abe, Eiichi; Kimura, Kunio; Hioki, Morihisa; and Noguchi, Hisataka, 3,847,806.
- Industrial Science and Technology, The President of the Agency of: *See—*
  - Ichikawa, Hayao; and Utsunomiya, Shinhachi, 3,848,162.
- Industrie Pirella S.p.A.: *See—*
  - Laberinti, Cesare, 3,847,720.
- Industrie Pirelli S.p.A.: *See—*
  - Ghersa, Piero; Torghele, Flavio; and Laberinti, Cesare, 3,847,693.
- Information Terminals Corp.: *See—*
  - Biery, Paul J.; Schwartz, Vernon R.; and Tregear, Roger N. J., 3,848,265.
- Inglish, Sumter R.; and May, Walter John, to Propper Manufacturing Co., Inc. Capillary tube dispensing vial and stand. 3,847,274, Cl. 206-44.00r.
- Inoue, Yukio. Golf score indicator. 3,847,110, Cl. 116-120.000.
- Institut Francais de Petrole, des Carburants et Lubrifiants: *See—*
  - Cosyns, Jean, 3,847,835.
- Instrumentation Laboratory, Inc.: *See—*
  - Haddad, Ihsan A.; and Krebs, William M., 3,847,777.
- Instrumentation Specialties Company: *See—*
  - Allington, William B., 3,847,785.
- Inter-Nation Research Corporation: *See—*
  - Hansen, Erik J., 3,847,577.
- Interbrew S.A.: *See—*
  - Auer, Ulrich; and Nicole, Andre, 3,847,188.
- International Business Machine Corporation: *See—*
  - Kripl, Josef F., 3,848,157.
- International Business Machines Corporation: *See—*
  - Allmon, Dwight George; Lee, Pedro; and Coker, Charles Walter, Jr., 3,848,251.
  - Chang, Harry C.; Strand, Richard J.; and Suelflow, Raymond D., 3,848,252.
  - Herrell, Dennis J., 3,848,259.
  - Hobgood, Leonard Douglas; and Lorenzen, Jerry Alan, 3,847,552.
  - Lewis, David Otto; and Miller, Thomas Howard, 3,848,235.
  - Wallace, Leonard J., 3,848,192.
- International Computer Limited: *See—*
  - Case, Derek Frank, 3,846,906.
- International Flavors & Fragrances Inc.: *See—*

  - Hall, John B., 3,847,975.
  - Hall, John B.; and Lala, Lekhu Kewalram, 3,847,993.
- International Harvester: *See—*
  - Cameron, Thomas M.; and Kellogg, John L., 3,847,241.
- International Harvester Company: *See—*
  - Aker, Ludwig E., 3,847,444.
  - Morkoski, James; and Garriott, Louis B., Jr., 3,847,441.
- International Paper Company: *See—*
  - D'Alessandro, Alfred C.; and May, Edwin A., 3,847,151.
- International Production Technology Corporation: *See—*
  - Lee, Robert E., Jr., 3,848,221.
- International Standard Electric Corporation: *See—*
  - Craven, George Frederick; and Hockham, George Alfred, 3,848,256.
  - Drake, Cyril Francis; and Amos, Robert Walter James, 3,847,625.
- Intersil Incorporated: *See—*
  - Rizzi, Joseph D.; and Fagan, Lloyd D., 3,848,238.
- Intille, George M., to Monsanto Company. Catalytic vinylation of aromatic compounds. 3,848,010, Cl. 260-668.00r.
- Iowa Beef Processors, Inc.: *See—*
  - Barbee, Wilford A., 3,846,869.
- Irvine, William M.: *See—*
  - Daunheimer, Lyn R.; and Irvine, William M., 3,847,646.
- Isayama, Yukio: *See—*
  - Kuroiwa, Tadaharu; Isayama, Yukio; Yokota, Akira; Kamio, Tsukasa; Kinnai, Kazuhiko; Abe, Eiichi; Kimura, Kunio; Hioki, Morihisa; and Noguchi, Hisataka, 3,847,806.
- Isbell, Joe A. Conveying and force producing means. 3,847,502, Cl. 415-92.000.
- Ise Electronics Corporation: *See—*
  - Kiyozumi, Kentaro, 3,847,114.
- Ishida, Hiroaki: *See—*
  - Kitai, Kiyoshi; Nakamura, Yukio; Ishida, Hiroaki; and Nagaoka, Shinji, 3,847,475.
- Ishikawa Tekko Kabushiki Kaisha: *See—*
  - Uchida, Yasuo, 3,847,490.
- Ital, Gunter; and Baurle, Horst, to Bosch, Robert, G.m.b.H. Precharging arrangement for a hydraulic displacement machine. 3,847,057, Cl. 91-6.500.
- Itaya, Nobushige: *See—*
  - Ohno, Nobuo; Itaya, Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Matsuo, Takashi; and Okuno, Yositosi, 3,847,944.
- Itek Corporation: *See—*
  - Hutchison, Walter A., III, 3,848,122.
- Ito, Keijiro: *See—*
  - Fujii, Seiji; Matsui, Kunio; Sato, Shigeru; Ito, Keijiro; Koizumi, Takashi; Tsuboyama, Shozo; and Watanabe, Hiroyuki, 3,848,127.
- Ito, Shigemasa: *See—*
  - Sakazume, Kaiichiro; Sakamoto, Eiichi; Mine, Kiyomitsu; Fujimori, Noboru; and Ito, Shigemasa, 3,847,613.
- Ito, Toshio: *See—*
  - Nomaguchi, Tamotsu; Sakai, Masatada; and Ito, Toshio, 3,847,534.
- Itoh, Yohnosuke; Yokota, Kozo; Watanabe, Tetsuya; and Matsui, Rokuro, to Nippon Yakin Kogyo Company Limited. Reduced pellets for making alloys containing nickel and chromium. 3,847,601, Cl. 75-130.500.
- ITT Industries, Inc.: *See—*
  - Taxil, Andre Marc Victorin; and Boucher, Raymond Claude Emile, 3,848,150.
- Ivanov, Pavel Mikhaeilovich. Antifriction composition. 3,847,826, Cl. 252-12.000.
- Ivanovic, Borislav. Continuous guidance method and apparatus for installing dip devices on circuit boards. 3,846,907, Cl. 29-626.000.
- Ivey, Herbert D.: *See—*
  - Dinsmore, Robert L.; and Ivey, Herbert D., 3,847,827.
- Iwaki, Tsutomu: *See—*
  - Fukuda, Masataro; Iwaki, Tsutomu; and Mitsumata, Tadayasu, 3,847,603.
- Iwamura, Soichi: *See—*
  - Ikeda, Hiroaki; Hirashima, Teruo; Sakai, Tetsuo; Iwamura, Soichi; Ohishi, Iwao; Fujio, Takashi; and Kamegaya, Takeo, 3,848,086.
- Iwata, Tamotu: *See—*
  - Iguchi, Shigeru; Yano, Tetsuo; and Iwata, Tamotu, 3,847,620.
- Izawa, Goro; and Nishimura, Tamio. Bromocinnamaldehyde as an insect repellent. 3,848,060, Cl. 424-333.000.
- Izord, Jean: *See—*
  - Laurent, Daniel; and Izord, Jean, 3,847,255.
- Izuo, Ryuji: *See—*
  - Sata, Toshikatsu; Nishimura, Masakatsu; and Izuo, Ryuji, 3,847,772.
- Jacaway, William A., Jr.: *See—*
  - Heady, Robert E.; and Jacaway, William A., Jr., 3,847,740.
  - Heady, Robert E.; and Jacaway, William A., Jr., 3,847,741.
- Jackson, James D.: *See—*
  - Vaughn, Charles D.; and Jackson, James D., 3,847,202.
- Jackson, Peter Frederick; and Morris, Arthur, to Imperial Chemical Industries Limited. Process for the preparation of aromatic polyesters. 3,847,873, Cl. 260-75.00r.
- Jackson, Richard S., to Roll-O-Sheets, Incorporated. Apparatus for perforating a web of flexible film. 3,847,047, Cl. 83-344.000.
- Jacobs, James W., to General Motors Corporation. Water heating system for a dishwasher. 3,847,666, Cl. 134-57.00d.
- Jacobs, Richard L., to Sherwin-Williams Company, The. Method of controlling plant growth 3-substituted lumazines. 3,847,589, Cl. 71-92.000.
- Jacobsson, Oake L. F. Bed-plant for hospitals. 3,846,853, Cl. 5-60.000.
- Jacques, Jean: *See—*
  - Viterbo, Rene; and Jacques, Jean, 3,848,030.
- Jahns, Erwin: *See—*
  - Dederer, Roland; Jahns, Erwin; Maier, Herbert; Moser, Joachim; and Vierling, Karl-Heinz, 3,847,470.
- Jamieson, Joseph, to Parker, Louis W. Silicon controlled rectifier type inverter for electric motors. 3,848,166, Cl. 318-227.000.
- Jamrogowicz, Harry F.: *See—*
  - Sheehan, Richard W.; Parlin, David B.; Jamrogowicz, Harry F.; and Patterson, John A., 3,846,968.
- Janiak, Stefan; and Rohr, Otto, to Ciba-Geigy AG. Benzimidazole compounds and pesticidal preparations containing them. 3,847,932, Cl. 260-309.200.
- Jarema, Chester P.: *See—*
  - Niebylski, Leonard M.; and Jarema, Chester P., 3,847,591.
- Jarman, Ronald D., to Dover Corporation. Filter unit having a generally cylindrical filter element supported on bearings. 3,847,817, Cl. 210-297.000.
- Jarrell, William Grant, to Petrolite Corporation. Purification of petroleum distillates containing naphthenic acids. 3,847,774, Cl. 204-190.000.
- Jasinski, Stanley C., to Timberjack Machines Limited. Control valve. 3,847,060, Cl. 91-453.000.
- Jeanmart, Claude: *See—*
  - Cotrel, Claude; Jeanmart, Claude; and Messer, Mayer Naoum, 3,847,921.
- Jefferson Chemical Company, Inc.: *See—*
  - Moss, Philip Hotchkiss, 3,847,992.
- Jeffries, William G.: *See—*
  - Houser, Lloyd; and Jeffries, William G., 3,847,584.
- Jemal, Emile Joseph. Process of preparing molybdenum trioxide by sublimation. 3,848,050, Cl. 423-59.000.
- Jen, Dixson Teh-Chao: *See—*
  - Lotan, Amram Zvi; and Jen, Dixson Teh-Chao, 3,848,233.
- Jenaer Glaswerk Schott & Gen.: *See—*
  - Dislich, Helmut; Hinz, Paul; and Kaufmann, Reinhard, 3,847,583.
- Jencks, Charles L.; and Murphy, Frank H., to General Electric Company. Electric circuit breaker with auxiliary trip mechanism. 3,848,102, Cl. 200-153.00l.
- Jenkins, Jonathan Moubray, to Unigate Limited. Method of constructing a multi-plate electrode structure. 3,846,879, Cl. 29-2.000.
- Jennings, Roy E., to Royal Seating Corporation. Chair table arm support. 3,847,432, Cl. 297-160.000.
- Jerchel, Dietrich: *See—*
  - Ost, Walter; Thomas, Klaus; and Jerchel, Dietrich, 3,847,922.
- Jett, Bernard Holton: *See—*
  - Daubenspeck, John M.; and Jett, Bernard Holton, 3,847,640.
- Jodon Engineering Associates AG: *See—*
  - Antes, Gregor, 3,847,469.
- Johansson, Odd Olov. Apparatus for determination of courses on nautical charts etc. 3,846,913, Cl. 33-76.00v.
- Johns-Manville Corporation: *See—*
  - Semprevivo, Ralph; Andrews, Donald W.; Clark, Richard L.; and French, David W., 3,847,418.
  - Zeller, Robert Dale, 3,847,333.
- Johnsen, Carsten Ingeman. Fuel cell using electromagnetic waves. 3,847,670, Cl. 136-86.00r.
- Johnson & Johnson, mesne: *See—*
  - Poncy, George W., 3,847,280.
- Johnson, Carl W., to Ferry-Morse Seed Company. Method of and apparatus for making seed tape. 3,846,956, Cl. 53-28.000.
- Johnson, Marvin M.; and Tabler, Donald C., to Phillips Petroleum Company. Hydrogenation. 3,847,946, Cl. 260-329.300.
- Johnson, Paul E.: *See—*
  - Caillouette, James C.; and Johnson, Paul E., 3,847,157.
- Johnson, Robert W., Jr.: *See—*
  - Shepherd, Lawrence H., Jr.; Kobetz, Paul; Laran, Roy J.; and Johnson, Robert W., Jr., 3,847,998.
- Jones, Carl T.: *See—*
  - Martin, Robert B.; and Jones, Carl T., 3,848,193.
- Jones, Charles: *See—*
  - Chen, Hsin S.; and Jones, Charles, 3,847,514.
- Jones, John Leslie, Sr. Process for manufacture of integral diaper waist band fastener. 3,847,702, Cl. 156-265.000.
- Jones, Shelton J.: *See—*
  - Powers, Thomas J.; and Jones, Shelton J., 3,847,724.
- Jonke, Joseph L.; and Clarke, Richard N., to Gulton Industries, Inc. Pressure transducer. 3,848,180, Cl. 323-51.000.
- Jorgensen, Karl-Gunnar, to Logma Aktiebolag. Tree harvesting apparatus. 3,847,192, Cl. 144-34.00e.
- Joubert, Jack: *See—*
  - Masson, Andre; and Joubert, Jack, 3,848,119.
- Journee, Paul: *See—*
  - Baut, Jacques; and Journee, Paul, 3,846,864.
- Judd, Claude I.: *See—*
  - Drukker, Alexander E.; and Judd, Claude I., 3,847,904.
- Julia, Marc: *See—*
  - Chabardes, Pierre; Julia, Marc; and Menet, Albert, 3,848,000.
- Junger, Hans: *See—*

  - Seiler, Claus-Dieter; Vahlensieok, Hans-Joachim; and Junger, Hans, 3,847,860.
- Jurschak, John. Flow meter. 3,847,020, Cl. 73-228.000.
- K. & M. Rubber Co.: *See—*
  - Meier, Ernie A.; and Micallef, Alfred M., 3,847,199.
- Kabushiki Kaisha Daini Seikosha: *See—*
  - Masui, Yasuyuki, 3,846,975.
- Kabushiki Kaisha Suwa Seikosha: *See—*
  - Kurita, Hirohisa, 3,846,973.
- Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
  - Araki, Hidejiro; Katoh, Takashi; and Otani, Susumu, 3,846,870.
- Kadi-Ogly, Ibragim Akhmedovich: *See—*
  - Shapiro, Aron Beniaminovich; Chernyavsky, Vladimir Pavlovich; and Kadi-Ogly, Ibragim Akhmedovich, 3,848,149.
- Kahovcova, Jitka: *See—*
  - Dolejs, Ladislav; Machkova, Zuzana; Beran, Pavel; Kahovcova, Jitka; Slama, Karel; and Sorm, Frantisek, 3,847,907.
- Kaiser Aluminum & Chemical Corporation: *See—*
  - Foye, John J., 3,847,206.
  - Kelly, Allan C., 3,848,055.
- Kaiser, Donald Bernard, to RCA Corporation. Method of aligning a laser tube within an envelope. 3,847,703, Cl. 156-294.000.
- Kali-Chemie Aktiengesellschaft: *See—*
  - Becher, Wilfried; Massonne, Joachim; and Pohlmeyer, Wilhelm, 3,848,064.
- Kalina, Theodore; and Moore, Roger E., to Exxon Research and Engineering Company. Catalytic coal hydrogasification process. 3,847,567, Cl. 48-202.000.
- Kalish, Harold. Automotive sun screen frame. 3,847,201, Cl. 160-105.000.
- Kamakura, Toshio: *See—*
  - Nishina, Yoshio; Kono, Isao; Kamakura, Toshio; Nakamura, Hayashi; Fujimori, Noboru; and Sakamoto, Eiichi, 3,847,621.
- Kamata, Yukio: *See—*
  - Sekine, Kunio; Kamata, Yukio; and Yamaishi, Yoshio, 3,847,779.
- Kamegaya, Takeo: *See—*
  - Ikeda, Hiroaki; Hirashima, Teruo; Sakai, Tetsuo; Iwamura, Soichi; Ohishi, Iwao; Fujio, Takashi; and Kamegaya, Takeo, 3,848,086.
- Kamienski, Conrad W.; and Eastham, Jerome F., to Gulf Resource & Chemical Corporation. Method of preparing polymers utilizing as catalysts hydrocarbon-soluble complexes of an organomagnesium compound with a group I organomethallic compound. 3,847,883, Cl. 60-83.700.
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  - Kuroiwa, Tadaharu; Isayama, Yukio; Yokota, Akira; Kamio, Tsukasa; Kinnai, Kazuhiko; Abe, Eiichi; Kimura, Kunio; Hioki, Morihisa; and Noguchi, Hisataka, 3,847,806.
- Kanarek, Alexander David. Nactivation of myxoviruses and method of preparing a vaccine therefrom. 3,847,737, Cl. 195-1.400.
- Kandler, Joachim: *See—*
  - Dany, Franz-Josef; Wortmann, Joachim; Kandler, Joachim; and Laubner, Jurgen, 3,847,843.
- Kaneko, Shiro; Masuda, Sakae; Ujihara, Motohiro; and Uchida, Yosuke, to Fuji Photo Film Co., Ltd. Process and apparatus for gelling a sol-form substance for a photographic light-sensitive element and for melting same. 3,847,616, Cl. 96-94.00r.
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- Kansai Paint Co., Ltd.: *See—*
  - Asada, Kiyohiko, 3,847,846.
- Kansai Paint Company, Limited: *See—*
  - Maruyama, Tsutomu, 3,847,768.
- Kappei, Freidhelm. Apparatus for anchoring an exchangeable battery box in the carriage of a battery driven vehicle. 3,847,242, Cl. 180-68.500.
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  - Okazaki, Tatsuo; Okazaki, Toshio; Karasawa, Nobuko; and Arai, Masako, 3,847,787.
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  - Grane, Gunnar; and Kareby, Erik, 3,847,498.
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  - Dislich, Helmut; Hinz, Paul; and Kaufmann, Reinhard, 3,847,583.
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  - Archer, David H.; and Keairns, Dale L., 3,847,563.
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  - Whitfield, Carroll J.; and Whitesides, Jack C., 3,847,225.
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  - Titus, Robert J.; and Kelly, William J., 3,848,155.
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- Kelsey-Hayes Company: *See—*
  - Good, William E.; and Digrasso, Leonard, 3,847,323.
  - Scharlack, Ronald S., 3,847,446.
- Kemmerling, Robert A.: *See—*
  - Reim, Thomas E.; Pollack, Jerry J.; and Kemmerling, Robert A., 3,848,135.
- Kempter, Fritz Erdmann: *See—*
  - Sturm, Hans-Juergen; Kempter, Fritz Erdmann; and Armbrust, Herbert, 3,847,974.
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  - Goodfellow, Robert D., 3,847,235.
- Kennecott Copper Corporation: *See—*
  - Carey, Curtis D.; and Platzke, Ronald N., 3,848,069.
- Kennedy, Carl D.: *See—*
  - Clark, Charles R.; Gregory, M. Duane; Kerfoot, Oliver C.; Veatch, Fred C.; Krehbiel, Delmar D.; and Kennedy, Carl D., 3,847,823.
- Kennicutt, Robert B.; and Mounts, William T., to Caterpillar Tractor Company. Tractor cab mounting apparatus. 3,847,492, Cl. 403-224.000.
- Kent, Frederick M.: *See—*
  - Sokol, Michael; and Kent, Frederick M., 3,847,482.
- Keppel, Wolf-Dieter, to Mannesmann & Keppel Electronics. Fluid flow regulators. 3,847,178, Cl. 137-515.700.
- Kerfoot, Oliver C.: *See—*
  - Clark, Charles R.; Gregory, M. Duane; Kerfoot, Oliver C.; Veatch, Fred C.; Krehbiel, Delmar D.; and Kennedy, Carl D., 3,847,823.
- Kerr, Robert M. Puller for bearing carrier. 3,846,898, Cl. 29-259.000.
- Kerrenneur, Alain Rogar: *See—*
  - Delgendre, Jacques Claude; Kerrenneur, Alain Rogar; and Berton, Georges Albert, 3,847,547.
- Kerstetter, Donald R.: *See—*
  - Bowes, Robert J.; and Kerstetter, Donald R., 3,848,154.
- Keturi, Raymond C.: *See—*
  - Sandstrom, Wayne R.; and Keturi, Raymond C., 3,846,946.
- Keuro Maschinenbau Gesellschaft mit beschrankter Haftung & Co.: *See—*
  - Stolzer, Paul, 3,847,048.
- Kewanee Oil Company: *See—*
  - Malak, Thomas Paul, 3,847,760.
- Kheifets, Rafail Efimovich: *See—*
  - Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,847,272.
- Kidde, Walter, & Company Inc.: *See—*
  - Riordan, William J., 3,847,533.
- Kienzle Apparate GmbH: *See—*

  - Kelch, Heinz; and Mueller, Helmuth, 3,848,113.
- Kiko, Frederick John, to Bell Telephone Laboratories, Incorporated. Differential amplifier with dynamic biasing. 3,848,195, Cl. 330-30.00d.
- Kilin, Viktor Evdokimovich: *See—*
  - Klushin, Nikolai Alexandrovich; Maslakov, Petr Avramovich; Kilin, Viktor Evdokimovich; Yankovsky, Oleg Alexandrovich; and Galimov, Anas Galimovich, 3,847,232.
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- Kimberly-Clark Corporation: *See—*
  - Mattina, Charles F.; and Selke, William A., 3,847,164.
- Kimura, Kunio: *See—*
  - Kuroiwa, Tadaharu; Isayama, Yukio; Yokota, Akira; Kamio, Tsukasa; Kinnai, Kazuhiko; Abe, Eiichi; Kimura, Kunio; Hioki, Morihisa; and Noguchi, Hisataka, 3,847,806.
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  - Forbess, Dennis L.; Kindler, William A., Jr.; and Marti, Rueben A., 3,848,027.
- Kine, Benjamin B.: *See—*
  - Haag, Thomas H.; and Kine, Benjamin B., 3,847,857.
- King, Joseph H. Single shaft sulky. 3,847,408, Cl. 280-63.000.
- Kinjerski, Theodore Andrew: *See—*
  - Van der Meulen, Sjaak Johan; Weizenbach, Bauke; Lee, Allan Henry; and Kinjerski, Theodore Andrew, 3,847,594.
- Kinnai, Kazuhiko: *See—*
  - Kuroiwa, Tadaharu; Isayama, Yukio; Yokota, Akira; Kamio, Tsukasa; Kinnai, Kazuhiko; Abe, Eiichi; Kimura, Kunio; Hioki, Morihisa; and Noguchi, Hisataka, 3,847,806.
- Kinoshita, Kazuhisa: *See—*
  - Mimino, Tohru; Kinoshita, Kazuhisa; and Hattori, Keisuke, 3,847,600.
- Kipp, Kevin K.: *See—*
  - Oswitch, Stanley; and Kipp, Kevin K., 3,848,045.
- Kipp, Michael Allen: *See—*
  - Collura, Peter C.; and Kipp, Michael Allen, 3,847,282.
- Kirk, Clair Francis. Wire gate latch. 3,847,425, Cl. 292-247.000.
- Kishimoto, Akira: *See—*
  - Hirata, Sadao; Yamada, Muneki; and Kishimoto, Akira, 3,847,728.
- Kishino, Shigeo; Yamada, Yasuo; Kurashashi, Yoshio; and Kume, Toyohiko, to Bayer Aktiengesellschaft. O-alkyl-o-cyclohexyl-s-alkyl-, haloalkyl- or alkenyl-phosphorothiolates. 3,848,031, Cl. 260-956.000.
- Kistner, John F., to Minnesota Mining and Manufacturing Company. Impregnated materials for leak prevention. 3,847,722, Cl. 161-109.000.
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  - Kono, Hisashi; Terai, Kenji; Niwa, Takazumi; Kitajima, Masahiko; Sawada, Morihiko; Ninomiya, Kohei; and Nakai, Shigeyuki, 3,848,016.
- Kitamura, Kiyoshi: *See—*
  - Kominami, Naoya; and Kitamura, Kiyoshi, 3,848,013.
- Kitamura, Shigeyoshi: *See—*
  - Ohno, Nobuo; Itaya, Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Matsuo, Takashi; and Okuno, Yositosi, 3,847,944.
- Kitano, Mitsuru: *See—*
  - Asano, Tetsumasa; Soga, Takaaki; and Kitano, Mitsuru, 3,848,169.
- Kiyozumi, Kentaro, to Ise Electronics Corporation. Apparatus for vapor deposition and ion implantation. 3,847,114, Cl. 118-49.001.
- Klasek, Frank A.: *See—*
  - Dalal, Ajay P.; Elarde, Paul F.; and Klasek, Frank A., 3,847,700.
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- Klockner-Werke AG: *See—*
  - Meschonat, Gunter; and Schungel, Peter, 3,847,041.
- Kloczewski, Harold A., to Grace, W. R., & Company. Method of producing a screen printable photocurable solder resist. 3,847,767, Cl. 204-159.140.
- Kloth, James Albert: *See—*
  - Parsons, Stuart L.; and Kloth, James Albert, 3,846,894.
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  - Acton, Hugh C.; Knapp, Robert L.; Van Ryn, Arthur L.; and Hozeski, Kenneth W., 3,847,433.
- Knapsack Aktiengesellschaft: *See—*
  - Dany, Franz-Josef; Wortmann, Joachim; Kandler, Joachim; and Laubner, Jurgen, 3,847,843.
- Knight, George R.: *See—*
  - Burt, Glenn R.; Condo, Albert C.; and Knight, George R., 3,846,989.
- Knoll A.G. Chemische Fabriken: *See—*
  - Bub, Oskar; Friedrich, Ludwig; Hofmann, Hans-Peter; Kreiskott, Horst; and Zimmermann, Frank, 3,847,905.
- Knowles, Philip; Marshall, Stuart Malcolm; Pain, David Lord; and Wooldridge, Kenneth Robert Harry, to May & Baker Limited. Triazolopyrimido isoquinolinone derivatives. 3,847,919, Cl. 260-256.40f.
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- Kobayashi, Yoshio: *See—*
  - Takahashi, Shizuo; Kobayashi, Yoshio; and Hosogai, Toshio, 3,847,708.
- Kobe, Inc.: *See—*
  - Brown, Francis Barton; and Erickson, John W., 3,847,512.
  - Erickson, John W.; and Budrys, Vitolis, 3,847,327.
- Kobeski, Walter D.: *See—*
  - Lange, Robert G.; and Kobeski, Walter D., 3,847,635.
- Kobetz, Paul: *See—*
  - Shepherd, Lawrence H., Jr.; Kobetz, Paul; Laran, Roy J.; and Johnson, Robert W., Jr., 3,847,998.
- Koch, Gilbert E.: *See—*
  - Hoffman, Daniel S.; and Koch, Gilbert E., 3,847,119.
- Kochling, Josef: *See—*
  - Gardner, John Nicholson; and Kochling, Josef, 3,847,999.
- Koehring Company: *See—*
  - Mistarz, Robert J., 3,847,014.
- Koenig, Karl-Heinz: *See—*
  - Zeeh, Bernd; Rohr, Wolfgang; Koenig, Karl-Heinz; and Fischer, Adolf, 3,847,931.
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  - Zirnstein, Peter; Schebiella, Erwin; Koerner, Siegfried; Weise, Joachim; and Mulansky, Horst, 3,847,077.
- Kohn, Gustave K.: *See—*
  - Kohn, Gustave K.; and Brown, Melancthon S., 3,847,951.
- Kohn, Gustave K.; and Brown, Melancthon S.; deceased (by Kohn, Gustave K.; special administrator), to Chevron Research Company. Insecticidal N-thio-substituted carbamates of dihydrobenzofuranols. 3,847,951, Cl. 260-346.200.
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  - Fujii, Seiji; Matsui, Kunio; Sato, Shigeru; Ito, Keijiro; Koizumi, Takashi; Tsuboyama, Shozo; and Watanabe, Hiroyuki, 3,848,127.
- Kolbach, Charles G., to Scott Paper Company. Apparatus for forming fibrous pads. 3,846,871, Cl. 19-148.000.
- Kolbinger, Rudolf: *See—*
  - Koenig, Karl-Heinz; Kolbinger, Rudolf; and Fischer, Adolf, 3,847,971.
- Kolosy, Erno, to Aluterv Aluminiumipari Tervezo Vallalat. Busbar system for electrolysis cells. 3,847,782, Cl. 204-267.000.
- Komatsu, Hideo: *See—*
  - Hagiwara, Yoshichi; Sato, Katunobu; Komatsu, Hideo; Yuguchi, Sadao; Yoshizumi, Nobuo; Nagai, Kenya; Takeda, Hiromu; and Ohnishi, Sei-Ichiro, 3,848,044.
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- Kondo, Eiichi; and Hasegawa, Tetsuo, to Canon Kabushiki Kaisha. Photosensitive material for electrophotography. 3,847,605, Cl. 96-1.500.
- Konen, Dolores A.: *See—*
  - Silbert, Leonard S.; Pfeefer, Philip E.; and Konen, Dolores A., 3,847,956.
- Konen, Inc.: *See—*
  - Konen, Ivan P., 3,847,197.
- Konen, Ivan P., to Konen, Inc. Tire bead demounting apparatus. 3,847,197, Cl. 157-1.170.
- Koninklijke Nederlandsche Hoogovens en Staalfabrieken N.V.: *See—*
  - Schokkenbroek, Jan. 3,847,592.
- Konishiroku Photo Industry Co. Ltd.: *See—*
  - Habu, Teiji; Yoshida, Kyusaku; and Takahashi, Kazuo, 3,847,838.
  - Nishina, Yoshio; Kono, Isao; Kamakura, Toshio; Nakamura, Hayashi; Fujimori, Noboru; and Sakamoto, Eiichi, 3,847,621.
  - Sakazume, Kaiichiro; Sakamoto, Eiichi; Mine, Kiyomitsu; Fujimori, Noboru; and Ito, Shigemasa, 3,847,613.
- Kono, Hisashi; Terai, Kenji; Niwa, Takazumi; Kitajima, Masahiko; Sawada, Morihiko; Ninomiya, Kohei; and Nakai, Shigeyuki, to Ube Industries, Ltd. Production of cracked gases from liquid hydrocarbon. 3,848,016, Cl. 260-683.00r.
- Kono, Isao: *See—*

  - Nishina, Yoshio; Kono, Isao; Kamakura, Toshio; Nakamura, Hayashi; Fujimori, Noboru; and Sakamoto, Eiichi, 3,847,621.
- Kopf, David, Systems: *See—*
  - Kopf, J. David, 3,847,809.
- Kopf, J. David, to Kopf, David, Systems. Proportioning system. 3,847,809, Cl. 210-96.000.
- Kopp, Reiner H.; and Holland, Heino H., to Brinkmann Instruments, Inc. Apparatus for concentrating laboratory specimens by evaporation. 3,847,200, Cl. 159-16.00r.
- Koppers Company, Inc.: *See—*
  - Foster, Anthony, 3,847,093.
- Koratron Company, Inc.: *See—*
  - Englert, Robert D.; and Berriman, Lester P., 3,846,845.
- Kordesch, Karl V.; and Clark, Milton B., to Union Carbide Corporation. Hydrazine concentration sensing cell for fuel cell electrolyte. 3,847,673, Cl. 136-86.00b.
- Korkonosov, Valentin Petrovich: *See—*
  - Pozdnikov, Vladimir Nikolaevich; Sazonov, Oleg Leonidovich; Taxar, Iegoshua Mikhailovich; Tesnavs, Edgar Rikhardovich; Yanushkovsky, Vladimir Alexandrovich; Gavrilov, Alexandr Pavlovich; Korkonosov, Valentin Petrovich; Peresypkin, Alexei Vasilievich; and Sapovalov, Eduard Parfentievich, 3,848,131.
- Korpiun, Olaf: *See—*
  - Hetzel, Eckhard; and Korpiun, Olaf, 3,847,964.
- Koshar, Robert J., to Minnesota Mining and Manufacturing Company. Fluoroaliphaticthiomethylsiloxanes. 3,847,961, Cl. 260-448.0rn.
- Koyama, Mitsuo: *See—*
  - Onda, Eiichi; Koyama, Mitsuo; and Nakagawa, Tadashi, 3,847,476.
- Kozacka, Frederick J.; and Salzer, Erwin, to Case-Shawmut Company, The. Fluid-tight electric fuse. 3,848,215, Cl. 337-246.000.
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- Kozoman, Frank E.: *See—*
  - Smith, Ralph E.; and Kozoman, Frank E., 3,847,749.
- Kozorezov, Konstantin Isaakovich; Semchenko, Vitaly Vasilievich; and Mikhailu, Georgy Ivanovich. Explosive circuit-breaker. 3,848,100, Cl. 200-61.080.
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- Kramer, Gunter; and Glaser, Helmut, to Varta Aktiengesellschaft. Alkaline accumulator operated in gas-tightly sealed condition. 3,847,668, Cl. 136-6.00g.
- Kramer, Louis E. Internal combustion engine. 3,847,124, Cl. 123-51.00b.
- Krauss-Maffei Aktiengesellschaft: *See—*
  - Bielfeldt, Friedrich Bernd; and Richardsen, Richard Flohrs, 3,847,525.
  - Zurek, Rudolf; and Modersohn, Dieter, 3,847,256.
- Krebs, William M.: *See—*
  - Haddad, Ihsan A.; and Krebs, William M., 3,847,777.
- Krehbiel, Delmar D.: *See—*
  - Clark, Charles R.; Gregory, M. Duane; Kerfoot, Oliver C.; Veatch, Fred C.; Krehbiel, Delmar D.; and Kennedy, Carl D., 3,847,823.
- Kreider, Benjamin A.; and Matalsky, William J., to Abar Corporation. Driving machanism for vacuum electric furnaces. 3,847,539, Cl. 432-121.000.
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- Kreiskott, Horst: *See—*
  - Bub, Oskar; Friedrich, Ludwig; Hofmann, Hans-Peter; Kreiskott, Horst; and Zimmermann, Frank, 3,847,905.
- Krembel, Frank, Jr., to Columbia Marking Tools, Inc. Pneumatically operated marking tool. 3,847,078, Cl. 101-3.00r.
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- Kripl, Maria A.: *See—*
  - Kripl, Josef F., 3,848,157.
- Krone, Donald R.: *See—*
  - Krone, Russell R.; Krone, Donald R.; Buchanan, George E.; and Noyes, James F., 3,847,302.
- Krone GmbH: *See—*
  - Marko, Hans, 3,848,096.
- Krone, Russell R.; Krone, Donald R.; Buchanan, George E.; and Noyes, James F. Gasoline dispensing system. 3,847,302, Cl. 222-14.000.
- Krosnar, Thomas Charles: *See—*
  - Gasson, Edward James; Marrian, Stanley Frederic; and Krosnar, Thomas Charles, 3,847,965.
- Kroth, Neil W.; Lohbauer, Kenneth R.; and Scheidt, James E., to Caterpillar Tractor Company. Low effort, proportional control valve. 3,847,180, Cl. 137-596.130.
- Krueger, Dennis L., to Minnesota Mining and Manufacturing Company. Separator for removing a dispersed liquid phase from a continuous liquid phase. 3,847,821, Cl. 210-488.000.
- Kruse, Fritz, to Wohlenberg, H., Kommanditgesellschaft. Device for exact angle-positioning of paper piles in paper cutters. 3,847,386, Cl. 271-171.000.
- Kryder, Robert A.: *See—*
  - Parker, William Andrew; and Kryder, Robert A., 3,848,123.
- Kuerten, Heribert; and Nagel, Otto, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Method and apparatus for mixing liquids. 3,847,375, Cl. 259-4.000.
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- Kukhar, Vasily Valentinovich: *See—*
  - Blinov, Boris Vladimirovich; and Kukhar, Vasily Valentinovich, 3,847,602.
- Kulczycki, Stanley N.; and Betts, Edward E., to McDonnell Douglas Corporation. Track fastener. 3,847,344, Cl. 248-503.000.
- Kulnevich, Vladimir Grigorievich: *See—*
  - Smirnov, Vladimir Alexandrovich; Kulnevich, Vladimir Grigorievich; Soltovets, Galina Nikolaevna; and Semchenko, Dmitry Platonovich, 3,847,952.
- Kumagai, Henry Yasuo, to Western Electric Company, Incorporated. Article of manufacture having a film comprising nitrogen-doped beta tantalum. 3,847,658, Cl. 117-201.000.
- Kume, Toyohiko: *See—*
  - Kishino, Shigeo; Yamada, Yasuo; Kurashashi, Yoshio; and Kume, Toyohiko, 3,848,031.
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- Kupper, Walter E.: *See—*
  - Hall, Donivan L.; and Kupper, Walter E., 3,847,238.
- Kuramoto, Nobuyuki: *See—*
  - Motani, Kensuke; Nakahara, Akihiko; and Kuramoto, Nobuyuki, 3,847,841.
- Kuraray Co., Ltd.: *See—*
  - Tada, Rentaro; Sato, Kenji; and Nishioka, Kinichi, 3,847,845.
- Kurashashi, Yoshio: *See—*
  - Kishino, Shigeo; Yamada, Yasuo; Kurashashi, Yoshio; and Kume, Toyohiko, 3,848,031.
- Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
  - Onozuka, Mitsuo; Nomoto, Koki; Iida, Kinji; and Morita, Tomijiro, 3,848,070.
- Kurita, Hirohisa, to Kabushiki Kaisha Suwa Seikosha. Automatic winding watch with bridge plate offset to receive automatic winding mechanism. 3,846,973, Cl. 58-82.00r.
- Kuroiwa, Tadaharu; Isayama, Yukio; Yokota, Akira; Kamio, Tsukasa; Kinnai, Kazuhiko; Abe, Eiichi; Kimura, Kunio; Hioki, Morihisa; and Noguchi, Hisataka, to Industrial Science and Technology, Director General of the Agency of. Method for treating sludge formd in city sewage systems. 3,847,806, Cl. 210-45.000.
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  - Fustukian, David A. W.; Kushnir, Bud W.; Norris, Leon F.; and Fraser, Robert W., 3,847,680.
- Kusters, Eduard, Maschinenfabrik: *See—*
  - Schneppenhorst, Ernst; and Leifeld, Ferdinand, 3,848,039.
- Kustom Electronics, Inc.: *See—*
  - Weber, Charles L., 3,848,199.
- KVB Engineering, Inc.: *See—*
  - Guth, Eugene Daniel; and Diaz, Arthur F., 3,847,800.
- Kyle Incorporated: *See—*
  - Criner, Joseph C., 3,847,005.
- Kyowa Hakko Kogyo Co., Ltd.: *See—*
  - Suzuki, Takeo; Tomita, Fusao; Nakano, Hirofumi; and Honda, Haruo, 3,847,747.
- La Bate, James B. Adjustable self wedging devices for side boards in ingot molds. 3,847,343, Cl. 249-202.000.
- La Porte Industries Limited: *See—*
  - Williams, Selwyn Donald; Leaver, John Philip; and Abbott, David, 3,847,830.
- Labana, Santokh S.; and Theodore, Ares N., to Ford Motor Company. Thermoset molding powders employing glycidyl methacrylate-functional polymers and monomeric anhydride crosslinking agents and molding thereof. 3,847,863, Cl. 260-42.180.
- Laberinti, Cesare: *See—*
  - Ghersa, Piero; Torghele, Flavio; and Laberinti, Cesare, 3,847,693.
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  - Brana Fernandez, Miguel; and Roldan Martinez, Christobal, 3,847,941.
- Lackner, Heinrich, to Vianova-Kunstharz, A.G. Water soluble resins and process for the preparation thereof. 3,847,849, Cl. 260-19.0ep.
- Lahm, Heinrich: *See—*
  - Foll, Gerhard; and Lahm, Heinrich, 3,846,880.
- Laine, Bernard Maurice: *See—*
  - Champagnat, Alfred; and Laine, Bernard Maurice, 3,847,739.
- Lake, John H.: *See—*
  - Mallander, Richard G.; and Lake, John H., 3,847,023.
- Lala, Lekhu Kewalram: *See—*
  - Hall, John B.; and Lala, Lekhu Kewalram, 3,847,993.
- Lalancette, Jean-Marc, to Ventron Corporation. Methanation processes. 3,847,963, Cl. 260-449.00m.
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- Lambert, Harry, to Barton-King Systems Corporation. Structural self-supporting system. 3,846,944, Cl. 52-758.00r.
- Lambertoni, Oreste, to Pages Holding S.A. Melting equipment for melting snow and ice. 3,847,137, Cl. 126-271.20a.
- Lamping, Harold D.: *See—*
  - Hermes, Walter L.; Corwin, Howard R.; Berkowitz, Murray; and Lamping, Harold D., 3,847,517.
- Lamy, Jacques Edouard, to Doris, C. G., (Compagnie Generale pour les Development Operationnels des Richesses Sous Marines). Swell damper. 3,846,988, Cl. 61-3.000.
- Landauer, LeRoy; Blakslee, Edward Leroy; Abraham, Benjamin Ichak; and Stieglitz, Henry Gilbert, to American Can Company. Roll-through method and apparatus for electrocoating can ends. 3,847,786, Cl. 204-300.000.
- Landriscina, Vincent James, Jr.: *See—*
  - Marchitto, Michael James; and Landriscina, Vincent James, Jr., 3,847,824.
- Lange, Robert G.; and Kobeski, Walter D., to United States Gypsum Company. Thixotropic cementitious composition and process. 3,847,635, Cl. 106-110.000.
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  - Kendall, Kenneth J.; Telleri, Carmen M.; and Laniewski, Leonard W., 3,848,246.
- Lapkin, Milton: *See—*
  - Fuzesi, Stephen; Lapkin, Milton; and Polak, Roger J., 3,847,844.
- Lappin, Terry A.: *See—*
  - Ridgway, John A., Jr.; Lappin, Terry A.; Benjamin, Benny Moses; Corns, Joseph B.; and Akin, Cavit, 3,847,750.
- Laran, Roy J.: *See—*
  - Shepherd, Lawrence H., Jr.; Kobetz, Paul; Laran, Roy J.; and Johnson, Robert W., Jr., 3,847,998.
- Largman, Theodore; and Stone, Herman, to Allied Chemical Corporation. Polyethylene terephthalate. 3,847,861, Cl. 260-40.00r.
- Laridon, Urbain Leopold; Delzenne, Gerard Albert; and Peeters, Hugo Karel, to Gevaert-Agfa N.V. Photopolymerisation of ethylenically unsaturated organic compounds. 3,847,610, Cl. 96-35.100.
- Latos, Edwin J., to Universal Oil Products Company. Working of non-ferrous metals. 3,847,828, Cl. 252-56.00r.
- Laubner, Jurgen: *See—*
  - Dany, Franz-Josef; Wortmann, Joachim; Kandler, Joachim; and Laubner, Jurgen, 3,847,843.
- Laue, Wolfgang; Schreiber, Eckehard; and Heyenga, Friedrich, to Gewerkschaft Victor Chemische Werke, Firma. Process for preparing concentrated fluorosilicic acid. 3,848,061, Cl. 423-341.000.
- Laurent, Daniel; and Izord, Jean. Bridge connector for phase conductor of current collecting system. 3,847,255, Cl. 191-38.000.
- Laurie, Kenneth A.: *See—*
  - Hale, Martin M.; and Laurie, Kenneth A., 3,848,203.
- Laurion, Francis R. Spoke wheel and wheel ornament. 3,847,443, Cl. 301-37.00r.
- Lavik, Melvin T.; and Hubbell, Ronald D., to Midwest Research Institute. Partially carbonized organic polymers as matrices for self-lubricating films and composites. 3,847,825, Cl. 252-12.000.
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- Lazzarotti, James: *See—*
  - Wojtowicz, Edward A.; Lazzarotti, James; Hunter, James R.; and Rodkey, Robert W., 3,847,383.
- Le Parquier, Guy: *See—*
  - Genuist, Jean; and Le Parquier, Guy, 3,848,253.
- Lear Siegler, Inc.: *See—*
  - Masser, Lloyd D., 3,847,442.
- Leaver, John Philip: *See—*
  - Williams, Selwyn Donald; Leaver, John Philip; and Abbott, David, 3,847,830.
- Lebow, Stanley Morris: *See—*
  - Rafe, Samuel Joseph; Burruss, Robert Page, Jr.; Lebow, Stanley Morris; and Callahan, Stephen Phillips, 3,847,317.
- Leder, Frederic; Savage, David W.; and Shrier, Adam L., to Exxon Research and Engineering Company. Method and composition for removing acidic contaminants from gases. 3,848,057, Cl. 423-223.000.
- Lee, Allan Henry: *See—*
  - Van der Meulen, Sjaak Johan; Weizenbach, Bauke; Lee, Allan Henry; and Kinjerski, Theodore Andrew, 3,847,594.
- Lee, Fred S.; and Vysniauskas, Jonas K., to Honeywell Information Systems, Inc. Magnetic field coil assembly for a magnetic bubble domain device. 3,848,209, Cl. 336-188.000.
- Lee, Pedro: *See—*
  - Allmon, Dwight George; Lee, Pedro; and Coker, Charles Walter, Jr., 3,848,251.
- Lee, Raymond, Organization, Inc., The: *See—*
  - Harding, Carol, 3,847,575.
  - Therrien, John A., 3,847,352.
  - Vertrees, Warren J., 3,846,859.
- Lee, Robert E., Jr., to International Production Technology Corporation. Contact assembly utilizing flexible contacts for pins of integrated circuits. 3,848,221, Cl. 339-74.00r.
- Leeds and Micallef: *See—*
  - Micallef, Lewis A., 3,847,313.
- Lehner, Alphonse C.; and Boeye, Paul E., to Liberty Carton Co. Display container for toys. 3,847,276, Cl. 206-45.140.
- Leibenzon, Mikhail Grigorievich: *See—*
  - Andreev, Sergei Vasilievich; Leibenzon, Mikhail Grigorievich; Trushin, Jury Petrovich; and Luzgin, Mikhail Sergeevich, 3,847,113.
- Leibler, Jerome E.; Bloch, Carl J.; Preston, Marvin, IV; and Weiser, Mark D., to Omnitext, Inc. Interpretive display processor. 3,848,232, Cl. 340-172.500.
- Leifeld, Ferdinand: *See—*
  - Schneppenhorst, Ernst; and Leifeld, Ferdinand, 3,848,039.
- Leis, Arthur F. Stock feeder. 3,846,997, Cl. 72-6.000.
- Leitz, Ernst, GmbH: *See—*
  - Broemer, Heinz; and Meinert, Norbert, 3,847,624.
- Lemke, Arthur A., to FMC Corporation. Method and apparatus for treating waste material. 3,847,802, Cl. 210-7.000.
- Lemond, Robert H. Shower head additive dispenser. 3,847,354, Cl. 239-317.000.
- LeNay, Tom W.; and Hadden, Donald L., to Baker Industries, Inc. Test and integrity equipment for a McCulloh system. 3,848,241, Cl. 340-214.000.
- Lenhard, Myron J.: *See—*
  - Hagenbach, Robert J.; and Lenhard, Myron J., 3,847,604.
- Lenz, George R., to Searle, G. D., & Co. 3-Oxygenated 23-di (lower alkyl)amino-22-methyl-norchola-24-4/5,20(22)-dienes and intermediates. 3,847,954, Cl. 260-397.100.
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- Leparulo, Angelo F.; and Grun, Charles, to Electromedia, Inc. Hydraulically-refuelable metal-gas depolarized battery system. 3,847,671, Cl. 136-86.00a.
- Leprince, Bernard. Illuminated display stand for wigs and cosmetics. 3,847,285, Cl. 211-1.500.
- Leroi, Jean-Claude: *See—*
  - Chanel, Rene; Alexandre, Bernard; Leroi, Jean-Claude; and Billion, Jacques, 3,847,755.
- Lesuer, William Monroe; and Dunn, Horton, Jr., to Lubrizol Corporation, The. Process for preparing phosphorus-containing acids. 3,848,032, Cl. 260-981.000.
- Leumann, Ernst: *See—*
  - Garratt, Peter Garth; Habermeier, Juergen; Porret, Daniel; Leumann, Ernst; and Zuppinger, Paul, 3,847,769.
- Levitz Furniture Corporation: *See—*
  - Short, Thomas W., 3,846,947.
- Lewis, Alan Glueck, to GAF Corporation. Collapsible steroscopic viewer. 3,847,467, Cl. 350-140.000.
- Lewis, Arthur E.: *See—*
  - Campbell, James F., Jr.; Engvall, Arthur E.; and Lewis, Arthur E., 3,847,690.
- Lewis, David Otto; and Miller, Thomas Howard, to International Business Machines Corporation. Scan and read control apparatus for a disk storage drive in a computer system. 3,848,235, Cl. 340-172.500.
- Lewis, John C., to Park-Ohio Industries, Inc. Inductor for heating elongated metal workpieces. 3,848,107, Cl. 219-10.790.
- L'Hermite, Alain A.: *See—*
  - Paraskevas, Dimitri; L'Hermite, Alain A.; Bernard, Georges F.; and Guinet, Jacques E., 3,847,481.
- Liang, Shou Chu; Milner, Edward Francis Godfrey; Toop, Gerald Wesley; and Anderson, Ronald Walter, to Cominco Ltd. Lead smelting process. 3,847,595, Cl. 75-77.000.
- Liautaud, Jean A., to Subsea Equipment Associates Limited. System of connection of a pipeline to an underwater pipeline and a method of putting it into effect. 3,846,992, Cl. 61-72.300.
- Liberty Carton Co.: *See—*
  - Lehner, Alphonse C.; and Boeye, Paul E., 3,847,276.
- Liberty Tool & Die Co., The: *See—*
  - Seil, Herbert, 3,847,162.
- Lichtenberg, Alfred, to Siemens Aktiengesellschaft. Power transmission arrangement for a magnetic suspension railroad. 3,847,087, Cl. 104-148.0ms.
- Liefeld & Co.: *See—*
  - Schroder, Paul B.; and Pollkotter, Gunter, 3,846,886.
- Lightner, Linn Stephen, to AMP Incorporated. Zero entry connector system. 3,848,222, Cl. 339-75.00m.
- Lilliston Corporation: *See—*
  - Frushour, George Victor; and Nafziger, Marvin Lee, 3,846,964.
- Lincoln, Frank H., Jr.; Pike, John E.; and Youngdale, Gilbert A. 15-Lower alkoxy PGB compounds. 3,847,967, Cl. 260-468.00d.
- Lind, Bengt Anders: *See—*
  - Svensson, Tore Rolf; Fundell, Kjell Erik; Ekemar, Karl Sven Gustave; Lind, Bengt Anders; and Fischer, Udo, 3,847,763.
- Lindbergh, Sven-Olof: *See—*
  - Widigs, Sven Holger; and Lindbergh, Sven-Olof, 3,847,117.
- Linder, Jerome; Maravetz, Lester L. M.; Schmit, George N.; and Newman, Neil F., to Esso Research and Engineering Company. Process for the preparation of cyclopropylmethyl alkyl amines. 3,847,984, Cl. 260-563.00r.
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- Lindner, Franz Friedrich. Rotating prism for projectors. 3,847,471, Cl. 353-81.000.

- Lindros, Charles J.: *See—*
  - Moldovan, Michael T., Jr.; Lindros, Charles J.; Anderson, Lawrence L.; Wescott, Robert D.; and Cusimano, Richard J., 3,847,345.
- Lipha, Lyonnaise Industrielle Pharmaceutique: *See—*
  - Szarvasi, Etienne; and Fontaine, Louis, 3,847,911.
- Litchfield, Mason Rawleigh, to Smith International, Inc. Drilling fluid saver and safety valve. 3,847,372, Cl. 251-248.000.
- Little, Arthur D., Inc.: *See—*
  - Perron, Robert R.; and Fowler, John T., 3,848,229.
- Litton Industries, Inc.: *See—*
  - Dunn, Elman R., 3,846,940.
- Litvin, Robert L.: *See—*
  - Race, Andras, 3,847,633.
- Livingston, James D., to General Electric Company. Directional eutectoid composites by solid-state up-transformation. 3,847,679, Cl. 148-2.000.
- Lloyd, Evan E. M.: *See—*
  - Rehm, John F.; and Lloyd, Evan E. M., 3,848,230.
- Lloyd, Richard, Limited: *See—*
  - Pegler, John Owen Michael; and Mapes, Brian Edward George, 3,847,555.
- Lobdell, Donn D.: *See—*
  - Shaw, Robert F.; Sidlauskas, David P.; and Lobdell, Donn D., 3,847,483.
- Loby, Raymond J.: *See—*
  - Thompson, Chester C.; Olsen, Severt E.; and Loby, Raymond J., 3,848,174.
- Lock, William E. Machine for testing and straightening arrows. 3,846,998, Cl. 72-34.000.
- Locke, Edward V., to Avco Everett Research Laboratory, Inc. Apparatus for heat treating a surface. 3,848,104, Cl. 219-121.00l.
- Loffelmann, Fritz: *See—*
  - Speth, Winfried; and Loffelmann, Fritz, 3,848,171.
- Loffler, Wilhelm: *See—*
  - Rieber, Martin; and Loffler, Wilhelm, 3,847,657.
- Logemann, Hugo, Jr.; and Dion, Donald Francis, to RCA Corporation. Bowling pin detector. 3,847,394, Cl. 273-54.00e.
- Logma Aktiebolag: *See—*
  - Jorgensen, Karl-Gunnar, 3,847,192.
- Lohbauer, Kenneth R.: *See—*
  - Kroth, Neil W.; Lohbauer, Kenneth R.; and Scheidt, James E., 3,847,180.
- Long, Richard C. Weeder. 3,847,226, Cl. 172-371.000.
- Lorenz, Richard L.: *See—*
  - Chaffee, William H.; Rubio, Alfred M.; and Lorenz, Richard L., 3,846,888.
- Lorenzen, Jerry Alan: *See—*
  - Hobgood, Leonard Douglas; and Lorenzen, Jerry Alan, 3,847,552.
- Lotan, Amram Zvi; and Jeu, Dixson Teh-Chao, to Bunker Ramo Corporation. Method and apparatus for interfacing with a central processing unit. 3,848,233, Cl. 340-172.500.
- Louderback, Allan L.: *See—*
  - Shanbrom, Edward; and Louderback, Allan L., 3,847,545.
- Loup, Ronald L., to Double A Products Co. Tamper-proof control valve. 3,847,176, Cl. 137-382.000.
- Love, Robert B.; and Radwill, Robert P., to Amsted Industries Incorporated. Truck center plate bearing. 3,847,090, Cl. 105-199.00c.
- Lovens Kemiske Fabrik Produktionsaktieselskab: *See—*
  - Godtfredsen, Wagn Ole, 3,847,913.
- Lovett, John R. Method of mounting a resilient sleeve on a conveyer roller. 3,846,901, Cl. 29-450.000.
- Lowe, Keith B.; and Gray, William R., to Allis-Chalmers Corporation. Adjustable and yieldable breaker bar supports for impact crusher. 3,847,358, Cl. 241-32.000.
- Lowe, Keith B.; and Gray, William R., to Allis-Chalmers Corporation. Rotor for impact crusher. 3,847,362, Cl. 241-191.000.
- LTV Aerospace Corporation: *See—*
  - Nelson, Roy A., 3,847,089.
- Lubrication Company of America: *See—*
  - Dinsmore, Robert L.; and Ivey, Herbert D., 3,847,827.
- Lubrizol Corporation, The: *See—*
  - Lesuer, William Monroe; and Dunn, Horton, Jr., 3,848,032.
  - Shumaker, Gary Allen, 3,847,663.
- Lucas Aerospace Limited: *See—*
  - Bottoms, Harry Simister, 3,847,503.
  - Guy, Kenneth Theodore, 3,847,172.
  - Maltby, Peter John; Glaze, Stanley George; Ellis, Kenneth Harold; Craven, Donald; and Binns, John Michael, 3,847,251.
- Lucas Electrical Company Limited, The: *See—*
  - Wilson, Ronald, 3,848,148.
- Lucas, Joseph, (Industries) Limited: *See—*
  - Aston, Michael William, 3,847,018.
  - Cooksey, William Harold, 3,847,063.
- Lumb, Hugo: *See—*
  - Schmidt, Willi Johann; and Lumb, Hugo, 3,847,366.
- Luscher, Jakob. Assembly comprising a quartz oscillator delivering two-phase periodic signals and a divider for the frequency of said signals. 3,848,200, Cl. 331-51.000.
- Luszczak, Myron Michael, to United States Gypsum Company. Stable wax sizing composition and method of sizing cellulosic fiber products. 3,847,637, Cl. 106-271.000.
- Luy, Hasso. Method and apparatus for leak testing of filled-up and closed containers. 3,847,013, Cl. 73-40.700.
- Luzgin, Mikhail Sergeevich: *See—*
  - Andreev, Sergei Vasilievich; Leibenzon, Mikhail Grigorievich; Trushin, Jury Petrovich; and Luzgin, Mikhail Sergeevich, 3,847,113.
- Ly, Manuel G.: *See—*
  - Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,847,969.
- Lykes Pasco Packing Co.: *See—*
  - Mitchell, William G., 3,847,899.
- Lyle, Phra D.: *See—*
  - Fulk, Walter F.; and Lyle, Phra D., 3,847,579.
- Lynch, Thomas, to Xerox Corporation. Sheet stacking method and apparatus. 3,847,388, Cl. 271-174.000.
- M&T Chemicals Inc.: *See—*
  - Althouse, Harlan E.; Scott, Fremont L.; and Cole, Gordon E., Jr., 3,847,654.
- Maassen, Wilhelm: *See—*
  - Rohner, Joachim; Maassen, Wilhelm; and Haberkorn, Egon, 3,847,364.
- Mac Gregor-Comarain S.A.: *See—*
  - Kummerman, Henri, 3,846,860.
- MacDonald, Thomas Richard, to Sperry Rand Corporation. Multiprocessor system with multiple cache memories. 3,848,234, Cl. 340-172.500.
- MacFarlane, Alistair C.: *See—*
  - Applegath, Fred; DuPree, Louis E., Jr.; MacFarlane, Alistair C.; and Robinson, Jacques D., 3,848,012.
- Machet, Michael W. Method of manufacturing a simulated stained glass article. 3,848,046, Cl. 264-279.000.
- Machkova, Zuzana: *See—*
  - Dolejs, Ladislav; Machkova, Zuzana; Beran, Pavel; Kahovcova, Jitka; Slama, Karel; and Sorm, Frantisek, 3,847,907.
- MacInnis, Martin B.: *See—*
  - Vanderpool, Clarence D.; and MacInnis, Martin B., 3,848,066.
- MacIntyre, Alfred J., Jr., to Sanders Associates, Inc. Gaseous discharge device. 3,848,248, Cl. 340-324.00m.
- MacMillan, Kenneth T., to MacMillan Mold Company, Inc. Apparatus for and method of retreading tires. 3,847,631, Cl. 156-96.000.
- MacMillan Mold Company, Inc.: *See—*
  - MacMillan, Kenneth T., 3,847,631.
- MacNeill, John H., to Optical Business Machines, Inc. Visual display of unrecognizable characters in optical character recognition machines. 3,848,228, Cl. 340-146.30f.
- Macovski, Albert. Selective material X-ray imaging system. 3,848,130, Cl. 250-369.000.
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- Madura, Francis Eli, to Amsted Industries Incorporated. Front bearing block assembly for tractor fifth wheel. 3,847,414, Cl. 280-437.000.
- Maggs, Frederick Arthur Pomroy: *See—*
  - Bailey, Alan; and Maggs, Frederick Arthur Pomroy, 3,847,833.
- Magna Corporation: *See—*
  - Rohrback, Gilson H.; and Homes, Elmond A., 3,848,187.
- Magnaflux Corporation: *See—*
  - Puidak, Heino, 3,848,183.
- Magnetic Analysis Corporation: *See—*
  - Gerner, James; and Suhr, Peter J., 3,848,182.
- Magnum Automotive Equipment, Inc.: *See—*
  - Brosene, William G., Jr., 3,847,198.
- Mahoney, John F.; and Perel, Julius, to Xerox Corporation. Multi-jet ink printer. 3,848,258, Cl. 346-140.000.
- Maier, Herbert: *See—*
  - Dederer, Roland; Jahns, Erwin; Maier, Herbert; Moser, Joachim; and Vierling, Karl-Heinz, 3,847,470.
- Majima, Kazu: *See—*
  - Miyoshi, Takeo; Majima, Kazu; Yamagata, Tetsuo; Harada, Susumu; and Sueishi, Motoharu, 3,847,130.
- Malak, Thomas Paul, to Kewanee Oil Company. Method of improving the corrosion protection of decorative chrome plated articles. 3,847,760, Cl. 204-35.00r.
- Malherbe, Alfred Andre. Carburetor. 3,847,125, Cl. 123-119.00a.
- Mallander, Richard G.; and Lake, John H., to Shell Oil Company. Sampling device and system. 3,847,023, Cl. 73-423.00r.
- Mallay Corporation: *See—*
  - Hamilton, William F., 3,847,530.
- Mallory Battery Company of Canada Limited: *See—*
  - Przybyla, Franciszek, 3,847,784.
- Maltby, Peter John; Glaze, Stanley George; Ellis, Kenneth Harold; Craven, Donald; and Binns, John Michael, to Lucas Aerospace Limited. Control apparatus for a powered hoist. 3,847,251, Cl. 187-29.00r.
- Mangiavacchi, Jacques, to Societe Anonyme: Glaenzer Spicer. Sealing device for use in universal joints. 3,846,995, Cl. 64-17.00r.
- Mann, Herbert: *See—*
  - Broll, Arno; Beyer, Hermann; Mann, Herbert; and Meyer-Simon, Eugen, 3,847,639.
- Mannesmann & Keppel Electronics: *See—*
  - Keppel, Wolf-Dieter, 3,847,178.
- Manor, Robert T. Valve mechanism for an air operated reciprocating engine. 3,847,058, Cl. 91-413.000.
- Mapes, Brian Edward George: *See—*
  - Pegler, John Owen Michael; and Mapes, Brian Edward George, 3,847,555.
- Marancik, William G.: *See—*

Gregory, Eric; Marancik, William G.; and Shattes, Walter J., 3,847,650.

- Marathon Oil Company: *See—*
  - Gotshall, William W., 3,847,862.
- Maravetz, Lester L.: *See—*
  - Linder, Jerome; Maravetz, Lester L.; Schmit, George M.; and Newman, Neil F., 3,847,985.
- Maravetz, Lester L. M.: *See—*
  - Linder, Jerome; Maravetz, Lester L. M.; Schmit, George N.; and Newman, Neil F., 3,847,984.
- Marchitto, Michael James; and Landriscina, Vincent James, Jr. Solid stick lubricant for tapping holes. 3,847,824, Cl. 252-12.000.
- Margosiak, Stanley A.: *See—*
  - White, Roy A.; and Margosiak, Stanley A., 3,847,852.
- Margrafe, Rodolphe: *See—*
  - Bouchaudon, Jean; Vourat, Guy; and Margrafe, Rodolphe, 3,847,868.
- Marino, Louis L.: *See—*
  - Race, Andras, 3,847,633.
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  - Waldman, Jeffrey; Sulinski, Harry V.; and Markus, Harold, 3,847,681.
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  - Goebel, Robert W.; and Marous, George R., 3,848,145.
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  - Knowles, Philip; Marshall, Stuart Malcolm; Pain, David Lord; and Wooldridge, Kenneth Robert Harry, 3,847,919.
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  - Forbess, Dennis L.; Kindler, William A., Jr.; and Marti, Rueben A., 3,848,027.
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  - Hammer, Edward E.; and Martyny, William C., 3,847,643.
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- Marx, Dieter O.: *See—*
  - Cosham, Michael A.; and Marx, Dieter O., 3,846,895.
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  - Klushin, Nikolai Alexandrovich; Maslakov, Petr Avramovich; Kilin, Viktor Evdokimovich; Yankovsky, Oleg Alexandrovich; and Galimov, Anas Galimovich, 3,847,232.
- Maslen, Frank Peter: *See—*
  - Gibson, Malcolm Ritchie; Roesler, Frank Cornelius; Smith, Stuart Raymond Leslie; and Maslen, Frank Peter, 3,847,748.
- Masonite Corporation: *See—*
  - Daunheimer, Lyn R.; and Irvine, William M., 3,847,646.
- Massa Division Dynamics Corporation of America: *See—*
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  - Kaneko, Shiro; Masuda, Sakae; Ujihara, Motohiro; and Uchida, Yosuke, 3,847,616.
- Masuda, Toshio: *See—*
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  - Kreider, Benjamin A.; and Matalsky, William J., 3,847,539.
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  - Tugukuni, Hideyoshi; and Matsuda, Mitsuhiro, 3,847,851.
- Matsuhisa, Koh, to Ricoh Co., Ltd. Platen mechanism in which angular position of each of a plurality of platen members disposed coaxially may be adjusted independently of others. 3,847,261, Cl. 197-129.000.
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  - Fujii, Seiji; Matsui, Kunio; Sato, Shigeru; Ito, Keijiro; Koizumi, Takashi; Tsuboyama, Shozo; and Watanabe, Hiroyuki, 3,848,127.
- Matsui, Rokuro: *See—*
  - Itoh, Yohnosuke; Yokota, Kozo; Watanabe, Tetsuya; and Matsui, Rokuro, 3,847,601.
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  - Ohno, Nobuo; Itaya, Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Matsuo, Takashi; and Okuno, Yositosi, 3,847,944.
- Matsushita Electric Industrial Co., Ltd.: *See—*
  - Mori, Fumiko, 3,848,105.
  - Nagaoka, Tadashi, 3,848,263.
  - Nishimura, Katsutoshi; and Fujisawa, Kiyoji, 3,848,194.
  - Oka, Shunzo, 3,848,219.
- Matsuura, Tadashi, to Ricoh Co., Ltd. Apparatus for the production of recording electrodes of the multiple needle type. 3,847,342, Cl. 249-85.000.
- Mattel, Inc.: *See—*
  - Hill, Allen D.; Bass, Sidney; and Rich, Hubert A., 3,846,933.
- Mattina, Charles F.; and Selke, William A., to Kimberly-Clark Corporation. Method of making reconstituted tobacco having reduced nitrates. 3,847,164, Cl. 131-143.000.
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- Mattsson, Bertil, to Hea Rehab AB. Wheel fitting device. 3,847,440, Cl. 301-1.000.
- Matyschik, Otto, to SKF Industrial Trading and Development Company B.V. Clutch release mechanism. 3,847,258, Cl. 192-98.000.
- May & Baker Limited: *See—*
  - Knowles, Philip; Marshall, Stuart Malcolm; Pain, David Lord; and Wooldridge, Kenneth Robert Harry, 3,847,919.
- May, Edwin A.: *See—*
  - D'Alessandro, Alfred C.; and May, Edwin A., 3,847,151.
- May, Walter John: *See—*
  - Inglish, Sumter R.; and May, Walter John, 3,847,274.
- Maynard, Derek J.: *See—*
  - Quintal, Bertram S.; and Maynard, Derek J., 3,848,153.
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- McBride, Jack C. Fishing pole holder and signaling device. 3,846,929, Cl. 43-17.000.
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  - Dunbar, Joseph E.; Harris, Robert F.; and McCarthy, James R., Jr., 3,847,927.
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- McComb, Kenneth H. Die assembly for foodstuff extruder. 3,847,531, Cl. 425-464.000.
- McCormick, Harold E.: *See—*
  - Prasse, Herbert F.; and McCormick, Harold E., 3,847,518.
- McCulloch Corporation: *See—*
  - Frederickson, Robert Eugene, 3,847,204.
- McDonnell Douglas Corporation: *See—*
  - Kulczycki, Stanley N.; and Betts, Edward E., 3,847,344.
- McDowell-Wellman Engineering Company: *See—*
  - Hamilton, George M., 3,847,562.
- McEvoy Oilfield Equipment Co., mesne: *See—*
  - Herd, David P., 3,847,215.
- McGettigan, Frank J. Frangible buffer apparatus for vehicles. 3,847,426, Cl. 293-1.000.
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- McGinniss, Vincent Daniel, to SCM Corporation. UV and laser curing of pigmented polymerizable binders. 3,847,771, Cl. 204-159.240.
- McGranghan, Francis R.: *See—*
  - Meyer, Raymond W.; McGranghan, Francis R.; and Evans, Dale K., 3,847,707.
- McHugh, Neil M.: *See—*
  - Brandl, Eugene H.; and McHugh, Neil M., 3,847,622.
- McInnes, Robert P. Rooftop tape storage rack. 3,847,316, Cl. 224-42.10c.
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- McKee, James W., to True Data Corporation. Card handling apparatus. 3,847,382, Cl. 271-4.000.
- McLaughlin, Lawrence D.: *See—*
  - Shaw, Donald L.; and McLaughlin, Lawrence D., 3,847,699.
- McMillan Electronics Corporation: *See—*
  - McMillan, Robert D., Jr., 3,848,128.
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- McNair, Samuel L., to Dazey Products Co. Control assembly for bathtub hydrotherapy unit. 3,846,848, Cl. 4-180.000.
- McTaggart, George D.: *See—*
  - Confer, James O.; and McTaggart, George D., 3,848,040.
- McVeigh, Harry A.: *See—*
  - Schwartz, Albert B.; and McVeigh, Harry A., 3,847,793.
- McVey, Charles I., to General Electric Company. Ceramic envelope lamp having metal foil inleads. 3,848,151, Cl. 313-217.000.
- Medspecs, Inc.: *See—*
  - Cotey, John; and Poirier, Jean R., 3,847,143.
- Mehta, Rustam Jehangir: *See—*
  - Geilhufe, Michael; and Mehta, Rustam Jehangir, 3,848,237.
- Meier, Ernie A.; and Micallef, Alfred M., to K. & M. Rubber Co. Removable oven door gasket and method of making same. 3,847,199, Cl. 156-293.000.
- Meier, Henry G.: *See—*
  - Eberhard, Elmer T.; and Meier, Henry G., 3,848,101.
- Meinert, Norbert: *See—*
  - Broemer, Heinz; and Meinert, Norbert, 3,847,624.
- Meiri, Shmuel, to Northwestern University. Apparatus actuating and nurse call system. 3,848,249, Cl. 340-325.000.
- Menet, Albert: *See—*
  - Chabardes, Pierre; Julia, Marc; and Menet, Albert, 3,848,000.
- Mensi, Domenico: *See—*
  - Sianesi, Dario; Caporiccio, Gerardo; and Mensi, Domenico, 3,847,978.
- Mercier, George J. Wall panel disappearing bed. 3,846,852, Cl. 5-10.00r.
- Merck & Co., Inc.: *See—*
  - Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,847,969.
- Merger, Franz: *See—*
  - Adolphi, Heinrich; Dietsche, Wolfram; Merger, Franz; Beutel, Peter; and Huber, Rolf, 3,847,936.
- Merkel, Rudolf: *See—*
  - Gerner, Heinz; and Merkel, Rudolf, 3,846,941.
- Meschonat, Gunter; and Schungel, Peter, to Klockner-Werke AG. Bolt tensioning and nut threading arrangement. 3,847,041, Cl. 81-57.380.
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- Messer, Mayer Naoum: *See—*
  - Cotrel, Claude; Jeanmart, Claude; and Messer, Mayer Naoum, 3,847,921.
- Messerchmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
  - Herrmann, Gunter, 3,847,411.
- Messerschmitt-Bolkow-Blohm GmbH: *See—*
  - Karch, Ludwig, 3,847,088.
  - Steenbeck, Ulf, 3,847,086.
- Mesta Machine Company: *See—*
  - Sutyak, John J., 3,847,062.
- Meyer, Edward D.: *See—*
  - Agostino, Salvatore R., Jr., 3,847,404.
- Meyer, Monroe W.: *See—*
  - Rupert, Edward J.; Meyer, Monroe W.; and Uhland, Gerald E., 3,846,903.
- Meyer, Raymond W.; McGranghan, Francis R.; and Evans, Dale K., to General Tire & Rubber Company, The. Laminating apparatus having dual doctor blade. 3,847,707, Cl. 156-436.000.
- Meyer, Vincent Edwin. Closure. 3,847,183, Cl. 138-96.00r.
- Meyer-Simon, Eugen: *See—*
  - Broll, Arno; Beyer, Hermann; Mann, Herbert; and Meyer-Simon, Eugen, 3,847,639.
- Meyers, Edward F., to Enviro-Gro, Inc. Self-starting plant marker and method and apparatus for making same. 3,846,954, Cl. 53-14.000.
- Micallef, Alfred M.: *See—*
  - Meier, Ernie A.; and Micallef, Alfred M., 3,847,199.
- Micallef, Lewis A., to Leeds and Micallef. Retractable turnspout closure. 3,847,313, Cl. 222-507.000.
- Michalko, Edward: *See—*
  - Hilfman, Lee; Pollitzer, Ernest L.; and Michalko, Edward, 3,847,796.
- Michaud, Andre Louis: *See—*
  - Mas, Robert J.; and Michaud, Andre Louis, 3,848,051.
- Michels, Albertus Peter Johannes; Gasseling, Franciscus Wilhelmus Engelbert; and Findhammer, Carl Fridriech Johan, to U.S. Philips Corporation. Device for converting thermal energy into mechanical energy. 3,846,985, Cl. 60-521.000.
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- Microsystems International Limited: *See—*
  - Cosham, Michael A.; and Marx, Dieter O., 3,846,895.
- Midwest Research Institute: *See—*
  - Lavik, Melvin T.; and Hubbell, Ronald D., 3,847,825.
- Migdal, Philip N., to Teledyne, Inc. Steerable radar antenna. 3,848,255, Cl. 343-761.000.
- Mihailovski, Alexander, to Stauffer Chemical Company. 3,5-Dichlorophenylcarbamyl pyrrolidine. 3,847,939, Cl. 260-326.400.
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- Mikhailu, Georgy Ivanovich: *See—*
  - Kozorezov, Konstantin Isaakovich; Semchenko, Vitaly Vasilievich; and Mikhailu, Georgy Ivanovich, 3,848,100.
- Miles Laboratories, Inc.: *See—*
  - Verbeck, Bruno J., 3,847,553.
- Miller, Arthur F.: *See—*
  - Callahan, James L.; Miller, Arthur F.; and Shaw, Filfrid G., 3,848,033.
- Miller, Calvin Lyle: *See—*
  - Freedy, Allan Leslie; Miller, Calvin Lyle; and Simpson, Fred Eugene, 3,847,451.
- Miller, John Herbert. Hand support attachment for a trumpet or like instrument. 3,847,051, Cl. 84-387.000.
- Miller, Orville C., to Centenary Central, Inc. Method of producing cutting plates for die cutting operations. 3,847,036, Cl. 76-107.00c.
- Miller, Ronald J.: *See—*
  - Campbell, Curtis M.; and Miller, Ronald J., 3,848,114.
- Miller, Thomas Howard: *See—*
  - Lewis, David Otto; and Miller, Thomas Howard, 3,848,235.
- Miller, William H. Gear blanks. 3,847,557, Cl. 29-191.000.
- Millington, Raymond J.; and Rexek, John R., to Motorola Inc. Self-compensated amplifier circuit. 3,848,143, Cl. 307-297.000.
- Mills, Ivor W.; Dimeler, Glenn R.; Atkinson, William A., Jr.; and Hoffman, James P., to Sun Oil Company of Pennsylvania. Oil for use in printing inks. 3,847,623, Cl. 106-32.000.
- Milner, Edward Francis Godfrey: *See—*
  - Liang, Shou Chu; Milner, Edward Francis Godfrey; Toop, Gerald Wesley; and Anderson, Ronald Walter, 3,847,595.
- Milotic, Milio. Transformable footwear. 3,846,919, Cl. 36-2.50w.
- Mimino, Tohru; Kinoshita, Kazuhisa; and Hattori, Keisuke, to Nippon Kokan Kabushiki Kaisha. High temperature alloy steel. 3,847,600, Cl. 75-126.00c.
- Mine, Kiyomitsu: *See—*
  - Sakazume, Kaiichiro; Sakamoto, Eiichi; Mine, Kiyomitsu; Fujimori, Noboru; and Ito, Shigemasa, 3,847,613.
- Minister of National Defence of Her Majesty's Canadian Government: *See—*
  - Hyne, Graham Everett, 3,848,202.
- Minnesota Mining and Manufacturing Company: *See—*
  - Kistner, John F., 3,847,722.
  - Koshar, Robert J., 3,847,961.
  - Krueger, Dennis L., 3,847,821.
  - Winslow, John M., 3,847,612.
- Misson, George W., to PPG Industries, Inc. Method of tempering glass. 3,847,580, Cl. 65-25.00a.
- Mistarz, Robert J., to Koehring Company. Enclosure leak tester and method. 3,847,014, Cl. 73-49.300.
- Mitchell, William G., to Lykes Pasco Packing Co. Method for manufacture of citrus bioflavonoids. 3,847,899, Cl. 260-236.500.
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  - Asano, Tetsumasa; Soga, Takaaki; and Kitano, Mitsuru, 3,848,169.
  - Nomaguchi, Tamotsu; Sakai, Masatada; and Ito, Toshio, 3,847,534.
- Mitsubishi Paper Mills, Ltd.: *See—*
  - Iguchi, Shigeru; Yano, Tetsuo; and Iwata, Tamotu, 3,847,620.
- Mitsubishi Petrochemical Company Limited: *See—*
  - Uchiyama, Masao; and Mori, Shoichiro, 3,848,014.
  - Uno, Taiko; and Uosaki, Kohei, 3,847,765.
- Mitsubishi Reiyon Kabushiki Kaisha: *See—*
  - Hitomi, Keiichi; Takagi, Kachio; Nomura, Seinosuke; and Okada, Sadayuki, 3,846,970.
- Mitsumata, Tadayasu: *See—*
  - Fukuda, Masataro; Iwaki, Tsutomu; and Mitsumata, Tadayasu, 3,847,603.
- Miura, Kiyoshi: *See—*
  - Saito, Tadayoshi; Miura, Kiyoshi; and Nakano, Yoshiyuki, 3,848,117.
- Miyagi, Arata: *See—*
  - Yoshimoto, Toshio; Imamura, Takaaki; Tanaka, Kazuo; and Miyagi, Arata, 3,848,026.
- Miyazako, Takushi: *See—*
  - Yoshida, Takashi; Sakaguchi, Shinji; and Miyazako, Takushi, 3,847,615.

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  - Ohno, Nobuo; Itaya, Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Matsuo, Takashi; and Okuno, Yositosi, 3,847,944.
- Mo Och Domsjo AB: *See—*
  - Blomqvist, Nils Verner; and Hagg, Per Borje, 3,847,710.
- Mobil Oil Corporation: *See—*
  - Cushman, Donald R.; Oberright, Edward A.; and Edwards, Roy T., 3,847,641.
  - Florian, John, 3,847,314.
  - Schwartz, Albert B.; and McVeigh, Harry A., 3,847,793.
- Modebadze, Otar Egorovich. Metal-to-glass joint. 3,847,628, Cl. 106-52.000.
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- Modersohn, Dieter: *See—*
  - Zurek, Rudolf; and Modersohn, Dieter, 3,847,256.
- Moeckl, Ernst, to Nixdorf Computer A.G. Data processor. 3,847,461, Cl. 312-281.000.
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- Moll, Franz: *See—*
  - Philippaerts, Herman A.; Pollet, Robert Joseph; Muller-Bardorff, Wolfgang; Saleck, Wilhelm; Moll, Franz; and Ghys, Theofiel Hubert, 3,847,617.
- Molyneux, David J., to Brown & Williamson Tobacco Corporation. Method of making a tobacco extract. 3,847,163, Cl. 131-143.000.
- Monroe Belgium N.V.: *See—*
  - Keijzer, Johan H.; Pierle, Willy R. J.; and Van de Voorde, G., 3,847,410.
  - Van Den Berg, Johan H., 3,846,863.
- Monsanto Company: *See—*
  - Applegath, Fred; DuPree, Louis E., Jr.; MacFarlane, Alistair C.; and Robinson, Jacques D., 3,848,012.
  - Baggett, William M.; Garrett, Ullman C., Jr.; and Snooks, Rupert J., Jr., 3,848,023.
  - Boustany, Kamel; and Vander Kooi, John P., 3,847,879.
  - Intille, George M., 3,848,010.
  - Paulik, Frank E., 3,848,065.
  - Shelby, Richard K., 3,848,042.
  - Trivette, Chester D., Jr.; and Vander Kooi, John P., 3,847,880.
- Monson, Franklin A.; and Mueller, Kenneth E., to AAI Corporation. Method of making an underwater projectile. 3,846,878, Cl. 29-1.200.
- Montecatini Edison S.p.A.: *See—*
  - Sianesi, Dario; Caporiccio, Gerardo; and Mensi, Domenico, 3,847,978.
- Montgomery, William Herbert, to American Cyanamid Company. Package for plural reactable components with rupturable ultrasonic seal. 3,847,279, Cl. 206-219.000.
- Mooney, David N.: *See—*
  - Eschbaugh, John T.; and Mooney, David N., 3,847,421.
- Moore, Raymond H., to United States of America, Atomic Energy Commission. Recovery of fission-produced technetium, palladium, rhodium and ruthenium. 3,848,048, Cl. 423-22.000.
- Moore, Robert L.: *See—*
  - Baker, Charles R.; and Moore, Robert L., 3,847,697.
- Moore, Roger E.: *See—*
  - Kalina, Theodore; and Moore, Roger E., 3,847,567.
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- Morfit, Oliver: *See—*
  - Godino, Rino L.; and Morfit, Oliver, 3,847,751.
- Morgan Refractories Limited: *See—*
  - Hill, Nigel Austin, 3,847,629.
- Morgenstern, David. Filtered cigarettes. 3,847,161, Cl. 131-10.300.
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- Mori, Shoichiro: *See—*
  - Uchiyama, Masao; and Mori, Shoichiro, 3,848,014.
- Morita, Tomijiro: *See—*
  - Onozuka, Mitsuo; Nomoto, Koki; Iida, Kinji; and Morita, Tomijiro, 3,848,070.
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- Morozov, Andrei Elizarovich: *See—*
  - Martyashin, Alexandr Ivanovich; Morozov, Andrei Elizarovich; Shakhov, Eduard Konstantinovich; and Shlyandin, Viktor Mikhailovich, 3,848,186.
- Morris, Arthur: *See—*
  - Jackson, Peter Frederick; and Morris, Arthur, 3,847,873.
- Morris, David E.; and Smith, Francis R., to Pennwalt Corporation. Monoalkylation of urea. 3,847,981, Cl. 260-553.00r.
- Morris, Earl L.; and Sally, Theodore J., to Acorn Engineering Company. Relievable hanger for clothing and the like. 3,847,336, Cl. 248-294.000.
- Morris, Ronald Meredith: *See—*
  - Bishop, David Paul; and Morris, Ronald Meredith, 3,847,915.
- Morrison, Howard J.; and Nix, Donald F., to Glass, Marvin, & Associates. Toy automobile carrying case. 3,847,275, Cl. 206-45.000.
- Morrison, Jimmie H. Motor mounting bracket. 3,847,330, Cl. 248-14.000.
- Morrow, Lorin Lee. Safety float valve. 3,847,177, Cl. 137-400.000.
- Moser, Harold Bob. Torque equalizing drive. 3,847,032, Cl. 74-427.000.
- Moser, Joachim: *See—*
  - Dederer, Roland; Jahns, Erwin; Maier, Herbert; Moser, Joachim; and Vierling, Karl-Heinz, 3,847,470.
- Moser, William R., to Exxon Research Engineering Company. Process for separating hydrocarbon. 3,847,801, Cl. 208-308.000.
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- Moss, Philip Hotchkiss, to Jefferson Chemical Company, Inc. Partially aminated polyoxyalkylene polyols. 3,847,992, Cl. 260-584.00b.
- Mosser Industries, Incorporated: *See—*
  - Hagar, Donald K., 3,847,373.
- Motani, Kensuke; Nakahara, Akihiko; and Kuramoto, Nobuyuki, to Tokuyama Soda Kabushiki Kaisha. Thiosemicarbazido heavy metal adsorbing resins. 3,847,841, Cl. 260-2.20r.
- Motorola, Inc.: *See—*
  - Bentz, John Edward, 3,848,088.
  - Davidsohn, Uryon S., 3,847,687.
  - Millington, Raymond J.; and Rexek, John R., 3,848,143.
- Mott, Lambert H. Spinnerette head assembly with porous metal filter and shear element. 3,847,524, Cl. 425-198.000.
- Mounts, William T.: *See—*
  - Kennicutt, Robert B.; and Mounts, William T., 3,847,492.
- Mowen, John E., to Ecodyne Corporation. Pneumatic pump. 3,847,508, Cl. 417-118.000.
- Mowrey, Rowland George: *See—*
  - Bissonette, Vernon Leon; Mowrey, Rowland George; and Sutton, Richard Calvin, 3,847,619.
- Muck, Eduard; Strachota, Jaroslav; and Horak, Josef, to Statni Vyzkumny Ustav Kozedelny. Coating compositions of polyesterurethanes, carboxy containing copolymers and polyisobutylene. 3,848,024, Cl. 260-859.000.
- Mueller, Gerhart Hermann; and Wendel, Kurt. Paper coating compositions. 3,847,856, Cl. 260-29.6rb.
- Mueller, Helmuth: *See—*
  - Kelch, Heinz; and Mueller, Helmuth, 3,848,113.
- Mueller, Kenneth E.: *See—*
  - Monson, Franklin A.; and Mueller, Kenneth E., 3,846,878.
- Mueller, Max B.; and Chandrasekaran, Swayambu, to Allied Chemical Corporation. Stress-crack resistant ethylene-perhaloethylene copolymers. 3,847,881, Cl. 260-80.770.
- Mueller, Wolfgang; Rodewald, Bernhard; and Witzke, Lothar, to Th. Goldschmidt, A.G. Process for the combined elimination and/or reconditioning of carburizing salt wastes. 3,847,597, Cl. 75-99.000.
- Muijs, Cornelis G. M.: *See—*
  - De Coene, Frans J. G. C.; and Muijs, Cornelis G. M., 3,847,160.
- Mulansky, Horst: *See—*
  - Zirnstein, Peter; Schebiella, Erwin; Koerner, Siegfried; Weise, Joachim; and Mulansky, Horst, 3,847,077.
- Muller, Ernst Willi: *See—*
  - Wilke, Gunther; and Muller, Ernst Willi, 3,848,015.
- Muller-Bardorff, Wolfgang: *See—*
  - Philippaerts, Herman A.; Pollet, Robert Joseph; Muller-Bardorff, Wolfgang; Saleck, Wilhelm; Moll, Franz; and Ghys, Theofiel Hubert, 3,847,617.
- Multifold-International, Inc., mesne: *See—*
  - Molitor, Edwin A.; Elsten, Walter; and Sergent, Enoch A., 3,846,961.
- Munro, William H., to Universal Oil Products Company. Conversion of black oil to low-sulfur fuel oil. 3,847,799, Cl. 208-210.000.
- Munsey, George B., to Munsey Products, Inc. Electrically heated corn popper and food warming apparatus. 3,847,067, Cl. 99-323.800.
- Munsey Products, Inc.: *See—*
  - Munsey, George B., 3,847,067.
- Munters, Carl Georg. Apparatus for drying compressed air. 3,847,578, Cl. 55-390.000.
- Murai, Yasuro. Hanger for dust bag. 3,847,332, Cl. 248-99.000.
- Murakami, Yoichi; and Watanabe, Hikaru, to Dainippon Ink and Chemicals, Inc. Polyurethane composition based on epoxide-modified linear polyester. 3,847,874, Cl. 260-77.5an.
- Murdoch, Henry W.: *See—*
  - Schumacher, Percy W., Jr.; and Murdoch, Henry W., 3,847,234.

- Murphy, Donald P.; and Valatka, Henry, to Oxy Metal Finishing Corporation. Alkoxylated furfuryl alcohol stripping composition and method. 3,847,839, Cl. 252-544.000.
- Murphy, Frank H.: *See—*
  - Jencks, Charles L.; and Murphy, Frank H., 3,848,102.
- Murray, Herbert C.: *See—*
  - Herr, Milton E.; Murray, Herbert C.; and Fonken, Gunther S., 3,847,982.
- Murray, Jerome L.; and Gardiner, Frances R. Hygenic douche system. 3,847,149, Cl. 128-225.000.
- Musch, Gordon Frederick: *See—*
  - Glover, Richard Warmath; Musch, Gordon Frederick; and Summa, John A., 3,847,233.
- Muth, Karl: *See—*
  - Weber, Helmut; Aumuller, Walter; Weyer, Rudi; Muth, Karl; and Stach, Kurt, 3,847,938.
- MWA Company: *See—*
  - Cihon, John A.; and Ehmann, Donald W., 3,847,568.
- Myers, Herman A. Garden tool. 3,847,227, Cl. 172-378.000.
- Myers, John W., to Phillips Petroleum Company. Catalytic conversion of hydrocarbons using a rhenium-alumina catalyst. 3,848,019, Cl. 260-683.680.
- N L Industries, Inc.: *See—*
  - Daubenspeck, John M.; and Jett, Bernard Holton, 3,847,640.
  - Erneta, Modesto, 3,848,059.
- Nafziger, Marvin Lee: *See—*
  - Frushour, George Victor; and Nafziger, Marvin Lee, 3,846,964.
- Nagai, Kenya: *See—*
  - Hagiwara, Yoshichi; Sato, Katunobu; Komatsu, Hideo; Yuguchi, Sadao; Yoshizumi, Nobuo; Nagai, Kenya; Takeda, Hiromu; and Ohnishi, Sei-Ichiro, 3,848,044.
- Nagaoka, Shinji: *See—*
  - Kitai, Kiyoshi; Nakamura, Yukio; Ishida, Hiroaki; and Nagaoka, Shinji, 3,847,475.
- Nagaoka, Tadashi, to Matsushita Electric Industrial Co., Ltd. Recording and reproducing system with automatic tape threading. 3,848,263, Cl. 360-83.000.
- Nagel, Otto: *See—*
  - Kuerten, Heribert; and Nagel, Otto, 3,847,375.
  - Platz, Rolf; Nagel, Otto; and Fuchs, Werner, 3,847,989.
- Naito, Shun-Ichi. Aminoethanesulfonyl derivatives and their production. 3,847,940, Cl. 260-326.900.
- Naka, Hiromitsu. Indoor escape device. 3,847,247, Cl. 182-81.000.
- Nakagawa, Tadashi: *See—*
  - Onda, Eiichi; Koyama, Mitsuo; and Nakagawa, Tadashi, 3,847,476.
- Nakaguchi, Glenn M.: *See—*
  - Caserio, Frederick F., Jr.; and Nakaguchi, Glenn M., 3,847,996.
- Nakahara, Akihiko: *See—*
  - Motani, Kensuke; Nakahara, Akihiko; and Kuramoto, Nobuyuki, 3,847,841.
- Nakai, Shigeyuki: *See—*
  - Kono, Hisashi; Terai, Kenji; Niwa, Takazumi; Kitajima, Masahiko; Sawada, Morihiko; Ninomiya, Kohei; and Nakai, Shigeyuki, 3,848,016.
- Nakajima, Hitoshi: *See—*
  - Kominami, Naoya; Nakajima, Hitoshi; Tamura, Nobuhiro; and Ohki, Kusuo, 3,847,972.
- Nakamatsu, Tsuyoshi: *See—*
  - Shiio, Isamu; Ozaki, Hachiro; and Nakamatsu, Tsuyoshi, 3,847,744.
- Nakamura, Hayashi: *See—*
  - Nishina, Yoshio; Kono, Isao; Kamakura, Toshio; Nakamura, Hayashi; Fujimori, Noboru; and Sakamoto, Eiichi, 3,847,621.
- Nakamura, Yukio: *See—*
  - Kitai, Kiyoshi; Nakamura, Yukio; Ishida, Hiroaki; and Nagaoka, Shinji, 3,847,475.
- Nakano, Hirofumi: *See—*
  - Suzuki, Takeo; Tomita, Fusao; Nakano, Hirofumi; and Honda, Haruo, 3,847,747.
- Nakano, Yoshiyuki: *See—*
  - Saito, Tadayoshi; Miura, Kiyoshi; and Nakano, Yoshiyuki, 3,848,117.
- Nakazawa, Yukiyoshi: *See—*
  - Takeda, Tadashi; Nakazawa, Yukiyoshi; and Ikeda, Hiroshi, 3,847,677.
- Nanaimo Enviro Systems Corporation: *See—*
  - Paczkowski, Michael M., 3,846,981.
- Napoli, Louis Sebastian: *See—*
  - DeBrecht, Robert Eugene; and Napoli, Louis Sebastian, 3,848,198.
- Nasalski, Paul J.; and Robinson, Edward L. Post card for mailing a picture. 3,847,325, Cl. 229-92.800.
- Nathan, Emanuel, to Opticase, Inc. Spectacle case. 3,846,872, Cl. 24-3.00g.
- National Research Development Corporation: *See—*
  - Swindells, Norman; and Bevis, Michael, 3,848,126.
- National Steel Corporation: *See—*
  - Smith, Robert B., 3,847,757.
- Needham, James M.; and Elliott, Delbert R., to Bendix Corporation, The. Adaptive braking system. 3,847,447, Cl. 303-21.0cg.
- Nelson, Roy A., to LTV Aerospace Corporation. Vehicle drive means. 3,847,089, Cl. 104-148.0lm.
- Neu, Frank D.: *See—*
  - Wohlmut, Peter G.; and Neu, Frank D., 3,848,095.
- Neuklis, Winifred A.: *See—*
  - Creger, Paul L.; and Neuklis, Winifred A., 3,847,994.
- Neumann, Peter, to Wander Ltd.; a/k/a Wander AG. 7-[Imidazolinyl-(2)-amino]-indazoles. 3,847,934, Cl. 260-309.600.
- Neurological Research and Development Group Incorporated: *See—*
  - Weinstock, Clifford, 3,846,857.
- Neutron Corporation: *See—*
  - Tufts, Wesley H.; and Albertassi, James H., 3,846,847.
- Newbould, Richard J. Indexing mechanism. 3,846,912, Cl. 33-1.00d.
- Newman, Douglas A.: *See—*
  - De Laurentis, Peter; and Newman, Douglas A., 3,847,645.
- Newman, Neil F.: *See—*
  - Linder, Jerome; Maravetz, Lester L. M.; Schmit, George N.; and Newman, Neil F., 3,847,984.
  - Linder, Jerome; Maravetz, Lester L.; Schmit, George M.; and Newman, Neil F., 3,847,985.
- Nicklin, Thomas; and Farrington, Frederick. Nickel-uranium catalyst. 3,847,836, Cl. 252-465.000.
- Nicolas, Jean: *See—*
  - Micheron, Francois; Nicolas, Jean; and Hildebrandt, Mieczyslax, 3,847,465.
- Nicole, Andre: *See—*
  - Auer, Ulrich; and Nicole, Andre, 3,847,188.
- Niebylski, Leonard M.; and Jarema, Chester P., to Ethyl Corporation. Lead-zinc foams. 3,847,591, Cl. 75-20.00f.
- Nielinger, Werner; Rudolph, Hans; Dhein, Rolf; and Schneider, Kurt, to Bayer Aktiengesellschaft. Transparent, thermoplastically formable copolyamides from bis-(4-aminocyclohexyl)methane-aromatic dicarboxylic acid-E,caprolactam. 3,847,877, Cl. 260-78.00l.
- Nielsen, Harold R. Unit construction booths. 3,847,424, Cl. 292-158.000.
- Nielsen, Harold R. Cantilevered booth construction. 3,847,431, Cl. 297-158.000.
- Ninomiya, Kohei: *See—*
  - Kono, Hisashi; Terai, Kenji; Niwa, Takazumi; Kitajima, Masahiko; Sawada, Morihiko; Ninomiya, Kohei; and Nakai, Shigeyuki, 3,848,016.
- Nippon Electric Company, Limited: *See—*
  - Tsunemitsu, Hideo; and Shiba, Hiroshi, 3,848,260.
- Nippon Gakki Seizo Kabushiki Kaisha: *See—*
  - Adachi, Takeshi, 3,848,142.
- Nippon Hoso Kyokai: *See—*
  - Ikeda, Hiroaki; Hirashima, Teruo; Sakai, Tetsuo; Iwamura, Soichi; Ohishi, Iwao; Fujio, Takashi; and Kamegaya, Takeo, 3,848,086.
- Nippon Kokan Kabushiki Kaisha: *See—*
  - Fujii, Seiji; Matsui, Kunio; Sato, Shigeru; Ito, Keijiro; Koizumi, Takashi; Tsuboyama, Shozo; and Watanabe, Hiroyuki, 3,848,127.
  - Mimino, Tohru; Kinoshita, Kazuhisa; and Hattori, Keisuke, 3,847,600.
- Nippon Yakin Kogyo Company Limited: *See—*
  - Itoh, Yohnosuke; Yokota, Kozo; Watanabe, Tetsuya; and Matsui, Rokuro, 3,847,601.
- Nippon Zeon Company, Ltd.: *See—*
  - Suzuki, Tsunao; Senuma, Mitsushi; Takakura, Ichiro; and Masuda, Toshio, 3,847,853.
- Nippondenso Co., Ltd.: *See—*
  - Miyoshi, Takeo; Majima, Kazu; Yamagata, Tetsuo; Harada, Susumu; and Sueishi, Motoharu, 3,847,130.
- Nischk, Gunther: *See—*
  - Radlmann, Edward; and Nischk, Gunther, 3,847,884.
- Nishida, Koji: *See—*
  - Okamoto, Toshaiaki; Inada, Masammi; and Nishida, Koji, 3,847,448.
- Nishimura, Katsutoshi; and Fujisawa, Kiyoji, to Matsushita Electric Industrial Co., Ltd. Automatic gain control circuit. 3,848,194, Cl. 330-29.000.
- Nishimura, Masakatsu: *See—*
  - Sata, Toshikatsu; Nishimura, Masakatsu; and Izuo, Ryuji, 3,847,772.
- Nishimura, Taiichi: *See—*
  - Kobayashi, Teruo; and Nishimura, Taiichi, 3,847,983.
- Nishimura, Tamio: *See—*
  - Izawa, Goro; and Nishimura, Tamio, 3,848,060.
- Nishina, Yoshio; Kono, Isao; Kamakura, Toshio; Nakamura, Hayashi; Fujimori, Noboru; and Sakamoto, Eiichi, to Konishiroku Photo Industry Co. Ltd. Laser-sensitive silver halide photosensitive material. 3,847,621, Cl. 96-126.000.
- Nishioka, Kinichi: *See—*
  - Tada, Rentaro; Sato, Kenji; and Nishioka, Kinichi, 3,847,845.
- Nissan Motor Company, Limited: *See—*
  - Hisatomi, Takashi, 3,847,131.
  - Masaki, Kenji; and Aono, Shigeo, 3,847,019.
- Nittelsu Chemical Engineering Co. Ltd.: *See—*
  - Akune, Mikio; Yoshii, Kokichi; and Yamauchi, Tadashi, 3,847,713.
- Niwa, Takazumi: *See—*
  - Kono, Hisashi; Terai, Kenji; Niwa, Takazumi; Kitajima, Masahiko; Sawada, Morihiko; Ninomiya, Kohei; and Nakai, Shigeyuki, 3,848,016.
- Nix, Donald F.: *See—*
  - Morrison, Howard J.; and Nix, Donald F., 3,847,275.
- Nixdorf Computer A.G.: *See—*
  - Moeckl, Ernst, 3,847,461.

- Noguchi, Hisataka: *See—*
    - Kuroiwa, Tadaharu; Isayama, Yukio; Yokota, Akira; Kamio, Tsukasa; Kinnai, Kazuhiko; Abe, Eiichi; Kimura, Kunio; Hioki, Morihisa; and Noguchi, Hisataka, 3,847,806.
- Nomaguchi, Tamotsu; Sakai, Masatada; and Ito, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Combustion apparatus. 3,847,534, Cl. 431-329.000.
- Nomoto, Koki: *See—*
    - Onozuka, Mitsuo; Nomoto, Koki; Iida, Kinji; and Morita, Tomijiro, 3,848,070.
- Nomura, Seinosuke: *See—*
    - Hitomi, Keiichi; Takagi, Kachio; Nomura, Seinosuke; and Okada, Sadayuki, 3,846,970.
- Noranda Mines Limited: *See—*
    - Gervais, Edouard; Chollet, Pierre; and Ranger, Robel, 3,847,556.
- Nordin, Harald, to Weck, Edward, & Company, Inc. Surgical drill with detachable hand-piece. 3,847,154, Cl. 128-305.000.
- Nordisk Ventilator Co. A/S: *See—*
    - Holt, Jorgen; Videmark, Christian; and Christiansen, Palle Hein, 3,847,065.
- Norris, Leon F.: *See—*
    - Fustukian, David A. W.; Kushnir, Bud W.; Norris, Leon F.; and Fraser, Robert W., 3,847,680.
- North American Rockwell Corporation: *See—*
    - Oehring, Leo George, 3,847,249.
- North Hills Electronics, Inc.: *See—*
    - Sherr, Solomon, 3,848,247.
- Northern Electric Company Limited: *See—*
    - Zuber, Bretislav Paul, 3,847,010.
- Northwestern University: *See—*
    - Meiri, Shmuel, 3,848,249.
- Northwood, James Edward, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Method of casting a directionally solidified article having a varied composition. 3,847,203, l. 164-60.000.
- Norton Company: *See—*
    - Eisner, Steve, 3,847,660.
- Norton, Orien K.; Grimes, David E.; and Sayler, Ralph A. Spool valve. 3,847,371, Cl. 251-65.000.
- Norton, Richard V., to Sun Research and Development Co. Purification process for aromatic acids. 3,847,977, Cl. 260-525.000.
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- Nowak, Ralph M., to Tucker Manufacturing Corporation. Storage unit. 3,847,458, Cl. 312-108.000.
- Nowak, Rudolf: *See—*
    - Holland, Gerhard W.; and Nowak, Rudolf, 3,847,596.
- Noyes, James F.: *See—*
    - Krone, Russell R.; Krone, Donald R.; Buchanan, George E.; and Noyes, James F., 3,847,302.
- Nussdorfer, Theodore J.: *See—*
    - Figler, Burton D.; and Nussdorfer, Theodore J., 3,848,129.
- Nutt, David Walter: *See—*
    - Boothman, David Richard; and Nutt, David Walter, 3,848,160.
- NV International Octrooimaatschappij "Octropa": *See—*
    - Bishop, David Paul; and Morris, Ronald Meredith, 3,847,915.
- Nye, Dudley D., Jr.; and Eisenstadt, Daniel J., to Airpax Electronics Incorporated. Ground fault detector circuit with feedback to sensor. 3,848,159, Cl. 317-18.00d.
- Oberdank, Jack O., to Wayne Manufacturing Company. Street sweeper filter shaker system. 3,847,576, Cl. 55-283.000.
- Obermark, Herbert Mauritz; deceased (by Ekholm, Tommy Ludvig Wilhelm), to Ekman, Erik Gunnar. Means for manual data registration. 3,846,915, Cl. 33-174.00r.
- Oberright, Edward A.: *See—*
    - Cushman, Donald R.; Oberright, Edward A.; and Edwards, Roy T., 3,847,641.
- Oehring, Leo George, to North American Rockwell Corporation. Axle lubrication system. 3,847,249, Cl. 184-6.120.
- Ogura, Akira: *See—*
    - Matsumura, Sakujiro; Yamamura, Tadashi; Ogura, Akira; and Hayashi, Masataka, 3,846,965.
- Ohishi, Iwao: *See—*
    - Ikeda, Hiroaki; Hirashima, Teruo; Sakai, Tetsuo; Iwamura, Soichi; Ohishi, Iwao; Fujio, Takashi; and Kamegaya, Takeo, 3,848,086.
- Ohki, Kusuo: *See—*
    - Kominami, Naoya; Nakajima, Hitoshi; Tamura, Nobuhiro; and Ohki, Kusuo, 3,847,972.
- Ohmann, William, to Whirlpool Corporation. Integral self-cleaning filter and side check valve for automatic washer. 3,847,812, Cl. 210-108.000.
- Ohnishi, Sei-Ichiro: *See—*
    - Hagiwara, Yoshichi; Sato, Katunobu; Komatsu, Hideo; Yuguchi, Sadao; Yoshizumi, Nobuo; Nagai, Kenya; Takeda, Hiromu; and Ohnishi, Sei-Ichiro, 3,848,044.
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- Oka, Shunzo, to Matsushita Electric Industrial Co., Ltd. Variable resistor. 3,848,219, Cl. 338-119.000.
- Okada, Sadayuki: *See—*
    - Hitomi, Keiichi; Takagi, Kachio; Nomura, Seinosuke; and Okada, Sadayuki, 3,846,970.
- Okamoto, Toshaiaki; Inada, Masammi; and Nishida, Koji, to Aisin Seiki Company Limited and Sharp Kabushiki Kaisha (Sharp Corporation). Apparatus for antiskid control of a hydraulic brake system. 3,847,448, Cl. 303-21.0be.
- Okawa, Isao, to Asahi Kaser Kogyo Kabushiki Kaisha. Sound insulating block. 3,846,949, Cl. 52-438.000.
- Okazaki Manufacturing Company Limited: *See—*
    - Okazaki, Tatsuo; Okazaki, Toshio; Karasawa, Nobuko; and Arai, Masako, 3,847,787.
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- Okazaki, Toshio: *See—*
    - Okazaki, Tatsuo; Okazaki, Toshio; Karasawa, Nobuko; and Arai, Masako, 3,847,787.
- Okuno, Yositosi: *See—*
    - Ohno, Nobuo; Itaya,. Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Matsuo, Takashi; and Okuno, Yositosi, 3,847,944.
- Oleszeko, Thaddeus J.; and Groschel, Walter H. Air diffusion in rotary hearth calciner. 3,847,752, Cl. 201-32.000.
- Olin Corporation: *See—*
    - Fuzesi, Stephen; Lapkin, Milton; and Polak, Roger J., 3,847,844.
- Olinkraft, Inc.: *See—*
    - Powers, Thomas J.; and Jones, Shelton J., 3,847,724.
- Oliver, John M., to PPG Industries, Inc. Recovery of glycols from mixed glycol compositions by distillation with acid treatment. 3,847,754, Cl. 203-34.000.
- Oliver Tom's Catering Equipment Limited: *See—*
    - Booker, William J. W., 3,847,134.
- Olivero, Carlo. Pre-wired switch box. 3,848,224, Cl. 339-198.00e.
- Olivetti, Ing. C., & C., S.p.A.: *See—*
    - Repetti, Renato, 3,847,462.
- Ollendorf, Stanford, to United States of America, National Aeronautics and Space Administration. Structural heat pipe. 3,847,208, Cl. 165-1.000.
- Olsen, Ole Jentoft: *See—*
    - Madsen, Rud Frik; Olsen, Ole Jentoft; and Stenseng, Mogens Martin, 3,847,818.
- Olsen, Severt E.: *See—*
    - Thompson, Chester C.; Olsen, Severt E.; and Loby, Raymond J., 3,848,174.
- Olsen, Willi; and Schlosser, Klaus, to Siemens Aktiengesellschaft. Hollow high-voltage electric insulator. 3,848,081, Cl. 174-209.000.
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- Olympia Werke AG: *See—*
    - Rittberg, Eilt-Heyo, 3,848,118.
- Omnitext, Inc.: *See—*
    - Leibler, Jerome E.; Bloch, Carl J.; Preston, Marvin, IV; and Weiser, Mark D., 3,848,232.
- Omori, Akira: *See—*
    - Suzuki, Hideaki; Togawa, Haruo; Omori, Akira; and Yamamoto, Naoki, 3,847,842.
- Onda, Eiichi; Koyama, Mitsuo; and Nakagawa, Tadashi, to Seiko Koki Kabushiki Kaisha. Shutter assembly having means for preventing rebounding of the shutter blades. 3,847,476, Cl. 354-252.000.
- Onitsuka Co., Ltd.: *See—*
    - Kobayashi, Kazutoshi, 3,846,921.
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    - MacNeill, John H., 3,848,228.
- Opticase, Inc.: *See—*
    - Nathan, Emanuel, 3,846,872.
- Ortner, Lorenz; Heinzelmann, Karl-Georg; Conrad, Bernd; and Dierker, Joachim, to Siemens Aktiengesellschaft. Process for making light conducting plates. 3,847,696, Cl. 156-154.000.
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    - Becker, Wilhelm; Osse, Peter; Gutte, Richard; and Hochbach, Friedrich, 3,847,726.
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    - Araki, Hidejiro; Katoh, Takashi; and Otani, Susumu, 3,846,870.
- Otsap, Ben A.: *See—*
    - Boyadjieff, George I.; and Otsap, Ben A., 3,847,216.

- Boyadjieff, George I.; and Otsap, Ben A., 3,847,218.
- Otte, Richard F., to Raychem Corporation. Capacitive electrical connectors. 3,848,164, Cl. 317-256.000.
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    - Crimmel, Harry W.; Terezakis, Emanuel G.; and Sutula, Phyllis A., 3,847,655.
    - Erickson, Thomas D.; and Wolf, Warren W., 3,847,626.
    - Erickson, Thomas D.; and Wolf, Warren W., 3,847,627.
    - Fulk, Walter F.; and Lyle, Phra D., 3,847,579.
- Owens-Illinois, Inc.: *See—*
    - Peters, Homer D. F.; Rough, Robert R.; and Ryan, William H., 3,847,581.
- Oxy Metal Finishing Corporation: *See—*
    - Murphy, Donald P.; and Valatka, Henry, 3,847,839.
- Ozaki, Hachiro: *See—*
    - Shiio, Isamu; Ozaki, Hachiro; and Nakamatsu, Tsuyoshi, 3,847,744.
- Pacific Technica Corporation: *See—*
    - Feldmann, Fritz, 3,847,082.
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    - Statman, Max; and Page, Ralph E., Jr., 3,847,756.
- Pages Holding S.A.: *See—*
    - Lambertoni, Oreste, 3,847,137.
- Pain, David Lord: *See—*
    - Knowles, Philip; Marshall, Stuart Malcolm; Pain, David Lord; and Wooldridge, Kenneth Robert Harry, 3,847,919.
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    - Lewis, John C., 3,848,107.
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    - Creger, Paul L.; and Neuklis, Winifred A., 3,847,994.
- Parker, Louis W.: *See—*
    - Jamieson, Joseph, 3,848,166.
- Parker, William Andrew; and Kryder, Robert A., to RCA Corporation. Automatic brightness control for image intensifier tube. 3,848,123, Cl. 250-213.0vt.
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    - Eschbaugh, John T.; and Mooney, David N., 3,847,421.
- Parks, Christ F.: *See—*
    - Eilers, Louis H.; and Parks, Christ F., 3,847,858.
- Parlin, David B.: *See—*
    - Sheehan, Richard W.; Parlin, David B.; Jamrogowicz, Harry F.; and Patterson, John A., 3,846,968.
- Parrish, Douglas R.; and Parrish, Richard A., to Parrish's Cake Decorating Supplies, Inc. Universal coupler for cake icing decorating tubes. 3,847,523, Cl. 425-191.000.
- Parrish, Richard A.: *See—*
    - Parrish, Douglas R.; and Parrish, Richard A., 3,847,523.
- Parrish's Cake Decorating Supplies, Inc.: *See—*
    - Parrish, Douglas R.; and Parrish, Richard A., 3,847,523.
- Parsons, Stuart L.; and Kloth, James Albert, to AMP Incorporated. Method and tool for preparing three conductor-cable for electrical fixture. 3,846,894, Cl. 29-203.00h.
- Pasqualucci, Carmine: *See—*
    - Turolla, Carlo; Bonfanti, Giovanni; and Pasqualucci, Carmine, 3,847,903.
- Pasternak, Israel S.; Dugan, John J.; and Higgins, James P., to Exxon Research and Engineering Company. Visbreaking a heavy hydrocarbon feedstock in a regenerable molten medium. 3,847,797, Cl. 208-114.000.
- Patel, Kanu I.; and Reiss, Carroll R., to Redken Laboratories, Inc. Acidic permanent waving solution and process for its use. 3,847,165, Cl. 132-7.000.
- Paterniti, Sam C., to Union Carbide Corporation. Reduced mercury containing zinc alkaline cells. 3,847,669, Cl. 136-30.000.
- Patrick, John; and Durmann, George J. Window shade and curtain brackets and mounting means therefor. 3,847,337, Cl. 248-252.000.
- Pattee, Warren K. Universal adaptor and disconnect for accessory ignition. 3,847,464, Cl. 339-31.00r.
- Patten, Dan H., Jr. Pickup mechanism. 3,847,267, Cl. 198-20.00r.
- Patterson, John A.: *See—*
    - Sheehan, Richard W.; Parlin, David B.; Jamrogowicz, Harry F.; and Patterson, John A., 3,846,968.
- Patterson, John W.; and Fried, John H., to Syntex (U.S.A.) Inc., mesne. Prostaglandins and process and intermediates therefor. 3,847,962, Cl. 260-448.80r.
- Paul, Donald G., to Chromalytics Corporation. Method and system for thermal analysis. 3,847,546, Cl. 23-230.0pc.
- Paul, Phillip T.: *See—*
    - Kindle, Robert W.; Barnhart, Robert R.; and Paul, Phillip T., 3,847,727.
- Paulik, Frank E., to Monsanto Company. Method for producing hydrogen iodide. 3,848,065, Cl. 423-487.000.
- Paull, David, to Swiss Aluminium Ltd., mesne. On site method of erecting a wall structure and a weather gasket joint. 3,846,951, Cl. 52-741.000.
- Paulucci, Jeno F.; d/b/a Paulucci, Jeno F., Enterprises: *See—*
    - Guibert, Raul, 3,847,069.
- PB Chemicals Limited: *See—*
    - Coulter, Michael Oliver; and Bell, David, 3,847,598.
- Peacock, George Brandwood; and Dobson, Austin, to Platt International Limited. Twisting of textile filaments. 3,846,966, Cl. 57-77.400.
- Pearce, Arthur W. Spreading and end spill dump trailer. 3,847,405, Cl. 280-34.00a.
- Peavy, Patrick L.: *See—*
    - Weber, Charles W.; Rucker, C. Olen; Peavy, Patrick L.; Woo, Pak-Fat (William); and Bear, James E., 3,847,207.
- Pechard, Lucien Leon, to Bunker Ramo Corporation. Connector for printed circuit boards. 3,848,223, Cl. 339-176.0mp.
- Pedersen, Bjarne Skinhoj: *See—*
    - Weis, Jon; and Pedersen, Bjarne Skinhoj, 3,848,002.
- Pedersen, Charles John; and Bromels, Marilyn H., to Du Pont de Nemours, E. I., and Company. Macrocyclic hetero imine complexing agents. 3,847,949, Cl. 260-340.300.
- Pedigo, Richard A. Grass clipping compacter attachment for lawnmowers. 3,846,963, Cl. 56-13.300.
- Peeso, James Bruce, Jr., to American Cyanamid Company. Dewatering acrylonitrile polymers. 3,847,885, Cl. 260-85.50r.
- Peeters, Hugo Karel: *See—*
    - Laridon, Urbain Leopold; Delzenne, Gerard Albert; and Peeters, Hugo Karel, 3,847,610.
- Pegler, John Owen Michael; and Mapes, Brian Edward George, to Lloyd, Richard, Limited. Milling cutters. 3,847,555, Cl. 29-105.00r.
- Pelteson, Frank M.: *See—*
    - Boltinghouse, Joseph C.; Pelteson, Frank M.; and Pinson, John C., 3,847,026.
- Pennwalt Corporation: *See—*
    - Morris, David E.; and Smith, Francis R., 3,847,981.
- Pensky, Jack: *See—*
    - Green, Allan M.; and Pensky, Jack, 3,847,890.
- Pepper, Kenneth V., to Genova Products. Plumbing fitting. 3,846,851, Cl. 4-252.00r.
- Perconti, Thomas J.: *See—*
    - Brandon, Kenneth F.; and Perconti, Thomas J., 3,847,319.
- Perel, Julius: *See—*
    - Mahoney, John F.; and Perel, Julius, 3,848,258.
- Peresypkin, Alexei Vasilievich: *See—*
    - Pozdnikov, Vladimir Nikolaevich; Sazonov, Oleg Leonidovich; Taxar, Iegoshua Mikhailovich; Tesnavs, Edgar Rikhardovich; Yanushkovsky, Vladimir Alexandrovich; Gavrilov, Alexandr Pavlovich; Korkonosov, Valentin Petrovich; Peresypkin, Alexei Vasilievich; and Sapovalov, Eduard Parfentievich, 3,848,131.
- Perez, George R., to AMF Incorporated. High capacity underwater acoustic release. 3,848,226, Cl. 340-5.00r.
- Perreault, Donald A., to Xerox Corporation and Teledyne Casting. Semi-encoded fascimile transmission. 3,847,732, Cl. 178-6.000.
- Perron, Robert R.; and Fowler, John T., to Little, Arthur D., Inc. Electronic lock system. 3,848,229, Cl. 340-149.00a.
- Perrotti, Emilio: *See—*
    - Santambrogio, Alberto; and Perrotti, Emilio, 3,847,902.
- Perry, Dean A. Valve with elliptical sealing. 3,846,885, Cl. 29-157.10r.
- Perry, Reginald P.; and Sjoberg, Nils W., to Prime Manufacturing Company. Sewing rib. 3,846,920, Cl. 36-22.00a.
- Peska, Lawrence, Associates, Inc.: *See—*
    - Waters, Lyle E., 3,847,300.
- Peter, Lothar: *See—*
    - Peter, Oskar E.; and Peter, Lothar, 3,847,493.
    - Peter, Oskar E.; and Peter, Lothar, 3,847,495.
- Peter, Oskar E.: *See—*
    - Peter, Oskar E.; and Peter, Lothar (said Peter, Lothar assor. to said), 3,847,493.
    - Peter, Oskar E.; and Peter, Lothar, 3,847,495.
- Peter, Oskar E.; and Peter, Lothar, said Peter, Lothar assor. to said Peter, Oskar E. Double conical hub-to-shaft connection. 3,847,493, Cl. 403-370.000.
- Peter, Oskar E.; and Peter, Lothar, to Peter, Oskar E. Symmetrical hub-to-shaft connection. 3,847,495, Cl. 403-370.000.
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- Peterson, Charles J. Convertible backpack and cot apparatus. 3,846,855, Cl. 5-114.000.
- Peterson, Wayne A.: *See—*
    - Beck, Henry E.; and Peterson, Wayne A., 3,847,059.
    - Hicks, Leon E.; Grant, John W.; Watts, Loyal O.; and Peterson, Wayne A., 3,847,416.

- Petrolite Corporation: *See—*
  - Jarrell, William Grant, 3,847,774.
- Peuchmaur, Alphonse, to Commissariat a l'Energie Atomique. Device for providing heat insulation at high temperature. 3,847,148, Cl. 138-178.000.
- Pfaff Industriemaschinen GmbH: *See—*
  - Albrecht, Ernst; and Hubele, Klaus, 3,847,096.
- Pfaff Industriemaschinen G.m.b.H., Firma: *See—*
  - Braun, Oskar, 3,847,099.
- PFAFF Industriemashiener G.m.b.H.: *See—*
  - Dusch, Albert; and Hintzen, Peter, 3,847,097.
- Pfeefer, Philip E.: *See—*
  - Silbert, Leonard S.; Pfeefer, Philip E.; and Konen, Dolores A., 3,847,956.
- Pfefferle, William C., to Engelhard Minerals & Chemicals Corporation. Two stage combustion process. 3,846,979, Cl. 60-39.040.
- Pfizer, Inc.: *See—*
  - Cronin, Timothy H., 3,847,900.
- Pfjcha, Ivan. Translational motion apparatus. 3,847,454, Cl. 308-62.000.
- Philippaerts, Herman A.; Pollet, Robert Joseph; Muller-Bardorff, Wolfgang; Saleck, Wilhelm; Moll, Franz; and Ghys, Theofiel Hubert, to Agfa-Gevaert. Process of preparing fine-grain silver halide emulsions. 3,847,617, Cl. 96-94.00r.
- Phillips Cable Limited: *See—*
  - Forester, Glen Robert, 3,847,190.
- Phillips Fibers Corporation: *See—*
  - Su, Tsung-Yuan, 3,847,554.
- Phillips, Jack C.; and Bennett, Donald E., to United States of America, Navy. Control surface deployment mechanism. 3,847,369, Cl. 244-42.00r.
- Phillips Petroleum Company: *See—*
  - Allen, James D., 3,847,997.
  - Bates, Bruce L., 3,846,993.
  - Erickson, Wayne K., 3,846,881.
  - Farfaglia, Silvio T.; and Bock, Ronald E., 3,847,540.
  - Johnson, Marvin M.; and Tabler, Donald C., 3,847,946.
  - Myers, John W., 3,848,019.
  - Schorno, Karl S., 3,847,549.
  - Seefluth, Charles L., 3,848,036.
- Picker Corporation: *See—*
  - Foderaro, Anthony J., 3,848,132.
- Pierce, Ogden R.: *See—*
  - Kim, Yung Ki; and Pierce, Ogden R., 3,847,916.
- Pierle, Willy R. J.: *See—*
  - Keijzer, Johan H.; Pierle, Willy R. J.; and Van de Voorde, G., 3,847,410.
- Pike, John E.: *See—*
  - Lincoln, Frank H., Jr.; Pike, John E.; and Youngdale, Gilbert A., 3,847,967.
- Pike, John E., to Upjohn Company, The. Prostagland E_1 F_1 and A_1 analogs. 3,847,966, Cl. 260-468.00d.
- Pilgram, Kurt H.; and Skiles, Richard D., to Shell Oil Company. Thiazoles herbicidal. 3,847,588, Cl. 71-90.000.
- Pim, Norman L., to Gulf-Western Manufacturing Company. Balance bar for handling wrapper rolls of a strip coiling machine. 3,847,429, Cl. 294-67.0aa.
- Pinel, John Fowler, to Bell-Northern Research Ltd. Telephone hybrid transformer balance network. 3,848,098, Cl. 179-170.00d.
- Pines, Seemon H.: *See—*
  - Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,847,969.
- Pinson, John C.: *See—*
  - Boltinghouse, Joseph C.; Pelteson, Frank M.; and Pinson, John C., 3,847,026.
- Pitney-Bowes, Inc.: *See—*
  - Schwartz, Leon J.; Spiegel, Gerald M., Jr.; and Hecht, Leon N., Jr., 3,847,606.
- Pitt, W. Wilson, Jr.: *See—*
  - Scott, Charles D.; and Pitt, W. Wilson, Jr., 3,847,550.
- Platt International Limited: *See—*
  - Peacock, George Brandwood; and Dobson, Austin, 3,846,966.
- Platz, Rolf; Nagel, Otto; and Fuchs, Werner, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Exothermic catalytic hydrogenation of organic compounds in a liquid reaction medium. 3,847,989, Cl. 260-570.900.
- Platzke, Ronald N.: *See—*
  - Carey, Curtis D.; and Platzke, Ronald N., 3,848,069.
- Plumhans, Leon Paul Jean, to Uniroyal A.G. Segmental mold. 3,847,520, Cl. 425-47.000.
- Podolor, Donald E.: *See—*
  - Block, Marshall H.; Hubbard, Gerald L.; and Podolor, Donald E., 3,846,931.
- Poffenberger, James C., to Preformed Line Products Company. Appliance for linear bodies. 3,847,491, Cl. 403-209.000.
- Pohlmeyer, Wilhelm: *See—*
  - Becher, Wilfried; Massonne, Joachim; and Pohlmeyer, Wilhelm, 3,848,064.
- Poirier, Jean R.: *See—*
  - Cotey, John; and Poirier, Jean R., 3,847,143.
- Polak, Roger J.: *See—*
  - Fuzesi, Stephen; Lapkin, Milton; and Polak, Roger J., 3,847,844.
- Polkekowski, Helmut: *See—*
  - Huttenbrauck, Herbert; Ostrop, Berthold; Soliman, Mustafa; and Polkekowski, Helmut, 3,847,438.
- Pollack, Jerry J.: *See—*
  - Reim, Thomas E.; Pollack, Jerry J.; and Kemmerling, Robert A., 3,848,135.
- Pollet, Robert Joseph: *See—*
  - Philippaerts, Herman A.; Pollet, Robert Joseph; Muller-Bardorff, Wolfgang; Saleck, Wilhelm; Moll, Franz; and Ghys, Theofiel Hubert, 3,847,617.
- Pollitzer, Ernest L.: *See—*
  - Hilfman, Lee; Pollitzer, Ernest L.; and Michalko, Edward, 3,847,796.
- Pollkotter, Gunter: *See—*
  - Schroder, Paul B.; and Pollkotter, Gunter, 3,846,886.
- Polysius AG: *See—*
  - Thiesler, Ingo; and Hackbarth, Wilhelm, 3,847,403.
- Poncet, Pierre; and Trempu, Rene, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Purification of gaseous streams containing sulfur derivatives. 3,848,058, Cl. 423-242.000.
- Poncy, George W., to Johnson & Johnson, mesne. Sterile package for clinical thermometers and the like and method of making it. 3,847,280, Cl. 206-306.000.
- Pope, William T. Qualitative RF output-reflected power indicator. 3,848,189, Cl. 324-95.000.
- Porath, Jerker Olof: *See—*
  - Axen, Rolf; Vretblad, Per; and Porath, Jerker Olof, 3,847,745.
  - Fryklund, Linda; and Porath, Jerker Olof, 3,847,889.
- Porret, Daniel: *See—*
  - Garratt, Peter Garth; Habermeier, Juergen; Porret, Daniel; Leumann, Ernst; and Zuppinger, Paul, 3,847,769.
- Potter, Robert Louis: *See—*
  - Chase, John Donald; and Potter, Robert Louis, 3,847,864.
- Powers, John Glenn: *See—*
  - Bussey, Robert William; and Powers, John Glenn, 3,848,207.
- Powers, Thomas J.; and Jones, Shelton J., to Olinkraft, Inc. Nonblocking foamed polymeric laminate and method. 3,847,724, Cl. 161-161.000.
- Pozdnikov, Vladimir Nikolaevich; Sazonov, Oleg Leonidovich; Taxar, Iegoshua Mikhailovich; Tesnavs, Edgar Rikhardovich; Yanushkovsky, Vladimir Alexandrovich; Gavrilov, Alexandr Pavlovich; Korkonosov, Valentin Petrovich; Peresypkin, Alexei Vasilievich; and Sapovalov, Eduard Parfentievich. Radioactive radiation detection system. 3,848,131, Cl. 250-388.000.
- PPG Industries, Inc.: *See—*
  - Houser, Lloyd; and Jeffries, William G., 3,847,584.
  - Misson, George W., 3,847,580.
  - Oliver, John M., 3,847,754.
  - Reese, Thomas J.; Claassen, George R.; and Tobin, Melvin W., 3,847,586.
  - Steiger, Roger A.; and Wilson, William L., 3,848,062.
  - Strain, Franklin, 3,847,762.
- Prasse, Herbert F.; and McCormick, Harold E., to Ramsey Corporation. Polyimide high-temperature resistant plastic sealing element. 3,847,518, Cl. 418-122.000.
- Prats, Michael: *See—*
  - Wang, Kuo H.; Prats, Michael; and Campbell, Don A., 3,847,219.
- Preformed Line Products Company: *See—*
  - Poffenberger, James C., 3,847,491.
- Preiswerk, Martin: *See—*
  - Avar, Lajos; Hofer, Kurt; and Preiswerk, Martin, 3,847,960.
- Presser, Adolph, to United States of America, Navy. Turnable solid state local oscillator. 3,848,201, Cl. 331-76.000.
- Preston, Marvin, IV: *See—*
  - Leibler, Jerome E.; Bloch, Carl J.; Preston, Marvin, IV; and Weiser, Mark D., 3,848,232.
- Prestridge, Floyd L., to Combustion Engineering, Inc. Process for electrical coalescing of water. 3,847,775, Cl. 204-191.000.
- Price, George D. Game apparatus with a pair of board members and playing pieces. 3,847,397, Cl. 273-131.0ad.
- Prichard, Robert A. Spinner for applying designs to fabrics. 3,847,116, Cl. 118-52.000.
- Prime Manufacturing Company: *See—*
  - Perry, Reginald P.; and Sjoberg, Nils W., 3,846,920.
- Probe Rite, Inc.: *See—*
  - Ardezzone, Frank J.; and Silverstein, Milton M., 3,848,188.
- Procter & Gamble Company, The: *See—*
  - Seiden, Paul, 3,848,047.
- Propper Manufacturing Co., Inc.: *See—*
  - Inglish, Sumter R.; and May, Walter John, 3,847,274.
- Prouty, Robert E.; and Smith, James J., to Essex International, Inc. Electromagnetic solenoid with improved contact antibounce means. 3,848,206, Cl. 335-193.000.
- Przedsiebiorstwo Dawiadczalne Pras Automatycznych i Tiocznikon "-Ponar-Hydomat": *See—*
  - Nowak, Edmund, 3,847,074.
- Przybyla, Franciszek, to Mallory Battery Company of Canada Limited. Porous cadmium anode and a method of forming it, and a primary cell using the anode. 3,847,784, Cl. 204-292.000.
- Puidak, Heino, to Magnaflux Corporation. Eddy current testing system having concentric coils, one being movable for balancing. 3,848,183, Cl. 324-40.000.
- Puls, Walter: *See—*
  - Brandenburg, Dietrich; and Puls, Walter, 3,847,893.
- Purchas, Derek Bernard. Filtering apparatus. 3,847,820, Cl. 210-457.000.
- Putz, Joachim, to Edeleanu Gesellschaft mbH. Two stage urea dewaxing process. 3,847,790, Cl. 208-25.000.

- Quality Engineered Specialty Products, Inc.: *See—*
  - Rafe, Samuel Joseph; Burruss, Robert Page, Jr.; Lebow, Stanley Morris; and Callahan, Stephen Phillips, 3,847,317.
- Quinlan, Joseph B.; and Darrah, Arthur F., to United States of America, Army. Ammunition. 3,847,081, Cl. 102-38.000.
- Quint, Henry J., to Rapistan Incorporated. Method and apparatus for removing filaments from the axle of a caster. 3,847,665, Cl. 134-6.000.
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- Quynn, Richard G., to Burlington Industries, Inc. Barre reduction process. 3,847,544, Cl. 8-178.000.
- Rabe, George B., to Thiokol Chemical Corporation. Rolling diaphragm for expelling liquid from tapered tanks. 3,847,310, Cl. 222-386.500.
- Race, Andras, 54% to Litvin, Robert L. and 46% to Marino, Louis L. Building material for modular construction. 3,847,633, Cl. 106-98.000.
- Radiation Dynamics, Inc.: *See—*
  - Thompson, Chester C.; Olsen, Severt E.; and Loby, Raymond J., 3,848,174.
- Radlmann, Edward; and Nischk, Gunther, to Bayer Aktiengesellschaft. Acrylonitrile (co) polymers containing antistatic agents. 3,847,884, Cl. 260-85.50r.
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- Radutsky, Grigory Avramovich: *See—*
  - Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,847,272.
- Radwill, Robert P.: *See—*
  - Love, Robert B.; and Radwill, Robert P., 3,847,090.
- Raevsky, Georgy Vladimirovich. Pipeline for use under conditions of considerable variations in temperature. 3,847,185, Cl. 138-122.000.
- Rafe, Samuel Joseph; Burruss, Robert Page, Jr.; Lebow, Stanley Morris; and Callahan, Stephen Phillips, to Quality Engineered Specialty Products, Inc. Automobile bicycle rack. 3,847,317, Cl. 224-42.03b.
- Ralston Purina Company: *See—*
  - Dunn, Howard J.; and Farr, M. Paul, 3,847,897.
- Ramacciotti, Aldo; and Eminian, Giancarlo, to Centro Sperimentale Metallurgico S.p.A. Process for refining metals, in particular liquid pig iron, in oxygen converters with continuous control of the operative procedure. 3,847,593, Cl. 75-60.000.
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  - Prasse, Herbert F.; and McCormick, Harold E., 3,847,518.
- Randell, Donald Richard; and Smith, Malcolm John, to Ciba-Geigy Corporation. Hydroxyaryl-tetramenthyl-dehydropiperidines. 3,847,930, Cl. 260-297.00r.
- Ranger, Robel: *See—*
  - Gervais, Edouard; Chollet, Pierre; and Ranger, Robel, 3,847,556.
- Rapistan Incorporated: *See—*
  - Quint, Henry J., 3,847,665.
- Ratschmeier, Dieter; Stark, Reinhard; and Wenk, Jurgen, to Siemens Aktiengesellschaft. Arrangement for generating a clock frequency signal for recording information on a data carrier. 3,848,167, Cl. 318-254.000.
- Rausch, Richard E., to Universal Oil Products Company. Sulfur-free reforming with a platinum-tin catalyst. 3,847,794, Cl. 208-88.000.
- Ravenhall, Arthur S., to Dunlop Limited. Pneumatic tires. 3,847,698, Cl. 152-209.00r.
- Ravve, Abraham: *See—*
  - Radlowe, Sol B.; Ravve, Abraham; and Brown, Kenneth H., 3,847,770.
- Ray, Robert L., to Dayco Corporation. Endless power transmission belt and method of making same. 3,847,029, Cl. 74-233.000.
- Raychem Corporation: *See—*
  - Evans, Joseph H., 3,847,721.
  - Otte, Richard F., 3,848,164.
- Raymont, William R. Golf club with unit-cell head construction. 3,847,399, Cl. 273-167.00f.
- Raytheon Company: *See—*
  - Dench, Edward C., 3,848,038.
  - Toledo, Emil, 3,847,759.
- Razdan, Raj Kumar; and Thompson, William R., to Beecham Group Limited, mesne. Certain ethers, esters or non-toxic acid addition salt derivatives of 2,2-di- and 2,2,3-tri-lower alkyl chroman- and chromen-ols. 3,847,928, Cl. 260-295.00f.
- RCA Corporation: *See—*
  - Anderson, Leonard Hugo, 3,848,191.
  - Carrell, Ross Michael, 3,848,087.
  - DeBrecht, Robert Eugene; and Napoli, Louis Sebastian, 3,848,198.
  - Kaiser, Donald Bernard, 3,847,703.
  - Kawamoto, Hirohisa; Allen, Elmer Lawrence, Jr.; and Weisbrod, Sherman, 3,848,196.
  - Logemann, Hugo, Jr.; and Dion, Donald Francis, 3,847,394.
  - Parker, William Andrew; and Kryder, Robert A., 3,848,123.
  - Rodda, William E.; and Dorsey, Denis Peter, 3,848,084.
  - Sterzer, Fred, 3,848,141.
  - Tourtellot, John Allen; and Stave, Frederick Roland, 3,848,146.
- Redken Laboratories, Inc.: *See—*
  - Patel, Kanu I.; and Reiss, Carroll R., 3,847,165.
- Reed, Samuel F., Jr.: *See—*
  - Baldwin, Mart G.; and Reed, Samuel F., Jr., 3,847,882.
  - Stevens, Travis E.; and Reed, Samuel F., Jr., 3,847,958.
- Reed Tool Company: *See—*
  - Schumacher, Percy W., Jr.; and Murdoch, Henry W., 3,847,234.
- Reese, Franklin S.: *See—*
  - Draugelis, Vaidevutis C.; Reese, Franklin S.; and Wagner, John W., 3,848,204.
- Reese, Thomas J.; Claassen, George R.; and Tobin, Melvin W., to PPG Industries, Inc. Apparatus for bending glass sheets to sharp curvatures. 3,847,586, Cl. 55-290.000.
- Regie Nationale des Usines Renault: *See—*
  - Roger, Yves, 3,847,056.
- Rehm, John F.; and Lloyd, Evan E. M., to Singer Company, The. Information transmission system. 3,848,230, Cl. 340-163.000.
- Reichhold-Albert Chemie Aktiengesellschaft: *See—*
  - Becker, Wilhelm; Osse, Peter; Gutte, Richard; and Hochbach, Friedrich, 3,847,726.
- Reid, Jay H., to Sears, Roebuck and Co. Tote box attachment for suburban type tractor. 3,847,436, Cl. 298-1.00c.
- Reid, William M. Low temperature natural gas transmission. 3,846,994, Cl. 62-87.000.
- Reim, Thomas E.; Pollack, Jerry J.; and Kemmerling, Robert A., to Republic Steel Corporation. Radiation source holder. 3,848,135, Cl. 250-496.000.
- Reinehr, Ulrich: *See—*
  - Engelhard, Helmut; Blankenstein, Gunter; and Reinehr, Ulrich, 3,848,028.
- Reinhall, Rolf Bertil. Device in grinding apparatus for vegetable or fibrous material. 3,847,363, Cl. 241-245.000.
- Reisman, Jack L. Lens processing apparatus. 3,846,889, Cl. 29-200.00d.
- Reiss, Carroll R.: *See—*
  - Patel, Kanu I.; and Reiss, Carroll R., 3,847,165.
- Reissmueller, Karl H.: *See—*
  - Ho, Ernest C.; Reissmueller, Karl H.; and Belardi, Richard J., 3,846,971.
- Reliance Electric Company: *See—*
  - Hall, Donivan L.; and Kupper, Walter E., 3,847,238.
- Renn, Charles F.: *See—*
  - Dershem, Thomas L.; and Renn, Charles F., 3,848,072.
- Repetti, Renato, to Olivetti, Ing. C., & C., S.p.A. Sliding drawer for tables and office desks. 3,847,462, Cl. 312-330.000.
- Republic Steel Corporation: *See—*
  - Reim, Thomas E.; Pollack, Jerry J.; and Kemmerling, Robert A., 3,848,135.
- Rewop Company: *See—*
  - Caldwell, Alan K., 3,847,515.
- Rexek, John R.: *See—*
  - Millington, Raymond J.; and Rexek, John R., 3,848,143.
- Rexnord, Inc.: *See—*
  - Gley, Paul R., 3,847,423.
- Reynolds, Blake: *See—*
  - Marion, Charles P.; and Reynolds, Blake, 3,847,564.
- Reznik, Barry David, to DeWiant Corporation. Erosion resistant composites. 3,847,559, Cl. 29-195.000.
- Rheinstahl Aktiengesellschaft: *See—*
  - Ubelacker, Erich, 3,847,053.
- Rhodes, Warren L., to Xerox Corporation. Method for transferring electrostatographically formed images. 3,847,642, Cl. 117-17.500.
- Rhone-Poulenc S.A.: *See—*
  - Boesch, Roger, 3,847,987.
  - Bouchaudon, Jean; Vourat, Guy; and Margrafe, Rodolphe, 3,847,868.
  - Chabardes, Pierre; Julia, Marc; and Menet, Albert, 3,848,000.
  - Cotrel, Claude; Jeanmart, Claude; and Messer, Mayer Naoum, 3,847,921.
- Rhone-Progil: *See—*
  - Chanel, Rene; Alexandre, Bernard; Leroi, Jean-Claude; and Billion, Jacques, 3,847,755.
- Rice, Dale W., to Corning Glass Works. Method for producing metal compounds. 3,848,068, Cl. 423-335.000.
- Rich, Hubert A.: *See—*
  - Hill, Allen D.; Bass, Sidney; and Rich, Hubert A., 3,846,933.
- Richards, James C.; and Trescott, Edward B. Addition of sulfur to alkyldihalogenphosphine. 3,847,979, Cl. 260-543.00p.
- Richardsen, Richard Flohrs: *See—*
  - Bielfeldt, Friedrich Bernd; and Richardsen, Richard Flohrs, 3,847,525.
- Richardson, Edwin A.: *See—*
  - Suman, George O., Jr.; Richardson, Edwin A.; and Scheuerman, Ronald F., 3,847,638.
- Richardson-Merrell Inc.: *See—*
  - Sill, Arthur D.; and Fleming, Robert W., 3,847,953.
- Richardson-Merrell S.p.A.: *See—*
  - Viterbo, Rene; and Jacques, Jean, 3,848,030.
- Ricoh Co., Ltd.: *See—*
  - Matsuhisa, Koh, 3,847,261.
  - Matsuura, Tadashi, 3,847,342.
- Riddel, John W., to General Motors Corporation. Air-fuel ratio sensor. 3,847,778, Cl. 204-195.00s.

Ridgway, John A., Jr.; Lappin, Terry A.; Benjamin, Benny Moses; Corns, Joseph B.; and Akin, Cavit, to Standard Oil Company. Aerobic fermentation apparatus. 3,847,750, Cl. 195-142.000.
Ridyard, Denis Robert Annesley, to Imperial Chemical Industries Limited. Aryl-azo-pyridone compounds containing a substituted pyrimidine or triazine group. 3,847,894, Cl. 260-153.000.
Rieber, Martin; and Loffler, Wilhelm, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Hydrophobic and oleophobic finish. 3,847,657, Cl. 117-135.500.
Rieger, Klaus K.: *See—*
Withers, James G., Jr.; and Rieger, Klaus K., 3,847,212.
Rieve, Robert W.; and Shalit, Harold, to Atlantic Richfield Company. Hydrocracking high molecular weight hydrocarbons containing sulfur and nitrogen compounds. 3,847,795, Cl. 208-108.000.
Riggio, Antonino. Pneumatic vise with high clamping force. 3,847,381, Cl. 269-32.000.
Rimlinger, Donald C.: *See—*
Squires, Howard J.; and Rimlinger, Donald C., 3,847,283.
Riordan, William J., to Kidde, Walter, & Company Inc. Flame ignition and supervision system. 3,847,533, Cl. 431-78.000.
Risk, Norman E.: *See—*
Freedy, Allan L.; and Risk, Norman E., 3,846,983.
Ritchie, William Barney, Jr.: *See—*
Bowley, Wallace William, 3,846,990.
Rittberg, Eilt-Heyo, to Olympia Werke AG. Jet printer, particularly for an ink ejection printing mechanism. 3,848,118, Cl. 239-101.000.
Rizzi, Joseph D.; and Fagan, Lloyd D., to Intersil Incorporated. Double junction read only memory. 3,848,238, Cl. 340-173.0sp.
Robbins & Myers, Inc.: *See—*
Goebel, Robert W.; and Marous, George R., 3,848,145.
Robertshaw Controls Company: *See—*
Russell, William J., 3,848,211.
Robertson Paper Box Co., Inc.: *See—*
Tyrseck, Walter J., 3,847,195.
Robinson, Edward L.: *See—*
Nasalski, Paul J.; and Robinson, Edward L., 3,847,325.
Robinson, Jacques D.: *See—*
Applegath, Fred; DuPree, Louis E., Jr.; MacFarlane, Alistair C.; and Robinson, Jacques D., 3,848,012.
Robra, Helmut: *See—*
Schmoll, Heinz; and Robra, Helmut, 3,847,008.
Robson, Harry E., to Esso Research and Engineering Company. Hydroisomerization of normal paraffinic hydrocarbons with a catalyst composite of chrysotile and hydrogenation metal. 3,848,018, Cl. 260-683.650.
Roby, Michael A., to Rubbermaid Commercial Products Inc. Duckboard fatigue relief mat. 3,846,945, Cl. 52-177.000.
Rockwell International Corporation: *See—*
Beever, Elmer R.; Shima, Rindge; and Zebus, Paul P., 3,847,024.
Boltinghouse, Joseph C.; Pelteson, Frank M.; and Pinson, John C., 3,847,026.
Troutman, Bruce L., 3,848,236.
Rodda, William E.; and Dorsey, Denis Peter, to RCA Corporation. Storage tube control apparatus for a telephone image transmission system. 3,848,084, Cl. 178-6.800.
Rodewald, Bernhard: *See—*
Mueller, Wolfgang; Rodewald, Bernhard; and Witzke, Lothar, 3,847,597.
Rodi & Wienenberger Aktiengesellschaft: *See—*
Schaudel, Rolf, 3,846,976.
Rodkey, Robert W.: *See—*
Wojtowicz, Edward A.; Lazzarotti, James; Hunter, James R.; and Rodkey, Robert W., 3,847,383.
Roemer, Leonhard J., Jr. Power capstan for anchor rope and the like. 3,847,378, Cl. 254-175.700.
Roesler, Frank Cornelius: *See—*
Gibson, Malcolm Ritchie; Roesler, Frank Cornelius; Smith, Stuart Raymond Leslie; and Maslen, Frank Peter, 3,847,748.
Roger, Yves, to Regie Nationale des Usines Renault and Automobiles Peugeot. Apparatus for manufacturing internal gears. 3,847,056, Cl. 90-73.000.
Rogers, William A., to Tanner Engineering Co. Low-friction seal. 3,847,389, Cl. 277-153.000.
Rogner, Gerd, to Singer Company, The. Needle thread wiper and pull-back mechanism for sewing machines. 3,847,102, Cl. 112-252.000.
Rohm & Haas Company: *See—*
Haag, Thomas H.; and Kine, Benjamin B., 3,847,857.
Walker, Robert Winn, 3,847,995.
Rohner, Joachim; Maassen, Wilhelm; and Haberkorn, Egon, to Schlafhorst, W., & Co. Pattern disruption device for crosswinding machines. 3,847,364, Cl. 242-18.100.
Rohr, Otto: *See—*
Janiak, Stefan; and Rohr, Otto, 3,847,932.
Rohr, Wolfgang: *See—*
Zeeh, Bernd; Rohr, Wolfgang; Koenig, Karl-Heinz; and Fischer, Adolf, 3,847,931.
Rohrback, Gilson H.; and Homes, Elmond A., to Magna Corporation. Method of detecting the onset of formation of adherent precipitates on surfaces immersed in liquids, and of controlling the formation of such precipitates. 3,848,187, Cl. 324-65.0cr.
Roldan Martinez, Christobal: *See—*
Brana Fernandez, Miguel; and Roldan Martinez, Christobal, 3,847,941.
Roll-O-Sheets, Incorporated: *See—*
Jackson, Richard S., 3,847,047.
Rollei-Werke Franke & Heidecke: *See—*
Sobotta, Reinhard, 3,847,472.
Sobotta, Reinhard, 3,847,473.
Romano, Ugo: *See—*
Moggi, Pietro; and Romano, Ugo, 3,847,937.
Romeo, Donald E.; and Burcham, Neil P., to TRW Inc. MOS integrated circuit structure. 3,848,261, Cl. 357-71.000.
Rometsch, Werner; and Veil, Karl, to Bosch, Robert, G.m.b.H. Hydrostatic drive for automotive vehicles or the like. 3,846,982, Cl. 60-445.000.
Ronzio, Richard A.; Kay, Herbert; and Vincent, John D., to American Metal Climax, Inc. Process for producing high purity molybdenum oxide and ammonium molybdate. 3,848,049, Cl. 423-54.000.
Rose, Herbert E. Method and apparatus for bending arches for doorways and the like. 3,847,006, Cl. 72-375.000.
Ross, H. Cameron. Foldable portable sign standard. 3,847,335, Cl. 248-166.000.
Rossi, Anthony T. Flap closing mechanism for high speed automatic casing machine. 3,846,962, Cl. 53-374.000.
Rossi, Eugene F., to Allis-Chalmers Corporation. Reduction kiln having distribution system. 3,847,538, Cl. 432-113.000.
Roto Diesel: *See—*
Bonin, Jean-Claude, 3,847,509.
Rough, Robert R.: *See—*
Peters, Homer D. F.; Rough, Robert R.; and Ryan, William H., 3,847,581.
Roy, Prodyot; Simpson, James L.; and Aitken, Edward A., to United States of America, Atomic Energy Commission. Method and apparatus for fabricating composite ceramic members. 3,847,653, Cl. 117-93.000.
Royal Appliance Mfg. Co.: *See—*
Holman, William G., 3,846,865.
Royal Seating Corporation: *See—*
Jennings, Roy E., 3,847,432.
Rubbermaid Commercial Products Inc.: *See—*
Roby, Michael A., 3,846,945.
Rubio, Alfred M.: *See—*
Chaffee, William H.; Rubio, Alfred M.; and Lorenz, Richard L., 3,846,888.
Rucker, C. Olen: *See—*
Weber, Charles W.; Rucker, C. Olen; Peavy, Patrick L.; Woo, Pak-Fat (William); and Bear, James E., 3,847,207.
Rudolph, Hans: *See—*
Nielinger, Werner; Rudolph, Hans; Dhein, Rolf; and Schneider, Kurt, 3,847,877.
Rudolphy, Albert, to Hoechst Aktiengesellschaft. Ink binder. 3,847,850, Cl. 260-20.000.
Rudszinat, Willy, to Hauni-Werke Korber & Co. K.G. Method and apparatus for testing wrappers of cigarettes or the like. 3,847,044, Cl. 83-2.000.
Ruger, William B.; and Sefried, Harry H., II, to Sturm, Ruger & Co., Inc. Bolt latch for auto loading firearm. 3,846,928, Cl. 42-16.000.
Ruger, William B.; and Sefried, Harry H., II, to Sturm, Ruger & Co., Inc. Burst fire mechanism for auto-loading firearm. 3,847,054, Cl. 89-129.00b.
Rupert, Edward J.; Meyer, Monroe W.; and Uhland, Gerald E., to United States of America, Air Force. Vacuum brazing tantalum alloys. 3,846,903, Cl. 29-487.000.
Russ, Joseph E., to United States of America, Navy. Roll computer. 3,847,348, Cl. 235-151.300.
Russell, Stanley L., to Stromberg-Carlson Corporation. Telephone battery feed circuit. 3,848,094, Cl. 179-18.0fa.
Russell, William J., to Robertshaw Controls Company. Electrical switch construction and an electrical control system utilizing the same or the like. 3,848,211, Cl. 337-64.000.
Ruth, Arthur P. Animal feeder. 3,847,121, Cl. 119-51.130.
Ryan, Paul T., to General Electric Company. Control apparatus for automatic air brake systems. 3,847,450, Cl. 303-81.000.
Ryan, William H.: *See—*
Peters, Homer D. F.; Rough, Robert R.; and Ryan, William H., 3,847,581.
Rypinski, Albert B., to Duo-Mode Electric Transport System, Inc. Dual-mode transportation system. 3,847,085, Cl. 104-122.000.
Saeki, Keiso: *See—*
Matsukawa, Hiroharu; and Saeki, Keiso, 3,847,832.
Safety Devices Incorporated: *See—*
Byrd, Clarence D., 3,847,377.
Saito, Tadayoshi; Miura, Kiyoshi; and Nakano, Yoshiyuki, to Hitachi, Ltd. Electronic analog operational circuit. 3,848,117, Cl. 235-193.000.
Sakaguchi, Shinji: *See—*
Yoshida, Takashi; Sakaguchi, Shinji; and Miyazako, Takushi, 3,847,615.
Sakai, Joseph A., Jr. Lift cell. 3,847,368, Cl. 244-13.000.
Sakai, Masatada: *See—*
Nomaguchi, Tamotsu; Sakai, Masatada; and Ito, Toshio, 3,847,534.
Sakai, Tetsuo: *See—*
Ikeda, Hiroaki; Hirashima, Teruo; Sakai, Tetsuo; Iwamura, Soichi; Ohishi, Iwao; Fujio, Takashi; and Kamegaya, Takeo, 3,848,086.
Sakamoto, Eiichi: *See—*
Nishina, Yoshio; Kono, Isao; Kamakura, Toshio; Nakamura, Hayashi; Fujimori, Noboru; and Sakamoto, Eiichi, 3,847,621.
Sakazume, Kaiichiro; Sakamoto, Eiichi; Mine, Kiyomitsu; Fujimori, Noboru; and Ito, Shigemasa, 3,847,613.

Sakazume, Kaiichiro; Sakamoto, Eiichi; Mine, Kiyomitsu; Fujimori, Noboru; and Ito, Shigemasa, to Konishiroku Photo Industry Co. Ltd. Silver halide photosensitive materials for color photography. 3,847,613, Cl. 96-74.000.
Sakiyama, Kazutaka; and Hashimoto, Tsutomu, to Toyo Soda Manufacturing Co., Ltd. Liquid supply system by pump. 3,847,507, Cl. 417-22.000.
Saleck, Wilhelm: *See—*
Philippaerts, Herman A.; Pollet, Robert Joseph; Muller-Bardorff, Wolfgang; Saleck, Wilhelm; Moll, Franz; and Ghys, Theofiel Hubert, 3,847,617.
Sally, Theodore J.: *See—*
Morris, Earl L.; and Sally, Theodore J., 3,847,336.
Salvail, Napoleon Paul. Solar water-heating systems. 3,847,136, Cl. 126-271.000.
Salzer, Erwin: *See—*
Kozacka, Frederick J.; and Salzer, Erwin, 3,848,215.
Salzer, Erwin, to Chase-Shawmut Company, The. Method of assembling electric high-voltage fuses and subassembly therefor. 3,848,214, Cl. 337-158.000.
Sanders Associates, Inc.: *See—*
Figler, Burton D.; and Nussdorfer, Theodore J., 3,848,129.
MacIntyre, Alfred J., Jr., 3,848,248.
Sandhack, Lothar: *See—*
Kunert, Max; and Sandhack, Lothar, 3,847,791.
Sandoz Ltd.; a/k/a Sandoz AG: *See—*
Avar, Lajos; Hofer, Kurt; and Preiswerk, Martin, 3,847,960.
Sandoz-Wander, Inc.: *See—*
Kathawala, Faizulla G., 3,847,918.
Sandstrom, Wayne R.; and Keturi, Raymond C. Precast concrete building construction. 3,846,946, Cl. 52-221.000.
Sandvik Aktiebolag: *See—*
Svensson, Tore Rolf; Fundell, Kjell Erik; Ekemar, Karl Sven Gustave; Lind, Bengt Anders; and Fischer, Udo, 3,847,763.
Santambrogio, Alberto; and Perrotti, Emilio, to Snam Progetti S.p.A. Preparation of caprolactam and dicyclohexyl ketone. 3,847,902, Cl. 260-239.30a.
Santilli, Ruggero. Intermeshing paddles. 3,847,395, Cl. 273-96.00r.
Santilli, Ruggero. Intermeshing paddles. 3,847,398, Cl. 273-96.00r.
Sarco Canada Limited: *See—*
Adachi, Rai Reiji, 3,847,814.
Sastri, Aiyaswami Suryanarayan, to Gillette Company, The. Processes for producing novel steels. 3,847,683, Cl. 148-12.300.
Sata, Toshikatsu; Nishimura, Masakatsu; and Izuo, Ryuji, to Tokuyama Soda Kabushiki Kaisha. Selective electrodialysis of cations. 3,847,772, Cl. 204-180.00p.
Sato, Katunobu: *See—*
Hagiwara, Yoshichi; Sato, Katunobu; Komatsu, Hideo; Yuguchi, Sadao; Yoshizumi, Nobuo; Nagai, Kenya; Takeda, Hiromu; and Ohnishi, Sei-Ichiro, 3,848,044.
Sato, Kenji: *See—*
Tada, Rentaro; Sato, Kenji; and Nishioka, Kinichi, 3,847,845.
Sato, Shigeru: *See—*
Fujii, Seiji; Matsui, Kunio; Sato, Shigeru; Ito, Keijiro; Koizumi, Takashi; Tsuboyama, Shozo; and Watanabe, Hiroyuki, 3,848,127.
Saturn Machine & Welding Co., Inc.: *See—*
Baird, William R.; and Sutton, Kenneth O., 3,847,753.
Saunders Archery Co.: *See—*
Saunders, Charles A., 3,846,873.
Saunders, Charles A., to Saunders Archery Co. Face pin for archery targets. 3,846,873, Cl. 24-153.00r.
Savage, David W.: *See—*
Leder, Frederic; Savage, David W.; and Shrier, Adam L., 3,848,057.
Sawada, Morihiko: *See—*
Kono, Hisashi; Terai, Kenji; Niwa, Takazumi; Kitajima, Masahiko; Sawada, Morihiko; Ninomiya, Kohei; and Nakai, Shigeyuki, 3,848,016.
Sayler, Ralph A.: *See—*
Norton, Orien K.; Grimes, David E.; and Sayler, Ralph A., 3,847,371.
Sazonov, Oleg Leonidovich: *See—*
Pozdnikov, Vladimir Nikolaevich; Sazonov, Oleg Leonidovich; Taxar, Iegoshua Mikhailovich; Tesnavs, Edgar Rikhardovich; Yanushkovsky, Vladimir Alexandrovich; Gavrilov, Alexandr Pavlovich; Korkonosov, Valentin Petrovich; Peresypkin, Alexei Vasilievich; and Sapovalov, Eduard Parfentievich, 3,848,131.
Scanner, Inc.: *See—*
Dolch, Volker, 3,847,346.
Schachet, Eli, to Sherwood Medical Industries, Inc. Modular thoracic drainage device. 3,847,152, Cl. 128-276.000.
Schaefer, Frank W. Method of applying refractory covering to skid rail. 3,848,034, Cl. 264-30.000.
Schaefer, Otto W. Apparatus for producing pigtails on hanger wires. 3,847,003, Cl. 72-134.000.
Schaffer, Fritz, G.m.b.H.: *See—*
Weidt, Karl-Adolf, 3,847,460.
Schantz, Spencer C.: *See—*
Schantz, Spencer C.; and Berry, William R. (said Berry assor to said), 3,848,205.
Schantz, Spencer C.; and Berry, William R., said Berry assor to said Schantz, Spencer C. Kick-out switch and buzzer. 3,848,205, Cl. 335-128.000.
Scharlack, Ronald S., to Kelsey-Hayes Company. Skid control system for tendem axled vehicles. 3,847,446, Cl. 303-21.0eb.
Scharm, Klaus: *See—*
Zerle, Ludiw; and Scharm, Klaus, 3,848,184.
Schatz, Milton C. Table-tennis ball throwing machine using air propulsion. 3,847,132, Cl. 124-11.00r.
Schaudel, Rolf, to Rodi & Wienenberger Aktiengesellschaft. Expansion bracelet. 3,846,976, Cl. 59-79.00r.
Schebiella, Erwin: *See—*
Zirnstein, Peter; Schebiella, Erwin; Koerner, Siegfried; Weise, Joachim; and Mulansky, Horst, 3,847,077.
Scheffler, Friedrich: *See—*
Seulen, Gerhard; and Scheffler, Friedrich, 3,847,291.
Scheidt, James E.: *See—*
Kroth, Neil W.; Lohbauer, Kenneth R.; and Scheidt, James E., 3,847,180.
Scheiwer, Albert T. Faucet. 3,847,181, Cl. 137-613.000.
Schenck, Carl, Maschinenfabrik GmbH: *See—*
Hack, Heinrich, 3,847,055.
Schenk, Richard C.: *See—*
Brant, William; and Schenk, Richard C., 3,847,391.
Schering AG: *See—*
Drawert, Manfred; and Griebsch, Eugen, 3,847,875.
Schering Aktiengesellschaft: *See—*
Vorbruggen, Helmut, 3,847,917.
Schering Corporation: *See—*
Gold, Elijah H., 3,847,988.
Scheuerman, Ronald F.: *See—*
Suman, George O., Jr.; Richardson, Edwin A.; and Scheuerman, Ronald F., 3,847,638.
Scheuermann, Henry. Douche apparatus. 3,847,150, Cl. 128-229.000.
schievelbein, Vernon H.; Shankle, Leonard A.; and Wade, Herbert N., to Texaco Inc. Secondary recovery process utilizing brine electrolyzed to remove hydrogen sulfide. 3,847,764, Cl. 204-149.000.
Schirmer, Hans A. Inductive reactance proximity alarm system for bulky movable objects. 3,848,243, Cl. 340-280.000.
Schissler, Lloyd R., to Sperry Rand Corporation. Acoustic delay surface wave motion transducer systems. 3,848,144, Cl. 310-8.100.
Schlaf, Helmut: *See—*
Burg, Karlheinz; and Schlaf, Helmut, 3,848,020.
Schlafhorst, W., & Co.: *See—*
Rohner, Joachim; Maassen, Wilhelm; and Haberkorn, Egon, 3,847,364.
Schlegel, Ulrich R. Tooth cleaning appliance. 3,847,168, Cl. 132-92.00r.
Schleicher, Helmut. Timing relay. 3,848,163, Cl. 317-141.00r.
Schloemann Aktiengesellschaft: *See—*
Schmoll, Heinz; and Robra, Helmut, 3,847,008.
Schlosser, Klaus: *See—*
Olsen, Willi; and Schlosser, Klaus, 3,848,081.
Schlosser, Ronald M.: *See—*
Baader, Earl E.; and Schlosser, Ronald M., 3,847,297.
Schluderberg, Donald C., to Babcock & Wilcox Company, The. Nuclear reactor safety system. 3,847,735, Cl. 176-38.000.
Schmermund, Alfred. Device for cutting continuous webs. 3,847,046, Cl. 83-152.000.
Schmid, Wolfgang: *See—*
Wanner, Karl; Schmid, Wolfgang; Karl, Hubertus; and Falchle, Jorg, 3,847,229.
Schmidemann, Walter: *See—*
Gieschen, Kurt; and Schmidemann, Walter, 3,848,134.
Schmidt, Bradley J., to Illinois Tool Works, Inc. Ground wire clip. 3,848,080, Cl. 174-164.000.
Schmidt, Friedo Eberhard: *See—*
Compernass, Josef; Grunberger, Eberhard; and Schmidt, Friedo Eberhard, 3,847,630.
Schmidt, Willi Johann; and Lumb, Hugo, to Kelle Aktiengesellschaft. Process for the preparation of winding operations and for the removal of rolls from a winding machine. 3,847,366, Cl. 242-68.300.
Schmit, George M.: *See—*
Linder, Jerome; Maravetz, Lester L.; Schmit, George M.; and Newman, Neil F., 3,847,985.
Schmit, George N.: *See—*
Linder, Jerome; Maravetz, Lester L. M.; Schmit, George N.; and Newman, Neil F., 3,847,984.
Schmitt, Donald J., to Therm-O-Disc Incorporated. Time delay relay. 3,848,213, Cl. 337-107.000.
Schmoll, Heinz; and Robra, Helmut, to Schloemann Aktiengesellschaft. Hydraulic forging press. 3,847,008, Cl. 72-407.000.
Schneider, Kurt: *See—*
Nielinger, Werner; Rudolph, Hans; Dhein, Rolf; and Schneider, Kurt, 3,847,877.
Schneppenhorst, Ernst; and Leifeld, Ferdinand, to Textilausrustungs-Gesellschaft Schroers & Co. and Kusters, Eduard, Maschinenfabrik. Method of making patterned layers. 3,848,039, Cl. 264-73.000.
Schokkenbroek, Jan, to Koninklijke Nederlandsche Hoogovens en Staalfabrieken N.V. Method for adding a granular or powdered reaction component to a molten metal, as well as an improved granular or powdered reaction component for carrying out a corrective rection on a molten metal. 3,847,592, Cl. 75-53.000.
Schorno, Karl S., to Phillips Petroleum Company. Method of geochemical exploration. 3,847,549, Cl. 23-230.0ep.
Schreiber, Eckehard: *See—*

  - Laue, Wolfgang; Schreiber, Eckehard; and Heyenga, Friedrich, 3,848,061.
- Schreiber, Henry Peter: *See—*
  - Holden, Harold William; and Schreiber, Henry Peter, 3,847,651.
- Schreyer, Kenneth D., to Columbus McKinnon Corporation. Joiner link pin retainer. 3,846,978, Cl. 59-85.000.
- Schroder, Paul B.; and Pollkotter, Gunter, to Liefeld & Co. Method for producing rims. 3,846,886, Cl. 29-159.100.
- Schultz, Peter C., to Corning Glass Works. Electric lamp having a fused silica glass envelope. 3,848,152, Cl. 313-221.000.
- Schumacher, Percy W., Jr.; and Murdoch, Henry W., to Reed Tool Company. Pressure relief device for drill bit lubrication system. 3,847,234, Cl. 175-228.000.
- Schungel, Peter: *See—*
  - Meschonat, Gunter; and Schungel, Peter, 3,847,041.
- Schwarm, Hans, to Eberle Werke KG. Snap-action switch assembly. 3,848,212, Cl. 337-67.000.
- Schwartz, Albert B.; and McVeigh, Harry A., to Mobil Oil Corporation. Conversion of hydrocarbons with a dual cracking component catalyst comprising ZSM-5 type material. 3,847,793, Cl. 208-70.000.
- Schwartz, Leon J.; Spiegel, Gerald M., Jr.; and Hecht, Leon N., Jr., to Pitney-Bowes, Inc. Protecting photoconductor surfaces. 3,847,606, Cl. 96-1.500.
- Schwartz, Phillip: *See—*
  - Heyworth, Renest; and Schwartz, Phillip, 3,847,499.
- Schwartz, Vernon R.: *See—*
  - Biery, Paul J.; Schwartz, Vernon R.; and Tregear, Roger N. J., 3,848,265.
- Schwarzbich, Jorg. Cylindrical roller thrust bearing. 3,847,456, Cl. 308-217.000.
- Schwrrz, Hans, to Aktiengesellschaft Brown, Boveri & Cie. Tubular connector assembly of a nuclear reactor charge machine. 3,847,734, Cl. 176-31.000.
- SCM Corporation: *See—*
  - Harmon, James E.; and Zeamer, Aaron C., 3,847,264.
  - McGinniss, Vincent Daniel, 3,847,771.
- Scott, Charles D.; and Pitt, W. Wilson, Jr., to United States of America, Atomic Energy Commission. Differential chromatographic method. 3,847,550, Cl. 23-230.00b.
- Scott, Fremont L.: *See—*
  - Althouse, Harlan E.; Scott, Fremont L.; and Cole, Gordon E., Jr., 3,847,654.
- Scott, John Alexander: *See—*
  - Heckrotte, Robert Sherwood; and Scott, John Alexander, 3,847,522.
- Scott Paper Company: *See—*
  - Buhayar, Eric S., 3,847,273.
  - Kolbach, Charles G., 3,846,871.
  - Mattor, John A., 3,847,614.
- Scott, Theron A.; and Hyde, Walter E., to Halliburton Company. Retrievable fluid control valve and method. 3,847,223, Cl. 166-305.00r.
- Scribner, Albert W. Stock feeder. 3,847,320, Cl. 226-115.000.
- Searle, G. D., & Co.: *See—*
  - Beltran, Humberto Flores, 3,847,926.
  - Kreider, Eunice M., 3,847,923.
  - Lenz, George R., 3,847,954.
- Sears, Roebuck and Co.: *See—*
  - Reid, Jay H., 3,847,436.
- Sebring, Burr, to Gorham; a division of Textron Inc. Method of mounting a handle to a vessel. 3,846,902, Cl. 29-458.000.
- Sedgwick Machine Works, Inc.: *See—*
  - Weaver, Herbert Schuyler, 3,846,939.
- Seefluth, Charles L., to Phillips Petroleum Company. Delayed venting in production of oriented hollow articles. 3,848,036, Cl. 264-40.000.
- Sefried, Harry H., II: *See—*
  - Ruger, William B.; and Sefried, Harry H., II, 3,846,928.
  - Ruger, William B.; and Sefried, Harry H., II, 3,847,054.
- Sehiekfluss, Rudolf; and Steckelberg, Willi, to Farbwerk Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Water-insoluble azlactone dyestuffs and process for preparing them. 3,847,909, Cl. 260-240.00f.
- Seiden, Paul, to Procter & Gamble Company, The. Brassidoyl propylene glycol hydrogen succinate. 3,848,047, Cl. 260-404.800.
- Seigneur, Daniel: *See—*
  - Guermeur, Georges Roger; and Seigneur, Daniel, 3,848,140.
- Seiko Koki Kabushiki Kaisha: *See—*
  - Kitai, Kiyoshi; Nakamura, Yukio; Ishida, Hiroaki; and Nagaoka, Shinji, 3,847,475.
  - Onda, Eiichi; Koyama, Mitsuo; and Nakagawa, Tadashi, 3,847,476.
- Seil, Herbert, to Liberty Tool & Die Co., The. Apparatus for injecting a fluid into a package of cigarettes. 3,847,162, Cl. 131-133.000.
- Seiler, Claus-Dieter; Vahlensieok, Hans-Joachim; and Junger, Hans, to Dynamit Nobel Aktiengesellschaft. Adhesive agents comprising phenolic resins and a mixture of silanes. 3,847,860, Cl. 260-38.000.
- Seismograph Service Corporation: *See—*
  - McGinnis, Floyd H., 3,847,022.
- Sekine, Kunio; Kamata, Yukio; and Yamaishi, Yoshio, to Dowa Mining Co., Ltd., The. Automatic apparatus for stripping deposited metal from a cathode plate in electrowinning process. 3,847,779, Cl. 204-198.000.
- Seldin, Leslie W. Application of dimension indicia to X-ray exposure. 3,848,136, Cl. 250-476.000.
- Seleznev, Jury Emelyanovich: *See—*
  - Burkin, Jury Alexandrovich; and Seleznev, Jury Emelyanovich, 3,846,893.
- Selke, William A.: *See—*
  - Mattina, Charles F.; and Selke, William A., 3,847,164.
- Semchenko, Dmitry Platonovich: *See—*
  - Smirnov, Vladimir Alexandrovich; Kulnevich, Vladimir Grigorievich; Soltovets, Galina Nikolaevna; and Semchenko, Dmitry Platonovich, 3,847,952.
- Semchenko, Vitaly Vasilievich: *See—*
  - Kozorezov, Konstantin Isaakovich; Semchenko, Vitaly Vasilievich; and Mikhailu, Georgy Ivanovich, 3,848,100.
- Semprevivo, Ralph; Andrews, Donald W.; Clark, Richard L.; and French, David W., to Johns-Manville Corporation. Plastic pipe section with an improved tap-in arrangement. 3,847,418, Cl. 285-219.000.
- Senuma, Mitsushi: *See—*
  - Suzuki, Tsunao; Senuma, Mitsushi; Takakura, Ichiro; and Masuda, Toshio, 3,847,853.
- Sergent, Enoch A.: *See—*
  - Molitor, Edwin A.; Elsten, Walter; and Sergent, Enoch A., 3,846,961.
- Seulen, Gerhard; and Scheffler, Friedrich, to AEG-Elotherm GmbH. Workpiece gripper having vibrating means thereon. 3,847,291, Cl. 214-27.000.
- Seville, Ovid Kingsley, to Weston Instruments, Inc. Industrial technique. 3,847,420, Cl. 285-336.000.
- Sextro, Gunter; and Burg, Karlheinz, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Thermoplastic molding composition on the basis of poly(oxymethylenes). 3,848,021, Cl. 260-823.000.
- Seydelmann, Ludwig. Food chopper. 3,847,360, Cl. 241-82.500.
- Shacklett, James T. Phono disc playback. 3,847,402, Cl. 274-14.000.
- Shaffer, Merle L. Walk-a-cycle. 3,847,409, Cl. 280-87.02r.
- Shafiee, Ali: *See—*
  - Staba, E. John; and Shafiee, Ali, 3,846,937.
- Shakhov, Eduard Konstantinovich: *See—*
  - Martyashin, Alexandr Ivanovich; Morozov, Andrei Elizarovich; Shakhov, Eduard Konstantinovich; and Shlyandin, Viktor Mikhailovich, 3,848,186.
- Shalit, Harold: *See—*
  - Rieve, Robert W.; and Shalit, Harold, 3,847,795.
- Shalit, Harold, to Atlantic Richfield Company. Thermal cracking of hydrocarbons in the presence of added sulfur compounds and nitric oxide. 3,848,017, Cl. 260-683.00r.
- Shamma, Ramzi A. System for electronic modification of sound. 3,848,092, Cl. 179-1.0vl.
- Shanbrom, Edward; and Louderback, Allan L., said Louderback assor. to Baxter Laboratories, Inc. Diagnostic test for sickle-cell. 3,847,545, Cl. 23-230.00b.
- Shankle, Leonard A.: *See—*
  - schievelbein, Vernon H.; Shankle, Leonard A.; and Wade, Herbert N., 3,847,764.
- Shapiro, Aron Beniaminovich; Chernyavsky, Vladimir Pavlovich; and Kadi-Ogly, Ibragim Akhmedovich. Electric machine rotor current collecting device. 3,848,149, Cl. 310-229.000.
- Shapovalov, Eduard Parfentievich: *See—*
  - Pozdnikov, Vladimir Nikolaevich; Sazonov, Oleg Leonidovich; Taxar, Iegoshua Mikhailovich; Tesnavs, Edgar Rikhardovich; Yanushkovsky, Vladimir Alexandrovich; Gavrilov, Alexandr Pavlovich; Korkonosov, Valentin Petrovich; Peresypkin, Alexei Vasilievich; and Sapovalov, Eduard Parfentievich, 3,848,131.
- Sharma, Ram A., to General Motors Corporation. Insulating seal for molten salt battery. 3,847,675, Cl. 136-133.000.
- Sharp Kabushiki Kaisha (Sharp Corporation): *See—*
  - Okamoto, Toshaiaki; Inada, Masammi; and Nishida, Koji, 3,847,448.
- Shattes, Walter J.: *See—*
  - Gregory, Eric; Marancik, William G.; and Shattes, Walter J., 3,847,650.
- Shaw, Donald L.; and McLaughlin, Lawrence D., to General Motors Corporation. Method of forming simulated stitches. 3,847,699, Cl. 156-251.000.
- Shaw, Filfrid G.: *See—*
  - Callahan, James L.; Miller, Arthur F.; and Shaw, Filfrid G., 3,848,033.
- Shaw, Joseph Denman. Programmed article dispenser. 3,847,301, Cl. 221-5.000.
- Shaw, Robert F.: *See—*
  - Shaw, Robert F.; Sidlauskas, David P.; and Lobdell, Donn D. (said Sidlauskas and Lobdell assors. to said), 3,847,483.
- Shaw, Robert F.; Sidlauskas, David P.; and Lobdell, Donn D., said Sidlauskas and Lobdell assors. to said Shaw, Robert F. Optical oximeter apparatus and method. 3,847,483, Cl. 356-41.000.
- Sheehan, Richard W.; Parlin, David B.; Jamrogowicz, Harry F.; and Patterson, John A., to Bigelow-Stanford, Inc. Yarn structure and method for producing same. 3,846,968, Cl. 57-140.00j.
- Shelby, Richard K., to Monsanto Company. Method for blow molding containers having raised bottom wall portions. 3,848,042, Cl. 264-99.000.
- Shell Canada Limited: *See—*
  - Wang, Kuo H.; Prats, Michael; and Campbell, Don A., 3,847,219.

- Shell Explorer Limited: *See—*
  - Wang, Kuo H.; Prats, Michael; and Campbell, Don A., 3,847,219.
- Shell Oil Company: *See—*
  - Groenendaal, Willem, 3,848,071.
  - Mallander, Richard G.; and Lake, John H., 3,847,023.
  - Pilgram, Kurt H.; and Skiles, Richard D., 3,847,588.
  - Suman, George O., Jr.; Richardson, Edwin A.; and Scheuerman, Ronald F., 3,847,638.
- Shellman, Carl E., to General Motors Corporation. Transmission control with pressure boost system. 3,847,179, Cl. 137-596.000.
- Shepherd, Lawrence H., Jr.; Kobetz, Paul; Laran, Roy J.; and Johnson, Robert W., Jr., to Ethyl Corporation. Preparation of beryllium bis(dihydrocarbyl borohydride). 3,847,998, Cl. 260-606.50b.
- Sherman, George R., to General Electric Company. Hinged adapter duct for oven vent. 3,847,135, Cl. 126-21.00r.
- Sherr, Solomon, to North Hills Electronics, Inc. Multi-dimensional liquid crystal assembly addressing system. 3,848,247, Cl. 340-324.00m.
- Sherrill, Frank Odell, to B/W Metals Company, Inc. Sneeze guard. 3,847,250, Cl. 186-1.00r.
- Sherwin-Williams Company, The: *See—*
  - Jacobs, Richard L., 3,847,589.
- Sherwood Medical Industries, Inc.: *See—*
  - Schachet, Eli, 3,847,152.
  - Trumble, William P., 3,847,156.
  - Weichselbaum, Theodore E.; and Wilhelmson, Jack L., 3,848,112.
- Shiba, Hiroshi: *See—*
  - Tsunemitsu, Hideo; and Shiba, Hiroshi, 3,848,260.
- Shiio, Isamu; Ozaki, Hachiro; and Nakamatsu, Tsuyoshi, to Ajinomoto Co., Inc. Method of producing elastases by bacteria. 3,847,744, Cl. 195-65.000.
- Shima, Rindge: *See—*
  - Beever, Elmer R.; Shima, Rindge; and Zebus, Paul P., 3,847,024.
- Shimadzu Metal Industries Ltd.: *See—*
  - Fujii, Seiji; Matsui, Kunio; Sato, Shigeru; Ito, Keijiro; Koizumi, Takashi; Tsuboyama, Shozo; and Watanabe, Hiroyuki, 3,848,127.
- Shimadzu Seisakusho Ltd.: *See—*
  - Fujii, Seiji; Matsui, Kunio; Sato, Shigeru; Ito, Keijiro; Koizumi, Takashi; Tsuboyama, Shozo; and Watanabe, Hiroyuki, 3,848,127.
- Shimanckas, William J. Stern drive unit with bellows enclosed reversing transmission and universal coupling steering control. 3,847,108, Cl. 115-35.000.
- Shlyandin, Viktor Mikhailovich: *See—*
  - Martyashin, Alexandr Ivanovich; Morozov, Andrei Elizarovich; Shakhov, Eduard Konstantinovich; and Shlyandin, Viktor Mikhailovich, 3,848,186.
- Shmusrov, Valery Pavlovich: *See—*
  - Tolstov, Jury Georgievich; Skorovarov, Vladimir Efremovich; Grinshtein, Boris Ilich; Stepanova, Valentina Gavrilovna; Bashkatov, Ivan Pavlovich; Vinitsky, Jury Danilovich; Balyasinsky, Valery Ottovich; and Shmusrov, Valery Pavlovich, 3,848,156.
- Shook, Howard E., Jr.; and Thompson, John B., to Du Pont de Nemours, E. I., and Company. Process of preparing a zerovalent nickel complex with organic phosphorus compounds. 3,847,959, Cl. 260-439.00r.
- Short, Thomas W., to Levitz Furniture Corporation. Combination warehouse - retail sales facility. 3,846,947, Cl. 52-236.000.
- Shoup, Stephen G., to Caterpillar Tractor Company. Fork and blade guide assembly. 3,847,240, Cl. 180-9.500.
- Shrier, Adam L.: *See—*
  - Leder, Frederic; Savage, David W.; and Shrier, Adam L., 3,848,057.
- Shuey, Harry F., to United States of America, Health, Education and Welfare, mesne. Asymmetric membrane of polyvinyl pyrrolidone-cellulose acetate blends for use as hemodialysis membranes. 3,847,822, Cl. 210-500.000.
- Shumaker, Gary Allen, to Lubrizol Corporation, The. Cleaning of metals with compositions containing alkali metal silicate and chloride. 3,847,663, Cl. 134-2.000.
- Sianesi, Dario; Caporiccio, Gerardo; and Mensi, Domenico, to Montecatini Edison S.p.A. Perfluoroinated linear polyethers having reactive terminal groups at both ends of the chain and process for the preparation thereof. 3,847,978, Cl. 260-535.00h.
- Sick, Milton W., to Eastman Kodak Company. Adjustable paper stack guide apparatus. 3,847,387, Cl. 271-171.000.
- Sidlauskas, David P.: *See—*
  - Shaw, Robert F.; Sidlauskas, David P.; and Lobdell, Donn D., 3,847,483.
- Siegart, William R.; Blackley, William D.; and Chafetz, Harry, to Texaco Inc. Process for preparing hydroxy derivatives of fluorinated polymers. 3,847,887, Cl. 260-93.50a.
- Siegel, Israel. Temperature differential fluid motor. 3,846,984, Cl. 60-509.000.
- Siemens Aktiengesellschaft: *See—*
  - Drebinger, Klaus; and Thilo, Peer, 3,848,254.
  - Lichtenberg, Alfred, 3,847,087.
  - Moder, Hans-Ulrich; and Grossmann, Gunter, 3,848,116.
  - Olsen, Willi; and Schlosser, Klaus, 3,848,081.
  - Ortner, Lorenz; Heinzelmann, Karl-Georg; Conrad, Bernd; and Dierker, Joachim, 3,847,696.
  - Ratschmeier, Dieter; Stark, Reinhard; and Wenk, Jurgen, 3,848,167.
  - Speth, Winfried; and Loffelmann, Fritz, 3,848,171.
- Sigmatex A.G.: *See—*
  - Weman, Per Olaf, 3,847,434.
  - Weman, Per Olag, 3,846,876.
- Silbert, Leonard S.; Pfeefer, Philip E.; and Konen, Dolores A., to United States of America, Agriculture. 2-Hydroperoxycarboxylic acids and their preparation. 3,847,956, Cl. 260-413.000.
- Silec-Semi-Conducteurs: *See—*
  - Dumas, Guy H., 3,848,158.
- Sill, Arthur D.; and Fleming, Robert W., to Richardson-Merrell Inc. Anthraquinone derivatives. 3,847,953, Cl. 260-376.000.
- Silverstein, Milton M.: *See—*
  - Ardezzone, Frank J.; and Silverstein, Milton M., 3,848,188.
- Simmons Company: *See—*
  - Stumpf, Walter, 3,847,379.
- Simons, Herbert D.; and Timmons, Frank E., to Sun Chemical Corporation. Shielding tapes. 3,848,073, Cl. 174-36.000.
- Simpson, David A.: *See—*
  - Breslow, David W.; and Simpson, David A., 3,847,609.
- Simpson, Fred Eugene: *See—*
  - Freedy, Allan Leslie; Miller, Calvin Lyle; and Simpson, Fred Eugene, 3,847,451.
- Simpson, James L.: *See—*
  - Roy, Prodyot; Simpson, James L.; and Aitken, Edward A., 3,847,653.
- Simpson, Robert D.; and Boone, Jimmie H., to Boeing Company, The. Automatic go-around control system for aircraft. 3,847,328, Cl. 244-77.00a.
- Sims, Paul Donald: *See—*
  - Hill, Andrew William; and Sims, Paul Donald, 3,847,661.
- Sina Aktiengesellschaft fur Instrumentierung und Automatik: *See—*
  - Hentschel, Michael, 3,848,185.
- Singer Company, The: *See—*
  - Garron, Stephen A., 3,847,100.
  - Rehm, John F.; and Lloyd, Evan E. M., 3,848,230.
  - Rogner, Gerd, 3,847,102.
- Sinkula, Anthony A., to Upjohn Company, The. Erythromycin-2-thiol esters and process. 3,847,896, Cl. 260-210.00e.
- Sjoberg, Nils W.: *See—*
  - Perry, Reginald P.; and Sjoberg, Nils W., 3,846,920.
- Sjoman, Carl F., to Team Industries. Knitted T-shirt hot presser and folder and method. 3,846,924, Cl. 38-2.000.
- SKF Industrial Trading and Development Company B.V.: *See—*
  - Matyschik, Otto, 3,847,258.
- SKF Kugellagerfabriken GmbH: *See—*
  - Braun, Wilhelm, 3,846,967.
- Skiles, Richard D.: *See—*
  - Pilgram, Kurt H.; and Skiles, Richard D., 3,847,588.
- Skinner, Harvey G., to Westmoreland Plastics Company; division of Vulcan, Inc. Two-piece chair. 3,847,435, Cl. 297-443.000.
- Skorovarov, Vladimir Efremovich: *See—*
  - Tolstov, Jury Georgievich; Skorovarov, Vladimir Efremovich; Grinshtein, Boris Ilich; Stepanova, Valentina Gavrilovna; Bashkatov, Ivan Pavlovich; Vinitsky, Jury Danilovich; Balyasinsky, Valery Ottovich; and Shmusrov, Valery Pavlovich, 3,848,156.
- Slama, Karel: *See—*
  - Dolejs, Ladislav; Machkova, Zuzana; Beran, Pavel; Kahovcova, Jitka; Slama, Karel; and Sorm, Frantisek, 3,847,907.
- Slater, Kenneth R.: *See—*
  - Armstrong, Alvin E.; and Slater, Kenneth R., 3,848,225.
- Sletzinger, Meyer: *See—*
  - Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,847,969.
- Sloane, Edwin A.; and Heizman, Charles L., to Time/Data Corporation. Vibration control system. 3,848,115, Cl. 235-151.000.
- Slosiarek, Michael L.; and Gatch, Richard E., to Allis-Chalmers Manufacturing Company. Hitch sway limiting device. 3,847,228, Cl. 172-450.000.
- Slot, Hendrik Bruins; and Geus, John W., to Stamicarbon N.V. Catalyst for preparing unsaturated nitriles. 3,847,831, Cl. 252-470.000.
- Smilgys, Bruno S., to Veeder Industries Inc. Rotary drive anti-backlash device. 3,847,347, Cl. 235-131.00r.
- Smirnov, Vladimir Alexandrovich; Kulnevich, Vladimir Grigorievich; Soltovets, Galina Nikolaevna; and Semchenko, Dmitry Platonovich. Process for producing alcohols of the furan series. 3,847,952, Cl. 260-347.800.
- Smith, Francis R.: *See—*
  - Morris, David E.; and Smith, Francis R., 3,847,981.
- Smith, Frederick R., to FMC Corporation. Absorbent alloy fibers of salts of carboxyalkylated starch and regenerated cellulose. 3,847,636, Cl. 106-168.000.
- Smith, Howard I. Power driven hammer. 3,847,322, Cl. 227-132.000.
- Smith International, Inc.: *See—*
  - Litchfield, Mason Rawleigh, 3,847,372.
- Smith, James J.: *See—*
  - Prouty, Robert E.; and Smith, James J., 3,848,206.
- Smith, James S., Sr. Brush unit and replacement brush therefor. 3,846,861, Cl. 15-179.000.
- Smith, John E., to Tescom Corporation. Torch aparatus. 3,847,355, Cl. 239-424.500.
- Smith, Malcolm John: *See—*
  - Randell, Donald Richard; and Smith, Malcolm John, 3,847,930.
- Smith, Ralph E.; and Kozoman, Frank E., to Duke University, Inc. Apparatus and method for rapid harvesting of roller culture supernatant fluid. 3,847,749, Cl. 195-127.000.

- Smith, Robert B., to National Steel Corporation. Recovering chromium values for stabilization of tin-plate surfaces. 3,847,757, Cl. 204-40.000.
- Smith, Stuart Raymond Leslie: *See—*
  - Gibson, Malcolm Ritchie; Roesler, Frank Cornelius; Smith, Stuart Raymond Leslie; and Maslen, Frank Peter, 3,847,748.
- Smithe, F. L., Machine Company, Inc.: *See—*
  - Bethke, Erwin, 3,847,384.
- Snam Progetti S.p.A.: *See—*
  - Moggi, Pietro; and Romano, Ugo, 3,847,937.
  - Santambrogio, Alberto; and Perrotti, Emilio, 3,847,902.
- Snap-on Tools Corporation: *See—*
  - Green, Talmage O., 3,847,038.
- Snooks, Rupert J., Jr.: *See—*
  - Baggett, William M.; Garrett, Ullman C., Jr.; and Snooks, Rupert J., Jr., 3,848,023.
- Snow, Helen E.: *See—*
  - Snow, Henry A., 3,847,569.
- Snow, Henry A., to Snow, Helen E. Method of making a cable type saw. 3,847,569, Cl. 51-309.000.
- Snyder, Lloyd R., to Technicon Instruments Corporation. Method and apparatus for curtain electrophoresis. 3,847,773, Cl. 204-180.00r.
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- Sobotta, Reinhard, to Rollei-Werke Franke & Heidecke. Slide projector with variable timing means for slide change. 3,847,473, Cl. 353-114.000.
- Social Dynamics Inc.: *See—*
  - Ford, Sanders, Jr., 3,847,565.
- Societe Anonyme Francaise du Ferodo: *See—*
  - Fieni, Walter, 3,847,367.
- Societe Anonyme: Glaenzer Spicer: *See—*
  - Mangiavacchi, Jacques, 3,846,995.
- Societe d'Assistance Technique Pour Products Nestle S.A.: *See—*
  - Duell, Norman Leroy, 3,847,268.
- Societe en nom collectif "Science et Cie," Societe Francaise de Recherche Medicale: *See—*
  - Beregi, Laszlo; Hugon, Pierre; Desnoyers, Pierre; and Duhault, Jacques, 3,847,925.
- Societe Generale de Constructions Electriques et Mecaniques (Alsthom): *See—*
  - Bourdon, Bernard; Duong, Claudy; and Coppier, Pierre, 3,847,776.
- Societe Industrielle Honeywell Bull (Societe Anonyme): *See—*
  - Guermeur, Georges Roger; and Seigneur, Daniel, 3,848,140.
- Soga, Takaaki: *See—*
  - Asano, Tetsumasa; Soga, Takaaki; and Kitano, Mitsuru, 3,848,169.
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  - Ashford, David William, 3,847,396.
- Soliman, Mustafa: *See—*
  - Huttenbrauck, Herbert; Ostrop, Berthold; Soliman, Mustafa; and Polkekowski, Helmut, 3,847,438.
- Soltovets, Galina Nikolaevna: *See—*
  - Smirnov, Vladimir Alexandrovich; Kulnevich, Vladimir Grigorievich; Soltovets, Galina Nikolaevna; and Semchenko, Dmitry Platonovich, 3,847,952.
- Solvay & Cie: *See—*
  - Forlano, Luigi, 3,848,007.
- Somann, Gert: *See—*
  - Catlos, Peter V.; and Somann, Gert, 3,846,875.
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  - Kayama, Takashi, 3,848,179.
- Sorm, Frantisek: *See—*
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  - Forsberg, Rolf Erik; and Sparr, Erik Einar, 3,847,334.
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  - Good, Paul F., 3,846,959.
- Sperberg, Lawrence R. Method of controlling and measuring tire forces. 3,847,012, Cl. 73-8.000.
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  - Blanshine, Allison W., 3,847,356.
  - Campbell, Curtis M.; and Miller, Ronald J., 3,848,114.
  - MacDonald, Thomas Richard, 3,848,234.
  - Mast, Aquila D.; Eggers, Edward T.; and Hyman, Myles, 3,847,073.
  - Schissler, Lloyd R., 3,848,144.
  - Thomas, Ronald E., 3,848,172.
- Speth, Winfried; and Loffelmann, Fritz, to Siemens Aktiengesellschaft. Arrangement for the optimum setting of the rotor blades of water turbines. 3,848,171, Cl. 318-561.000.
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  - Schwartz, Leon J.; Spiegel, Gerald M., Jr.; and Hecht, Leon N., Jr., 3,847,606.
- Spiri, Willy H., to Cavins Co., The. Well slip assembly. 3,846,877, Cl. 24-263.0ca.
- Spohr, Guenter. Method and apparatus for treating sludge. 3,847,808, Cl. 210-66.000.
- Sprout, Waldron & Company, Inc.: *See—*
  - Holmes, William S.; Fisher, Chester Donald; and Ihrig, Clifford D., 3,847,359.
- Squibb, E. R., & Sons, Inc.: *See—*
  - Breuer, Hermann; and Treuner, Uwe D., 3,847,908.
  - Denzel, Theodor; and Hoehn, Hans, 3,847,929.
- Squires, Howard J.; and Rimlinger, Donald C. Reed switch analyzer. 3,847,283, Cl. 209-74.00m.
- St. Cyr, Lewis A.: *See—*
  - DeForest, Elbert M.; St. Cyr, Lewis A.; and Young, Loren H., 3,848,052.
- Staba, E. John; and Shafiee, Ali, to University of Minnesota, The Regents of the. Production of allergens by plant tissue culture technique. 3,846,937, Cl. 47-58.000.
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  - Blomquist, Oskar Vive Elon, 3,847,230.
- Stach, Kurt: *See—*
  - Weber, Helmut; Aumuller, Walter; Weyer, Rudi; Muth, Karl; and Stach, Kurt, 3,847,938.
- Stache, Ulrich: *See—*
  - Radscheit, Kurt; Stache, Ulrich; and Brodersen, Richard, 3,847,906.
- Stamicarbon N.V.: *See—*
  - Slot, Hendrik Bruins; and Geus, John W., 3,847,831.
- Standard Oil Company: *See—*
  - Boone, David E., 3,847,957.
  - Hanson, Robert B.; and Stephens, James R., 3,847,878.
  - Kuhlmann, George E., 3,847,976.
  - McCaulay, David A., 3,848,011.
  - Ridgway, John A., Jr.; Lappin, Terry A.; Benjamin, Benny Moses; Corns, Joseph B.; and Akin, Cavit, 3,847,750.
- Standard Oil Company, The: *See—*
  - Callahan, James L.; Miller, Arthur F.; and Shaw, Filfrid G., 3,848,033.
- Standard Products Company, The: *See—*
  - Dallen, John A., 3,846,948.
- Standard Register Company, The: *See—*
  - Parenti, Frank V.; and Staneck, Robert W., 3,847,318.
- Standard Steel Products Corporation: *See—*
  - Brown, Robert S., 3,847,419.
- Staneck, Robert W.: *See—*
  - Parenti, Frank V.; and Staneck, Robert W., 3,847,318.
- Stankiewicz, Jerzy G. Traffic network for urban settlement. 3,847,496, Cl. 404-1.000.
- Stanley Aviation Corporation: *See—*
  - Stanley, Robert M., 3,847,329.
- Stanley, Robert M., to Stanley Aviation Corporation. Rocket escape apparatus. 3,847,329, Cl. 244-122.0ad.
- Stark, Reinhard: *See—*
  - Ratschmeier, Dieter; Stark, Reinhard; and Wenk, Jurgen, 3,848,167.
- Stasiuk, Michael, to Versatile Manufacturing Ltd. Power transmission device. 3,847,035, Cl. 74-687.000.
- Statman, Max; and Page, Ralph E., Jr., to Eastman Kodak Company. Recovery of diethyl ether from an olefin hydration product stream by extractive distillation with water. 3,847,756, Cl. 203-92.000.
- Statni Vyzkumny Ustav Kozedelny: *See—*
  - Muck, Eduard; Strachota, Jaroslav; and Horak, Josef, 3,848,024.
- Staudt, Heinrich, to Bosch, Robert, G.m.b.H. Centrifugal RPM governor for fuel injected internal combustion engines. 3,847,127, Cl. 123-140.00r.
- Stauffer Chemical Company: *See—*
  - Mihailovski, Alexander, 3,847,939.
  - Mihailovski, Alexander; and Baker, Don R., 3,847,980.
  - Pallos, Ferenc Marcus, 3,847,970.
  - Teach, Eugene G.; and Arneklev, Duane R., 3,847,587.
- Stave, Frederick Roland: *See—*
  - Tourtellot, John Allen; and Stave, Frederick Roland, 3,848,146.
- Stearns, William P.; and Elpern, Barry S., to Holmes, John L., mesne. Method of fitting a prosthetic device for providing corrections of auditory deficiencies in aurally handicapped persons. 3,848,091, Cl. 179-1.00n.
- Steckelberg, Willi: *See—*
  - Sehiekfluss, Rudolf; and Steckelberg, Willi, 3,847,909.
- Steenbeck, Ulf, to Messerschmitt-Bolkow-Blohm GmbH. Suspended railway having a magnetic suspended guide of its vehicles. 3,847,086, Cl. 104-130.000.

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- Stein, Leonard, to General Electric Company. Method of forming silicon epitaxial layers. 3,847,686, Cl. 148-175.000.
- Stein, William B., to Warner & Swasey Company, The. Cutoff insert apparatus. 3,846,882, Cl. 29-96.000.
- Steinwart, Johannes; and Feierabend, Karl. Ignition system for rotary piston combustion engines of trochoid type. 3,847,257, Cl. 192-.062.
- Stelzer, Roland B.: *See—*
  - Allen, Joseph C.; Tate, Jack F.; and Stelzer, Roland B., 3,847,220.
  - Allen, Joseph C.; Tate, Jack F.; and Stelzer, Roland B., 3,847,221.
- Stengelin, Adolf Friedrich Johann Conrad; deceased (by Stengelin, Volker; and Stengelin, Jorg; heirs). Apparatus for biologically purifying effluent. 3,847,811, Cl. 210-150.000.
- Stengelin, Jorg: *See—*
  - Stengelin, Adolf Friedrich Johann Conrad, 3,847,811.
- Stengelin, Volker: *See—*
  - Stengelin, Adolf Friedrich Johann Conrad, 3,847,811.
- Stenseng, Mogens Martin: *See—*
  - Madsen, Rud Frik; Olsen, Ole Jentoft; and Stenseng, Mogens Martin, 3,847,818.
- Stepanova, Valentina Gavrilovna: *See—*
  - Tolstov, Jury Georgievich; Skorovarov, Vladimir Efremovich; Grinshtein, Boris Ilich; Stepanova, Valentina Gavrilovna; Bashkatov, Ivan Pavlovich; Vinitsky, Jury Danilovich; Balyasinsky, Valery Ottovich; and Shmusrov, Valery Pavlovich, 3,848,156.
- Stephens, James R.: *See—*
  - Hanson, Robert B.; and Stephens, James R., 3,847,878.
- Stephens, William D.; Willis, T. Chade; and Combs, Charles S. Polymers and copolymers of 1-ferrocenyl-1,3-butadiene. 3,847,871, Cl. 260-63.0bb.
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- Stickler, Charles W., Jr., to Grey Tech Industries, Inc. Hinged roof and sidewall forms for a monolithic structure. 3,847,521, Cl. 425-62.000.
- Stieglitz, Henry Gilbert: *See—*
  - Landauer, LeRoy; Blakslee, Edward Leroy; Abraham, Benjamin Ichak; and Stieglitz, Henry Gilbert, 3,847,786.
- Stievenart, Emile Frans: *See—*
  - Blanc, Marie Jean; and Stievenart, Emile Frans, 3,848,133.
- Stiftelsen Institutet for mikrovagsteknik vid Tekniska Hogskolan i Stockholm: *See—*
  - Berggren, Benny; and Boling, Goran, 3,848,106.
- Stigberg, Jon D.: *See—*
  - Houck, Walter H.; and Stigberg, Jon D., 3,848,190.
- Stirnemann, Max Lehner. Apparatus for fabricating price shields or the like consisting of a price tag or label printed by a balance and a label support. 3,847,704, Cl. 156-364.000.
- Stockman, Richard F., to Air Preheater Company, Inc. The. Ash removal system. 3,847,296, Cl. 110-165.00r.
- Stolzer, Paul, to Keuro Maschinenbau Gesellschaft mit beschrankter Haftung & Co. Power frame saw. 3,847,048, Cl. 83-452.000.
- Stone, Herman: *See—*
  - Largman, Theodore; and Stone, Herman, 3,847,861.
- Stoody Company: *See—*
  - Zvanut, Albert J., 3,848,109.
- Strachota, Jaroslav: *See—*
  - Muck, Eduard; Strachota, Jaroslav; and Horak, Josef, 3,848,024.
- Strain, Franklin, to PPG Industries, Inc. Process using silicate treated asbestos diaphragms for electrolytic cells. 3,847,762, Cl. 204-98.000.
- Strand, Richard J.: *See—*
  - Chang, Harry C.; Strand, Richard J.; and Suelflow, Raymond D., 3,848,252.
- Straniti, Salvatore, to Avco Corporation. Turbomachine rotor. 3,847,506, Cl. 416-244.000.
- Stromberg-Carlson Corporation: *See—*
  - Russell, Stanley L., 3,848,094.
- Strube, Herbert Eugene: *See—*
  - Willhite, William, Jr.; and Strube, Herbert Eugene, 3,847,045.
- Stumpf, Walter, to Simmons Company. Upholstery spring coil. 3,847,379, Cl. 267-91.000.
- Sturm, Hans-Juergen; Kempter, Fritz Erdmann; and Armbrust, Herbert, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Continuous production of anthranilic acid. 3,847,974, Cl. 260-518.00r.
- Sturm, Ruger & Co., Inc.: *See—*
  - Ruger, William B.; and Sefried, Harry H., II, 3,846,928.
  - Ruger, William B.; and Sefried, Harry H., II, 3,847,054.
- Su, Tsung-Yuan, to Phillips Fibers Corporation. Analysis of materials to measure vaporizable components. 3,847,554, Cl. 23-253.0pc.
- Sub-Marine Systems Incorporated: *See—*
  - Fischel, Halbert; and Dichiro, Anthony, 3,847,211.
- Subsea Equipment Associates Limited: *See—*
  - Liautaud, Jean A., 3,846,992.
- Suchanek, Borivoj: *See—*
  - Buran, Vojtech; Horn, Vladimir; and Suchanek, Borivoj, 3,847,187.
- Sueishi, Motoharu: *See—*
  - Miyoshi, Takeo; Majima, Kazu; Yamagata, Tetsuo; Harada, Susumu; and Sueishi, Motoharu, 3,847,130.
- Suelflow, Raymond D.: *See—*
  - Chang, Harry C.; Strand, Ricnard J.; and Suelflow, Raymond D., 3,848,252.
- Sugarman, Nathan: *See—*
  - Palmer, Nigel Innes; Sugarman, Nathan; and Grammer, Don O'-Neil, 3,847,676.
- Sugihara, Kanji: *See—*
  - Wakabayashi, Takashi; and Sugihara, Kanji, 3,848,218.
- Suh, John T.; and Bare, Thomas M., to Colgate-Palmolive Company. α,α-Dialkylphenethylamine derivatives. 3,847,950, Cl. 260-340.500.
- Suhr, Peter J.: *See—*
  - Gerner, James; and Suhr, Peter J., 3,848,182.
- Sulinski, Harry V.: *See—*
  - Waldman, Jeffrey; Sulinski, Harry V.; and Markus, Harold, 3,847,681.
- Sullivan, Harry G. Planetary gear driven rotary display device. 3,846,926, Cl. 40-34.000.
- Suman, George O., Jr.; Richardson, Edwin A.; and Scheuerman, Ronald F., to Shell Oil Company. Hydrated metal oxide deposition. 3,847,638, Cl. 106-287.00s.
- Sumitomo Chemical Company, Limited: *See—*
  - Ohno, Nobuo; Itaya, Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Matsuo, Takashi; and Okuno, Yositosi, 3,847,944.
- Summa, John A.: *See—*
  - Glover, Richard Warmath; Musch, Gordon Frederick; and Summa, John A., 3,847,233.
- Summers, George D., to Atlantic Research Corporation. System for transmitting and utilizing supplemental data via television systems. 3,848,082, Cl. 178-5.600.
- Sun Chemical Corporation: *See—*
  - Simons, Herbert D.; and Timmons, Frank E., 3,848,073.
- Sun Oil Company of Pennsylvania: *See—*
  - Mills, Ivor W.; Dimeler, Glenn R.; Atkinson, William A., Jr.; and Hoffman, James P., 3,847,623.
- Sun Research and Development Co.: *See—*
  - Norton, Richard V., 3,847,977.
- Sun Ventures, Inc.: *See—*
  - Thompson, Robert M., 3,847,872.
- Sutton, Kenneth O.: *See—*
  - Baird, William R.; and Sutton, Kenneth O., 3,847,753.
- Sutton, Richard Calvin: *See—*
  - Bissonette, Vernon Leon; Mowrey, Rowland George; and Sutton, Richard Calvin, 3,847,619.
- Sutula, Phyllis A.: *See—*
  - Crimmel, Harry W.; Terezakis, Emanuel G.; and Sutula, Phyllis A., 3,847,655.
- Sutyak, John J., to Mesta Machine Company. Plunger and cylinder arrangement. 3,847,062, Cl. 92-86.500.
- Suykens, Matthieu, to Borg-Warner (Canada) Ltd. Bulk ship unloader. 3,847,290, Cl. 214-15.00e.
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- Suzuki, Isao: *See—*
  - Moriya, Kazuo; and Suzuki, Isao, 3,846,916.
- Suzuki Metal Industry Co., Ltd.: *See—*
  - Suzuki, Akira; Hagiwara, Masaki; and Teraoka, Nobuhiro, 3,847,002.
- Suzuki, Takeo; Tomita, Fusao; Nakano, Hirofumi; and Honda, Haruo, to Kyowa Hakko Kogyo Co., Ltd. Process for producing chloramphenicol analogs. 3,847,747, Cl. 195-96.000.
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- Swierkot, Helmut Johann. Buckle assembly. 3,846,874, Cl. 24-188.000.
- Swindells, Norman; and Bevis, Michael, to National Research Development Corporation. Recording of Kossel lines. 3,848,126, Cl. 250-272.000.
- Swiss Aluminium Ltd., mesne: *See—*
  - Paull, David, 3,846,951.
- Syfritt, Harold A. Assembly for use in recreational activities. 3,846,858, Cl. 9-2.00s.
- Syncro Corporation: *See—*
  - Gynn, George E., 3,848,177.
- Syntex (U.S.A.) Inc., mesne: *See—*
  - Patterson, John W.; and Fried, John H., 3,847,962.

- Szarvasi, Etienne; and Fontaine, Louis, to Lipha, Lyonnaise Industrielle Pharmaceutique. Novel substituted (nitrofurylacrylidene) hydrazines with antibacterial properties. 3,847,911, Cl. 260-240.00a.
- Szendroi, Imre; and Ehret, Jenson E., to Bethlehem Steel Corporation. Paddle switch for automatic gate closure on hoppers. 3,847,303, Cl. 222-66.000.
- Tabler, Donald C.: *See—*
  - Johnson, Marvin M.; and Tabler, Donald C., 3,847,946.
- Tachibana, Shinro, to Eisai Co., Ltd. Separation of secretin and cholecystokininpancreozymin from mixture thereof. 3,847,891, Cl. 260-112.500.
- Tada, Rentaro; Sato, Kenji; and Nishioka, Kinichi, to Kuraray Co., Ltd. Separation and purification of the saponified ethylene-vinyl acetate interpolymers. 3,847,845, Cl. 260-2.50m.
- Taeymans, Alois; Dumont, Georges; and Balleux, Willem, to Belgonucleaire. Treatment of combustible residue. 3,847,094, Cl. 110-8.00r.
- Takagi, Kachio: *See—*
  - Hitomi, Keiichi; Takagi, Kachio; Nomura, Seinosuke; and Okada, Sadayuki, 3,846,970.
- Takagi, Norio: *See—*
  - Sobajima, Shigenobu; Takagi, Norio; and Chiba, Kiyoshi, 3,847,659.
- Takahashi, Kazuo: *See—*
  - Habu, Teiji; Yoshida, Kyusaku; and Takahashi, Kazuo, 3,847,838.
- Takahashi, Shizuo; Kobayashi, Yoshio; and Hosogai, Toshio, to Tokyo Automatic Machinery Works, Ltd. Apparatus for making bags from soft tapes of synthetic resins. 3,847,708, Cl. 156-510.000.
- Takakura, Ichiro: *See—*
  - Suzuki, Tsunao; Senuma, Mitsushi; Takakura, Ichiro; and Masuda, Toshio, 3,847,853.
- Takarada, Eiichi, to Amsted Industries Incorporated. Servo feed control for electrical discharge machining. 3,848,108, Cl. 219-69.00g.
- Takeda, Hiromu: *See—*
  - Hagiwara, Yoshichi; Sato, Katunobu; Komatsu, Hideo; Yuguchi, Sadao; Yoshizumi, Nobuo; Nagai, Kenya; Takeda, Hiromu; and Ohnishi, Sei-Ichiro, 3,848,044.
- Takeda, Tadashi; Nakazawa, Yukiyoshi; and Ikeda, Hiroshi, to Hitachi, Ltd. Method of manufacturing semiconductor devices. 3,847,677, Cl. 148-1.500.
- Takekoshi, Tohru, to General Electric Company. Method for making polyetherimides. 3,847,870, Cl. 260-47.0cp.
- Takeuchi, Richard T. Split hull design for boats. 3,847,103, Cl. 114-66.50r.
- Talmon, Wolfgang: *See—*
  - Dworak, Wilhelm; and Talmon, Wolfgang, 3,847,519.
- Tambor, Ronald, to Thiokol Chemical Corporation, mesne. Rolling diaphragm with lateral support. 3,847,308, Cl. 222-386.500.
- Tamura, Nobuhiro: *See—*
  - Kominami, Naoya; Nakajima, Hitoshi; Tamura, Nobuhiro; and Ohki, Kusuo, 3,847,972.
- Tamura, Zensuki: *See—*
  - Hishinuma, Yukio; Arashi, Norio; and Tamura, Zensuki, 3,847,572.
- Tanaka, Kazuo: *See—*
  - Yoshimoto, Toshio; Imamura, Takaaki; Tanaka, Kazuo; and Miyagi, Arata, 3,848,026.
- Tanaka, Satoru; and Hashimoto, Kazunori, to Eisai Co., Ltd. Certain scopolammonium compounds. 3,847,924, Cl. 260-292.000.
- Tanner Engineering Co.: *See—*
  - Rogers, William A., 3,847,389.
- Tashbar, Philip W., to Unites States of America, National Aeronautics and Space Administration. System for depositing thin films. 3,847,115, Cl. 118-49.100.
- Tate, Jack F.: *See—*
  - Allen, Joseph C.; Tate, Jack F.; and Stelzer, Roland B., 3,847,220.
  - Allen, Joseph C.; Tate, Jack F.; and Stelzer, Roland B., 3,847,221.
  - Allen, Joseph C.; and Tate, Jack F., 3,847,224.
- Taxar, Iegoshua Mikhailovich: *See—*
  - Pozdnikov, Vladimir Nikolaevich; Sazonov, Oleg Leonidovich; Taxar, Iegoshua Mikhailovich; Tesnavs, Edgar Rikhardovich; Yanushkovsky, Vladimir Alexandrovich; Gavrilov, Alexandr Pavlovich; Korkonosov, Valentin Petrovich; Peresypkin, Alexei Vasilievich; and Sapovalov, Eduard Parfentievich, 3,848,131.
- Taxil, Andre Marc Victorin; and Boucher, Raymond Claude Emile, to ITT Industries, Inc. Discharge lamp with baffle plates. 3,848,150, Cl. 313-204.000.
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- Teague, Gilbert B. Ball sprue swage method and means. 3,847,000, Cl. 72-89.000.
- Team Industries: *See—*
  - Sjoman, Carl F., 3,846,924.
- Technicon Instruments Corporation: *See—*
  - Snyder, Lloyd R., 3,847,773.
- Teijin Limited: *See—*
  - Sobajima, Shigenobu; Takagi, Norio; and Chiba, Kiyoshi, 3,847,659.
  - Suzuki, Hideaki; Togawa, Haruo; Omori, Akira; and Yamamoto, Naoki, 3,847,842.
- Tekology Corporation: *See—*
  - Blengsli, Helmer L., 3,847,632.
- Teledyne Casting: *See—*
  - Perreault, Donald A., 3,847,732.
- Teledyne, Inc.: *See—*
  - Migdal, Philip N., 3,848,255.
  - Wiesler, Mordechai; and Havdala, Samuel, 3,847,284.
- Teledyne, Inc.; d/b/a Teledyne: *See—*
  - Goodspeed, Raymond F., 3,847,715.
- Teledyne Wah Chang Albany: *See—*
  - Amick, Darryl D., 3,847,684.
- Teleflex Limited: *See—*
  - Hemens, James Frederick, 3,847,034.
- Telefonaktiebolaget LM Ericsson: *See—*
  - Edstrom, Nils Herbert, 3,848,093.
- Telleri, Carmen M.: *See—*
  - Kendall, Kenneth J.; Telleri, Carmen M.; and Laniewski, Leonard W., 3,848,246.
- Temperilli, Aldemio: *See—*
  - Bernardi, Luigi; Foglio, Maurizio; and Temperilli, Aldemio, 3,847,991.
- Terai, Kenji: *See—*
  - Kono, Hisashi; Terai, Kenji; Niwa, Takazumi; Kitajima, Masahiko; Sawada, Morihiko; Ninomiya, Kohei; and Nakai, Shigeyuki, 3,848,016.
- Teraoka, Nobuhiro: *See—*
  - Suzuki, Akira; Hagiwara, Masaki; and Teraoka, Nobuhiro, 3,847,002.
- Terezakis, Emanuel G.: *See—*
  - Crimmel, Harry W.; Terezakis, Emanuel G.; and Sutula, Phyllis A., 3,847,655.
- Tescom Corporation: *See—*
  - Smith, John E., 3,847,355.
- Tesnavs, Edgar Rikhardovich: *See—*
  - Pozdnikov, Vladimir Nikolaevich; Sazonov, Oleg Leonidovich; Taxar, Iegoshua Mikhailovich; Tesnavs, Edgar Rikhardovich; Yanushkovsky, Vladimir Alexandrovich; Gavrilov, Alexandr Pavlovich; Korkonosov, Valentin Petrovich; Peresypkin, Alexei Vasilievich; and Sapovalov, Eduard Parfentievich, 3,848,131.
- Texaco Development Corporation: *See—*
  - Marion, Charles P.; and Reynolds, Blake, 3,847,564.
- Texaco Inc.: *See—*
  - Allen, Joseph C.; Tate, Jack F.; and Stelzer, Roland B., 3,847,220.
  - Allen, Joseph C.; Tate, Jack F.; and Stelzer, Roland B., 3,847,221.
  - Allen, Joseph C.; and Tate, Jack F., 3,847,224.
  - Braden, William B., Jr., 3,847,222.
  - Canup, Robert Eugene, 3,847,129.
  - schievelbein, Vernon H.; Shankle, Leonard A.; and Wade, Herbert N., 3,847,764.
  - Siegart, William R.; Blackley, William D.; and Chafetz, Harry, 3,847,887.
- Texas Instruments Incorporated: *See—*
  - Armstrong, Alvin E.; and Slater, Kenneth R., 3,848,225.
  - Baboian, Robert; and Fiore, Peter O., 3,847,685.
  - Harper, James G., 3,846,905.
  - Turk, Charles D., 3,847,560.
- Textilausrustungs-Gesellschaft Schroers & Co.: *See—*
  - Schneppenhorst, Ernst; and Leifeld, Ferdinand, 3,848,039.
- Textron Inc.: *See—*
  - Doss, David, 3,846,972.
- Th. Goldschmidt, A.G.: *See—*
  - Mueller, Wolfgang; Rodewald, Bernhard; and Witzke, Lothar, 3,847,597.
- Thamasett, Eberhard, to Wieland-Werke AG. Device for conical tapering of tubes of circular cross section. 3,847,001, Cl. 72-96.000.
- Thayer, Inc.: *See—*
  - Burnham, Benjamin K., 3,847,406.
- Theodore, Ares N.: *See—*
  - Labana, Santokh S.; and Theodore, Ares N., 3,847,863.
- Therm-O-Disc Incorporated: *See—*
  - Schmitt, Donald J., 3,848,213.
- Therrien, John A., 10% to Lee, Raymond, Organization, Inc., The. Welding apparatus. 3,847,352, Cl. 239-133.000.
- Thibodeau, Rheal A.: *See—*
  - Giguere, Andre N.; and Thibodeau, Rheal A., 3,848,110.
- Thibodeau, Rose Agathe Cote: *See—*
  - Giguere, Andre N.; and Thibodeau, Rheal A., 3,848,110.
- Thiesler, Ingo; and Hackbarth, Wilhelm, to Polysius AG. Seal for a conveyor axle of a traveling grate. 3,847,403, Cl. 277-57.000.
- Thilo, Peer: *See—*
  - Drebinger, Klaus; and Thilo, Peer, 3,848,254.
- Thiokol Chemical Corporation: *See—*
  - Rabe, George B., 3,847,310.
- Thiokol Chemical Corporation, mesne: *See—*
  - Grossman, Walter B., 3,847,309.
  - Hosek, William S., 3,847,307.
  - Tambor, Ronald, 3,847,308.
- Thomas & Betts Corporation: *See—*
  - Bawa, Jaspal S., 3,847,417.
- Thomas, Klaus: *See—*
  - Ost, Walter; Thomas, Klaus; and Jerchel, Dietrich, 3,847,922.
- Thomas, Ronald E., to Sperry Rand Corporation. Yaw damper synchro system for aircraft. 3,848,172, Cl. 318-586.000.

- Thompson, Chester C.; Olsen, Severt E.; and Loby, Raymond J., to Radiation Dynamics, Inc. High voltage solid-state rectifier system. 3,848,174, Cl. 321-11.000.
- Thompson, George Scott. Vehicle heating unit. 3,847,350, Cl. 237-8.00a.
- Thompson, John B.: *See—*
  - Shook, Howard E., Jr.; and Thompson, John B., 3,847,959.
- Thompson, Robert M., to Sun Ventures, Inc. Water white polyimide polymer prepared from di(aminomethyl)-dialkyladamantanes. 3,847,872, Cl. 260-65.000.
- Thompson, William R.: *See—*
  - Razdan, Raj Kumar; and Thompson, William R., 3,847,928.
- Thoms, William Charles: *See—*
  - Bakermans, Fransiscus Cornelius; and Thoms, William Charles, 3,846,896.
- Thomson-CSF: *See—*
  - Genuist, Jean; and Le Parquier, Guy, 3,848,253.
  - Micheron, Francois; Nicolas, Jean; and Hildebrandt, Mieczyslax, 3,847,465.
- Thorn Electrical Industries, Limited: *See—*
  - Wolfe, Kenneth Roy; Woodward, Frank; and Vause, Arthur Samuel, 3,848,120.
- Thorn, Herbert; and Davis, Robert E., to Ideal Toy Corporation. Kissing doll actuated by pressure applied to lips. 3,846,934, Cl. 46-232.000.
- Throckmorton, Peter E.: *See—*
  - Kellen, James N.; and Throckmorton, Peter E., 3,847,942.
- Thuries, Edmond, to Delle-Alsthom. Thermo-siphonic cooling circuit and circuit breaker. 3,848,103, Cl. 200-289.000.
- Timberjack Machines Limited: *See—*
  - Jasinski, Stanley C., 3,847,060.
- Time/Data Corporation: *See—*
  - Sloane, Edwin A.; and Heizman, Charles L., 3,848,115.
- Timmons, Frank E.: *See—*
  - Simons, Herbert D.; and Timmons, Frank E., 3,848,073.
- Tittelbach, Herbert. Disassemblable valve. 3,847,374, Cl. 251-367.000.
- Titus, Robert J.; and Kelly, William J., to Cogar Corporation. CRT linear sweep control circuit. 3,848,155, Cl. 315-27.0td.
- Tobin, Melvin W.: *See—*
  - Reese, Thomas J.; Claassen, George R.; and Tobin, Melvin W., 3,847,586.
- Tobin, Robert A. Nut or candy dispenser. 3,847,305, Cl. 222-166.000.
- Todd, Charles Edward: *See—*
  - Habert, William Charles; and Todd, Charles Edward, 3,847,705.
- Togawa, Haruo: *See—*
  - Suzuki, Hideaki; Togawa, Haruo; Omori, Akira; and Yamamoto, Naoki, 3,847,842.
- Tokuyama Soda Kabushiki Kaisha: *See—*
  - Motani, Kensuke; Nakahara, Akihiko; and Kuramoto, Nobuyuki, 3,847,841.
  - Sata, Toshikatsu; Nishimura, Masakatsu; and Izuo, Ryuji, 3,847,772.
- Tokyo Automatic Machinery Works, Ltd.: *See—*
  - Takahashi, Shizuo; Kobayashi, Yoshio; and Hosogai, Toshio, 3,847,708.
- Toledo, Emil, to Raytheon Company. Method of making a magnetic memory device. 3,847,759, Cl. 204-28.000.
- Tolle, Gunter. Sewing machine having thread severing device. 3,847,101, Cl. 112-252.000.
- Tolstov, Jury Georgievich; Skorovarov, Vladimir Efremovich; Grinshtein, Boris Ilich; Stepanova, Valentina Gavrilovna; Bashkatov, Ivan Pavlovich; Vinitsky, Jury Danilovich; Balyasinsky, Valery Ottovich; and Shmusrov, Valery Pavlovich. Surge arrestor for hig voltage electric power applications. 3,848,156, Cl. 315-36.000.
- Tomita, Fusao: *See—*
  - Suzuki, Takeo; Tomita, Fusao; Nakano, Hirofumi; and Honda, Haruo, 3,847,747.
- Toop, Gerald Wesley: *See—*
  - Liang, Shou Chu; Milner, Edward Francis Godfrey; Toop, Gerald Wesley; and Anderson, Ronald Walter, 3,847,595.
- Toray Industries, Inc.: *See—*
  - Hagiwara, Yoshichi; Sato, Katunobu; Komatsu, Hideo; Yuguchi, Sadao; Yoshizumi, Nobuo; Nagai, Kenya; Takeda, Hiromu; and Ohnishi, Sei-Ichiro, 3,848,044.
- Torghele, Flavio: *See—*
  - Ghersa, Piero; Torghele, Flavio; and Laberinti, Cesare, 3,847,693.
- Toth, Ivan, to Csepeli Szerszamgepgyar. Method and construction for increasing the service life of rolling screw mechanism with double-nut prestress. 3,847,033, Cl. 74-459.000.
- Tourtellot, John Allen; and Stave, Frederick Roland, to RCA Corporation. AC motor. 3,848,146, Cl. 310-163.000.
- Townsend, Stephen E., to Xerox Corporation. Staggered scan facsimile. 3,848,083, Cl. 178-6.000.
- Toyo Seiken Kaisha Limited: *See—*
  - Hirata, Sadao; Yamada, Muneki; and Kishimoto, Akira, 3,847,728.
- Toyo Soda Manufacturing Co., Ltd.: *See—*
  - Sakiyama, Kazutaka; and Hashimoto, Tsutomu, 3,847,507.
- Toyo Tire Cord Company Limited: *See—*
  - Matsumura, Sakujiro; Yamamura, Tadashi; Ogura, Akira; and Hayashi, Masataka, 3,846,965.
- Toyoda-Koki Kabushiki-Kaisha: *See—*
  - Moriya, Kazuo; and Suzuki, Isao, 3,846,916.
- Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
  - Miyoshi, Takeo; Majima, Kazu; Yamagata, Tetsuo; Harada, Susumu; and Sueishi, Motoharu, 3,847,130.
- Trabocco, Ronald E.; and De Luccia, John J., to United States of America, Navy. Titanium-beryllium reinforced matrices. 3,847,558, Cl. 29-191.400.
- Treadwell Corporation: *See—*
  - Gunther, Arnold, 3,847,570.
- Treese, David W. Flow through impellers and fluid machines employing same. 3,847,505, Cl. 415-213.000.
- Tregear, Roger N. J.: *See—*
  - Biery, Paul J.; Schwartz, Vernon R.; and Tregear, Roger N. J., 3,848,265.
- Trempu, Rene: *See—*
  - Poncet, Pierre; and Trempu, Rene, 3,848,058.
- Trescott, Edward B.: *See—*
  - Richards, James C.; and Trescott, Edward B., 3,847,979.
- Treuner, Uwe D.: *See—*
  - Breuer, Hermann; and Treuner, Uwe D., 3,847,908.
- Tri-State Hospital Supply Corporation: *See—*
  - Dooley, Ronald M.; and Haas, John W., 3,846,849.
- Tridair Industries: *See—*
  - Heyworth, Renest; and Schwartz, Phillip, 3,847,499.
- Trivette, Chester D., Jr.; and Vander Kooi, John P., to Monsanto Company. Method for vulcanizing rubber with bis-sulfenamide accelerators. 3,847,880, Cl. 260-79.50b.
- Trocciola, John C.; and Walsh, Myles A., III, to United Aircraft Corporation. Fuel cell with gas separator. 3,847,672, Cl. 136-86.00c.
- Troutman, Bruce L., to Rockwell International Corporation. Threshold circuit. 3,848,236, Cl. 340-173.00r.
- Truckweld Equipment Co.: *See—*
  - Warjone, James E.; and Wilkison, Albert C., 3,847,231.
- True Data Corporation: *See—*
  - McKee, James W., 3,847,382.
- True Temper Corporation: *See—*
  - Davis, Robert T., 3,846,910.
- Trumble, William P., to Sherwood Medical Industries, Inc. Suture. 3,847,156, Cl. 128-335.500.
- Trumpf Maschinen AG, Firma: *See—*
  - Bitzel, Hubert, 3,847,049.
- Trushin, Jury Petrovich: *See—*
  - Andreev, Sergei Vasilievich; Leibenzon, Mikhail Grigorievich; Trushin, Jury Petrovich; and Luzgin, Mikhail Sergeevich, 3,847,113.
- TRW, Inc.: *See—*
  - Bussey, Robert William; and Powers, John Glenn, 3,848,207.
  - Romeo, Donald E.; and Burcham, Neil P., 3,848,261.
  - Vaughn, Charles D.; and Jackson, James D., 3,847,202.
- Tsuboyama, Shozo: *See—*
  - Fujii, Seiji; Matsui, Kunio; Sato, Shigeru; Ito, Keijiro; Koizumi, Takashi; Tsuboyama, Shozo; and Watanabe, Hiroyuki, 3,848,127.
- Tsunemitsu, Hideo; and Shiba, Hiroshi, to Nippon Electric Company, Limited. Electrode structure for a semiconductor device having a shallow junction and method for fabricating same. 3,848,260, Cl. 357-71.000.
- Tu, Hsiu-Ying. Soft mat. 3,846,856, Cl. 5-344.000.
- Tucker, Council A., to American Telecommunications Corporation. Telephone wall mount. 3,848,097, Cl. 179-146.00r.
- Tucker Manufacturing Corporation: *See—*
  - Nowak, Ralph M., 3,847,458.
- Tufts, Wesley H.; and Albertassi, James H., to Neutron Corporation. Marine toilet. 3,846,847, Cl. 4-95.000.
- Tugukuni, Hideyoshi; and Matsuda, Mitsuhiro, to Dai Nippon Toryo Co., Ltd. Thermosetting synthetic polymer dispersions and process for production thereof. 3,847,851, Cl. 260-22.0cb.
- Tulumello, Angelo C. Apparatus for separating oil from water and measuring the amount of oil so separated. 3,847,810, Cl. 210-96.000.
- Turk, Charles D., to Texas Instruments, Incorporated. Corrosion resistant metallic multilayer structure. 3,847,560, Cl. 29-196.300.
- Turner, Richard E. Foot support. 3,847,147, Cl. 128-83.500.
- Turolla, Carlo; Bonfanti, Giovanni; and Pasqualucci, Carmine, to ARCHIFAR Industrie Chimiche del Trentino S.p.A. Method for extracting and isolating rifamycin O from fermentation broths of rifamycins. 3,847,903, Cl. 260-239.30p.
- Tyler, William E., III, to Esso Research and Engineering Company. Acid catalyzed alkylation of hydantoin. 3,847,933, Cl. 260-309.500.
- Tyrseck, Walter J., to Robertson Paper Box Co., Inc. Check wallet and blank for forming same. 3,847,195, Cl. 150-39.000.
- Ube Industries, Ltd.: *See—*
  - Kono, Hisashi; Terai, Kenji; Niwa, Takazumi; Kitajima, Masahiko; Sawada, Morihiko; Ninomiya, Kohei; and Nakai, Shigeyuki, 3,848,016.
- Ubelacker, Erich, to Rheinstahl Aktiengesellschaft. Armored vehicle. 3,847,053, Cl. 89-36.00k.
- Uchanski, Joseph; and Uchanski, Olga. Nontipping, disposable dishware. 3,847,324, Cl. 229-1.50h.
- Uchanski, Olga: *See—*
  - Uchanski, Joseph; and Uchanski, Olga, 3,847,324.
- Uchida, Yasuo, to Ishikawa Tekko Kabushiki Kaisha. Ball joint. 3,847,490, Cl. 403-140.000.
- Uchida, Yosuke: *See—*
  - Kaneko, Shiro; Masuda, Sakae; Ujihara, Motohiro; and Uchida, Yosuke, 3,847,616.

- Uchiyama, Masao; and Mori, Shoichiro, to Mitsubishi Petrochemical Company Limited. Catalytic steam dealkylation. 3,848,014, Cl. 260-672.00r.
- Uebelstadt, Manfred, to Auti Nsu Auto Union A.G. Shock absorber. 3,847,428, Cl. 293-96.000.
- Uhland, Gerald E.: *See—*
  - Rupert, Edward J.; Meyer, Monroe W.; and Uhland, Gerald E., 3,846,903.
- Ujihara, Motohiro: *See—*
  - Kaneko, Shiro; Masuda, Sakae; Ujihara, Motohiro; and Uchida, Yosuke, 3,847,616.
- Uly-Pak, Inc.: *See—*
  - Howard, H. Keith, 3,847,711.
- Unigate Limited: *See—*
  - Jenkins, Jonathan Moubray, 3,846,879.
- Union Carbide Corporation: *See—*
  - Dawson, Thomas Larry, 3,847,855.
  - Kordesch, Karl V.; and Clark, Milton B., 3,847,673.
  - Paterniti, Sam C., 3,847,669.
- Union Oil Company of California: *See—*
  - Keller, Theodore E., 3,847,548.
- Uniroyal A.G.: *See—*
  - Plumhans, Leon Paul Jean, 3,847,520.
- Uniroyal, Inc.: *See—*
  - Dorsch, Robert E., 3,847,716.
  - Habert, William Charles; and Todd, Charles Edward, 3,847,705.
  - Kindle, Robert W.; Barnhart, Robert R.; and Paul, Phillip T., 3,847,727.
- United Aircraft Corporation: *See—*
  - Trocciola, John C.; and Walsh, Myles A., III, 3,847,672.
- United Kingdom of Great Britain and Northern Ireland, Minister of Technology in Her Britannic Majesty's Government of the: *See—*
  - Barnes, Hamilton Nigel, 3,847,253.
- United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the: *See—*
  - Bailey, Alan; and Maggs, Frederick Arthur Pomroy, 3,847,833.
- United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
  - Northwood, James Edward, 3,847,203.
- United States Catheter & Instrument Corporation: *See—*
  - Ayella, Robert J., 3,847,140.
- United States Gypsum Company: *See—*
  - Lange, Robert G.; and Kobeski, Walter D., 3,847,635.
  - Luszczak, Myron Michael, 3,847,637.
- United States of America
  - Agriculture: *See—*
    - Harper, Robert J., Jr.; Blanchard, Eugene J.; and Gautreaux, Gloria A., 3,847,542.
    - Silbert, Leonard S.; Pfeefer, Philip E.; and Konen, Dolores A., 3,847,956.
  - Air Force: *See—*
    - Boyd, Bruce; Espersen, Peter G.; and Heyser, Lewis S., Sr., 3,848,197.
    - Rupert, Edward J.; Meyer, Monroe W.; and Uhland, Gerald E., 3,846,903.
  - Army: *See—*
    - Baldwin, Mart G.; and Reed, Samuel F., Jr., 3,847,882.
    - Quinlan, Joseph B.; and Darrah, Arthur F., 3,847,081.
    - Van Atta, Peter W., 3,848,085.
    - Waldman, Jeffrey; Sulinski, Harry V.; and Markus, Harold, 3,847,681.
  - Army, mesne: *See—*
    - Stevens, Travis E.; and Reed, Samuel F., Jr., 3,847,958.
  - Atomic Energy Commission: *See—*
    - Cahoon, John B., Jr.; Currey, John B.; and Emig, Donald L., 3,847,535.
    - Cooper, Martin H., 3,848,067.
    - Moore, Raymond H., 3,848,048.
    - Roy, Prodyot; Simpson, James L.; and Aitken, Edward A., 3,847,653.
    - Scott, Charles D.; and Pitt, W. Wilson, Jr., 3,847,550.
  - Health, Education and Welfare, mesne: *See—*
    - Shuey, Harry F., 3,847,822.
  - National Aeronautics and Space Administration: *See—*
    - Hoop, James M., 3,847,141.
    - Houck, Walter H.; and Stigberg, Jon D., 3,848,190.
    - Ollendorf, Stanford, 3,847,208.
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    - Hollahan, John R.; and Wydeven, Theodore. Method of preparing water purification membranes. 3,847,652, Cl. 117-93.1gd.
  - Navy: *See—*
    - Phillips, Jack C.; and Bennett, Donald E., 3,847,369.
    - Presser, Adolph, 3,848,201.
    - Russ, Joseph E., 3,847,348.
    - Trabocco, Ronald E.; and De Luccia, John J., 3,847,558.
- United States Steel Corporation: *See—*
  - Cannon, Raybon C.; and Wiesboeck, Robert A., 3,848,063.
- Unites States of America, National Aeronautics and Space Administration: *See—*
  - Tashbar, Philip W., 3,847,115.
- Universal Oil Products Company: *See—*
  - Berger, Charles V., 3,847,792.
  - DePalma, Ted V., 3,846,980.
  - Hilfman, Lee; Pollitzer, Ernest L.; and Michalko, Edward, 3,847,796.
  - Latos, Edwin J., 3,847,828.
  - Munro, William H., 3,847,799.
  - Rausch, Richard E., 3,847,794.
  - Sparks, Allen K., 3,848,006.
  - Withers, James G., Jr.; and Rieger, Klaus K., 3,847,212.
- University of Minnesota, The Regents of the: *See—*
  - Staba, E. John; and Shafiee, Ali, 3,846,937.
- Uno, Taiko; and Uosaki, Kohei, to Mitsubishi Petrochemical Company Limited. Method for the treatment of cyanide-containing wastes. 3,847,765, Cl. 204-151.000.
- Uosaki, Kohei: *See—*
  - Uno, Taiko; and Uosaki, Kohei, 3,847,765.
- Upjohn Company, The: *See—*
  - Argoudelis, Alexander D.; and Coats, John H., 3,847,746.
  - Herr, Milton E.; Murray, Herbert C.; and Fonken, Gunther S., 3,847,982.
  - Kelly, Robert C.; Wechter, William J.; and Gish, Duane T., 3,847,898.
  - Moffett, Robert Bruce, 3,847,910.
  - Moffett, Robert Bruce, 3,847,935.
  - Pike, John E., 3,847,966.
  - Sinkula, Anthony A., 3,847,896.
- U.S. Philips Corporation: *See—*
  - Gieschen, Kurt; and Schmidemann, Walter, 3,848,134.
  - Michels, Albertus Peter Johannes; Gasseling, Franciscus Wilhelmus Engelbert; and Findhammer, Carl Fridriech Johan, 3,846,985.
  - Te Velde, Ties Siebolt, 3,847,758.
- Uskokovic, Milan Radoje, to Hoffmann-La Roche Inc. Processes for the preparation of desa-androst-9-EN-5-ones and desa-pregn-9-EN-5-ones. 3,847,945, Cl. 260-338.000.
- Uterhart, Philip E., to Bell & Howell Company. Electrical camera focusing mechanism. 3,847,474, Cl. 354-168.000.
- Utsunomiya, Shinhachi: *See—*
  - Ichikawa, Hayao; and Utsunomiya, Shinhachi, 3,848,162.
- Utt, Orval L.; and Evans, Howard J., to Industrial Nucleonics Corporation. Coating thickness gauge. 3,848,125, Cl. 250-272.000.
- Vahlensieok, Hans-Joachim: *See—*
  - Seiler, Claus-Dieter; Vahlensieok, Hans-Joachim; and Junger, Hans, 3,847,860.
- Valatka, Henry: *See—*
  - Murphy, Donald P.; and Valatka, Henry, 3,847,839.
- Valdenaire, Claude: *See—*
  - Bauer, Felix; and Valdenaire, Claude, 3,847,095.
- Valles, Ildefonso Carrascosa. Case-like purse. 3,847,278, Cl. 206-.820.
- Vallinotto, Michele; and Villata, Luigi. Clamp device, adapted to be assembled in sequence, for supporting and retaining pipes, cables and the like. 3,847,331, Cl. 248-74.0ph.
- Van Atta, Peter W., to United States of America, Army. Low light level television camera. 3,848,085, Cl. 178-7.200.
- Van de Voorde, G.: *See—*
  - Keijzer, Johan H.; Pierle, Willy R. J.; and Van de Voorde, G., 3,847,410.
- Van Den Berg, Johan H., to Van Eekelen, Alex H. A. and Monroe Belgium N.V. Windshield Wiper assembly. 3,846,863, Cl. 15-250.320.
- van den Houte, Jozef Willy: *See—*
  - Van Royen, Freddy Ghisleen; and van den Houte, Jozef Willy, 3,847,611.
- Van der Ham, Wim. Inlet grill. 3,847,066, Cl. 98-40.0vt.
- Van der Meulen, Sjaak Johan; Weizenbach, Bauke; Lee, Allan Henry; and Kinjerski, Theodore Andrew, to Gordon, Sherritt, Mines Limited. Disintegration of scrap alloys to facilitate recovery of nickel, cobalt and copper values. 3,847,594, Cl. 75-63.000.
- Van Eekelen, Alex H. A.: *See—*
  - Van Den Berg, Johan H., 3,846,863.
- Van Riper, Robert S. Fastener device. 3,847,489, Cl. 403-110.000.
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  - Acton, Hugh C.; Knapp, Robert L.; Van Ryn, Arthur L.; and Hozeski, Kenneth W., 3,847,433.
- Vander Kooi, John P.: *See—*
  - Boustany, Kamel; and Vander Kooi, John P., 3,847,879.
  - Trivette, Chester D., Jr.; and Vander Kooi, John P., 3,847,880.
- Vandermeulen, Douglas J.; and Weis, Siegfried K., to Frost, C. L., & Son, Inc. Mower blade saddle assembly. 3,847,455, Cl. 308-187.100.
- Vanderpool, Clarence D.; and MacInnis, Martin B., to GTE Sylvania Incorporated. Process for preparing crystalline magnesium fluoride. 3,848,066, Cl. 423-490.000.
- Vanguard Electronics Company, Inc.: *See—*
  - Felkner, Darrel, 3,848,210.
- Vann, Roy R. Method and apparatus for determining communication of a perforated zone with a second zone. 3,848,124, Cl. 250-260.000.
- Varco International, Inc.: *See—*
  - Boyadjieff, George I.; and Otsap, Ben A., 3,847,216.
  - Boyadjieff, George I.; and Otsap, Ben A., 3,847,218.
- Varian Associates: *See—*
  - Yoo, Jack A., 3,848,075.
- Varta Aktiengesellschaft: *See—*
  - Kramer, Gunter; and Glaser, Helmut, 3,847,668.
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- Vause, Arthur Samuel: *See—*
  - Wolfe, Kenneth Roy; Woodward, Frank; and Vause, Arthur Samuel, 3,848,120.
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  - Clark, Charles R.; Gregory, M. Duane; Kerfoot, Oliver C.; Veatch, Fred C.; Krehbiel, Delmar D.; and Kennedy, Carl D., 3,847,823.
- VEB Polygraph Leipzig Kombinat fuer Polygraphische: *See—*
  - Zirnstein, Peter; Schebiella, Erwin; Koerner, Siegfried; Weise, Joachim; and Mulansky, Horst, 3,847,077.
- VEB Rathenower Optische Werke: *See—*
  - Burck, Peter, 3,847,780.
- Veeder Industries Inc.: *See—*
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- Veil, Karl: *See—*
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  - Lalancette, Jean-Marc, 3,847,963.
- Verbeck, Bruno J., to Miles Laboratories, Inc. Test for a given constituent in a liquid. 3,847,553, Cl. 23-253.0tp.
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  - Stasiuk, Michael, 3,847,035.
- Vertrees, Warren J., to Lee, Raymond, Organization, Inc., The. Boating apparatus. 3,846,859, Cl. 9-2.00s.
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  - Lackner, Heinrich, 3,847,849.
- Vickery, Ronald C. Synthetic lightweight building material. 3,847,634, Cl. 106-109.000.
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  - Tolstov, Jury Georgievich; Skorovarov, Vladimir Efremovich; Grinshtein, Boris Ilich; Stepanova, Valentina Gavrilovna; Bashkatov, Ivan Pavlovich; Vinitsky, Jury Danilovich; Balyasinsky, Valery Ottovich; and Shmusrov, Valery Pavlovich, 3,848,156.
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- Voedisch, Richard K., to Illinois Water Treatment Company. Ion exchange vessel. 3,847,805, Cl. 210-33.000.
- Voegeli, Ernst. Package for ampoules. 3,847,281, Cl. 206-437.000.
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  - Klutchko, Sylvester; and Von Strandtmann, Max, 3,847,920.
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  - Bouchaudon, Jean; Vourat, Guy; and Margrafe, Rodolphe, 3,847,868.
- Vretblad, Per: *See—*
  - Axen, Rolf; Vretblad, Per; and Porath, Jerker Olof, 3,847,745.
- Vulcan Materials Company: *See—*
  - DeForest, Elbert M.; St. Cyr, Lewis A.; and Young, Loren H., 3,848,052.
- Vysniauskas, Jonas K.: *See—*
  - Lee, Fred S.; and Vysniauskas, Jonas K., 3,848,209.
- Vyzkumny a vyvojovy ustav Zavodu vseobechneho strojirenstvi: *See—*
  - Buran, Vojtech; Horn, Vladimir; and Suchanek, Borivoj, 3,847,187.
- Wade, Herbert N.: *See—*
  - schievelbein, Vernon H.; Shankle, Leonard A.; and Wade, Herbert N., 3,847,764.
- Wadley, Edward F.; and Wasselhoft, Robert D., to Esso Research and Engineering Company. Isomerization of polymethylbenzenes. 3,848,009, Cl. 260-668.00a.
- Wagner, John W.: *See—*
  - Draugelis, Vaidevutis C.; Reese, Franklin S.; and Wagner, John W., 3,848,204.
- Wagner, Joseph. Prefabricated shelter structure. 3,846,943, Cl. 52-23.000.
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- Wallace, Leonard J., to International Business Machines Corporation. Drift compensated document sensing system. 3,848,192, Cl. 328-1.000.
- Wallace, Richard A. Electrogel apparatus for removing electrolytes and concentrating the same from an aqueous solution. 3,847,788, Cl. 204-301.000.
- Walsh, Myles A., III: *See—*
  - Trocciola, John C.; and Walsh, Myles A., III, 3,847,672.
- Walterscheid, Jean, GmbH: *See—*
  - Geisthoff, Hubert, 3,847,415.
- Wander Ltd.; a/k/a Wander AG: *See—*
  - Neumann, Peter, 3,847,934.
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- Wang, Su-San, to Hoffmann-La Roche Inc. Octapeptide solid phase-fragment process and peutapeptide intermediates. 3,847,892, Cl. 260-112.500.
- Wanner, Karl; Schmid, Wolfgang; Karl, Hubertus; and Falchle, Jorg, to Bosch, Robert, G.m.b.H. Portable impact wrench. 3,847,229, Cl. 173-48.000.
- Warjone, James E.; and Wilkison, Albert C., to Truckweld Equipment Co. Pole reinforcement installation. 3,847,231, Cl. 173-134.000.
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  - Stein, William B., 3,846,882.
- Warner, Paul F. Preparing anethole trithione using sulfolane solvent. 3,847,943, Cl. 260-327.00c.
- Warner-Lambert Company: *See—*
  - Klutchko, Sylvester; and Von Strandtmann, Max, 3,847,920.
- Wasselhoft, Robert D.: *See—*
  - Wadley, Edward F.; and Wasselhoft, Robert D., 3,848,009.
- Watanabe, Hikaru: *See—*
  - Murakami, Yoichi; and Watanabe, Hikaru, 3,847,874.
- Watanabe, Hiroyuki: *See—*
  - Fujii, Seiji; Matsui, Kunio; Sato, Shigeru; Ito, Keijiro; Koizumi, Takashi; Tsuboyama, Shozo; and Watanabe, Hiroyuki, 3,848,127.
- Watanabe, Tetsuya: *See—*
  - Itoh, Yohnosuke; Yokota, Kozo; Watanabe, Tetsuya; and Matsui, Rokuro, 3,847,601.
- Waters, Ernest B., Jr.: *See—*
  - Garrick, John R.; and Waters, Ernest B., Jr., 3,848,043.
- Waters, Lyle E., to Peska, Lawrence, Associates, Inc. Non detachable pull top can. 3,847,300, Cl. 220-269.000.
- Watkins, Edward Davis, to Celanese Coatings & Specialties Company. Trimethylolalkane di-allyl ether-ester coating compositions. 3,848,029, Cl. 260-899.000.
- Watson, Donald W., to Xerox Corporation. Adhesive binding means for edge binding assembly pages together in book fashion. 3,847,718, Cl. 161-39.000.
- Watts, Jack, to Welwyn Electric Limited. Strain measuring system. 3,847,017, Cl. 73-88.50r.
- Watts, Loyal O.: *See—*
  - Hicks, Leon E.; Grant, John W.; Watts, Loyal O.; and Peterson, Wayne A., 3,847,416.
- Wayne Manufacturing Company: *See—*
  - Oberdank, Jack O., 3,847,576.
- Wean United, Inc.: *See—*
  - Boshold, Raymond F., 3,847,075.
- Weaver, Herbert Schuyler, to Sedgwick Machine Works, Inc. Safety astragal. 3,846,939, Cl. 49-370.000.
- Weber, Charles L., to Kustom Electronics, Inc. Frequency generating device utilizing a phase locked loop including a voltage control oscillator. 3,848,199, Cl. 331-2.000.
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- Webster, Colin James, to Imperial Chemical Industries Limited. Tobacco composition. 3,847,326, Cl. 131-17.000.
- Wechter, William J.: *See—*
  - Kelly, Robert C.; Wechter, William J.; and Gish, Duane T., 3,847,898.
- Weck, Edward, & Company, Inc.: *See—*
  - Nordin, Harald, 3,847,154.

Weglage, David E., 50% to Becker, Walter. Method of applying retainer rings from interconnected retainer ring supply. 3,846,900, Cl. 29g413.000.

Wehlau, Paul A. Golf aid. 3,846,918, Cl. 33-262.000.

Weichselbaum, Theodore E.; and Wilhelmson, Jack L., to Sherwood Medical Industries, Inc. Identification system. 3,848,112, Cl. 235-61.70r.

Weidt, Karl-Adolf, to Schaffer, Fritz, G.m.b.H. Plastic furniture. 3,847,460, Cl. 312-257.00r.

Weinstock, Clifford, to Neurological Research and Development Group Incorporated. Multi-section variable density mattress. 3,846,857, Cl. 5-345.000.

Weis, Jon; and Pedersen, Bjarne Skinhoj, to A/S Cheminova. Process for the production of p-nitrophenols. 3,848,002, Cl. 260-622.00r.

Weis, Siegfried K.: *See—*
Vandermeulen, Douglas J.; and Weis, Siegfried K., 3,847,455.

Weisbrod, Sherman: *See—*
Kawamoto, Hirohisa; Allen, Elmer Lawrence, Jr.; and Weisbrod, Sherman, 3,848,196.

Weise, Joachim: *See—*
Zirnstein, Peter; Schebiella, Erwin; Koerner, Siegfried; Weise, Joachim; and Mulansky, Horst, 3,847,077.

Weiser, Mark D.: *See—*
Leibler, Jerome E.; Bloch, Carl J.; Preston, Marvin, IV; and Weiser, Mark D., 3,848,232.

Weissman, Bernard. Disposable probe tip for electro-surgical device. 3,847,153, Cl. 128-303.140.

Weizenbach, Bauke: *See—*
Van der Meulen, Sjaak Johan; Weizenbach, Bauke; Lee, Allan Henry; and Kinjerski, Theodore Andrew, 3,847,594.

Wells, James E. Damper sequencer. 3,847,210, Cl. 165-103.000.

Welwyn Electric Limited: *See—*
Watts, Jack, 3,847,017.

Weman, Per Olaf, to Sigmatex A.G. Vehicle occupant restraint system. 3,847,434, Cl. 297-389.000.

Weman, Per Olag, to Sigmatex, A.G. Buckle with latch. 3,846,876, Cl. 24-230.00a.

Wendel, Kurt: *See—*
Mueller, Gerhart Hermann; and Wendel, Kurt, 3,847,856.

Wenk, Jurgen: *See—*
Ratschmeier, Dieter; Stark, Reinhard; and Wenk, Jurgen, 3,848,167.

Werkzeugmaschinenfabrik Adolf Waldrich Coburg: *See—*
Gerner, Heinz; and Merkel, Rudolf, 3,846,941.

Werth, John J., to ESB Incorporated. Alkali metal-porous conductive carbon battery having a molten alkali metal chloraluminate electrolyte. 3,847,667, Cl. 136-6.0fs.

Wescott, Robert D.: *See—*
Moldovan, Michael T., Jr.; Lindros, Charles J.; Anderson, Lawrence L.; Wescott, Robert D.; and Cusimano, Richard J., 3,847,345.

Western Electric Company, Incorporated: *See—*
Baker, Charles R.; and Moore, Robert L., 3,847,697.
Dalal, Ajay P.; Elarde, Paul F.; and Klasek, Frank A., 3,847,700.
Kumagai, Henry Yasuo, 3,847,658.

Westfall, Harold L.: *See—*
Akers, Robert M.; and Westfall, Harold L., 3,847,171.

Westinghouse Electric Corporation: *See—*
Archer, David H.; and Keairns, Dale L., 3,847,563.

Westmoreland Plastics Company; division of Vulcan, Inc.: *See—*
Skinner, Harvey G., 3,847,435.

Weston, David. Separation of copper minerals from pyrite. 3,847,357, Cl. 241-20.000.

Weston Instruments, Inc.: *See—*
Seville, Ovid Kingsley, 3,847,420.

Weyer, Rudi: *See—*
Weber, Helmut; Aumuller, Walter; Weyer, Rudi; Muth, Karl; and Stach, Kurt, 3,847,938.

Weyerhaeuser Company: *See—*
Dixon, John Allen, 3,847,390.

Whirlpool Corporation: *See—*
Ohmann, William, 3,847,812.

White, Roy A.; and Margosiak, Stanley A., to De Bell & Richardson, Inc. Outdoor degradable hydrocarbon plastic. 3,847,852, Cl. 260-23.00h.

Whitesides, Jack C.: *See—*
Whitfield, Carroll J.; and Whitesides, Jack C., 3,847,225.

Whitfield, Carroll J.; and Whitesides, Jack C., to Kelley Manufacturing Co. Peanut harvester. 3,847,225, Cl. 171-101.000.

Whitman, Marcus E. Package for electronic semiconductor devices. 3,848,077, Cl. 174-525.000.

Whittier, Clyde. Variably adjustable ditching implement. 3,846,923, Cl. 37-98.000.

Wichner, Theodore, 50% Wichner, Valeria O. Preformed blanks for false teeth set-up. 3,846,911, Cl. 32-2.000.

Wichner, Valeria O.: *See—*
Wichner, Theodore, 3,846,911.

Widigs, Sven Holger; and Lindbergh, Sven-Olof. Apparatus for coating edge regions of panels or boards. 3,847,117, Cl. 118-407.000.

Wieder, Horst F.: *See—*
Bredereck, Hellmut F. I.; Iliopulos, Miltiadis I.; and Wieder, Horst F., 3,847,866.

Wiehe, Irwin Andrew: *See—*
Erhardt, Peter Franklin; and Wiehe, Irwin Andrew, 3,847,644.

Wieland-Werke AG: *See—*
Thamasett, Eberhard, 3,847,001.

Wieloch, Francis J., to Xerox Corporation. Sheet container. 3,847,385, Cl. 271-121.000.

Wiersma, Henry R., to Danly Machine Corporation. Safe knockout arrangement for power press. 3,847,009, Cl. 72-427.000.

Wiesboeck, Robert A.: *See—*
Cannon, Raybon C.; and Wiesboeck, Robert A., 3,848,063.

Wiesler, Mordechai; and Havdala, Samuel, to Teledyne, Inc. Magnetic tape die sorting system. 3,847,284, Cl. 209-81.00r.

Wiewiorowski, Tadeusz Karol, to Freeport Minerals Company. Recovery of cobalt values from the leached ore tailings of a conventional ammoniacal leaching process. 3,848,054, Cl. 423-140.000.

Wiggins Teape Research & Development Limited: *See—*
Hill, Andrew William; and Sims, Paul Donald, 3,847,661.

Wild, Fletcher Sutcliffe, Limited: *See—*
Allen, Thomas Jeffrey, 3,847,439.

Wilhelmson, Jack L.: *See—*
Weichselbaum, Theodore E.; and Wilhelmson, Jack L., 3,848,112.

Wilke, Gunther; and Muller, Ernst Willi. Process for the production of dimers and trimers of conjugated dienes. 3,848,015, Cl. 260-677.00r.

Wilkison, Albert C.: *See—*
Warjone, James E.; and Wilkison, Albert C., 3,847,231.

Willhite, William, Jr.; and Strube, Herbert Eugene. Web perforating apparatus. 3,847,045, Cl. 83-37.000.

William, Frank J., III, to General Electric Company. Method for preparing polyetherimides. 3,847,869, Cl. 260-47.0cz.

Williams, Clarence L. Ice breaker attachment for road maintenance vehicles. 3,847,437, Cl. 299-25.000.

Williams, Claude E.; and Gates, F. Alan. Automatic lift apparatus. 3,847,292, Cl. 214-75.00g.

Williams, Redford B., Jr.: *See—*
Williams, Redford B., Jr.; and Hartwell, John W. (said Hartwell assor. to said), 3,847,142.

Williams, Redford B., Jr.; and Hartwell, John W., said Hartwell assor. to said Williams, Redford B., Jr. Blood flow measuring apparatus and method. 3,847,142, Cl. 128-2.05f.

Williams, Selwyn Donald; Leaver, John Philip; and Abbott, David, to La Porte Industries Limited. Peroxygen compounds. 3,847,830, Cl. 252-186.000.

Williamson, Robert W. Safety mechanism for special machines and fixtures. 3,847,259, Cl. 192-131.00r.

Willis, T. Chade: *See—*
Stephens, William D.; Willis, T. Chade; and Combs, Charles S., 3,847,871.

Wilson, Charles T. Magnetic tape cartridge changer. 3,848,264, Cl. 360-92.000.

Wilson, Edward L., to Exxon Research and Engineering Company. Fluidized bed gasification process with reduction of fines entrainment by utilizing a separate transfer line burner stage. 3,847,566, Cl. 48-202.000.

Wilson, Richard D. Hand star wrench. 3,847,042, Cl. 81-175.000.

Wilson, Ronald, to Lucas Electrical Company Limited, The. Starter motors. 3,848,148, Cl. 310-209.000.

Wilson, William L.: *See—*
Steiger, Roger A.; and Wilson, William L., 3,848,062.

Wind-De-Co., Inc.: *See—*
Hillman, Edwin K., 3,847,109.

Winslow, John M., to Minnesota Mining and Manufacturing Company. Light-sensitive heat-developable sheet material. 3,847,612, Cl. 96-67.000.

Wirth, Joseph G.: *See—*
Heath, Darrell R.; and Wirth, Joseph G., 3,847,867.

Wisconsin Alumni Research Foundation: *See—*
DeLuca, Hector F., 3,847,955.

Wise, John D. Automatic house painter. 3,847,112, Cl. 118-7.000.

Wisotsky, Serge S. Pile driving method and apparatus. 3,846,991, Cl. 61-53.500.

Withers, James G., Jr.; and Rieger, Klaus K., to Universal Oil Products Company. Heat transfer tube having multiple internal ridges. 3,847,212, Cl. 165-179.000.

Witzke, Lothar: *See—*
Mueller, Wolfgang; Rodewald, Bernhard; and Witzke, Lothar, 3,847,597.

Wohlenberg, H., Kommanditgesellschaft: *See—*
Kruse, Fritz, 3,847,386.

Wohlmut, Peter G.; and Neu, Frank D., to I/O Metrics Corporation. Three dimensional electro-optical retrieval system. 3,848,095, Cl. 179-100.30v.

Wojtowicz, Edward A.; Lazzarotti, James; Hunter, James R.; and Rodkey, Robert W., to Burroughs Corporation. Document feeding device. 3,847,383, Cl. 271-11.000.

Wolf, Warren W.: *See—*
Erickson, Thomas D.; and Wolf, Warren W., 3,847,626.
Erickson, Thomas D.; and Wolf, Warren W., 3,847,627.

Wolfe, Kenneth Roy; Woodward, Frank; and Vause, Arthur Samuel, to Thorn Electrical Industries, Limited. Light bulb and reflector assembly. 3,848,120, Cl. 240-41.0bm.

Woo, Pak-Fat (William): *See—*
Weber, Charles W.; Rucker, C. Olen; Peavy, Patrick L.; Woo, Pak-Fat (William); and Bear, James E., 3,847,207.

Woods, Glenn; and Frackowiak, Anthony J., to Hoover Ball and Bearing Company. Disassembly apparatus for knockdown reel. 3,846,887, Cl. 29-200.00d.

Woodward, Frank: *See—*
Wolfe, Kenneth Roy; Woodward, Frank; and Vause, Arthur Samuel, 3,848,120.

Wooldridge, Kenneth Robert Harry: *See—*
Knowles, Philip; Marshall, Stuart Malcolm; Pain, David Lord; and Wooldridge, Kenneth Robert Harry, 3,847,919.

Wootton, Thomas S., to Baldwin Electronics, Inc. Alarm system utilizing pulse position modulation and dual conductor sensor. 3,848,231, Cl. 340-164.00r.

Wortmann, Joachim: *See—*
Dany, Franz-Josef; Wortmann, Joachim; Kandler, Joachim; and Laubner, Jurgen, 3,847,843.

Wright, Richard E. Reducing roller device. 3,847,144, Cl. 128-57.000.

Wydeven, Theodore: *See—*
United States of America, National Aeronautics and Space Administration, 3,847,652.

Wynne, J. Harry, II. Spray device for coating the outside of pipe. 3,847,353, Cl. 239-184.000.

X. English keyboard scheme. 3,847,263, Cl. 197-100.000.

Xerox Corporation: *See—*
Brant, William; and Schenk, Richard C., 3,847,391.
Draugelis, Vaidevutis C.; Reese, Franklin S.; and Wagner, John W., 3,848,204.
Erhardt, Peter Franklin; and Wiehe, Irwin Andrew, 3,847,644.
Fisher, Donald J., 3,847,480.
Hagenbach, Robert J.; and Lenhard, Myron J., 3,847,604.
Helbig, Gerald R., 3,847,479.
Hoffman, Daniel S.; and Koch, Gilbert E., 3,847,119.
Howell, Richard Stockton; and Hotchkiss, Stuart Evan, 3,847,306.
Lynch, Thomas, 3,847,388.
Mahoney, John F.; and Perel, Julius, 3,848,258.
Perreault, Donald A., 3,847,732.
Rhodes, Warren L., 3,847,642.
Townsend, Stephen E., 3,848,083.
Watson, Donald W., 3,847,718.
Wieloch, Francis J., 3,847,385.
Young, Eugene F., 3,847,478.

Yabe, Toshinori, to Bridgestone Tire Company Limited. Collapsible tire building drum. 3,847,706, Cl. 156-417.000.

Yamada, Muneki: *See—*
Hirata, Sadao; Yamada, Muneki; and Kishimoto, Akira, 3,847,728.

Yamada, Yasuo: *See—*
Kishino, Shigeo; Yamada, Yasuo; Kurashashi, Yoshio; and Kume, Toyohiko, 3,848,031.

Yamagata, Tetsuo: *See—*
Miyoshi, Takeo; Majima, Kazu; Yamagata, Tetsuo; Harada, Susumu; and Sueishi, Motoharu, 3,847,130.

Yamaishi, Yoshio: *See—*
Sekine, Kunio; Kamata, Yukio; and Yamaishi, Yoshio, 3,847,779.

Yamamoto, Naoki: *See—*
Suzuki, Hideaki; Togawa, Haruo; Omori, Akira; and Yamamoto, Naoki, 3,847,842.

Yamamoto, Nobuo, to Fuji Photo Film Co., Ltd. Process for the preparation of novel dihydroxy-1,4-dioxanes. 3,847,948, Cl. 260-340.300.

Yamamura, Tadashi: *See—*
Matsumura, Sakujiro; Yamamura, Tadashi; Ogura, Akira; and Hayashi, Masataka, 3,846,965.

Yamanouchi, Teruo: *See—*
Endo, Ichiro; and Yamanouchi, Teruo, 3,847,607.

Yamauchi, Tadashi: *See—*
Akune, Mikio; Yoshii, Kokichi; and Yamauchi, Tadashi, 3,847,713.

Yankovsky, Oleg Alexandrovich: *See—*
Klushin, Nikolai Alexandrovich; Maslakov, Petr Avramovich; Kilin, Viktor Evdokimovich; Yankovsky, Oleg Alexandrovich; and Galimov, Anas Galimovich, 3,847,232.

Yano, Tetsuo: *See—*
Iguchi, Shigeru; Yano, Tetsuo; and Iwata, Tamotu, 3,847,620.

Yanushkovsky, Vladimir Alexandrovich: *See—*
Pozdnikov, Vladimir Nikolaevich; Sazonov, Oleg Leonidovich; Taxar, Iegoshua Mikhailovich; Tesnavs, Edgar Rikhardovich; Yanushkovsky, Vladimir Alexandrovich; Gavrilov, Alexandr Pavlovich; Korkonosov, Valentin Petrovich; Peresypkin, Alexei Vasilievich; and Sapovalov, Eduard Parfentievich, 3,848,131.

Yokota, Akira: *See—*
Kuroiwa, Tadaharu; Isayama, Yukio; Yokota, Akira; Kamio, Tsukasa; Kinnai, Kazuhiko; Abe, Eiichi; Kimura, Kunio; Hioki, Morihisa; and Noguchi, Hisataka, 3,847,806.

Yokota, Kozo: *See—*
Itoh, Yohnosuke; Yokota, Kozo; Watanabe, Tetsuya; and Matsui, Rokuro, 3,847,601.

Yoo, Jack A., to Varian Associates. Method for splicing compound superconductors. 3,848,075, Cl. 174-94.000.

Yoo, Jin Sun, to Atlantic Richfield Company. Oxidation and desulfurization of a hydrocarbon material. 3,847,798, Cl. 208-209.000.

Yoshida Kogyo Kabushiki Kaisha: *See—*
Douri, Hisashi, 3,846,897.

Yoshida, Kyusaku: *See—*
Habu, Teiji; Yoshida, Kyusaku; and Takahashi, Kazuo, 3,847,838.

Yoshida, Takashi; Sakaguchi, Shinji; and Miyazako, Takushi, to Fuji Photo Film Co., Ltd. Image-receiving material for color diffusion transfer process. 3,847,615, Cl. 96-77.000.

Yoshii, Kokichi: *See—*
Akune, Mikio; Yoshii, Kokichi; and Yamauchi, Tadashi, 3,847,713.

Yoshimoto, Toshio; Imamura, Takaaki; Tanaka, Kazuo; and Miyagi, Arata, to Bridgestone Tire Company Limited. Rubbery vulcanizable composition. 3,848,026, Cl. 260-888.000.

Yoshizumi, Nobuo: *See—*
Hagiwara, Yoshichi; Sato, Katunobu; Komatsu, Hideo; Yuguchi, Sadao; Yoshizumi, Nobuo; Nagai, Kenya; Takeda, Hiromu; and Ohnishi, Sei-Ichiro, 3,848,044.

Young, Eugene F., to Xerox Corporation. Segmented bias roll. 3,847,478, Cl. 355-3.000.

Young, Fred M., to Young Radiator Company. Extractor tool for heat-exchanger core. 3,846,892, Cl. 29-202.00r.

Young, John S.; and Goodwin, James. Water skier's safety device. 3,848,244, Cl. 340-286.000.

Young, Loren H.: *See—*
DeForest, Elbert M.; St. Cyr, Lewis A.; and Young, Loren H., 3,848,052.

Young Radiator Company: *See—*
Young, Fred M., 3,846,892.

Young, Sidney Geoffrey: *See—*
Ellis, Jack, 3,848,137.

Youngdale, Gilbert A.: *See—*
Lincoln, Frank H., Jr.; Pike, John E.; and Youngdale, Gilbert A., 3,847,967.

Yuguchi, Sadao: *See—*
Hagiwara, Yoshichi; Sato, Katunobu; Komatsu, Hideo; Yuguchi, Sadao; Yoshizumi, Nobuo; Nagai, Kenya; Takeda, Hiromu; and Ohnishi, Sei-Ichiro, 3,848,044.

Zanoni, Carl Z., to Zygo Corporation. Optical noncontacting surface sensor for measuring distance and angle of a test surface. 3,847,485, Cl. 356-167.000.

Zax, Grigory Iosifovich: *See—*
Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,847,272.

Zeamer, Aaron C.: *See—*
Harmon, James E.; and Zeamer, Aaron C., 3,847,264.

Zebus, Paul P.: *See—*
Beever, Elmer R.; Shima, Rindge; and Zebus, Paul P., 3,847,024.

Zeeh, Bernd; Rohr, Wolfgang; Koenig, Karl-Heinz; and Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Oxadiazolidine-3,5-diones. 3,847,931, Cl. 260-307.00b.

Zeller, Robert Dale, to Johns-Manville Corporation. Method and apparatus for centering a luminaire support. 3,847,333, Cl. 248-125.000.

Zellweger AG: *See—*
Baumann, Eduard, 3,848,240.

Zerle, Ludiw; and Scharm, Klaus, to Erhardt & Leimer KG, Firma. Metal sensing apparatus with a protective cover of a grounded conductive plastic material to prevent accumulation of electrical charges. 3,848,184, Cl. 324-41.000.

Ziedonis, Janis Gunars, to Hoffmann-La Roche Inc. Ultrasonic transducer assembly. 3,847,016, Cl. 73-71.5us.

Zimmermann, Frank: *See—*
Bub, Oskar; Friedrich, Ludwig; Hofmann, Hans-Peter; Kreiskott, Horst; and Zimmermann, Frank, 3,847,905.

Zirnstein, Peter; Schebiella, Erwin; Koerner, Siegfried; Weise, Joachim; and Mulansky, Horst, to VEB Polygraph Leipzig Kombinat fuer Polygraphische. Setting up arrangement for a combined printing and stamping machine. 3,847,077, Cl. 101-24.000.

Zuber, Bretislav Paul, to Northern Electric Company Limited. Smooth tape formation of tubes. 3,847,010, Cl. 72-468.000.

Zuppinger, Paul: *See—*
Garratt, Peter Garth; Habermeier, Juergen; Porret, Daniel; Leumann, Ernst; and Zuppinger, Paul, 3,847,769.

Zurek, Rudolf; and Modersohn, Dieter, to Krauss-Maffei Aktiengesellschaft. Current collecting shoe for suspension type vehicle. 3,847,256, Cl. 191-49.000.

Zvanut, Albert J., to Stoody Company. Arc welding process and electrode for stainless steel. 3,848,109, Cl. 219-146.000.

Zygo Corporation: *See—*
Zanoni, Carl Z., 3,847,485.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF NOVEMBER, 1974

NOTE.—**Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).**

- Baermann, Max. Eddy current and/or induction brake or clutch. Re. 28,237, 11–12–74, Cl. 310—93.
- Boosen, Karl-Josef, to Lonza Ltd. Method for manufacturing tetronic acid. Re. 28,242, 11–12–74, Cl. 260—343.6.
- Bunker-Ramo Corp., The: *See—*
  - Koster, Robert A. Re. 28,238.
- Carmet Co.: *See—*
  - Dupuis, Hubert J. Re. 28,239.
- Chemetron Corp.: *See—*
  - Cranage, Bidwell C. Re. 28,241.
- Cranage, Bidwell C., to Chemetron Corp. Coupler assembly. Re. 28,241, 11–12–74, Cl. 24—230.
- Danforth, Richard L.: *See—*
  - Hendricks, Willis R., and Danforth. Re. 28,236.
- Dupuis, Hubert J., to Carmet Co. Indexable broach. Re. 28,239, 11–12–74. Cl. 29—95.1.
- Eastman Kodak Co.: *See—*
  - Jenkins, Philip W. Re. 28,240.
- Hendricks, Willis R., and R. L. Danforth, to Shell Oil Co. Footwear assembly. Re. 28,236, 11–12–74, Cl. 36—2.5.
- Jenkins, Philip W., to Eastman Kodak Co. Photosensitive elements containing photooxidants containing heterocyclic nitrogen atom substituted by an alkoxy or an acyloxy group. Re. 28,240, 11–12–74, Cl. 96—90.
- Koster, Robert A., to The Bunker-Ramo Corp. Control/display apparatus. Re. 28,238, 11–12–74, Cl. 340—172.5.
- Lonza Ltd.: *See—*
  - Boosen, Karl-Josef. Re. 28,242.
- Rys, Tadeusz, to Square D Company. Bolted contact switch with cam means for overcoming magnetic pinch forces on contact blades. Re. 28,243, 11–12–74, Cl. 200—256.
- Shell Oil Co.: *See—*
  - Hendricks, Willis R., and Danforth. Re. 28,236.
- Square D Co.: *See—*
  - Rys, Tadeusz. Re. 28,243.

LIST OF PLANT PATENTEES

- Bailey, Dorothy J. S. Rose plant. 3,649, 11–12–74, Cl. 14.
- Delbard, Georges A., to The Conrad-Pyle Co. Rose plant. 3,647, 11–12–74, Cl. 25.
- DeRuiter, Gujsbert, to The Conrad-Pyle Co. Rose plant. 3,648, 11–12–74, Cl. 17.
- Conrad-Pyle Co., The: *See—*
  - Delbard, Georges A. 3,647.
  - DeRuiter, Gujsbert. 3,648.
- Jackson & Perkins Co.: *See—*
  - Warriner, William A. 3,650.
  - Warriner, William A. 3,651.
  - Warriner, William A. 3,652.
- Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,650, 11–12–74, Cl. 24.
- Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,651, 11–12–74, Cl. 24.
- Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,652, 11–12–74, Cl. 6.

LIST OF DESIGN PATENTEES

- A/S W. Jordan Borste & Penselfabrik: *See—*
  - Lindbo, Per. 233,579.
- Aladdin Industries, Inc.: *See—*
  - Bridges, John A., and Degrow. 233,581.
- Alfred Dunhill Ltd.: *See—*
  - Gomersall, Stanley F. 233,622.
- Aluminum Co. of America: *See—*
  - Williams, Marvin H. 233,626.
- American Optical Corp.: *See—*
  - Fessella, Gregory F., and Rhoads. 233,610.
- Auer, Robert T.: *See—*
  - Campbell, Laurie J., Auer, Cook, and Lohr. 233,621.
- Bluem, Gary R. Fluid pressure testing apparatus. 233,625, 11–12–74, Cl. D52—6.
- Bray, Freddie L.: *See—*
  - Bray, Judson R., and F. L. 233,603.
- Bray, Judson R., and F. L. Fishing lure. 233.603, 11–12–74, Cl. D22—27.
- Bridges, John A., and G. C. Degrow, to Aladdin Industries, Inc. Cafeteria service tray. 233,581, 11–12–74, Cl. D7—38.
- California R & D Center: *See—*
  - Smith, Jay III, and Sims. 233,618.
- Campbell, Laurie J., R. T. Auer, C. S. Cook, and R. J. Lohr, to Louis Marx & Co., Inc. Riding vehicle. 233,621, 11–12–74. Cl. D34—15.
- Chicago Lock Co.: *See—*
  - Kerr, William J. 233,589.
  - Kerr, William J. 233,590.
  - Kerr, William J. 233,591.
  - Kerr, William J. 233,592.
- Christiansen, Palle H.: *See—*
  - Holt, Jorgen, Videmark, and Christiansen. 233,605.
- Cohen, Maurice. End support for a garment display rack. 233,576, 11–12–74, Cl. D6—85.
- Conway, Ronald I., R. V. Jones, J. J. Natoli, and J. V. Stram, to International Business Machines Corp. Numeric input/audio output multifunction console or the like. 233,608, 11–12–74, Cl. D26—5.
- Cook, Calvin S.: *See—*
  - Campbell, Laurie J., Auer, Cook, and Lohr. 233,621.
- Davis, Paul, to Sweetheart Plastics, Inc. Lid for a packaging container or the like. 233,599, 11–12–74, Cl. D9—267.
- Davis, Samuel R., Jr., and H. A. Watson, to Ipco Hospital Supply Corp. Package of spoons or the like. 233,596, 11–12–74, Cl. D9—193.
- Davis, Samuel R., Jr., and H. A. Watson, to Ipco Hospital Supply Corp. Package of forks or the like. 233,597, 11–12–74, Cl. D9—193.
- Degrow, Gary C.: *See—*
  - Bridges, John A., and Degrow. 233,581.
- Defores, Eugene, to Societe Le Foyer. Marking pen. 233,631, 11–12–74, Cl. D74—17.
- Devore, William D., and R. A.: *See—*
  - Thomas, Robert W. 233,585.
- D'Sal Products, Inc.: *See—*
  - Fears, Lowell T. 233,594.
- Dunning, Walter B., D. S. Endter, W. G. McDonald, and A. C. Rissberger, Jr., to Eastman Kodak Co. Aperture card cartridge and closure therefor. 233,628, 11–12–74, Cl. D61—1.
- Eastman Kodak Co.: *See—*
  - Dunning, Walter B., Endter, McDonald, and Rissberger. 233,628.
- Endter, Dale S.: *See—*
  - Dunning, Walter B., Endter, McDonald, and Rissberger. 233,628.
- F.lli Pagani S.p.A.: *See—*
  - Pagani, Eugenio. 233,623.
- Farber, Marie L.: *See—*
  - Stubbmann, Albert, and Farber. 233,615.
- Fears, Lowell T., to D'Sal Products, Inc. Combined fluids applicator and container. 233,594, 11–12–74, Cl. D9—10.
- Folson, Henry J.: *See—*
  - Forssell, Dag C. G., and Folson. 233,600.
- Forssell, Dag C. G., and H. J. Folson, to Vector Co. Pontoon boat. 233,600, 11–12–74, Cl. D12—62.
- Fossella, Gregory F., and P. K. Rhoads, to American Optical Corp. Microscope laser. 233,610, 11–12–74, Cl. D26—14.1.
- Gerhard, Heinrich: *See—*
  - Mueller, Walter, Gerhard, and Stierli. 233,575.
- Gillespie Furniture Co.: *See—*
  - Keller, Huey T. 233,578.
- Glaberson, Martin, to Warner-Lambert Co. Razor blade dispenser. 233,598, 11–12–74, Cl. D9—224.
- Glass, Marvin I., P. J. Ishikawa, and J. A. Vernon, to Marvin Glass & Associates. Game cabinet. 233,617, 11–12–74, Cl. D34—5.
- Gomersall, Stanley F., to Alfred Dunhill Ltd. Cigarette lighter. 233,622, 11–12–74, Cl. D48—27.
- Hanaoka, Tadashi, I. Kaneko, I. Shiina, to Misawa Homes Co., Ltd. Prefabricated building unit for audio and/or visual equipment. 233,601, 11–12–74, Cl. D13—1.
- Hanaoka, Tadashi, and I. Kaneko, to Misawa Homes Co., Ltd. Prefabricated building ventilation unit. 233,602, 11–12–74, Cl. D13—1.
- Hand, Claude E., III. Golf tee container. 233,613, 11–12–74, Cl. D34—5.
- Higgins, Wesley J.: *See—*
  - Weber, Ronald J., and Higgins. 233,604.

- Holt, Jorgen, C. Videmark, and P. H. Christiansen, to Nordisk Ventilator Co. Aktieselskab. Roof-hood for a ventilation twin-duct. 233,605, 11–12–74, Cl. D23—163.
- Horvath, William, to Thiokol Corp. Combined rechargeable dispensing container and overcap therefor. 233,593, 11–12–74, Cl. D9—8.
- Interluebke Gebr. Luebke KG: *See—*
  - Mueller, Walter, Gerhard, and Stierli. 233,575.
- International Business Machines Corp.: *See—*
  - Conway, Ronald I., Jones, Natoli, and Stram. 233,608.
- Ipco Hospital Supply Corp.: *See—*
  - Davis, Samuel R., Jr., and Watson. 233,596.
  - Davis, Samuel R., Jr., and Watson. 233,597.
- Irving, Levine. A strand of beads for a curtain element or the like. 233,580, 11–12–74, Cl. D6—205.
- Ishikawa, Paul J.: *See—*
  - Glass, Marvin I., Ishikawa, and Vernon. 233,617.
- Johnson, Robert W., and H. Leong. Picture viewer. 233,629, 11–12–74, Cl. D61—1.
- Jones, Robert V.: *See—*
  - Conway, Ronald I., Jones, and Natoli. 233,608.
- Kaneko, Isao: *See—*
  - Hanaoka, Tadashi, Kaneko, and Shiina. 233,601.
  - Hanaoka, Tadashi, and Kaneko. 233,602.
- Kao, Tonis: *See—*
  - Kramer, Herbert, and Kao. 233,611.
- Keller, Huey T., to Gillespie Furniture Co. Dresser or the like. 233,578, 11–12–74, Cl. D6—154.
- Kerr, William J., to Chicago Lock Co. Key for an axial tumbler-type lock. 233,589, 11–12–74, Cl. D8—136.
- Kerr, Williams J., to Chicago Lock Co. Key for an axial tumbler-type lock. 233,590, 11–12–74, Cl. D8—136.
- Kerr, William J., to Chicago Lock Co. Key for an axial tumbler-type lock. 233,591, 11–12–74, Cl. D8—136.
- Kerr, William J., to Chicago Lock Co. Key for an axial tumbler-type lock. 233,592, 11–12–74, Cl. D8—136.
- Kinard, William C. Tennis ball holder. 233,614, 11–12–74, Cl. D34—5.
- Kirk, Norman. Electrically curved hair vibrator. 233,632, 11–12–74, Cl. D83—1.
- Kohner Bros., Inc.: *See—*
  - Stubbmann, Albert, and Farber. 233,615.
- Kopp, Theodore J. Scraper or the like. 233,586, 11–12–74, Cl. D7—181.
- Kramer, Herbert, and T. Kao, to Siemens Aktiengesellschaft. Telephone subscriber. 233,611, 11–12–74, Cl. D26—14.
- Laurenti, Italo M. Scissors. 233,587, 11–12–74, Cl. D8—57.
- Leong, Henry: *See—*
  - Johnson, Robert W., and Leong. 233,629.
- Lindbo, Per, to A/S W. Jordan Borste & Penselfabrik. Toothbrush display stand. 233,579, 11–12–74, Cl. D6—188.
- Lohr, Raymond J.: *See—*
  - Campbell, Laurie J., Auer, Cook, and Lohr. 233,621.
- Louis Marx & Co., Inc.: *See—*
  - Campbell, Laurie J., Auer, Cook, and Lohr. 233,621.
- Mandell, Darla R., to Marrick Industries Inc. Vending machines. 233,624, 11–12–74, Cl. D52—3.
- Marrick Industries Inc.: *See—*
  - Mandell, Dara R. 233,624.
- Mansei Kogyo Kabushiki Kaishya: *See—*
  - Moriya, Nobuyoshi. 233,612.
- Marvin Glass & Associates: *See—*
  - Glass, Marvin I., Ishikawa, and Vernon. 233,617.
- McDonald, William G.: *See—*
  - Dunning, Walter B., Endter, and McDonald. 233,628.
- Misawa Homes Co., Ltd.: *See—*
  - Hanaoka, Tadashi, Kaneko, and Shiina. 233,601.
  - Hanaoka, Tadashi, and Kaneko. 233,602.
- Modern Faucet Mfg. Co.: *See—*
  - Rauh, Jack. 233,606.
- Moriya, Nobuyoshi, to Mansei Kogyo Kabushiki Kaishya. Cigarette lighter. 233,612, 11–12–74, Cl. D27—42.
- Mueller, Walter, H. Gerhard, and D. Stierli, to Interluebke Gebr. Luebke KG. Combined work desk, bed and multiple storage unit. 233,575, 11–12–74, Cl. D6—4.
- Natoli, John J.: *See—*
  - Conway, Ronald I., Jones, and Natoli. 233,608
- Nordisk Ventilator Co. Aktieselskab: *See—*
  - Videmarw, Christian, and Christiansen. 233,605.
- Olday, Fred L. Loose hair collecting attachment for fur sewing machine. 233,630, 11–12–74, Cl. D70—2.
- Pagani, Eugenio, to R.lli Pagani S.p.A. Lamp set for motorcycles or the like. 233,623, 11–12–74, Cl. D48—32.
- Palumbo, Gary S. Combined spoon rest and scraper for a jar or the like. 233,582, 11–12–74, Cl. D7—39.
- Rauh, Jack, to Modern Faucet Mfg. Co. Spray head. 233,606, 11–12–74, Cl. D23—37.
- Reitknecht, Jack. Fountain toothbrush. 233,574, 11–12–74, Cl. D4—1.
- Rhoads, Peter K.: *See—*
  - Fossella, Gregory F., and Rhoads. 233,610.
- Salviato, Augusto. Combined condiment shaker set and tray therefor. 233,583, 11–12–74, Cl. D7—35.
- Salviato, Augusto. Combined condiment set and tray therefor. 233,584, 11–12–74, Cl. D7—55.
- Seki Yoshizo, to Tomy Kogyo Co., Ltd. Toy race trackway. 233,620, 11–12–74, Cl. D34—15.
- Shiina, Iwao: *See—*
  - Hanaoka, Tadashi, Kaneko, and Shiina. 233,601.
- Siemens Aktiengesellschaft: *See—*
  - Kramer, Herbert, and Kao. 233,611.
- Sims, Anson: *See—*
  - Smith, Jay, III, and Sims. 233,618.
- Sinding, John R. Bottle. 233,595, 11–12–74, Cl. D9—39.
- Smith, Jay, III, and A. Sims, to California R & D Center. Combined toy apartment house and garage. 233,618, 11–12–74, Cl. D34—15.11.
- Societe Le Foyer: *See—*
  - Defores, Eugene. 233,631.
- Spaeth, Edwin B., Jr. Utility pole crossarm. 233,609, 11–12–74, Cl. D26—12.
- Stanley Works, The: *See—*
  - Stoutenberg, Carl C. 233,588.
- Stierli, Dieter: *See—*
  - Mueller, Walter, Gerhard, and Stierli. 233,575.
- Stoutenberg, Carl C., to The Stanley Works. Garden tool sharpener. 233,588, 11–12–74, Cl. D8—91.
- Stubbmann, Albert, and M. L. Farber, to Kohner Bros., Inc. Paddle and ball toy. 233,615, 11–12–74, Cl. D34—5.
- Sweetheart Plastics, Inc.: *See—*
  - Davis, Paul. 233,599.
- Thiokol Corp.: *See—*
  - Horvath, William. 233,593.
- Thomas, Robert W., to William D. Devore and R. A. Cooker. 233,585, 11–12–74, Cl. D7—94.
- Tomy Kogyo Co., Ltd.: *See—*
  - Seki, Yoshizo. 233,620.
- Topalis, Stylianos A. Expanded cereal food product. 233,573, 11–12–74, Cl. D1—1.
- Waddell, George A. Tool holder. 233,627, 11–12–74, Cl. D54—6.
- Warner-Lambert Co.: *See—*
  - Glaberson, Martin. 233,598.
- Watson, Harry A.: *See—*
  - Davis, Samuel R., Jr., and Watson. 233,596.
  - Davis, Samuel R., Jr., and Watson. 223,597.
- Wausau Metals Corp.: *See—*
  - Weber, Ronald J., and Higgins. 233,604.
- Weber, Ronald J., and W. J. Higgins, to Wausau Metals Corp. Ventilator unit. 233,604, 11–12–74, Cl. D23—151.
- Welk, Leonard E. Fireplace. 233,607, 11–12–74, Cl. D23—97.
- Williams, Marvin H., to Aluminum Co. of America. Architectural panel. 233,626, 11–12–74, Cl. D54—2.
- Vector Co.: *See—*
  - Forssell, Dag C. G., and Folson. 233,600.
- Vernon, John A.: *See—*
  - Glass, Marvin I. Ishikawa, and Vernon. 233,617.
- Verzillo, Ralph J. Golf putter head. 233,616, 11–12–74, Cl. D34—5.
- Videmark, Christian: *See—*
  - Holt, Jorgen, Videmark, and Christiansen. 233,605.

CLASSIFICATION OF PATENTS

ISSUED NOVEMBER 12, 1974

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	
93	3,846,844
243R	3,846,845
CLASS 3	
1	3,846,846
CLASS 4	
95	3,846,847
112	3,846,849
172.19	3,846,850
180	3,846,848
252R	3,846,851
CLASS 5	
10R	3,846,852
60	3,846,853
100	3,846,854
114	3,846,855
344	3,846,856
345R	3,846,857
CLASS 8	
39	3,847,541
66	3,847,542
127.6	3,847,543
178	3,847,544
CLASS 9	
2S	3,846,858
	3,846,859
CLASS 13	
20	3,848,072
CLASS 14	
71	3,846,860
CLASS 15	
179	3,846,861
210R	3,846,862
250.02	3,846,867
250.32	3,846,863
250.42	3,846,864
392	3,846,865
425	3,846,866
CLASS 16	
181	3,846,868
CLASS 17	
43	3,846,869
CLASS 19	
80R	3,846,870
148	3,846,871
CLASS 23	
230EP	3,847,548
	3,847,549
230PC	3,847,546
230B	3,847,545
	3,847,550
230L	3,847,547
232R	3,847,551
	3,847,552
253PC	3,847,554
253TP	3,847,553
CLASS 24	
3G	3,846,872
153R	3,846,873
188	3,846,874
200	3,846,875
230AU	Re.28,241
230A	3,846,876
263CA	3,846,877
CLASS 28	
72.14	3,846,881
CLASS 29	
1.2	3,846,878
2	3,846,879
36	3,846,880
95.1	Re.28,239
96	3,846,882
105R	3,847,555
116AD	3,846,883
127	3,846,884
157.1R	3,846,885
159.1	3,846,886
187	3,847,556
191	3,847,557
191.4	3,847,558
195	3,847,559
196.3	3,847,560
200B	3,846,888
200D	3,846,887
	3,846,889
	3,846,890
201R	3,846,891
202R	3,846,892
203DT	3,846,896
203MM	3,846,893
203H	3,846,894
	3,846,895
207.5SL	3,846,897
259	3,846,898
401	3,846,899
413	3,846,900
450	3,846,901
458	3,846,902
487	3,846,903
568	3,846,904
589	3,846,905
603	3,846,906
626	3,846,907
CLASS 30	
120.1	3,846,908
138	3,846,909
271	3,846,910
CLASS 32	
2	3,846,911
CLASS 33	
1D	3,846,912
76V	3,846,913
110	3,846,914
147Q	3,846,916
174R	3,846,915
180R	3,846,917
262	3,846,918
CLASS 36	
2.5R	Re.28,236
2.5W	3,846,919
22A	3,846,920
59R	3,846,921
CLASS 37	
83	3,846,922
98	3,846,923
CLASS 38	
2	3,846,924
CLASS 40	
16.2	3,846,925
34	3,846,926
334	3,846,927
CLASS 42	
16	3,846,928
CLASS 43	
17	3,846,929
25	3,846,930
42.53	3,846,931
138	3,846,932
CLASS 44	
62	3,847,561
CLASS 46	
14	3,846,933
232	3,846,934
CLASS 47	
26	3,846,935
58	3,846,936
	3,846,937
CLASS 48	
76	3,847,562
77	3,847,563
95	3,847,564
180S	3,847,565
202	3,847,566
	3,847,567
CLASS 49	
342	3,846,938
370	3,846,939
CLASS 51	
118	3,846,940
165.89	3,846,941
295	3,847,568
309	3,847,569
334	3,846,942
CLASS 52	
23	3,846,943
177	3,846,945
221	3,846,946
236	3,846,947
400	3,846,948
438	3,846,949
632	3,846,950
741	3,846,951
743	3,846,952
745	3,846,953
758R	3,846,944
CLASS 53	
14	3,846,954
24	3,846,955
28	3,846,956
59W	3,846,957
	3,846,958
61	3,846,959
163	3,846,960
250	3,846,961
374	3,846,962
CLASS 55	
73	3,847,570
87	3,847,571
179	3,847,572
244	3,847,575
283	3,847,576
319	3,847,573
385	3,847,577
387	3,847,574
390	3,847,578
CLASS 56	
13.3	3,846,963
16.6	3,846,964
CLASS 57	
58.52	3,846,965
77.4	3,846,966
78	3,846,967
140J	3,846,968
	3,846,969
140R	3,846,970
CLASS 58	
23R	3,846,971
	3,846,972
82R	3,846,973
87	3,846,974
126A	3,846,975
CLASS 59	
79R	3,846,976
80	3,846,977
85	3,846,978
CLASS 60	
39.04	3,846,979
279	3,846,980
286	3,846,981
445	3,846,982
478	3,846,983
509	3,846,984
521	3,846,985
641	3,846,986
690	3,846,987
CLASS 61	
.5	3,846,989
3	3,846,988
5	3,846,990
53.5	3,846,991
72.3	3,846,992
CLASS 62	
23	3,846,993
87	3,846,994
CLASS 64	
17R	3,846,995
CLASS 65	
11W	3,847,579
25A	3,847,580
29	3,847,581
33	3,847,582
	3,847,583
40	3,847,584
99A	3,847,585
290	3,847,586
CLASS 66	
50B	3,846,996
CLASS 71	
88	3,847,587
90	3,847,588
92	3,847,589
121	3,847,590
CLASS 72	
6	3,846,997
34	3,846,998
68	3,846,999
89	3,847,000
96	3,847,001
128	3,847,002
134	3,847,003
184	3,847,004
375	3,847,006
393	3,847,005
	3,847,007
407	3,847,008
427	3,847,009
468	3,847,010
477	3,847,011
CLASS 73	
8	3,847,012
40.7	3,847,013
49.3	3,847,014
70	3,847,015
71.5US	3,847,016
88.5R	3,847,017
94	3,847,018
117.3	3,847,019
228	3,847,020
418	3,847,021
421R	3,847,022
423R	3,847,023
432SD	3,847,024
460	3,847,025
CLASS 74	
5.6D	3,847,026
190	3,847,027
217B	3,847,028
233	3,847,029
242.14R	3,847,030
258	3,847,031
427	3,847,032
459	3,847,033
491	3,847,034
687	3,847,035
CLASS 75	
20F	3,847,591
53	3,847,592
60	3,847,593
63	3,847,594
77	3,847,595
84.4	3,847,596
99	3,847,597
121	3,847,598
122	3,847,599
126C	3,847,600
130.5	3,847,601
161	3,847,602
213	3,847,603
CLASS 76	
107C	3,847,036
CLASS 81	
5.1R	3,847,037
52.4R	3,847,038
	3,847,039
57.18	3,847,040
57.38	3,847,041
175	3,847,042
CLASS 82	
5	3,847,043
CLASS 83	
2	3,847,044
37	3,847,045
152	3,847,046
344	3,847,047
452	3,847,048
613	3,847,049
CLASS 84	
1.25	3,847,050
387	3,847,051
CLASS 87	
31	3,847,052
CLASS 89	
36K	3,847,053
129B	3,847,054
CLASS 90	
14	3,847,055
73	3,847,056
CLASS 91	
6.5	3,847,057
413	3,847,058
	3,847,059
453	3,847,060
497	3,847,061
CLASS 92	
86.5	3,847,062
100	3,847,063
CLASS 93	
1C	3,847,064
CLASS 96	
1SD	3,847,604
1.5	3,847,605
	3,847,606
1.6	3,847,607
27R	3,847,608
33	3,847,609
35.1	3,847,610
48R	3,847,611
67	3,847,612
74	3,847,613
75	3,847,614
77	3,847,615
90R	Re.28,240
94R	3,847,616
	3,847,617
95	3,847,618
108	3,847,619
114	3,847,620
126	3,847,621
CLASS 98	
33	3,847,065
40VT	3,847,066
CLASS 99	
323.8	3,847,067
425	3,847,068
443R	3,847,069
643	3,847,070
CLASS 100	
32	3,847,071
35	3,847,072
88	3,847,073
209	3,847,074
223	3,847,075
CLASS 101	
3R	3,847,078
24	3,847,077
122	3,847,076
426	3,847,079
CLASS 102	
27R	3,847,080
38	3,847,081
93	3,847,082
	3,847,083
CLASS 104	
20	3,847,084
122	3,847,085
130	3,847,086
148LM	3,847,089
148MS	3,847,087
	3,847,088
CLASS 105	
199C	3,847,090
468	3,847,091
CLASS 106	
10	3,847,622
32	3,847,623
47Q	3,847,624
50	3,847,626
	3,847,627
52	3,847,625
	3,847,628
65	3,847,629
90	3,847,630
97	3,847,632
98	3,847,633
109	3,847,634
110	3,847,635
168	3,847,636
271	3,847,637
287SS	3,847,638
288B	3,847,639
300	3,847,640
CLASS 110	
8C	3,847,093
8R	3,847,094
14	3,847,095
101R	3,847,092
165R	3,847,296
CLASS 112	
65	3,847,096
68	3,847,097
79A	3,847,098
152	3,847,099
158E	3,847,100
252	3,847,101
	3,847,102
CLASS 114	
66.5R	3,847,103
162	3,847,104
CLASS 115	
1C	3,847,105
7	3,847,106
35	3,847,107
	3,847,108
52	3,847,109
CLASS 116	
120	3,847,110
CLASS 117	
3	3,847,641
17.5	3,847,642
33.5L	3,847,643
36.7	3,847,644
36.9	3,847,645
37R	3,847,646
38	3,847,647
47A	3,847,648
	3,847,649
71M	3,847,650
72	3,847,651
93	3,847,653
93.1GD	3,847,652
123D	3,847,654
126GQ	3,847,655
132C	3,847,656
135.5	3,847,657
201	3,847,658
211	3,847,659
212	3,847,660
218	3,847,661
CLASS 118	
2	3,847,111
7	3,847,112
40	3,847,113
49.1	3,847,114
	3,847,115
52	3,847,116
407	3,847,117
602	3,847,118
637	3,847,119
CLASS 119	
29	3,847,120
51.13	3,847,121
159	3,847,122
CLASS 123	
8.45	3,847,123
51B	3,847,124
119A	3,847,125
140R	3,847,126
	3,847,127
141	3,847,128
148E	3,847,129
179L	3,847,130
198DB	3,847,131
CLASS 124	
11R	3,847,132
30R	3,847,133
CLASS 126	
21A	3,847,134
21R	3,847,135
271	3,847,136
271.2A	3,847,137
CLASS 128	
1.1	3,847,138
2H	3,847,139
2M	3,847,140
2V	3,847,141
2.05F	3,847,142
17	3,847,143
57	3,847,144
66	3,847,145
75	3,847,146
83.5	3,847,147
225	3,847,149

229 3,847,150
269 3,847,151
276 3,847,152
303.14 3,847,153
305 3,847,154
334R 3,847,155
335.5 3,847,156
348 3,847,157
492 3,847,158

CLASS 130
27T 3,847,160

CLASS 131
10.3 3,847,161
17 3,847,326
133 3,847,162
143 3,847,163
3,847,164

CLASS 132
7 3,847,165
9 3,847,166
92R 3,847,167
3,847,168

CLASS 134
1 3,847,662
2 3,847,663
3,847,664
6 3,847,665
57D 3,847,666
183 3,847,169

CLASS 135
1R 3,847,170
5AT 3,847,171

CLASS 136
6FS 3,847,667
6G 3,847,668
30 3,847,669
86A 3,847,671
86B 3,847,673
86C 3,847,672
86R 3,847,670
100 3,847,674
133 3,847,675
148 3,847,676

CLASS 137
100 3,847,172
110 3,847,173
334 3,847,174
360 3,847,175
382 3,847,176
400 3,847,177
515.7 3,847,178
596 3,847,179
596.13 3,847,180
613 3,847,181

CLASS 138
30 3,847,182
96R 3,847,183
120 3,847,184
122 3,847,185
173 3,847,186
178 3,847,148

CLASS 139
127P 3,847,187
384B 3,847,188

CLASS 140
106 3,847,189
149 3,847,190

CLASS 141
12 3,847,191

CLASS 144
34E 3,847,192

CLASS 145
46 3,847,193

CLASS 148
1.5 3,847,677
2 3,847,678
3,847,679
11.5A 3,847,681
11.5F 3,847,680
12.1 3,847,682
12.3 3,847,683
20.6 3,847,684
31.5 3,847,685
175 3,847,686
187 3,847,687

CLASS 150
28 3,847,194
39 3,847,195

CLASS 152
209R 3,847,698
226 3,847,196

CLASS 156
2 3,847,688
7 3,847,689
13 3,847,690
72 3,847,691
3,847,692
79 3,847,693
86 3,847,694
96 3,847,631
3,847,695

154 3,847,696
155 3,847,697
251 3,847,699
252 3,847,700
259 3,847,701
265 3,847,702
293 3,847,199
294 3,847,703
364 3,847,704
405 3,847,705
417 3,847,706
436 3,847,707
510 3,847,708
3,847,709
511 3,847,710
515 3,847,711
583 3,847,712

CLASS 157
1.17 3,847,197
1.24 3,847,198

CLASS 159
4A 3,847,713
3,847,714
16R 3,847,200

CLASS 160
105 3,847,201

CLASS 161
7 3,847,715
35 3,847,716
37 3,847,717
39 3,847,718
65 3,847,719
108 3,847,721
109 3,847,722
159 3,847,720
160 3,847,723
161 3,847,724
167 3,847,725
186 3,847,726
215 3,847,727
252 3,847,728
256 3,847,729

CLASS 162
198 3,847,730
203 3,847,731

CLASS 164
50 3,847,202
60 3,847,203
132 3,847,204
155 3,847,205
274 3,847,206

CLASS 165
1 3,847,207
3,847,208
14 3,847,209
103 3,847,210
166 3,847,211
179 3,847,212
181 3,847,213

CLASS 166
.5 3,847,214
.6 3,847,215
72 3,847,216
85 3,847,217
224A 3,847,218
263 3,847,219
273 3,847,220
274 3,847,221
3,847,224
303 3,847,222
305R 3,847,223

CLASS 171
101 3,847,225

CLASS 172
371 3,847,226
378 3,847,227
450 3,847,228

CLASS 173
48 3,847,229
127 3,847,230
134 3,847,231
168 3,847,232
170 3,847,233

CLASS 174
36 3,848,073
38 3,848,074
52S 3,848,077
3,848,078
68.5 3,848,079
94 3,848,075
141R 3,848,076
164 3,848,080
209 3,848,081

CLASS 175
228 3,847,234
372 3,847,235
383 3,847,236

CLASS 176
28 3,847,733
31 3,847,734
38 3,847,735
78 3,847,736

CLASS 177
25 3,847,237
255 3,847,238

CLASS 178
5.6 3,848,082
6 3,847,732
3,848,083
6.8 3,848,084
7.2 3,848,085
7.3D 3,848,086
7.6 3,848,087
7.9 3,848,088
18 3,848,089

CLASS 179
1VL 3,848,092
1E 3,848,090
1N 3,848,091
15AS 3,848,093
18FA 3,848,094
100.3G 3,848,096
100.3V 3,848,095
146R 3,848,097
170D 3,848,098

CLASS 180
5R 3,847,239
9.5 3,847,240
54R 3,847,241
68.5 3,847,242
79.2R 3,847,243
89A 3,847,244

CLASS 182
49 3,847,245
78 3,847,246
81 3,847,247

CLASS 184
1R 3,847,248
6.12 3,847,249

CLASS 186
1R 3,847,250

CLASS 187
29R 3,847,251

CLASS 188
1C 3,847,252
2A 3,847,253
70R 3,847,254

CLASS 191
38 3,847,255
49 3,847,256

CLASS 192
.062 3,847,257
98 3,847,258
131R 3,847,259

CLASS 193
37 3,847,260

CLASS 195
1.4 3,847,737
1.8 3,847,738
28R 3,847,739
31F 3,847,740
3,847,741
36R 3,847,742
63 3,847,743
65 3,847,744
68 3,847,745
80R 3,847,746
96 3,847,747
109 3,847,748
127 3,847,749
142 3,847,750

CLASS 196
155 3,847,751

CLASS 197
1R 3,847,262
100 3,847,263
114R 3,847,264
129 3,847,261
172 3,847,265

CLASS 198
9 3,847,266
20R 3,847,267
40 3,847,268
41 3,847,269
140 3,847,270
168 3,847,271
177R 3,847,272
236 3,847,273

CLASS 200
61.08 3,848,099
3,848,100
150R 3,848,101
153L 3,848,102
256 Re.28,243
289 3,848,103

CLASS 201
32 3,847,752

CLASS 202
241 3,847,753

CLASS 203
34 3,847,754
57 3,847,755

92 3,847,756

CLASS 204
15 3,847,758
28 3,847,759
35R 3,847,760
40 3,847,757
67 3,847,761
98 3,847,762
148 3,847,763
149 3,847,764
151 3,847,765
157.1S 3,847,766
159.14 3,847,767
3,847,768
159.22 3,847,769
159.23 3,847,770
159.24 3,847,771
180P 3,847,772
180R 3,847,773
190 3,847,774
191 3,847,775
192 3,847,776
195P 3,847,777
195S 3,847,778
198 3,847,779
224M 3,847,781
224R 3,847,780
267 3,847,782
275 3,847,783
292 3,847,784
299 3,847,785
300 3,847,786
301 3,847,787
3,847,788

CLASS 206
.82 3,847,278
.84 3,847,277
44R 3,847,274
45 3,847,275
45.14 3,847,276
219 3,847,279
306 3,847,280
437 3,847,281
491 3,847,282

CLASS 208
11 3,847,789
25 3,847,790
3,847,791
60 3,847,792
70 3,847,793
88 3,847,794
108 3,847,795
111 3,847,796
114 3,847,797
209 3,847,798
210 3,847,799
236 3,847,800
308 3,847,801

CLASS 209
74M 3,847,283
81R 3,847,284

CLASS 210
7 3,847,802
8 3,847,803
22 3,847,809
23 3,847,804
33 3,847,805
45 3,847,806
46 3,847,807
66 3,847,808
96 3,847,810
108 3,847,811
150 3,847,812
232 3,847,813
237 3,847,814
242 3,847,815
3,847,816
297 3,847,817
321 3,847,818
444 3,847,819
457 3,847,820
488 3,847,821
500 3,847,822

CLASS 211
1.5 3,847,285
13 3,847,286

CLASS 213
111 3,847,288

CLASS 214
10 3,847,289
15E 3,847,290
27 3,847,291
75G 3,847,292
302 3,847,293
332 3,847,294

CLASS 215
1R 3,847,295

CLASS 219
10.55 3,848,105
3,848,106
10.79 3,848,107
69G 3,848,108
121L 3,848,104

130 3,847,287
146 3,848,109
525 3,848,110
543 3,848,111

CLASS 220
4F 3,847,299
85P 3,847,297
88B 3,847,298
269 3,847,300

CLASS 221
5 3,847,301

CLASS 222
14 3,847,302
66 3,847,303
105 3,847,304
166 3,847,305
203 3,847,306
386.5 3,847,307
3,847,308
3,847,309
3,847,310
473 3,847,311
501 3,847,312
507 3,847,313

CLASS 223
98 3,847,314

CLASS 224
2C 3,847,315
42.03B 3,847,317
42.1C 3,847,316

CLASS 225
100 3,847,318

CLASS 226
4 3,847,319
115 3,847,320

CLASS 227
7 3,847,321
132 3,847,322

CLASS 228
3 3,847,323

CLASS 229
1.5H 3,847,324
92.8 3,847,325

CLASS 233
32 3,847,327

CLASS 235
54F 3,847,345
61PD 3,848,113
61.11E 3,847,346
61.7R 3,848,112
131R 3,847,347
150.26 3,848,114
151 3,848,115
151.3 3,847,348
152 3,847,349
153AE 3,848,116
193 3,848,117

CLASS 237
8A 3,847,350

CLASS 239
63 3,847,351
101 3,848,118
133 3,847,352
184 3,847,353
317 3,847,354
424.5 3,847,355
507 3,847,159
662 3,847,356

CLASS 240
1.4 3,848,119
41BM 3,848,120
41.6 3,848,121
46.51 3,848,122

CLASS 241
20 3,847,357
32 3,847,358
34 3,847,359
82.5 3,847,360
152 3,847,361
191 3,847,362
245 3,847,363

CLASS 242
18.1 3,847,364
55.2 3,847,365
68.3 3,847,366
107.4 3,847,367

CLASS 244
13 3,847,368
42R 3,847,369
77A 3,847,328
122AD 3,847,329

CLASS 248
14 3,847,330
74PB 3,847,331
99 3,847,332
125 3,847,333
158 3,847,334
166 3,847,335
252 3,847,337
294 3,847,336

419 3,847,338
503 3,847,344

CLASS 249
1 3,847,339
18 3,847,340
27 3,847,341
85 3,847,342
202 3,847,343

CLASS 250
213VT 3,848,123
260 3,848,124
272 3,848,125
3,848,126
321 3,848,127
336 3,848,128
339 3,848,129
369 3,848,130
388 3,848,131
439 3,848,132
469 3,848,133
471 3,848,134
476 3,848,136
496 3,848,135
497 3,848,137

CLASS 251
6 3,847,370
65 3,847,371
248 3,847,372
298 3,847,373
367 3,847,374

CLASS 252
8.55D 3,847,823
12 3,847,824
3,847,825
3,847,826
48.8 3,847,827
56R 3,847,828
63.5 3,847,829
186 3,847,830
316 3,847,832
425 3,847,833
431R 3,847,834
439 3,847,835
465 3,847,836
468 3,847,837
470 3,847,831
500 3,847,838
522 3,847,975
544 3,847,839

CLASS 254
88 3,847,376
158 3,847,377
175.7 3,847,378

CLASS 259
4 3,847,375

CLASS 260
2.1E 3,847,840
2.2R 3,847,841
3,847,842
2.5AS 3,847,844
2.5BB 3,847,843
2.5M 3,847,845
13 3,847,846
17R 3,847,847
18S 3,847,848
19EP 3,847,849
20 3,847,850
22CB 3,847,851
23XA 3,847,853
23H 3,847,852
23.7A 3,847,855
23.7M 3,847,854
29.6RB 3,847,856
29.6RW 3,847,857
33.2R 3,847,858
33.4UR 3,847,859
38 3,847,860
40R 3,847,861
42.14 3,847,862
42.18 3,847,863
42.52 3,847,865
45.75B 3,847,864
47CP 3,847,867
3,847,870
47CZ 3,847,869
47XA 3,847,866
47R 3,847,868
63BB 3,847,871
65 3,847,872
75R 3,847,873
77.5AN 3,847,874
78TF 3,847,878
78L 3,847,877
78R 3,847,875
3,847,876
79.5B 3,847,879
3,847,880
80.77 3,847,881
83.5 3,847,882
83.7 3,847,883
85.5R 3,847,884
3,847,885
89.1 3,847,886
93.5 3,847,887

94.9GD 3,847,888
112R 3,847,889
112.5 3,847,890
3,847,891
3,847,892
112.7 3,847,893
153 3,847,894
187 3,847,895
210E 3,847,896
211R 3,847,897
211.5R 3,847,898
236.5 3,847,899
239D 3,847,904
239.1 3,847,900
239.3A 3,847,902
239.3B 3,847,905
239.3P 3,847,901
3,847,903
239.55C 3,847,906
240A 3,847,911
3,847,912
240D 3,847,908
240F 3,847,909
240H 3,847,907
243C 3,847,913
248AS 3,847,914
248CS 3,847,915
3,847,916
248NS 3,847,910
249.6 3,847,917
256.4F 3,847,918
3,847,919
3,847,920
268BC 3,847,921
268R 3,847,922
281 3,847,923
292 3,847,924
293.73 3,847,925
293.75 3,847,926
294.8F 3,847,927
295F 3,847,928
296H 3,847,929
297R 3,847,930
307B 3,847,931
309.2 3,847,932
309.5 3,847,933
309.6 3,847,934
309.7 3,847,935
310A 3,847,936
319.1 3,847,937
326.1 3,847,938
326.14R 3,847,941
326.4 3,847,939
326.9 3,847,940
327C 3,847,943
327R 3,847,942
329.3 3,847,946
332.2R 3,847,944
332.5 3,847,947
338 3,847,945
340.3 3,847,948
3,847,949
340.5 3,847,950
343.6 Re.28,242
346.2R 3,847,951
347.8 3,847,952
376 3,847,953
397.1 3,847,954
397.2 3,847,955
404.8 3,848,047
413 3,847,956
429.5 3,847,957
439CY 3,847,958
439R 3,847,959
3,847,960
448.2N 3,847,961
448.8R 3,847,962
449M 3,847,963
465.2 3,847,964
465.3 3,847,965
468D 3,847,966
3,847,967
471A 3,847,969
482P 3,847,970
490 3,847,971
497A 3,847,972
501.12 3,847,973
518R 3,847,974
524R 3,847,976
525 3,847,977
535H 3,847,978
543P 3,847,979
552R 3,847,980
553R 3,847,981
558R 3,847,982

560 3,847,983
563R 3,847,984
3,847,985
564G 3,847,986
566B 3,847,987
566D 3,847,988
570.9 3,847,989
576 3,847,990
584B 3,847,992
584R 3,847,991
586P 3,847,993
600 3,847,994
601R 3,847,995
604AC 3,847,996
604HF 3,847,997
606.5B 3,847,998
606.5P 3,847,999
607A 3,848,000
621B 3,848,001
622R 3,848,002
635D 3,848,003
652.5R 3,848,004
3,848,005
660 3,848,006
662R 3,848,007
665R 3,848,008
668A 3,848,009
3,848,011
668R 3,848,010
669R 3,847,968
671R 3,848,012
672R 3,848,013
3,848,014
677R 3,848,015
683R 3,848,016
3,848,017
683.65 3,848,018
683.68 3,848,019
823 3,848,020
3,848,021
824EP 3,848,022
857PG 3,848,023
859R 3,848,024
878R 3,848,025
888 3,848,026
897B 3,848,027
898 3,848,028
899 3,848,029
936 3,848,030
956 3,848,031
981 3,848,032

CLASS 264
13 3,848,033
30 3,848,034
40 3,848,035
3,848,036
46.4 3,848,037
51 3,848,038
73 3,848,039
86 3,848,040
98 3,848,041
99 3,848,042
134 3,848,043
176F 3,848,044
255 3,848,045
279 3,848,046

CLASS 267
91 3,847,379
179 3,847,380

CLASS 269
32 3,847,381

CLASS 271
4 3,847,382
11 3,847,383
80 3,847,384
121 3,847,385
171 3,847,386
3,847,387
174 3,847,388
195 3,847,390
220 3,847,391

CLASS 273
54E 3,847,394
96R 3,847,395
101.1 3,847,396
131AD 3,847,397
156 3,847,398
167F 3,847,399

CLASS 274
1L 3,847,400
10R 3,847,401
14 3,847,402

CLASS 277
57 3,847,403
153 3,847,389
187 3,847,404

CLASS 280
34A 3,847,405
36B 3,847,406
46 3,847,407
63 3,847,408
87.02R 3,847,409
124F 3,847,410
150AB 3,847,411
3,847,412
437 3,847,414
478R 3,847,415
481 3,847,416

CLASS 285
161 3,847,417
219 3,847,418
302 3,847,392
315 3,847,393
316 3,847,413
330 3,847,419
336 3,847,420
353 3,847,421

CLASS 290
40 3,848,138

CLASS 292
60 3,847,422
113 3,847,423
247 3,847,425

CLASS 293
1 3,847,426
19 3,847,427
96 3,847,428

CLASS 294
67AA 3,847,429

CLASS 297
61 3,847,430
158 3,847,424
3,847,431
160 3,847,432
239 3,847,433
389 3,847,434
443 3,847,435

CLASS 298
1C 3,847,436

CLASS 299
25 3,847,437
34 3,847,438
81 3,847,439

CLASS 301
1 3,847,440
9TV 3,847,441
13SM 3,847,442
37R 3,847,443
63DD 3,847,444

CLASS 303
21AF 3,847,445
21BE 3,847,448
21CG 3,847,447
21EB 3,847,446
21F 3,847,449
81 3,847,450

CLASS 305
54 3,847,451

CLASS 307
235R 3,848,139
252 3,848,140
293 3,848,141
294 3,848,142
297 3,848,143

CLASS 308
6R 3,847,452
3,847,454
36.1 3,847,453
187.1 3,847,455
217 3,847,456

CLASS 310
8.1 3,848,144
60 3,848,145
93 Re.28,237
163 3,848,146
168 3,848,147

209 3,848,148
229 3,848,149

CLASS 312
100 3,847,457
108 3,847,458
184 3,847,459
257R 3,847,460
281 3,847,461
330 3,847,462

CLASS 313
204 3,848,150
217 3,848,151
221 3,848,152
346 3,848,153
481 3,848,154

CLASS 315
27TD 3,848,155
36 3,848,156

CLASS 317
5 3,848,157
11A 3,848,158
18D 3,848,159
27R 3,848,160
119 3,848,161
123 3,848,162
141R 3,848,163
256 3,848,164

CLASS 318
207R 3,848,165
227 3,848,166
254 3,848,167
331 3,848,168
3[illegible] 3,848,169
487 3,848,170
561 3,848,171
586 3,848,172

CLASS 320
23 3,848,173

CLASS 321
11 3,848,174
3,848,175
18 3,848,176

CLASS 322
73 3,848,177

CLASS 323
6 3,848,178
22T 3,848,179
51 3,848,180

CLASS 324
29.5 3,848,181
40 3,848,182
3,848,183
41 3,848,184
57R 3,848,185
3,848,186
65CR 3,848,187
73AT 3,848,188
95 3,848,189
158T 3,848,190

CLASS 325
53 3,848,193
326 3,848,191

CLASS 328
1 3,848,192

CLASS 330
29 3,848,194
30D 3,848,195
34 3,848,196
44 3,848,197
56 3,848,198

CLASS 331
2 3,848,199
51 3,848,200
76 3,848,201
94.5PE 3,848,202
94.5 3,848,203

CLASS 335
128 3,848,205
193 3,848,206
210 3,848,207

CLASS 336
96 3,848,208
188 3,848,209
200 3,848,210

CLASS 337
64 3,848,211
67 3,848,212
107 3,848,213

158 3,848,214
246 3,848,215

CLASS 338
32H 3,848,216
32R 3,848,217
35 3,848,218
119 3,848,219

CLASS 339
8P 3,847,463
31R 3,847,464
32R 3,848,220
74R 3,848,221
75M 3,848,222
176MP 3,848,223
198E 3,848,224

CLASS 340
3R 3,848,225
5R 3,848,226
74 3,848,227
146.3F 3,848,228
149A 3,848,229
163 3,848,230
164R 3,848,231
172.5 Re.28,238
3,848,232
3,848,233
3,848,234
3,848,235
173SP 3,848,238
173R 3,848,236
3,848,237
174TF 3,848,239
174R 3,848,240
214 3,848,241
274 3,848,242
280 3,848,243
286 3,848,244
324A 3,848,246
324M 3,848,247
3,848,248
324R 3,848,245
325 3,848,249
336 3,848,250
347DD 3,848,251
365L 3,848,252

CLASS 343
5CM 3,848,253
112R 3,848,254
761 3,848,255
768 3,848,256

CLASS 346
49 3,848,257
140 3,848,258

CLASS 350
3.5 3,847,465
7 3,847,466
140 3,847,467
160R 3,847,468
247 3,847,469

CLASS 351
6 3,847,470

CLASS 353
81 3,847,471
94 3,847,472
114 3,847,473

CLASS 354
168 3,847,474
234 3,847,475
252 3,847,476
312 3,847,477

CLASS 355
3R 3,848,204
3 3,847,478
14 3,847,479
15 3,847,480

CLASS 356
34 3,847,481
40 3,847,482
41 3,847,483
129 3,847,484
167 3,847,485
205 3,847,486
207 3,847,487

CLASS 357
5 3,848,259
71 3,848,260
3,848,261

CLASS 360
60 3,848,262
83 3,848,263

92 3,848,264
132 3,848,265

CLASS 403
79 3,847,488
110 3,847,489
140 3,847,490
209 3,847,491
224 3,847,492
345 3,847,494
370 3,847,493
3,847,495

CLASS 404
1 3,847,496
10 3,847,497
133 3,847,498

CLASS 408
1 3,847,499
52 3,847,500
108 3,847,501

CLASS 415
92 3,847,502
143 3,847,503
201 3,847,504
213 3,847,505

CLASS 416
244 3,847,506

CLASS 417
22 3,847,507
118 3,847,508
214 3,847,509
293 3,847,510
342 3,847,511
365 3,847,512
571 3,847,513

CLASS 418
15 3,847,514
16 3,847,515
91 3,847,517
122 3,847,518
126 3,847,519

CLASS 423
22 3,848,048
54 3,848,049
59 3,848,050
79 3,848,051
96 3,848,052
115 3,848,053
140 3,848,054
158 3,848,055
210.3 3,848,056
223 3,848,057
242 3,848,058
248 3,848,067
327 3,848,059
335 3,848,068
341 3,848,061
440 3,848,062
464 3,848,063
469 3,848,064
487 3,848,065
490 3,848,066
508 3,848,069
512 3,848,070
574 3,848,071

CLASS 424
333 3,848,060

CLASS 425
47 3,847,520
62 3,847,521
72 3,847,516
3,847,522
191 3,847,523
198 3,847,524
245R 3,847,525
3,847,526
291 3,847,535
308 3,847,527
450.1 3,847,528
451.2 3,847,529
461 3,847,530
464 3,847,531
500 3,847,532

CLASS 431
78 3,847,533
329 3,847,534
3,847,536
347 3,847,537

CLASS 432
113 3,847,538
121 3,847,539
230 3,847,540

CLASSIFICATION OF DESIGNS

D1—	1	233,573
D4—	18	233,574
D6—	4	233,575
	85	233,576
	154	233,577
		233,578
	188	233,579
	205	233,580
D7—	38	233,581
	39	233,582
	55	233,583
		233,584
	94	233,585
	181	233,586
D8—	57	233,587
	91	233,588
	136	233,589
		233,590
		233,591
		233,592
D9—	8	233,593
	10	233,594
	39	233,595
	193	233,596
		233,597
	224	233,598
	267	233,599
D12—	62	233,600
D13—	1R	233,601
		233,602
D22—	27	233,603
D23—	37	233,606
	97	233,607
	151	233,604
	163	233,605
D26—	5C	233,608
	12	233,609
	14A	233,611
	L	233,610
D27—	42	233,612
D34—	5FF	233,617
	GH	233,616
	GT	233,613
	SP	233,615
	ST	233,614
	14C	233,619
	15AJ	233,621
	LL	233,618
	A	233,620
D45—	32R	233,623
D48—	27	233,622
	32	233,628
D52—	3	233,624
	6	233,625
D54—	2A	233,626
	6	233,627
D61—	1N	233,629
D70—	2B	233,630
D74—	17	233,631
D83—	1S	233,632

CLASSIFICATION OF PLANTS

P. —	6	3,652
P. —	14	3,649
P. —	17	3,648
P. —	24	3,650
P. —		3,651
P. —	25	3,647

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,847,141
3,847,632
3,847,871
3,847,958
2 : 3,846,859
3,846,946
4 : 3,846,947
3,847,109
3,847,201
3,847,267
3,847,463
3,847,687
3,848,091
3,848,114
3,848,172
3,848,244
5 : 3,847,067
6 : Re.28,238
3,846,845
3,846,858
3,846,868
3,846,877
3,846,885
3,846,907
3,846,917
3,846,918
3,846,924
3,846,929
3,846,931
3,846,933
3,846,938
3,846,944
3,846,950
3,846,971
3,846,987
3,847,024
3,847,026
3,847,051
3,847,082
3,847,093
3,847,145
3,847,157
3,847,159
3,847,165
3,847,182
3,847,204
3,847,206
3,847,211
3,847,216
3,847,218
3,847,260
3,847,282
3,847,298
3,847,300
3,847,311
3,847,314
3,847,315
3,847,327
3,847,336
3,847,339
3,847,344
3,847,351
3,847,382
3,847,389
3,847,398
3,847,399
3,847,402
3,847,422
3,847,449
3,847,454
3,847,483
3,847,484
3,847,494
3,847,499
3,847,501
3,847,512
3,847,523
3,847,535
3,847,537
3,847,545
3,847,548
3,847,551
3,847,553
3,847,565
3,847,573
3,847,576
3,847,587
3,847,588
3,847,652
3,847,653
3,847,688
3,847,689
3,847,690
3,847,702
3,847,715
3,847,721
3,847,723
3,847,725
3,847,738
3,847,800
3,847,809
3,847,822
3,847,827
3,847,897
3,847,939
3,847,951
3,847,962
3,847,970
3,847,980
3,847,996
3,848,046
3,848,055
3,848,074
3,848,075
3,848,077
3,848,079
3,848,089
3,848,090
3,848,095
3,848,097
3,848,101
3,848,109
3,848,115
3,848,130
3,848,139
3,848,164
3,848,180
3,848,187
3,848,188
3,848,191
3,848,210
3,848,221
3,848,236
3,848,237
3,848,238
3,848,239
3,848,241
3,848,251
3,848,255
3,848,258
3,848,261
3,848,265
8 : 3,846,855
3,846,903
3,846,923
3,846,963
3,847,023
3,847,032
3,847,080
3,847,294
3,847,329
3,847,531
3,848,049
9 : 3,846,928
3,846,932
3,846,990
3,847,015
3,847,054
3,847,092
3,847,183
3,847,195
3,847,279
3,847,320
3,847,347
3,847,392
3,847,468
3,847,485
3,847,506
3,847,524
3,847,532
3,847,672
3,847,727
3,847,736
3,847,743
3,847,844
3,847,852
3,847,864
3,847,885
3,847,900
3,848,042
3,848,086
3,848,102
3,848,216
10 : 3,847,522
3,847,609
3,847,636
3,847,674
3,847,829
3,847,872
3,847,886
3,847,977
3,848,233
12 : 3,846,857
3,846,894
3,846,898
3,846,908
3,846,911
3,846,914
3,846,926
3,846,962
3,847,006
3,847,136
3,847,150
3,847,173
3,847,191
3,847,210
3,847,245
3,847,292
3,847,365
3,847,408
3,847,427
3,847,430
3,847,634
3,847,824
3,847,899
3,848,023
3,848,143
3,848,159
3,848,166
3,848,190
3,848,228
13 : 3,846,964
3,847,005
3,847,155
3,847,225
3,847,259
3,847,631
3,848,063
15 : 3,847,103
17 : 3,846,867
3,846,884
3,846,888
3,846,940
3,846,980
3,846,983
3,847,009
3,847,014
3,847,059
3,847,090
3,847,108
3,847,123
3,847,126
3,847,144
3,847,166
3,847,170
3,847,174
3,847,180
3,847,186
3,847,199
3,847,240
3,847,241
3,847,248
3,847,275
3,847,288
3,847,324
3,847,416
3,847,436
3,847,451
3,847,452
3,847,474
3,847,492
3,847,575
3,847,584
3,847,633
3,847,635
3,847,637
3,847,646
3,847,700
3,847,718
3,847,740
3,847,741
3,847,770
3,847,786
3,847,792
3,847,794
3,847,796
3,847,798
3,847,799
3,847,802
3,847,805
3,847,810
3,847,828
3,847,878
3,847,923
3,847,954
3,847,957
3,847,976
3,848,006
3,848,011
3,848,041
3,848,080
3,848,088
3,848,108
3,848,165
3,848,183
3,848,207
3,848,208
3,848,224
3,848,227
3,848,245
3,848,249
3,848,262
18 : 3,847,058
3,847,111
3,847,269
3,847,371

3,847,379
3,847,414
3,847,447
3,847,716
3,847,742
3,847,750
3,847,757
3,847,986
3,848,146
3,848,177
3,848,206
19 : 3,847,132
3,847,217
3,847,335
3,847,409
20 : 3,846,848
3,846,972
3,847,072
3,847,243
3,847,266
3,847,486
3,847,508
3,847,711
3,847,712
3,847,947
3,848,052
3,848,199
3,848,264
21 : Re.28,243
3,847,135
3,847,175
3,847,574
3,847,753
3,848,029
22 : 3,846,890
3,847,105
3,847,167
3,847,413
3,847,542
3,847,724
3,847,998
3,848,018
3,848,053
3,848,054
23 : 3,847,169
3,847,614
24 : 3,846,878
3,846,909
3,846,959
3,847,115
3,847,140
3,847,168
3,847,208
3,847,233
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37 : 3,846,861
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3,848,175
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44 : 3,846,902
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3,847,397
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3,847,638
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49 : 3,846,930
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51 : 3,846,945
3,847,027
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3,847,129
3,847,184
3,847,735
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3,848,226
52 : 3,846,893
53 : 3,847,231
3,847,263
3,847,328
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3,847,595
3,848,027
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55 : 3,846,865
3,846,866
3,846,892
3,846,956
3,847,037
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3,847,297
3,847,358
3,847,362
3,847,457
3,847,538
3,847,821

3,847,904
3,847,950
3,847,955
3,848,205
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6 : 233,580
233,600
233,606
233,614
233,618
9 : 233,588
233,598
12 : 233,576
17 : 233,573
233,589
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233,617
20 : 233,585
24 : 233,596
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233,632
25 : 233,575
233,599
233,610
26 : 233,627
27 : 233,625
29 : 233,603
34 : 233,582
233,587
233,593
233,615
36 : 233,574
233,608
233,628
37 : 233,577
233,578
41 : 233,613
42 : 233,595
233,621
233,626
233,629
233,630
44 : 233,616
47 : 233,581
233,594
48 : 233,624
49 : 233,619
53 : 233,586
55 : 233,604

PLANT PATENTS

6 : 3,649
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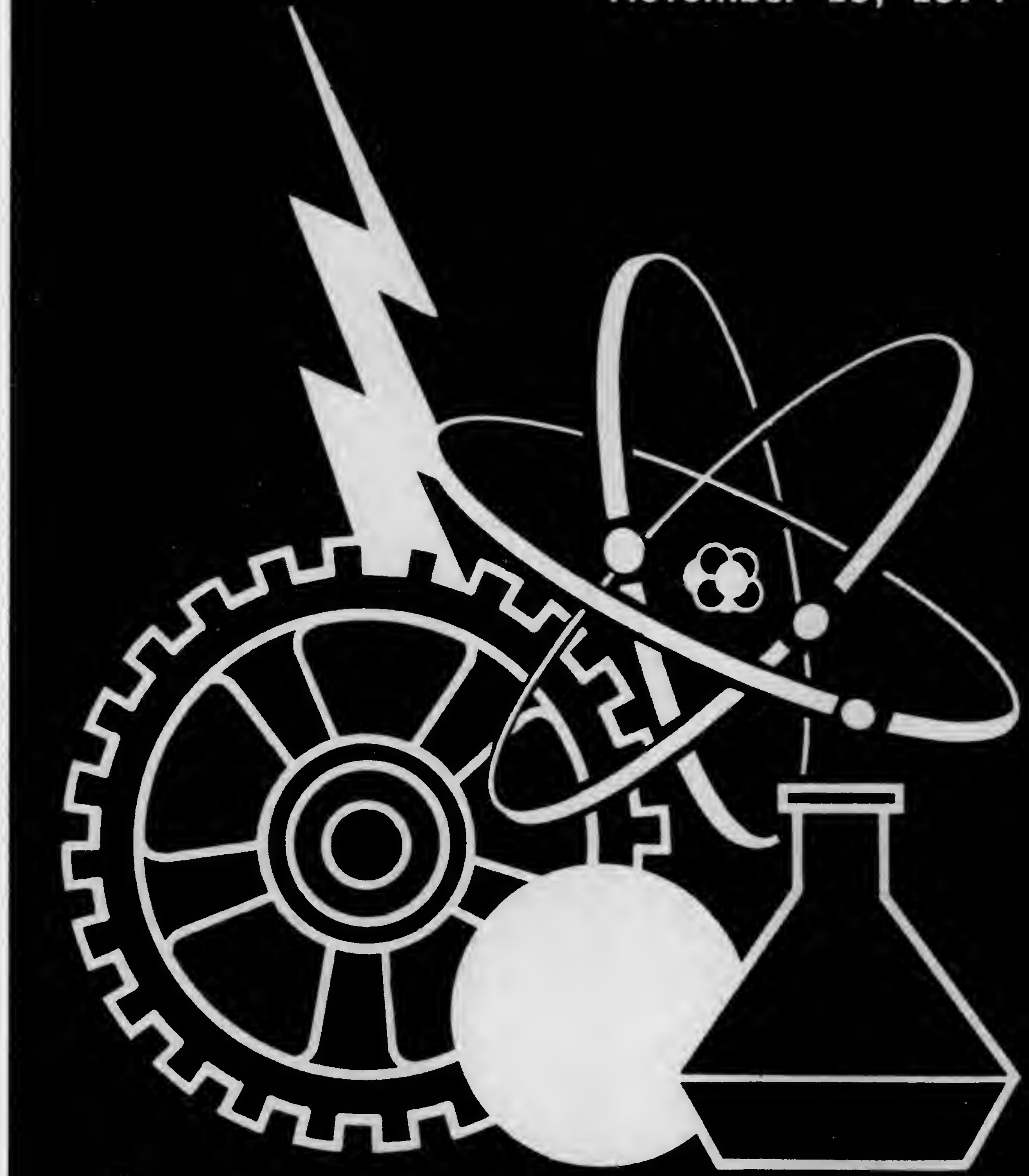
PATENTS

November 19, 1974



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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

November 19, 1974 Volume 928 Number 3

CONTENTS

Page

Patent and Trademark Notices
- Listing of Errata in the Patent Official Gazette 886
- Patent Suits 886

Patent Notices
- Certificates of Correction for the Week of November 19, 1974 888
- Dedications 888
- Erratum 889
- Disclaimers 889

Condition of Patent Applications 890

Reissue Patents Granted (28,244) 891

Plant Patents Granted (3,653) 893

Patents Granted
- General and Mechanical (3,848,266) 894
- Chemical (3,849,064) 1157
- Electrical (3,849,584) 1286

Design Patents Granted (233,633) 1359

Index of Patentees . . . . . PI 1

Indices of Reissues, Plants and Designs . . . . . PI 49

Classification of
- Patents (Including Reissues) . . . . . PI 51
- Designs and Plants . . . . . PI 54

Geographical Index of Residence of Inventors
- Patents (Including Reissues) . . . . . PI 55
- Designs and Plants . . . . . PI 57

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PATENT OFFICE NOTICES

Listing of Errata in the Patent Official Gazette

Effective December 3, 1974, Errata for Classification sequence will be printed at the beginning of each of the major sections: Reissues, Plant Patents, Patents (including General and Mechanical, Chemical, Electrical), and Design Patents.

ROBERT J. RISH,
Acting Assistant Commissioner for Administration.

Oct. 25, 1974.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,685,536, Starkey and Ransburg, METHOD FOR ELECTROSTATICALLY COATING ARTICLES; **2,794,417,** same, APPARATUS FOR ELECTROSTATICALLY COATING ARTICLES; **2,893,893,** W. W. Crouse, METHOD AND APPARATUS FOR ELECTROSTATIC COATING, **filed** Feb. 27, 1974, D.C., E.D. Pa. (Philadelphia), Doc. 74–473, *Ransburg Corp.* v. *The Daily Corp.*

2,794,417. (See 2,685,536.)

2,893,893. (See 2,685,536.)

3,289,568, R. L. Ronning, PRODUCT PELLETING AND COOLING APPARATUS; **3,429,349,** same, PULL-THROUGH HAMMER MILL; **3,643,404,** same, METHOD AND APPARATUS FOR ENHANCING THE SEPARATION OF PARTICULATE MATERIAL FROM AN EFFLUENT STREAM, **filed** May 13, 1974, D.C., N.D. Ohio (Toledo), Doc. C–74–181, *Richard L. Ronning* v. *Verhoff Alfalfa Mills.*

3,298,338, J. A. Clark, Sr., MEANS FOR REGULATING HEIGHT OF FUEL MOUNDS WITHIN A FURNACE, **filed** Jan. 29, 1974, D.C. Oreg. (Portland), Doc. C–74–71, *Joseph A. Clark, Sr.* v. *Edward Hines Lumber Company.* Stipulation for dismissal filed May 1, 1974.

3,428,333, V. E. Nelson, TOW-TYPE SECTIONAL AUTOMATICALLY FOLDABLE HARROW CART, **filed** May 15, 1974, D.C. Minn. (St. Paul), Doc. 6–74–110, *Clark Equipment Company* v. *Gladys Nelson Howen.*

3,429,349. (See 3,289,568.)

3,468,631, Raible, Bentley and De Wall, BLOOD OXYGENATOR WITH HEAT EXCHANGER; **3,488,158,** same, BUBBLER ASSEMBLY FOR OXYGENATOR; **3,578,411,** same, BUBBLER FOR BLOOD TREATING APPARATUS, **filed** Oct. 31, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–2579–WMB, *Bentley Lab. Inc.* v. *William Harvey Research Corp.* Filed order dismissing action with prejudice. The court retains jurisdiction for 60 days to vacate this order and to reopen the action if further litigation is necessary, entered May 1, 1974.

3,488,158. (See 3,468,631.)

3,492,014, K. Von Besser, SAFETY SKI BINDING, **filed** Mar. 7, 1974, D.C., C.D. Utah (Salt Lake City), Doc. C–74–70, *Safety Systems, Inc.* v. *Miller Ski Company Incorporated.*

3,497,877, Diemond and Greenberg, POOL WITH INTEGRAL SLIDE; **D. 198,858,** L. E. Greenberg, SLED; **D. 216,577,** Greenberg and Diemond, POOL WITH INTEGRAL SLIDE, **filed** Mar. 3, 1970, D.C., S.D.N.Y., Doc. 70–C–858, *Coleco Industries Inc.* v. *Krotman-Antelis Inc.* Filed consent judgment, defendants are enjoined. Plaintiff's claims for unfair competition are dismissed with prejudice, Feb. 20, 1974.

3,578,411. (See 3,468,631.)

3,635,269, J. H. Price, METHOD AND MEANS FOR CUTTING TREES, **filed** May 17, 1974, U.S. Court of Claims (District of Columbia), Doc. 175–74, *John H. Price* v. *The United States.*

3,643,404. (See 3,289,568.)

3,657,747, Rogers, Jr. and Snitzer, SOFA BED AND LINKAGE MECHANISM, **filed** May 17, 1974, D.C., N.D. Ohio (Toledo), Doc. C74–188, *Flexsteel Industries, Inc.* v. *Kustom Fit of Ohio, Inc. and Kustom Fit Mfg. Co.*

3,670,549, Tselikov, Nosal and Verderevsky, METHOD AND APPARATUS FOR COLD ROLLING THIN WALL PIPE; **3,673,840,** same, COLD ROLLING PIPE MILL ROLLER TYPE ROLLING STAND; **3,680,345,** same, FLOATING, BLANK FEED AND TURNING MECHANISM FOR THIN WALL PIPE MILL; **3,739,624,** same, PIPE BLANK CLAMP, **filed** Jan. 8, 1974, D.C., E.D. Wash. (Spokane), Doc. C–74–13, *Patent Management, Inc.* v. *Sandvik Special Metals Corporation.* Notice of dismissal under Rule 41 FRCP without prejudice filed Apr. 3, 1974.

3,672,969, Nobel and Ostrow, ELECTRODEPOSITION OF GOLD AND GOLD ALLOYS, **filed** Jan. 16, 1974, D.C.N.J. (Newark), Doc. 74–73–C, *Lea-Ronal, Inc.* v. *Auric Corporation.* Stipulation and order of dismissal of action May 15, 1974.

3,673,840. (See 3,670,549.)

3,680,345. (See 3,670,549.)

3,739,624. (See 3,670,549.)

3,754,279, Valenti and Follett, THERMAL RECORDER HAVING ANALOGUE STYLUS AND PRINT HEAD, **filed** May 17, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1350, *General Electric Co.* v. *Gulton Industries.*

3,810,535, C. M. Phipps, GUMBALL MACHINE COIN BANK, **filed** May 14, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1312, *Superior Toy & Manufacturing Co., Inc.* v. *Tarrison Company and Bruce Trafman and Martin Trafman, doing business as Todd Lynn Sales.*

D. 198,858. (See 3,497,877.)

D. 216,577. (See 3,497,877.)

D. 219,118, Baker and Plecia, BOAT, **filed** May 8, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV–74–1250, *Sidewinder Marine, Inc.* v. *Wreidt, Inc., doing business as Wriedt Custom Boats.*

P.P. 1,814, H. C. Swim, ROSE PLANT; **P.P. 2,056,** same; **P.P. 2,078,** same; **P.P. 2,592,** L. Lens, same; **P.P. 2,836,** Armstrong and Swim, same; **P.P. 3,128,** D. L. Armstrong, same, **filed** Oct. 10, 1972, D.C., E.D. Tex. (Tyler), Doc. 5595, *Armstrong Nurseries, Inc.* v. *Charles R. Cadey; Ty-Tex Rose Nurseries and Consolidated Nurseries, Inc.* Consent judgment, plant patents are owned by plaintiff and are presumed valid. Defendants have infringed plaintiff's patents. Defendants are hereby enjoined from selling, using or otherwise disposing of said rose plants, Oct. 24, 1972.

P.P. 2,056. (See P.P. 1,814.)

P.P. 2,078. (See P.P. 1,814.)

P.P. 2,592. (See P.P. 1,814.)

P.P. 2,836. (See P.P. 1,814.)

P.P. 3,128. (See P.P. 1,814.)

3,031,725, R. E. Omholt, FLOORING SYSTEMS, **filed** May 24, 1974, D.C., E.D. Wis. (Milwaukee), Doc. 71–C–486, *Powerlock Systems, Inc.* v. *Duo-Lok, Inc. and Baseman Brothers, Inc.* Judgment—Powerlock's Letters Patent has been infringed by Baseman. Baseman enjoined from infringing or contributing to the infringement of said patent. The counterclaim filed by Baseman is hereby dismissed, May 24, 1974.

3,113,115, Ziegler, Breil, Martin and Holzkamp, POLYMERIZATION CATALYST; **3,231,515,** same, CATALYST; **3,257,332,** same, POLYMERIZATION OF ETHYLENE; **3,392,162,** same, POLYMERIZATION OF ETHYLENICALLY UNSATURATED HYDROCARBONS, **filed** May 2, 1974, D.C. Del. (Wilmington) Doc. 74–87, *Eastman Kodak Company* v. *Studiengesellschaft Kohle mbH, as trustee for the Max-Planck-Institut fur Kohlenforschung.*

3,183,524, J. H. Hart, GIRL'S SWIMMING SUIT FOR COMPETITION AND RACING, **filed** May 30, 1974, D.C., S.D. Fla. (Miami), Doc. 74–715–C–NCR, *John L. Hart* v. *L. A. Baarcke, doing business as North Palm Beach Swim Shop.*

3,231,503, E. Laue, AMMONICALLY AQUEOUS SOLUTION CONTAINING SODIUM CHLORITE AND USED FOR DISSOLVING; **3,466,208,** L. J. Slominski, SOLUTION AND METHOD FOR DISSOLVING COPPER, **filed** Sept. 15, 1969, D.C., C.D. Calif. (Los Angeles), Doc. 69–1831–CC, *MacDermid, Incorporated* v. *Southern California Chemical Co., Inc.* Filed final judgment and order thereon that plaintiff take nothing and the action be dismissed on the merits. All claims of patents are invalid and void, entered May 31, 1974.

3,231,515. (See 3,113,115.)

3,257,332. (See 3,113,115.)

3,350,688, Kasper and Billingsley, MATRIX CIRCUITRY CONTROLLED BY TIMING MODULES HAVING INDIVIDUAL TIME DURATION OUTPUTS; **3,532,990,** F. S. Kasper, CONTROL SYSTEMS FOR EFFECTING THE TIMED ACTUATION OF A CONTROLLED DEVICE AND METHODS THEREFOR; **3,593,308,** J. C. Fagan, PAINT SPRAY CONTROL SYSTEM; **3,646,521,** V. E. Porter, MULTI-LEVEL SPRAY CONTROL, **filed** Mar. 26, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c765, *Amtron, Inc.* v. *Nordson Corp. et al.* Enter consent judgment order between plaintiff and defendant that the complaint is dismissed with prejudice and the counterclaim is dismissed with prejudice as to Nos. 3,350,688, 3,593,308 and 3,646,521 and dismissed without prejudice as to No. 3,532,990, May 23, 1974.

3,379,000, Webber and Wilson, METAL FILAMENTS SUITABLE FOR TEXTILES; **3,505,038,** same, METAL FIBRIL COMPACTS; **3,678,675,** W. G. Klein, ANTISTATIC FABRIC; **3,705,021,** Sundberg and Luksch, REINFORCED METAL FIBRIL MATS AND METHODS OF MAKING SAME; **3,759,708,** Sundberg and Luksch, METHOD OF MAKING METAL FIBRIL MATS AND REINFORCED METAL FIBRIL MATS, **filed** May 14, 1974, D.C., N.D. Ga. (Atlanta), Doc. C–74–934–A, *Brunswick Corporation* v. *N.W. Bekaert, S.A. and Bekaert Steel Wire Corporation.*

3,392,162. (See 3,113,115.)

3,466,208. (See 3,231,503.)

3,505,038. (See 3,379,000.)

3,513,743, D. M. Montguire, MULTIPLE-HEAD SLITTING APPARATUS; **Re. 27,918,** same, **filed** Apr. 1, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c907, *National Steel Corporation* v. *H. R. Braner Engineering, Inc.*

3,532,990. (3,350,688.)

3,552,469, L. M. Corless, TIRE BEAD SEATER; **3,675,705,** same, TIRE BEAD SEATING AND INFLATION APPARATUS; **3,804,871,** B. Buchholz, ENCAPPED POLYMERIC TIN MERCAPTIDES FOR STABILIZING POLYVINYL CHLORIDE, **filed** Aug. 23, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2174, *B & J Manufacturing Company* v. *Hennessy Industries, Inc.*

3,593,308. (See 3,350,688.)

3,608,646, E. C. Ryan, ROTARY HOE, **filed** Nov. 9, 1972, D.C., N.D. Ohio (Cleveland), Doc. C72–1215, *Western Litho Plate & Supply Co.* v. *National Machine Company.* Journal entry, plaintiff dismisses its complaint as to Claim 3 with prejudice and its complaint in all other respects is dismissed without prejudice to the right of each defendant to use the said prior events, acts and facts as a defense in any future civil action, May 24, 1974.

3,615,117, P. E. Neidlinger, ANTI-SAIL TARPAULIN, **filed** Apr. 9, 1973, D.C., W.D.N.C., Doc. C–C–73–78, *East Akron Tarp & Ratched Manufacturing Co.* v. *Austin Cushion and Canvas Company.* Judgment—Ordered: Patent is invalid; plaintiff's complaint is dismissed on the merits, May 30, 1974.

3,646,521. (See 3,350,688.)

3,674,444, A. Otani, IRON SCRAP BUNDLES, **filed** May 28, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1452, *Akemasa Otani* v. *Tezuka Kasan Co., Ltd., Kunitoshi Tezuka and Hyman Michaels Co.*

3,675,705. (See 3,552,469.)

3,678,675. (See 3,379,000.)

3,705,021. (See 3,379,000.)

3,759,708. (See 3,379,000.)

3,804,871. (See 3,552,469.)

Re. 27,918. (See 3,513,743.)

Certificates of Correction for the Week of Nov. 19, 1974

P.P. 3,213
Re. 27,893
Re. 28,125
Re. 28,138
3,557,066
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3,837,664
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Dedications

3,078,307.—*Paul N. Craig,* Roslyn, Pa., and *Charles L. Zirkle,* Haddon Heights, N.J. TRIFLUOROMETHYLPHENYLALKYLAMINE DERIVATIVES. Patent dated Feb. 19, 1963. Dedication filed May 16, 1974, by the assignee, *A. H. Robins Company, Incorporated.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,205,074.—*Herman Nack,* and *Howard G. Schutz,* Columbus, Ohio. METHOD OF TREATING FOOD PRODUCT PREPARED IN FLUIDIZED BED. Patent dated Sept. 7, 1965. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,238,893.—*Paul Zuppiger,* Carouge, Geneva, Switzerland. VARYING SPEED TRANSPORT APPARATUS, TRANSPORT MEMBERS AND COUPLINGS. Patent dated Mar. 8, 1966. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,239,942.—*William H. Mink* and *Herman Nack,* Columbus, Ohio. PROCESS FOR DRYING FOOD. Patent dated Mar. 15, 1966. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,250,104.—*Roland B. Fischer,* Columbus, Ohio. HIGH-TEMPERATURE ROLLING MILL. Patent dated May 10, 1966. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,269,025.—*Charles E. Dryden, William H. Mink,* and *Herman Nack,* Columbus, Ohio. FREEZE-DRYING METHOD UNDER HIGH VACUUM UTILIZING A FLUIDIZED BED. Patent dated Aug. 30, 1966. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

Erratum

All reference to Patent No. 3,694,905 to W. H. Cooksey for Ignition Distributors appearing in the OFFICIAL GAZETTE of October 3, 1972, should be deleted since no patent was granted.

Disclaimers

3,541,526.—*Oscar C. Levy,* Pikesville, and *George A. Groth,* Fallston, Md. APPARATUS FOR RECORDING SALES AND THE LIKE. Patent dated Nov. 17, 1970. Disclaimer filed Mar. 18, 1974, by the assignee, *American Totalisator Company, Inc.*

Hereby enters this disclaimer to all claims of said patent.

3,566,982.—*Jacob Henry Share,* Albertson, N.Y., and *Stanley Share,* Ormand Beach, and *Seymour Joseph Share,* Daytona Beach, Fla. WELL POINT SYSTEM. Patent dated Mar. 2, 1971. Disclaimer filed June 5, 1974, by the assignee, *Stanley-Jackson Corp.*

Hereby enters this disclaimer to claims 1–8 and 10–15 of said patent.

3,776,982.—*Rene Nicolet, Walter Gutmann,* and *Theodor Volker,* Freiburg, Switzerland. PROCESS FOR THE PRODUCTION OF IMPACT RESISTANT TRANSPARENT POLYMERS OF VINYL CHLORIDE AND ACRYLIC ACID ESTER. Patent dated Dec. 4, 1973. Disclaimer filed Mar. 19, 1974, by the assignee, *Lonza Ltd.*

Hereby disclaims the portion of the term of the patent subsequent to Dec. 4, 1990.

3,778,271.—*Edwin H. Land,* Cambridge, Mass. PHOTOGRAPHIC PRODUCTS COMPRISING AN OPACIFYING AGENT IN ASSOCIATION WITH A REFLECTING AGENT. Patent dated Dec. 11, 1973. Disclaimer filed May 7, 1973, by the assignee, *Polaroid Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Dec. 10, 1985.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 26, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions: Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-8-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-10-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-13-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-25-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-17-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	3-20-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	4-9-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-3-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	2-1-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-17-73
DESIGNS, GROUP 290—C D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	6-4-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-19-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools: Cutlery; Jacks.	1-2-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-14-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	2-26-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	3-22-74

Expiration of patents: The patents within the range of numbers indicated below expire during September 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents.................... Numbers 2,811,722 to 2,814,801, inclusive
Plant Patents.................... Numbers 1,656 to 1,660, inclusive

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REISSUES

NOVEMBER 19, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification: matter printed in italics indicates additions made by reissue.

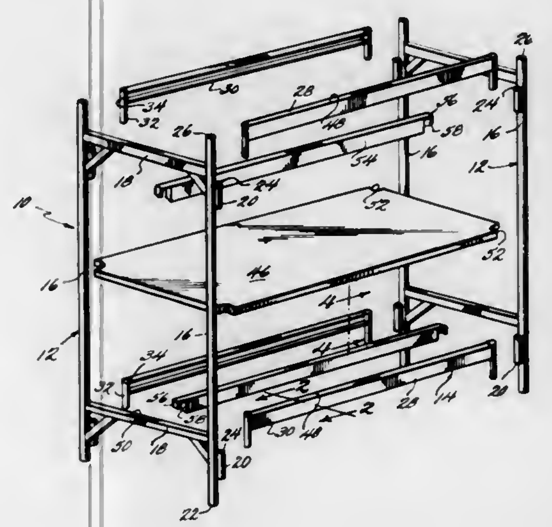
28,244
STOCK RACK

John D. Evans, Rocky Mount, N.C., assignor to Metals, Inc., Rocky Mount, N.C.

Original No. 3,696,763, dated Oct. 10, 1972, Ser. No. 34,456, May 4, 1970. Application for reissue May 22, 1973, Ser. No. 362,856

Int. Cl. A47b *3/06*

U.S. Cl. 108—157 **12 Claims**



1. A knock-down stock rack comprising:
a pair of longitudinally spaced, upright standards, each standard including a pair of transversely spaced, upright posts;
at least one upright tubular socket member secured to each post intermediate its free ends and lying in an upright plane defined by and extending between two longitudinally aligned posts, the upper end of each socket member being spaced from the upper end of the post;
a longitudinally extending support member extending between each longitudinally aligned post, each support member having a pair of downwardly extending dowels secured to the free ends thereof and telescopically received in the socket members secured to the posts; and
at least one rectangular shelf seated upon the support members and extending between the posts, the shelf having a cut-out at each corner within which each post is at least partially received, the shelf maintaining the posts in a rectangular alignment and increasing the rigidity of the stock rack.

28,245
OPTICAL TESTING DEVICE AND METHOD OF USING THE SAME

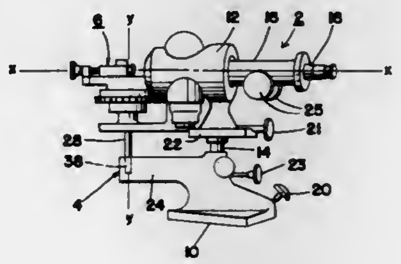
Joseph S. Nupuf, 1342 Cleveland Ave. NW.
Canton, Ohio 44703

Original No. 3,540,828, dated Nov. 17, 1970, Ser. No. 600,216, Dec. 8, 1966. Application for reissue Nov. 17, 1972, Ser. No. 307,514

Int. Cl. G01b *9/00*

U.S. Cl. 356—124 **17 Claims**

1. In a system for measuring optics or the like comprising,
a measuring means including a lens system having a relatively fixed optical axis for measuring the curvature of the optical surface of an optic,
a supporting means detachably mounted on said measuring means for supporting said optic in alignment with said optical axis,
said supporting means pivotally mounted on said measuring means for rotation in a horizontal plane about a vertical axis which intersects said optical axis,
a carriage means movably mounted on said support means for movement relative to said measuring means,
an adjustment means operably coacting with said carriage means for selectively positioning the apex of the optical surface of said optic substantially at the point of intersection of said optical axis and said vertical axis, and
said supporting means including another adjustment means for rotating said optic about said vertical axis for measuring the curvature of said optical surface from its geometrical center along a horizontal plane [to] *toward* its peripheral edge.



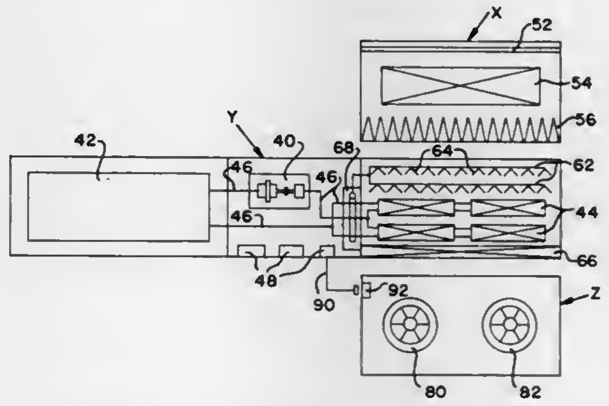
28,246
HIGH CAPACITY PREFABRICATED AIR CONDITIONING SYSTEM

William F. Stockford and Joseph M. Gamewell, Salisbury, N.C., assignors to Gamewell Mechanical, Inc., Salisbury, N.C.

Original No. 3,721,107, dated Mar. 20, 1973, Ser. No. 143,319, May 14, 1971. Application for reissue Dec. 13, 1973, Ser. No. 424,378

Int. Cl. F25d *19/00*

U.S. Cl. 62—298 **6 Claims**



1. A prepackaged air conditioning system comprising:
an intake section including a first separable enclosure having means associated therewith receiving air to be cooled and treated;
a cooling unit including a second separable enclosure with a longitudinal axis and having a condenser, a centrifugal compressor, and a set of cooling coils

therein, said cooling coils being positioned at one end of said enclosure;
a supply section including a third separable enclosure having means associated therewith for supplying air to an area to be cooled; and
said first and third enclosures having means associated therewith for attachment to said second enclosure adjacent and alongside said one end in operative alignment with said set of cooling coils, whereby the flow of air past said cooling coils is transverse the longitudinal axis of said second enclosure.

28,247

AUTOMATIC FILM DEVELOPING APPARATUS

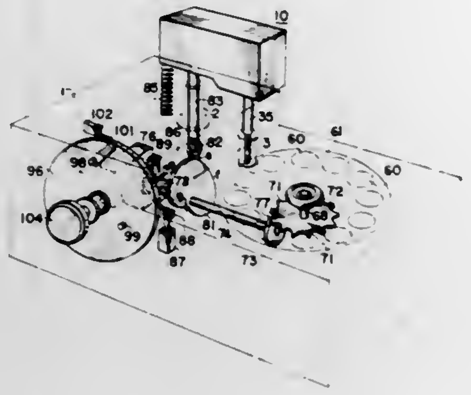
Shigeru Okayama, Seijyo, Setagaya-ku, Tokyo, Kunihiro Okayama, Kameino, Fujisawa, and Hidehiko Takahashi, Soshigaya, Setagaya-ku, Tokyo, Japan

Original No. 3,605,601, dated Sept. 20, 1971, Ser. No. 800,232, Feb. 18, 1969. Application for reissue Sept. 19, 1973, Ser. No. 398,845

Claims priority, application Japan, Feb. 27, 1968, 43/12,393; Mar. 6, 1968, 43/14,433

Int. Cl. G03d *13/02*

U.S. Cl. 354—335 **7 Claims**



1. A film developing apparatus comprising, in combination:
a casing;
a spool rotary device provided above the casing and including a vertical rotary shaft adapted to be [fitted tightly within the hole of] *engaged with* a spool of a cassette packing a photographed film;
a rotary direction reverse device to reverse the rotary direction repeatedly and alternately of said vertical shaft;
a group of cup-shaped processing tanks *each of said tanks having an open mouth* with a tank being provided for each of the steps of the developing process, said tanks containing developer or washing water and at least one of them being removably arranged and aligned with the axis of said vertical rotary shaft;
a shifting device for said group of processing tanks, said shifting device bringing the processing tanks, one after the other, aligned with the axis of said vertical rotary shaft and with the open mouth of said tanks below said shaft;
a timer device and an electric circuit which determines the processing period of each processing step;
an ascent and descent device for the spool rotary device, *said ascent and descent device having a top position and a bottom position,* wherein under control of said timer device at [a bottom dead point] *the bototm position* of said ascent and descent device [the] *a* cassette fitted to one end of the vertical rotary shaft is immersed in the processing tank located directly below the vertical rotary shaft [at a top dead point thereof] *and thereafter at said top position of said ascent and descent device* said cassette [being] *is* elevated to the place where said processing tanks are not prevented from shifting when said shifting device for the processing tanks of a group is operated; and
said timer device and circuit controlling the operation of said spool rotary device, said ascent and descent device, and said shifting device for the processing tanks;
wherein at every predetermined processing period of each processing step, each operation including the stopping and elevating of said vertical rotary shaft, the shifting of said processing tanks at the top [dead point] *elevation* of the vertical rotary shaft and the lowering and re-rotation of said shaft is performed in turn.

28,248

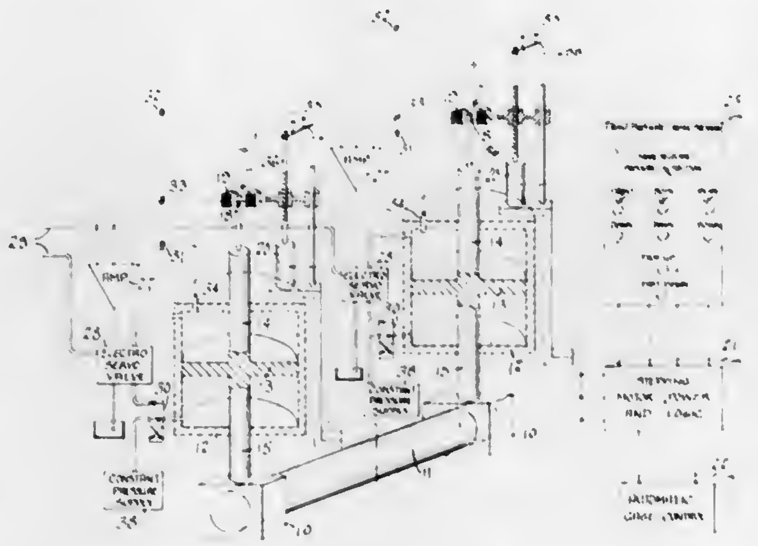
SCREWDOWN SYSTEM FOR ROLLING MILL

Robert Herbst, Cheshire, Conn., assignor to Textron, Inc., Providence, R.I.

Original No. 3,566,638, dated Mar. 2, 1971, Ser. No. 732,999, May 29, 1968. Application for reissue Mar. 20, 1972, Ser. No. 236,501

Int. Cl. B21b *37/08*

U.S. Cl. 72—8 **5 Claims**



1. In a screwdown system for a mill including [a roll] *rolls defining a roll gap,* means for supporting [a roll] *the rolls* and means for [causing said roll to move to effect mill adjustment] *controlling the position of one of said rolls to control the roll gap,* the improvement comprising a double-acting hydraulic cylinder means having a piston for providing [the] *a screwdown* force [to effect mill adjustment] *on one of said rolls,* servo valve means responsive to a command signal for controlling the flow of hydraulic fluid to position said cylinder, [means providing a rolling pressure reference signal, piston displacement sensing means for providing a signal indicative of piston displacement, and means for combining said reference signal and the displacement signal to derive the command signal] *means for predetermining the position and sensing displacement of said one of said rolls, comprising a core and coil movable relative to each other, and effective to emit a signal indicative of the relative positions, means for positioning one of said coil and core to predetermine the roll gap, the other of said coil and core being coupled to said piston for movement therewith, and means for applying the emitted signal to said servo valve as the command signal to control the roll gap.*

28,249

ADJUSTABLE TIMER HAVING ROTATING CAM AND WIDE RANGE VARIABLE DWELL

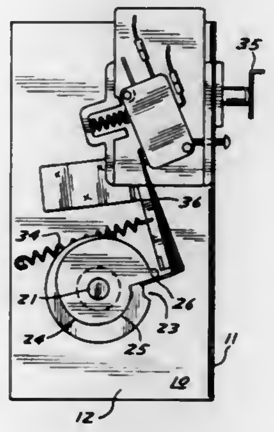
Malcolm J. Estrem, Edina, Minn., by The Cornelius Company, Anoka, Minn., assignee

Original No. 3,670,128, dated June 13, 1972, Ser. No. 865,904, Oct. 13, 1969, which is a division of application Ser. No. 795,389, Jan. 2, 1969, which is a continuation-in-part of application Ser. No. 696,673, Dec. 11, 1967, both now abandoned. Application for reissue Nov. 23, 1973, Ser. No. 418,301

Int. Cl. H01h *3/42, 43/10*

U.S. Cl. 200—153 LB **17 Claims**

1. Adjustable timing apparatus having variable dwell switching comprising in combination;
a. a rotatable shaft;
b. at least one cam means mounted on said shaft for rotation therewith, said cam means having a peripheral surface including a substantial circumferentially elongated portion of constantly varying radius and a short circumferentially and radially extending switch resetting means for non-constantly varying radius disposed intermediate the portions of largest and smallest radius on said substantial circumferentially elongated portion said last named means being operable to reset a switch contact assembly subsequent to actuation thereof;
c. means operable to rotate said shaft;
d. at least one spring switch contact assembly having a normal deactuated position, and an actuated position, and including a cam follower in engagement with the peripheral surface of said cam, said cam follower being operable to actuate said switch contact assembly at a predetermined radial position of said cam and said shaft and to reset and deactuate said switch contact assembly by said resetting means causing said switch contact assembly to move past its normal deactuated position before allowing the switch contact assembly to assume its normal deactuated position in response to engagement with said switch resetting means whereby said switch contact assembly may be successively, repeatably actuated at the same angular position of said shaft and said cam as rotation thereof is effected.



PLANT PATENTS

GRANTED NOVEMBER 19, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,653

HYBRID TEA ROSE PLANT

Armando Valepiano and Sergio Valepiano, both of Via Forte San Paolo 27, Ventimiglia, Italy 00139
Filed Mar. 5, 1973, Ser. No. 338,220
Claims priority, application Italy, Mar. 3, 1972, 48,755/72
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—20 **1 Claim**

1. A hybrid tea rose plant, having medium sized flowers, colored between Turkey red, Orient red, characterized in that the first plant of this variety was obtained by isolating a sport of the variety of rose commercially known by the name of Baccara, and said plant having the following unique combination of characteristics:
a. *from the physical standpoint:* a plant that is vigorous, bushy, and slender and is of average density, growing to an average height of 150–200 cm. from the ground, with numerous branches and flowers; stems are not widely spaced and are well covered with large leaves of a dark green that matches the flowers harmoniously; the flowers are from average to large in size, of harmonious shape, of a color between Turkey red and Orient red with tinges of red Vermilion, and are suitable for commerce and export;
b. *from a physiological standpoint:* a plant that is resistant to disease, that is simple to grow for industrial production and which has considerable vegetative affinity for the main graft recipients; the flowers of which are resistant to the inclemencies of weather and to discoloration from sunlight, withstand transport and packing well, and which last well after being cut; and the flowers and other parts of the plant being suitable for reproduction by vegetative means.

3,654

MINIATURE ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277
Filed Dec. 26, 1973, Ser. No. 428,310
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety (cultivar) of miniature rose plant of hardy, dwarf, rounded, much branched bush type, as illustrated and described, characterized by buds and flowers resembling the "Baccara" (Plant Patent 1,367, expired) hybrid tea rose in general form (only in miniature), the color being a darker shade of red and the open flower having a similar fluorescent glow; the general color effect being dark red similar to "Dwarf King," easy to propagate from cuttings; with medium small dull to semi-glossy foliage, tinted reddish on new growth; with flowers of above average lasting quality borne singly or several to stem in loose clusters.

PATENTS

GRANTED NOVEMBER 19, 1974

GENERAL AND MECHANICAL

3,848,266

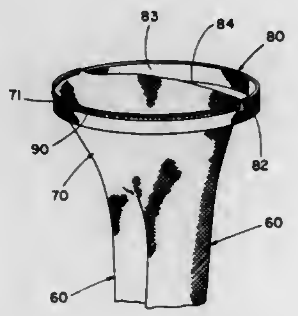
METHOD OF SECURING A WAISTBAND TO COMBINATION GARMENT

Mildred Conaway, Siloan Springs, Ark.; Alligene Thompson, Tahlequah, Okla.; Dorsie Mae Bowen, Fayetteville, Ark.; Danny Brown, Springdale, Ark., and Larry McGarrah, Summers, Ark., assignors to Bear Brand Hoisery Co., Chicago, Ill.

Filed Jan. 30, 1974, Ser. No. 437,852

Int. Cl. A41f *9/00*

U.S. Cl. 2—237 **2 Claims**



1. A method of securing an elastic waistband to a garment having a generally tubular panty portion with a waist opening therein, the method comprising placing the elastic waistband against the garment with the outside of the elastic waistband in contact with the outside of the garment and with the adjacent edge of the wasitband spaced inwardly from the waist opening of the garment a distance less than the width of the elastic waistband, folding the portion of the garment forming the waist opening over the waistband to overlap the portion of the garment and the waistband, and sewing together the overlapped portion of the garment and the waistband to provide a garment and elastic waistband wherein the waistband extends beyond the waist opening of the garment.

3,848,267

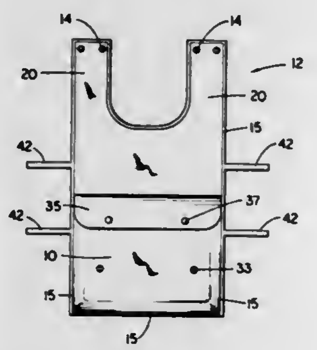
CARRIER GARMENT-CUSHION

Jimmy F. De Spain, 5 Cool Creek Cir., Carmel, Ind. 46032

Filed Oct. 17, 1973, Ser. No. 407,220

Int. Cl. A41d *1/00, 3/02*

U.S. Cl. 2—94 **10 Claims**



1. A garment comprising:
- a. a first vest section having a pocket and fastening means at the shoulder;
- b. a second vest section having a pocket and fastening means at the shoulder, said fastening means of said second vest section being receptive to said fastening means of said first vest section;
- c. a first cushion member, said first cushion member being fittable within said pocket of said first vest section;
- d. a second cushion member, said second cushion member being fittable within said pocket of said second vest section;
- e. means for securing said fastening means of said first vest section to said pocket of said first vest section to form a cushion configuration; and
- f. means for securing said fastening means of said second vest section to said pocket of said second vest section to form a cushion configuration.

3,848,268

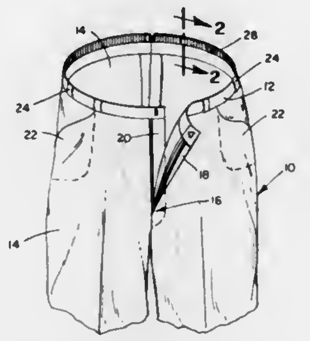
MULTIPLE SIZE SLACKS

Anthony H. D'Ambrosio, 10th St. and Godfrey Ave., Philadelphia, Pa. 19126

Filed Oct. 9, 1973, Ser. No. 404,610

Int. Cl. A41f *9/00*

U.S. Cl. 2—237 **14 Claims**



1. A waist assembly for a garment comprising:

a waistband of a relatively stretchable outer garment fabric turned over at its upper extremity to form a bight with a small inner flap depending therefrom;

an elastic strip of one piece construction having an upper portion which is longitudinally elastic including means substantially preventing transverse bending of said upper portion whereby to exhibit no-roll characteristics, said upper portion being positioned adjacent to and sewn to the side of said inner flap facing inwardly to the wearer away from said waistband with the top of said strip being approximately coextensive with said bight; and

a curtain depending from the lower portion of said elastic strip and sewn thereto on the side of said elastic strip facing inwardly toward the wearer and away from said outcr garment.

3,848,269

EXPANDABLE GARMENT WAISTBAND

Sanford I. Forrest, 8002 Ivy Ln., Pikesville, Md. 21208

Continuation-in-part of Ser. No. 298,256, Oct. 17, 1972, Pat. No. 3,800,332. This application Nov. 12, 1973, Ser. No. 414,899

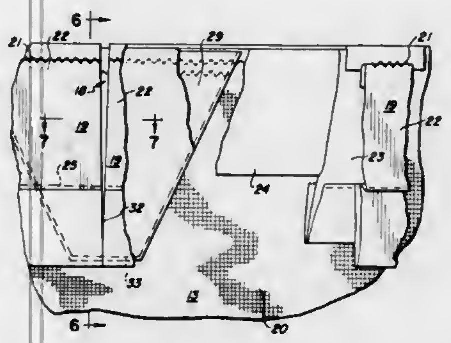
Int. Cl. A41f *9/00*

U.S. Cl. 2—237 **3 Claims**

1. In a garment having attached front and rear fabric panels, each of said panels having respective inside and outside surfaces, a waistband in a peripheral edge portion of said attached panels, a curtain co-extensive with said waistband on said inside surfaces of said panels, a vertical slit in said rear panel, through said waistband and curtain, said slit defining a waistband forward section and a waistband rearward section, the improvement comprising:

elastic means at said vertical slit between said waistband and said curtain, said elastic means having a forwardly extending portion, a rearwardly extending portion, and a base;

means for securing said base of said elastic means to said curtain;



means for attaching said forwardly extending portion and said rearwardly extending portion of said elastic means to said curtain whereby said slit is urged by said elastic means to a normally closed position;

a fabric coating for covering said elastic means, said fabric coating of design similar to that of said garment; and

means for attaching said fabric coating to said elastic means.

3,848,270

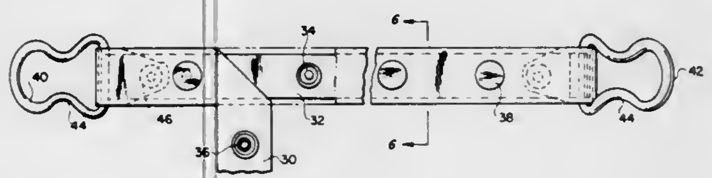
BELT HAVING INTERCHANGEABLE DECORATIVE STRIPS

Robert B. Rand, P.O. Box 1939, Daytona Beach, Fla. 32015

Filed May 8, 1973, Ser. No. 358,414

Int. Cl. A41f *9/00*

U.S. Cl. 2—311 **1 Claim**



1. A belt for fastening around the torso of a wearer, comprising a body encircling member having in operative position an inner side and an outer side, readily detachable, elongated decorative strip means connected to the outer side of said member, cooperating fastener means for fastening said decorative strip means to said member comprising cooperating fastener elements on both the outer side of said member and the adjacent side of said decorative strip means, a buckle for attaching end portions of said member to each other, and said decorative strip means having an end passing through said buckle and secured to the inner side of said member.

3,848,271

LADY'S BELT

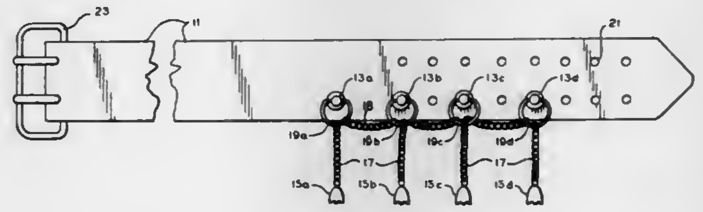
Dhruv Goele, 51-21 Function Blvd., Elmhurst, N.Y. 11373

Filed Nov. 21, 1973, Ser. No. 418,117

Int. Cl. A41f *3/02, 9/00*

U.S. Cl. 2—338 **1 Claim**

1. A decorative article of apparel comprising:
- a. a belt having a plurality of essentially equally spaced holes therein and including means for fastening said belt about the waist of the wearer;
- b. a plurality of studs having central internal threads extending in from the rear attached to said belt by means of bolts inserted from the back of said belt through said holes and screwed into said threads;
- c. a plurality of rings one being attached to each of said studs at the end which projects from the front of said belts;
- d. a plurality of chains, one being suspended from each of said rings, said chains each having one end attached to a ring with at least some of said chains passing through one ring and suspended therefrom and attached to another of said rings;



- e. additional chains attached to and extending between any two of said rings not having a chain attached to one and suspended from the other so that each of said rings has a section of chain extending between it and the next adjacent chain;
- f. a plurality of bells, one attached to the other end of each one of said plurality of suspended chains.

ERRATUM

For Class 3—1 see:
Patent No. 3,848,276

3,848,272

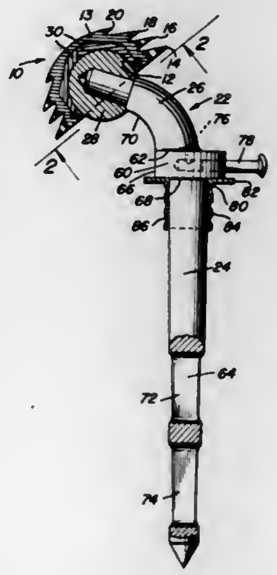
ARTIFICIAL HIP JOINT

Douglas G. Noiles, New Canaan, Conn., assignor to United States Surgical Corporation, Baltimore, Md.

Filed Jan. 13, 1972, Ser. No. 217,540

Int. Cl. A61f *1/24*

U.S. Cl. 3—1 **24 Claims**



1. An artificial hip joint, comprising:

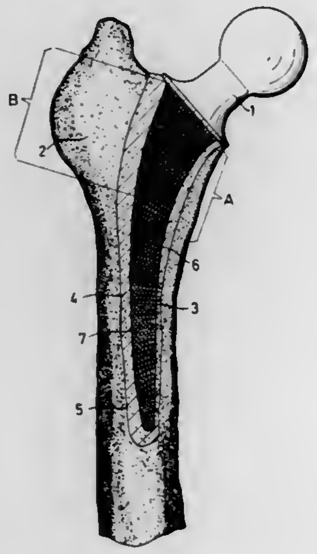
an acetabulum prosthesis of the cotyloid cavity defining an aperture having screw threads on the inner surface thereof and a plurality of blades extending outwardly away from said aperture for engaging the prepared wall of the cotyloid cavity;

at least one insert having an outer threaded surface and an inner bearing surface inserted into said aperture and threadedly connected by means of said threads to said acetabulum prosthesis to form a socket, the outer surface of said at least one insert engaging and being supported by the inner surface of said aperture; and a prosthesis of the head of the femur movably interconnected with said acetabulum prosthesis and including a pin to be driven into the bone-marrow channel of the femur, a curved neck integral with the pin, and a hip ball positioned on the neck, movably located within said socket and in movable contact with said insert, said socket enveloping more than one-half of the hip ball to prevent withdrawal of the hip ball from the socket, said artificial hip joint composed of surgical grade materials suitable for implantation into the body.

3,848,273

SHANK FOR BONE IMPLANTS

Otto Frey, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland
Filed Jan. 29, 1973, Ser. No. 327,803
Claims priority, application Switzerland, Feb. 2, 1972, 1550/72
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **8 Claims**

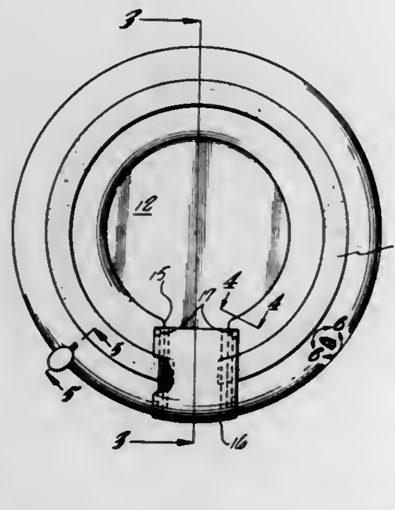


1. A solid shank for implanting in a bone cement to anchor a bone implant in a bone, said shank having a narrowing cross-sectional area towards one end and an external nonporous surface having discrete unconnected depressions therein between raised portions of said shank, said depressions being between 10 microns and 100 microns depth.

3,848,274

INFLATABLE BED PAN

Janet Oliver, 428½ N. Kenwood, Glendale, Calif. 91206
Filed Aug. 10, 1973, Ser. No. 387,303
Int. Cl. A61g *9/00*
U.S. Cl. 4—113 **7 Claims**

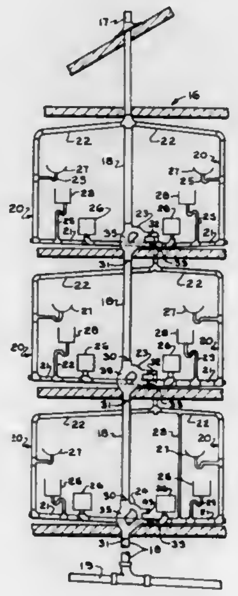


1. An inflatable bed pan comprising: a semitoroidal shaped air-tight member having a bottom member stretched thereacross to close the bottom of the semitoroidal member; said semitoroidal member being interrupted at one point in its circumference to form a single discharge passage; a flap attached to said semitoroidal member for closing said discharge passage said flap having locking means adjacent the extended end thereof, closure means carried by said semitoroidal member on either side of said discharge passage and being adapted to cooperate with said locking means to secure said flap in passage closing position; a ring of foam material attached to said semitoroidal member which serves as a wedge between the patient and direct contact with the pan; means for filling said member with air, and means for controllably deflating said member.

3,848,275

STANDPIPE VENT SYSTEM AND FITTING FOR MULTI-STORY BUILDINGS

Emile V. Dumas, 307 Washington St., Monroe, Mich. 48161
Filed July 23, 1973, Ser. No. 381,494
Int. Cl. E03d *9/04*
U.S. Cl. 4—211 **8 Claims**



1. A sanitary system for a multi-story building, comprising, in combination, a plurality of sanitary fixtures with drains on different floors, a vertical drain stack having upper and lower ends and including a plurality of vertically oriented drain pipes and a plurality of loop vent fittings connecting said drain pipes in series, one loop vent fitting adjacent each floor having a sanitary fixture, each loop vent fitting including a closed loop conduit with connecting means, a sanitary sewer pipe, means connecting said sewer pipe to the lower end of said drain stack, a roof vent, means connecting said roof vent to the upper end of said drain stack, at least one branch sanitary drain circuit for each floor having a fixture, each circuit having a soil end connected to said connecting means on the loop vent fitting for the adjacent floor and a venting end connected to said connecting means on the first superjacent loop vent fitting in the drain stack, means connecting said venting end of the uppermost branch circuit to the atmosphere, and means connecting the drains of all fixtures on each floor to the adjacent branch sanitary drain circuit intermediate said soil end and said venting end.

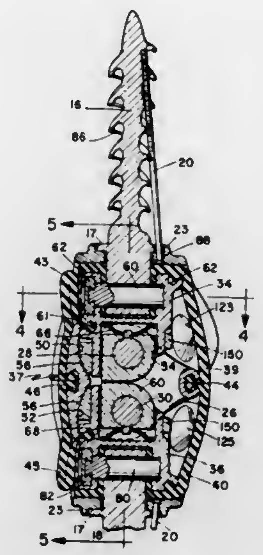
3,848,276

KNEE IMPLANT DEVICE

Ysidore M. Martinez, 5608 Lakewood Dr., San Diego, Calif. 92041
Filed May 3, 1973, Ser. No. 356,816
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **14 Claims**

1. A joint prosthesis comprising:
joint means,

attachment means for securing said joint means between relatively movable skeletal members,
said joint means for constraining said skeletal members to a combination of relative rotation and translation,
said joint means comprising at least two axially spaced pivot bearings incorporating two pivot pins, a common pivot frame, and two connector blocks,

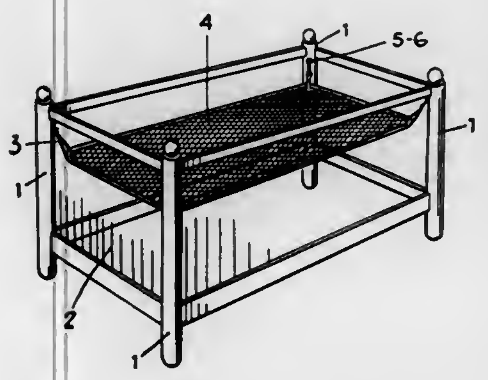


said two pivot pins spaced axially in said joint means and carried on said common pivot frame,
said pivot bearings being connected to said attachment means through said connector blocks,
said connector blocks having an axial bore and receiving said pivot pins through a transverse opening through said axial bore.

3,848,277

CRIB MATTRESS ADJUSTING DEVICE

Silvana Reguitti, via S. Rocchino, 54 Brescia, Italy
Filed Jan. 26, 1973, Ser. No. 327,107
Int. Cl. B65d *63/10;* **A47c** *17/14*
U.S. Cl. 5—11 **1 Claim**

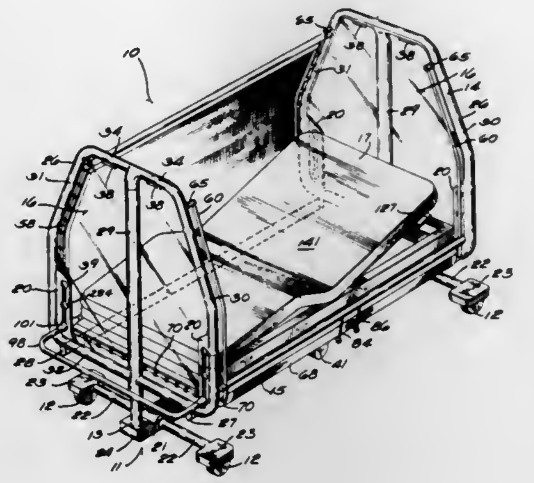


1. In a crib for infants having vertical supports at each of the four corners thereof, barrier means connecting the supports to one another and defining a rectangular inner region, a mattress-supporting frame positioned within the barrier means and perpendicularly thereto, the improvement consisting of a mattress adjusting device which comprises a flexible strip having an upper extremity with an opening thereat and to be connected to the vertical support of said crib, a first plurality of openings at predetermined distances from said upper extremity along said strip, and a lower extremity with a second opening, said lower extremity forming a loop in said strip, which loop is to engage the mattress-supporting frame, and a fastener extending through said second opening and a selected one of said first openings.

3,848,278

PEDIATRIC BED

Robert L. Propst, Ann Arbor, Mich., assignor to Herman Miller, Inc., Zeeland, Mich.
Division of Ser. No. 175,505, Aug. 27, 1971, Pat. No. 3,763,507. This application Sept. 27, 1972, Ser. No. 292,517
Int. Cl. A61g *7/02;* **A47c** *27/08*
U.S. Cl. 5—91 **7 Claims**



1. A pediatric bed comprising, in ombination: a body support enclosure having a pair of ends and sides, a mattress and mattress-support frame suspended from the lower portion of said ends, a base for support of said enclosure, said enclosure being adjustable vertical relative to said base by lift means for raising and lowering the elevation of said bed, said sides being slidably mounted on tracks anchored to said ends, said sides being independently movable between a first position where the top margin of said sides are at or below said mattress level, a second position wherein the top margin is substantially above said mattress and a third position intermediate said first and second positions, said sides including latch means for releasably positioning said sides in said positions, said sides when positioned in said third position having an upper portion extending generally vertically upwards, and when positioned in said second position, having a first portion extending generally vertically upwards, and a second portion above said first portion sloped inwardly over said mattress, said 178 ress-support frame being adjustable between a horizontal position and one or more angles of incline, said support frame further including means for independently adjusting the slope of the back, upper leg and lower leg support portions of said mattress relative to the horizontal. mattress-support

3,848,279

PORTABLE CAMPING EQUIPMENT

William J. Ipsen, Jr., 823 S. 7th St., La Crosse, Wis. 54601
Continuation-in-part of Ser. No. 192,025, Oct. 26, 1971, abandoned. This application Apr. 6, 1973, Ser. No. 348,637
Int. Cl. A47c *29/00*
U.S. Cl. 5—113 **12 Claims**

1. A unitary covered camping cot foldable into a compact condition suitable for transportation by a single individual which comprises:

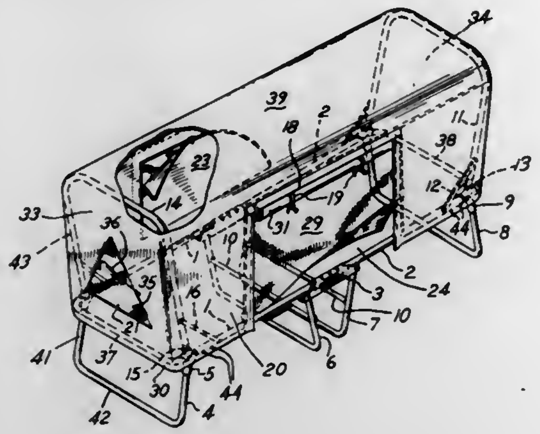
a. a foldable rectangular frame comprising a pair of pivotally connected lightweight U-shaped frame members, and means for pivotally connecting the open end portions of each U-shaped frame member;
b. a pair of lightweight U-shaped end support legs, the open end portion of each being pivotally connected transversely to the side portions of each U-shaped frame member in close proximity to the closed end portions of each frame member;
c. a lightweight U-shaped intermediate support leg, the open end portions of which being pivotally connected

transversely to the frame in close proximity to the open end portions of the frame members;

d. a single pair only of inverted, lightweight U-shaped support arms, the open end portions of each being permanently pivotally connected transversely to the side portions of each U-shaped frame member in close proximity to the closed end portions of each U-shaped frame member;

e. means attached to the frame for defining a support surface across the rectangular frame for the horizontal support of an individual;

f. a flexible cover attached to the rectangular frame having an access opening and ventilation opening therein, said arms being positioned between said cover and said support surface; and,

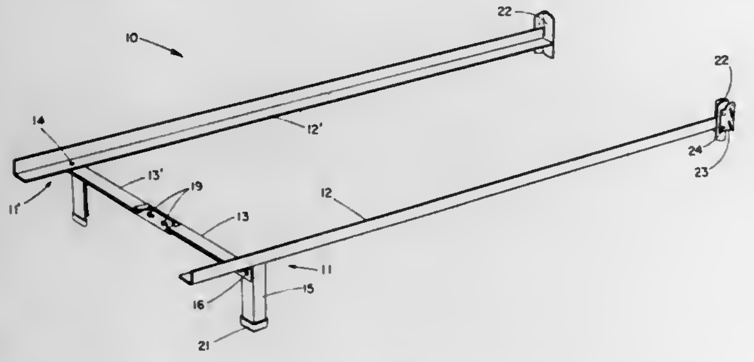


g. the camping cot being foldable, from a horizontal, open position as said inverted U-shaped support arms are in a generally upright position and define flexible side support means for said flexible cover and define a chamber above and between said support arms, said single pair of U-shaped arms defines the sole support means for said cover when said cover is in the chamber defining position, and the U-shaped support legs extend downward to maintain the cot in a stable position, to a closed, portable, compact condition where the support legs and support arms are positioned longitudinally inward against the side portions of the frame and the U-shaped frame members folded together such that the frame members are generally parallel and substantially enclose both the flexible cover and the support arms and the support legs are positioned against the exterior of the frame members.

3,848,280
TWO-LEGGED COLLAPSIBLE BED FRAME

James E. Allen, Newburgh; James M. Lashley, Richland, and C. Bernard Noelting, Evansville, all of Ind., assignors to Advance Manufacturing Co., Division of MGT Corporation, Rockport, Ind.

Filed May 23, 1973, Ser. No. 363,022
Int. Cl. A47c *14/00*
U.S. Cl. 5—202 **3 Claims**



1. A frame for connecting to a bed headboard comprising: a first mattress supporting rail having a first hook-shaped end connectable to said headboard and a first opposite end portion;

a second mattress supporting rail parallel to said first rail and having a second hook-shaped end connectable to said headboard and a second opposite end portion, each rail having a right angle cross sectional configuration including a vertical wall integrally joined to a horizontal wall with said vertical wall of each rail spaced outwardly of each horizontal wall;

a first cross support having a proximal end pivotally mounted to said horizontal wall of said first rail at said first end portion and a distal end swingable from a position against and beneath said first support toward said second rail;

a second cross support having a proximal end pivotally mounted to said horizontal wall of said second rail at said second end portion and a distal end swingable from a position against and beneath said second rail toward said distal end of said second support and connectable therewith;

a first leg pivotally mounted to said first support beneath said horizontal wall of said first rail and swingable from a depending vertical position to a horizontal position against said first support; and,

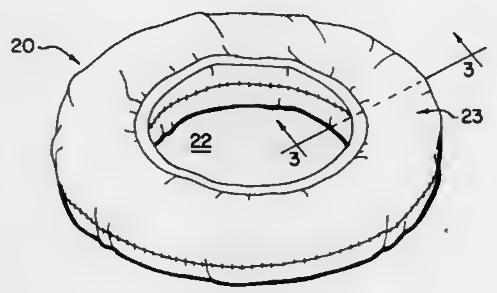
a second leg pivotally mounted to said second support beneath said horizontal wall of said second rail and swingable from a depending vertical position to a horizontal position against said second support;

said first leg has a top edge bearing against said horizontal wall of said first rail when said first support extends toward said second rail preventing said first leg from pivoting in any direction with respect to said first support; and, said second leg also has a top edge bearing against said horizontal wall of said second rail when said second support extends toward said first rail preventing said second leg from pivoting in any direction with respect to said second support.

3,848,281
APERTURED ARTICLE AND PROTECTIVE COVER THEREFOR

Dixie I. Mathews, 4502 Abbott St., Apt. 104, Dallas, Tex. 75205

Filed Jan. 23, 1974, Ser. No. 435,726
Int. Cl. A47g *9/00*
U.S. Cl. 5—337 **11 Claims**



1. A head rest which comprises:

a cushion element formed with an aperture therethrough; and

a cover for said cushion element comprising four sheets of formable material, each sheet having a shape generally in accordance with the cross-sectional configuration of said cushion element in a principal plane therethrough including a peripheral edge shaped in accordance with the peripheral configuration of said cushion element and an interior edge defining an aperture shaped in accordance with the configuration of the aperture through said cushion element;

first and second of said sheets being joined at their peripheral edges to define a first enclosure for said cushion element;

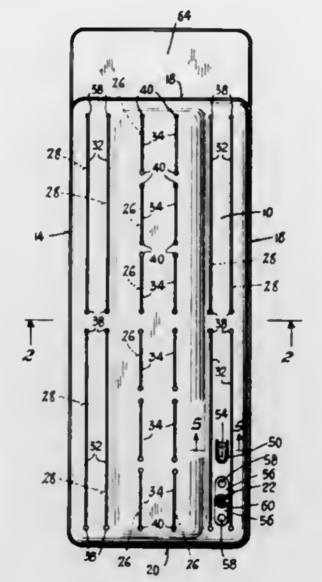
third and fourth of said sheets being joined at their peripheral edges to define a second enclosure for said cushion element and said first enclosure;

said first and second enclosures being joined at the interior edge of said second and third sheet whereby said cushion element is completely enclosed with the aperture therethrough exposed.

3,848,282
LIGHT WEIGHT FLOTATION MATTRESS

Eric A. Viesturs, 147D Hill Ct., Heritage Village, Southbury, Conn. 06488

Filed Jan. 18, 1973, Ser. No. 324,862
Int. Cl. A47c *27/08*
U.S. Cl. 5—348 WB **12 Claims**



1. A light-weight flotation mattress, comprising, in combination:

a. a pair of thin, resilient and flexible synthetic plastic upper and lower sheets of substantially rectangular configuration, located in superposed relation and having their peripheral portions respectively joined to form a flat, closed and watertight bag of rectangular outline with oppositely disposed longitudinal side edges,

b. said bag having a stoppered filling opening, and

c. a plurality of elongate, resilient and flexible plastic tie strips in said bag and located intermediate the longitudinal side edges of the bag, said strips joining together the upper and lower sheets in spaced-apart relation,

d. said tie strips being broadside to and spaced from one another, and disposed in substantially parallel rows,

e. said rows extending longitudinally of the bag in spaced-apart relation and parallel to the opposite longitudinal side edges of the bag,

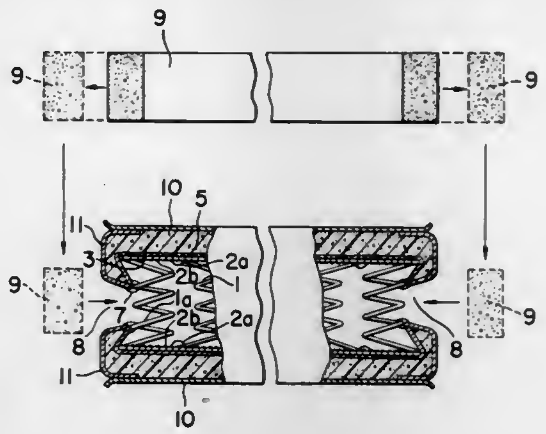
f. those tie strips of the rows which are located adjacent the longitudinal edges of the bag being narrower than strips disposed nearer the center of the bag such that the sheets are held in closer spaced relation near the longitudinal side edges of the bag than at its center.

3,848,283
MATTRESS

Minoru Ikeda, Tokyo, Japan, assignor to France Bed Co., Ltd., Tokyo, Japan

Filed Jan. 4, 1973, Ser. No. 321,078
Claims priority, application Japan, Aug. 9, 1972, 47-79840; Aug. 9, 1972, 47-79841
Int. Cl. A47c *23/00*
U.S. Cl. 5—351 **3 Claims**

1. A mattress comprising a plurality of coil springs juxtaposed side-by-side one another so as to form a flat plane, at least one frame wire fixed to said springs]nd running about the periphery of said flat plane to define a top plane and to form said coil springs into a unitary spring assembly, a sheet of an elastic material covering at least said top plane and having and edge portion covering only a portion of the side of said spring assembly and being formed with first surface means, second surface means opposing said first surface means in spaced relation thereto, said first surface means diverging outwardly with respect to the plane of said second surface means, said first and second surface means defining a void space around the side periphery of said spring assembly,

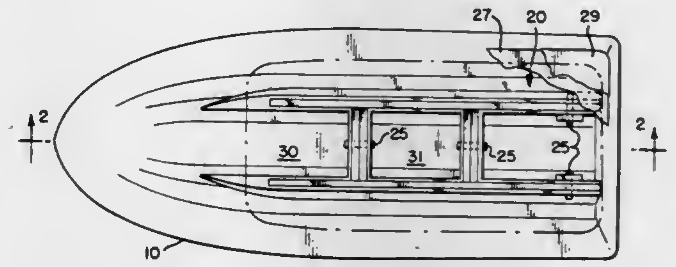


an endless elastic stretchable foam block filling said void, said elastic foamed block being in its vertical plane in a state of compression, said elastic foamed block having a normal inner width or length, when at no degree of stretch, less than the length or width of said block in said void, whereby said endless block in said void is under forces which tend to draw said block inward said first and second surface means constituting means for exerting a vertical compression against said block and for retaining said block in said void.

3,848,284
STRINGER SYSTEM FOR GLASS FIBER-REINFORCED BOAT HULLS

David T. Livingston, Seattle, Wash., assignor to Reinell Boats, Inc., Marysville, Wash.

Filed Nov. 14, 1973, Ser. No. 415,567
Int. Cl. B63b *5/00*
U.S. Cl. 9—6 **10 Claims**



1. A custom-molded stringer member for positioning in the interior of a glass fiber-reinforced resin hull of a boat to provide stiffening for the hull of the boat and support for the floor and transom of the boat, comprising:

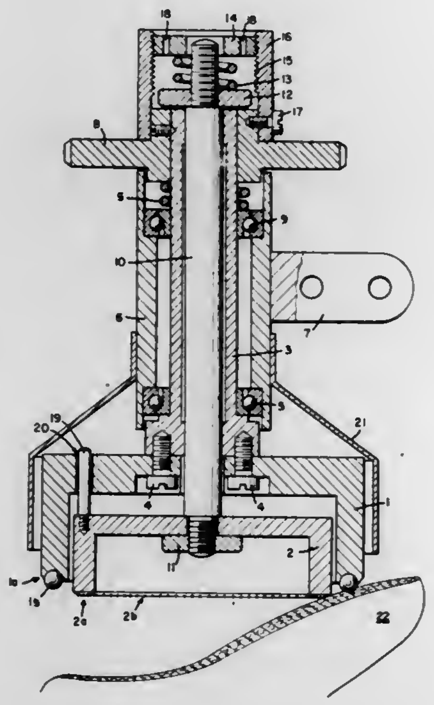
a stringer member including (1) one or more molded, rigid, synthetic foam beams extending essentially parallel to the length of hull of the boat having an essentially planar upper surface and a lower surface adapted to fit the contour of the qull of the boat]nd (2) one or more rigid cross braces extending between the beams, each having a planar upper surface and a lower surface adapted to fit the contour of the hull of the boat,

one or more layers of glass fiber-reinforced resin over the stringer member and intersection of the stringer member with the hull of the boat for securing the stringer member to the boat hull and making it an integral part thereof,

a floor member adhered to the upper surface of the stringer member, and
one or more layers of glass fiber-reinforced resin laid over the floor member and intersection between the floor member and boat hull.

3,848,285
MACHINING TOOL

Dieter Braun, and Wolfram Kortendieck, both of Stuttgart, Germany, assignors to Fortuna-Werke Maschinenfabrik AG, Stuttgart, Germany
Filed Oct. 18, 1973, Ser. No. 407,516
Claims priority, application Germany, Oct. 18, 1972, 2250980
Int. Cl. A43d *25/00*
U.S. Cl. 12—17 R **7 Claims**

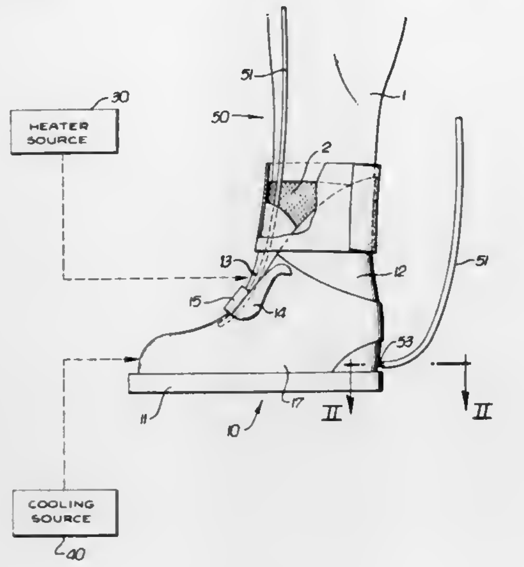


1. A machining tool, especially for use in connection with the manufacturing of shoes, which includes: bearing means, spindle means rotatably supported by said bearing means, first rotatable tool means connected to said spindle means for rotation with the latter, second rotatable tool means having the axis of rotation thereof substantially coaxially arranged with regard to the axis of rotation of said first tool means, and resilient elastic means interposed between said second rotatable tool means and said spindle means, said first and second tool means respectively being provided with machining surfaces located closely adjacent to each other so as to be adapted substantially simultaneously to act upon a workpiece to be machined thereby.

3,848,286
METHOD OF AND APPARATUS FOR CUSTOM MOLDING FOOTWEAR

Anthony J. Kahmann, 3032 Galena Ave., Simi, Calif. 93065
Filed Mar. 11, 1974, Ser. No. 449,963
Int. Cl. A43d *9/00;* **A43b**
U.S. Cl. 12—142 P **13 Claims**

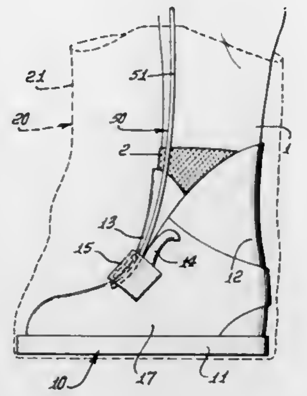
1. A method of forming a boot or shoe of moldable material to better conform it to a user's foot after having placed the boot on the user's foot including the steps of:
a. applying a vacuum beneath said boot;
b. applying sufficient heat to the boot for the boot material to become moldable while maintaining the vacuum so



that the vacuum will cause the boot to mold towards the foot to conform thereto.

3,848,287
METHOD AND APPARATUS FOR CUSTOM MOLDING SHOES AND BOOTS

James Simonsen, 18522 Pacific Coast Hwy., Malibu, Calif. 90265
Filed Mar. 15, 1974, Ser. No. 451,352
Int. Cl. A43b ; A43d *9/00*
U.S. Cl. 12—142 P **6 Claims**



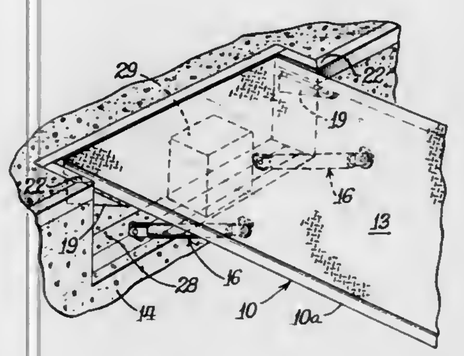
1. A method of forming a boot or shoe of moldable material to better conform it to a user's foot after having placed the boot on the user's foot including the steps of:
a. surrounding the boot with a flexible, air tight material with a melting temperature higher than that of the molding temperature of the boot;
b. making an air tight seal between the flexible, air tight material and the boot;
c. applying a vacuum beneath said flexible air tight materials;
d. applying sufficient heat to the boot for the boot material to become moldable while maintaining the vacuum so that the vacuum will cause the boot to mold toward the foot to conform thereto.

3,848,288
SAFETY LOCK FOR BASCULE BRIDGE

Lawrence I. Richards, and Ronald R. Gould, both of Elk Grove Village, Ill., assignors to Autoquip Corporation, Chicago, Ill.
Filed May 14, 1973, Ser. No. 360,118
Int. Cl. E01d *15/06*
U.S. Cl. 14—41 **10 Claims**

1. In a bascule bridge apparatus for spanning an area which apparatus comprises a foundation member at one side of said area and forming a pivotal bridge support, a bridge member

having one end pivotally mounted on said support, a power device connected to the bridge member to pivot the bridge member between a horizontal position and an erect position, and a safety device to hold the bridge member in the erect position to prevent accidental lowering of the bridge member, the improvement wherein:
said foundation member forming abutment means immediately adjacent said support;
said safety device including blocking means movably attached to one of said members adjacent said one end of the bridge member and movable, only when said bridge member is in the erect position,



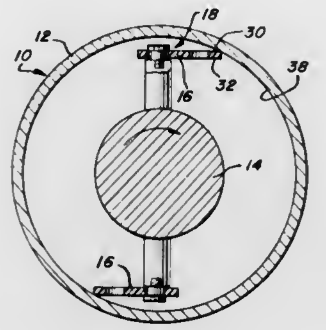
to a first position in juxtaposition to the other member so as to contact said other member should said bridge member start to lower and thereby block further downward movement of the bridge member, and
to a second position at which the blocking means is clear of said other member so that the bridge member can freely move down and up, and
power means interconnecting the one member and the blocking means to move said blocking means between its two positions.

ERRATUM

For Class 15—79 see:
Patent No. 3,849,043

3,848,289
SCRAPER BLADE

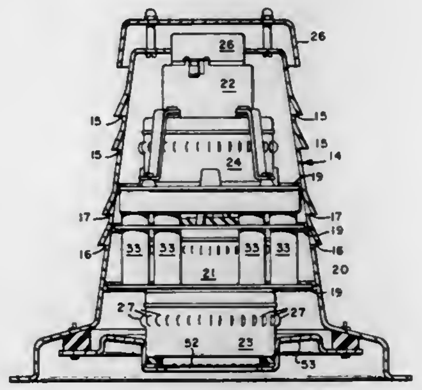
Thomas H. Bachmann, New Albany, Ind., assignor to Chemetron Corporation, Chicago, Ill.
Filed Apr. 16, 1973, Ser. No. 351,456
Int. Cl. F28g *3/12*
U.S. Cl. 15—246.5 **6 Claims**



1. In a scraped-surface apparatus comprising a fluid container having a substantially cylindrical wall, a rotatable shaft disposed axially thereof defining an annular fluid chamber for holding fluid being treated, and one or more scrapers driven by said shaft extending outwardly thereof and including outer edges for scraping fluid from the inside surface of said cylindrical wall, each scraper defining an acute angle with respect to a tangent drawn at its point of contact with said wall, the improvement wherein each scraper comprises a blade of a polyphenylene sulfide material filled throughout the entire blade with a reinforcing filler, said scraping edge having a substantially perpendicular included angle.

3,848,290
RINSE METHOD AND MACHINE

Charles Ross Bates, 140 Wortham Ct., Mountain View, Calif. 94040
Continuation of Ser. No. 212,587, Dec. 27, 1971, abandoned. This application Sept. 27, 1973, Ser. No. 401,348
Int. Cl. A47l *7/00*
U.S. Cl. 15—321 **2 Claims**



1. An improved carpet cleaning machine of the type adapted to deposit and retrieve rinse liquid from carpets for the purpose of cleaning the carpet, comprising:
a hand-held implement having a handle positioned to be grasped by the operator and having one end adapted to be moved across the carpet being cleaned;
means carried by the one end of the implement and adapted to deposit rinse liquid onto the carpet from a source for spraying said liquid onto the carpet;
means adjacent said implement for controlling the quantity of rinse liquid being sprayed onto the carpet, said implement also including at said one end channel means adapted to retrieve the rinse liquid from the carpet and transmit the liquid away from the carpet;
a portable liquid holding tank attached to the implement to receive the rinse liquid retrieved from the carpet for retaining the majority of said rinse liquid;
a suction power unit affixed immediately adjacent to said holding tank for creating a vacuum flow directed through said one end of said implement for pulling the rinse liquid from the carpet and through the implement into the holding tank and for sucking wet air upwardly from said holding tank, said power unit comprising a rigid unitary frame adapted for attachment to the holding tank, the frame including a base plate having an opening centrally thereof and an interior cavity extending from said base plate, a plurality of conduits having the upstream end of each opening into said base plate, said conduits surrounding said interior cavity and serving to prevent a flow of wet air from entering said interior cavity, each of said conduits opening at the downstream end into an exhaust manifold, and a conduit divider plate having openings to accommodate said conduits, said conduit divider plate being positioned intermediate the upstream and downstream ends of said conduits and orthogonally thereto, the second end of said hand-held implement being attached through a flexible hose to said holding tank at a point above the normal full level of liquid within said holding tank, whereby a liquid-air combination is drawn through the one end of the implement, then passed through said second end of the implement and into the holding tank by air being sucked through said implement by the power unit whereby the great majority of the liquid upon entry of the liquid-air combination into the holding

tank drops from the air into the container portion of the holding tank while the wet air is sucked upwardly;

a first electric motor-fan combination mounted to said base plate with the motor portion thereof within said interior cavity and the fan portion thereof extending outside said interior cavity adjacent the upstream ends of said conduits and in position to pump wet air through said conduits around said interior cavity and into said exhaust manifold, the wet air exiting the fan of said first electric motor-fan combination being thrown out therefrom in a direction substantially perpendicular to the direction of flow through said conduits;

a second electric motor-fan combination rigidly mounted exteriorly to said rigid unitary frame and centrally on said exhaust manifold, to receive and further pump the air from said holding tank, the motor portion of said second motor-fan combination being within a protective housing to prevent contact with the wet air being propelled by the fan portion of said second motor-fan combination;

a cover attached over said rigid unitary frame and conforming in mated vapor seal relationship to the edges of said base plate, said conduit divider plate and said exhaust manifold, the space between said cover, said exhaust manifold and said conduit divider plate defining an intake duct and the space between said cover, said base plate and said conduit divider plate defining an exit duct, said cover having discharge openings thereon above the mating of said cover with said exhaust manifold to permit discharge of the flow of wet air driven from said fan of said second motor-fan combination, said cover also having a set of intake openings thereon above the mating of said cover and said conduit divider plate and below the mating of said cover and said exhaust manifold, said cover further having a set of exit openings thereon above the mating of said cover and said base plate and below the mating of said cover and said conduit divider plate, said intake openings permitting inflow and said exit openings permitting outflow of air to cool the windings of said first motor, said cover still further having an opening adjacent the upper end thereof to permit an impeller on the drive shaft of said second motor to draw dry air to cool said second motor, said dry air after cooling said second motor being mixed with the flow of wet air leaving the fan of said second motor-fan combination and exiting therewith through said discharge openings, said cover extending beyond said base plate and being attached to said holding tank.

2. An improved carpet-cleaning machine as in claim 1 wherein said first motor includes an impeller mounted on the drive shaft thereof opposite the end on which said fan of said first motor is attached, said impeller serving to pull a flow of dry cooling air through said intake openings and said intake ducts and over the windings of said first motor and then to propel said dry cooling air from the windings of said first motor through said exit duct and out of said exit openings.

3,848,291

CLEANING HEAD FOR CLEANING CARPETS AND THE LIKE IN SITU

George A. Morse, Billerica, Mass., assignor to Carpetech Corp., Everett, Mass.

Filed Mar. 1, 1972, Ser. No. 230,886

Int. Cl. A47l *7/00*

U.S. Cl. 15—322 **3 Claims**

1. In a cleaning head for use with ancillary equipment for cleaning carpets and the like comprising a vacuum source including a vacuum hose adapted to be connected to said cleaning head and a source of cleaning solution including a cleaning fluid supply hose adapted to be connected to said cleaning head, the combination comprising:

a. a floor head assembly having a front and rear portion and comprising vacuum nozzle means adapted to be connected to said vacuum hose for applying suction to a surface being cleaned, solenoid actuated valve means having an open and a closed position, and cleaning fluid sprayer means for spraying cleaning fluid to impinge on the surface being cleaned, said sprayer means having a fluid inlet and said valve means being coupled to said fluid inlet;

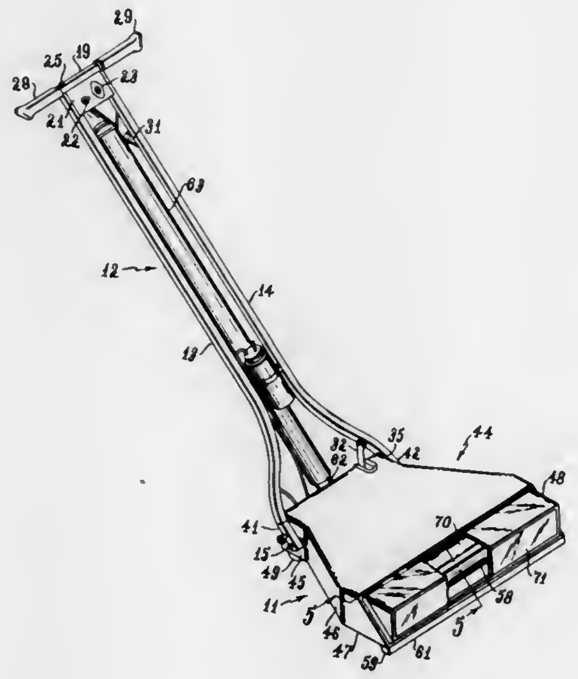
b. a handle assembly pivotally connected to said floor head assembly, said handle assembly comprising hand grip means and first and second hollow elongated members, said hand grip means comprising first and second hand grip members and an enclosure rigidly attached to said elongated members, said elongated members extending between said hand grip means and said floor head assembly and being connected to said floor head assembly rear portion;

c. fluid coupling means communicating with the interior of said first elongated member adjacent said hand grip means for coupling said first elongated member to said supply hose;

d. hose means connecting said valve means to the interior of said first elongated member adjacent said floor head assembly, said first elongated member being sealed whereby said first elongated member in combination with said fluid coupling and said hose means define a fluid flow path;

e. an electrical plug carried by said enclosure and adapted for connection to an electrical power cord;

f. an on-off switch carried by said enclosure and coupled to said electrical plug;



g. electrical conductor means extending between said hand grip means and said floor head assembly and disposed in part in said second elongated member and connecting said switch and said solenoid valve; and

h. electric light means carried by said floor head assembly front portion, said electric light means comprising an elongated fluorescent light disposed within fluorescent light enclosure means, and additionally including a weight carried within said fluorescent light enclosure means for providing a predetermined pressure by said front portion on the surface being cleaned, said floor head assembly including a metal cover member having a generally rectangular rear portion, a generally trapezoidal middle portion, and a generally rectangular front portion having a rearwardly sloping front surface for receiving said light means, said solenoid valve means is carried within said cover member and attached to one side of the middle portion thereof, and said light enclosure means is generally triangular in cross section and carried by said sloping front surface.

3,848,292

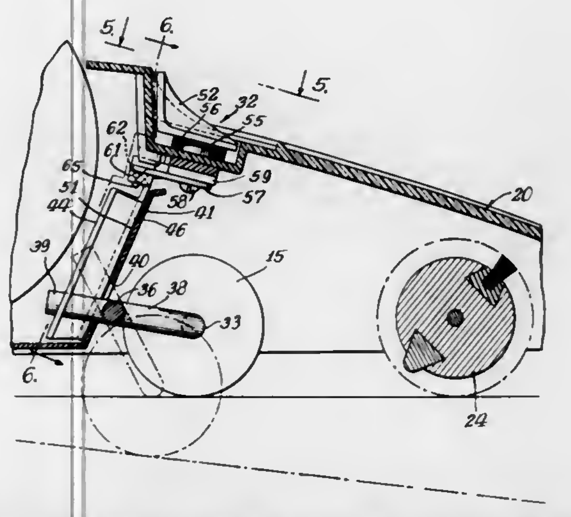
ADJUSTABLE WHEEL MOUNTING MEANS

Erwin E. Nordeen, St. Paul, and Clifford H. Olson, Jr., Chisago City, both of Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 30, 1972, Ser. No. 239,430

Int. Cl. A47l *5/34*

U.S. Cl. 15—339 **14 Claims**



1. In a vacuum cleaner having a carriage, front wheels, rear wheels rotatably carried by the carriage, a nozzle having a front portion and a top wall, means for carrying the nozzle on the carriage, and structure for adjusting the height of the front portion of the carriage relative to a subjacent surface on which said wheels are disposed including axle means for journalling said front wheels for rotation about a borizontal wheel axis, means mounting the axle means to said carriage for pivotal movement about a horizontal pivot axis parallel to and spaced from said wheel axis, a control member adjustably carried by the nozzle, locking means for releasably retaining the control member in any one of a plurality of different preselected adjusted positions, and improved means for positioning the axle means comprising a connector having a portion pivotally mounted on said carriage and means movably connected between said connector and said control member, said connector portion having a lower force transmitting member spaced substantially below said top wall substantially at the level of said wheel axis for engaging a portion of said axle means spaced from said pivot axis defining means for effectively positively pivoting said axle means in one direction of pivoting about said pivot axis as a result of adjustment of said control member in one direction of adjustment and thereby adjustably raising said front portion of the carriage relative to the subjacent surface to provide an adjustable mounting of the vacuum cleaner suitable for use with different pile height floor coverings.

3,848,293

DUAL ACTION CONICAL DOOR HINGE SYSTEM

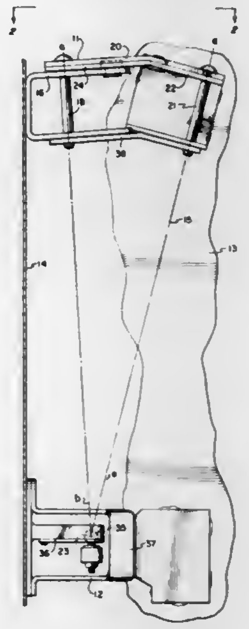
Joseph H. Marchione, and John J. Skubal, both of Rockford, Ill., assignors to Atwood Vacuum Machine Co., Rockford, Ill.

Filed Mar. 19, 1973, Ser. No. 342,539

Int. Cl. E05d *3/06*

U.S. Cl. 16—163 **12 Claims**

1. In a door hinging construction for pivotal mounting of a door on a vehicle body, a pair of vertically spaced hinges in coaxial relationship, the upper one of said hinges comprising a first fixed member mounted on the vehicle body and a second movable member mounted on the door, each of said members having thereon a substantially horizontal segmental planetary gear portion, the teeth of which are in rolling meshing engagement, upright pintles on said members at the centers of the arcs of the respective segmental planetary gears, these pintles being inclined relative to one another on axes converging downwardly toward the lower hinge, and links pivoted to the opposite ends of said pintles serving to keep the segmental planetary gear teeth in mesh, the lower one of said hinges comprising a first fixed member mounted on a vehicle body, and a small movable member mounted on the door, these two members having a universal joint connection pivotally connecting the members for universal pivotal movement about the point of convergance of the aforesaid axes, and door



throwout control means on the upper one of said hinges whicn in part-way opening of the door prevents throwout of the door relative to said hinge but which in further opening of the door allows a predetermined extent of the door throwout relative to said hinge, said door throwout control means in the closing of the door reversing its functioning.

3,848,294

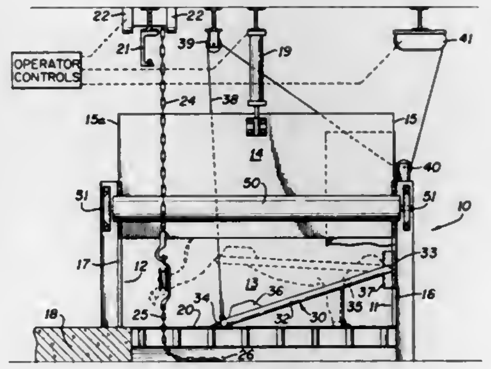
HANDLING LIVE ANIMALS TO PREPARE THEM FOR SLAUGHTER

Charles R. Taylor; Albert J. Bernhardt, both of Sterling; Jerry L. Bradford, Rock Falls, all of Ill., and Donald J. Willems, Sioux City, Iowa, assignors to Armour and Company, Phoenix, Ariz.

Filed July 25, 1973, Ser. No. 382,315

Int. Cl. A22b *5/02, 1/00*

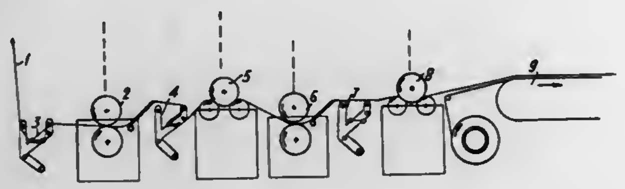
U.S. Cl. 17—45 **11 Claims**



1. A method of shackling an animal comprising driving the animal into an enclosure having a side door in closed position, raising the rear end of the animal by elevating a hoist member located in front of the animal's rear leg and under the rearward portion of the animal's belly to raise the hind feet of the animal off the floor of the enclosure, opening said side door, attaching a shackle to one of said animal's hind legs, and hoisting the shackled animal through the opening provided by the open door and upwardly on the outside of said enclosure.

3,848,295
PROCESS OF MAKING A BULKED PADDING WEB

Robert Bolliand, and Claude Saligny, both of Lyon, France, assignors to Rhone-Poulenc Textile, Paris, France
Continuation-in-part of Ser. No. 161,627, July 12, 1971, Pat. No. 3,737,950. This application Feb. 5, 1973, Ser. No. 329,544
Claims priority, application France, July 10, 1970, 70.26734
Int. Cl. D01d *11/02*
U.S. Cl. 19—65 T **8 Claims**



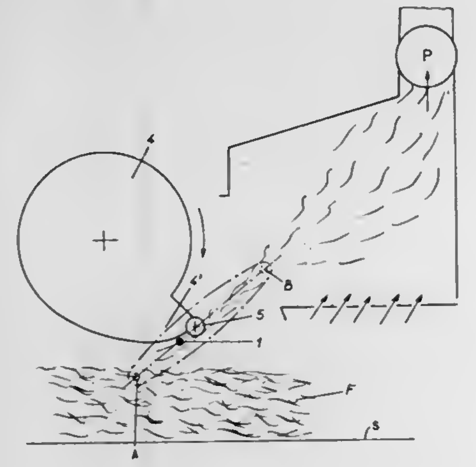
1. Method of making a bulked padding web, said method comprising the steps of

a. feeding tensional tow through an upstream pair of parallel rollers comprising an upper upstream roller and a lower upstream roller;
b. thereafter feeding said tow through a downstream pair of parallel rollers comprising an upper downstream roller and lower downstream roller, wherein said downstream pair of rollers are substantially parallel to said upstream pair of rollers; and
c. while rotating each roller in the same direction, relative to the direction of travel of said tow, and at a different peripheral speed for each roller of each pair of rollers from the other roller of the pair, the upstream pair of rollers having a higher ratio of peripheral speeds than the downstream pair, the ratio of peripheral speeds of said downstream rollers being less than 5, and the upper rollers having a higher peripheral speed than the lower rollers;

whereby a bulked padding web is obtained.

3,848,296
THE OPENING AND INDIVIDUAL SEPARATION OF FIBERS

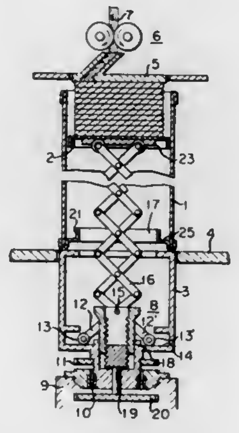
Bernard Rudloff, Marckolsheim (Bas-Rhein), France
Filed Dec. 29, 1972, Ser. No. 319,643
Claims priority, application France, June 20, 1972, 72.23096
Int. Cl. D01g *7/06*
U.S. Cl. 19—81 **4 Claims**



1. In a device for the separation of textile fibres and the like from a bale or mass of said fibres, comprising an elongated horizontally disposed member, means mounting said member at its ends for oscillatory movement up and down means retaining a said bale or mass of said fibres beneath said member, impulse means to impart oscillations to said member to cause said member to strike the fibres of said bale or mass thereby to separate the fibres of said bale or mass, and means to remove from the vicinity of the bale or mass fibres thus separated therefrom.

3,848,297
MEANS FOR PREVENTING INVERSION OF MOVABLE BOTTOM OF SLIVER COLLECTION CAN

Shozo Ohashi, Itami; Mitsuo Mori, Toyota, and Satoshi Oyobe, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi Prefecture and The Toyo Fibre Co., Ltd., Tokyo, both of, Japan
Filed Oct. 24, 1972, Ser. No. 300,257
Claims priority, application Japan, Oct. 30, 1971, 46-100474
Int. Cl. B65h *54/80*
U.S. Cl. 19—159 R **6 Claims**



1. A sliver collection can, open at the lower end and upper end thereof, for use with a device for accomodating coils of the sliver, said device including an reciprocally movable member which can be extended into said can and retracted therefrom through the lower open end of said can, said sliver collection can comprising: a cylindrical body having open opposite ends, a circular bottom member located within said can and adapted for movement along the inner wall of said can between an uppermost and bottommost position and being moved along said wall by said reciprocally movable member which contacts said bottom member when said reciprocally movable member extends into said can, said bottom member having flange means depending downwardly, and a support member coupled to the lower open end of said can to provide a lower end stop for said bottom member, said support member having a central opening for passage of said movable member therethrough and having a circular flange extending upwardly within said can, said bottom member flange means and said support member flange interacting to limit inclination of said bottom member relative to said can when said can is in a tilted position, said bottom member flange means having a length slightly greater than the distance between the inner wall of said can and the flange extending upwardly within said can from said support member whereby said bottom member is prevented from becoming inverted, without appreciably reducing the volume within said can in which sliver may be collected.

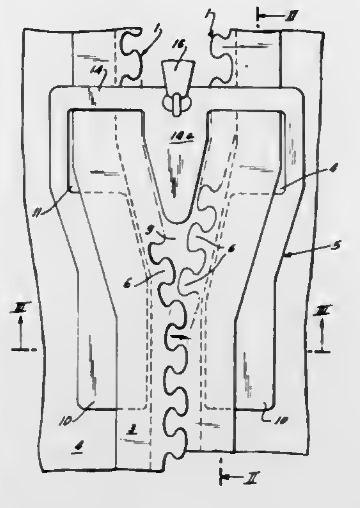
3,848,298
SLIDE FASTENER

Alfons Frohlich, Essen, Germany, assignor to Opti-Holding AG, Glarus, Switzerland
Filed Apr. 5, 1973, Ser. No. 348,110
Claims priority, application Germany, Apr. 5, 1972, 2216282
Int. Cl. A44b *19/14, 19/26*
U.S. Cl. 24—205.1 R **12 Claims**

1. A slide fastener comprising:

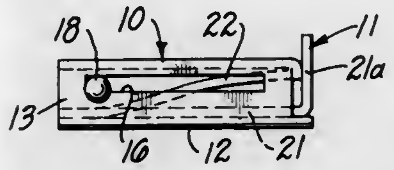
two elastically deformable fastener halves provided with complementary coupling formations; and

a generally plate-shaped slider having two wings separated by an elongate gap accommodating said coupling formations, each of said fastener halves including a pair of rigidly interconnected substantially parallel flanges bracketing a respective one of said wings, the latter being provided with guiding edges adjacent said gap in camming engagement with said coupling formations for interlinking same upon a relative displacement of said slider in a fastener-closing sense in the longitudinal direction of said gap, said slider further including bridge means joining said wings to each other.



3,848,299
JEWELRY CLASP

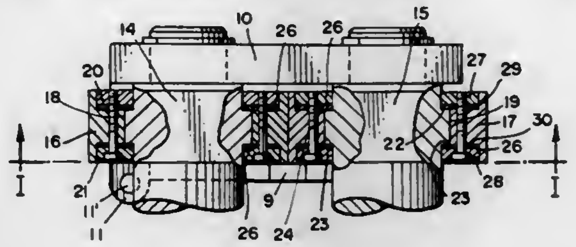
Ernest F. Gray, 3246 San Amadeo, Apt. 0, Laguna Hills, Calif. 92653
Continuation-in-part of Ser. No. 296,069, Oct. 10, 1972, abandoned. This application Dec. 17, 1973, Ser. No. 425,213
Int. Cl. A44b *17/00*
U.S. Cl. 24—230 SC **7 Claims**



1. A clasp comprising a receptor adapted to be connected to one end of an article to be fastened, said receptor having a base a pair of substantially vertical side walls, a pair of aligned elongated horizontally directed slots formed in said side walls substantially parallel throughout to said base, said receptor having a downwardly directed stop member adjacent to its free end, a spring clip adapted to be connected to the other end of said article, said spring clip having a free end longitudinally insertable into the free end of said receptor, said spring clip having at least one integral spring finger extending angularly upwardly therefrom, said spring finger having one end thereof adapted to be depressed by and pass beneath said stop member upon the insertion of said spring clip into said receptor, said end adapted thereafter to be automatically moved upwardly by the resilience of said spring finger into locking engagement behind said stop member, and a release member extending transversely across said receptor and having its opposite ends slidably extending through said horizontal slots, each end of said release member having a protuberance thereon disposed on the outside of said receptor to facilitate manual engagement and simultaneous sliding movement of both ends of said release member with respect to said receptor, said release member being adapted upon movement thereof toward said stop member to engage and move said end of said spring finger downwardly beneath said stop member to permit the withdrawal of said spring clip from said receptor.

3,848,300
NIP ROLL ASSEMBLY FOR STUFFER BOX CRIMPING DEVICE

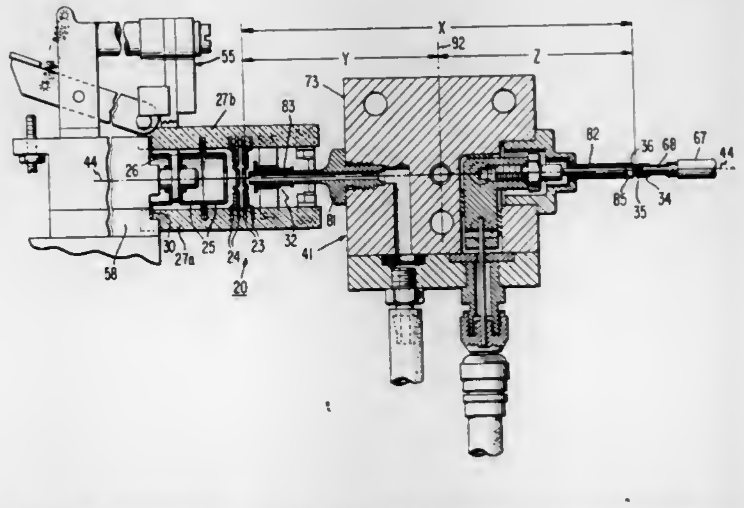
Rudolf Fuchs, Kassel, and Kurt Glieschke, Bonaforth, both of Germany, assignors to Akzona Incorporated, Asheville, N.C.
Filed Jan. 15, 1973, Ser. No. 323,945
Claims priority, application Germany, Feb. 11, 1972, 7205130
Int. Cl. D02g *1/12*
U.S. Cl. 28—1.6 **6 Claims**



1. In a stuffer box device for crimping synthetic filaments including a stuffer box and a pair of cooperating nip roll assemblies which are disposed adjacent one end of said stuffer box and are driven in opposite directions to feed said filaments into said box, each said assembly including a shaft and a nip ring joined to said shaft, the improvement which comprises an assembly in which each nip ring is fitted to a collar of its corresponding shaft with a transition fit, two clamping rings being disposed about the corresponding shaft of each nip ring on the two sides, respectively, of said collar, and means for removably securing said clamping rings to each other so as to press the opposing faces of said clamping rings against axially outwardly facing surface portions of said collar and of the corresponding nip ring, thereby coupling said shaft for torque transmission to said nip ring.

3,848,301
METHOD OF DIRECTLY SPACING A CATHODE-TO-GRID ASSEMBLY FOR A CATHODE-RAY TUBE

Leon Lester Gruber, East Petersburg, Pa., assignor to RCA Corporation, New York, N.Y.
Filed Nov. 6, 1972, Ser. No. 304,012
Int. Cl. B65d *63/08*
U.S. Cl. 29—25.16 **7 Claims**



1. In the manufacture of a cathode-ray tube cathode-grid assembly in which a cathode having an emissive surface is mounted on a cathode support in axial alignment therewith and in which the emissive surface is precisely spaced a distance S from the confronting surface of an apertured grid, the method of assembling said cathode-grid assembly comprising the steps of,

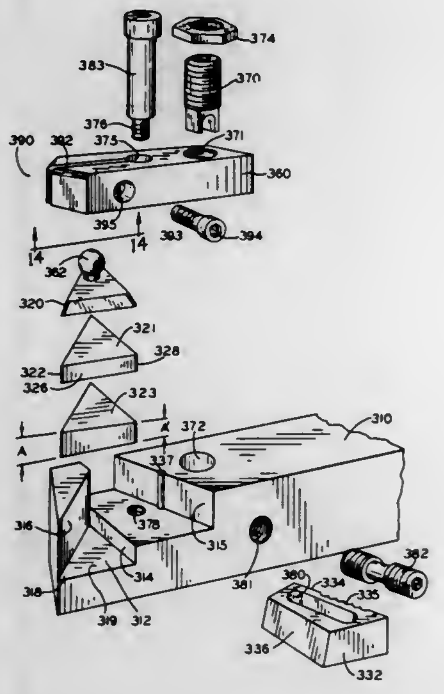
a. fixing said grid and cathode support in final positions relative to each other on a first carriage assembly, said first carriage assembly including a slidable platform,
b. mounting said cathode on a second carriage assembly,

c. adjusting at least one of said first and second carriage assemblies to locate said cathode and said grid a predetermined distance apart,
d. moving said slidable platform said predetermined distance minus the spacing distance S to locate said cathode within said cathode support, and
e. fixing said cathode within said cathode support.

2. In the manufacture of a cathode-ray tube cathode-grid assembly in which a cathode having an emissive surface is mounted on a cathode support in axial alignment therewith and in which the emissive surface is precisely spaced a distance S from the confronting surface of an apertured grid, the method of assembling said cathode-grid assembly comprising the steps of,
a. fixing said grid and cathode support in final positions relative to each other,
b. moving said grid relative to a reference point while sensing the distance therebetween until a predetermined spacing between said point and said grid is obtained,
c. moving said cathode relative to said reference point while sensing the distance therebetween until a predetermined spacing between said point and said cathode is obtained, whereby a predetermined measured distance between said cathode and said grid is obtained, and
d. moving said grid relative to said cathode an amount equal to the difference between said predetermined measured spacing and said spacing distance S, thereby spacing said cathode emissive surface said distance S from said grid.

3,848,302
MOUNTING FOR TOOL BITS

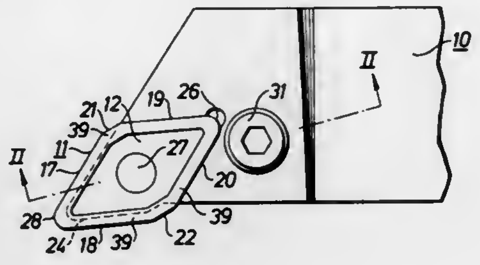
Arthur Franklin Hudson, Box 1025, Huntington, Ind. 46750
Continuation of Ser. No. 173,528, Aug. 20, 1971, abandoned. This application July 31, 1972, Ser. No. 261,633
Int. Cl. B26d *1/12*
U.S. Cl. 29—96 **1 Claim**



1. A tool holder for tool bits having cutting surfaces comprising: a tool cutting end having a bit-receiving area formed therein; a tool bit mounted in said receiving area; movable wedge means disposed within said area and movable therein to define the operative position of said tool bit and including a locking means and a plurality of spaced locking means adapted for interlocking with a projecting portion within said area to define its position, and clamping means for holding said wedge and tool bit in their respective positions; and wherein said clamping means includes a chip breaking clamping pad having a swivable connection with said clamping means to communicate hold down force on said tool bit at its position within said seat; and including means for gripping said swivable connection to prevent angular movement of said chip breaker clamping pad from its adjusted position.

3,848,303
CUTTING INSERT AND CUTTING TOOL ASSEMBLY

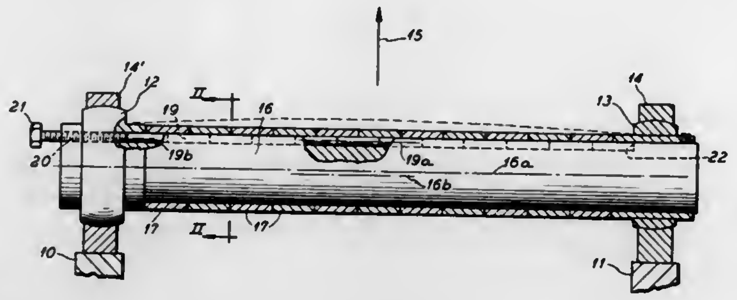
Kurt Heinrich Albert Erich Faber, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden
Division of Ser. No. 257,530, May 30, 1972, Pat. No. 3,777,341. This application July 16, 1973, Ser. No. 379,205
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 **4 Claims**



1. A tool holder and cutting insert combination for copy turning consisting of a tool holder (**10**) and a basically rhombic insert (**11**), said insert having edge portions (**21, 22**) which separate pairs of edges (**17** and **18** from **19** and **20**) extending towards the cutting tips and which extend symmetrically relative to the longest diagonal and substantially parallel thereto, at least one of a pair of edges extending to one cutting tip being formed as a main cutting edge and the insert having substantially flat side surfaces (**12, 13**) being located at a right angle of the intersection of the edge surfaces (**14, 15, 16**), means being uisposed in said yolder t6 securely clamp the insert against a bottom supporting surface of basically rhombic configuration and complementary side supports in a recess in said holder, characterized in that the recess is formed in such a manner that, with the insert clamped in position in the holder **10**, the edge forming the main cutting edge (**18**) as well as the edge forming the out-facing cutting edge (**22**) located adjacent thereto are laid bare in their entirety with respect to said holder **10** for enabling those two cutting edges (**18, 22**) to be brought into cutting engagement with a workpiece.

3,848,304
VARIABLE CURVATURE BEAM

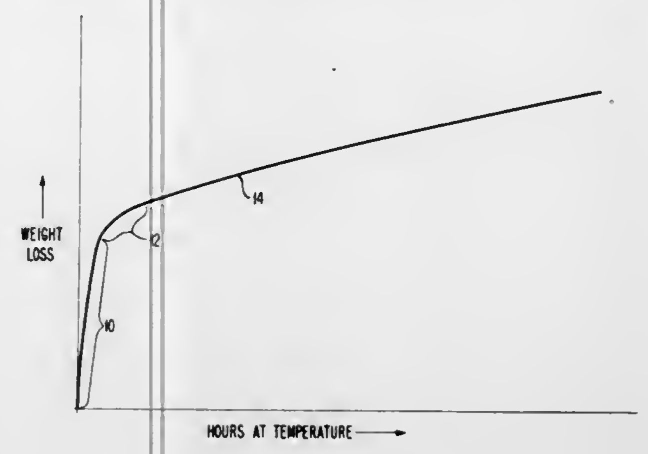
Robert F. Lucas, Janesville, Wis., assignor to Beloit Corporation, Beloit, Wis.
Filed Feb. 7, 1973, Ser. No. 330,212
Int. Cl. B21b *13/02*
U.S. Cl. 29—116 AD **7 Claims**



1. An adjustable curvature roll structure comprising in combination:
a roll body having sufficient flexibility over its length to be bowed about its axis;
a resiliently flexible structural axle upon which said body is rotatably mounted with said axle adapted to be supportably mounted at its end; and
a compression means extending axially along the axle offset from the axis thereof connected to the axle at each end, said compression means having sufficient flexibility so that it provides no increase in section modulus to the axle and being in the form of a plurality of short separated units in axial compression contact with each other.

3,848,305
ROLL FOR CONTACT FUSING THERMOPLASTIC PARTICLES TO SUBSTRATES

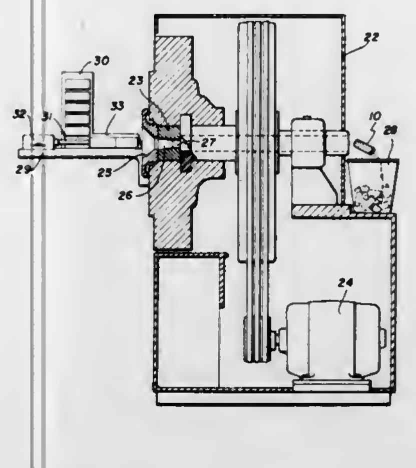
Paul D. Jachimiak, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 26, 1972, Ser. No. 317,975
Int. Cl. B21b *31/08*
U.S. Cl. 29—132 **3 Claims**



1. A roll for fusing thermoplastic granular material to a substrate, said roll having a cylindrical core, and a coating on said core of a silicone elastomeric material, the improvement comprising:
said coating having the volatile components thereof, reduced to a level at which the coating has, under in service conditions, a substantially constant rate of weight loss.

3,848,306
PROCESS FOR PRODUCING A BEARING

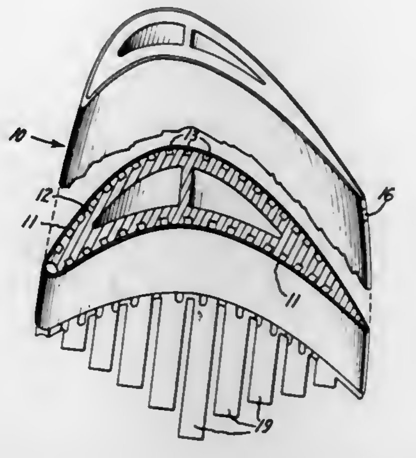
John W. Morse, Shrewsbury, Mass., assignor to Engineering Plastic, Inc., Westboro, Mass.
Division of Ser. No. 316,221, Dec. 18, 1972, abandoned, which is a continuation of Ser. No. 138,937, April 30, 1971, abandoned. This application Oct. 9, 1973, Ser. No. 404,698
Int. Cl. B23p *11/00*
U.S. Cl. 29—149.5 NM **3 Claims**



1. A process for producing a bearing, comprising the steps of:
a. preparing a flat layer of plastic and a flat sheet of perforated metal,
b. bonding the two layers together in flat condition,
c. performing a preliminary bending of the bonded layers into a rough tube,
d. swaging the tube into a perfect cylindrical condition, and
e. finishing the bearing.

3,848,307
MANUFACTURE OF FLUID-COOLED GAS TURBINE AIRFOILS

Paul H. Kydd, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Continuation-in-part of Ser. No. 240,616, April 3, 1972, abandoned. This application Sept. 24, 1973, Ser. No. 400,137
Int. Cl. B21k *3/04;* **B23p** *15/04*
U.S. Cl. 29—156.8 B **6 Claims**



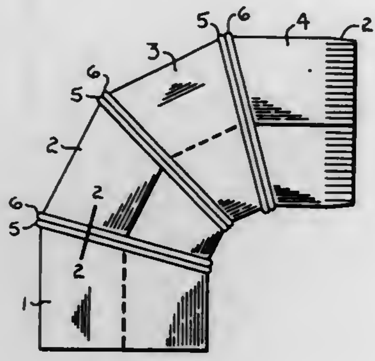
1. In the method for applying a continuous skin over a turbine bucket core having a plurality of grooves recessed in the surface thereof and separated by ridges of the core material, in which method the grooves are filled with a first material, said bucket core surface is covered with at least one rigid layer of another material to form the bucket skin and said first material is then removed completing conversion of each groove to an empty enclosed passage for receiving, transporting and discharging coolant, the improvement comprising the steps of,
a. selecting one material for the bucket skin, said material being capable of deposition over the bucket core as a porous layer having structural integrity,
b. selecting a second material for temporarily occupying the grooves of said bucket core, said second material having a melting temperature lower than the melting temperature of said one material, said one material and the bucket core material being wet by, but not actively alloying with said second material when molten and said second material being capable of bonding said one material to itself and to said bucket core,
c. disposing said second material in each of said grooves to a level approximately flush with the outer surface of said bucket core,
d. depositing a porous coating of said one material over said bucket core and over the deposits of said second material and
e. heating the composite so formed to a temperature above the melting point of said second material and below the melting temperature of said one material until said second material melts and is drawn from said grooves into the porous coating by capillary action to empty each of said grooves, to bond said one material together and also to bond said one material to the surfaces of said bucket core in contact therewith.

3,848,308
STOVE PIPE ELBOW

Paul W. Kaval, 5812 Monroe Rd., Conneaut, Ohio 44030
Filed June 11, 1973, Ser. No. 369,093
Int. Cl. B21d *53/00*
U.S. Cl. 29—157 A **2 Claims**

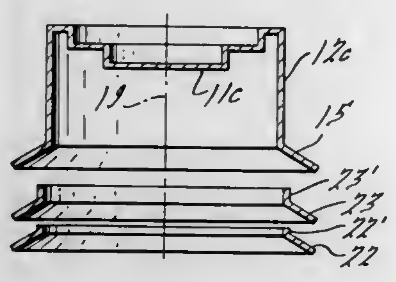
1. The method of making a swivel type stove elbow comprises the steps of forming a generally rectangular piece of sheet metal with opposite end edges having notches opposite each other, rolling the rectangular piece to a tubular shape with said end edges extending axially and with one end edge overlapping the other end edge, said notches registering and

the bottoms of the notches in each end edge being overlapped by a portion of the sheet of the other edge, and forming the material outside the notches in rigid lock seams of the type which prevents displacement or unlocking of said end edges, the end edges in the space between said adjacent lock seams having only two thicknesses of metal in overlapping relation and the adjacent lock seams being axially spaced from each other a distance sufficient to provide material on opposite sides of a cut between the lock seams in a plane oblique to the axis of the tube for forming interlocking slip joint means between the sections formed by the cut, cutting the tubular shape in planes oblique to the axis of the tube and between adjacent lock seams, forming the material on one side of each cut into a first external annular hollow bead terminating in an inwardly extending flange, forming the material on the other side of each cut into a second external annular hollow bead joined to an internal annular hollow bead terminating in an outwardly extending flange, and assembling the sections on opposite sides of each cut with said inwardly extending flange in said internal bead and said outwardly extending flange in said first bead.



3,848,309
PULLEY METHOD OF MANUFACTURE

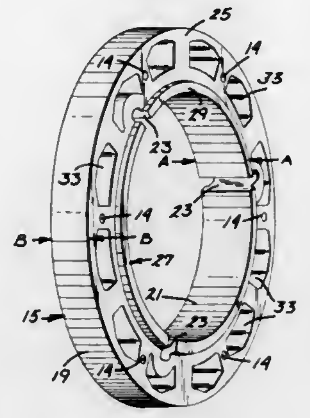
Christopher Nuss, Warren, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Nov. 12, 1973, Ser. No. 415,043
Int. Cl. B21d *53/26;* **B21k** *1/28, 1/42*
U.S. Cl. 29—159 R **13 Claims**



1. In the method of manufacturing a wheel having a hub and a radially outwardly opening annular channel, the steps of forming a bowl having a base to provide said hub and having an integral annular side flange terminating outwardly from said base in a first radially outwardly extending annular edge flange to provide one side of said outwardly opening channel, reforming said bowl to remove said first annular edge flange therefrom and to form a second radially outwardly extending annular edge flange integral with the reformed bowl at the outer periphery of said annular side flange to provide the other side of said outwardly opening channel, and securing said first annular edge flange to said reformed bowl in axially reversed relationship with respect to said second annular edge flange to provide said annular channel.

3,848,310
METHOD OF FORMING A TAPE REEL HUB BY EXTRUSION

Clarence I. Steinback, Edina, Minn., assignor to Acrometal Products, Inc., Minneapolis, Minn.
Filed Sept. 22, 1972, Ser. No. 291,331
Int. Cl. B21k *1/40*
U.S. Cl. 29—159.3 **9 Claims**

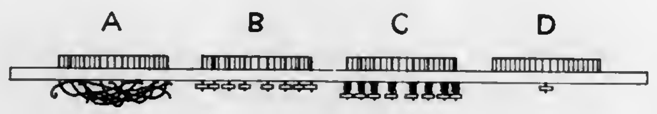


1. A method of forming a tape reel hub comprising the steps of:

a. heating a billet of metal to a temperature below the melting temperature of said metal;
b. extruding said billet through an extrusion die constructed for forming a longitudinally extending tubular shaped object having a longitudinal axis;
c. severing said extruded tube perpendicularly to said longitudinal axis to define tape hubs having desired widths; and
d. machining an outside surface of said tape hub to form a smooth tape engaging face.

3,848,311
METHOD AND MEANS FOR MOUNTING COINS AND THE LIKE

Leonard Anthony Fariello, Box 173, Troy Meadows Rd., Whippany, N.J. 07981
Filed Dec. 1, 1972, Ser. No. 311,385
Int. Cl. B21f *43/00;* **B23p** *13/00*
U.S. Cl. 29—160.6 **8 Claims**

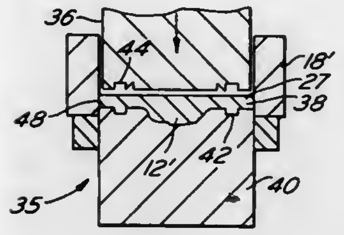


1. A method for mounting an object, such as a coin or the like, comprising the steps of:

engaging the perimeter of an object, such as a coin or the like, with a frame means which bares opposite sides, that is both obverse and reverse sides, of the object; and
forming said frame means with a plurality of fastening elements extending from the perimeter of said frame means; wherein
said engaging step comprises clasping an object substantially about the full perimeter thereof; and
said forming step comprises forming a plurality of filamentary fastening elements.

3,848,312
METHOD OF PRODUCING A METAL OBJECT WITH HIGH RELIEF AND HAVING A PROOF FINISH FROM POWDERED METAL

Kathleen E. Kirkham, Staten Island, N.Y., assignor to Franklin Mint Corporation, Franklin Center, Pa.
Filed Sept. 18, 1973, Ser. No. 398,361
Int. Cl. B22f *3/24*
U.S. Cl. 29—160.6 **12 Claims**

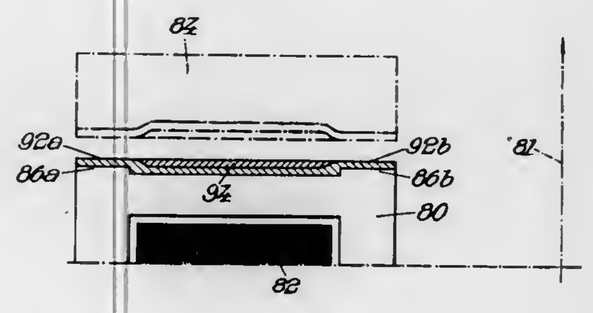


1. A method for producing a proof finish on a metal object having at least one portion of its surface area raised more than 0.100 inches in relief, comprising the steps of:

a. providing a die and die cavity, said die comprising a die recess which is engraved with the negative of the relief to be formed and which is greater than 0.100 inches in depth within said die, said die cavity disposed immediately above said die recess;
b. filling said die recess with a metal powder;
c. introducing said metal powder into said die cavity;
d. compacting said metal powder inside said die cavity and said die recess to form a relief compact;
e. sintering said relief compact at a temperature and for a time sufficient to produce a durable sintered compact, but insufficient to produce any significant dimensional change in said relief compact;
f. inserting said sintered compact in a coining press, said coining press comprising a coining die recess identical in shape and dimension to said die recess of step; (a);
g. striking said sintered relief compact to form a final relief object having a proof finish; and
h. ejecting said final relief object.

3,848,313
FRICTION ARMATURE WITH FRICTION AND MAGNETIC LININGS

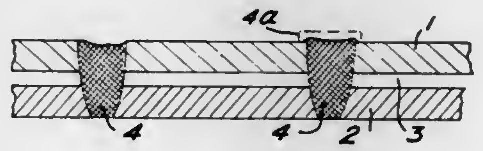
Jean-Francis Guyonnet, Paris, France, assignor to Centre National De La Recherche Scientifique, Paris, France
Continuation-in-part of Ser. No. 766,153, Oct. 9, 1968, abandoned. This application May 18, 1971, Ser. No. 144,492
Claims priority, application France, Oct. 11, 1967, 67.124111; Sept. 27, 1968, 68.168044; Dec. 11, 1970, 70.44678
Int. Cl. B32b *15/00*
U.S. Cl. 29—191.2 **5 Claims**



1. Friction armature comprising an annular support and a lining formed on its surface, the latter including at least one annular projection and the lining including a first layer made of a magnetic material covering the whole annular surface including the annular projection and being exposed on the lining surface above said projecting annular portion, and a second layer of a friction material exposed at the surface of said lining above the remaining portions of said support surface flush with the exposed portion of the first layer, the crystals of the material of the second layer belonging to the crystalline hexagonal system with a major proportion of their base planes **0001** substantially oriented in directions parallel to the lining surface.

3,848,314
ASSEMBLY OF SUBSTANTIALLY PARALLEL METALLIC SURFACES

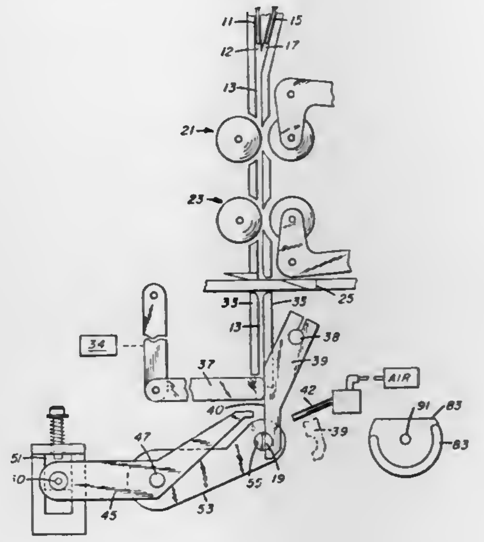
Jacques Andre Stohr, Nice, France, assignor to Commissariat A L'Energie Atomique, Paris, France
Filed Oct. 24, 1972, Ser. No. 300,242
Claims priority, application France, Nov. 4, 1971, 71.39512
Int. Cl. B23k *15/00*
U.S. Cl. 29—191 **4 Claims**



1. A heat-insulating structure comprising a stack of spaced substantially parallel plates having a small relative spacing, connecting bridges formed by electron beam welding of said plates joining said plates in pairs, said bridges defining closed compartments under vacuum between said plates, the vacuum required for the welding operations being maintained within said compartments at least one spacing system mounted between each pair of said plates, said spacing system being a wire mesh trellis, said trellis being attached to said plates at the intersection of said wires.

3,848,315
SCROLL WINDING AND LOADING APPARATUS

John N. Gade, Rush, and James D. MacKay, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Division of Ser. No. 234,750, March 15, 1972, Pat. No. 3,787,954. This application Sept. 10, 1973, Ser. No. 395,470
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 B **10 Claims**

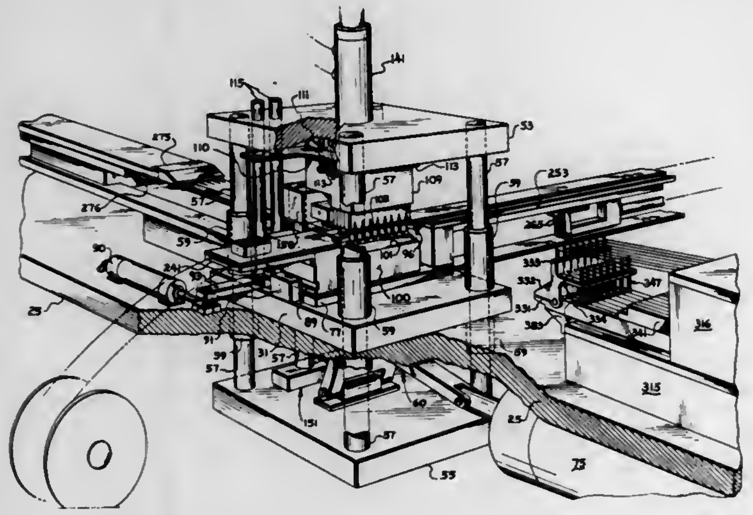


1. Apparatus for use in loading a web into a receptacle, said receptacle having a supply compartment, a takeup compartment, and a takeup core rotatably housed within said takeup compartment, said apparatus comprising:

mandrel means for forming said web into a wound scroll having a free web end;
means for transferring said scroll from said mandrel means to said supply compartment;
means for positioning said free web end with respect to said core;
cup means for entering said takeup compartment to support said takeup core therewithin; and
means for attaching said free web end to said takeup core while said takeup core is supported by said cup means.

3,848,316
LEAD WIRE ASSEMBLY APPARATUS

Fransiscus Cornelius Bakermans, Shiremanstown, and William Charles Thoms, East Berlin, both of Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Sept. 26, 1973, Ser. No. 400,909
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 DTS **10 Claims**

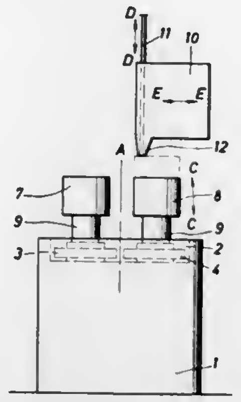


1. An apparatus for assembling groups of lead wires attached to terminals on a carrier strip, comprising,
a tooling station having a carrier strip feed path,
means for positioning a carrier strip on said feed path in said tooling station,
means for feeding a plurality of continuous wires substantially perpendicular to the direction of said carrier strip feed path in said tooling station,
means for pulling each of said continuous wires a predetermined distance through said tooling station,
means for severing a plurality of lead wires from said continuous wires pulled through said tooling station, and
means for attaching the severed ends of the lead wires to terminals on said carrier strip in said tooling station.

3,848,317
MACHINE FOR THE AUTOMATIC INSERTION OF SLOT INSULATIONS OR ARMATURES OF ELECTRICAL MACHINES

Otto Rist, Schwanenstrasse 34, 798 Ravensburg, Germany
Filed Oct. 4, 1973, Ser. No. 403,626
Claims priority, application Germany, Oct. 19, 1972, 2251218
Int. Cl. H02k *15/10*
U.S. Cl. 29—205 E **4 Claims**

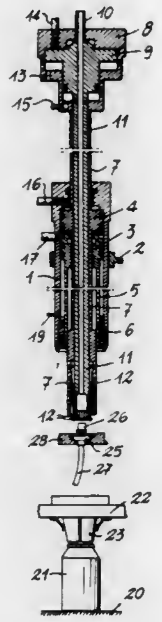
1. A machine for the automatic insertion of prefabricated slot insulations or cover caps or armature insulations into stators or armatures or electrical machines comprising
at least two receivers holding a workpiece to be equipped, said receivers being rotatable in stepwise fashion as part of an index plate, and arranged diametrically on a movable circular indexing table and at the same radial distance from its axis of rotation,
one of said receivers with said workpiece being disposed directly below said insertion tool, and
said insulating strips, to be inserted, being insertable as



individual pieces in synchronism with said index place by said tool.

3,848,318
DEVICE FOR PLACING AND SEAM FOLDING THE BOTTOMS OF SUPPLY VALVES ON AEROSOL CONTAINERS

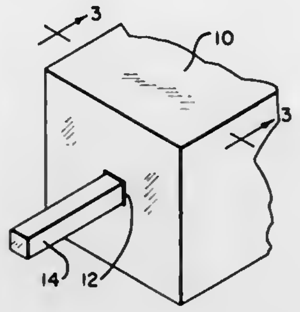
Giancarlo Giuffredi, Milan, Italy, assignor to Costa Tecnologie Speciali S.p.A., Milan, Italy
Filed Aug. 9, 1973, Ser. No. 386,994
Claims priority, application Italy, Sept. 30, 1972, 29915/72
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 B **5 Claims**



1. An apparatus for placing and seam folding the bottoms of dispensing valves on aerosol containers, and valves having tube lengths applied thereto, comprising a container bearing platform and a device overlying said platform and movable relative thereto, the device comprising a cylinder accomodating a hollow tubular body, the cross-section are, of which is larger than that of the valve bottoms, and an elongated hollow body movable within said tubular body, the end of the elongated hollow body facing said platform being shaped to form a housing seat for said bottoms and associated valves, means for providing air suction in said seat retaining a valve housed therein, and movable means operatively connected to said tubular body and said elongated body, respectively, to move the same relative to said platform and said cylinder, the apparatus being characterized by comprising seam folding pliers housed in said seat in the hollow body, a shaped portion of the pliers projecting therefrom, a rigid tube movable within the elongated hollow body and having one end thereof extending adjacent said pliers, and movable means operatively connected to the rigid tube to move the same relative to the elongated hollow body and outwardly spread said seam folding pliers.

3,848,319
PROCEDURE FOR FABRICATING ULTRA-SMALL GOLD WIRE

Paul E. Hendrickson, Wayne, Pa., assignor to Albert A. Ciardi, Jr., Philadelphia, Pa., a part interest
Filed Mar. 8, 1973, Ser. No. 339,306
Int. Cl. B23p *17/00*
U.S. Cl. 29—423 **7 Claims**

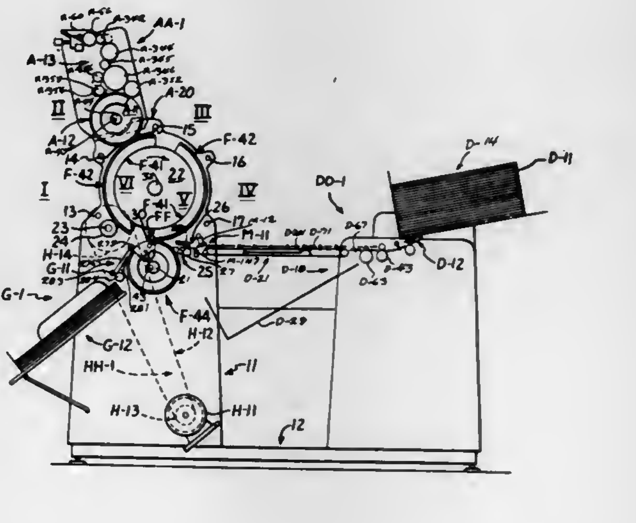


1. The method of fabricating ultra-small precious metal or metal alloy wire comprising the steps of
A. forming a copper sleeve having a first cross-sectional size and annealing the sleeve,
  1. said copper sleeve being formed with an axially aligned opening having a second cross-sectional size;
B. forming a core of precious metal or metal alloy having a third cross sectional size and annealing the core, said annealing being carried out separately from annealing the sleeve,
  1. the ratio of the first cross-sectional size to the third cross-sectional size being at least five to one,
  2. the second cross sectional size being formed slightly larger than the third cross-sectional size;
C. inserting the previously annealed core into the opening and then reducing the second cross-sectional size to equal the third cross-sectional size to mechanically bond the core to the sleeve;
D. reducing the cross-sectional size of the sleeve and the cross sectional size of the core in the same ratio as the initial sizes by successive size reductions until the core is reduced to the ultra-small wire size range, and
E. removing the sleeve chemically from the core to produce an ultra-small precious metal wire.

3,848,320
PRINTING PRESS METHOD OF ASSEMBLY

William Ward Davidson, Jr., Port Washington, Long Island, N.Y., assignor to Van Vlaanderen Machine Company, Paterson, N.J.
Continuation-in-part of Ser. No. 73,161, Sept. 17, 1970, abandoned, which is a continuation-in-part of Ser. No. 658,385, Aug. 4, 1967, abandoned. This application Mar. 16, 1972, Ser. No. 235,221
Int. Cl. B41f *7/08, 31/30*
U.S. Cl. 29—428 **37 Claims**

1. The method of manufacturing and producing a variety of different, structurally related, printing presses with diverse printing function capabilities including the steps of:
1. constructing a plurality of like printing cylinder support frame structures with each such frame structure constructed for supporting upper and lower printing cylinders therein and with each such frame structure being formed and constructed to provide a plurality of like module mounting stations for the mounting of self-contained plate cylinder modules of self-contained inking modules about the upper portion of an upper printing cylinder mounted in said support frame structure;
2. constructing a plurality of pairs of upper and lower printing cylinders with all of the lower printing cylinders having the same effective printing diameter and with the upper printing cylinder in each pair having an effective printing diameter which is a whole integer multiple, greater than one, of the effective printing diameter of the lower printing cylinder;
3. constructing a plurality of like self-contained plate cylinder modules with each such plate cylinder module comprising a frame structure in which is mounted a plate cylinder having an effective printing diameter equal to the effective printing diameter of the lower printing cylinders, and in which is also mounted means for inking a plate mounted on the surface of said plate cylinder, the said plate cylinder module frame structures each including mounting means which adapt them to be mounted at any of the module mounting stations of a printing cylinder support frame structure;
4. constructing a plurality of self-contained inking modules with each inking module comprising a frame structure in which is mounted an inking mechanism for inking a plate mounted on the surface of an upper printing cylinder, the said inking module frame structures each including mounting means which adapt them to be mounted at any of the module mounting stations of a printing cylinder support frame structure;
5. assembling a pair of said upper and lower printing cylinders into each of said support frame structures in rotational, tangential relationship to each other to define a printing bite therebetween; and
6. selectively assembling plate cylinder modules and inking modules in the mounting stations of said support frame structures with some presses having a plate cylinder module in one mounting station and other presses having an inking module in the same mounting station as the plate cylinder module of said first mentioned presses.

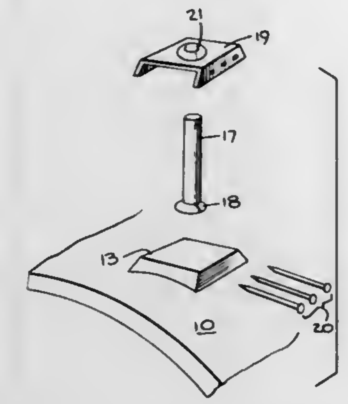


3,848,321
METHOD OF FABRICATING A CONSTRICTABLE TUBE VALVE ELEMENT

Irving D. Press, West Orange, N.J., assignor to Resistoflex Corporation, Roseland, N.J.
Division of Ser. No. 162,407, July 14, 1971, Pat. No. 3,791,617. This application July 16, 1973, Ser. No. 379,248
Int. Cl. B23p *11/00*
U.S. Cl. 29—432.2 **4 Claims**

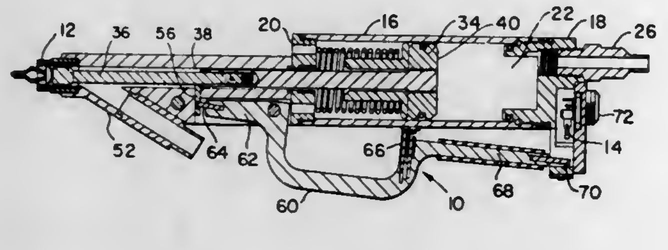
1. The method of fabricating a flexible plastic tube for a constrictable tube valve with the tube having two bosses spaced apart along a longitudinal element on one side of the tube and two further bosses similarly spaced along a longitudinal element on the diametrically opposite side of the tube such that pairs of said bosses are in substantially diametral opposition, and with individual connecting elements secured to a corresponding one of said bosses, said method comprising the steps of extruding a tube of flexible plastic having a generally uniform wall thickness except for two ribs of greater radial dimension extending longitudinally of the tube on the radially

outer surface thereof, said ribs being located along diametrically opposite elements of the tube, removing longitudinal sections of said ribs to leave said bosses, and thereupon affixing said connecting elements to said bosses.



3,848,322
METHOD OF ATTACHING A FASTENER TO A SUPPORT WITH AN AIR OPERATED GUN

Donald E. Kuehn, Bay Village, and J. Keith Lyon, Lorain, both of Ohio, assignors to TRW, Inc., Cleveland, Ohio
Division of Ser. No. 154,936, June 21, 1971, Pat. No. 3,776,444. This application July 23, 1973, Ser. No. 381,411
Int. Cl. B23p *11/02*
U.S. Cl. 29—453 **8 Claims**

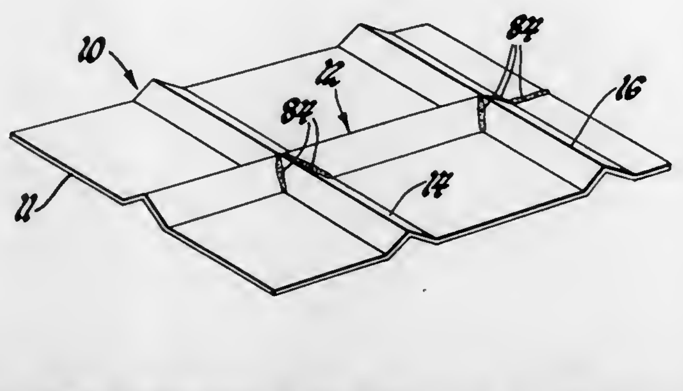


1. The method of attaching a fastener to a support with a tool having a housing forming an inner passage with a chuck at an end thereof and a fastener opening spaced rearwardly of the chuck, said method comprising positioning a plunger in a first position in said passage to the rear of said fastener opening, feeding a fastener through the opening and into said chuck, moving said plunger forwardly by applying a fluid force against a piston connected with said plunger and stopping said plunger in a second position with the forward end adjacent the fastener in the chuck by means of a stop extending into said passage, continuing an application of the fluid force on the piston, and retracting the stop from said passage to enable the piston to move the plunger forwardly to a third position substantially through said chuck to push the fastener out of the chuck and into engagement with the support.

3,848,323
METHOD OF FORMING STIFFENER RIBS IN A SHEET METAL PANEL

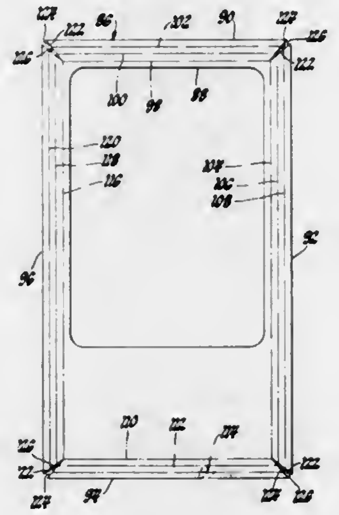
Julius M. Perger, Cleveland, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 4, 1973, Ser. No. 394,151
Int. Cl. B23k *31/02*
U.S. Cl. 29—475 **4 Claims**

1. A method of forming intersecting stiffener ribs in a flat sheet of deformable metal having outer edges comprising the steps of placing a plurality of interconnected slit means in the interior of said sheet with each slit means including a pair of diverging side edges, forming an elongated depression in said sheet along a first axis intersecting one of said side edges at an angle relative thereto whereby said one of said side edges is displaced out of the plane of said sheet while maintaining the outer edges in the plane of the sheet so as to cause the other of said side edges to move in the direction towards the said one of said side edges, forming an elongated depression in said sheet along a second axis intersecting the other side edge at an angle relative thereto whereby said other side edge is displaced out of the plane of said sheet while maintaining the outer edges in the plane of the sheet so as to cause said one of said side edges to move in a direction towards said other side edge and meet the latter at substantially the same elevation relative to the plane of said flat sheet, and joining said side edges together so as to cause said depressions along said first and second axes to be interconnected and serve as stiffener ribs for said sheet.



3,848,324
METHOD OF FORMING A SHEET METAL DOOR

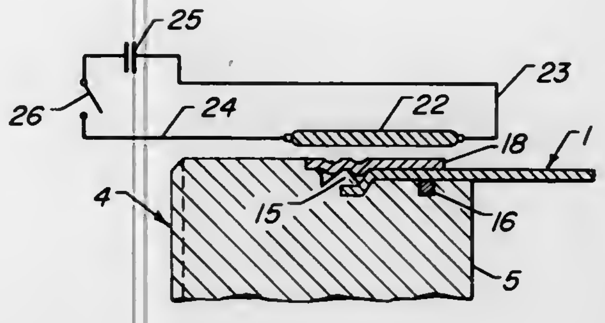
Julius M. Perger, Cleveland, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 4, 1973, Ser. No. 394,160
Int. Cl. B23k *31/02*
U.S. Cl. 29—475 **4 Claims**



1. A method of fabricating a closure member comprising the steps of, providing a flat sheet metal panel having a plurality of interconnected outer edges forming a plurality of corners, cutting slit means in each corner of said sheet metal panel so as to form a pair of spaced side edges lying on opposite sides of a line that intersects the corner, forming an elongated depression in said panel adjacent to and spaced from each outer edge and along an axis that intersects the side edges of a pair of slit means intermediate the ends thereof so as to cause the side edges of each slit means to move out of the plane of the panel towards each other and meet at a juncture while maintaining the outer edges in the plane of the panel, and permanently connecting the side edges of each slit means together so that each depression serves as a stiffener means for rigidifying said panel.

3,848,325
METHOD FOR ASSEMBLING BODY AND END SECTIONS FOR FLUID POWER CYLINDER

Charles W. Bimba, 101 Main St., Monee, Ill. 40449
Continuation-in-part of Ser. No. 249,346, May 1, 1972, Pat. No. 3,811,367. This application Aug. 30, 1973, Ser. No. 393,006
Int. Cl. B23p *17/00*
U.S. Cl. 29—511 **6 Claims**



1. In a fluid power cylinder having a tubular body section, metallic end caps, an internal piston member and piston rod means extending through at least one of the end caps, the improved method of providing a non-loosening connection between an end cap and the tubular body section, which comprises the steps of:

a. providing an extended width peripheral portion for the end cap sized to fit into an end of the tubular body section,

b. forming a continuous peripheral shoulder around said end cap which is of larger diameter than said extended width portion adapted to engage said body section and which will form an abutting stop for the latter when they are assembled,

c. further forming a peripheral groove in said cap adjacent said shoulder, with said groove bottom being of lesser diameter than said extended width portion of the cap and said groove further having a sloping wall portion angled upwardly toward such extended width portion,

d. effecting a coupling between the end cap and said tubular body section to a point where the end of the latter abuts said shoulder of said cap and then permanently deforming the end of the tubular body section down into a said groove until such body section conforms to the bottom and sloping wall portion of said groove,

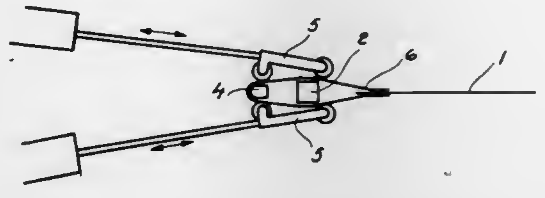
e. subsequently rolling and displacing a portion of the shoulder of said cap continuously down over the deformed end portion of the tubular body section in said groove, whereby there is an initial tight peripheral clamping of the end cap to the body section, and

f. effecting the pressing of an encircling metal band over the rolled portion of the shoulder and the deformed end portion of the tubular body section which is in said groove, whereby to effect a circumferential locking of cap and body sections together in a high pressure resisting engagement.

3,848,326
METHOD AND APPARATUS FOR FORMING A SUPPORT LUG OF A CATHODE STARTING SHEET ASSEMBLY

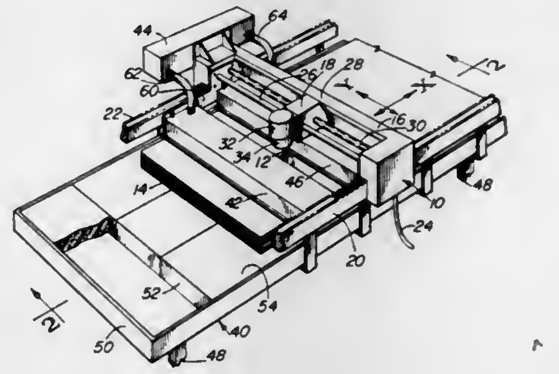
Jorma J. Lehtovaara, Merstham, England, assignor to Lonnstrom Oy, Rauma, Finland
Filed Aug. 21, 1973, Ser. No. 389,654
Claims priority, application Sweden, Aug. 22, 1972, 10905/72
Int. Cl. H01r *43/04;* **B23p** *19/02*
U.S. Cl. 29—525 **6 Claims**

1. Method for forming a support lug of a cathode starting sheet assembly comprising a starting sheet, a support rod and at least one support lug extending around said support rod and secured to opposite sides of said starting sheet, comprising feeding a starting sheet blank and a support rod at a mutual distance being less than their mutual distance in the final starting sheet assembly to a support lug blank feeding station, inserting an auxiliary rod between said feeding station and said support rod at the side thereof being opposite to said starting sheet blank, said auxiliary rod having a cross-sectional dimension being smaller than the corresponding dimension of said support rod, feeding at least one support lug blank against said auxiliary rod, bending said support lug blank around said auxiliary rod to form a support lug, and removing said auxiliary rod.



3,848,327
APPARATUS FOR WORKING ON SHEET MATERIAL

Heinz Joseph Gerber, and David Raymond Pearl, both of West Hartford, Conn., assignors to Gerber Garment Technology, Inc., East Hartford, Conn.
Continuation-in-part of Ser. No. 96,384, Dec. 9, 1970, Pat. No. 3,750,507. This application June 21, 1973, Ser. No. 372,429
Int. Cl. D06h *7/00*
U.S. Cl. 29—559 **10 Claims**

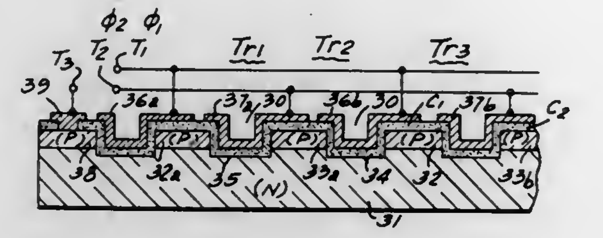


1. Apparatus for holding sheet material comprising: a support table having a bed defining a supporting surface on which the sheet material can be spread; vacuum means for producing sub-atmospheric pressure in at least one region of the supporting surface; and pressurizing means cooperating with the vacuum means and positioned above the supporting surface of the table for producing a region of increased pressure above atmospheric pressure over sheet material on the supporting surface, the pressurizing means including a fluid compartment positioned over the region of sub-atmospheric pressure at the supporting surface and defining a chamber receiving pressurized fluid and having at least one opening confronting the supporting surface of the table and overlying said one region in which the subatmospheric pressure is produced whereby the sheet material between the region of sub-atmospheric pressure and the fluid compartment is forced tightly against the supporting surface.

3,848,328
CHARGE TRANSFER DEVICE

Tetsuo Ando, Ebina-machi, and Yoshimi Hirata, Hatano, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Dec. 5, 1972, Ser. No. 312,332
Claims priority, application Japan, Dec. 11, 1971, 46-100410
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 29—578 **2 Claims**

1. The method of forming a charge transfer device which includes: taking an N-type silicon substrate; covering said substrate with a silicon nitride layer; selectively etching away portions of said silicon nitride layer and said substrate to form a plurality of windows having bottoms below the silicon nitride layer, forming a first layer of thick silicon dioxide by thermal oxidation in said windows, removing the silicon nitride layer; selectively forming a P-type layer by diffusion technique to form a plurality of island areas unidirectionally arrayed, the depth of the P-type layer being shallower than the bottom of the silicon dioxide layer; removing said first silicon dioxide layer; forming a second oxide layer covering the N-type surface of said substrate and the P-type island areas; and depositing a plurality of metal layers to form gate electrodes and each gate electrode covering a portion of the N-type substrate and overlying a substantial portion of an adjacent P-type layer.



3,848,329
METHOD FOR PRODUCING A SEMICONDUCTOR STRAIN SENSITIVE ELEMENT OF AN ELECTROMECHANICAL SEMICONDUCTOR TRANSDUCER

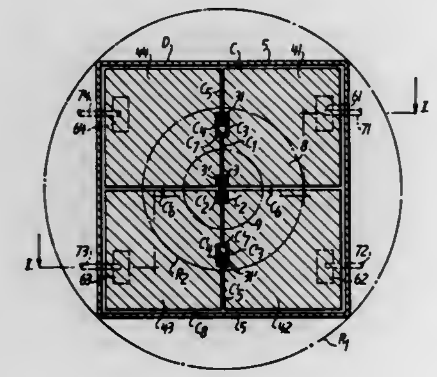
Isemi Igarashi; Hiroshi Nakamura, and Susumu Sugiyama, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Filed Oct. 11, 1973, Ser. No. 405,534

Claims priority, application Japan, Oct. 11, 1972, 47-102238

Int. Cl. B01j *17/00*

U.S. Cl. 29—580 **28 Claims**



1. A method for producing a semiconductor strain sensitive element for electromechanical semiconductor transducers, said element having a base plate, at least two strain sensitive parts, lead mounting electrodes formed integrally on one face of said base plate, and a plurality of signal transmitting parts for transmitting electrical signals generated by said strain sensitive parts to said lead mounting electrodes, said method comprising the steps of:

forming a layer of a semiconductor crystal integrally with one face of said base plate having electrical insulating characteristics therebetween, said base plate comprising a semiconductor crystal;

forming at least two pairs of first narrow grooves in parallel to one another having a distance therebetween which is short when compared with the length thereof by removing said layer at first predetermined portions within a strain sensitive region, whereby at least two of said strain sensitive parts are formed;

forming a plurality of second narrow grooves comprising a perimeter groove formed at the perimeter part of said element and other grooves connected to said first narrow grooves and said perimeter groove to block a predetermined area by removing said layer at second predetermined portions, whereby a plurality of said signal transmitting parts are formed with a distance therebetween greater than the distance between said first grooves and which encompass an area therein greater than the area between said first grooves; and

forming a layer of a metal at a predetermined portion of each of said signal transmitting parts having a predetermined area to connect ohmically with said semiconductor crystal layer of said signal transmitting parts, whereby said lead mounting electrodes are formed and are connected ohmically with said signal transmitting parts.

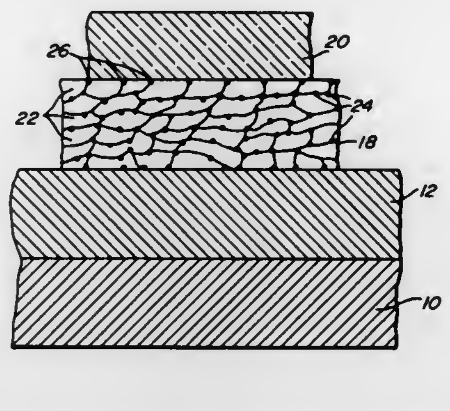
3,848,330
ELECTROMIGRATION RESISTANT SEMICONDUCTOR CONTACTS AND THE METHOD OF PRODUCING SAME

Edward L. Hall, and Elliott M. Philofsky, both of Phoenix, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Division of Ser. No. 258,620, June 1, 1972, Pat. No. 3,743,894. This application Mar. 16, 1973, Ser. No. 341,838

Int. Cl. B01j *17/00*

U.S. Cl. 29—590 **6 Claims**



1. The method of producing a metallic contact for a semiconductor device comprising the steps of:

evaporating a layer of contact metal comprising aluminum and at least a 1 percent portion of copper onto said semiconductor device;

heating said device to a temperature sufficiently high to cause said copper to go into solution with said aluminum and

rapidly cooling said device at a rate of at least 50° C per second to precipitate copper rich precipitates out of solution to form a fine grain structure having aluminum grains and grains of copper rich precipitates interspersed between said aluminum grains along the grain boundaries and triple points thereof.

3,848,331
METHOD OF PRODUCING MOLDED STATORS FROM STEEL PARTICLES

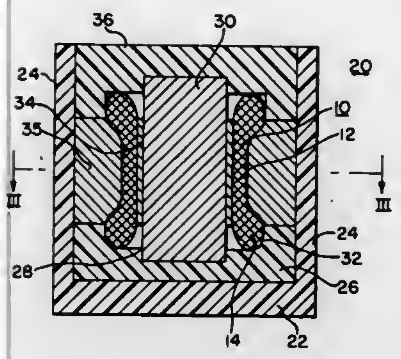
Norman M. Pavlik, Pittsburgh, and James W. Cunningham, Vandergrift, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 11, 1973, Ser. No. 396,256

Int. Cl. H02k *15/02*

U.S. Cl. 29—596 **15 Claims**

1. The method of producing a molded core having at least one conductor embedded therein employing microlaminations in which the microlaminations are formed from a ferromagnetic material, are substantially of an elongated rectangular cross-section, have been annealed to decarburize, deoxidize and improve the magnetic characteristics thereof, and in which each of the microlaminations is provided with an electrically insulative coating on the surface thereof, the steps comprising, preforming a conductor into a desired configuration, assembling the preformed conductor in a flexible container of predetermined configuration, adding microlaminations about the conductor within the container, sealing the container, compressing the microlaminates about the conductor to attain a packing factor in excess of 80%, removing the pressure and thereafter removing the molded core from the container.



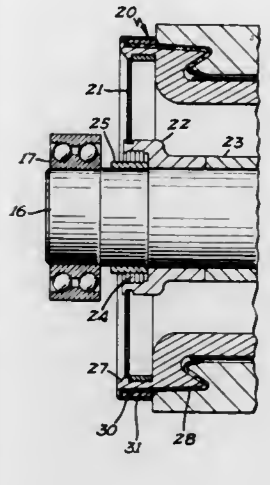
3,848,332
COMMUTATOR RING BANDING

Carl R. Bergquist, Jr., Hopkins, Minn., assignor to The Bergquist Co., Inc., Minneapolis, Minn.

Continuation of Ser. No. 208,310, Dec. 15, 1971, abandoned. This application Aug. 13, 1973, Ser. No. 387,631

Int. Cl. H01n *43/00*

U.S. Cl. 29—597 **10 Claims**



1. The method of preparing an electrically insulating layer along the outer annular end surface of the commutator of an electrical motor to isolate the commutator from adjacent motor shaft support means in an electrical motor assembly which includes a central shaft, armature and commutator means including an annular commutator supporting sleeve, with said commutator means being mounted on said shaft, load bearing support means for said shaft adjacent the ends thereof, and annular spacer means disposed along said shaft for supporting said commutator supporting sleeve and separating said commutator means from said load bearing support means, said method comprising:

a. applying a first generally rigid insulation layer to the outer edge surface portion of said annular commutator supporting sleeve to insulate the same therefrom;

b. applying a film of a curable electrical insulating adhesive composition to the outer surface of said first insulation layer to form an annular base bonding surface;

c. applying a generally flat endless band of heat shrinkable fluorinated ethylene-propylene over said adhesive film to cover said base bonding surface, said band normally having a diameter slightly greater than the diameter of said annular spacer means, but slightly less than the diameter of said annular spacer means upon undergoing thermal shrinkage; and

d. exposing said band to thermal energy adequate to cause thermal shrinkage therein until said band shrinks to a normal diameter significantly less than that of of said annular spacer means and becomes firmly bonded to said base bonding surface and the adhesive film fully cured.

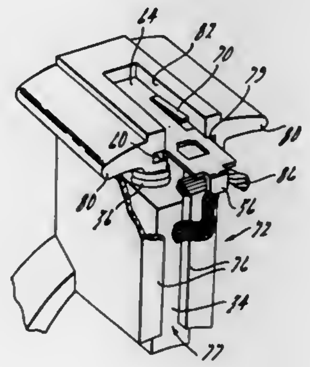
3,848,333
METHOD OF ASSEMBLY OF AN ELECTRICAL BRUSH AND TERMINAL MEMBER

Theodore G. Apostoleris, 3750 Miller Rd., Ann Arbor, Mich. 48103

Division of Ser. No. 362,628, May 21, 1973,. This application Dec. 17, 1973, Ser. No. 425,642

Int. Cl. H01r *9/00*

U.S. Cl. 29—630 E **6 Claims**



1. A method of assemblying a resiliently biased electrical brush within a brush housing comprising the steps of:

inserting in a first direction the brush and biasing means within the housing;

compressing the biasing means with an end of the terminal blade member to a degree sufficient compress all of the biasing means between the brush and an imaginary plane defined by the terminal blade member final position;

sliding the terminal blade member generally perpendicular to the first direction until the end of the blade member enters a slot provided therefor in said housing and the shoulders of said blade member are aligned with notches provided therefor in said housing; and

forcing said blade 4ember vnd]nd said shoulders into said slot and notches, respectively, until resilient fingers of said terminal blade member move freely behind wall means of said housing.

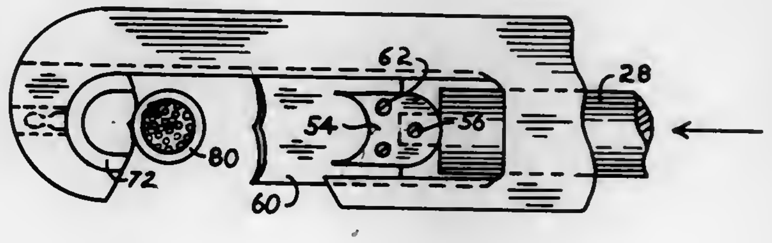
3,848,334
HYDRAULICALLY ACTUATED CABLE CUTTER AND INDENTOR

John A. Mattera, deceased, late of 32-50 72nd St., Jackson Heights, N.Y. 11370 (by Sadie Mattera, executrix)

Filed Mar. 24, 1972, Ser. No. 237,719

Int. Cl. B26b *17/00*

U.S. Cl. 30—180 **1 Claim**

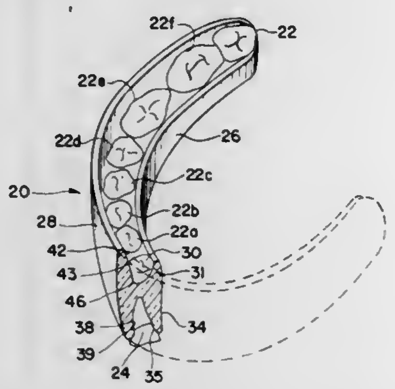


1. Hydraulically actuated tool comprising a cylinder, means for admitting hydraulic fluid under pressure to one end of said cylinder, a tool head integral with the other end of said cylinder, a hollow piston in said cylinder, said piston having an inwardly directed flange at its one end adjacent said means for

admitting hydraulic fluid, as axial rod in said hollow piston secured to said means for admitting hydraulic fluid, an outwardly directed flange on the free end of said rod, a spring on said rod, mounted between said inwardly directed flange and said outwardly directed flange, for biasing said piston against the action of hydraulic fluid, said tool head terminating in a hook having a curved internal surface, a tongue extending from said tool head, spaced from and opposite of said hook, said tool head, said hook and said tongue forming an opening for the passage of a cable, said hook having a bore disposed in the axis of the movement of said piston, an anvil being mounted in said hook and a tool component mounted in said opening on the other end of said piston, means for securing said anvil in said hook, said tool component a blade mounted on the other end of said piston said blade being formed with a pair of concave cutting edges, said anvil having a pair of convex faces complementary to said pair of cutting edges and substantially wider than said pair of cutting edges.

3,848,335
ORTHODONTIC APPLIANCE HAVING COOPERATION DETECTION CAPABILITY

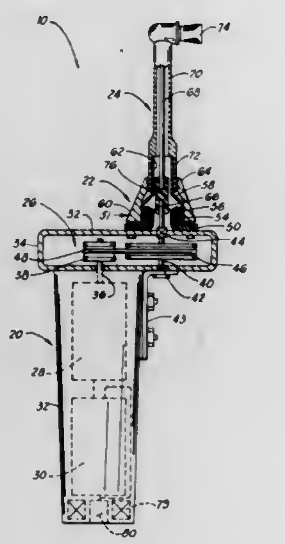
Earl O. Bergersen, 950 Linden Ave., Winnetka, Ill. 60093
Filed Jan. 25, 1974, Ser. No. 436,701
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 B **15 Claims**



1. An orthodontic appliance for use in the positioning of teeth, said appliance formed of a material which is normally essentially transparent under normal room conditions and which increases in opacity by absorption of moisture when placed in a patients mouth for a predetermined period of time.

3,848,336
DENTAL INSTRUMENT

John W. Copeland, 161 S. Oliver, Wichita, Kans. 67218
Filed July 2, 1973, Ser. No. 375,625
Int. Cl. A61c *3/06*
U.S. Cl. 32—59 **16 Claims**



1. A portable dental instrument, comprising:

a. a hollow handle,

b. an electric motor mounted in said handle, said electric motor having a power output shaft,

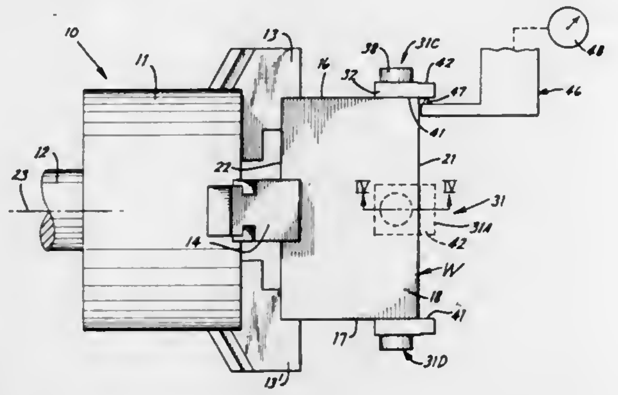
c. means to power said electric motor mounted in said handle and connected to said motor,

d. speed changing means mounted on said handle and connected to said electric motor output shaft, said speed changing means, having an output shaft, and

e. rotary dental tool mounting means for removably mounting a rotary dental tool in operating position, mounted on said speed changing means, and connected to said rotary dental tool when mounted to change the operating speed of said tool relative the operating speed of said motor, said mount means has a resilient coupler member connectable between said output shaft and a drive shaft of said rotary dental tool and a sleeve member slidably engagable with said rotary dental tool and mounting said tool by friction pressure such that said tool is rotatable on said sleeve by finger pressure.

3,848,337
SURFACE INDICATOR

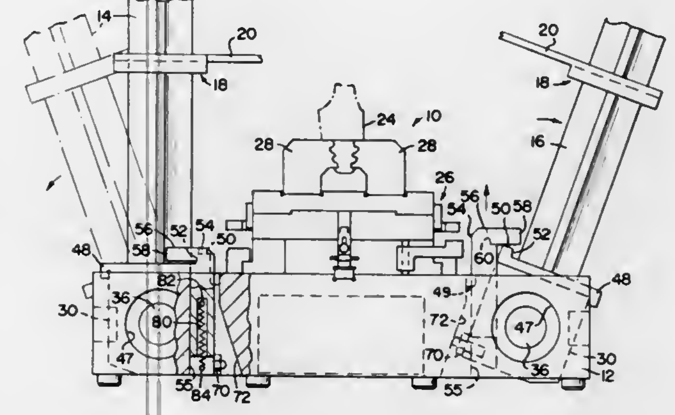
David M. Kraklau, St. Joseph, and John H. Taylor, Sodus Twp., Berrien County, both of Mich., assignors to Advance Products Corporation, Benton Harbor, Mich.
Division of Ser. No. 146,052, May 24, 1971, Pat. No. 3,718,977. This application Dec. 4, 1972, Ser. No. 311,507
Int. Cl. G01b *3/30*
U.S. Cl. 33—174 H **4 Claims**



1. A portable and detachable gauging device adapted for attachment to a ferrous workpiece for accurately determining the distance between two substantially parallel surfaces on said workpiece, said device consisting of an article which is free of relatively moving parts, said article including a body having a smooth planar base surface, said body having a substantially cylindrical recess extending therethrough with the longitudinal axis of said recess being substantially perpendicular to said planar base surface, said recess extending from said base surface through said body to the side of said body opposite said base surface, said body being shaped substantially as a rectangular prism and having substantially perpendicular length and width dimensions which are both perpendicular to said axis, said body also having a thickness dimension extending in a direction substantially parallel to said axis, the width and length dimensions each being substantially greater than the thickness dimension, magnet means including a substantially cylindrical magnet snugly disposed within said recess and fixed relative to said body, said magnet being disposed so as to not project outwardly beyond said base surface, said magnet having on one end thereof a substantially smooth planar axial end surface which is disposed parallel and substantially flush with said base surface, and said magnet means including substantially cylindrical gripping means fixedly connected to and coaxially aligned with said magnet and projecting outwardly from the other end thereof, said gripping means projecting outwardly beyond said other side of said body, said cylindrical gripping means having a diameter which is substantially smaller than each of the length and width dimensions of said body, whereby said gripping means facilitates manual gripping and manipulation of said article.

3,848,338
UNIVERSAL GAGE WITH TILT-OUT UPRIGHTS

Martin A. Herman, 2085 W. 114th St., Cleveland, Ohio 44102
Filed Dec. 20, 1972, Ser. No. 317,072
Int. Cl. G01b *5/20*
U.S. Cl. 33—174 PB **6 Claims**



1. In a universal type gage including a base, a pair of uprights, means for positioning a test article between said uprights, and gage means carried by said uprights, the improvement of

a positioning means on the base for an upright and having one of said uprights secured thereto,

a shaft operatively secured to and extending from said positioning means,

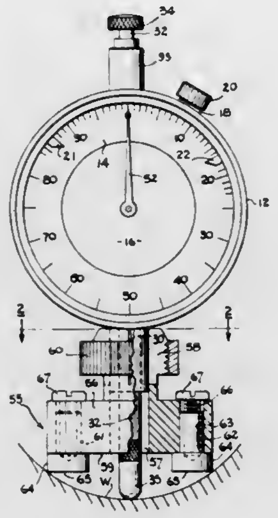
means journalling said shaft on said base for pivotal movement of said one upright away from said base,

means for locking said positioning means in position on said base with said one upright vertically positioned, and

said locking means including a lock member slidable vertically in relation to said base, and a locking device provided on said positioning means, said lock member and locking device having operative engagement when said one upright is vertically positioned.

3,848,339
CYLOMETER

Ray Howard Strasbaugh, 3400 Airport Way, Long Beach, Calif. 90806
Filed Feb. 9, 1973, Ser. No. 331,214
Int. Cl. G01b *5/08, 5/20*
U.S. Cl. 33—174 A **7 Claims**



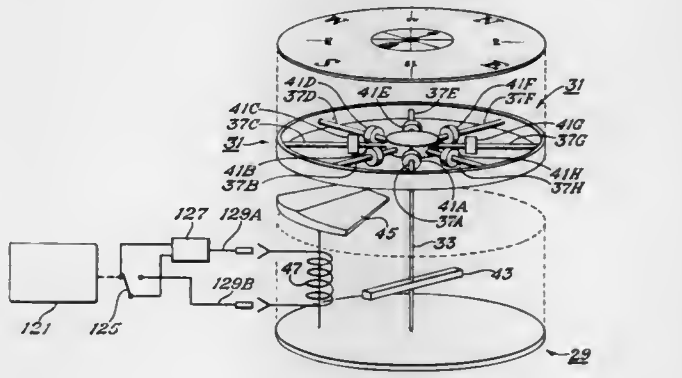
1. A cylometer comprising in combination:

a support carrying a projecting pair of contact members laterally spaced apart by the length of a chord which they are adapted to span upon contacting the curved surface of a workpiece, said contact members being mutually parallel, selectively rotatable cylinders, each characterized by an annular work-contact perimeter disposed perpendicular to its cylindrical axis and adapted for changeable point contact with the curved work surface,

a longitudinally reciprocable plunger disposed parallel with said cylinders, transecting said support intermediate the contact members and having an end adapted to contact the workpiece in line with the midpoint of said chord, and indicator means responsive to movement of said plunge for indicating the perpendicular distance between said chord and the work-contacting end of the plunger, whereby the curvature of said workpiecc can be determined.

3,848,340
DISTANCE AND DIRECTION RECORDING DEVICE AND METHOD

Alton B. Hamm, 3724 Scranton Dr., Fort Worth, Tex. 76118
Filed Sept. 25, 1972, Ser. No. 291,775
Int. Cl. G01c *22/00*
U.S. Cl. 33—354 **21 Claims**



1. A device for recording distance and direction of travel as it is moved along a course of traverse relative to a given point comprising:

support means,

rotatable means coupled to said support means for rotation about an axis of rotation relative to said support means, a plurality of radially extending supports coupled to said rotatable means at different angular positions about the axis of rotation of said rotatable means for rotation therewith,

weight means coupled to each radial support for movement to positions between said axis of rotation and a given perimeter outward from said axis of rotation, and

means for moving selected ones of said weight means to positions between said axis of rotation and said given perimeter dependent upon the distance and direction of travel with said device,

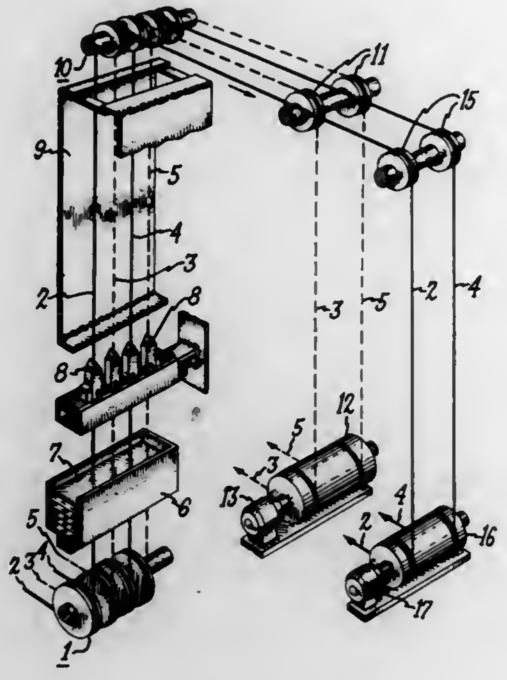
said support means being adapted to be positioned to allow said axis of rotation to be located in a generally horizontal position to allow said rotatable means to rotate to a position of stable equilibrium dependent upon the resultant weight shift applied to said rotatable means by the movement of said weight means between said axis of rotation and said given perimeter.

3,848,341
METHOD OF DRYING COATED WIRES

Bernd Linder, Hendersonville, N.C., assignor to General Electric Company
Filed May 22, 1972, Ser. No. 255,792
Int. Cl. F26b *3/22;* B44d *1/42*
U.S. Cl. 34—25 **4 Claims**

1. In a method of treating coated wires wherein a plurality of wire strands coated with heat hardenable coating material are passed closely adjacent one another in the same direction through a drying oven for heat hardening the coating material,

the improvement which comprises the step of imparting relative longitudinal motion between adjacent ones of said plural-



ity of coated wire strands during passage through said drying oven for preventing them from sticking together.

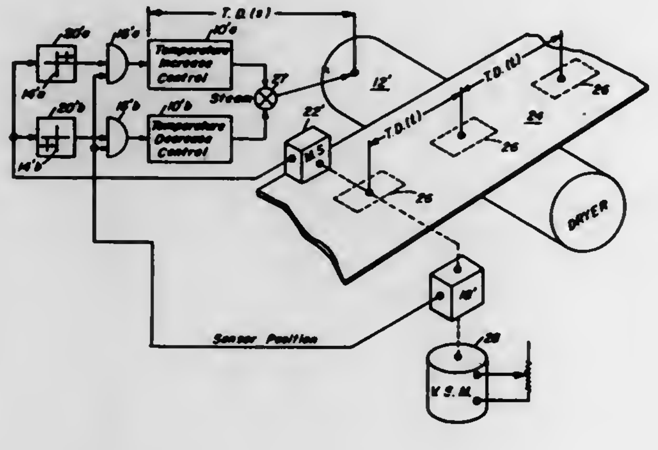
3,848,342
CONTROL SYSTEM

Edward C. Bartles, and Raymond A. Fraim, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 26,606, April 8, 1970, Pat. No. 3,706,339, which is a division of Ser. No. 778,395, Nov. 28, 1968, Pat. No. 3,518,775. This application July 24, 1972, Ser. No. 274,537

Int. Cl. F26b *21/06*

U.S. Cl. 34—48 **2 Claims**



1. Control apparatus comprising
a. heat exchange means having a regulatable temperature; b. signal responsive valve means cooperative with said heat exchange means, and having therewith a certain time constant, said valve means being adapted to regulate such temperature;
c. sensing means for producing a signal variable as a function of the moisture of a web dried by said heat exchange means; and
d. cyclic gating means for cyclically applying the signal of said sensing means to said valve means, at intervals proportional to said time constant; said cyclic gating means including means for driving said sensing means back and forth across said web, and gate means for use in applying the output signal of said sensing means to said valve means only when said sensing means has a certain widthwise position with respect to said web.

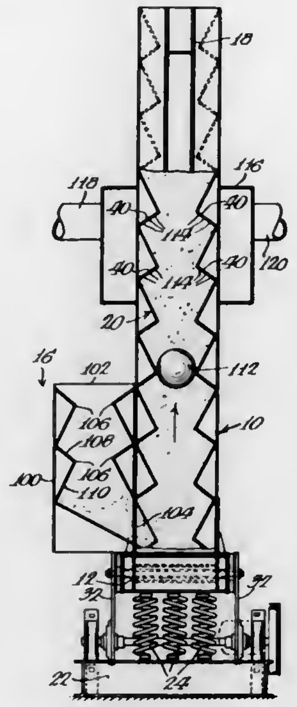
3,848,343
VERTICAL LIFT CONVEYOR

Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Division of Ser. No. 118,633, Feb. 25, 1971, which is a continuation-in-part of Ser. No. 843,531, July 22, 1969, abandoned. This application Feb. 9, 1973, Ser. No. 331,331

Int. Cl. F26b *15/08;* **B02c** *19/00, 21/00*

U.S. Cl. 34—164 **5 Claims**



1. A lift conveyor of the vibratory type including a stationary base, a tubular non-horizontally elongated lift assembly having an inlet at its lower end and an outlet at its upper end, said lift assembly including a plurality of opposed, horizontally aligned, inwardly directed projections extending between said ends with each projection being defined by an upper surface and a lower surface with the upper surface having a longer length than the lower surface, vibrating means associated with said lift assembly for moving said lift assembly up and down in a non-horizontal direction, and operative to accelerate said lift assembly in a downward direction at a rate greater than the rate of acceleration of gravity; means associated with said inlet for precluding backflow of material during movement of said lift assembly in a downward direction; and a mulling device within said lift assembly, said mulling device comprising an object sufficiently large so as to be engaged by said projections to preclude downward movement of the object therepast and sufficiently small so as to be movable above the projections that it may engage whereby during vibration of said lift assembly, movement of said object therein provides mulling action on material passing through said lift assembly.

3,848,344
BUNKER-BOILER INSTALLATIONS

Roland Kemmetmueller, Pittsburgh, Pa., assignor to American Waagner-Biro Company, Inc., Pittsburgh, Pa.

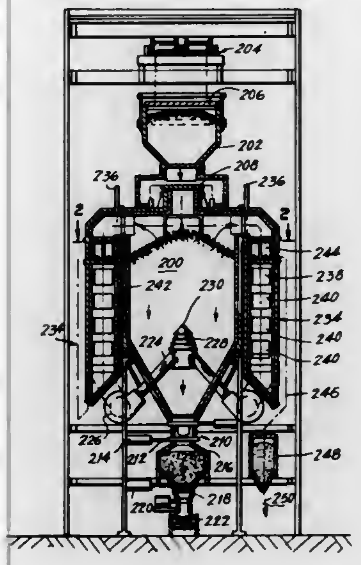
Continuation-in-part of Ser. No. 279,224, Aug. 9, 1972, Pat. No. 3,795,987. This application Oct. 23, 1973, Ser. No. 408,851

Int. Cl. F26b *17/12*

U.S. Cl. 34—168 **10 Claims**

1. In an apparatus for cooling a hot material in bulk, such as hot coke, upright bunker means having a top end for receiving the material such as hot coke and a lower discharge end through which the material is discharged after being cooled, fan means for creating a path of gas flow upwardly through the interior of the bunker means and downwardly along the exterior thereof for continuously circulating a cooling gas upwardly through the bulk material in the bunker means to extract heat therefrom while cooling the latter material so that the material is discharged from the bunker means in a cooled

condition, and a plurality of heat exchanger and/or boiler means situated at the exterior of said bunker means adjacent thereto and distributed thereabout, said plurality of heat exchanger and/or boiler means respectively having top ends communicating with the top end of said bunker means and bottom ends communicating with said fan means so that the latter draws the gas heated in the bunker means from the top end of the latter downwardly through the plurality of heat exchanger and/or boiler means to be returned to said bunker means after being cooled in said heat exchanger and/or boiler means, so that any one of said heat exchanger and/or boiler means may be placed out of operation for purposes such as inspection or repair while the cooling of the material in bulk within the bunker means continues with the remaining heat exchanger and/or boiler means.



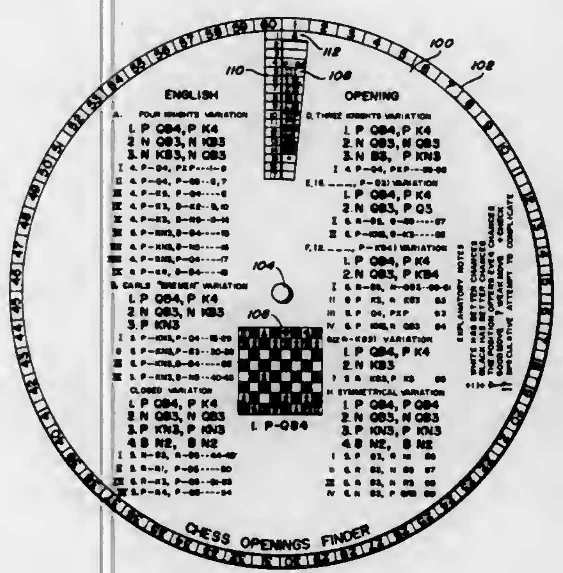
3,848,345
CHESS WHEEL

Vrej Ter-Gevorkian, deceased, late of 4313 Green Pond Rd., Bethlehem, Pa. 18017 (Aram Sarhadian, administrator)

Filed May 29, 1973, Ser. No. 364,879

Int. Cl. G09b *19/22*

U.S. Cl. 35—8 R **10 Claims**



1. An instructional device for teaching opening moves in the game of chess comprising:
a first member having a sector-shaped and sector-placed slot and bearing indicia representing a plurality of variations of a particular opening move sequence, each variation comprising a plurality of moves leading to a particular position of the chess pieces, and each variation including a plurality of subvariations for the move following that move leading to said particular position, each subvariation comprising the first move of a plurality of alternatives each comprising a sequence of moves that are to follow said first move, and each subvariation having associated therwith a plurality of sector numbers, each sector number being associated with a particular one of said alternatives;
a second member larger than said first member and bearing indicia dividing the surface of said second member into a plurality of sectors, said sectors being consecutively numbered and corresponding in dimension to the size of said slot in said first member, each of said sectors containing a sequence of moves corresponding to a specific one of the alternatives associated with a particular one of said subvariations of said particular opening move sequences contained on said first member; and
means for rotatably fastening the center of said first member to the center of said second member.

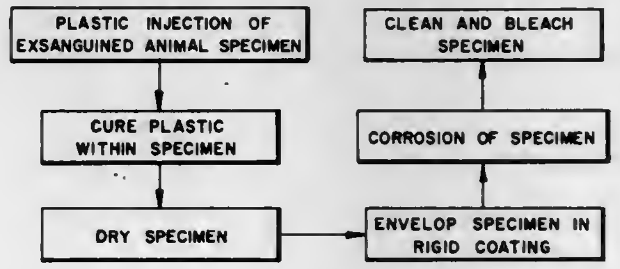
3,848,346
PROCESS OF PREPARING SKELETAL-VASCULAR CASTS

Walter J. Mackey, 1991 Sharondale Ave., St. Paul, Minn. 55113

Filed Sept. 6, 1973, Ser. No. 394,758

Int. Cl. G09b *23/30*

U.S. Cl. 35—20 **10 Claims**


PLASTIC INJECTION OF EXSANGUINED ANIMAL SPECIMEN
CURE PLASTIC WITHIN SPECIMEN
DRY SPECIMEN
CLEAN AND BLEACH SPECIMEN
CORROSION OF SPECIMEN
ENVELOP SPECIMEN IN RIGID COATING

1. The method of preparing skeletal-vascular casts of the articulated skeleton and vasculature structure of an animal comprising the steps of:
a. exsanguinating the animal;
b. injecting a curable synthetic resinous fluid into the blood vessels of said exsanguinated animal;
c. curing said curable synthetic resinous fluid into a generally rigid mass;
d. removing the outer skin from the flesh of said animal;
e. wrapping said skinned animal in a generally rigid perforated wrapping disposed about the outer surface of said animal;
f. placing said wrapped animal into contact with a colony of flesh-eating insects and maintaining said contact until the flesh is substantially entirely removed, whereupon the specimen is removed from contact with said insects; and
g. thereafter cleaning, bleaching, and removing said perforated wrapping from said animal.

3,848,347
SKI BOOT WITH ADJUSTABLE FLEXURE MEANS

Alden B. Hanson, and Chris A. Hanson, both of Boulder, Colo., assignors to Hanson Industries Inc., Boulder, Colo.

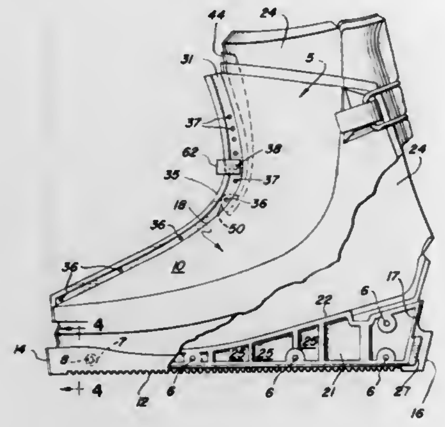
Filed Mar. 5, 1973, Ser. No. 338,291

Int. Cl. A43b *11/00*

U.S. Cl. 36—2.5 AL **16 Claims**

1. A ski boot with means for adjusting the flex in the boot so that the flex in the boot can be changed by the wearer of the boot, said boot comprising:
a shell having a closure system adapted for closing said shell about the foot of a skier;
said shell having a split portion commencing at the top of said boot and extending toward the bottom of said boot, said split portion being defined in part by a pair of generally parallel opposed edges;

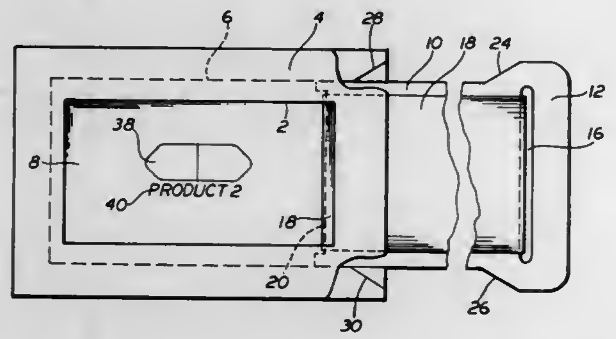
clamping means for interconnecting the edges of said split portion at a desired point along the length of said split portion;



whereby, upon exertion of pressure on said boot, the shell is adapted to separate along the length of said split portion from the top of the boot to the location where said clamping means connects the edges of said split portion.

3,848,348
DISPLAY DEVICE

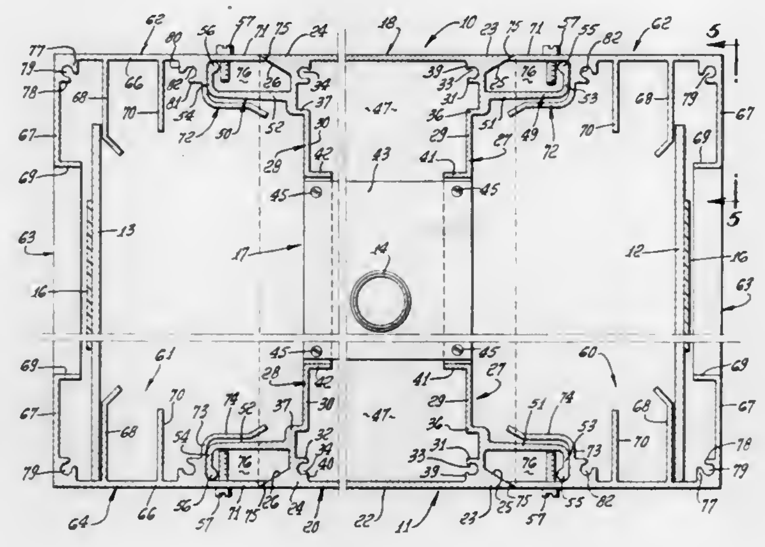
Margaret Grant Hawley, Philadelphia, Pa., assignor to Smith Kline Corporation, Philadelphia, Pa.
Filed July 23, 1973, Ser. No. 381,992
Int. Cl. G09f *11/00*
U.S. Cl. 40—64 R **1 Claim**



1. A display device comprising:
a planar frame having opposed upper and lower edges, opposed side edges and a window opening,
an endless flexible band having substantially parallel edges, said flexible band being secured to the frame between the window opening and one side edge of the frame on a line substantially normal to the edges of the band, lying behind and overlapping the window opening, and having a display opposite the window opening for viewing through the window opening,
a planar slide means having a pair of opposed edges substantially normal to the edges of the band, said band substantially encompassing the slide means between the opposed edges thereof,
a handle integral with the slide means extending beyond said one side edge of the frame for manually moving the slide means in the direction away from the other side edge of the frame to rotate the band about the slide means and move the band away from the window opening and for subsequently returning the slide means to its original position,
a planar panel behind the slide means and connected to the frame, said panel presenting a display underlying the window opening and visible when the band is moved away from the window opening,
whereby reciprocal movement of the handle and the associated slide means results in the presentation of the displays alternatively.

3,848,349
ILLUMINATED OUTDOOR SIGN

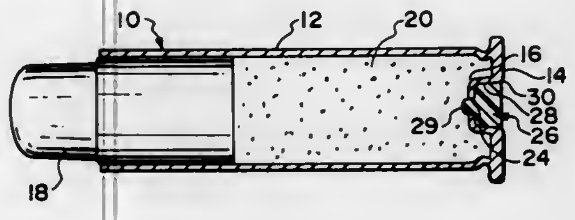
Roy Olsen, San Gabriel, Calif., assignor to Superior Outdoor Display Inc., Long Beach, Calif.
Filed Feb. 9, 1973, Ser. No. 330,997
Int. Cl. G09f *13/04*
U.S. Cl. 40—132 R **10 Claims**



1. In a sign having a cabinet which frames at least one display panel, illumination means within the cabinet for illuminating the panel, and electrical means for supplying power to said illumination means, said cabinet including a central frame member and at least a front frame member, the improvement wherein said central frame member comprises:
four identical elongate frame sections mitered at a 45° angle at the ends thereof and joined at right angles, each of said frame sections including:
an elongate outer plate having at least one side edge; and
a first elongate L-shaped flange supported with one of the legs thereof parallel to and spaced inwardly from said outer plate and projecting beyond said one side edge thereof, the other leg of said first flange extending toward but being spaced from the plane of said outer plate and terminating in an enlarged lip; and wherein said front frame member comprises:
four identical elongate frame sections mitered at a 45° angle at the ends thereof and joinable at right angles, each of said frame sections including:
an elongate side wall positionable coplanar with said outer plate of said central frame member and having a side edge adapted to engage said one side edge of said central frame member;
a second elongate L-shaped flange, one edge of said second flange being connected to said side wall, said side wall and said second flange defining a U-shaped channel for receipt of said first flange, the legs of said first flange being positionable parallel and adjacent to respective legs of said second flange; and
means extending through said side wall, between said side edge thereof and said one edge of said second flange, for preventing removal of said first flange from said U-shaped channel but permitting selective pivotal movement of said frame sections of said front frame member relative to said central frame member, rotation of said first flange within said U-shaped channel of the frame section forming the top of said front frame member being permitted in a first direction until said side edge of said side wall contacts said one leg of said first flange, said one side edge of said outer plate of said frame sections of said central frame member overlapping said side edge of said side wall of said frame sections of said front frame member thereby permitting pivotal movement of said top of said front frame member in said first direction only relative to the top of said central frame member.

3,848,350
DRY FIRE CARTRIDGE OR SHOT SHELL

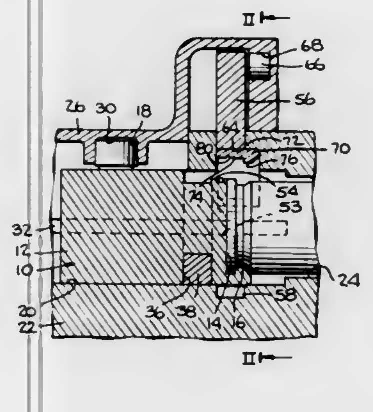
Herman J. Seminiano, 3720 W. 61st St., Chicago, Ill. 60629
Filed Aug. 10, 1973, Ser. No. 387,285
Int. Cl. F41c *27/00*
U.S. Cl. 42—1 N **6 Claims**



1. A dummy cartridge suitable for dry-firing practice comprising:
a cartridge case having a base end with a center fire primer pocket therein;
said primer pocket including a flash hole defined by said base end and a shock-absorbing plastic body molded within said primer pocket, characterized by its toughness and ability to recover after penetration by a firing pin;
an integral portion of said plastic body extending within said flash hole in interfacial locking relationship.

3,848,351
GUN BOLT

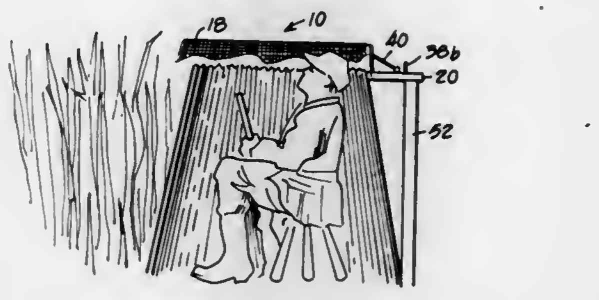
Burton Parker Clark, Saint George, Vt., assignor to General Electric Company, Burlington, Vt.
Filed July 23, 1973, Ser. No. 381,952
Int. Cl. F41c *15/00;* **F41d** *7/02*
U.S. Cl. 42—25 **6 Claims**



1. A bolt assembly, for a firearm, for firing a round of ammunition having a peripheral extractor groove, said assembly comprising:
a receiver having a chamber having an interior wall;
a bolt longitudinally slidable in said receiver and having an extractor lug for disposition within an initial, angularly defined, portion of the extractor groove of the round;
a filler segment for disposition within the remainder, angularly defined, portion of the extractor groove of the round; and
transport means for initially disposing said filler segment within the remainder portion of the extractor groove and for subsequently disposing both said filler segment and said extractor lug within said chamber in transverse adjustment with said interior wall, whereby the extractor groove is substantially filled and supported over its full 360° of angular extent.

3,848,352
COVER FOR A HUNTER'S BLIND

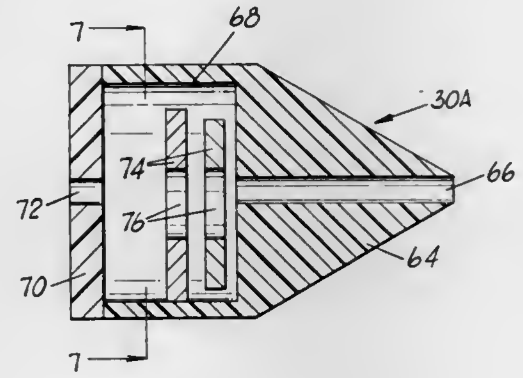
Chester M. Sayles, 967 Montgomery Ave., San Bruno, Calif. 94066
Filed Nov. 7, 1973, Ser. No. 413,570
Int. Cl. 220 *35;* **A01m** *31/00*
U.S. Cl. 43—1 **13 Claims**



1. A cover for a hunter's blind of the kind used to camouflage the presence of a hunter, said cover comprising,
screen means for covering a top opening in the blind, said screen means including a peripheral frame and netting on the frame, said netting being sufficiently open to permit a hunter beneath the netting to watch flying wild fowl through the netting,
mounting means including a base member for mounting the screen means adjacent one edge of the top opening in the blind, and
hinge means for connecting the screen means to the base member for opening movement and having a generally horizontally extending axis whereby the screen means swings vertically about the hinge means between a generally horizontally extending closed cover position over the blind and a generally vertically extending open position.

3,848,353
RATTLE SOUNDER FOR FISHING LURES

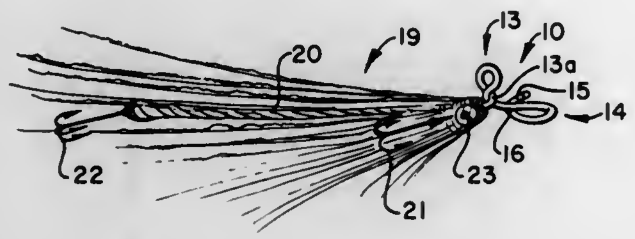
Bingham A. McClellan, Traverse City, Mich., assignor to McClellan Industries, Inc., Traverse City, Mich.
Filed July 5, 1973, Ser. No. 376,813
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.31 **2 Claims**



1. A rattle lure attachment for fishing lures comprising
a hollow body having a cylindrical interior cavity closed at each end, and defining aligned central holes at each end coaxial with said cavity,
and a plurality of flat metal slugs of polygonal outlines positioned loosely in said cavity to strike against the surface thereof when the body is moved,
said slugs having central bores larger than the holes in said body and being sized to surround the axis of said cavity when the peripheries of the slugs engage the periphery of the cavity.

3,848,354
QUICK TIE DEVICE

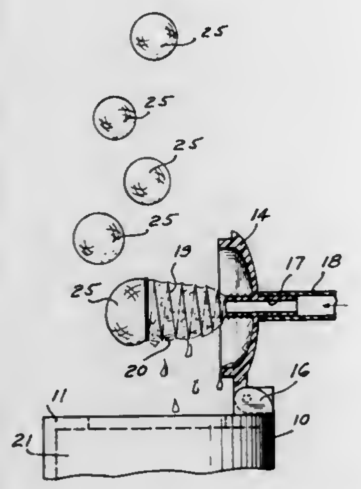
Grover R. Austad and Ronald G. Austad, both of 801 7th Ave., North, Great Falls, Mont. 59401
Filed Dec. 18, 1972, Ser. No. 315,934
Int. Cl. A01k *85/08, 91/04*
U.S. Cl. 43—42.49 1 Claim



1. A quick tie eye comprising
an elongate body forming a fishing device to which a line is to be connected;
a post connected to the body intermediate its length and projecting substantially normal to the elongate axis of the body; and
an open eyelet formed at one end of said body and spaced from said post, said open eyelet being formed as an angled loop having an opening and having a shank end at least partially wrapped around the body and projecting therefrom to stand outwardly of the body with the free end of the shank being tipped in a direction away from the post and terminating over the open eyelet.

3,848,355
BUBBLE SOLUTION HOUSING WITH COVER-MOUNTED TUBE AND COIL SPRING

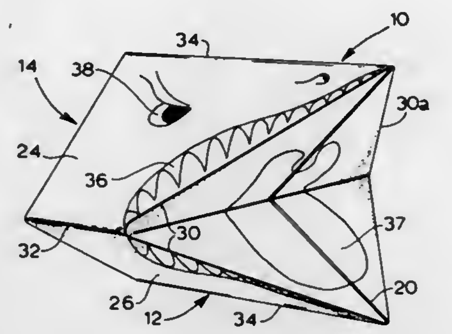
Donald E. Weight, 234 E. 25th St., New York, N.Y. 10010
Filed Apr. 25, 1974, Ser. No. 464,179
Int. Cl. A63h *33/28*
U.S. Cl. 46—7 1 Claim



1. A toy for forming of soap bubbles comprising a cylindrical hollow housing, means hinging said housing to a cover, a flexible tube externally fastened to said cover and communicating with the hollow housing interior through an opening in the cover, and means securing a coil spring inside the cover about said opening in a position such that a liquid soap solution may be located in the housing interior to wet the coil spring when the cover is closed, with the rotation of the cover about its hinging means to an open position permitting the user to blow through the tube and form bubbles from the soap solution retained on the coil spring.

3,848,356
ENVELOPE HAVING MEANS FOR READILY FORMING A HAND PUPPET THEREFROM

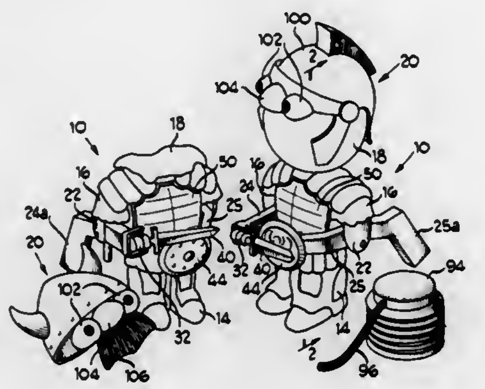
Glenn John Wylie, 14 W. Dean Park Dr., Islington, Ontario, and Irving Morton Koltz, 28 Livingston Rd., Scarborough, Ontario, both of Canada
Filed Jan. 7, 1974, Ser. No. 431,089
Int. Cl. B65d *27/00*
U.S. Cl. 46—11 8 Claims



1. A novelty article of paper card stock in the form of a puppet which comprises;
an envelope of paper card stock having two sides which are fastened along three edges to form a rectangular envelope having one open edge and three closed edges defining two closed corners, said envelope having preformed means by which it may be readily altered in shape to form a hand puppet, said means comprising a plurality of fold lines dividing said envelope into adjacent portions relatively swingable thereabout, said fold lines including:
edge fold lines formed along said three closed edges;
diagonal fold lines formed from the closed corners of the envelope across each said side in a triangular manner, and,
a further fold line along the central axis of each said side, intersecting the junction of the two diagonal fold lines whereby, the envelope may be manufactured and shipped flat, and may be set up to form a puppet simply by opening out the sides at said open edge into a generally rectangular opening, and then indenting the envelope inwardly along the closed edge between the two closed corners whereby to form the two closed corners of the envelope into upper and lower relatively movable lobes separated by said further fold line.

3,848,357
DUELING FIGURE TOYS

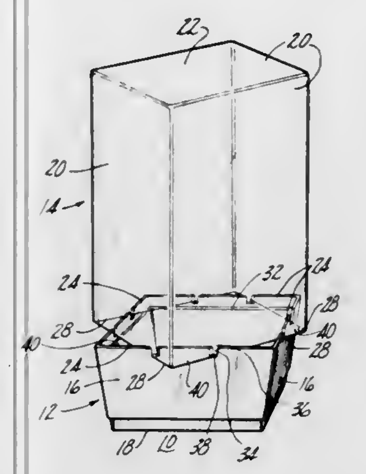
Howard J. Morrison, Deerfield, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed Oct. 12, 1973, Ser. No. 406,040
Int. Cl. A63h *13/06*
U.S. Cl. 46—142 18 Claims



1. A dueling type amusement device including, in combination, at least a pair of figure toys, each figure toy comprising:
a torso having a portion thereof defining a target area;
a physically collapsible head mounted on said torso;
at least a first arm mounted on said torso including a selectively actuatable striking element for striking the target area of an opposing figure; and
means operatively associated between said target area and said head for collapsing said head in response to a striking blow being delivered to the target area of that figure toy by the striking element of another figure toy.

3,848,358
PLANT TERRARIUM

James I. Messmer, Southfield, Mich., assignor to Florists' Transworld Delivery Association, Detroit, Mich.
Filed Mar. 27, 1973, Ser. No. 345,276
Int. Cl. A01g *9/02;* **B65d** *25/00*
U.S. Cl. 47—34 7 Claims

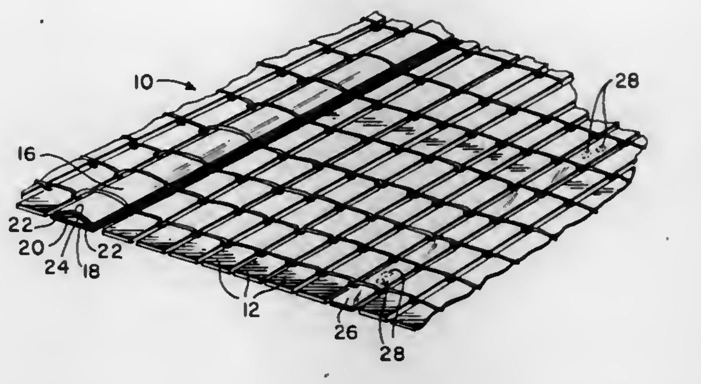


1. A terrarium for storing and growing a plant, said terrarium comprising: a container for the plant having side walls provided with a top edge defining a top opening to the interior of said container; a cover for said container, said cover having side walls provided with a bottom edge defining a bottom opening to the interior of said cover; said container top opening having a cross-sectional shape defined by said top edge; said cover bottom opening having a cross-sectional shape defined by said bottom edge; first support means to stably support said cover over said container in a first position such that said container top opening and said cover bottom opening are substantially contiguous and concentric and said cross-sectional shapes are in matching relationship to form an enclosure; and second support means to stably support said cover over said container in a second position such that the container top opening and the cover bottom opening are in mismatching relationship to provide an opening to the interior of said terrarium between said bottom edge and said top edge, wherein said first support means is a ledge projecting from said container side walls proximate said top edge for receiving thereon said bottom edge of said cover to stably support said cover over said container, said second support means is a plurality of slots defined in said container side walls, each of said slots having one end open to said top edge of said container side walls to receive therein said bottom edge of said cover to stably support said cover over said container and each of said slots having an end opposite said open end terminating between said top edge of said container side walls and said ledge.

3,848,359
DEVICES, SYSTEMS AND METHODS EMPLOYING KNITTING FABRIC MULCH

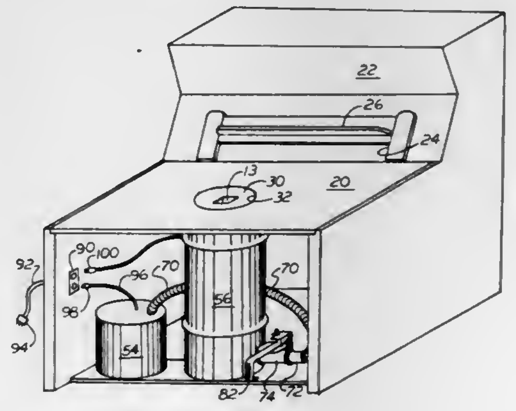
Robert T. Seith, Tuscaloosa, Ala., and Otto M. Bundy, Bradenton, Fla., assignors to Gulf States Paper Corporation, Tuscaloosa, Okla.
Filed Feb. 20, 1973, Ser. No. 333,782
Int. Cl. A01g *25/02;* **A01c** *1/04*
U.S. Cl. 47—56 13 Claims

1. A mulch comprising an open-mesh knitted fabric constituted by a multiplicity of knittedly interconnected longitudinal and transverse yarn elements, said fabric having at least one seed tape and a multiplicity of parallel strips between longitudinal yarn elements and interleaved with transverse yarn elements of said fabric, said strips being substantially wider than said yarn elements and occupying a major portion of the area of the fabric.



3,848,360
MEANS FOR AND METHOD OF POTTING PLANTS

Charles J. Million, 2426 Millegar Ln., Vista, Calif. 92083
Filed Mar. 2, 1973, Ser. No. 337,676
Int. Cl. A01g *9/08*
U.S. Cl. 47—58 14 Claims



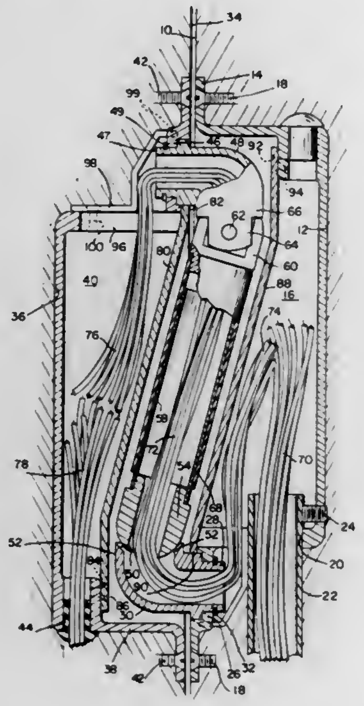
1. The method of potting a plant in a growing medium in a pot having an opening in its bottom, comprising:
a. providing a work surface with a recess therein,
b. placing said pot in said recess and applying a vacuum to said recess to retain said pot in said recess and to said pot through said opening,
c. positioning said plant in said pot and drawing its roots downwardly by said vacuum,
d. bringing said growing medium across said work surface to said pot, packing said growing medium about said roots of said plant by said vacuum, and filling said pot with said medium, and
e. discontinuing said vacuum when said pot is filled and ejecting said pot upwardly out of said recess.

3,848,361
CONDUCTOR TRANSFER ASSEMBLY

John R. Foster; George Z. Zawadzki, and Maksimiljan Godec, all of Indianapolis, Ind., assignors to Von Duprin, Inc., Indianapolis, Ind.
Filed Sept. 14, 1973, Ser. No. 397,397
Int. Cl. B60j *1/08, 13/00*
U.S. Cl. 49—167 21 Claims

1. The combination with a passage having a frame and a hinged closure, of a wire transfer assembly comprising a first

chambered plate recessed into an element of said frame and elongated in a direction parallel with the hinge axis of said closure, a second chambered plate recessed into an edge of said closure adjacent said frame element and registering with said first chambered plate, a first tubular elbow having one end penetrating and journalled about its own axis in one of said plates and having its other end disposed at times in the chamber of the other of said plates, a second tubular elbow having one end penetrating and journalled about its own axis in the other of said plates, said last-named axis being offset from but parallel with the axis of said one end of said first elbow and having its other end disposed at times in the chamber of said one plate, a first tubular head mounted to rock about a transaxial axis relative to said other end of said first elbow, a first tube coaxially supported from said first head, a second tubular head mounted to rock about a transaxial axis relative to said other end of said second elbow, and a second tube coaxially supported from said second head, said tubes being telescopically associated with each other for relative coaxial rotation and longitudinal extension and contraction.



3,848,362

GRINDING APPARATUS FOR SIDE SURFACE OF A WORKPIECE

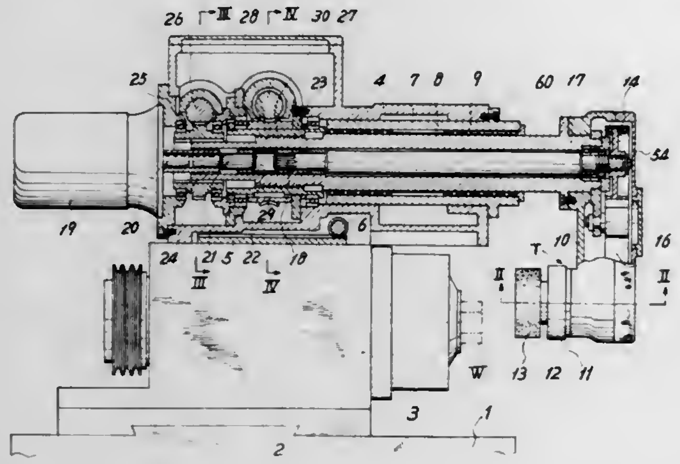
Makoto Kikuchi, Kariya; Hiroaki Asano, Chiryu; Ikuo Otsu, Toyota, and Toyoaki Saeki, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Aichi-ken, Japan

Filed Nov. 3, 1972, Ser. No. 303,602

Claims priority, application Japan, Nov. 4, 1971, 46-87775

Int. Cl. B24b *5/06*

U.S. Cl. 51—2 K **7 Claims**



1. A grinding apparatus for the side surface of a workpiece comprising:

a bed;

a head stock mounted upon said bed for holding a workpiece thereon;

a main body mounted upon said head stock;

a spindle rotatably and slidably carried within said main body;

a swing arm attached to said spindle at one end thereof;

a grinding wheel rotatably mounted on the other end of said swing arm;

drive means for driving said grinding wheel; and

first feeding means mounted on said main body and operatively connected with said spindle for simultaneously imparting a rotational and axial movement to said swing arm so as to feed the grinding wheel toward the workpiece via a spiral feed pathway.

3,848,363

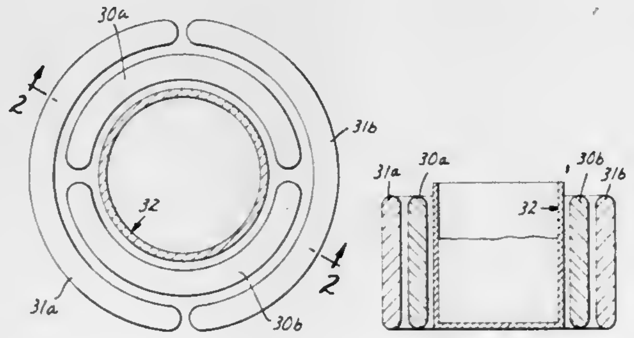
APPARATUS FOR TREATING OBJECTS WITH PARTICLES MOVED BY MAGNETIC FORCE

William R. Lovness, West Saint Paul, and James F. Feldhaus, Oak Park Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 20, 1973, Ser. No. 334,000

Int. Cl. B24b *31/00*, *1/00*

U.S. Cl. 51—7 **5 Claims**



1. An apparatus for treating objects with particles moved by magnetic force comprising in combination:

a. means for generating a rotating magnetic field,

b. magnetic particles which are capable of being rotated by the magnetic field, and

c. means confining the rotating magnetic particles to a predetermined area within the effective influence of said magnetic field, wherein said means for generating a rotating magnetic field comprises at least four overlapping coils that are arranged in a generally circular pattern of opposed pairs and that are energized with two or more out of phase sources of alternating current so that opposed coils are of opposite magnetic polarity and of the same phase, and generation of said rotating magnetic field causes rotation of the magnetic particles on their axes and also causes their rotation in an orbital path about the axis of rotation of the rotating field and objects placed in their path are subjected to aggressive surface treatment.

3,848,364

SUPPORT STRUCTURE FOR SHELVING

Peter Costruba, Pico Rivera, Calif., assignor to Angeles Metal Trim Co., Los Angeles, Calif.

Division of Ser. No. 00,048, Jan. 2, 1970, Pat. No. 3,714,748. This application Sept. 25, 1972, Ser. No. 292,093

Int. Cl. A47g *29/02*

U.S. Cl. 52—36 **11 Claims**

1. A building structure, comprising:

a pair of elongated upstanding channeled stud members having main webs spaced apart and disposed in opposed substantially parallel relationship;

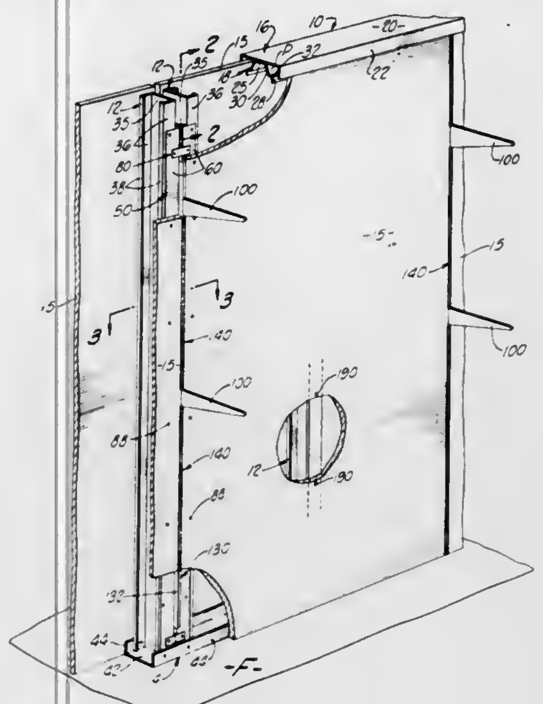
an elongated upstanding interlock member having therein a shallow elongated vertical channel extending longitudinally of said interlock member adapted to adjustably receive a support bar therein, said interlock member having an inward elongated vertical passage behind said vertical channel;

said passage having a U-shaped closed end extending longitudinally of said interlock member, said closed end forming one extremity of said interlock member;

means for securing said interlock member and said studs together as an interlocked rigid structure;

an elongated support bar positioned in said vertical channel having a slot communicating with said inward vertical passage; and

anchoring means adapted to anchor said support bar in said vertical channel.



3,848,365

LAPPING OR HONING MACHINE

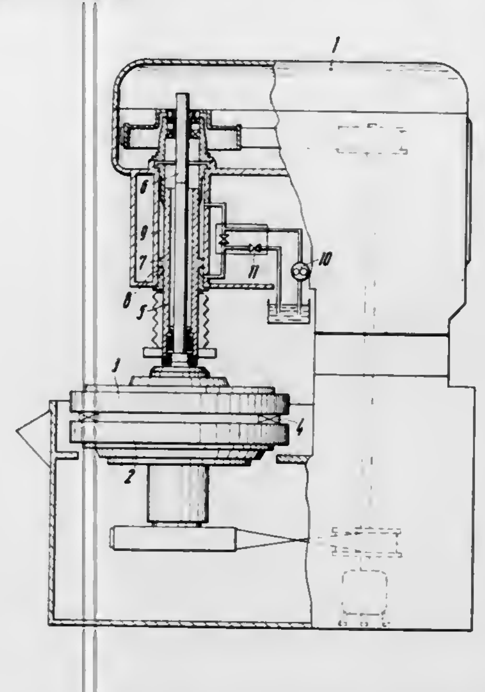
Hans-Friedrich Bovensiepen, Metzkausen, and Willi A. Caspers, Mettmann, both of Germany, assignors to Peter Walters, Mettman, Germany

Filed Jan. 16, 1973, Ser. No. 324,048

Claims priority, application Germany, Feb. 1, 1972, 2204581

Int. Cl. B24b *7/00*, *49/08*, *1/00*

U.S. Cl. 51—111 R **13 Claims**



1. In a lapping or honing machine equipped with a pressure unit on a driven lap or hone to apply lapping or honing pressure to a workpiece and a control unit by which power input to the pressure unit is adjustable, the improvement which comprises means to steplessly increase the pressure of said driven lap or hone on the workpiece from a predetermined value toward a maximum value.

3,848,366

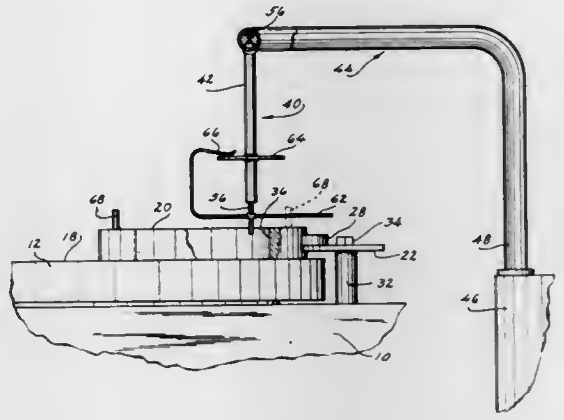
MEANS TO ASSURE UNIFORM FLOW OF AN ABRASIVE SOLUTION

John David, 1017 Indiana St., Racine, Wis. 53405

Filed Jan. 16, 1973, Ser. No. 324,179

Int. Cl. B24b *37/04*, *57/00*

U.S. Cl. 51—129 **3 Claims**



1. In a lapping machine having a lap plate rotatable about a first axis, and a work-confining ring member having an opening, and in contact with, and freely rotatable on said plate about a second axis radially positioned relative to said first axis, in combination, a means to apply an abrasive solution to the surface of said plate, comprising an upright tubular dispensing member having an axial bore and terminating upwardly in a solution-supply member, said bore having fluid connection with said supply member, a rod freely rotatable in said bore and being of a diameter substantially less than the diameter of said bore and extending below said dispensing member, a plurality of radially-extending circumferentially-spaced arms integral with said rod and lying in a plane below said dispensing member, normal thereto and above said ring, a means to index rotation of said rod comprising an upright index member integral with said ring, and successively engageable with each of said arms to rotate said rod upon rotation of said ring.

3,848,367

ANCHOR DEVICE FOR TRAILERS

Ray A. Barnes, 1057 Patricia, Cape Girardeau, Mo. 63701

Continuation-in-part of Ser. No. 83,309, Oct. 23, 1970, Pat. No. 3,691,703. This application May 3, 1972, Ser. No. 249,828

Int. Cl. E04h *12/20*

U.S. Cl. 52—157 **1 Claim**

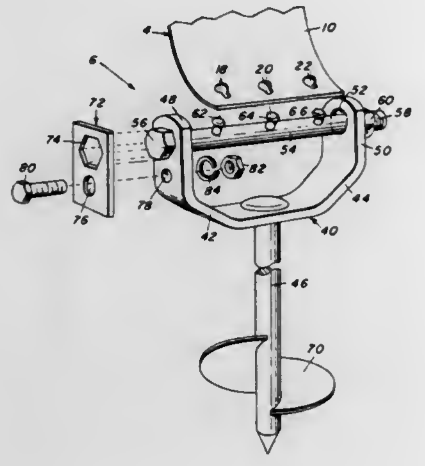
1. An anchoring system for receiving and holding the ends of a belt to secure a trailer at a selected location and to protect it against damage, comprising:

a belt consisting of an elongated web formed from a plurality of steel bands embedded in space side-by-side relationship in a wide, flat plastic covering, said plastic covering protecting said bands and providing a slip-resistant surface, said belt being adapted to pass over said trailer; first and second connecting means on respective first and second ends of said belt, said first connecting means comprising a plurality of apertures at said first end of said belt and including one aperture adjacent the end of and passing through a corresponding one of each of said steel bands;

first and second ground anchor means for location on opposite sides of said trailer;

fastening means on each said anchor to cooperate with a corresponding one of said first and second connecting means to secure the first end of said belt to said first anchor means and the second end of said belt to said second anchor means, whereby said belt may be secured to one anchor means, pass over said trailer and be secured to the other anchor means, at least one of said ground anchor means including a generally Y-shaped yoke having first and second upstanding, spaced arms secured to a depending leg, said fastening means on said at least one anchor means including a bar member spanning said yoke, the ends of said bar passing through and being rotatable in first and second apertures located in said first and second arm;

pin means on said bar member for engaging said plurality of apertures on said first end of said belt to connect the end of said belt to said bar member;



means including a shaped head on said bar member for rotating said bar to wind said belt around said bar and to place said belt in tension;

locking means for said bar comprising a locking plate having a first opening shaped to receive snugly and without rotation said shaped head and a second opening spaced from said first opening, a locking aperture in said first arm of said yoke positioned for alignment with said second opening in said locking plate when said locking plate is placed over said shaped head, and locking pin means adapted to pass through said second opening and said locking aperture when aligned to secure said locking plate and said bar member against rotation with respect to said yoke and to maintain the tension in said belt; and means secured to said depending leg of said yoke and serving to facilitate securing of said yoke in the ground and to prevent withdrawal thereof by forces directed axially along said leg.

3,848,368

APPARATUS FOR PNEUMATIC TIRE UNIFORMITY CORRECTION

Tokuma Toshioka, No. 4-5-65 Higashi-Kaigankita, Chigasak-shi, Kanagawa-ken; Haruyuki Takagi, No. 3-4-40 Higashi-Kaigan, Tsujido, Fuijisawa-shi, Kanagawa-ken, and Masayuki Shirai, No. 4-50 Tatsukamigaoka, Hiratsuka-shi, Kanagawa-ken, all of Japan

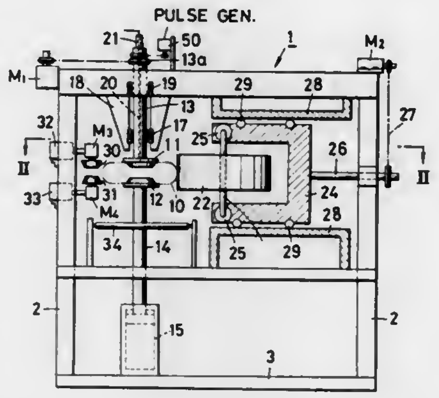
Filed July 5, 1972, Ser. No. 269,245

Claims priority, application Japan, July 6, 1971, 46-49256

Int. Cl. B24b ***49/16***

U.S. Cl. 51—165 R **6 Claims**

1. Apparatus for improving the radial force uniformity of a pneumatic tire comprising, a plurality of memory means each representative of an individual, respective area on the circumference of a pneumatic tire whose radial force uniformity is to be improved, the areas represented by individual memory means being different areas and corresponding jointly to the peripheral area on the treads of the tire, means to sense said tire during rotation thereof in a loaded condition to develop automatically signals representative of radial force variations over a given level, means applying said signals representative of radial force variations over a given level to said memory means for storage therein, abrading means rendered effective automatically under control of said memory means to abrade on the periphery of said tire at periods corresponding to the periods and areas on the circumference of said tire developing the radial force variations above said level present themselves to said abrading means for abrading thereof, and means cooperative with said memory means rendering said abrading means effective only after the termination of the development of the corresponding signals representative of the radial force variations of the tire, said means cooperative with said memory means rendering said abrading means effective including a plurality of logic gates, each of said logic gates corresponding to one of the individual, respective areas on the circumference of the tire, means applying said signals representative of radial force variations stored in said memory means to said logic gates, means for sequentially applying input signals to said logic gates to enable ones of said logic gates receptive of said stored signals representative of radial force variations to develop output signals, and means receptive to said logic gate output signals for rendering said abrading means effective in response thereto.



3,848,369

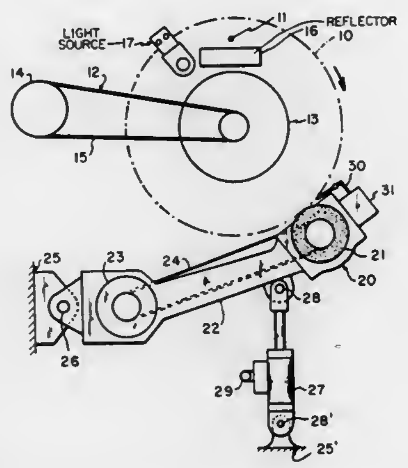
APPARATUS FOR BALANCE CORRECTING PNEUMATIC TIRES USING REFLECTIVE UNBALANCE CONTROL

Freydoun Monajjem, Stow, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Nov. 13, 1972, Ser. No. 306,075

Int. Cl. B24b ***49/12***

U.S. Cl. 51—165 R **6 Claims**



1. Apparatus for balance correcting pneumatic tires comprising:

A. a rotation means for rotating an inflated pneumatic tire;
B. grinding means disposed adjacent said rotation means for removing selected amounts of rubber from selected portions of the tire at a predetermined rate;
C. a light source disposed adjacent said rotation means and adapted to illuminate reflective, imbalance indicating means on said tire during rotation thereof;
D. a light sensing means disposed adjacent said rotation means and adapted to sense light from the light source reflected by the reflective means on said tire and output an electrical signal in response to reflected light sensed; and
E. an actuating means for actuating the grinding means in response to the electrical output from the light sensing means.

3,848,370

WORK FEED DEVICES FOR CENTRELESS GRINDING MACHINES

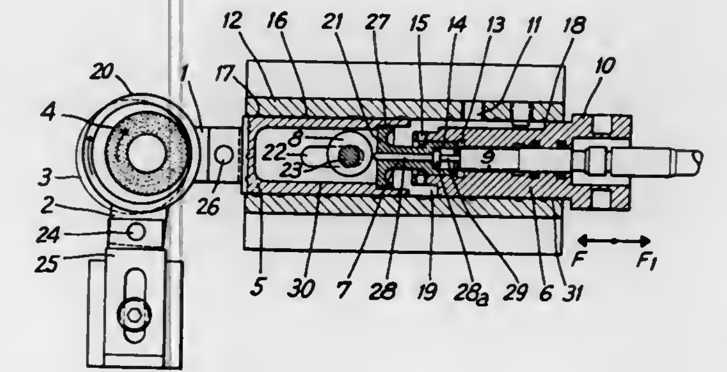
Georges Garcin, Cran-Gevrier, France, assignor to Ste Nouvelle de Roulements (S.N.R.), Annecy, France

Filed Nov. 10, 1972, Ser. No. 305,347

Claims priority, application France, Dec. 27, 1971, 71.46832

Int. Cl. B24b ***5/18, 41/06***

U.S. Cl. 51—237 **7 Claims**



1. In a centreless grinding machine
means defining a support face for a workpiece,
a shoe for supporting the workpiece radially, and
a workpiece feed device, said feed device comprising cylinder means,
a first piston mounted in the cylinder means and carrying the shoe
a second, control piston mounted in the cylinder means,
resilient means connecting the second piston to the first piston and applying an adjustable force between the pistons, and
a telescopic retaining element, said element limiting the maximum spacing between the pistons.

3,848,371

METHOD OF RECONDITIONING A HEAT EXCHANGER

Lester L. Dillinger, 218 Fourth St., Seal Beach, Calif. 90740

Filed July 26, 1973, Ser. No. 382,770

Int. Cl. B24b ***19/26***

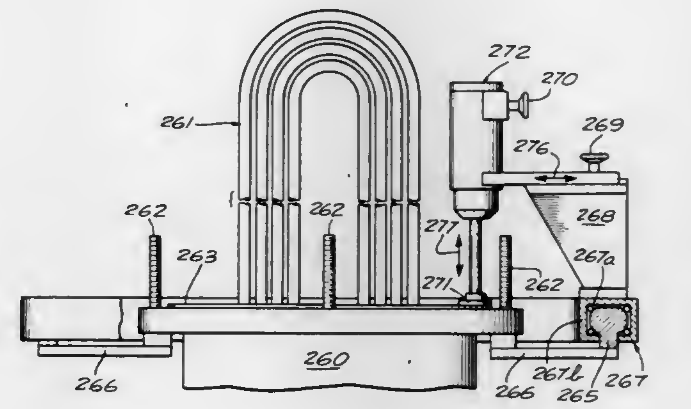
U.S. Cl. 51—241 S **6 Claims**

1. The method of reconditioning a generally circular header for a heat exchanger, which has a return tube bundle protruding from the center thereof and a plurality of studs protruding from the outer circumference thereof and projecting parallel to the tubes, by finishing an annular sealing surface which lies intermediate to said tubes and said studs, comprising the steps of:

placing a circular rail about said header and concentric to said annular sealing surface and aligned parallel thereto; placing a ring in retentive engagement with said rail and rotatable thereon;

selecting a surface finishing tool having a tool support and having a feed adjustment which is adjustable in two dimensions relative to said support;

attaching said tool support to said ring in a fixed circumferential position thereon such that said tool support projects beyond and over said studs, and said tool may be adjusted axially of said ring so as to engage the annular sealing surface and cut same to a desired depth, and said tool may also be adjusted radially of said ring so as to sweep the full radial width of the annular sealing surface; and



concurrently rotating said ring on said track, operating said tool, and varying said feed adjustment so as to finish the sealing surface.

3,848,372

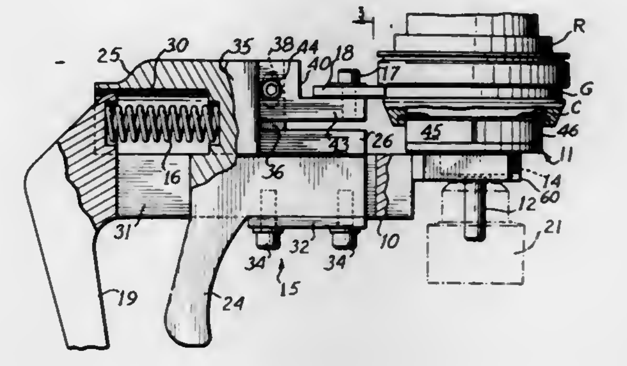
METHOD FOR POLISHING A SEAMING ROLL

Roy M. Peebles, c/o Sheldon Little Company, 1228 Zonolite Rd. N.E., Decatur, Ga. 30306

Division of Ser. No. 114,200, Feb. 10, 1971, Pat. No. 3,745,718. This application July 11, 1973, Ser. No. 378,208

Int. Cl. B24b ***1/00***

U.S. Cl. 51—289 R **1 Claim**



1. A method for polishing a seaming roll on a can closing machine in which the seaming roll remains on the machine in completely assembled condition, said method including the steps of gripping the seaming roll with a chuck and rotating the chuck thereby to rotate the seaming roll; positioning an abrasive material in alignment with the area of the seaming roll to be polished; holding the abrasive material in alignment while moving the abrasive material toward the seaming roll; and urging the abrasive material with a substantially constant force against the seaming roll while the seaming roll is rotated.

3,848,373
METHOD FOR THE TREATMENT OF WORKPIECE SURFACES

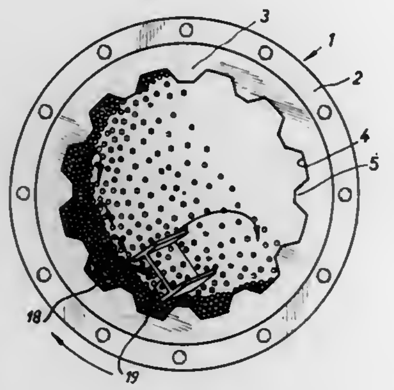
Oskar Pletscher, Zurich, Switzerland, assignor to Gebruder Pletscher, Marthalen, Zurich, Switzerland

Filed Feb. 16, 1972, Ser. No. 226,691

Claims priority, application Switzerland, Feb. 22, 1971, 2522/71

Int. Cl. B24b *1/00*

U.S. Cl. 51—313 **7 Claims**



1. A method of treating the surfaces of workpieces comprising the steps of:

A. Introducing a quantity of particles into a treatment chamber, which quantity has a volume which is substantially less than the volume of said chamber;

B. Introducing a quantity of a friction reducing medium to said chamber, said quantity being sufficient only to coat said particles and workpieces;

C. Introducing workpieces to be treated to said chamber;

D. Rotating said chamber lifting said particles to an area in said chamber which is substantially higher and is removed from the surfaces of the workpieces, placing said particles in the state of a free falling stream of particles, and freely rotating said workpieces; and

E. Causing said free falling stream of particles to impinge on the major portion of the surfaces of the workpieces whereby the surfaces being so treated are open to the action of the sliding motion of the particles, assisted by the friction reducing medium, to thereby treat the surfaces of said workpieces.

3,848,374
SANDING DRUM STRUCTURE IN A DRUM SANDER

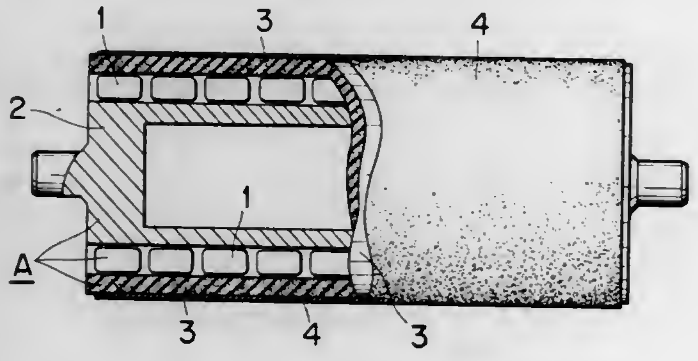
Katsuji Hasegawa, Nagoya, Japan, assignor to Meinan Machinery Works, Inc., Aichi-Pref., Japan

Filed Dec. 29, 1972, Ser. No. 319,728

Claims priority, application Japan, Dec. 28, 1971, 46-471288

Int. Cl. B24d *9/02*

U.S. Cl. 51—373 **9 Claims**



1. A sanding drum structure, comprising:

a sanding drum base having a substantially cylindrical peripheral surface;

a tubular inflatable jacket surrounding said peripheral surface, said jacket comprising radially foldable bellows means inflatable by pressurized fluid so that when pressurized fluid is supplied thereto said jacket expands radially to snugly engage said peripheral surface of said base and to define a substantially cylindrical outer surface, and when pressurized fluid is discharged therefrom said jacket folds in a radial direction;

a cylindrical sleeve body surrounding said jacket, said body being made of resiliently stretchable material and having an internal diameter larger than the diameter of the peripheral surface of said base to define therebetween an annular zone in which said jacket is disposed, said body being expanded radially outwardly when said jacket is expanded;

a seamless cylindrical sanding member separate from and surrounding said body and adapted to be releasably frictionally engaged with the outer surface of said body when said jacket and said body are expanded, said sanding member being separable from said body when said jacket is folded.

ERRATUM

For Class 52—36 see:
Patent No. 3,848,364

ERRATUM

For Class 52—157 see:
Patent No. 3,848,367

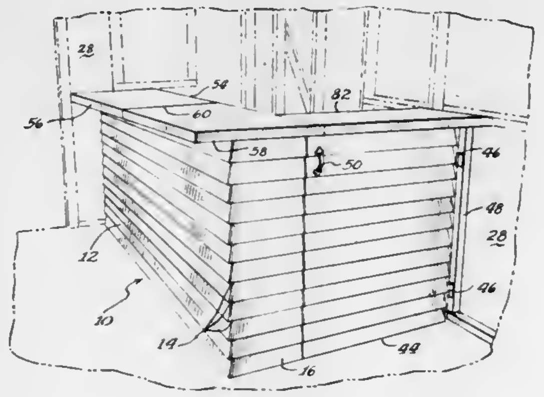
3,848,375
PORTABLE FURNITURE DEVICE

Benjamin White, 7723 S. Michigan, Chicago, Ill. 60619

Filed Oct. 3, 1973, Ser. No. 403,063

Int. Cl. A47b *96/14*

U.S. Cl. 52—36 **10 Claims**



1. A portable furniture device adapted to be installed in and removed from a particular location in an edifice having a floor, comprising:

a vertical front panel;

a vertical side panel secured by hinges to said front panel and adapted for pivotal movement relative to said first panel about said hinges;

one end of said front panel being removably attached to said edifice;

a first horizontal top panel fastened by hinge means to said edifice above said front panel and adapted to lie adjacent and be supported by said front and side panels in one position and to be rotated to a second vertical storage position about said hinge means;

said first horizontal top panel comprising two members hinged together whereby one member is adapted to be folded against said other member when said first horizontal top panel is rotated to said second storage position about said hinge means;

door means pivotally attached to said edifice and extending between said edifice and said vertical side panel;

said door means adapted to alternately lie adjacent said edifice or to extend from said edifice;

a second horizontal top panel fastened by additional hinge means to said edifice above said door means and adapted to lie adjacent and to be supported by said door means in one position and to be rotated about said additional hinge means to a second vertical storage position.

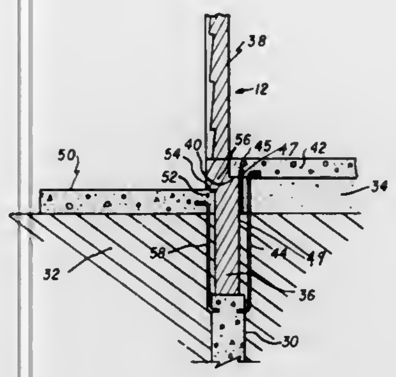
3,848,376
SYSTEM FOR ANCHORING MODULAR HOUSING UNITS

Richard R. Elmore, Herrin, Ill., assignor to Dura-Plex Industries, Peoria, Ill.

Filed Sept. 15, 1972, Ser. No. 289,485

Int. Cl. E02d *27/00;* **E04b** *5/32, 1/35*

U.S. Cl. 52—169 **3 Claims**



1. In a housing unit, a prefabricated, unitary wall panel having an upper portion extending above a grade level and delimiting an outer perimeter of a portion of an interior area of said unit and a footing below the grade level and supporting said wall panel, and anchoring means for said wall panel comprising a base wall panel portion offset toward said interior area portion from said upper portion of said wall panel for forming a ledge at said perimeter of said interior area portion, a layer of concrete spaced from said footing and extending over said ledge for anchoring said wall panel with said layer and over said interior area portion for forming a part of a floor of said unit, and at least one locking member connected to said base portion of said wall panel and extending from said wall panel and above said ledge into said layer of concrete for locking said wall panel and said layer against separation in a direction normal to said wall panel.

3,848,377
MAT FOUNDATION

Masahi Mori, No. 91 Aza-Matsuogawa, Zaohango, Yamagata-shi, Yamagata-ken, Japan

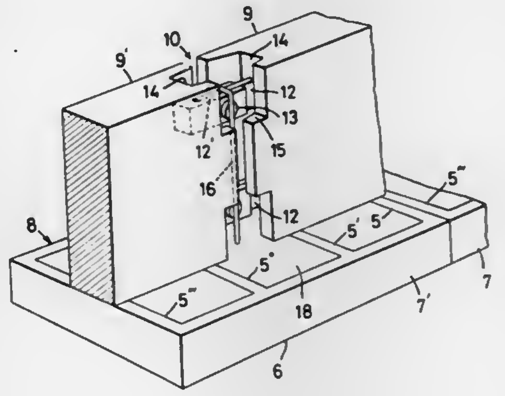
Filed Apr. 18, 1973, Ser. No. 352,177

Claims priority, application Japan, Sept. 2, 1973, 48-16261

Int. Cl. E02d *27/00*

U.S. Cl. 52—169 **2 Claims**

1. A mat foundation comprising in combination a foundation lattice framework of lattice frames juxtaposed on the bottom of a pit excavation, said lattice frames having transverse bars formed in the shape of an inverted trapezoid; vertically elongated foundation blocks having lateral joining sections aligned on the foundation lattice framework, each of said foundation blocks being so disposed as to be astride adjacent lattice frames; adjacent joining section of the foundation blocks being so disposed as to be located above open spaces of the foundation lattice framework; notches on the joining sections to facilitate the securing of the joining members; metal tongue, groove and pin joint members connecting said joining section to each other, said tongue in one joining section entering the groove of another joining section to be held by said pin; a vertical reinforcing bar fixed to the joining members, the lowermost ends of the reinforcing bar being inwardly bent and extending into open space of the foundation lattice framework, the open space and the joints being filled with concrete.



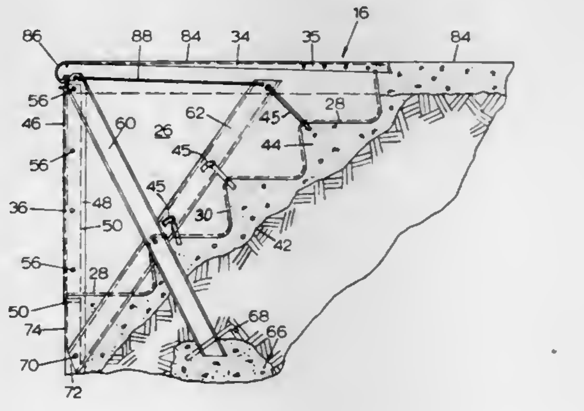
3,848,378
STAIRS FOR SWIMMING POOLS

Donald H. Witte, York, Pa., assignor to Fox Pool Corporation, York, Pa.

Continuation-in-part of Ser. No. 223,837, Feb. 7, 1972, abandoned. This application Aug. 18, 1972, Ser. No. 281,754

Int. Cl. E04f *11/00;* **E04h** *3/16*

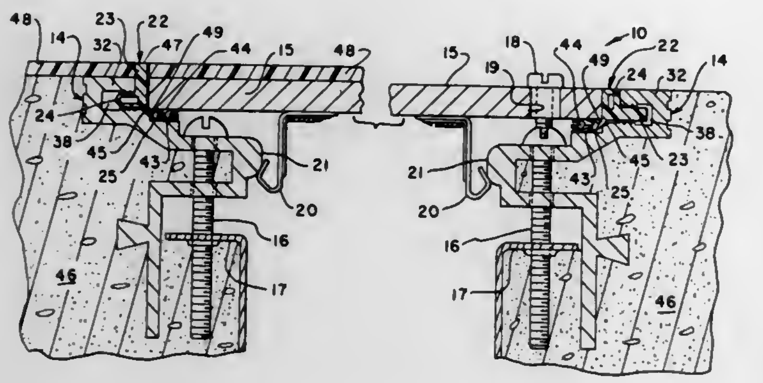
U.S. Cl. 52—184 **16 Claims**



10. A swimming pool having a sidewall in combination with stairs comprising a preformed shell extending rearwardly from said sidewall and said shell having opposite substantially planar sides and a series of stair tread and riser panels connected together and to said sides of said shell, the forward edges of said sides terminating in laterally extending planar flanges, means connecting end portions of said sidewall of said pool respectively to said flanges on each side of said stair shell in watertight manner, mounting members extending along the inner surfaces of said flanges, means connecting said members to said flanges adjacent said sidewalls of said shell, and structural brace members connected directly to said mounting members at opposite sides of said shell and extending therealong, rearwardly from said flanges, said brace members being adapted to be anchored to the earth adjacent opposite sides of said stair shell to brace said shell and sidewall of said pool.

3,848,379
REVERSIBLE TRIM STRIP WITH ATTACHED GASKET FOR AN UNDERFLOOR ELECTRICAL CABLE TRENCH

John O. Hazen, Monaca, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.
Filed Jan. 10, 1973, Ser. No. 322,397
Int. Cl. E04b *5/48;* **E04f** *17/08*
U.S. Cl. 52—221 **11 Claims**



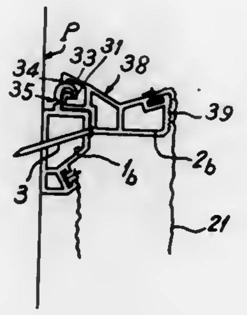
1. In an underfloor electrical trench assembly having spaced-apart linear screed strips presenting horizontally disposed, upwardly presented supporting ledges; a cover plate spanning the distance between said linear screed strips and having lateral edge portions of its bottom surface confronting said supporting ledges; screed lips, one presented above the level of each linear screed strip and laterally spaced-apart from the adjacent side edge of said cover plate thereby to provide a space therebetween; the improvement comprising: reversible trim strips, one for each linear screed strip and being reversible relative to the linear screed strip between first and second strip positions, each of said reversible trim strips comprising:

a tile-stop extension;
a tongue joined to said tile-stop extension, the height of said tongue being less than that of said tile-stop extension, and a gasket strip joined to and extending angularly from said tile-stop extension and said tongue;
said tongue being disposed in said space with an upper edge thereof substantially coplanar with the upper surface of said cover plate when said trim strip is in the first strip position;
said tile-stop extension being disposed in said space with an upper extremity thereof elevated above the upper surface of said cover plate when said trim strip is in the second strip position; and
said gasket strip being disposed between said supporting ledge and the lateral edge portion of the bottom surface of said cover plate when said trim strip is in said first strip position and in said second strip position.

3,848,380
DEVICE FOR FIXING SHEETS TO SURFACE

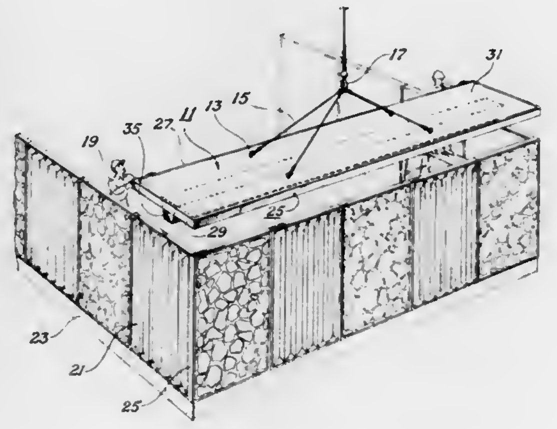
Marcel Assael, 12 Place Maurice Gillet, 29 N Brest (Finistere), France
Continuation-in-part of Ser. No. 183,507, Sept. 24, 1971, abandoned. This application Feb. 14, 1973, Ser. No. 332,271
Claims priority, application France, Oct. 1, 1970, 70.35461; Jan. 15, 1971, 71.01278; June 14, 1971, 71.21423; Feb. 15, 1972, 72.04991
Int. Cl. E04b *1/347;* **E04c** *3/32;* **A47h** *23/00*
U.S. Cl. 52—222 **10 Claims**

1. A wall mounting device comprising a covering sheet adapted to overlie a surface, a bar adapted to be secured to a surface, a movable strip formed of at least one piece and complementarily hinged to said bar at an edge of said strip, said strip having an opposite edge constituting an edge means for supporting a corresponding edge of a covering sheet, complementary assembling means for securing said strip in a folded-back compact position parallel said bar adjacent said surface, in said surface, in said folded-back compact position being in a direction opposed to that in which said covering sheet extends, said covering sheet being tensioned in said position, complementary abutment means provided on said bar and on said strip for holding said strip in an angular open position relative to said bar for fixing a covering sheet thereon, and said edge means of said strip including fastening means for securing said corresponding edge of said covering sheet against said edge means, prior to moving said strip into said folded back compact position.



3,848,381
DECK PANEL FOR ROOF AND FLOOR STRUCTURES

David E. Bloxom, Fort Worth, Tex., assignor to Speed Fab-Crete Corporation, International, Fort Worth, Tex.
Filed May 29, 1973, Ser. No. 364,302
Int. Cl. E04b *1/04*
U.S. Cl. 52—236 **6 Claims**

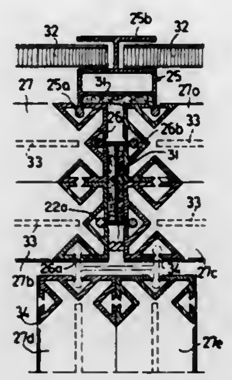


1. A combination structure for buildings and the like comprising:

a. a foundation;
b. a plurality of wall panels emplaced on said foundation; each said wall panel having a peripheral metallic skeleton that is structurally adequate to bear its share of the design load for said building such that said wall panels alone are sufficient without requiring supplemental structural supports, and a lightweight concrete center portion that has a desired facade and interior finish and that adds its structural strength, particularly in compression, to said wall panel for a large additional safety factor; said wall panels being welded together at their adjacent metallic peripheral skeletons; and
c. a plurality of deck panels emplaced, respectively, adjacent each other and connected to said wall panels at the desired height; each said deck panel including a continuous peripheral skeleton formed of a plurality of connected together metallic members; said skeleton having a structural strength adequate to bear a predetermined design load without requiring any additional supports; a lightweight concrete center portion carried by said peripheral skeleton; said concrete center portion including a downwardly depending beam of lightweight concrete extending longitudinally thereof; a plurality of first and second panel reinforcing bars embedded in said concrete center portion and connected with said peripheral skeleton; said plurality of first and second panel reinforcing bars extending longitudinally and transversely of said panels; and a plurality of beam reinforcing bars embedded in and extending longitudinally of said depending beam of lightweight concrete; said plurality of beam reinforcing bars being unprestressed at the time of pouring said concrete center portion such that said panel has a flat upper surface that does not bow upwardly in the longitudinal center thereof.

3,848,382
BUILDING FRAME STRUCTURE

Eberhard G. Rensch, Lerchesbergring 24, Frankfurt/Main, Germany
Continuation of Ser. No. 218,626, Jan. 17, 1972, abandoned, which is a division of Ser. No. 44,848, June 9, 1970, Pat. No. 3,706,169. This application July 5, 1973, Ser. No. 376,448
Claims priority, application Germany, June 9, 1969, 1929175; Mar. 10, 1970, 2011258
Int. Cl. E04b *2/72*
U.S. Cl. 52—263 **5 Claims**

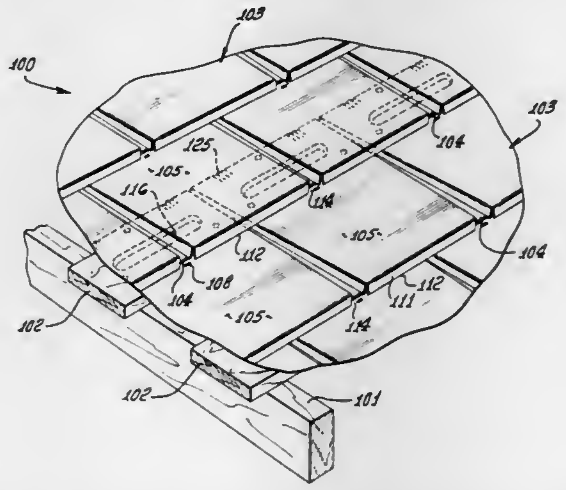


1. A building-frame structure comprising a plurality of upstanding wall members each having a profiled edge provided with a vertical slit and with an undercut behind said slit forming an enlarged vertical channel; a connector provided with a plurality of substantially parallel vertical ribs each traversing an edge slit of a respective wall member and terminating in a vertical bead received in said channel behind said slit, said connector including a web bridging said ribs, the profiled edges of said wall members being coplanar and spaced from said web; and a sealing layer inserted between said coplanar edges and said web.

3,848,383
STRUCTURAL SURFACE METAL SHINGLE COVERING

Robert J. Wilson, 1076 W. San Bruno, and Robert W. Naden, 39880 Ave. 7½, both of Fresno, Calif.
Continuation-in-part of Ser. No. 97,773, Dec. 14, 1970, Pat. No. 3,720,031, which is a continuation-in-part of Ser. No. 817,607, March 24, 1967, abandoned. This application Feb. 26, 1973, Ser. No. 336,087
Int. Cl. E04d *1/18*
U.S. Cl. 52—533 **5 Claims**

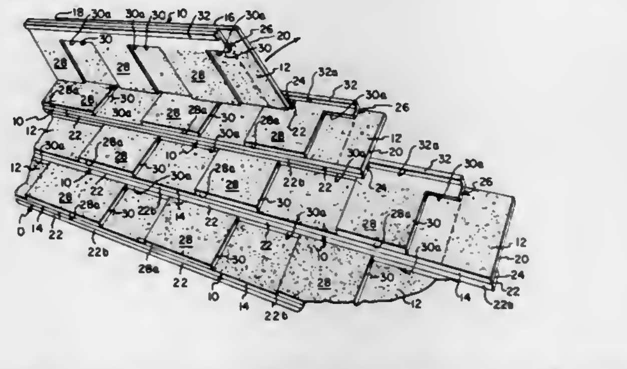
1. In a roof structure having a plurality of horizontal boards providing a supporting surface, a plurality of horizontally arranged courses of formed metal shingle elements each having a shingle wall of trapezoidal shape and generally planar, downturned tapering side flanges on said wall, a downturned bottom butt flange on said wall having a bottom edge adapted to contact corresponding walls of the next lower course of shingle elements; a plurality of flashing strip elements extending beneath and between edges of adjacent shingle elements of a course and positioned by said butt flanges; and means securing said shingle elements to said supporting surface; each shingle wall having a lower portion having a planar uninterrupted surface exposed to weather and an upper portion covered by the lower portion of the next above adjacent shingle elements and associated flashing elements in the next above course of shingle elements; wherein the improvement comprises:



means for minimizing lateral and longitudinal distortion of each shingle wall out of its normal preformed plane at the contact zone of the butt flange edges of shingle elements of the next above course, said distortion minimizing means comprising
indentation means extending laterally and longitudinally in the upper portion of each shingle wall above the contact of the butt wall of the upper shingle therewith and spaced from the side flanges thereof;
said means for securing each shingle element being located in the portion of said shingle wall between said indentation means, said side flanges and above said butt wall contact of the upper shingle with the lower portion whereby said planar surface of the lower portion and edge of the butt wall of the upper shingle form a virtually uniform joint line appearance.

3,848,384
COMPOSITION SHINGLE

James W. Eaton, Elgin, and Allan J. Luck, Marengo, both of Ill., assignors to Masonite Corporation, Chicago, Ill.
Continuation-in-part of Ser. No. 229,420, Feb. 25, 1972, abandoned. This application July 2, 1973, Ser. No. 375,626
Int. Cl. E04d *1/20, 1/26, 1/36*
U.S. Cl. 52—420 **7 Claims**

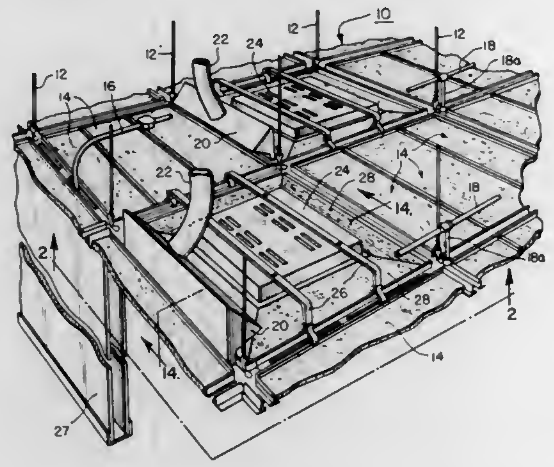


1. A shingle system comprising at least one pair of shingles, each shingle having a solid rectangular base of thin composition sheet material with an undersurface and an opposite outer surface having at least a portion thereof adapted for exposure

to the weather, said bases having parallel elongated upper and lower edges and a first narrow strip along said lower edges secured beneath said undersurface for use in securing the lower edges of said shingle bases to the surface of a supporting roof or wall structure; said shingles including a second narrow strip along said upper edge secured above said outer surface of said base for abutting engagement with a first strip of a shingle laid in an adjacent row; each of said shingles including a tab member of thin composition sheet material having an underside adapted to overlay the outer surface of a shingle base and an opposite outer surface having at least a portion adapted for exposure to the weather, each of said tab members including an elongated strip comprising an upper edge portion thereof and a plurality of longitudinally spaced apart shingle tabs integral therewith extending downwardly from said elongated strip defining alternate open spaces between said tabs exposing the outer surface of an underlying base, said open spaces of one tab member dimensioned to match the tabs of the other tab member of said pair of shingles, each of said open spaces defined by a lower edge segment of said elongated strip and a pair of opposite side edges of adjacent tabs, each tab including a lower edge spaced downwardly from said lower edge segments by a dimension whereby said tab lower edges are aligned with said lower edge of an underlying shingle base and the lower edge segments adjacent thereto are aligned with the tab lower edges and the lower edge of an underlying base in a next adjacent upper row of shingles, and means for securing said elongated strips of said tab members adjacent one of said first and second strips.

3,848,385
MODULAR CEILING CONSTRUCTION

Neil J. Thompson, Palatine, Ill., assignor to National Ceiling Corporation, Chicago, Ill.
Filed June 12, 1970, Ser. No. 45,638
Int. Cl. E04b *5/52;* **F24f** *13/06*
U.S. Cl. 52—475 **21 Claims**

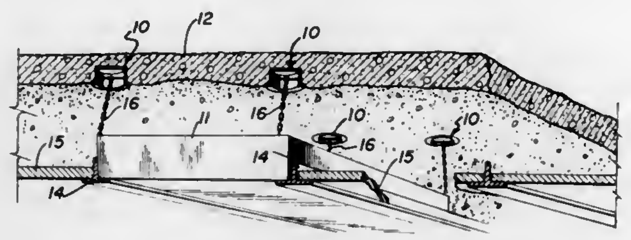


20. The modular grid system of claim **19** in which said elongated members of said main runner means are each formed as channel members of a generally U-shaped cross-section and each have exterior support flanges extending along opposite sides of said channel member and in which said elongated members of said secondary runner means are each of a generally T-shaped cross-section.

3,848,386
FIXTURE SUPPORT

David J. Catallozzi, 31 Harvey Ln., Westboro, Mass. 02169
Continuation of Ser. No. 150,385, June 7, 1971, abandoned. This application June 11, 1973, Ser. No. 368,709
Int. Cl. E04b *5/00*
U.S. Cl. 52—706 **4 Claims**

1. A fixture support adapted to be attached to the upper surface of a concrete form so as to subsequently be embedded in a concrete ceiling poured on the form, comprising



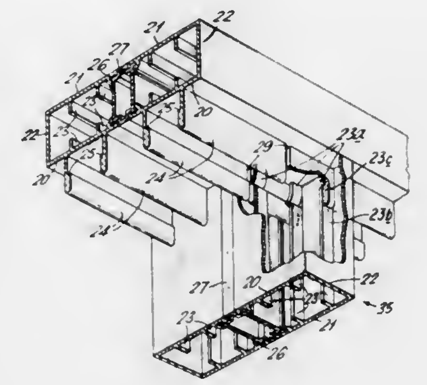
a. a main body having a cylindrical tubular portion with an integral closure at a first closed end and an integral outwardly-extending flange at a second open end extending outwardly of the tubular portion,

b. a bar extending transversely across the tubular portion and extending externally thereof a substantially greater distance than the flange, the bar extending across the tubular portion at a position adjacent the closed end, and

c. an elongated, flexible element having a first end attached to the bar and a second end extendable well beyond the limits of the main body to a point a greater distance from the main body than any straight distance within the main body, the support including a closing means for attaching the entire flexible element within the main body until the body is attached to the form.

3,848,387
EXTRUDED SECTION AND STRUCTURES INCORPORATING SUCH SECTION

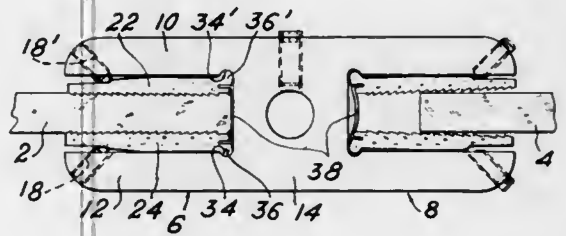
Joseph A. Hafner, Stoney Creek, Ontario, Canada, assignor to John Anderson Cuddie, Hamilton, Ontario and Alcide Melanson, Burlington, Ontario, Canada, part interest to each
Continuation-in-part of Ser. No. 192,425, Oct. 26, 1971, abandoned. This application July 3, 1972, Ser. No. 268,923
Claims priority, application Canada, Feb. 7, 1972, 134047
Int. Cl. E04c *3/07;* **E04b** *1/343*
U.S. Cl. 52—735 **11 Claims**



1. An extruded structural member including an elongated structural element with two longitudinally extending side faces directed away from one another, a pair of spaced apart longitudinally extending first flanges integral with said element and projecting from one of the side faces thereof and a pair of spaced apart longitudinally extending second flanges integral with said element and projecting from the other side face thereof, with said first flanges having inner mating faces spaced apart a first predetermined distance and said second flanges having outer mating faces spaced apart by said first predetermined distance such that the second flanges of one such member will fit slidably between the first flanges of another such member and with each flange of one of said pairs of flanges having a ledge in its mating face, the ledges extending the length of the flange facing towards the adjacent side face of the member and spaced therefrom a second predetermined distance throughout the length of the flange, each flange of the other pair of flanges having a resilient projection integral therewith, projecting from its mating face, each such projection having a free edge spaced from an end of the structural element by said second predetermined distance, facing away from said end and extending across the associated mating faces in a direction transversely to said side faces of said structural element so that in assembling two such structural members with said end of one abutting against said one side face of the other, the edges of the resilient projections of the one will engage under the ledges of the other to hold the two members together at a predetermined angular relationship.

3,848,388
MULTI-DIRECTIONAL CONNECTING ELEMENT FOR PANELS

Serge Norbert Emile Bretche, 82 avenue Roger Salengro, Chaville, France (92370)
Filed Feb. 1, 1973, Ser. No. 328,509
Claims priority, application France, Feb. 8, 1972, 72.04186
Int. Cl. F16b *5/06*
U.S. Cl. 52—753 D **5 Claims**



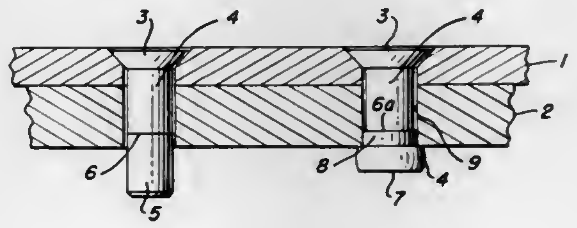
1. A connecting element for panels comprising a connecting element having the shape of a partial cylindrical surface defined by two parallel planes, longitudinal grooves in said surface parallel to said planes surrounded on three sides by faces of said surface, each groove having two sides constituted by two parallel ribs and by an end portion constituted by a junction surface between said two ribs, an internally threaded bore in at least one of the sides of each groove which opens into said groove, the axis of each bore being parallel to the plane which defines the cylindrical surface and forming an obtuse angle with the internal face of the corresponding rib, a screw in each bore,

packing-strips in said grooves, each packing-strip engaging one of the internal faces of said grooves, means for preventing sliding motion between said packing-strips and said panel on each of said packing-strips, a recess adjacent the bottom of said groove, a shouldered end for each packing-strip engaging in the corresponding recess and a curved spring blade joining the two packing-strips in a groove at said shouldered ends.

3,848,389
BIMETAL RIVETS

Roland Howard Gapp, South Laguna; Marcos Daniel Alazraki, Orange, and John Harper, Santa Ana, all of Calif., assignors to Textron Inc.
Continuation of Ser. No. 888,999, Dec. 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 733,567, May 31, 1968, abandoned. This application Apr. 19, 1972, Ser. No. 245,408
Int. Cl. F16b *5/04, 19/06*
U.S. Cl. 52—758 D **16 Claims**

1. In combination a plurality of structural members having axially aligned apertures therein, and a bimetal rivet of a predetermined grip length extending through said aligned apertures fastening said members together, the meeting areas of said members forming a high shear zone, said rivet comprising



a solid integral head and shank section of a first metal having a high shear and tensile strength at room temperature and up to at least 1,000° F., said head and shank section consisting of an enlarged head portion and a cylindrical shank extending therefrom,

a solid tail section of a ductile and readily formable second metal being compatible with the metal of the head and shank section for integral union therewith,

the shank of said head and shank section and said tail section being of the same diameter,

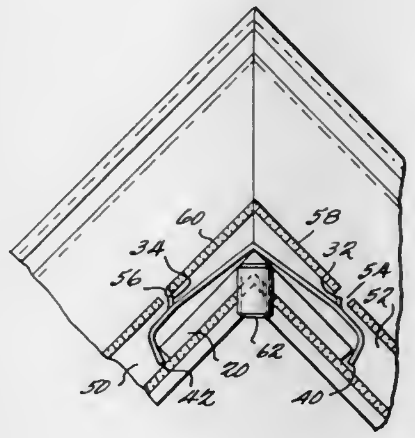
said tail section and the shank of said head and shank section being united end to end and forming an interface between the entire cross-sectional area of their meeting ends,

said interface comprising an integral welded joint,

said interface being located within the grip length of said rivet, and only the shank of said head and shank section extending across said high shear zone, said tail section projecting beyond the adjacent surface of the structural member most remote from said head and being upset, thereby securely clamping said structural members together.

3,848,390
WINDOW FASTENER

William S. Anderson, Berwyn, Pa., and Roman Gerken, Delran, N.J., assignors to United States Banknote Corporation, New York, N.Y.
Filed Jan. 12, 1973, Ser. No. 322,943
Int. Cl. E06b *1/14*
U.S. Cl. 52—758 H **3 Claims**



1. A corner framing fastener for fastening together a pair of framing rails forming a corner comprising:

an L-shaped bottom spring member having a threaded aperture at the apex thereof;

a top spring member having leg portions extending outward from an apex and forming an obtuse angle with respect to each other, each leg portion terminating in a curved end for engaging an end of said L-shaped member and a tab extending outward from each leg portion for each engaging a slot in one of said pair of framing rails forming a corner; and

a screw member with one end thereof passing through said threaded aperture with said screw member engaging the threads thereof and said one end engaging the apex of said bottom spring member for exerting a force on the apex of said top spring member to urge that apex away from said bottom spring member and cause said tabs to engage said respective slots to pull said framing rails toward each other.

3,848,391
PROCESS FOR GAS-FREE PACKAGING OF MOLTEN ALKALI METAL

Helmut Knorre, Seligenstadt, and Peter Leidl, Grossauheim, both of Germany, assignors to Deutsche Gold-Und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed Mar. 5, 1973, Ser. No. 337,985
Int. Cl. B65b *31/02*

U.S. Cl. 53—7 **2 Claims**

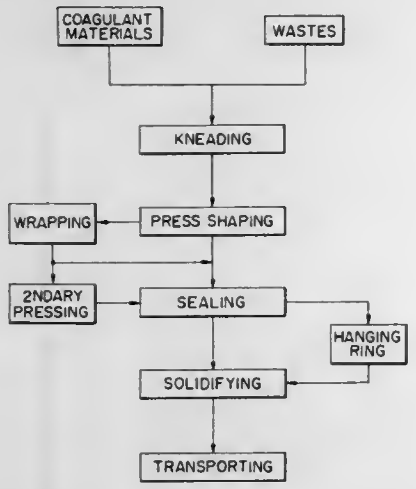
1. A process for the gas-free packaging of a molten alkali metal in a can capable of accepting a clamp-on lid, said process comprising filling said can with said molten metal, applying a lid to said can, closing said can by clamping said lid to said can, inventing the resulting closed can so that the exposed surface of said lid faces downward, and cooling the inverted can.

3,848,392
METHOD FOR DISPOSAL OF INDUSTRIAL WASTES

Kunitoshi Tezuka, Tokyo, Japan, assignor to Tezuka Kosan Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1973, Ser. No. 406,395
Claims priority, application Japan, Oct. 18, 1972, 47-103650; June 23, 1973, 48-71119
Int. Cl. B65b *63/02*

U.S. Cl. 53—21 R **11 Claims**



1. A method for disposal of industrial wastes which comprises the steps of incorporating a coagulant into the starting waste, kneading the mixture, press-shaping the resulting kneaded mixture, sealing the resulting shaped article with a cement material, and aging and solidifying the sealed, shaped article.

3,848,393
PACKAGING MACHINE AND PROCESS

Alfred C. Monoghan, Warren, N.J., assignor to Monaghan Automated Systems, Inc., Greenbrook, N.J.

Continuation of Ser. No. 112,574, Feb. 4, 1971, abandoned. This application Dec. 18, 1972, Ser. No. 316,097
Int. Cl. B65b *31/00*

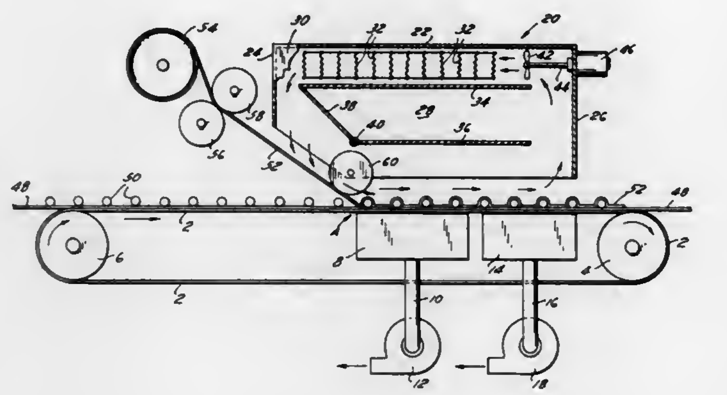
U.S. Cl. 53—22 A **10 Claims**

1. A process for the continuous skin packaging of articles which comprise the steps of:

forming at least two zones of reduced pressure,

providing said first zone with an area of greater reduced pressure than the pressure in said second zone to evacuate the bulk of the air in said first zone,

continuously moving a packaging substrate upon which the articles are sequentially directed through said zones,



continuously softening a film of plastic material, and

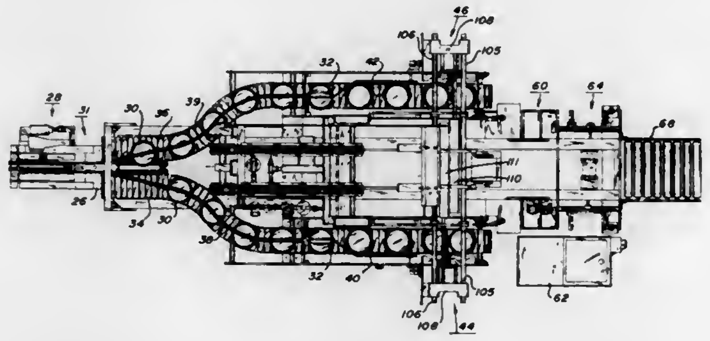
continuously feeding said softened film at an angle to said substrate to the front of said zones and in sequence over the articles positioned on said substrate whereby said film is shaped around the articles and adhered to itself.

3,848,394
APPARATUS AND METHOD FOR ORIENTING AND CASE PACKING EARED CONTAINERS

Raymond A. Heisler, 657 Dakota Trl., Franklin Lakes, N.J. 07417

Filed June 26, 1973, Ser. No. 373,752
Int. Cl. B65b *5/08, 35/56, 43/28*

U.S. Cl. 53—26 **39 Claims**



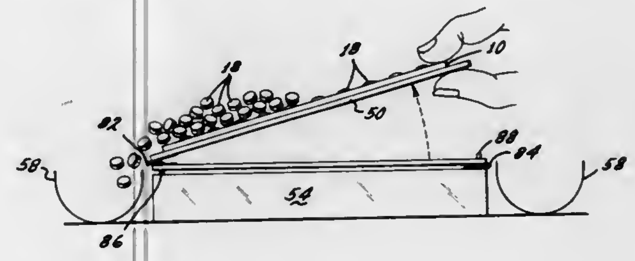
1. Apparatus for receiving containers in a single file array and to equally divert said containers to two conveyors and to then insert an equal number of containers substantially simultaneously into the opposite open ends of an erected carton and thereafter delivering said carton to closing, gluing and sealing means after which the carton is delivered from the apparatus, said apparatus including: (a) a delivery means adapted to deliver a supply of eared containers to a receiving station; (b) a diverting means at said receiving station, said diverting means adapted to alternately feed every other container to and along a first transporting conveyor disposed along one side of the apparatus and to alternately feed the other container to and along a second transporting conveyor disposed along the other side of the apparatus; (c) means for erecting and delivering an erected carton to an inserting station whereat the carton has both its ends retained in an open condition, each open end of the carton positioned adjacent a container inserting apparatus; (d) means in association with said conveyor for presenting each container to an inserting station with the ears of the container in a determined oriented condition; (e) circuit control means adapted to determine that a required quantity of containers are in place in way of each of the inserting apparatus and that an open erected carton is in its required place; (f) inserting apparatus associated with each transporting conveyor, each apparatus having an ear engaging arm disposed to slidably engage the side of a container as the container is moved from the conveyor to and into the open end of a carton, said engaging arm engaging one side of an ear to orient the axis of the ear at a determined angle to the side of the receiving carton, and an ear retaining finger associated with the ear engaging arm, said finger and arm retaining an ear of the container at a determined orientation in the carton during insertion of the container to achieve the carton filled condition, and (g) means for moving the filled carton to sealing and delivery means.

3,848,395
MEANS FOR AND METHOD OF DISPENSING MEDICINAL TABLETS AND CAPSULES

George A. Totten, 200 N. El Camino Real, Oceanside, Calif. 92054

Filed Sept. 19, 1973, Ser. No. 398,574
Int. Cl. B65b *67/02*

U.S. Cl. 53—35 **11 Claims**



1. Means for separating a selected number of medicinal tablet or capsule objects from a bulk supply of said objects, comprising:

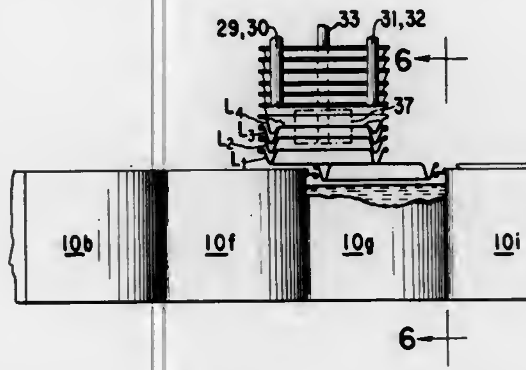
a. a tray having a planar working surface,
b. a template, positioned on said working surface, having rows and files of openings, each of said openings being of a size to accept only one of said objects, whereby upon dumping of said objects from said bulk supply on said template and by manipulation, all of the openings will be filled,
c. a base and pivotal mounting means between said base and said tray so that said tray can be tilted toward an end thereof to pour off said objects under force of gravity, and
d. a receptacle under said end of said tray located to receive said objects when poured off said end of said tray by tilting of said tray.

3,848,396
MEANS FOR DEPOSITING LIDS ON FILLED CONTAINERS AND THEN SEATING SAID LIDS IN SEALING CONDITION ON SUCH CONTAINERS

Richard Schmidt, Crestwood, N.Y., assignor to Procter Paint and Varnish Co., Inc., Yonkers, N.Y.

Filed Nov. 9, 1973, Ser. No. 414,456
Int. Cl. B65b *7/28;* **B67b** *1/04*

U.S. Cl. 53—43 **17 Claims**



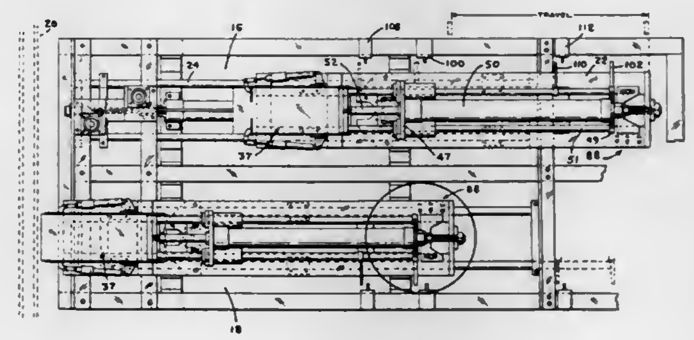
1. A lid-applying machine for closing filled containers comprising a feed line on which said containers are movable, a lid-depositing means positioned at a station along said feed line, means for advancing filled containers in abutting relationship along said feed line to and away from said lid-depositing means at said station, said lid-depositing means including means for maintaining a stack of lids, hold-back presser means movable reciprocally toward and away from said stack of lids and removably engageable with lids in said stack, and actuating means located along said feed line operated by said containers to actuate said presser means to effect momentary release and reengagement of said stack for deposit of a single lid onto a lidded container at said station, means for retaining said single lid against movement with said lidded container whereby movement of said lidded container along said feed line causes said released single lid to be applied to the next adjacent filled container.

3,848,397
BOX FILLING DEVICE

Russell W. Allen, Pompton Plains, N.J., assignor to Container Equipment Corporation, Bloomfield, N.J.

Filed Apr. 20, 1973, Ser. No. 353,169
Int. Cl. B65b *63/02*

U.S. Cl. 53—124 D **13 Claims**



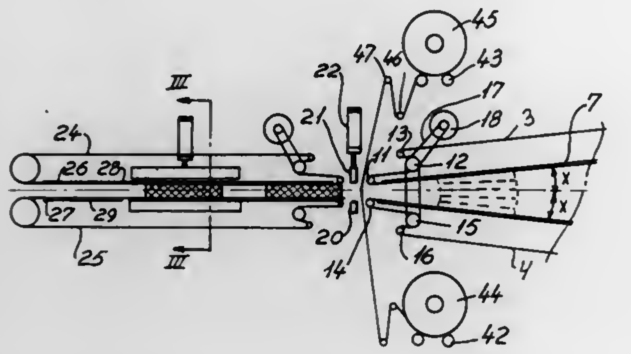
1. The receptacle for transporting material and inserting said material into a container comprising:

a bottom surface having a front and back side;
a rear wall disposed above said bottom surface, constructed and arranged to move forward and backward above said bottom surface;
first and second side walls extending above said bottom surface;
opening lip means movably connected to at least one of said bottom surface and side walls; and
lip moving means connected to at least one of said bottom surface and said side walls to move one end of said lip means transverse to the plane of said side wall to increase and decrease the size of the front opening of said receptacle;
wherein said opening lip means comprise first and second lip means operatively associated with said first and second side walls respectively; and
said lip moving means move said first and second lip means in opposing manner; and
wherein first and second lip means are pivotally mounted to said first and second side walls; and
wherein said lip moving means comprise translation extension means to produce translational movement to actuate said opening lip means; and
wherein said lip moving means further comprise means to convert the translation movement of said translation extension means to rotary movement to pivot said opening lip means;
further comprising shoe means connected to said rear wall and disposed parallel to and adjacent said bottom surface to move along said bottom surface to gather material in said container for movement to the front opening of said container; and
further comprising:
bellying bar means disposed on the bottom surface of said

container extending from said bottom surface above said shoe means; and
said shoe means comprising segments disposed on either side of said bellying bar.

3,848,398
APPARATUS FOR WRAPPING COMPRESSIBLE ARTICLES

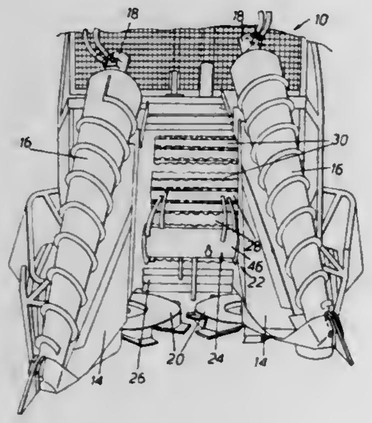
Poul Suhr, Kirkebakken 17, DK-2600 Glostrup, Denmark
Filed May 8, 1973, Ser. No. 358,338
Int. Cl. B65b *63/02*
U.S. Cl. 53—124 C **4 Claims**



1. An apparatus for wrapping compressible articles in sheet material, comprising two conveyor belts converging in their feeding direction, means for supplying wrapping sheet material from two sides to a position in front of the front ends of the conveyor belts, sealing and severing means provided between the front ends of the conveyor belts and a holding mechanism, said heat sealing and severing means comprising two heat sealing jaws which are movable relative to one another transversely of the direction of movement of the articles, two guide plates between the front ends of the converging conveyor belts and the heat sealing jaws, the distance between the two guide plates being slightly greater than the minimum distance between the converging belts, and the means for supplying wrapping sheet material being arranged to supply this material to a position following the guide plates in the direction of travel of the articles.

3,848,399
SUGAR CANE HARVESTERS

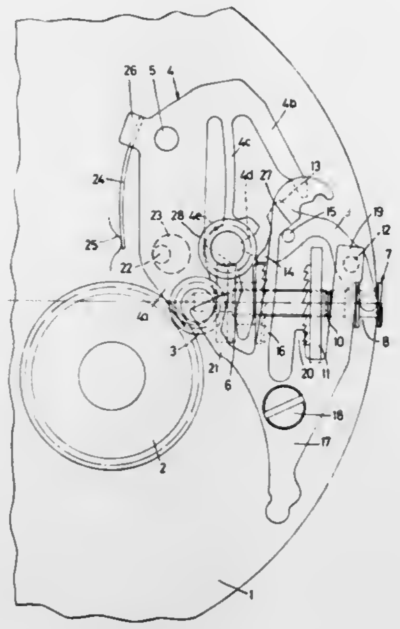
Sam Robert Makeham, Bundaberg, Australia, assignor to Massey-Ferguson (Australia) Limited, Sunshine, Victoria, Australia
Filed Apr. 30, 1973, Ser. No. 355,860
Claims priority, application Great Britain, May 6, 1972, 21201/72
Int. Cl. A01d *45/10*
U.S. Cl. 56—13.9 **6 Claims**



1. In a mobile sugar cane harvester comprising ground wheels, a body portion supported on said ground wheels, a pair of crop gathering members defining a crop-receiving throat, said crop gathering members being mounted on said body portion, and a pair of cane cutters mounted on said body portion, said cane cutters being connected to a drive train whereby the cutters may be contra-rotated about respective upwardly-extending axes to sever canes as the canes pass through the throat, each cane cutter comprising a blade support member, said blade support member being coupled to said drive train, and a blade mounted at the periphery of said blade support member; the improvement wherein said blade support member comprises a flat disc, and a flange, said flange being fixed to the periphery of said disc and extending axially downwardly therefrom with respect to the axis of rotation of said cutters, said blade being mounted at the lower edge of said flange and downwardly offset from at least the inner portion of said blade support member and wherein said flange is in the form of a cylinder, said cylinder and said disc together defining a drum-shaped structure.

3,848,400
CONTROL MECHANISM FOR WATCH MOVEMENTS

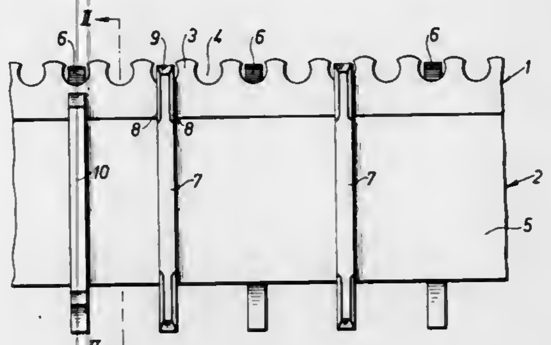
Josef Fluck, Grenchen; Kurt Schaller, Lengnau, and Roland Zaugg, Grenchen, all of Switzerland, assignors to A. Schild S. A., Grenchen, Switzerland
Filed Mar. 6, 1974, Ser. No. 448,564
Claims priority, application Switzerland, Mar. 23, 1973, 4276/73
Int. Cl. G04b *27/04*
U.S. Cl. 58—68 **7 Claims**



1. A control mechanism for mechanical watch movements comprising a control stem, a setting-lever pivoting on a movement plate and linked to the stem, a setting-lever spring capable of securing the stem in several different axial positions, a clutch-wheel movable on a square of the stem, a winding-pinion coaxial with the stem, and a setting-wheel intended to be driven in rotation by the clutch-wheel in at least one of the said positions of the stem, and further comprising a control plate pivoting on the movement plate and having at least two arms, one of these arms being resiliently deformable with respect to the other arm, which is rigid, and a second spring causing the said control plate to rotate around its pivoting point, and wherein the said resiliently deformable arm is engaged in a groove of the clutch-wheel while the rigid arm carries the said setting-wheel.

3,848,401
GRASS CUTTER

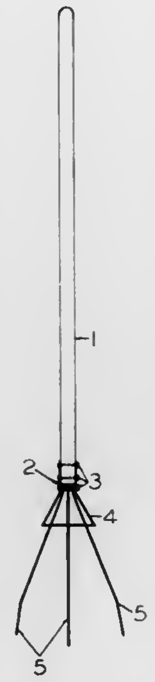
Per Sigvard Hast, Hastholmsvagen 10, S-11644 Stockholm, Sweden
Filed Sept. 28, 1973, Ser. No. 401,958
Claims priority, application Sweden, Sept. 29, 1972, 12581/72
Int. Cl. A01d *55/04*
U.S. Cl. 56—296 **4 Claims**



1. In a cutter assembly for cutting grass, hedges and similar vegetation, in which said assembly comprises a holder bar and a cutter bar, both bars having transversely extending teeth, the cutter bar being reciprocatingly movable along a side edge of the holder bar thus causing a cutting action between the teeth, the improved construction according to which the cutter bar is formed as a flat-sided flexible strip and the teeth on the holder bar are disposed alternatingly on both flat sides of the cutter bar, the spacing between the teeth on the holder bar, measured perpendicularly to the plane of the cutter bar, being less than the thickness of the cutter bar, the cutter bar thus being pressed between the teeth on the holder bar and bent to a curved shape.

3,848,402
SELF ADJUSTING HEDGE AND PIPE RAKE

Melbourne E. Agen, 248 Bunting Ln., Madison, Wis. 53704
Filed July 30, 1973, Ser. No. 383,602
Int. Cl. A01d *7/06*
U.S. Cl. 56—400.2 **4 Claims**



1. A self-adjusting rake for use in confined spaces comprising in combination

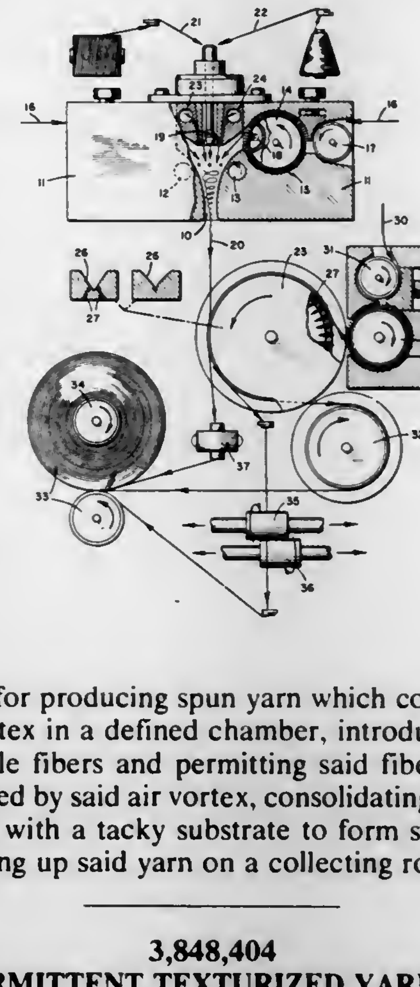
a. a handle,

b. a guide head fixed to said handle and configured with a plurality of elongated slots disposed therein which extend through an elevational gradient when said rake is operably positioned for use with the lower end extremities of said slots disposed in nearer mutual adjacency than the upper end extremities thereof,

c. a plurality of tines disposed closely clustered and pivotally affixed at their root ends essentially as extension of said handle to said guide head wherein each said tine has a vertical component of movement when said rake is operably positioned for use, each said tine being disposed separately within one of said slots, said tines being actuated to drop to the lower end extremities of said slots when said rake is raised thereby to be closely clustered along their entire length when said rake is unsupported except by said handle, and to be divergently biased by said guide head being biased downward relative to said tines when said tines are placed down and drawn along a surface being raked, thereby causing said tines to be disposed at the upper end extremities of said slots.

3,848,403
AERODYNAMIC SPINNING OF COMPOSITE YARN

Emilian Bobkowicz, and Andrew John Bobkowicz, both of 1435 St. Alexander St., Rm. 310, Montreal, Quebec, Canada
Filed Aug. 6, 1973, Ser. No. 385,720
Claims priority, application Canada, Nov. 29, 1972, 157798
Int. Cl. D01h *1/12*
U.S. Cl. 57—34 HS **20 Claims**



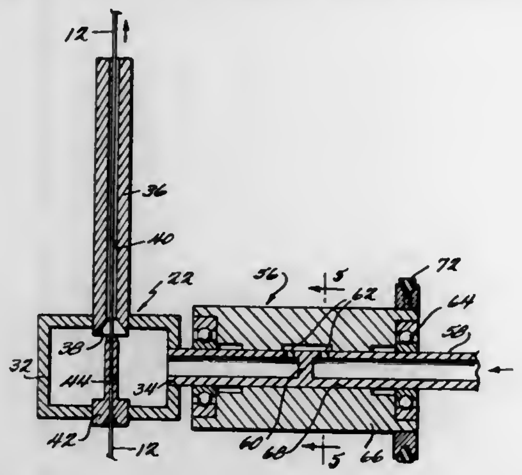
1. Method for producing spun yarn which comprises forming an air vortex in a defined chamber, introducing into said chamber staple fibers and permitting said fibers to become helically twisted by said air vortex, consolidating said helically twisted fibers with a tacky substrate to form spun yarn, and linearly winding up said yarn on a collecting roll.

3,848,404
INTERMITTENT TEXTURIZED YARN AND FALSE-TWIST APPARATUS AND PROCESS FOR PRODUCING THE SAME

Joe F. London, Jr., Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.
Filed Sept. 25, 1972, Ser. No. 291,586
Int. Cl. D02g *1/02, 1/16*
U.S. Cl. 57—34 HS **10 Claims**

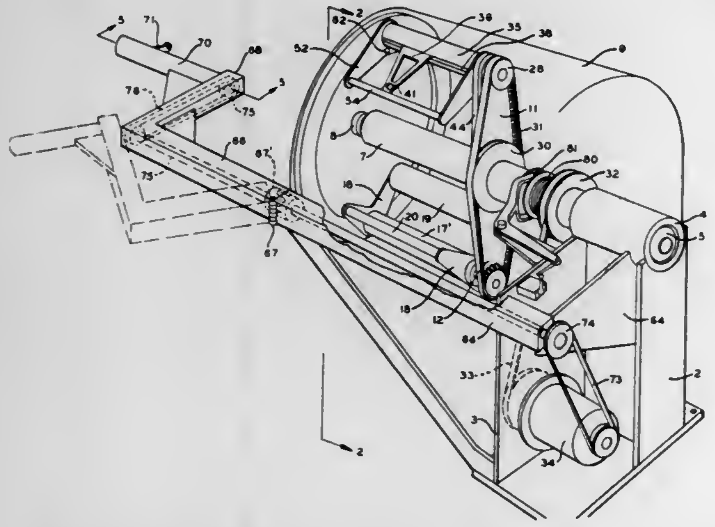
1. A method of texturizing thermoplastic yarn which comprises the steps of continuously feeding a substantially uniformly continuous yarn into and out of a texturizing zone, maintaining a false twist in the yarn within said texturizing zone by continuously imparting a twist to the yarn at a twisting position spaced downstream from an upstream position of restraint, providing a region of closely adjacent surrounding

peripheral confinement along a predetermined short longitudinal extent of the yarn continuously moving between said upstream position of restraint and said twisting position, and intermittently passing superheated steam through said confinement region at a sonic velocity so as to heat-set the false twist in successive spaced portions of the yarn contacted by said superheated steam while permitting the remaining portions of the yarn to pass out of said texturizing zone with the false twist imparted thereto while moving therethrough removed without being heat set.



3,848,405
APPARATUS AND METHOD FOR PRODUCING NO-TWIST CENTER PULL ROVING PACKAGES

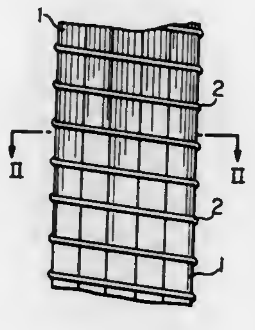
Harald E. Karlson, Santa Monica, Calif., assignor to Goldsworthy Engineering Inc., Torrance, Calif.
Filed July 29, 1970, Ser. No. 59,261
Int. Cl. D01h *1/04;* **B65h** *54/02*
U.S. Cl. 57—71 **13 Claims**



1. The method of producing a package of a textile fiber strand which incorporates a twist in each turn of the strand in the package; said method comprising locating a strand feeding element in spaced parallel relationship with respect to a nonrotating, nonshiftable mandrel receiving said strand, orbiting said feeding element about said mandrel, simultaneously shifting said feeding element back and forth in parallel relationship with respect to a portion of the length of said mandrel, feeding said strand to said feeding element, winding said strand issued from said feeding element about said mandrel over one end thereof to form a package on said mandrel and thereby incorporate a twist in each turn of said strand during the orbiting and shifting movement of the feeding element about said mandrel, continuously shifting said feeding element outwardly with respect to the mandrel as the diametral size of the package on the mandrel increases, shifting a member axially with respect to said mandrel simultaneously with the shifting movement of the feeding element outwardly and in direct proportion thereto, generating an electrical signal in response to the shifting movement of said last named member and in proportion to the diametral size of the package formed on said mandrel, and reducing the speed of movement of said feeding element in response to and in proportion to said electrical signal.

3,848,406
GLASS FIBER ROVING BAND FOR FIBER REINFORCED PLASTICS

Kiyoshi Tabei, Fujisawa, and Hirokazu Kittaka, Sagamihara, both of Japan, assignors to Nitto Boseki Co., Ltd., Gonome, Fukushima-shi, Japan
Filed Nov. 6, 1972, Ser. No. 303,838
Claims priority, application Japan, Nov. 18, 1971, 46-107912
Int. Cl. D02g *3/38, 3/40, 3/18*
U.S. Cl. 57—149 **1 Claim**



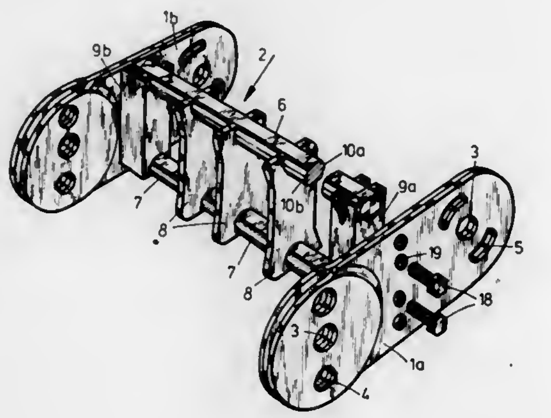
1. A flat glass fiber roving band for a fiber reinforced plastics, said band comprising a plurality of untwisted glass fiber rovings arranged in side-by-side relation with each other to provide said flat band, and fibrous means wound around the glass fiber rovings to provide a transverse strength of the band, only the transverse outside rovings being impregnated with synthetic resin before assembly.

ERRATUM

For Class 58—68 see:
Patent No. 3,848,400

3,848,407
LINK STRUCTURE FOR CHAINS FOR SUPPORTING AND GUIDING ENERGY CONVEYING CONDUCTORS

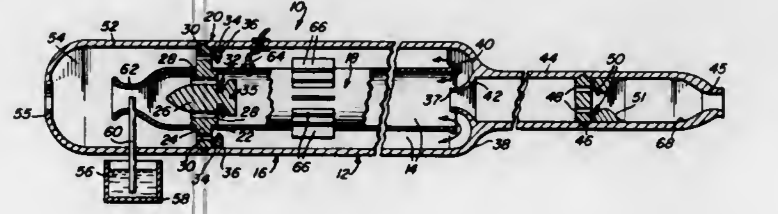
Werner Moritz, Siegen, Germany, assignor to Kobelschlepp Gesellschaft mit beschrankter Haftung, Siegen, Germany
Filed Oct. 24, 1973, Ser. No. 409,238
Claims priority, application Germany, Nov. 11, 1972, 2255283
Int. Cl. F16g *13/00*
U.S. Cl. 59—78.1 **9 Claims**



1. A link structure for use in chains for supporting energy conductors, especially cables and hoses, which includes: a first and a second link member arranged in spaced relationship and parallel to each other, a web arranged between and connected to said first and second link members while having its longitudinal extension substantially at a right angle with regard to the longitudinal extension of said first and second link members, said web comprising at least two traverse means arranged in substantially parallel and spaced relationship to each other and extending in the longitudinal direction of said web, at least one of said traverse means having two oppositely located rounded sections the contour of which corresponds to that of a cylinder and also having two oppositely located plane sides spaced from each other by a distance considerably less than the maximum distance between said rounded sections, a plurality of spacer webs respectively extending transverse to said traverse means and substantially parallel to each other while being spaced from each other in the longitudinal direction of said web, each of said spacer webs having two end portions at least one of which is provided with an undercut rounded coutout conforming in cross section to said rounded sections of said traverse means, at least one of said traverse means normally resting in said cutouts of said spacer webs and being non-removable therefrom when said rounded sections of said traverse means occupy a first position in the pertaining rounded cutouts of said spacer webs in which position said plane sides of said traverse means form a right angle with the distance line between said at least two traverse means, at least said one traverse means being rotatable from said first position into a second position angularly offset to said first position by about 90° for removal from the pertaining cutouts in said spacer webs, and locking means associated with said rotatable traverse means for preventing accidental turning thereof in the pertaining cutouts of said spacer webs.

3,848,408
COUNTER-WAVE PULSE JET ENGINE

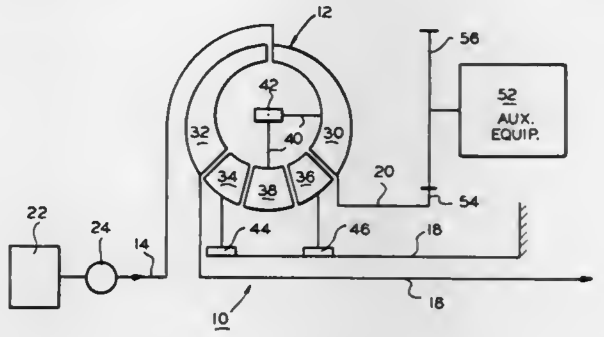
Leo L. Tompkins, 127 Wacaster St., Jackson, Miss. 39209
Filed Feb. 8, 1973, Ser. No. 330,643
Int. Cl. F02k *7/04*
U.S. Cl. 60—248 **10 Claims**



1. A combustion engine, comprising, in combination:
a. a housing forming an enclosed, resonance chamber having a pair of adjacent end portions;
b. a port provided in one of the housing end portions for permitting a fluid to pass into the chamber;
c. valve means associated with the port for closing same during intermittent combustions occurring in the chamber;
d. a further port arranged at the other of the housing end portions and being also provided with an associated further valve means for admitting air into the resonance chamber when a condition of low pressure is present in a portion of the chamber adjacent the further valve means;
e. deflection means provided on the housing and arranged between the chamber end portions for deflecting fluid passing between the chamber end portions; and
f. exit means provided on the housing and arranged between the chamber end portions for permitting combustion gases to exit the chamber.

3,848,409
TRANSMISSION SYSTEM

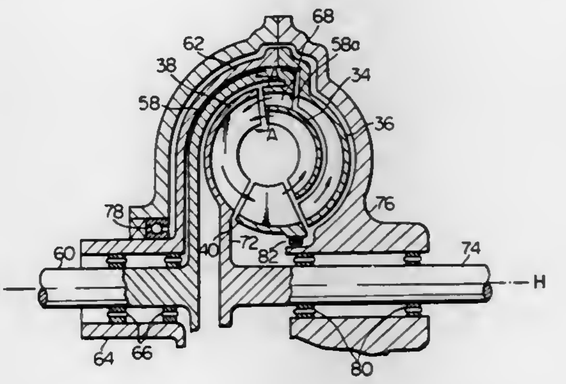
Miczyslaw J. Waclawek, Mishawaka, Ind., assignor to Clark Equipment Company, Buchanan, Mich.
Filed Oct. 9, 1973, Ser. No. 404,558
Int. Cl. F16h *47/06*
U.S. Cl. 60—345 **21 Claims**



1. A high ratio hydrodynamic torque converter comprising:
a. an impeller;
b. at least one turbine;
c. at least one reactor;
d. an auxiliary element preceding said impeller;
e. input means connected to said impeller;
f. an output shaft connected to said at least one turbine;
g. a stationary support connected to said reactor;
h. said auxiliary element being connected to one of said output shaft and said stationary support; and
i. a torque regenerative element located in said torque converter between said at least one reactor and said auxiliary element, said torque regenerative element being drivingly connected to said impeller, with said torque regenerative element absorbing a maximum torque when said torque converter is stalled and diminishing as said torque converter increases in speed ratio.

3,848,410
HYDRAULIC TORQUE CONVERTER AND POWER SYSTEM INCORPORATING SAME

Keijiro Kinoshita, Yokohama, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan
Filed Apr. 24, 1973, Ser. No. 354,108
Claims priority, application Japan, Apr. 25, 1972, 47-41670; May 1, 1972, 47-43537
Int. Cl. F16h *41/00*
U.S. Cl. 60—347 **11 Claims**



1. A hydraulic torque converter comprising at least two pumps respectively connected to separate driving members and rotatable about a common axis for producing a combined hydrodynamic power from rotational powers imparted thereto from said driving members, said pumps being located radially adjacent to each other about said axis, the pump positioned radially inwardly of the other being connected through a curved arm and a plurality of struts which are spaced apart from each other around the radially inwardly positioned pump for providing passageways between the other pump and a turbine, the turbine is rotatable about said axis responsive to said hydrodynamic power from said pumps and is drivingly connected to a driven member, and a stator positioned between said turbine and at least one of said pumps.

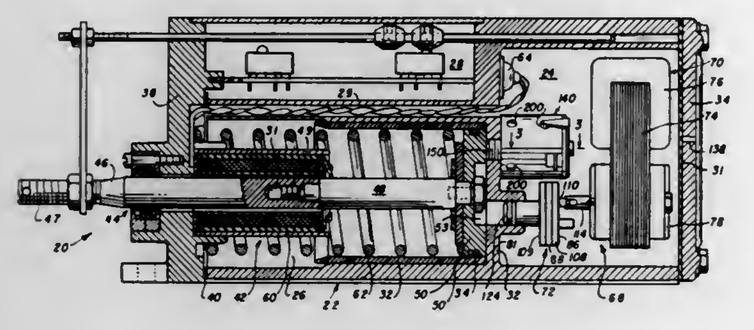
3,848,411
CONTROL CIRCUIT FOR AN ELECTROMECHANICAL ACTUATOR

Charles F. Strawn, Arlington, Tex., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Jan. 26, 1973, Ser. No. 326,854

Int. Cl. F15b *11/12, 15/18*

U.S. Cl. 60—432 **12 Claims**



1. In a control system including an actuator means having an actuator shaft movable between at least first and second positions, shaft positioning means including drive means and hold means for positioning said shaft at any one of a plurality of positions including said first and second positions and positions intermediate said first and second positions, and position sensing means for providing a sense signal indicating the position of said shaft, a control circuit responsive to said sense signal and a command signal indicating a desired position for said shaft for effecting energization of said drive means and said hold means for positioning said shaft, said control circuit comprising first switching means operable when enabled to provide an energizing signal for said drive means, second switching means operable when enabled to provide an energizing signal for said hold means, said first and second switching means being enabled concurrently whenever the difference between said command and sense signals exceeds a first predetermined amount to permit said shaft to be driven from a given position toward said second position, and to be maintained at any one of said discrete positions intermediate said given position and said second position, said second switching means being enabled independently of said first switching means whenever the difference between said command and sense signals exceeds a second predetermined amount to permit said shaft to be moved from a given position toward said first position and to be maintained at any one of the positions intermediate said given position and said first position.

3,848,412
METHOD OF SUPPLYING THERMAL ENERGY TO THE HEATER OF A HOT-GAS ENGINE, AS WELL AS A HOT-AS ENGINE COMPRISING A DEVICE FOR CARRYING OUT THE METHOD

Albertus Peter Johannes Michels; Henricus Cornelis Johannes Van Beukering; Herman Fokker, and Roelf Jan Meijer, all of Emmansingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

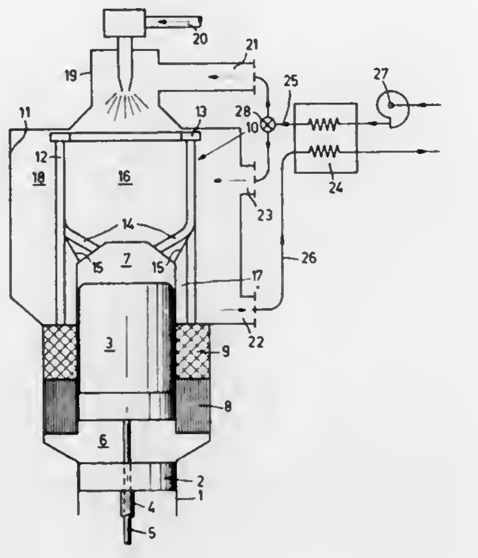
Continuation of Ser. No. 334,869, Feb. 22, 1973. This application Apr. 8, 1974, Ser. No. 458,550

Claims priority, application Netherlands, Mar. 6, 1970, 03200

Int. Cl. F02g *1/04*

U.S. Cl. 60—517 **9 Claims**

1. In a hot gas engine including a housing, a burner for combustion of air and fuel producing combustion gases and a heater comprising a plurality of ducts for exchange of heat from said combustion gases to fluid medium flowing in said ducts, the improvement in combination therewith wherein said heater ducts are situated within said housing and define a first annular space surrounded by the ducts, a second annular space surrounding the ducts, and a third space axially adjacent said ducts, said first and third spaces comprising a primary combustion space, said second space comprising a secondary combustion space including a discharge outlet, said apparatus further comprising means for supplying to said primary combustion space fuel and a quantity of air which is stoichiometrically insufficient for complete combustion of the supplied fuel resulting in combustion at a temperature lower than the temperature of stoichiometric combustion, the apparatus further comprising secondary means for supplying air to said secondary combustion space for reaction with combustion gases that flow there from the primary combustion space, said heater ducts absorbing heat from and reducing the temperature of said combustion gas which flows past the ducts from the primary to secondary combustion spaces, said heat removal in combination with non-stoichiometric combustion ensuring that the temperature of said combustion gases remain below the corresponding stoichiometric temperature such that formation of nitrogen oxides is inhibited.



3,848,413
HOT GAS ENGINE POWER CONTROL DEVICE

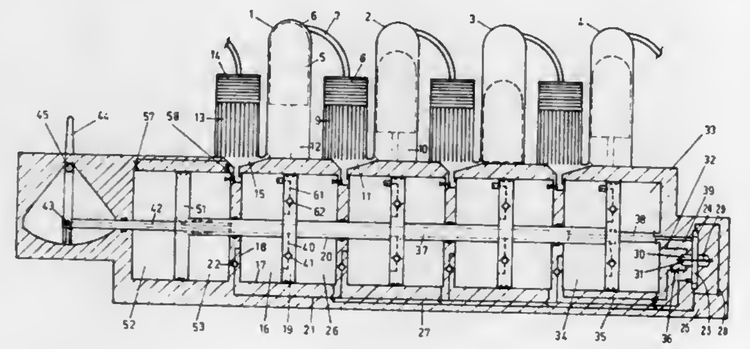
Yngve Roland Gothberg, Malmo, Sweden, assignor to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmo, Sweden

Filed Aug. 22, 1973, Ser. No. 390,518

Claims priority, application Sweden, Sept. 26, 1972, 44384/72

Int. Cl. F02g *1/04, 1/06*

U.S. Cl. 60—525 **6 Claims**



1. A multiple-cylinder hot gas engine power control device comprising in combination, a plurality of pistons each having

a low temperature working chamber for receiving gas, a dead volume chamber coupled to each said working chamber, a movable wall in each of said chambers for changing the chamber volume, and means coupling said movable walls together for common movement to control the engine power.

3,848,414
PRESSURE CONVERTER

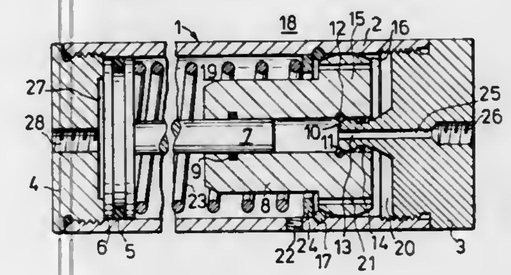
John Roland Larsson, Atvidaberg, Sweden, assignor to Aktiebolaget Assa, Atvidaberg, Sweden

Filed Feb. 14, 1973, Ser. No. 332,315

Claims priority, application Sweden, Feb. 29, 1972, 2530/72

Int. Cl. F15b *7/00*

U.S. Cl. 60—593 **9 Claims**



1. A pressure converter comprising

an outer housing having an inner cylindrical surface defining a cylindrical cavity through said housing, said inner surface having two ends,

first and second end pieces at each end of said inner surface, said end pieces closing the cavity in said housing, said end pieces each having a fluid union therein,

a first piston disposed in the cavity in said housing toward said first end piece and abutting said inner surface of said housing,

a tubular member disposed in the cavity in said housing toward said second end piece and having an inner cylindrical surface therein defining a cylindrical cavity through said tubular member,

a second smaller piston disposed in the cavity in said tubular member and abutting said inner surface of said tubular member, said second piston being rigidly connected to said first piston, and

a spigot having a rounded outer surface extending from said second end piece into the cavity in said tubular member, and having a fluid connection therein between said cavity and said union is said second end piece, said spigot abutting the inner surface of said tubular member such that it forms the tilting axis of said tubular member which is tiltable relative to said second end piece and said outer housing.

3,848,415
RESONANT GAS-EXPANSION ENGINE WITH HYDRAULIC ENERGY CONVERSION

Mihai C. Demetrescu, 17761 Palmento Way, Irvine, Calif. 92664

Filed Dec. 11, 1972, Ser. No. 314,211

Int. Cl. F2b *71/04*

U.S. Cl. 60—595 **9 Claims**

1. A resonant, combustion -gas- expansion, fluid pressurizing motive system comprising:

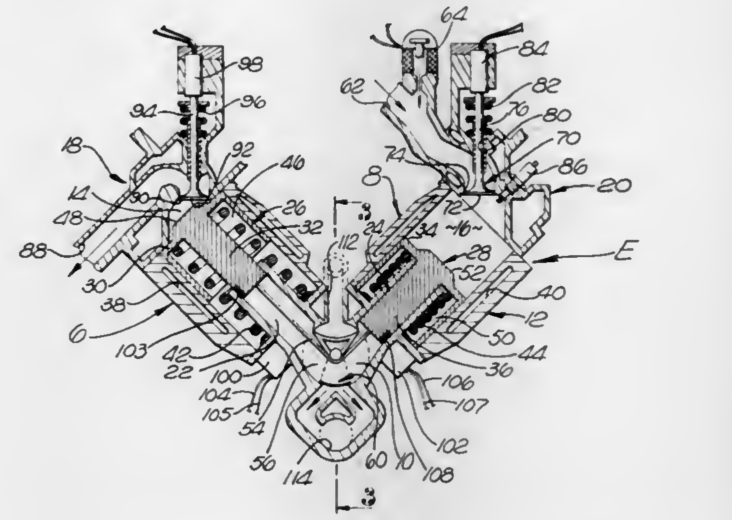
block means defining at least one pair of combustion -gas- expansion working chambers, and at least one pair of hydraulic working chambers, each of said hydraulic working chambers being coaxial with one of said combustion -gas- expansion working chambers;

at least one pair of compound piston means, each piston means being intermediate one of said combustion -gas- expansion working chambers and one of said hydraulic working chambers;

spring means interposed between said piston means and said block means,

said spring means, said piston means and a hydraulic fluid defining a spring-mass system;

hydraulic inlet and outlet means coupled to said hydraulic working chambers;



control means responsive to said spring-mass system including means for supplying and igniting a gas for driving said spring mass system at its frequency of mechanical resonance.

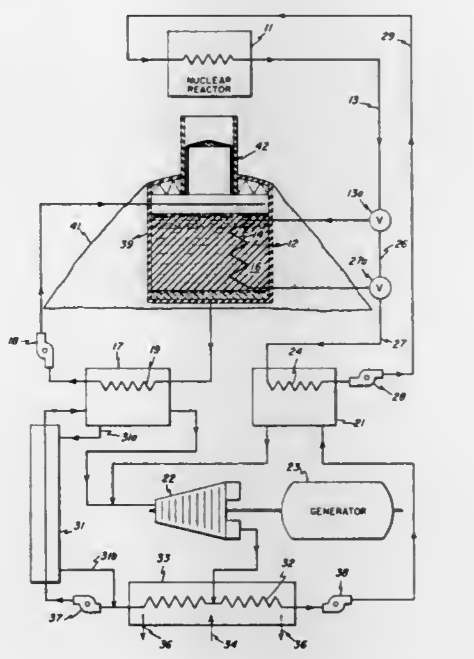
3,848,416
POWER GENERATING PLANT WITH NUCLEAR REACTOR/HEAT STORAGE SYSTEM COMBINATION

Francis P. Bundy, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 23, 1973, Ser. No. 363,139

Int. Cl. F01k *23/00, 23/10*

U.S. Cl. 60—676 **20 Claims**



1. In a power plant for generating electricity in which a source of high temperature fluid under pressure is in flow communication with a steam boiler in which heat from said high temperature fluid is used to generate steam for operation of the steam turbine used to drive a generator, the improvement in combination with the source of high temperature fluid and the steam boiler comprising:

a. a heat storage enclosure containing a mass of a salt material having a melting point of about, and less than, the temperature of the high temperature fluid,

b. heat exchange means located in said enclosure in contact with said mass,

c. means connected to said heat exchange means for selectively placing said heat exchange means into and out of flow communication with the source of high temperature fluid,

d. means connected to said heat exchange means for selectively placing said heat exchange means into and out of flow communication with the steam boiler,

e. a second boiler in flow communication with the steam turbine and

f. means for circulating said fluid heat exchange material into direct contact with said mass for receiving heat therefrom and then to said second boiler for the generation of steam with the heat carried thereby.

3,848,417

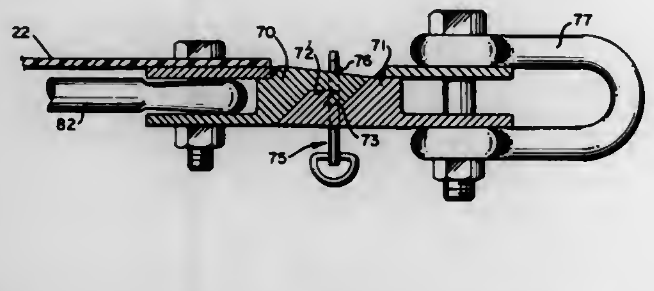
SELF-RIGHTING FLOATING BOOMS

Millard F. Smith, 2 Harding Ln., Westport, and Anthony V. Anusauckas, Fairfield, both of Conn., assignors to said Smith by said Anusauckas

Division of Ser. No. 164,606, July 21, 1971, Pat. No. 3,756,031, which is a continuation-in-part of Ser. No. 815,663, April 14, 1969, Pat. No. 3,638,430. This application May 17, 1973, Ser. No. 361,335

Int. Cl. E02b *15/04*

U.S. Cl. 61—1 F **4 Claims**



1. A tension-transmitting connector for the end of the flat vertically arrayed fin of an elongated floating material containment boom, for joining said end thereof to a tension-applying towing or anchoring rig or to the juxtaposed end of a similar boom, comprising:

A. a vertically elongated towed flange secured to said flat fin end and having a distal portion exposed for engagement with a substantially identical, mirror image towing flange;

B. means forming a raked, tension-carrying joint interlocking said towed flange to said towing flange including:
   1. a raked distal jaw protruding proximally from said towed flange in a first lateral direction,
   2. a corresponding opposite raked distal jaw protruding from said towing flange in the opposite lateral direction,
   3. a proximal raked groove immediately adjacent to each jaw with one wall formed by said adjacent jaw and positioned to receive the interengaging jaw,
   4. and locking means secured to the distal portions of said flanges for releasably securing said oppositely protruding raked distal jaws in barbed scarph interengagement and positioned to block lateral separation of each jaw from its interengaging groove and cooperate with said groove to block overlapping sliding movement of said flanges,

whereby tension loads are readily transmitted from one elongated boom segment to the next and to terminal towing rigs while the containment integrity of the booms is not significantly reduced.

3,848,418

UNDERGROUND STORAGE TANK FOR LOW TEMPERATURE LIQUEFIED GAS

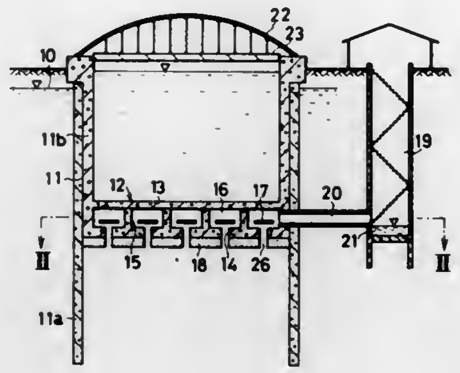
Kunio Takase, Ohmiya; Hisashi Miyakoshi, and Mitsuo Ohmura, both of Nishinomiya, all of Japan, assignors to Osaka Gas Co., Ltd., Osaka-shi, Osaka and Ohbayashi-Gumi, Ltd., Osaka, both of, Japan

Filed Apr. 12, 1973, Ser. No. 350,410

Claims priority, application Japan, Apr. 24, 1972, 47-41092; July 8, 1972, 47-68340

Int. Cl. F17c *1/12;* **B65g** *5/00*

U.S. Cl. 61—.5 **6 Claims**



1. An underground storage tank for a low temperature liquefied gas comprising a top closure cover outside of ground, a concrete annular side wall deeply extending in the ground, a concrete floor slab provided at a level lower than a ground-water level, and an insulation for keeping, at least, the upper portion of said tank to a low temperature, wherein said floor slab comprises an upper floor slab section, a lower floor slab section placed upon the excavated bottom of the soil, and a plurality of supporting members interposed between said upper and lower floor slab sections, said annular side wall extending to said lower floor slab section in contact therewith and forming an adiabatic space free from the soil inside of said side wall between said upper and lower floor slab sections and said supporting members.

3,848,419

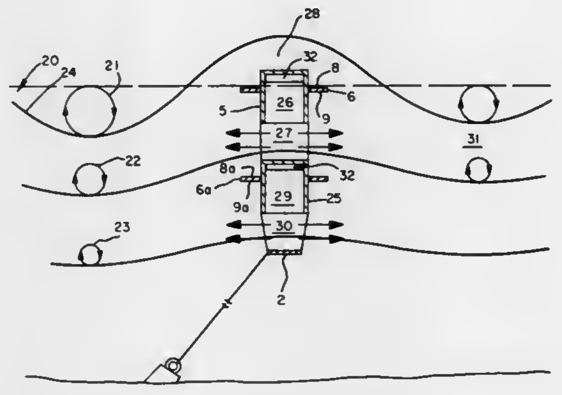
FLOATING WAVE BARRIER

Wallace William Bowley, Stafford Springs, Conn., assignor to William B. Ritchie, Jr., Duxbury, Mass., a part interest

Continuation-in-part of Ser. No. 357,938, March 7, 1973, which is a continuation-in-part of Ser. No. 267,086, June 28, 1972, abandoned. This application July 27, 1973, Ser. No. 383,346

Int. Cl. E02b *3/04*

U.S. Cl. 61—5 **9 Claims**



1. A wave barrier comprising a plurality of buoyant members, at least one of said members comprising a vessel having a closed top, an open bottom and at least one annulus secured

to the exterior of the vessel, the remainder of said members being a disk or one of said vessels having at least one annulus attached to the exterior of the vessel, said members being flexibly suspended to each other and, when anchored in water having a configuration such that the members are located at different vertical levels along a common vertical axis and each vessel has its bottom at a lower water level than its top, each of said disks being of relatively great horizontal extent compared to its vertical dimention, the mass and buoyancy of said members and the distance between said members being such as to provide vertical, out of phase motion of said members to exert a compression force on water between said members to reduce a vertical wave velocity component and increase a horizontal wave velocity component in both a landward and seaward direction without substantial contact of said members.

3,848,420

MINE ROOF SUPPORTS

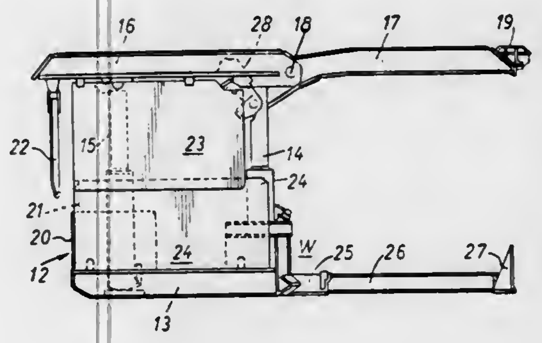
Archelaius Dawson Allen, Preston, and Fred Small, Lathom, both of England, assignors to Gullick Dobson Limited, Ince, Wigan, England

Filed Mar. 16, 1973, Ser. No. 342,304

Claims priority, application Great Britain, Mar. 24, 1972, 13972/72

Int. Cl. E21d *15/44, 23/00*

U.S. Cl. 61—45 D **3 Claims**



1. A mine roof support comprising a base structure, hydraulic prop means including foremost and rearmost props mounted on said base structure, said base structure being extended forwardly of all said prop means to provide a walkway for miners, a roof-engaging canopy mounted on said prop means for application thereby to a roof to be supported, a cantilever roof-engaging member pivotally attached to and projecting forwardly from said canopy and over said walkway, a lower side-shield plate extending up from and secured to the base structure along the side thereof and closing the space between said foremost and rearmost props for a part of the height thereof, an upper side-shield plate hingedly attached to said canopy along the side thereof and depending therefrom and overlapping said lower side shield plate for substantially the full length thereof so as to close the remaining space between said foremost and rearmost props, an extensible shield closing the support at the rear of all said prop means, whereby the flushing of mineral into the support at the sides and rear thereof is prevented, and a pressure-fluid ram means acting between said canopy and said cantilever roof-engaging member to apply the latter to a roof to be supported whereby said walkway is clear of obstruction by prop means, mounted on said base structure, for supporting said cantilever roof-engaging member.

3,848,421

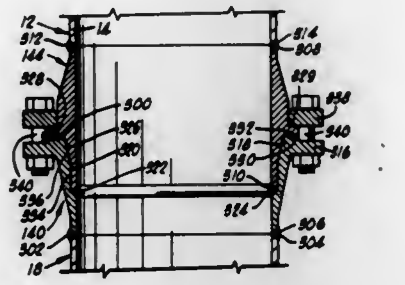
RISER SECTION APPARATUS

Billy L. O'Brien, 1400 Pine St., and Heber P. O'Brien, 730 E. 14th St., both of Ada, Okla. 74820

Continuation-in-part of Ser. No. 121,788, March 8, 1971. This application Dec. 6, 1972, Ser. No. 312,572

Int. Cl. F16l *35/00;* **B23q** *1/08*

U.S. Cl. 61—72.3 **8 Claims**



1. A riser section constructed to be interconnected to other riser sections to form a riser, each riser section being supportable in one position via a riser support assembly as another riser section is positioned in an interconnecting position therewith and secured thereto, the connected riser sections being subsequently lowerable into an interconnecting position with an underwater pipeline, each riser section comprising:

a pipe section, having a connecting upper end and a connecting lower end, the connecting upper end of the pipe section being connectable with the connecting lower end of another pipe section for interconnection of the pipe section to another pipe section; and

a support ring secured about a portion of the outer periphery of the pipe section spaced a distance from the upper end thereof and extending generally radially therefrom forming an upper surface and a lower surface, the support ring positioned on the pipe section and sized to be engageable with a portion of the riser support assembly for securedly supporting the pipe section, and the connecting upper end of the supported pipe section being connectable to the connecting lower end of another pipe section in the supported position of the pipe section and in a connected position of the pipe section to another pipe section, the support ring being spaced from the connected portions of the pipe section and the other pipe section connected thereto.

3,848,422

REFRIGERATION PLANTS

Lauritz Benedictus Schibbye, Saltsjo-Duvnas, Sweden, assignor to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden

Continuation-in-part of Ser. No. 352,731, April 19, 1973, abandoned. This application Jan. 23, 1974, Ser. No. 435,767

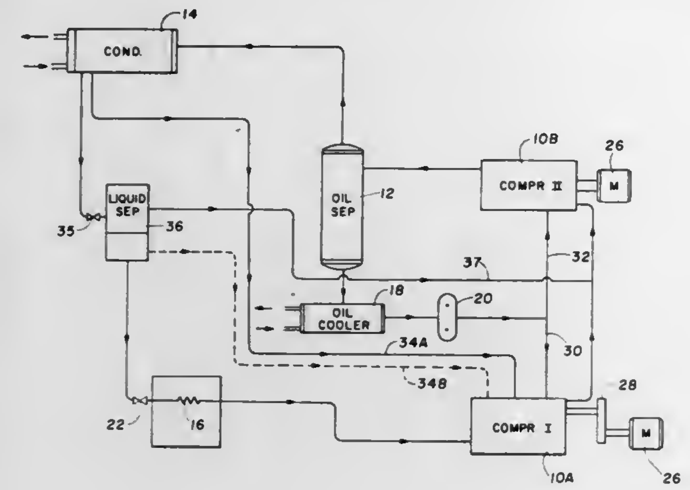
Claims priority, application Great Britain, Apr. 24, 1973, 19655/73

Int. Cl. F25b *1/10*

U.S. Cl. 62—84 **7 Claims**

1. A method of operating a refrigeration plant including a condenser, an evaporator, a first compressor means forming a low pressure stage and a second compressor means forming a high pressure stage each said compressor means being of the meshing screw rotor type having a first rotor driven by a prime mover and a second rotor driven by direct contact between its lands and the lands of the first rotor, comprising the steps of driving the first compressor means with a speed such that the peripheral velocity of its male rotor is higher than that of the

male rotor of the second compressor means and supplying lubricating oil to the first compressor means in an amount at least not considerably exceeding what is necessary to satisfactorily lubricate the relatively movable contact surfaces.

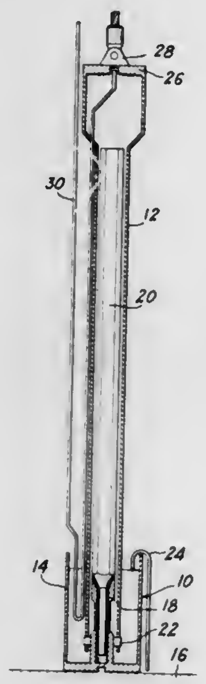


3,848,423
HANDLING SYSTEM FOR NUCLEAR FUEL ASSEMBLIES

Charley Renaux, Jouques, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Feb. 9, 1972, Ser. No. 224,813
Claims priority, application France, Feb. 9, 1971, 71.04263
Int. Cl. F17c *7/00*

U.S. Cl. 62—45 **4 Claims**



1. A nuclear fuel assembly handling system for dissipating residual thermal power of the fuel, comprising a support, a trough on said support open at the top, a bell having an open bottom part, means on said open bottom part cooperating with said support to lock said bell to said support with the lower edge of said bell below the opening of said trough, a U-tube for said bell opening into the top closed part of said bell and to the exterior and discharging at a level at least equal to the opening of said U-tube into the bell.

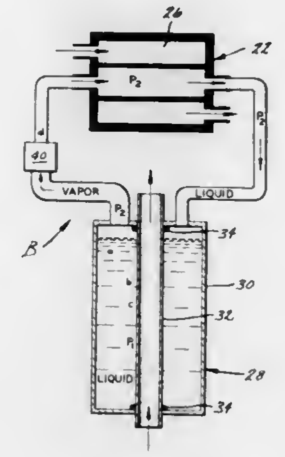
3,848,424
REFRIGERATION SYSTEM AND PROCESS

Lyle G. Rhea, Rt. 1, Box L-189, Rolla, Mo. 65401

Filed Sept. 22, 1972, Ser. No. 291,348
Int. Cl. F25b *1/00*

U.S. Cl. 62—115 **18 Claims**

1. A heat extraction system comprising: a container, the interior of which is isolated from the surrounding atmosphere; a refrigerant in the container, some of the refrigerant in the container being in the liquid phase and some being in the vapor phase; rotating means disposed within the container and extended into the liquid therein for causing the temperature at the exterior surface of the rotating means to drop below the temperature of the bulk of the liquid refrigerant when rotated about a substantially upright axis, the configuration of the rotating means being such that when the rotating means is rotated at sufficient speed a reduction in pressure and temperature occurs in the refrigerant along the surface of the rotating means while the pressure of the great bulk of the liquid refrigerant remains unchanged; and means for revolving the rotating means at a speed great enough to cause said reduction in pressure and temperature along the surface thereof.

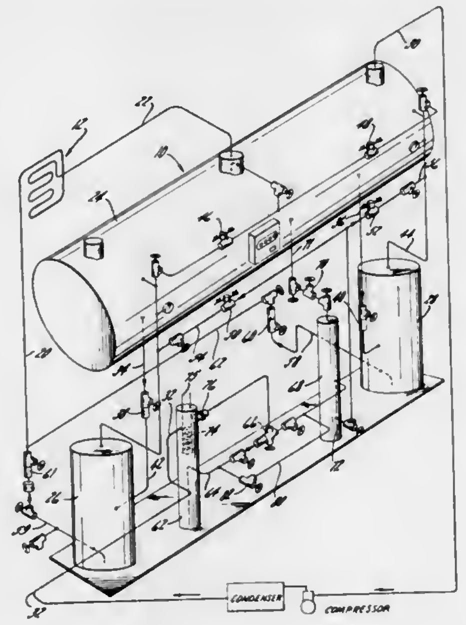


3,848,425
LOW PRESSURE REFRIGERATION SYSTEM

John E. Watkins, Maywood, Ill., assignor to Successor Corporation, Maywood, Ill.

Filed Dec. 4, 1972, Ser. No. 311,772
Int. Cl. F25b *41/00*

U.S. Cl. 62—174 3 Claims



1. In a refrigeration system having an evaporator and operative to overfeed the evaporator with liquid refrigerant in excess of that evaporated, a compressor, a suction line connecting the return side of said evaporator with the suction inlet of said compressor, an accumulator tank interposed in said suction line operative to collect liquid refrigerant overfeed passing through the evaporator while permitting gaseous refrigerant to return to the compressor, a condenser connected to the outlet of said compressor operative to cool and liquify compressed refrigerant gas received from the compressor, and a system connected to the accumulator and the evaporator for recirculating the liquid refrigerant overfeed collected in the accumulator including a pair of pumper drums connected to said accumulator tank for alternately receiving liquid refrigerant therefrom by gravity, and means supplied from the outlet of the compressor for alternately pressurizing said pumper drums for pumping the liquid refrigerant therein to the evaporator, the improvement comprising:

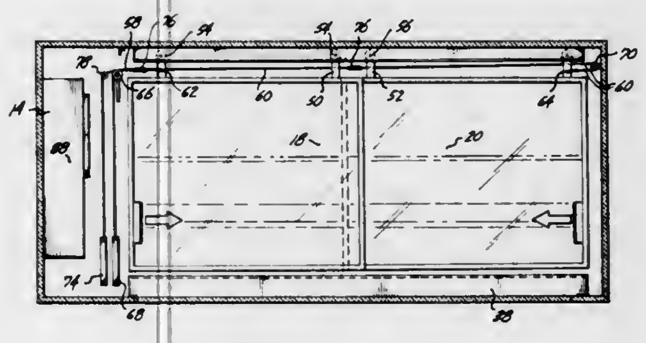
means including a pressure reducing connection and a pressure control valve connected to receive and operative to reduce the pressure of all of said refrigerant from the condenser to a predetermined pressure to provide a stream of primary make-up pressurized refrigerant, and further including means for carrying all of said stream of primary make-up pressurized refrigerant to said pumper drums, combining said stream with overfeed liquid refrigerant in said pumper drums and utilizing said stream for alternately pressurizing said pumper drums for feeding refrigerant to said evaporator.

3,848,426
AIR CIRCULATION SYSTEM FOR A REFRIGERATOR DISPLAY CASE

Robert W. Whitney, 1235 Second Ave. North, Seattle, Wash. 98109

Filed Aug. 31, 1973, Ser. No. 393,414
Int. Cl. A47f *3/04*

U.S. Cl. 62—255 7 Claims



1. In a refrigerator display case of the type including a cabinet, a cooling coil and blower end mounted within said cabinet, vertically spaced food supporting shelves mounted within said cabinet and laterally sliding doors on said cabinet providing access to the food on said shelves, the improvement comprising a cool air circulation system including:

duct means directing cool air from said end mounted cooling coil and blower along the bottom of said cabinet, said duct means including a top plate means having a plurality of holes therein through which said cool air moves upwardly into said cabinet;

longitudinal channel means positioned within said duct means and beneath said top plate means to selectively close said holes therein to control the distribution of cool air to said cabinet; and

damper means controlling the return flow of air to said end mounted cooling coil, said damper means being mechanically linked to said sliding doors and closable in response to the opening of said doors.

3,848,427
STORAGE OF GAS IN UNDERGROUND EXCAVATION

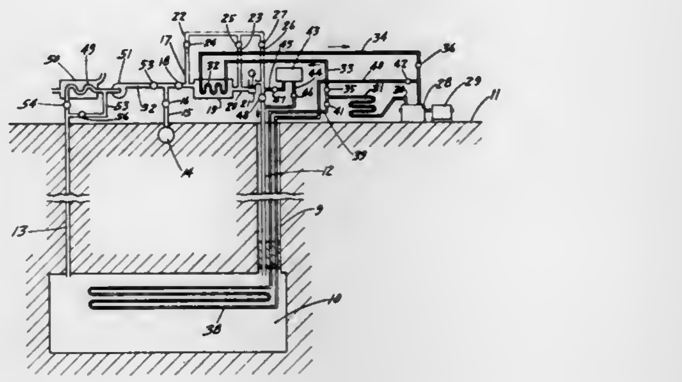
Robert L. Loofbourow, 4032 Queen Ave. South, Minneapolis, Minn. 55410

Filed Mar. 1, 1971, Ser. No. 119,623
Int. Cl. F25d *23/12*

U.S. Cl. 62—260 7 Claims

1. A method of storage of pipeline gas received as compressed gas from a pipeline at pressures between about 700 to 1,200 psi and temperatures between about 40° to 80° F in an excavated underground storage facility including at least one excavated underground rock chamber, which method comprises:

A. cooling said gas to about −50° to −150°F and charging to said storage facility at pipeline pressures,
B. when said facility contains about one half of its maximum capacity, increasing the pressure and maintaining at moderately elevated level up to about 2,500 psi,



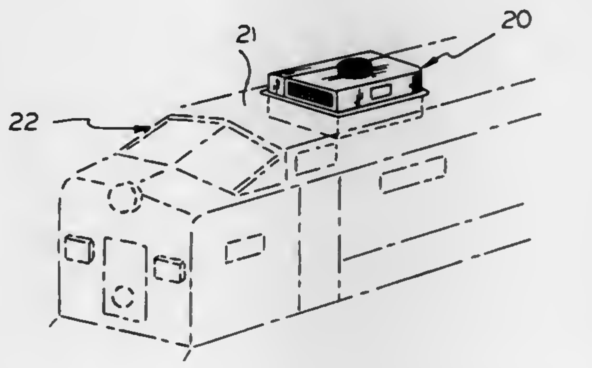
C. maintaining the facility at reduced temperature between about −50° and −150° F, whereby the gas is maintained for storage predominantly in the gaseous state and is densified to store between about 75 and 475 cubic feet of gas to each cubic foot of storage space,
D. circulating stored gas to heat exchangers at ground surface to cool the gas to maintain the storage temperature,
E. discharging said stored gas upon demand, and
F. after the quantity of stored gas has been reduced to about one half of its maximum, decreasing the pressure while maintaining the temperature between about +50° and −150° F.

3,848,428
AIR CONDITIONING SYSTEM FOR A LOCOMOTIVE CAB

James F. Rieter, Jr., Glenview, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed May 21, 1973, Ser. No. 362,435
Int. Cl. F25d *21/14*

U.S. Cl. 62—285 5 Claims



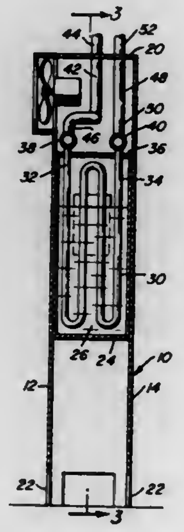
1. An air conditioning system for a locomotive cab to be mounted in the roof of the locomotive cab, said system comprising a frame including a centrally and horizontally arranged panel, upper and lower covers on the top and bottom sides of the panel defining upper and lower chambers, the upper chamber being generally positioned above the roof and exposed to the atmosphere, the lower chamber being generally positioned below the roof and within the cab, a pair of heat exchanger condensing units in the upper chamber one at each the front and back ends thereof and extending vertically and perpendicular to the longitudinal axis of and the path of move-

ment of the locomotive, means connecting said condenser units in parallel, a compressor unit in the upper chamber along one side thereof, air inlet openings in the upper cover at the front and back walls aligning with the condenser units, an air discharge opening in the upper cover, a fan in the upper chamber between the spaced condenser units arranged to draw air into the chamber through the condenser units and expel air through the air discharge opening, a heat exchanger evaporator unit in the lower chamber, an air inlet opening in the lower cover for the lower chamber aligned with said evaporator unit to allow air to move from the cab through the evaporator unit and into the lower chamber, air discharge opening means in the lower cover, a blower in the lower chamber including a housing having an inlet communicating with the lower chamber and outlet means communicating with the air discharge opening means to pull air through the evaporator unit and expel it through the discharge opening means into the cab.

3,848,429
HOLDOVER COOLING UNIT

Paul R. Franklin, Jr., 5211 W. Beaver St., Jacksonville, Fla. 32205

Filed Nov. 10, 1972, Ser. No. 305,242
Int. Cl. F25d *11/04*
U.S. Cl. 62—439 **5 Claims**



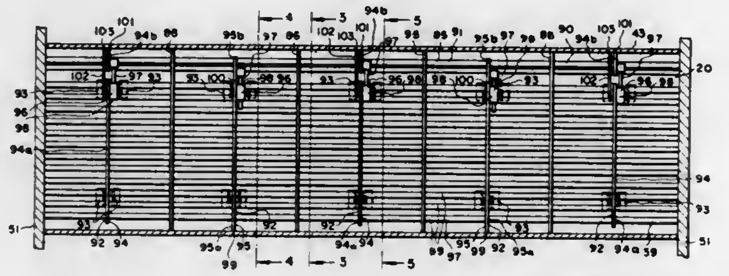
1. In combination with a source of liquid nitrogen under pressure, a housing including air inlet and air outlet openings and blower means operatively associated with the housing for pumping air through the housing and out the air outlet opening, at least one closed tank disposed within the housing for the passage of air being pumped through the housing in heat transfer relation with the outer surfaces of the tank, a quantity of eutectic solution disposed within the tank, and a coil of good heat transmitting material disposed within the tank and including inlet and outlet ends opening outwardly of the tank, fluid flow controlled means communicating the inlet end of the coil with said source of liquid nitrogen under pressure, said outlet end being free of gas flow restricting means for free venting of vaporized liquid nitrogen therefrom.

3,848,430
ABSORPTION REFRIGERATION MACHINE WITH SECOND STAGE GENERATOR

James M. Porter; Carl V. Loweth, both of La Crosse, and Kenneth W. Gilster, Onalaska, all of Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Sept. 13, 1973, Ser. No. 397,090
Int. Cl. F25b *15/06*
U.S. Cl. 62—476 **11 Claims**

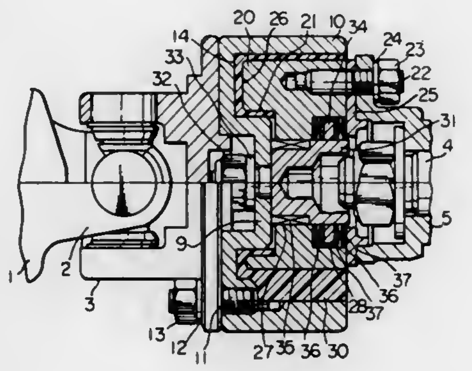
1. In a two stage absorption refrigeration machine wherein the second stage generator is heated by water vapor generated in the first stage generator and water condensate formed in the first stage generator from heating steam supplied through a steam control valve, a second stage generator comprising: a shell defining an enclosure; first conduit means for passing an absorption solution from said first stage generator into said enclosure; a first elongated tube bundle extending through said enclosure; a second elongated tube bundle extending through said enclosure; second conduit means for passing water vapor that is generated in said first stage generator through the tubes of said first tube bundle; third conduit means for passing steam condensate that is formed in said first stage generator through the tubes of said second tube bundle; each of said tube bundles being fixedly supported at their ends by said shell; and means intermediate the ends of said second tube bundle to accommodate longitudinal expansion of the tubes of said second tube bundle relative to the tubes of said first tube bundle during idle and start up conditions of said refrigeration machine.



3,848,431
AUTOMOTIVE VIBRATION ABSORBING JOINT ASSEMBLY

Koichi Takahashi; Keizaburo Usui; Eiichi Abe, all of Yokohama City, and Kiyotaka Ozaki, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed May 10, 1973, Ser. No. 358,924
Claims priority, application Japan, May 17, 1972, 47-48948
Int. Cl. F16d *3/14*
U.S. Cl. 64—27 NM **5 Claims**

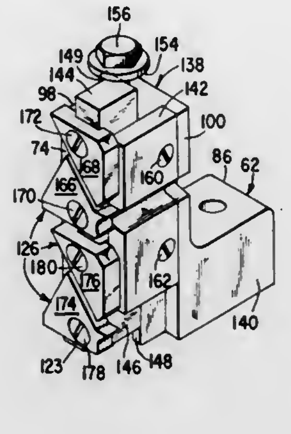


1. In a final drive line of a motor vehicle, the improvement comprising, in combination, a propeller shaft and a final pinion drive shaft, a universal joint attached to the rear end of said propeller shaft and having a yoke portion, a flange attached to the front end of said final pinion drive shaft, and an additional joint including an annular member secured to said yoke portion of said universal joint, an intermediate member received in said annular member and secured to said flange of said final pinion drive shaft, said intermediate member being spaced axially and radially apart from said annular member, a resilient member filling a space formed between said annular member and said intermediate member and drivably connecting said annular member and said intermediate member, said intermediate member having an axial bore formed therethrough, a cylindrical member extending through said axial bore and secured at its front end to said annular member, a needle bearing carried on said cylindrical member for maintaining the rotary axis of said cylindrical member in alignment with the rotary axis of said intermediate member, a radial flange formed on said cylindrical member and a pair of thrust bearings mounted on both sides respectively of said radial flange on said cylindrical member for thereby carrying an axial thrust force applied to said annular member and said intermediate member in either direction.

3,848,432
CAM SECTION BLOCKS FOR CIRCULAR KNITTING MACHINES

Lester Mishcon, Miami Beach, and Donald W. Reagan, Hialeah, both of Fla., assignors to The Singer Company, New York, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,831
Int. Cl. D04b *15/32*
U.S. Cl. 66—54 **1 Claim**

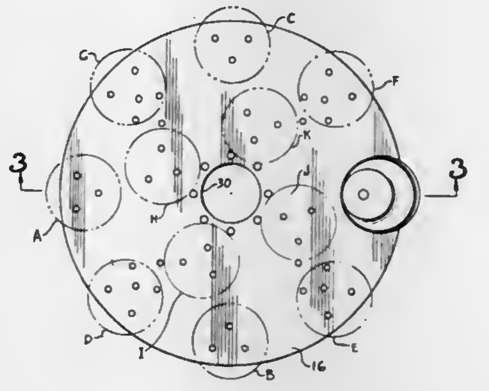


1. In a multi-feed circular knitting machine, the combination comprising a plurality of cam-section blocks; the blocks being L-shaped with a front upright portion and rear-wardly extending foot portion, and each block having parallel planar opposite side surfaces, defining a leading a trailing side in relation to the direction of needle movement, parallel planar opposite end surfaces, and parallel planar top and bottom surfaces generally defining the L-shaped outline of the block; means for mounting needle actuating cams for one feed only on the front upright portion of each block; a ring for supporting said cam-section blocks around a circular arc concentric with the cylinder of the machine, with the cams facing the center of the arc, and with adjacent side surfaces of the cam-section blocks extending in diverging direction outwardly from said center; and a fastener at the foot portion of each block for securing the foot portions of the blocks to the ring; the front of each block including a portion which mates with a notch on a portion of the ring to positively fix, in conjunction with the fastener at the foot, the positions of the blocks on the ring; the means for mounting the cams for each block on the front portion of the block including a vertically adjustable rectangularly shaped elongated member having a front surface to which the cams are affixed and a rear surface which engages a front surface on the upright portion of the block, the elongated member and an integral portion of the leading side of the block including a slot in one such part and a projecting portion on the other extending into the slot, such slot and projecting portion permitting vertical movement of the elongated member in the block and preventing horizontal movement of the member away from said engaged front surface on the upright portion of the block, the means for mounting the cams for each block on the front portion of the block also including removable plate means on the trailing side of the block in engagement with one side of the elongated member, such removable plate means being the only restraint against movement of the elongated member in the direction of needle movement, the opposite side of the elongated member being in engagement with an integral part of the block.

3,848,433
BOBBIN MOUNTING DISC

John Greczin, 7312 School Ln., Melrose Park, Philadelphia, Pa. 19126

Filed Aug. 25, 1972, Ser. No. 283,787
Int. Cl. D04b *15/48*
U.S. Cl. 66—125 R **3 Claims**

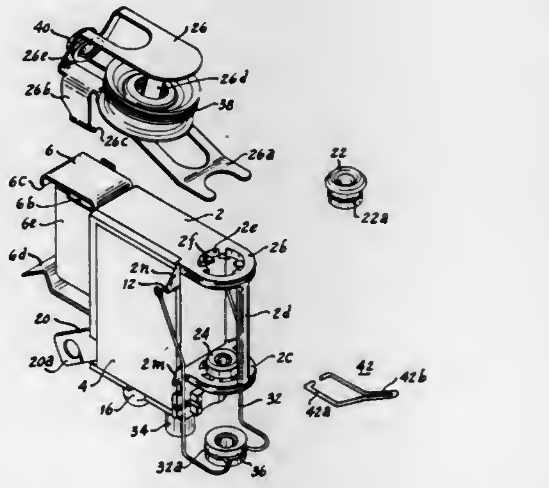


1. In combination with a multi-feed circular knitting machine,
- A. a bobbin mounting disc concentrically positioned on the knitting machine,
  - 1. said disc having rotary movement relative to the knitting machine,
  - 2. said disc being drilled to provide a plurality of randomly positioned mounting holes,
  - 3. said disc acting as a shield during rotation to prevent upward passage of any air currents that may be generated beneath the disc by the rotary movement; and
- B. a plurality of mounting blocks secured to the disc at the said mounting holes,
  - 1. each said mounting block carrying bobbin support means to accommodate a yarn-wound bobbin,
  - 2. said mounting blocks being capable of being secured to the disc in a variety of randomly located positions.

3,848,434
YARN DETECTOR SWITCH-LOWER

Alton W. Hopkins, Newtown Square, Pa., assignor to Control Switch, Inc., Folcroft, Pa.

Filed Mar. 5, 1973, Ser. No. 337,925
Int. Cl. D04b *35/14*
U.S. Cl. 66—163 **9 Claims**

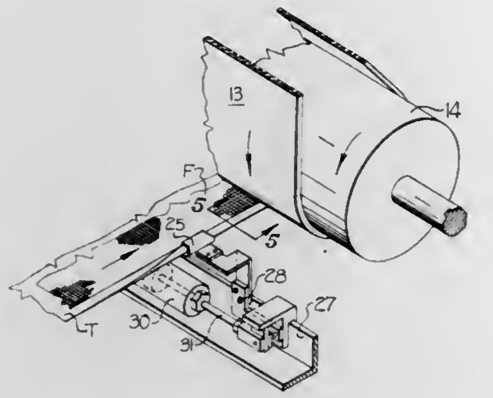


1. A yarn detector device for a knitting machine comprising:
- an insulating housing;
- a pair of electrical terminals on said housing;
- a toggle spring mechanism comprising an overcenter spring biased crank shaft in said housing with the opposite ends of said crank shaft extending out through opposite walls of said housing;

an electric circuit within said housing extending between said terminals;
contacts within said housing responsive to operation of said crank shaft for closing said electric circuit;
and external thread passage means through which the thread passes before entering the knitting machine comprising:
thread guiding means and means mounting the same on said housing;
a trip lever for detecting a break or end of thread to operate said crank shaft to close said contacts;
and quick disconnect joint means between said trip lever and said crank shaft enabling ready replacement thereof.

3,848,435
TRANSFER PRINTING MACHINE

Edwin B. Armstrong, Jr., Burlington, N.C., assignor to Alamance Industries, Inc., Burlington, N.C.
Filed July 23, 1973, Ser. No. 381,630
Int. Cl. D06p *7/00;* **B41m** *5/26*
U.S. Cl. 68—5 D **6 Claims**

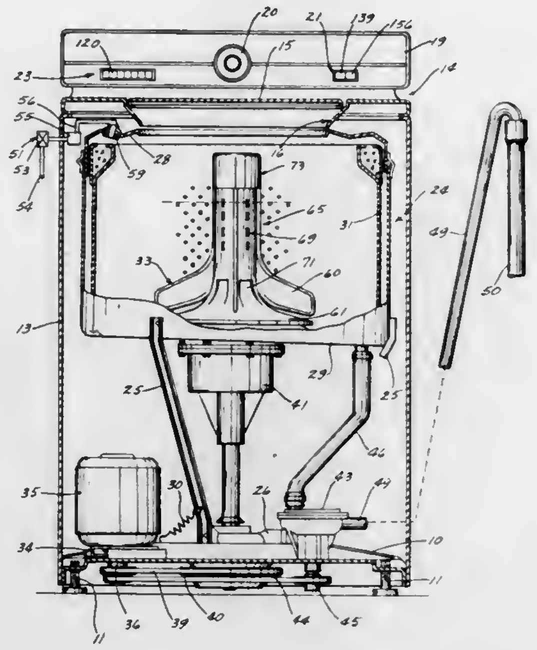


1. In a transfer printing machine adapted to continuously transfer printed heat-transferable indicia from the face side of lengths of transfer paper of a given width to the face side of lengths of fabric of a lesser width, said machine including a transfer paper supply, a fabric supply, a heated transfer roll, an endless blanket supported for engagement with at least a portion of the peripheral surface of said transfer roll, fabric take-up means, a transfer paper take-up means, and drive means for rotating said transfer roll and said endless blanket and continuously moving the fabric from the respective supplies to the respective take-up means and between said transfer roll and said endless blanket with the face side of the fabric and the indicia bearing side of the transfer paper in facing relationship so that the heat transferable indicia is transferred from the paper to the fabric as they pass between said endless blanket and said transfer roll, the combination therewith of means for preventing the transfer to the endless blanket of indicia from the portions of the paper normally extending outwardly beyond the width of the fabric, said means comprising folding means positioned at opposite edges of the transfer paper and in advance of said transfer roll for folding the outer edges of the transfer paper inwardly a sufficient distance that the heat transferable indicia along the outer edges will not be transferred to said endless blanket.

3,848,436
PRECLEANING A LAUNDRY WASHING MACHINE

Quintin N. Rottering, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa
Filed Feb. 23, 1973, Ser. No. 335,251
Int. Cl. D06f *33/02*
U.S. Cl. 68—12 R **7 Claims**

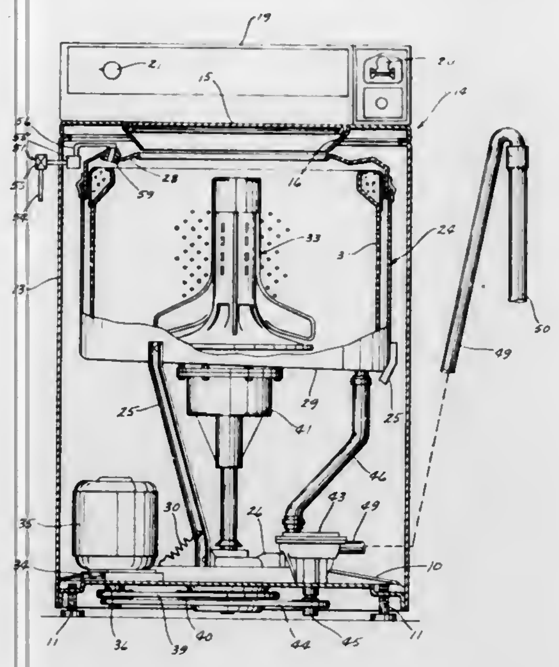
1. In a laundry apparatus, the combination comprising: a container for receiving and containing washing fluid, a basket disposed within said container for receiving fabrics to be washed and centrifugally rotatable for removing fluids from said fabrics; means for washing fabrics in said basket; pump means communicating with said container and operable for pumping vitiated washing fluid from said container; pump drive means energizable for operating said pump means; conduit means effectively connected to said container and communicating with said pump means for conducting said vitiated fluid from said container toward an external drain; fluid supply means for directing water into said apparatus; a sequence control circuit for programming said apparatus through a plurality of operations including an optional preliminary apparatus flushing operation and other operations selectable as a group to comprise a primary cycle of operations; and control means including preselection means for selecting a primary cycle of operations and for optionally selecting said flushing operation, said control means being operable in cooperation with said sequence control circuit for initiating said flushing operation including energizing said fluid supply means and said pump drive means to effect flow of water into said apparatus and through said pump means and said conduit means toward said external drain and being further operable for initiating said primary cycle of operations at completion of said flushing operation, said sequence control circuit being cooperable with said control means responsive to selection of said primary cycle of operations and nonselection of said flushing operation for initiating said selected primary cycle of operations.



3,848,437
PRECLEANING A TOKEN-ACTUATED LAUNDRY WASHING MACHINE

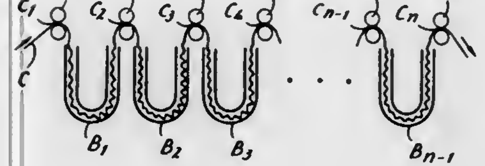
Quintin N. Rottering, Newton, Iowa, assignor to The Maytag Company, Newtown, Iowa
Filed Feb. 23, 1973, Ser. No. 335,252
Int. Cl. D06f *33/02*
U.S. Cl. 68—12 R **9 Claims**

1. In a token-actuated laundry apparatus, the combination comprising: container means for receiving and containing washing fluid and fabrics to be washed therein; means for washing fabrics in said container means; pump means communicating with said container means and operable for pumping vitiated washing fluid therefrom; pump drive means energizable for operating said pump means; conduit means effectively connected to said container means and communicating with said pump means for conducting said vitiated fluid from said container means; fluid supply means for directing water into said container means; a sequence control circuit for programming said apparatus through a plurality of operations including an optional preliminary apparatus flushing operation and other operations selectable as a group to comprise a primary cycle of operations excluding said flushing operation; energizing circuit means including token-actuated circuit means responsive to receipt of a proper token and further including cycle selection means responsive to selection of a desired primary cycle of operations, said energizing circuit means being operable for energizing said sequence control circuit to initiate operation of said apparatus through said primary cycle of operations upon actuation of both of said token-actuated circuit means and said cycle selection means; optional flushing circuit means selectively actuatable by selection of said flushing operation after actuation of said token-actuated circuit means and prior to actuation of said cycle selection means for energizing said sequence control circuit to initate operation of said fluid supply means and said pump drive means to effect flow of water into said container means and through said pump means and said conduit means to flush said container means, said pump means, and said conduit means prior to initiation of said primary cycle of operations; and holding circuit means responsive to completion of said flushing operation for maintaining said laundry apparatus conditioned for selection and initiation of said primary cycle of operations.



3,848,438
APPARATUS FOR SUCCESSIVELY PROCESSING CONTINUOUSLY CONNECTED TEXTILE FABRIC

Yoshishige Tachibana, Akashi, and Yoshihiro Morikuni, Osaka, both of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka-fu, Japan
Filed Oct. 26, 1973, Ser. No. 410,117
Claims priority, application Japan, Oct. 28, 1972, 47-108156
Int. Cl. B05c *3/152, 3/178, 11/124*
U.S. Cl. 68—22 R **20 Claims**

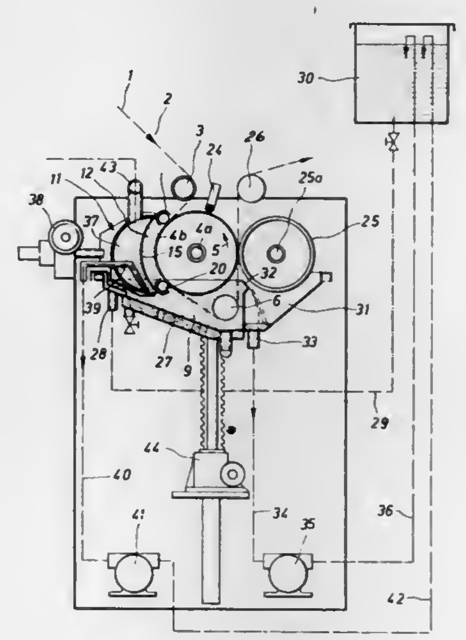


1. An apparatus for successively processing a continuous textile fabric having detectable portions at predetermined intervals, comprising

means defining a feeding path for feeding along the length of the path said continuous textile fabric,
a plurality of detecting means disposed in successively displaced portions along said feeding path for detecting corresponding ones of said detectable portions of said continuous textile fabric,
said feeding path defining means including a plurality of feeding means for feeding said continuous textile fabric and respectively corresponding to said plurality of detecting means,
means provided along said feeding path for processing said continuous textile fabric,
means for individually controlling said feeding means and responsive to said detecting means to disable said feeding means, individually, in response to detection of a detectable portion of said fabric by the respectively corresponding ones of said detecting means, said controlling means further being responsive to disablement of all of said plurality of feeding means to enable, a predetermined time following said disablement, said feeding means for again feeding said continuous textile fabric along said path.

3,848,439
DEVICE FOR IMPREGNATING AND DYEING WIDE TEXTILE WEBS

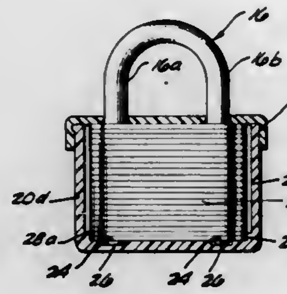
Karl Peter Lopata, Krefeld, Germany, assignor to Kleinewefers Industrie Companie GmbH, Krefeld, Germany
Filed Nov. 20, 1972, Ser. No. 308,014
Claims priority, application Germany, Nov. 18, 1971, 2157257
Int. Cl. B05c *1/10, 3/132, 11/115*
U.S. Cl. 68—184 **6 Claims**



1. A device especially for impregnating and dyeing wide webs of textile material in a continous manner, which includes container means adapted to receive impregnating and dyeing liquid, roller means mounted to extend into said container means, vacuum means arranged adjacent said roller means and comprising hood means extending approximately over the length of said roller means and having its marginal area equipped with a rim-shaped structure, said vacuum means also comprising an endless sealing strip arranged in said rim-shaped structure and being positioned to press against web material passed between said roller means and said vacuum means, and means for feeding a web to be treated between said roller means and said vacuum means.

3,848,440
PADLOCK CASE

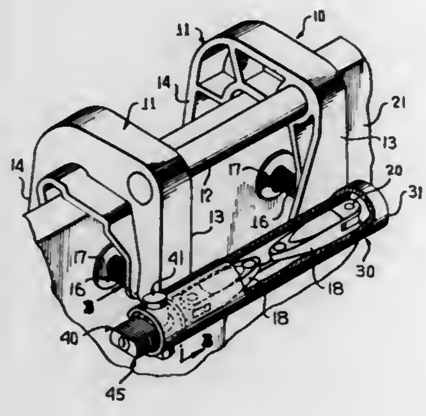
Larry, N. Manuel, deceased, late of 6161 N. Clark, Lakewood, Calif. 90712 (Ruby Joy Manuel, administratrix)
Filed Feb. 21, 1973, Ser. No. 334,491
Int. Cl. E05b *67/38*
U.S. Cl. 70—55 **11 Claims**



1. A case adapted to contain and surround the body portion of a padlock to protect it from mud, water, or other substances, the case including opening defining means adapted for receiving the legs of a padlock shackle, the opening defining means being comprised of two round bevelled holes each sized to form a snug fit with a respective shackle leg whereby a body portion of a padlock can be contained within the case with the padlock's shackle protruding through the case to the outside of the case.

3,848,441
OUTBOARD MOTOR ANTI-THEFT DEVICE

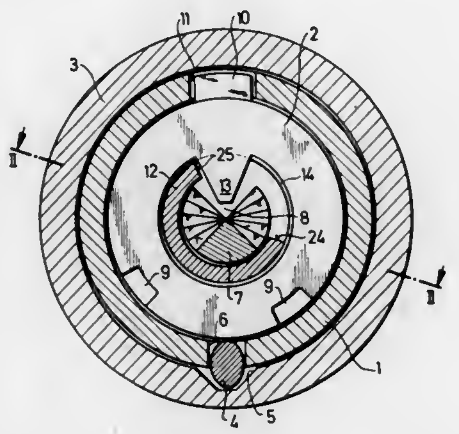
Adrian L. Quinley, P.O. Box 669, Bay Minette, Ala. 36507
Filed Oct. 23, 1973, Ser. No. 409,023
Int. Cl. F16b *41/00*
U.S. Cl. 70—232 **6 Claims**



1. A latch assembly for a clamping mechanism of an outboard motor and the like of the type which includes a pair of threaded clamping members each having an actuator pivoted thereto and movable into opposed aligned relation, said latch assembly comprising an elongated tubular member of an internal cross section for receiving the aligned actuators, said tubular member having an axial slot therein extending from one end thereof to a point adjacent to but spaced from the other end thereof, said slot being of a width to receive therein the threaded clamping members, and releaseable lock means transversing said one end of said tubular member and preventing removal thereof from the clamping members and the actuators, said lock means including a conventional lock of the type including a hasp, and said hasp being fully telescoped within said tubular member in a protected position when said lock is closed.

3,848,442
BI-DIRECTIONAL CYLINDER LOCK

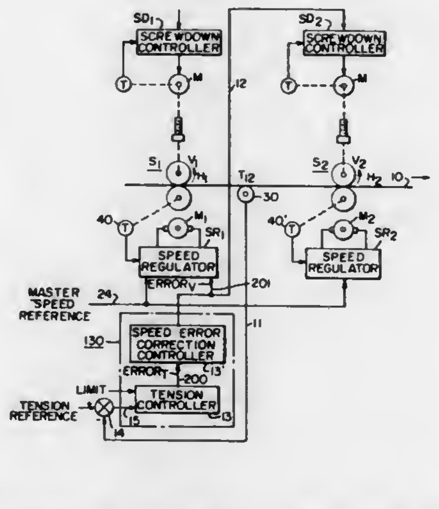
Pekka Henrikki Mertanen, Helsinki, Finland, assignor to Oy Wartsila AB, Helsinki, Finland
Filed Nov. 12, 1973, Ser. No. 414,940
Claims priority, application Finland, Nov. 13, 1972, 3162/72
Int. Cl. E05b *29/02*
U.S. Cl. 70—366 **9 Claims**



1. A cylinder lock mechanism comprising a cylinder housing with a cylindrical opening, a cylinder turnable in said opening and providing at its turning axis a free space for a plurality of locking discs provided with a central opening forming the keyway of the lock mechanism and being turnable by means of a key of the lock mechanism relative to said cylinder both in clockwise and in counter clockwise direction from a key insertion position into a cylinder-releasing position, said lock mechanism including a turnable reset member, connected through a slip clutch to said key of the lock when the key is in operating position in said keyway, so that turning of said key from its cylinder-releasing position back to its insertion position, causes a corresponding turning movement of said reset member which is provided with contact surfaces engaging said locking disc and returning them during said movement to their initial position allowing removal of said key from said lock mechanism.

3,848,443
AUTOMATIC CONTROL METHOD AND APPARATUS FOR A ROLLING MILL

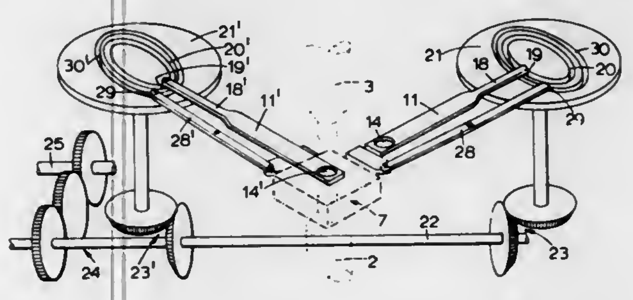
Robert S. Peterson, and John W. Cook, both of Williamsville, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 31, 1973, Ser. No. 365,668
Int. Cl. B21b *37/06*
U.S. Cl. 72—8 **14 Claims**



1. In the method of controlling the gauge of work strip material passing through a tandem rolling mill having a plurality of roll stands, with each of said roll stands being initially adjusted in speed and roll opening for maintaining a desired relatively constant mass flow passage of said material through the roll stands with a desired tension condition between at least one pair of said roll stands, said method including the steps of: sensing a tension deviation from said desired tension condition, changing the speed of a selected one of said pair of roll stands in response to said tension deviation to correct said tension and adjusting the roll opening of the latter of said pair of roll stands in relation to the direction of the passage of said work strip material in response to the change of speed in said selected one roll stand and concurrently changing the speed of said selected one roll stand in response to resulting change in tension, for restoring said desired mass flow condition.

3,848,444
FEED MECHANISMS

Raymond Ernest Baugh, Walsall, and John Edward Plaister, Lapworth, both of England, assignors to Taylor & Challen Limited, Birmingham, England
Filed Dec. 27, 1972, Ser. No. 319,059
Int. Cl. B21b *37/00;* **B21d** *43/20*
U.S. Cl. 72—10 **9 Claims**



1. A feed mechanism comprising two or more separate feed members which are adapted to reciprocate along respective longitudinal axes, a separate feed station positioned along the longitudinal axis of each feed member and providing a supply of workpieces to that feed member, a work station positioned at the meeting of said longitudinal axes to receive workpieces from all of said feed members, a separate unloading station positioned along the longitudinal axis of each feed member and lying on the same side of the work station as the respective feed station, and actuation means which reciprocates the feed members in synchronism so that each in turn feeds a workpiece from a respective feed station to said work station while the previous feed member to feed a work piece to the work station removes a work piece from the work station to the unloading station.

3,848,445
METHOD OF FABRICATING IMPROVED FUSE ELEMENTS

Frank L. Cameron, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Division of Ser. No. 219,712, Jan. 21, 1972, Pat. No. 3,747,041. This application Apr. 17, 1973, Ser. No. 351,921
Int. Cl. B21f *3/04*
U.S. Cl. 72—142 **4 Claims**

1. A method for fabricating a fuse element, comprising the following steps:

joining the narrowest end of each piece of a two-piece mandrel having an outer periphery which is variable with mandrel length to form a complete mandrel which is smaller in cross-sectional area at the point said narrow ends are joined than at opposite ends of the completed mandrel;

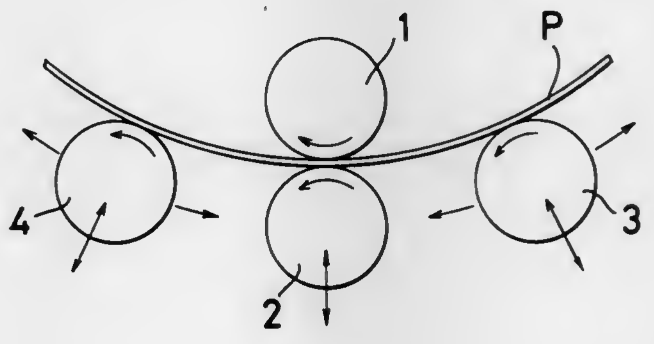
winding fuse material which has a variable cross-sectional area along the length thereof, at a constant pitch on said completed mandrel to form a wound fuse element of generally constant pitch, said latter cross-sectional area of said fuse material being generally proportional to the radius of curvature of said periphery of any point along said mandrel's length;

disconnecting said two-piece mandrel while said wound fuse element is disposed thereon; and

removing said separated mandrel pieces from said wound fuse element.

3,848,446
ARRANGEMENT FOR BENDING STEEL PLATES

Yasuhiro Iwasaki; Hidehiko Tsukamoto; Nobutaka Maeda, all of Hiroshima, and Chikara Takeuchi, Nagasaki, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 30, 1972, Ser. No. 284,947
Claims priority, application Japan, Sept. 8, 1971, 46-69566
Int. Cl. B21d *5/14*
U.S. Cl. 72—168 **1 Claim**



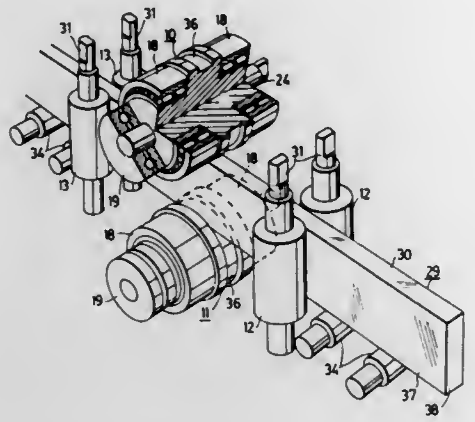
1. An apparatus for bending a steel plate in three dimensions to form a pressure outside plating for a spherical holder or the like comprising in combination: an upper and lower roll arrangement including a center pair of pinch-type bending rolls of mating configurations, one of which being barrel-shaped and the other hourglass-shaped, said pair of rolls being divided across their longitudinal axes into the same numbers of members, some of which are firedly mounted while the remaining members are rotatably mounted as followers, said center pair of bending rolls being adjustable in position toward and away from each other, and two other hourglass-shaped pressure bending rolls disposed at appropriate distances away from the pair of bending rolls in such a matter as to be adjustable in the same direction as the said bending rolls and also to be adjustable toward and away from the said pair of bending rolls, said two hourglass rolls being also divided in the same manner across their longitudinal axes; whereby, desired bending is accomplished by forcing a plate through the center pair of bending rolls and along the hourglass rolls disposed on both sides of the pair, driving the two rolls of the center pair together in alternate directions; moving the two other hourglass-shaped pressure bending rolls on both sides of the center pair alternately toward the plate until they, by turns, reach preset positions in pressure contact with the plate; and repeating the afore-said procedure until the plate attains the desired curvature along the rolls.

3,848,447
ROLLING METHOD AND A ROLLING MILL FOR CARRYING OUT THE METHOD

Per-Olof Strandell, Taby, Sweden, assignor to AB Metalform, Stockholm, Sweden
Filed Nov. 6, 1972, Ser. No. 303,842
Int. Cl. B21b *1/00*
U.S. Cl. 72—199 **6 Claims**

1. A method for producing a semi-finished metal section from an elongated piece of stock of rectangular cross section having two opposing first sides of greater width than the remaining two second sides, said method comprising:

a. passing the stock between two working rolls contacting the second sides, said working rolls having a diameter of at least 0.8 times the width of said first sides and being mounted for adjustable movement toward each other, and two pairs of guide rolls positioned on either side of the working rolls and contacting the first sides, said guide rolls having a smaller diameter than the working rolls and presenting a nip of constant width therebetween;



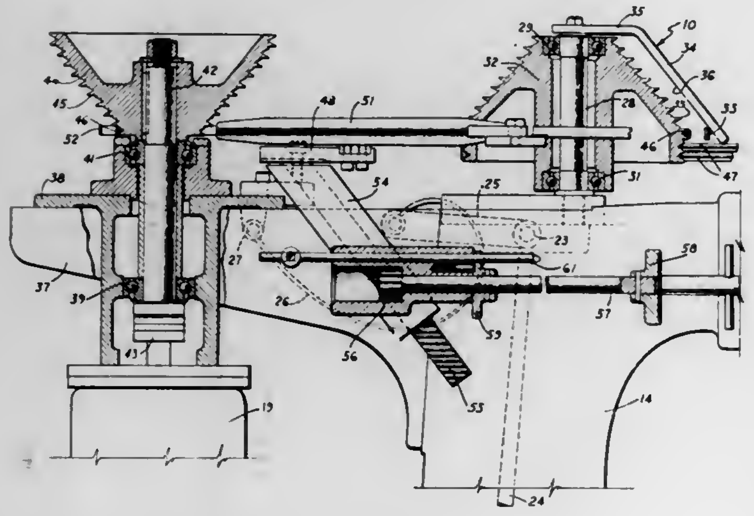
b. reversing the direction of movement of the stock and again passing it between the rolls without turning the stock around its longitudinal axis;

c. guiding the stock into and out of the roll nip during successive passes;

d. adjusting the working rolls during successive passes to bear against the second sides and to reduce the width of the first sides while maintaining a constant width between the guide rolls.

3,848,448
MACHINE DRIVE

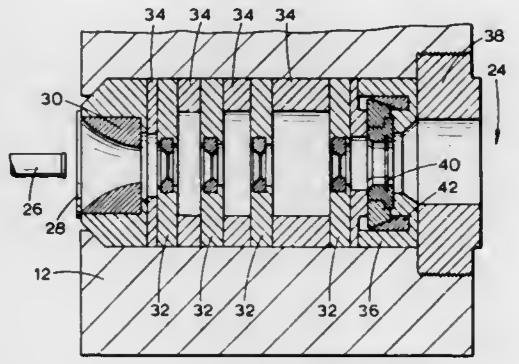
Robert H. Allen, Barre, Mass., assignor to Charles G. Allen Company, Barre, Mass.
Filed May 10, 1973, Ser. No. 359,204
Int. Cl. F16h *7/08*
U.S. Cl. 74—242.4 **10 Claims**



1. A machine drive, comprising
a. a main body,
b. a first pulley rotatably mounted on the main body,
c. a secondary body movably mounted on the main body for movement in a plane perpendicular to the axis of the first pulley,
d. a second pulley rotatably mounted on the secondary body, the first and second pulleys having surfaces that are of the conical, stepped type tapering in opposite directions, and
e. a belt frame movably mounted on the secondary body for movement relative thereto in a plane lying at the angle of the surfaces of the pulleys, the belt belt frame and the second pulley being movably mounted on the secondary body for movement toward the first pulley to loosen a belt relative to the first said pulley.

3,848,449
CYLINDER FORMING

David John Campion, Weston-Super-Mare, England, assignor to Cylinder Forming Limited, Somerset, England
Filed June 12, 1973, Ser. No. 369,362
Claims priority, application Great Britain, June 19, 1972, 28597/72
Int. Cl. B21d *22/28*
U.S. Cl. 72—349 **8 Claims**

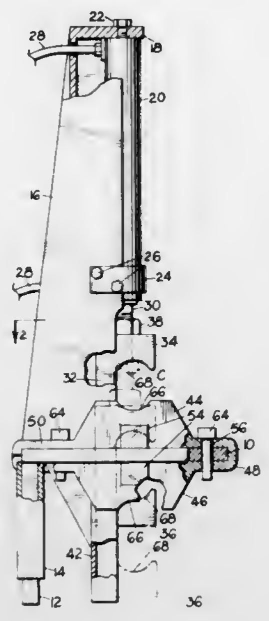


1. A method for deep drawing and ironing the interior surface of a tubular component, using a punch having a leading end provided with a rim of very hard material which projects radially proud of the outer surface of the punch, and die means comprising an intake ring and a series of ironing rings of progressively reducing diameter, which method comprises the steps of
i. locating a sheet metal blank at the mouth of the intake ring,
ii. advancing the leading end of the punch against the blank and carrying it through the intake ring and ironing rings so as to draw the blank into an elongate tubular component, and
iii. securing the component while withdrawing the punch, whereby the raised leading end thereof effects ironing of the interior surface of the component.

3,848,450
CABLE STRAIGHTENER

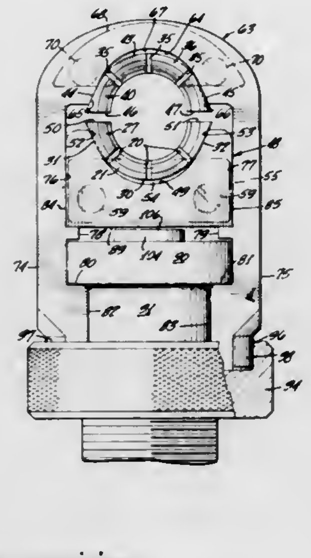
Eugene K. Dehlbom, 3241 Allen St., Kelso, Wash. 98626, and Rockne H. Foshaug, Route 1, Box 15, Rainier, Oreg. 97048
Filed Apr. 12, 1973, Ser. No. 350,335
Int. Cl. B21d *17/02*
U.S. Cl. 72—384 **6 Claims**

1. A cable straightener comprising:
a. a base member,
b. two pairs of laterally spaced cable support members mounted on the base member for supporting a bent portion of cable between the support members of each pair, one pair projecting from one surface of the base member and the other pair projecting from the opposite surface of the base member,
c. the base member having an opening therethrough between the cable support members of each pair,
d. a head member extending freely through said opening and having a pair of opposed head sections one associated with each of said pairs of cable support members for engaging a bent portion of cable intermediate the associated cable support members, and
e. reciprocative power means interengaging the base member and head member for moving said head member relative to the base member, whereby movemnt of each head section toward its associated cable support members effects straightening of a cable supported therebetween.



3,848,451
SWAGING TOOL

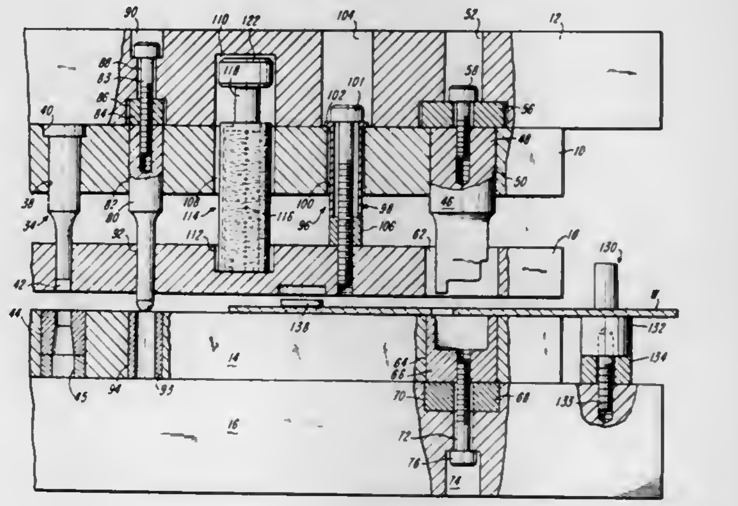
Frederick R. Allin, Long Beach, Calif., assignor to The Deutsch Company, Metal Components Division, Gardena, Calif.
Filed Nov. 24, 1972, Ser. No. 309,145
Int. Cl. B21d *39/00*
U.S. Cl. 72—402 **13 Claims**



1. A swaging tool comprising
a duality of dies,
each of said dies including a plurality of substantially parallel elongated elements collectively having an inner surface defining a generally semicylindrical contour, and an outer surface having a central part made up of a plurality of said elements collectively defining a generally cylindrical segment and side parts flatter than said central part and flaring outwardly therefrom,
said elements of each of said dies being spaced apart so as to provide a means for permitting radial compression thereof so as to reduce the radius of curvature of said inner surface,
a member carrying each of said dies,
each of said members including a surface adjacent said outer surface of the die carried thereby,
said surface of each of said members including a central part defined by a generally cylindrical segment of smaller radius than that of said generally cylindrical segment of said central part of said outer surface of said die carried thereby, and having side parts flatter than said central part of said member and flaring outwardly therefrom,
said side parts of said member engaging said side parts of said die carried thereby,
said central part of each of said members being normally spaced from said central part of said die carried thereby,
and means for moving said members relatively toward each other for compressing said dies and swaging a workpiece therebetween.

3,848,452
DIE APPARATUS

Robert J. Gargrave, Dayton, Ohio, assignor to Dayton Progress Corporation, Dayton, Ohio
Filed Mar. 20, 1973, Ser. No. 342,971
Int. Cl. B21j *13/02*
U.S. Cl. 72—448 **20 Claims**



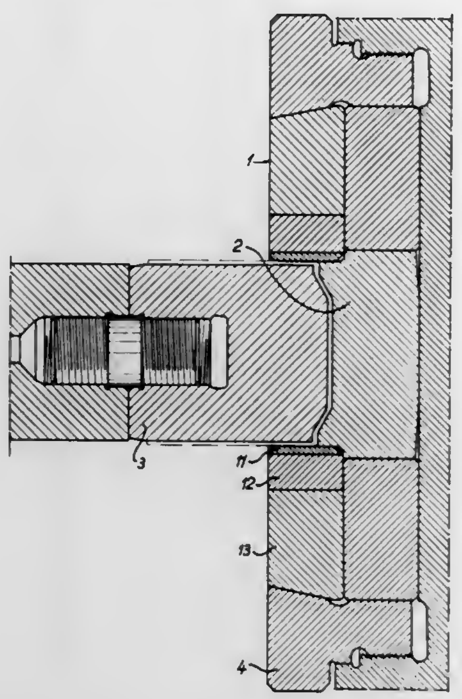
1. Die apparatus including upper and lower die halves comprising means to receive therebetween a work piece and to act thereon to modify said work piece, said lower die half including a lower die plate defining a platform for said work piece, and said upper half including a tool retainer plate mounting die tools movable therewith to and from said platform to engage said work piece and modify the same, and a disc-shaped element in association with at least a portion of said die tools for establishing the effective position thereof, said disc-shaped element being reformable as to its depth in an axial sense in correspondence with the shortening or modification of one or more of said die tools so as to maintain a prescribed relative positioning of the working portions of said die tools.

3,848,453
DIE FOR SHAPING METALS

Jean Hardt, Fribourg, Switzerland, assignor to Aluminum Suisse SA
Continuation of Ser. No. 166,536, July 27, 1971, abandoned. This application Sept. 5, 1973, Ser. No. 394,468
Claims priority, application Switzerland, Aug. 4, 1970, 11703/70
Int. Cl. B21c *3/00*
U.S. Cl. 72—467 **12 Claims**

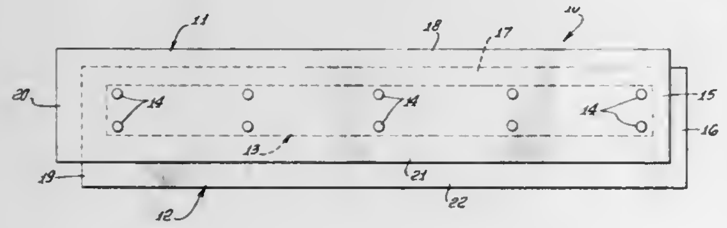
1. A die for metal shaping operations in general and impact drawing in particular comprising a working ring of metal carbide, a coaxial stress ring of metal carbide closely surrounding and radially supporting said working ring and a coaxial steel collar closely surrounding and radially supporting said stress ring, the radial thickness of said working ring being

less than that of said stress ring, the modulus of elasticity of said working ring being greater than that of said stress ring and



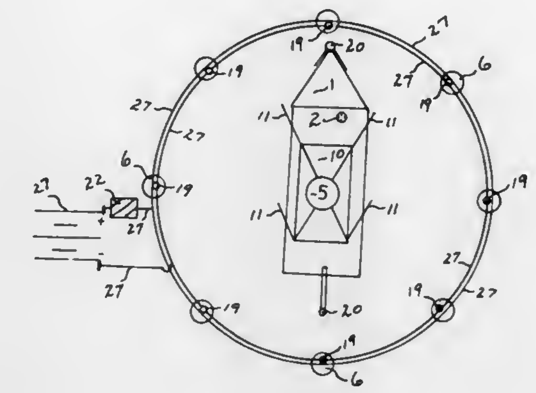
the modulus of elasticity of said stress ring being greater than that of said collar.

3,848,454
BENCH TOOL FOR SHEET METAL BENDING
Harry H. Hall, 861 E. 26th St., San Bernardino, Calif. 92404
Filed Oct. 11, 1973, Ser. No. 405,397
Int. Cl. B21d *5/16*
U.S. Cl. 72—457 **3 Claims**



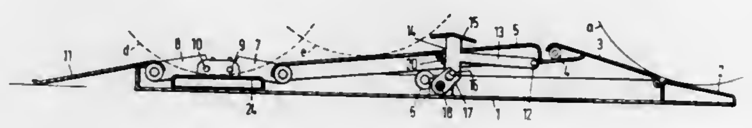
1. A bench tool for sheet metal bending, said tool comprising:
- a rectangular flat steel top plate approximately 3/16 inch thick;
- a rectangular flat steel bottom plate approximately 3/16 inch thick;
- a rectangular flat steel spacer plate about 3/32 inch thick; means for uniting said plates in parallel overlapping relation to form a peripheral series of sheet metal bending slots extending in a single plane entirely around the periphery of said tool, the bottom of each of which slots is formed by an edge of said spacer plate, the side walls of each bending slot being of unequal width and being formed by parallel peripheral portions of said top and bottom plates, and wherein
- two relatively short bending slots are provided on the ends of said tool and two relatively long bending slots are provided on the sides thereof, and wherein
- the side walls of the short bending slot at one end of the tool differ in width from the side walls of the slot at the other end of the tool, and wherein
- the side walls of one of said short bending slots correspond respectively in width to the side walls of one of said long bending slots, while the side walls of the other of said short bending slots correspond respectively in width to the side walls of the other of said long bending slots.

3,848,455
MAGNETIC COMPASS CORRECTOR MEANS
Philip M. Banner, 28 Oxford Rd., Massapequa, L. I., N.Y. 11758
Filed Mar. 20, 1973, Ser. No. 343,114
Int. Cl. G01c *17/38*
U.S. Cl. 73—1 E **7 Claims**



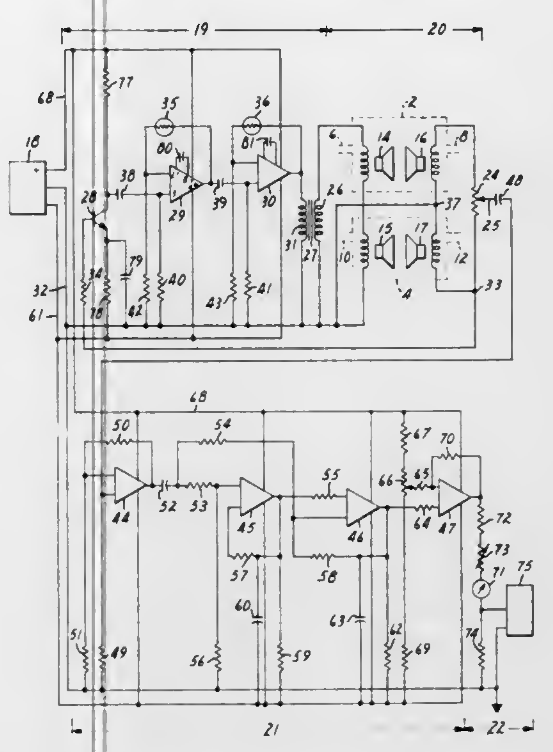
1. Compass correction means for a craft comprising a plurality of markers directionally spaced with respect to a centrally located reference point and defining an enclosure, so that each marker defines a predetermined direction with respect to said reference point; means to rotate a craft within said enclosure about said reference point to selectively line the craft with the markers and reference point for compass correction purposes; and signal means on said markers which cooperate with means on the front and rear of said craft to indicate the proper alignment of the craft with each of said markers and the reference point.

3,848,456
TESTING APPARATUS FOR SHOCK ABSORBERS ON VEHICLES
Klaas Anthonie Jacob Van der Perk, Oud-Beijerland, Netherlands, assignor to ITT Industries, Inc., New York, N.Y.
Filed Apr. 4, 1973, Ser. No. 347,900
Int. Cl. G01m *17/04*
U.S. Cl. 73—11 **7 Claims**



1. Testing apparatus for shock absorbers on vehicles comprising supporting means upon which vehicle wheels may be positioned, said supporting means including a first lever bearing on a base plate via a roller support, said first lever occupying a first position when at rest, said first lever responding to pressure applied from a vehicle wheel to rotate about said roller support to a second position, a second lever jointed by pivot-like means to said first lever, a third lever pivoted between the second lever and the base plate, said second lever incorporating means responsive to pressure of a vehicle wheel to turn said third lever about its pivot to the base plate and lock said first lever in substantially said second position, wheel supports jointed by pivot-like means to the base plate and to the first lever, said wheel supports rising to an upraised position capable of supporting pressure from a wheel when the first lever is locked in the second position, and release means for releasing said wheel supports and permitting pressure from a wheel to turn said third lever about its pivot to the base to release the first lever from its second position and lock it in a third position, whereby the lever arms are locked in positions enabling removal of the wheels of a vehicle from the testing apparatus without damage to the apparatus or the vehicle.

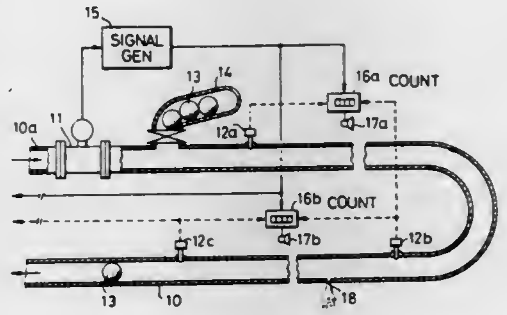
3,848,457
GASEOUS FLUID MONITORING APPARATUS
Donald James Behymer, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 14, 1973, Ser. No. 360,104
Int. Cl. G01n *31/00*
U.S. Cl. 73—24 **4 Claims**



1. Apparatus for detecting the modification of a gaseous fluid by a known material including
- a first chamber for receiving the gaseous fluid;
- a second chamber for receiving the gaseous fluid from an area where it is subject to being modified by a known material;
- a first and second transducer positioned in each of said first and second acoustic chambers, said first transducer being an electric to acoustic transducer and said second transducer being an acoustic to electric transducer;
- an oscillator connected for energizing said first transducers with a signal having a frequency that is equal to the resonant frequency of said first chamber;
- a bridge circuit including said second transducers, said bridge circuit being energized by the acoustic energy received by said second transducers from said first transducers, the acoustic energy received by said second transducer of said second acoustic chamber varying with the modification of the gaseous fluid by the known material; a feedback circuit connected between said bridge circuit and said oscillator for providing said oscillator with an electrical signal proportional to the electrical signal output of said second transducer for said first chamber causing said oscillator to operate at the resonant frequency of said first chamber; and
- means connected to the output of said bridge circuit and responsive thereto for providing a signal indicative of the modification of the gaseous fluid by the known substance.

3,848,458
SYSTEM FOR DETECTING ABNORMALITIES IN PIPELINES
Masahiro Soya, Kawasaki City, Japan, assignor to Tokico Ltd., Kawasaki City, Kanagawa-Ken, Japan
Filed Dec. 27, 1972, Ser. No. 318,856
Claims priority, application Japan, Dec. 28, 1971, 46-003390; Apr. 12, 1972, 47-036766
Int. Cl. G01m *3/08*
U.S. Cl. 73—40.5 R **4 Claims**

1. A system for detecting abnormalities in pipelines which comprises:
- a pipeline for transferring a fluid;
- a flowmeter installed in said pipeline at the upstream fluid sending end thereof and operating to measure the flow rate of the fluid flowing thereby and to produce accordingly a pulse signal;
- a traveling structure for traveling through said pipeline together with and at the same velocity as the fluid;
- means provided on the pipeline at a point downstream from said flowmeter to launch said traveling structure into the pipeline;
- traveling structure detecting means comprising a plurality of pairs of sensors provided in the pipeline at positions divisionally defining specific sections thereof in which abnormal points can exist to cause the velocity of the fluid at said point to differ from the velocity of the fluid at normal positions of the pipeline, the downstream sensor of one pair of sensors is used doubly as the upstream sensor of the pair of sensors divisionally defining the section adjacently downstream from the section divisionally defined by the first named pair of sensors; and
- counting means operating in response to the detection signal of the upstream sensor of said a plurality of pairs of sensors to start counting said pulse signals produced by



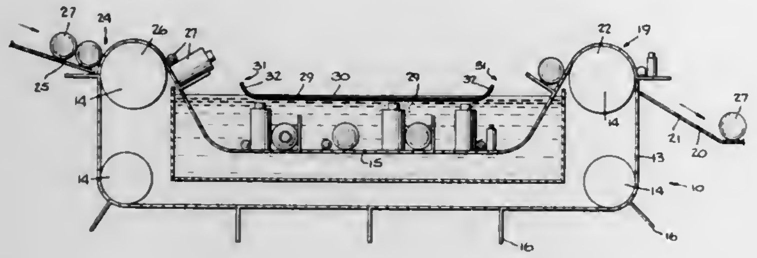
the flowmeter and in response to the detection signal of the other downstream sensor to stop counting said pulse signal and operating to produce an abnormality detection output when the resulting pulse signal count exceeds a preset specific value, said the counting means comprising a plurality of counters provided to correspond respectively to a plurality of pipeline sections divisionally defined by said plurality of pairs of sensors,

said counting means being caused, in the case where there is an abnormality point within the pipeline section divisionally defined by said pair of sensors, to carry out counting in excess of the normal preset value by the increase in the time for the passage of the traveling structure through said pipeline section in excess of a normal reference passage time and thereby to produce said abnormality detection output, and each sensor thus doubly used being adapted to send a count stopping signal to the counter corresponding to the section for which said sensor functions as the downstream sensor and sends a count starting signal to the counter corresponding to the section for which said sensor functions as the upstream sensor.

3,848,459
PRESSURE TESTING DEVICE FOR GLASS AEROSOL BOTTLES
Bruce R. Davidson, Lake Grove, and Agustus R. Agneta, Massapequa, both of N.Y., assignors to Parfums Rochas, Inc., New York, N.Y.
Filed Apr. 5, 1973, Ser. No. 348,318
Int. Cl. G01m *3/10*
U.S. Cl. 73—41.2 **4 Claims**

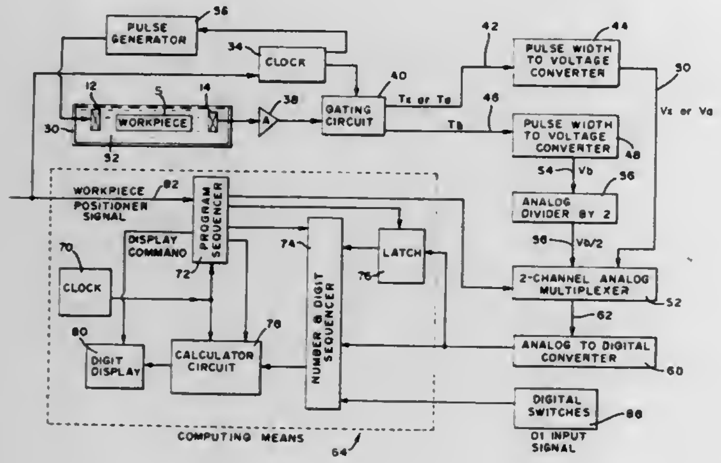
1. In an aerosol pressure testing apparatus for testing aerosol containers of random sizes and orientations containing fluid umder pressure including a heated liquid bath through which an endless belt conveys the containers to be pressure tested, said belt being trained around rollers disposed around

a tank holding said bath and respective rollers being disposed at elevated positions adjacent each end of the tank, the improvement comprising a plurality of transverse holding members carried by said belt for retaining said containers on said belt during passage thereof through said bath, and for receiving said containers on and discharging the same from said belt by gravity, said members each including a plurality of spaced fingers extending outwardly from the surface of said belt, a downwardly inclined feed ramp at the input end of said apparatus and a downwardly inclined discharge ramp at the discharge end of said apparatus, each said ramp being stationary and including complementary fingers adapted to intermesh with the fingers on said belt to feed onto and discharge from said belt respectively, said containers by gravity.



3,848,460
METHOD AND APPARATUS FOR MEASURING THE VELOCITY OF SOUND IN A WORKPIECE

Walter J. Bantz, Newark, Ohio; John W. Couture, Brookfield, and Richard J. Pittaro, Stamford, both of Conn., assignors to Krautkramer-Branson, Incorporated, Stamford, Conn.
Continuation-in-part of Ser. No. 262,233, June 13, 1972, abandoned. This application Oct. 31, 1973, Ser. No. 411,376
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.5 R , **7 Claims**



1. Apparatus for measuring the velocity of sound in a workpiece immersed in a liquid bath by the ultrasonic pulse-echo method comprising:

a body of liquid;

a transmit transducer and a receive transducer disposed in said body of liquid and spaced a predetermined distance (Dl) from one another;

electrical circuit means coupled to said transmit transducer and said receive transducer for producing during a first time interval a first electrical signal (Tx) commensurate with the transit time of an ultrasonic pulse signal traversing said predetermined distance from said transmit transducer through said liquid to said receive transducer; and for producing during a second time interval during which a workpiece is disposed in said body of liquid and said transducers, separated by said distance, are acoustically coupled through said liquid to opposite sides of the workpiece a second electrical signal (Ta) commensurate with the transit time of an ultrasonic pulse signal from said transmit transducer through the liquid and workpiece to said receive transducer, and a third electrical signal (Tb) commensurate with one round trip transit time of the ultrasonic pulse signal in the workpiece;

means for producing a fourth electrical signal commensurate with said predetermined distance (Dl);

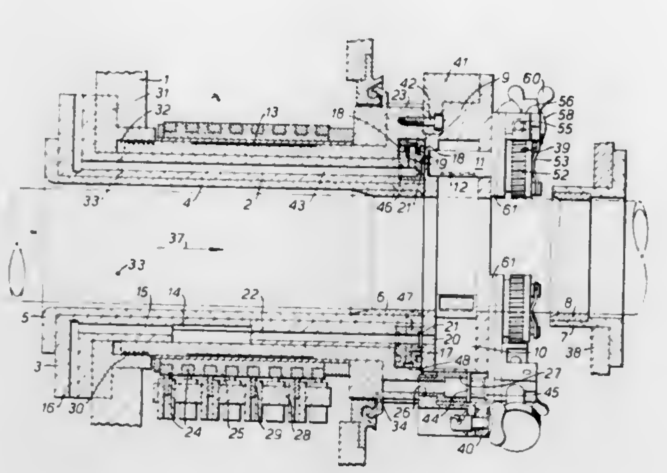
means for producing a control signal indicative of the presence and absence of a workpiece in said body of liquid for denoting the condition when providing said first, second and third signals, and

computer means coupled for receiving said first, second, third and fourth signals and receiving also said control signal providing identification of said first, second and third signals for providing an output signal (Vs) commensurate with the velocity of the ultrasonic signal in the workpiece in accordance with the formula:

$V_s = Dl(T_x - T_a + T_b/2)/T_x(T_b/2)$

3,848,461
ROTARY ULTRASONIC TESTING APPARATUS

Mathew James Hetherington, Near Market Harborough, and Peter Atkinston, Stanion, nr. Kettering, both of England, assignors to British Steel Corporation, London, England
Filed May 30, 1973, Ser. No. 365,133
Claims priority, application Great Britain, June 8, 1972, 26825/72
Int. Cl. G01n *29/04*
U.S. Cl. 73—71.5 US **6 Claims**

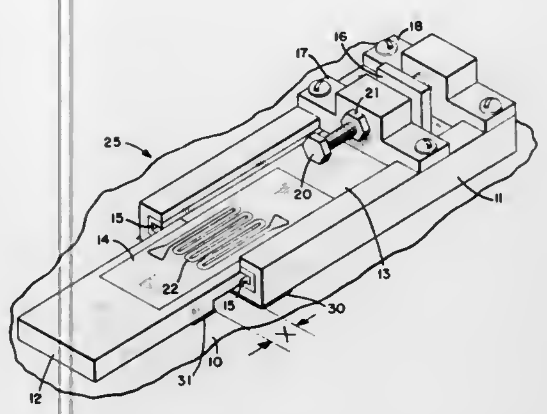


1. Rotary ultrasonic testing apparatus including an ultrasonic probe assembly mounted for rotation so as to transcribe a close-pitched helix about a tubular body to be tested, said probe assembly being mounted for rotation on a hydrostatic liquid bearing, said liquid bearing including at least one bearing surface having at least one recess and a liquid inlet opening into the recess for supplying liquid under pressure into the recesss, and a non-recessed bearing surface against which the recessed bearing surface is arranged to abut, liquid being forced in use by the supply pressure over the edges of the recess so as to provide a low friction bearing film between the recessed surface and the non-recessed surface.

3,848,462
STRAIN CONTROL TRANSDUCER

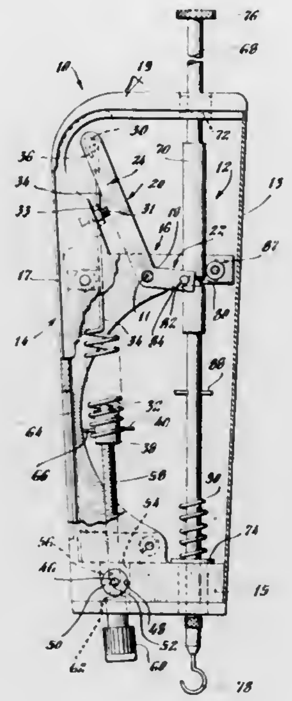
William F. McIlrath, 3 Lemon St., Wright Patterson AFB, Ohio 45453
Filed June 29, 1973, Ser. No. 374,985
Int. Cl. G01n *3/32*
U.S. Cl. 73—88.5 R **10 Claims**

1. A strain control transducer comprising a carrier mounted on a strain surface, a stationary mounting plate mounted on said surface adjacent said carrier, a slidable mounting plate slidably mounted on said carrier, a strain measuring device mounted jointly on said slidable mounting plate and said stationary mounting plate, and means mounted on said carrier for limiting the sliding movement of said slidable mounting plate in one direction.



3,848,463
SLIP-RELEASE LINEAR FORCE GAUGE FOR DETECTING COMPRESSION AND TENSION FORCES WHICH EXCEED A STANDARD FORCE

Sid Hejzlar, and Robert M. Zweig, both of Flushing, N.Y., assignors to John Chatillon & Sons, Inc., Kew Gardens, N.Y.
Filed Apr. 20, 1973, Ser. No. 352,966
Int. Cl. G01l *5/00*
U.S. Cl. 73—141 AB **11 Claims**



1. A slip-release linear force gauge for detecting compression and tension forces which exceed a predetermined standard force level comprising:

a supporting frame having a fulcrum point located therein, rigid balance arm means pivotally mounted in said supporting frame on said fulcrum point,

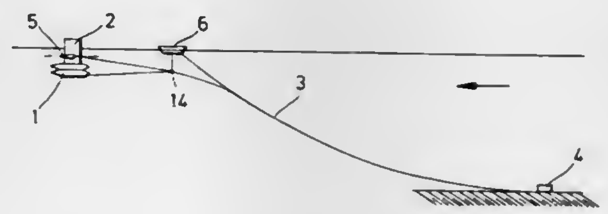
means for generating a predetermined standard torque acting upon said balance arm means in one direction about said fulcrum point,

means for relating the predetermined standard torque to the predetermined standard force level against which tension and compression forces are tested,

detector means slidably mounted in said supporting frame to assume a preset position and coupled to said balance arm means for generating a test torque in response to tension and compression forces applied to said detector means, the test torque acting upon said balance arm means about said fulcrum point in a direction opposed to the predetermined standard torque, said detector means being disposed to linearly slip from its preset position when the test torque exceeds the standard torque thereby indicating that the tension or compression force has exceeded the predetermined standard force level.

3,848,464
UNDERWATER MEASURING BUOY SYSTEM

Robert Hans Scheipner, Dusseldorf-Vennhausen; Helmut Schlussler, Holzbuttgen, and Raimund Germershausen, Kaarst, all of Germany, assignors to Firma Rheinmetall GmbH, Dusseldorf, Germany
Filed Mar. 7, 1973, Ser. No. 338,969
Claims priority, application Germany, Mar. 9, 1972, 2211333
Int. Cl. G01d *1/00;* **B63b** *21/52*
U.S. Cl. 73—170 A **7 Claims**



1. An auxiliary device to be applied under water for the determination of physical or chemical characteristics in waters, comprising

a measuring buoy-system,

means for retaining floating in a predetermined immersion depth said measuring buoy system,

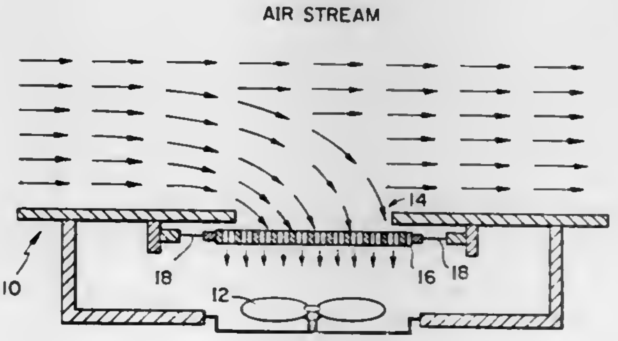
said measuring buoy system comprising a plurality of prismatic cells, disposed parallel relative to each other and arranged about a common symmetry axis joined to a unit, for reception of measuring devices,

said cells being disposed symmetrically about a central body flown through the water,

sensors disposed in said cells and including stabilization fins with said fins being disposed horizontally.

3,848,465
AIR MOMENTUM ANEMOMETER

Wallace E. Howell, R.F.D. 3 Box 400, Golden, Colo. 80401
Continuation-in-part of Ser. No. 131,120, April 5, 1971, Pat. No. 3,719,079. This application Dec. 29, 1972, Ser. No. 319,551The portion of the term of this patent subsequent to Mar. 6, 1990, has been disclaimed.
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 R **13 Claims**



1. A device for measuring wind velocity which comprises: means to displace a portion of a first airstream from its flow path in a direction substantially normal to said flow path;

means to sense the momentum flux of the displaced portion of the airstream spaced apart from the means to displace the portion from the airstream in a direction substantially normal to the original path and to convert the momentum flux of the displaced portion of the airstream into a force directly proportional to that displaced momentum flux;

means responsive to the means to sense and convert to produce a signal representing said force;

means to convert the signal representing said force to an alternating signal; and

means to measure the alternating signal.

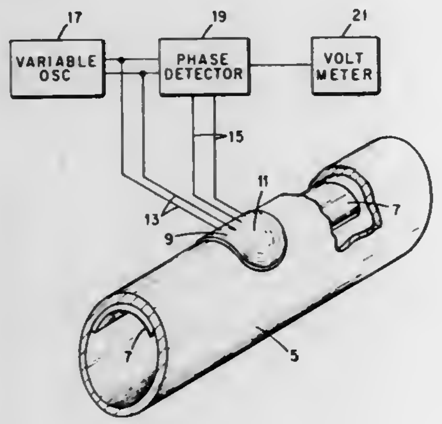
3,848,466
MAGNETIC TEMPERATURE SENSOR

Ralph E. Dial, Concord; John J. Keyes, Jr., Oak Ridge, and John W. Krewson, Jr., Norris, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Jan. 30, 1974, Ser. No. 438,083

Int. Cl. G01k *7/38, 13/02*

U.S. Cl. 73—349 **5 Claims**



1. A temperature sensor for monitoring the temperature and detecting rapid temperature changes of one surface of a wall of nonmagnetic material comprising:

a layer of ferromagnetic material disposed in contact with said one surface of said wall;

at least one electromagnetic coil disposed on the other surface of said wall opposite said one surface from said layer;

an electrical signal source connected to said coil for inducing magnetic fields in said layer, and means responsive to the changes in current induced in said coil from changes of the magnetic permeability of said layer with changes in temperature of said one surface for indicating the temperature of said one surface.

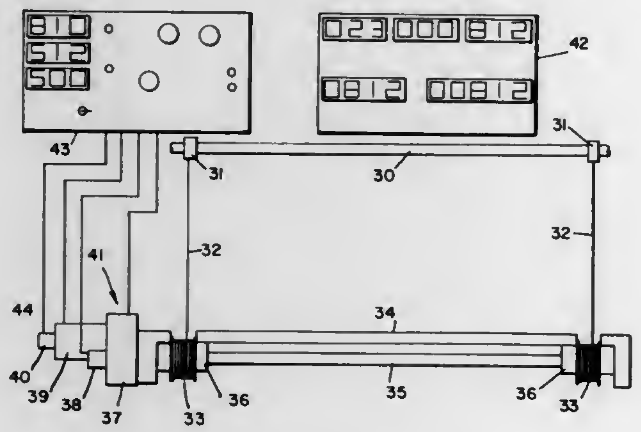
3,848,467
PROPORTIONED RESISTANCE EXERCISE SERVO SYSTEM

Evan R. Flavell, P.O. Box 6397, Astoria, Oreg. 94706

Filed July 10, 1972, Ser. No. 270,219

Int. Cl. A63h *21/24*

U.S. Cl. 73—379 **12 Claims**



2. An exercise apparatus including in combination:

resistance means for providing in each of two opposite directions exercise resistance proportioned to the force applied by the user,

reversing means connected to said resistance means for causing said resistance means to reciprocate automatically between two predetermined limits, and

means connected to said resistance means for displaying the user's performance.

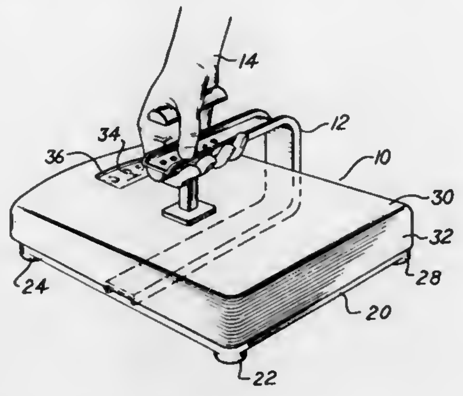
3,848,468
HAND GRIP TESTING DEVICE FOR BODY WEIGHING SCALES

Oran D. Richards, 1116½ Middlebury St., Elkhart, Ind. 46514

Filed Feb. 1, 1973, Ser. No. 328,609

Int. Cl. G01l *5/02*

U.S. Cl. 73—380 **5 Claims**



1. A detachable hand grip testing device for use with body weighing scales having a platform, a base, and a dial, comprising a generally U-shaped frame having a first member for seating beneath the base of the scales and a second member for extending above the platform in spaced relation thereto, a member supported by said second member and movable toward said first frame member for engaging the upper surface of said platform, and one part of a hand gripping means on said movable member and another part of a hand gripping means on said second member, for urging said movable member against said platform for registering the pressure on the scale dial.

3,848,469
SAMPLE INTRODUCTION SYSTEM FOR GAS CHROMATOGRAPH

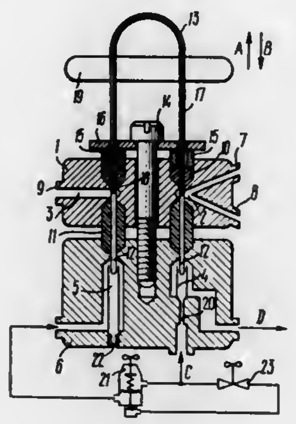
Leonid Vladimirovich Chizhov, Leninsky prospekt, 82/2, kv. 362, Moscow, U.S.S.R.

Filed Apr. 4, 1973, Ser. No. 347,727

Claims priority, application U.S.S.R., Oct. 11, 1972, 1833600

Int. Cl. G01n *1/22*

U.S. Cl. 73—422 GC **4 Claims**



1. A sample introduction system for gas chromatographs, comprising: a sampler unit having a flow-type filling chamber hermetically sealed from the atmosphere and an exhaust chamber; two connecting passageways communicating said filling chamber with said sample; a passageway connecting said exhaust chamber, for venting to the atmosphere; a sample inlet unit having a sample receiving chamber sealed from the atmosphere and communicating with a source of carrier gas and a chromatographic column, an overpressure chamber communicating with said carrier gas source and vented to the atmosphere; means for providing a pressure differential between said sample receiving chamber and said overpressure chamber; passages provided with sealing bushings, between said filling chamber and said sample receiving chamber and between said exhaust chamber and said overpressure chamber; a metering element formed as a bent tube with parallel ends pointing in the same direction; exit ports formed in said tube ends; rods connected with said ends of said tube beyond said exit ports, said tube and rods being slidably mounted in said sealing bushings and being capable of reciprocating between two fixed positions so that in one said fixed position of said tube with rods and said exit ports of said tube communicate with the said chambers of said sampler unit, with said chambers of said sample inlet unit being sealed from said chambers of said sampler unit by the outer surfaces of said rods, whereas in the other fixed position said exit ports of said tube communicate with said chambers of said sample inlet unit, with said chambers of said sample inlet unit being sealed from said chambers of said sampler unit by the outer surface of said tube.

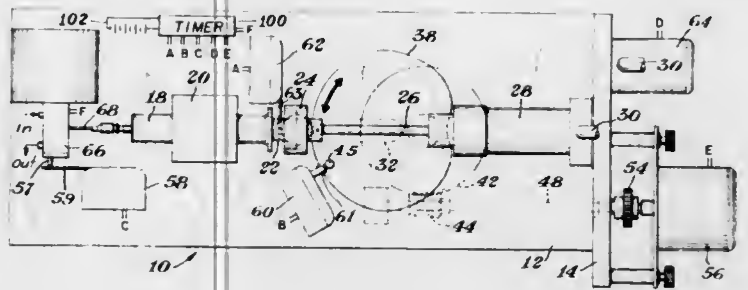
3,848,470
SAMPLE COLLECTION AND DELIVERY APPARATUS

Paul Hargash, Saginaw, and Franklin J. Karle, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 2, 1972, Ser. No. 277,318

Int. Cl. G01n *1/14*

U.S. Cl. 73—425.6 **6 Claims**



1. Fluid sample withdrawal and discharging apparatus comprising a syringe-like hollow barrel having a close fitting piston therein, said barrel having a constricted forward end and an open rear end, said piston extending into said barrel from said rear end, means including an actuating rod-like member for rapidly driving said piston towards said constricted forward end and for withdrawing said piston away from said constricted end, a rotatable cam-like plate having an edge surface, means for rotating said cam-like plate, said cam-like plate being disposed adjacent to said rod-like member, contact means coupled to said rod-like member and positioned to bear against said edge surface of said cam as said piston is withdrawn away from said constricted end, and timing means cooperating with switching means selectively to actuate said means for driving said piston and said means for rotating said cam-like element.

3,848,471
NOISE POLLUTION LEVEL MEASURING CIRCUIT

James A. Hamburg, Southfield, and Donald R. Whitney, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

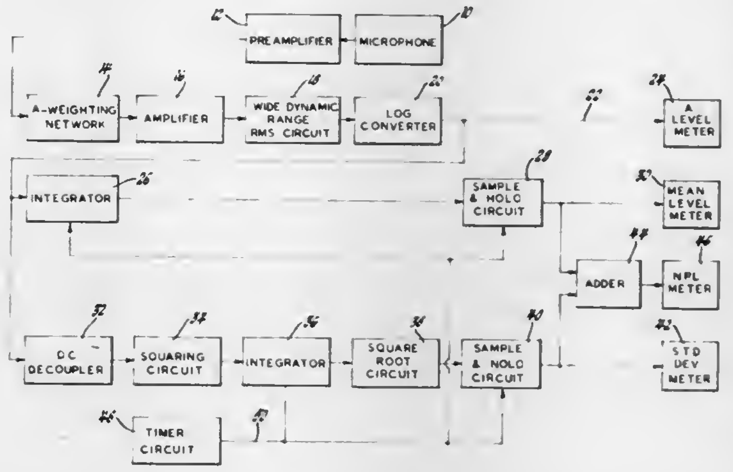
Filed Apr. 23, 1973, Ser. No. 353,446

Int. Cl. G01h *3/08, 3/10*

U.S. Cl. 73/557 **5 Claims**

1. An instrument for determining noise pollution level (NPL) of sound signals according to the formula NPL $= L_e + 2.5\ \sigma$ wherein L_e is the mean sound pressure level and σ is the standard deviation of the sound pressure level, the quantities L_e and σ being taken over a fixed time interval comprising,

a circuit responsive to the sound signals to be monitored for providing a first signal representing sound pressure level, an integrator circuit operative through a fixed time interval and responsive to the sound pressure level signal for producing a second signal representing mean sound pressure level,



a standard deviation circuit operative through the fixed time interval and responsive to the sound pressure level signal for producing a third signal representing the standard deviation of the sound pressure level and for properly scaling the third signal,

circuit means for adding the second and third signals to produce a fourth signal representing noise pollution level, and means for providing a readout of noise pollution level according to the fourth signal.

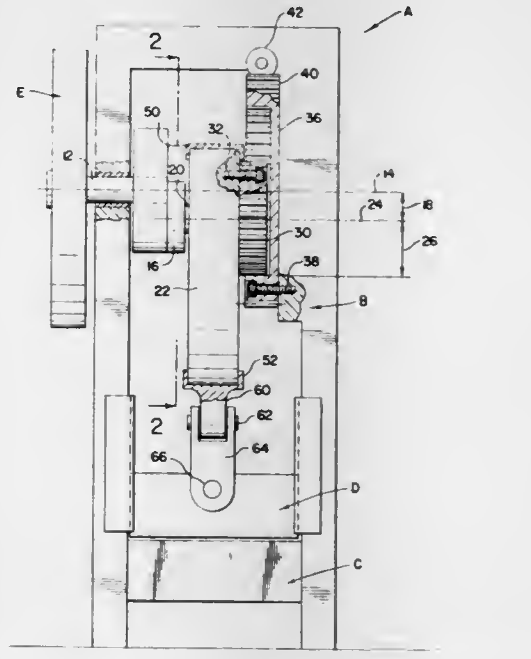
3,848,472
CYCLOID PRESS

Norman L. Pim, Salem, Ohio, assignor to Gulf & Western Manufacturing Company (Hastings), Hastings, Mich.

Filed June 4, 1973, Ser. No. 366,982

Int. Cl. F16h *37/12*

U.S. Cl. 74—52 **6 Claims**



1. In a press including a rotatable power shaft for reciprocating a slide connected with the power shaft through a connecting rod and connecting rod assembly said connecting rod assembly including inner and outer eccentrics, said inner eccentric being rotatably driven about a fixed center in a

predetermined direction, an epicyclic gear train for rotatably driving said outer eccentric in a direction opposite to said predetermined direction about said inner eccentric, said gear train including a sun gear having a sun gear center coincidental with said fixed center, said sun gear being fixedly mounted against rotation, said gear train including a pinion gear mounted on said outer eccentric in engagement with said sun gear, said eccentrics and gear train being dimensioned for moving said connection substantially in the path of a three-lobe hypocycloid when said inner eccentric is rotatably driven.

3,848,473

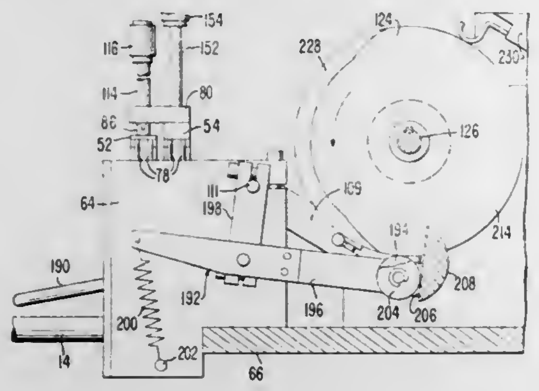
ACTUATOR FOR TOOL MOVING MECHANISM

John C. Diepeveen, 1737 Kimberly Dr., Sunnyvale, Calif. 94087

Division of Ser. No. 18,153, March 10, 1970, Pat. No. 3,653,268. This application Feb. 24, 1972, Ser. No. 229,058

Int. Cl. F16h *25/08*

U.S. Cl. 74—53 **16 Claims**



1. A mechanical actuator comprising: a support; a cam mounted on the support for rotation relative thereto about a first axis; an actuator member mounted on the support for rotation about a second axis substantially parallel with the first axis and having a bearing surface spaced radially from and facing said second axis; a lever having first means for mounting the same for movement on the support in a direction transversely of said axes and second means adjacent to one end thereof for engaging said cam and said surface; and means biasing said second means into engagement with said cam and said surface, said member being movable into any one of a number of operative positions relative to said support to adjust the location of said surface relative to said cam.

ERRATUM

For Class 74—242 see:
Patent No. 3,848,448

3,848,474

VARIABLE-SPEED, POSITIVE-DRIVE TRANSMISSION PROVIDING OUTPUT SPEEDS FROM ZERO R.P.M. UP TO FULL OUTPUT R.P.M.

Aaron Meyer Epstein, 268 Autumn Ridge Rd., Fairfield, Conn. 06604

Filed Jan. 10, 1973, Ser. No. 322,435

Int. Cl. F16h *29/04*

U.S. Cl. 74—117 **10 Claims**

1. A variable-speed, positive-drive transmission comprising: a rotatable input connection adapted to have a rotary source of power connected thereto, said input connection being rotatable about the main axis of the transmission;

an output speed control member rotatably mounted in said transmission adapted to be turned to various angular positions about the main axis, said output speed control member having a plurality of openings therein spaced about the main axis;

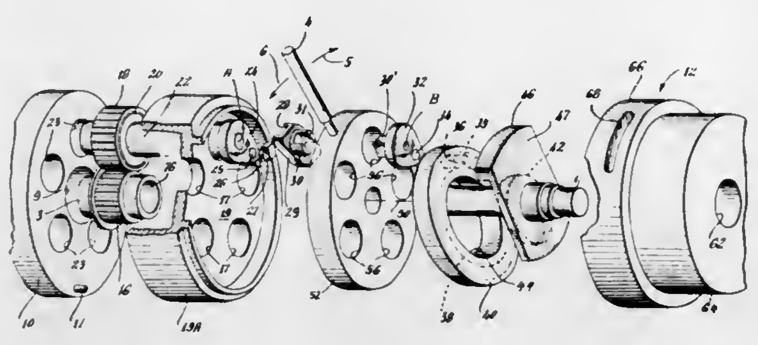
a plurality of input crank arms each having an axis of swinging motion, said input crank arms being mounted on the input side of said speed control member with their swing axes parallel with the main axis;

eccentric drive means attached to said input connection and engaging the input crank arms for swinging the input crank arm back and forth about their respective swing axes;

a plurality of adjustable length crank arms mounted on the output side of said speed control member, respective ones of said adjustable length crank arms being connected through respective ones of said openings in the speed control member to respective ones of said input crank arms, said adjustable length crank arms having the same swing axes as said input crank arms and being swung back and forth by said input crank arms;

said adjustable length crank arms each having slideways thereon extending from said swing axis out toward the respective ends of said adjustable length crank arms;

a plurality of output crank arms mounted in said transmission adapted to swing back and forth abour rock axes, said rock axes extending parallel with the main axis;



a plurality of swivel means, respective swivel means being mounted on respective ones of said output crank arms, each of said swivel means having a swivel axis;

respective swivel means engaging the respective slideways of said adjustable length crank arms;

said swivel means being movable along said slideways of said adjustable length crank arms;

a plurality of over-running clutches, respective clutches being driven by respective output crank arms;

a driven gear engaged by a plurality of intermediate gears positioned thereabout;

respective intermediate gears being driven by said respective over-running clutches; and

output connection means driven by said gears and adapted to be connected to a load to be driven,

whereby turning said output speed control member to differing angular positions about said main axis changes the respective displacement between said swing axes and said swivel axes for changing the effective length of said adjustable length crank arms for varying the speed of rotation of said output connection means.

3,848,475

CONE TYPE FRICTION GEARING

Heinrich Tippmann, Munich, Germany, assignor to ITT Industries Inc., New York, N.Y.

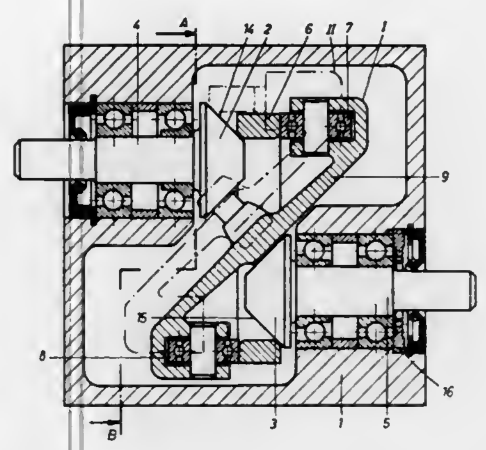
Filed Apr. 17, 1973, Ser. No. 351,962

Claims priority, application Germany, Apr. 19, 1972, 2219056

Int. Cl. F16h *15/42*

U.S. Cl. 74—192 **11 Claims**

1. A continuously or ridgelessly adjustable friction drive, in which a friction ring is permitted to slide on coneshaped shell surfaces of bevel wheels for the purpose of adjusting the transmission ratio, comprising a friction ring, a casing, two bevel wheels rotatably supported inside the casing and having cone-shaped shells engaging said friction ring from opposite sides, and a guide member supporting bearings arranged to engage respectively opposite sides of said friction ring causing it to press against the cone-shaped shell surfaces.



3,848,476

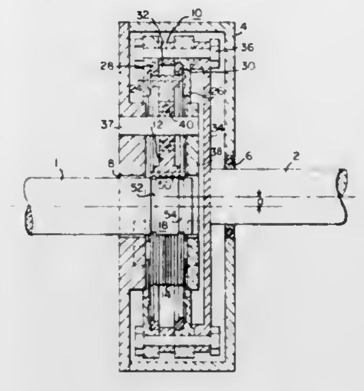
TRACTION ROLLER TRANSMISSION

Charles Edward Kraus, Austin, Tex., assignor to Excelermatic, Inc., Leesburg, Va.

Filed June 5, 1973, Ser. No. 367,194

Int. Cl. F16h *13/02, 13/06*

U.S. Cl. 74—206 **12 Claims**



1. A traction roller transmission comprising a rotatable means having a circular race; a first roller having a circumferential race and being disposed relative to said rotatable means such that a space is formed between the races of the rotatable means and the first roller, and at least one motion transmitting traction roller rotatably supported in said space with its circumferential face in frictional engagement with the circumferential race of said first roller along a first line of contact and with the circular race of said rotatable means along a second line of contact for transmitting motion between the first roller and the rotatable means, said circumferential face and said circumferential race having a difference in curvature which is larger than the difference in curvature between said circumferential face and said circular race, and said second line of contact being shorter than said first line of contact.

3,848,477

DEVICE FOR GUIDING AND RESUMING THE AXIAL CLEARANCE IN SCREWS OF REDUCTION WORMS, PARTICULARLY FOR LOW POWER GEARED MOTOR

Aldo Giandinoto, and Ugo Gilardelli, both of Milan, Italy, assignors to Fabbrica Italiana Magneti Marelli, S.p.A., Milano, Italy

Filed Mar. 2, 1973, Ser. No. 337,714

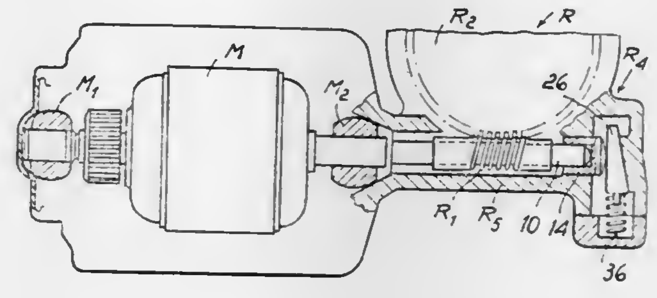
Claims priority, application Italy, Mar. 15, 1972, 21884/72

Int. Cl. F16h *1/16*

U.S. Cl. 74—425 **10 Claims**

1. Device for automatically absorbing the axial motion of a gear worm, which motion results from engagement of the worm with a reciprocating element or the like, comprising:

a motor, a motor shaft driven by said motor; said shaft having an axis; a gear worm secured on and coaxial with said motor shaft, such that said motor drives said shaft and said gear worm to rotate; said shaft having a free end which undergoes axial shift due to axial force applied to said worm;



wedge means in communication with said shaft free end; said wedge means being shaped and positioned such that reciprocation thereof transversely to said shaft axis reciprocates said shaft along said axis, and said wedge means being shaped such that reciprocation of said wedge means in one direction thrusts said shaft axially away from said wedge means; spring means connected to said wedge means for reciprocating said wedge means in said one direction.

3,848,478

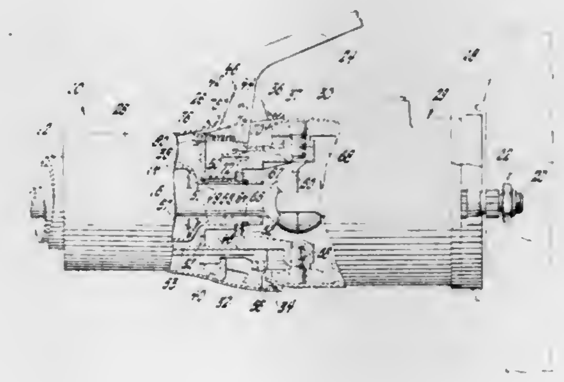
SHIFT LEVER BOWL ASSEMBLY

Harold J. Burke, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 12, 1973, Ser. No. 396,352

Int. Cl. G05g *9/12;* **B23p** *11/02*

U.S. Cl. 74—484 **8 Claims**



1. A steering column shift bowl assembly comprising a cylindrical shift bowl cover having a flared end-portion formed thereon, an inwardly and rearwardly extending flange formed on the end of said flared end-portion, an opening formed in said flared end-portion, and a shift bowl having a side wall whose outer surface conforms to the inner surface of said flared end-portion, a selector lever mounting clevis formed on said shift bowl wall and extending through said opening, said shift bowl being retained against said flared end-portion in a permanent, mechanical interference fit therewith by said inwardly and rearwardly extending flange.

3,848,479

INTEGRAL ADJUSTMENT CLUTCH FORK

George R. Morris, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 278,676, Aug. 7, 1972, Pat. No. 3,800,929. This application Nov. 5, 1973, Ser. No. 413,001

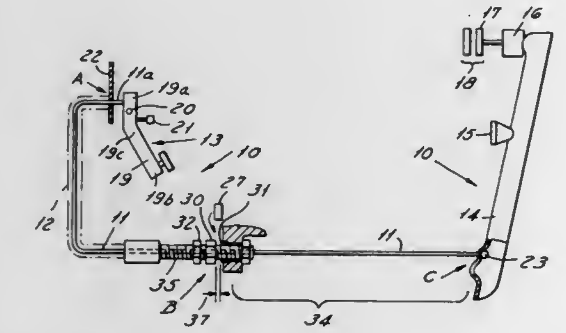
Int. Cl. G05g *23/02*

U.S. Cl. 74—522 **2 Claims**

1. Linkage having an integral adjustment gauge comprising:

a. means defining an arcuately movable first member; and

b. means defining a reciprocal second member, one of said members having at least two contact surfaces, the first surface being arranged for a pre-installation condition of said linkage when said first surface and other member is interengaged thereby defining a first effective length for said other member, and the second surface being arranged for a post-installation and operative compensating condition of said linkage when said second surface and other member is subsequently interengaged thereby defining a second effective length for said other member,



each of said contact surfaces comprising a semi-spherical seat spaced longitudinally along said first member, said reciprocal second member carrying an element having a surface for complimentary engagement with said contact surfaces whereby in the pre-installation condition said element is in engagement with the contact surfaces closest to the center of movement of said first member, and in the post-installation compensated condition, said element is in engagement with the other of the contact surfaces most remote from the center of movement of said first member.

3,848,480

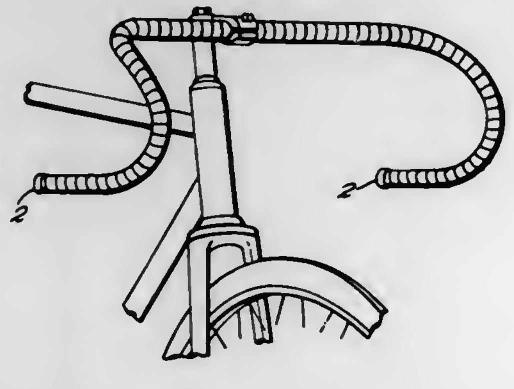
HAND GRIPS

Herbert B. Oseroff, 9800 Bay Harbor Dr., Bay Harbor Islands, Fla. 33154, and William J. Sparks, 5129 Granada Blvd., Coral Gables, Fla. 33146

Filed Feb. 5, 1973, Ser. No. 329,944

Int. Cl. G05g *1/04*

U.S. Cl. 74—558.5 **5 Claims**



1. In a hand operated device for hand powered and hand guided equipment having

a rigid handle means in the form of an operating shaft or steering mechanism, and

a gripping element encircling at least a portion of said handle means,

the improvement wherein said gripping element is formed from a reversible thermoplastic rubber having the properties:

1. Shore A hardness in the range of about 35 to about 50, as determined by ASTM standard D2240-68;
2. Tear resistance of about 120 to about 175 pounds pull, as determined by ASTM standard D624-70; and
3. Modulus at 300 percent elongation in the range of about 100 to about 400 pounds per square inch pull, as determined by ASTM standard D2433-70.

3,848,481

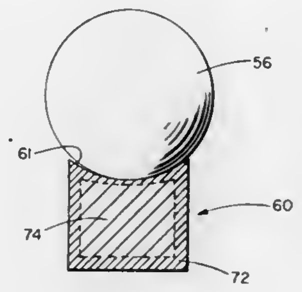
CAMS

James M. Denker, Scituate, Mass., assignor to Nutron Corporation, Hingham, Mass.

Filed Jan. 29, 1973, Ser. No. 327,651

Int. Cl. F16h *53/00*

U.S. Cl. 74—567 **11 Claims**



1. A cam defining a longitudinally-extending cam track, said cam including

a central longitudinally-extending portion underlying and defining the center of said track and

longitudinally-extending side portions on opposite sides of said central portion underlying and defining respective side portions of said track,

each of said side portions being a layer of relatively high yield point material and of substantial thickness overlying a core of relatively low yield point material, and

said central portion being one of said core and a thin layer of said relatively high yield point material overlying said core.

3,848,482

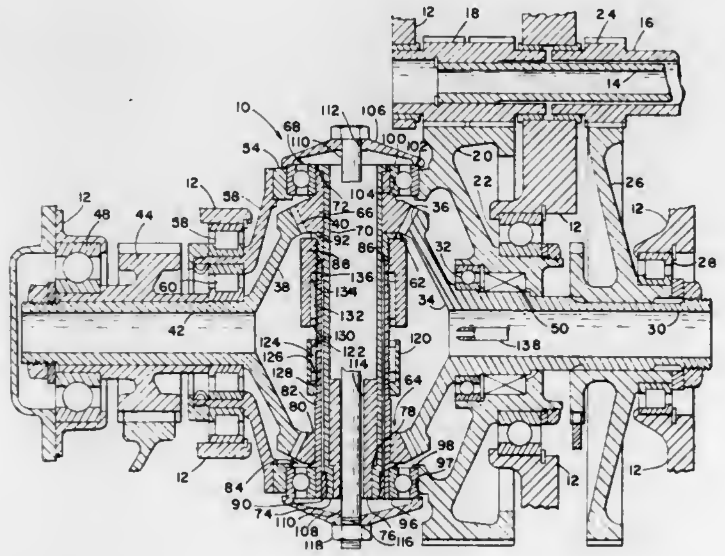
DIFFERENTIAL GEARING FOR GAS TURBINE ENGINE

Wayne C. Shank, Tucson, Ariz., assignor to Avco Corporation, Williamsport, Pa.

Filed Aug. 3, 1973, Ser. No. 385,433

Int. Cl. F16h *1/38, 1/40*

U.S. Cl. 74—710 **16 Claims**



1. A differential assembly for connecting a rotatable input shaft to a pair of rotatable output shafts, said differential assembly comprising:

a first bevel ring gear journaled for rotation and connected to one of said shafts;

a second bevel ring gear journaled for rotation about an axis coaxial with said first gear and connected to another of said shafts, said first and second ring gears facing one another;

an annular carrier surrounding said ring gears and journaled about an axis coaxial with said ring gears, said annular carrier being connected to the last of said shafts;

first and second coaxial planet gear assemblies rotatably journaled in opposite sides of said annular carrier about an axis normal to the axis of rotation of said carrier and engaging both of said ring gears;

said first planet gear assembly comprising a bevel gear and an elongated inner annular element extending radially inward through the axis of rotation of said annular carrier to a remote end adjacent said second planet gear assembly, and a balancing slug positioned in the remote end of said annular element, said balancing slug having a predetermined weight for balancing said first planet gear assembly about the axis of rotation of said carrier; and

said second planet gear assembly comprising a bevel gear and an elongated outer tubular element slidably telescoping over said annular element and extending radially inward through the center of rotation of said carrier to a remote end adjacent said first planet gear assembly, and a balacing slug positioned at the remote end of said tubular element, said balancing slug having a predetermined mass for balancing said second planet gear assembly;

whereby the centrifugally induced forces urging said planet gear assemblies radially outward are minimized.

3,848,483

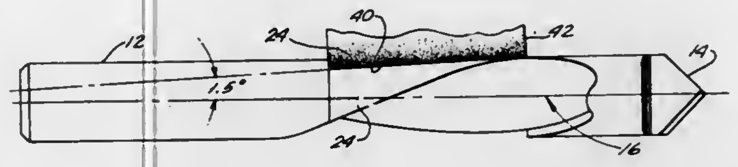
METHOD OF MAKING ROUTER BITS

Harry W. Wall, Glendora, and Eugene W. Wall, Claremont, both of Calif., assignors to Wall Machine Works, South El Monte, Calif.

Continuation of Ser. No. 272,323, July 17, 1972, abandoned, which is a division of Ser. No. 106,368, Jan. 14, 1971, Pat. No. 3,701,188. This application Dec. 21, 1973, Ser. No. 427,134

Int. Cl. B21k *5/02*

U.S. Cl. 76—101 A **3 Claims**



1. A method of making a router bit from a substantially cylindrical, elongated body having a pair of ends, the method comprising

1. holding the elongated body in a fixed position,
2. engaging the cylindrical surface of the body, at a point spaced intermediate the two ends of the body, with a generally S-shaped cutting edge of a rotary mill cutter,
3. moving the body linearly while concurrently rotating the body about its axis and rotating the mill cutter such that the S-shaped cutting edge of the mill cutter forms in the cylindrical surface of the body a single closed helical flute having a concave wall surface which gradually merges into a convex wall surface extending laterally between a pair of substantially parallel, longitudinally extending helical edges extending between a pair of longitudinally spaced apart ends located inwardly from the ends of the body, and
4. thereafter holding the grinding edge of a rotating grinding wheel at a small angle of inclination relative to the longitudinal axis of the body and then moving the angularly disposed grinding edge of the rotating grinding wheel into contact with only the unfluted portion of the body, within the confines of the two ends of the flute, and concurrently rotating the body about its axis to form a closed ground relief wall of convex curvature which encircles the body continuously from one helical edge of the flute to the other edge thereof, and intersects the helical edge along the concave wall surface of the flute to form a continuous helical cutting edge which wraps around only a portion of the circumference of the cylindrical body.

3,848,484

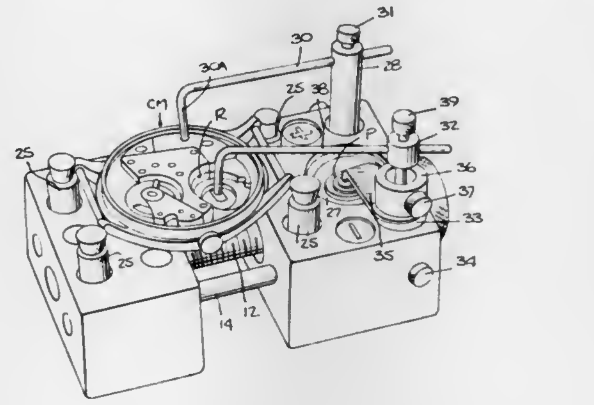
WATCH MOVEMENT HOLDER

Henry B. Fried, New York, N.Y., assignor to Bulova Watch Company, Inc., New York, N.Y.

Filed Sept. 21, 1973, Ser. No. 399,525

Int. Cl. G04d *3/00*

U.S. Cl. 81—6 **9 Claims**



1. A watch movement holder comprising:

A. a movable block having a threaded bore therein;

B. a stationary block having a lead screw extending therefrom and passing through said threaded bore whereby the position of the movable block relative to the stationary block is adjustable to set the holder to the size and shape of a watch movement bridging the blocks, said stationary block having a well formed therein for receiving a power cell to energize an electronic or electric watch movement, two terminal posts mounted on same stationary block and connected to said cell, and probes supported by and extending from said post to engage contact points on said movements, and

C. removable pegs insertable in selected holes in a row of holes formed in said movable block and in a row of holes formed in said stationary block to provide abutments to engage the periphery of the movement.

3,848,485

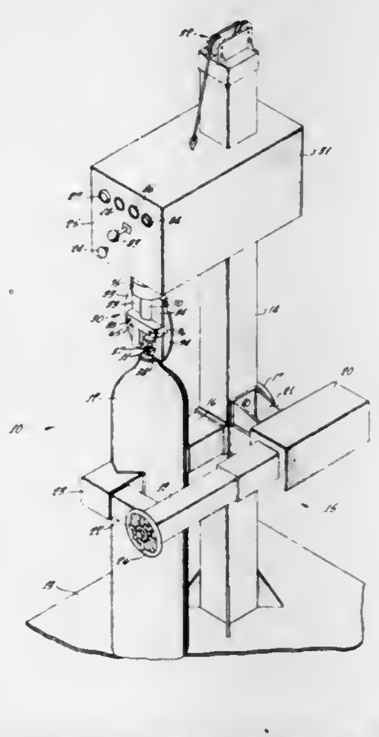
VALVING MACHINE

Carl A. Grenci, 4791 Lesa Pl., Yorba Linda, Calif. 92686

Filed Oct. 18, 1973, Ser. No. 407,416

Int. Cl. B25b *17/00, 21/00;* **B67b** *7/08*

U.S. Cl. 81—57.11 **8 Claims**



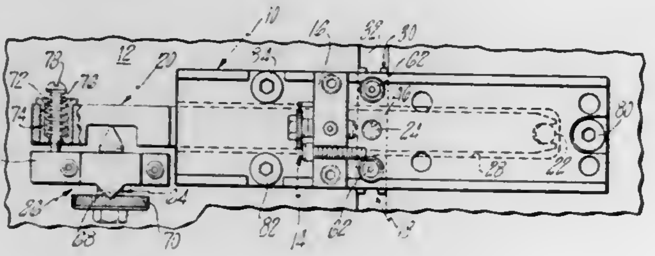
1. A machine for rotating a first member relative to a second member comprising:

means for securely holding said second member;

a pair of tongs pivotable about a pair of parallel, spaced axes;
drive means;
means forming a direct, non-friction connection between said drive means and said tongs for rotating said tongs with a torque T_1 about an axis spaced halfway between and perpendicular to said axes; and
power multiplication means operatively coupled between said drive means and said tongs for urging one ends of said tongs into contact with opposite sides of said first member with a torque T_2, T_2 being greater than T_1 whereby said tongs tightly hold said first member during turning thereof relative to said second member.

3,848,486
ADJUSTABLE TOOLHOLDER

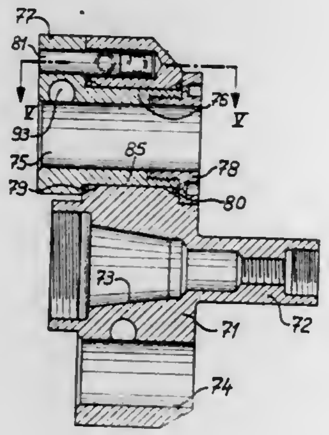
Edmund J. Robichaud, 1813 Stanley St., New Britain, Conn. 06053
Filed Dec. 20, 1973, Ser. No. 426,445
Int. Cl. B23b *29/10*
U.S. Cl. 82—36 R **12 Claims**



1. A toolholder assembly comprising a support, a toolholder mounted for movement on the support relative to an adjustment axis of the toolholder, the support and toolholder having cooperating guide means limiting toolholder movement to rectilinear motion on the support transversely of the adjustment axis of the toolholder, an operating bar having a pivot connection to the support and a drive connection to the toolholder for moving the toolholder in a selected linear direction laterally of the toolholder and its adjustment axis, and an adjustment device for actuating the operating bar, the pivot and drive connections of the operating bar permitting angular movement of the operating bar to effect precision lateral movement of the toolholder transversely of its adjustment axis as established by the cooperating guide means.

3,848,487
TOOL HOLDERS FOR MACHINE TOOLS

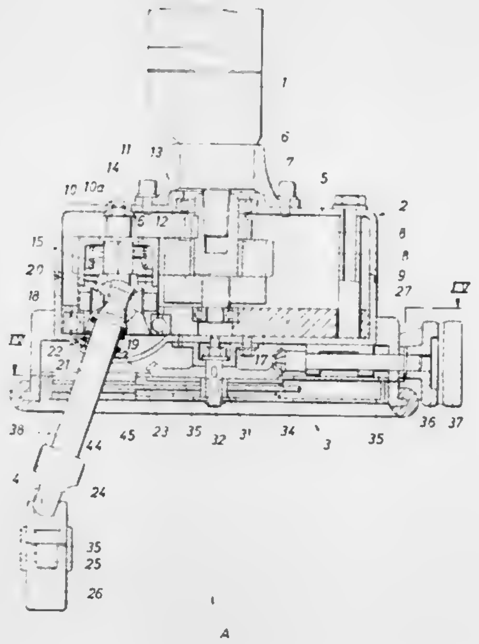
Charles Willen, 14, Route du Stand, 1844 Villeneuve, Switzerland
Division of Ser. No. 67,370, Aug. 27, 1970, Pat. No. 3,750,498. This application Aug. 7, 1973, Ser. No. 386,297
Claims priority, application Switzerland, Aug. 29, 1969, 13108/69; Aug. 29, 1969, 13109/69; Aug. 29, 1969, 13110/69; Aug. 29, 1969, 13112/69
Int. Cl. B23b *29/12*
U.S. Cl. 82—36 R **4 Claims**



1. A tool holder comprising a tool holder body and a tool carrying and automatically tool relieving means on said body, said means comprising a tubular sleeve mounted for pivoting movement about its axis in a hole of the body and adapted to carry a tool support, a nut attached to and concentric with an end portion of the sleeve for pivotal movement therewith, means forming parts of said body, sleeve and nut defining conical, cylindrical and planar surfaces, two antifriction bearings on said surfaces, to facilitate the pivoting movement of the sleeve, and means including said nut, for subjecting the bearings to a stress in operational use of a tool mounted on the tool support, play between opposed surfaces of the body and the sleeve being limited to play which protects the bearings from overload.

3,848,488
MULTISPINDLE HAND SCREWING DEVICE OR BRACE

August Weisenburger, Sophienstrasse 6, Frankfurt am Main, Germany
Filed Jan. 4, 1974, Ser. No. 430,749
Claims priority, application Germany, Jan. 9, 1973, 2300848
Int. Cl. B25d ; B25b *17/00, 23/02*
U.S. Cl. 81—52.4 R **14 Claims**



1. A multispindle hand screwing device or brace, in particular for tightening and unscrewing the wheel screw fastenings of motor vehicles, having a drive motor which drives via a transmission unit a plurality of screw spindles provided at their free ends with a screwing implement and with the interposition in each case of a claw or dog coupling which automatically disengages at a predetermined torque, each screw spindle comprising a universal joint shaft having two joints, and the spindle end provided with the screwing implement being guided parallel in each case by a radially movable slide member which can be moved by a drive unit common to all the slide members.

ERRATUM

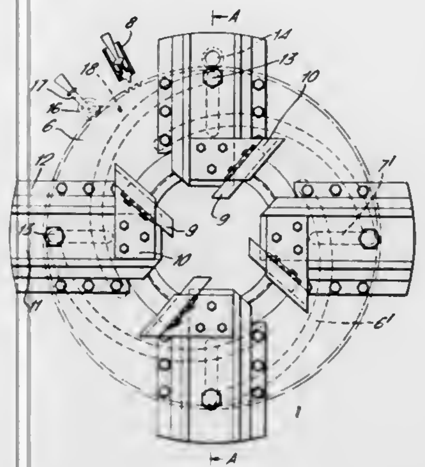
For Class 82—19 see:
Patent No. 3,848,505

ERRATUM

For Class 82—36 see:
Patent No. 3,848,486

3,848,489
ROTARY MACHINE TOOL

Augustin Zabaleta Santana, Prim 43, Bilbao, Spain
Filed Mar. 9, 1973, Ser. No. 339,647
Int. Cl. B23b *3/04, 5/14*
U.S. Cl. 82—61 **12 Claims**



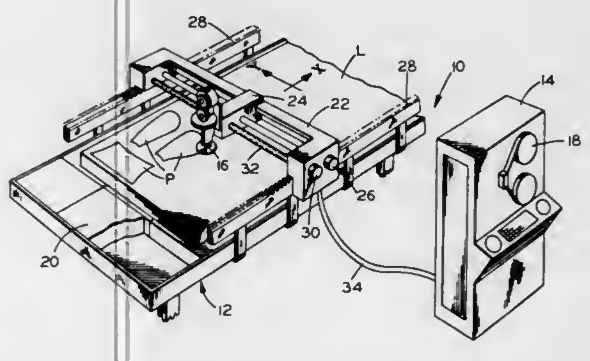
1. A machine apparatus comprising a tool carrier, first and second axially aligned wheels having a common axis, at least one guide slot in each said wheel, the slot in one of said wheels extending radially and the slot in the other said wheel subtending an angle at the center of said other wheel and having one end closer to said center than the other end thereof, means for rotatably mounting said wheels, a pair of coaxial pinion gears separately engaging said first and second wheels and having different diameters for producing relative rotary displacement between said first and second wheels, means slidably mounting said tool carrier with respect to one of said wheels, means coupled to said carrier and engaging the slots in said first and second wheels for displacing said carrier in response to relative rotation of said wheels, and means for selectively holding one of said wheels at a fixed angular position.

ERRATUM

For Class 83—36 see:
Patent No. 3,848,487

3,848,490
METHOD AND APPARATUS FOR CONTROLLING A CUTTING TOOL

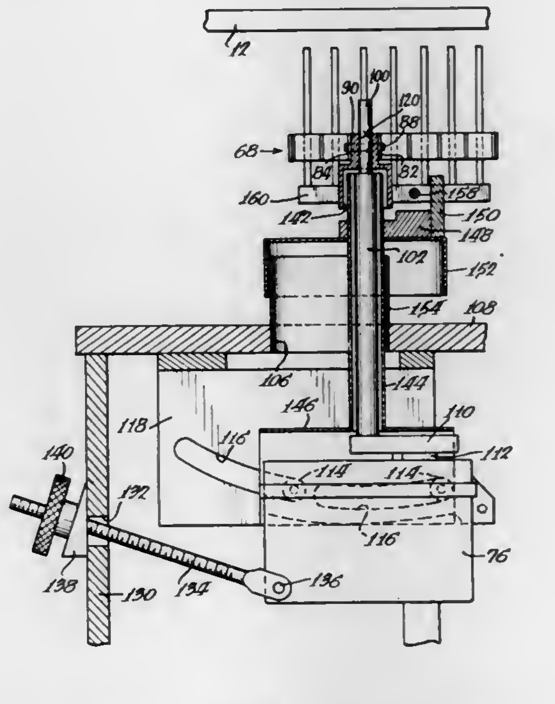
Roger R. Arel, New Britain, Conn., assignor to Gerber Garment Technology, Inc., East Hartford, Conn.
Filed Nov. 2, 1973, Ser. No. 412,149
Int. Cl. D06h *7/00*
U.S. Cl. 83—49 **25 Claims**



1. In combination in an automatically controlled cutting machine having a cutting table with a cutting tool and a support surface on which sheet material to be cut is spread and held by means of a vacuum holddown system, the table also including means for moving the cutting tool and the sheet material on the surface relative to one another along a line of cut with the tool advancing in cutting engagement with the material, the improvement comprising:
means for sensing previous cuts by the tool in the sheet material in the region of the cutting tool as the tool advances through the sheet material.

3,848,491
SLICE RECEIVING PLATTER FOR SLICING APPARATUS

Keith E. Flesch, Garrett, Ind., assignor to Peter Eckrick & Sons, Inc., Fort Wayne, Ind.
Filed Apr. 16, 1973, Ser. No. 351,444
Int. Cl. B26d *7/00*
U.S. Cl. 83—77 **11 Claims**



1. In a slicing apparatus, the combination comprising: a slicing blade; means mounting said slicing blade for rotation about a substantially vertical axis; means for rotating said slicing blade about said substantially vertical axis; means above said blade for progressively feeding material to be sliced toward said blade; a slice receiving platter; means mounting said slice receiving platter at a fixed location below said blade to receive slices as they are cut by said blade; and means for adjusting the angular relationship of the platter in two planes with respect to said blade whereby said platter may be adjusted to receive slices in perfect stacks for a variety of slice types and stack thicknesses.

3,848,492
APPARATUS FOR LONGITUDINALLY SEPARATING SERIALLY PRODUCED SYNTHETIC-RESIN PACKAGES

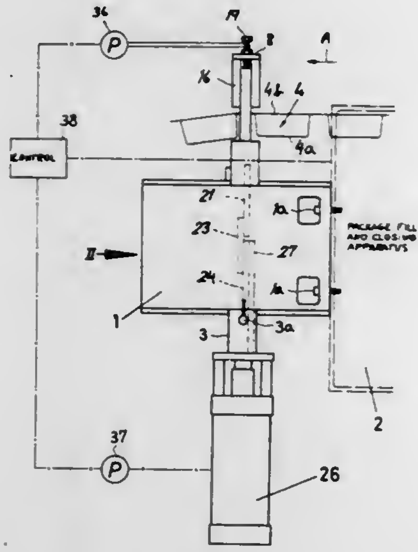
Artur Vetter, Gronenbach, Germany, assignor to Multivac Sepp Haggenmuller KG, Wolfertschwenden/Allgau, Germany
Filed Feb. 2, 1973, Ser. No. 329,204
Claims priority, application Germany, Feb. 4, 1972, 2205233
Int. Cl. B26d *7/06*
U.S. Cl. 83—99 **11 Claims**

1. In combination with a machine that produces a continuous synthetic-resin band that emerges longitudinally and stepwise from the machine and is formed with a plurality of longitudinally spaced packages, an apparatus comprising:
a frame longitudinally downstream of said machine;
an upper cutter beam fixed on said frame and provided with a cutting element having at least one straight section extending transverse to the longitudinal direction of displacement of said packages and at each end of said straight section two oppositely curved sections each tangential to and forming a continuation of said straight

section, said sections having cutting edges lying in a common plane;

a vertically displaceable lower cutter beam on said frame having a planar upper surface parallel to said plane;

means for lifting said lower beam to transversely sever said band between two of said packages by chopping same between said beam and said cutter element and for lowering said lower beam to allow at least one more package to advance between said beam;



at least two pneumatic cylinders formed in said element between said curved sections;

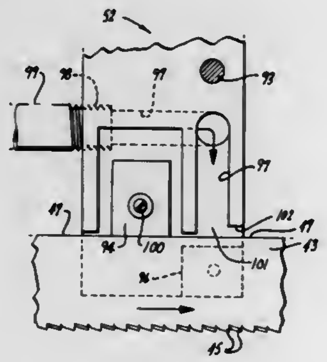
respective pistons in said cylinders having piston rods displaceable out of said cutting element below said plane;

means biasing said pistons into a position with said rods above said plane; and

means for applying fluid pressure to said pistons to push them down and thereby engage said rods against portions of said band cut free by said curved sections.

3,848,493
PIVOTAL ARM BAND SAW

Gerald R. Harris, Livermore, Calif.
Division of Ser. No. 86,732, Nov. 4, 1970, Pat. No. 3,682,030. This application Aug. 8, 1972, Ser. No. 278,851
Int. Cl. B27b *13/12;* **B23d** *55/08;* **B27b** *13/10*
U.S. Cl. 83—168 **2 Claims**

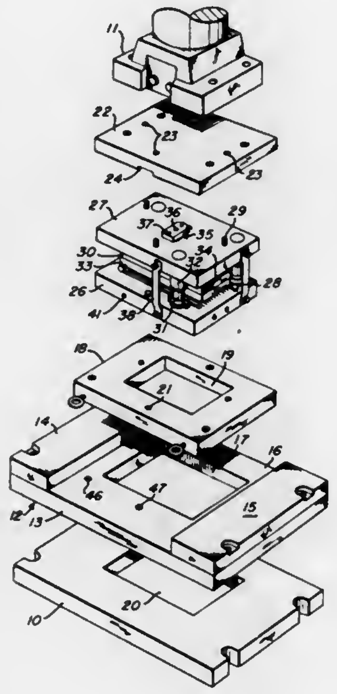


1. In a band saw including a frame, a pair of relatively spaced apart wheels rotatably mounted to said frame and formed for receipt and carrying of a continuous loop band saw blade thereon, and guide means including at least one guide member mounted to said frame intermediate said wheels and formed to guide and orient a portion of said saw blade for cutting of a work piece, said guide member being positioned to guide said saw blade before said saw blade advances into contact with said work piece, said guide member further including a plurality of blade engaging elements positioned to engage said blade on both sides thereof and formed for sliding engagement with said saw blade, the improvement comprising:

a coolant channel formed in said guide member and terminating in a discharge opening positioned for discharge of coolant onto the smooth back edge of said saw blade, said discharge opening being positioned and said guide member being adapted for flow of said coolant from said discharge opening over both sides of said saw blade at a position in advance of the first engagement of said saw blade with any of said blade engaging elements in said guide member contacting the sides of said saw blade as said saw blade moves through said guide member.

3,848,494
PRESS ADAPTER SYSTEM FOR STANDARDIZING DIE USE

Robert J. Gargrave, and Ludomil A. Holiga, both of Dayton, Ohio, assignors to Dayton Progress Corporation, Dayton, Ohio
Filed Dec. 7, 1972, Ser. No. 313,163
Int. Cl. B26d *7/06*
U.S. Cl. 83—109 **32 Claims**



1. For use in a press or like apparatus providing a press slide and a press bed, elements adapting the press to a facile installation and exchange of dies, including a thrust plate for removable mounting to the press slide and a bolster plate assembly for removable mounting to the press bed, said thrust plate providing means for the mounting of a tool holder element of a die thereto, said bolster plate assembly including a bolster for removable mounting to the press bed and a platen removably mounted to the bolster, said removable platen having means for the releasable mounting of a die holder element of the die thereto, and means positioning said platen upon said bolster to provide a proper basis for the accurately aligned mounting of the die holder element opposite the tool holder element.

3,848,495
DIE FIXTURE

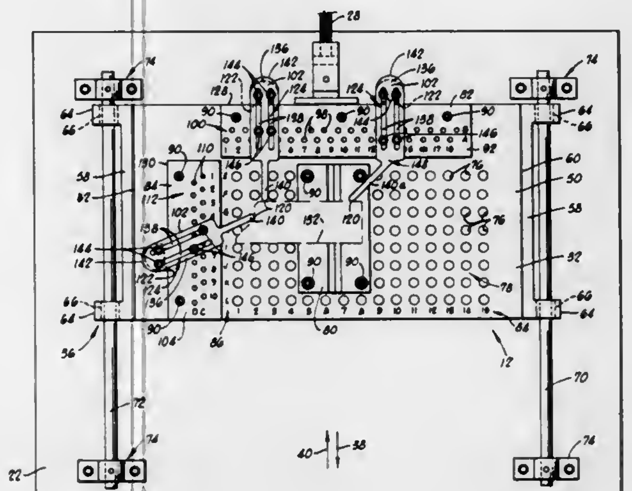
Charles J. Youra, Van Nuys, Calif., assignor to Doric Corporation, Oklahoma City, Okla.
Division of Ser. No. 238,803, March 28, 1972, Pat. No. 3,777,602. This application Oct. 25, 1973, Ser. No. 409,710
Int. Cl. B26d *7/06*
U.S. Cl. 83—128 **13 Claims**

1. A die fixture for positioning a workpiece blank, comprising:

a base, having an upper and a lower face;

support means connected to the upper face of the base, having an engaging surface formed thereon and a plurality of index openings formed in an upper face thereof, each of the index openings identifiable via locating indicia;

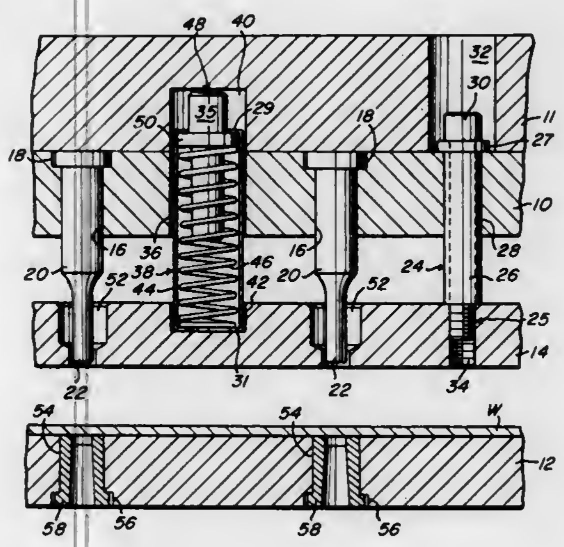
locators, each locator having a blank engaging surface and a stop surface and secured in a predetermined assembled position on the upper surface of the support means, the stop surfaces of each of the locators engaging the engaging surface of the support means positioning each of the locators in one direction; and



means removably securing each of the locators to the upper surface of the support means via predetermined index openings locating each of the locators in one other direction securedly positioning the blank engaging surfaces of the locators in a predetermined assembled position, each blank engaging surface engaging a portion of the workpiece blank for positioning the workpiece blank in a predetermined position.

3,848,496
DIE AND SPRING ASSEMBLIES HAVING PARTICULAR APPLICATION TO STRIPPER PLATES

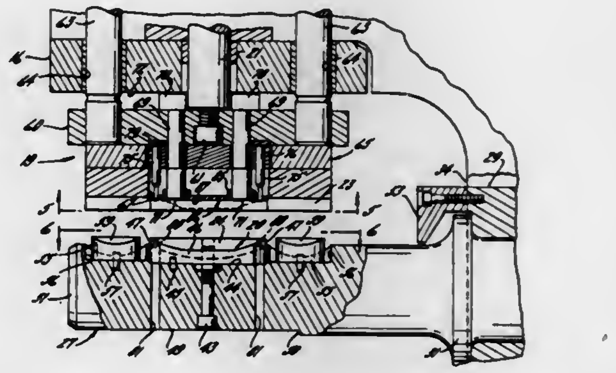
Harry A. Stevens, Union, and Allan E. Randolph, Sr., Dayton, both of Ohio, assignors to Dayton Progress Corporation, Dayton, Ohio
Filed Jan. 15, 1973, Ser. No. 323,955
Int. Cl. B26f *1/14*
U.S. Cl. 83—133 **14 Claims**



1. In a die for use in a punch press or like equipment including a first die means providing a first die shoe to which is secured a tool retainer, a second die means providing a second die shoe to which is fixed a die plate, stripper plate means interposed between said die means and normally displaced from and mounted for movement to and from said tool retainer, work being accomplished by the die in movement of one of said die means relative the other between an open position of the die in which said tool retainer and stripper plate are displaced from each other and from said die plate and a closed position in which work is performed by tools mounted by said tool retainer, and biasing means positioned between said first die means and said stripper plate, said biasing means including compressible spring means and a cage-like housing therefor, said housing basing on said stripper plate and having a relatively reciprocable relation to said first die means and there being means responsive to relative motion of said die means in a closing movement of the die to compress said spring means independently of said housing, expansion of said spring means responsive to relative motion of said die means in an opening movement of the die being limited by said housing.

3,848,497
PRESS FOR PUNCHING HOLES IN TUBULAR MEMBERS

Paul M. Lancaster, Rockford, and Eugene H. Paquet, Winnebago, both of Ill., assignors to W. A. Whitney Corp., Rockford, Ill.
Filed Nov. 7, 1973, Ser. No. 413,502
Int. Cl. B23d *21/14*
U.S. Cl. 83—192 **8 Claims**



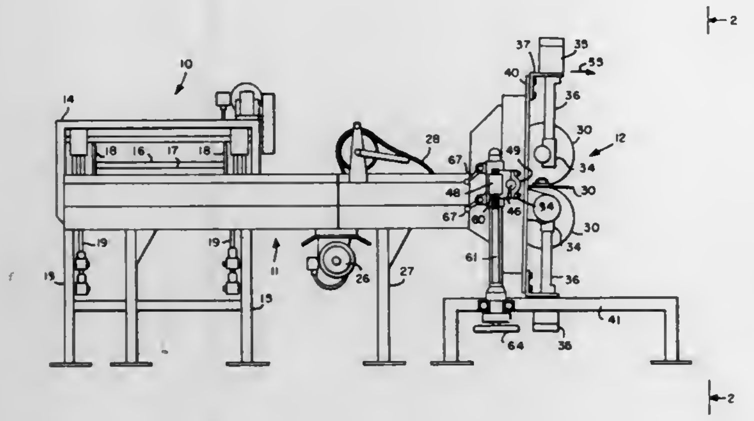
1. A press for punching a slug from the side of a tubular member to form a hole therein, said press including a frame, a vertically reciprocable ram mounted on said frame, a female die member carried by said ram, a horn secured to said frame and projecting beneath said female die member to telescopically receive said tubular member, a male die member secured to said horn and underlying said female die member, said female die member having a central opening of predetermined size and shape and having a lower surface curved in conformance with the outer surface of said tubular member, said male die member having a cross-sectional size and shape approximately equal to the size and shape of said opening and projecting upwardly from said horn to mate with said female die member to punch said slug from the side of said tubular member, said male die member further having an upper surface curved in conformance with the inner surface of said tubular member to keep from deforming said slug as the latter is punched from the tubular member so the slug may be refitted within the hole in the side of the tubular member, a small punch carried by the ram and projecting downwardly through said opening in said female die member, and a small hole formed through said male die member to receive said small punch to form a small hole in said slug as an incident to punching said slug from the tubular member.

3,848,498
ROTARY SLICER FOR FRUITS AND VEGETABLES

Louis P. Lazzarini, San Jose, Calif., assignor to Genevieve I. Hanscom; Robert Magnuson and Louis J. Thompson, Trustees of the Estate of Roy M. Magnuson, part interest to each
Filed May 18, 1973, Ser. No. 361,767
Int. Cl. B26d *7/06*
U.S. Cl. 83—401 **7 Claims**

1. A power-driven slicing machine for cutting produce into segments, comprising:

- a plurality of power-driven disc blade assemblies each mounted for rotation and adapted to slice produce;
- means supporting said disc blade assemblies such that they diverge from a common center line radially outward;
- means for feeding the produce in single-file order along a feed line intercepting said common center line such that



the produce is cut into segments by the slicing action of the power-driven disc blades, and
- means to vary the relative positions of the power-driven disc blade assemblies and the feeding means so as to alter the angle between the center line and the feed line thereby to change the configuration of the segments resulting from the slicing of the produce.

3,848,499
APPARATUS FOR MECHANICALLY CUTTING FLANGES FROM PRESHAPED STEEL CONSTRUCTION MEMBERS

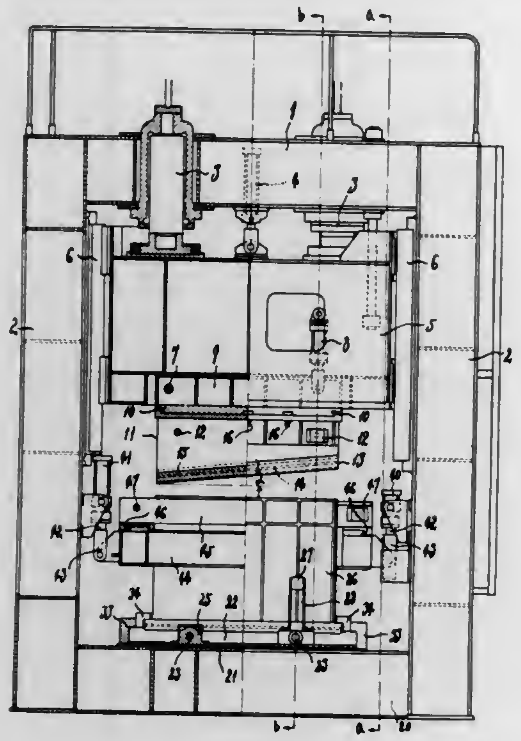
Ichiro Tanaka, 4-3 Kudegadanicho, Nishinomiya, Hyogo Prefecture, Japan

Filed Aug. 10, 1973, Ser. No. 387,251

Claims priority, application Japan, Aug. 11, 1972, 47-81031

Int. Cl. B26d *7/02*

U.S. Cl. 83—461 **6 Claims**



1. Apparatus for cutting off opposite flanges from the connecting web of shaped steel articles, with the cutting being at the junctions between inner faces of the flanges and said web, comprising in combination:
- a. two cutting blades assembled in rigid spaced apart parallel relation with means to selectively pre-adjust the distance therebetween for different size shaped sections to be cut;
- b. means by which the cutting blades are mechanically advanced to be pressed against and retracted from an article to be cut,
- c. adjustable support means including two supports having support portions for supporting said flanges of an article to be cut, and for bearing a force acting on the article during cutting, and also having flange clamping or engaging face portions to accomodate the article to be held and cut;
- d. two protective rigid support members adjustably spaced apart by means for expansively and retractively adjusting the distance therebetween to move said members into pressing contact with the inner faces of the flanges of the article to be cut, and to protectively support said article to thereby prevent the flanges from buckling; and
- e. further including means connected with said protective support members adapted to adjust their said pressing contact position with said flanges, and means enabling said support members to retract as the cutting blades are advanced.

3,848,500
REGISTERING DEVICE FOR GAPS TO BE FORMED IN A SLIDE FASTENER CHAIN

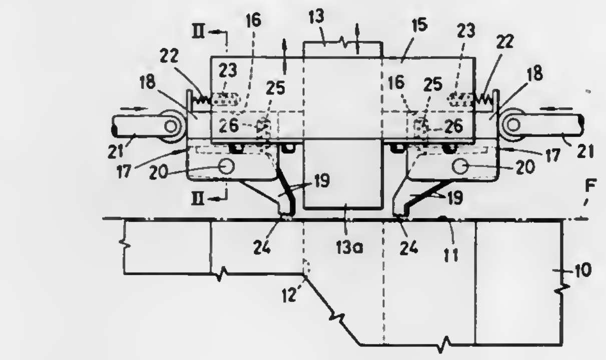
Kihei Takahashi, Uozu, Japan, assignor to Yoshida Kogy Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1973, Ser. No. 421,110

Claims priority, application Japan, Dec. 6, 1972, 47-140020[U]

Int. Cl. B26d *7/02*

U.S. Cl. 83—465 **2 Claims**



1. A registering device for gaps to be formed in a slide fastener chain having rows of continuous fastener elements and intermittently transported in a horizontal plane, which device comprises in combination with a cutting tool:
- a. a vertically movable supporting block;
- b. a pair of carriages mounted movably in said block and positioned on opposite sides of the cutting tool;
- c. a pair of clamping arms pivotally connected to the respective carriages and adapted to compress a length of fastener elements inwardly adjacent the cutting tool;
- d. actuating means for moving said carriages horizontally inwardly toward each other relative to the cutting tool;
- e. a first spring means interposed between said block and each of said carriages and normally urging the latter away from the cutting tool; and
- f. a second spring means adapted to urge said clamping arm normally toward the plane of the fastener chain.

3,848,501
FABRIC CUTTING

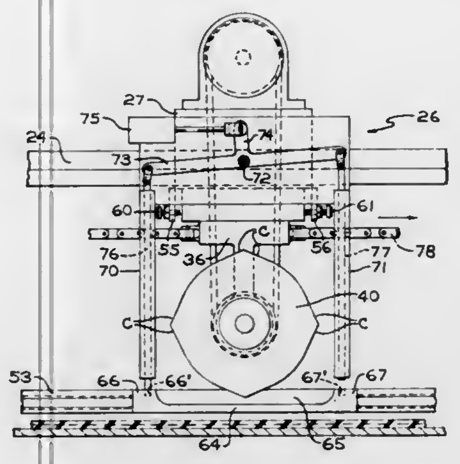
Mathew Kuts, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed July 20, 1973, Ser. No. 380,982

Int. Cl. B26d *1/20;* **B23d** *19/02*

U.S. Cl. 83—471.3 **8 Claims**

1. A bias cutting apparatus for cutting rubberized fabric comprising a support frame, a carriage mounted on said support frame for reciprocal movement, power operated means connected to said carriage for reciprocating said carriage, a cutter means journaled on said carriage for rotation thereon, drive means mounted on said carriage operatively connected to said cutter means for rotating said cutter means, said cutter means having a plurality of spaced linear cutting edges, a guide plate secured to the lower portion of said support frame over which fabric is moved and under which a conveyor belt travels, anvil means operatively connected to said carriage for movement therewith, said anvil means supported against lateral movement on said guide plate and guide for longitudinal reciprocal movement on said guide plate, said anvil means having a linear cutting edge and a pair of spaced bosses, biasing means connected to said cutter means to bias a portion of the cutting edges of said cutter means into shearing contact with said linear cutting edge of said anvil means, drive means selectively interconnecting one or the other of said bosses to said carriage for reciprocal movement of said anvil therewith.



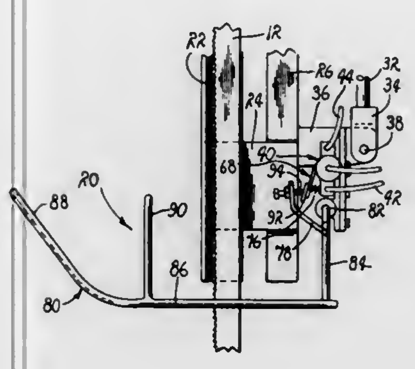
3,848,502
SAFETY DEVICE FOR PROTECTING AN OPERATOR'S HANDS

Edwin R. O'Neill, 2393 Barstow Ave., Fresno, Calif. 93705

Filed Nov. 5, 1973, Ser. No. 413,356

Int. Cl. B26d *4/22, 7/22*

U.S. Cl. 83—814 **7 Claims**



7. In a safety device for protecting an operator's hands from the cutting surface of a device adapted to cut hand-fed workpieces, the improvement comprising:
- A. a shield adapted to be arranged in juxtaposition with a cutting surface of a selected device supported for rectilinear motion along a substantially linear path extending between a first position wherein the shield is disposed in a protective relation with said cutting surface and a second position, spaced from said first position, wherein said shield is disposed in non-protective relation with said cutting surface; and
- B. actuating means including a fluid-pressurizable actuator connected to said shield adapted to respond to pressurization for moving said shield from said first position to said second position, means for selectively pressuring said actuator including a selectively operable fluid control valve connected to a source of fluid maintained under pressure, and feeler means connected to said fluid control valve adapted to respond to an engagement with a workpiece for operating the fluid control valve and so disposed as to be engaged by a workpiece as the workpiece is hand-fed to said device.

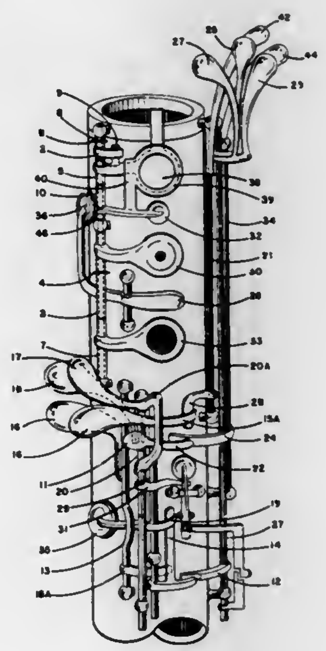
3,848,503
OBOE FINGERING SYSTEM AND MOUTHPIECE

Dick Paladino, 4221 San Bernardino Ave., Las Vegas, Nev. 89102

Continuation-in-part of Ser. No. 349,625, April 9, 1973. This application Nov. 20, 1973, Ser. No. 417,555

Int. Cl. G10d *7/00*

U.S. Cl. 84—380 **4 Claims**



1. In an oboe or English horn, having an upper portion and a lower portion, a key arrangement comprising:
- first, second, and third tone holes in said upper portion corresponding to B natural, A natural, and G natural,
- first, second and third vented tone hole covers and keys integral therewith said keys being located to be normally activated by the first, second, and third fingers of the left hand,
- fourth, fifth and sixth tone holes in said lower portion corresponding to F natural, F sharp and D natural respectively, a ventless tone hole cover over said fourth tone hole cover and a fourth key overlying said ventless cover located to be normally activated by the first finger right hand, and
- vented tone hole covers and keys integral therewith overlying said fifth and sixth tone holes located to be normally actuated by the second and third fingers of the right hand.

3,848,504
MUSICAL TOY

Kenneth W. Ingham, 49 Joycelyn Cres., Georgetown, Ontario, Canada

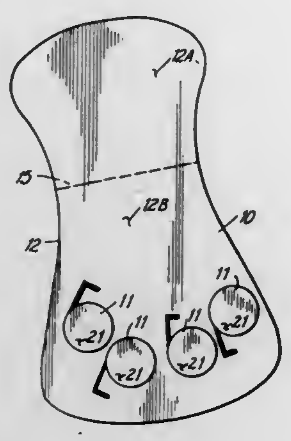
Filed Sept. 26, 1973, Ser. No. 401,048

Int. Cl. G10d *13/08*

U.S. Cl. 84—402 **3 Claims**

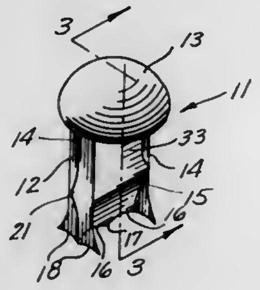
1. A musical toy instrument formed of a flat base on which is mounted a plurality of hollow capped metal cylinders, each with a metal disc loosely fitted in the interior of the cylinder, the base of the instrument being formed of a non-metallic semi-rigid material, with

said cylinders and discs mounted, each spaced with relation to each other so as to correspond to the spacing of fingers of the user, together with a thumb rest holder mounted on the base of the device to enable the user to position the fingers of a hand with respect to the location of the individual cylinders, so as to be able to individually tap each cylinder with a specific finger.



3,848,505
HOLE PUNCHING FASTENER FOR SHEET METAL

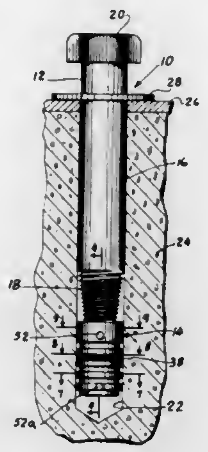
Floyd Leroy Wilson, P.O. Box 203, Manhattan, Kans. 66502
Filed Jan. 16, 1973, Ser. No. 324,159
Int. Cl. F16b *15/06*
U.S. Cl. 85—19 **6 Claims**



1. A self-penetrating rivet for fastening superimposed pieces of sheet metal together by driving an I-shaped slit therein and downwardly deforming portions of the sheet metal sheets to form locking lugs, comprising a shank member provided with an enlarged head, said head having a flat, horizontal bottom and said shank depending centrally from said bottom, said shank member further having upper and lower portions separated by an intermediate portion, the upper portion having a depth approximately equal to the total depth of the locking lugs to be formed in the sheets of metal, at least the lower and intermediate portions of said shank member having a generally I-shaped cross section defining a web member and flange members at the opposite side edges of said web member, the lower ends of the web member and flange members being shaped to define cutting edges, the cutting edge of each flange member being downwardly concavely arcuately curved on opposite sides of the web member, the web member in said intermediate portion of the shank member being formed to define upwardly facing locking shoulders on its opposite faces to lockingly engage under portions of the locking lugs formed on the superimposed pieces of sheet metal when the shank member is driven therethrough so that the lower portion of the shank member is completely below the locking lugs, whereby to clamp the locking lugs between the locking shoulders and the flat horizontal bottom of said head on both sides of said web member.

3,848,506
EXPANSION ANCHOR

Kenneth B. Zifferer, c/o Expansion Bolt Company, 500 State St., York, Pa. 17405
Filed Dec. 15, 1972, Ser. No. 315,546
Int. Cl. F16b *13/06*
U.S. Cl. 85—83 **18 Claims**



1. An expansion anchor, comprising:

a. a bolt and an expansion sleeve therefor,

b. said bolt consisting of a generally cylindrical shank, a conically tapered and threaded tip at the lower end of the shank and torque tool engageable means at the upper end of the shank,

c. said conically tapered and threaded bolt tip being circular in cross-section at all points along its longitudinal axis, with progressively increasing radii of curvature in upward direction,

d. said expansion sleeve being internally tapered and threaded to receive said conically tapered and threaded bolt tip in screw-threaded engagement therewith,

e. said expansion sleeve being also longitudinally slit to form a plurality of longitudinally extending parts,

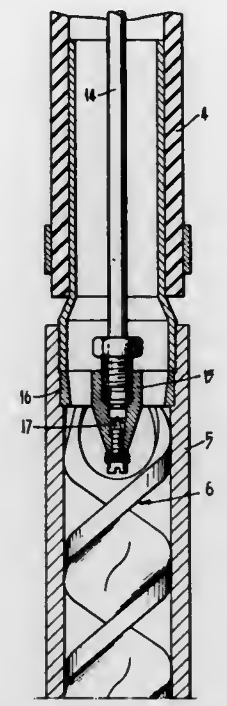
f. said longitudinally extending parts being arcuately shaped, in cross-section, at all points along the longitudinal axis of the expansion sleeve, with progressively increasing internal radii of curvature corresponding, substantially, to the progressively increasing radii of curvature of the bolt tip in that portion of the bolt tip whereon the expansion sleeve is adapted to be substantially fully engaged and expanded,

g. the respective radii of curvature of the bolt tip and expansion sleeve along their longitudinal axes being out of phase when the bolt tip initially engages the expansion sleeve and moving progressively into phase as the bolt tip is progressively threaded into the expansion sleeve until the bolt tip is substantially threaded into the expansion sleeve and substantial expansion thereof is attained, at which time their respective radii of curvature substantially coincide.

3,848,507
PIPELINE FOR DELIVERING CROSS-LINKED SLURRIED EXPLOSIVES

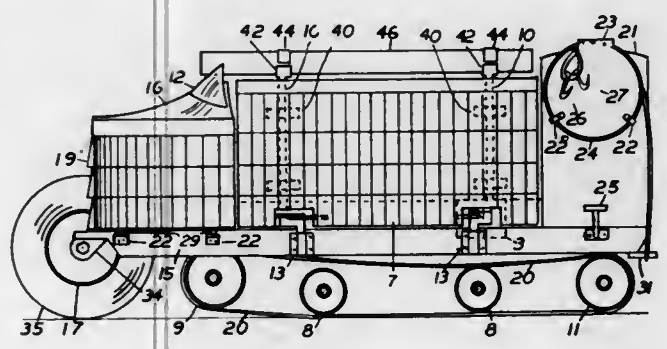
Adam Prus Wisinski, Parkdale, Australia, assignor to ICI Australia Limited, Melbourne, Victoria, Australia
Filed Oct. 27, 1972, Ser. No. 301,520
Claims priority, application Australia, Nov. 12, 1971, 7013/71
Int. Cl. C06b *21/02*
U.S. Cl. 86—1 R **2 Claims**

1. A pipeline for delivering cross-linked slurried explosives having at the discharge end a collinear rigid tubular open-ended extension of approximately the same diameter, a turbine within the extension, a rotatable stirrer mounted for rotation by the turbine within the extension at the end thereof remote from the pipeline, and means for delivering liquid cross-linking agent into the extension, said means including an inner tube of external diameter small in relation to the internal diameter of the pipeline extending along and within the pipeline to terminate in an outlet within the extension between the pipeline and the stirrer.



3,848,508
INFANTRY ATTACK VEHICLE WITH RESILIENT ARMOR

David John Bullinger, Cayuta Rd., Van Etten, N.Y. 14889
Filed June 7, 1973, Ser. No. 367,704
Int. Cl. F41h *7/04*
U.S. Cl. 89—36 H **4 Claims**



1. An infantry attack snowmobile having a propelling motor, transmission and frame comprising:

a. a rubber tired wheel for stearing said snowmobile;

b. wrap-around resilient armor for providing shielding for said propelling motor and transmission, said armor comprising a series of outwardly extending flat spring blades, a steel backup plate, means securing said spring blades to said backup plate, and means securing said backup plate to said frame;

c. a removable panel of resilient armor comprising several rows of outward extending steel spring blades, an inner backup steel plate, said blades being secured to said steel plate by spot welding, and a plurality of uprights secured to said inner backup steel plate for supporting said removable panel, each of said uprights comprising an upper portion, a lower portion and a laterally offset portion connecting said upper and lower portions;

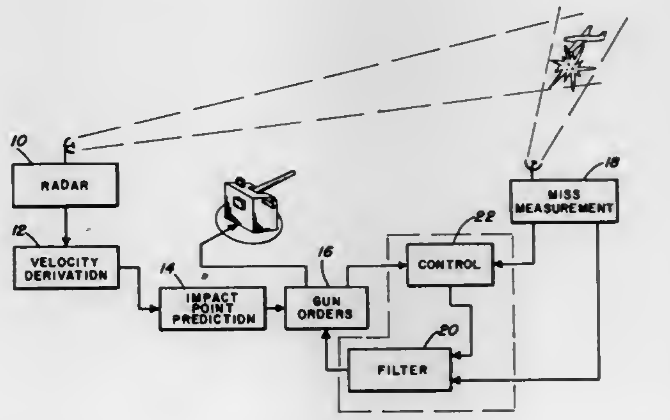
d. spring means resiliently biasing said latterally offset and upper portions of said uprights latterally outward from said frame;

e. a plurality of round sockets attached to opposite sides of the frame, said lower portion of said uprights being set into said round sockets on one side of the frame whereby said removable panel may be moved by removing said lower portions of said uprights from the sockets on one side of the frame and placing said lower portions of said uprights into the sockets on the opposite side of the frame;

f. a plurality semicircular rocket launcher supports, means pivoting each of said rocket launcher supports on the top of each of said upper portions of said uprights, and elastic rocket launcher holddown straps.

3,848,509
CLOSED-LOOP GUN CONTROL SYSTEM

Robert J. Corn, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 31, 1972, Ser. No. 302,635
Int. Cl. F41g *3/06, 3/08*
U.S. Cl. 89—41 AA **12 Claims**



1. A system for directing the firing of a weapon at a target comprising:

means for determining the velocity of the target;

means for predicting an impact point for the projectile next to be fired from said velocity;

means for deriving a gun order for aiming the weapon based on the predicted impact point;

means for measuring at least one performance component of a previously fired projectile; and

means for determining a correction to be applied to said gun order based on said measured performance component of said previously fired projectile, the correction-determining means including a recursive filter connected to a linear predictor, and a storage-feedback device connected to the linear predictor and recursive filter.

3,848,510
BOLT LOCKING MECHANISM FOR RECIPROCATING GUN

John F. Wolpert, Louisville, Ky., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 27, 1973, Ser. No. 391,701
Int. Cl. F41d *5/02*
U.S. Cl. 89—173 **1 Claim**

1. In an automatic firearm, a bolt locking mechanism comprising,

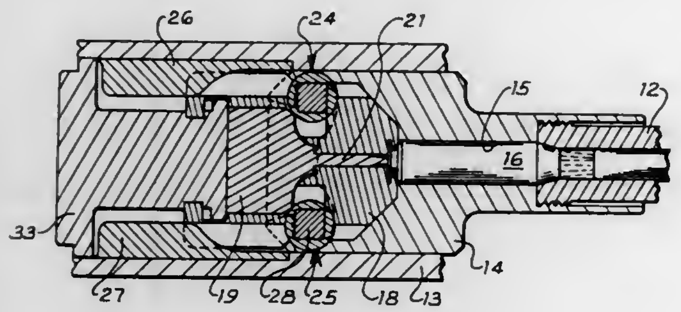
a breech housing,

a barrel extension connected to said breech housing having means for attaching a barrel on one end thereof and having locking grooves therein,

a bolt slidably mounted in said breech housing, said bolt having opposed linear slots with parallel surfaces in each side thereof, an accelerator slidably mounted in said bolt, said accelerator having a firing pin attached thereto,

first and second roller lock assemblies each said roller lock assembly having a shaft with at lesst one pair of flat parallel surfaces on each end thereof and a roller positioned midway between said shafts ends with said flat parallel surfaces extending outwardly from each side of said roller, said parallel surfaces on each end of said shaft being slidably engageable with the parallel surfaces of said linear slots in said bolt and each said roller being engageable with said accelerator, said roller lock assemblies releasably locking said accelerator with said bolt, and

cam means attached to said breech housing engageable with said roller lock assemblies for locking said accelerator with said bolt until a round carried by said bolt reaches a battery position and said roller lock assemblies unlock said accelerator from said bolt and lock said bolt to said barrel extension and upon recoil of said bolt said cam means actuates said roller lock assemblies to unlock said bolt from said barrel extension and to lock said accelerator with said bolt.



3,848,511
GAS UTILIZATION DEVICE FOR AUTOMATIC GUNS, MORE PARTICULARLY FOR AUTOMATIC SHOTGUNS

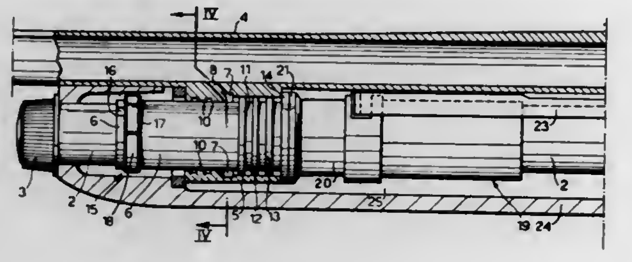
Ernesto Zanoni, Brescia, Italy, assignor to S.p.A. Luigi Moranchi, Brescia, Italy

Filed May 21, 1973, Ser. No. 362,133

Claims priority, application Italy, May 19, 1972, 24571/72

Int. Cl. F41d *5/10*

U.S. Cl. 89—191 A **4 Claims**



1. A gas utilization device for automatic guns, more particularly automatic shotguns of the type which comprise a cylindrical magazine extending parallel to the barrel of the gun and below the same, said device being characterized in that it comprises a cylindrical element connected to the barrel and enclosing a part of the magazine, a substantially sleeve-like element slidably and coaxially mounted on at least the said part of the magazine, an annular chamber defined between said sleeve-like element and the cylindrical element, means for sealing the gas under pressure to isolate said chamber from said part of the magazine, an annular piston connected externally and coaxially to the substantially sleeve-like element, a recoil mass slidably mounted on the magazine outside the cylindrical element adjacent said sleeve-like element, at least one communication aperture between the barrel and the annular chamber formed between the cylindrical element and the substantially sleeve-like element; the gases entering in said chamber driving the annular piston and the substantially sleeve-shaped element against the recoil mass thereby causing activation of the mechanisms of the gun.

3,848,512
MILLING TOOL FOR WORKING OF GROOVES OR SLOTS

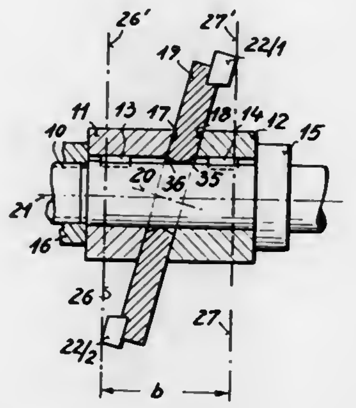
Manfred Erhardt, Munich, Germany, assignor to Carl Hurth Maschinen- und Zahnradfabrik, Munich, Germany

Filed May 8, 1972, Ser. No. 251,348

Claims priority, application Germany, June 25, 1971, 2131581

Int. Cl. B23c *1/02*

U.S. Cl. 90—11 A **4 Claims**



1. A disk-shaped tool for cutting on axially facing walls, comprising:

means defining a rotatable cutter spindle;

a pair of hollow sleeves mounted on said spindle and key means for locking said hollow sleeves to said spindle for rotation therewith, said hollow sleeves having opposed inclined and parallel axially facing surfaces thereon defining a gap therebetween;

a base member, the axis of which is inclined to the spindle axis, mounted on said spindle and being engaged on opposite sides thereof by said inclined and parallel surfaces on said pair of hollow sleeves, said base member being rotatable relative to said spindle means and said pair of hollow sleeves;

a plurality of pairs of cutting means secured to said base member adjacent the periphery thereof, each of said cutting means having at least one cutting edge thereon adapted to cut substantially in an axial direction, each of said cutting means in each pair being spaced 180° at the periphery of said base member, one of said cutting means being on one axially facing side of said base member and the other of said cutting means being on the other axially facing side of said base member, each cutting means being adapted to engage only one axially facing wall when said cutting means are in a cutting position defined by a position axially spaced the furthest from a plane extending perpendicular to the axis of said spindle means at the midpoint between said pair of cutting means, only one of said pairs of said cutting means being permitted to be positioned in said cutting position at a time; and

means for axially moving said hollow sleeves toward each other to tightly clamp said base member therebetween, said means for tightly clamping said base member between said hollow sleeves being releasable to permit a relative rotation between said base member and said spindle means to bring another one of said pairs of said cutting means into said cutting position.

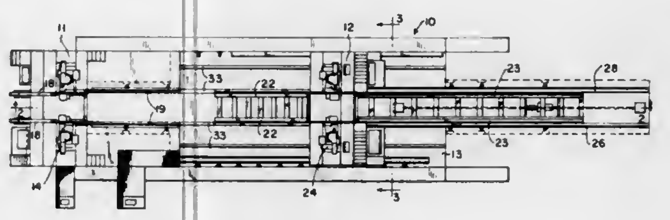
3,848,513
TANDEM WHEEL TRUING MACHINE

Leonard F. Manyek, Lansing, Ill., assignor to Stanray Corporation, Chicago, Ill.

Filed May 12, 1972, Ser. No. 252,709

Int. Cl. B23c *3/04*

U.S. Cl. 90—16 **9 Claims**



1. A tandem wheel truing installation for simultaneously truing lengthwise spaced wheels of a vehicle, said installation comprising a foundation, a first wheel truing assembly fixedly mounted on said foundation, track means for guiding said vehicle wheels, a second wheel truing assembly, track means extendable with said track means on said first wheel truing assembly for providing a continuous track along said foundation, means mounting said second wheel truing assembly for lengthwise movement relative to said first wheel truing assembly, and means for maintaining said second wheel truing assembly in a selective stationary position relative to said first wheel truing assembly, whereby said first and second wheel assemblies are spaced complementary to the lengthwise spacing of the vehicle wheels to be trued.

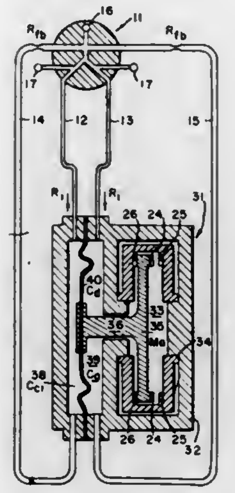
3,848,514
FLUIDICALLY CONTROLLED PNEUMATIC TO MECHANICAL CONVERTERS

Happy H. Unfried, Los Angeles, and John F. Cogger, Northridge, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 138,413, April 29, 1971, Pat. No. 3,735,707. This application Feb. 21, 1973, Ser. No. 334,507

Int. Cl. F15b *13/042;* **F01l** *25/04*

U.S. Cl. 91—3 **7 Claims**



1. A pneumatic to mechanical converter comprising:

a cylindrical housing having end covers thereon;

a first set of ratchet teeth attached to the internal surface of one of said end covers and arranged concentrically of the axis of said cylindrical housing;

a second set of ratchet teeth attached to the internal surface of the other of said end covers and arranged concentrically of the axis of said cylindrical housing;

a circular disc concentrically arranged within said cylindrical housing for axial movement therein, said disc having oppositely disposed faces each confronting the internal surface of one said end covers of said cylindrical housing;

a fluid amplifier;

means for operatively coupling said fluid amplifier to said disc for axially oscillating said disc within said cylindrical housing;

a third set of ratchet teeth attached to one of said faces of said circular disc and arranged for engagement with said first plurality of teeth; and

a fourth set of ratchet teeth attached to the other of said faces of said circular disc and arranged for engagement with said second plurality of teeth;

the cross-section of each set of ratchet teeth being such that alternating engagement between the first and third set of ratchet teeth and between the second and fourth set of ratchet teeth causes relative rotation in incremental steps between said cylindrical housing and said circular disc.

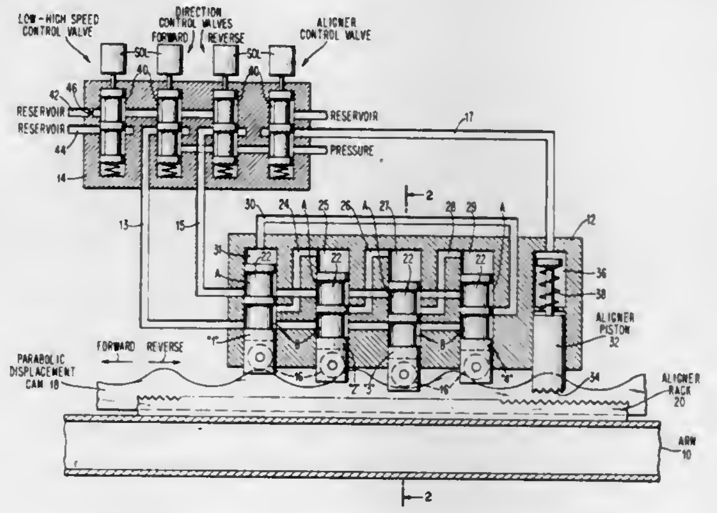
3,848,515
LINEAR HYDRAULIC DRIVE SYSTEM

Bayard G. Gardineer, Patterson, and Hugo A. Panissidi, Peekskill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,403

Int. Cl. F15b *15/26;* **F01l** *21/02*

U.S. Cl. 91—184 **13 Claims**



1. A linear hydraulic motor comprising a cyclical linear cam drive rack,

a motor block containing a plurality of hydraulically actuated pistons, valve assemblies connected directly to and forming an extension of said valve assemblies being interconnected to sequentially operate said pistons for effecting relative movement between said motor block and said drive rack selectively in either direction, said pistons being adapted to engage said drive rack,

means for mounting said drive rack eccentrically on a linear arm, said arm being fixedly journaled with respect to said motor block whereby the pressure of said pistons on said rack causes a torsional force to be applied to said linear arm rotationally locking same in said journaling means,

journal means for constraining the relative motion of said motor block to a path parallel to said drive rack and means for controlling the flow of hydraulic fluid to said motor block to initiate movement of said motor.

3,848,516
HIGH CAPACITY INFLATABLE HOSE FITTING

Henry H. Merriman, 751 W. Washington Ave., Jackson, Mich. 49203

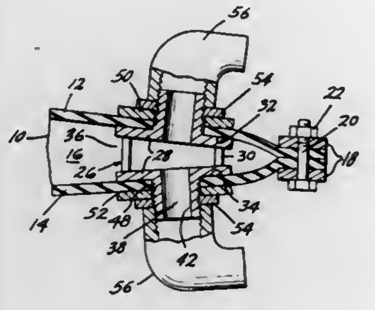
Filed Oct. 2, 1972, Ser. No. 294,178

Int. Cl. F16j *3/00*

U.S. Cl. 92—92 **8 Claims**

1. In an inflatable hose power unit, a hose having opposed, spaced flattened portions and ends, means closing the ends of said hose, a hole defined in each portion, said holes being in

opposed relation, a fitting having a generally flat internal member having a periphery and opposite sides, hose mounting means defined on each side of said internal member for attaching said internal member to the opposed hose portions, said internal member being located within said hose intermediate said portions and said hose mounting means extending through said holes, an exteriorly accessible passage defined in said internal member, and port means open to the interior of said hose and communicating with said passage and said internal member periphery.



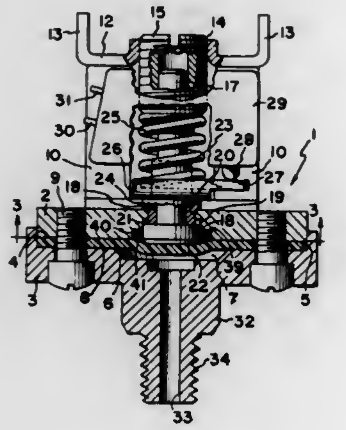
3,848,517
PRESSURE SENSITIVE DEVICE FOR OPERATING A SWITCH OR THE LIKE

Earle G. Hawke, Clarkston, Mich., assignor to The Nason Company, Clarkston, Mich.

Filed Aug. 28, 1972, Ser. No. 284,033

Int. Cl. F01b *19/00;* **F16j** *3/00*

U.S. Cl. 92—101 6 Claims



1. A pressure sensitive device comprising a body having walls defining a chamber; a flexible diaphragm spanning said chamber; pressure fluid conduit means in communication with said chamber on one side of said diaphragm; a bore in communication with said chamber on the opposite side of said diaphragm; a reciprocable piston extending through said bore and terminating at and abutting said opposite side of said diaphragm, said piston being movable in response to the introduction and exhaust of pressure fluid to and from said chamber via said conduit means; a counterbore surrounding said bore and being of less depth than that of said bore; an annular cushioning member constantly occupying said counterbore and encircling said piston, said cushioning member spanning the distance between said piston and the periphery of said counterbore and having a thickness greater than the depth of said counterbore whereby said cushioning member engages said diaphragm and forms a resilient bridge for the latter between said piston and the periphery of said counterbore; and means for limiting movement of said piston in a direction outwardly of said chamber a distance greater than the depth of said counterbore.

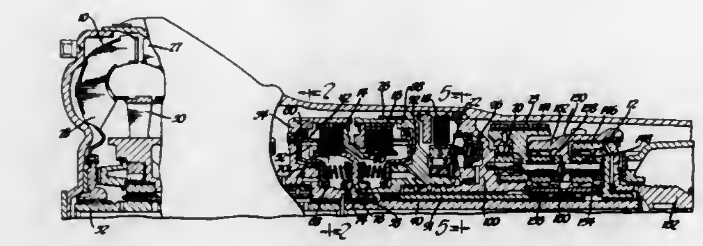
3,848,518
SHEET METAL PISTON FOR TRANSMISSIONS AND METHOD OF MAKING A PISTON ASSEMBLY

Ames R. Martin, Ypsilanti, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 14, 1972, Ser. No. 288,905

Int. Cl. F01b *31/00;* **F16j** *1/10*

U.S. Cl. 92—107 7 Claims



1. A piston assembly for selectively engaging a friction drive establishing device comprising an annular thin wall shell having inner and outer rims, an annular channel formed in the face of said shell bounded by a cylindrical wall disposed adjacent to said outer rim, contact means for a friction drive establishing device operatively disposed in said channel, said contact means comprising a thin wall metallic member with free end portions and curved into a circular member, said contact means being resiliently constrictable into a smaller circular configuration for installation into said channel and being provided with radially extending projections thereon which contact said cylindrical wall to yieldably retain said contact member in said shell, and said contact means having surface means on one face thereof for engagement with a friction drive establishing device.

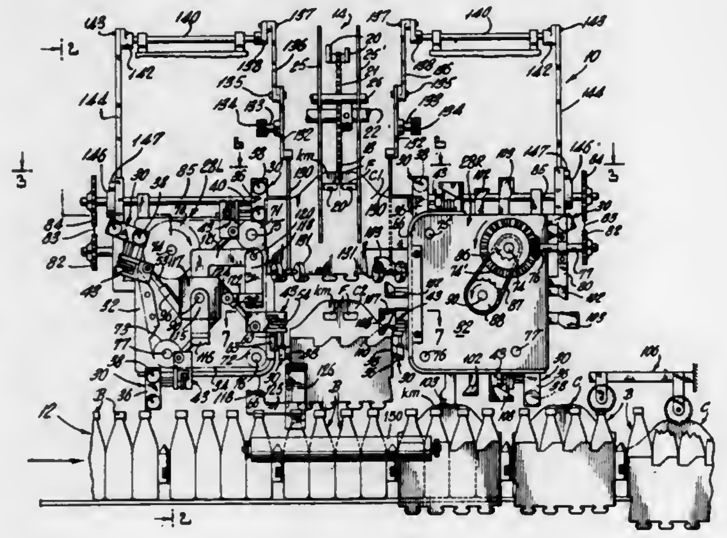
3,848,519
PACKAGING MACHINE

Robert H. Ganz, 8 Ridge Crest Rd., Saddle River, N.J. 07458

Filed May 14, 1973, Ser. No. 360,155

Int. Cl. B31b *1/76*

U.S. Cl. 93—53 SD 30 Claims



1. An apparatus for opening a folded tubular packaging container of the type which comprises a plurality of hingedly connected wall panels adapted to be unfolded by hinging in opposite directions the panels adjacent fold lines at opposite ends of the container, said apparatus comprising means for advancing successive containers in folded condition along a predetermined path with the container end fold lines extending in the direction of travel, panel gripping head assemblies, means for supporting said panel gripping head assemblies in paired relation for travel along opposite sides of the path of said container advancing means which supporting means comprises conveyor members mounted for travel in a path which extends in part along the path of travel of the containers, means on said gripping head assemblies for engaging in gripping relation with panels adjacent said container end fold lines which panels are disposed on opposite side faces of the container, means for moving said gripping head assemblies into position for engaging with opposite faces of each successive folded container while each said container is advancing, means for pivoting said panel gripping heads in opposite directions about axes extending in the direction of travel so as to hinge the panels which are gripped in opposite directions about said end fold lines and thereby open the container into tubular form.

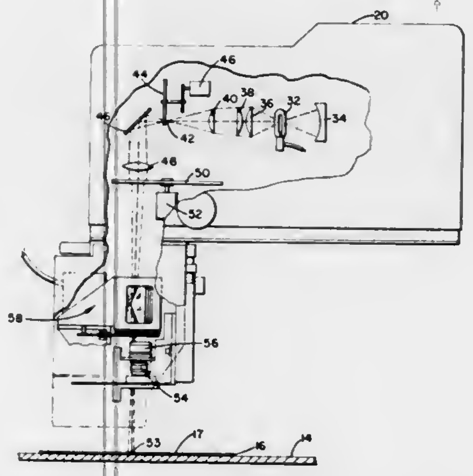
3,848,520
LINE DRAWING PHOTOEXPOSURE DEVICE WITH IMAGE ROTATING MEANS

Ronald B. Webster, Melrose, and Leonard G. Rich, West Hartford, both of Conn., assignors to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed July 24, 1972, Ser. No. 274,797

Int. Cl. G03b *29/00*

U.S. Cl. 354—4 6 Claims



1. A photoexposure mechanism for exposing lines on a photosensitive surface by means of a light spot moved thereover, said mechanism comprising means defining a supporting surface for supporting a piece of material having a photosensitive surface, and a photoexposure device supported for movement relative to said supporting means in a plane generally parallel to said supporting surface, said photoexposure device comprising an aperture, means for illuminating said aperture, and an optical imaging system for forming an image of said aperture on said photosensitive surface which image is a substantially undistorted optical reproduction of said aperture and constitutes the aforesaid spot which is moved over said photosensitive surface to expose lines thereon as a result of movement of said photoexposure device relative to said supporting surface, the path of light rays through said optical imaging system including at least one zone of non-parallel light rays, and an image rotator capable of rotating said non-parallel light rays, said image rotator being located in said zone of non-parallel light rays for rotating said image relative to said photosensitive surface, said imaging system comprising a lens located between said aperture and said photosensitive surface and said image rotator being located between said aperture and said lens, said image rotator comprising a mirror assembly defining an odd number of planar reflecting surfaces encountered successively by a light ray passing through said assembly and arranged to deflect such a ray traveling along the optical axis of said rays first away from and then eventually back to a straight line colinear with said optical axis as said optical axis enters said mirror assembly, and means for rotating said mirror assembly about said given straight line, said photoexposure device also including a first support member to which said mirror assembly is fixed, a second support member, means attaching said first support member to said second support member and permitting said first support member to be manually adjusted relative to said second member to shift said first support member toward and away from said given straight line along a first line perpendicular to said straight line and to vary the inclination of said first support member relative to said straight line in the plane defined by said first line and said given straight line, a third support member, means attaching said second support member to said third support member and permitting said second support member to be manually adjusted relative to said third member to shift said second support member toward and away from said given straight line along a second line perpendicular to both said given straight line and first line and to vary the inclination of said second support member relative to said given straight line in the plane defined by said second line and said given straight line, and a main frame, said means for rotating said mirror assembly including means mounting said third support member to said main frame for rotation relative to said main frame about said given straight line.

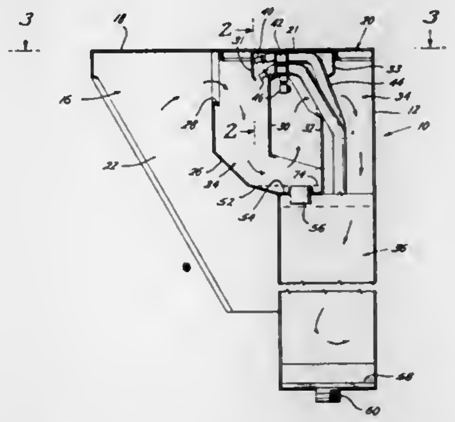
3,848,521
VENTILATING SYSTEM

Roy R. King, Houston, Tex., assignor to Industrial Industries, Inc., Houston, Tex.

Filed May 31, 1973, Ser. No. 365,563

Int. Cl. F23j *11/02*

U.S. Cl. 98—115 K 7 Claims



1. A ventilating system for drawing air from above cooking ranges and the like, comprising,

a. a vertically oriented, upstanding housing adapted for bottom mounting to a floor,

b. a hood member secured to the housing (a) for collecting air for passage through the housing (a), the top of the hood member being substantially coplanar with the top of the housing thereby forming a counter,

c. an entry chamber within the upper portion of the housing (a) adjacent the hood member (b) with a port for reception of air from the hood member (b), said chamber having

  i. a plurality of vertically oriented baffles each extending substantially the width of the housing (a) to impart changes in flow pattern of the air,

  ii. nozzle means within the chamber (c) for imparting a spray of water across substantially the width of said chamber to extract materials entrained in the air, and

  iii. drain means in the chamber (c) for removing water and materials that collect in the bottom of said chamber,

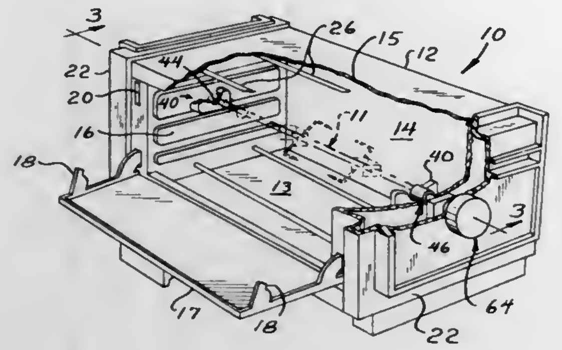
d. an expansion chamber within the lower portion of the housing (a) to receive air from the entry chamber (c) and slow its movement, the chamber (d) having greater volume than the chamber (c),

e. a duct providing pneumatic communication between the chambers (c) and (d), and

f. an air exhaust duct communicating with the expansion chamber.

3,848,522
ROTISSERIE SPIT MOUNTING MEANS

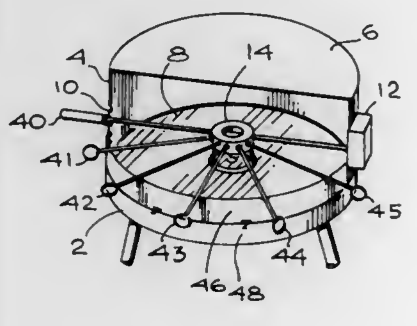
William F. Trelc, Boonville, Mo., assignor to McGraw-Edison Company, Elgin, Ill.
Filed July 10, 1972, Ser. No. 270,445
Int. Cl. A47j *37/04*
U.S. Cl. 99—421 H **8 Claims**



1. For use in a broiler have spaced stationary end walls, a spit mounting arrangement comprising the combination of a spit of length less than the spacing between the end walls, opposed supports inwardly spaced from the end walls and defining thereon concave trough sections adapted to receive and support the spit near the opposite ends thereof, rotatable power means located adjacent but axially spaced from and aligned with one spit end as the spit is on the supports, a shaft rotatably keyed to the power means and axially movable relative thereto between axially spaced operative positions, a drive coupling on the shaft adapted to become rotatably keyed with the adjacent one spit end in one operative shaft position and to be separated from said spit end in a second operative position, a control element on the shaft exposed on the side of the end wall remote from the spit, the control element being axially keyed to the shaft but being free to rotate relative to the shaft, and faces on the control element and adjacent end wall engaged upon partial rotation of the control element on the shaft relative to the end wall to releasibly lock the control element in the second operative position where the coupling and spit are separated.

3,848,523
ROTARY BARBECUE DEVICE

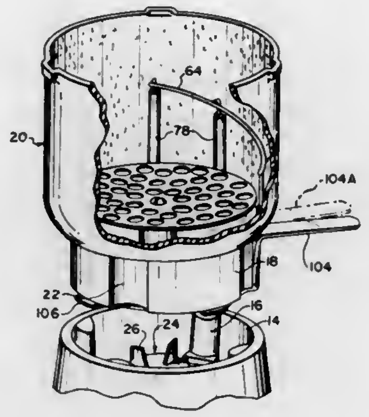
Laszlo Galisz, 147 Huston St., Sherman Oaks, Calif. 91403, and Miklos Vali, 5723 Harold Way, Hollywood, Calif. 90028
Filed May 29, 1973, Ser. No. 364,862
Int. Cl. A47j *37/04*
U.S. Cl. 99—421 H **10 Claims**



1. A portable, rotary barbecue attachment device for use with and actuation by a motorized barbecue spit comprising:
a housing; and
a plurality of hollow, mutually rotatable members horizontally disposed within said housing and extending outwardly of said housing; one of said hollow rotatable members being a driving member and the other hollow rotatable members being driven members,
said hollow driving member being adapted to cooperatively engage and to be rotated by said motorized barbecue spit and the hollow driven members being adapted to cooperatively engage and rotate food holding skewers.

3,848,524
APPARATUS FOR PEELING VEGETABLES

Walter J. Semrow, Manchester, Conn., assignor to Dynamics Corporation of America, New York, N.Y.
Filed Oct. 10, 1972, Ser. No. 296,125
Int. Cl. A23n *7/02*
U.S. Cl. 99—631 **7 Claims**

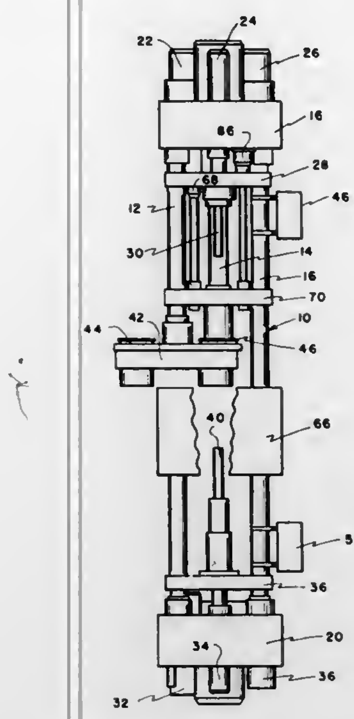


1. A vegetable peeler comprising,
a power unit including a drive shaft driven at high speed by a motor,
a container member removably mounted on said power unit journalling a driven shaft on its bottom wall and having an upstanding wall surrounding said shaft,
a disengageable clutch means to interengage said shafts in interdriving relationship,
a horizontally disposed concave scraper disk mounted on the upper end of said driven shaft with the concavity disposed upwardly and having holes through the disk defining scraping edges on the trailing walls of the holes, and
tumbler means above said disk and circularly inclined upwardly in the direction of disk rotation along and inwardly spaced from a portion of said upstanding wall to tumble vegetables of various sizes located on scraper disk and contacting said tumbler means,
said tumbler means comprising a curved member defining a helical ledge bordering the scraper disk and overhanging the space below it into which peelings may be discarded by the peeling disk.

3,848,525
CONTROL MEANS FOR OPPOSED RAMS OF A PRESS

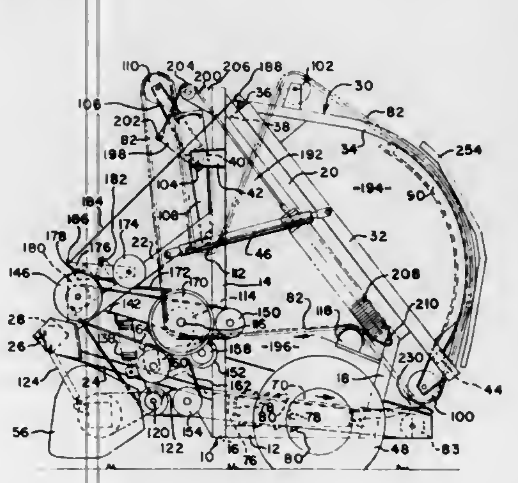
Francis Joseph Kent, Wallingford, and Seymour E. Steinbrook, Wynnewood, both of Pa., assignors to Wean United, Inc., Pittsburgh, Pa.
Filed Aug. 30, 1973, Ser. No. 393,237
Int. Cl. B30b *15/18*
U.S. Cl. 100—48 **3 Claims**

1. In a press having opposed rams and means for causing said rams to advance towards each other during their working strokes,
a control means including a set of at least two movement detecting means for each ram arranged to monitor the movements of their associated rams,
said detecting means forming zones of variable lengths, and means for coordinating said sets of movement detecting means in a manner to interrupt movement of one of the rams in the event an undesirable degree of travel occurs in one ram as compared with the other until the lagging ram reaches a desired synchronized position to the interrupted ram.



3,848,526
HAY ROLL FORMING MACHINE

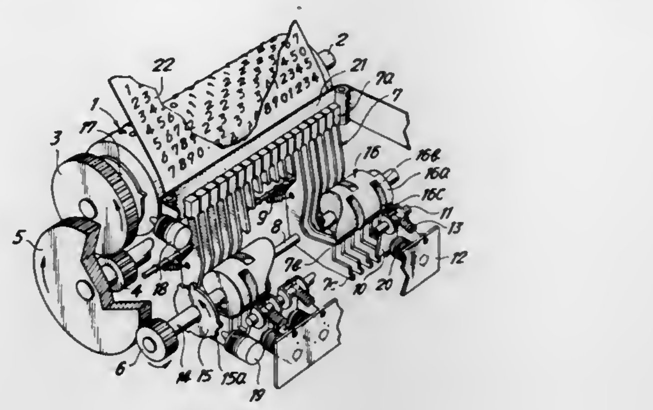
Aquila D. Mast, Lancaster, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed Apr. 24, 1973, Ser. No. 353,942
Int. Cl. A01d *39/00;* **B30b** *5/06, 9/00*
U.S. Cl. 100—88 **5 Claims**



1. A mobile hay roll-forming machine comprising in combination, a base frame having wheels for mobility, lower flexible propelling means extending transversely across said base frame, means to drive said propelling means to move the upper course across said base frame, upper endless flexible apron means, upper frame means supporting said upper apron means to position the lower course thereof above said lower propelling means and spaced therefrom, means to drive said upper apron to move the lower course thereof in opposition to said lower propelling means to form a coiled roll of hay and the like therebetween by engagement with said opposing movable means, means adapted to elevate the rearward portion of said upper frame means relative to said base frame to permit discharge of a formed roll of hay and the like from the rearward end of said machine, and means interconnected to said drive means for said upper apron and said frame to automatically discontinue the driving of said upper apron when said rearward portion has been elevated while the driving means for said lower propelling means continues to move the same rearwardly to effect discharge of said roll of hay and the like.

3,848,527
PRINTER WITH ROTARY ROLL COLUMN SELECTING MEANS

Shohachi Nihira, Tokyo, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan
Filed May 2, 1973, Ser. No. 356,472
Claims priority, application Japan, May 4, 1972, Japan 47-44378
Int. Cl. B41j *9/32*
U.S. Cl. 101—93 C **3 Claims**



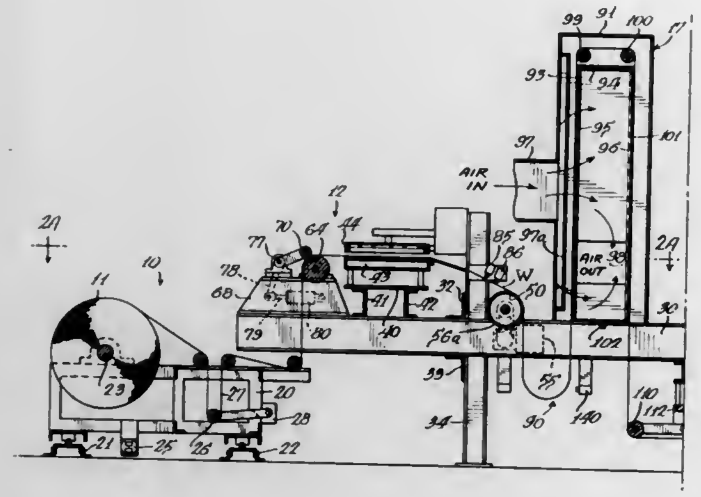
1. A printer having a printing station comprising
a type wheel having type characters arranged about the periphery in a plurality of columns, means including a shaft to rotate said type wheel to advance said columns through said station,
means coupled to said shaft to index a recording sheet through said station once after each passage of said columns through said station,
means for printing the type characters on the recording sheet,
type selecting means including electrical control means for selecting a given type character from each of the columns of said type wheel, and
column selecting means rotating at a predetermined ratio relative to the shaft of said type wheel to select one column from a group of adjacent columns, said ratio corresponding to the number of characters in each column, said column selecting means being functionally coupled to said type selecting means and comprising a rotary roll having a number of actuating segments about its periphery corresponding to the number of columns in said group, said column selecting means operable to select a single column from the group in each actuating segment, whereby each column is selected once during each revolution of said roll,
said type selecting means including a common electromagnetic means for said group of adjacent columns, said electromagnetic means being controlled by said electrical control means for comparing a given type character with the type position of said type wheel and being actuated when said given character is in printing position in said station, and said type printing means being actuated only when both said column selecting means and said electromagnetic means are simultaneously actuated, whereby when the common electromagnetic means is operated by said control means, the printing means operates to print a character from only one column of said group at any one time, as determined by the segment of said roll which is in actuating position.

3,848,528
MULTI-STATION PRINTING SYSTEM

Robert R. Seedorf, Barrington, Ill., assignor to The Roy M. Moffitt Company
Filed Sept. 25, 1972, Ser. No. 291,964
Int. Cl. B41f *15/10, 15/24*
U.S. Cl. 101—115 **2 Claims**

1. A multi-station screen printing system with a screen printer at each of the stations for printing on a section of

continuous web while said web is stationary at a station; means associated with each of said stations for feeding and advancing the web into said station and stopping the web in response to a registry mark thereon and independently of web feeding means at other stations including, a drive roller beyond the screen printer, means for driving said drive roller at either a fast speed or a slow speed, intermittently operable means in advance of the screen printer for holding the web, and control means including means at the station for successively scanning a registry mark on the web for first reducing the drive roller from fast speed to slow speed and then upon a second scanning of said registry mark stopping the drive roller and activating the web holding means to hold the web in position for printing; and means for permitting independent operation of the screen printer at a station on a stationary web independently of the operation at another station including a web loop between said stations, and means for detecting the size of said loop and controlling the web feeding means at the next station beyond the web loop to maintain the loop to a predetermined dimension, said web holding means including a pair of rotatable rollers engaging the web therebetween and a relay operated brake for stopping rotation of said pair of rollers, and said drive roller is a vacuum roller which yieldably holds the web thereagainst whereby stopping of the web by said holding means is permitted by movement between the web and the vacuum roller.



3,848,529
INK LEVEL CONTROL SYSTEM

Harold W. Gegenheimer, Darien; Walter A. Siebein, Redding, and George J. Hancock, Milford, all of Conn., assignors to Baldwin-Gegenheimer Corporation, Stamford, Conn.
Filed Oct. 24, 1972, Ser. No. 299,894
Int. Cl. B41l *27/08;* **B41f** *31/06*
U.S. Cl. 101—363 **5 Claims**

1. A mechanism for maintaining the level of ink in an ink fountain at a predetermined minimum level comprising:

a. an ink fountain containing a quantity of ink,

b. a fountain roller extending into said ink fountain and adapted to remove ink from said ink fountain in small amounts,

c. wave making means mounted adjacent to said ink and extending below the level of ink in said ink fountain,

d. means for moving said wave making means longitudinally along the length of said ink fountain to form a wave of ink which extends above the level of ink in said ink fountain, said wave making means including switch activating

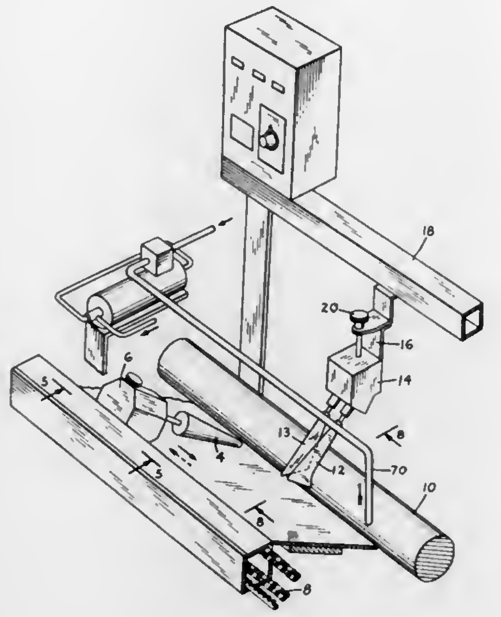
e. an ink supply means containing a supply of ink for feeding to said ink supply,

f. a control means operatively associated with said ink supply means, said control including means to permit ink feeding and means to prevent ink feeding,

g. switch means operatively associated with said control means, said switch means being positioned to be activated by said switch activating means as said wave making means moves longitudinally of said ink fountain and being adapted to cause ink feed,

h. ink sensor means mounted adjacent to said ink fountain, said ink sensor means including a first member which extends into said ink fountain to a position above the level of ink in said ink fountain,

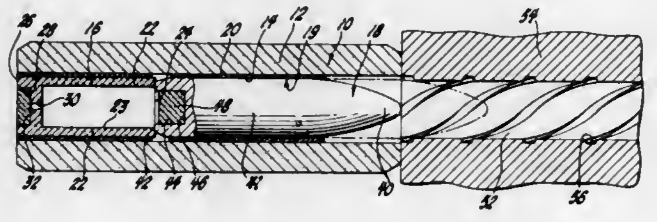
i. said first member of said ink sensor means being operatively associated with said control means and said means for preventing ink feeding,



j. said control means being adapted to feed ink in small measured quantities to said ink fountain unless the wave of ink caused by said ink agitator is sufficiently high to activate said first ink sensor member to thereby prevent further ink feed.

3,848,530
SHOT OBTURATION SYSTEM FOR FULLY TELESCOPED CASELESS AMMUNITION

Roy D. Plumer, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.
Filed May 15, 1970, Ser. No. 37,523
Int. Cl. F42b *5/18, 9/16*
U.S. Cl. 102—38 **4 Claims**



1. In a round of telescoped caseless ammunition:

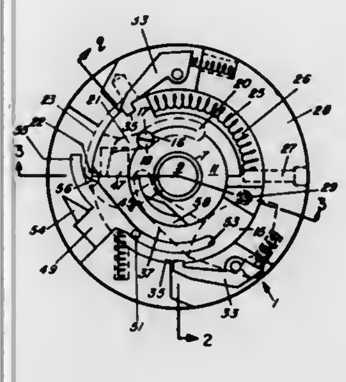
a. a tubular propellant charge comprised of first and second end portions and an axial bore therebetween, said first end portion having a radial wall with an outwardly extending axial pocket therein and an axial opening communicating between said pocket and said bore;

b. a projectile having nose, side, and aft sections and affixed to said bore at said side section, said sections located within said bore between said first and second end portions; and

c. first and second primer means affixed respectively in said pocket of said first end portion and to said aft section of said projectile, whereby detonation of said first primer initiates a flash wave that propagates through said axial opening of said pocket and said axial bore of said propellant to detonate said second primer means and whereby the detonation of said second primer means advances said nose section of said projectile beyond said first end portion of said propellant prior to substantial ignition of said propellant.

3,848,531
SELF-DESTRUCT FUZE

George P. Mellen, Wayzata, Minn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Oct. 30, 1973, Ser. No. 411,107
Int. Cl. F42c *9/04*
U.S. Cl. 102—70 R **9 Claims**



1. A self-destruct fuze for a spin-type projectile, comprising: a housing including a hollow cylindrical body adapted to be mounted in said projectile with its longitudinal axis coincident with the spin axis of the projectile, and a cover plate attached to the forward end of said body,

a primary lead tube containing an explosive primary lead axially mounted in said body, at least the rear end of said tube being open for exposing said primary lead to an explosive charge in said projectile,

a firing arming rotor rotatably mounted on said tube,

a second arming rotor rotatably mounted on said first rotor, said rotors having safe, armed and fired positions,

means releasable during launch for locking one rotor against rotation relative to said housing prior to launch, spin-actuated means for locking said rotors against relative rotation prior to spin decay in said safe and armed positions,

springs means normally biasing said second rotor toward said safe and fired positions,

spin-actuated means for rotating said first rotor against said spring means from said safe position to said armed position after release of said releasable locking means,

an explosive detonator carried by said second rotor,

a firing member mounted in said housing in position to be struck by said detonator when said spring means rotates said second rotor from said armed position to said fired position after release of said second rotor from said spin-actuated locking means during spin decay, and

an explosive lead in said first rotor aligned with said detonator and said primary lead when said detonator is in said fired position.

3,848,532
PROJECTILE AND CARTRIDGE ARRANGEMENT

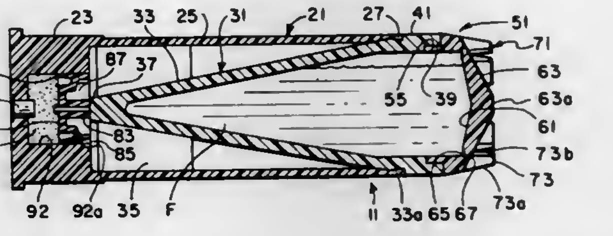
David D. Abbott, Deer Meadow Farm, Md., assignor to AAI Corporation, Cockeysville, Md.
Division of Ser. No. 183,487, Sept. 24, 1971, Pat. No. 3,776,137. This application Apr. 10, 1973, Ser. No. 349,710
Int. Cl. F42b *11/18, 13/36*
U.S. Cl. 102—87 **20 Claims**

1. A projectile for firing from a cartridge and rupturable on target impact after firing from a cartridge, comprising

a front portion having a frontal wall and a guard around said frontal wall

a cavity formed in said projectile for holding a flowable dispersable charge desired to be dispersed on target impact after said projectile having been fired from a cartridge,

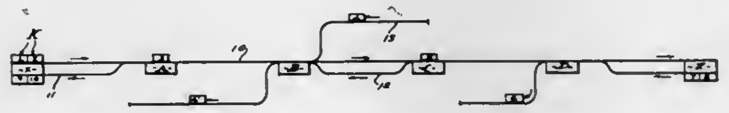
the forward end of said cavity being bounded by said frontal wall, which frontal wall is rupturable to release such a charge from said cavity when the projectile strikes a target at a velocity consistent with its having been fired from a cartridge,



said guard having sufficient impact resistance to provide a measure of protection against the inadvertent rupture of the frontal wall during lower velocity handling frontal impact shocks, including dropping from hand-held positions of the projectile above a hard ground surface.

3,848,533
NON-STOP RAPID TRANSIT SYSTEM

Harlow B. Grow, 16530 Chattanooga Pl., Pacific Palisades, Calif. 90272
Filed Mar. 30, 1973, Ser. No. 346,602
Int. Cl. B61k *1/00*
U.S. Cl. 104—18 **18 Claims**



1. A two way non-stop rapid mass transit system comprising; a single main line extending between opposite terminals and having at least one enroute station therealong, and at least three individually operable cars adapted to be releasably coupled one to the other, a pair of said cars with its complement of passengers being coupled together and operated to depart from each terminal and progress in opposite directions along said main line, one of said cars with its complement of passengers being loaded at said enroute station and operated to depart therefrom and progress along said main line in the direction of and at a speed less than the foremost of the said pair of cars traveling in the same direction, the rearmost of the said pair of cars in each instance being uncoupled from said foremost car and operated to stop at said enroute station for exchange of passengers, the foremost car in each instance passing said enroute station non-stop and being coupled to said one of said cars and operated for continued progress to the other terminal, and a parallel track with entry and reentry switches to said main line extends between enroute stations at passing points between terminals for simultaneous progress of pairs of cars therebetween progressing in opposite directions.

3,848,534
WIGGLE TRACK SECTION

Richard F. Beck, Olympia Fields, and Louis T. Cerny, Tinley Park, both of Ill., assignors to Elgin, Joliet and Eastern Railway Company, Chicago, Ill.
Filed Mar. 22, 1973, Ser. No. 343,901
Int. Cl. B61k *7/00*
U.S. Cl. 104—26 A **15 Claims**

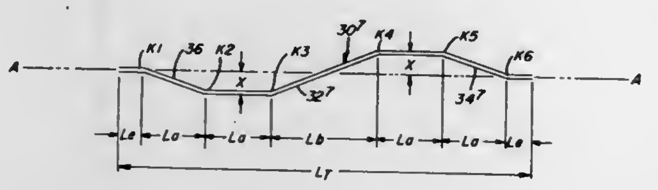
1. In combination, with a rolling rail vehicle of the type having wheels for riding on a track and rolling free of the

engine, such as in a railroad classification yard, the improvement which comprises:

a first curved wiggle section having generally parallel rails connected to said track as a continuation of said track;

said first curved wiggle section bending away from one side of said center line of said track and then bending back to said center line of said track;

a reverse curved wiggle section having generally parallel rails connected to said first curved wiggle section as a continuation of said first curved wiggle section;



said reverse curved wiggle section bending away from the other side of said center line of said track and then bending back to said center line of said track;

so that the pressure of the flanges of the wheels of said vehicle on the rails of said track section; the skewing of the trucks of said vehicle; and the varying of the location of the pressure of the bearings of said vehicle on the axle of said vehicle; retard the acceleration of said vehicle while said vehicle moves through said wiggle section.

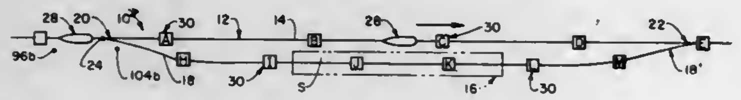
3,848,535
RAPID TRANSIT SYSTEM

Bruce Mitchell, Sylmar, Calif. 83450

Continuation-in-part of Ser. No. 140,959, May 6, 1971, abandoned. This application Jan. 13, 1972, Ser. No. 180,769

Int. Cl. B61b *13/10*

U.S. Cl. 104—88 **8 Claims**



1. A rapid transit system comprising:

guide line network;

a car movable throughout said network, said car being fixedly connected to a tow bar, said tow bar being movably supported on said guide line network, said tow bar being of a car length substantially greater than the length of said car;

drive means connected to said guide line network for moving said car along said guide line network, said drive means including uniformly spaced drive motor units, the length of said tow bar to be sufficient to extend between any adjacent sets of said drive motor units, each of said drive motor units being activated upon the approach of said tow bar, said drive motor units do not move with said car but include a plurality of separate drive motors; and said drive motors being two in number within a single drive motor unit, each of said drive motors being spaced above said guide line network, said motors of a single unit being hinged together on a common axis whereby said motors are continuously biased by gravity toward engagement with said tow bar.

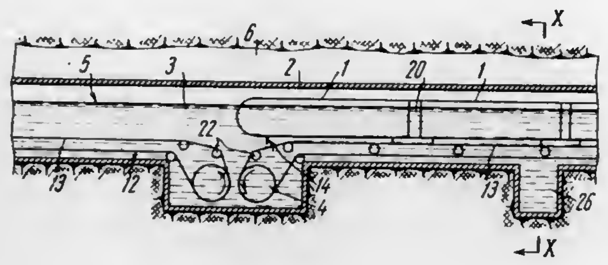
3,848,536
METHOD OF CONVEYING GOODS IN CONTAINERS ALONG A TUBE LINE

Zinovy Zinovievich Chukhanov, ulitsa Obrucheva 6, korpus 6, kv. 352; Zinovy Fedorovich Chukhanov, ulitsa D. Ulyanova 3, kv. 40; Vladimir Illarionovich Panov, ulitsa Molostovykh 13, korpus 4, kv. 87; Anatoly Mikhailovich Nikolaev, ulitsa Stroitelei, 6, korpus 6, kv. 43; Sergei Andreevich Tsuprov, B. Vuzovsky pereulok, 1, kv. 36, and Ivan Vasilievich Lyashenko, Lesnaya ulitsa, 45, kv. 89, all of Moscow, U.S.S.R.

Filed Aug. 23, 1973, Ser. No. 390,946

Int. Cl. B61b *13/10*

U.S. Cl. 104—147 R **4 Claims**



1. A method of conveying cargo in containers comprising forming a pipeline filled with a liquid to a given level, coupling a plurality of loaded containers floating freely in the liquid for movement in trains from an inlet to an outlet of said pipeline, advancing said train in the pipeline by means of a plurality of conveyors arranged along the length of the pipeline and provided with traction members adapted to transfer said containers, from one traction member to the next, and maintaining said given liquid level constant along the entire length of the pipeline by draining and introducing liquid at respective points located at predetermined distances from one another along said pipeline where said given level is expected to rise or drop.

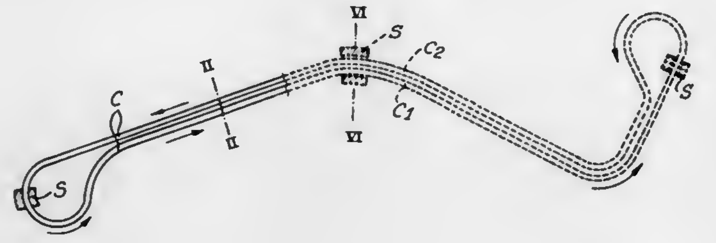
3,848,537
TRANSPORTATION SYSTEM

Frederic Rodot, 6A, avenue de e'ouche 21, Dijon, France

Filed Dec. 30, 1971, Ser. No. 214,072

Int. Cl. B61b *13/00*

U.S. Cl. 104—154 **14 Claims**



1. A transportation system comprising:

an upwardly open channel;

a pair of parallel guide tracks flanking said channel;

a vehicle provided with wheels rolling on said guide tracks, said vehicle being provided with blade means depending into said channel, said blade means including at least one blade mounted pivotally on said vehicle;

control means for swinging said blade between an effective position and a substantially ineffective position; said control means including abutment means adjacent said guide tracks operatively engageable with said blade upon displacement of said vehicle past a predetermined location; and

fluid-circulation means for maintaining a continuous liquid flow in said channel, said blade means dipping into the liquid for entraining the vehicle in the direction of flow.

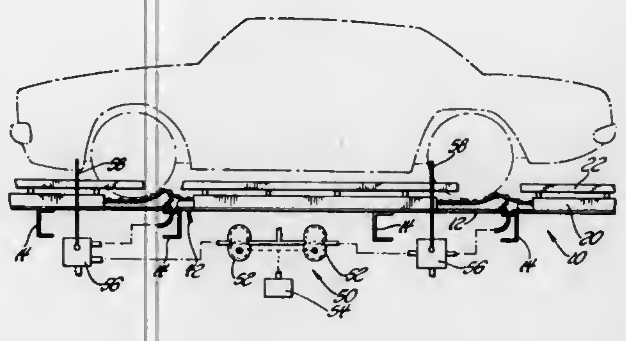
3,848,538
CONVEYOR ASSEMBLY

Leonard J. Hondzinski, Rochester, Mich., assignor to Nuprin Corporation, Rochester, Mich.

Filed July 23, 1973, Ser. No. 381,376

Int. Cl. B61b *13/00*

U.S. Cl. 104—155 **5 Claims**



1. A conveyor assembly comprising; a fluid conduit expansible in response to fluid pressure therein and having first and second ends, a support means for supporting said conduit, said conduit being attached to said support means, said conduit having a fluid outlet adjacent said first end thereof, said conduit having an inlet adjacent said second end thereof, the terminal portion of said second end of said conduit being movably supported by said support means.

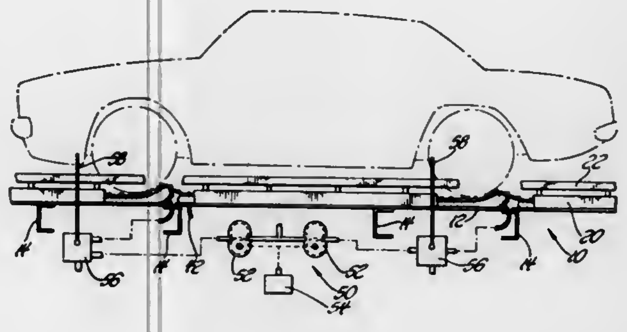
3,848,539
CONVEYOR ASSEMBLY

Leonard J. Hondzinski, Rochester, Mich., assignor to Nuprin Corporation, Rochester, Mich.

Filed July 23, 1973, Ser. No. 381,378

Int. Cl. B61b *13/00*

U.S. Cl. 104—155 **8 Claims**



1. A conveyor assembly comprising; an elongated support means, a fluid conduit expansible in response to fluid pressure therein and disposed along said support means, beam means extending transversely of said support means for supporting same, fluid pipe means extending along said support means on at least one side thereof and supported on said beam means, said fluid pipe means being in fluid communication with said conduit.

3,848,540
CONVEYOR ASSEMBLY

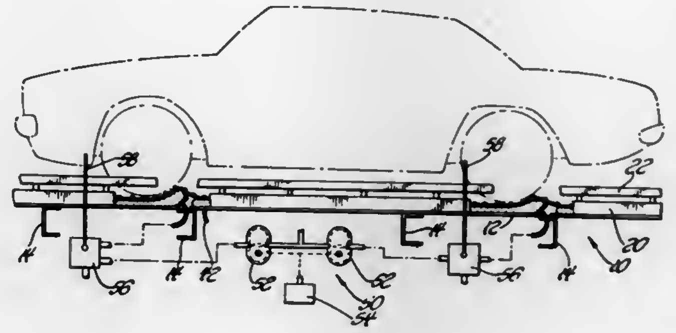
Leonard J. Hondzinski, Rochester, Mich., assignor to Nuprin Corporation, Rochester, Mich.

Filed July 23, 1973, Ser. No. 381,379

Int. Cl. B61b *13/00*

U.S. Cl. 104—155 **6 Claims**

1. A conveyor assembly comprising; a conduit having a cross section which is endless, a flexible and expandable tube disposed within said conduit, said tube being smaller than said conduit in the unexpanded condition and being stretchable to expand to conform to the endless interior of said conduit, said conduit being nonstretchable for limiting the expansion of said tube.



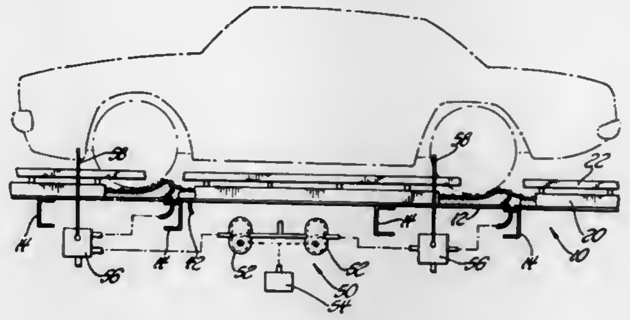
3,848,541
CONVEYOR BELT

Leonard J. Hondzinski, Rochester, Mich., assignor to Nuprin Corporation, Rochester, Mich.

Filed July 23, 1973, Ser. No. 381,377

Int. Cl. B61b *13/00*

U.S. Cl. 104—155 **3 Claims**



1. A conveyor assembly comprising; a plurality of conduits sequentially disposed along a path and expansible in response to fluid pressure therein, each of said conduits including fluid inlet means and fluid outlet means, fluid flow regulator means for supplying a substantially equal volume of fluid per predetermined period of time to each of said fluid inlet means whereby conveyed articles move at equal speeds regardless of differences in weight.

3,848,542
SAFETY SHIELD

Thomas Schied, Philadelphia, and Edward J. Wright, Warrington, both of Pa., assignors to Sherman Car Wash Equipment Co., 600 W. Broad St., Palmyra, N.J.

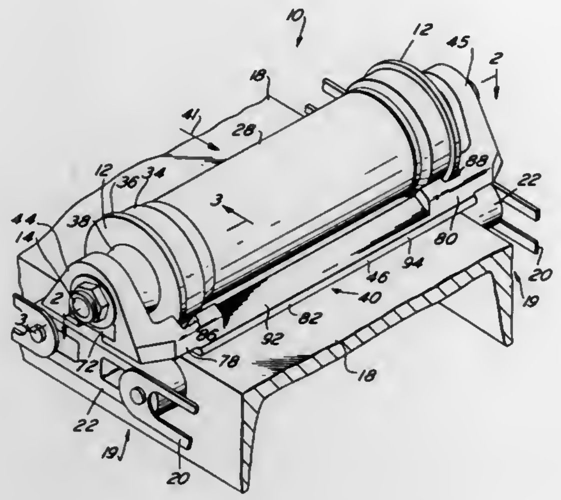
Filed Oct. 15, 1973, Ser. No. 406,739

Int. Cl. B61b *13/00*

U.S. Cl. 104—172 B **8 Claims**

1. A safety shield for a conveyor dolly of the type which comprises two spaced links with upwardly extending lugs, said lugs supporting a shaft on which means for rolling engagement with the wheel of an automobile is mounted, said safety shield comprising first and second ears and a guard, each of said ears being generally U-shaped and comprising two legs which are for overlying the lugs, said legs defining a first slot therebetween for receiving the shaft on which the roller is supported,

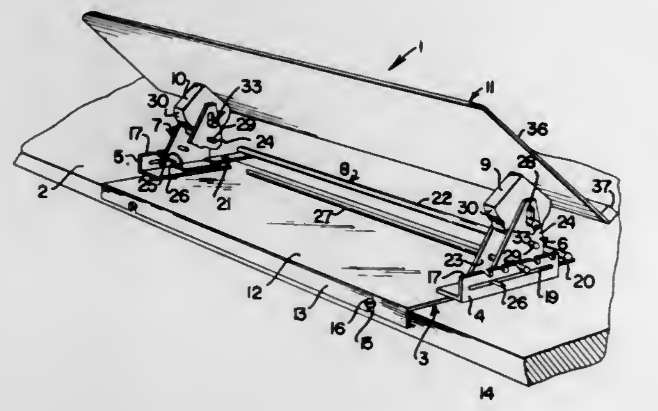
said first slot being closed at at least one end, and said guard comprises an elongated member, said member being supported by said ears so that it extends along said means for rolling contact.



3,848,543
ADJUSTABLE SHELF STRUCTURE

Richard L. Johnston, Shawnee, Kans., assignor to Richard L. Johnston, Shawnee and Sam L. Ruben, Mission, both of, Kans.

Filed Mar. 26, 1973, Ser. No. 344,880
Int. Cl. A47f *5/12*
U.S. Cl. 108—5 **1 Claim**

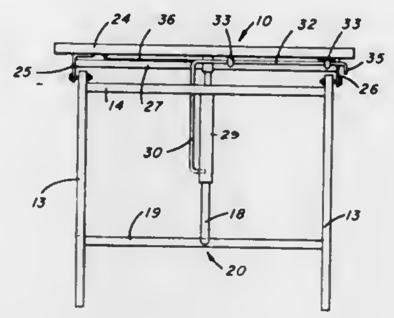


1. An adjustable shelf structure comprising:
a. a base frame and means thereon for mounting said frame on a supporting surface, said base frame having a pair of spaced elongated structural members each with a forward end and a rear end and extending horizontally and upwardly and each having an upper horizontally extending edge with a plurality of spaced notches therein, said elongated structural members having an elongated horizontally extending way therein,
b. an upper frame located above said base frame, and including a pair of spaced brackets, said spaced brackets each having an upstanding flange,
c. a first rod mounted on each of said flanges and projecting into a respective base frame way, a second rod mounted on each of said flanges and spaced above and rearwardly offset from said first rod and adapted to be selectively received in a respective one of the notches in said upper edges,
d. a shelf member positioned above said upper frame, said shelf member having a pair of spaced depending portions respectively received adjacent said flanges, said depending portions each having an arcuate lower edge with a plurality of circumferentially spaced notches therein,
e. a rod projecting from each of said depending portions, said brackets each having an upwardly extending way therein receiving said depending portion rod, and
f. a stop member mounted on each of said bracket flanges and received in a respective one of the notches of said depending portions.

3,848,544
DRAFTING TABLES

James Bruce Douglas, 5840 McLynn Ave., Montreal 29, Quebec, Canada

Filed Jan. 18, 1973, Ser. No. 324,839
Int. Cl. A47f *5/12*
U.S. Cl. 108—6 **3 Claims**

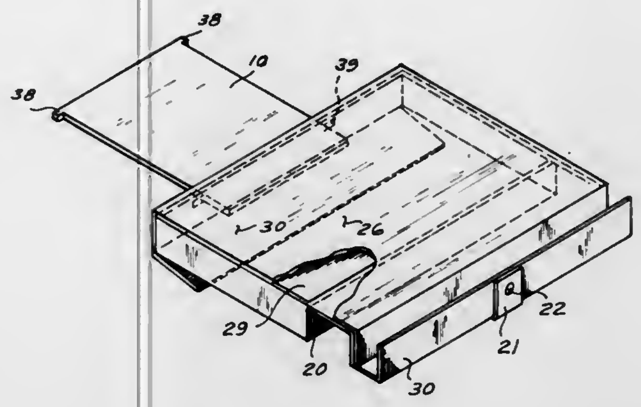


1. A drafting table comprising:
a. a support frame including two upright front leg members and a cross member rigidly connecting upper portions of said leg members and single rear leg means extending downwardly and rearwardly from said cross member in an operative position thereof,
b. a single normally vertical pivot connecting said single rear leg means to said cross member, the upper forward end of said rear leg means being mounted underneath said cross member and said rear leg means being dimensioned to allow said rear leg means to be folded by movement about said pivot into a position parallel to the front leg members and wholly within the outer boundaries of the front leg members and said cross member,
c. means defining a series of notches spaced along said rear leg means so that said notches have openings rearwardly of the rear leg means when the rear leg means is in its operative position,
d. board means mounted on the support frame by pivot means allowing tilting of the board means about a horizontal axis adjacent a front edge of the board means, said pivot means allowing adjustment of the angular position of the board means to a variety of sloping operative positions and also allowing folding of said board means into a position close to and parallel to said front leg members, and
e. adjustment means mounted on said board means for adjustment thereof relative to said rear leg means, said adjustment means including a rod having an upper shaft portion extending horizontally under the board means, said upper shaft portion being positioned close to the board means and rotatably mounted thereon, said rod having a lever portion extending downwardly from one end of said shaft portion and having a lower horizontal portion at its lower end, said lower horizontal portion being suitable for engagement with the notches of said rear leg means when the board means and the rear leg means are in their operative positions, and said rod having handle means at the other end of said shaft portion for rotating said shaft portion to control engagement of the lower horizontal portion with said notches, said lever portion being disengageable from said notches and pivotal against the underside of said board means for folding of the table,
whereby said table can be folded by disengagement of the lower horizontal rod portion from the notches, folding of the rear leg means parallel to the plane of the front leg members, pivoting of the rod lever portion against the board means and then pivoting of the board means flat against the leg members.

3,848,545
DRAWER FOR FOLDING TABLE

Herbert S. Chase, Woodmere, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Mar. 12, 1973, Ser. No. 339,983
Int. Cl. A47b *85/00*
U.S. Cl. 108—26 **3 Claims**

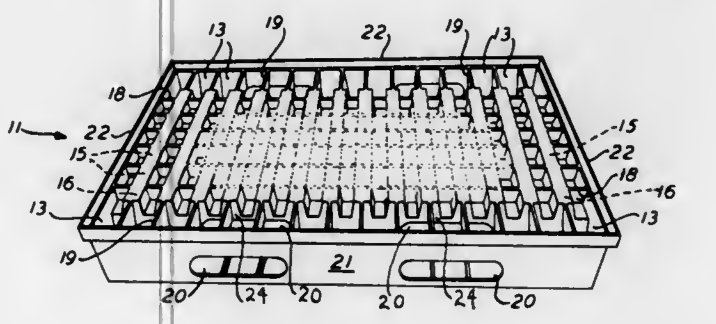


1. An assembly adaptable for mounting to the under-surface of a folding leg table, the assembly comprising a removable drawer, said assembly comprising an attachment bracket which is fastened to the undersurface of a table, and a drawer which is slidably mounted to the attachment bracket by means of an attached guide strip which fits into a slot in the attachment bracket, said guide strip fastened to, and extending from the back of the drawer through a slot in an angle at the rear end of the attachment bracket, so that the front of the drawer may be lowered below the level of the border edges of the table and slid from underneath the table, with the rear of the drawer being supported by the guide strip which loosely fits in the slot of the angle of the attachment bracket.

3,848,546
PALLET

James J. Lawlor, Glen Rock, N.J., assignor to P.D.Q. Plastics, Inc., Newark, N.J.

Filed Aug. 6, 1973, Ser. No. 385,855
Int. Cl. B65d *19/24, 19/38*
U.S. Cl. 108—52 **7 Claims**

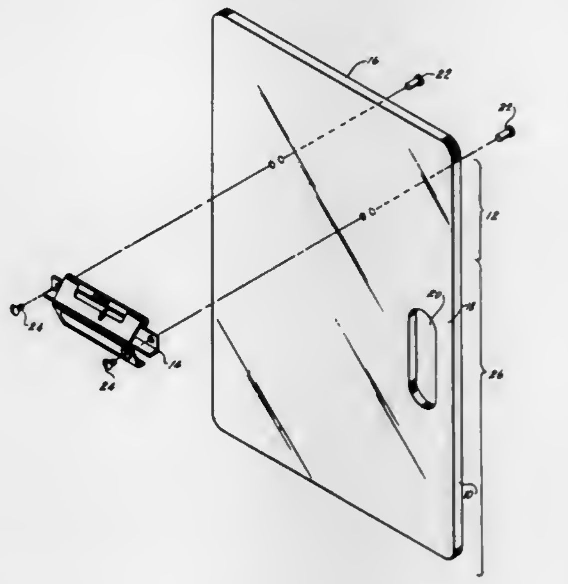


1. A pallet comprising
a. a generally rectangular, integrally molded load-bearing body,
b. a top surface on the load bearing body,
c. a plurality of indentations in the top surface, spaced apart from each other,
d. a floor at the bottom of each top indentation,
e. the spaces between the top indentations defining bottom indentations,
f. side walls of the top indentations converging toward each other downwardly,
g. side walls of the bottom indentations converging toward each other upwardly,
h. adjacent top and bottom indentations having common side walls,
i. the top and bottom indentations having end walls disposed linearly in the same plane,
j. the top of each end wall of the top indentations coinciding with the plane defined by the top surface,
k. the bottom of each end wall of the bottom indentations coinciding with the plane defined by the bottoms of the floors of the top indentation,
l. a full-length, elongated, hollow, support leg at each opposite longitudinal side of the body, open at the top, and extending below the plane defined by the bottom of the top indentations,
m. each support leg provided with vertical, integral, latitudinal bridges defining a plurality of separate compartments in the legs,
n. the top of the bridges coplanar with the plane defined by the top surface,
o. horizontally opposite slots in the support legs in their longitudinal sides, positioned below the plane defined by the bottom of the floors in the top indentations,
p. the slots spaced upwardly from the bottom edge of the legs,
q. the portions of the bridges in the legs opposite to the slots, cut away to admit lifting devices into the legs through the slots.

3,848,547
BALLISTIC CLIP BOARD

Roger W. Schaefer, Arcadia, Calif., assignor to Safariland Leather Products, Monrovia, Calif.

Filed Mar. 13, 1972, Ser. No. 234,242
Int. Cl. E06b *9/00*
U.S. Cl. 109—49.5 **8 Claims**



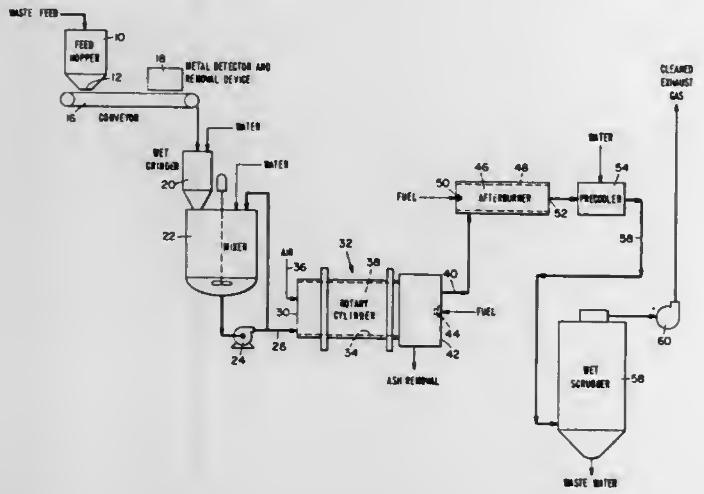
1. A ballistic clip board which comprises:
a. a board member having a tensile yield strength of at least 9,000 psi and a tensile break strength of at least 8,000 psi;
b. clip means adapted for holding papers, said clip means positioned within the periphery of said board member and below the upper edge of said board member and to at least provide a transparent zone between said clip means and said upper edge of said board member and providing a protective area sufficient to shield the forehead of an average size man while providing a zone of observation between said clip and the upper edge of said board member, said board member having a length and width sufficient to protect the vital organs of an average

man when in a crouched position, said board member being provided with a handle formed of an aperture and contained within the periphery of said board member, adjacent to and along a length thereof, said handle positioned between said clip means and said lower edge of said board member.

3,848,548
INCINERATION PROCESS FOR DISPOSAL OF WASTE PROPELLANT AND EXPLOSIVES

James William Bolejack, Jr., Blacksburg; Truman Knox Daniel, Jr., Christianburg, and Darrell Edward Rolison, Blacksburg, all of Va., assignors to Hercules Incorporated, Wilmington, Del.

Filed Nov. 27, 1973, Ser. No. 419,299
Int. Cl. F23g *7/00*
U.S. Cl. 110—7 R **9 Claims**



1. A process for incineration of waste liquid and solid propellants and explosives comprising:

a. forming an aqueous suspension of propellant or explosive waste in water having a dispersed phase comprising solid propellant or explosive waste in particulate form, in which the solid particles have an average maximum length of less than **0.25** inch, and a continuous phase comprising water;

b. introducing air, and the suspension of step (a) into one end of a rotary incinerator operating at a temperature of from about **1200°F.** to about **2200°F.**, said suspension being fed at a rate sufficient to initially form a thin aqueous layer of said suspension on the walls of said incinerator and continuously contacting said layer of suspension with dry surface of said incinerator wall whereby the aqueous content of the continuous phase of the suspension is evaporated and the propellant particles are sequentially dried and ignited within;

c. drawing exhaust gases from the rotary kiln and contacting said exhaust gases with water to remove particulate matter and noxious gases from said gas, and

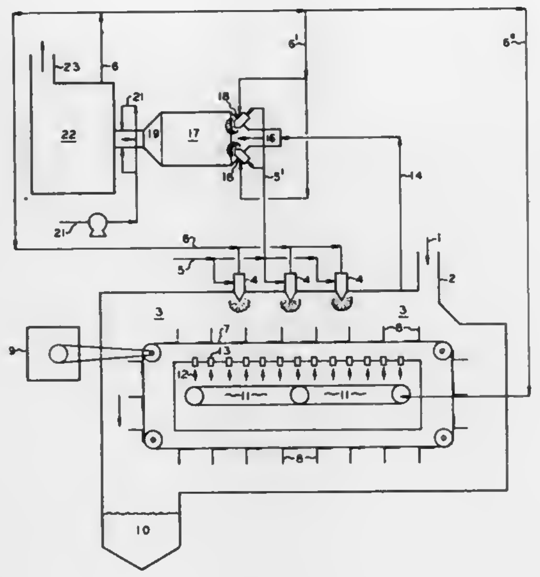
d. exhausting the resulting gases from step (c) to the atmosphere.

3,848,549
TWO-STAGE SMOKELESS INCINERATOR WITH FLUIDIZED BED FIRST STAGE

Robert C. Pryor, and Howard M. Katz, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 11, 1973, Ser. No. 359,444
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 A **20 Claims**

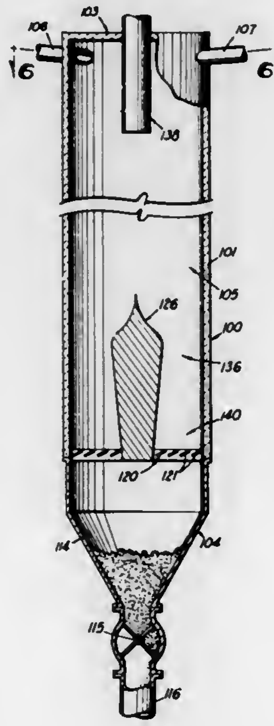
1. A substantially smokeless two-stage contiguous incinerator for incineration of waste products comprising a first stage, contiguous second stage, connecting means between said first and second stage, exiting gas means from said second stage, quench zone at the outlet of said second stage, and wherein said first stage includes fluidizing means positioned generally below said waste products to conduct fluidizing gases upwardly through said waste products thereby maintaining said waste products in at least a partially fluidized state in said first stage, and conducting means for conducting gases from said quench zone to said fluidizing gas means.



3,848,550
DEVICE FOR SEPARATING SOLID OR LIQUID PARTICLES FROM A GASEOUS MEDIUM

Mack D. Bowen, Smyrna, Ga., assignor to Georgia Tech Research Institute, Atlanta, Ga.

Division of Ser. No. 136,099, April 21, 1971, Pat. No. 3,802,164. This application Feb. 1, 1974, Ser. No. 438,721
Int. Cl. F23g *5/12*
U.S. Cl. 110—18 R **14 Claims**



1. A device for decomposing particulate agricultural waste products such as peanut hulls, which comprises:

a. an elongate cylinder having first end wall means at one end thereof and second end wall means at the opposite end thereof whereby to define a chamber;

b. inlet means for forcibly introducing the particulate waste product and combustion supporting gas tangentially into said chamber adjacent said first end wall means and axially toward said second end wall means, whereby to form an outer helical flow layer adjacent the inner surface of said cylinder which reacts with said second end wall means to reverse axial direction and form a second helical flow layer within the confines of said outer layer;

c. exhaust conduit means extending through said first end wall means and presenting a discharge mouth disposed concentrically within said chamber and positioned beyond said inlet means toward said second end wall means;

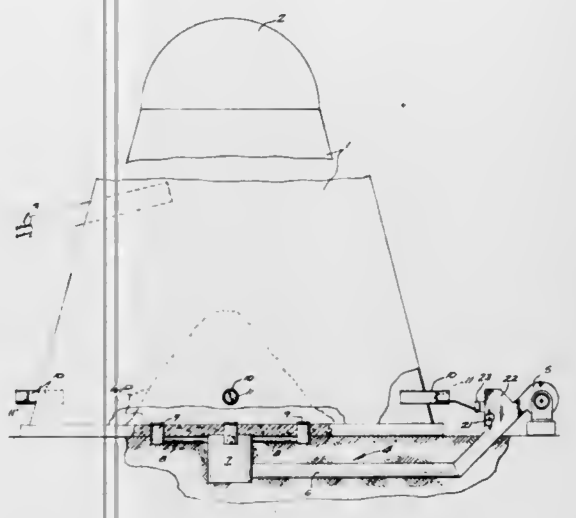
d. means for heating said chamber sufficiently to at least partially decompose the waste products; and

e. flow control means disposed adjacent said second wall of said chamber to trap partially decomposed waste products adjacent said second end while constraining the gas to reverse its flow and form a compressible vortex from said flow control means to said discharge mouth of the exhaust conduit.

3,848,551
NEGATIVE PRESSURE UNDERFIRE CONTROL SYSTEM

William H. Cramer, 1510 College St. Apt. D-4, Lacey, Wash. 98503

Filed Feb. 7, 1974, Ser. No. 440,398
Int. Cl. F23g *7/00*
U.S. Cl. 110—18 R **7 Claims**



1. An underfire air control system preventing adverse temperatures within the metal shell of a burner structure, said burner structure including an underfire system for delivery of combustion supporting air from a pressure source to the base of piled waste material, said control system comprising,

draft sensing means disposed within a draft opening in the burner structure in communication with the atmosphere and the burner interior, said draft sensing means positionable in response to a draft within said opening,

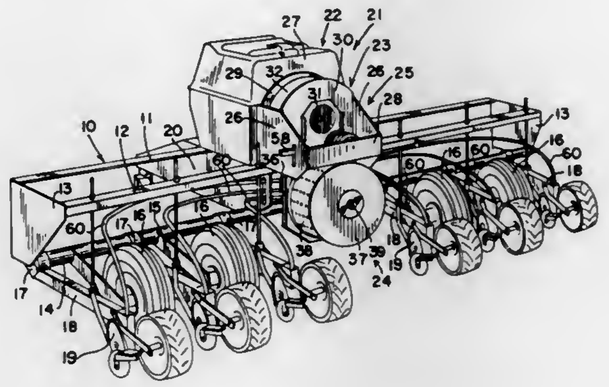
regulating means associated with the underfire system and regulating the volume of air delivered from the pressure source to the burner interior, and

translating means interposed between said draft sensing means and said regulating means for translating movement of said draft sensing means into controlled movement of said regulating means whereby upon a predetermined draft occurring in the burner opening said regulating means will diminish the supply of underfire air to the burner interior with a consequent reduction in internal burner temperatures.

3,848,552
SEED DISPENSER FOR PLANTERS

Jack L. Bauman, 210 Robin Hill, and Vedrick A. Erickson, 865 S. Wright St., both of Naperville, Ill. 60540

Division of Ser. No. 162,091, July 13, 1971, Pat. No. 3,762,603. This application Apr. 27, 1973, Ser. No. 354,968
Int. Cl. A01c *23/02*
U.S. Cl. 111—77 **8 Claims**

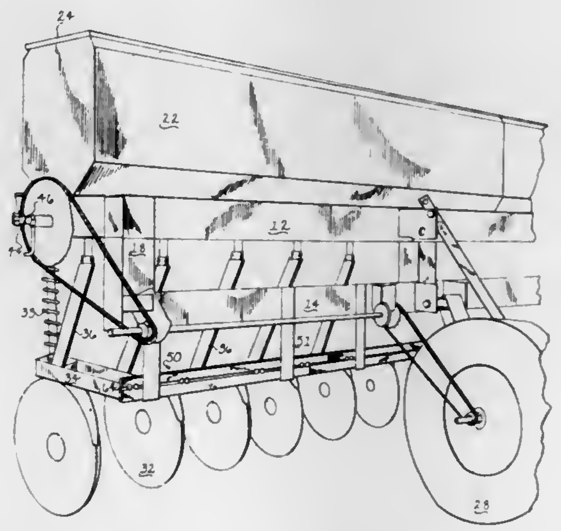


1. In a planter, a transversely elongated traveling frame having spaced furrow openers thereon, a seed dispenser assembly comprising a seed hopper centrally mounted on the frame having a seed discharge outlet in its bottom, an air blower mounted on the frame adjacent the hopper, a supporting member carried by said frame and extending below said blower, said supporting member having a first and a second surface, a drive shaft rotatably mounted in said supporting member vertically spaced from the blower, and a seed selector drum mounted on said drive shaft adjacent said first surface of said supporting member, said supporting member having openings therein communicating through a chute and a tube protruding from said second surface with said discharge outlet and said blower respectively to direct seed and air under pressure respectively to the interior of the drum.

3,848,553
AGRICULTURAL DRILL

John M. Tye, P.O. Box 218, Lockney, Tex. 79241

Filed Apr. 24, 1972, Ser. No. 247,120
Int. Cl. A01c *5/00*
U.S. Cl. 111—87 **7 Claims**



1. In an agricultural planter having

a. an elongated frame,

b. said frame including elongated, horizontal beams extending substantially the entire length of the frame,

c. means attached to the frame for attaching said frame to a draft vehicle,

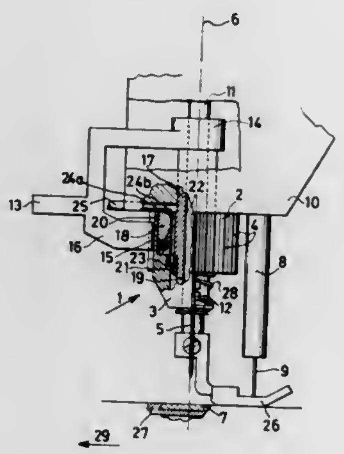
d. an elongated seed box mounted on said frame,

e. said elongated seed box extending along said frame,

g. a plurality of seeders attached to the bottom of said seed box,
h. chutes extending from said seeders to a plurality of planting discs,
j. The improvement comprising in combination with the above:
k. a bar extending substantially the full length of said frame,
m. said bar horizontal and attached to said frame below the forward position thereof,
n. brackets attached to said bar,
o. said bar including structural means for clamping said brackets to said bar for longitudinal adjustment therealong,
p. arms pivoted to said brackets, and
q. said planter discs attached to the rear end of said arms,
r. said seed box having an elongated slot therein,
s. said seeders clamped to said box along said slot, and
t. spacers within the elongated slot between said seeders in said box.

3,848,554
CUTTING DEVICE FOR SEWING MACHINES

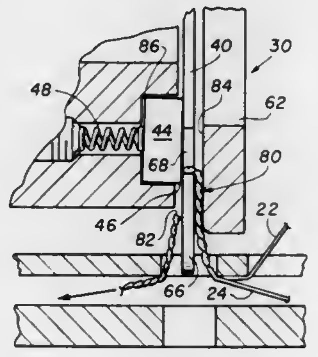
Manfred Kropf, Heubach-Lautern, Germany, assignor to Triumph International Aktiengesellschaft, Munchen, Germany
Filed Aug. 8, 1973, Ser. No. 386,546
Claims priority, application Germany, Aug. 9, 1972, 2239148
Int. Cl. D05b *37/08*
U.S. Cl. 112—124 **7 Claims**



1. A cutting device for cutting sewn tapes, laces, and the like and adapted for use on a sewing machine of the type having a presser foot and a stationary anvil, comprising a knife means arranged behind said presser foot with respect to the direction of feed of the material being sewn, said knife means cooperating with said stationary anvil and being operable to provide a striking and cutting motion of said knife means substantially perpendicular to the surface of the material being sewn, drive means for actuating said knife means to effectuate said striking and cutting motion of said knife means, bearing means about which said knife means is rotatable, said bearing means having an axis substantially perpendicular to the surface of the material being sewn, adjustable means for adjusting the angular position of said knife means about said axis, said presser foot having a support bar, said axis of said bearing means being disposed parallel to said support bar, said axis of said bearing means and support bar being generally aligned in the direction of feed of said sewn material, said knife means including a knife carrier having an upper portion arranged as a cylinder, said adjustable means including external gear means on said cylinder providing for rotation of said cylinder, said cylinder being formed with a hollow portion and having means defining an internal wall, a stationary carrier sleeve disposed in said hollow portion of said cylinder, said cylinder being slidable relative to said stationary carrier sleeve, said cylinder and stationary carrier sleeve defining a pneumatically operable power means for effecting said striking and cutting motion of said knife means, and biasing means providing a biasing force in a direction opposite to the direction in which said knife means is moved during said cutting and striking operation, said stationary carrier sleeve being disposed with its longitudinal axis arranged generally coaxial with said presser foot support bar.

3,848,555
SEWING MACHINE CUTTING DEVICE

Ronald J. Boser, 19 Branwood Dr., Dix Hills, N.Y. 11746
Filed Dec. 10, 1973, Ser. No. 423,509
Int. Cl. D05b *65/00*
U.S. Cl. 112—252 **7 Claims**

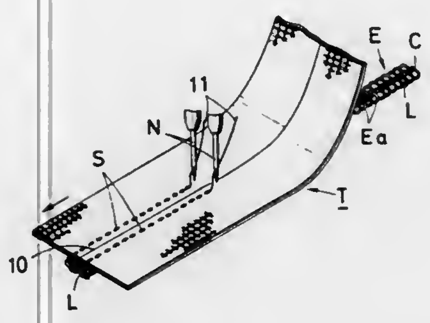


1. A cutting device for a sewing machine, said sewing machine including a vertically reciprocating sewing needle operative to produce stitched engagement of a needle thread in a work piece, a supply source for said needle thread, means to advance said work piece beneath and rearwardly of said sewing needle so as to draw taut said needle thread extending from said work piece to said supply source thereof, said taut length portion of said thread establishing a cutting zone, and said cutting device operable in said cutting zone comprising a vertically oriented wall, a block member in facing relation to said wall having a bottom cutting edge thereon, a vertically reciprocating thread-engaging member in interposed relation between said wall and block member operatively arranged to lift a loop of said needle thread into cutting relation with said cutting edge while positioning a length portion thereof between said thread-engaging member and said wall, and spring means biasing said thread-engaging member against said wall and into holding contact with said severed loop length therebetween, whereby following said severing of said thread inadvertent unthreading of said sewing machine needle is obviated.

3,848,556
METHOD FOR PRODUCING A SLIDING CLASP FASTENER

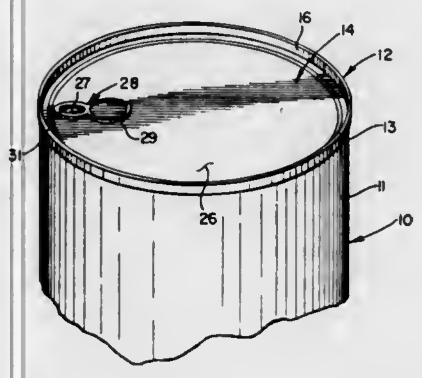
Fumio Terada; Yoshio Matsuda, and Yoshiharu Yamaguchi, all of Uozu, Japan, assignors to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 26, 1971, Ser. No. 202,083
Claims priority, application Japan, Dec. 4, 1970, 45-108006; Dec. 4, 1970, 45-108007
Int. Cl. A44b *19/40;* **D05b** *3/12*
U.S. Cl. 112—265 **2 Claims**

1. A method for producing sliding clasp fasteners comprising: providing a warp-knitted fabric section composed of a plurality of individual carrier tapes arranged in side-by-side relationship with alternate pairs of carrier tapes being connected together by a low-temperature soluble connecting thread and the remaining alternate pairs of carrier tapes being connected together by a high-temperature soluble connecting thread; separating said fabric section into pairs of carrier tapes by dissolving said low-temperature soluble connecting thread; then sewing two rows of interengaged fastener elements to each pair of carrier tapes along opposed edges thereof; and then dissolving said hith-temperature soluble connecting thread from the pairs of carrier tapes to separate each pair into similar halves of a sliding clasp fastener.



3,848,557
METHOD FOR FORMING PROTECTIVE EDGE ON EASY OPENING CONTAINER

Albert J. Holk, Jr., Frankfort, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Division of Ser. No. 82,260, Oct. 20, 1970, Pat. No. 3,696,961, which is a continuation-in-part of Ser. No. 815,043, April 10, 1969, abandoned. This application May 1, 1972, Ser. No. 249,326
Int. Cl. B21d *51/26*
U.S. Cl. 113—121 C **7 Claims**

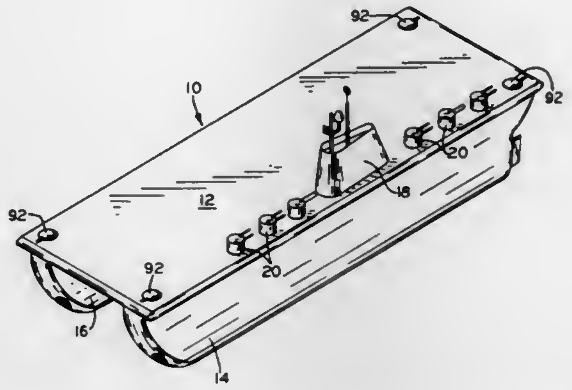


1. A method of forming an easy opening end closure comprising forming a shell having an upstanding chuck wall about a panel, drawing a major portion of said panel into a substantially hat shaped section having a transverse wall and a side wall, partially folding said side wall, scoring said panel to form a weakening line at least after said partially folding of said side wall has been initiated, and thereafter completely folding said side wall to form a double thickness annular folded band about said transverse wall.

3,848,558
SUBMERSIBLE AIRCRAFT CARRIER

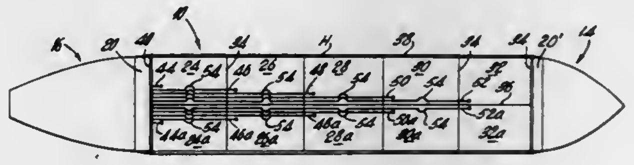
Richard D. Henry, Hookstown Grade Rd. R. D. 1, Clinton, Pa. 15026
Filed Apr. 10, 1972, Ser. No. 242,352
Int. Cl. B63b *3/13*
U.S. Cl. 114—16 R **6 Claims**

1. A submersible aircraft carrier comprising a hull having a storage for aircraft, a water-tight compartment including an openable and closeable door providing access for aircraft to be moved out of storage into said compartment, an aircraft launching deck of said carrier, elevator means for bringing the aircraft from hold level within said compartment to deck level, and a raisable and lowerable hatch disposed at deck level whereby the aircraft can be brought to deck level while maintaining the said compartment at a water-tight condition and isolated from the remainder of the hold of the aircraft carrier, a launching deck for said aircraft including a landing surface with a plurality of apertures opening at the landing surface for providing drainage of surface water from the deck, and means for heating the deck surface to preclude the formation of ice thereon.



3,848,559
CENTRALIZED CARGO HANDLING SYSTEM FOR CRYOGENIC VESSELS

Frank J. Tarossi, Middletown, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.
Continuation of Ser. No. 323,406, Jan. 15, 1973, which is a continuation of Ser. No. 118,445, Feb. 24, 1970, abandoned. This application Dec. 12, 1973, Ser. No. 424,053
Int. Cl. B63b *25/08*
U.S. Cl. 114—74 A **9 Claims**



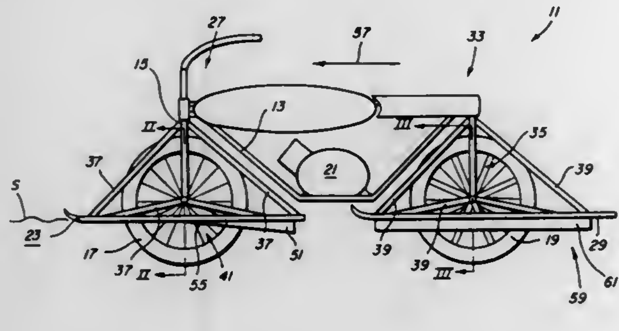
1. A tanker for the transportation of liquid cargo at atmospheric pressure and cryogenic temperatures comprising, in combination:

a. a deck;
b. a hull having forward, after and intermediate cargo-carrying portions, said cargo-carrying portion having a transverse bulkhead located at each end thereof and being constructed and arranged into a plurality of cargo-carrying holds between said ends;
c. cofferdam means located aft of said cargo-carrying portion to provide a pump room for housing electrical and mechanical equipment necessary for the loading and discharge of the liquid cargo,
aa. said pump room including manifold means for loading and discharging said liquid cargo and pump means operably associated therewith;
d. a first piping system including a first plurality of separate and independent main cargo pipes extending longitudinally along the bottom of said hull within said cargo-carrying portion, each one of said separate and independent pipes being connected at one end to said pump means and terminating in a different corresponding one of said cargo-carrying holds, whereby said liquid cargo can be selectively distributed throughout the tanker; and
e. a second piping system including a second plurality of separate and independent cooldown and recirculation pipes extending longitudinally at the top of said hull

adjacent and below said deck, each one of said separate and independent cooldown and recirculation pipes being connected at one end to said pump means and selected ones of said pipes operably extending to and terminating at different corresponding ones of said cargo-carrying holds.

3,848,560
AMPHIBIOUS MOTORCYCLE

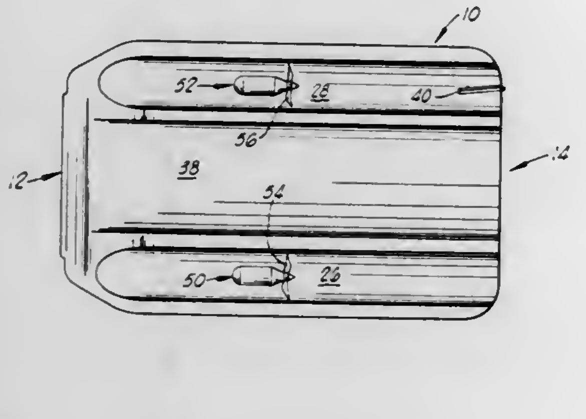
Samuel R. Du Bose, P.O. Box 1134, Clarksdale, Miss. 38614
Filed Aug. 20, 1973, Ser. No. 390,058
Int. Cl. B60f *3/00*
U.S. Cl. 115—1 R **8 Claims**



1. The combination with a motorized non-buoyant vehicle having a frame, a guidable fork pivotally attached to said frame for pivotal movement about a substantially vertical axis, a forward wheel rotatably attached to said fork, a rearward wheel journaled to said frame, and drive means attached to said frame for rotatably driving at least one of said forward and rearward wheels; forward strip-like ski means attached to said fork for supporting the forward portion of the vehicle upon the surface of a body of water as the vehicle is propelled, rearward strip-like ski means attached to said frame adjacent said rearward wheel for supporting the rearward portion of the vehicle upon the surface of the water as the vehicle is propelled, and propelling means coupled to said drive means for propelling the vehicle over the surface of the water, said forward and rearward ski means constituting the sole supporting means for said vehicle only while under power in water.

3,848,561
BOAT

Walter V. Price, 321 N. Jefferson, P. O. Box 195, Arnett, Okla. 73832
Filed Jan. 15, 1973, Ser. No. 323,997
Int. Cl. B63h *5/08*
U.S. Cl. 115—39 **12 Claims**



1. A boat comprising:

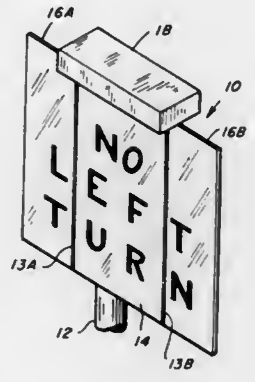
a hull having a pair of spaced water flow channels disposed on opposite sides of the bottom thereof and extending aft from the bow to the stern of the boat, said flow channels opening downwardly in the water over their entire length, having a concave upper side of semi-circular configuration, and being of substantially the same depth from the bow to the stern of the boat;

a propeller assembly disposed in each of said water flow channels, each of said assemblies including a propeller; and

means for individually and independently controlling the speed and direction of rotation of each of said propellers.

3,848,562
TRAFFIC CONTROL SIGN

Donald M. Downing, 4408 S. 41st W. Ave., Tulsa, Okla. 74107
Continuation-in-part of Ser. No. 277,668, Aug. 3, 1972, Pat. No. 3,741,147. This application May 23, 1973, Ser. No. 362,894
Int. Cl. E01f *9/10*
U.S. Cl. 116—63 R **12 Claims**



1. In a traffic control sign including:

a first rectangular planar panel and means to support said first panel in a vertical position;

at least a second rectangular vertical planar panel, means to rotatably support said second panel at a vertical edge thereof to a vertical edge of said first panel, said second panel rotatable;

means to support electric motor means on said first panel; means to support a support plate on said first panel and means to journal wing shaft means in said support plate, said second panel attached to said wing shaft means;

means to rotatably mounted wing shaft drive means about said wing shaft;

drive means operatively connected between said motor and said wing shaft drive means;

means for controllably starting and stopping said motor, wherein upon energization of said motor in one instance said wing shaft and said rotatable panel are rotated in one direction, and upon subsequent energization of said motor in a seocnd instance they are rotated in the opposite direction;

the improvement comprising:

spring drive means operatively connected between said wing shaft drive means and said wing shaft means comprising:

a. a first radial arm attached to said wing shaft drive means, said wing shaft drive means rotating freely coaxial with said wing shaft;

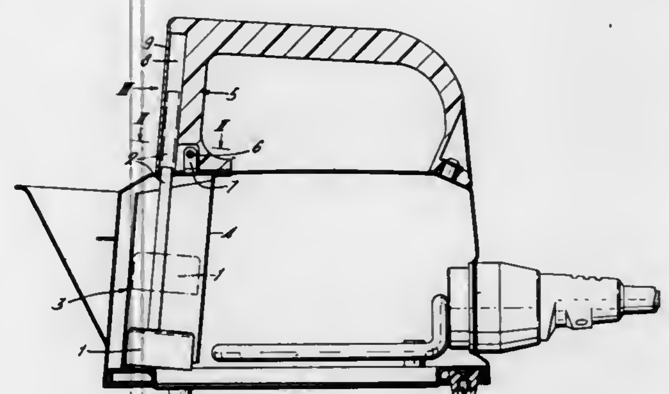
b. a second radial arm, spaced along said wing shaft from said first arm, attached to said wing shaft;

c. helical spring means surrounding said wing shaft in the space between said radial arms, first and second ends of said spring means operatively connected to said first and second arms;

whereby when said wing shaft drive means is actuated, said first arm will rotate, causing one end of said spring to be rotated, causing said second end of said spring to be rotated in the same direction, and causing said second arm to be rotated, causing said wing shaft and said rotatable panel to be rotated.

3,848,563
KETTLES

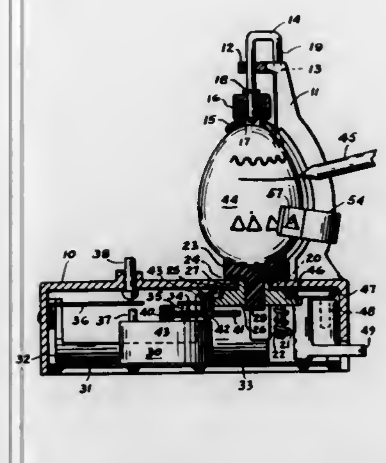
John Robert Brown, London, England, assignor to Sunbeam Electric Limited, Glasgow, Scotland
Filed June 11, 1973, Ser. No. 368,674
Claims priority, application Great Britain, June 15, 1972, 2815/72
Int. Cl. G01f *23/00*
U.S. Cl. 116—118 R **6 Claims**



1. A kettle with a liquid level indicator comprising a hollow kettle body for containing a liquid, a handle secured to said kettle body, a substantially vertically extending hollow guide housing secured within said kettle body having the interior of said housing in fluid communication with the liquid in said kettle body, float means having an indicating portion, means constraining said float means to vertical movement within said guide housing, to be positioned vertically in accordance with the level of liquid contained within said kettle body, said handle having a substantially vertical upright portion, said upright portion being positioned above said guide housing, a substantially vertically extending passage in said upright portion, an aperture in said kettle body permitting movement of said indicating portion into said passage, said indicating portion being visible in said passage for indicating the level of liquid in said kettle body.

3,848,564
ROTATING EGG COLORING DEVICE

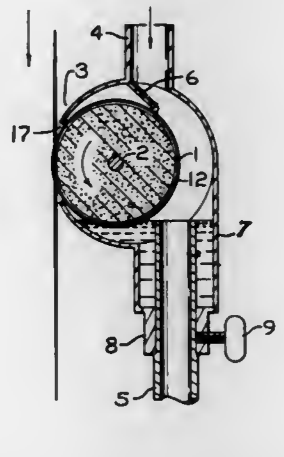
Leo Kull, 58 Westover Ave., West Caldwell, N.J. 07006
Filed July 18, 1973, Ser. No. 380,513
Int. Cl. B05c *11/12*
U.S. Cl. 118—13 **4 Claims**



1. An egg coloring device having a base, a holding means and a rotating means to hold and rotate an egg, said base supporting rotatably said holding and said rotating means, said holding means being spring loaded toward said rotating means with a stop position keeping them apart a distance slightly less than the length of a small egg, said holding and rotating means rotating on a common axis, said rotating means being rotatable by a power source, said rotating and said holding means providing a frictional hold for an egg when said egg is placed between them with the long axis of said egg lined up with said common axis, said power source being capable of rotating said rotating means together with said egg, said base including a post next to said egg with an equal clearance between said egg and said post, said post having means for attaching templates with various template holes next to said egg, said templates being slidable on and frictionally retained on said post, whereby said templates may be adjusted relative to said egg with said template holes serving as guiding means for drawing various shapes and lines to the shell of said egg.

3,848,565
BLANKET FEED BINDER APPLICATOR

John V. Schweppe, Shelby, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Dec. 29, 1972, Ser. No. 319,423
Int. Cl. B05c *1/08*
U.S. Cl. 118—234 **4 Claims**



1. A roller applicator for applying solution to fibers drawn across the surface thereof comprising a housing, a freely rotatable cylindrical applicator contained in said housing, said housing being provided with a port through which the roller is exposed to the atmosphere and out of which a portion of the surface of the applicator protrudes; means to feed the solution across the surface of the roller inside of said housing; means to remove excess solution from the housing continuously; means associated with the applicator surface to direct flow of solution on the surface of said roller towards the center thereof and away from the ends thereof, said means including a concave applicator surface and collar means on each end of said applicator, said collars having diameters greater than the diameter of any portion of the applicator located therebetween, to thereby direct fluid from said collar towards the center of said applicator along said concave surface.

3,848,566
DONOR APPARATUS

Klaus K. Stange, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Division of Ser. No. 864,265, Sept. 24, 1969, Pat. No. 3,687,106, Continuation-in-part of Ser. No. 840,967, July 11, 1969, abandoned. This application May 10, 1972, Ser. No. 251,954
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **5 Claims**

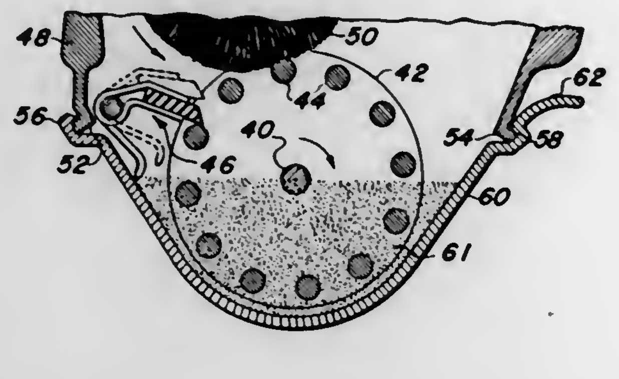
1. A developing system for latent patterns employing electroscopic marking particles comprising:

a cylindrically shaped applicator adapted to be rotated about an axis and capable of holding electroscopic marking particles;

a plurality of elongated donor members each having a surface portion capable of attracting electroscopic marking particles;

support means for supporting each of said donor members substantially in spaced parallel relation with each other; means coupled to said support means for moving said donor members through a closed path, a portion of which brings said donor members successively into contact with said applicator;

a shroud partially enclosing said applicator at least along its axial dimensions and having engageable areas thereon; and



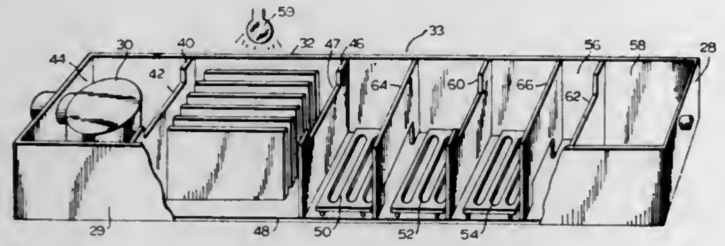
a housing resiliently engaged with said areas on said shroud and adapted to support a quantity of electroscopic marking particles adjacent said closed path, said housing being detachable from said shroud by moving said housing from said areas.

3,848,567
AQUARIUM

John W. Garber, Jr., 1815 Regents Park Rd., Crofton, Md. 21113

Filed Apr. 26, 1974, Ser. No. 464,681
Int. Cl. A01k *63/00*

U.S. Cl. 119—5 **7 Claims**



1. An improved salt water aquarium, comprising:

a transparent tank member having a base, salt water fish being advantageously displayed therein;

a base member positioned below and supporting the base of said transparent tank member;

a combination air-water filter head disposed on the base of said transparent tank member and communicating with said base member, said filter head having a water inlet means, a water outlet means and an air inlet means;

an isolation valve positioned within said base member and coupled to the water outlet means;

a filter unit positioned within said base member and having an inlet and outlet, said isolation valve operatively coupled to said inlet, said filter unit being substantially as large as said base member and thereby having a relatively large surface area, water being circulated through said filter from said tank member for filtration thereof, a valve responsive to the liquid level in the filter positioned at the inlet for maintaining the water level within said filter unit at a predetermined desired level, said filter unit being uncovered and thereby exposed to the air within said base;

a pump member positioned within said base and coupled to the outlet of said filter unit; and

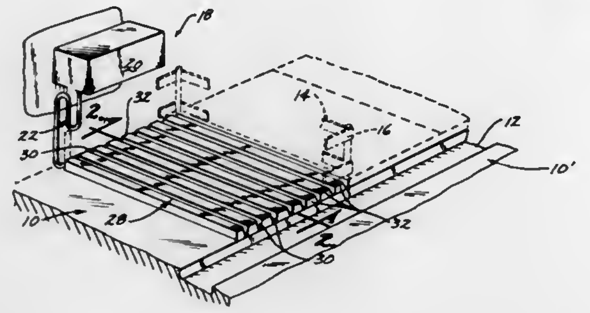
a check valve coupled between said pump member and said water inlet means for preventing backflow of water if said pump is inoperative.

3,848,568
RIBBED FLOOR AND METHOD OF WASTE REMOVAL

Thamon E. Hazen, Ames, Iowa, and John R. Miner, Corvallis, Oreg., assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Dec. 29, 1972, Ser. No. 319,212
Int. Cl. A01k *01/00*

U.S. Cl. 119—28 **4 Claims**



1. A floor and waste disposal system for animals, comprising,

a floor section sloping approximately one degree downwardly from an upper end portion to a lower end portion, said floor section having in at least a substantial center portion a plurality of elongated spaced apart narrow channels extending longitudinally from said upper end portion towards said lower end portion, each of said channels having a top width, a bottom width and a depth, said top width being less than said bottom width and being within the range of from about 1¼ to about 1⅜, said depth being at least equal to the maximum width of said channel,

a liquid distribution compartment extending substantially across the upper end portion of said floor section, said compartment having liquid communication openings in operative liquid communication with the upper ends of said channels,

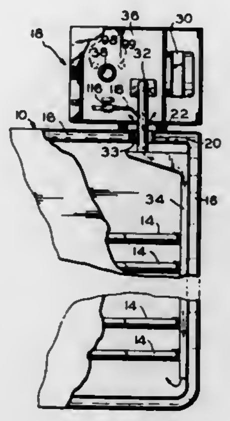
and means for intermittently rapidly introducing a flushing liquid into said liquid distribution compartment.

3,848,569
METHOD AND APPARATUS FOR CONTROLLING GASEOUS ENVIRONMENT

Max H. Folsom, Portland, Oreg., assignor to National Appliance Company, Portland, Oreg.

Continuation-in-part of Ser. No. 293,014, Sept. 28, 1972, abandoned. This application May 29, 1973, Ser. No. 364,720
Int. Cl. A01k *41/04*

U.S. Cl. 119—37 **31 Claims**



1. A method of controlling the environment of an incubator by controlling the concentration of carbon dioxide therein, said method comprising:

detecting the proportion of carbon dioxide in said incubator by electrically detecting a parameter which changes in accordance with the concentration of carbon dioxide,

selecting the desired concentration of carbon dioxide and continuously comparing said parameter with a function of said desired concentration,

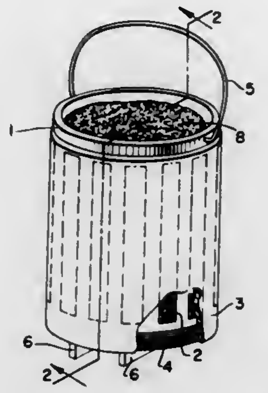
and automatically adding carbon dioxide to the environment of said incubator whenever the concentration falls below the desired value.

3,848,570
RECEPTACLE-BIRD FEEDER

Robert E. Scigliano, 176 Vinal St., Revere, Mass. 02151

Filed Apr. 10, 1973, Ser. No. 349,797
Int. Cl. A01k *5/00*

U.S. Cl. 119—51 R **5 Claims**



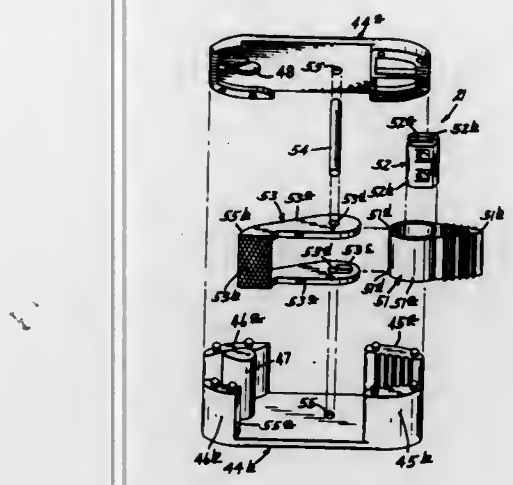
1. A throw-away type receptacle for receiving waste cooking grease or suet comprising, a container having slot means formed in the side wall thereof, a discardable sleeve mounted on the container providing a leak-proof cover for said slot means during the filling of said container, and bird perch means connected to said container, whereby after the container has become filled with solidified grease or suet, the discardable sleeve is removed therefrom to expose the contents of the can to the atmosphere through the slot means, to thereby provide a bird feeder.

3,848,571
HOPPLE

Monty L. Pearson, Muncie, and Lee C. Walls, Valparaiso, both of Ind., assignors to Raceway Products Corporation, Muncie, Ind.

Filed Mar. 27, 1973, Ser. No. 345,439
Int. Cl. F16g *11/04;* **A44b** *11/10*

U.S. Cl. 119—126 **17 Claims**



1. A buckle for releasably and adjustably receiving and retaining a strap, comprising:

a. a housing having an open end to receive the strap, and converging, opposed side walls proximate said open end;

b. handle means carried by the housing for rotation about a fixed axis and having a handle portion manually accessible external of the housing for movement between clamping and non-clamping positions;

c. a clamping member having converging outer surfaces cooperable with the converging side walls of the housing in clamping relation therewith and adapted to have the strap threaded therearound, the clamping member defining an enclosed portion loosely retained about the rotational axis of the handle means to permit movement of the clamping member between clamping and non-clamping positions;

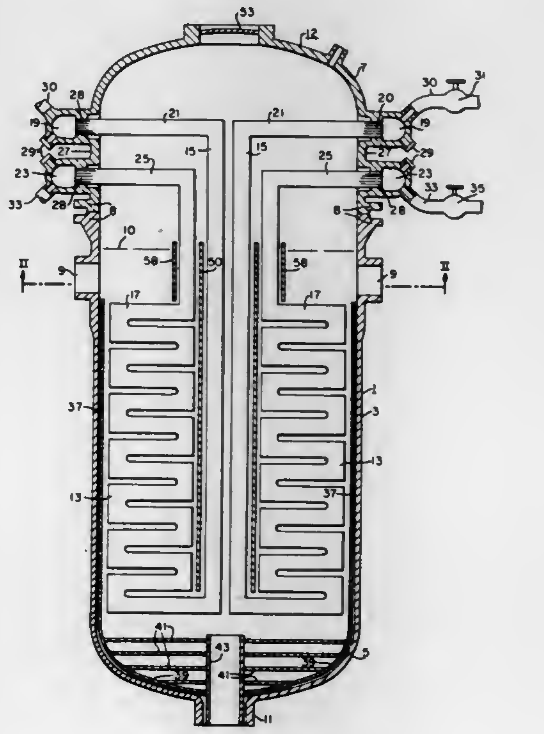
d. and an actuating member disposed within the enclosed portion of the clamping member, the actuating member being rotatable with said handle means and engageable with said clamping member in camming fashion to effect movement thereof into said clamping position.

3,848,572
STEAM GENERATOR

Angelo R. Giardina, Broomall, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 9, 1971, Ser. No. 169,978
Int. Cl. F22b *1/02*

U.S. Cl. 122—32 **6 Claims**



1. A vapor generator for transferring heat from a primary fluid to a secondary fluid to vaporize said secondary fluid, said vapor generator comprising in combination:

a vertical cylindrical shell portion,

a lower head portion,

an upper removable head portion,

a level to which said primary fluid fills said shell, when said vapor generator is operating,

means for supplying inert gas to said upper head to maintain said level,

means for introducing primary fluid to the upper portion of said shell below said level,

means for removing primary fluid from the lower portion of said shell,

a plurality of modular tube bundles,

each tube bundle comprising a generally vertical downcomer portion and a serpentine riser portion, the latter portion being disposed below said level,

said upper removable head portion having a cylindrical wall portion,

said cylindrical wall portion having at least one head portion for each modular tube bundle extending outwardly therefrom,

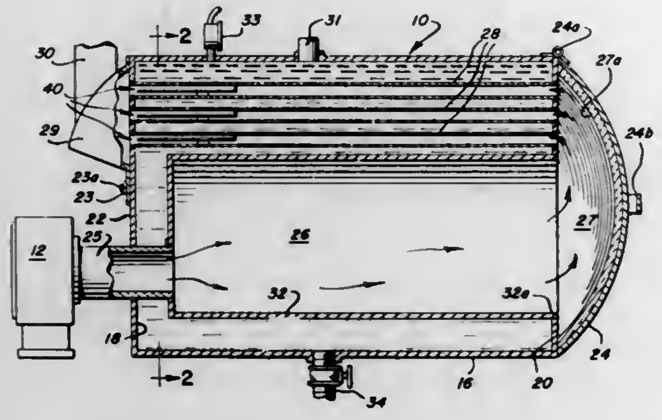
said tube bundles and their associated heads being so dis-

posed so that the inlet and outlet end portions of said tube bundles extend generally horizontally prior to terminating in the associated heads providing an arrangement wherein each tube bundle is essentially the same configuration, and the tube bundles are removable from the shell with the upper head portion,
a cylindrical sleeve member disposed adjacent said shell to provide an annular quiescent zone between said shell and said sleeve member,
a plurality of baffles disposed between adjacent tube bundles and cooperating with the sleeve member to generally wall off each serpentine portion of each tube bundle in a compartment and provide a riser compartment free of tubes adjacent each compartment having the serpentine tubes disposed therein,
said baffles having heavy walls capable of withstanding high pressure differentials, and
a plurality of pressure relief means disposed within said walls,
said pressure relief means being adapted to relieve pressure build-up in the compartments having the serpentine tubes disposed therein.

3,848,573

BAFFLE MEANS FOR HEAT EXCHANGER, AND METHOD OF FABRICATION THEREOF

James L. Phillips, 2635 S. Avers Ave., Chicago, Ill. 60623
Filed Nov. 3, 1972, Ser. No. 303,321
Int. Cl. F22b *7/12*
U.S. Cl. 122—149 **11 Claims**

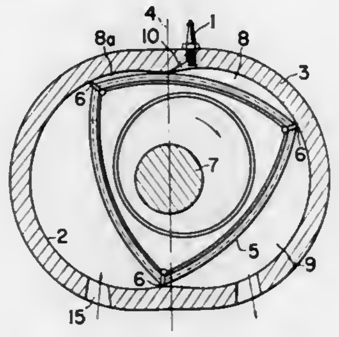


1. In combination, a fire tube boiler having a plurality of generally horizontal heat tubes mounted within a boiler shell and a combustion chamber in communication with the heat tubes for supplying heated gases thereto to heat water about the heat tubes by heat transfer, and baffle means in at least some of said heat tubes spanning a part of the cross-sectional area thereof in the portion to which the heating medium normally gravitates to encourage deflection of the heating medium to that portion of the tubes to which it does not normally gravitate, the baffle means each being comprised of a one-piece member having a body portion extending longitudinally of a heat tube, a baffle portion extending upwardly from one end of said body portion transversely of said heat tube spanning the top portions of the heat tube, and feet means extending downwardly from said body portion for engaging the lower portions of the heat tube affording the sole support of the baffle member in said heat tube.

3,848,574

COMBUSTION PROMOTING IMPROVEMENT IN ROTARY ENGINE

Tetsuzo Fujikawa; Masahisa Kawano, and Masaru Yamamoto, all of Akashi, Japan, assignors to Kawasaki Jyukogyo Kabushiki Kaisha, Hyogo-ken, Japan
Filed May 31, 1973, Ser. No. 365,739
Claims priority, application Japan, June 3, 1972, 47-65655
Int. Cl. F02b *53/12*
U.S. Cl. 123—8.09 **2 Claims**

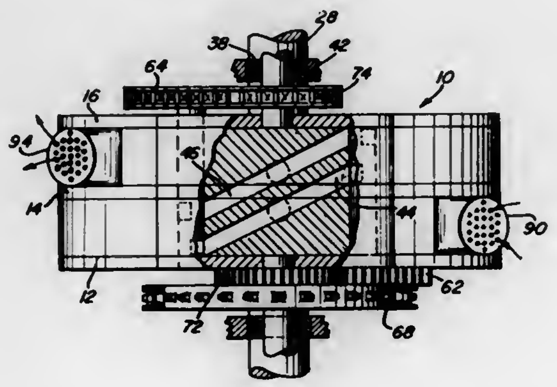


1. An arrangement in a rotary engine comprising a housing having a trochoidal inner surface with a minor axis; a rotor of multi-lobed shape undergoing planetary rotational movement within the casing for executing intake of a working fluid, compression, explosion, and exhaust; means forming a recess in the inner surface of said housing; a spark plug disposed in said recess, said spark plug being disposed at a position downstream, with respect to the rotational direction of the rotor, from said minor axis, said recess being elongated in the rotational direction and being defined by a downstream wall surface continuously and semi-cylindrically surrounding the downstream side of said spark plug; a pair of opposing side wall surfaces contiguously adjoining the downstream wall surface on respective opposite sides thereof and extending upstream in mutually converging directions; and a bottom surface contiguously adjoining said wall and downstream wall surfaces and extending smoothly upstream with such an inclination that the depth of said recess decreases progressively in the upstream direction to zero, whereby the recess directs a combustion flame generated at the spark plug in a converging manner toward the upstream side of the spark plug, said downstream wall surface acting as a reflector for the flame.

3,848,575

SLIDING VANE ROTARY COMBUSTION ENGINE

Raymond E. Williams, 15126 Pioneer Blvd., Norwalk, Calif. 90650
Filed Jan. 26, 1973, Ser. No. 326,668
Int. Cl. F02b *53/06, 53/08*
U.S. Cl. 123—8.11 **7 Claims**

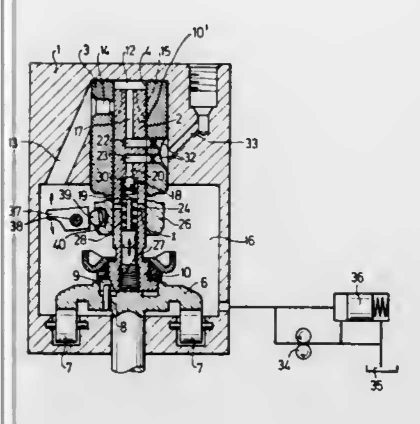


1. A rotary engine comprising casing means defining a pair of generally cylindrical chambers, a pair of generally cylindrical rotors journalled from said casing means in said chambers, said rotors being smaller in diameter than said chambers and eccentrically disposed therein with the peripheries of said rotors disposed in closely spaced relation with predetermined peripheral areas of said chambers so as to define a single crescent shaped working zone in each chamber, means coupling said rotors for rotation together, each of said rotors being equipped with a single generally radially slidable vane for sweeping the working zone of the corresponding chamber, said casing means including intake means opening into the working zone of one chamber on the departure side of the corresponding peripheral area and outlet means opening into the working zone of the other chamber on the approach side of the corresponding peripheral area, said engine including a pair of transfer passages including inlet ends opening into the working zone of said one chamber on the approach side of the corresponding peripheral area and outlet ends opening into the working zone of the other chamber on the departure side of the corresponding peripheral area, the vane of the rotor disposed in said other chamber being advanced relative to the vane of the rotor disposed in said one chamber, in its approach toward the corresponding peripheral area, and a pair of rotary valve structures driven at one half rotor speed operatively associated with the inlet and outlet ends of said transfer passages operative to alternately open and close the inlet and outlet ends of said passages, one of said valve structures being operative to generally inversely open and close the intake ends of said passages and the other of said rotary valve structures being operative to generally inversely open and close the outlet ends of said passages each revolution of said rotors, and rotor driven liquid fuel injection means operative to alternately inject liquid fuel into said transfer passages.

3,848,576

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Gerald Hofer, Flacht, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Nov. 1, 1973, Ser. No. 411,824
Claims priority, application Germany, Nov. 29, 1972, 2258309
Int. Cl. F02m *41/08*
U.S. Cl. 123—139 BD **6 Claims**



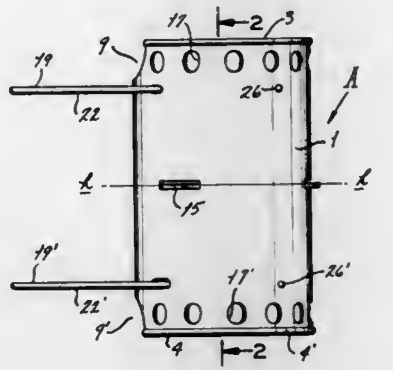
1. In a fuel injection pump for internal combustion engines, including: (a) a housing; (b) a cylinder mounted within said housing and having a central bore and a plurality of fuel supplying bores formed about the circumference of said cylinder and extending substantially radially from said central bore; (c) a plurality of channel means within said housing, each extending between a fuel injection nozzle and a fuel supplying bore, said channel means and their operatively associated fuel supplying bores forming a plurality of fuel paths, one for each of the fuel injection nozzles, said plurality of fuel paths being equal in number to the number of engine cylinders supplied by said pump; (d) a piston, said cylinder and said piston defining a work chamber; (e) cam means for rotating and reciprocating said piston within said central bore; said piston serving, as a result of its motion within said central bore, to distribute fuel through respective ones of said plurality of fuel paths; (f) relief channel means defining a first control point; (g) relief valve means operatively associated with said relief channel means, said relief valve means being adapted to open during the fuel supply stroke of said piston, as a function of engine rpm and after the fuel supply to said fuel paths has been interrupted to thereby control the fuel pressure of the fuel quantity within said fuel paths, the improvement wherein:

A. said relief channel means comprises two coaxially disposed blind bores within said piston and two radial bores one for each of said coaxially disposed blind bores, each said radial bore extending radially from the blind end of its respective blind bore;
B. two fuel supplying bores are provided for each associated channel means with each of said radial bores being operatively associated with a respective one of each of said two fuel supplying bores, and with one of said radial bores and its operatively associated fuel supplying bores defining a second control point and the other of said radial bores and its operatively associated fuel supplying bores defining a third control point;
C. said coaxially disposed blind bore closest to said work chamber and said third control point serving as a passage for supplying fuel to be distributed and as a passage through which fuel is distributed; and
D. said coaxially disposed blind bore farthest from said work chamber and which extends between said first control point and said second control point including a spring-loaded valve which opens in the pressure relief direction.

3,848,577

CHARCOAL FIRE STARTER AND GRILL

Duane L. Storandt, 12 Hanley Downs, Richmond Heights, Mo. 63117
Filed Mar. 12, 1973, Ser. No. 340,257
Int. Cl. A47j *37/07;* **F24b** *3/00*
U.S. Cl. 126—25 B **4 Claims**



1. A charcoal fire starter comprising:
An open-ended body;
A grate carried by said body;
Said grate separating said body into a charcoal chamber and a combustible material chamber;
Handle means detachably engaged to said body comprising a substantially U-shaped handle having a hand grip portion and a pair of legs;
Each leg having a terminal portion remote from said hand grip portion;
Each terminal portion having a bend turning away from each other in the plane containing said legs to define an outwardly projecting lug;
Each leg having a first portion located exteriorly of said body and a second portion presented interiorly of said body;
Said body having handle receiving slots for accommodating the legs of said handle;
Said body having locking apertures for receiving the lugs of said leg terminal portion;

Said handle being of rod stock having a diameter;
Each handle receiving slot having a height substantially the same as the diameter of said leg;
One of said handle receiving slots having a length slightly greater than the diameter of said leg to accommodate endwise entry of one lug and the related bend;
The other of said handle receiving slots having end portions, the distance between parallel planes containing the end portions being substantially the same as the length of the associated lug to permit lengthwise entry of same.

3,848,578

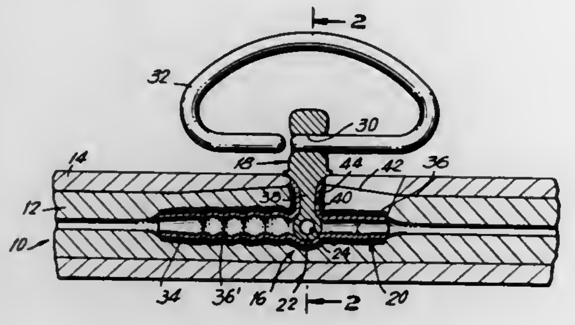
VALVE WITH MEANS FOR PROMOTING INGROWTH OF TISSUE

Louis Bucalo, Holbrook, N.Y., assignor to Investors in Ventures, Inc., new york, N.Y.

Continuation-in-part of Ser. No. 103,606, Jan. 4, 1971, Pat. No. 3,707,957. This application Oct. 5, 1972, Ser. No. 295,144

Int. Cl. A61b *19/00*

U.S. Cl. 128—1 R **5 Claims**



1. For use in the body of a living creature, valve means adapted to be inserted into an interior passage of the body for controlling the flow of fluid therethrough, and filamentary means extending around and carried by an exterior surface of said valve means for promoting ingrowth of tissue into tight engagement with said exterior surface, said exterior surface surrounding a given axis and said filamentary means being wound continuously around and engaging said exterior surface without interruption circumferentially around said axis, said living creature being a human being and said valve means being small enough to be inserted into a human vas and being made of a material compatible with the interior of the body, said valve means having outer and inner components and said filamentary means being carried by said outer component of said valve means.

3,848,579

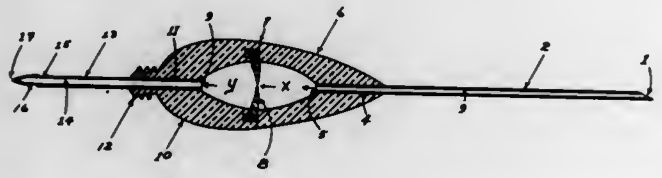
AUTOMATIC ELASTO-VALVULAR HYPODERMIC SAMPLING NEEDLE

Antony-Euclid Villa-Real, 5934 Schering Rd., Baltimore, Md. 21206

Filed Feb. 23, 1973, Ser. No. 335,419

Int. Cl. A61b *5/14;* **A61m** *5/32*

U.S. Cl. 128—2 F **31 Claims**



1. In combination, a blood specimen collection assembly comprising a hallow hub means, a resilient valve, a first hollow cannula and a second hollow cannula, both of said cannulas fixed axially in relation to each other as well as in relation to the center of the said valve by the said hub means, and wherein the first said cannula having a pointed end being for the purpose of puncturing the skin and the blood vessel wall, and wherein the said second cannula having a pointed end being for the purpose of piercing the rubber stopper of the evacuated specimen collection receptacle to establish communication between the said assembly and the vacuum of the said evacuated specimen collection receptacle, a first cavity and a second cavity, both of the said cavities located interiorly of the said hub means, said hollow first cannula communicating with the said first cavity providing a fluid inlet, and, said second cannula being also hollow and communicating with the said second cavity providing a fluid outlet, said valve situated therebetween the said first and second cavities, said valve having a cross-section that is thickest at the outward portion and thinner at the inward portion and particularly thinnest at the central part making the said valve structurally sensitive to the relevant pressure differential changes focussed at and immediately around the said central part of the said valve, said valve in cross-section describing an inclined arc-like convexity toward the first cavity at its foreface proximal to the said first cavity, and, said valve defining an inclined arc-like concavity toward said second cavity at its hind-face proximal to the said rear cavity, the combination of both the said inclined arc-like convexity and concavity being formed from the outer section of the said valve toward the said valve's central part with a taper of the said valve toward the said valve's center, said valve provided with a plurality of cuts across its central part and said cuts converging toward and intersecting the said valve' s center defining a plurality of said cross sections; said valve held in stationary position at its outer border by the inner portion of the said hub means; said valve normally in the closed position when the said assembly is not properly engaged with a potent evacuated specimen collection receptacle and not properly linked with an active vein; said valve being in a minutely semi-open position as far as air transit from the said first cavity to the said aft cavity is concerned when the said first cannula is in communication with the kinetically flowing venous blood running through the venous lumen of the properly penetrated vein thus allowing blood transport from the venous side into the said fore cavity, but, said valve, after air transit across its minutely widened cuts not permitting the viscous blood to transfer across said valve into the said second cavity and into the said evacutated receptacle until a substantially potent aspirating force triggers the said valve to the actually open position so as to allow the blood specimen collection through the said assembly into the said aspirating receptacle, said valve in the open position achieving gradual variation in aperture sizes directly proportional to the degree of pressure difference between the venous pressure and the aspirating negative pressure of the said communicated evacuated specimen collection receptacle so that in effect the said valve serves as a compensatory shock absorber automatically decreasing the undesired effects of high shear forces that predisposes the red blood cells to mechanical hemolysis using the evacuated receptacle as a means of blood specimen extraction.

3,848,580

APPARATUS FOR CONTROLLED SELECTIVE SEPARATION OF UNDESIRABLE CONSTITUENTS FROM BLOOD TO ACHIEVE A THERAPEUTIC EFFECT

Viktor Holger Hyden, Prastgardsgatan 2, and Fritz Victor Hasselblad, Box 220, both of Goteborg, Sweden

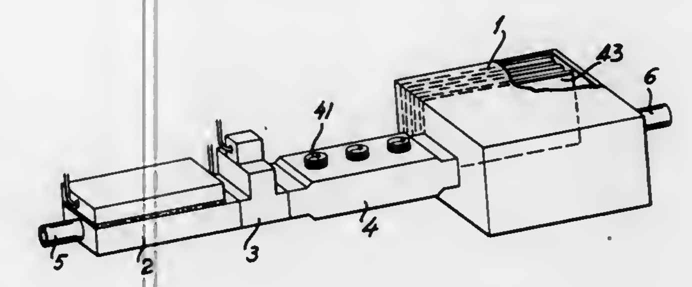
Filed Dec. 10, 1971, Ser. No. 206,812

Claims priority, application Sweden, Dec. 11, 1970, 16781/70

Int. Cl. A61b *5/00*

U.S. Cl. 128—2 F **10 Claims**

1. Therapeutic apparatus for controlled selective separation of constituents of blood flowing from a donor comprising a passage adapted to have blood flow therethrough a device communicating with said passage including a plurality of active surface means positioned to be contacted by the said flowing blood for separating predetermined constituents of the blood, and detection means communicating with the passage and said device for measuring characteristics of the flowing blood and for emitting a signal in response to a predetermined value of each such measured characteristic whereby the occurrence of an abnormality in or completion of said selective separation can be detected.



3,848,581

APPARATUS FOR TAKING MULTIPLE SAMPLES OF BIOLOGICAL LIQUID

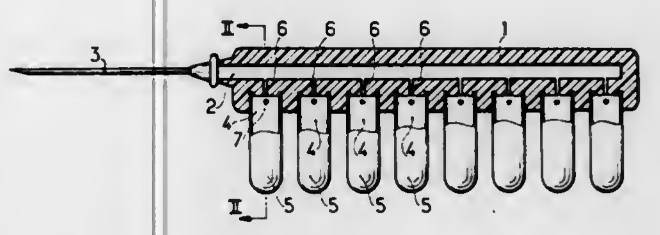
Paul Cinqualbre, and Louise Cinqualbre, nee Monier, 20, rue de la Ravinelle, both of Nancy, France

Filed Oct. 10, 1972, Ser. No. 296,215

Claims priority, application France, Oct. 8, 1971, 71.36314; Oct. 2, 1972, 72.35882

Int. Cl. A61b *5/14*

U.S. Cl. 128—2 F **8 Claims**



1. Apparatus for taking samples of a biological liquid and particularly human blood to obtain a plurality of separate samples for different analyses, comprising an elongated body having a longitudinally extending central passageway, a hypodermic needle connected with said central passageway at one end of said body, a plurality of test tubes, means for removably mounting said test tubes by their upper ends in depending position under said body with the upper ends of the test tubes closed by said body, said mounting means comprising means for slidably gripping the upper end of each test tube for movement between an upper position and a lower position and venting means comprising a vent passage which is closed by the test tube when in its upper position and opened when the test tube is in its lower position, and branch passageways leading from said central passagewy to said test tubes respectively, whereby the individual test tubes can be filled successively to the desired extent with samples of liquid supplied through said needle, central passageway and the respective branch passageways by selectively manually lowering individual test tubes to corresponding lower positions on said mounting means to allow displacement of air in the lowered test tubes by fluid.

3,848,582

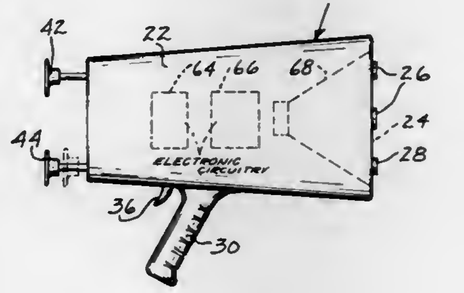
PORTABLE ELECTROCARDIOGRAPHIC SIGNAL APPARATUS

Dean L. Milani, Highland Park, and Richard G. Kerwin, Prospect Hgts., both of Ill., assignors to Medical Research Laboratories, Inc., Des Plaines, Ill.

Filed July 10, 1972, Ser. No. 270,441

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.06 R **4 Claims**



1. A portable electrocardiographic signal apparatus comprising a housing, a display screen on the front of said housing, pickup electrode means carried by said housing on the back thereof and positioned externally thereof for placement against a patient's chest, mounting means for said electrode means extending into said housing, spring means mounted internally of said housing and bearing on said mounting means resiliently to bias said electrode means outwardly of said housing, positive stop means in said housing acting on said mounting means to limit outward movement of said electrode means, means in said housing-engaging and laterally stabilizing said mounting means and hence said electrode means, electronic circuitry means in said housing interconnecting said electrode means and said display screen, and pistol grip means on and extending down from the bottom of said housing substantially centrally thereof for normal gripping of said pistol grip means by one hand of an operator to support said housing in one hand with said pickup electrode means against a patient's chest and said screen disposed toward said operator in ready viewing position for said operator to display an instantaneous electrocardiographic signal.

3,848,583

SPIROMETERS

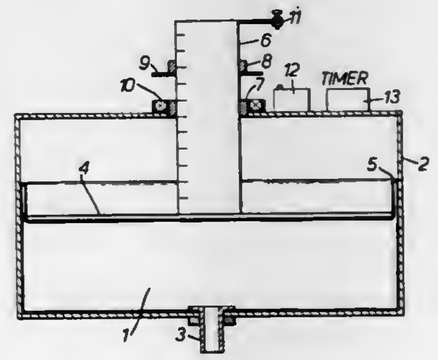
Eric W. Parr, Staines, England, assignor to Wilkinson Sword Limited, London, England

Filed Feb. 7, 1973, Ser. No. 330,190

Claims priority, application Great Britain, Feb. 19, 1972, 7803/72

Int. Cl. A61b *5/08*

U.S. Cl. 128—2.08 **17 Claims**

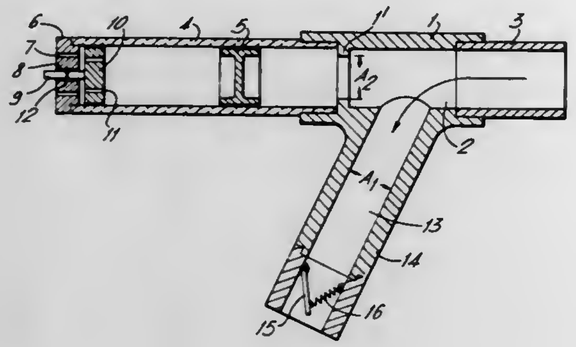


1. A self-contained hand-portable spirometer, comprising a hand-portable container having an inlet for receiving air exhaled by a patient,

an expansible chamber in the container and having an air inlet connected to the said inlet of the container for receiving the air exhaled by the patient, the expansible chamber being defined by wall means of substantially air-tight solid-phase material,
indicating means attached to the container,
control means releasably rendering the indicating means responsive to the chamber expansion for indicating the volume of the said air received,
timing means attached to the container,
means responsive to the initial receipt of the exhaled air by the chamber for initiating the timing means to produce a timing signal for indicating a measuring instant at a predetermined time after the initial receipt of the exhaled air, and
means responsive to the said timing signal for actuating the control means to render the indicating means unresponsive to the expansion of the chamber and to maintain the indication of the indicating means at the said predetermined instant.

3,848,584
INTEGRATED FLOW INDICATOR

Ben Amy Otsap, Encino, Calif., assignor to Meeda Scientific Instrumentation Limited, Tel Aviv, Israel
Filed Apr. 5, 1973, Ser. No. 348,245
Claims priority, application Israel, Apr. 17, 1972, 39232
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 **5 Claims**

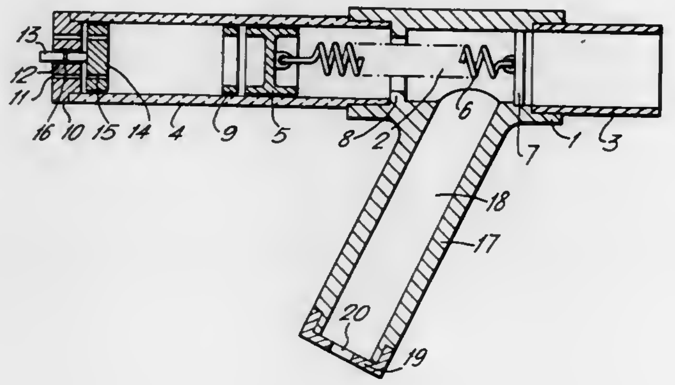


1. An improved integrated flow indicator adapted for measuring the capacity of human breath comprising: a body having a cylindrical bore including a first and second ends; an entrance adapter and mouthpiece formed adjacent to the first end of the cylindrical bore and communicating therewith; a floating piston disposed in the cylindrical bore adjacent to the first end of the cylindrical bore and slidable in the cylindrical bore between a first position adjacent to the first end of the cylindrical bore and a second position adjacent to the second end of the cylindrical bore; at least one passage in the body leading off from the cylindrical bore between the first end of the cylindrical bore and the first position of the piston and having an outlet valve means disposed in the passage adjacent to the outlet of the passage; spring means biasing the valve means to a passage closed position, with the biasing force exerted by the spring means such as to assure that a linear relationship is maintained between the velocity of flow and quantity of air flowing through indicator; and means for returning the piston to its first position after usage of the indicator.

3,848,585
PEAK FLOW INDICATOR FOR FLUIDS

Ben Amy Otsap, Encino, Calif., and Eli Neuman, Kiron, Israel, assignors to Meeda Scientific Instrumentation Limited, Tel Aviv, Israel
Filed Apr. 5, 1973, Ser. No. 348,246
Claims priority, application Israel, Apr. 17, 1972, 39233
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 **7 Claims**

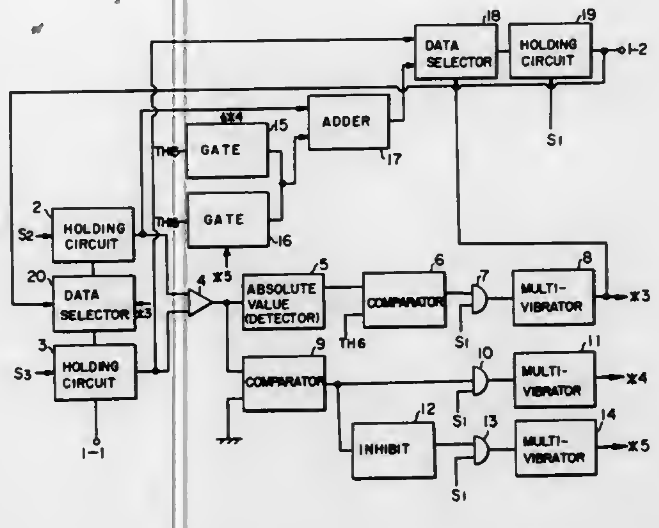
1. An improved peak flow and/or velocity indicator adapted for testing the human breath in order to measure the pulmonary activity of a patient comprising:
a body including a cylindrical bore having a first end and a second end;
a mouthpiece means for use by a patient formed adjacent to the first end of the cylindrical bore and communicating therewith;
a piston disposed in the cylindrical bore and slidable in the cylindrical bore between a first position adjacent to the first end of the cylindrical bore and a second position adjacent to the second end of the cylindrical bore;
a spring disposed in the cylindrical bore so as to bias the piston toward its first position;
at least one passage leading off from said cylindrical bore between the first position and the mouthpiece means and having an outlet therein;
control means for permitting a predetermined flow of air through the outlet of the passage;
indicator means disposed in the cylindrical bore between the second end of the cylindrical bore and the piston and slidable in the cylindrical bore, with the indicator means being normally positioned adjacent to and in contact with the piston and being moved by the piston as the piston moves from its first position towards its second position; and
means for returning the indicator means to its normal position after the indicator means has been moved by the piston, said return means being separate and distinct of said indicator means.



3,848,586
SIGNAL DETECTION SYSTEM

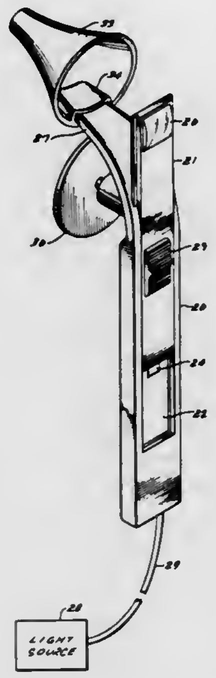
Takaji Suzuki, Kokubunji, and Toshio Ogawa, Hachioji, both of Japan, assignors to Hitachi Ltd., Tokyo, Japan
Filed Dec. 18, 1972, Ser. No. 316,019
Claims priority, application Japan, Dec. 17, 1971, 46-101896
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.1 B **7 Claims**

1. A signal detection system comprising holding means for holding an electrical signal subjected to sampling, detecting means for detecting the differential between sampled values x_i and x_{i+1} (where i is an integer) held in said holding means, comparing means for comparing the output of said detecting means with a predetermined first threshold value, discriminating means for discriminating the polarity of the output of said detecting means, adding means controlled by the output of said discriminating means for adding a predetermined second threshold value to the sampled value x_i in response to the appearance of the sampled value x_{i+1}, means for applying the result of addition by said adding means to said detecting means for the purpose of detecting the differential between the result of addition and another sampled value x_{i+2}, and means controlled by the output of said comparing means to be connected to said adding means in lieu of said holding means for deriving the result of addition from said adding means, said result of addition and said sampled value being selectively derived depending on the appearance or disappearance of the output from said comparing means.



3,848,587
EAR, NOSE AND THROAT EXAMINING INSTRUMENT

Bernard McDonald, 18212 Pacific Coast Hwy., Malibu, Calif. 91265
Filed Nov. 21, 1972, Ser. No. 308,528
Int. Cl. A61b *1/06*
U.S. Cl. 128—9 **8 Claims**

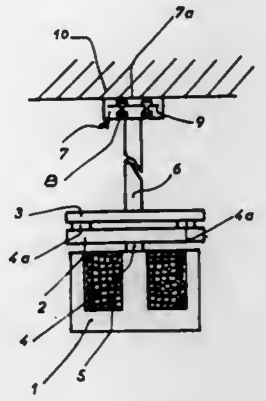


1. An ear, nose or throat (ENT) examining instrument comprising:
an elongated handle;
a non-round speculum support tang at one end of the handle extending at an angle to the length thereof for engaging a socket of a transparent speculum;
a remote light source; and
a fiber optic bundle extending from the light source into the handle and terminating adjacent the end of the tang.

3,848,588
MAGNETOTHERAPEUTIC DEVICES

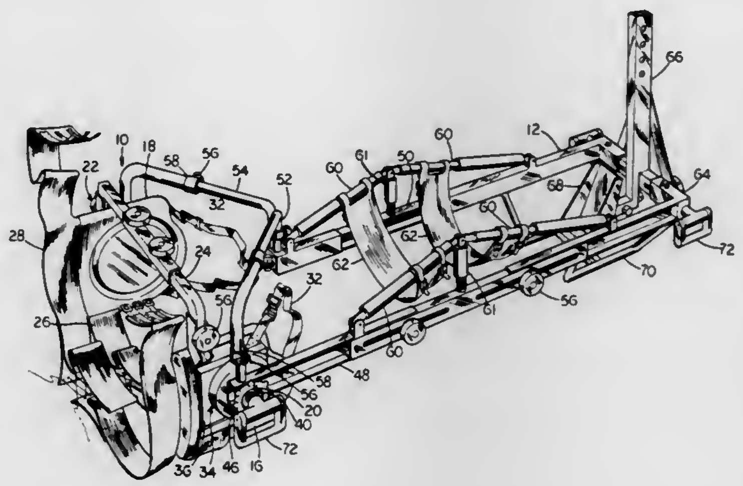
Joseph Miquel, 7 Rue Simonet, Paris, France
Filed May 31, 1972, Ser. No. 258,337
Claims priority, application France, June 2, 1971, 71.19867; Aug. 4, 1971, 71.28524
Int. Cl. A61h *23/02*
U.S. Cl. 128—41 **1 Claim**

1. A device comprising a head portion having a surface for contact with a selected area of the human body; means detachably connectable to said head portion for effecting reciprocatory or vibratory motion thereto, said means comprising a rod detachably fixed at one end thereof to said head portion, a first plate fixedly connected to the other end of said rod, a second plate comprising a non-deformable material and having substantially the same shape and dimensions as said first plate, struts disposed between the two plates at their periphery to space the two plates apart and fixedly connect them together, an electromagnetic circuit fixed to the center portion of said second plate for effecting reciprocatory or vibratory movement of said second plate, said struts and thereby said first plate said rod and said head portion.



3,848,589
TRACTION SPLINT

Guy C. Throner, 13350 Via Madronas Dr., Saratoga, Calif. 95070
Filed Apr. 9, 1973, Ser. No. 349,024
Int. Cl. A61f *5/04*
U.S. Cl. 128—84 C **14 Claims**



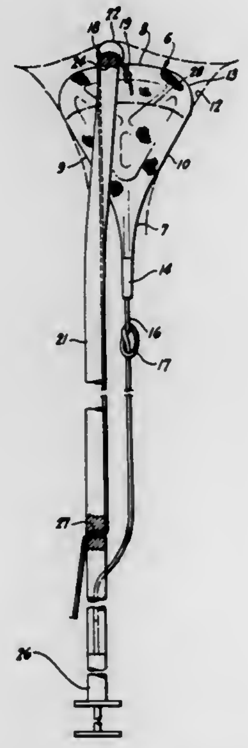
1. A portable orthopedic apparatus for constraining a patient's fractured leg in traction while simultaneously permitting him to assume sitting, reclining, and prone positions and to be moved between bed and wheelchair or the like, comprising
frame means including frame support means for positioning along and supporting a patient's leg and provide an attachment point for traction devices, wherein said frame means comprises inner and outer side bars extending distally from said frame support means to lie along the opposite sides of a patient's leg, a transverse bar interconnecting the distal end area of said side bars, ans traction mounting means attached to said transverse bar,
said frame support means for positioning on the patient at his hip joint area to provide a secure support on the patient for said frame means, wherein the frame support means comprises at least one foundation means for positioning along the patient's body overlying the hip joint,

and means for securing said foundation means to said body so that said foundation means will not move from position when traction is applied to the patient's leg and pivot means pivotally interconnecting said frame means and said frame support means coaxially with the axis through the patient's hip joint for providing pivotal movement between said frame means and said frame support means, and between the patient's femur and the socket therefor. about said hip joint axis,

whereby when a patient is properly placed in traction in said portable orthopedic apparatus, said apparatus enables said patient to freely move between sitting, reclining and prone positions, and while in these positions to be moved about between beds, wheelchairs, and the like, without disturbing the traction forces being exerted on said patient by said apparatus.

3,848,590
INTRAUTERINE DEVICE

Sotiris Kitrilakis, Berkeley, Calif., assignor to Tecna Corporation, Berkeley, Calif.
Filed May 23, 1973, Ser. No. 363,097
Int. Cl. A61f *5/46*
U.S. Cl. 128—129 **5 Claims**

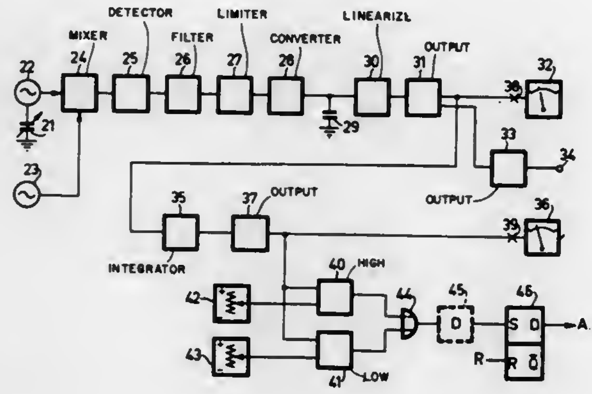


1. In combination, an intrauterine device including an envelope, a loosely knotted filling tube connected to and extending from one portion of said envelope, a cord secured to another portion of said envelope and having at least a partial loop, an inserter rod, and means on said inserter rod contoured to be engaged with and disengaged from said partial loop in said cord.

3,848,591
ELECTRONICALLY-CONTROLLED GAS PRESSURE METER

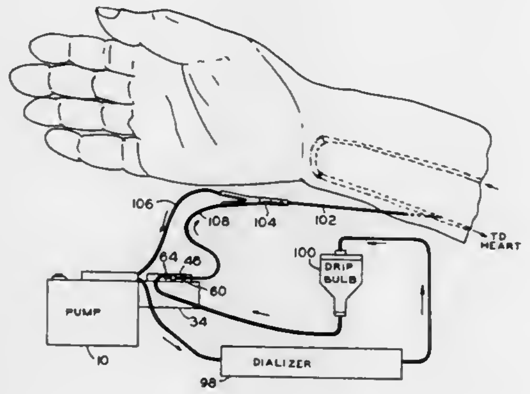
George Edward Smythe, and Geoffrey Keith Orton, both of London, England, assignors to U.S. Phillips Corporation, New York, N.Y.
Filed Oct. 13, 1972, Ser. No. 297,187
Claims priority, application Great Britain, Nov. 2, 1971, 50799/71
Int. Cl. A62b *7/00*
U.S. Cl. 128—145.8 **7 Claims**

1. A gas pressure meter suitable for monitoring the gas pressure in a patient's lungs during ventilation of the patient by means of a medical respirator comprising, a pressure transducer for converting said gas pressure into an equivalent electric parameter, a gas tube coupled thereto, a first oscillator which is connected to the transducer so that the oscillation frequency thereof depends upon the instantaneous value of the transducer output, a second oscillator of fixed frequency, mixer circuit means coupled to said first and second oscillators to derive an output signal having a frequency which is equal to the difference frequency of the oscillator frequencies, a frequency-to analogue converter coupled to the mixer output for providing an analogue signal proportional to the difference frequency, an integrator, means for applying said analogue signal to the integrator which provides an output signal indicative of the mean value of the gas pressure, and visual pressure indicator means for providing an indication of the analogue signal and of said output signal.



3,848,592
SINGLE NEEDLE ALTERNATING FLOW BLOOD PUMP SYSTEM

Charles B. Willock, 16222 S.E. Oatfield Rd., Milwaukie, Oreg. 97222
Filed Apr. 6, 1973, Ser. No. 348,509
Int. Cl. A61m *01/03*
U.S. Cl. 128—214 R **7 Claims**



1. A single needle alternating flow blood pump system for alternate removal of blood from a blood vessel and return to said blood vessel via a single needle, said system comprising: a blood flow path including a blood pump and tubing means communicating between said needle and said blood pump for withdrawing blood from said blood vessel,

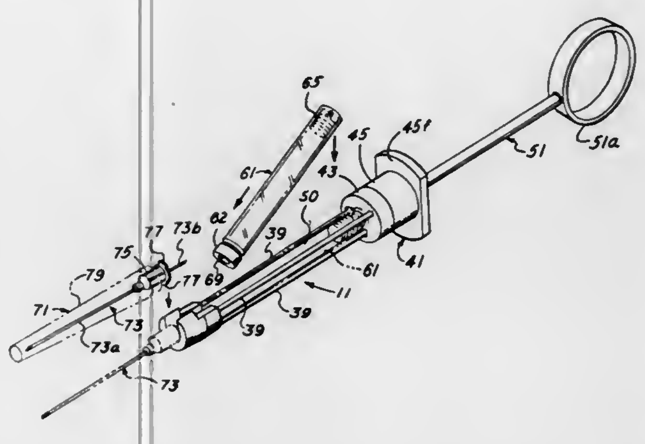
blood receiving means also in said blood flow path through which blood is circulated by said blood pump for subsequent return to said needle,

valve means in said blood flow path by way of which the blood flow is returned to said needle, said valve means being normally closed for impeding the flow of blood to said needle as said pump operates to withdraw blood therefrom,

and means operatively connected to both said pump and said valve means and responsive to a given cyclical condition of said blood pump during pumping operation thereof for cyclically interrupting operation of said blood pump to interrupt withdrawal of blood for predetermined time periods after said blood pump has withdrawn substantially equal quantities of blood and for opening said valve means to return said blood to said blood vessel through said needle, whereby blood is alternately withdrawn and returned via the same needle.

3,848,593
SIDE LOADING DISPOSABLE CARPULE SYRINGE

Brian E. Baldwin, Wilmette, Ill., assignor to Affiliated Hospital Products, Inc., St. Louis, Mo.
Continuation of Ser. No. 79,585, Oct. 9, 1970, abandoned. This application Dec. 7, 1972, Ser. No. 312,986
Int. Cl. A61m *5/24, 5/32*
U.S. Cl. 128—218 DA **17 Claims**



1. A syringe adapted for connection of a needle hub having laterally projecting side flanges, comprising

a body adapted to receive a removable carpule having a closed needle-pierceable forward section,

said body having a forward shouldered end, with a carpule-retaining shoulder,

said shouldered end having connecting means thereon for connection of a needle hub thereto,

said shouldered end having a laterally central needle-butt-end-receiving opening and a laterally interconnecting side opening formed therein and extending along and beyond the entire longitudinal thickness of said shoulder for enabling lateral assembly of a butt-end-protruding needle and hub unit with said syringe body,

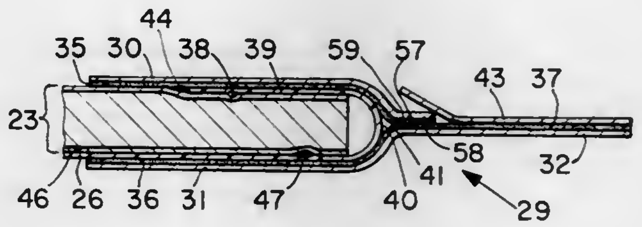
said body having a transverse needle-hub-flange-securing open-sided non-screw-thread-forming slot having longitudinally oppositely facing longitudinally spaced needle-hub-flange-gripping walls and being formed at said shouldered end and forming said connecting means for receiving and gripping the flanged portion of a flanged needle hub as a function of side insertion of a flanged needle hub through said side opening,

said longitudinally oppositely facing longitudinally spaced needle-hub-flange-gripping walls of said slot having a circumferential angular extent to enable relative rotational motion between a flanged needle hub and said gripping walls after insertion of said flanged needle hub through said flange-securing open-sided slot,

said flange-gripping walls defining said slot being variably spaced along the length of said slot to form both a loose-fitting feed slot zone and a laterally relatively more narrow and closer fitting flange-gripping zone which serves to frictionally secure a flanged needle hub open its rotational movement within said slot to bring its flange portion into opposite gripping wall engagement within said laterally relatively more narrow and closer fitting flange-gripping slot zone angular spaced from and angularly connecting with said loose-fitting feed slot zone.

3,848,594
TAPE FASTENING SYSTEM FOR DISPOSABLE DIAPER

Kenneth Barclay Buell, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed June 27, 1973, Ser. No. 374,188
Int. Cl. A61f *13/16*
U.S. Cl. 128—284 **25 Claims**

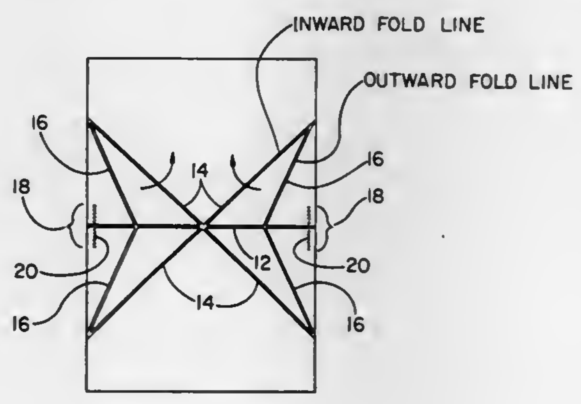


1. In a disposable diaper having a back surface and a front surface, an improved tape fastener system, comprising:

- a. a front surface portion;
- b. first attachment means associated with the front surface portion and the front surface of the diaper for attaching the front surface portion to the front surface;
- c. a back surface portion;
- d. second attachment means associated with the back surface portion and the back surface of the diaper for attaching the back surface portion to the back surface;
- e. a fastening portion; and
- f. third attachment means associated with the fastening portion for attaching the fastening portion to another part of the diaper;
- g. the front surface portion, the back surface portion, and the fastening portion joined and attached in an area of joinder adjacent the edge of the diaper;
- h. whereby forces imposed on the fastening portion are transmitted to both the front and back surfaces of the diaper.

3,848,595
PREFOLDED DIAPER WITH IMPROVED LEG FIT

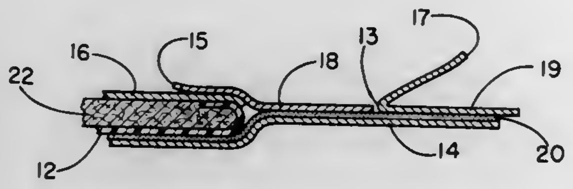
Dan D. Endres, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Apr. 26, 1973, Ser. No. 354,495
Int. Cl. A61f *13/16*
U.S. Cl. 128—284 **5 Claims**



1. In a disposable prefolded rectangular diaper of the wing fold type having top and side edges in which side portions of the diaper are first folded inwardly, in which marginal portions are then folded outwardly, and in which the diaper is further folded approximately in half in the transverse direction; the improvement wherein the facing surfaces of the folded diaper are securely fastened together at each of the side edges in an area closely adjacent the transverse fold in a manner to shorten each of said side edges to prevent extension of the side edges to full length and to provide downwardly extending fin portions adjacent the transverse fold of each of said side edges, which fin portions are retained when the prefolded diaper is opened up and applied to an infant.

3,848,596
FASTENING TAPE ARRANGEMENT FOR DISPOSABLE DIAPERS

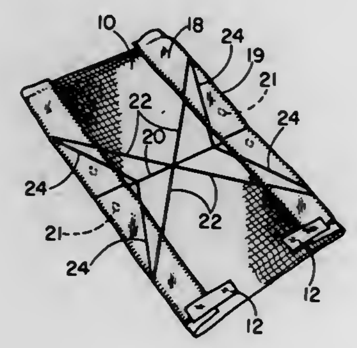
Karl L. Pennau, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed July 2, 1973, Ser. No. 375,816
Int. Cl. A61f *13/16*
U.S. Cl. 128—284 **7 Claims**



1. In a fastening device for disposable diapers which comprises an elongate strip of pressure-sensitive tape having one end portion secured to a back of the diaper with the unsecured end portion of said tape extending beyond the edge of said diaper and having the pressure-sensitive adhesive surface on the unsecured end portion of said tape covered with a removable protective covering, the improvement wherein the protective covering disposed over the pressure-sensitive adhesive surface on the unsecured end portion of said tape is comprised of at least two separately removable sections, each of said sections separately protecting a different area of the adhesive surface on said unsecured portion whereby when one of said sections is individually removed only that area of the adhesive surface initially protected by the removed section will be exposed and made available for fastening purposes while the remaining area of the adhesive surface on said unsecured end portion remains covered.

3,848,597
PREFOLDED DISPOSABLE DIAPER

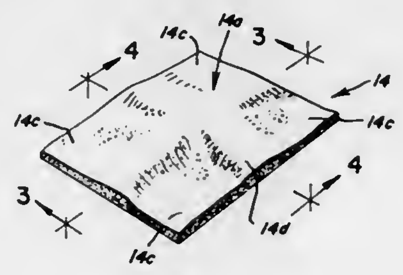
Dan D. Endres, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed July 5, 1973, Ser. No. 376,381
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **5 Claims**



1. A prefolded disposable diaper of generally elongate rectangular shape having a central absorbent pad, a fluid permeable face, a fluid impermeable backing, two side edges and two ends; a narrow panel section at each of said edges being folded inwardly to thereby narrow the transverse dimension thereof; the internal face of each of said inwardly folded narrow panel sections being securely attached to the face of said diaper at areas adjacent to and spaced a short distance from the transverse mid-line of said diaper; said narrowed diaper and said folded narrow panel sections being folded in half transversely into diaper half sections with the fluid permeable face portions disposed on the interior of said transversely folded diaper; each of said half sections including said narrow panel sections being folded inwardly on a first pair of diagonal lines starting from near the midpoint of said transverse fold and extending away from each other to the edge of the fold defining said narrow panel section and at a point short of said diaper ends; each of said half sections including said narrow panel section also being folded outwardly along a second pair of diagonal fold lines with each of said fold lines starting at a point on said transverse fold located midway between the center thereof and the edge of the fold defining said narrow panel section and extending to the edge of said panel section fold at approximately the same point as each of said first pair of diagonal folds, the attachment of said narrow panel sections being such that the full width of the inward fold of the narrow panel sections adjacent the transverse mid-line of the diaper is maintained when worn.

3,848,598
DISPOSABLE DIAPER WITH DOUBLE CONTOURED PANEL

Frederick K. Mesek, Downers Grove, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.
Filed July 9, 1973, Ser. No. 377,351
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **4 Claims**

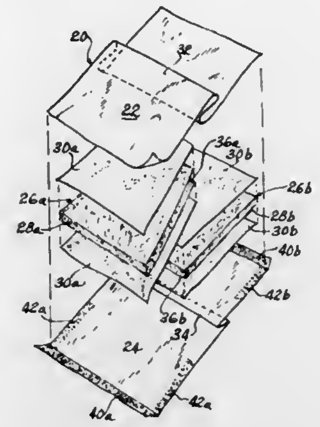


1. A multi-layer diaper comprising: a rectangular water-impervious backing sheet; an absorbent batt in juxtaposition with said backing sheet, said batt being smaller than said backing sheet and centrally disposed with respect thereto, said batt comprising a unitary, highly porous, loosely compacted, cellulosic fibrous layer continuous throughout its thickness and having a smaller quantity of fibers in at least two opposite marginal portions of its area than in a central portion therebetween, said batt having a smooth and gradual thickness contour between said marginal portions and said central portion; and a rectangular porous facing layer disposed over said batt, said loosely compacted batt having greater wettability to water than said facing layer.

3,848,599
CONTOURABLE DIAPER

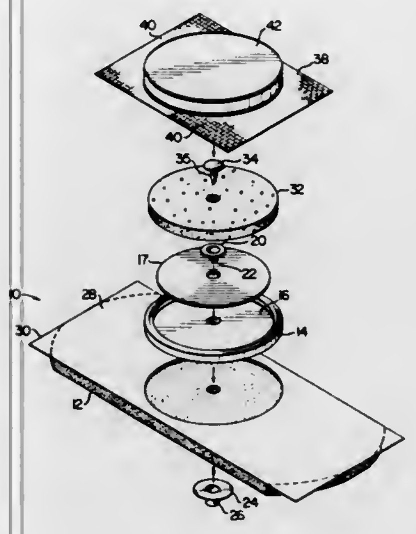
Charles H. Schaar, Lake Zurich, Ill., assignor to The Kendall Company, Walpole, Mass.
Filed Oct. 12, 1973, Ser. No. 406,140
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **18 Claims**

1. A contourable diaper comprising:
- a fluid pervious cover sheet having at least one pleat extending laterally across the cover sheet;
- a fluid impervious back sheet having at least one pleat extending laterally across the back sheet; and
- a pair of absorbent pads intermediate said cover and back sheets, said pads having overlapping ends in the longitudinal central region of the diaper with the pads being free of attachment in the overlapped region, whereby said pads move longitudinally relative each other and the diaper transforms from a generally planar shape to an arcuate configuration responsive to longitudinal expansion of the diaper, with the longitudinal sides of the diaper bowing inwardly in the central region of the diaper to generally conform to the contour of an infant's body.



3,848,600
INDIFFERENT ELECTRODE IN ELECTROSURGICAL PROCEDURES AND METHOD OF USE

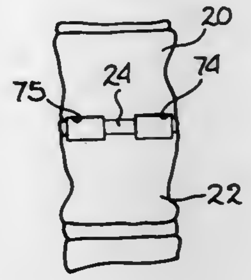
Charles T. Patrick, Jr., and Charles L. Milligan, both of Centerville, Ohio, assignors to NDM Corporation, Dayton, Ohio
Continuation-in-part of Ser. No. 223,107, Feb. 3, 1972, abandoned. This application Jan. 30, 1973, Ser. No. 328,120
Int. Cl. A61n *3/02*
U.S. Cl. 128—303.13 **36 Claims**



1. An indifferent electrode for use in electrosurgical procedures and easily contoured to body surfaces which comprises an electrode-electrolyte assembly including an electrode and an electrolyte composition in which the electrode is an electrically conductive means having at least 0.038 square inch surface thereof in essentially complete contact with said electrolyte composition having at least 2.0 square inches of its conductive surface adaptable to be applied in essentially complete conductive contact with the skin of a patient and having a thickness of at least 10 mils to thus space any part of said conductive means from the skin, said thickness being at least about 165 mils when the conductive element surface area is between about 0.038 and 0.10 square inch, said electrically conductive means, in turn, having a means for electrically connecting said electrode.

3,848,601
METHOD FOR INTERBODY FUSION OF THE SPINE

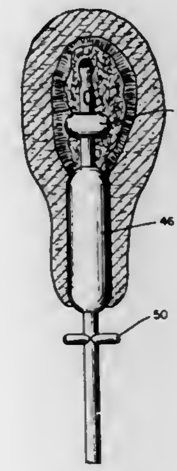
Gabriel W. C. Ma, 3501 Kahawalu Dr., Honolulu, Hawaii 96817, and Don E. Poulson, 23 Kalaka Pl., Kailua, Hawaii 96734
Filed June 14, 1972, Ser. No. 262,687
Int. Cl. A61b *17/32;* **B23b** *51/08, 47/00*
U.S. Cl. 128—305 **6 Claims**



1. The method of performing interbody fusion of the spine between an upper and lower vertebra and across a section of the disc comprising the steps of:
- producing a parallelpiped shaped cavity in the spine by:
  - employing a thin walled hollow chisel of rectangular cross section having exterior dimensions corresponding to the desired rectangular cross section of the cavity and the hollow also being of rectangular cross section;
  - forcing the chisel a desired depth into the spine thereby cutting the sides of the cavity;
  - inserting a cylindrical drill bit within the hollow of said chisel and drilling out the greater portion of the tissue defined by the hollow of said chisel and then subsequently removing the remainder of said tissue; and
  - removing the drill bit from said hollow;
- inserting into said cavity a bone plug having dimensions equal to the dimensions of said cavity.

3,848,602
ABORTION FACILITATING DEVICE AND PROCESS

Morton Gutnick, 8329 Fairview Rd., Elkins Park, Pa. 19117
Filed Apr. 19, 1972, Ser. No. 245,310
Int. Cl. A61m *29/00*
U.S. Cl. 128—344 **16 Claims**

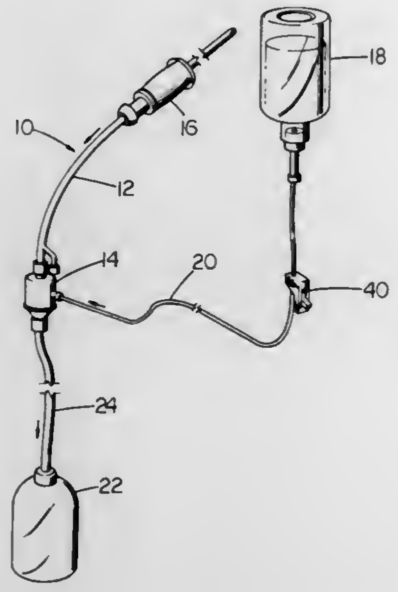


1. A process for performing an abortion to a uterus containing at least one human fetus during approximately the first 24 weeks of pregnancy, comprising steps of:
- a. Inserting into the undilated cervix a radially expandable dilating member which is substantially coextensive therewith;
- b. Substantially radially uniformly and gradually enlarging the expandable portion of said dilating member by the introduction therein of a fluid until the cervix is dilated an amount in the range from about 1.5 cm. to about 4 cm.;

c. Exhausting said dilating member; and
d. Removing said dilating member from the cervix.

3,848,603
ANTISEPTIC CATHETER

Guy C. Throner, 13350 Via Madronas Dr., Saratoga, Calif.
Filed Nov. 2, 1973, Ser. No. 412,310
Int. Cl. A61m *25/00*; **A61f** *5/44*
U.S. Cl. 128—349 R **16 Claims**

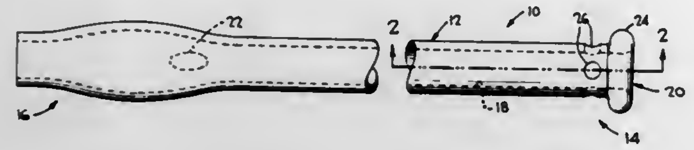


1. An apparatus for preventing infectious organisms from entering the body of a medical patient through or along a catheter for removing body fluids, comprising:

a. a catheter having an inner end portion for insertion into a patient's body and an outer end portion for conducting body fluids to a collection reservoir, and
b. a means for preventing the migration of infectious organisms through and around said catheter from a body fluid flow collection means to a fluid flow discharge source in said body comprising a receptacle having an antiseptic discharge contacting and mixing means in the path of flow of said fluids whereby because of said mixture of antiseptic and body fluids infectious organisms in said body fluids are prevented from migrating through the catheter and into the patient.

3,848,604
SUCTION CATHETER

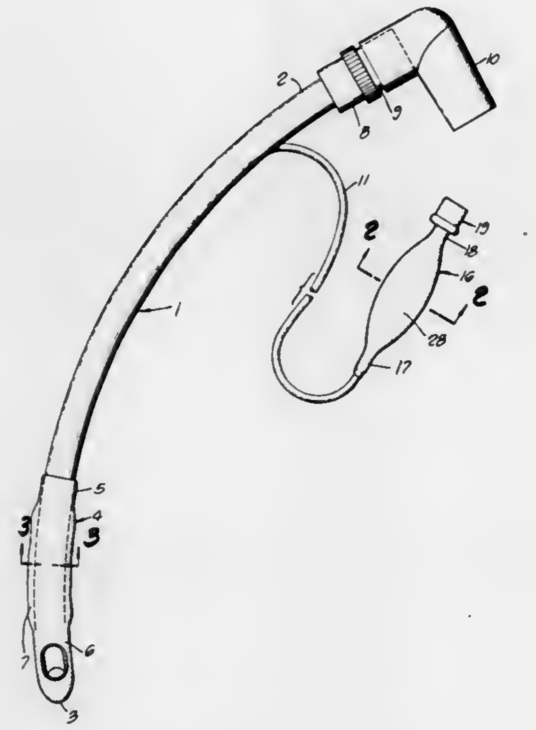
Marvin A. Sackner, Miami Beach, Fla., assignor to Physician's Medical Patent Development Corporation, Newark, N.J.
Continuation-in-part of Ser. No. 196,602, Nov. 8, 1971, abandoned. This application Feb. 16, 1973, Ser. No. 332,823
Int. Cl. A61m *25/00*
U.S. Cl. 128—350 R **8 Claims**



1. A suction catheter of a size suitable for insertion into a body cavity containing a gas such as the nose, mouth or laryngotracheobronchial tree, comprising an elongated tube formed of a flexible material having a lumen running interiorly thereof, said tube having a distal end with an opening for placing said lumen in communication with the interior of the body cavity and a proximal end adapted to place said lumen in communication with a source of pressure lower than that existing at the distal end of said tube, regulation means for controlling, from said proximal end, the suction applied at said distal end, aperture means near said distal end extending through said tube into said lumen, and flange means extending laterally from said tube adjacent said aperture means and between said aperture means and said opening to maintain said aperture means spaced from the walls of said body cavity thereby aiding in preventing occlusion of said aperture means upon application of suction to said catheter.

3,848,605
ENDOTRACHEAL TUBE WITH IMPROVED INFLATION RETENTION MEANS

Andrew Harautuneian, Westlake Village, and William H. Penny, Arcadia, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed Apr. 23, 1973, Ser. No. 353,243
Int. Cl. A61m *16/00, 25/02*
U.S. Cl. 128—351 **6 Claims**



1. In a medical device for insertion into a body passage, comprising, in combination:

an administration tube for insertion in a body passage; said tube including a main balloon circumposed about said tube for inflation and retaining the tube in a relatively fixed position within a body passage during medical treatment;

a branch tube connected at an inner end to the interior of said main balloon for inflating the balloon from outside the body passage;

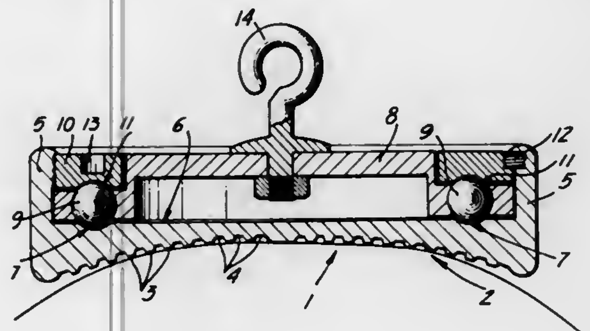
pilot balloon means connected in series to the main balloon through an outer end of the branch tube for access outside the body passage;

said pilot balloon means comprising an elastic material having expansion properties appreciably greater than the corresponding inflation characteristics of the main balloon whereby inflation of the main balloon causes radical exaggerated inflation of the pilot balloon for immediately apprizing a user of the inflated condition of the main balloon in a body passage; and

inflation valve means connected in series to the pilot balloon for permitting inflation pressure to be administered to the balloons; the improvement including means for permitting the central portion of the pilot balloon to freely expand longitudinally and laterally when inflated, said means comprising a pilot balloon having a free central portion communicating at one end with an elastic collar of reduced cross-section, said branch tube having bonded to the outer end thereof an enlarged, rigid collar, said elastic collar being stretched in circumposed, airtight relationship around said bonded collar for obviating the use of adhesives and bonding of the pilot balloon collar to said bonded collar and branch tube.

3,848,606
FETAL EXTRACTOR FOR USE DURING BIRTH

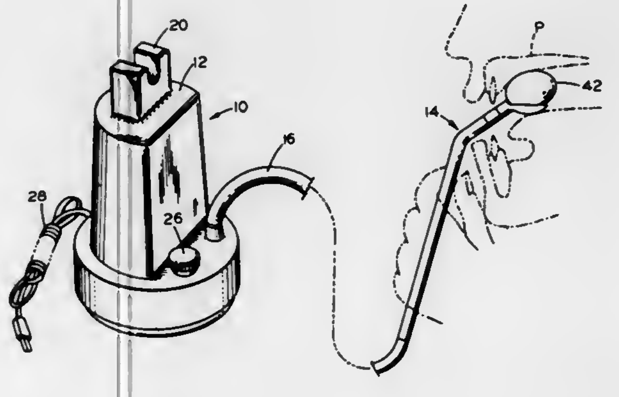
Abraham Chertkoff, 532, 9 de Julio St., Cordoba, Argentina
Filed Aug. 8, 1972, Ser. No. 278,818
Claims priority, application Argentina, Sept. 27, 1971, 238185
Int. Cl. A61b *17/42*
U.S. Cl. 128—352 **5 Claims**



1. A fetal extractor comprising a permanently rigid plate member defining a concave surface, an adhesive substance on said surface for adhering said surface to part of a fetal head, rotatable means opposite said concave surface separate from and engaged with said plate member to move with respect thereto only by rotation about an axis substantially perpendicular to said surface, and means for applying external traction force to said rotatable means to traction the fetus when adhered to said surface.

3,848,607
THERAPEUTIC APPARATUS

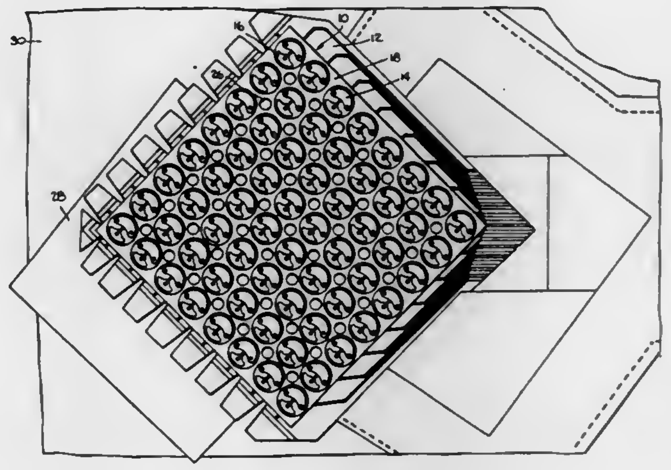
Mel St. Clair, 31 Byram Shore Rd., Greenwich, Conn. 06830
Continuation-in-part of Ser. No. 193,679, Oct. 29, 1971, abandoned. This application June 8, 1973, Ser. No. 368,073
Int. Cl. A61f *7/00*
U.S. Cl. 128—400 **11 Claims**



1. Therapeutic apparatus for the treatment of congestion, infection and similar conditions in the mouth, nasal passages, sinuses and regions of the head surrounding the mouth comprising: a base having a fluid chamber for receiving and storing a fluid; pumping means connected with the base and communicating with the fluid chamber for pumping the fluid received by the chamber; heating means to heat the fluid pumped from the chamber in the base by the pumping means; flexible fluid conduit means connected at one end with the base to receive the fluid pumped from the chamber and having another end provided with two fluid passageways; and a hand-held applicator connected to the other end of the flexible fluid conduit means to permit the applicator to be manually manipulated remotely of the base, the applicator including a relatively rigid, elongated handle, a hollow pillow formed from a fluid impervious material and coupled directly to one end of the elongated handle for support within the mouth compressed against and conformed to the hard palate and rigid backing means extending between the one end of the handle and the hollow pillow, the hollow pillow also being connected to the other end of the flexible fluid conduit means with the two fluid passageways communicating with the interior of the pillow to permit the pumped and heated fluid to be circulated in and out of the pillow, the pillow being of a bulbous configuration suitable for insertion in the mouth and having a pliable surface portion extending at least from one lateral side of the pillow over the upper part of the pillow pressed against the palate to the other lateral side, the pliable surface portion being smooth to permit efficient transfer of dry heat through the pillow material into the hard palate from the fluid circulated through the interior of the pillow, the rigid backing means having a concave contour, diverging from the axis of the handle at the one end and extending under the pillow to provide support for the pillow along the full periphery of the area of contact between the pliable surface and the palate.

3,848,608
SUBJECT INTEGUMENT SPATIAL STIMULATOR

Charles E. Leonard, So. Burlington, Vt., assignor to General Electric Company, Burlington, Vt.
Filed July 23, 1973, Ser. No. 381,850
Int. Cl. A61n *1/04*
U.S. Cl. 128—419 R **6 Claims**



1. A cutaneous stimulator comprising:
a plurality of pairs of first and second immediately adjacent, noncontiguous contacts,
the plurality of said first contacts being arranged in columns, and
the plurality of said second contacts being arranged in rows, each of said contacts on each respective column being interconnected, and
each of said contacts in each respective row being interconnected;
a ground plane contact means immediately adjacent and noncontiguous to each of said first and second contacts;
means for energizing a selected column and a selected row including
first means for providing a first electrical potential between the selected column and said ground plane contact means which is less than the cutaneous breakdown threshold potential,
second means for providing a second electrical potential between the selected row and said ground plane contact

means which is less than the cutaneous breakdown threshold potential,

the sum of said first and second electrical potentials between said selected column and row being greater than the cutaneous breakdown threshold potential.

3,848,609
AXIAL FLOW TYPE HARVESTING MACHINES

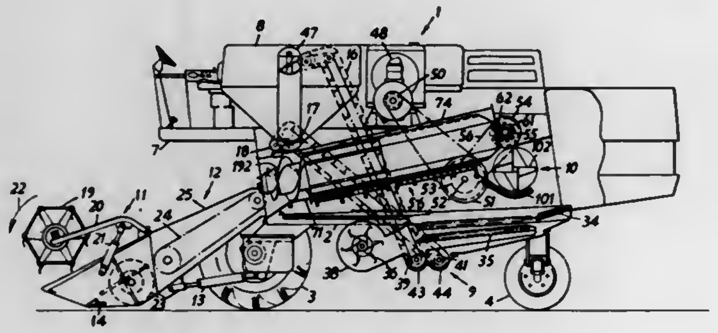
Frans H. Mortier, Maldegem; Gerard O. Jacobs, Ichtegem; Frans J. G. C. Decoene, Zedelgem; August Braet, Beernem, all of Belgium, and Edward W. Rowland-Hill, Lancaster, Pa., assignors to Clayson N. V., Zedelgem, Belgium

Filed June 29, 1972, Ser. No. 267,268

Claims priority, application Great Britain, July 6, 1971, 31576/71; Sept. 21, 1971, 43973/71

Int. Cl. A01f *7/06*

U.S. Cl. 130—27 T **18 Claims**



1. An axial flow type harvesting machine such as a combine harvester having a generally fore-and-aft extending axial flow type threshing and separating mechanism comprising:

a generally fore-and-aft extending casing;

a concave provided in said casing;

rotor means mounted in said casing, the rotor means having a generally cylindrical body portion;

at least one threshing member extending from the surface of said body portion for cooperating with said casing to operate on the crop material to be harvested, the threshing member having an outer rasp bar section and an inner support section, the height of the support section being substantially larger than the height of the rasp bar section and substantially smaller than the radius of the generally cylindrical body portion.

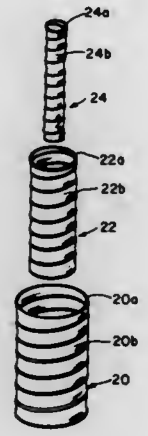
3,848,610
HAIR CURLER CONSTRUCTION AND CASE

Lynn Carol Thomas, 2727 Clay St., San Francisco, Calif. 94111

Filed June 14, 1973, Ser. No. 370,131

Int. Cl. A45d *2/02*

U.S. Cl. 132—39 **8 Claims**



1. In a hair curler of the type having an axially compressible coil-wound resilient metal wire frame the improvement comprising a highly flexible, membraneous hair supporting sleeve shrink-fit conformed around the exterior of said frame so that each portion of the sleeve intermediate adjacent metal portions of the frame forms a smooth, slightly concave surface so that the sleeve is axially collapsible with said frame, said concave surfaces adapted to collapse inwardly to allow adjacent metal portions of said frame to be in near abutment and to provide an unoccupied region in the frame interior.

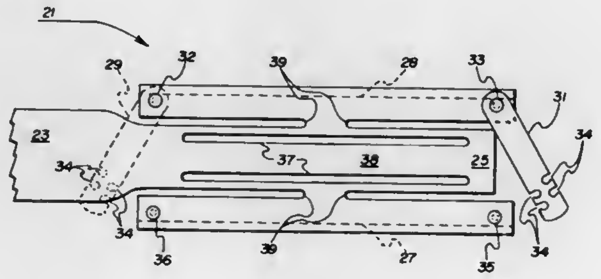
3,848,611
HAIR CUTTING GAUGE

Josephine Q. Asaro, 3627 Plumosa Dr., San Diego, Calif. 92106

Filed July 9, 1973, Ser. No. 377,206

Int. Cl. A45d *24/00*

U.S. Cl. 132—45 **1 Claim**



1. A hair cutting gauge for gauging the residual length of a person's hair after cutting comprising:

a first comb section;

a second comb section; and

adjustable coupling means coupled to said first and second comb sections and operable for coupling said first and second comb sections in parallel disposition and adjustably displaced by approximately the desired residual length of the hair being cut.

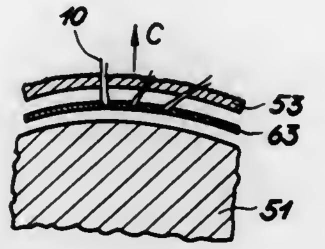
3;848,612
WIG

Erwin Kohler, Ahrensburg near Hamburg, Germany

Division of Ser. No. 724,334, April 26, 1968, Pat. No. 3,589,376. This application Mar. 19, 1971, Ser. No. 126,065

Int. Cl. A41g *5/00*

U.S. Cl. 132—53 **1 Claim**



1. A wig, comprising in combination, a support element consisting essentially of a single skin-thin transparent foil of a flexible synthetic resin contoured to substantially a portion of the shape of a head, said foil having an outer surface having a nonreflectant and light absorbing matte finish, and hairs having first end portions which are unknotted and entirely embedded in elongated condition in said foil without extending through said foil and second opposite end portions extending freely outward from said outer surface.

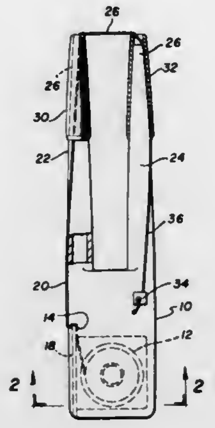
3,848,613
DENTAL FLOSS HOLDER

John F. Sheehan, 318 Charles St., Fitchburg, Mass. 01420

Filed May 31, 1973, Ser. No. 365,472

Int. Cl. A61c *15/00*

U.S. Cl. 132—92 R **3 Claims**



1. A dental floss holder comprising a pair of elongated tapering self-sustaining arms connected together at corresponding ends and separated at the opposite ends, the latter being free-ended,

an elongated interiorly tapering hollow cap for each free end portion of each arm, the caps conforming interiorly to the exterior of the respective arm free end portions and closely fitting extending beyond the same, the caps being open at both ends, and being slidably associated with the free end portions of the arms and being selectively removable therefrom,

dental floss applied to each free end portion of each arm and extending under its cap out of the narrower one of the open ends of the cap directly to the corresponding end of the other cap, the floss being clamped between the caps and their arm ends for the entire lengths of the caps, the floss being held taut thereby and by the self-sustaining arms, the caps and the free end portions of the arms being in frictional contact along the entire lengths of the caps, and a floss supply recess, a door therefor, said door being positioned to pinch the floss and apply tension thereto, controlling the feed of the floss from the supply recess.

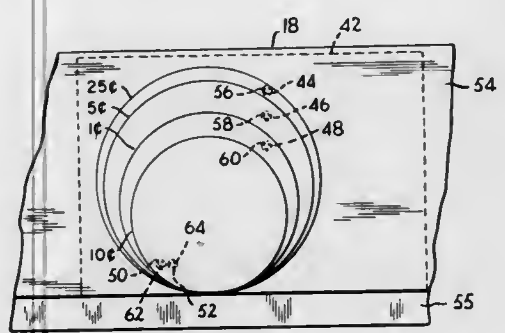
3,848,614
COIN PROCESSOR HAVING ERROR-INDICATING SYSTEM

Barton C. Conant, Westport, and Szee Ming Yao, Norwalk, both of Conn., assignors to Abbott Coin Counter Co. Inc., Greenwich, Conn.

Filed Dec. 7, 1973, Ser. No. 422,744

Int. Cl. G07d *3/16*

U.S. Cl. 133—8 R **11 Claims**



1. A system for providing indication of the presence of foreign matter on the guide rail of an elongate coin chute of a coin processor, said chute supporting first and second sensor means successively longitudinally positioned along said guide rail for respectively generating first and second output signals upon the transit of a coin through said chute, said first and second output signals cooperatively indicating the denominational value of said coin, said system comprising counter circuit means incremented responsively to said first output signal and decremented responsively to said second output signal for generating an output signal upon attaining a preselected count and indicator means operated on the occurrence of each counter circuit means output signal for providing said indication of said presence of foreign matter.

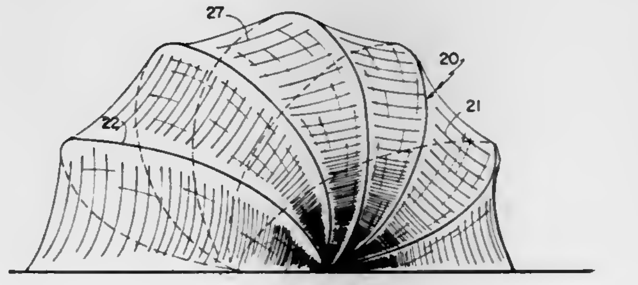
3,848,615
COLLAPSIBLE AND FOLDABLE SHELTER

Gerhardt Allan Warner, and Kurt E. Warner, both of 52 Talbot Ave., Winnipeg, Manitoba, Canada

Filed Feb. 1, 1973, Ser. No. 328,749

Int. Cl. A45f *1/16*

U.S. Cl. 135—4 R **4 Claims**



1. A collapsible and foldable enclosure comprising in combination a continuous helical coil spring forming a frame and a flexible cover secured to the individual coils of said coil spring, and means to hold parts of said individual coils together on common parts of the perimeter thereof and in consecutive order, said means includes at least one tie member engaging around said common parts of said individual coils, all of said coils passing through said tie member in consecutive order, whereby said frame can be moved from between the open position with the ends engaging a surface thus forming a partial torus, and the closed position with the individual coils in an overlapping relationship of substantially circular configuration, and means to secure said cover to said individual coils thereby defining gores between said individual coils, said continuous helical coil spring transferring the gravitational and aerodynamic load from one individual coil to the other individual coils.

ERRATUM

For Class 135—25 see:
Patent No. 3,848,740

3,848,616
FLUID FLOW CONTROL SYSTEMS

George E. Sanner, Cypress Hill, Md., assignor to Santron Corporation, Towson, Md.

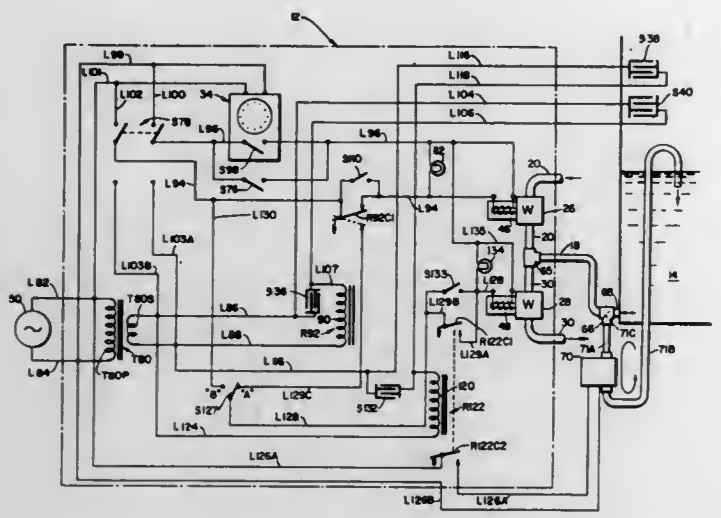
Continuation-in-part of Ser. No. 18,829, Feb. 12, 1970, abandoned, which is a division of Ser. No. 456,787, May 18, 1965, Pat. No. 3,500,844. This application July 18, 1972, Ser. No. 272,793

Int. Cl. H01h *35/18;* **G05d** *9/12*

U.S. Cl. 137—78 **13 Claims**

1. The combination of a receptacle and means for controlling the level of the liquid in said receptacle, comprising: a fluid conduit means communicating with said receptacle; valve means for controlling the flow of fluid through said conduit means; valve actuating means operable in a first mode of operation to actuate said valve means automatically upon

a change of the level of fluid in the receptacle at any time, said valve actuating means being operable in a second mode of operation to actuate said valve means upon a change of the level of fluid in the receptacle within a selected time period, and said valve actuating means being operable in a third mode of operation to actuate the valve means at any time and irrespective of whether there is a change in the level of fluid in the receptacle; and means for selecting the one of said first, second, and third modes in which it is desired that said valve actuating means be operable.



3,848,617

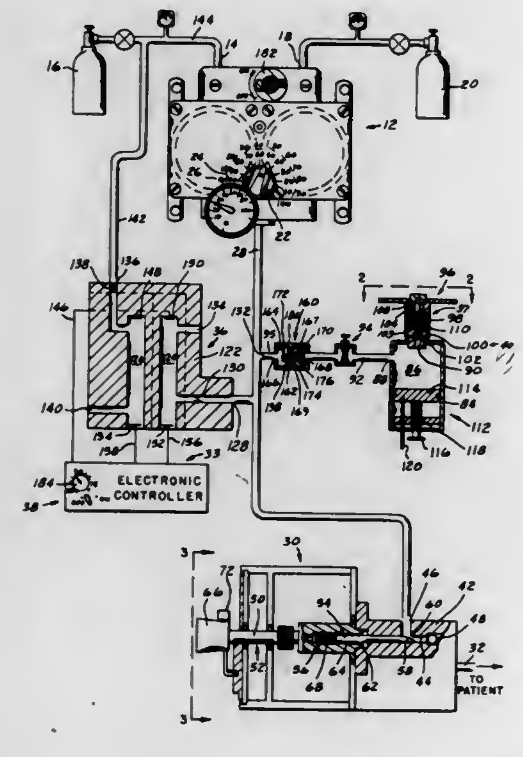
MEANS FOR MAINTAINING A FIXED FLOW THROUGH A BREATHING REGULATOR IN AN INHALATION SYSTEM

Walter L. Dray, Davenport, Iowa, assignor to The Bendix Corporation, South Bend, Ind.

Filed Dec. 29, 1972, Ser. No. 319,422

Int. Cl. A61m *16/00;* **F16k** *37/00;* **G05d** *11/13*

U.S. Cl. 137—88 12 Claims



1. In a therapeutic inhalation system having a mixing regulator for mixing a first fluid with a second fluid in a predetermined ratio and delivering a resultant breathable fluid mixture at a flow rate above a predetermined fixed flow rate through a supply conduit to a flow control valve in response to an operational requirement of a recipient, relief valve means controlled by an operator for diverting a portion of said breathable fluid mixture to the atmosphere when said operational requirement of the recipient is below said fixed flow rate to maintain said predetermined ratio, said relief valve means comprising:

adjustable means connected to said supply conduit for allowing an amount of the breathable fluid mixture between said fixed flow rate and a selected flow rate to escape into the atmosphere to maintain said predetermined ratio of fluid mixture at said fixed flow rate through said mixing regulator; and

indicator means positioned by an operator for varying the selected flow rate in the adjustable means in a direct relationship with a change in the flow control valve.

3,848,618

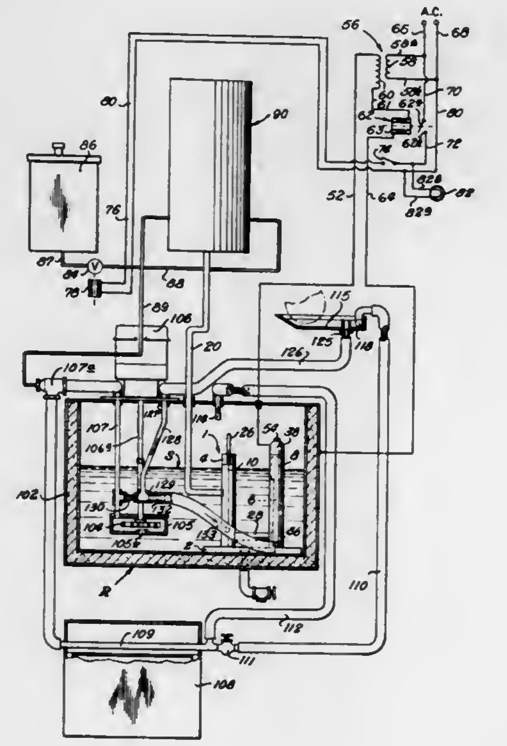
APPARATUS FOR MIXING FLUIDS OF DIFFERENT SPECIFIC GRAVITY

Edwin H. Royse, 4720 Vicksburg St., Dallas, Tex. 75207

Filed Dec. 29, 1972, Ser. No. 319,721

Int. Cl. G05d *11/06*

U.S. Cl. 137—91 15 Claims



1. A device for controlling the specific gravity of a solution of first and second liquids comprising: a reservoir; means for admitting the solution into the reservoir; actuated valve means adapted to admit first liquid into the means for admitting the solution into the reservoir; a U-shaped tube in said reservoir, said U-shaped tube having first and second legs, each of said legs being opened to atmosphere; means to admit solution to said first leg to form a column of solution therein; means associated with said first leg to adjust the height of the column of solution; control liquid in said second leg forming a column of control liquid therein; and an electrode secured to said second leg, said electrode being engageable by said control liquid to sense changes in the level of the column of control liquid, said electrode being adapted to actuate said actuated valve means.

3,848,619

IMPROVEMENTS IN PRESSURE-RESPONSIVE HYDRAULIC CONTROL VALVE ASSEMBLIES

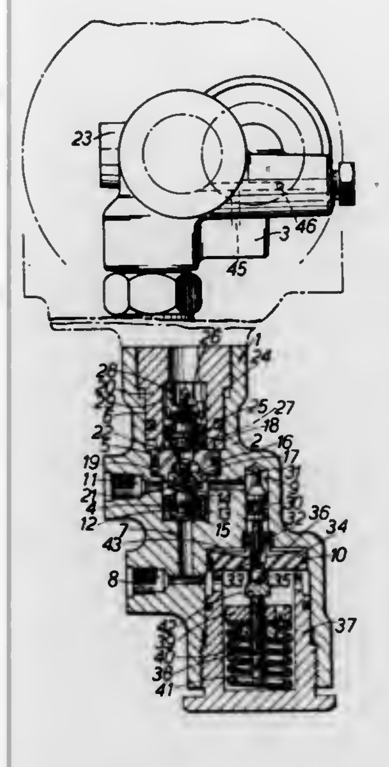
Robin Adam Cochrane, Haseley Knob, England, assignor to Girling Limited, Birmingham, England

Division of Ser. No. 275,352, July 26, 1972. This application June 8, 1973, Ser. No. 368,016

Claims priority, application Great Britain, July 31, 1971, 36100/71

Int. Cl. F16k *31/363*

U.S. Cl. 137—116 5 Claims



1. An hydraulic control valve assembly comprising a housing having an inlet, an outlet, a bore communicating with said outlet, and a counterbored recess extending from said bore and communicating with said inlet, an abutment shoulder between said bore and said counterbore, a valve for controlling communication between said inlet and said outlet and comprising a valve member, a stem carrying said valve member, a spring abutment adjustably mounted on said stem, a seating member, a hollow non-adjustable closure member sealingly located within said recess to close said recess and to clamp said seating member against said abutment shoulder, and a compression spring for urging said valve member into engagement with said seating member acting between said closure member and said spring abutment, a piston working in said bore and responsive to fluid pressure in said outlet, and a portion of said piston acting on said valve member through said seating member, said valve member being movable away from said seating member when an opening force generated by said fluid pressure acting on said piston exceeds a predetermined value, and adjustment of said spring abutment with respect to said stem alters the loading of said compression spring whereby said opening force generated by said fluid pressure can be adjusted.

3,848,620

FLUID PRESSURE MODULATOR AND SYSTEM

John F. Fisher, and Burton S. Zeller, both of Jackson, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

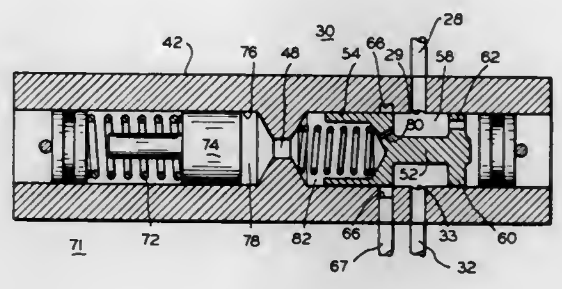
Filed May 14, 1973, Ser. No. 360,203

Int. Cl. F16k *31/12*

U.S. Cl. 137—116.3 10 Claims

1. In a system for actuating a fluid pressure operated device, in combination:

a. a pressure modulator including a housing having an elongated, substantially uniform diameter opening therein with a closed end, a spool member movable within said opening, a first land portion on said spool member near said closed end and having an aperture therethrough, a second land portion on said spool member, spaced from said first land portion and forming with the inner surface of said opening and said closed end, via said first land portion aperture, a variable volume substantially uniform diameter chamber, a fluid inlet port communicating with said chamber and arranged to admit pressurized fluid to the chamber, a fluid outlet port operatively connecting said chamber with said device, a vent in said housing connected with said opening, one end of said spool member abutting the said closed housing end when said modulator isn in a quiescent position and means for resisting an increase in the volume of said chamber, the said spool member being arranged to move away from the said closed housing end in response to an increase in fluid pressure in the said chamber, the said vent being arranged to be normally covered by the said second land portion and to be uncovered when the said spool member moves more than a predetermined distance, with the said land portions being spaced apart in a manner so as to permit the regulation of fluid pressure by controlling only the fluid volume outflow from said chamber;



b. an accumulator including another housing having another elongated opening and having another closed end, a piston movable within said another opening, resilient means interposed between said another closed end and said piston and a passageway between said modulator and accumulator permitting only fluid communication between said accumulator and said modulator chamber, whereby an increase in pressure in the said chamber, to an amount above a predetermined value, causes said spool member to uncover said vent port and an increase in pressure in said chamber causes a build-up of pressure in said accumulator; and

c. multiple bias means responsive to the said build-up of pressure in said accumulator causing said spool member to move back again toward its quiescent position.

3,848,621

DOUBLE BLOCK AND BLEED GATE VALVE TO CONTROL UNIDIRECTIONAL METER PROOVER SPHERE

Harvard G. Dickenson, Tulsa, Okla., assignor to Valve Specialty Supply, Inc., Tulsa, Okla.

Filed Dec. 17, 1973, Ser. No. 425,230

Int. Cl. G01f *25/00*

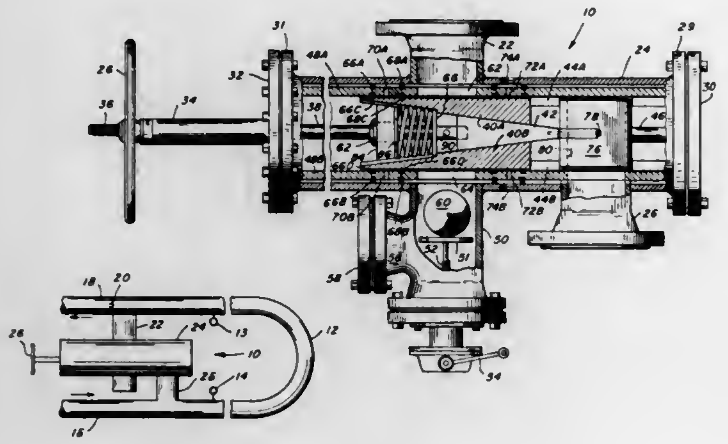
U.S. Cl. 137—268 8 Claims

1. A sphere launcher for a meter prover system comprising:

a. a horizontal chamber having at least one inlet opening on its upper surface, and at least one outlet opening on its lower surface, displaced horizontally from each other;

b. means connecting said outlet opening to the inlet pipe of a meter prover loop, placed below said outlet, and means connecting the outlet pipe of said prover loop, above said chamber inlet, to said inlet;

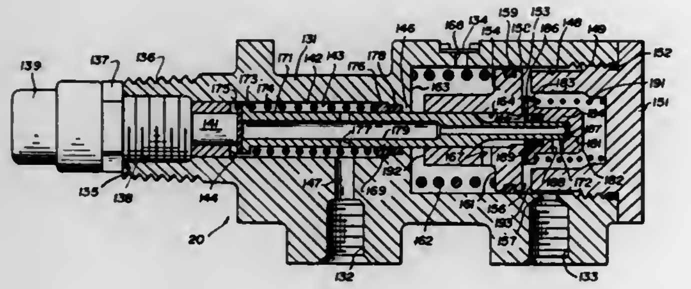
c. seal means and sphere catcher means inside said chamber, arranged so that when said sphere catcher means is aligned with said outlet, said seal means is sealing said inlet, and means to move said seal means and sphere catcher means so that said sphere catcher means is aligned sequentially with said inlet and said outlet; and wherein



d. said seal means including wedge means to force sealing surfaces outwardly in contact with sealing rings to seal said inlet from said outlet.

3,848,622
TEMPERATURE MODULATED PRESSURE REGULATING VALVE

Gordon F. Cummings, III, Rockford, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Division of Ser. No. 307,883, Nov. 20, 1972, Pat. No. 3,804,217. This application Sept. 14, 1973, Ser. No. 397,491
Int. Cl. F16k *17/38;* G05d *23/00*
U.S. Cl. 137—468 **1 Claim**



1. A thermally responsive pneumatic pressure regulating valve for providing a regulated pressure head inversely proportional to a temperature signal, said valve having a body including a supply chamber and a regulating chamber spaced from each other, an inlet port communicating with said supply chamber adapted for connection to a source of fluid pressure, an outlet port communicating with said regulating chamber adapted for connection to control apparatus, and a vent port spaced from said outlet port;

a temperature sensor mounted in said body having a portion extending externally thereof in communication with said temperature signal and including a movable portion disposed within said supply chamber, said movable portion being adapted for extensile movement in response to temperature rise;

an annular balance piston slidably mounted within said body between said outlet port and said vent port including a central aperture, one face of said piston being adjacent said outlet port defining one end of said regulating chamber, said one piston face including a first annular valve seat surrounding said central aperture;

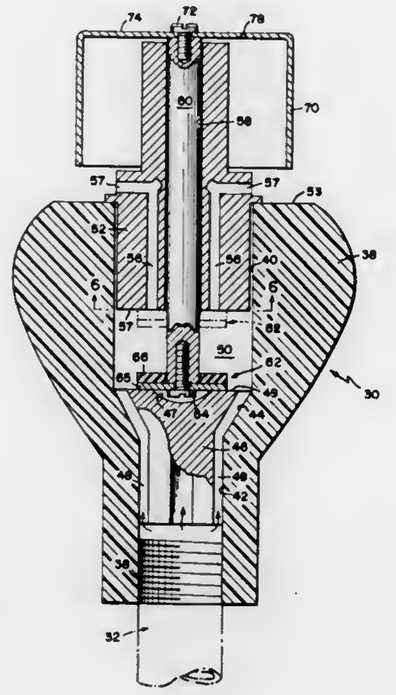
a regulating spring disposed between an opposite face of said piston adjacent said vent port and a shoulder formed in said body adjacent said supply chamber, said regulating spring biasing said piston against the force of a regulated pressure in said regulating chamber;

an elongated hollow slideable plunger mounted in said body extending through the central apertured portion of said piston, said plunger having a first end portion thereof disposed within said supply chamber engageable with said movable portion of said temperature sensor, said first end portion including a passage communicating the interior of said plunger with said supply chamber, said plunger having a second end portion thereof disposed within said regulating chamber including a second annular valve seat defined thereon; and

a movable pilot member disposed in said regulating chamber having a flange portion including a first annular sealing surface adapted for engagement with said first annular valve seat of said piston and having a socket portion including a second annular sealing surface adapted for engagement with said second annular valve seat of said plunger, said pilot member being resiliently urged toward sealing engagement with said piston, being movable out of engagement with said first annular valve seat in response to extensile movement of said plunger for bleeding pressure fluid from said regulating chamber through said central aperture of said piston member, said second sealing surface being separated from said second valve seat in response to retractile movement of said plunger for admitting pressure fluid to said regulating chamber.

3,848,623
AIR TRAP

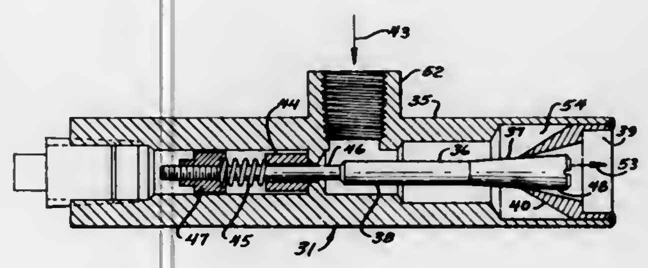
Harold J. Schramm; John R. McCullough, and Joseph P. Yarnall, Jr., all of West Chester, Pa., assignors to Schramm, Inc., West Chester, Pa.
Filed Sept. 5, 1972, Ser. No. 286,008
Int. Cl. F16t *1/30*
U.S. Cl. 137—186 **9 Claims**



1. For use in a system for producing bubbles in which an elongated conductor has an internal passage to which gas is supplied thereto from a compressor and a plurality of openings along its length for allowing gas to flow outwardly from its internal passage to produce bubbles, an air trap to allow liquid to flow readily from the internal passage upon the supply of gas thereto from the compressor comprising a valve body, an inlet means adapted to be connected to the internal passage of the conductor, an outlet means for discharging fluid to the exterior of said valve body, passageway means interconnecting said inlet and outlet means, a valve member constructed and arranged for opening and closing said passageway means and movable between a first position in which said passageway means is open and a second position in which said passageway means is closed, and means responsive to the discharge of gas from said outlet means to actuate said valve member to said second position closing said passageway means, and including means responsive to pressure of the gas upstream of said valve member when said valve member is in said second position for holding said valve member in said second position as long as said pressure is maintained, and means for moving said valve member to its first position when said pressure is released.

3,848,624
SELF-CLEANING VALVE FOR REFRIGERATING APPARATUS

Ronald A. Banike, Elmhurst, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.
Filed Sept. 29, 1972, Ser. No. 293,408
Int. Cl. F16k *25/00;* F25d *3/12*
U.S. Cl. 137—242 **2 Claims**

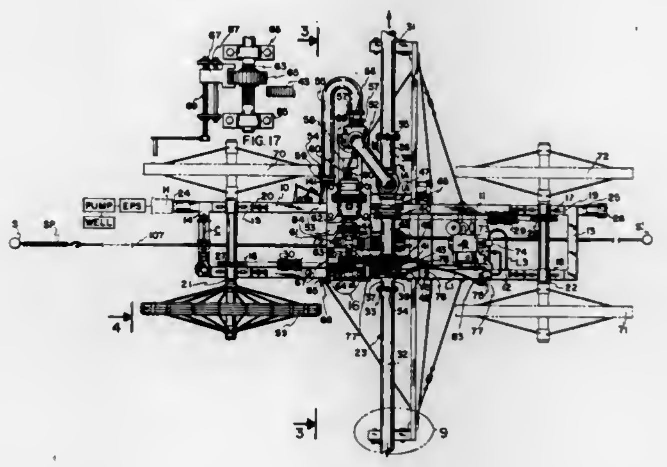


1. A self-cleaning valve for a liquid refrigerant that also exists as a solid, comprising: a valve body having an inlet and an outlet for flow of said refrigerant therethrough in a downstream direction; a valve movable part in said body mounted for movement along a longitudinal axis and having an annularly tapered substantially rigid valve opening and closing surface; and an annular valve seat part having a substantially rigid seal surface for sealingly engaging said rigid tapered closing surface, said movable part moving in said downstream direction to open the valve and modulate refrigerant flow therethrough, said valve seat rigid seal surface comprising a scraping portion for engaging the tapered surface of said movable part, said scraping portion converging in an upstream direction toward said axis whereby the opening and closing movements of the movable part result in the scraping portion scraping solid refrigerant from that portion of the movable valve surface disposed upstream from the area of sealing engagement in the valve closed position.

3,848,625
PRIME MOVER FOR AND IN WHEEL-LINE IRRIGATION APPARATUS

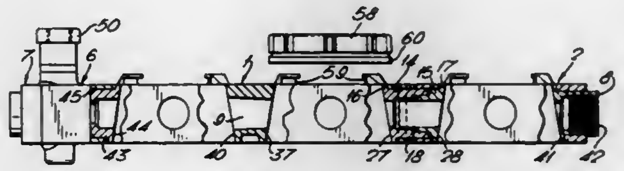
Burr Courtright, LaGrande, Oreg., assignor to CH$_2$O, Inc., LaGrande, Oreg.
Filed Nov. 7, 1973, Ser. No. 413,704
Int. Cl. A01g *25/02;* B05b *3/12*
U.S. Cl. 137—344 **12 Claims**

1. An agricultural, side-roll wheel-line prime mover, including in combination: a frame; forward and rearward, parallel, mutually spaced axles journaled to said frame; wheels mounted upon each of said axles; transverse, central, water-delivery, wheel-line conduit journaled to said frame for axial revolvement; water inlet structure affixed to said frame; water-pressure-to-mechanical-torque converter means mounted to said frame and having a revolvable output drive, a fluid inlet coupled to said water inlet structure, and a fluid inlet, said wheel-line conduit including wall-aperture passageway means; stationary means in part surrounding and sealing said wheel-line conduit over and at opposite sides of said passageway means and coupled to said fluid outlet for passing fluid from said converter means into said wheel-line conduit, for water-delivery irrigation thereby; revolvable torque-responsive means mounted upon and keyed to said central conduit for imparting revolvement to the latter; and mechanical means coupled to and between said revolvable output drive and said torque responsive means for imparting torque to the latter to thereby revolve the same and said wheel-line conduit.



3,848,626
MEANS FOR COUPLING FLUID CONTROL COMPONENTS IN FLUID LINES

Leslie William Smith, Shipston-on-Stour; Michael John Wates, Bishampton, and Robert John Tait, Shipston-on-Stour, all of England, assignors to C. A. Norgren Co., Littleton, Colo.
Filed July 19, 1973, Ser. No. 380,885
Claims priority, application Great Britain, July 18, 1972, 33500/72
Int. Cl. F16k *11/10*
U.S. Cl. 137—269 **9 Claims**

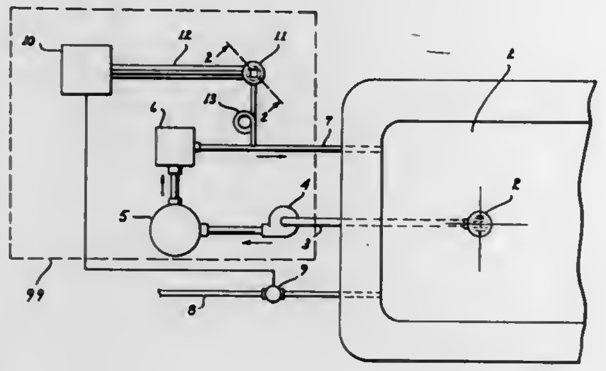


1. In apparatus for supporting and connecting fluid control and/or conditioning units to permit flow of fluid through such units in series wherein said apparatus includes at least one pair of frames each capable of supporting at least one of said units in a position so that fluid inlet and outlet ports of each said unit are within the frame, each of said frames having local peripheral openings via which fluid can flow to and from a unit located in said frame, the improvement comprising:

at least one pair of tubular insert components which are insertable through two of said peripheral openings, one in one frame and one in the other frame, said insert components having:
- sealing faces for co-operating with sealing faces of said units in said frames; and
- co-operating means to provide a fluid path from a unit in one frame to a unit in the other frame.

3,848,627
APPARATUS FOR MAINTAINING THE WATER LEVEL WITHIN A SWIMMING POOL TO PREDETERMINED LIMITS

Littleton D. Page, Rt. 2, Box 798, Tucson, Ariz. 85715
Continuation-in-part of Ser. No. 220,976, Jan. 26, 1972, Pat. No. 3,759,286. This application July 20, 1973, Ser. No. 381,360
Int. Cl. G05d *9/12*
U.S. Cl. 137—392 **2 Claims**

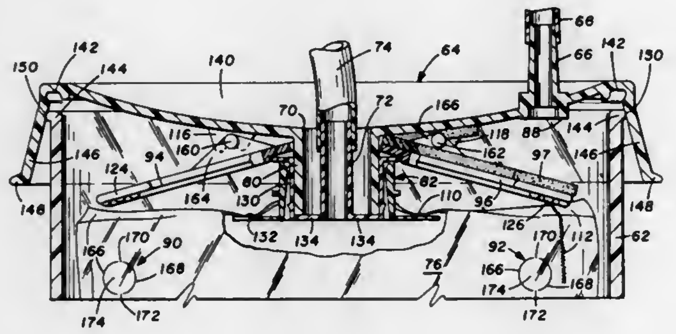


1. In a system for automatically maintaining the water level in a swimming pool having a suction line, a pump and a return line, and including a makeup water line connecting the return line to a source of makeup water under pressure, a normally closed, electrically actuated valve disposed in said makeup water line, a level sensing chamber positioned with respect to the swimming pool such that a normal range of pool water level falls intermediate the ends thereof, said sensing chamber having a fluid sealed lower end, an upper end thereof having a vent aperture for communicating with the atmosphere, means for placing the interior of said sensing chamber in direct liquid communication with said return line, a plurality of vertically separated level sensing probes extending into the interior of said sensing chamber, said plurality of level sensing probes including at least a lowermost common probe, a low water level probe positioned above said common probe, and a high water level probe positioned above said low water level probe, control means connected to said plurality of probes and to said valve for sensing a first condition in which no conductive path exists between said common probe and said low water level probe and responding to said first condition by energizing said electrically actuated valve to initiate the introduction of makeup water in the pool, said control means further sensing a second condition in which a conductive path exists between said common probe and said high water level probe and responding to said second condition by de-energizing said electrically actuated valve to terminate the introduction of makeup water into the pool, the improvement comprising in combination:

a. means for directing the flow of makeup water from the end of said makeup water line in a downward vertical direction;
b. an apertured base being vertically downwardly displaced from the end of said makeup line and having an aperture in general vertical alignment with the end of said makeup line for channelling the makeup water flowing from said makeup line through said apertured base;
c. a connecting pipe disposed intermediate said apertured base and said return line for conveying the makeup water to the return line; and
d. a float valve disposed within said connecting pipe and responsive to the water level therein for sealing said aperture when the water level within said connecting pipe nears said aperture; whereby, said float valve in combination with the air gap intermediate said apertured base and the end of the makeup line impedes the flow of water from said pool through said return line and said connecting pipe into said makeup water line.

3,848,628
DISPOSABLE SAFETY FLOAT VALVE

David W. Deaton; Stephen M. Brower, both of Dallas, and Marshall P. Durham, Jr., Desota, all of Tex., assignors to Deaton Medical Company, Dallas, Tex.
Filed Aug. 9, 1972, Ser. No. 279,062
Int. Cl. F16k *33/00*
U.S. Cl. 137—434 **5 Claims**

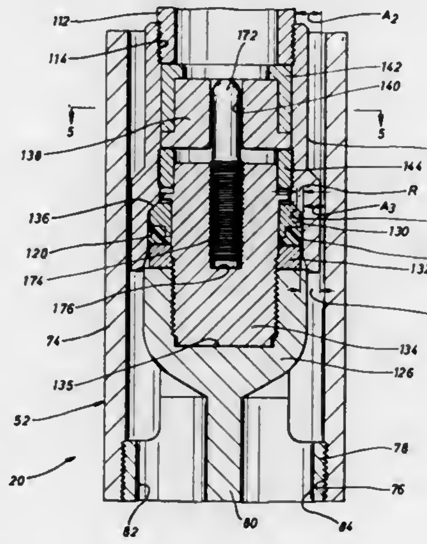


1. A float valve operable between open and closed positions in response to fluid level within a fluid container having a lid with a vacuum inlet formed therethrough comprising: a projection extending from the underside of the lid

an elongated strip of flexible material having low fluid absorption characteristics,
a portion of said flexible strip having structure for being frictionally and detachably connected to said projection extending from the underside of the lid, said strip having a length greater than the distance from said projection to the vacuum inlet
said strip having a free end which normally hangs below the vacuum inlet due to bending of said flexible strip when the fluid level within the fluid container is below a predetermined level,
said free end having sufficiently low fluid absorption characteristics to float on the fluid when the fluid reaches the predetermined level within the container to bend upwardly to obstruct the vacuum inlet to prevent the fluid from being drawn through the vacuum inlet.

3,848,629
LOW FLOW SAFETY VALVE WITH PRESSURE LOCK

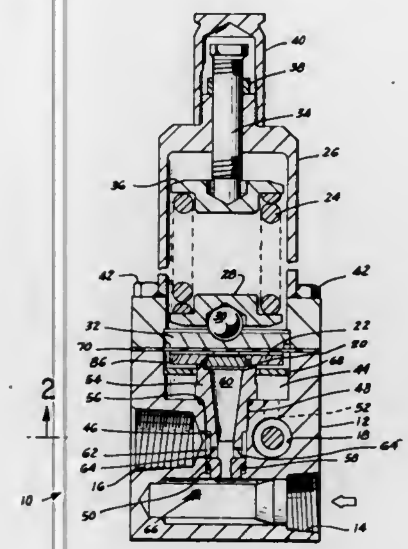
David E. Young, Friendswood, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Oct. 31, 1972, Ser. No. 302,545
Int. Cl. F16k *17/64*
U.S. Cl. 137—459 **25 Claims**



1. A safety valve apparatus comprising:
an inner member movable between longintudinally spaced positions within an outer member, said members defining a flow passage;
valve means for closing said flow passage in one position of said inner member, said flow passage being open in the other position of said inner member;
means operable under normal flow conditions for maintaining said inner member in said other position;
means for shifting said inner member to said one position when the flow of fluids falls below a predetermined minimum rate;
pressure sensitive means operable upon closure of said valve means and being responsive to upstream pressure for retaining said inner member in said one position; and
second pressure sensitive means normally being disposed in inoperative relation to said pressure sensitive means and being selectively operable to combine with said pressure sensitive means and allow upstream pressure acting thereupon to develop a resultant force urging said inner member toward said other position.

3,848,630
RELIEF VALVE

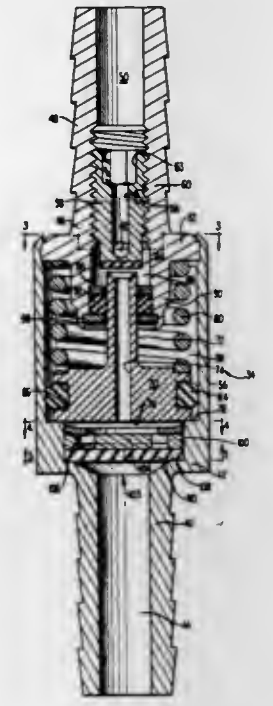
Irvin B. Weise, Bellaire, Tex., assignor to Anderson, Greenwood & Company, Houston, Tex.
Continuation of Ser. No. 220,769, Jan. 26, 1972, abandoned. This application Oct. 2, 1973, Ser. No. 402,739
Int. Cl. F16k *31/36*
U.S. Cl. 137—475 **6 Claims**



1. A pilot valve, comprising
a valve body,
said valve body defining an inlet port, a control pressure port, an outlet port, and a communication from said inlet port to said control pressure port and to said outlet port, means in said communication defining a valve seat between said outlet port and said other two ports,
a valve member positioned within said communication and adapted to engage and disengage from said valve seat to control flow therethrough,
means biasing said valve member toward engagement with said valve seat,
pressure responsive means exposed to the fluid pressure immediately downstream of said valve member and having an effective pressure area larger than said valve member,
said pressure responsive means being associated with said valve member and said biasing means to exert a force against said baising means when said valve member cracks open to assure that said valve member snaps to full open position on opening,
said body defining a diaphragm chamber surrounding said valve seat and in communication with said outlet port,
said pressure responsive means being a diaphragm exposed to the fluid pressure within said diaphragm chamber, and means positioned within said diaphragm chamber for converting the kinetic energy of fluid flowing therein when said valve member is out of engagement with said valve seat to static pressure to assure a positive snap action of said valve member to full open position when it first opens,
said diaphragm chamber being cylindrical,
said valve member being hexagonal and moving within said diaphragm chamber with the corners of said hexagonal valve member lightly guiding the movement of said valve member within said diaphragm chamber without binding and sticking.

3,848,631
BEER KEG PROTECTIVE DEVICE

Merton R. Fallon, Thousand Oaks, Calif., assignor to Draft Systems, Inc., Northbridge, Calif.
Continuation of Ser. No. 82,783, Oct. 26, 1970, abandoned. This application Feb. 5, 1973, Ser. No. 329,330
Int. Cl. F16k *31/365*
U.S. Cl. 137—505.11 **1 Claim**

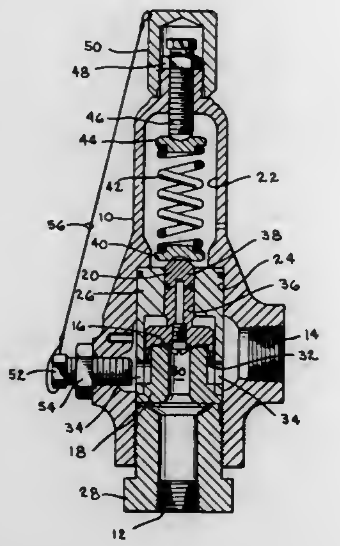


1. A pressure control device for disposition in a gas passage between a gas pressure source and a pressure vessel comprising:
an elongated housing having a gas inlet, a gas outlet, a first chamber and a valve seat; said inlet lying in communication with said first chamber and including an element receivable therein having an axial passageway and at least one radial aperture for delivery of gas from said passageway through said aperture into said chamber, the inner end of said element comprising said valve seat; a piston in said housing, said piston having a passage therethrough in communication on one side thereof with a second chamber defined at least in part by said housing and the face of said piston, said piston being movable axially betweeen first and second positions, said second chamber lying in communication with said housing outlet; said piston having a stem defining a part of the passage through said piston, said stem having an annular end defining an inlet for the passage through said piston; a spring for biasing said piston into said first position; said piston in said first position establishing communication between said first chamber and the passage in said piston for permitting flow of gas from said housing inlet through said chamber, the passage in said piston, and the second chamber to said outlet for pressures in said second chamber less than or equal to a predetermined pressure; said piston, in response to a gas pressure in said second chamber in excess of the predetermined pressure and acting thereon adjacent said outlet, being movable against the

bias of said spring into said second position to seal said annular end of the piston stem against said seat thereby to preclude transmission of gas through the passage in said piston; said spring biasing said piston for movement from said second position to said first position, said piston being movable into said first position by said spring in response to a pressure in said second chamber less than or equal to the predetermined pressure, means for venting said first chamber externally of said housing in response to a pressure therein greater than the predetermined pressure, said venting means including an annular member forming an outer wall portion for said first chamber and movable axially in said housing between first and second positions, said member in said first position forming a seal with said housing for precluding venting said first chamber, means for biasing said member into said first position, means carried by said member and responsive to a pressure in said first chamber greater than said predetermined pressure for moving said member axially against said biasing means into said second position to vent said first chamber between said member and said housing; means cooperable between said housing and said element for adjusting the axial position of said element in said housing inlet and hence the axial spacing between said valve seat and the annular end of said stem in said first position of said piston, and a check valve carried by said housing adjacent said outlet and downstream of said piston for precluding backflow through said device, said check valve including a seat and a flexible member having an opening therethrough, said flexible member being downstream of said seat and engageable thereagainst to seal about said opening.

3,848,632
VALVE

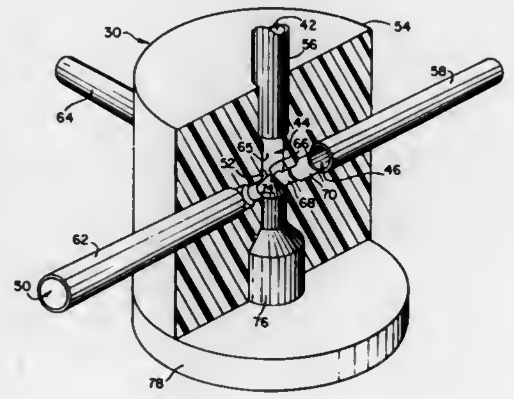
Walter W. Powell, Houston, Tex., assignor to Anderson, Greenwood & Co., Bellaire, Tex.
Filed Oct. 9, 1973, Ser. No. 404,279
Int. Cl. F16k *15/06*
U.S. Cl. 137—514 **6 Claims**



1. A valve, comprising
a body defining an inlet, an outlet and a valve seat surrounding communication between said inlet and said outlet,
a valve member positioned within said body and adapted to move within said body to open and close flow through said valve seat,
said body defining a bore,
a portion of said valve member extending into and reciprocating within said bore,
said valve member portion defining a groove facing said bore,
an O ring positioned in said groove and adapted to be in sliding engagement with the walls of said bore, and
means providing pressure communication from the part of said valve member exposed to inlet fluids to the interior of said groove whereby fluid pressure forces said 0 ring against the walls of said bore to create a damping drag against the movement of said valve member.

3,848,633
PRECISE FLUID-DIVIDING APPARATUS

Carl R. Hurtig, Scituate; Robert L. Kent, Andover, and Leo J. Blumle, Milton, all of Mass., assignors to Damon Corporation, Needham Heights, Mass.
Filed Oct. 22, 1971, Ser. No. 191,611
Int. Cl. G01n *1/18*
U.S. Cl. 137—561 A **8 Claims**

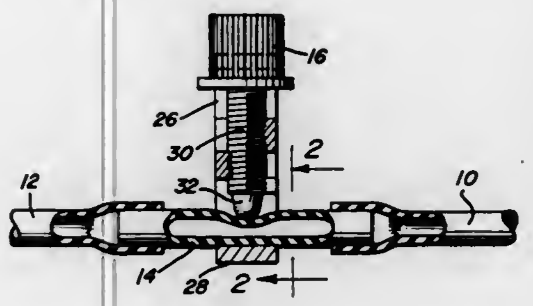


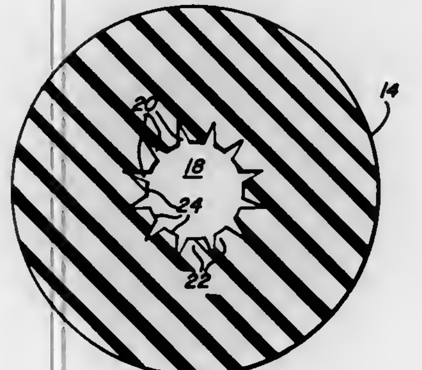
1. Apparatus for dividing flowing fluid with precision into a number of portions of selected relative volumes, said apparatus comprising
A. an input conduit for fluid to be divided,
B. a plurality of output conduits for receiving said portions of said fluid,
C. means forming a chamber
  1. having an outer wall of circular cross section oriented with the center along a vertical axis,
  2. having said input conduit feeding thereinto along said vertical axis,
  3. having said output conduits feeding out from said outer wall at a common level along said axis, and
  4. providing symmetrical fluid passages therethrough from said input conduit to said output conduits, and
D. a conical member disposed in said chamber with the cone axis coincident with said vertical axis, with the apex of said conical member pointed toward said input conduit, and with the conical surface thereof forming at least a portion of the chamber surface spanning said outer wall opposite said input conduit and being located along said axis at the level at which said output conduits feed out from said outer wall.

3,848,634
FLUID CONTROL SYSTEM FOR CONTROLLING INTRAVENOUS FLOW RATE

Douglas G. Noiles, New Canaan, Conn., assignor to United States Surgical Corporation, Baltimore, Md.
Filed Aug. 16, 1972, Ser. No. 280,948
Int. Cl. F16k *7/06*
U.S. Cl. 137—601 **8 Claims**

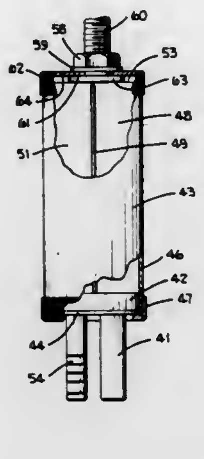
1. A fluid control system for controlling the flow rate of a parenteral fluid from a parenteral fluid reservoir to means for feeding the parenteral fluid into a patient's body, comprising:
first conduit means for passing parenteral fluid therethrough;
second conduit means for passing parenteral fluid therethrough in spaced relation to said first conduit means;
third conduit means comprised of a resilient material having an interior opening of non-circular cross section, said interior opening having a shape such that compression of said third conduit means forms a plurality of parallel, longitudinally extending flow passages each of which is in parenteral fluid communication with said first and second conduit means; and
a compression clamp in operative relationship with said third conduit means for transaxially compressing said third conduit means to form said plurality of flow passages and for varying the combined cross-sectional area of said flow passages between a maximum and a minimum, said compression clamp having means for manually setting the extent of compression on said third conduit means, said compression clamp further capable of maintaining said compression substantially constant until manually reset, said third conduit means and said compression clamp together forming a valve which is suitably sized for controlling the flow rate of said parenteral fluid and for maintaining said flow rate substantially constant during a predetermined time period.





3,848,635
FLUID DISTRIBUTOR APPARATUS

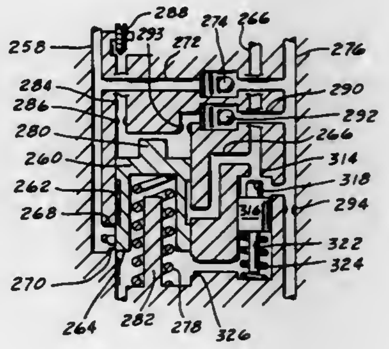
Edward D. Scheffler, Jr., Coloma, Mich., assignor to AG Tec Inc., Indianapolis, Ind.
Filed Feb. 26, 1973, Ser. No. 336,017
Int. Cl. A01h *17/08*
U.S. Cl. 137—610 **7 Claims**



1. Fluid distributor apparatus comprising:
a body having a fluid inlet means, a plurality of fluid outlet means, flow splitter means having leading edges intersecting at a point in registry with said inlet means to split the fluid flowing into said body into at least two paths, a different one of said outlet means communicating with each of said paths, the relative location of intersection of said edges with respect to said inlet means being changeable to change the proportions of inlet fluid flowing through the different outlet means.

3,848,636
CONTROL APPARATUS PARTICULARLY FOR A PLURALITY OF COMPRESSOR BLEED VALVES OF A GAS TURBINE ENGINE

Howard L. McCombs, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.
Filed Sept. 15, 1972, Ser. No. 289,404
Int. Cl. F17d *3/00*
U.S. Cl. 137—624.27 **8 Claims**



1. Control apparatus for controlling a control output signal for a predetermined interval of time in response to an input signal comprising:
input signal generating means for generating a control input fluid pressure signal;
output passage means providing an output fluid pressure signal;
a first source of pressurized fluid;
a second source of pressurized fluid at a lower pressure relative to said first source;
conduit means providing communication between said first and second sources and including a first check valve and a flow restriction downstream from said check valve;
first fluid pressure responsive valve means having first and second positions for venting said output passage means to one of said first and second sources depending upon the position of said valve means;
said first fluid pressure responsive valve means being vented to said conduit means intermediate said check valve and said flow restriction and responsive to pressurization thereof;
first resilient means operatively connected to said first fluid pressure responsive valve means for actuating the same to said first position to vent said output passage means to said second source;
normally closed second valve means in said conduit means for controlling flow therethrough;
second fluid pressure responsive means responsive to said input fluid pressure signal for actuating said second valve means;
second resilient means operatively connected to said second fluid pressure responsive means for actuating the same to a closed position;
first passage means communicating with said second fluid pressure responsive means and adapted to be vented by said first fluid pressure responsive valve means to one of said first and second sources depending upon the position of said first valve means;
said second valve means being actuated by said second fluid pressure responsive means to an open position in response to said control input fluid pressure signal to pressurize said check valve to an open position and pressurize said first fluid pressure responsive valve means against the resistance of said first resilient means thereby actuating

said first fluid pressure responsive valve means to said second position to simultaneously vent said first source of pressurized fluid to said output passage means and said first passage means to establish said output fluid pressure signal and pressurize said second fluid pressure responsive means to actuate said second valve means to a closed position;

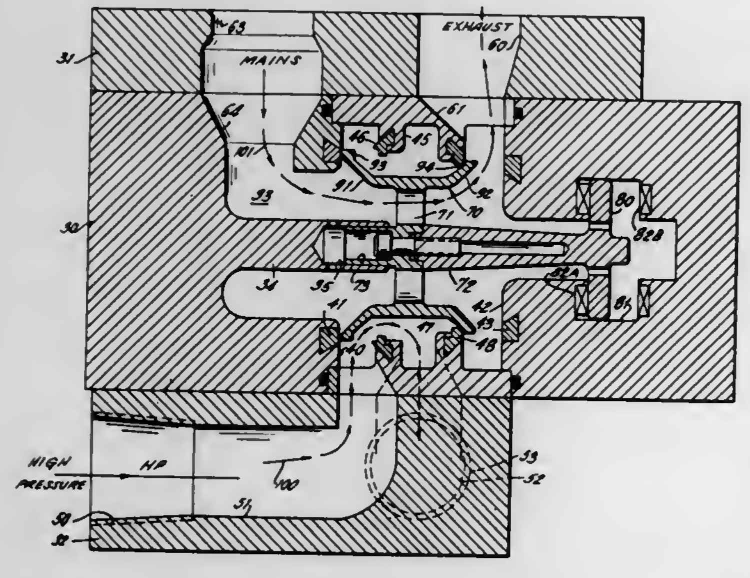
said closed second valve means disestablishing communication between said first source and said conduit means whereupon said check valve is actuated to a closed position;

said first resilient means urging said first fluid pressure responsive valve means against the opposing pressurized fluid intermediate said check valve and said flow restriction which opposing pressurized fluid is forced through said flow restriction to restrict movement of said first fluid pressure responsive valve means to said first position to a predetermined velocity;

said first fluid pressure responsive valve means being operative to vent said output passage means to said first source over the major portion of its range of movement from said second to said first position.

3,848,637
HIGH SPEED FOUR-WAY VALVE

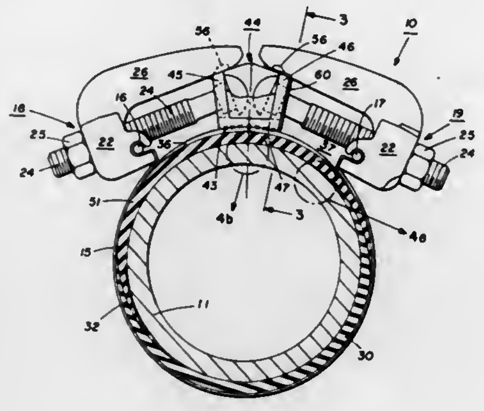
George A. Wilson, Pineville, Pa., assignor to I-T-E Imperial Corporation, Spring House, Pa.
Filed May 7, 1973, Ser. No. 357,666
Int. Cl. F16k *11/02, 11/07*
U.S. Cl. 137—625.27 **5 Claims**



1. A high speed, four-way valve comprising, in combination:
a valve body having a central chamber;
a hollow cylindrical valve sleeve disposed within said central chamber and movable therein in a direction along its axis; said sleeve having first and second, third and fourth serially disposed and axially spaced annular seal elements; said first and third annular seal elements facing toward one axial direction of said sleeve; said second and fourth annular seal elements facing toward the other axial direction of said sleeve;
first, second, third and fourth serially disposed and axially spaced stationary annular seals fixed within said central chamber and sealingly engageable, respectively, with said first, second, third and fourth annular seal elements; said first and third annular seal elements simultaneously engaging said first and third stationary annular seals, respectively, when said valve sleeve is in a first axial position; said second and fourth annular seal elements engaging said second and fourth stationary annular seals, respectively, when said valve sleeve is in a second axial position; and first, second, third and fourth ports extending through said valve body and into said central chamber; said first port communicating with the hollow interior of said cylindrical valve sleeve; said second port communicating between said first and second stationary annular seals; said third port communicating between said second and third stationary annular seals; said fourth port communicating between said third and fourth stationary annular seals;
said sleeve having first and second enlarged diameter end regions; the outer axial ends of said first and second enlarged diameter end regions defining said first and fourth annular seal elements; interior regions of said first and second enlarged diameter end regions opposing said first and fourth annular seal elements defining said second and third annular seal elements, respectively.

3,848,638
PIPE REPAIR CLAMP

William L. Huslander, and Charles J. Glover, both of Bradford, Pa., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed May 24, 1973, Ser. No. 363,694
Int. Cl. F16l *55/16*
U.S. Cl. 138—99 **10 Claims**

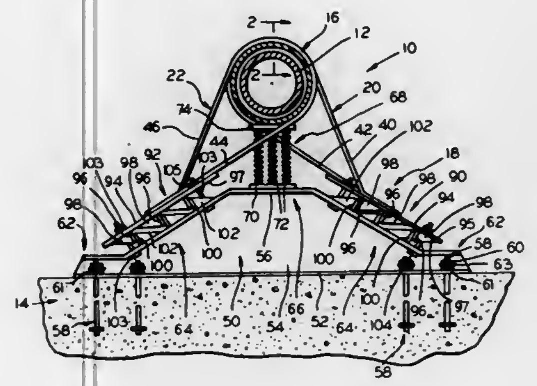


1. In a pipe repair clamp including a flexible band for encircling a substantial circumferential portion of pipe section to be repaired, lug means secured to each of the circumferential opposing ends of said band, held bolt fasteners engageable with said lug means on the respective band ends and adapted to apply a generally circumferentially effective first force for tightened installation takeup of said band about a contained pipe section, a spanner plate positioned circumferentially encircling a portion of pipe section between the opposing ends of said band and gasket means circumferentially underlying said band and spanner plate for engagement against the peripheral surface of a contained pipe section, force applicator means adapted to cooperate with said lug means and responsive to tightened installation takeup of said band to apply a second force separately effective from said first force for locally increasing radially inward clamping force between said gasket and said spanner plate at a location on said spanner plate circumferentially intermediate said lug means.

3,848,639
PIPE RESTRAINING DEVICE

Tsuan-Tong Chen, 4001 W. Kirk, Skokie, Ill. 60076
Filed July 12, 1973, Ser. No. 378,779
Int. Cl. F16l *9/18, 3/04*
U.S. Cl. 138—103 **9 Claims**

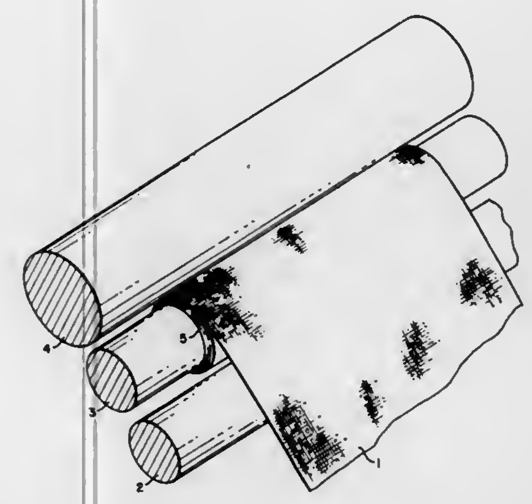
1. A pipe movement restricting device comprising:
a pipe,
a pedestal structure,
a sleeve proportioned to freely receive said pipe and be spaced from contact with same,
said sleeve being supported on said pedestal in a position to be substantially concentric with said pipe,
a first tie band looped about said sleeve in the plane thereof and having its ends anchored to said pedestal on one side of said pedestal,
and a second tie band looped about said sleeve in the plane thereof and having its ends anchored to said pedestal on the other side of said pedestal,



said tie bands being tensioned against said sleeve to press same against said pedestal and hold said sleeve in spaced relation about the pipe from divergent directions.

3,848,640
TUBING MADE FROM B-STAGED EPOXY RESIN COMPOSITION

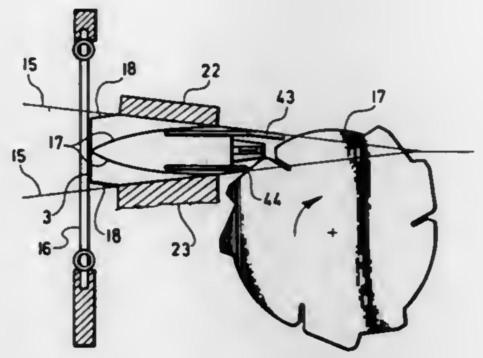
Thomas G. Crawford, Hampton, and William E. Kearse, Fairfax, both of S.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 188,803, Oct. 13, 1971, abandoned. This application Feb. 6, 1973, Ser. No. 330,155
Int. Cl. F16l *9/16*
U.S. Cl. 138—145 **14 Claims**

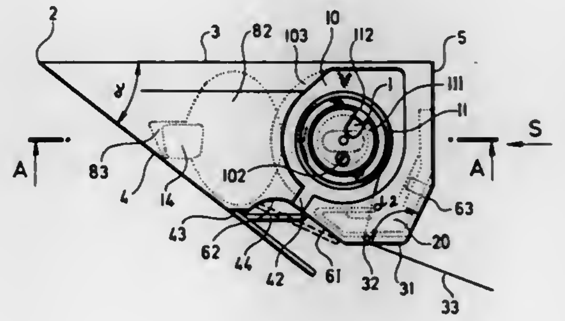


1. A tube comprising a cured cylinder formed from a plurality of wrapped concentric layers of a treated cloth, said treated cloth comprising a fabric impregnated with an epoxy resin composition having a greeness of about 6 to 35percent, said composition comprising about 55 to 75 percent epoxy resin having an average epoxy equivalent weight of about 220 to 365 and about 25 to about 45 percent trimellitic anhydride, the composition initially dissolved in a solvent for the trimellitic anhydride and the fabric initially cured to the B-stage.

3,848,641
WEFT INSERTER FOR TRAVELLING-WAVE SHEDDING LOOMS

Zdenek Zabrodsky; Frantisek Augusta, both of Usti nad Orlici; Zdenek Kramenic, Chocen, and Oldrich Chronek, Brno, all of Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia
Filed June 4, 1973, Ser. No. 365,998
Claims priority, application Czechoslovakia, June 12, 1972, 4057-72
Int. Cl. D03d *47/26*
U.S. Cl. 139—12 **10 Claims**





1. In a weft inserter for travelling-wave shedding looms, having an inserter body with a leading point, a recess adapted to receive a rotary bobbin, a roller co-operating with a driving roller on a chain conveyor and with a recess for a carrier on said chain conveyor, and a weft outlet brake, the improvement which comprises a planar base wall of the weft inserter including an angle (α) not exceeding 45° with a planar front wall thereof, said front wall merging via an arcuate recess into a wall merging in turn into a rear wall of said inserter, the rear wall forming a right angle with said base wall, in the middle of said rear wall there being provided a notch for said thread outlet brake and a guide for weft thread, said notch extending through said wall towards a slot connecting said arcuate recess with said recess for the rotary bobbin and directed towards the rotational axis of said bobbin rotatably supported on a projection in the bottom of said recess, said weft inserter, when viewed from said point, being widened by its convex surfaces merging into a top guide face and into a bottom guide face symmetrical with the latter along a middle plane of the inserter, said guide faces being provided, along said base wall, with an upper relieving surface and a lower relieving surface symmetrical with the latter along said middle plane, while the region where said front wall ceases and merges into said arcuate recess, said front wall is continued, on the one hand, as an upper thread separating spring overlapping said slot and, on the other hand, as a lower thread separating spring bent to lie parallel with said base wall said roller being arranged in the space between said point and said bobbin.

3,848,642
SHED FORMING DEVICE

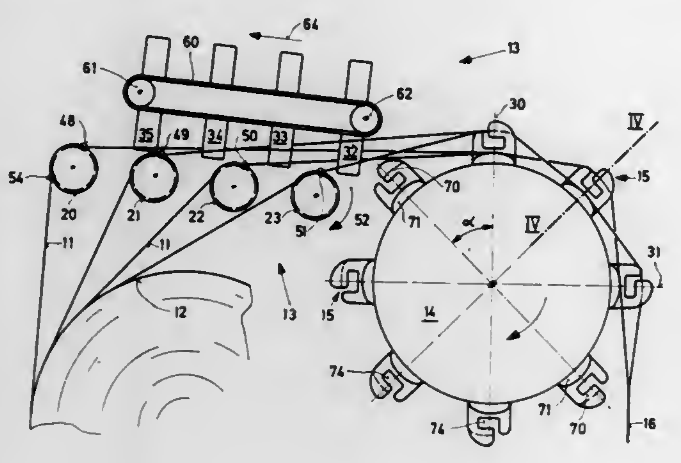
Alois Steiner, Rieden/SG, Switzerland, assignor to Ruti Machinery Works Ltd., formerly Casper Honegger, Ruti, Switzerland

Filed Apr. 4, 1973, Ser. No. 347,712

Claims priority, application Switzerland, Apr. 14, 1972, 5654/72

Int. Cl. D03c *13/00*

U.S. Cl. 139—28 **9 Claims**



1. Device for producing cloth weaves on a loom having a plurality of sheds following each other in the longitudinal direction of the warp threads, wherein there are provided rows, extending transversely of the warp threads, of shedding elements alternatingly determining upper and lower sheds, which said shedding elements travel along the warp threads, so that they retain the warp threads on their upper or lower shed position over a predetermined zone, a control means arranged before the said zone for laterally deflecting each of the warp threads in accordance with a program, thereby associating each warp thread with one of the shedding elements determining the upper or lower shed, wherein said control means comprises at least one rotatable control roller, the axis of which is arranged to extend perpendicular to the warp threads and which has a plurality of warp thread guide grooves which extend, separate from each other and continuously, in juxtaposition on the generated surface of the control roller, about the latter, and extend to and fro obliquely with reference to the axis of the control roller by a predetermined amount which, according to said program, is preferably equal to the spacing of adjacent upper and lower shed elements, the locations which are outermost in the axial direction of the said grooves being control locations for controlling the warp threads.

3,848,643
READING MECHANISM OF A DOBBY

Walter Wicker, Oberrieden, Switzerland, assignor to Staubli Ltd., Horgen-Zurich, Switzerland

Continuation-in-part of Ser. No. 232,859, March 8, 1972, abandoned. This application Feb. 20, 1973, Ser. No. 334,156

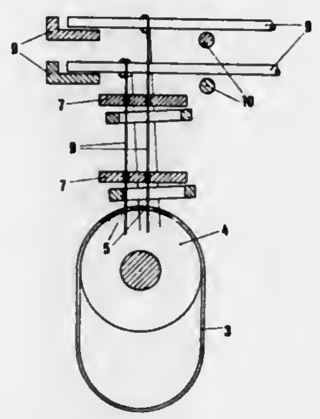
Claims priority, application Switzerland, Mar. 10, 1971, 3494/71

Int. Cl. D03c *1/22, 1/24*

U.S. Cl. 139—68 **5 Claims**

1. In a reading mechanism of a dobby having a patterned perforated, moving pattern card and reading needles which read said perforations and control a shed-forming mechanism, the improvement comprising:

- a plurality of horizontally aligned, axially and vertically movable push needle means, said push needle means being vertically movable between first and second positions, said push needle means, when in said first position, being positioned to effect an operation of said shed-forming mechanism;
- a plurality of vertically aligned and axially movable reading needle means, one each being swingably connected to one of said push needle means, each of said reading needle means being adapted to move axially toward and away from and engage a perforation in said perforated pattern card to thereby control the vertical movement of said push needle means;
- pusher means directly engaging said push needle means when said push needle means is in said first position to thereby effect an operation of said shed-forming mechanism, said pusher means by-passing said push needle means when said push needle means is in said second position;



- conveyor means for supporting said pattern card for movement;
- first drive means for driving said pattern card for continuous movement;
- guide means for engaging and guiding said reading needle means; and
- second drive means connected to said guide means to effect a positive movement of said reading needle means from a starting position simultaneously with said pattern card while engaged therewith, said second drive means including means for returning said reading needle means to a position above said starting position only when said reading needle means are disengaged from said pattern card.

3,848,644
WEAVING SHUTTLE

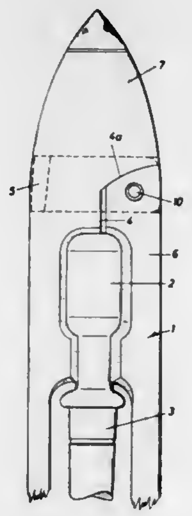
Otto Meyering, Sudlohn, and Hubert Heinrich Langenhoff, Borken-Rhedebrugge, both of Germany, assignors to Gebr. Schmeing, Borken-Weseke, Germany

Filed Aug. 27, 1973, Ser. No. 391,550

Claims priority, application Germany, Sept. 12, 1972, 335445; Mar. 5, 1973, 2310874; Apr. 7, 1973, 2317508

Int. Cl. D03j *5/16*

U.S. Cl. 139—207 **8 Claims**



1. An improved weaving shuttle for use with a weft bobbin, said weaving shuttle including:

- a. an elongated head portion having a transverse bore;
- b. a pair of side wall portions extending longitudinally from said head portion;
- c. means providing for the separation of said side wall portions along a surface crossed by said bore adjacent said head portion to mount the weft bobbin therebetween;
- d. support means disposed at an angle to the longitudinal axis of said shuttle for resiliently drawing said side wall portions together to secure the weft bobbin between said side wall portions, said support means comprising:
  - i. an elongated plate-shaped tension element formed from an elastic material and having a longitudinal axis and a transverse axis, said element being receivable in said transverse bore, with said axes lying in a common plane which follows the longitudinal axis of said shuttle to extend across the surface of separation;
  - ii. an elongated abutment at one longitudinal end of said plate-shaped tension element, said transverse bore having a configuration corresponding to said tension element whereby said tension element may be placed under tension longitudinally of said transverse bore; and,
  - iii. means acting at the other end of said tension element for securing said tension element under a desired degree of tension longitudinally of said transverse bore.

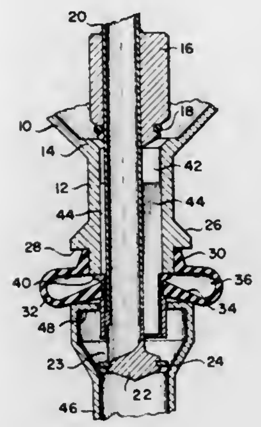
3,848,645
CONTAINER FILLING APPARATUS

Henry H. Franz, H. H. Franz Co., 3201 Falls Cliff Rd., Baltimore, Md. 21211

Filed Aug. 6, 1973, Ser. No. 385,728

Int. Cl. B65b *3/18;* **B67c** *3/30*

U.S. Cl. 141—117 **6 Claims**



1. Apparatus for filling a container with liquid from a reservoir having a depending nozzle comprising a valve seat formed on said nozzle, a valve member having a sealing ring engaging said seat to control the flow of liquid from the reservoir through said nozzle, a vent tube carried by said valve member and arranged to extend above the liquid level in the reservoir, said vent tube extending through said nozzle and terminating in a projection, said vent tube having an opening formed therein adjacent said projection, a bellows-like member mounted on the lower end of said nozzle and depending therefrom, an annular nipple-like member carried by said bellows and arranged to engage said projection to close the opening in said vent tube, said bellows engaged by a container for initially compressing said bellows toward said nozzle to raise said nipple-like member and open said vent tube to deliver any fluid therein to said container, said nipple-like member upon the continued compressing of said bellows engaging means on said vent tube to elevate said vent tube and valve member for delivering liquid to said container through said nozzle.

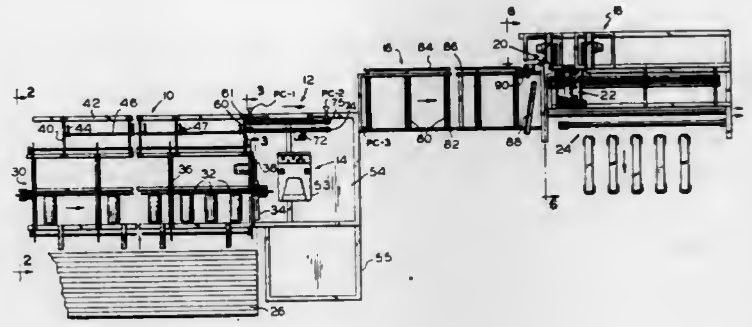
3,848,646
METHOD AND APPARATUS FOR CUTTING LUMBER TO RANDOM OR SPECIFIED CLEAR LENGTHS

Thomas R. Miles, Portland, Oreg., assignor to Edward Hines Lumber Co., Hines, Oreg.

Filed Dec. 30, 1971, Ser. No. 214,011

Int. Cl. B27b *27/00*

U.S. Cl. 144—3 N **29 Claims**



1. Apparatus for clear-cutting lumber to random and specified lengths comprising in combination:

- a defect-cutting station including defect-cutting means,
- means for driving a piece of lumber endwise across the cutting plane of said cutting means, means for sensing a defect in said piece at said cutting means, and means for actuating said cutting means to remove the sensed defect in response to said defect-sensing to provide a random clear length of lumber,
- means for transferring said random clear length from said defect-cutting station to a cut-to-length station,
- said cut-to-length station including length-cutting means, means for sensing the longest specified length in a given clear random-length piece, and means responsive to a specified-length sensing for positioning said clear random length with respect to said length-cutting means so as to enable said length-cutting means to cut said random length to the longest specified length sensed, and means operable to actuate said length-cutting means in response to the positioning of said random length.

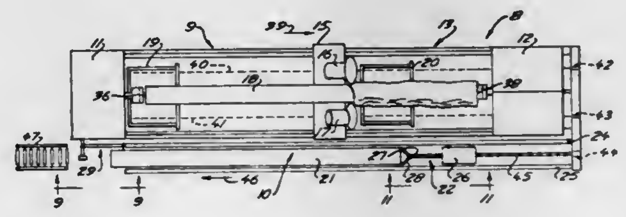
3,848,647
APPARATUS FOR MACHINING LOGS

Charles Raymond Fell, P.O. Box 218, Hudson Hope, B. C., Canada

Filed Dec. 11, 1972, Ser. No. 313,942

Int. Cl. B27c *9/04*

U.S. Cl. 144—3 R **24 Claims**



1. Apparatus for machining a log having a longitudinal axis, the apparatus having a lathe portion, a grooving portion and a handling means, wherein the lathe portion includes:

- a. a headstock and a tailstock, a bed extending between the headstock and the tailstock, the headstock and tailstock each having a dog for engaging the log for rotating the log about the longitudinal axis thereof,
- b. a chipper carriage mounted on the bed so as to be traversed along the bed, the carriage having a cutter for turning the log as the carriage is traversed along the bed to produce a turned log,

c. a chipper carriage feed mechanism coupled to the chipper carriage to traverse the chipper carriage along the bed,

wherein the grooving portion includes:

d. a slide trough for carrying a turned log, the slide trough being adjacent and parallel to the bed,

e. a feed carriage mounted on the slide trough for traversing along the slide trough, the feed carriage having a seat to engage an end of the turned log for pushing the log,

f. a feed carriage feed mechanism coupled to the feed carriage to traverse the feed carriage along the slide trough,

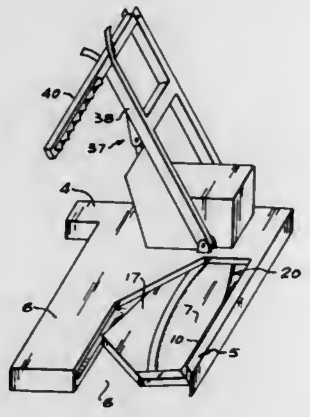
g. cutting means aligned with the slide trough so that as the turned log is traversed along the trough by the feed carriage the cutting means cuts a groove and a slot in the turned log producing a slotted and grooved log,

and wherein the handling means includes:

h. means to hold the log, the means being adaptable to accept a log from a supply, to position the log so as to be acceptable to the lathe portion prior to machining to permit the turned log to be moved easily into the slide trough, and to be moved clear of the log to permit machining of the log.

3,848,648
TREE FELLING APPARATUS

Michael Dika, and Jerry Felix Dika, both of P.O. Box 117, Rycroft, Alberta, Canada
Filed Apr. 6, 1973, Ser. No. 348,742
Int. Cl. A01q *23/08*
U.S. Cl. 144—34 A **7 Claims**



1. A tree feller comprising:

a frame having a base and an anvil extending forwardly therefrom;

a cutting assembly comprising a guide bar, pivotally mounted at its inner end on the base, having an endless, driven saw chain mounted on its peripheral portion, said cutting assembly further comprising a guard member, associated with the guide bar, for protecting the upper and lower side surfaces of the return portion of the saw chain, said guide bar and guard member having substantially parallel top and bottom surfaces;

means for rotating the saw chain about the guide bar;

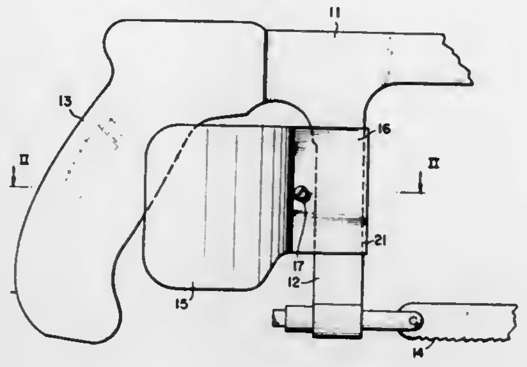
means for advancing the cutting assembly from an open position to a closed position adjacent the anvil, whereby a tree located between them may be cut by the saw chain; a pusher assembly associated with the frame and adapted to contact a tree being cut at a point spaced above the guide bar;

means for pressing the upper portion of the pusher assembly against the tree to control the direction of its fall;

said saw chain being of sufficient size to make a cut having a kerf substantially equal to or greater than the thickness of the guide bar and associated guard plate, whereby the tree may be cut without any substantial wedging action.

3,848,649
SAFETY DEVICE FOR HACKSAW

Varney V. Wanless, Amity, Oreg., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Aug. 23, 1973, Ser. No. 390,939
Int. Cl. B27b *21/02*
U.S. Cl. 145—35 R **1 Claim**



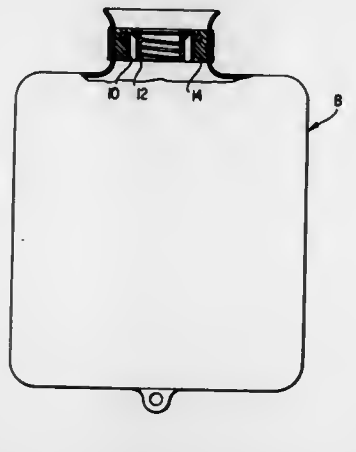
1. A sheet metal shield that may be readily clamped to the frame of a hacksaw for the purpose of protecting a hand of the user that is grasping the handle of the hacksaw, said shield being shaped and fitted with attachment means so as to locate the shield in a position that does not interfere with the replacement of a blade on the hacksaw,

said shield formed at one end in a U-shaped clamp section of a size to fit about a frame member of the hacksaw that is generally oriented perpendicular to the axis of the hacksaw blade, with threaded fastening means fitted to the said end of the shield for clamping the U-shaped clamp section about the same frame member,

said shield shaped in a curved form so as to rest, in the attached state in a location extending from the attached hacksaw frame member, to a location about one side of the hacksaw handle and separated from the hacksaw handle by a space sufficient to permit positioning of the hand of the user about the hacksaw handle and between the hacksaw handle and the shield in said space.

3,848,650
BOTTLE CLOSURES

Philip Wilson-Haffenden, Walmer, England, assignor to Haffenden-Richborough Limited, Sandwich, Kent, England
Filed Apr. 28, 1972, Ser. No. 248,383
Int. Cl. B65d *33/16*
U.S. Cl. 150—8 **7 Claims**

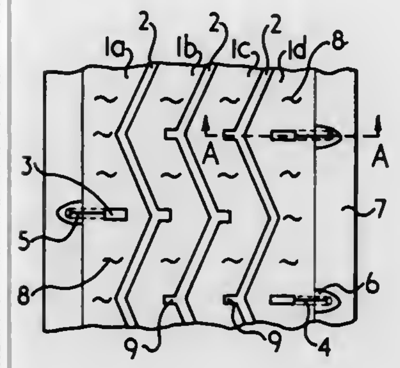


1. A hot-water bottle formed of flexible, water-retaining material and having a neck portion closed by a molded plug, said plug including an orifice adapted to receive a threaded stopper, a plastic shell axially slidably insertable in said plug and having internal threads for engaging said threaded stopper, and wherein said plug includes an integrally molded shoulder partially closing said orifice at the outer end thereof

against which said plastic shell is adapted to abut when fully inserted into said plug and which provides a washer for said stopper.

3,848,651
TIRE TREAD HAVING DRAINAGE CHAMBERS

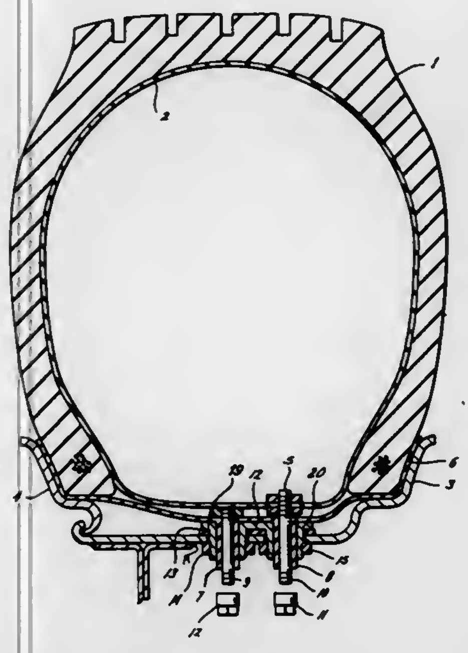
Tom French, Sutton Coldfield, England, assignor to Dunlop Limited
Filed Sept. 12, 1972, Ser. No. 288,436
Claims priority, application Germany, Sept. 15, 1971, 42869
Int. Cl. B60c *11/06*
U.S. Cl. 152—209 R **13 Claims**



1. A tire comprising a tread portion having an axially outer circumferential tread rib, a plurality of circumferentially spaced apart wide drainage chambers provided in said circumferential rib, narrow axial slots extendng from at least some of the chambers to the axially outer side of the tire, and wide axial drainage channels connected to the chambers and spaced radially inwards from the ground-contacting surface of the rib at the base of the slots.

3,848,652
INNER TUBE SEALING MEANS

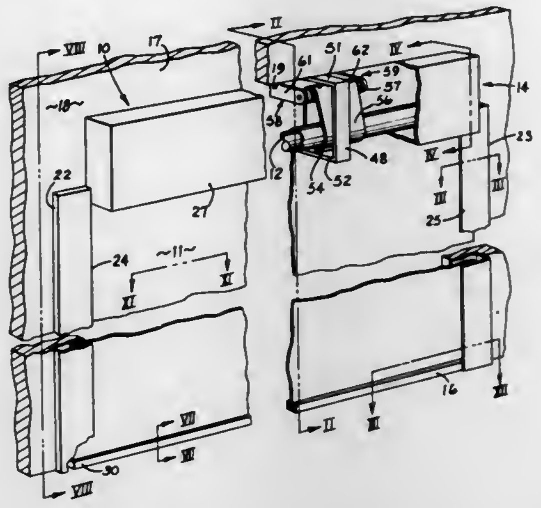
George W. Hughes, 2601 Mills, Houston, Tex. 77026
Filed Oct. 11, 1973, Ser. No. 405,472
Int. Cl. B60c *29/00*
U.S. Cl. 152—427 **5 Claims**



1. In a means for sealing an inner tube in a tire casing mounted on a wheel rim, an inner tube having a valve stem, a flexible member mounted between said inner tube and rim, valve stem extending through said flexible member and terminating between said member and said inner tube, means for maintaining said valve stems in position of the rim.

3,848,653
FLEXIBLE CLOSURE PANEL AND MEANS FOR SUPPORTING SAME

Wilbur R. Youngs, Findlay, Ohio, assignor to Overhead Door Corporation, Dallas, Tex.
Filed Feb. 12, 1973, Ser. No. 331,615
Int. Cl. E06b *9/08*
U.S. Cl. 160—120 **21 Claims**



1. In a closure structure including flexible closure panel means having upper and lower edges, comprising:

elongated, horizontal shaft means, the upper edge of said panel means being secured to said shaft means so that rotation of said shaft means in one rotational direction will cause said panel means to be rolled upon said shaft means;

support means located beneath said shaft means and adapted to support said shaft means and the panel means rolled thereon in a substantially horizontal position;

roll means rotatably supported directly above, parallel with and spaced from said shaft means;

shoe means secured to and along said lower edge of said panel means, said shoe means and the lower portion of said panel means being heavier than said shaft means;

plural spaced band means having intermediate portions thereof draped over said roll means, each band means having its upper end attached to said shaft means and its lower end attached to said shoe means, said band means being rolled upon said shaft means in said one rotational direction and the tension on said band means being such that said shaft means is raised off of said support means when said shoe means is raised; and

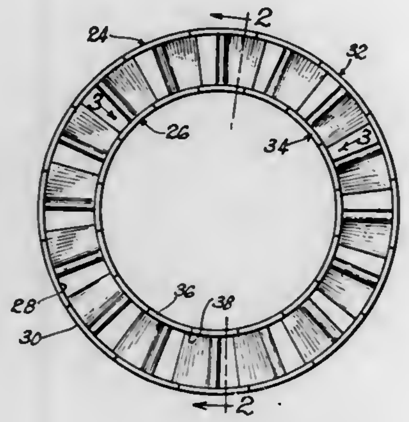
means for selectively rotating said shaft means.

3,848,654
PRECISION CASTING WITH VARIABLE ANGLED VANES

James H. Boyle, Muskegon, and John E. Ingalls, Pentwater, both of Mich., assignors to Howmet Corporation, Greenwich, Conn.
Filed Feb. 10, 1972, Ser. No. 225,222
Int. Cl. B22c *9/02*
U.S. Cl. 164—34 **3 Claims**

1. In the method of producing ring structures formed of a ring member with a plurality of vanes of the same design extending radially in circumferentially spaced apart relation from the ring member, with some of the vanes extending at an angle of rotation with reference to their radial axes normal to the ring axis which differs from others of the vanes, in which an integral pattern of the ring member and radially extending vanes is formed of heat disposable material for use in producing an integral casting by precision casting technique, the steps of providing separate heat disposable patterns of the vanes with locating projections extending from the ends thereof, providing separate ring forming segments of heat disposable material having sockets shaped to correspond with

the locating projections on the ends of the vanes for receiving the locating projections therein in fitting relation for assembly of the vane patterns with the segments and in which the segments are formed with end walls shaped to interfit one with another for assembly into a composite ring structure, in which in order to assemble the patterns with vanes extending at an angle of rotation with reference to their radial axes which differ from others of the vanes in the assembled ring structure, each of the vanes are the same and each of the segments are the same except for the sockets which form one segment to another different in their angle of rotation with reference to the radial axis, assembling said vanes with the segments having the sockets differing in angles of rotation corresponding to the desired differences in angle of rotation of the assembled vanes in the ring structure, and joining the ring segments with the assembled vanes into the ring structure.



3,848,655
METHOD OF MAKING A STEEL INGOT

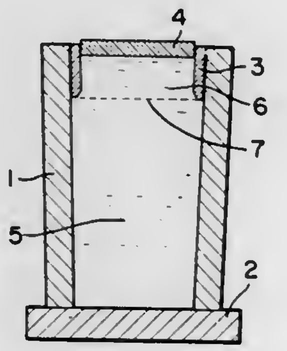
Yasumasa Sato, Imaichi; Shigeru Matsuyama, Utsunomiya, and Masaaki Kobayashi, Imaichi, all of Japan, assignors to Aikoh Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1972, Ser. No. 316,874

Claims priority, application Japan, Dec. 27, 1971, 46-105469

Int. Cl. B22c *1/22*

U.S. Cl. 164—43 **10 Claims**



1. A method of making a steel ingot which comprises pouring at least 3 tons of molten steel into a steel ingot forming mold, said mold being provided with an insulating material for maintaining the side portion of the molten steel in a hot condition at the upper portion of the mold, with said molten steel having a carbon content of not more than 0.7 percent, with the amount of molten steel at the hot upper portion of the mold being at least 10 percent by weight of the steel ingot; covering the top surface of the molten steel, and thus keeping it warm, with a plate-like molded material having a bulk specific gravity of 0.2 to 0.7 and a thickness of at least 10 mm which comprises 30 to 88 percent by weight of a refractory material, 5 to 45 percent by weight of a fibrous substance and 2 to 20 percent by weight of a binder; and casting a steel ingot in said mold.

3,848,656
PROCESS FOR COOLING AND SUPPORTING A CONTINUOUSLY CAST METAL BAR

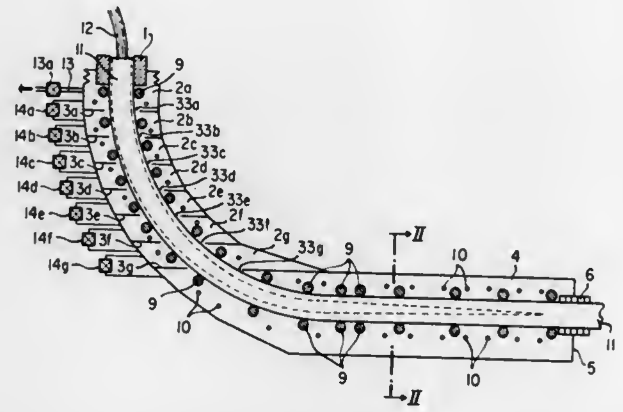
Jean-Luc Charles Meylan, Geneva, Switzerland, assignor to Battelle Memorial Institute, Carouge/Geneva, Germany

Filed June 8, 1972, Ser. No. 260,733

Claims priority, application Switzerland, June 9, 1971, 8423/71

Int. Cl. B22d *11/12*

U.S. Cl. 164—89 **7 Claims**



1. A process for cooling and supporting a continuously cast metal strand, particularly a steel slab, in which the metal strand is formed in a cooled mould and extracted from the mould by roller trains, the metal strand being cooled during extraction until it has completely hardened, the improvement comprising subjecting the surface of the metal strand, in the region of solidification of the metal strand, along its path of extraction, to the action of a gaseous medium having about the same pressure as the ferrostatic internal pressure of the metal strand and, at the same time, cooling said metal strand by spraying liquid on its surface, the metal strand leaving the mould being guided first along an inclined and curved path and then along a substantially horizontal path, the surface of the metal strand being subjected to the pressure of the gaseous medium increasing by steps along the inclined path, the value of the pressure in each step being substantially constant and corresponding to the medium value of the ferrostatic internal pressure of the portion of the metal strand traversing said step.

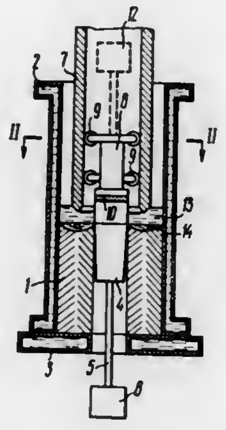
3,848,657
APPARATUS FOR ELECTROSLAG MELTING OF HOLLOW INGOTS

Vladimir Alexandrovich Tetjuev, ulitsa Uralskaya, 113, kv. 79, Perm, Boris Izrailevich Medovar, ulitsa Turgeneva, 33, kv. 6; Leonty Vasilievich Chekotilo, bulvar Lesi Ukrainki, 2, kv. 8; Valery Georgievich Popov, ulitsa Scherbakova, 49a, kv. 10, all of Kiev; Pavel Ivanovich Tjurikov, ulitsa Ezhena Potie, 9, kv. 7, Perm; Ivan Egorovich Kosmatenko, ulitsa Tekhnicheskaya, 15, kv., Perm, all of U.S.S.R.

Filed Dec. 29, 1972, Ser. No. 319,794

Int. Cl. B22d *27/02*

U.S. Cl. 164—252 **3 Claims**



1. An apparatus for electroslag melting of hollow ingots, said apparatus comprising: a cooled crystallizer; a bottom plate for said cooled crystallizer; a mandrel for forming a cavity in an ingot, said mandrel being introduced into said crystallizer; a drive for moving said mandrel in the vertical direction; at least one consumable electrode mounted in an electrode holder and adapted for melting an ingot in said cooled crystallizer; and an extension assembly for said mandrel, said extension assembly being mechanically fixed-coupled with said mandrel and electrically insulated therefrom and having rollers for centering said mandrel, mandrel-faced lateral sides of said consumable electrode serving as guides for each of said rollers.

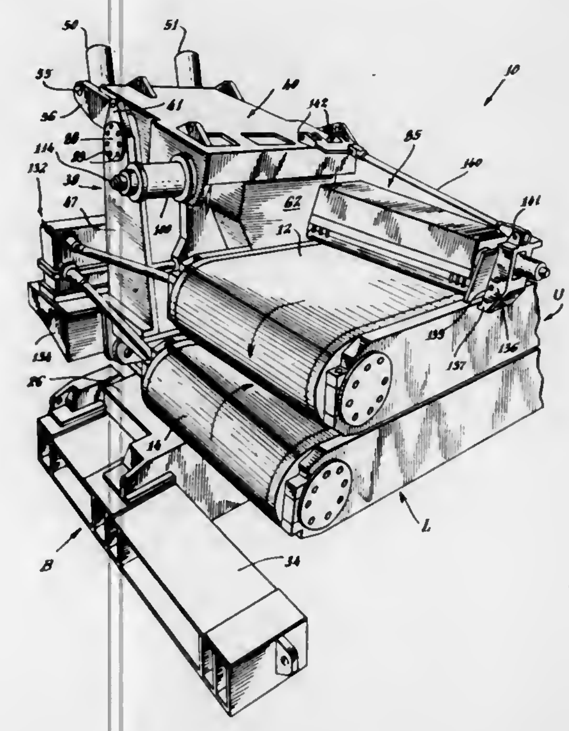
3,848,658
CARRIAGE ORIENTATION AND LIFT SYSTEM FOR A TWIN BELT CONTINUOUS METAL CASTING MACHINE

Robert William Hazelett, Winooski; John Frederick Barry Wood, Burlington, and Robert J. Carmichael, Colchester, all of Vt., assignors to Hazelett-Strip-Casting Corporation, Malletts Bay, Winooski, Vt.

Filed Mar. 16, 1973, Ser. No. 342,096

Int. Cl. B22d *11/06*

U.S. Cl. 164—278 **15 Claims**



1. A carriage orientation and lift system for a twin-belt continuous metal casting machine comprising:
- a machine frame including a chassis with a back frame extending upwardly therefrom,
- a lower belt carriage extending outboard from this chassis in rigid cantilevered relationship adapted to have a lower casting belt revolved around it,
- a fulcrum pivot on said back frame above the level of said lower carriage,
- a lift arm pivotally attached to said back frame by said fulcrum pivot, said lift arm having a rear portion extending behind said back frame and a front portion extending in front of said back frame,
- lift means connected to the rear portion of said lift arm and to the frame for pulling downwardly on the rear portion of said lift arm to swing up the front portion thereof,
- an upper carriage connected by a pivot assembly to the front portion of said lift arm, said upper carriage being positioned above said lower carriage and being adapted to have an upper casting belt revolved around it in parallel relationship with said lower belt,
- a convex circularly curved cylindrical segment positioned on said back frame at a lower level than said fulcrum pivot,
- roller means mounted on said upper carriage at a lower level than said pivot assembly in rolling engagement with said curved cylindrical segment,
- the axis of said curved cylindrical segment being parallel with the axis of said pivot assembly and also parallel with the axis of said fulcrum pivot,
- the distance from said fulcrum pivot to the axis of said curved cylindrical segment being equal to the distance from the axis of said pivot assembly to the axis of said roller means, and
- the effective radius of curvature of said curved cylindrical segment plus the radius of said roller means being equal to the distance between the axis of said fulcrum pivot and the axis of said pivot assembly,
- thereby to maintain the upper carriage parallel with the lower carriage as the upper carriage is raised and lowered by said lift arm.

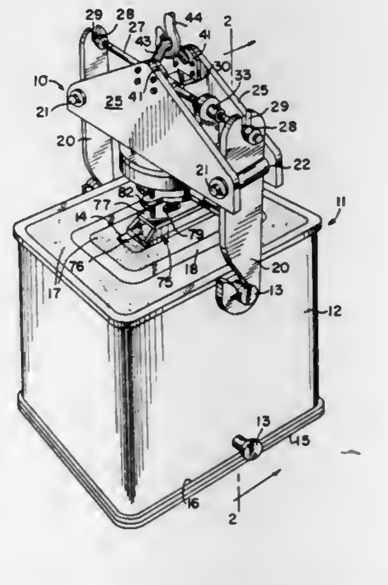
3,848,659
APPARATUS FOR HANDLING MOLDS

Edward Keagy, Naperville, Ill., assignor to Kaiser Industries Corporation, Oakland, Calif.

Filed Nov. 3, 1972, Ser. No. 303,376

Int. Cl. B22d *29/04*

U.S. Cl. 164—405 **10 Claims**



1. A device for separating an arbor and a cast iron ingot mold from a pouring assembly including a flask comprising a portable fixture including vertical jack means operatively mounted on said fixture, a motor on the fixture operatively connected with said jack means to cause the jack means to operate in a downward direction, a cross-beam mounted adjacent the lower end of the vertical jack means, and means to rotate said cross-beam between two positions at substantially ninety degrees from each other whereby to engage an arbor in one position and to engage a cast iron ingot mold in the other position, said jack means and cross-beam by the downward movement thereof causing said arbor to separate from the flask in one position of the cross-beam and causing said ingot mold to separate from said flask in the other position of the cross-beam.

3,848,660
PLASTIC HEAT EXCHANGE APPARATUS AND A METHOD FOR MAKING

Thomas A. Reilly, Reading, Pa.; Charles F. Reitz, and Robert D. Smith, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

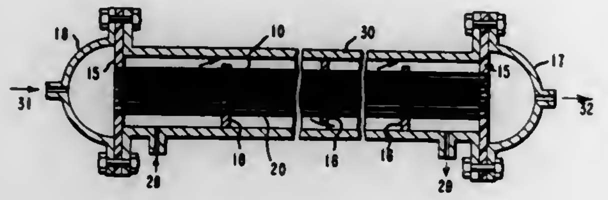
Division of Ser. No. 64,221, Aug. 17, 1970, Pat. No. 3,718,181. This application Sept. 22, 1972, Ser. No. 291,182

Int. Cl. F28f *7/00*

U.S. Cl. 165—1 **4 Claims**

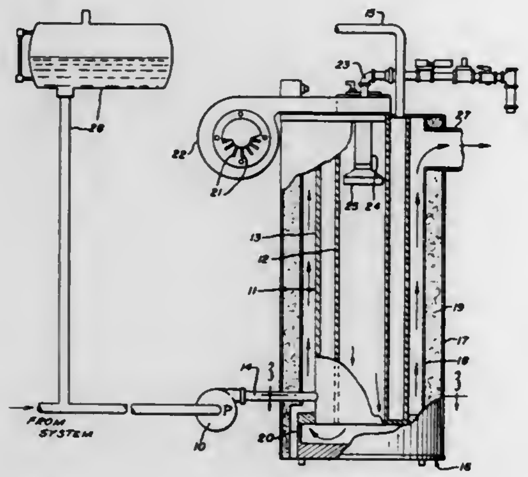
1. A method of transferring heat between two fluid masses comprising: passing a first fluid mass through the interior and directly into contact with the inner surface of a plurality of hollow filaments made from a plastic composition containing

5 to 45 percent by weight of filler particles having a thermal conductivity substantially greater than the thermal conductivity of the plastic, substantially all of said filler particles having a diameter greater than 2.0 microns and the ratio of the diameter of said filler particles to the wall thickness of said filaments is 0.001 to 0.1, said filler particles having a distribution in said plastic composition which is homogeneous enough so that said filaments have a tensile strength greater than 1,000 psi and an elongation to failure of greater than 25 percent at room temperature and heterogeneous enough so that said filaments have a thermal conductivity greater than twice the thermal conductivity of the plastic; and directly contacting substantially the entire outer surface of said hollow filaments with a second fluid mass having an overall temperature difference from said first fluid mass.



3,848,661
THERMAL FLUID HEATER APPARATUS

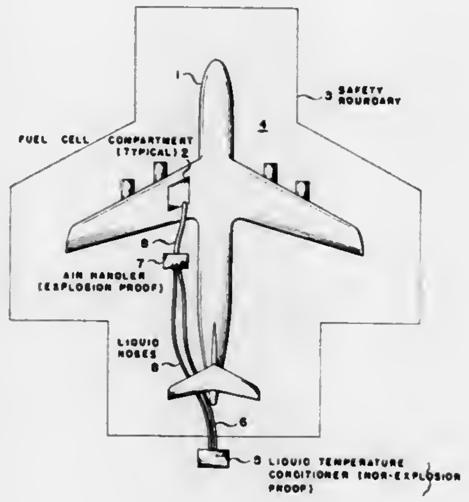
Lewis J. Palm, and Ronald B. Palm, both of Pulaski, N.Y., assignors to Fulton Boiler Works, Inc., Pulaski, N.Y.
Division of Ser. No. 77,820, Oct. 5, 1970, Pat. No. 3,747,670. This application July 23, 1973, Ser. No. 381,372
Int. Cl. F28d *7/10*
U.S. Cl. 165—155 **2 Claims**



1. An apparatus for heating a thermal fluid having a boiling point higher than water and for circulating the heated thermal fluid within a closed system in order to exchange the heat of that fluid comprising: means including an interior cylindrical shell and a concentric exterior cylindrical shell coextension with and radially spaced therefrom to define a substantially unobstructed elongated annular chamber for continuous unidirectional throughflow of thermal fluid during circulation thereof through the closed system; means for heating the shells to effect heat exchange with the thermal fluid during throughflow thereof in said chamber and including an insulated outer jacket spaced radially from said exterior shell, air inlet deflecting means and a source of combustible material positioned within said interior shell for producing hot combustion products flowing in one axial direction through the inside of the interior shell in wall contact therewith and then flowing in the opposite axial direction between the outside of the exterior shell and the jacket in wall contact therewith; means for producing a bodily flow of said thermal fluid within said annular chamber continuously swirling about the central axis of said chamber in a helical path of predetermined width and characterized by rotary and axial flow components cooperatively determining a flow that continuously fills and sweeps the entire annular chamber by introducing adjacent one end of the chamber a stream of said liquid along a direction that is tangent to the chamber periphery including horizontal inlet means at one end of said chamber directed tangentially to said helical flow path and outlet means at the opposite end of said annular chamber; and said apparatus being characterized in that the radial distance between said interior and exterior shells is in the range from about 1 inch to about 10 inches, the shells further having a length of about twice the diameter of the exterior shell and the inlet having a diameter in the range from about 1½ inch to about 3 inches to produce a minimum flow rate in said chamber of 1 foot per second for preventing scorching of said thermal fluid.

3,848,662
METHOD AND APPARATUS FOR SUPPLYING A TEMPERATURE CONDITIONED AIRFLOW TO AN OPEN COMPARTMENT IN AN EXPLOSION SUSTAINING AMBIENT SURROUNDING

Roy L. Kilgore, Marietta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Feb. 3, 1972, Ser. No. 223,282
Int. Cl. F24h *3/06*
U.S. Cl. 165—1 **5 Claims**


1
3 SAFETY BOUNDARY
4
FUEL CELL COMPARTMENT (TYPICAL) 2
8
7
AIR HANDLER (EXPLOSION PROOF)
LIQUID HOSES
6
6
5 LIQUID TEMPERATURE CONDITIONER (NON-EXPLOSION PROOF)

1. A method of supplying temperature conditioned, ambient air to the interior of a compartment open to the ambient and containing explosion sustaining vapors at a compartment temperature in the range of from approximate the ambient temperature up to approximately 50°F. above the ambient temperature, said open compartment further producing an explosion sustaining zone ambient to the compartment, said method comprising the steps of:

temperature conditioning a liquid at a location exterior to the explosion sustaining zone;

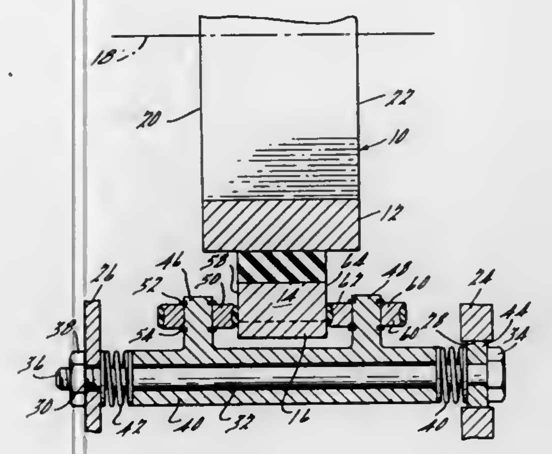
circulating said temperature conditioned liquid to an explosion proof heat exchange means located within the explosion sustaining zone, and returning said liquid out of the explosion sustaining zone for recycling of the temperature conditioning;

blowing explosion sustaining zone air into contact with the heat exchange means and thus heat exchange relationship relative to the temperature conditioned liquid whereby said air becomes temperature conditioned; and

supplying said temperature conditioned ambient air to the interior of the compartment.

3,848,663
ROTARY REGENERATOR FOR A GAS TURBINE ENGINE WITH RESILIENT MOUNTS FOR POSITIONING THE REGENERATOR

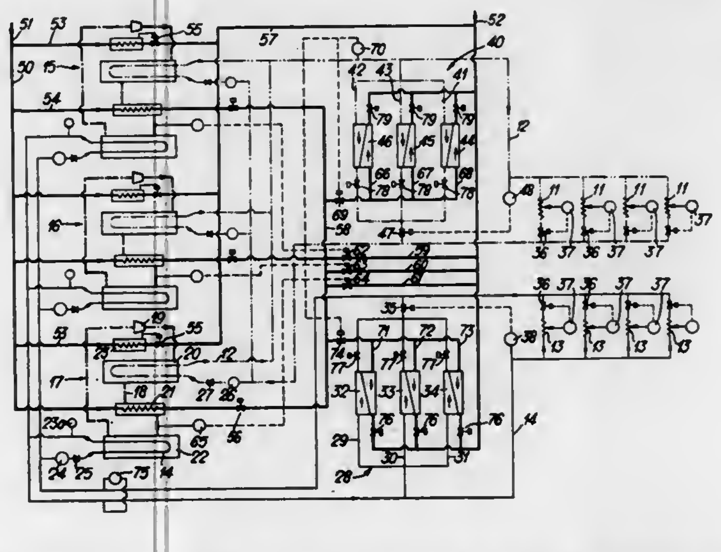
V. Durga Nageswar Rao, Woodhaven, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Nov. 19, 1973, Ser. No. 417,441
Int. Cl. F28d *19/00*
U.S. Cl. 165—8 **12 Claims**



1. A regenerator assembly for a gas turbine engine comprising a rotary regenerator core mounted within a gas turbine engine, said assembly comprising a ceramic matrix adapted to conduct a counterflow of hot and cool gases under differential pressures, a matrix rim surrounding the regenerator matrix, a ring gear surrounding the rim, a means for yieldably mounting the ring gear concentrically around the rim, an adjustable member situated adjacent the ring gear and mounted on portions of said housing for shifting movement in a direction generally parallel to the axis of rotation of said regenerator matrix, bearing means carried by the adjustable member for positioning said rim relative to said adjustable member, means for yieldably maintaining said adjustable member in its adjusted position whereby the axial position of said regenerator matrix with respect to the engine housing and the direction of the axis of rotation of said matrix may be controlled.

3,848,664
HEATING/COOLING APPARATUS

Edward James Perry, Ickenham, and Paul Moumouloff, London, both of England, assignors to Kins Developments Limited, London, England
Filed June 23, 1972, Ser. No. 265,454
Claims priority, application Great Britain, June 23, 1971, 29495/71
Int. Cl. F24f *3/00*
U.S. Cl. 165—22 **13 Claims**



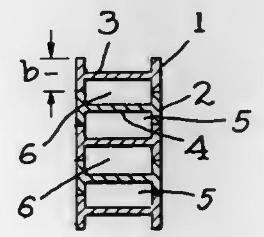
1. Heating and cooling apparatus including a heating device, a heating circuit for recirculating heated fluid to the heating device, a cooling device, a cooling circuit for recirculating cooled fluid to the cooling device, the flow path in the cooling circuit being separate from the flow path in the heating circuit, refrigeration means for cooling the cooled fluid and heating the heated fluid, first heat exchange means selectively operable for removing unwanted heat from the heating circuit when not required by the heating device, and second heat exchange means selectively operable for adding heat to the fluid in the cooling circuit when insufficient heat is added at the cooling device.

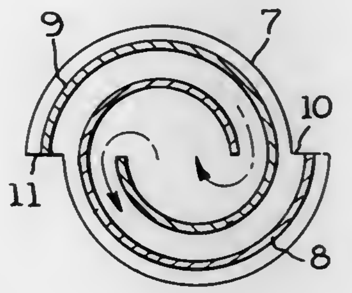
ERRATUM

For Class 165—34 see:
Patent No. 3,848,654

3,848,665
DAMPER SLIDE FOR HOT BLAST SLIDE DAMPERS

Johannes Uerlichs, Woffelsbach; Rudolf Muller, Merzenich, and Wilhelm Kuckertz, Konzendorf, all of Germany, assignors to Hermann Rappold & Co. GmbH, Duren, Germany
Filed May 9, 1972, Ser. No. 251,709
Claims priority, application Germany, May 17, 1971, 2124303
Int. Cl. F16k *49/00*
U.S. Cl. 165—168 **2 Claims**





1. A slide for use in a hot blast slide damper having a casing, said slide comprising:

a pair of channel members, each having an I-shape cross-section with opposite flanges joined by a web;

said pair of channel members being spirally interwound with the edges of the flanges of one of said members sealingly connected to the edges of the flanges of the other of said members;

said spirally interwound members forming a flat disc;

said connected and spirally interwound members forming therebetween a pair of spaced convoluted cooling channels, said channels being separated by said webs of said members;

said channels being connected at the center of said flat disc;

a first of said channels, at the periphery of said disc, having an inlet connection for communication with a source of cooling fluid;

a second of said channels, at the periphery of said disc, having an outlet connection for discharging said cooling fluid;

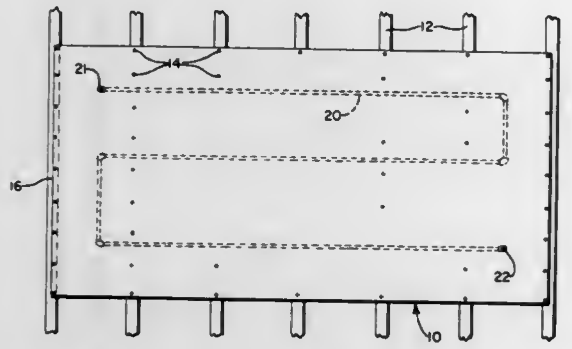
whereby cooling fluid flows into said first channel from said inlet connection, through said first channel to said center of said disc and into said second channel, and through said second channel to said outlet connection; and

a core member positioned at said center of said disc, said core member having deflecting means forming continuations of said webs of said members.

3,848,666
FOAMED METAL BODIES

Alex R. Valdo, Phoenix, Ariz., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. Nos. 91,211, Nov. 19, 1970, abandoned, and Ser. No. 91,212, Nov. 19, 1970, Pat. No. 3,735,552 abandoned. This application Feb. 26, 1973, Ser. No. 335,680
Int. Cl. F28f *3/12*
U.S. Cl. 165—168 **4 Claims**



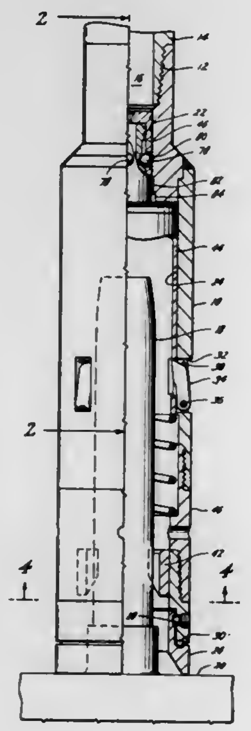
1. A rectangular structural panel of foamed aluminum having discrete cells therein, having a density less than about 50 pounds per cubic foot and having embedded therein a copper-base conduit for a heating liquid, the conduit having an inlet and an outlet end, both of said ends projecting out through one face of the panel.

ERRATUM

For Class 165—252 see:
Patent No. 3,848,657

3,848,667
SHEARED PIPE CUTTER

John E. Clark, Jr., Houma, La., assignor to A-Z International Tool Company, Houston, Tex.
Filed Nov. 2, 1973, Ser. No. 412,114
Int. Cl. E21b *29/00*
U.S. Cl. 166—55.6 **9 Claims**



1. A pipe cutter for cutting sheared well drill pipe comprising

a tubular mandrel having means at its upper end for connecting with a pipe string,

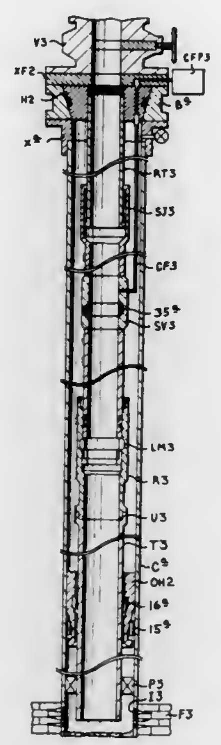
a plurality of cutters pivotally mounted in windows defined by said mandrel,

a piston slidably mounted within said mandrel and adapted to engage said cutters to cam said cutters to a cutting position,

said piston having means for restricting flow of fluids through said piston during cutting by said cutters and a bypass whereby movement of said piston to a completed cutting position opens said bypass around said flow restricting means to provide a change in pressure of the fluid in the mandrel above said piston signaling completion of said cut.

3,848,668
APPARATUS FOR TREATING WELLS

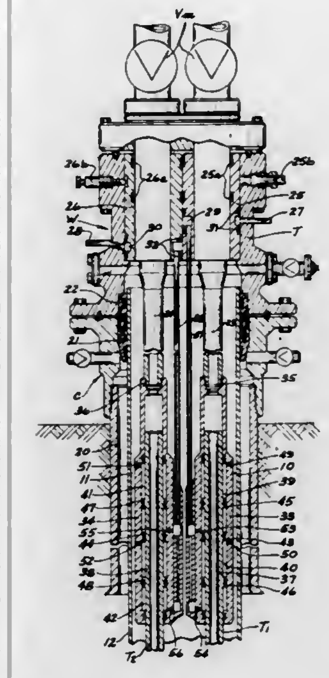
Phillip S. Sizer, Dallas, and Carter R. Young, Lewisville, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.
Filed Dec. 22, 1971, Ser. No. 210,727
Int. Cl. E21b *23/00*
U.S. Cl. 166—72 **16 Claims**



1. Apparatus for treating a well having one or more flow conductors therein to install a surface controlled subsurface safety valve in each such flow conductor of the well for controlling flow from the well therethrough which includes: guide and support means insertable through each well flow conductor to engage the flow conductor at a point below which it is desired to part said conductor for removal of the upper portion of said conductor thereabove leaving the lower portion of the conductor in place in the well; means for parting the upper portion of each original flow conductor from the remainder thereof left in place in the well at the selected point in the flow conductor for removal of the upper portion of the flow conductor from the well while leaving the lower portion engaged with and supported by the guide support means; means including replacement flow conductor means for each separate flow conductor of the well having surface controlled safety valve means therein insertable into the well telescoped over the guide and support means into engagement with the upper end of the lower portion of the flow conductor left in place in the well and having connecting means for connecting said replacement flow conductor means with the upper end of the original flow conductor left in the well engaged with and supported by the guide and support means over which said replacement flow conductor means is telescoped, said guide and support means being removable from within the replacement flow conductor means after said replacement flow conductor means has been connected to the upper end of said original low conductor left in place in the well for removal of said guide and support means from the well; and control means at the surface connected to each of the subsurface safety valve means and operative in response to predetermined conditions sensed in the well or at the surface for actuating each of said safety valve means to cause the same to move to closed position upon the occurrence of such predetermined sensed conditions, whereby wells may be provided with surface controlled subsurface safety valve apparatus without disturbing the flow conductors below the point of parting and removing the upper portion thereof and without disturbing the remainder of the flow conductor and well apparatus left in place in the well therebelow.

3,848,669
WELL CONTROL APPARATUS

Cicero C. Brown, P.O. Box 19236, Houston, Tex. 77024
Filed Nov. 29, 1972, Ser. No. 310,665
Int. Cl. E21b *43/12, 33/03*
U.S. Cl. 166—72 **30 Claims**



1. An assembly for regulating the flow of effluents through a well comprising:

a. support means releasably supporting a plurality of parallel conduits in said well;

b. sensor means connected to said support means and responsive to one or more predetermined conditions at said well to automatically release said support means; and

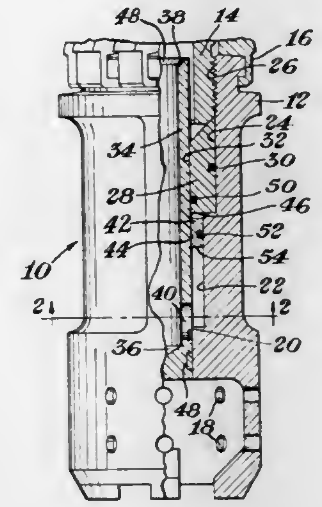
c. flow control means comprising valve means in each of said conduits operable upon predetermined movement of its respective conduit to regulate flow of effluents through the well, said valve means comprising a first valve connected to said conduit and a second valve adapted to be moved axially through said conduit into operative engagement with said first valve to render said first valve inoperative and said second valve operative upon said predetermined movement of its respective conduit.

3,848,670
VALVE ASSEMBLY

Charles A. Pitts, Wichita Falls, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Filed June 25, 1973, Ser. No. 373,330
Int. Cl. E21b *43/12;* **F16k** *1/00*
U.S. Cl. 166—224 R **8 Claims**

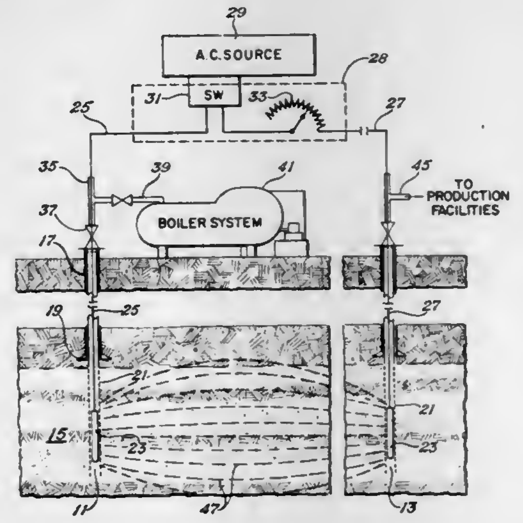
1. A valve assembly adapted for use in a tubular structure, said assembly including a housing adapted to be coupled at one end to a suitable structure disposed across said tubular structure, said housing having an inner cylindrically shaped wall including an undercut part thereof intermediate the ends of the housing,

a tubular member having an upper end and a lower end and outer wall having an outwardly extending shoulder, said tubular member fitting within said housing, said outer wall of said tubular member fitting closely but slidably against the inner wall of said housing with said shoulder fitting closely but slidably against said undercut part, said housing and said tubular member each having at least one port extending therethrough, means for maintaining a slidable sealing relationship between said housing and said tubular member between said shoulder and above said undercut part, means for applying a mechanical force through one end of said housing to move said tubular member with respect to said housing whereby said ports communicate with each other and a vacuum is produced in the space between said shoulder and an adjacent undercut part of said housing.



3,848,671
METHOD OF PRODUCING BITUMEN FROM A SUBTERRANEAN TAR SAND FORMATION

Loyd Rupert Kern, Irving, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Oct. 24, 1973, Ser. No. 409,063
Int. Cl. E21b *43/00*
U.S. Cl. 166—248 **16 Claims**



1. A method of producing bitumen from a subterranean tar sand formation containing viscous bitumen comprising the steps of:

a. drilling and completing a plurality of at least two wells extending from the surface into said tar sand formation for production of said bitumen therefrom; at least one said well being completed as an injection well and at least one said well being completed as a production well; said wells being spaced apart and arranged in a predetermined pattern;

b. pre-heating said tar sand formation and sand bitumen intermediate said wells sufficiently to render said bitumen mobile within said tar sand formation; said pre-heating being effected by passing a predetermined electrical current from one of said wells to the other of said wells for a predetermined time interval;

c. thereafter injecting a fluid that is immiscible with said bitumen through said injection well and into said tar sand formation; and

d. producing said bitumen from said production well.

3,848,672

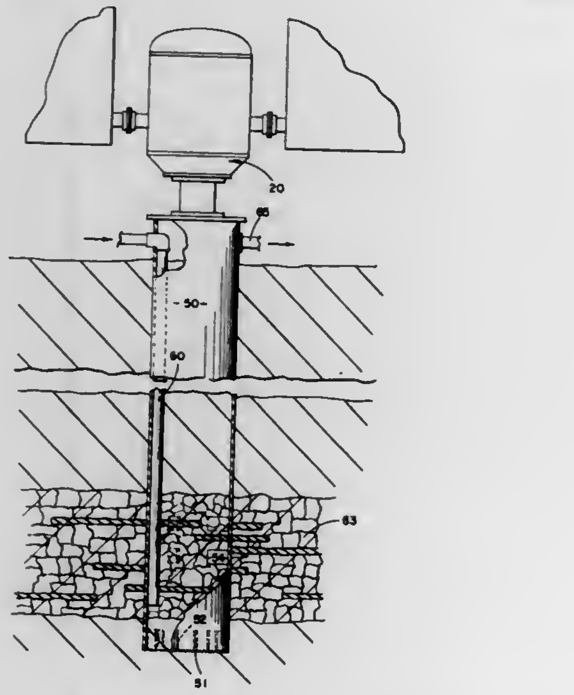
SONIC RETORTING TECHNIQUE FOR IN SITU MININING OF CARBONACEOUS MATERIAL

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Filed May 21, 1973, Ser. No. 361,885

Int. Cl. E21b *43/24*

U.S. Cl. 166—249 **13 Claims**



1. The method of extracting oil from an oil shale body in the earth having kerogen therein, comprising the steps of:

coupling a sonic generator to said oil shale body by means of a solid member interconnecting said generator and said body,

transmitting sonic energy from said generator through said solid member to said oil shale body,

expending said sonic energy in said oil shale body as an energy sink until conversion temperature of the kerogen is reached so that shale oil is produced, and

extracting the shale oil from the earth.

3,848,673

RECOVERY OF HYDROCARBONS

Richard L. Clampitt, and James E. Hessert, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 26, 1973, Ser. No. 335,810The portion of the term of this patent subsequent to Jan. 10, 1990, has been disclaimed.

Int. Cl. E21b *43/16*

U.S. Cl. 166—275 **27 Claims**

1. A method of treating a subterranean formation, penetrated by at least one borehole, with a fluid medium comprising an aqueous gel, which method comprises:

adding to water containing a water-thickening amount of a water-soluble cellulose ether, an amount of a water-soluble compound of a polyvalent metal wherein the metal present is capable of being reduced to a lower polyvalent valence state, said amount of metal compound being sufficient to cause gelation of said water when the valence of at least a portion of said metal therein is reduced to said lower valence state;

injecting said water containing said cellulose ether and said metal-containing compound into said borehole and into said formation; and

contacting said water in said formation with an amount of a reducing gas which is effective to reduce at least a portion of said metal to said lower valence state.

3,848,674

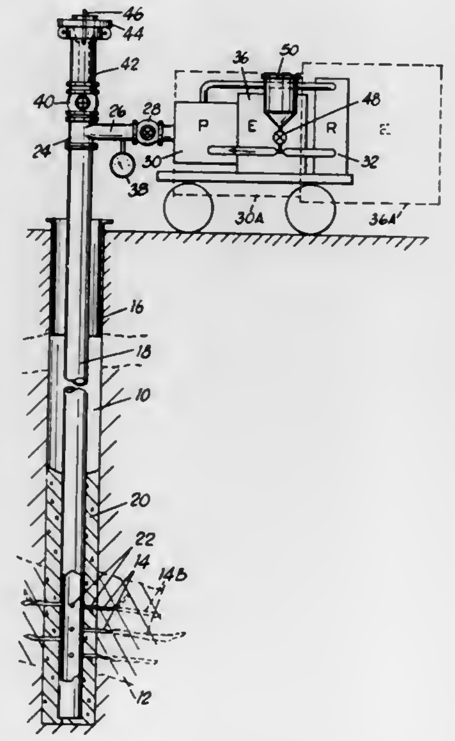
METHOD AND APPARATUS FOR FRACTURING OIL AND GAS STRATA

Archibald Irvine McColl, Kalamazoo, Mich., assignor to Alexander M. S. McColl, Kalamazoo, Mich.

Filed Oct. 18, 1973, Ser. No. 407,622

Int. Cl. E21b *43/00, 43/26*

U.S. Cl. 166—299 **12 Claims**



1. Apparatus for developing sub-stratum fracturing pressure from an adjacent portion of a well bore having a high pressure pipe extending to the top of the bore and having its lower end sealed to the bore along said stratum with pressure openings in the pipe and the seal comprising,

means for introducing fracturing liquid into the top of said pipe,

a means defining charge receiving and explosion chamber adapted to be connected to the top of said pipe in pressure transmitting relation to the interior of the pipe,

and means for exploding an explosive charge in said chamber,

said pipe and said chamber being capable of withstanding pressures of at least 2,000 p.s.i.

3,848,675

FOAM-PRODUCING APPARATUS

John L. Evans, Blackwater, near Camberley, England, assignor to Chubb Fire Security Limited, Middlesex, England Continuation-in-part of Ser. No. 242,317, April 10, 1972, abandoned. This application Nov. 5, 1973, Ser. No. 412,639

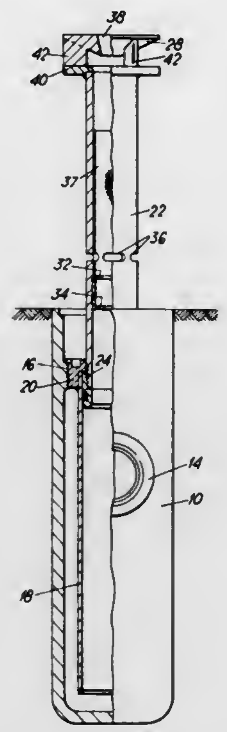
Claims priority, application Great Britain, Apr. 14, 1971, 9437/71

Int. Cl. A62c *35/44*

U.S. Cl. 169—15 **8 Claims**

1. In a fire-fighting sprinkler system, foam-producing apparatus comprising:

a foam generator having an inlet for receiving a solution of a foaming agent and a delivery end through which the foam is expelled and defining a path between the said inlet and delivery end, a jet head between the inlet and the delivery end for forming the said solution into a spray, a turbulence generator located downstream of the jet head, and air-entraining means comprising air-intake apertures and opening into the path of the said solution between the jet head and the turbulence generator for introducing air into the path of the spray;



a housing for the foam generator, the housing in use being recessed into the ground;

the foam generator being mounted for movement relative to the housing between a lower position in which it does not extend substantially above the housing and an upper position in which the delivery end and the air-intake apertures of the foam generator are above the level of the housing and to which the foam generator is automatically lifted, when the foaming agent solution is delivered to the solution-receiving inlet, by the pressure of the solution.

3,848,676

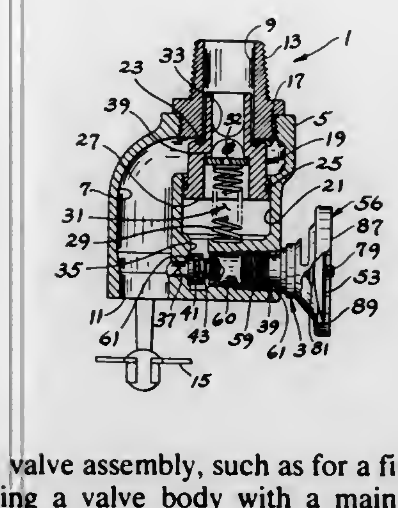
THERMALLY ACTUATED VALVE ASSEMBLY

John Doherty, Jr., Assonet, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 26, 1973, Ser. No. 428,600

Int. Cl. A62c *37/08*

U.S. Cl. 169—37 **6 Claims**



1. In a main valve assembly, such as for a fire extinguishing sprinkler, having a valve body with a main passage therethrough, one end of said main passage constituting an inlet adapted for connection to a pressurized fluid source and the other end thereof constituting an outlet adapted for the discharge of fluid, a main valve seat in said main passage between said inlet and said outlet, valve means movable between a closed position in engagement with said main valve seat blocking communication between said inlet and said outlet and an open position permitting the flow of fluid through said main passage, said main valve means having a first pressure area against which fluid pressure acts to move said valve means from its closed position to its open position and a second pressure area larger than the first pressure area against which fluid pressure acts to seat said valve means against said main valve seat so as to maintain said main valve means in its closed position against the force exerted by fluid pressure acting against said first pressure area, an auxiliary passage between said first pressure area and said second pressure area for equalizing fluid pressure applied to the first and second pressure areas, said auxiliary passage including a vent for venting fluid pressure from acting against said second pressure area; a thermally actuated pilot valve assembly for effecting opening of said main valve assembly in response to being subjected to a predetermined elevated ambient temperature, said pilot valve comprising a housing removably insertable as a unit into said valve body in said auxiliary passage between said second pressure area and said vent, a pilot valve passage in said valve housing consituting a portion of said auxiliary passage through which all fluid vented from said vent port must flow, said pilot valve passage having an inlet, an outlet and a valve seat therebetween, said pilot valve assembly further comprising a pilot valve member movable in said pilot valve housing between a closed position in which said pilot valve member is seated in said pilot valve thereby to block communication between said second pressure area in said vent so as to maintain fluid pressure acting against said second pressure area and to maintain said main valve means in its closed position and an open position for venting fluid pressure from said auxiliary passage thus reducing the fluid pressure acting against the second pressure area so as to enable fluid pressure acting against the first pressure area to open said main valve means, means for biasing said pilot valve towards its closed position, a thermostatic disk carried by said pilot valve housing, said disk being abruptly movable over center from a first curvature position to a second curvature position when subjected to said predetermined ambient temperature, means interconnecting said disk and said pilot valve member, and abutment means spaced from said disk when the latter is in its first curvature position and engageable by said disk as it moves from its first to its second curvature position thereby to permit free movement of said disk until it engages said abutment means without application of force to said pilot valve member and, upon engagement of the disk by said abutment means, to apply a force to said pilot valve member via said interconnecting means so as to move it against the force of said biasing means toward its open position.

3,848,677

SOIL CULTIVATING IMPLEMENTS AND SCREENING ELEMENTS

Ary Van der Lely, 10, Weverskade, Maasland, and Cornelis Johannes Gerardus Bom, 36, Esdoornlaan, Rozenburg, both of Netherlands

Filed May 17, 1973, Ser. No. 361,292

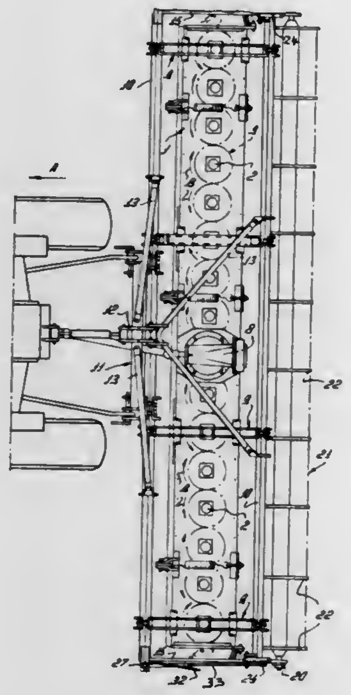
Claims priority, application Netherlands, May 24, 1972, 7206943

Int. Cl. A01b *33/06*

U.S. Cl. 172—112 **15 Claims**

1. A soil-working cultivating implement comprising a frame and a plurality of soil-working members rotatably mounted on said frame, said soil-working members being mounted on upwardly extending shafts located in a transverse row and driving means on said implement being connected to rotate said shafts, a plate-like screening element being pivotably mounted on said frame adjacent each end of said row, said

element having a forward end pivoted to said frame and being turnable about an axis that extends substantially parallel to said shafts, a spring associated with said element and said



spring biasing said element to turn same towards said soil-working members, against a stop on said implement, whereby the turning movement of said screening element about said axis is limited.

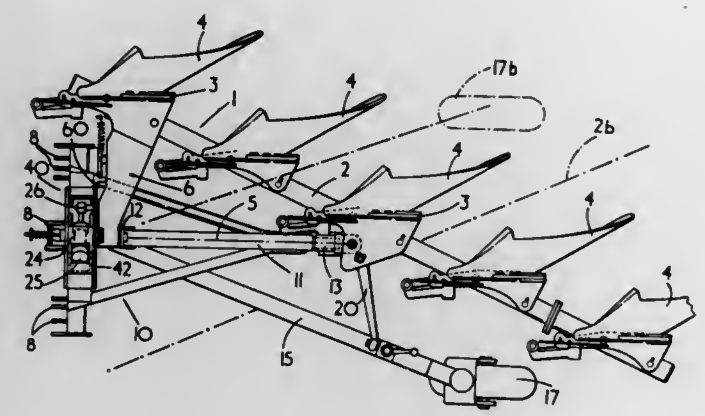
3,848,678
REVERSIBLE PLOUGH OPERATING MEANS

Charles Vernon Roger Dowdeswell, Lower Radbourne Farm, Southam, Leamington Spa, Warwickshire, England

Filed Dec. 22, 1972, Ser. No. 317,820

Int. Cl. A01b *3/44, 3/46*

U.S. Cl. 172—225 **3 Claims**



1. Reversible plough mechanism for a reversible plough of the character described, in which a plough share carrying frame is pivotally mounted on support structure for turnover movement about a longitudinal axis in effecting plough reversal, the operating mechanism being carried from an upstanding support mounted on the support structure and comprising: a fluid pressure operated double acting ram which is pivotally connected about respective axes, parallel with said longitudinal axis between a forward part of the ploughshare carrying frame and the upper part of a crank member which latter is pivotally carried about a further axis parallel with and between said axes by the upstanding support whereby the ram is carried by the crank member for over center movement therewith relative to said further axis on said turnover movement of the ploughshare carrying frame, said crank member having two opposed bearing surfaces of curved form about and below said further axis; and a projection which is carried by said forward part of the ploughshare carrying frame and which, dependent on the direction of turnover movement, engages a corresponding bearing surface of the crank member when the ploughshare carrying frame is in the substantially midway over center raised position of turnover movement in order to retain the ploughshare carrying frame at said position prior to release of said engagement by reverse pivotal movement of the crank member on initial extension of the ram.

3,848,679
TOOL HOLDER

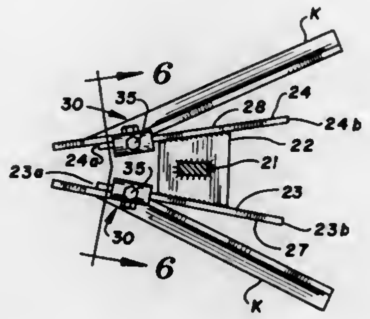
Wayne S. Tonsfeldt, Sabin, Minn. 56580

Continuation of Ser. No. 212,114, Dec. 27, 1971

Filed July 25, 1973, Ser. No. 382,522

Int. Cl. A01b *15/00, 35/22*

U.S. Cl. 172—762 **5 Claims**



1. An earth working tool mounting for attachment to a tool bar which tool bar is mounted on a vehicle for movement, such earth working tool mounting including:

a. a generally upright member having an upper end for attachment to the tool bar and having a lower end;
b. a plate member attached to the lower end of said member and positioned thereon to be in a generally horizontal attitude, the sides of said plate member being diverging outwardly from the front to the rear thereof, the front thereof being directed in the direction of movement of the vehicle;
c. a pair of generally flat mounting bars fixedly attached to said sides of said plate member, said bars each having an upper and lower surface, said upper surface being flat and horizontal and said lower surfaces consisting of upwardly and inwardly converging camming sections; and
d. means for attaching an earth working tool respectively on each of said mounting bars, said means including clamp means comprising a camming surface to engage said camming section and a generally arcuate top section to extend over said upper surface and tightening means provided through said top section for tightening against said upper surface.

3,848,680
IMPACT CLUTCH MECHANISM

John G. Legler, North Aurora, Ill., assignor to Skil Corporation, Chicago, Ill.

Filed Dec. 26, 1973, Ser. No. 427,734

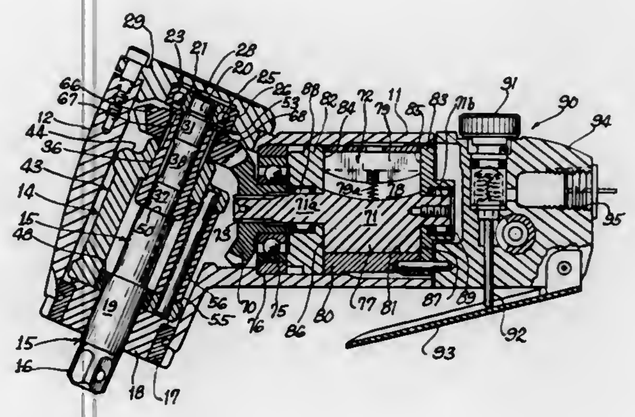
Int. Cl. E21b *33/03*

U.S. Cl. 173—93.5 **11 Claims**

1. In an impact wrench of the type including an impact clutch mechanism and a motor for powering the same, the improvement comprising:

a. an anvil shaft carrying an anvil formation and having one of its ends configured for transmitting rotation to a member adapted to be engaged by the impact wrench;
b. an impact clutch assembly for transmitting continuous rotation to the anvil shaft until the latter resists such rotation and thereafter to impart successive impact blows to the anvil shaft;

c. connecting means for transmitting rotation from said motor to said impact clutch assembly; and
d. thrust bearing means engaged with said anvil shaft and the housing of the impact wrench for transmitting to the latter such axial forces which are applied to the anvil shaft, said thrust bearing means being independent of said impact clutch assembly and said connection means thereby to prevent such axial forces from being transferred to said motor.



3,848,681
IMMERSION HYDROPERCUSSIVE DEVICE

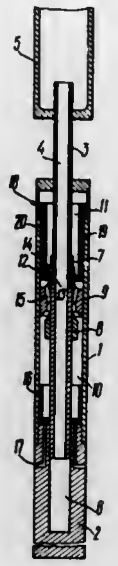
Bogdan Vyacheslavovich Voitsekhovsky; Faina Fedorovna Voitsekhovskaya, and Bogdan Bogdanovich Voitsekhovsky, all of ulitsa Maltseva Kottedzh 2, Novosibirsk, U.S.S.R.

Filed Mar. 12, 1973, Ser. No. 340,035

Claims priority, application U.S.S.R., Mar. 10, 1972, 1755841

Int. Cl. E21b *11/06*

U.S. Cl. 173—125 **4 Claims**



1. An immersion hydropercussive device comprising a movable housing, a percussive mass rigidly connected to said movable housing, a source of high-pressure fluid, a hollow rod located in said movable housing, a cavity in said percussive mass, the interior of said hollow rod at one end communicating with said source of high-pressure fluid, and at the other end with said cavity in the percussive means, two stops rigidly fastened to the hollow rod, a piston mounted on said hollow rod with a provision for movement along the axis of the latter between the two said stops, a circular cavity formed between said piston and said hollow rod, ports in said hollow rod for communicating said circular cavity with the interior of the rod while accelerating said percussive mass, said piston dividing said movable housing in two cavities, a first cavity located adjacent said percussive means and a second cavity, ports formed in said piston for connecting said first and second cavities while accelerating said percussive mass, other ports in said hollow rod for communicating said second cavity with said cavity of said interior of the rod while cocking said percussive mass, another stop formed in said first cavity for interaction with the end surface of said piston upon completion of cocking said percussive mass, a liner installed co-axially in said second cavity provisioned for moving along the walls of this cavity for interaction between the end surface of the liner and said piston following the percussion of said percussive mass, and a hydroaccumulator installed between the said source of high-pressure fluid and the interior of the rod.

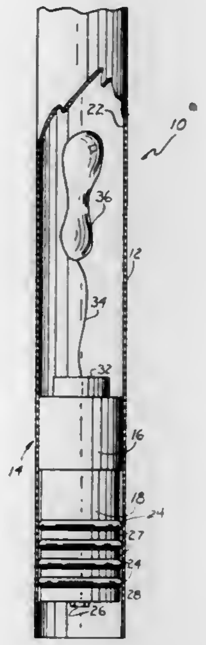
3,848,682
FREE-FALL CORNER

John C. Payne, Long Island City, N.Y., assignor to Leslie J. Payne, Arlington, Va., a part interest

Filed Aug. 29, 1972, Ser. No. 284,567

Int. Cl. E21b *7/12*

U.S. Cl. 175—5 **6 Claims**



1. A free fall earth extracting apparatus for extruding earth from the ocean bottom comprising: a barrel having opposite open ends and being descendable to vertically penetrate the ocean bottom, an extrusion piston adapted to frictionally slide within the barrel, a container attached to the piston, an inflatable bag-like member connected at one end to the container, and means arranged within the bag-like member, thereby creating a positive buoyant force sufficient to lift the piston in the barrel, so as to effectuate extrusion of earth into the barrel, and then the apparatus including the extruded earth from the ocean bottom.

3,848,683
METHOD AND MEANS FOR DRILLING

Jan Edward Persson, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Feb. 1, 1973, Ser. No. 328,631

Claims priority, application Sweden, Feb. 10, 1972, 1588/72

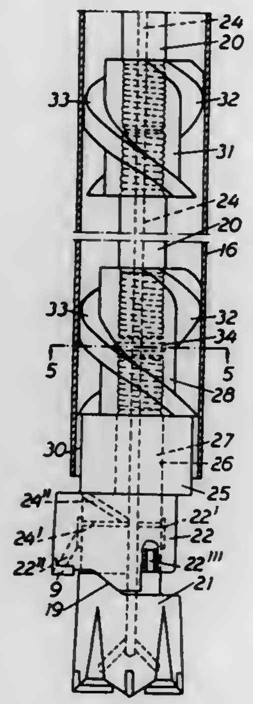
Int. Cl. E21b *21/04, 1/02*

U.S. Cl. 175—65 **28 Claims**

1. A method for drilling by means of a rotatable drilling tool adapted to drill a hole in advance of trailing casing tube means which are passed by drill rod means for carrying, rotating, and supplying flushing medium to said drilling tool, the drilling particles produced during drilling being removed by said flushing medium via said casing tube means, said method comprising

a. maintaining an annular slot of predetermined and substantially constant width between the mouth of said casing tube means and said drilling tool, said slot being of a width less than the size of drilling particles which are to be blocked from entering said casing tube means,

b. keeping centering surfaces on said drilling tool in rotary sliding engagement with the interior of said casing tube means rearwardly of and in close proximity to said slot for maintaining said drilling tool on center with respect to said casing tube means and said slot width constant during drilling, and



c. sifting the flushing medium through said slot for preventing oversized drilling particles to be entrained into and churned in said slot and casing tube means during removal of said flushing medium and rotation of said drilling tool.

3,848,684

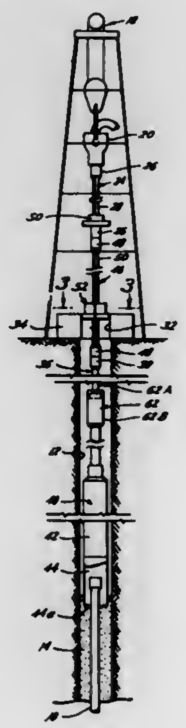
APPARATUS FOR ROTARY DRILLING

Thomas Douglas West, Houma, La., assignor to Tri-State Oil Tool Industries, Inc., Bossier Parish, La.

Filed Aug. 2, 1973, Ser. No. 385,171

Int. Cl. E21b *17/00*

U.S. Cl. 175—195 5 Claims



1. In a rotary drilling apparatus of the type wherein a rotary table imparts rotation to a pipe string and drill through a kelly releasably connected to the upper end of the pipe string and selectively engagable with the table for rotation therewith, the improvement comprising:

an auxiliary drive member disposed below and releasably connected to said kelly and adapted to form a part of the pipe string, and

means for selectively engaging said auxiliary drive member with said rotary table for rotation therewith.

3,848,685

MUD REMOVING SYSTEM BY MEANS OF AN EXCAVATOR AND AN APPARATUS THEREFOR

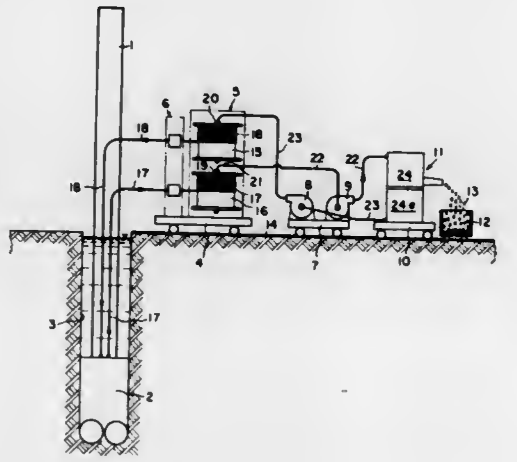
Atsushi Takagi, Yokohama; Mitsuo Miura, Tokyo; Akio Suzuki, Kashiwa; Yoshinori Kukino, Yokohama; Kiyoshi Amagai; Haruji Shimizu, both of Tokyo; Mitsutoshi Satoh, Kashiwa; Shoji Kohno, Chiba, and Mitsuo Ebine, Sakura, all of Japan, assignors to Takenaka Komuten Company, Ltd., Osaka-fu, Japan

Filed Dec. 12, 1972, Ser. No. 314,325

Claims priority, application Japan, Dec. 31, 1971, 46-1961; Mar. 18, 1972, 47-32579

Int. Cl. E21b *21/00*

U.S. Cl. 175—206 8 Claims



1. A spoil removal system for underground excavation comprising at least one hose, said one hose serving to remove a mud slurry entraining spoils from a zone of excavation to ground surface, means for forcing mud slurry, from the zone of excavation through the hose, a hose reel mounted on a shaft for rotational motion therewith, means for rotating the reel, a swivel pipe joint connected to one end of the shaft, one end of said hose being connected to the shaft near the swivel joint, fluid passage means through the shaft whereby fluid can pass from the hose through the shaft and through the swivel joint, traverse guiding means responsive to the amount of hose reeled in or reeled out to lay the hose properly on the reel, excavated mud treating means for the removal of spoil material from the mud and for recirculating mud slurry to the excavating zone, and pipe or hose means connected at one end to said swivel joint and at its other end to said excavated mud treating means.

3,848,686

DEVICE FOR COLLECTING DRILL DUST AND A SEALING MEMBER INTENDED FOR SAID DEVICE

Goran Jysky; Ilmar Mardla, and Bjorn Ericsson, all of NYkoping, Sweden, assignors to Ilmeg AB, Nykoping, Sweden

Filed June 14, 1973, Ser. No. 369,833

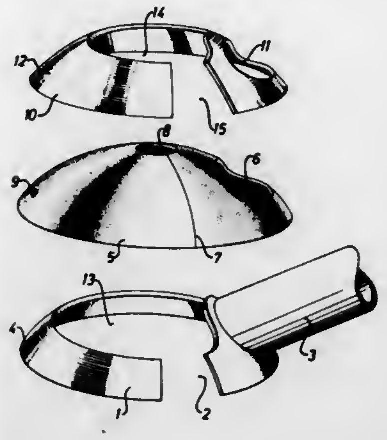
Claims priority, application Sweden, June 14, 1972, 7846/72

Int. Cl. E21b *21/00;* **E21c** *7/02*

U.S. Cl. 175—209 9 Claims

1. A device for collecting drill dust, especially in rock drilling, which comprises a hood provided with a connection means for a transport pipe, which hood is intended to rest with

its lower edge surface against a rock face or the like and has at its upper end a sealed-off gland for a drill bit or drill rod, wherein the hood comprises two shells (1,10), one of which is fitted over the other, which shells are provided at their upper ends with oppositely located apertures (13,14), said shells each being also provided with a slot (2,15) made in the same direction between the respective aperture (13,14) and outer edge, and further being arranged to hold between them an elastic sealing member (5) with an aperture (8) intended to be located in line with the aforesaid apertures.



3,848,687

HOLE SAW

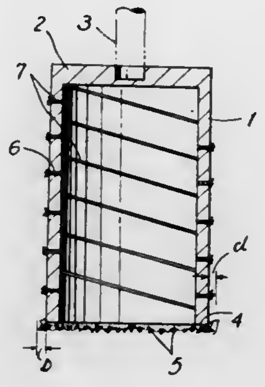
Toshiei Funakubo, Odawara, Japan, assignor to Kabushiki-Kaisha Eishin, Tokyo, Japan

Filed Jan. 19, 1973, Ser. No. 325,060

Claims priority, application Japan, Feb. 8, 1972, 47-15521

Int. Cl. E21b *9/16;* **E21c** *13/00*

U.S. Cl. 175—394 1 Claim



1. A hole saw comprising

a hollow cylindrical body closed at one end and having a uniformly cylindrical wall projecting from said closed end which has an annular rim around its free open end,

flinders of super-hard alloy secured on said rim to project laterally outwardly beyond said wall,

said wall having an external spiral groove therein, and means positioned in said spiral groove and carrying flinders of super-hard alloy in a spiral path around the outside of said wall and positioned to project outwardly from said wall to a less extent than the first-mentioned flinders.

3,848,688

LIQUID-REPELLING SHIELD DEVICE

King L. Kloppenstein, Prospect Heights, Ill., assignor to Triangle Package Machinery Company, Chicago, Ill.

Filed Oct. 26, 1973, Ser. No. 410,247

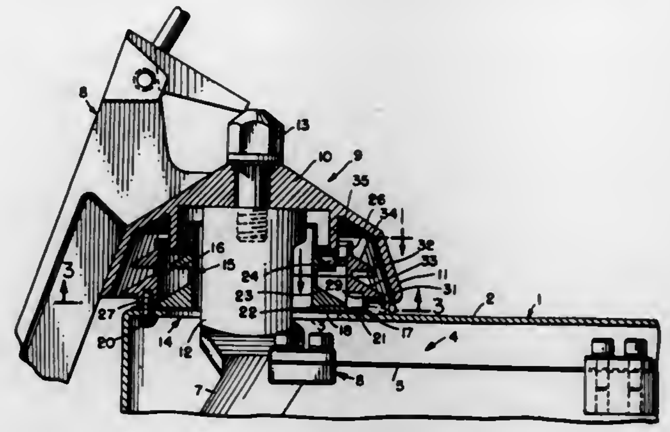
Int. Cl. G01g *21/02;* **F16j** *15/50;* **F02j** *11/00*

U.S. Cl. 177—179 17 Claims

1. A liquid repelling shield device for use between two relatively movable members, comprising,

a. an arrangement of inner and outer tubular elements mounted on one of said members, and

b. an outer, skirted cover, mounted on the other of said members and having the skirt portion thereof surrounding said tubular elements in spaced relation thereto,



c. whereby the space within said inner element will be protected against the entry of liquid under pressure thereinto, and still allow freedom of movement between said members.

3,848,689

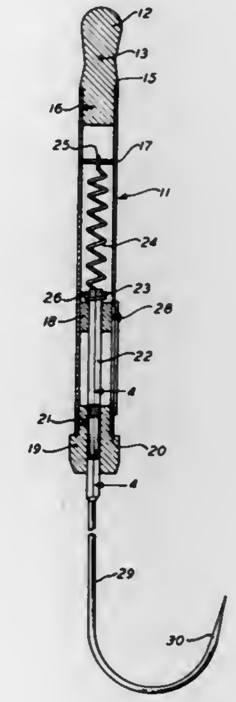
GAFF-SCALE WITH LOCK

Karl Hilterhaus, 19 Coeyman Ave., Nutley, N.J. 07110

Continuation-in-part of Ser. No. 289,797, Sept. 11, 1972, Pat. No. 3,743,042. This application Apr. 30, 1973, Ser. No. 355,566

Int. Cl. G01g *3/02;* **B65g** *7/12*

U.S. Cl. 177—233 5 Claims



1. A gaff-scale comprising:

a. a generally elongated hollow housing having a longitudinal slot,

b. a first guide for a rod attached in the housing,

c. a non-circular passage in the first guide,

d. a rod in the housing having a portion slidable in the passage in the first guide,

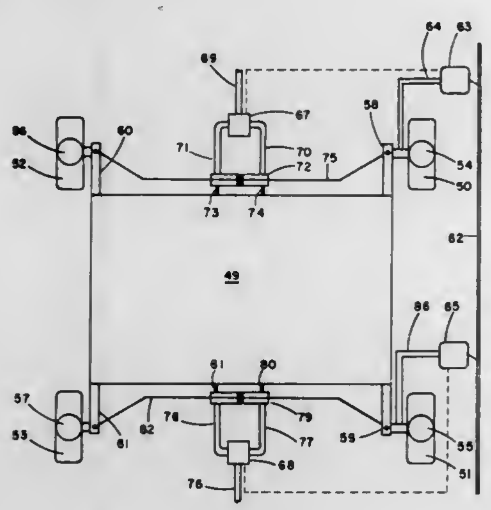
e. the portion of the rod slidable in the passage in the first guide provided with a non-circular cross-sectional configuration corresponding closely to the passage in the first guide, whereby torsional movement of the rod is inhibited;

f. a spring in the housing,

g. an end of the spring attached to the housing above the first guide,
h. another end of the spring attached to an end of the rod above the first guide,
i. an index on the rod visible in the longitudinal slot in the housing,
j. a scale on the housing arranged in visible relation to the index,
k. a second guide for the rod attached to the bottom of the housing,
l. the second guide having a non-circular passage,
m. a portion of the rod slidable in the passage in the second guide and provided with a cross-sectional configuration corresponding closely to the passage in the second guide, whereby torsional movement of the rod is inhibited,
n. an integral hook on a portion of the rod outside of the housing,
o. a strip in the passage in the second guide engageable with the rod.
p. a pivotable latch mounted in a slot in the second guide and engageable and disengageable with the strip.

3,848,690
VEHICLE STEERING CONTROL SYSTEM

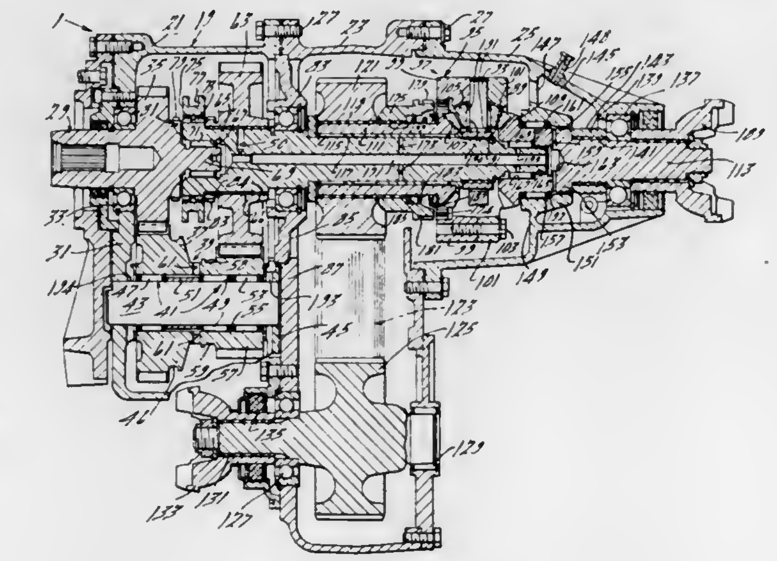
Royal R. Hawkins, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Aug. 2, 1971, Ser. No. 172,333
Int. Cl. B62d *11/04*
U.S. Cl. 180—6.48 **6 Claims**



1. A system to control the steering of a vehicle having right and left propelling means capable of being driven at different speeds, the system comprising:
right variable speed driving means adapted to drive the right propelling means;
left variable speed driving means adapted to drive the left propelling means;
a source of direct current potential having first and second terminals;
a speed control potentiometer having a resistive element connected between said first and second terminals and having a wiper arm;
first connecting means connecting said wiper arm to the right variable speed driving means;
second connecting means connecting said wiper arm to the left variable speed driving means;
manual steering control means connected to said first and second connecting means to relatively adjust the power to the right and left variable speed driving means; and
automatic steering control means comprising sensing means responsive to a preset reference for automatically controlling the steering of the vehicle, said automatic steering control means connected in parallel with said manual steering means to relatively adjust the power to the right and left variable speed driving means, wherein said speed control means controls the right and left variable speed driving means in unison to affect speed control and said manual and automatic steering control means controls the right and left variable speed driving means relative to one another to affect steering control.

3,848,691
FULL TIME FOUR WHEEL DRIVE

Courtney F. Dolan, Syracuse, N.Y., assignor to Chrysler Corporation, Highland Park, Mich.
Continuation of Ser. No. 311,045, Nov. 30, 1972. This application Oct. 24, 1973, Ser. No. 409,342
Int. Cl. B60k *17/34*
U.S. Cl. 180—44 R **34 Claims**

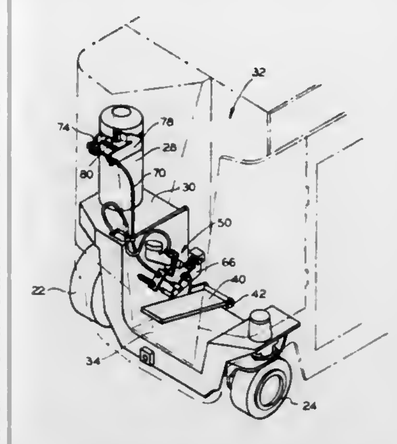


1. A transfer case for power drive systems comprising a housing, an input shaft, a rear wheel output shaft and a front wheel output shaft rotatably mounted in said housing, a differential carrier member, means for connecting said input shaft to said differential carrier member in a driving relationship, said means including an intermediate shaft member, a plurality of gear means adapted to connect said input shaft to said intermediate shaft member, a pinion member carried by said differential carrier member, first and second side gear members in mesh with said pinion member on opposite sides thereof to permit rotation of said side gear members at different speeds, means drivingly connecting said first side gear member to said front wheel output shaft, said second side gear member being connected to said rear wheel output shaft, and locking means drivingly and movably connected to one of said members and adapted to be moved between a first position out of engagement with one of said members and in which said differential carrier member may rotate relative to said side gear members and a second position in engagement with said one member for locking it to another one of said members for locking said intermediate shaft member differential carrier member, pinion member and side gear members together.

3,848,692
DUAL BRAKE ON DRIVE AND IDLER WHEELS OF INDUSTRIAL TRUCKS

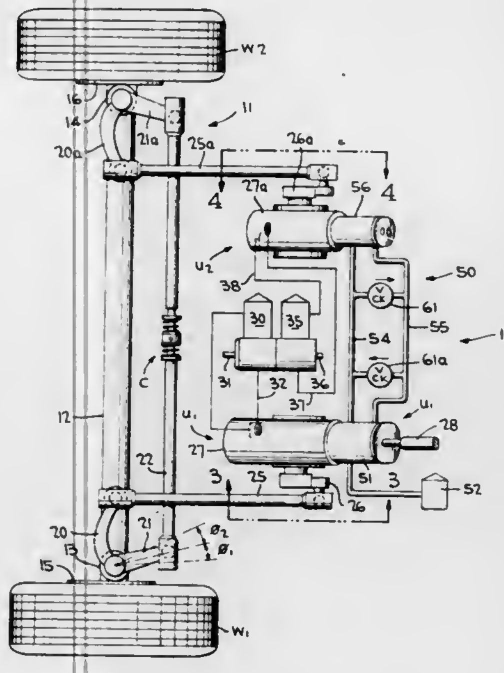
John S. Messner, and Robert E. Jones, both of Battle Creek, Mich., assignors to Clark Equipment Company, Buchanan, Mich.
Filed Dec. 26, 1973, Ser. No. 428,502
Int. Cl. B60k *17/30*
U.S. Cl. 180—52 **10 Claims**

1. In a power driven material handling truck having a base frame and wheels supporting the front end of the frame, a rear drive-steer wheel supported from the base frame on one side of the truck and spaced a first lateral distance from the center line thereof, a rear idler wheel supported from the base frame on the opposite side of the truck and spaced a second lateral distance from the center line thereof which is greater than the said first distance, said idler wheel being of smaller diameter than said drive-steer wheel, and brake means for braking both said rear mounted wheels comprising a brake external of said drive-steer wheel for braking said latter wheel, a brake internal of said idler wheel for braking said idler wheel, and single operator control means connected to both said external and internal brakes for engaging said brakes.



3,848,693
DUAL HYDRAULIC POWER STEERING SYSTEM WITH HYDROSTATIC CONTROL

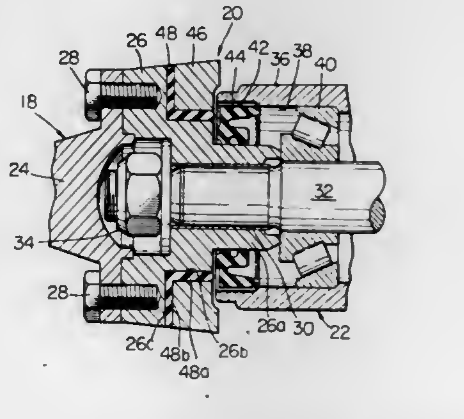
Richard H. Sheppard, c/o R. H. Sheppard Co., Inc., Hanover, Pa. 17331
Filed Nov. 1, 1973, Ser. No. 411,823
Int. Cl. B62d *5/06*
U.S. Cl. 180—79.2 **6 Claims**



1. In a dual hydraulic power steering system for coordinated turning wheels of a vehicle comprising first and second power operating units, steering linkage means provided between said wheels and said power operating units to interconnect the same, corresponding first and second power supply means interconnected to the corresponding operating units, first and second control means to direct the flow of fluid as required to steer the vehicle, means for coupling said control means, steering shaft means to operate said first control means and said coupling means, each combination of operating unit, control means and supply means being independent for directly turning separate wheels and each combination providing less than the total maximum design force required to allow the operator of the vehicle to comfortably turn said wheels, the improvement comprising in said coupling means, overdrive means effective to operate said second control means so as to lead said first control means in operation of said operating units, and coordinating means to limit the effectiveness of said coupling means in response to a predetermined torque applied to said steering shaft means, whereby both of said combinations may normally operate in said system but with leading by said second combination, and, upon failure of one combination, partial force power steering may still be effective.

3,848,694
TORSIONAL DAMPER FOR MOTOR VEHICLE DRIVE TRAIN

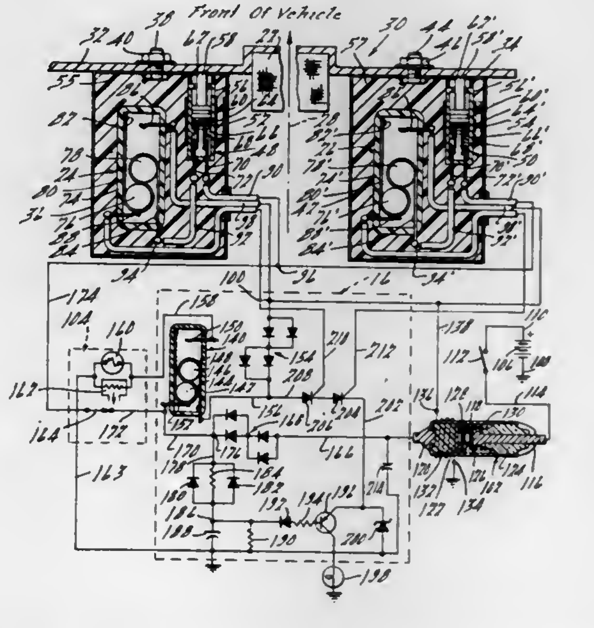
Masashi Matsui, and Teisuke Horio, both of Yokohama City, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Dec. 7, 1972, Ser. No. 311,713
Claims priority, application Japan, Jan. 10, 1972, 47-5445
Int. Cl. B60k *23/00*
U.S. Cl. 180—70 P **4 Claims**



1. A motor vehicle drive line comprising, a differential gear unit having a differential pinion drive shaft, a companion flange surrounding the forward end of said pinion shaft, and a torsional vibration damper having an annular resilient member mounted on an axial end surface of said companion flange and an annular inertia member secured about said resilient member, said resilient member and said inertia member coaxially surrounding said companion flange.

3,848,695
APPARATUS FOR CONTROLLING AN INFLATABLE SAFETY DEVICE

Leonard Lacaze, Jr., Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Apr. 2, 1973, Ser. No. 347,266
Int. Cl. B60n *21/08*
U.S. Cl. 180—103 **7 Claims**



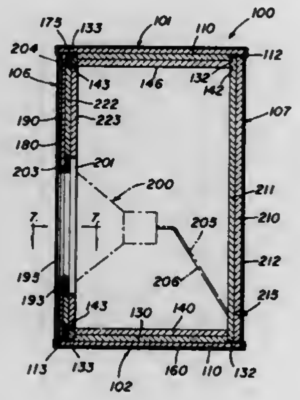
1. In a motor vehicle having a passenger compartment, an inflatable safety device positioned within said passenger com-

partment for restraining a vehicle occupant during a crash of said vehicle, a radiator positioned forward of said passenger compartment and a source of electrical energy; apparatus for controlling the inflation of said inflatable safety device, said apparatus comprising: electrically actuated means for causing the inflation of said inflatable safety device, said inflation causing means being connected to one terminal of said source of electrical energy; a first switch attached to said radiator or its support structure, said first switch being responsive to a predetermined acceleration; a second switch connected in series with said first switch, said second switch being located in said passenger compartment and being responsive to a predetermined acceleration less than that to which said first switch is responsive; and a thermal cut-off device having a first and second terminal, said first terminal of said thermal cut-off device being connected to the other terminal of said source of electrical energy, said second terminal of said thermal cut-off device being connected through said first and second switches to said inflation causing means, said thermal cut-off device having a fusible element therein and being normally conductive between its first and second terminals, said fusible element when melted rendering said thermal cut-off device nonconductive between its first and second terminals; and a resistance wire coiled around said thermal cut-off device, said resistance wire being connected to said source of electrical energy and to said first switch to supply current to said resistance wire when said first switch is in its accelertion-responsive condition.

3,848,696
LOUD SPEAKER HOUSING SYSTEMS

Scott F. Everitt, Indianapolis, Ind., assignor to Acoustic Fiber Sound Systems, Inc., Indianapolis, Ind.

Filed June 9, 1972, Ser. No. 261,340
Int. Cl. H04r *1/28;* **G10k** *13/00*
U.S. Cl. 181—31 B **28 Claims**

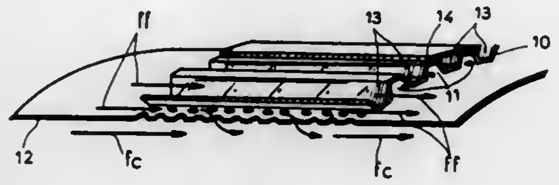


1. A loud speaker system having a housing comprising a bendable carrier sheet of sufficient length to form a top wall, a first side wall, a second side wall and a bottom wall, at least two layers of corrugated material fixedly mounted to said carrier sheet and to each other and arranged in a laminated stack with the corrugations of one of said layers extending in a direction substantially perpendicular to the direction of the corrugations of the other of said layers, a V-shaped groove in the laminated stack of corrugated material at at least three of the points at which junctures are to be formed between said walls, each of said V-shaped grooves extending transversely of the corrugated material along the entire width thereof and through the corrugated material, and means for connecting together the ends of said bendable carrier sheet and the ends of said corrugated material and the junctures at said V-shaped grooves to provide parallel spaced apart top and bottom walls interconnected by parallel and spaced apart first and second side walls, each of said walls including a portion of said carrier sheet and two superimposed layers of corrugated material in which the corrugations in one layer extend in a direction substantially perpendicular to the corrugations in the other layer, spaced apart front and rear walls interconnecting said side walls, said top wall and bottom wall, said front wall having an aperture therein and loud speaker means mounted in said housing in registry with said aperture.

3,848,697
ACOUSTIC DAMPING AND COOLING OF TURBOJET EXHAUST DUCTS

Michel Rene Jannot, Sceaux; Robert Guillaume Vaillant, Paris, and Serge Yvan Dzalba-Lyndis, Villejuif, all of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed July 3, 1973, Ser. No. 376,214
Claims priority, application France, July 4, 1972, 72.24082
Int. Cl. B64d *33/06*
U.S. Cl. 181—33 HB **12 Claims**

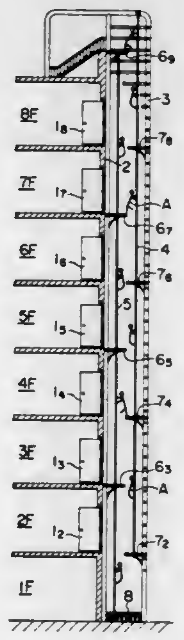


1. An exhaust duct inside which flows a hot turbojet flow and outside which flows a cooler turbojet flow, comprising in combination: at least one non-perforated external annular sheet; at least one perforated internal annular sheet; and a longitudinally corrugated element positioned between said external and internal annular sheets, noise attenuation chambers communicating with said hot flow being bounded by said perforated internal sheet and said corrugated element and cooling chambers communicating with said cooler flow being bounded by non-perforated external sheet and said corrugated element.

3,848,698
EMERGENCY ESCAPING DEVICE FOR HIGH BUILDING

Yoichiro Kanbe, 31-7, 2-chome, Sakae-cho, Soka-shi, Saitama-ken, Japan

Filed July 25, 1973, Ser. No. 382,331
Claims priority, application Japan, Aug. 31, 1972, 47-87484
Int. Cl. A62b *1/20*
U.S. Cl. 182—83 **5 Claims**



1. An emergency escaping device for high building comprising

a. an integral of vertically serial protection piping frames having a plurality of cross plates or arms, said frames being faced apart with the emergency exits of the building and the building exterior wall and being usable as emergency escaping ladders;

b. a plurality of poles within said protection piping frames for which peoples escape sliding down, said poles being aligned in two rows in forward and backward seeing from said protection piping frames;

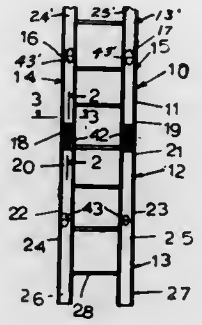
c. a plurality of stepping plates being located at every other emergency exit at the building floors, said stepping plates being provided with said several vertical poles in the backward row therethrough spaced at a proper distance from the several poles in the forward position;

d. a plurality of resting plates being located at the protection piping frames at the same level with every other floors in different from aforegoing floors having said stepping plates, said resting plates being provided with several poles therethrough spaced at a proper distance from the backward poles.

3,848,699
INTERLOCKING BUCKING HINGE AND LADDER COMBINATION

Charles W. Goodwin, Erie, Pa., assignor to PMCS Company, Inc., Erie, Pa.

Filed May 7, 1973, Ser. No. 357,926
Int. Cl. E06c *1/383*
U.S. Cl. 182—163 **11 Claims**



1. A hinge comprising

a first stack of platelike members and a second stack of platelike members,

said first stack of platelike members comprising first links haVing first spacers disposed therebetween,

and said second stack of platelike members comprising second links having second spacers disposed therebetween,

a first end of said first links extending beyond a first end of said first spacers,

and a first end of said second links extending beyond the first end of said second spacers,

said first links having laterally extending portions extending laterally beyond the sides of said first spacers,

said second links having laterally extending portions extending laterally beyond said sides of said second spacers and disposed between said laterally extending side portions of said first links,

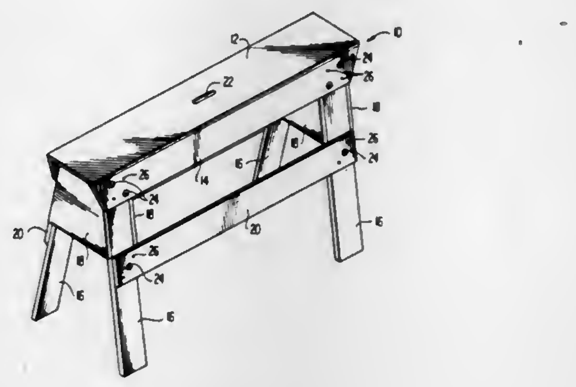
pivot means connecting said side portions of said first links to the laterally extending side portions of said second links,

the ends of said first portion of said second links being adapted to engage the ends of said first spacers when said second links are swung into alignment with said first links, said first links and said second links defining a space between when said second links are swung into spaced parallel relation to said first links.

3,848,700
SUPPORTING DEVICE

Thomas Jefferson Davis, Jr., 505 University Ave., Lubbock, Tex. 79401

Filed June 26, 1973, Ser. No. 373,807
Int. Cl. F16m *11/00*
U.S. Cl. 182—181 **6 Claims**



1. A supporting device, comprising:

an elongated top panel having a wide, substantially flat upper surface,

a pair of legs secured to said top panel near each end thereof to support it in an elevated position, said legs of each pair being inclined downwardly and outwardly from said top panel relative to a substantially vertical plane extending longitudinally through the center portion of the supporting device and a substantially vertical plane extending substantially transversely through the center portion of the supporting device,

an elongated side panel disposed adjacent each side of said end panel and being inclined downwardly and outwardly therefrom in overlapping relation to the upper side portions of said legs adjacent thereto, said side panels being secured to said top panel and to said legs, and

an end brace member secured to the inner end surface and the outer end surface of the upper portions of the legs of each of said pair of legs, each end brace member comprising an upper surface in engagement with the lower surface of said top panel, downwardly and outwardly inclined side surfaces in substantial alignment with the outer side surfaces of the pair of legs adjacent thereto, and a bottom surface that is substantially parallel to said upper surface thereof, the bottom surfaces of said end brace members being disposed in a substantially common plane that is substantially parallel to said upper surface of said top panel, the portion of said bottom surfaces extending between each pair of said legs being of a length that is greater than the width of said upper surface of said top panel, and

the length of said top panel being greater than the longitudinal distance between the end brace members having the greatest longitudinal spacing therebetween,

thereby enabling more than one supporting device to be stacked by resting said bottom surfaces of said end brace members of one supporting device on the upper surface of the top panel of another supporting device.

3,848,701
SAWHORSE BRACKET

Elmer J. Hughes, 13613 San Pablo Ave., No. 17, San Pablo, Calif. 94806

Filed Sept. 10, 1973, Ser. No. 395,950
Int. Cl. F16b *7/00*
U.S. Cl. 182—185 **9 Claims**

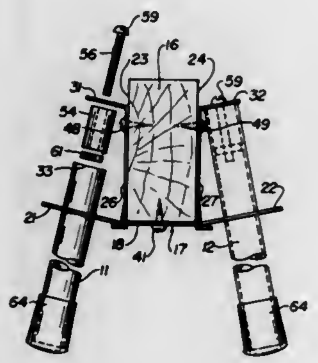
1. A device for demountably connecting the legs and ridge beam of a sawhorse comprising:

a base member adapted for mounting at and securing to the underside of said beam and having portions formed to extend laterally from the opposite sides of said beam;

a pair of strap members;

means connecting said base and strap members with the latter extending vertically from said base member and spaced apart for engagement with and being adapted for securing to said beam sides;

said base member portions being formed with openings



dimensioned to slidably receive a pair of legs and said strap members being formed with laterally extending parts spaced from said base portions and in alignment with said openings, in the attached position of said base and strap members, for engaging the upper ends of said legs threaded through said openings; and

means for demountably fastening said parts and legs.

3,848,702

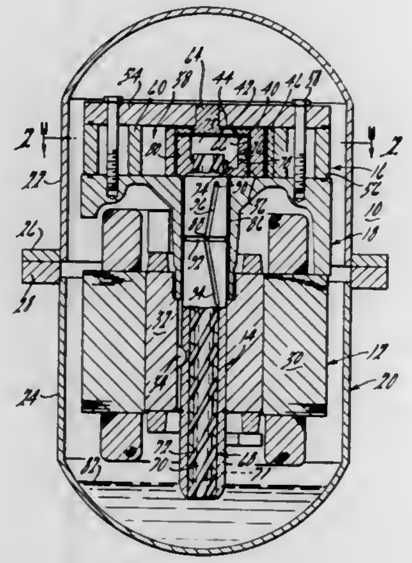
LUBRICATING SYSTEM FOR VERTICAL MACHINE ELEMENTS

Ernest R. Bergman, Fort Loramie, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Filed Oct. 2, 1972, Ser. No. 294,005

Int. Cl. F01m *7/00*

U.S. Cl. 184—6.3 **10 Claims**



1. In combination, means providing a main lubricant reservoir wherein lubricant normally stands at a level, a generally vertically disposed drive shaft having a journal, means supporting said drive shaft with said journal disposed above said level, and providing a bearing for said journal, means for rotating said drive shaft, means for lubricating said bearing comprising means defining a recess within said drive shaft adjacent said bearing and defining a passage through which lubricant may flow from said recess to said bearing driving rotation of said drive shaft, lubricant pump means extending into said main lubricant reservoir below said level and extending into said recess and effective to pump lubricant from said main lubricant reservoir into said recess, said means defining said recess including means retaining lubricant therein when rotation of said drive shaft stops and said lubricant pump means stops so that such retained lubricant may flow therefrom through said passage to lubricate said bearing when rotation of said drive shaft resumes, said recess communicating with the interior of said tubular drive shaft and said means for retaining lubricant within said recess comprising a dam between said recess and the interior of said tubular drive shafting.

3,848,703

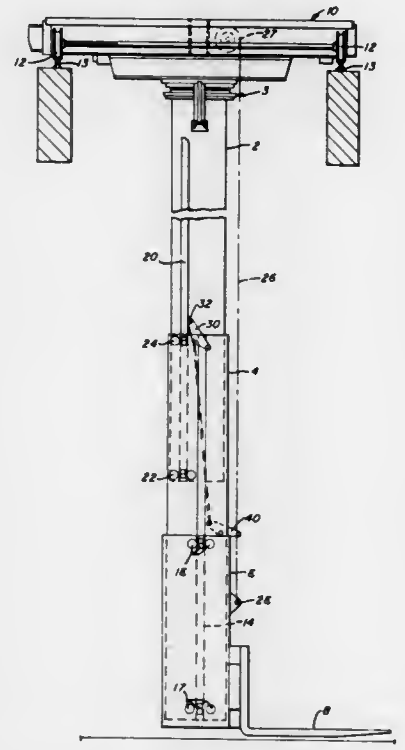
LATCHING MECHANISM FOR TELESCOPING LIFTING APPARATUS

Frederick Stanley Rundle, Montour Falls, N.Y., assignor to Shepard Niles Crane & Hoist Corporation, Montour Falls, N.Y.

Filed May 1, 1972, Ser. No. 249,374

Int. Cl. B66b *5/16*

U.S. Cl. 187—73 **4 Claims**



1. A telescoping load lifting apparatus comprising a fixed mast portion, a movable mast portion and load bearing portion wherein said movable mast portion and said load bearing portion are individually and conjointly vertically movable with respect to said fixed mast portion and individually vertically movable with respect to each other,

latching means comprising vertically spaced apart upper and lower latch lever means,

each of said latch lever means pivotally mounted upon said movable mast portion,

said lower and upper latch lever means being operably interconnected whereby said lower latch lever means may selectively engage and disengage said load bearing portion whereby said movable mast portion and the load bearing portion are vertically moved conjointly from their most extended position to a predetermined elevation, and whereby said upper latch lever means may selectively engage and disengage said fixed mast portion for selectively supporting said movable mast portion during further vertical movement of said load bearing portion above said predetermined elevation.

ERRATUM

For Class 187—86 see:
Patent No. 3,848,706

3,848,704

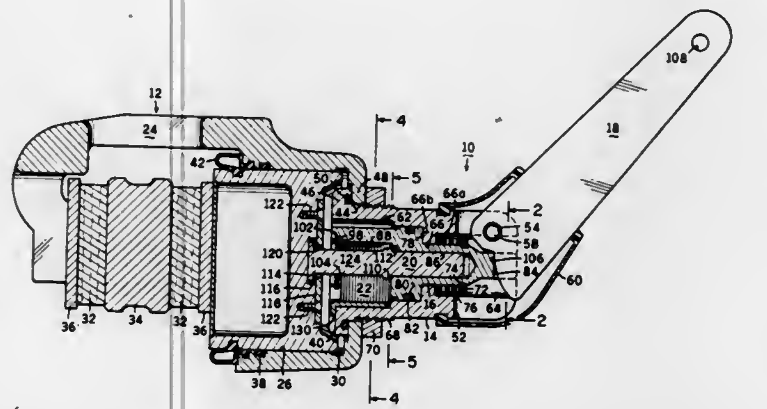
PARKING BRAKE AND WEAR ADJUSTMENT MEANS

Edward J. Falk, St. Louis, Mo., assignor to Wagner Electric Corporation, Parsippany, N.J.

Filed Nov. 19, 1973, Ser. No. 417,251

Int. Cl. F16d *65/52*

U.S. Cl. 188—71.8 **18 Claims**



1. In a caliper disc brake assembly of the type including a hydraulically actuated piston wherein the piston is slidable in a caliper bore and is actuated upon introduction of hydraulic fluid pressure forces to urge the piston and associated brake pad assembly into braking engagement with the disc, the improvement comprising:

an outer housing mounted on the caliper;

an actuating piston movably mounted within the outer housing for movement relative thereto;

actuating means mounted on the outer housing to engage the actuating piston and to apply a force thereto to move the piston relative to the housing;

an adjusting stem mounted within the actuating piston and provided to receive the force applied to the actuating piston by the actuating means and to transmit that force to the piston slidable in the caliper bore to urge the brake pad assembly into braking engagement with the disc;

a plurality of radially independently expandable means provided within the actuating piston for compensating for wear resulting from repeated braking engagement of the brake pad assembly and the disc; and

a single radially outwardly extending shoulder portion annularly disposed about the stem and intermediately of the length of the stem for engaging the radially expandable means.

3,848,705

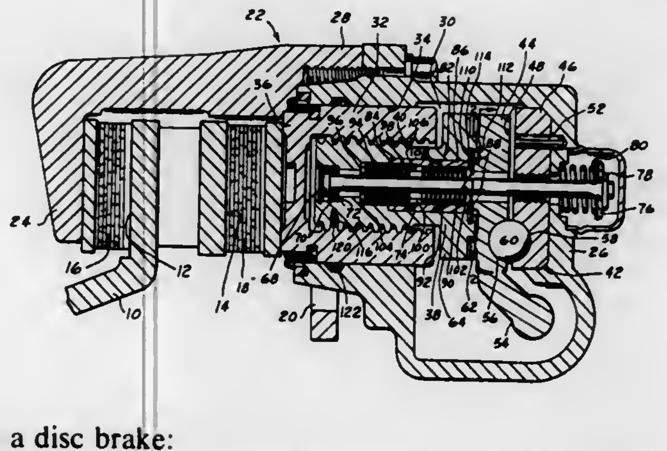
APPLICATION ADJUSTER FOR DISC BRAKE

Richard T. Burnett, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Aug. 13, 1973, Ser. No. 387,876

Int. Cl. F16d *65/56*

U.S. Cl. 188—71.9 **10 Claims**



1. In a disc brake:

a rotor having two friction faces, one on each side of the rotor;

two friction members positioned respectively adjacent said two friction faces;

a torque member;

a caliper housing slidably mounted on said torque member and operatively connected to said friction members for urging the members into engagement with their respective adjacent friction faces during a brake application;

said caliper housing defining a chamber and brake actuating mechanism in the chamber for advancing said friction members toward their respective adjacent friction faces; said actuating mechanism including an extendible member slidably carried in the chamber and operatively connected to one of said friction members, said extendible member being formed of two relatively rotatable parts which extend one with respect to the other upon relative rotation therebetween, rotatable cam means in the chamber drivably connected to the extendible member for sliding the latter upon rotation of said cam means; and

clutch mechanism for connecting the cam means to one of said parts upon brake application and for disconnecting the cam means upon brake release so that the latter can rotate relative to said one part, said clutch mechanism including lost motion means for permitting said cam means to initially rotate relative to said one part a predetermined distance upon brake application, and additional means for connecting said one part to said cam means for rotation therewith after said cam means is rotated through said predetermined distance, said clutch mechanism also including a pair of coil springs connected in series driving relationship between the cam means and said one part in such manner that the respective springs develop predetermined different torques for brake application and for brake release.

3,848,706

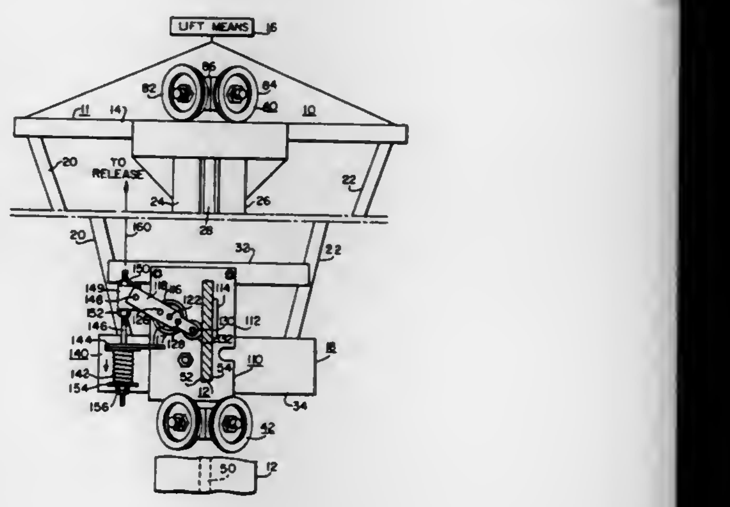
LIFT APPARATUS

Richard H. Darwent, Hopatcong, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 3, 1973, Ser. No. 421,713

Int. Cl. B66b *5/18*

U.S. Cl. 187—86 **7 Claims**



1. Lift apparatus comprising:

a structure including first and second spaced guide rails, each of said guide rails having first and second opposed side guide surfaces,

and first and second safety devices carried by a platform which operative on said first and second guide rails, respectively,

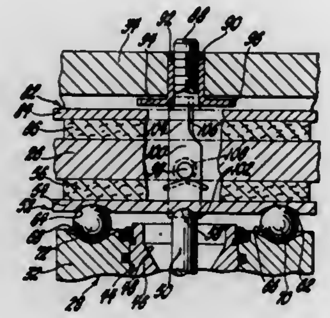
each of said safety devices including a back-up plate, and a cam member having a circular portion, said back-up plate and cam member being disposed adjacent to but spaced from the first and second side guide surfaces, respectively, of a guide rail, an actuating arm, means pivotally mounting said actuating arm coaxial with the circular portion of said cam member, and a roller carried by said actuating arm,

said actuating arm, when pivoted about a predetermined angle, directing said roller about the circular portion of said cam member into engagement with the second side guide surface of its associated guide rail, said actuating arm and roller having a predetermined clearance between their engaging surfaces selected to enable the actuating arm to position the roller against the guide rail while being isolated from forces generated between the engaging cam member, roller, guide rail and back-up plate.

3,848,707
DISC BRAKE ADJUSTER

Frank W. Brooks, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 13, 1973, Ser. No. 388,069
Int. Cl. F16d *65/56*
U.S. Cl. 188—71.9 1 Claim



1. A disc brake comprising:

a rotatable disc to be braked, a caliper having first and second legs extending on each side of said disc, first and second friction brake pad assemblies respectively mounted on said first and second caliper legs to frictionally engage the opposed sides of said disc when the brake is actuated, and brake actuating means on said first leg when actuated moving said first friction brake pad assembly into engagement with said disc;

said brake actuating means including a piston recessed to receive a push rod extending toward and engaging said first friction brake pad assembly for transmitting brake actuating force thereto in response to the application of brake actuating force on said piston;

first piston means mounting said first friction brake pad assembly on said first leg for limited movement in the direction of rotation of said disc when said first friction pad assembly engages said disc while said disc is rotating, the amount of such movement being in accordance with the amount of unadjusted wear of said friction brake pad assemblies, said mounting means including first and second pairs of mating ramps respectively formed in said first leg and said first friction brake pad assembly and a ball received between each mating pair of ramps substantially in line with said piston push rod in the direction of limited movement of said first friction brake pad assembly in the direction of rotation of said disc;

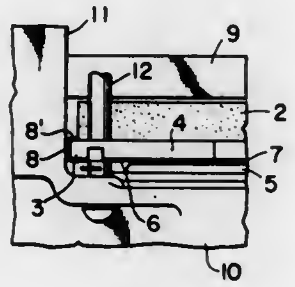
second means mounting said second friction brake pad assembly on said second leg and including a first threaded member secured to said second friction brake pad assembly and extending away from said disc in axial alignment with said piston push rod and a second threaded member in threaded relation with said first threaded member and rotatably received in said second leg in axial alignment with said piston push rod and having a peripherally toothed flange extending beyond said second friction brake pad assembly and parallel to said disc;

and an adjuster pawl pivotally mounted on said caliper and extending across said disc and having one end engaging said first friction brake pad assembly in driven relation whereby said adjuster pawl is pivoted in a plane substantially parallel to the axis of said disc when said first friction brake pad assembly moves in the direction of rotation as aforesaid and has a spring urging the pawl in the opposite pivoted direction, the other end of said pawl acting on said teeth of said second threaded member in a ratchet-like manner in one pivotal direction to rotate said second threaded member upon a predetermined minimum amount of such first friction brake pad assembly movement to move said first threaded member and therefore said second friction brake shoe assembly toward said disc to adjust for wear of said friction brake pad assemblies.

3,848,708
FRICTION PAD FOR DISC BRAKE ASSEMBLY

Takeshi Noguchi, Osaka, Japan, assignor to Sumitoma Electric Industries, Ltd., Osaka, Japan

Filed June 7, 1973, Ser. No. 367,989
Claims priority, application Japan, June 7, 1972, 47-66934
Int. Cl. F16d *65/02*
U.S. Cl. 188—73.1 3 Claims



1. In a disc brake assembly in which a friction pad is mounted in planar confronting fashion for a limited movement toward and away from a rotatable braking disc and wherein the ends of said pad move parallel to a guide surface adjacent thereto which is subject to rusting, and wherein said pad comprises a lining which faces and frictionally engages said disc and a back plate overlying the surface of said lining remote from said disc and having ends projecting beyond said lining, the improvement comprising: a stainless steel sheet overlying the back plate and having peripheral projecting end portions elastically covering the ends of said back plate along at least those portions of said back plate whose ends face said guide surface, said sheet peripheral end portions being bent over the projecting ends of said back plate with the sheet edges elastically gripping the lining side of said back plate inwardly of said back plate ends adjacent corner contact lines between said lining and said back plate with the confronting surfaces of said back plate ends and said stainless steel sheet end portions being spaced from each other such that said sheet end portions move elastically relative to the ends of said back plate to facilitate movement of said back plate relative to said guide surface regardless of rust accumulation thereon.

3,848,709
DISC BRAKE CALIPER AND FRICTION PAD MOUNTING STRUCTURE

Roger Tourneur, Saint-Maur, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed July 2, 1973, Ser. No. 376,059
Claims priority, application France, July 12, 1972, 72.25256
Int. Cl. F16d *55/224*
U.S. Cl. 188—73.3 6 Claims

1. In a disc brake:

a rotor having a pair of friction faces;

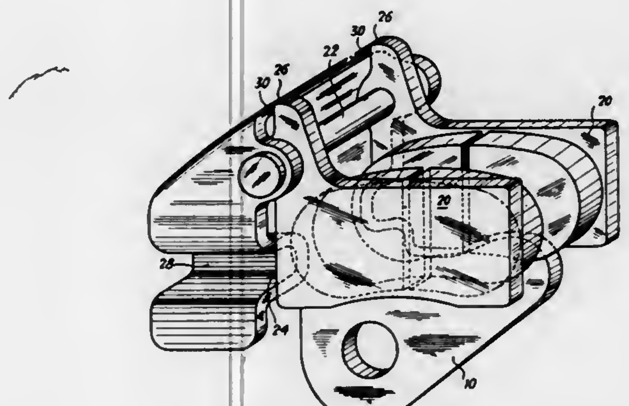
a U-shaped fixed support straddling said rotor and presenting a pair of legs extending generally parallel to each of said friction faces,

a pin carried by said fixed support at one edge of each of said legs, said pin extending across said rotor in a direction generally parallel to the axis of the rotor,

a pair of friction elements mounted on said pin adjacent each of said friction faces,

said one edge of each of said legs having a pair of bearing surfaces for anchoring its corresponding friction element, said pair of bearing surfaces being located in alignment on opposite sides of a plane intersecting said pin and perpendicular to a plane extending along a radius of the rotor and intersecting said pin so that each friction element anchors on one of said surfaces or the other of said surfaces, depending upon the direction of rotation of the rotor, and

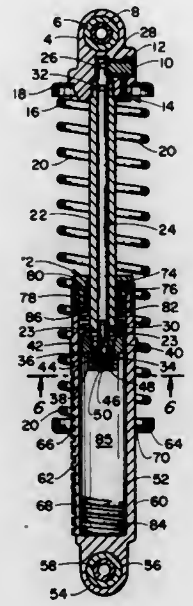
a clamping member slidably mounted on said fixed support for urging said friction elements into engagement with their corresponding friction faces.



3,848,710
SHOCK ABSORBER, PISTON AND VALVE STRUCTURE

John T. Thompson, Granada Hills, and Arnold A. Cowan, Tarzana, both of Calif., assignors to The Bobrick Corporation, North Hollywood, Calif.

Continuation of Ser. No. 179,752, Sept. 13, 1971, abandoned.
This application July 16, 1973, Ser. No. 379,612
Int. Cl. F16f *9/34*
U.S. Cl. 188—280 16 Claims

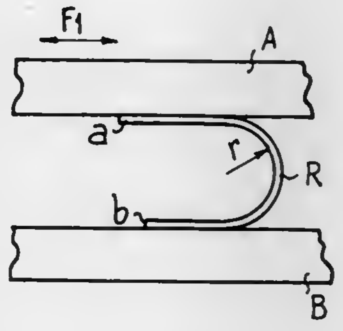


1. In a hydraulic shock absorber, the combination of: a pressure tube having closed radial walls and a reciprocable piston assembly therein dividing said pressure tube into first and second chambers; a single flow path connecting said chamber for fluid flow during jounce and rebound conditions; said assembly having at least first and second fluid passageways communicating to said single flow path through and from one side of said assembly to the other side open to hydraulic fluid flow during normal and jounce conditions, said at least first fluid passageway and said single flow path being centrally located in said assembly; and a single valve member controlling said hydraulic fluid flow through said single flow path and being responsive to hydraulic fluid differential pressure to close said at least second fluid passageway during rebound conditions and restrict the flow of hydraulic fluid in said pressure tube through said single flow path from said other side of said assembly to said one side; and a body of shock absorbing fluid positionable on one side of said piston assembly.

3,848,711
ELECTRICAL COUPLING BETWEEN ELEMENTS IN RELATIVE MOTION IN RESPECT OF EACH OTHER

Claude Brenot, and Gaston Mollard, both of Paris, France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 180,003, Sept. 13, 1971, abandoned.
This application July 12, 1973, Ser. No. 378,628
Int. Cl. H02g *11/00*
U.S. Cl. 191—12 R 2 Claims



1. A rotary electrical coupler between two elements relatively rotatable about an axis of rotation over a limited angular displacement comprising, in combination:

a. said two elements each of which include a first element and a second element, said first element being positioned radially inwardly with respect to its associated second element, said first and second elements having respective cylindrical walls concentric with respect to said axis of rotation, said walls having at least one pair of opposite walls which are respectively integral with said first and second elements;

b. a plurality of conductive springs, each of said springs having a "U" shape forming two ends, two linear portions and a curved intermediate portion, said two ends being respectively attached to said first and second elements, said two linear portions applying pressure respectively on the two opposite walls of a said pair of walls, said springs rolling without slip on said walls during said limited angular displacement and including one group of springs for each of said pair of walls, the springs in each of said groups being staggered regularly and circularly about said axis of rotation; and

c. terminals for connecting said springs, each of said springs being connected by its two ends to two respective terminals for transmitting an electrical datum, said springs transmitting separate electrical data between said elements.

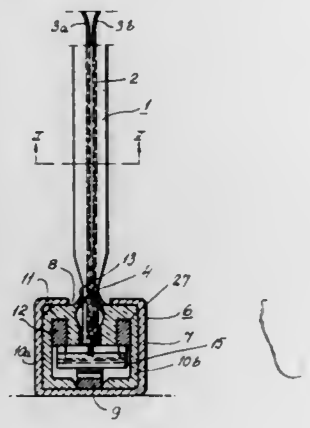
3,848,712
DEVICE FOR SUPPLYING AN OBJECT PROPELLED ALONG A RAIL OR THE LIKE WITH ELECTRICAL CURRENT

Bertil G. Flodell, Snapphenevågen 124, 17534 Jarfalla, Sweden

Filed Apr. 9, 1973, Ser. No. 349,407
Int. Cl. B60m *1/04*
U.S. Cl. 191—30 3 Claims

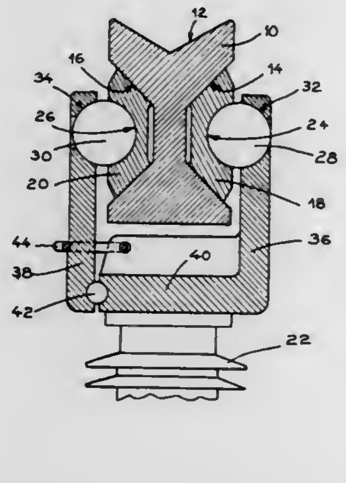
1. A device for supplying a vehicle with an electric drive motor, with current comprising a vehicle carried rod-like

current collecting means with a stream lined shaped part, wires housed extending through said means for connection to the vehicle drive motor, a hollow outer rail having a longitudinal slot, a hollow member of electrical insulating material housed within and extending the length of said outer rail and having a slot in line with said outer rail slot, said insulating member having a pair of resilient lips normally closing said insulating member slot having said rod-like means extending between said lips through said insulating member slot, current carrying means in said insulating member, a body slideably mounted in said insulating means and contacts carried by said body connected to wires and slideably engaging said current carrying means.



3,848,713
BALL-JOINT SUPPORT DEVICE FOR A RAIL CONDUCTOR OF A CURRENT-COLLECTING SYSTEM

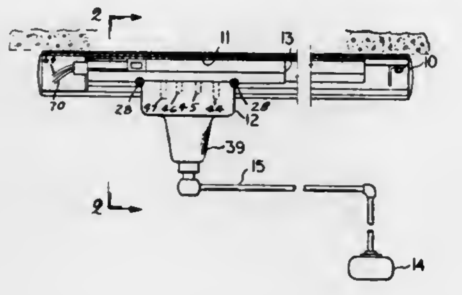
Daniel Laurent, Grenoble, and Hubert Ligones, Saint-Egreve, both of France, assignors to Societe Dauphinoise Electrique, Grenoble, France
Filed May 23, 1973, Ser. No. 363,259
Claims priority, application France, June 6, 1972, 72.20396
Int. Cl. B60m *1/30*
U.S. Cl. 191—32 **4 Claims**



1. A stationary support device for a current supplying rail conductor, comprising:
- a pair of opposite support shoes having confronting side faces engaging the side faces of said rail conductor, respectively, said side faces of said shoes and of sail rail conductor being complementary shaped to permit relative longitudinal sliding motion of said rail conductor between said support shoes;
- clamp means to urge said support shoes resiliently against said rail conductor and
- ball-joint means interconnecting said clamp means and said support shoes to admit of small free rotary motion of said rail conductor relative to said support device.

3,848,714
LOW ELECTRICAL LEAKAGE SUPPORT

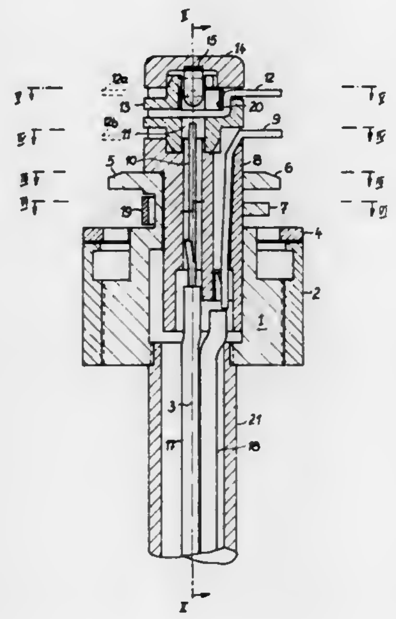
Patrick H. Claxton, Brampton, Ontario, Canada, and Thomas A. Keenan, Erie, Pa., assignors to American Sterilizer Company, Erie, Pa.
Filed Dec. 26, 1972, Ser. No. 318,556
Int. Cl. B60n *1/04*
U.S. Cl. 191—33 **13 Claims**



1. A support for an electrical system comprising
- a main first channel track having means including a first web and spaced downwardly extending first and second flanges attached to said first web,
- second channel means supporting bus bars on said main track,
- said second channel means having a second web, a third flange and a fourth flange,
- a first bus bar supported on said second web and a second bus bar supported on said third flange and a third bus bar supported on said fourth flange,
- means for connecting said bus bars to a source of electricity, said second channel means comprising dielectric means between said bus bars and said main track whereby a low electrical leakage results between said bus bars and said track.

3,848,715
ADAPTOR FOR AN ELECTRICAL POWER DISTRIBUTOR TRACK

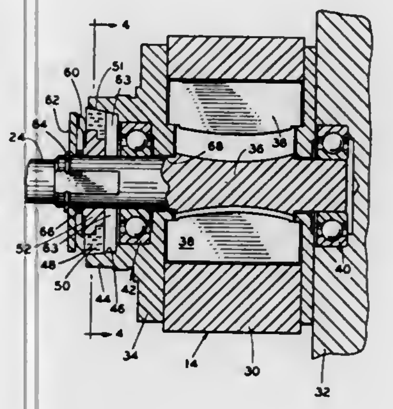
Kurt Hesse, Waterfohr 38, 492 Lemgo, Germany
Filed Mar. 26, 1973, Ser. No. 344,664
Claims priority, application Germany, Apr. 1, 1972, 2216145
Int. Cl. B60l *5/00;* **H01r** *9/00*
U.S. Cl. 191—45 R **17 Claims**



1. An adaptor for an electrical power distribution track adapted to be fitted into the open channel of the said track in a first position and adapted to be rotated to a second position for making electrical contact therewith, said adaptor comprising spring loaded contact means for making contact with electrical power lines in said track, holding elements on said adaptor adapted to be located in recesses provided in the track, and means for locking the adaptor into position, said adaptor having an electrical selector contact which can be variably positioned for selectively making contact with different power lines in said track, said selector contact being assembled in a rotatable part arranged to selectively provide contact with an upper and/or lower power line on either side of the distribution track channel, and said selector contact being connected in the adaptor to current conducting parts operative to conduct current to the consuming element.

3,848,716
PNEUMATIC OPERATED MOTOR AND BRAKE FOR HOIST

John R. Hanning, Bryan, Ohio, assignor to The Aro Corporation, Bryan, Ohio
Filed June 14, 1973, Ser. No. 370,172
Int. Cl. F16d *55/18*
U.S. Cl. 192—3 R **10 Claims**

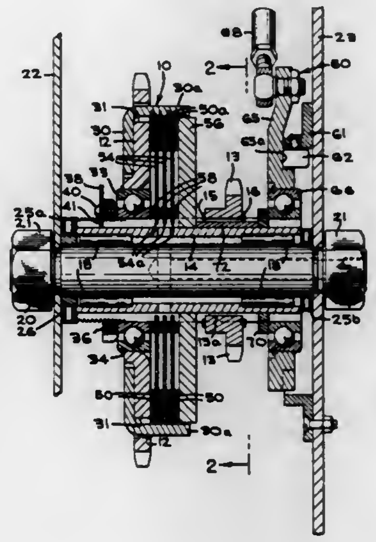


1. An air motor driven device comprising in combination: a housing with a rotary air motor, said motor having an output shaft;
- said housing also including an end plate with means for mounting the shaft through said plate;
- brake means for said motor, said brake means including:
- a fixed friction surface defined in said housing;
- a rotating member mounted to rotate with said shaft, said member also including a friction surface;
- biasing means engaging one side of said member and biasing said friction surface of said member axially into cooperative braking contact with said fixed friction surface; and fluid inlet path means consisting only of clearances for fluid flow where said shaft extends through said end plate, said fluid providing a brake disengaging force to the opposite side of said member being displaced axially on said shaft to disengage said surfaces against the force of said biasing means when said motor is operated.

3,848,717
CLUTCH ACTUATING MECHANISM

George W. Culbertson, Oconomowoc, Wis., assignor to FMC Corporation, San Jose, Calif.
Filed Dec. 20, 1972, Ser. No. 316,774
Int. Cl. F16d *19/00*
U.S. Cl. 192—93 A **4 Claims**

1. A clutch mechanism comprising a rotatable shaft, a powered drive member rotatably mounted on said shaft, clutch means for connecting said drive member in driving engagement with said shaft, said clutch means including a plurality of members movable axially of said shaft to connect said drive member to said shaft, a rotary actuating mechanism mounted for rotation on said shaft and for axial movement therealong, a driven member keyed to said shaft and disposed in fixed position axially of said shaft between said actuating mechanism and said clutch means, and thrust means connecting said actuating mechanism to said clutch means so that rotation of said actuating mechanism causes engagement of said clutch means without axial movement of said driven member, said shaft having longitudinal grooves therein underlying portions of said driven member and said thrust means including at least one elongate rigid member disposed in one of said grooves.

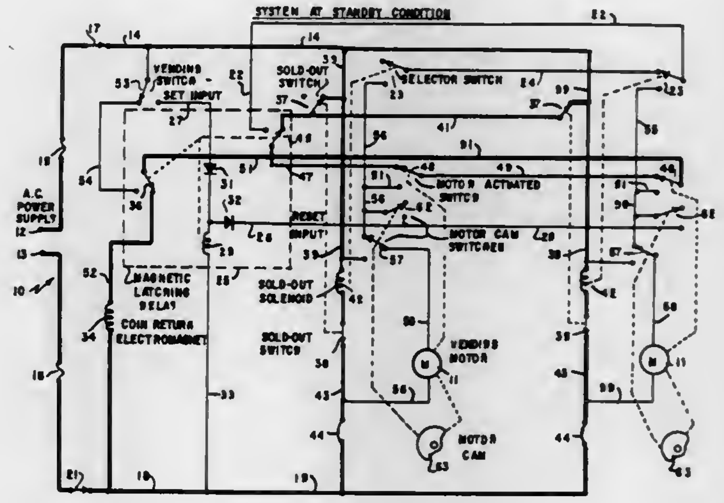


ERRATUM

For Class 192—133 see:
Patent No. 3,848,721

3,848,718
VENDING MACHINE CONTROL CIRCUIT

Floyd V. Bookout, Long Grove, Ill., assignor to Rock-Ola Manufacturing Corporation, Chicago, Ill.
Filed Nov. 12, 1973, Ser. No. 414,753
Int. Cl. G07f *5/22*
U.S. Cl. 194—1 M **4 Claims**



1. A control circuit for use in an automatic coin-operated vending machine having a plurality of electric vending motors each being operable when energized from a power supply to control an associated commodity vending mechanism, comprising: keyboard means having a plurality of selectively operable selector switches, energization of said keyboard means serving to establish control circuit relationship between each

selector switch and an associated vending motor; bistable credit memory means having set and reset control inputs, said memory means being operable to assume credit and non-credit operating states thereof upon individual energization of said set and reset inputs respectively; vending switch means in circuit with the power supply and said memory means and being operable to set the latter into said credit state to precondition a vending cycle; additional switch means in circuit with the power supply and operatively controlled by said memory means, said additional switch means being operable to energize said keyboard means from the power supply in response to said credit operating state and to deenergize said keyboard means in response to said non-credit operating state; plural motor actuated switch means in series circuit with said additional switch means, each said motor actuated switch means being associated with a vending motor and being operable to provide a temporary supply hold circuit thereto in response to energization thereof upon operation of the selector switch associated therewith, each said motor actuated switch means being further operable to deenergize said keyboard means to prevent further operation thereof; first and second motor cam switch means in circuit with the power supply and associated with each vending motor to be operatively responsive to predetermined rotational movement of cam means driven thereby until completion of a vending cycle, said first motor cam switch means being operable to interrupt said temporary supply hold circuit thereto and to substitute therefor a second supply hold circuit from the power supply, and said second motor cam switch means being operable to energize said reset input of said memory means to reset the latter into said non-credit operating state; whereby a vending cycle of each motor controlled vending mechanism is preconditioned upon operation of said vending switch means and independently initiated by a single selector switch operation.

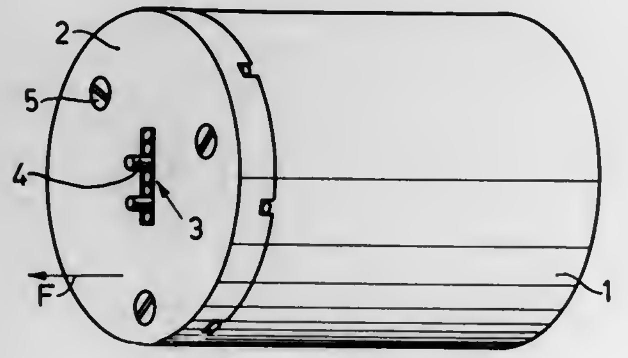
3,848,719
PRINTING DEVICE COMPRISING ELECTRO-MAGNETS

Lucien Milan, Garches, France, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed July 9, 1970, Ser. No. 53,418

Int. Cl. B41j *3/44*

U.S. Cl. 197—1 R **1 Claim**



1. A device for printing dots selected from a series arranged in a line, comprising a plurality of separately energizable elongated electro-magnets having parallel longitudinal axes arranged in a circle, a cylindrical enclosure surrounding the plurality of electro-magnets, each electro-magnet having an axial movable core, a plurality of L-shaped printing levers substantially radially arranged within the enclosure, each printing lever having one end attached to the enclosure and having an opposite end arranged within a line formed by said opposite ends, and a plurality of pushing members attached to the cores of the electro-magnets, each pushing member aligned with a corresponding printing lever, the printing levers exerting a biasing force on the pushing members in a direction corresponding to the rest position of the cores, said levers being formed by tongues punched from an elastic, flat disc fixed to the periphery of said cylindrical enclosure and pointing inwardly into the cylindrical enclosure, the end of each tongue being provided with a printing stylus.

3,848,720
PRESSURE SPRING FOR A THERMOPRINTER

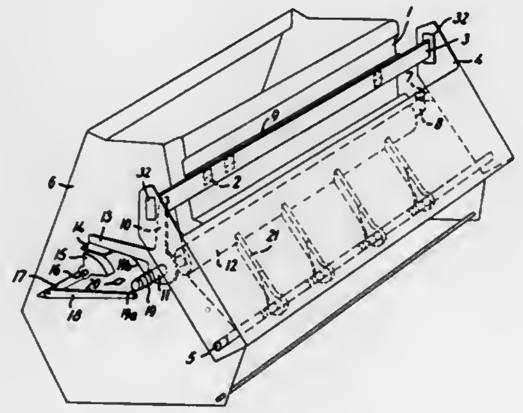
Henning Gunnar Carlsen, Aalbaek, Denmark, assignor to Contex Calculators A/S, Birkerod, Denmark

Filed Sept. 4, 1973, Ser. No. 394,245

Claims priority, application Denmark, Mar. 5, 1973, 1175/73

Int. Cl. G01d *15/10*

U.S. Cl. 197—1 R **8 Claims**



1. A thermoprinter comprising
a supporting frame;
a printing plate mounted in said supporting frame and including a line of typing means of an electric resistance material for printing line by line on a thermosensitive recording strip and means for selectively supplying heating current to said typing means;
pressing means for pressing said strip into contact with said printing plate during the printing of each line, said pressing means including a holder connected with said supporting frame, a leaf spring supported at its end in said holder in operative relation to the printing plate and extending in the line direction thereof with such a curvature in its unloaded condition that a convex lateral surface of the leaf spring faces the printing plate, and means for locking said holder to said supporting frame in a position in which said leaf spring is pressed against the printing plate with a substantially uniformly distributed pressure in the length direction of the leaf spring;
and an advancing mechanism for stepwise advancing said strip across the printing plate, said mechanism including actuator means for applying local bias forces in the direction away from the printing plate in points on said leaf spring situated a short distance from either end thereof supported in said holder, whereby the leaf spring is relieved from pressure contact with the printing plate when said strip is to be advanced.

3,848,721
SAFETY GUARD FOR PRESSES

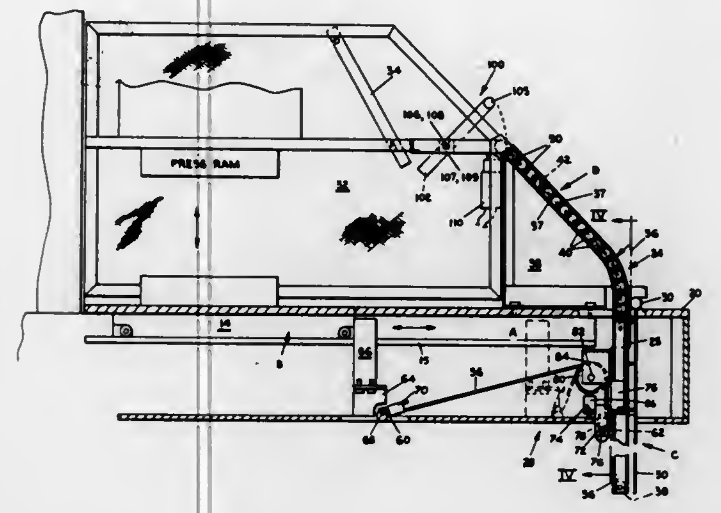
Henry Smit, Kentwood, Mich., assignor to Leslie E. Tassell, Grand Rapids, Mich.

Filed Nov. 2, 1973, Ser. No. 412,466

Int. Cl. F16d *9/00*

U.S. Cl. 192—133 **31 Claims**

1. A safety guard for presses comprising a tambour-like panel including a plurality of elongated, rigid members; flexible means for securing said rigid members adjacent and parallel to one another; and means for movably securing said guard to a press.



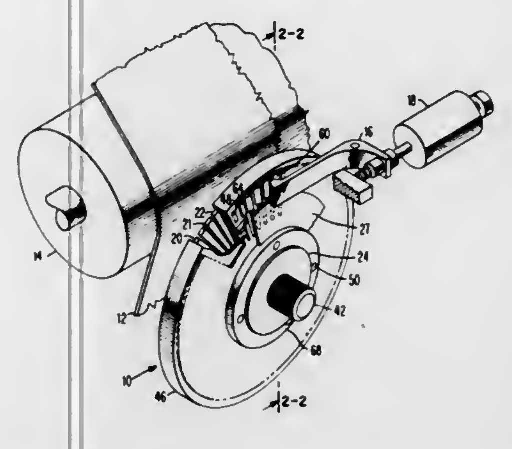
3,848,722
PRINT DISC ASSEMBLY FOR A PRINTER

Peter Samuel Bolan, Vestal; Aramis Duane Bryant, Johnson City; John Edward Drejza, Endwell; Charles Stephen Holovka, Endicott, and Ludwig Wilhelm Weber, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 21, 1973, Ser. No. 362,563

Int. Cl. B41j *1/32*

U.S. Cl. 197—53 **10 Claims**



1. In a print disc assembly for a printer having a movable carriage with a rotatable support shaft;
a support wheel secured to and rotatable with said shaft having a plurality of axial openings through said wheel adjacent the periphery thereof;
a resilient spoked print disc mounted on one side of and secured to said support wheel having integral type characters adjacent the ends of said spokes;
a plurality of slugs slideably disposed in said openings to engage different ones of said spokes, and
a resilient spoked interposer secured to and rotatable with said support wheel on the other side with the spokes of said interposer normally biasing said slugs against the corresponding spokes of said print disc.

3,848,723
ADAPTER KEY CAPS

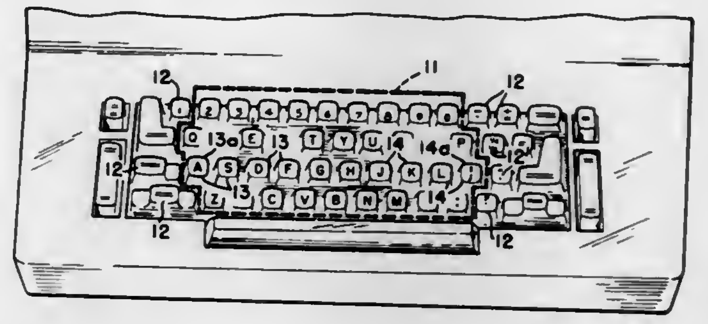
Lois M. Hogue, 3766 Dana Pl., San Diego, Calif. 92103

Filed July 23, 1973, Ser. No. 381,951

Int. Cl. B41j *5/16*

U.S. Cl. 197—102 **2 Claims**

1. In a typewriter having character and service keys arranged in aligned parallel rows and all being uniformly shaped with concave upper surfaces, an improvement therefor is provided comprising:
an adapter key cap fabricated from a lightweight material and having a shell-like wall appearance and further having the configuration of a lower-open-ended hollow pyramidal frustum sized to snugly fit over particular ones of said keys, the closed upper surface of the pyramidal frustum is flat except for being provided with a single outwardly facing beveled projection along its rear perimeter having a cross-sectional shape defining an angle greater than ninety degrees at its apex to reduce the possibility of irritating a typist's fingers and to allow tactile identification, and the underside of the closed upper surface is coated with an adhesive to ensure connection to particular ones of said keys.



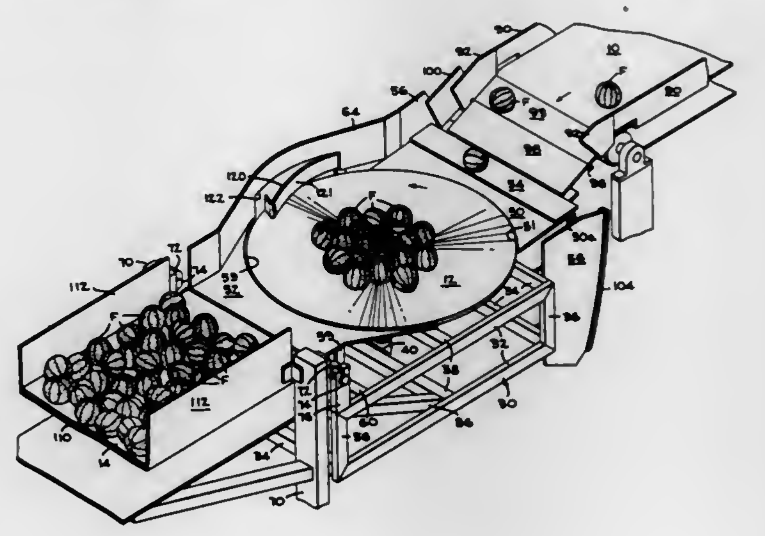
3,848,724
ACCUMULATOR FOR FRAGILE ARTICLES

Wilber C. Belk, Lakeland, Fla., assignor to FMC Corporation, San Jose, Calif.

Filed Jan. 14, 1974, Ser. No. 433,173

Int. Cl. B65g *47/22*

U.S. Cl. 198—29 **15 Claims**



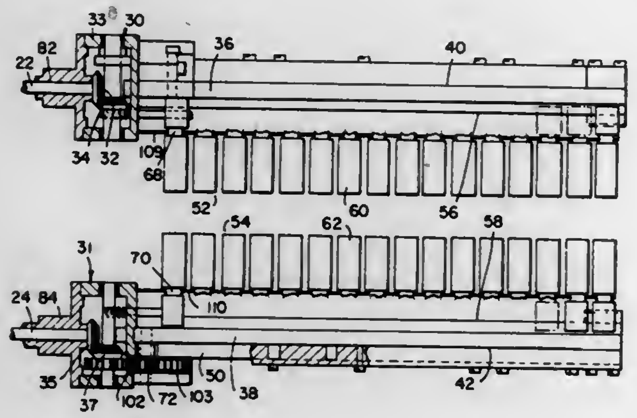
1. Apparatus for accumulating fragile articles received at random from a delivery conveyor, said apparatus comprising a turntable mounted for rotation about a vertical axis and having a radially inwardly sloping article supporting surface, said turntable being normally positioned adjacent to said delivery conveyor so that said articles are delivered onto said surface from said delivery conveyor, means for continuously rotating said turntable as said articles are fed thereto so that said articles will gravitate to the center of the turntable in a generally uniform radial distribution, means for sensing when the turntable is filled with accumulated articles, and means operable upon the actuation of said sensing means for elevating the turntable to cause the accumulated articles to gravitate therefrom.

ERRATUM

For Class 198—31 see:
Patent No. 3,848,746

3,848,725
DRIVEN-ARTICLE DROPPING MACHINE AND METHOD

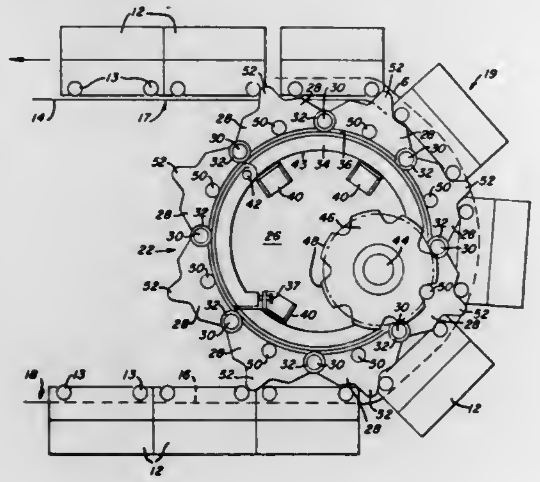
Max E. Toby, San Francisco, Calif., assignor to Toby Enterprises, San Francisco, Calif.
Filed Feb. 14, 1973, Ser. No. 332,249
Int. Cl. B65g *57/00*
U.S. Cl. 198—35 11 Claims



1. A method of handling articles which consists of sequentially depositing articles onto a longitudinally extending driven conveyor means at a receiving station disposed along the length thereof, directly supportingly engaging said articles on said conveyor means for substantially the greater portion of their width, positively moving said conveyor means and the articles deposited thereon from said receiving station along a longitudinal path having a width equal to the width of the article being conveyed and longitudinally spaced from said receiving station, and then moving said conveyor means in a direction other than along the longitudinal length thereof to provide a discharge opening for said articles in the longitudinal path of said conveyor means to thereby cause said articles to gravitally drop from said conveyor means immediately below said longitudinal path.

3,848,726
APPARATUS FOR TRANSFERRING PALLETS BETWEEN THE UPPER AND LOWER REACHES OF AN ENDLESS CONVEYOR SYSTEM

Erich Wiemer, Essen, Germany, assignor to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed May 2, 1973, Ser. No. 356,573
Int. Cl. B65g *35/00*
U.S. Cl. 198—108 9 Claims

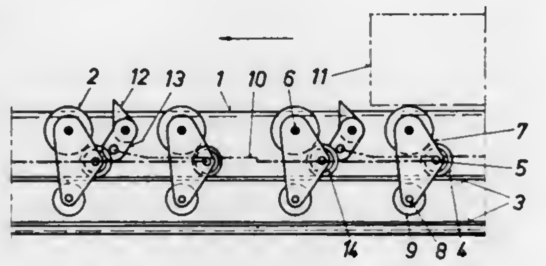


1. Apparatus for transferring a plurality of pallets between the upper and lower reaches of an endless conveyor comprising,

first endless engaging means for transferring each of said pallets from said lower reach to said upper reach,
second endless engaging means for transferring each of said pallets from said upper reach to said lower reach,
said second endless engaging means positioned remote of said first endless engaging means,
support means at each end of said endless conveyor for maintaining said first and second endless engaging means aligned with said upper and lower reaches at opposite ends of said endless conveyor to thereby provide transfer of said plurality of pallets between said upper and lower reaches,
said support means including a support member,
a ring member mounted on said support member,
fastening means for maintaining said ring member engaged to said support member,
said ring member having a circumferential track extending around the outer periphery,
said first and second endless engaging means arranged to revolve around said ring member in said circumferential track and,
drive means for imparting rotational movement to one of said endless engaging means at a preselected angular velocity.

3,848,727
STOW ROLLER TRAIN FOR CARGO

Richard Gebhardt, H. Thomastrasse 10, 6920 Sinsheim, Germany
Filed Nov. 16, 1973, Ser. No. 416,504
Claims priority, application Germany, Feb. 16, 1973, 2307700
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 25 Claims

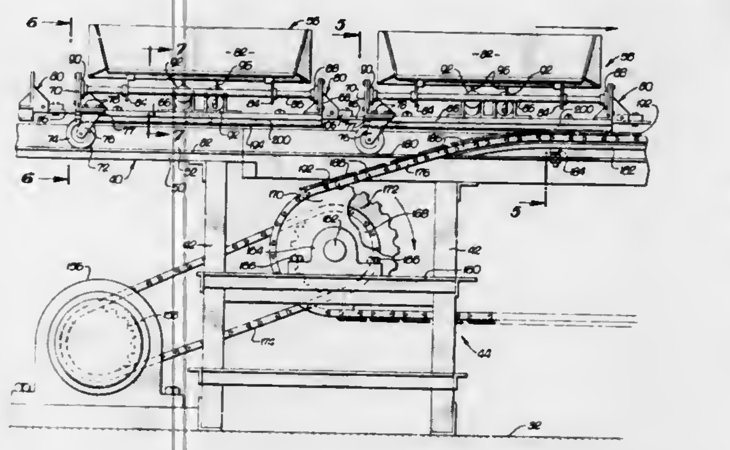


1. A stow roller train comprising:

a plurality of conveying roller sets spaced from one another in a conveying direction for sequentially conveyingly engaging articles to be conveyed,
a continuously movable traction means extending adjacent said plurality of conveying roller sets,
each of said conveying roller sets including an articlecarrying roller and an intermediate roller at one side of said traction means and a support roller at the other side of said traction means,
article position detecting means for detecting the position of an article on said article-carrying rollers,
linkage means connected to said detecting means and to respective ones of said intermediate rollers for automatically effecting movement of said intermediate rollers between driving positons with the respective intermediate roller drivingly connecting the traction means with the respective associated article-carrying roller of the same conveying roller set and idling positions with the respective intermediate roller out of driving connection with the traction means and the respective associated article-carrying roller of the same conveying roller set in dependence on the position of said article,
and supporting roller mounting means interconnecting a supporting roller and intermediate roller of a given conveying set such that movement of said intermediate roller from an idling to a driving position thereof automatically results in movement of said supporting roller against the traction means to thereby press the traction means in a direction toward the intermediate roller.

3,848,728
CONVEYOR AND SORTING SYSTEM

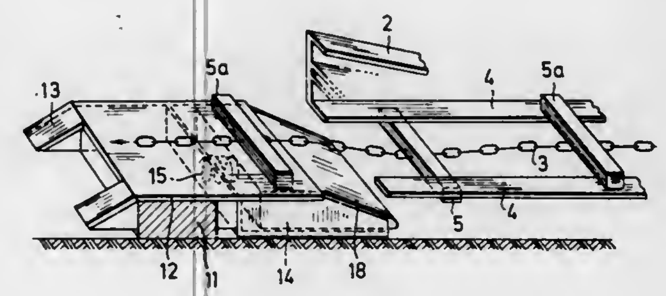
Peter Leibrick, Diamond Bar, and Nick H. Terry, Temple City, both of Calif., assignors to Butz Engineering Corporation, Azusa, Calif.
Filed Feb. 1, 1973, Ser. No. 328,655
Int. Cl. B65g *17/00*
U.S. Cl. 198—155 12 Claims



1. A closed loop parcel sorting conveyor system comprising an endless track means encompassing a horizontal area, a plurality of receptacle carriage means contiguously mounted on said track, coupling means uniting each of said receptacle carriage means one to the other forming an endless conveyor to ride on said endless track; each of said receptacle carriage means including guide wheels associated with said track portion to prevent lateral displacement, a pivotable receptacle portion forming a part of at least some of said receptacle carriage means, each of said pivotable receptacle portions being independently pivotal one from the other, and energizable linear actuators on said receptacle carriage means associated with said pivotable receptacles to tilt said receptacles normal to the line of travel and gravitationally discharge parcels thereon; in-line power means positioned on said track portion; two sets of friction contact means having flat surfaces thereon, the flat surfaces of the contact means of one set being adapted for engagement with the flat surfaces of the contact means of the other set, the contact means of said one set being part of said power means and the contact means of said other set being connected with said receptacle carriage means to sequentially translate power to effect forward movement of each of said receptacle carriage means and in turn move the entire contiguous endless conveyor around said endless track.

3,848,729
SCRAPER CONVEYOR

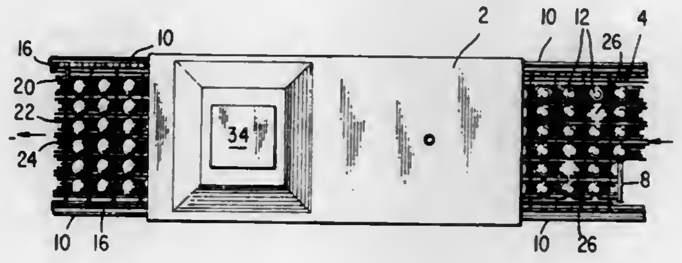
Reinold Krohm, Herne, Germany, assignor to Klockner-Werke AG, Duisburg, Germany
Filed May 8, 1973, Ser. No. 358,418
Claims priority, application Germany, May 9, 1972, 2222650
Int. Cl. B65g *19/22*
U.S. Cl. 198—171 22 Claims



1. In a scraper conveyor, a combination comprising a pair of transversely spaced parallel guide rails defining an upper and a lower conveyor run, said rails having cutouts at said lower run; a chain of scraper elements; means for moving said scraper elements along said rails selectively in one and in an opposite direction, said scraper elements having opposite end portions engaged in the respective rails and at times subject to becoming disengaged therefrom; and restoring means comprising guide element means having pivotable flaps which are arranged to be contacted by disengaged scraper elements and to guide the end portions thereof into said cutouts, thereby restoring the end portions of the respective disengaged scraper elements into said rails.

3,848,730
EGG WASHER

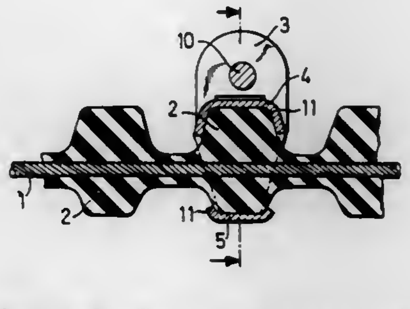
Otto C. Niederer, deceased, late of Bear Tavern Rd., Titusville, N.J. 08560; Thomas O. Niederer, and Dennis A. Niederer, executors, both of Bear Tavern Rd., Titusville, N.J. 08560
Filed Mar. 8, 1972, Ser. No. 232,693
Int. Cl. B65g *15/00*
U.S. Cl. 198—183 3 Claims



1. In equipment for use in washing or otherwise handling eggs embodying two spaced parallel supports, a conveyor embodying two parallel chains movable along said supports, a plurality of rods connected to said chains and extending in parallel relation transversely to the direction of movement of said conveyor, the improvement comprising molded plastic spool-like members surrounding said rods and each including a tubular central portion bearing against a rod and having a plurality of integrally formed radially extending circular egg supporting fins projecting outwardly from said central portion and lying in parallel planes extending in the direction of movement of the conveyor.

3,848,731
TOOTHED BELT WITH ARMOR AND SUPPORTING ELEMENTS FOR CONVEYING OR TRANSPORTING MEANS

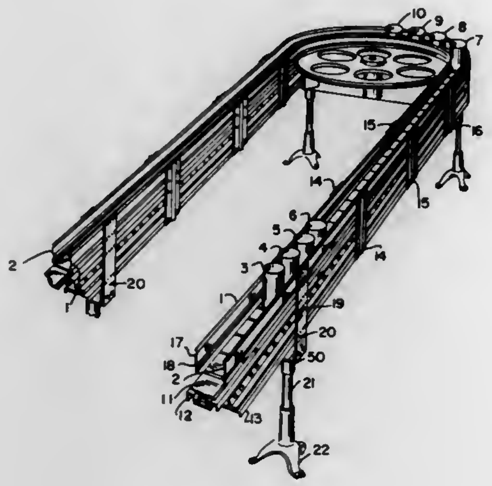
Hans-Holger Wiese, and Horst Siemsen, Fuhrberg, both of Germany, assignors to Hans-Holger Wiese, Wieloweg, Germany
Filed Nov. 17, 1972, Ser. No. 307,542
Int. Cl. B65g *15/30*
U.S. Cl. 198—193 4 Claims



1. A toothed belt with teeth blocks consisting of elastic material, an armor cord and conveying and transporting means having supporting elements engaging selected tooth blacks and cover plates which are twice the width of a tooth block and which embracingly engage two adjacent tooth blocks.

3,848,732
RIVETED MODULAR CONVEYOR

James A. Catalano, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed May 1, 1972, Ser. No. 249,335
Int. Cl. B65g *15/60*
U.S. Cl. 198—204 12 Claims

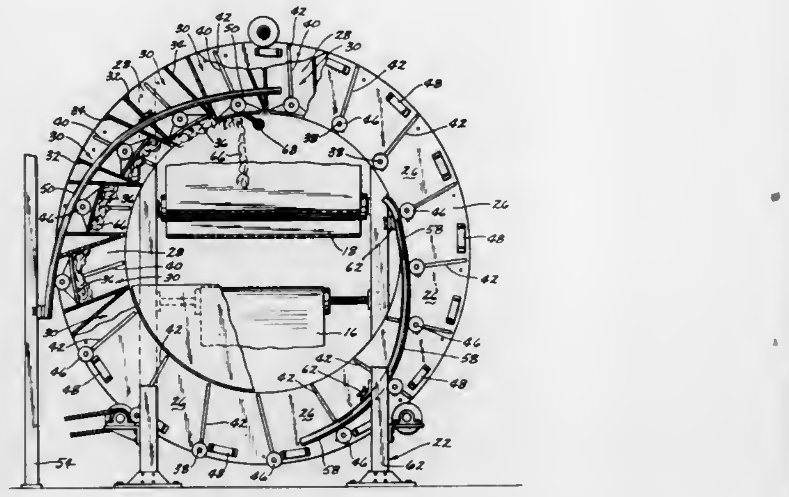


1. A conveyor frame structure for the passage of objects from one location to another comprising:
- paired side guide means each extending along the length of the conveyor frame structure for supporting the rest of said frame and for guiding objects as they pass down the length of the conveyor frame structure;
- a plurality of pairs of vertical frame members each having an upper portion and a lower portion and spaced from each other down the length of the conveyor frame structure;
- fastening means for attaching each of said vertical frame members to a side guide means;
- a horizontal conveyor carryway disposed along the length of said conveyor frame structure and comprising a single sheet of material extending laterally from vertical frame member to vertical frame member;
- paired fastening means for attaching each of said plurality of pairs of vertical frame members to opposed sides of said horizontal conveyor carryway;
- a conveyor return support member made of one continuous sheet of material mounted below and extending longitudinally the length of said conveyor carryway and extending laterally from vertical frame member to vertical frame member; and
- paired fastening means for attaching each vertical frame member of said pairs of vertical frame members to said conveyor return support member.

3,848,733
ROTARY CONVEYOR

Jimmie D. McAlister, Bayard, Iowa 50029
Filed Feb. 1, 1973, Ser. No. 328,658
Int. Cl. B65g *29/00*
U.S. Cl. 198—211 10 Claims

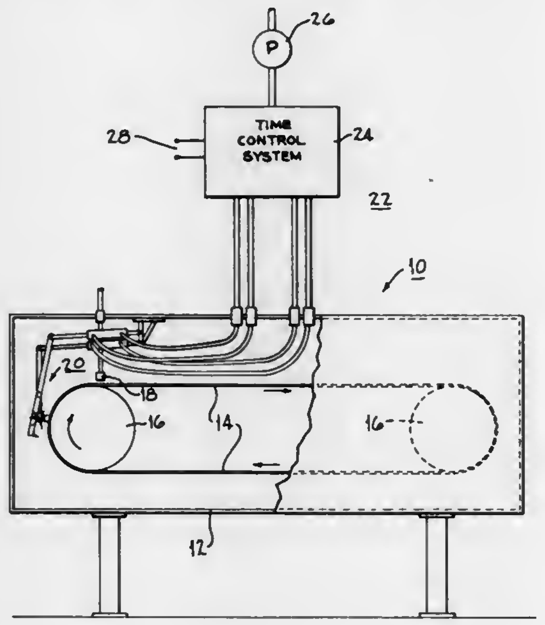
1. A rotary conveyor comprising,
- a support means,
- a housing rotatably mounted on said support means about a horizontal axis
  - said housing comprising a peripheral wall having annular side walls extending radially inwardly therefrom, a plurality of storage cells in said housing defined by radially extending walls extending between said side walls,
- a selectively movable plate member in each of said storage cells and being normally positioned adjacent said peripheral wall,
  - movable mounting means movably connecting said plate members to said housing whereby said plate members can be moved radially inwardly in their respective storage cells, said movable mounting means comprising an arm means secured to said plate member and extending outwardly through a radially extending slot in said side walls,



and a first and second cam track means each secured to said support means for selective engagement with said arm means as said housing is rotated to cause said plate members to move radially inwardly in their respective storage cells for at least a portion of one revolution of said housing to selectively dump the contents therefrom.

3,848,734
DOCTORING APPARATUS

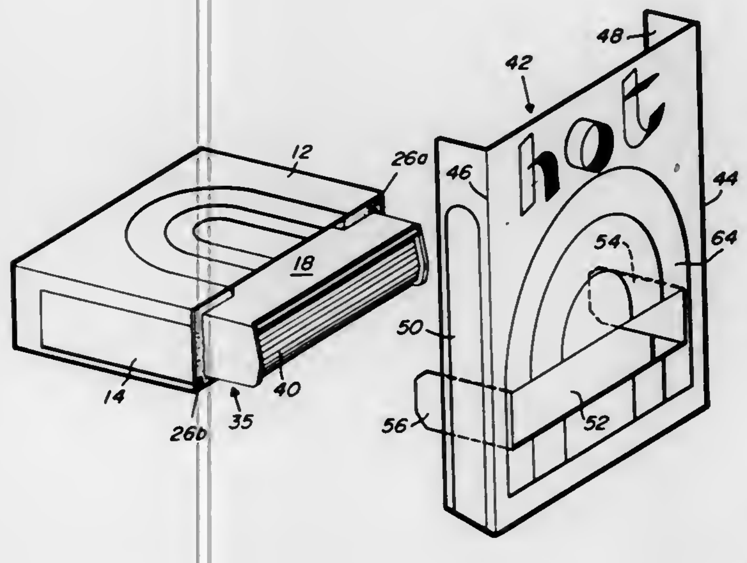
Wolfgang K. Heiland, Trevose, Pa., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed June 14, 1973, Ser. No. 370,094
Int. Cl. B65g *45/00*
U.S. Cl. 198—230 2 Claims



1. A doctoring apparatus for uninterrupted doctoring of material from a moving belt comprising a multiple-bladed doctor assembly rotatably mounted and provided with means for indexing said assembly by rotating said assembly in the same direction of rotation as the moving belt to provide a new blade in doctoring position, a single blade for doctoring during the indexing operation of the multiple-bladed assembly, a first pivotal means engaging said multiple-bladed doctor assembly for moving said assembly in and out of doctoring position, a second pivotal means engaging said single blade for moving said blade in and out of doctoring position during the indexing operation of the multiple-bladed assembly and actuating and sequence timing means engaging said first and second pivotal means for controlling the sequence and timing of the operations and providing the energy for indexing and for doctoring.

3,848,735
SHIPPING AND DISPLAY CARTON ASSEMBLY FOR AN ELECTRONIC DEVICE

Paul D. McGee, Medinah, and Dalton C. Ulmer, Schaumburg, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Jan. 2, 1973, Ser. No. 320,219
Int. Cl. B65d *25/24*
U.S. Cl. 206—45.25 7 Claims

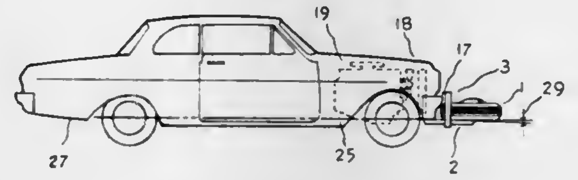


1. A shipping and display carton assembly for an electronic device, including in combination: an outer carton member having top, bottom and side walls and end flaps, said carton member being perforated at the top, bottom and side walls, along a line located a predetermined distance from a first end of said carton for removing said first end portion thereof, carton insert means being formed to receive said electronic device in surrounding fashion and being sufficiently rigid to protect said electronic device, said carton insert means being dimensioned for receipt within said outer carton member when said electronic device is received in said insert means, one end portion of said insert means being breakable for removal from the remaining portion thereof, said one end portion being substantially equal to the removable first end portion of said carton and being aligned therewith, so that upon removal of said one end portion of said carton member and the corresponding end portion of said insert means, a predetermined portion of said electronic device is exposed for display, the remaining portion of said device being held in said insert means within said outer carton portion, and display card means having an opening therethrough dimensioned for receipt of said exposed portion of said electronic device, said display card means and said packaged portion of said electronic device providing support to said display card means in a generally vertical position when said exposed portion of said electronic device is inserted through the opening.

3,848,736
TIRE BUMPER KIT

Cheston Lee Eshelman, 621 N.E. 30th Ter., Miami, Fla. 33137
Continuation-in-part of Ser. No. 88,059, Nov. 9, 1970, abandoned. This application Feb. 22, 1972, Ser. No. 228,035
Int. Cl. B65d *79/00, 81/32, 85/00*
U.S. Cl. 206—223 4 Claims

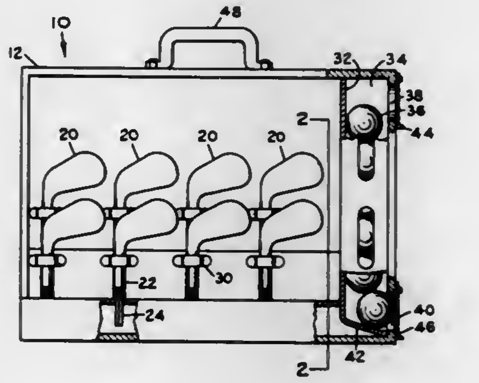
1. A multiple parts kit comprising a plurality of differently shaped structural elements so formed and dimensioned that when assembled together they form a rigid platform for mounting on the forward portion of a motor vehicle to carry substantially horizontally thereon a spare wheel and tire; said kit comprising a U-shaped element having means for attaching it to the bumper of a highway vehicle in one of several vertical positions, an elongated element having means at one end for attachment to a cross frame member of the highway vehicle, a collar-like member for encircling said elongated element for



connecting it to the U-shaped element, a support member for mounting on the elongated member to carry a tire and wheel, means being provided on the elongated member to accommodate longitudinal movement therealong of the support member, a stop for mounting on the elongated member to limit said longitudinal movement, two rod-like side braces for rigidifying the assembled platform, and an assortment of nuts, bolts and washers for assembling the parts of the kit.

3,848,737
GOLF SET

Clarence Kenon, 418 S.W. 2nd Ter., Dania, Fla. 33004
Filed Jan. 19, 1973, Ser. No. 324,986
Int. Cl. A63b *53/02, 55/00, 55/02, 55/04*
U.S. Cl. 206—315 7 Claims



1. In a golf set having a carrying case with a hingedly mounted front side, the improvement which comprises:
- a lower horizontal platform inside said case immediately behind said hinged front side, and an upper horizontal platform inside said case behind and above said lower platform, each of said platforms having a plurality of downwardly-extending openings therein;
- a plurality of different golf club heads mounted on said platforms and extending upward therefrom inside the case, each of said club heads having a reduced shank portion snugly received in a respective opening in the platform on which that club head is mounted, and the club heads on the upper platform extending behind and above the club heads on the lower platform;
- a golf club handle having means at its lower end for releasable attachment to said reduced shank portion of each golf club head individually;
- and means on the case releasably holding said golf club handle.

3,848,738

KEEPING MEANS FOR KEEPING STORAGE BOXES FOR COMPACT CASSETTES

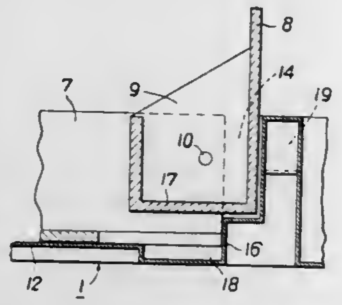
Karl Hirsch, Klagenfurt, Austria, assignor to Firma Karl Hirsch OHG Plastikwarenerzeugung, Klagenfurt, Austria

Filed May 24, 1973, Ser. No. 363,719

Claims priority, application Austria, May 29, 1972, 4637/72

Int. Cl. A45c *11/00*

U.S. Cl. 206—387 **11 Claims**



1. Keeping means for keeping storage boxes having a body including a rear wall, and a hinged cover pivoted to said body adjacent to said rear wall and comprising a holder adapted to hold a compact cassette in said hinged cover, said hinged cover being pivotally movable relative to said body between a closed position, in which said hinged cover extends transversely to said rear wall and a compact cassette held by said holder is accommodated in said body, and an open position, in which said hinged cover extends generally parallel to said rear wall and a compact cassette held by said holder is disposed outside said body,

said keeping means comprising at least two hinged leaves, each of said leaves having at least one receptacle side, which faces another of said leaves, and is provided on said receptacle side with longitudinal and transverse walls, which define receptacles, each of which is adapted to receive the body of one of said boxes,

said transverse walls being provided with stops adapted to hold said bodies in said receptacles in a predetermined position in which said rear walls extend adjacent to and parallel to respective longitudinal walls and define clearance spaces therewith which are sufficiently large to enable a movement of each of said covers to said open position.

3,848,739

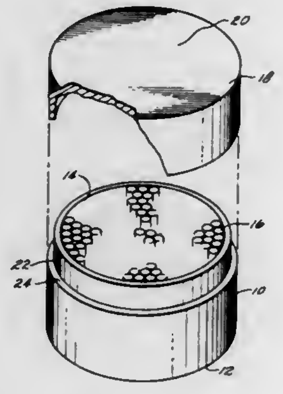
PACKAGING AND PURIFYING GRAPHITE

Arthur Wayne Fagan, Dallas, Tex., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Oct. 27, 1972, Ser. No. 301,446

Int. Cl. B65d *85/20*

U.S. Cl. 206—443 **7 Claims**



1. A package comprising:
a. a receptacle formed of graphite and having a central cavity and rigid, load-supporting walls with a through opening in at least one wall thereof;
b. a closure member also formed of graphite and adapted for removable attachment to said receptacle and across said through opening;
c. means to removably secure said closure member across said through opening;
d. solid form items substantially entirely filling said central cavity and consisting essentially of a plurality of slender cylindrical bodies of graphite having less than 20 parts per million of inorganic impurities and packed therein in a stacked array; and
e. at least a portion of said receptacle and closure member being formed of graphite with interconnecting pores having diameters no greater than about 0.5 micron in diameter to provide permeability to gases but not to airborne particulate matter.

3,848,740

UMBRELLA

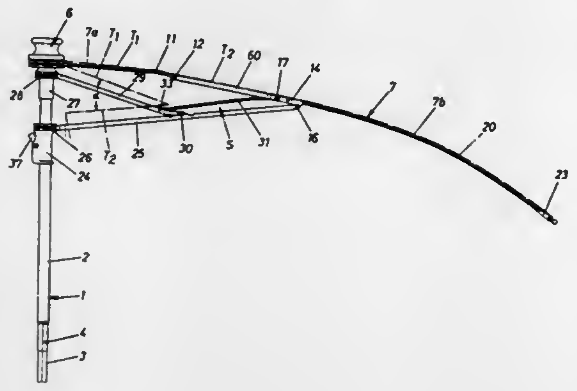
Heinz Weber, Hilden, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada

Filed Dec. 3, 1973, Ser. No. 420,908

Claims priority, application Germany, Dec. 7, 1972, 2259885

Int. Cl. A45b *19/00*

U.S. Cl. 135—25 R **7 Claims**



1. An umbrella frame having a stick, foldable dome ribs extending substantially radially from the stick, each dome rib consisting of first and second sections pivotably joined together, the first dome rib section, adjacent the stick consisting of first and second parts pivotably joined together, the first dome rib section being laterally offset from the second dome rib section where they join together.

3,848,741

ADJUSTABLE, SEALED ROLL SCREEN FOR CLASSIFYING AND CONVEYING MATERIAL-IN-PROCESS SUCH AS TACONITE PELLETS

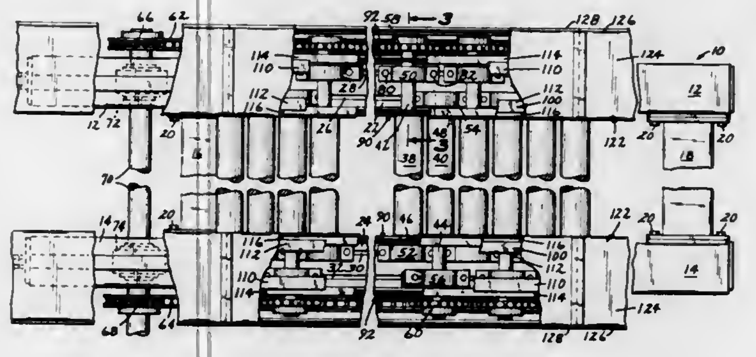
Kenneth M. Haley; Dennis F. Koschak; Lawrence J. Molinaro, and Richard L. Reed, all of Silver Bay, Minn., assignors to Reserve Mining Company, Silver Bay, Minn.

Filed June 22, 1973, Ser. No. 372,828

Int. Cl. B07c *1/10*

U.S. Cl. 209—106 **6 Claims**

1. A roll screen, comprising:
a. a frame, including two longitudinal side members;
b. a plurality of spaced rollers mounted for rotation about generally parallel axes;
c. bearings for rotatably mounting said rollers on the side members;
d. means connecting said bearings to the side members for individually adjusting the positions of said rollers along the side members to provide any desired spacing between said rollers to compensate for decreased roller diameter resulting from wear of the rollers and to vary the open area of the roll screen, said connecting means including two longitudinal bearing plates, each with two parallel T-slots therein, said bearing plates attached to the side members;
e. means for mounting said bearings on the bearing plates, said mounting means including T-nuts which move in said T-slots;



f. means for sealing said bearings and said connecting means from foreign material and dust;
g. means for driving said rollers; and
h. means for covering said driving means to guard against accidental interference with the driving means

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3,848,742

GLASS CONTAINER INSPECTION MACHINE

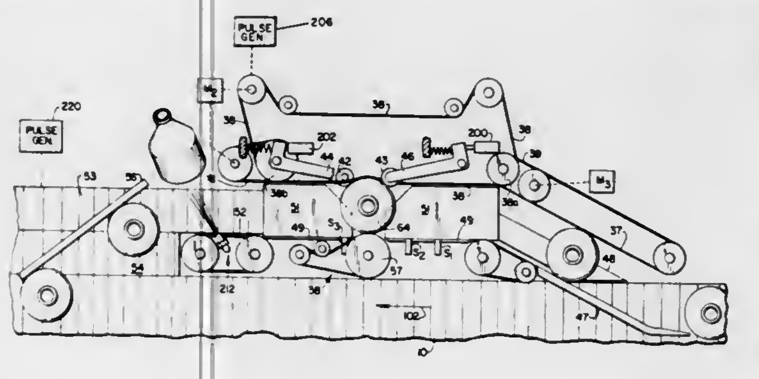
Willy Krenmayr, Jona, Switzerland, assignor to Emhart Zurich S.A., Zurich, Switzerland

Filed Jan. 2, 1973, Ser. No. 320,569

Claims priority, application Switzerland, Jan. 19, 1972, 761/72

Int. Cl. C10g *13/02*

U.S. Cl. 209—111.7 **25 Claims**



1. Container inspection apparatus for use alongside a container conveyor, and comprising:
a. a base for supporting the containers in upright position as they are moved along in a line and a rail against which the containers are adapted to be rolled as they are so moved;
b. means for diverting containers from the conveyor onto an upstream end of said base;
c. means for metering the containers so moving onto the base;
d. a continuously driven endless transport belt located at one side of said base, generally opposite said rail to roll the containers and advance them at a speed greater than that permitted by said metering means to space the containers along said base;
e. means for rotating each container on a fixed reference axis at an inspection station, said rotating means including said transport belt and means for wrapping a segment of said belt around a portion of the periphery of the container being inspected at said station; and
f. said means for so wrapping said belt being selectively movable into and out of engagement with said belt to permit at least one full revolution of the container being inspected on said reference axis.

ERRATUM

For Class 209—106 see:
Patent No. 3,848,741

3,848,743

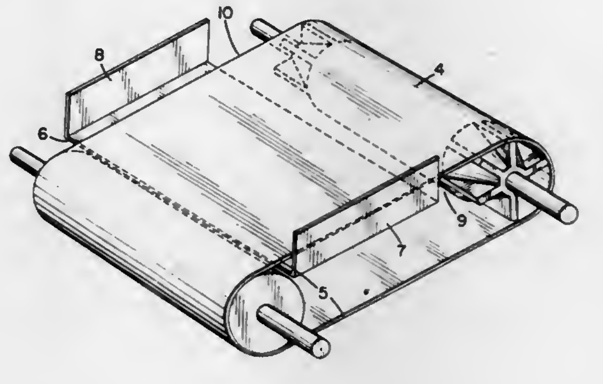
PULLEY FOR MAGNETIC SEPARATION OF SOLID WASTES

Victor Danberg, 6 Mary Ann Ln., Wallingford, Conn. 06492

Filed Dec. 13, 1971, Ser. No. 207,396

Int. Cl. B03c *1/18*

U.S. Cl. 209—218 **4 Claims**



1. A magnetic separator unit for separating magnetic material from a burden which must be scrambled and regrouped before passing on to the next of a series of magnetic separators, consisting of an endless conveyor belt passing over a head magnetic pulley and a tail pulley, said head magnetic pulley rotating about a shaft axially extending through said head magnetic pulley having a magnetic section and at least one end pulley extension, extending longitudinally and composed of non-magnetic material, said end pulley extension being fluted, having at least one open tapering groove sloping in depth in the longitudinal direction, and said end pulley extension being about one-fourth to about one-half the face length of the magnetic section of the said head pulley.

3,848,744

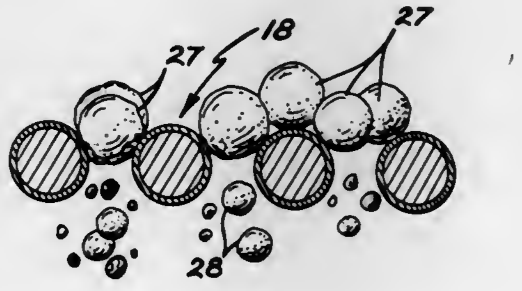
GREEN PELLET SIZING SCREEN

James H. Flaherty, 3 S.W. Third St., Grand Rapids, Minn. 55744

Filed Dec. 4, 1972, Ser. No. 311,698

Int. Cl. B07b *1/52*

U.S. Cl. 209—393 **15 Claims**

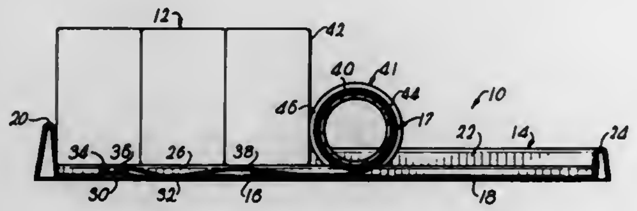


1. A pellet sizing screen of the type disposed adjacent the discharge end of a balling drum to classify magnetite type iron oxide pellets formed in the balling drum of magnetite concentrate according to size and usable in conjunction with means to impart movement to the screen, said screen comprising:
a plurality of screen rods relatively spaced apart to define openings of sufficient size to allow passage of undersize magnetite type pellets and restrict passage of magnetite type pellets equal to or greater than a preselected size;
means securing the screen rods in relative arrangement to one another;

- each said screen rod having an inner core and an outer shell attached to at least a portion of the inner core;
- said outer shell being of hard chromium of a thickness of at least about 0.005 inch and adapted to receive and convey magnetite type pellets discharged from the balling drum; and
- said inner core being a fatigue resistant material having a modulus of elasticity lower than the material of the outer shell.

3,848,745
TRAY UNIT

John W. Smith, 214 W. 99th Ter., Kansas City, Mo. 64114
Filed Aug. 8, 1973, Ser. No. 386,560
Int. Cl. A47f *1/00;* **B65g** *1/16*
U.S. Cl. 211—49 D **7 Claims**



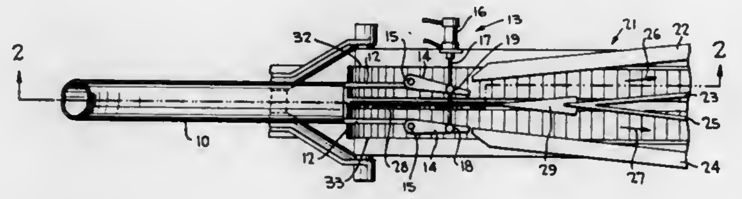
1. A merchandise vending unit having an automatic merchandise advancing means, said unit comprising:

- a tray having a bottom wall adapted to support a quantity of individual merchandise items;
- said tray having a front rim and being of a size and shape to retain said items in a longitudinally disposed layer extending rearwardly from said rim; and
- advancing means affixed to said bottom wall and engageable with a normally rearwardmost one of said items to automatically shift the remaining ones of said items forwardly in said tray when the normally forwardmost one of said items is removed therefrom whereby the next remaining forwardmost item is adjacent said rim,
- said advancing means including a roll of extensible sheet material having a memory to render the same self-winding,
- said material including a stretch underlying said items when in a partially extended condition,
- said advancing means presenting a rolled portion of said material rearwardly of said rearmost item when the advancing means is in engagement with the said rearmost item,
- said material having an end affixed to said bottom wall proximal said forward rim of said tray whereby said items in the tray are biased in the direction of said rim by said rolled portion,
- said advancing means further including a cylindrically shaped roller about which said rolled portion of material is wound, said roller being disposed transversely of said material and in contact with said rearmost item.

3,848,746
APPARATUS FOR DIVERTING A ROW OF CYLINDRICAL BODIES ALTERNATELY INTO TWO PATHS OF TRAVEL

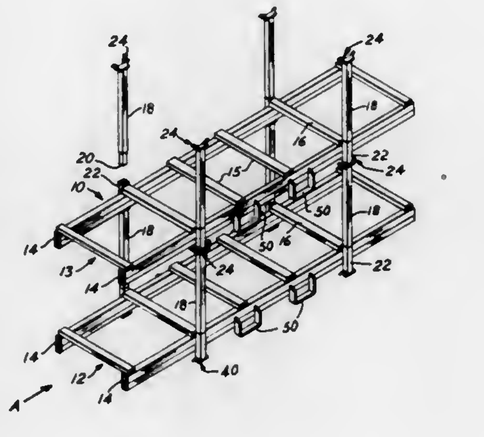
Johannes Bernardus van der Winden, Amstelveen, Netherlands, assignor to Stork Amsterdam B.V., Amstelveen Netherlands
Continuation-in-part of Ser. No. 259,178, June 2, 1972, abandoned, Continuation of Ser. No. 61,600, Aug. 6, 1970, abandoned. This application Dec. 11, 1973, Ser. No. 423,822
Claims priority, application Netherlands, Aug. 8, 1969, 6912110
Int. Cl. B65g *47/26*
U.S. Cl. 198—31 AC **2 Claims**

1. Apparatus for diverting a row of cylindrical bodies advancing successively along a path of travel and alternately into two divergent paths of travel, comprising: means for forwardly advancing the bodies in an attitude lying on their respective outer cylindrical walls along the path of travel; spaced, parallel and fixed guide means located adjacent the forward end of said advancing means in the path of travel of the bodies; diverter means located at the forward end of said spaced guide means in the path of travel of the bodies and being movable transversely thereof; a pair of spaced and fixed divergent guide means located adjacent the forward end of said movable guide means and defining the two divergent paths of travel for the bodies; a fixed, narrow upright ridge element located centrally between said fixed guide means and extending toward said divergent guide means; and movable conveyor means located beneath said pair of divergent guide means at a level below the upper edge of said ridge element, the cylindrical bodies moving along said ridge in an unstable condition after leaving said advancing means and thereafter being diverted alternately into the divergent paths of travel upon actuation of said movable diverter means which causes the bodies to move to one side or the other of said ridge element.



3,848,747
STACKING FRAME

Harry W. Thompson, Pontiac, Ill., assignor to Interlake, Inc., Chicago, Ill.
Filed Apr. 16, 1973, Ser. No. 351,365
Int. Cl. A47f *5/10;* **B65d** *19/38*
U.S. Cl. 211—177 **10 Claims**

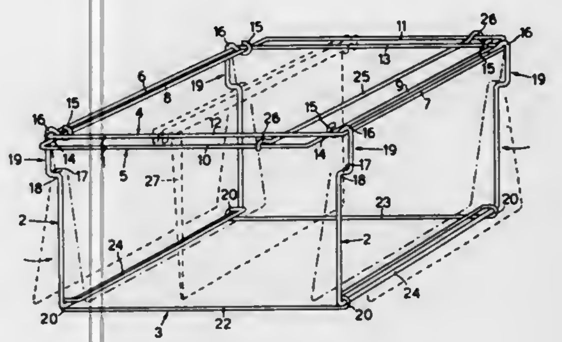


1. A stacking component for a stacking frame installation, comprising:

- a support member, and
- a saddle member mounted at an end of said support member, said saddle member including an elongate substantially linear supporting edge facing away from said end of said support member and a pair of projections extending from the ends of said supporting edge in substantially coplanar relationship with said supporting edge, but in angular relationship thereto, and away from said end of said support member.

3,848,748
SUPPORT OF BENT STIFF WIRE FOR SUSPENDED FILES OR THE LIKE, REMOVABLY INSERTABLE INTO A FURNITURE DRAWER

Pietro Ceccarelli, Massa, Italy, assignor to Ing. C. Olivetti & Co., S.p.A., Ivrea (Torino), Italy
Filed May 2, 1973, Ser. No. 356,557
Claims priority, application Italy, May 3, 1972, 68359/72
Int. Cl. A47f *5/10*
U.S. Cl. 211—178 R **3 Claims**



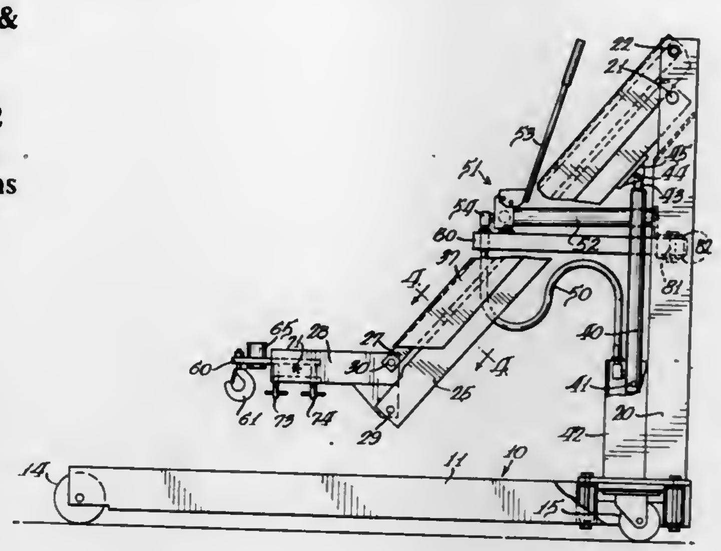
1. A support for removable insertion in furniture drawers for use with suspended files or the like, said support comprising:

- a first rigid wire frame comprising two substantially rectangular elements and disposed in superposed relationship wherein one of said two elements has two opposite sides parallel to and protruding from two opposite sides of the other element at a predetermined distance therefrom;
- a second rigid wire frame disposed below said first frame during use and having a substantially rectangular configuration and having two hooked portions at each end portion of two opposite sides thereof; and
- a pair of rigid wire substantially U-shaped side members for mutually interconnecting said first and said second frames during use, said side members comprising means disposed on the closed end portion of each side member for engaging with one of said hooked portions and means disposed at the open end portion of each side member for engaging with said first wire frame to rotatably mount each side member on one of said two opposite sides of said one of said two elements for movement through substantially 270° and to hold each side member in a substantially right angle position with reference to said first wire frame.

3,848,749
COMBINATION CRANE AND JACK UNIT

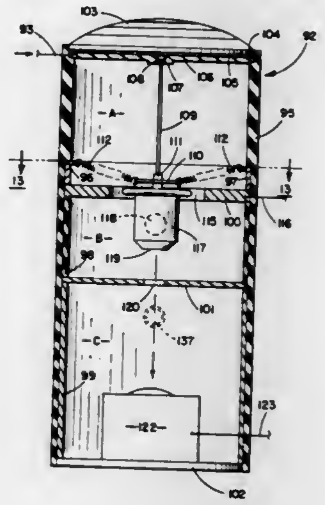
Richard T. Anderson, and Michael J. Sethney, both of Owatonna, Minn., assignors to Owatonna Tool Company, Owatonna, Minn.
Filed Nov. 5, 1973, Ser. No. 412,588
Int. Cl. B66c *23/00*
U.S. Cl. 212—8 R **7 Claims**

1. A combination crane and jack unit including a base having a plurality of floor-engaging wheels, a mast extending upwardly from said base, a parallelogram structure including a pair of parallel arms pivotally mounted at one of their ends and one above the other to the upper end of said mast, a generally horizontal support pivotally connected to the opposite ends of the arms, means for raising and lowering said arms to raise and lower said support, with said arms having a lower position extending at an angle of approximately 45° to the mast to place said support just above said base, a first means on said support for holding a supporting chain or the like for a depending article when the unit is to function as a crane, second means on said support for holding a fixture to engage under an article when the unit is to function as a jack, said parallel arms lying one above the other, and shield means depending from the upper one of said arms and overlapping the lower one of said arms to prevent positioning of an operator's fingers between said arms.



3,848,750
CRANE TIP ALARM

Daniel W. Hoge, 1529 Lynton St., Wilmington, Calif. 90744
Filed Feb. 9, 1973, Ser. No. 331,218
Int. Cl. B66c *23/84;* **G08c** *21/00*
U.S. Cl. 212—69 **9 Claims**



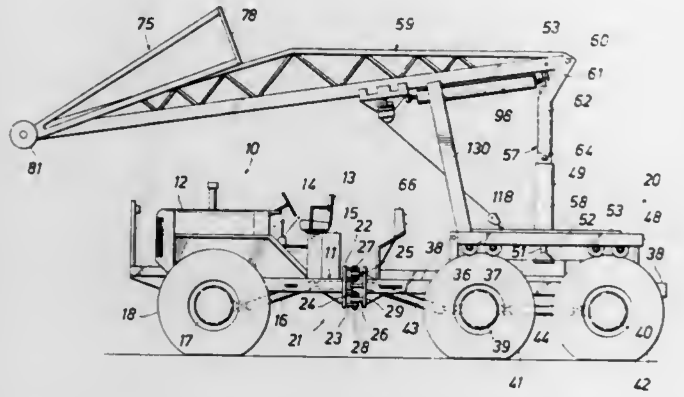
1. A device for indicating tilting of a structure on which it is mounted, said device comprising photoelectric emitting means suspended by a pendulum swingable over an annular area above vertically aligned photoelectric receiving means electrically connected to a first signaling device, said pendulum also carrying an annular electrical conducting element spacedly disposed within a larger surrounding annular electrical conducting element, contiguity between the two annular elements serving to make a circuit to a second tilt signaling device, whereby the two tilt signaling devices indicate progressive amounts of tilt of said structure.

3,848,751
SIDE BOOM PIPE LAYING MACHINE

John G. Holland, Sr., 648 Rocky River, Houston, Tex. 77027
Filed Jan. 16, 1973, Ser. No. 324,194
Int. Cl. B66c *23/78*
U.S. Cl. 212—145 **11 Claims**

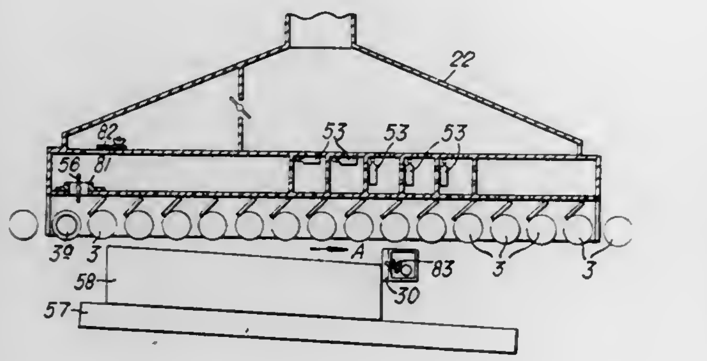
1. Apparatus for use in off-the-road hoisting operations, comprising: a vehicle unit having ground engaging means; an

upright mast on said unit; boom means having one end pivotably attached to the said mast; hoist means movable longitudinally along said boom means and adapted for handling a load; support means pivotally attached to the other end of said boom means, said support means being adapted for pivotal rotation between a supporting position at right angles to said boom means where the lower end of said support means rests on the ground and provides vertical support, and a traveling position substantially parallel to and above said boom means; and selectively operable motor means for pivotally rotating said support means between said supporting position and said traveling position.



3,848,752
APPARATUS FOR TRANSFERRING SHEET MATERIAL

Geoffrey Hindle Branch, Golborne, Near Warrington, Lancashire, and James Edward Hall, Billinge, Near Wigan, Lancashire, both of England, assignors to Pilkington Brothers Limited, Liverpool, Lancashire, England
Filed Sept. 17, 1970, Ser. No. 73,032
Claims priority, application Great Britain, Sept. 19, 1969, 46409/69
Int. Cl. B66c *1/02*
U.S. Cl. 214—1 BS **17 Claims**



1. Apparatus for transferring sheets of glass across an open space defining a transfer path from a first location to a to a second location comprising:

suction means mounted above the transfer path and extending between those locations;

a series of driven rollers mounted in the suction means at a level to project below the bottom of the suction means and each extending transversely of the transfer path, the extent of which projection is such that when a sheet is drawn by suction against the driven rollers the gap between the upper face of the sheet and the bottom of the suction means constitutes an air flow restrictor which creates reduced pressure over the sheet to suctionally hold the sheet against the rollers;

air flow restriction means in the suction means to restrict the flow of air drawn between said driven rollers in the absence of a sheet;

said suction means comprising a suction hood in the bottom of which said series of driven rollers are housed, the hood having an open bottom through which the driven rollers project;

division means in the hood defining a separate release chamber adjacent the second location;

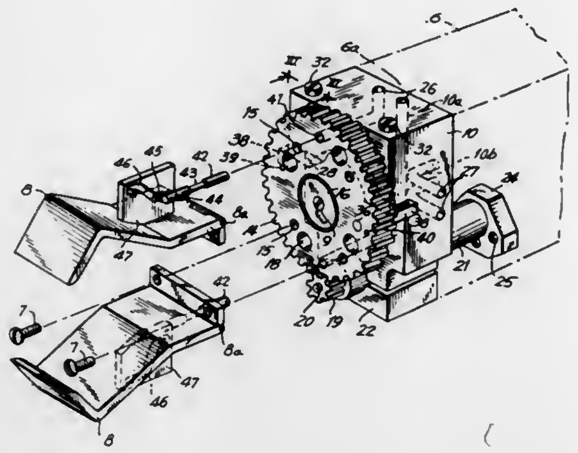
suction control means operable to cut off the suction when a sheet has been transferred to a required second location so that the sheet drops away from the drive elements at that location;

actuating means arranged to be actuated by movement of a sheet to the second location; and

valve means controlled by the actuating means for cutting off the suction in only a part of the suction hood associated with the second location so as to release the sheet when it has reached the second location.

3,848,753
TURNING MOVEMENT DEVICE FOR MATERIAL HANDLING APPARATUS

Sven Christer Borg, Handen; Christer Ragnar Hesson, Johanneshov, and Erik Henning Nilsson, Trangsund, all of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Sept. 6, 1972, Ser. No. 286,714
Claims priority, application Sweden, Apr. 14, 1972, 4849/72
Int. Cl. F16d *71/04*
U.S. Cl. 214—1 B **5 Claims**



1. A turning movement device for a gripper of a material handling apparatus for angular movement of an article forwards and backwards through a predetermined angle comprising:

a. a block element which is removably secured to the material handling apparatus,

b. an attachment member for the gripper being pivotally supported on the element and movable through said predetermined angle,

c. a driving motor for the attachment member,

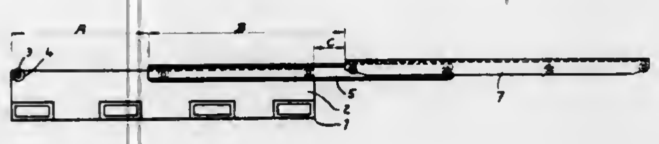
d. adjustable damping means for damping the movement of the attachment member in the two end positions of its turning movement,

e. a driving medium for said driving motor and gripper, and

f. said block being provided with passageways for flow of said driving medium to said gripper and driving motor, said material handling apparatus having a corresponding passageway, and at least one of the passageways in said block being automatically connected to the corresponding passageway when the block is fixed to said material handling apparatus.

3,848,754
SIDE LOADING FORK UNIT FOR LIFT TRUCKS

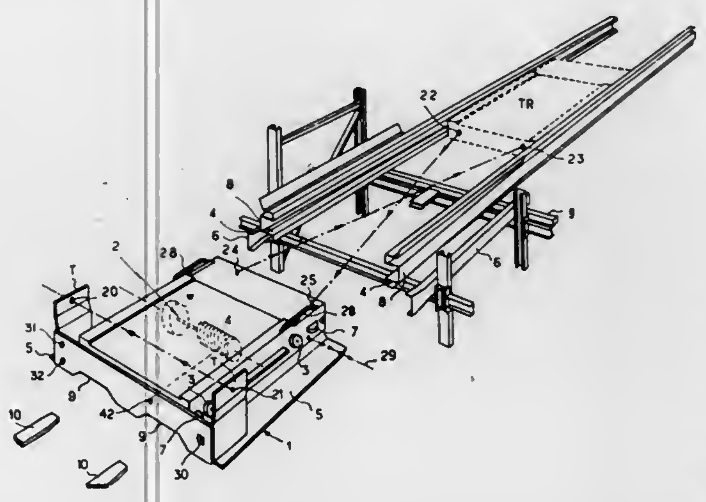
Anders Ivar Bryntse, Mjolby, Sweden, assignor to AB BYGG-OCH Transportekonomi (BT), Mjolby, Sweden
Filed June 26, 1973, Ser. No. 373,898
Claims priority, application Sweden, July 11, 1972, 9115/72
Int. Cl. B65g *25/00*
U.S. Cl. 214—1 BB **2 Claims**



1. A side loading fork unit for lift trucks, comprising a body and forks and intermediate guides mounted for lateral movement relative to said body, a hydraulic cylinder mounted for movement on said body in the same direction as said forks and intermediate guides, said cylinder having teeth thereon that engage with a gear wheel mounted on said body for rotation about a stationary axis, said gear wheel being fixedly connected to another gear or chain wheel in engagement with a rack or chain, respectively, on said intermediate guide, and a chain or cable secured to and interconnecting the left ends of said cylinder and fork and extending over a roller on the right end of said intermediate guide and another chain or cable secured to and interconnecting the right ends of said cylinder and fork and extending over a roller on the left end of said intermediate guide.

3,848,755
ELECTRO-MECHANICAL LOAD TRANSFER DEVICE FOR DYNAMIC STORAGE

Christian Bussienne, 4 Av. Se Pa Rivette, 27600 Louviers, and Dominique Mary, "La Jouche", Elbeuf-76, both of France
Filed Dec. 29, 1972, Ser. No. 319,477
Claims priority, application France, Jan. 12, 1972, 72.00899
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 A **8 Claims**



1. A dynamic storage installation having at least one storage level comprising:

a structure forming a plurality of juxtaposed storage gangways fitted with two load supporting rails,

an entrance gangway and an exit gangway placed perpendicularly to said storgage gangways at their ends,

at least one flat trolley movable on said rails, said trolley having a vertically movable load bearing surface which assumes an up position relative to said load supporting rails in which it transports the load relative to said storage gangway, and a down position relative to said load supporting rails in which it deposits a load on said rails and freely moves below said load, said trolley being equipped with electrical control components capable of ensuring automatic control of its movements for effecting loading, unloading and assembly of loads toward the gangway exit, a single flat trolley as said entrance gangway and a single flat trolley at the exit gangway,

a loader with which each of said trolleys co-operate

means for introducing said loader into a selected gangway, each loader comprising a support element and components for centering said loader and trolley relative to said storage gangway, a portion of said support element cooperating with slide bars with which each storage gangway is fitted at its ends,

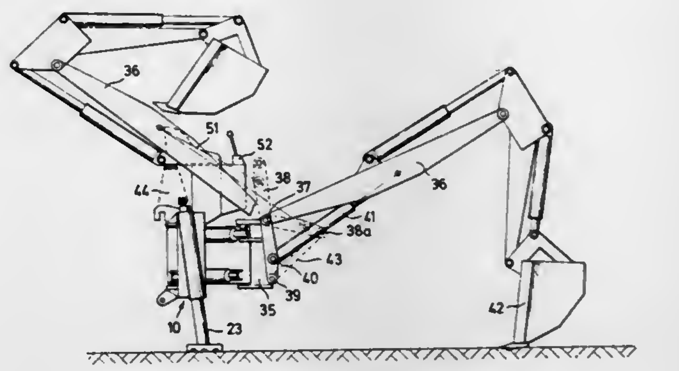
an electric cable,

a drum and winder means, said cable and drum and winder means being mounted on each trolley, said loader being connected to the corresponding flat trolley by said electric cable wound on said drum and winder means, said cable being laid down or taken up along said storage gangway as said trolley moves therealong, and

a female plug and power cable mounted on said structure at the end of each storage gangway, said loader further comprising a plug which engages automatically with said female plug and power cable so as to provide an electricity supply to the electrical control components of said trolley.

3,848,756
BACKHOE APPARATUS

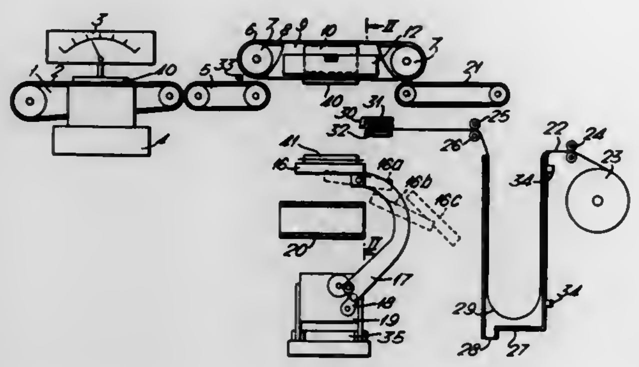
Hans Schaeff, Wurtt, 7183 Langenburt, Germany
Division of Ser. No. 125,618, March 18, 1971, abandoned. This application Mar. 2, 1973, Ser. No. 337,558
Int. Cl. B66f *9/00*
U.S. Cl. 214—138 C **8 Claims**



1. In a backhoe apparatus including a frame, a backhoe boom, a shovel means associated with said boom, a column means at one end of said boom, and an operating arm pivotally connected with said frame for movement about a vertical pivot axis, said operating arm also being swingably connected with said column, whereby said arm is swingable relative to said frame and said column is swingable relative to said arm, the improvement comprising: a first means for laterally swinging said operating arm continuously and under load conditions through an arc of at least 45° to each side of a central position, said first means including a first hydraulic cylinder, one end of which is connected to said frame the other end of which is connected to said arm; and second means for laterally swinging said column independently of the lateral swinging of said operating arm, said second means including a second hydraulic cylinder one end of which is connected to said arm the other end of which is connected to said column, said second means effecting lateral swinging of said boom through an arc of at least 45° to each side of the longitudinal axis of the operating arm, whereby the boom and shovel means are effectively swingable through at least 180°.

3,848,757
SORTING AND STACKING OF FOOD SLICES

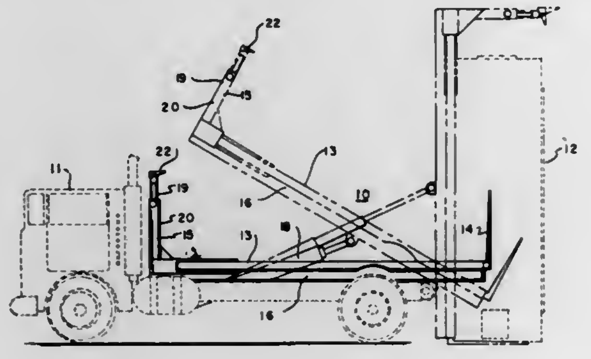
Ingo Jordan, Hamburg, Germany, assignor to Lever Brothers Company, New York, N.Y.
Continuation of Ser. No. 242,651, April 10, 1972, abandoned. This application Sept. 18, 1973, Ser. No. 398,516
Claims priority, application Germany, Apr. 13, 1971, 2117839
Int. Cl. B66c *17/06*
U.S. Cl. 214—152 **4 Claims**



1. A method of forming stacks of flexible food slices comprising feeding a series of flexible food slices in turn to the underside of a moving air permeable conveyor, attaching each slice in turn to the underside of the conveyor by vacuum, conveying each attached slice to a position over a stacking support, stopping said conveyor with said slice at said position, releasing the vacuum and forcibly releasing said slice to allow it to fall from the conveyor and form a stack on said stacking support, and when the stack contains the desired number of slices the said stacking support then being moved downwardly and outwardly from under the stack to allow said stack to fall on a moving conveyor for conveyance away.

3,848,758
HYDRAULIC TRUCK BED

Jack N. Carter, Rt. 4, Nampa, Idaho 83651
Filed Aug. 30, 1973, Ser. No. 389,937
Int. Cl. B60p *1/16*
U.S. Cl. 214—501 **1 Claim**

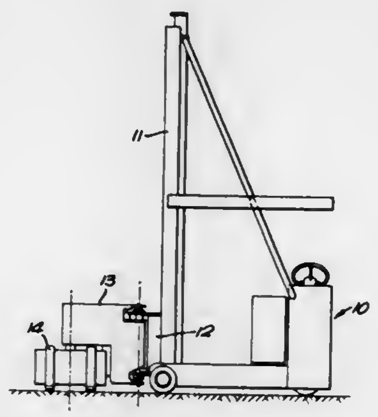


1. In a truck bed having a pallet which is supported by a pair of parallelly, rectilinearly disposed main beams, which is provided with means for pivotally mounting said pallet over the rearwardmost terminal end of a truck chassis, and which is provided with means for selectively raising and lowering said pallet into a substantially vertical position and a plurality of loading forks which are substantially perpendicularly mounted at the rearwardmost terminal end of said pallet, a movable headboard which is disposed transversely at the forward portion of said pallet, comprising:

- a pair of upstanding cornerposts mounted on suitable rollers which ride along said rectilinear main beams and including a container containing lip comprising an inverted L-shaped member disposed with its inside vertex rearwardly with respect to said truck bed, said L-shaped member being pivotally mounted to the terminal ends of said cornerposts;
- a head plate fastened between said cornerposts;
- a headboard actuator sub-assembly including a pair of actuator means which are mounted along said main beams of said pallet for selectively moving said headboard with respect to said pallet.

3,848,759
INDUSTRIAL LIFT TRUCKS

Cecil Goodacre, and Peter Alfred Leggett, both of Basingstoke, England, assignors to Lansing Bagnall Limited, Basingstoke, England
Filed May 4, 1973, Ser. No. 357,384
Claims priority, application Great Britain, May 8, 1972, 21442/72
Int. Cl. B66f *9/14*
U.S. Cl. 214—730 **7 Claims**



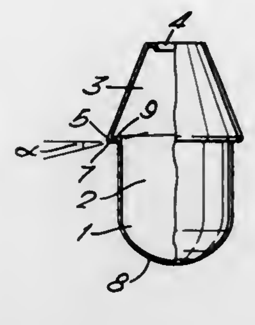
1. An industrial lift truck comprising a mast structure mounted on the truck:

- a load lifting carriage which is movable up and down the mast structure;
- a turret head mounted on said load lifting carriage for sideways movement relatively thereto;
- a load supporting structure mounted on said turret head for rotation relatively thereto about an upright axis;
- two spaced apart horizontally opposed toothed racks which are fixedly mounted on one end of said load lifting carriage and extend across the width thereof;
- a gear assembly mounted on said turret head and including two gear wheels in mesh with each other which are mounted on said turret head for rotation about parallel upright axes, one of the gear wheels being in mesh with one of said two racks and the other gear wheel being in mesh with the other of said two racks; and
- means for driving said one gear wheel so as to move said turret head sideways.

3,848,760
PACKING CONTAINER

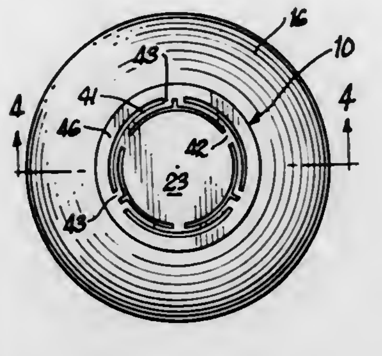
Hans Anders Rausing, Lund, Sweden, assignor to Sobrefina SA, Fribourg, Switzerland
Filed Dec. 8, 1972, Ser. No. 313,413
Claims priority, application Sweden, Dec. 30, 1971, 16883/71
Int. Cl. B65d *11/16*
U.S. Cl. 215—12 **4 Claims**

1. A packaging container comprising a plastic element having a substantially concave bottom portion, a cylindrical wall portion above said bottom portion and a conical top portion above the cylindrical wall portion, said bottom portion, wall portion and top portion being integrally formed, the bottom edge of the conical top portion having a greater diameter than the diameter of the top of the cylindrical wall portion and extending therebelow, and a sleeve member of substantially rigid cardboard-like material surrounding said cylindrical portion for supporting said cylindrical portion and maintaining the shape thereof and extending downwardly at least as far as the lowest portion of the concave bottom portion to serve as a base for the container, an integral flange-like annular portion extending from the top circumference of the cylindrical portion outwardly and downwardly to the lower circumferential edge of the conical top portion, the radial width of said flange-like annular portion being greater than the thickness of said sleeve member and the upper edge of said sleeve member engaging the lower surface of said flange-like annular portion to protect the sleeve from deterioration by any liquid which may contact the upper edge of said sleeve member when the contents of said container are poured therefrom.



3,848,761
CHILD-PROOF CLOSURES

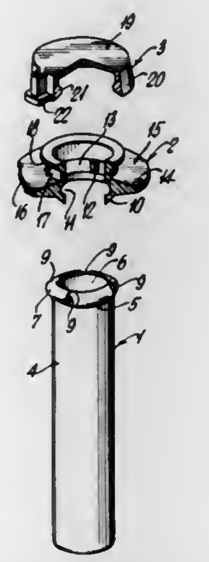
Sidney M. Libit, 441 Lakeside Ter., Glencoe, Ill. 60022
Filed June 22, 1973, Ser. No. 372,816
Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*
U.S. Cl. 215—220 **5 Claims**



1. In combination, a container having a screw-threaded neck and a closure for said neck, said closure comprising an inner sleeve having an internal screw thread engageable with said neck thread for attachment and removal of the closure, an outer sleeve exteriorly of said inner sleeve, concentric with, spaced therefrom and connected thereto for joint rotation of both sleeves, said outer sleeve having at least one internal projection and said container having at least one external projection selectively abuttable with said outer sleeve projection when the closure is rotated on the neck to open condition, said projections having respective configurations allowing non-abutting rotation of the outer sleeve relative to the container only when the closure is rotated to closed condition, the means connecting said two sleeves adapted to permit axial movement of the outer sleeve to disengage the projections, the improvement in which said joining means comprises a plurality of resiliently deformable, elongated straps located in the annular zone defined between the two sleeves, one end of each strap being joined to the outer sleeve and the other end to the inner sleeve, the principal plane of each strap being perpendicular to the common axis of the sleeves in the normal condition of the sleeves, and displaceable out of said perpendicular position upon relative axial displacement of the sleeves, each strap being arcuate between its respective junctions with the sleeves.

3,848,762
CONTAINER - SNAP-ON CLOSURE ASSEMBLY

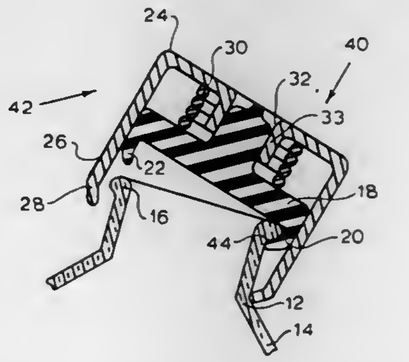
Ralph H. Thomas, Clark, N.J., assignor to Bristol-Meyer Company, New York, N.Y.
Filed June 18, 1973, Ser. No. 370,767
Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*
U.S. Cl. 215—224 **7 Claims**



1. A container adapted to receive a snap-on closure comprising a neck portion, terminating in a container opening, and a rounded annular bead; a plastic ring adapted to snap into engagement with said rounded annular bead, said plastic ring being provided with means for receiving said snap-on closure and a flat flange extending outwardly from said neck portion whereby a substantially flat abutting surface is provided which may serve as an abutting surface for the lower margin of said snap-on closure.

3,848,763
DUAL MOTION CHILD RESISTANT CLOSURE

Willis A. Kropp, Deland, Fla., assignor to Alexander C. Hunt, Orlando, Fla.
Filed Feb. 12, 1973, Ser. No. 331,765
Int. Cl. B65d *85/56, 55/02;* **A61j** *1/00*
U.S. Cl. 215—225 **18 Claims**

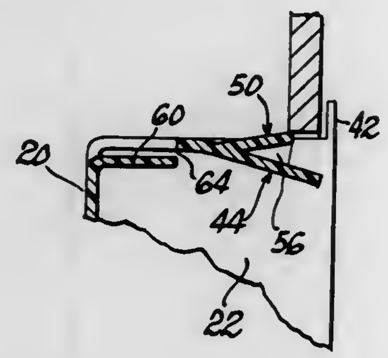


1. A closure adapted to be secured on a neck of a container of the type having a lip surrounding at least a portion of the periphery of said neck, said closure comprising:

- a cap member adapted to fit over said neck and having a flexible side wall adapted to engage said lip;
- means for limiting the expansion of said flexible side wall and
- means for providing resiliency between said cap member and said expansion limiting means.

3,848,764
ELECTRICAL BOX STRUCTURE FOR SECUREMENT TO WALL PANELING WITHOUT SEPARATE FASTENERS

George Salg, River Forest, Ill., assignor to Reflect-O-Lite Manufacturing Company, Chicago, Ill.
Filed Aug. 25, 1972, Ser. No. 283,850
Int. Cl. H02g *3/08*
U.S. Cl. 220—3.6 **13 Claims**

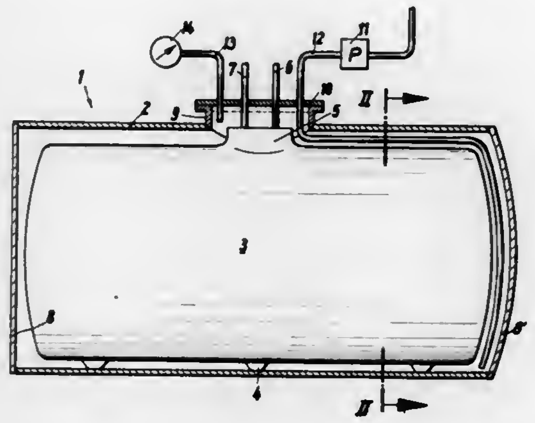


1. A plastic molded electrical box assembly secured without fasteners to a wall panel and supported in an opening defined by said panel, said box assembly comprising a plurality of sidewall segments each extending forwardly of said back wall to collectively define, with said back wall, an open hollow box assembly defining an open front spaced from said back wall, said sidewall being substantially the same shape and size, in front elevation, as said panel opening, and integral wall panel securing means comprising stop members extending outwardly of said sidewall segments for limiting entry of said box assembly through said wall panel opening from the front and for engaging the front surface of said wall panel when the box assembly is secured to said panel, and outwardly extending locking elements integral with the sidewall segments of said box assembly and located a given fixed distance rearwardly of said stop members for engaging the back surface of said wall panel when the box assembly is supported in said opening, said locking elements each comprising an upwardly sloping cam segment having one end merging in the sidewall segment and an opposite exposed end disposed entirely outwardly of the respective sidewall segment, whereby said locking elements are proportioned to be deflected inwardly when said box assembly is pushed inwardly through said opening and then resiliently to move outwardly when said stop members have engaged the front surface of said wall panel, said locking elements being proportioned to prevent removal of said box assembly forwardly of said opening, and to prevent removal of said box assembly from said wall panel, and a plurality of knock-outs formed with said box assembly along weakened lines of connection to facilitate their easy separation, thereby to provide access for electrical conductors to the interior from the exterior of said box assembly.

3,848,765
TANK FOR FUEL OIL OR OTHER LIQUIDS

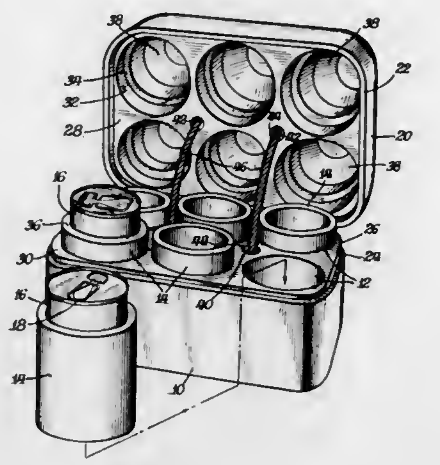
Hermann Dürkop, Bremen, Germany, assignor to Forval-Verkaufsgesellschaft H. Dürkop & Co., Bremen, Germany
Filed June 17, 1971, Ser. No. 154,052
Int. Cl. B65d *25/18, 25/24, 51/18*
U.S. Cl. 220—9 A **8 Claims**

1. A container assembly comprising an inner and an outer tank adapted for under ground large capacity storage of fuel oil and other liquids, said outer tank being formed as a cylindrical tube made substantially entirely of asbestos-cement of a thickness to be self supporting of its own weight and the weight of the inner tank, said tube including ends, at least one end being closed and sealed by a lid, said lid including two plates of asbestos-cement secured together in face to face relation and having asbestos fibers in each plate oriented at substantially ninety degrees relative to the fibers of the other plate.



3,848,766
INSULATED CONTAINER PACK

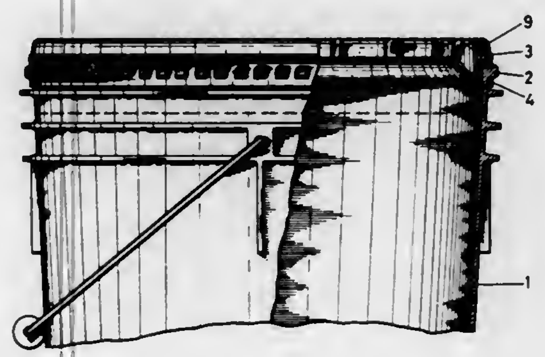
David Lawrence Gantt; Dan Frederick Stone, both of Keitering, and Timothy Joseph Townsend, Springboro, all of Ohio, said Gantt and Townsend assignors to Triance Enterprises, Inc., Dayton, Ohio
Filed June 29, 1972, Ser. No. 267,635
Int. Cl. B65d *25/18*
U.S. Cl. 220—9 F **5 Claims**



1. A food and/or beverage pack for holding food or drink containers comprising a block of low thermal conductivity material, said block having a plurality of cavities therein, said cavities being upwardly-open through the upper surface of said block and being adapted to seat cups therein, cups for holding said containers made of low thermal conductivity material seated upwardly-open in each said cavity, the height of said cups being such that a cup holding a container may be picked up with the container in the cup and the container will continue to be insulated from the hand and the atmosphere, said cups constructed for seating and exposing containers so that human lips may engage their rims without engaging the cups, and a lid having downwardly directed cavities matching those in said block and being directed through the bottom of the underside of said lid, said lid cavities being capable of receiving the tops of said containers and cups and having shoulders seatable on the rims of said cups when said cups are seated in the matching block cavities, said underside surface of said lid seating essentially flush on the upper surface of said block so that said matching block and lid cavities form independent thermal cavities.

3,848,767
CONTAINER WITH LID

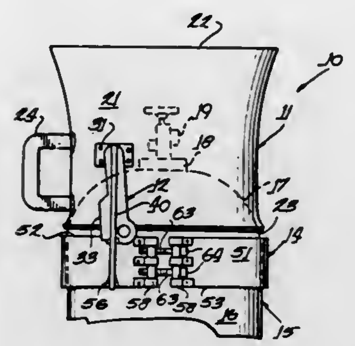
Willy B. Naf, Waltenschwil, Switzerland, assignor to Koninklijke Emballage Industrie Van Leer B.V., Netherlands
Filed Jan. 11, 1973, Ser. No. 322,845
Claims priority, application Switzerland, Jan. 11, 1972, 00403/72
Int. Cl. A47j *27/08;* **B65d** *45/00*
U.S. Cl. 220—59 **5 Claims**



1. A container with lid, which are both made of synthetic material, which lid extends with a reversed, channel-shaped edge over the upper edge of the container which is open at the top, and is attached to the outer wall of the container with the outer leg of the reversed channel-shaped edge, characterized in that said outer leg is provided with a number of peripheral openings which fit over a number of radially extending projections of the upper edge of the container, in which embodiment said outer leg is radially confined by a thickened portion, ridge or similar projecting part on each projection and axially by the projections themselves.

3,848,768
COMBINATION PROTECTIVE CAP AND STAND FOR A PRESSURIZED GAS CYLINDER

Richard J. Griffin, 2007 Garfield, Granite City, Ill. 62040
Filed Dec. 7, 1973, Ser. No. 422,519
Int. Cl. B65d *25/00*
U.S. Cl. 220—85 P **5 Claims**

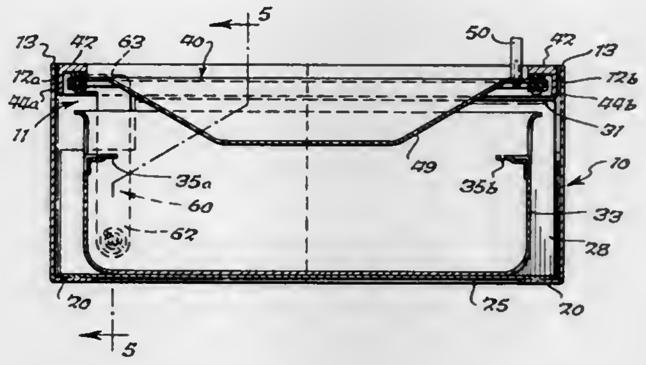


1. A protective cap intended for use with a pressurized gas cylinder having an elongated cylinder body member and semispherical top and bottom end surfaces, the top surface having a boss provided centrally thereof with a valve assembly received therein and projecting axially therefrom, the cap intended to protect the valve assembly from damage and abuse, the protective cap comprising:

- a cap of an elongated hollow cylindrical configuration having a closed top edge, an open bottom edge, and longitudinally concave shaped side wall surfaces interconnecting said top and bottom edges, said bottom edge being of a diameter greater than the diameter of the central portion of said cap and being of a lesser diameter than the diameter of said cylinder and defining a contoured skirting about the cap adapted to seat on the circumference of the semispherical curved top end surface of the cylinder;
- a plurality of latch means spaced circumferally about the side wall of said cap and pivotally mounted thereto for rotation relative thereto, each latch means including a lever arm having one end pivotally attached to said side wall surface with the opposite end projecting therefrom and each having a top end of a hook member pivotally mounted thereto in a position radially outwardly from and vertically above the pivot axis;
- latch retaining means formed integrally with said lever arm and adapted to detachably attach said lever arm to a portion of said hook member;
- a collar ring having a circumference adapted to fit snugly about the top circumferal end of said cylinder, means for detachably attaching said collar ring to said cylinder, said collar ring having a top edge, a bottom edge, and confronting end edges, and a plurality of angularly spaced apart projections defined in said bottom edge and projecting outwardly therefrom to define a cavity like recess therebehind of a size and configuration adapted to detachably receive a hook portion of said hook member therein for detachably retaining said cap to said collar ring in a position resting on said cylinder top end surface in a manner surrounding and protecting said valve assembly.

3,848,769
HINGE ASSEMBLY FOR RECEPTACLES AND THE LIKE

Valentin E. Beil, Eden, N.Y., assignor to McDonald Products Corporation, Buffalo, N.Y.
Filed Feb. 16, 1972, Ser. No. 226,816
Int. Cl. B65d *43/16;* **A24b** *19/04*
U.S. Cl. 220—259 **15 Claims**



1. In an ash receptacle having an opening and including a cover member having a peripheral configuration generally conforming to the shape of said opening and being supported by said receptacle within said opening in a position closing said opening, hinge means connecting said cover member to said receptacle and located within said receptacle so as to be concealed from view when said cover member closes said receptacle opening, said hinge means comprising:

- a. link means pivotally connected adjacent one end thereof to said cover member;
- b. connecting means fixed within said receptacle;
- c. said link means being movably connected adjacent the other end thereof to said connecting means, the connection of said link means to said connecting means being spaced from the connection of said link means to said cover member in a direction within said receptacle and away from said opening;
- d. the pivotal connection of said link means to said cover member moving first away from and then toward a surface of said receptacle adjacent the connection as said cover member is pivoted about the connection to said link means through an angle of about ninety degrees so as to be moved to a position opening said receptacle;
- e. said receptacle having an inner surface portion adjacent said opening and said cover member having an outer surface portion and a peripheral surface meeting in an

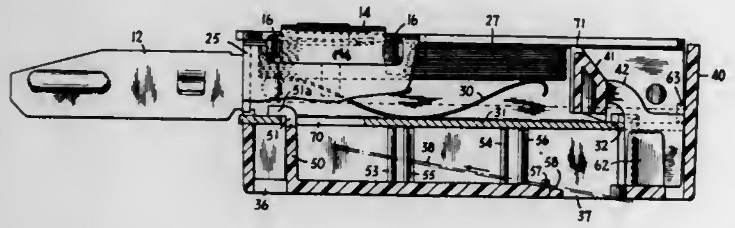
edge, said cover peripheral surface portion being disposed substantially parallel to and being positioned relatively close to said inner surface portion of said receptacle, said cover member edge moving along said inner surface portion of said receptacle in a direction away from said opening when said cover member is moved to an open position; and

f. the pivotal connection of said link means to said cover member being located inwardly of the plane of said receptacle opening when said cover member closes said opening and remaining substantially inwardly of the plane of said receptacle opening when said cover member is moved to an open position.

3,848,770
BLADE DISPENSER WITH USED BLADE VAULT

Clemens A. Iten, Staunton, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed July 27, 1972, Ser. No. 275,704
Int. Cl. B65d *35/22*
U.S. Cl. 221—102 **8 Claims**

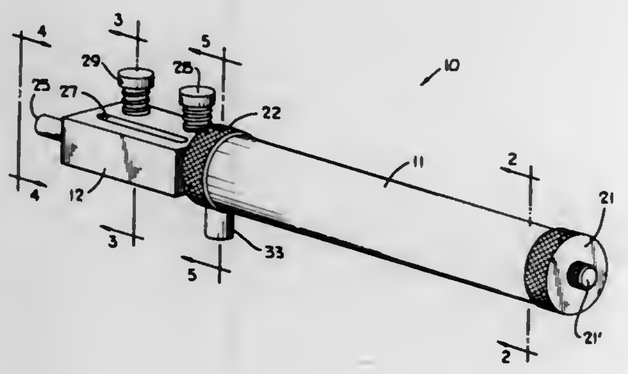


1. A blade dispenser having an elongated body for new blades and a vault member for used blades, said body member having top, bottom and side walls and an open rear end, said bottom wall having an opening therein near the front end; said vault member being of plastic molded as a single unitary piece of continuous material and having a forward upstanding lug with a top forwardly extending hook portion and said vault member further having at the rear end an upstanding nose portion; in assembled relation of the members said lug projecting through said bottom wall with the hook engaged forwardly over a section of said bottom wall and said nose portion extending into said open rear end of the body member; and said members having interlocking elements normally preventing relative axial displacement.

3,848,771
BALL BEARING FEEDER

George E. Shreev, Union City, Ind., assignor to Gene B. Symmonds, Indianapolis, Ind.

Filed May 14, 1973, Ser. No. 359,788
Int. Cl. B65h *3/32*
U.S. Cl. 221—105 **2 Claims**



1. A hand held ball bearing feeder comprising:

a rigid block including a chamber with an entrance opening and an exit opening through which a plurality of ball bearings may pass, said chamber is sized to allow a predetermined fixed number of ball bearings to be within said chamber in a single row, said block also including an external slot opening into said chamber and extending at least partially from said entrance opening to said exit opening and being sized to prevent said ball bearings from passing through said slot;

first and second plungers slidably mounted to said block adjacent respectively said entrance opening and said exit opening and extending into said chamber, said plungers including springs normally biasing said plungers to block said chamber but yieldable when said plungers are depressed to allow movement of said plungers from said chamber, said plungers are spaced apart a fixed unchangeable distance;

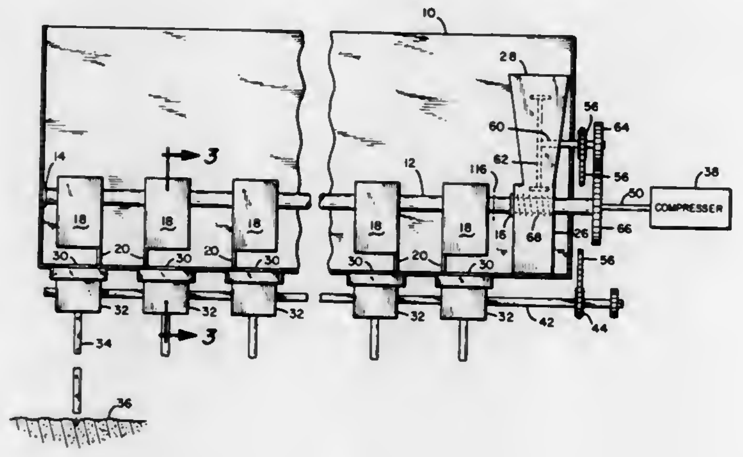
a rigid tube rotatably mounted to said block and including a plurality of parallel hollow stems extending lengthwise therethrough with each stem forming a passage containing ball bearings, said tube includes a first end with a removable cap mounted thereon and an opposite end adjacent said entrance opening, said tube being rotatable to position a stem in line with said entrance opening;

detent means mounted on said block and operable to normally hold said rigid tube in place and keeping one of said stems aligned with said entrance opening but yieldable to allow rotation of said tube and alignment of another stem with said entrance opening.

3,848,772
SEED AND SOIL TREATMENT DEVICE

Robert D. Aanestad, Burnsville; Melvin J. Straub, Minnetonka, and Edward J. Norgard, Plymouth, all of Minn., assignors to Robert D. Aanestad, Plymouth, Minn.

Filed Apr. 1, 1974, Ser. No. 456,524
Int. Cl. A01c *7/06*
U.S. Cl. 222—145 **8 Claims**



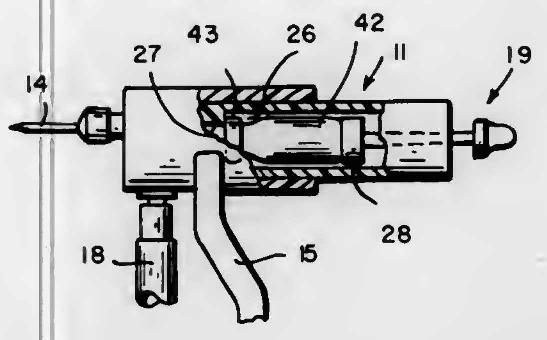
1. A seed and soil treater mounted on an implement having a frame, a seed box mounted on said frame and having at least one opening in the bottom thereof, a seed receiver mounted under and immediately adjacent said opening and in operative relationship thereto, a conduit attached to said seed receiver for receiving seeds therefrom and depositing them in the ground and ground support wheels attached to said frame, said seed and soil treater comprising:

a. a source of treatment material attached to said frame,
b. a dispersion cup mounted in said seed box immediately above said opening at a distance therefrom to allow seeds in said seed box to enter said seed receiver, and
c. means coupling said source of treatment material and said dispersion cup for conveying said treatment material to said dispersion cup.

3,848,773
RADIOACTIVE GAS DISPENSING DEVICE

Norman Adler, Arlington; John L. Morgenthau, Jr., Auburndale, and Paul A. Gold, West Medford, all of Mass., assignors to New England Nuclear Corp., Boston, Mass.

Filed Mar. 7, 1972, Ser. No. 232,576
Int. Cl. B67b *7/24*
U.S. Cl. 222—1 **16 Claims**



1. A device for dispensing a pre-measured amount of a stored radioactive gas contained in a sealed vial having a pierceable septum, said device comprising

dispenser means having a gas dispensing adapter for dispensing said gas from said device and a displacement gas intake adapter;

first needle means mounted in said dispenser means and connected to said displacement gas intake adapter;

second needle means mounted in said dispenser means and connected to said gas dispensing adapter;

displacement gas injection means, including a source of displacement gas, connected to said displacement gas intake adapter;

gas dispensing means connected to said gas dispensing adapter

means for holding said sealed vial, said vial holding means being adapted to be releasably connected to said dispenser means so that the pierceable septum of said vial is positioned therein opposite said first and second needle means;

means for relatively moving said vial and said first and second needle means within said dispenser means so that said vial comes into contact with said first and second needle means to pierce said septum, said first and second needle means thereupon extending into the gas filled interior of said vial to provide communication between the interior of said vial and said gas dispensing adapter through said second needle means and between the interior of said vial and said source of displacement gas through said first needle means;

whereby, displacement gas may be injected into said vial from said displacement gas injection means and upon injection of said displacement gas, a pre-measured amount of said stored radioactive gas is dispensed from the vial and device through said gas dispensing adapter and said gas dispensing means

one way valve means for preventing substantial flow of said premeasured amount of radioactive gas from said vial to said source of displacement gas but permitting flow of said displacement gas to said vial from said displacement gas source.

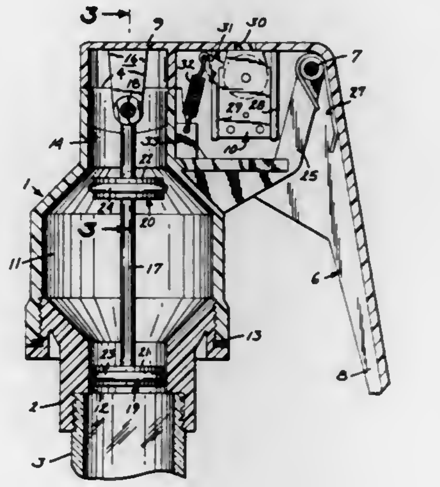
3,848,774
MEASURING AND DISPENSING CAP

Lloyd J. Schimke, Box 1272 Hwy. 2, East Minot, N. Dak. 58701

Filed Jan. 24, 1973, Ser. No. 326,190
Int. Cl. G01f *11/38*
U.S. Cl. 222—36 **7 Claims**

1. A cap for measuring and dispensing predetermined amounts of liquid from a container, comprising:

a. a body defining a measuring chamber of predetermined volume, the chamber having a cylindrical outlet located at the top of said body;
b. means for adapting and connecting the bottom of said body to an opening in the liquid container, said adapting and connecting means defining a cylindrical inlet which is in communication with the measuring chamber and the container opening aligned with the outlet;
c. a shaft having top and bottom ends;
d. inlet and outlet valve discs fixedly mounted on said shaft, each being movable in a sealing relationship within the cylindrical inlet and outlet, repectively, for opening and closing the inlet and outlet, the outlet valve mounted toward the top end of said shaft and the inlet valve mounted toward the bottom end of said shaft;



e. a single acting handle rotatably mounted on said body, the handle having upper and lower ends;
f. means for pivotally connecting the upper end of said handle to the upper end of said shaft to urge said shaft in a direction away from the liquid container when said handle lower end is moved toward said body;
g. means for biasing the lower end of said handle away from said body, in which position said inlet is closed by said inlet valve and said outlet is open, and when said handle is moved toward said body, said inlet is opened and said outlet is closed by said outlet valve;
h. first and second pouring spouts located at the top of said body and in communication with the outlet, the spouts being located opposite each other and each spout spaced about 90° from said handle.

3,848,775
VALVE STRUCTURE FOR PRESSURIZED LIQUID DISPENSER

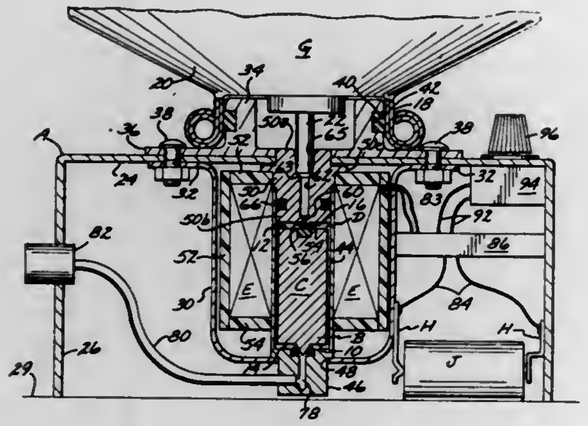
Clarence R. Possell, San Diego, Calif., assignor to C-H Products Corporation, Rialto, Calif.

Filed Aug. 27, 1973, Ser. No. 391,637
Int. Cl. G04c *23/38*
U.S. Cl. 222—70 **3 Claims**

1. In a dispenser that automatically discharges metered quantities of a pressurized liquid from a container at timed intervals, said dispenser of the type that includes a body assembly that defines an elongate vertical liquid metering chamber having first and second ends, an elongate armature of less length than said metering chamber movably disposed in the latter, said armature formed from a magnetically attractable material and having first and second ends, said armature of less transverse cross section than that of said metering chamber, a spray nozzle, first passage means in communication with said spray nozzle, a solenoid surrounding at least a portion of said metering chamber, a source of electric power, second passage means that maintain communication between the interior of said container and a tubular valve seat that extends into said metering chamber from said second end thereof, a normally open electric circuit means connected to said sole-

noid and said source of power that periodically close to momentarily energize said solenoid to move said armature from a first to a second position, first valve means on said second end of said armature that seal with said tubular valve seat when said armature is in said second position, an improved valve structure for maintaining said liquid in said metering chamber when said armature is in said first position, said valve structure including:

a. a tapered rigid element of circular transverse cross section that projects outwardly from the center of said first end of said armature;
b. a resilient first ring snuggly and sealingly disposed in a recess formed in said first end of said metering chamber, said first ring having a centrally disposed opening therein coaxially aligned with said element, said recess in communication with said first passage means, with said element when said armature is in said first position extending into said opening to pressure seal with said ring and exert an outward radially directed force thereon to maintain said first ring in sealing engagement with said recess, and said element when said solenoid is energized moving out of said opening as said armature moves to said second position to permit said liquid to discharge from said metering chamber through said first passage means due to the pressure on said liquid, said armature when said solenoid ceases to be energized returning to said first position due to the weight of said armature and the action of pressurized liquid on said armature as said liquid discharges into said metering chamber from said tubular valve seat, said first ring formed from a resilient material that is inert to said pressurized liquid said second end of said armature including said valve means having a greater area than the portion of said first end and element exposed to said pressurized liquid when said element is in said first position, with said armature due to the differential in areas on opposite ends thereof exposed to said pressurized liquid at all times tending to remain in said first position to seal with said first ring, and said armature only moving from said first position when said solenoid is energized to create a magnetic field.

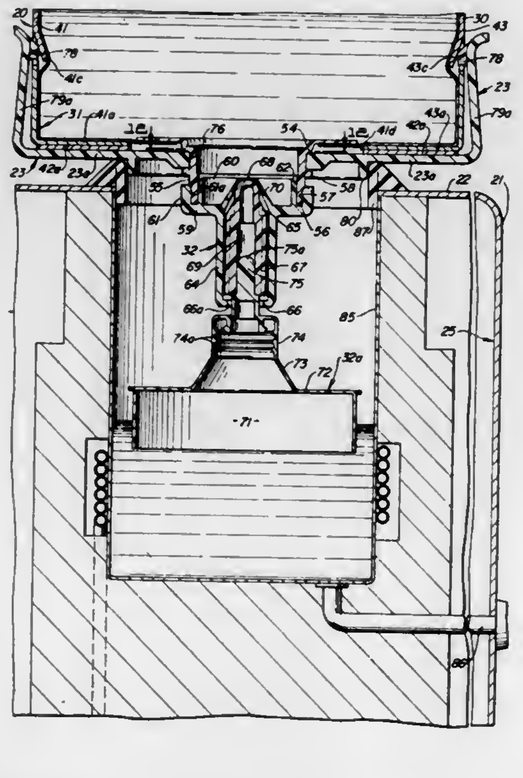


3,848,776

DISPOSABLE RESERVOIR PACKAGE FOR LIQUID-DISPENSER HAVING VALVE AND OPERATING FLOAT

Warren J. Schieser, Columbus, Ohio, assignor to Corco, Inc., Worthington, Ohio
Filed Dec. 19, 1972, Ser. No. 316,466
Int. Cl. B65d *37/00;* **B67d** *5/06*
U.S. Cl. 222—105 7 Claims

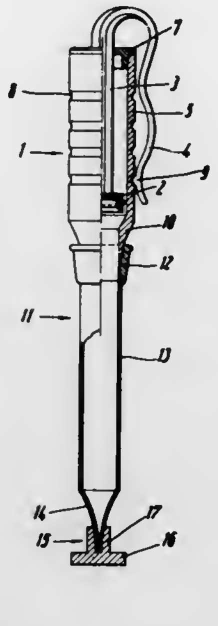
1. A package assembly for use as a disposable reservoir in a liquid dispensing unit comprising an outer protective box and an inner flexible bag disposed within and protected by the outer box, said box having a substantially flat wall adapted to rest on a support surface when in dispensing position on the dispensing unit with the bag filled with liquid, said bag having a neck which is adjacent said flat wall with the bag filled, a valve member on the neck for controlling discharge of liquid through said neck in cooperation with a valve seat on the neck, a guide sleeve in which said valve member is slidably mounted for axial movement between seated and unseated positions relative to said seat, said valve guide sleeve extending axially outwardly of the neck, said substantially flat box wall having an opening through which the valve guide sleeve and neck can project, means for locking the neck in said opening in a position such that the axis of the valve guide sleeve will be substantially normal to the flat wall and the neck will be locked in fixed axial position, said valve member seating on said valve seat when moved axially inwardly but dropping downwardly by gravity when the box with the filled bag is resting on said flat wall in dispensing position, a float for attachment to the slidable valve member, said valve member being movable to closed position by said float when attached thereto and positioned in said well to maintain a predetermined level of liquid in the well, said means for locking the neck in said opening comprising a locking panel at said flat wall having a keyhole slot at said opening, said neck having a radially outwardly opening locking groove on its exterior, said keyhole slot having a wide portion through which the neck can pass axially and a communicating narrow portion into which the neck can be moved laterally to lock it axially at said locking groove, said locking panel being part of an adapter which is adapted to support the box on the support surface of the dispensing unit which is substantially horizontally disposed, said panel of the adapter having a flat surface providing said flat support surface on which the flat wall of the box rests, said panel having said keyhole slot formed therein, and locating means extending from said flat support surface of said panel for locating the flat wall of the box on said flat support surface of the panel to locate said opening in said box wall in cooperation with said keyhole slot in said adapter panel, said box having side walls at right angles to said flat wall, said locating means on the adapter panel including a pair of opposed resilient box-gripping flanges which extend outwardly from said flat support surface of the panel and are adapted to extend over and grip said side walls of the box when the box is inserted therebetween, said box side walls having locking slots therein adjacent said box flat wall, and inwardly extending locking lugs on said box gripping flanges for interlocking with said slots to retain the box on the adapter with its flat wall resting on the support surface of the adapter panel.



3,848,777

DEVICE FOR RECEIVING AND DISPENSING VARIABLE LIQUID QUANTITIES

Walter Sarstedt, Numbrecht/Rommelsdorf; Hans-Dieter Krause, Hannover, and Hermann Wisser, Stuttgart-Feuerbach, all of Germany
Filed Aug. 29, 1972, Ser. No. 284,506
Claims priority, application Germany, Aug. 30, 1971, 7133041; Jan. 24, 1972, 2203174
Int. Cl. G01f *11/06*
U.S. Cl. 222—386 4 Claims

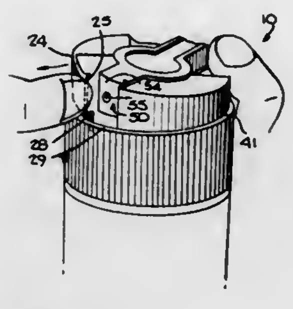


1. A device for receiving and dispensing variable quantities of liquid such as blood and blood serum, said device comprising: a cylinder, a plunger disposed within said cylinder in hermetically sealed sliding relationship with said cylinder, a plunger rod extending out of the top end of said cylinder and in a U-shape to define a corrugated handle portion resiliently engaging the outer periphery of said cylinder, at least one of said cylinder and said plunger rod having graduations thereon, a smooth collar disposed at the bottom end of said cylinder and defining an opening therein, and a pipette having an upper end for frictionally engaging said collar and a lower end defined by a thin drawn out tip, said graduations including a plurality of axially spaced annular grooves extending about said cylinder, said handle including a detent projection which may be disposed in any one of said grooves upon axial movement of said handle portion.

3,848,778

CHILDPROOF ACTUATOR ASSEMBLY

Philip Meshberg, 85 Old Oak Rd., Fairfield, Conn. 06604
Filed Aug. 14, 1972, Ser. No. 280,432
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.11 20 Claims



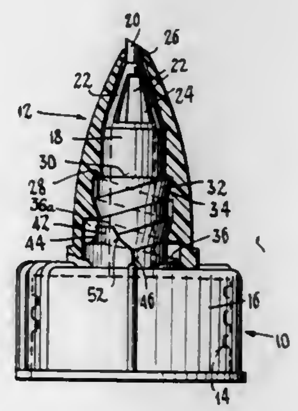
1. In combination with
a container,
a dispensing valve assembly secured to the container, and
a actuator assembly including
a housing member mounted on the container,
an actuator member mounted in the housing in operable connection with the valve,
the actuator being rotatable about the longitudinal axis of the container between a non-dispensing position and a dispensing position,
blocking means for preventing operation of the valve when the actuator is in the non-dispensing position, and means for deterring rotational movement of the actuator when the actuator is in the non-dispensing position, wherein the improvement comprises:
A. the deterring means being a locking means for preventing rotational movement of the actuator when the actuator is in the non-dispensing position, the locking means having cooperable portions one of which is a resilient flap portion of the housing member radially movable between engaging and disengaging positions with respect to the other,

whereby when the locking means is disabled by moving the one portion to the disengaging position, the actuator can be rotated free of the blocking means to the dispensing position for dispensing product by operating the actuator valve, and when rotated to the non-dispensing position the resilience of said flap will cause said locking means to engage.

3,848,779

CAPTIVE DISPENSING CAP CONSTRUCTION

Morton B. Stull, 2132 81st St. Gulf, Marathon, Fla. 33050
Filed Sept. 8, 1969, Ser. No. 855,971
Int. Cl. B67d *3/02*
U.S. Cl. 222—521 5 Claims

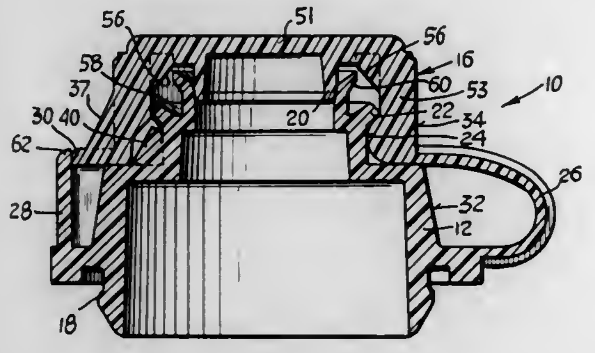


1. A captive dispensing cap construction comprising, in combination:

a. a tubular body part adapted to be carried by a container and having a discharge spout,
b. a screw cap part carried by said body part and surrounding said discharge spout,
c. said cap and body parts having two pairs of mutually engageable portions,
d. one pair of mutually engageable portions comprising cooperable screw thread means respectively on said parts, for moving the cap part axially on the body part as the cap part is turned,
e. the other pair of mutually engageable portions comprising cooperable stop lugs respectively on the body and cap parts,
f. one set of surfaces of the lugs becoming engaged and acting in a manner to halt clockwise turning of the cap part in screwing-on direction as the cap part is screwed toward its full-on position on the body part,
g. another set of surfaces of the said lugs becoming engaged and halting the opposite, unscrewing, turning of the cap part as the latter is unscrewed through part of a revolution from said full-on position,

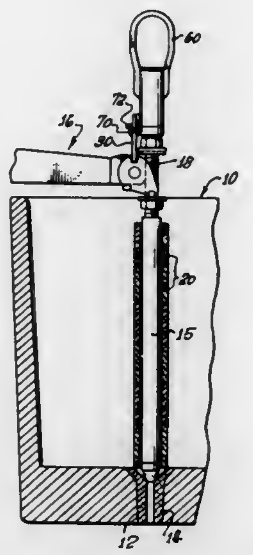
h. one of said stop lugs having a sloping face with respect to the other stop lug to facilitate bypass of the lugs as the cap part is screwed onto the body part,
i. at least one of said portions of the said one pair of the mutually engageable portions comprising the cooperable screw threads of the said parts being resilient and yieldable to enable the cap part to shift so that the stop lug on the cap part can be forced past the stop lug on the body part as the cap part is applied to the body part and screwed toward its full-on position,
j. one of said parts of the cap construction having a recess adjoining the stop lug thereof and in the path of movement of said other stop lug but disposed circumferentially past the stop lug it adjoins, so as to freely receive the other stop lug of the other part after the lugs have bypassed each other, thereby to enable the screw thread means to continue freely for an interval to further move the cap part axially during the turning thereof.

3,848,780
SAFETY CAP
Morton B. Stull, c/o Stull Engraving Co., 221-223 Banta Ave., Garfield, N.J. 07026
Filed Feb. 13, 1974, Ser. No. 441,934
Int. Cl. B65d *47/00*
U.S. Cl. 222—546 **13 Claims**



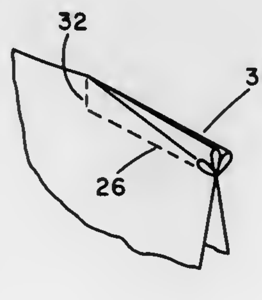
1. A safety cap for small dispensers of the hand-held type and the like, comprising in combination:
a. a tubular cap body having a top discharge opening,
b. a captive closure cap adapted to fit the opening of the cap body so as to seal the same,
c. cooperable yieldable retainer means on the cap body and cap, tending to hold the latter firmly on said body in sealing position,
d. a flexible hinge web structure connecting said cap body and closure cap for holding the latter captive while enabling it to be swung from the sealing position closing off the body to a discharge position removed from the opening of the body,
e. said cap and body having cooperable bearing means enabling the cap to be turnably shifted on the body within limits as determined by the web structure,
f. an interference lug and a lifting tab disposed respectively on the cap body and cap so as to overlie and be in registration with one another when the cap has been swung about the web structure to its sealing position on the body,
g. said hinge web structure being sufficiently long to enable the cap, when in its sealing position, to be turned within said limits so as to shift the lifting tab thereof out of registration with the interference lug on the cap body, and
h. detent means for yieldably holding the cap in a turned position on the cap body wherein the lifting tab is out of registration with the interference lug so that a user's finger can be applied to the underside of the lifting tab for the purpose of removing the cap, thereby enabling the user to readily remove the cap without tending to return to the registration position under the action of the web structure.

3,848,781
QUICK RELEASE STOPPER ROD FOR STEEL MILL LADLE
Joseph E. Springer, 11211 Monte Vista, Ontario, Calif. 91761
Filed Feb. 20, 1973, Ser. No. 334,006
Int. Cl. B22d *37/00*
U.S. Cl. 222—559 **21 Claims**



1. In the combination of a ladle having a bottom port to pour molten metal, a stopper rod in the ladle to open and close the bottom port and support structure carried by the ladle to support and control the stopper rod, the improvement comprising:
the stopper rod being equipped for cooperation with a crane to lift the stopper rod out of the ladle;
said support structure being equipped with attachment means to releasably connect the stopper rod to the support structure;
said attachment means being variable between a first state to connect the stopper rod to the support structure and a second state to release the stopper rod from the support structure; and
a latch to releasably retain said attachment means in its first state,
said latch being responsive to lifting force on the stopper rod by a crane to release the attachment means for shift from its first state to its second state to release the stopper rod from the support structure.

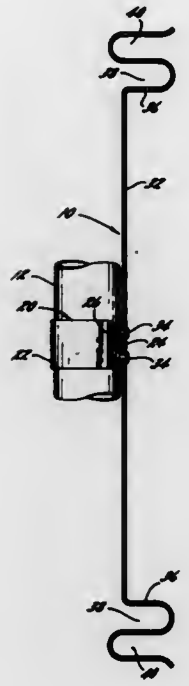
3,848,782
METHOD FOR FORMING PINCH PLEATS FOR DRAPERIES
Robert A. Rekker, 428 Howe Ave., Passaic, N.J. 07055
Filed Apr. 9, 1974, Ser. No. 459,312
Int. Cl. A41b *43/00;* **D06j** *1/00*
U.S. Cl. 223—34 **1 Claim**



1. A method for forming winged pinch pleats, comprising the steps of:
a. positioning and sewing a stiffening means in supporting abutment to an area of drapery material intended for use as a heading of a drape;

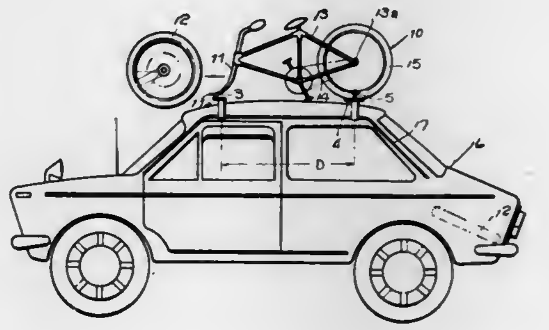
b. folding a portion of said area in order to define upper and lower horizontal limits to said heading;
c. marking off a plurality of centerlines, each centerline being transverse with respect to the major axis of the heading;
d. aligning one edge of a pleat gage with one of said centerlines;
e. folding said heading about said pleat gage in order to form a longitudinal loop corresponding in cross-section to the total of the cross-sections of the wings of the desired pleat;
f. stitching said loop parallel to the edge of said pleat gage opposite to said centerline;
g. inserting a pleat former within said longitudinal loop;
h. pressing the material of said loop, including said stiffening means, into firm contact with said pleat former in order to conform said material into the shape of said pleat former and thereby of a pleat;
i. withdrawing said pleat former; and
j. stitching the lower ends of the wings of said pleat, thereby securing the pleat into its ultimate form.

3,848,783
BICYCLE LOCK CARRYING BRACKET
Sidney Falk, Chicago, Ill., assignor to Fort Lock Corporation, River Grove, Ill.
Filed Apr. 12, 1973, Ser. No. 350,347
Int. Cl. B62j *11/00*
U.S. Cl. 224—39 R **3 Claims**



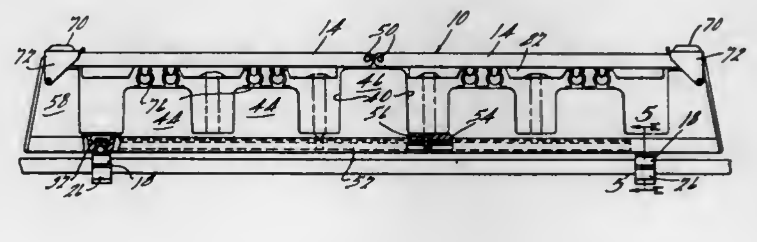
1. A bracket for connection with a tubular frame member of a bicycle for carrying a lock of the type including a flexible cable, said bracket comprising a clamp having a generally C-shaped body portion terminating in resiliently yieldable first and second legs projecting outwardly from said body portion, said first leg including a detent latching means adapted to attachably receive said second leg for clamping said C-shaped portion about said tubular frame member, an elongated flexible strap transversely connected to one of said legs intermediate the ends of said strap, and the opposite ends of said strap including bent over flanges defining inwardly and outwardly facing pockets extending perpendicular to said strap so that the flexible bicycle lock cable may be coiled about the strap ends when they are flexed towards one another and when said strap ends are released they resiliently hold the coiled lock cable on said bracket.

3,848,784
BICYCLES-LADING APPARATUS
Keizo Shimano, and Tokiharu Nishino, both c/o Shimano Industrial Co., Ltd., No. 77, 3-cho, Oimatsu-cho, both of Osaka, Japan
Filed Jan. 3, 1972, Ser. No. 214,604
Claims priority, application Japan, June 26, 1971, 46-46635
Int. Cl. B60r *9/10*
U.S. Cl. 224—42.1 F **7 Claims**



1. An apparatus mounted on the roof of a passenger car and adapted to carry bicycles whose front wheels are dismounted from the pawl members of the front forks comprising,
a. mounting means rigidly fixed on said roof of the passenger car,
b. frame members fixed to said roof through means of said mounting means,
c. fixing means which are fixed to the upper surface of said frame members and adapted to fix the front forks of the bicycles thereto comprising plates secured to said frame members, cylindrical shafts secured to said plates and disposed substantially in parallel to said frame member, hollow shafts insertibly fixed to each of said cylindrical shafts, lock nuts releasably securing said hollow shaft to said cylindrical shaft, a solid rod inserted in each said hollow shaft and each having one end thereof provided with threads and the other end provided with a projection bored with a transverse hole, a nut means screwably engageable with said threads of the rod, a cam means inserted in said transverse hole, and a cap nut for rotatably supporting said cam means, whereby each fork tine is clamped between said lock nut and said nut means at one end and said lock nut and said cap means at the other end of said solid rods,
d. wheel lading stands which are fixed to said upper surface of the frame member and adapted to mount thereon the rear wheels of said bicycles and,
e. retaining means for fixedly securing said rear wheels to said wheel lading stands.

3,848,785
SKI RACK FOR MOTOR VEHICLES
John A. Bott, 931 Lake Shore Dr., Grosse Pointe Shores, Mich. 48236
Filed May 14, 1973, Ser. No. 360,096
Int. Cl. B60r *9/12*
U.S. Cl. 224—42.1 F **7 Claims**

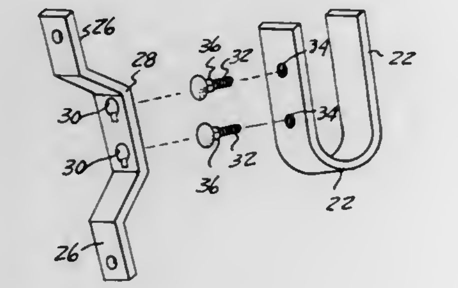


1. A ski rack for an automotive vehicle including a pair of longitudinally spaced holders each including a base provided

with a plurality of upstanding bosses defining recesses therebetween adapted to accommodate skis with their edges set on the bottoms of said recesses, a plurality of upwardly open pole receptacles on the tops of said bosses and at least one closure bar assembly pivoted on said base and arranged to contact both the upper edges of skis in said recesses and poles in said receptacles, spaced supports engageable with the underside of each of said bases, fasteners connecting said bases to said supports, and independent attaching means for connecting said supports to the vehicle body whereby said bases and their closure bars may be removed from said supports without disturbing said attaching means and supports.

3,848,786
PIPE SUPPORTING RACK FOR VEHICLE

James S. Baxter, 214 Lake Shore Dr., Oxford, Mich. 48051
Filed Dec. 4, 1972, Ser. No. 312,026
Int. Cl. B60r *11/00*
U.S. Cl. 224—42.45 R **1 Claim**



1. Means for transporting an elongated object having a circular cross setion, comprising:

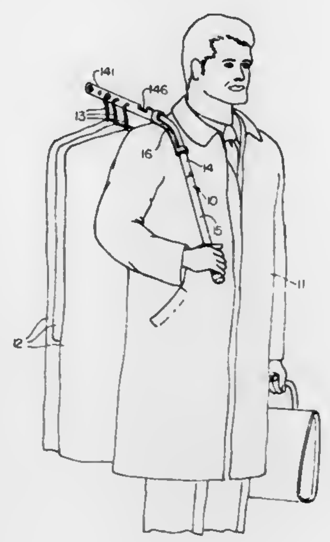
a vehicle;
a plurality of brackets each having upper and lower portions rigidly attached to the vehicle at a common vertical height, and horizontally spaced to accomodate the length of the elongated object, each bracket having a horizontally off-set mid-section with a pair of vertically spaced key-hole shaped openings in which the large end of each opening is above the narrow end thereof;
a U-shaped support for each bracket, each support having a pair of spaced sides forming a top opening for receiving the elongated object, and a semi-circular bight having a diameter greater than that of the circular cross-section of the elongated object; and
a pair of members carried on one side of each support and received in respective key-hole shaped openings, each member having a head and a neck, the head being larger than that of the narrow end of the key-hole shaped opening but smaller than the large end thereof, the head being spaced a distance from the support accomodating the thickness of the bracket, and the neck having a diameter suited for being received in the small end of the key-hole shaped opening, whereby the supports are aligned to cooperate in removably receiving an elongated object such as a section of pipe.

3,848,787
TRAVEL TOTES

Edward J. Hill, 1660 Lochridge Rd., Bloomfield Hills, Mich. 48103
Filed Oct. 15, 1973, Ser. No. 406,573
Int. Cl. A45c *13/26*
U.S. Cl. 224—45 T **5 Claims**

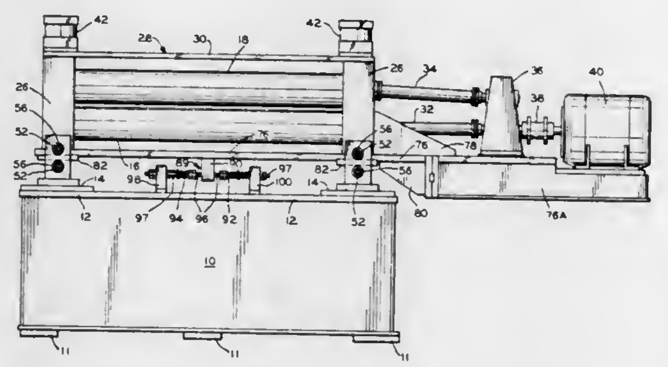
1. A tote means for use by travelers and others for carrying on one's shoulder clothing or other items mounted on conventional hook type hangers or the like, said items being bagged as required against damage by rain or dust, comprising

a. an upper rear shoulder element formed of suitable tubing vertically flattened at its upper rearwardly disposed end portion, is vertically curved at its central portion, and terminates in a diagonally downwardly extending straight open end portion,
b. the said vertically flattened end portion of said rear shoulder element having a plurality of transverse large and small apertures therethrough spaced to receive the hooked end of items to be hung on and carried by said tote,
c. a resilient pad secured to the bottom of the vertically curved central portion of said upper rear shoulder element whereby to provide cushioning means supporting the said tote on the shoulder of its user, and
d. a front guide element including a hand grip fixed on the lower end thereof and means fixed on the upper end thereof removably securing said front guide element in non-turnable relationship with respect to the said downwardly extending end portion of said upper rear shoulder element.



3,848,788
CONTINUOUS STRIP FEEDING SELF-ALIGNMENT APPARATUS

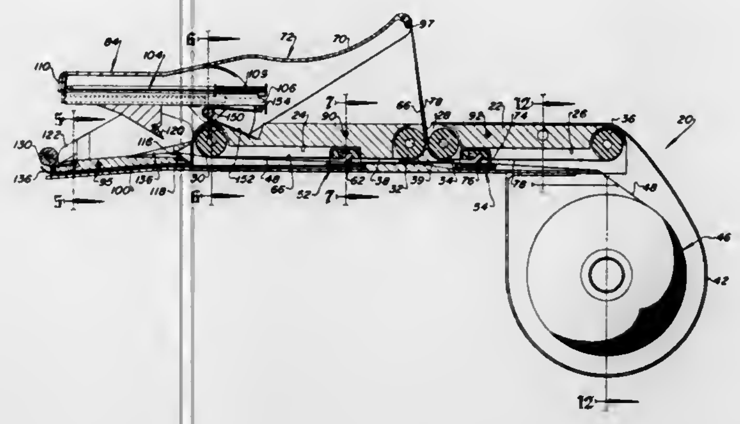
John R. Buta, Salem, Ohio, assignor to Paxon Machine Company, Salem, Ohio
Filed July 23, 1973, Ser. No. 381,909
Int. Cl. B65h *25/26*
U.S. Cl. 226—19 **16 Claims**



1. Apparatus for feeding metal strip comprising a support base, a pair of vertically opposed horizontally aligned pinch rolls mounted on a horizontal platform above said support base and shiftable with respect to said support base, fixed guide means on said base with which said shiftable platform is engaged, said guide means being adapted to permit horizontal arcuate transverse movement of said platform in reaction to forces of lateral thrust between said rolls and said strip.

3,848,789
BINDING AND LABELING APPARATUS

William J. Baker, Reed City; John R. Bos, Grand Haven, and Robert W. Klemm, Reed City, all of Mich., assignors to Gardner-Denver Company, Dallas, Tex.
Filed Nov. 15, 1973, Ser. No. 416,054
Int. Cl. B25c *5/02*
U.S. Cl. 227—76 **21 Claims**

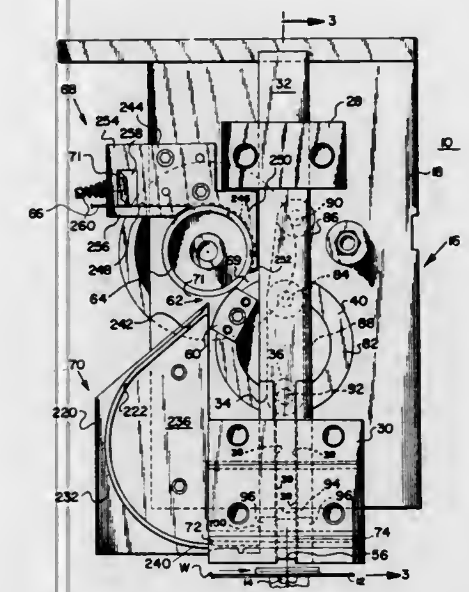


1. Apparatus for applying a closed loop of binding material such as tape or the like around an article and characterized by:

a frame;
feeding means supported by said frame for feeding a length of tape around an article;
operating means for operating said feeding means to feed said length of tape;
flexible guide means movable for guiding said tape in a curved path substantially around said article; and,
means for fastening said tape to form a closed loop.

3,848,790
STITCHING HEAD APPARATUS

William G. A. Verwey, Phoenix, and Stephen L. Stanton, Baltimore, both of Md., assignors to Precision Industries, Inc., Baltimore, Md.
Filed Feb. 22, 1973, Ser. No. 334,740
Int. Cl. B27f *7/16*
U.S. Cl. 227—90 **11 Claims**



1. A wire stitching head comprising;

a frame;
stitch forming means mounted on said frame for forming a preselectively shaped stitch from a preselected length of wire which has been supplied thereto;
stitch driving means movably mounted with respect to said stitch forming means for driving the stitch formed by said stitch forming means into a work piece positioned in predetermined relationship with respect to said stitching head;
wire feeding means for intermittently supplying said preselected length of wire to said stitch forming means from a supply of wire; and
first wire guiding means mounted on said frame for guiding said wire toward said stitch forming means, said first wire guiding means comprising;
a base having an arcuate channelway therein, and
a cover plate movably positioned on said base and movable between a first position in which said cover plate covers said channelway in said base and a second position in which said channelway in said base member is exposed; and
further including a guide member secured to said frame for guiding the movement of said stitch forming means, said guide member including a guide channel of predetermined width and a passageway through which said wire passes to reach said guide channel; said first wire guiding means being secured to said frame with one end of said arcuate channelway located adjacent the entrance to said passageway; and
wherein said wire feeding means includes: a cam wheel mounted on said frame, driving means selectively rotating said cam wheel, a guide roller mounted on said frame, driving means for rotating said guide roller, said guide roller mounted on said frame in proximity to said cam wheel to define a path of travel for said supply of wire therebetween, said path of travel having an entrance location for the reception of said wire and an exit location for the exit of said wire; the other end of said arcuate channelway located adjacent the exit location of said path of travel to receive the wire exiting therefrom; and
wherein said driving means for rotating said guide roller includes a drive shaft freely rotatable in said frame, said drive shaft having said guide roller secured thereto at one end thereof, and motive means for rotating said drive shaft; and said driving means for selectively rotating said cam wheel includes a driven shaft freely rotatably in said frame, said driven shaft having said cam wheel secured thereto at one end thereof, and clutch means selectively operative to interconnect said drive shaft and said driven shaft; and
wherein a second end of said driven shaft includes a chordal flat thereon and further including first and second contact switches mounted on said frame in proximity to said second end of said driven shaft, each of said first and second contact switches including a movable contact which engages the periphery of said second end of said driven shaft and is movable between first and second positions in response to engagement with said chordal flat;
further including counter means responsive to first signals from said first contact switch; and first control means responsive to said first signals for controlling deactivation of said clutch means; and
further including pull roll means for advancing a blank past said stitching head; clutch-brake means for intermittently controlling said pull roll means; and second control means responsive to second signals from said second contact switch for controlling the operation of said clutch brake means.

3,848,791
APPARATUS FOR FABRICATING WOODEN FRAMES

John Calvin Jureit, 8901 Arvida Ln., Coral Gables, Fla. 33156; Howell J. Cotten, Rt. 1, Box 280, Keswick, Va. 22947; Adolfo Castillo, 7761 S.W. 18th Ter., Miami, Fla. 33155, and Roy Leutwyler, 1016 N.W. 43rd St., Miami, Fla. 33127
Filed Feb. 1, 1973, Ser. No. 328,605
Int. Cl. B27f *7/02*
U.S. Cl. 227—100 **32 Claims**

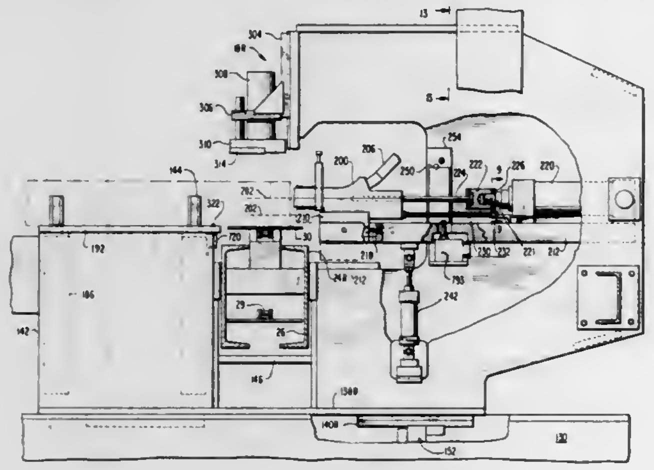
1. Apparatus for fabricating a wooden frame, panel or the

like having a pair of elongated frame members and a plurality of intermediate members spaced one from the other and extending between the elongated frame members comprising: means for supporting the pair of elongated frame members with an intermediate frame member extending therebetween in a generally common horizontal plane, a pair of nailing assemblies along respective opposite sides of said support means,

a nailing gun carried by each of said nailing assemblies, means for actuating each of said nailing guns for driving a nail through the corresponding elongated frame member and into the corresponding end of the intermediate frame member,

means mounting said nailing guns for movement between discrete positions for driving nails through each elongated member at different elevations, and

means for automatically shifting said nailing guns from one elevation to another elevation in response to completion of nailing at said one elevation in order to drive a nail at said other elevation.



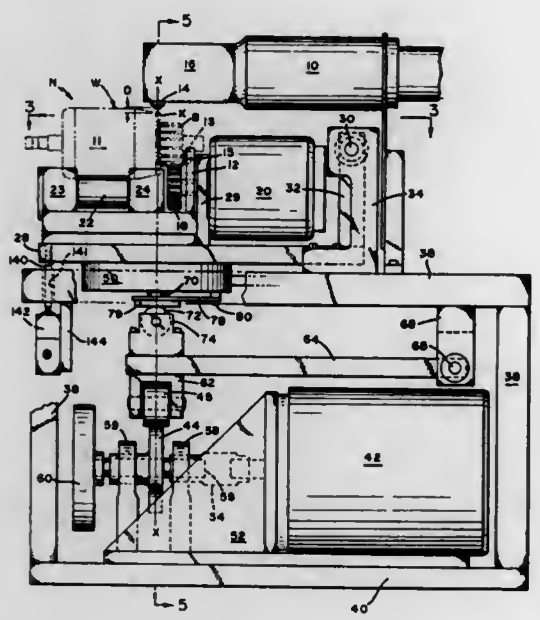
3,848,792
VIBRATORY WELDING APPARATUS

Bruce L. Mims, Redding, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.

Division of Ser. No. 293,366, Sept. 29, 1972, Pat. No. 3,791,569. This application Nov. 7, 1973, Ser. No. 413,554

Int. Cl. B23k *5/20*

U.S. Cl. 228—1 **9 Claims**



1. A nesting structure for a workpiece to be welded by vibratory energy sequentially at several circumferentially spaced locations comprising:

support means for receiving the workpiece in indexed position;

means for rotationally indexing the workpiece while disposed on said support means;

means for causing said support means with the workpiece supported thereon to undergo reciprocating motion for causing alternatingly the workpiece engaging tip of a vibratory welding apparatus to engage the workpiece or be withdrawn therefrom;

force exerting means coupled between said support means and said means for causing said support means to undergo reciprocating motion for causing a workpiece on said support means to be in forced contact with the workpiece engaging tip;

means disposed for sensing the condition when said support means is disposed in a first position in which the workpiece is withdrawn from the tip and in a second position in which the workpiece is in forced contact with the tip, and

control means coupled to said means for sensing, said means for indexing and said means for causing said support means to undergo reciprocating motion for causing operation of said means for indexing when said support means is in said first position and causing operation of the means providing vibratory energy when said support means is in said second position.

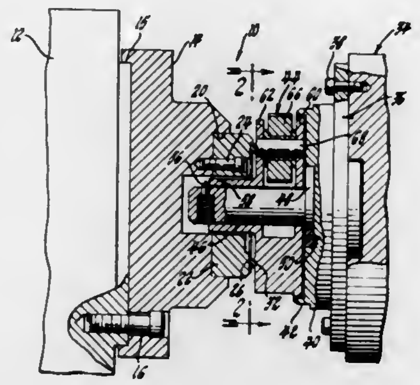
3,848,793
FRICTION WELDER

Stanley W. Herman, Nashville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 203,263, Nov. 30, 1971, Pat. No. 3,780,422. This application Aug. 24, 1973, Ser. No. 391,214

Int. Cl. B23k *27/00*

U.S. Cl. 228—2 **3 Claims**



1. A friction welder comprising a drive member headstock rotatable about an axis, a welder head rigidly secured to said rotatable drive member headstock for rotation therewith, a rotatable friction welding tool rigidly secured to said welder head, said tool having a workpiece contact portion of a temperature stable material radially spaced from said axis and extending axially from said welder head, a tailstock, holding means operatively connected to said tailstock for rigidly holding first and second workpieces together each workpiece having an outer planar face so that the outer faces thereof are aligned in a common plane, means for relatively moving said headstock and tailstock axially so that said contact portion of said rotating friction welding tool initially contacts and frictionally heats material in an annular track portion in the outer faces of said workpieces to a plasticized condition and intermixes the plasticized material of said workpieces to thereby effect a bond that subsequently solidifies to securely join said workpieces together when said contact portion of said rotating tool is moved from frictional engagement with said workpieces.

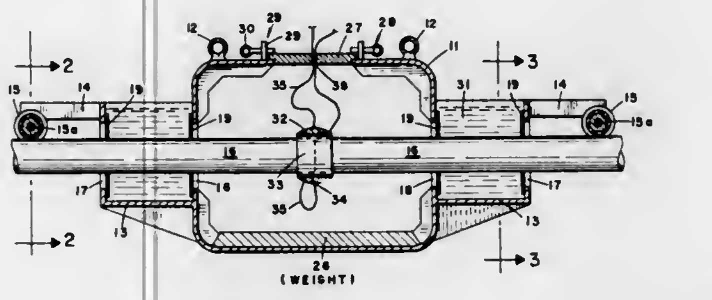
3,848,794
BLAST CHAMBER

William G. Howell, Lakewood, Colo., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Mar. 12, 1973, Ser. No. 340,133

Int. Cl. B23k *21/00*

U.S. Cl. 228—3 **20 Claims**



1. Apparatus for containing an explosive force developed by the explosive welding of pipe sections which comprises:

a blast chamber having first and second at least partially open ends, in which said explosive is adapted to be enclosed;

means for closing said first and second ends at least partially such that there is provided an opening in said first and second ends sufficient for passage of pipe sections of selected size into abutting relationship in said chamber with said pipe sections extending longitudinally therefrom; and

means for containing a fluid arranged around at least one of said pipe sections extending longitudinally from said chamber to form a water trap around at least said one pipe section on at least one of said ends and substantially adjacent at least one of said openings for substantially containing the explosive force and noise resulting from the explosive welding of the pipe sections.

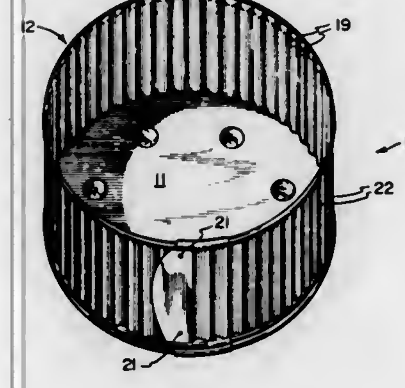
3,848,795
TEAR-AWAY PACKAGE

Stanford W. Bird, Salt Lake City, Utah; Jerome D. Wasserman, Arlington Heights, and Earl L. Hatley, Lake Bluff, both of Ill., assignors to Plastronics Corporation, Salt Lake City, Utah, by said Stanford W. Bird and Consolidated Foods Corporation, Chicago, Ill., by said Wasserman and Hatley

Filed Mar. 29, 1972, Ser. No. 239,238

Int. Cl. B65d *11/02, 11/24*

U.S. Cl. 229—23 R **2 Claims**



1. A cake container comprising

a substantially rigid flat base having a curved bead formed around an upper peripheral edge thereof and an outwardly flared ridge formed around a lower peripheral edge thereof and with a groove formed peripherally around the base between the bead and the ridge;

a wall, formed from a strip of flexible, somewhat resilient material, and having a lower edge wrapped around the base, said lower edge having an outwardly flared ridge extending beneath a groove; and said wall having a groove extending around the top thereof;

means coupling the ends of the strip forming the wall whereby the ends of the groove extending around the top of the wall are nested, the ends of the groove at the lower edge are nested and the ends of the outwardly flared ridge are nested and the wall is of generally ring shaped, whereby the bead of the base fits into the groove at the bottom edge of the wall and the outwardly flared ridge of the wall fits into the groove formed between the bead and the ridge of the base.

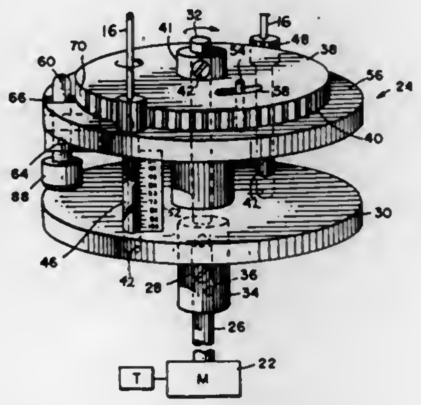
3,848,796
CENTRIFUGE APPARATUS FOR SEDIMENTATION STUDY

Brian S. Bull, Loma Linda, Calif., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Division of Ser. No. 191,336, Oct. 22, 1971, which is a continuation-in-part of Ser. No. 113,166, Feb. 8, 1971, abandoned. This application Sept. 27, 1972, Ser. No. 292,540

Int. Cl. B04b *9/08*

U.S. Cl. 233—25 **20 Claims**



1. A sedimentation rate centrifuge comprising, a centrifuge head, a driven shaft mounting said head for rotation therewith and a drive motor coupled to said driven shaft for imparting rotative motion thereto about the axis of said head in intermittent periods of predetermined duration to generate centrifugal force applicable in a direction generally normal to its axis of rotation, said centrifuge head comprising a body, sample tube holder means carried by said body near the periphery thereof, said sample tube holder means each constructed and arranged to receive elongate sample tubes each containing a thin column of blood and each vertically arranged and oriented substantially parallel to the axis of rotation of said body so that the centrifugal force is applied laterally to the long axis of said sample tubes, means for causing periodic rotation of each of said sample tube holder means and associated sample tube about its own long axis between each application of centrifugal force and when said body is substantially at rest.

3,848,797
RUBBISH COMPACTOR-CONTAINER WITH LOAD RELEASE

Byron M. Kolling, Glen Ellyn, Ill., assignor to Bynal Products, Inc., Franklin Park, Ill.

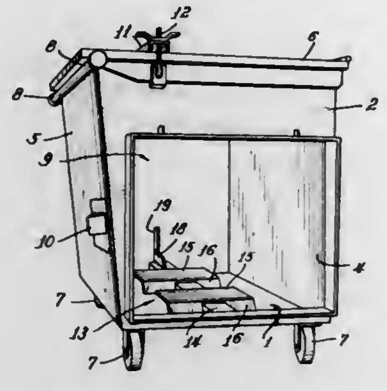
Filed Mar. 23, 1973, Ser. No. 344,229

Int. Cl. B30b *15/32*

U.S. Cl. 232—43.1 **7 Claims**

1. A rubbish compactor-container comprising a container having side and end walls and a floor and a cover adapted to close the otherwise open top thereof, at least one of said walls flaring outwardly toward the top, one of said end walls having an opening therein for feeding rubbish into said container and compacting the rubbish within said container, a lift normally resting in the bottom of the container and having load-engaging top surfaces adapted to support a body of compacted

rubbish throughout the bottom thereof and elevate said body within said container, and means for elevating said lift sufficiently to loosen a body of compacted rubbish to dump the same from said container.



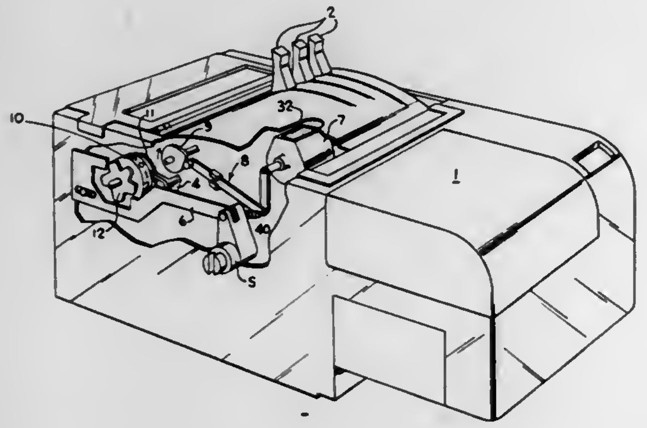
ERRATUM

For Class 233—25 see:
Patent No. 3,848,796

3,848,798
CREDIT SYSTEM FOR POSTAGE METERS

Gilbert N. Riley, Wilton, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Aug. 3, 1973, Ser. No. 385,449
Int. Cl. G07g *1/00;* **G06f** *15/18*
U.S. Cl. 235—101 **10 Claims**



1. A credit apparatus for a machine, comprising:
register means for registering the extent to which said machine has been operating;
register locking means associated with said register means for preventing further operation of the machine after a first predetermined limit of operation has been registered by said register;
disabling means including a lock, said disabling means associated with said register locking means for disabling said register locking means and for permitting said machine to continue operation and said register means to register a second predetermined limit of operation; and
means associated with said disabling means for maintaining a record of the number of times said disabling means disables the register locking means.

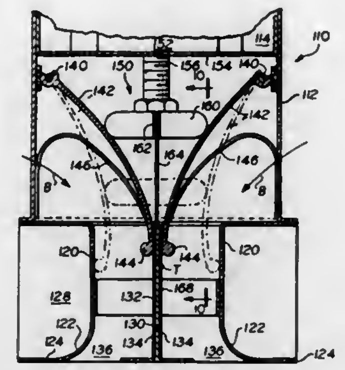
ERRATUM

For Class 235—552 see:
Patent No. 3,848,811

3,848,799
CEILING AIR DIFFUSER

Thomas L. Day, Brookfield, Conn., assignor to Connor Engineering Corporation, Danbury, Conn.

Filed July 12, 1973, Ser. No. 378,623
Int. Cl. F24f *7/06*
U.S. Cl. 236—49 **3 Claims**



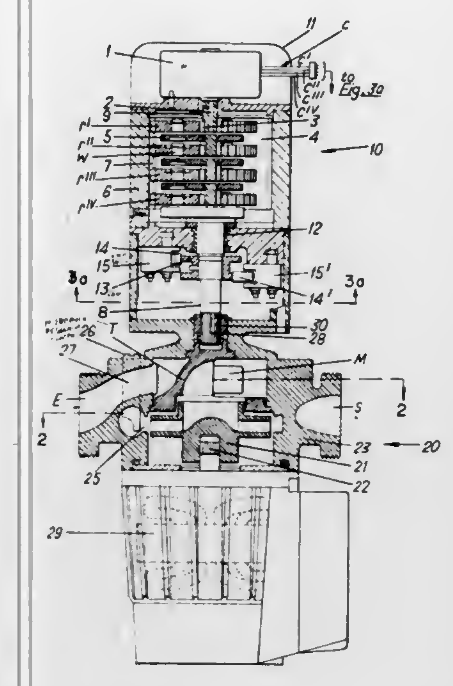
1. An air diffuser of the elongated-slot type for mounting on a ceiling tee bar, comprising:
an elongated air plenum chamber housing;
at least one elongated vertically disposed outwardly flaring lower side wall, depending from the corresponding side wall of said air plenum chamber housing and defining the outerside of an elongated air discharge slot of the air diffuser;
a pair of vertically disposed transverse end plates, one at either end of the air diffuser, each of said end plates having a centrally located notch adapted to fit over and engage the vertically upstanding web of the ceiling tee bar, so that when the air diffuser is mounted in place, the vertical web and one horizontal flange of the ceiling tee bar appear normally as in other areas of the ceiling, but help to hide from view the operating mechanism of the diffuser;
at least one elongated air flow control vane pivotally mounted at its upper end, with its lower free end resiliently urged toward one side of the elongated air discharge slot to a position in which said air flow control vane cuts off communication between said air plenum chamber housing and the air discharge slot; and
means for selectively positioning the free lower end of said air flow control vane and variably opening communication between said plenum chamber housing and the air discharge slot, thereby regulating the effective air outlet opening.

3,848,800
BOOSTER FOR CENTRAL HEATING INSTALLATION WITH AUTOMATIC REGULATION

Maurice Perche, Boulogne, France, assignor to ITT Industries, Inc., New York, N.Y.

Filed Sept. 27, 1972, Ser. No. 292,647
Claims priority, application France, Sept. 28, 1971, 71.34765; Nov. 26, 1971, 71.42351; Mar. 30, 1972, 72.11173
Int. Cl. F24d *3/02*
U.S. Cl. 237—8 A **13 Claims**

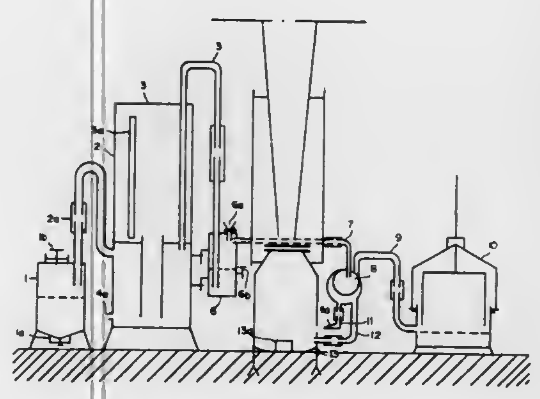
1. Booster apparatus for automatically controlling the circulation of fluid in a heat exchanger system, comprising
a pump adapted to be connected to a fluid circulating system,
a first motor coupled to drive said pump,
a hydraulic flow regulator mounted in said pump to enable selection of flow-pressure characteristics of said pump and thereby a suitable operation point,
a rotatable valve associated with said pump to control the flow rate through the pump,
a second motor coupled to control the position of said rotatable valve,
control means responsive to signals from thermostatic control means to position said second motor and said rotatable valve and control flow through the pump accordingly, and
means positioning the pump, the first motor and the second motor together in a common housing.



3,848,801
PROCESS FOR THE TRANSFORMATION OF THE INTERIOR STRUCTURE OF CLOUDS

Fred Ollivier, and Gerald Ollivier, both of Manosque, France, assignors to Pepro Societe Pour le Development et la Vente de Specialities Chemiques, Lyon, France

Filed June 4, 1973, Ser. No. 367,008
Claims priority, application France, June 16, 1972, 72.22941; Nov. 20, 1972, 72.41746; May 29, 1973, 73.21153
Int. Cl. E01h *13/00*
U.S. Cl. 239—2 R **12 Claims**

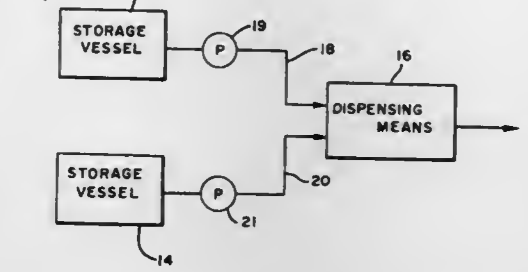


1. A process for the transformation of the internal structure of visible cloud banks to avoid hail-storms, comprising
igniting an explosive composition to create a sudden upward movement of energy directed to form shock waves at cloud level, and
repeating said igniting step at time intervals of less than 25 seconds for a period of time sufficient to modify the internal structure of visible cloud banks at the cloud level to avoid hail-storms.

3,848,802
METHOD AND APPARATUS FOR THE PREPARATION AND EJECTION OF A VISCOUS DILATANT MATERIAL

Edward R. Degginger, Convent Station, and John S. Frisco, North Bergen, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed June 1, 1972, Ser. No. 258,569
Int. Cl. B05b *1/34*
U.S. Cl. 239—10 **10 Claims**

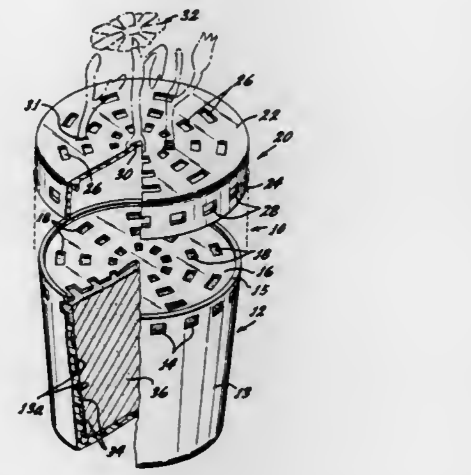


1. A process for preparing and then ejecting a viscous dilatant material comprising the steps of:
a. passing separate aqueous solutions of an alkali metal borate (component A) and a water-soluble vinyl alcohol polymer (component B) through separate conduits to a point of convergence within a dispensing means thereby partially converting each component to said viscous dilatant material;
b. mixing said partially converted components within said dispensing means to obtain substantially complete conversion to said viscous dilatant material; and
c. ejecting said viscous dilatant material from the dispensing means in the form of a spray.

3,848,803
DECORATIVE ROOM AIR TREATING DEVICE

John S. Levey, 4059 Mariners Cir., Westlake Village, Calif. 91361

Continuation-in-part of Ser. No. 353,086, April 23, 1973, abandoned, which is a continuation-in-part of Ser. No. 250,181, May 4, 1972, abandoned. This application May 25, 1973, Ser. No. 363,811
Int. Cl. B05b *1/30*
U.S. Cl. 239—59 **5 Claims**



1. A decorative room air treating device, said device comprising:
an inner container and an outer container, said containers both having sidewalls with circular cross-sections about a common axis, and, at least, one of said containers being closed by a transverse bottom wall, and both said containers being so dimensioned that the inner container fits closely but rotatably within the outer container, the side

walls of each of said containers being provided with a plurality of orifices spaced thereabout, the orifices of the inner container being so disposed that in a first rotational angular position relative to the outer container, none of the orifices of the inner container falls in registry with any of the orifices in the outer container, and, in a second such relative rotational angular position, a plurality of the orifices of the inner container falls into registry with those of the outer container;

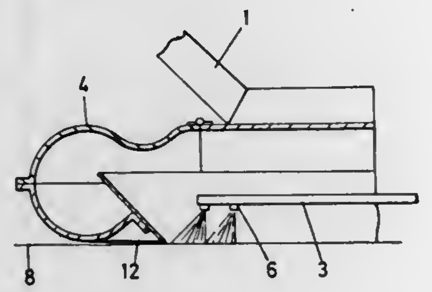
an evaporative air treating substance disposed within the walls of the inner container, a decorative base to support both said containers;

means to interlockingly engage the bottom of the sidewall of one of said containers with said base;

and a decorative capping to be placed coaxially over both said containers, said capping having means to interlockingly engage the top rim of the other of said two containers not so engaged with the said decorative base, whereby, when the capping is rotated about said axis relative to the base, the container interlockingly engaged with said capping will be correspondingly rotated relative to the other container interlockingly engaged with the base, thereby to dispose said inner container in either its said first or second rotational angular positions relative to the outer container, or in any position therebetween.

3,848,804
SURFACE CLEANING

John Richard Prestwich, Maidenhead, England, assignor to Warwick Pump and Engineering Company Limited, Dorchester on Thames, Oxfordshire, England
Filed Nov. 21, 1972, Ser. No. 308,464
Int. Cl. B05b *9/02*
U.S. Cl. 239—160 **14 Claims**

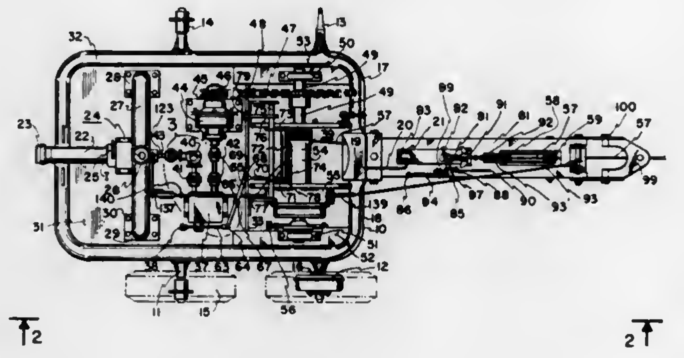


1. A device for cleaning a surface which comprises: at least one nozzle carried by said device for directing water downwardly onto the surface; means for imparting motion to the said or one of said nozzles relative to the device to continuously move the said or one of said nozzles substantially transverse to a general direction of advance of the device; means for directing water through the said or one of said nozzles during a normal cleaning operation when the said or one of said nozzles is in said continuous movement substantially transverse to the general direction of advance of the device.

3,848,805
WINCH-DRIVEN IRRIGATION APPARATUS

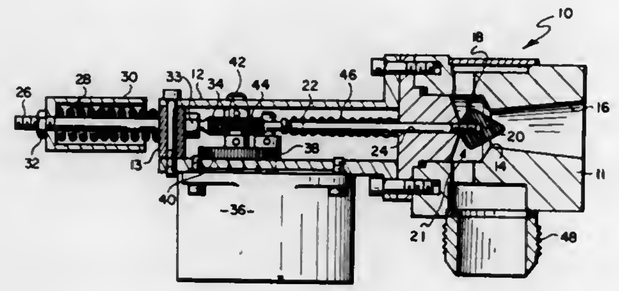
Burr Courtright, LaGrande, Oreg., assignor to CH2O, Inc., LaGrande, Oreg.
Filed Nov. 7, 1973, Ser. No. 413,702
Int. Cl. B05b *3/18*
U.S. Cl. 239—189 **10 Claims**

1. Agricultural irrigation apparatus comprising a horizontal frame provided with supporting wheels; an erect, water delivery structure mounted to said frame and having a fluid input; a drive line including a speed-reduction transmission having input and output drives; a water-pressure-to-revolving-mechanical-power converter having water inlet structure constructed for coupling to an external water-carrying hose, a revolving output drive coupled to said transmission input drive, and a fluid outlet coupled to said fluid input of said water delivery structure; a winch drum journaled to said frame and having an input drive coupled to said output drive of said transmission; a winch cable having an inner end wound upon said winch drum and an outer end constructed for extension forwardly of said frame to be anchored to the external object; a stop abutment disposed upon said cable proximate said outer end thereof; and means mounted to said frame and responsive to the contact with said means of said stop abutment, for simultaneously braking said wheels and also braking said revolving output drive of said converter.



3,848,806
THROTTLING VENTURI VALVE

Bryan Samuelsen, and Alfred A. Liebman, both of Woodland Hills, Calif., assignors to Rockwell International Corporation, El Sequndo, Calif.
Filed Apr. 30, 1973, Ser. No. 355,389
Int. Cl. B63h *11/00;* **B64d** *33/04*
U.S. Cl. 239—265.11 **8 Claims**



1. A throttling venturi valve apparatus for metering gaseous fluids therethrough comprising:

a housing, said housing forming a mixing chamber, throat portion, and a nozzle portion at a first end of said housing; a movable pintle positioned upstream of said throat portion in said mixing chamber, said pintle having a stem portion;

conduit means connected to said housing to direct said gaseous fluid into said mixing chamber;

driver means connected to said stem portion of said movable pintle to move said pintle axially into and out of said throat portion, thereby closing down or opening up the passage between said pintle and said throat portion;

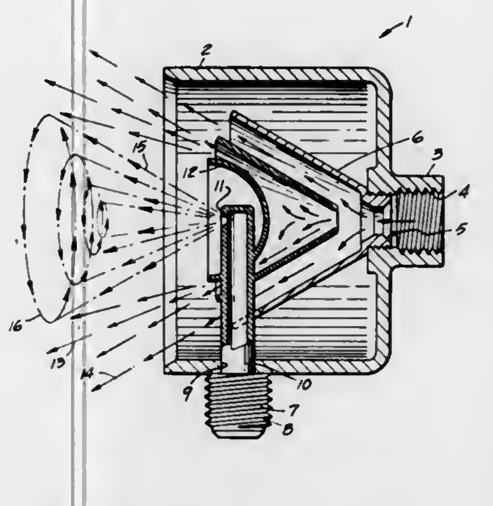
temperature and pressure sensing means in said conduit to monitor gaseous fluid upstream of said throttling venturi valve;

computer means linked to said temperature and pressure sensing means in said conduit, said computer being additionally linked to said driver means to cause said driver means to move said pintle dependent upon the temperature and pressure of said upstream gaseous fluid, thereby regulating the flow of gaseous fluids through said venturi valve; and

feedback means linked between said movable pintle and said computer means to monitor the axial position of said pintle.

3,848,807
CONFINING NOZZLE FOR SPRAY GUN

Pedro Partida, 335A 10th St., San Francisco, Calif. 94103
Filed Dec. 10, 1973, Ser. No. 423,202
Int. Cl. B05b *1/28*
U.S. Cl. 239—290 **4 Claims**



1. A nozzle for a fluid spray gun comprising:

a housing of generally hollow cylindrical configuration having an open end;

an orifice positioned concentrically within said housing and disposed for emission of a stream of fluid out of the open end of said housing;

means for connecting said orifice to a source of fluid under pressure;

a conical air supply member positioned concentrically within said housing;

means for connecting said air supply member to the outlet of an air spray gun;

said member comprising two separate concentric conical air conduits disposed for emitting a first inner air stream and a second outer air stream axially through said open end of housing,

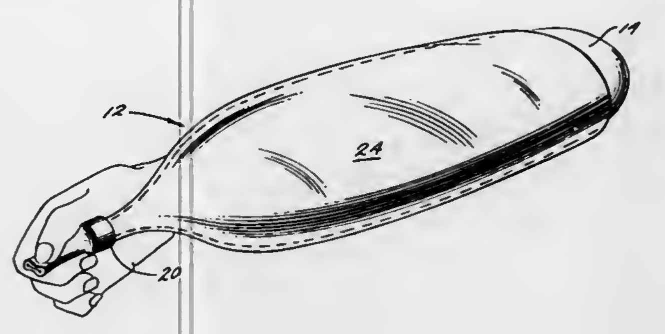
said streams being concentric with each other and having a generally circular cross-sectional configuration;

said first inner air stream being disposed to impinge upon said fluid stream thereby effecting atomization of said fluid stream;

said second outer stream being disposed to produce an air screen around said first stream thereby confining said first stream to a predetermined area.

3,848,808
WATER SQUIRT TOY WITH PROTECTIVE SLEEVE

Warren Newton Fetty, Altadena; Richard Parke Knerr, Arcadia; Richard Lee Gillespie, San Gabriel, and Pierre Andre Bettencourt, Duarte, all of Calif., assignors to Wham-O Manufacturing Company, San Gabriel, Calif.
Filed May 31, 1973, Ser. No. 365,537
Int. Cl. B65d *1/32;* **B67d** *5/08;* **A63h** *33/00*
U.S. Cl. 239—327 **16 Claims**



1. A water squirt toy comprising:

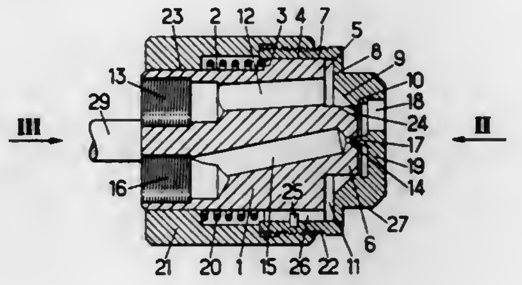
a hollow elongated tube made of a resiliently deformable material and having a closed end and an open end,

adapter means for attachment to a source of water under pressure, the adapter means being arranged to receive the open end of the tube at a mating, water flow conducting relationship so the tube can be filled to an expanded condition with water from the water source, and

a protective sleeve disposed around the exterior of the tube to contain the force of any possible bursting of the tube.

3,848,809
ATOMIZERS

Andre Hennequin, Argancy, France, assignor to Societe des Aciers Fins de l'Est, Boulogne-Billancourt, France
Filed Apr. 16, 1973, Ser. No. 351,355
Claims priority, application France, May 8, 1972, 72.16413
Int. Cl. B05b *1/32*
U.S. Cl. 239—412 **10 Claims**



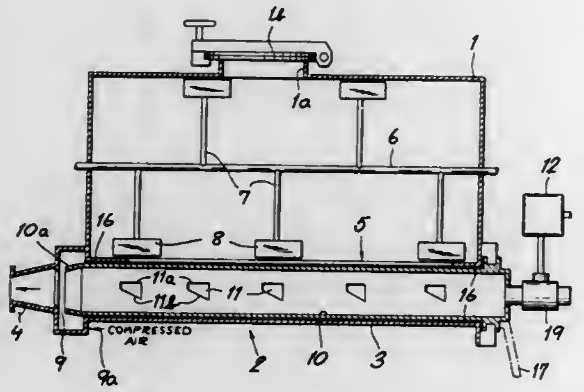
1. A liquid-gas emulsion atomizer comprising a body member having respective feed conduits for conducting pressurized gas and pressurized liquid to one end of said body member to be emulsified, said liquid feed conduit terminating at said one end of said body member in an axial passage; an external closure casing slidingly supported on said body member having an end wall structure including a needle valve disposed to enter said axial passage and ensure closure of said axial passage, means cooperating with said one end of said body member to define a gas chamber communicating with said gas feed conduit and a gas passage leading from said gas chamber, and also having a series of annularly spaced outlet passages; resilient means interposed between said body member and said closure casing normally biasing said closure casing axially in a direction to ensure the closure of said axial passage against the pressurized liquid and closure of said gas passage; restricted passage means interconnecting said gas chamber through said annularly spaced outlet passages to the atmosphere, said passage means being operative upon delivery of pressurized gas to said gas feed conduits to establish a progressively increasing pressure in said gas chamber effective to overcome the biasing force of said resilient means and shift said closure casing axially in the opposite direction opening said axial passage and said gas passage leading from said gas chamber thereby establishing a mixing and emulsification of the issuing liquid and gas and the discharge of the resulting emulsion from said annularly spaced outlet passages.

3,848,810
CONCRETE-DISPLACEMENT APPARATUS

Roland Geisler, Gelsenkirchen, and Wilhelm Konig, Haltern-Holtwick, both of Germany, assignors to Neuhausser KG, Lunen and Bergwerksverband GmbH, Essen, both of, Germany
Filed Aug. 24, 1973, Ser. No. 391,511
Claims priority, application Germany, Aug. 26, 1972, 2242060
Int. Cl. A47f *1/03*
U.S. Cl. 239—417.3 **15 Claims**

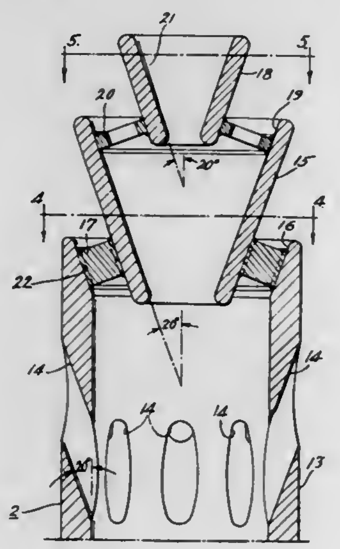
1. A concrete-spray machine comprising a mixing vessel provided at its bottom with a window; a feed pipe underlying said vessel and communicating therewith through said window; a metering tube rotatable in said feed pipe and having at least one opening formed in the wall of the metering tube

registerable with said window upon angularly displacement of said tube relative to said pipe; means at one end of said pipe for discharging pneumatically entrained concrete therefrom; means for supplying compressed air to the other end of said pipe for passage through said tube and entrainment of concrete passing through said window toward said one end; and a bypass duct extending at least partly through said tube and receiving air from said other end of said pipe, said bypass duct being formed with outlets inclined downwardly in the direction of flow of concrete through said tube.



3,848,811
DEVICE FOR INJECTING A FLUID INTO A FLUIDIZED BED OF PARTICULATE MATERIAL

Melbourne G. Fryback, Wallingford, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.
Filed Dec. 19, 1973, Ser. No. 426,300
Int. Cl. B01d *53/34;* **B01j** *1/00;* **B05b** *1/00*
U.S. Cl. 239—552 **6 Claims**



1. A nozzle for contacting a fluid with a finely divided solid in fluidized condition comprising

a. a cylindrical member having a plurality of circumferentially spaced holes in its walls, the axis of each hole forming an acute angle with the axis of the cylindrical member with respect to the direction of movement of the fluid;
b. a frusto-conical member attached to the cylindrical member with the small cross-sectional area facing the cross-sectional face of the cylindrical member and defining a first annular space between the walls of the first frusto-conical member and the wall of the cylindrical member, the axis of revolution of said annular space forming an acute angle with the axis of the cylindrical member with respect to the direction of flow and
c. a connecting member spanning the first annular space whereby the first frusto-conical member is attached to the cylindrical member and defining a plurality of circumferentially spaced apertures in the first annular space.

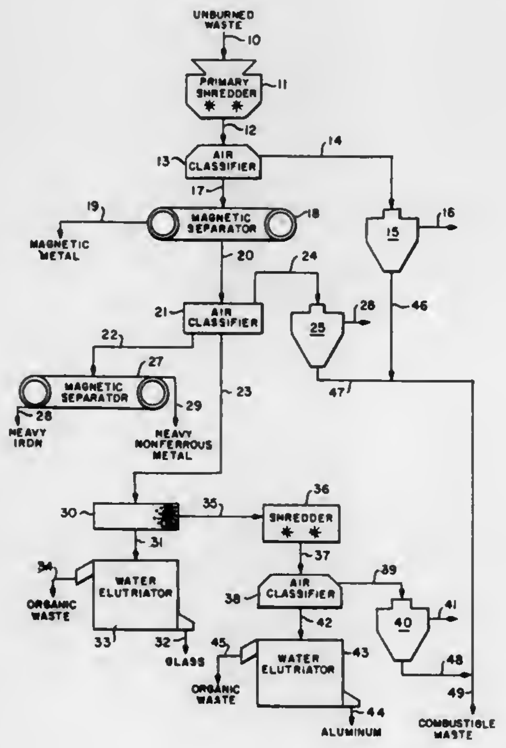
3,848,812
PROCESS FOR EXTRACTING PROTEIN FROM MICROORGANISMS

Hakan Lars Mogren, Solna; Gudmund Oscar Hedenskog, Stockholm, and Lennart Eugen Enebo, Ektorp, all of Sweden, assignors to SCP-Exploatering AB, Solna, Sweden
Filed Feb. 26, 1973, Ser. No. 336,148
Int. Cl. B02c *19/12*
U.S. Cl. 241—2 **13 Claims**

1. A process for extracting protein from microorganisms, to obtain a protein concentrate having a low nucleic acid content comprising producing a suspension of the microorganisms, exposing said suspension to a cell wall disintegration treatment, adjusting the pH of the suspension to a value higher than 6, increasing the temperature of the suspension to more than 30°C to precipitate the protein, and separating the precipitated protein from the liquid.

3,848,813
CONTINUOUS PROCESS FOR MECHANICALLY SEPARATING MATERIALS CONTAINED IN URBAN REFUSE

Martin H. Stanczyk, Marlboro; Paul M. Sullivan, Riverdale, and Max J. Spendlove, Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.
Filed Mar. 9, 1973, Ser. No. 339,687
Int. Cl. B02c *19/00*
U.S. Cl. 241—19 **13 Claims**

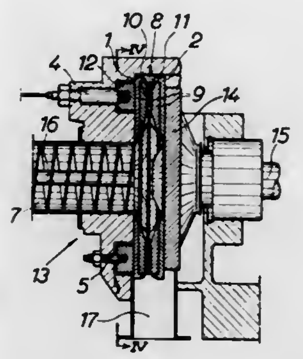


1. A process for the treatment of unburned urban refuse to separate and recover components thereof which comprises:

a. shredding the refuse by subjecting it to a flailing action sufficient in intensity to physically liberate components of the refuse contained in bags and boxes, to shatter glass containers and bottles and to perform a tearing action on the refuse to produce a relatively coarse product but of insufficient intensity to cause folding or balling up of tin cans contained in the refuse;
b. discharging the shredded product into a first pneumatic separation zone wherein light pieces of shredded refuse comprising paper and plastics are removed;
c. subjecting the shredded refuse to a magnetic separation wherein a ferrous metal fraction comprising tin cans is removed;
d. passing the refuse to an air classification zone and separating said portion into three fractions, a heavy fraction comprising massive metals, an intermediate fraction comprising glass, aluminum and heavy organic materials and a light fraction comprising paper and plastics;
e. assorting the intermediate fraction by size to recover a small particle size fraction comprising glass and a large particle size fraction;
f. comminuting the large particle size fraction and passing the comminuted product to a second pneumatic separation zone, and
g. recovering from the second pneumatic separation zone a light fraction comprising paper and plastics and a heavy fraction comprising aluminum.

3,848,814
PULP GRINDER

Ahti Syrjanen, Valkeakoski, Finland, assignor to Yhtyneet Paperitehtaat Oy Jylhavaara, Valkeakoski, Finland
Filed Aug. 23, 1972, Ser. No. 283,230
Claims priority, application Finland, Aug. 27, 1971, 2397/71
Int. Cl. B02c *7/06, 7/14*
U.S. Cl. 241—37 **2 Claims**



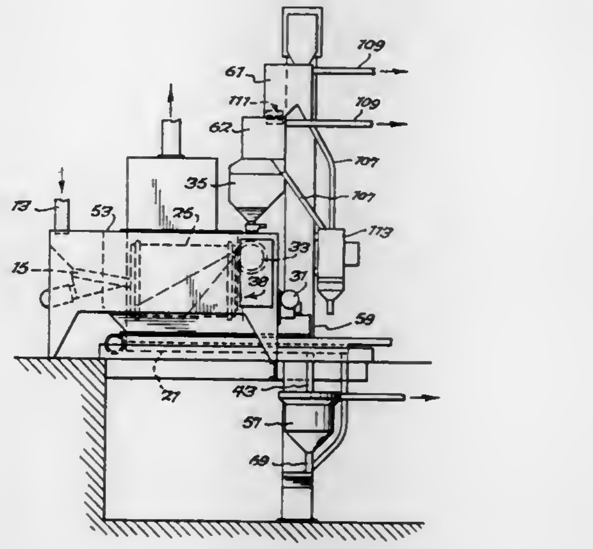
1. Improvement in a pulp grinder for cellulose, paper or other equivalent pulp and comprising at least one non-rotating blade disk and at least one rotating blade disk which have grinding surfaces facing each other, the non-rotating blade disk being secured to the body of the grinder by means of three fixing pins, said fixing pins being adapted to contact the non-rotating blade disk and deflect the latter so that the grinding surfaces are adjustable to be parallel, wherein the improvement comprises in that at least one fixing pin includes means for heating said pin so as to be variable in length.

3,848,815
GRANULATING APPARATUS

James H. Carpenter, Jr., and Bernard W. Ixer, Hagerstown, Md., assignors to The Carborundum Company, Niagara Falls, N.Y.
Filed May 17, 1972, Ser. No. 254,279
Int. Cl. B02c *21/00, 17/02;* **B24c** *3/30*
U.S. Cl. 241—74 **3 Claims**

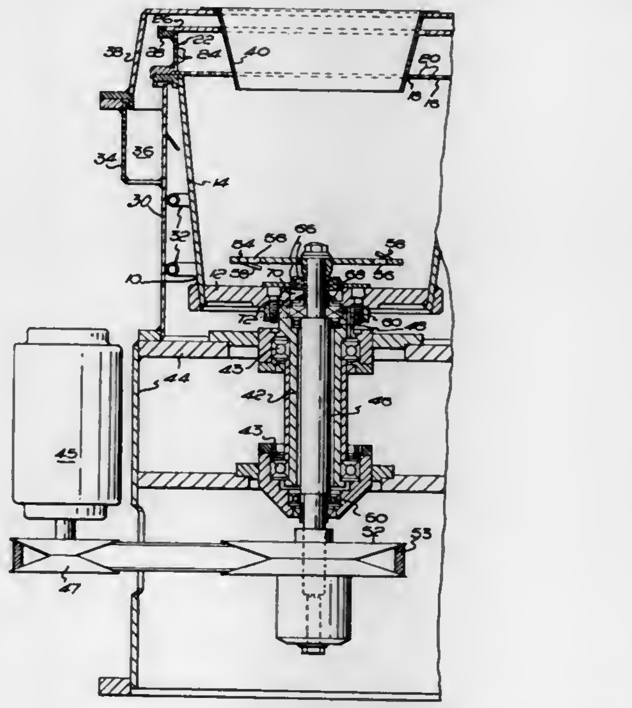
1. Apparatus for granulating lumps of material comprising:

a. a drum supported for rotation about a substantially horizontal axis, said drum having an inner surface and a plurality of apertures for providing passage ways for granulated material and abrasive particles therethrough;
b. means for feeding lumps of material into an inlet end of said drum;
c. a spiral screw connected to the inner surface of said drum;
d. means for projecting a stream of abrasive particles with sufficient force for granulating the lumps of material within the drum, said projecting means being positioned at an outlet end of said drum and above the axis of rotation of said drum;
e. means for rotating said drum for moving the lumps of material against the force of the projecting stream of abrasive particles whereby granulated material and spent abrasive particles pass through the apertures in said drum; and
f. a separator for removing the granulated material from the spent abrasive particles;
g. said spiral screw including a first section near the inlet end and a second section near the outlet end of said drum, said first section projecting into the interior of the drum a greater distance than said second section projects into the interior of the drum so that lumps of molded sand tend to be pushed over said second section by the force of abrasive particles and hled in said drum until completely granulated.



3,848,816
MILLING MACHINES

Douglas Morley, Halifax, England, assignor to August's Limited, Halifax, Yorkshire, England
Filed May 21, 1973, Ser. No. 362,227
Int. Cl. B02c *17/16, 18/12*
U.S. Cl. 241—74 **5 Claims**



1. Milling apparatus comprising a rotatable bowl which has a base and side wall means and which is for holding a quantity of fluent material to be milled and a plurality of milling elements, a rotatable mixing member mounted in the bowl, a drive shaft means which extends through the base of the bowl and which is drivingly connected to the mixing member, a prime mover, and transmission means operatively coupling the prime mover and the drive shaft means and the prime mover and the bowl whereby the mixing member selectively can be driven independently of the bowl for the milling operation, and the bowl can be rotated by the prime mover to

centrifugally discharge the milled substance from the top of the bowl.

3,848,817
SELF-PROPELLED CRUSHER UNIT

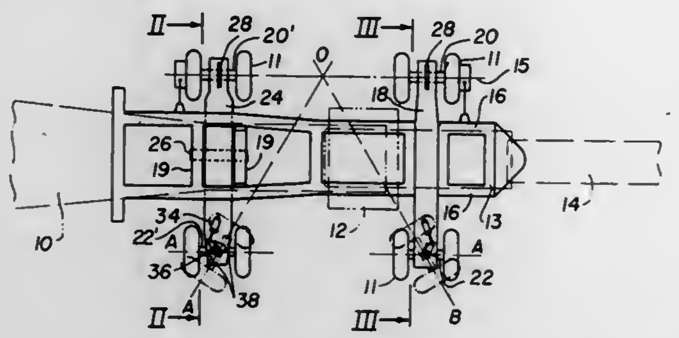
Christian Vaillant, Douchy Les Mines, and Jean Pierre Menissez, Wavrechain Sous Denain, both of France, assignors to Fives-Cail Babcock, Paris, France

Filed Nov. 15, 1973, Ser. No. 416,199

Claims priority, application France Nov. 17, 1972, 72.40859

Int. Cl. B02c *21/02*; **B62d** *7/08*

U.S. Cl. 241—101.7 **6 Claims**



1. In a self-propelled crusher unit comprising a chassis, wheels with pneumatic tires supporting the chassis, a crusher carried by the chassis, a feed assembly for delivering material to the crusher and a recovery conveyor for removing the crushed material from the crusher, the feed assembly and recovery conveyor defining a longitudinal axis of the unit:

1. four axles supporting the chassis,
   a. two of the axles having axes disposed in a common vertical plane and being fixed in respect of the longitudinal axis, and
   b. two of the axles being orientable about vertical axes in respect of the longitudinal axis,
2. abutments arranged on the chassis for limiting the rotation of the orientable axles between a first position wherein these axles are parallel to the common vertical plane containing the axes of the fixed axles and a second position wherein the axes of the orientable axles bear upon a vertical axis contained in the common vertical plane and disposed substantially equidistantly between the fixed axles, and
3. means for moving the orientable axles between the first and second positions, and for maintaining the orientable axles in a selected one of said positions.

3,848,818
MOBILE CRUSHER UNIT

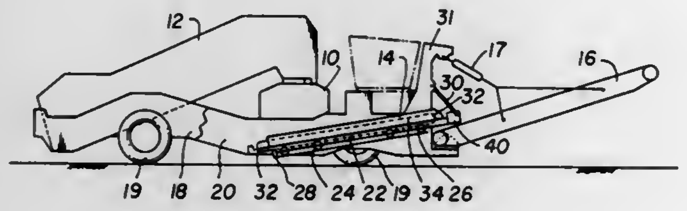
Christian Vaillant, Douchy-les-Mines, and Jean-Pierre Menissez, Wavrechain sous Denain, both of France, assignors to Fives-Cail Babcock, Paris, France

Filed Dec. 12, 1973, Ser. No. 423,899

Claims priority, application France, Dec. 12, 1972, 72.44120

Int. Cl. B02c *21/02*

U.S. Cl. 241—101.7 **5 Claims**



1. A mobile crusher unit comprising

1. a chassis including
   a. two transversely braced longitudinal beams each having an inwardly facing side,
2. a crusher mounted on the chassis for crushing material,
3. a recovery conveyor means for the recovery of crushed material from the crusher, the recovery conveyor means being disposed between the longitudinal beams and including
   a. a frame and
   b. a recovery conveyor supported on the frame,
4. two rails affixed to the inwardly facing sides of the longitudinal beams,
5. rollers supporting the recovery conveyor means frame on the rails and permitting the frame to be displaced longitudinally along the rails between the longitudinal beams for disassembling the recovery conveyor means from the unit, and
6. immobile means for holding the recovery conveyor means in a desired position on the chassis of the unit.

3,848,819
TOROIDAL COIL WINDING MACHINE

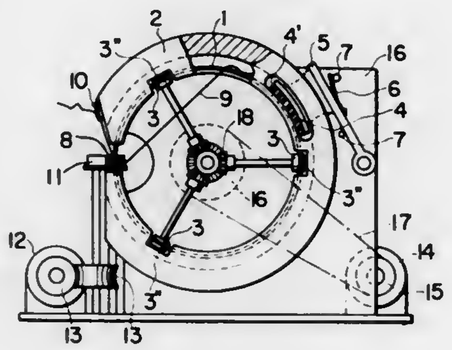
Yasuo Fukushima, Saitama, Japan, assignor to Toko Inc., Tokyo, Japan

Filed Feb. 8, 1973, Ser. No. 330,521

Claims priority, application Japan, Feb. 8, 1972, 47-13278

Int. Cl. H01f *41/08*

U.S. Cl. 242—4 B **9 Claims**



1. A winding machine for helically winding a wire on a toroidal core, comprising:

- a C-shaped ring formed with a hole, through which the wire is fed, and rotatable to pass through the bore of the toroidal core together with the wire passing through the hole thereof;
- a C-shaped ring holder formed with an annular track for holding and guiding therethrough said C-shaped ring, said ring holder furthermore having an annular groove extending radially outward of said annular track for permitting the wire to freely pass therethrough, said ring holder including rotating means disposed facing said annular track for rotating said C-shaped ring, and braking means disposed radially outward of said annular track for applying a frictional force to the wire rotating together with said C-shaped ring when the hole in said C-shaped ring is adjacent to said braking means;
- core rotating means disposed adjacent to the ends of said ring holder for supporting the toroidal core in position and for rotating the same in synchronism with the rotation of said C-shaped ring; and
- retaining means for retaining the free end of the wire when it is fed to be wound on the toroidal core.

3,848,820
METHOD AND APPARATUS FOR HANDLING A YARN DRAWN AT A HIGH SPEED FROM A BOBBIN BY A PROCESSING MACHINE

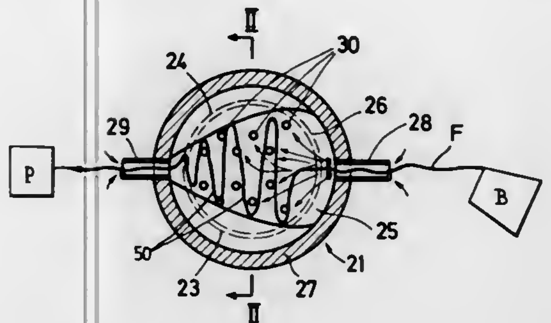
Hans Stutz, Sommerau 171, 8623 Kempten, Switzerland, and Josef Huber, Muelhausen, France, assignors to said Stutz, by said Huber

Filed Nov. 17, 1972, Ser. No. 307,598

Claims priority, application Switzerland, Nov. 24, 1971, 17107/71; Apr. 12, 1972, 5347/72

Int. Cl. B65h *54/22*

U.S. Cl. 242—18 R **12 Claims**



1. A method of withdrawing yarn from a bobbin at high speeds by means of a processing machine, comprising the steps of:

- A. providing a yarn storage compartment having a yarn inlet, yarn outlet and an air outlet therebetween, the air outlet communicating with a vacuum producing device, the storage compartment having a dimensional extent in one direction greater than once but less than twice the thickness of the yarn intended to be handled by the storage compartment;
- B. maintaining a vacuum in the yarn storage compartment and generating an air flow into the yarn storage compartment via the yarn inlet and yarn outlet and removing the air entering by the vacuum producing device through the air outlet;
- C. removing yarn from the bobbin via the generated air flow acting on the yarn entering the storage compartment; and
- D. automatically regulating the quantity of yarn being stored in the storage compartment by varying the degree of vacuum in the yarn storage compartment by the volume and/or quantity of the stored yarn, and hence, the quantity and/or velocity of air entering the storage compartment whereby the stored yarn is maintained in a loosened condition permitting ready removal by the yarn processing machine without entanglements, twist, and free of balloons.

3,848,821
SPACE-SAVING STORAGE OF FLEXIBLE SHEETS

Henning W. Scheel, Ernst-August-Str. 18, 2 Hamburg 52, Germany

Filed Aug. 28, 1972, Ser. No. 283,961

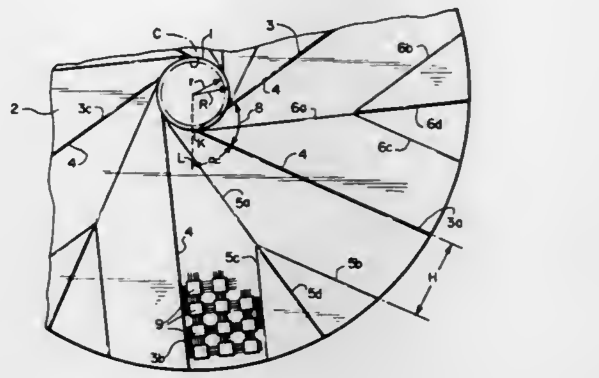
Claims priority, application Germany, Nov. 17, 1972, 2144034

Int. Cl. B65h *45/02*

U.S. Cl. 242—55 **10 Claims**

1. Apparatus for storing on a hub an annular sheet in folded condition and for deploying it into extended position, comprising:

- a. a hub of diameter which is small as compared with the diameter of the sheet when extended and the hub having an axis;
- b. a sheet made of thin flexible material fixed in the vicinity of its center to the hub such that when the sheet is in extended position it lies substantially normal to said axis of the hub;
- c. the sheet having multiple predetermined sharply-defined bend lines about which the sheet is pleated by folding the sheet in one axial direction at multiple major bend lines uniformly spaced about the sheet and then folding the sheet oppositely at intermediate bend lines bisecting the angle between adjacent major bend lines, the folds being made in such a way that at each bend line only the sheet material contiguous thereto is folded upon itself, said major bend lines each extending from the hub as a substantially straight line which is tangent to an imaginary coaxial cylinder located within the hub and of slightly smaller diameter and selected such that extensions of adjacent major bend lines would intersect at common points lying near the surface of the hub; and
- d. the pleated sheet having sufficient memory of said sharply defined bend lines to assume said folded condition when rolled onto said hub.



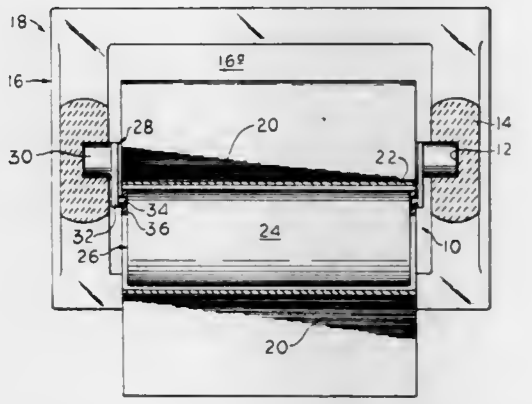
3,848,822
DISPENSING DEVICE

Philip Boone, 15 Fenwick Rd., Winchester, Mass. 01890

Filed June 4, 1973, Ser. No. 366,679

Int. Cl. A47k *10/22*

U.S. Cl. 242—55.2 **21 Claims**



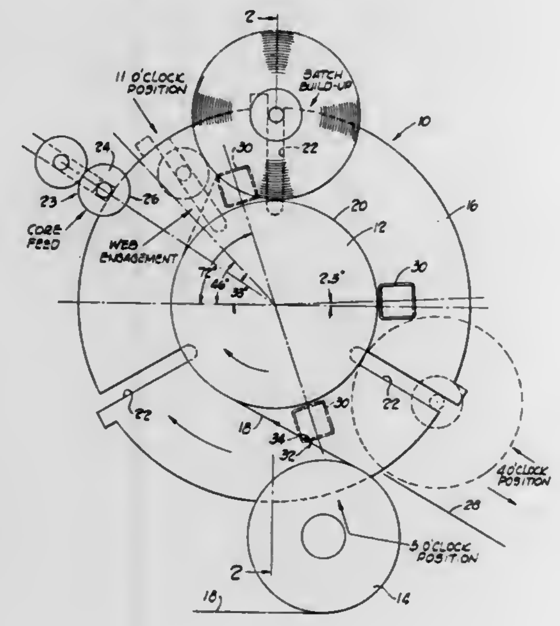
1. A roll-supporting, storage and dispensing device for attachment to support members of a conventional roll-type paper or the like dispenser, said device being adapted to serve in place of the usual roll-supporting means and comprising:

- a hollow cylindrical drum-like element forming therewithin a storage and dispensing chamber and being adapted to slidable mounting thereon of the core of a roll of said paper so as to allow free rotation of the latter, said drum-like element having at least one end-portion including aperture means formed therein permitting ready access to material contained within the interior area of said element and the removal at will of said material from said area through said end portion;
- a pair of engaging means integral with given portions of said drum-like element at least one of which is radially offset from the longitudinal axis of said element so as to be adjacent to and integral with a peripheral end portion thereof;
- a pair of mounting elements for releasably supporting said drum-like element, each of said mounting elements being

attached at one end portion to said dispenser support members and at an other end portion being so formed as to releasably engage said engaging means of the drum-like element, said radially-offset engaging means of the drum-like element and said other formed end portion of the mounting element when engaged therewith being so disposed transversely to the side of said end-portion of the drum-like element embodying said aperture means as to permit unrestricted access thereto and ready removal of material through that end of the drum-like element, and means fixing said drum-like element against movement during removal of said paper and material.

3,848,823
WEB WINDING MACHINE

Derek Mitchell, Larkhall, Scotland, assignor to Proctor & Schwartz, Inc., Philadelphia, Pa.
Filed Sept. 17, 1973, Ser. No. 398,010
Int. Cl. B65h *19/20*
U.S. Cl. 242—56 A **10 Claims**



1. A machine for winding a flexible web onto consecutive spears comprising:

a batcher roller;

means for rotating the roller;

means for supporting a spear in contiguous parallel relationship with the surface of the batcher roller;

means for guiding the flexible web onto the surface of the roller whereby the web engages the roller at a point removed from the spear;

the spear and the batcher roller defining a nip through which the web passes so that rotation of the batcher roller causes rotation of the spear and winding of the web on the spear;

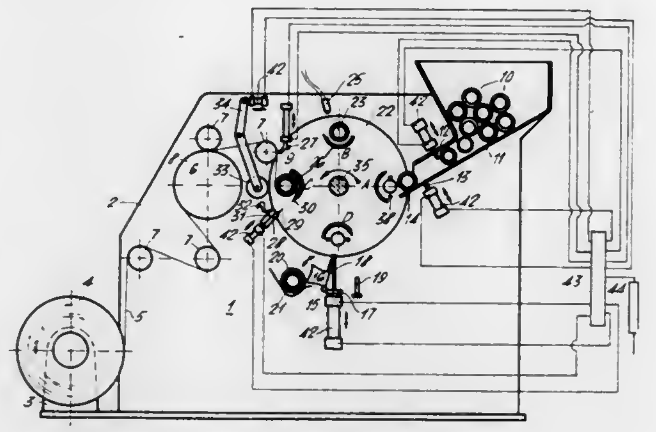
a carrier cutter;

means for orbiting said cutter about the surface of the batcher roller, the cutter including means to engage the web at a first position remote from said nip prior to engagement of the web with the batcher roller and to release the web at a second position adjacent said nip, the carrier cutter having an electrical heating element adapted to engage the web and to cut the web across the width thereof during movement of the cutter between said positions;

a feeding station adjacent said nip for introducing successive spears into contiguous relationship with the batcher roller, the movement of the carrier cutter being in timed relationhip with the feed of successive spears so that the cutter remains in engagement with the web past the feeding station releasing the web on engagement of the web by a newly introduced spear.

3,848,824
FOIL COILING MACHINE

Marinus Johannes Van Schijndel, Utrecht, Netherlands, assignor to Hunter Douglas International N.V., Willemstad, Curacao, Netherlands
Filed Jan. 12, 1973, Ser. No. 323,296
Claims priority, application Netherlands, Jan. 15, 1972, 7200619
Int. Cl. B65h *19/20*
U.S. Cl. 242—56 A **6 Claims**



1. An apparatus for coiling sheet material on a core from a supply of such material comprising means for supporting a core including at least one pair of axially aligned spindles, means for moving said spindles axially into and out of engagement with opposite ends of said core, means for rotating said spindles about their aligned axes when engaged with said core, rotating means for supporting and moving said spindles about an axis other then their aligned axes to at least two stations, said rotating means holding said spindles at each of said stations for a time before moving said spindles to the next succeeding station, two of said stations being coiling stations, an arcuate plate supported by said rotating means adjacent to and spaced from a core on said spindles, an inner guiding surface on said plate for guiding the end of a sheet about said core, means at one of said stations movable into and out of cooperation with said arcuate plate to extend the guiding surface of said arcuate plate to assist in guiding said sheet about said core to initiate the coiling thereof, said means for rotating said spindles operating at said first station to coil sheet material on said core to less than completion, said means for rotating said spindles completing the coiling of said sheet material onto said core at said second station, cut-off means adjacent said first station for cutting off the sheet of material being wound, and means at said second station to discharge said fully wound core.

3,848,825
SEMI-AUTOMATIC CASSETTE LOADER

Darrell W. Zielke, Valencia, Calif., assignor to Superscope, Inc., Sun Valley, Calif.
Filed May 21, 1973, Ser. No. 361,978
Int. Cl. B65h *19/20*
U.S. Cl. 242—56 R **29 Claims**

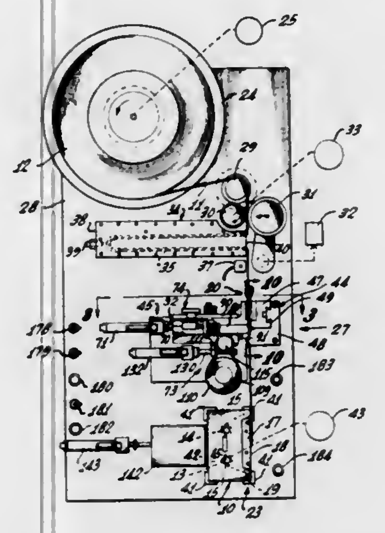
1. In a machine for loading a tape cassette having a leader attached to two reels of the cassette and adapted to be drawn out as a loop, said machine having means for holding a supply roll of tape in a supply station, means for holding a cassette to be loaded in a loading station, and means for feeding tape along a predetermined path from said supply station to said loading station through an intermediate splicing station, including means for driving one reel of the cassette in the loading station, an improved cutting-and-splicing apparatus comprising:

two positioning members mounted in side-by-side relation in said splicing station on one side of said path on opposite sides of a transverse plane through said path, and relatively movable along said plane between first and second displaced operating conditions, said first member being on the side of said plane closest to said supply station;

first and second holding grooves formed in said first and second member, respectively, in the sides thereof adjacent said path, and aligned with said path in said first opeating condition to receive one side portion of the loop from the cassette, said holding grooves being displaced from eith other, parallel to said path, in said second operating condition;

blade mounting means on the front side of said head adjacent said path and movable relative to said head between blade-extending and blade-retracting positions, for supporting a blade for movement along said plane;

means operable as an incident to the reciprocation of said head to convert the head alternately to a cutting head in which the blade is extended at the end of a forward stroke, and to a splicing head in which the blade is held retracted at the end of a forward stroke, thereby producing alternating cutting strokes and intervening splicing strokes;



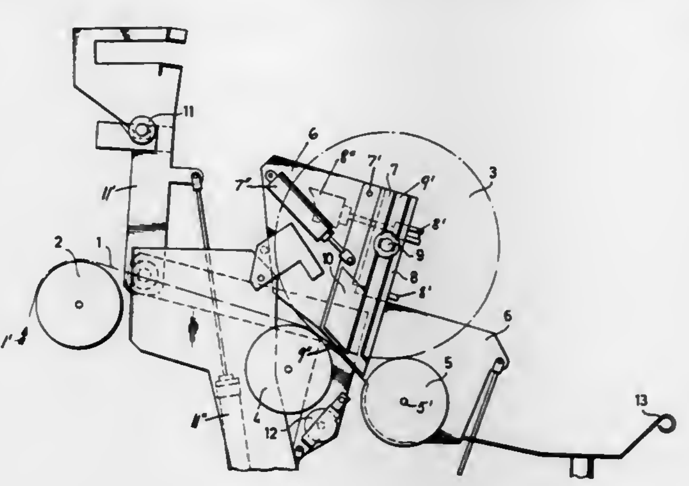
means for supplying strips of splicing material to the front side of said head during said splicing strokes, in alignment with said path across said plane, for application of the splicing material across said plane to the tape and leader lying on said path;

and control means for operating said machine to cut the leader in said first and second grooves along said plane, align the tape from the supply roll with said second groove, apply a strip of splicing material to join the leader and the tape across said plane, wind a selected length of tape into the cassette along said third and second grooves, sever the tape across said plane, align said first and third grooves along said path, apply a second strip of splicing material across said plane, and wind the remaining tape and leader material into the cassette.

3,848,826
CONTINUOUS WEB WINDING APPARATUS

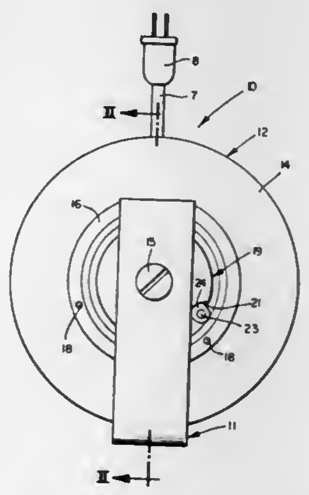
Gerhard Voswinckel, Aachen, Germany, assignor to H. Krantz, Aachen, Germany
Filed June 6, 1972, Ser. No. 260,109
Claims priority, application Germany, June 14, 1971, 2129410
Int. Cl. B65h *17/08*
U.S. Cl. 242—66 **15 Claims**

1. In a continuous web winding apparatus wherein a first drive roller rotates a winding roller in a starting position, wherein a second drive roller is arranged for rotating the winding roller in cooperation with the first drive roller while the winding roller is in an intermediate position, and wherein the second drive roller rotates the winding roller while the latter is in an end position, the improvement comprising guide means for said winding roller positioned adjacent the ends of said rollers, journal means on the axis of said second roller and operatively connected to said guide means, and actuating means arranged for cooperation with said journal means for tilting said guide means back and forth about the axis of said second drive roller whereby the winding roller is transferred from said intermediate position to said end position.



3,848,827
MAGNETIC ROTARY LOCKING AND RELEASE MECHANISM

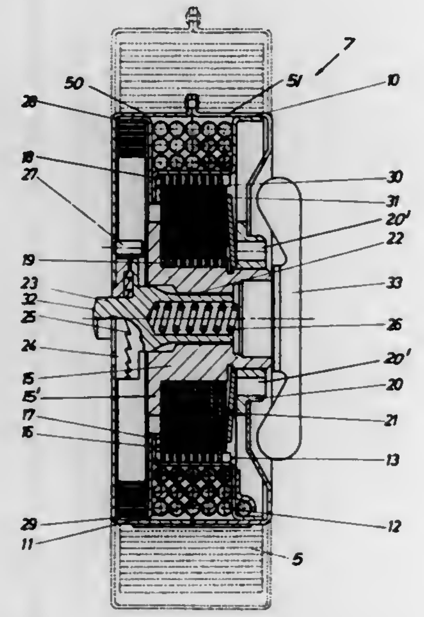
Bernard J. Tamarin, The Philadelphian, 1C 41, 2401 Pennsylvania Ave., Philadelphia, Pa.
Filed Oct. 3, 1973, Ser. No. 402,993
Int. Cl. B65b *75/48*
U.S. Cl. 242—107.7 **12 Claims**



1. In locking and release means having ratchet mechanism useful in a cord reel or similar rotary device with an unwinding direction and a winding direction, the combination of a gear having segmented and desegmented portions and a pivotable pawl engageable with such segmented portion, one of these two mutually engageable members being magnetized and the other attracted theretoward by the resulting magnetic field for engagement therewith, the pawl being adapted to be in ratcheting engagement with the segmented portion when adjacent thereto during rotation in the unwinding direction and adapted to remain within the magnetic field and occupy a position of minimum separation from such desegmented portion when adjacent the latter and further adapted to be deflected in the opposite direction therefrom into sliding nonratcheting contact with the segmented portion of the gear in the winding direction.

3,848,828
ENERGY TRANSFORMER FOR SECURING A SAFETY BELT ON A SEAT OF A VEHICLE

Hans Kuhl, Kornbergweg 12, Plochingen, Germany
Continuation of Ser. No. 823,677, May 12, 1969, abandoned. This application Feb. 18, 1972, Ser. No. 227,378
Claims priority, application Germany, May 13, 1968, 1755464
Int. Cl. A62b *35/00;* **B65h** *75/48*
U.S. Cl. 242—107.3 **3 Claims**

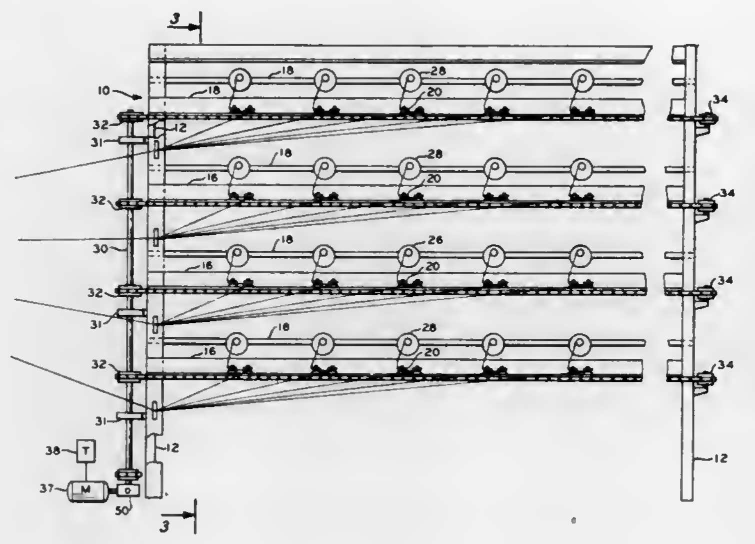


1. In combination with a safety belt, an energy transformer securing a safety belt selectively to a seat of a vehicle and to a vehicle itself, comprising
a housing,
a drum rotatably mounted and in said housing having a recess,
belt means wound on said drum,
said drum having a central bore,
a hub disposed in said recess,
a laminated friction brake including inner plates and outer plates, disposed parallel to and adjacent each other,
said outer plates being secured to said drum for joint rotation with the latter,
said inner plates being secured to said hub for joint rotation with the latter,
spring means for pressing said plates against each other,
means for varying the pressure applied to said plates,
a coupling member axially displaceable relative to and disposed in the central bore of said hub,
a disc having a first gearing disposed coaxially with said coupling member and connected with said housing,
a second gearing provided on one end face of said coupling member engageable with said first gearing, and releasable therefrom upon displacement of said coupling member,
spring means for retaining said first gearing in engagement with said second gearing, and
said coupling member forming jointly with said disc an overrunning clutch to permit rotation of said drum jointly with said inner plates connected with said housing.

3,848,829
GUIDE MEANS FOR YARN HANDLING APPARATUS

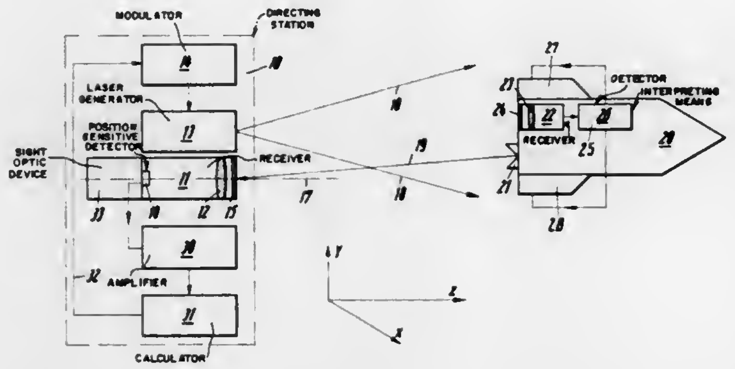
Walter D. Womer, Greenville, S.C., assignor to Phillips Fibers Corporation, Greenville, S.C.
Filed Dec. 29, 1972, Ser. No. 319,521
Int. Cl. B65h *49/02, 57/00*
U.S. Cl. 242—131 **12 Claims**

1. In a yarn handling apparatus comprising a frame, at least one yarn package mounted on said frame, and at least one guide means mounted on said frame for receiving yarn from said yarn package and guiding same during further handling thereof, the improvements comprising:
rotatably mounting said guide means on said frame; and providing means operatively connected to said yarn guide means for rotating said guide means in one of a first mode (a) continuously at a timed rate, and a second mode (b) intermittently at predetermined timed intervals, in accordance with the wear rate of said guide means during the time said yarn handling apparatus is in operation.



3,848,830
MISSILE GUIDANCE SYSTEM

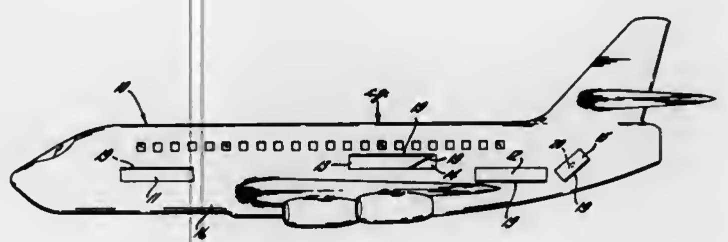
Gunthard Born, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany
Filed Nov. 16, 1972, Ser. No. 307,236
Claims priority, application Germany, Nov. 20, 1971, 2157672
Int. Cl. F41g *5/08, 7/14, 9/00*
U.S. Cl. 244—3.16 **6 Claims**



1. A missile guidance system, comprising:
a transmitting station having means defining a laser adapted to transmit a guidance electromagnetic radiation signal to a zone spaced from said transmitting station;
means comprising a missile and propulsion means for propelling said missile to and into said zone, said missile means including guidance signal receiving means responsive to said guidance signal for controlling the movement of said missile while in said zone;
means comprising a source of a location electromagnetic radiation signal on said missile means which is adapted to transmit same rearwardly thereof;
a receiving station located adjacent said transmitting station and having means defining a location electromagnetic radiation signal receiver for said location electromagnetic radiation signal from said missile, said location electromagnetic radiation signal receiver means including means for locating said missile means in said zone and producing said guidance signal in response to said location electromagnetic radiation signal.

3,848,831
FUSELAGE FLAPS FOR AN AIRCRAFT

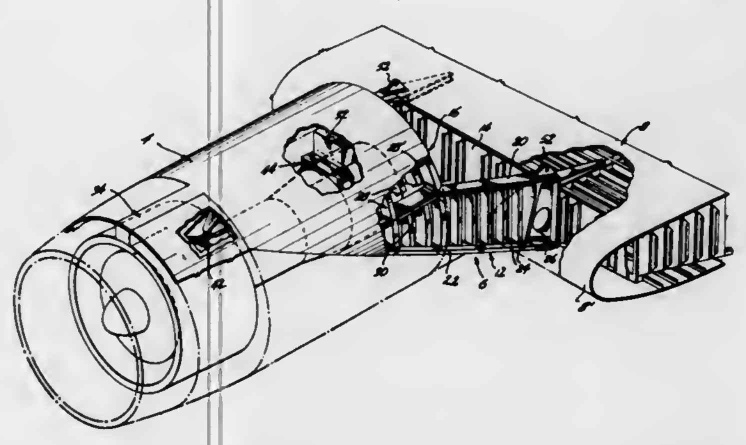
Milford Geary, Box 26, Polo, Ill. 61064
Continuation-in-part of Ser. No. 188,626, Oct. 12, 1971, abandoned, which is a division of Ser. No. 10,331, Feb. 11, 1970, Pat. No. 3,680,814. This application Oct. 23, 1973, Ser. No. 408,752
Int. Cl. B64c *3/00, 9/32*
U.S. Cl. 244—45 R **4 Claims**



1. Control apparatus for an aircraft having a fuselage, said control apparatus comprising a first flap located on a laterally facing side of the fuselage and positioned rearwardly of the longitudinal center of gravity of the aircraft, means mounting said flap on said fuselage for downward swinging from a retracted position to an extended position about an axis which is inclined upwardly and rearwardly relative to the longitudinal axis of said fuselage, a second flap located on said side of said fuselage and positioned between said first flap and said center of gravity, means mounting said second flap on said fuselage for downward swinging from a retracted position to an extended position about an axis extending generally parallel to the longitudinal axis of said fuselage, each of said flaps conforming substantially to the configuration of said fuselage when in its retracted position and projecting outwardly from said side of said fuselage when in its extended position, said second flap being located to channel air to said first flap when said flaps are in said extended positions, and mechanism connected between said flaps and said fuselage and selectively operable to swing said flaps between said positions.

3,848,832
AIRCRAFT ENGINE INSTALLATION

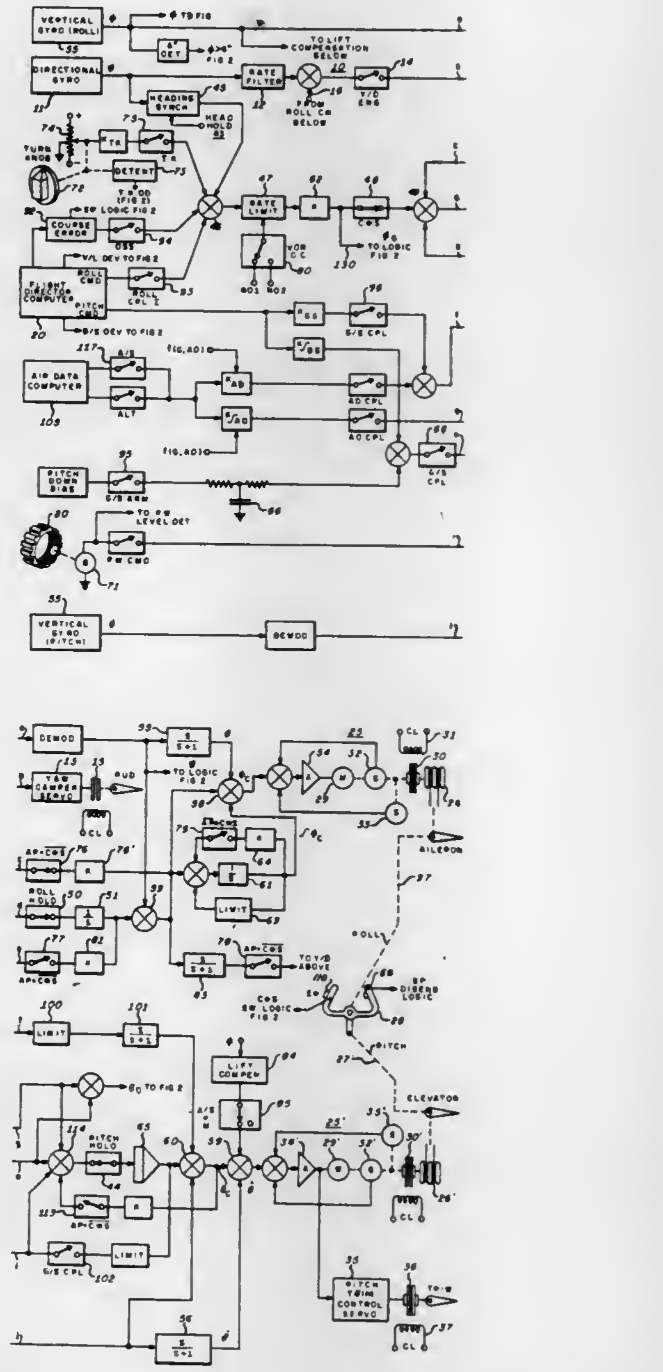
Michael Richard Stanley, Federal Way, and Lucas James Kimes, Seattle, both of Wash., assignors to The Boeing company, Seattle, Wash.
Filed Mar. 9, 1973, Ser. No. 339,646
Int. Cl. B64d *27/00*
U.S. Cl. 244—54 **13 Claims**



1. In combination, a winged aircraft having an A-frame-like strut cantilevered forward from the leading edge structure of each wing thereof, said strut comprising a pair of forwardly cantilevered beams and an inverted U-shaped transom interconnecting the forward end portions of the beams, and an engine for the aircraft suspended from the transom portion of the strut within the inside concave recess of the transom.

3,848,833
AIRCRAFT AUTOMATIC FLIGHT CONTROL SYSTEM

Paul A. Rauschelbach, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.
Filed July 14, 1972, Ser. No. 271,867
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 D **18 Claims**

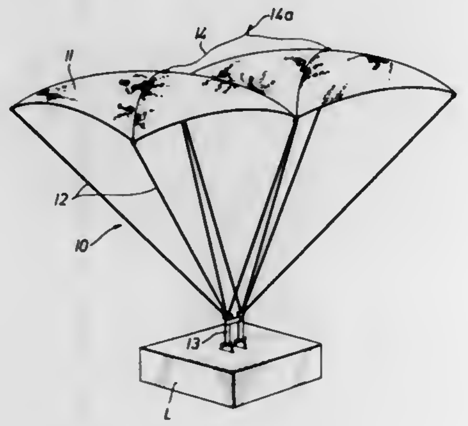


1. An automatic flight control system for an aircraft having the usual manual control wheel and control mechanism between it and the craft control surface for controlling the attitude of the craft in accordance with movement of said control wheel, the combination comprising
an automatic pilot servomotor system having a servomotor, an output member connected with said control mechanism, and clutch means adapted when engaged to move said control mechanism and control surface in accordance with movement of said servomotor and when disengaged to permit free movement of said control mechanism and control surface by said control column,
automatic flight control means including stable attitude reference and flight path control means for controlling said servomotor system when engaged to automatically control said control surfaces to automatically maintain said craft attitude and flight path,
control wheel steering means for said automatic flight control system including switch means actuable by the human pilot for disengaging said servomotor clutch means during actuation of said switch means whereby the human pilot may alter said attitude and flight path through said manual control mechanism, and

logic means responsive to actuation of said switch means for synchronizing said automatic flight control means to the attitude and flight path established by said human pilot through said manual control mechanism and upon deactuation of said switch means to re-engage said servomotor clutch means whereby said automatic flight control means thereafter controls said aircraft from said manually estalished attitude and flight path.

3,848,834
PARACHUTE ASSEMBLY

Sam B. Phillips, Jr., 9150 Gulf Freeway, Houston, Tex. 77017
Continuation of Ser. No. 763,762, Sept. 30, 1968, abandoned.
This application Mar. 22, 1971, Ser. No. 126,918
Int. Cl. B64d *17/06*
U.S. Cl. 244—145 **1 Claim**

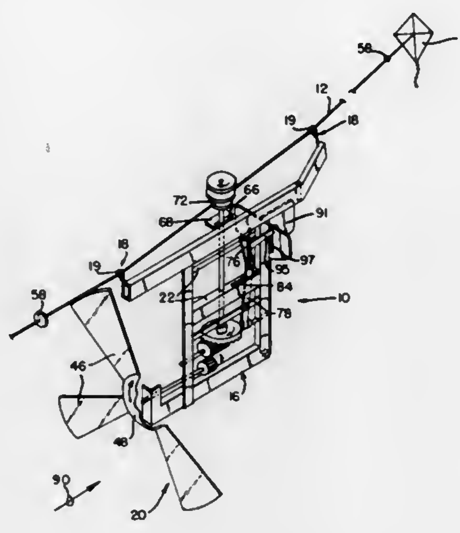


1. A parachute assembly comprising:
- a. a flat canopy having a top and a bottom surface;
- b. a plurality of suspension lines secured to said canopy and extending below said bottom surface of said canopy;
- c. deployment means for assisting in opening said canopy secured to said canopy and extending upwardly from said top surface of said canopy;
- d. reinforcing means secured to said canopy with said reinforcing means further including attachment means for securing said suspension lines to said canopy;
- e. first and second rectangular sections included in said canopy;
- f. two centrally crossed webbing strips included in said reinforcing means and secured to each of said first and second rectangular sections with said crossed webbing strips in each section extending diagonally between each corner of said section and with the ends of each of said webbing strips including said attachment means for securing said suspension lines to said canopy; and
- g. a deployment line included with said deployment means disposed above said top surface of said canopy and secured at spaced locations on said top surface of said canopy at the point of intersection of said webbing strips on each of said first and second rectangular sections, said webbing strips in each section being unsecured to said section for a portion of their lengths at the point of intersection of said webbing strips to form attachment means for said deployment line.

3,848,835
WIND TURBINE POWERED LINE SUSPENDED DEVICE

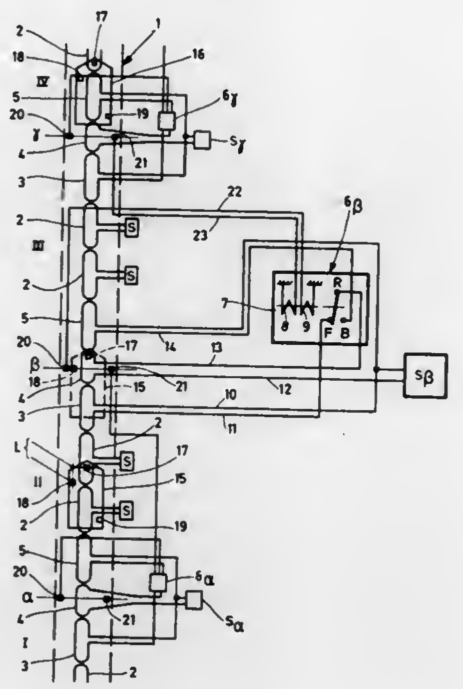
Walter P. Browning, 666 Devon State Rd., Devon, Pa. 19333, and William L. Dodge, 526 Panmure, Haverford, Pa. 19041
Filed May 9, 1973, Ser. No. 358,555
Int. Cl. B64c *31/06*
U.S. Cl. 244—155 R **16 Claims**

1. A wind turbine powered device adapted to be supported by and driven along a line such as having one end carried by an aeronautic device, comprising in combination:
- a. a frame;
- b. means for releasably supporting the frame from a line;
- c. wind turbine means carried by the frame on a shaft having a fixed axis and including a generally unidirectional rotary power output means for at least frictionally drivingly coacting with a line for driving the device along a supporting line; and
- d. means responsive to a stop on a supporting line for automatically reversing the direction in which the device is driven along a supporting line.



3,848,836
CAR ACTUATED INDUCTIVE BLOCK CONTROL

Gunnar Alexius Wallgard, Huskvarna, and Lars-Gunnar Rinnfors, Jonkoping, both of Sweden, assignors to Saab-Scania Aktiebolag, Linkoping, Sweden
Filed Dec. 26, 1973, Ser. No. 428,130
Claims priority, application Sweden, Jan. 3, 1973, 7300053
Int. Cl. B61l *13/00*
U.S. Cl. 246—63 R **4 Claims**

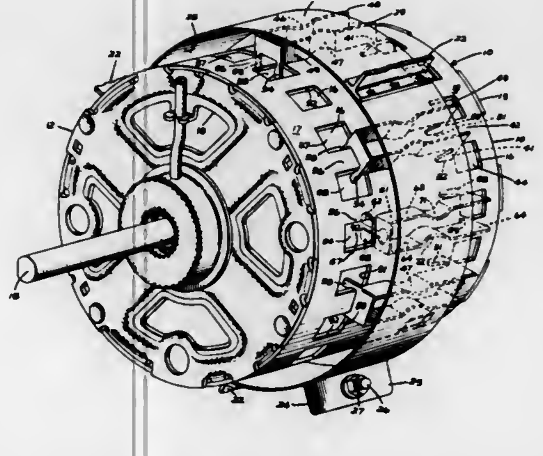


1. A control system for a plurality of driverless vehicles which are intended to move in one direction along a defined path along which lengthwise elongated radiators are arranged end-to-end, each vehicle being moveable only in response to energization of a radiator to which it is adjacent, said path being divided into longitudinally adjacent blocks, each comprising a plurality of said radiators and each block intended to be occupied by only one vehicle at a time, the front end of one block being defined from the rear end of another longitudinally adjacent block by a boundary which a vehicle crosses is moving from said one block into said other block, said system being characterized by:

- A. there being at each boundary a boundary radiator group comprising
  - 1. a transition radiator which extends across the boundary and a short distance into each of the blocks adjoining the boundary,
  - 2. an exit radiator longitudinally adjacent to the transition radiator in the front end portion of the block behind the boundary, and
  - 3. an entry radiator longitudinally adjacent to the transition radiator in the rear end portion of the block ahead of the boundary;
- B. a plurality of radiator energizing input units, one for each boundary, each connected with the transition radiator for its boundary to energize the same at any time;
- C. a plurality of bistable switch devices, one for each boundary, each comprising
  - 1. a pair of input terminals that are adapted to receive control signals alternately,
  - 2. means responsive to a control signal applied to one of said input terminals to effect connection of the entry radiator for its boundary with the input unit for its boundary to the exclusion of the adjacent exit radiator, and
  - 3. means responsive to a control signal applied to the other of said input terminals to effect connection of the exit radiator for its boundary with the input unit for its boundary to the exclusion of the adjacent entry radiator;
- D. a plurality of vehicle passage detection means, one at each boundary, each of said detection means being responsive to passage of a vehicle across its boundary to produce a control signal; and
- E. means connecting the vehicle passage detection means at each boundary
  - 1. with said one input terminal of the bistable switch device for its boundary, so that the entry radiator directly in front of a vehicle at a boundary is energized simultaneously with disconnection of its adjacent exit radiator from the input unit for said boundary, and
  - 2. with the other input terminal of the bistable switch device for the next boundary to the rear, so that an exit radiator can be energized in consequence of a vehicle clearing the block directly in front of that exit radiator.

3,848,837
MOUNTING ADAPTER MEANS FOR DYNAMOELECTRIC MACHINE

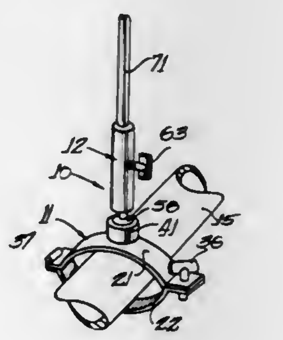
Richard W. Dochterman, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.
Continuation-in-part of Ser. No. 200,525, Nov. 19, 1971, Pat. No. 3,740,599. This application June 15, 1973, Ser. No. 370,302
Int. Cl. H02k *5/00*
U.S. Cl. 248—14 **10 Claims**



1. A mounting adapter for a dynamoelectric machine, said adapter comprising at least two laterally extending legs and at least two spaced apart resiliently movable depending elements having surfaces for engaging portions of a dynamoelectric machine stationary structure; said depending elements being spaced apart a predetermined distance to trap a predetermined portion of a dynamoelectric machine stationary surface therebetween; said at least two depending elements and at least two laterally extending legs being interconnected whereby the laterally extending legs may be held in a desired relationship to a dynamoelectric stationary surface trapped between said at least two depending elements.

3,848,838
UMBRELLA MOUNTING BRACKET

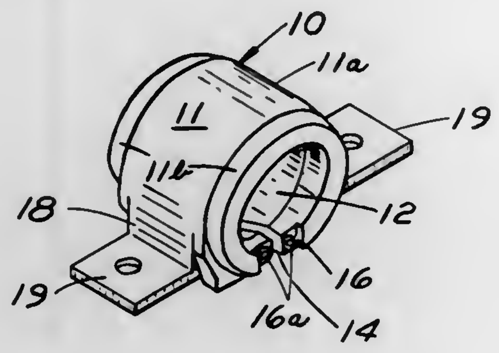
Robert Lee Thomas, 402 W. 12th, Irving, Tex. 75060
Filed Nov. 8, 1973, Ser. No. 413,844
Int. Cl. F16m *13/02*
U.S. Cl. 248—42 **4 Claims**



1. A mounting bracket intended for the mounting of an umbrella on a lawn chair and the like to protect an individual sitting in the chair from the direct rays of the sun, the mounting bracket comprising a clamp member including a top member and a bottom member each formed of an elongated rectangular strip of material curvingly bent intermediate its opposed opposite first and second end portions to define a longitudinally extending concave interior curved surface, the top and bottom members being placed with their interior surface in confronting relationship with each other, the first ends of the top and bottom members having a transversely extending slot in each of the ends and in general alignment with each other such that the slot in the top member end overlies the slot in the bottom member end, an elongated hollow cylindrical member extending in alignment with the axis of the slots normal to the longitudinal axis of the clamp, a side wall of the cylindrical member passing through the aligned slots to pivotally interconnect the top and bottom members together and permit swinging movement thereof about the axis of the cylindrical member toward and away from each other, fastening means associated with the second ends of each member for detachably attaching and detaching the ends together in a releasable manner, a cylindrical socket member disposed centrally on the exterior surface of the top member and projecting outwardly therefrom and terminating in an outermost top surface, a hemi-spherical recess disposed concentrically in the socket member and opening out of the top surface thereof, a spherical ball member of a size and configuration complementary to the diameter of the hemi-spherical recess and disposed therein and captured thereby for relative movement relative thereto, a portion of the spherical ball member projecting outwardly of the top surface of the socket member, a shaft connected to the projecting portion of the ball and extending radially outwardly therefrom, a support member having a top end and a bottom end, a bore disposed axially in the support member bottom end and extending thereinto of a diameter to receive the projecting end of the shaft from the ball member to mount the shaft therein with the ball member spaced a slight distance outwardly from the bottom end of the support member, an elongated cylindrical bore extending axially through the top portion of the support member and opening out of the top end thereof and adapted to receive the base end of an umbrella standard in a supporting manner

therein, a threaded aperture extending through the side wall of the support member normal to the axis of the support member and communicating with the bore at one end and with the exterior surface of the side wall with the other end, a bolt like fastener including an elongated threaded shank having one end threadedly received in the threaded aperture, an enlarged head portion formed integrally with the opposite end of the bolt fastener in the form of a flattened head portion of a generally elongated rectangular shape extending normal to the axis of the shank and adapted to be readily grasped between the fingers of an individual's hand to effect the rotation of the shank in opposite directions about its axis to move the innermost shank fastener end thereof into and out of engagement with an umbrella standard inserted into the cylindrical bore.

3,848,839
CONDUIT SUPPORT CLAMP
Gary P. Tillman, 1704 Dudley St., Erie, Pa.
Continuation-in-part of Ser. No. 220,624, Jan. 25, 1972, abandoned. This application Jan. 10, 1974, Ser. No. 432,280
Int. Cl. F16l *3/04*
U.S. Cl. 248—54 R **14 Claims**



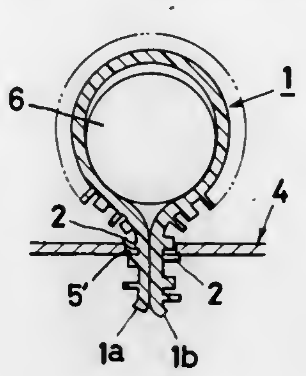
1. A conduit support clamp for supporting an elongate conduit relative to a structure comprising

an elongate elastomeric body having a bore extending axially therethrough for receiving the conduit therein, said elastomeric body having a central portion for receiving the conduit in circumferentially spaced relation thereto and opposite end portions axially spaced from said central portion for receiving the conduit in frictionally engaging relation circumferentially thereof at axially spaced locations and forming the only interconnection of said elastomeric body with said conduit, and

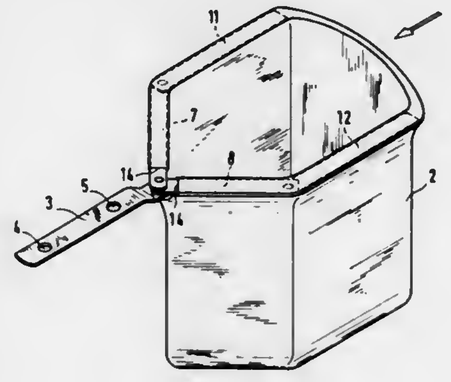
rigid means carried by said central portion in spaced relation from said opposite end portions for substantially encircling the conduit and fixedly attaching said central portion in circumferentially spaced relation of the conduit to the structure for movement of said central portion with the structure relative to said opposite end portions in response to relative motion between the conduit and structure normal to the conduit, said relative motion being accommodated predominantly by shear in said elastomeric body between said central and opposite end portions.

3,848,840
PLASTIC CLAMPING RIDGED STRAP
Hideo Umezu, 17-17, Koishikawa 4-chome, Bunkyo-ku, Tokyo, Japan
Filed Jan. 8, 1973, Ser. No. 321,849
Claims priority, application Japan, Jan. 8, 1972, 47-4451; Oct. 13, 1972, 47-101851; Oct. 13, 1972, 47-101852
Int. Cl. F16l *3/08*
U.S. Cl. 248—73 **11 Claims**

1. In combination, a ridged plastic clamping strap composed of an elongated plastic band having a plurality of alternately arranged tall flexible ridges and short rigid ridges intergrally connected to one surface of the elongated band, each tall ridge being nearer to one adjacent short ridge than to the other adjacent short ridge, thus leaving a space between the tall ridge and the other adjacent short ridge sufficient to allow the tall ridge to bend down but leaving a space between the tall ridge and the one adjacent short ridge insufficient to allow the tall ridge to bend down; and a plate having at least one aperture which allows the short rigid ridges to pass without obstruction and allows the tall flexible ridges to pass only when yieldingly bent down.



3,848,841
REFUSE CONTAINERS, PARTICULARLY FOR VEHICLES
Klaus Rafeldt, Grunlandweg 270, D 7181 Jagstheim, Germany
Filed Apr. 21, 1972, Ser. No. 246,280
Claims priority, application Germany, Apr. 23, 1971, 2120058
Int. Cl. B65b *67/12*
U.S. Cl. 248—99 **3 Claims**



1. In a collapsible frame structure for supporting a refuse bag of the type having a pocket around its upper edge and an opening in said pocket, the frame structure including two fork arms coupled at one end by a pivot joint and insertable at their other ends into the pocket on opposite sides of the bag through the opening, the fork arms being laterally displaceable from each other to thereby open the mouth of the bag, the improvements characterized by:

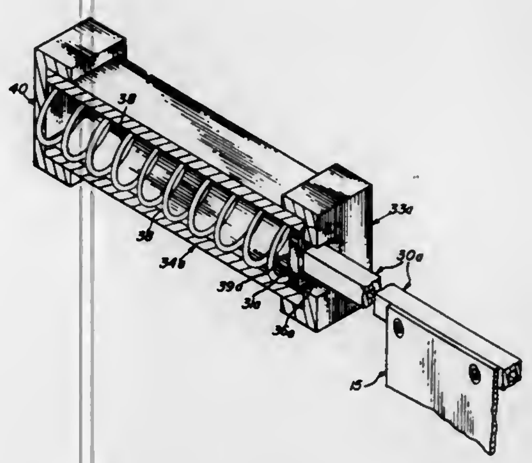
a. an elongated stem member adapted to be secured at one end to a mounting structure, such as the dashboard of a motor vehicle, and having a hole at the other end for receiving a hinge pin;

b. each fork arm having first and second arm members pivotally joined together at a first end, each of the second arm members have offset crank portions at their pivotal joint ends one of said second arm members being offset downwardly, the other of said second arms being offset upwardly such that the second arms are vertically disposed with respect to each other to thereby dimensionally minimize the space occupied by the frame structure when collapsed;

c. holes in each second end of the first arm members, and

d. a hinge pin pivotally extending through the hole in the stem member and the holes in the first arm members to join said first arm members to said stem such that the first arms are vertically disposed with respect to each other and thereby from a common joint to render the fork arms laterally displaceable from each other over a wide-angle relative to the stem member.

3,848,842
IMPINGEMENT SHIELD
Milford L. Jepsen, 18018 Jersey Ave., Artesia, Calif. 90701
Filed Mar. 14, 1973, Ser. No. 341,075
Int. Cl. F16m *13/00*
U.S. Cl. 248—204 **4 Claims**



1. Apparatus for mounting an impingement shield, comprising:

a housing;

a support rod adapted to have an impingement shield supported therefrom;

said support rod having a pressure plate affixed to said support rod to define a rod/plate assembly;

said pressure plate being positioned within said housing;

means for resiliently orienting said support rod in a normally horizontal orientation whereby said support rod and said supported shield may move under the influence of a disturbing face and for resiliently reorienting said support rod and said supported shield when said disturbing force is removed;

said housing having an aperture therein;

said support rod being positioned to project out of said housing through said aperature;

said resilient orienting means comprising at least one compression spring positioned in said housing, with one end of said spring positioned to press against a surface of said plate, and the other end of said spring positioned to press against a wall of said housing;

said housing having at least one collar like end piece having said aperture;

said plate being positioned in said housing with the outer surface of said plate abutting the inner surface of said collar like end piece, with said support rod projecting out of said housing through said aperture;

said compression spring urging said outer surface of said plate against said inner surface of said end piece for causing said support rod to project outwardly through said aperture of said collar like end piece in a normally horizontal orientation.

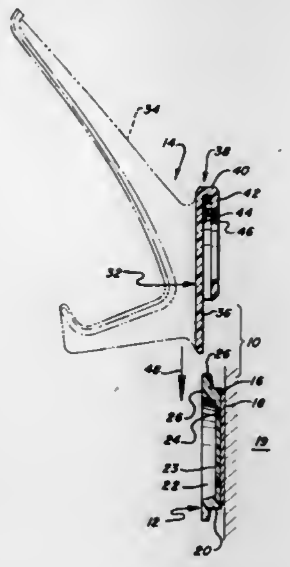
3,848,843
FIXTURE ASSEMBLY
Leon M. Levy, Chicago, Ill., assignor to Selfix, Inc., Chicago, Ill.
Filed Aug. 3, 1972, Ser. No. 277,664
Int. Cl. A47g *1/16*
U.S. Cl. 248—224 **9 Claims**

1. A fixture and support assembly for effectively attaching a fixture to a supporting surface, said assembly comprising:

a fixture having a first connecting member for connecting said fixture to a fixture support;

a fixture support adapted to be affixed to the supporting surface and having a second connecting member for connecting said support to said fixture, said second connecting member having a configuration operative to connect said support to said fixture independently of the angular orientation at which said fixture support is affixed to the supporting surface;

said first and second connecting members being complementary in shape and engageable with each other to effect interconnection between said fixture and said support with said fixture at a selected one of a plurality of orientations relative to said support;



said complementary connecting members including interlocking elements engageable with each other, said interlocking elements having a configuration for locking said interconnected fixture and fixture support at said selected orientation to preclude relative angular movement therebetween;

one of said complementary connecting members including retaining means engageable with at least a portion of the other of said connecting members for precluding disengagement of said interlocking elements when said fixture and support are interconnected;

whereby said fixture is retained in said selected orientation relative to said support and relative angular movement between said interconnected fixture and support is precluded.

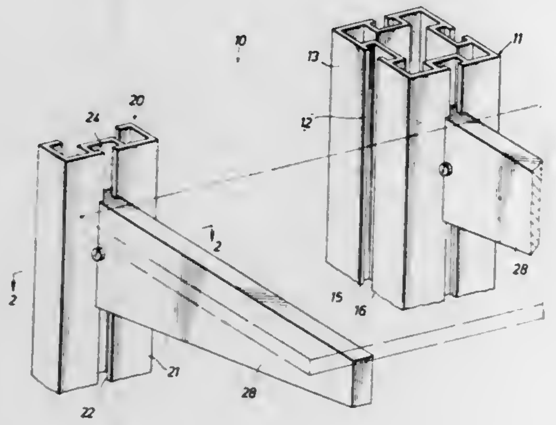
3,848,844
ADJUSTABLE DISPLAY SHELF APPARATUS
Robert R. Barrett, Houston, Tex., assignor to Visual Designs Mfg. Co., Houston, Tex.
Filed Apr. 6, 1973, Ser. No. 348,481
Int. Cl. A47b *47/00;* **A47g** *29/02*
U.S. Cl. 248—245 **8 Claims**

1. A display unit comprising:

vertical support means having opposed spaced shoulder means defining an elongated groove therebetween and having elongated chamber means formed therein and being disposed behind said opposed shoulder means, said vertical support means defining first generally planar friction surface means;

support bracket means having a support portion for supporting objects thereon, said support bracket means having a face portion of a configuration generally corresponding to the cross-sectional configuration of said elongated groove and said elongated chamber, said face portion of said bracket means being disposed within said elongated chamber means and extending through said elongated groove and being movable along said groove and chamber, said face portion defining second generally planar friction surface means, said support bracket means having a transverse latch aperture formed therein, at least a portion of said aperture intersecting the plane of said first friction surface means; and

latch pin means being disposed within said transverse aperture of said bracket means and having cam surface means



defined thereon, said latch pin means being movable relative to said bracket means between a locked position where said cam surface means engages said vertical support means and urges said first and second friction surface means into friction locked engagement and a released position where said cam surface means is retracted to a position releasing said frictional engagement between said first and second friction surfaces.

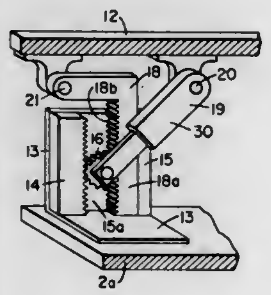
3,848,845
ADJUSTABLE SEAT ASSEMBLY

George A. Bogart, Cleveland, Ohio, assignor to Arthur J. Klein, Cleveland, Ohio, a part interest

Filed Apr. 7, 1972, Ser. No. 241,991

Int. Cl. F16m *11/24, 13/00;* **B60n** *1/02*

U.S. Cl. 248—393 **3 Claims**



1. An adjustable seat assembly comprising a base, a seat member disposed above said base, drive means for swinging and elevating said seat relative to said base, bar means connectable with said base being movable in direction generally perpendicular to said base, means pivotally connecting said bar means to said seat, lever means comprising a first lever and a second lever operatively connected to each other in telescopic relation, the first lever being operatively connected to the bar means and the second lever being operatively connected to said seat, said drive means being operatively connected to said seat and actuable to swing said seat about said bar means pivotal connection, and said lever means being movable with said seat and operable to move said bar means relative to said base effective with said drive means to simultaneously swing and elevate said seat.

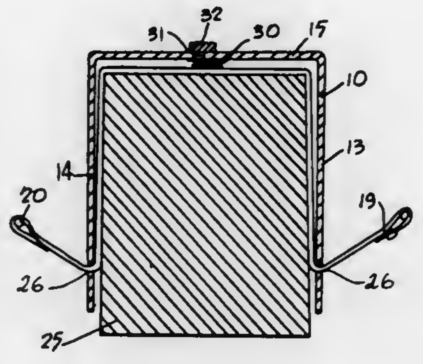
3,848,846
SNOW MOLD

Edwin D. Ebner, New City, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Oct. 5, 1973, Ser. No. 403,959

Int. Cl. B28b *7/34*

U.S. Cl. 249—66 **3 Claims**



1. In combination, a hollow mold body having a mold body top plate and at least one mold removal strap adapted to rest on the top plate of said mold body, said strap passing through slots in each of two side plates of the mold body, together with tension spring means to hold the mid-section of the strap to the mold body top plate when the strap is free of external force.

3,848,847
CASTING METHOD FOR ALUMINUM OR ALUMINUM ALLOYS AND A MOLD THEREFOR

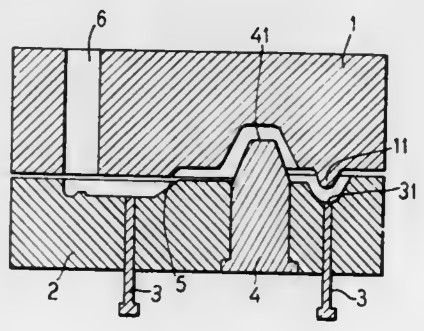
Noboru Komatsu; Tohru Arai, and Masayoshi Mizutani, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho

Filed July 2, 1973, Ser. No. 375,390

Claims priority, application Japan, July 11, 1972, 47-69767

Int. Cl. B22c *3/00*

U.S. Cl. 249—115 **9 Claims**



1. In a mold for casting aluminum or aluminum alloys comprising at least two mold members having mold surfaces coacting to form a cavity for receiving the molten aluminum or aluminum alloy, each of said mold members being of a ferrous metal, the improvement comprising at least a portion of the mold surface of at least one mold member being a metal carbide layer of at least one metal being selected from Group V, Subgroup a of the periodic table.

3,848,848
FAIL SAFE APPARATUS FOR FLUID ACTUATED SYSTEMS

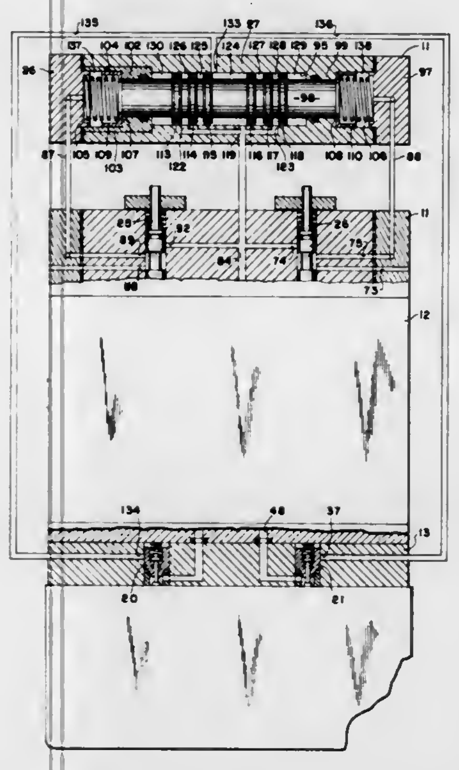
Domenic A. Di Tirro, 3139 Harriet Rd., Silver Lake, Ohio 44224

Filed Mar. 25, 1974, Ser. No. 454,369

Int. Cl. F16k *11/24*

U.S. Cl. 251—31 **11 Claims**

1. A fluid pressure cutoff apparatus comprising a housing, a bore extending from one end of said housing to the other end, a spool slidably mounted in said bore for movement axially of said bore between a central position and side positions, said bore having annular shoulders spaced from the ends of said bore forming end chambers and supporting said spool, centering means for resiliently holding said spool in a centered position, fluid supply passages connected to said end chambers for communicating with separate valve means, said spool having ends extending into said end chambers and having the same effective end areas subjected to fluid pressure whereby said spool is biased from a central position to one of said side positions when the fluid pressure in one of said end chambers exceeds the fluid pressure in the other of said end chambers by a force exceeding the resilient force of said centering means, said spool having annular lands in sealing engagement with said bore at positions between said annular shoulders dividing the space between said spool and said bore into a central chamber and side chambers, a central inlet passage in communication with said bore for admitting fluid into said central chamber and a central outlet passage for communicating fluid out of said central chamber with said spool in said central position and for cutting off communication of said fluid out of said central chamber when said spool is displaced into one of said side positions, side inlet passages located in communication with said bore between said annular shoulders and said central inlet passage for communicating fluid under pressure into one of said side chambers when said spool is in a side position whereby fluid pressure acts against the effective area of one of said annular lands of said spool to supplement the force on said spool ends biasing said spool and locking said spool in the side position.



3,848,849
FLUID CONTROL VALVE

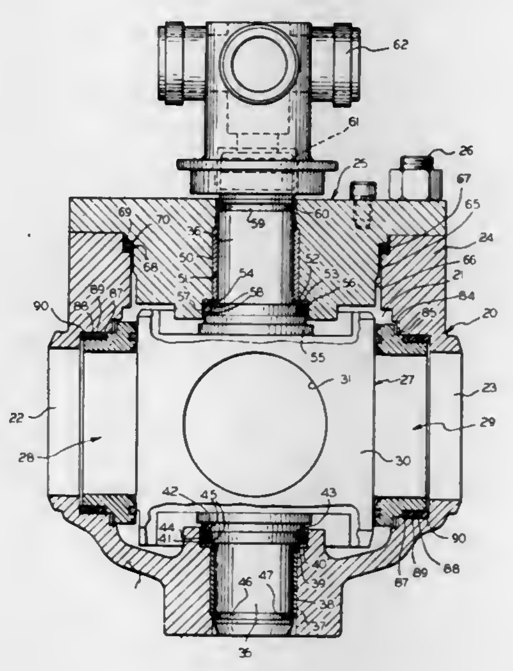
William H. Alexander, Houston, Tex., assignor to Vapor Corporation, Chicago, Ill.

Filed June 29, 1973, Ser. No. 375,082

Int. Cl. F16k *5/20*

U.S. Cl. 251—314 **26 Claims**

1. In a valve including a valve body defining a valve cavity, axially aligned inlet and outlet ports in the body communicating with said cavity, a plug rotatably mounted in the cavity on an axis perpendicular to the axis of said ports, said plug having a passageway extending transaxially therethrough which when aligned with the ports provides communication therebetween, and seats within the cavity at the ports coacting with the plug and body to define a seal between the plug and ports when the plug is in closed position, the improvement in the seats wherein each seat comprises a generally cylindrical rigid base having a passageway therethrough mating with a port, the axis of the seat extending perpendicular to the pivot axis of the plug and common with the port axis, the end of the seat coacting with the plug being arcuately formed on the same radius as the plug and having bonded thereon a resilient seal member, said seal member including inner and outer continuous spaced seal lips having ribbon-like sealing surfaces engaging the plug, and wear resistant load bearing insert means mounted at the end of the seat engaging the plug, said bearing insert means including a pair of inserts positioned between the inner and outer seal lips at diametrically opposed positions along the seat and aligned along the pivot axis of the plug above and below the plug passageway, each insert having a bearing surface slightly recessed from the sealing surfaces of said seal lips.



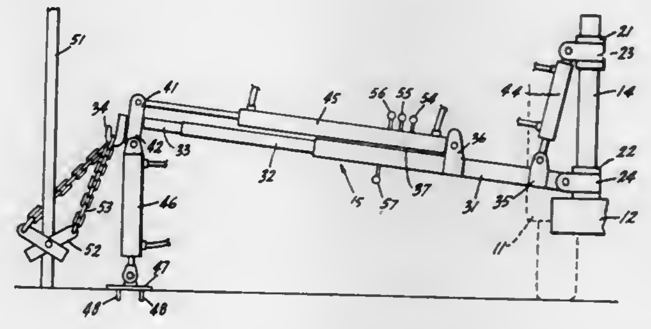
3,848,850
VEHICLE MOUNTED HYDRAULIC POWERED POST PULLER

John H. Bemis, Kalamazoo, Mich., assignor to Bemis & Sons, Inc., Kalamazoo, Mich.

Continuation-in-part of Ser. No. 320,163, Feb. 2, 1973, abandoned. This application Mar. 1, 1974, Ser. No. 447,143

Int. Cl. E21b *19/00;* **B66f** *3/00*

U.S. Cl. 254—30 **17 Claims**

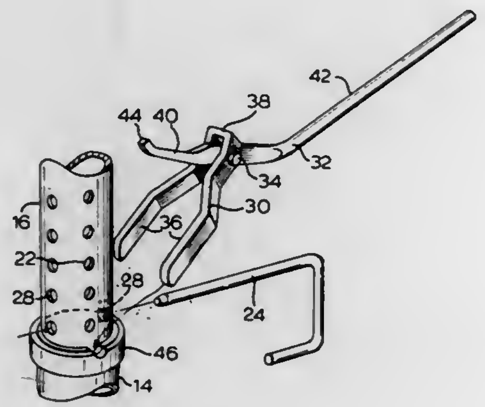


1. A hydraulically operated post-pulling apparatus adapted to be mounted on a vehicle comprising

- a. a support adapted to be mounted on said vehicle,
- b. a boom pivotally mounted at one end with respect to said support and adapted to revolve about a vertical axis and additionally to be raised and lowered, said boom comprising a pair of telescopingly arranged boom members,
- c. first hydraulic cylinder means mounted with respect to said support and said boom and adapted for raising and lowering said boom angularly,

- d. second hydraulic cylinder means affixed to said boom members and adapted to extend and retract said boom members with respect to each other,
- e. third hydraulic cylinder means pivotally connected at one end to the remote end of said boom and having a ground-engaging support means mounted at the other end, and
- f. means on the remote end of said boom for engaging means adapted to engage and grip a post to be pulled from the ground.

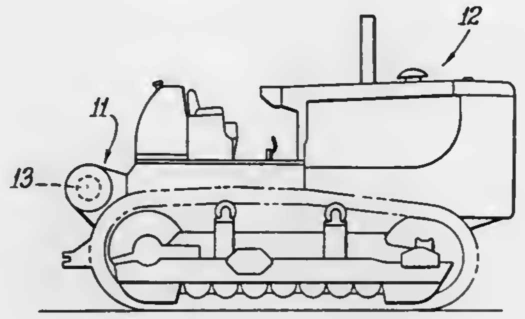
3,848,851
JACKING DEVICE
Murray A. Elias, Islington, Ontario, Canada, assignor to Dell Holdings Limited, Rexdale, Ontario, Canada
Filed Aug. 28, 1973, Ser. No. 392,208
Int. Cl. B66f *1/04*
U.S. Cl. 254—108 **11 Claims**



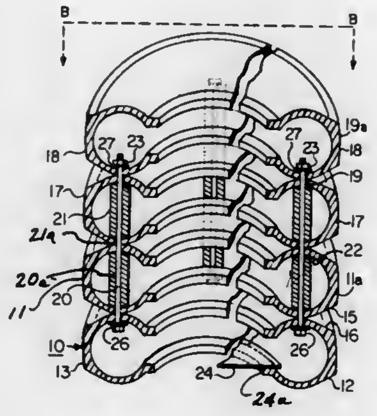
1. A jacking device comprising
- a. a first tubular member,
- b. a second tubular member telescopically mounted within said first tubular member and projecting outwardly from one end of said first tubular member,
- c. adjustment means for adjusting the position of said second tubular member with respect to said first tubular member,
- d. said adjustment means consisting of a bracket member and a lever member, said bracket member having an inner end and an outer end, fulcrum means pivotally mounting said lever member with respect to said bracket member with a first end of said lever member projecting outwardly from one side of said fulcrum means and a second end of said lever member projecting outwardly from the other side of said fulcrum means, said outer end of said bracket being adapted to engage said one end of said first tubular member to support said bracket means in a position with said fulcrum means spaced outwardly from said first and second tubular means,
- e. a plurality of longitudinally spaced passages opening inwardly of said second tubular member for engaging said first end of said lever whereby said second tubular member may be telescoped with respect to said first member in response to movement of said second end of said lever about said fulcrum means, and
- f. means for locking said first tubular member with respect to said second tubular member to prevent inward telescoping of said second member with respect to said first member.

3,848,852
WINCH DRUM DISCONNECT CLUTCH
Henry T. Therkildsen, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed May 29, 1973, Ser. No. 364,902
Int. Cl. B66d *1/24*
U.S. Cl. 254—187 R **2 Claims**

1. A winch of the type having a rotatable cable drum and comprising
- a power input means,
- a rotatable, elongated drive shaft,
- clutch means providing a selective coupling between the power input means and the elongated drive shaft,
- a first clutch member rotatably mounted upon the drive shaft and operatively coupled in driving relation with the rotatable cable drum,
- a second clutch member secured for rotation with the shaft and axially movable thereon,
- the first and second clutch members having facing jaw-type gear faces suitable for meshing engagement with each other, and
- hydraulically responsive piston means axially arranged within the elongated drive shaft and coupled with the second clutch member to control engagement and disengagement between the first and second clutch members, the power input means comprising a power input shaft supporting a first bevel gear, second and third bevel gears arranged in meshing relation with the first bevel gear and in opposition to each other, the clutch means comprising respective clutches for selectively coupling each of the second and third bevel gears with the elongated drive shaft, each of the respective clutches being mounted upon the elongated drive shaft.

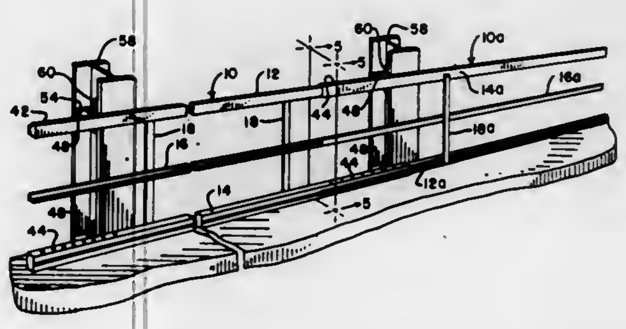


3,848,853
HIGHWAY SAFETY TIRE DEVICE
Merton B. Way, 5300 John R. Rd., Troy, Mich. 48084, and John Pas, 2915 Hessel, Rochester, Mich. 48063
Filed Mar. 15, 1973, Ser. No. 341,788
Int. Cl. E01f *13/00*
U.S. Cl. 256—1 **2 Claims**



1. In a highway safety device for use as a barrier on a roadway, the combination of, at least three full-scale used motor vehicle tires concentrically arranged and adapted and stacked to form an elongated, cylindrical, integral columnar body having an elongated, concentric, cylindrically outlined opening formed by the inside rims of said stacked tires, concentric outside completely cylindrical walls defined by the treads of said tires, and transverse completely circular sidewalls connected between said rims and said tread, said sidewalls having circular convex portions thereof each contacting the circular convex portion of the tire adjacent to it,
- walls defining bores formed annulary and axialy in the side walls of said tires generally at the point of tangency thereof, said bores aligned with each other so that when said tires are stacked said bores define at least two axial oppositely spaced openings through said side walls,
- and fastening means operable to fixedly fasten said tires integrally together in shock resistant relationship to each other through said connected sidewall circular portions only of said sidewalls for leaving said concentric opening entirely free of obstruction, said fastening means including a plurality of rigid elongated fastening members egaging said bores and elongated, one-piece spacers engaging the sidewalls of said tires adjacent said elongated members in opposed tensioned relationship to said elongated members to maintain said stacked tires in rigid spaced shock resistant relationship to each other.

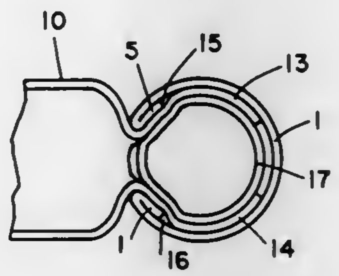
3,848,854
SAFETY BARRIER
Joseph L. De Barbieri, Bethlehem, Pa., assignor to Beth-Con Realty, Inc., Bath, Pa.
Filed July 30, 1973, Ser. No. 383,746
Int. Cl. E04h *17/16*
U.S. Cl. 256—65 **12 Claims**



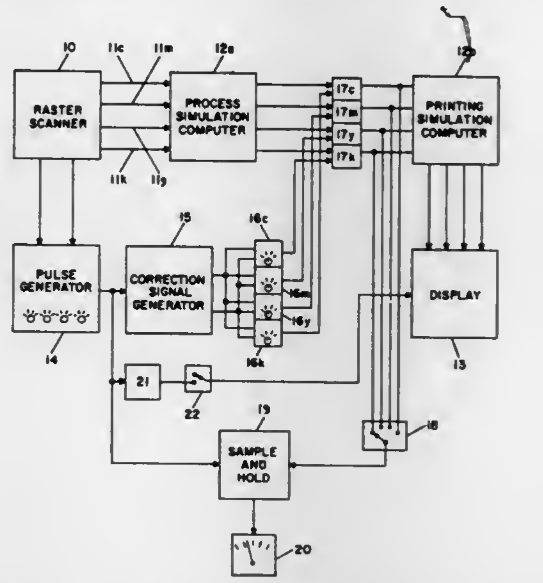
1. A fence section adapted for partial telescopic assembly with a corresponding section when said corresponding section is in an inverted position relatively to said fence section to provide a longitudinally extending barrier, said fence section comprising first and second rails in spaced relationship and means connecting said rails and maintaining them in said spaced relationship, said means connecting said rails terminating at said rails, said first rail having a body element including end portions of given cross sectional dimensions and shape and said second rail including longitudinally extending hollow interior end portions dimensioned and positioned to telescopically receive an end portion of a body element of a rail corresponding to said first rail when said corresponding rail is in an inverted position with respect to said first rail, said end portions of said first and second rails each including means for cooperation with means for securing said fence sections to a corresponding section in an endwise adjusted relationship when said fence section is in partial telescopic assembly with said corresponding inverted section.

3,848,855
TUBING CONNECTION
Edward E. Weiland, 8768 Buffalo, Union Lake, Mich. 48085
Continuation-in-part of Ser. No. 248,253, April 27, 1972, Pat. No. 3,776,523, which is a continuation-in-part of Ser. No. 120,107, March 2, 1971, abandoned. This application June 18, 1973, Ser. No. 371,308
Int. Cl. E04h *17/14*
U.S. Cl. 256—73 **6 Claims**

1. A tubing assembly comprising a connection of a first tube member to a second tube member, said second tube member having an elongated longitudinal slot in its side wall, a pair of flanges along the longitudinal edges of said slot, said flanges being deformed away from each other inside said second tube member and conforming to the inside surface of said second tube member, said first tube member having opposed recesses in an end forming two tabs extending from said end, said tabs being flattened and extending through said slot and being spread outwardly within said second tube member to substantially conform with the inside surface of said flanges and said second tube member thereby securely connecting said first tube member to said second tube member.



3,848,856
LOCAL CORRECTION APPARATUS FOR A COLOR PREVIEWER
Nicholas J. Reeber, Hauppauge, and Karl M. St. John, Huntington Station, both of N.Y., assignors to Hazeltine Corporation, Greenlawn, N.Y.
Filed Oct. 1, 1973, Ser. No. 402,234
Int. Cl. H04n *9/02*
U.S. Cl. 358—76 **14 Claims**



1. In a graphic arts color previewer wherein a set of color component signals are developed by successively scanning elemental areas of an input image, said signals being individually representative of corresponding elemental areas of color separations in the actual graphic arts process being previewed, and wherein said color component signals are processed to provide on a display a preview image simulating a color reproduction of said input image, apparatus for adjusting the color content of a selected local area of said preview image, comprising:
- means for generating a series of pulse-type signals in synchronism with the scanning of said input image, the number of pulses, pulse duration and time of occurrence of said pulse-type signals in said series being selected to define a series of time intervals corresponding to a local area of said preview image;
- and means responsive to said pulse-type signals for adjusting the color content of at least one of said color component signals during said time intervals defined by said pulse-type signals to form a locally corrected color component signal;

thereby causing an adjustment in the color content of said selected local area in said preview image.

3,848,857

CARBURETTORS PROVIDED WITH A STARTING DEVICE WITH AN ECCENTRIC FLAP VALVE

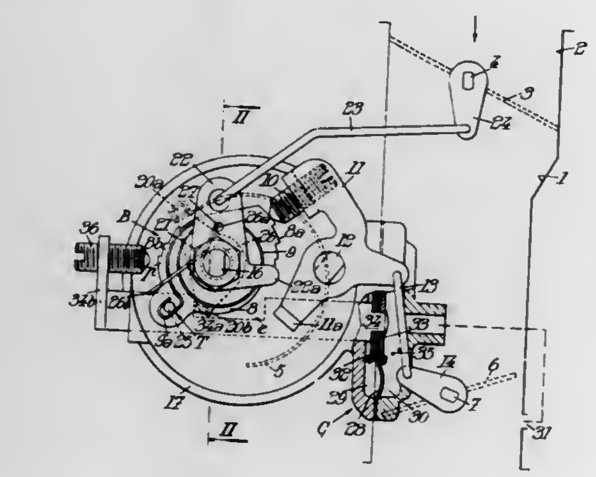
Andre Louis Mennesson, Neuilly S/Seine, France, assignor to Societe Industrielle De Brevets Et D'Etudes S.I.B.E., Nanterre, France

Filed June 26, 1973, Ser. No. 373,748

Claims priority, application France, July 31, 1972, 72.27507

Int. Cl. F02m *1/10*

U.S. Cl. 261—39 B **9 Claims**



1. Carburettor comprising a starting device with an eccentric flap valve situated in an air intake of the carburettor upstream of an intake system for the primary air/fuel mixture, said valve being actuated by the air flow inspired by the carburettor against the effect of a first thermostatic member which tends to close said flap valve when the temperature of an element of the engine is below a given limit, said carburettor comprising in addition a cam called a "fast idling" cam adapted to cooperate with a second thermostatic member, said cam being intended to partly open the usual throttle member of the carburettor when the flap valve is at least partially closed, pneumatic means sensitive to the pressure in the intake pipe downstream of the throttle member being provided to control, by their movement, the opening of the valve when said pressure diminishes, said carburettor also comprising stop means with several positions, adapted to limit, in variable manner as a function of said position that they occupy, the movement of the pneumatic means, and said second thermostatic member constituting means sensitive to the ambient temperature arranged to control the position occupied by the stop means.

3,848,858

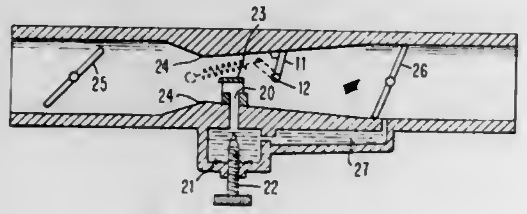
VELOCITY-ACTUATED FUEL CONTROL VALVE

Kenneth J. Page, P.O. Box 152, Walton, N.Y. 13858, and John Van Buren, Woodlawn Rd., No. 3, Walton, N.Y. 13856

Filed Apr. 27, 1973, Ser. No. 355,077

Int. Cl. F02m *7/06*

U.S. Cl. 261—63 **2 Claims**



1. In combination with the intake manifold of an internal combustion engine, said manifold having a fuel supply inlet and a Venturi portion, an independent valve assembly comprising a semi-circular disc located in a sleeve and pivotally supported over a shaft transversely positioned in said sleeve, a coil spring wound around said shaft engaging at one end said disc and at the other end said sleeve, said assembly being adapted to be inserted in the intake manifold of an internal combustion engine.

ERRATUM

For Class 264—64 see:
Patent No. 3,848,862

3,848,859

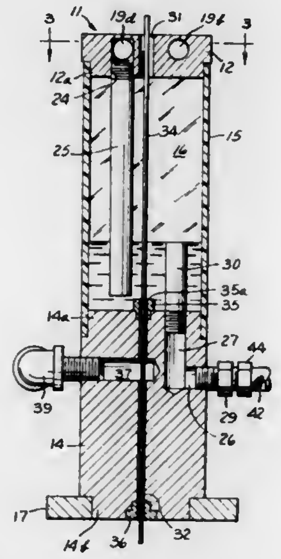
CONTINUOUS QUENCHING MEANS FOR A MOVING WIRE

Robert T. Catlin, Trumbull, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Apr. 30, 1973, Ser. No. 355,773

Int. Cl. C21d *9/52*

U.S. Cl. 266—3 R **4 Claims**



1. A quenching apparatus for quenching a continuously moving member in a liquid, said apparatus comprising a housing having a chamber for containing a quenching fluid and having an upper base containing an upper access opening, a lower access opening aligned with the upper access opening to define a path for the member passing through the chamber, pneumatic sealing means for preventing the passage of quenching fluid and permitting the passage of the member through the lower access opening, and a cooling passage in the upper base having end portions and connected at one end portion to a fluid inlet pipe extending into said chamber and at another end portion to a source of said quenching fluid, the cooling passage being disposed to direct said quenching fluid a substantial circumferential distance around said upper access opening before said quenching fluid enters the fluid inlet pipe.

3,848,860

WASTE GAS COLLECTING DEVICE OF CONVERTER

Hidenori Maeda, Tokyo; Yujiro Matsui, Yokohama; Tsukasa Ikeda, Kosakamachi, and Eikichi Mohri, Tokyo, all of Japan, assignors to Taisei Kensetsu Kabushiki Kaisha, Dowa Kogyo Kabushiki Kaisha, Tokyo, Japan

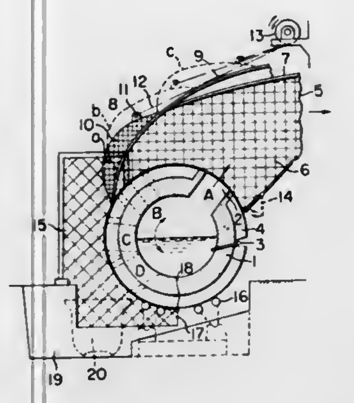
Filed Feb. 20, 1973, Ser. No. 333,506

Foreign Application Priority Data Mar. 29, 1972, Japan 47/30752

Int. Cl. C21c *5/38*

U.S. Cl. 266—18 **1 Claim**

1. A waste gas collecting device of a converter, comprising an apron arranged to cover the entire shell of the converter except for the mouth of said converter, opposed upright windshield plates provided on the front side of the converter to shield both sides of the converter and apron, a windshield plate suspended below the converter, a waste gas hood arranged above the rear portion of the converter and extending forwardly to a point to cover the mouth of the converter during the reaction stage, said waste gas hood being provided with an opening at the forward end portion thereof, and a movable hood slidingly moved on said waste gas hood to open and close said opening and adapted to cover the mouth of the converter over the section of the arcuate locus of movement of the converter mouth from the position in the reaction stage to the position in the material charging stage, said device being used in a waste gas treatment system having a waste gas exhaust route including the waste gas hood, a dust chamber, a waste heat boiler and a Cottrell precipitator, and a sulfuric acid plant in which a waste gas emerging from the converter during the reaction stage and supplied thereto through said waste gas exhaust route by an exhaust fan is desulfurized through a process of recovering SO_2 from said waste gas in the form of sulfuric acid.



3,848,861

DUST SHIELD FOR USE WITH A MOTION TRANSMITTING ROD

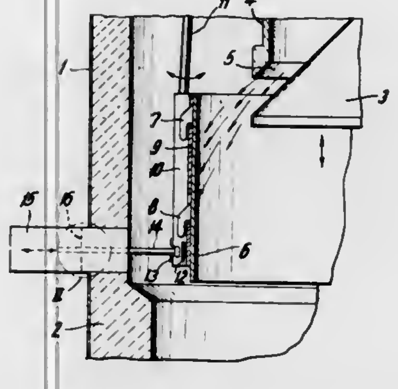
Stephanus Nicolaas Hendrick Rumping, Beverwijk, Netherlands, assignor to Gutehoffnungshutte Sterkrade Aktiengesellschaft, Oberhausen, Netherlands

Filed Sept. 22, 1972, Ser. No. 291,409

Claims priority, application Germany, Sept. 21, 1971, 2147123

Int. Cl. C21b *7/02*

U.S. Cl. 266—25 **11 Claims**



1. A device for adjusting the position of a structural element in a dust-laden environment, such as for use inside of a metallurgical blast furnace, including a drive member, a passageway extending from said drive member toward said structural element, an axially elongated motion rod extending through said passageway between said drive member and said structural element, said motion rod being capable of effecting the combination of longitudinal movement and limited pivotal movement and/or transverse movement in at least one direction, means for preventing the passage of dust along said motion rod toward said drive member, wherein the improvement comprises that said means for preventing the passage of dust includes a shield having an opening therethrough, said shield extending transversely of said motion rod and across said passageway so that flow through said passageway is limited to the opening through said shield, a plate-shaped slide movably displacebly mounted in said shield and extending transversely of said motion rod, said slide closing the opening through said shield, said slide having a bore therethrough so that said motion rod extends through the bore, the bore in said motion rod shaped to conform to the transverse configuration of said motion rod with the minimum clearance therebetween, and said slide closing the opening through said shield in every position of said motion rod so that there is no opening through said passageway through which dust can pass.

3,848,862

VEHICLE HYDROPNEUMATIC SUSPENSION SYSTEM

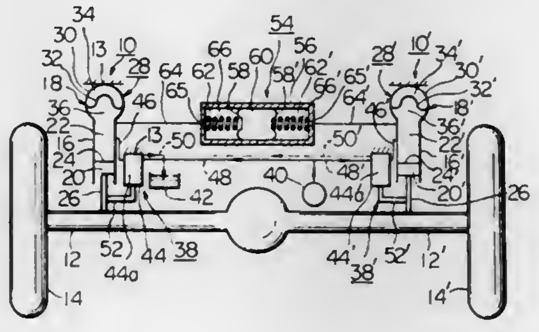
Naganori Ito, and Hiroshi Aikawa, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan

Filed Mar. 26, 1973, Ser. No. 344,485

Claims priority, application Japan, Mar. 27, 1972, 47-29701

Int. Cl. F16z *5/00*

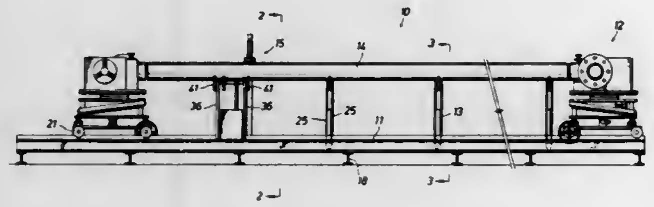
U.S. Cl. 267—64 R **20 Claims**



1. A hydropneumatic suspension system for a motor vehicle having a body and wheel supporting means, comprising first and second suspension struts each of which is mounted between said vehicle body and said wheel supporting means and has a chamber filled with pressurized hydraulic fluid, each of said suspension struts being retractable and extensible in response to relative movement between said vehicle body and said wheel supporting means to increase and reduce, respectively, the pressure of the hydraulic fluid in the corresponding chamber, a hydraulic fluid pressure source and a hydraulic fluid reservoir fluidly communicable with said chambers of said suspension struts to supply and discharge hydraulic fluid into and from, respectively, said chambers thereby maintaining the height of said vehicle body substantially constant independently of the load of said vehicle, levelling means disposed between said chambers and said source and between said chambers and said reservoir to control fluid communication therebetween and responsive to increases and reductions of the load of said vehicle to establish said fluid communication between said chambers and said source and between said chambers and said reservoir, an accumulator including a casing having therein first and second hydraulic fluid chambers, a gas chamber defined therebetween and filled with pressurized gas, and first and second partition members separating said first and second hydraulic fluid chambers, respectively, from said gas chamber, said first and second hydraulic fluid chambers of said accumulator communicating respectively with said chambers of said first and second suspension struts, each of said partition members being responsive to the difference between the fluid pressures in said hydraulic fluid chambers of said accumulator to move toward one of said hydraulic fluid chambers of said accumulator in which one the fluid pressure is lower.

3,848,863
WELDING JIG

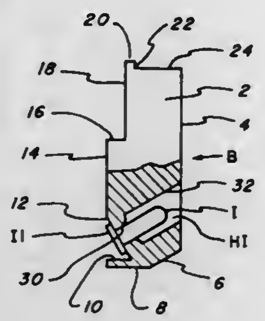
Harold W. Owen, Los Alamitos, Calif., assignor to Pullman Incorporated, Chicago, Ill.
Filed May 3, 1973, Ser. No. 356,860
Int. Cl. B23k *37/04*
U.S. Cl. 269—9 **13 Claims**



1. A welding jig comprising
a set of elongate rails defining a first axis of specified length;
means transversely attached to said rails;
at least a pair of aligned selectively erectable pipe support means pivotally supported on said attached means and which are erectable to a pipe supporting position above and parallel to the first axis and which are further movable to a retracted position clearing said rails for movement therealong;
carriage means supported on said rails;
means for moving said carriage means along said rails and past said pipe support means when said pipe support means is in the retracted position;
rotatable means carried by said carriage means and having an axis of rotation generally perpendicular to the first axis; and
said rotatable means holding a pipe fitting at a specified position relative to a pipe prior to attachment to the pipe supported on said pipe support means.

3,848,864
FINGERS EMPLOYING INSERTS TO SUPPORT WORK PIECES IN A FLOW SOLDER MACHINE

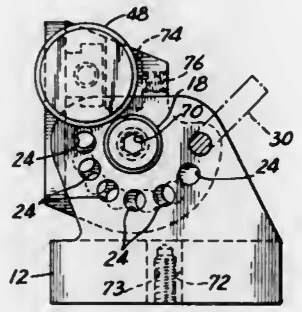
Gregory J. Dwyer, Livonia, and Walla L. Ferris, Detroit, both of Mich., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Nov. 21, 1972, Ser. No. 308,534
Int. Cl. B23q *1/00*
U.S. Cl. 269—46 **8 Claims**



1. A finger for use in supporting a workpiece in a flow solder machine comprising
a block,
means associated with said block enabling the block to be fastened to a movable conveyor,
means associated with said block enabling it, in cooperation with a plurality of similar blocks which are fastened to a movable conveyor, to support a workpiece and thus enable the workpiece to be carried through the work stations of a flow solder machine,
said block, and each similar block, including means making it independently removable from said movable conveyor for cleaning and repair and independently replaceable thereon,
said means to support a workpiece including an opening in said block, and in each similar block, and a resilient insert in said opening,
the block terminating at one end in a ledge having a substantially flat face which may be drilled to enable the block to be locked to the movable conveyor of a flow solder machine,
the block terminating at the other end in a ledge shaped to provide a seat against which a workpiece may rest, and
the opening in said block being formed through the block adjacent the other end to receive the resilient insert, said seat and said resilient insert together forming a support for a workpiece.

3,848,865
CUTTING TOOL HOLDING DEVICE

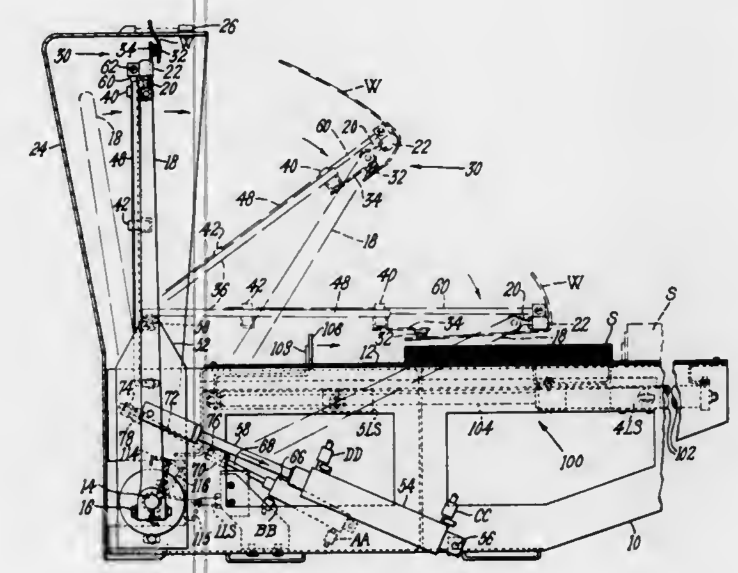
Marlin E. Bird, 3417 Gabriel Ave., Zion, Ill. 60099
Filed Jan. 18, 1974, Ser. No. 434,662
Int. Cl. B23q *104*
U.S. Cl. 269—69 **7 Claims**



1. A device for holding cutting tools such as form tools and the like, while sharpening the same, the device comprising:
a base frame having a generally flat base portion and a generally transverse portion extending outwardly from said base portion;
a holding member having a generally flat front face and an acutely angled abutment wall extending along one side of said front face, said wall being adapted to receive one side of a dovetail portion of the cutting tool, said holding member having a transverse extension for contacting the transverse portion of said base frame;
means for pivotably connecting said transverse extension to said transverse portion to enable said front face to be angularly adjusted relative to said base frame;
means for releasably locking said front face of said holding member in one of several predetermined angular positions, said locking means comprising a cooperative set of apertures in each of said base frame transverse portion and said holding member transverse extension and pin means adapted to be inserted therein, each of said sets being on a different radius from the pivotable connection so as to prohibit said pin means from being inserted into more than one aperture of said holding member transverse extension, once said pin means has been inserted into an aperture in said base frame transverse portion; and,
means associated with said holding member for engaging the opposite side of said dovetail portion of the cutting tool and urging said dovetail portion toward said abutment wall to securely hold the tool in the device.

3,848,866
MACHINES FOR STACKING LIMP WORK PIECES

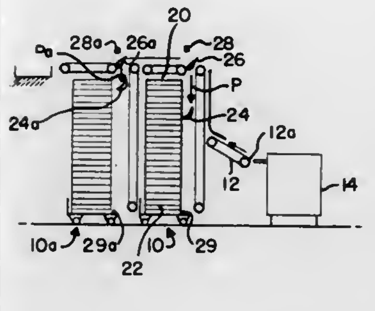
George A. Fuller, Jr., Wenham; Wilfred L. Langevin, Beverly; Carlton G. Lutts, Salem, and Geoffrey C. Neiley, Jr., North Reading, all of Mass., assignors to USM Corporation, Boston, Mass.
Filed Mar. 22, 1972, Ser. No. 236,878
Int. Cl. B65h *29/08*
U.S. Cl. 271—63 R **9 Claims**



1. A machine for stacking flexible work pieces, comprising a relatively movable wiper blade and hold-back means, the wiper blade being carried by an oscillatory lever and the hold-back means being carried by an oscillatory member operable substantially in phase with said lever, the turning radius of the blade being greater than that of the hold-back means, means for jointly moving the blade and hold-back means, respectively, between a work receiving position and a delivery position wherein each piece is to be stacked, and mechanism for causing the hold-back means initially to engage each work piece at said work receiving position and then relatively advance the wiper blade lengthwise of the work piece and away from the hold-back means during their movement toward said delivery position to cause the transferred work piece to be outspread lengthwise for deposit on the stack.

3,848,867
NO-COUNTER SORTER-STACKER

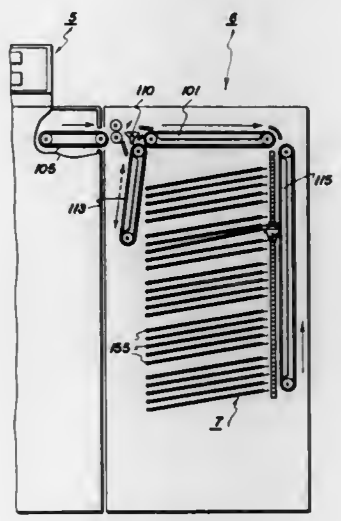
Dale R. Johnson, Seattle, Wash., assignor to Norfin, Inc., Seattle, Wash.
Filed Sept. 20, 1972, Ser. No. 290,625
Int. Cl. B65h *29/60*
U.S. Cl. 271—173 **4 Claims**



1. In a sorting-stacking apparatus having a plurality of successive stations for receiving sheets of paper or the like and sheet distributing means including a sheet deflector movable along said stations for inserting the sheets into said stations and adapted to receive the sheets from a supply capable of feeding a flow of sheets along a path to the distributing means with a time spacing between each successive sheet being at a predetermined generally uniform first time interval, the improvement comprising:
control means for said sheet deflector for directing the insertion of the sheets into predetermined stations, said control means including means operative during said flow of sheets for detecting a second time interval after passage of a sheet greater than said first time interval and in response to said detection directing the insertion of the next sheet into a different station;
said control means including means for directing the insertion of all of a run of sheets into one station for stacking a plurality of sheets into said station before inserting a sheet into a subsequent station; and stack control means responsive to said means for detecting said second time interval for directing the insertion of the sheets after said second time interval into the next successive station;
said control means including means for directing the insertion of individual sheets into successive stations starting with an initial station and sort control means responsive to said means for detecting said second time interval for directing the insertion of the next sheet after said second time interval into said initial station;
and manually operable switch means for selectively actuating said stack or sort control means.

3,848,868
SHEET SORTING APPARATUS

Denis J. Stemmle, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Mar. 9, 1973, Ser. No. 339,805
Int. Cl. B65h *29/60*
U.S. Cl. 271—173 **5 Claims**



1. Sorting apparatus comprising:
a frame;
an array of tray members arranged in a column each pivotally supported by said frame at one end thereof on a pivot axis;
conveyor means for conveying sheets past an inlet of the array of tray members; and
actuating means operatively associated with said conveyor means and moving in the same direction therewith, said actuating means including camming means rotatable on an axis extending in the direction which said actuating means is moved for pivoting each of said tray members into an opened position and deflecting a sheet into the opened tray member at predetermined positions along the array of tray members.

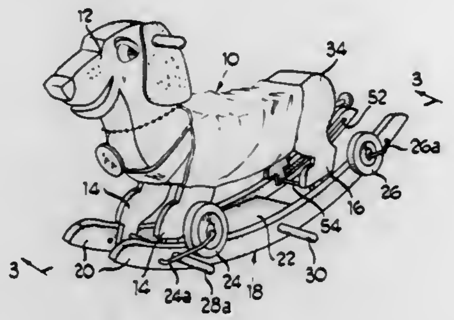
3,848,869
EXTENSIBLE RIDING TOY

Howard J. Morrison, Deerfield, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 17, 1973, Ser. No. 324,343

Int. Cl. A63g *17/00*

U.S. Cl. 272—52.5 **19 Claims**



1. A riding toy, comprising: a body portion simulating an animal having leg means movably connected to a ground engaging base structure, the body portion of the simulated animal being elongated to provide means on which a child may sit and the base structure having means providing for movement of the toy relative to the ground, said body portion including a plurality of relatively longitudinally movable parts with at least one of the parts being movable relative to said base structure, and with leg means on said one part being connected to the base structure for movement relative thereto to accommodate the relative movement of said body parts, and means for adjusting the length of said body portion for accommodating one or more riders on the toy.

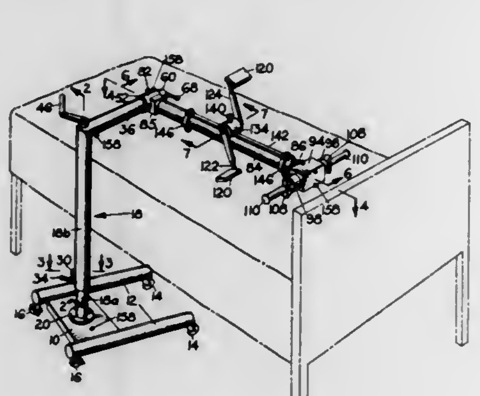
3,848,870
EXERCISE APPARATUS ON PEDESTAL FOR PATIENTS

Lloyd L. Craig, 1024 Murry Dr., The Dalles, Oreg. 97054

Filed Feb. 12, 1973, Ser. No. 331,355

Int. Cl. A63b *17/00, 23/00, 23/04*

U.S. Cl. 272—67 **10 Claims**



1. Exercise apparatus for patients comprising a base, a pedestal on said base, a substantially horizontal lateral extension on the upper end of said pedestal having a free end, an arm secured to said lateral extension adjacent to the free end of the latter whereby to be offset laterally from said pedestal, said arm extending at right angles to said lateral extension, and exercising means on said arm for engagement by a patient in a lying or sitting position, said exercising means comprising a head on said arm, laterally projecting handles pivotally connected to said head and having cam ends engaged eccentrically against said head, and spring means in said head urging said cam ends against said head whereby an exercising force is required to pivot the handles relative to the head in the eccentric rotation of said cam ends.

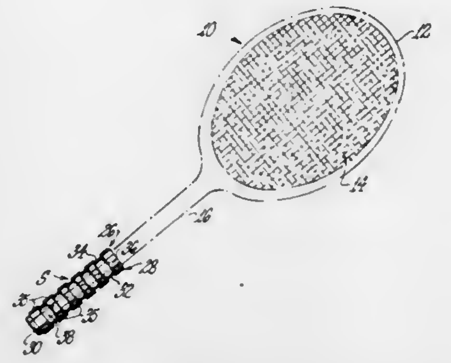
3,848,871
NON-SLIPPING HAND GRIP FOR TENNIS RACKET AND THE LIKE

Alvin H. Sweet, 5168 Wood Ave., Apt. B, South, South Gate, Calif. 90280, and Don A. Sweet, 8610 Graham Ave., Los Angeles, Calif. 90002

Filed Apr. 19, 1973, Ser. No. 352,647

Int. Cl. A63b *49/00;* **B62k** *21/26*

U.S. Cl. 273—75 **4 Claims**



1. In combination, a sports implement having a longitudinal handle formed with respective wide sides and narrow sides, and a hand grip attachment therefor comprising wrap-around sheet material disposed lengthwise snugly overlying a hand grip portion of the handle and carrying a longitudinal row of manually-compressible suction cups extending only along opposite narrow sides thereof, said sheet material being formed with spaced-apart openings overlying at least one of said wide sides between the rows of suction cups and being of sufficient size to enable a user's grasped hand to directly contact the underlying handle therethrough and thus in conjunction with the opposite rows of manually compressed suction cups to maintain a non-slipping grip on the handle.

3,848,872
BILLIARD TYPE TABLE WITH ROTATABLE DISK ON PLAYING SURFACE HAVING AT LEAST ONE BALL APERTURE THERETHROUGH

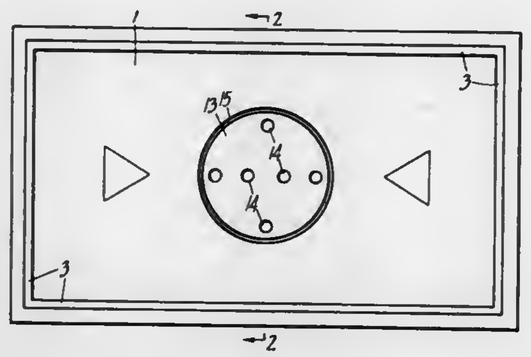
George Velissaris, 235 Chruch St., Richmond Victoria, Australia

Filed June 7, 1973, Ser. No. 367,791

Claims priority, application Australia, June 7, 1972, 9238/72

Int. Cl. A63d *15/00*

U.S. Cl. 273—125 R **10 Claims**



1. A billiard type table comprising, in combination, means forming a substantially planar playing surface; cushion means extending along the periphery of said playing surface; said playing surface having a circular aperture therein spaced from said cushion means; a circular disk rotatably mounted in said aperture, said disk normally being stationary during play on said playing surface, said disk further being mounted for stepwise rotation about a vertical axis, with its upper surface coplanar with said playing surface to form a movable part of said playing surface; said disk having at least one aperture therein, eccentric to its axis of rotation, for movement of a playing ball therethrough; means, including a selectively manually actuable operating member, selectively operable to rotate said disk stepwise to position through a fixed increment of 360° said at least one aperture at different locations in said playing surface each time said member is actuated; and releasable latch means operable, responsive to each such stepwise rotation of said disk, to latch said disk with said at least one aperture in its new location in said playing surface.

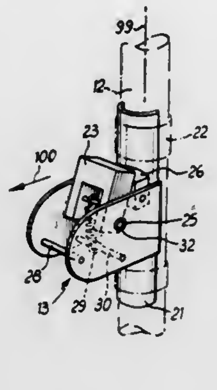
3,848,873
INDICATORS FOR INDICATING ACCELERATIONS IN SPORTS EQUIPMENT WHICH ARE SWUNG IN USE

David Lees Linning, 26 Cinnamon Ln., Fearnhead Warrington, England

Filed Mar. 26, 1974, Ser. No. 454,903

Int. Cl. A63b *69/36*

U.S. Cl. 273—186 A **8 Claims**



1. In combination with the shaft of an article of sports equipment which is swung in use, a lightweight indicator for indicating predetermined acceleration of the shaft, said indicator comprising a body part, a movable member part movable in the body part in response to accelerations of the shaft in directions transverse to the axis of the shaft during the swinging of the shaft, a stop member for arresting the movable member part, means on the body part for secure and demountable attachment of the indicator on said shaft and means for controlling the movement of said movable member part so that it moves, at a threshold level of the transverse acceleration, from a first rest position, through a neutral equilibrium position to a second rest position at said stop member and thereby produces mechanically an audible signal on impact with said stop member.

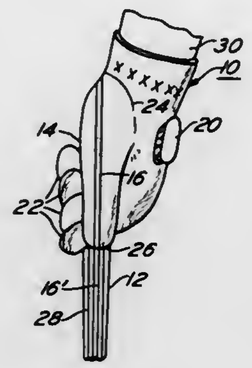
3,848,874
GOLF GLOVE, SYSTEM AND METHOD

Vance V. Elkins, Jr., 42 Hampton Dr., Freehold, N.J. 07728

Filed Oct. 25, 1972, Ser. No. 300,440

Int. Cl. A63b *69/36*

U.S. Cl. 273—183 B **1 Claim**



1. A method for aiding an individual in properly gripping a golf club with a golf glove comprising the steps of

a. applying sighting indicia along a substantial portion of the length of the thumb portion of said golf glove,

b. said individual gripping a grip portion of the golf club with a hand wearing said golf glove,

c. observing the individual normally gripping said grip portion with the gloved hand,

d. positioning the individual's gloved hand to grip said grip portion of said golf club in a proper swing position,

e. providing removable indicia,

f. aligning said removable indicia with said sighting indicia and affixing said removable indicia to said grip portion, and

g. thereafter said individual gripping said club with the gloved hand and while sighting along a longitudinal extension of the golf club shaft aligning said sighting indicia with the removable indicia whereby the individual properly grips the club.

3,848,875
AUTOMATIC RECORD PLAYER

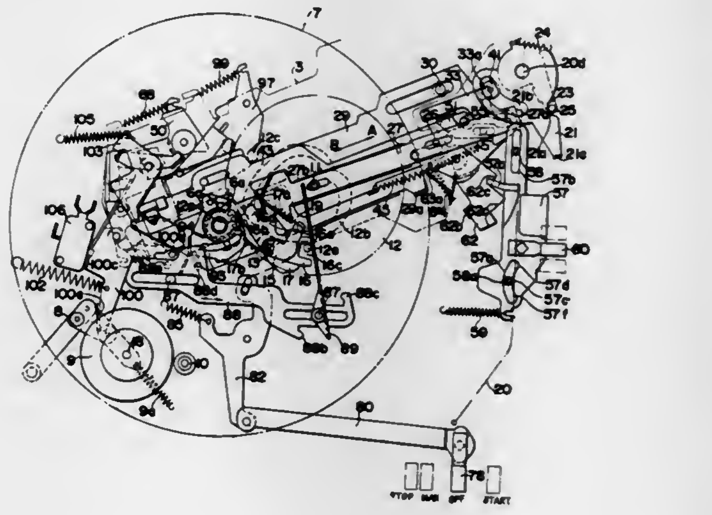
Seizo Miyoshi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 30, 1972, Ser. No. 310,708

Claims priority, application Japan, Dec. 6, 1971, 46-98781; Dec. 6, 1971, 46-98782; Dec. 6, 1971, 46-98783; Dec. 10, 1971, 46-100393; Dec. 10, 1971, 46-100394; Dec. 11, 1971, 46-100482; Dec. 7, 1971, 46-115157[U]; Dec. 7, 1971, 46-115158[U]; Dec. 11, 1971, 46-116972[U]; Dec. 9, 1971, 46-117075[U]; Dec. 9, 1971, 46-117076[U]; Dec. 9, 1971, 46-117078[U]; Dec. 9, 1971, 46-117079[U]; Dec. 8, 1971, 46-117082[U]; Dec. 8, 1971, 46-117083[U]; Dec. 8, 1971, 46-117084[U]; Dec. 8, 1971, 46-117085[U]

Int. Cl. G11b *17/08*

U.S. Cl. 274—10 R **8 Claims**

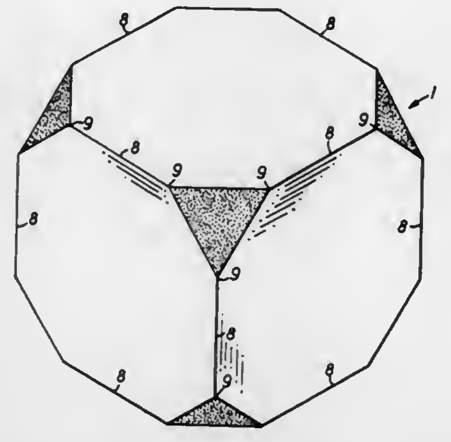


1. In an automatic record player, the combination which comprises a tonearm including a pickup stylus interchangeably carried thereby; a turntable; a turntable drive system comprising an electrical motor for rotating said turntable in one predetermined direction when said motor is operated; an operational mode control including a control knob manually movable to any one of start, manual and stop positions; an electrical switch for connecting a suitable power source to said motor; means rotatable between first and second positions and including a spring element for normally urging said rotatable means to said first position in which condition said switch is opened, said rotatable means being rotated to the second position when said control knob is moved either to the start position or to the stop or manual position to close said

switch thereby to operate said motor; pivotable means rotatable together with said tonearm connected therewith by means of a tonearm shaft and having a projection; a drive plate reciprocatable and including a cam member rigidly carried thereby at one end thereof; transmission means for transmitting a rotational force of said turntable to said drive plate for causing said drive plate to move in one direction during a first portion of an operation of said transmission means; a lifting rod having a lower end slidably engaging said cam member and an upper end for supporting said tonearm and operable in such a manner that, when said drive plate is moved in said one direction, said lifting rod shifts said tonearm upwardly and, when said drive plate is moved in said opposite direction, said lifting rod is allowed to downwardly shift; a record size selector comprising a selector knob movable among first, second and third detent stop positions, that are respectively associated with standardized diameters of 7, 10 and 12 inches of commercially available records, and at least one positioning plate having stepped edges corresponding to said detent stop positions of said selector knob, said positioning plate being pivotable in response to the movement of said drive plate in said one direction thereby to permit any one of said stepped edges, selected by the setting of said selector knob to the corresponding one of the detent stop positions, to be positioned in the path of angular travel of said projection of said pivotable means for enabling the pickup stylus to be automatically engaged in the lead-in groove of a record to be played; a detector plate relatively slidably carried by said drive plate, said detector plate being movable together with said drive plate when said control knob is moved to the stop position past the manual position and capable of undergoing a relative motion with respect to said drive plate, when said control knob is moved to the start position, in such a way that, after said drive plate is moved in a predetermined distance in said one direction, said detector plate is held stationary and said drive plate is permitted to further move in said one direction, said detector plate including a spring element for urging said detector plate in one direction whereby, after said drive plate has been moved a predetermined distance is said opposite direction said detector plate commences to move together with said drive plate further moving in said opposite direction; escapement means operable, when the control knob is moved to the start position to cuase said transmission means to undergo one cycle of the operation thereof, to rotate the tonearm in one direction from the resting position to another position immediately above the lead-in groove of the record to be played in response to the relative motion of said detector plate with respect to said drive plate, said tonearm after having played said record being returned to the resting position by said escapement means when said drive plate is moved in said one direction during a subsequent cycle of operation of said transmission means caused upon entry of the pickup stylus in the lead-out groove of said record, said escapement means being operatively carried by said drive plate adjacent to said cam member and also operable, when the control knob is moved to the stop position past the manual position while the record is being played, to immediately return said tonearm to the resting position in response to the movement of said drive plate in said one direction caused through said transmission means by manually moving said control knob to said stop position; means for causing the relative motion between said detector plate and said drive plate only when said control knob is moved to said start position; means for locking said rotatable means in said second position when said rotatable means is rotated to said second position; and a stop plate carried by the detector plate and frictionally rotatable between first and second positions, said stop plate being normally maintained in the first position when the relative motion between the detector plate and the drive plate does not take place and rotated to the second position when said relative motion takes place, said stop plate in said second position being capable of engaging with said locking means upon completion of the movement of said drive plate in said opposite direction thereby permitting said switch to be turned off with said rotatable means rotated to said first position.

3,848,876
SCANNING ELEMENT

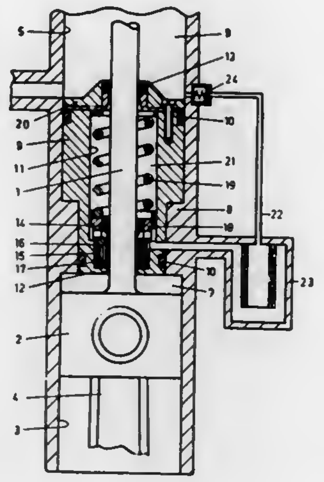
Gunter Joschko, and Hans-Jurgen Winter, both of Berlin, Germany, assignors to Ted Bidplatten Aktiengesellschaft AEG-Telefunken, TELDEC, Zug, Switzerland
Filed Sept. 29, 1972, Ser. No. 293,514
Claims priority, application Germany, Sept. 30, 1971, 2149439; Sept. 30, 1971, 7137567
Int. Cl. G11b *3/46*
U.S. Cl. 274—38 **17 Claims**



1. In a signal scanning means for scanning of signals stored on an information carrier which is moving with a velocity relative to the signal scanning means, the combination of a transducer body, and a scanning element attached to the transducer body for scanning signal-storing undulations on the surface of the information carrier, the scanning element comprising a diamond having natural crystal faces and at its tracing portion a rounded intersection of at least two natural crystal faces and at the intersection a sharply retreating trailing edge.

3,848,877
SEAL FOR PISTON ROD OF STIRLING ENGINE

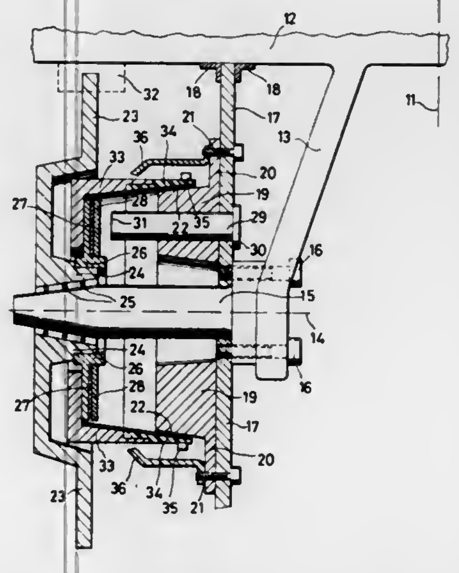
John Ingemar Bengtsson, Eslov; Sven Anders Samuel Hakansson, Malmo; Sven Gunnar K:son Lundholm, Lund, and Lars Lonnberg, Bara, all of Sweden, assignors to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmo, Sweden
Division of Ser. No. 329,710, Feb. 5, 1973. This application Jan. 21, 1974, Ser. No. 435,186
Int. Cl. F16j *15/24;* **F16k** *39/00*
U.S. Cl. 277—3 **2 Claims**



1. A Stirling cycle hot gas engine having a sealing device about a movable piston rod in a region extending between a first working gas filled chamber at high cyclic gas pressure and a second crankcase chamber with oil therein to lubricate said piston rod and having gas therein at lower pressure, said sealing device comprising in combination, a resilient synthetic plastic ring about said piston rod in said region conically tapered away from said rod on both ends, a pair of complementary metal ring wedges tapered toward said rod and mating with the ring on opposite sides thereof to urge said ring toward said rod thereby to engage it at a position lubricated by said oil, spring means loading the rings in the axial direction of the rod, and a gas flow return conduit including a one way valve connecting said region to said high pressure chamber to provide a flow path for gases toward said high pressure chamber and tending to maintain in said region a gas pressure at the lower cyclic pressure.

3,848,878
DEVICE FOR PRODUCING A SERIES OF ELECTRICAL PULSES, WHOSE FREQUENCY IS PROPORTIONAL TO THE SPEED OF ROTATION OF THE WHEEL OF A MOTOR VEHICLE

Friedrich Mayer, Augsburg, Germany, assignor to Allegemeine Industrie Commerz, Munchen, Germany
Filed Sept. 25, 1973, Ser. No. 400,531
Claims priority, application Germany, Oct. 2, 1972, 2248274
Int. Cl. F16j *15/16*
U.S. Cl. 277—25 **2 Claims**

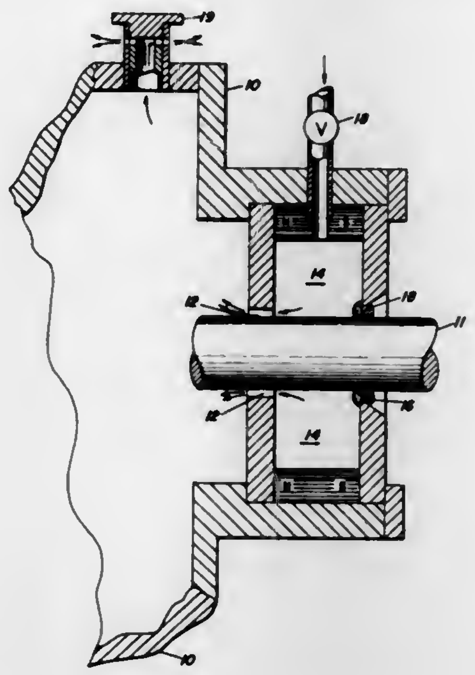


1. A device for producing a series of electric pulses, whose frequency is proportional to the speed of rotation of a motor vehicle wheel having a brake element associated therewith and which is to be monitored as regards its braking behavior, characterized by a concentric ring, which is fixed to the chassis of the vehicle and is concentric to the wheel axis, the ring having a conical outer surface, a sleeve-shaped body which is also concentric with respect to the wheel axis and which is fixed to the brake element, and a ring which consists of wear-resistant elastic plastics material and is fixed at the edge of the sleeve-shaped body, the latter ring having a conical inner surface, and having on its outer surface a number of centrifugal weights in such a manner that the inner surface of the plastics material ring rubs or engages the conical outer surface in the case of low speeds of rotation of the wheel, while in the case of higher speeds of rotation of the wheel it moves clear of the outer surface.

3,848,879
SHAFT SEAL

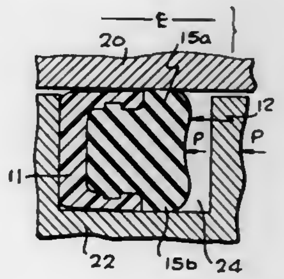
Wayne A. Hudgins, Hampton, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Dec. 19, 1972, Ser. No. 316,646
Int. Cl. F16j *9/00;* **E21b** *33/00*
U.S. Cl. 277—80 **4 Claims**

1. In combination with a gearbox/transmission housing or the like containing a liquid lubricant and having a shaft extending from within; a ferrofluid magnetic sealing means interposed between the shaft and housing and encircling the shaft at the point of exit from the housing; a pressurized air supply cavity spaced axially inward next to the said ferrofluid magnetic sealing means; and a controlled clearance labyrinth seal spaced axially inward next to the pressurized air supply cavity, thereby preventing the said internally contained liquid lubricant from contacting the said ferrofluid magnetic sealing means.



3,848,880
FLUID SEAL

Charles L. Tanner, Los Angeles, Calif., assignor to Tanner Engineering Company, Los Angeles, Calif.
Filed June 9, 1972, Ser. No. 261,267
Int. Cl. F16j *9/00*
U.S. Cl. 277—176 **9 Claims**



1. A fluid seal for sealing between two members having contiguous surfaces, one of which has an annular groove juxtaposed to the other surface, said seal comprising:

a first continuous annular sealing ring positioned in the groove and having a substantially U-shaped cross sectional configuration including a body portion positioned to abut the low pressure side of the groove and a pair of substantially parallel leg portions positioned repectively adjacent the base of the groove and the other surface with no initial interference; and

a second coaxial continuous annular sealing ring having first and second body portions made of resilient flowable material positioned in said groove, said first body portion being positioned in engaging relationship between said first ring's leg portions, said second body portion having a greater radial width in the free state than the radial width of the first annular ring, said second body portion including projections extending in their free state sufficiently beyond said first ring's leg portions such that when installed said projections bear respectively against the other surface and the base of the groove and are exposed to the high pressure side of the groove, said legs normally being out of contact with the surfaces, said legs being constructed to spread progressively into full engagement with said surfaces upon said resilient flowable material of said second ring being forced by fluid pressure between said legs.

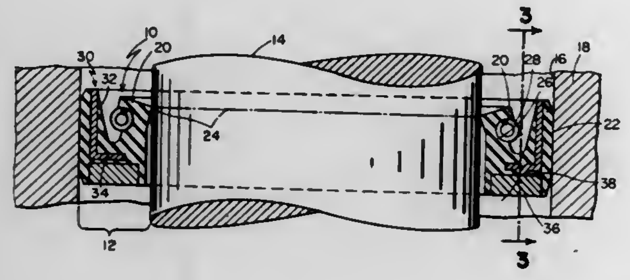
3,848,881
HIGH PRESSURE SEAL

Arthur H. Ginn, Laconia, N.H., assignor to International Packings Corporation, Bristol, N.H.

Filed Oct. 3, 1973, Ser. No. 402,979

Int. Cl. F16j *15/32*

U.S. Cl. 277—181 **3 Claims**



1. A radial seal for shaft-to-bore sealing against a high pressure fluid medium comprising an integral annular body formed from an elastomeric material having a maximum radial dimension at least as great as the shaft-to-bore gap; a first rigid reinforcing member comprising a generally axial first portion at least partially enclosed by said body and an integral second portion enclosed by said body and projecting radially inwardly from said first portion; and a second rigid reinforcing member at least partially enclosed by said body and including an annular surface facing said first reinforcing member second portion, said first reinforcing member second portion contacting said surface at a plurality of spaced apart locations thereby providing spaces therebetween which are filled with said elastomeric material.

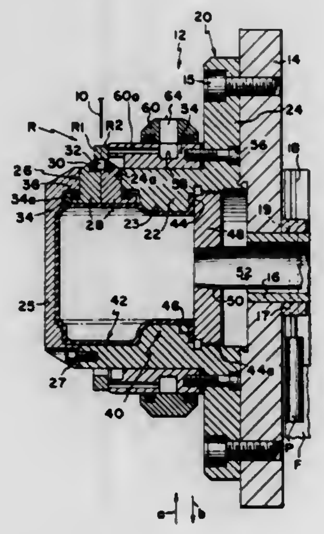
3,848,882
RING CHUCKING APPARATUS

Edward F. Sullivan, 4465 Bradford St., Saginaw, Mich. 48603

Filed Nov. 20, 1972, Ser. No. 308,178

Int. Cl. B23b *31/10, 31/30*

U.S. Cl. 279—4 **13 Claims**



1. Ring chucking apparatus for holding piston rings and the like, to be axially divided into at least two ring parts by a cutting blade at a ring cutting station, comprising:

a support body;

a plurality of circumferentially spaced, ring holding chuck jaws mounted on each body for movement between radially inner, ring receiving and releasing positions in which an undivided ring is received and divided ring parts are released, and radially outer ring gripping positions, each of said chuck jaws including a pair of axially spaced independently movable jaw portions, engageable with axially opposite end portions of a ring to be divided, said jaw portions being separated by an axial gap for receiving the cutting blade after it has cut a ring into two ring parts; and

radially expansible and contractible means, movable between collapsed and expanded conditions, for moving said chuck jaw portions between said radially inner ring receiving and releasing positions and said radially outer ring clamping positions.

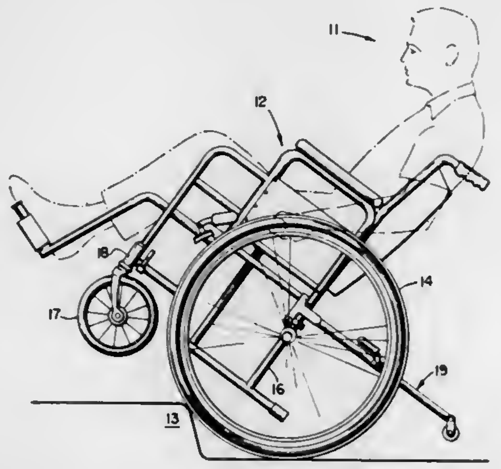
3,848,883
WHEELCHAIR ANTI-TIP APPARATUS

Stephen J. Breacain, 3260 Delaware St., Oakland, Calif. 94602

Filed Aug. 8, 1973, Ser. No. 386,736

Int. Cl. B62b *5/02*

U.S. Cl. 280—5.32 **15 Claims**



1. In combination with a wheelchair having main rear wheels, an anti-tip apparatus comprising:

horizontal member means secured to the frame of said wheelchair adjacent the axes of rotation of said wheels and extending laterally and rearwardly of said wheels of said wheelchair in normally parallel relation to a ground surface; and

extension member means slidably secured to said horizontal member means and extensible to a position rearwardly of said wheels for preventing excessive rearward tipping of said wheelchair.

3,848,884
WHEELED TROLLEY

Walter M. Lines, Selsfield House, East Grinstead, Sussex; Alfred N. Alsop, 227 London Rd., Morden, Surrey, and Edgar A. Ross, "Hurdles" Granvilk Rd., Limpsfield, all of England

Filed Dec. 29, 1972, Ser. No. 319,460

Claims priority, application Great Britain, Jan. 3, 1972, 147/72

Int. Cl. B62b *11/00*

U.S. Cl. 280—36 B **11 Claims**

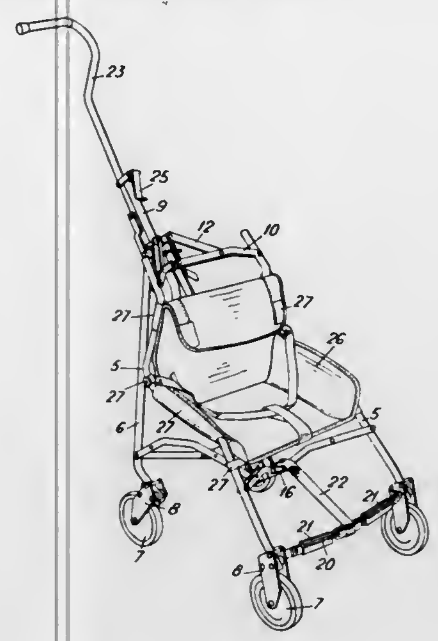
1. A folding wheeled frame for a pushchair comprising an upwardly extending backbone,

two front and two rear upwardly extending supports, each of which carries a wheel at its lower end,

separate pivotal links connecting each of said supports adjacent their lower ends to a first fixed point near the lower end of said backbone,

additional separate pivotal links connecting each of said front supports to a second fixed point on said backbone above the lower end of said backbone,

a mounting movable longitudinally along said backbone above said second fixed point and



a pivotal connection between each of said supports and said mounting,

whereby upward movement of said mounting relative to said fixed points will draw said supports upwardly and inwardly toward said backbone as said links swing about said fixed points.

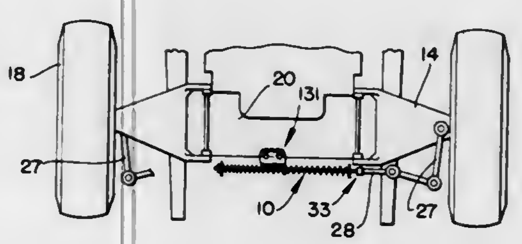
3,848,885
STABILIZER APPARATUS FOR ROAD VEHICLES

Fred W. Hefren, 3814 Eisenhower, Odessa, Tex. 79762

Filed Dec. 10, 1973, Ser. No. 422,998

Int. Cl. B62d *7/08*

U.S. Cl. 280—94 **10 Claims**



1. In a road vehicle, provided with a running gear in the form of a wheel suspension system with one of the wheels being a steering wheel mounted for horizontal turning about a turning axis by a pitman arm connected thereto, and having a steering system which includes a rod assembly connected for moving the pitman arm, the improvement comprising:

a steering gear stabilizer apparatus for resisting turning movement of the steering wheel about the turning axis; said stabilizer apparatus comprising a single fixed mounting bracket, a shaft having opposed ends, compression springs, a universal joint, spring retainers, and a movable mounting bracket;

means by which said shaft is reciprocatingly received in supported relationship respective to said fixed mounting bracket;

said springs being spaced from one another by said fixed mounting bracket;

said spring retainers being affixed to opposed ends of said shaft in a position to bias each of said springs towards said fixed mounting bracket;

said universal joint connecting one end of said shaft to said movable bracket;

means by which said movable mounting bracket is affixed to said steering system; means by which said fixed mounting bracket is connected in fixed relationship with respect to said movable bracket;

so that turning movement of the wheel about the turning axis is resisted by one of said compression springs.

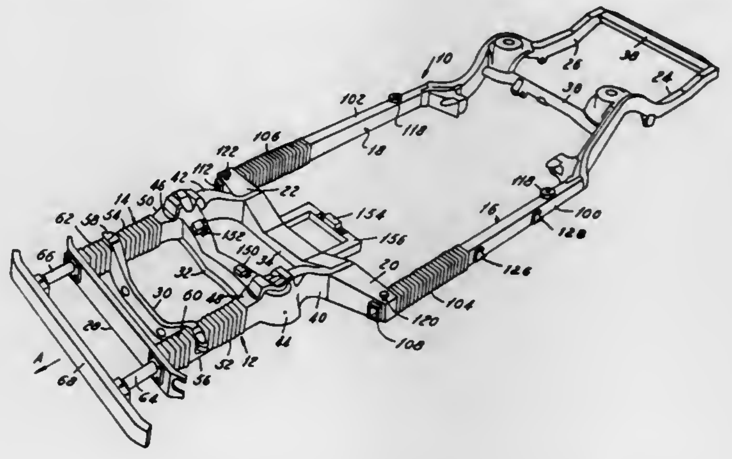
3,848,886
BODY SUPPORT AND IMPACT ABSORBING FRAME SYSTEM FOR A MOTOR VEHICLE

James R. Feustel, Taylor; Kenneth L. Hoyt, Farmington, and Jonas Valukonis, Detroit, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 5, 1972, Ser. No. 295,379

Int. Cl. B62d *21/14*

U.S. Cl. 280—106 R **19 Claims**



1. An energy absorbing system for a motor vehicle comprising:

a vehicle frame assembly having plastically deformable energy absorbing sections,

a vehicle body,

primary and secondary mounting means supporting said body on said frame assembly,

said primary mounting means including resilient elements constructed to attenuate the transmission of noise and vibration from said frame assembly to said vehicle body, said secondary mounting means being inoperative during normal operation of said vehicle,

said primary mounting means being deflectable under the inertia load of said body in the event a major impact is imposed upon said frame assembly,

said secondary mounting means being constructed to hold said body on said frame assembly upon deflection of said primary mounting means whereby said inertia load of said body is imposed upon said energy absorbing sections of said frame assembly,

said secondary mounting means including a plurality of pairs of juxtaposed spaced abutment means,

one of said abutment means of each of said pair being connected to said frame assembly and the other abutment means of each of said pair being connected to said body, said pairs of abutment means being constructed to limit the longitudinal displacement of said body with respect to a portion of said frame assembly when said primary mounting means deflects under said inertia load.

3,848,887
INFLATABLE SAFETY BELT

John William Fox, Ashtead, England, assignor to Project Laboratories Limited, London, England

Filed Apr. 25, 1972, Ser. No. 247,491

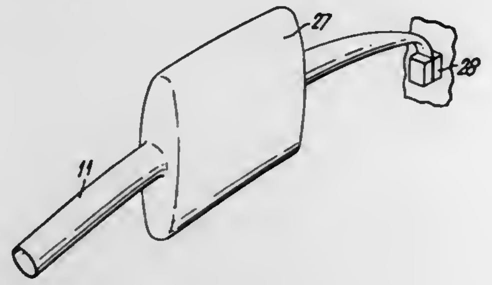
Claims priority, application Great Britain, Nov. 15, 1971, 53014/71

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **6 Claims**

1. A restraint system for restraining an occupant of a vehicle in the event of sudden deceleration, said system comprising:

at least one hollow inflatable strap member in the form of a hose having a closed hose wall, said strap member being adapted to be secured at its ends and to extend across part of the occupant of the vehicle, said hose being formed of elastic material having greater elasticity in the radial direction than in the longitudinal direction, whereby said hose will expand in width on inflation to a width substantially greater than its uninflated width in order to provide cushioning for the occupant while at the same time expanding substantially not at all in the longitudinal direction;



- gas supply means adapted to supply gas to inflate the hose; and
- control means for controlling the supply of gas from the gas supply means, said control means being arranged to respond to an impact causing sudden deceleration and to operate said gas supply means independently of tension in said inflatable strap member.

3,848,888
SEATBELT RETRACTOR

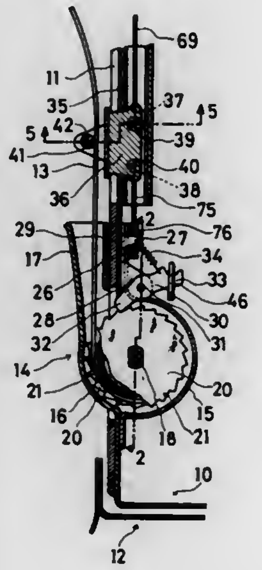
Kenichi Kazaoka, Nagoya; Kimiharu Hirose, Oobu; Hisao Matsumoto, Chita, and Yasuo Takeshita, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi Pref., Japan

Filed Sept. 25, 1972, Ser. No. 292,152

Claims priority, application Japan, Sept. 25, 1971, 46-74914

Int. Cl. B60r *21/02*

U.S. Cl. 280—150 SB **5 Claims**



1. A seatbelt retractor for a vehicle having a vehicle body and a vehicle door hinged thereto comprising a seatbelt reeling-up means mounted on said door and having a rotatable shaft biased in a belt retracting direction, a seatbelt securable to said body at one end and mounted on said shaft at the other end, and a belt-extending locking means movable in response to the opening and closing movement of said door so as to automatically lock the movement of said reeling-up means when said door is closed, said locking means comprising ratchet wheel means rotatably mounted on said shaft, pawl means engageable with said ratchet wheel means, control means mechanically connected to said pawl means thereby controlling engagement of said pawl with said ratchet wheel means, and mechanical means connected to said control means and adapted to releasably engage the vehicle body in association with the movement of said door, whereby said mechanical means actuated by disengagement from the vehicle body in response to the opening movement of said door controls said control means to thereby disengage said pawl from said ratchet wheel means and said mechanical means actuated by engagement with said vehicle body in response to the closing movement of said door controls said control means to thereby complete engagement of said pawl with said ratchet wheel means.

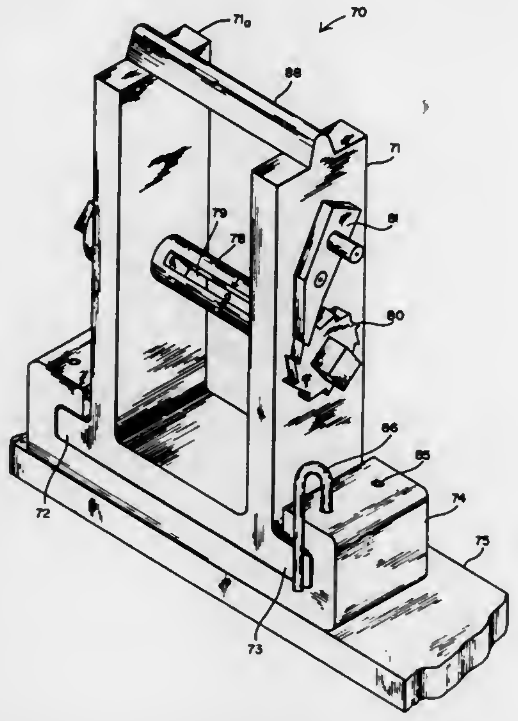
3,848,889
LOAD FASTENERS

Clarence C. Sharrow, 121 11th Ave., South St. Paul, Minn. 55112

Continuation-in-part of Ser. No. 260,248, June 6, 1972, abandoned, which is a continuation-in-part of Ser. No. 120,546, March 3, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 397,643

Int. Cl. B60p *7/00*

U.S. Cl. 280—179 A **8 Claims**



1. A heavy duty load fastening device, comprising:

- a housing adaptable for detachably mounting on a carrier, said housing including a first side member and a second side member, said first side member spaced from said second side member to provide an opening between said first side member and said second side member for a chain sprocket wheel;
- said chain sprocket wheel having a peripheral surface with a plurality of recesses therein for receiving and positively engaging the links of a chain, said chain sprocket wheel rotatably mounted in the space between said first side member and said second side member;
- a chain holding member, said chain holding member mounted on said first side member and said second side member, said chain holding member located in the space between said first side member and said second side member, said chain holding member having a peripheral surface for holding said chain links in an edgewise position, said chain holding member spaced sufficiently close to said peripheral surface of said sprocket wheel to hold at least one of said chain links securely in at least one of said plurality of recesses in said chain sprocket wheel;

- a ratchet member rigidly connected to said sprocket and rotatably mounted on said housing; and
- a pawl mounted on said housing for forming interlocking engagement with said ratchet member to thereby prevent rotation of said ratchet member and said sprocket wheel in at least one direction when said pawl is in interlocking engagement with said ratchet member.

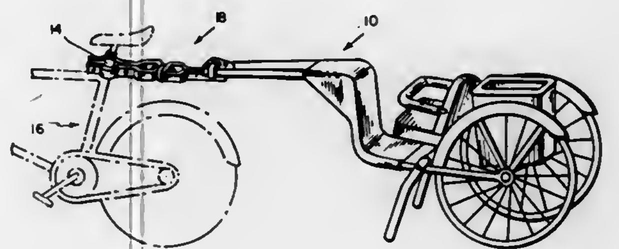
3,848,890
COUPLING FOR CONNECTING TANDEM TRAILER TO BICYCLE

Alexander D. MacAlpine, 50 N. Main St., Natick, Mass. 01760

Filed Feb. 1, 1973, Ser. No. 328,523

Int. Cl. B60d *1/12*

U.S. Cl. 280—204 **7 Claims**



1. A coupling for connecting the loop at the end of the draw bar of a tandem trailer to the seat post of a bicycle frame comprising a clamp adapted to be clamped to the seat post, a link pivotally connected at one end to the clamp for rolling about a roll axis, a post fixed to the other end of the link on which the loop is adapted to be pivotally mounted for swivel movement, a jaw comprising a part pivotally mounted on the link adjacent to post, said jaw having a part at its end for engagement with the loop containing a hole for receiving said post and a fail safe hook disposed at the inner side of the loop and means mounted on the jaw for releasably holding said part in engagement to loop, with the hook disposed at the inner side of the loop and with the hole engaged with the post.

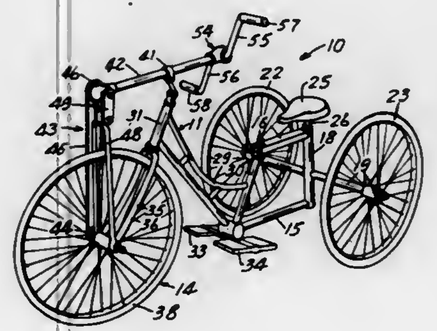
3,848,891
FRONT WHEEL DRIVE CYCLE

Angelo James Vittori, 529 Northwest 9th St., Chisholm, Minn. 55719

Filed Aug. 6, 1973, Ser. No. 385,980

Int. Cl. B62m *1/14*

U.S. Cl. 280—250 **11 Claims**



1. A cycle comprising:

- a frame;
- rear wheel means rotatably mounted on a rear portion of the frame;
- front wheel means, means mounting the front wheel means on a front portion of the frame, said means mounting the front wheel means being rotatable about a generally upright axis to steer the cycle;
- seat means mounted on the frame;
- tiller means releasably and adjustably secured to the means mounting the front wheel means, said tiller means being longitudinally adjustable relative to said mounting means and having a first portion extended in a forward direction and a second portion extended in a rearward direction from said mounting means;
- support means connected between the first portion of the tiller means and the means mounting the front wheel means, said support means and said tiller means being of fixed length.
- drive means having a first drive linkage drivably connecting the front wheel with the forward portion of the tiller means and a second drive linkage connecting the first drive linkage and the rear portion of the tiller means, and means for imparting torque to the rear portion of the second drive linkage.

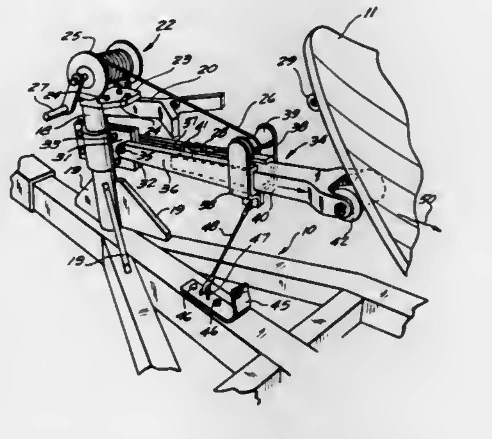
3,848,892
BOAT TRAILER ATTACHMENT

Gerard S. Reder, 467 North St., Pittsfield, Mass. 01201

Filed June 18, 1973, Ser. No. 371,110

Int. Cl. B60p *3/10*

U.S. Cl. 280—414 R **9 Claims**



1. An attachment for use with a boat trailer having an upstanding post, a winch mounted on said post, and a rope wound on the winch, said attachment comprising:

- a. an elongated pusher arm longitudinally extensible and retractable, said pusher arm having two ends movable toward and away from each other in the longitudinal direction of said pusher arm,
- b. means for coupling an end of said arm to the post, the other end of said arm being adapted for engagement with the bow of a boat mounted on the trailer,
- c. means for securing an end of the rope to said arm, and
- d. rope support means spaced from said post for reversing the direction of the rope between its said end and said winch,

whereby winding the rope on to the winch causes said rope end to apply a force to said arm in a direction away from the post so that said arm is extended and its said other end can push a boat rearwardly with respect to the trailer.

3,848,893
DUAL TRAILER HITCH ATTACHMENT

James M. Patterson, 15246 E. Weeks Dr., La Mirada, Calif. 90638

Filed May 18, 1973, Ser. No. 361,457

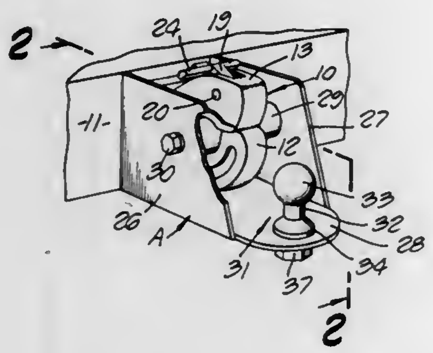
Int. Cl. B60d *1/06*

U.S. Cl. 280—417 **2 Claims**

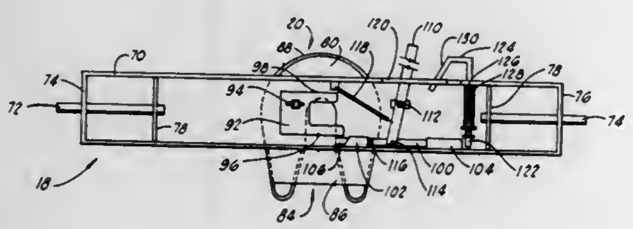
1. As an article of manufacture, an attachment for converting a towing vehicle trailer hitch of the coupling-pintle type to a ball-and-socket type, comprising:

- a. a body structure;
- b. a pintle carried by said body structure adapted for pulling connection with a trailer hitch coupling;
- c. a component of a ball-and-socket hitch carried by said body, adapted for pulling connection with a mating component of a ball-and-socket hitch; and

d. said body being of U-shaped configuration with spaced side walls and a bridging bottom wall, the inner edges of said walls being adapted to engage an outer surface of the towing vehicle and being adapted to straddle the coupling of the trailer hitch, the pintle being supported at its ends in the side walls.



3,848,894
FIFTH WHEEL TRAILER HITCH
Glenn H. Breford, Holyrood, Kans., assignor to Midway Industries Inc., Holyrood, Kans.
Filed July 16, 1973, Ser. No. 379,713
Int. Cl. B62d *53/06*
U.S. Cl. 280—437 **7 Claims**

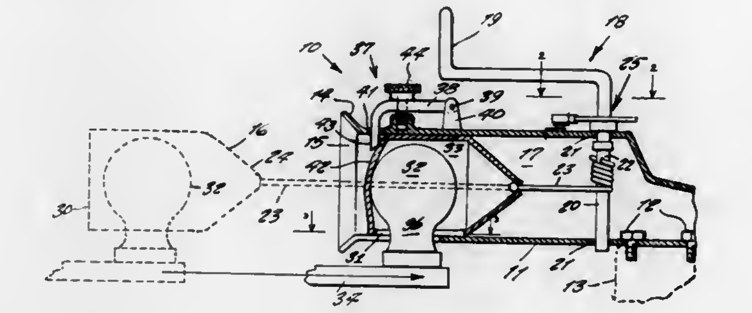


1. A trailer hitch mountable in the bed of a truck on the bottom thereof, comprising:

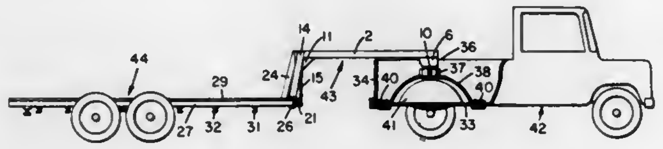
a. a frame having spaced upright end portions, said upright end portions each having in the upper portion thereof means to pivotally receive and mount a shaft,
b. a cross member attached to said end portions substantially below the top edge thereof and joining said end portions,
c. a second cross member, said second cross member having shaft mounting means in the end portions thereof, the shafts thereof being pivotally and oppositely mountable in the mounting means in the upper portions of said upright end portions of said frame,
d. coupling means mounted on the upper side of said second cross member and constructed and adapted to receive and mount in towing relation cooperating coupling means on a trailer or thhe like, and
e. said coupling means has a entrance slot in said second cross member, a jaw member movably mounted with said second cross member, a locking bolt slidably mounted to secure said jaw member in an operating position and a second locking bolt slidably mounted to in use secure said first named locking bolt when said first named locking bolt is securing said jaw member.

3,848,895
ANY ANGLE HITCH ATTACHMENT
Roland L. Christopher, Creston Star Rt., Paso Robles, Calif. 93446
Filed Sept. 18, 1973, Ser. No. 398,482
Int. Cl. B60d *1/16*
U.S. Cl. 280—478 R **5 Claims**

1. In a trailer hitch, in combination: a trailer tongue and a coupling ball having a reduced neck secured to and projecting upwardly from said tongue; a socket having a bottom opening through which said ball is freely receivable to couple said ball and socket; a tubular housing attachable to a towing vehicle, said housing having at its rear end an open mouth for entry of the coupled ball and socket, and having in its bottom a longitudinal slot in open communication with said mouth so as to receive said reduced neck while said socket is received in said housing, said socket having at its forward end a nose so related to said open mouth of the housing as to provide for easy entry of the socket into the housing; a winch carried by said housing, and a cable attached to said nose and adapted to be wound upon said winch to draw the coupled ball and socket into the housing.



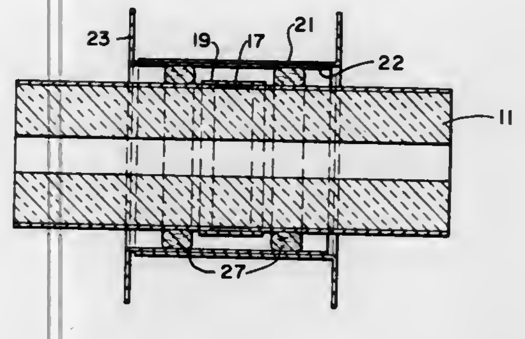
3,848,896
TRAILER HITCH ASSEMBLY
Sam Dennis, 300 Winkles St., Elyria, Ohio 44035
Filed Oct. 1, 1973, Ser. No. 402,124
Int. Cl. B62d *53/00*
U.S. Cl. 280—423 R **2 Claims**



1. An improved trailer hitch assembly member for connecting a twin I-beam frame trailer to a pick-up truck, or the like, comprising:

a. an expanded L-shaped tongue structure member, a first end portion of said tongue structure member uniquely affixed to the front end portion of a twin I-beam frame trailer is constructed of vertical twin I-beam tongue structure members being affixed perpendicularly to the forward end portion of the upper flange areas with their web sections aligned in a plane with the web sections of twin I-beam frame trailer members extended forwardly beyond the forward face of a horizontal perpendicularly adjoined channel trailer frame member and to the upper forward face area of said channel trailer frame member;
b. I-beam tongue structure base members affixed to the forward face area of said channel trailer frame member and perpendicularly to said twin I-beam trailer frame members at their inner sides with the flange faces of said base member aligned in horizontal planes with the flange faces of said twin I-beam trailer frame members;
c. twin I-beam tongue structure members outwardly spaced with their web sections in parallel planes with respect to said vertical twin I-beam tongue structure members affixed to the upper and forward flange areas of said outwardly extended base members and extending forward so that the upper ends are aligned with the upper ends of said vertical twin I-beam tongue structure members;
d. tongue structure braces affixed to the upper rearward flange areas of said vertical twin I-beam tongue structure members and extending rearward at an appropriate angle with the opposite ends affixed to the upper flange face areas of said twin I-beam trailer frame members.

3,848,897
THERMAL SHIELD
William McClellan, 151 N. Autumn, San Jose, Calif. 95110
Filed Dec. 26, 1973, Ser. No. 427,920
Int. Cl. F16l *59/14*
U.S. Cl. 285—47 **10 Claims**



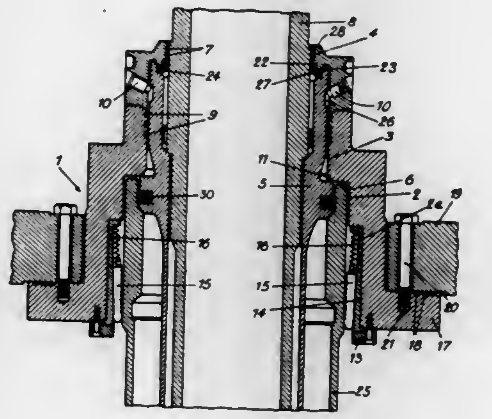
1. A thermal shield surrounding a fixture running through a hole in a wall, said thermal shield comprising

a pair of rigid mating insulators forming a cylinder closely surrounding said fixture,
a pair of metal shields encasing said insulators, the first of said shields partially circumscribing the external surface of said mating insulators, said first of said shields provided with longitudinal edge portions, and the second of said shields circumscribing both the external surface of said insulators not circumscribed by the first of said shields and the longitudinal edge portions of said first shield so that said first shield is captured by said second shield and the pair of said shields in combination extend completely around and closely surround the external surface of said insulators holding them in mating relation, said shields being placed into captured relation by sliding the second of said shields onto the longitudinal edge portions of the first of said shields in a direction generally parallel to the fixture,
a pair of asbestos ropes surrounding said shields in sealing relation at opposite ends thereof, said ropes being coated with a protective material to prevent the asbestos from flaking and crumbling, and
a pair of elongated flanged tubular members disposed in the hole in the wall through which the fixture passes, said tubular members surrounding said fixture, said shields, and said insulators, the flanges of said tubular members being attached to opposite sides of the wall respectively, and said tubular members sealingly and slidingly engaging with the respective ropes disposed around the opposite ends of said shields.

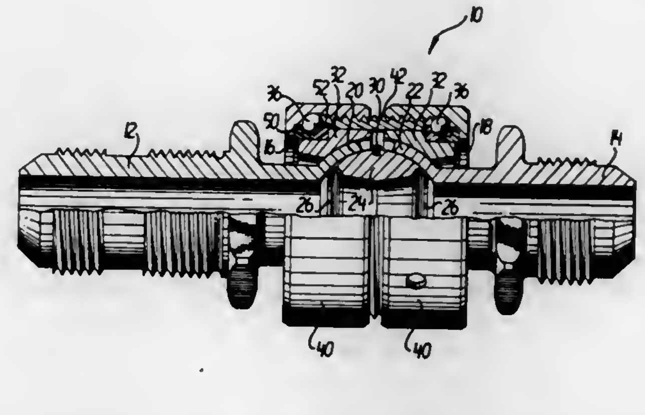
3,848,898
CONNECTOR FOR USE BETWEEN AN UNDERWATER WELLHEAD AND A BEARING SURFACE
Philippe De Panafieu, Holland Pk. W11, London, England, and Edward Earl Castor, P.O. Box 9163, Houston, Tex. 77011
Filed Apr. 9, 1973, Ser. No. 349,582
Claims priority, application France, Apr. 7, 1972, 72.12238
Int. Cl. F16l *3/02*
U.S. Cl. 285—61 **8 Claims**

1. A connector assembly for joining pipe casings in an underwater wellhead, comprising:

a. a generally cylindrical inner casing,
b. a generally cylindrical intermediate casing concentric with and surrounding the inner casing over part of the length thereof,
c. a generally cylindrical outer casing concentric with and surrounding the intermediate casing over part of the length thereof, means on the inner, intermediate, and outer casings forming a nested assembly of said casings, said nested assembly presenting, in cross-section, two inwardly oriented steps, one above the other, defined by the tops of the intermediate and outer casings, respectively,
d. a tubular body having upper and lower generally cylindrical inner surface enlargements defining a cross-section profile generally conforming to the cross-section of the assembled inner, intermediate, and outer casings, the upper enlargement having a smaller diameter than the lower enlargement,
e. an annular support surface on the intermediate casing defined by an annular step located at a height at least as great as the height of the outer casing,
f. an annular bearing surface on the tubular body defined by a perpendicular step between the upper and lower enlargements and engaging the support surface,
g. extendable locking means mounted in the tubular body adjacent and extending into the upper enlargement,
h. means in the intermediate casing for receiving the locking means, whereby the tubular body is secured to the intermediate casing, and
i. wedging means secured to the tubular body within the lower enlargement and engaging the outer casing whereby the tubular body is clamped to the outer casing.



3,848,899
PNEUMATIC SWIVEL ASSEMBLY
Jack Edward Smith, Whittier, Calif., assignor to Dumont Aviation Associates, Lakewood, Calif.
Filed Feb. 16, 1973, Ser. No. 333,132
Int. Cl. F16l *17/00*
U.S. Cl. 285—98 **2 Claims**



1. A swivel assembly for joining a plurality of fluid conduits comprising:

a. housing assembly means having first and second openings therein and including means adapted to movably engage and retain said conduits in adjacent relationship;
b. a first conduit including an inner fluid passageway diameter and including a first end comprising a partially spherical shape flared radially from an axis of said first conduit, said first spherically shaped end further comprising an annular edge, said first end selectively movably mounted within said housing assembly means;

c. a second conduit including an inner fluid passageway diameter and including a second end comprising a partially spherical shape flared radially from an axis of said second conduit, said second spherically shaped end further comprising an annular edge, said second end selectively movably mounted within said housing assembly means;

d. a ball-rotator comprising a concentric surface spherically complemental to a surface of said first and said second spherically shaped flared ends and in engagement therewith, said ball-rotator further including two annular lips having a diameter substantially larger than said inner diameter of and adjacent of said conduits, each of said lips disposed in movable, fluid sealing contact with a respective flared end of said first and said second conduits said ball-rotator having a bore therethrough with a minimum diameter at least as large as said passageway diameters, said annular lips and said bore defining a passageway in pneumatic coupling relationship with said first conduit and said second conduit;

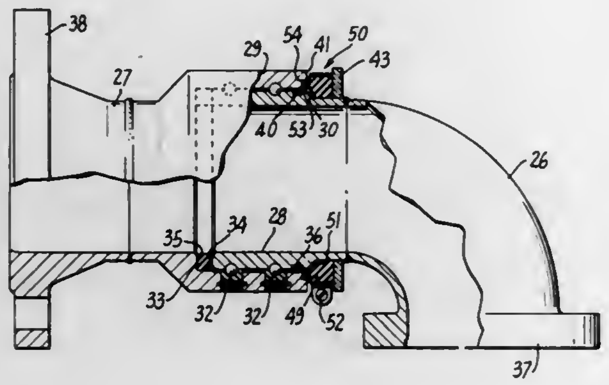
e. said ball-rotator having an annular ring including an axis, and being mounted on said spherical surface engageable with the annular edge of said first flared end and of said second flared end; and

f. said annular edge of said first flared end, said annular ring and one of said annular lips having a predetermined angular relation when the axes of said first conduit and of said annular ring are coincidental, the angular relation being that the angular distance from said annular ring to the said first spherically shaped end annular edge substantially equaling the angular distance from said first spherically shaped end annular edge to said annular lip disposed in contact with said first conduit flared end, and further substantially equaling the angular distance from said annular lip to the end of said first conduit inner diameter whereby upon maximum misalignment of either conduit relative to said ball-rotator, the inner diameter of said conduit is not constricted by said ball-rotator.

3,848,900

EXTERNAL ROTARY SEAL FOR A SWIVEL JOINT

Ben W. Brundage, 4390 Piedmont Ave., Oakland, Calif. 94611
Filed Aug. 17, 1973, Ser. No. 389,328
Int. Cl. F16j *17/00, 33/16*
U.S. Cl. 285—98 **2 Claims**



1. In a swivel joint:

a. a first cylindrical member having a tubular portion terminating in an end;

b. a second cylindrical member having an end rotatably mounted within said tubular portion of the first member; c. bearing means mounting and retaining said end of the said second member for rotation in the tubular portion of the first member with the end of the tubular portion of said first member fitting closely adjacent to but spaced from the second member to provide an annular space between the said first and second members;

d. a resilient sealing means carried in the end of the first cylindrical member adjacent said annular space;

e. a shoulder on the said second member immediately adjacent said end of the said first cylindrical member and disposed substantially in the same radial plane therewith whereby to provide a substantially continuous surface including the said end of the said first cylindrical member and the said shoulder;

f. a washer lying against said sealing means in the end of the said first cylindrical member and against the shoulder of the said second member and extending across the annular space therebetween;

g. a resilient ring member fitted in a groove about said second member and engaged with the said washer;

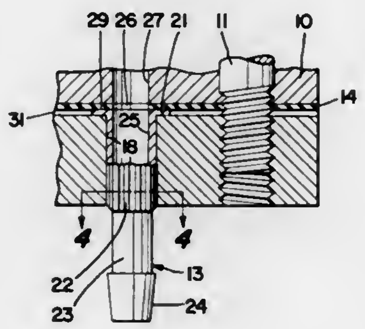
h. a stop secured to the said second cylindrical member on the side of said resilient ring member opposite from said washer and engaged with the said resilient ring member whereby to prevent the resilient ring member from sliding away from the said washer; and

i. a means for compressing said ring member to force the ring into engagement with said washer.

3,848,901

FLUID LINE JOINT FOR A VALVE BASE PLATE

Robert K. Hoffman, Plainwell, Mich., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed July 9, 1973, Ser. No. 377,209
Int. Cl. F16l *39/00*
U.S. Cl. 285—137 R **4 Claims**

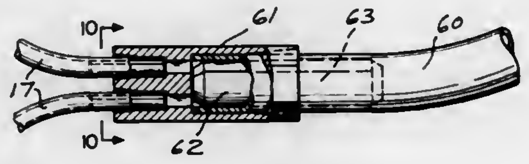


1. A joint comprising a fluid line fitting and a base plate, the base plate having a bore therethrough, the fitting having a bore therethrough and also having a radially outwardly extending flange at one end thereof, the fitting also having a shank adjacent the flange that is press fitted into said plate bore, said flange being in engagement with a face of the plate at a location surrounding said plate bore, and said engagement being maintained by said press fit.

3,848,902

LINE COUPLING

Henry J. Modrey, 930 Camellia Dr., Royal Palm Beach, Fla. 33406
Filed Aug. 16, 1972, Ser. No. 281,120
Int. Cl. F16l *39/02*
U.S. Cl. 285—137 R **9 Claims**



1. A device for sealingly coupling a flexible tubing to a receiver, said coupling device comprising in combination:

a flexible tubing;

a springy tubular member capable of diametrical contraction and expansion along its entire length, said member being dimensioned to be insertable into the tubing in its expanded state;

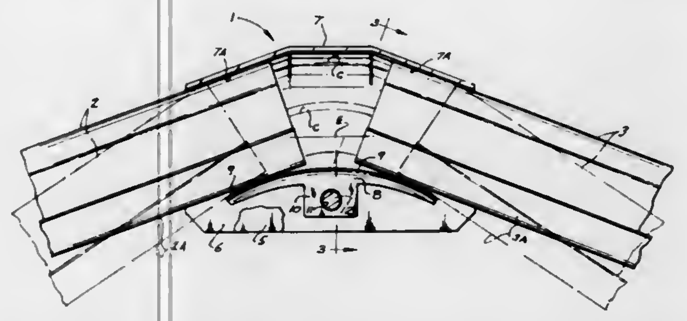
a receiver including an elongate receiving opening having a cross-sectional outline slightly less than the outer peripheral outline of the tubing, the length of said springy tubular member being at least equal to the length of the receiving opening, said receiving opening connecting at its bottom end with a duct opening in the receiver;

insertion of the tubing with the spring member therein into the receiving opening causing a contraction of the tubular member along its entire length against the springy action thereof whereby the resulting pressure against the inner wall of the tubing as generated by the contraction of the tubular member presses the respective lengthwise wall portion of the tubing against the surrounding wall of the receiving opening in sealing engagement therewith.

3,848,903

ADJUSTABLE ELBOW FOR SPLIT CONDUIT

Frank R. Kinnan, P.O. Box 445, Camas Valley, Oreg. 97416
Filed June 22, 1973, Ser. No. 372,479
Int. Cl. F16l *43/00*
U.S. Cl. 285—179 **3 Claims**



1. An elbow for joining the ends of conduit in a desired angular relationship, said elbow comprising,

a main body of U-shaped configuration and having opposed sidewalls and a bridge portion interconnecting the sidewalls, said bridge portion having wall surfaces inclined relative to the longitudinal centerline of the main body, said inclined wall surfaces being engageable with the conduit end portions,

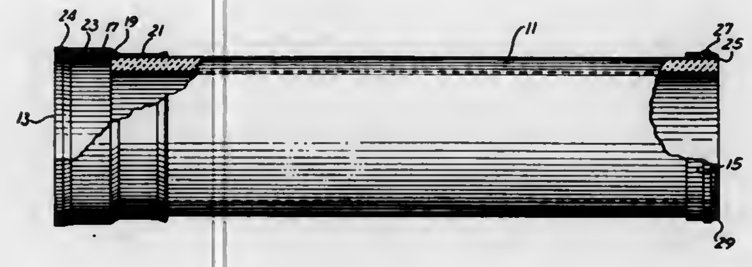
a clip intermediate said sidewalls and adapted to also bear upon the conduit end portions, and

fastener means acting on said sidewalls to bias same inwardly into contact with the conduit end portions thereby holding same in fixed relationship at the desired angular relationship therebetween.

3,848,904

PIPE HAVING COUPLING MEANS

Richard H. Anderson, Dover, Ohio, assignor to Clow Corporation, Oak Brook, Ill.
Filed Jan. 22, 1973, Ser. No. 325,952
Int. Cl. F16l *49/00*
U.S. Cl. 285—230 **10 Claims**

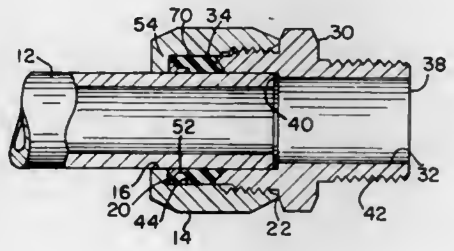


1. A length of pipe adapted to be joined end-to-end to a similar pipe without additional components to form a liquid-tight line, which pipe comprises a generally uniform tubular member, the outside surface adjacent the one end of said tubular member which serves as the spigot end of said pipe having a circumferential sealing band sealingly attached thereto, the radially outermost surface of said band being disposed a predetermined radial distance from the outside surface of said member, the other end of said tubular member having a sleeve of elastomeric thermoplastic material affixed to the outside circumferential surface of said member in liquid-tight relationship thereto as a result of having been heated and then forcibly expanded while hot during mounting upon said member, and a polymeric resin material coating the outer surface of said tubular member in the region of said sleeve, said sleeve having a portion extending a predetermined axial distance beyond the other end of said member which is larger in diameter over its entire length than the remainder of said sleeve, said extension portion having an inner diameter which is slightly smaller than the diameter of said sealing band, and said elastomeric extension portion being resiliently deformed radially outwardly when the band-carrying spigot end of another pipe length is pushed thereinto so that a narrow liquid-tight seal is formed between said band outermost surface and the inner surface of said sleeve extension portion.

3,848,905

HIGH PRESSURE FITTING

Victor S. Hammer, Glen Ellyn, and Chester W. Brozek, Chicago, both of Ill., assignors to Chicago Fittings Corporation, Broadview, Ill.
Filed Apr. 3, 1972, Ser. No. 240,533
Int. Cl. F16l *13/02*
U.S. Cl. 285—286 **12 Claims**



1. A fitting for joining a first member to a second member, which has a passageway therein to receive an insertion end and accompanying portion of the first member, comprising:

ferrule means having a flange portion extending outwardly from the first member in a direction generally transverse to the axis of the first member and a sleeve portion conformed to the shape of the outer circumference of the first member and extending axially therealong, said flange portion being affixed to said sleeve portion at the end thereof furthermost from the insertion end of the first member, said ferrule means located on the outer surface of the first member, at a predetermined distance in the axial direction from the insertion end of the first member, and joined to the first member in such a fashion as to be fixedly anchored thereto at said predetermined distance from the insertion end of the first member;

deformable sealing means positioned about the circumference of the first member between the insertion end thereof and said flange portion of said ferrule means;

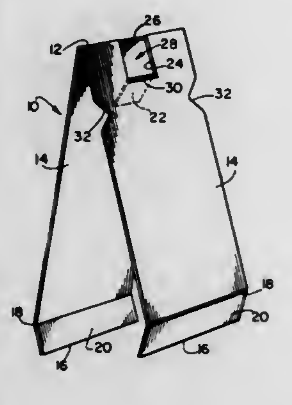
a coupling nut extending over said sealing means and said flange portion of said ferrule means, said coupling nut having a radially inwardly extending shoulder positioned with said flange portion of said ferrule means between said shoulder and the insertion end of the first member, and said coupling nut having threads formed on the inner circumference thereof adjacent the insertion end of the first member;

threads formed on the external surface of the second member to mesh with said threads formed on said coupling nut;

- a sealing means engaging structure on the end of the second member through which the first member is inserted, meshing of said threads on said coupling nut and on the second member casuing said sealing means engaging structure to compress said sealing means against said flange portion of said ferrule means to form a fluid tight seal; and
- a fillet between said sleeve portion and said flange portion to aid in securing proper deformation of said sealing means by directing said sealing means outwardly along said flange portion to bear against the inner surface of said coupling nut to form a stronger radial seal.

3,848,906
DISPOSABLE TONGS

Seymour Fleishman, 857 W. Belden Ave., Chicago, Ill. 60614
Filed Feb. 23, 1973, Ser. No. 335,233
Int. Cl. A47l *13/52*
U.S. Cl. 294—1 R **1 Claim**

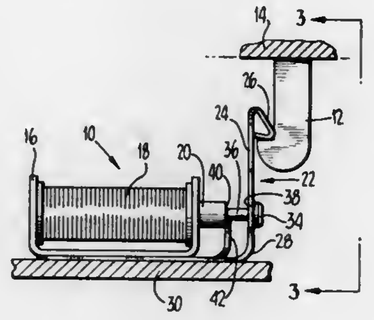


1. Disposable tongs which are adapted to pick up animal excrement and are formed of a single sheet of material, such as cardboard or the like of generally rectangular shape, having a single central transversely extending straight score line and folded on said score line to form a first hinge line and form a pair of side members which are hingedly connected at said first fold hinge line, said first fold line forming a sharp pointed top fold edge with said side members being flat and extending downwardly and away from each other in opposite angular directions from said sharp pointed top fold edge hinge line, each said flat side member having a bottom edge and a transversely extending score line spaced upwardly of the bottom edge to form a second fold hinge and defining a jaw segment between said bottom edge and said second fold hinge line with each said jaw segment being inclined and sloping downwardly and inwardly at an angle with respect to the longitudinal axis of the side member and inclined towards the opposite jaw segment, and hingeable at said second fold hinge line, each said jaw segment being flat and non-curvilinear and with each of said side members adapted to be directly manually engaged and moved towards each other so that the jaw segments may grasp and hold the material or matter to be engaged by said tongs, with said jaw segments yielding or hinging on said second hinge line as said side members are urged towards each other, one of said side members having a tongue struck out of a side thereof to engage the other side member to space the said side members from each other in normal position, and at least one of said side members having cutouts to permit gripping engagement by the fingers of the hand.

3,848,907
LATCH/UNLATCH MECHANISM FOR CASSETTE HOLDER DOOR

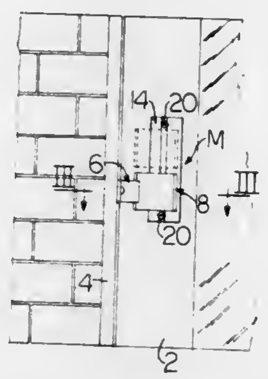
John Shiurila, Alameda, Calif., assignor to The Singer Company, New York, N.Y.
Filed Sept. 17, 1973, Ser. No. 398,275
Int. Cl. E05c *19/06*
U.S. Cl. 292—81 **4 Claims**

1. A latch/unlatch mechanism particularly useful for a cassette holder door comprising:
- a solenoid including a coil and plunger means responsive to the magnetic field in the coil;
- resilient latch means yieldably engageable with a hook on said door and operatively and directly attached to said plunger means and disengageable from said hook by the bending thereof upon energization of said solenoid and the retraction of said plunger means; and
- tab means integral with said resilient latch means and operatively engaged with said plunger means for limiting the overtravel of said plunger means beyond the required stroke upon de-energization of said coil.



3,848,908
LOCKING DEVICE FOR SLIDING PANELS

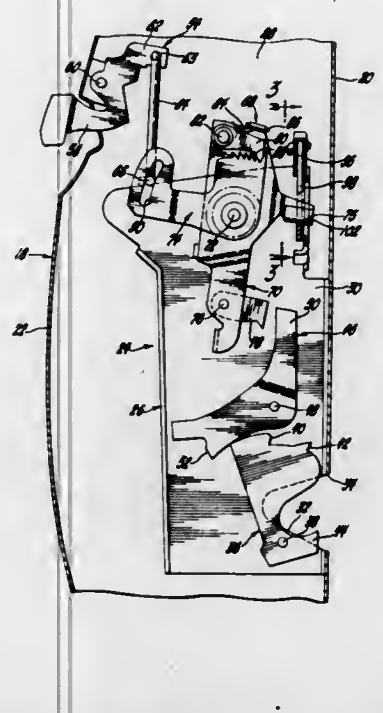
Harry M. Rich, Toronto, Ontario, Canada, assignor to Ram Partitions Limited, Ontario, Canada
Filed June 27, 1973, Ser. No. 374,086
Int. Cl. E05c *1/04*
U.S. Cl. 292—189 **13 Claims**



1. Mechanism for releasably interlocking a pair of closure members of which one, at least, is movable between open and closed positions relative to the other;
- a stationary interlock element mountable on one of the closure members and a movable interlock element having a hook portion which is disengageably engageable with the hook portion of the other when the movable closure member is in closed position relative to the other closure member to prevent movement thereof towards its open position;
- an attachment plate;
- elongated mating formations on said attachment plate and on the movable interlock element permitting said movable interlock element to be retained on said attachment plate while sliding thereon in the direction of the length of said mating formations; said attachment plate being mountable on one of said closure members for mounting said movable interlock element;
- each said stationary and movable interlock element and said attachment plate being, respectively, of uniform cross-section throughout its length enabling it to be formed by extrusion.

3,848,909
CLOSURE LATCH ASSEMBLY

Charles W. Foley, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed June 1, 1973, Ser. No. 365,767
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **3 Claims**

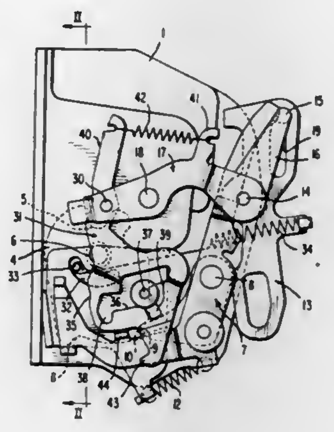


1. In a latch assembly disposed on a rigid support structure and including latch means actuable from a latched condition to an unlatched condition and handle means having a rod element bodily shiftable between an extended position and a retracted position in response to corresponding movement of a handle portion of said handle means, the improvement comprising, a first lever disposed on said support structure for pivotal movement about an axis thereof and engageable on said latch means for actuating the latter to the unlatched condition upon pivotal movement in one direction, a second lever disposed on said support structure for pivotal movement about said axis, said rod element being engageable on said second lever and operative to pivot the latter in said one direction in response to bodily movement of said rod element to the extended position, and one-way clutch means between said first and said second levers operative to establish therebetween a rigid connection only in said one direction of pivotal movement so that pivotal movement of either of said first and said second levers relative to the other in the opposite direction effects adjustment of the angle included therebetween.

3,848,910
DOOR LOCK, ESPECIALLY FOR MOTOR VEHICLE DOORS

Karl Wilfert, Gerlingen-Waldstadt; Gunter Gmeiner, Sindelfingen; Christian Grabner, Maichingen, and Ernst Nockemann, Wuppertal, all of Germany, assignors to Firma Bomoro Bocklenberg & Motte GmbH & Co. KG, Wuppertal and Daimler-Benz Aktiengesellschaft, Stuttgart, both of, Germany
Filed Oct. 20, 1972, Ser. No. 299,276
Claims priority, application Germany, Oct. 22, 1971, 2152613
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **27 Claims**

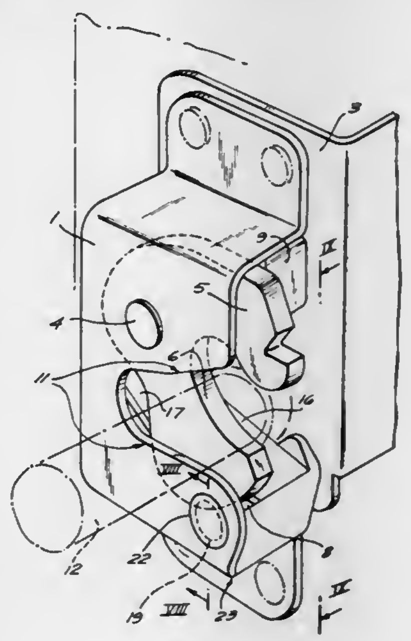
1. A lock for doors and the like comprising:
- a latching means engaging in a closure means at a closed position,
- a locking pawl means locking said latching means in the closed position, said locking pawl means being disengageable from the latching means by a disengaging lever means,
- safety lever means coordinated to said disengaging lever means for preventing the release of said locking pawl means, and



- a locking lever means for forcibly guiding said locking pawl means into the locked position and for checking the closed position of said latching means, said locking lever means being actuated by said safty lever means.

3,848,911
MOTOR VEHICLE DOOR LATCH

Hans-Dieter Watermann, Metzkausen, and Frank Kleefeldt, Heiligenhaus, both of Germany, assignors to Arn. Kiekert Sohne, Heiligenhaus, Germany
Filed Mar. 7, 1973, Ser. No. 338,816
Claims priority, application Germany, Mar. 8, 1972, 2211161; Apr. 18, 1972, 2218734
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **11 Claims**



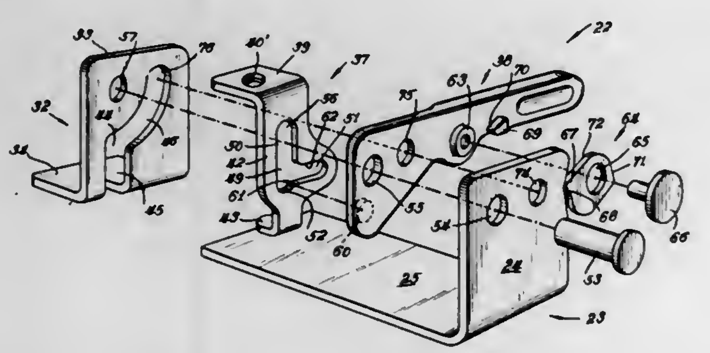
1. A latch for a door engageable with a doorpost, said latch comprising:
- a bolt extending from said doorpost and having an axis;
- a U-shaped housing on said door having a flat central web formed with a laterally open notch and two flat legs extending from said web toward said door;
- a cover plate bridging said legs of said housing;
- a pivot pin extending axially between said web and said plate;
- a pivotal flat locking pawl on said pin having a pair of arms separated by a bight, said bolt being engageable with one of said arms adjacent said bight to pivot said pawl;
- a keeper pivoted between said web and said plate and engageable with at least one of said arms to prevent pivoting of said pawl in one direction to retain said bolt behind said pawl in said notch; and

a pair of outwardly resiliently deflectable ramps between said plate and said web and next to said pawl, said ramps converging toward a plane described by the axis of said bolt in the direction of insertion thereof, said bolt being engageable with both of said ramps on entrance along said plane into said notch, said ramps being in continuous engagement with said bolt throughout the movement thereof in said housing and said pawl being dimensioned to prevent engagement of said bight with said bolt.

3,848,912
LATCH FOR HATCH COVERS FOR HOPPER CARS

Finn Jensen, Dolton, and Rudolph E. Nadherny, Naperville, both of Ill., assignors to Illinois Railway Equipment Company, Chicago, Ill.

Filed Oct. 2, 1973, Ser. No. 402,830
Int. Cl. E05c *5/00*
U.S. Cl. 292—256.5 **4 Claims**

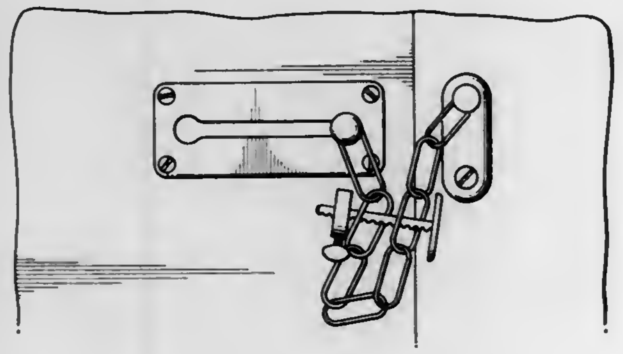


1. A latch for holding the distal edge of a hatch cover in closed position over a trough of a hopper car comprising: an upstanding outer flange secured to said hopper car, an upstanding inner flange secured to said hopper car and spaced from said outer flange toward said hatch cover; a keeper overlying said inner flange, guided for translatory and pivotal movement thereon, and having a laterally extending arm overlying said hatch cover in latched position; and a handle pivoted on said outer and inner flanges between said keeper and said outer flange and cooperating with said keeper for shifting said laterally extending arm between latched and unlatched positions, said keeper having a platelike section juxtaposed to said inner flange, said platelike section having an L-shaped slot, and said handle having a detent extending into said L-shaped slot and movable along the lower arm thereof when said handle is pivoted between latched and unlatched positions.

3,848,913
LOCKING DEVICE FOR DOOR CHAINS

John J. McGann, Jr., P.O. Box 991, New Smyrna Beach, Fla. 32069

Filed May 29, 1973, Ser. No. 365,397
Int. Cl. E05c *19/18*
U.S. Cl. 292—264 **3 Claims**

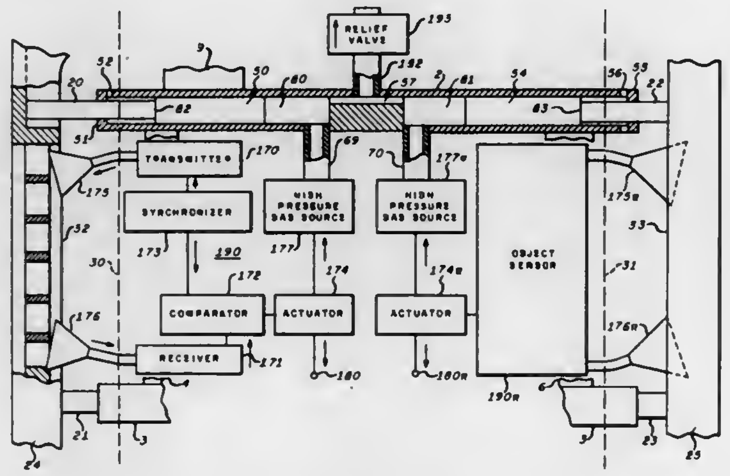


1. A locking device, secured through selected links of a door chain, and consisting of two parts: (1) a screw-like device, consisting of a large head, and a shaft having notches along the length of the shaft, and (2) a cylindrical collar which fits on the shaft, and having a thumb screw which screws into threads tapped into the cylindrical collar, and into the notches on the shaft.

3,848,914
MOTOR SHIFTABLE SHOCK ABSORBING BUMPER

Robert Lucian Wathen, Greenvale, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.

Continuation of Ser. No. 208,328, Dec. 15, 1971, abandoned. This application Oct. 19, 1973, Ser. No. 389,612
Int. Cl. B60r *19/06;* **B61f** *19/04;* **H01j** *39/12*
U.S. Cl. 293—9 **13 Claims**



1. A radio pre-collision protective system for a vehicle having first and second ends, comprising:

directive radio object detector means at said first end characterized by the generation of a control signal instantaneously prior to collision of an object with said first end of said vehicle,

high pressure fluid generator means instantaneously responsive to said control signal, and

actuator means for supporting bumper means at said first end and responsive to activation of said high pressure fluid generator means for extending said bumper means prior to said collision.

ERRATUM

For Class 293—88 see:
Patent No. 3,848,916

ERRATUM

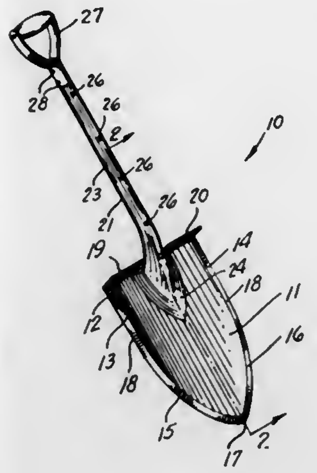
For Class 294—1 see:
Patent No. 3,848,906

3,848,915
TREE BALLING SPADE

Bernard Wherry, c/o Wherry Nurseries, St. Marys, W. Va. 26170

Filed Jan. 3, 1973, Ser. No. 320,762
Int. Cl. A01b *1/02*
U.S. Cl. 294—49 **1 Claim**

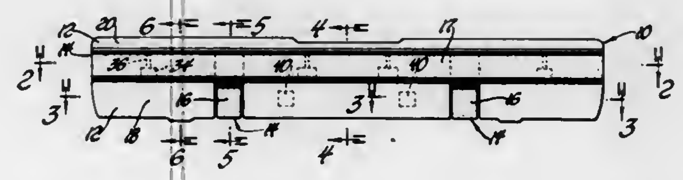
1. In a tree balling spade, a relatively thin concave blade having a transverse back edge and spaced parallel side edges blending into curved forward edges that terminate in a point, a continuous sharpened edge extending along both side edges and forward edges from the rear edge, a pair of foot engaging plates of generally rectangular formation integrally formed on the back edge of said blade and extending generally perpendicularly upwardly from said blade, a first arcuate metallic plate secured to said blade by welding, a second arcuate metallic plate provided with an arrowhead extension that engages the concave surface of the blade and is secured thereto, a generally cylindrical handle having a portion thereof positioned between said arcuate plates, securing elements extending through said arcuate plates and said handle for securing said handle to said blade, and a stirrup handgrip rigidly secured to the outer end of said handle, said first and second arcuate metallic plates extending from said handgrip to said blade, the blade of the spade having a length from the back edge to the point on the front approximately one and one half times as great as the distance between the pair of side edges adjacent the back edge.



3,848,916
BUMPER ASSEMBLY

Richard E. Hulten, Durham, N.H., assignor to McCord Corporation, Detroit, Mich.

Filed Jan. 18, 1973, Ser. No. 324,721
Int. Cl. B60r *19/08*
U.S. Cl. 293—88 **6 Claims**



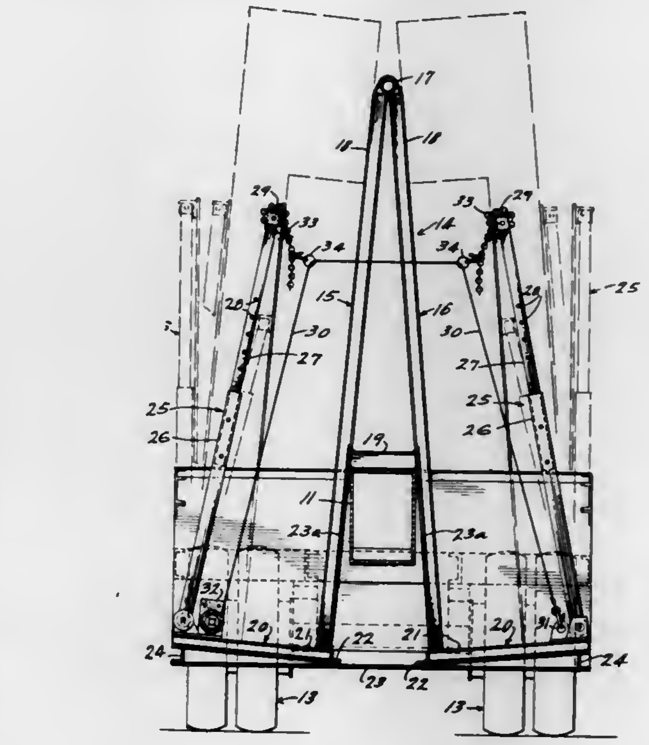
1. An energy absorbing bumper assembly comprising; an elongated plastic shell adapted to extend transversely of a vehicle, said shell member having at least one open aperture therein, plastic bumper means for absorbing impact energy disposed within said aperture and being exposed through said shell member, said shell member being adapted to deflect upon impact thereby to allow said bumper means to absorb the impact energy, a support member, said bumper means being independently secured to said support member, said shell member being secured to said support member, and said shell member including spring means disposed rearwardly thereof.

3,848,917
APPARATUS FOR TRANSPORTING FLAT GLASS AND THE LIKE

John L. O'Neal, 24982 Thompson Rd., Perrysburg, Ohio 43551

Filed Apr. 9, 1973, Ser. No. 349,020
Int. Cl. B60p *3/00*
U.S. Cl. 296—3 **9 Claims**

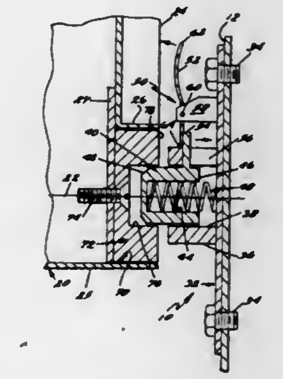
1. A structure for supporting stacks of flat rigid sheet material upon a semi-trailer having a rigid main frame extending lengthwise of the semi-trailer, said structure comprising a generally A-shaped platform having a pair of sloped support walls extending downwardly to terminate below the level of said trailer rigid main frame, said support walls joined at their top edges and at an intermediate position by a rigid internal web which rests upon said main frame to support the entire structure, each of said support walls extending from their upper intersecting edges downwardly and outwardly to terminate at a level below said main frame to provide a central sloped divider, a rigid platform extending outwardly and slightly upwardly from the lower edges of each of said support walls to provide a floor on each side of the divider to support the lower edges of a stack of such rigid sheets at a level below said truck frame, at least two elongate clamping members having a lower end pivotally secured to said rigid platform and extending upwardly along but spaced from the adjacent support wall, and means for securing the upper ends of said clamping members relative to said support wall to prevent movement of such rigid sheets away from said wall, said securing means including a tension line having one end secured to said platform on one side of said wall and extending through guide means secured to the upper ends of a pair of opposed clamping members and thence downwardly to said opposed platform opposite the secured end thereof, and means for winding said line on said opposed platform to exert an inward and downward force upon said clamping members.



3,848,918
TAILGATE RELEASE

James L. Dyer, Sparta, Mich., assignor to Rewop Company, Grand Rapids, Mich.

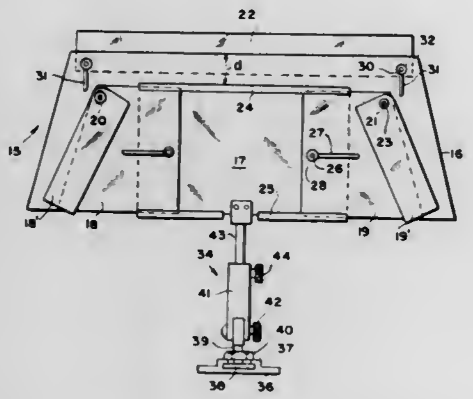
Filed Mar. 12, 1973, Ser. No. 340,369
Int. Cl. B62d *25/00*
U.S. Cl. 296—57 R **21 Claims**



1. Apparatus for removably, pivotally securing a tailgate to a vehicle, including a tailgate pivotable between an open and closed position, and a casing framing at least a portion of said tailgate, said tailgate having an edge including an aperture adjacent said casing for receiving a hinge pin, said apparatus comprising: a hinge pin positioned adjacent said tailgate aperture; a base plate secured to said casing adjacent an edge of said tailgate including said aperture and between said edge of said tailgate and said casing; said base plate having a housing mounted thereon and projecting from only one side of said base plate, towards said tailgate whereby said base plate can be mounted against said casing without the need for providing accomodations for the housing; said housing including a receptacle slidably receiving said hinge pin release means mounted on said base plate and being operably connected to said hinge pin for axially moving said hinge pin; said release means including means located between said edge of said tailgate and said casing for actuating said release means whereby said hinge pin is withdrawn to permit removal of said tailgate from said vehicle; said actuating means being protected between said tailgate edge and casing when said tailgate is in its closed position and accessible when said tailgate is in its open position.

3,848,919
OPHTHALMIC SCREEN FOR MOTORISTS

Robert Smith, 555 Elmwood Ter., Rochester, N.Y. 14620
Filed May 8, 1969, Ser. No. 823,025
Int. Cl. B60j *3/04*
U.S. Cl. 296—97 F **7 Claims**

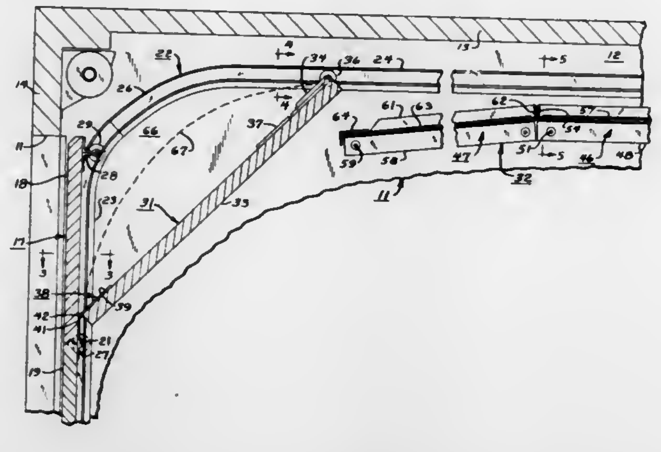


1. An opthalmic screen device of the character described, at the lower part of the windshield of a motor vehicle, directly in front of the driver, comprising a light-filtering panel member of relatively low density, a light-shielding member of comparatively high density covering only the major central part of said panel inward of its top and side edges and starting substantially from the bottom edge of said panel, whereby said panel is unobstructed in a predetermined top zone extending from side to side and in predetermined zones along its sides, extending from top to bottom thereof; the upper edges of said members being horizontal, said light shielding member comprising a central area and two horizontally slidably mounted panels overlapping said central area, one at each side thereof, and means extending from the screen for mounting onto the vehicle.

3,848,920
CARGO DEFLECTOR PANEL

James T. Linhart, 203 W. Hickey, Lombard, Ill. 60148; Flay D. Crosswell, 309 Lafayette, and Gerald W. Galbreath, 787 Irvin Shoots Rd., both of Marion, Ohio 43302
Filed Oct. 3, 1972, Ser. No. 294,687
Int. Cl. B62d *25/06*
U.S. Cl. 296—106 **29 Claims**

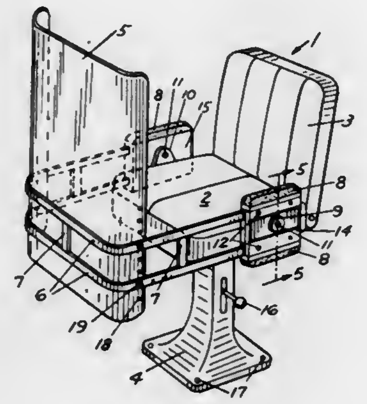
1. In a truck trailer having a pair of substantially vertical side walls and top and bottom walls connected between said side walls, the rear of said trailer defining an access opening into the interior thereof, a pair of substantially L-shaped guide tracks mounted on the walls of said trailer, said guide tracks including substantially vertical track portions disposed adjacent the opposite sides of said access opening and substantially horizontal track portions extending inwardly into the interior of said trailer adjacent the upper edge of said access opening, said vertical and horizontal track portions being interconnected by arcuate track portions, and a door unit slidably supported on said guide tracks and movable between a closed vertical position wherein said door unit is disposed within said vertical track portions for closing said access opening and an open substantially horizontal position wherein said door unit is supported on said horizontal track portions for uncovering said access opening, said door unit including a plurality of door panels horizontally hinged together to permit relative pivotal movement therebetween as the door moves between its open and closed positions, the improvement comprising:



deflector means associated with said door unit for preventing the cargo contained within said trailer from interfering with the upper edge of said door unit as same is being moved from its closed to its open position, said deflector means including a deflector panel extending laterally across the width of said door, said deflector panel being disposed at an angle relative to said door unit when same is in said closed position, one edge of said deflector panel being disposed adjacent the door unit and means pivotally connecting said one edge of said deflector panel to the upper portion of said door unit, the other edge of said deflector panel being disposed adjacent said horizontal track portions, and means associated with said deflector panel adjacent said other edge for slidably supporting same on said horizontal track portions.

3,848,921
BOAT SEAT

Raymond Dewey Rhodes, 1609 Donald Dr., Bossier City, La. 71010
Filed Apr. 2, 1973, Ser. No. 347,060
Int. Cl. A47c *7/66;* B63b *29/00*
U.S. Cl. 297—184 **8 Claims**



1. A seat for watercraft comprising:

a. A support mounted to the floor of said watercraft;

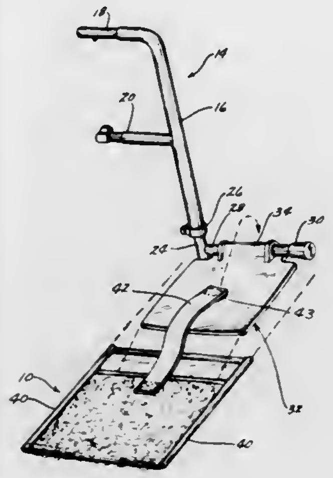
b. At least one shield mount, one end of which is in essentially horizontally adjustable cooperation with said support; and

c. An essentially transparent shield means adjustably carried by the opposite end of said at least one shield mount, and adapted to protect the occupant in said seat from wind and inclement weather; and

d. An arm rest assembly mounted on said support comprising a locking plate adapted to engage said at least one shield mount; a shield mount plate adapted to engage said at least one shield mount in cooperation with said locking plate; a threaded adjusting bolt carried by said support, said locking plate and said shield mount plate; and an adjusting knob adapted to receive said adjusting bolt in threaded relationship and exert collective holding pressure on said support, said locking plate, said shield mount plate, and said at least one shield mount when said adjusting knob is tightened on said adjusting bolt.

3,848,922
WHEELCHAIR FOOTPLATE COVER CUSHION

Royal D. Blanford, 437 E. 6th St., Ames, Iowa 50010
Filed Nov. 21, 1973, Ser. No. 418,089
Int. Cl. A47c *7/36*
U.S. Cl. 297—219 **9 Claims**

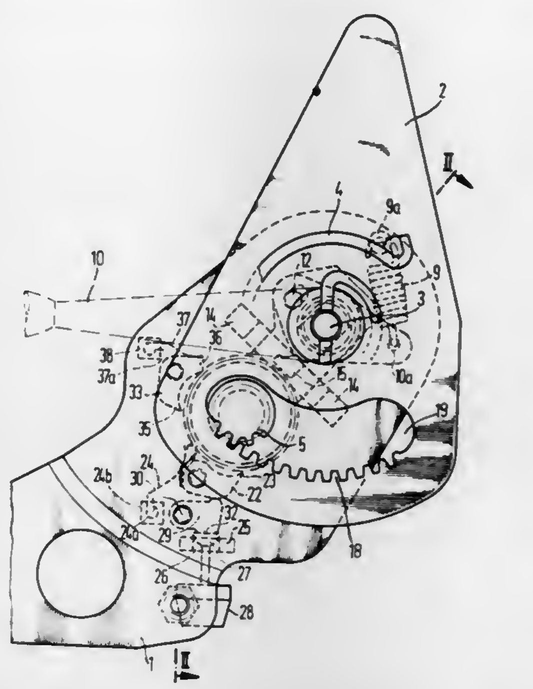


1. A wheelchair comprising,
a frame having wheels,
a pair of footrests on said frame,
each footrest including a substantially vertically disposed support member, and a footplate pivoted to said vertical member for pivotal movement about a horizontal axis between a first position extending horizontally inwardly to a second position extending vertically, and
a cover cushion detachably positioned on said footplate and including an enclosure open at only one end and in communication with a pocket in said enclosure, the free end of said footplate being positioned in said pocket, and a fastening means extending from one side of said enclosure over said pivotal end of said footplate into engagement with the opposite side of said enclosure.

3,848,923
SAFETY LOCKING DEVICE FOR AUTOMOBILE RECLINING SEATS

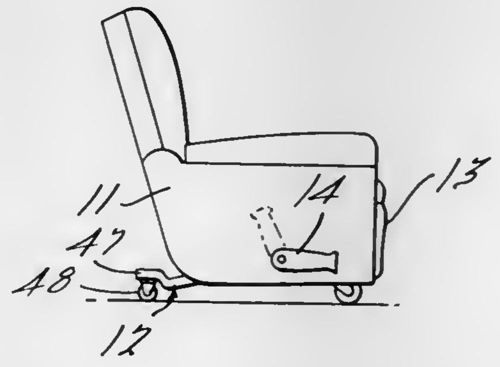
Bernhard Dehler, Coburg/Bayern, Germany, assignor to Metallwerk Max Brose & Co., Bayern, Germany
Filed July 30, 1973, Ser. No. 384,021
Claims priority, application Germany, Aug. 7, 1972, 2238899
Int. Cl. A47c *1/25*
U.S. Cl. 297—366 **19 Claims**

1. A safety locking device for reclining seats of a motor vehicle, said seats including a stationary section and a reclining section pivotally connected to said stationary section, said device comprising ratchet means mounted to rotate with said reclining section upon pivotal motion thereof, pawl means pivotally mounted relative to said stationary section in a position to enable engagement of said pawl means with said ratchet means to lock said ratchet means against rotation, means normally biasing said pawl means out of locking engagement with said ratchet means, and actuating means displaceable in response to abrupt motion of said motor vehicle for urging said pawl means into locking engagement with said ratchet means thereby to prevent pivotal motion of said reclining section.



3,848,924
MOBILE CHAIR BASE HAVING LOCKING MEANS

Edwin J. Shoemaker; Edwin G. Gensler, and David B. White, all of Monroe, Mich., assignors to La-Z-Boy Chair Company, Monroe, Ill.
Filed Sept. 20, 1973, Ser. No. 399,081
Int. Cl. A47c *7/50*
U.S. Cl. 297—434 **7 Claims**



1. In a base for a chair, a base frame having side elements with at least one cross bar therebetween, a wheel mounted at the forward end of each side element, a caster mounted at each rear end of said side elements, a spring pressed locking member at the front ends of the side elements which are urged by the springs into engagement with the wheels, a leg rest mounted at the forward end of the chair, link means on the sides of the chair for supporting and moving the leg rest to extended and retracted positions, and means operated when the link means moves said leg rest from retracted position for releasing said locking means.

3,848,925
TRANSIT VEHICLE SEAT

Arthur J. Harder, Jr., Franklin Park, Ill., assignor to Coach and Car Equipment Corporation, Elk Grove Village, Ill.
Filed Nov. 2, 1972, Ser. No. 303,243
Int. Cl. A47c *7/02*
U.S. Cl. 297—452 **3 Claims**

1. A transit seat comprising:
a rotary cast, monolithic, hollow, plastic shell without voids

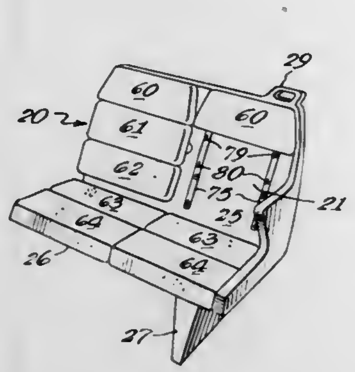
and composed of a thermosetting, plastic material selected from the group consisting of cross linkable linear polyethylene, polycarbonate, polyvinylchloride and nylon;

said shell being rotary cast from powder and having a thickness in the range ⅛ inch — ¼ inch to permit rotary casting into the desired seat shape without creating voids and to permit accommodation in a rotary casting mold using powder as a starting material;

a foamed polyurethane plastic material completely filling the interior of said shell, said interior being without voids; said foamed polyurethane having a density in the range 2.0 to 3.5 lbs. per cubic foot;

said hollow plastic shell having a pebbled inner surface including bumps and indentations resulting from the rotary casting of said shell from powder;

said foamed, polyurethane plastic material intimately surrounding said bumps and filling said indentations at said hollow surface;



the combination of said hollow plastic shell and said foamed polyurethane interior having substantially greater strength, resistance to indentation and rigidity than said hollow plastic shell alone;

a plurality of cushion sections;

means removably mounting a first of said cusion sections in a first predetermined position on said shell;

means mounting a second of said cushion sections in a second predetermined position on said shell;

fastener means for securing said second cushion section against removal from said second predetermined position in the absence of a special tool;

said fastener means being hidden from view by said second cushion section and said shell;

and means on said first-recited mounting means and on the second cushion section cooperating to maintain the first cushion section in said first predetermined position and to prevent its removal therefrom so long as the second cushion section is in the second predetermined position.

3,848,926
OCCUPANT SEAT

Kenitiro Kuroishi, Yokohama, Japan, assignor to NHK Spring Co., Ltd., Yokohama-shi, Japan

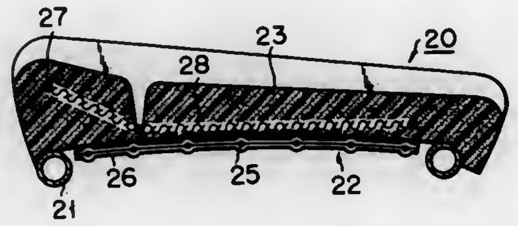
Filed Dec. 26, 1972, Ser. No. 318,661

Claims priority, application Japan, Mar. 3, 1972, 47-26272; Mar. 3, 1972, 47-26274; Mar. 3, 1972, 47-26275

Int. Cl. A47c *7/02*

U.S. Cl. 297—452 **3 Claims**

1. An occupant seat comprising a frame, a spring structure fitted to the frame and a seating section mounted on the spring structure, said spring structure including a plurality of parallel, unconnected spring members consisting of a single wire having a hook at both ends for engagement with said frame, a coil portion adjacent each end and a straight central portion between said coil portions, said seating section comprising a buffer body, the underside of said buffer body including a plurality of parallel grooves so located in said underside that each of said spring members extends into one of said grooves,



such arrangement of said spring members and grooves serving to prevent lateral displacement of the spring members.

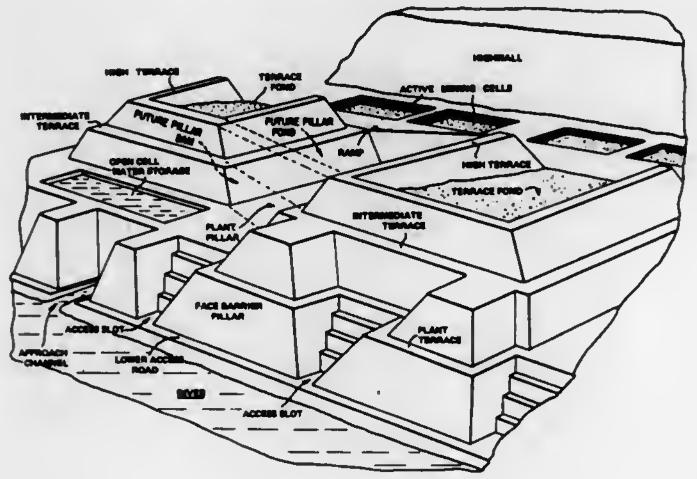
3,848,927
MINING METHOD USING CONTROL BLASTING

Clifton W. Livingston, 624 Panorama Dr., Grand Junction, Colo. 81501

Division of Ser. No. 14,166, Feb. 25, 1970,. This application Aug. 18, 1971, Ser. No. 172,736

Int. Cl. E21c *37/00*

U.S. Cl. 299—13 **30 Claims**



1. A mining method comprising:
a. preparing a bench free face by conducting test blasts;
b. establishing a pattern of cellular units separated by pillars of the ore body to be mined;
c. tunneling horizontally though said ore body perpendicular to said free face in said pillar areas; d. tunneling through said cellular units parallel to said free face and at the same level as said tunneling in step (c);
e. placing charges in the tunnels formed in step (d) in the area of said cellular units; and
f. detonating said charges.

3,848,928
PANTOGRAPHIC WALL PROTECTOR AND AUTOMATIC CONTROLLING DEVICE THEREOF

Shigeo Nakajima, Kushiro, Japan, assignor to Taiheiyo Coal Mining Co., Ltd., Tokyo, Japan

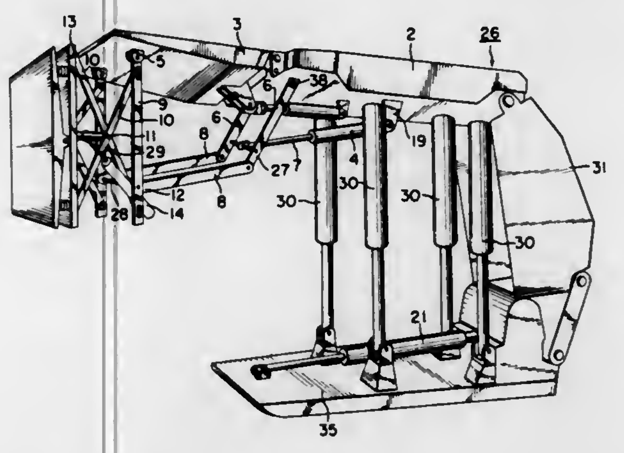
Filed Feb. 12, 1973, Ser. No. 331,791

Int. Cl. E21d *23/00*

U.S. Cl. 299—33 **3 Claims**

1. In a mining operation wherein a moveable drum shearer (**34**) moves against a wall to shear material therefrom, a pantograph wall protector to hold the wall at locations where the drum shearer is not operating comprising in combination:

a. a horizontal shoe (**35**) with inner and outer ends, the inner end being towards said moveable drum shearer (**34**);
b. an arch frame (**31**) extending vertically upwards from said shoe outer end and vertically extending prop means (**30**) connected to said shoe (**35**);
c. a center beam (**2**) with inner and outer ends, said outer end being horizontally supported by said arch frame (**31**) and said prop means (**39**) above said shoe and a tipping beam (**3**) pivotally connected to said center beam and said tipping beam serving to support the ceiling of an excavation;
d. brackets (**5**) disposed towards said tipping beam inner end, and link bars extending downwards, a horizontally telescoping zig-zag pantograph extending from said link bars including a vertical wall protection plate (**13**) disposed at the outer end of said pantograph, with hydraulic cylinder means connected to said center beam and link bars to extend and contract said pantograph;
e. support means (**16**) on said shoe inner end a switch member and an enabling member (**15**) one of said members being mounted on said support member (**16**), the other of said member being mounted for motion with said movable drum shearer (**34**) whereby as the drum shearer (**34**) advances or retreats, the switch is enabled by said switch enabling means (**15**) which switch in turn is coupled to and operates said hydraulic cylinder means to expand or contract the pantograph protector so as to allow passage of said drum shearer.



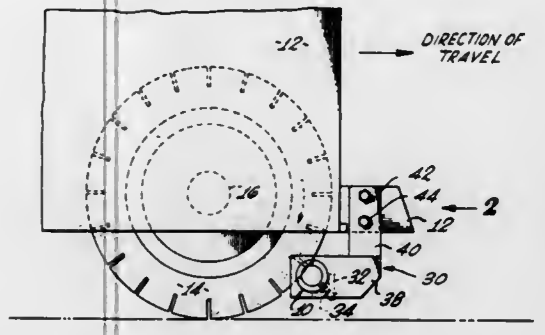
3,848,929
WATER APPLICATOR FOR A PAVEMENT GROOVING MACHINE

Harold C. Miller, Chicago, Ill., assignor to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.

Filed June 14, 1973, Ser. No. 369,938

Int. Cl. E01c *23/09*

U.S. Cl. 299—39 **16 Claims**



1. A water applicator for attachment to a pavement grooving machine of the type including a cutter assembly which has a rotating shaft on which are mounted a plurality of parallel rotary cutting blades at a predetermined spacing, the blades engaging the pavement to cut grooves therein, the water applicator including:

a water tube having,
  a tubular wall having,
    at least one enclosed internal passage extending in a direction axially of said tubular wall,
  a plurality of notch-like openings extending through said tubular wall into communication with said passage, said openings spaced along said tubular wall at a corresponding spacing to the predetermined spacing of the cutting blades, each said opening being of sufficient width to loosely receive an associated one of the cutting blades;
  and supporting means adapted for connection to the pavement grooving machine for supporting said water tube in spaced parallel relation to the rotating shaft with the cutting blades projecting through the associated said openings in said tubular wall partially into said passage.

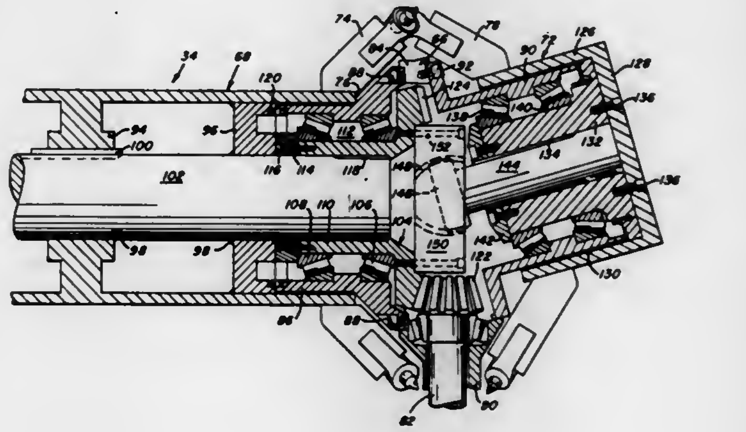
3,848,930
CONTINUOUS MINING MACHINE WITH DRIVE TO ANGLED END SECTIONS

Maurice K. LeBegue, Ashland, Ky., assignor to National Mine Service Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 210,916, Dec. 22, 1971, Pat. No. 3,774,969. This application Oct. 17, 1973, Ser. No. 407,171

Int. Cl. E21c *27/24*

U.S. Cl. 299—76 **9 Claims**



1. A continuous mining machine comprising,
an elongated body portion mounted on propelling means,
a boom member pivotally secured to said body portion and extending forwardly therefrom,
a drum member rotatably mounted on the front of said boom member transversely to said body portion, said drum member having cutting elements extending therefrom,
said drum member having an intermediate section and a pair of end sections, said end sections extending angularly to said intermediate section so that certain of said cutting elements mounted on said drum member overlap along the front of said drum member to provide a continuous cutting pattern along the length of said drum member,
said pair of said drum member end sections having rear portions spaced from said drum member intermediate section and forming a pair of openings between said end sections and said intermediate section,
input drive shafts for rotating said drum member, said input drive shafts extending through said respective openings,
bevel gear drive means positioned within said drum member and nonrotatably secured to said intermediate section,
pinion gears secured to said input drive shafts and meshing with said respective bevel gear drive means, and

means drivingly connecting each of said bevel gear drive means to said adjacent end sections so that said input shafts rotate said drum member intermediate section and said end sections.

3,848,931

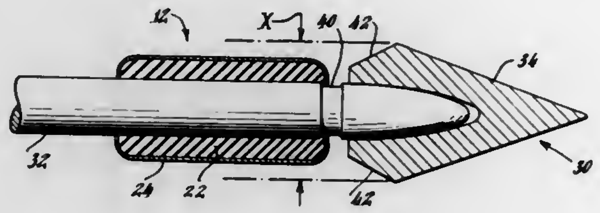
TOOL BIT FOR VIBRATION ATTENUATION

James A. Swisher, Easton, Conn., assignor to International Tool Sales, Inc., Bridgeport, Conn.

Filed Oct. 10, 1972, Ser. No. 295,928

Int. Cl. B25d *17/12*

U.S. Cl. 299—94 **10 Claims**



1. A percussion tool bit for attenuating operational vibrations, comprising:

a shank through which forces are translated, said shank having a groove disposed therein;

a compressible sleeve disposed about a portion of said shank and in intimate contact therewith;

a rigid sleeve disposed to compressibly encase said compressible sleeve, said rigid sleeve being configured for engagement into said groove on said shank to interlock therewith; and

a work tip detachably affixed to one end of said shank.

3,848,932

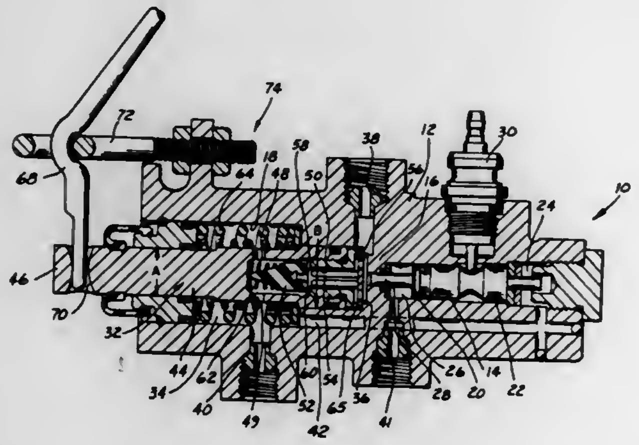
VEHICLE BRAKING SYSTEMS HAVING HEIGHT SENSING PROPORTIONING VALVE

Richard L. Lewis, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed July 2, 1973, Ser. No. 375,421

Int. Cl. B60t *11/34, 17/22*

U.S. Cl. 303—6 C **8 Claims**



1. In a brake control valve:

a housing defining a bore therewithin;

means dividing said bore into first and second compartments;

one of said compartments having a first inlet port communicated to a first pressure source, an outlet port, and valve means for controlling fluid communication between said first inlet port and said outlet port, said valve means being responsive to a first fluid pressure level at said outlet port to restrict fluid communication between said first inlet port and said outlet port to establish a lower fluid pressure level at said outlet port than at said first inlet port; and

pressure differential responsive means mounted in the other compartment and defining a pair of fluid cavities between opposite ends of each of the pressure differential responsive means and corresponding ends of said other compartment, means communicating one of said cavities with said first inlet port and the other cavity with a second fluid pressure source, the pressure level generated by said second fluid pressure source normally being substantially equal to the pressure level generated by said first pressure source to hold said pressure differential responsive means in a normal position, said pressure differential responsive means shifting in response to the fluid pressure level at said first inlet port upon failure of fluid pressure at said second inlet port to another position, said pressure differential responsive means carrying means disposed out of engagement with said valve means when the pressure differential responsive means is disposed in the normal position, but engaging said valve means to hold the latter open to permit substantially unrestricted fluid communication between said first inlet port and said outlet port when said pressure differential responsive means is shifted to the another position;

said means dividing said bore into said compartments being a wall extending transversely across said bore;

said valve means including a pair of valve members cooperating with one another to control fluid communication between said first inlet port and said outlet port;

said means carried by said pressure differential responsive means being independent of said valve members disengaged from the latter when the differential pressure responsive means is disposed in said normal position, but moving into engagement with one of said valve members to hold the latter away from the other valve member when said differential pressure responsive means shifts to said another position.

3,848,933

SKID CONTROL SYSTEM FOR VEHICLES

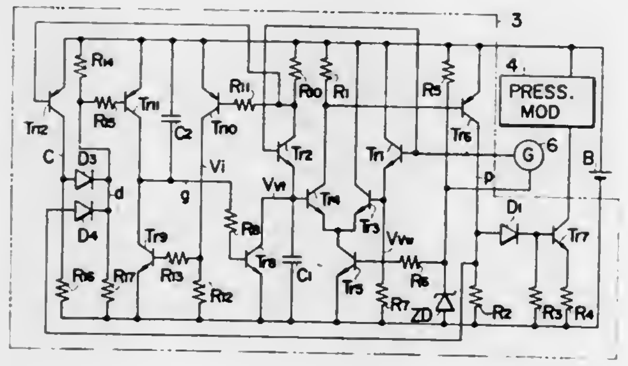
Takeshi Ochiai, Aichi, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Continuation-in-part of Ser. Nos. 109,461, Jan. 25, 1971, abandoned, and Ser. No. 109,465, Jan. 25, 1971, abandoned. This application July 11, 1972, Ser. No. 270,584

Claims priority, application Japan, Jan. 26, 1970, 45-6312; Aug. 5, 1970, 45-67971; Jan. 27, 1970, 45-6743

Int. Cl. B60t *8/08*

U.S. Cl. 303—21 BE **43 Claims**



1. A control device for regulating the braking effect of a brake system of a vehicle with wheels on the basis of the wheel velocity and a set deceleration comprising, regulator means for establishing an indication corresponding to the set deceleration, circuit means forming a control signal corresponding to the velocity of the wheel to be controlled, network means responsive to an indication corresponding to the set deceleration and coupled to said circuit means for inhibiting changes in the value of the control signal formed by said circuit means at a rate greater than the indication, and electrical means responsive to the control signal for producing a brake modulation output when the change in the value of the signal is inhibited, said regulator means including variation means for varying the set deceleration as a function of the time during which the signal is not inhibited and during which the wheel velocity is simultaneously increasing.

3,848,934

HYDRAULIC UNIT FOR A BRAKING MECHANISM PROVIDED WITH AN ANTI-LOCKING SYSTEM

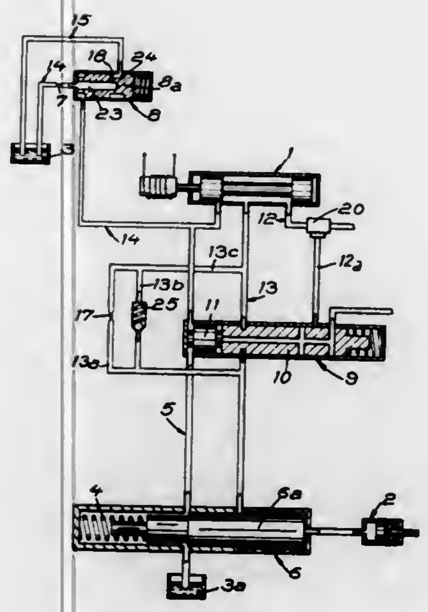
Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Mar. 7, 1973, Ser. No. 339,008

Claims priority, application France, Mar. 9, 1972, 72.8307

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 F **10 Claims**



1. Hydraulic unit for a braking mechanism having an anti-locking system for at least one wheel of a vehicle which is intended to ensure the pressure variations of a fluid in the brake operators receiving said fluid connected to said wheel both when locking is imminent and when the wheel regains its grip and which is constituted by a source of fluid under pressure controlled by the driver, by said brake operators, by a first pipe connected to the source of fluid under pressure, by a second pipe connected to the brake operators and by a third exhaust pipe, characterized in that a three-way valve having two stable positions controlled by a device detecting the dynamic state of the wheel is connected to the three said pipes and is able to connect the second pipe selectively to the first pipe and the third exhaust pipe, however, on the one hand, a distributor having two positions which is arranged in the second pipe, closes the latter in its second position as soon as the detection device registers an abnormal state of rotation of the wheel and remains in a cloed position as long as the value of the pressure of the fluid from said controlled source has not appreciably decreased and thereby opens the distributor thus allowing a substantially free passage of fluid in said first position and that, on the other hand, a first conduit is provided having a first flow-limiter in parallel flow relationship to said distributor, and in that said third pipe includes a first accumulator and a second flow-limiter, and in that a second conduit is provided in parallel flow relationship to said second flow limiter, said second pipe comprising a valve member constituted by a moving member of a second accumulator permanently connected to said second pipe between said distributor and the brake operators, said moving member being in its position opening said second conduit when the volume of said accumulator is minimal.

3,848,935

FLUID PRESSURE BRAKING SYSTEMS FOR VEHICLES

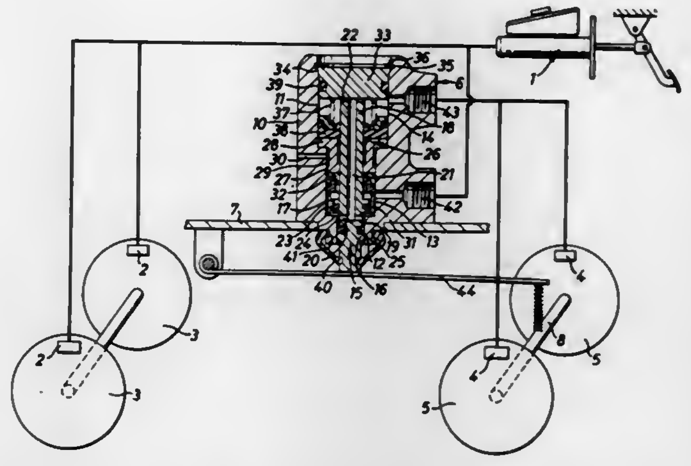
Harold Hodkinson, Leamington Spa, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed Apr. 16, 1973, Ser. No. 351,314

Claims priority, application Great Britain, Apr. 19, 1972, 18165/72

Int. Cl. B60t *8/26*

U.S. Cl. 303—22 R **2 Claims**



1. A fluid pressure control valve for controlling fluid pressure acting in a motor cylinder to apply a brake to a vehicle wheel, comprising valve means in a valve body with an inlet adjacent one end for communication with a fluid pressure source, said body having an outlet spaced from said inlet adjacent another end for communication with a motor cylinder of a vehicle wheel, a first plunger disposed in said body extending through an opening in said one end and having an enlarged annular flange on one end thereof in communication with said inlet, the inner end of said valve body adjacent said opening forming a valve seat therein for said annular flange to seat thereon to close off communication between said inlet and outlet, resilient means acting on the portion of the plunger extending out of said valve body opening and normally urging said annular flange out of contact with said valve seat for maintaining said flange unseated and said inlet and outlet in communication with each other, when the brake is not being applied, a second plunger disposed in said valve body comprising an annular flange slidably disposed on said first plunger, said second plunger flange being stepped and having one face in communication with said outlet and another face in communication with said inlet, said one face having a diameter and cross sectional area substantially greater than its other face, whereby said valve means is closed and said one plunger is seated when the loading applied to said one plunger by fluid pressure at the inlet exceeds the loading applied to said one plunger by said resilient means, so that an increase in pressure at said inlet is transmitted to said outlet by said second plunger without the valve means being reopened, the increase in pressure at said outlet being less, when said valve means is closed, than the increase in pressure at said inlet by an amount determined by the ratio between the cross-sectional areas of the sides of said second plunger which are exposed to fluid pressure at the inlet and outlet respectively.

3,848,936

ENDLESS TRACK DEVICE FOR VEHICLES

Toshio Tsuchiya, Ooi-machi, and Osamu Takeuchi, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1973, Ser. No. 336,355

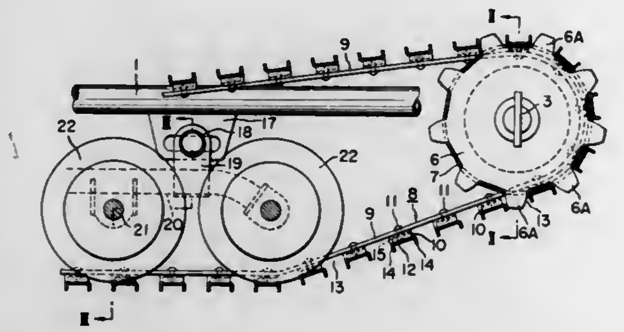
Claims priority, application Japan, Mar. 1, 1972, 47-21223

Int. Cl. B62d *55/24*

U.S. Cl. 305—35 EB **1 Claim**

1. An endless track device for vehicles usable on snow, ice and the like, comprising: a drive wheel supported by the body

of a vehicle in a longitudinal and medial plane thereof and having a plurality of radially extending driving teeth formed around its periphery; at least one guide wheel also supported by the vehicle body in longitudinally aligned relation with said drive wheel; an endless track consisting of a pair of flexible endless belts arranged on opposite sides of said drive wheel and a plurality of flexible connecting bars made of steel sheet extending transversely of said belts for interconnecting them on their exterior surfaces with a definite spacing between any adjacent two of said connecting bars; the latter having U-shaped groove portions formed at the medial portions thereof for engagement with respective peripheral portions of said drive wheel and said guide wheels, and the remaining opposite side portions being flexible relative to said groove portions; said opposite side portions being engageable with the surface over which the vehicle travels to support a part of its weight; said driving teeth being successively received in spaces between said groove portions for driving engagement with said endless track; said connecting bars having central and side scraper blades respectively formed on edges thereof at said groove portions and said opposite side portions; said central blades projecting more outwards than said side blades.



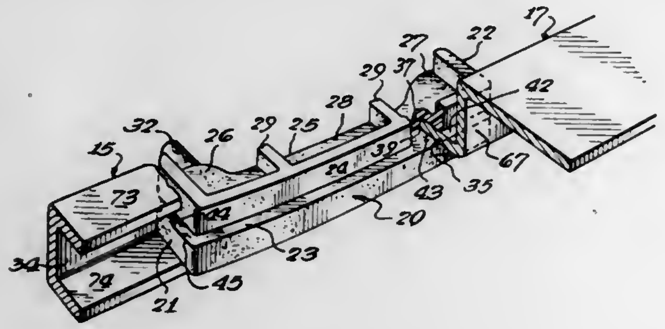
3,848,937
SLIDE MECHANISM

Arthur J. Harder, Jr., Franklin Park, Ill., assignor to Coach and Car Equipment Corporation, Elk Grove Village, Ill.

Filed Apr. 26, 1972, Ser. No. 247,681

Int. Cl. F16c *21/00*

U.S. Cl. 308—6 R **11 Claims**



1. A slide mechanism comprising:
- a first frame;
- a pair of bearing elements each located on said first frame in opposed relation to each other and spaced apart in a direction transverse to the direction of desired sliding movement;
- a second frame having a pair of sliding rail elements each having means for slidably engaging a respective one of said pair of bearing elements to mount said second frame for sliding movement relative to said first frame;
- at least one of said bearing elements having sufficient resiliency to permit flexing between a normal condition in which said one bearing element is relatively bowed toward said other bearing element and a condition in which the one bearing element is relatively less bowed;
- and means mounting said one bearing element on said first frame in said relatively less bowed condition; said one bearing element including means normally urging said one bearing element to return to its normal condition, whereby said second frame is held between said bearing elements in a manner which prevents movement of the second frame in a direction transverse to the direction of sliding movement.

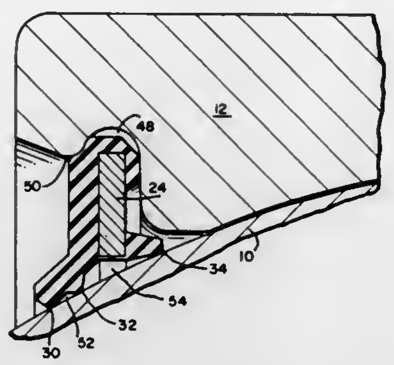
3,848,938
BEARING AND BEARING SEAL

Leo Stella, Bristol, Conn., and Alfred J. Sarbello, Agawam, Mass., assignors to The Torrington Company, Torrington, Conn.

Filed Feb. 28, 1973, Ser. No. 336,542

Int. Cl. F16c *33/72*

U.S. Cl. 308—36.1 **2 Claims**



1. In a sealed, self-aligning bearing, a ball having an outer surface which is a portion of a sphere, a socket having a inner surface cooperating with the spherical outer surface portion of the ball, the socket having at each end an annular groove directed toward the ball forming a seal-receiving recess, and an elastically deformable integral snap-sealing ring filling the space between each seal-receiving recess and the ball, and adapted to enter and lock itself in said space by elastic deflection, each sealing ring having three separate axially-spaced points, each in contact with the spherical outer surface of the ball, thereby providing two spaces between the inside of the sealing ring and the outside of the spherical ball, the outermost point being a surface of a elastically deflected cantilevered axially extending lip.

3,848,939
RADIAL ROLLING BEARING ASSEMBLY

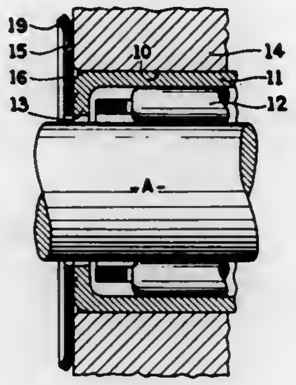
Alfred Pitner, Paris, France, assignor to Nadella, Rueil Malmaison, France, a part interest

Filed Dec. 30, 1971, Ser. No. 214,177

Claims priority, application France, Jan. 29, 1971, 71.03089

Int. Cl. F16c *33/58*

U.S. Cl. 308—236 **13 Claims**



1. A radial rolling bearing assembly comprising in combination a machine element defining a bore and an outer surface surrounding the bore, a cold-formed member of thin sheet metal which is an interference fit in the bore, said member defining a bearing ring having a longitudinal axis, rolling members within the ring, the ring having an annular portion defining an outer radial face in a plane perpendicular to said axis and an inner radial face which axially retains the rolling members, means for axially locating the bearing ring in the bore, the locating means comprising an annular element which has an annular surface in axial abutment with the outer radial face of the annular portion and is substantially of the same nature of metal as said member and has a portion which extends radially beyond said bore and is in axially supported relation to said outer surface of the machine element, and fusion welding rigidly interconnecting the annular element and the annular portion.

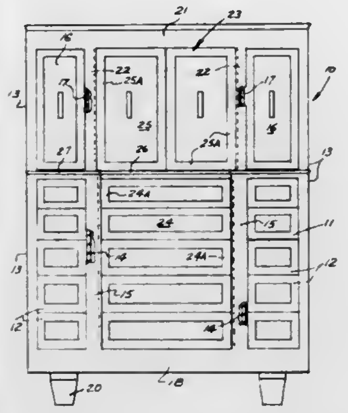
3,848,940
DUAL PURPOSE CABINET

Darrell E. Berens, 649 Chambers St., Eugene, Oreg. 97402

Filed Apr. 18, 1973, Ser. No. 352,092

Int. Cl. A47f *3/10*

U.S. Cl. 312—135 **2 Claims**



1. A cabinet for the storage of valuable household items permitting display or concealment of the stored items, said cabinet comprising,
- stationary cabinet structure defining a central open area extending substantially the height of the cabinet, said structure having decorative trim disposed upon the cabinet front adjacent said open area,
- an upright panel structure of elongate configuration normally closing said open area of the cabinet, said panel having exterior trim similar to the trim on the stationary cabinet structure simulating a cabinet of substantially conventional appearance, horizontal extensions projecting rearwardly from the rearward side of said rotatable panel into the cabinet open area for the upright storage thereon of elongate articles, shaft means mounting said panel for rotational movement about a vertical axis rearwardly offset from the cabinet front, and
- said rotatable panel in its normal position having vertically extending edges in opposing relationship to corresponding edges formed on the stationary members of the cabinet, at least some of the panel edges being oblique allowing close disposition of the panel edges to a corresponding stationary edge of the cabinet while permitting arcuate travel therepast during panel rotation whereby lines of demarcation between the panel and stationary cabinet structure are substantially concealed.

3,848,941
VISUAL-ROTARY-INDEX CARD FILE

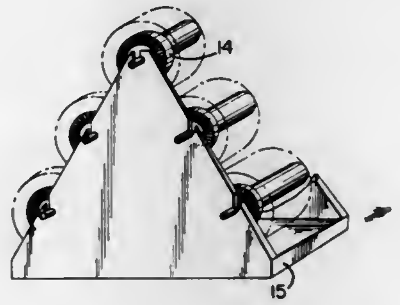
Roland Clough Brown, P.O. Box 430, Del Mar, Calif. 92014

Filed Dec. 8, 1972, Ser. No. 322,183

Int. Cl. A47b *63/00;* **A47f** *1/00*

U.S. Cl. 312—189 **7 Claims**

1. A Visual-Rotary-Index card file unit assembled on an axle of circular section at the bearings, but otherwise of other geometric section for the press fit of a hub with slot means completely around its cylindrical surface for holding index means consisting of large size index cards inserted in index card frames, formed with a fork section of two closely-spaced tines, each narrow frame of rectangular plan, the two together forming a sandwich with a stubby flap along the bottom side fitting snugly into the slot of the said slotted hub, one end of said axle fitted with handwheel means for turning said axle, and brake means to control the rotation of said axle by the operator, stick-um indices suitably spaced around the rim of said handwheel correspond to tabs on said index means, the whole assembly as a unit capable of being lifted off and on its stand means for storage and use by the operator.



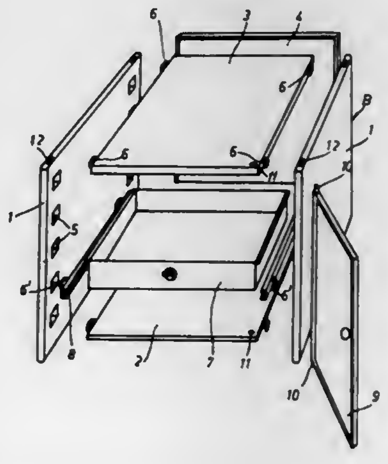
3,848,942
MODULE FOR FURNITURE DEVELOPMENT

Luigi Fanini, via Branante, Loreto, Italy

Filed Mar. 22, 1973, Ser. No. 343,860

Int. Cl. A47b *43/00, 87/00;* **A47f** *5/08*

U.S. Cl. 312—257 R **11 Claims**



1. A module fabricated of synthetic material for integration with similar modules to develop articles of furniture and the like comprising a pair of side walls, each of said side walls being comprised of inner and outer components, each of said components having a main planar portion with inward and outward surfaces, said components having a plurality of flange-like projections on their inner confronting surfaces in mutual abutting relation, means fixedly uniting such abutting projections integrating said components into said unitary side walls, said side walls being hollow in the zones between said projections, a top wall, a bottom wall, a rear wall, cooperative means provided on said top and bottom walls and said side walls for detachably engaging said top and bottom walls to said side walls, and means securing said rear wall to said side walls.

3,848,943
ROTATABLE SILVERWARE HOLDER

Noah Gene Geesaman, and Vivian B. Geesaman, both of R.R. No. 1, Bryant, Ind. 47326

Filed Sept. 14, 1973, Ser. No. 397,598

Int. Cl. A47b *81/00*

U.S. Cl. 312—284 **6 Claims**

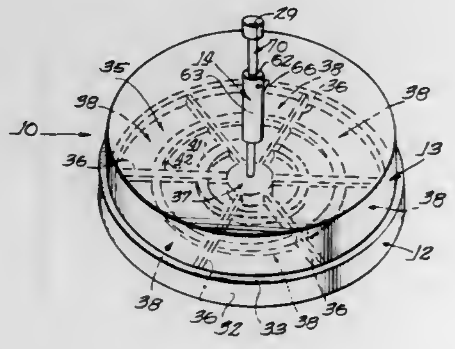
1. A rotatable silverware holder comprising:
- a base member adapted to rest on any suitable support

surface and including an elongated cylindrical boss projecting upwardly a slight distance therefrom and having an elongated vertically extending rod projecting axially upwardly from the top surface of the boss;

a circular tray rotatably supported on the boss projecting from the base for rotation about its axis, the tray including a centrally disposed axially inwardly projecting hub member and a cylindrical outer side wall surface, the elongated rod projecting axially through the hub member through a suitable aperture provided axially therethrough;

a plurality of angularly spaced elongated rectangular partitions radially extending between the hub member and the tray side walls to define therebetween a plurality of separate compartments in the tray, the ends of the partitions engaging the hub member and the interior of the side walls with a side edge of each of the partitions disposed adjacent the tray bottom surface;

a pair of different diameter concentric ring like spacer members connected to the interior tray bottom surface, the partitions dividing the spacer members into arcuate sections with an arcuate section of each spacer member being disposed in each of the compartments, each spacer member having a plurality of radially extending slots provided therein with each slot being of a size and shape adapted to receive a particular item of silverware therein in a manner to support and store the same in a side-by-side relationship;



a hollow cylindrical cover open at one end and closed at the opposite end and being of a diameter to completely cover the compartments in the tray, the closed end having a centrally disposed aperture permitting the rod to extend axially therethrough;

an elongated hollow tubular member having one end connected to the center of the exterior top surface of the closed end of the cover with the opposite end projecting axially upwardly therefrom, the handle being concentric with the rod which extends axially therethrough; and

means for retaining the cover in an open position spaced axially upwardly a distance from the tray to permit silverware to be inserted into the tray and also to permit silverware to be removed from the tray, such means being readily released to permit the cover to close the tray to protect the same from dirt and other contamination.

3,848,944
CARRYING CASE FOR PA SYSTEM WITH STOWED LECTERN

Thomas P. Gilmer, Jr., Albuquerque, N. Mex., assignor to Lectrosonics, Inc., Albuquerque, N. Mex.

Filed Nov. 16, 1973, Ser. No. 416,424

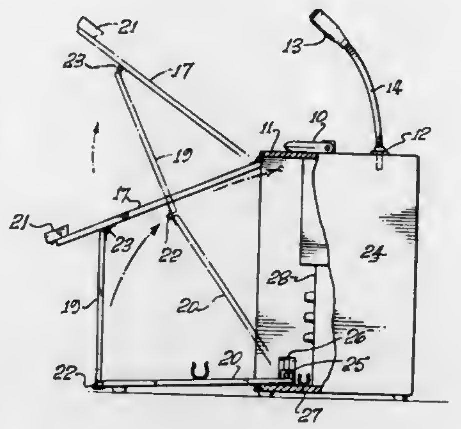
Int. Cl. A47b *77/10, 88/00*

U.S. Cl. 312—314 **10 Claims**

1. In a case having a front panel, two side panels, a top panel and a bottom panel, the combination of

a rear panel connected along its top edge to said case by means for permitting it to be swung up and out through an angle greater than 90° and back to a desired slanted position of less than 90° from the starting vertical position.

first and second members for supporting said panel in said slanted position, said first member extending down from said panel to one end of said second member resting on a supporting surface, one end of said first member being hinged to said panel near the free end thereof and the other end of said first member being hinged to said second member at said one end thereof, the other end of said second member extending into said case, and



means for pivotally attaching said other end of said second member inside said case near said bottom panel, whereby the hinge between said support members may be swung up through an arc while said rear panel swings first upwardly from said slanted position and then downwardly to a vertical position to close said case with said support members securely stowed within said case.

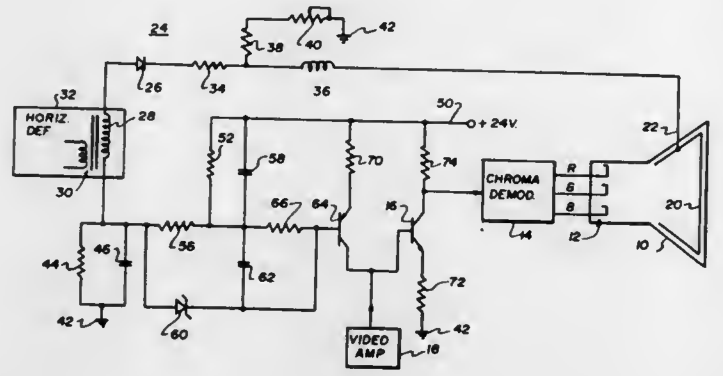
3,848,945
BRIGHTNESS LIMITING CIRCUIT

Robert A. Holzrichter, Chicago, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Filed Mar. 16, 1973, Ser. No. 342,314

Int. Cl. H01j *29/70*

U.S. Cl. 315—30 **13 Claims**



1. In a television receiver including a cathode ray tube having cathode means and anode means, and a high voltage anode power supply connected to said anode means to provide anode current which is related to cathode current, a limiting circuit responsive to both instantaneous peak current and average current in the cathode ray tube, comprising:

means actuable for limiting the current to the cathode ray tube,

peak current monitoring means responsive to a sensed instantaneous peak cathode ray tube current for actuating said limiting means, and

average current monitoring means responsive to a sensed average cathode ray tube current for actuating said limiting means.

3,848,946
ELECTRIC CONNECTORS

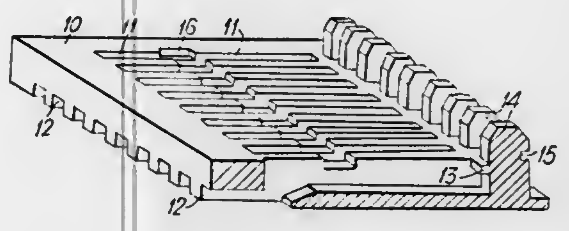
David Walker Halley, Dundee, and Russell Allan Leather, Perth, both of Scotland, assignors to Ferranti Limited, Hollinwood, Lancashire, England

Filed May 19, 1971, Ser. No. 144,871

Claims priority, application Great Britain, May 30, 1970, 26197/70

Int. Cl. H01r *13/54;* **H05k** *1/12*

U.S. Cl. 339—17 F **6 Claims**



1. An electric connector for connection with the conductors of a flat multiple-conductor cable comprising a first body member of electrically insulating material having means for attaching the cable thereto, a second body member of electrically insulating material securable to the first body member so as to sandwich part of the cable between the two body members, at least one conductive connection member carried by one of the body members, and at least one conductive contact member in the form of a lever having two arms, one arm including a resilient elongated portion and being attached at its end to the other body member, the other arm being engageable at its end with a connection member, the contact member being so shaped that when the two body members are secured to one another with the cable attached to the first body member a portion of the contact member intermediate the two arms thereof bears upon a conductor of the cable from which the insulation has been removed, thereby connecting said conductor to said connection member.

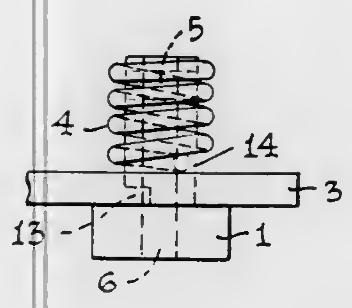
3,848,947
ELECTRICAL CIRCUIT BOARD TERMINAL SPRINGCLIP

Dorothy E. Jambor, Milwaukee, Wis., assignor to Dot Co Incorporated, Glendale, Wis.

Filed June 16, 1972, Ser. No. 251,933

Int. Cl. H05k *1/04*

U.S. Cl. 339—17 R **6 Claims**



1. An electrical terminal comprising:

a. a conductive rivet including a shaft and a head;

b. a slot in said shaft proximate the head;

c. a bore extending through the end of the shaft opposite the head and having an axis perpendicular to the axis of said shaft;

d. a coil spring disposed about said shaft and having the end thereof nearest the head attached in said slot.

3,848,948
ZERO INSERTION LEVERED INTERFERENCE CONNECTION

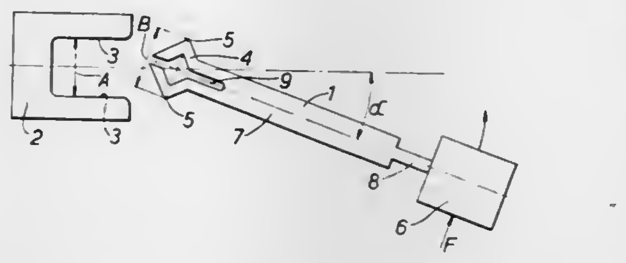
Lucas Soes, Vught, Netherlands, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 11, 1973, Ser. No. 405,730

Claims priority, application Netherlands, Oct. 18, 1972, 7214078

Int. Cl. H01r *21/28*

U.S. Cl. 339—64 R **4 Claims**



1. An electrical connector comprising male and female contacts engageable by elastic deformation of the male contact, the female contact having a central axis and having a pair of spaced contact surfaces extending parallel to said axis for receiving the male contact between them; the male contact comprising an elongate body formed with an enlargement at its free end projecting from opposite sides of the body, distal parts of the enlargement on opposite sides of the body defining male contact surfaces spaced apart by a distance greater than the spacing between the female contact surfaces, parts of the enlargement proximal to the contact surfaces falling within a circular envelope of diameter equal to the spacing between and passing through the male contact surfaces, a slot extending into the enlargement longitudinally between the male contact surfaces from an end of the enlargement remote from the body, the arrangement being such that the body can be oriented at a first inclination relative to said axis the female contact for insertion of the enlargement into the female contact with minimum interference between the enlargement and the female contact surfaces, and thereafter can be reoriented by rotation relative to the female contact to a second inclination relative to said axis to present maximum interference and elastically to deform the male contact surfaces towards each other as the male contact surfaces with respective female contact surfaces engage.

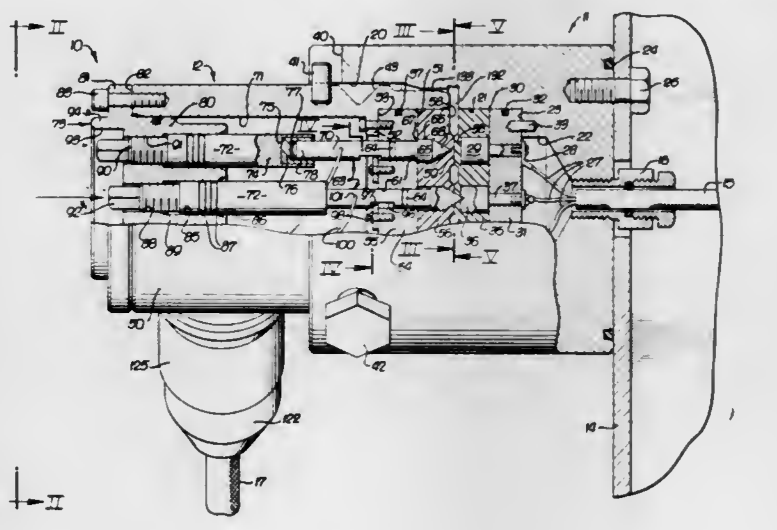
3,848,949
SUBSEA BUTTON-TYPE ELECTRICAL CONNECTOR

Chester B. Falkner, Whittier, Calif., assignor to Deep Oil Technology Inc., Long Beach, Calif.

Filed Nov. 24, 1972, Ser. No. 309,416

Int. Cl. H01r *13/54, 9/06*

U.S. Cl. 339—75 M **6 Claims**



1. In a multi-contact button-type electrical connector for use in a hostile environment, the combination of:

- a receptacle means provided with a chamber having an open end;
- a carrier member within said chamber provided with a plurality of contact elements having a resilient protective cover thereover;
- a plug means receivable within said open end and chamber of said receptacle means;
- a carrier body carried by said plug means in alignment with said carrier member on said receptacle means,

said carrier body including a plurality of through bores,

- a contact member slidable in each through bore and having a pointed contact head aligned with a contact element in said receptacle means,
- a protective cover embedding said pointed head and adapted to contact the cover on said contact element;

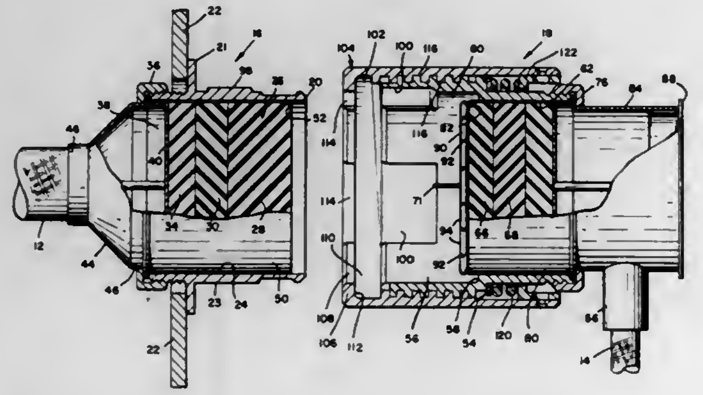
and means for individually and separately advancing each contact member into a selected electrical contact with its respective contact element;

said last mentioned means including a follower member having an inner end in force applying relation to an end of a contact member,

said follower member having an outer end having means for receiving forces to move said follower member and said contact member axially into electrical contact with said contact element.

3,848,950
ELECTRICAL CONNECTOR

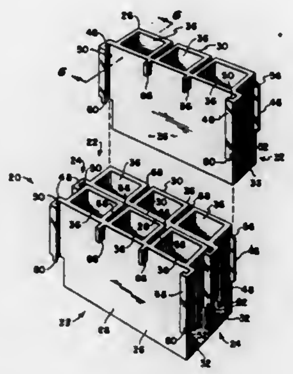
Larry L. McCormick, and Ben F. Selk, both of Los Angeles, Calif., assignors to G & H Technology, Inc., Santa Monica, Calif.
Filed Sept. 7, 1972, Ser. No. 287,184
Int. Cl. H01r *13/54*
U.S. Cl. 339—90 R **21 Claims**



8. An electrical connector including the combination of
a plug section,
a first set of electrical contacts on said plug section,
a receptacle section adapted to mate with said plug section, a second set of electrical contacts on said receptacle section, one of said sets being movable between a first position wherein said contacts are electrically mated and a second position wherein they are electrically unmated, a breech lock on said sections including a plurality of circumferentially spaced detent means on one of said sections and a movable member on the other of said sections,
said movable member being rotatable between a first angular position wherein it engages the detent means and a second angular position wherein it does not engage said detent means,
resilient spring means effective to bias said movable member toward said first angular position, and
means operatively coupled to said breech lock and to said movable set of contacts for moving said set into the first mated position when said movable member is in said first angular position and into the second unmated position when said movable member is in said second angular position.

3,848,951
CONNECTOR HOUSINGS AND LOCKING STRUCTURES THEREFOR

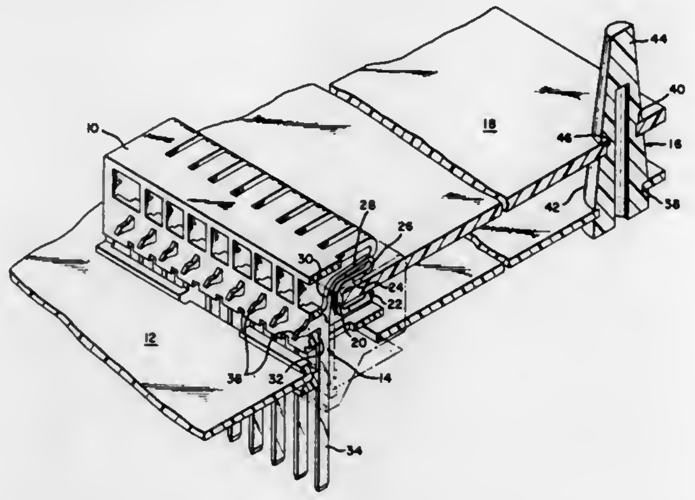
Leonard H. Michaels, Warrenville, and Edward L. Romine, Darien, both of Ill., assignors to Molex Incorporated, Downers Grove, Ill.
Filed Jan. 12, 1973, Ser. No. 322,913
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 R **12 Claims**



1. A locking structure for holding a pair of connector housing parts in assembled relation, said locking structure comprising a pair of interfacing rigid channel members each defining a slot and a pair of complementary rib members slidably receivable in said slots, a pair of resilient lock means for releasably retaining said rib members, in said channel members, each said lock means comprising a lock member normally obstructing the entrance end of one said slot, an integral resilient hinge interconnecting each said lock member and one said channel member for permitting said lock member to be moved relative to said rigid channel member in response to engagement by the corresponding rib member to a position wherein said rib member may enter said slot.

3,848,952
ZERO INSERTION FORCE EDGE CARD CONNECTOR

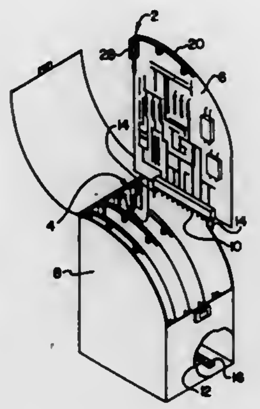
Charles I. Tighe, Jr., Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed July 27, 1973, Ser. No. 383,365
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 R **13 Claims**



1. An electrical connector for receiving and contacting a mating electrical connector upon application of substantially no insertion force, comprising:
- a housing having a fulcrum portion and a stop portion in parallel spaced relation defining an access opening therebetween; and
- a plurality of connector spring contacts fixedly mounted in said housing, each said contact including a yoke portion having two interconnected parallel arms with an electrical contact on one of said arms and a follower contact on the other of said arms, a horizontal cantilever spring and a vertical cantilever spring connected in series, a contact support portion connected to one end of said spring series and said yoke connected to the other end of said spring series, and a terminal portion connected to said contact support, said support portion being fixedly mounted in said housing with said terminal portion extending from said housing and said yoke aligned with said access opening, whereby said mating connector is inserted into said access opening without engaging said spring contacts and is rotated about said fulcrum portion to abut said stop portion and engage said spring contacts.

3,848,953
DEVICE FOR INSERTING AND CLAMPING A PRINTED CIRCUIT BOARD

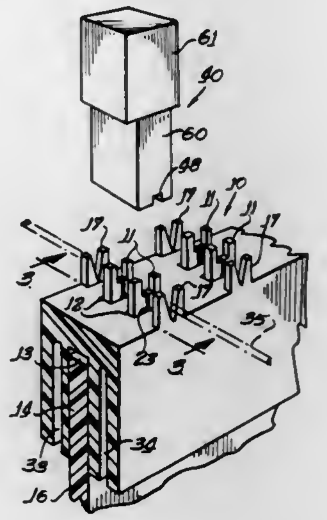
George J. Petroshanoff, Torrance, Calif., assignor to Tridair Industries, Torrance, Calif.
Continuation of Ser. No. 334,800, Feb. 22, 1973, abandoned. This application Mar. 14, 1974, Ser. No. 451,331
Int. Cl. H01r *13/54*
U.S. Cl. 339—92 M **1 Claim**



1. A device for inserting and clamping a printed circuit board of the type having male pin-type contacts for connection with female interconnects within a chassis wherein the board is received in close array with adjacent boards comprising a circuit board component and a chassis component, said circuit board component consisting of a strut and an integral alignment housing, said strut fastened through depending strut tabs to the end of said circuit board opposite the male contact pins, said strut having a width slightly wider than the thickness of said circuit board, said strut extending over and conforming to a substantial portion of the upper contour of said board, said alignment housing suitably arranged to extend downwardly contiguous to one face of the circuit board and adjacent one end thereof when said strut is attached to said circuit board, a jack screw rotatably received but axially restrained within a central bore of said housing, said jack screw extending below said housing and having a reduced tip to facilitate engagement with a nut member, said jack screw having an enlarged head disposed within a central enlarged bore of said housing, said jack screw adapted to be driven by a tool, said housing having a generally rectangular configuration slightly larger in cross-section than the diameter of said jack screw with a locking projection extending along its length along one face thereof, said chassis component consisting of a substantially U-shaped channel-like guide and an attached guide nut, said guide secured adjacent an open end of said circuit board chassis with the longitudinal axis of said guide extending toward said female interconnects on said chassis, one depending leg of said guide extending further outwardly and then inwardly to form a wraparound portion, said guide adapted to slidably receive with limited clearance said alignment housing in a manner such that the locking projection of said alignment housing is carried within said wraparound portion, said guide arranged with respect to female interconnects on such chassis such that when said alignment housing is within said guide said male contacts on said circuit board are aligned with said female interconnects on said chassis, said locking projection of said alignment housing carried within said wraparound portion of said guide to confine said alignment housing and attached circuit board from tilting relative to the longitudinal axis of said guide, a guide nut attached to said guide for threaded engagement with said jack screw after said alignment housing is received within said guide and the male contacts of said circuit board are aligned with said female interconnects, said male contacts being inserted into electrical engagement with said female interconnects by rotation of said jack screw, and said strut acting to distribute the inserting load over said circuit board as said circuit board is inserted into said chassis.

3,848,954
CLIP TERMINAL AND APPLICATOR TOOL COMBINATION

William S. Sedlacek, Chicago, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.
Filed June 6, 1973, Ser. No. 367,410
Int. Cl. H01r *9/08*
U.S. Cl. 339—97 R **13 Claims**



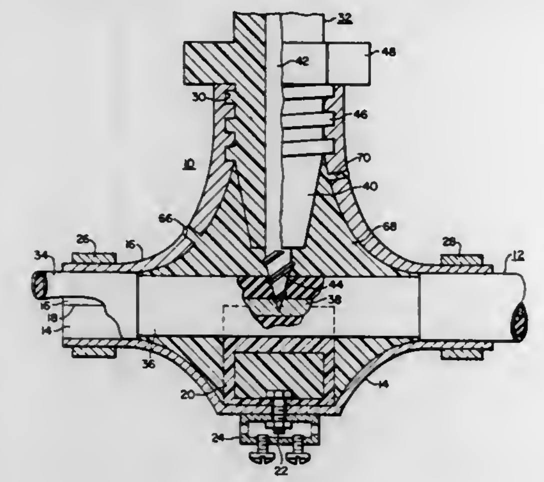
1. The combination of a clip terminal of the type having a flat body portion providing two resilient arms separated by a notch at the upper end thereof and by a slot having substantially parallel edges and communicating with the lower end of said notch, the bottom portion of said notch having formed therein sharp corner edges oriented substantially parallel to the axis of an insulated wire to be inserted into the slot, so that movement of the insulated wire into the slot will cause said sharp corner edges to cut through the insulation and bare the surface of the conductor to make electrical contact between the clip terminal and the conductor within the insulated wire, and applicator tool means having first pusher means extending from one end thereof and engaging the insulated wire for pushing the wire into said slot, said applicator tool means further including cutter means spaced from said pusher means to cut the insulated wire at a predetermined distance beyond said clip terminal after said insulated wire is inserted into said clip terminal, said cutting means being movable relative to said pusher means and movable in the same direction as said pusher means to cut the insulated wire after the pusher means has completely inserted the wire into said slot.

3,848,955
ELECTRICAL CONNECTOR FOR TAPPING A CONCENTRIC ELECTRICAL CABLE

Arthur M. Lockie, Sharon, Pa., and Jeffrey A. Hatch, Jefferson City, Mo., assignors to Westinghouse Electric Company, Pittsburgh, Pa.
Filed Aug. 9, 1973, Ser. No. 387,071
Int. Cl. H01r *11/20*
U.S. Cl. 339—97 R **8 Claims**

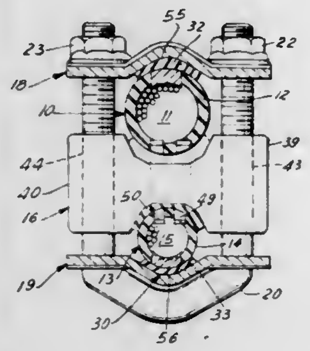
1. An electrical connector for tapping a concentric electrical cable, comprising:
- a housing disposable around the cable to be tapped;

- a plug inserted through an opening in said housing, said plug having threads thereon which are engageable with threads on said housing;
- terminal means located on said plug and adapted for electrical connection of a tapping cable; and
- piercing means for penetrating the insulation around the inner conductor of the cable to be tapped, said piercing means being located on said plug and being electrically connected to said terminal means, with the threads on said plug and housing advancing the piercing means toward the inner conductor when the plug is rotated, thereby forcing the piercing means through the cable insulation and into the inner conductor to establish electrical contact, said piercing means comprising an electrical conducting stud having a substantially pointed end, said stud including threads thereon which have the same pitch as the threads which engage the plug and the housing.



3,848,956
SELF-SEALING UNDERGROUND TAP CONNECTOR

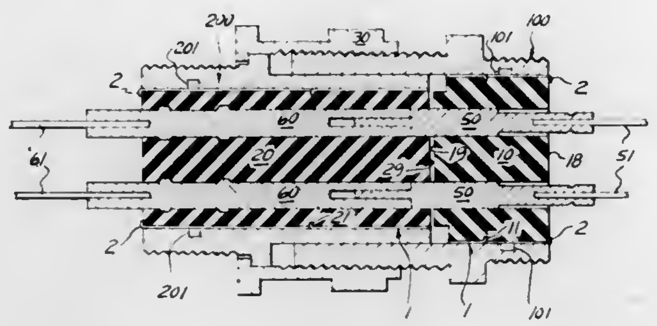
Russell H. Kraft, Hopewell Junction, N.Y., assignor to Fargo Mfg. Company, Inc., Poughkeepsie, N.Y.
Continuation-in-part of Ser. No. 232,742, March 8, 1972, abandoned. This application Feb. 4, 1974, Ser. No. 439,235
Int. Cl. H01r *11/20*
U.S. Cl. 339—98 **10 Claims**



1. A connector for joining a tap conductor to a run conductor in which said tap includes a spacer bar formed of a non-conducting material, first and second surfaces of said spacer bar, a slot formed in said spacer bar extending from said first to said second surface, a conductor bar disposed within said slot, first and second groups of piercing teeth formed on and extending from said conductor bar protruding from said slot at said first and second respective surfaces of said spacer bar, a first idler member of said tap, first non-electrical conducting idler teeth of said first idler member disposed in spaced relation with said first group of piercing teeth for receiving said cable therebetween, a second idler member of said tap, second non-electrical conducting idler teeth of said second idler member disposed in spaced relation with said second group of piercing teeth for receiving said conductor therebetween pressure means for pressing said first group of piercing teeth and said first idler teeth and said second group of piercing teeth and said second idler teeth toward each other whereby said first and second groups of piercing teeth respectively pierce through the insulation of said run conductor and said tap conductor to produce a firm mechanical and electrical connection between said conductor bar and said run conductor and said tap conductor, and said first and second idler teeth respectively pierce through the insulation of said conductor and said line to produce a firm mechanical connection, and first, second, third and fourth insulation means respectively surrounding said first and second groups of piercing teeth and said first and second idler teeth.

3,848,957
ELECTRICAL CONNECTOR INSERT RETAINER

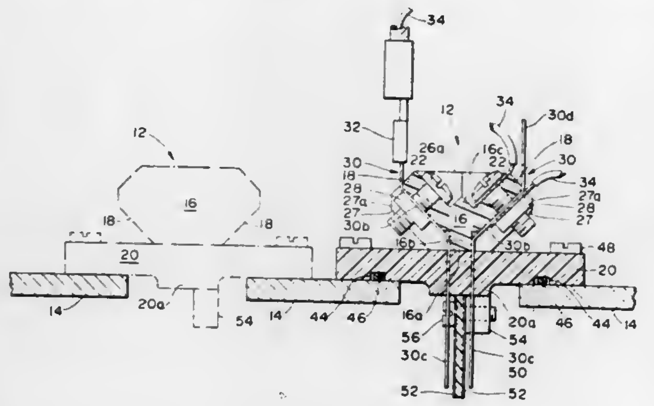
Robert W. Brush, Unadilla, N.Y., assignor to The Bendix Corporation, Southfield, Mich.
Filed Jan. 28, 1974, Ser. No. 437,259
Int. Cl. H01r *13/50*
U.S. Cl. 339—176 M **4 Claims**



3. In combination with an electrical connector of the type having a housing and an insert disposed in said housing, the improvement comprising an insert retainer for retaining said insert within said housing, said insert retainer comprising:
- a sleeve having a central axis and a plurality of axially extending fingers disposed around the periphery of one end of said sleeve, each of said fingers terminating in an end portion that includes a radial projection that extends in the direction of the central axis of said sleeve.

3,848,958
HIGH DENSITY TERMINAL STRIP

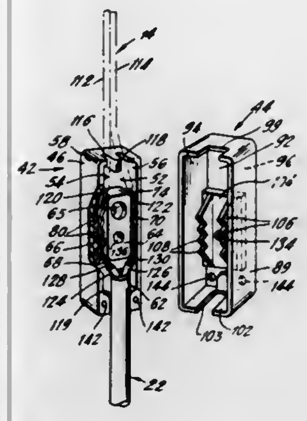
Walter Kern, Cohasset, Mass., assignor to Teradyne, Inc., Boston, Mass.
Filed Aug. 9, 1973, Ser. No. 387,153
Int. Cl. H01r *9/00*
U.S. Cl. 339—198 R **18 Claims**



1. In an electrical terminal strip having at least two rows of connection sites arrayed on an elongated insulating base member which has a generally planar mounting surface facing in a first direction, each said connection site including an electrical terminal-forming threaded element, the improvement comprising panel means of electrically insulating material on said base, said panel means carrying said rows of said connection sites and having a first surface at which said sites are accessible for electrical connection and for adjustment of said threaded element, said first surface facing away from said first direction and being inclined relative to said mounting surface, and said panel means having a second surface facing toward said first direction and being located intermediate said mounting surface and said first surface, and carrying at said second surface a row of further connection sites that are accessible for electrical connection.

3,848,959
CONNECTOR FOR ALARM SYSTEM DOOR CORD

Philip J. Parlato, Kings Park, N.Y., assignor to Alarm Products International, Inc., Long Island City, N.Y.
Filed Apr. 23, 1973, Ser. No. 353,701
Int. Cl. H01r *13/50*
U.S. Cl. 339—200 **18 Claims**

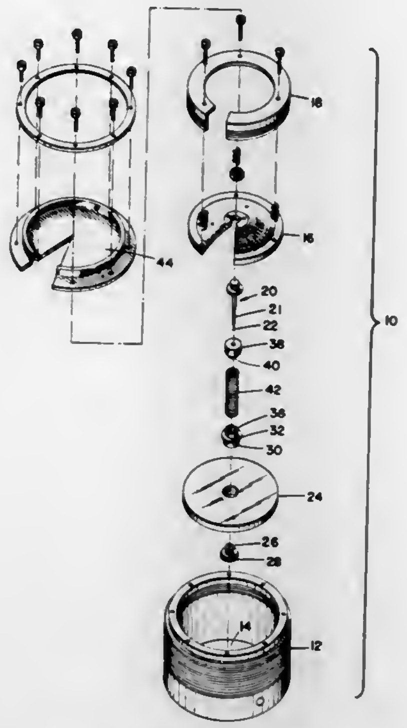


1. A connector joining two sections of an electric lead, comprising:
- a housing divided into a female channel section and a male channel closing section;
- said housing female channel section including a channel having a width defined between first and second side surfaces that are carried by said female channel section; said channel width approximating the width of one of said electric lead sections, thereby causing the lead sections that are joined in said channel to lie one above the other; said channel having a depth greater than the height of the said two electric lead sections laid over one another; said channel depth being defined by a first channel closing surface that is at the bottom of said channel and is carried by said female channel section;
- said male channel closing section carrying a second channel closing surface that projects toward and is opposed to said first channel closing surface and that projects between said channel first and second side surfaces;
- forcing means for forcing said first and second channel closing surfaces to move together, thereby to squeeze electric lead sections in said channel together.

3,848,960
JEWELLED STABILIZED OPTIC CELL

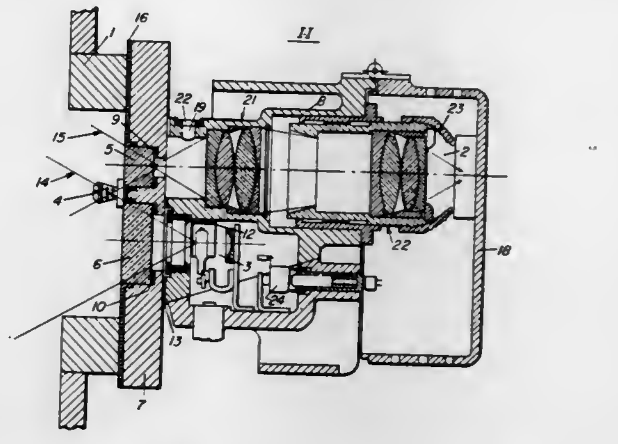
Richard H. Burns, Webster; Orest Engelbrecht, Brighton, and Brian H. Welham, Perinton, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Mar. 30, 1973, Ser. No. 346,498
Int. Cl. G02b *23/16*
U.S. Cl. 350—16 **3 Claims**

1. An assembly for mounting an optical member buoyantly supported within a transparent fluid, the fluid being disposed within a chamber of a stabilizer cell, and the cell having at least one wall, comprising:
- a mounting means extending from the stabilizer cell wall to an end terminating in the chamber;
- a holder being connected to the optical member and having a pivot means associated therewith, the pivot means being engageable with the end of said mounting means terminating in the chamber;
- a pull collar being moveable along and fixable to said mounting means; and
- an extendable coil spring under tension connecting the holder to the pull collar for applying a variable force from the pivot means against the end of said mounting means terminating in the chamber.



3,848,961
OBSERVATION DEVICE

Andre Champeau, 7, Rue Puvis de Chavannes 75, Paris, France
Filed Sept. 22, 1972, Ser. No. 291,321
Claims priority, application France, Sept. 28, 1971, 71.34873; Aug. 30, 1972, 72.30726
Int. Cl. G02b *7/00, 23/16*
U.S. Cl. 350—63 **2 Claims**



1. An observation device for high pressure and temperature treatment apparatus comprising
- a casing for said apparatus resistant to high pressure and temperature conditions, an opening in said casing,
- an optical eye-piece including an objective lens for observation within said casing in a wide field, mounted on said casing adjacent said opening,
- an optical element for protection of said eye-piece, of small diameter with respect to said opening, an attachment plate mounting said element and closing said opening, said eye-piece providing observation within said casing through said optical element,
- a device for lighting the interior of said casing mounted on said plate,

a second optical element protecting said device mounted in said plate between said lighting device and the interior of said casing, and spray nozzle means of anti-adherent material located on said plate adjacent said optical elements for cleaning the surface of said optical elements exposed to the interior of said casing.

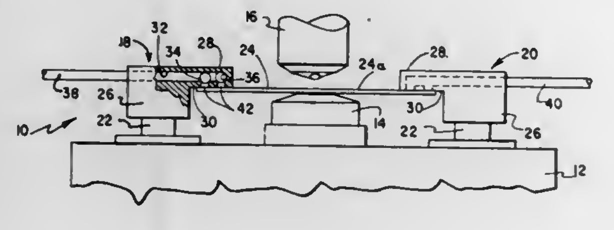
3,848,962
SLIDE MOUNTING APPARATUS FOR MICROSCOPY

John Russell Nelson, Natick, Mass., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Oct. 18, 1973, Ser. No. 407,537

Int. Cl. G02b *21/00*

U.S. Cl. 350—86 **13 Claims**



1. Slide mounting apparatus for microscopy which comprises:
- vacuum chuck means having at least one slide-registration surface to which a vacuum can be applied by evacuation of the chuck means for securing a specimen-bearing slide thereagainst,
- a vacuum reservoir having a capacity equivalent to a multiple of the capacity of said chuck means,
- vacuum path defining means connecting the reservoir to the chuck means, for transmitting vacuum thereto, and
- a vacuum pump connected to said reservoir for periodically evacuating the reservoir,
- whereby the chuck means can be evacuated repeatedly by means of the reservoir for successively securing a series of slides against said slide registration surface for examination between evacuations of said reservoir by said pump.

3,848,963
MICROSCOPE STAGE FINGERS

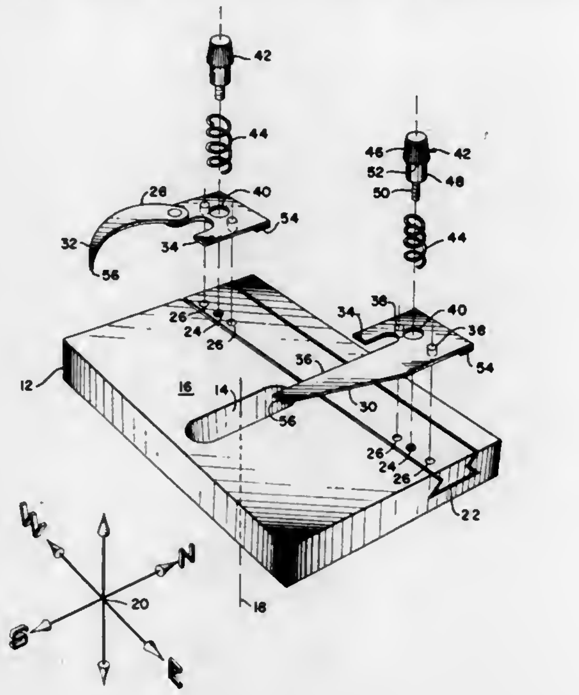
Theodore H. Peck, Irondequoit, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation-in-part of Ser. No. 154,335, June 18, 1971, abandoned. This application Feb. 14, 1973, Ser. No. 332,454

Int. Cl. G02b *21/26*

U.S. Cl. 350—90 **4 Claims**

1. In combination with a microscope stage having a substantially planar surface, a cross slide member movable in relation to the planar surface, and first and second spaced fingers with each finger having a free terminal end and an upper and lower surface, each finger being connected to the cross slide member in superposed relation to the planar surface, and one finger having a spring action to urge a microscope slide against the other finger to hold the microscope slide immobilized relative to the cross slide member, the improvement comprising:
- fulcrum means attached to the lower surface of each finger; and
- a spring member engaged to the upper surface of each finger between the terminal end and a plane of the fulcrum means transversing the upper surface, the spring member urging the terminal end of the fingers toward the surface of the stage thereby floating the terminal ends of the fingers independently of any random movement of the cross slide member.



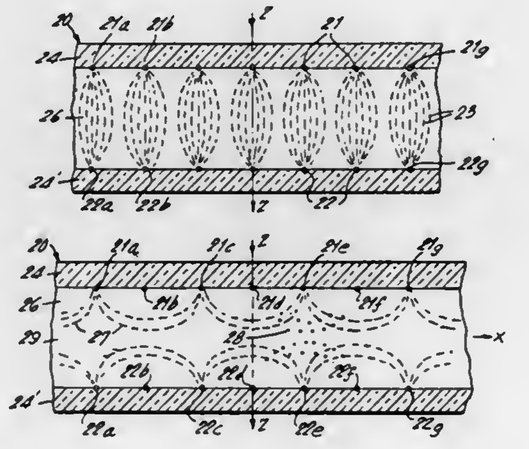
3,848,964
FORCED CLOSURE DIPOLAR ELECTRO-OPTIC SHUTTER AND METHOD

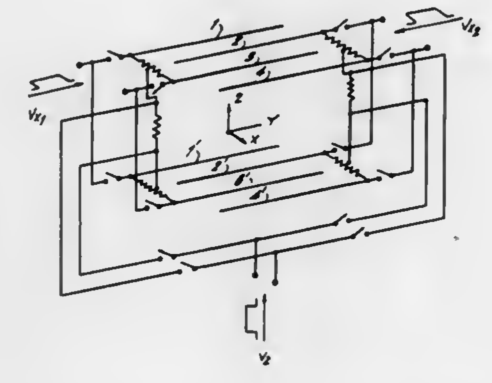
Alvin M. Marks, 100 Blair Rd., East, Oyster Bay, N.Y. 11771

Continuation of Ser. No. 42,813, June 2, 1970, abandoned, and a continuation-in-part of Ser. No. 556,113, June 8, 1966, Pat. No. 3,527,525. This application July 27, 1972, Ser. No. 275,504

Int. Cl. G02f *1/28*

U.S. Cl. 350—160 R **16 Claims**





1. A light controlling device comprising at least a pair of spaced transparent sheets, a transparent suspending medium between said sheets, a layer comprising a plurality of elongated dipoles freely carried within the suspending medium, each said dipole having a first dimension in a direction of elongation on the order of one-half the wavelength of light and a second dimension normal to the direction of elongation substantially smaller than said first dimension, said dipoles presenting a cross-section to electromagnetic radiation which is a function of their orientation, whereby light transmission through the layer is at a maximum when the direction of elongation of said dipoles are oriented parallel to a light path and at a minimum when said dipoles are in random directions, a first series of spaced wirelike electrodes straight line parallel to each other disposed in a plane and carried by one of the transparent sheets, a second series of spaced wire-like electrodes straight line parallel to each other disposed in a plane parallel to the plane of the first series and carried by the other transparent sheet, means for electrically interconnecting selected electrodes into a plurality of electrode sets, and electrical circuit means selectively applying direct electrical potential differences to said electrode sets for creating interlaced electric field patterns within the dipole suspension layer to control the disposition of the dipoles within the suspension.

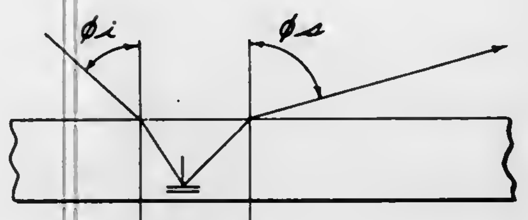
3,848,965
METHOD OF CONTROLLING MONOCHROMATIC COLLIMATED LIGHT BY CONTROLLING THE LIGHT REFLECTION BAND OF A LIQUID CRYSTAL

James E. Adams, Jr., Ontario, and Werner E. L. Haas, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 17, 1973, Ser. No. 407,385

Int. Cl. G02f *1/16*

U.S. Cl. 350—160 LC **17 Claims**



1. A method for placing a layer of an optically negative liquid crystal material in a diffusely light scattering condition comprising
- a. providing a layer of an optically negative liquid crystalline material in its Grandjean texture state, said optically negative material having a light reflection band with center wavelength λ_o.
- b. directing incident collimated monochromatic light upon said liquid crystal layer at an angle of incidence from 0° to about 15°, wherein said incident light is not diffusely scattered by said liquid crystal layer; and
- c. applying to said liquid crystal film some external stimulus which is capable of changing the location of the light reflection band and applying said stimulus until the incident light is diffusely scattered by said liquid crystal layer whereby the diffusely scattered light is observable from a wide range of angles.

3,848,966
HOMEOTROPIC ALIGNMENT ADDITIVE FOR LIQUID CRYSTALS

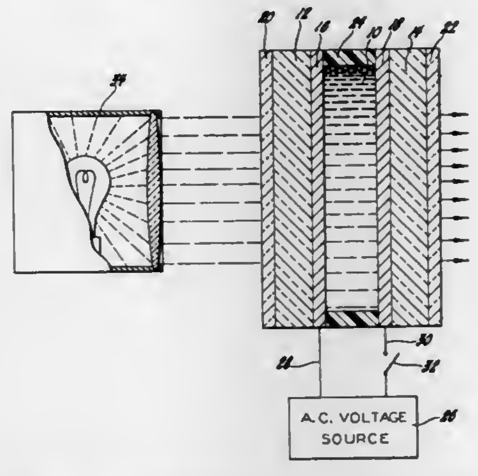
George W. Smith, Birmingham, and Daniel B. Hayden, Port Huron, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 15, 1973, Ser. No. 406,636

Int. Cl. G02f *1/16*

U.S. Cl. 350—160 LC **2 Claims**

1. A nematic liquid crystal material which assumes a homeotropic texture comprising a nematic material having a negative dielectric anisotropy and having dissolved therein from small but effective amounts to 0.5 percent octadecylmalonic acid.



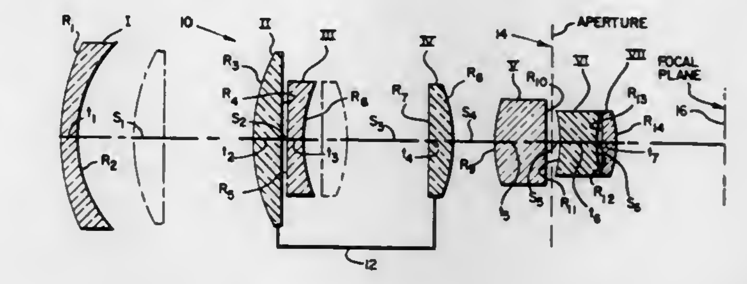
3,848,967
COMPACT SEVEN ELEMENT ZOOM LENS WITH OPTICAL COMPENSATION

David S. Grey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 26, 1972, Ser. No. 318,224

Int. Cl. G02b *15/14*

U.S. Cl. 350—184 **14 Claims**



1. A zoom lens the optical portion of which consists, in an axially aligned arrangement from the long conjugate side to the short conjugate side, of:
- a negative lens element having a convex surface toward said long conjugate;
- a positive second lens element having a strongly curved surface toward said long conjugate and a weaker surface toward said short conjugate;
- a negative third lens element with a weakly curved surface toward said long conjugate and a stronger surface toward said short conjugate;
- a positive fourth lens element with a weakly curved surface toward said long conjugate and a stronger surface toward said short conjugate;
- a positive fifth lens element having a strong curvature toward said long conjugate and a weaker surface toward said short conjugate;
- a negative sixth lens element; and
- a positive seventh lens element with a weakly curved surface toward said long conjugate and a stronger surface toward said short conjugate.

3,848,968
COMPACT EIGHT ELEMENT ZOOM LENS WITH OPTICAL COMPENSATION

David S. Grey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

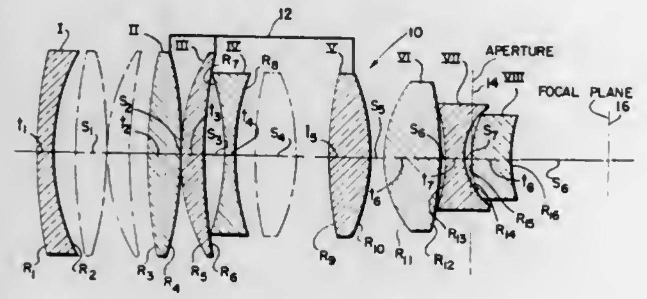
Filed Dec. 26, 1972, Ser. No. 318,226

Int. Cl. G02b *15/14*

U.S. Cl. 350—184 **15 Claims**

1. A zoom lens the optical portion of which consists, in an axially aligned arrangement from the long conjugate side to the short conjugate side, of:

- a negative first lens component having a convex surface toward said long conjugate;
- a positive second lens component;
- a positive third lens component, having a convex surface toward said long conjugate, adjacent to said positive second lens component;
- a negative fourth lens element;
- a positive fifth lens component with unequally curved surfaces having its weaker curvature toward said long conjugate;
- a positive sixth lens component having a strong curvature toward said long conjugate;
- a negative seventh lens element with unequally curved surfaces having its weaker curvature toward said long conjugate; and
- a positive eighth lens component.



3,848,969

SHORT PHYSICAL LENGTH ZOOM LENS

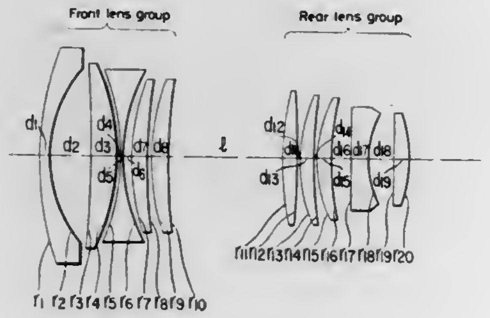
Akira Tajima, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 5, 1973, Ser. No. 348,070

Claims priority, application Japan, Apr. 18, 1972, 47-38980

Int. Cl. G02b *15/16*

U.S. Cl. 350—184 **4 Claims**



1. A short physical length optical objective of the zoom type comprising, in the direction of an incident light beam, a front lens group of negative power and a rear lens group of positive power axially separated from each other by a variable air space to effect magnification variation, said front group including, in succession in said direction, a negative meniscus lens element having a convex forward surface, a positive lens element having a strongly convex rear surface, a double concave lens element, and two positive meniscus lens elements each having a convex forward surface, said rear lens group comprising a plurality of mutually spaced lenses including, in succession in said direction, two positive meniscus lens elements each having a convex forward surface, a negative lens element having a concave rear surface, and a positive lens element.

3,848,970

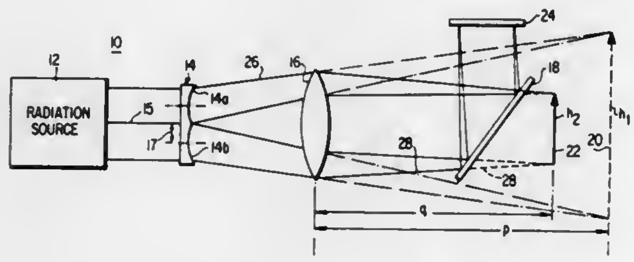
APPARATUS FOR MEASURING AND CONTROLLING ANNULUS DIAMETERS OF IMAGES FORMED BY A PINCUSHION LENS

John B. Goodell, Baltimore, Md., assignor to Westinghouse Electric Corporation

Filed Sept. 7, 1973, Ser. No. 395,313

Int. Cl. G02b *3/06, 13/18, 15/14*

U.S. Cl. 350—189 **10 Claims**



1. An optical system for focusing radiation into an annulus of selected diameter, said system comprising:

a. a source of radiation;

b. first lens means for forming the radiation emanating from said source into an annulus;

c. second lens means for focusing the radiation along a path toward a work surface;

d. adjustable mounting means for receiving said first and second lens means and adjusting the spacing between said first and second lens means whereby the diameter of the radiation annulus is varied selectively;

e. display means disposed remotely from the radiation path and including a scale for measuring the diameter of the radiation annulus; and

f. reflective means disposable from a first position intercepting the radiation path wherein the radiation annulus is reflected to said display means for comparison with said scale, to a second position remote from the radiation path to permit the radiation annulus to be focused upon said work surface.

3,848,971

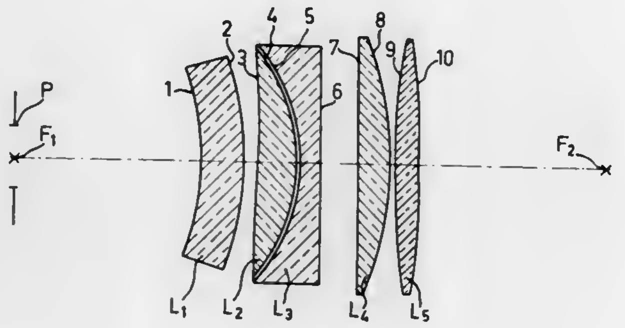
OBJECTIVE SYSTEM THE ENTRANCE PUPIL OF WHICH LIES OUTSIDE THE SYSTEM

Claude Hily, Champigny, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 264,534, June 20, 1972, abandoned. This application Nov. 15, 1973, Ser. No. 416,238

Int. Cl. G02b *9/60*

U.S. Cl. 350—216 **7 Claims**



1. Objective system the entrance pupil diaphragm of which lies outside the system and the focal length of which is at least 50mm and which, viewed in the direction of the path along which the radiation travels, comprises in succession a correcting lens system and a converging lens system, the converging lens system comprising two converging components which are made of materials having Abbe numbers approximately equal to 55 and have powers differing by at most 20 percent, which converging components determine 90 percent of the power of the objective system, and in that the correcting lens system comprises in succession a first sub-system and a second sub-system, the second sub-system comprising two components one of which is converging and the other of which is diverging and which are made of materials having different dispersive powers, the absolute values of their powers being about equal while the sum of their powers is about one-fourth of the total power of the objective system, the first sub-system comprising a lens which is bounded by two concentric spherical surfaces the center of which lies in the entrance pupil, the lens having a thickness, measured along the optical axis, which is between 15 and 25 percent of the focal length of the objective system, and the distance, measured along the optical axis, between the outer surfaces of the first and last lens in the objective system is about one-half of this focal length.

3,848,972

LARGE-APERTURE TELEPHOTO LENS

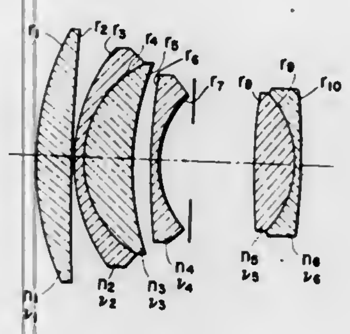
Sumio Nakamura, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Shibuya-ku, Tokyo-to, Japan

Filed Apr. 11, 1973, Ser. No. 349,943

Claims priority, application Japan, Apr. 14, 1972, 47-036903

Int. Cl. G02b *9/34*

U.S. Cl. 350—223 **6 Claims**



1. A large-aperture telephoto lens system comprising a first lens, a second lens, a third and a fourth lens, wherein said first lens is a positive meniscus lens with its convex surface positioned on the object side, said second lens is a cemented positive meniscus doublet lens with its convex surface positioned on the object side, said third lens is a negative meniscus lens with its convex surface positioned on the object side and said fourth lens is a cemented positive doublet lens, and said large-aperture telephoto lens system satisfying the following conditions:

$$\nu_2 > \nu_3 > 45,\ n_3 > n_2,\ 0.3f > \ r_4 \ > 0.15f \qquad (1)$$

$$\nu_6 > \nu_5 > 45,\ n_5 > n_6,\ 0.3f > \ r_9 \ > 0.15f \qquad (2)$$

$$30 > \nu_4,\ n_4 > 1.70 \qquad (3)$$

$$f_{123} \qquad 2f \qquad (4)$$

where reference symbols n_2, n_3, n_5, n_6 and n_4, respectively represent refractive indexes of the front and rear lenses of the cemented second and fourth lenses and refractive index of the third lens, reference symbols ν_2, ν_3, ν_4, ν_5, and ν_6, respectively, represent Abbe's numbers of said lenses, reference symbols r_4 and r_9, respectively, represent radii of curvatures of cemented surfaces of said second and fourth lenses, reference symbol f_{123} represents the total focal length of said first, second and third lenses and reference symbol f represents the total focal length of the lens system as a whole.

3,848,973

PRISM HOLDER FOR A DIGITAL LIGHT DEFLECTION SYSTEM

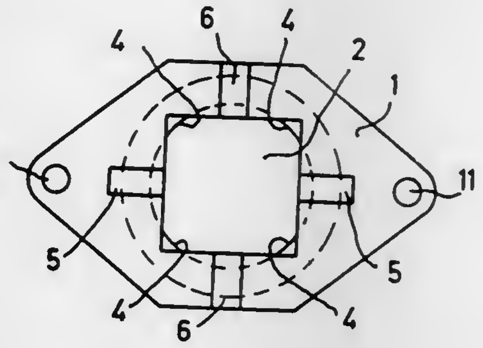
Josef Merz, Hamburg, Germany; Johannes Van Esdonk, and Joannes Franciscus Maria Janssen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 2, 1972, Ser. No. 303,249

Claims priority, application Germany, Nov. 6, 1971, 2155270

Int. Cl. G02b *7/18*

U.S. Cl. 350—287 **6 Claims**



1. A prism holder for a digital light deflection system, which system comprises one or more rectangular prisms and Kerr cells accommodated in a vessel filled with the liquid necessary for the Kerr cells; the holder comprising a plate-shaped member having a substantially rectangular aperture the dimensions of which are larger than the corresponding dimensions of a rectangular prism, a ring shaped support member on one side of said plate-shaped member and concentric with said aperture, said ring shaped support member having a diameter smaller than the diagonal and larger than the smallest side of said aperture and forming supporting points on one side of the aperture on which the prism can bear with at least a part of its outer edge, and fixing members secured to the plate-shaped member on the other side thereof for enclosing the prism in the aperture without exerting pressure on it.

3,848,974

HEAD-UP DISPLAY APPARATUS

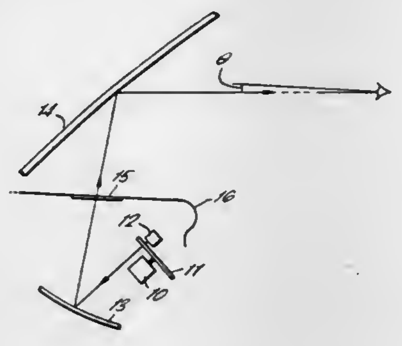
John Trevor Hosking, Lilac Cottage, Austenwood Ln., Gerrards Cross, Buckinghamshire, and Norman Blackham, Lane Farm, Sewell, near Dunstable, Bedfordshire, both of England

Filed Jan. 29, 1973, Ser. No. 327,532

Claims priority, application Great Britain, Jan. 28, 1972, 4250/72

Int. Cl. G02b *27/18*

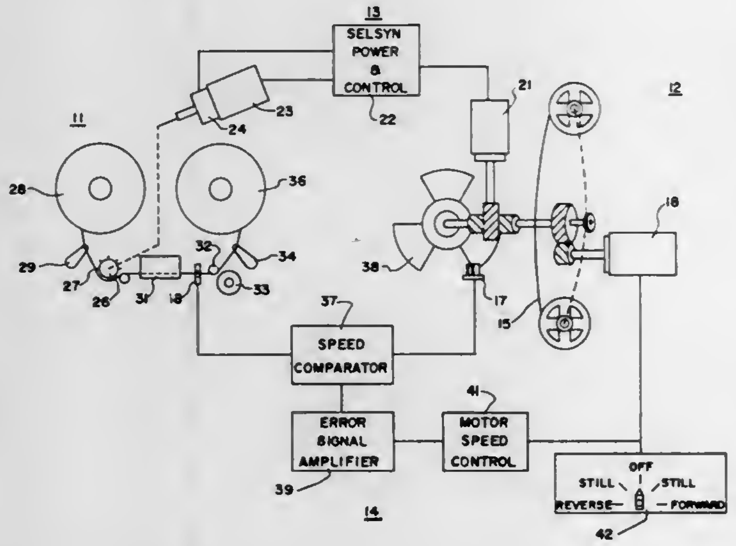
U.S. Cl. 350—174 **17 Claims**



1. A head-up display apparatus for a motor vehicle comprising a curved windscreen for the vehicle, a speedometer having a datum mark and numeric characters movable relative to the datum mark in response to the speed of the vehicle, a source of collimated light for illuminating said datum mark and at least a portion of said numeric characters adjacent to said datum mark, a convex mirror, and a diverging lens positioned to project said illuminated datum mark and numeric characters onto said convex mirror, said curved windscreen being positoned to receive the image of said datum mark and of said characters reflected from said convex mirror to cause a display of the speed of the vehicle which appears to an observer to emanate from a position which is a finite distance from the observer.

3,848,975
SOUND FILM SYNCHRONIZATION SYSTEM AND METHOD

Phillip L. Bourret, P.O. Box 128, Los Altos, Calif. 94022, and Simon Yin, 3074 Locke Ct., Fremont, Calif. 94536
Filed June 1, 1973, Ser. No. 365,829
Int. Cl. G03b *31/04*
U.S. Cl. 352—5 **9 Claims**



1. A film and magnetic tape synchronization system including tape transport means for conveying tape past a transducer, film transport means for conveying film for projection and control means interconnected between the tape and film transport means, said control means including means responsive to the motion of the film transport means to control the motion of the tape transport means at non-performance speeds, and means responsive to the motion of the tape transport means to control the motion of the film transport means at performance speeds so that constant frame-by-frame synchronization of film and tape is provided.

3,848,976
METHOD AND APPARATUS FOR SYNCHRONIZED SHOOTING AND PROJECTION OF A MOVIE AND RECORDING AND PLAYBACK OF SOUND ON A TAPE

Noboru Tsujimoto; Katsuji Maruyama, and Haruo Misawa, all of Suwa City, Japan, assignors to Chinon Industries Incorporated, Suwa, Japan
Division of Ser. No. 187,333, Oct. 7, 1971, abandoned. This application Feb. 26, 1973, Ser. No. 335,794
Claims priority, application Japan, Oct. 17, 1970, 45-91398
Int. Cl. G03b *31/04*
U.S. Cl. 352—17 **6 Claims**

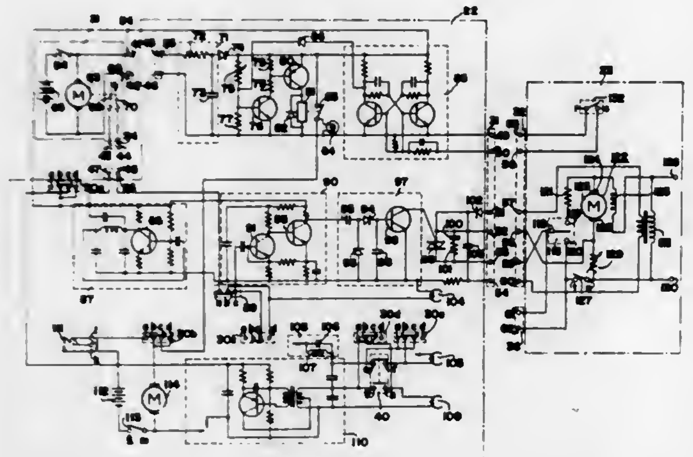
1. An appartus for synchronizing the movement of a visual image recording film and an audio signal information recording medium, comprising:

means for transporting said visual image film past an image conversion station, including a film transport motor, a power supply and first switching means interposed between said power supply and said film transport motor;

means for transporting said audio information medium past a recording or reproducing station, including an audio medium transport motor;

a delay circuit coupled to said power supply through said first switching means, including a switching transistor coupled in parallel with said film transport motor and means for switching said switching transistor between first and second states when a motor drive current for said film transport motor reaches a predetermined value;

further switching means coupled to the output of said delay circuit, said further switching means switching from a first

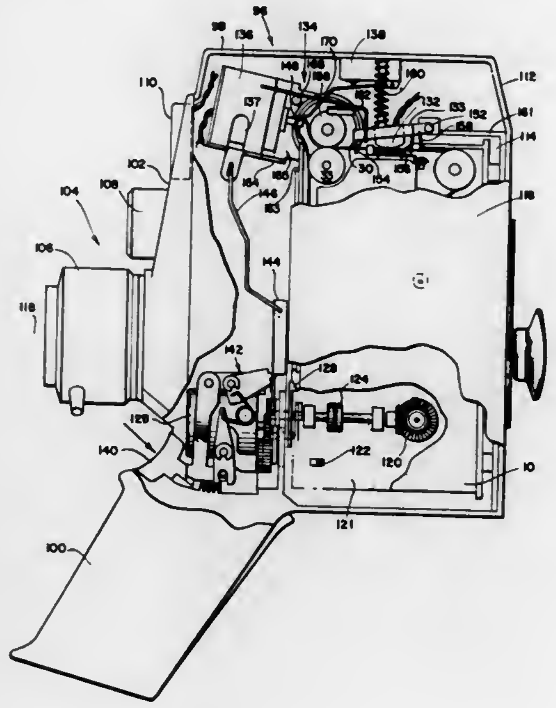


to a second state when said second transistor is switched into its second state; and

means coupling said further switching means to said audio medium transport motor to connect said audio medium transport motor to said power supply when said further switching means is switched into its second state.

3,848,977
MULTIPURPOSE, AUDIO-VISUAL CASSETTE SYSTEM

Donald T. Scholz, Watertown, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed June 28, 1973, Ser. No. 374,578
Int. Cl. G03b *31/06*
U.S. Cl. 352—14 **19 Claims**



1. A camera comprising:

a substantially light-tight camera housing;

means for receiving a film cassette in operative relation with said camera housing, such cassette including a cassette housing configured for retaining a strip of photographic film material, such cassette housing including a first opening configured for film exposure operations and opening defining means configured for sound operations;

selectively operative means for cooperating with such film strip when such cassette is operatively positioned within said receiving means for advancing such film strip serially across such openings, said advancing means including a first drive means for intermittently advancing incremental portions of such film strip across such first opening and a second drive means for substantially constantly advancing such film strip across such opening defining means;

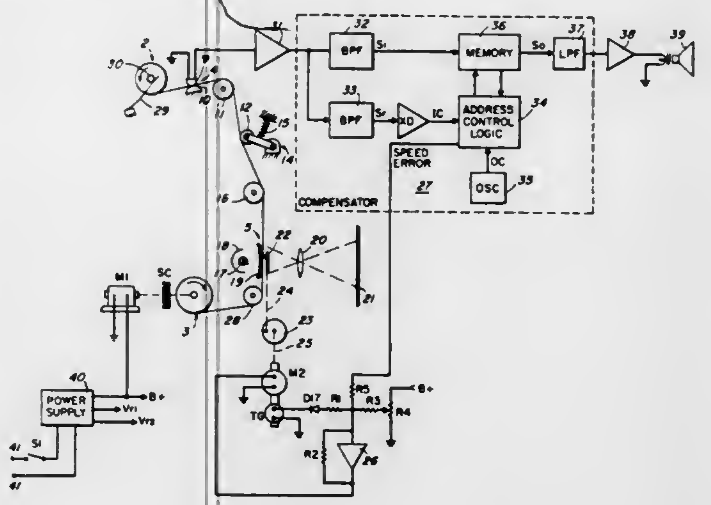
means located in operative relation with such first opening for exposing such incremental portions of such film strip at said first opening so as to record scene images thereon; means including a sound-head mounted in said camera housing in operative relation with said opening defining means for providing sound recording upon or sound reproduction from such film strip;

means located in said camera housing in operative relation to such opening defining means for receiving a loop of such film strip extending through such opening defining means; and

means located in said loop receiving means for controlling at least one of said drive means to extend a portion of such film strip through such opening defining means and into said loop receiving means while other portions of such film strip to either side of such loop remain within such cassette housing so as to thereby initially form a loop of film extending from such cassette housing and for thereafter controlling the size of such loop during the advancement of such film strip so that with such cassette mounted in said camera such film strip may be exposed and sound recorded thereon without removing it from such cassette, such loop serving to isolate the constantly advanced portions of such film strip from the intermittently advanced portions thereof.

3,848,978
ANALOG INFORMATION STORAGE AND RETRIEVAL SYSTEM

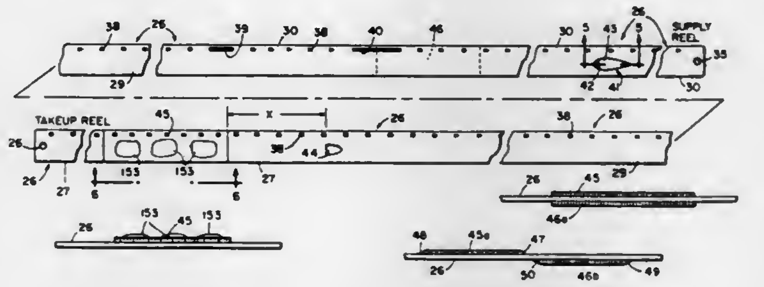
William R. Wray, 46 Russell St., Brookline, Mass. 02167
Division of Ser. No. 294,317, Oct. 2, 1972. This application Feb. 11, 1974, Ser. No. 441,647
Int. Cl. G03b *31/00*
U.S. Cl. 352—30 **2 Claims**



1. In combination with a sound motion picture projector comprising film drive means for intermittently advancing a strip of film through a projection station, means located at said projection station for projecting images recorded on the film, and transducer means located at a playback station spaced from said projection station for reproducing an audio signal and a pilot signal simultaneously recorded on the film in synchronism with the recorded images, damping means located between said stations and adapted to engage a strip of film passing therebetween to produce a relatively uniform film speed at said playback station, a memory having a plurality of selectively addressable storage locations, first means for addressing said storage locations in a predetermined cyclic sequence in response to a series of applied input address signals, means for applying an audio signal reproduced by said transducer means to storage location addressed by said first means, second means for addressing said storage means in said predetermined cyclic sequence in response to a series of applied output address signals, speaker means, means connecting said speaker means to the storage location addressed by said second means, signal generating means responsive to said first and second means for sensing the distance in said sequence between the locations addressed by said first and second means and producing a first, a second or a third signal according as said distance is in a first range, a second range, or a third range, respectively, first address signal producing means controlled by said transducer means and said sensing means for applying input address signals to said first means at a rate determined by the frequency of the reproduced reference signal when said second or said third signal is present, and second address signal producing means for applying output address signals to said second means at a constant rate determined by the frequency at which the reference signal was recorded when said first or said second signal is present.

3,848,979
SELF-CLEANING PHOTOGRAPHIC TRANSPARENCY PROCESSING AND PROJECTION SYSTEM

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Division of Ser. No. 261,153, June 9, 1972,. This application Oct. 31, 1973, Ser. No. 411,314
Int. Cl. G03b *23/02*
U.S. Cl. 352—78 R **3 Claims**



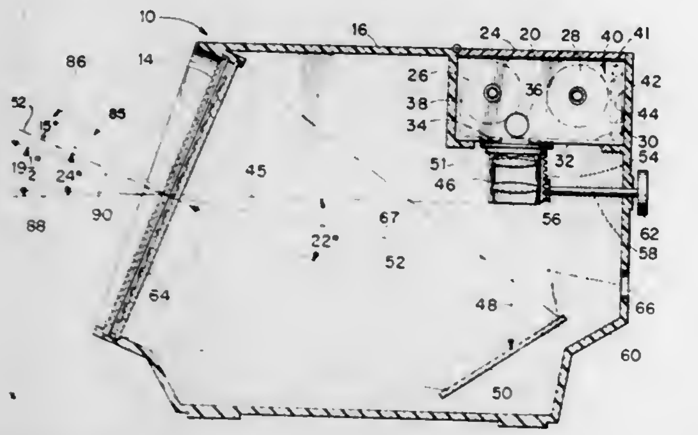
1. A photographic cassette, comprising an opaque housing, means forming a film gate in said housing, takeup and supply reels rotatably mounted in said housing, a strip of film having ends connected to said takeup and supply reels and extending therebetween through said film gate, said film being initially unexposed and primarily coiled on said supply reel, said cassette being adapted to cooperate with a camera for selective exposure of portions of said film in said film gate as said film is advanced onto said takeup reel to an exposure termination position, processing means in said housing responsive to manipulation of said film in said housing following its initial advance from said supply reel toward said takeup reel to said exposure termination position to apply processing composition to said film as it is first rewound onto said supply reel to a process termination position, said cassette being adapted to cooperate with film drive and projection apparatus for sequential projection of portions of said film in said film gate as said film is advanced onto said takeup reel to a projection termination position beyond said exposure termination position, and to be rewound to a rewind termination position on said supply reel beyond said process termination point, and a cleaning pad of absorbent material mounted on said film in position to move through said film gate as said film moves from said process termination position to said rewind termination position.

3,848,980
PROJECTOR APPARATUS AND SYSTEM EMPLOYING UNIQUE SCREEN

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Continuation of Ser. No. 174,461, Aug. 24, 1971, abandoned. This application July 27, 1973, Ser. No. 383,082
Int. Cl. G03b *41/00*
U.S. Cl. 352—81 **6 Claims**

1. In a projection system including photographic film of the type having a recorded image formed at least in part by a

repetitive series of image forming segments arranged in a regular array, the improvement comprising a screen configured for projection of such recorded images thereto, said



screen having a plurality of lenticular elements arranged in a regular array, and said plurality of elements provided in a 1:1 or larger ratio of small integers to the projected images of such image forming segments.

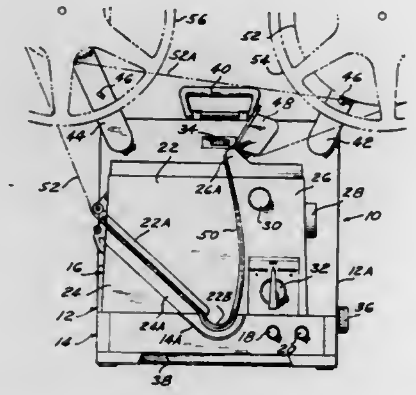
3,848,981
SELF-THREADING MOTION PICTURE PROJECTOR

Conkling Chedister, Barnegat, N.J., and Frank H. Beckman, New Britain, Conn., assignors to Kalart Victor Corporation, Plainville, Conn.

Filed June 14, 1973, Ser. No. 370,015

Int. Cl. G03b *1/56*

U.S. Cl. 352—157 **14 Claims**



1. A motion picture projector with self-threading mechanism, said projector comprising in combination:

an upright enclosure including in one of its outer walls a slot for insertion and removal of a length of film, said slot extending from one wall of the enclosure to another wall thereof, said one wall having an outwardly directed protrusion adjacent to the slot end in said wall, one said protrusion constituting a film guiding means for slidably guiding thereon a film portion in addition to the length of film insertable into the slot thereby extending the effective length of said slot;

a chassis stationarily mounted within said enclosure parallel to but spaced apart from said slotted wall;

a first sprocket rotatably mounted on said chassis, a second sprocket rotatably mounted on said chassis, either of said sprockets constituting a take-up sprocket or a supply sprocket, lower loop-forming means mounted on said chassis pivotal between a loop-forming position and a retracted position, an upper loop-forming means mounted on said chassis pivotal between a loop-forming position and a retracted position, said sprockets and said loop-forming means being on the chassis side facing said slotted wall and a film holding means including a stationarily mounted film channel;

film loading and threading means pivotally supported by said one wall of the enclosure, said loading and threading means being pivotal between a first limit position constituting the film loading position and a second limit position constituting the film threading position;

a first locking means movable between an inactive position and a locking position for locking a portion of film within the slot to the first sprocket, a second locking means movable between an inactive position and a locking position for locking a portion of film within the slot to the second sprocket, said second locking means including a first pressure means supported on said loading and threading means for pivotally moving in unison therewith, a first actuating means for moving the lower loop-forming means from the loop-forming position to the retracted position, a second activating means for moving the upper loop-forming means from the loop-forming position to the retracted position and a second pressure means movable into and out of a pressure position holding film extending between said pressure means and the channel in the latter; and

linkage means operatively coupling said first and second locking means, said first and second activating means and said second pressure means to said loading and threading means for sequential operation of the locking means, the activating means and the second pressure means,

pivoting of said loading and threading means from the loading position through a first predetermined angle operating the first locking means for locking the respective film portion to the first sprocket, pivoting of said means through a second predetermined angle operating the first actuating means for moving the lower loop-forming means into the retracted position, pivoting of said means through a third predetermined angle operating the second activating means for moving the upper loop-forming means into the retracted position, pivoting of said means through a fourth predetermined angle causing the first pressure means on said loading and threading means to slide the film portion guide on said protrusion into the slot and locking said film portion to the second sprocket and pivoting of said means through a fifth predetermined angle moving said second pressure means into the position holding the film in the channel, said fifth angular movement of the loading and threading means placing the same in the second limit position.

3,848,982
MICROFILM READER

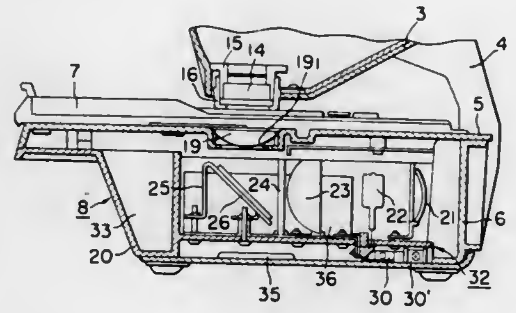
Akira Shoji, Yokohama; Hitoshi Yanagawa, Tokyo, and Takashi Hirashima, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1972, Ser. No. 285,259

Claims priority, application Japan, Sept. 15, 1971, 46-84076[U]

Int. Cl. G03b *23/08, 21/20, 21/11*

U.S. Cl. 353—27 **4 Claims**



1. A microfilm reader for reading micro images recorded on a microfilm comprising a housing having an opening, a projection screen disposed in said housing, optical means for projecting images on said microfilm toward said screen; a first light source unit having a first base disposed thereon a main lamp, an optical system for directing the light from said main lamp to said microfilm and a plug connected to said main lamp; a second light source unit having a second base disposed thereon an auxiliary lamp connected to an auxiliary electric source, an optical system for directing the light from said auxiliary lamp to said microfilm and a plug not electrically connected to said auxiliary lamp; said first and second bases having said respective plugs at corresponding fixed positions and having the same configuration for permitting them to be selectively and exchangeably fitted into and detached from said opening of said housing in a drawer-like fashion; and a snap member fixedly provided in said housing for holding either of said bases by engaging either of said plugs when either of said light source units are inserted in said opening, said snap member being electrically connected to an AC electrical source.

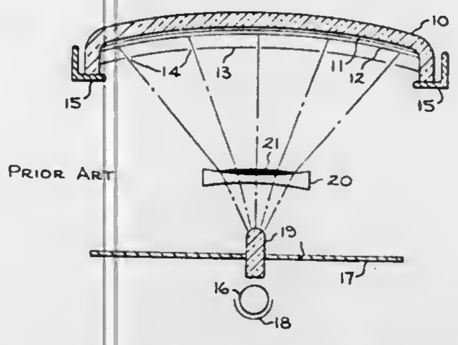
3,848,983
OPTICAL SYSTEM FOR PROVIDING UNIFORM EXPOSURE OF A PHOTOSENSITIVE SURFACE

Elmer G. Fridrich, Chardon, Ohio, assignor to General Electric Company, Syracuse, N.Y.

Filed June 23, 1971, Ser. No. 155,727

Int. Cl. G03b *27/00*

U.S. Cl. 95—1 R **3 Claims**



1. Apparatus for applying actinic energy of substantially uniform intensity to a photosensitive surface, comprising:

lamp means comprising a short, linear arc adapted to emit actinic energy; and

means for rotating said lamp means with respect to the photosensitive surface about an axis extending substantially through the center of said arc, said lamp means being oriented such that said arc is inclined to the axis of rotation of said lamp means in order to direct the most intense energy from said lamp means toward portions of the photosensitive surface more distant from said lamp means than other portions of the photosensitive surface.

3,848,984
SINGLE LENS REFLEX CAMERA

Kyusei Kanno, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

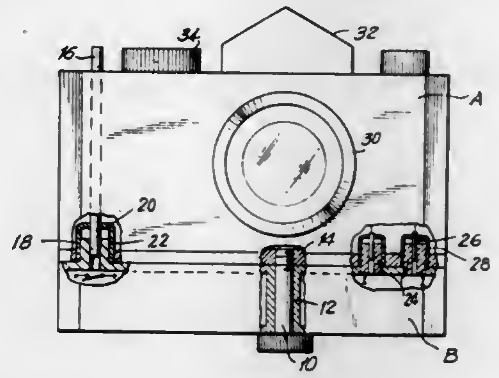
Filed Mar. 11, 1974, Ser. No. 450,383

Claims priority, application Japan, Mar. 23, 1973, 48-32756

Int. Cl. G03b *7/08, 17/00*

U.S. Cl. 354—38 **8 Claims**

1. In a camera, housing means, casing means, and means detachably connecting said casing means to said housing means, said housing means carrying manually operable means for manually determining exposure variables which include exposure time and diaphragm aperture, and automatic means for automatically determining at least one of said variables, said automatic means being carried in part by said housing means and in part by said casing means so that when the latter is detached from said housing means a fully manual operation of the camera can be achieved while when said casing means is connected with said housing means automatic determination of at least said one variable can be achieved, said housing means carrying a movable means supported by said housing means for movement in preparation for making an exposure, and motion transmitting means extending between said housing means and casing means when the latter is connected with said housing means for transmitting movement from said movable means through said motion transmitting means to the



interior of said casing means, said casing means carrying in its interior as the part of said automatic means which is situated in said casing means a means which is acted on by said motion transmitting means in response to movement of said movable means for controlling, at least in part, the part of said automatic means which is carried by said casing means.

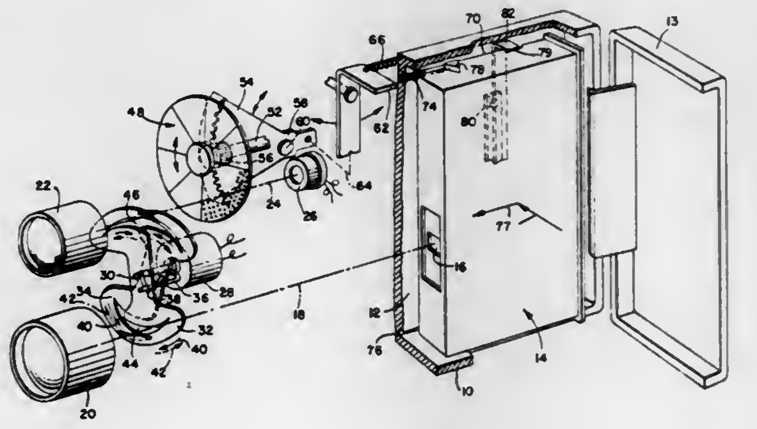
3,848,985
AUTOMATIC EXPOSURE CONTROL SYSTEM

Stewart Bennett, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 214,632, Jan. 3, 1972, abandoned. This application Dec. 7, 1973, Ser. No. 422,972

Int. Cl. G03b *7/08*

U.S. Cl. 354—41 **18 Claims**



1. A photographic system comprising:

A film handling cassette including:

photographic material;

first means for indicating one of a plurality of mutually exclusive ranges of film speed, said one range embracing the speed of said photographic material; and

second means for indicating the particular speed of said photographic material within said one range; and

a camera including:

an objective lens;

means for receiving said cassette with its said photographic material disposed in operative relationship with said lens;

a light sensitive element responsive to scene light;

means responsive to said light sensitive element for varying the amount of scene light impinging on such photographic material, said scene light varying means being selectively operable in more than one of a plurality of operating ranges respectively correlated to said plurality of film speed ranges;

means responsive to said first indicating means when said cassette is positioned in said receiving means for regulating said light varying means for operation in the one film speed range; and means responsive to said second indicating means when said cassette is positioned in said receiving means for regulating the amount of scene light received by said light sensitive element in accordance with the particular speed of said photographic material within said one range.

3,848,986
CAMERA SHUTTER CONTROLS FOR EXTREMELY SHORT EXPOSURE TIME

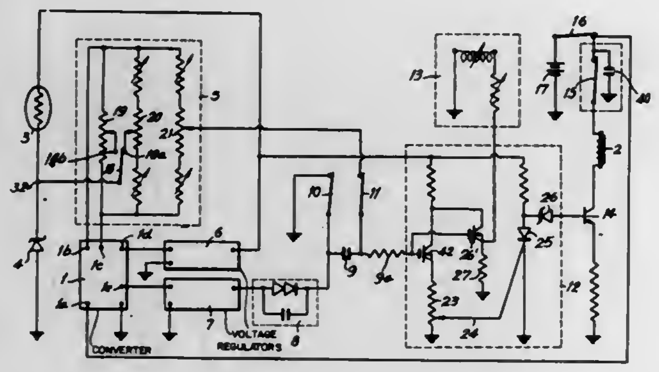
Seinan Miyakawa, and Nobuhiro Noda, both of Tokyo, Japan, assignors to Asahi Kogako Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Division of Ser. No. 251,761, May 9, 1972. This application Apr. 23, 1973, Ser. No. 353,884

Claims priority, application Japan, May 12, 1971, 46-37319; May 13, 1971, 46-37735; May 21, 1971, 46-41155

Int. Cl. G03b *7/08*

U.S. Cl. 354—51 **4 Claims**



1. In a camera having circuitry for automatically determining the extent to which film in the camera is exposed, said circuitry including an electromagnetic means for terminating an exposure when said electromagnetic means becomes unenergized, switching circuit means electrically connected to said electromagnetic means for controlling the deenergizing thereof, signal-transmission means electrically connected to said switching circuit means for transmitting to the latter a signal corresponding to exposure-determining factors for operating said switching circuit means to deenergize said electromagnetic means in accordance with said factors, and control means electrically connected with said switching circuit means for providing an automatic electrical control and a mechanical control, for causing the switching circuit means to deenergize said electromagnetic means after a variable time duration when providing said automatic control, and for causing the switching circuit means to deenergize said electromagnetic means after a pre-determined extremely short fixed time duration when providing said mechanical control, said switching circuit means including a high input impedance transistor electrically connected to said signal transmission means for receiving a signal therefrom and having an output, a thyristor for deenergizing said electromagnetic means, and wherein said control means includes a variable resistor means connected between said output of said transistor and said thyristor, said variable resistor means having an adjusting component having a position for operating said thyristor with a bleeder voltage for deenergizing said electromagnetic means, said last-mentioned position providing said mechanical control.

3,848,987
CASSETTE TYPE SEQUENCE CAMERA

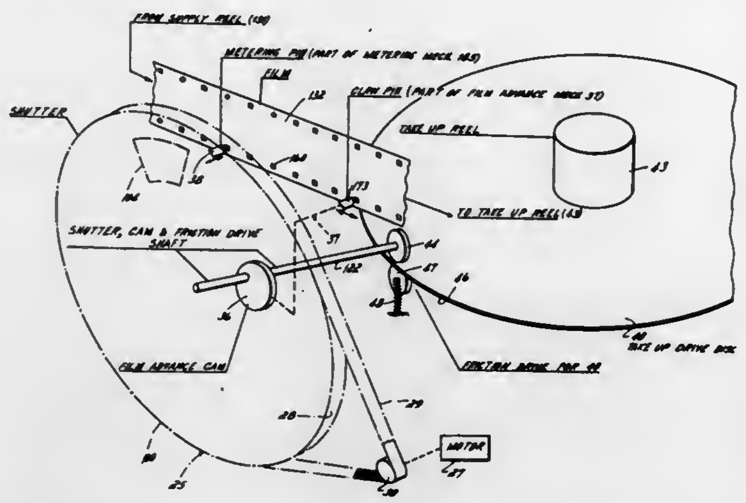
Warren D. Novak, Chappaqua, N.Y., assignor to The Mosler Safe Company, Hamilton, Ohio

Filed May 14, 1973, Ser. No. 360,361

Int. Cl. G03b *17/42, 9/10, 1/22*

U.S. Cl. 354—212 **5 Claims**

1. A camera comprising,
a housing,
a lens mounted in said housing,
said housing having a chamber adapted to receive a cassette having film exposed at one side thereof adjacent said lens, a rotary shutter mounted in said housing between said lens and said chamber,
a motor mounted in said housing and drivably connected to said shutter,
a film advance mechanism mounted in said housing adjacent said lens and operably connected to said shutter to advance said film intermittently as said shutter rotates,
a drive disc rotatably mounted in said housing in a plane perpendicular to the plane of rotation of said shutter,
a spindle on said drive disc projecting into said chamber and connectable to a cassette,
a friction wheel carried by said shutter and rotatable therewith, said friction wheel engaging one surface of said drive disc,
and a pinch roller mounted in said housing and engageable with the opposite surface of said drive disc adjacent said friction wheel.



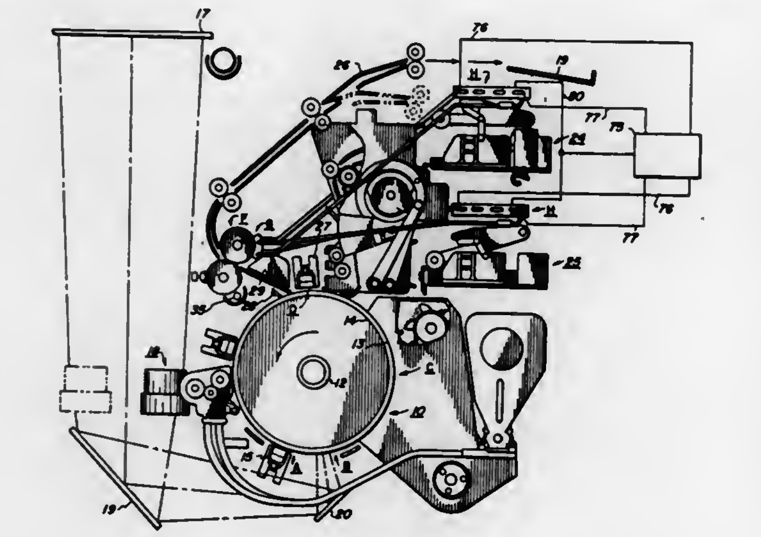
3,848,988
MOISTURE CONTROL DEVICE

Raghulinga R. Thettu, and Haribhajan S. Kocher, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed June 11, 1973, Ser. No. 368,924

Int. Cl. G03g *15/22*

U.S. Cl. 355—3 R **7 Claims**



1. In a copying machine having a supply station for storing final support material upon which copies are to be produced and a heat fusing station for fixing said copies, the improvement comprising
an evaporator, containing a working substance, which vaporizes at a predetermined temperature, for removing heat energy from the fuser system,
a condensor positioned in said support material supply station, being operatively connected in fluid flow communication with said evaporator means, for condensing said vapor of the working substance and discharging the latent energy into the supply region, and
means associated with said condenser for providing energy to the working substance in said condenser when the rate of discharge falls below a predetermined level.

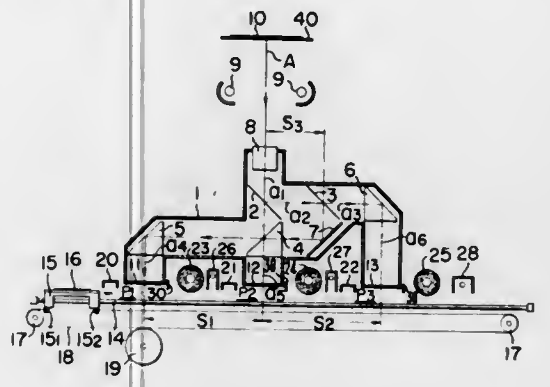
3,848,989
MULTICOLOR ELECTROPHOTOGRAPHIC REPRODUCTION DEVICE

Keizo Yamaji, and Akira Kurahashi, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 40,942, May 25, 1970, abandoned. This application Jan. 15, 1973, Ser. No. 323,743

Int. Cl. G03g *15/00*

U.S. Cl. 355—4 **1 Claim**



1. An electrophotographic reproduction apparatus capable of continuously producing a polychromatic reproduction of a color original comprising: light means for forming a light image of the color original, a single photoconductive surface movable linearly at its exposing position, optical means for separating the color image formed by said light means into at least two color separation images, means for conducting said color separation images along different optical paths of equal length to said photoconductive surface, means for separately forming on said photoconductive surface electrostatic latent images of each of said color separation images, means for separately developing each of said color separation images with different marking material, the color of which corresponds to the separation image being developed by said marking material, and means for transferring and affixing the developed images in superimposed relationship onto a copying material, and cleaning means for said photoconductive surface for repetitive use.

3,848,990
ELECTROPHOTOGRAPHIC COLOR COPYING APPARATUS

Osamu Otubo; Isamu Terashima, and Norio Akutsu, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

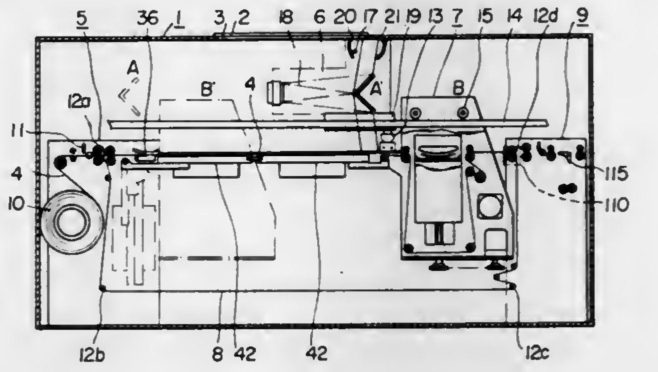
Filed Apr. 11, 1973, Ser. No. 350,205

Claims priority, application Japan, Apr. 12, 1972, 47-36063

Int. Cl. G03g *15/22*

U.S. Cl. 355—4 **14 Claims**

1. An electrophotographic color copying apparatus comprising a main housing, at least one transport belt for transporting and supporting a recording paper, guide means for directing the transport belt along a predetermined path, the predetermined path having at least a first planar portion and a substantially U-shaped portion extending substantially transversely to the first planar portion, the transport belt along the U-shaped portion delimiting a recess area for accommodating a developing means, means for moving the recess area from a first position to a second position along the planar portion of the predetermined path, means for feeding a recording paper to a predetermined position along the planar portion of the predetermined path by the transport belt, means for holding the recording paper at the predetermined position, means for uniformly electrically charging the surface of the recording paper held at the predetermined position, means for exposing the recording paper held at the predetermined position to light reflected from an original, the reflected light being projected onto the recording paper through an optical filter unit so as to form a letent charged image on the recording paper, the developing means being located in the recess area for developing a visible image from the latent charged image on the recording paper with toners of at least two primary colors, the developing means being movable along the planar portion of the predetermined path when the recessed area is moved from the first position to the second position so as to engage with the recording paper to develop the visible image on the recording paper.



3,848,991
ELECTROPHOTOGRAPHIC COPYING APPARATUS

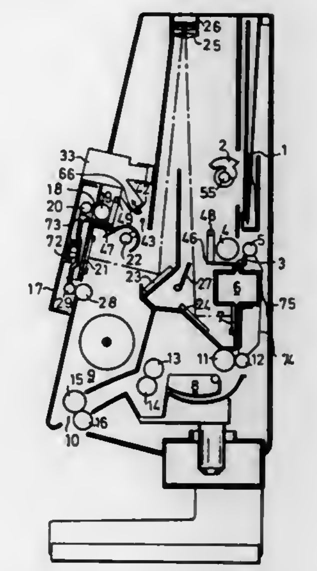
Karl Gustav Zeuthen, Gentofte, Denmark, assignor to Rexomi A/S, Copenhagen, Denmark

Filed Oct. 12, 1973, Ser. No. 405,907

Claims priority, application Denmark, Oct. 17, 1972, 5123/72

Int. Cl. G03g *15/00*

U.S. Cl. 355—14 **7 Claims**



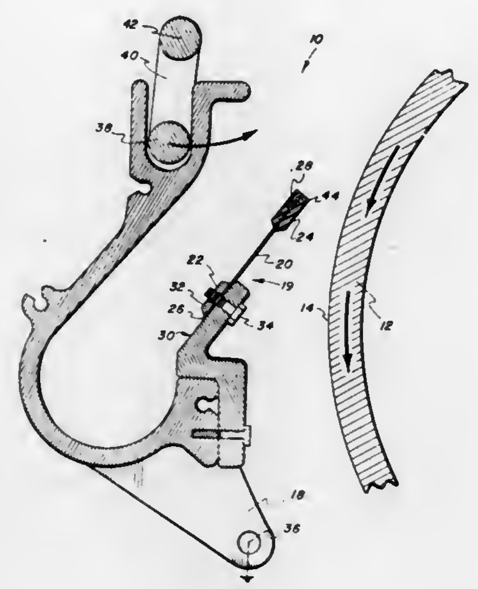
1. An electrophotographic copying apparatus, comprising mutually spaced, substantially vertical first and second conveying paths for an original to be reproduced and a copy sheet having a photosensitive surface to receive a reproduction of said original, respectively;
a main driving system including an electric motor for advancing the original and the copy sheet in a downwards direction along said conveying paths;
an exposure lamp arranged at said first conveying path for illuminating the original;
a corona charging device, an exposure window, a developing device and a drying device arranged in order of succession in the advancing direction of the copy sheet along said second conveying path;
a supply of copy sheets arranged above said second conveying path;

a catch mechanism for taking off a single copy sheet at a time from said sheet supply and advancing said sheet towards said second conveying path;
spring biased stop members arranged to be inserted into said first and second conveying paths for defining substantially vertical original and copy sheet start positions at the upper ends of said conveying paths, the original and the copy sheet being kept in these start positions by their own weight;
and a pair of advancing rollers arranged in each of said conveying paths above said stop members, the rollers of each of said roller pairs being removed from each other when an original and a copy sheet are present in said start positions,
wherein the improvement comprises that programming means are provided, which comprise
a first switching device for switching on and off the current supply to the electric motor of the main driving system;
a second switching device for switching on and off the current supply to the corona charging device and the exposure lamp;
first and second control mechanisms for retracting the spring biased stop members from each of said conveying paths and simultaneously coupling together the rollers of said roller pairs;
a number of actuating members for actuating and deactuating said first and second switching devices and said first and second control mechanisms;
a mannually operated start button to influence the actuating member for said first switching device;
a cam wheel connected with said catch mechanism;
and a single, circular disc-shaped timing member mounted for rotation in the copying apparatus and coupled with the main driving system, said timing member being provided on one lateral surface with a number of radially displaced, substantially circular actuating surface sections, each of which is in operative engagement with one of said actuating members to operate said members in a timed sequence during a single revolution of the timing member, the surface section associated with the actuating member for the first switching device being formed so as to operate said actuating member to actuate the first switching device to switch on the current supply to the electric motor of the main driving system when said actuating member is influenced by said start button, whereby rotation of the timing member will be started, the timing member furthermore having a number of teeth arranged in a circular arc outside said actuating surface sections so as to get in operative engagement with said cam wheel in a timed sequence with the operation of said actuating members.

3,848,992
DEVELOPER BLADE CLEANING

Richard E. Smith, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed May 3, 1973, Ser. No. 356,985
Int. Cl. G03g *15/00*
U.S. Cl. 355—15 **12 Claims**

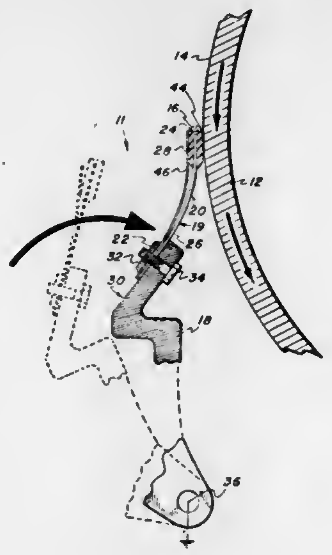
1. A photoreceptor blade cleaning system for cleaning dry developer material from a moving photoreceptor surface in electrophotographic apparatus comprising:
a cleaning blade having a main portion of thin planar material with a mounting edge and an opposing free edge substantially spaced from said mounting edge,
said cleaning blade further having a cleaning tip portion comprising a body of elastomer material mounted to said free edge of said main portion, extending over only said free edge and substantially spaced from said mounting edge,
said main portion being resiliently flexible only perpendicular said planar dimensions thereof, and being cantilever mounted by blade mounting means at said mounting edge of only said main portion, extending generally parallel to said photoreceptor surface for substantial resilience only in a direction toward or away from said photoreceptor surface,
said blade being mounted to project toward the direction of motion of said photoreceptor surface when in cleaning engagement therewith to provide a chiseling cleaning engagement of said cleaning tip against said surface,



and means for pressing said tip portion of said blade into substantially uniform cleaning engagement with said photoreceptor surface,
said main portion of said blade being sufficiently stiff to prevent blade tuck-under from high frictional forces between said tip and said photoreceptor surface.

3,848,993
SUPPORTED DEVELOPER BLADE CLEANING

Christ S. Hasiotis, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed May 3, 1973, Ser. No. 356,986
Int. Cl. G03g *15/00*
U.S. Cl. 355—15 **7 Claims**

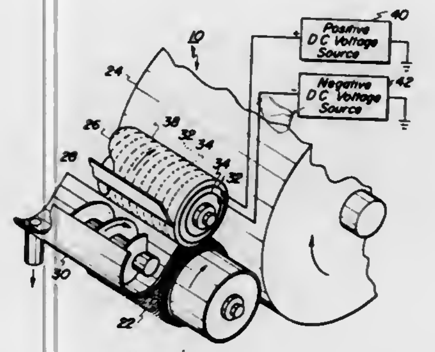


1. A photoreceptor blade cleaning system for cleaning dry developer material from a moving photoreceptor surface in electrophotographic apparatus comprising:
a cleaning blade having a main portion of thin planer material with a mounting edge and an opposing free edge substantially spaced from said mounting edge,
said cleaning blade further having a cleaning tip portion comprising a body of elastomer material mounted to said free edge of said main portion substantially spaced from said mounting edge,

said main portion being resiliently flexible only perpendicular said planar dimensions thereof, and being cantilever mounted by blade mounting means at said mounting edge of said main portion, and extending generally parallel to said photoreceptor surface for substantial resilience only in a direction toward or away from said photoreceptor surface,
said cleaning blade being mounted to project toward the direction of motion of said photoreceptor surface when in cleaning engagement therewith to provide a chiseling cleaning engagement of said cleaning tip against said surface,
and means for pressing said tip portion of said cleaning blade into substantially uniform cleaning engagement with said photoreceptor surface, including an independent backing blade member cantilever mounted independently from said main portion of said cleaning blade,
said backing blade having a free edge resiliently engaging said cleaning tip portion to uniformly support and urge said cleaning tip portion against said photoreceptor.

3,848,994
LINE CHARGE TONER CLEANING

Lawrence J. Fraser, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 29, 1973, Ser. No. 410,836
Int. Cl. G03g *15/00*
U.S. Cl. 355—15 **9 Claims**

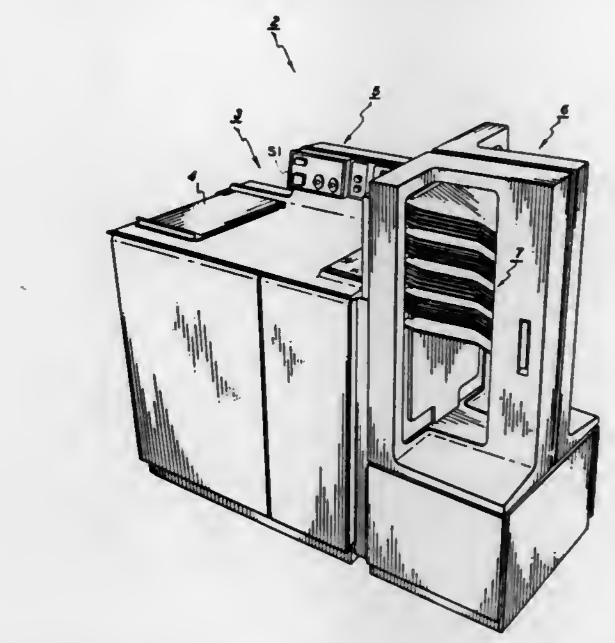


1. In electrostatographic apparatus in which electrostatically attractable imaging material is cleaned from an imaging surface, the improvement comprising:
a moving surface cleaning member making a cleaning engagement with said imaging surface for removing said imaging material from said imaging surface;
a moving surface pick-off member making a cleaning engagement with said cleaning member for removing said imaging material from said surface of said cleaning member to said surface of said pick-off member;
electrostatic field means for generating a multiplicity of closely adjacent differently charged areas on said pick-off member in said engagement with said cleaning member for producing a plurality of non-uniform imaging material attractive electrical fringe fields between said pick-off member and said cleaning member;
and imaging material removal means for removing said imaging material from said pick-off member.

3,848,995
COPIER/DUPLICATOR SYSTEM

John F. Gauronski, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed May 30, 1973, Ser. No. 365,352
Int. Cl. G03g *15/00*
U.S. Cl. 355—26 **6 Claims**

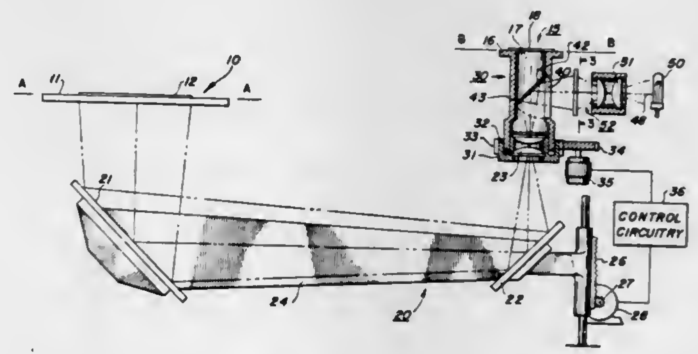
1. In a copier/duplicator system in which copy sheets are reproduced from documents and distributed for sorting into trays moved past a sheet discharge zone to sort copy sheets into collated sets, an improved control circuit for minimizing the delay between sorting runs comprising:
first circuit means including first gate means to receive signals indicative of a copier/duplicator system ready condition and a second gate means to receive signals indicative of a start print condition,



second circuit means including third gate means to receive signals from said first circuit means and to receive signals from machine control indicative of the position of said moving trays to start another sorting cycle,
said third gate means generating output signals to reset said first circuit means and initiate the next sorting cycle.

3,848,996
PHOTOCOMPOSING APPARATUS

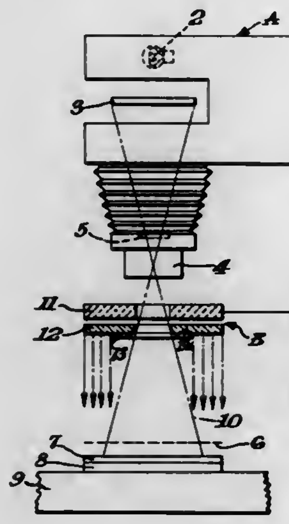
Justin Christian Goding, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed May 16, 1973, Ser. No. 360,725
Int. Cl. G03b *27/70*
U.S. Cl. 355—43 **6 Claims**



1. A photocomposing device for positioning a movable optical exposure system to project a light image of an original onto a recording medium within a predetermined format including:
a platen for supporting an original to be reproduced within the object plane of the photocomposing device,
an imaging station for supporting a recording medium within the image plane of the photocomposing device,
movable exposure means for projecting a light image of the original, supported in said object plane, onto the recording medium supported in said image plane, said exposure means being arranged to be repositionable between the object and image planes to minify or magnify the image of the original projected onto the image plane,
means to create a light image at the platen surface indicative of the original surface area recordable within said predetermined format for any position of said optical system, said means to create a light image including

- an opaque mask positioned off the optical axis of the exposure system having a transparent frame formed therein;
- means to illuminate said mask; and
- a mirror means interposable into the optical path of the exposure means for projecting a light image of the mask information back through said exposure means onto said viewing platen.

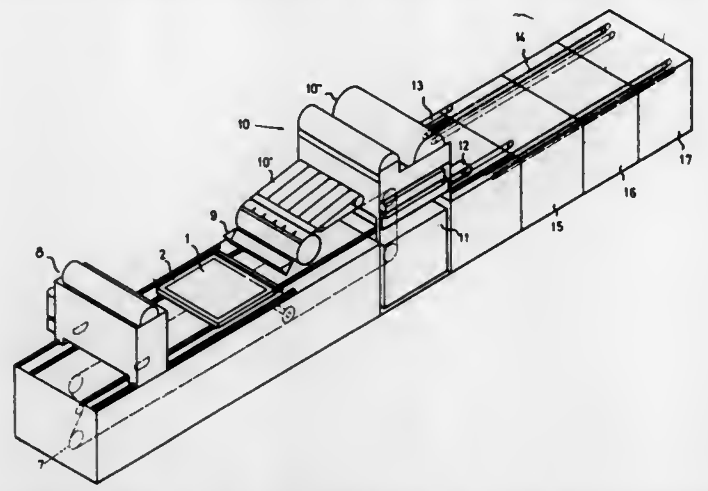
3,848,997
AUXILIARY LIGHTING DEVICE FOR ENLARGERS
Leopold Muehloegger, Brixen, Italy, assignor to Durst A. G. Fabrik Fototechnischer Apparate, Bozen, Italy
Filed June 26, 1973, Ser. No. 373,757
Int. Cl. G03b *27/54*
U.S. Cl. 355—71 **5 Claims**



1. An auxiliary lighting device for an enlarger having a lens which projects an image on photosensitive material comprising an annular electroluminescent plate disposed in the immediate proximity of the lens, the annular electroluminescent plate having a central aperture to permit the light coming from the lens to pass through it, and the annular electroluminescent plate having means associated there with for uniformly exposing the photosensitive material to its illumination.

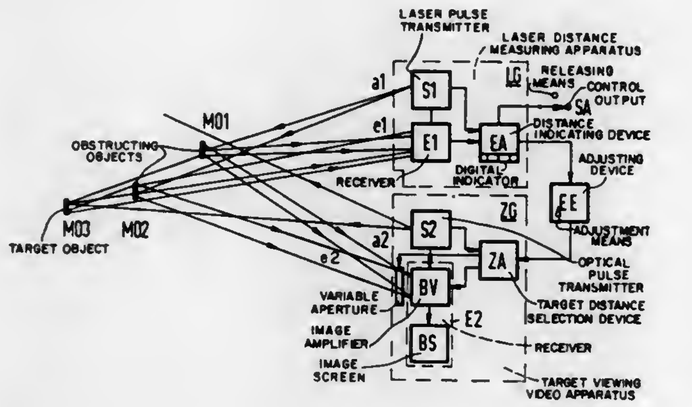
3,848,998
APPARATUS FOR THE PRODUCTION OF PHOTOPOLYMER PLATES
Saku Yonekura, Tokyo; Hideaki Miyamoto, and Akio Namba, both of Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka and Tokyo Kikai Seisakusho, Ltd., Tokyo, Japan
Filed May 2, 1973, Ser. No. 356,532
Claims priority, application Japan, May 2, 1972, 47-44054; May 2, 1972, 47-44053; May 2, 1972, 47-44052; May 2, 1972, 47-44051; May 2, 1972, 47-44050
Int. Cl. G03b *27/30*
U.S. Cl. 355—100 **12 Claims**

1. An automated apparatus for producing a photopolymer plate having relief images areas which comprises;
- a. rigid support plate for receiving an image-bearing transparency and a protective film thereon, said rigid support plate and said protective film being capable of transmitting actinic radiation therethrough;
- b. means for covering said image-bearing transparency with said protective film in intimate contact therewith said means being capable of effecting relative reciprocating movement in relation to said rigid support plate;
- c. means for feeding a liquid photosensitive material onto said protective film to form a layer of photosensitive material;
- d. means for laminating a backing material onto said layer of photosensitive material, said backing material being capable of transmitting actinic radiation;
- e. exposure means including a rigid plate, and being adapted to receive said rigid support plate below said rigid plate, and said exposure means further comprising an upper actinic light source and a lower actinic light source being provided on a frame of said exposure means, said rigid plate being provided on a frame of said exposure means, said rigid plate being capable of transmitting actinic radiation;
- f. actuating means for transferring said rigid support plate from a protective film feeding station to an exposure station, and for successively operating said liquid photosensitive material feeding means and said laminating means during the transference of said rigid support plate to said exposure station;



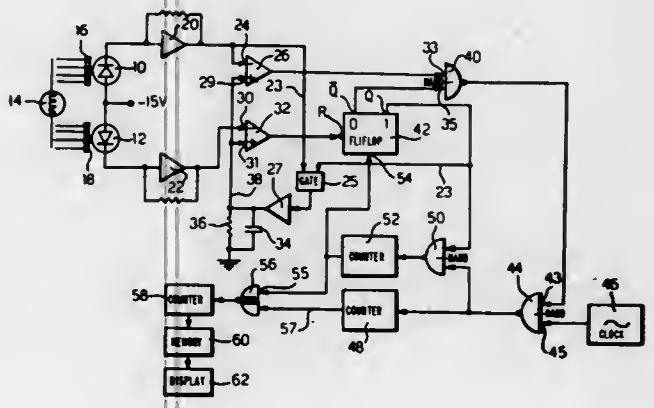
- g. means for removing said protective film from the lower surface of said exposed layer;
- h. means for removing unhardened non-exposed portions in said layer to form relief images on said backing material;
- i. means for treating said relief images on said backing material at a washing-out station;
- j. means for subjecting said relief images to the postexposure;
- k. means for transferring said backing material from a washing-out station through the post-exposure station.

3,848,999
OPTICAL RANGE MEASURING APPARATUS
Georg V. Dall'Armi, Unterhaching, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Oct. 26, 1971, Ser. No. 192,143
Claims priority, application Germany, Oct. 29, 1970, 2053111
Int. Cl. G01c *3/08*
U.S. Cl. 356—4 **17 Claims**



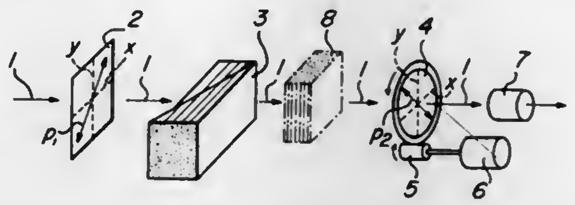
1. Optical range measuring apparatus for one of a plurality of measuring objects including a target measuring object, comprising laser distance measuring apparatus (LG) having a first laser pulse transmitter (S1), a first receiver (E1) connected to the first transmitter and a distance indicating device (EA) connected to the first transmitter and the first receiver for determining and measuring the distance of at least one measuring object; target-viewing video apparatus (ZG) having a second optical pulse transmitter (S2) aligned with the measuring objects, a second receiver (E2) having an image amplifier (BV) connected to the second transmitter and an image screen (BS) connected to the image amplifier and a target distance selection device (ZA) connected to the second transmitter and the image amplifier of the second receiver for opening the second receiver after the elapse of an adjustable period of time after each pulse of the second pulse transmitter is transmitted; and an adjusting device (EE) connected between the distance indicating device of the laser distance measuring apparatus and the target distance selection device of the target-viewing video aparatus for selectively adjusting said target distance selection device to the distance of one of the measuring objects measured by the laser distance measuring apparatus.

3,849,000
DIGITAL DISPLAY OPTICAL PYROMETER
Paolo Soardo, and Mario Pasta, both of Turin, Italy, assignors to Institute Elettrotecnico Nazionale Galileo Ferraris, Turin, Italy
Filed May 17, 1973, Ser. No. 361,085
Claims priority, application Italy, May 24, 1972, 68641/72
Int. Cl. G01j *5/60*
U.S. Cl. 356—45 **8 Claims**



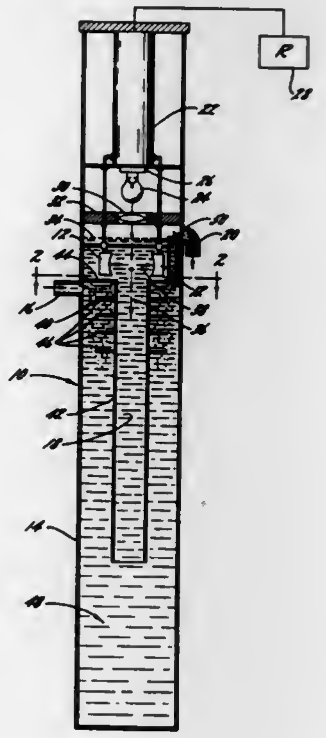
1. Digital display optical pyrometer apparatus comprising photometric means adapted to emit respectively a first and a second electrical signal, corresponding to respective linear functions of two radiant energy fluxes incident on said means, circuit means connected to said photometric means to process the signals emitted thereby and to supply a digital signal proportional to the radiation temperature associated with said energy fluxes and visual display means piloted by said digital signal and providing a digital measurement of the said temperature, wherein the improvement consists in:
- a. a storage circuit having a discharge time constant proportional to the reciprocal of a preselected constant A;
- b. a charging and comparator circuit adapted to apply to said storage circuit a voltage not less than the product of said first signal and a second preselected constant C, for a predetermined first time interval, and to allow successively the discharge of the storage circuit to the value of the second signal so as to cause a sequence of charge and discharge cycles of said storage circuit to take place;
- c. a source of electrical clock pulses; and
- d. a logic circuit including first counter means arranged to count a number of pulses emitted by the source of clock pulses, said number being proportional to the expression $[\ln(1/C)-B]/A$ wherein B is a third preselected constant and to emit at the termination of said counting an output pulse which initiates the functioning of said charging and comparator circuit to allow discharge of the storage circuit, said logic circuit further including second counter means which enables the application to said visual display means of the pulses counted by said first counter means during a preselected time interval.

3,849,001
POLARIZATION INTERFERENCE CORRELATION SPECTROMETER
Masaru Inoue; Toshio Kaneko; Koichi Matsumoto; Makoto Ishikawa, and Nobuo Akitomo, all of Katsuta, Japan, assignors to Hitachi Ltd., Tokyo, Japan
Filed June 16, 1972, Ser. No. 263,454
Claims priority, application Japan, June 18, 1971, 46-43307
Int. Cl. G01j *3/00*
U.S. Cl. 356—98 **15 Claims**



1. A polarization interference correlation spectrometer comprising:
- first means for polarizing a light beam;
- second means for splitting the polarized beam obtained from said first means into two orthogonal polarization components and for generating a difference between the optical paths of the two orthogonal polarization components;
- third means for deriving two orthogonal polarization interference components from the two orthogonal polarization components obtained from said second means; and
- fourth means for deriving an electric modulated signal based on the two polarization interference components obtained from said third means.

3,849,002
METHOD AND APPARATUS FOR ELIMINATING AIR DURING FLUID TURBIDITY MEASUREMENT
Clifford C. Hach, Ames, Iowa, assignor to Hach Chemical Company, Ames, Iowa
Filed May 11, 1973, Ser. No. 359,446
Int. Cl. G01n *21/00, 1/10*
U.S. Cl. 356—103 **6 Claims**



1. In a turbidimeter for sensing the turbidity of a continuously flowing fluid sample including a container for supporting a vertical column of fluid to be tested, means defining a drain opening in said container for establishing an upper surface on said fluid column whereby the fluid may drain from the column at the level of said upper surface, inlet means for trans-

mitting a continuous flow of fluid to said column, a light source fixed relative to said container for directing a beam of light down into said fluid column, means including photoelectric cells surrounding said light beam and being disposed facing the beam passing through the fluid column to define a measuring zone, the electrical output of said cells being dependent upon the amount of light energy from said light beam that is reflected toward the photoelectric cells by particles suspended in said fluid, the improvement comprising, an air trap zone disposed between the inner wall of the container and the central portion of the fluid column through which said light beam passes, said air trap zone being in communication with the inlet means transmitting said fluid flow to the column, vent means connecting said air trap zone to said drain outlet, and said air trap means extending downwardly a substantial distance along the length of said container so that fluid flowing through said air trap zone is present a sufficient length of time to eliminate air and reach a quiescent state prior to flowing up through the central column to the measuring zone and departure of said fluid through said drain.

3,849,003

INTERFEROMETER APPARATUS FOR MEASURING THE ROUGHNESS OF A SURFACE

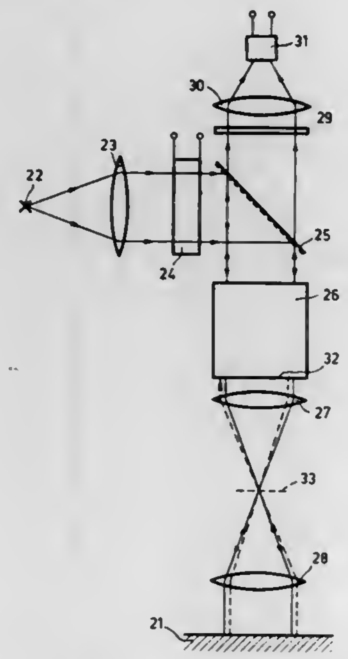
Christiaan Hendrik Frans Velzel, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 126,149, March 19, 1971, abandoned, and a continuation-in-part of Ser. No. 859,989, Sept. 22, 1971, Pat. No. 3,676,006. This application Apr. 6, 1973, Ser. No. 348,686

Claims priority, application Netherlands, Mar. 25, 1970, 7004247

Int. Cl. G01b *9/02*

U.S. Cl. 356—109 **3 Claims**



1. An apparatus for measuring the roughness of a surface, comprising an electro-optical modulator having electrical terminals for receiving a periodic electrical signal, means for projecting substantially monochromatic radiation through the electro-optical modulator, the electro-optical modulator thereby providing two aligned orthogonally polarized sub-beams having a periodically varying phase difference, an interferometer in the path of the sub-beams from the electro-optical modulator for spatially displacing the sub-beams in accordance with the direction of polarization, means in the interferometer for continuously varying the spatial displacement of the subbeams, means for superimposing the initially displaced sub-beams on the surface to be measured and for directing reflected radiation from the surface back to the interferometer wherein the spatial displacement between the sub-beams is removed, an analyzer in the path of the recombined reflected sub-beams, and a photo detector in the path of the beams passing through the analyzer.

3,849,004

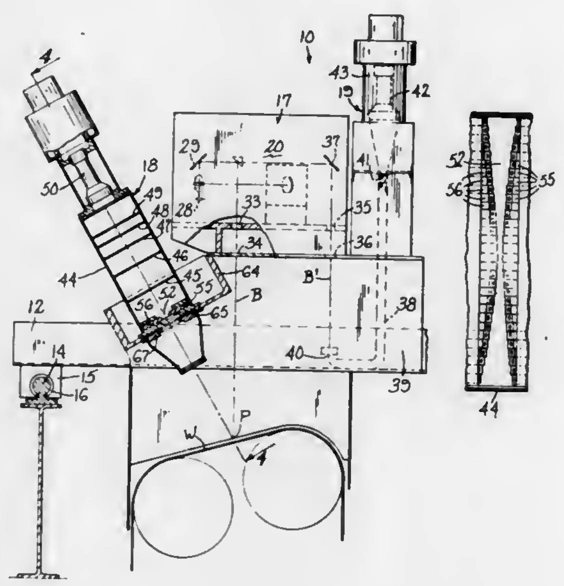
PHOTO-DETECTOR FOR OPTICAL INSPECTION SYSTEM

Henry R. Cofek, Fairfield, Conn., assignor to Geisco Associates, Cheshire, Conn.

Filed Oct. 11, 1973, Ser. No. 405,448

Int. Cl. G01n *21/18*

U.S. Cl. 356—200 **2 Claims**



1. In an optical inspection system of the type in which a beam of light is scanned across the surface of material to be inspected on a photodetector is positioned to be responsive to changes in the level of light energy on said material due to discontinuities therein; a photodetector comprising a housing having an elongated opening at the lower portion thereof adapted to admit light from the beam on the material, said opening being sufficiently long as to cover the dimension of scan of the beam across the material, a photo-sensitive device positioned in said housing above said opening, said photosensitive device being effective to provide an electrical output proportional to the light energy received thereby, means defining said opening to have a varying width along the length thereof, said defining means being adjustably positionable on said housing, with respect to the width of said opening.

3,849,005

METHOD AND DEVICE FOR ESTIMATING A GASEOUS COMPONENT

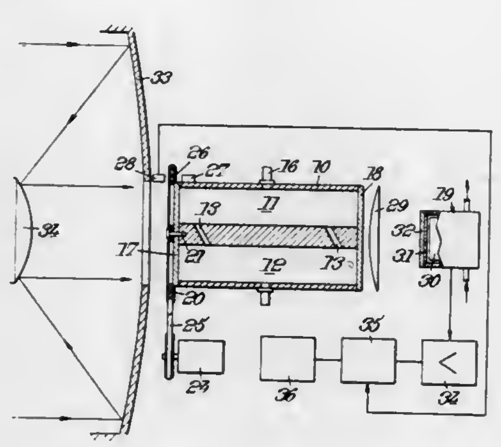
Andre Girard, Chatenay-Malabry, and Jean Laurent, Palaiseau, both of France, assignors to Office National D'Etudes et de Recherches Aerospatiales (ONERA), Chatillon-Sous-Bagneux, France

Filed Apr. 13, 1973, Ser. No. 350,975

Claims priority, application France, Apr. 21, 1972, 72.14150

Int. Cl. G01n *21/22, 21/34*

U.S. Cl. 356—201 **11 Claims**



1. Method for determining a component of interest of a gaseous mixture, said method using the absorption or the emission of a characteristic radiation of said component and comprising
  alternately and cyclically
  passing a beam of radiation emerging from said mixture and whose spectral composition contains at least one characteristic ray of the component through an enclosure through which the beam encounters a predetermined weight of the component of interest
  and splitting said beam and simultaneously passing part of said beam through a second enclosure where the beam encounters a weight of the component of interest greater than said predetermined weight and the remainder of said beam through a weight of said component substantially less than said predetermined weight,
  and measuring the cyclical variations in the beam which alternately is passed through said first enclosure and is passed partly through said second enclosure and partly through said lesser weight of component.

3,849,006

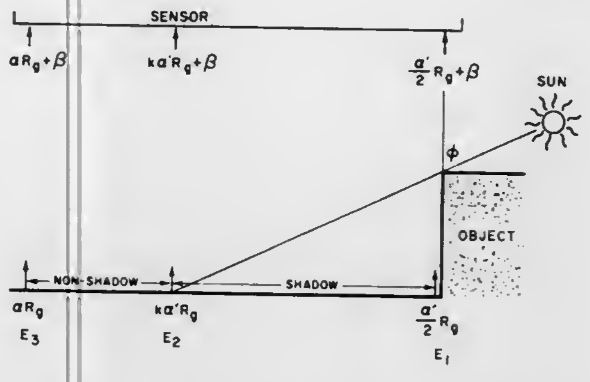
METHOD FOR EXTRACTING PHOTOMETRIC INFORMATION FROM AERIAL PHOTOGRAPHIC IMAGERY

Kenneth Robert Piech, Williamsville, and John Elwyn Walker, Buffalo, both of N.Y., assignors to Calspan Corporation, Buffalo, N.Y.

Filed June 4, 1973, Ser. No. 366,913

Int. Cl. G01n *21/48*

U.S. Cl. 356—209 **4 Claims**



1. A method for extracting photometric information from aerial photographic imagery including the steps of:
  choosing at least two shadows over different reflectances in the input photographic scene;
  determining the shadow and non-shadow radiances for each shadow chosen;
  calculating β and α/α', where α is proportional to atmospheric transmittance and total (sunlight + skylight) irradiance; α' is proportional to atmospheric transmittance and skylight irradiance; where β is proportional to the amount of air light in the scene, and to the amount of camera flare light;
  choosing a standard object in non-shadow in the input photographic scene;
  determining the radiance of the standard object;
  calculating α and α', whereby the parameters for calibrating an image photometrically and for correcting for sensor non-linearity are obtained.

3,849,007

DIRECTION INDICATOR FOR COUPLING

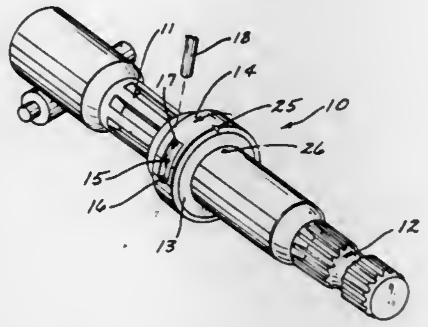
Florian B. Recker, Hopkinton, Iowa 52237

Filed Nov. 3, 1972, Ser. No. 303,337

Int. Cl. F16l *55/00*

U.S. Cl. 403—27 **3 Claims**

1. In a locking collar of the type used to connect a first rotatable shaft to a second rotatable means, the locking collar being releasable upon rotation in one direction only relative to said first rotatable shaft, the improvement comprising a groove disposed in the outer periphery of the locking collar with the bottom thereof tapering on one end thereof from a point on the periphery of the collar to a point radially inwardly from the outer periphery at the other end of the groove, said other end of the groove having an end wall which extends substantially radially outwardly from a point near the bottom



of the groove to the outer periphery of the locking collar; and means for guiding a punch against said end wall in one direction comprising two sidewalls on said groove extending from the periphery of the locking collar to a distance generally inwardly from the periphery of the locking collar for guiding a punch squarely against said end wall.

3,849,008

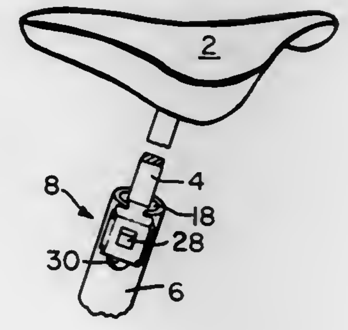
SADDLE SUPPORT SYSTEM

Raymond W. Boucher, Dothan, Ala.; Robert Boudreau, Bedford, Pa., and John A. Conti, Dothan, Ala., assignors to Hedstrom Co., Bedford, Pa.

Filed Oct. 9, 1973, Ser. No. 404,150

Int. Cl. F16b *7/10*

U.S. Cl. 403—104 **7 Claims**



1. A saddle support system comprising a cage with an opening into its interior, a nut aligned inside the cage so that its threaded opening is adjacent to the opening in the cage, a bolt passing through the opening in the cage and threading into the nut, a tubular saddle pillar, a saddle post fiting coaxially within the saddle pillar, an opening in the wall of the pillar and wherein the cage is secured to the saddle pillar and the bolt is of sufficient length to thread through the nut, pass through the pillar opening and engage the saddle post, thereby frictionally securing the post at a selected level in the saddle pillar.

3,849,009

BALL AND SOCKET JOINT FOR RACK AND PINION STEERING GEAR

Julien Louis Bourdon, Suresnes, France, assignor to Gemmer France, Suresnes, France

Filed Mar. 9, 1973, Ser. No. 339,567

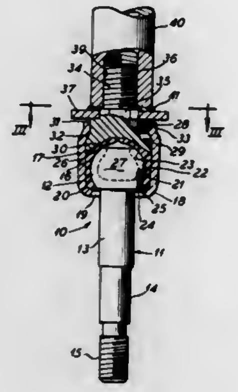
Claims priority, application France, Mar. 28, 1972, 72.10831

Int. Cl. B25q *3/38;* **F16b** *7/00;* **F16c** *11/06*

U.S. Cl. 403—133 **15 Claims**

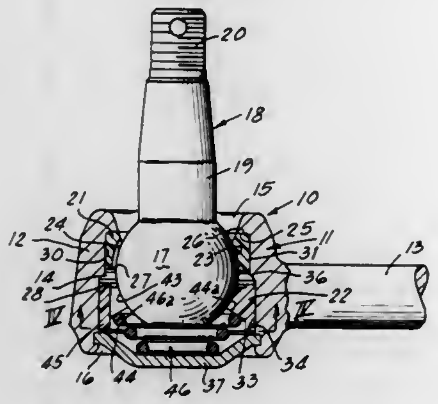
1. A joint comprising a stud having a head and a shank extending from the head, a plastics bearing enveloping said

head, a metal tube surrounding said bearing, said tube having an inturned end bottoming the bearing and defining an aperture freely receiving the stud shank therethrough, a closure plug in said tube overlying the bearing, said tube and plug cooperating to provide a housing enveloping said bearing, a reduced diameter crimped portion on the tube holding the plug against the bearing and pre-loading the bearing on the stud head, and threaded means on the housing projecting beyond the closure plug to connect the joint to a rod member or the like.



3,849,010
DUAL SEAT SOCKET JOINT

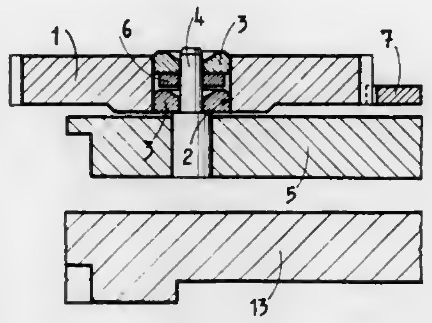
Edward J. Herbenar, Detroit, Mich., assignor to TRW Inc., Cleveland, Ohio
Continuation-in-part of Ser. No. 274,870, July 25, 1972, abandoned, and a continuation of Ser. No. 408,152, Oct. 19, 1973,. This application May 2, 1973, Ser. No. 356,633
Int. Cl. F16c *11/06*
U.S. Cl. 403—138 **10 Claims**



1. A ball and socket joint adapted for automotive steering linkages and wheel suspensions which comprises a ball ended stud, a housing receiving the ball end of the stud, a load carrying bearing in the housing receiving a portion of the ball end of the stud in tiltable and rotatable relation, a split wear take-up bearing in the housing spaced from the load carrying bearing receiving a portion of the ball end of the stud projecting from the load carrying bearing, a coil spring compressed in the housing urging the wear take-up bearing toward the load carrying bearing, and said wear take-up bearing having a tapered end wall converging toward the ball end of the stud receiving the end coil of the spring thereagainst to convert a portion of the axial load of the spring on the wear take-up bearing into a radial expansion force wedging the wear take-up bearing in the housing.

3,849,011
DEVICE FOR LIMITING THE AXIAL PLAY OF A ROTATABLE ELEMENT OF A MOVEMENT OF TIMEPIECE OR OF A SMALL MECHANICAL APPARATUS

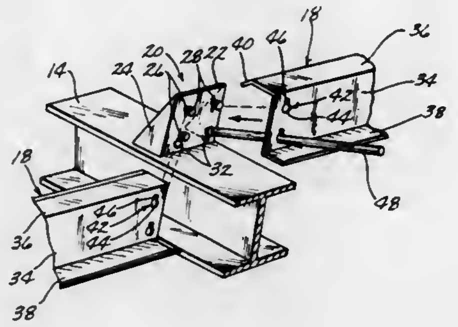
Francois Berthoud, Le Lieu, Switzerland, assignor to Ebauches S.A., Canton of Neuchatel, Switzerland
Filed Apr. 24, 1973, Ser. No. 354,074
Claims priority, application Switzerland, Apr. 26, 1972, 6243/72
Int. Cl. F16d *1/06*
U.S. Cl. 403—165 **12 Claims**



1. In a movement of a timepiece or like small mechanical apparatus, in which there is a rotatable element and a frame stationary relative thereto one of said element and frame having a shaft rigidly secured thereto, the invention comprising means limiting the axial play of the rotatable element relative to the frame comprising a ring tightly engaged on the said shaft, at least a pair of annular bearing members seated spaced apart within said other of said element and frame, said bearing members having coaxial bores receiving said shaft journalled for rotation therein, said ring being disposed between said bearing members, facing surfaces thereof defining alternately abutting surfaces to said ring, the maximum play of said rotatable element being defined by the difference between the axial spacing of said bearing members and the thickness of said ring.

3,849,012
BUILDING STRUCTURE FASTENER

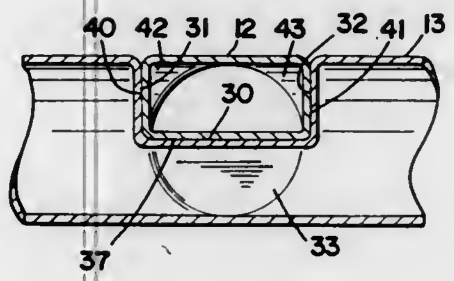
Theodore L. Krouse, 113 W. South St., Monticello, Iowa 52310
Filed Oct. 24, 1973, Ser. No. 409,286
Int. Cl. F16b *9/02*
U.S. Cl. 403—188 **7 Claims**



1. A building structure comprising,
a support member,
a mounting plate on said support member and having a post with a head on its outer end, and a locking tab on said mounting plate adjacent said post and adapted to be resiliently deflected towards said plate and said head having a larger cross sectional area than said post, and
a structural member having an enlarged opening and a slot extending from said opening such that said head on said post may be positioned through s said opening and upon said structural member being moved said post moves into said slot having a size smaller than said head thereby limiting said head against passing through it and said locking tab being resiliently depressed as said structural member is moved until it drops into said opening and engages the edge thereof to limit movement of said structural member, said post engaging the end of said slot and the locking tab engaging said enlarged opening with said post head being over said slot.

3,849,013
FRAME JOINT CONSTRUCTION

Everett I. Bibb, 24225 San Pedro Ln., Carmel, Calif. 93921
Division of Ser. No. 94,398, Dec. 2, 1970, Pat. No. 3,749,594.
This application Mar. 9, 1973, Ser. No. 339,698
Int. Cl. F16b *7/00*
U.S. Cl. 403—347 **3 Claims**

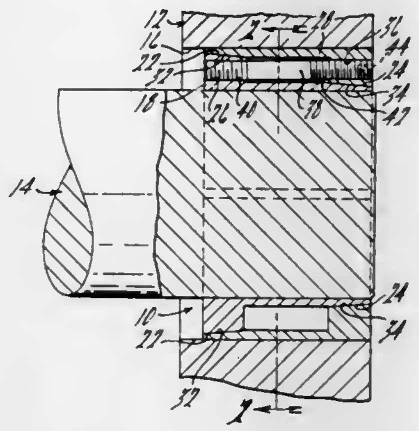


1. A metallic joint consisting of a first tube having a notch therein defined by a solid substantially rectangular seat extending substantially diametrically of said tube and upstanding solid end walls of substantially semicircular contour and each extending from the periphery of said tube to said seat, the portion of said tube below said notch being shaped to provide shoulders consisting of semi-circular solid vertical walls substantially tangential to the outer wall of the tube and having lower edges interconnected with the outer wall of the tube by solid walls of arcuate cross section which extend horizontally to said outer wall of the tube, and a second tube having a notch therein in confronting relation to the notch of said first tube and defined by a solid substantially rectangular seat extending substantially diametrically of the second tube and overlying the seat of the first tube, and depending solid end walls of substantially semi-circular contour and each extending from the periphery of said second tube to said seat, said last-named end walls lying substantially in contiguity with the shoulders of the first tube and being substantially coextensive in area with the areas of said shoulders, the portion of said second tube above the notch thereof being shaped to provide shoulders consisting of semi-circular solid vertical walls substantially tangential to the outer wall of the second tube and having upper edges interconnected with said last-named outer wall by solid walls of arcuate cross section which extend horizontally to the outer wall of the second tube, said last-named shoulders lying substantially in contiguity with the end walls of the notch in said first-named tube, said tubes being bonded to each other in the area of said joint.

3,849,014
EXPANDABLE HUB LOCKING ASSEMBLY

Joel W. Maxey, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 5, 1972, Ser. No. 312,412
Int. Cl. F16b *2/04*
U.S. Cl. 403—370 **8 Claims**

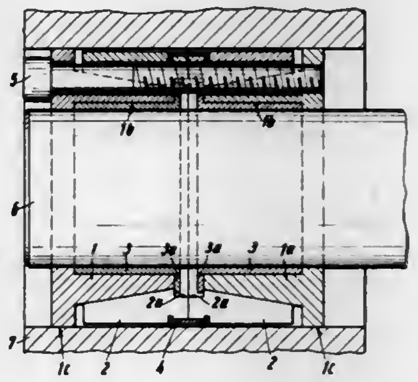
1. An expandable hub constructed to secure a first member having an external cylindrical surface,
said expandable hub comprising inner and outer hub parts, said hub parts having cooperating frustoconical surfaces, means constructed to produce relative axial displacement between said inner and outer hub parts and concomitant radial contraction and expansion of said parts, respectively,
said means including a threaded member threadedly engaging both said inner and outer hub parts,



said threaded member being rotatable to produce axial displacement of said inner hub part relative to said outer hub part.

3,849,015
SYMMETRICAL HUB-TO-SHAFT CONNECTION

Oskar E. Peter, Schlosstrasse 9/1, 7129 Brackenheim, and Lothar Peter, Guglingen, both of Germany, assignors to Oskar E. Peter, Brackenheim, Germany
Filed Sept. 17, 1973, Ser. No. 398,198
Claims priority, application Germany, Oct. 24, 1972, 22521206
Int. Cl. F16d *1/06*
U.S. Cl. 403—370 **5 Claims**



1. In a symmetrical hub-to-shaft clamping connection, to secure a hub (**7**) on a shaft (**6**),
a pair of inner clamping rings (**1**, **1***a*) having outer, oppositely directed conical surfaces;
a pair of outer clamping rings (**2**, **2**) having inner oppositely directed, matching conical surfaces, and outer cylindrical surfaces for clamping the rings to the hub;
axial bores penetrating through said clamping rings, and clamping bolts (**5**) threaded in the bores to axially clamp the inner and outer rings against each other and engage said conical surfaces;
wherein the improvement comprises
a cylindrical relieved surface (**1***b*) formed on the inner surface of the clamping rings (**1**, **1***a*);
a ring-shaped cutout (**2***a*) formed in the facing surface of the outer clamping rings (**2**);
sleeve members (**3**) seated in cylindrical relieved surfaces (**1***b*) and made of a material which is soft with respect to the shaft, or the clamping rings, respectively, to prevent scoring in case of slippage of the shaft with respect to the rings, said sleeve members being secured in the inner clamping ring by means of an interference fit, and being formed with outwardly directed flanges (**3***a*) fitting radially around the inner end surfaces of the inner rings (**1**, **1***a*) and into said ring-shaped cutout (**2***a*) of the outer rings (**2**);

an axially slit ring (**4**) of U-shaped cross section engaging the outer clamping rings (**2**) adjacent the facing surfaces to secure the rings into a single assembly;
and terminal flanges (**1***c*) formed adjacent the outer end faces of the rings (**1**, **1***a*).

3,849,016
DEVICE FOR INTRODUCING RODS, DOWELS OR THE LIKE INTO CONCRETE PAVED CARRIAGEWAYS

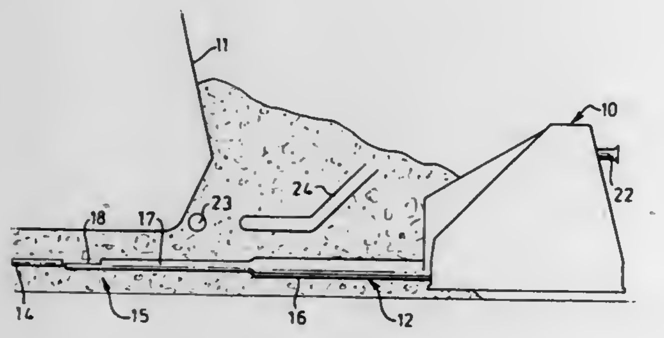
Kenneth Alfred Cochrane, Matlock, and Robert Geoffrey Holloway, Chesterfield, both of England, assignors to Robert McGregor & Sons Limited, Derbyshire, England

Filed Nov. 13, 1972, Ser. No. 305,897

Claims priority, application Great Britain, Dec. 23, 1971, 59854/71

Int. Cl. E01c *11/18*

U.S. Cl. 404—100 **11 Claims**



1. A device for introducing rods, dowels or the like into concrete paved carriageways, such device comprising a holder positioned in front of the conforming plate of a concrete paving machine, magazine means providing a supply of rods or dowels within said holder, a guide tube connected to the holder, in position to longitudinally receive rods or dowels from said magazine means, and means for extracting rods or dowels from said magazine in the holder and moving them endwise into and through said guide tube for positioning in the wet concrete.

3,849,017
TANDEM WHEEL SUPPORTS

William Phillip King Rochfort, Brisbane, Australia, assignor to Kerbit PTY.LTD., Queensland, Australia

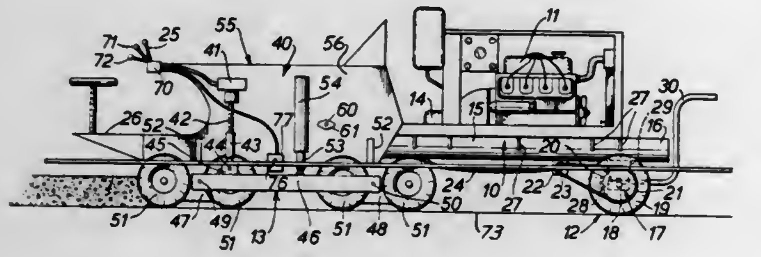
Division of Ser. No. 101,405, Dec. 24, 1970, abandoned, which is a continuation of Ser. No. 780,432, Dec. 2, 1968, abandoned.

This application Oct. 11, 1972, Ser. No. 296,589

Claims priority, application Australia, Nov. 18, 1966, 14148/66; Jan. 26, 1968, 32660/68

Int. Cl. E01c *19/20*

U.S. Cl. 404—108 **10 Claims**



1. A concrete laying machine comprising:

a. a mobile main frame having a front ground wheel assembly adapted for steering the machine;
b. a hopper on said main frame for holding a supply of concrete mix and having an open bottom providing an outlet through which the concrete mix is discharged;
c. an open bottom, downwardly facing mold extending rearwardly from the outlet of said hopper for receiving concrete mix discharged therefrom and shape the laid concrete to a desired cross-sectional shape;
d. feed means within the hopper for feeding the concrete mix through the hopper outlet into the mold; and
e. a pair of rear ground-engaging wheel assemblies mounted on said frame independent of one another and located respectively on opposite sides of the hopper, each of said rear ground-engaging wheel assemblies comprising two pairs of wheels disposed in tandem with each pair of tandem wheels independently pivotally connected to opposite ends of a major frame member, said major frame being pivotally connected to the main frame of said machine at a position between said pair of tandem wheels for free pivotal movement thereof.

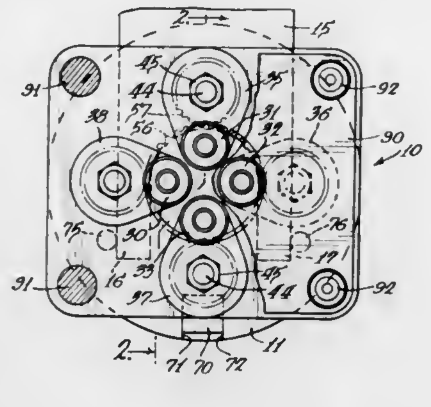
3,849,018
MULTIPLE SPINDLE HEAD

Richard A. Anderson, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jan. 31, 1973, Ser. No. 328,323

Int. Cl. B23b *39/16*

U.S. Cl. 408—46 **2 Claims**



1. A multiple spindle head for use in numerical control machining centers comprising, an interlocked two-part body, one of said body parts rotatably mounting a plurality of spindles, a mounting stem rotatably mounted in said body and extending from the other body part for insertion into the spindle of said machining center, means within said body for transmitting rotation of the mounting stem to said plurality of spindles, locator means on the other body part engageable with the spindle head of the machining center to orient said body and hold said body against rotation, means for rotatably adjusting said body parts relative to each other about an axis lengthwise of said body to vary the orientation of the plurality of spindles to said locator means, said plurality of spindles being adjustably mounted on said one body part to vary their orientation one to the other, a template for locating each of said plurality of spindles in a selected position, and mounting posts for said template extending outwardly from said other body part.

3,849,019
APPARATUS FOR CUTTING HOLES IN PORCELAINIZED METAL

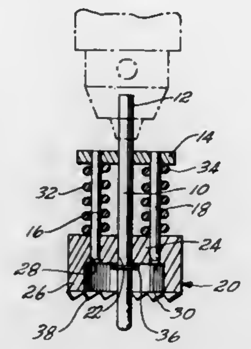
Max L. Green, Pasadena, Calif., assignor to Relton Corporation, Arcadia, Calif.

Filed Mar. 12, 1973, Ser. No. 340,553

Int. Cl. B23b *51/04*

U.S. Cl. 408—142 **6 Claims**

1. A tool for cutting holes in porcelain coated metal with a rotary drill, comprising a guide shaft adapted to be held at one end in the chuck of the drill, the other end of the guide shaft being adapted to extend through a pilot hole in the metal, a cutter head slidably engaging the shaft, slidable means locking the head to the shaft for rotating the head from the shaft while permitting the head to move freely lengthwise of the shaft, spring means connected between the shaft and the head, the spring means urging the head toward the pilot hole engaging end of the shaft, the head having an annular flange coaxial with the shaft and projecting toward the pilot hole end of the shaft, and a plurality of cutting teeth on the end of the flange, the teeth projecting in a direction parallel to the axis of rotation of the shaft.



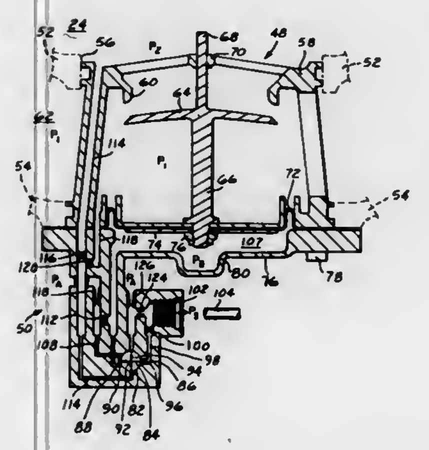
3,849,020
FLUIDIC COMPRESSOR AIR BLEED VALVE CONTROL APPARATUS

James M. Eastman, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Sept. 13, 1973, Ser. No. 396,905

Int. Cl. F01b *25/00*

U.S. Cl. 415—28 **10 Claims**



1. Gas turbine engine air compressor bleed valve apparatus comprising:

valve means operatively connected to said air compressor for venting compressor pressurized air from a compressor stage intermediate the compressor inlet and outlet to a relatively lower pressure air source;
first pressure responsive means responsive to the pressure differential between said compressor pressurized air and said relatively lower pressure air operatively connected to said valve means for actuating the same in an opening direction;
second pressure responsive means responsive to the pressure differential between a control air pressure and said relatively lower air pressure operatively connected to said valve means for actuating the same in a closing direction;
a first passage having first and second series flow restrictions communicating compressor discharge air with a relatively lower pressure air source;
a second passage having third and fourth series flow restrictions communicating compressor pressurized air from said intermediate stage to compressor inlet air;
fluid pressure differential responsive control means responsive to the pressure differential between a first fluid pressure generated between said first and second flow restrictions which varies as a predetermined function of compressor pressure ratio and thus compressor corrected rotational speed and a second fluid pressure generated between said third and fourth flow restrictions said control means adapted to control said control air pressure in proportion to said fluid pressure differential derived from said first and second fluid pressures;
said valve means being actuated to a fully open position in response to said control air pressure at compressor corrected rotational speeds below a predetermined valve and progressively actuated to a fully closed position over a predetermined range of compressor corrected rotational speeds during an engine acceleration.

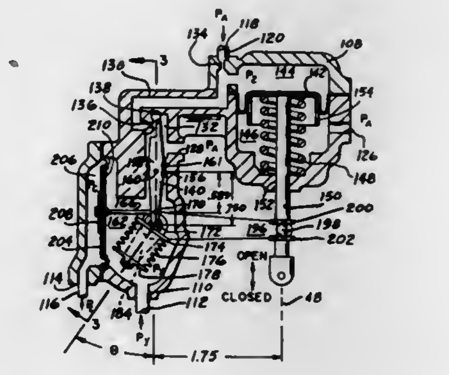
3,849,021
COMPRESSOR GEOMETRY CONTROL APPARATUS FOR GAS TURBINE ENGINE

James M. Eastman, and Robert W. Schuster, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed Apr. 2, 1973, Ser. No. 347,251

Int. Cl. F02c *9/14*; **F01d** *17/06*, *19/00*

U.S. Cl. 415—30 **12 Claims**



1. Control apparatus for a gas turbine engine having a variable geometry air compressor comprising:

a fluid pressure responsive output member operatively connected to said air compressor for varying the geometry thereof;
valve means for controlling the fluid pressure to which said pressure responsive member responds;
control means responsive to first and second air pressures at least one of which varies in a predetermined manner in response to engine speed, said control means having a lever member operatively connected to said valve means for actuating the same in proportion to the ratio of said first and second air pressures over a predetermined range of engine speeds during an acceleration of the engine to a selected speed;
said control means having a first air pressure responsive member operatively connected to said lever member and responsive to said first and second air pressures, and a second air pressure responsive member operatively connected to said lever member and responsive to said second air pressure for loading said lever member in opposition to said first air pressure responsive member; and
means operatively connecting said fluid pressure responsive output member and said second air pressure responsive member for positioning said second air pressure responsive member in response to movement of said output member to vary the effective force component of said second air pressure responsive member opposing said first air pressure responsive member.

3,849,022
TURBINE BLADE COOLANT DISTRIBUTOR

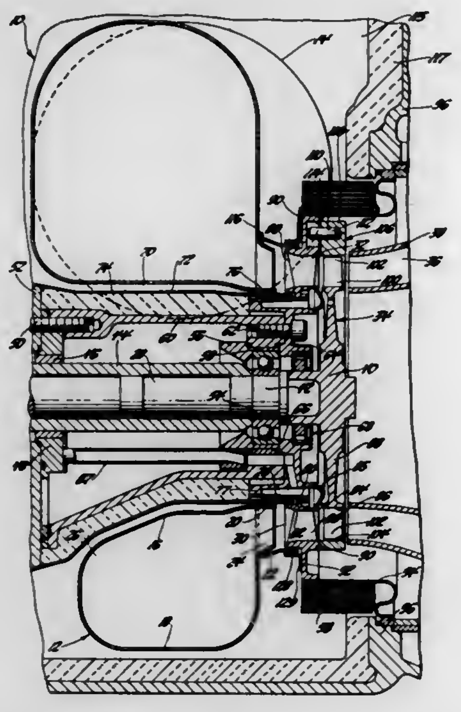
Charles A. Amann, Bloomfield Hills, and James M. Ricketts, Oxford, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 12, 1973, Ser. No. 378,648

Int. Cl. F02c *7/12*, *7/20*; **F01d** *5/00*

U.S. Cl. 415—116 **4 Claims**

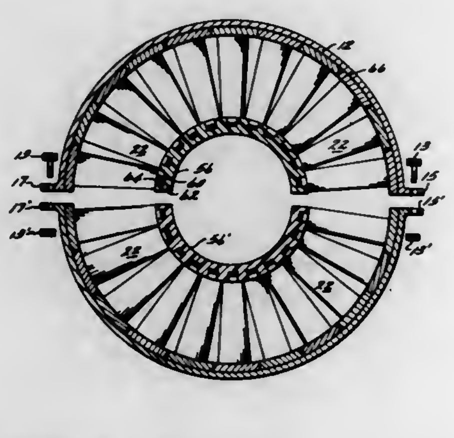
1. In a gas turbine engine having a gas generator including a turbine nozzle having an outer shroud and an inner shroud with a row of vanes connected therebetween for directing gas flow through turbine blades on a rotor wherein the gas flow is confined at the outer diameter of the rotor by a fixed rotor shroud ring connected to the outer shroud of the nozzle for free radial expansion with respect thereto the improvement comprising: means defining an air chamber, means for directing cooling air into said chamber, a nozzle box located in said air chamber having an inlet adapted to be connected to a combustion chamber outlet and having inner and outer walls thereof forming an annular outlet located coaxially of the inlet of the turbine nozzle, said annular outlet including a continuous ring thereon located axially forwardly of said outlet and



having an extension thereon directed axially rearwardly of said outlet and located radially outwardly of the outer shroud of the turbine nozzle to define an annular slot directed axially of said outlet to a point adjacent the front edge of the outer shroud at the inner surface thereof, a plurality of circumferentially spaced openings in said ring in communication with said air chamber located axially forwardly of said outlet, said outer wall of said annular outlet overlying said openings to direct flow from said chamber through said slot to direct cooling air across the inner surface of said outer shroud for cooling the radial outermost tips of turbine blades and the exposed surface of the rotor shroud ring to maintain a predetermined clearance therebetween.

3,849,023
STATOR ASSEMBLY

Nicholas Klompas, Lynnfield, Mass., assignor to General Electric Company, Lynn, Mass.
Filed June 28, 1973, Ser. No. 374,518
Int. Cl. F04d *29/08*
U.S. Cl. 415—170 **9 Claims**



1. A stator assembly comprising:

an outer casing longitudinally split into at least two sectors and having a dovetail groove around the inside surface thereof;

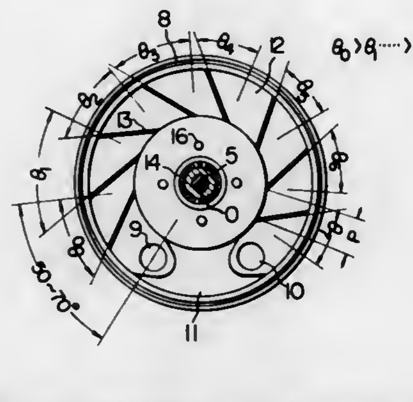
an inner segmented shroud longitudinally split into at least two sectors, each of which has a plurality of circumferentially spaced apart pockets in the outer surface thereof wherein each pocket is undercut at one end, and

a plurality of stator vanes extending radially between the shroud and casing with each vane having:

an inner root portion which includes an integral heel portion and an integrally extending toe portion for engaging the undercut end of a respective shroud pocket, and an outer platform from which extend forward and aft tangs which engage the dovetail groove.

3,849,024
VORTEX BLOWER

Tadahisa Masai, Hitachi, and Takeshi Atago, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed June 1, 1973, Ser. No. 366,145
Claims priority, application Japan, June 21, 1972, 47-61335
Int. Cl. F04d *5/00, 11/00*
U.S. Cl. 415—213 **10 Claims**



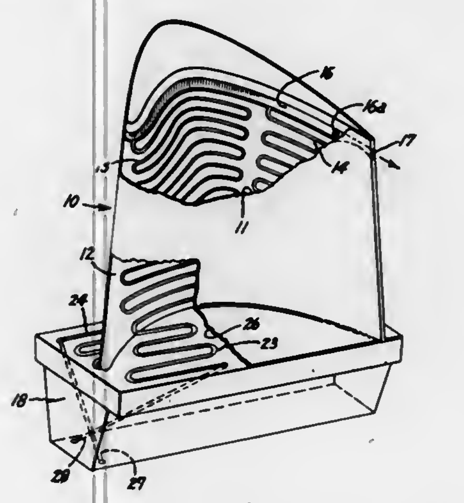
1. A vortex blower comprising a rotor unit provided with a plurality of vanes arranged at fixed intervals in an annular groove, half circular in sectional shape, formed in said rotor unit, and a stator unit also formed with a similar annular groove half circular in sectional shape and designed to serve as an air chamber, the last-said groove being provided at suitable locations thereof with an inlet opening, an outlet opening and a land portion separating said both openings, said both units being arranged in opposed relation and suitably spaced-apart relative to each other, wherein by rotating said rotor a vortex flow is produced in the grooves in said rotor and stator units and is discharged out from said outlet opening, and further characterized in that a plurality of partitioning vanes are provided in the air chamber formed in said stator unit, wherein said partitioning vanes are arranged such that the intersection betwen said vanes and the inner edge of said air chamber will be located further forward in the direction of advancement of the fluid than the corresponding intersection of the straight line connecting the center of said air chamber with the intersection between said vanes and the outer edge of said air chamber.

3,849,025
SERPENTINE COOLING CHANNEL CONSTRUCTION FOR OPEN-CIRCUIT LIQUID COOLED TURBINE BUCKETS

Clayton M. Grondahl, Elnora, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Mar. 28, 1973, Ser. No. 345,538
Int. Cl. F01d *5/18*
U.S. Cl. 416—97 **11 Claims**

1. In a vane structure adapted for mounting in a rotating element of a machine wherein the airfoil surfaces of the vane are subjected to contact with hot gas, the vane comprising an airfoil-shaped core and a conforming skin affixed thereto, said core and said skin defining at least one open-ended subsurface passage therebetween for the transit of coolant therethrough, said at least one passage being adapted to receive coolant flow

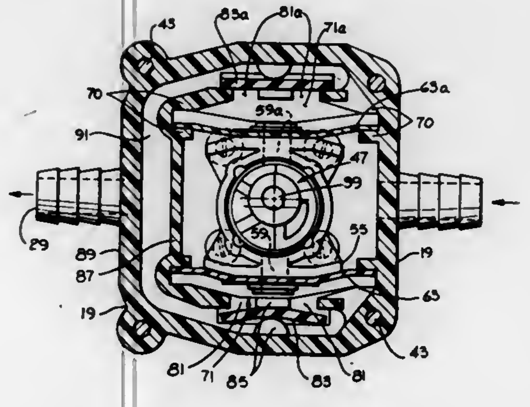
at the radially inner end thereof from a source of coolant and to discharge the coolant flow from the radially outer end thereof into a chordwise-extending manifold, said manifold in turn being adapted to discharge coolant flow from said vane, the improvement in which a plurality of subsurface passages



are employed, each passage being arranged in a serpentine pattern confined to one face of the vane and having a substantially constant depth along the length thereof, most of each successive convolution of said serpentine pattern extending in the generally chordwise direction.

3,849,026
PUMP

Ezra D. Hartley, 2700 Jalmia Dr., Los Angeles, Calif. 90046
Filed Sept. 27, 1972, Ser. No. 292,528
Int. Cl. F04b *1/00*
U.S. Cl. 417—203 **6 Claims**



1. A pump comprising:

a housing;

means for defining a variable volume chamber in said housing, said variable volume chamber including a movable wall for varying the volume of said chamber, said chamber having an inlet through which fluid can flow into the chamber and an outlet through which fluid can be expelled from the chamber;

said movable wall including a flexible diaphragm;

an eccentric;

means for mounting said eccentric for rotation in said housing;

a shuttle block substantially circumscribing said eccentric and being driven thereby as the eccentric rotates;

said shuttle block having a driven surface which confronts said eccentric and which is constructed and arranged to allow said eccentric to drive said shuttle block along a path which forms a loop;

means for interconnecting said diaphragm and said shuttle block whereby at least a portion of the diaphragm is moved by said shuttle block;

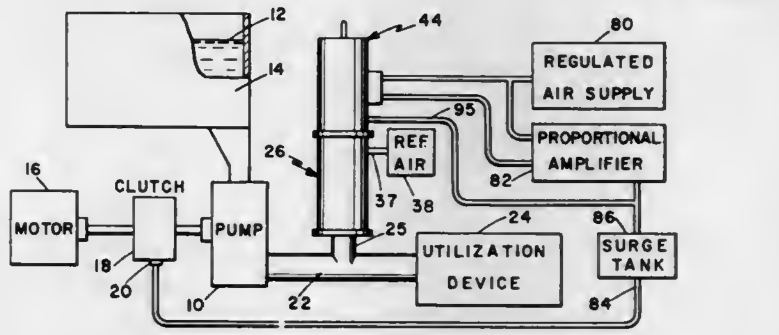
said diaphragm having means to accommodate the loop-like motion of the shuttle block without damaging the diaphragm;

first valve means for controlling fluid flow through said inlet; and

second valve means for controlling fluid flow through said outlet whereby said variable volume chamber can take in fluid through said inlet and discharge the fluid under pressure through said outlet.

3,849,027
FLUIDIC CONSTANT PRESSURE PUMP CONTROL

Frederick H. Blake, 5712 Rutgers, La Jolla, Calif. 92037
Filed Aug. 1, 1973, Ser. No. 384,740
Int. Cl. F04b *49/00*
U.S. Cl. 417—223 **8 Claims**



1. A control system for producing a constant pressure output of pumped product from a pump in an intermittent demand cycle comprising:

an accumulator piston-cylinder having a piston with a reference side and a regulating side,

said regulating side being in fluid communication with the output of said pump,

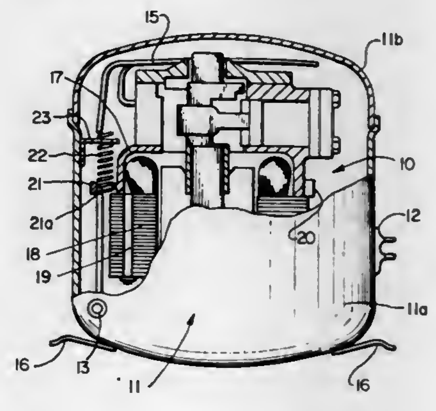
said reference side being maintained at a reference pressure to transmit said reference pressure to the pumped product from said pump,

fluidic means comprising a sensor positioned to detect the movement of a piston controlled element operatively associated with said accumulator piston-cylinder for producing change in the quantity of a control air-flow pressure in response to said piston moving beyond predetermined operating limits, and

speed control means in fluid communication with said control air flow pressure for producing proportional change in the input speed of said air pump in response to changes in said control air flow pressure.

3,849,028
STRUCTURE FOR SUPPORTING A MOTOR-COMPRESSOR UNIT IN A HOUSING

Yuko Kurita; Yasuhiro Kawanishi; Katsuji Yoshikawa, and Kiyoshi, Tanaka, all of Oaza, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi City and Tokyo Sanyo Electric Co., Ltd., Oraguun Gumma Pref., both of, Japan
Filed Oct. 16, 1972, Ser. No. 297,600
Int. Cl. F04b *17/00;* **F16f** *15/00*
U.S. Cl. 417—363 **2 Claims**



1. A mechanical refrigeration system including a motor-compressor unit having a crankcase mounted thereon, a housing adapted for receiving therein said motor-compressor unit, a plurality of brackets secured on the interior of the housing in suitable spaced relation to one another, openings of a number corresponding to that of said brackets and formed at the base of said crankcase of said motor-compressor unit in correspondingly spaced relation to one another and coil springs of the number corresponding to that of said brackets, wherein the improvement comprises that the upper end portion of said each coil spring is wedged into an arm portion of the corresponding bracket, with the lower end portion of each coil spring being engaged with the corresponding opening whereby said motor-compressor unit is yieldably suspended in said housing, wherein each of said coil springs has a radially outwardly extending end extremity adjacent to said other end of said coil spring and further comprising engagement notches one for each opening formed adjacent to said openings at the base of said crank case, each of said engagement notches adapted to retain firmly in place the corresponding one of said coil springs after the latter has been engaged in said opening.

3,849,029

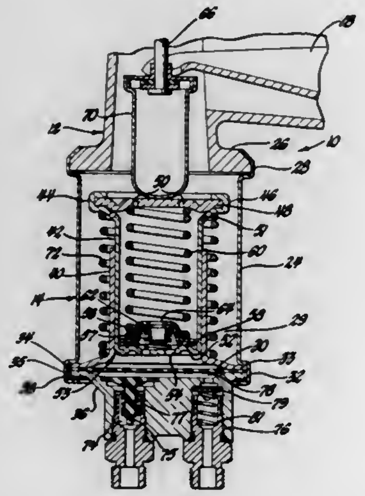
COMBINATION ENGINE OPERATED FUEL PUMP AND AIR PUMP

John E. Creager, Fenton, and Robert G. Taylor, Columbiaville, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 4, 1972, Ser. No. 311,464

Int. Cl. F04b *35/02*

U.S. Cl. 417—388 **3 Claims**



1. In a combination air compressor and fuel pump assembly of the type having a common rocker arm for driving the fuel pump and air compressor the improvement comprising: an oil filled housing adapted to be secured to the fuel pump body; a diaphragm secured within a flanged portion on said housing by a cylinder, a valve housing, a gasket, and a flanged portion on said body crimped below the valve housing and gasket; a hollow piston having top and bottom perforated end plates slidably positioned within said cylinder with said top perforated end plate being unobstructed to allow oil from the oil filled housing to enter and discharge through the perforations into and out of said piston; said cylinder, piston and the upper side of said diaphragm define an oil cavity; whereas the lower side of said diaphragm and valve housing define an air cavity; a relief valve within said hollow piston spring biased against a seat on said perforated bottom end plate to close the perforations in said end plate to prevent oil from discharging from the oil cavity during the pumping stroke; an inlet valve positioned within said relief valve that is spring biased so as to close an inlet opening in said relief valve to, along with the relief valve, prevent oil from discharging from the oil cavity during the pumping stroke and which inlet valve allows oil to enter the oil cavity from the oil filled housing through the inlet opening during the intake stroke to empty the oil cavity and thereby allow the air cavity to be filled, said valve housing having air intake and discharge valves therein to take in air through the air intake valve during the suction stroke through the discharge valve and discharge air out of the lower cavity during the pump stroke; drive means secured to a rocker arm which drive means is in contact with the top perforated piston end plate to slidably move said piston into said cylinder during the pump stroke, and spring means surrounding said cylinder which is in contact with the underside of the upper portion of said piston which spring means moves said piston out of said cylinder during the suction stroke.

3,849,030

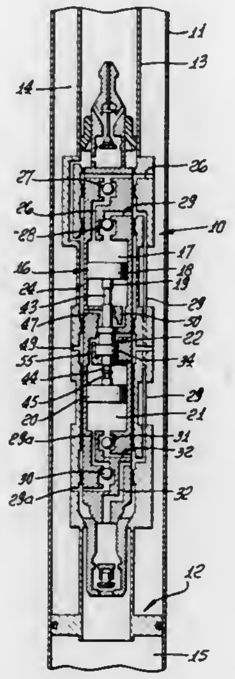
FLUID OPERATED PUMP WITH OPPOSED PISTONS AND VALVE IN MIDDLE

Ralph F. McArthur, Huntington Park, and Melle F. Geurts, Los Angeles, both of Calif., assignors to Kobe, Inc., Huntington Park, Calif.

Filed Mar. 22, 1973, Ser. No. 343,877

Int. Cl. F04 *17/00;* **F04b** *35/00;* **F11** *25/02*

U.S. Cl. 417—393 **3 Claims**



1. In a fluid operated pump, the combination of:

an elongated pump assembly having a main body including an upper pumping cylinder having an upper pump piston therein and a lower pumping cylinder below said upper cylinder and having a lower pump piston therein, said pistons being rigidly connected together by a piston rod therebetween, said pump having power fluid inlet passage means adapted to be connected to a source of power oil under high pressure, having well fluid inlet passage means adapted to be connected to a source of well fluid at substantially lower pressure, and having discharge passage means adapted to receive fluid pumped by the pump and discharge it into a conduit leading to the surface of the ground, the fluid pressure in said discharge passage means being intermediate between the fluid pressures in said power fluid inlet passage and said well fluid inlet passage; and

valve means in said pump adapted to connect said power fluid inlet passage means to the lower end of said upper cylinder below said upper piston, said well fluid inlet passage means to the lower end of said lower cylinder below said lower piston, and said discharge passage means to the upper ends of said cylinders above the pistons therein to cause an upstroke of the pump, and alternatively adapted to connect said power fluid inlet passage means to the upper end of said lower cylinder above the piston therein, said well fluid inlet passage means to the upper end of said upper cylinder above said piston therein, and said discharge passage means to the lower ends of said cylinders below the pistons therein to cause a downstroke of the pump, said valve means on the upstroke of the pump connecting said discharge passage means to the lower end of said upper cylinder before it connects said power fluid inlet passage means to the upper end of said lower cylinder, said valve means on the downstroke of the pump connecting said discharge passage means to the upper end of said lower cylinder before it connects said power fluid inlet passage means to the lower end of said upper cylinder, said valve means including a tubular valve sleeve encircling said piston rod and longitudinally movable relative to the main body of said pump in response to differential fluid pressures applied thereto.

3,849,031

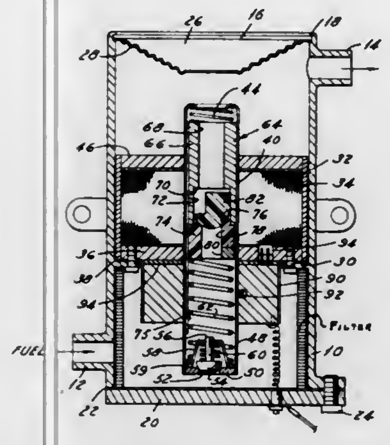
ELECTRONICALLY CONTROLLED LIQUID FUEL PUMP

Benny J. Charboneau, and Alton J. O'Connor, both of Cass City, Mich., assignors to Walbro Corporation, Cass City, Mich.

Filed May 4, 1973, Ser. No. 357,367

Int. Cl. F04b *17/04*

U.S. Cl. 417—417 **7 Claims**



1. In an electronically controlled pump of the type having a pump casing provided with a fuel inlet adjacent one end thereof and a fuel outlet adjacent the other end thereof, a solenoid winding, a pump tube centrally of said solenoid winding with one end thereof in fluid communication with said fuel inlet and the other end thereof in fluid communication with said fuel outlet, an armature assembly mounted for axial movement in said tube, bias means yieldably biasing said armature assembly, valves in said tube and said armature assembly, and a control circuit including a reed switch for actuating said solenoid winding, that improvement which comprises said reed switch being mounted adjacent said tube and spaced generally axially from said solenoid winding in fixed relation to said casing, and a permanently magnetized element fixedly carried by said armature assembly for movement therewith to influence said reed switch to change states to de-energize said solenoid winding when said armature has been axially moved with respect to said tube against the bias of said biasing means by energization of said solenoid winding.

3,849,032

HIGH PRESSURE RECIPROCATING PUMP

Philip A. Mulvey, Elmhurst, and Kenneth G. Porter, Mt. Prospect, both of Ill., assignors to Perfect Pump Co., Melrose Park, Ill.

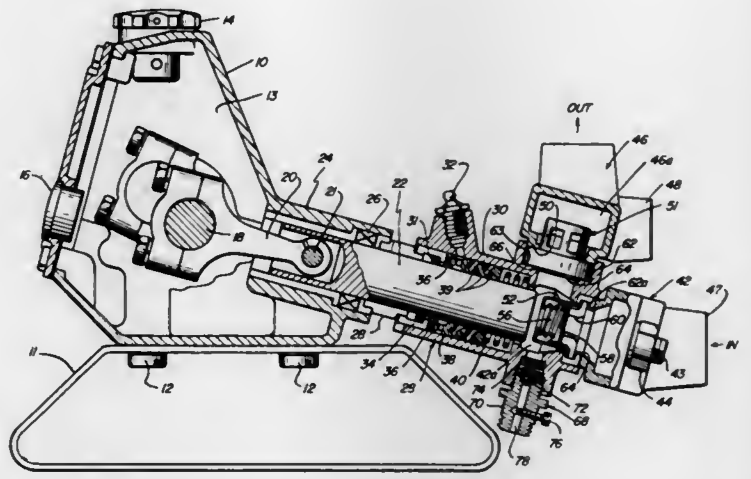
Filed July 2, 1973, Ser. No. 375,605

Int. Cl. F04b *39/14;* **F01b** *31/10;* **F16k** *25/00*

U.S. Cl. 417—454 **11 Claims**

1. In a high pressure pump having a plunger movable in a cylinder by a rotatable crankshaft to urge fluid through an entry into a suction chamber of the pump, and then urge the fluid under pressure through a discharge chamber and out of said pump, the improvement which comprises

an interchangeable valve assembly mounted in said suction and discharge chambers, said valve assemblies being reversed relative to each other so that such suction chamber valve assembly is opened and said discharge chamber valve assembly is closed during a suction stroke of the plunger, and said opening and closing of the valve assemblies is reversed during the pressure stroke of the plunger, each valve assembly including a continuous flange mounted interiorly in an annular groove in an elastomeric seal ring and extending beyond one side of said elastomeric ring,



a rigid anchoring ring having a continuous flange mounted interiorly in said annular groove in said elastomeric seal ring and extending beyond the opposite side of said elastomeric seal ring, and

a matching continuous grooved seat in each of said chambers wherein said anchoring ring is positioned.

3,849,033

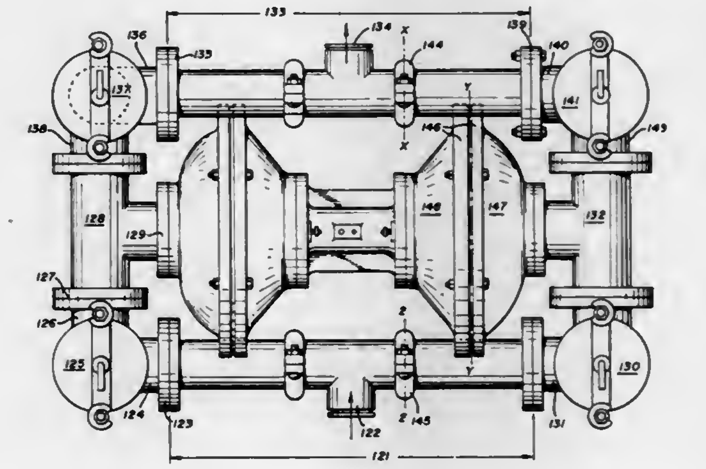
AIR PRESSURE-ACTUATED DOUBLE-ACTING DIAPHRAGM PUMP

Robert A. Schall, Stamford, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Division of Ser. No. 365,936, June 1, 1973, , which is a continuation of Ser. No. 161,465, July 12, 1971, abandoned. This application Mar. 29, 1974, Ser. No. 456,110

Int. Cl. F04b *21/06*

U.S. Cl. 417—454 **7 Claims**



1. A double-acting pressure-actuated diaphragm pump having a horizontal pump axis, which comprises

a first pair of housing sections bolted to each other to constitute a first pump housing,

a first pump diaphragm interposed between said housing sections, and dividing the housing into a first pumping chamber having first intake- and discharge connections directed away from one another, and a first actuating chamber having an opening concentric with the diaphragm,

a second pair of housing sections bolted to each other to constitute a second pump housing, a second pump diaphragm dividing said second pump housing into a second pumping chamber having second intake- and discharge connections directed opposite to each other, similar to said first intake- and discharge connections, and a second actuating chamber having an opening concentric with the diaphragm,

a tubular connecting member rigidly interconnecting said pump housings in axially aligned relationship, and so that said first and second actuating chambers are located adjacent to each other, and that the pump housing assembly is constituted of a pair of inner housing sections defining the respective actuating chambers, and a pair of outer housing sections defining the respective pumping chambers,

an actuating rod interconnecting said first and second diaphragms, coaxial with the pump axis and guided in said connecting member in sealing relationship with each end thereof, providing a double diaphragm assembly whereby the pump delivery stroke of one diaphragm will coincide with the pump intake stroke of the other diaphragm,

said pump consisting of an intermediate section comprising said connecting member and associated inner housing sections,

a first disconnectible subassembly unit comprising the first outer housing section, a first upright intake check valve having a lateral discharge neck connected to said outer housing section, and having a bottom intake neck extending parallel to the pump axis, and towards the opposite end of the pump, and a first upright discharge check valve having a bottom intake neck connected to said outer housing section, and having a lateral discharge neck extending parallel to the pump axis and towards said opposite end of the pump,

a second disconnectible subassembly unit opposite to said first subassembly unit, which comprises the second outer housing section, a second upright intake check valve having a lateral discharge neck connected to said outer housing section, and having a bottom intake neck extending parallel to the pump axis and towards the opposite end of the pump, and a second upright discharge check valve having a bottom intake neck connected to said outer housing section, and a lateral discharge neck extending parallel to the pump axis and towards said opposite end of the pump,

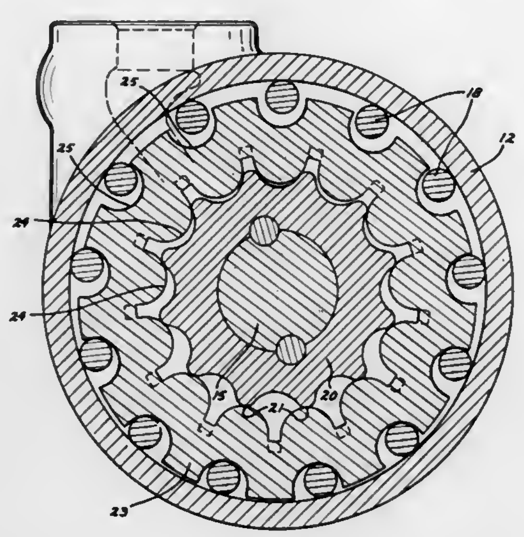
a first intermediate pipe header detachably interconnecting the intake necks of the first and second intake check valves, and having intake means for both said intake valves,

and a second intermediate pipe header detachably interconnecting the discharge necks of the first and second discharge check valves, and having discharge means for both said discharge valves, and track structure for supporting said first and second subassembly units, when disconnected from said intermediate section, and retracted to allow for inspection of the respective diaphragms.

3,849,034
ORBITAL DEVICE

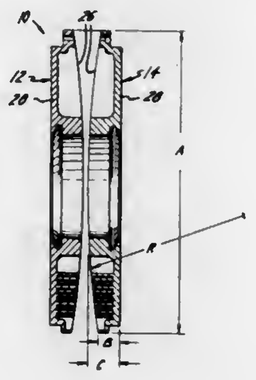
Ralph R. Ohnesorge, Minneapolis, Minn., assignor to Gresen Manufacturing Company, Minneapolis, Minn.
Filed Jan. 12, 1973, Ser. No. 323,059
Int. Cl. F01c *1/02;* **F03c** *3/00;* **F04c** *1/02*
U.S. Cl. 418—61 B **9 Claims**

1. In apparatus of the class above described including a housing comprised of a pair of end elements and a cylindrical center element to form a cylindrical chamber in which a gerotor set including an inner externally toothed element disposed on a shaft extending through the housing and an outer internally toothed orbital element, both disposed for movement within the chamber and valving therefor, the combination comprising; a radially outwardly opening groove disposed radially outwardly of the crest of each of the internal teeth on the outer element of the gerotor set so as to present a substantially uniform radial wall thickness therefor; a like plurality of cylindrical elements extending axially of the chamber, said cylindrical elements being of smaller diameter than said grooves and being circumferentially equidistant from one another, said cylindrical elements being engaged by said grooves to prevent rotation of said outer orbital element.



3,849,035
INTERMEDIATE HOUSING SECTION FOR A MULTI-ROTOR ROTARY INTERNAL COMBUSTION ENGINE AND METHOD OF MANUFACTURE THEREOF

Charles Jones, Hillsdale, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.
Filed May 11, 1973, Ser. No. 359,248
Int. Cl. B23p *15/00;* **F01c** 21/00, 1/02
U.S. Cl. 418—60 **8 Claims**



1. An intermediate housing section for a multi-rotor rotary mechanism which defines with other housing sections spaced adjacent rotor cavities within which rotors are supported for rotation on a crankshaft, the intermediate housing section comprising:

a. a first housing part having integral inner and outer peripheral portions;

b. a second housing part having integral inner and outer peripheral portions;

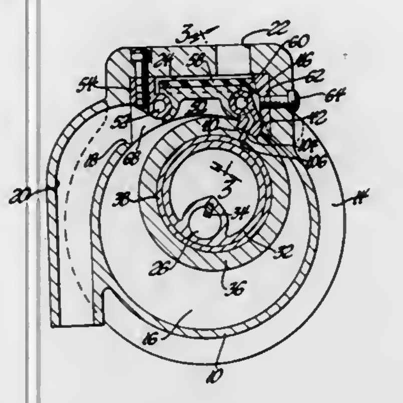
c. said first and second housing parts each having a matching surface portion extending from and forming a part of the inner and outer peripheral portions and an opposite substantially flat surface portion;

d. securing means disposed at the respective outer peripheral portions of the first and second housing parts to clamp said first and second housing parts in abutment along their respective matching surface portions; and

e. each of said matching surface portions having a partial cylindrical configuration such that the maximum extent of the curvature thereof lies substantially in an imaginary plane extending through the axis of the crankshaft and substantially bisecting the region of highest heat flux and so that, upon the housing parts being clamped together, compressive stresses are created in each of said first and second housing parts which act to maintain the matching surface portions in continuous abutment at their respective integral inner and outer peripheral portions.

3,849,036
ROTARY COMPRESSOR WITH VALVE MEMBER PIVOTED TO AN ECCENTRIC PISTON

Balfour Read, 625 5th St., Traverse City, Mich. 49684
Filed Oct. 26, 1972, Ser. No. 301,118
Int. Cl. F01c *1/02;* **F04c** *1/02, 17/02*
U.S. Cl. 418—62 **1 Claim**

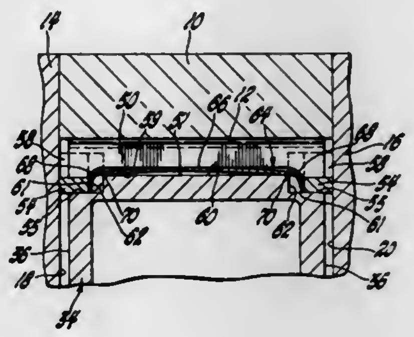


1. Air compressor means, comprising; a housing member having a chamber space for a rotary piston provided therein and including a fresh air inlet port and a compressed air outlet port provided through the side walls of said housing member in relatively close spaced relation to each other, a drive shaft extended axially through said chamber space and journalled within opposite end walls of said housing member, a rotary piston member provided in said chamber space and including an eccentrically driven member keyed to said shaft and having a relatively free floating cylindrical sleeve member journalled thereon and relatively fitted for rotary piston movement within said chamber space, and valve means mounted in said housing member between said inlet and outlet ports and connected to said sleeve member for actuation thereby, said valve means providing separation between said inlet and outlet ports in the course of rotary piston movement of said sleeve member within said chamber space, said chamber space being cylindrical in form and having a separate valve space provided in open communication apart therefrom and relatively between said inlet and outlet ports, said valve means including a valve member provided essentially wholly within said valve space and having relative sealing engagement with the side walls thereof in the course of actuated movement, means replacably affixed to an end wall of said valve space and therewithin for providing a journal bearing and relative end wall sealing surface for one end of said valve member as engaged thereto, like means replacably affixed to said sleeve member and to extend into said valve space for providing a journal bearing and relative end wall sealing surface for the other end of said valve member as engaged thereto, and a pair of connecting links provided between said journal bearing and relative end wall sealing surface means for retaining said valve member replacable therebetween, and said valve member sealing the space between said journal bearings and including a resilient sealing lip extending therebeyond for engagement with the opposite end wall of said valve space in the opening and closing of said outlet port to said chamber.

3,849,037
COMBINATION APEX AND CORNER SEAL SPRING FOR ROTARY ENGINE

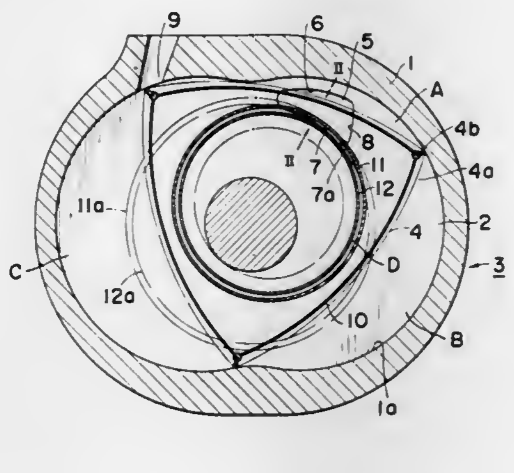
Thomas C. Downs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed June 11, 1973, Ser. No. 368,602
Int. Cl. F04c *27/00*
U.S. Cl. 418—121 **3 Claims**

1. In a rotary machine, a housing having an inwardly facing inner peripheral wall and a pair of spaced oppositely facing inner end walls, a rotor rotatably mounted in said housing having sides opposite said end walls and a plurality of corners that remain adjacent said peripheral wall as said rotor rotates, said rotor and said housing walls cooperatively defining a plurality of chambers separated by said rotor corners that expand and contract as said rotor rotates, each said rotor corner having an apex seal groove extending thereacross facing outwardly toward said peripheral wall and also having a corner seal hole in each said rotor side contiguous with said apex seal groove and facing outwardly toward one of said end walls, an apex seal mounted in said apex seal groove for engaging said peripheral wall, a corner seal mounted in each said corner seal hole for engaging the opposite end wall, said apex seal and said apex seal groove having bottoms with an apex seal spring space therebetween, said corner seals and said corner seal holes having bottoms with corner seal spring spaces therebetween open to said apex seal spring space, a single spring located in said spaces, said spring having two end portions and an intermediate portion of substantially greater length than said end portions with each said portion having a curved shape and with seat portions joining said intermediate portion and said end portions, said intermediate portion arranged in said apex seal spring space with all said seat portions positively seating on said apex seal groove bottom adjacent the ends thereof and engaging said bottom of said apex seal to bias said apex seal outwardly against said peripheral wall and with said end portions extending freely into said corner seal spring spaces and engaging said bottoms of said corner seals to bias said corner seals outwardly against said end walls.



3,849,038
ROTARY PISTON TYPE ENGINE

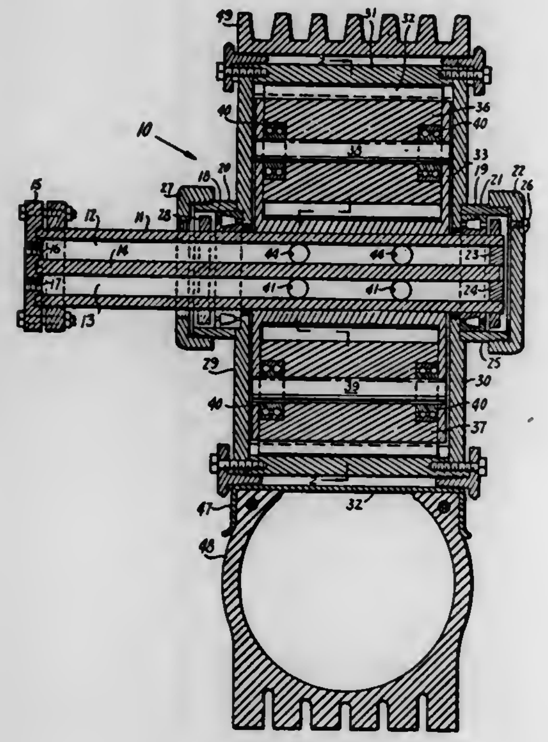
Noriyuki Kurio, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan
Filed Nov. 21, 1973, Ser. No. 417,940
Int. Cl. F01c *19/08*
U.S. Cl. 418—142 **2 Claims**



1. A rotary piston type engine including a casing which comprises a center housing having a trochoidal inner peripheral wall and a pair of side housings secured to the opposite sides of the center housing, and a rotor having a substantially triangular outer periphery and disposed in said casing for rotation therein with apices in sliding engagement with the inner peripheral wall of the center housing so that working chambers of variable volume are defined between the inner peripheral wall of the center housing and the rotor, each of said side housings having an inner surface opposing to said rotor and at least one of said side housings being provided with air intake port means opening to the inner surface thereof, said rotor having opposite side surfaces each provided with side seal means disposed substantially along the triangular outer periphery of the rotor, and oil seal means disposed at diametrically inner portion of the rotor, said side and oil seal means being in slidable sealing engagement with the inner surface of the adjacent side housing, the improvement comprising the fact that said oil seal means on the side of the rotor facing to the side housing having said intake port means comprises at least a pair of diametrically spaced oil seal members, one being disposed at such a location that the outer envelope of the traces of the member is radially outside of the radially inner extremity of the intake port means, and the other at such a location that the outer envelope of the traces thereof is radially inside of the radially inner extremity of the intake port means.

3,849,039
RIM POWER HYDRAULIC MOTOR

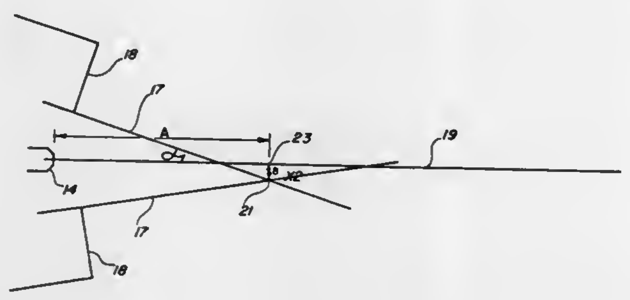
Raymond H. Leidig, Rt. 3, Box 504, Lake Charles, La. 70601
Filed Mar. 22, 1972, Ser. No. 237,036
Int. Cl. F01c *1/00*
U.S. Cl. 418—165 **4 Claims**



1. A rim power hydraulic motor comprising a fixed hollow axle having an inlet conduit and an outlet conduit for hydraulic fluid under pressure extending therethrough, a generally cylindrical housing journaled for rotation on said axle, a generally cylindrical body rigidly mounted on said axle completely enclosed in said housing, a generally cylindrical internal spur gear formed on said housing surrounding said body, a pair of spur gears mounted in said body and meshing with the spur gear formed on said housing, and conduits within said body communicating with the conduits in said axle for delivering hydraulic fluid to said spur gears and from said spur gears to said axle for driving said spur gears in said body to drive said housing.

3,849,040
SPINNING APPARATUS WITH CONVERGING GAS STREAMS

Paul H. McGinnis, Kings Mountain; William D. McLaughlin, Jr., and Robert E. Swander, both of Charlotte, all of N.C., assignors to Celanese Corporation, New York, N.Y.
Division of Ser. No. 237,832, March 24, 1972, Pat. No. 3,787,265. This application July 30, 1973, Ser. No. 383,631
Int. Cl. D01d *3/00;* **B29c** *25/00*
U.S. Cl. 425—72 **1 Claim**



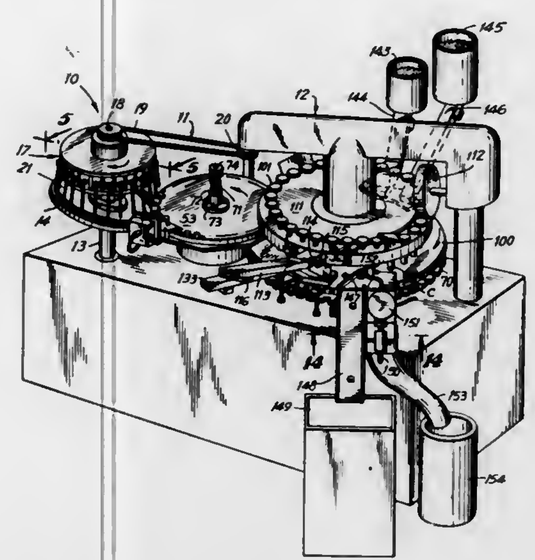
1. Apparatus for producing organic thermoplastic filamentary material comprising nozzle means having an extrusion orifice for fiber-forming material and a plurality of substantially rectangular gas outlet passages shaped so as to emit substantially planar gas streams, said gas outlet passages being spaced from said extrusion orifice and separated from said nozzle means by an insulating means, said gas outlet passages being so positioned with respect to the nozzle means such that: 1) the gas passages are closer to the axis of the extrusion orifice at the outlet end of the passage than at an interior zone of the passage so as to direct the gas stream in a convergence angle with the axis of the extrusion orifice of from about 5° to 45°, 2) no two of the planar projections of the gas outlet passages converge and intersect with the axis of the extrusion orifice at the same angle, and 3) planar projections of the gas outlet passages intersect at a point which is at a distance measured perpendicularly from the axis of the extrusion orifice at least equal to the diameter of the extrudate stream at a point along the extrudate stream in juxtaposition to the point of intersection of the planar projections of the gas outlet passages, and means for supplying said gas passages with gas under pressure to be projected from said passages to contact and attenuate the stream of fiber-forming material issuing from said extrusion orifice.

3,849,041
APPARATUS FOR MANUFACTURING ENVIRONMENTAL SEED CELLS

Philip B. Knapp, Lynbrook, N.Y., assignor to Minnesota Mining & Manufacturing Co., St. Paul, Minn.
Filed Apr. 30, 1973, Ser. No. 355,701
Int. Cl. B29c *3/02;* **B30b** *11/12*
U.S. Cl. 425—110 **6 Claims**

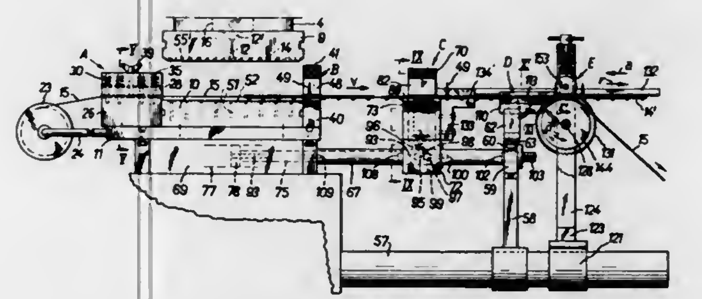
1. A tableting apparatus for forming an environmental seed cell having a central seed surrounded by layers of compressed environmental material comprising, in combination, means for selecting single seeds from a bulk seed supply, conveyor means including a conduit for receiving said single seeds and advancing the same in an air stream flowing through said conveyor means, transfer mechanism positioned at the terminal end of said conveyor means for receiving said seeds, said transfer mechanism including a support table, a distributor disk slidably mounted over said support table and including individual pockets, means for rotating said distributor disk relative to said table serially to align said pockets with said terminal end of said conveyor, said disk moving in timed relation sequentially to align a pocket with said terminal end as each seed emerges from said end, an air relief passage means formed in said disk and communicating with each said

pocket, a screen member disposed in each said air release passage, said screen being of a size to permit flow of air therethrough and to block the passage of said seed, a vertically disposed discharge aperture means formed in said table in the path of movement of said pockets for receiving seeds advanced by said pockets, tableting means including a mold disk having a multiplicity of mold cavities and means for rotating the cavities of said mold disk into registry with said discharge aperture in said table in synchronism with the movement of said pockets of said distributor disk into registry with said aperture, whereby individual seeds are deposited in said mold cavities.



3,849,042
INJECTION MOLDING MACHINE FOR PRODUCING SLIDE FASTENERS

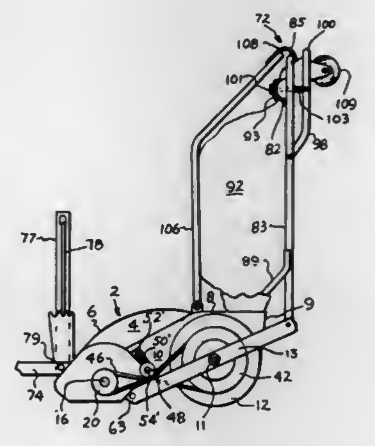
Hans Anderegg, 3, Hetterstrasse, Weiningen, Zurich, Switzerland
Filed Nov. 16, 1972, Ser. No. 307,188
Int. Cl. B29f *1/10*
U.S. Cl. 425—126 R **2 Claims**



1. An injection molding machine for fabricating sliding fasteners, especially zippers, by injecting molding closure elements onto support bands in a bipartite mold, comprising: a bipartite mold, means for opening and closing said mold, an injection molding unit for injection molding material into said mold, a band feed mechanism for feeding support bands through said mold, said band feed mechanism comprising a to-and-fro movable band clamping mechanism provided with clamping elements and arranged in the band feed direction after the mold, pneumatically actuated means for displacing said to-and-fro movable band clamping mechanism, means for selectively opening and closing said clamping elements, stop means cooperating with said band clamping mechanism; said band clamping mechanism being synchronously controlled with the opening and closing movement of the mold in such a manner that when the mold is open the clamping elements fixedly clamp the support bands at the region of the mold, the clamping mechanism is then advanced in the feed direction until reaching said stop means in order to draw the support bands with the closure elements molded thereon out of the mold and to draw a new length of band into the open mold, upon impact of said clamping mechanism against said stop means the clamping elements release the support bands, and then the clamping mechanism is again retracted towards the mold and in its terminal position upon closing of the mold the clamping elements again fixedly clamp the support bands; said clamping elements comprising a relatively stationary clamping element and a clamping element movable with respect to the stationary clamping element and cooperating therewith, the support bands being guided between and through both clamping elements, said displacing means comprising guide rod means along which move said clamping mechanism, piston rod means for connecting said clamping mechanism with pneumatically actuated piston means for moving said clamping mechanism to-and-fro between said stop means and the mold; said movable clamping element being provided with a pressure compartment closed by a diaphragm, means for supplying compressed air to said pressure compartment, slide valve piston means for controlling connection of said pressure compartment with said compressed air supplying means, and venting channel means; so that when the clamping mechanism has reached the end of its stroke at the region of the mold and said piston means is impinged in order to displace the clamping mechanism in the feed direction against the other end of the stroke, said slide valve piston means opens connection of the compressed air supplying means to said pressure compartment in order to press the diaphragm against the movable clamping element and to displace said movable clamping element against the fixed clamping element for the purpose of fixedly clamping the support bands, whereas at the other end of the stroke of the clamping mechanism, said slide valve piston means impinges against said stop means and the pressure compartment is connected with said venting channel means to release the support bands.

3,849,043
ROTARY BRUSH SWEEPER AND BAGGER

Charles W. Doering, Louisville, Ky., assignor to Brinly-Hardy Co., Inc., Louisville, Ky.
Filed June 30, 1972, Ser. No. 268,064
Int. Cl. E01h *1/04*
U.S. Cl. 15—79 **10 Claims**



1. An apparatus for collecting debris including:
a frame having wheels to support said frame;
a housing supported by said frame;
said housing having means to receive debris;
means disposed within said housing to compress debris received by said receiving means;
said compression means includes:
  means cooperating with said housing to form a debris confining channel and a debris confining chamber within said housing, said debris confining channel being between said receiving means and said debris confining chamber and communicating with each;

and rotatable means including angularly spaced elements advancing the debris from said receiving means to said debris confining chamber and from said debris confining chamber to said debris confining chamber by each of said elements advancing from said receiving means to said debris confining chamber, from said debris confining chamber to said debris confining chamber, and from said debris confining chamber to said receiving means;

each of said elements cooperating with said cooperating means when each of said elements advances from said debris confining chamber to said debris confining chamber to reduce the extension of each of said elements in said debris confining chamber as each of said elements advances through said debris confining chamber;

means to operate said rotatable means;

said debris confining chamber having an outlet adapted to receive a debris containing device;

and said debris confining chamber having an increasing and fixed cross sectional area toward said outlet.

3,849,044
SPINNERET FOR SPINNING COMPOSITE MULTI-CORE FILAMENTS

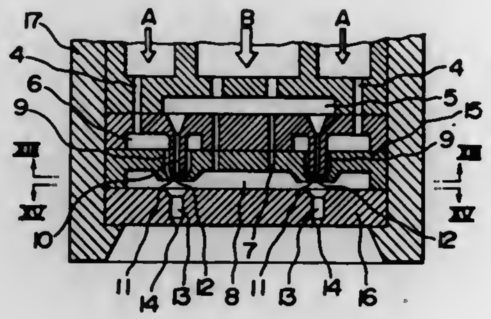
Satoshi Ando, Osaka; Masao Matsui, Takatsuki, and Fumimaro Ogata, Nishinomiya, all of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan and Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A., Milano, Italy

Division of Ser. No. 68,506, Aug. 31, 1970, Pat. No. 3,725,192 which is a continuation of Ser. No. 706,023, Feb. 16, 1968. This application Dec. 11, 1972, Ser. No. 313,798

Claims priority, application Japan, Feb. 25, 1967, 42-11961; Feb. 25, 1967, 42-11962; Feb. 25, 1967, 42-11963

Int. Cl. D01d *3/00*

U.S. Cl. 425—131.5 **4 Claims**



1. A spinneret for spinning of composite filamentary material comprising sheath and core portions consisting of a first and a second polymeric material respectively, comprising:

- a. an outer spinneret plate having spinning orifices bored therethrough;
- b. an inner spinneret plate having internal injecting passages each coaxial to one of said spinning orifices to inject material in and about the axis of each spinning orifice and external injecting passages co-axial to said internal passages to inject material in each spinning orifice in the vicinity of the walls thereof;
- c. a space confined between said inner and outer spinneret plates and communicating with the inlet end of said internal injecting passages;
- d. first duct means connecting a source of a first sheath-forming fluid and pressurized polymeric material to both said space and said internal injecting passages; and
- e. second duct means connecting a source of a second core-forming fluid and pressurized polymeric material to said external passages.

3,849,045
EXTRUSION DIE DEVICE

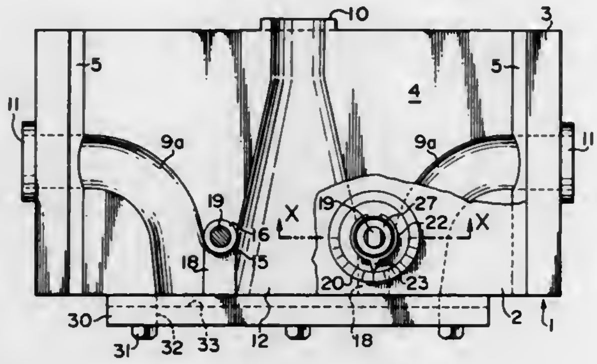
Shunjiro Ohkawa, Tokyo, and Katsumo Minagawa, Kawagoe, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Sept. 25, 1972, Ser. No. 291,829

Claims priority, application Japan, Sept. 29, 1971, 46-75995

Int. Cl. B29f *3/04*

U.S. Cl. 425—131.1 **2 Claims**



1. An extrusion die device for extruding rubber material comprising, in combination, a die block having upper and lower die block sections secured to each other; a die attached to the front side of said die block and in alignment with the contacting line of said upper and lower die block sections; a plurality of passages including complementary channels formed on the upper surface of said lower die block section and on the lower surface of said upper die block section, said complementary channels extending to the rear side of said die and being merged with each other at at least a position spaced from the rear side of said die; a shaft rotatably supported by said upper and lower die block sections at the position where said complementary channels are merged with each other, said shaft extending outwardly of the die block and being manually rotatable at the outer end portion of said shaft; a vane secured to said shaft at said position, said vane extending to the rear side of said die to vary the relative amount of the rubber materials passing through said passages; fixing means for fixing said shaft at a predetermined position with a screw formed on the outer end portion of said shaft and a nut on said screw; graduation means on the external surface of said die block; and a pointer attached to said shaft to indicate the rotational position of said shaft on said graduation means.

3,849,046
EXTRUDER WITH ROTATING DIE HEAD

Nikolai Efimovich Kalakov; Svyatoslav Sergeevich Shipitsin, both of ulitsa K. Marxa, 10, kv. 10; Veniamin Alexandrovich Minchenko, Mikroraion 13, 15, kv. 75; Innokenty Mikhailovich Kudryavtsev, ulitsa Zhilyabieva, 13, 29; Vladimir Afanasievich Zimin, ulitsa Pushina 9/13, kv. 1, and Boris Antonovich Pervitsky, ulitsa Sayanskaya, 13, kv. 71, all of Angarsk, Irkutskoi oblasti, U.S.S.R.

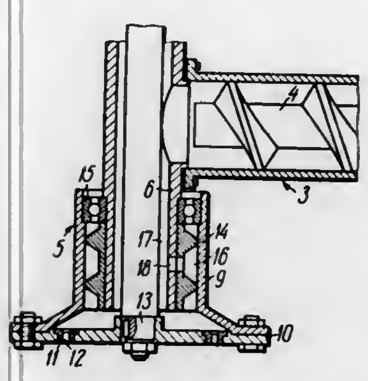
Filed Sept. 18, 1972, Ser. No. 290,144

Claims priority, application U.S.S.R., Jan. 26, 1972, 174822; Apr. 12, 1972, 1772494

Int. Cl. B29f *3/06*

U.S. Cl. 425—208 **2 Claims**

1. A machine for granulation of pastelike materials, comprising an extruder with an internally rotating screw and an attachment for feeding pastelike material, said attachment including means adapted to rotate and feed said material to said rotating screw; a rotating die head; a connecting pipe coupling the body of said extruder with the body of said die head; a die disk with dies fixed on the body of said die head; an independent drive with a shaft housed in said connecting pipe and rigidly coupled with said die disk; a packing comprising a profile-shaped bushing with an annular recess on its outer surface said packing located between the body of said die head and said connecting pipe.



3,849,047
DEVICE FOR PRODUCING A CONTINUOUS DOUGH STRIP

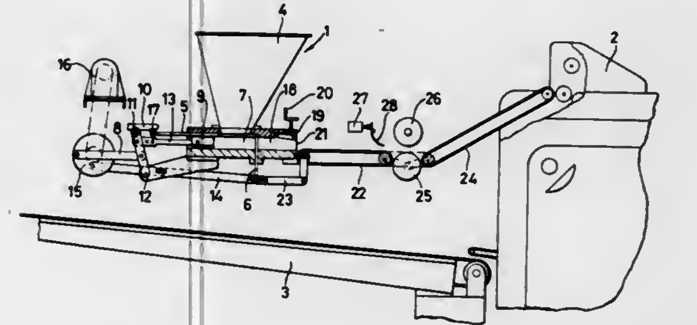
Kate Kemper, Wybuelstrasse 6, CH-8702 Zurich-Zollikon, Switzerland

Filed Jan. 26, 1973, Ser. No. 326,857

Claims priority, application Germany, Jan. 28, 1972, 2203969

Int. Cl. A21c *5/00*

U.S. Cl. 425—238 **14 Claims**



1. A device for producing a continuous strip of dough, having an adjustable constant height and width, and feeding the strip into a dough working machine, said device comprising, in combination, a dough receiving hopper arranged to contain a mass of dough and having a discharge mouth; a cylinder positioned beneath said hopper and having a lateral inlet, communicating with said discharge mouth, and an axial outlet; respective closing means operable to close said inlet and said outlet, the closing means at said inlet being operable to separate, from the mass of dough, a piece of dough discharged through said inlet into said cylinder; a cylindrical chamber, having a diameter substantially equal to that of said cylinder and open at both ends, communicating coaxially with said outlet; a piston reciprocable in said cylinder; means, including a linkage connected to said piston, operable to advance said piston to move a separated piece of dough in said cylinder through said outlet and into said chamber for joining to dough in said chamber to form a continuous strip of dough, and to retract said piston beyond said inlet; a first transport device positioned to receive the dough strip from said cylindrical chamber; first driving means connecting said first transport device to said linkage for step-by-step operation of said first transport device in synchronism with reciprocation of said piston; a second transport device positioned to receive the dough strip from said first transport device, and driven by the dough working machine; and dough strip smoothing roller means between said first and second transport devices and driven in synchronism with said second transport device.

3,849,048
DISTRIBUTOR AND NOZZLE ASSEMBLY FOR INJECTION-MOLDING MACHINES

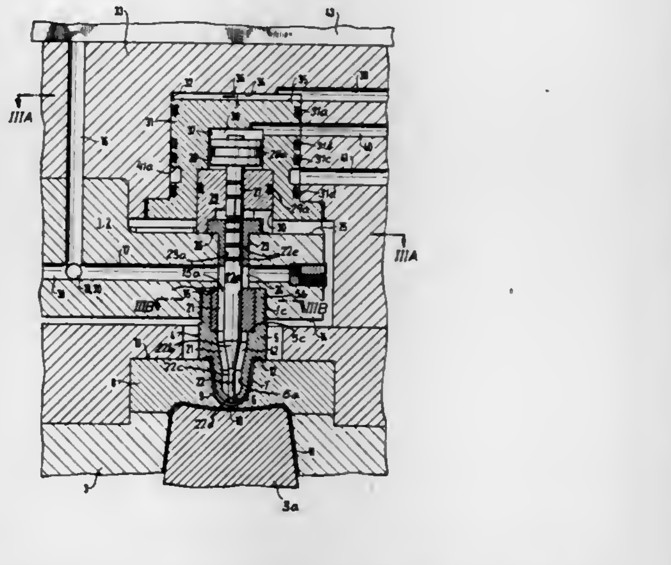
Friedrich Bernd Bielfeldt, Aidenried, and Richard Herbst, Munchen, both of Germany, assignors to Krauss-Maffei A.G., Munchen, Germany

Filed May 3, 1972, Ser. No. 250,078

Claims priority, application Germany, May 4, 1971, 2121895

Int. Cl. B29f *1/03*

U.S. Cl. 425—247 **8 Claims**



1. An injection-molding machine comprising an injection member adapted to displace a stream of thermoplastic synthetic-resin material at an elevated pressure; a mold member having at least one mold cavity and a plurality of inlet orifices in spaced-apart relationship, each communicating with a mold cavity; and a distributor member interposed between said injection member and said mold member for distributing said synthetic-resin from said injection member to said orifice, at least one of said members being shiftable relative to another of said members for urging said members together for distribution of said material, said distributor member comprising a respective nozzle assembly registerable with and adapted to communicate with each of said orifices, said distributor member having respective generally annular surfaces surrounding each of said orifices, and means for selectively displacing said surfaces for applying same against said mold member for individual sealing of said nozzle assemblies with said orifices. said mold member comprising a mold-bottoming plate formed with said orifices and juxtaposed with said distribution member, said mold-bottoming plate being provided with respective recesses opening in the direction of said distributing member and communicating with the respective orifices, said distributing member comprising a body provided with a plurality of arms together formed with one of said nozzle assemblies and a central passage communicating with said injection member and respective passages traversing said arms from said central passages to the respective assemblies, each of said nozzle assemblies comprising an injection nozzle head receivable with limited clearance in the respective recess and provided with an injection orifice, and a valve needle received in the respective nozzle head for selectively blocking the injection orifice thereof, each of said surfaces surrounding the respective nozzle head and bearing annularly upon said mold-bottoming plate around the respective clearance, said body being provided at each arm with a respective hydraulically displaceable piston operatively connected to the respective needle for controlling the displacement thereof.

3,849,049
APPARATUS FOR THE BLOW MOLDING OF HOLLOW BODIES MADE OF THERMOPLASTIC SYNTHETIC MATERIAL

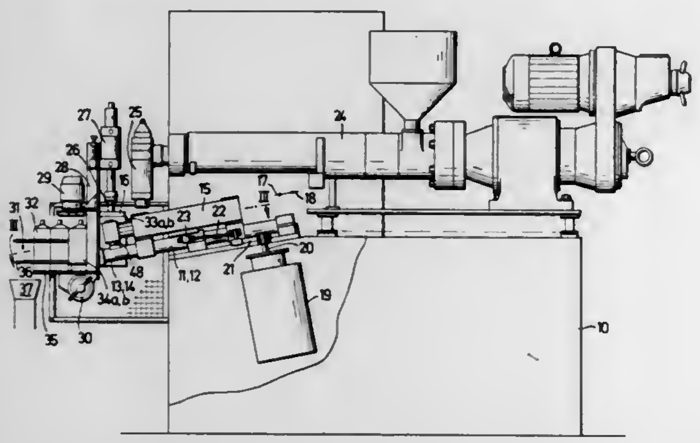
Ewald Brieschke; Erich Kiefer, both of Bonn-Holzlar, and Heinz Rolniczak, Hennef-Stossdorf, all of Germany, assignors to Kautex-Werke Reinold Hagen GmbH, Bonn-Holzlar, Germany

Filed Sept. 12, 1972, Ser. No. 288,357

Claims priority, application Germany, Sept. 13, 1971, 2145673

Int. Cl. B29d *23/03, 23/04*

U.S. Cl. 425—326 B **18 Claims**



1. In an apparatus for making hollow bodies of thermoplastic synthetic material using blow molding technique of the type that includes (a) an extruder supplying a parison, (b) a receiving station in the zone of said extruder, (c) a removing station spaced from said receiving station, (d) a hollow mold, (e) means for opening and closing said mold, (f) means for reciprocating said mold between said receiving station in which said mold is charged with a parison and said removing station in which a finished blow molded article is removed from said mold, (g) a support member possibly embodied as a mandrel introducible into said mold for expanding said parison therein by a fluid medium, the improvement comprising, in combination:

A. guide means having a free end and extending substantially normal to the direction of extrusion;
B. a carriage slidably mounted on said guide means;
C. first drive means for moving said carriage back and forth on said guide means; and
D. a bridge carried by said guide means in the vicinity of its said free end, said mandrel being disposed on said guide means.

3,849,050
APPARATUS FOR EMBOSSING PLASTIC MATERIAL

James M. Adams, Terre Haute; Randall R. Hopper, Shelburn, and James K. Rutherfoord, Garland E. Raley, Terre Haute, all of Ind., assignors to Ethyl Corporation, Richmond, Va.

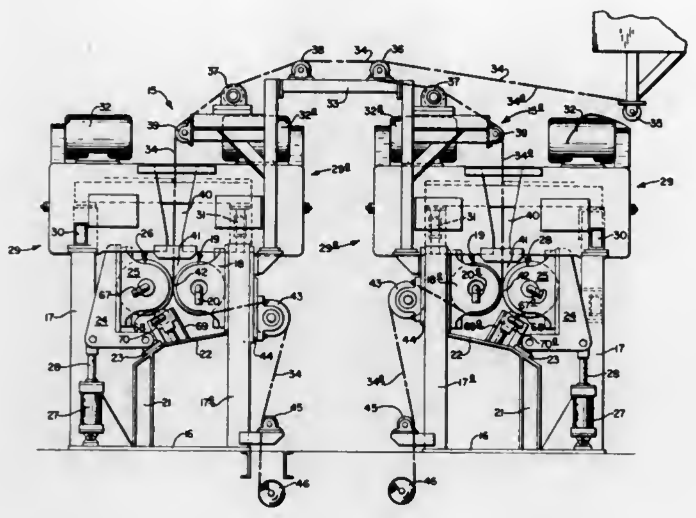
Filed Jan. 15, 1973, Ser. No. 323,452

Int. Cl. B29c *15/00*

U.S. Cl. 425—363 **13 Claims**

1. In an apparatus for supplying and recirculating heated air for embossing thermoplastic film, the combination comprising:

a. an elongated housing having a narrow, rectangular heated air exit slot and an adjacent, narrow, rectangular return air entry slot extending substantially the full width of said housing;
b. longitudinal divider means within said housing separating the interior of said housing into a heated air supply compartment and a return air compartment;
c. heating means in one of said compartments for heating the air moving through said compartment;
d. means connecting said heated air supply compartment to said return air compartment;
e. fan means for recirculating air through said heated air supply compartment and said return air compartment; and
f. power means located outside of said housing connected to said fan means for driving said fan means.



3,849,051
EXTRUSION APPARATUS

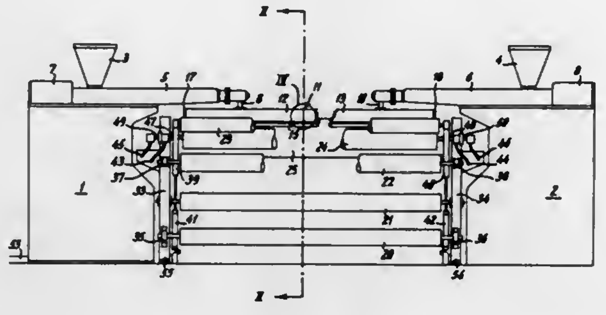
Erik Solbeck, 342, Vedbaek Strandvej, Vedbaek, Denmark

Filed Feb. 1, 1973, Ser. No. 328,556

Claims priority, application Denmark, Feb. 16, 1972, 719/72; Feb. 16, 1972, 720/72

Int. Cl. B29f *3/00*

U.S. Cl. 425—376 **11 Claims**



1. An extrusion apparatus for producing sheet-material in great width dimensions consisting at least partly of a thermoplastic material, comprising at least two extruders; a wide-orifice extrusion die including at least one die channel extending throughout the length of the die and an outlet slit communicating with said die channel for extruding thermoplastic material; means for connecting said extruders to said extrusion die to provide a direct communication from each extruder to one and the same die channel; a roller system including at least one cooling roller for cooling the sheet-material subsequent to the extrusion of thermoplastic material and a number of transport rollers for conveying the sheet material produced after cooling; means for supporting at least one of said extruders for movement in the width direction of the extrusion die; and means for mounting said roller system to be displaceable transversely to the axial direction of the die.

3,849,052
PIPE BELLING MACHINE

John Gordon, 520 Lancaster Ave., Frazer, Pa. 19355

Filed July 19, 1973, Ser. No. 380,540

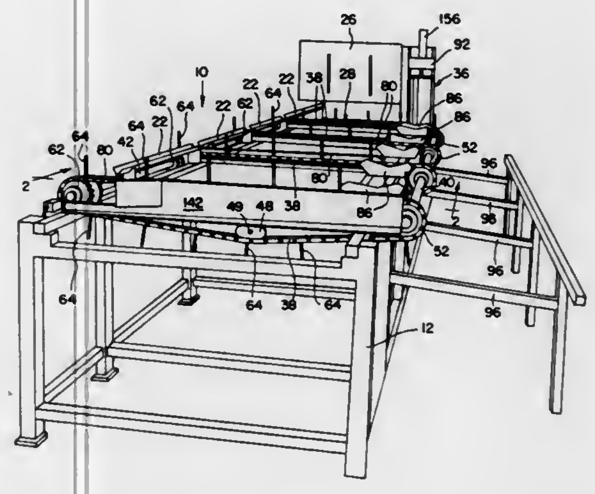
Int. Cl. B29c *17/07*

U.S. Cl. 425—387 **24 Claims**

1. In a pipe belling machine, the combination of

A. a frame having a longitudinal axis,

1. said frame having an inlet end and a remote end;
B. a pipe receiving station supported by the frame,
1. said pipe receiving station receiving lengths of previously cut pipes from a source exterior of the machine;
C. a heater mounted at the inlet end of the frame,
1. said heater defining at least one pipe end heating station;
D. a chain conveyor functioning transversely of the said longitudinal axis,
1. said conveyor including means to urge the pipes transversely across the frame,



2. a portion of each said pipe being positioned within the heating station for pipe end heating purposes as the pipe is urged across the frame;
E. a belt rotative about the frame and having an upper path and a lower path of travel,
1. the said pipes resting upon the upper belt path and being rotated thereby upon operation of the belt; and
F. a belling station receiving the pipes from the heating station,
1. said belling station including means to impress a bell shape upon the previously heated end of the pipe.

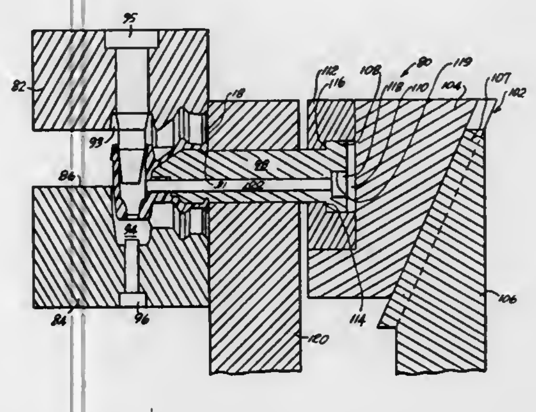
3,849,053
MOLD FOR FABRICATING THE HOUSING OF A DISPENSING VALVE FOR PRESSURIZED DISPENSERS

Roger K. Bruce, Mission Viejo; Werner Marhold, Huntington Beach, and Cecil F. Adickes, Playa del Rey, all of Calif., assignors to Sterigard Corporation, Santa Ana, Calif.

Continuation-in-part of Ser. No. 114,204, Feb. 10, 1971, Pat. No. 3,734,125. This application July 2, 1973, Ser. No. 375,674

Int. Cl. B29c *1/14, 7/00*

U.S. Cl. 425—438 **13 Claims**



1. An improved mold for the fabrication of a dispensing valve housing having a barrel and a base, the barrel having a bore and the base having a hollow interior, the longitudinal axes of the bore and the barrel being at right angles to one another, the barrel having an external mounting flange at a rear end thereof, the mold comprising:

a. an upper and a lower mold half having mold cavities defining the external surface of the dispensing valve housing;
b. a core pin carried by the upper mold half and defining the bore of the barrel;
c. means for raising the upper mold half relative to the lower mold half to separate the upper mold half from the housing;
d. a base core for defining the hollow interior of the base;
e. means for raising the core relative to the lower mold half simultaneously with the raising of the upper mold half and at a slower rate to separate the lower mold half from the housing at substantially the same time that the upper mold half separates from the housing;
f. means for drawing the core from the base after the upper mold half and its carried core pin are raised from the lower mold half; and
g. a parting surface between the upper and lower mold halves defined by a barrel parting plane perpendicular to the axis of the barrel and extending to a terminus on the barrel of the barrel's external flange, a base parting plane extending parallel to the barrel parting plane and containing the base's longitudinal axis, the base parting plane terminating in the barrel at a line measuring parallel to the axis of the base, the base parting plane termination line extending no further than the terminus of the barrel parting plane in the barrel, and a transition plane connecting the base and barrel parting planes.

3,849,054
POTTERS WHEEL HEADS

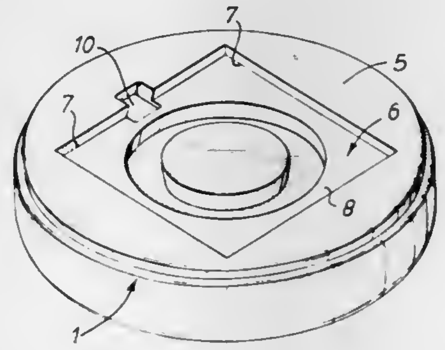
Rene Jordache, 42 Laurier Rd., London, England

Filed Dec. 29, 1972, Ser. No. 319,875

Claims priority, application Great Britain, June 1, 1972, 25640/72; June 1, 1972, 25642/72

Int. Cl. B28b *1/29*

U.S. Cl. 425—459 **15 Claims**

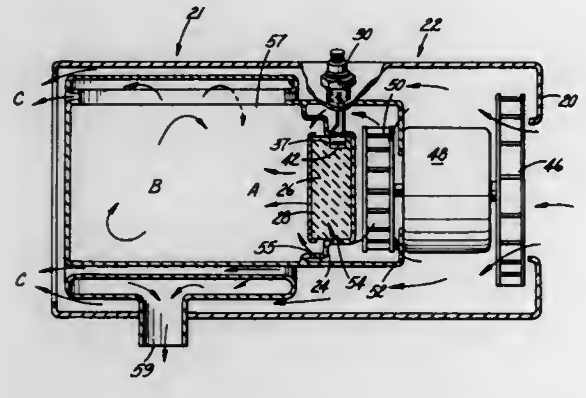


1. A device for attachment to a rotatable potters wheel head comprising:

a main body having an upper and lower surface;
means, carried by said body, for connecting said body to the wheel head so that said body rotates with the wheel head; and
means, located adjacent the upper surface of said body, for receiving a member adapted to be interposed between said body and the clay to be modelled and for coupling the member to said body for rotation therewith,
said means for connecting comprising an annular, beaded, flexible flange descending from said body lower surface and adapted to grip the periphery of the wheel head.

3,849,055
LIQUID FUEL HEATER IMPROVEMENT

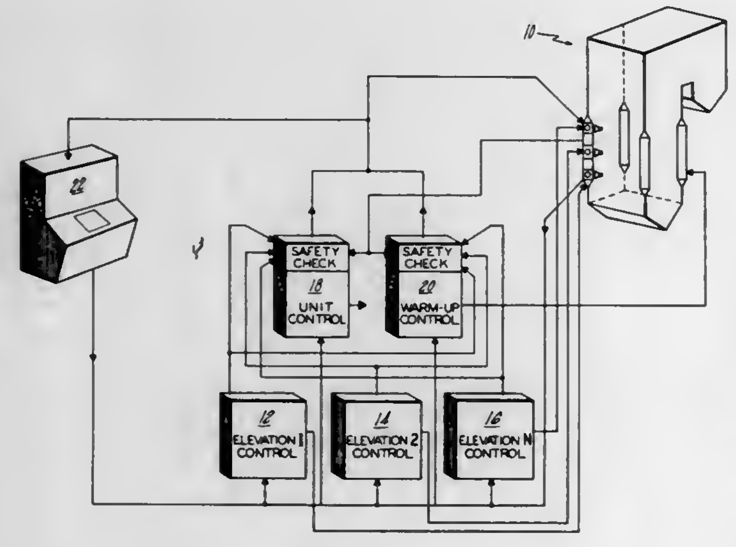
Edward I. Stanley, North Olmsted, and Donald G. Batchelor, Chagrin Falls, both of Ohio, assignors to Stacee Manufacturing, Inc., Cleveland, Ohio
Filed Mar. 4, 1974, Ser. No. 447,671
Int. Cl. F23d *3/40*
U.S. Cl. 431—7 **8 Claims**



1. In a liquid fuel heater including a granular refactory block, two ports extending into the refactory block, a fuel supply means delivering fuel to said refactory block through a first of said ports, and means conveying air under pressure to penetrate said refactory block and vaporize the fuel delivered to the refactory block, an improvement in said liquid fuel heater comprising a cavity disposed entirely within the said refactory block, said two relatively adjacent ports terminating in said cavity, asbestos wick material positioned within said cavity, and igniter means supported adjacent to said asbestos wick material within a second of said ports.

3,849,056
COMPUTER BASED PLANT PROTECTION SYSTEM

Jack Ascher Schuss, West Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Nov. 2, 1972, Ser. No. 303,239
Int. Cl. F23n
U.S. Cl. 431—24 **4 Claims**

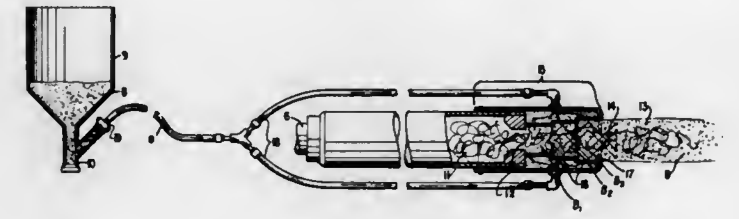


1. A protection system for a furnace, the furnace having a plurality of burners and associated ignitors situated at each of a plurality of vertically displaced elevations, condition responsive signal generators being associated with each furnace elevation for providing signals commensurate with the state of the burners and ignitors and the presence of flame, said protection system comprising:

- a plurality of first programmable controllers, each of said controllers of said first plurality being associated with one of said furnace burner elevations and receiving signals commensurate with the state of the burners and ignitors at that elevation and the presence or absence of flame, each of said controllers of said first plurality providing output signals for controlling the ignitors and burners at the associated elevation in accordance with the received signals and a stored program, each of said controllers of said first plurality further generating an arming signal commensurate with the condition of flame desired and a flame failure signal;
- a second programmable controller, said second controller being responsive to the arming and flame failure signals generated by each of said controllers of said first plurality for generating a control signal for terminating furnace operation when the arming and flame failure signals from all of said first controllers indicate unsafe operating conditions;
- a third programmable controller, said third programmable controller being responsive to the arming and flame failure signals generated by each of said controllers of said first plurality for generating a control signal for terminating furnace operation when the arming and flame failure signals from all of said first controllers indicate unsafe operating conditions;
- means for delivering the arming and flame failure signals provided by each of said controllers of said first plurality to said second and third controllers; and
- means connecting the outputs of said second and third controllers in parallel.

3,849,057
JET FLAME CLEANING AND COATING APPARATUS AND METHOD

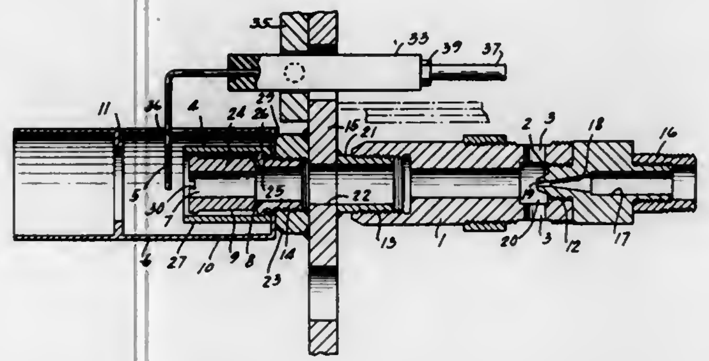
Clifford Peck, Elberton, Ga., and Clarence A. Garrison, Monroe, La., assignors to C. S. Peck Co., Inc., Elberton, Ga.
Division of Ser. No. 97,553, Dec. 14, 1970, Pat. No. 3,741,792. This application Apr. 10, 1973, Ser. No. 349,819
Int. Cl. B05b *7/20, 7/02*
U.S. Cl. 431—158 **4 Claims**



1. A flame jet apparatus comprising a combustion chamber, pressurized means for feeding a hydrocarbon fuel and oxidant into said chamber, said chamber having at least one outlet orifice for releasing a combustion jet flame, a venturi type adapter disposed outwardly of said outlet orifice, a nonpressurized container for storing a material to be dispensed, and at least one pick-up line leading from said venturi adapter to said container, whereby passage of the combustion jet flame past the venturi adapter creates a vacuum in said pickup line drawing said material into said flame, said apparatus being characterized by a pair of oppositely disposed pick-up lines positioned on a generally cylindrically formed venturi adapter, said adapter having a plurality of graduated, stepped internal bores that are provided with at least two apertures in each of said bores and which are located proximate to the point of entry of said pick-up lines into said venturi adapter.

3,849,058
GAS BURNER FOR COKE OVEN EXHAUST GAS

Horst Pankow, Gelsenkirchen, Germany, assignor to Gewerkschaft Schalker Eisenhuette
Filed Feb. 12, 1973, Ser. No. 331,808
Claims priority, application Germany, Feb. 24, 1972, 2208776
Int. Cl. F23q *3/00*
U.S. Cl. 431—264 **5 Claims**



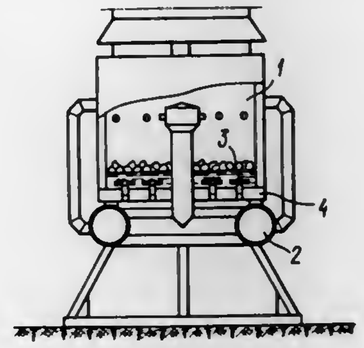
1. A gas burner particularly adapted to burn coke oven exhaust gas comprising,

- a mixing tube for the mixing of the gas with air to provide a combustible mixture,
- a gas feeding nozzle at the intake end of said mixing tube have a converging discharge end extending into said mixing tube and creating a Venturi effect,
- air inlet passageways leading into said mixing tube adjacent the converging discharge end of said feeding nozzle to accommodate the drawing of air into said mixing tube by the gas passing through said feeding nozzle to produce a combustible mixture in said mixing tube,
- a burner head concentric with said mixing tube in communication therewith,
- an electrical igniter spaced in advance of said burner head, a burner tube extending about said burner head and in advance thereof,
- said burner head having a cylindrical main passageway and an auxiliary annular passageway extending about said main passageway concentric therewith and having communication with said main passageway adjacent the downstream end of said burner head.

3,849,059
DEVICE FOR BURNING LIQUID COMBUSTIBLE WASTES

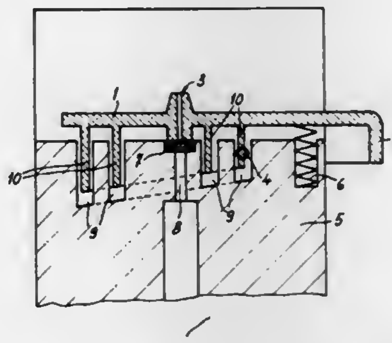
Vladimir Ivanovich Filippov, ulitsa 8 Marta, 2/10, kv. 93, Moscow, and Mikhail Vasilievich Sumarokov, ulitsa kirova, Kvartal 116, korpus 26, kv. 38, Ljubertsy Moskovskoi oblasti, both of U.S.S.R.
Filed Nov. 14, 1973, Ser. No. 415,901
Claims priority, application U.S.S.R., Nov. 15, 1972, 1845735
Int. Cl. F23d *5/02*
U.S. Cl. 431—331 **1 Claim**

1. A device for burning liquid combustible wastes, comprising: a combustion chamber containing a barbotage bath; a plurality of air-guiding element disposed in said chamber for imparting rotational motion to liquid combustible wastes contained therein; an air-supplying head disposed beneath the barbotage bath of said chamber; a plurality of branch pipes vertically installed and uniformly spaced along the bottom of the said bath for permitting communication between said air supplying head and said air-guiding elements, each of said air-guiding elements being constructed as a block of guiding nozzles located beneath the surface of said bath and freely installed in respective ones of said branch pipes for rotation in a horizontal plane, said nozzles being substantially inclined downwardly with respect to the bottom surface of said barbotage bath.



3,849,060
CIGARETTE LIGHTER WITH BAFFLE

Pierre Chevallier, Sainte-Foy-Los-Lyon, France, assignor to Etablissements Genoud & Cie. Societe Anonyme, Venissieux (Rhone), France
Filed Apr. 5, 1973, Ser. No. 348,106
Claims priority, application France, Apr. 7, 1972, 72.12863
Int. Cl. F23d *13/04*
U.S. Cl. 431—344 **1 Claim**



1. In a cigarette lighter operating with gaseous fuel and having a body provided with a member formed with an outlet orifice for the gaseous fuel, and a lever member pivotally mounted on said body for selectively opening and closing said orifice, the improvement wherein:

- one of said members is formed with a plurality of concentric grooves open in the direction of the other member and each extending endlessly around said orifice;
- said other of said members is formed with a respective lip received in each groove between the flanks thereof, said lips projecting in the direction of said one of said members and extending endlessly around said orifice to form a labyrinth seal with said flanks of said grooves, said lever including a burner outlet orifice; and a valve-forming washer located between said burner outlet orifice and said body outlet orifice.

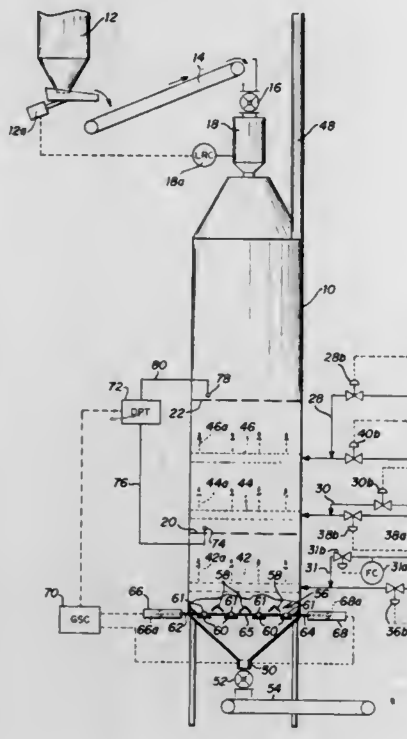
3,849,061
VERTICAL KILN CONTROL

James R. Summer, Blum Hill, Tex., assignor to Round Rock Lime Company, Blum, Tex.
Filed July 30, 1973, Ser. No. 383,484
Int. Cl. F27b *1/26*
U.S. Cl. 432—47 **19 Claims**

1. A process for heat treating particulate material of nonuniform gradation in a vertical kiln having a particulate material inlet at the upper end thereof and a particulate material outlet at the lower end thereof comprising:

a. supplying a heat input to the burning zone of said kiln sufficient to treat a charge of standard particles having a predetermined mass residence time which is based upon a predetermined bulk density and a predetermined flow rate of particles therethrough;

b. delivering said particulate material to said inlet of said vertical kiln at a sufficient rate to maintain said kiln filled with particulate material from said outlet through said burning zone, passing said particulate materials into the burning zone of said kiln, and continuously removing heat treated particulate material from said outlet;



c. sensing a quality indicative of the bulk density of said particulate materials passing through said burning zone; and

d. controlling the rate of said particulate material passing through said burning zone in step (b) relative to a comparison of said quality with a quality indicative of said predetermined bulk density to yield a mass residence time equivalent to said predetermined mass residence time within said burning zone and substantially uniformly heat treated particulate materials.

3,849,062
REINFORCED FUSER ROLL CONSTRUCTION

Raghulinga R. Thettu, Webster, and Edward G. Williams, Macedon, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 21, 1973, Ser. No. 361,923
Int. Cl. G03g *13/20*

U.S. Cl. 432—60 7 Claims

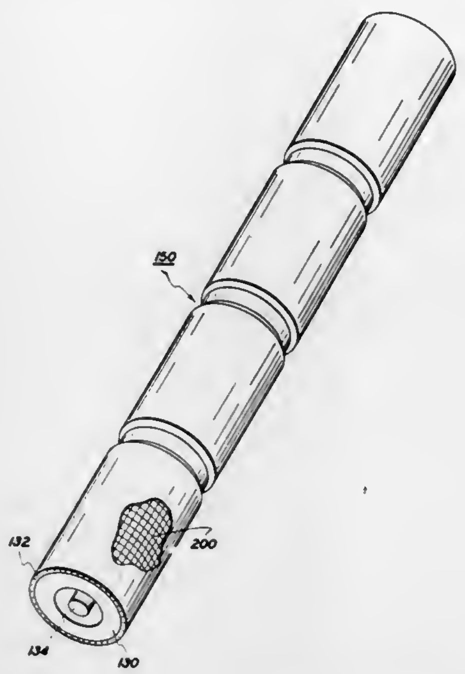
1. In an electrostatic reproduction machine in which the fusing device for fusing powder images to copy sheets is accomplished by passing the powder image on the sheets through the nip of compressible rotatable members which apply heat and pressure, an improved fuser roll comprising:

a rigid core member;

a thin coating of elastomeric material covering the surface of said core member;

said elastomeric coating having a reinforcing jacket positioned thereon;

said jacket being formed by a plurality of strands of heat stable material in a predetermined pattern;



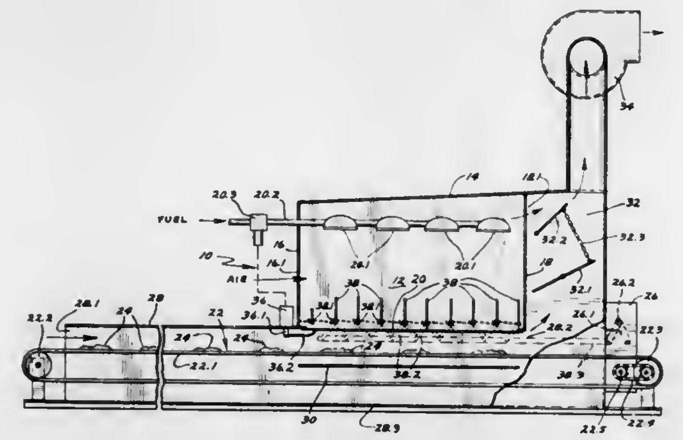
wherein said reinforcing jacket material has a tensile strength exceeding that of said elastomeric coating; and wherein said reinforcing jacket material has elongation characteristics less than that of said elastomeric coating.

3,849,063
SAFE INFRARED RADIATION-EMITTING APPARATUS

John E. Eichenlaub, 9321 Franklin Ave., West, Minneapolis, Minn. 55426

Filed Oct. 9, 1973, Ser. No. 404,306
Int. Cl. F27b *9/14, 5/00*

U.S. Cl. 432—185 21 Claims



1. Apparatus for safely emitting infrared radiation comprising a source of infrared radiation, an infrared radiation-transmissive, flexible wall softenable at a temperature below 1,000° F. and having a surface confronting the radiation source but spaced therefrom, means for transporting a coolant across the opposed surface of the wall to cool the latter, and means preventing access of the coolant to the radiation source.

CHEMICAL

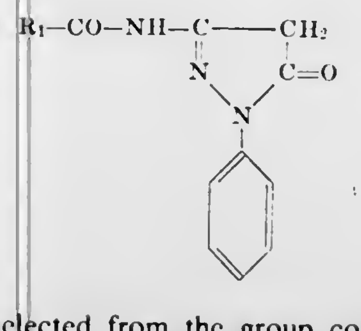
3,849,064
METHOD AND COMPOSITIONS FOR THE DYEING OF HUMAN HAIR

Erik Wiskott, Bottmingen Basel-Land, Switzerland, assignor to Therachemie Chemisch Therapeutische GmbH, Dusseldorf, Germany

Filed Sept. 24, 1970, Ser. No. 75,304
Claims priority, application Germany Oct. 2, 1969, 1949748
Int. Cl. A61k *7/12*

U.S. Cl. 8—10.2 5 Claims

1. In the process of dyeing human hair which comprises applying to the hair at temperatures of from 10° to 40°C an effective amount of an aqueous composition for dyeing human hair comprising an oxidation dyestuff combination of a developer component and a coupling component at a pH from 8 to 10 in the presence of an oxidizing agent, the improvement which comprises utilizing as said oxidation dyestuff combination, (a) from 0.3 to 5 percent by weight of said composition, of a coupling component 3-amino-pyrazol-5-one having the formula



wherein R_1 is selected from the group consisting of alkyl having one to six carbon atoms, phenyl, halophenyl, and cyclohexyl, and (b) from 0.3 to 5 percent by weight of said composition, of a developer component compound selected from the group consisting of (1) an aromatic amine, (2) a 4-amino-pyrazolone, and (3) an amino-pyridine.

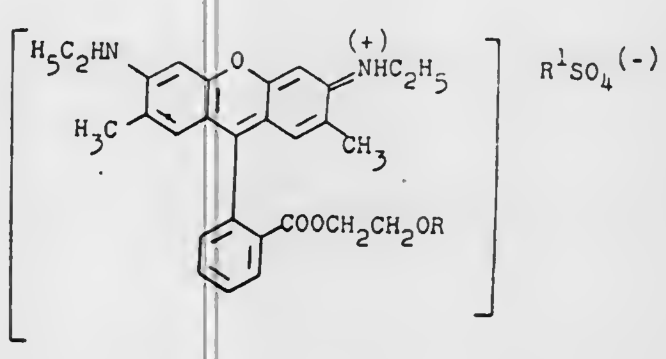
3,849,065
RHODAMINE DYE SOLUTIONS

Karl Schmeidl, Frankenthal, Germany, assignor to Badische anilin and Soda-Fabrik aktiengesellschaft, Ludiurgshafen/Rhein, Germany

Filed July 24, 1972, Ser. No. 274,580
Int. Cl. D06p *1/42;* **C09b** *11/28*

U.S. Cl. 8—25 2 Claims

1. A stable highly concentrated solution of an esterified rhodamine dye of the formula (A)



(A)

in which

R is hydrogen, acetyl, propionyl, alkyl of one to four carbon atoms or a radical of the formula $(CH_2CH_2O)_nR^2$;

n is the integer 1 or 2;

R^1 is hydrogen, methyl or ethyl; and

R^2 is hydrogen, acetyl, propionyl or alkyl of one to four carbon atoms.

3,849,066
METHOD OF INCREASING COVERING POWER OF KNITTED COTTON FABRIC

John G. Frick, Jr., and Gloria A. Gautreaux, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sept. 13, 1972, Ser. No. 288,806
Int. Cl. D06c *15/00*

U.S. Cl. 8—115.5 2 Claims

1. A method for increasing the opacity and covering power of a cellulosic knitted fabric comprising impregnating said fabric with a cross-linking agent, passing the impregnated fabric through press rollers which are heated to about 100° C. to 110° C. and which exert a pressure on said fabric of about 0.1 to 0.5 tons per centimeter of roll widths, and reacting the cross-linking agent with said fabric after passing the fabric through said rollers.

3,849,067
PROCESS FOR THE MERCERIZATION OF COTTON FABRICS WITH LIQUID AMMONIA AND AMMONIA/AMINE SOLUTIONS

Timothy A. Calamari, Jr.; Wilson A. Reeves; Sidney P. Schreiber, and Albert S. Cooper, Jr., all of Metairie, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 7, 1971, Ser. No. 141,359
Int. Cl. D06m *1/06, 1/10*

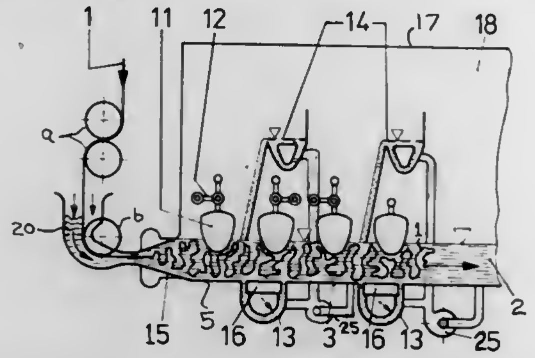
U.S. Cl. 8—115.7 8 Claims

1. A liquid ammonia mercerizing process consisting of tensioning, in both the width and the length dimensions, a fibrous fabric selected from the group consisting of a cotton fabric and a cotton/synthetic fiber blend fabric containing at least 25 percent of cotton, immersing the tensioned fabric in liquid ammonia for a period of about from 0.1 second to 1.0 second, stretching the immersed fabric to a progressively increasing degree of tension over a series of incrementally larger rollers during the immersion and during the subsequent step of removing ammonia from the fabric by volatilization, continuing the tensioning and progressive stretching of the fabric until at least about 90 percent of the ammonia has been removed from the fabric by volatilization, the time interval measured from immersion of the fabric in the liquid ammonia until at least about 90 percent of the ammonia has been removed by volatilization being limited to within 12 seconds and the dimensional stressing of the fabric accomplished by reason of the tensioning and progressive stretching of the fabric being maintained within the limits of about from 1 to 15 percent elongation relative to the length dimension and sufficient to restrict shrinkage in the width dimension to less than 5 percent, thereby to obtain a fibrous fabric in which essentially only the fiber surfaces have been modified.

4. A liquid ammonia mercerizing process consisting of tensioning, in both the width and the length dimensions, a fibrous fabric selected from the group consisting of a cotton fabric and a cotton/synthetic fiber blend fabric containing at least 25 percent of cotton, immersing the tensioned fabric in liquid ammonia for a period of about from 0.1 second to 1.0 second, stretching the immersed fabric to a progressively increasing degree of tension over a series of incrementally larger rollers during the immersion and during the subsequent step of removing ammonia from the fabric by quenching the fabric with water and removing the water from the fabric by volatilization, continuing the tensioning and progressive stretching of the fabric until the fabric is dry, the time interval measured from immersion of the fabric in the liquid ammonia until at least about 90 percent of the ammonia has been removed by the treatment with water being limited to within 12 seconds and the dimensional stressing of the fabric accomplished by reason of the tensioning and progressive stretching of the fabric being maintained within the limits of about from 1 to 15 percent elongation relative to the length dimension and sufficient to restrict shrinkage in the width dimension to less than 5 percent, thereby to obtain a fibrous fabric in which essentially only the fiber surfaces have been modified.

3,849,068
PROCESS FOR CONTINUOUS TREATMENT OF WEBS WITH HOT LIQUIDS

Christian August Meier-Windhorst, uber Hamburg-Harburg, 2101 Lindhorst, Germany
Filed Dec. 8, 1972, Ser. No. 313,362
Claims priority, application Germany, Dec. 8, 1971, 2160799
Int. Cl. B05c *3/04, 3/176*
U.S. Cl. 8—151 **6 Claims**

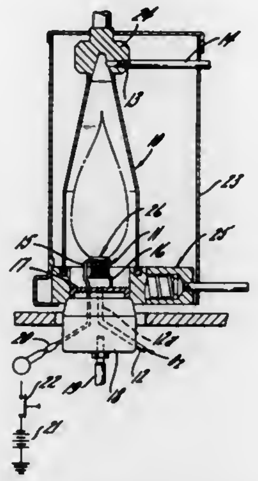


1. Process for the continuous liquid treatment of a web of textile and like material, comprising the steps of:
- a. continuously introducing said web and a stream of treating liquid into a liquid treating zone, maintaining a body of treating liquid in said zone, the depth of the body of liquid being progressively greater from the inlet end to the discharge end of said zone, said web being kept submerged in said liquid;
- b. inducing convective and turbulent currents in said body of treating liquid in said zone to cause said web to move therethrough with a crimped or curly edge contour, thereby increasing the overall residence time of the web therein;
- c. continuously moving said web and said treating liquid in the same direction through said zone at substantially the same overall speed to effect a continuous concentration balance and an even distribution of the treatment over the entire web area;
- d. maintaining the weight ratio of treating liquid to the web under treatment in said zone in the range from about 10:1 to about 50:1;
- e. the speed of movement of said web within said treating zone in convoluted form being substantially less than the entrance speed of the flat web;
- f. the overall residence time of the web in the body of treating liquid being sufficient to effect uniform and thorough treatment of the web by means of constantly changing directions of the web exposed surfaces; and
- g. continuously removing said web and used treating liquid from said treating zone.

3,849,069
COMBUSTION APPARATUS AND METHOD FOR MATERIALS CONTAINING A RADIOACTIVE ISOTOPE TRACER

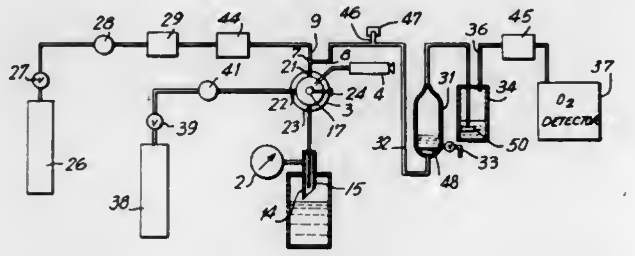
Niilo H. Kaartinen, Turku, Finland, assignor to Packard Instrument Company Inc., Downers Grove, Ill.
Filed June 19, 1972, Ser. No. 264,379
Int. Cl. G01n *31/00*
U.S. Cl. 23—230 PC **9 Claims**

1. An apparatus for the flame combustion of a starting material, comprising: a combustion chamber, an ignition basket in said combustion chamber, means for supplying gaseous oxygen to said combustion chamber, means for holding the starting material to be burned, said holding means adapted to be placed within said ignition basket and having a mouth opening upwardly into the space above said ignition basket, and said holding means including an ignition promoting substance arranged around said mouth.



3,849,070
APPARATUS FOR AND METHOD OF DETERMINING OXYGEN AND CARBON DIOXIDE IN SEALED CONTAINERS

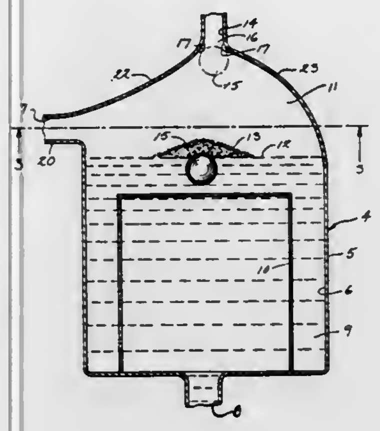
Adan C. Garza, Avon, and Vincent S. Bavisotto, Simsbury, both of Conn., assignors to Brewer's Unlimited, Inc., St. Paul, Minn.
Filed Sept. 25, 1972, Ser. No. 292,020
Int. Cl. G01n *1/16, 1/26, 33/14*
U.S. Cl. 23—230 R **9 Claims**



1. An apparatus for determining dissolved O_2 and CO_2 in a liquid in a container and O_2 in the headspace of said container, wherein said apparatus includes a source of inert gas for providing a stream of gas at a chosen rate, a pressure gauge for measuring total gas pressure in said container, hollow tubular piercing means for penetrating a container without loss or inleakage of gas at the region of penetration, said piercing means having a sharp tip, the tip of said piercing means being selectively positionable in the headspace or in the liquid after piercing said container, said pressure gauge being operatively connected with said piercing means, means for removing CO_2 and volatile organic components from a gas stream, and means for measuring the oxygen content of said gas stream, wherein said improvement comprises: valve means having first, second and third ports and an off position, and connecting means for connecting said first port to any of said second and third ports and said off position, a syringe detachably connected to said first port, a hollow probe tube lying within said hollow piercing means and having two ends, one of the ends of said hollow probe tube being proximate the tip of said piercing means and the other of its ends being connected to said second port of said valve means; and a branched tube having three ports, the first of said tube ports being connected to said third valve port, the second of said tube ports being connected to said source of inert gas and the third of said tube ports being connected to said means for removing CO_2 and volatile organic components from said gas stream and to said oxygen-content measuring means for introduction of a sample taken by said syringe and from said syringe into said gas stream and flow in sequence through said means for removing CO_2 and volatile organic components and oxygen-content measuring means, thereby making it possible to determine the oxygen content of said sample, the CO_2 content of said sample being determinable from the reading of said pressure gauge.

3,849,071
BLOOD-GAS SEPARATING SYSTEM FOR PERFUSATE CIRCULATION

Kenneth L. Kayser, 8435 W. Kenyon Ave., Wauwatosa, Wis. 53226
Division of Ser. No. 317,421, Dec. 21, 1972,. This application Aug. 27, 1973, Ser. No. 391,651
Int. Cl. A61m *1/03*
U.S. Cl. 23—258.5 **9 Claims**

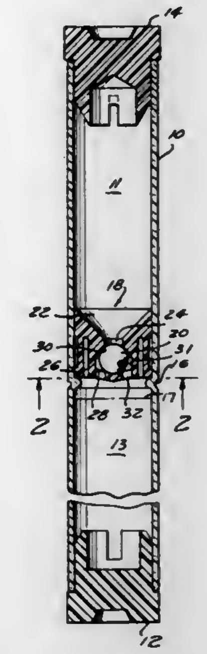


1. A blood-gas separating system for perfusate circulation, comprising a blood supply, blood transfer means connected to said supply for adding a gas to be dissolved by the blood received from said supply and supplying blood containing the dissolved gas, and a blood-gas separating means including a blood conducting first outlet supplying blood for perfusate circulation and a second outlet, said separating means receiving blood containing dissolved gas and any undissolved gas from said transfer means and separating undissolved gas from the blood containing dissolved gas and passing blood free of undissolved gas through said blood conducting first outlet for perfusate circulation and including valve means responsive to the presence of blood and undissolved gas within said separating means, said valve means controlling the flow through said second outlet and providing a maximum open valve position when large accumulations of undissolved gas is present in said separating means thereby permitting the free flow of undissolved gas through said second outlet and a position for maximum restriction of said second outlet when large accumulations of blood free of undissolved gas is present in said separating means thereby permitting a controlled flow of gas and blood through said second outlet.

3,849,072
PLASMA SEPARATOR

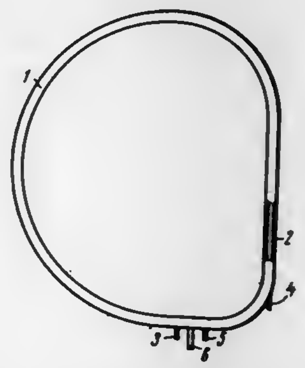
Waldemar A. Ayres, Rutherford, N.J., assignor to Becton, Dickson and Company, East Rutherford, N.J.
Filed Apr. 25, 1972, Ser. No. 247,483
Int. Cl. G01n *9/30;* **B01d** *21/26*
U.S. Cl. 23—259 **29 Claims**

1. A separator device for separating light liquid constituents from heavier solid constituents of mixtures thereof, comprising:
- a hollow elongate member having at least one end adapted for receiving the mixture;
- means for sealing the open ends of said hollow member; and valve means fixedly positioned in said member for dividing the member into first and second sealed chambers, said valve means being normally closed to seal said first chamber and said second chamber from each other, said valve being responsive to a force in one direction for opening the valve so that the first and second chambers are in communication with each other while the force is applied and said valve closing to interrupt said communication after the force terminates.



3,849,073
TUBULAR REACTOR FOR PRODUCTION OF CARBON BLACK FROM ACETYLENE BY DETONATION EXPLOSION

Pavel Alexandrovich Tesner, ulitsa Chapalygina, 2, kv. 3; Vadim Georgievich Knorre, ulitsa Dmitria Ulyanova, 4, korpus I, kv. 27; Vladimir Fedorovich Podkopaev, Proletarsky prospekt, 58, kv. 35, all of Moscow; Tamara Timofeevna Pakhtusova, Leninsky raion, poselok Razvilka, 8, kv. 8, Moskovskaya; Vsevolod Viktorovich Baaenkevich, Khlebozavodsky proezd, 5, korpus 2, kv. 382, Moscow, and Arkady Petrovich Astakhov, Leningradskaya ulitsa, 8a, kv. 44, Podolak, all of U.S.S.R.
Filed July 17, 1972, Ser. No. 272,666
Int. Cl. C01b *49/00;* **C09c** *1/49*
U.S. Cl. 23—259.5 **2 Claims**



1. A tubular reactor for the production of carbon black from acetylene by detonation explosion, comprising: a reaction chamber housing formed of a closed loop having smoothly curving portions conjugated with a straight-linear portion adapted for stabilization of a detonation wave caused by the explosion, the reaction chamber being of an essentially constant-diameter tubular configuration; an acetylene inlet connection on said housing communicating with said chamber; an inert gas inlet connection on said housing communicating with said chamber; igniter means for igniting acetylene fed into said chamber, said igniter means communicating with said chamber adjacent one of the ends of said straight-linear loop portion, said straight-linear portion and said inert gas inlet connection being disposed on, respectively, either side of said igniter means; and a carbon black outlet connection being mounted on the housing in communication with said chamber.

3,849,074

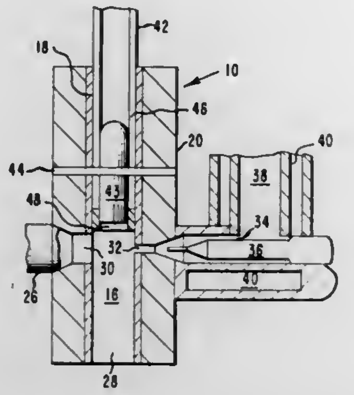
APPARATUS FOR MIXING QUICKLY REACTIVE MATERIALS

Thomas Franklin Ficklinger, Landenberg, Pa.; Watt Nixon Jeter, Waynesboro, Va., and Kewal Krishan Likhyani, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 7, 1972, Ser. No. 312,956

Int. Cl. B01j *1/00;* **B08b** *9/02;* **C08g** *20/00*

U.S. Cl. 23—285 **1 Claim**



1. A novel mixing apparatus for quickly reactive fluid streams comprising walls defining an elongated mixing chamber of uniform cross-section along its length, discharge means at one end of said chamber, oppositely disposed jetting orifices in the walls of said chamber to allow streams of fluid components to enter the chamber and collide near the center of the chamber, a plunger positioned within the chamber and adapted to wipe the walls of the mixing chamber as it moves in the direction of the discharge means while permitting substantially continuous flow of the fluid components into the chamber, said plunger being hollow and slotted on opposite sides for alignment with the jetting orifices of the chamber, and wiper means positioned both within said hollow plunger and its slots, the said wiper means being located upstream of said jetting orifices and adapted to remain stationary with respect to the chamber walls whereby the plunger is wiped as it moves away from the discharge means.

3,849,075

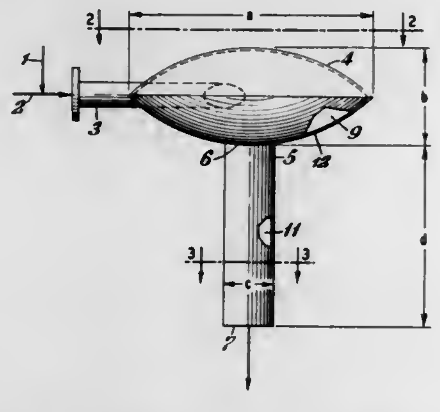
CRACKING REACTOR

Charles W. Albright, and George E. Keller, II, both of South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 252,512, May 8, 1972, abandoned. This application May 14, 1973, Ser. No. 359,676

Int. Cl. B01f *3/04;* **B01j** *1/00;* **C07c** *11/04*

U.S. Cl. 23—284 **7 Claims**



1. A reactor adapted for the cracking of hydrocarbons with hot gas comprising:

- A. a circular convex lens shaped hollow structure having (i) two walls, which are joined at their peripheries to form the structure, at least one of said walls being provided with an orifice disposed substantially centrally therein; and (ii) at least one hollow inlet feed chamber open at both ends passing through a wall of the structure, one end of said feed chamber being disposed in the interior of the structure at about the juncture of the walls in such a manner that vapor, which is passed through said chamber, will flow substantially tangentially to the juncture, provided that the rate of flow is sufficient therefor, creating a vortex-like flow within the structure; and
- B. at least one hollow tube open at both ends;

wherein:

- a. one end of tube (B) is connected to structure (A) at about its orifice in substantially concentric alignment therewith and in open communication with structure (A);
- b. the ratio of the length of structure (A) measured along a theoretical axis, which joins the center points of the walls, to the diameter of structure (A) measured across a theoretical plane perpendicular to the theoretical axis and bisecting structure (A) is about 0.05:1 to about 1:1;
- c. the ratio of the equivalent diameter of the orifice of structure (A) to the equivalent diameter of tube (B) is about 1:1 to about 0.1:1;
- d. tube (B) has a length to the equivalent diameter ratio of about 5:1 to about 200:1; and
- e. the ratio of the volume of structure (A) to the volume of tube (B) is about 0.01:1 to about 5:1.

3,849,076

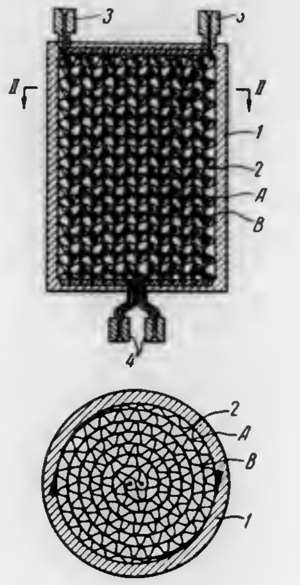
CATALYTIC REACTOR FOR CARRYING OUT CONJUGATE CHEMICAL REACTIONS

Vladimir Mikhailovich Gryaznov, Leninskie Gory, MGU Zona L, kv. 11; Viktor Sergeevich Smirnov, Kutuzovsky prospekt, 26, kv. 555; Alexandr Petrovich Mischenko, Khersonskaya ulitsa, 7, korpus 4, kv. 515, and Sergei Ivanovich Aladyshev, ulitsa Grimau, 7/2, korpus 4, kv. 77, all of Moscow, U.S.S.R.

Filed June 21, 1972, Ser. No. 265,000

Int. Cl. B01j *9/04;* **C07c** *3/58*

U.S. Cl. 23—288 R **3 Claims**



1. A catalytic reactor for carrying out conjugate chemical reactions, said reactor comprising: a hollow body encluding a cylindrical casing and opposite end covers, a thin-wall plate disposed in said body and coiled as a double spiral to define two reaction zones separated from one another by said thin-wall plate, said thin-wall plate being made of a palladium alloy that is selectively permeable to hydrogen and is catalytically active with regard to the reactions taking place in said two zones, said thin-wall plate having upper and lower edges which are sealably engaged in said covers of the body and end edges which are sealably engaged in the said casing, inlet means for feeding reactant products into said zones respectively, and outlet means for discharging the reaction products from said respective zones, said inlet means being disposed at one of the end covers and the outlet means at the other of the end covers, one of said inlet and outlet means comprising two conduits at diametrically opposite locations proximate said casing, and the other of said inlet and outlet means comprising two conduits adjacent one another centrally in said casing.

3,849,077

CONTINUOUS METHOD FOR THE RECOVERY BY CONDENSATION IN THE SOLID STATE OF SUBLIMABLE SUBSTANCES

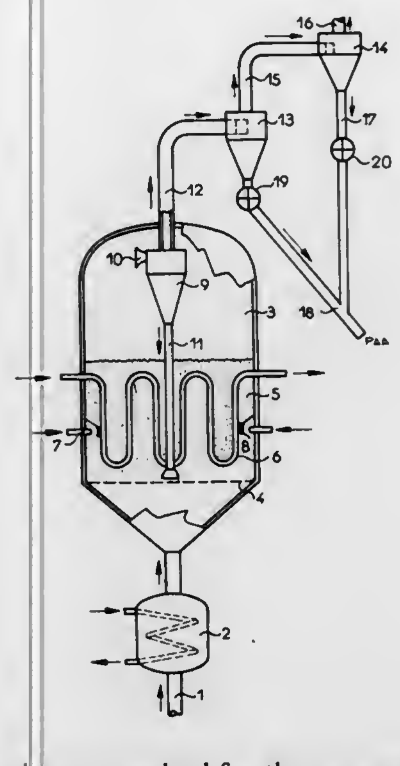
Jacques Becuwe, Fontenay/Sous/Bois, France, assignor to Rhone-Progil, Paris, France

Filed Aug. 28, 1972, Ser. No. 284,348

Claims priority, application France, Sept. 9, 1971, 71.32531

Int. Cl. B01d *7/00*

U.S. Cl. 23—294 **17 Claims**



1. In the continuous method for the recovery by condensation in the solid state of sublimable substances from within a gaseous mixture containing same, the steps of passing the gaseous mixture containing the substance to be collected through a fluidized bed of inert solid particles, maintaining the particles in the fluidized bed at a temperature below the condensation temperature of the substance whereby the substance condenses as a cover on the solid particles, projecting the solid particles against surfaces for dislodging condensed substance from the solid particles, and separating the dislodged condensed substance from the solid particles.

3,849,078

SEALING RING OF STAINLESS IRON BASE ALLOY

Glenn R. Gobble, and Richard G. Loebs, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 19, 1972, Ser. No. 299,103

Int. Cl. B32b *18/00;* **C22c** *39/14*

U.S. Cl. 29—183 **1 Claim**

1. A sealing ring having a generally axially extending portion and a generally radially extending flange having high corrosion and abrasion resistance made of a stainless iron base alloy consisting essentially of 3.1 to 3.65 percent carbon, 24 to 27 percent chromium, up to 0.9 percent manganese, up to 1.50 percent silicon and the balance iron.

3,849,079

METALLIC MATERIALS BASED ON MARTENSITIC STEEL

Jean Montuelle, Bourg-la-Reine; Georges Chaudron, Paris, and Gerard Piaard-Legry, Fontenay-aux-Roses, all of France, assignors to Agence Nationale de Valorisation de la Recherche (Anvar), Paris, France

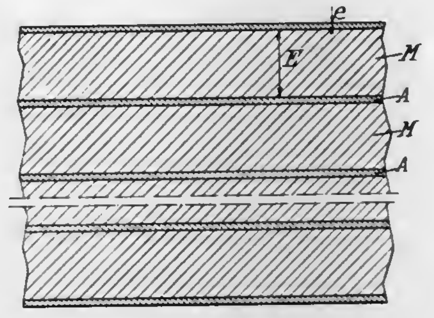
Filed Dec. 15, 1970, Ser. No. 98,237

Claims priority, application France, Dec. 19, 1969, 69.44094

Int. Cl. C23c *39/20*

U.S. Cl. 29—183.5 **10 Claims**

1. Massive ferrous metallic material having high mechanical strength and resistance in depth of the material to hydrogen embrittlement consisting essentially of a regular alternation of a plurality of layers of martensitic steel and of layers of austenitic structure having a resistance to corrosion higher and a mechanical resistance lower than those of said martensitic steel, the thickness of each martensitic layer being of a magnitude equal to at least five times the average thickness of the adjacent austenitic layers situated respectively on both sides of the martensitic layer concerned.



3,849,080

ROTATIONALLY SYMMETRICAL HOLLOW COMPOUND BODY

Hartwin Zechmeister, Munich, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg AG, Munich, Germany

Filed Apr. 19, 1972, Ser. No. 245,575

Claims priority, application Germany, Apr. 19, 1971, 2118848

Int. Cl. B32b *15/00*

U.S. Cl. 29—191.2 **3 Claims**

1. Rotationally symmetrical hollow compound body consisting of two layers, arranged one within the other, each part merging into the other without gaps, and characterized by the combination of the following features:

- a. the inner layer essentially consists of metal selected from the group consisting of alloys on a nickel, titanium, cobalt or aluminum basis;
- b. the outer layer essentially consists of a fibrous material selected from the group essentially consisting of tungsten, beryllium, steel, boron, carbon or silicon carbide fiber, which are arranged as coiled endless fiber, staple fiber or fiber matting, whereby the spaces between the individual fibers are cast with one of the metals mentioned under (a), thereby providing a low density structure;
- c. said materials of the outer and inner layers being selected such that the heat expansion coefficient of the metal inner layer is equal to or larger than that of the outer layer, and said material of said outer layer exhibits a specific modulus less than the specific modulus of said material of the inner layer; and
- d. when the compound body is at rest the outer layer shows evidence mainly of tensile stress, the inner layer mainly of pressure stress so that the compound body exhibits small radial deformations under rotation or with the application of an internal pressure.

3,849,081

POLYBUTADIENE COMPOSITIONS AND HYDROCARBONS THICKENED THEREWITH

Amandus D. Snyder, and William K. Taft, both of Lewiston, N.Y., assignors to Olin Mathieson Chemical Corporation, New Haven, Conn.

Filed July 22, 1959, Ser. No. 828,918

Int. Cl. C10l *7/02*

U.S. Cl. 44—7 E **2 Claims**

1. A polybutadiene composition obtained by adding to a latex, produced by emulsion polymerization of butadiene wherein the conversion of butadiene to polybutadiene is about 55 to 65 percent, from about 0.2 to 0.4 parts by weight of acrylonitrile per 100 parts by weight of butadiene within a period of about 3 to 25 minutes prior to shortstopping the emulsion polymerization of the butadiene.

2. An incendiary gel consisting essentially of a liquid hydrocarbon thickened with from about 2 to about 10 percent by weight based upon the weight of the incendiary gel of the product obtained by adding to a latex, produced by emulsion polymerization of butadiene wherein the conversion of butadiene to polybutadene is about 55 to 65 percent, from about 0.2 to 0.4 parts by weight of acrylonitrile per 100 parts by weight of butadiene within a period of about 3 to 25 minutes prior to shortstopping the emulsion polymerization of the butadiene.

3,849,082

HYDROCARBON CONVERSION PROCESS

Robert H. Kozlowski, Berkeley; Robert P. Sieg, Piedmont, and John W. Scott, Ross, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed June 26, 1970, Ser. No. 50,123
Int. Cl. C10l *1/18*

U.S. Cl. 44—56 **6 Claims**

1. A process for producing a gasoline blending stock which comprises:

a. feeding an alcohol and a light hydrocarbon mixture containing at least tertiary olefins, linear olefins and isobutanc to an etheration zone,
b. reacting the alcohol with the tertiary olefins in the etheration zone to obtain an ether and unreacted linear olefins and isobutane,
c. separating the ether from the linear olefins and isobutane,
d. feeding water and at least a portion of the linear olefins to a hydration zone,
e. reacting the water with the linear olefins in the hydration zone to obtain a product alcohol,
f. oxidizing the isobutane to obtain t-butyl alcohol, and
g. blending at least portions of the ether, product alcohol and t-butyl alcohol to produce a gasoline blending stock.

3,849,083

GASOLINE ADDITIVE

Michael Dubeck, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 14, 1972, Ser. No. 244,237
Int. Cl. C10l *1/22*

U.S. Cl. 44—72 **7 Claims**

1. Gasoline containing a carburetor detergent amount of an ether amine having the formula $R—O—L—NH_2$ wherein R is $C_1–C_{40}$ alkyl and L is $C_2–C_8$ alkylene.

3,849,084

CALCIUM-STRONTIUM SMOKE INHIBITORS FOR DIESEL FUELS

Davis A. Skinner, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 88,885, Nov. 12, 1970, abandoned, which is a continuation-in-part of Ser. No. 740,809, May 31, 1968, abandoned. This application July 3, 1972, Ser. No. 268,774
Int. Cl. C10l *1/26*

U.S. Cl. 44—70 **7 Claims**

1. A smoke suppressant for diesel fuels comprising a mixture of an oil-soluble hydrocarbon sulfonate, naphthenate or phenate of calcium and an oil-soluble hydrocarbon sulfonate, naphthenate or phenate of strontium, the metal content of the mixture comprising about 10–90 weight-percent calcium and about 90–10 weight-percent of strontium.

3,849,085

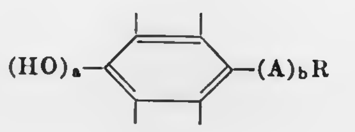
MOTOR FUEL COMPOSITION

Kenneth L. Kreuz, Fishkill, and Matthew A. McMahon, Wappingers Falls, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed May 8, 1972, Ser. No. 251,001
Int. Cl. C10l *1/18*

U.S. Cl. 44—78 **10 Claims**

1. A motor fuel composition comprising a mixture of hydrocarbons in the gasoline boiling range containing from about 0.01 to 0.25 volume percent based on said composition of a saturated aliphatic hydrocarbon substituted phenol represented by the formula:



in which *a* represents an integer from 1 to 2, A represents a lower aliphatic radical having from 1 to 4 carbon atoms, *b* is an integer from 0 to 1, R represents an aliphatic hydrocarbon radical having an average molecular weight from about 500 to 3,500 and the residual open bonds are satisfied by hydrogen atoms.

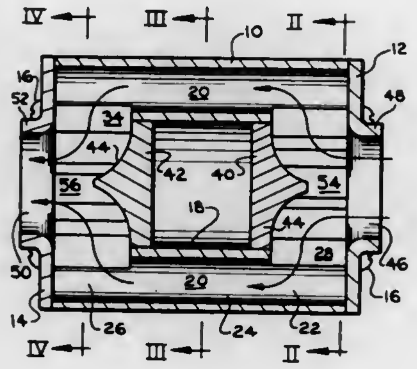
3,849,086

SUPERCHARGER FOR INTERNAL COMBUSTION ENGINE CARBURETION

Howard R. Johnson, Grass Lake, Mich., assignor to Hush Company, Inc., Ann Arbor, Mich.

Filed July 20, 1973, Ser. No. 381,278
Int. Cl. F02m *21/04*

U.S. Cl. 48—180 C **9 Claims**



1. A supercharger for use with a carburetor for internal combustion engines characterized by its ability to dynamically retain the movement of carburetor air and provide mixing of the combustible mixture through generation of a vortex comprising, in combination, an elongated body having an axial center, an inlet end and an outlet end, a chamber defined at said outlet end, means defining a plurality of longitudinally extending passages in said body extending between said ends thereof, each of said means defining said passages having an inlet and an outlet adjacent said body inlet end and outlet end, respectively, means defined at said passages' inlets for imparting a vortex motion to air entering said passages, and discharge means defined at said passages' outlets for discharging

air from said passages into said chamber at an angle to said body axial center to create a vortex within said chamber concentric to said body axial center.

3,849,087

PROCESS FOR PRODUCING GASES BY THE CONVERSION OF HYDROCARBONS

Tetsutaro Arakawa, Tokyo, and Michio Oka, Yokohama, both of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan.

Filed Feb. 15, 1973, Ser. No. 332,837
Int. Cl. C01b *2/16*

U.S. Cl. 48—214 **29 Claims**

1. A process of producing a mixed gas which comprises cracking a hydrocarbon or hydrocarbons with at least one of steam and carbon dioxide in the presence of a catalyst consisting essentially of

a. nickel,
b. at least one of vanadium and molybdenum, and
c. a heat resistant carrier.

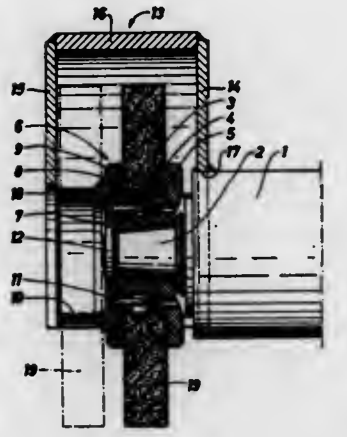
3,849,088

SAFETY HOOD FOR GRINDING DISCS

Bengt Johansson, Hisings Backa, Sweden, assignor to Centro-Maskin i Goteborg AB, Goteborg, Sweden

Filed Feb. 14, 1973, Ser. No. 332,421
Claims priority, application Sweden, Feb. 14, 1972, 1745/72
Int. Cl. B24b *55/04*

U.S. Cl. 51—269 **1 Claim**



1. A grinding disc safety device comprising a grinding disc, which is intended for grinding with its peripherical part, a driven spindle nose, a flange piece being detachably mounted on said spindle nose, means detachably connecting said flange piece to said spindle nose, a safety hood enclosing a portion of said grinding disc, said safety hood having side walls with an opening therebetween with said disc projecting through said opening so that a segment of said disc is exposed, and said safety hood having a second opening in one side wall thereof, which is right in front of a side of said grinding disc, said second opening being arranged for rendering said flange piece and said connecting means accessible for mounting and demounting, said flange piece having a cylindrical projection, the outer diameter of which closely fits to the edges of said second opening, and the outer end of which closely fits to said side wall of said safety hood, said side wall being at a distance from the end of said spindle nose, which is at least as great as the width of said grinding disc, so that said grinding disc can be introduced into said safety hood through said first mentioned opening out side of said spindle nose in order to be mounted on the same.

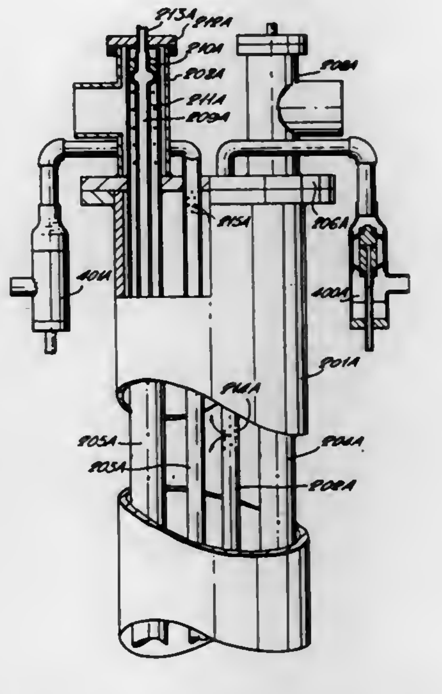
3,849,089

PROCESS, SYSTEM AND APPARATUS AND COMPONENTS THEREOF FOR THE SEPARATION OF GASEOUS COMPONENTS

Robert A. Ritter, and David G. Turnbull, both of Calgary, Canada, assignors to Ritter Engineering Ltd., Alberta, Canada

Filed Jan. 4, 1973, Ser. No. 320,433
Claims priority, application Canada, Sept. 28, 1972, 152760
Int. Cl. B01d *53/04*

U.S. Cl. 55—33 **51 Claims**



1. A cyclic process for separating and recovering one selected gas from a mixture of at least two gases, which process comprises: preferentially adsorbing one gas from the gas mixture by passing the gas mixture, while under a positive pressure condition of up to 60 p.s.i.g., in a lengthwise direction through an elongated first adsorption zone having a length/-width ratio greater than one, said first adsorption zone containing an adsorbent material which is more selective to one gas than to said selected gas in that gaseous mixture, the adsorption zone also including primary inlet means and primary outlet means; causing the gas mixture to travel a relatively long adsorption path along the length of the first adsorption zone from the inlet means, through the adsorbent and out the primary outlet means; withdrawing said selected gas, which is less strongly adsorbed, from said adsorption zone through a primary outlet zone, which is substantially free of adsorbent material; discontinuing the adsorption step; and, while said adsorbing step is discontinued, regenerating the adsorbent by positively urging the adsorbed gases to travel along a relatively short, direct, desorbing path transverse to the adsorption path to a first distinct zone substantially free of adsorbent, disposed within said adsorbent zone, said first distinct zone being disposed along the length of the first adsorption zone, and further being subjected to the influence of a subatmospheric gaseous pressure; removing said desorbed gas from said first distinct zone through a secondary outlet zone which is substantially free of adsorbent material; and cyclically repeating said adsorption-desorption steps.

3,849,090

ELECTROSTATIC PRECIPITATOR

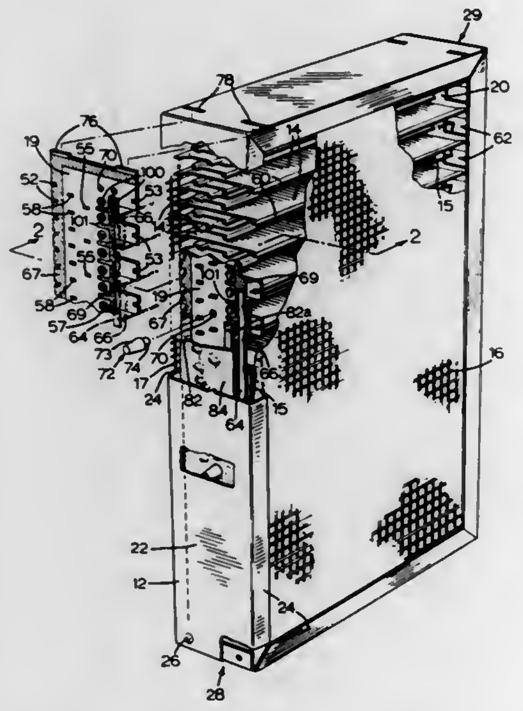
Cassius D. Remick, Waterloo, Ontario, Canada, assignor to Electrohome Limited, North Kitchener, Ontario, Canada

Continuation-in-part of Ser. No. 190,211, Oct. 18, 1971, Pat. No. 3,727,380. This application Apr. 13, 1973, Ser. No. 351,010
Int. Cl. B03c *3/47, 3/12*

U.S. Cl. 55—143 **8 Claims**

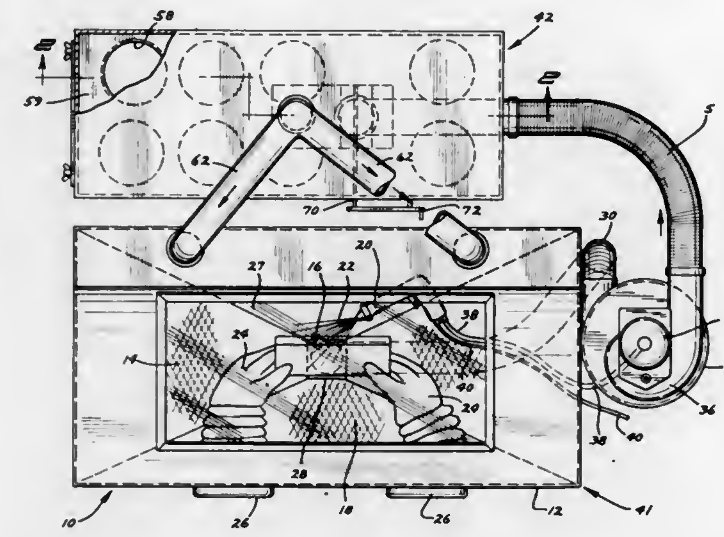
1. In an electrostatic precipitator an improved arrangement for supporting and electrically connecting the collector plates

thereof comprising two spaced apart printed circuit boards, a plurality of collector plates stacked in spaced apart relationship one above the other and extending between said printed circuit boards and supported thereby, said printed circuit boards having a plurality of slots extending therethrough, said collector plates having tabs extending therefrom, said tabs extending into said slots, at least two bus bars adapted for connection to two terminals of a DC power supply at different DC potentials, one of said bus bars being on one of said printed circuit boards and the other of said bus bars also being on one of said printed circuit boards, every other one of said collector plates being electrically connected via at least certain of said tabs thereof to said one bus bar, a plurality of isolating resistors, said isolating resistors being electrically connected between said other bus bar and the remaining ones of said collector plates and being of sufficient magnitude, upon occurrence of an arc-over between two adjacent ones of said collector plates, to inhibit discharge of the capacitors constituted by other adjacent pairs of collector plates via said arc-over, said isolating resistors being constituted by electrically resistive, resilient cement adhered to said printed circuit board carrying said other bus bar and electrically connecting said remaining ones of said collector plates via at least certain of said tabs thereof to said other bus bar, said certain tabs of said remaining collector plates extending through certain of said slots that are physically spaced apart from said other bus bar, whereby said electrically resistive, resilient cement bridges the spaces between said certain tabs of said remaining collector plates and said other bus bar, said electrically resistive, resilient cement also being adhered to said certain of said tabs of said remaining ones of said collector plates and extending over the slots through which the last-mentioned tabs extend and thereby inhibiting rattling of said last-mentioned tabs.

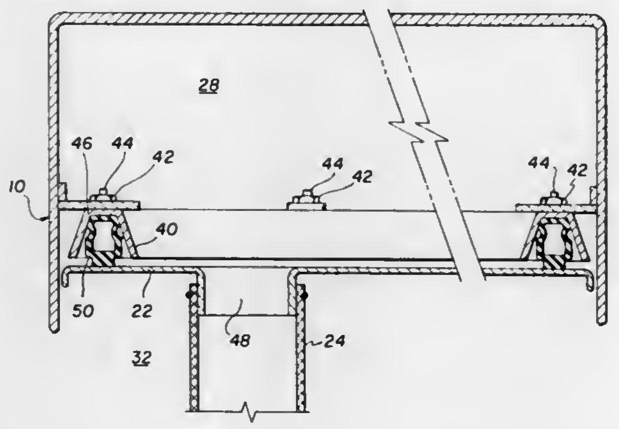


3,849,091
CLOSED LOOP AIR FILTRATION SYSTEM
Bertil G. Peterson, Bloomington, Minn., assignor to Tobin-Arp Manufacturing Company, South Minneapolis, Minn.
Filed Apr. 17, 1972, Ser. No. 244,691
Int. Cl. B01d *46/04*
U.S. Cl. 55—302 **4 Claims**

1. An airtight filter box including an airtight plenum across the top thereof, an airtight collection chamber across the bottom of said box and vertically below the plenum, an airtight filtration compartment between said collection chamber and said plenum, a plurality of vertical, porous filtration sleeves each open at an upper end to the inside of said plenum and at a lower end to the inside of said collection chamber and each extending through the filtration compartment, first conduit means extending into the plenum for introducing a stream of air to be filtered into the box, second conduit means extending outwardly from the plenum, a first collar extending from the plenum into the filtration compartment in spaced relation to said vertical sleeves, a second collar open to the inside of said plenum, valve means in said plenum between said conduit means and said collars, said valve means including a valve element movable between a first position wherein said first conduit means discharges air to be filtered into said plenum through said second collar and said second conduit means receives filtered air from said filtration compartment through said first collar and a second position wherein said first conduit means discharges air into said filtration compartment through said first collar and said second conduit means receives air from said plenum through said second collar.



3,849,092
APPARATUS FOR SEPARATING A GASEOUS CARRIER FROM PARTICULATE MATTER ENTRAINED THEREIN
Even Bakke, New Providence, and Celestino G. Scapicchio, Newark, both of N.J., assignors to The Slick Corporation, New York, N.Y.
Filed Mar. 31, 1972, Ser. No. 240,180
Int. Cl. B01d *41/00*
U.S. Cl. 55—302 **3 Claims**



1. Dust collection apparatus for effecting separation of particulate matter from a gaseous carrier thereof, comprising a perimetric housing,

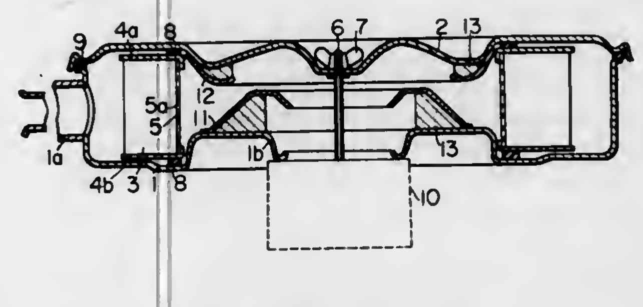
- a tube sheet removably mounted therein operatively subdividing the interior of said housing into a clean air plenum and a dirty air plenum,
- a plurality of elongate filter socks of permeable filter media disposed within said dirty air plenum for limiting the flow of gaseous carrier from said dirty plenum to said clean air plenum to passage therethrough, said filter socks being suspendedly mounted on said tube sheet and displaceable in conjunction therewith externally of said perimetric housing,

- an inflatable hollow sealing means mounted on said perimetric housing and in spaced inflatably engageable relation with the periphery of said filter media supporting tube sheet when the latter is operatively mounted within said perimetric housing so as to permit unimpeded displacement of said tube sheet and filter media supported thereby externally of said housing when said sealing means is in uninflated condition,
- a source of compressed air,
- means for effecting removal of collected particulate matter from the surface of said filter media,
- means for selectively introducing compressed air from said source into said sealing means to displace a portion thereof into continuous gas tight sealing relationship with the surface of said tube sheet when the latter and the filter media supported thereby are mounted within housing and to thereby limit the flow of gaseous carrier from the dirty air plenum to the clean air plenum to passage through said filter media,

ejector pump means responsive to a selective flow of released compressed air from said source therethrough to induce a flow of confined gaseous fluid from said sealing means and thereby positively reduce the pressure therein to a valve below that of ambient pressure and induce a collapse of said sealing means and a retraction thereof from engaged relation with said tube sheet,

- and valve means for selectively effecting the introduction of said compressed air into said sealing means to inflate the same and the introduction of said compressed air into said ejector pump means for effecting positive deflation of said sealing means.

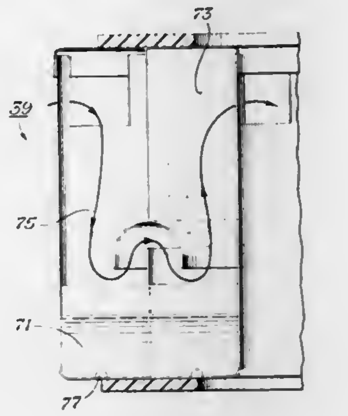
3,849,093
AIR CLEANER FOR AUTOMOBILES
Masami Konishi, Toyota, and Kenji Hikita, Toyihashi, both of Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan
Filed Sept. 15, 1972, Ser. No. 289,611
Claims priority, application Japan, Oct. 14, 1971, 46-94866
Int. Cl. B01d *50/00*
U.S. Cl. 55—316 **5 Claims**



1. An automotive air cleaner, including:

- an annular air cleaning filter element;
- housing means enclosing the filter element and including means sealing with the axially opposite ends of the filter element;
- the housing means further including means defining an inlet thereto disposed radially outwardly of the filter element sealing means and means defining an outlet therefrom disposed generally centrally of the filter element and opening through the bottom of the housing radially inwardly of the sealing means, completing a passageway for air extending from said inlet, through the filter element and out the outlet;
- wall means defining, when secured in said housing, a liquid-tight annular receptacle within said housing having a mouth opening radially inwardly surrounding said outlet and being disposed radially inwardly from the filter element;
- means securing the receptacle wall means with respect to the housing for preventing said passageway from extending under the receptacle, whereby said passageway extends over the outside of the receptacle and down past the mouth thereof to reach said outlet, the receptacle being thereby positioned to trap liquid fuel escaping into the air cleaner through said outlet if and when the automotive vehicle incorporating the air cleaner turns on its side.

3,849,094
OIL BATH AIR FILTER ELEMENT
Will W. Holland, 1702 First St., Brownwood, Tex. 76801
Filed Mar. 5, 1974, Ser. No. 448,228
Int. Cl. B01d *50/00*
U.S. Cl. 55—330 **8 Claims**



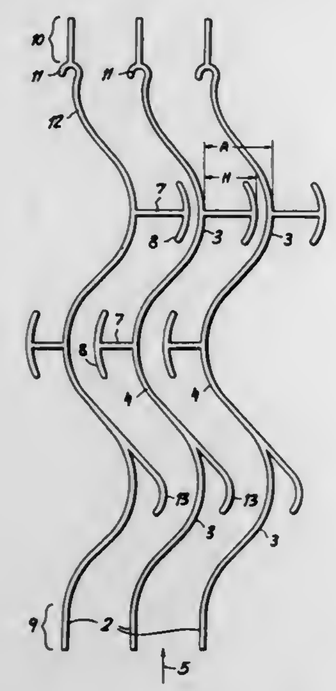
1. An annular air filter element adapted to be inserted into an air filter bowl of a motor vehicle and to be removed therefrom for servicing, said bowl having a bottom end with a central aperture adapted to fit over the air intake of a carburetor, surrounding side walls with an air intake, and a removable top, said annular filter element comprising:

- an annular container formed by bottom wall structure and inner and outer walls extending therefrom forming an annulus with an upper annular opening,
- a removable annular top means adapted to fit over and close said opening,
- said annular container being adapted to be inserted within said filter bowl between said central aperture and said surrounding walls and to be in sealing contact with the bottom of said bowl and its top when inserted in place,
- said annular container having air inlet means formed through said outer wall near the upper end thereof and air outlet means formed through said inner wall near the upper end thereof to allow passage of air from the air intake of said bowl to said central aperture by way of said annular filter element,
- an air direction changer means located in the annulus of said container for directing the air to make three 180° turns when flowing from said inlet means to said outlet means,
- a quantity of oil or the like located in the bottom of said annular container, and
- an air pervious filter medium located in the flow path of the air between said air direction changer and said outlet means.

3,849,095
LOUVER ARRANGEMENT FOR A LIQUID/GAS SEPARATOR
Ulrich Regehr, Susterfeld 65, 51 Aachen, Germany
Filed Sept. 25, 1972, Ser. No. 292,255
Claims priority, application Germany, Sept. 27, 1971, 2148079
Int. Cl. B01d *45/08*
U.S. Cl. 55—394 **3 Claims**

1. A deflection assembly for the inertial separation of a liquid from a gas comprising means forming a flow passage having a general direction of fluid flow between an inlet and an outlet; an array of geometrically identical parallel deflector

plates of generally undulate configuration and substantially sinusoidal cross-section mounted in said passage and transversely spaced apart by a distance A between corresponding points of successive plates to define respective flow paths between them, each plate having a side turned toward said inlet and extending generally parallel to said flow direction, each of said plates comprising a plurality of corrugation crests and a plurality of corrugation troughs; a respective web extending transversely from each crest of each of said plates toward a confronting other plate and into a trough thereof thereby obstructing the flow path therebetween; and an arcuate cylinder-segment flange at an end of each of said webs remote from the plate and defining therewith a respective liquid collection trough open opposite to said flow direction, each segment having a curvature corresponding substantially to that of the trough in which it lies, said webs, flanges and crests running transversely to said flow direction, said flanges each lying at a height H from the plate upon which they are mounted and H is greater than 0.5 A, the difference between the heights of said liquid collection troughs and the width of said flow passage decreasing from liquid-collection trough to liquid-collection trough in said direction.

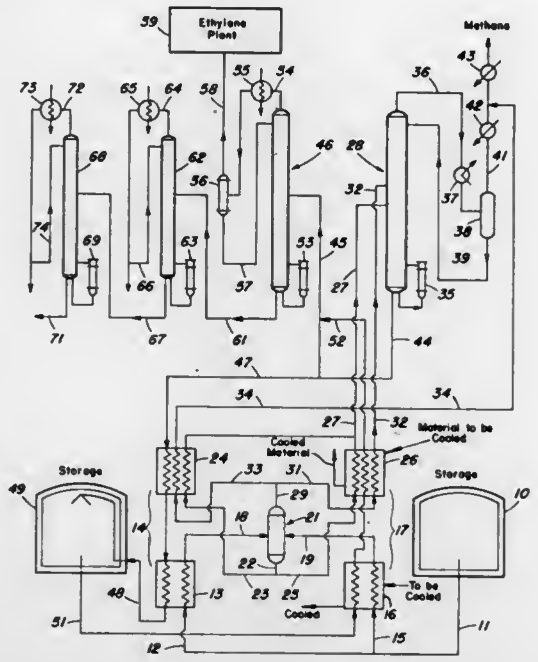


3,849,096
FRACTIONATING LNG UTILIZED AS REFRIGERANT UNDER VARYING LOADS

Ludwig Kniel, Scarsdale, N.Y., assignor to The Lummus Company, Bloomfield, N.J.
Continuation of Ser. No. 839,427, July 7, 1969, abandoned. This application Aug. 4, 1971, Ser. No. 168,838
Int. Cl. F25j *3/06*
U.S. Cl. 62—23 **2 Claims**

1. A process for the regasification and fractionation of liquefied natural gas, comprising:

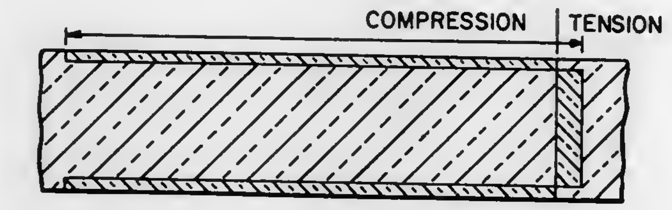
a. heating liquefied natural gas and recovering the cold potential therefrom;
b. introducing heated natural gas from step (a) into a demethanizer to recover a methane overhead and a bottoms of heavier components, said methane overhead recovery varying above and below a specific average amount;
c. introducing a first portion of the bottoms from the demethanizer into a deethanizer, said deethanizer being operated at a feed rate corresponding to the amount of bottoms available from the demethanizer at the specific average amount of methane overhead recovery, said first portion being the entire bottoms during periods when the methane overhead recovery is no greater than the specific average amount and when the methane overhead recovery is in excess of the specific average amount, said first portion being less than the entire bottoms and corresponding to the bottoms available when the methane overhead recovery is at the specific average amount;
d. cooling the remaining portion of the bottoms available during a period when the methane overhead recovery is greater than the specific average amount by indirect heat transfer with liquefied natural gas;
e. passing the cooled remaining portion of bottoms to a storage zone;



f. withdrawing remaining portion of bottoms from said storage zone during periods when the methane overhead recovery is less than the specific average amount at a rate corresponding to that required to maintain the feed rate to the deethanizer;
g. heating the withdrawn remaining portion of bottoms and recovering the cold potential therefrom; and
h. introducing the heated remaining portion of bottoms into the deethanizer to maintain said feed rate to the deethanizer.

3,849,097
METHOD FOR CONTINUOUSLY HOT FORMING STRONG LAMINATED BODIES

James W. Giffen; David A. Duke, both of Corning; William H. Dumbaugh, Jr., Painted Post; James E. Flannery, Corning; John F. MacDowell, Painted Post, and John E. Megles, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.
Division of Ser. No. 78,763, Oct. 7, 1970, Pat. No. 3,673,049, which is a continuation-in-part of Ser. No. 735,044, June 6, 1968, abandoned. This application Mar. 27, 1972, Ser. No. 238,118
Int. Cl. C03b *27/00;* **B32b** *7/02*
U.S. Cl. 65—33 **16 Claims**

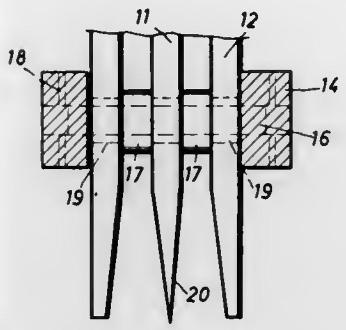


1. A method for continuously hot-forming a strong laminated glass article consisting of a tensilely-stressed core portion and a compressively-stressed surface layer fused thereto and substantially enveloping said core portion such that the fused glass surface between said core portion and said surface layer is essentially defect-free and wherein the coefficient of thermal expansion of said surface layer at the setting point is at least about 15× 10^{-7}/°C. less than the coefficient of thermal expansion of said core portion which comprises the steps of:

a. melting a glass forming batch for each said core portion and said surface layer;
b. essentially simultaneously bringing said molten batches together while in the fluid state and combining them into a laminated glass article at an elevated temperature such that said core portion has a viscosity greater than and up to six times greater than said surface layer and fusing said core portion and surface layer together such that an interface therebetween is essentially defect-free.

3,849,098
DEVICE FOR MANUFACTURING DOUBLE LAYER SHEET GLASS

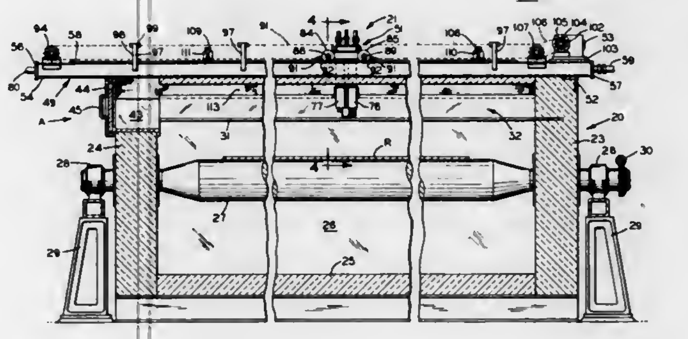
Hans-Jurgen Wortmann, Bochum-Lgdr, Germany, assignor to Flachglas Aktiengesellschaft Delog-Detag, Furth/Bayern, Germany
Filed Sept. 12, 1973, Ser. No. 396,456
Claims priority, application Germany, Sept. 14, 1972, 7233864; Oct. 7, 1972, 2249284
Int. Cl. C03b *23/24*
U.S. Cl. 65—152 **23 Claims**



1. Device for manufacturing double layer sheet glass by fusing the horizontal cross edges and vertical longitudinal edges of paired, oppositely parallel-spaced single layer sheets supported on a lower guide means and vertically guided through a processing oven by means of an upper guide means, at least one of the two guide means for the glass sheets consisting of individually independent elongated segments, whereby each guide segment exhibits three track-like guide elements disposed in a substantially horizontal plane in oppositely parallel spacing relative to one another.

3,849,099
SCANNING APPARATUS FOR MEASURING GLASS TEMPERATURES

Robert E. Maltby, Jr., Perrysburg, and Thomas B. O'Connell, Maumee, both of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio
Filed Nov. 15, 1973, Ser. No. 416,168
Int. Cl. C03b *25/04*
U.S. Cl. 65—158 **10 Claims**

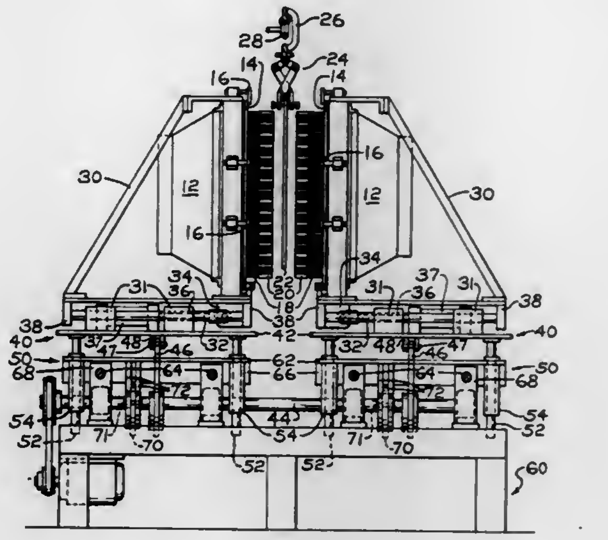


1. In a scanning apparatus for observing the temperature profile across an article as it is conveyed through a lehr, including a roof in said lehr and a pyrometer for observing said temperature profile, the improvement comprising:

a. a transversely elongated passageway extending through said roof;
b. a frame mounted on said roof adjacent said passageway;
c. pyrometer support means projecting into said passageway and movably mounted on said frame for reciprocation along the elongation of said passageway; and
d. closure means for continuously sealing said support means in said passageway as said support means is moved therealong.

3,849,100
TEMPERING GLASS SHEETS

Antonio Luppino, Willard, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Oct. 24, 1972, Ser. No. 299,970
Int. Cl. C03b *27/00*
U.S. Cl. 65—348 **3 Claims**



1. Apparatus for cooling glass sheets comprising a pair of plenum chambers, each having an inward facing, apertured wall facing an inward facing, apertured wall of said other plenum chamber in spaced relation thereto, means for supporting a glass sheet between said apertured walls in a given plane, means for imparting tempering medium under pressure to said plenum chambers for delivery through said apertured walls against the opposite surfaces of a heated glass sheet located therebetween, first means for supporting said plenum chambers for reciprocation in unison in planes substantially parallel to said given plane in a horizontal direction, second means for supporting said plenum chambers for reciprocation in unison in said substantially parallel planes in a vertical direction, drive means, means to selectively couple said drive means to said first support means to reciprocate said plenum chambers in unison in said horizontal direction, means to selectively couple said drive means to said second support means to reciprocate said plenum chambers in unison in said vertical direction, and means for operatively interconnecting said first and second support means to move said plenum chambers in unison in closed orbital paths when said drive means is selectively coupled by each of said coupling means to its respective said support means.

3,849,101
COOLING SYSTEM FOR GLASS FORMING MOLD

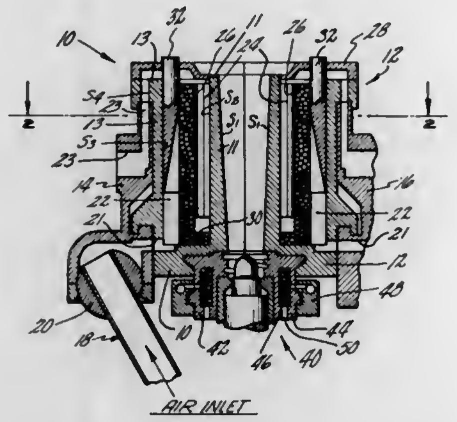
Frederick Joseph Wythe, Hebron, and George Dudley Mylchreest, Simsbury, both of Conn., assignors to Emhart Corporation, Bloomfield, Conn.
Filed Nov. 6, 1972, Ser. No. 304,207
Int. Cl. C03b *9/38*
U.S. Cl. 65—355 **11 Claims**

1. In a glassware forming machine the improvement comprising:

a. a cast iron mold cavity defining structure including inner wall means defining a glassware forming first surface which is adapted to contact the molten glass material and to remove heat therefrom, and said inner wall means defining a second cast iron surface spaced from the first so that heat is adapted to be conducted from said first surface generally toward said second surface,

b. outer wall means spaced from said inner wall means and defining a third surface spaced from said second surface, and an internal chamber between said second and third surfaces;

c. a porous metal filler material in said chamber and comprising generally spherical metallic particles which have been brazed to one another for improved heat conduction between the particles, and defining interstices between adjacent particles for preserving the porosity of said filler,



d. said metallic particles being brazed to said second cast iron surface by the same metallic brazing alloy used to braze said particles to one another so as to not only improve the heat conduction between the particles, but also between the particles and said cast iron inner wall means;

e. and means defining a fluid inlet and an outlet opening for passing a coolant fluid through said interstices in said porous metal filler material to cool the particles and in turn to cool the inner wall means which defines said glassware forming first surface.

3,849,102
PLANT GROWTH REGULANT METHOD

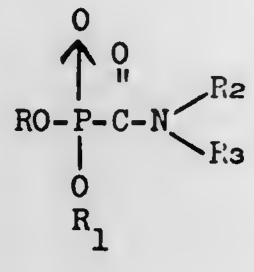
Harry C. Bucha, and William P. Langsdorf, Jr., both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 850,220, Aug. 14, 1969, abandoned. This application May 18, 1972, Ser. No. 254,670

Int. Cl. A01n

U.S. Cl. 71—76 **10 Claims**

1. A method for retarding the growth rate of plants while causing little or no apparent damage to the plants which comprises applying to said plant a growth retardant effective amount of a compound of the formula



where

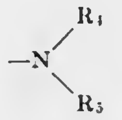
R is selected from the group consisting of alkyl of one through eight carbon atoms, chloroalkyl of two through eight carbon atoms containing up to three chlorine atoms, bromoalkyl of two through eight carbon atoms containing up to three bromine atoms, alkoxyalkyl of three through ten carbon atoms, total, alkenyl of two through eight carbon atoms, alkynyl of three through four carbon atoms, phenyl or benzyl;

R_1 is selected from the group consisting of alkyl of one through eight carbon atoms, chloroalkyl of two through eight carbon atoms containing up to three chlorine atoms, bromoalkyl of two through eight carbon atoms containing up to three bromine atoms, alkoxyalkyl of three through ten carbon atoms, total, alkenyl of two through eight carbon atoms, alkynyl of three through four carbon atoms, phenyl or benzyl;

R_2 is selected from the group consisting of hydrogen, alkyl of one through four carbon atoms, hydroxyalkyl of two through four carbon atoms, alkenyl of three through four carbon atoms or alkylnyl of three through four carbon atoms;

R_3 is selected from the group consisting of hydrogen, alkyl of one through four carbon atoms, hydroxyalkyl of two through four carbon atoms, alkenyl of three through four carbon atoms or alkynyl of three through four carbon atoms;

R_2 and R_3 can be taken together to form a bridge consisting of $—(CH_2)_2—O—(CH_2)_2—$ or $—(CH_2)_n—$ where *n* is 4, 5 or 6; and one of R_2 or R_3 can be



where

R_4 is hydrogen or alkyl of one through four carbon atoms and

R_5 is hydrogen or alkyl of one through four carbon atoms.

3,849,103
PLANT FOODS

Frederick John Harris, and John Stewart Raitt, both of Edinburgh, Scotland, assignors to Scottish Agriculture Industries Limited, Edinburgh, Scotland

Division of Ser. No. 807,908, March 17, 1969, Pat. No. 3,733,192. This application Oct. 30, 1972, Ser. No. 301,770

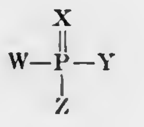
Claims priority, application Great Britain, Mar. 28, 1968, 14966/68; Apr. 29, 1968, 20217/68

Int. Cl. A01n *21/02, 9/36*

U.S. Cl. 71—77 **15 Claims**

1. A process of enhancing plant growth which comprises applying to crop plants, in an amount effective to enhance the yield of the crop by action on the plant metabolism, a compound selected from the group consisting of

1. compounds of formula:



$$W—\overset{\overset{\displaystyle X}{\|}}{\underset{\underset{\displaystyle Z}{|}}{P}}—Y$$

wherein X is selected from the group consisting of oxygen and sulphur; W is selected from the group consisting of c_2–C_{10} alkyl and the 4,6 bisphosphonyl-2-s-triazinyl radical; Y is selected from the group consisting of hydroxy, amino and a radical defined for W; and Z is selected from the group consisting of hydroxyl and amino; and

2. non phytotoxic salts and esters thereof.

3,849,104
CONTROL OF AESCHYNOMENE SP. WITH COLLETROTRICHUM GLOEOSPORIOIDES PENZ. F. SP. AESCHYNOMENE

James T. Daniel; George E. Templeton, both of Fayetteville, and Roy J. Smith, Jr., Stuttgart, all of Ark., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 17, 1973, Ser. No. 351,934

Int. Cl. A01n *9/00*

U.S. Cl. 71—65 **1 Claim**

1. A process for controlling northern jointvetch weeds comprising inoculating the weed with an amount of the fungus *Colletotrichum gloeosporioides* f. sp. *aeschynomene* sufficient to infect and kill the weed.

3,849,105
GRANULAR PESTICIDE

Verle W. Woods, P.O. Box 1016, Yakima, Wash. 98901

Continuation-in-part of Ser. No. 629,102, April 7, 1967, abandoned. This application Jan. 21, 1970, Ser. No. 4,771

Int. Cl. A01n *19/00, 5/00*

U.S. Cl. 71—65 **6 Claims**

1. A method of producing a granular pesticide formulation from an oleaginous suspension of a solid, water-insoluble pesticide dispersed in a continuous water phase, said method comprising the following steps:

spraying the suspension onto the surfaces of a free-flowing granular water-absorbent carrier substance that is inert to the pesticide and suspension components and that is adequately absorbent to cause the surface suspension sprayed thereon to invert, said spraying being accomplished while subjecting the granular carrier substance to a tumbling action;

and terminatng the tumbling of the granular carrier substance after spraying of the suspension thereon, permitting the sprayed granular carrier substance to cure at rest during absorption of the suspension components, whereby the suspension remaining on the sprayed surfaces of the granular carrier substance inverts.

3,849,106
HERBICIDAL COMPOSITION AND METHOD

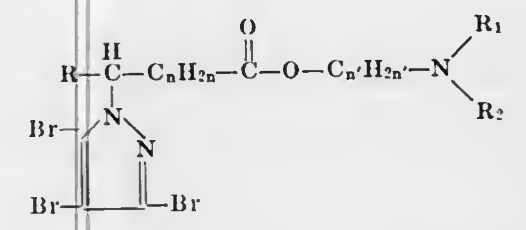
Gabriel Kornis; Arnolds Steinhards; Eldon George Nidy, and Henry J. Vostral, all of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 4, 1970, Ser. No. 16,577

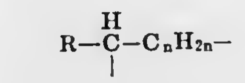
Int. Cl. A01n *9/22*

U.S. Cl. 71—92 **6 Claims**

1. The method of controlling weeds and regulating the growth of plants which comprises applying to a situs and to growing plants a herbicidally effective and growth regulatory amount of a 2-(dialkylamino)-alkyl ester of a 3,4,5-tribromopyrazole-1-alkanoic acid of the formula:



wherein *n* is an integer 0, 1, 2, or 3; *R* is hydrogen, alkyl of from one to 10 carbon atoms, inclusive; the sum of the carbon atoms in the group



$$R—\overset{\displaystyle H}{\underset{|}{C}}—C_nH_{2n}—$$

being not more than 11; —C_7 H_{2n} — is alkylene of from two to eight carbon atoms, inclusive (*n'* being an integer from two to eight, inclusive); and R_1 and R_2 are lower-alkyl of from one to eight carbon atoms, inclusive.

3,849,107
HERBICIDE

Adolf Fischer, Mutterstadt, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/-Rhine, Germany

Filed July 13, 1971, Ser. No. 162,317

Claims priority, application Germany, July 28, 1970, 2037265

Int. Cl. A01n *9/22*

U.S. Cl. 71—92 **1 Claim**

1. A process for controlling the growth of unwanted plants which comprises applying a phytotoxic amount of a mixture of (a) N-propyl-N- -chloroethyl-2,6-dinitro-4-trifluoromethylaniline and (b) 1-phenyl-4-amino-5-chloropyridazone-(6), the weight ratio of a:b being in the range of 1:3 to 3:1.

3,849,108
METHOD OF RETARDING THE REGROWTH ON TREES

Richard W. Fields, Geneva, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed May 5, 1972, Ser. No. 250,555

Int. Cl. A01n *9/00*

U.S. Cl. 71—88 **10 Claims**

1. A method of retarding the regrowth of shoots in the vicinity of cut branches on trees which comprises applying to the cut surface of said tree a solution containing from about 0.005 to about 0.5 weight percent of a compound selected from the group consisting of 2-methoxy-3,6-dichlorobenzoic acid, sodium 2-methoxy-3,6-dichlorobenzoate, potassium 2-methoxy-3,6-dichlorobenzoate, furfuryl 2-methoxy-3,6-dichlorobenzoate and amine salts of 2-methoxy-3,6-dichlorobenzoic acid.

3,849,109
MIXED HERBICIDE COMPOSITION

Yoshiro Kato, Fukuoka, and Masaru Kado, Kanagawa, both of Japan, assignors to Mitsui Toatsu Chemicals Inc. and Kumiai Chemical Industry Co., Ltd., both of Tokyo, Japan

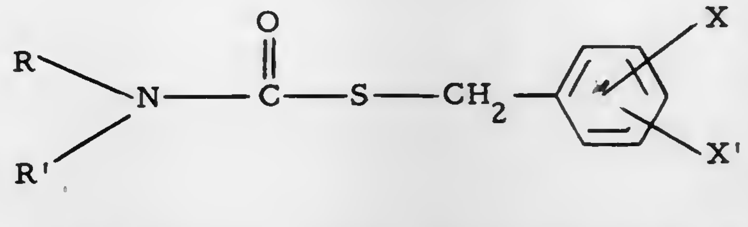
Filed Apr. 24, 1970, Ser. No. 31,777

Claims priority, application Japan, Apr. 24, 1969, 44-31282

Int. Cl. A01n *9/12*

U.S. Cl. 71—100 **10 Claims**

1. A mixed herbicide composition which comprises as an active ingredient, a herbicidal effective amount of a mixture of a thiocarbamate compound of the formula:

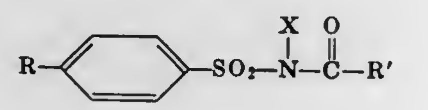


wherein R and R′ each represent a member selected from the group consisting of a $C_1—C_4$ alkyl group or R and R′ are each a propenyl group or R and R′ form a member selected from the group consisting of a piperidine ring and a morpholine ring together with a nitrogen atom; X and X′ each represent a member selected from the group consisting of a hydrogen atom, a halogen atom, a methyl group and a $C_1—C_2$ alkoxy group; and either 4-nitro-2′, 4′, 6-trichlorodiphenyl ether or 4-nitro-2′, 4′-dichloro-6′-fluorodiphenyl ether; and an inert carrier, the thiocarbamate and ether compounds being present in a weight ratio of from 0.3 – 3:1.0.

3,849,110
HERBICIDAL METHOD EMPLOYING ARYL-SULFONYLUREAS OR SALTS THEREOF

Quentin F. Soper, and Granville B. Kline, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Filed Jan. 7, 1963, Ser. No. 249,581
Int. Cl. A01n *9/14*
U.S. Cl. 71—103 **11 Claims**

1. A method for inhibiting the growth of germinating grass seeds and of seedling grasses which comprises applying to a locus of said seeds and seedlings an effective amount of a compound having the following formula:



$$R-C_6H_4-SO_2-\overset{X}{\overset{|}{N}}-\overset{O}{\overset{\|}{C}}-R'$$

wherein R is a member of the group consisting of $—NO_2$, $—NH_2$, and $—NHCOR''$; R′ is a member of the group consisting of, amino, C_1–C_6 alkylamino, di(C_1–C_6 alkyl)amino, monocyclic arylamino, substituted monocyclic arylamino, and N-(C_1–C_6 alkyl)-N-monocyclic arylamino; R″ is a member of the group consisting of C_1–C_6 alkyl, C_1–C_6 haloalkyl, C_2–C_4 alkenyl, and C_2–C_4 haloalkenyl; and X is a member of the group consisting of hydrogen, the alkali metals, the alkaline earth metals and ammonium. $C_1 - C_4$ lower-alkyl substituted ammoniums.

3,849,111
METHOD FOR PURIFYING AND AGGLOMERATING PYRITE CINDERS

Per Gudmar Kihlstedt, Bromma, Sweden, assignor to AB Cold Bound Pellets, Djursholm, Sweden
Filed Dec. 16, 1969, Ser. No. 885,613
Claims priority, application Sweden, Dec. 20, 1968, 17612/68
Int. Cl. C21b *1/24;* **C22b** *1/00*
U.S. Cl. 75—2 **12 Claims**

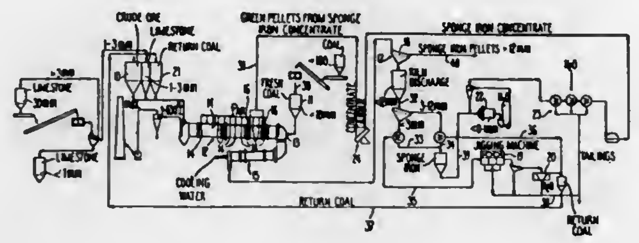
1. A method for purifying and agglomerating pyrite cinders, comprising (1) grinding the pyrite cinders, (in at least one grinding operation) (2) removing sulphide material from the ground pyrite cinders by flotation, (3) forming an aqueous mixture containing the ground and purified pyrite cinders and a binding agent comprising slaked lime, finely ground and slaked steel furnace slag, Portland cement, finely-divided silica, finely divided silicate containing material or mixtures thereof, (4) agglomerating the mixture and (5) heating the agglomerates for 1 to 24 hours in an atmosphere consisting essentially of steam, at a temperature of approximately 160° – 230°C and a pressure of approximately 10 – 70 atmospheres above atmospheric.

3,849,112
PELLETISING HAEMATITE IRON ORE FINES

Asoka Gupta, Burnpur, India, assignor to The Indian Iron & Steel Company Limited, Calcutta, Ind.
Continuation of Ser. No. 712,402, March 12, 1968, abandoned. This application Apr. 13, 1971, Ser. No. 133,748
Int. Cl. C21b *1/24*
U.S. Cl. 75—3 **4 Claims**

1. A process for treating iron ore to produce a sponge-iron agglomerate, comprising reducing iron ore in a rotary kiln in the presence of solid carbon, separating a sponge-iron product from the reduced ore product discharged from the kiln, grinding the sponge-iron product, magnetically separating a ground concentrate consisting essentially of sponge-iron from the ground product, adding to the sponge-iron concentrate additives consisting essentially of hydrated lime and water, said hydrated lime and water being present in an amount effective to permit pelletization of said concentrate with the hydrated lime the binder for the pellets, agglomerating by rolling same into pellets consisting essentially of sponge-iron concentrate and hydrated lime and water, and heating the pellets to harden same, the weight percent of the composition of the pellets prior to heating being about as follows:

concentrate	81.1%
hydrated lime	8.9%
total water	10.0%.



3,849,113
PROCESS FOR THE PRODUCTION OF CRUDE FERRONICKEL

Thomas E. Ban, South Euclid, Ohio, assignor to McDowell-Wellman Engineering Company, Cleveland, Ohio
Filed June 12, 1973, Ser. No. 369,169
Int. Cl. C22b *1/24*
U.S. Cl. 75—3 **1 Claim**

1. A process for producing crude ferronickel from lateritic ore comprising:

1. forming moist pellets ⅜ inch to ¾ inch in diameter and consisting of uniformly blended finely divided lateritic ore and finely divided solid carbonaceous fuel, the amount of said fuel being only slightly more than stoichiometrically required to reduce the nickeliferous moiety of the ore;
2. charging moist pellets to a traveling grate to a bed depth of from 6 – 12 inches;
3. drying said pellets by passing hot oxygen-depleted gas at 400° – 800°F through the bed at a rate of 250 – 400 SCFM/sq. ft. of grate area for a period of time sufficient to reduce the moisture content to no more than about 3 percent by weight;
4. firing said dried pellets with hot oxygen-depleted gas at 1,500° – 2,400°F for 15 – 40 minutes at a rate of 100 – 250 SCFM/sq. ft. of grate area to yield hot oxide-containing pellets in which at least 95 percent of the Ni is reduced to metal;
5. charging the hot pellets to an electric arc furnace to separate the metal from the oxide constituents.

3,849,114
PROCESS FOR PRODUCING HIGH CARBON FERROCHROME

Toyozi Yoshida; Kazuhisa Ushiyama, and Minoru Yamanaka, all of Tokuyama, Japan, assignors to Showa Denko Kabushiki Kaisha and Shunan Denko Kabushiki Kaisha, both of Tokyo, Japan
Filed Sept. 14, 1973, Ser. No. 397,359
Int. Cl. C22b *1/14;* **C21b** *1/08*
U.S. Cl. 75—3 **2 Claims**

1. A process for producing high carbon ferrochrome which comprises feeding continuously to an electric-arc furnace a charge mixture consisting of sintered pellets obtained by the reductive calcination of chrome ores, said pellets being those in which about 80 – 50 mol percent of the total content of the oxygen combined with iron and chromium components has been removed and the two components are in the acid-soluble from and about 20 – 50 mol percent, without having been removed and the two components remain in the form of acid-insoluble oxides, and containing substantially no free carbon, and a granular carbonaceous reducing material of particle sizes not greater than 100 mm, at least 70 percent by weight thereof being of sizes in the range of about 20 – 100 mm, said carbonaceous material being fed in an amount equal to 0.7 – 1.4 times the stoichiometric amount required to reduce the oxides of iron and chromium remaining in said pellets to Fe_7C_3 and Cr_7C_3, respectively; and thereafter submitting said charge mixture in said electric-arc furnace continuously to a submerged electric-arc smelting operation to form the high carbon ferrochrome.

3,849,115
SINTERING PROCESS

Thomas Eugene Ban, South Euclid, Ohio, assignor to McDowell-Wellman Engineering Company, Cleveland, Ohio
Filed Mar. 24, 1972, Ser. No. 237,660
Int. Cl. C21b *1/10;* **C22b** *1/16*
U.S. Cl. 75—5 **8 Claims**

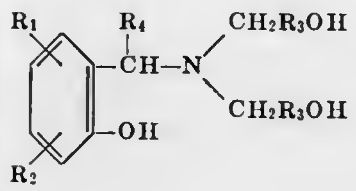
1. A process for sintering a burden of particles on a traveling grate which traverses a sintering zone and a cooling zone on the same strand, said burden comprising iron oxide, combustible carbonaceous material and water, said process comprising the steps of:

a. igniting the said iron oxide burden containing the water with a flame and moving the ignited burden into the sintering zone;
b. passing recycle oxygen-rich exhaust gas from the cooling zone through the burden to effect sintering of the ignited iron oxide burden in the sintering zone and to produce a relatively cold humid sinter exhaust gas;
c. moving said iron oxide burden from the sintering zone into the cooling zone;
d. recycling at least a portion of said relatively colder sinter exhaust gas through said burden at a downstream point to partially cool the sintered iron oxide; and burden to complete sintering and to relieve the gases of entrained combustible matter;
e. passing oxygen-rich gas through said iron oxide burden to further cool said burden, to increase the temperature of said gas and to yield an oxygen-rich recycle gas for recycling to said sintering zone.

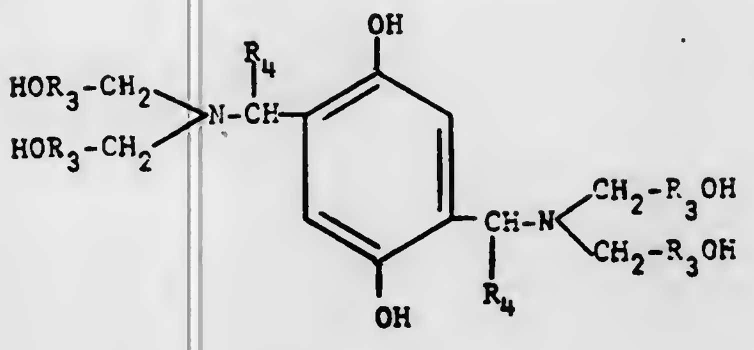
3,849,116
BORON BINDING PLANT GROWTH AGENTS

Ronald Swidler, and Harris M. Benedict, both of Pasadena, Calif., assignors to Stanford Research Institute, Menlo Park, Calif.
Filed July 23, 1971, Ser. No. 165,750
Int. Cl. A01n
U.S. Cl. 71—76 **7 Claims**

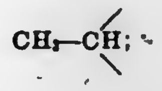
1. A method of dwarfing the growth of plants comprising the step of applying to the plants an effective amount of a compound of the formulae:



and



where R_4 is selected from hydrogen and lower alkyl of 1 to 10 carbon atoms; R_3 is selected from methylene, ethylene and



R_2 is selected from hydrogen, hydroxyl, halogen, alkyl, aryl, haloaryl, alkoxy, haloalkyl, carboxyl and p-hydroxydimethylbenzyl; R_1 is selected from hydrogen, hydroxyl and alkyl and R_1 and R_2 when joined together and taken with the benzene ring form naphthalene.

3,849,117
TREATMENT OF SLAGS COVERING MOLTEN METALS

Andrew Philpotts, Nechells, England, assignor to Foseco International Limited, Birmingham, England
Continuation of Ser. No. 861,476, Sept. 26, 1969, abandoned. This application May 22, 1972, Ser. No. 255,378
Claims priority, application Great Britain, Oct. 7, 1968, 47471/68
Int. Cl. C21b *3/04;* **C21c** *7/00;* **C22b** *9/10*
U.S. Cl. 75—24 **9 Claims**

1. In a process for separating slag covering molten metal from the molten metal, the improvement comprising incorporating in said slag an additive consisting essentially of pumice in an amount to coagulate and sufficiently thicken said slag into a semi-solid mass capable of being separated from the molten metal without any significant inclusion of the slag therein and thereafter separating the resultant thickened and coagulated, semi-solid slag from the surface of the metal.

3,849,118
PRODUCTION OF MAGNESIUM METAL

William A. Mod, Lake Jackson, and James H. Enos, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.
Continuation of Ser. No. 660,217, Aug. 14, 1967, abandoned. This application June 15, 1970, Ser. No. 48,880
Int. Cl. C22b *45/00*
U.S. Cl. 75—67 **5 Claims**

1. A process for preparing magnesium metal which comprises:

a. contacting at atmospheric pressure a magnesium halide compound with lime and a reducing agent selected from the group consisting of aluminum, aluminum-silicon compounds, aluminum silicides and mixtures thereof, at a temperature within a range of from about 700°C to about 1100°C for a sufficient period of time to reduce at least a portion of the magnesium halide to form molten magnesium metal, said lime being provided in an amount which at the minimum is stoichiometrically required to react with substantially all halides released from said magnesium halide during the reaction, and
b. recovering said molten magnesium metal.

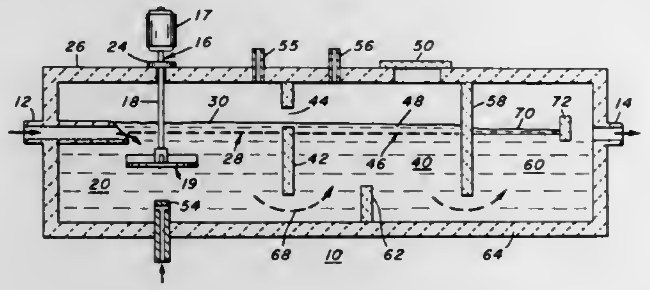
3,849,119
TREATMENT OF MOLTEN ALUMINUM WITH AN IMPELLER

Marshall J. Bruno, Greensburg; Noel Jarrett, Lower Burrell, and Burl L. Slaugenhaupt, Apollo, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 195,772, Nov. 4, 1971, Pat. No. 3,767,382. This application July 5, 1973, Ser. No. 376,703The portion of the term of this patent subsequent to Sept. 23, 1990, has been disclaimed.
Int. Cl. C22b *21/06*
U.S. Cl. 75—68 R **30 Claims**

1. A continuous method of treating molten aluminum containing one or more of the metallic impurities from the group

of the elements Sr, Li, K and Ca to decrease its content of oxide inclusions, hydrogen gas and one or more of said metallic impurities comprising the steps

a. continuously introducing said molten aluminum containing said metallic impurities into an agitated zone maintained by the action of a submerged rotating vaned impeller and containing a mixture of said molten aluminum and a reactive salt flux containing magnesium chloride, said molten aluminum being introduced substantially into the rotating impeller,



b. continuously moving a mixture comprising said molten aluminum and salt flux from said agitated zone to a separate quiet zone to substantially separate molten aluminum from the remainder of said mixture which remainder rises to form a floating salt flux-oxide layer above the separated molten aluminum,

c. recirculating salt flux from said floating salt flux-oxide layer in said quiet separation zone to said agitated zone, and maintaining in said recirculated salt flux a maximum oxide content of 20 weight percent,

d. removing a purified molten aluminum product containing reduced amounts of said metallic impurities.

3,849,120
SMELTING OF COPPER-IRON OR NICKEL-IRON SULFIDES

Telfer E. Norman, 37 Hillside Dr., Denver, Colo. 80215
Filed June 25, 1973, Ser. No. 373,471
Int. Cl. C22b *15/00*

U.S. Cl. 75—74 **14 Claims**

1. A process of smelting ore concentrates containing copper and iron sulfides or nickel and iron sulfides which comprises:

a. introducing said concentrates into a refractory lined smelting chamber, together with a siliceous flux, for smelting said concentrates and flux to a matte and slag at temperatures of 1,200° to 1,400°C;

b. controlling the rates of introduction of said concentrates and flux into said smelting chamber so that, after smelting, an iron silicate type slag containing between 25 and 40 percent SiO_2 is produced;

c. introducing a mixture of carbonaceous or hydrocarbon fuel, steam and an oxidizing gas containing about 50 to 95 percent free oxygen into said smelting chamber to provide the heat required for smelting, by combustion of said fuel with said oxidizing gas and to provide H_2O gas for chemical reaction above 700°C with iron sulfides in said concentrates and to provide an excess of said oxidizing gas over that required for complete combustion with said fuel;

d. controlling the relative rates at which said concentrates and flux and said mixture of fuel, steam and oxidizing gas are introduced into said chamber so that smelting temperatures of 1,200° to 1,400°C are attained and molten matte and slag at temperatures of about 1,200° to 1,400°C are produced;

e. so controlling the rate at which the steam in said mixture of fuel, steam and oxidizing gas is introduced into said chamber that the concentration of H_2O gas, in the mixed gases coming into reactive contact with said concentrates, is sufficient to react with one-quarter to two-thirds of the iron sulfides in said concentrates to produce iron oxides and H_2S;

f. so controlling the relative proportions of said excess of oxidizing gas in said mixture of fuel, steam and oxidizing gas that a chemical balance, within practical limits, of one mole of SO_2 for each two moles of H_2S is obtained in the exit gases from said chamber;

g. removing the mixed gases formed by or supplied to the smelting and combustion reactions, including S_2, H_2S, SO_2, CO_2, H_2O and N_2, from said chamber and cooling said gases to temperatures below the boiling point of elemental sulfur or below about 445°C, to permit the H_2S and SO_2 to react to produce elemental sulfur and water vapor; and

h. collecting said molten matte and slag on a hearth at the bottom of said smelting chamber, permitting said matte and slag to form a pool consisting of separate layers of matte and slag and withdrawing said matte and slag through suitably placed tapholes.

3,849,121
ZINC OXIDE RECOVERY PROCESS

W. Herbert Burrows, 2518 Boxewood Ct. N.E., Atlanta, Ga. 30345
Filed Nov. 30, 1971, Ser. No. 203,462
Int. Cl. C22b *3/00*

U.S. Cl. 75—103 **10 Claims**

1. A method for the selective recovery of various components from electric furnace flue dust which contains the oxides of zinc, iron, lead and copper, comprising the steps of:

a. treating said flue dust with an ammonium chloride solution maintained at an elevated temperature to form a solution comprising zinc chloride salt, a copper-ammonium complex, and lead chloride salt;

b. separating said solution from the undissolved iron oxide;

c. adding zinc metal to said solution whereby the copper and lead ions are displaced by said zinc and precipitate out of said solution as copper and lead metals; and,

d. lowering the temperature of said solution whereby the zinc component is precipitated therefrom as zinc oxide.

3,849,122
STAINLESS IRON BASE ALLOY METAL-TO-METAL HIGH SPEED SEALS

Glenn R. Gobble, and Richard G. Loebs, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Division of Ser. No. 299,103, Oct. 19, 1972,. This application Mar. 22, 1974, Ser. No. 453,846
Int. Cl. C22c *39/14*

U.S. Cl. 75—126 A **2 Claims**

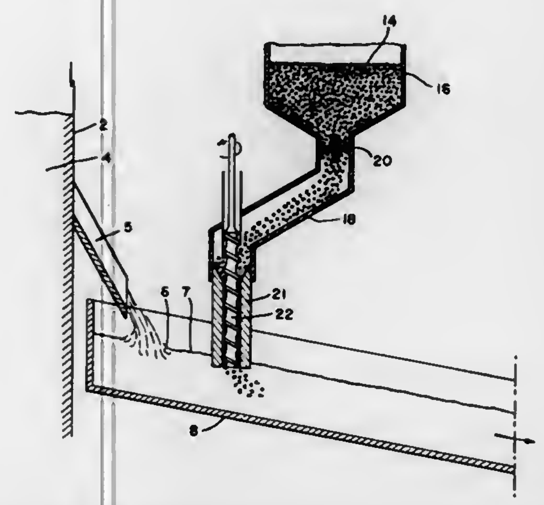
1. In stainless iron base metal-to-metal high speed seal constructions that include at least two face-to-face metal surfaces and wherein said surfaces are movable relative to each other, an alloy forming said surfaces consisting essentially of **3.1%** to **3.65%** carbon, **24%** to **27%** chromium, up to **0.9%** manganese, up to **1.50%** silicon, and the balance iron.

3,849,123
INCORPORATION OF SOLID ADDITIVES INTO MOLTEN ALUMINUM

Earle R. Webster, Jr., 213 Harvard Ave., Palmerton, Pa. 18071
Filed Nov. 7, 1972, Ser. No. 304,330
Int. Cl. C22c *1/06*

U.S. Cl. 75—138 **8 Claims**

1. A method for forming a fine grained aluminum solid by incorporating a master alloy containing aluminum and an intermetallic grain refiner into an aluminum melt comprising forming a stream of the aluminum melt and adding thereto beneath the surface of said stream said master alloy in the form of small particles and thereafter solidifying said aluminum melt, and wherein said particles are prepared by quickly chilling an atomized liquid solution of a master alloy containing aluminum and an intermetallic grain refiner, thereby providing particles, each of which contain many minute particles of the grain refiner carried in an aluminum matrix.



3,849,124
CAPACITOR POWDER

Gerard J. Villani, Needham, Mass., assignor to Norton Company, Worcester, Mass.
Continuation-in-part of Ser. No. 882,482, Dec. 5, 1969, Pat. No. 3,597,664. This application July 26, 1971, Ser. No. 166,220The portion of the term of this patent subsequent to Aug. 10, 1988, has been disclaimed.
Int. Cl. C22c *15/00*

U.S. Cl. 75—177 **6 Claims**

1. A powdered material of niobium-zirconium-titanium ternary alloy, in form suitable for manufacture into an electrolytic capacitor anode, the alloy having an essentially homogeneous crystal structure of a single body centered cubic alloy phase wherein the elements of the alloy are present in atomic percentages of from:

20 to 40% for niobium
30 to 60% for zirconium
20 to 40% for titanium.

3,849,125
METHOD OF SULPHUR ADDITION FUME CONTROL

William F. Finkl, Evanston, Ill., assignor to A. Finkl & Sons Company, Chicago, Ill.
Filed Mar. 26, 1973, Ser. No. 345,244
Int. Cl. C21c *7/00;* **C22c** *33/00*

U.S. Cl. 75—53 **2 Claims**

1. In a method of controlling sulphur fume generation during the addition of specification sulphur in the steelmaking process, the steps of

forming a heat of molten steel which requires the addition of sulphur to ensure achievement of a pre-determined sulphur level in the final product, said molten steel having the following nominal composition:

C	.47/.55
Mn	.95/1.30
S	.06/.10
Si	.35
Ni	.25
Cr	.50/.90
Mo	.10/.25
V	.03/.05

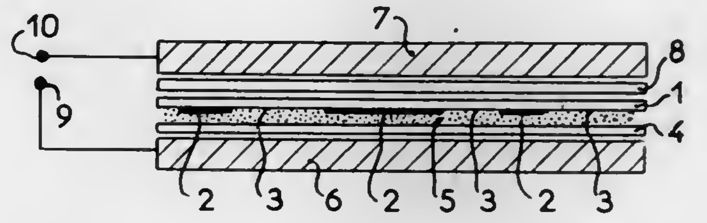
conditioning the molten steel prior to tap by removing slag whereby the steel is tapped in a substantially slag-free condition, and

then adding iron sulfide, as a source of sulphur to the tap vessel, while tapping the molten steel.

3,849,126
NON-ELECTROSTATIC METHOD FOR PRODUCING ELECTROGRAPHIC IMAGE

Marcus Cantarano, 47, Av. F. Roosevelt-Bat B, Thiais (94), France
Continuation of Ser. No. 631,792, April 18, 1967, abandoned. This application June 9, 1971, Ser. No. 151,489The portion of the term of this patent subsequent to Dec. 4, 1990, has been disclaimed.
Int. Cl. G03g *17/00*

U.S. Cl. 96—1 R **6 Claims**



1. A method for producing an electrographic image from an original provided with a conductivity pattern ranging from a portion having a greater conductivity to a portion having a lesser conductivity comprising the steps of:

a. interposing a thin uniform layer of electrically chargeable particles between a conductive image carrier and said conductivity pattern of said original,

b. disposing said original and said conductive image carrier between a first and a second electrode so that said original is interposed between said layer of electrically chargeable particles and said second electrode,

c. interposing a dielectric layer between said image carrier and said first electrode to insulate said conductive image carrier therefrom and

d. generating an alternating electric field of sufficient strength between said electrodes to charge said electrically chargeable particles whereby said particles receive electric charges having different maximum values according to the different conductivities of said portions of said conductivity pattern whereby the said electrically charged particles are attracted toward and away from said conductivity pattern of said original whereby a portion of said electrically charged particles are removed from said conductivity pattern and form an electrographic image on said image carrier and the remainder of said particles form an electrographic image on said original.

3,849,127
ELECTROSTATOGRAPHIC PROCESS IN WHICH COATED CARRIER PARTICLES ARE USED

Robert W. Madrid, Macedon, and Robert J. Hagenbach, Rochester, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Division of Ser. No. 27,114, April 9, 1970, which is a continuation-in-part of Ser. No. 585,739, Oct. 11, 1966,. This application Apr. 12, 1972, Ser. No. 244,254
Int. Cl. G03g *9/02*

U.S. Cl. 96—1 SD **3 Claims**

1. An electrostatographic imaging process comprising the steps of forming an electrostatic latent image on a recording surface and contacting said electrostatic latent image with a developer mixture comprising finely-divided toner particles electrostatically clinging to the surface of carrier particles, said carrier particles comprising particulate cores coated with an outer layer comprising from about 1 to about 20 microns in thickness of a blend of a polyphenylene oxide resin and a solid terpolymer of (1) from about 5 to about 94.5 percent, by weight, of an unsaturated silicon free organic compound, (2) from about 94.5 to about 5 percent, by weight, of an unsaturated silicon free organic compound different from the compound of (1), and (3) from about 0.5 to about 50 percent, by weight, of a polymerizable organosilicon compound selected from the group consisting of silanes, silanols, and siloxanes having from 1 to 3 hydrolyzable groups and an organic group attached directly to a silicon atom containing less than 8 carbon atoms and an unsaturated carbon to carbon linkage, the weight ratio of said polyphenylene oxide to said terpolymer being from about 90:10 to about 25:75, whereby at least a portion of said finely-divided toner particles are attracted to and held on said recording surface in conformance to said electrostatic latent image.

3,849,128
PROCESS FOR PRODUCING A DRUM PHOTOSENSITIVE MEMBER FOR ELECTROPHOTOGRAPHY

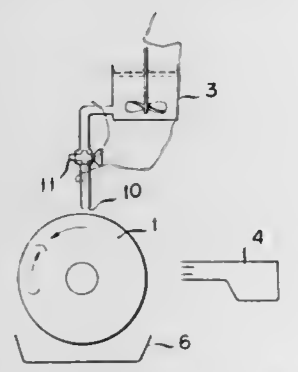
Takashi Ihara, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Ohta-ku, Tokyo, Japan

Filed Dec. 19, 1968, Ser. No. 785,122

Claims priority, application Japan, Dec. 30, 1967, 42-85219

Int. Cl. G03b *5/08;* **B05b** *13/06*

U.S. Cl. 96—1.5 **8 Claims**



1. A method for providing a drum member for electrophotography comprising the steps of:

a. providing a drum having an electrically conductive surface;

b. while rotating said drum, applying to the surface thereof a film of liquid comprising a mixture of particulate photoconductive material, a binder resin, a first solvent therefor, and a second solvent, said second solvent having a lower vapor pressure than said first solvent, said second solvent being employed in quantity sufficient to lengthen the evaporation time of the total solvent, said total solvent comprising said first and second solvents;

c. evaporating said first and second solvents from said photoconductive liquid film by applying heated air thereto to provide a solid photoconductive layer of less than 100 microns on said drum surface;

d. while rotating said drum, applying to the surface of said photoconductive layer a film of liquid containing electrically insulative translucent material and a solvent therefor; and

e. evaporating the solvent from said insulative liquid film by applying heated air thereto to provide a substantially imperforate solid translucent insulative layer on said photoconductive layer.

3,849,129
ELECTROPHOTOGRAPHIC ELEMENT CONTAINING Se-Te ALLOY LAYERS

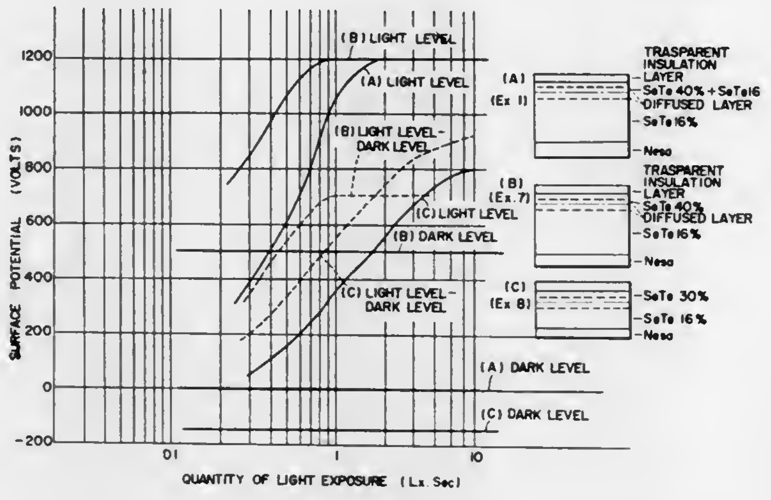
Koichi Kinoshita, Narashino, and Tadaji Fukuda, Tokyo, both of Japan, assignors to Katsuragawa Denki Kabushiki Kaisha, Tokyo-to, Japan

Continuation-in-part of Ser. No. 84,354, Oct. 27, 1970, abandoned. This application Nov. 30, 1972, Ser. No. 310,886

Int. Cl. G03g *5/00, 5/04*

U.S. Cl. 96—1.5 **9 Claims**

1. In a photosensitive element for use in the method of electrophotography wherein a first electric field is applied across a photosensitive element comprising an electroconductive layer, a photosensitive photoconductive layer consisting of a Se–Te alloy having a percentage of Te therein in the range of 0 to 25 mol percent manifesting persistent internal polarization and a highly insulative layer integrally bonded to said photosensitive photoconductive layer to deposit a charge of one polarity on the surface of said highly insulative layer, and a second electric field is applied across said photosensitive element to deposit a charge of the opposite polarity on the surface of said highly insulative layer concurrently with projection of a light image upon said photosensitive element whereby to form a latent image on the surface of said highly insulative layer corresponding to said light image, the improvement which comprises a layer at the interface between said photosensitive photoconductive layer and said highly insulative layer, said interfacial layer consisting of a mixture of first Se-Te alloy having a percentage of Te therein in the range of 20 to 50 mol percent and a second Se–Te alloy having a percentage of Te therein in the range of 0 to 25 mol percent, the percentage of Te in said first alloy being higher than that in said second alloy, and the ratio of said first alloy to said second alloy in said interfacial layer being in the range of from 1:1 to 1:2.



3,849,130
ORGANIC PHOTOCONDUCTIVE COMPOSITION AND ELECTROPHOTOGRAPHIC MEMBER

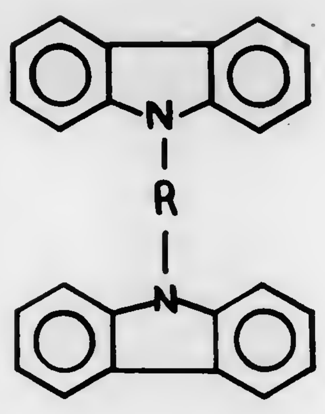
Jean-Pierre Montillier, Manchester, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 236,196, March 20, 1972, abandoned, and a continuation-in-part of Ser. No. 260,972, June 8, 1972, abandoned. This application Dec. 1, 1972, Ser. No. 311,222

Int. Cl. G03g *5/10*

U.S. Cl. 96—1.5 **8 Claims**

1. A photoconductive electrically insulating composition comprising a charge transfer complex of a dicarbazolyl compound of the formula:



wherein R is a cycloalkyl group, with a Lewis acid selected from the group consisting of 2,4,7-trinitro-9-fluorenone and 2,4,5,7-tetranitro-9-fluorenone, the mole ratio of dicarbazolyl compound to Lewis acid being from about 1:0.5 to 1:5, and from 5 to 50 percent by weight of a polymer selected from the group consisting of poly-N-vinyl carbazole and a halogenated poly-N-vinyl carbazole.

3,849,131
COLOR PHOTOGRAPHIC DIFFUSION TRANSFER PROCESS

Yoshinobu Yoshida, and Atsuaki Arai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 15, 1973, Ser. No. 388,670

Claims priority, application Japan, Aug. 17, 1973, 48-82274

Int. Cl. G03c *7/00, 5/54, 1/40, 5/30*

U.S. Cl. 96—3 **6 Claims**

1. A color photographic diffusion transfer process comprising

imagewise exposing a photographic material having at least one silver halide emulsion layer and a dye developer present adjacent to the silver halide in said silver halide emulsion layer and

treating said photographic material in superposed relation with an image receiving material with an alkaline processing solution whereby the dye developer at the exposed portions of the silver halide emulsion layer is immobilized and the dye developer at the unexposed portions of the silver halide emulsion layer is transferred by diffusion to the image receiving material, said treatment with said alkaline processing solution being in the presence of 6,6′,7,7′-tetrahydroxy-4,4,4′,4′-tetramethyl-bis-2,2′-spirocumarone.

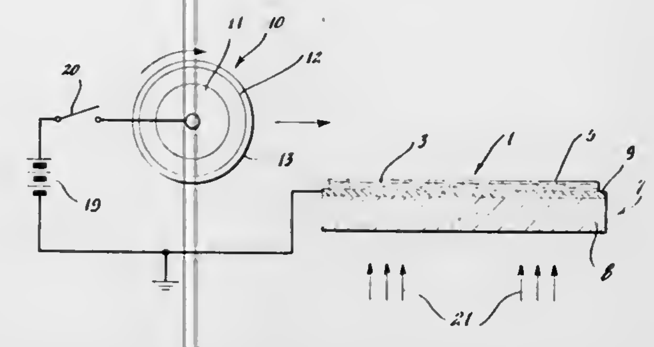
3,849,132
PHOTOELECTROPHORETIC IMAGING METHOD EMPLOYING A CHROMOGENIC REACTION

John B. Wells, Rochester, and Joseph Mammino, Penfield, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Jan. 4, 1973, Ser. No. 321,103

Int. Cl. G03g *5/00, 13/00, 17/00*

U.S. Cl. 96—1.3 **9 Claims**



1. An imaging method comprising the steps of:

a. providing a layer of an imaging suspension comprising finely divided chromogenic particles in an electrically insulating liquid between a pair of electrodes at least one of which is at least partially transparent, each of said particles comprising an electrically photosensitive pigment;

b. providing an image receiving layer comprising a co-reactant for the chromogenic material of said particle;

c. applying an electrical field across said suspension layer and exposing said layer to an imagewise pattern of activating electromagnetic radiation through said transparent electrode, wherein an image is formed on said image receiving layer; and

d. chromogenically reacting the chromogenic material of the particles with the co-reactant of the receiving layer.

3,849,133
PROCESS FOR FORMING PHOTOGRAPHIC IMAGES BY HIGH SPEED DIFFUSION TRANSFER PROCESS

Haruhiko Iwano; Mitsugu Tanaka; Tesuo Otsuki, and Atsuaki Arai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 20, 1971, Ser. No. 135,766

Claims priority, application Japan, Apr. 20, 1970, 45-33135

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 R **12 Claims**

1. In a process for forming photographic images by a high speed silver halide diffusion transfer process, the improvement which comprises using an aqueous developer containing a small amount of a highly active silver halide developing agent and a large amount of at least one phenol having substantially no silver halide developing activity.

3,849,134
COPPER (I) SALT-HYDROPHILIC BINDER LITHOGRAPHIC IMAGES

Ralph Kingsley Blake, Westfield, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 60,619, Aug. 3, 1970, Pat. No. 3,736,871, and a continuation-in-part of Ser. No. 864,867, Oct. 8, 1969, abandoned. This application Nov. 15, 1972, Ser. No. 306,621

Int. Cl. G03c *5/54;* **G03f** *7/02*

U.S. Cl. 96—29 L **10 Claims**

1. A transfer process for making lithographic images on a receptor which comprises

1. exposing imagewise a photographic element comprising a support bearing a layer of a dispersion of lightsensitive silver halide in a macromolecular organic protein colloid binder; developing the exposed layer with a silver halide developing agent to form a silver image; treating the developed silver image with an aqueous solution having a pH about 0.5 to 6 containing
   - a. a water-soluble, inorganiic copper salt yielding copper (II) ions in a concentration of 0.01 molar to about 2.0 molar,
   - b. a water-soluble, inorganic halide yielding a halogen ion forming a silver salt no more soluble in water than silver chloride in a concentration of 0.01 to 0.5 molar, to reduce copper (II) ions,
2. contacting the wet, treated, imaged surface with the surface of a receptor which comprises a macromolecular organic protein colloid on a support, and
3. separating the treated imaged surface from the receptor surface, said receptor surface being treated with an oleophilic compound which is on the treated imaged surface or which is applied after the treated imaged surface and receptor surface have been separated.

ERRATUM

For Class 96—35 see:
Patent No. 3,849,144

3,849,135
ETCH-BLEACHING TREATMENT OF EXPOSED AND DEVELOPED PHOTO PLATES AND FILMS

Jupp Karlikowski, Eurasburg, and Hans Michel, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 20, 1972, Ser. No. 308,112

Claims priority, application Germany, Dec. 10, 1971, 2161407

Int. Cl. G03c *5/00*

U.S. Cl. 96—36 **6 Claims**

1. A method of physically removing gelatin particles during etch-bleaching of exposed and developed photo-plates, films

and the like utilizing gelatin emulsions, said method comprising:

immersing the developed photo article in an etch-bleaching solution; and

applying an ultrasonic sound, for at least a period of minutes to the immersed photo article from an ultrasonic source to apply mechanical force to the gelatin particles of the photo article, whereby and subsequently washing the photo article, preferably with a period of applied ultrasonic sound, such particles are thereby physically removed completely therefrom.

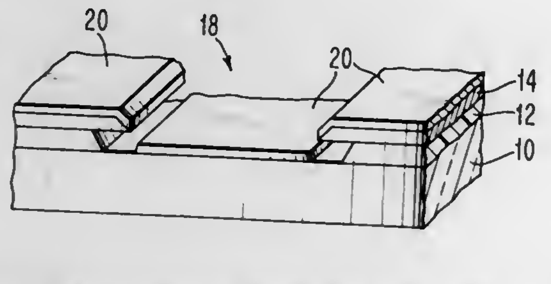
3,849,136
MASKING OF DEPOSITED THIN FILMS BY USE OF A MASKING LAYER PHOTORESIST COMPOSITE

Kurt R. Grebe, Beacon, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 31, 1973, Ser. No. 384,349

Int. Cl. G03c *5/00*; **B44d** *1/18*

U.S. Cl. 96—36.2 **18 Claims**



1. A method of depositing patterned thin films on a substrate, comprising:

forming a first layer of photosensitive material which can be patterned on said substrate,

forming a masking layer on said first layer,

patterning said masking layer to form openings therein which extend to said first photosensitive layer,

patterning said first photosensitive layer to form openings therein which extend to said substrate and which are aligned with said openings in said masking layer and of larger size than said openings in said masking layer, and depositing said thin films onto said substrate through said aligned openings using said masking layer as a deposition mask.

3,849,137
LITHOGRAPHIC PRINTING PLATES AND PHOTORESISTS COMPRISING A PHOTOSENSITIVE POLYMER

Helmut Barzynski, Lambsheim; Mong-Jon Jun, Ludwigshafen; Dietrich Saenger, Ludwigshafen, and Otto Volkert, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

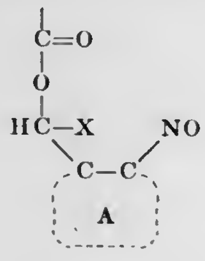
Filed Oct. 5, 1972, Ser. No. 295,146

Claims priority, application Germany, Oct. 12, 1972, 2150691

Int. Cl. G03c *1/70, 1/72*

U.S. Cl. 96—67 **2 Claims**

1. A lithographic printing plate comprising a support and a layer of a photosensitive coating material on said support, said material consisting essentially of a polymer having a molecular weight of more than 500 and containing in the molecule such an amount but at least 5% by weight, with reference to the molecular weight, of aromatic or heteroaromatic o-nitrocarbinol ester groups of the formula I:



(I)

where A denotes an aromatic or pyridine system having 5 to 14 ring members, X denotes hydrogen, an alkyl of 1 to 8 carbon atoms or an aryl or aralkyl that its exposed areas can be washed out after exposure with an alkaline solvent or solvent mixture used as developer in which the said coating material was insoluble prior to exposure.

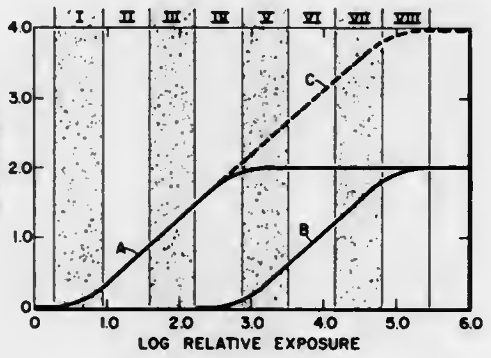
3,849,138
COLOR PHOTOGRAPHY

Charles W. Wyckoff, Needham, Mass., assignor to Applied Photo Sciences, Inc., Newbury, Mass.

Division of Ser. No. 876,626, Nov. 14, 1969, Pat. No. 3,663,228, which is a continuation-in-part of Ser. No. 445,496, April 9, 1965, abandoned, which is a continuation-in-part of Ser. No. 98,176, March 24, 1961, Pat. No. 3,450,536. This application Jan. 6, 1972, Ser. No. 215,878

Int. Cl. G03c *1/76, 3/00, 1/84, 7/16*

U.S. Cl. 96—74 **25 Claims**



1. A natural color photographic film comprising:

at least two groups of photosensitive emulsions, each group being sensitive to a different spectral region;

each of said groups comprising a plurality of emulsions of different effective speeds;

all of said emulsions being capable of producing a color image, and being characterized by D-log E curves of substantially equal slope, and being in photographically active relationship to each other to produce a single natural color image; and

the effective speed of one emulsion in each of said groups being such that it commences responding to impinging light as another emulsion in the same group approaches saturation.

3,849,139
POLYETHYLENE TEREPHTHALATE FILM FOR USE AS ROENTGENOGRAPHIC FILM BASE

Noburo Hibino; Kunihira Seto; Teruo Kobayashi, and Kazuo Inoue, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

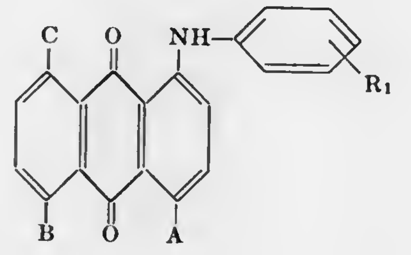
Filed Sept. 7, 1972, Ser. No. 287,209

Claims priority, application Japan, Sept. 9, 1971, 46-69853

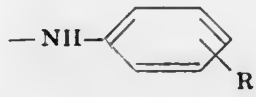
Int. Cl. G03c *1/84*

U.S. Cl. 96—84 R **3 Claims**

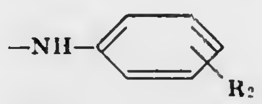
1. A roentgenographic photographic element comprising a base film comprising a film of polyethylene terephthalate and, incorporated therein, (a) at least one of 1-(p-benzyloxyanilino)-4-hydroxyanthraquinone or 1-(p-phenethyloxyanilino)-4-hydroxyanthraquinone, and (b) an anthraquinone derivative of the general formula



wherein A, B and C each is a hydrogen atom, a hydroxyl group or a



group with the proviso that A, B and C are not simultaneously hydrogen atoms, and when A is a



group or a hydroxyl group, B and C are not simultaneously hydrogen atoms; R_1 and R_2 are a hydrogen atom, a halogen atom, an ortho-substituted alkyl group or an alkoxy group, said base film having coated thereon an X-ray sensitive silver halide photographic emulsion.

3,849,140
DIFFUSION-RESISTANT DISPERSIBLE YELLOW COUPLERS FOR THE PRODUCTION OF PHOTOGRAPHIC COLOR IMAGES

Karl Kuffner, Unterhaching near Munich, and Hans Glockner, Pullach near Munich, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

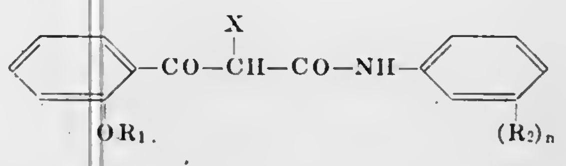
Filed Mar. 22, 1972, Ser. No. 236,972

Claims priority, application Germany, Mar. 25, 1971, 2114577

Int. Cl. G03c *1/40*

U.S. Cl. 96—100 **3 Claims**

1. A color photographic material which comprises at least one silver halide emulsion layer containing a yellow coupler of the formula



in which

R_1 represents a linear or branched hydrocarbon chain having at least 10 carbon atoms;

X represents chlorine;

R_2 represents halogen, cyano, $—R_3$, $—OR_3$, $—COOR_3$, $—CONH_2$, $—CONHR_3$, $—CON(R_3)_2$, $—SO_2R_3$, $—SO_2NH_2$, $—SO_2NHR_3$, $—SO_2N(R_3)_2$ or $—SO_2F$, and if two or more groups R_2 are present, they can be the same or different;

R_3 represents alkyl having 1 to 4 carbon atoms or aryl, and if two groups R_3 occur in the same radical, they can be the same or different; and

n represents 1, 2 or 3.

3,849,141
PULVERULENT METAL COATING COMPOSITIONS

Bert E. Palm, Mentor, and Alexander W. Kennedy, Chardon, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Oct. 18, 1972, Ser. No. 298,647

Int. Cl. C09d *5/10*

U.S. Cl. 106—1 **21 Claims**

1. In a pre-paint coating composition adapted for treating metal substrates and providing corrosion resistance thereto, said composition comprising liquid medium containing a hexavalent chromium-containing substance, a reducing agent and pulverulent zinc, the improvement comprising pulverulent zinc having particle size such that virtually all particles have size finer than 16 microns, with less than about 10 weight percent of said particles having size greater than 10 microns and with from about 5 to about 25 weight percent having size finer than 2 microns.

3,849,142
BARIUM- OR STRONTIUM-CONTAINING GLASS FRITS FOR SILVER METALLIZING COMPOSITIONS

Joel A. Conwicke, Youngstown, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 13, 1972, Ser. No. 314,602

Int. Cl. C09d *5/24*

U.S. Cl. 106—1 **5 Claims**

1. In a noble-metal composition comprising

35–85 percent of a noble-metal powder;

15–70 percent of a liquid vehicle;

2–10 percent of Bi_2O_3; and

2–6 percent of a glass frit binder: the improvement comprising, as said binder, a glass frit consisting essentially of,

8–65 percent BaO or SrO or a mixture of BaO and SrO;

15–75 percent CdO; and

3–45 percent of B_2O_3 or SiO_2 or a mixture of B_2O_3 and SiO_2, the amount of either said B_2O_3 or said SiO_2 not exceeding about 30 percent.

3,849,143
INK STORAGE COMPOSITION

James R. Hubbard, Moorestown, N.J., assignor to Graphic Controls Corporation, Buffalo, N.Y.

Filed Dec. 1, 1972, Ser. No. 311,351

Int. Cl. C09d *11/00*

U.S. Cl. 106—22 **12 Claims**

1. A composition consisting essentially of a viscous single phase, uniformly dispersed mixture of chrysotile asbestos fibers of grades 5-7 and a fluid ink comprising at least one polar solvent and a dye soluble therein, said fluid ink comprising at least 70 volume percent of said composition and being releasable from retention by said fibers in said single phase mixture by means of physical contact with a capillary ink delivery means.

3,849,144
LIGHT-SENSITIVE COMPOSITIONS COMPRISING POLYMERS CONTAINING DIARYLCYCLOPROPENE MOIETY AND PROCESS OF USING

Donald H. Wadsworth, and William C. Perkins, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 164,044, July 19, 1971, Pat. No. 3,779,989. This application Aug. 27, 1973, Ser. No. 392,168

Int. Cl. G03c *1/68, 1/70*

U.S. Cl. 96—35.1 **24 Claims**

1. A light-sensitive composition comprising

a light-sensitive polymer having a backbone which is the residue of a polymer comprised of repeating units at least 30 percent of which are characterized by containing an activated phenyl group and having attached directly to said phenyl group a diarylcyclopropene moiety,

and a solvent for said light-sensitive polymer.

3,849,145
CORDIERITE BINDER COMPOSITION

John J. Pitha, Lenox, Mass., assignor to General Electric Company

Division of Ser. No. 781,473, Dec. 5, 1968, Pat. No. 3,607,790. This application Oct. 19, 1970, Ser. No. 82,140

Int. Cl. Co3c *3/22*; **C04b** *33/26*

U.S. Cl. 106—39.6 **3 Claims**

1. A composition of matter, suitable for use as a binder, consisting essentially of a mixture of about 6 to 22.5 parts by weight of cordierite-forming glass material and about 8 to 46 parts by weight of cordierite-forming crystalline material, in

which the glass material is a fired and vitrified mixture of SiO_2, Al_2O_3 and MgO, the crystalline material being talc plus a member of the group consisting of a porcelain mixture and kaolin.

3,849,146
DIRECT-PRINT LIGHT-DEVELOPABLE SILVER HALIDE EMULSION CONTAINING CYCLIC DIOXIDE OR SELENONE AS SENSITIZER

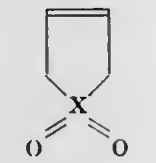
David W. Walters, Williamson; Robert E. Heeks, Penfield, and Donald P. Sullivan, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 2, 1973, Ser. No. 320,422

Int. Cl. G03c *1/28*

U.S. Cl. 96—107 **8 Claims**

1. A photosensitive direct-print light developable emulsion comprising silver halide grains, a binder, iodide and a cyclic compound having the general formula:



wherein X is selected from the group consisting of S and Se; and hydrogen and lower alkyl substitution products thereof; said cyclic compound being present in an amount effective to sensitize said emulsion.

3,849,147
SILVER HALIDE SUPERSENSITIZED PHOTOGRAPHIC EMULSION

Keisuke Shiba, and Akira Sato, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 49,981, June 25, 1970, Pat. No. 3,718,475. This application Jan. 10, 1973, Ser. No. 322,581

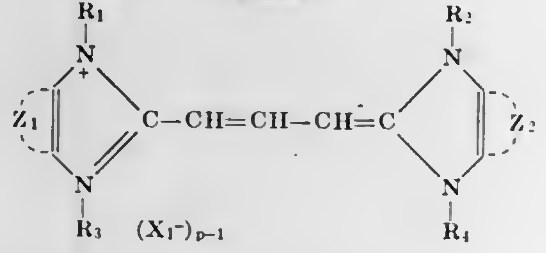
Claims priority, application Japan, June 25, 1969, 44-50118The portion of the term of this patent subsequent to Feb. 27, 1990, has been disclaimed.

Int. Cl. G03c *1/14*

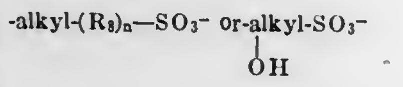
U.S. Cl. 96—124 **15 Claims**

1. A super-sensitized silver halide photographic emulsion wherein the light-sensitivity in the wavelength region of 500–530 mμ is increased containing at least one first sensitizing dye represented by the following formula I:

Formula I



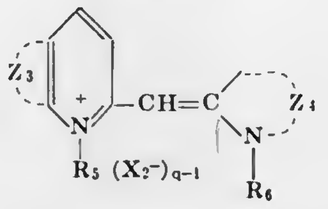
wherein R_1 and R_2, which may be the same or different, each represents an alkyl group, an aryl group or a substituted alkyl group with the substituent being vinyl, aryl, acetoxy, carboxy, sulfato, N-acetylsulfamyl or hydroxy; R_3 and R_4, which may be the same or different, each represents an alkyl group, a substituted alkyl group with the substituents being the same as in the substituted alkyl group of R_1 and R_2, an aryl group, a sulfoalkyl group or a substituted alkyl group having a sulfo group of the formula



$$\text{-alkyl-}(R_8)_n\text{—}SO_3^-\ \text{or-}\underset{\underset{OH}{|}}{\text{alkyl}}\text{-}SO_3^-$$

wherein R_8 represents an atomic group and *n* is an integer of at least 1; at least one of said R_3 and R_4 being sulfoalkyl or said substituted alkyl group having a sulfo group, the end carbon atom of said sulfoalkyl group or said substituted alkyl group having a sulfo group forming a covalent bond with the nitrogen atom of the heterocyclic nucleus; Z_1 and Z_2, which may be the same or different, each represents a non-metallic atomic group necessary to complete a heterocyclic nucleus of the benzimadazole series, said nucleus being unsubstituted or substituted with halogen, an N-unsubstituted or alkyl-substituted sulfamyl or carbamyl group, an N-disubstituted sulfamyl group, an alkyl sulfonyl group, a trifluoromethyl group, an alkyl group, a substituted alkyl group wherein the substituent is an aryl group or a carboxyl group, a cyano group, a phenyl group, a carboalkoxyl group, a hydroxyl group or an alkoxyl group; X_1^- represents an acid anion group and *p* is an integer of 1 or 2, being 1 when the dye of formula I forms an intermolecular salt; and at least 1 second sensitizing dye represented by the following formula II:

Formula II



wherein Z_3 represents a non-metallic atomic group necessary to complete a substituted or unsubstituted heterocyclic nucleus of the 2-quinoline series wherein the substituent is alkyl or halogen; Z_4 represents a non-metallic atomic group necessary to complete a benzoxazole nucleus, a naphthoxazole nucleus, a benzthiazole nucleus, a benzselenazole nucleus, a naphthothiazole nucleus or a naphthoselenazole nucleus, each of said nuclei being unsubstituted or substituted by an alkyl group or a trifluoromethyl group, a phenyl group, a halogen atom, an alkoxyl group or an alkoxyl group having a sulfo group; R_5 and R_6, which may be the same or different each represents an alkyl group, a substituted alkyl group with the substituents being the same as in the substituted alkyl group of R_1 and R_2, a sulfoalkyl group or said substituted alkyl group having a sulfo group; at least one of said R_5 and R_6 being a sulfoalkyl group or said substituted alkyl group having a sulfo group except where the heterocyclic nucleus completed by Z_4 has been substituted by a sulfoalkoxyl group; X_2^- represents an acid anion; and *q* is an integer of 1 or 2, *q* being 1 when the dye of formula II forms an intermolecular salt.

ERRATUM

For Class 106—39 see:
Patent No. 3,849,145

3,849,148
METHOD OF TREATING GLASS FIBERS TO IMPROVE ADHESION TO POLYOLEFINS

Chester S. Temple, Kennedy Twp., Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 63,830, Aug. 14, 1970, abandoned. This application Apr. 14, 1972, Ser. No. 243,992

Int. Cl. C03c *25/02;* **D06m** *13/00*

U.S. Cl. 106—287 SB **3 Claims**

1. An aqueous size suitable for application on glass fibers consisting of an aqueous emulsion consisting of 0.5 to 10 percent by weight of an organic-silane coupling agent, 0.1 to 6.0 percent by weight of a nonionic surfactant, 0.001 to 1 percent by weight of a glass fiber lubricant and 0.1 to 6 percent by weight of an organic peroxide, free radical initiator having a half life exceeding 60 hours at 212°F. and 20 minutes at 300°F.

3,849,149
MODIFICATION OF MINERAL SURFACES

Jean Drummond Swift, Olinda; David Geoffrey Hawthorne, South Oakleigh; Bryan Clarence Loft, Strathmore, and David Henry Solomon, Glen Waverley, Victoria, all of Australia, assignors to Commonwealth Scientific and Industrial Research, Campbell, Australia

Filed Feb. 1, 1972, Ser. No. 222,684

Claims priority, application Australia, Feb. 10, 1971, 3980/71; Feb. 10, 1971, 3982/71; Feb. 10, 1971, 3984/71; Feb. 10, 1971, 3986/71

Int. Cl. C09g *1/00*

U.S. Cl. 106—288 B **8 Claims**

1. An inorganic pigment or filler material consisting of a particulate inorganic mineral other than titanium dioxide having an acidic surface coating with a significant number of acidic sites with pKa values of less than 2.8 wherein the acidic surface coating comprises at least one material selected from the oxides, hydrated oxides, silicates and phosphates of multivalent metals.

3,849,150
PRODUCTION OF PIGMENT PASTES FOR PRINTING INK AND VARNISH PAINT

Klaus Schrempp, Ludwigshafen; Werner Jettmar, Mannheim; Rudolf Polster, Frankenthal, and Eduard Hartmann, Limbuergerhof, all of Germany, assignors to Badische Anilin & Soda Fabrik Aktiengesellschaft, Rheinland-Pfalz, Germany

Filed June 13, 1972, Ser. No. 262,352

Int. Cl. C08h *17/14*

U.S. Cl. 106—288 Q **7 Claims**

1. A process for the production of high tinctorial strength pigment pastes for printing inks and varnish paints without a previous conditioning of an initial agglomerate-forming finely particled crude pigment, which process comprises admixing said crude pigment, which has been distorted in crystallization and which is strongly agglomerated and whose primary particle size is less than 1 micron and whose BET surface area is within the range from 0.5 to 15 m^2/g, at room temperature to 200°C. in a liquid medium consisting essentially of an organic solvent suitable for said printing inks and varnish paints or a mixture of such solvents or a resin solution in such solvents, the ratio of crude pigment to liquid medium being from 1:100 to 1:0.5, and further mixing the resulting suspension consisting essentially of said pigment and said solvent at said temperature until the pigment exhibits optimum tinctorial properties as evidenced by a very uniform particle size and uniform distribution in said solvent.

3,849,151
FLOCCULATION OF KAOLIN SLURRIES WITH PHOSPHORIC ACID

William F. Abercrombie, Jr., Macon, Ga., assignor to J. M. Huber Corporation, Huber, Ga.

Filed July 2, 1973, Ser. No. 375,636

Int. Cl. C08h *17/06;* **C09c** *1/42*

U.S. Cl. 106—288 B **11 Claims**

1. In the method for producing high grade kaolin clay products which comprises leaching a dispersed kaolin clay water slurry with about 3 to about 10 pounds, per ton of clay, of a leaching agent capable of reducing the insoluble salts present in said slurry as impurities to their soluble form, flocculating said slurry with a flocculating agent, and dewatering the resultant slurry mixture to remove said soluble salts, the improvement comprising:

adding phosphoric acid as a flocculating agent to said slurry during the leaching step, said phosphoric acid being added in an amount sufficient to reduce the pH of the slurry to between about 2.5 to about 4.5, to thereby obtain a finished clay product that upon dispersion, possesses improved low viscosity and slurry stability characteristics.

3,849,152
POLYSILOXANE ENCAPSULATION OF PIGMENTS

Victor J. Mimeault, Shaker Heights, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Filed Nov. 6, 1972, Ser. No. 303,831

Int. Cl. C09c *1/34*

U.S. Cl. 106—308 Q **7 Claims**

1. Completely encapsulated pigment particles of improved dispersion, color strength, and heat and light stability for incorporation into a moldable polymeric resinous system, said pigment being a chrome-based pigment, and the encapsulation of said particles being a completely encompassing, continuous, adherent, protective envelope consisting essentially of a polysiloxane having a sufficient polymeric growth to be solid at room temperatures.

3,849,153
COLOR CORRECTING PROCESS

Lewis A. Giorgi, 286 New Main St., Yonkers, N.Y. 10701

Filed May 11, 1973, Ser. No. 359,415

Int. Cl. B23p *7/00*

U.S. Cl. 117—2 R **4 Claims**

1. A process for color-correcting areas of a color studio relief or other color photograph having applied colors which comprises applying anhydrous diacetone alcohol to selected areas of the photograph to be modified and then treating those areas with a selected dye soluble in diacetone alcohol but not in water, steaming the thus treated areas and treating said steamed photograph with a 50:50 mixture by volume of denatured alcohol and a stabilizer.

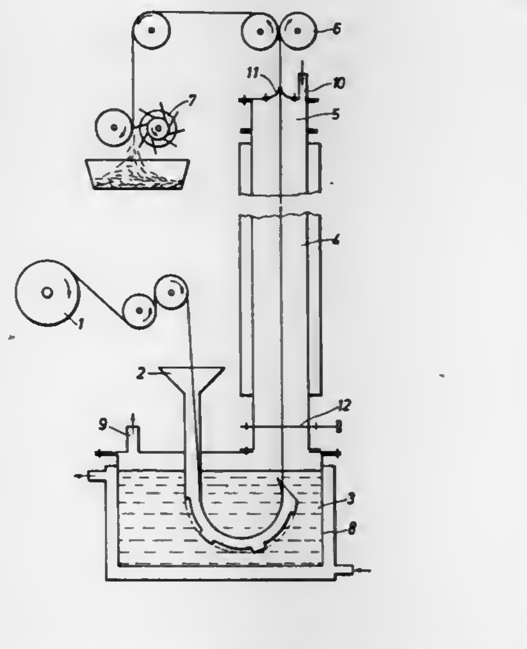
3,849,154
PROCESS FOR THE CONTINUOUS PRODUCTION OF FIBRE-REINFORCED POLYAMIDE MOULDING COMPOSITIONS

Dietrich Michael, Krefeld; Heinrich Gilch, Bonn-Ippendorf, and Wilhelm Hechelhammer, Krefeld, all of Germany, assignors to Farbenfabrik Bayer, Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 15, 1972, Ser. No. 234,907

Int. Cl. B32b *17/04;* **C03c** *25/02*

U.S. Cl. 117—4 **12 Claims**



1. A process for the continuous production of homogeneous fibre-reinforced polyamide molding compositions which com-

prises drawing a fibre structure through a melt of a normally foamable polymerisation mixture, which contains but is substantially unaffected by up to 0.3 percent by weight of water, and which comprises a commercial grade lactam containing at least four ring members, from 0.05 to 10 percent by weight, based on the lactam, of a catalyst selected from the group consisting of an alkali metal and an alkaline earth metal salt of formic acid and from 0.05 to 20 percent by weight, based on the lactam used, of an activator selected from the group consisting of an organic isocyanate and a masked organic isocyanate and impregnating said fibre structure with said polymerization mixture, thereafter guiding the impregnated structure through a reaction zone which has a temperature in the range from the temperature of the polymerization mixture to 350℃, and polymerizing the impregnated fibre structure in the reaction zone, cooling the polymerized structure thus obtained and thereafter chopping it into a granulate free of foam bubbles.

3,849,155
BRIGHTENING OF POLYACRYLONITRILE WET TOW

Gottfried Eigenmann, Therwil; Leo Kaiser, Aesch, and Christian Luethi, Muenchenstein, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

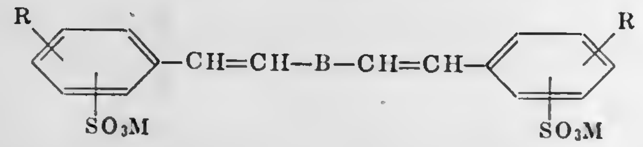
Filed June 8, 1972, Ser. No. 260,786

Claims priority, application Switzerland, June 18, 1971, 8929/71

Int. Cl. C09b *23/14;* **C09k** *1/60*

U.S. Cl. 117—7 **9 Claims**

1. A process for providing brightened polyacrylonitrile stretched fibres, comprising treating the fibres in the gel state in a bath which contains at least one compound of the formula



wherein B is 4,4′-biphenylene, 1,4-phenylene or 2,6-naphthylene, R is hydrogen, alkyl with 1 to 4 carbon atome, halogen, —SO_3M or alkoxy with 1 to 4 carbon atoms located in the ortho- or meta-position to the bridge member and M denotes the hydrogen, alkali metal, ammonium or amine salt ion, the solubility of these compounds in water at 90℃ being at least 10 g/l and drying the treated fibers.

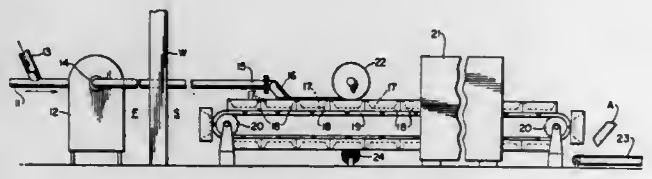
3,849,156
PROCESS FOR PROVIDING A BACKING ON CARPETS

Lawrence Marlin, Yorktown Heights, and Eric George Schwarz, Somers, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. Nos. 795,694, Jan. 31, 1969, abandoned, and Ser. No. 199,170, Nov. 16, 1971, abandoned, which is a continuation-in-part of Ser. No. 795,406, Jan. 31, 1969, abandoned, and Ser. No. 795,674, Jan. 31, 1969, abandoned. This application Aug. 11, 1972, Ser. No. 279,887

Int. Cl. B44c *1/02*

U.S. Cl. 117—10 **24 Claims**



1. A process for providing a backing on a carpeting material which comprises:

I. forming a substantially non-aqueous mixture comprising
  a. an organic polyisocyanate,
  b. a polyhydroxyl-containing compound substantially reactive with said polyisocyanate only at a temperature of at least 70℃. to form a polyurethane,
  c. an organosilicon surfactant for structurally stabilizing the froth produced according to step (II) below, during the period that the liquid phase of said froth is chemically stable and until said froth is cured by heating to a temperature of at least 70℃. to produce a cured foam, and
  d. a catalyst having substantial catalytic activity in the curing of said mixture only at temperatures of at least 70℃.;

II. substantially uniformly dispersing inert gas throughout the mixture by mechanical beating of said mixture to form a heat curable froth which is substantially structurally and chemically stable, but workable at ambient conditions, wherein
  i. said froth is free of auxiliary blowing agents;
  ii. components (a), (b), (c) and (d) above, present in the liquid phase of said froth are such that an unfrothed admixture containing only (a), (b), (c) and (d) in the same proportions (a), (b), (c) and (d) are present in the liquid phase of said froth is chemically stable to the extent that the admixture retains a viscosity of not greater than 10,000 cps fro about 2,600 seconds at 25°C. ± 0.5°C.;
  iii. said froth has a density of not greater than 45 percent of the density of the unfrothed liquid phase; and
  iv. a ¼ inch section of said froth is curable to a tack free conditions in not more than about 30 minutes at a temperature of 125°C.; and

III. applying said froth to the back of a carpeting material;

IV. shaping said froth into a desired shape; steps (III) and (IV) being carried out without initiating any substantial polymerization; and

V. heat curing the resultant shaped froth at a temperature of at least 70°C. to form a cured polyurethane foam backing on said carpeting material, any further expansion of said froth during heat curing being substantially only thermal expansion of said inert gas employed.

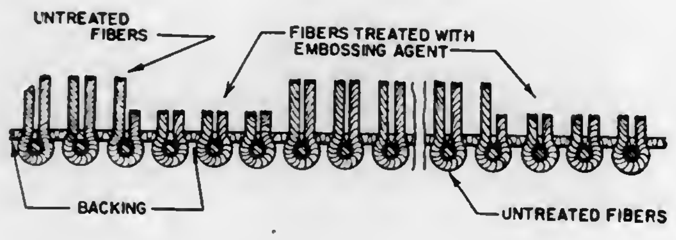
3,849,157
CARPET EMBOSSING IN REGISTER WITH PRINT

Leon B. Palmer, Little Falls, and Robert P. Conger, Park Ridge, both of N.J., assignors to Congoleum Industries, Inc., Kearny, N.J.

Filed Aug. 6, 1973, Ser. No. 386,047

Int. Cl. B44d *1/02, 5/02;* **D03d** *27/00*

U.S. Cl. 117—11 **30 Claims**



1. A process for producing an embossed effect on nylon pile fabric having a surface of nylon fibers which comprises,

applying to defined areas of the pile surface of said fabric a chamical embossing agent for said fibers,

said agent being blended into a liquid base vehicle and being a metal halide and an acid,

allowing said embossing agent in its vehicle to remain in contact with said fibers for a period of time and at a temperature sufficient to reduce the height of said pile, without deterioration of said fibers and, thereafter, effectively removing the embossed agent from the fabric,

said reduction in height of the fibers being in the area contacted by said embossing agent only and being a reduction sufficieint to display a significant embossed effect in the overall fabric.

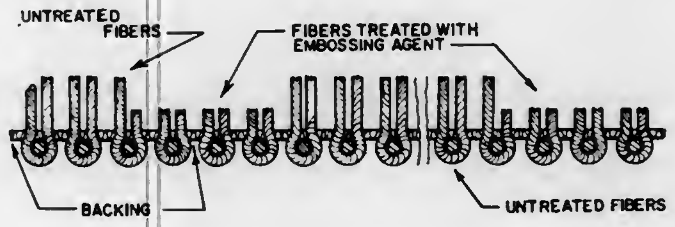
3,849,158
CARPET EMBOSSING IN REGISTER WITH PRINT

Leon B. Palmer, Little Falls, and Robert P. Conger, Park Ridge, both of N.J., assignors to Congoleum Industries, Inc., Kearny, N.J.

Filed Aug. 6, 1973, Ser. No. 386,037

Int. Cl. B44d *1/02, 5/02;* **D03d** *27/00*

U.S. Cl. 117—11 **27 Claims**



1. A process for producing an embossed effect on nylon pile fabric having a surface of nylon fibers which comprises,

applying to defined areas of the pile surface of said fabric a chemical embossing agent for said fibers,

said agent being an azole having a five membered heterocyclic aromatic ring or fused aromatic ring containing two or more heteroatoms, in the five membered ring, at least one of which is always nitrogen, blended into a liquid base vehicle, said liquid base vehicle also including an acid,

allowing said embossing agent in its vehicle to remain in contact with said fibers for a period of time and at a temperature sufficient to reduce the height of said pile, without deterioration of said fibers,

and, thereafter, effectively removing the embossing agent from the fabric,

said reduction in height of the fibers being in the area contacted by said embossing agent only and being a reduction sufficient to display a significant embossed effect in the overall fabric.

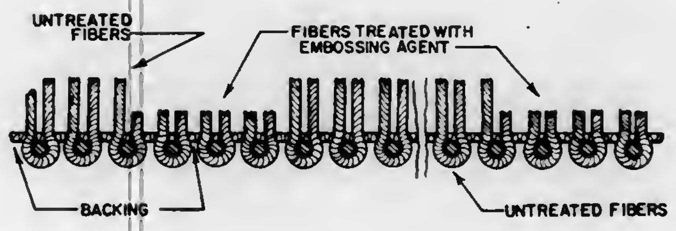
3,849,159
CARPET EMBOSSING IN REGISTER WITH PRINT

Leon B. Palmer, Little Falls, and Robert P. Conger, Park Ridge, both of N.J., assignors to Congoleum Industries, Inc., Kearny, N.J.

Filed Aug. 6, 1973, Ser. No. 386,048

Int. Cl. B44d *1/02, 5/02;* **D03d** *27/00*

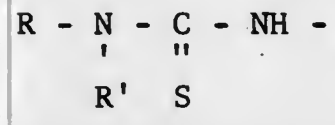
U.S. Cl. 117—11 **19 Claims**



1. A process for producing an embossed effect on nylon pile fabric having a surface of nylon fibers which comprises,

applying to defined areas of the pile surface of said fabric a chemical embossing agent for said fibers,

said agent being blended into a liquid base vehicle and corresponding to the following formula:



$$R - \underset{\displaystyle R'}{N} - \underset{\displaystyle S}{\overset{}{C}} - NH - R''$$

wherein R, R′ and R″ may be any combination of H, N-acetyl, methyl, ethyl, butyl, isopropyl, pentyl, or hexyl, said aqueous base vehicle also including an acid,

allowing said embossing agent in its vehicle to remain in contact with said fibers for a period of time and at a temperature sufficient to reduce the height of said pile, without deterioration of said fibers and, thereafter, effectively removing the embossing agent from the fabric,

said reduction in height of the fibers being in the area contacted by said embossing agent only and being a reduction sufficient to display a significant embossed effect in the overall fabric.

3,849,160
COATING WITH PULVERULENT MIXTURES OF HYDROXY CONTAINING POLYMERS AND ϵ-CAPROLACTAM MASKED POLYISOCYANATES

Rolf Dhein; Hans Rudolph; Hans-Joachim Kreuder, all of Krefeld-Buckum, and Herbert Gebauer, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 215,110, Jan. 3, 1972, abandoned, which is a continuation-in-part of Ser. No. 78,217, Oct. 5, 1970, abandoned. This application Dec. 26, 1972, Ser. No. 318,670

Claims priority, application Germany, Dec. 28, 1970, 2064098; May 8, 1971, 1957483

Int. Cl. B05b *5/02;* **B44d** *1/095*

U.S. Cl. 117—17 **6 Claims**

1. In the process of forming a continuous coating on an article by the steps of electrostatically spraying a pulverulent mixture of a hydroxyl group containing polymer having a softening point of at least 40℃. and a masked polyisocyanate onto the article and baking said sprayed pulverulent mixture at an elevated temperature to form said continuous coating, the improvement comprising employing as the masked polyisocyanate and ϵ-caprolactam masked polyisocyanate and a baking temperature of at least about 130℃.

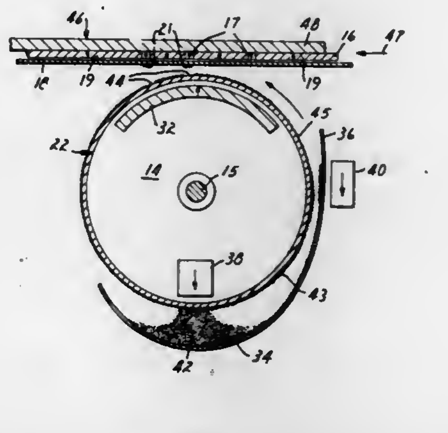
3,849,161
MAGNETIC TONER POWDER APPLICATOR

Bryan L. Klaenhammer, Hugo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 13, 1973, Ser. No. 388,049

Int. Cl. G03g *13/00;* **B05b** *5/02*

U.S. Cl. 117—17.5 **11 Claims**



1. A device for applying magnetic toner powder to a transfer sheet positioned adjacent to a master source document which is magnetized to provide a discrete external magnetic field pattern of one polarity extending through said transfer sheet and a remaining background area of an opposite polarity, said device comprising:

a roller sleeve rotatively coupled to a non-rotating roller support, said sleeve having an outer layer for carrying magnetic toner powder and for depositing said powder on a surface of said transfer sheet,

means non-rotatively coupled to the roller support for providing a magnetic bias field extending over a sector of said roller sleeve, wherein a major component of said magnetic bias field reinforces said one polarity of said magnetic field pattern and opposes said opposite polarity, thereby aiding the transfer of toner powder where said reinforcement occurs to produce a toner powder reproduction of said magnetic field pattern which is substantially free of toner powder deposition in said background area,

means for receiving a said master source document and transfer sheet in substantial contact with each other to have at least a portion of the surfaces of said document and sheet parallel to the axis of rotation of said roller sleeve,

means for transporting said contacted source document and transfer sheet with respect to said sector of the roller sleeve and for rotating said sleeve during said transporting, wherein the surface of said transfer sheet away from the source document is transported parallel to and spaced from the outer layer of the roller sleeve within said sector by a predetermined minimum distance of separation; and means for providing a magnetic field for removing excess toner powder from the outer layer of the sleeve to enable a uniform distribution of toner powder to remain on the outer layer, said powder distribution when adjacent to background areas within said sector being less than said predetermined minimum distance of separation.

3,849,162

PROCESS FOR PREVENTING THE STAINING OF POLYAMIDE FIBRE MATERIAL TREATED WITH FLUORESCENT WHITENERS

Volkmar Mueller, Arlesheim; Hans-Ulrich Berendt, Allschwil, and Melvin Harris, Arlesheim, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed May 30, 1972, Ser. No. 257,722

Claims priority, application Switzerland, June 7, 1971, 8274/71

Int. Cl. D06m *3/40*

U.S. Cl. 117—33.5 T **13 Claims**

1. A process for preventing the staining of optically-brightened synthetic polyamide fiber material, which comprises the step of applying to the fiber material at a temperature of 20° to 120°C (a) simultaneously with an optical brightener in organic solvent or (b) as an after-treatment of optically brightened fiber material, a preparation which contains a water-soluble fixing agent with affinity for the polyamide fibers, an organic solvent, and 0 to 10 percent of water, wherein the fixing agent is a polycondensation product of formaldehyde with an aryl sulphonic acid or a diarylsulphone, and wherein the optical brightening agent contains at least one water-solubilizing agent.

3,849,163

PROCESS FOR THE OPTICAL BRIGHTENING OF ORGANIC MATERIALS

Adolf Emil Siegrist, Basel; Peter Liechti, Binningen; Erwin Maeder, Aesch/Bl.; Leonardo Guglielmetti, Birsfelden; Hans Rudolf Meyer, and Kurt Weber, both of Basel, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

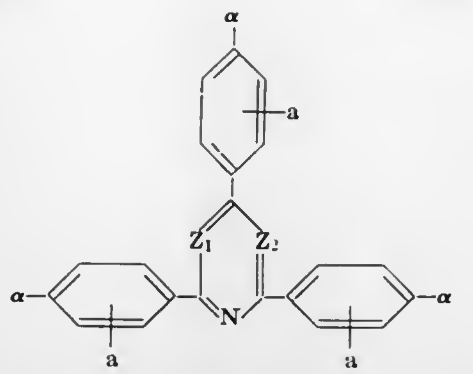
Division of Ser. No. 67,967, Aug. 28, 1970, Pat. No. 3,758,462, which is a continuation-in-part of Ser. No. 588,318, Oct. 21, 1966, abandoned. This application Oct. 5, 1972, Ser. No. 295,405

Claims priority, application Switzerland, Oct. 28, 1965, 14902/65; July 4, 1966, 9649/66

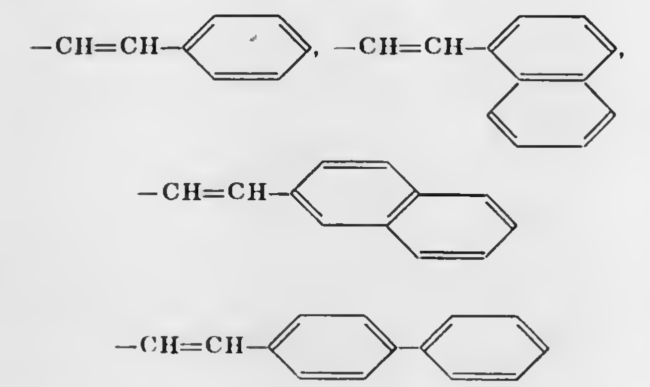
Int. Cl. D06p *5/00;* **C09b** *23/00*

U.S. Cl. 117—33.5 T **8 Claims**

1. Process for the optical brightening of organic materials, wherein there is incorporated in these materials or applied to their surfaces, 0.001–0.5 percent by weight of a compound of the formula



in which a represents hydrogen, halogen, the methyl group or the methoxy group, Z_1 and Z_2 each stands for a ring member =CH— or =N— and α for a hydrogen atom, phenyl or a radical of the series



or

in which (I) at least one radical α differs from hydrogen or phenyl and has the significance of one of the other radicals quoted for α, and in which (II) terminal phenyl or naphthyl in said α substituents are unsubstituted or substituted by 1 to 3 C_1–C_8-alkyl groups, 1 to 2 halogen atoms, a C_1–D_4-alkoxy group, a carboxylic acid, carboxylic acid ester or carboxylic acid amide group.

3,849,164

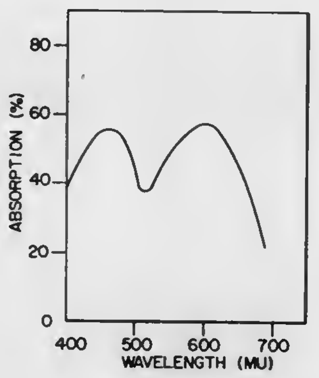
PRESSURE-SENSITIVE RECORD UNIT COMPRISING A MIXTURE OF TWO CHROMOGENIC COMPOUNDS

Helmut Schwab, Dayton; Troy Eugene Hoover, Kettering, and Chao-Han Lin, Dayton, all of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Division of Ser. No. 89,751, Nov. 16, 1970, abandoned. This application May 9, 1972, Ser. No. 251,842

Int. Cl. B41c *1/06*

U.S. Cl. 117—36.8 **13 Claims**

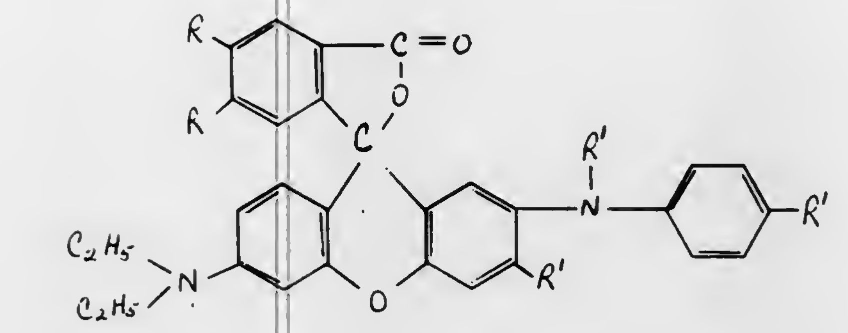


1. A pressure sensitive record unit comprising:

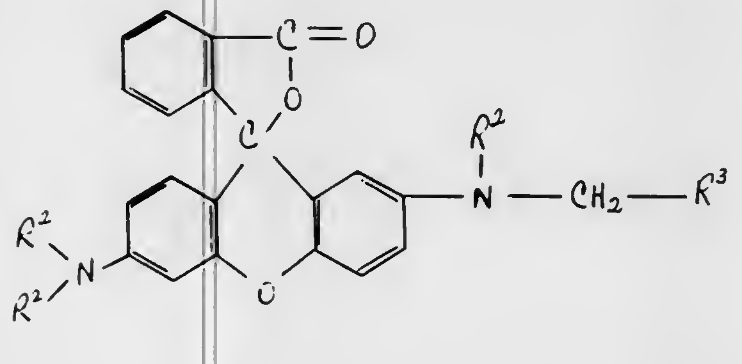
(a) support web or sheet material,

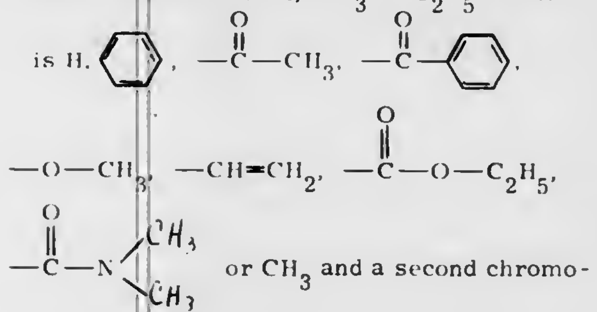
(b) mark-forming components and a releasable liquid solvent for said mark-forming components arranged in contiguous juxtaposition and supported by said sheet material,

(c) said mark-forming components consisting essentially of a mixture of two colorless but colorable chromogenic compounds wherein the first chromogenic compound has a generally green appearance and exhibitis two light absorption peaks—one in the range of 400 to 500 millimicrons and another in the range of 550 to 650 millimicrons—in its colored form and wherein the second chromogenic compound exhibits a single absorption peak in the range of 500 to 600 millimicrons in its colored form; the mixture, additionally, consisting essentially of a first chromogenic compound represented by the formula:

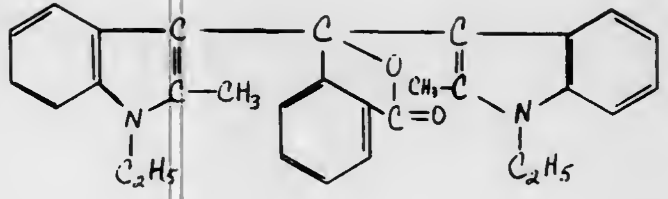


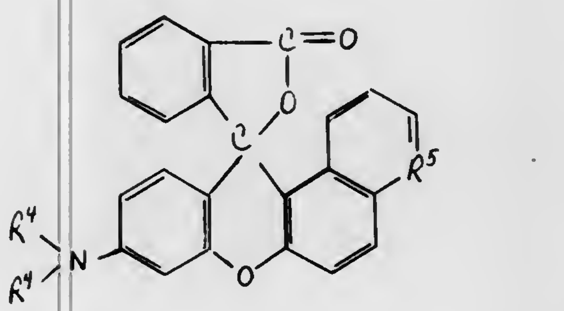
wherein each R is H or NO_2 and each R^1 is H, CH_3 or C_2H_5; or



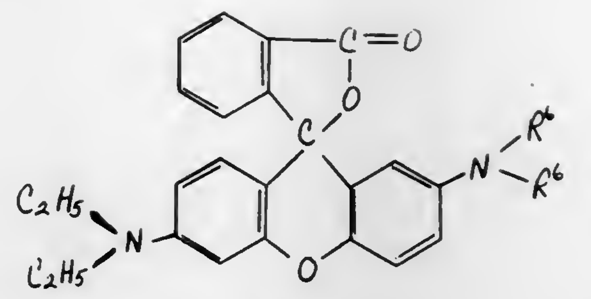


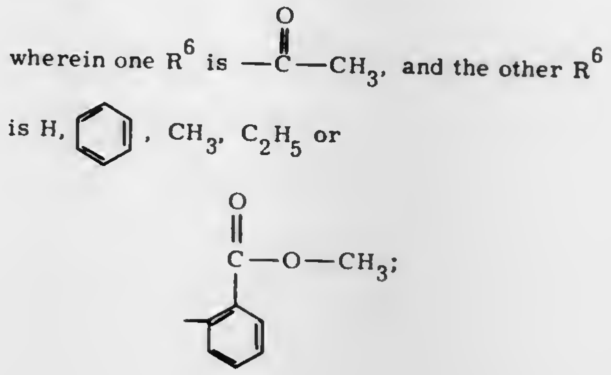
wherein each R^2 is H, CH_3 or C_2H_5 and R^3 is H, phenyl, $-\overset{O}{\overset{\|}{C}}-CH_3$, $-\overset{O}{\overset{\|}{C}}-C_6H_5$, $-O-CH_3$, $-CH{=}CH_2$, $-\overset{O}{\overset{\|}{C}}-O-C_2H_5$, $-\overset{O}{\overset{\|}{C}}-N(CH_3)_2$ or CH_3 and a second chromogenic compound represented by the formula:



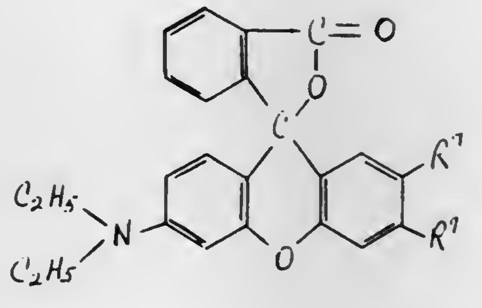


wherein each R^4 is H, CH_3 or C_2H_5 and R^5 is C or N;

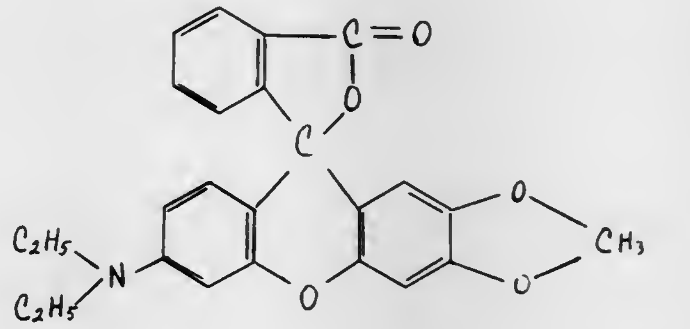




wherein one R^6 is $-\overset{O}{\overset{\|}{C}}-CH_3$, and the other R^6 is H, phenyl, CH_3, C_2H_5 or $-C_6H_4-\overset{O}{\overset{\|}{C}}-O-CH_3$;



wherein each R^7 is H, Cl, CH_3, C_2H_5 or $-S-CH_3$; or



wherein the mole ratio of the first chromogenic compound to the second chromogenic compound ranges from 1:5 to 5:1 and said mixture, on reaction with an acidic material, exhibits a neutral-colored form; and an electron-accepting material of the Lewis acid type reactive with said mixture to produce a mark; which components upon pressure-release of the liquid solvent are brought into reactive contact in the released solvent.

3,849,165

LIQUID ELECTROGRAPHIC DEVELOPMENT PROCESS

Frederick A. Stahly, August, and Stewart H. Merrill, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 149,851, June 3, 1971, Pat. No. 3,788,995. This application Aug. 13, 1973, Ser. No. 387,875

Int. Cl. G03g *9/04, 13/10*

U.S. Cl. 117—37 LE **14 Claims**

1. The process of developing electrostatic charge patterns carried on the surface of an electrographic element comprising the steps of forming said electrostatic charge patterns on said electrographic element and contacting said charge patterns with a liquid developer comprising an electrically insu-

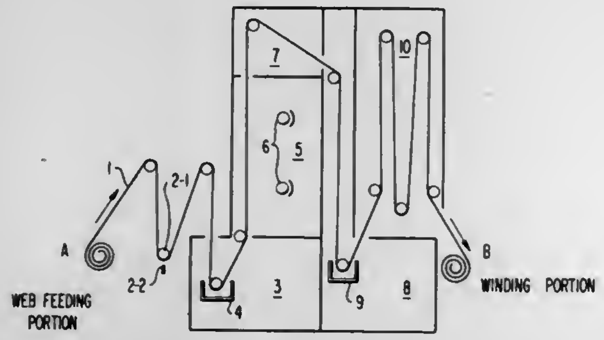
lating carrier liquid having a dielectric constant less than about 3 and a volume resistivity greater than 10^{10} ohm-cm. and at least one polymer to develop said charge patterns, said polymer containing at least two monomeric moieties, at least one of said monomeric moieties being a polar moiety present in an amount of at least about 1.5×10^{-4} moles/g. of said polymer and at least one other of said monomeric moieties being a moiety soluble in said carrier liquid, said polymer containing a sufficient amount of said soluble moiety to yield a dispersibility ratio for said polymer in the liquid carrier greater than about 0.825, and said polar moiety being selected from the group consisting of:

a. sulfoalkyl acrylates;
b. sulfoalkyl methacrylates;
c. metal salts of sulfoalkyl acrylates;
d. metal salts of sulfoalkyl methacrylates;
e. amine salts of sulfoalkyl acrylates;
f. amine salts of sulfoalkyl methacrylates;
g. metal salts of acids selected from the group consisting of acrylic and methacrylic acids; and
h. amine salts of acids selected from the group consisting of acrylic and methacrylic acids;

and mixtures thereof.

3,849,166
METHOD FOR PROVIDING SUBBING LAYER OF PHOTOGRAPHIC FILM

Takenori Omichi; Teppei Ikeda, and Shunichi Adachihara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Feb. 16, 1972, Ser. No. 226,704
Claims priority, application Japan, Feb. 17, 1971, 46-7238
Int. Cl. B44d *1/06, 1/092*
U.S. Cl. 117—47 A **4 Claims**



1. A method of providing a subbing layer for a photographic film comprising the steps of:

(a) providing a biaxially stretched and heat-set polyethylene terephthalate film support;
(b) treating the surface of said support to impart thereto a hydrophilic property;
(c) applying to said treated surface an aqueous solution of hydrogen peroxide or an aqueous solution of hydrogen peroxide further containing a water miscible solvent;
(d) applying ultraviolet rays to said treated surface while said surface is in a wet state from step (c); and
(e) applying a hydrophilic resin solution or gelatin dispersion in a mixed organic solvent containing a solvent or swelling agent for polyethylene terephthalate to the treated surface to form thereon said subbing layer.

3,849,167
PROCESS FOR GALVANIZING HIGH CARBON STEEL WIRE

Stephen D. Polc, and Charles F. Rhein, both of Independence, Mo., assignors to Armco Steel Corporation, Middeltown, Ohio
Filed Nov. 29, 1972, Ser. No. 310,569
Int. Cl. C23c *1/02, 1/12*
U.S. Cl. 117—51 **6 Claims**

1. In a process for galvanizing high carbon steel wire wherein the steel wire in normally clean condition is subjected to a final cold drawing operation prior to galvanizing utilizing a water-soluble soap, the improvement which comprises the step of passing the wire directly from the final drawing operation into a zinc-ammonium chloride flux bath having a concentration of from 8 to 20 degrees Baume and thereafter into the zinc coating bath with the elimination of a pickling and a rinse step following the final drawing.

3,849,168
CHEMICALLY FILLED POLYMERIC ARTICLES

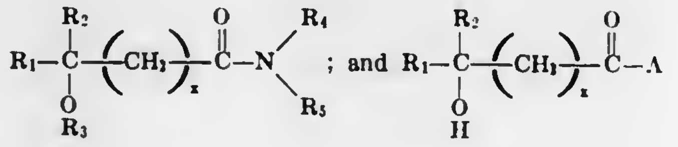
Henry Tice Hoffman, Jr., Trenton, N.J., assignor to American Can Company, Greenwich, Conn.
Continuation-in-part of Ser. No. 868,626, Oct. 22, 1969, abandoned. This application May 16, 1972, Ser. No. 253,775
Int. Cl. B44d *1/02*
U.S. Cl. 117—106 R **9 Claims**

1. The process for filling a continuous, apparently homogeneous, thin solid gas-permeable polymeric article comprising the step of diffusing two diffusion compounds in the gaseous state into said thin article individually from opposite sides thereof to effect reaction between said diffusion compounds within the said solid article and resultant deposition therewithin of an immobile reaction compound.

3,849,169
METHOD FOR PRODUCING WRINKLE FREE PERMANENTLY PRESSED CELLULOSIC TEXTILE MATERIALS

Robert J. Cicione, Cranston, R.I.; Edward G. Najjar, Lincoln, Mass.; Patricia M. Scanlon, Arlington, Mass.; John L. Ohlson, Bedford, Mass., and Joseph F. Finn, Hyde Park, Mass., assignors to W. R. Grace & Co., New York, N.Y.
Division of Ser. No. 195,844, Nov. 4, 1971, Pat. No. 3,827,994. This application Apr. 20, 1973, Ser. No. 353,160
Int. Cl. D21h *1/38*
U.S. Cl. 117—143 A **12 Claims**

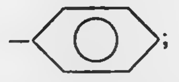
1. In a process for treating a cellulosic textile material with a cellulosic textile treating composition containing an aqueous solution of an aminoplast creaseproofing agent, the process comprising impregnating the cellulosic textile material with the aqueous solution of the aminoplast creaseproofing agent, drying the impregnated cellulosic textile material, and curing the aminoplast by heating the dried impregnated cellulosic textile material; the improvement comprising maintaining in said solution 0.5–35 percent of a material selected from the group consisting of:



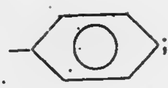
$$R_1-\underset{\underset{R_3}{|}}{\underset{O}{|}}{\overset{\overset{R_2}{|}}{C}}-\left(CH_2\right)_x-\overset{\overset{O}{\|}}{C}-N\begin{matrix}R_4\\ \\R_5\end{matrix}\ ;\ \text{and}\ R_1-\underset{\underset{H}{|}}{\underset{O}{|}}{\overset{\overset{R_2}{|}}{C}}-\left(CH_2\right)_x-\overset{\overset{O}{\|}}{C}-A$$

in which;

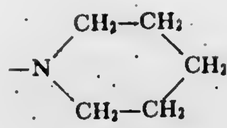
a. x is 0 or 1;
b. R_1 is hydrogen or an alkyl group having about 1–5 carbon atoms;
c. R_2 is hydrogen or an alkyl group having about 1–5 carbon atoms;
d. R_3 is hydrogen, an alkyl group having about 1–5 carbon atoms, or $—SO_3^-$;
e. R_4 is hydrogen, an alkyl group having about 1–8 carbon atoms, $—CH_2CH_2OH$; or

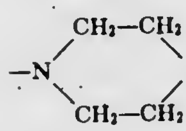
—;

f. R_5 is hydrogen, an alkyl group having about 1–8 carbon atoms, $—CH_2CH_2OH$;

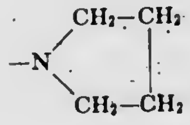
—;

or $—CH_2OH$; and
g. A is



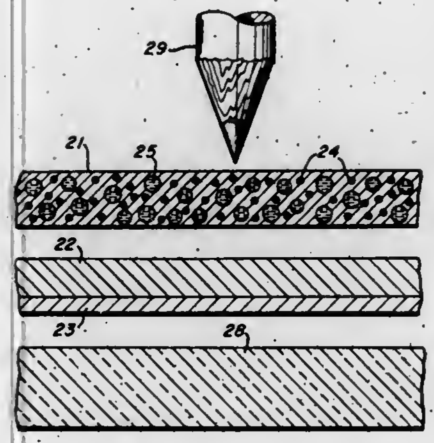


or



3,849,170
COATING COMPOSITION FOR OPTICAL PROJECTION

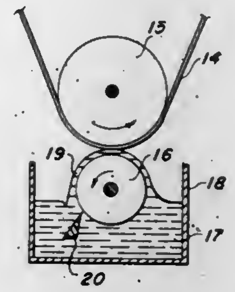
John D. Mays, Dayton, and Jack L. McClannan, Pittsburgh, both of Ohio, assignors to The Standard Register Company, Dayton, Ohio
Continuation-in-part of Ser. No. 130,205, April 1, 1971, abandoned. This application Jan. 9, 1973, Ser. No. 322,159
Int. Cl. B41c *1/06*
U.S. Cl. 117—36.3 **6 Claims**



1. Record sheet material comprising substrate sheet material having a pressure-sensitive, self-imaging top surface region and a bottom surface region, wherein the bottom surface region is a transfer-adhesive composition comprising a wax and a tack-regulator, wherein the top surface region and the bottom surface region are separated by a cushioning layer, wherein the wax is polyethylene having a molecular weight of about 800 to about 1200 and the tack-regulator is a tack-decreasing agent selected from the group consisting of 10% to 20%, by weight of the wax and tack-regulator combination, of paraffin having a melting point of about 135° to 175° Fahrenheit and 1% to 6%, by weight of the wax and tack-regulator combination, of poly(ethylene-vinyl acetate) having a melting point of about 128° to about 138° Fahrenheit.

3,849,171
METHOD FOR CLEANING BACKGROUND AREAS FROM DEVELOPED RECORDING SURFACES

Isoji Takahashi, and Masamichi Sato, both of Asaka, Japan, assignors to Rank Xerox, Ltd., London, England
Filed Nov. 27, 1970, Ser. No. 93,313
Claims priority, application Japan, Dec. 2, 1969, 44-96397
Int. Cl. G03g *13/10, 13/22*
U.S. Cl. 117—37 LE **19 Claims**



1. A method of forming images comprising providing an electrostatographic imaging member bearing an electrostatic latent image on a recording surface, developing said electrostatic latent image with a liquid developer comprising an insulating carrier liquid and suspended toner particles whereby at least a portion of said toner particles deposit on said recording surface to form an imaged recording surface having image areas and background areas, rotating an applicator member in a cleaning liquid to form a film of said cleaning liquid on the surface of said applicator member; maintaining said applicator member free from contact with said imaged recording surface, and contacting said imaged recording surface with said film of cleaning liquid carried on the surface of said applicator member to remove toner particles deposited in said background areas.

3,849,172
ELECTROLESSLY PLATEABLE POLYMERIC COMPOSITION

James Chin, and James C. Hartley, Jr., both of New Haven, Conn., assignors to Uniroyal, Inc., New York, N.Y.
Continuation of Ser. No. 754,949, Aug. 23, 1968, Pat. No. 3,649,713. This application Mar. 13, 1972, Ser. No. 234,427
Int. Cl. B44d *1/092*
U.S. Cl. 117—47 A **6 Claims**

1. An electrolessly plated article comprising a layer of metal electrolessly deposited on and adhered to a shaped plastic substrate, said plastic substrate consisting of:

a. a terpolymer made from about 65 to 90% styrene, 5 to 35% acrylonitrile and 0.25 to 25% vinylpyridine monomers,
b. graft polymers made from 7 to 80% styrene, 3 to 34% acrylonitrile, 0.25 to 25% vinylpyridine monomers on 10 to 90% elastomeric spines selected from the group consisting of
  i. polybutadiene,
  ii. butadiene-styrene copolymers and
  iii. ethylene-propylene-dicyclopentadiene terpolymers,
c. a blend of the terpolymer defined in (a) above in admixture with not more than 45% of a resinous ABS polymer, or
d. a blend of the graft polymer defined in (b) above in admixture with not more than 45% of a resinous ABS polymer, all of said percentages being by weight.

3,849,173

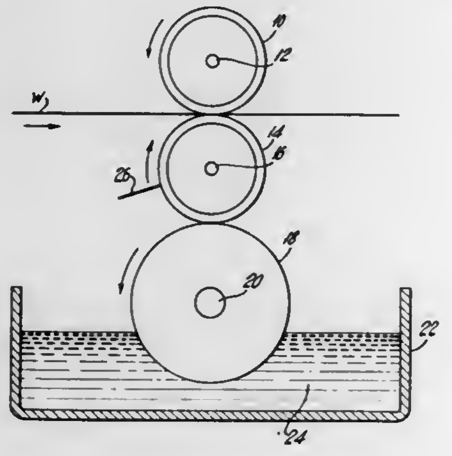
SYNTHETIC RESIN COMPOSITION AND METHODS OF UTILIZING THE SAME

Arthur H. Drelich, Plainfield, and George J. Lukacs, Perth Amboy, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed June 7, 1972, Ser. No. 260,613

Int. Cl. B44d *1/44, 1/02*

U.S. Cl. 117—62.1 **16 Claims**



1. A method of applying a stable synthetic resin composition having an alkaline pH to porous materials and controlling the migration thereon which comprises: applying to porous materials a stable synthetic resin composition having an alkaline pH and comprising: (1) from about 0.1 percent to about 60 percent by weight on a solids basis of a synthetic resin; (2) from about 0.01 percent to about 5 percent by weight, based on the weight of said synthetic resin of a polyvalent metal complex coordination compound; and (3) a water-soluble, ionically-active ammonium or alkali metal salt of an acid capable of being chemically converted into an ionically inactive polyvalent metal salt of said acid by chemical reaction and precipitation or sequestration of said polyvalent metal salt, said salt being capable of sequestering or precipitating the metal in said polyvalent metal complex coordination compound and being present in an amount of from about 5 percent to about 90 percent molecular equivalent on a stoichiometric basis of said polyvalent metal and substantially immediately destroying the the stability of said synthetic resin composition to coagulate and precipitate the resin on said porous materials under controlled migration conditions.

3,849,174

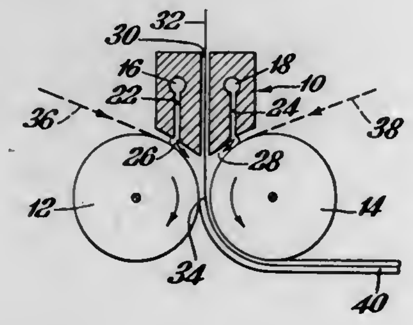
CALENDERING OF LAMINATED POLYMERIC MATERIALS

Fred H. Ancker, Warren, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 839,292, July 7, 1969, Pat. No. 3,658,978. This application Feb. 25, 1972, Ser. No. 229,349

Int. Cl. B44d *1/44*

U.S. Cl. 117—65.2 **6 Claims**



1. In the calendering of laminated plastic materials, wherein streams of flowable plastic material and laminating webs are fed thru the nip opening of a pair of counter-rotating calender rolls, the improvement which comprises calendering while maintaining a volumetric obstruction across the width and between the pair of calender rolls, with the most downstream projection of said obstruction being positioned so as to at least penetrate the bank of material otherwise formed between the pair of calender rolls upstream of the nip by the selection of calendering conditions, and feeding streams of plastic material to said nip opening on each side of said volumetric obstruction while concurrently feeding at least one laminating web between said streams of polymeric material.

3,849,175

METHOD FOR COATING STEEL PARTS WITH ENAMEL

Friedel Kaup, Gutersloh, and Heinrich Warnke, Marienfeld, both of Germany, assignors to Miele & Cie, Gutersloh, Germany

Filed Mar. 7, 1972, Ser. No. 232,515

Int. Cl. B23p *3/00;* **C23c** *3/02*

U.S. Cl. 117—70 C **1 Claim**

1. Method for coating the surface of a steel article with an enamel coat, comprising the steps of:

a. applying to the steel surface a thin layer of metallic zinc having a thickness between about 0.3 and about 5 g/m^2 to provide a smooth and abrasion resistant coat thereon;

b. immersing the zinc-coated steel surface in a liquid enamel slip to form a coating of the slip on the zinc layer, and, without drying;

c. firing the slip to form an enamel outer coat on said steel article.

3,849,176

SURFACE-TREATED STEEL PLATES HIGH IN ANTICORROSIVENESS

Hidejiro Asano, and Yashichi Ouyagi, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 32,439, April 27, 1970, Pat. No. 3,677,797. This application Mar. 17, 1972, Ser. No. 235,864

Claims priority, application Japan, Apr. 28, 1969, 44-32874

Int. Cl. B44d *1/16*

U.S. Cl. 117—71 M **2 Claims**

1. An iron or steel product having, on the surface thereof, a film of a thickness of less than 1μ consisting essentially of nickel and at least one oxide selected from the group consisting of oxides of Cr, Mn and Zn with a coating of an organic resin paint on the surface of said film.

3,849,177

PROCESS EMPLOYING CATALYST COATED YARN PROCESSING ROLLS

Harold Fernandes, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Inc., Wilmington, Del.

Filed June 26, 1972, Ser. No. 266,000

Int. Cl. B65h *57/00;* **B01j** *9/00*

U.S. Cl. 117—71 R **5 Claims**

1. A process for cleaning a movable surface characterized by irregular rounded surface nodules having interstices between the nodules to prevent accumulation of deposits of organic oxidizable material when a moving textile filamentary structure bearing a coating of finish containing oxidizable organic components is contacted by said surface moving at the same speed as said structure at elevated temperatures in the presence of oxygen, said process comprising: applying to said surface a solution of soluble catalyst metal salt and a reducing agent; heating said surface to dry and reduce the metal catalyst salt to a catalytic amount of finely-divided metal particles in the interstices; moving said surface; and contacting said moving surface with a textile filamentary structure of synthetic polymer moving at the same speed as said surface, said structure bearing a coating of finish containing oxidizable organic components, in the presence of oxygen and at a temperature of from about 100℃. up to the melting point of the synthetic polymer whereby said oxidizable organic components are oxidized.

3,849,178

THERMAL PROTECTIVE PROCESS AND ARTICLE COATED WITH THERMAL PROTECTIVE COMPOSITION

Rubin Feldman, Ladue, Mo., assignor to T.S.I., Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 93,416, Nov. 11, 1970, abandoned. This application Apr. 10, 1972, Ser. No. 242,733

Int. Cl. C09k *3/28;* **C09d** *5/18*

U.S. Cl. 117—72 **36 Claims**

1. A process of protecting at least a part of an element from flame or extreme thermal conditions comprising applying to said part of said element a protective composition, at least a substantial part of said composition intumescing to form a continuous porosity matrix and undergoing an endothermic phase change from a solid to a vapor in a well-defined predetermined temperature range below the temperature of said flame or thermal extreme.

3,849,179

INTERNALLY COATED REACTION VESSEL AND PROCESS FOR COATING THE SAME

Marion G. Morningstar, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Aug. 27, 1973, Ser. No. 391,880

Int. Cl. C08f *1/98, 3/30;* **C23f** *14/02*

U.S. Cl. 117—97 **12 Claims**

1. A process for substantially reducing the build-up of polymer on the internal surfaces of a reaction vessel used in the dispersion or emulsion polymerization of polymerizable ethylenically unsaturated monomers which comprises applying to said surfaces an aqueous coating solution comprised predominantly of polymeric polyethyleneimine and having a solids content of about 5 to about 20 percent by weight, and thereafter drying and curing said coating to insolubilize the same.

3,849,180

PROCESS FOR BONDING PARTICULATE SOLID MATERIALS TO A SUBSTRATE

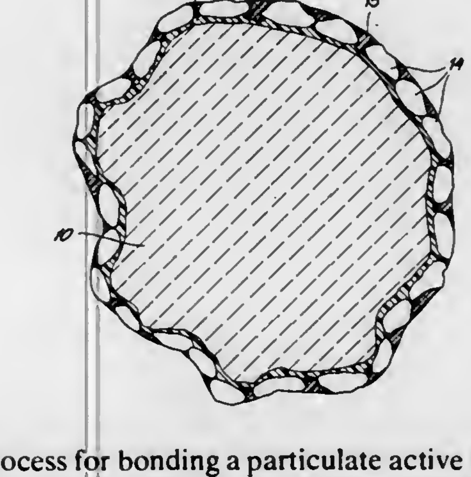
Reinhold Schulze, Hamburg, Germany, assignor to Norddeutsche Affinerie, Hamburg, Germany

Filed May 24, 1972, Ser. No. 256,323

Claims priority, application Germany, May 25, 1971, 2125781

Int. Cl. B44d *1/02*

U.S. Cl. 117—100 B **7 Claims**



1. A process for bonding a particulate active solid consisting of stannic acid to pieces of a substrate, which comprises depositing said particulate active solid upon said pieces of said substrate from an aqueous medium in the presence of a flocculating system consisting of two successively introduced flocculating agents, at least one of said agents having an affinity for the active solid while said agents are interactive to form a bonding substance adhering the active solid to said pieces of substrate in a porous layer, said pieces consisting of coke breeze, silica, alumina, a silicate aluminate or an aluminosilicate, said agents having respectively the general formula R — A and R′ — B wherein R and R′ are homopolymer, copolymer or mixed polymer groups consisting of maleic, vinylic, acrylic, methacrylic or styrenic repeating units and A and B represent respectively acid and basic functionality.

3,849,181

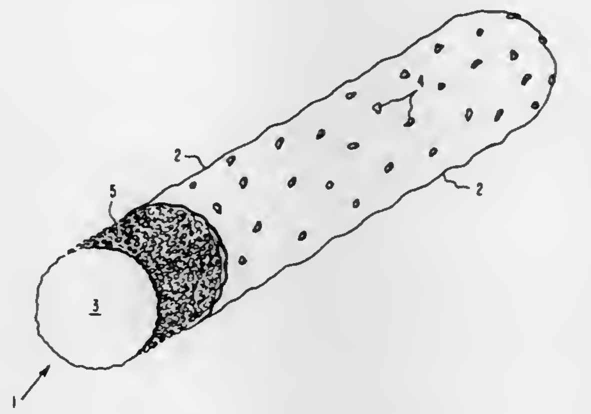
PRODUCT AND PROCESS

James Ralph Green, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 35,064, May 6, 1970, abandoned. This application June 30, 1972, Ser. No. 268,024

Int. Cl. C23c *13/04*

U.S. Cl. 117—106 R **16 Claims**



1. A high strength polycrystalline refractory oxide fiber having a diameter between about 3 and 250 microns and comprised of grains having a median grain diameter of
less than about 3 microns and
less than about 10 percent of said fiber diameter,
said fiber having adhered thereto a vitrified coating consisting essentially of a glass-forming oxide, in the form of an optically uniform layer, the apparent thickness of said coating being
less than about 1 micron,
less than about 5 percent of said fiber diameter and less than ½ said median grain diameter.

3,849,182

HIGHLY SHAPE-CLASSIFIED OXIDIZED LOW CARBON HYPEREUTECTOID ELECTROSTATOGRAPHIC STEEL CARRIER PARTICLES

Robert J. Hagenbach, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 834,862, June 19, 1969, abandoned. This application June 11, 1973, Ser. No. 369,036

Int. Cl. B44d *1/094;* **G03g** *9/02*

U.S. Cl. 117—100 M **9 Claims**

1. A highly shape-classified low carbon hypereutectoid electrostatographic steel carrier material having an average particle size between about 50 microns and about 1,000 microns and a specific gravity of at least about 7 grams per cubic centimeter wherein said steel carrier material has been heat treated to a tempered martensitic microstructure with an average hardness of 40–55 Rockwell C, said heat treatment being in an air or oxygen atmosphere at temperatures ranging between about 500°F and about 1,000°F to provide an oxide surface layer comprising Fe_3O_4 on said steel carrier material, said oxide surface layer having a thickness between about 0.2 and about 5.0 microns, said steel carrier material comprising

carrier cores having a composition comprising about 95.0 to 99.0 parts iron, 0.1 to 2.0 parts carbon, 0.5 to 2.0 parts manganese, 0.5 to 2.0 parts silicon, 0.03 to 0.1 parts aluminum, 0.01 to 0.05 parts phosphorus, and 0.02 to 0.05 parts sulphur, said carrier cores being overcoated with a resinous coating material capable of electrostatically releasing toner particles adhered thereto to an electrostatic latent image.

3,849,183

PAPER COATED WITH COMPOSITIONS OF POLYMERIC MATERIALS

Orest Nicholas Chick, Sarnia, Ontario, and Graham Neville Means, Petrolia, Ontario, both of Canada, assignors to Polysar Limited-Polysar Limited, Sarnia, Canada

Division of Ser. No. 307,407, Nov. 17, 1972, , which is a continuation-in-part of Ser. No. 204,762, Dec. 3, 1971, Pat. No. 3,809,666. This application Feb. 13, 1974, Ser. No. 442,200

Int. Cl. D21h *1/34;* **C08d** *7/00;* **B32b** *23/08*

U.S. Cl. 117—155 UA **4 Claims**

1. Paper coated with a composition having a pH of 7–11 and comprising a latex blend, a filler and an adhesive, said filler being selected from finely divided clay, calcium sulfoaluminate, calcium carbonate, alumina, silica, titania, zinc oxide and colorants and being present in amount of 1–20 parts by weight per part of latex blend (dry weight), said adhesive being selected from starch, casein and soy protein and being present in amount of 3–30 parts by weight per 100 parts by weight of filler, said latex blend being a blend of (A) 10–40 parts on a dry weight basis of an aqueous latex of a copolymer prepared from a monomer mixture comprising (1) 30–15 weight percent of an acyclic conjugated diolefin monomer selected from butadiene-1,3, isoprene, chloroprene and 2,3-dimethylbutadiene-1,3, (2) 70–85 weight percent of a monoolefinically unsaturated copolymerizable monomer free of carbonyl structures selected from styrene, alpha-methyl styrene, alpha-chlorostyrene and vinyl toluene, and (3) 0–10 weight percent of an olefinically unsaturated carboxylic acid selected from the groups consisting of (a) unsaturated carboxylic acids containing 3–5 carbon atoms, (b) cinnamic acid, and (c) mixtures of (a) and (b); (B) 90–60 parts on a dry weight basis of an aqueous latex of a copolymer prepared from a monomer mixture comprising (1) 0.1–5 weight percent of an olefinically unsaturated carboxylic acid as defined in subsection (A) (3), (2) 0.1–5 weight percent of an olefinically unsaturated carbonyl compound selected from acrolein, alpha-methyl, beta-methyl and beta-phenyl acroleins, methyl vinyl ketone and mixtures thereof, (3) 90–99.8 weight percent of monomers composed of 60–30 parts of an acyclic conjugated diolefin monomer as defined in subsection (A) (1) and 40–70 parts of a monoolefinically unsaturated copolymerizable monomer free of carbonyl structures as defined in subsection (A) (2).

3,849,184

TREATMENT OF PAPERBOARD

Allan Roberts, deceased, late of Upminster, England (by Margaret Agnes Roberts, executrix), assignor to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 27,121, April 9, 1970, abandoned. This application Dec. 16, 1971, Ser. No. 208,896

Claims priority, application Great Britain, Apr. 18, 1969, 19836/69

Int. Cl. D21h *1/40*

U.S. Cl. 117—155 UA **4 Claims**

1. A coated paperboard comprising:
- i. a paperboard consisting of at least one ply consisting essentially of cellulosic fibrous materials, and
- ii. a coating on at least one surface thereof comprising:
  - a. 95 to 99 percent by weight of a water-soluble lignosulphonate salt and
  - b. from 1 to 5 percent by weight of a non-reactive hydrophobic waxy material having a melting point higher than the temperature of application of said coating to said paperboard

said paperboard having a thickness of 0.004 to 0.050 inch and a basis weight of 130 to 850 g/m², said coating being present in an amount effective to improve the physical strength characteristics of said paperboard.

3,849,185

METHOD OF PREPARING SURGICAL SUTURES

Thomas H. Shepherd, Hopewell, and Francis E. Gould, Princeton, both of N.J., assignors to National Patent Development Corporation, New York, N.Y.

Division of Ser. No. 32,448, April 27, 1970, Pat. No. 3,674,901, which is a continuation-in-part of Ser. Nos. 567,856, July 26, 1966, Pat. No. 3,520,949, and Ser. No. 650,259, June 30, 1967, abandoned, which is a division of Ser. No. 654,044, July 5, 1967,. This application Dec. 13, 1971, Ser. No. 207,583

Int. Cl. B44d *1/09*

U.S. Cl. 117—161 UB **5 Claims**

1. A method of preparing a suture comprising coating a surgical suture fiber with a casting syrup of hydroxyethyl or hydroxypropyl acrylate and then completing the polymerization of the acrylate.

3,849,186

ELASTOMERIC SHIELD FOR AN ELECTRICAL CONDUCTOR CONNECTOR MODULE AND METHOD OF MAKING SAME

Henry N. Tachick, Pittsfield, and Richard H. Arndt, Lenox, both of Mass., assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 168,170, Aug. 2, 1971, Pat. No. 3,793,614. This applicatior July 2, 1973, Ser. No. 375,827

Int. Cl. B44d *1/18*

U.S. Cl. 117—201 **1 Claim**

1. A method of manufacturing an electrical conductor connector module, comprising:
1. providing an insulating housing having an elongated passageway extending through it,
2. inserting a plug into said passageway to seal off a portion of the passageway from the remainder thereof,
3. inserting a hollow tube into the unplugged end of the passageway, said tube forming a fluid tight seal with the passageway thereby to mask its walls from contact with a fluid introduced into the passageway through the tube,
4. introducing a body of fluid elastomeric, electrically conductive material in an uncured state into said passageway through said tube thereby coating the unmasked section of the passageway with said material,
5. draining the surplus coating material from said passageway, and curing said coating of electrically conductive material, and
6. removing the plug and tube from said housing.

3,849,187

ENCAPSULANT COMPOSITIONS FOR SEMICONDUCTORS

Charles A. Fetscher, and Michael J. Rosso, both of Olean, N.Y., assignors to The Dexter Corporation, Windsor Locks, Conn.

Continuation of Ser. No. 65,272, March 8, 1970, abandoned, which is a continuation of Ser. No. 700,726, Jan. 26, 1968, abandoned. This application Mar. 27, 1972, Ser. No. 238,697

Int. Cl. H01l *7/00*

U.S. Cl. 117—201 **20 Claims**

1. A method for improving the electrical insulating properties and compatibility of semiconductor devices that comprises directly, and without passivation, encapsulating said semiconductor devices with an encapsulant consisting essentially of an uncured epoxy resin; a curing agent for said epoxy resin selected from the group consisting of amine, phenolic novolacs and anhydrides; and from about 0.05 to 5 percent by weight based upon the total weight of said encapsulant of a lower alkyl poly-lower alkoxy silane having a substituent in the alkyl group reactive with said epoxy resin and being a member selected from the group consisting of amine and epoxy substituents; and, curing said encapsulant, said silane imparting enhanced compatibility between said epoxy resin and the components of said semiconductor devices such that said encapsulated semiconductor devices are resistant to failure under reverse bias at high temperature and resistant to change when subjected to boiling water.

3,849,188

ELECTROSTATIC IMAGE-RECORDING MEDIUM AND METHOD OF MAKING SAME

Kensuke Suzuki, Fuji City; Yasuhide Goto, Numazu City; Kazunari Iwasaki, and Yoshiharu Sumitomo, both of Fuji City, all of Japan, assignors to Kabushiki Kaisha Kohjin, Tokyo, Japan

Filed Mar. 31, 1972, Ser. No. 239,999

Claims priority, application Japan, Apr. 5, 1971, 46-20372; Dec. 16, 1971, 46-101446

Int. Cl. G03g *5/00, 7/00*

U.S. Cl. 117—201 **10 Claims**

1. An electrostatic image-recording medium comprising a dielectric layer provided on a conductive base support, said dielectric layer being composed of a linear polymer having a specific volume resistivity of over $10^{12}\Omega$-cm that is soluble in a solvent selected from the group consisting of aromatic hydrocarbons, ketones and esters and polycarbonate resin which is soluble in a halogenated hydrocarbon dispersed in said linear polymer.

3,849,189

FLUX COATED ELECTRODE

Lazar Matveevich Yarovinsky, Sharikopodshipnikovskaya ulitsa, 2, kv. 6, Moscow, and Alexei Ilich Rumyantsev, Nagornaya ulitsa, 36, Vsevolzhsky Leningradskoi oblasti, both of U.S.S.R.

Division of Ser. No. 763,405, Sept. 27, 1968, abandoned. This application Apr. 20, 1972, Ser. No. 245,810

Int. Cl. B23k *35/22, 35/24*

U.S. Cl. 117—205 **1 Claim**

1. An electrode for building up parts whose surfaces are exposed to friction at temperatures of up to 650°C with an iron-base alloy which will have a high hardness at this temperature and be scratch resistant, said electrode comprising a core, and a coating on said core which consists essentially of 10 to 30 percent of calcium carbonate, 8 to 30 percent of fluor spar, 3 to 10 percent of titanium dioxide, 10 to 30 percent of ferromolybdenum, 1.0 to 8.0 of ferrocolumbium, 10 to 40 percent of ferrosilicon, 0 to 10 percent of metallic manganese, and 0 to 10 percent of metallic chromium based on the total coating weight, said core consisting of chrome-nickel austenitic steel containing 17 to 21 percent of chromium, 7.5 to 11.0 percent of nickel, 0 to 5 percent of molybdenum, 0 to 1.3 percent of columbium, and 0 to 6 percent of manganese, the balance being iron.

3,849,190

DIELECTRIC GLASS OVERLAYS AND METHOD FOR PRODUCING SAID GLASS COMPOSITIONS

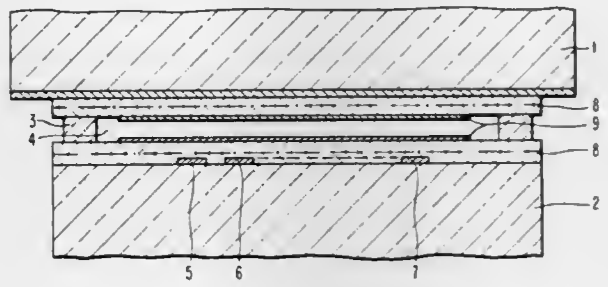
Betty J. Foster, and Rao R. Tummala, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 20, 1973, Ser. No. 353,051

Int. Cl. H01j *9/00;* **B44d** *1/09, 1/14*

U.S. Cl. 117—219 **13 Claims**

1. In a method for fabricating a gas panel display cell array structure having at least one glass substrate having a planar surface with electrically conductive metal contacts thereon and a dielectric composite glass material overlying said planar surface and said electrically conductive metal contacts, and wherein the improvement in said method comprises the following steps in the order recited:
- a. coating said planar surface of said glass substrate with said electrically conductive metal contacts thereon with a first slurry containing an organic dispersion medium and a first glass frit;
- b. coating said planar surface of said glass substrate with said electrically conductive metal contacts thereon and coated with said first slurry containing said first glass frit with a second slurry containing an organic dispersion medium and a second glass frit where said second glass frit has a higher softening temperture and viscosity than said first glass frit;
- c. gradually heating said coatings in an atmosphere selected from the group consisting of nitrogen, oxygen and air to a temperature approximately equal to the softening temperature of said glass substrate to evaporate said organic dispersion mediums thereby forming dry coatings;
- d. maintaining said coatings at said temperature approximately equal to the softening temperature of said glass substrate for a time interval to form a composite having an integrally diffused interface of two distinct glass compositions; and
- e. gradually cooling said coatings to room temperature.



8. In a glass panel display cell array structure, a soda lime silica glass substrate having at least one planar surface and electrically conductive metal contacts on said planar surface of said substrate, wherein the improvement comprises: a dielectric glass overlay said contacts and said planar surface of said glass substrate, said dielectric glass overlay comprising first and second glass compositions having a diffused interface, said first glass composition consisting essentially of any one of the compositions A, B and C, as set forth in the following table:

	Composition A in weight per cent	Composition B in weight per cent	Composition C in weight per cent
Pbo	73.5	70	72
B_2O_3	12.7	15	6.5
SiO_2	13.6	9	17
Al_2O_3	0.2	6	4.5

said seccond glass composition consisting essentially of any one of the compositions D, E and F as set forth in the following table:

	Composition D in weight per cent	Composition E in weight per cent	Composition F in weight per cent
SiO_2	55	10	56
Na_2O	6	10	0
K_2O	3	0	0
B_2O_3	25	50	26
Al_2O_3	1	20	2
BaO	4	5	5
CaO	1	0	0
Li_2O	5	0	11
Ti_2O	0	5	0

3,849,191
PHOTOGRAPHIC ARTICLES AND MATERIALS USEFUL IN THEIR MANUFACTURE

Howard F. Earhart; Frederick J. Jacoby, and Clemens B. Starck, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 596,803, Nov. 25, 1966, Pat. No. 3,516,832. This application Oct. 2, 1969, Ser. No. 870,776

Int. Cl. G03c *1/32*

U.S. Cl. 117—226 **5 Claims**

1. An article of manufacture comprised of a light impermeable sheet and uniformly coated on one surface of said light impermeable sheet a low-friction, antistatic, antiblocking coating which consists essentially of by weight,

a. from about 30 to about 55 percent of substantially spherical, polymeric beads having an average diameter of from about 0.5 to about 25 microns, said beads being substantially insoluble in a 30:70 by weight mixture of acetone and water;

b. from about 10 to 33 percent of low viscosity cellulose nitrate, said low viscosity cellulose nitrate having an intrinsic viscosity in acetone at 25°C of from about 0.4 to about 1.5; and

c. from about 25 to about 60 percent of finely divided carbon black.

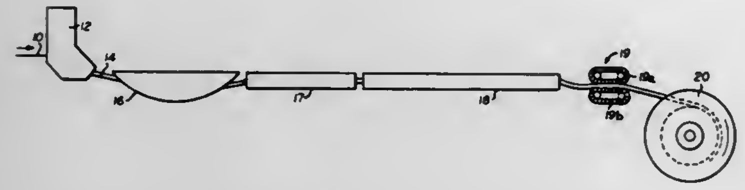
3,849,192
METHOD OF APPLYING AND COOLING LOW DENSITY POLYETHYLENE CABLE INSULATION

Gertraud A. Schmidt, Eatontown, N.J., assignor to General Cable Corporation, Inc., New York, N.Y.

Filed May 12, 1972, Ser. No. 252,871

Int. Cl. B44d *1/42, 1/44*

U.S. Cl. 117—232 **10 Claims**



1. The method of applying and shrinking polyethylene insulation over metal conductors of electric cables having insulation of a radial thickness of substantially 0.345 inch and having a maximum shrinkage within a critical range from about 120° C to about 100° C and a ratio of outside diameter to inside diameter greater than about 1.3:1 which method comprises;

a. Extruding the polyethylene over a conductor with the polyethylene at a temperature substantially higher than the melting point of the polyethylene,

b. Advancing the cable from the region of extrusion and along a substantially catenary course into a first cooling zone, the temperature of the polyethylene being substantially higher than 120° C,

c. Maintaining the temperature of the outside of the insulation in the first cooling zone at least as high as approximately the melting point of the polyethylene,

d. Continuing the immersion of the cable in the first zone with the heat absorbing capacity of the conductor and the temperature of the zone sufficient to cool the insulation at the outlet end of the first zone to a radial temperature gradient within about 20 percent of the temperature of the outside of the insulation,

e. Advancing the cable from the first zone into a second zone,

f. Maintaining the temperature of the second zone and the time of immersion of the cable in the second zone to cool the outside of the insulation below 100° C, the lower limit of maximum shrinkage of the polyethylene, while maintaining the radial temperature gradient in the polyethylene within a range of about 30 percent of the highest temperature within the radial extent of the insulation at every instant during the cooling in the second zone, and

g. Maintaining the radial temperature gradient within said 30 percent range until all of the polyethylene has cooled below the 100° C so as to distribute shrinkage stresses more uniformly throughout the radial thickness of the insulation.

3,849,193
METHOD OF PREPARATION OF SINGLE CRYSTAL FILMS

Bernard Ferrand; Francis Forrat; Yves Grange, all of Grenoble; Jean-Claude Joubert, Venon, and Jean Mareschal, Gieres, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 22, 1972, Ser. No. 255,549

Claims priority, application France, May 25, 1971, 71.18889

Int. Cl. H01f *10/02*

U.S. Cl. 117—235 **10 Claims**

1. A method of preparation of a single-crystal thin film of a rare earth mixed oxide having a garnet structure of the formula $T_3M_5O_{12}$ where M represents iron and T represents yttrium, the steps of placing a single-crystal substrate in an aqueous solution in an autoclave which contains compounds having a base of constituents to form the single-crystal film by liberating said constituents in situ by double decomposition, bringing said solution to a high temperature and high pressure to dissolve said constituents and then depositing said constituents by recrystallization on said single-crystal substrate, a temperature difference within the range of 20°C to 70°C being maintained between dissolution and deposition of the constituents.

3,849,194
LOW D.E. STARCH CONVERSION PRODUCTS

Frederick C. Armbruster, and Earl R. Kool, both of La Grange, Ill., assignors to CPC International Inc., Engelwood Cliffs, N.J.

Continuation of Ser. No. 602,563, Dec. 19, 1966, abandoned. This application Sept. 17, 1971, Ser. No. 181,566

Int. Cl. C12b *1/00;* **C13k** *1/06*

U.S. Cl. 127—29 **14 Claims**

1. A process for producing a waxy starch hydrolysate which comprises treating in a first step an aqueous slurry of waxy starch with a bacterial alpha-amylase enzyme at a temperature above about 85°C. to liquefy the waxy starch and to provide an aqueous solution containing a liquefied waxy starch, then subsequently in a second step, at reduced temperatures below about 85°C, treating said liquefied waxy starch with a bacterial alpha-amylase enzyme to saccharify the waxy starch and to achieve a waxy starch hydrolysate having a dextrose equivalent value from about 5 to about 25, stopping the saccharification reaction and recovering the waxy starch hydrolysate so produced.

3,849,195
ULTRASONIC CLEANING

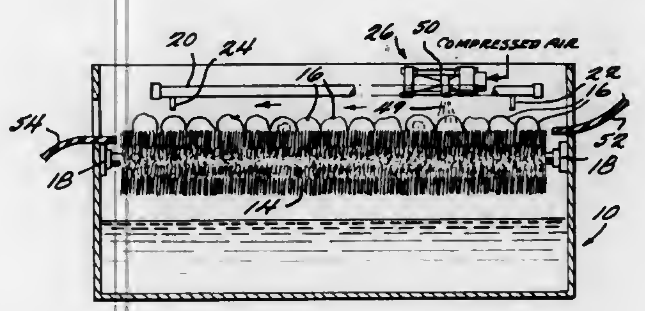
Harry C. Powell, Jr., Faber, Va. 22938, and Donald W. Floyd, Rt. 2, Box 36, Afton, Va. 22920

Filed Aug. 3, 1972, Ser. No. 277,640

Int. Cl. A23n *13/00;* **B08b** *7/02*

U.S. Cl. 134—1 **4 Claims**

1. Apparatus for ultrasonically cleaning the surfaces of articles comprising: a transducer for generating a beam of ultrasonic vibrations in the surrounding atmosphere; conveyor means for transporting an article transversely through the beam and for simultaneously revolving and brushing the article, said means including two closely spaced parallel brushes rotatably driven in the same direction; liquid application means for wetting the surface of the article carried by the conveyor means with a film of liquid before the article enters the beam; and rinse means for rinsing the article after it has been exposed to the beam.



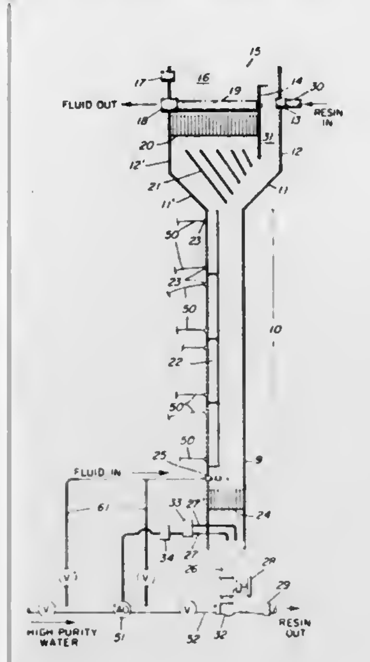
3,849,196
ULTRASONIC CLEANING OF RESIN

James H. Halloway, Tracy, and George E. Petersen, Frement, both of Calif., assignors to General Electric Company, San Jose, Calif.

Division of Ser. No. 39,030, May 20, 1970, abandoned. This application Aug. 17, 1972, Ser. No. 281,512

Int. Cl. B08b *3/10*

U.S. Cl. 134—1 **7 Claims**



1. A method of cleaning contaminated ion exchange resins comprising the steps of

a. introducing the ion exchange resin and a carrier fluid to a treatment zone in a countercurrent flow so that a turbulent condition results in the treatment zone and a hydraulic classification of the resin particles is achieved,

b. simultaneously applying the ultrasonic energy across the treatment zone to remove the contamination from the resin,

c. collecting the cleaned resin in the treatment zone,

d. removing the carrier fluid carrying the contamination removed from the resin from the treatment zone and

e. educting the cleaned resin from the treatment zone in a fluid medium.

3,849,197
METHOD AND APPARATUS FOR DECONTAMINATING A RINSE LIQUID

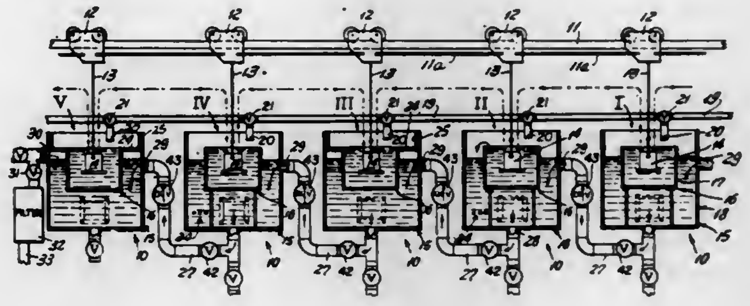
Benjamin J. Sorrentino, 43 Vermont Ave., Stratford, Conn. 06497

Filed Mar. 8, 1973, Ser. No. 339,402

Int. Cl. B08b *7/04*

U.S. Cl. 134—10 **10 Claims**

1. Apparatus for treating water in which work coming from a plating tank has been rinsed, comprising a series of holding tanks; means for conducting rinse water to a first holding tank; means for conducting batches of rinse water from tank to tank, certain of said tanks having outer shells and work-treating inner shells, the latter being adapted to be filled to overflowing with water and so positioned in the outer shells that water in said inner shells may overflow into said outer shells; means for immersing successive batches of work into the water in said inner shells to rinse the work, the immersion of the work causing the water in the inner shells to overflow into the outer shells; means for maintaining a uniform level of water in the outer shells of the tanks as it flows from tank to tank, the water in at least several of the outer shells being accessible for chemical testing and being open to receive chemicals to treat the water; and means for discharging rinse water from the outer shell of the terminal tank of a series of tanks for the disposal or reuse of the treated rinse water.



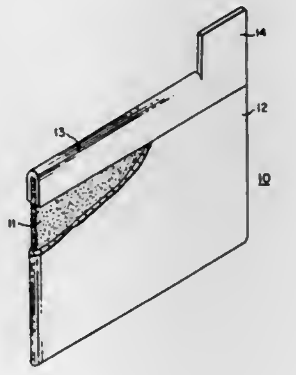
3,849,198
IRON ELECTRODE PASTE FOR ALKALINE BATTERY PLATES

Joseph Seidel, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 31, 1973, Ser. No. 384,3[illegible]0

Int. Cl. H01m *43/04*

U.S. Cl. 136—25 **7 Claims**



1. A negative electrode containing an active battery electrode paste mixture comprising:

A. a solid component comprising:

1. about 70–100 parts of coarse iron particles selected from the group consisting of iron oxide, iron oxide hydrate and mixtures thereof, having an average particle size of between about 5 to about 85 microns diameter;
2. about 5–30 parts of fine iron particles selected from the group consisting of iron oxide, iron oxide hydrate and mixtures thereof having an average particle size of up to about 1 micron diameter;
3. about 1–5 parts of a reaction promoting additive selected from the group consisting of sulfur, selenium, tellurium and their compounds;
4. about 0.02–1 parts of a water-soluble dispersing agent; and
5. about 0.02–0.5 parts of a water-soluble cellulosic thickener;

B. water, wherein the solids:water weight ratio is between about 5:1 to 2:1 and the specific gravity of the paste is between about 2-3 grams/cu. cm.

3,849,199
ELECTROCHEMICAL GENERATOR WITH A ZINC ELECTRODE

Georges Feuillade, Arpajon, and Paul Cord, Paris, both of France, assignors to Compagnie Generale D'Electricite, Paris, France

Filed Feb. 16, 1973, Ser. No. 333,420

Claims priority, application France, Feb. 24, 1972, 72.06294; Feb. 25, 1972, 72.06491

Int. Cl. H01m *43/02*

U.S. Cl. 136—30 **20 Claims**

1. An electrochemical storage cell comprising a positive electrode, a negative electrode comprising a collector core consisting of a chemically inert metallic grid covered with a substance containing zinc, an electrolyte consisting of an aqueous basic solution of an alkaline polyacid phosphate salt in a concentration such that the pH be maintained substantially constant and at a predetermined value or range of values, wherein said substance containing zinc is a heat hardening substance having a composition by weight of 10 to 100 parts of said alkaline polyacid phosphate salt, 50 to 200 parts of zinc or a compound containing zinc, and 2 to 20 parts of at least an oxide of a metal selected from the group consisting of the elements in columns IIA and IIIB of the periodical classification and lithium, and wherein said electrolyte includes at least one alkaline halide.

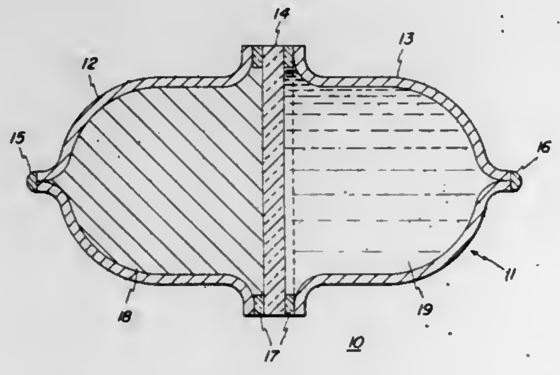
3,849,200
SEALED SODIUM-IODINE BATTERY

Richard J. Charles, Schenectady, and Stephan P. Mitoff, Elnora, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed June 18, 1971, Ser. No. 154,550

Int. Cl. H01m *13/00*

U.S. Cl. 136—83 R **2 Claims**



1. A sealed sodium-iodine battery operable at a temperature of approximately 120°C consisting of a casing, a liquid sodium anode positioned in the casing, a solid sodium beta-alumina ion-conductive electrolyte adjacent the anode, and a liquid iodine cathode positioned adjacent the opposite side of the electrolyte.

3,849,201
ANODE AND SENSING CELL FOR HYDRAZINE FUEL CELL

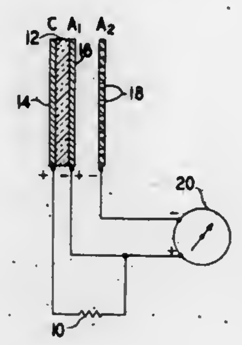
Karl V. Kordesch, Lakewood, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 871,321, Oct. 30, 1969, abandoned, which is a division of Ser. No. 659,154, Aug. 8, 1967, abandoned. This application Mar. 23, 1972, Ser. No. 237,510

Int. Cl. H01m *27/12*

U.S. Cl. 136—86 B **5 Claims**

1. In combination with a hydrazine fuel cell battery comprising at least one hydrazine anode, at least one oxidant cathode and an electrolyte in contact with said anode and cathode and containing dissolved hydrazine; a device for controlling the hydrazine concentration in said electrolyte, said device comprising, in combination; a sensing cell operably independent from said fuel cell battery, said sensing cell comprising a first (working) hydrazine anode through which current flows when said device is in operation, a second (reference) hydrazine anode and an oxidant cathode, said first and second anodes and said cathode being in contact with said hydrazine-containing electrolyte; means for measuring the potential difference between said first anode and said second anode; a spacer between said cathode and said first anode for preventing gross contact of hydrazine with said cathode; a load resistance connected across said cathode and said first anode and means for adding hydrazine to said electrolyte in response to changes in said potential difference.



3,849,202
METHOD OF MANUFACTURING A METAL-AIR BATTERY

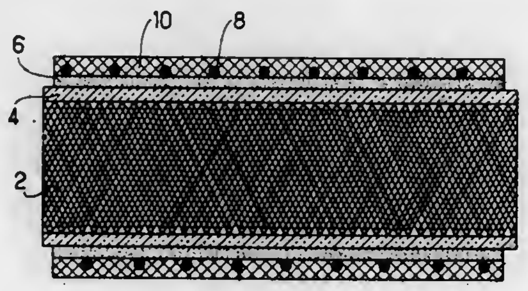
Jean-Paul Pompon, Vitry sur Seine, France, assignor to Compagnie General D'Electricite, Paris, France

Filed Dec. 20, 1972, Ser. No. 316,785

Claims priority, application France, Dec. 20, 1971, 71.45734; June 26, 1972, 72.22961

Int. Cl. H01m *27/00*

U.S. Cl. 136—86 A **5 Claims**



1. A method of manufacturing electrochemical storage battery elements having an inside space for the flow of an alkaline solution containing a powered metal in suspension and an outside space for the flow of an oxidising gas, said method comprising the steps of

producing a coaxial tubular structure comprising, from the inside towards the outside, the following layers in contact with one another:

a metallic, unalterable, negative collector, permeable to said alkaline solution and capable of withstanding a radial compression,

a porous, water-repellant, insulating, unalterable separator permeable to said alkaline solution but not to said powered metal in suspension,

a porous and electronically conductive active layer enabling, within itself, a reducing reaction for the said oxidising gas in contact with the said alkaline solution, and

a fine grid;

fitting around said coaxial tubular structure a tubular sleeve composed of an unalterable metal which may undergo deformation and which is perforated with holes so that the metal segments remaining between the holes do not form any continuous line throughout its whole length parallel to the axis of said tubular sleeve, and

subjecting said tubular sleeve to traction parallel to its axis, thereby increasing its length and decreasing its cross-sectional area by plastic deformation until said coaxial tubular structure is permanently radially compressed by said tubular sleeve, said tubular sleeve thereupon constituting, at least partly, a positive collector in electrical contact with said porous and electrically conductive active layer.

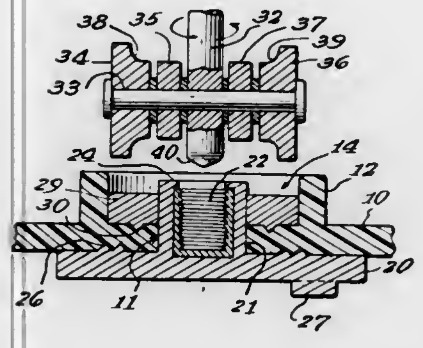
3,849,203
METHOD FOR PRODUCING BATTERY TERMINAL

Norman E. Hollis; Gottfried W. Jutte; Frank I. McCartney, all of Indianapolis, Ind., and John V. McHugh, Evanston, Ill., assignors to The Richardson Company, Des Plaines, Ill.

Continuation of Ser. No. 199,453, Nov. 17, 1971, abandoned. This application Aug. 31, 1973, Ser. No. 393,511

Int. Cl. H01m *1/02*

U.S. Cl. 136—135 S **2 Claims**



1. A method for producing a terminal member for a battery case adapted for making connections between an external cable and plates of a battery cell; said terminal comprising an enlarged base provided with a bushing extending laterally from one surface of said base, a locking ring member positioned so that said bushing passes through said ring member, a lip formed from said bushing and in contact with a said ring member, and a peripheral depression in said ring member; which method comprises swaging on said bushing and locking ring member producing friction and resulting heat to deform: (1) said bushing to form said lip; and (2) said locking ring member to form said peripheral depression.

3,849,204
PROCESS FOR THE ELIMINATION OF INTERFACE STATES IN MIOS STRUCTURES

Alan Bicksler Fowler, Yorktown, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1973, Ser. No. 375,283

Int. Cl. H01l *7/54*

U.S. Cl. 148—1.5 **13 Claims**

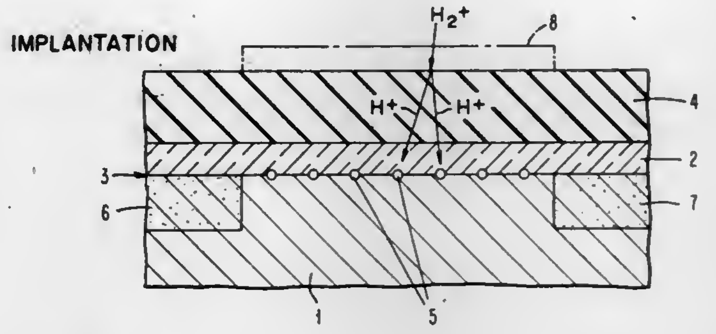
1. In a fabrication process for forming semiconductor devices having a semiconductor

an oxide layer on a surface of said substrate, an insulating layer on said oxide layer and have interface states at the oxide and substrate interface,

said insulatingmaterial being pervious to diffusion of gases through it only at high temperatures on the surface of said oxide layer. the improvement comprising the steps of:

implanting hydrogen ions at said interface region which is capable of entering the lattice of said substrate, and

annealing said substrate in an inert atmosphere for a time and temperature sufficient to substantially eliminate interface states.



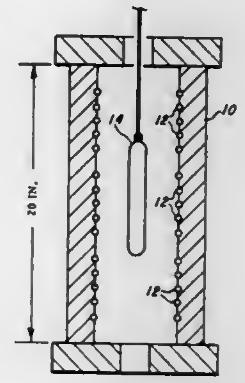
3,849,205
ENHANCEMENT OF SOLID STATE RECRYSTALLIZATION BY INDUCED NUCLEATION

Maurice J. Brau, Richardson, and Richard A. Reynolds, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 27, 1973, Ser. No. 391,110

Int. Cl. B01j *17/02;* **H01l** *3/20*

U.S. Cl. 148—1.6 **8 Claims**



1. A method for enhancement of solid state recrystallization of a polycrystalline ternary semiconductor compound consisting of the step of melting a portion of a polycrystalline ternary semiconductor compound ingot and allowing single crystal growth from the liquid to occur at the liquid-solid interface whereby a single crystal nucleus is formed at the liquid-solid interface.

3,849,206
DENSIFICATION OF HARD CHROME PLATED SURFACES

Louis John Jacobs, Chicago, Ill., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 2, 1973, Ser. No. 320,217

Int. Cl. C23f *7/26*

U.S. Cl. 148—6.2 **3 Claims**

1. A method of treating metal parts having chrome plating thereon wherein said chrome plating contains pores and cracks comprising the steps of:

a. applying a solution to said chrome plated metal parts whereby solution penetrates said pores and cracks, said solution consisting essentially of a chromic acid solution having a specific gravity of from 1.64 to 1.66; and

b. heating said chrome plated metal parts having said chromic acid applied thereto to a temperature of about 230°F ± 10°F, gradually heating to a temperature of 700°F ± 50°F, permitting said temperature to stabilize at 700°F ± 50°F throughout said part and then rapidly heating said part to 1,200°F to convert said chromic acid to chromic oxide.

3,849,207

ALUMINUM ELEMENT HAVING INTEGRAL SEPIA SURFACE AND METHOD THEREFOR

Michael N. Marosi, Encino, Calif., assignor to Convertex, Ltd., North Hollywood, Calif.

Filed Aug. 13, 1973, Ser. No. 388,062

Int. Cl. C23f *7/00*

U.S. Cl. 148—6.27 **13 Claims**

1. Method of forming sepia-tone coatings on aluminum structural elements comprising surface reacting the element for 10 to 30 minutes in a bath at a temperature between 170° and 190°F, said bath having a pH of between 9 and 10 and consisting essentially of 0.1 to 3 percent by weight alkali metal formate and water; rinsing the surface, and thereafter overcoating with a clear, colorless resinous film.

3,849,208

WHITE, OPAQUE CONVERSION COATING ON ALUMINUM

Michael N. Marosi, Encino, Calif., assignor to Convertex, Ltd., Los Angeles, Calif.

Filed Aug. 13, 1973, Ser. No. 388,065

Int. Cl. C23f *7/00*

U.S. Cl. 148—6.27 **19 Claims**

1. Method of forming opaque white conversion coatings on aluminum structural elements comprising caustic etching and cleaning the surface, surface reacting the element for **5** to **30** minutes in a bath at a temperature between **50°** and **110°F**, said bath having a pH not less than **3.3** and not more than **4**, and consisting essentially of from **10** to **20** percent by weight halide ion, and from **2** to **20** percent by weight of a saturated, di- or tri- carboxylic acid having from two to eight carbon atoms and water, rinsing the surface and thereafter overcoating with a clear, colorless resinous film.

3,849,209

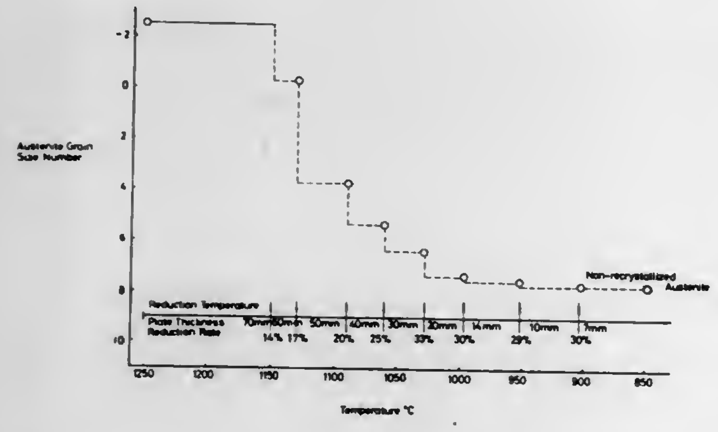
MANUFACTURING METHOD OF HIGH TENSION, HIGH TOUGHNESS STEEL

Keizo Ishizaki, Kitakyoshu; Hiroshi Sekine, Tokyo; Hisashi Gondo, Hisashi; Koji Wada, Kisarazu; Tsuyoshi Kawano, Kisarazu; Hidekazu Watanabe, Kisarazo; Gou Kanbayashi, Chiba-ken, and Tadasatsu Maruyama, Tokyo, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 222,496, Feb. 1, 1972, abandoned. This application Oct. 11, 1973, Ser. No. 405,635

Int. Cl. C21d *7/12, 7/14*

U.S. Cl. 148—12 F **5 Claims**



1. A method for manufacturing a high tension, high toughness steel comprising hot-rolling a steel composition composed of:

0.005 – 0.15% C,
less than 0.60 % Si,
0.70 – 2.0% Mn,
0.01 – 0.15% Nb,
0 to less than 0.20% V,
0 to less than 0.08% Al,
0 to less than 1.00% Ni,
0 to less than 1.00% Cr,
0 to less than 1.00% Cu,
0 to less than 0.20% Ti, and
0 to less than 0.20% Zn,

with the remainder being iron and unavoidable impurities, and wherein said hot rolling is carried out after heating to a temperature of higher than 1,200°C, and during said hot rolling, at least one severe reduction at a rate of more than 26 percent per pass is effected in the temperature range from 1,100°C to 950°C, and wherein the total reduction below 950°C is more than 45 percent of the plate thickness at 950°C, and then finishing at a temperature below 850°C and above the Ar_3 transformation point.

3,849,210

HIGH STRENGTH HIGH CONDUCTIVITY ALUMINUM ALLOY WINDINGS IN LARGE CORE FORM TRANSFORMERS

Laurence D. Kunsman, 113 Echo Springs Cir., Trafford, Pa. 15085

Division of Ser. No. 168,770, Aug. 3, 1971, abandoned. This application Aug. 17, 1973, Ser. No. 389,415

Int. Cl. C21d *9/52;* **C22c** *21/04;* **C22f** *1/04*

U.S. Cl. 148—12.7 **1 Claim**

1. In the method of forming a coil for a core form transformer the steps comprising, solution heat treating at a temperature within the range between 800° and 950°F an age hardenable aluminum base alloy having a composition within the range between 0.35 percent to 0.8 percent magnesium, 0.3 percent to 0.7 percent silicon, 0.5 percent maximum iron and the balance aluminum in the form of wire for imparting thereto high ductility, low strength and low spring-back, winding the solution heat treated wire into predetermined coil configuration and thereafter age hardening the wire in coil configuration at a temperature within the range between 325°F and 375°F for a time period ranging between about 8 and 12 hours, to provide a yield strength level of at least 10,000 psi during short-circuit operation conditions of the transformer.

3,849,211

FLUX FOR WELDING REFRACTORY AND NON-FERROUS METALS

Samuil Mordkovich Gurevich, bulvar Lesi Ukrainki, 2, kv. 2; Vadim Nikolaevich Zamkov, bulvar Lesi Ukrainki, 2, kv. 8; Valery Pavlovich Prilutsky, ulitsa N. Botanicheskaya, 15/17, kv. 4; Vladimir Filippovich Topolsky, ulitsa Kioto, 9, kv. 89; Nikolai Vasilievich Podkopai, ulitsa Stanislavskogo, 3, kv. 4; Sergei Afanasievich Manoilo, ulitsa Demyana Bednogo, 12, kv. 33, and Nikolai Leonidovich Dykhno, ulitsa Melnikova, 48, kv. 6, all of Kiev, U.S.S.R.

Filed June 13, 1973, Ser. No. 369,763

Int. Cl. B23k *35/34;* **C22b** *9/10*

U.S. Cl. 148—26 **2 Claims**

1. A flux for melting refractory and non-ferrous metals, which contains, percent by weight:

barium fluoride - 3–7
calcium fluoride - 83–92
aluminium fluoride - 5–10

3,849,212

PRIMARY RECRYSTALLIZED TEXTURED IRON ALLOY MEMBER HAVING AN OPEN GAMMA LOOP

Donald R. Thornburg, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 228,318, Feb. 22, 1972, abandoned. This application Dec. 11, 1972, Ser. No. 312,681

Int. Cl. C04b *35/00*

U.S. Cl. 148—31.55 **4 Claims**

1. A heat treated alloy member having an open gamma loop and improved magnetic characteristics consisting essentially of up to 0.03% carbon, up to 1% manganese, less than 0.012% sulfur, from about 0.3% to about 4% of a volume resistivity improving element selected from the group consisting essentially of, up to 2% silicon, up to 2% chromium, and up to 3% cobalt, and the balance essentially iron with incidental impurities, the alloy having a major porportion of the grains exhibiting a (110) texture and in which a major proportion of the oriented grains have cube edges of their crystal lattices aligned within 12° of the rolling direction, and primary recrystallized and normal grain growth microstructure.

3,849,213

METHOD OF PRODUCING A MOLDED ANISOTROPIC PERMANENT MAGNET

Max Baermann, 506 Bensberg Wolfshof, Bezirk, Cologne, Germany

Continuation of Ser. No. 61,425, Aug. 5, 1970, abandoned, which is a continuation-in-part of Ser. No. 662,284, Aug. 22, 1967, abandoned. This application Dec. 7, 1972, Ser. No. 312,906

Claims priority, application Germany, Sept. 1, 1966, 1288317

Int. Cl. C21d *1/04*

U.S. Cl. 148—108 **14 Claims**

1. A method of making a magnetized plastic bonded permanent magnet having a selected pole arrangement, said method comprising the following steps:

a. producing a flat casting of a permanent magnet alloy having a coercive force greater than 1,200 Oersteds, said casting having a smallest dimension located between two generally flat surfaces and a preferred magnet direction perpendicular to said two flat surfaces;
b. magnetizing said casting to at least about saturation by a magnetizing field passing through said small dimension and generally perpendicular to said surfaces;
c. crushing said casting into anisotropic particles each having a preferred magnetic axis and a size which can pass through a 100 mesh screen;
d. mixing said particles with a plastic binder to form a non-magnetically aligned mixture;
e. molding said mixture in a mold under the influence of a magnetic field having an intensity in the range of 1,000–4,000 Gauss and with a configuration generally matching said selected pole arrangement.

3,849,214

COLD ROLLER LEVELING TREATMENT OF CUBE ORIENTED SILICON STEEL TO REMOVE COIL SET

Karl Foster, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 26, 1973, Ser. No. 410,133

Int. Cl. H01f *1/04*

U.S. Cl. 148—111 **6 Claims**

1. In the process of producing cube oriented silicon steel, wherein the steel has been high temperature box annealed and cooled in coiled form to provide the desired grain orientation which results in coil set, the method of removing the coil set comprising the steps of,

a. cold roller leveling the coiled material at ambient temperature without longitudinal tension and thereafter
b. annealing the leveled material at a temperature between 700°C and 1,300°C.

3,849,215

METHOD OF HEAT TREATING WELDED ZR—CB OBJECTS

Aart van der Linde, Alkmaar, and Eduard Maurice Hornsveld, Bergen, both of Netherlands, assignors to Reactor Centrum Nederland, The Hague, Netherlands

Filed Mar. 23, 1972, Ser. No. 237,402

Claims priority, application Netherlands, Mar. 26, 1971, 7104075

Int. Cl. C21d *1/74, 9/50*

U.S. Cl. 148—127 **2 Claims**

1. A method for improving the corrosion resistance of a welded portion of an object made of zirconium base alloy containing 0.5 to 5 weight percent columbium, said method comprising thermally treating said portion by heating to an elevated temperature in the range 450° to 650° C while excluding oxygen and nitrogen and maintaining said portion at the elevated temperature for a period of time greater than 25 hours when the temperature is less than 475° C, 20 to 80 hours when the temperature is 475° C, 15 to 70 hours when the temperature is 500° C, 10 to 60 hours when the temperature is 525° C, 5 to 50 hours when the temperature is 540° C, 1 to 40 hours when the temperature is 560° C, 0.5 to 30 hours when the temperature is 575° C and for a period of time less than 20 hours when the temperature is greater than 575° C, said method being free of any operation involving deformation of said portion.

3,849,216

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE AND SEMICONDUCTOR DEVICE MANUFACTURED BY USING THE METHOD

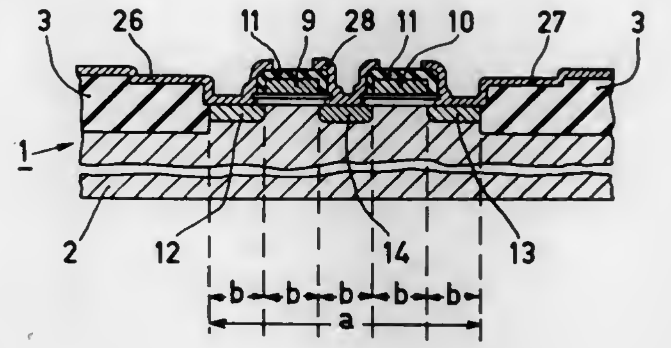
Roelof Herman Willem Salters, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 7, 1972, Ser. No. 304,392

Claims priority, application Netherlands, Nov. 20, 1971, 7116013

Int. Cl. H01l *7/44*

U.S. Cl. 148—187 **12 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of providing on a surface of a semiconductor body a first electrically insulating layer, providing on said body so as to extend over only part of said semiconductor surface at least one electrically conductive layer separated from the semiconductor surface by said first insulating layer, converting the exposed surface of said conductive layer into a second electrically insulating layer by a chemical conversion process, said first insulating layer masking the underlying semiconductor surface against said chemical conversion process, thereafter introducing into said semiconductor surface doping material against which said conductive layer and said second insulating layer acts as a mask to form at least one surface zone in the body having conductivity properties different from those of the adjacent semiconductor material, and forming by an etching process a contact window over said surface zone, said second insulating layer forming part of the contact window etching mask and being removed at most only partly by said etching process.

3,849,217

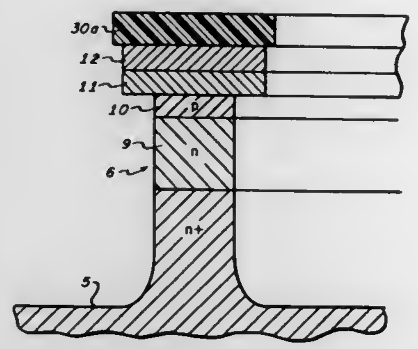
METHOD OF MANUFACTURING HIGH FREQUENCY DIODE

Harry Kroger, Sudbury, and Curtis N. Potter, Holliston, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Division of Ser. No. 222,771, Feb. 2, 1972, Pat. No. 3,761,783. This application Mar. 9, 1973, Ser. No. 339,810

Int. Cl. C23f *1/02;* **H01l** *7/50*

U.S. Cl. 156—11 **6 Claims**



1. The method of making a high frequency diode device from a body of semiconductor material having type $n+$ conductivity and having an epitaxial layer of type n conductivity, the method comprising:

forming a layer of type p conductivity material at a surface of said epitaxial layer,
forming a metal layer of chromium over said surface,
forming a metal layer of gold over said chromium layer,
forming a ring shaped photoresist mask over said gold layer,
substantially removing by etching said metal layers except where protected by said ring shaped mask for forming contiguous metal ring layers,
undercutting said contiguous metal ring layers by etching said semiconductor body for generating a first annular mesa projecting from said body for supporting said metal ring layers,
removing by etching substantially all parts of said metal ring layers overhanging said first annular mesa, and
removing said photoresist mask.

3,849,218

COMPOSITION AND METHOD FOR STRIPPING NICKEL, ZINC AND CADMIUM FROM SUBSTRATES OF IRON AND COPPER

Merton M. Beckwith, Rockville, and Jaan-Jiue Fong, Tolland, both of Conn., assignors to Conversion Chemical Corporation, Rockville, Conn.

Filed Mar. 13, 1973, Ser. No. 340,911

Int. Cl. C09k *3/00;* **C23f** *1/00*

U.S. Cl. 156—18 **17 Claims**

1. A composition for selectively stripping nickel, cadmium and zinc coatings from a workpiece providing a substrate surface of iron, copper or alloys of iron or copper comprising, on a per liter basis at makeup, an aqueous solution of:

A. about 20 to 80 grams of a water-soluble nitrobenzoic acid compound selected from the group consisting of nitrobenzoic acid, ring-substituted nitrobenzoic acid, the ammonium and alkali metal salts thereof, and mixtures thereof;
B. about 40 to 160 grams of a water-soluble carbonate compound selected from the group consisting of carbonic acid, the ammonium and alkali metal salts thereof, and mixture thereof;
C. about 0.2 to 8.0 grams of a water soluble dithiocarbamate compound selected from the group consisting of substituted and unsubstituted thiocarbamic acids, the alkali metal and ammonium salts thereof, and mixtures thereof;
D. about 0.2 to 16.0 grams of a water-soluble thiosulfuric acid compound selected from the group consisting of thiosulfuric acid, the alkali metal and ammonium salts thereof, and mixtures thereof;
E. ammonium hydroxide in a quantity sufficient to provide a solution pH of about 8.5 to 10.7;

said composition having a weight of ammonium ion (NH_4^+) to nitrobenzoic acid radical ($NO_2C_6H_4COO^-$) of about 1.0 – 3.0:1.0, a weight ratio of thiosulfuric acid radical ($S_2O_3^=$) to dithiocarbamate radical (($(C_2H_5)_2NSCS^-$)) of about 0.2 – 8.0:1.0 and a weight ratio of dithiocarbamate and thiosulfuric acid radicals combined to nitrobenzoic acid radical of about 0.01 – 0.70:1.0.

3,849,219

MANUFACTURE OF OPTICAL APPARATUS

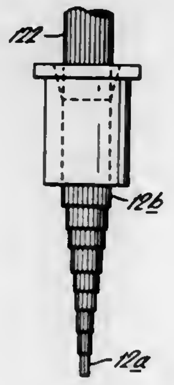
John Alan Hall-Jackson, Acomb, England, assignor to The Rank Organisation Limited, London, England

Filed June 21, 1973, Ser. No. 371,957

Claims priority, application Great Britain, June 21, 1972, 29081/72

Int. Cl. B32b *17/04, 31/16*

U.S. Cl. 156—73.6 **7 Claims**



1. A method of producing a fibre optic spray comprising the steps of:

forming a bundle which comprises a large number of optical fibres of substantially equal length each extending from end to end of the bundle;
locating one end of the bundle in a holding ferrule;
inserting the holding ferrule into the open end portion of a hollow forming ferrule also having a portion of internal diameter reducing from a maximum dimension adjacent the end portion receiving the bundle to a minimum dimension at the other end;
supporting the ferrule assembly with the holding ferrule above the forming ferrule;
shaking the assembly to cause the inner fibres of the bundle to fall to a staggered extent into the lower reducing-diameter portion of the forming ferrule;
bonding the fallen fibres in position to the holding ferrule, the forming ferrule being withdrawn; and
cutting off the staggered fibre lengths exposed by withdrawal of the forming ferrule.

3,849,220

METHOD FOR MAKING CORDLESS TIRES

Yasuo Suzuki; Iwao Arimura, and Tatsuo Arai, all of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

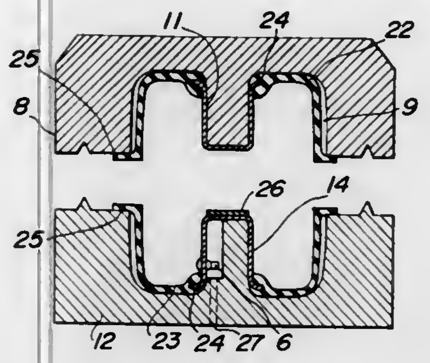
Filed Dec. 21, 1971, Ser. No. 210,509

Claims priority, application Japan, Dec. 24, 1970, 45-117206; July 10, 1971, 46-40545

Int. Cl. B29h *17/00*

U.S. Cl. 156—110 R **9 Claims**

1. A method for making a cordless tire having a hollow cylindrical metal hub with a longitudinal center line coinciding with the axis of rotation of the tire and a pair of outwardly extending annular flanges integrally formed with said hub at the longitudinally opposite ends thereof, and a shaped rubber shell extending from one of the pair of annular flanges to the other, the cylindrical hub having at its bottom a disk flange located between the pair of annular flanges and extending at right angles to the axis of rotation of the tire, said method comprising the steps of forming two halves of the rubber shell of the tire body as a as a whole by means of a mold assembly composed of two half molds separable in the axial direction of internal cavities thereof and an annular core to be inserted into said cavities, each of said half shells extending from one of said annular flanges to the peripheral center line of the tire, and having along the peripheral center line annular lugs made integral with the side edges of the half bodies opposite to the hub members and bonded to form an annular ridge, bonding the flange side edge of each half shell to the corresponding annular flange of the corresponding hub by snugly fitting a cylindrical stud made integral with each of the two half molds in the corresponding hub, bonding the annular lugs along the peripheral center line of the two half shells to each other to form an annular ridge and form a tire case having a rubber shell integral with the hub, and vulcanizing the tire case thus formed in the mold by pressurizing the inside space of the tire defined by the rubber shell and the cylindrical hub.



3,849,221

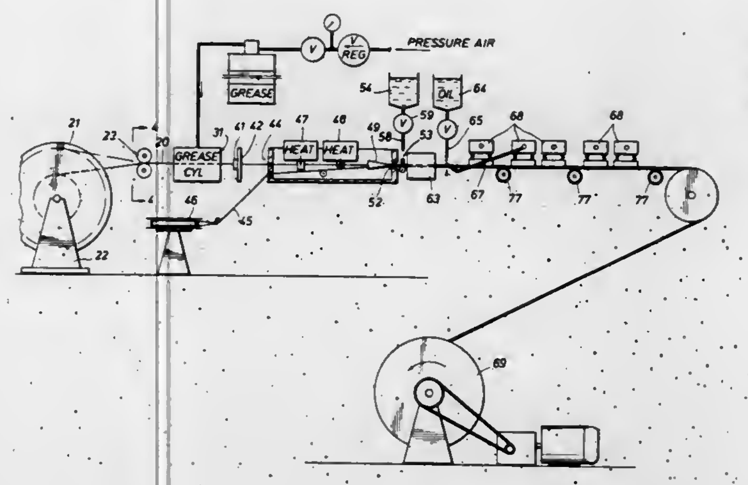
METHOD FOR MANUFACTURING A SHEATHED CABLE FOR USE IN POST-TENSIONING CONCRETE STRUCTURES

Thomas E. Middleton, Houston, Tex., assignor to Pre-Stress Concrete, Inc., Houston, Tex.

Division of Ser. No. 860,737, Sept. 24, 1969, Pat. No. 3,654,027. This application Mar. 13, 1972, Ser. No. 233,946

Int. Cl. B29c *17/00;* **E04c** *3/10, 5/08*

U.S. Cl. 156—145 **3 Claims**



1. A method of manufacturing a sheathed cable for use as post-tensioned reinforcing member in concrete structures comprising the steps of:

continuously advancing an elongated plastic strip having feathered edges;
heating the plastic strip to soften at least the edges of said strip;
continuously advancing a multistranded cable into adjoining relationship with said advancing plastic strip;
applying grease to completely impregnate said advancing cable;
removing excess grease from said cable to provide a uniformly impregnated cable;
loosely forming said heated strip around said impregnated cable so that the heat softened edges of said strip are in overlapping relationship;
applying a solvent uniformly to the heated contiguous surfaces of the overlapping edges of said plastic strip;
pressing said overlapping edges together to effect an initial bond therebetween to form a sheath; and
applying additional force to the overlapping portion of said plastic strip to ensure an effective bond of said plastic sheath.

3,849,222

METHOD FOR TRANSVERSELY ASSEMBLING SHEET STRIPS SUCH AS VENEERS, STRIPS OF CARDBOARD OR THE LIKE

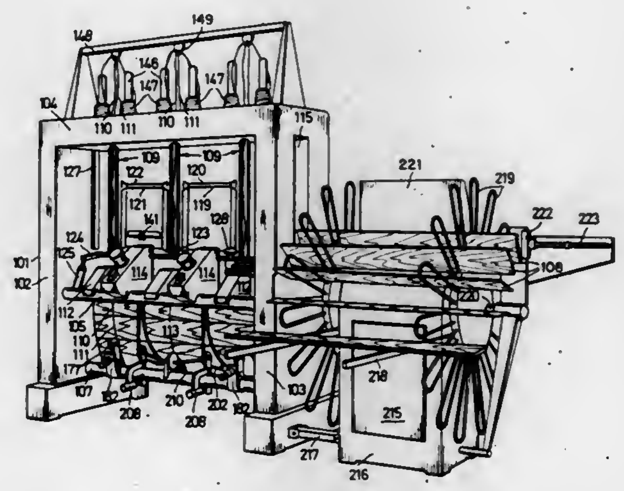
Gerhard Ortel, Rietberg/Westfalen, Germany, assignor to Heinrich Kuper, Rietberg/Westfalen, Germany

Continuation-in-part of Ser. No. 800,157, Feb. 18, 1969, Pat. No. 3,686,057. This application May 3, 1972, Ser. No. 249,937

Claims priority, application Germany, Feb. 21, 1968, 1628989; Austria, Aug. 20, 1968, 8104/68

Int. Cl. B32b *31/12, 31/18*

U.S. Cl. 156—148 **7 Claims**



1. A method of transversely assembling strips, such as veneers, to form larger sheets by means of a plurality of connecting threads adhered at right angles to the longitudinal extension of assembled strips, and comprising the step of:

a. laterally introducing a first edgewise strip between thread guiding devices arranged adjacent one another, said strip being conveyed in a guide and disposed with its lower edge on a first abutment arranged displaceably, said abutment being secured for a holding operation above a downwardly extending path for the strip;
b. retarding said first strip before it comes into contact by its front edge, viewed in the direction of travel, with a second abutment;
c. displacing said first abutment so as to permit said first strip to move downwardly;
d. after reaching its lateral end position, causing downward movement against the upper side edge of the preceding strip already connected to the sheet;
e. during the descending movement of said first strip, effecting the following steps in a continuous fashion:

1. applying adhesive-coated threads to opposite surfaces of said first strip;
2. cementing said threads to said first strip by heat; and
3. weaving said threads above the upper longitudinal edge of said first strip so that the strip is secured in a wicker-work-like fashion; and

f. returning said first abutment to a position in which it is ready to repeat step (a).

3,849,223

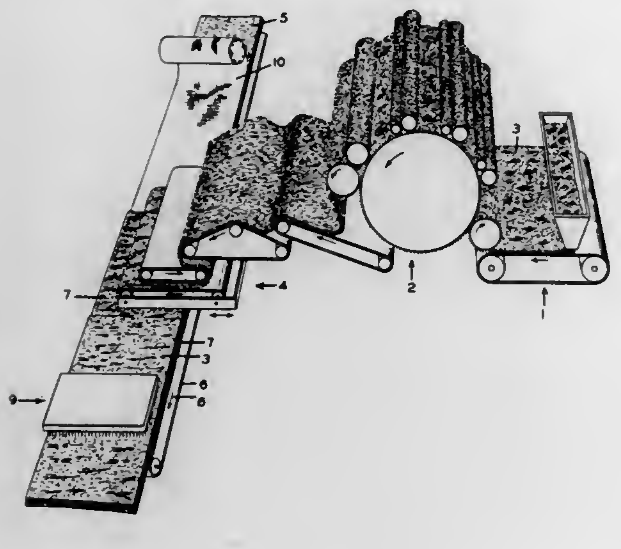
METHOD OF MAKING A NON-WOVEN NEEDLED FABRIC HAVING A RANDOM LINEAR STREAKED DESIGN

Raymond C. Kent, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Feb. 26, 1973, Ser. No. 335,923

Int. Cl. B32b *23/02*

U.S. Cl. 156—148 **6 Claims**



1. A method of manufacturing a non-woven needled fabric having a random linear streaked design of a plurality of colors comprising:

a. forming a fibrous layer by opening and blending dyed staple organic fiber bundles to a controlled degree such that each of the bundles retains its distinct coloration, the individual bundles being of one of a plurality of colors;

b. garnetting said layer into a web whereby the fibers are oriented but at a speed whereby further fiber blending is minimized;

c. cross-lapping said web onto a backing web positioned on a stationary apron to build up sufficient layers to hide the backing;

d. transporting said backing web and plurality of surfacing layers to a needling station and needling the web and overlying layers to form an integral, unitary, needled fabric in which the commingled fibers form colorful streaks having a random linear pattern of the plurality of colors of the staple fiber bundles.

3,849,224

WATER RESISTANT CORRUGATED PAPERBOARD

Harold L. Hintz, and Joseph T. Webb, both of Charleston, S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed July 21, 1972, Ser. No. 273,835

Int. Cl. B31f *1/22*

U.S. Cl. 156—208 **10 Claims**

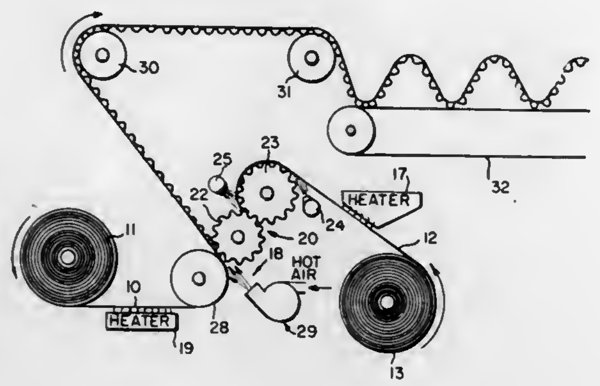
1. In the process of manufacturing water resistant corrugated paperboard, consisting of at least one linerboard component having both sides thereof coated with a film of thermoplastic material, and at least one corrugating medium component having both sides thereof coated with a film of thermoplastic material, the steps of:

a. pretreating the said corrugating medium component with an interval size treatment to selected from the group consisting of 0.75–1.0% rosin with about 1.5% alum, 0.2% stearic anhydride with 0.3–0.4% alum, or 0.2% succinic anhydride with 0.3–0.4% alum inhibit the water wicking tendencies thereof;

b. applying a direct pre-heat treatment to one side of the said coated and sized corrugating medium prior to entering the corrugating nip of a corrugating machine;

c. applying an indirect pre-heat treatment to the opposite side of the said coated and sized corrugating medium by heating at least one of the corrugating rolls of the corrugating machine;

d. applying a lubricating treatment in the form of a water spray or a water spray containing detergent to the corrugating nip of the corrugating machine;



e. applying a direct pre-heat treatment to one side of the said coated linerboard component prior to entering the bonding nip of a corrugating machine;

f. applying an indirect pre-heat treatment to the opposite side of the said coated linerboard component by heating the pressure roll of the corrugating machine;

g. applying an additional direct heating treatment at the bonding nip of the corrugating machine to render the thermoplastic film surface on one of the components tacky and bondable;

h. pressing the tacky and bondable surface of one of the components into contact with the other of said components at the bonding nip; and,

i. cooling the laminate thus formed to allow the bond to set.

3,849,225

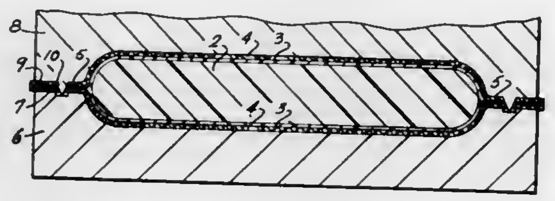
METHOD OF FORMING AN APPLICATOR CONSTRUCTION

Richard J. Haertle, Brookfield, Wis., assignor to Kleen Test Products, Inc., Milwaukee, Wis.

Filed Jan. 10, 1973, Ser. No. 322,407

Int. Cl. B29c *3/00;* **B32b** *31/18, 1/04, 27/40*

U.S. Cl. 156—213 **3 Claims**



1. A method of forming an applicator to be used for applying a product to a surface, comprising the steps of applying layers of a fusible thermoplastic resin to opposite surfaces of a cellular resilient core material, applying a layer of absorbent fabric to the outer surface of each layer of resin to form a composite structure, providing a die including a pair of die members, said die members having cooperating generally flat peripheral pressure surfaces and having cooperating cutting elements located intermediate the inner and outer extremities of said pressure surfaces, applying pressure through said pressure surfaces to the peripheral edge portion of the composite structure while maintaining the cutting elements out of cooperating cutting relationship, heating said peripheral edge portion to a temperature sufficiently high to fuse the core material and fuse the resin layers and impregnate the fused material into the fabric to provide an integrally bonded peripheral edge portion, and moving the cutting elements into cooperating cutting relationship to trim said bonded peripheral edge portion and provide an applicator having an outwardly projecting fused peripheral edge.

3,849,226

PRODUCING FIBER REINFORCED RESIN PANELS WITH GELCOAT FIBER LAYER AND LACQUER PROTECTIVE

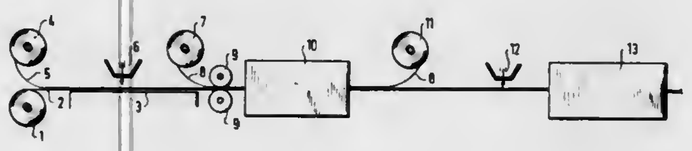
Josef Butz, Weiden, Germany, assignor to Flachglas Ag Delog-Detag, Fuerth/Bayern, Germany

Filed Aug. 14, 1972, Ser. No. 280,188

Claims priority, application Germany, Aug. 26, 1971, 2142731

Int. Cl. C09j *3/14*

U.S. Cl. 156—247 **6 Claims**



1. A method of producing fiber-reinforced resin panels comprising the steps of:

extending a bottom cover film layer;

depositing onto said bottom cover layer a layer of fibers;

impregnating said fiber layer with a liquid thixotropic polymerizable resin mix to which the cover film layers and the fibers are inert;

covering said impregnated fiber layer with a top cover layer, each cover layer being cleanly separable from the resin-impregnated fiber layer at any stage of resin polymerization;

gelling, at least partially, the resin of the impregnated, bilaterally covered fiber layer;

separating from the gelled layer at least one of the two cover layers so as to expose the former;

applying to the exposed gelled resin-impregnated fiber layer a protective layer of a curable coating substance which is free of fibers; and

curing the superposed resin-impregnated fiber layer and the protective layer, thereby creating a molecular bond between the layers.

3,849,227

METHOD FOR SCORE SEALING A FOAM PLASTIC CONTAINER

Teunis Frieling, Pijnacker, and Teunis Ten Bruggencate, Zoetermeer, both of Netherlands, assignors to Stichting Ontwikkeling Verpakkingsmethoden In De Zuivelindustrie, The Hague, Netherlands

Filed Apr. 20, 1972, Ser. No. 245,855

Claims priority, application Netherlands, May 13, 1971, 7106615

Int. Cl. B32b *31/00*

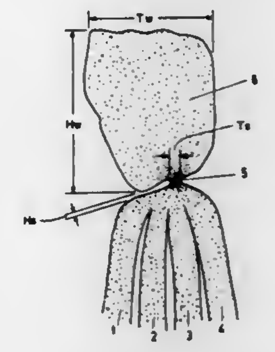
U.S. Cl. 156—268 **6 Claims**

1. A method for the application of a sealing weld to a container of foam plastic sheet with a density of less than 250 kg/m³, comprising:

A. overlapping the parts of the foam plastic to be welded,

B. seal welding said overlapped parts together by means of pressure that compresses the welded parts to between about 10 percent and 20 percent of their original thickness at a temperature approximately 20°C above the softening point of the plastic for a time of less than about 10 seconds without the foamy character of the weld being lost, and

C. simultaneously welding a score weld adjacent and along said seal weld and that is tearable, and is formed by compressing said parts to a thickness less than 2 percent of the original thickness of said overlapped parts at a pressure that is considerably higher than 200 kg/cm² so that said score weld is almost completely surrounded or bridged and protected by the refoaming of the adjacent parts of the sealing weld and the container that have remained ductile, thereby preventing unintentioned collapse of the score weld by loading.



3,849,228

METHOD AND APPARATUS TO CONSTRUCT WALL PANELS

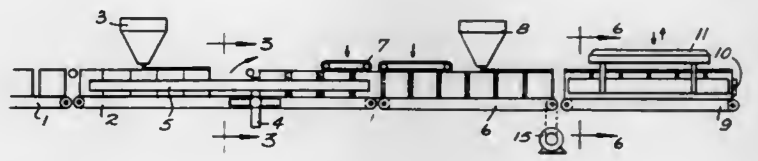
Hans Lingl, Neu-Ulm, Germany, assignor to Lingl Corporation, Paris, Tenn.

Filed Oct. 23, 1973, Ser. No. 409,005

Claims priority, application Germany, Nov. 3, 1972, 2253816

Int. Cl. B32b *31/00;* **E04d** *15/00*

U.S. Cl. 156—297 **16 Claims**



1. A process for the production of wall panels by perpendicular superposition of rows of blocks, each block having a predetermined intended vertical and horizontal face wherein said process comprises the steps of:

a. placing said blocks onto a conveying means with the intended vertical faces of said blocks oriented horizontally and the intended horizontal faces of said blocks oriented vertically;

b. aligning said blocks into a continuous row with said intended horizontal faces of said blocks abutting one another;

c. applying mortar to the surfaces of said horizontally oriented intended vertical faces of said blocks;

d. turning each of said blocks by 90° to place the intended vertical face of each of said turned blocks adjacent to the intended vertical face of the preceding block, so that each of said blocks now has its intended horizontal face oriented horizontally;

e. bringing the intended vertical faces of said blocks together to form a predetermined vertical joint thickness;
f. applying mortar to said intended horizontal faces of said blocks;
g. lifting a predetermined number of said blocks and placing them onto a horizontal support thereby forming a row in a wall panel of such blocks having both vertical and horizontal mortared joints.

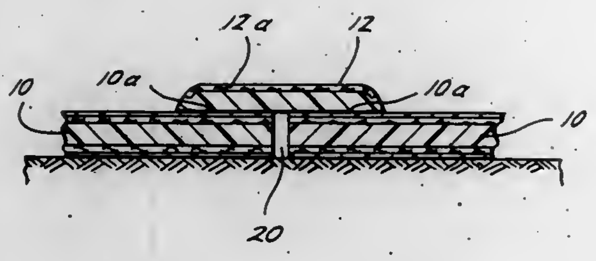
3,849,229
METHOD OF JOINING AND SEALING ASPHALT PLANKS FOR A RESERVOIR OR THE LIKE

Leo J. Spillane; Stephen H. Alexander, and Reba H. Bramble, all of Houston, Tex., assignors to Gulf States Asphalt Co. Inc., Houston, Tex.

Filed June 22, 1973, Ser. No. 372,779

Int. Cl. C09j *3/30;* **E02b** *5/00*

U.S. Cl. 156—304 **6 Claims**



1. A method of joining asphaltic planks to form a substantially permanently watertight reservoir or the like, comprising the steps of:

positioning a plurality of asphaltic planks of relatively stiff material on a base, with the edges of the planks in substantially butting non-overlapping relationship to thereby form a plurality of longitudinal and lateral spaces between said edges;

placing a primer on the upper surfaces of the planks adjacent the longitudinal and lateral spaces between the edges of the planks; and

applying sealing strips of substantially permanently nonhardening, yieldable solvent-free bituminous material, each of said strips having a strip of woven fiberglass on its upper surface, on said primed upper surfaces and extending across each of said longitudinal and lateral spaces to form a sealed watertight joint between each of the adjacent planks which does not crack and which yields to accommodate shifting or other relative movements of the planks while maintaining the sealed joint.

3,849,230
PROCESS OF BONDING USING EPOXY-AZIDO ADHESIVES

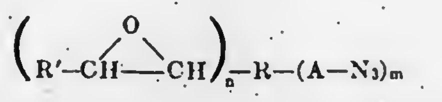
David S. Breslow, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 85,300, Oct. 29, 1970, abandoned, which is a division of Ser. No. 843,230, July 18, 1969, Pat. No. 3,608,604. This application Nov. 30, 1972, Ser. No. 310,739

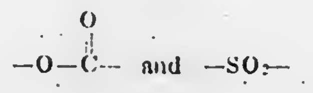
Int. Cl. C09j *5/00;* **B32b** *27/38, 25/02*

U.S. Cl. 156—330 **6 Claims**

1. A process of adhering a polymer to a substrate selected from the group consisting of siliceous material, metal and other polymer substrates which comprises the steps of (1) modifying said polymer by heating in admixture with a small amount of an epoxy-azido compound having the formula



where R is a polyvalent organic radical, R′ is a radical selected from the group consisting of hydrogen, alkyl, cycloalkyl, aryl, and aralkyl radicals, A is a radical selected from the group consisting of



$$-O-\overset{\overset{O}{\|}}{C}- \text{ and } -SO_2-$$

and *n* and *m* are integers from 1 to 100 and, (2) coupling said polymer to said substrate through the epoxy groups on the modified polymer.

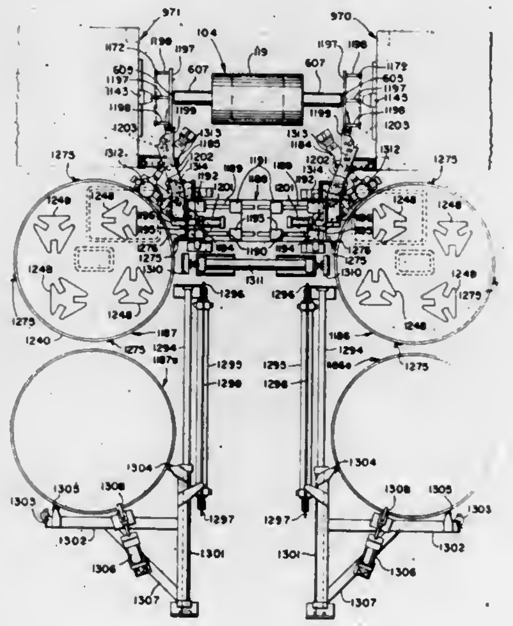
3,849,231
BEAD MECHANISM

Wilhelm Brey, Cuyahoga Falls, Ohio; William Hostetler, Santa Ana, Calif.; Earl Ferdnand Loeffler, Akron, Ohio; Hubert Ernest Kolm, Louisville, Ohio, and Fred Grove Elder, Atwater, Ohio

Division of Ser. No. 10,579, Feb. 11, 1970, Pat. No. 3,700,526. This application Sept. 15, 1971, Ser. No. 180,835

Int. Cl. B29h *17/22*

U.S. Cl. 156—403 **13 Claims**



1. A mechanism for automatically feeding beads, as they are needed, to a machine used in a tire making process for setting beads in position on green tires, said mechanism comprising:

a. a pair of arms positioned adjacent the machine in predetermined spaced relation to the overall length of a drum with tire making material wrapped thereon;
b. means for mounting the arms for rotating in planes angularly disposed to the longitudinal axis of a drum positioned in the machine for receiving beads;
c. a source of beads disposed adjacent each arm;
d. a plurality of arcuately spaced fingers carried by each arm for transporting beads from the source to the machine for receipt thereby, the fingers being movable into and out of engagement with the beads;
e. means for rotating the arms and fingers into position for grabbing beads from the source;
f. means for moving the fingers into grabbing engagement with a pair of beads from said source;
g. means for rotating the arms and fingers with engaged beads, towards the machine for delivery of the beads; and
h. means for moving the fingers out of engagement with the delivered beads when the machine accepts them;
i. a shoulder on each finger for engaging beads; and
j. means carried by the fingers for deflecting beads against the shoulders;

the source of beads including:

k. at least one stack of beads adjacent each arm;
l. means for holding the beads in spaced relation in the stacks; and
m. means for moving the beads towards one end of the stacks for removal therefrom by the fingers.

3,849,232
FALLING FILM EVAPORATOR

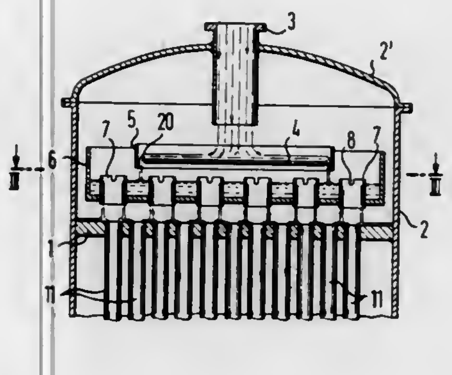
Gustav Kessler, Malsch; Erich Frank, Karlsruhe, and Volker Laumann, Ettlingen, all of Germany, assignors to Wiegand Karlsruhe GmbH, Ettlingen, Germany

Filed Mar. 13, 1973, Ser. No. 340,662

Claims priority, application Germany, Mar. 16, 1972, 2212816

Int. Cl. B01d *1/22, 1/00*

U.S. Cl. 159—13 A **10 Claims**



1. A falling film evaporator comprising, in combination:

a. a shell having an axis upright in the normal operating position of said evaporator;
b. a transverse tube sheet forming the floor of a feed chamber in said shell,
   1. said tube sheet being formed with a plurality of spaced openings therethrough;
c. a plurality of heating tubes received in said openings and axially extending from said sheet away from said feed chamber, said heating tubes having respective orifices axially open toward said feed chamber;
d. a receptacle in said feed chamber;
e. a plurality of distributor tubes axially extending from said receptacle toward said tube sheet and communicating with said receptacle,
   1. respective annular terminal lower faces of said distributor tubes bounding orifices of said distributor tubes spacedly directed toward said tube sheet,
   2. the number of said distributor tubes being substantially smaller than the number of said heating tubes,
   3. the cross section of said orifice of each distributing tube being substantially greater than the cross-section of said orifice of each heating tube,
   4. at least a portion of each of said faces being aligned in the direction of said axis with a portion of said tube sheet free from said openings; and
f. feed means for feeding the liquid to be evaporated to said receptacle.

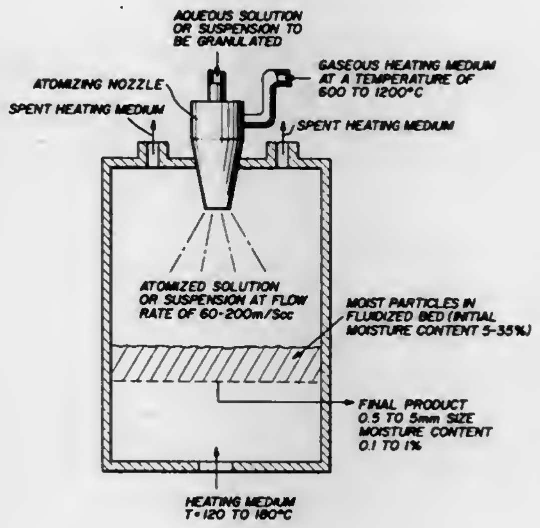
3,849,233
METHOD OF PRODUCTION OF GRANULATED PRODUCT

Mikhail Vasilievich Lykov, Simonovsky val, 22, korpus 2, kv. 53; Gleb Fedorovich Rybalchenko, ulitsa Grishina, 18, kv. 73; Mikhail Alexeevich Korotkov, Selo Semenovskoe, 139, all of Moscow; Evgeny Ivanovich Dobrovolsky, Sotsgorod, Podolskaya ulitsa, 25; Inna Lukinichna Rudenko, Sotsgorod, Shkolny proezd, 4, kv. 4, both of Dneprodzerzhinsk; Oleg Vladimirovich Avilov, ulitsa Tsitadelnaya, 5/9, kv. 65, Kiev; Nikolai Panteleevich Kuz, ulitsa Bolotnikovskaya, 46, korp. 3, kv. 69, Moscow; Nikolai Ivanovich Dubinin, ulitsa Krasnoarmeiskaya, 129, kv. 52, Kiev; Lev Pavlovich Glozman, Sotsgorod, ulitsa Volgodonskaya, 1, kv. 1; Alexandr Dmitrievich Lizunkov, Sotsgorod, ulitsa Ukhtomskogo, 35, kv. 4, both of Dneprodzerzhinsk; Viktor Ivanovich Voishvilo, ulitsa Patrisa Lumumby, 60, kv. 57, Cherkassy; Khanna Isaakovna Sverdlova, Sotsgorod, Shkolny proezd, 1, kv. 3, Dneprodzerzhinsk, all of U.S.S.R.; Yakov Benedictovich Bljumberg, deceased, late of Donskaya ulitsa, 42, kv. 4, Moscow, U.S.S.R., and by Anna Benedictovna Bljumberg, executrix, Leningrad, U.S.S.R.

Continuation of Ser. No. 47,156, June 17, 1970, abandoned, which is a continuation-in-part of Ser. No. 637,679, May 11, 1967, abandoned. This application Mar. 2, 1972, Ser. No. 231,424

Int. Cl. B01d *1/16;* **F26b** *3/12*

U.S. Cl. 159—48 R **4 Claims**


AQUEOUS SOLUTION OR SUSPENSION TO BE GRANULATED
GASEOUS HEATING MEDIUM AT A TEMPERATURE OF 600 TO 1200°C
ATOMIZING NOZZLE
SPENT HEATING MEDIUM
SPENT HEATING MEDIUM
ATOMIZED SOLUTION OR SUSPENSION AT FLOW RATE OF 60-200m/Sec
MOIST PARTICLES IN FLUIDIZED BED (INITIAL MOISTURE CONTENT 5-35%)
FINAL PRODUCT 0.5 TO 5mm SIZE MOISTURE CONTENT 0.1 TO 1%
HEATING MEDIUM T=120 TO 160°C

1. A method of producing a granulated product from liquid solutions or suspensions, said method comprising atomizing the solution or suspension in a downwardly directed stream of a first gaseous heating medium to effect preliminary drying of the thus atomized solution or suspension until the moisture content of the particles formed will be within the range of 5 to 35 percent; gravitationally supplying the thus preliminarily dried particles to a fluidized bed which is fluidized by a second gaseous heating medium flowing counter currently to the atomized stream, and finally drying the formed particles in the fluidized bed by the said second gaseous heating medium flowing upwardly thru said bed to form granules with a preset moisture content, the temperature of said first gaseous heating medium and the ratio of its rate of flow to that of said liquid solution or suspension being selected for controlling the size of the obtained granules within the range of 0.5 to 5.0 mm, with a yield of 90–95 percent of the fraction of the desired size, said first heating medium being supplied at a temperature of 600°C to 1200°C, and the second said gaseous heating medium being supplied at a temperature below the melting point or decomposition temperature of the final desired product.

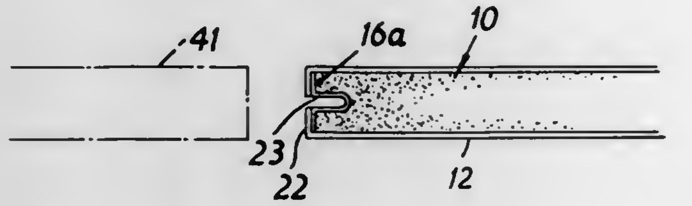
3,849,234
SHEET MATERIAL ORNAMENT WITH UNFOLDABLE UPSTANDING FINGERS

Aloysius H. Pottkotter, 20915 Westland, Southfield, Mich. 48075
Filed Oct. 15, 1973, Ser. No. 406,674
Int. Cl. A63g *31/00*
U.S. Cl. 161—17 **10 Claims**

1. An unfoldable-fingered ornament comprising
a rearward support of relatively stiff sheet material,
inner and outer superimposed ornamental members of flexible sheet material having central portions and elongated fingers radiating outward from said central portions and foldably flat,
and means for securing said central portions to said rearward support.

3,849,235
CEMENTITIOUS BUILDING BOARD WITH EDGE REINFORCING STRIPS

Thomas Gwynne, Loughborough, England, assignor to BPB Industries Limited, London, England
Filed July 10, 1972, Ser. No. 270,394
Claims priority, application Great Britain, July 12, 1971, 32635/71; May 22, 1972, 23991/72
Int. Cl. B32b *1/04, 3/04, 31/18*
U.S. Cl. 161—44 **3 Claims**

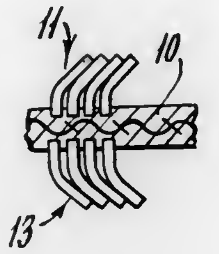


1. A gypsum panel comprising
a generally planar core of gypsum having two opposite face surfaces terminating in edges, at least one of said edges being provided with a kerf,
at least one cover sheet of a non-metallic material disposed adjacent to at least one of said face surfaces and said kerfed edge,
and a reinforcing element disposed along and in contact with said kerfed edge between said cover sheet and the core, said reinforcing element including two side flanges and a kerf-reinforcing portion joined to and located between said side flanges, said reinforcing portion being characterized by a contour which conforms substantially to that of said kerf, said cover sheet terminating in an edge which overlies and is secured to one of said reinforcing side flanges.

3,849,236
FLOCK-TEXTURING METHOD AND PRODUCT

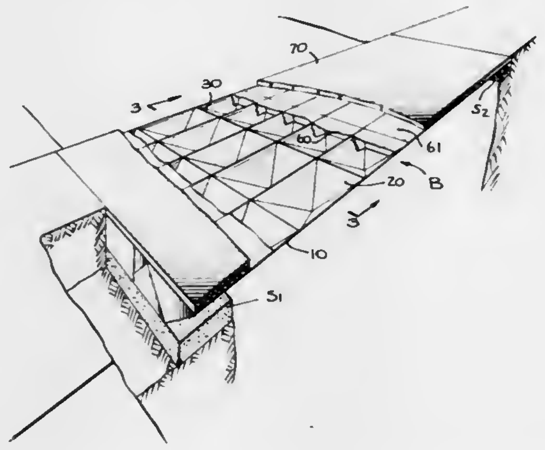
Richard P. Bourdon, Claremont, N.H., assignor to Pervel Industries, Inc., Plainfield, Conn.
Filed June 11, 1973, Ser. No. 368,493
Int. Cl. D03d *27/00*
U.S. Cl. 161—64 **24 Claims**

1. The method of treating a flock-finished fabric wherein the flock consists of synthetic fibers of uniform denier and length bonded at corresponding ends to at least one side of a fabric base and uniformly distributed over the base and oriented normal to the base, the flock density being less than maximum and at least such that the average fiber-to-fiber spacing is substantially less than projecting flock-fiber length, which method comprises soaking the flock-finished fabric with a dilute aqueous solution of a heat-curable adhesive to which the flock is compatible, randomly folding the soaked fabric, wringing from the folded fabric a substantial fraction of the fabric-adhered solution, spreading the wrung-out fabric, drying the spread and wrung-out fabric, and then heating the dried fabric to a temperature and for a period sufficient to cure the adhesive.



3,849,237
STRUCTURAL MEMBER OF SHEET MATERIAL

Lev Zetlin, 89 Hamilton Dr., Roslyn, N.Y. 11576
Filed Apr. 8, 1971, Ser. No. 132,390
Int. Cl. B32b *3/12;* **E01d** *19/12*
U.S. Cl. 161—68 **18 Claims**

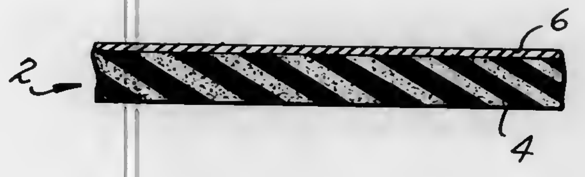


1. A structural member comprising:
longitudinal web means of sheet material including a pair of integrally connected, elongated first sheet sections relatively inclined to one another and defining between themselves an elongated channel;
a plurality of hollow shell elements of sheet material arranged in side-by-side adjacency in and longitudinally distributed along said elongated channel, each of said hollow shell elements having a first pair of opposite side walls each of which comprising a second sheet section generally parallel to and in substantially full face-to-face contact with the respective one of said first sheet sections and each of said hollow shell elements having a second pair of opposed side walls intermediate of and generally transverse to said first pair of side walls; and
means integrally connecting said hollow shell elements with said longitudinal web means at said respective first and second sheet sections thereof substantially along the full face-to-face contact region therebetween so as to form said shell elements and said web means into a composite integral structure.

3,849,238
ARTIFICIAL SKIN

Francis E. Gould, 29 Cedar Ln., and Samuel H. Ronel, 84 Deerpath, both of Princeton, N.J. 08540
Filed Apr. 7, 1972, Ser. No. 242,162
Int. Cl. C09j *7/02;* **B32b** *3/26*
U.S. Cl. 161—159 **16 Claims**

1. An artificial skin consisting essentially of (1) a relatively thick water-containing hydrophilic polymer hydrogel sponge layer and (2) on one side of said sponge layer a relatively thin film layer of non hydrophilic moisture vapor permeable, oxygen and carbon dioxide permeable polymer, said layers (1) and (2) combined have a moisture vapor transmission of 200–5,000 grams/sq. meter/24 hours/40° C./80 percent relative humidity/mil. and said hydrophilic polymer being a polymer of a member of the group consisting of hydroxy lower alkyl acrylates, hydroxy lower alkyl methacrylates, hydroxy lower alkoxy lower alkylacrylates, hydroxy lower alkoxy lower alkyl methacrylates, vinyl pyrrolidone, acrylamide, lower alkyl methacrylamide, N-hydroxy lower alkyl acrylamide, N-hydroxy lower alkyl methacrylamide and polyvinyl alcohol.



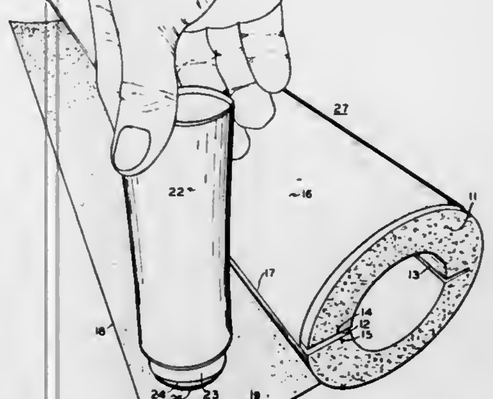
3,849,239
PRESSURE-SENSITIVE TRANSFER ELEMENTS

Wilfred Harry Newman, Holland-on-Sea, England, assignor to Ozalid Company Limited, Loughton, Essex, England
Filed June 15, 1973, Ser. No. 370,527
Claims priority, application Great Britain, June 23, 1972, 29539/72; Sept. 29, 1972, 45135/72
Int. Cl. B32b *3/26, 5/18, 27/30*
U.S. Cl. 161—160 **7 Claims**

1. A pressure-sensitive transfer element consisting of a backing film of pretreated polypropylene, a layer of a cured polyurethane composition containing from 15 to 35 percent by weight based on the solids content of a compatible polymer consisting of a vinyl polymer or a cellulose ester, an intermediate layer of polyvinylidene chloride or of uncured polyurethane resin on said layer and a layer of microporous polymer sponge on said intermediate layer.

3,849,240
SELF SEAL SYSTEM FOR THE INSTALLATION OF INSULATION

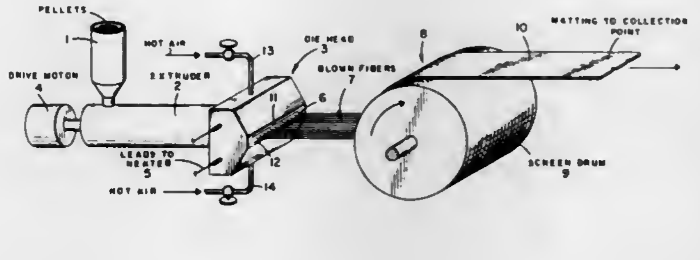
John Paul Mikulak, Minneapolis, Minn., assignor to Johns-Manville Corporation, New York, N.Y.
Filed Jan. 19, 1970, Ser. No. 3,638
Int. Cl. B32b *27/42;* **C09j** *7/00*
U.S. Cl. 161—167 **1 Claim**



1. A thermal insulating element comprising a body of fibrous thermal insulation mat having a major face; a flap of flexible sheet material overlying a portion of a major face of said body and extending from a margin of said body; an adhesive of the phenolic neoprene type on said sheet material securing said sheet material to said body; and a dormant layer of said adhesive secured to an extending face of said flap, said dormant layer of said adhesive being capable of adhesive activation by an organic activating solvent whereby said flap can be adhered to an adjacent surface which it overlays.

3,849,241
NON-WOVEN MATS BY MELT BLOWING

Robert R. Butin; James P. Keller, and John W. Harding, all of Baytown, Tex., assignors to Exxon Research and Engineering Company
Continuation-in-part of Ser. Nos. 865,105, Oct. 9, 1969, Pat. No. 3,755,527, and Ser. No. 103,050, Dec. 31, 1970, abandoned, and Ser. No. 103,094, Dec. 31, 1970, abandoned, said Ser. No. 103,050, and Ser. No. 103,094, each is a continuation-in-part of Ser. No. 786,122, Dec. 23, 1968, abandoned. This application Feb. 22, 1972, Ser. No. 227,769
Int. Cl. F06b *9/30*
U.S. Cl. 161—169 **37 Claims**



1. In a process for producing a melt-blown non-woven mat wherein a fiber-forming thermoplastic polymer resin is extruded in molten form from orifices of a heated nozzle into a stream of hot inert gas which attenuates said molten resin into fibers that form a fiber stream, and said fibers are collected on a receiver in the path of said fiber stream to form said non-woven mat,
the improvement which comprises:
subjecting a fiber-forming thermoplastic polymer resin having an initial intrinsic viscosity of at least 1.4 to degradation in the presence of a free radical source compound prior to extrusion from said nozzle orifices until said resin has both a reduced intrinsic viscosity of from about 0.6 to less than 1.4 and an apparent viscosity in said nozzle orifices of from about 50 to about 300 poise.

3,849,242
ANTISTATIC FIBER BLEND

Kenji Takeya, and Kunio Tanahashi, both of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan
Filed Oct. 13, 1972, Ser. No. 297,283
Claims priority, application Japan, Oct. 18, 1971, 46-82330
Int. Cl. D02g *3/00, 3/02*
U.S. Cl. 161—176 **5 Claims**

1. A blend of substantially all acrylic synthetic fibers having improved antistatic properties and improved physical properties consisting essentially of 25 to 85 percent by weight of nonshrinkable fibers and 75 to 15 percent by weight of shrinkable fibers having a difference in shrinkage of 7 to 40 percent from said nonshrinkable fibers, and containing 20 to 60 percent of antistatic fibers based on the weight of all the fibers in the blend which antistatic fibers constitute all or a part of the nonshrinkable fibers, said antistatic fibers being side-by-side type conjugated fibers in which antistatic properties are imparted only to the low shrinkage component side.

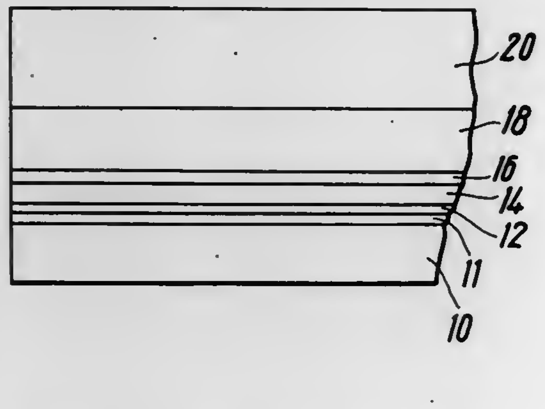
3,849,243
LAMINATES OF SUPPORT MATERIAL AND FLUORINATED POLYMER CONTAINING PENDANT SIDE CHAINS CONTAINING SULFONYL GROUPS

Walther Gustav Grot, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 196,772, Nov. 8, 1971, Pat. No. 3,770,567. This application Aug. 1, 1973, Ser. No. 384,497
Int. Cl. B32b *27/06, 27/04*
U.S. Cl. 161—189 **5 Claims**

1. A laminate comprising a first layer of fluorinated polymer containing pendant side chains containing sulfonyl groups which are attached to carbon atoms which have at least one fluorine atom attached thereto wherein a majority of the sulfonyl groups are in the $—(SO_2NH)_mQ$ form, Q being selected from the group consisting of H, cation of an alkali metal, cation of an alkaline earth metal and combinations thereof, and *m* being the valence of Q; and a second layer of fluorinated polymer containing pendant side chains containing sulfonyl groups wherein the sulfonyl groups are in the $—SO_2M$ form wherein M is a halogen atom, said second layer being integral with said first layer and containing support material completely encapsulated therein.

3,849,244
HEAT-REFLECTING LAMINATED SAFETY GLASS PANE

Rolf Groth, Witten, Germany, assignor to Flachglas Aktiengesellschaft DELOG-DETAG, Furth, Bayern, Germany
Filed Feb. 29, 1972, Ser. No. 230,370
Claims priority, application Germany, Mar. 3, 1971, 2109995
Int. Cl. B32b *17/10;* **B60j** *3/00*
U.S. Cl. 161—199 **4 Claims**

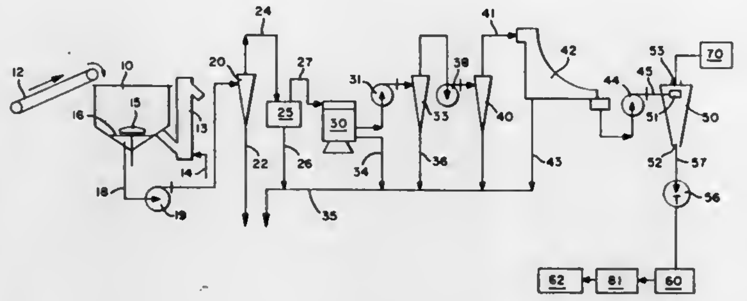


1. A heat reflective, safety glass laminate exhibiting improved splinter adhesion adapted for use in motor vehicles and aircraft comprising, in face-to-face, sequential bonded engagement with one another

- A. a first layer comprising a glass pane,
- B. a second layer ranging from about 30 to 100A in thickness of a vacuum vapor deposited material selected from the group consisting of thorium fluoride, sodium fluoride, cryolite, magnesium fluoride, lanthanum fluoride, and cerium fluoride each having a vaporization temperature above about 1000°C,
- C. a third layer which is substantially transparent consisting essentially of high refractive index zinc sulfide,
- D. a fourth layer which is substantially transparent consisting essentially of gold,
- E. a fifth layer which is substantially transparent consisting essentially of high refractive index zinc sulfide,
- F. a sixth layer consisting essentially of an adhesive organic polymeric transparent film, and
- G. a seventh layer comprising a glass pane.

3,849,245
SEPARATION OF GREASY LIQUIDS AND RECOVERY OF PAPER FIBER FROM MUNICIPAL REFUSE

Paul G. Marsh, and David E. Chupka, both of Middletown, Ohio, assignors to Black Clawson Fibreclaim, Inc., Middletown, Ohio
Continuation-in-part of Ser. No. 224,815, Feb. 9, 1972, abandoned. This application Nov. 13, 1973, Ser. No. 415,301
Int. Cl. D21f *1/66;* **B01d** *21/26*
U.S. Cl. 162—4 **15 Claims**



1. The process of recovering by-products, including paper fibers for reuse from refuse containing waste paper contaminated by garbage, comprising the steps of:

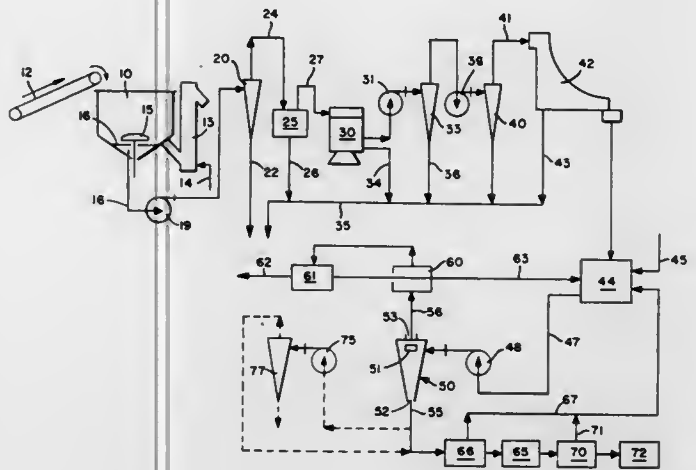
- a. forming from said refuse a pumpable aqueous slurry wherein the solid constituents are of a maximum particle size of the order of paper fibers and consist essentially of paper fibers contaminated with greasy liquids,
- b. supplying said slurry to a conical vessel having a tangentially arranged inlet port adjacent the base thereof and having outlet ports in the apex and base thereof, said inlet and base ports being of the same order of flow area,
- c. maintaining the supply flow to said inlet port sufficiently high to develop in said vessel centrifugal force conditions causing vortical separation of said slurry within said vessel into an outer fraction containing the large majority of the paper fibers and an inner fraction containing the large majority of said greasy liquids and to cause discharge flows of said outer and inner fractions through said apex and base ports respectively,
- d. maintaining said discharge flows through both of said outlet ports in predetermined relation such that the portion of said outer fraction discharged through said apex port as accepted stock contains the large majority of the paper fibers which enter said vessel,
- e. recovering for reuse the reject materials in such discharge flow through said base outlet, and
- f. further treating said recovered reject materials to convert the same into one or more of the following by-products:
  - i. the grease constituents thereof,
  - ii. fuel including said grease constituents,
  - iii. fuel substantially free of said grease constituents.

3,849,246
RECOVERY OF PAPER FIBER FROM WASTE MATERIAL CONTAMINATED WITH GREASE, WAX AND/OR SIMILAR MATERIAL

Delmar R. Raymond, Suffern, and Jack M. Kleinfeld, Bronx, both of N.Y., assignors to Black Clawson Fibreclaim, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 294,324, Oct. 2, 1972, abandoned. This application June 13, 1974, Ser. No. 478,792
Int. Cl. D21b *1/08*
U.S. Cl. 162—4 **9 Claims**

1. In the recovery of paper fiber for reuse from waste paper material, the process of separating the reusable paper fibers from light organic contaminants of specific gravities similar to or lower than paper fibers, comprising the steps of:

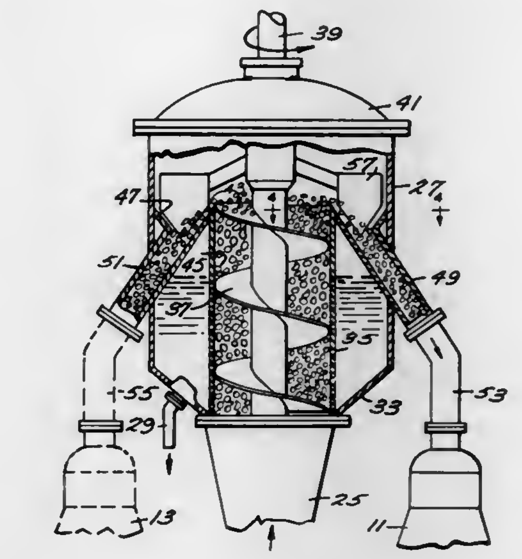
- a. forming from said waste material a pumpable aqueous slurry wherein the solid constituents are of a maximum particle size of the order of paper fibers and consist essentially of paper fibers and one or more of such light organic contaminants, namely, grease, wax and plastic fragments and fibers similar in size and specific gravity to paper fibers,
- b. heating said slurry to an elevated temperature of at least 120°F sufficient to soften whatever grease and wax is present therein,
- c. supplying said heated slurry to a closed cylindrical-conical vessel having a tangentially arranged inlet port adjacent the base thereof and having outlet ports in the apex and base thereof, said inlet and base ports being of substantially the same order of flow area,
- d. maintaining the supply flow to said inlet port sufficiently high to develop in said vessel centrifugal force conditions causing vortical separation of said slurry within said vessel into an outer fraction containing the large majority of the paper fibers and an inner fraction containing the large majority of said light contaminant materials, and to cause discharge flows of said outer and inner fractions through said apex and base ports respectively,
- e. maintaining said discharge flows through both of said outlet ports in predetermined relation such that the portion of said outer fraction discharged through said apex port as accepted stock contains the large majority of the paper fibers which enter said vessel, and
- f. recovering said paper fibers in said accepted stock for reuse.



3,849,247
SCREENING AND FEEDING DEVICE FOR CELLULOSE DIGESTERS

Johan C.F.C. Richter, St. Jean Cap Ferrat, France, assignor to Kamyr Aktiebolag, Karlstad, Sweden
Filed Mar. 12, 1973, Ser. No. 339,758
Claims priority, application Sweden, Mar. 21, 1972, 72/3600
Int. Cl. D21c *7/06*
U.S. Cl. 162—237 **6 Claims**

1. A cellulose digesting apparatus in which a top portion of at least one vertical digester is in open communication with a pressure-resistant vessel containing a screening device wherein liquid is strained from a chips-liquid suspension for recirculation of the liquid, and a feeding device for transferring the chips from said vessel to the digester, said feeding device comprising a plurality of chips outlets in the vessel each for connection to a separate digester and a distributing device for the distribution of the chips upon the outlets used, said screening device comprising a separating shell having an upper impervious portion and a lower strainer portion including means for collecting liquid separated from the chips; means for feeding the strainer chips upwardly through the shell for discharge over the top edge of the upper impervious portion, said means including a feeder screw surrounded by said shell and coaxial therewith; collecting means around said shell and below the top edge of said impervious portion for collecting strained chips discharged therefrom, said collecting means



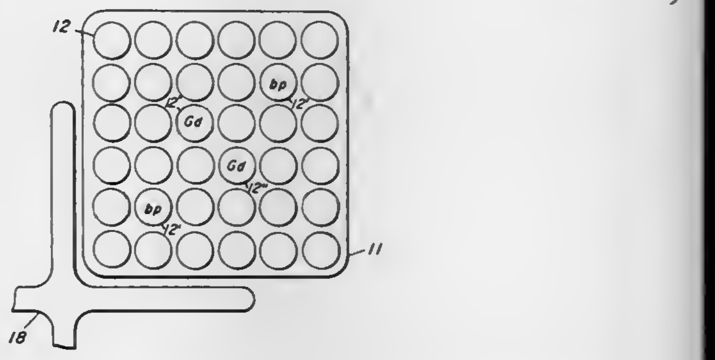
comprising a circular trough; the chips outlets comprising tubes connected to and sloping downwardly from the bottom of said trough for discharge into said digestors substantially by gravity.

ERRATUM

For Class 176—36 see:
Patent No. 3,849,257

3,849,248
SAMARIUM COMPENSATION FOR NUCLEAR REACTOR FUEL

Frederick R. Channon, and David L. Fischer, both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.
Continuation of Ser. No. 799,467, Feb. 14, 1969, abandoned. This application Oct. 27, 1971, Ser. No. 193,221
Int. Cl. G21c *3/04, 7/02, 7/24*
U.S. Cl. 176—68 **9 Claims**



1. A fuel assembly for use with other fuel assemblies in a thermal nuclear reactor core, said core including control rods which are selectively movable into and out of said core to control reactivity thereof, said fuel assembly comprising an array of a plurality of spaced fuel elements containing new nuclear fuel initially lacking an equilibrium amount of samarium, said new fuel providing an excess of reactivity to compensate for said equilibrium amount of samarium which said new fuel will contain after a period of operation in said core, and an initial amount of dilute fixed gadolinium burnable poison in said fuel assembly to absorb neutrons during the period of samarium build-up in said new fuel to equilibrium to compensate for said initial lack of samarium and the said initial excess of reactivity whereby said burnable poison sub-

stantially depletes out of said fuel as the samarium builds up to the equilibrium amount, said dilute gadolinium poison having a density and distribution in the fuel assembly such that the poison will not be substantially self-shielding, said gadolinium being particularly useful in said fuel assembly as compared to other burnable poison in that it has both a neutron capture cross section which decreases more rapidly than l/v and than the cross section of samarium-149 over thermal neutron energy range of from 0.005–0.1 electron volts, and also provides either an increased "cold" shutdown margin or an increased "hot" operating reactivity margin the initial amount of said burnable poison being substantially defined by: burnable poison atoms/fuel atoms = $Y\,\sigma_f^f/\sigma_c^{bp}$
where

Y is the fractional yield of Sm-149 atoms per fission of fuel,
σ_f^f is the microscopic neutron fission cross section of the fuel, and
σ_c^{bp} is the microscopic neutron capture cross section of the burnable poison.

3,849,249
PRODUCTION OF SYNTHETIC POLYNUCLEOTIDES

Kyuji Rokugawa; Yoshiki Katoh; Akira Kuninaka, and Hiroshi Yoshino, all of Choshi, Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Choshi-shi, Chiba-ken, Japan
Filed June 29, 1973, Ser. No. 374,888
Claims priority, application Japan, July 21, 1972, 47-72471
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 N 8 Claims

1. A process for producing a polynucleotide which comprises steps of: cultivating a microorganism belonging to the genus *Achromobacter* and contacting at least one nucleoside diphosphate with a cultured material selected from the culture of said microorganism, the cells isolated from the culture, and polynucleotide phosphorylasse containing material derived from the cells, in the presence of at least one divalent cation selected from manganese and magnesium ions.

3,849,250
PROCESS FOR PRODUCING L-ARGININE BY FERMENTATION

Kiyoshi Nakayama, Sagamihara, and Hajime Yoshida, Tokyo, both of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Chiyoda-ku, Tokyo, Japan
Continuation-in-part of Ser. No. 119,348, Feb. 26, 1971, abandoned. This application Jan. 16, 1973, Ser. No. 324,033
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 4 Claims

1. A process for producing L-arginine which comprises culturing *Corynebacterium glutamicum* ATCC 21659 in a nutrient medium containing a carbon source, nitrogen source and inorganic salts to accumulate L-arginine, and recovering the accumulated L-arginine therefrom.

3,849,251
PROCESS FOR PRODUCING L-TRYPTOPHAN

Kiyoshi Nakayama, Sagamihara, and Hiroshi Hagino, Tokyo, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
Filed May 23, 1973, Ser. No. 363,039
Claims priority, application Japan, Nov. 11, 1972, 47-114236
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 4 Claims

1. A process for producing L-tryptophan by fermentation which comprises culturing a mutant strain of *Corynebacterium glutamicum* which requires phenylalanine and tyrosine for growtn and which is resistant to at least one analogue of tryptophan and at least one of the group consisting of phenylalanine analogues and tyrosine analogues, in an aqueous nutrient medium containing sources of carbon, nitrogen, inorganic nutrients and required growth factors; accumulating L-tryptophan in the resulting culture liquor and recovering said L-tryptophan therefrom.

3,849,252
ENZYME COMPOSITION AND PROCESS FOR THE MANUFACTURE THEREOF

Edmund E. Percs, Basel; Kurt F. Stocker, Basel-Land, both of Switzerland; Birger Blomback; Margareta Blomback, both of Stockholm, Sweden, and Birgit Hessel, Bandhagen, Sweden, assignors to Pentaphram A.G., Basle, Switzerland
Filed Jan. 14, 1972, Ser. No. 217,994
Claims priority, application Switzerland, Jan. 18, 1971, 733/71
Int. Cl. C07g *7/02;* **A61k** *19/00*
U.S. Cl. 195—62 13 Claims

1. An enzyme composition from venom of Bothrops atrox of any other snake the venom of which is immunologically cross-reactive with Bothrops atrox venom, the said enzyme composition having, at lower doses, a hemostatic activity and, at higher doses, a blood anticoagulant activity in humans and other mammals, and being characterized by the following properties:

a. it has a thrombin-like endopeptidase activity,
b. it comprises a peptide component and a carbohydrate component, the peptide component including one or more polypeptides having a molecular weight between about 18,000 and 55,000 as determined by the equilibrium ultracentrifugation method,
c. it has a carbohydrate (neutral sugar) content of about 2 to 10 percent by weight, based on the protein content,
d. it is scarcely soluble in distilled water but readily soluble in physiological sodium chloride solution,
e. it forms complexes with phenol and phenol derivatives, which complexes are scarcely soluble or insoluble in water,
f. it causes coagulation of fibrinogen by selective elimination of fibrinopeptides A from fibrin without releasing fibrinopeptides B,
g. it has a thrombin-like activity corresponding to about 30 to 450 NIH-thrombin units per mg. of protein content,
h. it splits tosylarginine methyl ester and gelatin but not lysin methyl ester, phenylalanine ethyl ester, N-acetylmethionine, N-acetyltyrosine, leucylglycine and casein,
i. it is not inhibited by heparin, heparinoids, hirudin, antithrombins and the polyvalent peptidase inhibitor of KUNITZ,
k. it is inhibited at an enzyme concentration of about 5 mg. per ml. to the extent of about 95 percent with respect to its coagulation and esterase activity by 2.5×10^{-3} molar diisopropyl fluorophosphate at a pH of 8 within 2 hours,
l. it is competitively inhibited by tosylarginine methyl ester and completely inhibited by the antibody contained in antibothrops serum,
m. it is not fixed and, therefore, not inactivated by fibrin,
n. it has a substantially longer biological halflife time than heparin,
o. it causes the formation of a fibrin derivative which interacts with excess fibrinogen to form a nonpolymerizable fibrin-fibrinogen complex,
p. it acts on fibrinogen with formation of a fibrin which has physico-chemical properties different from those of fibrin produced by thrombin insofar as it is rapidly hydrolyzed by fibrinolytic enzymes even in the presence of activated factor XIII and of calcium ions and is soluble in 5-molar aqueous urea, and
q. it causes in vivo a defibrinogenation and a secondary fibrinolysis without hemorrhagic and thromboembolic side effects.

3,849,253
PROCESS OF IMMOBILIZING ENZYMES

Richard D. Harvey, Marion, and Kurt Ladenburg, Cedar Rapids, both of Iowa, assignors to Penick & Ford, Limited, Cedar Rapids, Iowa
Filed Oct. 10, 1972, Ser. No. 296,330
Int. Cl. C07g *7/02*
U.S. Cl. 195—68 9 Claims

1. The process of immobilizing a water-soluble enzyme on a carrier, wherein an aqueous solution of an enzyme is contacted with a water-insoluble carrier material for fixation of said enzyme thereon, and said carrier material while said surfaces are wetted with said enzyme solution is contacted with an aqueous solution of film-forming resin, said resin being in the process of polymerization to a water-insoluble state at a temperature and pH at which said enzyme is stable, wherein the improvement comprises employing nylon in the form of a spongy floc as said carrier material, and depositing on the exposed enzyme solution coated surfaces of said nylon floc carrier material a water-insoluble film of said resin containing said enzyme in active form.

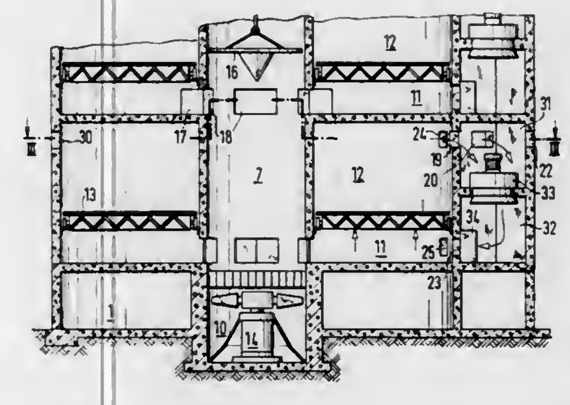
3,849,254
PROCESS FOR EFFECTING ENZYMATIC REACTIONS IN AEROSOLS

Donald J. Kirwan, and John L. Gainer, both of Charlottesville, Va., assignors to The University of Virginia, Charlottesville, Va.
Filed May 31, 1973, Ser. No. 365,637
Int. Cl. C12b *1/00;* **C07g** *7/02*
U.S. Cl. 195—116 9 Claims

1. A method for inactivating airborne virus or airborne bacterium which comprises contacting an aerosol containing said virus or bacterium with an immobilized hydrolytic enzyme wherein the particle size of said aerosol is from 0.002 to 5 microns, wherein said immobilized enzyme is attached to a solid support forming an enzyme reactor and wherein said inactivation is effected by passing said aerosol through said reactor.

3,849,255
DEVICE FOR GERMINATING AND DRYING MALT

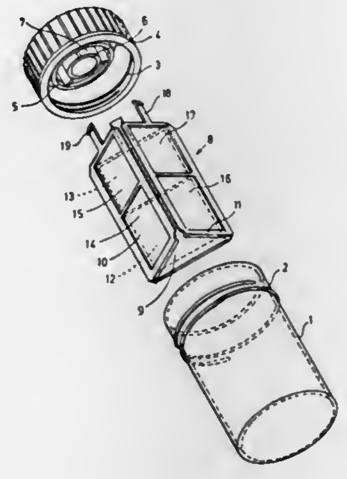
Gisbert Schlimme, Braunschweig, and Manfred Tschirner, Wolfenbuttel, both of Germany, assignors to Miag Muhlenbau und Industrie GmbH, Braunschweig, Germany
Filed Apr. 19, 1972, Ser. No. 245,514
Claims priority, application Germany, May 3, 1971, 2121586
Int. Cl. C12c *1/14, 1/06*
U.S. Cl. 195—129 5 Claims



1. In a malt drying and germinating apparatus, a basic chamber having a generally cylindrical wall,
a central vertical stack spaced radially inwardly of said cylindrical wall,
vertically spaced horizontal walls extending from said cylindrical wall to said stack, and dividing said basic chamber into a plurality of individual superimposed working chambers,
a malt drying and germinating rack in each working chamber between said horizontal walls and dividing each working chamber into an air inlet chamber beneath said rack and an air outlet chamber above said rack,
air inlet ducts leading into each inlet chamber beneath the associated rack thereof,
door means in each air inlet duct varying the volume of air supplied through said inlet ducts,
an air outlet duct leading from each air outlet chamber adjacent the top thereof,
door means for varying the flow of air through said outlet ducts,
an air circulating blower at the bottom of said central stack, an air heating chamber at the bottom of said basic chamber and having heating means therein,
an air inlet duct leading from said heating chamber to said blower,
another air inlet duct admitting air at ambient temperature to said air heating chamber,
air circulating means disposed outside of said working chambers and having communication with said air outlet ducts leading from said air outlet chambers for withdrawing spent air therefrom,
conveyor means in each working chamber above the associated rack for conveying malt thereonto,
malt turnover means adjacent said conveyor means for turning over the malt on each rack,
individual drive means on the outside of said working chambers adjacent each conveyor means for turning over the malt on the associated rack during heating and germinating thereof,
said racks being mounted for turning movement about said working chambers and turning thereabout during drying and germinating of the malt and being individually driven and accommodating the circulation of air therethrough.

3,849,256
SUBSTRATE-CONTAINING TEST CONTAINER

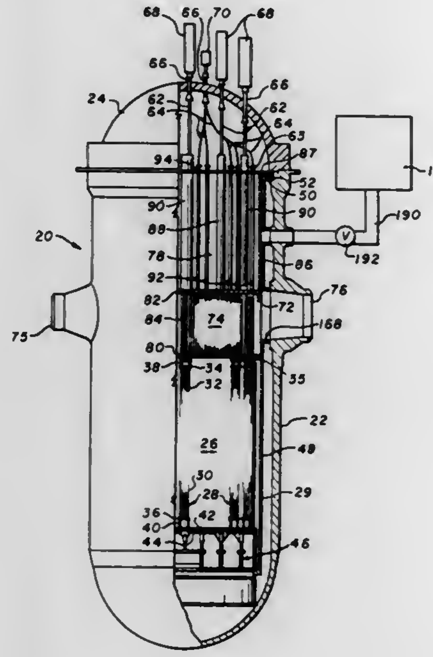
Fritz Linder, 440 60 Skarhamn, Sweden
Filed Oct. 13, 1972, Ser. No. 297,230
Claims priority, application Sweden, Jan. 31, 1972, 1081/72
Int. Cl. C12k *1/10*
U.S. Cl. 195—139 14 Claims



1. A fluid testing device comprising a casing, having a removable screw lid, and a hollow testing colum disposed within the caseing, said testing column having a number of test fields spaced apart from each other said test fields being located along respective parts of the surface of the column, facing the casing, an annular groove formed in the lower face of said lid and suspension means projecting from the upper part of said testing column into said annular groove for detachably holding said testing column.

3,849,257
GUIDE STRUCTURE FOR CONTROL ELEMENTS

Frank Bevilacqua, Windsor, Conn., assignor to Combustion Engineering Inc., Windsor, Conn.
Filed June 28, 1972, Ser. No. 266,858
Int. Cl. G21c *7/08*
U.S. Cl. 176—36 R **13 Claims**



1. A nuclear reactor comprising, in combination:

a vessel having a nuclear core fixedly positioned therein;

a plurality of fuel assemblies comprising said nuclear core, each of said fuel assemblies having a plurality of longitudinally extending fuel elements and a plurality of longitudinally extending guide channels;

an upper plate and lower plate in said vessel, said lower plate overlying all of said plurality of fuel assemblies and said upper plate being spaced above said lower plate;

a plurality of hollow tubes extending between and rigidly connected to said upper plate and said lower plate, the wall of each of said hollow tubes being circumferentially continuous substantially over the length thereof, and each of said hollow tubes being in alignment with only one of said guide channels;

a support means for supporting said two spaced plates in said vessel;

a plurality of control elements each of which is situated for telescoping movement within only one of said hollow tubes and said channel in alignment therewith;

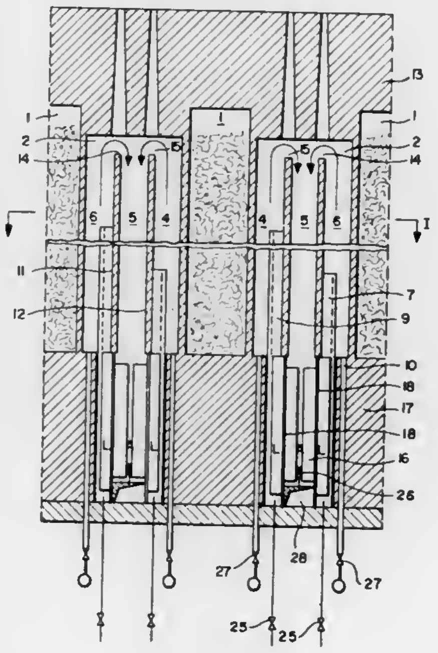
a plurality of yoke means each of which is wholly within said vessel and which interconnects at least two of said plurality of control elements, each of said yoke means having a plurality of laterally extending fingers each of which overlies and is in alignment with one of said hollow tubes and which is connected to said control element situated therein;

connection means for each of said yoke means connected to said yoke means inside said vessel and passing outside of said vessel, each of said interconnected connection means, yoke means and control elements forming a rigid and essentially nonflexible unitary structure; and

drive means positioned outside of said vessel for each of said connection means, each of said drive means being connected to one of said connection means for driving said control elements connected thereto between a fully inserted position and a fully retracted position to control the reactivity of said nuclear core during normal operation, the position of each of said yoke means for both of said control element positions being vertically above both of said upper and lower plates.

3,849,258
RECUPERATIVE COKE OVEN

Claus Flockenhaus, Essen-Haarzopf; Wolfgang Simonis, Gladbeck; Kurt-Gunther Beck, Essen-Bredeney, and Heinrich Echterhoff, Essen, all of Germany, assignors to Didier-Kellogg Industrieanlagenbau GmbH, Essen and Bergwerksverband GmbH, Essen-Kray, both of, Germany
Filed Dec. 29, 1972, Ser. No. 319,471
Claims priority, application Germany, Dec. 28, 1971, 2164994
Int. Cl. C10b *5/20, 1/06*
U.S. Cl. 202—140 **5 Claims**



1. A recuperative coke oven comprising:

a plurality of oven chambers;

heating walls located on opposite sides of each of said oven chambers, each of said heating walls separating adjacent of said oven chambers;

each of said heating walls having therein a plurality of flue groups, said flue groups being aligned in a row extending in the longitudinal direction of the respective heating wall;

each of said flue groups comprising first, second and third separate flues arranged side-by-side across the width of the respective heating wall and in a direction transverse to said longitudinal direction thereof;

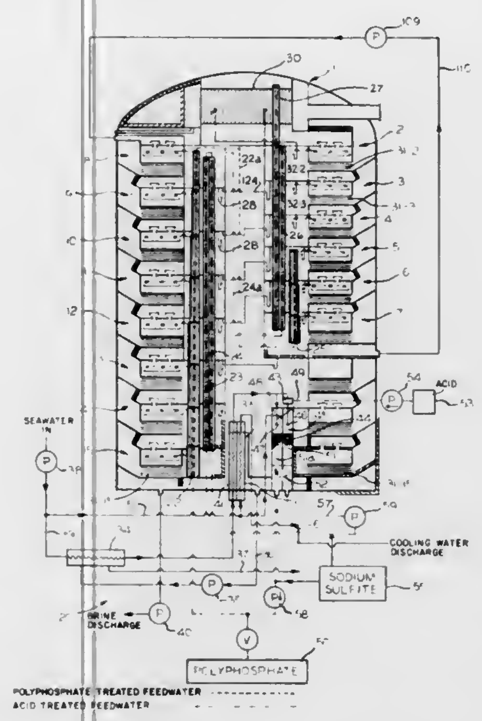
said first and second flues of each of said flue groups being ascending flues and being located adjacent the neighboring of said oven chambers separated by the said respective heating wall, and said third flue being a descending flue positioned between said first and second flues;

each of said flue groups having positioned therebelow a recuperator having cells in communication with said flues of said flue group;

separate means connected to each of said cells of each said recuperator for supplying to said recuperator and to the respective said first and second flues a low calorie gas and/or air and for withdrawing from said recuperator and from the respective said third flue a combustion gas; and separate flow control means operably connected to each of said cells for independently controlling the flow through each of said separate means for supplying and withdrawing.

3,849,259
DISTILLATION APPARATUS

Armando B. Steinbruchel, San Diego, Calif., assignor to Aqua-Chem, Inc., Milwaukee, Wis.
Continuation of Ser. No. 186,178, Oct. 4, 1971, abandoned. This application Sept. 27, 1973, Ser. No. 401,183
Int. Cl. B01d *1/26, 3/02*
U.S. Cl. 202—174 **37 Claims**



1. An evaporator including a plurality of successive effects, each effect operating at a lower temperature than preceding effects,

each effect including heat exchange tube means for placing a feed liquid and vapor in a heat exchange relation so that at least a portion of said feed liquid is vaporized and at least a portion of said vapor is condensed,

vapor distribution means for feeding at least a part of the vaporized portion of the feed liquid generated in each effect except the lowest temperature effect, as the vapor to the heat exchange tube means of the next lower temperature effect,

the heat exchange tube means of the initial one of said successive effects being oriented with its individual heat exchange tubes disposed substantially vertically and the heat exchange tube means of the remaining effects being oriented with their individual heat exchange tube means disposed substantially horizontally,

feed liquid distribution means for feeding an initial quantity of feed liquid to the interiors of the heat exchange tubes of the initial effect and for feeding the unevaporated portion of said feed liquid from each effect as a film over the outer surfaces of said horizontally disposed heat exchange tubes of the next succeeding effect, said vapor distribution means conducting said vapor to the interiors of said horizontally disposed tubes of the next lower temperature effect, said feed liquid means also including means for providing an additional quantity of feed liquid to each of said horizontally disposed heat exchange tubes in an amount substantially sufficient to maintain a thin film on the outer surfaces thereof.

3,849,260
WATER DISTILLATION APPARATUS

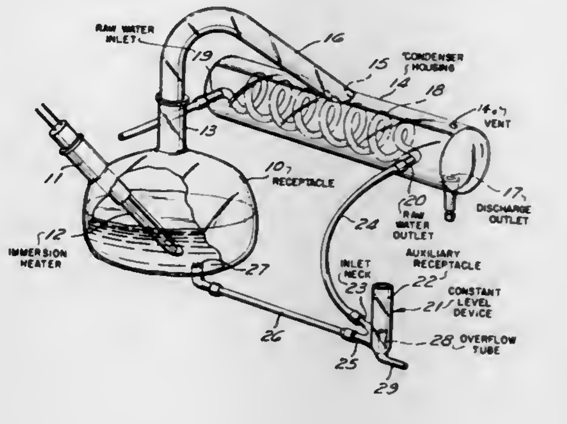
Raymond Charles Ruckstuhl, Delray Beach, Fla., assignor to Oral Corporation, Boca Raton, Fla.
Filed June 14, 1973, Ser. No. 369,905
Int. Cl. B01d *3/42*
U.S. Cl. 202—181 **6 Claims**

1. In a water distillation apparatus having

a receptacle providing a boiling chamber, heating means for boiling the water in said receptacle;

a condenser connected to receive water vapor from said boiling chamber;

and a constant level device including an auxiliary receptacle having a fluid connection to the bottom of said boiling chamber and having a water inlet above said connection, a downwardly extending overflow tube having its upper end open inside said auxiliary receptacle to define the static water level inside said boiling chamber, and means providing a discharge opening from the bottom of said overflow tube;



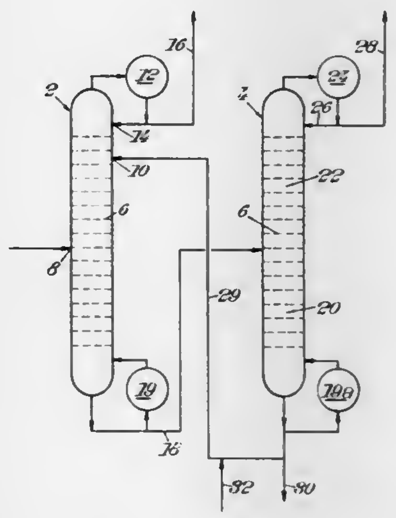
the improvement wherein said fluid connection provides a valve-less passageway between the bottom of said boiling chamber and said auxiliary receptacle;

and further comprising

means defining a drain opening in said overflow tube of the constant level device which is lower than the bottom of said boiling chamber and communicates directly and uninterruptedly with the bottom of the boiling chamber through said fluid connection to drain the boiling chamber each time the boiling stops and the flow of water into the boiling chamber is discontinued.

3,849,261
METHOD FOR SEPARATING HYDROCARBONS ESPECIALLY AROMATIC HYDROCARBONS AND INSTALLATIONS THEREFOR

Georges Gau, Nancy, France, assignor to Agence Nationale de Valorisation de la Recherche (Anvar), Courbevoie, France
Filed Feb. 25, 1972, Ser. No. 229,273
Claims priority, application France, Feb. 26, 1971, 71.06659
Int. Cl. B01d *3/34;* **C07c** *7/04, 15/08*
U.S. Cl. 203—39 **43 Claims**



1. Method of enriching one of the constituents of an initial mixture containing at least two hydrocarbons, and of which at

least one possesses a replaceable hydrogen atom more readily replaceable by a metal of an organometallic compound than a hydrogen atom of the other hydrocarbon, comprising fractionally distilling said mixture in contact with such an organometallic compound having a metal atom which preferentially replaces a replaceable hydrogen atom on one of said hydrocarbons, said metal atom being substituted in a chemically reversible manner for said replaceable hydrogen atoms, effecting replacement of at least one hydrogen atom of said hydrocarbon whose hydrogen atom is more readily replaced by said metal atom with said metal atom, and collecting vapor phase distillate enriched in the hydrocarbon of the initial mixture which has the least affinity for said metal and an unvaporized bottoms phase enriched in the hydrocarbon of the initial mixture which has the most affinity for said metal atom in a partially metallated form.

3,849,262

PROCESS FOR THE SEPARATION OF MONOETHANOLAMINE, DIETHANOLAMINE, AND TRIETHANOLAMINE FROM CRUDE ETHANOLAMINE MIXTURES

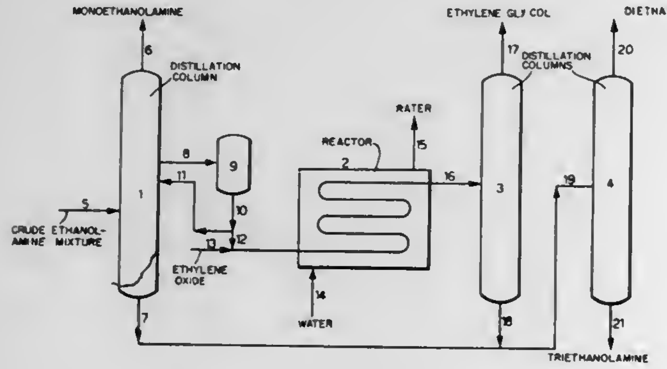
Gioacchino Cocuzza, Catania, Italy, assignor to Societa Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed July 18, 1973, Ser. No. 380,526

Claims priority, application Italy, Sept. 20, 1972, 29422/72

Int. Cl. B01d *3/34;* **C07c** *91/02*

U.S. Cl. 203—38 **5 Claims**



1. A process for the separation of monoethanolamine, diethanolamine and triethanolamine from crude ethanolamine mixtures containing ethylene glycol obtained by the reaction of aqueous ammonia with ethylene oxide, comprising the steps of:

- a. introducing the crude ethanolamine mixture into a distillation column at a point situated between the top of the column and the bottom of the column;
- b. removing monoethanolamine at the top of the column;
- c. removing diethanolamine and triethanolamine at the bottom of the column;
- d. removing a side stream containing monoethanolamine and ethylene glycol in a weight ratio of 1:1 to 20:1, respectively, at a point situated between the top of the column and the point at which the crude ethanolamine mixture is introduced;
- e. mixing the side stream with ethylene oxide in a quantity such that the weight ratio of ethylene oxide to monoethanolamine is about 1:1 to 1.4:1 and reacting the resulting mixture for about 20 to 120 minutes at temperatures of at most 50°C to yield a reaction product comprising diethanolamine, triethanolamine and ethylene glycol; and
- f. separating the ethylene glycol in the reaction product from the diethanolamine and triethanolamine in the reaction product.

3,849,263

PROCESS FOR ELECTROLYTICALLY COLOURING OF ALUMINIUM WHICH HAS PREVIOUSLY BEEN ANODICALLY OXIDIZED

Ove Christopher Gedde, Gaupefaret 24, 1713 Gralum, Sarpsborg, Norway

Filed June 25, 1970, Ser. No. 49,951

Claims priority, application Norway, June 25, 1969, 2638/69

Int. Cl. C23b *9/02*

U.S. Cl. 204—35 N **5 Claims**

1. A process for electrolytically coloring an aluminum article which comprises first, anodically oxidizing said article to form an alumina layer thereon; immersing said article in an aqueous bath comprising a strong acid and a solution of about 0.5 to 20 percent by weight of a divalent tin salt, based on said bath, said tin salt being the predominant source of metal ions in said bath capable of forming and determining the color of the colored compounds in said alumina layer, and passing an alternating current between said anodically oxidized article and a counter-electrode via said bath to develop said color on said article.

3,849,264

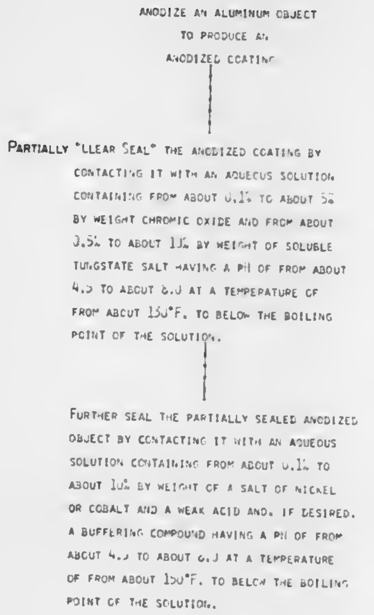
PRODUCTION OF STAIN RESISTANT, CLEAR, SEALED ANODIZED FILMS

Kenneth E. Weber, Granada Hills; Donald G. Crozier, Burbank, and Wilbur W. Hawley, Santa Ana, all of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif., by said Weber and Crozier

Filed Sept. 5, 1972, Ser. No. 286,595

Int. Cl. C23c *7/00*

U.S. Cl. 204—35 N **15 Claims**



ANODIZE AN ALUMINUM OBJECT TO PRODUCE AN ANODIZED COATING

PARTIALLY "CLEAR SEAL" THE ANODIZED COATING BY CONTACTING IT WITH AN AQUEOUS SOLUTION CONTAINING FROM ABOUT 0.1% TO ABOUT 5% BY WEIGHT CHROMIC OXIDE AND FROM ABOUT 0.5% TO ABOUT 10% BY WEIGHT OF SOLUBLE TUNGSTATE SALT HAVING A PH OF FROM ABOUT 4.5 TO ABOUT 6.0 AT A TEMPERATURE OF FROM ABOUT 150°F. TO BELOW THE BOILING POINT OF THE SOLUTION.

FURTHER SEAL THE PARTIALLY SEALED ANODIZED OBJECT BY CONTACTING IT WITH AN AQUEOUS SOLUTION CONTAINING FROM ABOUT 0.1% TO ABOUT 10% BY WEIGHT OF A SALT OF NICKEL OR COBALT AND A WEAK ACID AND, IF DESIRED, A BUFFERING COMPOUND HAVING A PH OF FROM ABOUT 4.5 TO ABOUT 6.0 AT A TEMPERATURE OF FROM ABOUT 150°F. TO BELOW THE BOILING POINT OF THE SOLUTION.

1. In a process of sealing an anodized aluminum coating in which said coating is contacted with a first solution containing tungstate and chromate ions so as to partially seal said anodized coating, the improvement which comprises:

contacting the anodized coating which has been contacted with said first solution after it has been removed from said first solution with a further solution containing from about 0.1% to about 10% by weight of a soluble salt of a metal selected from the group consisting of nickel and cobalt and of a weak acid at a temperature of from about 150°F. to immediately below the boiling point of said solution for a period sufficient to further seal said anodized coating in order to render said anodized coating substantially stain resistant.

3,849,265

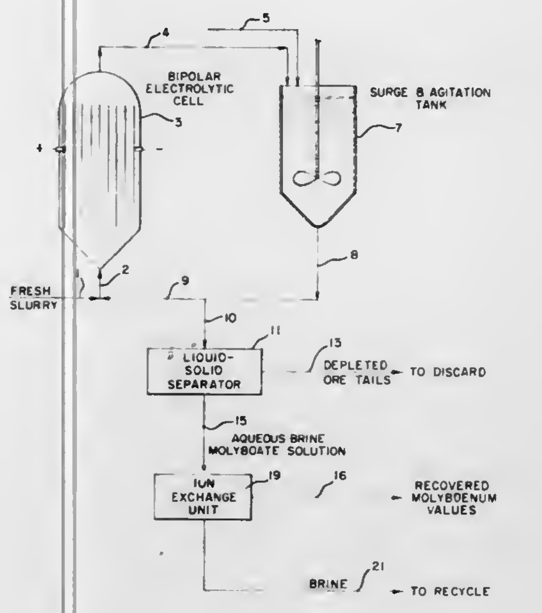
ELECTRO-OXIDATIVE METHOD FOR THE RECOVERY OF MOLYBDENUM FROM SULFIDE ORES

Bernard J. Scheiner; Roald E. Lindstrom, both of Reno, Nev., and Thomas A. Henrie, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Oct. 1, 1971, Ser. No. 185,502

Int. Cl. C01b *15/00*

U.S. Cl. 204—86 **5 Claims**



1. The method for the dissolution of molybdenum and rhenium, which comprises:

forming a pumpable slurry, said slurry being a mixture of a pulverized solid and a carrier liquid, said solid being a sulfide-type source of molybdenum, or rhenium or of molybdenum and rhenium; and said carrier liquid being an aqueous salt solution;

contacting said slurry with an anode and cathode;

providing current through said anode and cathode, while maintaining the slurry at a pH of 5 to 9 and temperature of 15° to 55°C, and thereby electrolyzing said slurry to electro-oxidize said molybdenum and rhenium; and

separating the resulting slurry into two fractions the first of which is an aqueous solution containing dissolved molybdenum, rhenium or a mixture of dissolved molybdenum and rhenium, and the second of which is the depleted electrolyzed solid.

3,849,266

PROCESS FOR THE ELECTROLYSIS OF ALKALI CHLORIDE SOLUTION

Bruno Corradi, Corso Italia; Vincenzo Petrillo, Cirie, and Giordano Cimarosti, Roverbella, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Continuation of Ser. No. 130,472, April 1, 1971, abandoned, which is a continuation-in-part of Ser. No. 796,190, Feb. 3, 1969, abandoned. This application Aug. 2, 1973, Ser. No. 385,042

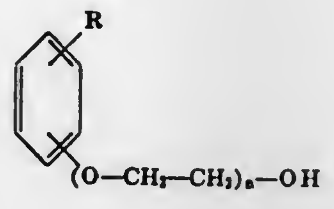
Claims priority, application Italy, Feb. 6, 1968, 12416/68

Int. Cl. C01d *1/06, 1/08*

U.S. Cl. 204—98 **12 Claims**

1. In a process for the electrolysis of alkaline chloride solutions in mercury cathode cells and diaphragm cells, the improvement comprising reducing the anodic overvoltage in both kinds of cells and the decomposition of the amalgam in mercury cathode cells during the electrolysis by adding to the electrolyte from 2 to 200 ppm of at least one compound selected from the group consisting of,

- i. the ethers of alcohols with polyoxyethylenes which
  - a. are derived from alcohols selected between aliphatic and aromatic ones and having from 8 to 20 carbon atoms, and
  - b. contain from 2 to 150 molecules of ethylene oxide for each molecule of alcohol,
- ii. the ethers of phenols with polyoxyethylenes having the following formula:



wherein

  - a. R is a radical selected between alkyl and aralkyl and has from 1 to 20 carbon atoms, and
  - b. *n* is between 2 and 40, inclusive,
- iii. the esters of carboxylic acids with polyoxyethylenes which
  - a. are derived from acids selected between aliphatic and aromatic ones and having from 6 to 20 carbon atoms, and
  - b. contain from 200 to 6000 ethylene oxide molecules for each molecule of acid.

3,849,267

PROCESS FOR RECOVERING MERCURY FROM A GAS CONTAINING MERCURY VAPOR

Hendrika Hilgen, Almelo, and Casper J. N. Rekers, Hengelo, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed Mar. 5, 1973, Ser. No. 338,193

Claims priority, application Netherlands, Mar. 6, 1972, 7202959

Int. Cl. C01g *13/04;* **C01d** *1/08*

U.S. Cl. 204—99 **7 Claims**

1. A process for recovering mercury from a mercury-containing gas comprising

mixing the gas with chlorine and

subsequently passing the mixture at a temperature up to 80°C through a gas-permeable bed of non-porous solid material presenting a total external surface area amounting to at least 20 m² per m³ bed volume which collects the mercury as a mercury chloride.

3,849,268

METHOD AND SYSTEM FOR PREVENTING SHORT-CIRCUITS IN MERCURY CATHODE ELECTROLYTIC CELLS

Nobuyuki Miyamaoto; Kyosuke Nakamura, both of Kawasaki, and Osamu Nittani, Tokyo, all of Japan, assignors to Fuji Denka Seizo Kabushiki Kaisha, Kawasaki-shi, Kanagawa-ken and Asahi Denka Kogyo Kabushiki Kaisha, Tokyo-to, both of, Japan

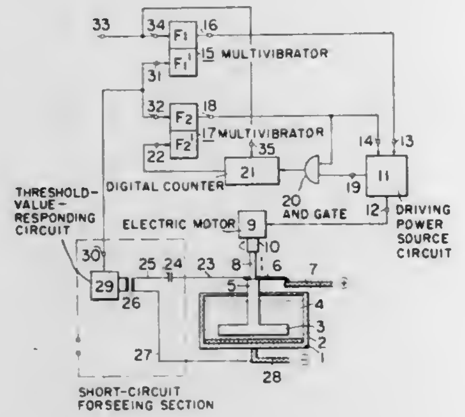
Filed Sept. 19, 1972, Ser. No. 290,411

Claims priority, application Japan, Sept. 5, 1972, 47-88897

Int. Cl. C01d *1/14;* **B01k** *3/00*

U.S. Cl. 204—99 **2 Claims**

1. A method of adjusting the distance between the anode and the cathode of a mercury cathode electrolytic cell, which method comprises the steps of: lowering the anode toward the cathode at a predetermined speed while observing the rate of voltage change with respect to the voltage between the anode and the cathode; producing an informational signal at a position of the anode with respect to the cathode when the rate of voltage change exceeds a predetermined threshold value; stopping and raising said anode at a speed substantially higher than said predetermined speed immediately after receiving the informational signal; and then stopping said anode at a position remote upwardly by a predetermined distance from said position of the anode with respect to the cathode, where said informational signal is produced.



3,849,269
PROCESSING ORES CONTAINING NICKEL AND COPPER OXIDES

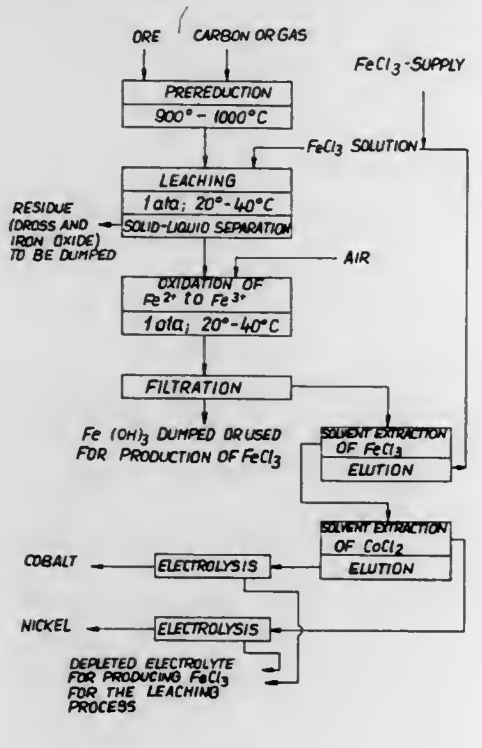
Jurgen Hartwig, Essen-Steele; Ulrich Scheffler, and Klaus-Herbert Ulrich, both of Essen, all of Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Sept. 18, 1973, Ser. No. 398,405

Claims priority, application Germany, Sept. 21, 1972, 2246413

Int. Cl. C22d *1/16, 1/14;* **C22b** *3/00*

U.S. Cl. 204—107 **8 Claims**


ORE
CARBON OR GAS
FeCl3-SUPPLY
PREREDUCTION
900° - 1000°C
FeCl3 SOLUTION
LEACHING
1 ata; 20°-40°C
SOLID-LIQUID SEPARATION
RESIDUE (DROSS AND IRON OXIDE) TO BE DUMPED
AIR
OXIDATION OF Fe2+ to Fe3+
1 ata; 20°-40°C
FILTRATION
Fe (OH)3 DUMPED OR USED FOR PRODUCTION OF FeCl3
SOLVENT EXTRACTION OF FeCl3
ELUTION
SOLVENT EXTRACTION OF CoCl2
ELUTION
COBALT
ELECTROLYSIS
NICKEL
ELECTROLYSIS
DEPLETED ELECTROLYTE FOR PRODUCING FeCl3 FOR THE LEACHING PROCESS

1. A process for isolating valuable substance selected from the group consisting of nickel, copper and cobalt from oxidic ore containing such values and which comprises reducing the ore so that these values, but not any iron contained in the ore, are reduced to their free metal state, leaching the valuable substance from thus-reduced ore at normal pressure and at a temperature below **100°C** with aqueous ferric chloride and oxidizing resulting eluate to precipitate ferric hydroxide therefrom.

3,849,270
PROCESS OF MANUFACTURING SEMICONDUCTOR DEVICES

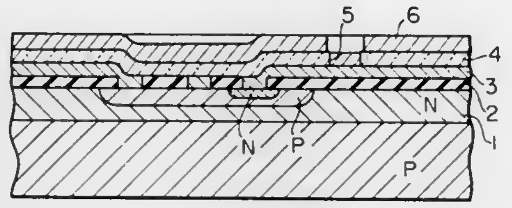
Mikio Takagi, Tokyo; Kazufumi Nakayama; Chiaki Terada, both of Kawasaki, and Hajime Kamioka, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki-shi, Japan

Filed Oct. 10, 1972, Ser. No. 295,795

Claims priority, application Japan, Oct. 11, 1971, 46-80047

Int. Cl. C23b *1/00, 3/02;* **B23p** *1/00*

U.S. Cl. 204—129.1 **26 Claims**



1. A process of manufacturing semiconductor devices which comprises the steps of:

forming an insulating layer having a closed pattern on one surface of a semiconductor substrate,

forming a deposited layer on the entire surface of the semiconductor substrate, the deposited layer being thin in the proximity of the edges of the surface of the insulating layer, and at least the portion of the deposited layer located on the insulating layer being conductive, and,

dipping the semiconductor substrate so treated in a bath of an etching solution wherein electrolytic etching is effected in a manner such that said portion of the deposited layer of conductive material on the insulating layer is connected as an anode whereby said portion of the deposited layer on the insulating layer is removed and the portion of the deposited layer encompassed by the insulating layer remains substantially unchanged.

3,849,271
ELECTROCHEMICAL DRILLING

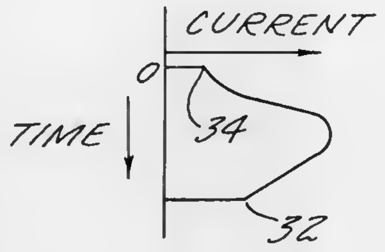
Frederick R. Joslin, Lebanon, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Continuation of Ser. No. 278,135, Aug. 4, 1972, abandoned.

Filed Dec. 13, 1973, Ser. No. 424,482

Int. Cl. B23p *1/00, 1/02, 1/12*

U.S. Cl. 204—129.2 **1 Claim**



1. In the electrochemical drilling of a hole completely through a workpiece, the steps of:

positioning a hollow electrode adjacent to a workpiece;

flowing an electrolyte through the electrode and against the workpiece;

applying a constant electrical voltage between the electrode and the workpiece across the electrolyte;

advancing the electrode at a constant rate toward the workpiece for the drilling of the hole while maintaining the electrolyte flow and voltage substantially constant;

measuring the magnitude of electric current flow between the electrode and the workpiece through the electrolyte as the electrode is advanced toward the workpiece and drilling proceeds, the electric current first increasing as the drilling proceeds until electric current reaches a maximum value at initial perforation, and thereafter decreasing as drilling proceeds until it reaches a predetermined value corresponding to the point of advancement of the electrode at which a uniform hole is completed through the workpiece; and automatically

terminating the drilling operation when the electric current reaches said predetermined current value.

3,849,272
PROCESS FOR EXACT ELECTROCHEMICAL WORKING OF WORKPIECES OF DIFFERENT SHAPE

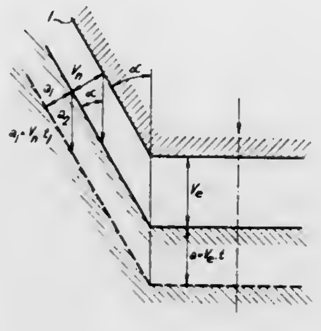
Jan Zubak, Ostrov, Czechoslovakia, assignor to Vyskumny ustav Automatizacie a mechanizacie, Nove Mesto nad Vahom, Czechoslovakia

Filed Oct. 15, 1971, Ser. No. 189,634

Claims priority, application Czechoslovakia, Dec. 8, 1970, 8247/70

Int. Cl. B23p *1/14, 1/04*

U.S. Cl. 204—129.25 **6 Claims**



1. A process for electrochemically working a workpiece using an electrode tool moving relatively thereto, wherein said workpiece is finished to the shape of said tool having a portion of its surface perpendicular to the relative direction of movement and a portion of its surface inclined at an angle to the relative direction of movement, comprising the steps of introducing an electrolyte between said tool and said workpiece and applying a current across said electrolyte, the improvement comprising adjusting, with respect to the surface inclined to the perpendicular surface at least one of the following parameters, the applied voltage, the conductivity of the electrolyte, the surface of the electrode tool or the time of working so that the ratio of said adjusted parameter to the corresponding parameter with respect to the surface perpendicular to the relative direction of movement is equal to $\sin^2$ of the angle which said inclined surface makes with the relative direction of movement.

3,849,273
METHOD OF AND APPARATUS FOR RADIUSSING AN EDGE OR EDGES OF A METALLIC AEROFOIL BLADE

Graham Frederick Johnson, 12 Forge Mill Rd., Redditch, England

Filed Jan. 4, 1973, Ser. No. 321,004

Int. Cl. B23p *1/00, 1/04*

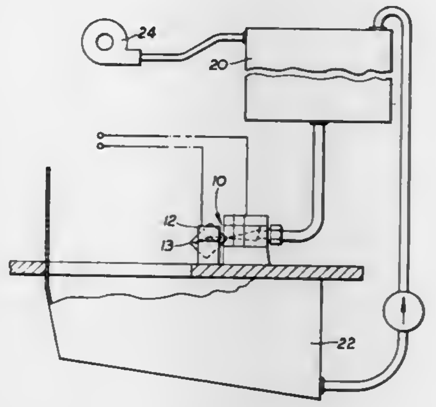
U.S. Cl. 204—129.6 **7 Claims**

1. A method of radiussing a longitudinal edge of a metallic aerofoil blade, comprising the steps of:

placing, in spaced relationship with the longitudinal edge of the metallic aerofoil blade, the working face of an electrode, said working face;

- a. having a slit, extending parallel and directly opposite to said edge, for discharge of electrolyte against said edge, and
- b. being so configured that no constraint is placed by said working face upon the flow of electrolyte leaving said slit,

passing a stream of electrolyte through said slit, against said edge, and thence around both sides of said aerofoil blade, and applying an electric current to the electrode and blade in such a manner that the electrode is cathodic and the blade is anodic,



thereby performing electrolytic machining by free flow of said stream of electrolyte to produce a curve of constantly varying radius around the edge of the blade.

3,849,274
PROCESS FOR COUPLING ORGANIC MOLECULES

Ellis K. Fields, River Forest, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed July 2, 1973, Ser. No. 375,333

Int. Cl. B01j *1/10*

U.S. Cl. 204—158 R **11 Claims**

1. A process for coupling organic molecules involving the step of irradiating an organic compound containing at least one abstractable hydrogen with ultraviolet light in the presence of hexachlorobenzene, hexabromobenzene, or hexaiodobenzene.

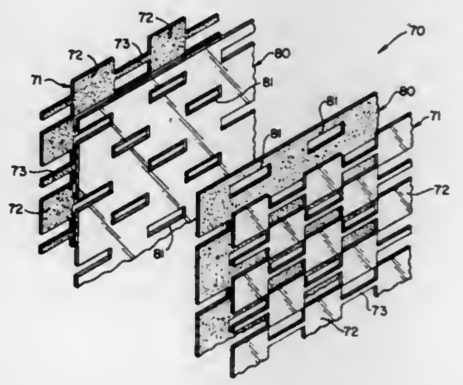
3,849,275
METHOD AND APPARATUS FOR REMOVING AND/OR SEPARATING PARTICLES FROM FLUID CONTAINING THE SAME

James T. Candor, 5440 Cynthia Ln., Dayton, Ohio 45429

Division of Ser. No. 263,605, June 16, 1972, Pat. No. 3,795,605, which is a continuation-in-part of Ser. No. 53,402, July 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 25,938, April 6, 1970, , which is a continuation-in-part of Ser. No. 864,851, Oct. 8, 1969, , which is a continuation-in-part of Ser. No. 811,421, March 28, 1969, abandoned. This application July 27, 1973, Ser. No. 383,255

Int. Cl. B01k *5/00*

U.S. Cl. 204—180 R **12 Claims**



1. A method for separating particles from a fluid carrying the same comprising the steps of directing said fluid through an inlet means of a passage defining means having an outlet means, electrostatically directing at least some of said particles intermediate said inlet means and said outlet means solely by an electrostatic action, and removing said fluid from said outlet means, said step of electrostatically directing at least some of said particles comprising the step of creating a plurality of non-uniform electrostatic fields with each field at least partially extending across said passage means and with the higher intensity portion of each field being substantially oppositely located relative to the higher intensity portion of an adjacent non-uniform field.

3,849,276
PROCESS FOR FORMING REACTIVE LAYERS WHOSE THICKNESS IS INDEPENDENT OF TIME

James H. Greiner, Millwood, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 19, 1971, Ser. No. 125,993
Int. Cl. C23c *13/00, 15/00*
U.S. Cl. 204—192 **27 Claims**

1. A method for forming reactive layers of controlled thickness on base materials, said reactive layers being combinations of the base material and at least one constituent which reacts with said base material, comprising:

bringing said reactive constituent to said base material in a substantially vacuum environment for reaction thereon to grow said reactive layer at a first rate;

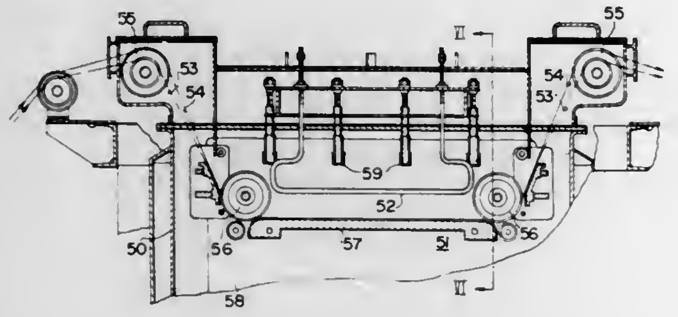
removing said reactive layer simultaneously with said growth, the removal of said reactive layer occurring at a seond rate;

adjusting said first and second rates to be equal for a desired final thickness of said reactive layer;

continuing said growth and said removal at least until said first and second rates of growth and removal respectively are equal, at which time a final thickness of said reactive layer is achieved.

3,849,277
ELECTROPLATING AND CONVEYING APPARATUS FEATURING ROTATION OF ARTICLES TO BE PLATED RELATIVE TO CATHODE MEMBER

Akira Miyata; Hideyo Okubo; Chikayoshi Tomita, and Akio Suzuki, all of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 83,714, Oct. 26, 1970, Pat. No. 3,740,323. This application June 13, 1973, Ser. No. 369,757
Claims priority, application Japan, Jan. 30, 1970, 45-7967
Int. Cl. B65g *49/02*
U.S. Cl. 204—202 **11 Claims**



1. A molten salt electroplating apparatus comprising:

a vessel adapted to contain molten salt electroplating bath; cathode belt means adapted to receive articles to be plated thereon;

a fastener belt means adjacent said cathode belt means and having a plurality of spaced projections thereon, said projections extending above said cathode belt and being adapted to receive the articles to be plated therebetween and to maintain the articles on the cathode belt means in a predetermined spaced apart relationship with said articles in electrical contact with said cathode belt means;

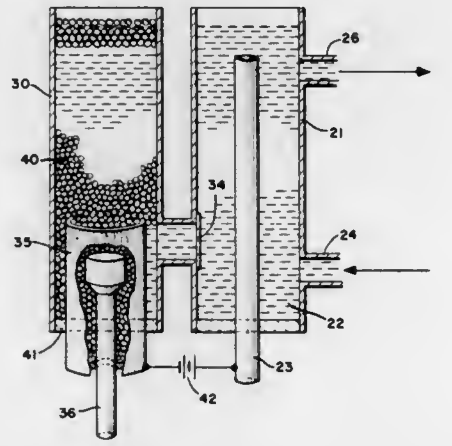
means for moving said cathode belt means through said electroplating bath at a first rate of speed;

means for moving said fastener belt means through said electroplating bath in the same direction as that of said cathode belt means and a second rate of speed different from said first rate of speed of movement of said cathode belt means so that the articles to be coated are rotated relative to said cathode belt means and relative to said fastener belt means by said movement of said cathode belt means and said fastener belt means through said electroplating bath at said different rates of speed, to thereby uniformly plate said articles as they are fed through said electroplating bath; and

means for applying direct current to both the cathode belt means and said fastener belt means.

3,849,278
ELECTROLYTIC SYSTEM

Frederick W. Sanders, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Filed May 11, 1972, Ser. No. 252,285
Int. Cl. C01c *3/12;* **B01k** *1/00*
U.S. Cl. 204—237 **7 Claims**



1. In an apparatus for conducting electrolytic reactions, said apparatus including an anode and at least one other electrode which acts as a cathode relative to said anode, and means defining a current path for flow of current from one electrode to the other electrode the flow of current tending to produce a gas at least at one of said electrodes during electrolysis, the improvement comprising:

a. a fixed static bed of solid particles selected from the group consisting of carbon particles, activated carbon particles, and platinized compound particles, positioned in a fixed, static condition adjacent one of said electrodes and adapted to receive the gas electrolytically produced at said one of said electrodes,

b. means to introduce a second gas capable of entering into an oxidation-reduction reaction with the gas electrolytically produced at said one of said electrodes directly into said fixed static bed of solid particles, and

c. means to introduce an aqueous solution into contact with said solid particles, said solid particles being essentially inert with respect to said electrolytically produced gas, said second gas, said aqueous solution, and the reaction product of said oxidation-reduction reaction and each solid particle being wetproofed by treatment with a substance not wetted by said aqueous solution in order to effectively promote the non-electrolytic oxidation-reduction between said gases.

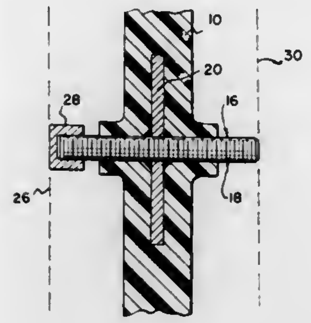
3,849,279
APPARATUS FOR SEALING MECHANICAL CONNECTION AT BIPOLAR BARRIER SHEET

Barry M. Barkel, Saline, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.
Filed Dec. 17, 1973, Ser. No. 425,138
Int. Cl. B01k *3/10*
U.S. Cl. 204—254 **5 Claims**

1. In a bipolar diaphragm electrolytic filter press cell for the production of chlorine from aqueous alkali metal chloride

solutions wherein the metal anode and metal cathode of adjoining cells are in direct electrical connection with each other and said anode and cathode are maintained in spaced relationship by an electrically inactive barrier sheet between them, the improvement of independently maintaining proper electrical and mechanical connections between the anode and cathode of adjacent cells while preventing electrolyte and gas flow through the cell barrier joint between said anode and cathode comprising in combination

1. said barrier sheet being molded around at least one valve metal connector rod, said connector rod having a valve metal circumferential restraining flange attached thereto



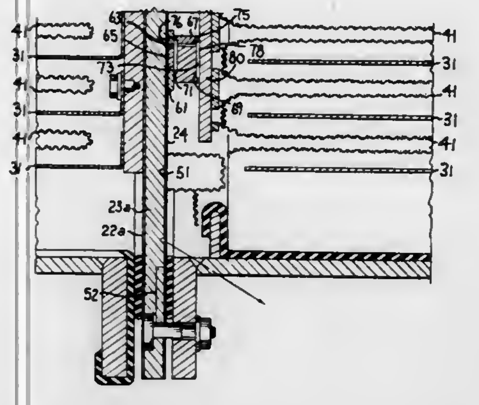
and positioned substantially equidistant from each end of said rod, said flange being substantially equidistant from and substantially parallel to both faces of said barrier sheet so that both ends of said rod are exposed to an electrolyte and removed from the face of said barrier sheet, and

2. said rod having attached to one of its ends a metal anode and having attached to the other end of said rod a ferrous metal cap, with a metal cathode attached to said cap

whereby an electrical and mechanical connection is made between adjacent cells without danger of connector rod slippage or electrolyte leakage around said rod.

3,849,280
ELECTROLYTIC CELL INCLUDING MEANS FOR PREVENTING ATOMIC HYDROGEN ATTACK OF THE TITANIUM BACKPLATE MEMBER

Carl W. Raetzsch; William B. Darlington, and Hugh Cunningham, all of Corpus Christi, Tex., assignors to PPG Industries Inc., Pittsburgh, Pa.
Division of Ser. No. 158,695, July 1, 1971, Pat. No. 3,759,813, which is a continuation of Ser. No. 55,680, July 17, 1970, abandoned. This application Mar. 1, 1973, Ser. No. 337,050The portion of the term of this patent subsequent to Sept. 18, 1990, has been disclaimed.
Int. Cl. B01k *3/10*
U.S. Cl. 204—256 **6 Claims**



1. An electrolyzer comprising a plurality of bipolar cells in series having bipolar units, at least one of said bipolar units comprising:

a backplate providing a barrier between adjacent cells in the series;

a cathode extending from one surface of said backplate and in electrical contact therewith; and

an anode extending from the opposite surface of said backplate and in electrical contact therewith;

said backplate comprising:

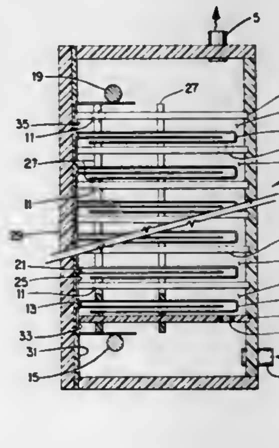
a catholyte-resistant member having two surfaces;

a valve metal member bonded to the surface of the catholyte resistant member opposite the surface from which the cathode extends; and

means on the surface of the catholyte resistant member from which the cathode extends, interposed between the cathode and the catholyte resistant member for preventing the migration of atomic hydrogen through the catholyte resistant member.

3,849,281
BIPOLAR HYPOCHLORITE CELL

John E. Bennett, Painesville; James W. Burkhardt, Mentor, and Richard E. Loftfield, Chardon, all of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio
Filed July 23, 1973, Ser. No. 381,730
Int. Cl. B01k *3/04*
U.S. Cl. 204—268 **6 Claims**



1. An electrolytic cell comprising:

A. a substantially vertically disposed container having electrolyte inlet means in the lower portion thereof and electrolysis product outlet means in the upper portion;

B. a plurality of horizontally disposed, electrically nonconductive, partitions dividing said container into a plurality of cell units;

C. a terminal, foraminous, sheet-like, monopolar anode horizontally disposed in the first of said cell units;

D. a terminal, foraminous, monopolar cathode, horizontally disposed in the last of said cell units and comprising a U-shaped construction adapted to receive and encompass a foraminous, sheet-like anode;

E. means for impressing an electrolyzing current across said monopolar electrodes;

F. at least one bipolar electrode comprising
  1. a sheet-like, foraminous, anode portion,
  2. a U-shaped, foraminous, cathode portion adapted to receive and encompass a sheet-like anode, and
  3. a conductive connecting portion joining said anode and cathode portions;

G. said bipolar electrode being horizontally disposed in adjacent cell units on opposite sides of a partition so that
  1. said anode portion is encompassed by a next-adjacent cathode and is parallel to said partition,
  2. said cathode portion encompasses a next-adjacent anode and is parallel to and spaced apart from the opposite side of said partition and the next-adjacent partition, and
  3. said connecting portion is held between an edge of said partition and a container sidewall; and

H. means for passing electrolyte and products of electrolysis from the bottom to the top of the container through the partition of each of the cell units in sequence.

3,849,282
METAL ELECTRODES AND COATINGS THEREFOR

Louis Degueldre; Charles Killens, and Louis Bourgeois, all of Brussels, Belgium, assignors to Solvay & Cie, Brussels, Belgium

Filed July 3, 1972, Ser. No. 268,552

Claims priority, application Luxembourg, July 9, 1971, 63506

Int. Cl. B01k *3/06*

U.S. Cl. 204—290 F **5 Claims**

1. A metallic electrode for electrochemical processes comprising a metal support and on at least a portion of said support a conductive coating consisting essentially of a compound ABO$_4$ with a structure of the rutile-type, where A represents an element in the trivalent state selected from the group consisting of Rh, Al, and Ga and B represents an element in the pentavalent state selected from the group consisting of Sb, Nb and Ta, and an oxide of the type MO$_2$ where M is selected from the group consisting of Ru and Ir, and the mole ratio of ABO$_4$ to MO$_2$ is from 1/1 to 1/6.

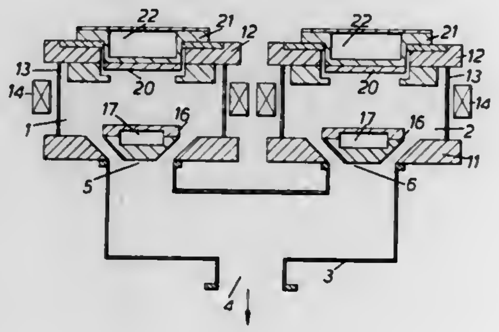
3,849,283
SPUTTERING APPARATUS

Geoffrey N. Jackson; Robert G. Pickard; Graham Brackley, and David W. Satchell, all of Leatherhead, England, assignors to E.R.A. Patents Limited, Leatherhead, Surrey, England

Filed May 1, 1972, Ser. No. 249,162

Int. Cl. C23c *15/00*

U.S. Cl. 204—298 **7 Claims**



1. Sputtering apparatus for use with a radio frequency supply source, said apparatus including an evacuable enclosure, a double electrode arrangement including two individual electrodes within said enclosure having means affording connection of said electrodes to opposite terminals of a radio frequency source respectively, and wall means arranged to electrically isolate the individual electrodes of said arrangement by separating the electric fields associated with said electrodes when said radio frequency source is energized and defining two electrically separate sputtering areas, and two work supporting table means, one located in each of said areas respectively.

3,849,284
APPARATUS METHOD AND VALVE FOR ELECTRODEPOSITING A COATING ON INTERIOR SURFACES OF CONTAINER BODIES

Hans Kossmann, Barrington, Ill., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 285,643, Sept. 1, 1972,. This application July 2, 1973, Ser. No. 375,458

Int. Cl. C23b *13/00, 5/68*

U.S. Cl. 204—300 **8 Claims**

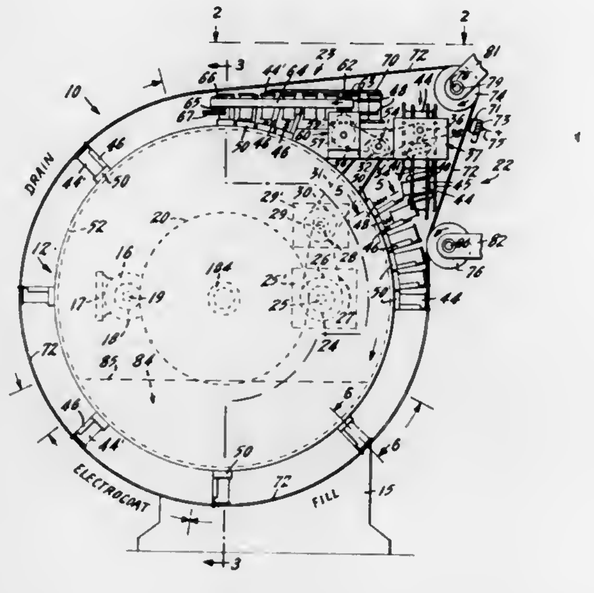
1. A fluid valve for electrodepositing systems wherein an electrolytic fluid and electric current insulatedly pass through the valve, which comprises:

a fixed exterior housing mountable on a wall of a reservoir containing the fluid, the exterior housing having a back wall with apertures therein communicating with the interior of the reservoir,

a moveable interior housing, interior of and slidingly engaged with the exterior housing, the interior wall of the interior housing defining a central valve chamber having a mouth opposite the back wall,

a resilient sealing ring mounted in the mouth,

a valve member fixedly connected at one of its ends to the back wall, extending axially into the chamber and having legs fixed to and extending transverse to its axis, the axial portion of the valve member having a conductive core connectable to circuitry,



an electrode connected to and projecting from the exterior of the valve member,

means for sealing and preventing fluid from passing between the housings, and

biasing means between the housings for flexibly biasing the sealing ring of the interior housing in sealing engagement with the valve member legs to seal the fluid valve chamber, the biasing means being inwardly compressible toward the back wall by an axial force, so that when the force is sufficient to compress the sealing ring and biasing means, a passageway is created between the valve member legs and the sealing ring which allows fluid to flow from the reservoir to the exterior of the valve chamber.

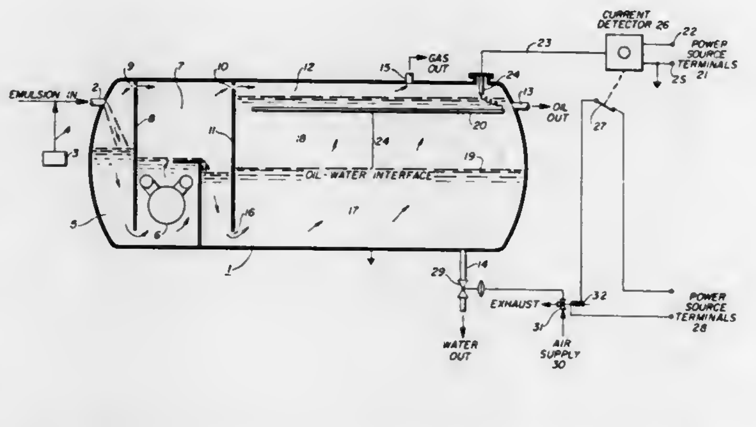
3,849,285
ELECTRIC CONTROL SYSTEM

Floyd Leon Prestridge, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.

Filed Sept. 15, 1972, Ser. No. 289,716

Int. Cl. B03c *5/02*

U.S. Cl. 204—305 **2 Claims**



1. A system is adapted to supplying power to an electric treater of oil field emulsions, including,

a pair of electrical power source terminals,

a circuit connected to the terminals and adapted to include a portion comprising the fluid oil-water mixture of an emulsion,

means connected to the circuit to manifest the power applied to the circuit,

means maintaining a predetermined length for the circuit portion between the terminals,

and means varying the electrical conductivity of the portion of the circuit, comprising a control system for regulating chemical injected into the emulsion, which chemical affects the electrical conductivity of the emulsion of the circuit portion.

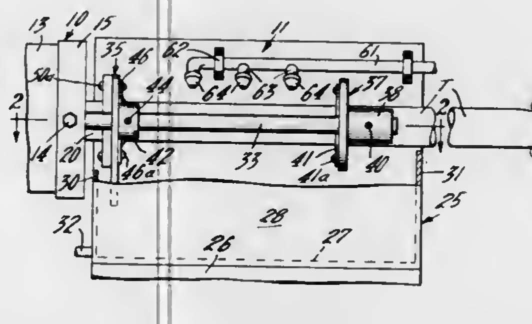
3,849,286
TREATMENT OF THERMOPLASTIC TUBING

Roger Brandt, Wayland, and John William Piltzecker, Shrewsbury, both of Mass., assignors to American Can Company, New York, N.Y.

Filed Dec. 13, 1962, Ser. No. 244,322

Int. Cl. C08f *47/22;* **B29d** *23/04*

U.S. Cl. 250—325 **3 Claims**



1. Apparatus for the surface treatment and sizing of thermoplastic tubing formed by extruding heated thermoplastic material through an annular extruder nozzle, comprising:

an elongate, internal forming member mountable at the nozzle of the extruder in closely adjacent, coaxial alignment with the extruder nozzle;

electrode means encircling said forming member in spaced relation thereto;

means for continuously passing said tubing along said forming member in tight fitting relation therewith to size said tubing;

means for impressing a high alternating voltage between said electrode means and said forming member while said tubing is being sized to produce a corona discharge treatment of the exterior surface of said tubing; and

means for cooling said tubing as it leaves the corona discharge zone, including means for internally cooling said forming member for progressively cooling the interior of said tubing, and coolant spray means disposed away from said electrode means in the direction of the discharge end of said forming member for directing a coolant spray over the exterior of said tubing.

3,849,287
COAL LIQUEFACTION PROCESS

William K. T. Gleim, Island Lake, and Mark J. O'Hara, Mt. Prospect, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 5, 1973, Ser. No. 329,507

Int. Cl. C10g *1/06*

U.S. Cl. 208—8 **2 Claims**

1. A process for the production of a hydrocarbonaceous liquid which comprises solvent extracting coal with a solvent at a temperature of about 600°F. to about 850°F., a pressure of about 100 to about 350 atmospheres and a solvent/coal weight ratio of about 1:2 to about 10:1, said solvent being a hydrogenated bottoms product from vacuum distillation of crude petroleum and having an initial normal boiling point above about 400°F.

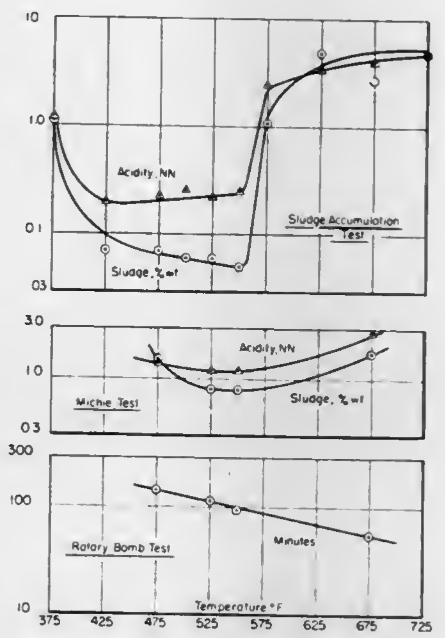
3,849,288
MANUFACTURE OF TRANSFORMER OILS

Donald Milstein, Cherry Hill, and Donald F. Hill, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,817

Int. Cl. C10g *23/02*

U.S. Cl. 208—14 **8 Claims**



1. A process for manufacturing a transformer oil which consists essentially of selecting a naphthenic distillate boiling in the range of about 450°F. to about 775°F., characterized by an aromatics content less than 30 percent, an alkane content less than 5percent, the balance being substantially all naphthenes and having a flash point not less than about 275°F., a viscosity at 100°F. of from about 55 to about 75 SUS and a specific gravity of about 0.865 to about 0.905; contacting said distillate with hydrogen in the presence of a hydrogenation catalyst at a temperature of about 550°F. at a pressure in the range from about 200 to about 5,000 psig, at a space velocity between about 0.2 and about 5 volumes per hour per volume of catalyst and a hydrogen circulation rate from about 250 to about 15,000 s.c.f. per barrel percolating the resulting hydrotreated oil through clay, utilizing a volume ratio of oil to clay between about 5 and about 10 and recovering from such operation a product constituting a transformer oil.

3,849,289
FLUIDIZED PLATINUM REFORMING FOLLOWED BY FIXED-BED PLATINUM REFORMING

Alexis Voorhies, Jr., 2569 E. Lakeshore Dr., Baton Rouge, La. 70810

Filed Feb. 23, 1973, Ser. No. 335,028

Int. Cl. C10g *35/08*

U.S. Cl. 208—65 **15 Claims**

1. A staged reforming process comprising charging a naphtha feedstock comprising naphthenes and paraffins to a first reforming zone, contacting said feedstock in the presence of hydrogen in said zone with a fluidized bed of reforming catalyst comprising a noble metal or mixtures thereof composited with a support at a temperature of from about 750°F. to about 850°F., at a pressure of from about 75 to about 250 psig., thereby substantially converting said naphthenes to aromatics with minimum hydrocracking of said paraffins; charging at least a portion of the effluent stream from said first reforming zone to a second reforming zone, contacting said stream in the presence of hydrogen, within said zone which contains a plu-

rality of fixed-bed catalyst reaction stages arranged in series, with intermediate reheating heating between beds to provide near isothermal conditions, said beds of reforming catalyst comprising a noble metal or mixtures thereof composited with a support, said second reforming reaction being conducted at a temperature of from 850° to about 1,050°F. and at a pressure of from about 75 to about 250 psig., thereby selectively dehydrocyclizing said paraffins to aromatics with a minimum of hydrocracking of said paraffins; and thereafter recovering the reformate.

3,849,290
UPGRADING OF REFORMATES BY CATALYST COMPOSITIONS SELECTIVE FOR CRACKING LOW AND HIGH BOILING PARAFFIN COMPONENTS

John J. Wise, Media, and Samuuel D. Burd, Jr., Yardley, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Aug. 2, 1972, Ser. No. 277,201
Int. Cl. C10g *37/10*
U.S. Cl. 208—66 **8 Claims**

1. A method for upgrading a naphtha charge composition boiling in the gasoline boiling range which comprises:

reforming a naphtha charge with a platinum reforming catalyst maintained at reforming conditions including a temperature above 800°F. and a pressure below 700 psig to produce an aromatic enriched product effluent comprising normal and branched hydrocarbons,

passing aromatic enriched product of said reforming in contact with a ZSM-5 type of crystalline aluminosilicate zeolite catalyst composition provided with major axis elliptical pore size in the range of about 6 to about 9 Angstroms under conditions for selectively cracking singly branched and normal hydrocarbons comprising C_7 and higher boiling hydrocarbons, and

thereafter subjecting the product of the above selective cracking to contact with a crystalline aluminosilicate zeolite hydrocracking catalyst of the erionite type providing an average pore size less than about 6 Angstroms under temperature and pressure conditions selected to crack n-paraffins boiling below C_7 hydrocarbons without substantial cracking of multibranched hydrocarbons and C_7 to C_9 alkyl aromatics in the aromatic enriched product.

3,849,291
HIGH TEMPERATURE CATALYTIC CRACKING WITH LOW COKE PRODUCING CRYSTALLINE ZEOLITE CATALYSTS

Hartley Owen, Belle Mead, N.J., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Oct. 5, 1971, Ser. No. 186,639
Int. Cl. C10g *37/02, 11/18;* **B01j** *9/20*
U.S. Cl. 208—78 **16 Claims**

1. In a dual riser hydrocarbon conversion operation employing fluidizable catalyst particles, the improved method of operation which comprises,

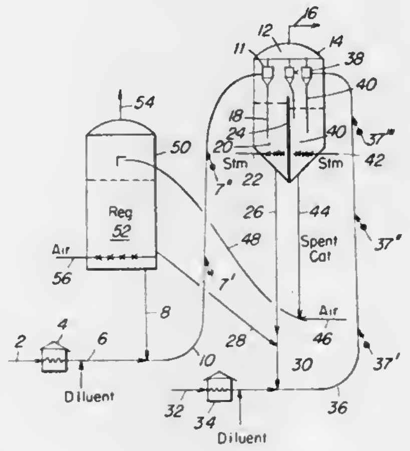
regenerating a catalyst mixture comprising a large pore crystalline zeolite of the faujasite type in admixture with from 10 to about 90 weight percent of a smaller pore crystalline zeolite of the ZSM-5 type under conditions to heat the catalyst mixture to an elevated temperature in the range of 1,000°F. up to about 1400°F.,

passing heated catalyst to the inlet of a first riser conversion zone for admixture with gaseous materials such as dry gas and/or C_5 and lighter gaseous hydrocarbons to form a first suspension therewith,

passing said first suspension in admixture with a fresh gas oil feed upwardly through said first conversion zone under elevated temperature cracking conversion conditions of at least 1000°F. and a hydrocarbon residence time less than about 12 seconds to cyclonic separation of the suspension into a hydrocarbon phase and a low coke containing catalyst phase, recovering the hydrocarbon phase and stripping the catalyst phase,

passing stripped catalyst mixture of relatively low coke level separated from said first conversion zone to the inlet of a second riser conversion zone in combination with an increment of the freshly regenerated catalyst,

forming a second suspension of catalyst with gaseous materials such as dry gas and/or C_5 and lighter gaseous hydrocarbons for passage upwardly through said second riser conversion zone,



passing said second suspension with higher coke producing hydrocarbon feed upwardly through said second conversion zone at a temperature of at least 950°F. for a hydrocarbon residence time in the range of 2 to 15 seconds and a higher catalyst to oil ratio than employed in said first conversion zone,

cyclonically separating the second suspension at the discharge of the second conversion zone into a second hydrocarbon phase and a second catalyst phase,

recovering the second hydrocarbon phase and stripping the second catalyst phase of entrained hydrocarbons, and

passing stripped second phase catalyst to said catalyst regeneration.

3,849,292
PROCESS FOR THE CONVERSION OF HEAVY HYDROCARBON CHARGE STOCKS

William K. T. Gleim, Island Lake, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Division of Ser. No. 283,900, Aug. 25, 1972, abandoned. This application Dec. 18, 1972, Ser. No. 316,169
Int. Cl. C10g *13/02;* **C01b** *33/28*
U.S. Cl. 208—111 **8 Claims**

1. A process for the conversion of a sulfurous, heavy hydrocarbonaceous charge stock, to produce desulfurized, lower-boiling hydrocarbon products, which comprises reacting said charge stock with hydrogen in contact with a catalytic composite of a porous alumina-containing carrier material, from about 1.0 percent to about 30.0 percent by weight of an alkali metal component and from about 0.1 percent to about 15.0 percent by weight of at least one metal component from Groups IV B, V B and VI B, a portion of said alkali metal component being in the free state and said carrier material being selected from the group consisting of alumina, alumina-silica, crystalline aluminosilicate, and crystalline aluminosilicate dispersed in an alumina-silica matrix.

3,849,293
HYDROCRACKING PROCESS UTILIZING REJUVENATED CATALYST

John W. Ward, Yorba Linda, Calif., assignor to Union Oil company, Los Angeles, Calif.
Continuation-in-part of Ser. No. 121,536, March 5, 1971, abandoned. This application Feb. 22, 1973, Ser. No. 334,873
Int. Cl. C10g *13/02*
U.S. Cl. 208—111 **9 Claims**

1. A process for the hydrocracking of a hydrocarbon feedstock to produce lower boiling hydrocarbons, which comprises subjecting said fecdstock in admixture with added hydrogen to hydrocracking conditions of pressure and temperature in contact with a catalyst comprising a non-zeolitic Group VIII noble metal supported on a siliceous zeolite carrier which also, as originally prepared, contained zeolitic mono- and/or divalent metal cations, said catalyst having been previously subjected to thermal and/or hydrothermal conditions resulting in a maldistribution of said Group VIII noble metal on said carrier with resultant reduction in hydrogenation activity and in a deleterious migration of said zeolitic metal cations resulting in a reduction in cracking activity, and which has thereafter been rejuvenated to greater than its original fresh activity by a process which comprises:

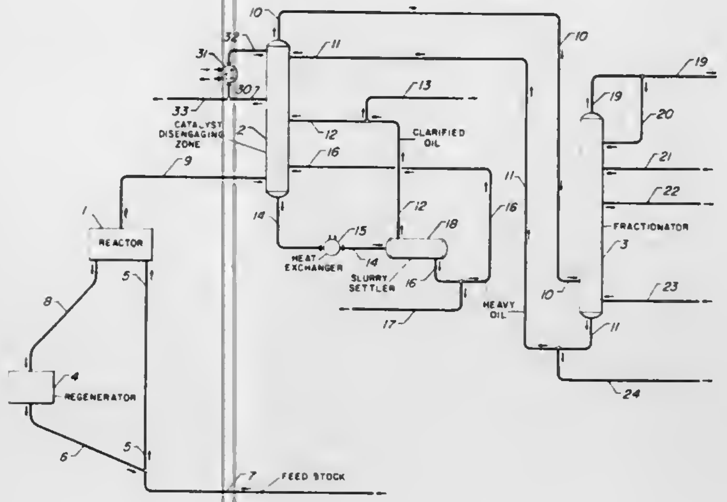
A. digesting said catalyst in an oxidized or sulfided state with a reagent consisting essentially of a 0.1 – 30 weight-percent aqueous ammonia solution containing a dissolved ammonium salt, and correlating the contacting time with the temperature and reagent strength so as to extract from said catalyst at least a substantial portion of said zeolitic metal cations while retaining in the catalyst at least about 70 percent of said Group VIII noble metal;

B. separating said catalyst from the resulting ammoniacal extract of zeolitic metal cations; and

C. drying and calcining the separated catalyst.

3,849,294
CATALYTIC CRACKING PROCESS IMPROVEMENT

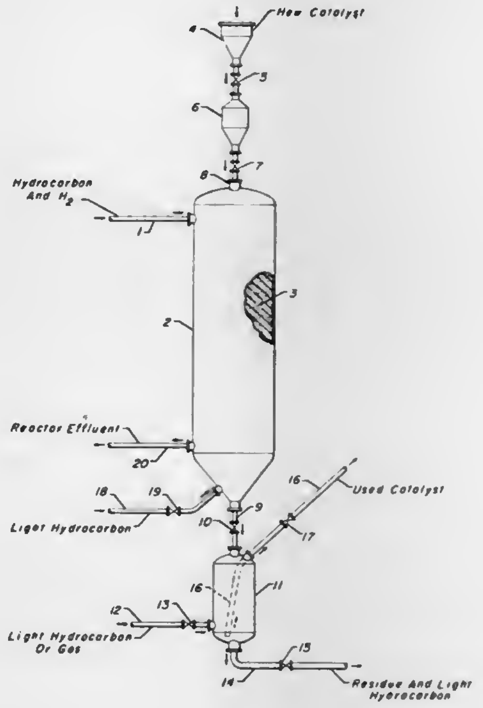
Andrew C. Hansen, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Feb. 15, 1973, Ser. No. 332,867
Int. Cl. C10g *11/18*
U.S. Cl. 208—162 **12 Claims**



1. In a fluidized catalytic cracking process in which a feed stock contacts a fluidized catalyst in a reaction zone at conditions to effect the cracking of said feed stock into cracked products and wherein catalyst is separated from a vaporous effluent material from said reaction zone, which vaporous effluent material contains entrained catalyst particles, the improvement which comprises passing said vaporous effluent material into a catalyst disengaging zone and therein contacting the same with a liquid hydrocarbon stream at conditions to condense a portion of said vaporous effluent material and to remove entrained catalyst from said vaporous effluent, recovering from said catalyst disengaging zone a liquid oil bottoms stream comprising said catalyst and at least a portion of said liquid hydrocarbon and condensed effluent material, passing remaining catalyst-free vaporous effluent material from said catalyst disengaging zone into a fractionation zone and therein fractionally condensing the same to form an overhead gasoline-containing vapor and a heavy cycle oil stream substantially free of entrained catalyst particles and boiling in the range of from above about 600°F. to about 1,000°F., supplying at least a portion of said catalyst-free heavy cycle oil stream to the catalyst disengaging zone as at least a portion of said liquid hydrocarbon stream, and condensing said gasoline-containing vapor.

3,849,295
CATALYST REMOVAL IN MOVING BED PROCESSES

George E. Addison, Mt. Prospect, Ill., assignor to Universal Oil Products Company, Des Moines, Ill.
Filed Aug. 23, 1972, Ser. No. 283,000
Int. Cl. C10g *11/16*
U.S. Cl. 208—166 **2 Claims**



1. In a process in which a downward moving-bed of catalyst is utilized in a hydrocarbon conversion process having reactants present in a reaction zone as a liquid phase, the method of removing catalyst from the bottom of a reaction vessel which comprises the steps of:

a. passing a quantity of catalyst and entrained liquid phase reactants from a reaction zone and into a separation zone through a fluid flow controlling valve means;

b. flushing liquid phase reactants entrained with the catalyst from the separation zone by passing a light liquid hydrocarbon upwardly over the catalyst in the separation zone and through the valve means and into the reaction vessel;

c. removing the light liquid hydrocarbon from the reaction vessel through the same outlet means used to remove the liquid phase reactants;

d. closing the valve means; and,

e. drying the catalyst within the separation zone by passing a stream of gas over the catalyst.

3,849,296
CATALYST COMPRISING ZINC OXIDE, SILICA AND ALUMINA AND PROCESSES EMPLOYING SAME

Albert L. Hensley, Jr., Munster, Ind., assignor to Standard Oil Company, Chicago, Ill.
Filed June 14, 1972, Ser. No. 262,572
Int. Cl. C10g *23/02*
U.S. Cl. 208—216 **16 Claims**

1. A process for the hydrodesulfurization of a hydrocarbon feedstock, which process comprises contacting in a reaction zone said feedstock with a catalytic composition in the presence of hydrogen and under hydrodesulfurization conditions, which catalytic composition comprises a hydrogenation component comprising a metal of Group VIA of the Periodic Table of Elements and a metal of Group VIII of the Periodic Table on a solid catalytic support comprising a composite of zinc oxide, silica, and a catalytically active alumina, each metal of said hydrogenation component being present in the elemental form, as the oxide, as the sulfide, or as a combination thereof.

3,849,297
PROCESS FOR REMOVING METALS FROM PETROLEUM RESIDUA

Robert Byron Long, Atlantic Highlands, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.
Filed June 8, 1972, Ser. No. 260,757
Int. Cl. C10g *17/00*
U.S. Cl. 208—251 R **20 Claims**

1. A process for reducing the level of metal contaminants in a hydrocarbon material selected from the group consisting of crude oil or a residual petroleum fraction which comprises contacting the hydrocarbon material at a temperature below 400°C. with an extractant comprising 0.001 to 10 wt. percent, based on the weight of the hydrocarbon, of elemental sulfur and a promoter selected from the group consisting of supported and unsupported oxides, sulfides, and selenides of vanadium, tantalum, niobium or mixtures thereof, and in the case where the promoter is unsupported the promoter is present in an amount of from 0.1 to 10 wt. percent, based on the weight of the hydrocarbon, and thereafter separating at least a portion of the extractant and metal contaminants from said hydrocarbon material.

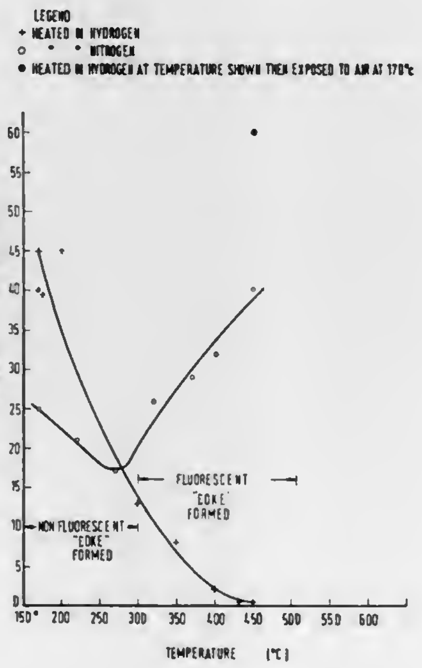
3,849,298
PROCESS FOR PREPARING PURIFIED NORMAL PARAFFINS

Eiichi Funakubo, Ashiya; Tetsuo Matsuo, Kobe; Takeshi Taira, Kobe; Taichi Kamada, Kobe; Hiroshi Harada, Kobe; Shoichiro Tanimura, Kobe, and Masanori Kubo, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Oct. 24, 1972, Ser. No. 300,404
Claims priority, application Japan, Oct. 21, 1971, 46-83771; Oct. 21, 1971, 46-83772
Int. Cl. C10g *25/00*
U.S. Cl. 208—310 **21 Claims**

1. Process for purifying normal paraffins which are suitable for use as starting materials or raw materials for feed or food petroleum fermentation products, comprising the steps of subjecting normal paraffins containing one or more carcinogenic polycyclic aromatic hydrocarbons to adsorption treatment in an adsorbent consisting essentially of alumina or a mixture of alumina and up to 15 weight percent of silica thereby to reduce said carcinogenic polycyclic aromatic hydrocarbons to less than 1 ppb, said alumina having a particle size of from 8 to 100 mesh, said adsorption treatment being carried out at a temperature of from 20°C to 100°C, and said alumina having a surface area of 100 m^2/g or more.

3,849,299
INHIBITING THE COKE FORMING TENDENCY OF SORBENTS

Kenneth Hugh Bourne, Sunbury-on-Thames; Evan Ellis Davies, London, and Robert Chalmers Pitkethly, Camberley, all of England, assignors to The British Petroleum Company Limited, London, England
Continuation of Ser. No. 77,893, Oct. 5, 1970, abandoned. This application Dec. 6, 1972, Ser. No. 312,531
Int. Cl. C07c *7/12*
U.S. Cl. 208—310 **8 Claims**



1. In a sorption process for the separation of hydrocarbon mixtures wherein some of the adsorbed compounds form coke by reacting with oxygen and in which the sorbent is a crystalline zeolite of substantially uniform pore size and free of hydrogenating metals and in which the zeolite sorbent as used in the sorption process has been exposed before such use to an oxygen-containing gas, the step of treating the zeolite sorbent with an atmosphere of hydrogen in the absence of the sorption feedstock at a temperature of at least 300°C after its exposure to the oxygen-containing gas to remove substantially all of the oxygen retained on the exposed zeolite sorbent.

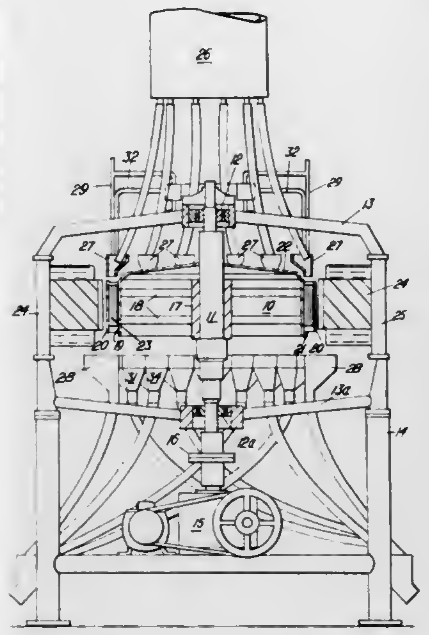
3,849,300
METHOD FOR THE SEPARATION OF SATURATED FROM UNSATURATED COMPOUNDS

Theodore T. Martin, and Marvin C. Allen, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
Filed July 25, 1973, Ser. No. 382,627
Int. Cl. C07c *7/12*
U.S. Cl. 208—310 **8 Claims**

1. In a method for separating saturated from unsaturated compounds present in a mixture via adsorbing said mixture on an adsorbent selected from the group consisting of silica gel, alumina, and fluorosil and eluting with a solvent for the subsequent quantitative analysis thereof, wherein the improvement comprises, saturating said adsorbed mixture with halogen vapor.

3,849,301
MAGNETIC SEPARATOR

Hugh Thomas Reading, Goonellabah, New South Wales, Australia, assignor to Readings of Lismore Pty., Limited, Lismore, New South Wales, Australia
Filed Dec. 7, 1972, Ser. No. 313,182
Claims priority, application Australia, Dec. 15, 1971, 7394/71
Int. Cl. B03c *1/00, 1/10*
U.S. Cl. 209—214 **10 Claims**

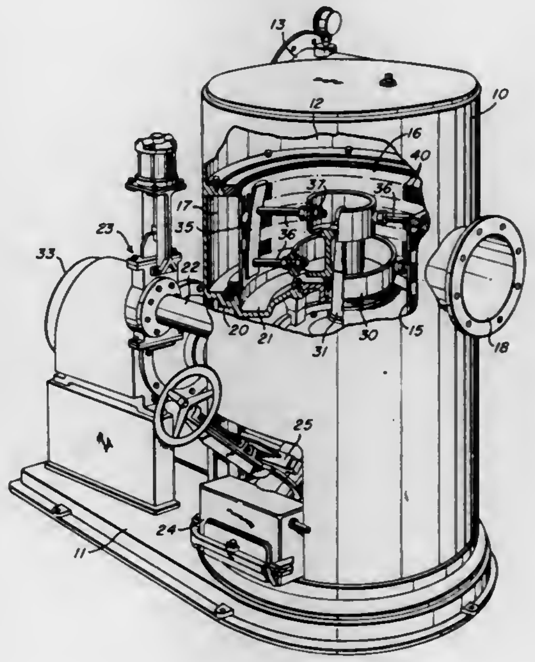


1. A magnetic separator-comprising:
a. a magnetically impermeable rotor mounted on a vertically oriented shaft and having at least one annular through passage constituting or formed on its periphery and defined by spaced-apart walls, the walls being formed from a material having non-magnetic characteristics, and the or each through passage being disposed about the axis of rotation of the rotor,
b. a number of spacers of a magnetically permeable material extending in a radial direction between the walls of the or each passage, successive spacers, together with the passage walls, defining through channels into which magnetic particles in a fluid suspension may be fed to pass in a direction substantially parallel to the axis of the rotor,
c. a number of magnetic pole pieces surrounding the rotor and having their magnetic axes disposed radially with respect to the rotor, successive ones of the pole pieces being of opposite polarity whereby a magnetic field of maximum intensity is induced in the rotor spacers intermediate successive ones of the pole pieces;
d. means for feeding a composite containing magnetic particles in a fluid suspension into said channels adjacent successive ones of the pole pieces;
e. means also adjacent successive ones of the pole pieces for delivering a washing fluid for washing magnetic particles from within the channels;
f. means intermediate successive pole pieces for delivering a washing fluid to successive said channels, for washing non-magnetic particles from within the channels, and
g. separate means for collection of magnetic and non-magnetic particles which are passed or washing through the channels.

3,849,302
METHOD AND APPARATUS FOR SCREENING PAPER FIBER STOCK

Peter Seifert, Middletown, Ohio, assignor to The Black Clawson Company, Middletown, Ohio
Filed Sept. 12, 1972, Ser. No. 288,288
Int. Cl. B07b *1/20*
U.S. Cl. 209—273 **16 Claims**

1. The method of screening a dilute suspension of paper fiber stock, comprising the steps of
a. continuously supplying the stock to one end of an annular supply chamber having as one wall thereof a cylindrical screen member having multiple slots therethrough extending generally parallel with the axis thereof,
b. maintaining a pressure difference from said supply chamber to the accepts side of said screen member to cause passage of accepted stock through said slots,
c. causing the stock in said supply chamber to form a tubular layer of substantial thickness and of substantially the same length as said screen member immediately adjacent the surface of said screen member in said supply chamber,
d. continuously rotating vane means in said supply chamber in a circular path adjoining said tubular layer at a sufficiently high speed to create a substantially tangentially oriented steady hydraulic shear field in said tubular layer of stock with shear rates sufficiently high to cause elongated contaminant particles to be aligned generally tangentially of said screen member and thereby to flow past rather than through said slots,



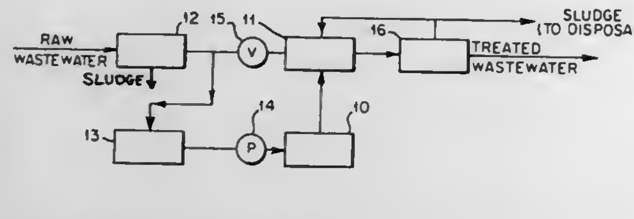
e. said path being located in a radially intermediate position in said supply chamber and said vane means being spaced angularly from each other within said path to provide for circulation of stock between said tubular layer and the space on the opposite side of said path from said tubular layer by way of the gaps between said vane means,
f. continuously removing from the other end of said screen chamber a portion of said stock including such contaminant particles, and
g. continuously recirculating stock from said other end of said supply chamber to said one end thereof.

3,849,303
METHOD AND APPARATUS FOR UPGRADING WASTEWATER TREATMENT PLANTS

Wilbur N. Torpey, Douglaston, N.Y., assignor to Autotrol Corporation, Milwaukee, Wis.
Continuation-in-part of Ser. No. 293,594, Sept. 29, 1972,. This application Apr. 16, 1973, Ser. No. 351,179
Int. Cl. C02c *1/04, 5/10*
U.S. Cl. 210—4 **17 Claims**

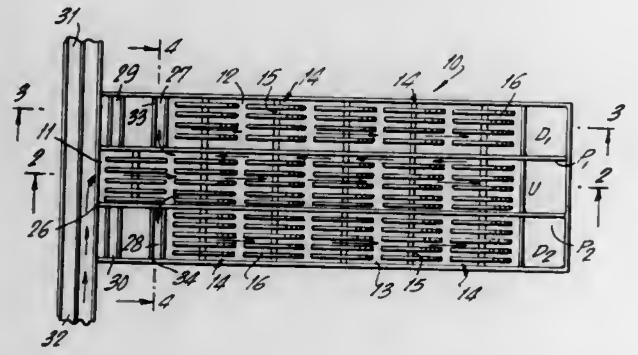
1. Process for the treatment of wastewater including carbonaceous and nitrogenous pollutants comprising the steps of,
a. removing settleable and floatable solids to obtain presettled wastewater;
b. supplying said presettled wastewater at a predetermined rate to a biological treatment unit;
c. said biological treatment unit employing partially submerged rotatable biological contactors having surface area for the growth and maintenance of organisms;

d. rotating said biological contactors at a predetermined peripheral velocity to alternately expose said surface area to wastewater and an oxygen containing atmosphere;
e. said predetermined rate and peripheral velocity being chosen to biochemically oxidize said carbonaceous and nitrogenous pollutants in said biological treatment unit;
f. supplying wastewater including mature organisms from said biological treatment unit to a denitrifying unit;
g. said denitrifying unit employing denitrifying organisms suspended in the wastewater to convert the nitrogen content of a substantial portion of said oxidized nitrogenous pollutants to nitrogen gas without the need for the addition of an external carbonaceous energy source;
h. creating currents in said wastewater in said denitrifying unit to maintain said denitrifying organisms in suspension;
i. supplying said wastewater from said denitrifying unit to a final clarifier;
j. said final clarifier removing sludge which includes mature organisms;
k. recirculating a portion of said removed sludge to said denitrification unit without said recirculated sludge passing through said biological treatment unit and;
l. wasting a portion of said removed sludge.



3,849,304
METHOD FOR THE PRIMARY AND SECONDARY TREATMENT OF WASTEWATER IN A UNITARY APPARATUS

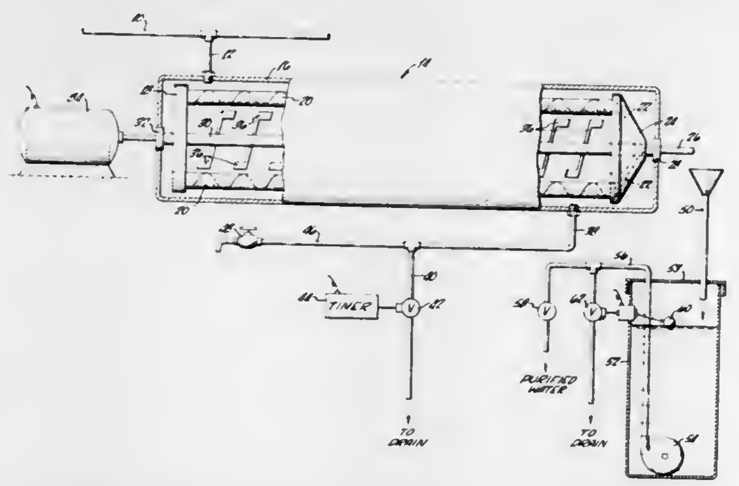
Wilbur N. Torpey, Douglaston, and Richard A. Sullivan, Woodside, both of N.Y., assignors to Autotrol Corporation, Milwaukee, Wis.
Filed Aug. 9, 1973, Ser. No. 386,860
Int. Cl. C02c *1/04*
U.S. Cl. 210—14 **7 Claims**



1. Method for the continuous treatment of wastewater comprising
a. providing a treatment tank having a primary bay and at least one secondary bay horizontally adjacent to said primary bay,
b. each of said bays including a lower settling zone and a vertically adjacent upper biological treatment zone,
c. introducing wastewater into the lower settling zone of said primary bay,
d. creating a flow of wastewater through the settling zone of said primary bay,
e. vertically directing said wastewater from the settling zone to the upper biological treatment zone of said primary bay,
f. creating a flow of wastewater through the biological treatment zone of said primary bay countercurrent to the direction of wastewater flow through the settling zone of said primary bay,
g. horizontally directing wastewater from the biological treatment zone of said primary bay to the biological treatment zone of said secondary bay,
h. creating a flow of said wastewater through the biological treatment zone of said secondary bay;
i. vertically directing said wastewater from the biological treatment zone of said secondary bay into the lower settling zone of said secondary bay,
j. creating a flow of said wastewater through the settling zone of said secondary bay countercurrent to the direction of wastewater flow through the biological treatment zone of said secondary bay, and
k. removing said wastewater from the settling zone of said secondary bay.

3,849,305
REVERSE OSMOSIS WATER PURIFYING SYSTEM FOR HOUSEHOLD USE

Serop Manjikian, P.O. Box No. 183, Del Mar, Calif. 92014
Continuation-in-part of Ser. No. 256,185, May 23, 1972,. This application Mar. 27, 1973, Ser. No. 345,447
Int. Cl. B01d *31/00, 13/00*
U.S. Cl. 210—116 **5 Claims**

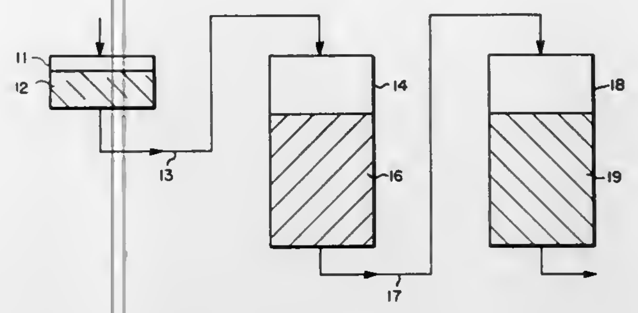


1. A water purifying system having a reverse osmosis water purifying unit comprising a semipermeable membrane mounted on a porous support within a pressure resistant container, means for introducing feed water under pressure into said pressure resistant container, means for releasing concentrate from said pressure resistant container, and means for storing and dispensing purified water passing through the semipermeable membrane in said water purifying unit, in which the improvement comprises:
a. a pipe connecting water under household pressure to the feed inlet of said pressure resistant container;
b. said semipermeable membrane being mounted on a porous support which is rotatable within said pressure resistant container and having external means for rotating said porous support; and,
c. means including an on-off valve for automatically periodically releasing concentrate directly from said pressure resistant container to drain.

3,849,306
PROCESS AND APPARATUS FOR REMOVING IMPURITIES FROM CONDENSATE WATER

John R. Anderson, Cranbury, N.J., assignor to The Permutit Company, Inc., Paramus, N.J.
Continuation-in-part of Ser. No. 209,160, Dec. 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 25,160, April 2, 1970, abandoned. This application June 5, 1973, Ser. No. 367,141
Int. Cl. B01j *1/08;* **C02b** *1/68*
U.S. Cl. 210—38 **7 Claims**

1. A process for removing impurities from condensate water containing sodium ions and ammonia consisting essentially of passing said water in series through a first vessel containing a first bed consisting essentially of particulate strong acid cation exchange resin in the hydrogen or ammonium form, passing said water through a second vessel containing a second bed consisting essentially of particulate strong base anion exchange resin in the hydroxide form and finally passing said water through a third vessel containing a third bed consisting essentially of particulate strong acid cation exchange resin in the hydrogen or ammonium form.



3,849,307
POLYALKYLENE POLYAMINE-ALDEHYDE-KETONE CONDENSATION POLYMER FLOCCULANTS AND RETENTION AIDS

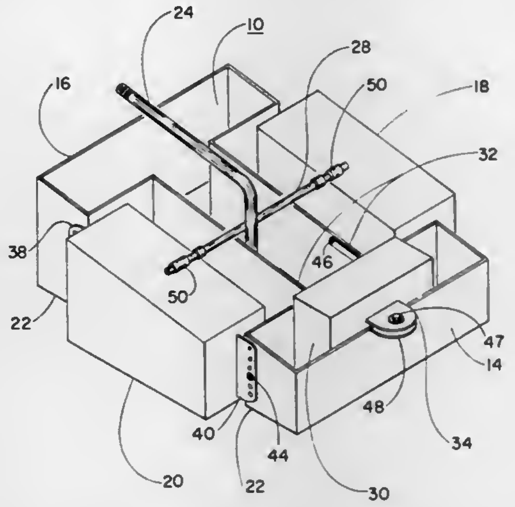
Warren Thorne Grundner, Vincentown, N.J., assignor to Sybron Corporation, Rochester, N.Y.
Division of Ser. No. 69,178, Sept. 2, 1970, abandoned. This application May 5, 1972, Ser. No. 250,832
Int. Cl. C02b *1/20;* **B01d** *21/01*
U.S. Cl. 210—54 **4 Claims**

1. A process for removing finely divided suspended particles from aqueous liquids comprising:
a. adding a water soluble condensation polymer of polyalkylene polyamine, an aldehyde and a ketone, said condensation polymer having molar ratios from about 0.9 polyalkylene polyamine, 1.8 aldehyde and 0.5 ketone, to about 1.1 polyalkylene polyamine, 3.0 aldehyde and 1.1 ketone to said aqueous liquid containing finely divided suspended particles to cause flocculation of the suspended particles and
b. separating said liquid from said particles.

3,849,308
APPARATUS FOR SKIMMING FLOATING POLLUTION FROM A LIQUID SURFACE

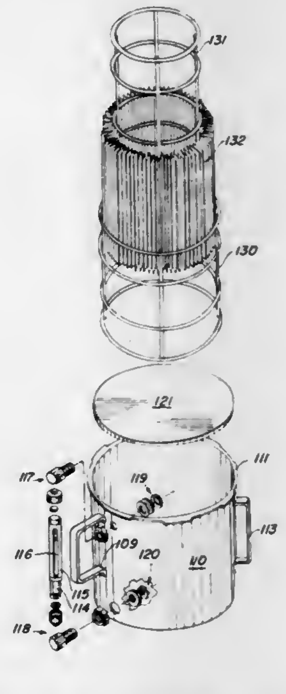
Hulan Westerman, P.O. Box 118, Boothville, La. 70038
Filed Oct. 25, 1972, Ser. No. 300,601
Int. Cl. B01d *33/38;* **E02b** *15/04*
U.S. Cl. 210—98 **2 Claims**

1. A rocking skimmer for collecting liquid from the surface of a body of water and comprising in combination:
a. an open-topped rigid container means, having walls extending upwardly from a closed horizontal bottom, for floating on said body of water and for collecting liquid from the surface thereof, said walls including end walls and side walls with one of said end walls being of less height than a second opposing end wall for the rapid submergence of said one end wall, and said side walls being constructed and arranged to provide said container means with greater width adjacent said end walls and a constriction therebetween for increasing the rate of flow of collected liquid through said constriction;
b. first flotation means exteriorly secured to said container means for keeping it afloat when filled with collected liquid and rockable about an axis transverse said constriction and the side walls of said container means;
c. second flotation means, having weight and buoyancy, interiorly secured in said container means adjacent said one end wall for said weight to rockably submerge said one end wall below the surface of said body of water and collect liquid therefrom over said one wall, and for said buoyancy responsive to said collected liquid, to rockably raise said submerged one end wall and flow said collected liquid oppositely therefrom to further raise said one end wall clear of the surface of said body of water; and
d. suction pipe means, having an open inlet, pivotally mounted on said transverse axis and in said container means adjustably above said bottom whereby said increased rate of flow of collected liquid through said constriction keeps said open inlet free of solids and stoppage thereby, and for the controlled discharge of said collected liquid therefrom to vary buoyancy relative to said weight of said second flotation means and thereby resubmerge said one end wall and recommence collection of surface liquid, and so on to continuously and rockably skim the surface of said body of water.



3,849,309
FOOD FRYER WITH CONTINUOUSLY FILTERED COOKING OIL

Wolford A. Morris, 1508 S. Lincoln, Springfield, Ill. 62708
Division of Ser. No. 207,243, Dec. 13, 1971, Pat. No. 3,797,378, which is a continuation-in-part of Ser. No. 30,650, April 22, 1970, Pat. No. 3,648,595. This application Aug. 20, 1973, Ser. No. 389,975
Int. Cl. B01d *27/08, 35/14*
U.S. Cl. 210—143 **6 Claims**



1. An oil filtering arrangement for continuously filtering cooking oil comprising a pair of concentric open frame sup-

port cylinders having an independent cylinder of filter paper freely positioned between and replaceably supported by them, the filter paper being made from mercerized wood pulp fiber saturated by a melamine-formaldehyde resin, which is in the order of 20–40 percent by weight.

3,849,310
METHOD AND APPARATUS FOR SEPARATING PARTICLES FROM A LIQUID

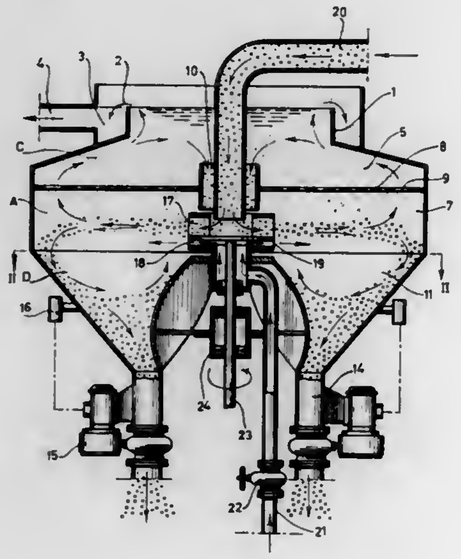
Elie Condolios, Grenoble, France, and Uilke Van Essen, Gorinchem, Netherlands, assignors to N.V. Technical Maatschappij Bergmann, Berkel en Roodenrijs, Netherlands and Societe Grenobloise D'Etudes et D'Applications Hydrauliques (Sogreah), both of Grenoble-Gare, Netherlands

Filed Jan. 12, 1972, Ser. No. 217,106

Claims priority, application France, Jan. 14, 1971, 71.01869; Mar. 25, 1971, 71.11405

Int. Cl. B01d *21/26*

U.S. Cl. 210—196 **9 Claims**



1. An apparatus for separating particles from a liquid, comprising a basin which from top to bottom is composed of four parts provided on top of one another;

a cylindrical upper front part forming an overflow edge and surrounded by a discharge gutter;

a downwardly diverging second part;

a cylindrical third part having a cylindrical section which is greater in diameter than that of said upper part, in which a screen is accommodated dividing the third part into a portion over and a portion under the screen, the solids being able to pass through perforations of the screen, the latter having openings with enlarged diameter along its periphery, and

a lower part composed of a plurality of funnels, each funnel constituting a collecting tank and having a discharge outlet for particles separated from said liquid: at least one conduit being provided for introducing the mixture to be treated, said conduit vertically extending towards the center of the third part in a zone lying below the screen and to a certain distance above a horizontal deflector, means associated with the discharge end of said at least one conduit for discharging the mixture into the basin centrifugally along a horizontal plane, while further at least one passage is provided for the discharge of the fraction, sedimented at the lower end of each outlet funnel.

3,849,311
DEVICE FOR REMOVING OIL AND THE LIKE FROM WATER CONTAMINATED BY OIL OR THE LIKE

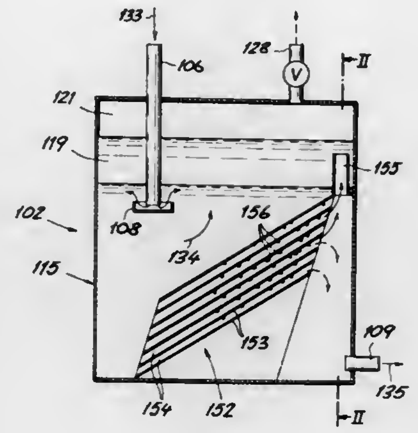
Peter Jakubek, Brunn am Gebirge, Austria, assignor to Fa. International Pollution Control Systems, Inc., Washington, D.C.

Filed Dec. 1, 1972, Ser. No. 311,264

Claims priority, application Austria, Dec. 1, 1971, 10355/71

Int. Cl. B01d *19/00*

U.S. Cl. 210—188 **8 Claims**



1. An apparatus for removing oil or the like from water which is contaminated with oil or the like, particularly from ship bilges, comprising

a bilge pump controlled by a float switch,

an air separator and an oil separator operatively communicating with each other,

a pump means for pumping water contaminated with oil via said air separator through said oil separator,

said oil separator comprising at least one collecting tank for the removed oil, and at least one coarse separator and at least one fine separator, the latter including foam,

said coarse separator communicating with said collecting tank by a shutoff member, and including an insert provided within said coarse separator and separating an inlet portion thereof from an outlet portion thereof comprising at least one flow channel extending obliquely upwardly in the direction of flow.

3,849,312
FILTER BED ASSEMBLY FOR CLEANSING COOKING OILS AND THE LIKE

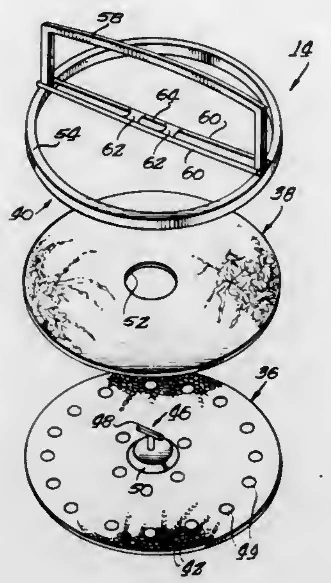
Walter A. Wecker, Sr., Deerfield, Ill., assignor to Wacker-Dearborn Corporation, Chicago, Ill.

Filed Nov. 6, 1972, Ser. No. 303,975

Int. Cl. B01d *25/14*

U.S. Cl. 210—237 **6 Claims**

1. A filter bed assembly comprising: base plate means adapted to be disposed adjacent the floor of a filtration vessel and including an upright, centrally disposed connection member and a perforate filter plate rigidly affixed to said connection member; a filter element having a central aperture sized to admit said connection member therethrough; joining and lifting means including a frame arranged for mechanically securing edge portions of said filter element in sealing position adjacent said filter plate, a connection element spanning said frame at the central portion thereof with opposite end portions of said connection element connected to the peripheral edge of said frame whereby clamping pressure applied to the central region of said connection element is transmitted to the opposite ends thereof where connected to said frame, said connection element further having coupling means for releasably engaging said connection member, and handle means upstanding from said frame, said filter element being situatable between said base plate and said frame and one of said connection member and said coupling means including transverse arm means and the other of said connection member and said coupling means including aperture means sized to pass said transverse arm means in one position of relative rotation for assembly and disassembly and to capture said transverse arm means in a different position of relative rotation for manipulating the filter bed assembly.



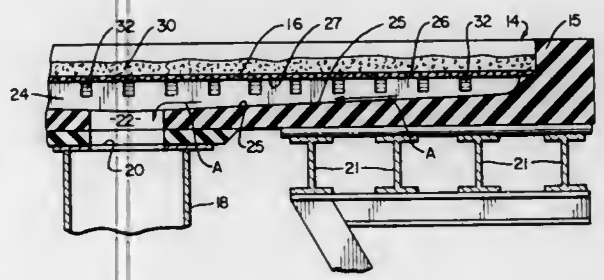
3,849,313
BELT FOR A VACUUM FILTER

Edwin B. Lopker, Fort Lauderdale, Fla., assignor to Pullman Incorporated, Houston, Tex.

Filed Nov. 30, 1972, Ser. No. 310,996

Int. Cl. B01d *33/04*

U.S. Cl. 210—400 **24 Claims**



1. A filter belt for a continuous belt vacuum filter, said belt having a series of ribs having horizontal top surfaces which provide a substantially horizontal, flat surface on the filtration portion of said belt, said ribs being positioned along the surface of said belt and spaced one from the other to define therebetween a series of drainage channels having a floor

a series of perforations through said belt, said perforations being in liquid flow communication with the floor of said drainage channels, and

the floor of said drainage channels being sloped downwardly from said horizontal top surfaces towards said perforations.

3,849,314
FILTER MEDIA INSERTS

Forest G. Niccum, Wood Dale, and Peter Heinrich, Jr., Chicago, both of Ill., assignors to Marvel Engineering Company, Chicago, Ill.

Filed June 21, 1973, Ser. No. 372,218

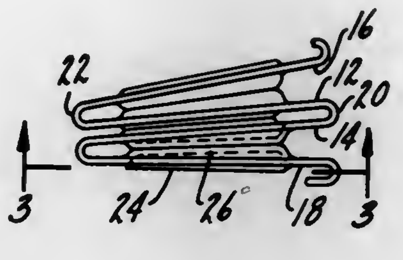
Int. Cl. B01d *27/06*

U.S. Cl. 210—493 **1 Claim**

1. A cylindrical filter member formed by a pleated filter element having a series of spaced pleat walls, and means integral with each wall of said pleated filter element for maintaining uniform pleat spacing including projections extending from opposite sides of each pleat wall, adjacent pleat wall projections extending from opposite sides of each pleat wall, projections from opposing walls being in contact with one another, each of said pleat wall projections having a length substantially greater than its width, with contacting pleat wall projections forming an angle on the order of about 90° with each other,

inner and outer folds adjoining adjacent pleat walls, with the spacing between walls joined by an outer fold being substantially constant over the radial length of the wall, contacting projections between pleat walls joined by an outer fold having generally constant depth and width throughout the length thereof,

the spacing between pleat walls joined by an inner fold gradually increasing from the inner fold toward the outside of the filter, with the depth and width of contacting projections spacing pleat walls joined by an inner fold gradually increasing from the inside of the filter element toward the outside of the filter element.



ERRATUM

For Class 242—33 see:
Patent No. 3,849,319

ERRATUM

For Class 250—325 see:
Patent No. 3,849,286

3,849,315
FILM-FORMING FIRE FIGHTING COMPOSITION

Peter Jordan Chiesa, Jr., Penn Township, Chester County, Pa., assignor to National Foam System, Inc., West Chester, Pa.

Filed May 18, 1972, Ser. No. 254,404

Int. Cl. A62d *1/00*

U.S. Cl. 252—3 **7 Claims**

1. In an aqueous film-forming fire-fighting foamable liquid containing dissolved fluorocarbon and silicone surfactants in amounts that give the liquid a surface tension at least as low as 19 dynes per centimeter but do not give it good foamability and also containing one or more foamability-increasing surfactants that are neither fluorocarbons nor silicones, to bring the foamability of the liquid up to the level needed for a fire-fighting foam, the improvement according to which at least 40 percent of the foamability-increasing surfactants is an imidazoline or amine di-propionate surfactant with hydrophilic and lipophilic moieties of which the hydrophilic moiety has at least three hydrophile units selected from the class consisting of hydroxyl, carboxyl, sulfo and nitrogen, and weighs at least 80 percent more than the lipophilic moiety.

3,849,316

SPACER COMPOSITION

Herman R. Motley, Tulsa; Earl F. Morris, Wagoner, both of Okla., and Joseph P. Pavlich, Houston, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 172,304, Aug. 16, 1971, abandoned. This application June 12, 1973, Ser. No. 369,366

Int. Cl. E21b *21/04*

U.S. Cl. 252—8.5 P **8 Claims**

1. A composition comprising, as percent by weight based on the components (*a*), (*b*) and (*c*):

a. a liquid hydrocarbon oil from about 70 to about 97 percent;

b. a water wetting surfactant which functions to maintain water wet solid particulate matter entering into admixture with said composition, water wet, from about 1.5 to about 15 percent;

c. an oil wetting surfactant which functions to maintain oil wet solid particulate matter entering into admixture with said composition, oil wet, about 1.5 to about 15 percent; and

d. an effective amount of a suspending agent, having the property of increasing the ability of the liquid hydrocarbon oil to suspend particulate solids, to increase the suspending ability of the liquid hydrocarbon.

3,849,317

ADDITIVE FOR REDUCING GEL STRENGTH IN AQUEOUS LIME CONTAINING DRILLING FLUIDS

Thad O. Walker, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 18, 1972, Ser. No. 315,955

Int. Cl. E21b *21/04;* **C09k** *3/00*

U.S. Cl. 252—8.5 A **6 Claims**

1. An aqueous drilling fluid having a liquid phase saturated with calcium hydroxide, containing as the additive for reducing gel strength and yield point, hydrolyzed cereal solids which is comprised of from about 15 percent to about 25 percent by weight di-saccharides, tri-saccharides, tetra-saccharides, and penta-saccharides, and from about 75 to about 85 percent by weight hexa-saccharides and above.

3,849,318

LUBRICATING OIL COMPOSITION CONTAINING ANTI-WEAR AGENTS

William R. Miner, Pinole, and Charles K. Parker, Jr., Kensington, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed July 3, 1972, Ser. No. 268,257

Int. Cl. C10m *1/10*

U.S. Cl. 252—18 **12 Claims**

1. A lubricating oil composition comprising:

a. An oil of lubricating viscosity, and

b. A nitrate of a Group I or Group II metal dispersed in said oil in an amount effective to substantially reduce wear.

3,849,319

DI AND TRI (HYDROCARBYLAMMONIUM) TRITHIOCYANURATE AND LUBRICATING OIL COMPOSITIONS CONTAINING SAME

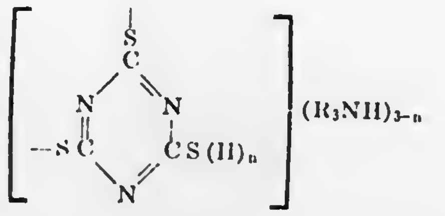
John W. Nebzydoski, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Nov. 19, 1973, Ser. No. 417,153

Int. Cl. C10m *1/38, 1/32*

U.S. Cl. 252—33.6 **10 Claims**

1. A lubricant composition comprising a major portion of base oil having lubricating properties containing from about 0.001 to 0.5 wt. percent of a hydrocarbyl-ammonium trithiocyanurate represented by the formula:



in which R is hydrogen or a hydrocarbyl radical having from about 8 to 24 carbon atoms at least one R being a hydrocarbyl radical and n has a value from 0 to 1.

3,849,320

ORGANIC COMPOSITIONS CONTAINING ALKALI METAL ARYLCARBAMATES

Robert F. Bridger, Hopewell; El-Ahmadi I. Heiba, and Stamoulis Stournas, both of Princeton, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 30, 1972, Ser. No. 310,752

Int. Cl. C10m *1/54*

U.S. Cl. 252—33.6 **10 Claims**

1. A lubricant composition containing, as an antioxidant, a minor amount of a carbamate of the group consisting of alkali metal arylcarbamates, diarylcarbamates and alkarylcarbamates having the structure:

$$R^1R^2NCO_2M$$

in which R^1 and R^2 are alkyl, aryl or hydrogen; at least one of R^1 and R^2 is aryl; and M is selected from the group consisting of Li, Na, K, Rb, Cs or tetraalkyl ammonium.

3,849,321

N-SUBSTITUTED FATTY ACID AMIDE LUBRICANTS

Frank C. Magne, 2223 Franklin Ave., New Orleans, La. 70117; Robert R. Mod, 4600 San Marco Rd., New Orleans, La. 70129; Gene Sumrell, 134 Wren St., New Orleans, La. 70124, and Winfred E. Parker, 420 W. Upsal, Philadelphia, Pa. 19119

Division of Ser. No. 176,734, Aug. 31, 1971, Pat. No. 3,746,644. This application Apr. 6, 1973, Ser. No. 348,801

Int. Cl. C10m *1/46, 1/48*

U.S. Cl. 252—46.7 **2 Claims**

1. A composition of matter useful as a lubricant and having antiwear and extreme pressure lubricating properties, said composition comprising paraffin oil and 5 to 10 weight percent of N,N-dibutyl-[9(10)-hydroxy-(9)10-dibutylphosphato]stearamide.

3,849,322

ALKYLATED TERTIARY AMINES AS HIGH-TEMPERATURE ANTIOXIDANTS FOR ESTER BASE LUBRICANTS

Kenneth T. Wendler, Freehold, and David A. Daniels, Kendall Park, both of N.J., assignors to W. R. Grace & Co., New York, N.Y.

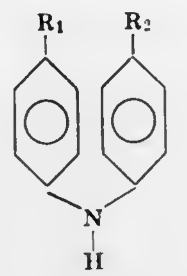
Continuation-in-part of Ser. No. 362,693, May 22, 1973, abandoned, which is a continuation of Ser. No. 152,405, June 11, 1971, abandoned. This application July 16, 1973, Ser. No. 379,823

Int. Cl. C10m *1/34*

U.S. Cl. 252—49.9 **40 Claims**

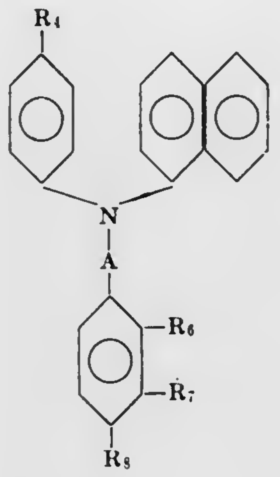
1. In a lubricant composition comprising major amounts of a carboxylic acid ester lubricant, the improvement comprising the presence of,

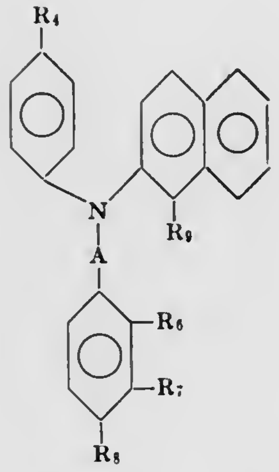
a. a secondary amine having the formula;



in which R_1 and R_2 are separately alkyl groups having 4–12 carbon atoms; and

b. a tertiary amine having the formula;





in which R_4 is an alkyl group having 4–12 carbon atoms and R_6, R_7, and R_8 are separately selected from the group consisting of CH_3, C_2H_5, iodine, bromine, chlorine, fluorine, nitro, and hydrogen, A is CCl_2, CBr_2, CI_2, or an alkylene group having about 1–7 carbon atoms, and R_9 is hydrogen or an alkyl group having 4–12 carbon atoms, said secondary amine and said tertiary amine being present in an amount effective for improving oxidative stability of the ester base lubricant at temperatures up to at least 400°F.

3,849,323

FRICTION-REDUCING PETROLEUM MIXTURES AND METHOD OF MAKING SAME

Clive Hollinshead, Santa Fe Springs, Calif., assignor to Ted Weiner and Gwendolyn Patricia Weiner, both of Lake Tahoe, Nev., part interest to each

Filed Apr. 24, 1972, Ser. No. 246,888

Int. Cl. C10m *1/26, 3/20, 5/12, 7/24*

U.S. Cl. 252—56 R **9 Claims**

1. A product useful as a lubricant or fuel additive which consists essentially of a hydrocarbon lubricant, a wax constituent dispersed in said hydrocarbon lubricant, and an emulsifier in an amount sufficient to maintain said wax constituent uniformly dispersed in said hydrocarbon lubricant, the wax constituent being selected from the group consisting of candellila, carnuba, Chinese, jojoba, beetle, myrtle, and sugar cane waxes, beeswax, a synthetic version of one of the foregoing natural waxes, and mixtures of the aforesaid waxes, and said wax constituent being present in an amount ranging from not more than one up to 10 parts of wax per 120 parts of the hydrocarbon.

3,849,324

FUNCTIONAL FLUIDS

Martin B. Sheratte, Reseda, Calif., assignor to Douglas McDonnell Corporation, Santa Monica, Calif.

Filed Mar. 29, 1971, Ser. No. 129,269

Int. Cl. C09k *3/00*

U.S. Cl. 252—78 **7 Claims**

1. A functional fluid composition consisting essentially of, by weight, (a) about 35 to about 85 percent of a phosphate ester in the form of a trialkyl phosphate containing alkyl groups of from about 3 to about 10 carbon atoms, and (b) about 15 to about 65 percent of a diester compound selected from the group consisting of adipic and sebacic acid alkyl diesters, having alkyl groups containing from about 4 to about 12 carbon atoms.

3,849,325

ALKALINE BRIGHT ZINC ELECTROPLATING

Marcis M. Kampe, Cleveland Heights, Ohio, assignor to Enthone, Incorporated, West Haven, Conn.

Division of Ser. No. 13,791, Feb. 24, 1970, Pat. No. 3,655,534. This application Jan. 6, 1972, Ser. No. 215,920

Int. Cl. C23b *5/46;* **C07d** *51/62*

U.S. Cl. 252—79.1 **4 Claims**

1. A composition comprising the reaction product of a nitrogen-containing heterocyclic compound with a primary amine, formaldehyde, and an epihalohydrin wherein the halogen atom is chloro or bromo or a glycerol chlorohydrin and a liquid diluant therefor.

3,849,326

SOLID WASHING COMPOSITIONS

Brian George Jaggers, Romford; Keith Frederick Ufton, Ilford, and Horst Richard Wagner, Ongar, all of England, assignors to Bush Boake Allen Limited, London, England

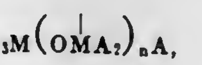
Filed June 29, 1971, Ser. No. 158,049

Claims priority, application Great Britain, July 1, 1970, 31863/70

Int. Cl. C11d *3/50*

U.S. Cl. 252—89 **18 Claims**

1. Solid perfumed washing compositions consisting essentially of at least one washing adjuvant selected from the group consisting of solid soaps, sodium carbonate, sodium sesquicarbonate, sodium perborate, sodium phosphate, sodium chloride, ammonium carbonate, borax, sodium hexametaphosphate, sodium tripolyphospate, sodium nitrilotriacetate, sodium metasilicate and sodium pyrophosphate, and as a perfumery component at least one compound selected from the group consisting of oligomeric compounds of the formula



$$A_3M\left(O\overset{|}{M}A_2\right)_nA,$$

wherein n is an integer, M is titanium or zirconium and the groups A are the same or different organic groups at least one of which has the formula (-OR), wherein R is the residue of a perfumery alcohol or phenol, said compound having been prepared by hydrolysis of a monomeric titanate or zirconate ester of formula MA_4 with from 50 to 90 moles of water per

100 moles of said monomeric ester, said perfumery component being in an amount between 0.02 and 15 percent of said composition.

3,849,327

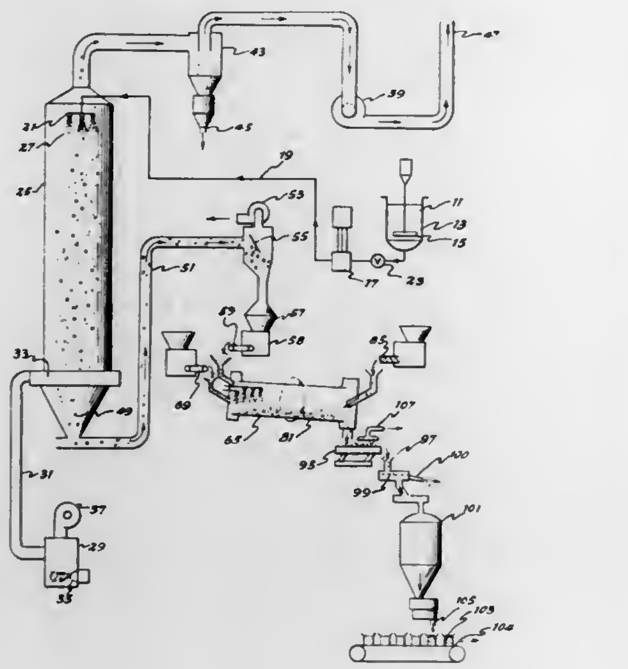
MANUFACTURE OF FREE-FLOWING PARTICULATE HEAVY DUTY SYNTHETIC DETERGENT COMPOSITION CONTAINING NONIONIC DETERGENT AND ANTI-REDEPOSITION AGENT

Walter A. DiSalvo, North Arlington; Frank R. Smith, Jr., North Plainfield, and Edward J. Kenney, Bernardsville, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. Nos. 124,111, March 15, 1971, , and Ser. No. 134,324, April 15, 1971, , and Ser. No. 203,365, Nov. 30, 1971,. This application Feb. 9, 1972, Ser. No. 224,694

Int. Cl. C11d *3/065, 11/02*

U.S. Cl. 252—109 **10 Claims**



1. A method of manufacturing a spray-dried free-flowing, particulate heavy duty synthetic organic detergent composition which comprises preparing by spray-drying a particulate intermediate composition which contains a detergent builder salt selected from the group consisting of alkali metal tripolyphosphates, alkali metal pyrophosphates, alkali metal carbonates, alkali metal silicates and alkali metal nitrilotriacetates, and mixtures thereof, and which contains less than 0.5 percent by weight of synthetic organic anti-redeposition agent, and mixing said intermediate composition with from 0.1 to 5 percent by weight of a synthetic organic anti-redeposition agent in powder form, which agent is selected from the group consisting of carboxymethyl cellulose, polyvinyl alcohol, methyl cellulose, hydroxypropyl methyl cellulose, polyvinyl pyrrolidone and polymeric acrylamide and mixtures thereof, and additionally admixing thereto from 1 to 10 percent by weight of a nonionic surface active compound or mixture thereof in liquid state, which nonionic compound contains lipophilic and hydrophilic moieties in blaance so that the compounds are water soluble and have dissolving, solubilizing and emulsifying effects on lipophilic soil, which nonionic surface active compound contains from 10 to 24 carbon atoms in the lipophilic moiety thereof and four to 100 lower alkoxy groups, wherein the lower alkoxy is of two to three carbon atoms, to produce a free-flowing, particulate, detergent composition having soil anti-redeposition properties.

3,849,328

PROCESS AND COMPOSITION FOR INHIBITING SCALE DEPOSITION

Vernon H. Schievelbein, and Thomas E. Sample, Jr., both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed May 4, 1972, Ser. No. 250,183

Int. Cl. C02b *5/06*

U.S. Cl. 252—180 **3 Claims**

1. A method for inhibiting the formation of mineral scale upon a substrate surface in contact with scale prone waters which comprises

dissolving sulfonated alkali lignins in the scale prone waters in an amount from about 0.0005 percent to about 0.01 percent by weight.

3,849,329

METHOD FOR PRODUCING FUELED MODERATOR

John B. Cahoon, Jr., Livermore, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 1, 1959, Ser. No. 843,900

Int. Cl. G21c *3/02, 21/00*

U.S. Cl. 252—301.1 R **1 Claim**

1. In a method for producing a high density fueled beryllia compact thermally stable at temperatures above 1,500° C, comprising the steps of dissolving about 4 percent by weight uranium chloride in ethyl alcohol, slurring an intermediate grade purity beryllia having a mean particle size of less than 10 microns in said ethyl alcohol solution, evaporating said solution at room temperature by the application of a vacuum pressure thereto, whereby free flowing powders are produced, compacting a quantity of said powders isostatically at a pressure greater than 20,000 psi, heating said compact in a furnace through which air is freely circulating for a period of at least 10 hours and to a maximum temperature of at least 1,000° F, and thereafter sintering said compact for at least 1 hour in hydrogen at a temperature at least as high as 1,500° C.

3,849,330

CONTINUOUS PROCESS FOR IMMOBILIZING RADIONUCLIDES, INCLUDING CESIUM AND RUTHENIUM FISSION PRODUCTS

Raymond E. Isaacson, and Lloyd E. Brownell, both of Richland, Wash., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Nov. 22, 1972, Ser. No. 308,917

Int. Cl. G21c *19/42*

U.S. Cl. 252—301.1 W **5 Claims**

1. A continuous process for immobilizing cesium - and ruthenium - containing radionuclide wastes as a complex metalo-silicate product which is virtually insoluble and nonleachable in alkaline or neutral environments comprising the steps of:

a. passing a solid premix consisting of (1) a metal oxidizer selected from the group consisting of oxides, nitrates, nitrites, sulfates, sulfites, carbonates or mixtures thereof, (2) an inert material selected from crushed basalt or sand, and (3) a metal fuel selected from the group consisting of aluminum, silicon, magnesium, zirconium, titanium or alloys thereof, said metal fuel having a concentration based on weight of reaction material which is subcritical to continuous ignition reaction, and said radionuclide wastes as a nitrate salt or a calcined oxide into a reactor;
b. adding additional metal fuel to said reactor whereby a complex metalo-silicate melt is formed by an exothermic reaction;
c. contacting condensate off gases from said reaction with a mixture selected from the group consisting of sodium aluminate and sodium silicate or sodium hydroxide and clays at a temperature of 90°C and atmospheric pressure to immobilize cesium sublimates as cesium aluminosilicates;
d. recycling said cesium aluminosilicate to said reactor as part of said premix;
e. removing ruthenium fission products as reduced ruthenium metal from said complex metalo-silicate melt; and
f. charging said complex metalo-silicate melt into a container for storage.

3,849,331

4-NAPHTHALIMIDO CYCLOAMMONIUM-ACRYLIC FIBER COMPOSITIONS

Georges Raymond Henry Mingasson, Paris, and Annick Marthe Suzanne Simone Domergue, Eaubonne, both of France, assignors to Ugine Kuhlmann, Paris, France

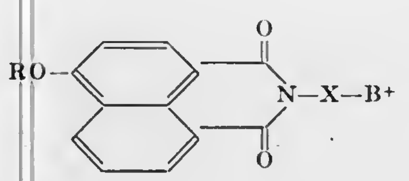
Division of Ser. No. 751,349, Aug. 9, 1968, Pat. No. 3,649,633. This application Dec. 1, 1971, Ser. No. 203,918

Claims priority, application France, Aug. 11, 1967, 67.117728

Int. Cl. C09k *1/02*

U.S. Cl. 252—301.2 W **5 Claims**

1. A composition of matter consisting of cations and an acrylic fiber having negative positions, said cations being attached at the negative positions of said fiber, in which the cations have the formula:



in which R is alkyl or monohydroxy or monoalkoxy substituted alkyls or alkoxy group, said alkyl having one to four carbon atoms, X is a carbon-nitrogen linkage or p-phenylene, B^+ is an N^+- (lower alkyl) cycloammonium said cycloammonium being a benzimidazolium, pyrazolium, triazolium or thiazolium group, wherein lower alkyl is methyl or ethyl, said cycloammonium group attached to X through a carbon atom, B^+ being unsubstituted on the remaining carbon atoms or substituted on said carbon atoms by up to four substituents selected from the group consisting of chlorine, methyl, ethyl, phenyl or methylthio.

3,849,332

SEQUENTIAL CARBONIZATION AND ACTIVATION OF FIBROUS MATERIAL IN A CARBON DIOXIDE ATMOSPHERE

Alan Bailey; Frederick Arthur Pomroy Maggs, both of Salisbury, and John Herbert Williams, Wilton, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

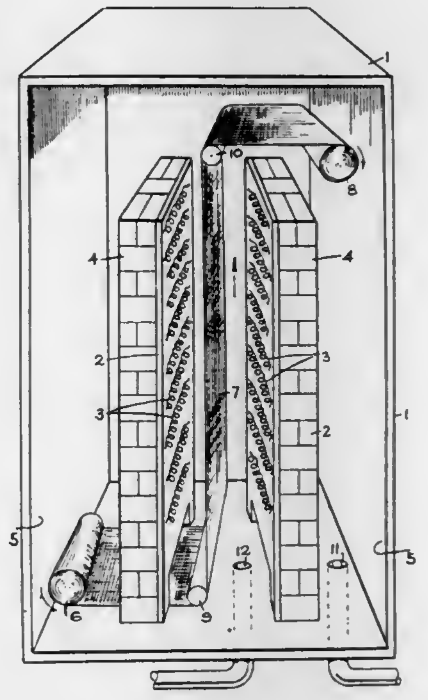
Continuation-in-part of Ser. No. 1,561, Jan. 8, 1970, abandoned. This application Feb. 15, 1972, Ser. No. 226,481

Claims priority, application Great Britain, Jan. 8, 1969, 1150/69

Int. Cl. C01b *31/08*

U.S. Cl. 252—422 **15 Claims**

1. A process for the manufacture of highly activated fibrous carbon comprising passing a body of a fibrous organic material in a continuous length upwardly past at least one heating element thereby subjecting the said fibrous material to a heating program comprising firstly a carbonizing stage to carbonize the organic fibrous material and subsequently an activating stage to activate the carbonized fibrous material and throughout both stages of said heating program exposing the fibrous material to an upward stream of a purging gas to remove volatile decomposition products and activate the carbonized fibrous material, said purging gas being selected from the group consisting of carbon dioxide, mixtures of carbon dioxide with ammonia, mixtures of carbon dioxide with up to 50 percent (V/V) of at least one inert gas and mixtures of carbon dioxide with at least one hydrogen halide; wherein the rate of upward passage of said fibrous organic material relative to the heating element gives a residence time of at least 15 minutes in the critical temperature range of between 40° and 80°C around the temperature at which the material starts to decompose and lose weight most rapidly during the carbonization process; and wherein the convective gas flow upwardly between said fibrous organic material and said heating element is reinforced by a supply of said purge gas to give a total relative gas flow rate over the surface of the material between 10 and 250 cm./minute.



3,849,333

SEMI-CONDUCTING POLYMER SYSTEM COMPRISING A COPOLYMER OF ETHYLENE-ETHYLARCRALATE OR VINYL ACETATE, ETHYLENE-PROPYLENE-TERMONOMER AND CARBON BLACK

Keith Andrew Lloyd, Plainfield, and Eugene Jay Fisher, Brunswick, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sept. 26, 1972, Ser. No. 292,338

Int. Cl. H01b *1/04;* **C09b** *1/48*

U.S. Cl. 252—511 **5 Claims**

1. A semi-conducting composition of:

i. a copolymer of ethylene and ethyl acrylate or vinyl acetate comonomer having a comonomer content of 2 to 5 weight per cent,
ii. an ethylene-propylene-termonomer elastomer in an amount of from 3 to 20 weight per cent of said composition, and
iii. a conducting carbon black in an amount of from 25 to 50 weight per cent of said composition.

3,849,334

MANUFACTURE OF PARTICULATE CATALYST COMPOSITIONS FOR THE POLYMERIZATION OF OLEFINS

Hans Frielingsdorf, Bad Duerkheim, Heinz Mueller-Tamm, Ludwigshafen, Lothar Hoehr, Buerstadt, and Erich Kolk, Bad Duerkheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Dec. 5, 1972, Ser. No. 312,283

Claims priority, application Germany, Dec. 13, 1971, P 21 61 771.0

Int. Cl. B01j *11/84*

U.S. Cl. 252—429 B **1 Claim**

1. A process for the manufacture of a particulate catalyst composition (K) having a particle diameter of from 0.1 to 5 mm. and suitable for the polymerization of olefins, comprising a Ziegler catalyst system (Z) embedded in a wax, the Ziegler catalyst system consisting of:

- (1) *a* grams of a particulate, inorganic carrier having a particle diameter of from 0.001 to 2 mm. and containing chemically combined metals, and
- (2) from 0.001*a* to 0.1*a* grams, in terms of the transition metal in catalyst component (2.1), of a Ziegler catalyst applied to said carrier, which Ziegler catalyst consists of:
    - (2.1) *b* gram-moles of a catalyst component consisting of a chloride, oxychloride or alkoxychloride of titanium, zirconium or vanadium, and
    - (2.2) from 0.01*b* to 100*b* gram-moles of a catalyst component consisting of a saturated metal alkyl, saturated metal alkoxyalkyl or saturated metal alkylhalide of aluminum, magnesium or zinc or a lithium alkyl,

wherein an intimate mixture (G) having a temperature of from 40° to 120° C. and consisting of *c* grams of the Ziegler catalyst system (Z) and 1*c* to 100*c* grams of a melt of a wax having a melting point above 30° C. is converted to the particulate catalyst composition (K) by comminution of said mixture (G), in which 1 part by weight of said intimate mixture (G) having a temperature of from 40° C. to 120° C. is passed, at a rate of from 0.0001 to 0.01 part by weight per second, into from 0.2 to 25 parts by volume, said parts by weight relating to said parts by volume as do kilograms to liters, of a liquefied inert gas having a temperature of from —30° to —200° C. and in motion at a Reynolds number of from 3.4×10^3 to 5×10^4, whereupon the resulting particulate catalyst composition (K) is separated from the inert gas.

3,849,335

ABRASION-RESISTANT CATALYST CONTAINING BORIC ACID SUITABLE FOR THE REARRANGEMENT OF KETOXIMES

Otto Immel, Krefeld-Uerdingen, and Hans-Helmut Schwarz, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Oct. 9, 1969, Ser. No. 865,194, now abandoned. Divided and this application Apr. 5, 1971, Ser. No. 131,496

Claims priority, application Germany, Oct. 12, 1968, P 18 02 887.0

Int. Cl. C07d *41/04*

U.S. Cl. 252—432 **6 Claims**

1. Abrasion-resistant catalysts containing boric acid and boron nitride suitable for the preparation of lactams by the rearrangement of cyclic ketoximes containing 5 to 12 carbon atoms in the ring in the gaseous phase at a temperature of 200° C. to 400° C., obtained by heating at a temperature of 250° to 900° C., (A) a mixture of boric acid and a supporting material in a weight ratio of boric acid: supporting material of 1:4 to 3:2; and (B) 1–30% by weight based on (A) of a nitrogen-containing compound which forms boron nitride with boric acid or boron trioxide, selected from the group consisting of NH_4OH, $(NH_4)_2CO_3$, NH_4Cl, urea, guanidine and thiourea.

3,849,336

PALLADIUM COMPOSITIONS SUITABLE AS OXIDATION CATALYSTS

William G. Lloyd and Donald R. Rowe, Bowling Green, Ky., assignors to Larox Research Corporation, Bowling Green, Ky.

Original application Feb. 7, 1972, Ser. No. 223,970, now Patent No. 3,790,662. Divided and this application Sept. 20, 1973, Ser. No. 399,359

Int. Cl. B01j *11/82, 11/78*

U.S. Cl. 252—438 **10 Claims**

1. An aqueous homogeneous solution consisting essentially of

- (a) a water-soluble palladium (II) salt, said salt being selected from the group consisting of a chloride, bromide, nitrate, sulfate, and Li_2PdCl_4, having a concentration of metal ion of at least about 0.00005 to about 0.025 mole per liter,
- (b) a copper (II) chloride or bromide,
- (c) a copper (II) salt selected from the group consisting of a nitrate, sulfate, alkylsulfonate, arylsulfonate, tetrafluoroborate, perchlorate, trifluoroacetate, trichloroacetate and methanephosphonate, and
- (d) the balance water,

wherein the total concentration of (b) and (c) is from about 0.003 to about 3 moles per liter, and wherein the copper (II) chloride or bromide (b) comprises from about 10 to about 80 mole percent of the total of (b) and (c)..

3,849,337

PROCESS FOR THE PREPARATION OF OXIDATION CATALYSTS AND CATALYSTS OBTAINED THEREBY

Giovanni Manara and Vittorio Fattore, San Donato Milanese, Italy, assignors to Snam Progetti, S.p.A., San Donato Milanese, Italy

No Drawing. Filed Apr. 21, 1972, Ser. No. 246,440

Claims priority, application Italy, Apr. 23, 1971, 23,548/71

Int. Cl. B01j *11/06, 11/08, 11/22*

U.S. Cl. 252—439 **7 Claims**

1. A process for the preparation of oxidation catalyst based on oxides of antimony and of a second metal selected from the group consisting of iron, uranium, tin, cerium, manganese and thorium said process comprising (i) providing a powdered catalytic mass by heating compounds of the said metals which are thermally decomposable to the metal oxides, (ii) drying the finely powdered catalytic mass; (iii) adding a compound, volatile at temperatures lower than the catalyst activation temperature, and selected from the group consisting of ammonium carbonate, ammonium bicarbonate, urea, hexamethylenetetramine and oxalic acid, (iv) molding the catalyst preparation to shape, (v) heating the shaped catalyst until said volatile compound is completely eliminated and (vi) then calcining to obtain the oxides of the said metals.

3,849,338

CATALYST SUPPORT AND OXYCHLORINATION CATALYST EMBODYING SAME

Jean-Claude Daumas, 8 Square des Villebenettes, 78 Marly-le-Roi, France, and Madeleine Le Page, 5 Square du Mont-Blanc, 75 Paris 15e, France

No Drawing. Filed Feb. 16, 1972, Ser. No. 226,929

Claims priority, application France, Mar. 19, 1971, 7105677

Int. Cl. B01j *11/78*

U.S. Cl. 252—441 **13 Claims**

1. A process for the preparation of an oxychlorination catalyst comprising the steps of forming a silica-magnesia support by forming a silica hydrogel with a compound selected from the group consisting of magnesium chloride, magnesium bromide, magnesium perchlorate and mixtures thereof, calcining the resulting hydrogel at a temperature of 530 to 700° C. to form the support, with the compound being employed in an amount sufficient to provide a hydrogel containing 10 to 25% magnesia based on the calcined particles, and depositing on the support a copper chloride catalyst.

3,849,339

METHOD OF PREPARING AN IMPROVED DEHYDROGENATION CATALYST

Robert R. Turley, Lake Jackson, William M. Castor, Clute, and Kenneth R. Nunnally, Brazoria, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 53,881, July 10, 1970, now Patent No. 3,703,593. This application Sept. 14, 1972, Ser. No. 288,915

The term of this patent subsequent to Nov. 21, 1989 has been disclaimed

Int. Cl. B01j *11/22*

U.S. Cl. 252—455 R **5 Claims**

1. In a process for preparing a catalyst for the dehydrogenation of alkyl aromatic hydrocarbons to vinyl aromatic hydrocarbons by preparing a paste consisting essentially of Fe_2O_3, Cr_2O_3 or an alkali metal chromate or dichromate decomposible to Cr_2O_3, an alkali metal oxide or an alkali metal salt decomposible to an alkali metal oxide, a binder and sufficient water to form said paste, forming said paste into pellets and calcining said pellets into a finished catalyst, the improvement which comprises employing as the Fe_2O_3 component a mixture of hydrated Fe_2O_3 and anhydrous Fe_2O_3 wherein the hydrated Fe_2O_3 is present in the range of from about 79 percent to about 95 percent of the total weight of iron oxides present.

3,849,340

HYDROCARBON CONVERSION CATALYST

Ernest L. Pollitzer, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Application Nov. 10, 1971, Ser. No. 197,375, now Patent No. 3,763,260, dated Oct. 2, 1973, which is a continuation-in-part of abandoned application Ser. No. 20,125, Mar. 16, 1970. Divided and this application Dec. 29, 1972, Ser. No. 319,440

Int. Cl. B01j *11/40*

U.S. Cl. 252—455 Z **6 Claims**

1. A catalyst composition comprising a zeolite component having a mordenite crystal structure and having a silica to alumina mole ratio of at least 40:1 prepared by acid extracting alumina from an initial mordenite composition having a silica to alumina mole ratio of about 12:1 to about 30:1 and metal component selected from the group consisting of copper, silver, gold and zirconium.

3,849,341

ESTER-LINKED DERIVATIVES OF CARBOHYDRATES AS BUILDERS FOR DETERGENT COMPOSITIONS

Vincent Lamberti, Upper Saddle River, N.J., assignor to Lever Brothers Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 77,052, Sept. 30, 1970. This application Feb. 1, 1972, Ser. No. 222,659

Int. Cl. C08b *19/04, 3/12;* **C11d** *3/22*

U.S. Cl. 252—546 **19 Claims**

1. A detergent composition comprising:

- (a) at least one detergent surface active agent selected from the group consisting of anionic, nonionic, zwitterionic and ampholytic agents;
- (b) an organic biodegradable detergent builder comprising a water soluble salt of an ester-linked carboxyl derivative of a polysaccharide, selected from the group consisting of starch maleate, starch succinate, starch phthalate, starch glutarate, starch citraconate, starch itaconate, starch diglycolate and starch dilactate wherein the D.S. value ranges from about 0.5–3 and wherein said builder represents from about 20% to about 60% of the total weight of the detergent composition and the weight ratio of builder to surfactant is from about 1:10 to about 50:1.

3,849,342

CATALYSTS FOR CONVERSION OF NITROGEN OXIDE POLLUTANTS IN AUTOMOTIVE EXHAUST GASES

Teuvo Santala, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 29, 1972, Ser. No. 310,623

Int. Cl. B01j *11/22*

U.S. Cl. 252—462 **3 Claims**

1. An improved catalyst for reducing nitrogen oxides in automotive exhaust gasses, said catalyst comprising a metal alloy having a composition, by weight, of from about 25 to 75 percent nickel, from about 0.5 to 20 percent of a metal catalyst selected from the group consisting of vanadium, lanthanum and didymium, and the balance copper and impurities.

3,849,343

METHOD OF CATALYST MANUFACTURE

James Hoekstra, Evergreen Park, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Feb. 5, 1973, Ser. No. 329,956

Int. Cl. B01j *11/08*

U.S. Cl. 252—466 PT **11 Claims**

1. In the preparation of a catalytic composite wherein a porous refractory carrier material is impregnated with a solution of a compound of a platinum group metal and a solution of a compound of an alkaline earth metal selected from the group consisting of calcium, strontium and barium, the improvement which comprises:

- (a) impregnating a porous refractory carrier material with a solution of a compound of at least one platinum group metal;
- (b) prior to calcining the impregnated carrier material, further impregnating the same with a compound of said alkaline earth metal in solution with a reducing agent; and
- (c) thereafter drying and calcining the resultant composite.

3,849,344

SOLID DIFFUSION SOURCES CONTAINING PHOSPHORUS AND SILICON

Carl H. McMurtry, Lewiston, and Yorihiro Murata, North Tonawanda, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Mar. 31, 1972, Ser. No. 239,897

Int. Cl. B32b *5/04;* **H01b** *1/04*

U.S. Cl. 252—500 **3 Claims**

1. A solid phosphorus containing source body for semiconductor diffusion doping treatment, said body comprising about 5 to about 70 wt. percent of compounds of phosphorus and silicon and the balance silicon containing additives, wherein the compounds of phosphorus and silicon are selected from the group consisting of compositions of $SiO_2 \cdot P_2O_5$, $2SiO_2 \cdot P_2O_5$, and $SiO_2 \cdot 2P_2O_5$, and the sili-

con containing additives are selected from the group consisting of silicon nitride, silicon oxide and silicon metal.

3,849,345
CONDUCTIVE ARTICLES MADE FROM BUTADIENE/STYRENE BLOCK COPOLYMERS AND CARBON BLACK

Kenneth E. Snavely, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed June 27, 1973, Ser. No. 375,798
Int. Cl. C08c *11/18;* **H01b** *1/06*
U.S. Cl. 252—511 **4 Claims**

1. An antistatic shoe sole stock having a resistivity in the range of 10^3 to 10^8 ohm-cm. prepared from a vulcanizable composition consisting essentially of a block copolymer having the formula

$$A-B$$

wherein A is an essentially homopolymer block formed from a monovinyl aromatic hydrocarbon having 8 to 15 carbon atoms and B is selected from the group consisting of an essentially homopolymer block formed from a conjugated diene having 4 to 8 carbon atoms and a copolymer block formed from a conjugated diene having 4 to 8 carbon atoms and a monovinyl aromatic hydrocarbon having 8 to 15 carbon atoms, the monovinyl aromatic hydrocarbon homopolymer content being from 10 to 40 percent by weight of the block copolymer and about 20 parts by weight of a normally nonconductive carbon black per 100 parts by weight of said block copolymer.

3,849,346
PROCESS FOR PREPARING GRANULAR DETERGENT COMPOSITION

Hideaki Kuwamura, Chiba, Ichiro Kashiwa, Kokubungi, Takashi Hirabayashi, Chiba, and Tadayoshi Tamura, Yachiyo, Japan, assignors to Lion Fat and Oil Company Limited, Tokyo, Japan
No Drawing. Filed June 8, 1972, Ser. No. 260,743
Claims priority, application Japan, June 30, 1971, 46/48,354
Int. Cl. C11d *3/065, 11/02*
U.S. Cl. 252—531 **2 Claims**

1. A process for preparing a granular detergent composition which comprises spray drying a slurry of 70–40% by weight of a mixture of 10–40% by weight of an anionic surface active agent selected from the group consisting of sodium alkylaryl sulfonate (C_8–C_{18}), sodium olefin sulfonate (C_8–C_{20}), sodium alkyl sulfonate (C_8–C_{20}), sodium alkyl sulfate (C_8–C_{20}) and mixtures thereof, 15–40% by weight of sodium tripolyphosphate, 15–40% by weight of sodium silicate having an Na_2O to SiO_2 ratio of 0.5–3, 0.5–10% by weight of magnesium sulfate in 30–60% by weight of water.

3,849,347
COMPOSITION FOR PRE-WASHING TREATMENT OF TEXTILES

Fumikatsu Tokiwa and Tetsuya Imamura, Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan
No Drawing. Filed June 5, 1972, Ser. No. 259,473
Claims priority, application Japan, June 9, 1971, 46/40,833
Int. Cl. C11d *1/22, 1/831*
U.S. Cl. 252—545 **7 Claims**

1. A transparent gel, liquid crystal, detergent composition consisting essentially of

(1) from about 8 weight percent to about 30 weight percent of straight chain or branched chain alkylbenzenesulfonate detergent selected from the group consisting of the alkali metal salts, monoethanolamine salts and diethanolamine salts of alkylbenzenesulfonates in which the alkyl groups have from 8 to 18 carbon atoms and mixtures thereof,

(2) from about 10 weight percent to about 62 weight percent of amphiphilic polyoxyethylene nonionic surfactant having an HLB value in the range of from 5 to 11 and selected from the group consisting of (a) polyoxyethylene alkyl ethers having alkyl groups of 8–22 carbon atoms and 1–8 oxyethylene units and (b) polyoxyethylene alkylphenyl ethers having alkyl group of 8–18 carbon atoms and 1–8 oxyethylene groups, and

(3) the balance is water,

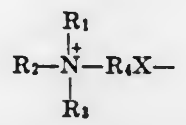
the sum of ingredients (1) plus (2) being in the range of from about 25 weight percent to 70 weight percent of the total composition.

3,849,348
DETERGENT COMPOSITIONS

Gordon Trent Hewitt, Upper Montclair, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Continuation of abandoned application Ser. No. 816,027, Apr. 14, 1969. This application Mar. 20, 1972, Ser. No. 236,521
Int. Cl. C11d *1/62, 1/835, 3/26*
U.S. Cl. 252—547 **1 Claim**

1. A foaming aqueous detergent composition effective in simultaneously cleansing and conditioning in a single operation consisting essentially of

(a) 13% to 20% by weight of a compound of the formula



$$R_2-\overset{\overset{R_1}{|+}}{\underset{\underset{R_3}{|}}{N}}-R_4X-$$

wherein

R_1 is a C_{10} to C_{18} alkyl or $RCONH(CH_2)_3$ where R is a higher alkyl radical;
R_2 and R_3 are each C_1 to C_3 alkyl;
R_4 is C_1 to C_4 alkylene or hydroxyalkylene;
and X is sulfo or carboxy ion;

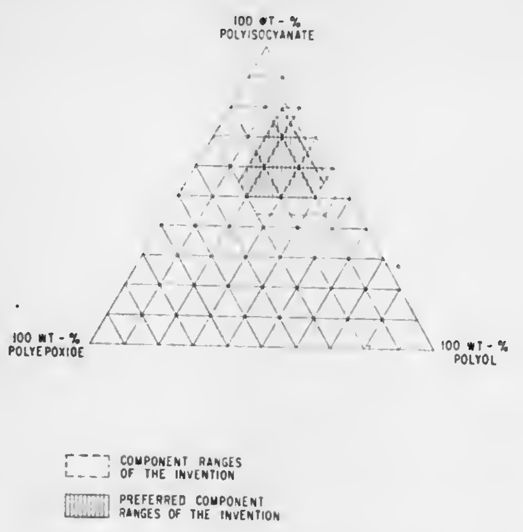
(b) 3% to 10% by weight of a mono C_{10} to C_{18} alkyl, di-C_1 to C_3 alkyl or hydroxy C_1 to C_3 alkyl tertiary amine oxide;

(c) 0.5% to 5% by weight of a C_{10} to C_{20} quaternary nitrogen compound;

(d) and the balance primarily water, said composition having a pH in the range of 7.5 to 10.

3,849,349
POLYISOCYANURATE FOAM AND PROCESS FOR PRODUCING THE SAME

Kurt C. Frisch, 17986 Parke Lane, Grosse Ile, Mich. 48138, and Kaneyoshi Ashida, 1–3–20 Nichihara-cho, Shibuya-ku, Tokyo, Japan
Filed May 12, 1971, Ser. No. 142,589
The term of this patent subsequent to Feb. 19, 1991, has been disclaimed
Int. Cl. C08g *22/18, 22/46*
U.S. Cl. 260—2.5 AW **23 Claims**


100 WT - %
POLYISOCYANATE
100 WT - %
POLYEPOXIDE
100 WT - %
POLYOL
COMPONENT RANGES OF THE INVENTION
PREFERRED COMPONENT RANGES OF THE INVENTION

1. A modified isocyanurate foam which is a product of a one-stage reaction in the presence of a blowing agent and an isocyanate trimerization catalyst from the reactants consisting essentially of

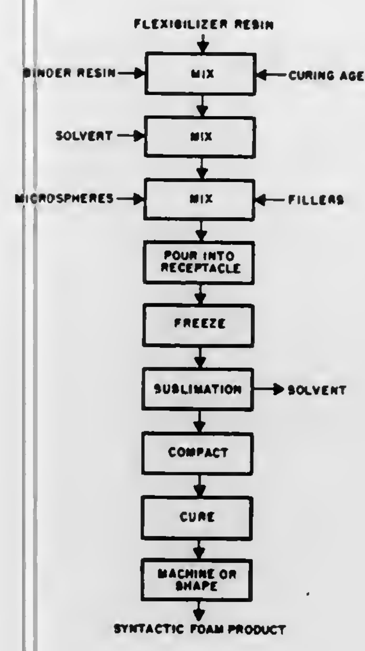
(1) a polynuclear polyisocyanate having an isocyanate equivalent weight of from 120 to 160,

(2) a polyepoxide in a proportion of from 0.1 to 0.6 equivalents per equivalent of said polyisocyanate,

(3) a polyol in a proportion of from 0.15 to 0.4 equivalents per equivalent of said polyisocyanate, wherein weight ratios of said polyisocyanate, said polyepoxide and said polyol to the total weight of said three reactants are 50 to 80 percent, 5 to 30 percent and 15 to 40 percent respectively.

3,849,350
PROCESS OF MAKING LOW DENSITY SYNTACTIC FOAMS

John Matsko, Albuquerque, N. Mex., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed June 6, 1973, Ser. No. 367,680
Int. Cl. C08g *53/08;* **C08j** *1/14*
U.S. Cl. 260—2.5 B **9 Claims**



1. A process for preparing a low binder content and low density syntactic foam product comprising mixing an epoxy binder resin, a flexibilizer resin and a curing agent to form a first mixture comprising from about 5 to about 10 weight percent of the final product, agitating said first mixture, adding sufficient solvent in a proportion of from about 200 milliliters to about 550 milliliters solvent per 100 grams of said final product to said first mixture during said agitation to provide a highly fluid state second mixture, and, while further agitating, adding hollow microspheres to said second mixture, pouring said second mixture with said hollow microspheres into a precooled receptacle to depth not greater than ½ inch, thereafter freezing said second mixture, subliming said solvent from said second mixture while maintaining said frozen condition, said sublimation yielding a dry product, corpressing said dry product at from about 90 to about 200 pounds per square inch and curing said compressed dry product yielding a syntactic foam product having a density of from about 0.202 to about 0.409 grams per cubic centimeter and a hollow microsphere to resin weight ratio of from about 90 to 10 to about 95 to 5.

3,849,351
PAVEMENT MARKING MATERIAL CONTAINING A POLYAMIDE MODIFIED BY A DIPHENOLIC ACID

Jens L. Jorgensen, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Continuation of abandoned application Ser. No. 181,240, Sept. 16, 1971. This application Sept. 13, 1973, Ser. No. 397,160
Int. Cl. C08g *51/04*
U.S. Cl. 260—18 N **7 Claims**

1. Marking material for forming pavement markings that bear traffic within seconds after application comprising

(I) solid thermoplastic-based particles that are non-tacky, nonblocking, and free-flowing at normal ambient temperatures but adapted to melt, coalesce, and form a continuous adherent film when applied to a pavement surface at a useful elevated temperature, the particles passing a screen of about 20 mesh, with at least about 80 weight-percent being retained on a screen of about 200 mesh and comprising
  (A) an organic thermoplastic phase that
    (1) constitutes on the average at least 25 volume-percent of the particles,
    (2) melts at a temperature above about 150° F. and forms a low-viscosity fluid melt below about 300° F., and
    (3) comprises polyamide condensation products of polycarboxylic acid and polyamine that account for at least 50 volume-percent of the organic phase, at least one weight-percent of the ingredients from which the polyamide condensation products were formed being diphenolic acid; and
  (B) a coloring agent in an amount that constitutes at least one volume-percent of the particles; and

(II) particulate material that is nonmelting at the temperature of application, is approximately within the size range of the thermoplastic-based particles, and is present in an amount between about 1 and 50 volume-percent of the whole marking material.

3,849,352
FLAME RETARDANT POLYOLEFIN COMPOSITIONS OF IMPROVED COLOR AND MELT STABILITY

Jerry O. Reed, Mauldin, and James S. Dix, Greenville, S.C., assignors to Phillips Petroleum Company
No Drawing. Filed May 30, 1972, Ser. No. 257,829
Int. Cl. C08f *19/04, 21/04*
U.S. Cl. 260—23 H **5 Claims**

1. A composition which consists essentially of (A) a polyolefin selected from homopolymers and copolymers derived from polymerization of 1-monoolefins having from 2 to 8 carbon atoms, (B) from 0.1 to 20 parts per hundred parts of (A) of a halogenated ether selected from the group consisting of 2,3-dibromopropyl 2,4,6-tribromophenyl ether, 11,12-dibromododecyl 2,6-dibromo-4-n-octylphenyl ether, 2,4,6-tribromophenyl benzyl ether, 3,4-dibromobutyl phenyl ether, 2,4,6-tribromophenyl cyclyohexyl ether, 2,2-bis[4-(2,3-dibromopropoxy)phenyl]propane, and 2,2-bis[4-(2,3-dibromopropoxy)3,5-dibromophenyl]propane, (C) from 0.1 to 2.5 parts per hundred parts of (A) of a solid metal soap mixture containing (1) a polyvalent metal soap of the formula $(RCOO)_2M$ wherein each R is a cyclic or acylic hydrocarbyl radical having from 2 to 22 carbon atoms therein and M is a polyvalent metal selected from the

group consisting of barium, cadmium, lead, strontium, tin and zinc, and (2) a polyvalent metal phenolate of the formula $M(OR')_2$ wherein each R′ is an aryl or alkaryl hydrocarbyl radical having from 4 to 18 carbon atoms therein and M is selected from the group consisting of barium, cadmium, lead, strontium, tin and zinc, and (D) from 0.5 to 10 parts per hundred parts of (A) of a metal oxide selected from the oxides of arsenic, antimony and bismuth.

3,849,353

HOT MELT

David D. Taft, Columbus, Ohio, and Terry H. Shepler, St. Paul, Minn., assignors to Ashland Oil, Inc., Ashland, Ky.

No Drawing. Filed Jan. 7, 1972, Ser. No. 216,242

Int. Cl. C09j *3/26*

U.S. Cl. 260—27 **15 Claims**

1. A hot melt composition consisting essentially of:

(1) copolymer of ethylene and unsaturated ester monomer selected from the group consisting of vinyl acetate; alkyl acrylate wherein the alkyl group contains 1–18 carbon atoms; and mixtures thereof; containing from about 40 to about 85% by weight of ethylene and from about 15 to about 60% by weight of unsaturated ester monomer;

(2) atactic polypropylene; and

(3) vulcanized rubber;

said composition based upon the combined weight of (1), (2), and (3) contains from about 5% to about 50% by weight of (1); about 10 to about 85% by weight of (2) and about 10 to about 50% of (3).

3,849,354

CABLE SEALANT COMPOSITION AND METHOD OF SEALING CABLE

Larry A. Strecker and James E. Wood, St. Louis, Mo., assignors to Inmont Corporation, New York, N.Y.

Filed Feb. 22, 1972, Ser. No. 227,956

Int. Cl. C08f *45/52*

U.S. Cl. 260—28.5 B **2 Claims**

1. A composition of matter comprising a normally noncuring blend of from about:

(a) 5–25% by weight ethylene propylene rubber,

(b) 20–50% by weight of butadiene-acrylonitrile copolymer,

(c) 10–30% atactic polypropylene,

(d) 5–30% polyethylene,

(e) 1–20% of paraffin wax, and

(f) 10–30% liquid paraffinic hydrocarbons.

3,849,355

AGGREGATE COMPOSITION CONTAINING SYNTHETIC THERMOPLASTIC RESIN PELLETS OR FRAGMENTS

Kaoru Yamaguchi and Takashi Saito, Yokohama, Japan, assignors to Nippon Zeon Company, Ltd., Tokyo, Japan

No Drawing. Continuation of abandoned application Ser. No. 168,722, Aug. 3, 1971. This application June 12, 1973, Ser. No. 369,180

Claims priority, application Japan, Aug. 6, 1970, 45/68,324; Oct. 24, 1970, 45/93,169

Int. Cl. C08f *45/04, 45/52*

U.S. Cl. 260—28.5 R **7 Claims**

1. In a composition useful as a paving material comprising in admixture aggregate and a binder selected from the group consisting of a bituminous material and a petroleum resin, the improvement wherein from 3–75% by weight of said aggregate is replaced with solid synthetic thermoplastic resin particles selected from the group consisting of vinyl chloride resins, polyethylene, polypropylene, polystyrene, acrylonitrile-butadiene-styrene and methacrylic resins in the form of pellets or fragments having a maximum lengthwise diameter of about 1–20 mm. in said admixture.

3,849,356

MIXTURE FOR MAKING A MOLD

Akio Matsui, Funabashi, Yuji Hasegawa, Chiba, and Hiroshi Fujimoto, Funabashi, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Ituka-ku, Kobe-shi, Hyogo-ken, Japan

No Drawing. Continuation of application Ser. No. 221,104, Jan. 26, 1972, which is a continuation-in-part of application Ser. No. 94,599, Dec. 2, 1970, both now abandoned. This application Sept. 11, 1973, Ser. No. 396,315

Claims priority, application Japan, Dec. 5, 1969, 44/98,030

Int. Cl. C08g *51/24*

U.S. Cl. 260—29.3 **5 Claims**

1. In a mixture for making a self-hardening fluid mold comprising a refractory material in powder form, water glass, a hardening agent selected from the group consisting of portland cement, slaked lime, alumina cement or mixtures thereof, surface active agent, about 0.20 to 1.0% by weight of powdered aluminum, and water, the improvement which comprises that the mixture additionally contains about 0.1 to 1.0 part by weight of a novolak phenol resin having a gelation time of from 50 to 80 seconds at 140° C., per 100 parts by weight of the refractory material.

3,849,357

PIGMENTED MASONRY WATER REPELLENT COMPOSITION CONTAINING ALKYLTRIALKOXY SILANE-ALKYL ORTHOSILICATE REACTION PRODUCT SILICONE RESIN

George Robert Wolf, Clinton, Mich., assignor to Stauffer Chemical Company, Westport, Conn.

No Drawing. Continuation-in-part of application Ser. No. 150,208, June 4, 1971, which is a continuation of application Ser. No. 886,001, Dec. 17, 1969, which in turn is a continuation-in-part of application Ser. No. 676,627, Oct. 19, 1967, all now abandoned. This application June 25, 1973, Ser. No. 373,589

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 NR **5 Claims**

1. A pigmented water repellent composition consisting essentially of a water-base paint composition containing a pigment, an organic resinous material selected from the class consisting of polymers of acrylic acid, methacrylic acid, alkyl esters of acrylic acid and methacrylic acid, an aqueous solution containing from 20 to 50 percent by weight of a silicone resin based on the total weight of the solution, said silicone resin is obtained from the reaction of from 1 to 3 parts of an alkyltrialkoxysilane having from 1 to 6 carbon atoms in the alkyl group with from 3 to 1 parts of an alkyl orthosilicate having from 1 to 4 carbon atoms in each alkyl group and water in an amount ranging from 0.4 to about 100 times the combined volume of the alkyltrialkoxysilane and the alkyl orthosilicate, and an acid selected from the group consisting of hydrochloric acid, sulfuric acid, ethyl hydrogen phosphite, diethyl hydrogen phosphite and mixtures of diethyl hydrogen phosphite and phosphorous acid in an amount to provide a pH of from 2 to 6, said water repellent composition containing from 2 to 40 percent by weight of the silicone resin based on the weight of said composition.

3,849,358

METHOD OF PREPARING HIGHLY CONCENTRATED RESINOUS LATEX

Masakazu Inoue, Takehiko Okamoto, and Ikuo Nagai, Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

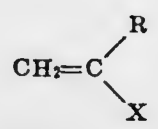
Continuation-in-part of abandoned application Ser. No. 160,445, July 7, 1971. This application July 11, 1973, Ser. No. 378,201

Claims priority, application Japan, Oct. 24, 1966, 41/69,759

Int. Cl. C08d *1/09;* **C08f** *15/40*

U.S. Cl. 260—29.7 UP **6 Claims**

1. A method of preparing a highly concentrated resinous latex having a solids content of 50–70% by weight directly by emulsion graft polymerization of ethylenically unsaturated monomers on an elastomeric polymer of conjugated diene type hydrocarbon which comprises adding, either incrementally or continuously in the presence of a free radical generator, an emulsifier and 92–20 parts by weight of monomers selected from the group consisting of monoalkenyl aromatic monomers and mixtures thereof with one or more acrylic monomers of the formula:



wherein R is a member selected from the group consisting of hydrogen and methyl and X is a member selected from the group consisting of —CN and —COOR′, wherein R′ is an alkyl group having 1 to 4 carbon atoms, to 8 to 80 parts by weight calculated as solids portion, of a polymerized conjugated diolefinic hydrocarbon-containing elastomeric, polymer latex, the average particle diameter of the dispersed polymeric particles of which is at least 0.15 micron, said emulsifier being added in an amount corresponding to the amount of said monomers added, as defined by the following formula:

$$9\times10^{-24}\frac{MV_{\circ}^{1/3}}{SR_{\circ}}V^{2/3}>W+W_{\circ}>4\times10^{-24}\ \frac{MV_{\circ}^{1/3}}{SR_{\circ}}V^{2/3}$$

wherein W is the number of parts by weight of the emulsifier that is required to be added to the polymerization system per 100 parts by weight of the total charge, when a volume V of polymer and monomers is present in the polymerization system, with the proviso that when W is calculated as zero or a minus number, no emulsifier is added to the polymerization system, $W_{\circ}$ is the number of parts by weight, per 100 parts by weight of the total charge, of the amount of emulsifier present in the elastomeric polymer latex, as converted on the basis of the effective molecular area of the emulsifier used in the emulsion polymerization reaction, $R_{\circ}$ is the average particle radius (cm.) of the particles of the elastomeric polymer latex, M is the molecular weight of the emulsifier used in the emulsion polymerization reaction, S is the area covered (cm.²) per molecule of the emulsifier used in the emulsion polymerization reaction, the average value of the weight of the several components being used when the emulsifier used is a mixture, $V_{\circ}$ is the value obtained by dividing the number of parts of the elastomeric polymer by the specific gravity of the polymer, and V is the value obtained by adding the value $V_{\circ}$ to the value obtained by dividing the number of parts by weight of the monomers added to the polymerization system at a certain time during the polymerization by the specific gravity of the polymer which should be formed by the said monomers added until that time, continuing the polymerization at a temperature of 40 to 70° C. and at least in the final stage the polymerization is carried out in an emulsion, the solid content of which is 50 to 70% by weight.

3,849,359

AGENTS FOR THE MANUFACTURE OF ORGANOPOLYSILOXANE COATINGS WHICH REPEL ADHESIVE SUBSTANCES

Siegfried Nitzsche, Heinrich Marwitz, and Friedrich Hockemeyer, Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

No Drawing. Filed Apr. 17, 1972, Ser. No. 244,945

Claims priority, application Germany, Apr. 20, 1971, P 21 19 120.8

Int. Cl. C08g *47/10, 51/28, 51/32*

U.S. Cl. 260—32.6 R **24 Claims**

1. A coating composition having substantially nonadherent properties which comprises (1) a diorganopolysiloxane having Si-bonded hydroxyl groups in the terminal units, (2) from 1 to 20 percent by weight based on the weight of the diorganopolysiloxane (1) of an organopolysiloxane free of amino groups and having Si-bonded hydrogen, (3) from 1 to 20 percent by weight based on the weight of the diorganopolysiloxane (1) of a tin compound, (4) from 1 to 20 percent by weight based on the weight of the diorganopolysiloxane (1) of an amino-substituted silicon copolymer having units of the formula

$$(CH_3)_mH_xSiO_{\frac{4-m-x}{2}}$$

and aminoorganosiloxane units of the formula

$$R_2'NRSi(R'')_n(OY)_pO_{\frac{3-n-p}{2}}$$

in which the copolymer contains units of the formula

$$(CH_3)_mH_xSiO_{\frac{4-m-x}{2}}$$

in an amount at least equal to but no more than 18 times the weight of the aminoorganosiloxane units, R is a divalent hydrocarbon radical, R′ is selected from the group consisting of hydrogen, alkyl and aminoalkyl radicals, R″ is a monovalent hydrocarbon radical, Y is an alkyl radical having from 1 to 5 carbon atoms, *n* and *p* each have a value of 0 to 2 and the sum of $n+p$ is less than 3, wherein *m* and *x* each have a value of from 0 to 3 with the average value of *m* being 0.9 to 2.5, and from 200 to 5000 percent by weight based on the weight of the diorganopolysiloxane (1) of an inert organic solvent substantially free of water.

3,849,360

POLYUREA-URETHANES PRODUCED FROM A MIXTURE OF TWO POLYAMINES

Basil S. Farah, Elma, and Herbert M. Schroeder, Williamsville, N.Y., assignors to Textron Inc.

No Drawing. Filed Sept. 3, 1970, Ser. No. 69,475

Int. Cl. C08g *22/18*

U.S. Cl. 260—33.2 R **21 Claims**

1. A urea-urethane composition of an essentially stoichiometric acount of polyamine with an isocyanate-terminated polyurethane prepolymer of 4,4′ - bis(isocyanatocyclohexyl)methane and polyester polyol, said polyamine consisting essentially of about 20 to 80 weight percent of 4,4′ - bis(aminocyclohexyl)methane and about 20 to 80 weight percent of monocyclic, alicyclic hydrocarbon diamine of 5 to about 16 carbon atoms, 5 to 10 of which form a ring structure.

3,849,361

METHOD OF PREPARING WATER-DISPERSABLE POLYMER COMPOSITIONS

Maurice L. Zweigle, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 10, 1973, Ser. No. 387,411

Int. Cl. C08f *45/34*

U.S. Cl. 260—33.2 R **7 Claims**

1. A method for preparing a fluid, water-dispersible suspension of water-soluble or water-swellable vinyl polymer which comprises preparing water-soluble or

water-swellable polymer in the aqueous phase of a microdisperse suspension of aqueous droplets in a liquid hydrocarbon or chlorinated hydrocarbon, separating the water from said suspension by azeotropic distillation while maintaining the polymer in microdisperse suspension, adding a liquid polyglycol or polyglycol ether having a solubility of at least 2 percent by weight in water, said polyglycol or polyglycol ether being employed in a predetermined amount sufficient to maintain the polymer in fluid suspension and recovering the hydrocarbon or chlorinated hydrocarbon by distillation from the suspension.

3,849,362

INCORPORATION OF FILLERS IN INSOLUBLE, INFUSIBLE OXYBENZOYL POLYMERS

James Economy, Eggertsville, and Roger S. Storm, Williamsville, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

No Drawing. Filed Sept. 4, 1973, Ser. No. 393,763

Int. Cl. C08g *51/34*

U.S. Cl. 260—33.2 R **17 Claims**

1. A method of making a filled, insoluble and infusible para-oxybenzoyl polymer which comprises preparing a dispersion of filler and a solution of para-hydroxybenzoic acid and/or polyester-forming derivatives thereof in a compatible high boiling solvent, condensing the para-hydroxybenzoic acid and/or polyester-forming derivative at an elevated temperature to an insoluble and infusible para-oxybenzoyl polymer having the filler incorporated therein and separating insoluble and infusible para-oxybenzoyl polymer having the filler incorporated therein from the high boiling solvent.

3,849,363

PROCESS FOR THE PRODUCTION OF HOMOGENEOUS RUBBER-SILICA MIXTURES

Günter Maass and Frederico Engel, Marl, Kreis Recklinghausen, Paul Bernemann, Haltern im Westfalen, and Harald Blümel, Hamm, near Marl, Kreis Recklinghausen, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Kreis Recklinghausen, Germany

No Drawing. Continuation of application Ser. No. 97,010, Dec. 10, 1970, which is a continuation of application Ser. No. 578,415, Sept. 9, 1966, which in turn is a continuation of application Ser. No. 131,424, Aug. 14, 1961, all now abandoned. This application Oct. 12, 1972, Ser. No. 296,755

Claims priority, application Germany, Aug. 17, 1960, C 22,161; Sept. 9, 1960, C 22,325; Dec. 15, 1960, C 22,964

Int. Cl. C08c *11/10, 11/22*

U.S. Cl. 260—33.6 AQ **4 Claims**

1. Process for the production of a homogeneous rubber-silica mixture by stepwise common precipitation of a synthetic rubber latex consisting of copolymerisates of butadiene and styrene and an alkali metal silicate solution in the presence of a neutral electrolyte with an acid, which consists of mixing a creamable rubber latex emulsion which contains an emulsifier component comprising an emulsifying agent that is stable only in an alkaline medium, with the desired amount of alkali metal silicate solution and such an amount of aqueous neutral electrolyte solution that the concentration of added electrolyte in the resulting cream is between 25 and 80 g./l. and the concentration of rubber is from 50 to 200 grams per liter, and effecting precipitation of homogeneous rubber-silica mixture by stepwise acidification procedure consisting essentially of (a) mixing the resulting cream uniformly with an acid selected from the group consisting of mineral acids and strong organic acids at a temperature between 0 and 30° C. under intensive stirring within 10 to 180 minutes until a pH value between 9 and 7 is attained, the electrolyte concentration being with shorter acid addition times at the upper limit of the above indicated range, (b) heating the reaction mixture for 10 to 120 minutes to 80 to 100° C., then (c) adding additional acid to a pH of 3 to 2 and filtering, washing and drying the resulting mixture.

3,849,364

FINELY DIVIDED CRYSTALLINE POLYMERS OF 1,4-DIHALO-2,3-EPOXYBUTANE

Edwin James Vandenberg, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Jan. 10, 1973, Ser. No. 322,585

Int. Cl. C08c *11/24;* **C08f** *45/30;* **C08g** *51/30*

U.S. Cl. 260—33.8 EP **4 Claims**

1. A process for preparing a dispersion of a crystalline polymer of 1,4-dihalo-2,3-epoxybutane in an inert liquid diluent which is a nonsolvent for the polymer, is at least a partial solvent for the epoxybutane and comprises a partially halogenated, aliphatic or cycloaliphatic hydrocarbon, which process comprises agitating a mixture of at least one 1,4-dihalo-2,3-epoxybutane and said diluent with at least a catalytic amount of an organoaluminum catalyst which has been modified by reaction with at least one agent selected from the group consisting of water, boron trifluoride and phosphorus pentafluoride, under polymerization conditions at a temperature below about —30° C. until a polymeric mixture is formed and then continuing to agitate the resulting mixture while maintaining the temperature at below about —30° C. until a dispersion of particles of crystalline polymer having a particle size less than about 100 microns is obtained in said diluent.

3,849,365

METHOD FOR PRODUCTION OF PLASTICIZED THERMOPLASTIC POWDER MIXTURES

Johann Bauer and Walter Popp, Burghausen, Germany, assignors to Wacker-Chemice GmbH, Munich, Germany

No Drawing. Filed July 31, 1973, Ser. No. 384,211

Claims priority, application Germany, Aug. 2, 1972, P 22 38 029.6

Int. Cl. C08f *45/26, 45/46, 45/50*

U.S. Cl. 260—34.2 **6 Claims**

1. A process for the production of dry thermoplastic powder mixtures, capable of trickling, from suspension polymerized polyvinyl chloride having a plasticizer content of 45% to 60% by weight based upon the finished powdered mixture, comprising initially mixing a powdered suspension polymerized polyvinyl chloride with a first amount of from 40% to 66% by weight of plasticizer, but not more than 30% by weight plasticizer based upon the finished powdered mixture, with high speed agitation, until said plasticizer has been worked into said polyvinyl chloride to produce an initial mixture and a temperature of at least 80° C. is attained; subsequently mixing said initial mixture with a second amount of from 34% to 60% by weight of the plasticizer to produce a subsequent mixture under high speed agitation without application of external heat in such a manner that the temperature does not drop below 80° C. during the period of addition of said second amount of plasticizer; and recovering said dry thermoplastic powder mixture capable of trickling having a plasticizer content of 45% to 60% by weight based upon the finished powdered mixture.

3,849,366

EPOXY RESIN COMPOSITIONS AND PROCESSES FOR PREPARING SAME

Charles T. Patrick, Jr., Centerville, Ohio, assignor to NDM Corporation, Dayton, Ohio

No Drawing. Filed Nov. 22, 1971, Ser. No. 201,212

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 EP **10 Claims**

1. A storage-stable, one-component, rapid curing, thixotropic composition which comprises a liquid polyepoxide component having a viscosity below about 10,000 centipoises, and, based upon 100 parts by weight of liquid epoxide component, from about 6 to 14 parts by weight dicyandiamide as latent curing agent, from about 0.25 to about 4.0 parts by weight of monuron accelerator, from about 6 to about 15 parts by weight asbestos fibers as thixotroping agent, from about 50 to about 175 parts by weight of a finely-divided, inert, inorganic filler, and from about 0.5 to about 5.0 parts by weight of an alkaline earth metal oxide.

3,849,367

FLEXIBLE POLYESTER BASED SEALING COMPOSITION

James F. Mayer, Hinsdale, and Victor V. Raimondi, Naperville, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Feb. 1, 1971, Ser. No. 111,755

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 R **9 Claims**

1. A flexible sealing composition which comprises from 20 to 90 parts by weight of a resin and from 10 to 80 parts by weight of a refractory inorganic oxide filler, said resin comprising from 55 to 95 parts by weight of an unsaturated polyester polymer and from 5 to 45 parts by weight of a hydrocarbon monomer, said cross-linked polyester polymer comprising the condensation product of the following components:

a. An aromatic dicarboxylic acid selected from the group consisting of isophthalic acid, terephthalic acid, and phthalic acid;
b. A saturated aliphatic dicarboxylic acid selected from the group consisting of adipic acid, azaleic acid, and sebacic acid;
c. A long-chained diol selected from the group consisting of triethylene glycol, diethylene glycol, or a mixture of triethylene glycol and diethylene glycol; and
d. An unsaturated aliphatic dicarboxylic acid selected from the group consisting of fumaric acid and maleic anhydride,

wherein said aromatic dicarboxylic acid is employed in the range of 1 to 3 moles per mole of said unsaturated aliphatic dicarboxylic acid, said saturated aliphatic dicarboxylic acid is employed in the range of 4 to 9 moles per mole of said unsaturated aliphatic dicarboxylic acid, and said long-chain glycols are employed in an amount sufficient to give a ½ to 3 mole percent excess over the carboxyl groups present, and wherein said hydrocarbon monomer is selected from the group consisting of a vinylalkenylbenzene, an acrylate, or a mixture of said vinylalkenylbenzene and said acrylate, said mixture containing 1 to 80 weight percent of said acrylate, said flexible sealing composition having a Shore hardness less than 80, and a tensile strength in the range of 100 to 200 p.s.i.

3,849,368

FIRE RETARDANT POLYMERS CONTAINING THERMALLY STABLE CYCLIC PHOSPHONATE ESTERS

James J. Anderson, Metuchen, Vasco G. Camacho, Iselin, and Robert E. Kinney, Lawrenceville, N.J., assignors to Mobil Oil Corporation

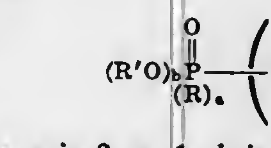
No Drawing. Original application Nov. 15, 1971, Ser. No. 199,022, now Patent No. 3,789,091. Divided and this application Aug. 17, 1973, Ser. No. 389,285

Int. Cl. C08f *45/58*

U.S. Cl. 260—45.8 R **7 Claims**

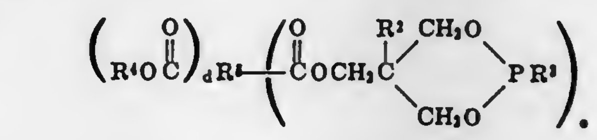
1. A polymer composition containing a flame retardant amount of at least one compound set forth by the formulae:

(A)



where a is 0 or 1; b is 0, 1 or 2, c is 1, 2, or 3 and $a+b+c$ is 3; R and R' are the same or dissimilar and are alkyl (C_1–C_8), phenyl, halophenyl, hydroxyphenyl, tolyl, xylyl, benzyl, phenethyl, hydroxyethyl, phenoxyethyl, or dibromophenoxymethyl; R^2 is alkyl (C_1–C_4); and R^3 is lower alkyl (C_1–C_4) or hydroxyalkyl (C_1–C_4) and

(B)



where d is 0, 1 or 2; e is 1, 2 or 3; R^2 is alkyl (C_1–C_4); R^3 is lower alkyl (C_1–C_4) or hydroxyalkyl (C_1–C_4); R^4 is alkyl (C_1–C_4) phenyl, halophenyl, hydroxyphenyl, hydroxyethyl, phenoxyethyl, dibromophenoxyethyl, tolyl, xylyl, benzyl, or phenethyl; and R^5 is monovalent alkyl (C_1–C_6), chlorophenyl, bromophenyl, dibromophenyl, tribromophenyl, hydroxyphenyl, naphthyl, tolyl, xylyl, benzyl, or phenethyl; divalent alkylene (C_1–C_6), vinylene, o-phenylene, m-phenylene, p-phenylene, tetrachlorophenylene (o, m, or p), or tetrabromophenylene (o, m, or p); or trivalent phenenyl.

3,849,369

POLYSTYRENE PLASTIC COMPOSITIONS CONTAINING BIS-PHENOXY COMPOUNDS AS FLAME RETARDANTS

Arnold L. Anderson, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

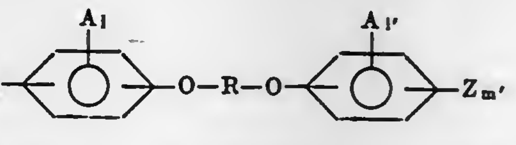
No Drawing. Continuation-in-part of abandoned application Ser. No. 260,240, June 6, 1972. This application Feb. 8, 1973, Ser. No. 330,856

The term of this patent subsequent to May 7, 1991, has been disclaimed

Int. Cl. C08f *45/60*

U.S. Cl. 260—45.9 R **14 Claims**

1. A plastic composition containing polystyrene having incorporated therein an effective amount of a flame retardant which is a compound having the formula:



wherein Z is selected from the group consisting of bromine or chlorine; m and m' are integers having a value of 1–5; i and i' are integers having a value of 0–2; A is selected from the group consisting of cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halo-phenyl, benzyl and halo-benzyl; and R is selected from the group consisting of

(a) $CH_2—CH(OH)—CH_2$

(b) $CH_2—CH(CH_2OH)—CH_2$

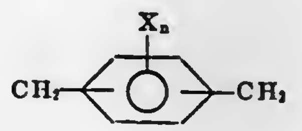
(c) $(CH_2)_w—O—(CH_2)_w$

where w=1-6

where X=H, Cl, Br

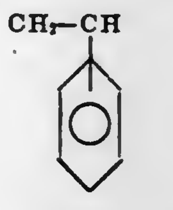
n=4

(d)

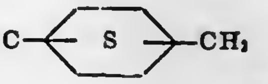


(e) $CH_2—C(O)—CH_2$

(f)



(g)

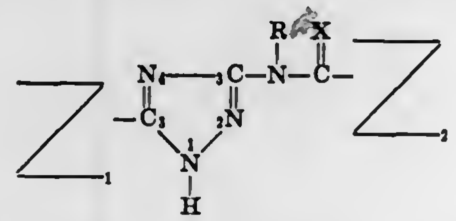


where S=saturated ring

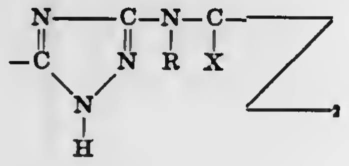
3,849,370
ENHANCEMENT OF RESISTANCE OF OLEFIN POLYMERS TO HEAVY METAL CATALYZED OXIDATIVE DEGRADATION

Motonobu Minagawa, Koshigaya, and Mitsuo Akutsu and Kenichi Nakagawa, Tokyo, Japan, assignors to Argus Chemical Corporation, Brooklyn, N.Y.
No Drawing. Filed Dec. 23, 1971, Ser. No. 211,647
Claims priority, application Japan, Dec. 30, 1970, 45/122,270
Int. Cl. C08f *45/58;* **C08g** *51/58*
U.S. Cl. 260—45.8 N **23 Claims**

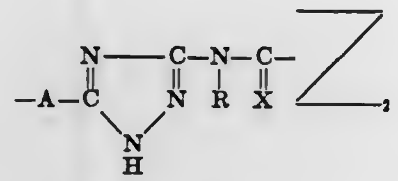
1. A stabilizer combination useful in the enhancement of the resistance of alpha-monoolefin polymers to copper-catalyzed oxidative deterioration, consisting essentially of at least one 3-amido-1,2,4-triazole having the formula:



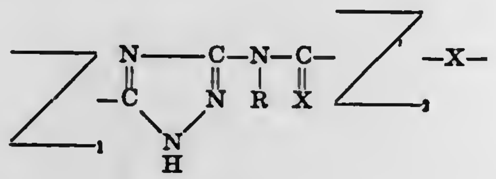
wherein:
- (a) R is selected from the group consisting of hydrogen and alkyl having from one to four carbon atoms;
- (b) Z_1 is selected from the group consisting of hydrogen, alkyl having from one to about eighteen carbon atoms; aryl and alkylaryl having from six to about eighteen carbon atoms; alkylenealkoxy and alkylenearyloxy having from two to about eighteen carbon atoms and nitrogen-containing heterocyclic rings having from four to five ring carbon atoms and one to two ring nitrogen atoms;



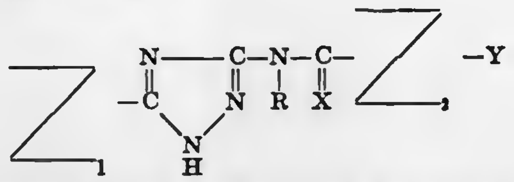
and



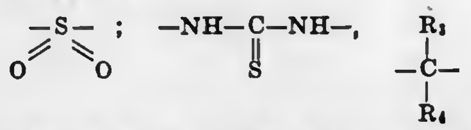
in which A is alkylene having from one to about eight carbon atoms;
- (c) X is selected from the group consisting of oxygen and sulfur;
- (d) Z_2 is a benzene or naphthalene ring substituted by from one to two R_1 groups and from zero to two R_2 groups; and
  - (i) R_1 is selected from the group consisting of OH, SH, SR_5 (where R_5 is selected from the group consisting of alkyl and alkylene carboxyalkyl having from one to four carbon atoms), and



(where X is as in (c) above) and at least one R_1 is in the ortho position);
  - (ii) R_2 is selected from the group consisting of alkyl, phenyl, alkyl phenyl, alkoxy, acyl, acyloxy, phenoxy and alkyl phenoxy having from one to about eighteen carbon atoms, halogen and amino; and



where Y is selected from the group consisting of oxygen, sulfur,



(where R_3 and R_4 are selected from the group consisting of hydrogen and alkyl having from one to three carbon atoms), provided, that there are at most two 1,2,4-triazole groups in the molecule,

and at least one alpha-monoolefin polymer stabilizer selected from the group consisting of organic phosphites, alkyl-substituted phenols and polynuclear phenols, thiodipropionic acid esters, polyvalent metal salts of organic acids, hydrocarbon sulfides and polysulfides, the stabilizer being compatible with polypropylene and having a low vapor pressure at olefin polymer working temperatures.

3,849,371
THERMALLY STABLE FLAME RETARDANT POLYPROPYLENE COMPOSITIONS

Lionel T. Wolford, Freehold, and John Versnel, Plainsboro, N.J., assignors to Cities Service Company, New York, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 222,341, Jan. 31, 1972. This application Sept. 7, 1973, Ser. No. 395,202
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.75 B **3 Claims**

1. A self-extinguishing composition comprising (A) a thermoplastic polymer of ethylenically-unsaturated monomers composed of at least 70 mole percent propylene and (B) a flame retardant amount of a mixture of (1) a hexabromocyclododecane having a melting point above 200° C. as indicated by the maximum endotherm determined by differential scanning calorimetry and (2) antimony trioxide, the amount of the hexabromocyclododecane component based on the total weight of the composition being from about 1 to 6 weight percent and the ratio of said component to antimony trioxide varying from about 0.5 to about 5.

3,849,372
VISCOSITY-STABLE CHLOROPRENE SOL POLYMER

Joseph Burton Finlay, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Oct. 20, 1972, Ser. No. 299,433
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.95 R **4 Claims**

1. In a process for producing a chloroprene sol polymer having excellent viscosity stability and color stability, in which a chloroprene-containing monomer is polymerized in an alkaline aqueous emulsion containing a dialkyl xanthogen disulfide but substantially no free sulfur to a monomer conversion not exceeding that at which an all-sol polymer is obtained, the improvement which comprises stopping the polymerization before exceeding said maximum conversion, adding 0.05 to 0.6 parts by weight, per 100 parts of polymer, of a phenolic anti-oxidant, and thereafter isolating the sol polymer as a solid, non-emulsified product, the phenolic antioxidant being selected from the group consisting of (a) 2,6-disubstituted phenols in which the substituents are alkyl or cycloalkyl radicals and contain up to 12 carbon atoms and at least one of the alkyl radicals is a tertiary radical, and (b) 2,2'-bis(6-tert-substituted phenols) in which the substituents are alkyl or cycloalkyl radicals and contain 4 to 12 carbon atoms and the link between the two rings is a covalent bond or a divalent sulfur or aliphatic radical.

3,849,373
POLYMERIC UV STABILIZERS FOR SUBSTANTIALLY HYDROCARBON POLYMERS

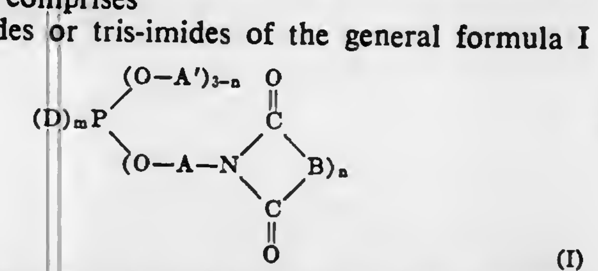
John Carl Siegle and Homer Bagenstose Wolfe, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed May 17, 1972, Ser. No. 254,234
Int. Cl. C08f *27/06, 27/08*
U.S. Cl. 260—47 UP **5 Claims**

1. Substantially hydrocarbon copolymeric stabilizer consisting of, on a weight basis, greater than 50% polymer repeat units derived from ethylene and less than 50% polymer repeat units derived from a comonomer which is copolymerizable with the ethylene and which contains a reactive basic site, said comonomer having the formula $CH_2{=}CR^1COOC_nH_{2n}N(R^2)R^3$ wherein n is 2–4, R^1 is H or CH_3 and each of R^2 and R^3 is selected from H and C_{1-4} alkyl, said reactive basic site having ionically bonded thereto a complementary acidic site of an ultraviolet light absorber having an acidic site.

3,849,374
STORAGE STABLE MIXTURES OF BIS OR TRIS IMIDES AND POLYAMINES

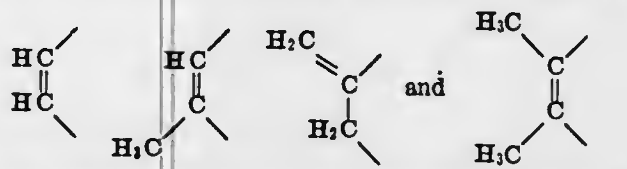
Alfred Renner, Munchenstein, and Theobald Haug, Frenkendorf, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed July 20, 1973, Ser. No. 381,327
Claims priority, application Switzerland, Oct. 10, 1972, 14,886/72
Int. Cl. C08g *20/32*
U.S. Cl. 260—47 CP **8 Claims**

1. A storage-stable, thermosetting composition of matter, which comprises
- (a) bis-imides or tris-imides of the general formula I



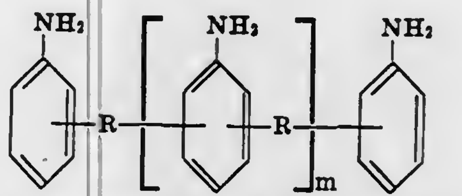
(I)

in which A and A denote aromatic radicals, aromatic radicals which are substituted by alkyl radicals with 1–4 carbon atoms, halogen atoms, the nitro group, the tertiary amino group, the alkoxy group, the carbalkoxy group or the carbamide group, or aromatic radicals which are interrupted by an oxygen atom, an alkylene group or a sulphonyl group, B denotes a radical selected from the formulae consisting of



D denotes an oxygen atom or sulphur atom, m denotes the number 1 or 0 and n denotes the number 2 or 3,
- (b) a polyamine of the formula II or III

$$E(NH_2)_n \qquad \text{(II)}$$



(III)

wherein, in the formula II, the radical E denotes an n-valent organic radical with 2 to 40 carbon atoms and n represents an integer from 2 to 4, and wherein, in the formula III, the radicals R each denote a divalent hydrocarbon radical of an aldehyde or ketone with 1 to 8 carbon atoms resulting from removal of the oxygen atom and m represents a number from 0.1 to 2, said composition containing 1 to 10 imide groups of the bis-imides or tris-imides of the formula I per primary amino group of the polyamines of the formula II or III.

3,849,375
LATENT CURING EPOXY RESIN-AROMATIC DISULFONAMIDE COMPOSITIONS

Harry A. Smith, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Apr. 2, 1973, Ser. No. 347,170
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 EN **7 Claims**

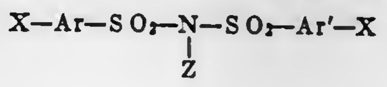
1. A latent curing epoxy resin composition comprising:
- (1) an epoxy resin having an average of more than one 1,2-epoxy group per molecule and
- (2) an aromatic disulfonamide;

wherein components (1) and (2) are present in quantities so as to provide a sulfonamide hydrogen equivalent: epoxy equivalent ratio of at least about 0.9:1.

3,849,376
AROMATIC POLYAMIDE COMPOSITIONS CONTAINING AROMATIC DISULFIMIDE COMPOUND HAVING AN AFFINITY FOR BASIC DYES

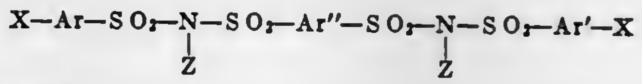
Gerhard Dieter Wolf, Dormagen, Gunter Blankenstein, Stommeln, and Gunther Nischk, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Continuation-in-part of application Ser. No. 161,285, July 9, 1971. This application Aug. 7, 1973, Ser. No. 386,272
Claims priority, application Germany, July 11, 1970, P 20 34 477.8
Int. Cl. C08g *20/38, 33/02*
U.S. Cl. 260—47 CZ **6 Claims**

1. A fiber forming polyamide composition consisting essentially of
- (1) an aromatic carboxylic polyamide; and
- (2) 50 to 500 milliequivalents per kilogram of said composition of a disulphimide having the formula



$$X{-}Ar{-}SO_2{-}\underset{\displaystyle Z}{\underset{|}{N}}{-}SO_2{-}Ar'{-}X$$

or



$$X{-}Ar{-}SO_2{-}\underset{\displaystyle Z}{\underset{|}{N}}{-}SO_2{-}Ar''{-}SO_2{-}\underset{\displaystyle Z}{\underset{|}{N}}{-}SO_2{-}Ar'{-}X$$

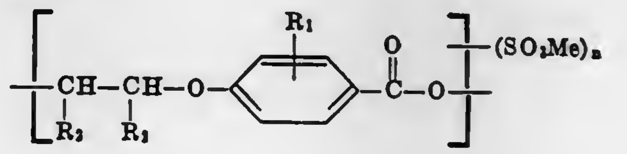
wherein

X is hydrogen or $—SO_3Z$;
Ar, Ar', and Ar'' are carbocyclic aromatic radicals; and
Z is hydrogen or alkali metal.

3,849,377
POLYESTER CONTAINING SULPHONIC ACID GROUPS

Günther Boehmke, Opladen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Sept. 20, 1973, Ser. No. 399,084
Claims priority, application Germany, Sept. 20, 1972, P 22 46 107.0
Int. Cl. C08g *17/02*
U.S. Cl. 260—49 **8 Claims**

1. Sulphonic acid group containing polyesters, which consist essentially of 5 to 50 recurring structural units of the formula



in which

R_1 is hydrogen, chloro or C_1–C_4-alkyl;

R_2 and R_3 independently of one another are hydrogen or C_1–C_2-alkyl;

Me is hydrogen, alkali metal, alkaline earth metal, ammonium, monoethanolammonium, diethanolammonium, triethanolammonium, cyclohexylammonium, or benzylammonium; and *n* is a number between 0.2 and 1.2.

3,849,378

UREA FORMALDEHYDE PIGMENT

Darrell J. L. Griffiths, State College, Pa., and Denis K. Huang, Laurel, Md., assignors to Westvaco Corporation, New York N.Y.

No Drawing. Filed Jan. 3, 1973, Ser. No. 320,834

Int. Cl. C08g *9/10, 53/03*

U.S. Cl. 260—69 R **13 Claims**

1. Process for the preparation of a white, bright and opaque precipitated urea formaldehyde pigment in slurry form for use in a papermaking operation which comprises the steps of:

(a) selecting a urea formaldehyde resin that has been reacted at least to its water insoluble stage, said resin having a water tolerance of from about 1.5 to 5.0 and a viscosity of at least about 450 cps. at 50% solids;

(b) precipitating said resin in an aqueous precipitating bath containing from about 0.125 to 1.5% by volume of a strong mineral acid catalyst at a temperature of from about 20–95 degrees C., under agitation, at a resin to water ratio of from 1/16 to 3/8, by adding said resin to the precipitating bath over a period of time ranging from about 15 minutes to one hour to form the precipitated urea formaldehyde pigment; and,

(c) reacting the mixture of resin and precipitating bath for an additional period of time to insure a total reaction time of from about ½ to 5 hours before collecting the precipitated pigment product and homogenizing the product to a particle size of from about 0.1 to 0.5 micron in an agglomerated structure of from about 3 to 6 microns.

3,849,379

PROCESS FOR THE SEMI-CONTINUOUS PREPARATION OF HIGH-MOLECULAR WEIGHT LINEAR POLYESTERS

Lambert Gaston Jeurissen and Frans Antoon De Smedt, Edegem, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed May 8, 1972, Ser. No. 251,167

Claims priority, application Great Britain, May 21, 1971, 16,347/71

Int. Cl. C08g *17/01*

U.S. Cl. 260—75 M **8 Claims**

1. A continuous process for the production of high molecular weight polyesters from terephthalic acid and ethylene glycol, which comprises,

in a first reaction step

adding terephthalic acid and ethylene glycol to bis-(2-hydroxyethyl)terephthalate at a ratio of 1.0 to 1.1 mole of terephthalic acid per mole of bis-(2-hydroxyethyl)terephthalate present and 0.3 to 0.9 mole of ethylene glycol per mole of free terephthalic acid that is being added,

heating the resultant mixture to a temperature between 240 and 310° C. in an inert atmosphere and at atmospheric pressure until a precondensate consisting of low molecular weight esterification product is formed,

separating said precondensate into a first and second half,

in a second reaction step

further polycondensing said first half of said precondensate at a temperature of 260 to 300° C. and at a pressure below 1 mm. of mercury until a high molecular weight linear polyester is obtained,

in a third reaction step

reacting the second half of said precondensate at a temperature above 200° C. with ethylene glycol, the amount of ethylene glycol added in this step being such that when taken together with half the amount of ethylene glycol added in the first reaction step, an amount is obtained that is molecularly equivalent to the amount of free terephthalic acid added in the first reaction step, thereby glycolizing the precondensate to bis(2-hydroxyethyl)terephthalate, and

recycling said bis(2-hydroxyethyl)terephthalate to the first reaction step and continuously repeating said steps.

3,849,380

POLYESTERS

Peter Frederick Jackson and James Angus Wilson Reid, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 15, 1972, Ser. No. 253,104

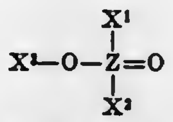
Int. Cl. C08g *17/015*

U.S. Cl. 260—75 R **15 Claims**

1. A process for the production of highly polymeric polymer by the polycondensation of a polycondensable material, at least 85 mol percent of which consists of at least one bis(dihydric alcohol) ester of an aromatic dicarboxylic acid or an oligomer thereof, the polycondensation being effected in the presence, as catalyst, of a mixture of

(a) a metallic component which is a weak acid salt of zinc, manganese or aluminum or zinc oxide and

(b) an organic component which is a compound of the structure



$$X^3\text{—O—}\overset{X^1}{\underset{X^2}{Z}}\text{=O}$$

wherein Z is selected from the group consisting of arsenic and phosphorus, x^1 is —R or —OR, x^2 is —R, x^3 is —H or —R, and each R, which may be the same or different, is a saturated aliphatic or aromatic hydrocarbon,

in which process the amount of each component is 0.0001 to 0.05% by weight of the polycondensable material.

3,849,381

CHROMATE CURABLE SEALANT COMPOSITIONS

Richard C. Doss and Leo L. Gingerich, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Dec. 15, 1972, Ser. No. 315,511

Int. Cl. C08g *39/08, 43/00*

U.S. Cl. 260—75 S **7 Claims**

1. A composition curable to a sealant comprising (a) a poly(oxyalkylene) - polyester - poly(monosulfide)-polythiol having an average of more than two mercapto groups per molecule and (b) a chromate selected from the group consisting of ammonium and alkali metal monochromates, dichromates, trichromates and tetrachromates in an amount sufficient to convert at least about 70 percent of the pendent thiol groups to polysulfide groups and thus form a sealant, said (a) being the acidic, unneutralized polymeric reaction product of at least one mercaptoalkanoic acid, at least one thiodialkanoic acid, and at least one poly(oxyalkylene)-polyol having an average of more than two hydroxy groups per molecule.

3,849,382

POLYESTERS FROM 2,6 - NAPHTHALENEDICARBOXYLIC ACID AND TRIS(2-HYDROXYETHYL) ISOCYANURATE

Yasukuni Nakatsuji, Tamaki Kanai, Hiroshi Noda, and Sadayoshi Miura, Sagamihara, and Hideaki Suzuki, Tokyo, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Filed Jan. 16, 1973, Ser. No. 324,085

Int. Cl. C08g *17/08*

U.S. Cl. 260—75 N **4 Claims**

1. A coating-forming polyester consisting essentially of units derived from

(A) an aromatic 2,6 - naphthalenedicarboxylic acid component consisting of a member selected from the group consisting of 2,6-naphthalene-dicarboxylic acid and the lower alkyl esters and halides thereof and 0–10 mol percent, based on said member, of other dicarboxylic acids or derivatives thereof selected from the group consisting of the aromatic dibasic acids other than 2,6 - naphthalenedicarboxylic acid, the lower alkyl esters and halides of said aromatic dibasic acids, and the aliphatic dibasic acids and the lower alkyl esters and halides thereof; and

(B) an alcohol component consisting of tris(2-hydroxyethyl)isocyanurate and other di- or trihydric alcohols, the latter polyhydric alcohols being contained in an amount of 0–60 mol percent of the total of said isocyanurate and other polyhydric alcohols; with the proviso that said aromatic 2,6-naphthalenedicarboxylic acid component (A) accounts for 40–50 equivalent percent of the whole polyester.

3,849,383

MOLDING COMPOUNDS FROM HEXAHYDROPHTHALIC ANHYDRIDE, TRIGLYCIDYL ISOCYANURATE AND A POLYOL

Charles A. Fetscher and Paul R. Schweyen, Olean, N.Y., assignors to The Dexter Corporation, Windsor Locks, Conn.

Filed Mar. 5, 1973, Ser. No. 338,191

Int. Cl. C08g *17/04*

U.S. Cl. 260—75 N **35 Claims**

1. A clear molding compound which is a reaction product of a polyol selected from the group consisting of glycerol, trimethylol propane, mixtures thereof, and any of the foregoing including up to 25% of the total polyol content of a polyol selected from the group consisting of ethylene glycol, diethylene glycol, propylene glycol, dipropylene glycol, pentaerythritol and propoxylated pentaerythriol, hexahydrophthalic anhydride, up to 25% of which is replaceable with an acid anhydride selected from the group consisting of tetrahydrophthalic anhydride, phthalic anhydride and mixtures thereof, and triglycidyl isocyanurate, the proportions of said polyol, anhydride and isocyanurate being such that there are initially present from 0.25 to 1 hydroxyl from the polyol and 1 to 1.35 glycidyl moieties from the isocyanurate per mol of anhydride and the reaction temperature being in the range of about 70° to about 140° C.

3,849,384

PROCESS FOR PREPARING A POLYMER COMPRISING ACRYLONITRILE, AN AROMATIC OLEFIN AND A TERPENE

Eric Nield, Watton-at-Stone, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 17, 1972, Ser. No. 254,084

Claims priority, application Great Britain, May 17, 1971, 15,266/71

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.78 **6 Claims**

1. A process for the preparation of a substantially odourless and taste free copolymer of acrylonitrile and aromatic olefin selected from the group consisting of styrene and α-methyl styrene containing 50 to 95% molar of units of acrylonitrile and 5 to 50% molar of units of at least one aromatic olefin randomly distributed in said copolymer, said process comprising polymerising an initial charge containing acrylonitrile, said aromatic olefin, a free radical polymerisation catalyst and at least one alkanethiol, and adding to said initial charge a monomer feed containing said aromatic olefin and at least one terpene consisting of two isoprene units and having at least one ethylenic bond, said monomer feed being at a rate corresponding pro rata to the rate of production of heat in the copolymer formation, and the amount of the alkanethiol in the initial monomer charge being selected to provide copolymer having a reduced viscosity (measured on a 0.5% w./v. solution in dimethyl formamide at 25° C.) between 0.5 and 1.8, and the amount of said terpene added with the monomer feed containing aromatic olefin being selected to maintain subsequent polymer formed within the range of 0.5 and 1.8.

3,849,385

CURABLE OLEFIN COPOLYMERS AND PROCESS FOR PRODUCING THE SAME

Teruo Oshima, Nishinomiya-shi, Tsuneyuki Nagase and Fujio Masuko, Takatsuki-shi, Takeshi Wada, Takasaki-shi, Masaaki Hirooka, Ibaragi-shi, and Isoji Taniguchi, Toyonaka-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Sept. 16, 1968, Ser. No. 762,342

Int. Cl. C08f *5/00, 15/40*

U.S. Cl. 260—80.78 **11 Claims**

1. A process for producing linear, amorphous, solid terpolymers composed of ethylene, propylene and 5-isopropylidene-2-norbornene, which comprises contacting ethylene, propylene and 5 - isopropylidene-2-norbornene in the presence of hydrogen with a catalyst obtained by contacting (1) an organoaluminum halide having the formula: AlR_nX_{3-n}, wherein R is a hydrocarbon residue; X is a halogen atom; and *n* is an arbitrary number of 1 to 2, with (2) a vanadium compound having a valency of 3 to 5, said organoaluminum halide and vanadium compound being essential constituents of the catalyst.

3,849,386

ONE-PACKAGE MOISTURE ACTIVATABLE POLYSULFIDE SEALANTS

Philip Bernstein, Yardley, and Alan E. Varker, Philadelphia, Pa., assignors to ESB Incorporated

No Drawing. Filed Nov. 5, 1973, Ser. No. 412,672

Int. Cl. C08g *23/00*

U.S. Cl. 260—79.1 **5 Claims**

1. Moisture activatable polysulfide sealants comprising a curable, liquid polysulfide polymer; a dormant curing agent; an alkaline earth hydroxide and a hydrolizable amine salt of an acid wherein:

(a) the polysulfide polymer is selected from polysulfide polymers having the recurring unit (RSS), wherein R is a divalent organic radical and SS is a disulfide linkage, and mercapto terminated polysulfide polymers having an average molecular weight of from about 2,000 to about 10,000;

(b) the dormant curing agent is incapable alone of curing the polysulfide polymer at room temperature but can effect such cure by exposure to free amine;

(c) the hydrolizable amine salt is a salt of organic or inorganic acid, capable of reacting with moisture in the air to release sufficient free amine to initiate the action of the domant curing agent;

(d) the alkaline earth hydroxide is a weakly basic hydroxide capable of forming a salt with the acid released from the hydrolizable amine salt of (c) when said amine salt releases free amine upon reaction with moisture in the air; and

(e) the amount of amine salt present is from about 1 to about 10 weight percent based on the total weight of the sealant; the amount of alkaline earth hydroxide present is at least stoichiometrically equal to the amount of amine salt present; and the remainder of the sealant comprises the liquid polysulfide polymer and dormant curing agent, from about 5 to about 25 parts of the curing agent being present for each 100 parts of the polysulfide polymer.

3,849,387

PROCESS OF FORMING POLYOLEFIN FIBERS

Robert W. Fowells, 603 K St., Washougal, Wash. 98671; Robert A. Damon, 1119 SE. 78th Ave. Vancouver, Wash. 98664; and James G. Coma, 200 NW. 78th St. Vancouver, Wash. 98665

Continuation-in-part of abandoned application Ser. No. 27,053, Apr. 9, 1970. This application Mar. 16, 1972, Ser. No. 235,420

Int. Cl. C08f *3/06, 3/10, 15/04*

U.S. Cl. 260—94.9 B **17 Claims**

1. A process of preparing fibers of polyolefins comprising polymerizing an olefin in the presence of a coordination catalyst system in a reaction medium whose solubility parameter is such that $(\delta_s-\delta_p)^2$ is less than about 3.0 cal./cc. and at a temperature less than the melt dissolution temperature of the polyolefin to be formed, and subjecting said polymerization solution to a positive shear stress of greater than about zero pound (force)/square foot up to about 0.1 pound (force)/square foot during polymerization, the magnitude of said shear stress being sufficiently great to precipitate the polyolefin as a fibrous gel having a fibrillar structure of fibrous polyolefin in which the interconnecting capillary spaces are filled with reaction medium, said magnitude of shear stress being less than that amount which would cause the direct formation of a substantial amount of discrete fibers directly recoverable without requiring further processing steps, and subsequently subjecting said fibrous gel formed during polymerization to a shear stress of greater than about 0.1 pound (force)/square foot, thereby producing discrete, directly recoverable, polyolefin fibers without requiring further processing steps.

3,849,388

ANALOGUES OF HUMAN THYROCALCITONIN

Werner Rittel, Basel, Max Brugger, Birsfelden, Bruno Kamber, Basel, Bernhard Riniker, Frenkendorf, and Peter Sieber, Reinach, Basel-Land, Switzerland, and Hendrik Marie Greven, Heesch, Netherlands, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

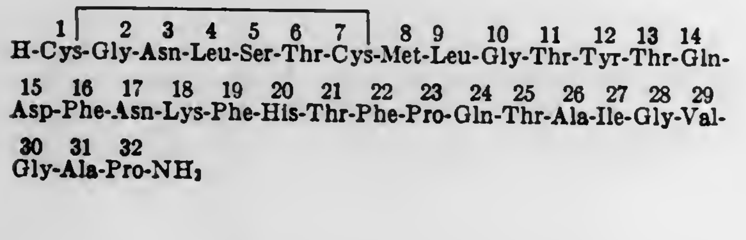
No Drawing. Continuation of abandoned application Ser. No. 864,544, Oct. 7, 1969. This application Sept. 28, 1972, Ser. No. 293,271

Claims priority, application Switzerland Oct. 15, 1968, 15,401/68; Nov. 20, 1968, 17,286/68

Int. Cl. A61k *27/00;* **C07c** *103/52*

U.S. Cl. 260—112.5 **14 Claims**

1. Peptides of the formula I


1 2 3 4 5 6 7 8 9 10 11 12 13 14
H-Cys-Gly-Asn-Leu-Ser-Thr-Cys-Met-Leu-Gly-Thr-Tyr-Thr-Gln-
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
Asp-Phe-Asn-Lys-Phe-His-Thr-Phe-Pro-Gln-Thr-Ala-Ile-Gly-Val-
30 31 32
Gly-Ala-Pro-NH₂

in which the aminoacid in position 8 is replaced by valine, norvaline, leucine, isoleucine, norleucine or α-aminobutyric acid, and those which contain glycine in position 12 and those which contain methionine in position 8 and glycine in positions 12 and 18, or at least in position 12, their antiparallel dimer and N^a-acyl derivatives wherein acyl is lower monobasic or dibasic alkanoyl, lower alkyloxycarbonyl, benzyloxycarbonyl, L-pyroglutamyl, carbamoyl, N-lower alkylcarbamoyl, N-phenylcarbamoyl, or N-phenylthiocarbamoyl, or desamino^1-derivatives of the monomeric or dimeric peptides, as well as therapeutically acceptable acid addition salts and complexes with a member selected from the group consisting of zinc phosphate, zinc pyrophosphate, zinc hydroxide, gelatine, polyphloretin phosphate and polyglutamic acid, of the said monomeric or dimeric peptides with the proviso that all aminoacid residues other than glycine are of the L-configuration.

3,849,389

INTERMEDIATES TO THE 5-Phe ANALOG OF LH-RH

James E. Shields, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Oct. 19, 1972, Ser. No. 298,893

Int. Cl. A61k *27/00;* **C07c** *103/52*

U.S. Cl. 260—112.5 **3 Claims**

1. A compound of the formula

$$R_4\text{-L-Trp-L-Ser}(R_2)\text{-L-Phe-Gly}(R)$$

in which R is hydrogen, methyl, ethyl, *p*-nitrobenzyl, or benzyl; R_2 is *t*-butyl or benzyl; and, when R_2 is *t*-butyl, R_4 is H-, CBz-, or $(AdOC)_2$-L-His-; and, when R_2 is benzyl,

R_4 is H-, CBz-, BOC-, AOC-, AdOC-, or $(AdOC)_2$-L-His-.

3,849,390

H-THR-LYS-ARG-OH AND DERIVATIVES THEREOF

William H. McGregor, Chester, and Norman H. Grant, Delaware, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Oct. 29, 1973, Ser. No. 410,584

Int. Cl. A61k *27/00;* **C07c** *103/52*

U.S. Cl. 260—112.5 **10 Claims**

1. A compound selected from those of the formula

$$\text{L-Thr-L-Lys-L-Arg-OH}$$

and

$$\text{R-Thr}(R^1)\text{-L-Lys}(R^2)\text{-L-Arg}(N^G\text{-}R^3)\text{-OR}^4$$

and the non-toxic acid addition salts thereof; wherein:

R is selected from the class consisting of hydrogen and an α-amino protecting group characterized by not being split off during the coupling of the amino acid residues which form said tripeptide and capable of being split off under reaction conditions which will not result in cleavage of the peptide chain and not give rise to side reactions during the synthesis of said tripeptide;

R^1 is selected from the class consisting of hydrogen or a protecting group for the alcoholic hydroxyl group of threonine selected from acetyl, benzoyl, tert-butyl, trityl, benzyl and benzyloxycarbonyl;

R^2 is selected from the class consisting of hydrogen and a protecting group for the side chain amino substituent of lysine selected from benzyloxycarbonyl, chlorobenzyloxycarbonyl, benzyl, tosyl, 2,4-dinitrophenyl, t-amyloxycarbonyl and t-butyloxycarbonyl;

R^3 is hydrogen and a protecting group on at least one of the N^δ, N^ω and $N^{\omega'}$ nitrogen atoms of arginine selected from nitro, tosyl, benzyloxycarbonyl, adamantyloxycarbonyl and trityl;

R^4 is selected from the class consisting of hydrogen, C_1–C_6 alkyl, benzyl, phenacyl, 4-picolyl, 4-(methylthio)phenyl, phthalimidomethyl, β-methylthioethyl and substituted benzyl wherein the substituent on said benzyl is at least one member selected from the class consisting of nitro, methoxy and methyl; and at least one of R, R^1, R^2, R^3 and R^4 being other than hydrogen and when said R is an α-amino protecting group, said group not being the same as the protecting group defined by R^1, R^2 and R^3.

3,849,391

RECOVERY OF PROTEIN

Carl T. Egger and Robert E. Olson, Muscatine, Iowa, assignors to Grain Processing Corporation, Muscatine, Iowa

No Drawing. Continuation of abandoned application Ser. No. 799,960, Feb. 17, 1969. This application Mar. 12, 1973, Ser. No. 340,181

Int. Cl. A23j *1/14, 1/18*

U.S. Cl. 260—123.5 **7 Claims**

1. A process for recovering protein from a protein-containing source material of vegetable or microbial origin which comprises forming at a pH other than the isoelectric pH of the protein an aqueous slurry of said protein source material, rapidly heating said slurry under pressure to and holding at a temperature in the range from about 250 to 350° F. for a period of not more than six minutes, flash cooling the heated slurry under reduced pressure to accomplish separation of vapor therefrom, and recovering the cooled homogeneous slurry containing protein in solution.

3,849,392

PROCESS FOR THE PRODUCTION OF POLYCONDENSATION PRODUCTS OF AROMATIC DIAZONIUM COMPOUNDS

Hartmut Steppan, Wiesbaden-Dotzheim, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

No Drawing. Continuation of abandoned application Ser. No. 826,296, May 20, 1969. This application Feb. 7, 1972, Ser. No. 224,324

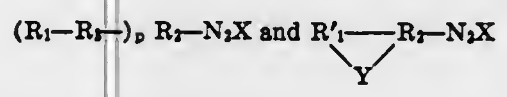
Int. Cl. C07c *113/04;* **G03c** *1/54;* **G03f** *1/54*

U.S. Cl. 260—141 **32 Claims**

1. A process for the preparation of a polycondensation product of an aromatic diazonium compound which comprises reacting in the absence of added formaldehyde at least one $A—N_2X$ compound and at least one B_1 compound of the formula

$$E(—CHR_a—OR_b)_m$$

in which $A—N_2X$ is a radical of a compound selected from the group consisting of a compound of the formula



$$(R_1—R_3—)_p\ R_2—N_2X \text{ and } R'_1\overset{}{—}R_2—N_2X \text{ (with } R'_1 \text{ and } R_2 \text{ bridged by } Y)$$

wherein

R_1 is a phenyl or naphthyl group

R'_1 is a phenylene or naphthylene group

R_2 is a phenylene group

R_3 is a single bond or one of the groups

—$(CH_2)_q$—NR_4—

—O—$(CH_2)_r$—NR_4—

—S—$(CH_2)_r$—NR_4—

—S—CH_2—CO—NR_4—

—O—R_5—O—

—O—

—S— or

—CO—NR_4—

the left-hand free valence of the specified groups is attached to R_1 and the right-hand free valence is attached to R_2,

wherein

q is a number from 0 to 5

r is a number from 2 to 5

R_4 is selected from the group consisting of hydrogen, alkyl with 1 to 5 carbon atoms, aralkyl with 7 to 12 carbon atoms, and aryl with 6 to 12 carbon atoms,

R_5 is an arylene group having 6 to 12 carbon atoms

Y is one of the groups —NH—, and —O—

X is an anion

p is a number from 1 to 3

E is a radical obtained by splitting off of m H atoms from a compound free of diazonium group selected from the group consisting of aromatic amines, phenols, thiophenols, phenol ethers, aromatic thioethers, aromatic heterocyclic compounds, aromatic hydrocarbons and organic acid amides,

R_a is selected from the group consisting of hydrogen and phenyl,

R_b is selected from the group consisting of hydrogen and alkyl $C_nH_{2n+1}CO$— wherein *n* is from 0 to 3 and a phenyl group, and

m is an integer from 1 to 10.

in a strongly acidic condensation medium and under condensation conditions sufficient to produce a polycondensation product of an aromatic diazonium compound containing, on the average, about 0.1 to 50 B_1 units per unit of $A—N_2X$.

3,849,393

WATER-SOLUBLE AZO DYESTUFFS CONTAINING CATIONIC GROUPS BY COUPLING DIAZONIUM NITROPHENYL COMPOUNDS WITH HOMOPHTHALIMIDES

Neville Slater Corby, James Stuart Hunter, and John Lindley Leng, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

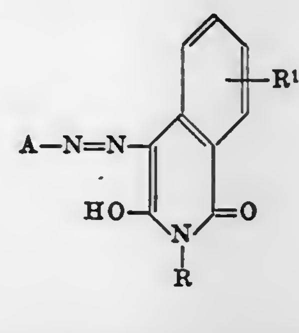
No Drawing. Filed June 17, 1971, Ser. No. 154,201

Claims priority, application Great Britain, July 2, 1970, 32,099/70

Int. Cl. C09b *29/36;* **D06p** *3/24, 3/76*

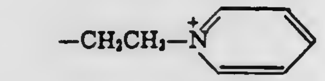
U.S. Cl. 260—155 **2 Claims**

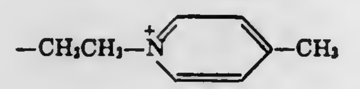
1. A water soluble azo dyestuff free from sulphonic acid or from carboxylic acid groups and having the formula



wherein A is ortho-nitrophenyl or orthonitrophenyl substituted wtih a member of the group consisting of nitro, chlorine, bromine, methyl, methoxy, acetyl, cyano, ethyl sulphonyl and trifluoromethyl, R^1 is hydrogen, nitro, hydroxy, methoxy, amino or acetamido and R is a protonated group having the formula

$$-CH_2CH_2CH_2-\overset{+}{N}H(CH_3)_2$$





or

$$-CH_2CH_2CH_2-\overset{+}{N}(CH_3)_3,$$

each of the said groups R being in association with an anion.

3,849,394

MONOAZO PIGMENTS CONTAINING A HYDROXYNAPHTHOYLAMINOACRIDONE RADICAL

Armand Roueche, Neu-Allschwil, Willy Mueller, Riehen, and Rudolf Mory, Dornach, Switzerland, assignors to Ciba Geigy AG, Basel, Switzerland

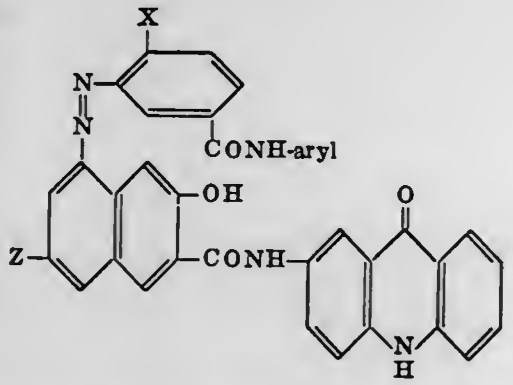
No Drawing. Original application Dec. 24, 1968, Ser. No. 786,727, now Patent No. 3,627,748. Divided and this application Sept. 28, 1971, Ser. No. 184,589

Claims priority, application Switzerland, Jan. 3, 1968, 7/68; Jan. 12, 1968, 505/68; Nov. 13, 1968, 16,920/68

Int. Cl. C09b *29/22;* **D06p** *1/08, 1/44*

U.S. Cl. 260—155 **6 Claims**

1. An azo pigment of the formula



wherein X is hydrogen, chlorine, methyl, or methoxy; aryl is phenyl, or phenyl substituted by chlorine, lower alkyl, lower alkoxy or trifluoromethyl; and Z is hydrogen, halogen, lower alkoxy or cyano.

3,849,395

DEGRADED MODIFIED SEAWEED EXTRACTIVE AND COMPOSITIONS CONTAINING SAME AND THEIR PRODUCTION

Arthur L. Moirano, Mountainside, N.J., assignor to Marine Colloids, Inc., Springfield, N.J.

No Drawing. Filed Aug. 25, 1971, Ser. No. 175,006

Int. Cl. C07g *3/00*

U.S. Cl. 260—209 R **8 Claims**

1. A degraded modified sulfated hydrocolloid selected from the group consisting of kappa-carrageenan, furcellaran, and iota-carrageenan which consists essentially of glycosidically linked hexose groups in the form of 3,6-anhydro-d-galactose groups and d-galactose groups containing sulfate to the extent of 12% to 35% by weight of said hydrocolloid, said hydrocolloid being characterized in that the ratio of 3,6-anhydro-galactose groups to galactose groups is from 0.8:1 to 1:1 and in that the viscosity in a 1.5% water solution is between 0.4 and 4 centipoises at 75° C.

3,849,396

LINCOMYCIN AND CLINDAMYCIN 1-O-ETHERS

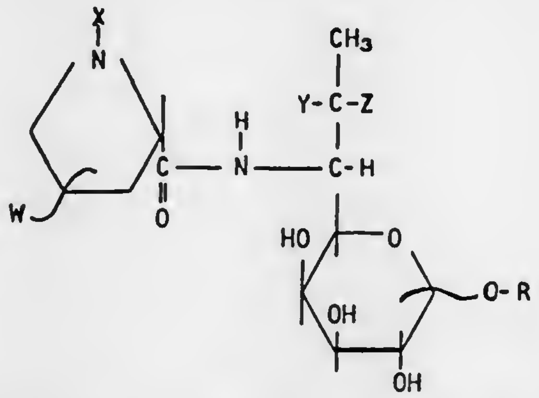
Robert D. Birkenmeyer, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Jan. 8, 1973, Ser. No. 321,957

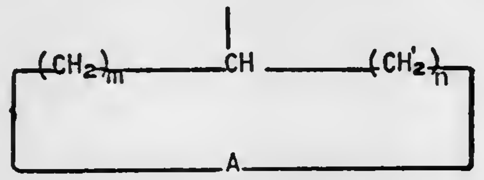
Int. Cl. C08b *19/00*

U.S. Cl. 260—210 R **27 Claims**

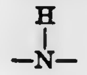
1. A compound selected from those of formula:



and the acid addition salts thereof, wherein W is selected from hydrogen and lower alkyl; X is selected from hydrogen, lower alkyl and hydroxy-substituted alkyl of from two to four carbon atoms, inclusive; Y is selected from hydrogen and hydroxyl; Z is hydrogen when Y is hydroxyl and when Y is hydrogen Z is selected from hydrogen, chlorine, bromine, and iodine; R is selected from lower alkyl, lower cycloalkyl, lower aryl, lower aralkyl, halo-substituted lower alkyl; halo-, nitro-, and amino-substituted lower aryl; halo-, nitro, amino- and hydroxy-substituted lower aralkyl; and a monovalent moiety of formula:



wherein A represents one of the divalent groups



$$-\overset{\displaystyle H}{\overset{|}{N}}-$$

—S—, and —O—; *m* and *n* are each integers of from 0 to 4, inclusive, and are such that the sum of $m+n$ is from 3 to 4.

3,849,397

3',5'-CYCLIC MONOPHOSPHATE NUCLEOSIDES

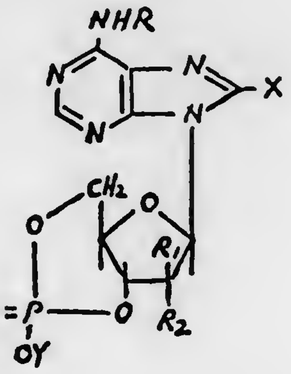
Roland K. Robins and Tasneem A. Khwaja, Santa Ana, Calif., assignors to International Chemical & Nuclear Corporation, Pasadena, Calif.

No Drawing. Filed Aug. 4, 1971, Ser. No. 169,095

Int. Cl. C07d *51/54*

U.S. Cl. 260—211.5 R **18 Claims**

1. A compound of the formula:



wherein X is H, a halogen, OH or SH; R is H or a C_1 to C_{10} acyl radical; R_1 is H or OH; R_2 is H or a leaving group selected from the group consisting of tosyl, mesyl, anisyl, brosyl, nisyl, or triisopropylbenzenesulfonyl; and Y is H, an alkali metal or ammonium; provided that when R_1 is OH, R and R_2 are H, and X is H or SH; R is acyl only when X is OH, R_1 is H and R_2 is a leaving group; and X is a halogen only when R and R_1 are H, and R_2 is a leaving group.

3,849,398

ANTIBIOTIC HAVING PARASITICIDAL ACTIVITY

Mamoru Arai, Tatsuo Haneishi, Hisashi Kayamori, Yoo Takiguchi, Noritoshi Kitano, and Susumu Kaneko, Tokyo, Japan, assignors to Sankyo Company Limited

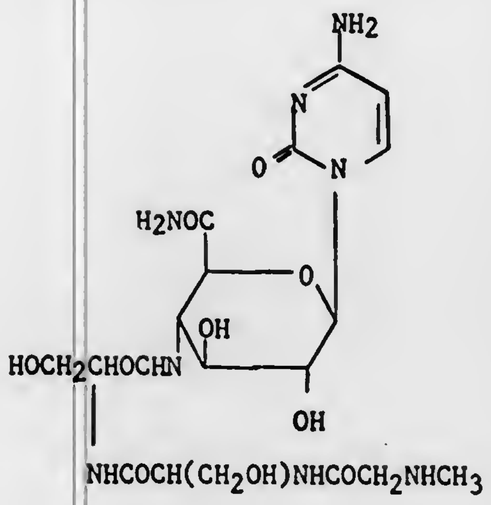
Filed Aug. 2, 1972, Ser. No. 277,588

Claims priority, application Japan, Aug. 3, 1971, 46/58,536

Int. Cl. C07d *51/52*

U.S. Cl. 260—211.5 AB **1 Claim**

1. An antibiotic aspiculamycin having the structural formula



3,849,399

2-SUBSTITUTED-3H-1,4-BENZODIAZEPINES

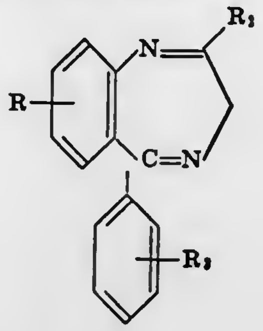
David Coffen, Glenridge, and Rodney Fryer, North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed July 23, 1973, Ser. No. 383,364

Int. Cl. C07d *53/06*

U.S. Cl. 260—239 BD **4 Claims**

1. A compound of the formula



wherein

R is selected from the group consisting of hydrogen, halogen, lower alkyl, trifluoromethyl, nitro, cyano, lower alkoxy and lower alkylthio;

R_1 signifies cyano or carboxamido;

R_2 signifies hydrogen or halogen

and the pharmaceutically acceptable acid addition salts thereof.

3,849,400

2-(SUBSTITUTED ANILINO)-4,5-DIHYDRO-3H-1,3-BENZODIAZEPINES

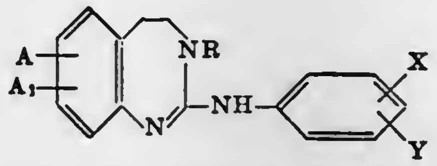
John T. Suh, 3709 W. Scenic Drive, 111 N., Mequon, Wis. 53092, and Richard A. Schnettler, 6234 W. Donges Lane, Brown Deer, Wis. 53223

No Drawing. Filed June 30, 1972, Ser. No. 268,127

Int. Cl. C07d *53/04*

U.S. Cl. 260—239 BD **10 Claims**

1. A compound selected from a compound of the formula



and pharmaceutically acceptable salts thereof, wherein A, A_1, X and Y are selected from hydrogen, hydroxy, halogen, trifluoromethyl, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, and R is hydrogen or lower alkyl of 1 to 4 carbons.

3,849,401

FLUOROALKYL AZIRIDINOPROPIONATES

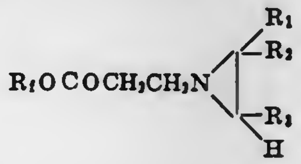
Giuliana C. Tesoro, Dobbs Ferry, N.Y., and Richard Ring, Woodbridge, N.J., assignors to J. P. Stevens & Co., Inc., Broadway, N.Y.

No Drawing. Original application Mar. 9, 1962, Ser. No. 178,572, now Patent No. 3,575,961, dated Apr. 20, 1971. Divided and this application Apr. 15, 1971, Ser. No. 134,459

Int. Cl. C07d *23/06*

U.S. Cl. 260—239 E **4 Claims**

1. A compound of the formula



wherein

R_1, R_2 and R_3 represent hydrogen or lower alkyl;

R_f is an aliphatic organofluorine-containing radical of the formula

$$CF_3(CF_2)_nCH_2-$$

or

$$HCF_2(CF_2)_nCH_2-$$

n is up to 9.

3,849,402

19-OXYGENATED AND 19-NOR$\Delta^{8(14)}$-STEROID COMPOUNDS

Gunther Kruger, St. Laurent, Quebec, Canada, assignor to Steele Chemicals Co. Ltd., Pointe Claire, Quebec, Canada

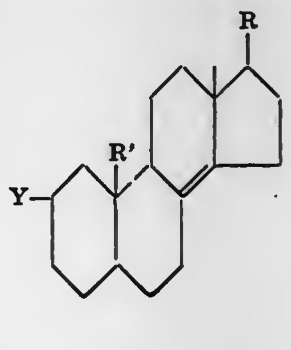
No Drawing. Filed Jan. 5, 1972, Ser. No. 215,669

Claims priority, application Canada, Jan. 6, 1971, 102,448; May 3, 1971, 112,028

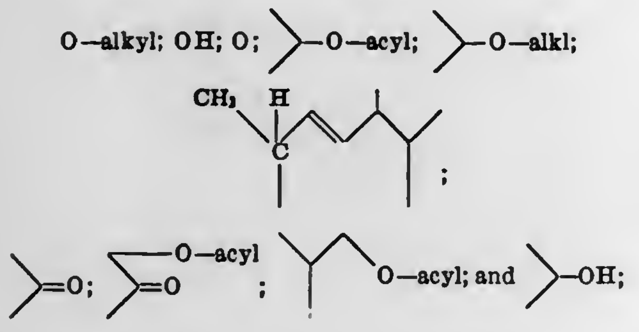
Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 R **11 Claims**

1. A steroid compound of the formula



wherein R is selected from the group consisting of



wherein alkyl is tetrahydropyranyl or lower alkyl; wherein acyl represents a group selected from those consisting of acetate, lower trialkyl acetates, monohalo acetates and trihalo acetates, wherein Y is selected from the group consisting of O=, HO—, O-alkyl and O-acyl, and wherein R′ is chosen from the group of H, CH_2OH,

$$CH_2—O—CO—NH—C(CH_3)_3,$$

CH_2Oalkyl and CH_2Oacyl, wherein alkyl and acyl are defined as above.

3,849,403

2,3,4,5-TETRAHYDRO-1,1,5,5-TETRASUBSTITUTED-1H-3-BENZAZEPINES

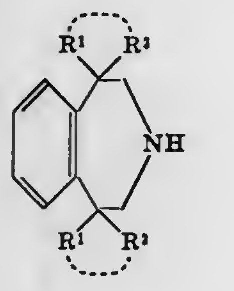
John P. Yardley, King of Prussia, Richard W. Rees, St. Davids, and Herchel Smith, Wayne, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 725,135, Apr. 29, 1968. This application Mar. 29, 1972, Ser. No. 239,394

Int. Cl. C07d *41/08*

U.S. Cl. 260—239 BB **3 Claims**

1. A compound of the formula:



wherein R^1 and R^2, independently, are (lower)alkyl or, taken together, are $—(CH_2)_n—$ wherein *n* is a whole number of from 2 to 6.

3,849,404

PURIFICATION OF 6,7 - DIHYDRO-17-HYDROXY-3-OXO - 3′H - CYCLOPROPA[6,7] - 17α-PREGNA-4,6-DIENE-21-CARBOXYLIC ACID γ-LACTONES

Joseph F. Zawadzki, Skokie, and Leland J. Chinn, Morton Grove, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Mar. 9, 1973, Ser. No. 339,625

Int. Cl. C07c *167/42, 173/00*

U.S. Cl. 260—239.57 **3 Claims**

1. In a process for separating 6α,7α-dihydro-17-hydroxy-3-oxo - 3′H - cyclopropa[6,7] - 17α - pregna-4,6-diene-21-carboxylic acid γ-lactone and 6β,7β-dihydro-17-hydroxy - 3 - oxo-3′H-cyclopropa[6,7] - 17α - pregna-4,6-diene-21-carboxylic acid γ-lactone from each other, the step which comprises treating a mixture of substantially only the two compounds with hydroquinone in a medium comprising a polar solvent selected from among alkanols, alkyl alkanoates, alkanones, alkanenitriles, water and mixtures thereof in the optional presence of a non-polar solvent selected from optionally-alkylated benzene, alkanes, cycloalkanes, dioxane, and polyhalogenated hydrocarbons, and mixtures thereof to form a sparingly soluble complex of the 6β,7β-dihydro-compound.

3,849,405

THIENO-[2,3-e][1,4]DIAZEPIN-2-ONES

Michio Nakanishi, Oita, and Kazuhiko Araki, Tetsuya Tahara, and Masami Shiroki, Fukuoka, Japan ,assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

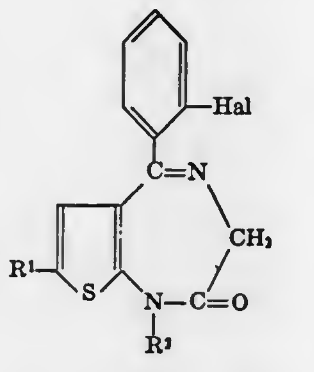
No Drawing. Filed Feb. 17, 1971, Ser. No. 116,240

Claims priority, application Japan, Feb. 17, 1970, 45/14,070; Feb. 23, 1970, 45/15,819; Mar. 7, 1970, 45/19,403; June 25, 1970, 45/56,154; July 31, 1970, 45/67,442

Int. Cl. C07d *53/02, 63/18*

U.S. Cl. 260—239.3 B **5 Claims**

1. Thieno-[2,3-e][1,4]diazepin-2-ones of the formula:



wherein R^1 is a lower alkyl group of from 1 to 2 carbon atoms; R^2 is a member selected from the group consisting of a hydrogen atom and a methyl group; and Hal represents a halogen atom; and the pharmaceutically acceptable acid addition salts thereof.

3,849,406

PYRAZOLINE COMPOUNDS

Horst Aebli, Basel, and Fritz Fleck, Bottmingen, Basel-Land, Switzerland, and Peter Stuart Littlewood, Ilkley, and Alec Victor Mercer, Leeds, England, assignors to Sandoz Ltd., Basel, Switzerland

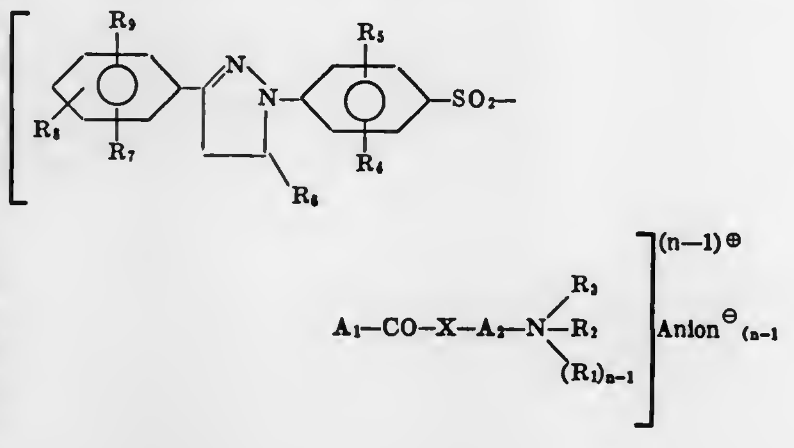
No Drawing. Filed Oct. 2, 1972, Ser. No. 293,931

Claims priority, application Switzerland, Oct. 8, 1971, 14,717/71; June 20 1972, 9,254/72; June 21, 1972, 9,330/72

Int. Cl. C07d *49/10*

U.S. Cl. 260—239.7 **12 Claims**

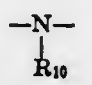
1. A compound of the formula



wherein

A_1 and A_2, independently, are alkylene of 1 to 3 carbon atoms,

X is —O— or

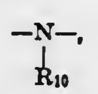


$$—\underset{R_{10}}{\underset{|}{N}}—$$

wherein R_{10} is hydrogen or lower alkyl,

R_1 is hydrogen or substituted or unsubstituted alkyl,

R_2 is substituted or unsubstituted alkyl, cyclohexyl, methylcyclohexyl, or substituted or unsubstituted phenyl, or when X signifies



$$—\underset{R_{10}}{\underset{|}{N}}—,$$

R_2 and R_{10} together with A_2 and the two attached nitrogens form a piperazine ring,

R_3 is substituted or unsubstituted alkyl, or

R_2 and R_3 together with the nitrogen atom form a piperidine or morpholine ring,

R_4 and R_5 are, independently, hydrogen, halogen, substituted or unsubstituted alkyl, or alkoxy,

R_6 is hydrogen, substituted or unsubstituted alkyl or substituted or unsubstituted phenyl,

R_7, R_8 and R_9 are, independently, hydrogen; halogen; substituted or unsubstituted alkyl, alkylsulphonyl, alkylthio, or phenyl; alkoxy; cyano; carboxylic or sulphonic acid amide or ester; or acylamino;

n is 1 or 2, and

Anion ⊖ signifies an equivalent of a non-chromophoric anion

provided that in the foregoing definitions any alkyl moiety contains 1 to 8 carbon atoms unless otherwise specified;

any substituent on substituted alkyl or on the alkyl moiety of alkylthio or alkylsulphonyl is halogen, phenyl, phenoxy, alkoxy of 1 to 4 carbon atoms, hydroxyl or cyano, any substituent on substituted phenyl is methyl, chloro, or methoxy;

any carboxylic or sulphonic acid ester is an alkyl ester wherein the alkyl group contains 1 to 5 carbon atoms; any acyl portion of an acylamino group is alkanoyl of 1 to 8 carbon atoms or alkoxycarbonyl of 2 to 9 carbon atoms; benzoyl; chloro- or methylbenzoyl; phenylsulphonyl, methylphenylsulphonyl; methylsulphonyl; or ethylsulphonyl, and

any halogen is chloro or fluoro.

3,849,407

5-BENZYL PYRIMIDINES INTERMEDIATES

Ronald M. Cresswell, Raleigh, John W. Mentha, Washington, and Russell L. Seaman, Chapel Hill, N.C., assignors to Burroughs Wellcome & Co. (U.S.A.) Inc., Tuckahoe, N.Y.

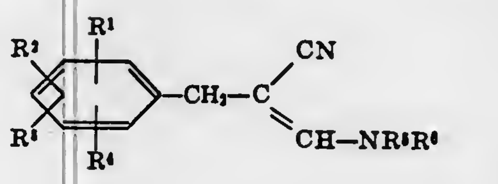
No Drawing. Original application Mar. 4, 1970, Ser. No. 16,606, now Patent No. 3,697,512, dated Oct. 10, 1972. Divided and this application Sept. 8, 1972, Ser. No. 287,463

Claims priority, application Great Britain, Mar. 6, 1969, 11,908/69, 11,909/69; May 16, 1969, 25,171/69; June 13, 1969, 30,247/69

Int. Cl. C07d *29/32*

U.S. Cl. 260—240 R **10 Claims**

1. In the method of preparing a compound of formula I



(I)

where R^1–R^4 are the same or different, and each is a hydrogen or halogen atom, lower alkyl, lower alkoxy or benzyloxy, or R^3 and R^4 taken together may be a methylenedioxy group when both R^1 and R^2 are hydrogen atoms and wherein the β-amino group NR^5R^6 is a primary amino group other than anilino or is a secondary amino group, by combining the corresponding β-alkoxy-α-benzylidene-propionitrile with an excess of the appropriate amine in the presence of a base in an alkanol.

3,849,408

4-SUBSTITUTED-Δ^2-CEPHALOSPORIN DERIVATIVES

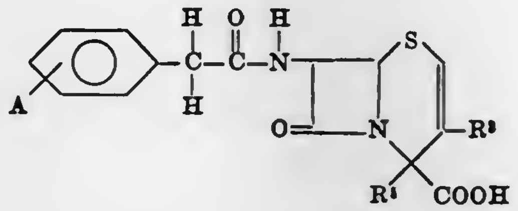
Joseph Edward Dolfini, Princeton, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 139,861, May 3, 1971. This application Mar. 31, 1972, Ser. No. 240,111

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **4 Claims**

1. A compound having the formula



wherein R^3 is alkyl of 1 to 6 carbons; R^5 is selected from the group consisting of alkyl of 1 to 6 carbons, chloromethyl, dimethylaminomethyl, benzyl, benzyloxymethyl and phenylchloromethyl; and A is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbons, methoxy, halo, nitro, trifluoromethyl, sulfamyl, and diethylamino.

3,849,409

HEXAHYDROTRIAZINE PHOSPHONATE DERIVATIVES

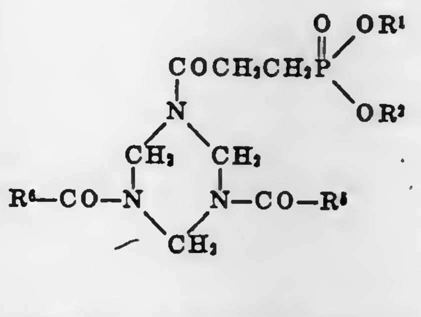
Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 139,222, Apr. 30, 1971, now Patent No. 3,762,865. This application Sept. 7, 1971, Ser. No. 178,417

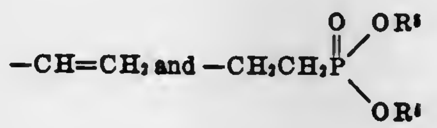
Int. Cl. C07d *55/14*

U.S. Cl. 260—248 NS **17 Claims**

1. A hexahydrotriazine phosphonate derivative corresponding to the structural formula:



wherein R^5 and R^6 are the same or different radicals and are selected from the group consisting of



$$—CH=CH_2 \text{ and } —CH_2CH_2\overset{O}{\overset{\|}{P}}\begin{matrix}OR^3\\OR^4\end{matrix}$$

and wherein R^1, R^2, R^3 and R^4 are the same or different and are radicals selected from the group consisting of alkyl, cycloalkyl, alkenyl, alkylene, carbocyclic aryl, and carbocyclic arylalkyl; said R^1, R^2, R^3 and R^4 radicals having from 1 to about 20 carbon atoms and either unsubstituted or substituted by non-interfering substituents selected from the group consisting of halogen, alkoxy and hydroxy, wherein the terminal valency of any such alkylene radical is linked to the same or another phosphonate molecule conforming to the above formula; and mixtures of said hexahydrotriazine phosphonate derivatives.

3,849,410

PIPERAZINE DERIVATIVES

Michio Nakanishi, Oita, and Takanori Oe and Chiaki Tashiro, Fukuoka, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

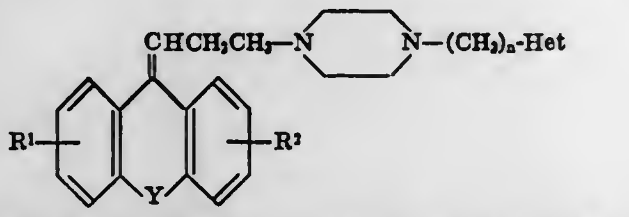
No Drawing. Filed Apr. 10, 1972, Ser. No. 242,770

Claims priority, application Japan, Apr. 10, 1971, 46/22,549

Int. Cl. C09b ***23/00;*** **C07d** ***51/72***

U.S. Cl. 260—240 TC **8 Claims**

1. An N-substituted piperazine compound of the formula:



wherein Y is $—CH_2—O—$, $—CH_2—S—$, $CH_2—SO_2—$, $—CH_2—CH_2—$, $—CH=CH—$, $—C(CH_3)_2—$, $—O—$ or $—S—$, each of R^1 and R^2 is H, C_{1-4}, alkyl, methoxy, methylthio or halogen, *n* is 0, 1, 2 or 3 and Het represents 2 furyl, pyridyl or 2 thienyl; and pharmaceutically acceptable acid addition salts thereof.

3,849,411

HYDRAZONES OF PYRAZOLOPYRIDINE CARBOXYLIC ACIDS AND ESTERS

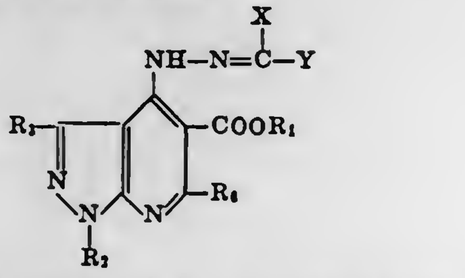
Hans Hoehn, Tegernheim, Germany, and Mark Chasin, Englishtown, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Application Dec. 15, 1971, Ser. No. 208,449, now Patent No. 3,773,777, dated Nov. 20, 1973, which is a continuation-in-part of application Ser. No. 42,415, June 1, 1970, which in turn is a continuation-in-part of application Ser. No. 833,672, June 16, 1969, both now abandoned. Divided and this application Jnne 11, 1973, Ser. No. 368,807

Int. Cl. C07d ***31/36***

U.S. Cl. 260—240 G **10 Claims**

1. A compound of the formula



wherein R_1 is hydrogen, lower alkyl or phenyl-lower alkyl, R_2 is hydrogen, lower alkyl or benzyl, R_3 is hydrogen or lower alkyl, R_6 is hydrogen or lower alkyl, X is hydrogen, phenyl or R_7, R_8-phenyl-lower alkyl and Y is R_7, R_8-phenyl or R_7, R_8-phenyl-lower alkyl, R_7 and R_8 each is hydrogen, halogen, lower alkyl or lower alkoxy, and physiologically acceptable acid addition salts thereof.

3,849,412

THIADIAZOLE SUBSTITUTED TRIAZINES

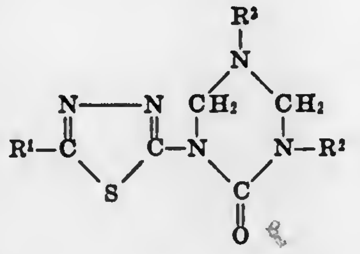
John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 225,616, Feb. 11, 1972. This application May 5, 1972, Ser. No. 250,092

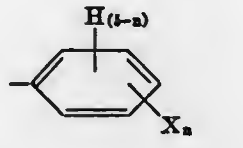
Int. Cl. C07d ***55/14***

U.S. Cl. 260—248 NS **5 Claims**

1. A compound of the formula



wherein R^1 and R^2 are each lower alkyl; R^3 is selected from the group consisting of lower alkyl, lower alkenyl, cycloalkyl of from 3 to 7 carbon atoms, lower haloalkyl, and



wherein X is selected from the group consisting of lower alkyl, halogen, trifluoromethyl, nitro, lower alkoxy, lower alkylthio and di(lower alkyl) amino; and *n* is an integer from 0 to 3.

3,849,413

PROCESS FOR THE MANUFACTURE OF N-(2,4-DIHALOGENO-S-TRIAZIN-6-YL)-UREAS

Rainer Begrich, Basel, and Karl Seitz, Oberwil, Basel-Land, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

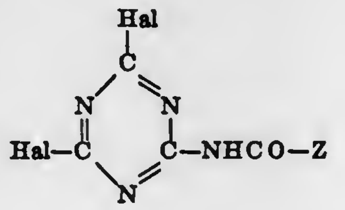
No Drawing. Filed June 8, 1972, Ser. No. 260,878

Claims priority, application Switzerland, June 22, 1971, 9,102/71; Apr. 25, 1972, 6,100/72

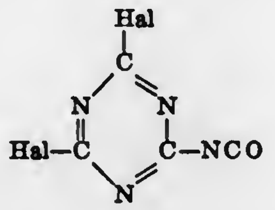
Int. Cl. C07d ***55/18***

U.S. Cl. 260—249.5 **4 Claims**

1. A process for the manufacture of a compound of the formula



wherein Hal is a halogen atom and Z is —NRR′ wherein R and R′ are hydrogen, lower alkyl or lower cycloalkyl, or R and R′ taken together with the nitrogen atom to which each is bonded is piperidino, pyrrolidino or morpholino, comprising the step of treating a compound of the formula



with an aqueous solution of an agent of the formula HNRR′.

3,849,414

PROCESS FOR PREPARING 1,5 - DIACETYL - 3,7-ENDOMETHYLENE - 1,3,5,7-TETRAAZACYCLOOCTANE

Victor I. Siele, Succasunna, and Everett E. Gilbert, Morristown, N.J., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Sept. 17, 1973, Ser. No. 397,525

Int. Cl. C07d ***55/14***

U.S. Cl. 260—248 NS **9 Claims**

1. A process for preparing 1,5-diacetyl-3,7-endomethylene-1,3,5,7-tetraazacyclooctane which comprises reacting hexamethylenetetramine with ketene in the presence of water.

3,849,415

CHLORO-p-DITHIINO PYRIDAZINE-DICARBONITRILES

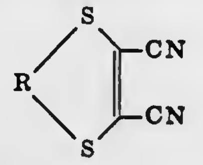
Norman H. Kurihara, Walnut Creek, and Donald E. Bublitz, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Jan. 7, 1971, Ser. No. 104,799, now Patent No. 3,761,475. Divided and this application Feb. 20, 1973, Ser. No. 333,946

Int. Cl. C07d ***51/04***

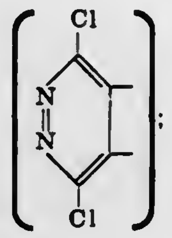
U.S. Cl. 260—250 AC **3 Claims**

1. A polycyanodithiino aromatic N-heterocyclic compound corresponding to the formula

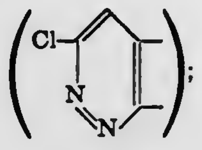


wherein R represents

3,6-dichloro-4,5-pyridazinediyl



6-chloro-3,4-pyridazinediyl



3,849,416

METHOD AND INTERMEDIATES FOR THE PREPARATION OF PYRIMIDINE COMPOUNDS

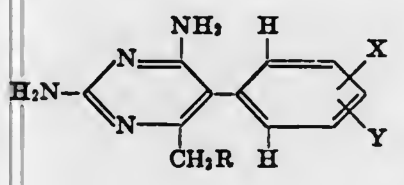
John W. Mentha, Washington, Janice V. Shaffner, Greenville, and Ronald M. Cresswell, Raleigh, N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

No Drawing. Continuation-in-part of abandoned application Ser. No. 177,502, Sept. 2, 1971. This application May 24, 1972, Ser. No. 256,339

Int. Cl. C07d ***51/42***

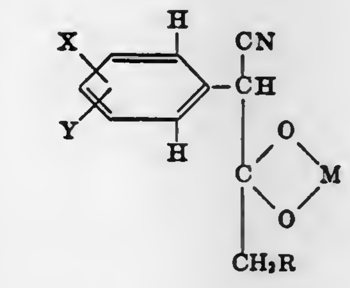
U.S. Cl. 260—256.4 N **5 Claims**

1. The method of preparing the compound of formula I



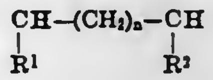
(I)

which comprises reacting a compound of formula II



(II)

with guanidine base, wherein in the above R is alkyl of 1 to 10 carbon atoms or a hydrogen atom, X is halogen atom or nitro, Y is halogen atom or hydrogen atom, and M is



$$\underset{R^1}{CH}—(CH_2)_n—\underset{R^2}{CH}$$

where R^1 and R^2 are the same or different and each are selected from the group consisting of hydrogen, lower alkyl of 1 to 4 carbon atoms, and lower alkyl substituted with hydroxy, halogen or lower alkoxy and $n=0$, 1 or 2.

3,849,417

CERTAIN 2-BENZENESULFONYLAMINO-PYRIMIDINES

Manfred Hübner, Ludwigshafen, Ruth Heerdt, Mannheim-Feudenheim, Felix Helmut Schmidt, Mannheim-Seckenheim, Max Thiel, Mannheim, and Rudi Weyer, Frankfurt-Unterliederbach, Germany, assignors to Boehringer Mannheim G.m.b.H., Postfach, Germany

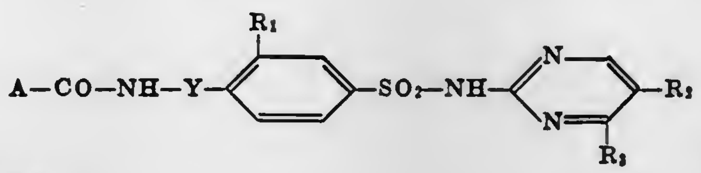
No Drawing. Filed Oct. 11, 1972, Ser. No. 296,744

Claims priority, application Germany, Oct. 20, 1971, P 21 52 230.5

Int. Cl. C07d ***99/04, 99/06***

U.S. Cl. 260—256.5 R **10 Claims**

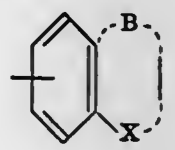
1. Sulfonylaminopyrimidine compound of the formula



(I)

wherein

A is an oxygen- or sulfur-containing bicyclic radical of the formula



wherein

X is oxygen or sulfur and B is alkylene of up to 4 carbon atoms or CH=CH; and wherein said radical may be substituted with one or two members of the group consisting of halogen and alkyl and alkoxy having not more than three carbons atoms;

Y is a straight-chained or branched alkylene containing up to 3 carbon atoms;

R_1 is a hydrogen atom or, together with Y, represents an alkylene bridge of from 3 to 4 carbon atoms;

R_2 is straight-chained or branched alkyl, cycloalkyl, cycloalkylalkyl, alkoxy, cycloalkoxy, alkoxyalkyl, alkoxyalkoxy, alkylthio or alkylthioalkyl, phenyl, or benzyl and wherein R_2 contains not more than 10 carbon atoms;

R_3 is a hydrogen atom or lower alkyl of from 1 to 6 carbon atoms; or

R_2 and R_3 together form a bridge of 3 to 5 methylene groups;

as well as the physiologically compatible salts thereof.

3,849,418
2,5-PIPERAZINEDIONES

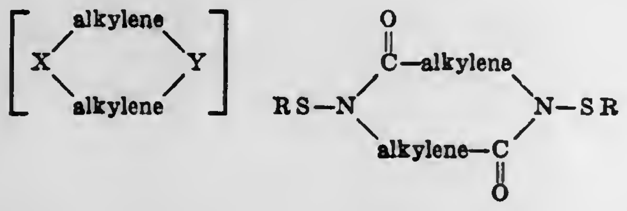
Kamel Boustany, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Original application July 20, 1970, Ser. No. 56,682, now abandoned. Divided and this application June 23, 1972, Ser. No. 265,611

Int. Cl. C07d ***51/72***

U.S. Cl. 260—268 DK **10 Claims**

1. A piperazinedione or C-alkylated piperazinedione of the formula



wherein the alkylenes are of 1–6 carbon atoms, and R is alkyl of 1–20 carbon atoms, aralkyl of 7–10 carbon atoms, cycloalkyl of 5–12 carbon atoms, alkaryl of 7–10 carbon atoms, phenyl and naphthyl.

3,849,419
ANTIVIRAL ANTIBIOTIC

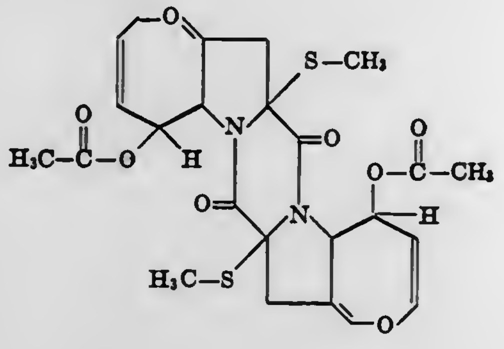
Donald C. Delong, David H. Lively, and Norbert Neuss, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Original application Oct. 18, 1967, Ser. No. 676,310, now Patent No. 3,745,158, dated July 10, 1973. Divided and this application Dec. 26, 1972, Ser. No. 318,055

Int. Cl. C07d ***95/00, 51/72***

U.S. Cl. 260—268 PC **1 Claim**

1. The composition of matter designated as factor I of antibiotic A–21101, said factor I being characterized by the following structural formula:



3,849,420
BIS-(ALKYLTHIO- AND ALKYLSULFONYL)-PENTACHLOROQUINOLINES

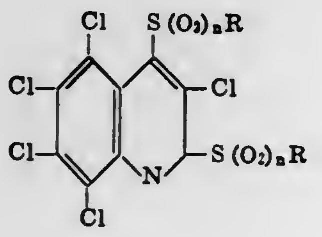
Yulan C. Tong, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 20, 1972, Ser. No. 299,420

Int. Cl. C07d ***33/60***

U.S. Cl. 260—283 S **19 Claims**

1. A compound corresponding to the formula:



wherein

n is 0 or 1; and

each R represents alkyl of from 1 to 10 carbon atoms, phenyl or cycloalkyl of from 5 to 8 carbon atoms.

3,849,421
PROCESS FOR THE PREPARATION OF COMPOUND HAVING ANTIBACTERIAL ACTION AND INTERMEDIATE THEREFOR

Takenari Nakagome and Hideo Agui, Osaka, and Toru Mitani and Mitsuo Nakashita, Hyogo, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

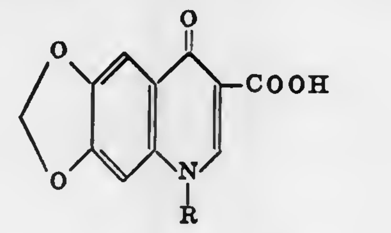
No Drawing. Filed Jan. 28, 1971, Ser. No. 110,586

Claims priority, application Japan, Jan. 28, 1970, 45/7,895; Feb. 18, 1970, 45/14,355; Feb. 23, 1970, 45/15,721; Feb. 24, 1970, 45/16,004, 45/16,005

Int. Cl. C07d ***33/48***

U.S. Cl. 260—287 R **10 Claims**

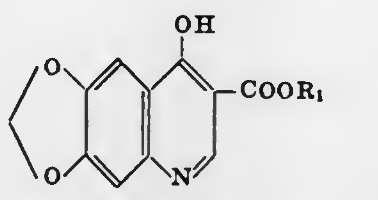
1. A process for the production of a compound represented by the formula:



(VII)

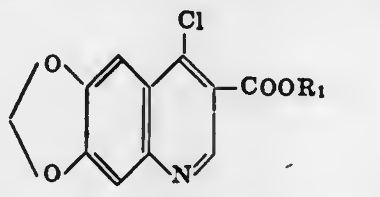
wherein R is a C_1–C_4 alkyl group, which process consists essentially of the sequential steps of:

(a) reacting a compound represented by the formula:



(IV)

wherein R_1 is a C_1–C_4 alkyl group, with phosphorus oxychloride to provide a compound represented by the formula:



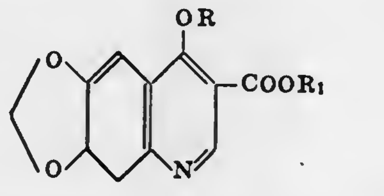
(V)

wherein R_1 is as described above and isolating said compound (V);

(b) reacting the compound (V) so formed in the presence of a base selected from the group consisting of an alkali metal hydroxide, an alkali metal carbonate, a metal salt of an alcohol represented by the formula ROH wherein R is as described above and pyridine with an alcohol represented by the formula:

ROH

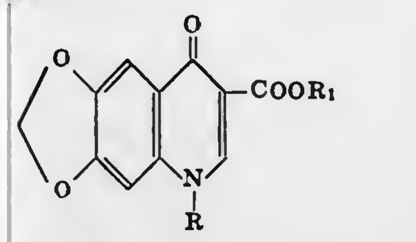
wherein R is as described above, to provide a compound represented by the formula (VI):



(VI)

wherein R and R_1 are described above and isolating said compound (VI);

(c) heating the compound (VI) in the presence or absence of an alkylating agent or an acid to provide a compound represented by the formula (I), wherein said alkylating agent is an alkyl halide, an alkenyl halide, an alkyl p-toluene sulfonate, a cycloalkyl halide, an hydroxy alkyl halide, a dialkyl sulfate, or triethyloxonium fluoroborate and wherein said acid is a strong, non-oxidizing inorganic or organic acid or a Lewis acid:



(I)

wherein R and R_1 are as described above and isolating said compound (I) and

(d) then hydrolyzing the compound (I) to provide the compound (VII).

3,849,422
PYRIDINE COMPOUNDS

Claus Weis, Pfeffingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

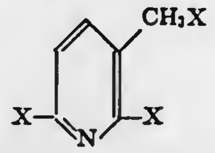
No Drawing. Filed Oct. 10, 1972, Ser. No. 296,430

Claims priority, application Switzerland, Oct. 27, 1971, 15,639/71; Mar. 3, 1972, 3,132/72; Mar. 7, 1972, 3,314/72; Sept. 7, 1972, 13,142/72

Int. Cl. C07d ***31/26***

U.S. Cl. 260—290 HL **5 Claims**

1. A compound of the formula



wherein X represents chlorine or bromine.

3,849,423
3-BENZYLPYRIDINES

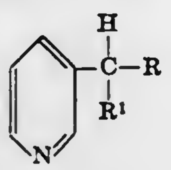
Eriks V. Krumkalns, Indianapolis, and William A. White, Fountaintown, Ind., assignors to Eli Lilly and Company of Indianapolis, Ltd., Indianapolis, Ind.

No Drawing. Filed Mar. 22, 1971, Ser. No. 126,919

Int. Cl. C07d ***31/48***

U.S. Cl. 260—294.8 G **6 Claims**

1. A compound of the formula



wherein

R is phenyl or 4-chlorophenyl;

R_1 is X—R^2;

R^2 is selected from the group consisting of phenyl, 4-chlorophenyl, 3-trifluoromethylsulfonylphenyl, and 4-trifluoromethoxyphenyl;

X is oxygen or sulfur;

and the acid addition salts thereof.

3,849,424
PROCESS FOR PREPARING DIHYDROPYRIDOBENZOXA (OR THIA)ZEPINES, INTERMEDIATES AND DERIVATIVES

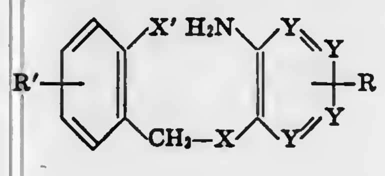
Harry Louis Yale, New Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Original application Apr. 6, 1970, Ser. No. 26,147, now abandoned. Divided and this application Mar. 6, 1972, Ser. No. 232,283

Int. Cl. C07d ***31/50***

U.S. Cl. 260—294.8 F **8 Claims**

1. A process for preparing compounds of the structure



wherein X is oxygen or sulfur, R and R′ are the same or different and are selected from the group consisting of hydrogen, halogen, lower alkyl, trifluoromethyl or N,N-dimethylaminosulfonyl; X′ is bromine or iodine and one Y is aza and the remainder carbon, which comprises reacting at a temperature of from about 20° C. to about 100° C., in an organic solvent boiling below about 100° C., an aminopyridine compound selected from the group consisting of an aminopyridinol, aminopyridinethiol or an acylated derivative thereof or a sodium derivative thereof, with an o-halobenzyl halide, and, if necessary, saponifying any acyl groups attached to the N atom attached to the pyridine nucleus of the resulting halobenzyloxy (or thio) pyridine, to form an amino-halobenzyloxy (or thio) pyridine of the above structure.

3,849,425
RESINS CONTAINING PYRIDINE N-OXIDE SALTS OF CARBAMOYL HALIDES

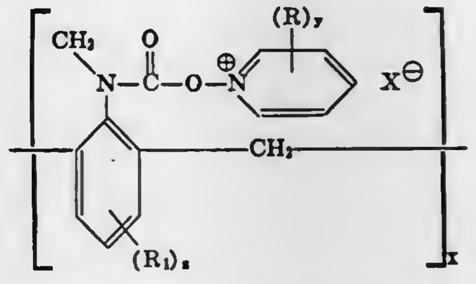
Victor A. Pattison, Tonawanda, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Jan. 12, 1973, Ser. No. 323,175

Int. Cl. C07d ***31/44***

U.S. Cl. 260—295 CA **9 Claims**

1. A composition of matter



wherein R and R_1 are alkyl radicals having from 1 to 6 carbon atoms or aryl radicals having 6 to 10 carbon atoms; X is halogen; *x* is a number having a value of from 1 to about 10 and *y* and *z* are numbers having a value of from 0 to 1.

3,849,426
CERTAIN PYRIDINIUM CARBAMOYL COMPOSITIONS

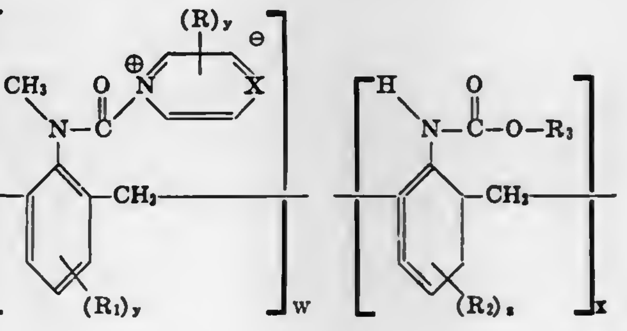
Victor A. Pattison, Tonawanda, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Jan. 12, 1973, Ser. No. 323,178

Int. Cl. C07d ***31/44***

U.S. Cl. 260—295 CA **8 Claims**

1. A composition having the formula:



wherein R, R_1 and R_2 are alkyl radicals having 1 to 6 carbon atoms or aryl radicals having 6 to 10 carbon atoms; R_3 is a linear alkyl radical having from 5 to 24 carbon atoms; X is halogen; *y* and *z* are numbers from 0 to 1; *w* is a number from about 2 to 10; *x* is a number from about 0.8 to 4; and the ratio of *w* to *x* is from about 12:1 to 1:2.

3,849,427

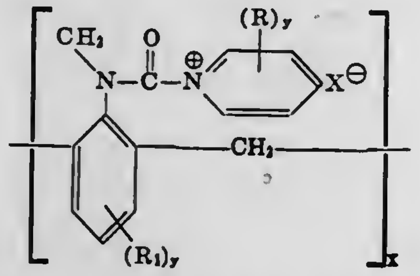
CERTAIN PYRIDINIUM ANILIDE HALIDE COMPOSITIONS

Victor A. Patison, Tonawanda, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Jan. 12, 1973, Ser. No. 323,180

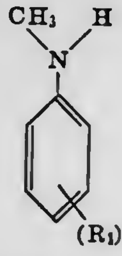
Int. Cl. C07d *31/44*
U.S. Cl. 260—295 Q **5 Claims**

1. A process for producing compositions of matter of the formula:



wherein R and R_1 are selected from the group consisting of hydrogen, and an alkyl radical having 1 to 6 carbon atoms or an aryl radical having 6 to 10 carbon atoms; X is halogen, *x* is a number having a value of from about 1 to 10; and *y* is a number having a value of 0 to 1; which comprises

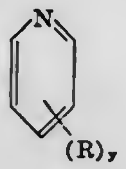
(a) reacting, in essentially stoichiometric amounts, formaldehyde and an N-methyl aniline of the formula



wherein R_1 and *y* are as previously defined,

(b) reacting the product of (a) with phosgene, in the absence of water, and

(c) reacting the product of (b) with a pyridine of the formula



wherein R and *y* are as previously defined.

3,849,428

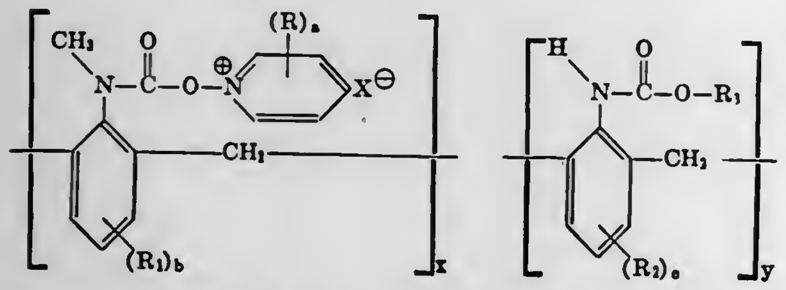
CERTAIN PYRIDINIUM CARBAMOYLOXY COMPOSITIONS

Victor A. Pattison, Tonawanda, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Jan. 12, 1973, Ser. No. 323,181

Int. Cl. C07d *31/44*
U.S. Cl. 260—295 CA **10 Claims**

1. A composition of matter having the formula



wherein R, R_1 and R_2 are alkyl having 1 to 6 carbon atoms or aryl having from 6 to 10 carbon atoms; R_3 is an alkyl radical having from 5 to 24 linear carbon atoms; X is halogen; *a*, *b* and *c* are numbers having a value of 0 or 1; *x* is a number having a value of from about 1 to 10 and *y* is a number having a value of from 0.8 to 4.

3,849,429

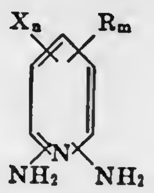
HALOGENATION OF DIAMINOPYRIDINES IN ACIDIC MEDIA

Max M. Boudakian, Pittsford, N.Y., assignor to Olin Corporation

No Drawing. Filed Mar. 30, 1973, Ser. No. 346,379

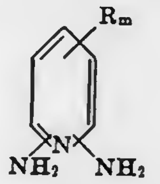
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 R **10 Claims**

1. A method of preparing halogenated diaminopyridines and halogenated substituted diaminopyridines of the formula:



wherein X is a halogen selected from the group consisting of chlorine, bromine and iodine; each R is independently selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms, nitro halogen, alkoxy of 1 to 4 carbon atoms, and phenyl; *n* is an integer of 1 to 3 and *m* is an integer of 0 to 2

which comprises reacting a compound of the formula:



wherein R and *m* are as defined above;

in the presence of hydrogen peroxide and a hydrohalide acid selected from the group consisting of HCl, HBr, and HI at a temperature of from about 0 to about 70° C.

3,849,430

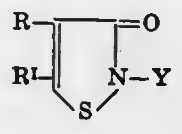
PROCESS FOR THE PREPARATION OF 3-ISOTHIAZOLONES AND 3-HYDROXYISOTHIAZOLES

Sheldon N. Lewis, Willow Grove, and George A. Miller, Glenside, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 621,770, Mar. 9, 1967. This application July 14, 1969, Ser. No. 841,548

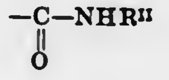
Int. Cl. C07d *91/10*
U.S. Cl. 260—302 A **9 Claims**

1. A process for preparing isothiazolones of the formula



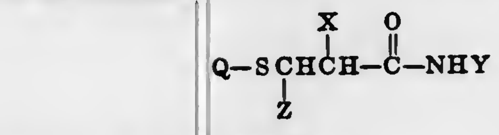
wherein

Y is hydrogen, an alkyl group of 1 to 18 carbon atoms, an aralkyl group of up to 10 carbon atoms, an aryl group of up to 10 carbon atoms, a halogen-, $(C_1–C_4)$ alkyl- or $(C_2–C_4)$alkoxy-substituted aryl group, a dialkylaminoalkyl group of up to 8 carbon atoms, an alkoxyalkyl group of up to 8 carbon atoms, and aryloxyalkyl group of up to 12 carbon atoms, or a carbamoyl group of the formula



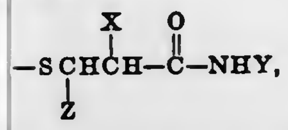
$$-\underset{\underset{\displaystyle O}{\|}}{C}-\mathrm{NHR^{II}}$$

R and R^I may be hydrogen, halogen, or a lower alkyl group; and R^{II} may be an alkyl group of 1 to 18 carbon atoms, which comprises contacting a halogenating agent selected from the group consisting of chlorine, bromine, sulfuryl chloride, sulfuryl bromide, N-chlorosuccinimide, and N-bromosuccinimide with a compound of the formula



$$\mathrm{Q{-}S\underset{\underset{\displaystyle Z}{|}}{C}H\overset{\overset{\displaystyle X}{|}}{C}H{-}\overset{\overset{\displaystyle O}{\|}}{C}{-}NHY}$$

wherein Q is hydrogen or

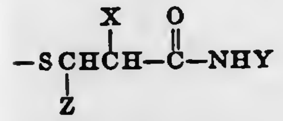


$$\mathrm{{-}S\underset{\underset{\displaystyle Z}{|}}{C}H\overset{\overset{\displaystyle X}{|}}{C}H{-}\overset{\overset{\displaystyle O}{\|}}{C}{-}NHY,}$$

X and Z are individually hydrogen or a lower alkyl group, and

Y is as defined above,

and wherein the halogenating agent is present to the extent of at least two mole equivalents when Q is hydrogen or to the extent of at least three mole equivalents when Q is



$$\mathrm{{-}S\underset{\underset{\displaystyle Z}{|}}{C}H\overset{\overset{\displaystyle X}{|}}{C}H{-}\overset{\overset{\displaystyle O}{\|}}{C}{-}NHY}$$

3,849,431

ISOTHIOCYANOBENZAZOLES

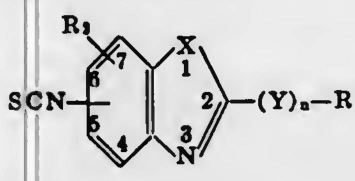
Jean-Jacques Gallay, Magden, René Bosshard, Birsfelden, and Paul Brenneisen, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Dec. 4, 1972, Ser. No. 311,987

Claims priority, application Switzerland, Dec. 7, 1971, 17,875/71

Int. Cl. C07d *49/38, 85/48, 91/44*
U.S. Cl. 260—306.6 R **12 Claims**

1. A compound of the general formula



(I)

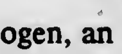
wherein

the SCN— group is in the 4-, 5-, 6- or 7-position,

R_1 represents hydrogen, a straight-chain or branched alkyl or alkenyl radical having at most 17 carbon atoms, an alkyl or alkenyl radical having a total of at most 6 carbon atoms and substituted by halogen, —CN, —OH, $C_1–C_5$ alkoxy, $C_1–C_5$ alkylthio or di-$(C_1–C_5)$alkylamino, an optionally $C_1–C_5$ alkyl-substituted mono-, bi- or tricyclic cycloalkyl or cycloalkenyl radical having 3 to 10 carbon atoms in the ring structure, which can also be bound by way of a CH_2— group to the substituent Y or to the 2-position of the heterocycle,

R_2 represents hydrogen, halogen or an alkyl or alkoxy radical having at most 4 carbon atoms,

X represents oxygen, sulphur or



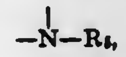
$$-\overset{|}{N}R_3,$$

R_3 represents hydrogen, an alkyl or alkenyl radical having at most 5 carbon atoms, a phenyl or benzyl radical, a dimethylamino- or diethylamino-alkyl radical having 2–5 carbon atoms in the alkyl chain, an alkoxycarbonyl radical having 2–5 carbon atoms, acetyl, propionyl, trichloroacetyl, benzoyl, or a $C_4–C_7$ saccharide group,

Y represents oxygen, sulphur, —SO—, —SO_2—, or —NR_4,

n is the number 0 or 1,

R_4 represents hydrogen, an alkyl or alkenyl radical having at most 5 carbon atoms, or together with the N-atom and the substituent R_1 a saturated or unsaturated heterocycle having 4 to 6 carbon atoms which may also contain a further hetero atom O or S selected from the group consisting of pyrrolidine, piperidine, 2-methylpiperidine, 4-methylpiperidine, piperazine, N′-methyl, N′,N′-di-methyl and N′-ethylpiperazine, morpholine, isomorpholine, thiomorpholine and hexamethyleneimine, or the group



$$-\overset{|}{N}-R_5,$$

and

R_5 stands for hydrogen, methyl or ethyl,

and their acid addition salts non-toxic for warm-blooded animals.

3,849,432

CERTAIN THIADIAZOLYL-CONTAINING-HALOGEN-SUBSTITUTED-IMIDAZOLIDINONES

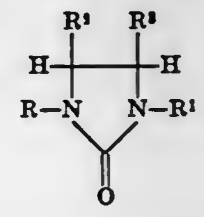
Carl Metzger, Wuppertal-Elberfeld, and Ludwig Eue, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 9, 1972, Ser. No. 251,666

Claims priority, application Germany, May 12, 1971, P 21 23 450.4

Int. Cl. C07d *99/10*
U.S. Cl. 260—306.8 D **20 Claims**

1. Imidazolidinone-(2) compound of the formula:



wherein

R is 1,3,4-thiadiazol-2-yl or 5-substituted 1,3,4-thiadiazol-2-yl wherein the substituent is one of alkyl, haloalkyl, alkylthio, alkylsulfoxy and alkylsulfonyl of up to 6 carbon atoms,

R_1 is lower alkyl, lower alkenyl, or lower alkynyl of up to 10 carbon atoms,

R_2 is halogen, and

R_3 is halogen, lower alkoxy, lower alkenyloxy, lower alkynyloxy, lower alkylthio, lower alkenylthio or lower alkynylthio, containing up to 10 carbon atoms.

3,849,433

4,5,6,7-TETRAHYDROBENZOTRIAZOLES AND PROCESS OF MAKING THE SAME

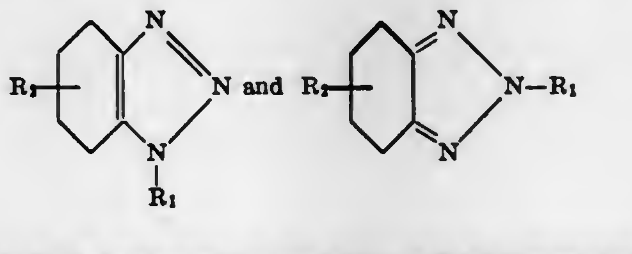
Ivan Butula, Zagreb, Yugoslavia, assignor to Rhein-Chemie Rheinau G.m.b.H., Mannheim, Germany

No Drawing. Filed Sept. 24, 1970, Ser. No. 75,255

Claims priority, application Germany, Sept. 26, 1969, P 19 48 794.6

Int. Cl. C07d *55/04*
U.S. Cl. 260—308 B **13 Claims**

1. A 4,5,6,7-tetrahydrobenzotriazole of the group consisting of compounds having the following formulae:



in which R_1 is hydrogen or an alkyl radical containing up to 18 carbon atoms, and R_2 is a carboxyl or lower alkoxycarbonyl radical, and acid addition and quaternary ammonium salts thereof.

3,849,434
PROCESS FOR PREPARING TRIAZOLOBENZODIAZEPINES

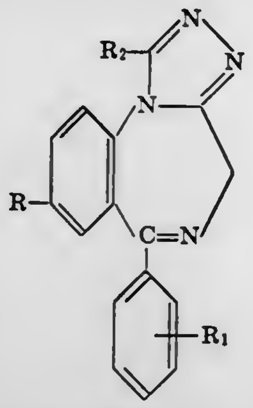
David Llewellyn Coffen, Glenridge, and Rodney Ian Fryer, North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed July 27, 1973, Ser. No. 383,363

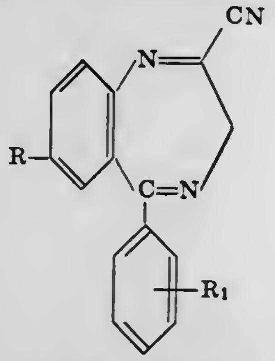
Int. Cl. C07d *53/06, 57/02*

U.S. Cl. 260—308 R **5 Claims**

1. A process for the preparation of a compound of the formula



wherein R is selected from the group consisting of hydrogen, halogen, lower alkyl, trifluoromethyl, nitro, cyano, lower alkoxy and lower alkylthio; R_1 signifies hydrogen or halogen; and R_2 signifies hydrogen or lower alkyl comprising reacting a compound of the formula



wherein R and R_1 are as described above with a compound of the formula

$$R_2—CO—NHNH_2$$

wherein R_2 is as described above.

3,849,435
IMIDAZOLINIUM SALTS AS SOFTENING AGENTS FOR TEXTILES

Helmut Diery, Kelkheim, Taunus, Ulrich Cuntze, Hofheim, Taunus, Adolf May, Diedenbergen, Taunus, and Eckard Milewski, Schwalbach, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

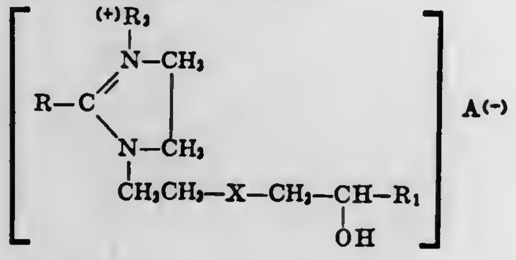
No Drawing. Filed Mar. 1, 1973, Ser. No. 337,203

Claims priority, application Germany, Mar. 2, 1972, P 22 10 087.4

Int. Cl. C07d *49/34*

U.S. Cl. 260—309.6 **2 Claims**

1. A compound of the formula



(1),

in which R represents alkyl or alkenyl of 7 to 21 carbon atoms, R_1 represents alkyl or alkenyl of 6 to 18 carbon atoms, of which radicals R and R_1 at least one contains more than 14 carbon atoms, R_2 represents methyl or ethyl, X represents oxygen or —NH— and $A^{(-)}$ represents $Cl^{(-)}$ or $R_2—OSO_3{}^{(-)}$.

3,849,436
CYCLIZATION OF 2-(3-ARYL - 5 - PYRAZOLYL) BENZOIC ACIDS, ESTERS AND AMIDES TO 2-ARYLPYRAZOLO[5,1-a]ISOINDOL-8-ONES

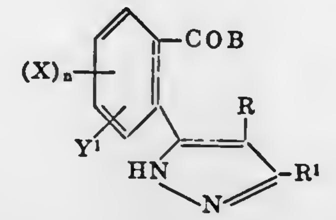
Alexander Lawrence Johnson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 4, 1972, Ser. No. 294,897

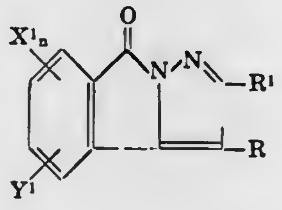
Int. Cl. C07d *57/00*

U.S. Cl. 260—310 R **3 Claims**

1. The process of contacting a compound of the formula

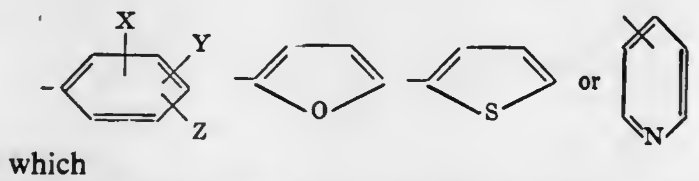


with a condensing agent consisting of a lower alkanoic anhydride in the presence of a tertiary amine selected from the group consisting of pyridine, trimethylamine, triethylamine, 1,4-diazabicyclo[2.2.2] octane, quinuclidine, quinoline, the 2-, 3-, and 4-picolines, the 2,3,4-, 2,3,5-, 2,3,6- and 2,4,6-collidines, the 2,3-, 2,4-, 2,5-, 2,6-, 3,4- and 3,5-lutidines, 1,4 - dimethylpiperazine, 4 - dimethylaminopyridine and N.N-dimethylaniline, at a temperature range of 20–100° C. from 15 minutes up to 8 hours and recovering a product of the formula



wherein

- X^1 is H, Cl, Br or F;
- Y^1 is H, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or CF_3;
- *n* is a whole number 1, 2, or 3;
- R is H, alkyl of 1 to 4 carbon atoms, or together with X is $—CH_2—$, $—CH_2CH_2—$, or CH=CH— connecting the 4-position of the pyrazole ring to the 2-position of the R^1 substituent;
- R^1 is tert-alkyl of 4 through 12 carbon atoms, naphthyl, phenanthryl,



in which

- X is H, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, NO_2, CH_3SO_2, CF_3, CN, or carboalkoxy of 1 to 4 carbon atoms;
- Y is H, halogen, alkoxy of 1 to 4 carbon atoms, or alkyl of 1 to 4 carbon atoms;
- Z is H, halogen, alkoxy of 1 to 4 carbon atoms, or alkyl of 1 to 4 carbon atoms;
- B is OM or NR^2R^3, in which
  - M is H, benzyl, or alkyl of 1–6 carbon atoms, optionally substituted with hydroxy or halogen; and
  - R^2 and R^3 are each hydrogen or alkyl of 1 to 6 carbon atoms.

3,849,437
NITROGEN-CONTAINING COMPOUNDS

John Clark Ousby and William Brian Turner, Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

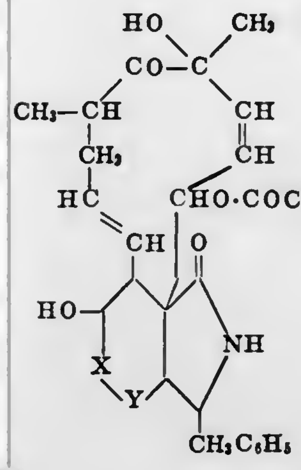
No Drawing. Continuation-in-part of abandoned application Ser. No. 607,905, Jan. 9, 1967. This application Jan. 16, 1968, Ser. No. 698,131

Claims priority, application Great Britain, Jan. 31, 1966, 4,182/66

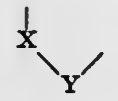
Int. Cl. A61k *21/00*

U.S. Cl. 260—325 **4 Claims**

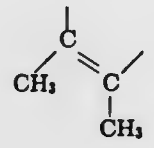
1. An antibiotic product which has the formula:



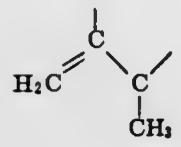
wherein the group



represents the group



or the group



3,849,438
2-SUBSTITUTED - 3 - DISUBSTITUTED-4,5,6,7-SUBSTITUTED OR UNSUBSTITUTED PHTHALIMIDINES

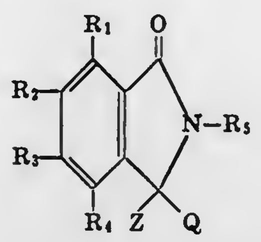
William J. Houlihan, Baden, Austria, and Jeffrey Nadelson, Lake Parsippany, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 126,272, Mar. 19, 1971. This application Mar. 7, 1972, Ser. No. 232,615

Int. Cl. C07d *27/50*

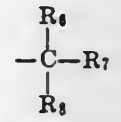
U.S. Cl. 260—325 **24 Claims**

1. A compound of the formula,



where

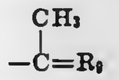
- R_1 is hydrogen, lower alkoxy, halo having an atomic weight of 19 to 36, or trifluoromethyl,
- R_2 is hydrogen, lower alkyl, lower alkoxy, halo having an atomic weight of 19 to 36, trifluoromethyl, nitro or amino,
- R_3 is hydrogen, lower alkyl, lower alkoxy, halo having an atomic weight of 19 to 36, trifluoromethyl, nitro, amino, dialkylamino or phenyl,
- R_4 is hydrogen, lower alkyl, lower alkoxy, or trifluoromethyl,
- R_5 is hydrogen, lower alkyl, phenyl, allyl, benzyl, hydroxyethyl, carbamoyloxy, or carbethoxymethyl, or
- R_1 and R_2 and R_3, or R_3 and R_4, together are methylenedioxy,
- Q is



$$—\overset{R_6}{\underset{R_8}{C}}—R_7$$

where R_5 and R_6 are each independently methyl or ethyl, or

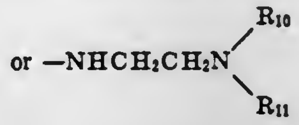
- R_6 and R_7 together are $—(CH_2)_n—$ where *n* is 4, 5, or 6,
- R_8 is methyl, vinyl or allyl, or



$$—\overset{CH_3}{C}=R_9$$

where R_9 is lower alkyl,

Z is hydroxy, amino, lower alkoxy,



$$\text{or } —NHCH_2CH_2N\begin{matrix} R_{10} \\ R_{11} \end{matrix}$$

where R_{10} and R_{11} are independently lower alkyl, provided that

(1) no more than two of R_1, R_2, R_3 or R_4 are other than hydrogen,

(2) when either of R_1 of R_3 is halo, the other of R_1 or R_3 is not halo,

(3) only one of R_1 and R_3, or R_2 and R_4 is alkoxy at one time,

(4) there are no two trifluoromethyl groups on adjacent carbon atoms,

(5) only on of R_2 or R_3 is nitro or amino,

(6) when Z is hydroxy and Q is t-butyl, then R_1, R_2, R_3, R_4 and R_5 are not hydrogen.

3,849,439
PROCESS FOR THE PRODUCTION OF ORGANIC PHOSPHORIC ACID ESTERS

Kennosuke Imamura, Tokyo, Shukichi Nabekawa, Funabashi, and Masao Takada, Tokyo, Japan, assignors to Nippon Chemical Industrial Co., Ltd., Tokyo, Japan

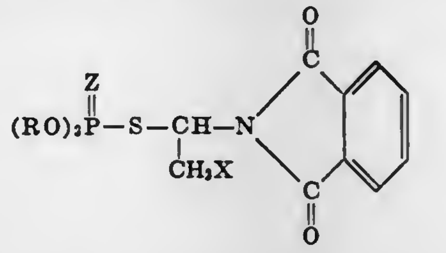
No Drawing. Filed Jan. 6, 1972, Ser. No. 215,903

Claims priority, application Japan, Aug. 10, 1971, 46/59,906

Int. Cl. C07d *27/52*

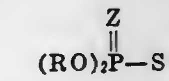
U.S. Cl. 260—326 E **13 Claims**

1. A process for producing an organic phosphoric acid ester represented by the general formula



wherein

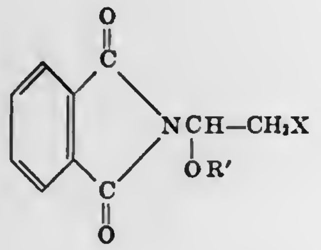
R represents an alkyl group having 1–3 carbon atoms, Z represents an oxygen atom or a sulfur atom, and X represents a chlorine atom or a bromine atom which comprises reacting an o,o-dialkylthiophosphoric acid or an o,o-dialkyldithiophosphoric acid represented by the general formula



$$(RO)_2\overset{Z}{\overset{\|}{P}}—SH$$

wherein R and Z have the above meaning

with N-(1-alkoxy-2-haloethyl) phthalimide represented by the general formula



wherein

R′ represents an alkyl group having 1–3 carbon atoms and X has the above meaning

in the presence of an acid catalyst selected from a protonic acid, Lewis acid or a mixture thereof; wherein said protonic acid is selected from the group consisting of hydrochloric acid, sulfuric acid and phosphoric acid; and said Lewis acid is zinc chloride.

3,849,440

IMIDOMETHYL PHOSPHONATES

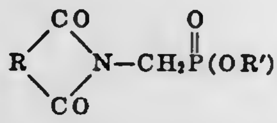
Peter Golborn, Lewiston, and James J. Duffy, Buffalo, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Mar. 30, 1972, Ser. No. 239,760

Int. Cl. C07d *27/10*

U.S. Cl. 260—326.5 A **6 Claims**

1. A compound of the formula



wherein R′ is selected from the group consisting of phenyl, lower alkenyl and halogen substituted and unsubstituted lower alkyl of 1 to 6 carbon atoms and R is selected from the group consisting of lower alkenylene and lower alkylene of 1 to 8 carbon atoms, wherein only 2 carbon atoms in said group form annular members of the imide rings.

3,849,441

SUBSTITUTED HETEROCYCLIC DERIVATIVES OF AZEPINE

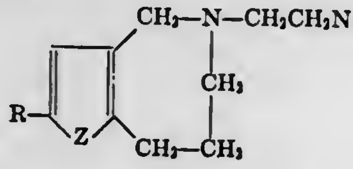
Martin Joseph Weiss, Oradell, N.J., Gabriel Joseph Gibs, Pearl River, and John Frank Poletto, Nanuet, N.Y., and William Alan Remers, West Lafayette, Ind., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application Oct. 1, 1971, Ser. No. 185,876, now Patent No. 3,758,501. Divided and this application July 5, 1973, Ser. No. 376,777

Int. Cl. C07d *27/00*

U.S. Cl. 260—326.9 **7 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein Z is a divalent moiety selected from the group consisting of oxa, thia and imino, and R is selected from the group consisting of hydrogen and an alkyl group having up to four carbon atoms; and the pharmacologically acceptable acid-addition salts thereof.

3,849,442

MANUFACTURE OF 1-ALKENYL-2-AMINOMETHYL PYRROLIDINES

Eric-Alain Denzler, Zurich, Switzerland, assignor to Fratmann S.A., Bougeries, Switzerland

No Drawing. Filed May 17, 1972, Ser. No. 254,235

Claims priority, application Switzerland, Sept. 30, 1971, 14,341/71

Int. Cl. C07d *27/04*

U.S. Cl. 260—326.85 **2 Claims**

1. A process for the manufacture of 1-allyl-2-aminomethyl pyrrolidine which comprises the steps of methylating 1-allyl-2-pyrrolidone with dimethyl sulfate; then treating the resultant methylated product with an alkali alkanol and nitromethane to form 1-allyl-2-nitromethylene pyrrolidine and then selectively reducing the nitromethylene group to form 1-allyl-2-aminomethyl pyrrolidine by reducing said 1-allyl-2-nitromethylene pyrrolidine with lithium aluminum hydride.

3,849,443

PROCESS FOR MAKING POLYMERCAPTANS

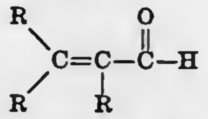
Rector P. Louthan, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Nov. 11, 1971, Ser. No. 197,922

Int. Cl. C07d *79/00*

U.S. Cl. 260—327 R **6 Claims**

1. A process for producing a polymercaptan which comprises reacting an alpha, beta-unsaturated aldehyde compound with hydrogen sulfide in solution in an alcohol boiling below about 100° C. containing sulfur and a nitrogenous base, wherein the alpha, beta-unsaturated aldehyde compound is at least one selected from the group of compounds having the formula:



$$\mathrm{R_2C{=}C(R){-}C({=}O){-}H}$$

wherein each R substituent is selected from hydrogen, alkyl or aryl and wherein each R substituent is so selected that the compound contains 4–18 carbon atoms, wherein the temperature is in the approximate range 20–150° C., the molar ratio of hydrogen sulfide to the aldehyde reactant is in the approximate range of from about 2:1 to about 10:1, the nitrogenous base is ammonia in the approximate range of 0.1 to 2.5 grams and the amount of sulfur is in the approximate range of from about .5 to about 4 grams, per mole of the aldehyde reactant and recovering a polymercaptan possessing a plurality of mercapto groups.

3,849,444

PRODUCTION OF BUTANEDIOLFORMAL

Hugo Fuchs, Ludwigshafen (Rhine), Ernst Ricker, Frankenthal, Pfalz, Franz Schmidt and Erich Schwartz, Mannheim, and Heinrich Sperber, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Continuation of abandoned application Ser. No. 762,928, Sept. 26, 1968. This application May 3, 1971, Ser. No. 139,922

Claims priority, application Germany, Sept. 29, 1967, P 16 43 248.7

Int. Cl. C07d *17/00*

U.S. Cl. 260—338 **3 Claims**

1. In a process for the production of 1,4-butanediolformal wherein a mixture of butanediol-1,4, an aqueous solution of formaldehyde or a substance yielding formaldehyde, and an acid or acid salt is heated in a reaction vessel, the improvement which comprises continuously

(a) heating at the boil a constant amount of said reaction mixture which contains less than 1% by weight of a strong acid or less than 10% by weight of an acid salt or a weak acid,

(b) evaporating the product of the synthesis from the reaction mixture at such a velocity that a mean residue time in the reaction vessel of less than 240 minutes is set up for the reaction mixture,

(c) condensing the vapors of the product of the synthesis,

(d) separating the two layers which form in the liquid condensate,

(e) subjecting the upper layer to treatment with alkali, passing said layer through an evaporator and thereafter fractionally distilling said treated layer, and

(f) subjecting the lower layer to azeotropic distillation and recycling the the distillate to the uncondensed product stream which leaves the reaction vessel.

3,849,445

POLYCARBAMATES OF ORGANIC POLYISOCYANATES AND CYCLIC ACETALS

Anthony Joseph Papa, St. Albans, and William Robert Proops, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

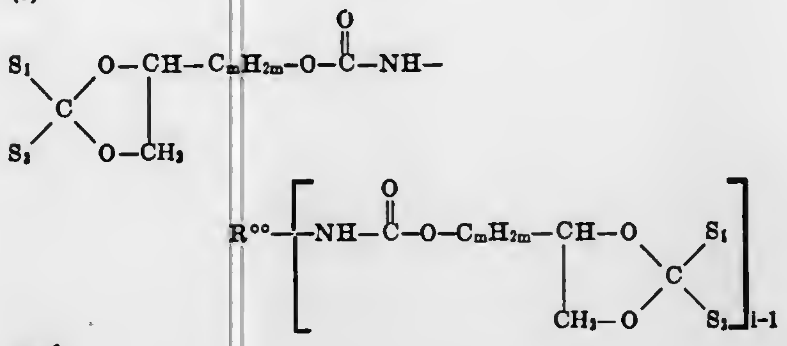
No Drawing. Original application May 25, 1971, Ser. No. 146,843, now Patent No. 3,784,594. Divided and this application Apr. 27, 1972, Ser. No. 248,201

Int. Cl. C07d *13/04*

U.S. Cl. 260—340.9 **17 Claims**

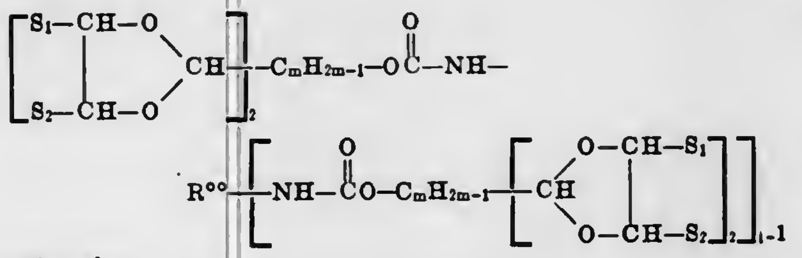
1. A polycarbamate having a formula selected from the group consisting of

(1)



and

(2)



wherein:

S_1 is selected from the group consisting of hydrogen and alkyl having from 1 to 10 carbon atoms;

S_2 is selected from the group consisting of hydrogen and alkyl having from 1 to 10 carbon atoms;

S_3 is selected from the group consisting of hydrogen, alkyl having from 1 to 10 carbon atoms, alkenyl having from 2 to 10 carbon atoms and dihaloalkyl having from 2 to 10 carbon atoms;

m is an integer having a value from 1 to 10;

$R^{\circ\circ}$ represents the unsubstituted nucleus of 2,4-tolylene diisocyanate, 2,6-tolylene diisocyanate or liquid poly (phenylmethylene) polyisocyanate; and

i has an average value from 2 to about 3.2.

3,849,446

CHROMONE-3-CARBOXYLIC ACIDS

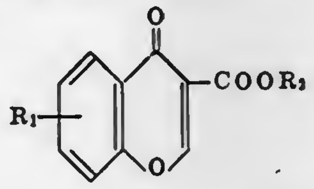
Max von Strandtmann, Rockaway Township, Sylvester Klutchko, Hackettstown, Daniel Kaminsky, Parsippany, and John Shavel, Jr., Mendham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Jan. 17, 1972, Ser. No. 218,503

Int. Cl. C07d *7/34*

U.S. Cl. 260—345.2 **7 Claims**

1. A compound of the formula:



I

wherein R_1 is hydrogen, halogen, lower alkoxy or hydroxy, and R_2 is hydrogen or lower alkyl.

3,849,447

BENZOPYRAN DERIVATIVES

Ulrich Eder and Rudolf Wiechert, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

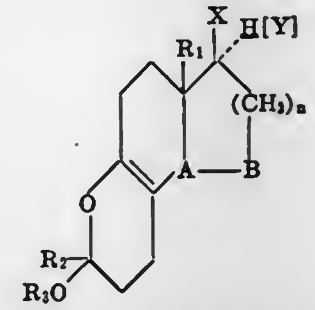
No Drawing. Filed June 9, 1972, Ser. No. 261,216

Claims priority, application Germany, June 11, 1971, P 21 30 053.8; Nov. 30, 1971, P 21 60 066.8

Int. Cl. C07d *7/20*

U.S. Cl. 260—345.2 **31 Claims**

1. A benzopyran of the formula



wherein R_1, R_2 and R_3 each are lower alkyl; *n* is the integer 1 or 2; A—B is $CH—CH_2$ or C=CH; X is OH, alkoxy of 1–10 carbon atoms, alkanoyloxy of 1–10 carbon atoms or benzyloxy and Y is H.

3,849,448

VAPOR PHASE OXIDATION OF BENZENE TO MALEIC ANHYDRIDE AT LOW OXYGEN TO BENZENE MOLAR RATIOS AND HIGH BENZENE CONCENTRATIONS

Clifford Archibald Crampton, 15 Wood End Road, Harpenden, England, and Charles Frederick Cardy, 14 Mount Grace Road, Stopley, Luton, England

No Drawing. Continuation of abandoned application Ser. No. 787,545, Dec. 27, 1968. This application Oct. 18, 1971, Ser. No. 190,375

Claims priority, application Great Britain, Jan. 3, 1968, 429/68

Int. Cl. C07d *5/10*

U.S. Cl. 260—346.8 A **19 Claims**

1. A process for the production of maleic anhydride by the catalytic partial oxidation of benzene comprising the steps of contacting at elevated temperature a gaseous mixture containing benzene and molecular oxygen, said gaseous mixture containing at least 4.55 volume percent of benzene and having an oxygen to benzene molar ratio of less than 4.5 to 1, with a fluidised oxidation catalyst

and separating maleic anhydride from the resultant gaseous mixture.

3,849,449

FURO[3,2-d][1,2,3]DIAZABORINES

Gareth Morse Davies, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

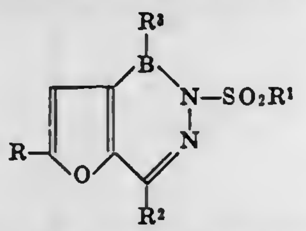
No Drawing. Filed Sept. 14, 1972, Ser. No. 289,114

Claims priority, application Great Britain, Oct. 4, 1971, 46,047/71; July 6, 1972, 31,691/72

Int. Cl. C07d *5/16, 107/02;* **C07f** *5/02*

U.S. Cl. 260—347.2 **7 Claims**

1. A boron derivative of the formula:



wherein R is hydrogen, methyl or chlorine;

R^1 is methyl, phenyl or phenyl substituted with 1 to 3 substituents selected from the group consisting of halogen, nitro, amino, methyl, methoxy, methylthio and acetamido;

R^2 is hydrogen, methyl or phenyl; and

R^3 is hydroxy.

3,849,450

BIS(TRIFLUOROMETHYL)EPOXIDES

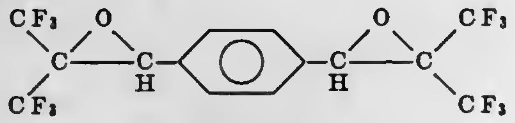
Jacques G. O'Rear, Camp Springs, and James R. Griffith, Riverdale Heights, Md., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Original application Feb. 2, 1973, Ser. No. 328,986, now abandoned. Divided and this application Dec. 11, 1973, Ser. No. 423,847

Int. Cl. C07d *1/00*

U.S. Cl. 260—348 R **1 Claim**

1. A difunctional epoxide compound comprising the formula



3,849,451

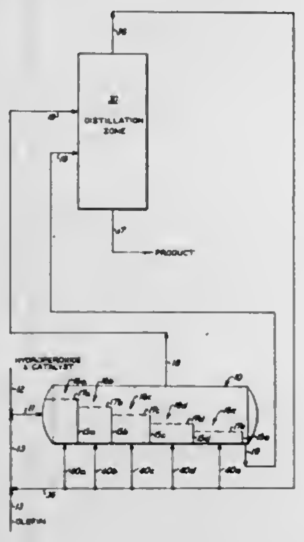
EPOXIDATION PROCESS

Theodore W. Steln, Hastings-on-the-Hudson, Harold Gilman, Milwood, and Richard L. Bobeck, East Northport, N.Y., assignors to Halcon International, Inc.

Continuation of abandoned application Ser. No. 51,332, June 30, 1970. This application Dec. 4, 1972, Ser. No. 311,608

Int. Cl. C07d *1/08*

U.S. Cl. 260—348.5 L **3 Claims**



1. In the continuous process for the preparation of propylene oxide by the reaction between propylene and an organic hydroperoxide in the presence of a liquid phase reaction medium and in the presence of a catalyst selected from at least one member of the group consisting of titanium, vanadium, chromium, columbium, selenium, zirconium, molybdenum, tellurium, tantalum, tungsten, rhenium and uranium; the improvement which comprises, continuously conducting the reaction in a reactor at a temperature within the range between about 90° C. and about 200° C. and at the autogenous pressure of the liquid phase reaction medium so that said medium is a boiling liquid, the reactor feed comprising 10 to 80 mol percent propylene and 1 to 60 mol percent hydroperoxide, continuously volatilizing a portion of the liquid phase reaction medium during the conduct of the reaction, as a result of said boiling, said volatilized portion containing at least one-fourth of the propylene oxide formed in the reaction, withdrawing the propylene oxide containing vaporized reaction medium from the reactor as a vapor, continuously withdrawing the unvaporized reaction medium containing the balance of the propylene oxide product from the reactor as a liquid, continuously separating propylene oxide from said withdrawn vaporized reaction medium by fractional distillation at temperatures not to exceed 160° C. and continuously recycling propylene in said withdrawn vaporized reaction medium to the epoxidation reaction as part of the said feed thereto.

3,849,452

PROCESS FOR PRODUCING α-ANTHRAQUINONE-SULFONATES WITH LOW MERCURY CONTENT

Eitaro Hongo and Hirohiko Yamada, Osaka, Yozo Fujii, Ashiya, Katsumi Masuda, Osaka-fu, and Junichi Itou and Takaaki Nakano, Takarazuka, Japan, assignors to Sumitomo Chemical Company, Limited

No Drawing. Filed Mar. 17, 1972, Ser. No. 235,863

Claims priority, application Japan, Mar. 27, 1971, 46/18,109

Int. Cl. C09b *1/00*

U.S. Cl. 260—370 **5 Claims**

1. A process for producing an α-anthraquinone sulfonate of low mercury content, which comprises reacting a thiosulfate selected from the group consisting of sodium thiosulfate, ammonium thiosulfate, potassium thiosulfate and calcium thiosulfate with an aqueous solution of an α-anthraquinone sulfonic acid or a salt thereof contaminated with mercury or a mercury compound used as catalyst in the preparation of an α-anthraquinone sulfonate, at a temperature of from 80° C. to the reflux temperature to convert the mercury or mercury compound to mercury sulfide, the amount of the thiosulfate being 1 to 50 times the chemical equivalent necessary to react with the mercury or mercury compound, removing the resulting precipitates by filtration and subjecting the filtrate to salting out.

3,849,453

QUINONE DERIVATIVES

Hiroshi Morimoto, Nishinomiya, Masazumi Watanabe, Takatsuki, Isuke Imada, Ibaraki, and Masao Nishikawa, Kyoto, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

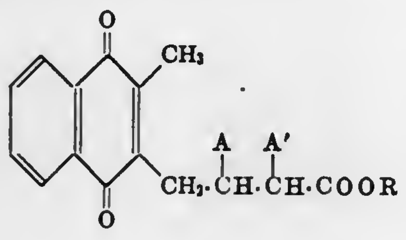
No Drawing. Filed Mar. 15, 1971, Ser. No. 124,547

Claims priority, application Japan, Mar. 17, 1970, 45/22,497; Mar. 18, 1970, 45/22,805

Int. Cl. C07c *63/52*

U.S. Cl. 260—396 R **5 Claims**

1. A member selected from the group consisting of a compound of the formula



wherein one of A and A' is hydrogen and the other is lower alkyl, and R is a member selected from the group consisting of hydrogen, alkyl of 1–6 carbon atoms, cycloalkyl of up to 6 carbon atoms and allyl, and pharmaceutically acceptable salts thereof.

3,849,454

N-SUBSTITUTED FATTY ACID AMIDE LUBRICANTS

Frank C. Magne, Robert R. Mod, and Gene Sumrell, New Orleans, La., and Winfred E. Parker, Philadelphia, Pa., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Aug. 31, 1971, Ser. No. 176,734. Divided and this application Apr. 6, 1973, Ser. No. 348,803

Int. Cl. A23j *7/00;* **C07f** *9/02*

U.S. Cl. 260—403 **1 Claim**

1. The compound N,N-dibutyl-[9(10)hydroxy-(9)10-dibutylphosphato]stearamide.

3,849,455

PROCESS FOR PREPARING METHYL AND ETHYL 3,11 - DIMETHYL - 7 - ETHYLTRIDECA-2,6,10-TRIENOATES

John A. Findlay, 682 George St., Fredericton, New Brunswick, Canada

No Drawing. Original application Dec. 30, 1969, Ser. No. 889,287, now abandoned. Divided and this application May 15, 1972, Ser. No. 253,085

Claims priority, application Canada, Jan. 6, 1969, 39,394

Int. Cl. C07c *67/00;* **C07d** *1/22*

U.S. Cl. 260—410.9 R **3 Claims**

1. A process for preparing an isomeric mixture of methyl or ethyl 3,11-dimethyl-7-ethyl-trideca-2,6,10-trienoates which comprises treating 3-methyl-1-penten-3-ol with ethyl vinyl ether in the presence of orthophosphoric acid to yield the α-ethoxyethyl ether of 3-methyl-1-penten-3-ol; heating said last-named compound in the presence of orthophosphoric acid to obtain 5-methyl-4-hepten-1-al; treating said last-named compound with ethyl magnesium bromide and decomposing the reaction mixture to obtain 7-methyl-6-nonen-3-ol; treating said last-named compound with Jones' reagent to obtain 7-methyl-6-nonen-3-one; treating said last-named compound with the ylid prepared from 4-oxopentyl-1-triphenyl-phosphonium iodide ethylene ketal to obtain 6-ethyl-10-methyldodeca-5,9-dien-2-one ethylene ketal; treating said latter compound with hydrochloric acid to obtain 6-ethyl-10-methyl-dodeca-5,9-dien-2-one; and treating said later compound with the anion prepared from diethylcarbomethoxymethyl or diethylcarbethoxymethyl phosphonate in benzene to obtain, respectively, methyl or ethyl 3,11-dimethyl-7-ethyltrideca-2,6,10-trienoate.

3,849,456

PREPARATION OF METHYL ALKANOATES

Charles H. McMullen, Scarsdale, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Mar. 22, 1972, Ser. No. 236,968

Int. Cl. C07c *67/00*

U.S. Cl. 260—410.9 R **6 Claims**

1. A process for the preparation of telomeric linear methyl alkanoates which comprises reacting (i) in the liquid phase, (ii) methyl formate with ethylene, (iii) in the presence of an initiating amount of an organic peroxide of the group consisting of alkyl peracylates, diacyl peroxides, and organic hydroperoxides, (iv) at a temperature in the range of from about 50° C. to 115° C., (v) using a molar excess of said methylformate with relation to said ethylene, and (vi) for a period of time sufficient to produce said telomeric linear methyl alkanoates.

3,849,457

PREPARATION OF CARBOXYLIC ACIDS BY HYDROGENOLYSIS OF ESTERS

Werner O. Haag, Trenton, and Darrell Duayne Whitehurst, Titusville, N.J., assignors to Mobil Oil Corporation

No Drawing. Continuation-in-part of abandoned application Ser. No. 794,342, Jan. 27, 1969. This application Mar. 15, 1972, Ser. No. 235,090

Claims priority, application Great Britain, Dec. 29, 1969, 63,055/69

Int. Cl. C08h *17/36*

U.S. Cl. 260—413 **27 Claims**

1. A method for the selective hydrogenolysis of an ester to a carboxylic acid without reduction of the carbonyl group of said ester comprising reacting said ester with hydrogen at an elevated temperature in the presence of a dual functional catalyst system comprising (1) a hydrogenation catalyst component selected from the group consisting of metals and compounds of metals of Group VIII of the Periodic System and (2) an acid acting catalyst component selected from the group consisting of a crystalline aluminosilicate zeolite and an ion-exchange resin having strongly acidic functional groups selected from the group consisting of sulfonic acid, phenylsulfonic acid and phosphonic acid and the resin is a cationic resin.

3,849,458

METHOD FOR DEUTERATING ORGANIC COMPOUNDS

Nguyen Dinh-Nguyen and Einar August Stenhagen, Molndal, Sweden, assignors to Incentive Research Development AB, Bromma, Sweden

No Drawing. Continuation of abandoned application Ser. No. 522,030, Jan. 21, 1966. This application Sept. 16, 1968, Ser. No. 768,950

Int. Cl. C07c *53/22*

U.S. Cl. 260—413 **9 Claims**

1. In the method of deuterating an organic compound containing hydrogen atoms replaceable by deuterium wherein said compound is reacted with heavy water as a deuterium source in the presence of alkali metal deuteroxide and a deuterium reduced Adams catalyst

$$(PtO_2H_2O),$$

the improvement which consists in carrying out the deuterating reaction in the presence of deuterium peroxide.

3,849,459

CATALYTIC COMPOUNDS AND PROCESSES FOR THEIR PREPARATION

Peter M. Maitlis, Hamilton, Ontario, Canada, Colin White, Selby, England, Jung W. Kang, Clinton, Ohio, and Devinder S. Gill, Hamilton, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

No Drawing. Filed May 4, 1972, Ser. No. 250,203

Claims priority, application Canada, May 25, 1971, 113,732

Int. Cl. C07f *15/00*

U.S. Cl. 260—429 CY **8 Claims**

1. Hydrided compounds of rhodium or iridium or a mixture of rhodium and iridium having the general formula $(C_5R_5M)_2H_xL_{4-x}\cdot yHL$ where

C_5 is the cyclopentadienyl ring,
R_5 are the methyl group substituents attached to the ring,
M is rhodium or iridium or a mixture of rhodium and iridium,
H is hydrogen,
L is any one of halide, trifluoroacetate or hexafluorophosphate,
x is any number from 1 to 3, and
y is 0 or 1.

3,849,460
PREPARATION OF TRINEOPHYLTIN HALIDES

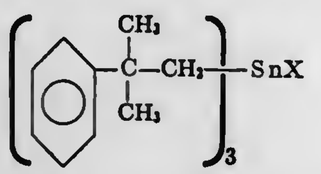
David A. Daniels, Kendall Park, and William R. Davis, South Plainfield, N.J., assignors to M & T Chemicals Inc., Greenwich, Conn.

No Drawing. Filed June 11, 1973, Ser. No. 368,813

Int. Cl. C07f *7/22*

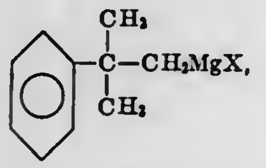
U.S. Cl. 260—429.7 **3 Claims**

1. In a method for preparing trineophyltin halides,



in high yield and purity, said method consisting of the following steps:

(1) adding a hydrocarbon solution of a stannic halide, SnX_4 to an ether solution of a neophyl magnesium halide



(2) hydrolyzing the resultant reaction mixture using an aqueous solution of an acid HX, and
(3) concentrating the organic portion of the resultant two-phase liquid to isolate the trineophyltin halide, wherein X represents chlorine or bromine,

the improvement of which consists of maintaining the temperature of the reaction mixture at between 55 and 65° C. during the addition of said stannic halide and until the time at which the reaction between the stannic halide and neophyl magnesium halide is substantially complete.

3,849,461
PREPARATION OF LIQUID POLYNUCLEAR FERROCENE DERIVATIVES

Harry J. Hyer, Palo Alto, and Thomas P. Rudy, Saratoga, Calif., assignors to United Aircraft Corporation, East Hartford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 663,517, Aug. 28, 1967. This application Mar. 29, 1968, Ser. No. 718,312

Int. Cl. C07f *15/02*

U.S. Cl. 260—439 CY **22 Claims**

1. In a method for producing noncrystalline noncrystallizable liquid polynuclear ferrocene derivatives which comprises condensing a hydrocarbyl substituted ferrocene, said hydrocarbyl substituents having *m* carbon atoms, with a material selected from the group consisting of aliphatic aldehydes having *n* carbon atoms and acetals derived therefrom, wherein *m* is an integer from 1–6, *n* is an integer from 1–12 and the value of the relationship $2m+n$ is from 3–14, in an inert diluent and in the presence of a catalytic amount of acid; the improvement which comprises adding the acid catalyst to the inert diluent prior to the formation of the completed reaction mixture, dissipating the heat of solvation thereof and subsequently completing the reaction mixture by addition of said material selected from the group consisting of aliphatic aldehydes having *n* carbon atoms and acetals derived therefrom to the mixture of the other reactants and the catalyst.

3,849,462
ROOM TEMPERATURE CURABLE ORGANOPOLYSILOXANES

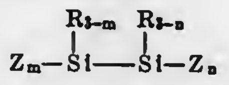
Guenther Fritz Lengnick, Adrian, Mich., assignor to Stauffer Chemical Company, Westport, Conn.

No Drawing. Application June 8, 1973, Ser. No. 368,427, which is a continuation-in-part of abandoned application Ser. No. 270,368, July 10, 1972. Divided and this application Feb. 8, 1974, Ser. No. 440,927

Int. Cl. C07f *7/08, 7/10*

U.S. Cl. 260—448.2 D **3 Claims**

1. A compound of the formula:



$$Z_m-\overset{R_{3-m}}{\mathrm{Si}}-\overset{R_{3-n}}{\mathrm{Si}}-Z_n$$

wherein R is selected from the group consisting of monovalent hydrocarbon radicals, halogenated monovalent hydrocarbon radicals and cyanoalkyl radicals; Z is a hydrolyzable group selected from the class consisting of aminooxy radicals, amino radicals, oximo radicals, amido radicals and phosphato radicals; *m* is a number of from 1 to 3, *n* is a number of from 0 to 3 and the sum of *m* and *n* is greater than 2.

3,849,463
PREVENTION OF SILICA PORE OBSTRUCTION IN CRYSTALLINE ALUMINOSILICATES

Francis G. Dwyer, West Chester, Pa., and Pochen Chu, Woodbury, N.J., assignors to Mobil Oil Corporation

No Drawing. Continuation-in-part of abandoned application Ser. No. 886,400, Dec. 18, 1969. This application Dec. 11, 1972, Ser. No. 313,717

Int. Cl. C01b *33/28*

U.S. Cl. 260—448 C **6 Claims**

1. A method of decreasing silica pore obstruction in crystalline aluminosilicates having a SiO_2/Al_2O_3 ratio greater than 6 which comprises admixing a crystalline aluminosilicate zeolite reaction mixture sufficient to prepare a crystalline aluminosilicate zeolite, said reaction mixture comprising the following components expressed as oxides in the mole ratios set forth:

$Na_2O/(R_2O+Na_2O)$	.31 to <1
$(R_2O+Na_2O)/SiO_2$	0.5 to .90
SiO_2/Al_2O_3	3 to 60
$H_2O/(R_2O+Na_2O)$	15 to 600

wherein R is a tetramethylammonium cation, with an alkali metal salt containing monovalent anions in an amount sufficient to decrease silica pore obstruction, and maintaining the mixture until crystals having the X-ray diffraction pattern values shown in Table 2 of the specification are formed.

3,849,464
META-THIOCARBAMILATE ETHERS AND SULFIDES

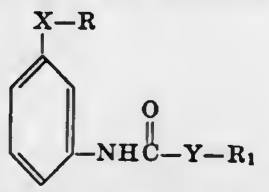
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Dec. 10, 1970, Ser. No. 97,004, now Patent No. 3,781,327. Divided and this application Sept. 4, 1973, Ser. No. 394,368

Int. Cl. C07c *155/02*

U.S. Cl. 260—455 A **10 Claims**

1. A compound having the formula



in which X is oxygen or sulfur; Y is sulfur; R is alkyl of from 1 to 10 carbon atoms, inclusive, lower alkenyl, vinyloxyalkyl in which the total carbon content is from 3 to 7 carbon atoms, inclusive, ketoalkyl having from 2 to 6 carbon atoms, inclusive, or alkylthioalkyl in which the total carbon content is from 2 to 7 carbon atoms, inclusive; R_1 is lower alkyl or lower alkenyl.

3,849,465
N-CYANOIMINES AND N-CYANOAZIRIDINES

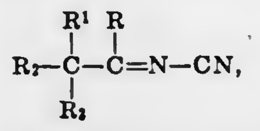
Frank Dennis Marsh, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Application July 16, 1964, Ser. No. 383,233, now Patent No. 3,510,474, which is a continuation-in-part of abandoned application Ser. No. 234,878, Nov. 1, 1962. Divided and this application June 11, 1969, Ser. No. 832,423

Int. Cl. C07c *119/00*

U.S. Cl. 260—453 R **8 Claims**

1. An N-cyanoimine of the formula



$$R_2-\overset{R^1}{\underset{R_3}{C}}-\overset{R}{C}=N-CN,$$

wherein the R's taken individually, contain up to 18 carbons and are members of the group consisting of hydrogen, alkoxy and hydrocarbyl and any two R's may be joined to form a divalent akylene group of 2–10 carbons.

3,849,466
LONG CHAIN ALIPHATIC THIOLESTERS OF CYCLOPROPIONIC ACID

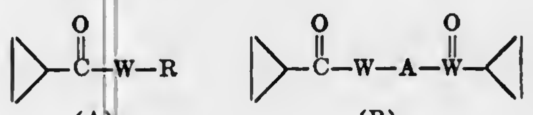
Clive A. Henrick and Gerardus B. Staal, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Filed Apr. 13, 1973, Ser. No. 350,952

Int. Cl. C07c *155/08*

U.S. Cl. 260—455 R **4 Claims**

1. A compound of the formulas A and B:



(A) (B)

wherein,

W is —S—;
R is a monovalent aliphatic radical of at least 10 carbon atoms; and
A is alkylene, alkenylene or alkynylene.

3,849,467
SUBSTITUTED O-(AMINOSULFONYL)-GLYCOLIC ANILIDES

Dietrich Mangold, Neckargemuend, Adolf Fischer, Mutterstadt, and Wolfgang Rohr and Gerhard Hamprecht, Mannheim, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

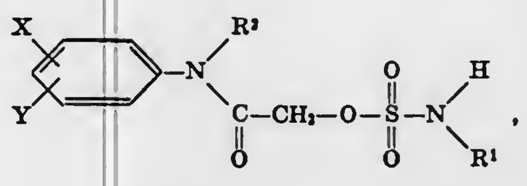
No Drawing. Filed Feb. 21, 1974, Ser. No. 444,302

Claims priority, application Germany, Mar. 3, 1973, P 23 10 757.5

Int. Cl. C07c *143/68*

U.S. Cl. 264—456 A **26 Claims**

1. A substituted O-(aminosulfonyl)-glycolic anilide of the formula



wherein R^1 denotes hydrogen, alkyl or haloalkyl of 1 to 6 carbon atoms, cyclo/pentyl or cyclohexyl, R^2 denotes alkyl of 1 to 6 carbon atoms, cyclopentyl or cyclohexyl, X denotes hydrogen, halogen, alkyl, haloalkyl or alkoxy of 1 to 6 carbon atoms, Y denotes hydrogen or alkyl of 1 to 6 carbon atoms, with the proviso that both X and Y cannot denote hydrogen.

3,849,468
METHOD FOR THE CONTINUOUS PREPARATION OF ALKYLPEROXYDICARBONATES

Robert Busseret, Chaponost, France, assignor to Rhone-Progil, Paris, France

Filed Nov. 10, 1972, Ser. No. 305,351

Claims priority, application France, Nov. 18, 1971, 7141287

Int. Cl. C07c *73/00, 73/02*

U.S. Cl. 260—463 **9 Claims**

1. A process for the continuous preparation of alkylperoxydicarbonates in solution from sodium peroxide and alkylchloroformates comprising continuously circulating in a reaction chamber an aqueous liquid maintained at a temperature of at least −10° C., continuously introducing into said aqueous liquid sodium hydroxide, hydrogen peroxide in a stoichiometric excess of 10–20%, alkylchloroformate and a solvent for said alkylperoxydicarbonate, at flow rates such that the pH of the aqueous liquid is constantly maintained at a value within the range of 3 to 10, whereby the amount of sodium hydroxide formed is in excess of 10–20% by weight with respect to the stoichiometric ratio of the alkylformate/sodium peroxide, continuously separating the obtained solution of alkylperoxydicarbonate from the aqueous liquid, washing said solution with water, and separating the washed solution of alkylperoxydicarbonate from the wash water.

3,849,469
PREPARATION OF α-OXIMINONITRILES

Manfred Jautelat, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

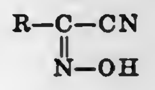
No Drawing. Filed Aug. 29, 1973, Ser. No. 392,831

Claims priority, application Germany, Sept. 6, 1972, P 22 43 629.9

Int. Cl. C07c *121/02*

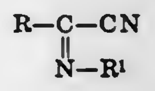
U.S. Cl. 260—464 **9 Claims**

1. A process for the preparation of an α-oximinonitrile of the formula



$$R-\underset{\underset{N-OH}{\|}}{C}-CN$$

in which R is an alkyl, alkenyl or alkynyl radical of 2–12 carbon atoms, a halogenoalkyl, cyanoalkyl, nitroalkyl or hydroxyalkyl radical of 1–8 carbon atoms, or a cycloalkyl radical, comprising reacting an α-iminonitrile of the formula



$$R-\underset{\underset{N-R^1}{\|}}{C}-CN$$

in which R^1 is one of the radicals specified for R, or is an aryl or a heterocyclic radical, with an acid-addition salt of hydroxylamine in the presence of an inert diluent at a temperature of about 20° to 150° C.

3,849,470

5-BENZYL PYRIMIDINES INTERMEDIATES THEREFORE, AND METHOD

Ronald M. Cresswell, Scarsdale, John W. Mentha, Hartsdale, and Russell L. Seaman, Chappaqua, N.Y., assignors to Burroughs Wellcome Co.

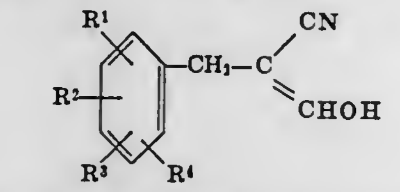
No Drawing. Original application Mar. 4, 1970, Ser. No. 16,606, now Patent No. 3,697,512, dated Oct. 10, 1972. Divided and this application June 12, 1972, Ser. No. 263,452

Claims priority, application Great Britain, Mar. 6, 1969, 11,908/69, 11,909/69; May 16, 1969, 25,171/69; June 13, 1969, 30,247/69

Int. Cl. C07c *121/66*

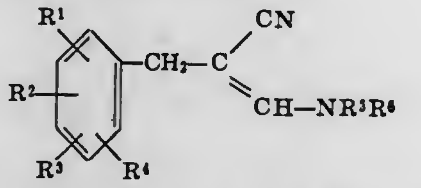
U.S. Cl. 260—465 F **8 Claims**

1. In the method of preparing a compound of formula I



(I)

which comprises treating with an acid a partially aqueous solution of a compound of formula II



wherein R^1–R^4 are the same or different, and each is a hydrogen or halogen atom, lower alkyl, lower alkoxy or benzyloxy, or R^3 and R^4 taken together may be a methylenedioxy group when R^1 and R^2 are hydrogen atoms and wherein R^5 is lower alkyl and R^6 is lower alkyl or hydrogen or NR^5R^6 is cyclic amino group of not less than one carbon atom or more than twelve carbon atoms.

3,849,471

PROCESS FOR REACTING WEAK ACIDS WITH CHLOROALKYL SUBSTITUTED SILICON COMPOUNDS

George M. Omietanski and Herbert E. Petty, Marietta, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Dec. 14, 1972, Ser. No. 314,978

Int. Cl. C07f *7/08, 7/10, 7/18*

U.S. Cl. 260—448.2 E **8 Claims**

1. The process which comprises reacting in the liquid phase a weak acid having a dissociation constant, determined as the negative log thereof, ranging from as low as about 2 to as high as about 13, determined in water at 25° C. with a chloroalkyl substituted silicon compound in the presence of ethylene diamine.

3,849,472

PROCESS FOR PREPARING 3-PENTENENITRILE

Dhafir Yusuf Waddan, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed July 9, 1973, Ser. No. 377,183

Claims priority, application Great Britain, July 31, 1972, 35,639/72

Int. Cl. C07c *121/04*

U.S. Cl. 260—465.3 **6 Claims**

1. A process for the manufacture of 3-pentenenitrile which comprises reacting at a temperature within the range −25° C. to 200° C. a mixture of butadiene, hydrogen cyanide and, as sole catalyst, a complex of cuprous chloride, bromide or iodide with an organic nitrile selected from 3-pentenenitrile and compounds having nitrile groups attached to a saturated or ethylenically unsaturated hydrocarbon residue containing up to three carbon atoms, the said catalyst being used in the amount of 0.0005 to 0.1 mole per mole of butadiene, the molar ratio of butadiene to hydrogen cyanide being 2:1 to 1:4, and the catalyst complex being formed by mixing the said cuprous salt with the said organic nitrile before or at the same time as it is mixed with the butadiene and hydrogen cyanide.

3,849,473

DIESTERS OF 1,3 - BIS(CARBOXYMETHYL) ADAMANTANES AND PROCESS FOR PREPARING SAME

Yoshiaki Inamoto and Hirokazu Nakayama, Wakayama, Hidetsugu Takenaka, Arita, and Yoshitomo Kimura, Naga-gun, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

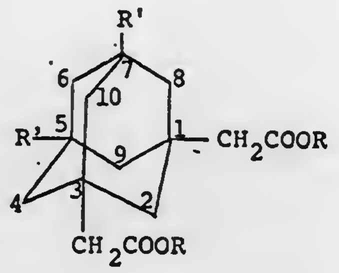
No Drawing. Filed June 23, 1971, Ser. No. 156,114

Claims priority, application Japan, June 24, 1970, 45/54,979

Int. Cl. C07c *69/74*

U.S. Cl. 260—468 G **2 Claims**

1. A compound of the formula



wherein

R is selected from the group consisting of crotyl, oleyl, linoleyl and methallyl, and

R′ is H or alkyl having 1 to 4 carbon atoms.

3,849,474

11-DEOXYPROSTAGLANDIN DERIVATIVES AND PROCESS THEREFOR

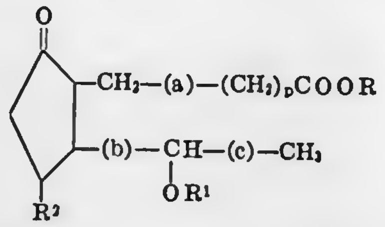
Nedumparambil A. Abraham, Dollard des Ormeaux, Jehan F. Bagli, Kirkland, and Tibor Bogri, Montreal, Quebec, Canada, assignors to Ayerst, McKenna and Harrison Limited, Ville St. Laurent, Quebec, Canada

No Drawing. Filed Mar. 27, 1972, Ser. No. 238,650

Int. Cl. C07c *11/36*

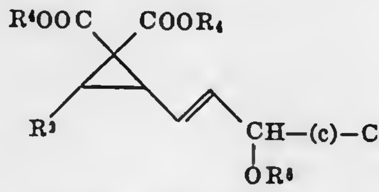
U.S. Cl. 260—468 D **10 Claims**

1. A process for preparing a compound of formula I



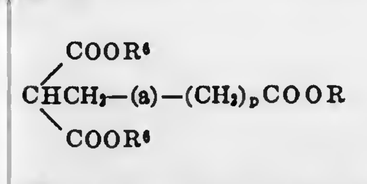
I

in which (a) is CH_2CH_2, *cis* $CH{=}CH$ or $C{\equiv}C$, p is an integer from 2 to 4, (b) is *trans* $CH{=}CH$, (c) is either $(CH_2)_q$ wherein q is an integer from 1 to 6 or *cis* $CH_2CH{=}CH(CH_2)_r$ wherein r is an integer from 0 to 3, R and R^1 is each hydrogen and R^2 is hydrogen, lower alkyl or CH_2OR^3 wherein R^3 is hydrogen which comprises subjecting a compound of formula II



II

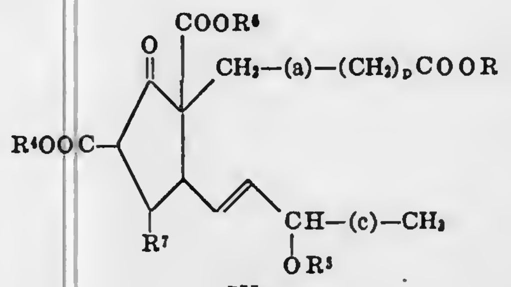
in which R^2 is hydrogen, lower alkyl or CH_2OR^3 in which R^3 is lower alkanoyl, R^4 is lower alkyl, R^5 is hydrogen or tetrahydropyran-2-yl and (c) is as defined herein to a base catalyzed condensation at a temperature of 100° to 150° C. for 30 minutes to three hours in the presence of, as the base, an alkali metal alkoxide or an alkali metal hydroxide with approximately an equimolar amount of a triester of formula III



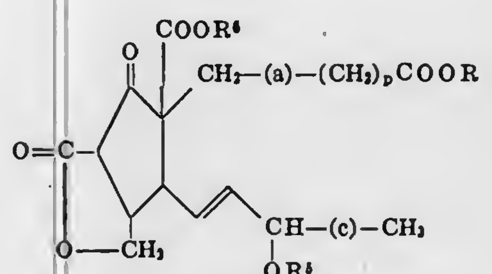
$$\overset{COOR^6}{\underset{COOR^6}{C}}HCH_2-(a)-(CH_2)_pCOOR$$

III

in which R and R^6 are lower alkyl and (a) and p are as defined herein to yield the corresponding cyclopentanonetriester selected from the group consisting of formula IVa and formula IVb



IVa



IVb

in which (a), (c), p, R^4, R^5 and R^6 are as defined herein, R is lower alkyl and R^7 is hydrogen or lower alkyl, said cyclopentanonetriester of formula IVa being obtained when R^2 of the compound of formula II is hydrogen or lower alkyl and said cyclopentanonetriester of formula IVb being obtained when R^2 of the compound of formula II is CH_2OR^3 in which R^3 is lower alkanoyl; in the instance when R^5 of the cyclopentanonetriester is tetrahydropyran-2-yl subjecting the cyclopentanonetriester to treatment with an acid in an inert solvent in the presence of water to remove the tetrahydropyran-2-yl protecting group to obtain the corresponding cyclopentanonetriester in which R^5 is hydrogen, and thereafter treating the instant cyclopentanonetriester intermediate with an alkali metal hydroxide to give the corresponding compound of formula I in which R and R^1 are hydrogen and R^2 is hydrogen, lower alkyl or CH_2OR^3 wherein R^3 is hydrogen.

3,849,475

PURIFICATION OF HIGH BOILING ESTERS

Paul Biarnais, Melle, Claude Falize, Neuilly-sur-Seine, and Gilbert Sitaud, Melle, France, assignors to Rhone-Progil, Courbevoie, France

Filed Apr. 26, 1972, Ser. No. 247,592

Claims priority, application France, Apr. 26, 1971, 7115732

Int. Cl. C07c *69/80*

U.S. Cl. 260—475 B **17 Claims**

1. In a process for purification of high boiling esters produced by esterification of an aromatic or aliphatic organic mono or poly carboxylic acid or its anhydride having 6 or more carbon atoms by an aliphatic monohydric or polyhydric alcohol having at least 8 carbon atoms, in the presence of an esterification catalyst, followed by neutralization of the reaction product, heating to 130–190° C. and decantation of the latter to separate therefrom an organic phase and an aqueous phase, the improvement which comprises performing the decantation step under positive pressure at a temperature within the range of 120–200° C.

3,849,476

PROCESS FOR MANUFACTURING 6-NITRO-2-SUBSTITUTED HEXANOIC ACID ESTERS

Ryoji Kikumoto, Kanagawa-ken, Japan, assignor to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

Filed May 22, 1969, Ser. No. 826,828

Claims priority, application Japan, May 25, 1968, 43/35,335; Nov. 13, 1968, 43/82,526

Int. Cl. C07c *131/00, 79/40*

U.S. Cl. 260—478 **6 Claims**

1. A process for manufacturing a 6-nitro-2-substituted hexanoic acid ester which comprises reacting an alicyclic compound of the group consisting of 2-nitro-6-oximino-1-cyclohexene-1-ol, 2,6-dinitrocyclohexanone, and a monoalkali metal salt of said 2,6-dinitrocyclohexanone with a lower alkanol and a substance which consists essentially of an effective amount of a basic catalyst until an ester of said alkanol with a 6-nitro-2-substituted hexanoic acid is obtained, the 2-substituent of said acid being oximino if said alicyclic compound is 2-nitro-6-oximino-1-cyclohexene-1-ol, and the 2-substituent of said acid being nitro if said alicyclic compound is 2,6-dinitrocyclohexanone or said mono-alkali metal salt thereof.

3,849,477

THIOALKYLPHENYL CARBAMATES

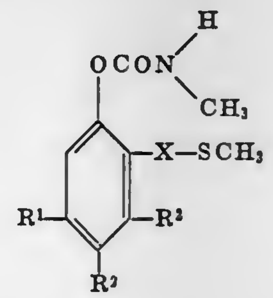
Edward D. Weil, Lewiston, and Hans L. Schlichting, Grand Island, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation of application Ser. No. 612,064, Dec. 1, 1966, which is a division of application Ser. No. 262,376, Mar. 4, 1963, now Patent No. 3,331,894. This application May 13, 1969, Ser. No. 826,076

Int. Cl. C07c *149/42*

U.S. Cl. 260—479 C **2 Claims**

1. A compound of the formula



wherein X is 1-(methoxymethyl)-1,3-propylene and R^1, R^2 and R^3 are independently selected from the group consisting of hydrogen and lower alkyl.

3,849,478

TETRAHYDRO-1-NAPHTHYL-N-METHYL-CARBAMATES

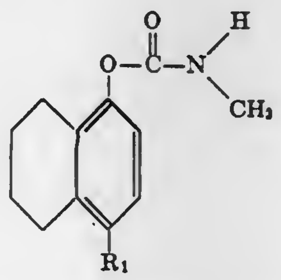
Linwood K. Payne, Jr., deceased, late of Charleston, W. Va., by Betty Lou B. Payne, executrix, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed May 10, 1972, Ser. No. 252,329

Int. Cl. C07c *125/06*

U.S. Cl. 260—479 C **4 Claims**

1. A compound of the formula:



wherein R_1 is formamido, lower alkanoylamido, phenylcarboxamido lower alkylideneimino, dilower alkylamino lower alkyleneimino, lower alkylureido, dilower alkylureido, lower phenylalkoxy, lower alkylthio, lower phenylalkylthio, lower alkyl sulfinyl or lower alkyl sufonyl.

3,849,479

DIMETHYL DIAMINOMALEATE

Robert Walter Begland, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,541

Int. Cl. C07d *97/02*

U.S. Cl. 260—482 P **5 Claims**

1. A compound of the group consisting of dimethyl diaminomaleate hydrochloride dimethyl diaminomaleate.

3,849,480

CATALYTIC ASYMMETRIC HYDROGENATION

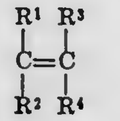
William S. Knowles and M. Jerome Sabacky, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation of abandoned application Ser. No. 758,603, Sept. 9, 1968. This application Aug. 20, 1971, Ser. No. 173,620

Int. Cl. C07b *1/00*

U.S. Cl. 260—490 **15 Claims**

1. A process for the asymmetric hydrogenation of an olefin which comprises the hydrogenation of an olefin of the formula



$$\begin{matrix} R^1 & & R^3 \\ | & & | \\ C & = & C \\ | & & | \\ R^2 & & R^4 \end{matrix}$$

wherein R^1, R^2, R^3 and R^4 are each independently selected from the group consisting of hydrogen; alkyl having at least one and a maximum of 12 carbon atoms; substituted alkyl said substitution being selected from the group consisting of amino, hydroxy, nitro, thio, carbonyl, carboxyl, carboxylic ester, said ester group having a maximum of 6 carbon atoms; phenyl; substituted phenyl, said substitution being selected from the group consisting of alkyl having a maximum of 4 carbon atoms, amino, carboxyl, nitro and carboxylic ester, said ester having a maximum of 4 carbon atoms, and said substitution being less than 3 substituents; amino; dibenzylamino; benzylamino; nitro; carboxyl and carboxylic ester, said ester having a maximum of 4 carbon atoms, provided that, upon hydrogenation,

(a) the olefin is capable of forming a racemic mixture, and

(b) at least one of the carbon atoms united by the olefinic bond is capable of forming an asymmetric carbon,

in the presence of a catalyst represented by the formula

$$M^1X_nL_3$$

wherein M^1 is a metal selected from the group consisting of rhodium, ruthenium and iridium; X is selected from the group consisting of hydrogen, chlorine, fluorine, bromine and iodine; each L is independently selected from the group $AR^5R^6R^7$, wherein A is selected from the group consisting of phosphorus and arsenic and R^5, R^6 and R^7 are each independently selected from the group consisting of hydrogen; alkyl having at least one carbon atom and a maximum of 12 carbon atoms; substituted alkyl, said substitution selected from the group consisting of amino, carbonyl, phenyl, nitro and alkoxy, said alkoxy having a maximum of 4 carbon atoms; phenyl; substituted phenyl, said substitution selected from the group consisting of alkyl having a maximum of 4 carbon atoms, amino and nitro, said substitution being less than 3 substituents; cycloalkyl having at least 3 carbon atoms and a maximum of 6 carbon atoms; pyrryl; thienyl; furyl; pyridyl and piperidyl, provided that at least one L group is optically active and *n* is one of the integers one or three.

3,849,481

HYDROGENATION OF LYSINE PRECURSORS

Robert Fuhrmann, Morris Plains, Fred W. Koff, Clifton, and John Pisanchyn, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 97,290, Dec. 11, 1970. This application Dec. 29, 1971, Ser. No. 215,962

Int. Cl. C07c *103/18*

U.S. Cl. 260—501.17 **7 Claims**

1. A process for the catalytic reduction of 2-oximino-6-nitrohexanamide to produce an alkanoic acid salt of D,L-lysine amide, comprising: subjecting 2-oximino-6-nitrohexanamide, an alkanoic acid containing 1–5 carbon atoms and hydrogen in the presence of a rhodium metal hydrogenation catalyst, to superatmospheric pressure, at a temperature above 15° C. to convert the 2-oximino-6-nitrohexanamide to said alkanoic acid salt of D,L-lysine amide.

3,849,482

AMINE SALTS OF CIS-PROPENYLPHOSPHONIC ACID

Burton G. Christensen, Scotch Plains, N.J., William J. Leanza, Staten Island, N.Y., and Thomas R. Beattie, North Plainfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Application May 15, 1968, Ser. No. 729,420, which is a continuation-in-part of application Ser. No. 679,203, Oct. 30, 1967, both now abandoned. Divided and this application Apr. 19, 1971, Ser. No. 135,396

Int. Cl. C07f *9/38*

U.S. Cl. 260—501.21 **3 Claims**

1. An amine salt of *cis*-propenylphosphonic acid wherein the amine is selected from the group consisting of α-phenethylamine, diethylamine, diethylene diamine, quinine, brucine, lysine, arginine, procaine, ethanolamine, morphine, benzylamine, ethylenediamine, N,N′ - dibenzylethylenediamine, diethanolamine, piperazine, N-aminoethylpiperazine, dimethylaminoethanol, 2-amino-2-methyl-1-propanol, theophylline, and N-methylglucamine.

3,849,483

TRISODIUM-MONOANILINE SALT OF 2-NAPHTHOL-3,6-DISULFONIC ACID

Martin Louis Feldman, East Brunswick, Donald William Hagedorn, Roxbury Township, and John Edson Gordon, Bridgewater Township, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application Oct. 6, 1972, Ser. No. 295,756. Divided and this application Feb. 7, 1974, Ser. No. 440,420

Int. Cl. C07c *143/42*

U.S. Cl. 260—501.21 **1 Claim**

1. The trisodium-monoaniline salt of 2-naphthol-3,6-disulfonic acid.

3,849,484

PROCESS FOR THE PRODUCTION OF PERCARBOXYLIC ACID

Peter Hoffmann and Gerd Schreyer, Grossauheim, Otto Weiberg, Neu Isenburg, and Wolfgang Weigert, Offenbach, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed May 11, 1972, Ser. No. 252,194

Claims priority, application Germany, May 21, 1971, P 21 25 160.5

Int. Cl. C07c *73/10*

U.S. Cl. 260—502 R **13 Claims**

1. In a process for the production of a percarboxylic acid by reacting hydrogen peroxide with a member of the group consisting of alkanoic acids having 2 to 5 carbon atoms and alkyl esters thereof having 1 to 5 carbon atoms in the alkyl group the improvement comprising carrying out the reaction in the gaseous phase at a temperature of 60 to 138° C. at a pressure from 20 Torr to normal pressure in the presence of a solid acid catalyst selected from the group consisting of ammonium sulfate, an alkali metal acid sulfate, barium nitrate, calcium nitrate, magnesium nitrate, aluminum phosphate, aluminum sulfate and boron phosphate.

3,849,485

STYRYLBENZENE DERIVATIVES, THEIR MANUFACTURE AND USE

Kurt Weber, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

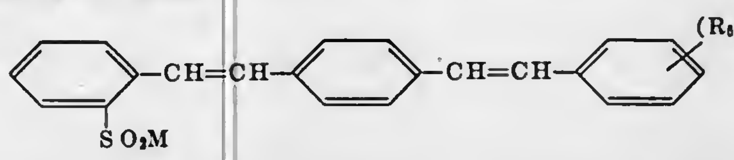
No Drawing. Filed June 1, 1970, Ser. No. 42,598

Claims priority, application Switzerland, June 5, 1969, 8,652/69

Int. Cl. C07c *123/24*

U.S. Cl. 260—505 R **2 Claims**

1. New di-styrylbenzene derivatives which correspond to the formula



wherein R_6 represents chlorine or a methyl group, *m* denotes the numbers 1 or 2 and M represents a hydrogen, alkali, alkaline earth, or ammonium ion.

3,849,486

PROCESS OF CONVERTING SULTONES TO HYDROXYALKYLSULFONATES

Gerhard O. Kuehnhanss, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

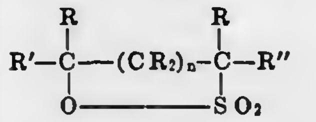
No Drawing. Filed May 3, 1973, Ser. No. 356,907

Int. Cl. C07c *143/02*

U.S. Cl. 260—513 R **10 Claims**

1. A process for converting sultones into hydroxy alkane sulfonic acid salts in high purity and high yield which comprises

reacting a sultone of the formula:



$$\begin{matrix} & R & & R & \\ & | & & | & \\ R'- & C & -(CR_2)_n- & C & -R'' \\ & | & & | & \\ & O & \text{————} & SO_2 & \end{matrix}$$

wherein:

R, R′ and R″ are hydrogen or alkyl, *n* is an integer of 0, 1, 2, or 3, the total number of carbon atoms in the sultone molecule is from about 6 to about 40,

with alkali metal hydroxide or alkaline earth metal hydroxide, in an anhydrous system, at a temperature of from about 75 to about 250° C., the hydroxide and sultone being used in a ratio of from about 1.1 to about 25 mols of alkali metal hydroxide, or from about 0.55 to about 12.5 mols of alkaline earth metal hydroxide, per mol of sultone.

3,849,487

NATURAL 15-METHYL AND ETHYL-15-EPI-PGE$_1$

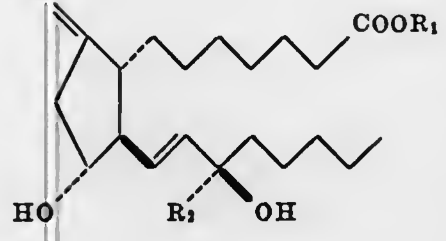
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 37,307, May 14, 1970. This application July 24, 1972, Ser. No. 274,643

Int. Cl. C07c *61/36, 69/74*

U.S. Cl. 260—514 D **2 Claims**

1. An optically active compound of the formula:



wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, or a pharmacologically acceptable cation, and wherein R_2 is methyl or ethyl.

3,849,488

ISOLATION AND PURIFICATION OF 3,4-DIHYDROXY PHENYLALANINE

Max Brenner, Spiegelbergstrasse 33, Basel, Switzerland

Filed Aug. 27, 1971, Ser. No. 175,520

Claims priority, application Switzerland, Aug. 27, 1970, 12,866/70

Int. Cl. C07c *101/72*

U.S. Cl. 260—519 **29 Claims**

1. A process for preparing pure 3,4-dihydroxy phenylalanine from an impure substance or from a mixture containing the said substance, characterized in that (1) the starting material is treated with an approximately equimolecular quantity of a lead salt in the presence of water, which lead salt is either a lead salt insoluble or slightly soluble in water, or a lead salt soluble in water, (2) the pH of the reaction mixture is brought to and maintained between 5 and 8 by means of a base, (3) the mother liquor is separated and the complex of 3,4-dihydroxy phenylalanine and lead, which is precipitated, is washed, the mother liquor and the washing waters being eliminated, (4*b*) the complex is decomposed by a diluted aqueous solution of an acid forming a lead salt soluble in water, employed in such a quantity and such a concentration that the resulting pH is between 2 and 5, (5*b*) the substance which precipitates and crystallizes is separated and washed and it consists of pure 3,4-dihydroxy phenylalanine while the soltuion and the washing waters contain a lead salt and (8) are recycled to stage (1) as an additional source of starting materials.

3,849,489

PURIFICATION OF TEREPHTHALIC ACID

Henryk S. Rudzki, 56 Via Capo le Case, Rome, Italy

Filed Jan. 21, 1971, Ser. No. 108,515

Int. Cl. C07c *51/42, 63/26*

U.S. Cl. 260—525 **3 Claims**

1. A process for the purification of impure terephthalic acid which comprises:

forming a first solution of ammonium terephthalate by contacting terephthalic acid to be purified with ammonia water containing from about 10 to about 35% by weight ammonia at a temperature of at least 10° C. and not in excess of 100° C. in an amount in excess of at least 150% of a stoichiometric quantity of ammonia needed to react with said terephthalic acid and in an amount necessary to form an unsaturated solution containing from 10 to 17% by weight reacted terephthalic acid so as to react said terephthalic acid with said ammonia to form ammonium terephthalate in an aqueous unsaturated solution,

separating ammonium terephthalate from the remainder of said solution,

decomposing said ammonium terephthalate to form a partially purified terephthalic acid product by heating said ammonium terephthalate at a temperature of at least about 275° C. at which impurities in said ammonium terephthalate are volatile and at a temperature at which said ammonium terephthalate decomposes to produce terephthalic acid, but at a temperature below about 300° C. so as to avoid sublimation of terephthalic acid,

forming a further solution of ammonium terephthalate by contacting said partially purified terephthalic acid with ammonia water containing from about 10 to about 35% by weight ammonia at a temperature of at least 10° C. and not in excess of 100° C. in an amount in excess of at least 150% of a stoichiometric quantity of ammonia needed to react with said terephthalic acid and in an amount necessary to form an unsaturated solution containing from 10 to 17% by weight reacted terephthalic acid so as to react said partially purified terephthalic acid with said ammonia to form ammonium terephthalate in an aqueous unsaturated solution,

separating said ammonium terephthalate from said further solution, and

decomposing said ammonium terephthalate to produce terephthalic acid by heating said ammonium terephthalate at a temperaure of at least 275° C. at which impurities in said ammonium terephthalate decompose to produce terephthalic acid, but at a temperature below 300° C. so as to avoid the sublimation of said ammonium terephthalate,

one of said separating steps and the decomposing step immediately following it being carried out by heating the solution treated during such step at its boiling point so as to separate said ammonium terephthalate, volatizing the remainder of said solution being separated and further heating the ammonium terephthalate so separated so as to decompose the same, and

the other of said separating steps being carried out by contacting the solution treated during such step with ammonia gas until ammonium terephthalate is precipitated and physically removing the precipitated ammonium terephthalate from the solution from which it is precipitated.

3,849,490
CYCLOHEXADIENYLAMIDOALKYLPHENYLSULFONYL UREAS

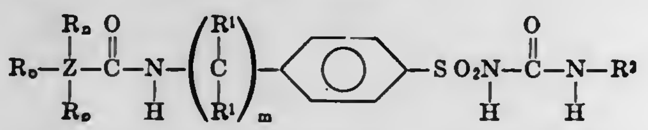
Berthold Richard Vogt, North Brunswick, Jack Bernstein, New Brunswick, and Frank Lee Weisenborn, Somerset, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed May 18, 1971, Ser. No. 144,678

Int. Cl. C07c ***127/00***

U.S. Cl. 260—553 DA **12 Claims**

1. A compound of the formula



wherein R is lower alkyl, lower alkoxy or halogen; *n* is 0 or 1; R^1 is H or alkyl of from 1 to 3 carbon atoms; *m* is 1, 2 or 3; Z is a cyclohexadienyl radical or a cyclohexadienyl radical which is mono- di- or tri-substituted by R; and R^2 is cycloalkyl or cycloalkene of from 5 to 8 carbon atoms or alkyl-substituted cycloalkyl or cycloalkene wherein the alkyl radical has from 1 to 3 carbon atoms.

3,849,491
PROCESS OF DEHALOGENATION AND DEHALOGENATION WITH SIMULTANEOUS REDUCTION OF 11a - HALO - 6 - DEOXY - 6 - DEMETHYL-6-METHYLENETETRACYCLINES BY HYDRAZINE

Ivan Villax, 1 Trevessa do Ferreiro, Lisbon 3, Portugal

No Drawing. Filed July 2, 1971, Ser. No. 159,458

Claims priority, application Portugal, July 3, 1970, 54,106, 54,107, 54,108

Int. Cl. C07c ***103/19***

U.S. Cl. 260—559 AT **5 Claims**

1. A process of dehalogenation and simultaneous dehalogenation and reduction of C6- of a 11a-chloro-6-deoxy-6-demethyl-6-methylenetetracycline, wherein the 11a-chloro derivative is dehalogenated at C11a- by equimolecular amounts of hydrazine to yield the respective 6-deoxy-6-demethyl-6-methylenetetracyclines, and simultaneously dehalogenated at 11a- and reduced at C6- by at least two equimolecular amounts of hydrazine to yield the respective 6-deoxytetracyclines, in the presence of catalytic amounts of a noble metal catalyst selected from the group consisting of palladium, platinum, and rhodium in an inert reaction medium, and the compounds thus formed are recovered subsequently from the reaction mixture.

3,849,492
BIS-SALICYLOYL-HYDRAZINES

Heimo Brunetti, Reinach, Kurt Schwarzenbach, Aesch, and Andreas Schmidt, Reinach, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

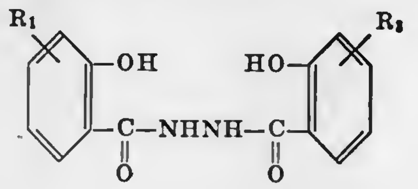
No Drawing. Filed Oct. 4, 1971, Ser. No. 186,393

Claims priority, application Switzerland, Oct. 8, 1970, 14,967/70; Aug. 16, 1971, 11,997/71

Int. Cl. C07c ***109/10***

U.S. Cl. 260—559 H **2 Claims**

1. A compound of the formula



wherein

R_1 and R_3 independently of one another are a member selected from the group consisting of acetoxy, propionyloxy, butyryloxy, isobutyryloxy, valeryloxy, caproyloxy, 2-ethylcaproyloxy, lauryloxy, capryloxy, myristyloxy, palmityloxy, stearyloxy, acrylyloxy, methacrylyloxy, crotonyloxy, isocrotonyloxy, oleoyloxy, benzoyloxy, and phenylacetoxy.

3,849,493
D-RING SUBSTITUTED 6-DEOXYTETRACYCLINES

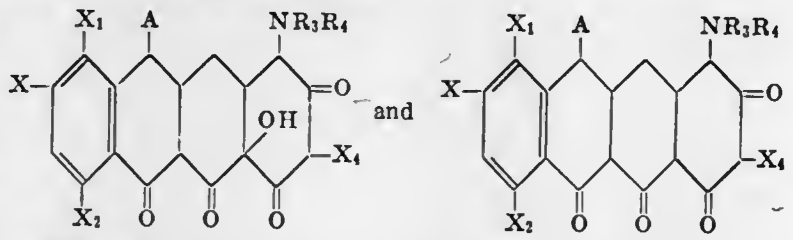
Lloyd H. Conover, Barham, near Canterbury, England, and Robert B. Woodward, Belmont, Mass., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Application Oct. 31, 1969, Ser. No. 873,077, now Patent No. 3,697,552, which is a division of application Ser. No. 569,052, Aug. 1, 1966, now Patent No. 3,509,184, which is a continuation-in-part of application Ser. No. 209,269, July 11, 1962, which in turn is a continuation-in-part of application Ser. No. 132,304, Aug. 18, 1961, both now abandoned. Divided and this application Mar. 7, 1972, Ser. No. 232,609

Int. Cl. C07c ***103/19***

U.S. Cl. 260—559 AT **6 Claims**

1. A compound selected from the group consisting of those having the formulae



wherein

X is selected from the group consisting of amino, mono-lower alkylamino, alkanoylamino having 2 to 4 carbon atoms, lower alkyl and lower alkoxy;

X_1 is selected from the group consisting of hydrogen and chloro;

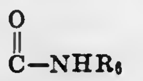
X_2 is selected from the group consisting of hydroxy and lower alkoxy;

A is selected from the group consisting of hydrogen and lower alkyl;

R_3 and R_4 when taken together with the nitrogen atom to which they are attached form a nitrogen heterocyclic ring selected from the group consisting of piperazino, piperidino, morpholino, pyrrolo, thiomorpholino, pyrrolidino and 2-(lower carbalkoxy)pyrrolidino;

R_3 and R_4 when taken separately are each selected from the group consisting of hydrogen, alkanoyl having 1 to 4 carbon atoms, and CH_2B_1 wherein B_1 is selected from the group consisting of hydrogen, lower alkyl and mono-substituted lower alkyl, said substituent being selected from the group consisting of hydroxy and lower alkoxy; provided that only one of said R_3 and R_4 substituents is selected from the group consisting of alkanoyl having 1 to 4 carbon atoms;

X_4 is selected from the group consisting of cyano and



$$\overset{O}{\overset{\|}{C}}—NHR_6$$

wherein R_6 is selected from the group consisting of hydrogen and lower alkyl.

3,849,494
TRIFLUOROMETHYLBENZOPHENONE O-ACYLOXIMES USEFUL AS CROP YIELD INCREASERS FOR PLANTS

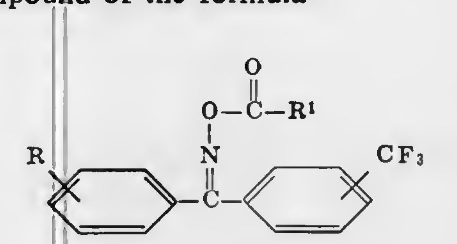
William Joseph Middleton, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 18, 1973, Ser. No. 324,878

Int. Cl. C07c ***131/00***

U.S. Cl. 260—566 AE **8 Claims**

1. A compound of the formula



R is H, methyl, trifluoromethyl or methoxy; and wherein

R^1 is phenyl, alkyl or haloalkyl of up to 11 carbon atoms.

3,849,495
REDUCING PRIMARY ARYLAMINE IMPURITIES IN DIARYLAMINES

Norman Gunning Bromby, Hexagon House, Blackley, Manchester, England

No Drawing. Filed Mar. 27, 1972, Ser. No. 238,581

Int. Cl. C07c ***85/16***

U.S. Cl. 260—576 **4 Claims**

1. A process for reducing, in a diarylamine selected from the group consisting of diphenylamine, diphenyl-p-phenylenediamine, di-β-naphthyl - p - phenylenediamine, phenyl-β-naphthylamine and phenyl-α-naphthylamine, the amount of corresponding primary arylamine present therein as an impurity, said process consisting essentially of heating said diarylamine with a member selected from the group consisting of phthalic acid, glutaric acid, succinic acid and a 1:6:3 mixture of adipic, glutaric and succinic acids, and anhydrides of said acids in amounts of 0.25 to 5.0 percent of the weight of said diarylamine so as to react with a major amount of said primary arylamine.

3,849,496
PREPARATION OF AMINES FROM AMINE SALTS

Denis Forster, University City, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 177,489, Sept. 2, 1971. This application June 18, 1973, Ser. No. 371,090

Int. Cl. C07c ***85/16***

U.S. Cl. 260—583 N **5 Claims**

1. Process for the preparation of amines from amine hydrochlorides which comprises contacting the said amine hydrohalide with an anhydrous high boiling organic solvent having a boiling point in the range of from 50° C. to 350° C., and characterized by a boiling point at least 30° C. higher than the said anhydrous amine, the said contacting being conducted in the presence of an excess of at least 50 wt. percent of ammonia beyond the stoichiometric portion required to neutralize the aforesaid amine hydrohalide with a resultant formation of two liquid phases, respectively, comprising (a) ammonia and dissolved ammonium halide, and (b) the high boiling solvent containing the free amine, and thereafter separating the said liquid phases.

3,849,497
THIOMETHYLATED BENZOPHENONES

Hans-Georg Heine and Hans-Jurgen Rosenkranz, Krefeld, and Hans Rudolph, Krefeld-Bockum, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

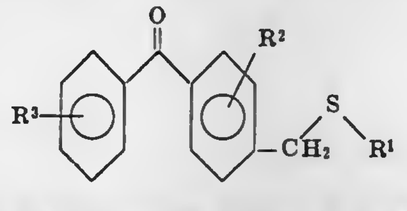
No Drawing. Filed Nov. 2, 1972, Ser. No. 303,121

Claims priority, application Germany, Nov. 5, 1971, P 21 55 000.5

Int. Cl. C07c ***49/80, 49/82***

U.S. Cl. 260—591 **1 Claim**

1. Thiomethylated benzophenones of the formula



wherein R^1 is phenyl, naphthyl, benzyl, phenethyl or one of said radicals substituted by alkyl having 1 to 5 carbon atoms, chlorine, bromine, methoxy or ethoxy; R^2 is hydrogen or alkyl having 1 to 5 carbon atoms and R^3 is hydrogen, methoxy, ethoxy, methyl or $—CH_2—SR^1$.

3,849,498
METHOD OF PREVENTING THE POLYMERIZATION OF UNSATURATED ALDEHYDE

Ryozi Sato, Takaoka, and Yasuyoshi Chino, Tokyo, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

No Drawing. Filed Dec. 22, 1971, Ser. No. 211,106

Claims priority, application Japan, Dec. 26, 1970, 45/119,037

Int. Cl. C07c ***47/20, 47/22***

U.S. Cl. 260—601 R **6 Claims**

1. A stabilized solution consisting essentially of an alkanol solution of an aldehyde monomer selected from the group consisting of acrolein and methacrolein, said alkanol having 1 to 8 carbon atoms and from 0.001 to 1% by weight, based on the weight of said monomer, of a hydroxylamine compound selected from the group consisting of N-alkylhydroxylamine having from 1 to 8 carbon atoms in the alkyl group, N,N-dialkylhydroxylamine having from 1 to 8 carbon atoms in each alkyl group and N,N-dicyclohexylhydroxylamine.

3,849,499
METHOD FOR PREPARING SULFOXIDES AND SULFONES

Alexandr Dmitrievich Malievsky, Malaya Dorogomilovskaya ulitsa 14, kv. 34; Viktor Vladimirovich Vints, Sumskaya ulitsa 6, korpus 4, kv. 116; Nikolai Markovich Emanuel, Vorobievskoe shosse 2"b", kv. 44; and Viktor Nikolaevich Parfenov, Uchinskaya ulitsa 1a, kv. 58, all of Moscow, U.S.S.R.

No Drawing. Filed May 17, 1972, Ser. No. 254,238

Int. Cl. C07c ***147/00***

U.S. Cl. 260—607 A **5 Claims**

1. A method for preparing a dialkyl sulfoxide or sulfone having 1 to 6 carbon atoms in each alkyl group comprising oxidizing a dialkyl sulfide or sulfoxide having 1 to 6 carbon atoms in each alkyl group with atmospheric oxygen in the presence of a readily oxidizable compound selected from the group consisting of acetaldehyde, propionaldehyde and methyl ethyl ketone at a room temperature of from 20° to 130° C. and isolating the resultant product.

3,849,500

WITHDRAWN

3,849,501

PROCESS FOR CONVERTING ETHOXYLATED ALKYL MERCAPTANS TO THEIR OIL SOLUBLE FORM USING ALKYLATED PHENOLS

**Frederic C. McCoy, 48 W. Willow St.,
Beacon, N.Y. 12508**

No Drawing. Original application Dec. 27, 1968, Ser. No. 787,567. Divided and this application Dec. 13, 1971, Ser. No. 207,621

Int. Cl. C07c *149/36*
U.S. Cl. 260—609 F **3 Claims**

1. A process for converting ethoxylated alkyl mercaptan substrates normally being insoluble in a 0.10% by weight solution of mineral oil at 75° F. to 80° F., to their oil soluble form, said substrates being of the formula:

$$R—S(CH_2CH_2O)_nH$$

wherein R is an alkyl radical of from 2 to 22 carbon atoms and $n=1$ to 30, by the process of:

(a) admixing each part by weight portion of said substrate to be solubilized, with

(b) a two to eight parts by weight of alkylated phenol, wherein the alkylating groups contain from 9 to 16 carbon atoms, at temperatures up to 175° F., until said oil-soluble form is produced.

3,849,502

HYDROXYLATION OF AROMATIC COMPOUNDS

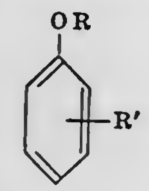
Francois Bourdin and Michel Costantini, Lyon, Michel Jouffret, Francheville-le-Bas, and Guy Lartigau, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Dec. 23, 1970, Ser. No. 101,149

Claims priority, application France, Dec. 30, 1969, 6945467

Int. Cl. C07c *37/00*
U.S. Cl. 260—613 D **7 Claims**

1. Process for hydroxylating an aromatic compound of the general formula:



in which R and R′, which are identical or different, each represent a hydrogen atom or an alkyl radical having 1 to 4 carbon atoms, wherein the aromatic compound is treated

at 20–150° C. with hydrogen peroxide in an amount such that the molecular ratio of hydrogen peroxide to the aromatic compound is below 0.3:1,

in the substantial absence of metal ions and in the presence of a catalytic amount of a strong acid having a $pK\ H_2O$ value below −0.1 and which is stable to oxidation by hydrogen peroxide, the amounts of hydrogen peroxide and strong acid being such that the ratio of the amount of acid, expressed in proton equivalents, to the number of molecules of hydrogen peroxide taking part in the reaction is $1\times10^{-4}:1$ to 1:1, the content of water in the reaction medium being initially below 20% by weight of the aromatic compound/water/hydrogen peroxide mixture, and

wherein the hydroxylation is carried out in the presence of a complexing agent selected from the groups consisting of a phosphoric acid, an alkyl acid phosphate, a cycloalkyl acid phosphate and a benzyl acid phosphate.

3,849,503

DIPHENYLETHERS HAVING HERBICIDAL PROPERTIES

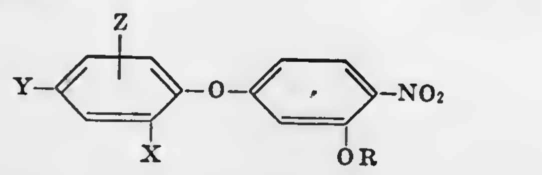
Itaru Shigehara, Kusatsu, Ryuyo Nishiyama, Kyoto, and Ryohei Takahashi, Kanichi Fujikawa, Tadaaki Toki, Hidetoshi Takagi, Rikuo Nasu, Isao Yokomichi, Fumio Kimura, and Shinzo Someya, Kusatsu, Japan, assignors to Ishihara Sangyo Kaisha Ltd., Nishiku, Osaka, Japan

No Drawing. Original application Oct. 14, 1970, Ser. No. 80,807. Divided and this application Dec. 21, 1972, Ser. No. 317,155

Claims priority, application Japan, Oct. 14, 1969, 44/81,971; Apr. 22, 1970, 45/33,793; May 6, 1970, 45/37,902, 45/37,903; June 5, 1970, 45/47,929

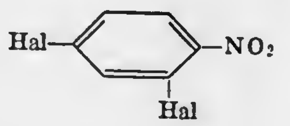
Int. Cl. C07c *43/20*
U.S. Cl. 260—613 R **6 Claims**

1. A process for producing a diphenylether having the general formula:



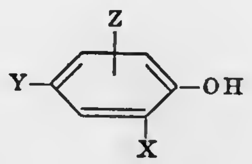
(I)

wherein X represents a halogen atom or a methyl radical in the 2-position; Y represents a halogen atom or an alkyl radical having up to 3 carbon atoms in the 4-position; Z represents hydrogen or halogen in the 5- and 6-positions, wherein both the 5- and 6-positions may be hydrogen, but only one of the 5- or 6-positions may be halogen; and R represents a saturated or an unsaturated hydrocarbon having up to 3 carbon atoms, methoxyethyl or an ethoxyethyl radical, which comprises reacting in the presence of an alkali metal hydroxide or carbonate a 2,4-dihalonitrobenzene having the general formula:



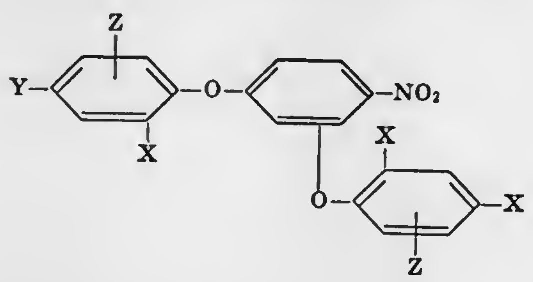
(II)

wherein Hal is a halogen atom, with a substituted phenol having the general formula:



(III)

wherein the molar ratio of the phenol to the 2 4-dihalonitrobenzene is at least 2:1, at a temperature of from 130° C. to 160° C. to produce a 2,4-bis(substituted phenoxy) nitro benzene having the general formula:



(IV)

then reacting said 2,4-bis(substituted phenoxy) nitrobenzene (IV) in the presence of an alkali metal hydroxide with an alcohol of the formula ROH wherein R is as defined above at a temperature of 20–100° C. to produce said diphenylether (I) and a substituted phenol (III) and thereafter isolating said diphenylether (I).

3,849,504

PERFLUOROPOLYETHERS AND PROCESS FOR MAKING

Ronald A. Mitsch, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

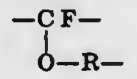
No Drawing. Continuation-in-part of abandoned application Ser. No. 622,099, Mar. 10, 1967. This application Sept. 27, 1968, Ser. No. 763,357

Int. Cl. C07c *43/12;* **C08g** *22/04*
U.S. Cl. 260—615 BF **1 Claim**

1. Polyperfluoroalkylene oxides having molecular weights in the range of 500 to 15,000, carbon-to-oxygen backbone ratios from 2:1 to 20:1, an average of 2.1 to 5 methylol end groups, and backbones consisting of repeating units of the structure

$$-(C_mF_{2m})-O-(C_nF_{2n})- \qquad \text{I}$$

where *m* and *n* are integers of 1 to 7, and one or more randomly distributed branched units of the structure



$$\begin{array}{l}-CF-\\ \ \ |\\ \ \ O-R-\end{array} \qquad \text{II}$$

where R is a side chain made of the repeating units of said structure I.

3,849,505

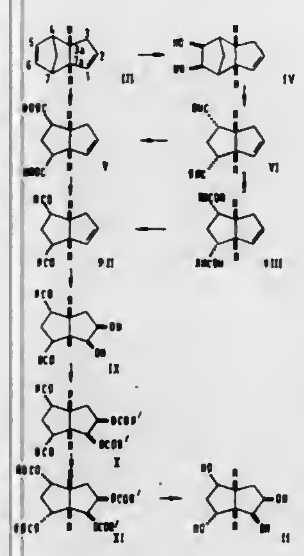
BICYCLIC POLYOLS

Stephen Turner, Swanland, England, assignor to Reckitt & Colman Products Limited, Hull, Yorkshire, England

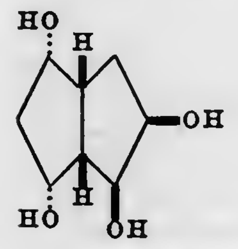
Filed Sept. 12, 1972, Ser. No. 288,385

Claims priority, application Great Britain, Sept. 24, 1971, 44,758/71

Int. Cl. C07c *35/22*
U.S. Cl. 260—617 F **1 Claim**



1. A racemic compound having the formula



II

3,849,506

1,2-DIMETHYL CYCLOOCTADIENE-1,5

Gunther Wilke and Paul Heimbach, Mulheim (Ruhr), Germany, assignors to Studiengesellschaft Kohle m.b.H., Mulheim (Ruhr), Germany

No Drawing. Division of applications Ser. No. 843,220, July 18, 1969, now Patent No. 3,586,727, Ser. No. 845,901, July 29, 1969, now Patent No. 3,629,347, and Ser. No. 845,904, July 29, 1969, now abandoned, of which each in turn is a continuation-in-part of application Ser. No. 532,900, Mar. 9, 1966, application Ser. No. 104,221, Apr. 20, 1961, now abandoned, application Ser. No. 76,520, Dec. 19, 1960, now abandoned, application Ser. No. 203,753 June 20, 1962, now abandoned, and application Ser. No. 582,775, Sept. 27, 1966, now abandoned. Divided and this application Jan. 26, 1971, Ser. No. 109,949

Claims priority, application Germany, Sept. 29, 1965, St 24,439

Int. Cl. C07c *13/26*
U.S. Cl. 260—666 A **1 Claim**

1. 1,2-dimethyl cyclooctadiene-1,5.

3,849,507

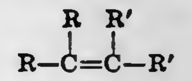
ALKYLATION OF AROMATIC HYDROCARBONS USING A COMPACTED MONTMORILLONITE CLAY CATALYST

Ernest A. Zuech, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Mar. 2, 1973, Ser. No. 337,371

Int. Cl. C07c *3/52*
U.S. Cl. 260—671 C **7 Claims**

1. A process for the alkylation of an aromatic hydrocarbon which comprises reacting the aromatic hydrocarbon with an acyclic olefin having the formula



$$\begin{array}{c}\ \ R\ \ \ R'\\ \ \ |\ \ \ \ |\\ R-C=C-R'\end{array}$$

wherein R is hydrogen or R′, and R′ is an alkyl radical having from one to six carbon atoms, in the liquid phase in the presence of an alkylation catalyst comprising montmorillonite clay which has been compacted into tablets, each tablet having a crushing strength of from 3 to 15 pounds.

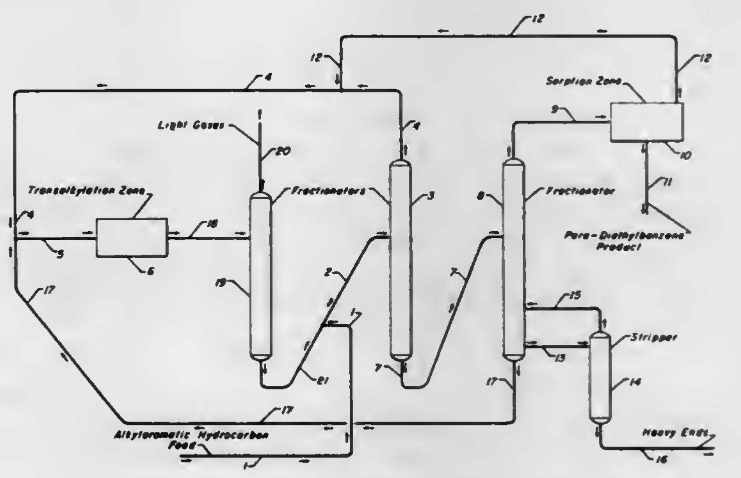
3,849,508

PROCESS FOR PRODUCING PARA-DIETHYLBENZENE

Harry M. Van Tassell, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 10, 1973, Ser. No. 387,395

Int. Cl. C07c *3/62*
U.S. Cl. 260—672 T **9 Claims**



1. A process for producing a para-diethylbenzene product from a hydrocarbon feedstock comprising an alkyl-

aromatic hydrocarbon selected from the group consisting of ethylbenzene, diethylbenzenes, triethylbenzenes, tetraethylbenzenes, pentaethylbenzene and hexaethylbenzens, which comprises the steps of:

(a) admixing with said feedstock at least a portion of a transalkylation zone effluent comprising benzene, ethylbenzene, para-diethylbenzene, meta-diethylbenzene, ortho-diethylbenzene and polyethylbenzenes, said effluent being formed as hereinafter specified, and separating at least a portion of the resulting mixture to provide a low-boiling stream comprising benzene and ethylbenzene, an intermediate-boiling stream comprising para-diethylbenzene, meta-diethylbenzene and orthodiethylbenzene, and a high-boiling stream comprising polyethylbenzenes;

(b) contacting at least a portion of said intermediate-boiling stream with a zeolitic crystalline aluminosilicate sorbent in a sorption zone at sorption conditions to separate paradiethylbenzene from said intermediate-boiling stream and form a para-diethylbenzene-lean stream comprising meta-diethylbenzene and ortho-diethylbenzene, and recovering the resulting separated para-diethylbenzene from said sorption zone as said product;

(c) removing said para-diethylbenzene-lean stream from said sorption zone, contacting at least a portion of said paradiethylbenzene-lean stream, at least a portion of said high-boiling stream and at least a portion of said low-boiling stream with a transalkylation catalyst in a transalkylation zone at transalkylation conditions, and removing from said transalkylation zone said transalkylation zone effluent.

3,849,509
POLYALKENAMERS AND PROCESS FOR THE PREPARATION THEREOF

Roland Streck and Heinrich Weber, Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Original application June 11, 1971, Ser. No. 152,374, now Patent No. 3,798,175. Divided and this application June 11, 1973, Ser. No. 368,710

Claims priority, application Germany, June 12, 1970, P 20 28 935.4

Int. Cl. C07c *11/00, 3/60*

U.S. Cl. 260—677 R **17 Claims**

1. A process for the production of polyalkenamers by the catalyzed ring-opening polymerization of cyclic olefins employing a catalyst containing a metal of Subgroups 5 to 7 of the Periodic Table which comprises conducting the polymerization in the presence of an unsaturated carboxylic acid ester wherein the ester group is separated from the double bonded carbon atom by at least one methylene group or the single bonded oxygen atom of the ester group and at least one of the carbon atoms having the double bond has at least one hydrogen atom.

3,849,510
HYDROGEN TRANSFER PROCESS

Federico Maspero, Milan, and Emilio Perrotti, San Donato Milanese, Italy, assignors to Snam Progetti, S.p.A., San Donato Milanese, Italy

No Drawing. Filed Oct. 13, 1971, Ser. No. 189,050

Claims priority, application Italy, Oct. 13, 1970, 30,898/70

Int. Cl. C07c *5/02, 5/18*

U.S. Cl. 260—680 R **6 Claims**

1. A process for transforming an olefinic compound into a mixture of compounds which comprise a compound that is the corresponding saturated hydrocarbon and a compound that is the corresponding diolefin, said process comprising passing an olefin over $(Ir(P(C_6H_5)_3)_2)_2$, said process being carried out at a pressure equal to or higher than atmospheric pressure.

3,849,511
OXIDATIVE DEHYDROGENATION WITH MANGANESE FERRITE CATALYST

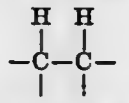
Harold E. Manning, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

No Drawing. Original application Oct. 7, 1970, Ser. No. 78,956, now Patent No. 3,751,385. Divided and this application July 30, 1973, Ser. No. 385,012

Int. Cl. C07c *5/18*

U.S. Cl. 260—680 E **7 Claims**

1. In a process for oxidative dehydrogenation of hydrocarbons having 2 to 12 carbon atoms, at least one



$$-\overset{\displaystyle H}{\underset{|}{\overset{|}{C}}}-\overset{\displaystyle H}{\underset{|}{\overset{|}{C}}}-$$

grouping and a boiling point below about 350° C. in vapor phase comprising contacting said hydrocarbons in the presence of oxygen at a temperature of greater than 250° C. with a catalyst wherein the improvement comprises employing as the catalyst a manganese ferrite containing 0.1 to 20 weight percent of carbon black prepared by intimately mixing said carbon black with the precursors of the manganese ferrite and then reacting the precursors to form the manganese ferrite in an atmosphere containing less than 15 mole percent oxygen.

3,849,512
ISOPRENE PREPARED BY THE CATALYTIC DEHYDRATION OF 2-METHYL-2,3-BUTANEDIOL

William G. Bowman, Pasadena, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

No Drawing. Filed Dec. 10, 1970, Ser. No. 96,975

Int. Cl. C07c *1/24*

U.S. Cl. 260—681 **10 Claims**

1. A process for the dehydration of 2-methyl-2,3-butanediol consisting essentially of contacting 2-methyl-2,3-butanediol in the vapor phase with a catalyst at a temperature in the range of 200 to 500° C., said catalyst being thorium oxide and lithium phosphate in which the lithium phosphate has a substantially neutral pH and wherein the thorium oxide and lithium phosphate are maintained separate and distinct from each other, in discrete beds, said 2-methyl-2,3-butanediol contacting said thorium oxide bed first and then subsequently contacting said lithium phosphate.

3,849,513
DISPROPORTIONATION PROCESS

Gerald Doyle, Somerville, N.J., assignor to Exxon Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 862,970, Oct. 1, 1969, now Patent No. 3,686,136. This application June 8, 1972, Ser. No. 260,826

Int. Cl. C07c *3/62*

U.S. Cl. 260—683 D **15 Claims**

1. A process for the disproportionation of olefins, which comprises contacting a feedstream containing at least one olefinic compound capable of being disproportionated with a catalyst which is prepared by contacting a carbonyl complex having the general formula $R[M(CO)_aX_b]$ wherein R is selected from the group consisting of alkali metal ions and cations of the type J_4Q wherein Q is selected from the group consisting of nitrogen, phosphorous, arsenic, and antimony, and J is selected from the group consisting of hydrogen, hydrocarbyl radicals, and the halogenated and oxygenated derivatives thereof, having up to 30 carbon atoms, M is a Group VI transition metal, X is a uninegatively charged ligand, selected from the group consisting of halide, cyanide, cyanate, thiocyanate, azide, C_1 to C_{20} alkoxide radicals, C_1 to C_{20} carboxylate radicals, and the halogenated derivatives thereof, *a* is an integer from 1 to 5, and *b* is an integer of from 1 to 3, with an activator, said activator comprising a compound selected from the group consisting of

compounds having the general formula r_nLY_m wherein *r* is independently selected from the group consisting of hydrogen, hydrocarbyl radicals, and the halogenated and oxygenated derivatives thereof, said activator containing up to 30 carbon atoms, L is selected from the group consisting of Group I–A, II–A and III–A metals, said metals having an atomic number of from 3 to 31, Y is a halogen radical, *n* is an integer of from 1 to 3, and *m* is an integer of from 0 to 3, *n* and *m* having a total equal to the valence of L, at a temperature of from about −100 to +150° C. and a pressure of between 0.1 and 1000 atmospheres, the molar ratio of the activator to carbonyl complex varying between 0.5:1 and 50:1, whereby said olefinic compound is disproportionated.

3,849,514
BLOCK POLYESTER-POLYAMIDE COPOLYMERS

Theodore F. Gray, Jr., and Kenneth R. Barton, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 683,789, Nov. 17, 1967. This application Sept. 5, 1969, Ser. No. 856,907

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 PE **14 Claims**

1. A block polyester-polyamide copolymer terminated with ester or hydroxyester end groups prepared by catalytically reacting the terminal groups of a prepolyamide and a prepolyester by means of an ester interchange reaction:

(A) a prepolyamide, having an inherent viscosity of at least about 0.1 and terminated with hydroxyester or ester end groups, said prepolyamide having been prepared from damine component and a second component selected from the group consisting of:

  (1) a molar excess of a diester of a difunctional dicarboxylic acid, and

  (2) a dicarboxylic acid and a terminating agent selected from the group consisting of monohydric and dihydric alcohols, wherein said acid is used in a molar amount greater than that for said diamine and wherein said terminating agent is added after the reaction between said diamine and said acid in an amount of one mole per equivalent of excess acid present, and

(B) a prepolyester, having an inherent viscosity of at least about 0.1 and terminated with hydroxy end groups, said prepolyester having been prepared from a difunctional dicarboxylic acid and a molar excess of a difunctional diol,

(C) said block copolymer having being stabilized against randomination in the molten state and having a polyamide content of from about 10–60% by weight of the block copolymer, and an inherent viscosity of at least 0.5.

3,849,515
PROCESS FOR THE PREPARATION OF POLYETHER/POLYESTER BLOCK COPOLYMERS

Erwin Muller, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 23, 1973, Ser. No. 335,266

Claims priority, application Germany, May 7, 1972, P 22 10 839.0

Int. Cl. C08g *39/10*

U.S. Cl. 260—860 **10 Claims**

1. A process for the preparation of polyether/polyester block copolymers which comprises condensing, in the presence of an etherification catalyst at a temperature 130° C.–220° C., hydroxyl saturated polyesters and hydroxyl polyethers each containing free hydroxyl groups, said polyester has a molecular weight of 250–3000 and said polyether has a molecular weight of 500–3000, the molar ratio of polyester to polyether being from about 5:1 to about 1:5.

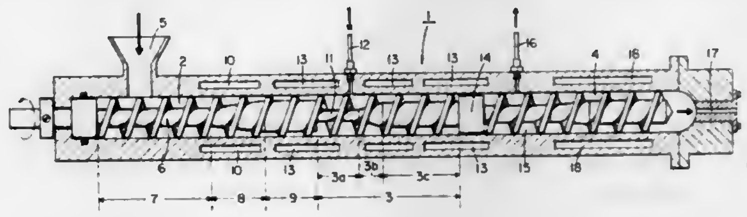
3,849,516
GRAFTED POLYOLEFINS AS STABILIZER COMPONENTS IN POLYOLEFINS

Don A. Plank, Baytown, Tex., assignor to Exxon Research and Engineering Company

Filed Apr. 3, 1972, Ser. No. 240,738

Int. Cl. C08f *29/12*

U.S. Cl. 260—876 R **12 Claims**



1. An oxidatively stabilized composition exhibiting outstanding resistance to oxidative degradation which comprises in combination:

(a) a major portion of a C_2 to C_8 thermoplastic or elastomeric polyolefin constituent having a greater tendency to oxidative degradation than said composition;

(b) at least one conventional antioxidant stabilizer system; and

(c) sufficient C_3 to C_{10} unsaturated carboxylic acid grafted C_3 to C_8 thermoplastic or elastomeric polyolefin additive to incorporate from about .05 to 1.0 weight percent of grafted component into said constituent polyolefin wherein said additive has been prepared by extruder grafting of a base polyolefin and said additive is degraded in molecular weight from said base polyolefin as evidenced by an increase of at least 25% in the MFR of said additive as compared to the MFR of said base polyolefin.

3,849,517
TETRAPOLYMER-TERPOLYMER BLENDS

Tsuneichi Takeshita, 4 Alton Road, Polly Drummond Hill, Newark, Del. 19711

No Drawing. Original application Apr. 15, 1971, Ser. No. 134,448, now abandoned. Divided and this application Apr. 2, 1973, Ser. No. 346,833

Int. Cl. C08f *29/00, 29/02*

U.S. Cl. 260—876 R **6 Claims**

1. A uniform blend of about 15–40 weight percent of the elastomeric tetrapolymer ethylene/C_3–C_{12} alpha-monoolefin/maleic anhydride/and C_6–C_{22} nonconjugated diene with about 60–85 weight percent of the elastomeric terpolymer ethylene/C_3–C_{12} alpha monoolefin/and C_6–C_{22} nonconjugated diene wherein said tetrapolymer and terpolymer each contain, by weight, about 20–75 percent ethylene units, 15–80 percent C_3–C_{12} alpha-monoolefin units, 2–10 percent nonconjugated diene units, the balance being maleic anhydride units.

3,849,518
PROCESS FOR PREPARING IMPACT-RESISTANT POLYMERIC COMPOSITIONS CONTAINING GRAFT COPOLYMERS

Febo Severini, Alberto Valvassori, and Carlo Tavazzani, Milan, and Alberto Pagliari, Saronno, Italy, assignors to Montecatini Edison S.p.A., Foro Buonaparte, Milan, Italy

No Drawing. Filed Dec. 18, 1972, Ser. No. 315,879

Claims priority, application Italy, Dec. 24, 1971, 32,893/71

Int. Cl. C08f *15/00*

U.S. Cl. 260—878 R **3 Claims**

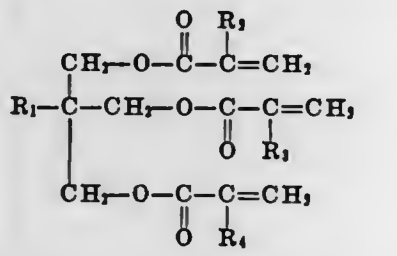
1. A process for preparing impact-resistant polymeric compositions comprising graft polymerizing at least one ethylenically unsaturated monomer selected from the

group consisting of styrenes, acrylonitrile, methacrylonitrile, styrene/acrylonitrile mixtures, alkyl acrylates, alkyl methacrylates, vinyl chloride and vinyl acetate onto an elastomer selected from the group consisting of saturated copolymers of ethylene and an α-olefin and low unsaturation copolymers of ethylene, an α-olefin and a diene or polyene hydrocarbon, wherein said elastomer is dissolved in a solvent selected from the group consisting of n-butane, propane and mixtures thereof.

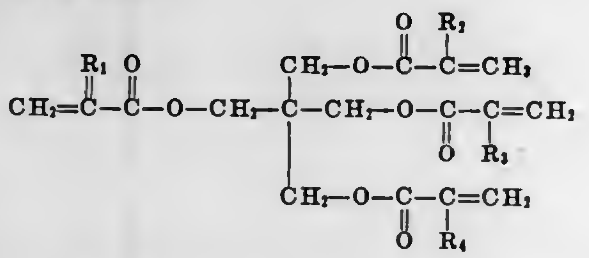
3,849,519
CHLOROPRENE ELASTOMER COMPOSITION

Takashi Kadowaki, Michio Dohi, and Katsuichi Yokobori, Omi-machi, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed Apr. 30, 1973, Ser. No. 355,344
Claims priority, application Japan, June 22, 1972, 47/62,663
Int. Cl. C08f *15/02, 15/06*
U.S. Cl. 260—890 9 Claims

1. A chloroprene elastomer composition which comprises a blend of (1) 20–80 parts by weight of a gel polymer prepared by polymerizing chloroprene monomer or a mixture of chloroprene monomer and no more than 20% of a comonomer in the presence of 1–10 wt. percent of a trifunctional cross-linking monomer based on the total monomer content of said gel polymer having the formula



wherein R_1 represents a hydrogen atom, or a methyl or ethyl group; R_2, R_3 and R_4 respectively represent hydrogen atoms or methyl groups, or in the presence of 1–10 wt. percent of a tetrafunctional cross-linking monomer based on the total monomer content of said gel polymer having the formula



wherein R_1, R_2, R_3 and R_4 represent hydrogen atoms or methyl groups; and (2) 80–20 parts by weight of a sol prepared by polymerizing chloroprene monomer or a mixture of chloroprene and no more than 20% of a comonomer.

3,849,520
RESINOUS BLEND AND ORIENTED SHRINK FILM COMPRISING POLYPROPYLENE, POLYBUTENE AND ETHYLENE/BUTENE COPOLYMER

Edward M. Bullard, South Orange, and Malcolm P. Schard, Washington Township, N.J., assignors to Mobil Oil Corporation
No Drawing. Filed Jan. 17, 1973, Ser. No. 324,265
Int. Cl. C08f *29/12*
U.S. Cl. 260—897 A 7 Claims

1. A resinous blend composition comprising:
- (A) from about 50% up to about 95% by weight of a high isotactic content polypropylene resin; and
- (B) from about 5% to about 50% by weight of a resinous mixture comprising:
  - (a) from about 10% up to about 75% by weight of a high isotactic content polybutene; and
  - (b) from about 25% up to about 90% by weight of a high isotactic content ethylene/butene-1 copolymer resin containing from about 0.1% to less than 10% by weight ethylene.

3,849,521
OIL- AND WATER-REPELLENT COMPOSITION COMPRISING A POLYMER CONTAINING FLUOROALKYL MONOMER UNITS AND AN ADDITIVE COPOLYMER

Kazusuke Kirimoto, Takao Hayashi, and Hiroaki Kojima, Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan
No Drawing. Filed Sept. 19, 1972, Ser. No. 290,332
Int. Cl. C08f *29/22*
U.S. Cl. 260—900 6 Claims

1. In an oil- and water-repellent composition, which comprises:

an oil- and water-repellent polymer containing units of a fluoroalkyl monomer and an additive copolymer containing 90 to 99 weight percent monomer units having the formula:

$$CR_1R_2{=}CR_3COOR_4$$

wherein R_1, R_2 and R_3 represent hydrogen atoms or methyl groups, and R_4 represents C_{1-18} alkyl groups and 1–10 weight percent of monomer units of the formula:

$$CH_2{=}CR_5CONHCH_2OH$$

wherein R_5 represents hydrogen or methyl; the improvement which comprises:

an oil- and water-repellent polymer containing at least 25 weight percent fluoroalkyl monomer units having C_{3-15} per fluoroalkyl groups and containing 15 to 0.1 weight percent acrylamide derivative monomer units selected from the group consisting of diacetoneacrylamide, diacetonemethacrylamide, a lower alkylol diacetoneacrylamide and a lower alkylol diacetonemethacrylamide.

3,849,522
BIS((1-OXO-2,6,7-TRIOXA - 1 - PHOSPHA BICYCLO [2.2.2]OCT-4-YL)METHYL) 2,5 DIBROMOTEREPHTHALATE

William A. Hills, Trenton, N.J., assignor to FMC Corporation, New York, N.Y.
No Drawing. Filed June 11, 1973, Ser. No. 368,732
Int. Cl. C07d *105/04;* **C08f** *45/58*
U.S. Cl. 260—927 R 1 Claim

1. Bis((1 - oxo - 2,6,7 - trioxa - 1 - phosphabicyclo [2.2.2]-oct-4-yl)methyl) 2,5-dibromoterephthalate.

3,849,523
PHOSPHORUS COMPOUNDS CONTAINING THE ATOM SKELETON P—(C—P)₂ OR P—(C—P)₃

Ludwig Maier, Zurich, Switzerland, assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Dec. 14, 1967, Ser. No. 690,418
Claims priority, application Switzerland, Dec. 16, 1966, 18,210/66; Dec. 21, 1966, 18,334/66; Dec. 23, 1966, 18,505/66
Int. Cl. C07f *9/38*
U.S. Cl. 260—932 4 Claims

1. A composition of matter having the formula:

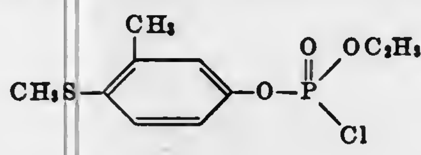
$$[(RO)_2P(:O)CH_2]_xP(:O)(OR')_{3-x}$$

where *x* is 2 and the R and R' are independently selected from the group consisting of H and alkyl of 1 to 12 carbons.

3,849,524
O-ETHYL-O-(3-METHYL - 4 - METHYLMERCAPTO-PHENYL)PHOSPHORIC ACID DIESTER CHLORIDE

Reimer Colln, Wuppertal-Elberfeld, and Wolfgang Hofer, Fritz Maurer, and Lothar Rohe, Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Oct. 18, 1972, Ser. No. 298,728
Claims priority, application Germany, Oct. 28, 1971, P 21 53 793.9
Int. Cl. C07f *9/14*
U.S. Cl. 260—949 1 Claim

1. O - ethyl - O -(3-methyl-4-methylmercaptophenyl)-phosphoric acid diester chloride of the formula



3,849,525
PROCESS OF MANUFACTURING POLYMER PARTICLES OF IRREGULAR SHAPE

Hendrik Adriaan Jacobus Battaerd, North Clayton, Victoria, Australia, assignor to ICI Australia Limited, and Commonwealth Scientific and Industrial Research Organization, Melbourne, Victoria, Australia
No Drawing. Filed May 22, 1972, Ser. No. 255,796
Claims priority, application Australia, May 31, 1971, PA 5,050/71
Int. Cl. B01j *2/08*
U.S. Cl. 264—6 5 Claims

1. In a process of manufacturing agglomerates of polymer particles by suspension polymerisation of droplets of a monomer suspended in a liquid medium comprising:
- (a) partially polymerising droplets of a monomer mixture suspended in a liquid medium mixed with a suspension stabilizer so that the droplets pass from an initial liquid state to a gel state;
- (b) completing said polymerisation under agglomerating conditions, to produce agglomerates of polymer particles

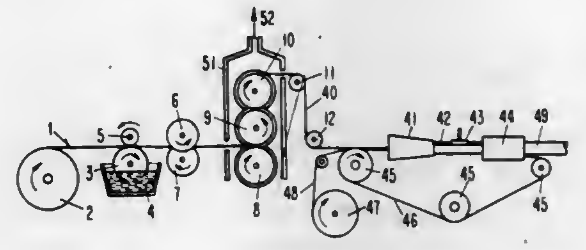
the improvement comprising:
- (c) subjecting the suspension of partially polymerised droplets mixed with a suspension stabilizer, to shear forces sufficiently high to overcome the forces of surface tension of the droplets and to cause the droplets to become elongated particles,
- (d) continuing the polymerisation while concurrently subjecting the particles to said shear forces until the viscosity of the particles is sufficiently raised for the resulting configuration of elongated particles to be unaltered in the absence of shear forces, whereby polymer particles of elongated shape are formed,
- (e) keeping the elongated particles in suspension by gentle agitation and allowing agglomeration of the particles to occur.

3,849,526
METHOD OF MAKING WEBS OF FILTER MATERIAL

Paul Adolf Muller, 9497 Triesenberg 405, Liechtenstein, and Hans Muster, 8340 Hadlikon-Hinwil, Switzerland
Filed July 8, 1971, Ser. No. 161,366
Claims priority, application Switzerland, May 13, 1971, 7,064/71
Int. Cl. A24c *5/50;* **B29c** *24/00*
U.S. Cl. 264—286 4 Claims

1. The method of treating an elongated web of fibrous material to render the same particularly adapted to be gathered transversely and enclosed in a wrapper to make a filter cord subdividable into filter rods and filter plugs for cigarettes, the steps comprising:

advancing an essentially in elastic web of the material through the bight between a pair of meshing rotating rolls provided with narrow longitudinal grooves parallel to the axes of the rolls alternating with narrow longitudinal ribs parallel to the axes of the rolls which engage the web and prevent appreciable longitudinal contraction thereof so that the web is stretched longitudinally to loosen and expose fibers in a plurality of closely-spaced successive narrow areas disposed transversely of the web without substantial impairment of the longitudinal continuity of the web; and



advancing the longitudinally stretched web through the bight between a pair of non-contacting meshing rotating rolls provided with narrow circumferential grooves alternating with narrow circumferential ribs which engage the web and prevent appreciable lateral contraction thereof to groove the web in a direction parallel to its travel and stretched transversely of the grooves to loosen and expose fibers in a plurality of closely-spaced narrow longitudinal areas without substantial impairment of the transverse continuity of the web.

3,849,527
METHOD FOR MAKING REINFORCED OR FILLED RESIN PRODUCTS

Frede Hilmar Drostholm, 2950 Vedbaek, Denmark
No Drawing. Continuation of abandoned application Ser. No. 158,084, June 29, 1971. This application May 31, 1973, Ser. No. 365,698
Int. Cl. D04h *1/58*
U.S. Cl. 264—35 16 Claims

1. A method for manufacturing products or articles or reinforced or filled polyesters, hardenable by means of a liquid ethylenically unsaturated monomeric cross-linking compound which is a solvent for said polyester, in the presence of a catalyst, which method comprises dry mixing the polyester with the reinforcing or filling material in the absence of the crosslinking compound and the catalyst, imparting the desired shape to the mixture of polyester and reinforcing or filling material, thereafter adding the liquid crosslinking compound and catalyst in the absence of the polyester to the shaped mixture of polyester and reinforcing or filling material, and thereafter curing the resin materials to form the product.

3,849,528
MICROPOROUS POLYMER SHEETS

Albert Ernest Smith, Ottawa, Ontario, Canada, assignor to Polysar Limited-Polysar Limited, Sarnia, Ontario, Canada
No Drawing. Filed Jan. 8, 1973, Ser. No. 321,931
Claims priority, application Canada, Feb. 16, 1972, 134,862
Int. Cl. B29h *7/20*
U.S. Cl. 264—49 10 Claims

1. A process for producing a microporous sheet which comprises:
- (1) depositing on a support a layer of thickness of about 0.6 cm. or less of solution of a composition which comprises a curable flowable polymer containing two or more reactive groups and having a

molecular weight of about 200 to about 10,000 and a curative which is a polyfunctional compound capable of reacting with the reactive groups of said polymer in a solvent, said solvent having a freezing point of about 50° to 150° C. and being capable of forming crystals on cooling to and below the freezing point;

(2) rapidly cooling said layer to a temperature of at least 40° C. below the freezing point of said solution whereby said solvent forms crystals dispersed in a matrix of said composition;

(3) reacting at a temperature below about 100° C. said curative with said curable polymer while maintaining said solvent as crystals until said matrix becomes non-flowable and substantially insoluble in said solvent at a temperature above the freezing point; and

(4) removing said solvent crystals by sublimation at about 20° to about 150° C. without substantially distorting said matrix,

thereby producing a microporous sheet having pore sizes of up to about 20 microns in diameter and a density of 0.1 to 0.8 gram per millilitre.

3,849,529

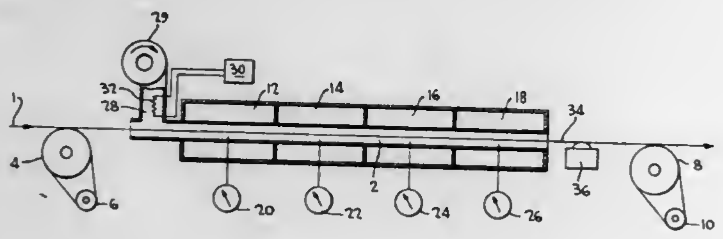
PROCESS FOR DRAWING POLYBENZIMIDAZOLE FIBROUS MATERIALS

George R. Ferment, Randolph, N.J., Arthur E. Prince, Jr., Charlotte, N.C., and Paul A. Sessa, Florham Park, N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Oct. 13, 1972, Ser. No. 297,511

Int. Cl. B29c *17/02;* **D02j** *1/22*

U.S. Cl. 264—85 **8 Claims**



1. An improved continuous process for the hot drawing of a continuous length of a polybenzimidazole fibrous material containing up to about 100 percent by weight of water, said drawing occurring without foaming and without employing multiple passes of the fibrous material through the drawing zone or drawing the fibrous material while in contact with a heated surface, which process comprises:

(a) continuously passing said continuous length of polybenzimidazole fibrous material in the direction of its length, for a single pass, through an elongated drawing zone containing a heated gaseous atmosphere maintained at a temperature of about 400 to 600° C.,

(b) continuously passing a preheated gas into said drawing zone at a rate which yields a Reynold's number within the drawing zone of about 50 to 50,000 so as to contact said fibrous material therein,

(c) drawing said fibrous material in said drawing zone while in contact with said preheated gas at a draw ratio of about 2:1 to 5:1 and at a drawing speed of at least 10 meters per minute, and

(d) thereafter continuously withdrawing from said drawing zone a stream of gas and drawn polybenzimidazole fibrous material.

3,849,530

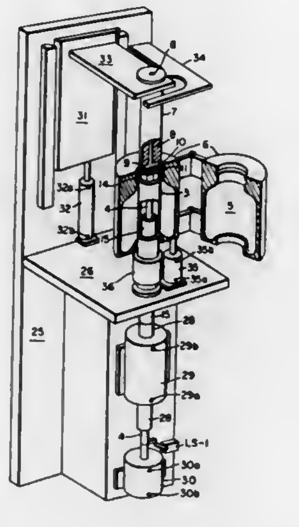
PROCESS FOR PRODUCING A BIAXIALLY ORIENTED THERMOPLASTIC ARTICLE

Nathaniel Convers Wyeth, Mendenhall, Pa., and Ronald Newman Roseveare, Lynchburg, Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Application Nov. 30, 1970, Ser. No. 93,571, now Patent No. 3,733,309, dated May 15, 1973, which is a continuation-in-part of abandoned application Ser. No. 885,853, Dec. 17, 1969. Divided and this application June 14, 1972, Ser. No. 262,594

Int. Cl. B29c *17/07*

U.S. Cl. 264—89 **35 Claims**



1. A process for producing a molded, hollow, oriented, thermoplastic article from a thermoplastic slug having a hollow center and having at least one open end communicating with the hollow center comprising:

(a) placing the slug in an extrusion chamber;

(b) extruding that portion of the slug to be oriented by advancement in its axial direction into an annular extrusion die orifice, which die orifice is convergent in its cross-sectional area in the direction of extrusion and extrudes the slug walls outwardly, into a mold cavity, to a shape relatively larger than the original shape of the slug, the extruded slug walls being within the orientation temperature range; and, while the extrudate is within the mold cavity and within its orientation temperature range, and as extrusion of the slug continues, simultaneously

  (1) drawing the extrudate by effecting relative sliding movement between the mold and the extrusion orifice; and

  (2) expanding the extrudate toward the mold wall by forcing a fluid against the interior of the extrudate; and

(c) completing expansion of the extrudate against the mold wall.

3,849,531

METHOD OF MAKING A CORED LASER TUBE

Wayne S. Mefferd, Palo Alto, Calif., assignor to Coherent Radiation Laboratories, Inc., Palo Alto, Calif.

Original application Aug. 19, 1968, Ser. No. 753,684, now Patent No. 3,619,810. Divided and this application July 23, 1970, Ser. No. 63,994

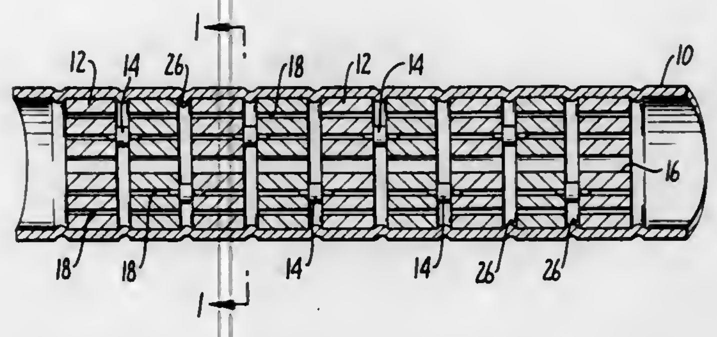
Int. Cl. B29c *17/07*

U.S. Cl. 264—92 **2 Claims**

1. The method of making a core structure surrounding the optical axis of an ion laser where said core structure is made of a plurality of graphite blocks having central bores extending along said axis which comprises:

A. Providing a key portion on the periphery of each of said blocks with said key portions extending less than 360° around the periphery of said block;

B. Supporting said blocks spaced apart from each other inside a tube of thermoplastic ceramic material having a lower coefficient of thermal expansion than said blocks with the central bores in said blocks aligned with each other and with said blocks supported independently of said tube;



C. Heating said blocks and said tube in the area surrounding said blocks to a high temperature, which is above the normal operating temperature of the laser parts, at which the thermoplastic material of said tube will flow while applying a greater pressure to the exterior of said tube than to the interior of said tube until the material of said tube flows into engagement with the circumference of said blocks and said key portions of said blocks; and

D. Cooling said tube to a temperature below the temperature at which the material of said tube flows.

3,849,532

METHOD OF PREPARING A ZIRCONIUM OXIDE THAT IS CRYSTALLIZED MOSTLY OR COMPLETELY IN CUBIC FORM

Klaus Deneke, Troisdorf-Lulsdorf, and Wilhelm Falkenhain and Peter Hack, Troisdorf-Ranzel, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Continuation of abandoned application Ser. No. 16,968, Mar. 6, 1970. This application Jan. 31, 1972, Ser. No. 222,405

Int. Cl. C01g *25/02*

U.S. Cl. 423—82 **9 Claims**

1. A process for converting monoclinic zirconium oxide to cubic zirconium oxide, which monoclinic zirconium oxide has been obtained by the flotation separation of a zirconium oxide-silicon oxide mixture, including finely granulating the zirconium oxide recovered from said flotation separation; treating said granulate with dilute hydrofluoric acid solution having a concentration of between 5 and 10%; separating the so-treated granulate from said solution, mixing said granulate with at least one oxide of a metal selected from the group consisting of calcium, magnesium, yttrium, thorium and cerium; and heating such mixture to about 1,000 to 2,000° C., whereby converting said monoclinic crystal structure substantially to a cubic crystal structure in the solid state.

3,849,533

SORPTION AGENT FOR NONSOLID METALS

Wolfgang Hetz, Kehl, Germany, assignor to Roth Handels GmbH, Basel, Switzerland

No Drawing. Filed June 5, 1972, Ser. No. 259,480

Claims priority, application Switzerland, June 10, 1971, 8,588/71

Int. Cl. C01g *13/00*

U.S. Cl. 423—99 **10 Claims**

1. A method of collecting a liquid metal selected from the group consisting of mercury, gallium, Rose's metal, and Wood's metal which comprises contacting said liquid metal with a solid, absorbent carrier impregnated with a water-soluble salt of a metal more noble than said liquid metal until said liquid metal reacts with said salt of the more noble metal to form a salt of said liquid metal, and the formed salt is absorbed by said carrier.

3,849,534

COBALT STRIPPING

Roald R. Skarbo, Lexington, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

Filed July 19, 1973, Ser. No. 380,790

Int. Cl. B01d *15/06;* **B01j** *1/04;* **C22b** *23/04*

U.S. Cl. 423—139 **8 Claims**

1. Process for removing cobalt from an oxime solution by acid stripping which comprises

contacting the oxime solution with an aqueous solution of hydrochloric acid and sodium chloride,

allowing the phases to separate, and

recovering the oxime for reuse, and wherein the stripping solution comprises 2 Normal to 4 Normal HCl and 50 to 200 g./l. NaCl.

3,849,535

METHOD FOR RECOVERY OF ELEMENTS AND COMPOUNDS FROM AQUEOUS SOLUTIONS

Meherwan C. Irani, Pittsburgh, Pa., assignor of a fractional part interest to Eugene F. Buell

No Drawing. Filed Jan. 8, 1969, Ser. No. 789,952

Int. Cl. C01b *33/12;* **C01g** *49/02*

U.S. Cl. 423—140 **6 Claims**

1. A process for recovery from aqueous solutions dissolved iron and iron compounds which form gelatinous iron solids containing water when precipitated from such solutions, consisting of precipitating such iron and iron compounds by means of a chemical reaction to form said gelatinous iron precipitate containing water in an aqueous solution, separating the gelatinous iron precipitate from the solution, adding to the gelatinous iron precipitate enough of a material capable of absorbing water as one of the forms water of crystallization and hydroxide from said gelatinous iron precipitate and selected from the group consisting of alkali and alkaline earth oxides, hydroxides and carbonates, and anhydrous salts capable of absorbing water as water of crystallization, drying the resulting mixture to remove the uncombined water, stirring the product in sufficient water to dissolve water soluble constituents, allowing the insoluble constituents to settle and separating the settled residue from water.

3,849,536

WET COMBUSTION OF WASTE LIQUORS

John Edward Morgan, Burnie, Tasmania, Australia, assignor to Associated Pulp and Paper Mills Limited, Melbourne, Victoria, Australia

Filed Aug. 31, 1971, Ser. No. 176,651

Claims priority, application Australia, Aug. 31, 1970, 2,374/70

Int. Cl. C01d *1/04;* **C02b** *1/34;* **D21c** *11/14*

U.S. Cl. 423—206 **2 Claims**

1. A two-stage continuous method of wet combustion of a waste liquor obtained from the soda process for the pulping of wood and containing combustible components, which method comprises the serially succeeding steps of

mixing a stream of the waste liquor with heated oxygenating gas under pressure;

passing the mixture at a temperature between 450° and 705.4° F. and under a pressure between 70 and 225 atmospheres upwardly through a first reaction zone in the lower compartment of a generally vertical pressure vessel wherein to effect combustion of a major part of the combustibles content of the stream into an inert gaseous phase comprising carbon dioxide and steam, with generation of heat;

passing the resulting partially oxidized mixture composed of gaseous phase and liquid phase, at elevated temperature, under pressure upwardly into a second reaction zone in an upper compartment of said pressure vessel, the said partially oxidized mixture being passed as a stream upwardly through but out of direct contact with liquid phase in the second reaction zone and being then distributed into said second reaction zone above such liquid phase;

separating the said inert gaseous phase from liquid phase of the partially oxidized mixture in the upper part of the second reaction zone, discharging the said inert gaseous phase from the upper part of the said second reaction zone, thereby reducing the partial pressure of the inert gaseous phase in equilibrium with the said liquid phase, causing the separated liquid phase to flow downwardly as a column of liquid in said second reaction zone, the temperature of the downwardly flowing column of liquid being at a temperature between 450° and 705.4° F. and under a pressure between 70 and 225 atmospheres;

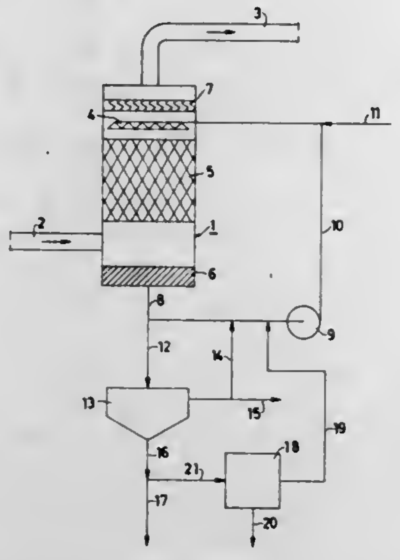
subjecting the residual combustibles content to said downwardly flowing column of liquid, substantially free from the aforesaid gaseous phase, to further oxidation treatment by passing an oxygenating gas under pressure upwardly through said column of liquid, thereby forming a further gaseous phase and a substantially combustibles-free liquid phase, the partial pressure of oxygen in contact with the liquid phase in the second reaction zone being at least as great as the partial pressure of oxygen in contact with the liquid phase in the first reaction zone, and the temperatures in the first reaction zone and in the second reaction zone being substantially the same;

continuously discharging said further gaseous phase, in admixture with the first-mentioned gaseous phase, from above said column of liquid; and

continuously withdrawing liquid phase, substantially free from combustibles, from the lower part of the second reaction zone.

3,849,537
METHOD OF PURIFYING GASES CONTAINING MERCURY VAPOUR

Torkel Allgulin, Skelleftehamn, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden
Filed Feb. 23, 1972, Ser. No. 228,610
Claims priority, application Sweden, Feb. 23, 1971, 2,300/71
Int. Cl. B01d *53/34*
U.S. Cl. 423—210 **16 Claims**



1. A method for purifying gases containing gaseous elementary mercury, comprising: preparing a washing solution containing mercury (II)ions in a quantity from 0.02 g./l. to saturation level and a quantity of at least one of the ions selected from the group Cl^-, Br^-, I^- and SO_4^{2-} which form sparingly soluble Hg(I) salts, the quantity of Cl^-, Br^-, I^- and SO_4^{2-} being sufficient to enable formed Hg(I) to precipitate out from the solution but insufficient to cause corresponding Hg(I) salts to be disproportioned to Hg(II) and Hg°, washing the contaminated gas with said solution.

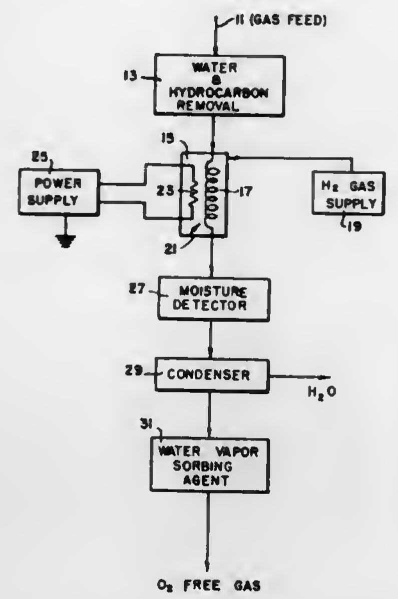
3,849,538
CATALYTIC PROCESS

John Stewart Campbell and Phineas Davies, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Oct. 13, 1971, Ser. No. 188,772
Claims priority, application Great Britain, Oct. 14, 1970, 48,825/70; Feb. 26, 1971, 5,546/71
Int. Cl. B01d *53/00*
U.S. Cl. 423—213.5 **4 Claims**

1. A process of treating an internal combustion engine exhaust gas containing nitrogen oxides and carbon monoxide to decrease the content thereof before discharge into the atmosphere, said process comprising a start-up phase wherein the exhaust gas and added air are passed over a refractory catalyst under oxidizing conditions to heat said catalyst to its operating temperature in the range of 750–900° C., a subsequent running stage wherein the exhaust gas is passed over the refractory catalyst under net reducing conditions at said operating temperature and at a space velocity of 6000 to 60,000 $hour^{-1}$ whereby at least 70% of the nitrogen oxides in said exhaust gas is destroyed with not more than 20% thereof being converted to ammonia, and a further stage wherein the thus treated exhaust gas is passed over an oxidation catalyst to convert the carbon monoxide in said gas to a nontoxic or innocuous gas, said refractory catalyst consisting essentially of a high temperature steam reforming base metal or precious metal catalyst having an active metal crystallite size of at least 1000 A., an active metal specific surface of less than about 10 $m.^2/g.$ of the active metal, a total specific surface of less than 150 $m.^2/g.$ and hydrothermal stability, the catalyst being supported on a steam-stable refractory oxide.

3,849,539
METHOD OF OXYGEN DETECTION AND REMOVAL

John H. Coleman, Roseville, Mich., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed Oct. 17, 1972, Ser. No. 298,201
Int. Cl. C01b *13/00*
U.S. Cl. 423—219 **1 Claim**



1. A method of determining and removing oxygen from a gas stream inert to hydrogen, wherein said oxygen concentration is less than 1% by weight, comprising:

passing said gas through a sorbent material selected from the group consisting of magnesium perchlorate and the metal aluminosilicates for drying said gas to a partial pressure of water vapor no more than a few hundredths of a millimeter of mercury;

passing said gas at about 3 atmospheres absolute pressure through a coil of tubing composed of a material comprising palladium;

contacting the outside surface of said coil of tubing with essentially pure hydrogen gas at about 6 atmospheres pressure and about 200° C. to diffuse a sufficient amount of hydrogen through the wall of said tubing to chemically combine with substantially all of said oxygen and form water vapor;

cooling said gas to and continuously monitoring the condensation-point temperature of water vapor in said gas in order to detect the moisture concentration resulting from said chemical combination of oxygen with hydrogen within said gas; and

further cooling said gas to about 1° C. above the freezing point of water at about 3 atmospheres absolute pressure to condense a major portion of said water vapor therefrom and subsequently passing said gas into contact with a sorbent material selected from the group consisting of the metal aluminosilicates and magnesium perchlorate to remove substantially all of said water vapor and thereby produce a substantially oxygen free gas.

3,849,540
METHOD OF SWEETENING NATURAL GAS

Jim Maddox, Jr., and Fan-Sheng Tao, Houston, Tex., assignors to Texaco Inc., New York, N.Y.
No Drawing. Filed June 19, 1972, Ser. No. 263,912
Int. Cl. B01d *53/34*
U.S. Cl. 423—224 **15 Claims**

1. A process for removing hydrogen sulfide from natural gas comprising:

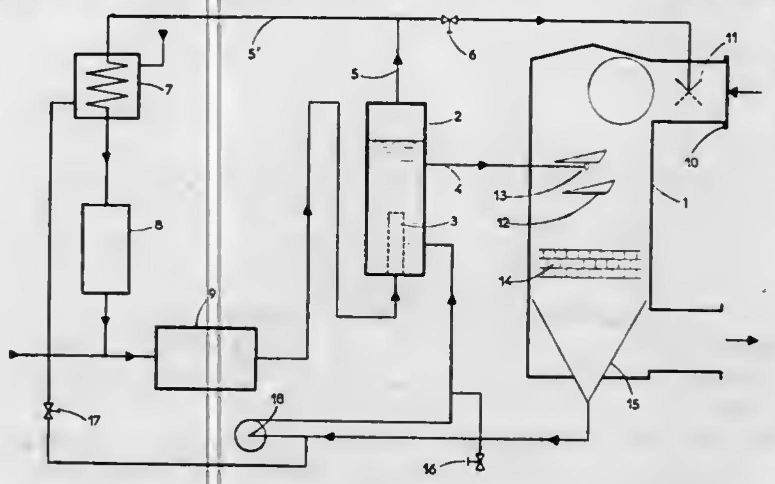
(a) oxygenating an aqueous solution consisting of a soluble catalyst, said catalyst consisting of transition metal compounds selected from the group consisting of salts of nickel, cobalt, manganese, copper, and iron,

(b) removing entrained but undissolved oxygen from the aqueous solution and

(c) treating hydrogen sulfide containing natural gas with the oxygen rich aqueous solution of step (b) at atmospheric pressure.

3,849,541
PROCESS FOR PURIFYING FUMES

Charles Bertrand, 49 Rue Gadeau de Kerville, Satteville-les-Rouen, France
Continuation-in-part of abandoned application Ser. No. 871,822, Oct. 28, 1969. This application May 24, 1972, Ser. No. 256,454
Claims priority, application France, Nov. 4, 1968, 7,241; Dec. 30, 1968, 7,247; Aug. 1, 1969, 6926450
Int. Cl. C01b *13/00*
U.S. Cl. 423—242 **13 Claims**



1. A process for substantially desulfurizing industrial effluent fumes which contain sulphur dioxide, comprising:

mixing the fumes with oxygen;

absorbing ozone in a solution of sulphuric acid;

reacting the fumes and oxygen with a stream of said ozone-carrying sulfuric acid solution for a total contact time of 4–6 seconds, wherein the ozone serves substantially only as a catalyst.

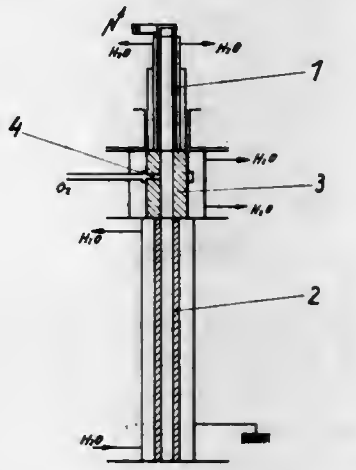
3,849,542
LITHIUM MAGNESIUM ALUMINUM HYDRIDE

John A. Snover, Midland, Mich., Joseph H. Walbel, Lake Jackson, Tex., and Arthur L. Daniels, Coleman, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed May 9, 1966, Ser. No. 549,430
Int. Cl. C01b *6/24*
U.S. Cl. 423—644 **8 Claims**

1. The compound lithium magnesium aluminum hydride corresponding to the empirical formula $LiMg(AlH_4)_3$.

3,849,543
MAKING METAL OXIDES WITH OXYGEN-CONTAINING GAS PRE-HEATED OVER Pd-Au-Ag-ALLOY ELECTRODE

Hans Zirngibl, Duisburg, Werner Fuhr and Klemens Jaschinski, Krefeld-Uerdingen, Peter Beumer, Krefeld, and Walter Weidmann, Duisburg-Mundelheim, Germany, assignors to Bayer Aktiengesellschaft
Filed May 11, 1971, Ser. No. 142,125
Claims priority, application Germany, May 27, 1970, P 20 25 897.3
Int. Cl. C01g *1/02, 23/04*
U.S. Cl. 423—592 **7 Claims**



1. In the production of a metal oxide including the steps of pre-heating an oxygen-containing gas, and then mixing said gas with the vapor of a metal halide to produce said metal oxide, the improvement which comprises pre-heating said oxygen-containing gas by passage through an electric arc established across two electrodes at least the anode of which is an electrode material comprising a Pd-Au-Ag-alloy containing from about 10 to 65% by weight of palladium, about 20 to 65% by weight of gold and about 15 to 50% by weight of silver, whereby there is essentially no weight loss of the electrode and no contamination of the metal oxide by the electrode.

3,849,544
COMPOUND $Cd_2Os_2O_7$ HAVING PYROCHLORE CRYSTAL STRUCTURE

Arthur W. Sleight, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Feb. 15, 1973, Ser. No. 332,579
Int. Cl. C01g *55/00*
U.S. Cl. 423—593 **2 Claims**

1. A composition having pyrochlore crystal structure of the formula

$$Cd_{2-x}Os_2O_{7-y}$$

wherein *x* and *y* independently are in the range 0 to about 0.5.

3,849,545

ZINC FERRITE OXIDATIVE DEHYDROGENATION CATALYST AND METHOD OF PREPARATION

Edward J. Miklas, Houston, Tex., assignor to Petro-Tex Chemicals Corporation, Houston, Tex.

No Drawing. Continuation-in-part of abandoned application Ser. No. 122,162, Mar. 8, 1971. This application June 1, 1973, Ser. No. 365,916

Int. Cl. C01g *9/00, 49/00*

U.S. Cl. 423—594 **13 Claims**

1. A method of preparing a zinc ferrite oxidative dehydrogenation catalyst comprising the steps of (a) contacting a solution of a soluble metal component comprising zinc and iron with a precipitating agent to precipitate an insoluble metal component comprising zinc and iron, said solution containing in addition to the soluble metal component from 0.1 to 11 weight percent of a soluble polyhydric organic compound based on the weight of metal and (b) calcining the precipitate to form said zinc ferrite oxidative dehydrogenation catalyst, wherein the precipitating agent is a solution of a hydroxide of a metal selected from the group consisting of Li, Na, K, Rb, and Cs, said precipitating solution having a normality of between 2 and 4 and said polyhydric compound contains at least 2 hydroxyl groups and is selected from the group consisting of organic alcohols, polyesters, polyethers, polysaccharides and mixtures thereof having a molecular weight of at least about 3,000.

3,849,546

PROCESS FOR OBTAINING ANTIGEN-LIPOID EMULSIONS

Jean-Louis Beaumont, La Varenne-Saint-Hilaire, France, assignor to Etablissement Public: Institut National de la Sante et la Recherche Medicale, Paris, France

No Drawing. Filed Feb. 23, 1972, Ser. No. 228,741

Claims priority, application France, Feb. 26, 1971, 7106658

Int. Cl. C12k *1/00;* **G01n** *31/02, 33/00*

U.S. Cl. 424—12 **8 Claims**

1. In the process of preparing a lipoid emulsion containing an antigen for immunochemical determinations, the said process comprising forming said antigen-containing emulsion in a neutral oil, which is liquid at ambient temperature, and subjecting the same to ultrasounds, the improvement comprising washing said emulsion with physiological saline solution or phosphate buffer solution having a pH of 7.3 with successive washing centrifugations and separations whereby a stable antigen-emulsion is recovered free of separate particles of said antigen.

3,849,547

COLORED NAIL POLISHES

Gregoire Kalopissis, Paris, France, assignor to Societe Anonyme dite: L'Oreal, Paris, France

No Drawing. Continuation-in-part of abandoned applications Ser. No. 655,741, July 25, 1967, and Ser. No. 749,315, Aug. 1, 1968. This application Feb. 2, 1971, Ser. No. 112,037

Int. Cl. A61k *7/04*

U.S. Cl. 424—61 **12 Claims**

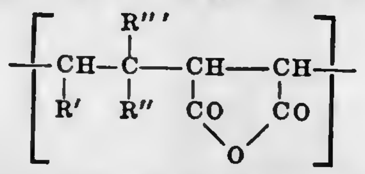
1. A transparent nail polish composition consisting essentially of a solution of 12–15% by weight of a nitrocellulose film former,

6–13% by weight of an aryl sulfonamide formaldehyde resin,

5–8% by weight of a plasticizer selected from the group consisting of dibutyl phthalate, camphor and their mixtures,

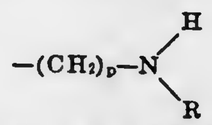
1–15% by weight of a coupler selected from the group consisting of ethanol, butanol, n-propanol, isopropanol and their mixtures,

12–32% by weight of a diluent selected from the group consisting of xylene, toluene and their mixtures, and 0.5–6% by weight of a soluble colored polymer consisting essentially of recurring units of the formula



$$-\left[\underset{R'}{CH}-\overset{R'''}{\underset{R''}{C}}-\underset{CO}{CH}-\underset{CO}{CH}\right]-$$

wherein R' and R'' each independently are selected from the group consisting of hydrogen, lower alkyl having 1–4 carbon atoms, phenyl and lower alkoxy having 1–4 carbon atoms, R''' is selected from the group consisting of hydrogen, $—OCOCH_3$, $—C{\equiv}N$ and $—COOCH_3$, having condensed on the anhydride function thereof (1) a dye selected from the group consisting of azo, anthraquinone and benzene dyes containing an extra nuclear radical having the formula



$$-(CH_2)_p-N\begin{matrix}H\\R\end{matrix}$$

wherein *p* is 2–6, and R is selected from the group consisting of hydrogen, $—CH_3$ and $—C_2H_5$, said extra nuclear radical being bonded to the aromatic nucleus of said dye through a nitrogen atom directly attached to said aromatic nucleus and said dye being bonded to said recurring units by an amide bond through the terminal nitrogen atom of said extra nuclear radical and (2) n-butyl alcohol, the remainder of said composition being essentially a solvent selected from the group consisting of acetone, ethyl acetate, butyl acetate, methyl acetate and mixtures thereof.

3,849,548

COSMETIC COMPOSITIONS

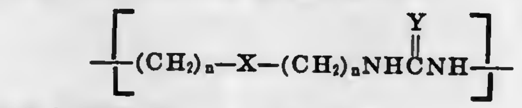
Paul Sheldon Grand, South Bound Brook, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,153

Int. Cl. A61k *7/06*

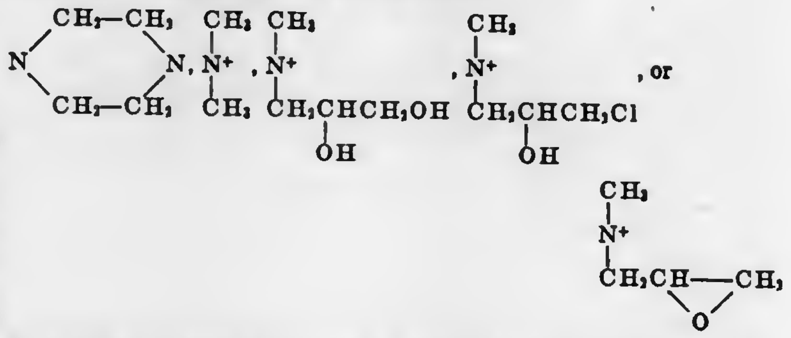
U.S. Cl. 424—70 **17 Claims**

1. A method of improving the condition of the hair and skin which comprises the step of applying thereto a conditioning amount of a composition comprising (I) a water-soluble aminopolyurea resin conditioning agent having a molecular weight in the range of 300 to 100,000 and having the following repeating unit:



$$-\left[(CH_2)_n-X-(CH_2)_nNH\overset{\overset{Y}{\|}}{C}NH\right]-$$

wherein X is NH, N–C_1 to C_{22} alkyl,



Y is O or S, and *n* is 2 or 3; and (II) a compatible, nontoxic cosmetic vehicle.

3,849,549

INDOMETHACIN SUPPOSITORIES

Robert E. Dempski, Dresher, and Joseph C. Saboe, Norristown, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 187,113, Oct. 6, 1971. This application June 9, 1972, Ser. No. 261,178

Int. Cl. A61j *3/08;* **A61k** *27/00*

U.S. Cl. 424—78 **5 Claims**

1. A suppository preparation consisting essentially of a dosage unit amount of indomethacin in a polyethylene glycol or a mixture of polyethylene glycols base containing from about 1.0 to not more than about 4.5% by weight of a nucleating agent selected from the group consisting of alkali halide, lactose, calcium chloride and sucrose, and from about 4 to not more than about 12% by weight of glycerol.

3,849,550

THERAPEUTIC COPOLYMER

Dvora Teitelbaum, Ramat Gan, and Asher Meshorer, Tsvi Hirshfeld, Ruth Arnon, and Michael Sela, Rehovot, Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

No Drawing. Filed Mar. 31, 1972, Ser. No. 240,244

Claims priority, application Israel, Apr. 21, 1971, 36,670

Int. Cl. A61k *27/00*

U.S. Cl. 424—78 **5 Claims**

1. A therapeutic preparation for use in the treatment or prevention of experimental allergic encephalomyelitis, comprising a water-soluble copolymer having a molecular weight in excess of 15,000 and up to 25,000, a net positive electrical charge, and being selected from the group consisting of a copolymer of a mixture consisting essentially of (1) alanine, glutamic acid, lysine and tyrosine in the molar ratio of about 6 parts alanine to 2 parts glutamic acid to 4.5 parts lysine to 1 part tyrosine; (2) alanine, aspartic acid, lysine and tyrosine in the molar ratio of about 5 parts alanine to 1.5 parts aspartic acid to 3.5 parts lysine to 1 part tyrosine; and (3) alanine, glutamic acid and lysine in the molar ratio of about 5 parts alanine to 1.5 parts glutamic acid to 3.5 parts lysine; in an amount effective for treatment or prevention of the said disease, dispersed in a pharmaceutically acceptable carrier for injectable administration.

3,849,551

BCG AS ADJUVANT IN MALARIA VACCINATION

Lawrence E. D'Antonio, 1000 Clifton Ave., Collingdale, Pa. 19023

No Drawing. Filed Sept. 28, 1972, Ser. No. 292,945

Int. Cl. C12k *5/00*

U.S. Cl. 424—88 **15 Claims**

1. A process for the vaccination of an animal against malaria which comprises administering to an animal materials consisting essentially of a non-living malaria vaccine and an amount of living BCG effective to function as an adjuvant for said vaccine, the combination of malaria vaccine and BCG being sufficient to provide an immune protection of the animal against malaria.

3,849,552

PROTEASE INHIBITORS AND METHOD FOR PREPARATION

Arne Gosta Jonsson, Sodertalje, and Nils Torsten Lennart Torstensson, Uppsala, Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

No Drawing. Continuation of abandoned application Ser. No. 128,493, Mar. 26, 1971. This application June 21, 1973, Ser. No. 372,208

Claims priority, application Great Britain, Apr. 1, 1970, 15,530/70; Jan. 28, 1971, 3,426/71

Int. Cl. A61k *21/00*

U.S. Cl. 424—115 **2 Claims**

1. A process for preparing a preparation containing protease inhibitors which comprises cultivating *Streptomyces violascens,* NRRL 3859, under aerobic conditions in a nutrient medium containing sources of carbon, nitrogen, and nutrient inorganic salts in assimilable form, for a period of about 10 to 100 hours until a sufficient amount of protease inhibitors is produced, said medium having a pH, prior to inoculation, ranging between about 5 and 8, and a temperature during fermentation ranging from about 10° to about 40° C.

3,849,553

CYCLIC NUCLEOTIDE THERAPEUTIC PREPARATION

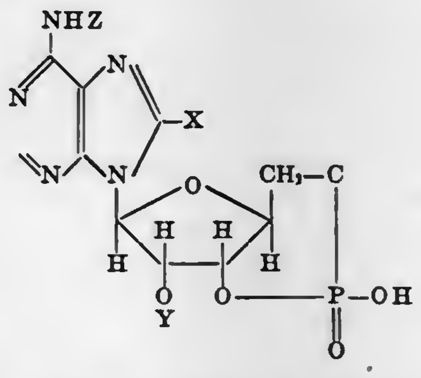
Frank J. Dea, Fullerton, and Eric L. Nelson, Santa Ana, Calif., assignors to Nelson Research & Development Company, Irvine, Calif.

No Drawing. Filed Sept. 4, 1973, Ser. No. 393,715

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 **9 Claims**

1. A method for treating psoriasis in humans comprising the administration to a human suffering from psoriasis of an effective dose for treating psoriasis of a compound of the formula



where Y and Z are each selected from the group consisting of H or butyryl and X is selected from the group consisting of H, —Br, $—SCH_3$, —SH, —OH and $—NH_2$, or a pharmaceutically acceptable addition salt thereof, provided that X, Y and Z are not all H, in a suitable pharmaceutical carrier.

3,849,554

REDUCTION OF BLOOD SERUM CHOLESTEROL

Milton Winitz, Palo Alto, Calif., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Continuation-in-part of abandoned application Ser. No. 510,778, Dec. 1, 1965. This application July 28, 1969, Ser. No. 847,815

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 **8 Claims**

1. A method for lowering the blood serum cholesterol level of a human in need of such therapy, which method consists essentially of administering to the human as the sole source of sustenance a defined diet composition consisting essentially of vitamins, minerals, a source of amino acids, a source of essential fatty acid and a carbohydrate component selected from the group consisting of glucose, maltose, polysaccharides of glucose, and mixtures thereof.

3,849,555

METHOD FOR MODIFYING SOUR AND BITTER TASTE

Robert J. Harvey, Sudbury, Mass., assignor to Mirlin Corporation, Wayland, Mass.

No Drawing. Filed Apr. 15, 1970, Ser. No. 28,962

Int. Cl. A61k *27/14*

U.S. Cl. 424—195 **9 Claims**

1. A method for rendering food sweet tasting which comprises:

contacting the tongue with material rich in the taste-modifying principle of *Synsepalum dulcificum* Daniell in an amount effective to modify the taste receptors of the tongue, said material being substantially free from the components of the ripe fruit of *Synsepalum dulcificum* Daniell which degrade the taste-modifying principle; and, thereafter and while said taste receptors are modified ingesting a mixture of food and non-toxic normally sour-tasting acid, the effective acid molarity of said mixture being in the range of 0.005M to 0.03M.

3,849,556

INSECTICIDAL COMPOSITION CONTAINING SURFACE ACTIVE DIURETHANES AND THIOPHOSPHORIC ACID ESTERS

Werner Wolff, Neubotting an der Inn, and Ruth Faber and Kasimir Ruchlack, Burgkirchen an der Alz, Germany (all % Farbwerke Hoechst AG, Frankfurt am Main, Germany)

No Drawing. Original application Aug. 15, 1968, Ser. No. 752,755. Divided and this application Aug. 11, 1972, Ser. No. 226,239

Claims priority, application Germany, Aug. 26, 1967, F 53,335

Int. Cl. A01n *9/36*

U.S. Cl. 424—213 **1 Claim**

1. An insecticidal composition consisting of 70 to 90% of O,O-dimethyl - S - (1,2-dicarbethoxy-ethyl)-dithiophosphate, 4-nitrophenyl-diethyl-thiophosphate, or 4-nitrophenyl-dimethyl-thiophosphate and 30 to 10% of an emulsifier consisting of

(a) 65 to 75% of a diurethane,
(b) 20 to 15% of a solution of 70% strength of calcium dodecyl benzene sulfonate or tetrapropylene benzene sulfonate in isobutanol and
(c) 15 to 10% of a reaction product of tributyl phenol with 20 mols of ethylene oxide or a reaction product of nonylphenol with 17 or 18 mols of ethylene oxide

said diurethane being obtained by reacting 1 mol of a bulk polymer of a molecular weight of 1,000 to 6,000 consisting of a water-insoluble polyether of a molecular weight of 500 to 3,000 on the basis of propylene oxide, butylene oxide or epichlorohydrine, to which 35 to 100%, referred to the weight of the polyether, of ethylene oxide was added, and 1 mol of a polyether alcohol of the formula

$$R—(C_2H_4O)_nH$$

in which R is alkyl of 8 to 18 carbon atoms, mono-, bis- or tris-alkyl benzene or mono-, bis- or tris-alkyl naphthalene, each alkyl containing 4 to 22 carbon atoms, and *n* is an integer of 2 to 10, with 1 mol of a diisocyanate at a temperature of 100 to 200° C. in the melt or in the presence of an inert organic solvent, said diisocyanate being selected from the group consisting of:

(a) hexamethylenediisocyanate
(b) mixtures of 2,4- and 2,6-toluylene-diisocyanate, and
(c) naphthylene-1,5-diisocyanate.

3,849,557

PHARMACEUTICAL COMPOSITIONS CONTAINING 1,1 - AZO BIS - (1H - IMIDAZO[1,2-a]PYRIDINIUM) DIBROMIDE COMPOUNDS AND THE USE THEREOF

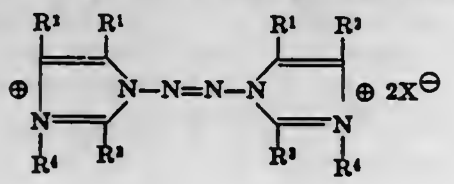
David Jack, London, and Ernest Edward Glover, Nunthorpe, England, assignors to Allen & Hansburys Limited, London, England

No Drawing. Original application May 13, 1971, Ser. No. 143,210, now Patent No. 3,773,746, dated Nov. 20, 1973. Divided and this application Dec. 5, 1972, Ser. No. 312,261

Int. Cl. A61k *27/00*

U.S. Cl. 424—226 **2 Claims**

1. An injectable composition in dosage unit form comprising as active ingredient a compound of the formula:



wherein:

R^1 and R^2, which are the same or different, are each hydrogen, lower alkyl, halogen, phenyl, phenyl substituted by halogen, phenyl substituted by hydroxy, phenyl substituted by lower alkoxy, phenyl substituted by trifluoromethyl, phenyl substituted by nitro; or together with the adjacent carbon atoms to which they are attached form phenyl;

R^3 and R^4, which are the same or different, are each lower alkyl or phenyl, or together with the adjacent nitrogen atom form pyridinium or tetrahydropyridinium; and

X is a physiologically acceptable anion, in association with a pharmaceutically acceptable carrier, wherein each dosage unit contains from 2 to 100 mgs. of active ingredient.

3,849,558

PHARMACEUTICAL COMPOSITIONS HAVING CONTROLLED GASTRO-INTESTINAL ABSORPTION

Toshio Nakamura, Tadao Maeda, and Hiroshi Takenaka, Ibaraki, and Yoshiya Yamahira, Takatsuki, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

No Drawing. Filed May 25, 1970, Ser. No. 40,358

Claims priority, application Japan, June 3, 1969, 44/43,895; Jan. 30, 1970, 45/8,619

Int. Cl. A61k *15/12, 21/00, 27/00*

U.S. Cl. 424—234 **5 Claims**

1. A pharmaceutical composition having controlled gastro-intestinal absorption rate of a therapeutcially active agent, said composition comprising a therapeutically effective amount of the therapeutically active agent and an equivalent or more amount by weight to the therapeutically active agent of castor oil, said therapeutically active agent being selected from the group consisting of chloramphenicol, chloramphenicol palmitate, riboflavin, riboflavin butyrate, salicylic acid, 1-p-chlorobenzoyl-2-methyl-5-methoxy-3-indolylacetic acid and pharmaceutically acceptable water soluble salts thereof.

3,849,559

TRANQUILIZER COMPOSITION AND METHOD OF TREATMENT

Erhard Wolf, Hofheim, Taunus, Hans Kohl, Schwalbach, Taunus, and Günter Härtfelder, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

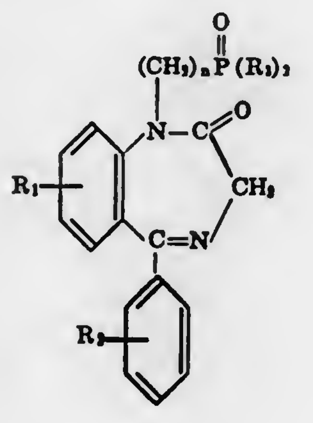
No Drawing. Continuation of application Ser. No. 140,977, May 6, 1971, now Patent No. 3,738,982. This application Mar. 12, 1973, Ser. No. 340,209

Claims priority, application Germany, May 8, 1970, P 20 22 503.0; Sept. 23, 1970, P 20 46 848.8

Int. Cl. A61k *27/00*

U.S. Cl. 424—244 **18 Claims**

1. Pharmaceutical preparation having tranquilizing properties containing an effective amount of an active compound of the formula



in which R_1 and R_2, which may be identical or different, each represent a hydrogen atom, a nitro group, a halogen atom or the trifluoromethyl group and R_2 in addition may represent a straight chain or branched alkyl group having 1 to 6 carbon atoms, R_3 represents a straight chain or branched alkyl group having 1 to 3 carbon atoms, and *n* is a number from 1 to 6, and a pharmaceutically tolerable adjuvant or excipient.

3,849,560

5-(5'-BARBITURILIDENE) - 4 - OXOTHIAZOLIDINE-2-IMINO HCl SALT USED AS AN ANTIMICROBIAL AGENT

Al F. Kerst, 5470 W. Geddes and John D. Douros, Jr., 6855 S. Depew, both of Littleton, Colo. 80123, and Milan Brokl, 1633 Cherry St., Denver, Colo. 80122

No Drawing. Continuation-in-part of abandoned application Ser. No. 180,923, Sept. 15, 1971. This application Dec. 1, 1972, Ser. No. 311,075

Int. Cl. A01n *9/12*

U.S. Cl. 424—254 **50 Claims**

1. A method of killing or inhibiting the growth of microorganisms selected from the group consisting of fungi, Gram positive bacteria and Gram negative bacteria which comprises contacting said microorganisms with 5-(5'-barbiturilidene)-4-oxothiazolidine-2-imino HCl salt in an amount effective to kill or inhibit the growth of said microorganisms.

3,849,561

ANTI-PEPTIC ULCER SUBSTANCE FROM CORYDALIS TUBERS

Junzo Iwasa, 24, Kouriumatsuka-cho, Nishikyogoku, Ukyo-ku, Kyoto-shi, Japan; Shunsuke Naruto, 843, Higashino-cho, Uriwari, Higashisumiyoshi-ku, Osaka-shi, Japan; Noboru Ikeda, 326–2, Nagayoshinagaharacho, Higashisumiyoshi-ku, Osaka-shi, Japan; Keiji Nakamura, 5–4, Aza, Akinaga, Nishimuko, Amagasaki-shi, Hyogo-ken, Japan; and Yukinobu Sohji, 851, Oaza, Takayanagi, Neyagawa-shi, Osaka-fu, Japan

No Drawing. Continuation-in-part of application Ser. No. 735,162, June 7, 1968, which is a continuation-in-part of application Ser. No. 649,103, June 27, 1967, which in turn is a continuation-in-part of application Ser. No. 493,267, Oct. 5, 1965, all now abandoned. This application Apr. 20, 1971, Ser. No. 135,594

Claims priority, application Japan, Oct. 20, 1964, 39/59,633; July 28, 1965, 40/45,681

Int. Cl. A61k *27/00*

U.S. Cl. 424—258 **3 Claims**

1. A pharmaceutical composition for treating peptic ulcers comprising as the essential active ingredient dehydrocorydaline chloride in admixture with a pharmaceutically acceptable carrier, said composition being in the form of a tablet containing 15.0 mg. of dehydrocorydaline chloride.

3,849,562

METHOD OF TREATING NEPHROSIS

Brian Peter Richardson, Basel, Switzerland, assignor to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

No Drawing. Filed Mar. 15, 1973, Ser. No. 341,509

Int. Cl. A61k *27/00*

U.S. Cl. 424—261 **3 Claims**

1. A method of treating nephrosis which comprises administering to a mammal in need of said treatment an amount effective for the treatment of nephrosis of 2-bromo-α-ergocryptine.

3,849,563

N-ALKANOYL-N-[1 - (HETEROCYCLIC AMINO) ISOPROPYL] - 2 - AMINOPYRIDINES IN THE TREATMENT OF PAIN

Rudolf Hiltmann, Hartmund Wollweber, and Friedrich Hoffmeister, Wuppertal-Elberfeld, and Hans-Gunther Kroneberg, Wuppertal-Vohwinkel, Germany, assignors to Bayer Aktiengesellschaft

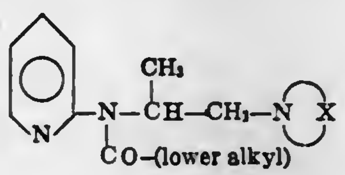
No Drawing. Application Dec. 27, 1971, Ser. No. 212,749, now Patent No. 3,773,771, which is a continuation-in-part of applications Ser. No. 82,838, Oct. 21, 1970, and Ser. No. 113,053, Feb. 5, 1971, Ser. No. 82,838 being a continuation-in-part of application Ser. No. 761,795, Sept. 23, 1968, and Ser. No. 113,053 being a continuation of application Ser. No. 761,323, Sept. 20, 1968, all now abandoned. Divided and this application May 7, 1973, Ser. No. 357,728

Claims priority, application Germany, Sept. 25, 1967, F 53,580, F 53,582

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **16 Claims**

1. A pharmaceutical composition useful for its analgesic effect comprising an analgesically effective amount of a compound selected from the group consisting of a 2-aminopyridine of the formula:



wherein X is a pentamethylene chain substituted by two methyl groups or a hexamethylene chain substituted by one or more or two methyl groups, and a pharmaceutically acceptable acid addition salt thereof, in combination with a pharmaceutically acceptable carrier.

3,849,564

INDOLE DERIVATIVES IN REDUCING INFLAMMATION

Marcel Descamps, Crainhem, and Henri Inion, Wemmel, Belgium, assignors to Labaz, Paris, France

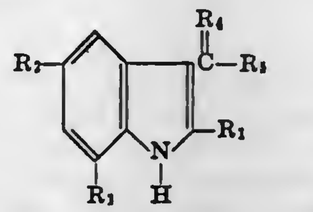
No Drawing. Continuation of abandoned application Ser. No. 203,915, Dec. 1, 1971. This application Oct. 9, 1973, Ser. No. 404,251

Claims priority, application Great Britain, Dec. 9, 1970, 58,543/70

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **21 Claims**

1. Method of treating a mammal to reduce inflammation which comprises administering thereto 100 mg. to 1000 mg. per 60 kg. of body-weight per day of a compound of the formula



or a pharmaceutically acceptable acid addition salt thereof, wherein R_5 represents 2-pyridyl, 3-pyridyl or 4-pyridyl and wherein R_2, R_3, R_4 and R_5 are such that:

(a) in the compounds wherein R_5 represents 2-pyridyl, when R_4 represents oxygen, R_1 represents ethyl and R_2 and R_3 represent hydrogen, and when R_4 represents NH, R_1 represents methyl and R_2 and R_3 represent hydrogen;
(b) in the compounds wherein R_5 represents 3-pyridyl, when R_1 represents methyl, ethyl, n-propyl or iso-

propyl, R_2 and R_3 represent hydrogen and R_4 represents oxygen, when R_2 represents methoxyl, R_1 represents methyl or isopropyl, R_3 represents hydrogen and R_4 represents oxygen, when R_3 represents methyl, R_1 represents isopropyl, R_2 represents hydrogen and R_4 represents oxygen or NH, and when R_1 represents methyl, n-propyl, isopropyl or isobutyl, R_2 and R_3 represent hydrogen and R_4 represents NH;

(c) in the compounds wherein R_5 represents 4-pyridyl, when R_1 represents isopropyl, R_2 and R_3 represent hydrogen and R_4 represents oxygen or NH, and when R_1 represents methyl, ethyl or n-propyl, R_2 and R_3 represent hydrogen and R_4 represents NH.

3,849,565

DISUBSTITUTED XANTHONE CARBOXYLIC ACID COMPOUNDS FOR INHIBITING ASTHMA

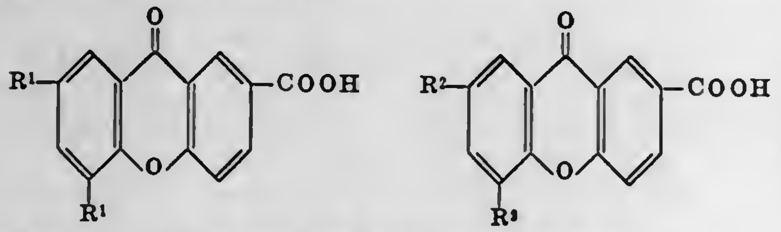
Jurg R. Pfister, Los Altos, and Ian T. Harrison and John H. Fried, Palo Alto, Calif., assignors to Syntex (U.S.A.) Inc.

No Drawing. Filed Jan. 12, 1972, Ser. No. 217,287

Int. Cl. A61k *27/00*

U.S. Cl. 424—283 **13 Claims**

1. A method for inhibiting the symptoms of the asthmatic condition resulting from an antigen-antibody reaction in a host susceptible to said reaction which comprises administering to said host an effective amount of from about 0.005 to about 100 mg. per kg. of body weight per day sufficient to produce said inhibition of a compound represented by the formulas:



wherein the R^1 groups are identically the group

$$-\underset{\substack{|\\ R}}{S}(O)_n$$

in which *n* is the integer 1 or 2, and R is lower alkyl; and one R^2 group is selected from the group consisting of lower alkyl and lower alkoxy and the other R^2 group is the group

$$-\underset{\substack{|\\ R}}{S}(O)_n$$

in which each of *n* and R is as defined above or pharmaceutically acceptable non-toxic alkyl or glycerol ester, unsubstituted, monoalkyl, dialkyl, dialkylaminoalkyl, alkoxyalkyl or phenethyl substituted amide, or salt thereof, wherein said alkyl and alkoxy groups each contain 1 to 8 carbon atoms.

3,849,566

METHOD OF PROPHYLAXIS AND THERAPY OF SPECIES *ULMUS* FOR DUTCH ELM DISEASE CAUSED BY *CERATOCYSTIS ULMI*

Bela J. Szappanyos, 3325 Burning Bush Road, Birmingham, Mich. 48010

Filed Dec. 26, 1968, Ser. No. 786,972

Int. Cl. A01n *9/26*

U.S. Cl. 424—343 **10 Claims**

1. A method of treating Dutch Elm disease in species *ulmus* comprising introducing into the vascular system of the species *ulmus*

an aqueous solution of

a water soluble penetrant of dimethyl sulfoxide and,

a water soluble fungicide of a salt solution of dichlorophene.

3,849,567

USE OF THIADIAZOLE HYDRAZONES AS BACTERICIDES

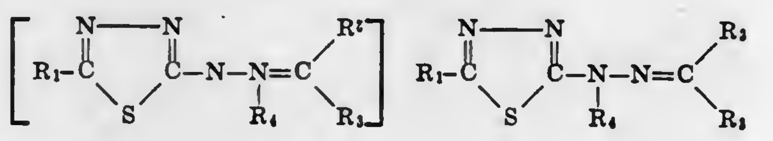
Chester G. Lemanski, East Brunswick, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Apr. 27, 1970, Ser. No. 32,429

Int. Cl. A01n *9/12*

U.S. Cl. 424—270 **4 Claims**

1. A method for combatting bacteria which comprises applying to said bacteria a bactericidally effective amount of a compound having the formula:



wherein R_1 is mercapto, R_2 is a C_1–C_4 alkyl, R_3 is a C_1–C_4 alkyl, and R_4 is hydrogen.

3,849,568

ANTIMYCOTIC BENZISOTHIAZOLINE DERIVATIVES

Horst Boshagen, Haan, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft

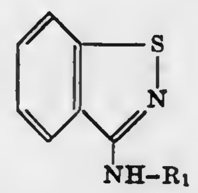
No Drawing. Application June 10, 1971, Ser. No. 151,929, which is a continuation-in-part of abandoned applications Ser. No. 566,199, July 19, 1966, and Ser. No. 783,756, Dec. 13, 1968. Divided and this application July 12, 1973, Ser. No. 378,520

Claims priority, application Germany, July 29, 1965, F 46,742

Int. Cl. A61k *27/00*

U.S. Cl. 424—270 **30 Claims**

1. An antimycotic composition comprising a pharmaceutical carrier in combination with an antimycotically effective amount of a compound selected from the group consisting of (a) a benzisothiazole of the formula:



wherein R_1 is alkyl of form 1 to 7 carbon atoms, chloroalkyl of 1 to 7 carbon atoms, benzyl, cyclohexyl, methylcyclohexyl, phenyl or phenyl substituted by halogen, nitro, lower alkyl, lower alkoxy or di(lower alkyl) amino and (b) a salt thereof with a strong acid.

3,849,569

COMPOSITION CONTAINING PROCAINE PENICILLIN

Robert James Mead, Barnard Castle, England, assignor to Glaxo Laboratories Limited, Greenford, Middlesex, England

No Drawing. Continuation of application Ser. No. 106,912, Jan. 15, 1971, which is a continuation of application Ser. No. 837,980, Apr. 30, 1969, which in turn is a continuation of application Ser. No. 511,229, Dec. 2, 1965, all now abandoned. This application Jan. 30, 1973, Ser. No. 328,063

Claims priority, application Great Britain, Jan. 20, 1966, 50,579/66

Int. Cl. A61k *21/00*

U.S. Cl. 424—271 **1 Claim**

1. A non-aqueous antibiotic composition for intramammary use consisting essentially of from about 3.33%–10% by weight of procaine penicillin G, from about 1%–3% by weight of procaine base as stabilizing agent for said procaine penicillin G and from about 2%–3% of polyoxyethylene sorbitan monooleate in a vegetable oil base.

3,849,570

METHOD OF TREATING CARDIAC ARRHYTHMIA WITH 2-(2'-DIETHYLAMINOETHYL) - 3-PHENYLPHTHALIMIDINE AND ITS SALTS

Manfred Raschack, Dannstadt, and Oskar Bub, Ludwigshafen, Germany, assignors to Knoll A.G. Chemische Fabriken, Ludwigshafen (Rhine), Germany

No Drawing. Filed Mar. 6, 1973, Ser. No. 338,546

Claims priority, application Germany, Apr. 1, 1972, P 22 16 065.2

Int. Cl. A61k *27/00*

U.S. Cl. 424—274 **2 Claims**

1. The method of treating cardiac arrhythmia in a patient suffering therefrom which comprises orally administering to said patient about 200–300 mg. per day of a member selected from the group consisting of 2-(2'-diethylaminoethyl)-3-phenyl-phthalimidine and salts thereof with physiologically tolerable acids.

3,849,571

INSECTICIDAL COMPOSITIONS CONTAINING CERTAIN TERPENE ETHERS AND PYRETHRINOIDS

Carl Bordenca, Ponte Vedra Beach, and John M. Derfer, Jacksonville, Fla., assignors to SCM Corporation, Cleveland, Ohio

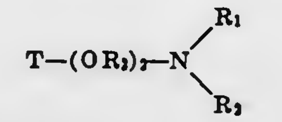
No Drawing. Application July 26, 1968, Ser. No. 747,830, now Patent No. 3,626,011, which is a division of application Ser. No. 607,876, Jan. 9, 1967, now Patent No. 3,446,843, which in turn is a continuation-in-part of abandoned application Ser. No. 479,009, Aug. 11, 1965. Divided and this application Jan. 11, 1971, Ser. No. 105,672

The term of this patent subsequent to May 27, 1986, has been disclaimed

Int. Cl. A01n *9/20, 9/24*

U.S. Cl. 424—282 **6 Claims**

1. An insecticidal composition comprising (a) an insecticidally effective amount of a pyrethrinoid selected from the group consisting of pyrethrin, allethrin and 5-benzyl-3-furfuryl±cis-trans chrysanthemate; and (b) an insecticidally effective amount of a terpene ether of the formula



$$T-(OR_3)_y-N\begin{matrix} R_1 \\ R_2 \end{matrix}$$

wherein T is terpenyl or sesquiterpenyl, R_1 and R_2 are like or dissimilar alkyl groups of 1 to 8 carbon atoms and R_3 is lower alkylene.

3,849,572

BIPHENYLENEACETIC ACID ANTI-INFLAMMATORY AGENTS

Bruce E. Witzel and Tsung-Ying Shen, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 72,531, Sept. 15, 1970. This application July 19, 1972, Ser. No. 273,232

Int. Cl. A61k *27/00*

U.S. Cl. 424—304 **4 Claims**

1. A method of treating a condition exhibiting at least one of the symptoms of pain, fever and inflammation which comprises the administration to a patient in need of such treatment of a therapeutically effective amount of 6-cyanobiphenylene-2-acetic acid.

3,849,573

NOVEL VINYLCARBAMATE DERIVATIVES OF PHENYLPROPANOLAMINE

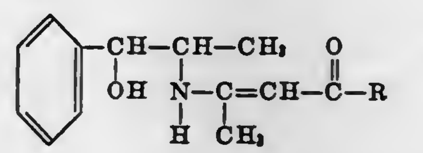
Henry Cecil Caldwell, Ambler, Pa., assignor to Smithkline Corporation

No Drawing. Original application Feb. 23, 1971, Ser. No. 118,159, now Patent No. 3,769,317. Divided and this application July 2, 1973, Ser. No. 376,057

Int. Cl. A61k *27/00*

U.S. Cl. 424—311 **5 Claims**

1. A pharmaceutical composition having antitussive activity in dosage unit form comprising a pharmaceutical carrier and from about 10 mg. to about 100 mg. of a chemical compound of the formula:



wherein:

R is a lower alkoxy group containing from 1 to 4 carbon atoms or a di-loweralkylamino group in which the loweralkyl group contains from 1 to 4 carbon atoms.

3,849,574

α-SUBSTITUTED-β-ARYLTHIOALKYL AMINO-ACIDS, FOR INCREASING HEART RATE

John T. Suh, Mequon, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 146,534, May 24, 1971, which is a continuation-in-part of application Ser. No. 764,624, Oct. 2, 1968, both now abandoned. This application June 26, 1973, Ser. No. 373,800

Int. Cl. A61k *27/00*

U.S. Cl. 424—319 **1 Claim**

1. The method of increasing the heart rate in an animal which comprises administering to said animal a daily dose of 0.01 to 10 mg./kg. of β-(*p*-chlorophenylthio)-α-methylalanine.

3,849,575

THIOSEMICARBAZONES AS ANTI-FERTILITY AGENTS

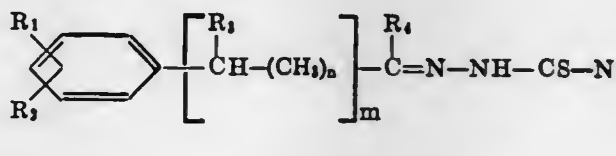
Richard L. Elton, Chester, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 187,880, Oct. 8, 1971. This application Jan. 26, 1973, Ser. No. 326,603

Int. Cl. A61k *27/00*

U.S. Cl. 424—323 **8 Claims**

1. A method of inhibiting fertility in a female animal in which such treatment is desired comprising internally administering to such a female animal 70 to 350 mg. per day of a compound of formula (I)



wherein

R_1 and R_2, independently, are hydrogen, halogen, or alkyl of 1 to 3 carbons,

R_3 and R_4 are independently hydrogen or alkyl of 1 to 3 carbons,
m is 0 or 1, and
n is 0, 1, or 2.

3,849,576

PROCESS AND COSMETIC COMPOSITIONS FOR THE TREATMENT OF SKIN AND SCALP

Gregoire Kalopissis, Paris, France, assignor to Societe Anonyme dite: L'Oreal, Paris, France

No Drawing. Continuation-in-part of applications Ser. No. 736,960, June 14, 1968, Ser. No. 794,363, Jan. 27, 1969, Ser. No. 801,840, Feb. 24, 1969, and Ser. No. 817,193, Apr. 17, 1969, all now abandoned, Ser. No. 858,161, Sept. 15, 1969, now Patent No. 3,671,643, and abandoned applications Ser. No. 12,122, Feb. 17, 1970, and Ser. No. 36,405, May 11, 1970; said application Ser. No. 736,960 being a continuation-in-part of abandoned applications Ser. No. 427,976, Jan. 25, 1965, and Ser. No. 602,480, Dec. 19, 1966. This application Nov. 29, 1971, Ser. No. 203,046

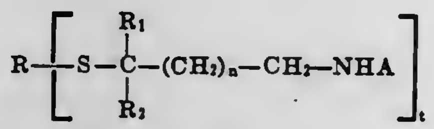
Claims priority, application France, Jan. 29, 1964, 961,897; June 21, 1967, 111,396; July 28, 1967, 116,160; Luxembourg, Dec. 22, 1965, 50,125; Feb. 23, 1968, 55,553; Jan. 29, 1969, 55,371; Feb. 19, 1969, 58,042; Apr. 19, 1969, 55,935; May 12, 1969, 58,634; Apr. 23, 1971, 63,056, 63,057; Belgium, June 3, 1969, 74,877

The term of this patent subsequent to June 20, 1989, has been disclaimed

Int. Cl. A61k ***27/00***

U.S. Cl. 424—330 **14 Claims**

1. A composition for topical application to a human's scalp and skin characterized by an excessive secretion of sebum to improve the condition thereof by reducing said excessive secretion of sebum comprising a nontoxic cosmetic carrier suitable for topical application to the scalp or skin and a nontoxic active component present in amounts effective to reduce excessive secretion of sebum, said active component being selected from the group consisting of a compound of the formula:



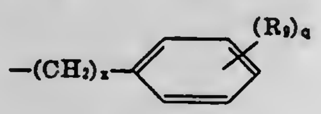
$$R\left[S-\underset{R_2}{\overset{R_1}{C}}-(CH_2)_n-CH_2-NHA\right]_t$$

and an acid salt thereof,

wherein *n* is 0 or 1 and when *n* is 0, R_1 and R_2 are selected from the group consisting of hydrogen and CH_3 and when *n* is 1, R_1 and R_2 are hydrogen;
t is 1,
A is hydrogen,
R is selected from the group consisting of $—C(C_6H_5)_3$; $—CH(C_6H_5)_2$; $—CH(_6H_4p\text{-}OCH_3)_2$;

$$—C(CH_3)_2—(C_6H_4p\text{-}OCH_3);$$

$—(CH_2)_z—R_8$ wherein *z* is 0 or 1 and R_8 is selected from the group consisting of naphthyl-1 and naphthyl-2; and



wherein *x* is 0–2 and
wherein when *q* is 1, 2 or 3, R_9 is selected from the group consisting of hydrogen, halogen, alkoxy having 1–5 carbon atoms and linear or branched chain alkyl having 1–4 carbon atoms, and when *q* is 1, R_9 is selected from the group consisting of acetamido, amino, phenoxy, cyclohexyl, trifluoromethyl, nitro, phenyl, dialkylamino wherein each alkyl moiety has 1–5 carbon atoms alkylthio having 1–5 carbon atoms, alkyl-sulfinyl having 1–5 carbon atoms and alkyl-sulfonyl having 1–5 carbon atoms.

3,849,577

METHOD OF REDUCING INTRAOCULAR PRESSURE IN HUMAN EYES

Monte G. Holland, New Orleans, La., assignor to Research Corporation, New York, N.Y.

Filed May 3, 1972, Ser. No. 249,814

Int. Cl. A61k ***27/00***

U.S. Cl. 424—330 **10 Claims**

1. A method of increasing the facility of outflow of fluid from human eyes and reducing the fluid in flow which comprises the steps of:

(a) Sympathectomizing said eyes by the administration thereto of sympathectomally effective amount of an ophthalmologically acceptable aqueous solution containing between 1 and 10% by weight of 6-hydroxydopamine,

(b) Administering and continuing to administer to said chemically sympathectomized eye an ophthalmologically administerable aqueous solution of from about 1 to about 2% by weight of an adrenergic amine is selected from the group consisting of amines having alpha and beta adrenergic activity, and a combination of at least one alpha adrenergically effective amine with at least one beta adrenergically effective amine.

3,849,578

ANTI-INFLAMMATORY TREATMENT

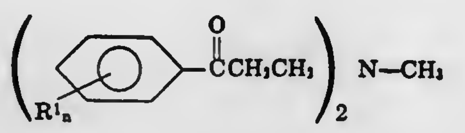
Marshall D. Draper, Woodland Hills, and Louis Levy, Encino, Calif., assignors to Riker Laboratories, Inc., Northridge, Calif.

No Drawing. Filed Feb. 28, 1973, Ser. No. 336,693

Int. Cl. A61k ***27/00***

U.S. Cl. 424—330 **5 Claims**

1. A method of treating inflammatory conditions in mammals which comprises administering to said mammal an effective amount of a compound of the formula



wherein R_1 is fluorine or chlorine and *n* is one, or a pharmaceutically acceptable salt thereof.

3,849,579

PROCESS FOR REDUCING PICKLE BLOATING WITH DEHYDROACETIC ACID

Richard C. Hall, Cleveland, Norman D. Kidd, Middleburg Heights, and George V. Daravingas, Lakewood, Ohio, assignors to SCM Corporation, Cleveland, Ohio

No Drawing. Filed Oct. 3, 1972, Ser. No. 294,722

Int. Cl. A23b ***7/10***

U.S. Cl. 426—49 **3 Claims**

1. In a process for curing cucumbers in brine by natural bacteriological fermentation, wherein the improvement comprises:

the inclusion of 0.005% to 0.5% volume of dehydroacetic acid in the brine solution based on the total volume of brine solution and cucumbers to prevent gas and bloating of said cucumber.

3,849,580

AEROSOL DISPENSING SYSTEM FOR ANHYDROUS EDIBLE FAT COMPOSITIONS

Vasant D. Sejpal, Hoboken, and William J. Lueschen and Bernard Weinstein, North Plainfield, N.J., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Sept. 5, 1972, Ser. No. 285,992

Int. Cl. A23c ***15/00***

U.S. Cl. 426—116 **2 Claims**

1. A dispensing system for comestible spreads not requiring refrigeration or included preservatives or corrosion inhibitors for prolonged shelf life comprising:

(A) a pressure tight container;
(B) a dispensing nozzle connected to said container;
(C) about 2 to 20 percent by total weight of a food grade propellant;
(D) about 80 to 98 percent by total weight of an anhydrous edible fat composition having a solid fat index of 5 to 30 percent at 70° F. selected from the class consisting of anhydrous butter, anhydrous solid vegetable oils and anhydrous liquid vegetable oils;

where the total weight is the weight of the propellant plus the weight of the composition.

3,849,581

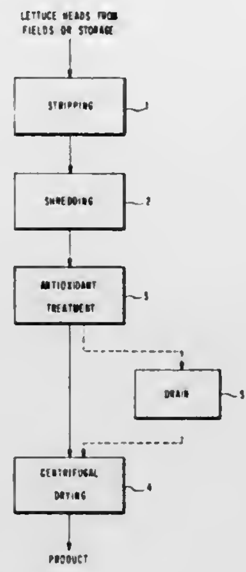
EXTENDED STORAGE LIFE LETTUCE PROCESS AND PRODUCT

Stanley Kubu, Miami, Fla., assignor to Burger King Corporation, Miami, Fla.

Filed Nov. 13, 1970, Ser. No. 89,404

Int. Cl. A23l ***3/34***

U.S. Cl. 426—145 **18 Claims**



1. A method of prolonging the shelf life of lettuce which comprises:

(a) shredding lettuce;
(b) treating the shredded lettuce with an aqueous antioxidant solution; and
(c) centrifugally drying said shredded lettuce to achieve partial dehydration of from about 6 to 10 percent of the original weight of the lettuce.

3,849,582

FORTIFIED SNACK PROCESS AND PRODUCT

Peter A. Blagdon, University City, Wayne R. Malzahn, Ballwin, and Huygene K. Fujiwara, Clayton, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

No Drawing. Continuation of abandoned application Ser. No. 64,553, Aug. 17, 1970. This application Feb. 5, 1973, Ser. No. 329,793

Int. Cl. A23l ***1/10***

U.S. Cl. 426—152 **6 Claims**

1. A process for producing a crisp, fried snack food product having improved nutritional properties, improved palatability and stability on storage comprising; forming a mixture of water, a pregelatinized starch, and a soy protein isolate which has not been subjected to the gelling action of heat whereby said mixture contains between about 30 to 48% water, between about 41 to 49% pregelatinized starch, between about 16 and 25% protein and between about 0.25 and 4.0% of a starch modifying and complexing agent; forming the mixture into a shaped food product without heat gelling of the protein isolate, stretching the formed food product to elongate said product to between about 25 to 100% of its original length, and frying the elongated and shaped product to provide the product with an improved crisp texture which is substantially free of large, hollow, balloon-like bubbles.

3,849,583

METHOD OF PRODUCING A FONDANT PRODUCT

Andreas Marinus Aartsen, Barendrecht, Netherlands, assignor to Cooperatieve Vereniging Suiker Unie U.A., Rotterdam, Netherlands

No Drawing. Filed June 19, 1972, Ser. No. 263,947

Claims priority, application Netherlands, June 21, 1971, 7108468

Int. Cl. A23g ***3/00***

U.S. Cl. 426—162 **8 Claims**

1. The method of producing a dry fondant product capable of admixture with liquid to form a sugar glaze which will not flow away incidental to thawing after having been frozen, which comprises the steps of:

(a) forming an emulsifiable fat component which is a mixture of a hard fat with a liquid oil and emulsifier having a melting point of between 20 and 40° C.; and

(b) bringing the temperature of the fat component above its melting point, thereby forming a liquid; and

(c) blending the liquid fat component of step (b) with a dry, granular fondant sugar component for a time sufficient to produce the dry fondant product in which the dry fondant product contains from 5–10% of the liquid fat component based by weight upon the amount of sugar component;

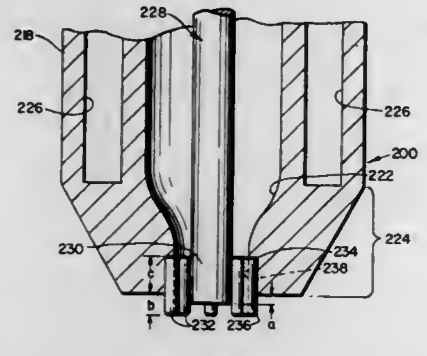
said dry fondant sugar component being obtained by providing a sugar solution which comprises, first concentrating such solution by cooking to reach a solids content of 90 to 95%; then admixing thereto 30 to 70% (calculated on total mixture) of finely divided sugar particles having for the major part a size not exceeding 40 microns; then breaking and cooling the mixture, and drying it during mixing, breaking and cooling to reach a moisture content of about 2% by weight.

ELECTRICAL

3,849,584
PLASMA ARC TORCH

Boris Evgenievich Paton, Apt. 21, 11/13, Kotsubinskogo Str.; Victor Iosifovich Lakomsky, Bastionoja, Ul. 10; Gary Alexandrovich Melnik, ul. Prazhskaya 3, kv. 169; Anatoli Ivanovich Chvertko, Blvd. Lesiga, Ukrainka 2, and Alfred Iosifovich Bukalo, Apt. 69, 8/2, Zaporozhtsa Str., all of Kiev, U.S.S.R.

Filed Oct. 24, 1973, Ser. No. 409,329
Int. Cl. H05b *7/18*
U.S. Cl. 13—9 **62 Claims**

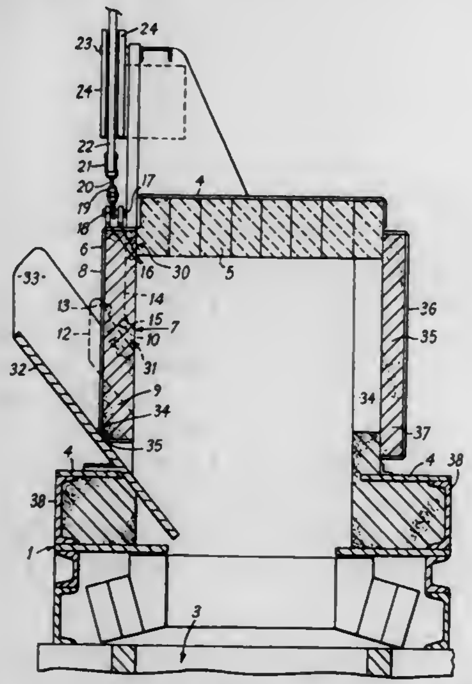


1. A plasma arc torch with a center electrode and a nozzle end structure, said nozzle end structure comprising: an elongate, hollow body coaxially surrounding and spaced from the lower end of said electrode; a plurality of circumferentially spaced apart electrically conductive heat sink inserts mounted in the interior of said body, around and radially spaced from said electrode, each said insert having a first portion radially adjacent said electrode lower end and second portion axially disposed beyond the terminal end of said electrode; said body providing an annular nozzle orifice having end means defining a nozzle orifice with a smoothly curved, convergent profile surface within said body for providing a substantially laminar flow of plasma gas past said electrode and inserts.

3,849,585
FURNACES

Reginald E. Laflin, Balcombe, England, assignor to A.P.V. Paralec Limited, Crawley, Sussex, England

Filed Dec. 13, 1973, Ser. No. 424,634
Claims priority, application Great Britain, Dec. 21, 1972, 59066/72
Int. Cl. F27d *1/18*
U.S. Cl. 13—26 **14 Claims**

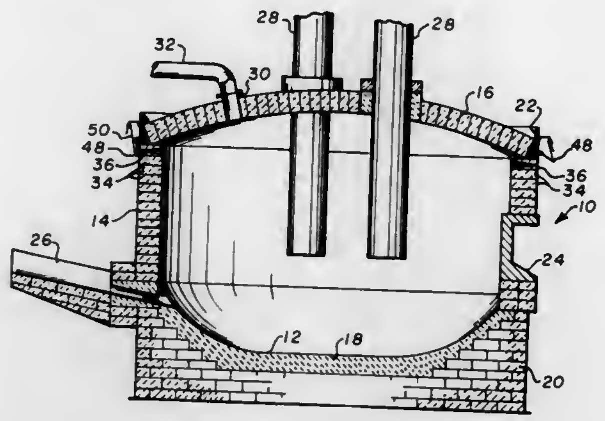


1. A static non-tipping electric induction furnace comprising a container in which metal to be melted is loaded, said container having an open upper end and a cover which extends over the upper end, said cover having at one side thereof a doorway defined by a door sill, a charging door, mounting means mounting said door for movement between an open position spaced from said door sill and a closed position engaging said door sill, said mounting means including guide means operable during the initial opening movement of the door for moving the door laterally bodily away from the door sill and then in a linear direction substantially parallel to the door sill.

3,849,586
ELECTRIC ARC FURNACES AND REFRACTORY SHAPES THEREFOR

Louis John Jacobs, Chicago, Ill., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 20, 1974, Ser. No. 444,193
Int. Cl. F27d *1/04*
U.S. Cl. 13—32 **3 Claims**

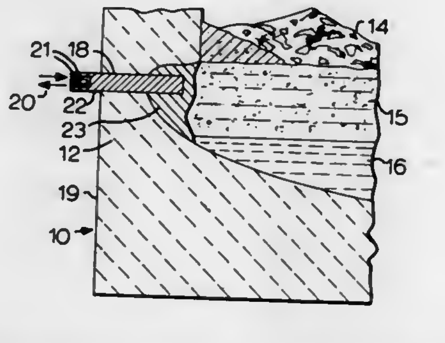


1. In an electric arc furnace having a side wall, a roof and a fume vent in said roof, the improvement comprising a series of refractory brick forming a row around said sidewall adjacent the top of said sidewall, each of said refractory bricks including two side faces abutting the adjacent refractory bricks in said row, each of said side faces of said refractory bricks having a groove formed therein, said grooves in abutting faces of adjacent refractory bricks coinciding so as to form channels through said row of refractory bricks extending from outside said furnace to inside said furnace, and means for opening and closing said channels.

3,849,587
COOLING DEVICES FOR PROTECTING REFRACTORY LININGS OF FURNACES

Gerald Gordon Hatch, Toronto, and Bert Orland Wasmund, West Hill, both of Canada, assignors to Hatch Associates Limited, Toronto, Ontario, Canada

Filed Dec. 13, 1973, Ser. No. 424,564
Claims priority, application Canada, Oct. 15, 1973, 183399
Int. Cl. F27b *3/24;* **F27d** *1/12*
U.S. Cl. 13—32 **19 Claims**

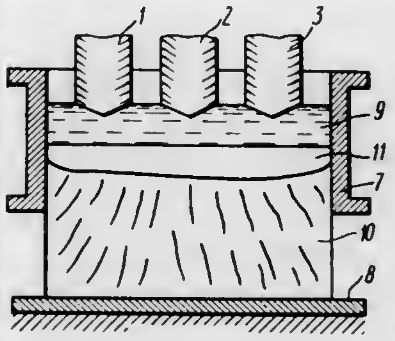


1. A method for protecting the refractory lining of a furnace operating at high temperatures comprising placing solid cooling members of high thermal conductivity into the lining, the outer portions of the cooling members remaining outside of the refractory lining, said cooling members being substantially devoid of water cooled channels in the portions thereof located inside the lining, and selecting the length, cross-sectional area, spacing and material of said cooling members to avoid melting thereof and to result in withdrawal of sufficient heat from the furnace lining to limit erosion of the lining.

3,849,588
METHOD OF ELECTROSLAG MELTING OF METAL INGOTS

Boris Evgenievich Paton, ulitsa Kotsjubinskogo, 9, kv. 21; Boris Izrailevich Medovar, ulitsa A. Barbjusa, 22/26, kv. 109; Ilya Iosifovich Kumysh, Vozdukhoflotsky prospekt, 42, kv. 51; Anatoly Konstantinovich Tsykulenko, ulitsa Babushking, 23, kv. 38; Jury Fedorovich Alferov, bulvar Lepse, 29, kv. 64; Grigory Bentsionovich Schupak, ulitsa Chudnovskogo, 7, kv. 61; Oleg Petrovich Bondarenko, ulitsa Kreschatik, 15, kv. 36, and Alexei Georgievich Bogachenko, ulitsa Miljutenko, 15/2, kv. 141, all of Kiev, U.S.S.R.

Filed Sept. 24, 1973, Ser. No. 399,803
Claims priority, application U.S.S.R., Feb. 2, 1973, 1907050
Int. Cl. H05b *3/60*
U.S. Cl. 13—34 **12 Claims**

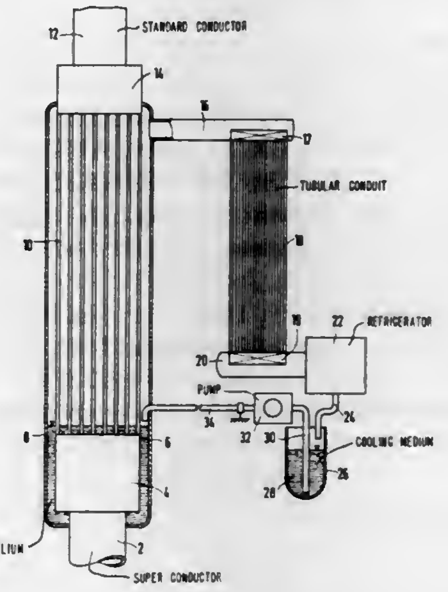


1. A method of electroslag melting of a metal ingot in a cooled mould from at least two consumable electrodes with each electrode being connected to an individual power source comprising the steps of: providing molten slag by establishing a slag bath in the mould; simultaneously supplying electric energy to each of the consumable electrodes having their lower ends dipped into the slag bath; forming the metal ingot in the mould in the course of melting the consumable electrodes; and alternately and repeatedly varying the current and voltage applied to each of the consumable electrodes.

3,849,589
CURRENT FEEDING ARRANGEMENT FOR ELECTRICAL APPARATUS HAVING LOW TEMPERATURE COOLED CONDUCTORS

Fritz Schmidt, Erlangen; Gunther Matthaus, Spardorf, and Peter Massek, Forchheim, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 314,565, Dec. 13, 1972, abandoned. This application Dec. 4, 1973, Ser. No. 421,693
Claims priority, application Germany, Dec. 20, 1971, 2163270
Int. Cl. H01v *11/00*
U.S. Cl. 174—21 R **10 Claims**

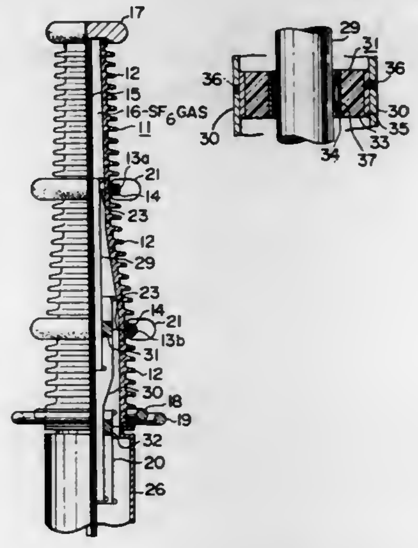


1. A current feeding arrangement for electrical apparatus having conductors, cooled to a low temperature, connected to a standard conductor by a connecting means, in which the connecting means is contained in a container and is cooled by a gasified liquid coolant, the improvement comprising connecting the end of the container located at the end of the connecting means disposed away from the conductor cooled to a low temperature, to a plurality of flow channels each having at least two walls covered by an electrical insulating material, and separated by a displacement of not more than 30 mm.

3,849,590
GAS FILLED ELECTRICAL BUSHING WITH CONCENTRIC INTERMEDIATE ELECTRODES

Jun Ozawa; Tokio Isogai; Toshio Ishikawa; Tokio Yamagiwa; Mutsuo Matsumura, all of Hitachi; Zenichi Nakano, Yokohama, and Shigeru Fuziya, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 25, 1973, Ser. No. 409,460
Claims priority, application Japan, Nov. 1, 1972, 47-108822
Int. Cl. H01b *17/28*
U.S. Cl. 174—31 R **13 Claims**



1. A gas filled-bushing comprising an insulator including at least three stacked insulator units, at least two splicer means hermetically joining each of said insulator units, insulating gas inserted in an inner space of said insulator, a control conductor means disposed at the center of said insulator for providing a current path, and at least a pair of cylinder-shaped intermediate electrodes arranged concentrically with said central conductor and electrically connected to said splicer means, said intermediate electrodes having at least a portion thereof opposed to each other, at least one intermediate electrode other than the electrode disposed nearest to said central conductor means including a portion extending below the terminus of the intermediate electrode disposed nearest to said

central conductor means, said last-mentioned portion of said intermediate electrode having a diameter smaller than the portion thereof opposed to said intermediate electrode disposed nearest to said central conductor means.

3,849,591
LAMINATE TAPE INCLUDING AN ADHESIVE RESIN TERNARY COPOLYMER OF ETHYLENE, VINYL ACETATE AND GLYCIDYL METHACRYLATE OR GLYCIDYL ACRYLATE AND LAMINATE SHEATH CABLE MADE THEREFROM

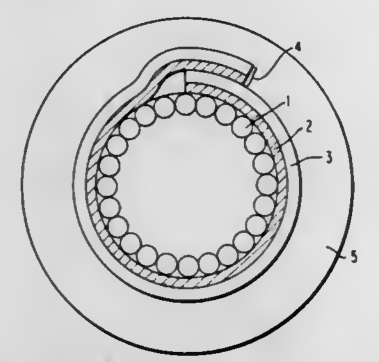
Terumichi Ichiba; Hiroshi Shimba, and Hiroaki Mukunashi, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan

Filed Mar. 1, 1973, Ser. No. 337,048

Claims priority, application Japan, Mar. 3, 1972, 47-22630; Mar. 3, 1972, 47-22631; May 13, 1972, 47-47334; May 13, 1972, 47-47336The portion of the term of this patent subsequent to July 30, 1991, has been disclaimed.

Int. Cl. H01b *7/18*

U.S. Cl. 174—107 **10 Claims**



1. A laminate tape comprising a metal tape and a resin which is a ternary copolymer composed of ethylene, vinyl acetate and glycidyl methacrylate or glycidyl acrylate, said resin being laminated on one or both surfaces of said metal tape.

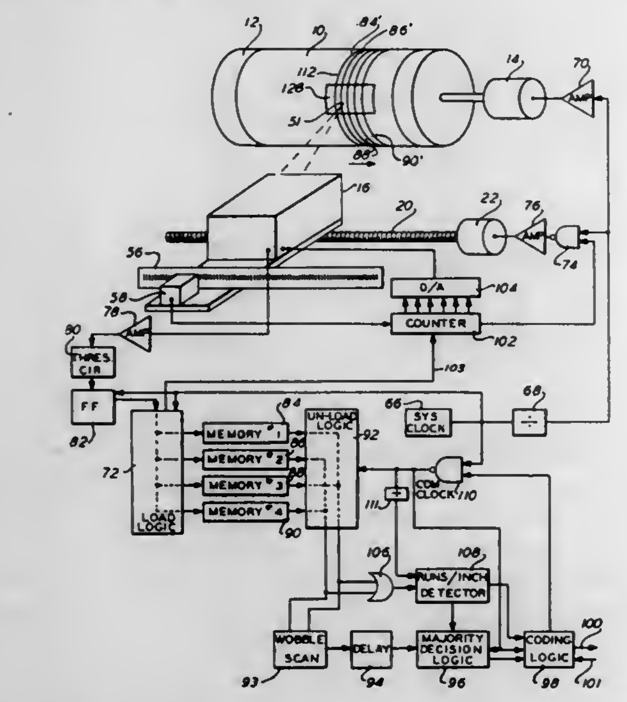
3,849,592
GRAPHIC DATA REDUNDANCY REDUCTION FOR TEXT AND HALF-TONE OPTICAL FACSIMILE SYSTEM

Bernard M. Rosenheck, Dix Hills, N.Y., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Feb. 5, 1973, Ser. No. 329,760

Int. Cl. H04n *1/32*

U.S. Cl. 178—6 **11 Claims**



1. A facsimile system for transmitting and receiving data representing black and white text and half-tone areas upon a document, comprising:

- means for optically scanning adjacent transverse areas of said document and converting each black and white and half-tone area within each scanned transverse area of said adjacent transverse areas of said document into digital signals;
- a plurality of memory means each storing said digital signals representing areas within one of said scannned transverse areas of said document;
- detector means for detecting the number of variations within said digital signals;
- selection means connected to said memory means to receive digital signals from more than one memory means and thereby more than one scanned adjacent transverse area at a time;
- said selection means including means for averaging said stored digital signals representing scanned adjacent transverse areas of said document from said more than one memory means when said detected variations within said digital signals are few thereby areally compressing said stored digital signals for transmission and reception;
- said selection means further including means for alternately selecting between said stored digital signals representing said scanned adjacent transverse areas of said document from said more than one memory means when said detected variations within said digital signals are numerous thereby passing said digital signals for transmission and reception.

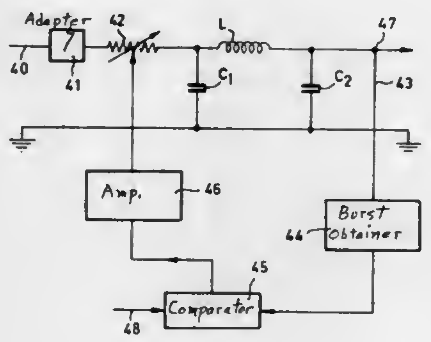
3,849,593
AMPLITUDE CORRECTOR FOR THE CHROMINANCE COMPONENT OF A COLOUR TELEVISION SIGNAL

Roger Brun, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 10, 1973, Ser. No. 349,792

Int. Cl. H04n *9/12, 9/46*

U.S. Cl. 358—27 **7 Claims**



1. A corrector circuit for a television signal having a chrominance component, said circuit comprising an adapter having an input means for receiving said signal and an output having a negligable output impedance; a variable resistance means coupled to said adapter output and having a control input; a pi-type low pass filter having an input capacitor coupled to said variable resistance means, an inductor coupled to said input capacitor, and an output capacitor coupled to said inductor, said inductor and said output capacitor being resonant at the frequency of said chrominance component; means coupled to said output capacitor for obtaining a chroma burst from said component; and a comparison means having a first input means coupled to said obtaining means, a second input means for receiving a reference potential, and an output coupled to said control input.

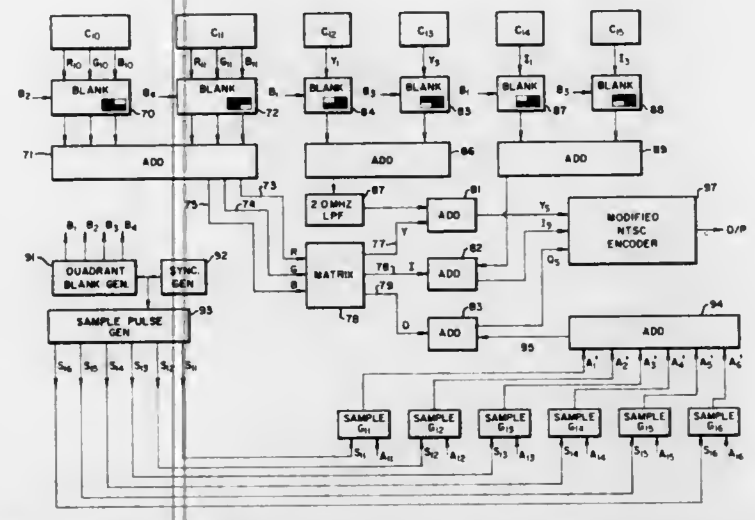
3,849,594
MULTI-PICTURE TV SYSTEM WITH AUDIO AND DODING CHANNELS

James W. H. Justice, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 25, 1973, Ser. No. 364,166

Int. Cl. H04n *7/04*

U.S. Cl. 178—5.6 **15 Claims**



1. An apparatus for transmitting a plurality of separate pictures or scenes and a plurality of audio signals using modulated subcarriers on a single TV carrier signal such that at least two scenes are transmitted for display in certain of four quadrants of a television receiving tube, the combination comprising:

- means for producing a plurality of video signals corresponding to said separate scenes,
- blanker means for limiting the scenes represented by said video signals for display in a predetermined quadrant of a television receiving tube,
- means for producing at least two video summation signals, each comprising at least two of said blanked video signals, means for sampling a plurality of audio signals to provide a plurality of audio signal bursts,
- means for producing an audio summation signal from said audio signal bursts; and
- encoder means receiving said two video summation signals and said audio summation signal for modulating one of said video summation signals and said audio summation signal onto separate phase displaced subcarriers for transmission with the other of said video summation signals on a single television carrier signal.

3,849,595
FACSIMILE SIGNAL TRANSMISSION SYSTEM

Tatsuo Ishiguro, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Sept. 27, 1973, Ser. No. 401,300

Claims priority, application Japan, Sept. 28, 1972, 47-97352

Int. Cl. H04n *7/12*

U.S. Cl. 178—6 **4 Claims**

STATE NO.	X_1 X_2 X_3	0° COMP.	90° COMP.	p	q
0	0 0 0	0	0	0 0	0 0
1	0 0 1	+1	0	0 1	0 0
2	0 1 0	+1	+1	0 1	0 1
3	0 1 1	0	+1	0 0	0 1
4	1 0 0	0	0	0 0	0 0
5	1 0 1	−1	0	1 1	0 0
6	1 1 0	−1	−1	1 1	1 1
7	1 1 1	0	−1	0 0	1 1

1. A facsimile signal transmission system comprising:
a transmitting apparatus including:

- means for converting an input binary facsimile signal to a first binary code signal indicating state numbers succeedingly and periodically assigned to the alternatively generated two levels of said input binary facsimile signal;
- odd state numbers being assigned to one of the levels of said facsimile signal and even state numbers to another of the levels of said facsimile signal;
  - means for generating from said first binary code signal a second binary code signal changing from one to another codes every time said state numbers change from an odd number to an even number;
  - means for generating from said first binary code signal a third binary code signal changing from one to another codes every time said state numbers change from an even number to an odd number;
  - means responsive to said second and third binary code signals for generating two kinds of amplitude-indicating signals, each indicating at least three kinds of amplitudes; and
  - means for quadrature-amplitude-modulating quadrature carriers with said two kinds of amplitude-indicating signals thereby to transmit the quadrature-amplitude-modulated signal via a transmission line to a receiving apparatus; and
- said receiving apparatus including:
  - means for quadrature-amplitude-demodulating the received quadrature-amplitude-modulated signal thereby to generate two kinds of amplitude-indicating signals; means for converting the last-mentioned two kinds of amplitude-indicating signals to two kinds of binary code signals corresponding to said second and third binary code signals; and
  - means responsive to the last-mentioned two kinds of binary code signals for regenerating said input binary facsimile signal.

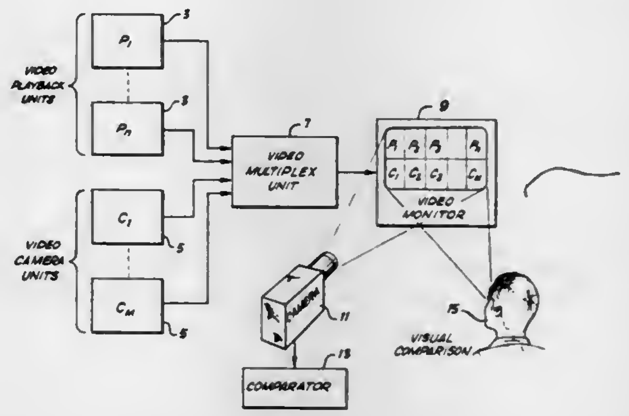
3,849,596
METHOD FOR COMPARISON USING SIMULTANEOUS DISPLAYS ON A VISUAL MONITOR

Lu Lawrence, 1024 N. Lincoln, Fullerton, Calif.

Filed Aug. 9, 1971, Ser. No. 170,202

Int. Cl. H04n *7/18*

U.S. Cl. 178—6.8 **4 Claims**



1. A method for comparative analysis wherein a plurality of pictorial scenes are simultaneously displayed on the screen of a video monitor for comparison, comprising the steps of:

- recording at least one video signal containing information for creating at least one reference pictorial scene of a given subject;
- activating the video monitor screen for separately displaying said at least one reference pictorial scene;
- generating video information for creating at least one comparison pictorial screne of said given subject, said at least one comparison pictorial scene presenting said given subject at times different from said at least one reference pictorial scene; and

activating the video monitor screen for separately displaying said at least one comparison pictorial scene whereby said reference and comparison pictorial scenes are produced separately and simultaneously on the video monitor screen for comparison of said given subject.

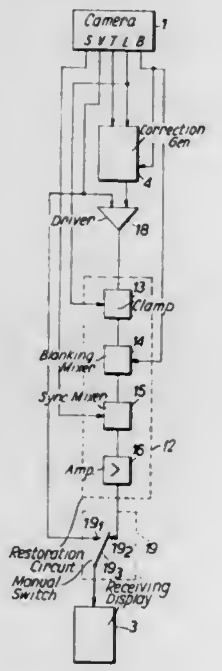
3,849,597
SIMULATOR VISUALIZATION DEVICE
Philippe Y. J. Paris, Fontenay-aux-Roses; Pierre P. A. Bougon, Elancourt, and Lucien Guimard, Montrouge, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 7, 1973, Ser. No. 358,055

Claims priority, application France, May 5, 1972, 72.16098

Int. Cl. H04m *7/18*

U.S. Cl. 178—6.8 **6 Claims**



1. In a vehicle operator training device which includes a closed circuit television arrangement having at least one display and a camera mounted to view a scene simulating that which would be presented to said vehicle operator under natural conditions, the combination comprising:

means within said camera for providing at least video and scan timing signal outputs;

correction generator means responsive to said timing signals to generate a composite correction function representative of a predetermined illumination gradient in at least one scan coordinate;

and correction driver means responsive to said camera video output and said composite control function for modulating said video in amplitude as a variable function of said illumination gradient through at least a portion of the scan of said camera in said scan coordinate.

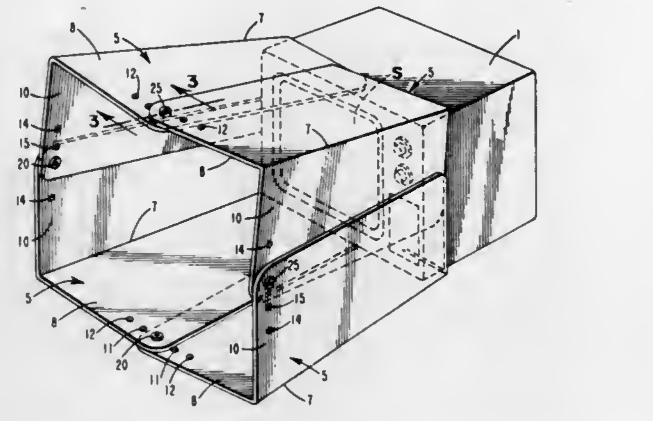
3,849,598
TELEVISION SCREEN LIGHT SHIELD
Charles C. Hoffberger, II, 2 Marina Plaza, Sarasota, Fla. 33577, and Charles A. Rivlin, 2245 Rogene Dr., Baltimore, Md. 21209

Filed Nov. 20, 1973, Ser. No. 417,611

Int. Cl. H01j *24/06;* **H04n** *5/64*

U.S. Cl. 178—7.82 **6 Claims**

1. An adjustable shield for a screen of an apparatus enabling imposition of images thereon comprising four foldable and interconnecting sections, each of said sections being of approximately the same size in overall length and width, each of said sections being adapted to be folded by folding means intermediate the width thereof thereby to be positioned in right angular configuration, each of said sections at one end thereof having an aperture on each side thereof, each of said sections when in said configuration overlapping an adjacent section that sufficient amount to place the side apertures of one section in alignment with the side apertures of the adjacent section, and pivot pin means in each of said aligned apertures, whereby said sections at the opposite ends thereof form a rectangular opening of adjustable size to fit different sizes of said apparatus and screen.



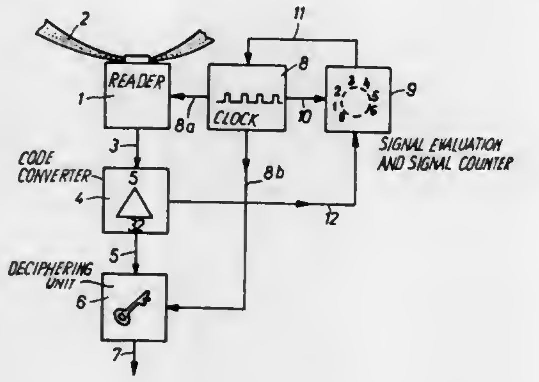
3,849,599
APPARATUS FOR DECIPHERING CIPHER CODE PRESENT AT INFORMATION CARRIERS IN THE FORM OF CHARACTER GROUPS OF THE SAME NUMBER OF DIGITS
Werner Josef Senn, Buhlmattweg 13, Baar, Switzerland

Filed Nov. 8, 1972, Ser. No. 304,743

Claims priority, application Switzerland, Nov. 10, 1971, 16329/71

Int. Cl. H04l *1/00*

U.S. Cl. 178—53.1 R **5 Claims**



1. An apparatus for deciphering ciphered texts, which are present at information carriers in the form of character groups of the same number of characters, said character groups being separated from each other by control character elements, comprising a reader for the information carrier, a clocking device for driving the reader, a deciphering unit controlled both by the clocking device and the reader, a signal evaluation device controlled by said reader, said signal evaluation device producing a first output signal in correspondence to the signals of each character and a second output signal in correspondence to the control character element signals, the output sides of said signal evaluation device being connected to the input side of a signal counter operating in a cyclical manner and having a counting capacity corresponding to the number of characters of each character group, said signal counter being advanced by one step by each of said first output signals, a control circuit connected to said clocking device, said control circuit being activated each time said signal counter is advanced by one step, such that the signal evaluation device advances said signal counter by means of its second output signals from a start position to a first position and said signal counter stops said clocking device by means of said control circuit, as soon as the signal counter receives in its start position one of said first output signals and receives in any position other than the start position one of said second output signals of the signal evaluation device.

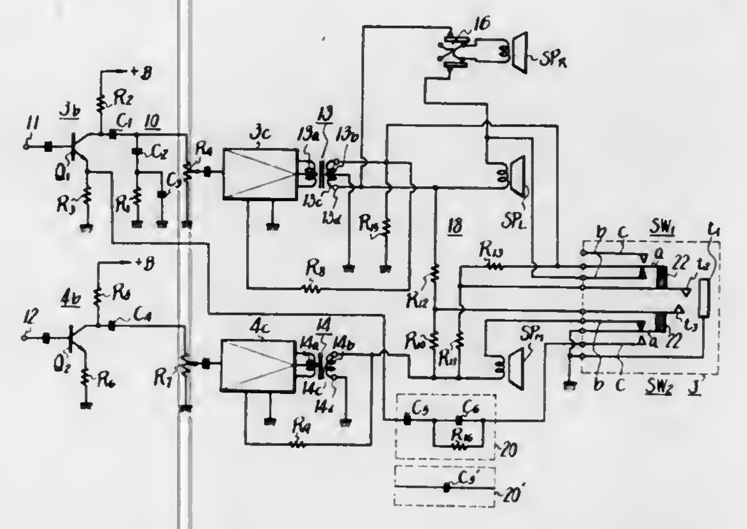
3,849,600
STEREOPHONIC SIGNAL REPRODUCING APPARATUS
Syunji Ohshima, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 11, 1973, Ser. No. 405,426

Claims priority, application Japan, Oct. 13, 1972, 47-118493

Int. Cl. H04h *5/00*

U.S. Cl. 179—1 G **13 Claims**



1. A stereophonic signal reproducing apparatus comprising:

a. left and right speaker systems and a central speaker system;

b. means for applying a difference signal (L—R) proportional to the difference between left and right signals L and R and an oppositely phased difference signal (R—L) to said left and right speaker systems and for applying a sum signal (L+R) to said central speaker system to thereby produce sounds from said left, right and central speaker systems, the produced sounds being mixed acoustically in space in a matrix manner;

c. frequency characteristic compensating means for varying the reproduction frequency response of said difference signals (L—R) and (R—L) such that the level of said difference signals is relatively high in a low frequency band but relatively small in a high frequency band as compared with the level of said sum signal (L+R);

d. a matrix circuit coupled to said means for applying for mixing said difference signals (L—R), (R—L) and said sum signal (L+R) in a matrix manner to produce left and right signals L and R, respectively;

e. auxiliary output terminal means coupled to said matrix circuit and adapted to be supplied with said left and right signals L and R; and

f. means operably coupled to said auxiliary output terminal for terminating the variation in the reproduction frequency response of said difference signals.

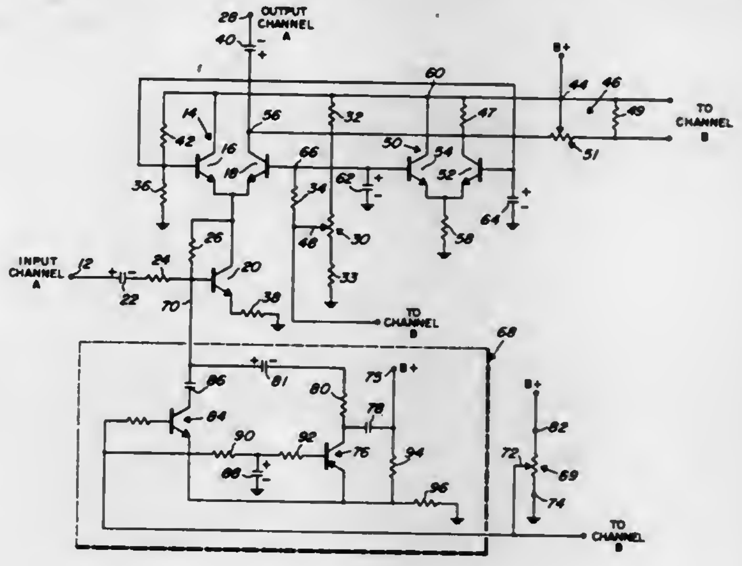
3,849,601
VOLUME AND TONE CONTROLS FOR MULTICHANNEL AUDIO SYSTEMS
Nikolai Goncharoff, Roselle, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Oct. 9, 1973, Ser. No. 404,554

Int. Cl. H03g *5/16*

U.S. Cl. 179—1 D **4 Claims**

1. In an audio signal translating system including a differential amplifier having first and second transistors, one of the transistors being connected to an output terminal, a signal translating transistor component including an input and output, the output thereof being connected to the first and second transistors of said differential amplifier for applying operating current and simultaneously an audio signal path thereto, an audio signal input means coupled to the input of said signal translating transistor to provide an input signal thereto, settable volume control means coupled to said differential amplifier a predetermined portion of said audio signal being passed by said differential amplifier to said output terminal in accordance with the setting of said volume control means, a tone control circuit connected to said input of said signal translating transistor for diverting predetermined frequency components of said audio signal therefrom to adjust the tonal quality of the audio signal passed to said output terminal, said tone control circuit including in combination; tone control selector means coupled to a source of power, first and second transistor means coupled electrically to said tone control selector means and capacitor means, said tone control selector means being movable to a first setting for providing a first predetermined voltage for rendering a first one of said first and second transistor means conductive, whereby high and low frequency components of said audio signal are diverted from said signal translating transistor through said first-mentioned transistor means, to provide a relatively flat frequency response to said audio output, to a second setting for providing a second predetermined voltage to render said first transistor means cut off, whereby high frequency components of said audio signal are diverted from said signal translating transistor through said capacitor means to provide a bass boost to said audio output and to a third setting for providing a third predetermined voltage for rendering said second transistor means conductive while maintaining said first transistor means cut off, whereby additional high frequency components of said audio signal are diverted from said signal translating transistor through said second transistor means while also diverting other high frequency components of said audio signal through said capacitor means, to provide a treble cut effect to said audio output.

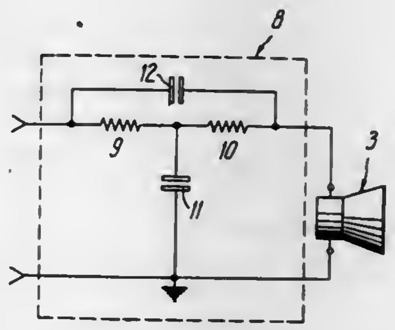


3,849,602
EARPHONE WITH FREQUENCY CORRECTION
Gennady Semenovich Gendin, Proletarsky prospekt, 50, kv. 20, Moscow, U.S.S.R.

Filed Dec. 23, 1971, Ser. No. 211,545

Int. Cl. H04r *3/08, 1/28*

U.S. Cl. 179—1 D **5 Claims**



1. An earphone comprising a case; an electroacoustic transducer adapted to reproduce sound in the audio frequency range, said transducer having an input for receiving an audio-frequency signal; an electric filter accommodated in said case and connected in series in the transmission path of said audio-

frequency signal, said transducer having a mid-band frequency of about 1,000 Hz and attenuated output in both high and low frequency ranges, said filter being effective in the mid-band frequency of the transducer for attenuating said mid-band frequency to compensate for the attenuation of low and high frequencies and provide a substantially linear overall radiation characteristic within the assigned audio-frequency band.

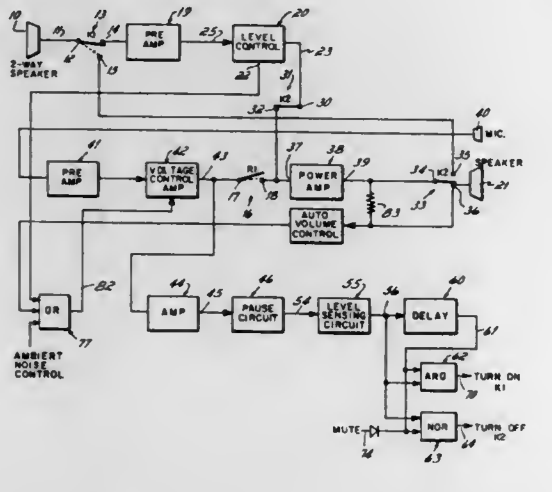
3,849,603
REMOTE BANKING INTERCOM SYSTEM

Steve Proios, Northvale, N.J., assignor to The Mosler Safe Company, Hamilton, Ohio

Filed Oct. 30, 1972, Ser. No. 302,253

Int. Cl. H04m *1/00*

U.S. Cl. 179—1 H **16 Claims**



1. An intercommunication system for a remote banking installation comprising:

- speech transducing and sound reproduction means located at a customer location;
- a microphone and a speaker located at a teller location, said microphone and speaker being separate electrical components;
- an amplifier means with an input and an output; and
- a switching means responsive to teller signals at a first nonzero level output from said microphone produced by speech input to said microphone at a first acoustic loudness to establish a first switching configuration and responsive to teller signals from said microphone at a second nonzero level less than said first level produced by speech input to said microphone at a second acoustic loudness less than said first acoustic loudness to establish a second switching configuration, said second nonzero signal level being sufficient in magnitude to permit, upon amplification by said amplifier means, audible reproduction thereof by said customer sound reproduction means, said first switching configuration providing an electrical connection from the output of said amplifier to said customer sound reproduction means and an electrical connection from said microphone to the input of said amplifier to permit the teller to talk to the customer and said second switching configuration providing an electrical connection from the output of said amplifier to said teller speaker and an electrical connection from said customer speech transducing means to the input of said amplifier to permit the customer to talk to the teller, said switching means being unresponsive to a decrease in teller speech signals to a level below said first level, but in excess of said second level, to permit the teller speech signals output from the microphone to drop below said first level to a level exceeding said second level without changing said switching configuration,
- said switching means being operative normally in said second switching configuration to facilitate communication from said customer to said teller without the switching of said switch means.

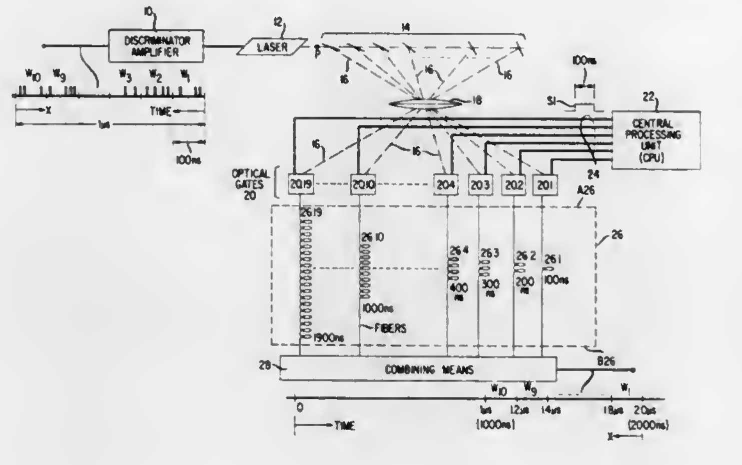
3,849,604
TIME-SLOT INTERCHANGER FOR TIME DIVISION MULTIPLEX SYSTEM UTILIZING ORGAN ARRAYS OF OPTICAL FIBERS

Vaclav Edvard Benes, Berkeley Heights, and Michel Albert Duguay, Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 28, 1973, Ser. No. 401,632

Int. Cl. H04j *3/00;* H04b *9/00*

U.S. Cl. 179—15 AQ **7 Claims**



1. In a time division multiplex communication system in which information is carried in the form of signal pulses in a plurality *j* of time-wise sequential time slots or words on an input signal path, apparatus for permuting said words to produce a predetermined sequence of said words on an output signal path, comprising:

- generating means for producing from each of said signal pulses a plurality of at least $(2j - 1)$ optical sub-pulses each propagating along spatially separate paths,
- a plurality of at least $(2j - 1)$ optical gates each disposed to receive a separate one of said sub-pulses, said gates being normally in an off-state which inhibits transmission of said sub-pulses therethrough,
- an array of at least $(2j - 1)$ optical fibers cut to different lengths so that the difference in length between functionally adjacent fibers is uniform, one end of each of said fibers being terminated in an input plane and the opposite end of each of said fibers being terminated in an output plane, each of said one ends of said fibers being in registration with a separate one of said gates,
- means for combining on said output signal path the optical sub-pulses emerging from the output plane of said array, and
- control means for applying to predetermined ones of said gates control signals effective to switch said gates to an on-state for a time period approximately equal to the duration of a time slot, said control signals being applied to said gates so that at prescribed times preselected words are coupled to preselected fibers, thereby to delay the sub-pulses in each of said words by a predetermined amount effective to permute said words and to produce said sequence on said output signal path.

3,849,605
SOLID STATE CONTINUITY CHECK CIRCUIT

Stanley L. Russell, West Webster, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

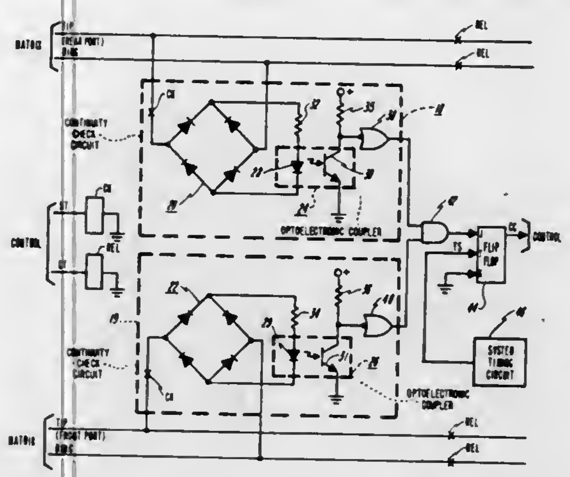
Filed Dec. 29, 1972, Ser. No. 319,245

Int. Cl. H04m *3/02*

U.S. Cl. 179—16 AA **8 Claims**

1. A continuity check circuit for common control telephone systems for connection to the tip and ring leads of a telephone circuit for detecting the presence of a potential across the tip and ring leads, said continuity check circuit comprising:

- a semiconductor device including an input circuit having a radiation source that generates photon radiation, the intensity of which is a function of the current flow therethrough, and an output circuit having a radiation sensitive device, the impedance of which is a function of the intensity of radiation from said source, said input and output circuits being electrically isolated, and
- circuit means for connecting, in response to the application thereto of a signal from the common control, said input circuit of said semiconductor device to the tip and ring leads of a telephone circuit so that in response to a potential being present across said tip and ring leads said input circuit is rendered conductive to produce a continuity check signal from said output circuit.



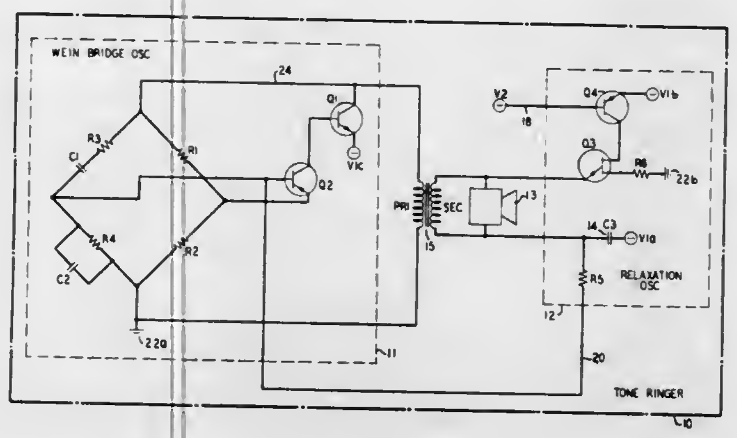
3,849,606
TONE RINGER

Kenneth Joseph Roberge, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 14, 1973, Ser. No. 369,937

Int. Cl. H04m *19/02*

U.S. Cl. 179—84 T **8 Claims**



1. A telephone set tone ringer comprising

- a transducer responsive to electrical signals of audio frequency for producing audible tones,
- means for generating a plurality of first electrical pulses which are applied to said transducer and produce a like plurality of audible clicks, and
- a first oscillator responsive to each of said first pulses for providing an audio frequency signal pulse output which is also applied to said transducer to produce an audio tone pulse.

3,849,607
POLARITY REVERSAL SWITCHING CIRCUIT

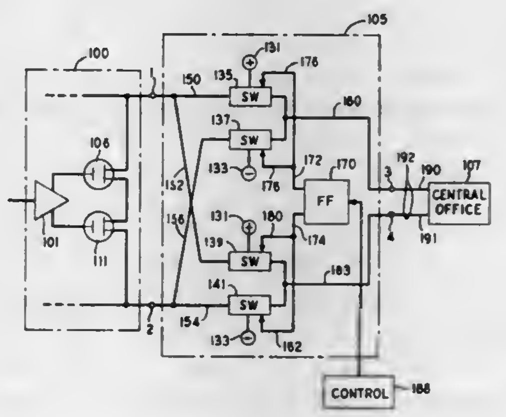
Robert Lawrence Carbrey, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 2, 1973, Ser. No. 356,317

Int. Cl. H03k *17/00*

U.S. Cl. 179—86 **15 Claims**

1. A voltage polarity reversal switching circuit comprising a first and second terminal pair, a third and fourth terminal pair, a first d.c. voltage source, a second d.c. voltage source, control means for producing first and second control signals, first means connected to said first d.c. voltage source and said first and third terminals responsive to said first control signal for establishing a signal path between said first and third terminals and for supplying said first d.c. voltage from said first d.c. voltage source to said first and third terminals, second means connected to said second d.c. voltage source and said second and fourth terminals responsive to said first control signal for establishing a signal path between said second and fourth terminals and for supplying said second d.c. voltage from said second d.c. voltage source to said second and fourth terminals, third means connected to said first d.c. voltage source and said first and fourth terminals responsive to said second control signal for establishing a signal path between said first and fourth terminals and for supplying said first d.c. voltage from said first d.c. voltage source to said first and fourth terminals, and fourth means connected between said second d.c. voltage source and said second and third terminals responsive to said second control signal for establishing a signal path between said second and third terminals and for supplying said second d.c. voltage from said second d.c. voltage source to said second and third terminals whereby the d.c. voltage polarity across said first and second terminal pair remains invariant and the voltage polarity across said third and fourth terminal pair is reversible.



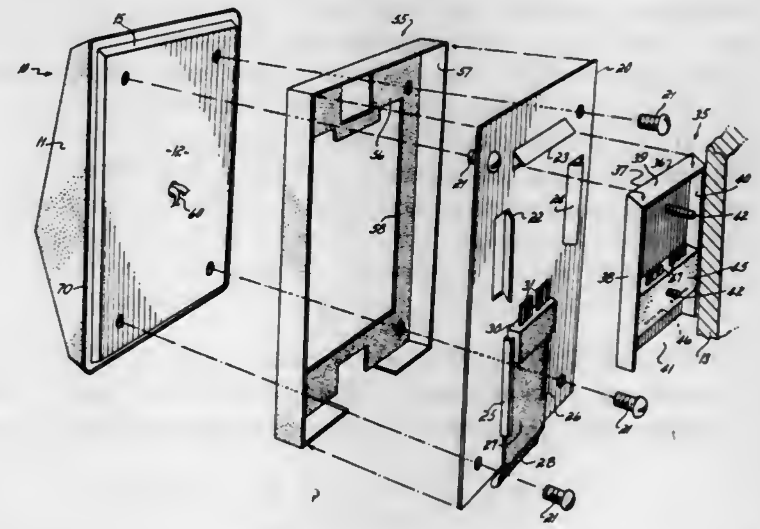
3,849,608
TELEPHONE MOUNTING STRUCTURE

Rafael T. Bustos, Atlanta, and James A. Leach, Mountain Park, both of Ga., assignors to Leggett & Platt Incorporated, Carthage, Mo.

Filed Nov. 12, 1973, Ser. No. 414,873

Int. Cl. H04m *1/04*

U.S. Cl. 179—146 R **51 Claims**

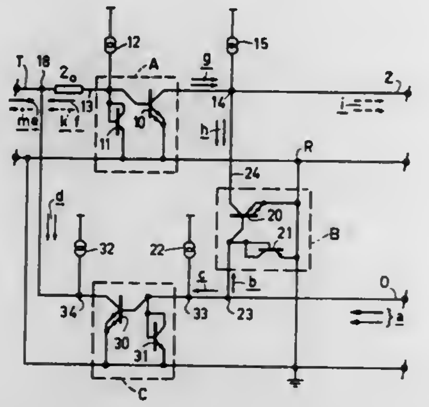


1. Improved mounting apparatus of the type for mounting a telephone set to a wall surface and for connecting the set to established telephone system circuitry, said apparatus comprising:

a wall bracket having a substantially flat forward face and rearwardly extending flanges on the top and two sides thereof,
said bracket being mounted on a wall surface and forming an enclosure with respect thereto,
said enclosure having an opening between the bottom of the forward face of said bracket and the wall surface,
first plug means having connectors disposed within said enclosure, spaced from and accessible from said opening, said connectors being connected to said telephone system circuitry,
a telephone set mounting plate connected to said telephone set,
second plug means mounted on said mounting plate for movement with respect thereto and being electrically connected to said set, said second plug means for cooperating with said first plug means to electrically connect said set to said circuitry, and releasably connecting the telephone set mounting plate and the telephone set to the wall bracket.

3,849,609
HYBRID CIRCUIT

Johannes Otto Voorman, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed May 7, 1973, Ser. No. 357,801
Claims priority, application Netherlands, June 15, 1972, 7208148
Int. Cl. H04b *1/58*
U.S. Cl. 179—170 NC **4 Claims**

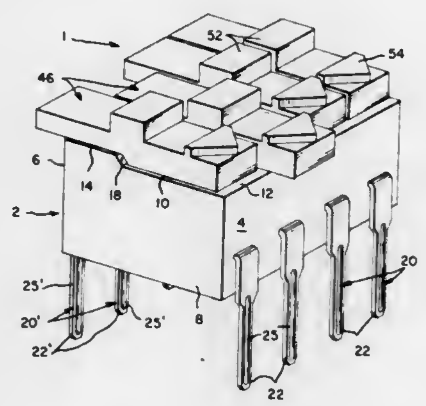


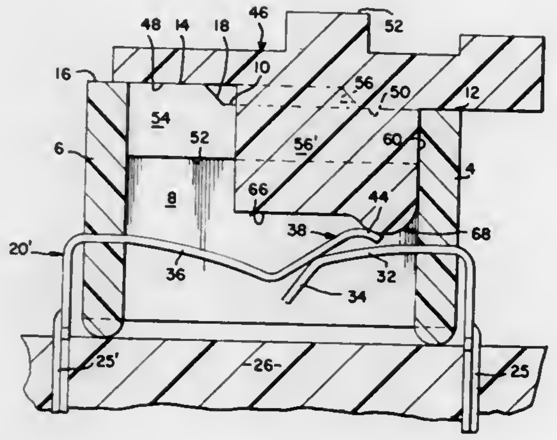
1. A hybrid circuit for coupling a two-way transmission path to a one-way transmission path and a one-way receiving path, of the type wherein a first amplifier has an input connected to the receiving path and an output connected to the two-way transmission path, a second amplifier has an input connected to the two-way transmission path and an output connected to the transmission path, and a third amplifier has an input connected to the receiving path and an output connected to the transmission path, the improvement wherein the first, second and third amplifiers are current-controlled current amplifiers, wherein a constant current source is connected to an input of at least one of the amplifiers, and wherein a constant current source is connected to at least one output of the amplifiers.

3,849,610
SLIDE SWITCH WITH INDIVIDUAL SLIDE OPERATORS

Joseph Larue Lockard, and William Henry Rose, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed July 19, 1973, Ser. No. 380,922
Int. Cl. H01h *15/24, 3/42*
U.S. Cl. 200—5 R **7 Claims**

1. A slide switch, comprising:
a housing,
a plurality of first contacts in a first row mounted in said housing with portions of the first contacts protruding from the housing to form first electrical terminals for pluggable connection externally of said housing,
a plurality of second contacts in a second row mounted in said housing with portions of the second contacts protruding from the housing to form second electrical terminals for pluggable connection externally of said housing, said second contacts each having an end portion overlying one of said first contacts,

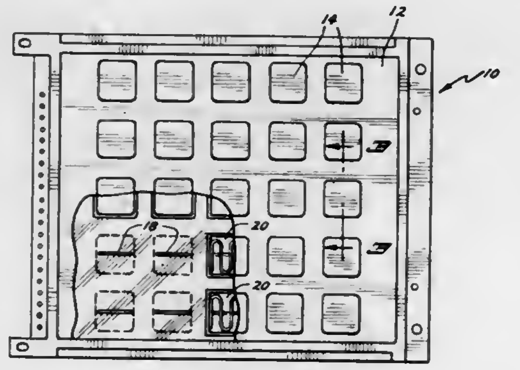




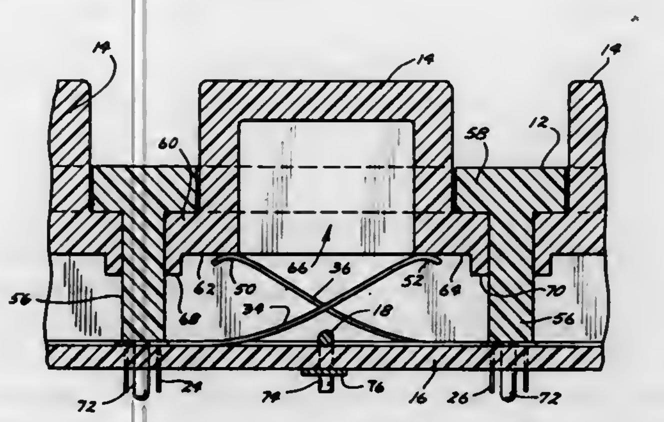
said housing having a plurality of spaced partitions,
a plurality of dielectric slide elements each slidably supported on corresponding pairs of partitions,
each said slide element having a portion protruding into said housing and engageable against a portion of one of said second contacts for deflecting one of said second contacts into engagement with one of said first contacts to complete an electrical circuit therebetween.

3,849,611
MANUALLY OPERABLE KEYBOARD SWITCH ASSEMBLY

Frank A. Walker, Jr., Huntington Beach, Calif., assignor to Controls Research Corporation, Santa Ana, Calif.
Filed May 21, 1973, Ser. No. 361,980
Int. Cl. H01h *13/70*
U.S. Cl. 200—5 A **25 Claims**



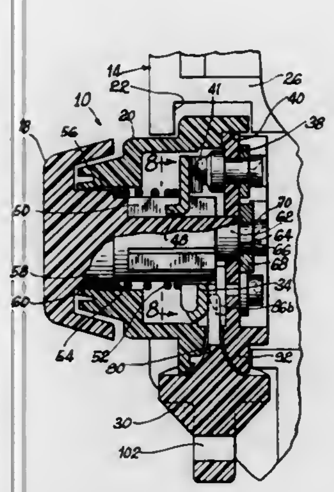
1. A manually operable keyboard switch assembly comprising, in combination:
keyboard housing defining a pattern of key-receiving channels;
an elongate contact bar stationarily disposed crosswise on the bottom of each of said channels;
a key received in each of said channels for limited movement toward and away from the contact bar associated with the respective channel; and



spring contact means fixedly mounted between multisection mounting means in each channel for urging an associated key normally to a position spaced from its associated contact bar, each spring contact means including at least a pair of spring leaves disposed in staggered, straddling relating to the associated contact bar and rising over in crossing relation above the contact bar into engagement with the associated key.

3,849,612
VEHICULAR ROTARY ELECTRICAL SWITCH ASSEMBLY WITH REMOVABLE, INTERPOSED NON-CONDUCTIVE PLUG KILL SWITCH MEANS

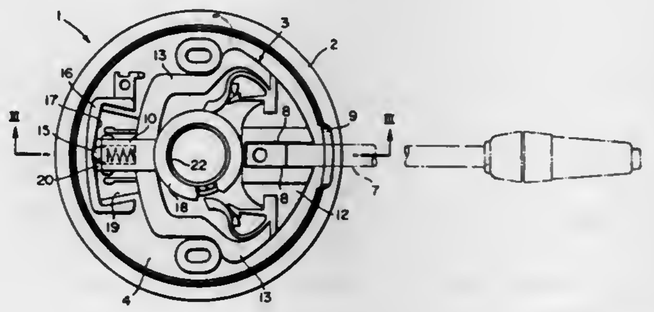
Jesse M. Cobb, Glenview, and William J. Schaad, Winnetka, both of Ill., assignors to Indak Manufacturing Corp., Northbrook, Ill.
Filed Aug. 1, 1973, Ser. No. 384,603
Int. Cl. H01h *21/50, 27/04*
U.S. Cl. 200—11 J **15 Claims**



1. An electrical switch,
comprising a casing,
a carriage rotatably mounted in said casing,
a contactor plate mounted on one end of said carriage rotatable therewith,
a plurality of contact points mounted in one end of said casing opposite said contactor plate for engagement by said plate, and
resilient means biasing said contactor plate toward said contact points,
said plate having a first portion conductively engaging a first one of said contact points throughout the range of movement of said contactor plate,
said first portion having a plurality of angularly spaced recesses for receiving said one contact point with a detent action whereby said contactor and said carriage are detained in positions corresponding to the locations of said recesses,
said one contact point and said recesses being smoothly rounded and being of corresponding size such that said one contact point is snugly receivable in each of said recesses with a precise positioning action,
said contactor plate having a contact segment for engaging a second of said contact points in at least one of said positions,
said contactor plate forming a closed electrical circuit between said first and second contact points in at least one of said positions.

3,849,613
TURN SIGNAL SWITCH APPARATUS FOR MOTOR VEHICLE

Yoshihiro Kawai, Aichi, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Nishikasugai-Gun, Aichi-Pref., Japan
Filed Sept. 26, 1973, Ser. No. 401,010
Claims priority, application Japan, Sept. 28, 1972, 47-112869
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.27 **1 Claim**



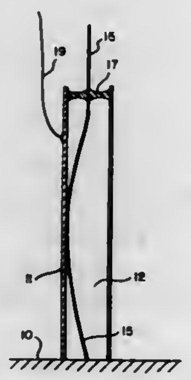
1. In a turn signal switch apparatus for a motor vehicle of the type which includes a substantially cylindrical housing body with an integral transverse base wall extending horizontally therein and a pivotable actuating member mounted within said housing body for horizontal pivotal movement on the transverse base wall caused by external manipulation of a turn signal switch lever connected to said actuating member by a driver of a motor vehicle, said horizontal pivotal movement of the actuating member being conducted through elastic engagement between a distal projection of said member and an upstanding guide rib formed on and integral with the transverse base wall, the improvement comprises: an elongated opening formed in the transverse base wall adjacent the upstanding guide rib and beneath the distal projection, said opening extending over a length corresponding to the angular sweep of the distal projection; a stopper tongue integrally formed with the actuating member, said stopper tongue extending toward the upstanding guide rib from the distal end portion of the actuating member; and a guide surface provided on said upstanding guide rib in cooperating relationship with the stopper tongue, so that stopper tongue keeps abutting engagement with said guide surface, whereby preventing the distal portion of the actuating member from being raised during repeated pivotal movements of the member.

3,849,614
TAMPER SWITCH DEVICE FOR DETECTION OF RELATIVE MOTION

Colin A. Connery, New York, N.Y., assignor to Calc Securities Systems, Inc., New York, N.Y.
Filed May 14, 1973, Ser. No. 359,863
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.41 **22 Claims**

1. A device for detecting relative motion between itself and a surface upon which it may be placed comprising:

- a hollow shell that is open at one end and is adapted to be placed on the surface to form an enclosure;
- an element that may be secured at least temporarily to said surface within the enclosure; and
- means for detecting any movement between said enclosure and said element after the element is secured to the surface,
- said detecting means comprising:



  - a probe mounted in said shell and extending beyond the open end of said shell enough that when said open end is placed on said surface the surface pushes the probe back into the shell, and
  - an electro-mechanical transducer means for detecting changes in the position of said probe, and said element that may be secured to said surface comprising an end of said probe that extends beyond the open end of said shell when the open end is not placed on a surface.

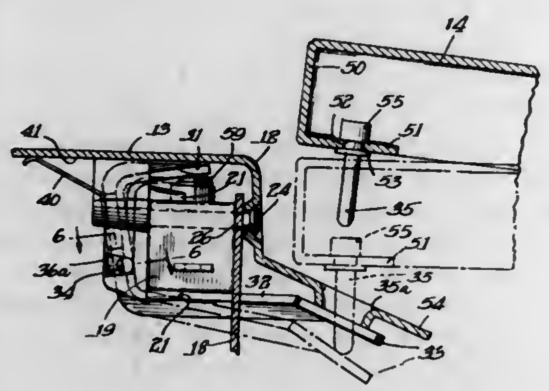
3,849,615
SWITCH HOLDER AND ACTUATING APPARATUS IN A HINGED CLOSURE APPLIANCE

Julian Vernon Fisher, Carpentersville, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Nov. 21, 1973, Ser. No. 417,795

Int. Cl. H01h *3/16*

U.S. Cl. 200—61.81 **9 Claims**



1. A switch operating mechanism for a switch having an actuator means which is secured to a housing having a movable lid and a stationary member wherein retaining means retains said switch on said stationary member so that said actuator means is in proximity to a first wall of said stationary member which is substantially flush with said lid when said lid is closed and said lid carries an actuating projection which extends through an opening in a second wall of said stationary member which is inclined with respect to said first wall and which has a portion that extends behind said lid when said lid is closed comprising operating means which assumes a first position when said lid is open and a second position when said lid is closed, means for pivotly mounting said operating means so that it can pivot between said first and second positions, a first leg positioned adjacent said first wall and said actuator means, a second leg, engagement means on said second leg, a third leg joining said first and second legs and resilient means disposed between said first wall and said operating means so as to bias said operating means towards said first position when said lid is closed, said first leg being positioned above said actuator means when said operating means is in said first position and so as to depress said actuator means when said operating means is in said second position and said second leg being positioned so that said engagement means provides a seal for said opening in said second wall when said operating means is in said first position and so that said engagement means engages said actuating projections on said lid when said operating means is pivoted from said first position to said second position.

3,849,616
SELF-BLASTING COMPRESSED-GAS ELECTRIC CIRCUIT BREAKER WITH IMPROVED CONTROL MECHANISM HAVING PNEUMATIC AND RESILIENT MEANS FOR ENGAGING THE BREAKER CONTACTS

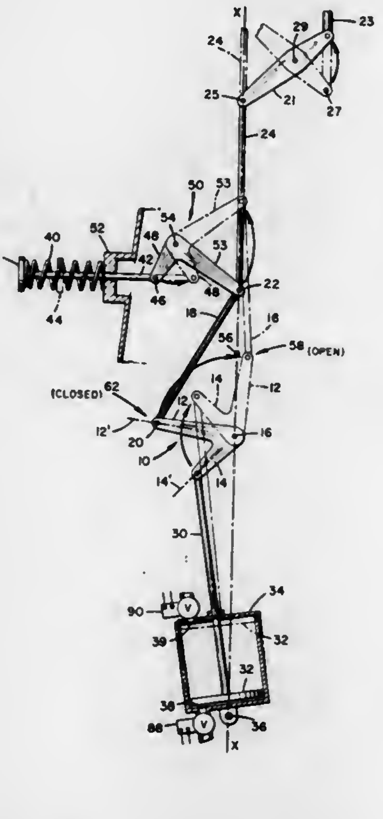
Benito Jose Calvino Y Teijeiro, Bergamo, Italy, assignor to Magrini-Fabbriche Riunite Magrini-Scarpa e Magnano M.S.M. S.p.A., Milan, Italy

Filed May 25, 1973, Ser. No. 363,896

Claims priority, application Italy, May 31, 1972, 25115/72

Int. Cl. H01h *35/38*

U.S. Cl. 200—82 R **13 Claims**



1. A control mechanism for opening and closing a circuit breaker having first and second contacts comprising
- A. pneumatic actuating means having a displaceable output member,
- B. a kinematic linkage means comprising a rotatable element having a first end coupled to the displaceable output member of said pneumatic actuating means and a second end, and a translatable element having a first end coupled by a connecting link to the second end of said rotatable element and a second end coupled to at least one of said first and second contacts, at least a part of said rotatable element being rotated to an equilibrium position on one side of a line coincident with the longitudinal axis of said translatable element when said circuit breaker is fully open and to an equilibrium position on the other side of said line when said circuit breaker is fully closed, and
- C. resilient means coupled to said translatable element, the engaging of the contacts of said circuit breaker being accomplished primarily by said resilient means and the separation of said contacts and the compression of said resilient means being accomplished primarily by said pneumatic actuating means.

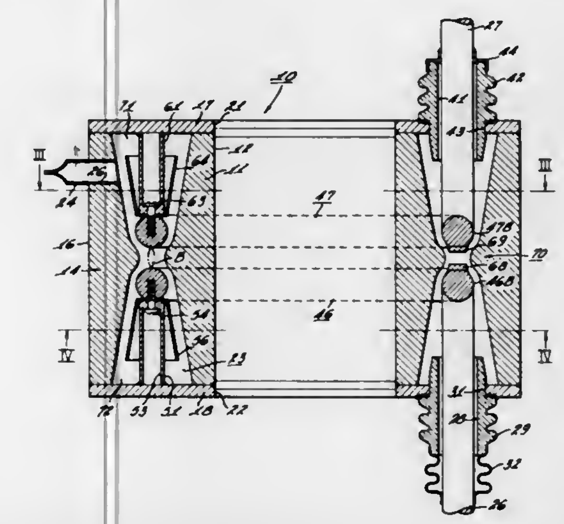
3,849,617
CONSTRICTION TYPE VACUUM INTERRUPTER

Herbert M. Pflanz, Westwood, Mass., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 25, 1972, Ser. No. 300,726

Int. Cl. H01h *33/66*

U.S. Cl. 200—144 B **28 Claims**



1. In a vacuum circuit interrupter;
- an evacuated housing;
- a pair of ring contacts in the form of incomplete toroids supported within said housing;
- a pair of relatively movable contact rods extending into said housing with each contact rod being connected to an end of an associated ring contact; and,
- restricting means supported in insulated relationship within said housing and operable on an arc moving between said ring contacts to effect lateral repression of an arc to prevent sidewise looping of the arc.

3,849,618
GAS SUPPLY PLANT FOR COMPRESSED GAS-INSULATED SWITCHGEAR

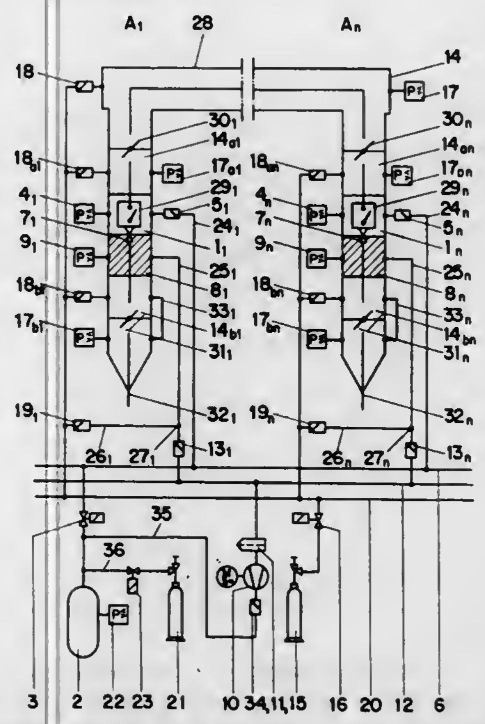
Karl Heinz Wagner, Mannheim-Kafertal; Reiner Muellerpoths, and Rudolf Hammel, both of Mannhein, all of Germany, assignors to Brown, Boveri & Company Limited, Baden, Switzerland

Filed May 14, 1973, Ser. No. 360,068

Claims priority, application Germany, May 16, 1972, 2223753

Int. Cl. H01h *33/80*

U.S. Cl. 200—148 R **5 Claims**



1. A switchgear plant comprising a plurality of gas-pressurized switchgear sections each of which includes a high pressure chamber containing therein a contact switching section and a low pressure chamber connected to said high pressure chamber by means of a blast valve actuatable to open position upon disengagement of the contacts of the switching section thereby to effect a discharge of arc-contaminated gas from the high pressure chamber into the low pressure chamber, a high pressure gas supply pipe common to all of said high pressure chambers and including branch pipes leading respectively therefrom to each of said high pressure chambers, each said high pressure branch pipe including a one-way valve openable automatically in the direction towards said high pressure chamber in response to a determined pressure differential across the one-way valve, a low pressure gas return pipe common to all of said low pressure chambers and including branch pipes leading respectively thereto from each of said low pressure chambers, each said low pressure branch pipe including a one-way valve openable automatically in the direction away from the low pressure chamber in response to a determined pressure differential across the one-way valve, a compressor having its inlet side connected to said common low pressure gas return pipe for withdrawing contaminated gas from said low pressure chambers and having its outlet side connected through a control valve to said common high pressure gas supply pipe and to a high pressure gas reservoir, high pressure monitoring means provided respectively for each of said high pressure chambers for separately controlling the operation of said control valve in response to a determined drop in pressure, and low pressure monitoring means provided respectively for each of said low pressure chambers for separately controlling the operation of said compressor.

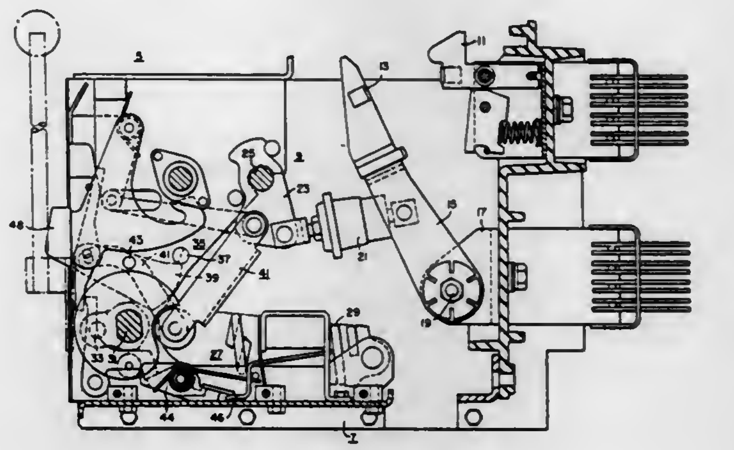
3,849,619
CIRCUIT BREAKER WITH REVERSE OVERRIDE DEVICE

Nagar J. Patel, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 14, 1973, Ser. No. 370,080

Int. Cl. H01h *3/30*, *3/42*

U.S. Cl. 200—153 SC **5 Claims**

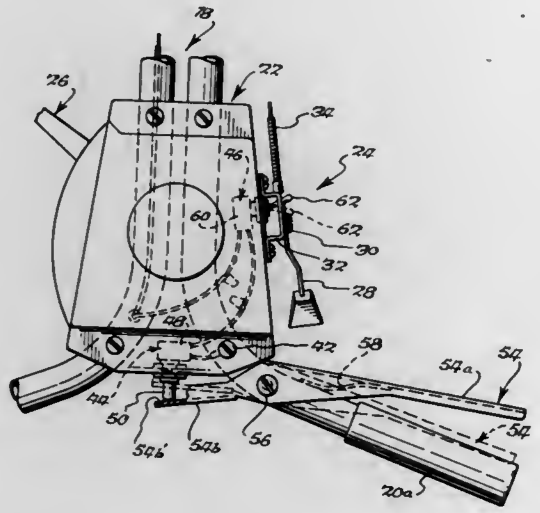


1. A circuit breaker comprising a pair of contacts operable between open and closed positions, a circuit breaker mechanism releasable to effect opening of said contacts, a trip structure for latching the circuit breaker mechanism in the closed position and for releasing said circuit breaker mechanism, said trip structure comprising a trip shaft operatively connected to said circuit breaker mechanism, a crank shaft structure operable to close said pair of contacts, closing spring means connected to said crank shaft structure, manual trip means operatively connected to said trip shaft for tripping said mechanism and comprising a trip member movable between tripped and untripped positions and biased in the untripped position, a cam on said crank shaft and operable for holding said member in the tripped position when the contacts bounce open in response to an attempt to close against fault currents that are higher than their ability to close and latch the cam having a

step surface engageable with said member when the closing spring means are charged, and latch means being mounted on said member for engagement with the step surface of the cam.

3,849,620
DEADMAN CONTROL

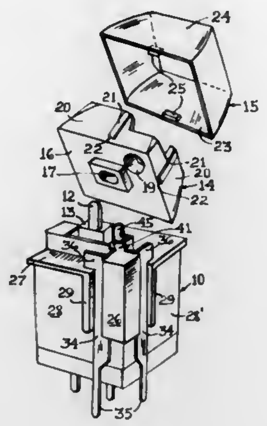
John M. Melisz, Hamberg, N.Y., assignor to Lisk Savory Corporation, Buffalo, N.Y.
Filed June 13, 1973, Ser. No. 369,708
Int. Cl. F02b *77/08;* **H01h** *9/06*
U.S. Cl. 200—157 **3 Claims**



1. A power trowel comprising in combination:
a trowel drive engine mounted on a frame;
handle means fixed to extend from said frame and including a pair of handles to be gripped by an operator for manipulating said trowel;
a handle lever mounted on one of said handles for movement between first and second positions;
spring means for normally biasing said handle lever into said first position, said handle lever being manually movable into said second position against the bias of said spring means incident to the gripping of said one handle by said operator;
a speed control throttle for said engine including a throttle lever carried by said handle means for movement between engine idle and engine run positions; and
first and second switches, said first switch having a casing fixed to said handle means adjacent said one handle, an operator mounted by its associated casing for movement between switch closed condition and a switch open condition and switch spring means for normally biasing its associated operator into switch closed condition, said handle lever when in said second position having one end thereof arranged to lie closely adjacent said one handle and having another end thereof arranged in engagement with said operator of said first switch for releasably maintaining same in its switch open condition against the bias of its associated spring means, and said second switch having a casing fixed to said handle means adjacent said throttle lever, an operator mounted by its associated casing for movement between a switch closed condition and a switch open condition and switch spring means for normally biasing its associated operator into switch closed condition, said throttle lever when in engine idle position engaging said operator of said second switch for releasably maintaining same in its switch open condition against the bias of its associated spring means, said first and second switches being serially arranged within a circuit for connecting said engine to ground when the operator of both of said switches is in its switch closed condition whereby to stop said engine.

3,849,621
ILLUMINATED PUSH-BUTTON SWITCH

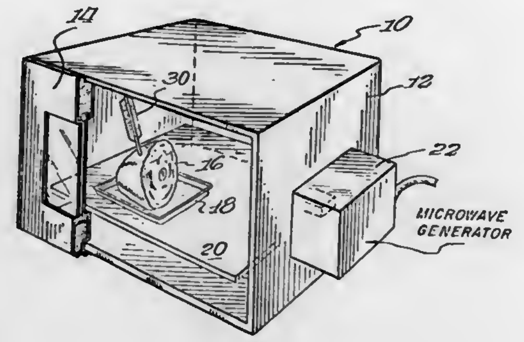
John W. Habecker, Waukegan, Ill., assignor to Cherry Electrical Products Corporation, Waukegan, Ill.
Filed May 9, 1974, Ser. No. 468,367
Int. Cl. H01h *9/16*
U.S. Cl. 200—310 **8 Claims**



1. An illuminated push-button switch comprising
a. a closed housing for the switch components including an actuator, one end of which is normally exposed,
b. a removable cap mounted on the exposed end of the actuator,
c. a light-transmitting cover for said cap,
d. an illuminating means mounted on said housing and adapted to project beneath said light-transmitting cover of said cap,
e. means carried externally of said housing providing electrical connections for said illuminating means,
f. means provided by said housing for attaching said electrical connecting means to the exterior thereof,
g. and means on said electrical connecting means cooperating with said means for attaching said electrical connecting means to said housing, so as to provide a socket for said illuminating means.

3,849,622
NON-IONIC FLUID THERMOMETER FOR MICROWAVE OVEN

Charles J. Merriam, 305 Lake Point Tower, Chicago, Ill. 60611
Division of Ser. No. 833,323, June 16, 1969, abandoned. This application Apr. 19, 1971, Ser. No. 135,344
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **4 Claims**

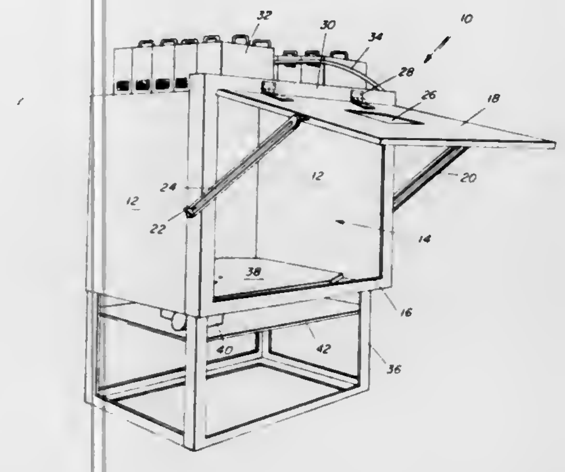


1. A method determining the temperature of food being heated in a microwave oven through microwave energy comprising the steps of:
providing a heat responsive thermometer being nonresponsive to microwave energy and having a hollow portion containing an expandable fluid also being nonresponsive to said microwave energy;

inserting the termometer into the food to be heated in a heat transferring relationship;
placing the food and thermometer into the microwave oven and heating the food by microwave energy.

3,849,623
MICROWAVE HEATING APPARATUS

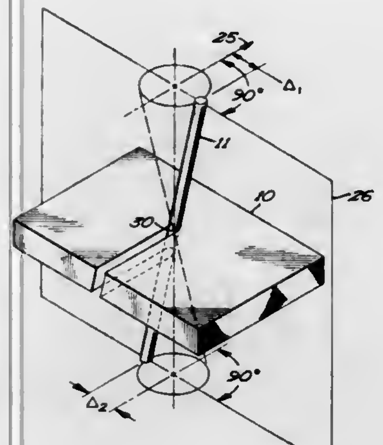
Charles L. Gilliatt, Andover, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Oct. 25, 1973, Ser. No. 409,495
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **8 Claims**



1. Microwave heating apparatus comprising:
a plurality of conductive walls defining an enclosure;
a source of electromagnetic energy having a predetermined operating frequency;
means for radiating said energy within said enclosure;
a system for supporting and moving an article to be heated within said enclosure;
said system comprising a table member and means to move said table member sequentially in orthogonal linear directions to provide substantially continuous orbital movement.

3,849,624
WIRE ELECTRODE ELECTRIC EROSION DEVICE

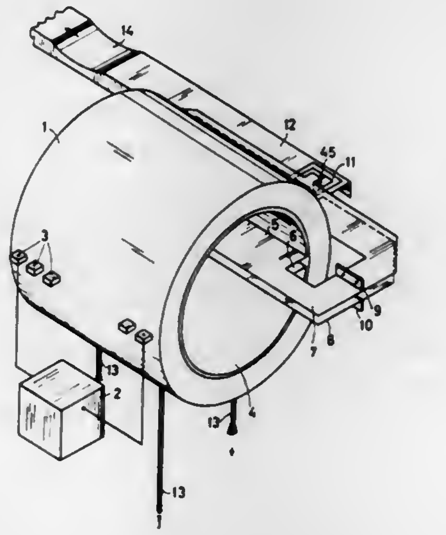
David H. Dulebohn, Minneapolis; Arney Landy, Jr., St. Paul, and Roy Earl Brandt, Columbia Heights, all of Minn., assignors to Andrew Engineering Company, Hopkins, Minn.
Filed May 29, 1973, Ser. No. 364,830
Int. Cl. B23p *1/12*
U.S. Cl. 219—69 V **23 Claims**



1. In combination, a tracer and tracer control device for controlling the electrically induced cutting of a workpiece, the combination comprising:
means responsive to the direction of successive portions of a line to be traced for generating a first signal indicative of the direction of said line portions and a second signal indicative of an error in said first signal;
means responsive to said second signal and operatively connected to said line portion responsive means for altering said first signal;
wire electrode means;
means for producing a relative movement between said workpiece and wire electrode means in accordance with said first signal;
means for inclining said wire electrode means within a plane; and
means responsive to said second signal for maintaining the plane of said inclined electrode means at right angles to said direction of relative movement between said workpiece and said inclined electrode means.

3,849,625
INDUCTION HEATING DEVICE

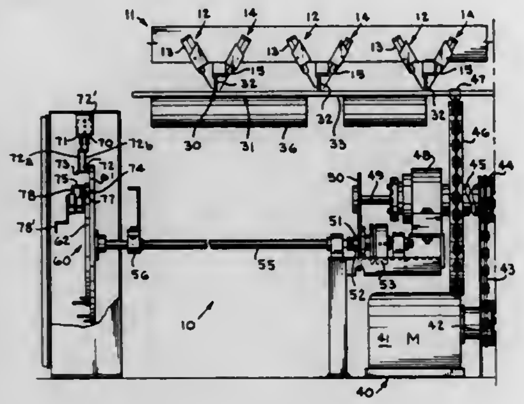
Joseph Trine, Oupeye, Belgium, assignor to Elphiac, Charleroi, Belgium
Filed June 25, 1973, Ser. No. 373,484
Claims priority, application Belgium, June 26, 1972, 4145
Int. Cl. H05b *5/06*
U.S. Cl. 219—10.79 **9 Claims**



1. An induction heating device comprising:
a. a primary winding and an A.C. generator connected thereto;
b. a hollow body of insulation material in which is embedded said primary winding and which defines at least a housing for a secondary winding;
c. a secondary winding made of single curved sheet metal plate with ends thereof being directed inwardly of said curved plate and spaced from one another, said secondary winding being rotatably glidable over an angle more than 90° relative to and within said housing provided in said hollow body;
d. a pair of spaced appending members each extending from one of said plate spaced ends, a portion of said members being directed inwardly of said curved plate;
e. a layer of insulation between said appending members; and
f. a heating inductor connected to said two appending members.

3,849,626
APPARATUS FOR CONTROLLING THE WELDING PATTERN BETWEEN WELDMENT COMPONENTS

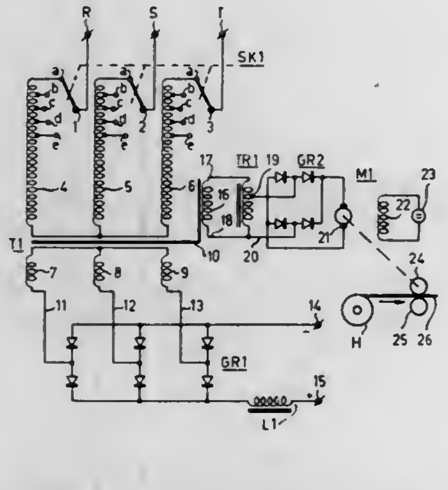
Richard Lee Linam, Leaque City, and Hilary W. Sheehan, Pasadena, both of Tex., assignors to Kelso Marine, Inc., Galveston, Tex.
Filed May 22, 1973, Ser. No. 362,780
Int. Cl. B23k *9/12*
U.S. Cl. 219—124 **4 Claims**



1. An arrangement for actuating welding guns to weld weldment components moving relative to the welding guns comprising:
- a. means for supporting the weldment components;
- b. means for moving the weldment components horizontally relative to the welding guns;
- c. switch means for turning the welding guns on to weld between the weldment components and for turning the welding guns off when the weld is completed; and
- d. means rotatable by said moving means for engaging said switch means to first turn the welding guns on and to then turn the welding guns off after a predetermined amount of travel of the weldment components.

3,849,627
ARC WELDING DEVICE WITH CONSUMABLE WELDING WIRE

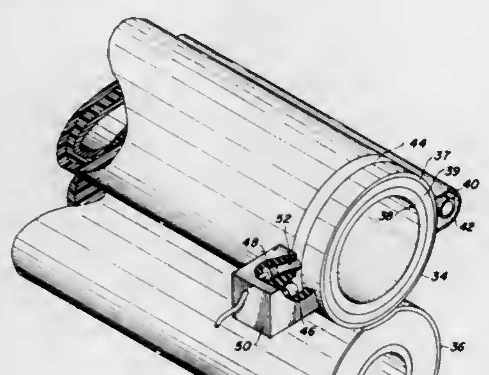
Arthur Victor Joseph Blavier, Bierges Lez Wavre, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 20, 1973, Ser. No. 352,875
Claims priority, application Netherlands, May 24, 1972, 7206946
Int. Cl. B23k *9/10*
U.S. Cl. 219—131 F **11 Claims**

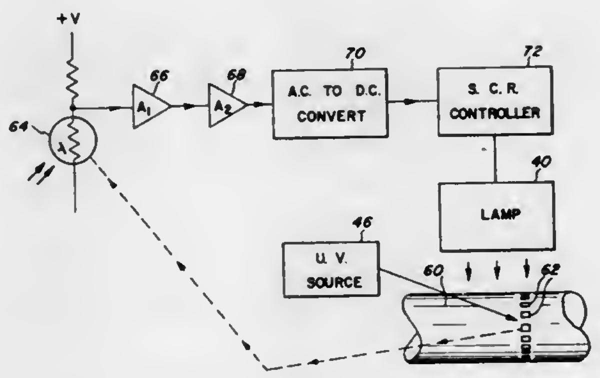


1. An arc welding device for welding work with a consumable welding wire and a direct current, comprising a multiphase welding transformer having primary windings adapted to be connected to respective phase lines of a multiphase power supply and a first group of secondary windings connected to a rectifier bridge to supple the welding current, a wire feed device including a motor coupled to drive rollers and with a reel containing consumable welding wire, the multi-phase welding transformer further comprising an auxiliary secondary winding connected to the motor and whose voltage determines the motor speed.

3,849,628
NON-CONTACT TEMPERATURE SENSOR FOR A ROLL FUSER OF A XEROGRAPHIC REPRODUCTION APPARATUS

Gerald Abowitz, Rochester; Frederick Robert Ruckdeschel, Webster, and Robert Eugene Gerace, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed July 25, 1973, Ser. No. 382,434
Int. Cl. H05b *1/00*
U.S. Cl. 219—216 **7 Claims**



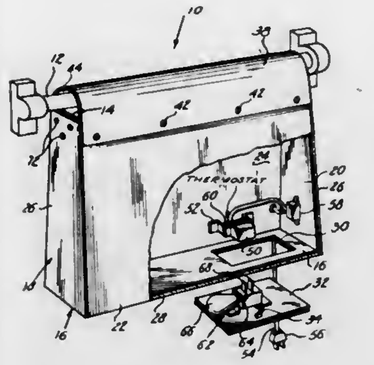


1. Fuser apparatus comprising:
a first roller;
a second roller cooperating with said first roller to form a nip through which a substrate supporting toner material is moved;
means for heating at least one of said rollers to elevate the surface temperature thereof to a level sufficient to render the toner material tacky;
means out of contact from said at least one of said rollers for sensing the surface temperature thereof; and
means responsive to the temperature sensed for controlling said heating for maintaining the surface temperature of said at least one of said rollers constant in an area where the toner material is contacted thereby, said means for sensing temperature comprising means for converting thermal radiation to light radiation representative of said surface temperature whereby said temperature sensing means senses said light radiation.

3,849,629
TOWEL WARMER

Joseph A. Graham, Jr., Milo, Iowa 50166
Filed Feb. 26, 1973, Ser. No. 335,738
Int. Cl. H05b *1/00*
U.S. Cl. 219—342 **4 Claims**

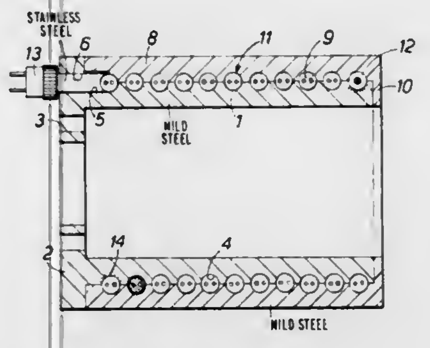
1. A towel warming and drying device, comprising:
a relatively tall, long, elongated and narrow closed housing of heat conducting material defining a top, bottom, narrow opposed ends and elongated opposed sides,
said top being of a lesser width than said bottom whereby said opposed elongated sides are flared outwardly from top to bottom,
an elongated inverted U-shaped bracket on said housing coextensive in length with the top thereof to provide a passageway parallel to said top whereby a towel bar or the like can be extended therethrough for supporting said housing in a depending relationship,



said bracket defining spaced parallel longitudinal edges with one of said edges secured to one sidewall of said housing and the other longitudinal edge secured to the other sidewall of said housing by removable fasteners,
said bracket and sidewalls defining a towel receiving surface when a towel is draped over the drying device, and
an electric heating component within said housing adapted for connection to a source of electricity.

3,849,630
ELECTRIC HEATING DEVICE

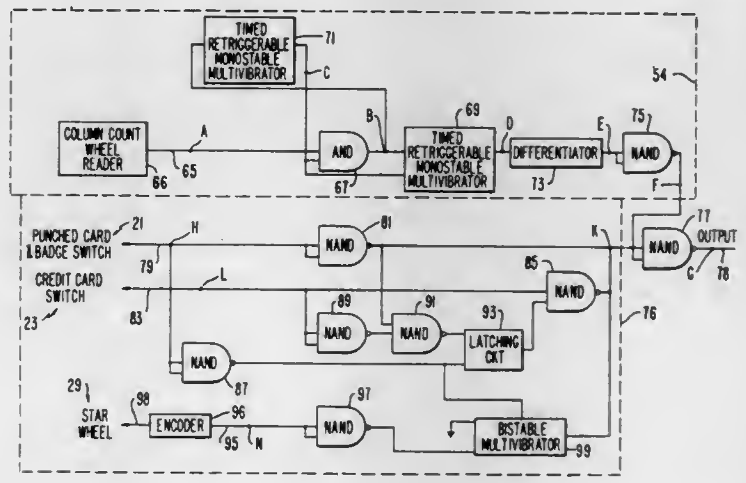
Kenneth David Halliday, South Shields, England, assignor to Pyrotenax Limited, Durham, England
Filed Oct. 18, 1972, Ser. No. 298,673
Claims priority, application Great Britain, Oct. 18, 1971, 48367/71
Int. Cl. H05b *5/58*
U.S. Cl. 219—535 **9 Claims**



1. An elongate heating device comprising a preformed elongate core having at least one helical groove in its outer surface; a separately formed sleeve of an internal diameter greater than the external diameter of said surface of the core which surrounds the core and has in its inner surface at least one helical groove that is of the same pitch as that of the groove on the core and that defines with the groove on the core a helical passage, at least one of the core and the sleeve being of a metal of high thermal conductivity; a length of mineral insulated heating cable comprising an elongate metallic sheath of high thermal conductivity, at least one elongate bare electrical heating conductor in said metallic sheath and compacted powdered mineral insulating material sealing the space between the electric heating conductor and the metallic sheath and insulating said conductor from said metallic sheath, which cable extends along the helical passage between the core and the sleeve with at least one of its ends protruding from the device, and electrical terminal means connected to each protruding end of the cable, the cable being so clamped between the core and sleeve and being of such a diameter with respect to the depth of the grooves, that part of the cable fits in the groove in the core and part of the cable fits in the groove in sleeve and that there is an effective heat transfer path between at least one of the cable sheath and the core, and the cable sheath and the sleeve.

3,849,631
PUNCHED CARD, BADGE AND CREDIT CARD READER

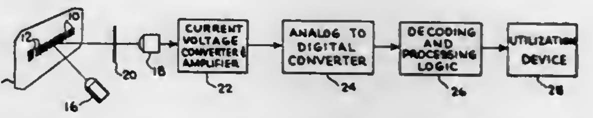
Eugene Louis Merlino, Jr., Dearborn Heights; Earl Edward Brinning, Detroit, and Roger Stanley Naeyaert, Grosse Pointe Woods, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.
Filed Mar. 4, 1971, Ser. No. 120,867
Int. Cl. G06k *7/015*
U.S. Cl. 235—61.11 B **20 Claims**



1. In combination with a reading apparatus having a station for reading documents and emitting pulses in response thereto, said documents having information coded thereon in rows and columns said columns having respective predetermined physical locations with respect to the leading and trailing edges of the document as it is procesed through the apparatus, the improvement therein comprising:
means for inhibiting the output of the pulses from said reading station during the continuation of the operation of said reading apparatus; and
variably positionable means actuated by the trailing edge of a document for actvating said inhibiting means immediately after the reading of a column selected form a plurality of said columns by the position of said variably positionable means.

3,849,632
READING APPARATUS FOR OPTICAL BAR CODES

Alton B. Eckert, Jr., Norwalk, and John H. Steinmetz, South Norwalk, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Continuation of Ser. No. 264,178, June 19, 1972, abandoned.
This application May 4, 1973, Ser. No. 357,353
Int. Cl. G06k *7/10;* **G08c** *9/06*
U.S. Cl. 235—61.11 E **6 Claims**


12
14
16
18
20
CURRENT VOLTAGE CONVERTER AMPLIFIER
22
ANALOG TO DIGITAL CONVERTER
24
DECODING AND PROCESSING LOGIC
26
UTILIZATION DEVICE
28

1. An apparatus for extracting width information from a linear bar code having variable width encoded elements and for impressing said information upon a width-modulated two-state signal, said apparatus comprising:
scanning means for scanning said linear bar code along a path which traverses said bar code and for generating a

video signal whose potential varies in accordance with the varying characteristics of the elements along the path;

a capacitive element having a first terminal to which said video signal is applied and also having a second terminal at which a clamped signal appears;

means for establishing a first clamping potential level at a first node and also a second clamping potential level at a second node which second clamping potential level is below the potential of said first clamping potential level, said means for establishing including means for maintaining a predetermined non-zero fixed-potential magnitude between said nodes;

first clamping means connecting to said capacitive element second terminal for preventing the potential of said capacitive element second terminal from rising above said first clamping potential level;

second clamping means connected to said capacitive element second terminal for preventing the potential of said capacitive element second terminal from falling below said second clamping potential level; and

a triggering circuit having an input connecting to said clamped signal, having an output at which the width-modulated two-state signal appears, and having the following trigger characteristic

when the potential of said capacitive element second terminal swings positive from a level at or near said second clamping potential level, said two-state signal remains in a first state until the potential of said capacitive element second terminal swings more than half-way from said second clamping potential level towards said first clamping potential level, and then said two-state signal enters its second state, and

when the potential of said capacitive element second terminal swings negative from a level at or near said first clamping potential level, said two-state signal remains in its second state until the potential of said capacitive element second terminal swings more than half-way from said first clamping potential level towards said second clamping potential level, and then said two-state signal enters its first state.

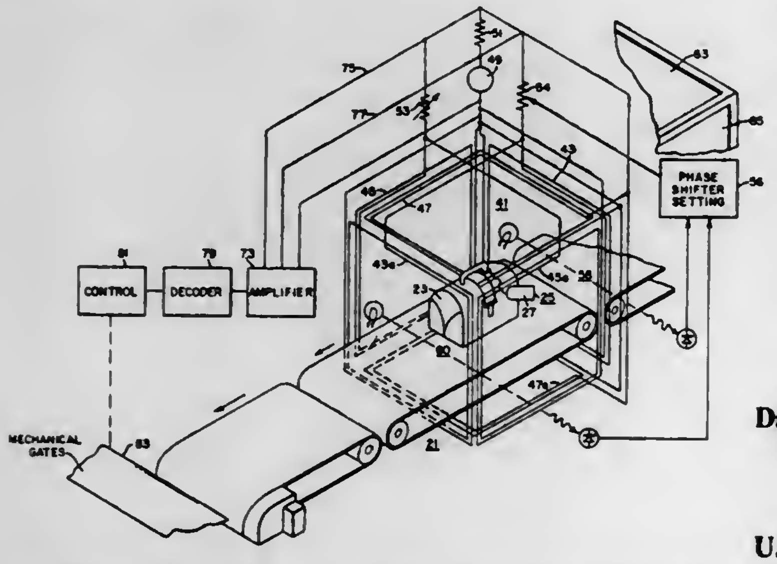
3,849,633
OBJECT IDENTIFYING APPARATUS

Herbert J. P. Reitboeck, and Thomas P. Brody, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 215,333, Jan. 4, 1972. This application July 17, 1973, Ser. No. 380,182

Int. Cl. G06k *19/03*, *7/01*; G01s *9/56*

U.S. Cl. 235—61.12 N **9 Claims**



1. A label, to be subjected to an electromagnetic field while attached to an object in said field, for identifying said object, the said label including a substrate having printed thereon antenna means to be electromagnetically coupled to said electromagnetic field to absorb energy therefrom, said substrate also having printed thereon counter means, including a plurality of counters and also printed thereon, means for selectively connecting certain of said counters to said antenna means to produce a predetermined number of field-energy absorbing counts.

3,849,634
ELECTRONIC COMPUTER

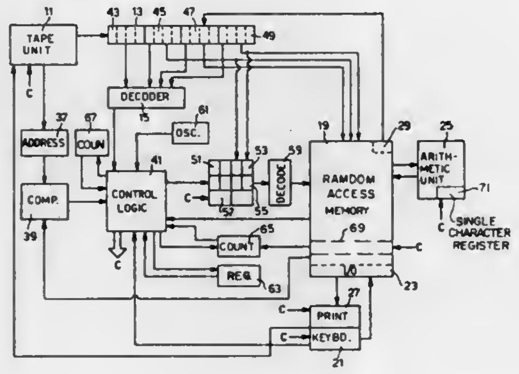
Fabrizio Saltini, Modena, and Vittorio Eccettuato, Cornaredo (Milano), both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Torino), Italy

Filed Sept. 11, 1972, Ser. No. 287,830

Claims priority, application Italy, June 21, 1969, 52336/69

Int. Cl. H03k *27/00*

U.S. Cl. 235—92 DP **3 Claims**



1. An electronic computer comprising:

a memory including a plurality of registers, each for storing a plurality of characters in corresponding stages, means for storing a single character, means for selecting a particular register of said plurality, means for exchanging a selected character stored in an associated stage of a selected memory register with said single character,

control logic connected to said memory for controlling said exchanging means to exchange said single character with the character at a first end of a selected register and to sequentially exchange after having performed said first exchange, successive characters of the selected register with the character simultaneously stored in the single character storing means, starting from the character at the other end of said selected register, and

a counter for counting the number of exchanges performed, after the first exchange, and for indicating when said exchanging means has sequentially exchanged all the characters of said selected register with said single character storing means, said control logic being responsive to the indication from said counter for halting the operation of said exchanging means.

3,849,635
HIGH SPEED PROGRAMMABLE COUNTER

David Daniel Freedman, Cinnaminson, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 12, 1973, Ser. No. 350,605

Int. Cl. G06m *1/28*

U.S. Cl. 235—92 CC **6 Claims**

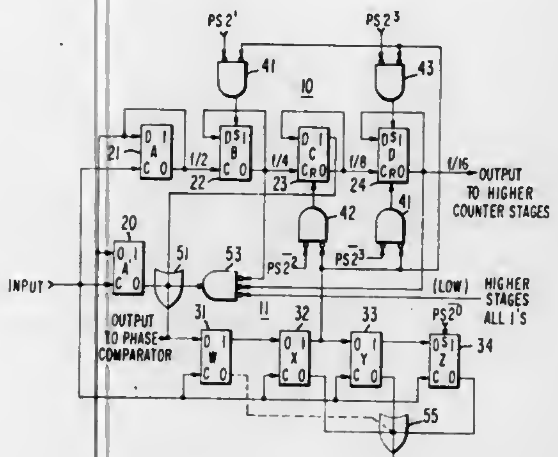
1. A high speed frequency divider responsive to a source of input signals for producing an output signal for every kth input signal, where k is a selectively defined integer, comprising:

a first counter for counting when enabled said input signals;

a second counter of modulo-n for counting when enabled

said input signals and producing the output signal when n signals have been counted;

means responsive to a count value of $k-n$ in the first counter for enabling the second counter and disabling the first counter;



means responsive to a count value less than n in the second counter for modifying the count value in the first counter; and

means responsive to the output signal for enabling the first counter and disabling the second counter.

3,849,636
METHOD AND APPARATUS FOR DETERMINING THE POSITION OF A VEHICLE

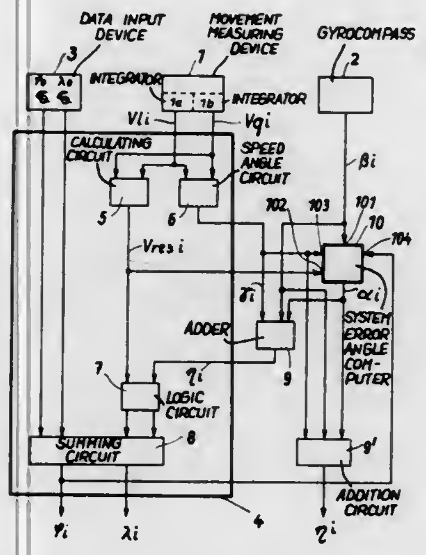
Horst Helms, Bremen, Germany, assignor to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Germany

Filed Mar. 7, 1973, Ser. No. 338,823

Claims priority, application Germany, Mar. 8, 1972, 2211063

Int. Cl. G06f *15/50*

U.S. Cl. 235—150.27 **14 Claims**



1. In apparatus to be mounted on a vehicle for producing signals indicative of the position of the vehicle relative to a known starting position, which apparatus includes: means for developing successive signals representing components of the motion of the vehicle in longitudinal and transverse directions during successive intervals; north-seeking gyrocompass means for producing a north direction indication signal; data input means for supplying signals indicative of such known starting position of the vehicle; and navigational computer means for producing signals indicative of the momentary position of the vehicle for each of the successive signals representing vehicle motion components, said computer constituting means for processing trigonometric functions and having first input means coupled to said means for developing successive signals representing vehicle motion components for receiving such signals and second input means coupled to said data input means for receiving signals indicative of the known starting position of the vehicle, the improvement wherein:

said navigational computer means comprises:

a. calculating circuit means connected to said first input means for receiving the successive signals representing vehicle motion components and for producing therefrom signals representing the resulting speed of the vehicle at such successive intervals;

b. speed angle circuit means connected to said first input means for receiving the successive signals representing vehicle motion components and for producing therefrom signals representing the speed angle of the vehicle at such successive intervals;

c. a logic circuit having first and second inputs, with said first input being connected to said calculating circuit means to receive the signals produced thereby and said second input being arranged to receive a signal indicative of the true directional angle of the vehicle movement, said logic circuit having first and second outputs and constituting means for deriving, from the signals at its inputs, a signal at its first output representative of the vehicle path component in the east/west direction and a signal at its second output representative of the vehicle path component in the north/south direction;

d. a summing circuit having first inputs connected to said second input means of said navigational computer means for receiving the signals supplied by said data input means, and second inputs connected to the first and second outputs of said logic circuit for receiving the signals produced thereby, said summing circuit having output means at which appear signals indicative of at least one component of the present position of the vehicle;

and said apparatus further comprises:

system error angle computer means having a first input coupled to said gyrocompass means for receiving the signal produced thereby, a second input connected to the output of said calculating circuit means to receive the signals produced thereby, a third input connected to the output of said speed angle circuit means to receive the signals produced thereby and a fourth input connected to said output means of said summing circuit to receive the signals appearing at such output, said system error angle computer constituting means for operating according to known gyrophysical motion equations in order to derive, from the signals supplied to its inputs, output signals representing the system error angle associated with said gyrocompass means;

addition circuit means having a first input connected to said gyrocompass means for receiving the signal produced thereby, a second input connected to said system error angle computer means for receiving the output signals produced thereby, and a third input connected to said speed angle circuit means for receiving the signals produced thereby, said addition circuit means combining the signals at its said inputs to produce at its output a signal indicative of the true directional angle of the vehicle movement, the output of said addition circuit means being connected to the second input of said logic circuit.

3,849,637
REACTOR MEGAWATT DEMAND SETTER

Robert M. Caruso, Simsbury, and Charles R. Musick, Vernon, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

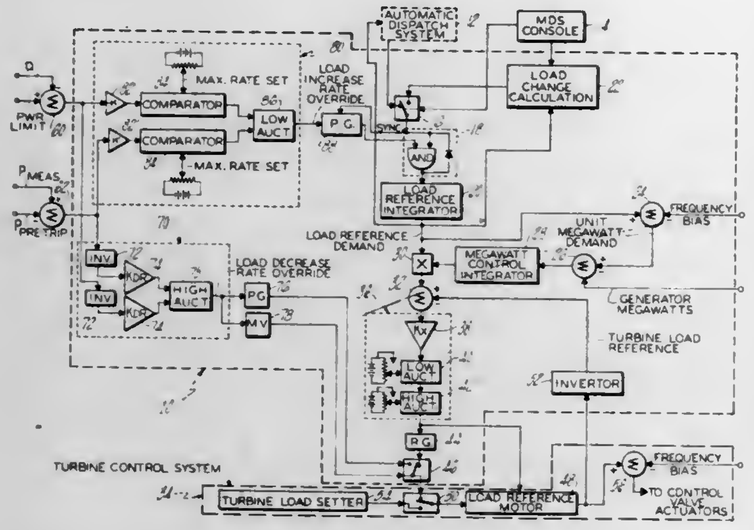
Filed May 22, 1973, Ser. No. 362,786

Int. Cl. G21d *3/00*; G06f *7/54*

U.S. Cl. 235—151 **10 Claims**

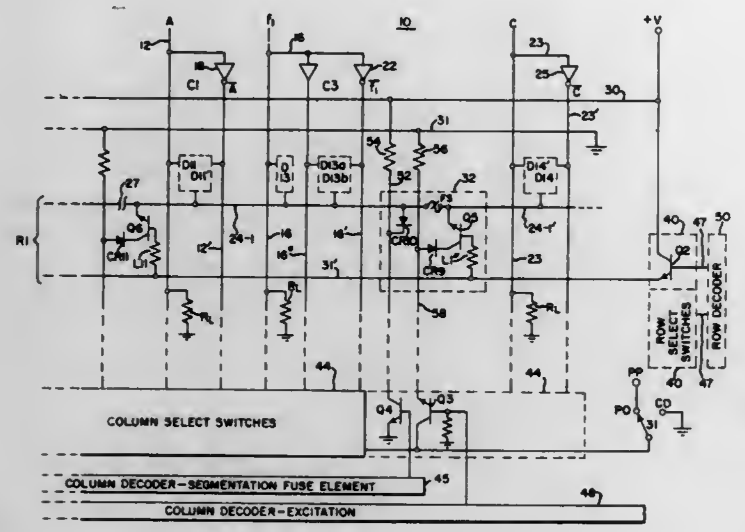
1. An improved method for controlling the load on an electrical power generation unit, the generation unit including

a nuclear steam supply system and a steam turbine driving a generator, the method including the steps of:
- comparing the desired unit load with actual load to provide a unit load error indication;
- controlling the turbine in accordance with the unit load error indication to null the load error by adjusting the turbine load;
- monitoring a plurality of nuclear steam supply system operating conditions;



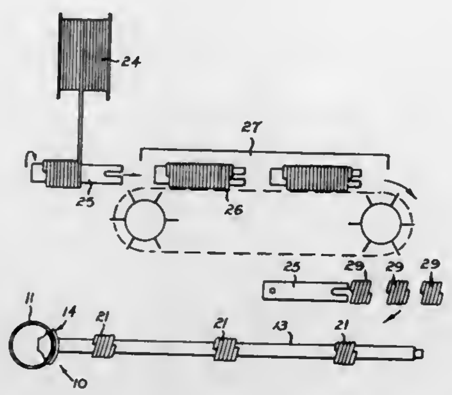
- comparing the monitored steam supply system conditions with their permissible limits and providing signals commensurate with differences therebetween;
- providing a load change rate override command whenever the margin between any of the monitored steam supply system operating conditions and its limit is within a preselected range; and
- adjusting the load on the turbine at a rate commensurate with any override command.

3,849,638
SEGMENTED ASSOCIATIVE LOGIC CIRCUITS
David L. Greer, Manlius, N.Y., assignor to General Electric Company, Syracuse, N.Y.
Filed July 18, 1973, Ser. No. 380,388
Int. Cl. H03k *19/20*
U.S. Cl. 235—152 **10 Claims**


COLUMN SELECT SWITCHES
COLUMN DECODER—SEGMENTATION FUSE ELEMENT
COLUMN DECODER—EXCITATION
ROW SELECT SWITCHES
ROW DECODER

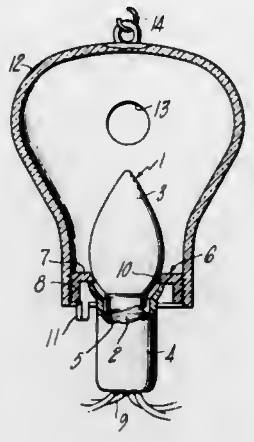
1. An associative logic circuit for implementing Boolean functions comprising:
- an array of logic elements each having an input terminal and an output terminal, said logic elements being arranged in orthogonally disposed columns and rows each including a respective column or row conductor, at least one of said rows of logic elements being segmented into a plurality of logic element groups by division of its respective row conductor into a like plurality of electrically isolated collinear segments, with each group thus formed including at least one input logic element and at least one output logic element and further including at least one load element;
- one or more of said column conductors associated with each said group of logic elements being connected to the output terminals of selected output logic elements of that group and connected across said load element associated therewith whereby the column conductor and the logic and load elements thus connected provide a Boolean function output which serves as input to a selected input logic element of another group and may also serve as an array output;
- said row conductor segments associated with each said group of logic elements being connected to the output terminals of selected input logic elements of that group and connected across said load elements associated therewith whereby the row conductor segments and the logic and load elements thus connected provide a Boolean function output which serves as input to a selected output logic element of that group and may also serve as an array output; and
- input means providing input variables in binary signal form into said array, and means for applying said input binary signals to selected ones of said column conductors and said row conductor segments, whereby the logic elements of said array as connected through said row and column conductors may generate complex multiple output Boolean functions of individual array input variables and lower level functions of these variables generated within the array.

3,849,639
DRIP IRRIGATION METHOD
Alan James Brock, North Adelaide, and Douglas William Fulton, Angle Park, both of Australia, assignors to S.A. Rubber Mills Pty. Ltd., South Australia, Australia
Division of Ser. No. 298,230, Oct. 17, 1972, which is a continuation of Ser. No. 70,786, Sept. 9, 1970, abandoned. This application Nov. 28, 1973, Ser. No. 419,850
Int. Cl. B05b *17/00;* **B44d** *1/08*
U.S. Cl. 239—1 **4 Claims**



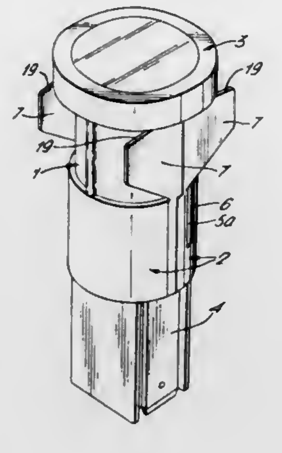
1. The method of installing a drip irrigation system over an area of land, comprising the steps:
- a. joining a secondary distribution pipe to a main supply pipe for liquid flow communication with the main supply pipe,
- b. piercing the wall of the secondary distribution pipe to form a series of apertures spaced along the pipe,
- c. winding a series of capillary tubes onto formers, heating the capillary tubes while on the formers to a sufficient temperature and for sufficient time that they retain a coil shape after removal from the formers, the outer diameter of said capillary tubes exceeding the diameter of said pierced apertures,
- d. removing the capillary tubes from the formers, and
- e. cutting lengths from the capillary tubes and inserting the tube of each cut length through a respective pierced aperture.

3,849,640
ELECTRIC LAMP COVER ADAPTER AND COVER
Jack N. McCarthy, Meadowood Rd., Tolland, Conn. 06084
Filed Oct. 1, 1973, Ser. No. 402,337
Int. Cl. F21v *17/00*
U.S. Cl. 240—100 **7 Claims**



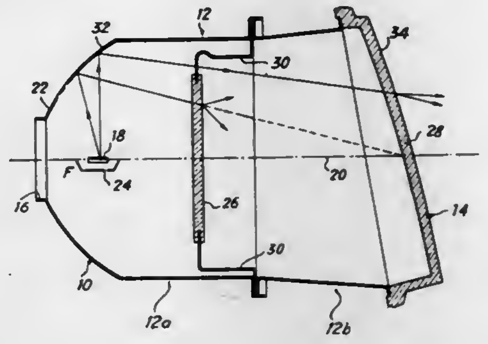
1. A cover adapter for attaching a cover to an incandescent lamp, comprising a first member having a hole therein for receiving the base of a lamp, said first member having an outer edge, a cylindrical-like member, said cylindrical-like member having an inner surface and an outer surface, said outer edge of said first member being connected to the inner surface of said cylindrical-like member, the outer surface of said cylindrical-like member having external threads for receiving the internal threads of a lamp cover, projection means extending downwardly from said cylindrical-like member, said projection means having holding means for holding wires for delivering current to an incandescent lamp.

3,849,641
LAMP HOUSING ASSEMBLY
Roberto Plana, Barcelona, Spain, assignor to AMP Incorporated, Harrisburg, Pa.
Filed Aug. 11, 1971, Ser. No. 170,800
Claims priority, application Spain, Sept. 24, 1970, 161829
Int. Cl. F21v *17/00, 21/00*
U.S. Cl. 240—151 **3 Claims**



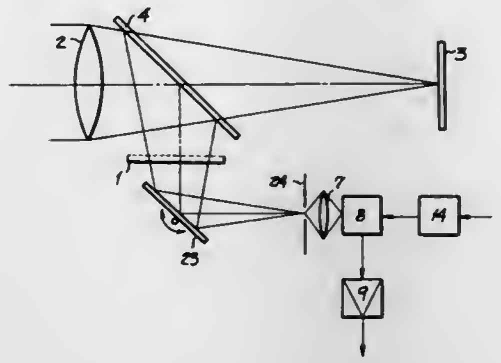
1. An electrical lamp housing comprising a tubular body having a lens part at one end and being divided longitudinally of the body into two body parts, the body parts having latch means for securing them together in assembled relationship to form the body and being identical, the latch means comprising an elongated arm and slot on each body part for cooperating with a corresponding slot and arm respectively on the other body part, the lens part having at least one opening for receiving end portions of the body parts and being detachably securable thereto to assist the latch means in retaining the body parts in their assembled relationship.

3,849,642
MOTOR VEHICLE HEADLAMPS
Olivier Puyplat, Paris, France, assignor to Cibie Projecteurs, Bobigny, France
Filed July 10, 1973, Ser. No. 377,999
Claims priority, application France, July 20, 1972, 72.26205; Mar. 27, 1973, 73.06856
Int. Cl. F21v *13/04*
U.S. Cl. 240—41.3 **10 Claims**



1. A motor vehicle headlamp comprising a parabolic mirror, a lamp having a dipped-beam filament disposed in front of the focus of the mirror, the mirror having a central part immediately surrounding the lamp and a peripheral part surrounding the central part, a front lens provided with relief patterns for intercepting and dispersing at least a part of the reflected dipped beam, and an auxiliary lens positioned between the lamp and the front lens, the auxiliary lens being provided with relief patterns for intercepting and dispersing at least that part of the dipped beam which is reflected by the central part of the mirror.

3,849,643
AUTOMATIC FOCUSING APPARATUS
Hideomi Takeda, Tokyo, Japan, assignor to Asahi Kogahu Kagyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 29, 1973, Ser. No. 420,293
Claims priority, application Japan, Nov. 30, 1972, 47-120244
Int. Cl. G01j *1/20;* **G03b** *3/00*
U.S. Cl. 250—201 **5 Claims**



1. Automatic focusing apparatus comprising:
- first means, including a lens, defining an optical path such that at least a portion of light passing through the lens impinges upon a plane, the lens and the plane being movable relative to each other in either of two opposite directions along the optical path,
- second means, including a photoelectric element responsive to the light impinging upon the plane, for producing an electrical focusing control signal that varies in accordance with the degree of contrast in the light impinging upon the plane, the degree of contrast being maximum for an in-focus spacing between the lens and the plane,
- third means, for increasing the difference between the degree of contrast obtained at an in-focus spacing and the degree of contrast obtained at an out-of-focus spacing,

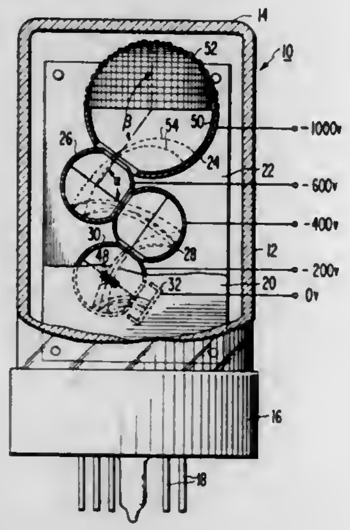
the third means including an optical transmission function filter comprising a two-dimensional diffraction grating disposed in the optical path and spaced from both the lens and the plane, and the third means further including a scanning mechanism comprising oscillating means and a plate disposed between the grating and the plane and having a slit therethrough through which the light passes in accordance with the oscillating means; and

fourth means, responsive to the electrical focusing control signal for adjusting the spacing between the lens and the plane to a relative position that maximizes the degree of contrast.

3,849,644
ELECTRON DISCHARGE DEVICE HAVING ELLIPSOID-HAPED ELECTRODE SURFACES

James Louis Ibaugh, Landisville, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 28, 1973, Ser. No. 345,666
Int. Cl. H01j *39/12*
U.S. Cl. 250—207 **14 Claims**



1. An electron discharge device comprising:

a. a staggered series of electrically disconnected electrodes, each of said electrodes including:
  i. a cavity within its interior substantially surrounded and enclosed by an ellipsoid-shaped electrode wall surface with an electron emissive peripheral portion thereon,
  ii. an input aperture through which an input energy source may be focused to impinge upon the electron emissive peripheral portion of said ellipsoid-shaped electrode wall surface,
  iii. an output aperture through which electrons emitted from said electron emissive peripheral portion may be accelerated for egression out of said electrode, said input and output apertures being arranged in staggered angular relation to each other, and

b. means for restrictingly accelerating electrons emitted from immediately preceeding electrodes to succeeding electrodes of said series, in sequence, said means comprising an electron permeable electrostatic electron accelerating member internesting within the output aperture of an immediately preceeding electrode and positioned intimately adjacent thereto.

3,849,645
ATMOSPHERIC COMPENSATION RADIOMETER SYSTEM

Eugene C. Byrne, Hacienda Heights, Calif., assignor to Actron Industries, Inc., Monrovia, Calif.

Filed June 8, 1973, Ser. No. 368,259
Int. Cl. G01j *3/34, 3/50;* **G01n** *21/26*
U.S. Cl. 250—209 **9 Claims**

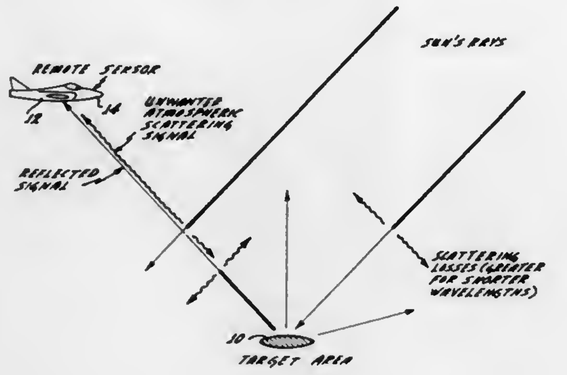
1. In combination:

a radiometer having a wide field of view for measuring spectral energy in a given band of frequencies;

first detecting means for measuring the spectral energy in at least two spaced-apart narrow bands, within said band of frequencies;

each of said narrow bands being affected differently by atmospheric scattering of radiation;

second detecting means for measuring the spectral energy in a broad band encompassing the given band of frequencies and including both of said narrow bands;


REMOTE SENSOR
12
14
UNWANTED ATMOSPHERIC SCATTERING SIGNAL
REFLECTED SIGNAL
SUN'S RAYS
SCATTERING LOSSES (GREATER FOR SHORTER WAVELENGTHS)
10
TARGET AREA

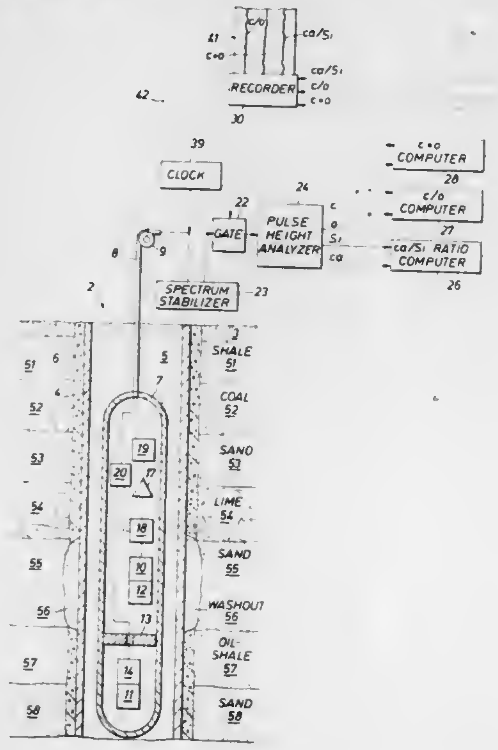
first processing means responsive to said first detecting means for determining the atmospheric scattering coefficient for spectral energy at the wavelengths received by a one of said narrow bands; and

second processing means coupled to said first processing means for correcting the spectral energy measured in said broad band by said determined scattering coefficient, to calculate the extinction coefficient of the atmosphere for that spectral band.

3,849,646
INELASTIC NEUTRON SCATTERING METHODS TO LOCATE COAL AND OIL SHALE ZONES

Philip F. McKinlay; Harry D. Smith, Jr., and Ward E. Schultz, all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed June 5, 1973, Ser. No. 367,299
Int. Cl. G01v *5/00*
U.S. Cl. 250—270 **8 Claims**



1. A method for locating and determining the quality of coal beds traversed by a well borehole comprising the steps of:

passing a well tool having a pulsed source of fast neutrons and a radiation detector through a well bore;

repetitively irradiating the earth formations in the vicinity of the well bore with relative short duration bursts of fast neutrons;

detecting, during said neutron bursts, gamma rays resulting from the inelastic scattering of fast neutrons by carbon, oxygen, silicon and calcium in earth formations in the vicinity of the well bore and generating signals representative thereof;

generating a first signal representative of the carbon/oxygen ratio of inelastic gamma rays in earth formations in the vicinity of the well bore;

generating a second signal representative of the calcium/-silicon ratio of inelastic gamma rays in earth formation in the vicinity of the well bore;

generating a third signal representative of the carbon plus oxygen inelastic gamma rays of earth formations in the vicinity of the well bore;

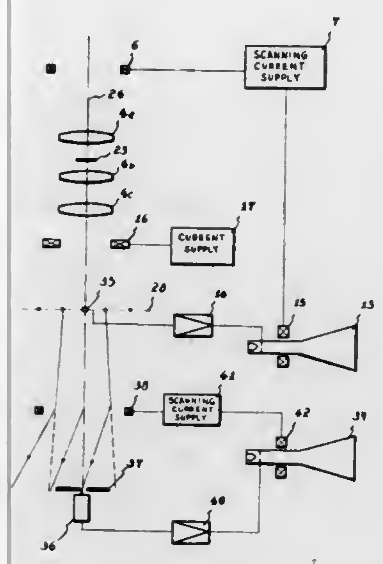
determining the location of coal beds by comparing said first, second, and third signals; and

determining the quality of said coal beds by comparing said carbon/oxygen ratio signal with a predetermined relationship of said carbon/oxygen ratio signal as a function of a BTU content of coal.

3,849,647
SCANNING ELECTRON MICROSCOPE

Hirotami Koike, and Katsuyoshi Ueno, both of Tokyo, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1973, Ser. No. 327,615
Claims priority, application Japan, Oct. 23, 1972, 47-105931
Int. Cl. H01j *37/26*
U.S. Cl. 250—306 **8 Claims**

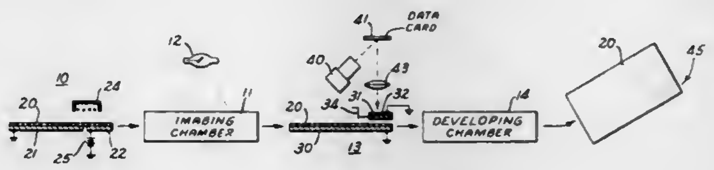


1. A scanning transmission electron microscope and electron diffraction device having a lens and deflection system defining an electron optical axis and comprising means for generating an electron beam directed along the optical axis, means for condensing said electron beam, an objective lens comprising a magnetic flux creating coil and associated pole pieces for creating a magnetic lens in the gap between the pole pieces, means for positioning a transmission specimen along the optical axis in the specimen plane within the gap between the pole pieces of the objective lens, the intensity of the magnetic flux in said gap being sufficient to form a first apparent lens just before the specimen plane and a second apparent lens thereafter, said objective lens system causing the electron beam to cross the electron optical axis at least twice after passing through the specimen plane, means comprising at least one deflection stage for deflecting the electron beam through a point on the front focal plane of the first apparent lens such that the beam scans the specimen substantially perpendicular thereto, a detecting means for detecting the transmitted electron beam, said detecting means being placed on any plane perpendicular to the optical axis where the center of the electron beam crosses the optical axis at the second or more crossing points, a first display means to which the signal from said detecting means is supplied, said display means being synchronized with said deflecting means and a second display means for displaying the diffraction pattern formed on the plane where the center of the electron beam crosses the optical axis at the second or more crossing points.

3,849,648
ELECTRON RADIOGRAPH PATIENT IDENTIFICATION SYSTEM

Frank V. Allan, and Murray S. Welkowsky, both of Los Angeles, Calif., assignors to Xonics, Inc., Van Nuys, Calif.

Filed Dec. 10, 1973, Ser. No. 423,408
Int. Cl. G03b *41/16*
U.S. Cl. 250—315 **13 Claims**



1. A method of placing object identification on an x-ray picture formed on a dielectric receptor by electronradiography, including the steps of:

producing an electrostatic charge image on a dielectric receptor by exposing the object to x-ray radiation;

producing a substantially uniform electrostatic charge on a zone of the dielectric receptor;

contacting the receptor at the charged zone by a photoconductor with the receptor and photoconductor having contiguous nonconducting surfaces and spaced interconnected conducting surfaces;

directing radiation to the photoconductor in a pattern which identifies the object and making selected portions of the photoconductor conductive;

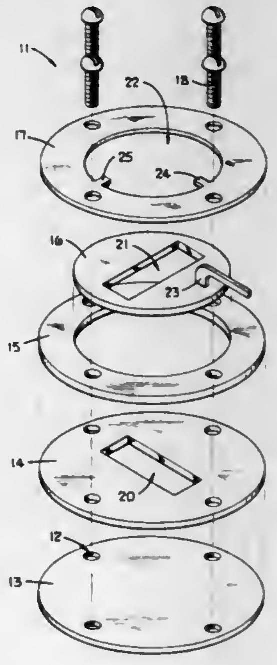
discharging the portions of the charged zone of the receptor in contact with said selected photoconductor portions; and

developing a visual image on the receptor corresponding to the charges thereon.

3,849,649
VARIABLE APERTURE X-RAY SHIELD

Carlton F. Carey, 221 Jackson, Anderson, Ind. 46011

Filed Mar. 26, 1973, Ser. No. 344,910
Int. Cl. G21f *5/04;* **H01j** *35/16*
U.S. Cl. 250—320 **17 Claims**

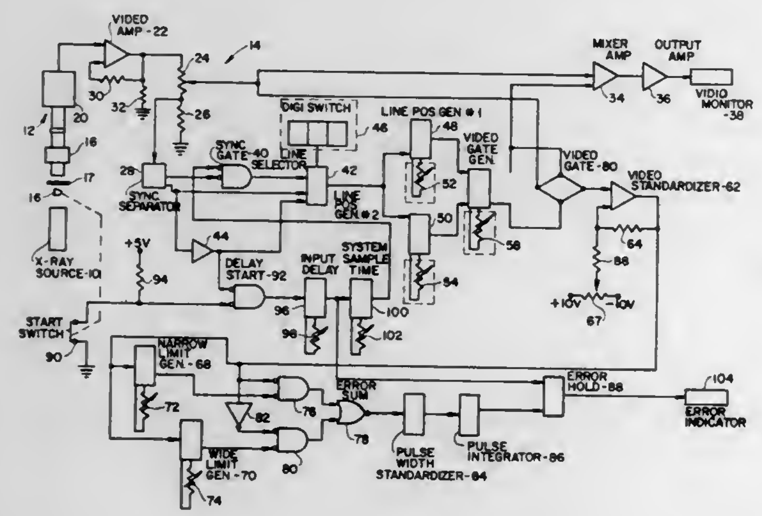


1. A device for providing a variable aperture for X-rays comprising:

- a. a first layer of material opaque to X-rays having a rectangular opening therein;
- b. a second layer of material opaque to X-rays and having a rectangular opening therein; and
- c. positioning means for maintaining said layers in parallel planes and for permitting said layers to rotate relative to one another, said positioning means including aligning means enabling positioning of the opening of said first layer of material such that a line perpendicular to said second layer and passing through said rectangular opening of said second layer also passes through said rectangular opening of said first layer.

3,849,650
AUTOMATIC X-RAY INSPECTION SYSTEM

Thomas Patten, San Jose, Calif., assignor to Picker Corporation, Cleveland, Ohio
Filed Mar. 29, 1973, Ser. No. 346,091
Int. Cl. H04b *1/38*
U.S. Cl. 250—321 **21 Claims**

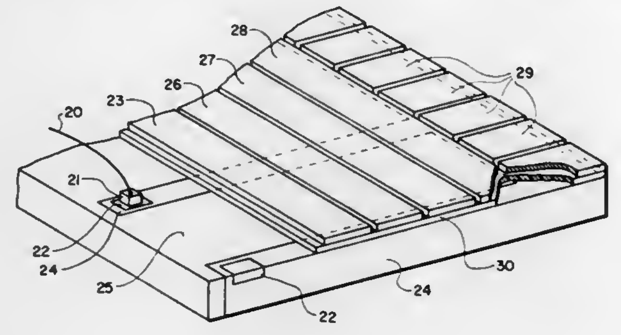


1. In an X-ray inspection apparatus including a source of X-ray for irradiating an object under inspection; and video means positioned to view an image resulting from the irradiation of said object for developing video signals having values representative of the viewed image, and horizontal and vertical scan synchronizing pulses, the improvement comprising an automatic video processor circuit including;

- adjustable line counter means for developing a first control signal upon the receipt of a preselected number of horizontal synchronizing pulses;
- adjustable line position generator means for developing a second control signal upon the occurrence of a first control signal and at a predetermined period of time after the receipt of a vertical synchronizing pulse;
- video gating means having an output circuit and being coupled to said video means for, upon receipt of a second control signal, applying video signals to its output circuit; standardizer circuit means coupled to said output circuit of said video gating means for converting video signals to digitized signals having values representative of the values of the video signals;
- adjustable reference generator means for developing a signal representative of a preselected limit; and,
- comparator circuit means for comparing said digitized signals with said limit reference signal and for developing an error signal if the value of said digitized signals attain a predetermined level with respect to the value of said limit reference signal.

3,849,651
CHARGE COUPLED SIGNAL PROCESSOR

Reinhard D. Ennulat, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Sept. 17, 1973, Ser. No. 397,528
Int. Cl. G01t *1/16*
U.S. Cl. 250—349 **10 Claims**

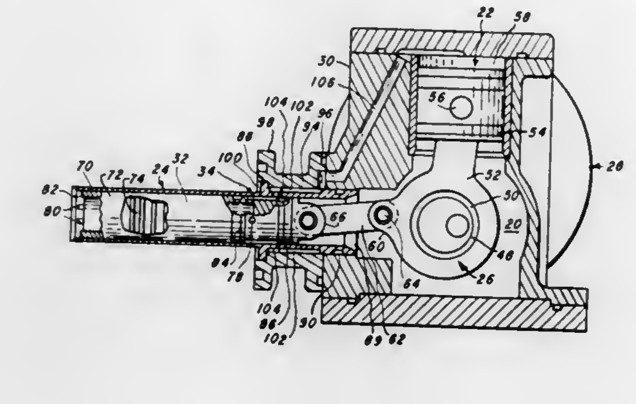


1. In a thermal imaging system wherein at least one line element of the thermal image is sampled simultaneously, an improved signal processing circuit comprising:

- a linear array containing a plurality of detector elements responsive to far-infrared radiation;
- a line imaging CCD with a like plurality of input diodes for signal injection; and
- circuit means coupling said detectors and said diodes for matching the impedances thereof and limiting the signal coupled therebetween to match the charge storage capabilities of the CCD.

3,849,652
FLOATING ANNULUS FOR GAS PORTING TO A MOVING HEAT EXCHANGER

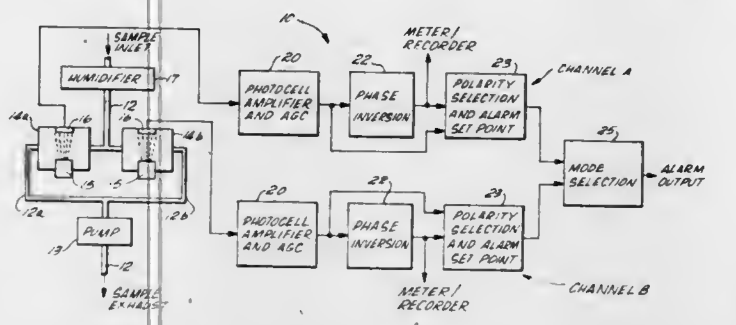
Robert M. Dix, Dallas, and Carol O. Taylor, Anna, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed June 25, 1973, Ser. No. 373,356
Int. Cl. G01t *1/16*
U.S. Cl. 250—352 **5 Claims**



1. In an infrared receiver including an infrared detector in a scanning path for infrared energy emanating from a source thereof for producing electrical signals representative of impinging infrared energy, an electro-optical system coupled to the detector for processing video signals from the electrical signals produced by the detector, and a refrigerator for cooling the detector to an operating temperature, said refrigerator having a motor, a compressor having a piston, a cooling member having a cold chamber and a regenerator-displacer, and a passage interconnecting the cooling member for transporting a cryogen between the compressor and the cold chamber of the cooling member responsive to the operation of the motor reciprocating piston in the compressor and the regenerator-displacer in the cooling member, the cooling member, compressor and passage forming a working volume for the cryogen, the improvement comprising a passage means for connecting the regenerator-displacer throughout the reciprocating cycle thereof to reduce the dead volume in the working volume and to circulate continuously the cryogen between the cold chamber and compressor through the regenerator-displacer to cool the cold chamber.

3,849,653
MULTICHANNEL BIOLUMINESCENT SENSORS

Roy R. Sakaide, Woodland Hills, and Clifford A. Shank, Canoga Park, both of Calif., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Sept. 27, 1973, Ser. No. 401,287
Int. Cl. G01h *33/00*
U.S. Cl. 250—361 **8 Claims**

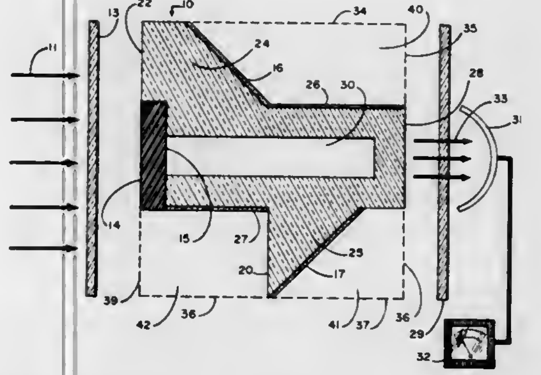


1. A system for detecting presence of a specific vapor in an atmosphere being sampled, comprising:

- a plurality of bioluminescent sensors utilizing different strains of micro-organisms which have predetermined luminescence characteristics upon exposure to the vapor; transducer means for monitoring the sensors and generating a plurality of signals representing luminescence of each sensor;
- circuit means connected to the transducer means to receive the transducer signals and to generate an output signal when the transducer signals represent the predetermined luminescence characteristics produced by exposure of the micro-organisms to the specific vapor.

3,849,654
FLUORESCENCE CUVETTE

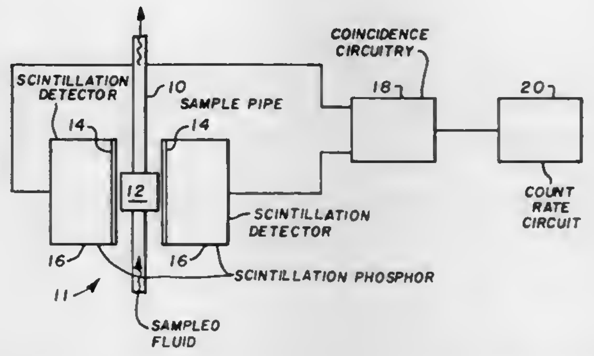
Harry Herbert Malvin, 3315 Dakota Way, Las Vegas, Nev. 89109
Filed Oct. 19, 1973, Ser. No. 407,823
Int. Cl. G01j *3/00*
U.S. Cl. 250—363 **6 Claims**



1. A cuvette comprising a cavity for receiving a fluid sample to be activated by incoming incident radiation, said cavity defined by confronting rearward and forward end walls spaced from each other in the direction of the incoming incident radiation and side walls therebetween, the rearward end wall being entirely opaque to incoming incident radiation and the forward wall being transparent to radiation scattered or emitted by said fluid sample, reflective surface means located external to and in fixed relationship to said cavity for reflecting said radiation at a 90° angle relative to the direction of the incoming radiation incident on the relecting surface, and means in said cavity for inserting and withdrawing a fluid sample.

3,849,655
LIGHT WATER REACTOR PRIMARY COOLANT LEAKAGE MONITOR

John Anthony Martucci, Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 15, 1972, Ser. No. 315,763
Int. Cl. G01t *1/10*
U.S. Cl. 250—366 **12 Claims**

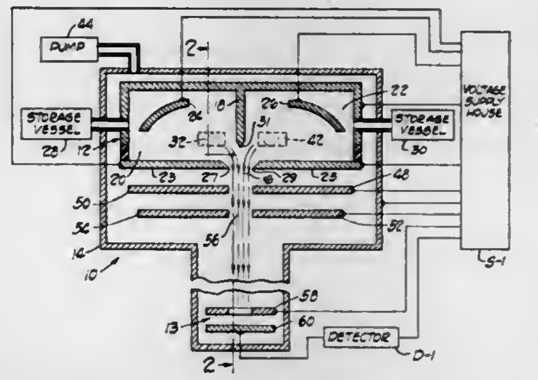


1. A method for the detection of leakage from the reactor coolant pressure boundary of a water cooled reactor which is surrounded by a containment fluid wherein said reactor coolant is irradiated with high energy protons to activate oxygen nuclei to produce nitrogen-**13** which is chemically bound in ammonia molecules, the method comprising:

- a. sampling said fluid surrounding the exterior of said reactor coolant pressure boundary;
- b. absorbing said nitrogen-**13** and ammonia, on a molecular sieve;
- c. detecting gamma photons emanating from said nitrogen-**13** by at least one pair of diametrically opposed mutually facing radiation detectors responsive to gamma photons; and
- d. registering only those detected gamma photons which simultaneously activate one pair of said diametrically opposed detectors.

3,849,656
PLURAL SAMPLE ION SOURCE

Michael J. Wallington, Manchester, England, assignor to Associated Electrical Industries Limited, London, England
Filed Nov. 12, 1969, Ser. No. 876,078
Claims priority, application Great Britain, Dec. 17, 1968, 59940/68
Int. Cl. H01j *39/34*
U.S. Cl. 250—424 **14 Claims**



1. An ion source for a mass spectrometer comprising:

- a. an evacuable ionization chamber;
- b. inlet means for introducing a plurality of vaporized samples into separate regions of said chamber;
- c. common aperture means defining at least one opening in communication with said ionization chamber through which ions formed in each of said regions exit to form an ion beam;
- d. partition means within said chamber for restricting the movement of the vaporized samples between said regions;
- e. means for developing ions of the samples in their respective regions of said chamber;

- f. electrode means for accelerating the ions through said common aperture means thereby producing an ion beam containing ions from each of the samples; and,
- g. said partition means extending to a position adjacent said common aperture means to define flow paths whereby ions from each of said regions may exit said ionization chamber through said opening without passing through any other regions.

3,849,657

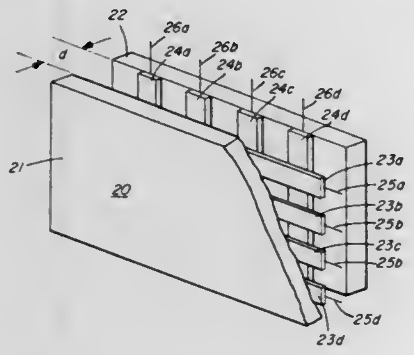
ELECTRO-OPTICAL DISPLAY DEVICE AND METHOD

David P. Hamblen, and George C. Higgins, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 192,414, Oct. 26, 1971, abandoned. This application Jan. 9, 1973, Ser. No. 322,270

Int. Cl. G01t *1/16*

U.S. Cl. 250—461 **20 Claims**



1. An electro-optical display device comprising:
- a. a transparent cell having two spaced transparent conductive walls, said cell containing an organic luminescent medium which fluoresces upon exposure to ultraviolet radiation,
- b. a source of ultraviolet radiation,
- c. means for directing said radiation to said cell to excite said medium contained therein to cause fluorescence of said medium at one conducting wall of said cell, and
- d. means for applying an electrical potential between said walls to quench fluorescence at said wall.

3,849,658

RADIOGRAPHIC RECORDING ELEMENT AND ITS USE IN RADIOGRAPHY

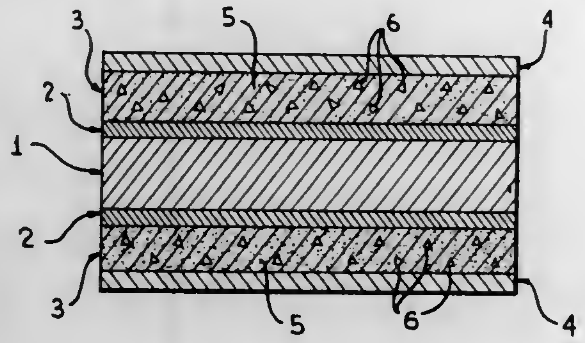
Lambert Gaston Jeurissen, Edegem; Romain Henri Bollen, Hove; Theofiel Hubert Ghys, Kontich, and Renaat Frans Heylen, Deurne, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Nov. 3, 1972, Ser. No. 303,407

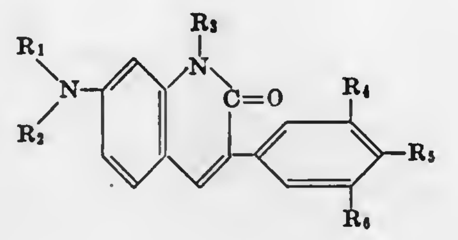
Claims priority, application Great Britain, May 31, 1972, 25528/72

Int. Cl. H01j *1/62*

U.S. Cl. 250—486 **20 Claims**



1. A radiographic image-recording element comprising a support bearing ultraviolet light-sensitive silver halide emulsion layers on opposite sides thereof and containing between said layers, or in said layers, a non-fluorescent ultraviolet light-absorbing substance corresponding to the formula:



wherein:

each of R_1, R_2 and R_3 independently of each other stands for an aliphatic group, each of R_4, R_5 and R_6 independently of each other stands for a member of the group consisting of hydrogen, alkyl, alkoxy and halogen.

3,849,659

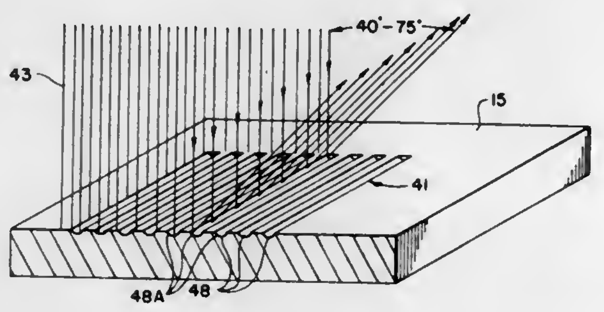
ALIGNMENT OF A PATTERNED ELECTRON BEAM WITH A MEMBER BY ELECTRON BACKSCATTER

Terence W. O'Keeffe, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 10, 1973, Ser. No. 395,804

Int. Cl. H01j *37/00*

U.S. Cl. 250—492 **13 Claims**



1. A method of aligning a patterned electron beam generated by a photocathode source with selected areas of a major surface of a member with a high degree of precision comprising the steps of:
- A. forming adjacent a major surface of a member at least two widely spaced apart detector marks of predetermined shape capable of producing electron backscatter on irradiation by an electron beam;
- B. positioning detector means corresponding to the detector marks adjacent periphery portions of the member;
- C. detecting by the detector means backscattered electrons produced by the detector marks and producing electrical signals corresponding to the respective areas of the detector marks irradiated by electron beams;
- D. positioning a photocathode source capable of projecting an electron beam spaced from the major surface of the member;
- E. causing a patterned electron beam to be projected by the photocathode source onto the major surface of the member, said electron beam having alignment beam portions corresponding to the detector marks, and each said alignment beam portion having a predetermined cross-sectional shape;
- F. moving the patterned electron beam relative to the member while continuing step C so that electrical signals vary; and
- G. positioning the patterned electron beam relative to the member where the electrical signals indicate optimum alignment of the alignment beam portions with the corresponding detector marks.

3,849,660

SYSTEM FOR PROCESSING FILM

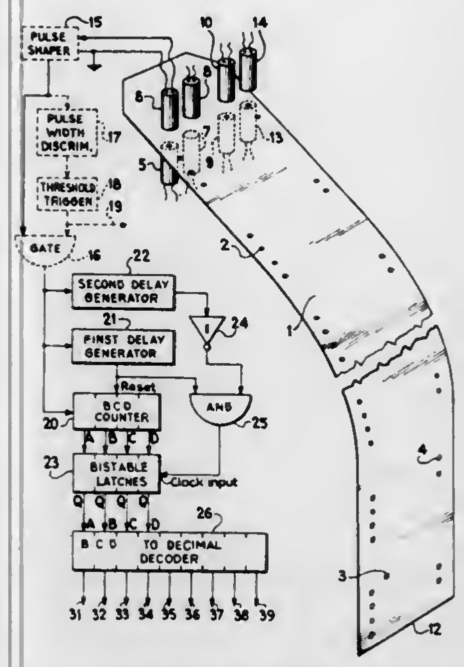
Michel Hommerin, Paris, France, assignor to Compagnie Generale de Radiologie, Paris, France

Filed Apr. 13, 1973, Ser. No. 350,764

Claims priority, application France, Apr. 19, 1972, 72.13830

Int. Cl. G01n *21/30*

U.S. Cl. 250—570 **9 Claims**



1. A system for processing photographic or radiographic film comprising, in combination:
- a. an unexposed film having sensible coded information encoded in predetermined zones of said film, said sensible coded information being present in predetermined numbers at predetermined locations for identifying in code at least one intrinsic characteristic of said film;
- b. sensing means positioned adjacent to said zones of said film for sensing passage of said coded information; and
- c. means for moving said film along a path past said sensing means.

3,849,661

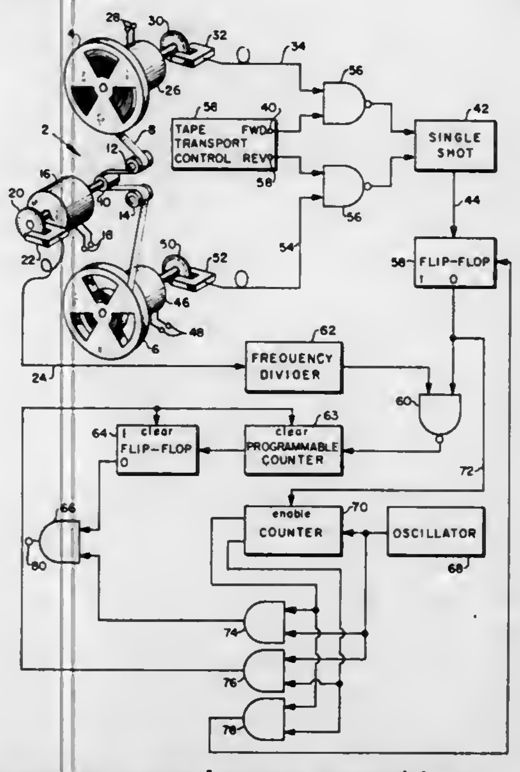
TAPE TRANSPORT CONTROL SYSTEM

Glenn A. Beiter, Louviers, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 12, 1972, Ser. No. 262,020

Int. Cl. G01n *21/30*

U.S. Cl. 250—571 **6 Claims**



1. A tape transport control system comprising:
- a tape drive capstan means for driving a tape at a predetermined speed;
- first sensor means arranged to produce a frequency modulated output signal indicative of the rotational speed of said tape drive capstan means;
- second sensor means arranged to produce a frequency modulated output signal indicative of the rotational speed of a tape storage reel operatively associated with said capstan means, which last-mentioned rotational speed varies in inverse proportion to the amount of tape stored on the tape storage reel; and
- comparator means for comparing the two frequency modulated output signals to produce an output signal indicative of a predetermined relationship representative of the amount of tape stored on the tape storage reel.

3,849,662

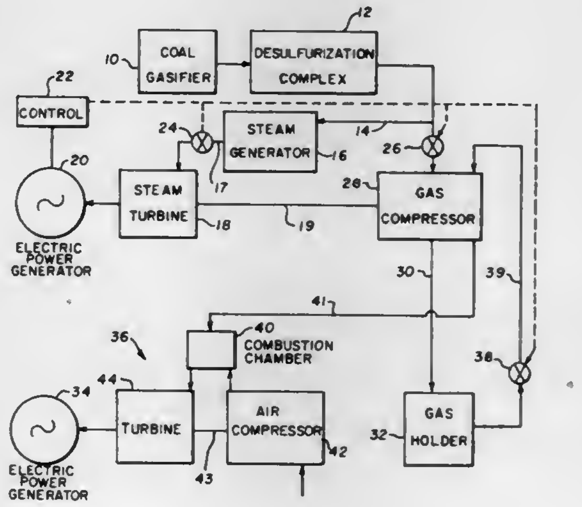
COMBINED STEAM AND GAS TURBINE POWER PLANT HAVING GASIFIED COAL FUEL SUPPLY

Henry John Blaskowski, West Simsbury, and Robert Willis Koucky, West Hartford, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 2, 1973, Ser. No. 320,364

Int. Cl. F02c *1/04*

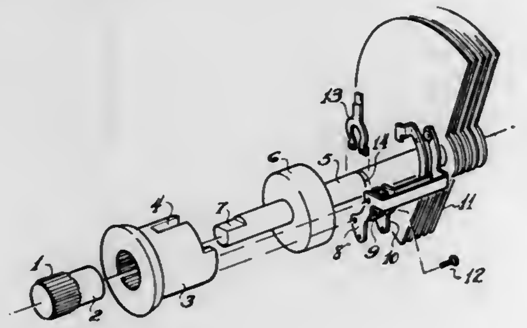
U.S. Cl. 290—2 **8 Claims**



1. An electric power generating plant comprising:
- a. a coal gasification complex for production of a gaseous fuel;
- b. a steam generator fired by said gaseous fuel;
- c. a steam turbine receiving steam from said steam generator;
- d. a first electric power generator connected to and driven by said steam turbine;
- e. a storage tank for storing said gaseous fuel;
- f. means for controlling the flow of gaseous fuel from said coal gasifier to said steam generator in response to increases and decreases in power demand on said first power generator;
- g. means for flowing the gaseous fuel from said coal gasifier which is not directed to said steam generator to said storage tank;
- h. a gas turbine fired by said gaseous fuel, said gas turbine comprising an air compressor, a combustion chamber and a turbine section;
- i. a second electric power generator connected to and driven by said gas turbine; and
- j. means for flowing gaseous fuel from said storage tank to said gas turbine combustion chamber to be combusted therein when the power demand on said first power generator is greater than a predetermined level.

3,849,663
VEHICLE ANTI-THEFT DEVICE

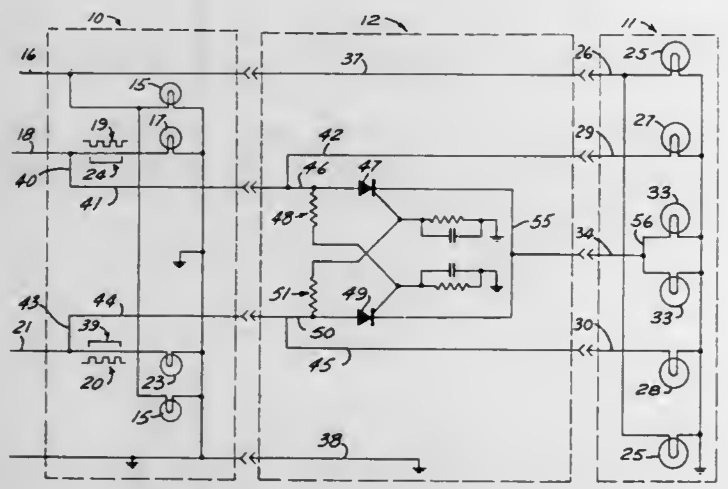
Frank J. Bogusz, Earls Court, Farmington, Conn. 06032
Filed Sept. 20, 1973, Ser. No. 398,986
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 AT **6 Claims**



1. A vehicle anti-theft device comprising a pair of starter contacts adapted to be selectively closed,
- means for starting the vehicle,
- a radio including tuning means selectively locatable at any of at least a plurality of settings,
- said tuning means including a first enabling contact which has a position which varies with the setting of said tuning means,
- a second enabling contact,
- means for actuating said starting means when said starter contacts and said enabling contacts are closed,
- means for selectively displacing said second enabling contact from a first position to a predetermined position where said first enabling contact will be engaged when said tuning means is tuned to a selected one of said plurality of setting.

3,849,664
VEHICLE WIRING ADAPTOR

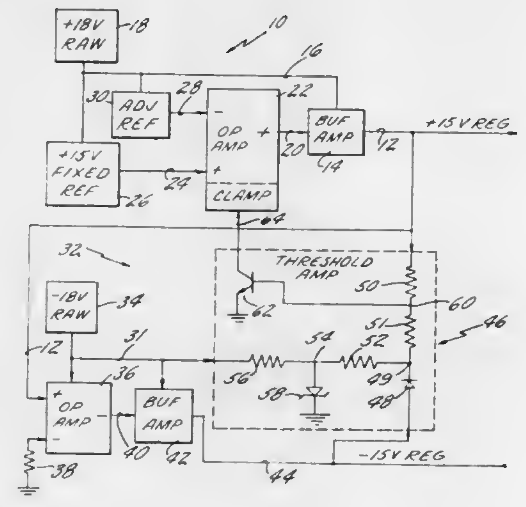
Richard C. Bryant, 1960 Evergreen, LaVerne, Calif. 91750
Filed Nov. 8, 1973, Ser. No. 413,954
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 LS **10 Claims**



1. An adaptor for causing the American-type turn/brake circuit of a first road vehicle to selectively energize turn lamps and brake lamps of the turn/brake circuit of a second, foreign-type vehicle, said first vehicle having independent first and second composite turn/brake lamps, said second vehicle having independent first and second turn lamps and at least one independent brake lamp, said adaptor including connecting means and comprising:
- means for providing a first electrical connection between said first composite turn/brake lamp of said first vehicle and said first independent turn lamp of said second vehicle;
- whereby said first turn lamp of said second vehicle is adapted to function as either a turn lamp or a brake lamp, depending upon the electrical signal present at said first composite turn/brake lamp of said first vehicle;
- means for providing a second electrical connection between said second composite turn/brake lamp of said first vehicle and said second independent turn lamp of said second vehicle;
- whereby said second turn lamp of said second vehicle is adapted to function as either a turn lamp or a brake lamp, depending upon the electrical signal present at said second composite turn/brake lamp of said first vehicle;
- means, comprising a first switch, for providing a third electrical connection between said first composite turn/brake lamp of said first vehicle and said independent brake lamp of said second vehicle;
- means, comprising a second switch, for providing a fourth electrical connection between said second composite turn/brake lamp of said first vehicle and said independent brake lamp of said second vehicle;
- whereby said brake lamp of said second vehicle is adapted to function as a brake lamp when permitted by the state of said switches.

3,849,665
SHORT CIRCUIT PROTECTED MASTER-SLAVE POWER SUPPLY

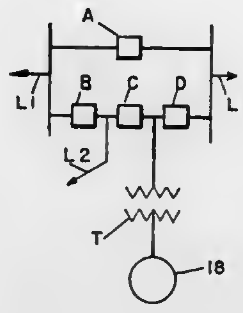
John C. Wells, Tolland, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Oct. 1, 1973, Ser. No. 402,423
Int. Cl. G05f *1/56*
U.S. Cl. 307—24 **3 Claims**



1. A short circuit protected master/slave power supply comprising:
- a master power supply;
- a slave power supply connected for response to said master power supply;
- control means connected to the output of said slave power supply for detecting a reduction in its output voltage in excess of a given magnitude and for generating a control signal related to the output voltage of said slave supply, said control means including:
- reference means providing a voltage reference having a magnitude lower than that of the nominal output of said power supply by an amount of voltage related to said given magnitude of voltage reduction;
- a voltage divider connected between the output of said master power supply and said reference means;
- a normally reverse-biased diode connected from a first point in said voltage divider to the output of said slave power supply; and
- a transistor having its base connected to a second point in said voltage divider, the current through said transistor providing said control signal; and
- means included within said master power supply and connected for response to said control means for clamping the output of said master power supply in a manner substantially proportional to said control signal.

3,849,666
METHOD FOR EMPLOYMENT OF FAST TURBINE VALVING

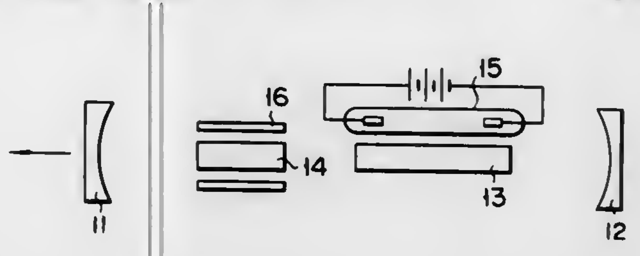
Robert H. Park, Brewster, Mass., assignor to Fast Load Control, Inc., Brewster, Mass.
Continuation-in-part of Ser. Nos. 525,615, Feb. 7, 1966, Pat. No. 3,515,893, and Ser. No. 42,281, June 1, 1970, Pat. No. 3,657,552. This application Apr. 17, 1972, Ser. No. 244,594
Int. Cl. H02j *1/10*
U.S. Cl. 307—85 **2 Claims**



1. The method of avoiding development of instability within a power system as a consequence of a transmission line fault which comprises the steps of,
- a. automatically initiating fast steam turbine valving in response to the occurrence of faults that would cause the opening of two lines if delay in fault clearance caused operation of a delayed fault clearance relay,
- b. simultaneously automatically initiating turbine governor load signal modification of a nature adapted to reduce sustained post fault turbine driving power.
- c. cancelling the load signal modification effected in step (b) if normal fault clearance takes place within a predetermined period of time following fault occurrence.

3,849,667
INTRACAVITY SECOND HARMONIC GENERATOR

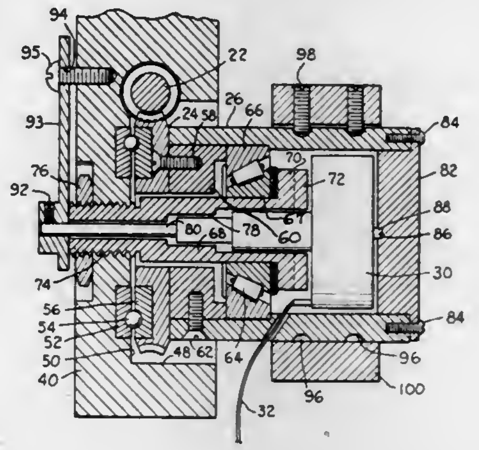
Yutaka Uematsu, Tokyo, and Tsuguo Fukuda, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Saiwai-ku, Kawasaki-shi, Japan
Filed Aug. 13, 1973, Ser. No. 387,820
Claims priority, application Japan, Aug. 16, 1972, 47-82027
Int. Cl. H02m *5/06*
U.S. Cl. 307—88.3 **6 Claims**



1. An intracavity second harmonic generator which comprises an optical resonator; crystalline potassium niobate received in the optical resonator so as to act as a second harmonic generating element, a laser element received in the optical resonator and emitting rays having an oscillated wave length of 0.9 to 1.1 microns; and a heater for heating the second harmonic generating element to the temperature at which phase matching between the fundamental and harmonic waves can be effected.

3,849,668
ORTHOTIC ARM JOINT

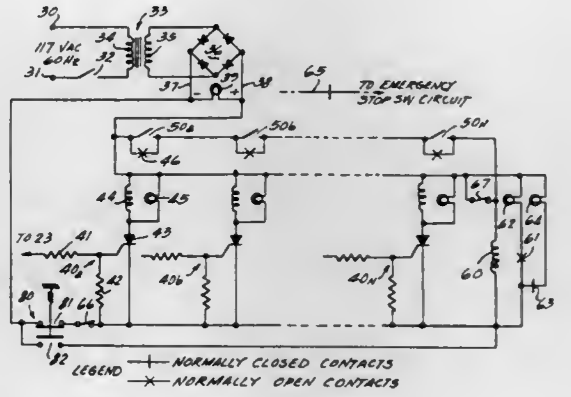
Dan H. Dane, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Oct. 4, 1973, Ser. No. 403,694
Int. Cl. B25j *3/00*
U.S. Cl. 307—149 **6 Claims**



1. A joint for use in a mechanical arm comprising:
- a. a fixed housing;
- b. a thrust bearing including an inner race connected to said fixed housing and an outer race;
- c. a worm gear;
- d. said outer race being carried in said worm gear;
- e. a spacer connected to said worm gear on an opposite side from said thrust bearing;
- f. a radial thrust bearing having an inner race and outer race;
- g. a bolt having a shank portion extending through said inner race of said radial thrust bearing, said spacer, said worm gear and said thrust bearing for engaging said fixed housing;
- h. a rotatable housing supported on said outer race of said radial thrust bearing having an inner end fixed to said worm gear;
- i. an outwardly extending arm coupled to said rotatable housing; and
- j. an electric motor having a shaft coupled to said worm gear for rotating said worm gear responsive to being energized,
- k. whereby said arm is manipulated by selectively energizing said electric motor for driving said worm gear which in turn rotates said rotatable housing.

3,849,669
MACHINE CONTROL

Billy J. Weston, 2317 W. Belmont Ave., Chicago, Ill. 60618
Filed Apr. 4, 1973, Ser. No. 347,887
Int. Cl. G05d *17/02;* **H01h** *47/00*
U.S. Cl. 307—154 **7 Claims**



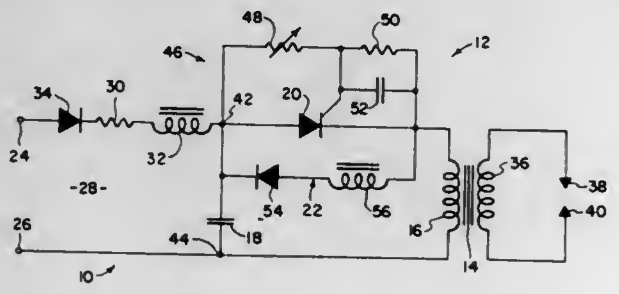
1. A machine control comprising:
- a plurality of work piece sensing probes for use at a plurality of transfer points between work stations of a machine;

- a control circuit normally conditioned to permit normal machine operation and operable to stop the machine;
- a plurality of sensing circuits connected to respective ones of said probes and jointly operable in response to detection of transfer of a work piece at each point to maintain said control circuit in its normal condition;
- a plurality of simulator circuits connected to respective ones of said sensing circuits for simulating the operation of a probe and its associated sensing circuit when such probe and circuit are not being used; said control circuit including a relay having a winding connected to said sensing circuits; and
- a cyclically operated switch means having first contacts connected to said sensing circuits for cyclically resetting said sensing circuits and second contacts connected to said control circuit relay winding for holding the relay operated between resetting of the sensing circuits and operation of the sensing circuits in response to detection of work piece transfer.

3,849,670
SCR COMMUTATION CIRCUIT FOR CURRENT PULSE GENERATORS

Ronald F. Lourigan, Kenosha, Wis., assignor to Webster Electric Company, Inc., Racine, Wis.

Filed Apr. 13, 1973, Ser. No. 350,986
Int. Cl. H03k *3/00*
U.S. Cl. 307—108 **5 Claims**

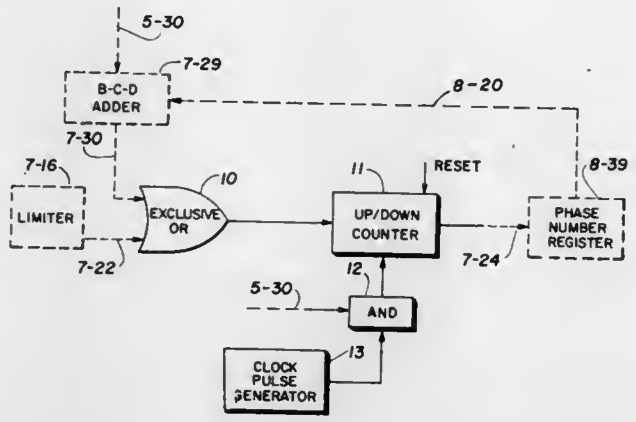


1. A current pulse generator circuit comprising:
- a pair of power supply terminals adapted to be connected to a power source;
- a capacitor;
- circuit means including said power supply terminals and said capacitor for charging said capacitor;
- a transformer having a primary winding;
- an SCR having a pair of output electrodes and a control electrode;
- a circuit loop including said capacitor, said primary winding and said SCR output terminals;
- gating means connected to said SCR control electrode for periodically rendering said SCR conductive to discharge said capacitor through said primary winding; and
- commutation means for reducing the turn-off time of the SCR following said capacitor discharge;
- said commutation means including a circuit branch connected across the SCR output electrodes;
- said circuit branch including rectifying means oppositely poled relative to said SCR output terminals for permitting reverse current to flow through said branch between said primary winding and said capacitor following discharge of the capacitor;
- said circuit branch further including variable effective impedance means in series with said rectifying means for imposing an initially high reverse voltage on the SCR and for thereafter permitting substantial reverse current flow for recharge of the capacitor.

3,849,671
PHASE DETECTOR CIRCUITRY

Michael A. Molack, Nesconset, N.Y., assignor to Dynell Electronics Corp., Melville, N.Y.

Filed May 15, 1972, Ser. No. 253,377
Int. Cl. H03d *13/00*
U.S. Cl. 307—232 **7 Claims**

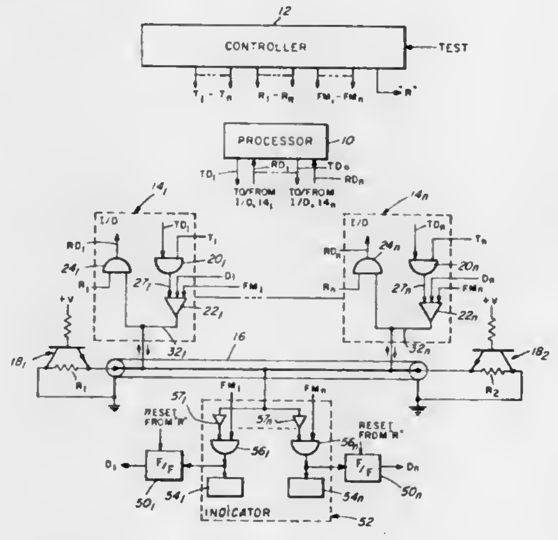


1. A phase detector operative in response to first and second binary signals occurring at a known frequency and recurring in discrete time intervals, comprising means for producing one discrete output when said first and second signals are of similar sense and another discrete output when said first and second signals are of a different sense, a source of pulses, counting means operative to continuously count said pulses and register indications in ascending order or descending order under control of said one or said other discrete output, respectively, and means for synchronizing said registration with one of said signals.

3,849,672
DIGITAL DATA TRANSMISSION SYSTEM

Christos J. Georgopoulos, Lowell, and Charles R. Ross, North Reading, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed June 30, 1972, Ser. No. 267,749
Int. Cl. H03k *5/08*
U.S. Cl. 307—235 **2 Claims**



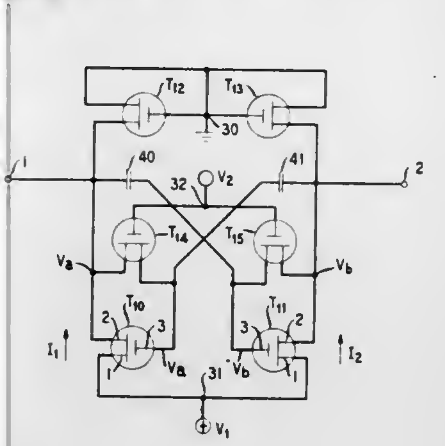
1. In a digital data transmission system, the combination comprising:
- a. a transmission line;
- b. an input device;
- c. an output device, the input device and the output device being interconnected through the transmission line;
- d. an impedance matching network terminating such transmission line, such network comprising:
  - i. electrical means having an impedance, such impedance being matched to the impedance of the transmission line;

  - ii. a transistor, the collector electrode and the emitter electrode thereof being connected in shunt across the electrical means, such transistor being constructed to have a normal current gain at least ten times as large as the inverse gain of said transistor; and
  - iii. means for biasing such transistor in its inverse mode of operation.

3,849,673
COMPENSATED IGFET FLIP-FLOP AMPLIFIERS

James Teh-Zen Koo, Wescosville, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 9, 1973, Ser. No. 414,193
Int. Cl. H03k *5/20, 3/286, 3/33*
U.S. Cl. 307—235 R **4 Claims**



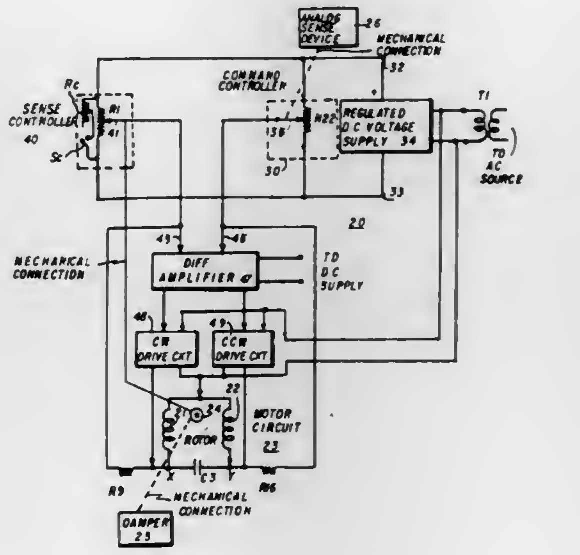
1. A signal amplifier comprising:
- a first pair of insulated gate field effect transistors having their source electrodes connected to a first common junction;
- means, including the source-drain circuit of a second pair of insulated gate field effect transistors, for cross-coupling the gate electrode of each of said first pair of transistors to the drain electrode of the other of said first pair of transistors;
- the gate electrodes of said second pair of transistors being connected to a second common junction;
- means, including the source-drain circuit of a third pair of insulated gate field effect transistors, for coupling the gate electrodes of said first pair of transistors to a third common junction;
- means for connecting the gate electrodes of said third pair of transistors to a fourth common junction;
- and signal input terminals located in the gate-drain circuits of said first pair of transistors.

3,849,674
SIGNAL COMPARATOR CIRCUIT FOR ANALOG CONTROL SYSTEMS

Robert G. Nettles, Goshen, Ind., assignor to Johnson Service Company, Milwaukee, Wis.

Continuation of Ser. No. 204,510, Dec. 3, 1971, abandoned, which is a division of Ser. No. 106,650, Jan. 15, 1971, Pat. No. 3,742,327. This application Mar. 16, 1973, Ser. No. 342,000
Int. Cl. H03k *17/00*
U.S. Cl. 307—253 **7 Claims**

1. A differential amplifier for comparing first and second input signals each of which is variable in amplitude and polarity and providing output signals which indicate amplitude and polarity differences between the compared signals, said amplifier comprising an input stage with a first input transistor having a first control electrode, and a first output electrode, and a second input transistor having a second control electrode, and a second output electrode, first means for extending to said first control electrode a first input signal which is variable in amplitude and polarity at said first control electrode, second means for extending to said second control electrode a second input signal which is variable in amplitude and polarity at said second control electrode, bias means biasing said first and second input transistors to be normally conducting for amplifying said first and second variable input signals to provide amplified signals at said first and second output electrodes, respectively, said bias means including a constant current source for supplying a constant current to said first and second input transistors such that said amplified signals provided by said input transistors establish a potential difference of one polarity between the first and second output electrodes whenever the input signal extended to the control electrode of one of said input transistors increases relative to the input signal extended to the control electrode of the other input transistor and a potential difference of the opposite polarity whenever the input signal extended to the control electrode of said one input transistor decreases relative to the input signal extended to the control electrode of the other input transistor, and an output stage including a first switching transistor having first and second input electrodes connected to said first and second output electrodes, respectively, and a second switching transistor having first and second input electrodes connected to said second and first output electrodes, respectively, and means normally reverse biasing said first and second switching transistors, one of said switching transistors becoming forward biased to provide a first output signal whenever one of said input signals increases a predetermined amount relative to the other one of said input signals such that the amplitude of the amplified signal provided at said first output electrode is a given amount greater than the amplitude of the amplified signal provided at said second output electrode, and the other one of said switching transistors becoming forward biased to provide a second output signal whenever said one input signal decreases said predetermined amount relative to said other input signal such that the amplitude of the amplified signal provided at said second output electrode is a given amount greater than the amplitude of the amplified signal provided at said first output electrode.



3,849,675
LOW POWER FLIP-FLOP CIRCUITS

Sigurd Gunther Waaben, Princeton, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

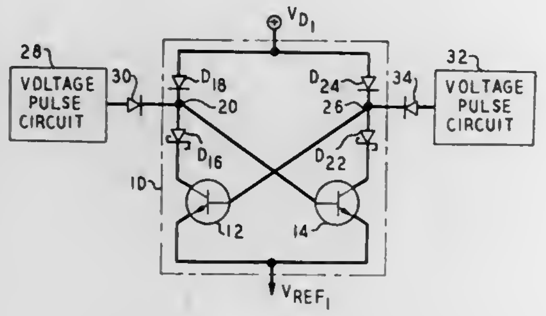
Continuation-in-part of Ser. No. 321,364, Jan. 5, 1973, abandoned. This application Jan. 3, 1974, Ser. No. 430,383
Int. Cl. H03k *3/286;* **G11c** *11/34*
U.S. Cl. 307—292 **7 Claims**

1. In combination:
- first and second junction transistors, each of said transistors having a collector, a base, at least one emitter and an emitter-base junction;
- first and second diodes, each having essentially the same barrier height;
- third and fourth diodes each having essentially the same barrier height;

the barrier height of the third and fourth diodes being less than the barrier height of the emitter-base junctions of the transistors;

one emitter of each of the first and second transistors being coupled together;

the cathode of the first diode being coupled to the anode of the third diode and the cathode of the third diode being coupled to the collector of the first transistor;



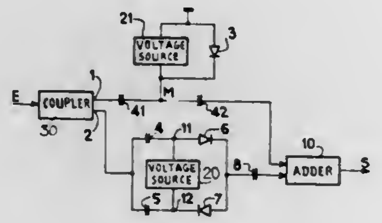
the cathode of the second diode being coupled to the anode of the fourth diode and the cathode of the fourth diode being coupled to the collector of the second transistor; and

the base of the first transistor being coupled to the cathode of the second diode and the base of the second transistor being coupled to the cathode of the first diode.

3,849,676
PHASE-CORRECTOR

Claude Bareyt, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Oct. 16, 1973, Ser. No. 406,862
Claims priority, application France, Oct. 20, 1972, 72.37262
Int. Cl. H03b *3/04*
U.S. Cl. 307—295 **4 Claims**

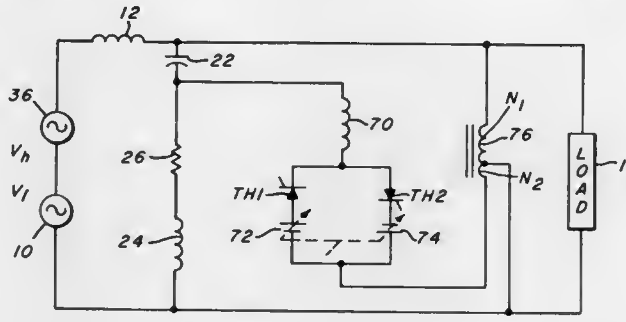


1. A phase corrector comprising means, having an input and first and second output terminals, for applying an input signal in phase quadrature to said first and second terminals, the signal appearing at said first terminal lagging in phase relatively to the signal appearing at said second terminal; a linear attenuator coupled to said first terminal; a non-linear channel coupled to said second terminal and including a non-linear device comprising a d-c series arrangement of two diodes, said two diodes being connected in the same direction relatively to a d-c current applied to said series arrangement, and being coupled in parallel and in reverse directions relatively to the a-c current appearing at said second terminal, means for biasing said diodes by the same d-c voltage value and in the same direction, and an adder for adding together the output signals from said linear attenuator and from said non-linear channel.

3,849,677
HYBRID POWER FILTERS EMPLOYING BOTH ACTIVE AND PASSIVE ELEMENTS

Eric J. Stacey, and Eugene C. Strycula, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 26, 1973, Ser. No. 373,726
Int. Cl. H03h *7/10*
U.S. Cl. 307—295 **4 Claims**



1. In an electrical system for supplying power from an electrical source section to a load section, one of said sections generating a single harmonic frequency fh to which the other section is subject to in the absence of filtering, the combination:

a hybrid filter interposed between said sections, and including at least two passive filter elements initially tuned to slightly above the said single harmonic frequency *fh;*

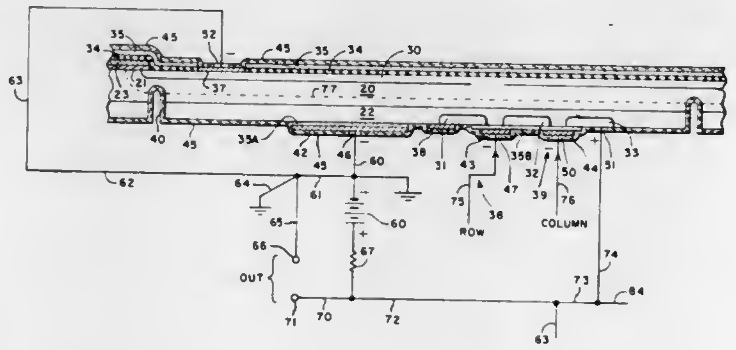
a shunt inductor having preselected inductance;

a pair of reverse parallel thyristors, the pair being connected in series with said shunt inductor, the series combination of shunt inductor and the thyristor pair being connected in parallel with one of said passive filter elements, whereby by adjusting the phase angle of thyristor conduction, the effective inductance of said shunt inductor is adjusted to bring said hybrid filter exactly at resonance at *fh.*

3,849,678
DETECTOR ARRAY

John Flynn, Belmont, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 12, 1973, Ser. No. 405,836
Int. Cl. H01l *15/00*
U.S. Cl. 307—311 **8 Claims**



1. In radiant energy responsive apparatus comprising a wafer of semiconductor material having a first thin layer of a first conductivity type on one side thereof for impingement by incident radiation and a second thicker layer of opposite conductivity type on the other side thereof to define therebetween a PN junction and an intrinsic junction depletion layer functioning inherently as a capacitor shunting a diode and a resistor of which the resistance decreases with increase in incident radiation, a plurality of intersecting grooves penetrating into said second layer to a depth insufficient to reach said depletion layer so as to divide said second layer into a plurality of detection elements, first conducting means for making electrical connection to all said elements, second conducting means for making electrical connection to said first layer, and reverse biasing means connected to said first and second conducting means and of magnitude sufficient to broaden said depletion layer until said grooves do penetrate it, so as to mutually isolate said elements electrically, the improvement which comprises:

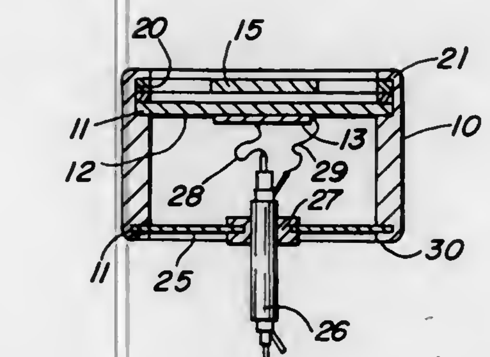
switching means integrated into each said element and forming part of said first conducting means, each said switching means having a first switching condition, in which the element is connected to said biasing means so that current flows to charge the inherent capacitor to a potential determined by said biasing means, and a second switching condition, in which the element is isolated from said biasing means so that the inherent capacitor may discharge, through the inherent resistance, at a rate determined by the incident radiation, and

means energizing the switching means of said elements into said first switching conditions singly in a predetermined repeating sequence of operations.

3,849,679
ELECTROACOUSTIC TRANSDUCER WITH CONTROLLED BEAM PATTERN

Frank Massa, Cohasset, Mass., assignor to Massa Division, Dynamics Corporation of America, Hingham, Mass.

Continuation-in-part of Ser. No. 10,748, Feb. 12, 1970, Pat. No. 3,638,052, and a continuation-in-part of Ser. No. 17,430, March 9, 1970, abandoned. This application Apr. 1, 1970, Ser. No. 24,615
Int. Cl. H04r *17/00*
U.S. Cl. 310—8.2 **2 Claims**

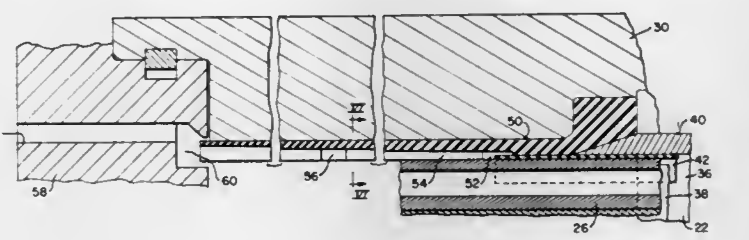


1. An electroacoustic transducer comprising a tubular housing open on at least one end, vibratile diaphragm means having a center portion and an outer peripheral portion, means for sealing the periphery of said vibratile diaphragm to close the open end of said tubular housing and form a clamped vibratile disc, transducer means comprising a piezoelectric disc rigidly bonded to one side of said diaphragm, electrical conductor means attached to said piezoelectric disc for imparting electrical signals thereto, the center and peripheral portions vibrating in different modes which give rise to alternative sonic effects depending upon the degree of interaction between said modes of vibration, and sound baffle means for controlling the radiation of sound from the center portion of said diaphragm as compared with the radiation of sound from the outer peripheral portion of said diaphragm, said vibratile diaphragm operating at its overtone resonant frequency mode of operation, wherein said means for controlling the sound radiating from the center portion comprises a rigid sound masking disc positioned over the center portion of said vibratile diaphragm and spaced away from the radiation surface thereof, the diameter of said sound masking disc being less than one-half the diameter of the free and unsupported portion of said vibratile disc, and the spacing between said sound masking disc and said vibratile diaphragm being a linear distance approximately equal to a number derived by dividing the area of said masking disc by the periphery of said disc.

3,849,680
LIQUID COOLED ROTOR FOR DYNAMOELECTRIC MACHINES

Paul R. Heller, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 24, 1974, Ser. No. 436,284
Int. Cl. H02k *9/00*
U.S. Cl. 310—54 **10 Claims**

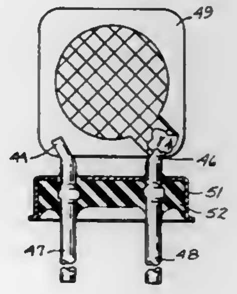


1. In a dynamoelectric machine having stator and rotor members, said rotor member having winding conductors disposed in longitudinal slots and means for circulating coolant liquid in thermal relation with said conductors, means on the rotor for receiving any leakage of said liquid and directing the leakage liquid to one end of the rotor, means for discharging liquid from said end of the rotor, and means on the stator member for receiving liquid discharged from the rotor.

3,849,681
PIEZOELECTRIC CRYSTAL UNITS WITH MALLEABLE TERMINALS AND EPOXY-FILLER SEALANT

Kelley E. Scott, Jr., Plano; Daryl M. Kemper, Sandwich, both of Ill.; Lloyd E. Grove, Geneva, and Ronald J. Kiess, Decatur, both of Ind., assignors to CTS Corporation, Elkhart, Ind.

Division of Ser. No. 830,956, June 6, 1969, Pat. No. 3,656,217. This application Feb. 15, 1972, Ser. No. 226,430
Int. Cl. H01v *7/00*
U.S. Cl. 310—9.1 **15 Claims**

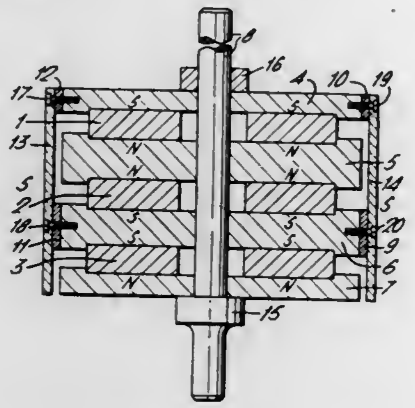


1. A piezoelectric crystal unit comprising an eyelet having a pair of terminal receiving apertures, a pair of conductive malleable terminals supported in the apertures of the eyelet, each of the terminals having a free end extending from the eyelet, a crystal plate having a pair of faces, an envelope surrounding the crystal plate and secured to the eyelet, and means formed integrally with the terminals for mounting the crystal plate in a substantially stress-free condition, said means comprising a bifurcated portion on each of said pair of terminals disposed adjacent to a face of said crystal plate, each of the bifurcated portions being provided with a slot defined by a pair of arms and a bottom edge, the crystal plate being disposed in and supported by the slot by the pair of arms and the bottom edge of the slot whereby stress-loading of the crystal plate by the mounting means is prevented.

3,849,682
PERMANENT MAGNET ROTOR FOR ALTERNATING CURRENT GENERATORS AND MOTORS

Kenneth John Binns, Chandlers Ford, England, assignor to National Research Development Corporation, London, England

Filed June 19, 1973, Ser. No. 371,541
Int. Cl. H02k *21/16*
U.S. Cl. 310—156 **19 Claims**

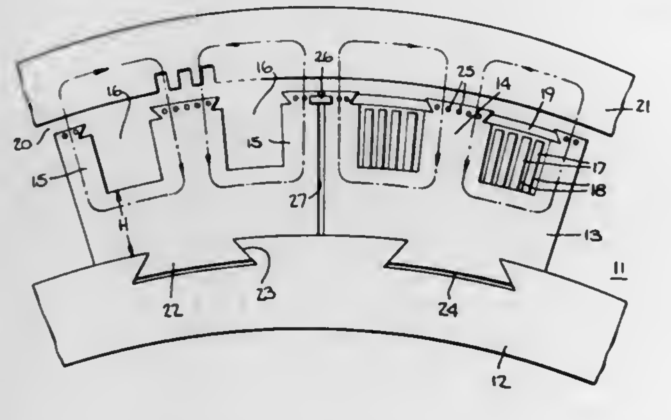


1. An alternating current electrical machine comprising a stator having an inner periphery with slots containing conductors of a distributed winding, and a rotor mounted to rotate with its outer periphery adjacent to the inner periphery of the stator, the rotor comprising a plurality of permanent magnets, spaced apart along the axis of rotation of the rotor with their magnetic axes coincident with the said axis and, with their directions of magnetization parallel to the said axis, a plurality of pole shoes spaced apart around the rotor periphery and extending substantially continuously for at least three quarters of the whole axial length of the rotor periphery, and a plurality of flux guides arranged to couple the poles of the permanent magnets to the pole shoes magnetically to give the pole shoes polarities which alternate around the rotor periphery but which are the same in the axial direction of the rotor over more than half the length of the outer periphery of the rotor, the flux guides and the pole shoes being arranged to ensure that the flux density at the pole shoes is high compared with that at the permanent magnet means.

3,849,683
POLE ELEMENT FOR A SYNCHRONOUS ELECTRIC MACHINE HAVING A LAMINATED LINK ROTOR

Werner Leistner, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed May 4, 1973, Ser. No. 357,260
Claims priority, application Germany, May 18, 1972, 2224911; Sept. 20, 1972, 2246448
Int. Cl. H02k *1/28*
U.S. Cl. 310—218 **6 Claims**

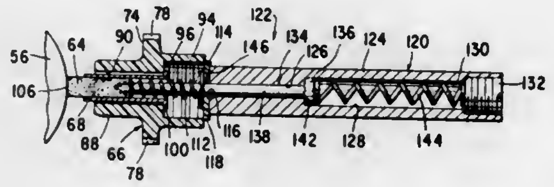


1. In an electric synchronous machine equipped with a laminated rotor and a pole arrangement mountable on the rotor, the pole arrangement comprising: a plurality of pole elements disposed one next to the other about the circumference of the rotor; and mounting means for mounting said pole elements on the rotor including for each of said pole elements an opening formed in the rotor, and a foot-like projection extending from the base of the pole element for engaging said rotor in said opening thereof; each of said pole elements including a pair of half poles disposed at the ends of the element, a complete pole disposed centered between said half poles, and an excitation winding for generating flux that passes into and out of the rotor, said complete pole being so configured and spaced apart from said half poles to conjointly define therewith respective pole gaps having a substantially rectangular shape for receiving said excitation winding therein in surrounding relation to said complete pole and for permitting the insertion and removal of said excitation winding in radial direction, said complete pole and said half poles conjointly defining a magnetic circuit for substantially confining all of said flux of said winding to the pole element in its passage through the rotor.

3,849,684
ASSEMBLY OF EXTERNALLY ACCESSIBLE BRUSHES

John L. Duncan, Pickens, and Fredrick W. Duthie, Greenville, both of S.C., assignors to The Singer Company, New York, N.Y.

Filed Feb. 21, 1973, Ser. No. 334,492
Int. Cl. H02k *13/00*
U.S. Cl. 310—242 **8 Claims**



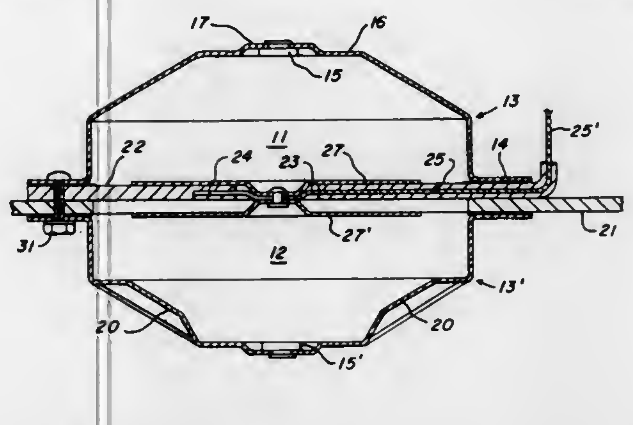
1. Apparatus for retaining a brush in a holder mechanism connected in an electric motor having a commutator, the holder mechanism including a holder having a counterbored inner opening with a threaded upper portion, a tube carried in the holder, a brush radially slidable in the tube in superposition to the commutator, a coil spring connected to the brush and a cap threadedly connected to the holder to compress a spring and bias the same in the direction of the commutator, said apparatus comprising:

a. a retainer sized to slightly overlap the threaded opening in the upper portion of the holder prior to the cap being screwed in place,
b. the retainer is made of a thin, nonmetallic and semiflexible material,
c. The retainer has a central aperture formed therein,
d. a plunger means operatively associated with the retainer,
  e. a barrel means formed on the plunger means, of smaller cross-sectional dimension than the cross-sectional dimension of the retainer,
f. a projection means extending from one end of the barrel,
  g. the barrel means to exert a substantially uniform pressure upon the retainer being inserted into the brush holder,
h. the projection means to extend through the central aperture of the retainer upon insertion thereof to be disposed within the coils of the spring to radially align the spring within the holder, and
i. the plunger means, including the barrel means and the projection means, is inserted into the brush holder to force the retainer radially downwardly, wherein the brush contacts the commutator and the spring is compressed between the brush and the retainer, the retainer will have its edges jammed into the threads of the holder to maintain its position after the plunger is removed prior to the cap being threaded into the holder.

3,849,685
IONIZATION CHAMBER WITH RECESSED RADIOACTIVE BODY

Larry D. Larsen, Palatine, Ill., and Arlon D. Kompelien, Richfield, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed June 22, 1973, Ser. No. 372,557
Int. Cl. H01j *7/40*
U.S. Cl. 313—54 **3 Claims**



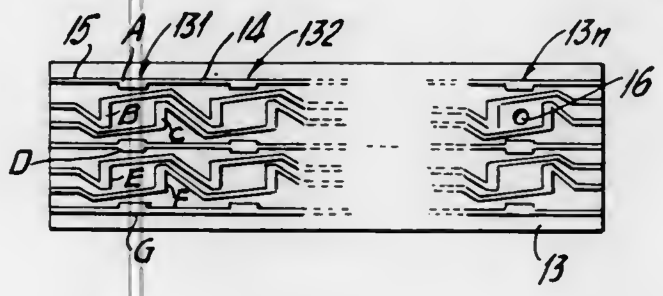
1. In an ionization smoke detector of the type having a smoke sensing chamber containing a radioactive source, an improved chamber assembly comprising in combination:

a cup like electrode mounted on a base member and defining an exterior chamber wall of an ionizing chamber;
a radioactive body for ionizing the area within said chamber, said body being mounted on the cup like electrode;
a dimple like recess in said cup like electrode at the mounting point of said body which is effective to recess the body so the radiating face thereof is substantially flush with the inner surface of the cup like electrode whereby the uniformity of ion flow to the inner surface of the electrode is improved.

3,849,686
PLASMA DISPLAY PANEL COMPRISING A FIRST EXTERNAL ELECTRODE FOR EACH DIGIT AND A SECOND EXTERNAL ELECTRODE FOR EACH SEGMENT

Togo Miyazaki, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed May 17, 1973, Ser. No. 361,327
Claims priority, application Japan, May 23, 1972, 47-60166; May 23, 1972, 47-60167; May 23, 1972, 47-60168
Int. Cl. H01j *7/42*
U.S. Cl. 313—484 **2 Claims**



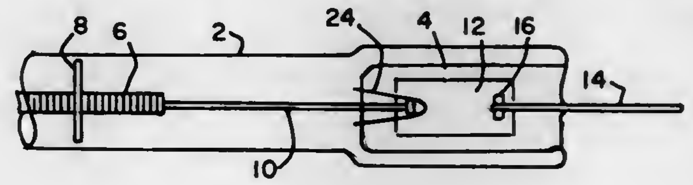
1. In a plasma display panel for a plurality of identical characters including:

first and second supporting members,
a plurality of identical sets of character-forming electrodes on said second supporting member,
a common electrode for each set on said first supporting member, and
means associated with the common electrode to enable a first electric potential to be applied thereto,
the improvement which comprises:
electroconductive means on said second supporting member in coplanar relation to said character-forming electrodes for connecting corresponding electrodes in each set in series so that corresponding electrodes in each set and the connecting electroconductive means therebetween form a continuous line segment free of branches, and
plural lead wires extending from first ends of each of the serially connected character-forming electrodes disposed at one end of said continuous line segment for applying a second electric potential to the corresponding electrodes connected to said each character-forming electrode coincident with said first potential, whereby a potential difference of predetermined magnitude may be produced between the energized corresponding electrodes and a common electrode for a selected set.

3,849,687
TUNGSTEN-HALOGEN LAMP WITH TANTOLUM GETTER

Leroy S. Huston, Derry, N.H., and Joseph S. Kulik, Jr., Amesbury, Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed July 13, 1973, Ser. No. 378,974
Int. Cl. H01k *1/54, 1/56*
U.S. Cl. 313—179 **5 Claims**

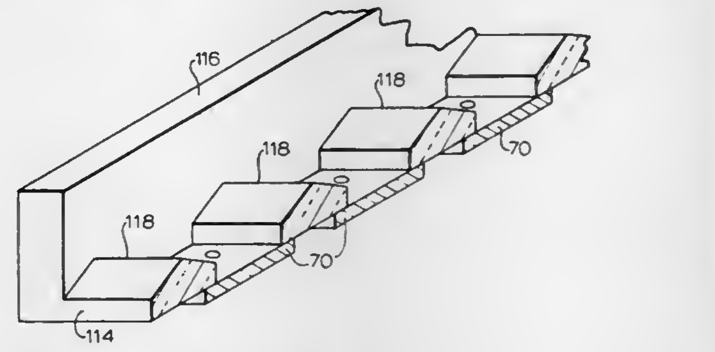


1. A tungsten-halogen incandescent lamp comprising:
an hermetically sealed, light-transmitting envelope;
a fill of inert gas and halogen within said envelope, said halogen being bromine;
a coiled tungsten filament supported within said envelope; and a piece of tantalum supported within said envelope for gettering oxygen and hydrogen, said piece of tantalum being so located within said envelope that the operating temperature of the portion of said tantalum piece used for gettering is between about 300° and 450°C.

3,849,688
DISPLAY PANEL HAVING ROWS AND COLUMNS OF CELLS WITH WIDE VIEWING ANGLE

Thomas C. Maloney, Bernardsville, and Donald E. Miller, Asbury, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed June 28, 1973, Ser. No. 374,398
Int. Cl. H01j *17/16*
U.S. Cl. 313—188 **11 Claims**

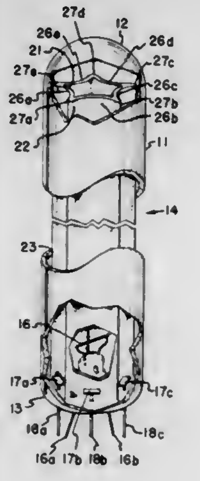


1. A display panel comprising
a first insulating plate having a top surface and a bottom surface and having a plurality of first parallel grooves in said top surface,
a first anode electrode in each said first groove,
a plurality of second parallel cathode electrodes spaced from said first electrodes and oriented at an angle to said first electrodes so that each second electrode crosses a plurality of first electrodes,

each crossing of a first electrode and a second electrode spaced therefrom defining a gas volume which comprises a first gas cell,
a second plate having top and bottom surfaces and positioned above and in sandwich relation with said first plate,
a plurality of second parallel grooves formed in said top surface of said second plate and extending downwardly therein to close to said bottom surface thereof, each of said second grooves being generally vertically aligned with one of said first grooves in said first plate,
a plurality of cross ribs disposed in each of said second grooves,
said cross ribs being spaced apart along each of said second grooves with a portion of a cathode disposed in the space between each pair of cross ribs,
said cross ribs extending from near the bottom surface of said second plate toward the top surface thereof,
said cross ribs being of a thickness which is considerably less than the thickness of said second plate,
the space between adjacent pairs of said cross ribs defining apertures which are operated as second cells and each of which is aligned with a first cell,
third electrodes positioned on the top surface of said second plate, each aligned with a group of said apertures whereby a portion of each third electrode is aligned with a portion of a second electrode and a portion of a first electrode at each said aperture, and
a top glass viewing plate covering said third electrodes, said first plate, second plate, and viewing plate being sealed together with an ionizable gas included inside said panel and in said cells,
said thin cross ribs providing isolation between said adjacent cathodes while permitting a viewer looking through said viewing window along each of said slots to see all of said cathode electrodes aligned with said display cells even when said viewer views said panel over a relatively wide viewing angle.

3,849,689
SEQUENTIAL DISCHARGE FLUORESCENT LAMP

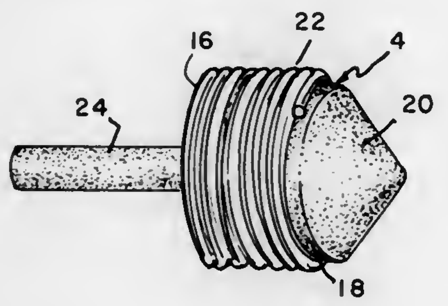
John H. Campbell, Mentor, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed July 2, 1973, Ser. No. 375,630
Int. Cl. H01j *17/00*
U.S. Cl. 313—190 **8 Claims**



1. A vapor discharge lamp comprising a pair of envelope members in parallel spaced apart relationship and electrode means defining a plurality of parallel sequential vapor discharge paths between and parallel to said envelope members, the surface of at least one of said envelope members being shaped to provide a plurality of grooves respectively extending along and facing said vapor discharge paths, each adjacent pair of said grooves defining a rib spaced sufficiently from the other of said envelope members to permit the vapor discharge of said lamp to shift from one groove to the next through the space between said rib and said other envelope member.

3,849,690
FLASH TUBE HAVING IMPROVED CATHODE

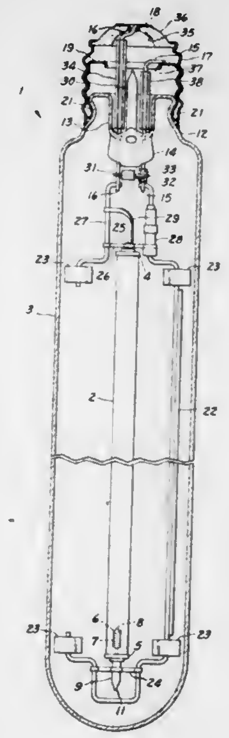
Robert J. Cosco, Amesbury, and John A. Pappas, Winthrop, both of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.
Filed Nov. 5, 1973, Ser. No. 412,811
Int. Cl. H01j *61/08*
U.S. Cl. 313—217 **8 Claims**



1. An electric discharge lamp comprising: an hermetically sealed, light transmitting envelope; a rare gas in said envelope; and a pair of electrodes in said envelope, one disposed at each end thereof, between which an arc discharge path is defined during operation of said lamp; at least one of said electrodes comprising a pressed and sintered pellet having a substantially cylindrical sidewall and composed of a substantially homogeneous mixture including a powdered refractory metal and an electron-emitting material, said cylindrical pellet being axially aligned with said arc discharge path, and a 100 percent pitched coil of refractory metal wire securely wound about the cylindrical sidewall of said pellet.

3,849,691
HIGH INTENSITY LAMP CONTAINING ARC EXTINGUISHING BASE

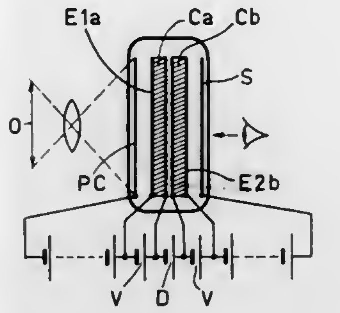
Byron R. Collins, Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed Dec. 8, 1972, Ser. No. 313,556
Int. Cl. H01j *5/46*
U.S. Cl. 313—318 **10 Claims**



1. A jacketed high intensity arc lamp comprising:
a vitreous outer envelope having a neck and a pair of inleads sealed therein at the neck end through a press;
an inner arc tube containing a discharge medium and having electrodes sealed into its ends and requiring a starting voltage high enough to start a discharge between spaced conductors in air;
means supporting said arc tube within said outer envelope and including conductors connecting said electrodes to said inleads;
a base attached to the neck of said outer envelope and comprising a metal shell, and end insulator, and an end contact centrally mounted thereon;
one of said leads extending through said shell and being connected to said end contact and the other of said inleads being connected to said shell;
and a sleeve within said base, said sleeve being of refractory insulating material which retains its shape and does not become conductive at high temperatures up to 1,000°C, said one inlead being passed through said sleeve which serves to assure a minimum breakdown voltage therefrom to said shell and facilitates arc extinguishment by drawing the arc up into the sleeve as said one inlead shortens until the arc is lengthened and constricted into extinction.

3,849,692
SURFACE CONDUCTIVE TILTED CHANNEL PLATE ELECTRON MULTIPLIER

Robert Malcolm Beasley; Douglas Raymond Mainard, and Derek Washington, all of Salfords, near Redhill, England, assignors to U.S. Philips Corporation, New York, N.Y.
Filed July 31, 1972, Ser. No. 276,701
Claims priority, application Great Britain, Aug. 2, 1971, 36250/71
Int. Cl. H01j *1/32, 31/48, 43/22*
U.S. Cl. 313—379 **8 Claims**

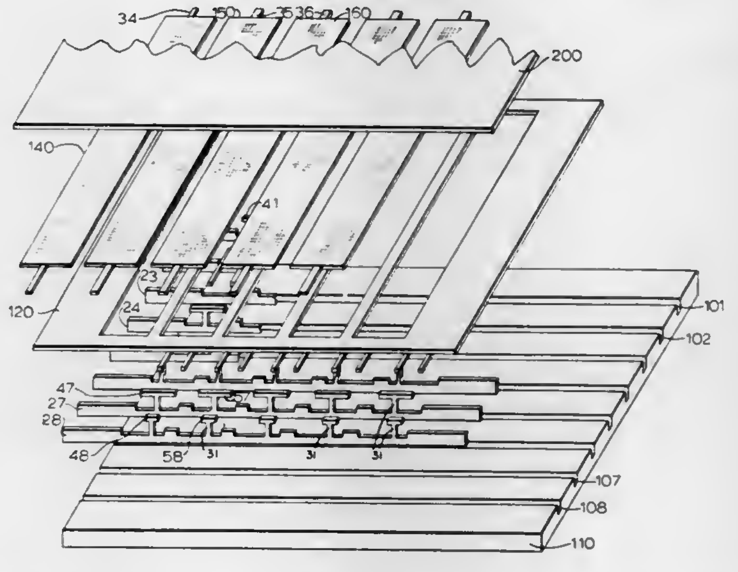


1. A channel-type electron multiplier comprising a tandem pair of non-conductive plates each having end walls of high conductivity material arranged in substantially parallel planes and a plurality of elongate channels opening at said end walls, said channels having surface of low conductivity material for producing secondary emission when impinged by an electron beam, channels in one plate being at least partially in registration with assigned channels in the other plate and channels in both plates extending substantially in the same direction and being inclined substantially at the same angle with respect to the planes of corresponding end walls.

3,849,693
MULTIPLE POSITION DISPLAY PANEL HAVING SEGMENTED ELECTRODES

Saul Kuchinsky, Somerville; Arthur B. Shesser, Plainfield; Arpad Somlyody, Somerville, and Richard B. Fehnel, Basking Ridge, all of N.J., assignors to Burroughs Corporation, Detroit, Mich.
Continuation of Ser. No. 55,388, July 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 45,034, June 10, 1970, abandoned. This application Feb. 22, 1972, Ser. No. 227,744
Int. Cl. H01j *61/66*
U.S. Cl. 313—519 **22 Claims**

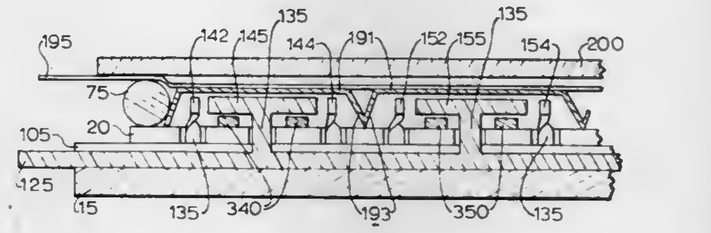
1. A multiple-position display device comprising
a sealed envelope having a viewing window and including an insulating base plate having top and bottom surfaces,
a plurality of elongated metal strip conductors spaced apart and supported by a surface of said base plate,
a plurality of metal strip cathode electrode segments spaced apart along the length of each of said elongated metal strip conductors, the cathodes of each strip being identical in size and shape,
said metal strip conductors and their cathode electrode segments being formed of a single piece of metal,



the cathode segments being positioned so that they form groups spaced apart along said device, each group comprising a display position,
an anode electrode positioned in operative relation with each of the groups of cathode segments, and
a gaseous atmosphere in the region about the cathode segments and the anode electrodes, including an ionizable gas at a pressure capable of sustaining cathode glow discharge.

3,849,694
MULTIPLE POSITION DISPLAY PANEL HAVING SPURIOUS GLOW SUPPRESSOR

Edgar Lloyd Harvey, Old Bridge, N.J., and Joel Martin Levine, Dunwoody, Ga., assignors to Burroughs Corporation, Detroit, Mich.
Continuation of Ser. No. 217,781, Jan. 14, 1972, abandoned, which is a continuation of Ser. No. 78,045, Oct. 5, 1970, abandoned. This application Jan. 18, 1974, Ser. No. 434,614
Int. Cl. H01j *61/66*
U.S. Cl. 313—519 **23 Claims**



1. A display panel comprising
a sealed gas-filled envelope having a viewing window and including an insulating base plate having top and bottom surfaces,
a plurality of elongated conductors supported on said base plate and each carrying a plurality of cathode electrode segments spaced apart along its length and spaced from the surface of the base plate,
said segments being arrayed in groups on said conductors, with a segment of different conductors being included in each group and each group comprising a display position in said panel,

- an anode electrode positioned beneath said cathode segments and adjacent the base plate in operative relation with each said group of cathode segments, and
- an auxiliary electrode electrically isolating the segment groups with their associated anode electrodes from each other.

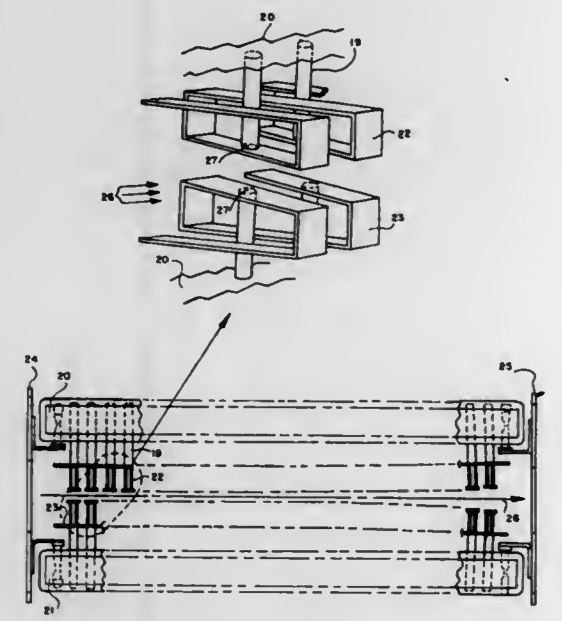
3,849,695
DISTRIBUTED DEFLECTION STRUCTURE EMPLOYING DIELECTRIC SUPPORT

Richard Elliot Piazza, and Bozidar Janko, both of Portland, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed July 19, 1973, Ser. No. 380,627

Int. Cl. H01j *23/34, 29/96*

U.S. Cl. 315—3 **10 Claims**



1. Dielectric supported deflection means comprising:

- an array of non-conductive mutually parallel members having one end a solid body and the other end forming a comb structure having teeth extending therefrom; and
- an array of conductive members defining helical deflection means bonded to the teeth of the non-conductive parallel members, said helical deflection means defining helix members having flat surfaces.

3,849,696
VERTICAL CONVERGENCE CIRCUITS

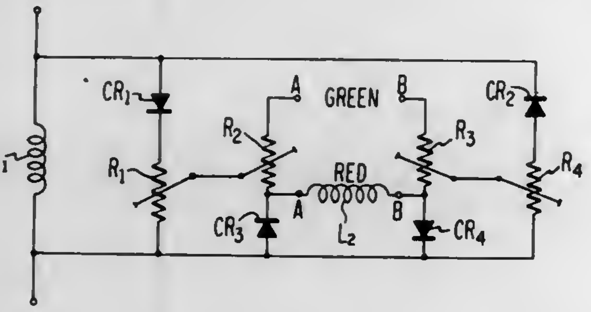
Rene Peter, Basel, and Hans Peter Lambrich, Geroldswil, both of Switzerland, assignors to RCA Corporation, New York, N.Y.

Filed Jan. 6, 1972, Ser. No. 215,864

Claims priority, application Great Britain, Jan. 6, 1971, 569/71

Int. Cl. H01j *29/50*

U.S. Cl. 315—13 C **14 Claims**



1. In a color television receiver, including a vertical deflection circuit for providing vertical rate drive signals to an associated vertical deflection yoke, a convergence circuit comprising:

- first and second input terminals adapted for connection to said deflection circuit,
- magnetic field producing means including at least a first convergence winding, and
- first and second current paths between said terminals, said current paths comprising, respectively, a series combination of a first unidirectionally conductive means with a first variable resistance means and a second unidirectionally conductive means with a second variable resistance means,
- said first conductive means being poled and connected for conducting current through said winding while bypassing said second current path so as to isolate said first current path from variations of said second resistance means during a given half of each vertical scan interval and for blocking current flow through said first variable resistance means during a complementary half of each vertical scan interval,
- said second conductive means being poled and connected for conducting current through said winding while bypassing said first current path so as to isolate said second current path from variations of said first variable resistance means during said complementary half of each vertical scan interval and for blocking current flow through said second variable resistance means during said given half of each vertical scan interval.

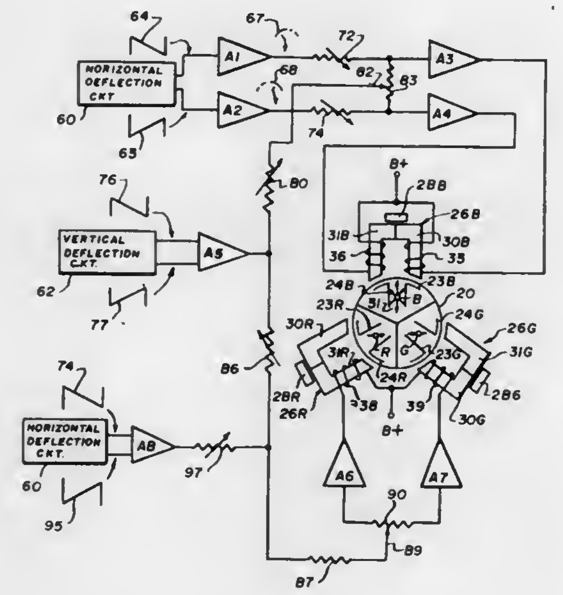
3,849,697
METHOD AND APPARATUS FOR STATIC AND DYNAMIC CONVERGENCE

Marvin E. Miller, Des Plaines, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 263,632, June 16, 1972, Pat. No. 3,774,132. This application Apr. 16, 1973, Ser. No. 351,655

Int. Cl. H01j *29/50*

U.S. Cl. 315—13 C **26 Claims**



1. In a color television receiver having a cathode ray tube with plural electron beams and scanning means for deflecting said plural electron beams to produce scanning lines, a convergence system, comprising:

- static convergence means for statically converging said plural electron beams in the vicinity of at least one edge of said scanning lines;
- dynamic convergence means for dynamically converging said plural electron beams over a center portion of said scanning lines, including
- adjustable means energized by said scanning means for producing a maximum controllable deflection for the scanning lines in the vicinity of the center portion.

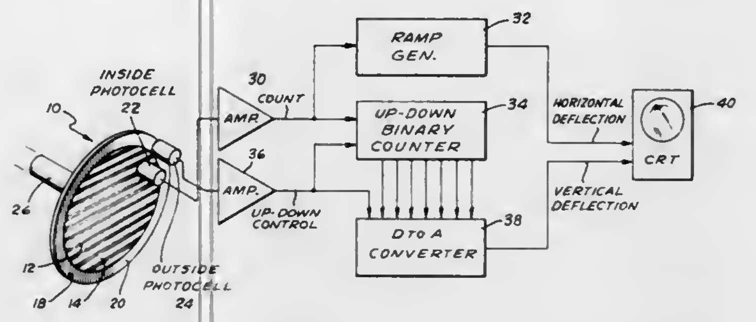
3,849,698
ELECTROMECHANICAL SWEEP GENERATING SYSTEM WITH THE UTILIZATION OF PHOTOCELLS

Hugh F. Frohbach, Sunnyvale, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed Apr. 25, 1973, Ser. No. 354,237

Int. Cl. H01j *29/70*

U.S. Cl. 315—367 **14 Claims**



1. Apparatus for generating synchronizing signals in synchronism with a rotating device comprising:

- disk means;
- means for rotatably supporting said disk means to be driven in synchronism with said rotating device;
- said disk means having parallel, equally spaced lines of one color alternate with parallel, equally spaced lines of a second color covering a face thereof and having a marking of one color extending over half of the perimeter of said face and a marking of another color extending over the other half of the perimeter of said face;
- a first photodetector means adjacent to said disk means and spaced at a predetermined radial distance from the center thereof for generating first signals responsive to the lines of said disk means;
- a second photodetector means adjacent said disk means positioned for generating second signals responsive to one of the colors on the perimeter of said disk means;
- first means responsive to said first signals for generating ramp signals synchronous with each first signal; and
- second means responsive to said first and second signals for generating an analog voltage which increases in the presence of second signals and decreases in the absence of second signals.

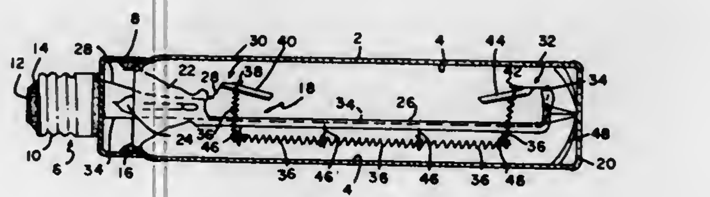
3,849,699
SINGLE BASE, SELF-IGNITING FLUORESCENT LAMP

William J. Roche, Merrimac, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Dec. 5, 1973, Ser. No. 421,980

Int. Cl. H01j *1/88*

U.S. Cl. 315—46 **9 Claims**



1. A fluorescent lamp comprising: an hermetically sealed, tubular glass envelope; a phosphor coating on the inside surface of said envelope; mercury and a rare gas contained in said envelope; a lamp base attached to one end of said envelope; and a mount structure sealed in said one end of said envelope and comprising, a first electrode supported at said one end of said envelope, a first lead-in wire electrically connecting said first electrode to a first terminal of said base, a rigid insulating tube within said envelope projecting from said one end of said envelope toward the other end thereof, a second electrode supported by said tube at said other end of the envelope, a second lead-in wire passing through the length of said insulating tube and electrically connecting said second electrode to a second terminal of said base, an ignition coil located within said envelope and electrically connected between said first and second electrodes, said ignition coil having an electron emissive coating over substantially its entire length, and support means projecting from said insulating tube and suspending said ignition coil away from the axis of the arc discharge path between said first and second electrodes.

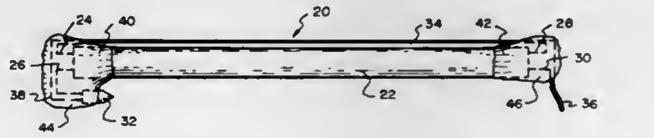
3,849,700
NON-CORROSIVE AQUARIUM LAMP ASSEMBLY

Boyd R. Johnson, 2034 Ashton Cir., Salt Lake City, Utah 84109

Filed Oct. 18, 1972, Ser. No. 298,722

Int. Cl. H01j *7/44*

U.S. Cl. 315—72 **4 Claims**



1. A non-corrosive lamp assembly comprising in a one-piece, non-corrosive waterproof lamp assembly:

- a fluorescent lighting tube presenting electrical connection terminals;
- conduction means permanently affixed to the terminals of the tube and operable to supply proper electrical current to the tube;
- non-corrosive sealant means comprising a closed mass applied in fluid form and hardening, thereby adhering to the fluorescent lighting tube in a sealing relationship by encapsulating the ends of the tube and corresponding electrical connections, the sealant maintaining the tube and corresponding electrical connections in a waterproof condition; and
- power supply means connected to the conduction means energizing the lamp.

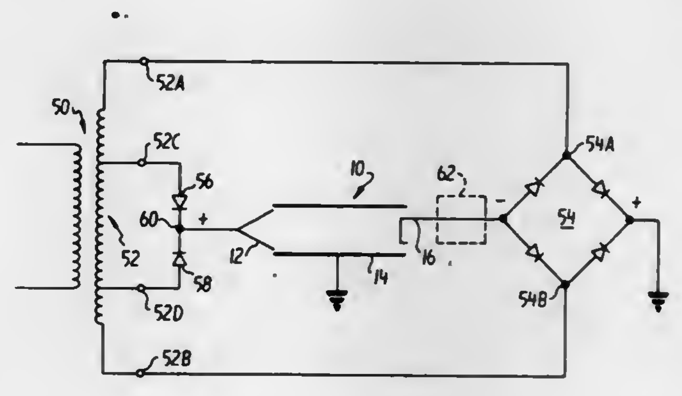
3,849,701
INTEGRATED DUAL VOLTAGE POWER SUPPLY

Charles S. Kerfoot, Baltimore, and Frank A. Halgas, Laurel, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 16, 1973, Ser. No. 360,993

Int. Cl. H05b *39/00, 41/14*

U.S. Cl. 315—101 **7 Claims**



1. A power supply circuit for supplying two supply voltages to a high power linear beam device comprising:

- a transformer winding having an output terminal adjacent each end thereof and a plurality of taps equally spaced from said output terminals;

a full wave rectifying circuit operatively connected to said output terminals and adapted for electrical connection to the linear beam device for providing a first d.c. output voltage to the linear beam device; and,

a plurality of rectifiers each operatively connected in like polarity to an associated one of said plurality of taps and to a common terminal,

said common terminal being adapted for electrical connection to the linear beam device to provide, in association with said rectifying circuit, a second d.c. output voltage.

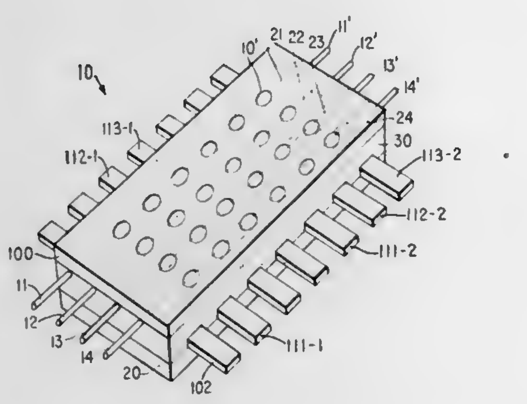
3,849,702
DISPLAY PANEL RESET AND SAFETY TIMING CIRCUIT

Mark F. Eisenberg, North Plainfield, and William J. Harmon, Jr., Middlesex, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 47,650, June 19, 1970, abandoned. This application July 10, 1972, Ser. No. 270,502

Int. Cl. H05b *37/00*

U.S. Cl. 315—169 TV **7 Claims**



1. A display system including a gas-filled display panel comprising

an array of first scanning cells disposed in rows and columns and including a scan anode electrode aligned with each row of scanning cells and a cathode electrode aligned with each column of scanning cells,

an array of display cells, each aligned with one of said scanning cells and adapted to receive glow transfer therefrom,

a display anode aligned with each row of said display cells and operating with said cathode electrodes,

a power supply coupled to said scan anodes for applying operating potential thereto,

said scanning cathode electrodes being connected in groups with at least every other cathode being in a group,

a separate cathode driver coupled to each of said groups of cathode electrodes for applying operating potential to each group of cathode electrodes separately,

drive means coupled to said cathode drivers and adapted to turn on each cathode driver separately in turn whereby the cathode electrodes are energized separately and in turn whereby each column of scanning cells is energized separately and in turn,

a character generator coupled to said display anodes and adapted to apply information signals thereto as each column of scanning cells is caused to glow whereby selected display cells in each associated column of display cells are caused to glow, and

means coupled to each of said cathode drivers for disabling said cathode drivers if said drive means becomes inoperative while one of said cathode drivers is applying operating potential to a group of cathodes.

3,849,703
ELECTRONIC FLASH APPARATUS

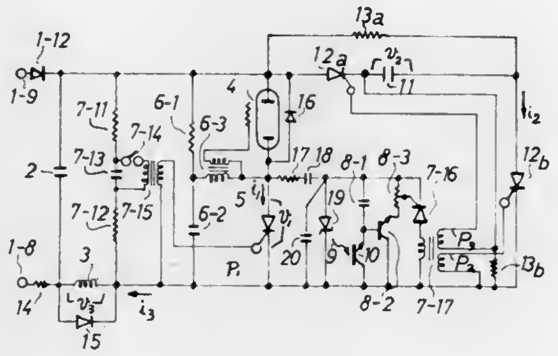
Akira Shimamura, Kawagoe, and Kunio Matsuzaki, Hanno, both of Japan, assignors to Shindengen Kogyo Kabushiki Kaisha (a/k/a Shindengen Electric Mfg. Co., Ltd., Tokyo-to, Japan

Filed June 7, 1972, Ser. No. 260,499

Claims priority, application Japan, July 6, 1971, 46-49284; June 9, 1971, 46-47987; July 20, 1971, 46-63478; Aug. 31, 1971, 46-78492; Aug. 31, 1971, 46-78493; Nov. 1, 1971, 46-101841; Mar. 18, 1972, 47-32431

Int. Cl. H05b *41/40*

U.S. Cl. 315—241 P **13 Claims**



1. An electronic flash apparatus using a flash tube, comprising: a flash tube having a triggering electrode; a direct current source, a main capacitor connected to the direct-current source and charged thereby; a coil; a first series circuit connected in parallel with said main capacitor through said coil and comprising the flash tube and a normally nonconducting main switching element; a control switch; a trigger circuit connected to the triggering electrode of the flash tube for triggering the flash tube in response to the conduction of the main switching element; a firing circuit connected to said control switch and responsive to the state thereof for rendering the main switching element conductive; a second series circuit connected in parallel with said first series circuit and comprising a first auxiliary switching element, a commutating capacitor and a second auxiliary switching element connected in the order named and wherein the first and second auxiliary switching elements have the same polarity as the main switching element; charging means electrically coupled through the commutating capacitor to said direct-current source for charging the commutating capacitor to a voltage having a polarity which is the reverse of that of the charged voltage of the main capacitor with respect to the forward current in the first and second auxiliary switching elements; light sensitive means for generating a detection signal responsive to reflected light which is reflected from a flashed object resulting from a light flash from the flash tube; an integrator receptive of said detection signal for integrating same and developing a corresponding output signal; and control means receptive of the output signal of said integrator and connected to the first and second auxiliary switching elements for triggering same when the output signal of the integrator exceeds a predetermined value.

3,849,704
LIGHTNING ARRESTOR

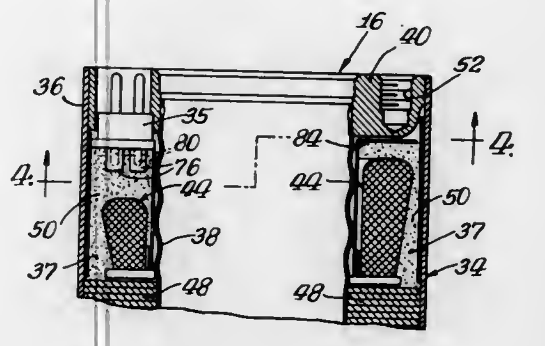
August L. Streater, Bluffton, Ind., assignor to Franklin Electric Co., Inc., Bluffton, Ind.

Filed Oct. 27, 1972, Ser. No. 301,629

Int. Cl. H02h *7/08, 1/04*

U.S. Cl. 317—13 R **9 Claims**

1. The combination of an electric motor including a grounded motor housing having an opening formed therein, power lines within said motor housing, at least one lightning arrestor mounted within said motor housing, said arrestor including a casing forming an electrode, said lightning arrestor being connected to one of said power lines and said arrestor casing being press fit into said opening to both establish electrical connection and to support said arrestor, said motor including a stator enclosure for a stator winding and potting material, said arrestor being located in said enclosure and being sealed to prevent entrance of said potting material.



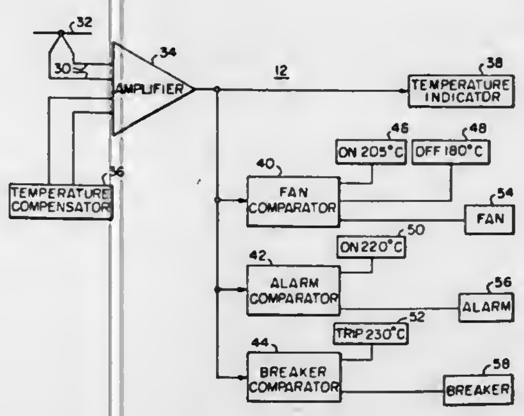
3,849,705
FLUID-COOLED TRANSFORMER HAVING A TEMPERATURE RESPONSIVE INDICATING AND CONTROLLING DEVICE

David W. McElroy, Mercer, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 11, 1973, Ser. No. 378,285

Int. Cl. H02h *7/04*

U.S. Cl. 317—14 R **4 Claims**



1. A fluid-cooled transformer comprising the combination of:

a core and coil assembly;

temperature responsive means located within the transformer coil;

means for forcing the cooling fluid around said core and coil assembly, said forcing means being controlled by said temperature responsive means;

a first comparator circuit which is responsive to the temperature of said temperature responsive means, said first comparator circuit being constructed to activate the forcing means at a first predetermined temperature and to deactivate the forcing means at a second predetermined temperature of said temperature responsive means;

means for providing an alarm if the temperature in the coil becomes excessively high, said indicating means being activated by said temperature responsive means;

a second comparator circuit which is responsive to the temperature of said temperature responsive means, said second comparator circuit being constructed to activate the alarm means at a third predetermined temperature of said temperature responsive means;

means for interrupting the load power delivered by the transformer, said interrupting means being activated by said temperature responsive means; and,

a third comparator circuit which is responsive to the temperature of said temperature responsive means, said third comparator circuit being constructed to activate the reducing means at a fourth predetermined temperature of said temperature responsive means;

said temperature responsive means being isolated from the forcing, alarm, and interrupting means to prevent the transfer of any high voltages existing on the temperature responsive means to the forcing, alarm or interrupting means.

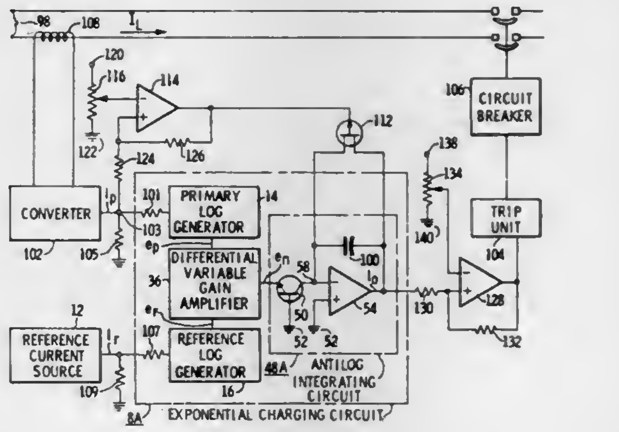
3,849,706
LOGARITHMIC COMPUTING CIRCUIT

Richard A. Johnson, Murrysville, and Jonn M. Fruhwald, North Braddock, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 4, 1973, Ser. No. 403,597

Int. Cl. H01h *47/18*

U.S. Cl. 317—27 R **9 Claims**



1. A logarithmic computing circuit for generating a computed output signal representing the value of a quantity raised to a variable power comprising:

means providing a primary current signal corresponding to the quantity to be raised to a variable power;

means providing a reference current signal;

a primary logarithmic function generator providing a primary log signal logarithmically related to said primary current signal;

a reference logarithmic function generator providing a reference log signal logarithmically related to said reference current signal;

means providing a differential signal responsive to the difference between said primary and reference log signals;

gain control means having an adjustable gain factor related to the desired value of the variable power and providing a gain control signal responsive to said differential signal as modified by the value of said gain factor;

summing means adding said reference log signal to the gain control signal of said gain control means;

and an antilogarithmic function generator responsive to the output of said summing means to provide a computed output signal corresponding to the magnitude of the primary current signal raised to a variable power, said antilogrithmic function generator being automatically calibrated for the gain selected in said gain control by that portion of the output of said summing means which is responsive to said reference log signal.

3,849,707
PLANAR GAN ELECTROLUMINESCENT DEVICE

Norman Braslau, Katonah; John J. Cuomo, Bronx; Erik P. Harris, Yorktown Heights, and Harold J. Hovel, Putnam Valley, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 7, 1973, Ser. No. 338,773

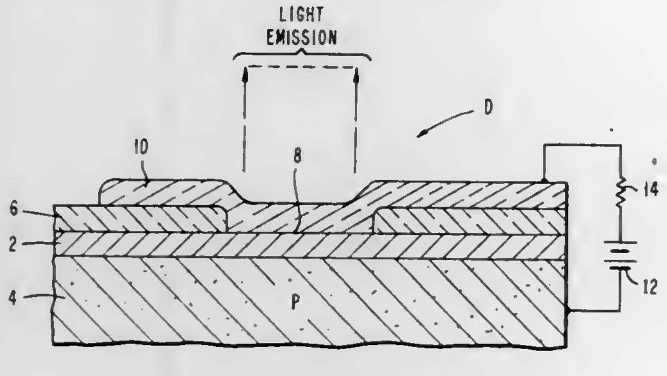
Int. Cl. K01l *15/00*

U.S. Cl. 357—17 **8 Claims**

1. An electroluminescent device comprising:

a substrate of *p*-type silicon;

a layer of high resistivity semi-insulating material on said substrate, said resistivity being of the order of 10^7 ohm-cm or higher,



a transparent electrical contact on said high resistivity semi-insulating material; and

a high electrical potential connected between said substrate and said high resistivity semi-insulating material.

3,849,708

CAPACITORS

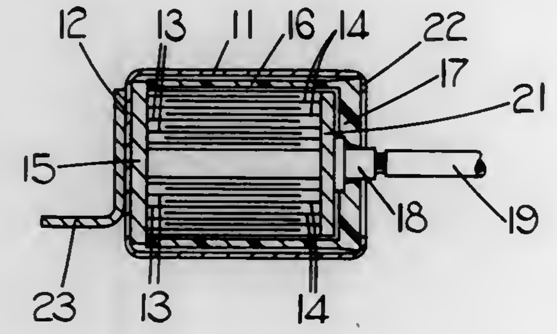
Peter Watson Leighton, Burnley, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed May 20, 1974, Ser. No. 471,717

Claims priority, application Great Britain, May 18, 1973, 23962/73

Int. Cl. H01g *1/14*

U.S. Cl. 317—260 **2 Claims**



1. A roll capacitor comprising two conductive ribbons separated by a dielectric wherein the projecting edges of the two conductive ribbons each engage a face of a respective conductive element, the conductive elements each consisting of a flexible, electrically insulating elastomer containing particles of conductive material which define conductive paths through the element one of the elements being positioned between one end of said roll and the casing and so establishing the electrical connection between one of the capacitor plates and the casing, and the other element being positioned between the other end of the roll and said terminal and so establishing the electrical connection between the other capacitor plate and said terminal.

3,849,709

MOTOR CONTROL SYSTEM

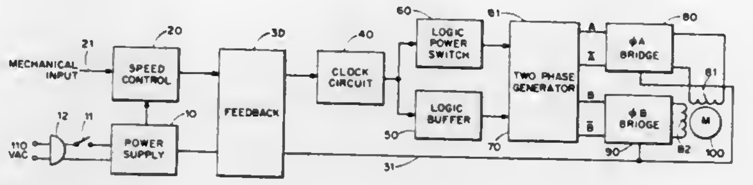
Herbert Berman, Brookline, and Stan Tenen, Newton, both of Mass., assignors to Herbert Beeman, Weston, Mass.

Filed Apr. 25, 1973, Ser. No. 354,355

Int. Cl. H02p *5/40*

U.S. Cl. 318—227 **9 Claims**

1. In a system for controlling a motor having at least one field winding and a variable frequency oscillator whose output controls motor speed, the improvement comprising speed control means coupled to said oscillator for controlling its output frequency, and including a light source a photo resistor and modulating means disposed intermediate said light source



and resistor, said photo resistor characterized by a relatively long off or decay time constant as said photo resistor traverses from its low resistance to high resistance state.

3,849,710

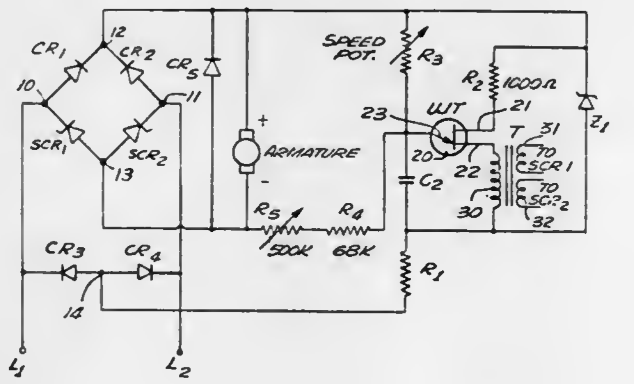
MOTOR SPEED CONTROL CIRCUIT

Raymond J. Mason, Lynwood, Calif., assignor to Minarik Electric Co., Los Angeles, Calif.

Continuation of Ser. No. 290,244, Sept. 18, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 428,251

Int. Cl. H02p *5/16*

U.S. Cl. 318—331 **8 Claims**



1. A motor speed control circuit comprising:

a bridge rectifier circuit having first and second input terminals and first and second output terminals, and including a pair of silicon-controlled rectifier devices coupled between respective ones of said input terminals and said second output terminal;

means for directly coupling a motor armature between said first and second output terminals;

said bridge rectifier also including first and second diodes coupled between respective ones of said input terminals and said first output terminal

third and fourth diodes coupled between respective ones of said input terminals and a third output terminal;

a first resistor having one end connected to said third output terminal;

a Zener diode connected between said first output terminal and the other end of said first resistor;

a unijunction transistor having its main current path coupled in series with the primary winding of a transformer, said series circuit being coupled across said Zener diode, said transformer having two secondary windings controlling respective ones of said silicon-controlled rectifier devices;

a speed potentiometer directly connected between said first output terminal and the control electrode of said unijunction transistor;

a capacitor coupled between said control electrode and said other end of said first resistor; and

additional bilateral resistance means connected directly between said second output terminal and said control electrode.

3,849,711

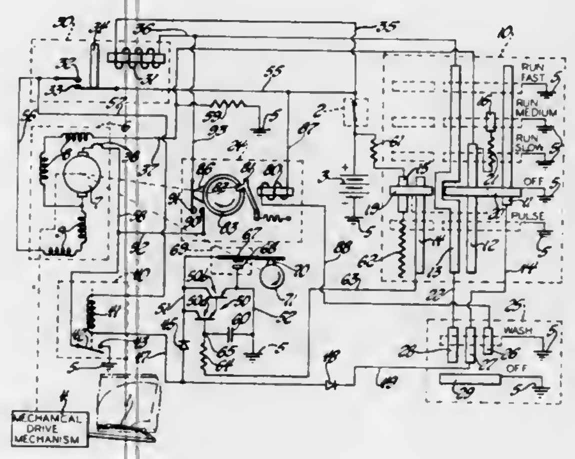
WINDSHIELD WIPER CONTROL CIRCUIT

James O. Elliott, Xenia, and Chris F. Keller, Jr., Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1973, Ser. No. 418,289

Int. Cl. B60s *1/08*

U.S. Cl. 318—443 **4 Claims**



1. A windshield wiper control circuit comprising in combination with a windshield wiper and an electric drive motor having an armature and at least a shunt field winding for driving the windshield wiper over a normal wipe pattern between inner and outer wipe positions; an electrical relay having an operating coil and normally open contacts; an energizing circuit for said relay operating coil including first, second and third circuit branches all connected to the same terminal end thereof; an energizing circuit for said motor shunt field winding; an energizing circuit for said motor armature including said normally open contacts of said relay in series; an electrical selector switch having a plurality of stationary contacts and two gang-operated movable contacts operable to at least Off, Run, and Pulse positions, one of said movable contacts and one of said stationary contacts being connected in series in said first circuit branch of said relay operating coil energizing circuit and arranged to be in electrical circuit closed condition when said movable contacts are in said Off and Run positions and in the electrical circuit open condition when said movable contacts are in said Pulse position; a first electrical switching device having normally open current carrying elements electrically operable to the electrical circuit closed condition connected in series in said second circuit branch of said relay operating coil energizing circuit; a pulse control timing circuit activated while said movable contacts of said selector switch are operated to the Pulse position electrically coupled to said first electrical switching device for periodically operating said normally open current carrying elements thereof to the electrical circuit closed condition at spaced intervals whereby said second circuit branch of said relay operating coil is periodically completed at spaced intervals, said pulse control timing circuit determining the repetition rate of said spaced intervals; a second electrical switching device having normally closed current carrying elements which are operated to the electrical circuit open condition when said windshield wiper is in said inner wipe position connected in series in said third circuit branch of said relay operating coil energizing circuit for closing said third circuit branch when said windshield wiper is moved away from said inner wipe position and for interrupting said third circuit branch when said windshield wiper is in said inner wipe position; and a power switching device having current carrying elements which operate to the electrical circuit closed condition in response to the operation of said movable contacts of said selector switch to either said Run position or said Pulse position connected in series in said motor shunt field winding energizing circuit, said motor armature energizing circuit and said relay operating coil energizing circuit whereby said drive motor is continuously energized while said movable contacts of said selector switch are in said Run position and said motor is periodically energized at spaced intervals while said movable contacts of said selector switch are in said Pulse position.

3,849,712

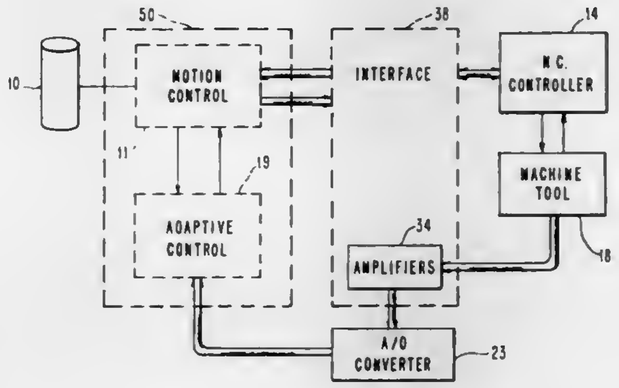
ADAPTIVE NUMERICALLY CONTROLLED MACHINE TOOL RESPONSIVE TO DEFLECTION FORCES ON THE TOOL NORMAL TO THE CUTTING PATH

Larry G. Lankford, Mahopac, and William R. Whittle, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1972, Ser. No. 267,802

Int. Cl. G05b *13/00*

U.S. Cl. 318—561 **3 Claims**



1. A closed loop tool control system comprising

a tool having a workpiece supported with respect thereto, said tool extending towards said workpiece,

a plurality of motors for relatively moving said tool and said workpiece,

an automatic tool controller connected to said tool and said motors for providing control of the operation thereof,

a plurality of sensing means for producing signals proportional to the deflection force between said tool and said workpiece having an output,

program means for supplying program control to said controller and corresponding data to closed loop control means

closed loop control means for continuously calculating and recalculating changing values of the critical component of said deflection force transverse to the path of motion directed by said data from said program means,

said closed loop control means having an input connected to an output of said program means, said closed loop control means operating upon said critical component to provide an output control signal varying with said critical component,

motor rate means connected to said controller for controlling the rate of operation of said motors in response to control signals, said motor rate means having an input, and

means for connecting said output control signal from said closed loop control means to said input of said motor rate means.

3,849,713

POSITION DETECTING AND MAINTAINING DEVICE

Toru Wada, Matsubara, Japan, assignor to Tsubakimoto Chain Co., Ltd., Osaka-shi, Japan

Filed June 18, 1973, Ser. No. 370,936

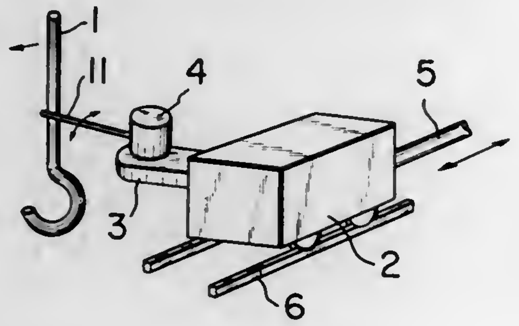
Claims priority, application Japan, June 20, 1972, 47-61695; Mar. 14, 1973, 48-28994

Int. Cl. G05b *11/01*

U.S. Cl. 318—675 **8 Claims**

1. A position detecting device for use with an article moving in a first direction along a first path, comprising:

guide means defining a second path which is spaced from but substantially parallel to said first path;
base means coacting with said guide means for movement along said second path in said first direction;
lever means rotatably supported on said base means, said lever means projecting outwardly so as to extend transversely relative to said paths, said lever means having a portion thereof positioned for engagement with said article when same is being moved along said first path to effect rotation of said lever means upon relative movement between said article and said base means;



means coacting with said lever means for urging said lever means to rotate in a direction whereby said portion is moved in a direction opposite to said first direction;
converting means associated with said lever means for converting the rotary angular position thereof to an electric signal; and
control means coacting with said base means and responsive to said electric signal for maintaining a substantially uniform spacing between said base means and said article as they are moved along their respective paths, whereby said base means and said article are moved substantially, in synchronism with one another.

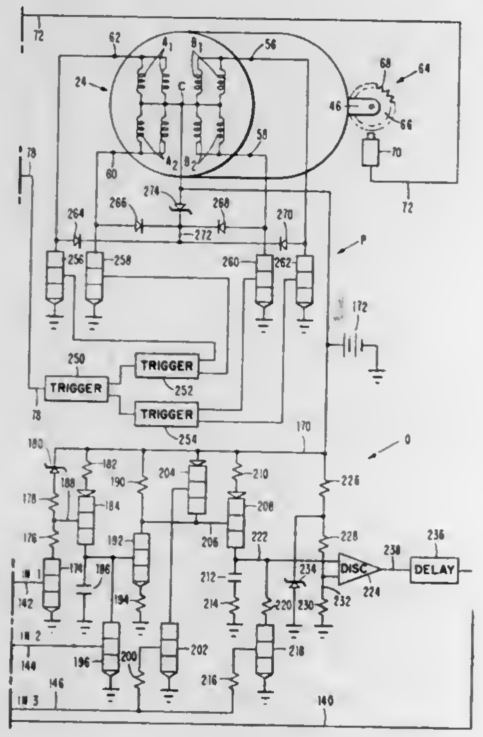
3,849,714
STEPPER MOTOR CONTROL SYSTEM

Jerome A. Goretzki; Kenneth E. Hendrickson, both of Rochester; Gary L. Mattson, and Larry F. Mattson, both of Pine Island, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 6, 1972, Ser. No. 260,238

Int. Cl. G05b *19/40*

U.S. Cl. 318—685 **13 Claims**



1. In combination, a stepper motor including a rotor and a stator, a plurality of windings on said stator, a source of electromotive force, an emitter rotatable with said rotor and producing output signals on incremental degrees of rotation of the rotor,
switching means connecting said source of electromotive force with said windings and responsive to successive pulse signals applied to it for switching said windings in such a manner to provide a step-wise rotating field in said stator tending to rotate said rotor likewise,
means connecting said emitter with said switching means so as to provide successive pulse signals to the switching means with rotation of said rotor to cause said rotor to accelerate from an initial position during an acceleration phase, and
means responsive to one of the output signals of said emitter for applying to said switching means a pair of quick pulse signals in addition to this output signal from said emitter, said pair of quick pulse signals being spaced time-wise from this emitter output signal and from each other much closer than are said first named successive pulse signals derived from said emitter for thereby rotating the magnetic field in said stator through **180** electrical degrees and thereby providing a retrotorque braking action on said rotor to cause it to decelerate during a deceleration phase.

3,849,715
ADJUSTABLE STEPPING DRIVE FOR MOTION-PICTURE FILM

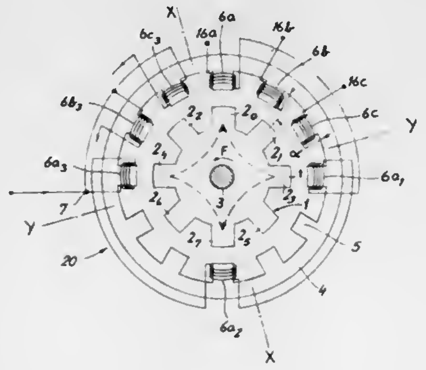
Pierre Regis Marie Henri Irissou, 2 rue Albert de Mun, Meudon-Bellevue, and Pierre Jean Francois Jacques Sarda, 26 rue du Parc de Clagny, Versailles, both of France

Filed Mar. 21, 1973, Ser. No. 343,403

Claims priority, application France, Mar. 23, 1972, 72.10192

Int. Cl. G05b *19/40*

U.S. Cl. 318—696 **19 Claims**



1. A stepping drive for intermittently advancing an elongate recording medium longitudinally subdivided into a succession of elemental areas of identical lengths, comprising:
an electric motor having a stator and a rotor coaxial therewith, said stator being provided with electromagnetic means forming an annular array of angularly equispaced magnet poles provided with windings and divided into $2n$ sectors of p poles each, n and p being integers with p at least equal to 3, said rotor having a ferromagnetic body provided with a set of angularly equispaced projections forming armatures for said poles, each set being divided into $2n$ sectors of q projections each, q being an integer greater than $p/2$ but less than p, the poles of each sector constituting a principal pole and a plurality of ancillary poles, said rotor having transitory positions in which certain of said armatures are aligned with ancillary poles and stopping positions in which certain of said armatures are aligned with principal poles;
energizing means for said motor connected to said windings for consecutive energization of successive pole pairs each consisting of correspondingly positioned magnet poles of two adjoining sectors connected for concurrent antiphasal excitation, said energizing means including a generator of consecutive sequences of mp pulses each, m being an integer, the last pulse of each sequence energizing said principal poles and having a duration substantially greater than that of the preceding pulses whereby said rotor is invariably arrested in one of said stopping positions;
transport means engageable with said medium; and
mechanical coupling means linking said rotor with said transport means for advancing said medium by a single elemental area, for co-operation with associated equipment, upon rotation of said rotor from one stopping position to another stopping position.

3,849,716
VOLTAGE CONVERTER

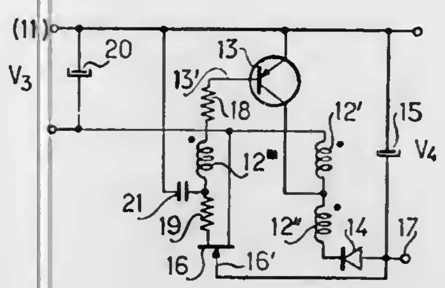
Guy De Bergh, Sceaux, and Jean Fontaine, Montrouge, both of France, assignors to Societe Alsacienne de Constructions Atomiques de Telecommunications et d'Electronique (Alcatel), Paris, France

Continuation of Ser. No. 104,948, Jan. 8, 1971, abandoned. This application Sept. 18, 1972, Ser. No. 289,917

Claims priority, application France, Jan. 9, 1970, 70.00704

Int. Cl. H02m *3/32*

U.S. Cl. 321—2 **1 Claim**



1. In a heart stimulation device; a low voltage converter supplying very low power, comprising a unidirectional low voltage source of one volt or less, a three-winding transformer, an input circuit for connection to said unidirectional low voltage source and including a first winding of said three-winding transformer and a transistor, said first winding being connected in series with the collector-emitter junction of said transistor, an output circuit from which is obtained a unidirectional output voltage, including a second winding of the transformer, and a diode, said second winding being connected in series with said diode, and a feedback circuit comprising a single active element only in the form of a field effect transistor and the third winding of the transformer, the source-drain circuit of said field effect transistor being connected in series with said third winding, the gate of said field effect transistor being connected directly to the output circuit to directly provide a control input to the field effect transistor in accordance with the unidirectional output voltage.

3,849,717
CIRCUIT FOR OPERATION OF GAS DISCHARGE LAMPS

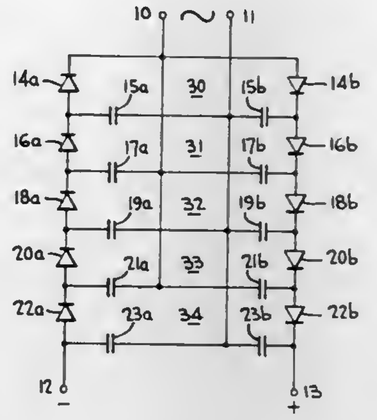
Alfred Walz, Am Kurzarm 7, Emmendingen/Baden, Germany, and Robert Ostreicher, deceased, In den Weihermatten 2, late of Teningen/Baden, Germany (by Ingrad Rombach geb. Ostreicher)

Continuation of Ser. No. 870,592, Aug. 13, 1970, abandoned. This application Dec. 18, 1972, Ser. No. 316,423

Int. Cl. H02m *7/00*

U.S. Cl. 321—15 **2 Claims**

1. An AC to DC converter for driving a gas discharge lamp type load from an AC source, comprising:
at least one first circuit connected to said AC source for generating a first voltage output which is a multiple of the peak voltage of said AC source,
at least one second circuit connected to said AC source and to the output of said at least one first circuit for generating a second voltage output which is a multiple of said first voltage output,
at least one third circuit connected to said AC source and to said second voltage output for generating a third voltage output which is a multiple of said second voltage output, said at least third circuit including output terminals for driving said load,
said at least one first circuit comprises first and second rectifying elements connected to one terminal of said AC source for respectively rectifying alternate half cycles of said AC source, and first and second capacitor elements respectively connected from the output of said first and second rectifying elements to the other terminal of said AC source,
said at least one second circuit comprises third and fourth rectifying elements respectively connected to the output of said first and second rectifying elements for respectively rectifying the same alternate half cycles of said AC source as said first and second rectifying elements, and third and fourth capacitor elements respectively connected from the output of said third and fourth rectifying elements to said one AC source terminal,



said at least one third circuit comprises fifth and sixth rectifying elements respectively connected to the output of said third and fourth rectifying elements for respectively rectifying the same alternate half cycles of said AC source as said third and fourth rectifying elements, and fifth and sixth capacitor elements respectively connected from the output of said fifth and sixth rectifying elements to said other AC source terminal,
the capacitance of said first and second capacitor elements is equal, the capacitance of said third and fourth capacitor elements is equal, and the capacitance of said fifth and sixth capacitor elements is equal, and
the capacitance of said fifth and sixth capacitor elements is less than the capacitance of said third and fourth capacitor elements, and the capacitance of said third and fourth capacitor elements is less than the capacitance of said first and second capacitor elements.

3,849,718
METHOD FOR CONTROLLING A RECTIFIER CIRCUIT WITH CONTROLLED RECTIFIERS AND ASSOCIATED QUENCHING DEVICES

Johannes Forster; Karl-Heinz Bezold, and Helmut Niehage, all of Berlin, Germany, assignors to Licentia Patent-Verwaltungs GmbH, Frankfurt, Germany

Filed Dec. 26, 1972, Ser. No. 318,410

Claims priority, application Germany, Dec. 30, 1971, 2165959

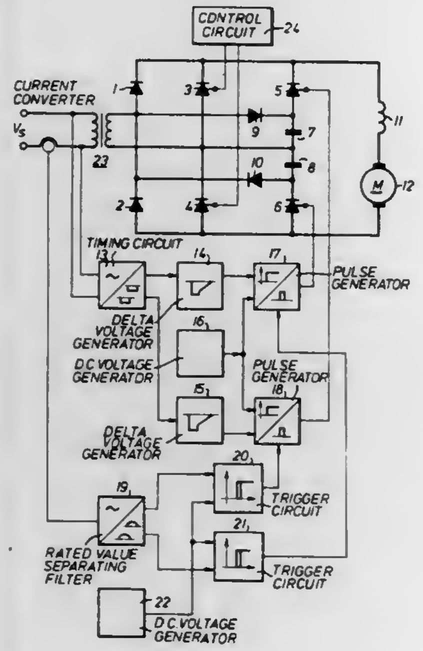
Int. Cl. H02k *29/02*

U.S. Cl. 321—40 **5 Claims**

1. In a method for controlling a rectifier circuit for an A.C. supply voltage and a corresponding A.C. supply current having a controlled rectifier and quenching means for the con-

trolled rectifier, the quenching means being connected in parallel with the controlled rectifier and having a quenching thyristor and a quenching capacitor, the method including firing the controlled rectifier at an adjustably selected firing electrical angle α and the improvement comprising the steps of:

establishing a quenching period between the electrical angle after which the A.C. supply current has reached its maximum value and prior to the electrical angle at which the A.C. supply voltage subsequently crosses through zero, said step of establishing a quenching period including the steps of producing a delta voltage signal in synchronism with a half-period of the A.C. supply voltage, producing a selectively variable first D.C. voltage signal, and comparing the delta voltage signal with the first D.C. voltage signal to determine the electrical angle of intersection of the delta voltage signal and the first D.C. voltage, said angle of intersection determining the beginning of the quenching period;



quenching the controlled rectifier at a quenching electrical angle β lying within said quenching period, and whose value is adjusted in dependence on a momentary value of the A.C. supply current, so that upon quenching of the controlled rectifier the resulting increase in voltage in the rectifier circuit is below the peak value of the A.C. supply voltage, said step of quenching at the adjustable angle β including the steps of producing a selectively variable second D.C. voltage, comparing a voltage signal representative of the half-period of the A.C. supply current with the second D.C. voltage signal, and controlling the quenching means for the controlled rectifier, by firing the quenching thyristor, to quench the controlled rectifier at the electrical angle following the beginning of the quenching period when the voltage signal representative of the A.C. supply current falls below the second D.C. voltage signal.

3,849,719

POWER RECTIFIER HAVING PHASE CONTROL ANGLE OF FIRING SIGNALS INDEPENDENT OF SUPPLY FREQUENCY VARIATION

Alois F. Geiersbach, Milwaukee, and Thomas P. Gilmore, Wauwatosa, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 14, 1973, Ser. No. 425,177

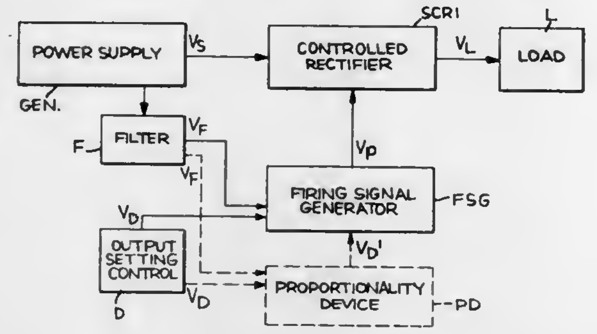
Int. Cl. H02m *5/30*

U.S. Cl. 321—69 R **14 Claims**

1. In a phase control rectifier circuit wherein a sample of the power supply voltage is compared with a reference signal to derive firing pulses for a load-supplying controlled rectifier, the improvement comprising

a filter for shifting the sample voltage through a substantially constant phase angle of approximately *n* times 90°, where *n* is an integer,

means for deriving a D.C. signal proportional to the amplitude of the phase-shifted filter output voltage, and



means for varying the magnitude of said reference signal in accordance with said D.C. signal, whereby the firing angles of rectifier firing pulses generated by comparing the output of said last-named means with the phase-shifted filter output signal are independent of variations in supply voltage frequency and magnitude.

3,849,720

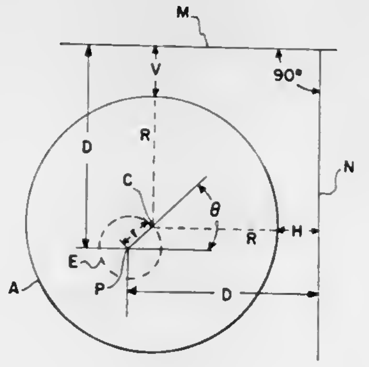
ELECTRO-MECHANICAL SINE/COSINE GENERATOR

Bruce Flagge, 107 Dogwood Court Dr., Yorktown, Va. 23490

Continuation-in-part of Ser. No. 229,143, Feb. 24, 1972, abandoned. This application Mar. 13, 1973, Ser. No. 340,862

Int. Cl. H02k *39/00*

U.S. Cl. 322—96 **1 Claim**



1. A function generator comprising:

A cylinder having an axis of rotation parallel to and a distance from its central axis;

a noncontacting transducer means including a sensing element, with said sensing element located from the surface of said cylinder and fixed relative to said axis of rotation; for producing an electrical signal proportional to the distance between said sensing element and the surface of said cylinder;

means for adjusting the zero and peak amplitudes of said electrical signal produced by said noncontacting means; and

means for rotating said cylinder about said axis of rotation whereby the electrical signal produced by said noncontacting transducer means as said cylinder rotates is a sine function.

3,849,721

MICROWAVE LOGGING APPARATUS HAVING DUAL PROCESSING CHANNELS

Thomas J. Calvert, Norwalk, Conn., assignor to Schlumberger Technology, New York, N.Y.

Filed Aug. 23, 1973, Ser. No. 390,989

Int. Cl. G01v *3/12, 3/18*

U.S. Cl. 324—6 **7 Claims**

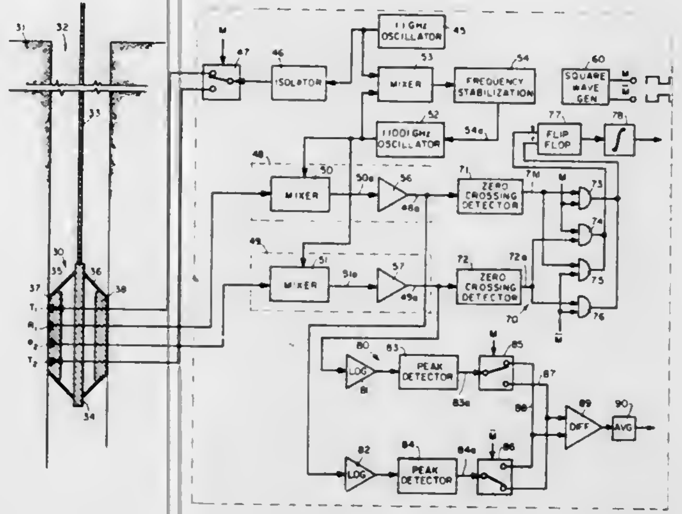
1. Apparatus for investigating earth formation surrounding a borehole, comprising:

first and second spaced transmitter means for injecting microwave electromagnetic energy into the surrounding formations;

switching means for alternately energizing said transmitter means;

first and second spaced receiver means positioned between said transmitter means on a substantially common axis therewith;

a first processing channel including in series arrangement first frequency translating means and first amplifying means for receiving microwave signals from said first receiving means, translating the frequency of said signals to a sub-microwave frequency and amplifying said signals to produce a first processed signal;



a second processing channel including in series arrangement second frequency translating means and second amplifying means for receiving microwave signals from said second receiving means, translating the frequency of said signals to a sub-microwave frequency and amplifying said signals to produce a second processed signal; and

means for comparing the phases of said first and second processed signals and for generating a first output which reflects said comparison; and

means synchronized with said switching means for reversing the sense of the comparison performed by said comparing means.

3,849,722

METHOD AND APPARATUS FOR DIGITALLY DETERMINING THE COMPLEX ELECTRIC FIELD WHEN CARRYING OUT PROSPECTING OPERATIONS

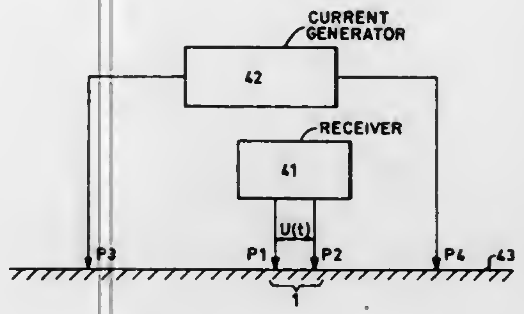
Bruno Yngve Nilsson, Boliden, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed July 2, 1973, Ser. No. 375,923

Claims priority, application Sweden, July 26, 1972, 9758/72

Int. Cl. G01v *3/06, 3/08*

U.S. Cl. 324—9 **7 Claims**



1. A method to be used in prospecting work for digitally determining the complex electric field generated in the ground when supplying an alternating current thereto, by determining potential differences in said field with respect to phase and amplitude, said method comprising the steps of:

1. picking up a first voltage between at least two points in the ground, said first voltage representing the potential differences induced by said current between these at least two points,
2. converting said first voltage to a pulse train having a frequency which is proportional to the instantaneous values of said first voltage,
3. counting the pulses in said pulse train for a predetermined length of time,
4. producing at least one reference second voltage bearing a known relationship to said alternating current supplied to the ground,
5. producing signals in response to the value of said at least one reference voltage to determine whether a certain pulse of said pulse train shall be added or subtracted during the counting of the pulses of said pulse train,
6. reading the counted value of said pulses after the elapse of said predetermined length of time,
7. decoding the value obtained by said reading to a digital form, and
8. visually indicating the digits thus produced.

3,849,723

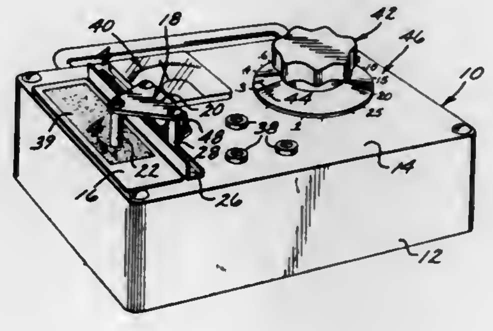
CONDUCTIVITY MEASURING METHOD AND APPARATUS

Gerald F. Allen, 532 Bucknell Ave., Claremont, Calif. 91711

Continuation of Ser. No. 61,738, Aug. 6, 1970. This application June 14, 1973, Ser. No. 370,157

Int. Cl. G01n *27/42*

U.S. Cl. 324—30 R **19 Claims**



1. A method of measuring the electrolytic conductivity of a liquid constituent of a sample comprising the steps of:

a. arranging a pair of conductivity measuring electrodes spaced from one another,

be removably arranging a body of dielectric sorption material with a first portion thereof bridging said electrodes and a second portion thereof exposed externally to said electrodes,

c. disposing said test sample in physical contact with said second portion of said body,

d. substantially saturating said first portion of said body by sorption transporting a portion of said liquid constituent of the sample from said second portion to said first portion of said body whereby the transported liquid constituent is in physical and electrical contact with said electrodes, and

e. measuring the conductivity of the transported liquid constituent bridging said electrodes.

3,849,724

METHOD AND APPARATUS FOR MEASURING THE GAP SPACING AND RELATIVE TRANSVERSE DISPLACEMENT OF AN ELECTROMAGNETIC CORE FROM AN ARMATURE USING MAGNETIC FIELD SENSORS

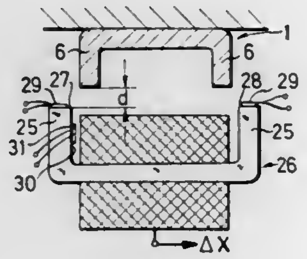
Michael Ghibu; Gerhard Bohn, both of Munich, and Peter Schwarzler, Furstenfeldbruck, all of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Filed Nov. 13, 1972, Ser. No. 306,035

Claims priority, application Germany, Nov. 17, 1971, 2157011

Int. Cl. G01r ***33/00***

U.S. Cl. 324—34 D **10 Claims**



1. A method of measuring the gap spacing and the relative transverse displacement of an electromagnetic core from an armature spacedly juxtaposed therewith across a gap traversed by a main flux path closed through said armature upon electrical energization of a coil on said core by an energization current, whereby a stray flux approximately proportional to the amplitude of said current is generated at said core, said armature extending longitudinally and being of U-profile with shanks turned toward said core, said core being of U-configuration with spaced apart poles reaching toward said armature, each of said poles being provided with a respective main magnetic field sensor, said method comprising the steps of:

a. additively combining the outputs of said sensors to yield a first output constituting a function of the gap spacing and the intensity of said energization current and approximately proportional to the magnetic field intensity of said main flux path;

b. subtractively combining the outputs of said sensors to yield a second output;

c. forming a a quotient signal signal of said first and second outputs and proportional to a relative transverse displacement of said core and said armature;

d. deriving a third output constituting a function of said energization current; and

e. forming a quotient signal of said first and third outputs which is substantially proportional to the spacing of said gap and independent of the amplitude of said energization current.

3,849,725

CIRCUIT FOR SWITCHING DIFFERENT RESISTANCE VALUES CORRESPONDING TO AMOUNT OF LIGHT MEASURED

Chiharu Mori, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 289,983, Sept. 18, 1972, Pat. No. 3,807,879, which is a continuation-in-part of Ser. No. 286,988, Sept. 7, 1972. This application Nov. 19, 1973, Ser. No. 417,426

Int. Cl. G01r ***27/02***

U.S. Cl. 324—65 R **9 Claims**

1. A quantized indicating unit comprising:

a circuit path for current flow;

a controllable constant current source connected in said circuit path for current flow and having a control circuit, the current source being characterized in that bias signals at said control circuit varies the amount of current flowing therethrough;

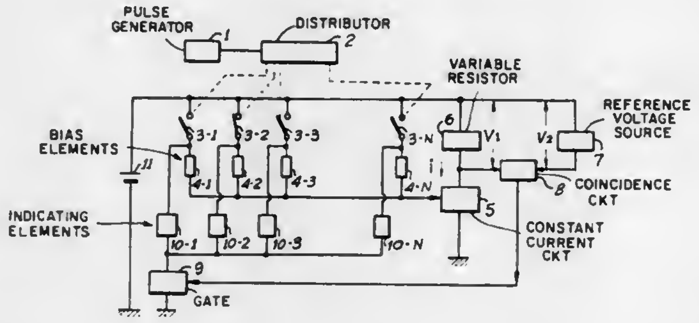
a controllable variable impedance means coupled as a load circuit in said circuit path for current flow;

a bias establishing circuit for said control circuit comprising:

a plurality of impedance means, and

means for selectively coupling any one of said impedance means to said control circuit thereby establishing the bias on said control circuit;

means for repeatedly and sequentially scanning through a sequence of states, said coupling means responding to each different one of said states for coupling at least one different impedance means to said control circuit thereby causing for each of said states a different bias signal on said control circuit and a signal on said variable impedance means corresponding to the amount of current flowing through the variable impedance means;



a source of a reference signal;

means for comparing said signal with said reference signal;

an indicating element for each of said impedance means; and

means coupled to said scanning means and comparing means and operative in synchronism the scanning of said scanning means for responding to each correspondence detected by said comparing means for switching an indicating element into an indicating condition which indicating element corresponds to the impedance means that is coupled to said control circuit at the detected correspondence.

3,849,726

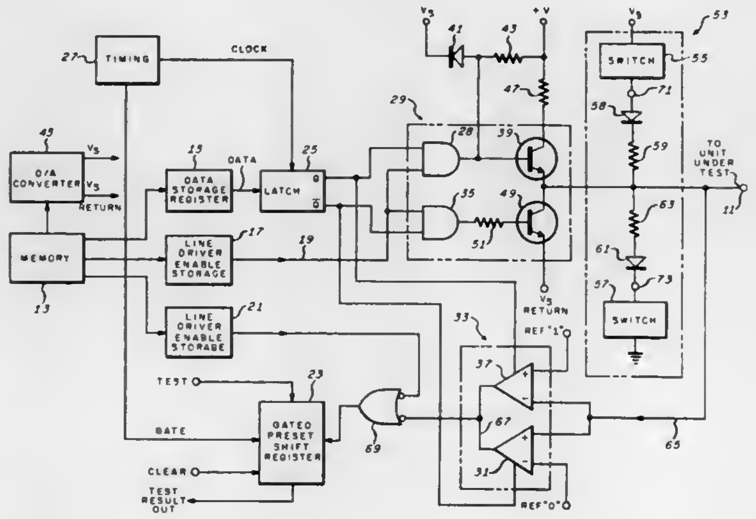
UNIVERSAL PROGRAMMABLE DIGITAL TESTING INTERFACE LINE

Frank K. Justice, Clearwater, Fla., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 28, 1974, Ser. No. 437,119

Int. Cl. G01r ***31/00***

U.S. Cl. 324—73 R **7 Claims**



1. A universal programmable interface line for intercoupling in accordance with stimulus or response information from an external memory, comprising terminal means for connecting the interface line to the external unit, line driver means for producing binary logic stimulus voltages at the terminal means, voltage comparator means for evaluating the magnitude of response signals applied to said terminal means by the external unit, programmable loading means for adjusting the impedance level at the terminal means, means for coupling said line driver means and said loading means to a programmable voltage source, means responsive to said stimulus or response information from said external memory for optionally enabling and disabling said line driver means and said voltage comparator means, and means for temporarily storing information derived from said voltage comparator means,

said line driver means including a pair of output transistors arranged to be serially coupled across said programmable voltage source, said transistors being connected so that the emitter element of one transistor and the collector element of the other transistor are directly connected to said terminal means, said line driver means further including means responsive to said enabling means for saturating one or the other of said transistors when a stimulus signal of logic ONE or ZERO, respectively, is to be applied to said external unit.

said loading means including resistor means and switching means for optionally coupling said terminal means to sources of known voltage through said resistor means.

3,849,727

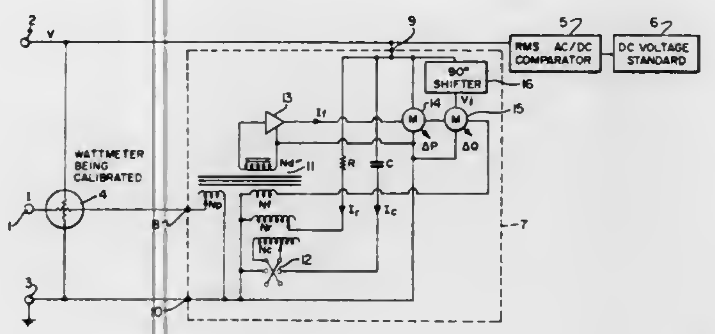
CURRENT COMPARATOR FOR POWER AND ENERGY MEASUREMENTS

Norbert L. Kusters, and William J. M. Moore, both of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Aug. 10, 1973, Ser. No. 387,450

Int. Cl. G01r ***21/00***

U.S. Cl. 324—142 **10 Claims**



1. An apparatus for measuring power which has a current component I and a voltage component V, comprising:

current transformer means having primary and secondary winding means;

means for applying the current I through the primary winding means;

means for measuring the voltage V;

impedance means connected in series with the secondary winding means;

means for applying the voltage V across the impedance means and the secondary winding means to provide a current therein; and

means adapted to provide ampere-turns balance within said current transformer means to enable power determination in terms of the voltage V, the impedance means and the primary and secondary turns ratio of said transformer.

3,849,728

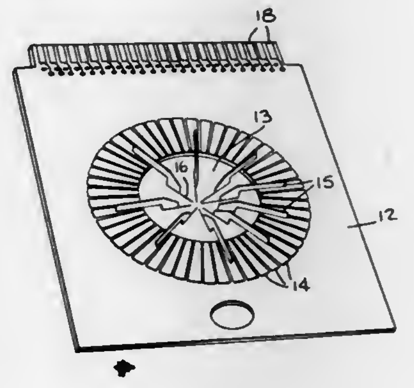
FIXED POINT PROBE CARD AND AN ASSEMBLY AND REPAIR FIXTURE THEREFOR

Arthur Evans, Brookfield Center, Conn., assignor to Wentworth Laboratories, Inc., Brookfield, Conn.

Filed Aug. 21, 1973, Ser. No. 390,184

Int. Cl. G01r ***31/02, 1/06***

U.S. Cl. 324—158 F **8 Claims**



1. A fixed point probe card for testing integrated circuit patterns formed on a substrate, each pattern having contacts deployed thereon at diverse points, said card comprising:

A. a planar printed circuit board having an opening providing access to an integrated circuit pattern, said board being subject to slight warpage,

B. an array of spaced conductive pads surrounding said opening, said pads being connected by said printed circuit to terminals, and

C. probes cantilevered from selected pads to provide connections between said integrated circuit contacts and said terminals, each probe being constituted by a rigid needle-holder formed of a thin strip of metal lying in the vertical plane and slightly raised above a respective pad, said holder being soldered to said pad to maintain the position thereof, and a resilient needle directly attached to the holder and extending therefrom, the needle extensions of all probes being of the same lengths, the raised holders being soldered to said pads at oriented positions relative thereto whereby regardless of board warpage, the points of all needles extending from the holder lie in a common plane and are disposed to engage said contacts, the needle holders being cantilevered from their respective pads to a degree necessary to bring the points into engagement with the contacts deployed at diverse points on the pattern.

3,849,729

SYSTEM FOR DETERMINING THE LISTENING AND VIEWING HABITS OF WAVE SIGNAL RECEIVER USERS

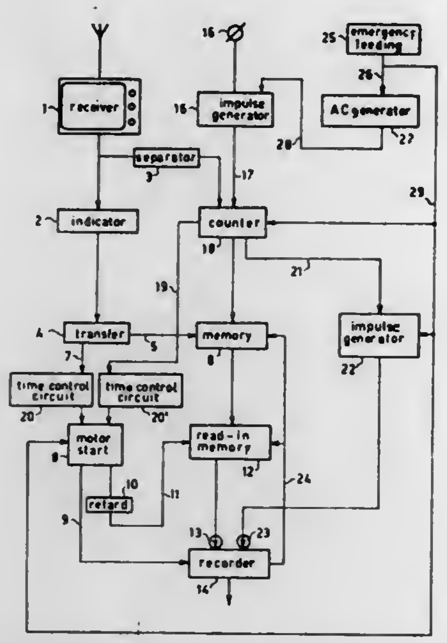
Johannes Wilhelmus Van Baggem, Scherpenzeel, Netherlands, assignor to Intomart N.V., Hilversum, Netherlands

Filed Dec. 14, 1972, Ser. No. 309,885

Int. Cl. H04h ***9/00***

U.S. Cl. 325—31 **10 Claims**

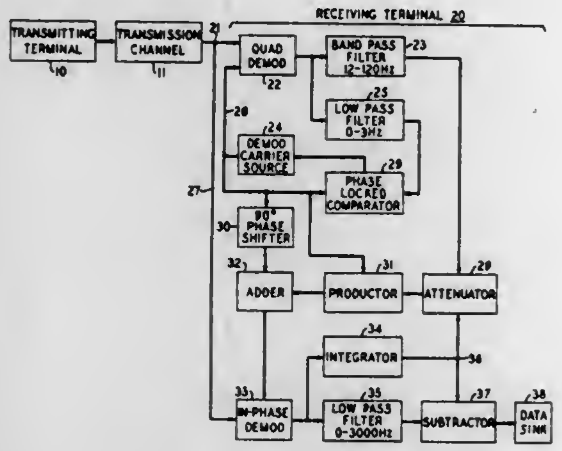
1. A system for determining the listening and viewing habits of radio and television receiver users comprising in combination, recording means with a movable record, means connected to said recording means and one said receiver for recording a coded signal on the record identifying the turning channel of the receiver and operation condition and the identification times when switching-in of the receiver and switching-off of the receiver and changing channels, means for developing further signals comprising time measuring intervals of predetermined duration, means connected to said recording means for recording on said record said measuring intervals during the operation of the receiver by a signal identifying the number of time units elapsed since the last coded signal was recorded, and signal responsive recording moving means connected to detect both said coded signals and said time measuring intervals for moving the record for recording when either of said signals are present and for stopping the record when said signals are not being presented for recording,



thereby presenting on the tape coded signals with the further time measuring signals therebetween indicating the time the tuning to a channel is kept in force.

3,849,730
CARRIER RECOVERY IN VESTIGIAL SIDEBAND DATA RECEIVERS

Edmond Yu-Shang Ho, Englishtown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 20, 1973, Ser. No. 371,680
Int. Cl. H04b *1/30*
U.S. Cl. 325—329 **4 Claims**



1. A synchronous demodulating carrier-wave recovery system for a vestigial-sideband, amplitude-modulated data signal which includes a discrete carrier component and which is received over a transmission channel subject to the impairments of frequency offset and phase jitter comprising

an adjustable local oscillator,

a quadrature demodulator responsive to said received signal and to the output of said local oscillator,

a control loop having a narrow bandwidth comparable to that of said frequency offset extending between said quadrature demodulator and said oscillator to control said oscillator,

a transmission path for the output of said quadrature demodulator having a passband comparable to that of said phase jitter for isolating a phase-jitter component therein,

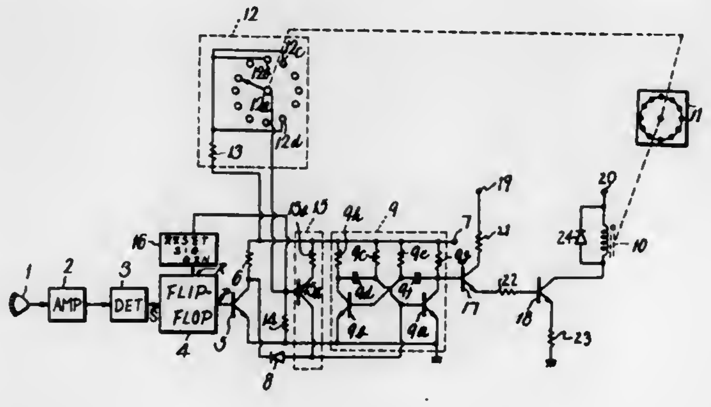
means for multiplying said phase-jitter component by the output of said local oscillator to form a partial in-phase demodulating signal,

means for combining said partial in-phase demodulating signal with a quadrature rotated output of said local oscillator to form a complete in-phase demodulating signal having both frequency-offset and phase-jitter components, and

an in-phase demodulator responsive jointly to said received signal and to said complete in-phase demodulating signal to form a data output substantially free of frequency-offset and phase-jitter impairments.

3,849,731
CHANNEL SELECTING CONTROL SYSTEM FOR TELEVISION TUNER

Koji Morita, Tokyo, and Tadashi Sato, Yono, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed May 7, 1973, Ser. No. 358,142
Claims priority, application Japan, May 8, 1972, 47-45216
Int. Cl. H04n *5/49*
U.S. Cl. 325—464 **11 Claims**



1. A channel selecting control system for a television tuner comprising:

a. a turret-type channel selector which is rotatable through a plurality of positions corresponding to respective television channels,

b. driving means for rotating said turret-type channel selector to sequentially select said television channels,

c. means for producing a control signal,

d. pulse generating means for producing a pulse signal of a predetermined frequency in response to the control signal and for supplying the pulse signal to the driving means to rotate said channel selector in step by step fashion at timed intervals corresponding to the frequency of the pulse signal at said positions corresponding to television channels,

e. frequency control means connected to the pulse generating means, and

f. unused channel detecting means connected to the frequency control means for detecting at least one unused channel selected by said turret-type channel selector and for actuating said frequency control means so as to increase the frequency of the pulse signal, to thereby cause the turret-type channel selector to substantially skip the position corresponding to the unused channel.

3,849,732
PULSE GENERATOR FOR DELIVERING RECTANGULAR PULSES HAVING FAST RISE AND FALL TIMES

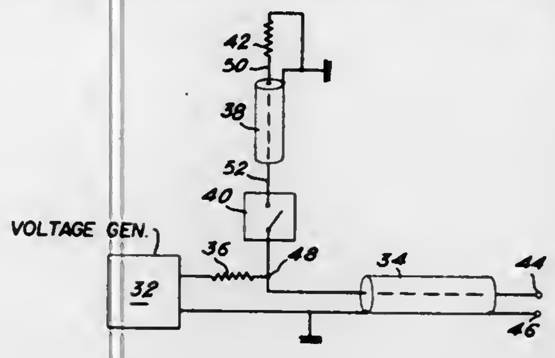
Jacques Pezot, Marcoussis, France, assignor to Commissariat A L'Energie Atomique, Paris, France
Filed Dec. 7, 1972, Ser. No. 313,041
Claims priority, application France, Dec. 17, 1971, 71.45436
Int. Cl. H03k *1/00, 3/04*
U.S. Cl. 328—59 **3 Claims**

1. A generator for producing electrical pulses having fast rise and fall times interrupting a steadily applied voltage by short periods of substantially zero output voltage, wherein said generator comprises

a direct-current high-voltage source;

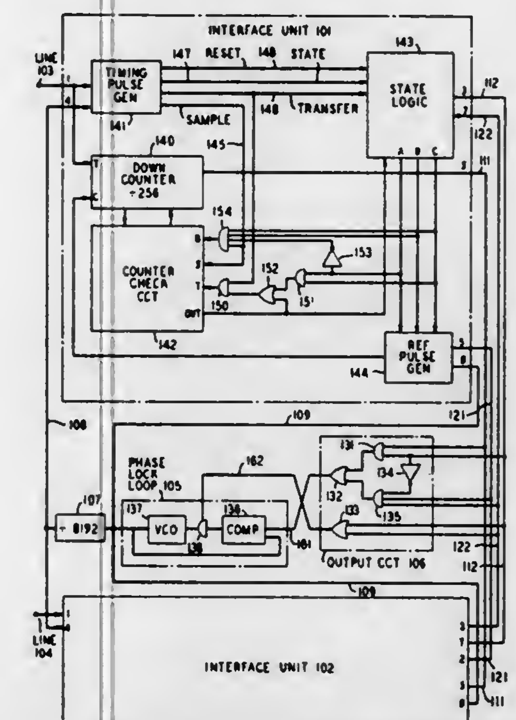
a first transmission line connected at one end to a high impedance output load and connected at its other end over a high impedance to said high-voltage source, both said high impedances being high relative to the characteristic impedance of said transmission line; and

a second transmission line of substantially the same characteristic impedance as said first line and of a length relative to that of said first line determined by the desired duty cycle of said pulses within the pulse period thereof, one end of said second line being terminated by as high impedance that is high relative to the characteristic impedance of the lines, and the other end being connected by means of a switch to that end of said first line at which said high impedance connected to said source is connected to said first line.



3,849,733
INTERFACE APPARATUS FOR RECEIVING AND MONITORING PILOT SIGNALS WHICH CONTROL A TIMING SIGNAL GENERATOR

Thomas Russell Lawrence, Omaha, Nebr., and Burton R. Saltzberg, Middletown, N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed May 23, 1973, Ser. No. 363,299
Int. Cl. H03b *3/06*
U.S. Cl. 328—155 **14 Claims**



1. A circuit for comparing the phase of timing signals with the phase of clock signals comprising,

means for producing the timing signals, said producing means also including means for producing running indications defining phases of each cycle of the timing signals;

means for storing a phase-defining indication;

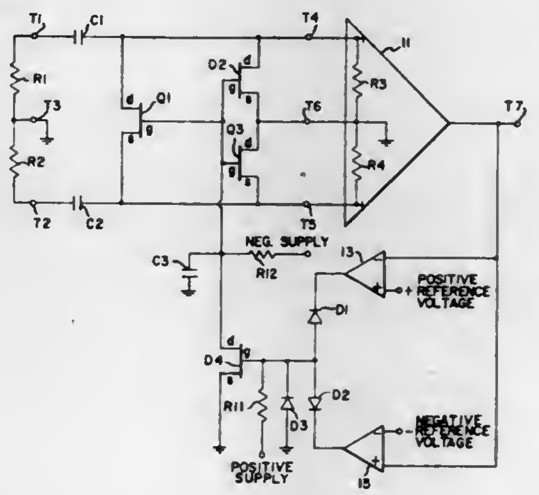
means for reading the running indication produced by the producing means when the clock signal is at a selected phase; and

means for comparing the read running indication and the stored indication;

means responsive to a substantial comparison match for writing the read indication into the storing means to replace the stored indication.

3,849,734
SIGNAL PROCESSING APPARATUS

Robert W. Grass, Quincy, Mass., assignor to Grass Instrument Company, Quincy, Mass.
Filed Sept. 29, 1970, Ser. No. 76,536
Int. Cl. H03f *3/68*
U.S. Cl. 330—30 D **2 Claims**



1. Signal processing apparatus comprising:

a differential input amplifier having a pair of input terminals and being operative to provide an output signal which is a relatively highly amplified function of an input signal applied to said input terminals;

means, including at least one coupling capacitor, for applying an input signal to said input terminals;

comparator means responsive to the output signal from said amplifier for generating a switching signal when said output signal passes above a first preselected level or below a second preselected level; and

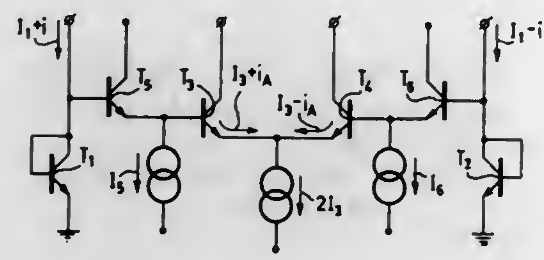
switching means controlled by said switching signal for selectively shunting said input terminals, said switching means including at least one field-effect transistor, the drain-source circuit of which is connected across said input terminals, said switching means further including a respective field-effect transistor for each of said input terminals, the drain-source circuits of each of said respective transistor being connected between the respective input terminal and ground, whereby blocking of said amplifier by low frequency signals is minimized.

3,849,735
WIDE-BAND DIFFERENTIAL AMPLIFIER

Henricus Wijnandus Gerardus Haenen, and Bernardus Josephus Marie Overgoor, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 241,203, April 5, 1972, abandoned. This application Sept. 24, 1973, Ser. No. 400,395
Claims priority, application Netherlands, Apr. 7, 1971, 7104636; Aug. 14, 1971, 7111226
Int. Cl. H03f *3/68*
U.S. Cl. 330—30 D **6 Claims**

1. A circuit comprising a differential amplifier including a first differential pair of transistors having at least some difference in their conduction characteristics and a first pair of input elements means coupled to the bases of said transistors respectively for converting an input difference current into a difference voltage for application to said bases, said input elements having logarithmic conduction characteristics sub-

stantially corresponding to that of a semiconductor junction; a first follower circuit coupled between at least one of said elements and said respective base; and means for eliminating

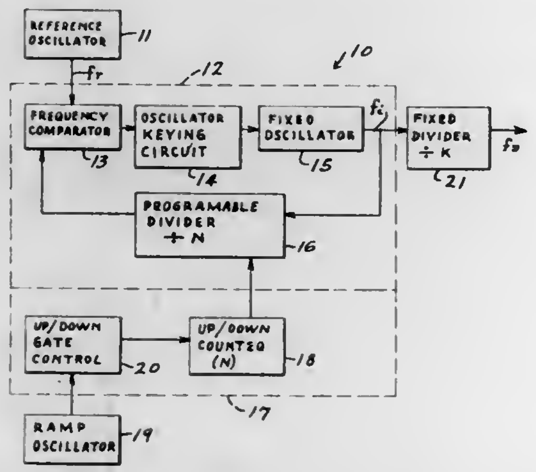


the effects of said transistor conduction characteristics difference comprising means coupled to said follower circuit for adjusting a bias current thereof.

3,849,736
FREQUENCY SYNTHESIZER HAVING FREQUENCY CONTROL LOOP WITH KEYED FIXED FREQUENCY OSCILLATOR

Donald W. Enerson, New Brighton, and Glenn R. Warfield, New Hope, both of Minn., assignors to Dana Corporation, Toledo, Ohio

Filed Nov. 19, 1973, Ser. No. 417,063
Int. Cl. H03b *3/04*
U.S. Cl. 331—1 A **5 Claims**



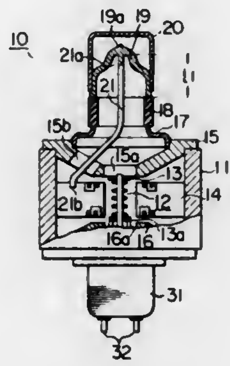
1. Apparatus for synthesizing from a reference signal a pulse train having an output frequency which is a predetermined Nth increment of the reference signal comprising, in combination, oscillator means for generating an intermediate signal, programmable divider means for dividing such intermediate signal by N to obtain a resultant signal, means for comparing such resultant signal with the reference frequency, means responsive to such comparison for controlling said oscillator means to maintain such intermediate signal N times the reference signal, means for dividing such intermediate signal by a predetermined constant to obtain the output pulse train, such constant determining the fraction of the reference signal for each increment, and means for selecting the Nth increment including a counter, said counter supplying the number N to said dividing means, and means for selectively counting said counter to the predetermined N.

3,849,737
MAGNETRON WITH CHOKE STRUCTURE FOR REDUCING HARMONICS IN OUTPUT

Tomokatsu Oguro, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 13, 1973, Ser. No. 426,705
Claims priority, application Japan, Dec. 18, 1972, 47-144213; Jan. 16, 1973, 48-7073; Jan. 8, 1973, 48-5363
Int. Cl. H01j *23/32;* **H03b** *9/10*
U.S. Cl. 331—86 **18 Claims**

1. A magnetron comprising a cylindrical anode, a cathode disposed coaxially with the cylindrical anode, a plurality of vanes protruding from the inner face of the anode towards the cathode for forming cavity resonators, a cathode stem provided gas-tightly at one opening end of the cylindrical anode for supporting the cathode and insulating the cathode from the anode, a hollow insulating body having at least one opening provided on the side of the other opening end of the cylindrical anode in a gas-tight relation with the cylindrical anode,

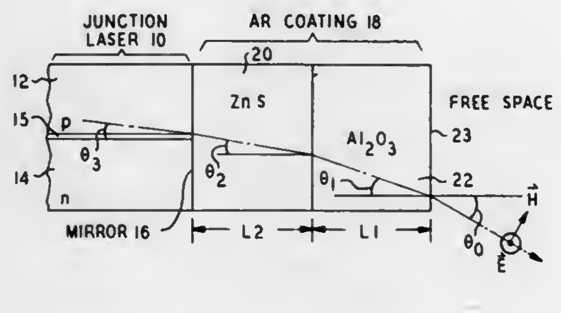


an output conductor one end of which is connected to one of the vanes and the other end of which extends in the hollow of the hollow insulating body, an output portion composed of at least the hollow insulating body and the output conductor, and a choke structure provided inside the output portion for blocking at least one of the harmonics contained in the microwave output of the magnetron.

3,849,738
MULTILAYER ANTIREFLECTION COATINGS FOR SOLID STATE LASERS

Basil Wahid Hakki, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 5, 1973, Ser. No. 348,161
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 H **11 Claims**



1. In a solid state laser, a body comprising
an active region capable of stimulated emission of radiation when suitably pumped,
said body having at least two parallel surfaces forming a resonator for sustaining said radiation, and
an antireflection coating formed on one of said at least two parallel surfaces,
characterized in that said coating comprises two contiguous layers of material, one of which has a refractive index less than, and one of which has a refractive index greater than, the square root of the refractive index of said active region, the thicknesses and refractive indices of said layers being mutually adapted to impedance match said coating to said active region.

3,849,739
LASER GLASS HOST COMPOSITIONS COMPRISING TeO_2, PbO AND ZnO

Richard F. Cooley, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

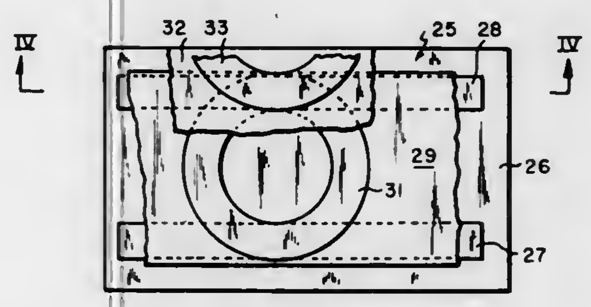
Filed June 27, 1973, Ser. No. 374,261
Int. Cl. H01s *3/00;* **C03c** *3/12, 3/30*
U.S. Cl. 331—94.5 E **8 Claims**

1. A laser glass host composition comprising TeO_2, PbO and ZnO in which the proportions in molar amounts of TeO_2, PbO and ZnO are defined by the area within the heavy lines connecting the points ABCDEF of the ternary diagram of the Figure of the drawings, the laser glass host composition being a host for an effective lasing amount of Nd_2O_3.

3,849,740
INTEGRATED OPTICAL AND/OR GATE

Gerald B. Brandt, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 1, 1973, Ser. No. 356,237
Int. Cl. H01s *3/05*
U.S. Cl. 331—94.5 C **8 Claims**

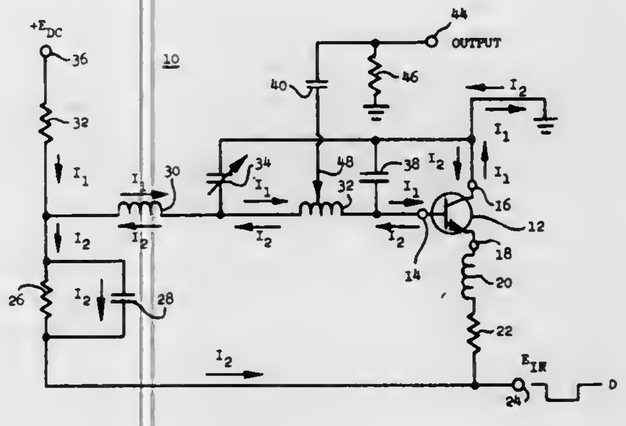


1. A thin film optical logic device comprising:
first and second optical waveguides for propagating optical energy at predetermined levels; a laser resonator including an active laser medium; means for positioning said laser medium close enough for evanescent coupling of optical energy propagating through said waveguides into said laser medium; said laser medium having a lasing threshold below the energy level of that optical energy coupled via at least one of said evanescent couplings; and an output waveguide positioned with respect to said laser medium for coupling into said output waveguide optical energy from said laser medium.

3,849,741
FAST RISE TIME OSCILLATOR

Lemuel D. Groom, III, Dallas, Tex., and Lavell Jordan, Jr., Plano, Colo., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 25, 1970, Ser. No. 75,422
Int. Cl. H03b *5/00, 11/00*
U.S. Cl. 331—165 **10 Claims**

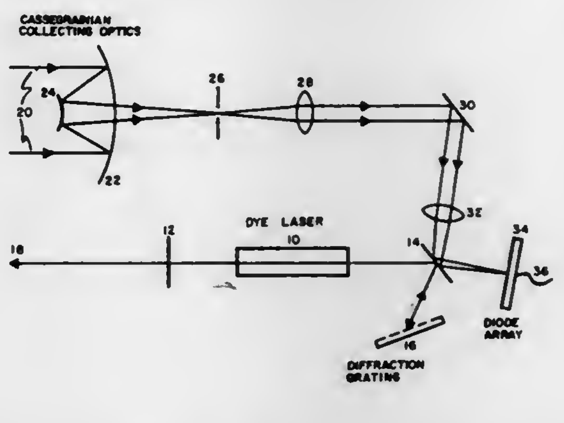


1. A method of rapidly initiating oscillations in an oscillator, including a transistor having a junction, with a tuned circuit electrically connected across said junction, comprising the steps of:
forward biasing said junction, and then
reverse biasing said junction to cause a rapid change in current in said junction thereby producing an internal transient in said tuned circuit which produces a rapid build up of oscillation.

3,849,742
SYNCHRONOUSLY TUNED LASER TRANSMITTER AND RECEIVER

Richard Swart Hughes, China Lake, and Julian L. Thompson, Keene, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 28, 1973, Ser. No. 374,748
Int. Cl. H01s *3/02*
U.S. Cl. 332—7.51 **9 Claims**



1. A synchronously tuned laser transmitter and receiver, comprising:
a laser including a laser cavity bounded at one end by an output mirror; a dual faced, reflective member in the path of the laser beam; and reflecting means at the opposite end of said cavity and in the reflective field of one face of said reflective member for retroflectively reflecting those wavelengths that are incident thereon at the retroflective angle unique to each wavelength;
a laser receiver for receiving the reflected output beam of said laser including collecting means for collecting the reflected beam received, processing and directing means for processing the beam into a form compatible with the detector used in said transmitter and receiver and directing said processed beam onto the other face of said reflective member, and a detector in the reflective field of said other face for providing an electrical output in response to said processed beam.

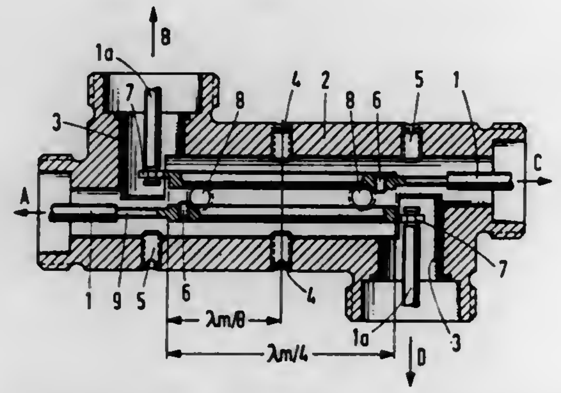
3,849,743
DIRECTIONAL QUARTERWAVE COAXIAL COUPLER HAVING MEANS TO AXIALLY MOVE THE COUPLING CONDUCTORS

Leo Treczka, Munchen, Germany, assignor to Spinner GmbH Elecktrotechnische Fabrik, Munchen, Germany

Filed Sept. 25, 1973, Ser. No. 400,658
Claims priority, application Germany, Sept. 28, 1972, 2247687
Int. Cl. H01p *5/02*
U.S. Cl. 333—10 **10 Claims**

1. A coaxial directional coupling for coupling electromagnetic energy at microwave frequencies, comprising an elongated coupler body of electrically conductive material having opposite ends each provided with an end connector opening and having an elongated main bore therethrough communicating with said end connector openings, said body having a lateral branch connector opening adjacent each end thereof opening in opposite directions and first and second branch

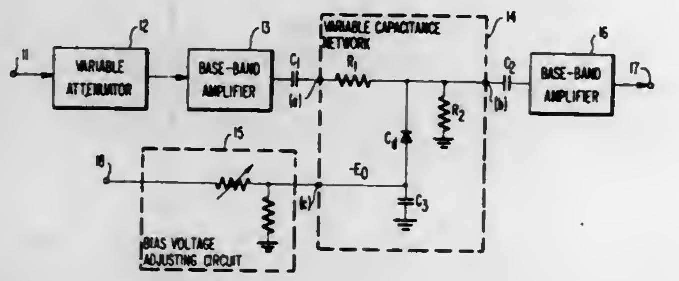
bore sections communicating the main bore with the branch connector openings along branch bore axes perpendicular with the longitudinal axis of the main bore, first and second straight internal main conductors disposed in adjacent parallel lapping relation over their major length paralleling the main bore axis each having an outer end extending through a diferent one of the end connector openings and an inner end portion crossing and terminating near the branch bore axis farthest from its outer end, said main conductors being axially movable in said main bore to provide quarter wavelength parallel lapping portions of variable length for different frequencies, a branch internal conductor extending axially through each branch bore perpendicular to said main conductors in respective opposite directions having an outer end projecting through respective ones of said branch connector openings and inner ends joined to the inner end portions of said main conductors, movable connection means at the inner ends of said main conductor and branch internal conductors permitting axial movement of the main conductors relative to the branch conductors while maintaining electrically conductive contact therebetween.



3,849,744
BASE-BAND DELAY EQUALIZER

Tadashi Furuya, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Apr. 24, 1973, Ser. No. 354,054
Claims priority, application Japan, May 4, 1972, 47-44822
Int. Cl. H03h *7/16*
U.S. Cl. 333—28 R **5 Claims**



1. A base-band delay equalizer for equalizing delay time for all the frequency components of a base-band signal of broad frequency bandwidth to be transmitted over an angle modulation transmission system, said equalizer being disposed at the base-band signal circuit of at least one of the transmitting or receiving ends of said transmission system and comprises in combination:

a variable-capacitance diode having a capacitance controllable in response to the voltage of said base-band signal applied thereto,

input means for supplying to said variable-capacitance diode said base-band signal,

output means for deriving from said variable-capacitance diode a delay-compensated base-band signal, said variable-capacitance diode being connected in shunt between said input and output means and ground,

a first resistor connected in series between said input means and the junction of said variable-capacitance diode with said output means,

a second resistor connected in common to said variable-capacitance diode and said output means and in shunt to ground such that the envelope time delay is approximated by

$$C_d\ (R_1R_2/R_1 + R_2)$$

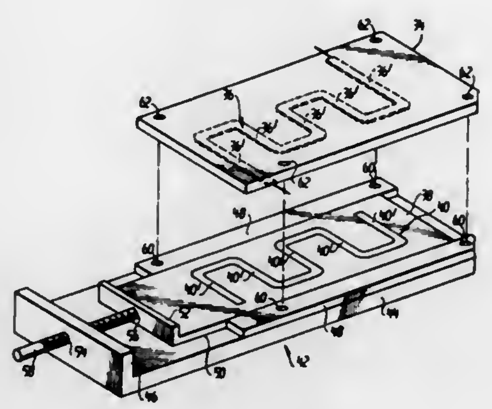
where C_d is the junction capacity of said variable-capacitance diode and R_1 and R_2 are the resistances of said first and second resistors, respectively, and

bias means for supplying to said variable-capacitance diode a direct-current bias voltage so as to set the non-input capacitance of said variable-capacitance diode at a suitable value.

3,849,745
METHOD AND SYSTEM FOR VARYING THE CHARACTERISTICS OF A DISPERSIVE DELAY LINE

James M. Schellenberg, Severna Park, and Raymond R. Jones, Mt. Airy, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 26, 1973, Ser. No. 327,030
Int. Cl. H03h *7/36*; H01p *1/18*
U.S. Cl. 333—31 R **8 Claims**



1. A variable delay line comprising:

a first substrate having a first electrically conductive strip embedded in one surface thereof, said first strip being configured to provide a plurality of spaced, electrically interactive, phase dispersive segments along the length thereof; and,

a second substrate overlying at least a portion of the one surface of said first substrate and including electrically conductive means electrically contacting said first strip for varying the spacing between said dispersive segments to thereby vary the electrical interaction between the segments of said first strip responsively to relative movement between said first and second substrates.

3,849,746
MOUNTING ASSEMBLY FOR FERROMAGNETIC CORE IN WAVEGUIDE PHASE SHIFTER

Robert J. Mason, Medford, and Earl Dixon, Voorhees, both of N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

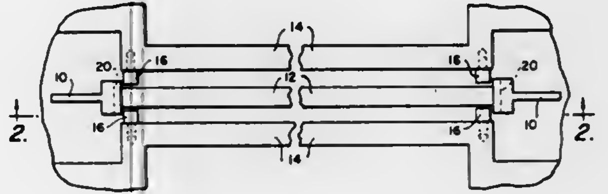
Filed Oct. 18, 1973, Ser. No. 407,744
Int. Cl. H01p *1/32*
U.S. Cl. 333—24.1 **6 Claims**

1. A mounting assembly for mounting a core of ferrimagnetic material within a waveguide of a low-power, microwave phase-shifter comprising:

a waveguide;

a ferrimagnetic core mounted longitudinally within said waveguide;

a plurality of at least four dielectric pegs inserted in holes drilled in the waveguide walls with four of said holes lined up with the ends of said core and acting to hold said four outer pegs, one hole being positioned on each side of the waveguide at each end of the core, the heads of said pegs protruding toward said ferrimagnetic core but leaving an appropriate clearance between said ferrimagnetic core and the peg-heads to allow for thermal expansion and acting to restrict the lateral motion of said core;

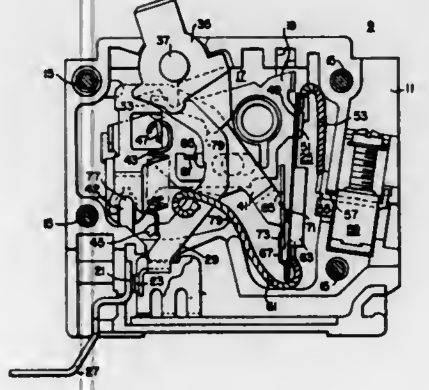


a plurality of dielectric transformers, one bonded to each end of said ferrimagnetic core and completely covering the ends of said core and overlapping the protruding heads of said four outer pegs so as to restrict longitudinal motion of said core with respect to said four outer pegs.

3,849,747
CIRCUIT BREAKER WITH HANDLE INDICATING MEANS

Stephen A. Mrenna, and Glenn R. Thomas, both of Beaver, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 28, 1973, Ser. No. 419,744
Int. Cl. H01h *9/20*
U.S. Cl. 335—166 **3 Claims**

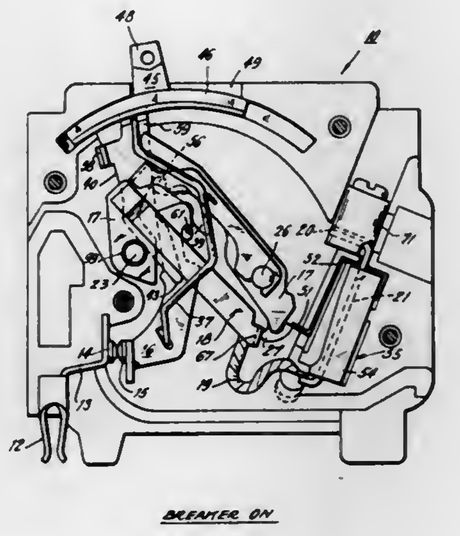


1. A circuit comprising an insulating housing having an opening in the front thereof, a circuit-breaker mechanism supported in said housing, said mechanism comprising a stationary contact, a movable contact, a contact arm supporting said movable contact, trip means, a releasable cradle, means pivotally supporting said cradle in proximity to one end thereof, said cradle at the other end thereof being latched on said trip means, an operating spring supported at one end thereof on said contact arm and at the other end thereof on said cradle, an operating member operatively connected to said contact arm and extending through said opening to permit manual operation of said circuit breaker, with said cradle in the latched position said operating member being manually movable between open and closed positions to operate said spring and said contact arm to thereby move said contact arm between open and closed positions, upon the occurrence of an overload current above a predetermined value said trip means releasing said cradle and said spring moving said cradle to a tripped position and said contact arm to the open position, following movement of said cradle to said tripped position said operating member being manually movable to the open position during which movement said operating member engages said cradle to move said cradle back to the latched position, blocking means on said contact arm engaging blocking means on said cradle to prevent movement of said cradle to the latched position when said contacts are welded closed and said cradle has been moved toward the tripped position, and said blocking means on said cradle striking said contact arm in an opening direction when said cradle is released and said contacts are welded closed whereby if the weld of said contacts is not a firm weld the striking action can break the weld to permit movement of said contact arm to the open position.

3,849,748
SMALL CIRCUIT BREAKER HAVING LARGE CONTACT SEPARATION

William T. Orriss, Bramalea, Ontario, Canada, assignor to ITE Circuit Breaker (Canada) Limited, Weston, Ontario, Canada

Filed Dec. 4, 1973, Ser. No. 421,533
Int. Cl. H01h *71/10*
U.S. Cl. 335—174 **7 Claims**

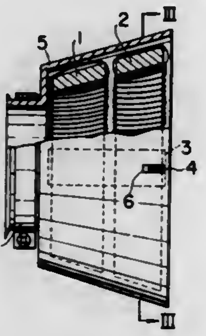


1. A circuit breaker including stationary and movable cooperating contacts, a movable contact arm to which said movable contact is mounted,

a spring-powered mechanism for opening and closing said cooperating contacts by moving said movable contact arm, latch means for maintaining said mechanism in a reset condition wherein the cooperating contacts may be closed, fault responsive means for automatically releasing latch means to trip said mechanism whereby said cooperating contacts may not be closed, operating means including a handle for selectively operating said mechanism when in said reset condition to open and close said cooperating contacts, stop means for engaging said contact arm to limit separation between said cooperating contacts when the latter are open; said stop means being operatively constructed to limit circuit opening of said contact arm to a first position when said mechanism is reset and to limit circuit opening of said contact arm to a second position when said mechanism is tripped with separation between said cooperating contacts being substantially greater when said contact arm is in said second position as compared to this separation when said contact arm is in said first position; said mechanism including a releasable cradle; said stop means being carried by said cradle and being repositioned as said mechanism is tripped and reset; a stationary pivot upon which said cradle is mounted and a repositionable pivot to which one end of said contact arm is mounted; said repositionable pivot being on said cradle; said movable contact being at the other end of said contact arm.

3,849,749
DEFLECTION COILS PRODUCING PINCUSHION AND BARREL DEFLECTION FIELDS

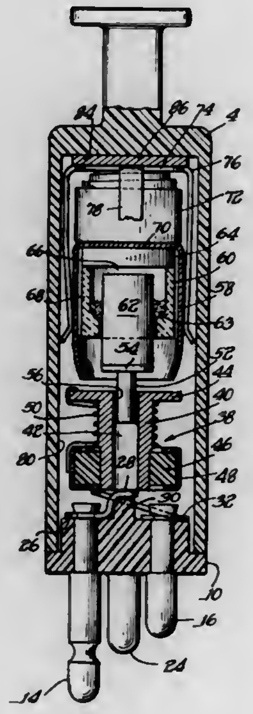
Tokuzo Kadota, Kadoma, Japan, assignor to Matsuhita Electric Industrial Co., Ltd., Osaka, Japan
Filed Feb. 12, 1973, Ser. No. 331,600
Claims priority, application Japan, Feb. 16, 1972, 47-16662; Feb. 28, 1972, 47-20883; Feb. 28, 1972, 47-20884
Int. Cl. H01f *7/00*
U.S. Cl. 335—210 **14 Claims**



1. A deflection yoke comprising a plurality of deflection coils arranged contiguously along a tube axis, and wherein the deflection field of said deflection coil located in the center of said plurality of deflection coils is distributed in a barrel magnetic field distribution, and the deflection field of said deflection coil located on each side of said centrally located deflection coil is distributed in a pincushion magnetic field distribution.

3,849,750
LINE PROTECTOR FOR A COMMUNICATION CIRCUIT

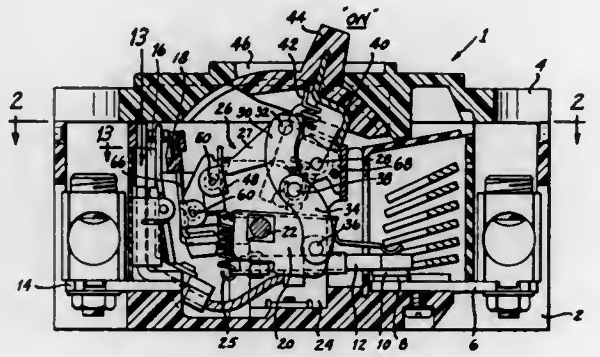
Bertram W. Baumbach, and Richard E. Nelson, both of Arlington Heights, Ill., assignors to Reliable Electric Company, Franklin Park, Ill.
Filed Jan. 2, 1974, Ser. No. 429,871
Int. Cl. H01h *39/00*
U.S. Cl. 337—32 **15 Claims**



1. A line protector for a communications circuit comprising a housing of insulating material and including a base, line terminals in said base, a ground terminal in said base, overvoltage protective means in spaced relation to said base, said protective means having spaced electrodes forming an arc gap, means forming a line circuit between said line terminals, first means forming a grounding circuit between one electrode and said ground terminal, second means forming a conductive connection between said line circuit and the other electrode, and longitudinally extensible spring means biasing said protective means toward said base, said spring means forming part of said ground circuit, said spring means, said protective means and said second means being structures that are in line within the housing and are substantially coaxial.

3,849,751
ELECTRIC CIRCUIT BREAKERS

Donald A. Link, Hubertus, and Fred H. Williams, Oshkosh, both of Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.
Filed Feb. 6, 1973, Ser. No. 330,031
Int. Cl. H01h *71/16*
U.S. Cl. 337—59 **11 Claims**

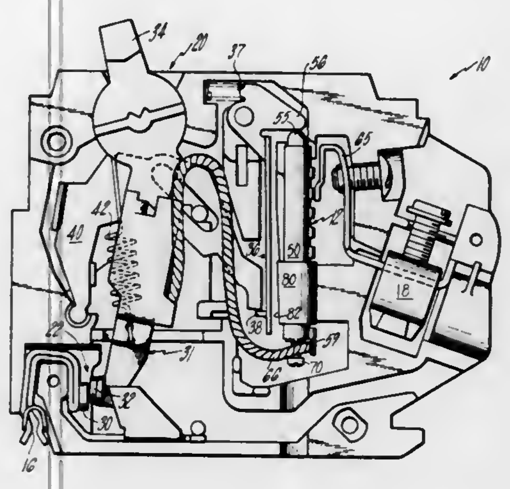


1. In an electric circuit breaker, the combination with an insulating housing, stationary contact means in said housing, movable contact means and an operating mechanism in said housing for said movable contact means including an operating handle pivotally movable between ON and OFF positions, latch means movable between latched and unlatched positions, collapsible toggle linkage connected to said latch means and spring means connected between said latch means and said toggle linkage and movable by said handle over center of said linkage to actuate the latter between essentially collapsed and straightened positions to effect operation of said movable contact means between open and contact engaged positions with said stationary contact means, of second spring means normally out of engagement with said movable contact means and means responsive to movement of said toggle linkage to transmit the large operating force developed by said toggle linkage when it assumes a generally in-line position to said second spring means to provide corresponding contact closing force between said movable and stationary contact means.

3,849,752
CURRENT RESPONSIVE ACTUATOR

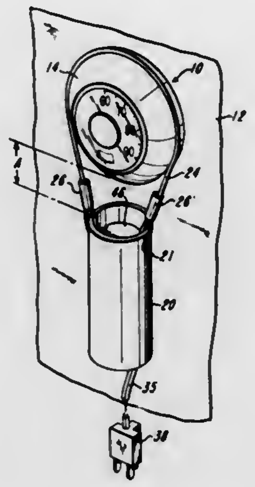
Eric W. Bayer, Wolcott, Conn., assignor to General Electric Company, New York, N.Y.
Filed Aug. 2, 1973, Ser. No. 384,985
Int. Cl. H01h *62/02*
U.S. Cl. 337—77 **14 Claims**

1. In a circuit breaker having a pair of terminals, an internal electrical circuit breaker between the circuit breaker terminals comprising an electrical switch and a current responsive actuator, a switch operating device operable for opening and closing the switch and having a switching member actuated by the current responsive actuator when the actuator current exceeds a predetermined level to open the circuit breaker switch, the improvement wherein the current responsive actuator comprises a thrust support and an elongated thermally sensitive expansion plunger extending longitudinally from the thrust support and longitudinally expandable from the thrust support upon being heated to actuate the switching member to open the switch, the current responsive actuator having an electrical impedance in the internal electrical circuit effective to heat and thereby longitudinally expand the expansion plunger to actuate the switching member to open the switch when the actuator current exceeds said predetermined level.



3,849,753
HEATER ATTACHMENT DEVICE FOR A WALL-MOUNTED THERMOSTAT

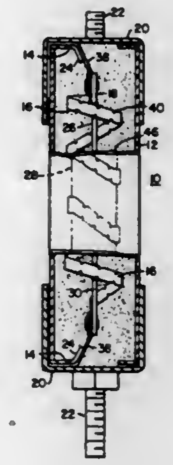
Robert A. Nichols, Xenia, Ohio, assignor to Capital Enterprises, Inc., Dayton, Ohio
Filed June 7, 1973, Ser. No. 367,862
Int. Cl. H01h *61/02*
U.S. Cl. 337—102 **11 Claims**



1. A heating device adapted for temporary use with a wall-mounted thermostat connected to control a heating system to provide for a controlled reduction in the operation of the heating system below the effective operating control range of the thermostat, said device comprising an electrical heating element, a housing having an upper end portion and a lower end portion and defining an air flow passage extending between said end portiOns, means on said housing for supporting said heating element adjacent said passage to provide for a flow of air generally upwardly within said passage in response to heating of the air within said passage by said heating element, an electrical power supply cord connected to said heating element and extending from said housing for connection within an electrical power supply, and means for temporarily supporting said housing below the thermostat in a position where said passage directs the heated air upwardly into the thermostat.

3,849,754
CURRENT LIMITING FUSE

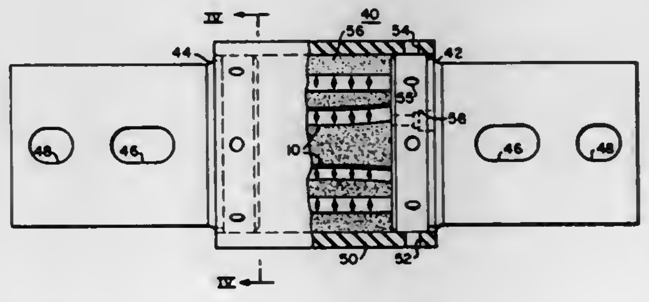
Donald D. Blewitt, Pittsburgh, and Woodrow G. Shaw, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 17, 1973, Ser. No. 407,335
Int. Cl. H01h *85/16*
U.S. Cl. 337—231 **8 Claims**



1. A fuse structure comprising a generally tubular, electrically insulating casing, terminal means disposed adjacent to each of the opposite ends of said casing, an axially-extending, electrically insulating support member disposed in said casing with the ends disposed adjacent to the respective terminal means, a fusible element disposed in a helical path on said support member and connected between said terminal means, the insulating support member being a segmented member comprising at least two connected longitudinal sections, one section being a high temperature electrically insulating material, and the other section being a low temperature electrically insulating material.

3,849,755
CURRENT LIMITING FUSE WITH FUSE ELEMENT WITH A DIAMOND SHAPED CUTOUT

Donald D. Blewitt, Pittsburgh, and Woodrow G. Shaw, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 28, 1973, Ser. No. 401,765
Int. Cl. H01h *85/04*
U.S. Cl. 337—295 **7 Claims**



1. An electrical fuse, comprising:
a. a tubular casing of electrical insulating material;
b. spaced terminals disposed adjacent portions of said casing; and

c. a fuse element of electrically conductive material disposed within said casing and electrically connected to said spaced terminals for interrupting electrical current flowing through said fuse when said current is of a predetermined value, said electrically conductive material having a central opening therein, said central opening enclosing as one part of the periphery thereof an angle substantially in the range of 30° to 45°, said angle having an apex which is spaced from one surface of said electrically conductive material by a predetermined distance to thereby provide an electrically resistive region of reduced cross section, the bisector of said angle being perpendicular to said one surface within a predetermined range, the radius of curvature of said apex of said angle being smaller than said distance between said apex and said one surface by a predetermined amount to thereby reduce the electrical resistance of said conductive material adjacent said region of reduced cross section, the length of at least one peripheral side of said angle being larger by a predetermined amount than said predetermined distance between said apex and said one side.

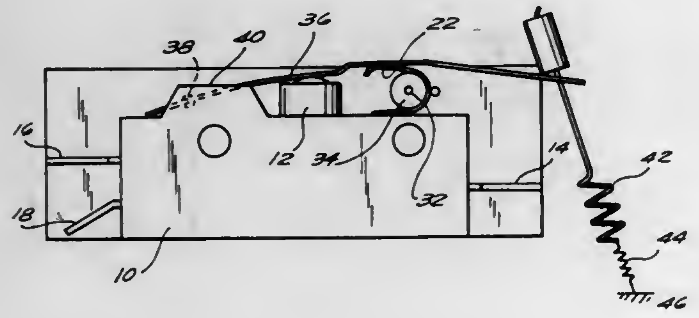
3,849,756
NITINOL ACTIVATED SWITCH USABLE AS A SLOW ACTING RELAY

Colin D. Hickling, Woodstock, N.Y., assignor to American Thermostat Corporation, South Cairo, N.Y.

Filed June 14, 1973, Ser. No. 369,852

Int. Cl. H01h *37/50*

U.S. Cl. 337—382 **10 Claims**



1. Apparatus for changing the state of a switch in accordance with the current in a conductor, said switch being of the type having a pair of relatively movable contacts normally biased to retain the switch in a first state and an actuating member for relatively moving the contacts against the bias to place the switch in a second state, said apparatus comprising a housing for said switch, a conductor, means operatively connected to said conductor for controlling the current flowing therethrough, said conductor generating thermal energy in accordance with the current flowing therethrough, a lever pivotally mounted on said housing, said lever being movable between a first position wherein said lever is operably connected to said actuating member to actuate said member and a second position wherein said lever is operably disconnected from said actuating member, and a thermally activated deformation element in thermal communication with said conductor and having a first portion operably connected to said actuating member and a second portion operably connected to said lever, said first and second portions being relatively close to one another when said element is in the undeformed state, said element deforming to move said first and second portions away from each other where the thermal energy generated by said conductor exceeds a given level such that said lever is moved to said second position and said actuating member is actuated.

3,849,757
TANTALUM RESISTORS WITH GOLD CONTACTS

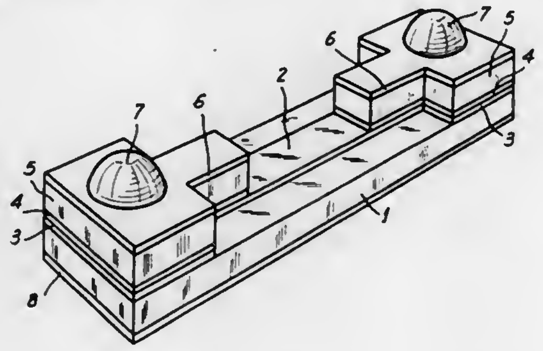
Robert Khammous, Chickli-Pariente; Andre Langlet, Paris, and Michel Leclercq, Levallois-Perret, all of France, assignors to Compagnie Honeywell Bull (Societe Anonyme), Paris, France

Filed Dec. 6, 1973, Ser. No. 422,463

Claims priority, application France, Dec. 14, 1972, 72.44558

Int. Cl. H01c *1/16*

U.S. Cl. 338—320 **12 Claims**



1. An electrical device comprising a resistive element formed by a thin metal strip borne by a rigid, electrically insulating substrate, and a plurality of contact means for said resistive element, said resistive element formed of a tantalum strip and a superposition of a layer of molybdenum and a layer of gold, with a gold dome disposed on each of said contact means.

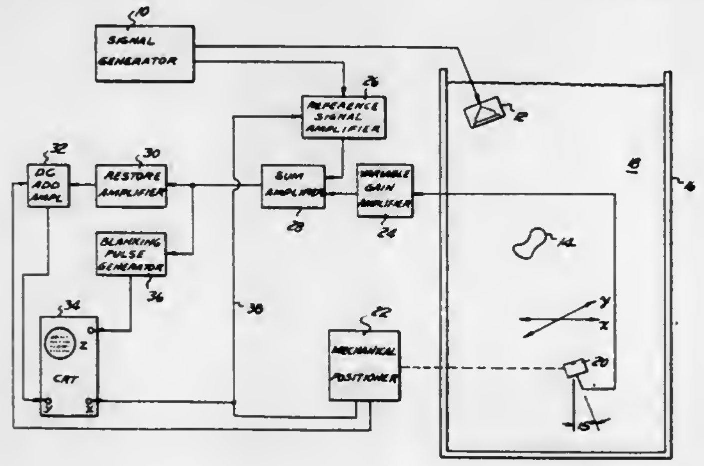
3,849,758
SYSTEM FOR MAKING BINARY ACOUSTIC HOLOGRAMS

Jerome L. Pfeifer, Livonia, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 15, 1973, Ser. No. 341,445

Int. Cl. G01s *9/66*

U.S. Cl. 340—5 H **36 Claims**



1. A system for making binary acoustic holograms of an object comprising:

means for generating electrical energy;

first means receiving said electrical energy for producing coherent acoustic energy, said coherent acoustic energy irradiating said object;

second means receiving said electrical energy for producing a reference electrical signal having the same frequency as said electrical energy with a predetermined phase and amplitude;

means detecting said acoustic energy incident on a hologram plane in the proximity of said object for generating, on a point-for-point basis, detected electrical signals indicative of the intensity of said acoustical energy, including means for generating signals indicative of the X and Y axis positions of said points with respect to said hologram plane;

means responsive to said reference electrical signals and said detected electrical signals for generating phase modulated signals indicative of the intensity and phase of said detected acoustic energy;

means responsive to said phase modulated signals for generating a blanking signal when the amplitude component of said phase modulated signal is less than a predetermined value;

means responsive to said phase modulated signal and said Y position signal for summing said phase modulated signals and said Y position signal generating a Y biased signal; and

means responsive to said Y biased signals, said Y position signal and said blanking signal for generating a binary interference pattern.

3,849,759
FAULT DETECTOR FOR MOTOR VEHICLE SAFETY DEVICE

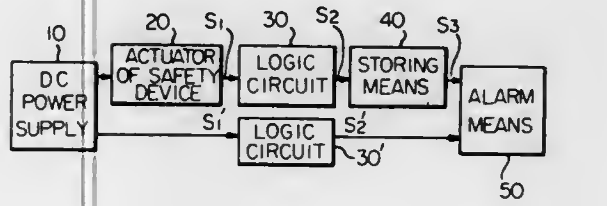
Akio Hosaka; Kosaku Baba, both of Yokohama, and Kiyoshi Wazawa, Fujisawa, all of Japan, assignors to Nissan Motor Company Limited, Yokohama City, Japan

Filed Feb. 15, 1973, Ser. No. 332,762

Claims priority, application Japan, Feb. 19, 1972, 47-19982[U]

Int. Cl. G08b *21/00*

U.S. Cl. 340—52 R **8 Claims**



1. A fault detector for an actuator of a safety device for a motor vehicle having an electrical DC power supply, which comprises: a logic circuit comprising a plurality of comparators responsive to internal signals in an electrical circuit of a safety device actuator, an inverter receptive of a logic output signal of one of said comparators, and a first NAND gate receptive of logical output signals of said inverter and the remaining ones of said comparators to develop a logic circuit output signal; a fault memory means for developing a continuous output signal in response to a logic circuit output signal representative of a fault in the safety device actuator; and an alarm actuated in response to said output signal from said memory means.

3,849,760
MULTI-DIMENSIONAL PATTERN RECOGNITION PROCESSOR

Hirohide Endou, Kokubunji; Jun Kawasaki; Yoshiji Fujimoto, both of Hachioji; Keiichi Nakane, Kokubunji, and Yoshiaki Kitazume, Sayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 11, 1972, Ser. No. 270,873

Claims priority, application Japan, July 12, 1971, 46-51609; Nov. 10, 1971, 46-89022; Apr. 28, 1972, 47-42217

Int. Cl. G06k *9/00*

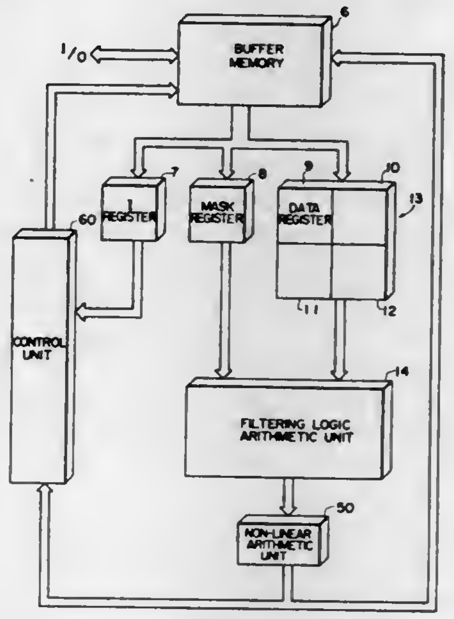
U.S. Cl. 340—146.3 H **7 Claims**

1. A multi-dimensional pattern recognition processor comprising

a pattern data register unit for storing information of individual picture elements of a multi-dimensional original pattern,

a mask register unit for designating a multi-dimensional weight information pattern applied to the pattern information of the individual picture elements of the original pattern,

a plurality of multiplier groups for simultaneously carrying out the multiplication on all the picture elements of the original pattern such that pattern information signals representative of the picture elements of the original pattern derived from said pattern data register unit are multiplied by weight information signals derived from the corresponding picture element portions of said mask register unit, and



a plurality of adders each associated with one of said multiplier groups for carrying out the addition of the results of multiplication by said multiplier groups,

wherein weight information stored in said mask register unit is changed to various forms so that said original pattern information can be suitably processed depending on said changed weight information.

3,849,761
COMMUNICATION SYSTEM

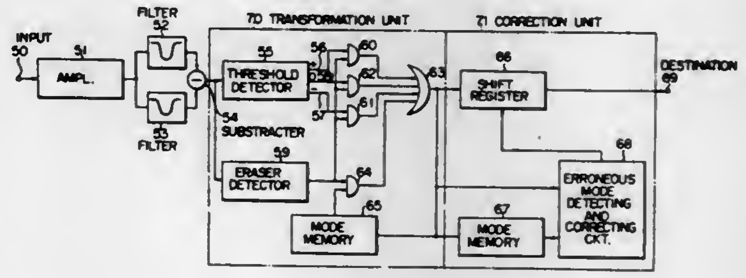
Masao Kasahara, Kyoto; Toshihiko Namekawa, Kobe; Keniti Fujiwra, Amagasaki; Shigeiti Hirasawa, Amagasaki, and Yasuo Sugiyama, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1972, Ser. No. 240,172

Claims priority, application Japan, Sept. 17, 1971, 46-72228

Int. Cl. G06f *11/00;* **G08c** *25/00*

U.S. Cl. 340—146.1 R **4 Claims**

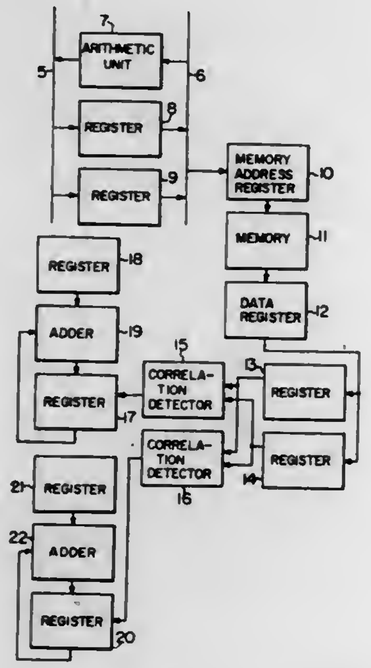


1. A communications system comprising, a plurality of signal repeaters having a first signal repeater receptive of a transmitted signal, a sequence of repeaters receptive of an output signal from a previous repeater and a last repeater, said received signal corresponding to a sequence of information code blocks and at least one checking code block, each information code block being an n-bit binary coded word corresponding to a redundantly encoded piece of information selected from a subset of a set of all n-bit binary code words, and said checking code block being an n-bit binary code word selected from a subset of n-bit binary code words not includ-

ing said subset of information code blocks, said last repeater comprising first detection means receptive of said signal to develop output signals corresponding to a binary one signal, binary zero signal or an ambiguous signal ambiguous as to logic content thereof, first memory means receptive of said first detector output signals for storing said first detector output signals therein, circuit means receptive of said first detector output signal corresponding to said ambiguous signal levels to store said first detector output signal and develop a first control signal in response thereto, a transformation circuit receptive of said first control signal and said first detector output signals stored in said first memory means for transforming under control of said first control signal an information code block having an ambiguous signal level into a transformed code block selected from a subset of n-bit binary code words not including information code blocks, second detection means receptive of said first detection means output signals from said code transformation circuit for detecting transformed code blocks and developing a second control signal in response thereto, second storage means receptive of said first detection means output signals from said code transformation circuit for storing said first detection means output signals therein, an error detecting and correcting circuit connected to said second storage means and receptive of said second control signal for replacing said transformed code block with a correct information code block, and output means connected to said second storage means for providing corrected output signals.

3,849,762
DIGITAL INFORMATION PROCESSING APPARATUS FOR PATTERN RECOGNITION

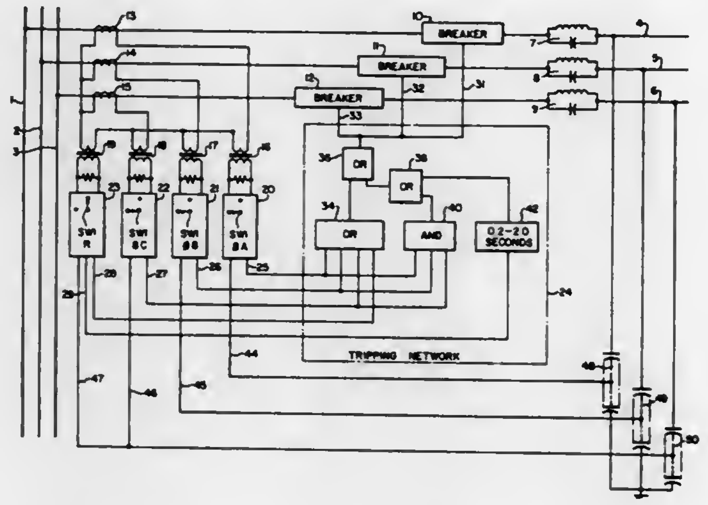
Yoshiji Fujimoto, Hachioji; Toshihiro Hananoi, Matsudo; Michio Yasuda, Koganei; Hiroshi Makihara, Kokubunji; Masaru Kuramizu, Hachioji; Minoru Ota; Hiroshi Kokido, both of Odawara, and Shozo Kadota, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 7, 1973, Ser. No. 338,888
Claims priority, application Japan, Mar. 8, 1972, 47-23092
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 Q **6 Claims**



1. A digital information processing apparatus for pattern recognition comprising: a memory unit for storing a piece of information representing an unknown pattern and M pieces of information representing M standard patterns (M being a given integral number) in a predetermined sequence of addresses word by word, each piece of information including N words (N being a given integral number); memory address register means for designating in said predetermined sequence the N (M + 1) addresses of said memory unit at which said M + 1 pieces of information are stored so that each piece of information of said unknown pattern and said M standard patterns is read out of said memory unit word by word in said predetermined sequence; data register means for temporarily storing each piece of information read out of said memory unit word by word; first register means for storing only said information of said unknown pattern selectively transferred from said data register means; second register means for storing only said plurality of pieces of information of said standard patterns selectively and sequentially transferred from said data register means; M correlation constant registers each storing a predetermined correlation constant corresponding to each of said M standard patterns; M correlation detectors each comparing said information of said unknown pattern stored in said first register means with said information of one of said standard patterns stored in said second register means by means of each bit and detecting the number of times of agreement between said unknown pattern and said standard pattern; and M adders provided for the respective one of said M standard patterns each for adding said correlation constant stored in a corresponding one of said correlation contant registers by the number of times of the agreement between said unknown pattern and said standard pattern in response to an output from said correlation detector, whereby the similarity between said unknown pattern and each of said M standard patterns is determined on the basis of the content of each of said adders.

3,849,763
CHANNEL DELAY CHECKBACK APPARATUS

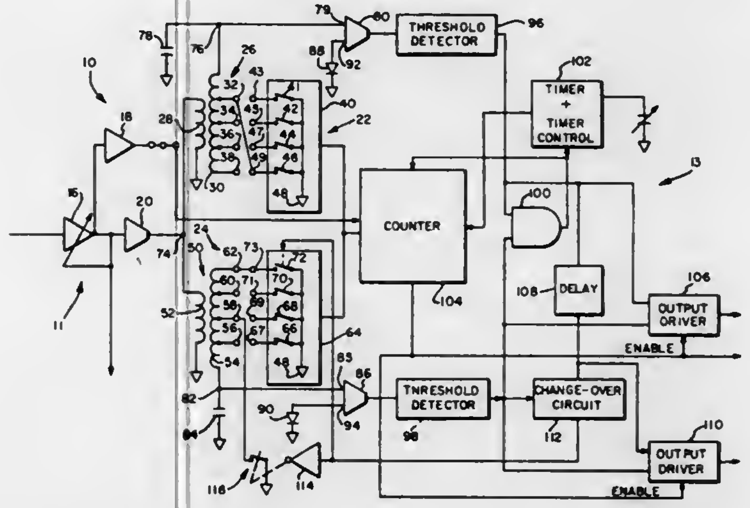
James E. Greene, Jr., Convent Station, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 29, 1973, Ser. No. 392,691
Int. Cl. H04q *1/20*
U.S. Cl. 340—147 R **21 Claims**



1. A channel measuring device comprisng a trnsmitter adapter to be connected to said channel for supplying a first control signal thereto, a receiver adapter to be connected to said channel for receiving a second signal therefrom said receiver providing a third control signal when initially energized by said second signal, first and second timing networks, said first and second timing networks having first and second timing periods, said first and second periods determining respectively the minimum and maximum acceptable time limits of said channel, means for concurrently initiating the timing out of said timing networks and the initiating of the operation of said transmitter to transmit said first signal, a comparing network having a plurality of input circuits and an output circuit, a first and a second of said input circuits being operatively connected to said first and second timing networks respectively for actuation thereby, a third of said input circuits being connected to said receiver for actuation by said third control signal when said receiver is receiving said second control signal, said comparing network being adapted to provide a fourth control signal when said third control signal is supplied to its said third input solely prior to the timing out of said first timing network and subsequent to the timing out of said second timing network.

3,849,764
PROGRAMMABLE FREQUENCY DECODER

Kuei-Seng Wang, Flemington; Philip L. Epstein, Elizabeth, and John Hsueh Chung Lu, East Orange, all of N.J., assignors to Quindar Electronics, Inc., Springfield, N.J.
Filed May 29, 1973, Ser. No. 364,684
Int. Cl. H04q *9/12;* **H04m** *11/00*
U.S. Cl. 340—171 R **12 Claims**



1. A decoding system comprising:

a. input means adapted to receive a series of multifrequency signals arranged in a particular sequence, each said multifrequency signal including one frequency from a first group of frequencies and one frequency from a second group of frequencies;

b. first and second decoding means operatively connected to said input means, said first decoding means including first and second tuned networks, said second decoding means including at least third and fourth tuned networks, said first tuned network responsive to a first frequency in said first group of frequencies, said second tuned network responsive to a second frequency in said first group of frequencies, said third tuned network responsive to a first frequency in said second group of frequencies, said fourth tuned network responsive to a second frequency in said second group of frequencies;

c. control means operatively connected to said first and second decoding means for selectively forming said first, second, third and fourth tuned networks in a particular sequence; and

d. output means operatively connected to said control means and said first and second decoding means for generating a command signal, said output means generating said command signal when the frequencies in the sequence of said multifrequency signals applied to said input means corresponds to the frequencies to which said first, second, third, and fourth tuned networks are sequentially responsive.

3,849,765
PROGRAMMABLE LOGIC CONTROLLER

Goro Hamano, Osaka, Japan, assignor to Matsushita Electrical Industrial Co., Ltd., Osaka, Japan
Filed Nov. 20, 1972, Ser. No. 307,791
Claims priority, application Japan, Nov. 30, 1971, 46-97005; Nov. 30, 1971, 46-97006; Mar. 17, 1972, 47-27779
Int. Cl. G06f *3/00, 9/00*
U.S. Cl. 340—172.5 **8 Claims**

1. A programmable logic controller for controlling a device having at least one input and at least one output comprising: main memory means for storing a plurality of programs, each of said plurality of programs consisting of a sequence of instructions, each instruction comprising an output part, an input part and two destination address parts;

auxiliary memory means for storing a plurality of program addresses corresponding to said plurality of programs;

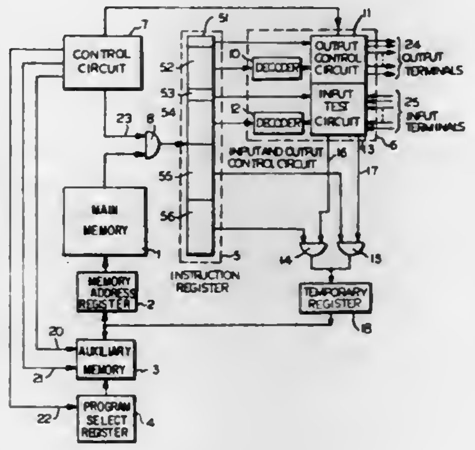
program select register means operatively connected to said auxiliary memory means for selecting one of said plurality of program addresses stored in said auxiliary memory means;

address reading means operatively connected to said auxiliary memory means for reading out the program address in said auxiliary memory means selected by said program select register means;

memory address register means operatively connected to said main memory means and to said auxiliary memory means for addressing said main memory means with said program address read out by said address reading means; instruction reading means operatively connected to said main memory means for reading out the instruction in said main memory means addressed by said memory address register means;

instruction register means operatively connected to said main memory means for storing said instruction read out by said instruction reading means;

input and output control circuit means operatively connected to said instruction register means and to said device and having a plurality of input terminals to which said at least one input of said device is connected and a plurality of output terminals to which said at least one output of said device is connected, said input and output control circuit means including a decoder means operatively connected to said instruction register means for selecting one of said plurality of output terminals specified by said output part of said instruction stored in said instruction register means, means operatively connected to said decoder means for energizing and deenergizing the output connected to the output terminal selected by said decoder means in accordance with said output part of said instruction stored in said instruction-register means, a second decoder means operatively connected to said instruction register means for selecting one of said plurality of input terminals specified by said input part of said instruction stored in said instruction register means, comparing means operatively connected to said second decoder means for comparing the input connected to the input terminal selected by said second decoder means with the condition specified by said input part of said instruction stored in said instruction register means, and selecting means, connected to said comparing means and responsive to the result of the comparison for selecting one of two destination address parts of said instruction in said instruction register means depending upon said result of said comparison;



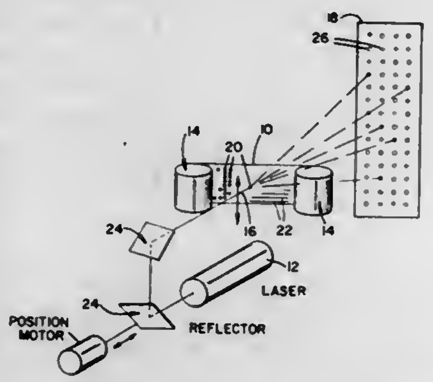
destination address reading means operatively connected to said instruction register means and to said selecting means for reading out the destination address part of said instruction stored in said instruction register means selected by said selecting means;

temporary register means operatively connected to said instruction register means for storing said destination address part read out by said destination address reading means;

writing means operatively connected to said auxiliary memory means for writing said destination address part in said temporary register means into the same location of said auxiliary memory means from which said program address was read out by said address reading means; and
means operatively connected to said program select register means for causing said program select register means to select a different program address after said destination address is written into said auxiliary memory means by said writing means.

3,849,766
DATA STORAGE AND RETRIEVAL SYSTEM

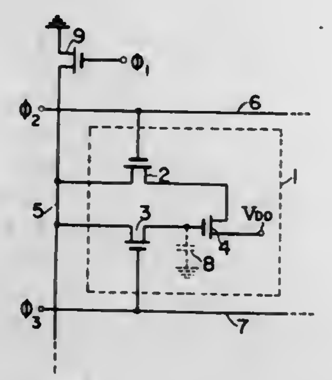
Ted J. Crowther, Saratoga; Charles F. Jacobson, Cupertino, and Kent K. Sutherlin, Mountain View, all of Calif., assignors to Optical Data Systems, Inc., Mountain View, Calif.
Filed May 18, 1972, Ser. No. 254,589
Int. Cl. G11c *13/04*
U.S. Cl. 340—173 LM 5 Claims



1. A data storage and retrieval method comprising the steps of recording a multiplicity of holograms in a plurality of longitudinal rows on a strip of photographic film, the holograms in each row being independent of the holograms in the other rows, directing a single light beam at the film strip, deflecting the beam to a desired row on the strip, moving the film parallel to the rows past the beam, and detecting images formed by the beam from holograms in the desired row as the film strip passes the beam.

3,849,767
MEMORY CIRCUIT

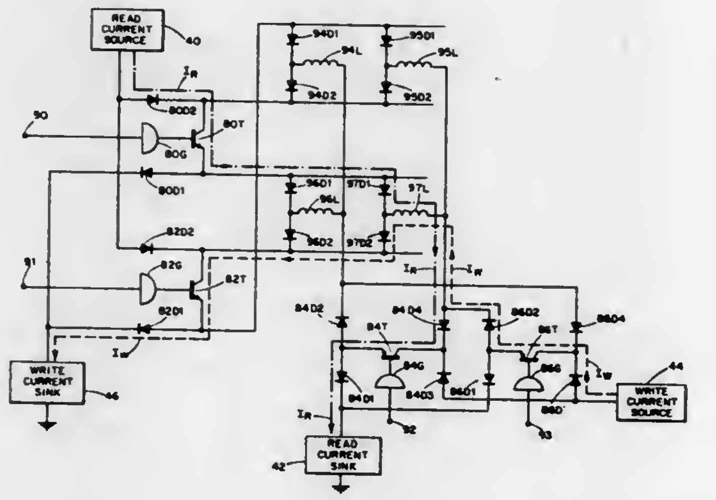
Hajime Shirato, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan
Filed Oct. 23, 1973, Ser. No. 408,578
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 DR 5 Claims



1. A memory circuit having memory cells arranged in matrix form, a "read" word line and a "write" word line provided at each row of said matrix, a common digit line provided at each column of said matrix, and a power supply, each of said memory cells comprising first, second and third insulated-gate field effect transistors each having a control terminal, an input terminal and an output terminal, said output terminal of said first insulated-gate field effect transistor and said input terminal of said second insulated-gate field effect transistor being connected to said common digit line at the matrix column where said memory cell is located, said input terminal of said first insulated-gate field effect transistor being connected to one of said input and output terminals of said third insulated-gate field effect transistor, said control terminal of said first insulated-gate field effect transistor being connected to said "read" word line of the row with which said memory cell is associated, said output terminal of said second insulated-gate field effect transistor being connected to said control terminal of said third insulated-gate field effect transistor, said control terminal of said second insulated-gate field effect transistor being connected to said "write" word line at said row with which said memory cell is associated, the other of said input and output terminals of said third insulated-gate field effect transistor being connected to one terminal of said power supply, means connecting each of said common digit lines to the other terminal of said power supply, said one terminal of said power supply having a potential capable of rendering said insulated-gate field effect transistor conductive when applied to the control terminal thereof, wherein after said each common digit line is connected to said other terminal of said power supply and is subsequently disconnected therefrom, at least one of said "read" word lines is selected an information in phase with information stored in said memory cell coupled to the selected "read" word line is read out to said common digit line.

3,849,768
SELECTION APPARATUS FOR MATRIX ARRAY

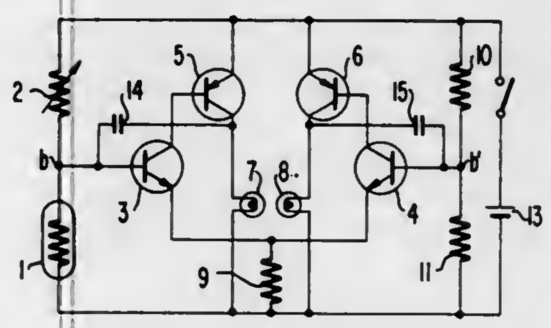
Srirama S. Durvasula, Westboro, Mass., assignor to Honeywell Information Systems, Inc., Waltham, Mass.
Filed Dec. 18, 1972, Ser. No. 316,334
Int. Cl. G11c *7/00, 11/02*
U.S. Cl. 340—174 TB 13 Claims



1. Selection apparatus for a matrix having a plurality of loads, said apparatus comprising a plurality of selection means having a first pair of said selection means coupled to provide a first current to one of said loads and having a second pair of said selection means coupled to provide a second current to said one of said loads, said plurality of selection means further comprising means for coupling said first pair of said selection means to provide said second current to another one of said loads and means for coupling said second pair of said selection means to provide said first current to said another one of said loads, wherein each of said loads includes two ends and wherein each of said selection means includes a transistor such that a pair of said selection means includes two transistors, said transistors in said first pair coupled to different ends of at least two of said loads for providing a current path therethrough, and said transistors in said second path therethrough, and said transistors in said second pair coupled to different ends of at least two of said loads for providing a current path therethrough.

3,849,769
INDICATING APPARATUS

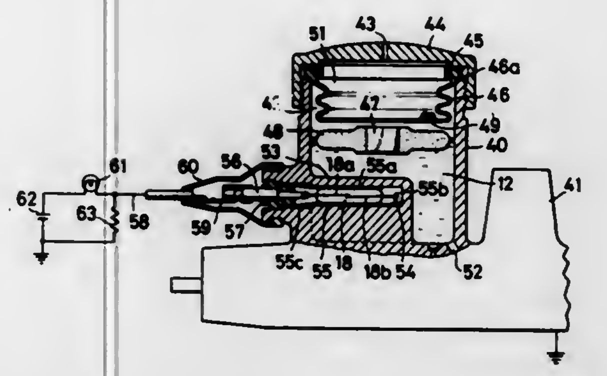
Yoshio Chiba, 168-30 Ninchi, Yawata-cho, Toyokawa, Japan
Continuation of Ser. No. 250,364, May 4, 1972, abandoned.
This application Sept. 11, 1973, Ser. No. 396,318
Claims priority, application Japan, May 4, 1971, 46-29652
Int. Cl. G08b *21/00;* G01j *1/44*
U.S. Cl. 340—213 R 8 Claims



1. An indicating apparatus comprising:
first and second transistors the emitters of which are commonly connected to a common-emitter resistance;
a first voltage divider circuit comprising a photoconductive element for receiving light to be measured and a variable resistor for setting an appropriate range of light to be measured, the output of said first voltage divider circuit being connected to the base of said first transistor;
a second voltage divider circuit comprising a pair of fixed resistors, the output of said second voltage divider circuit being connected to the base of said second transistor;
a first output transistor, the base of which is connected to the collector of said first transistor;
a first indicator lamp connected to the collector of said first output transistor;
a second output transistor, the base of which is connected to the collector of said second transistor;
a second indicating lamp connected to the collector of said second output transistor;
a first feedback capacitor connected to positively feedback the output of said first output transistor to the base of said first transistor;
a second feedback capacitor connected to positively feed back the output of said second output transistor to the base of said second transistor; and
means for connecting a D. C. power supply to said transistors and voltage divider circuits.

3,849,770
DEVICE FOR DETECTING DECREASE OF LIQUID IN A LIQUID RESERVOIR

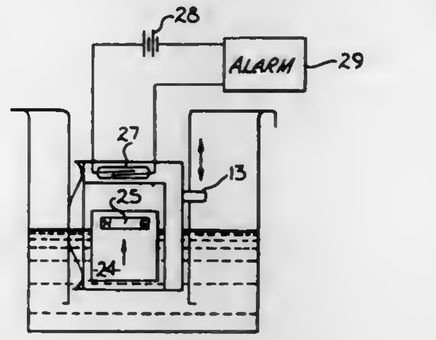
Yoshihiro Hayashida, Chigasaki, Japan, assignor to Tokico Ltd., Kawasaki, Kanagawa-ken, Japan
Filed Apr. 24, 1973, Ser. No. 354,003
Claims priority, application Japan, Apr. 25, 1972, 47-49285
Int. Cl. G08b *21/00*
U.S. Cl. 340—244 E 5 Claims



1. A device for detecting decrease of liquid comprising: a liquid reservoir storing liquid therein, said liquid reservoir having a lower bottom surface and including a shoulder portion projecting from said lower bottom surface, said shoulder portion being provided in the vicinity of the upper surface thereof with a blind hole extending substantially horizontally in the shoulder portion; a conduit disposed in proximity to the lower bottom surface of the liquid reservoir, said conduit being at a level lower than the blind hole and communicating with the interior of the liquid reservoir; float means movable upwardly and downwardly with change of quantity of the liquid in the reservoir; a permanent magnet centrally secured in said float means and having magnetic poles disposed vertically, said permanent magnet being of a columnar configuration; a normally open reed switch disposed in said blind hole in the shoulder portion of the liquid reservoir, said reed switch including reeds with contact portions disposed at a position transversely offset from the axis of the permanent magnet by a distance at least equal to the radius of the permanent magnet; said reed switch being closed by a horizontal component of magnetic flux from the permanent magnet when the liquid decreases below a predetermined level and said permanent magnet with said float means has reached a position of a predetermined spacing from the reed switch; and means coupled to said reed switch for producing an output signal upon closing of the reed switch.

3,849,771
LIQUID LEVEL ALARM

Ronald Applin, 6219 Esplanade, Playa Del Rey, Calif. 90291
Filed Jan. 24, 1973, Ser. No. 326,562
Int. Cl. G08b *21/00*
U.S. Cl. 340—245 5 Claims



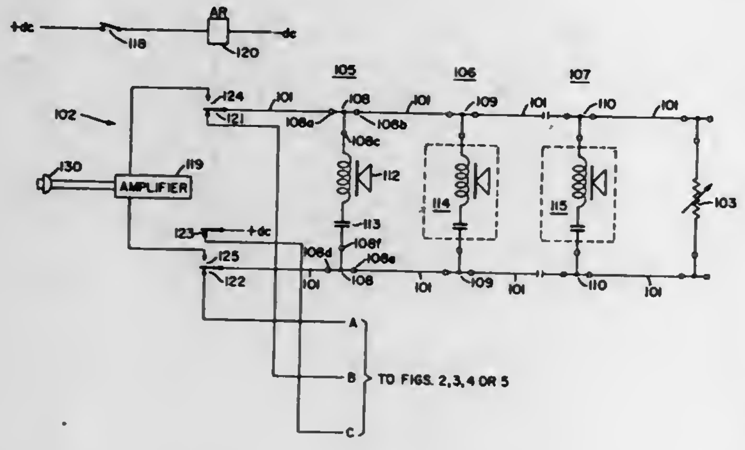
1. A liquid level alarm which comprises:
a. a hollow tubular member, said tubular member having openings therein whereby when said tubular member is partially immersed in liquid, the liquid level within said tubular member will be substantially the same as the liquid level surrounding said member;
b. a hook on said tubular member whereby said tubular member can be supported substantially vertically on the rim of an open vessel;
c. a cage member slideably positioned within said hollow tubular member;
d. a magnetic reed switch mounted on the top portion of said cage member;
e. a float within said cage member;
f. a permanent magnet secured to said float whereby when said float rises in said cage said magnetic reed switch will be actuated.

3,849,772
CIRCUIT INTEGRITY CHECKING MEANS FOR AUDIO SIGNAL CIRCUIT

Roy Clair Burnett, Owen Sound, Canada, assignor to General Signal Corporation, Rochester, N.Y.
Filed Aug. 6, 1973, Ser. No. 386,136
Claims priority, application Canada, Sept. 6, 1972, 151078
Int. Cl. G01r *31/02;* G08b *19/00*
U.S. Cl. 340—256 18 Claims

1. A direct current supervisory circuit for verifying the circuit integrity of a cable pair across which a plurality of audio devices may be bridged and comprising:

a. a direct current blocking device in series with each of said audio devices for restricting the passage of direct current through said audio devices;
b. an impedance bridged across said cable pair, near the remote end thereof, for providing a direct current circuit across said cable pair; and
c. a three state line supervisory sensor in series with a direct current power supply and selectively bridged across the near end of said cable pair for;



1. indicating the circuit continuity of said cable pair when said line supervisory sensor is in a first of its three states;
2. indicating the lack of circuit continuity of said cable pair when said line supervisory sensor is in a second of its three states; and
3. indicating a low impedance, shunt across said cable pair when said line supervisory sensor is in a third of its three states.

3,849,773
APPARATUS FOR DISPLAYING CHARACTERS AND/OR LIMITED GRAPHS

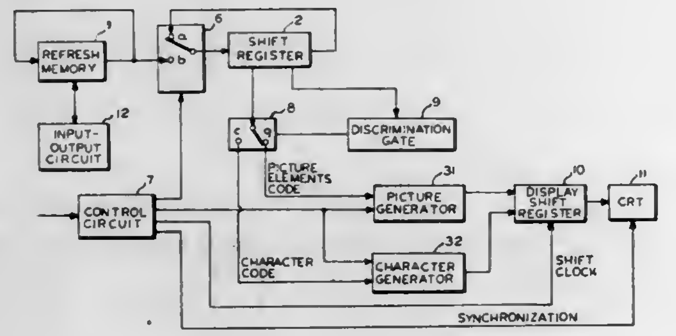
Toshiaki Katahira; Hiroshi Izumi, and Masao Tokonami, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma, Osaka, Japan

Division of Ser. No. 112,201, Jan. 22, 1971, abandoned. This application Mar. 12, 1973, Ser. No. 340,103

Claims priority, application Japan, Feb. 16, 1970, 45-13638; Feb. 27, 1970, 45-17299

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 AD **1 Claim**



1. An apparatus for displaying characters and limited graphs on a cathode ray tube of a standard television system, each character being displayed at a character area on said cathode ray tube, which character area is divided into (S-1) blocks for picture element display, the apparatus comprising:
an input-output circuit;
a refresh memory circulating at a clock frequency;
a character generator;
a picture element generator;
means coupled to said input-output circuit and said refresh memory for entering character codes of plural lines from said input-output circuit into said refresh memory, each character code being formed by S bits, one of which is a discrimination bit for discriminating whether to drive said character generator or to drive said picture element generator and the others of which correspond to said (S-1) blocks of each character area;
a shift register operatively coupled to said character generator and said picture element generator; and
means coupled to said shift register and said refresh memory for transferring said character codes to said shift register from said refresh memory, said character generator being driven in accordance with the value of said discrimination bit of the output signals produced by said shift register for converting said output signals into video signals which produce character patterns on said cathode ray tube, said picture element generator being driven in accordance with the value of said discrimination bit of the output signals produced at said shift register for converting said output signals produced at said shift register into video signals which produce picture element patterns on said cathode ray tube, whereby when it is determined in accordance with the discrimination bit in each of some predetermined character codes to drive said picture element generator, said picture element generator is driven by the output signals produced at said shift register and generates picture elements in some blocks of predetermined character areas in accordance with the value of each of said (S-1) bits of said some predetermined character codes so as to enable a display of a limited graph on said cathode ray tube, so that characters and limited graphs in a predetermined pattern can be displayed on said cathode ray tube.

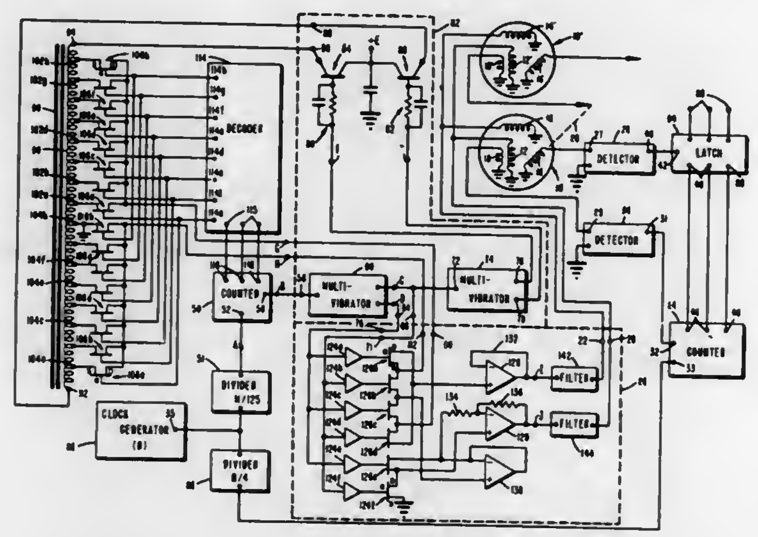
3,849,774
ANALOG-TO-DIGITAL CONVERTER EMPLOYING AN ELECTROMAGNETIC RESOLVER

Seymour Barth, Searingtown, N.Y., assignor to Astrosystems, Inc., Lake Success, N.Y.

Filed Sept. 14, 1972, Ser. No. 288,995

Int. Cl. H03k *13/02*

U.S. Cl. 340—347 DA **12 Claims**



1. In an analog-to-digital converter system including an electromagnetic transducer having first and second reference windings, a voltage generator for providing stepped voltages to said first and second reference windings, said voltages having fundamental sinusoidal frequency components in phase quadrature with respect to each other and low harmonic content, comprising
an impedance element having first and second ends and having at least first and second groups of spaced taps thereon,
first switching means connected to said impedance element for alternately connecting reference voltages of opposite polarity and constant value across said first and second groups of spaced taps, said taps being located on said impedance element to provide a voltage at each tap within a group which is a sinusoidal function of said location with respect to a tap maintained at a fixed potential, said first switching means further comprising an input terminal and first, second, third and fourth output terminals,
a clock generator for generating pulses,
a counter having an input coupled to said clock generator and a first output coupled to said first switching means, said counter resetting after receiving a predetermined number of pulses from said clock generator,
a decoder having an input coupled to a second output of said counter and a plurality of output terminals, each of said output terminals being coupled to the control terminals of a corresponding tap switch in said first and second groups, said decoder energizing sequentially said tap switches in accordance with pulses received by said counter means from said clock generator,

said first switching means further comprising a first multivibrator having an input coupled to the input terminal of said first switching means and a pair of outputs coupled to said first and second output terminals of said first switching means, said first multivibrator receiving a pulse each time said counter resets and reversing the states of the voltages at its first and second outputs, a second multivibrator having an input coupled to an output of said first multivibrator and a pair of outputs, said second multivibrator reversing the states of the voltages at its outputs for every second pulse received by said first multivibrator, first and second switching elements each having an input coupled to a corresponding output of said second multivibrator and an output coupled to said third and fourth output terminals of said first switching means and to a corresponding end of said impedance element, said first and second switching elements being driven alternately into conduction each time the output of said second multivibrator changes states,

second switching means connected to said impedance element and having first and second output terminals, said second switching means coupling sequentially and selectively the taps in each of said first and second groups respectively to said first and second output terminals to provide stepped output voltages thereat, said voltages having fundamental sinusoidal components in phase quadrature with each other, said second switching means including first and second groups of said tap switches, each tap switch having a first terminal, a second terminal and a control terminal, the first terminal of each of the switches in said first and second groups being coupled to a corresponding tap in said first and second groups of spaced taps respectively; and a switching circuit having a first input terminal coupled to the second terminals of said first group of tap switches and a second input terminal coupled to the second terminals of said second group of tap switches, said switching circuit further comprising third and fourth input terminals coupled to the first and second output terminals of said first switching means, first, second, third, fourth, fifth and sixth switches, each of said switches having first, second and control electrodes, the control electrodes of said first, third and fifth switches being coupled to the third input terminal of said switching circuit and said second, fourth and sixth switches being coupled to the fourth input terminal of said switching circuit, means coupling the second and first electrodes of said first and second switches respectively to the second input terminal of said switching circuit and means coupling the second and first electrodes of said third and fourth switches respectively to the first input terminal of said switching circuit, first, second and third operational amplifiers, each of said amplifiers having first and second input terminals and an output terminal; the first input terminal of said first amplifier being

coupled to the first electrode of said first switch and the second electrode of said fourth switch, the second input terminal and the output terminal of said first amplifier being coupled together; the first input terminal of said second amplifier being coupled to the second electrode of said fifth switch and the first electrode of said sixth switch, the second input terminal of said second amplifier being coupled to the first electrode of said fifth switch, the second input and output terminals of said third amplifier and the output terminal of said second amplifier; and the first input terminal of said third amplifier being coupled to the second electrode of said second switch and the first electrode of said third switch, the second electrode of said sixth switch being coupled to a reference point, means coupling the outputs of said first and second amplifiers to the second and first output terminals respectively of said second switching means, and
means coupling the first and second output terminals of said second switching means to the first and second input windings of said transducer respectively.

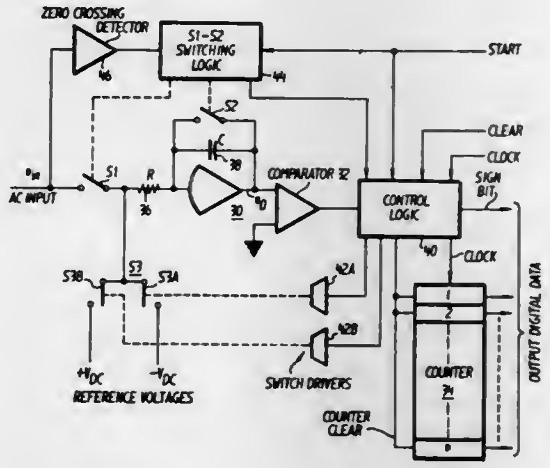
3,849,775
AC ANALOG TO DIGITAL CONVERTER

James E. Buchanan, Bowie, and Joel E. Brown, Baltimore, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 24, 1972, Ser. No. 300,027

Int. Cl. H03k *13/20*

U.S. Cl. 340—347 N T **2 Claims**



1. An AC analog to digital converter for converting input data comprising an AC analog voltage to a digital number proportional to the amplitude of the AC analog voltage, comprising:
zero crossing detector means producing an output in response to each zero crossing of the AC analog voltage,
integrating means,
input switching means and clearing switching means associated with said integrator,
switching logic means receiving the outputs of said detector means and responsive to a first zero crossing detector output to produce an output for closing said input switching means for supply of the AC analog voltage to said integrating means and to a next successive detector output to produce an output for opening said input switching means, defining there between a data integrating interval,
comparator means responsive to the integrated output voltage of said integrating means to indicate the sign and amplitude of the integrated output voltage of the integrating means,
control logic responsive to the output of said switching logic means produced in response to the said next successive detector output concluding the data integration interval, to initiate a reference integration interval, said control logic responding to the sign indication of said comparator means for supply of a DC reference voltage to said inte-

grating means of predetermined amplitude and of opposite polarity to the sign indication,

a counter,

said control logic gating clock pulses of a predetermined repetition rate to said counter during the reference integration interval and responding to the zero voltage indication output of said comparator for concluding the reference integration interval and terminating the gating of further clock pulses to said counter and the supply of the DC reference voltage to said integrating means, the count attained by said counting means during the reference integration interval comprising a digital number proportional to the amplitude of the AC analog voltage for the half-cyle thereof integrated during the data integration interval, and wherein

said reference voltages comprise DC compensated reference voltages of equal amplitude and opposite polarity produced from an AC reference voltage by a compensating circuit comprising:

further integrating means,

further input switching means operated by said switching logic to be closed for the duration of the data integration interval for supply of the AC reference voltage to said further integrating means, and to be open for the reference voltage integrating interval, and

holding switch means connected between the input of said further integrating means and ground and normally in an open position and closed by said logic switching means to maintain the DC integrated voltage output of said further integrating means for the reference integration interval of said integrating means of said converter, thereby to provide a DC reference voltage output compensated for variations in the AC reference supply voltage, and

an inverter receiving the output of said further integrating means for supplying the compensated DC reference voltage of the opposite polarity.

3,849,776
VIDEO TAPE RECORDERS FOR RECORDING PLURAL RADAR INFORMATION SOURCES ON A SINGLE TRACK

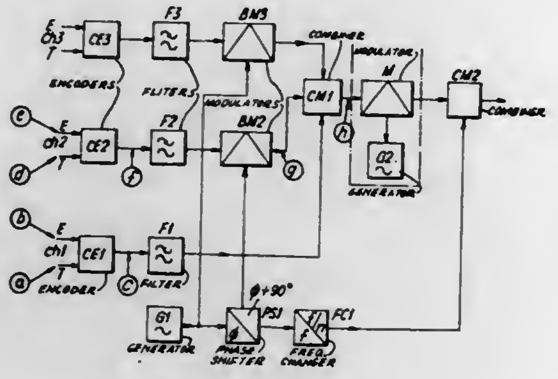
Richard Swynford-Lain, Earley, England, assignor to Ferranti Limited, Hollinwood, England

Filed Oct. 18, 1972, Ser. No. 298,516

Claims priority, application Great Britain, Oct. 20, 1971, 48701/74

Int. Cl. G01s *9/00*; G11b *5/00*

U.S. Cl. 343—5 PC **20 Claims**



1. A video tape recorder for recording and replaying video display information originating simultaneously from up to three sources, and represented by separate video display information signals which includes record signal processing apparatus comprising first carrier generating means operable to generate two carrier signals of the same frequency but in quadrature with one another, modulating means operable to modulate the two carrier signals with first and second video display information signals respectively, and combining means operable to combine the two modulated signals with the third video display information signal to form a single video track of a composite signal; apparatus for causing the composite signal to be recorded on to or retrieved from a magnetic recording medium; and playback signal processing apparatus comprising signal separating means operable to separate the said third video display information signal in said composite signal from the two modulated signals, second carrier generating means operable to generate two carrier signals of the same frequency as the carrier signals generated by the first carrier generating means but in quadrature with one another, and demodulating means operable to demodulate the two modulated signals to derive the first and second video display information signals.

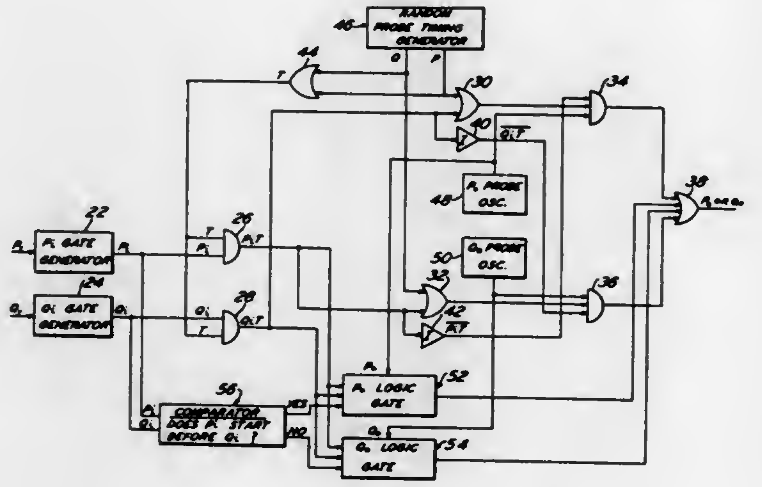
3,849,777
INTERROGATOR-TRANSPONDER FRUIT REDUCER

Oscar Shames, Philadelphia; James L. Hinds, Telford; Gerald J. Palatucci, Warrington, and Michael Raditz, Cornwells Heights, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 26, 1973, Ser. No. 409,837

Int. Cl. G01s *9/56*

U.S. Cl. 343—6.5 LC **7 Claims**



1. In a prober-remitter collision avoidance system employing two distinct probe signal types, P_o and Q_o, a probe selector comprising:

an output terminal;

first means for detecting the presence of a signal P_1 and for producing a signal P_i;

second means for detecting the presence of a signal Q_1 and for producing a signal Q_i;

third means connected to the output of said first means for providing a Q_o-probe signal to said output terminal upon receipt of said signal P_i;

fourth means connected to the output of said second means for providing a P_o probe signal to said output terminal upon receipt of said signal Q_i;

fifth means connected to the output of said first means and to the output of said second means for providing to said output terminal a probe signal opposite in type to the last received said P_i or Q_i signals when said signals are detected concomitantly by said first and second means; and

sixth means connected to the output of said first means and to the output of said second means and adapted to provide a randomly selected P_o- or Q_o-probe signal to said output terminal when said first and second means fail to detect said P_1 or Q_1 signals within a predetermined time interval.

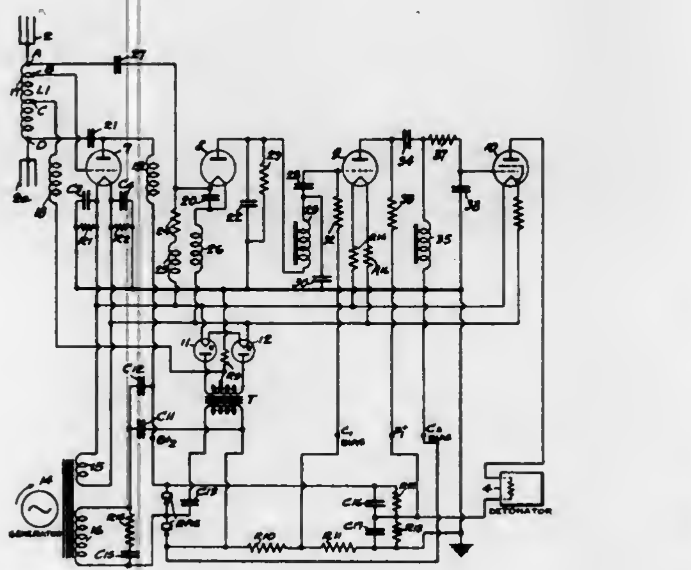
3,849,778
PULSE DOPPLER FUSE

Paul Wilson Redcay, Washington, D.C., assignor to The United States of America as Represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 8, 1950, Ser. No. 148,444

Int. Cl. F42c *13/04*

U.S. Cl. 343—7 PF **2 Claims**



2. An ordnance fuse comprising a pulsed radio frequency oscillator, pulsing means for said oscillator, said oscillator including an electron tube having grid, plate and cathode elements, a diode for detecting reflections of radio frequency energy generated by said oscillator and radiated by radiation means coupled thereto, said radiation means common to the oscillator and diode, a frequency selective amplifier coupled to said diode and responsive to the Doppler frequency due to the relative movement of said fuse and a reflective surface, detonator triggering means coupled to the output of said amplifier, and wind driven alternating current generating means for supplying power to the fuse, said pulsing means comprising a transformer coupled to the high voltage output of said generating means, rectifying means connected across the output terminals of said transformer, said grid connected to the transformer at a point intermediate its output terminals whereby a variable bias is applied to said grid and said oscillator periodically pulsed in accordance with the frequency of said generating means.

3,849,779
MULTIPLE TARGET INDICATOR AND DISCRIMINATOR

William C. Boyd, Stow, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

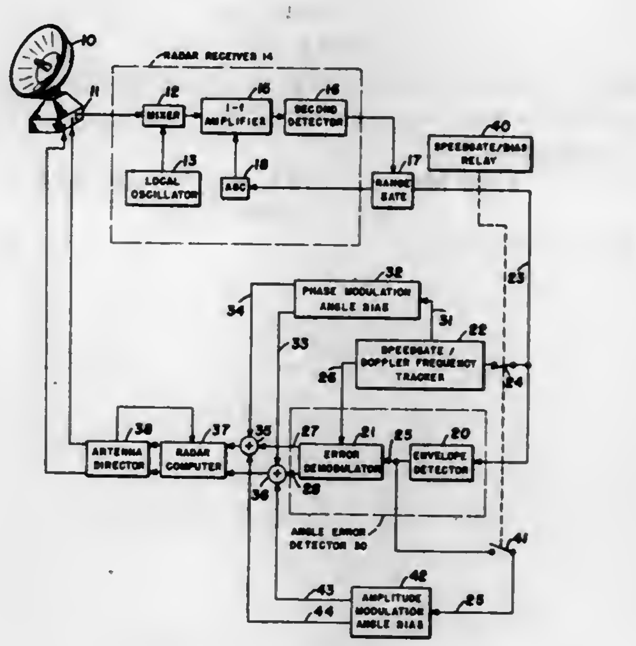
Filed Mar. 28, 1973, Ser. No. 345,603

Int. Cl. G01s *9/02*

U.S. Cl. 343—7.4 **10 Claims**

1. In a radar of the sequential lobe type wherein a radar signal is transmitted and received by antenna means, and the received radar signal is a composite signal containing a phase modulated signal component caused by multiple targets occurring within one radar beamwidth, a multiple target indicator comprising,

detection means connected to said composite signal for producing an output signal derived from said phase modulated signal component, and



indicating means connected to receive said detecting means output signal and producing a signal indicative of the presence of muultiple targets.

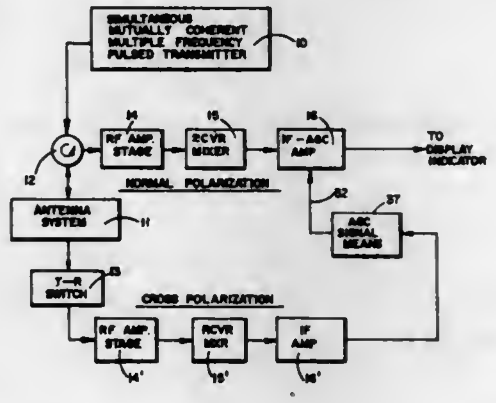
3,849,780
DUAL POLARIZATION RESPONSIVE RADAR HAVING IMPROVED RESPONSE TO SMALL TARGETS

Forest J. Dynan, Santa Ana, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 12, 1969, Ser. No. 808,043

Int. Cl. G01s *7/34*

U.S. Cl. 343—7 A **10 Claims**



1. In a pulsed energy ranging system, means for enhancing the detection of discrete targets against an associated clutter background, comprising

transmitting means for simultaneous transmission of a plurality of carrier frequencies having a common single plane of polarization;

receiving means having a first and second polarization-sensitive channel responsive to a respective first and second mutually orthogonally polarized component of received echoes of said transmission, the polarization of one of which polarized components corresponding to the transmitted polarization; and

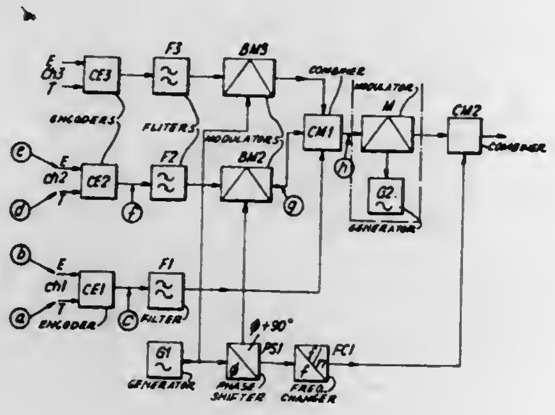
received signal processing means responsive to both said channels of said receiving means for distinguishing discrete targets from clutter while allowing a suppressed clutter display for ground map orientation of such targets, said received signal processing means comprising

automatic gain control means having a first input responsively coupled to an output of that polarization-sensitive channel sensitive to said transmitted polarization and further having a gain control input responsively coupled to an output of the other of said polar-

grating means of predetermined amplitude and of opposite polarity to the sign indication,
a counter,
said control logic gating clock pulses of a predetermined repetition rate to said counter during the reference integration interval and responding to the zero voltage indication output of said comparator for concluding the reference integration interval and terminating the gating of further clock pulses to said counter and the supply of the DC reference voltage to said integrating means, the count attained by said counting means during the reference integration interval comprising a digital number proportional to the amplitude of the AC analog voltage for the half-cyle thereof integrated during the data integration interval, and wherein
said reference voltages comprise DC compensated reference voltages of equal amplitude and opposite polarity produced from an AC reference voltage by a compensating circuit comprising:
further integrating means,
further input switching means operated by said switching logic to be closed for the duration of the data integration interval for supply of the AC reference voltage to said further integrating means, and to be open for the reference voltage integrating interval, and
holding switch means connected between the input of said further integrating means and ground and normally in an open position and closed by said logic switching means to maintain the DC integrated voltage output of said further integrating means for the reference integration interval of said integrating means of said converter, thereby to provide a DC reference voltage output compensated for variations in the AC reference supply voltage, and
an inverter receiving the output of said further integrating means for supplying the compensated DC reference voltage of the opposite polarity.

3,849,776
VIDEO TAPE RECORDERS FOR RECORDING PLURAL RADAR INFORMATION SOURCES ON A SINGLE TRACK

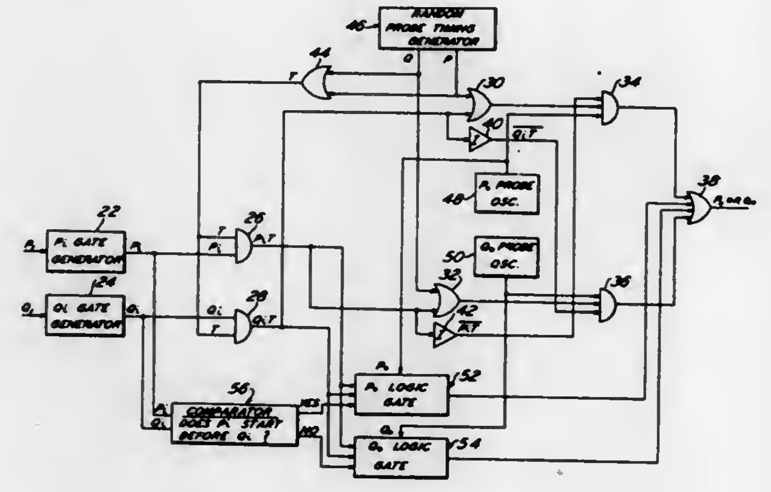
Richard Swynford-Lain, Earley, England, assignor to Ferranti Limited, Hollinwood, England
Filed Oct. 18, 1972, Ser. No. 298,516
Claims priority, application Great Britain, Oct. 20, 1971, 48701/74
Int. Cl. G01s *9/00*; G11b *5/00*
U.S. Cl. 343—5 PC **20 Claims**



1. A video tape recorder for recording and replaying video display information originating simultaneously from up to three sources, and represented by separate video display information signals which includes record signal processing apparatus comprising first carrier generating means operable to generate two carrier signals of the same frequency but in quadrature with one another, modulating means operable to modulate the two carrier signals with first and second video display information signals respectively, and combining means operable to combine the two modulated signals with the third video display information signal to form a single video track of a composite signal; apparatus for causing the composite signal to be recorded on to or retrieved from a magnetic recording medium; and playback signal processing apparatus comprising signal separating means operable to separate the said third video display information signal in said composite signal from the two modulated signals, second carrier generating means operable to generate two carrier signals of the same frequency as the carrier signals generated by the first carrier generating means but in quadrature with one another, and demodulating means operable to demodulate the two modulated signals to derive the first and second video display information signals.

3,849,777
INTERROGATOR-TRANSPONDER FRUIT REDUCER

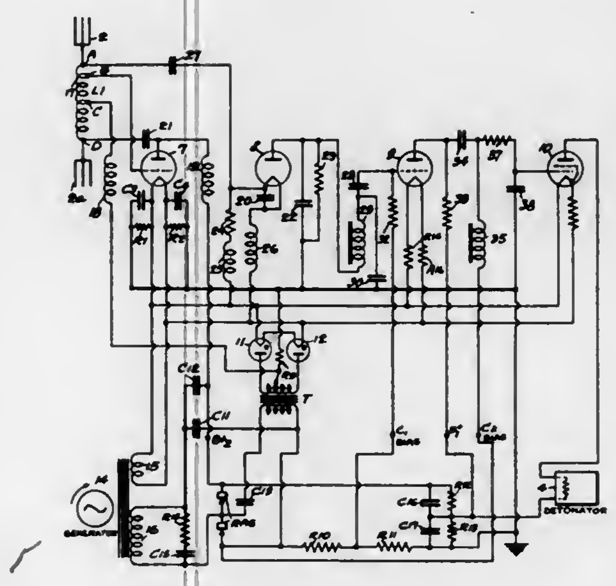
Oscar Shames, Philadelphia; James L. Hinds, Telford; Gerald J. Palatucci, Warrington, and Michael Raditz, Cornwells Heights, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 26, 1973, Ser. No. 409,837
Int. Cl. G01s *9/56*
U.S. Cl. 343—6.5 LC **7 Claims**



1. In a prober-remitter collision avoidance system employing two distinct probe signal types, P_o and Q_o, a probe selector comprising:
an output terminal;
first means for detecting the presence of a signal P_1 and for producing a signal P_i;
second means for detecting the presence of a signal Q_1 and for producing a signal Q_i;
third means connected to the output of said first means for providing a Q_o-probe signal to said output terminal upon receipt of said signal P_i;
fourth means connected to the output of said second means for providing a P_o probe signal to said output terminal upon receipt of said signal Q_i;
fifth means connected to the output of said first means and to the output of said second means for providing to said output terminal a probe signal opposite in type to the last received said P_i or Q_i signals when said signals are detected concomitantly by said first and second means; and
sixth means connected to the output of said first means and to the output of said second means and adapted to provide a randomly selected P_o- or Q_o-probe signal to said output terminal when said first and second means fail to detect said P_1 or Q_1 signals within a predetermined time interval.

3,849,778
PULSE DOPPLER FUSE

Paul Wilson Redcay, Washington, D.C., assignor to The United States of America as Represented by the Secretary of the Army, Washington, D.C.
Filed Mar. 8, 1950, Ser. No. 148,444
Int. Cl. F42c *13/04*
U.S. Cl. 343—7 PF **2 Claims**

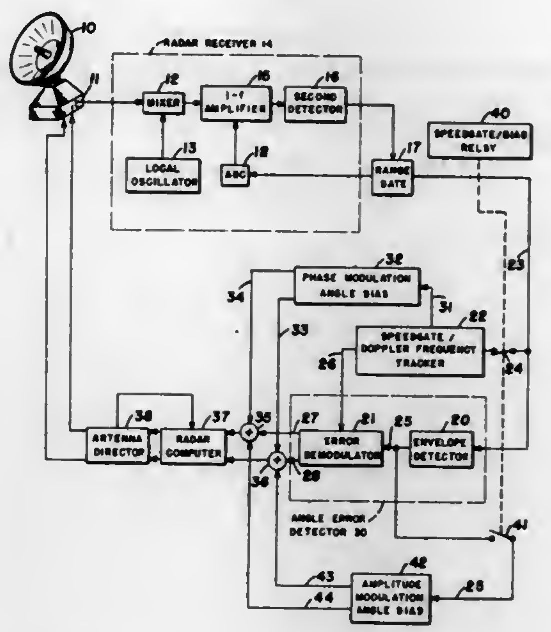


2. An ordnance fuse comprising a pulsed radio frequency oscillator, pulsing means for said oscillator, said oscillator including an electron tube having grid, plate and cathode elements, a diode for detecting reflections of radio frequency energy generated by said oscillator and radiated by radiation means coupled thereto, said radiation means common to the oscillator and diode, a frequency selective amplifier coupled to said diode and responsive to the Doppler frequency due to the relative movement of said fuse and a reflective surface, detonator triggering means coupled to the output of said amplifier, and wind driven alternating current generating means for supplying power to the fuse, said pulsing means comprising a transformer coupled to the high voltage output of said generating means, rectifying means connected across the output terminals of said transformer, said grid connected to the transformer at a point intermediate its output terminals whereby a variable bias is applied to said grid and said oscillator periodically pulsed in accordance with the frequency of said generating means.

3,849,779
MULTIPLE TARGET INDICATOR AND DISCRIMINATOR

William C. Boyd, Stow, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 28, 1973, Ser. No. 345,603
Int. Cl. G01s *9/02*
U.S. Cl. 343—7.4 **10 Claims**

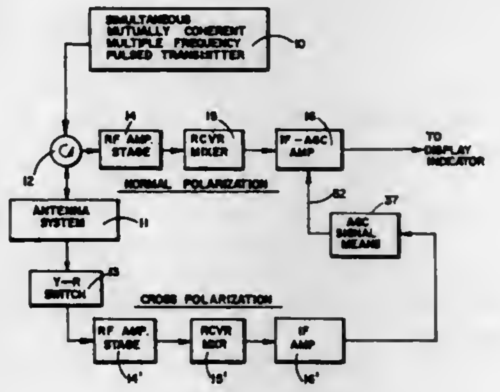
1. In a radar of the sequential lobe type wherein a radar signal is transmitted and received by antenna means, and the received radar signal is a composite signal containing a phase modulated signal component caused by multiple targets occurring within one radar beamwidth, a multiple target indicator comprising,
detection means connected to said composite signal for producing an output signal derived from said phase modulated signal component, and



indicating means connected to receive said detecting means output signal and producing a signal indicative of the presence of muultiple targets.

3,849,780
DUAL POLARIZATION RESPONSIVE RADAR HAVING IMPROVED RESPONSE TO SMALL TARGETS

Forest J. Dynan, Santa Ana, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Mar. 12, 1969, Ser. No. 808,043
Int. Cl. G01s *7/34*
U.S. Cl. 343—7 A **10 Claims**



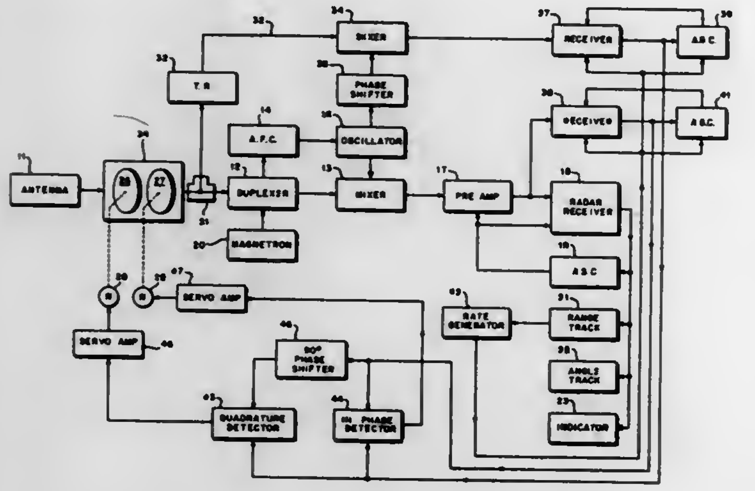
1. In a pulsed energy ranging system, means for enhancing the detection of discrete targets against an associated clutter background, comprising
transmitting means for simultaneous transmission of a plurality of carrier frequencies having a common single plane of polarization;
receiving means having a first and second polarization-sensitive channel responsive to a respective first and second mutually orthogonally polarized component of received echoes of said transmission, the polarization of one of which polarized components corresponding to the transmitted polarization; and
received signal processing means responsive to both said channels of said receiving means for distinguishing discrete targets from clutter while allowing a suppressed clutter display for ground map orientation of such targets, said received signal processing means comprising
automatic gain control means having a first input responsively coupled to an output of that polarization-sensitive channel sensitive to said transmitted polarization and further having a gain control input responsively coupled to an output of the other of said polar-

ization sensitive channels for varying the gain of said gain control means substantially inversely with variations in the output of said other polarization-sensitive channel.

3,849,781
RADAR SYSTEM

Eldon L. Ort, Doylestown, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 31, 1963, Ser. No. 285,554
Int. Cl. G01s *7/36*
U.S. Cl. 343—18 E **12 Claims**

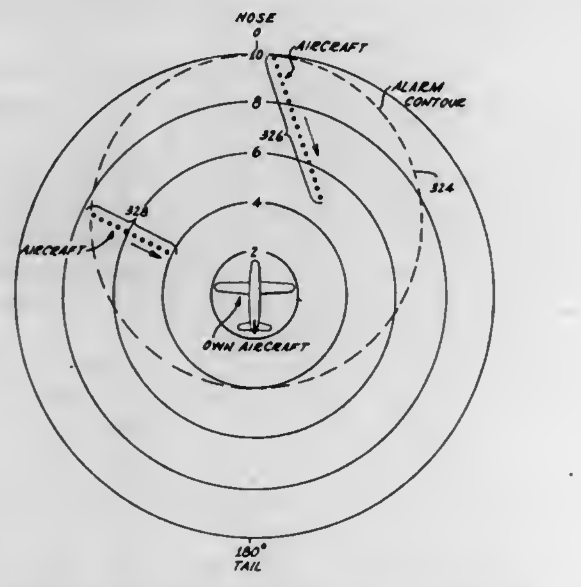


1. A radar system capable of effective operation in an ECM environment, comprising in combination:
antenna means,
radar receiver means,
wave guide means connecting said antenna means to said radar receiver means,
first means included in said wave guide blocking signals of a predetermined polarization from reception by said radar receiver means,
second means disposed in said wave guide means between said antenna means and said first means for changing the polarization of a received ECM signal to said predetermined polarization blocked from reception by said radar receiver means.

3,849,782
COLLISION PREVENTION

Donald S. Bond, Princeton, N.J., assignor to RCA Corporation, New york, N.Y.

Filed June 5, 1957, Ser. No. 663,778
Int. Cl. G08g *5/04*
U.S. Cl. 343—112 CA **21 Claims**

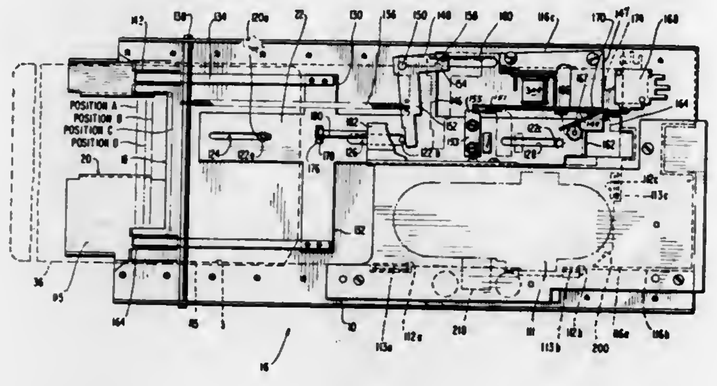


17. In combination: means for giving an indication representative of the direction of an intruding craft from an observing craft; and means preventing the operation of said first named means as long as said direction is changing.

3,849,783
TIME RECORDER

Dominick Tringali, and John W. Dillard, both of Columbia, S.C., assignors to Universal Business Machines Incorporated, Columbia, S.C.

Division of Ser. No. 239,124, March 29, 1972, Pat. No. 3,793,641. This application July 16, 1973, Ser. No. 379,496
Int. Cl. G01d *15/28;* **G07c** *1/18*
U.S. Cl. 346—134 **9 Claims**

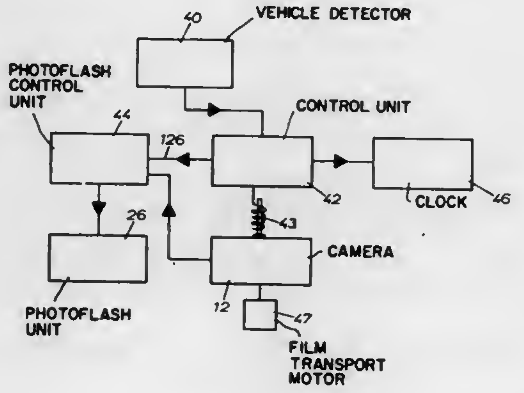


1. In a record receiver printing device having an upper and a lower plate arranged in spaced parallel relation to one another to define a chute assembly, said plates being slotted adjacent one end thereof, a record receiver gripping and positioning apparatus mounted above said upper plate for reciprocatory movement with respect thereto, said apparatus terminating in a depending arm arranged to extend into the slots adjacent an end of said plates, a record receiver manually insertable into said chute assembly with an end thereof engaging said depending arm for initiating manual movement of said apparatus with respect to said chute assembly, and means actuated by the initial movement of said apparatus over and above said upper plate for automatically causing said apparatus to be moved with respect to said chute assembly.

3,849,784
APPARATUS FOR MONITORING TRAFFIC

Jürgen Holzapfel, Neuss, Germany, assignor to Robot Foto und Electronic GmbH & Co. KG, Dusseldorf-Benrath, Germany

Filed Nov. 14, 1973, Ser. No. 415,508
Claims priority, application Germany, Nov. 25, 1972, 2257818
Int. Cl. G01d *1/12*
U.S. Cl. 346—107 VP **8 Claims**

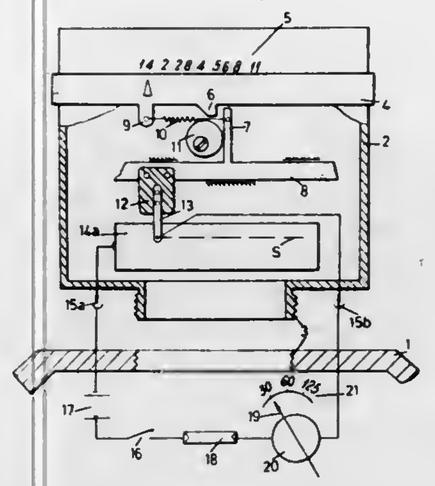


1. In an apparatus for monitoring the traffic at a road intersection at which there is a control light having a "stop" period, which apparatus includes: a photographic camera actuated when a vehicle enters the intersection during said "stop" period, a time meter in the form of an electronic digital counter which receives counting pulses at a given frequency, a register having a control input and connected said digital counter so that the small time units are transferred to said register when a control impulse is applied to said control input at the beginning of the "stop" period, and a time display device connected to said register to display the time information stored in said register, said camera taking a photograph of both said road intersection and said time display device, the improvement comprising:
an electronic photoflash device comprising an electronic flash tube having a triggering electrode, a storage capacitor connected across said electronic flash tube for supplying the electric power to said flash tube to cause it to emit light, power supply means connected to said capacitor to charge it to an operating voltage, a triggering transformer having a primary and a secondary winding, the secondary winding being connected to the triggering electrode, triggering circuit means including a triggering capacitor and a triggering switch connected to the primary winding for energizing the transformer to initiate the discharge of the flash tube when said switch is closed, charging means connected to the triggering capacitor for charging the capacitor, and anti-interference means connected to the triggering circuit means for lessening the pulse occurring when said switch is opened to thereby ameliorate the occurrence of false counts in the electronic digital counter due to said pulse.

3,849,785
PHOTOGRAPHIC CAMERA WITH PRESELECTABLE DIAPHRAGM APERTURE

Heinz Schulze, Dresden, Germany, assignor to VEB PENTACON DRESDEN Kamera-und Kinowerke, Dresden, Germany

Filed Feb. 25, 1974, Ser. No. 445,483
Claims priority, application Germany, Apr. 11, 1973, WPG 03 b
Int. Cl. G03b *7/02, 7/20, 17/14*
U.S. Cl. 354—40 **2 Claims**



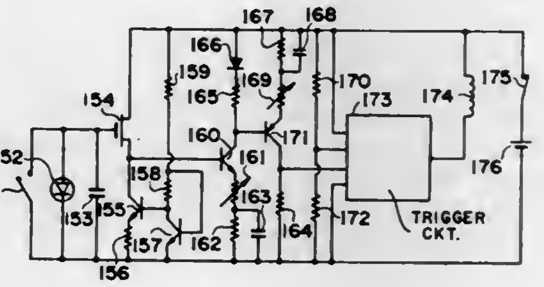
1. In a photographic camera comprising an objective lens having a preselectable aperture diaphragm, a diaphragm preselection setting device, an exposure measuring circuit including a moving coil, a photoelectric cell, a power source and a voltage adjustment device having a sliding contact, the provision of

a. an entrainment member on said preselection setting device effective to move said sliding contact, and
b. stop means for effecting arrest of said sliding contact in a position in which the electrical value corresponding to the photometric initial diaphragm is determined by the voltage adjustment device, the entrainment connection between the entrainment member and the sliding contact being nullified on arrest of said sliding contact.

3,849,786
LIGHT INTEGRATING TYPE LIGHT DETECTOR CIRCUIT WITH PHOTOVOLTAIC CELL

Yasuhiro Nanba, and Motonobu Matsuda, both of Osaka, Japan, assignors to Minolta Camera kabushiki Kaisha, Osaka-shi, Japan

Filed Dec. 8, 1972, Ser. No. 313,498
Claims priority, application Japan, Dec. 10, 1971, 46-99391; Dec. 11, 1971, 46-99861
Int. Cl. G03b *7/08*
U.S. Cl. 354—51 **29 Claims**

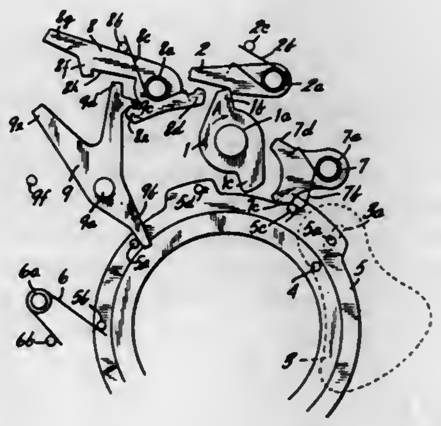


1. A light sensitive circuit comprising:
a. a photovoltaic cell;
b. a capacitor element;
c. switch means actuatable for initiating a variable time interval;
d. said photovoltaic cell, said capacitor element and said switch means being connected in a parallel circuit with each other, whereby upon opening of said switch means, said capacitor element is charged with a signal; and
e. circuit means responsive to the signal of said parallel circuit of a threshold level to provide an output signal after the timing interval, said threshold level being selected within a range of a signal charged on said capacitor element with a charging current substantially equal to a short circuit current of said photovoltaic cell, whereby said timing interval is inversely proportional to the intensity of light directed onto said photovoltaic cell.

3,849,787
LENS SHUTTER WITH PRE-VIEW DEVICE FOR A PHOTOGRAPHIC CAMERA

Tadashi Nakagawa, Yotsukaido, Japan, assignor to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1972, Ser. No. 319,154
Int. Cl. G03b *19/12*
U.S. Cl. 354—156 **4 Claims**



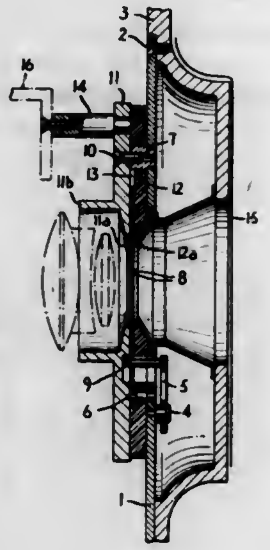
1. In a lens shutter, at least one shutter blade for opening and closing a lens aperture, a shutter blade operating member for operating said at least one shutter blade to an open posi-

tion and a closed position opening and closing the lens aperture, a drive member for driving said operating member for opening and closing the lens aperture for taking photographic exposures, a lock member for releasably locking said drive member operable to release said drive member for taking of said exposures, a pre-view device coactive with said operating member for opening and closing the lens shutter with said operating member at will for viewing through said lens aperture the scene to be photographed comprising an actuating member operable from a rest position to a first position and back to said rest position for actuating said shutter blade operating member for respectively opening and closing said at least one blade to open and close the lens aperture independently of said drive member for pre-viewing the scene to be photographed, a release member for releasing said lock member for taking exposures and for releasably holding said actuating member in said first position when actuating said operating member to a position opening said at least one shutter blade and being operable to release said actuating member for allowing said operating member to close the shutter blade thereby closing the lens aperture.

3,849,788
SHUTTER ASSEMBLY FOR A CAMERA

Masuo Ogihara, and Masanori Watanabe, both of Chiba, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1973, Ser. No. 364,280
Claims priority, application Japan, May 26, 1972, 47-62161
Int. Cl. G03b *9/08*
U.S. Cl. 354—226 **8 Claims**

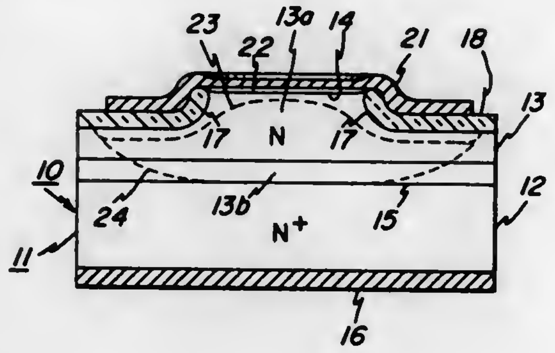


1. In a photographic shutter assembly for use with a camera: a support plate having opposed major faces and having an opening therethrough; a first member spaced from one major face of said support plate and having an opening therethrough defining a shutter aperture in alignment with the support plate opening; connecting means rigidly interconnecting said first member to said support plate to form therewith a unitary rigid construction with a predetermined space existing between said first member and said one major face; a second member disposed in said space and having an opening therethrough in alignment with both said other openings; means defining a compartment between said first and second members; a set of shutter blades housed within said compartment; and means on said support plate and said first member mounting said set of shutter blades for opening and closing movement to effect corresponding opening and closing of said shutter aperture.

3,849,789
SCHOTTKY BARRIER DIODES

Linus F. Cordes, and Marvin Garfinkel, both of Schenectady, N.Y., assignors to General Electric, Schenectady, N.Y.

Filed Nov. 1, 1972, Ser. No. 302,800
Int. Cl. H01l *5/00*
U.S. Cl. 357—15 **6 Claims**

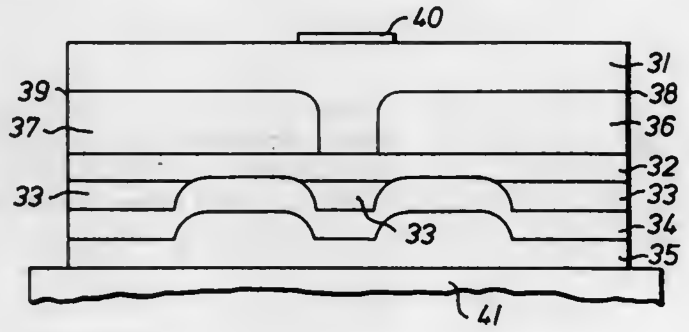


1. A Schottky barrier diode comprising
a layer of semiconductor material of one conductivity type having a pair of opposed faces,
a conductive member secured to one of said faces to form a Schottky barrier rectifying contact therewith,
a substrate member of semiconductor material of said one conductivity type and low resistivity in relation to said layer secured to the other face of said layer to form a non-rectifying contact therewith,
said layer being divided into a plurality of sublayers each of uniform net activator concentration, the net activator concentration of a sublayer being greater than the net activator concentration of a preceding sublayer starting from the sublayer adjacent said conductive member,
each of said sublayers extending beyond the peripheral portions of said Schottky barrier rectifying contact.
the net activator concentration and the thicknesses of said sublayers being set such that the value of reverse voltage applied between said conductive member and said substrate member at which depletion in said layer extends from said one face to said other face thereof produces a value of electric field at said one face which is equal to or less than the value of electric field at which avalanche breakdown occurs at said one face.

3,849,790
LASER AND METHOD OF MAKING SAME

Hartmut Gottsmann, Unterkirchberg, and Joachim Specovius, Brackwede, both of Germany, assignors to Licentia Patent-Verwaltungs GmbH, Frankfurt am Main, Germany

Filed July 26, 1972, Ser. No. 275,191
Claims priority, application Germany, July 29, 1971, 2137892
Int. Cl. H01s *3/06, 3/18*
U.S. Cl. 357—18 **16 Claims**

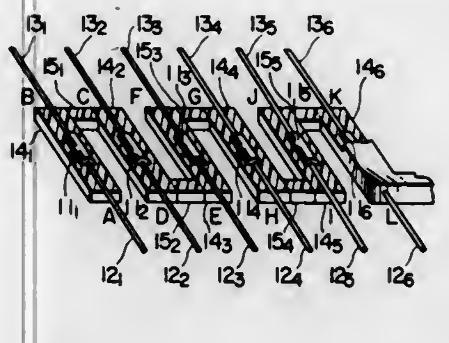


1. In a double heterostructure laser diode including a semiconductor body having a light emitting active layer, a highly doped first layer of a first conductivity type overlying one major surface of said active layer, a second layer of said first conductivity type overlying said first layer, a third highly doped layer of the opposite conductivity type overlying the opposite major surface of said active layer and a fourth layer of said opposite conductivity type overlying said third layer, said first and third layers being formed of a crystal whose band spacing between the valance band and the conductive band is greater than that of the crystal which forms said active layer, the improvement comprising: first means extending into said semiconductor body from one major surface thereof through said second layer and at least into said first layer for confining the current flow through said first and second layers to a narrow path and for blocking current flow through laterally extending portions of said first and second layers; and further means for limiting the current flow in said fourth layer to a narrow path which is aligned with the said narrow path through said first and second layers, said further means comprise spaced apart semiconductor regions of said first conductivity type within said fourth layer at the interface of said third and fourth layers and forming respective barrier layers with said fourth layer, said narrow path in said fourth layer being between said barrier layers.

3,849,791
HIGH BREAK DOWN VOLTAGE-COMBINED SEMICONDUCTOR DEVICE SUITABLE FOR FABRICATION OF VOLTAGE MULTIPLIER RECTIFIER CIRCUIT

Yoichi Nakashima; Hisashi Sakamoto; Takeshi Ishizuka, and Kensuke Suzuki, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 6, 1973, Ser. No. 367,368
Claims priority, application Japan, June 12, 1972, 47-57733
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 357—72 **12 Claims**



1. A combined semiconductor device comprising a plurality of semiconductor elements each having a pair of lead wires, first insulating material members for molding each semiconductor element down to appropriate positions of the lead wires with the remaining portions of the lead wires being exposed which are to be connected with external electric circuits, and second insulating material members for connecting the adjacent first insulating material members in a bridged manner along a rectangular waveform line with interspaces therebetween, each of said interspaces being able to fix another electric circuit element therein which is connected with the lead wires.

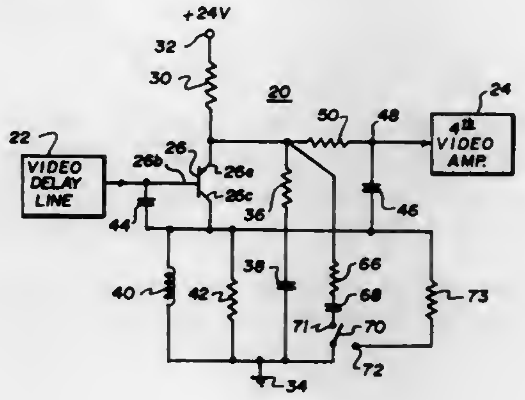
ERRATUM

For Class 358—27 see:
Patent No. 3,849,593

3,849,792
SIGNAL TRANSLATING CHANNEL WITH PRE-SHOOT AND OVER-SHOOT

Robert A. Holzrichter, Chicago, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Filed Mar. 16, 1973, Ser. No. 342,315
Int. Cl. H04n *5/48*
U.S. Cl. 358—37 **11 Claims**

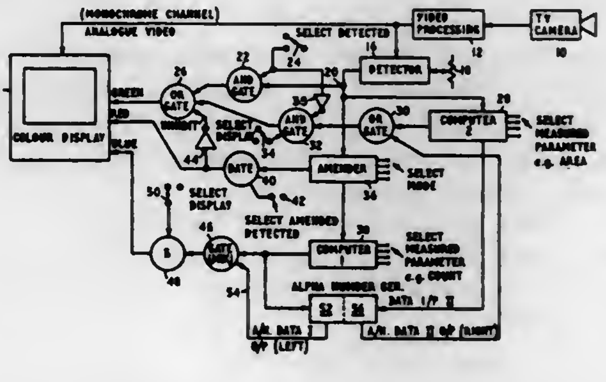


1. A signal translating channel for producing pre-shoot and over-shoot in an output waveform, comprising:
an active device having first, second and third electrodes;
input means coupling an input waveform to said first electrode for producing second and third waveforms at said second and third electrodes, respectively;
first differentiating means coupled to said second electrode for differentiating the second waVeform;
second differentiating means coupled to said first differentiating means for differentiating the differentiated second waveform to produce a doubly differentiated second waveform; and
combining means coupled to said second differentiating means and said third electrode for combining the doubly differentiated second waveform and the third waveform to produce pre-shoot and over-shoot in the output waveform.

3,849,793
IMAGE ANALYSIS SYSTEM

Roger John Herbert Ablett, Potton, England, assignor to Image Analysing Computers Limited, Milbourn, Royston, Hertfordshire, England

Filed Dec. 27, 1972, Ser. No. 318,713
Claims priority, application Great Britain, Dec. 31, 1971, 61036/71
Int. Cl. H04n *9/00*
U.S. Cl. 358—81 **18 Claims**



1. In a method of analyzing features in a field comprising the steps of scanning the field to produce a monochrome video signal relating thereto, detecting amplitude levels thereof which exceed a given reference voltage, generating constant amplitude pulses from the detected amplitude levels and deriving signals from the constant amplitude pulses, the improvement comprising the additional steps of:

displaying said monochrome signal on a colour television display monitor to produce a monochrome representation of the field, and,

displaying at least some of said signals derived from said constant amplitude pulses on said monitor in a distinctive colour simultaneously with said monochrome video signal whereby the display of these signals is in strong contrast to the monochrome representation of the remainder of the field.

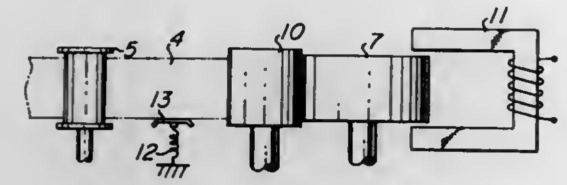
3,849,794
MAGNETIC TAPE TRANSFER DEVICE

Ichiro Arimura, Kyoto; Yutaka Higashida, Nishinomiya, and Kozo Kurashina, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

Continuation of Ser. No. 175,228, Aug. 26, 1971, abandoned. This application May 29, 1973, Ser. No. 364,339

Int. Cl. G11b *5/86*

U.S. Cl. 360—17 **6 Claims**



1. In a magnetic tape transfer device in which there are provided a first supply reel around which a recorded original tape is wound, a second supply reel around which a nonrecorded transfer tape is wound, a capstan to which the latest-wound portion of both the recorded original tape and nonrecorded transfer tape are kept pressed, a take-up reel without any flange rotatably mounted on a rotary arm, means for energizing said rotary arm so that a side of said take-up reel contacts with said capstan, a guide roller with at least one flange provided between said supply reels and said take-up reel, a tape side control means elastically supported to be brought into contact with one side end of both tapes between said guide roller and said take-up reel and to be movable in the transverse direction of both tapes, and a magnetic field generating means for applying a magnetic field to both tapes wound on said take-up reel, both tapes being unwound from said supply reels and taken up on the take-up reel after being wound in a predetermined angle so that the magnetic surfaces of both tapes are brought into contact with each other by means of said guide roller.

3,849,795
VIDEO TAPE RECORDER IN WHICH THE DRUM IS ROTATED SYNCHRONOUSLY WITH SIGNALS ON TAPE

Minoru Koda; Tadao Shioyama, and Akio Nishiyama, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed May 31, 1973, Ser. No. 365,722

Claims priority, application Japan, June 5, 1972, 47-56357

Int. Cl. G11b *5/52, 21/02, 15/28*

U.S. Cl. 360—73 **5 Claims**

1. A video tape recorder comprising:

a cylindrical drum having at least one rotatable video head for scanning a tape wrapped around said drum;

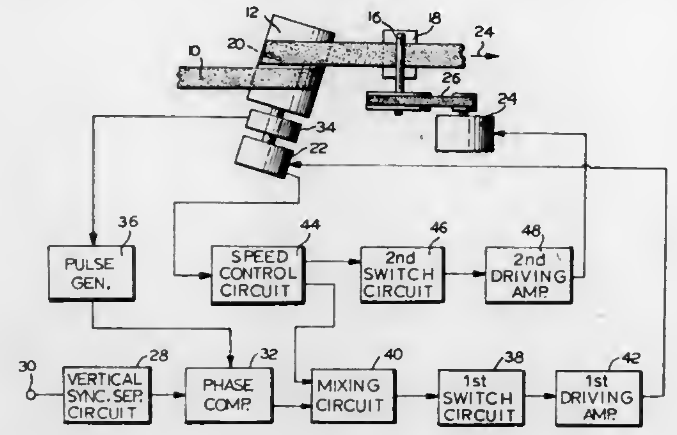
a drum motor coupled to said drum for rotating said drum and video head;

a capstan and a pressure roller for moving the tape in the longitudinal direction thereof in conjuction with each other;

a capstan motor coupled to said capstan for rotating said capstan;

detecting means coupled to said drum for detecting the rotational speed of said video head; and

switch means coupled to said detecting means and said capstan motor and adapted to be coupled to a source of electric power for supplying power to said capstan motor, the detecting means controlling said switch means to the off condition during the time when said rotational speed of said video head is no higher than a predetermined speed, whereby no electric power for rotating said capstan motor is supplied through said switch means to said capstan motor, and the detecting means controlling the switch means to the off condition during the time when said rotational speed of said video head is higher than the predetermined speed, whereby electric power for rotating said capstan motor is supplied through said switch means to said capstan motor.



3,849,796
ROTARY HEAD MAGNETIC RECORDING AND REPRODUCING APPARATUS

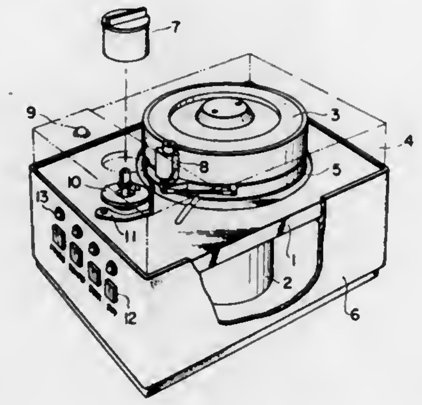
Shoji Omiya, Shijonawate; Yoshiaki Hayashi, Takatsuki, and Akio Kuki, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

Filed Feb. 20, 1973, Ser. No. 333,481

Claims priority, application Japan, Feb. 21, 1972, 47-18172

Int. Cl. G11b *5/52, 5/60, 23/04*

U.S. Cl. 360—85 **6 Claims**



1. A rotary head magnetic recording and reproducing apparatus comprising: a rotating drum having at least one magnetic head mounted about an outer surface of said rotating drum; drum driving means for operating said rotating drum at a high speed; a tape cartridge containing a reel of magnetic tape in such a manner that said magnetic tape can be taken in and out of said cartridge, said reel of magnetic tape having a first engaging means at the beginning thereof, the length of said magnetic tape being sufficient to substantially make a single winding around the outer surface of said rotating drum, the width of said rotary drum being greater than that of said magnetic tape; cartridge holding means arranged adjacent to said rotating drum for removably supporting said cartridge; a tape holding post having an engaging pawl for engaging said first engaging means of said magnetic tape in said cartridge mounted on said cartridge holding means; and tape holding post driving means for reversibly moving said tape holding post along the outer surface of said rotating drum, whereby signals are recorded on or reproduced from said magnetic tape wound around the outer surface of said rotating drum by said tape holding post while producing a layer of air between said magnetic tape and said rotating drum.

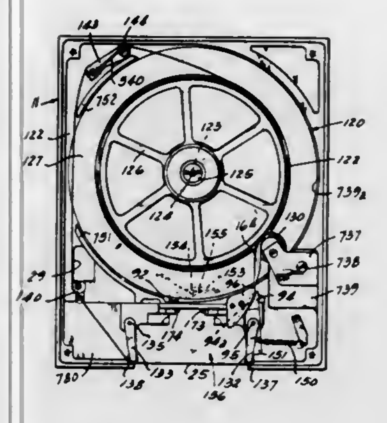
3,849,797
VIDEO TRANSDUCER SYSTEM AND CARTRIDGE THEREFOR

Marvin Camras, Glencoe, Ill., assignor to ITT Research Institute, Chicago, Ill.

Filed Aug. 21, 1972, Ser. No. 282,275

Int. Cl. G11b *15/22, 23/04, 15/29*

U.S. Cl. 360—93 **3 Claims**



1. In a transducer system including a capstan for driving engagement with a record tape in an operating mode,

said capstan having a flywheel rotatable therewith, capstan pressure roll means shiftable from a retracted position to an operating position to engage the record tape with the capstan in the operating mode, a brake for the flywheel disposed adjacent the flywheel and actuable into braking relation to said flywheel and thus to a capstan retarding condition for retarding rotation of the capstan, and a brake control coupled with said brake and operable contemporaneously with retraction of said pressure roll means from the operating position to actuate said brake to its capstan retarding condition, a driving motor for said capstan having a rotor and having a motor shaft secured with said rotor, said motor being operable to drive said capstan at a rotational speed corresponding to a record tape speed of at least about 60 inches per second during said operating mode,

said flywheel being directly on said motor shaft and having its outer peripheral surface coaxial with the axis of said motor shaft, said capstan being directly adjacent said flywheel along the length of said motor shaft without any intervening drive element, said brake for said flywheel comprising a brake shoe physically movable toward and away from said outer peripheral surface of said flywheel, and said brake control comprising a spring operable to press said brake shoe into direct frictional contact with said outer peripheral surface of said flywheel in the capstan retarding condition of said brake.

3,849,798
CARTRIDGE ADAPTER

Yoshio Ono, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 6, 1972, Ser. No. 295,644

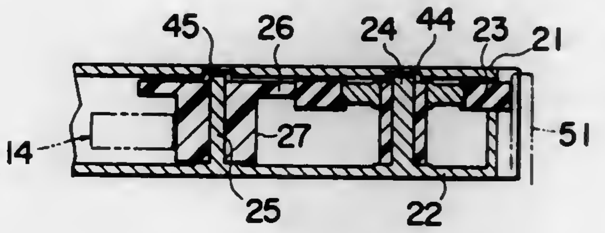
Claims priority, application Japan, Oct. 8, 1971, 46-92732

Int. Cl. G11b *31/00*

U.S. Cl. 360—94 **5 Claims**

1. In a cartridge adapter having external dimensions and configuration of a large-size cartridge and mounting internally a small-size tape cartridge, and further having a pair of side by side idlers for transmitting by peripheral, frictional contact, torque from the capstan external of the cartridge adapter to the tape within the small-sized tape cartridge, the improvement wherein:

at least said idler contacting said capstan is mounted on a resilient, flexible shaft and said idlers are positioned relative to each other such that when the adapter is in use, said capstan presses on said adjacent idler to flex its shaft and to move that idler into firm contact with said tape contacting said idler, and when said adapter is not in use and contact with said capstan ceases, there is no more than bare contact between said idlers, and said flexible shaft and one face of the adapter are molded integrally.



3,849,799
MAGNETIC RECORDING AND REPRODUCING APPARATUS

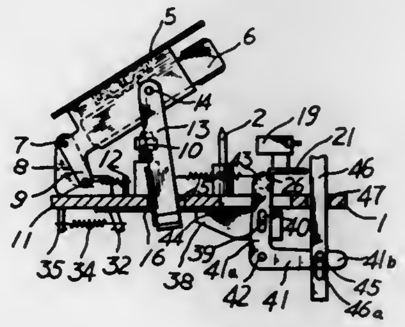
Niro Nakamichi, Tokyo, Japan, assignor to Nakamichi Research Incorporated, Kodaira City, Tokyo, Japan

Filed June 28, 1972, Ser. No. 267,180

Claims priority, application Japan, June 30, 1971, 46-48325

Int. Cl. G11b *5/00*

U.S. Cl. 360—96 **5 Claims**



1. A magnetic recording and reproducing apparatus for use with a cassette containing a pair of reels between which a tape is wound, comprising a chassis having thereon a pair of reel shafts for driving the reels on the cassette, a capstan for feeding the tape in the cassette and a magnetic head for recording on the tape and reproducing therefrom, said magnetic head being movable between an advanced position in which the head contacts the tape in the cassette and a retracted position in which the head is separated from the cassette, means for moving the head from the retracted position to the advanced position, a cassette receiving case pivotally movable on the chassis, said cassette receiving case having a non-operative position in which the cassette can be inserted into and withdrawn from the cassette receiving case and an operative position in which the cassette cooperates with the magnetic head and the capstan on the chassis to effect recording and reproducing, said cassette also including walls defining locating holes through which extend corresponding locating pins on the chassis for positively holding the cassette in the operative position, means for moving the cassette receiving case from the non-operative position to the operative position, means for locking the cassette receiving case in the operative position, and means for resiliently pushing the cassette so that the locating pins on the chassis bear against the walls defining the

locating holes in the cassette to hold the cassette in position when the cassette receiving case is in the operative position, characterized by further comprising a cassette biasing means in said cassette receiving case cooperative with said locating pins for opposing movement of said cassette upon engagement of said cassette with said locating pins, and for allowing said cassette receiving case to move relative to said cassette after such engagement, said means for resiliently pushing said cassette being restrained from pushing said cassette until such movement of said cassette receiving case relative to said cassette after said engagement, said cassette thereby being freely movable in said cassette receiving case before said engagement.

3,849,800

MAGNETIC DISC APPARATUS

David E. Cuzner, Romsey; Charles O. R. Dodman, Basingstoke; John S. Heath, and Leonard J. Rigbey, both of Winchester, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 2, 1972, Ser. No. 231,320

Int. Cl. G11b *17/00*

U.S. Cl. 360—97 **18 Claims**

1. A random access disc memory system comprising:

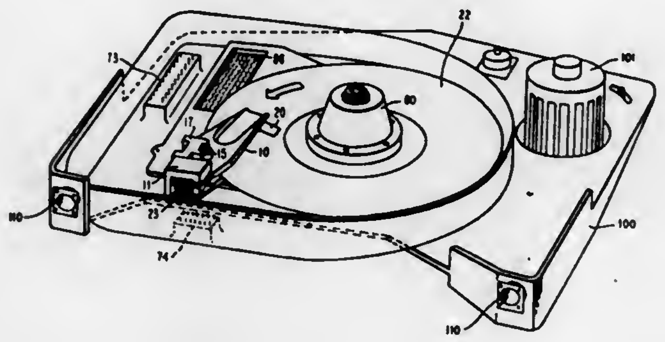
a plurality of interchangeable disc modules, each said module being characterized by

an enclosing means enclosing:

at least one magnetic disc rotatably mounted, at least one magnetic head associated with each side of each of said discs, an arm for carrying at least one of said magnetic heads, mounting means for supporting said arm for planar angular movement about a fixed axis where said fixed axis is at the center of gravity of said arm, and a motor connected to said arm, said motor dedicated solely for simultaneously selectively positioning one or more of said magnetic heads to any one of a plurality of concentric tracks located on said rotatable magnetic discs, said motor comprising a hollow coil carried by said arm and located so as to perform a translation movement along a curved path causing said arm to perform angular movement and a stator having magnetic pole pieces defining a magnetic flux gap therebetween and with said coil performs said translation movement, at least one of said pole pieces extending within the coil and at least one of said pole pieces extending outside the coil, so as that when current passes through said coil, magnetic flux crossing said gap will link said coil causing said coil to experience a force which causes said coil to perform said translational movement and move said arm angularly;

a housing unit for accepting any one of said disc modules, said housing unit comprising;

a first means mechanically connectable to said disc module for transmitting mechanical energy into said module only for rotating said discs within said module; and a second means electrically connectable to said disc module for controlling the operation of said motor with said module and for controlling the reading and writing of information on said discs by means of said heads.



DESIGNS

NOVEMBER 19, 1974

233,633

SUSPENSORY SUPPORT BRIEF

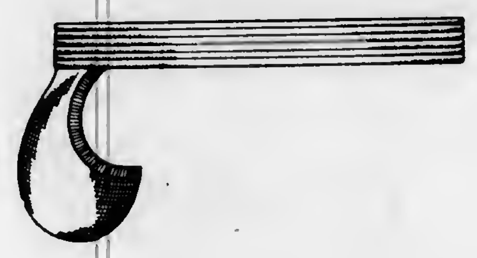
Eugene R. Burkard, 4536 W. Point Loma Blvd., San Diego, Calif. 92107

Continuation-in-part of abandoned design application Ser. No. 237,222, Mar. 27, 1972. This application Apr. 29, 1974, Ser. No. 464,744

Term of patent 14 years

Int. Cl. D2—*02*

U.S. Cl. D2—10



233,634

HOSPITAL GOWN

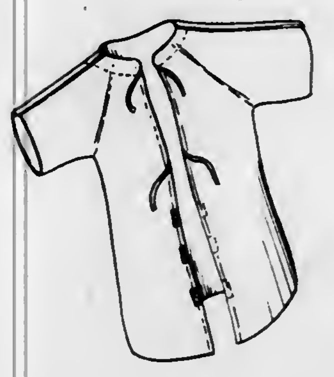
Dana R. Snider, 241 E. Burrows, Tucson, Ariz. 85704

Filed May 24, 1973, Ser. No. 363,427

Term of patent 14 years

Int. Cl. D2—*01*

U.S. Cl. D2—17



233,635

WIRE HELMET GUARD

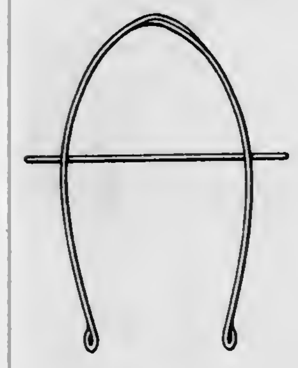
Terry A. Litsinger, Sr., 905 Mae St., Kent, Ohio 44240

Filed Oct. 12, 1972, Ser. No. 296,767

Term of patent 14 years

Int. Cl. D2—*03*

U.S. Cl. D2—232



233,636

RUBBER BOOT

Otto Schneider, 3 Bassengvei, 1800 Askim, Norway

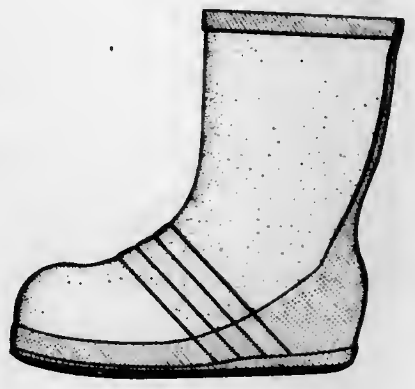
Filed Dec. 18, 1972, Ser. No. 315,889

Claims priority, application Norway June 16, 1972

Term of patent 7 years

Int. Cl. D2—*04*

U.S. Cl. D2—272



233,637

COMBINED SOLE AND HEEL UNIT FOR FOOTWEAR

Aubrey Askew, Southport, England, assignor to Dunlop Limited, St. James, London, England

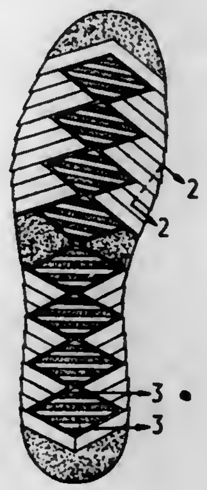
Filed Mar. 9, 1973, Ser. No. 339,845

Claims priority, application Great Britain Sept. 18, 1972

Term of patent 14 years

Int. Cl. D2—*02*

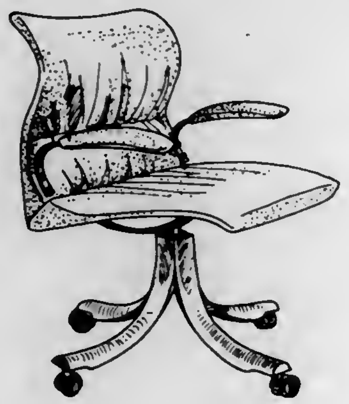
U.S. Cl. D2—320



233,638
ARMCHAIR

Giovanni Offredi, Via Muratori 29, Milan, Italy
Filed Mar. 20, 1973, Ser. No. 343,007
Claims priority, application Italy Feb. 21, 1973
Term of patent 14 years
Int. Cl. D6—*01*

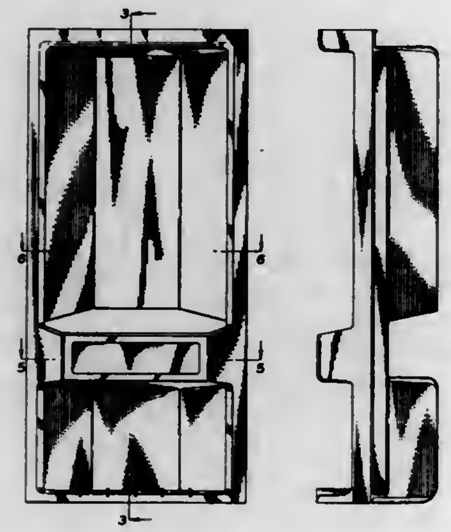
U.S. Cl. D6—31



233,639
ACCESSORIES HOLDER FOR A SHOWER

Dwight N. Wooters, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed June 14, 1972, Ser. N. 262,546
Term of patent 14 years
Int. Cl. D6—*04*

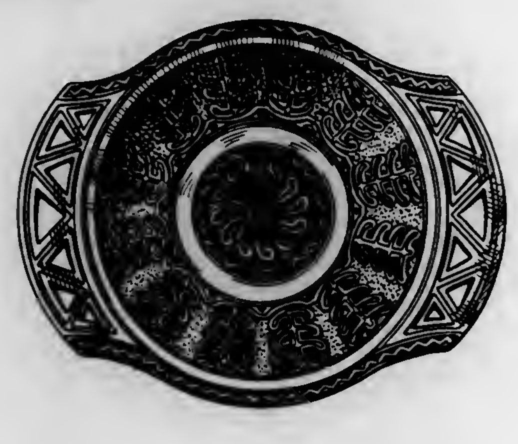
U.S. Cl. D6—91



233,640
BREAD BASKET

Augusto Salviato, Corso Mario Abbiate 110, Vercelli, Italy
Filed June 11, 1973, Ser. No. 369,049
Term of patent 14 years
Int. Cl. D7—*01*

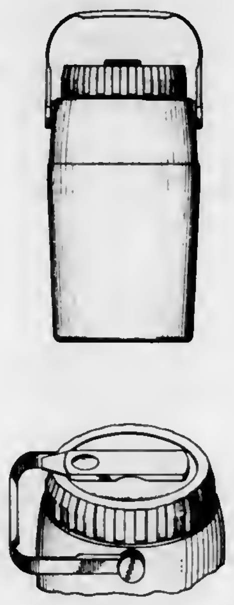
U.S. Cl. D7—20



233,641
INSULATED JUG

David Edward Roche, Nashua, N.H., assignor to Family Products, Inc., Tyngsboro, Mass.
Filed Sept. 27, 1972, Ser. No. 292,778
Term of patent 14 years
Int. Cl. D7—*01*

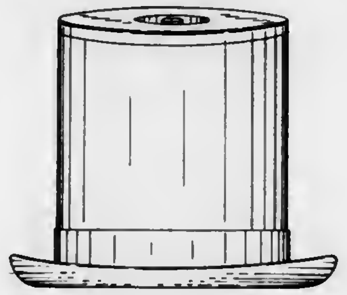
U.S. Cl. D7—77



233,642
FOOD CONTAINER

Ethel A. Arnold, Minneapolis, Minn., assignor to Ambassador Snack Products, Inc., Minneapolis, Minn.
Filed June 12, 1973, Ser. No. 369,163
Term of patent 14 years
Int. Cl. D7—*07*

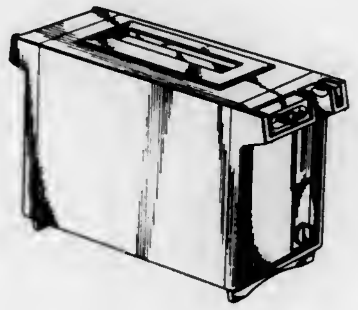
U.S. Cl. D7—76



233,643
TOASTER

Masatoshi Naito, Ikeda, Fujio Sawamura, Toyonaka, Kunio Funatsu, Higashi, and Noriharu Furuyabu, Ashiya, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma City, Osaka, Japan
Original design application May 22, 1972, Ser. No. 255,950. Divided and this application Aug. 24, 1973, Ser. No. 391,311
Claims priority, application Japan Nov. 26, 1971
Term of patent 14 years
Int. Cl. D7—*02*

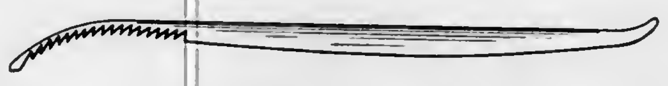
U.S. Cl. D7—93



233,644
LETTUCE CORER OR THE LIKE

Edward N. Montesi, Barrington, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed July 18, 1973, Ser. No. 380,315
Term of patent 14 years
Int. Cl. D7—*02*

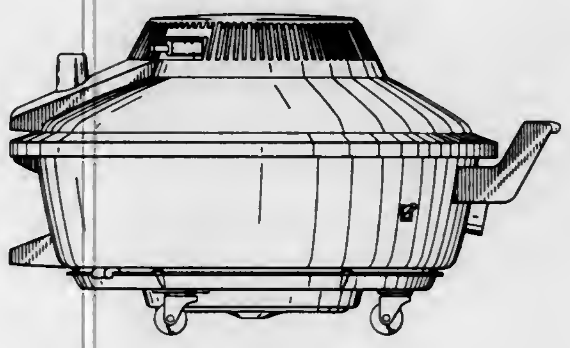
U.S. Cl. D7—147



233,645
VACUUM CLEANER

Arne J. Diehl, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Sept. 17, 1973, Ser. No. 397,684
Term of patent 14 years
Int. Cl. D15—*05*

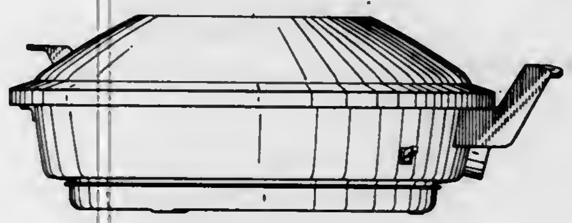
U.S. Cl. D7—166



233,646
VACUUM CLEANER

Arne J. Diehl, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Sept. 17, 1973, Ser. No. 397,685
Term of patent 14 years
Int. Cl. D15—*05*

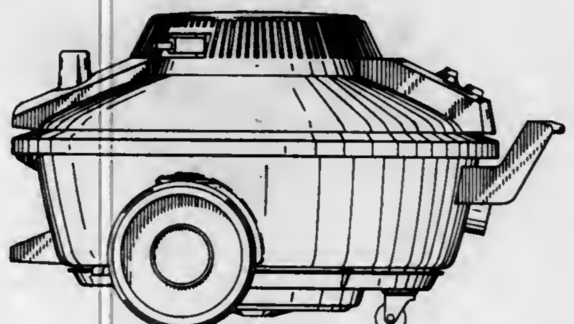
U.S. Cl. D7—166



233,647
VACUUM CLEANER

Arne J. Diehl, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Sept. 17, 1973, Ser. No. 397,686
Term of patent 14 years
Int. Cl. D15—*05*

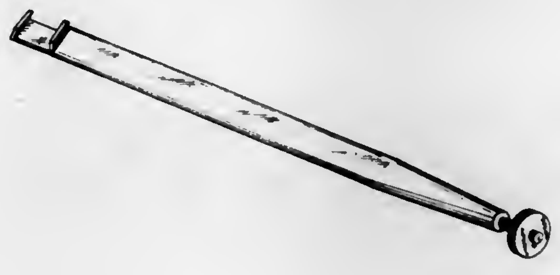
U.S. Cl. D7—166



233,648
WRENCH HAND TOOL

Robert A. Louks, Gilman, Iowa 50106
Filed May 17, 1973, Ser. No. 361,222
Term of patent 14 years
Int. Cl. D8—*05*

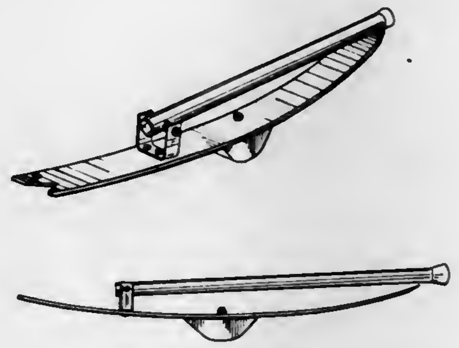
U.S. Cl. D8—22



233,649
TENT PEG EXTRACTOR OR THE LIKE

William A. Wood, Raleigh, N.C., assignor of a fractional part interest to Everett D. Lassiter, Raleigh, N.C.
Filed Aug. 31, 1972, Ser. No. 285,319
Term of patent 14 years
Int. Cl. D8—*05, 99*

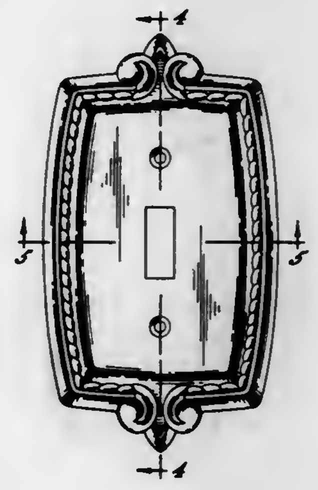
U.S. Cl. D8—88



233,650
ESCUTCHEON PLATE

Raymond U. H. Tegner, Lodi, Wis. (℅ Amerock Corporation, 4000 Auburn St., Rockford, Ill. 61101)
Filed Nov. 10, 1972, Ser. No. 305,567
Term of patent 14 years
Int. Cl. D8—*09*

U.S. Cl. D8—181

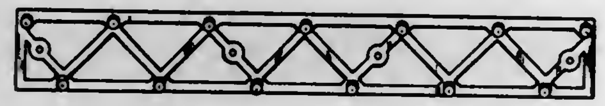


233,651
TACKLESS CARPET STRIPPING

Lawrence R. Sutton, Detroit, Carl P. Ranno, Grosse Pointe Park, and Kenneth E. Hewson, Farmington, Mich., assignors to Performance Industries, Inc., Pontiac, Mich.

Filed Mar. 5, 1973, Ser. No. 338,107
Term of patent 14 years
Int. Cl. D8—*08*

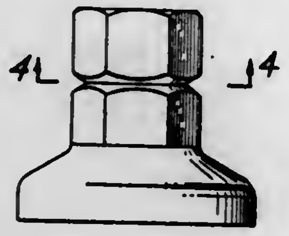
U.S. Cl. D8—266



233,652
NUT

George S. Wing, 605 Paseo del Mar,
Palos Verdes Estates, Calif. 90274
Filed Sept. 13, 1971, Ser. No. 180,242
Term of patent 14 years
Int. Cl. D8—*08*

U.S. Cl. D8—273

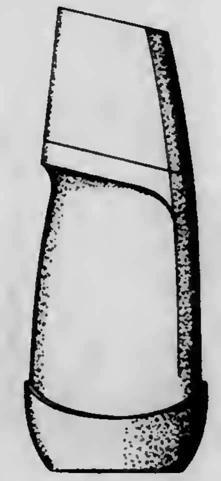


233,653
COMBINED AEROSOL BOTTLE AND CAP THEREFOR

John Pardo, Yonkers, N.Y., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 22, 1972, Ser. No. 282,678
Term of patent 14 years
Int. Cl. D9—*01*

U.S. Cl. D9—63

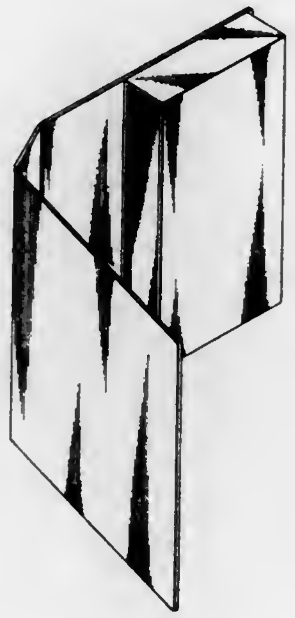


233,654
CONTAINER FOR BOOKLETS OR THE LIKE

John E. Lawlor, Tappan, N.Y., and John E. Sgombick, Ramsey, N.J., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 5, 1973, Ser. No. 329,799
Term of patent 14 years
Int. Cl. D9—*03*

U.S. Cl. D9—202

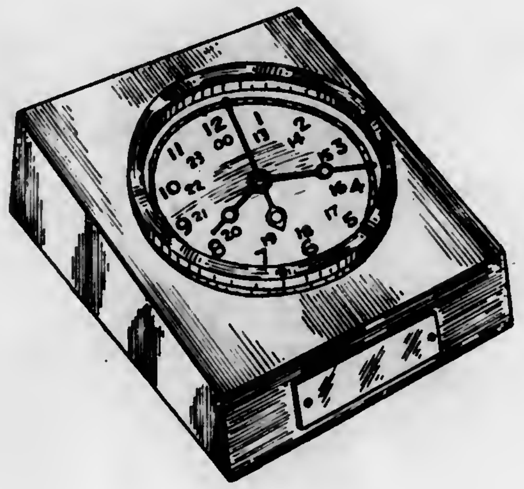


233,655
DESK CLOCK

William Anthony Hilliard, Danvers, Mass., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Mar. 2, 1973, Ser. No. 337,403
Term of patent 14 years
Int. Cl. D10—*01*

U.S. Cl. D10—25

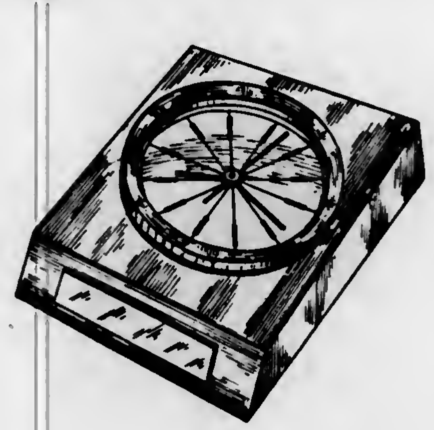


233,656
DESK CLOCK

William Anthony Hilliard, Danvers, Mass., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Mar. 2, 1973, Ser. No. 337,543
Term of patent 14 years
Int. Cl. D10—*01*

U.S. Cl. D10—25

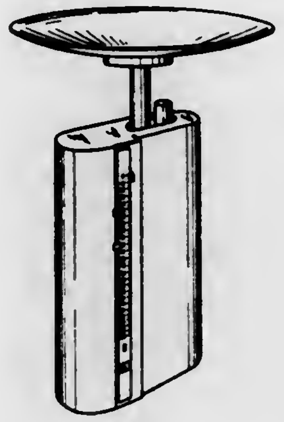


233,657
FOOD SCALE

Marco Zanuso, Milan, Italy, assignor to Terraillon, Annemasse, France

Original design application Feb. 28, 1972, Ser. No. 230,174, now Patent No. 231,016. Divided and this application June 18, 1973, Ser. No. 371,144
Claims priority, application Switzerland Sept. 1, 1971
Term of patent 14 years
Int. Cl. D10—*04*

U.S. Cl. D10—89

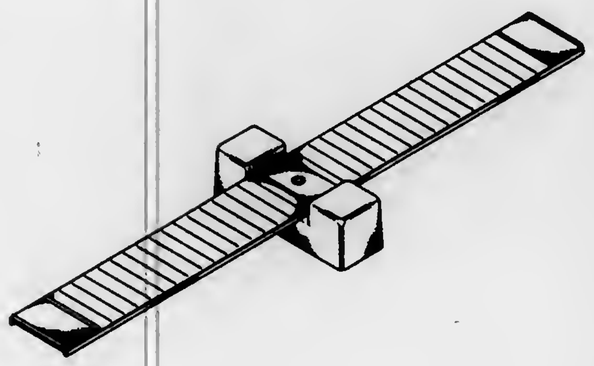


233,658
BALANCE SCALE

Philip J. Schroeder, Wellesley, Mass., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 26, 1973, Ser. No. 326,630
Term of patent 14 years
Int. Cl. D10—*04*

U.S. Cl. D10—90

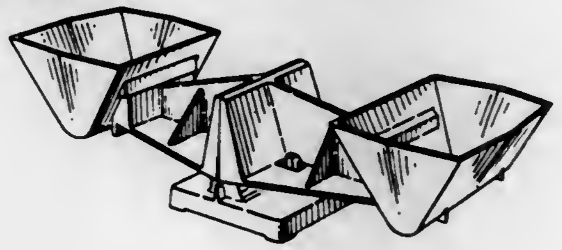


233,659
BALANCE SCALE FOR TEACHING

Alan Dawn, Fareham, England, assignor to E. S. Perry Limited

Continuation-in-part of abandoned design application Ser. No. 212,859, Dec. 27, 1971. This application June 15, 1973, Ser. No. 370,344
Claims priority, application Great Britain June 28, 1971
Term of patent 14 years
Int. Cl. D10—*04*

U.S. Cl. D10—90

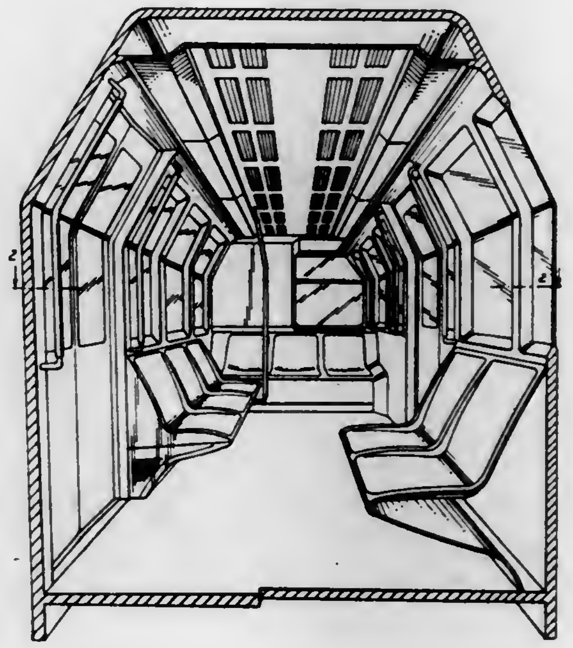


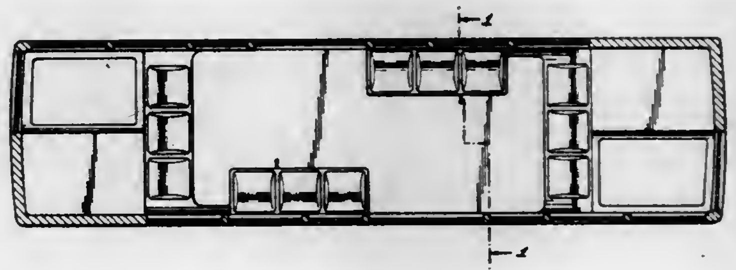
233,660
BODY FOR RAILWAY CAR OR SIMILAR VEHICLE

Walter H. Gollwitzer, Birmingham, Mich., and William B. Shenk, Jr., Rodenkirchen, Cologne, Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 13, 1972, Ser. No. 234,452
Term of patent 14 years
Int. Cl. D12—*03*

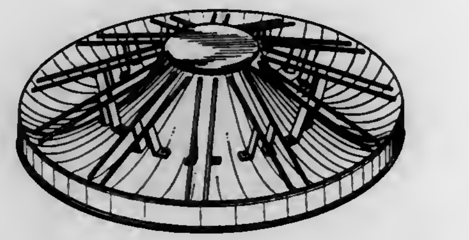
U.S. Cl. D12—40





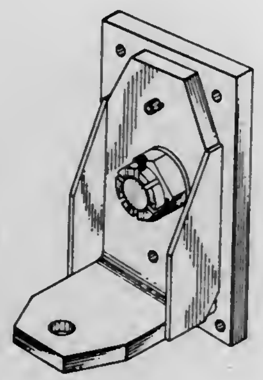
233,661
BICYCLE RACK

Ronald L. Ewers, Litchfield, Mich., assignor to Game Time, Inc., Litchfield, Mich.
Filed Dec. 12, 1973, Ser. No. 423,994
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D12—115



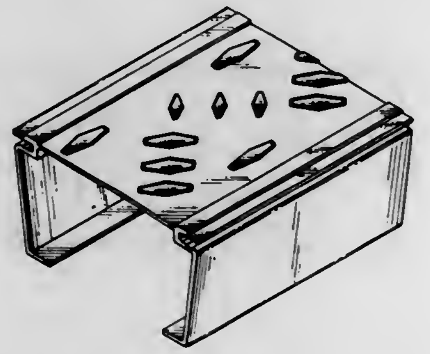
233,662
TRAILER HITCH

Norman C. Brown, 111 Bruning Ave., Rio Vista, Calif. 94571; Charles W. Brown, 1031 Johnfer Way, Sacramento, Calif. 95831; and Norman R. Brown, Orangevale, Calif. (1017 Charleston Circle, Roseville, Calif. 95678)
Filed Apr. 19, 1973, Ser. No. 352,620
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—162



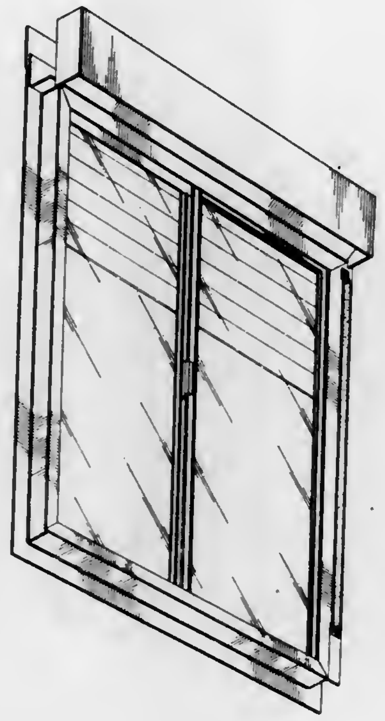
233,663
METAL FLOORING SECTION FOR ANIMAL ENCLOSURES AND THE LIKE

Grant T. Facer, Lafayette, and John A. Metzger, Fresno, Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Filed Sept. 14, 1972, Ser. No. 289,151
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 J



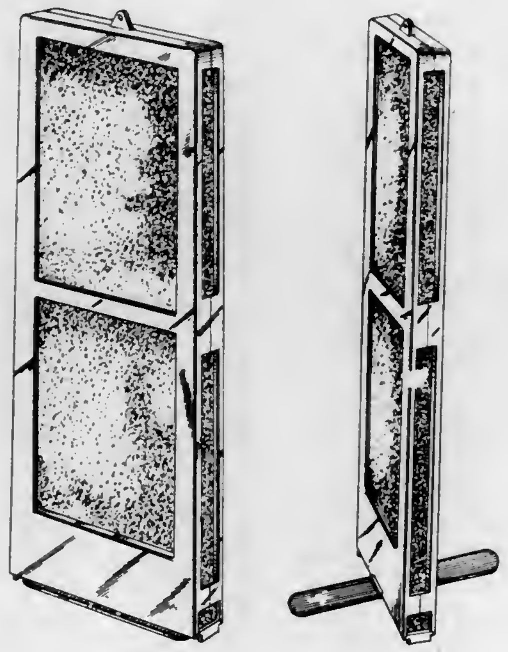
233,664
INTEGRAL SECURITY SHUTTER-WINDOW UNIT

Oscar P. Gilmore, Riverside, Calif., assignor to S. J. Collins, Riverside, Calif.
Filed Jan. 8, 1973, Ser. No. 321,718
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 M



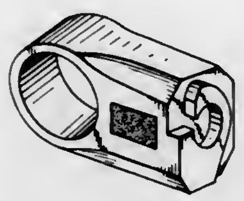
233,665
CONTAINER FOR INSECTICIDES OR SIMILAR ARTICLE

Gunther Neugebauer, Haan, Germany, assignor to American Home Products Corporation, New York, N.Y.
Filed Mar. 8, 1973, Ser. No. 339,268
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—19



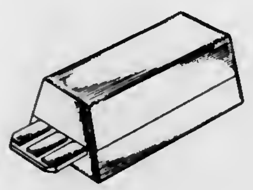
233,666
FISH HOOK BEND CORRECTOR

Benjamin P. Robinson, Springfield, N.J. (1101-C Council Oak Drive, Sioux City, Iowa 51109)
Filed Mar. 16, 1973, Ser. No. 342,152
Term of patent 14 years
Int. Cl. D22—*05, 99*
U.S. Cl. D22—31



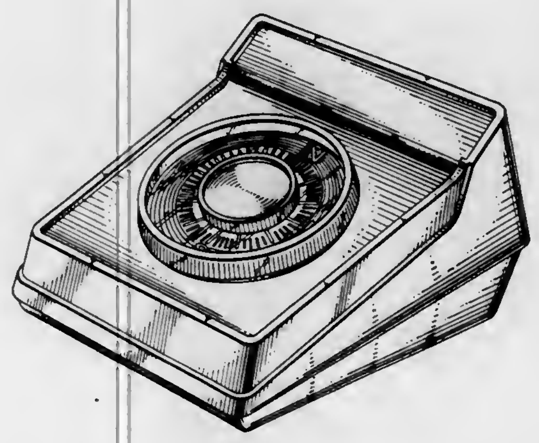
233,667
ELECTRICAL CONNECTOR

Wallace L. Knute, Del Mar, Calif., assignor to Ivac Corporation, San Diego, Calif.
Filed July 20, 1972, Ser. No. 273,391
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 A



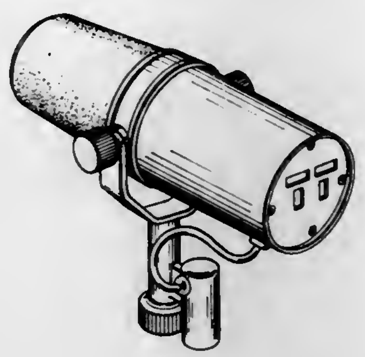
233,668
CONTROL UNIT FOR AN ANTENNA ROTATOR

Raymond Kaysen, Glenside, Pa., assignor to RCA Corporation
Filed July 2, 1973, Ser. No. 375,381
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 C



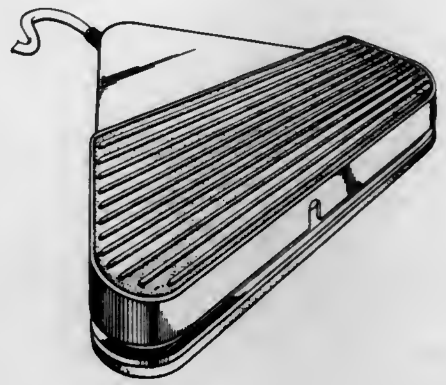
233,669
MICROPHONE

Gerald W. Plice, Morton Grove, Ill., assignor to Shure Brothers Incorporated
Filed Dec. 11, 1972, Ser. No. 313,999
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 J



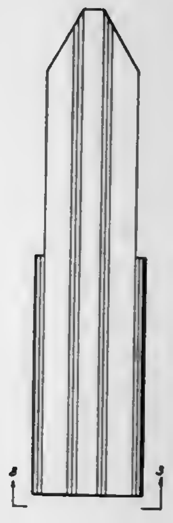
233,670
FOOT PEDAL FOR DICTATING MACHINE

James C. Sturrock, Atlanta, Ga., assignor to Robert N. Fink, Decatur, Ga.
Filed Mar. 7, 1974, Ser. No. 448,889
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 D

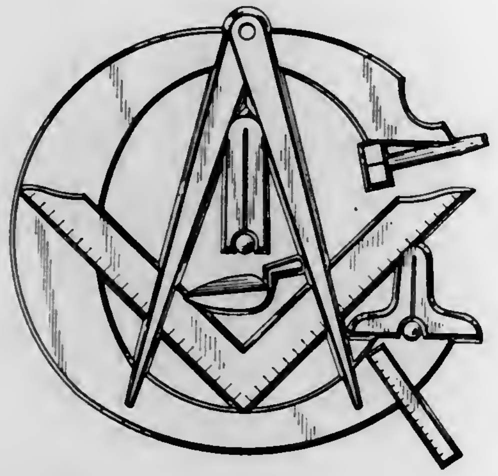


233,671
FENCE PICKET FOR LAWN EDGING OR SIMILAR ARTICLE

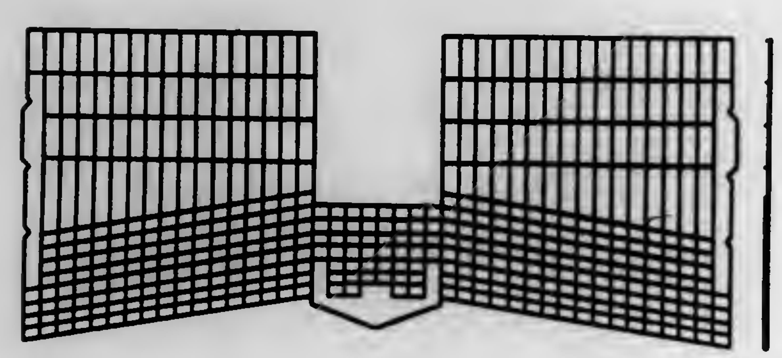
Kenneth F. Gay, Westerville, Ohio, assignor to Lawn Products, Inc., Columbus, Ohio
Filed July 25, 1972, Ser. No. 274,869
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D28—1 C



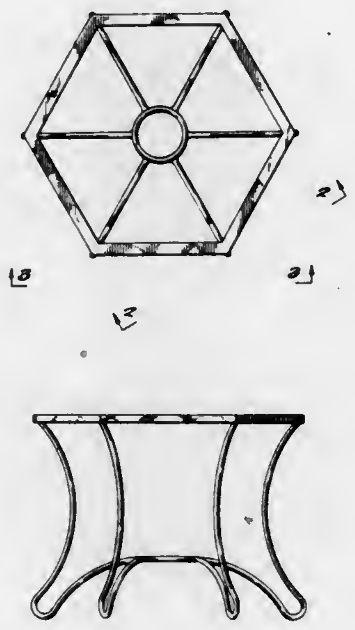
233,672
EMBLEM
Max R. Meehan, Buffalo Lake, Minn. 55314
Filed May 17, 1973, Ser. No. 361,306
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—11 R



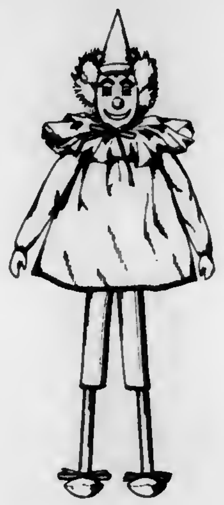
233,673
POULTRY CAGE DIVIDER PANEL
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Continuation-in-part of design application Ser. No. 119,078, Feb. 25, 1971, now Patent No. 225,337. This application Dec. 4, 1972, Ser. No. 311,915
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



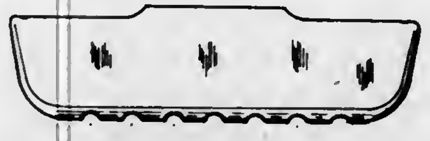
233,674
AQUARIUM STAND
Gerald R. Ritzow, 8844 Douglas Ave., Racine, Wis. 53402, and Roger C. Ritzow, S53 W23581 Big Bend Road, Waukesha, Wis. 53186
Filed Apr. 25, 1973, Ser. No. 354,188
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—12



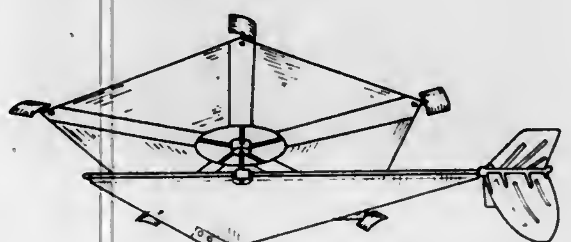
233,675
DOLL
Clair T. Buckner and Betty J. Buckner, both of 1528 Greenhills Road, Sacramento, Calif. 95825
Filed Aug. 22, 1973, Ser. No. 390,398
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 A



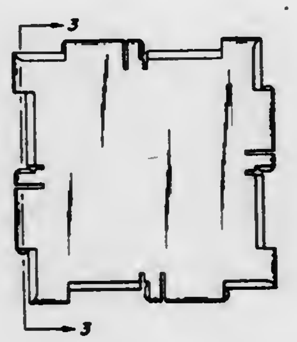
233,676
GOLF PUTTER
Armand W. Robustelli, 7 View St., Greenwich, Conn. 06830
Filed Mar. 21, 1973, Ser. No. 343,201
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



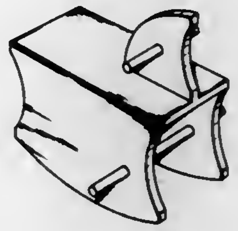
233,677
TOY HELICOPTER
Uwe C. Seefluth, Haus Kronos Seestrasse, 2409 Klingberg, Germany
Continuation-in-part of design application Ser. No. 25,028, Sept. 16, 1970. This application Jan. 31, 1972, Ser. No. 222,424
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 KK



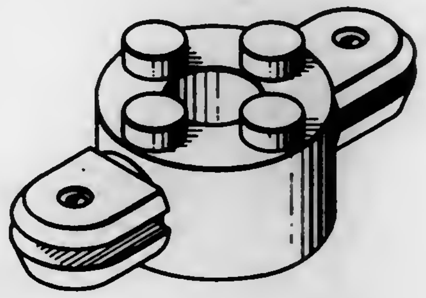
233,678
TOY CONSTRUCTION PIECE
Edward Henry Harvey, The Verne, Moor Common, Lane End, England
Filed Sept. 12, 1972, Ser. No. 288,324
Claims priority, application Great Britain Mar. 16, 1972
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 GG



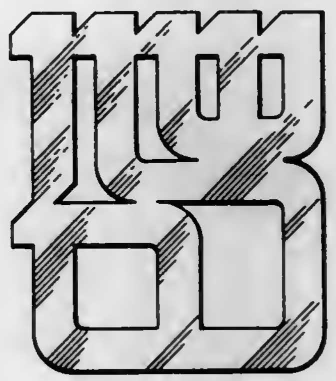
233,679
ROCKING HORSE
Lloyd A. Nielsen, 4441 South Ave. W., Missoula, Mont. 59801
Filed Feb. 16, 1973, Ser. No. 332,786
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AE



233,680
TOY ASSEMBLY ELEMENT
Godtfred Kirk Christiansen, Billund, Denmark, assignor to Interlego A.G., Zug, Switzerland
Filed Mar. 15, 1973, Ser. No. 341,497
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 GG



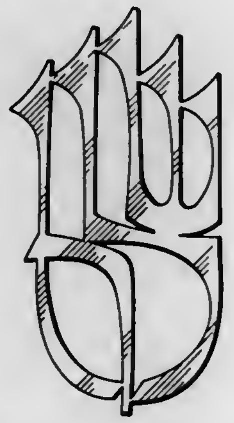
233,681
JEWELRY FINDING
Bernard Bernstein, 3224 Bronx Blvd., Bronx, N.Y. 10467
Filed Mar. 26, 1973, Ser. No. 345,013
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—19 R



233,682
JEWELRY FINDING

Bernard Bernstein, 3224 Bronx Blvd.,
Bronx, N.Y. 10467
Filed Mar. 26, 1973, Ser. No. 345,014
Term of patent 14 years
Int. Cl. D11—*01*

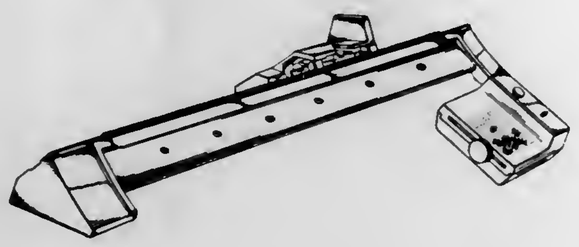
U.S. Cl. D45—19 R



233,683
SINGLE BED HAND OPERABLE KNITTING MACHINE

Wayne A. Current, Cranford, N.J., assignor to The Singer Company, New York, N.Y.
Filed May 3, 1973, Ser. No. 356,874
Term of patent 14 years
Int. Cl. D15—*06*

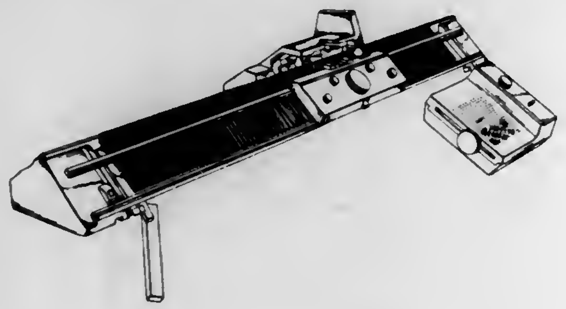
U.S. Cl. D47—5



233,684
DOUBLE BED HAND OPERABLE KNITTING MACHINE

Wayne A. Current, Cranford, N.J., assignor to The Singer Company, New York, N.Y.
Filed May 3, 1973, Ser. No. 356,982
Term of patent 14 years
Int. Cl. D15—*06*

U.S. Cl. D47—5



233,685
CURTAIN FABRIC

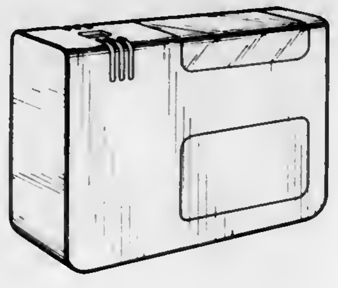
Peter E. Schroeder, Arni, Switzerland, assignor to Gardisette International AG, Zurich, Kirchenweg, Switzerland
Filed Mar. 26, 1973, Ser. No. 344,536
Claims priority, application Germany Oct. 7, 1972
Term of patent 14 years
Int. Cl. D5—*02*

U.S. Cl. D47—6 E

233,686
TABLE LIGHTER

Franz Alban Stutzer, Offenbach am Main, Germany assignor to Rowenta-Werke, G.m.b.H.
Filed May 25, 1973, Ser. No. 363,913
Claims priority, application Germany Dec. 17, 1972
Term of patent 14 years
Int. Cl. D27—*05*

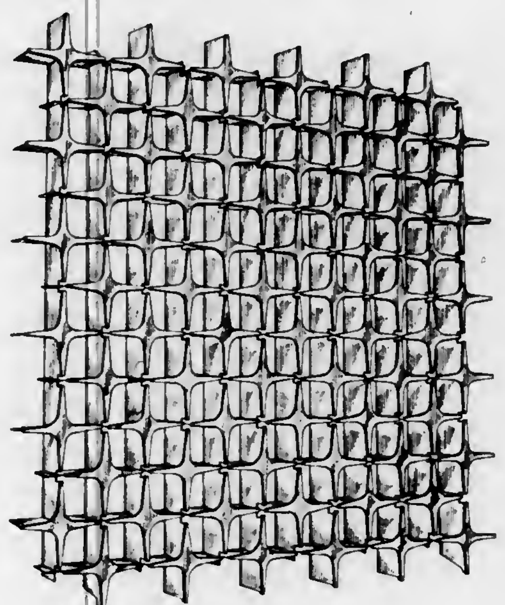
U.S. Cl. D48—27 R



233,687
ILLUMINATOR GRID PANEL

Charles U. Deaton, Genessee Mountain,
Golden, Colo. 80401
Filed Nov. 24, 1972, Ser. No. 308,995
Term of patent 14 years
Int. Cl. D26—*05;* D25—*02*

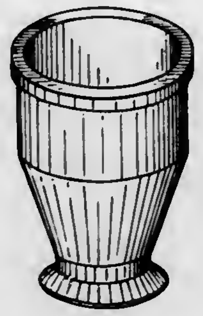
U.S. Cl. D48—16 A



233,688
TUBULAR HOOD FOR ATTACHMENT TO A FLASHLIGHT THEREBY ADAPTED FOR TRANSILLUMINATION

Antonino Araujo, Jr., Columbus, Ohio, assignor to Abbott Laboratories, North Chicago, Ill.
Filed Apr. 5, 1973, Ser. No. 348,439
Term of patent 14 years
Int. Cl. D26—*99, 02*

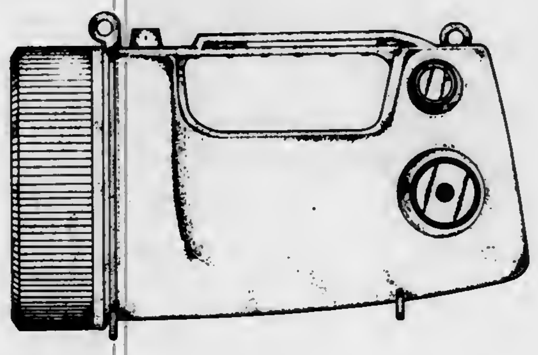
U.S. Cl. D48—20 H



233,689
COMBINED RADIO RECEIVER AND FLASHLIGHT

Koji Mizuno, Kasuga, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 10, 1974, Ser. No. 432,335
Term of patent 14 years
Int. Cl. D26—*02*

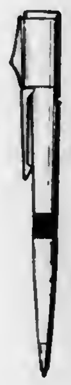
U.S. Cl. D48—24 R



233,690
COMBINATION LIGHTER AND PEN

Mervyn Dudley Roddon, Great Bookham, England, assignor to Ronson Corporation, Woodbridge, N.J.
Filed Nov. 5, 1973, Ser. No. 412,644
Claims priority, application Great Britain May 4, 1973
Term of patent 14 years
Int. Cl. D27—*05;* D19—*06*

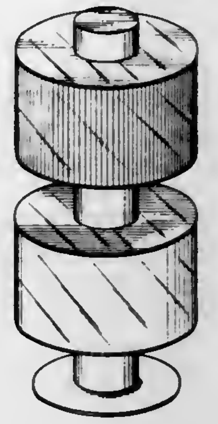
U.S. Cl. D48—27 A



233,691
OUTDOOR GROUND LEVEL LIGHTING FIXTURE

Hans Paul Ludwig Geisler, Norderstedt, Germany, assignor to Deutsche Texaco Aktiengesellschaft, Hamburg, West Germany
Filed Apr. 24, 1972, Ser. No. 247,253
Claims priority, application West Germany Jan. 12, 1972
Term of patent 14 years
Int. Cl. D26—*03, 05*

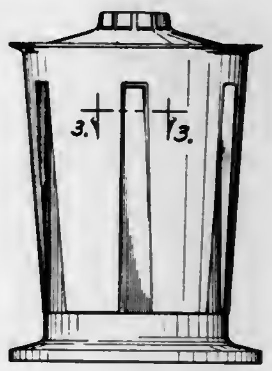
U.S. Cl. D48—31



233,692
PORTABLE SPIN DRYER

Thomas R. Smith, Frank E. Ross, and William J. Swartz, Newton, Iowa, assignors to The Maytag Company, Newton, Iowa
Filed July 5, 1972, Ser. No. 269,281
Term of patent 14 years
Int. Cl. D15—*05*

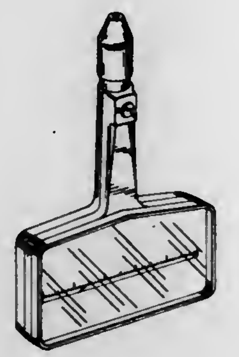
U.S. Cl. D49—1 A



233,693

COMPRESSION TESTER

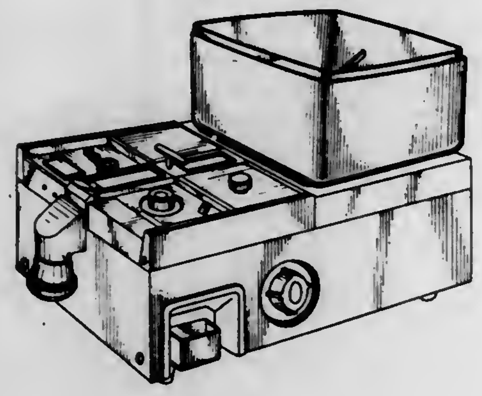
Norman Holtzman, Los Angeles, Calif., assignor to Hanson Hawk, Inc., Chatsworth, Calif.
Filed Mar. 2, 1972, Ser. No. 231,451
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R



233,694

AUTOMATIC COIN COUNTING MACHINE

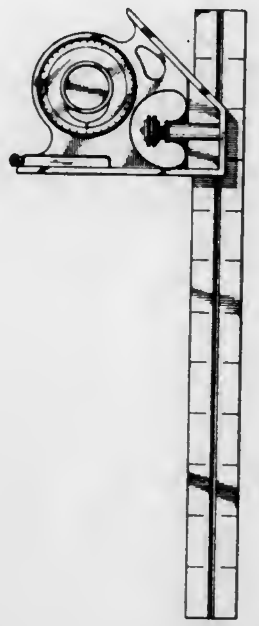
Masashi Tamura, Himeji, and Yoshio Akioka, Tokyo, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Hyogo-ken, Japan
Filed Apr. 21, 1972, Ser. No. 246,500
Claims priority, application Japan Oct. 25, 1971
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D52—4 R



233,695

COMBINED TRY-MITRE SQUARE AND ANGLE FINDER

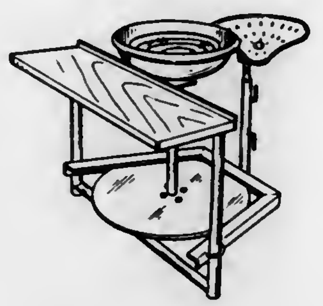
Donald L. Payne, Rockford, Ill., assignor to Pro Products, Incorporated, Rockford, Ill.
Filed Feb. 26, 1973, Ser. No. 335,892
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 A



233,696

POTTER'S WHEEL

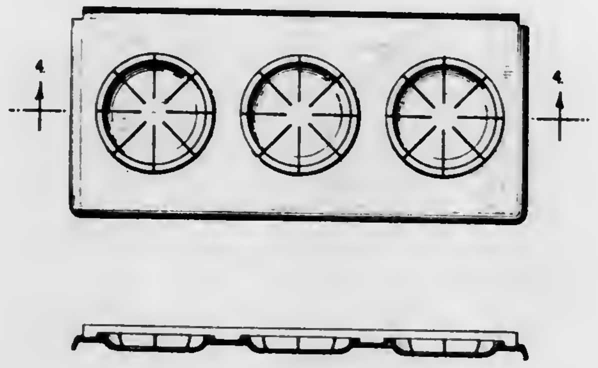
Robert E. Piepenburg, 515 E. Windemere, Royal Oak, Mich. 48073
Filed Sept. 8, 1972, Ser. No. 287,505
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D55—1 R



233,697

SHIELD FOR COFFEE MACHINE BURNER PLATES

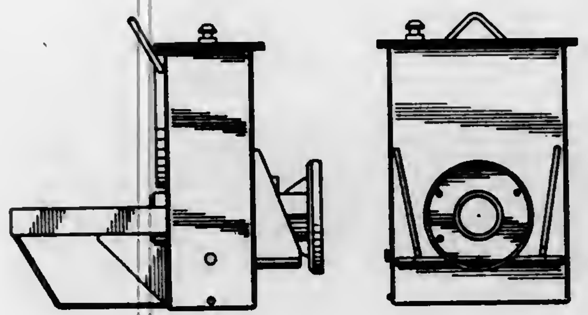
James O. Tate, Birmingham, Ala., assignor to Tate, Inc., Birmingham, Ala.
Filed Jan. 8, 1973, Ser. No. 321,728
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D55—1 E



233,698

GEAR CASE FOR MAGNETIC SEPARATOR DRIVE

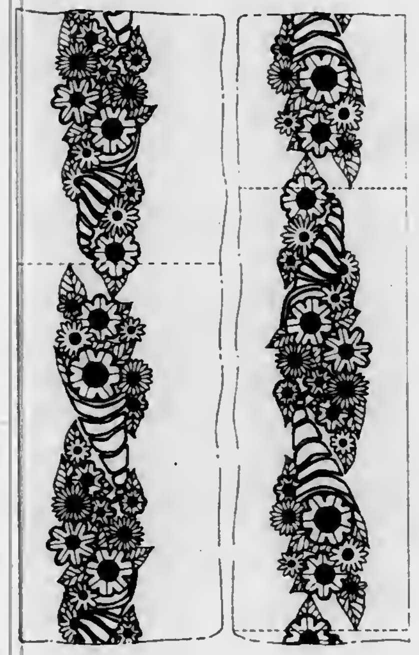
Karl J. Hnatko, Hibbing, Minn., assignor to Taconite Engineering & Manufacturing Co., Hibbing, Minn.
Filed Apr. 30, 1973, Ser. No. 355,514
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D55—1 G



233,699

PAPER TOWELING

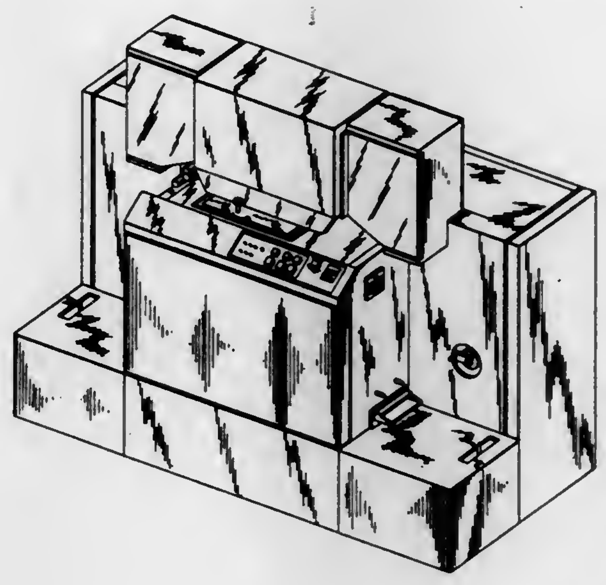
John S. Reece, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Feb. 23, 1973, Ser. No. 335,373
Term of patent 14 years
Int. Cl. D5—*03*
U.S. Cl. D59—2 A



233,700

PHOTOGRAPHIC PRINTER

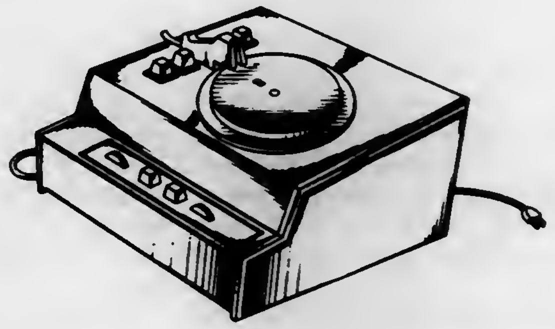
Andrew V. McClare, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 27, 1973, Ser. No. 355,255
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



233,701

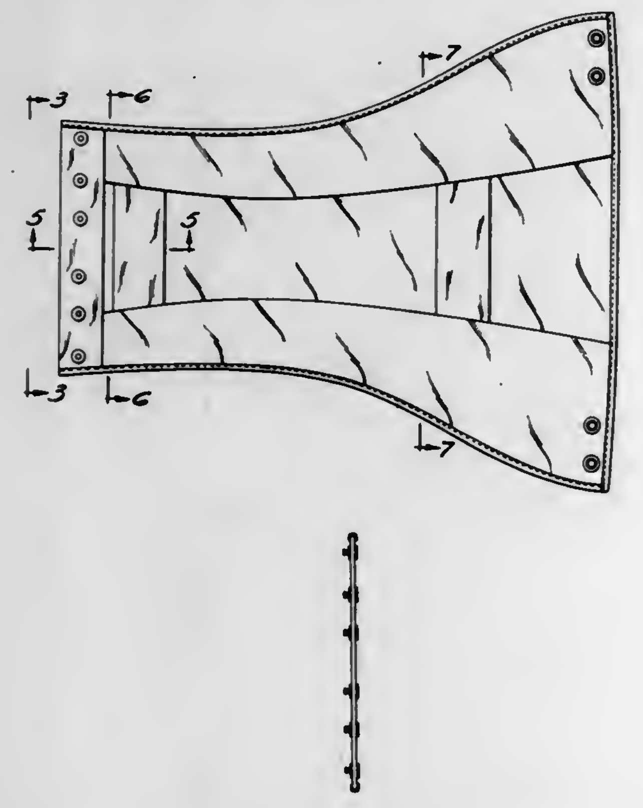
PRINTER

Gary R. Bluem, Minneapolis, Minn., assignor to Kroy Industries, Inc., Stillwater, Minn.
Filed Jan. 30, 1973, Ser. No. 327,984
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 R



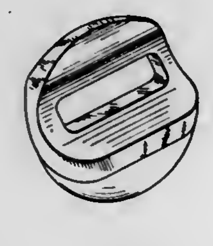
233,702
GARMENT FOR HOLDING A DIAPER

George F. Koury, Metairie, La., assignor to Pantasote Company, New York, N.Y.
Filed Mar. 10, 1972, Ser. No. 233,865
Term of patent 14 years
Int. Cl. D2—*01;* D24—*04*
U.S. Cl. D83—1 A



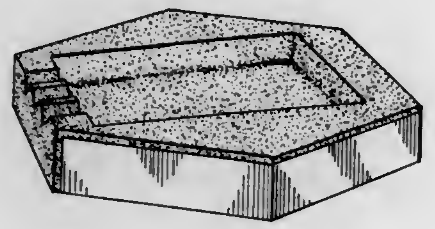
233,703
HAND HELD ELECTRIC MASSAGER

Samuel L. McNair, Overland Park, Kans., assignor to Dazey Products Co.
Filed Dec. 15, 1972, Ser. No. 315,629
Term of patent 14 years
Int. Cl. D24—*04, 99*
U.S. Cl. D83—1 T



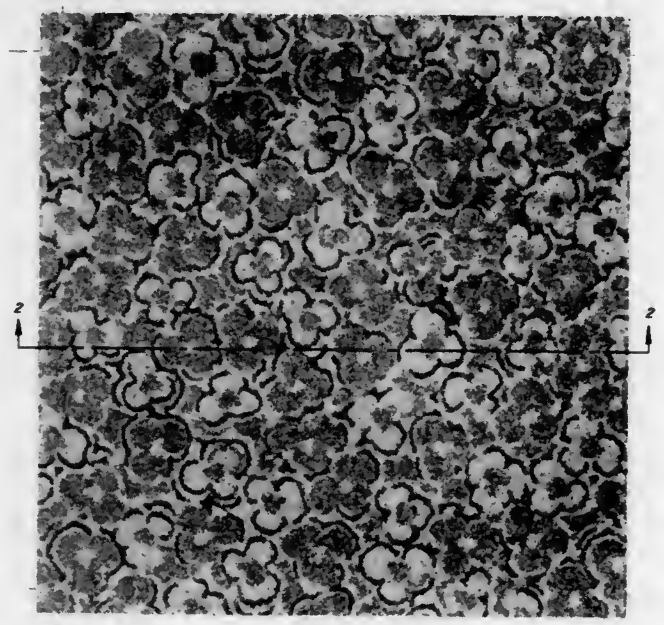
233,704
ASH TRAY

Ira Saltz, Greenlawn, N.Y., assignor to Oxford Pendaflex Corporation, Garden City, N.Y.
Continuation-in-part of design application Ser. No. 295,985, Sept. 28, 1972, now Patent No. 231,276.
This application Jan. 21, 1974, Ser. No. 435,207
Term of patent 14 years
The term of this patent subsequent to Apr. 9, 1988, has been disclaimed
Int. Cl. D27—*03*
U.S. Cl. D85—2 H



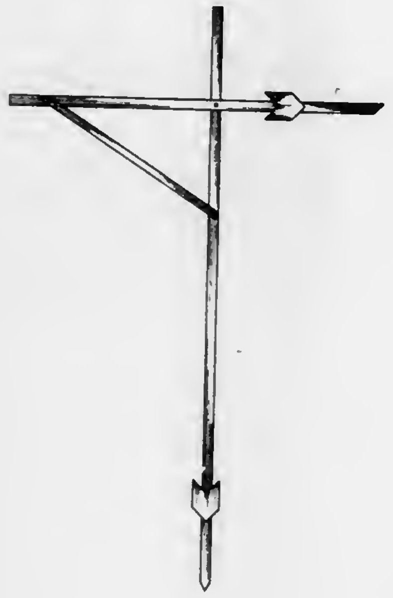
233,705
SOFT SURFACE FLOOR COVERING OR SIMILAR ARTICLE

Gerald E. White, Albertson, N.Y., assignor to Congoleum Industries, Inc., Kearny, N.J.
Filed Feb. 15, 1973, Ser. No. 332,779
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D92—4



233,706
STAND FOR REAL ESTATE SIGN

Thomas A. Battaglia, 43 Manor Road, Kentfield, Calif. 94904
Filed Oct. 9, 1973, Ser. No. 404,167
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12 A



LIST OF PATENTEES
TO WHOM
PATENTS WERE ISSUED ON THE 19TH DAY OF NOVEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-Z International Tool Company: *See—*
Clark, John E., Jr., 3,848,667.
AAI Corporation: *See—*
Abbott, David D., 3,848,532.
Aanestad, Robert D.: *See—*
Aanestad, Robert D.; Straub, Melvin J.; and Norgard, Edward J., 3,848,772.
Aanestad, Robert D.; Straub, Melvin J.; and Norgard, Edward J., to Aanestad, Robert D. Seed and soil treatment device. 3,848,772, Cl. 222-145.000.
Aartsen, Andreas Marinus, to Cooperatieve Vereniging Suiker Unie U.A. Method of producing a fondant product. 3,849,583, Cl. 426-162.000.
AB Bygg- och Transportekonomi (BT): *See—*
Bryntse, Anders Ivar, 3,848,754.
AB Cold Bound Pellets: *See—*
Kihlstedt, Per Gudmar, 3,849,111.
AB Metalform: *See—*
Strandell, Per-Olof, 3,848,447.
Aba, Eiichi: *See—*
Takahashi, Koichi; Usui, Keizaburo; Aba, Eiichi; and Ozaki, Kiyotaka, 3,848,431.
Abbott Coin Counter Co., Inc.: *See—*
Conant, Barton C.; and Yao, Szee Ming, 3,848,614.
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Ablett, Roger John Herbert, to Image Analysing Computers Limited. Image analysis system. 3,849,793, Cl. 358-81.000.
Abowitz, Gerald; Ruckdeschel, Frederick Robert; and Gerace, Robert Eugene, to Xerox Corporation. Non-contact temperature sensor for a roll fuser of a xerographic reproduction apparatus. 3,849,628, Cl. 219-216.000.
Abraham, Nedumparambil A.; Bagli, Jehan F.; and Bogri, Tibor, to Ayerst, McKenna and Harrison Limited. 11-Deoxyprostaglandin derivatives and process therefor. 3,849,474, Cl. 260-468.00d.
Acoustic Fiber Sound Systems, Inc.: *See—*
Everitt, Scott F., 3,848,696.
Acrometal Products, Inc.: *See—*
Steinback, Clarence I., 3,848,310.
Actron Industries, Inc.: *See—*
Byrne, Eugene C., 3,849,645.
Adachihara, Shunichi: *See—*
Omichi, Takenori; Ikeda, Teppei; and Adachihara, Shunichi, 3,849,166.
Adams, James E., Jr.; and Haas, Werner E. L., to Xerox Corporation. Method of controlling monochromatic collimated light by controlling the light reflection band of a liquid crystal. 3,848,965, Cl. 350-160.0lc.
Adams, James M.; Hopper, Randall R.; Raley, Garland E.; and Rutherford, James K., to Ethyl Corporation. Apparatus for embossing plastic material. 3,849,050, Cl. 425-363.000.
Addison, George E., to Universal Oil Products Company. Catalyst removal in moving bed processes. 3,849,295, Cl. 208-166.000.
Adickes, Cecil F.: *See—*
Bruce, Roger K.; Marhold, Werner; and Adickes, Cecil F., 3,849,053.
Adler, Norman; Morgenthau, John L., Jr.; and Gold, Paul A., to New England Nuclear Corporation. Radioactive gas dispensing device. 3,848,773, Cl. 222-1.000.
Advance Manufacturing Co.: *See—*
Allen, James E.; Lashley, James C.; and Noelting, C. Bernard, 3,848,280.
Advance Products Corporation: *See—*
Kraklau, David M.; and Taylor, John H., 3,848,337.
Affiliated Hospital Products, Inc.: *See—*
Baldwin, Brian E., 3,848,593.
AG Tec Inc.: *See—*
Scheffler, Edward D., Jr., 3,848,635.
Agen, Melbourne E. Self adjusting hedge and pipe rake. 3,848,402, Cl. 56-400.200.
Agence Nationale de Valorisation de la Recherche (Anvar): *See—*
Gau, Georges, 3,849,261.
Montuelle, Jean; Chaudron, Georges; and Piaard-Legry, Gerard, 3,849,079.
Agfa-Gevaert Aktiengesellschaft: *See—*
Kuffner, Karl; and Glockner, Hans, 3,849,140.
AGFA-Gevaert N.V.: *See—*
Jeurissen, Lambert Gaston; and De Smedt, Frans Antoon, 3,849,379.
Jeurissen, Lambert Gaston; Bollen, Romain Henri; Ghys, Theofiel Hubert; and Heylen, Renaat Frans, 3,849,658.
Agneta, Agustus R.: *See—*
Davidson, Bruce R.; and Agneta, Agustus R., 3,848,459.
Agui, Hideo: *See—*
Nakagome, Takenari; Agui, Hideo; Mitani, Toru; and Nakashita, Mitsuo, 3,849,421.
Aikawa, Hiroshi: *See—*
Ito, Naganori; and Aikawa, Hiroshi, 3,848,862.
Aikoh Co., Ltd.: *See—*
Sato, Yasumasa; Matsuyama, Shigeru; and Kobayashi, Masaaki, 3,848,655.
Aisin Seiki Kabushiki Kaisha: *See—*
Kazaoka, Kenichi; Hirose, Kimiharu; Matsumoto, Hisao; and Takeshita, Yasuo, 3,848,888.
Akitomo, Nobuo: *See—*
Inoue, Masaru; Kaneko, Toshio; Matsumoto, Koichi; Ishikawa, Makoto; and Akitomo, Nobuo, 3,849,001.
Aktiebolaget Assa: *See—*
Larsson, John Roland, 3,848,414.
Aktiebolaget Electrolux: *See—*
Borg, Sven Christer; Hesson, Christer Ragnar; and Nilsson, Erik Henning, 3,848,753.
Akutsu, Mitsuo: *See—*
Minagawa, Motonobu; Akutsu, Mitsuo; and Nakagawa, Kenichi, 3,849,370.
Akutsu, Norio: *See—*
Otubo, Osamu; Terashima, Isamu; and Akutsu, Norio, 3,848,990.
Akzo N.V.: *See—*
Hilgen, Hendrika; and Rekers, Casper J. N., 3,849,267.
Akzona Incorporated: *See—*
Fuchs, Rudolf; and Glieschke, Kurt, 3,848,300.
Aladyshev, Sergei Ivanovich: *See—*
Gryaznov, Vladimir Mikhailovich; Smirnov, Viktor Sergeevich; Mischenko, Alexandr Petrovich; and Aladyshev, Sergei Ivanovich, 3,849,076.
Alamance Industries, Inc.: *See—*
Armstrong, Edwin B., Jr., 3,848,435.
Alarm Products International, Inc.: *See—*
Parlato, Philip J., 3,848,959.
Alazraki, Marcos Daniel: *See—*
Gapp, Roland Howard; Alazraki, Marcos Daniel; and Harper, John, 3,848,389.
Albright, Charles W.; and Keller, George E., II, to Union Carbide Corporation. Cracking reactor. 3,849,075, Cl. 23-284.000.
Alexander M.S.: *See—*
McColl, Archibald Irvine, 3,848,674.
Alexander, Stephen H.: *See—*
Spillane, Leo J.; Alexander, Stephen H.; and Bramble, Reba H., 3,849,229.
Alexander, William H., to Vapor Corporation. Fluid control valve. 3,848,849, Cl. 251-314.000.
Alferov, Jury Fedorovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Kumysh, Ilya Iosifovich; Tsykulenko, Anatoly Konstantinovich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Bondarenko, Oleg Petrovich; and Bogachenko, Alexei Georgievich, 3,849,588.
Allan, Frank V.; and Welkowsky, Murray S., to Xonics, Inc. Electron radiograph patient identification system. 3,849,648, Cl. 250-315.000.
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Jack, David; and Glover, Ernest Edward, 3,849,557.
Allen, Archelaius Dawson; and Small, Fred, to Gullick Dobson Limited. Mine roof supports. 3,848,420, Cl. 61-45.00d.
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Allen, Robert H., 3,848,448.
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Allen, Marvin C.: *See—*
Martin, Theodore T.; and Allen, Marvin C., 3,849,300.
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Allen, Russell W., to Container Equipment Corporation. Box filling device. 3,848,397, Cl. 53-124.00d.
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Mayer, Friedrich, 3,848,878.
Allgulin, Torkel, to Boliden Aktiebolag. Method of purifying gases containing mercury vapour. 3,849,537, Cl. 423-210.000.

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  - Degginger, Edward R.; and Frisco, John S., 3,848,802.
  - Fuhrmann, Robert; Koff, Fred W.; and Pisanchyn, John, 3,849,481.
- Allin, Frederick R., to Deutsch Company Metal Components Division, The. Swaging tool. 3,848,451, Cl. 72-402.000.
- Allis-Chalmers Corporation: *See—*
  - Geiersbach, Allois F.; and Gilmore, Thomas P., 3,849,719.
  - Pflanz, Herbert M., 3,849,617.
- Alsop, Alfred N.: *See—*
  - Lines, Walter M.; Alsop, Alfred N.; and Ross, Edgar A., 3,848,884.
- Aluminum Company of America: *See—*
  - Bruno, Marshall J.; Jarrett, Noel; and Slaugenhaupt, Burl L., 3,849,119.
- Aluminum Suisse SA: *See—*
  - Hardt, Jean, 3,848,453.
- Amagai, Kiyoshi: *See—*
  - Takagi, Atsushi; Miura, Mitsuo; Suzuki, Akio; Kukino, Yoshinori; Amagai, Kiyoshi; Shimizu, Haruji; Satoh, Mitsutoshi; Kohno, Shoji; and Ebine, Mitsuo, 3,848,685
- Amann, Charles A.; and Ricketts, James M., to General Motors Corporation. Turbine blade coolant distributor. 3,849,022, Cl. 415-116.000.
- American Can Company: *See—*
  - Brandt, Roger; and Piltzecker, John William, 3,849,286.
  - Hoffman, Henry Tice, Jr., 3,849,168.
  - Kossmann, Hans, 3,849,284.
- American Cyanamid Company: *See—*
  - Feldman, Martin Louis; Hagedorn, Donald William; and Gordon, John Edson, 3,849,483.
  - Weiss, Martin Joseph; Gibs, Gabriel Joseph; Poletto, John Frank; and Remers, William Alan, 3,849,441.
- American Home Products Corporation: *See—*
  - McGregor, William H.; and Grant, Norman H., 3,849,390.
  - Sejpal, Vasant D.; Lueschen, William J.; and Weinstein, Bernard, 3,849,580.
  - Yardley, John P.; Rees, Richard W.; and Smith, Herchel, 3,849,403.
- American Hospital Supply Corporation: *See—*
  - Harautuneian, Andrew; and Penny, William H., 3,848,605.
- American Sterilizer Company: *See—*
  - Claxton, Patrick H.; and Keenan, Thomas A., 3,848,714.
- American Thermostat Corporation: *See—*
  - Hickling, Colin D., 3,849,756.
- American Waagner-Biro Company, Inc.: *See—*
  - Kemmetmueller, Roland, 3,848,344.
- AMP Incorporated: *See—*
  - Lockard, Joseph Larue; and Rose, William Henry, 3,849,610.
  - Plana, Roberto, 3,849,641.
  - Tighe, Charles I., Jr., 3,848,952.
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  - Soes, Lucas, 3,848,948.
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- Anderegg, Hans. Injection molding machine for producing slide fasteners. 3,849,042, Cl. 425-126.00r.
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- Anderson, Greenwood & Co.: *See—*
  - Powell, Walter W., 3,848,632.
- Anderson, Greenwood & Company: *See—*
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- Anderson, James J.; Canacho, Vasco G.; and Kinney, Robert E., to Mobil Oil Corporation. Fire retardant polymers containing thermally stable cyclic phosphonate esters. 3,849,368, Cl. 260-45.80r.
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- Anderson, Richard H., to Clow Corporation. Pipe having coupling means. 3,848,904, Cl. 285-230.000.
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- Ando, Satoshi; Matsui, Masao; and Ogata, Fumimaro, to Kanegafuchi Boseki Kabushiki Kaisha and Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A. Spinneret for spinning composite multi-core filaments. 3,849,044, Cl. 425-131.500.
- Ando, Tetsuo; and Hirata, Yoshimi, to Sony Corporation. Charge transfer device. 3,848,328, Cl. 29-578.000.
- Andrew Engineering Company: *See—*
  - Dulebohn, David H.; Landy, Arney, Jr.; and Brandt, Roy Earl, 3,849,624.
- Angeles Metal Trim Co.: *See—*
  - Costruba, Peter, 3,848,364.
- Anusauckas, Anthony V.: *See—*
  - Smith, Millard F.; and Anusauckas, Anthony V., 3,848,417.
- Apostoleris, Theodore G. Method of assembly of an electrical brush and terminal member. 3,848,333, Cl. 29-630.00e.
- Applied Photo Sciences, Inc., mesne: *See—*
  - Wyckoff, Charles W., 3,849,138.
- Applin, Ronald. Liquid level alarm. 3,849,771, Cl. 340-245.000.
- A.P.V. Paralec Limited: *See—*
  - Laflin, Reginald E., 3,849,585.
- Aqua-Chem, Inc.: *See—*
  - Steinbruchel, Armando B., 3,849,259.
- Arai, Atsuaki: *See—*
  - Iwano, Haruhiko; Tanaka, Mitsugu; Otsuki, Tesuo; and Arai, Atsuaki, 3,849,133.
  - Yoshida, Yoshinobu; and Arai, Atsuaki, 3,849,131.
- Arai, Mamoru; Haneishi, Tatsuo; Kayamori, Hisashi; Takiguchi, Yoo; Kitano, Noritoshi; and Kaneko, Susumu, to Sankyo Company Limited. Antibiotic having parasiticidal activity. 3,849,398, Cl. 260-211.5ab.
- Arai, Tatsuo: *See—*
  - Suzuki, Yasuo; Arimura, Iwao; and Arai, Tatsuo, 3,849,220.
- Arai, Tohru: *See—*
  - Komatsu, Noboru; Arai, Tohru; and Mizutani, Masayoshi, 3,848,847.
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  - Nakanishi, Michio; Araki, Kazuhiko; Tahara, Tetsuya; and Shiroki, Masami, 3,849,405.
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- Argus Chemical Corporation: *See—*
  - Minagawa, Motonobu; Akutsu, Mitsuo; and Nakagawa, Kenichi, 3,849,370.
- Arimura, Ichiro; Higashida, Yutaka; and Kurashina, Kozo, to Matsushita Electric Industrial Co., Ltd. Magnetic tape transfer device. 3,849,794, Cl. 360-17.000.
- Arimura, Iwao: *See—*
  - Suzuki, Yasuo; Arimura, Iwao; and Arai, Tatsuo, 3,849,220.
- Armbruster, Frederick C.; and Kooi, Earl R., to CPC International Inc. Low D.E. starch conversion products. 3,849,194, Cl. 127-29.000.
- Armco Steel Corporation: *See—*
  - Polc, Stephen D.; and Rhein, Charles F., 3,849,167.
- Armour and Company: *See—*
  - Taylor, Charles R.; Bernhard, Albert J.; Bradford, Jerry I.; and Williams, Donald J., 3,848,294.
- Armstrong Cork Company: *See—*
  - Kent, Raymond C., 3,849,223.
- Armstrong, Edwin B., Jr., to Alamance Industries, Inc. Transfer printing mechine. 3,848,435, Cl. 68-5.00d.
- Arn. Kiekert Sohne: *See—*
  - Watermann, Hans-Dieter; and Kleefeldt, Frank, 3,848,911.
- Arndt, Richard H.: *See—*
  - Tachick, Henry N.; and Arndt, Richard H., 3,849,186.
- Arnon, Ruth: *See—*
  - Teitelbaum, Dvora; Gan, Ramat; Meshorer, Asher; Hirshfeld, Tsvi; Arnon, Ruth; and Sela, Michael, 3,849,550.
- Aro Corporation, The: *See—*
  - Hanning, John R., 3,848,716.
- Asahi Glass Company, Ltd.: *See—*
  - Kirimoto, Kazusuke; Hayashi, Takao; and Kojima, Hiroaki, 3,849,521.
- Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
  - Yonekura, Saku; Miyamoto, Hideaki; and Namba, Akio, 3,848,998.
- Asahi Kogahu Kogyo Kabushiki Kaisha: *See—*
  - Takeda, Hideomi, 3,849,643.
- Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
  - Kanno, Kyusei, 3,848,984.
  - Miyakawa, Seinan; and Noda, Nobuhiro, 3,848,986.
  - Mori, Chiharu, 3,849,725.
- Asano, Hidejiro; and Ouyagi, Yashichi, to Nippon Steel Corporation. Surface-treated steel plates high in anticorrosiveness. 3,849,176, Cl. 117-71.00m.
- Asano, Kiroaki: *See—*
  - Kikuchi, Makoto; Asano, Kiroaki; Otsu, Ikoo; and Saeki, Toyoaki, 3,848,362.
- Asaro, Josephine Q. Hair cutting gauge. 3,848,611, Cl. 132-45.000.
- Ashida, Kaneyoshi: *See—*
  - Frisch, Kurt C.; and Ashida, Kaneyoshi, 3,849,349.
- Ashland Oil, Inc.: *See—*
  - Taft, David D.; and Shepler, Terry H., 3,849,353.
- Assael, Marcel. Device for fixing sheets to surface. 3,848,380, Cl. 52-222.000.
- Associated Electrical Industries Limited: *See—*
  - Wallington, Michael J., 3,849,656.
- Associated Pulp and Paper Mills Limited: *See—*
  - Morgan, John Edward, 3,849,536.
- Astakhov, Arkady Petrovich: *See—*
  - Tesner, Pavel Alexandrovich; Knorre, Vadim Georgievich; Podkopaev, Vladimir Fedorovich; Pakhtusova, Tamara Timofeevna; Baenkevich, Vsevolod Viktorovich; and Astakhov, Arkady Petrovich, 3,849,073.
- Astra Lakemedel Aktiebolag: *See—*
  - Jonsson, Arne Gosta; and Torstensson, Nils Torsten Lennart, 3,849,552.
- Astrosystems, Inc.: *See—*
  - Barth, Seymour, 3,849,774.
- Atago, Takeshi: *See—*

  - Masai, Tadahisa; and Atago, Takeshi, 3,849,024.
- Atkinston, Peter: *See—*
  - Hetherington, Matthew James; and Atkinston, Peter, 3,848,461.
- Atlantic Richfield Company: *See—*
  - Kern, Loyd Rupert, 3,848,671.
- Atlas Copco Aktiebolag: *See—*
  - Persson, Jan Edward, 3,848,683.
- Atwood Vacuum Machine Company, The: *See—*
  - Marchione, Joseph H.; and Skubal, John J., 3,848,293.
- Augusta, Frantisek: *See—*
  - Zabrodsky, Zdenek; Augusta, Frantisek; and Kramenic, Zdenek, 3,848,641.
- August's Limited: *See—*
  - Morley, Douglas, 3,848,816.
- Austad, Grover R.; and Austad, Ronald G. Quick tie device. 3,848,354, Cl. 43-42.490.
- Austad, Ronald G.: *See—*
  - Austad, Grover R.; and Austad, Ronald G., 3,848,354.
- Automotive Products Limited: *See—*
  - Hodkinson, Harold, 3,848,935.
- Autoquip Corporation: *See—*
  - Richards, Lawrence I.; and Gould, Ronald R., 3,848,288.
- Autotrol Corporation: *See—*
  - Torpey, Wilbur N., 3,849,303.
  - Torpey, Wilbur N.; and Sullivan, Richard A., 3,849,304.
- Avco Corporation: *See—*
  - Shank, Wayne C., 3,848,482.
- Avilov, Oleg Vladimirovich: *See—*
  - Lykov, Mikhail Vasilievich; Rybalchenko, Gleb Fedorovich; Korotkov, Mikhail Alexeevich; Dobrovolsky, Evgeny Ivanovich; Rudenko, Inna Lukinichna; Avilov, Oleg Vladimirovich; and Bljumberg, Yakov Benedictovich, 3,849,233.
- Ayerst, McKenna and Harrison Limited: *See—*
  - Abraham, Nedumparambil A.; Bagli, Jehan F.; and Bogri, Tibor, 3,849,474.
- Ayres, Waldemar A., to Becton, Dickson and Company. Plasma separator. 3,849,072, Cl. 23-259.000.
- Baba, Kosaku: *See—*
  - Hosaka, Akio; Baba, Kosaku; and Wazawa, Kiyoshi, 3,849,759.
- Bachmann, Thomas H., to Chemetron Corporation. Scraper blade. 3,848,289, Cl. 15-246.500.
- Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
  - Barzynski, Helmut; Jun, Mong-Jon; Saenger, Dietrich; and Volkert, Otto, 3,849,137.
  - Fischer, Adolf, 3,849,107.
  - Frielingsdorf, Hans; Mueller-Tamm, Heinz; Hoehr, Lothar; and Kolk, Erich, 3,849,334.
  - Fuchs, Hugo; Ricker, Ernst; Schmidt, Franz; Schwartz, Erich; and Sperber, Heinrich, 3,849,444.
  - Schmeidl, Karl, 3,849,065.
  - Schrempp, Klaus; Jettmar, Werner; Polster, Rudolf; and Hartmann, Eduard, 3,849,150.
- Baenkevich, Vsevolod Viktorovich: *See—*
  - Tesner, Pavel Alexandrovich; Knorre, Vadim Georgievich; Podkopaev, Vladimir Fedorovich; Pakhtusova, Tamara Timofeevna; Baenkevich, Vsevolod Viktorovich; and Astakhov, Arkady Petrovich, 3,849,073.
- Baermann, Max. Method of producing a molded anisotropic permanent magnet. 3,849,213, Cl. 148-108.000.
- Bagli, Jehan F.: *See—*
  - Abraham, Nedumparambil A.; Bagli, Jehan F.; and Bogri, Tibor, 3,849,474.
- Bailey, Alan; Maggs, Frederick Arthur Pomroy; and Williams, John Herbert, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the. Sequential carbonization and activation of fibros material in a carbon dioxide atmosphere. 3,849,332, Cl. 252-422.000.
- Baker, William J.; Bos, John R.; and Klemm, Robert W., to Gardner-Denver Company. Binding and labeling apparatus. 3,848,789, Cl. 227-76.000.
- Bakermans, Fransiscus Cornelius; and Thoms, William Charles, to Du Pont de Nemours, E. I., and Company. Lead wire assembly apparatus. 3,848,316, Cl. 29-203.0dt.
- Bakke, Even; and Scapicchio, Celestino G., to Slick Corporation, The. Apparatus for separating a gaseous carrier from particulate matter entrained therein. 3,849,092, Cl. 55-302.000.
- Baldwin, Brian E., to Affiliated Hospital Products, Inc. Side loading disposable-capsule syringe. 3,848,593, Cl. 128-218.0da.
- Baldwin-Gegenheimer Corporation: *See—*
  - Gegenheimer, Harold W.; Siebein, Walter A.; and Hancock, George J., 3,848,529.
- Ban, Thomas E., to McDowell-Wellman Engineering Company. Process for the production of crude ferronickel. 3,849,113, Cl. 75-3.000.
- Ban, Thomas Eugene, to McDowell-Wellman Engineering Company. Sintering process. 3,849,115, Cl. 75-5.000.
- Banike, Ronald A., to Hollymatic Corporation, mesne. Self-cleaning valve for refrigerating apparatus. 3,848,624, Cl. 137-242.000.
- Banner, Philip M. Magnetic compass corrector means. 3,848,455, Cl. 73-1.00e.
- Bantz, Walter J.; Couture, John W.; and Pittaro, Richard J., to Krautkramer-Branson, Incorporated. Method and apparatus for measuring the velocity of sound in a workpiece. 3,848,460, Cl. 73-67.50r.
- Bareyt, Claude, to Thomson-CSF. Phase-corrector. 3,849,676, Cl. 307-295.000.
- Barkel, Barry M., to Basf Wyandotte Corporation. Apparatus for sealing mechanical connection at bipolar barrier sheet. 3,849,279, Cl. 204-254.000.
- Barnes, Ray A. Anchor device for trailers. 3,848,367, Cl. 52-157.000.
- Barrett, Robert R., to Visual Designs Mfg. Co. Adjustable display shelf apparatus. 3,848,844, Cl. 248-245.000.
- Barth, Seymour, to Astrosystems, Inc. Analog-to-digital converter employing an electromagnetic resolver. 3,849,774, Cl. 340-347.0da.
- Bartles, Edward C.; and Fraim, Raymond A., to Eastman Kodak Company. Control system. 3,848,342, Cl. 34-48.000.
- Barton, Kenneth R.: *See—*
  - Gray, Theodore F., Jr.; and Barton, Kenneth R., 3,849,514.
- Barzynski, Helmut; Jun, Mong-Jon; Saenger, Dietrich; and Volkert, Otto, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Lithographic printing plates and photoresists comprising a photosensitive polymer. 3,849,137, Cl. 96-67.000.
- Basel, Horst Aebli; Fleck, Fritz; Littlewood, Peter Stuart; and Mercer, Alec Victor, to Sandoz Ltd. Pyrazoline compounds. 3,849,406, Cl. 260-239-700.
- BASF Aktiengesellschaft: *See—*
  - Mangold, Dietrich; Fischer, Adolf; Rohr, Wolfgang; and Hamprecht, Gerhard, 3,849,467.
- Basf Wyandotte Corporation: *See—*
  - Barkel, Barry M., 3,849,279.
- Batchelor, Donald G.: *See—*
  - Stanley, Edward I.; and Batchelor, Donald G., 3,849,055.
- Bates, Charles Ross. Rinse method and machine. 3,848,290, Cl. 15-321.000.
- Battaerd, Hendrik Adriaan Jacobus, to ICI Australia Limited and Commonwealth Scientific and Industrial Research Organization. Process of manufacturing polymer particles of irregular shape. 3,849,525, Cl. 264-6.000.
- Battelle Memorial Institute: *See—*
  - Meylan, Jean-Luc, 3,848,656.
- Bauer, Johann; and Popp, Walter, to Wacker-Chemie GmbH. Method for production of plasticized thermoplastic powder mixtures. 3,849,365, Cl. 260-34.200.
- Baugh, Raymond Ernest; and Plaister, John Edward, to Taylor & Challen Limited. Feed mechanisms. 3,848,444, Cl. 72-10.000.
- Bauman, Jack L.; and Erickson, Vedrick A. Seed dispenser for planters. 3,848,552, Cl. 111-77.000.
- Baumbach, Bertram W.; and Nelson, Richard E., to Reliable Electric Company. Line protector for a communication circuit. 3,849,750, Cl. 337-32.000.
- Bausch & Lomb Incorporated: *See—*
  - Burns, Richard H.; Engelbrecht, Orest; and Welham, Brian H., 3,848,960.
  - Peck, Theodore H., 3,848,963.
  - Sakaide, Roy R.; and Shank, Clifford A., 3,849,653.
- Bavisotto, Vincent S.: *See—*
  - Garza, Adan C.; and Bavisotto, Vincent S., 3,849,070.
- Baxter, James S. Pipe supporting rack for vehicle. 3,848,786, Cl. 224-45.00r.
- Bayer Aktiengesellschaft: *See—*
  - Boehmke, Gunther, 3,849,377.
  - Boshagen, Horst; and Plempel, Manfred, 3,849,568.
  - Colln, Reimer; Hofer, Wolfgang; Maurer, Fritz; and Rohe, Lothar, 3,849,524.
  - Dhein, Rolf; Rudolph, Hans; Kreuder, Hans-Joachim; and Gebauer, Herbert, 3,849,160.
  - Heine, Hans-Georg; Rosenkranz, Hans-Jurgen; and Rudolph, Hans, 3,849,497.
  - Hiltmann, Rudolf; Wollweber, Hartmund; Hoffmeister, Friedrich; and Kronebert, Hans-Gunther, 3,849,563.
  - Immel, Otto; and Schwarz, Hans-Helmut, 3,849,335.
  - Jautelat, Manfred, 3,849,469.
  - Metzger, Carl; and Eue, Ludwig, 3,849,432.
  - Muller, Erwin, 3,849,515.
  - Wolf, Gerhard Dieter; Blankenstein, Gunter; and Nischk, Gunther, 3,849,376.
  - Zirngibl, Hans; Fuhr, Werner; Jaschinski, Klemens; Beumer, Peter; and Weidmann, Walter, 3,849,543.
- Bayer, Eric W., to General Electric Company. Current responsive actuator. 3,849,752, Cl. 337-77.000.
- Bear Brand Hosiery Co.: *See—*
  - Conaway, Mildred; Thompson, Alligene; Bowen, Dorsie Mae; Brown, Danny; and McGarrah, Larry, 3,848,266.
- Beasley, Robert Malcolm; Mainard, Douglas Raymond; and Washington, Derek, to U.S. Philips Corporation. Surface conductive tilted channel plate electron multiplier. 3,849,692, Cl. 313-379.000.
- Beattie, Thomas R.: *See—*
  - Christensen, Burton G.; Leanza, William J.; and Beattie, Thomas R., 3,849,482.
- Beaumont, Jean-Louis, to Etablissement Public: Institut National de la Sante et la Recherche Medicale. Process for obtaining antigen-lipoid emulsions. 3,849,546, Cl. 424-12.000.
- Beck, Kurt-Gunther: *See—*
  - Flockenhaus, Claus; Simonis, Wolfgang; Beck, Kurt-Gunther; and Echterhoff, Heinrich, 3,849,258.
- Beck, Richard F.; and Cerny, Louis T., to Elgin, Joliet and Eastern Railway Company. Wiggle track section. 3,848,534, Cl. 104-26.00a.
- Beckman, Frank H.: *See—*

Chedister, Conkling; and Beckman, Frank H., 3,848,981.

Beckwith, Merton M.; and Fong, Jaan-Jiue, to Conversion Chemical Corporation. Composition and method for stripping nickel, zinc and cadmium from substrates of iron and copper. 3,849,218, Cl. 156-18.000.

Becton, Dickson and Company: *See—*
Ayres, Waldemar A., 3,849,072.

Becuwe, Jacques, to Rhone-Progil. Continuous method for the recovery by condensation in the solid state of sublimable substances. 3,849,077, Cl. 23-294.000.

Begland, Robert Walter, to Du Pont de Nemours, E. I., and Company. Dimethyl diaminomaleate. 3,849,479, Cl. 260-482.00p.

Begrich, Rainer; and Seitz, Karl, to Ciba-Geigy AG. Process for the manufacture of N-(2,4-dihalogeno-S-triazin-6-yl)-ureas. 3,849,413, Cl. 260-249.500.

Behymer, Donald James, to Minnesota Mining and Manufacturing Company. Gaseous fluid monitoring apparatus. 3,848,457, Cl. 73-24.000.

Beil, Volentin E., to McDonald Products Corporation. Hinge assembly for receptacles and the like. 3,848,769, Cl. 220-259.000.

Beiter, Glenn A., to Honeywell Inc. Tape transport control system. 3,849,661, Cl. 250-571.000.

Belk, Wilber C., to FMC Corporation. Accumulator for fragile articles. 3,848,724, Cl. 198-29.000.

Bell Telephone Laboratories, Incorporated: *See—*
Benes, Vaclav Edvard; and Duguay, Michel Albert, 3,849,604.
Carbrey, Robert Lawrence, 3,849,607.
Hakki, Basil Wahid, 3,849,738.
Ho, Edmond Yu-Shang, 3,849,730.
Koo, James Teh-Zen, 3,849,673.
Lawrence, Thomas Russell; and Saltzberg, Burton R., 3,849,733.
Roberge, Kenneth Joseph, 3,849,606.
Waaben, Sigurd Gunther, 3,849,675.

Beloit Corporation: *See—*
Lucas, Robert G., 3,848,304.

Bemis & Son, Inc.: *See—*
Bemis, John H., 3,848,850.

Bemis, John H., to Bemis & Son, Inc. Vehicle mounted hydraulic powered post puller. 3,848,850, Cl. 254-30.000.

Bendix Corporation, The: *See—*
Brush, Robert W., 3,848,957.
Burnett, Richard T., 3,848,705.
Dray, Walter L., 3,848,617.
Eastman, James M., 3,849,020.
Eastman, James M.; and Schuster, Robert W., 3,849,021.
Lewis, Richard L., 3,848,932.
McCombs, Howard L., 3,848,636.
Pfeifer, Jerome L., 3,849,758.

Benedict, Harris M.: *See—*
Swidler, Ronald; and Benedict, Harris M., 3,849,116.

Benes, Vaclav Edvard; and Duguay, Michel Albert, to Bell Telephone Laboratories, Incorporated. Time-slot interchanger for time division multiplex system utilizing organ arrays of optical fibers. 3,849,604, Cl. 179-15.0aq.

Bengtsson, John Ingemar; Hakansson, Sven Anders Samuel; Lundholm, Sven Gunnar K:Son; and Lonnberg, Lars, to Kommanditbolaget United Stirling (Sweden) AB & Co. Seal for piston rod of Stirling engine. 3,848,877, Cl. 277-3.000.

Bennett, John E.; Burkhardt, James W.; and Koftfield, Richard E., to Diamond Shamrock Corporation. Bipolar hypochlorite cell. 3,849,281, Cl. 204-268.000.

Bennett, Stewart, to Polaroid Corporation. Automatic exposure control system. 3,848,985, Cl. 354-41.000.

Berendt, Hans-Ulrich: *See—*
Mueller, Volkmar; Berendt, Hans-Ulrich; and Harris, Melvin, 3,849,162.

Berens, Darrell E. Dual purpose cabinet. 3,848,940, Cl. 312-135.000.

Bergersen, Earl O. Orthodontic appliance having cooperation detection capability. 3,848,335, Cl. 32-14.00b.

Bergman, Ernest R., to Copeland Corporation. Lubricating system for vertical machine elements. 3,848,702, Cl. 184-6.300.

Bergquist, Carl R., Jr., to Bergquist Co., Inc., The. Commutator ring banding. 3,848,332, Cl. 29-497.000.

Bergquist Co., Inc., The: *See—*
Bergquist, Carl R., Jr., 3,848,332.

Bergwerksverband GmbH: *See—*
Geisler, Roland; and Konic, Wilhelm, 3,848,810.

Berman, Herbert: *See—*
Berman, Herbert; and Tenen, Stan, 3,849,709.

Berman, Herbert; and Tenen, Stan, to Berman, Herbert. Motor control system. 3,849,709, Cl. 318-227.000.

Bernemann, Paul: *See—*
Maass, Gunter; Engel, Frederico; Bernemann, Paul; and Blumel, Harald, 3,849,363.

Bernhard, Albert J.: *See—*
Taylor, Charles R.; Bernhard, Albert J.; Bradford, Jerry I.; and Williams, Donald J., 3,848,294.

Bernstein, Jack: *See—*
Vogt, Berthold Richard; Bernstein, Jack; and Weisenborn, Frank Lee, 3,849,490.

Bernstein, Philip; and Varker, Alan E., to ESB Incorporated. One-package moisture activatable polysulfide sealants. 3,849,386, Cl. 260-79.100.

Berthoud, Francois, to Ebauches S.A. Device for limiting the axial play of a rotatable element of a movement of timepiece or of a small mechanical apparatus. 3,849,011, Cl. 403-165.000.

Bertrand, Charles. Process for purifying fumes. 3,849,541, Cl. 423-242.000.

Beth-Con Realty, Inc.: *See—*
De Barbieri, Joseph L., 3,848,854.

Bettencourt, Pierre Andre: *See—*
Fetty, Warren Newton; Knerr, Richard Parke; Gillespie, Richard Lee; and Bettencourt, Pierre Andre, 3,848,808.

Beumer, Peter: *See—*
Zirngibl, Hans; Fuhr, Werner; Jaschinski, Klemens; Beumer, Peter; and Weidmann, Walter, 3,849,543.

Bevilacqua, Frank, to Combustion Engineering Inc. Guide structure for control elements. 3,849,257, Cl. 176-36.00r.

Bezold, Karl-Heinz: *See—*
Forster, Johannes; Bezold, Karl-Heinz; and Neihage, Helmut, 3,849,718.

Biarnais, Paul; Falize, Claude; and Sitaud, Gilbert, to Rhone-Progil. Purification of high boiling esters. 3,849,475, Cl. 260-475.00b.

Bibb, Everett I. Frame joint construction. 3,849,013, Cl. 403-347.000.

Bielfeldt, Friedrich Bernd; and Herbst, Richard, to Krauss-Maffei A.G. Distributor and nozzle assembly for injection-molding machines. 3,849,048, Cl. 425-247.000.

Bimba, Charles W. Method for assembling body and end sections for fluid power cylinder. 3,848,325, Cl. 29-511.000.

Binns, Kenneth John, to National Research Development Corporation. Permanent magnet rotor for alternating current generators and motors. 3,849,682, Cl. 310-156.000.

Bird, Marlin E. Cutting tool holding device. 3,848,865, Cl. 269-69.000.

Bird, Stanford W.; Wasserman, Jerome D.; and Hatley, Earl L., said Bird, Stanford W., assor. to Plastronics Corporation and said Wesserman and Hatley assors. to Consolidated Foods Corporation. Tear-away package. 3,848,795, Cl. 229-23.00r.

Birkenmeyer, Robert D., to Upjohn Company, The. Lincomycin and clindamycin 1-0-ethers. 3,849,396, Cl. 260-210.00r.

Black Clawson Company, The: *See—*
Seifert, Peter, 3,849,302.

Black Clawson Fibreclaim Inc.: *See—*
Marsh, Paul G.; and Chupka, David E., 3,849,245.

Black Clawson Fibreclaim, Inc., mesne: *See—*
Raymond, Delmar R.; and Kleinfeld, Jack M., 3,849,246.

Blackham, Norman: *See—*
Hosking, John Trevor; and Blackham, Norman, 3,848,974.

Blagdon, Peter A.; Malzahn, Wayne R.; and Fujiwara, Huygene K., to Ralston Purina Company. Fortified snack process and product. 3,849,582, Cl. 426-152.000.

Blake, Frederick H. Fluidic constant pressure pump control. 3,849,027, Cl. 417-223.000.

Blake, Ralph Kingsley, to Du Pont de Nemours, E. I., and Company. Copper (I) salt-hydrophilic binder lithographic images. 3,849,134, Cl. 96-29.00l.

Blanford, Royal D. Wheelchair footplate cover cushion. 3,848,922, Cl. 297-219.000.

Blankenstein, Gunter: *See—*
Wolf, Gerhard Dieter; Blankenstein, Gunter; and Nischk, Gunther, 3,849,376.

Blaskowski, Henry John; and Koucky, Robert Willis, to Combustion Engineering, Inc. Combined steam and gas turbine power plant having gasified coal fuel supply. 3,849,662, Cl. 290-2.000.

Blavier, Arthur Victor Joseph, to U.S. Philips Corporation. Arc welding device with consumable welding wire. 3,849,627, Cl. 219-131.00f.

Blewitt, Donald D.; and Shaw, Woodrow G., to Westinghouse Electric Corporation. Current limiting fuse. 3,849,754, Cl. 337-231.000.

Blewitt, Donald D.; and Shaw, Woodrow G., to Westinghouse Electric Corporation. Current limiting fuse with fuse element with a diamond shaped cutout. 3,849,755, Cl. 337-295.000.

Bljumberg, Anna Benedictovna: *See—*
Lykov, Mikhail Vasilievich; Rybalchenko, Gleb Fedorovich; Korotkov, Mikhail Alexeevich; Dobrovolsky, Evgeny Ivanovich; Rudenko, Inna Lukinichna; Avilov, Oleg Vladimirovich; and Bljumberg, Yakov Benedictovich, 3,849,233.

Bljumberg, Yakov Benedictovich: *See—*
Lykov, Mikhail Vasilievich; Rybalchenko, Gleb Fedorovich; Korotkov, Mikhail Alexeevich; Dobrovolsky, Evgeny Ivanovich; Rudenko, Inna Lukinichna; Avilov, Oleg Vladimirovich; and Bljumberg, Yakov Benedictovich, 3,849,233.

Bloejack, James William, Jr.; Daniel, Truman Knox, Jr.; and Rolison, Darrell Edward, to Hercules Incorporated. Incineration process for disposal of waste propellant and explosives. 3,848,548, Cl. 110-7.00r.

Blomback, Birger: *See—*
Percs, Edmund E.; Stocker, Kurt F.; Blomback, Birger; Blomback, Margareta; and Hessel, Birgit, 3,849,252.

Blomback, Margareta: *See—*
Percs, Edmund E.; Stocker, Kurt F.; Blomback, Birger; Blomback, Margareta; and Hessel, Birgit, 3,849,252.

Bloxom, David E., to Speed Fab-Crete Corporation. Deck panel for roof and floor structures. 3,848,381, Cl. 52-236.000.

Blumel, Harald: *See—*
Maass, Gunter; Engel, Frederico; Bernemann, Paul; and Blumel, Harald, 3,849,363.

Blumle, Leo J.: *See—*

Hurtig, Carl R.; Kent, Robert L.; and Blumle, Leo J., 3,848,633.

Bobeck, Richard L.: *See—*
Stein, Theodore W.; Gilman, Harold; and Bobeck, Richard L., 3,849,451.

Bobkowicz, Andrew John: *See—*
Bobkowicz, Emilian; and Bobkowicz, Andrew John, 3,848,403.

Bobkowicz, Emilian; and Bobkowicz, Andrew John. Aerodynamic spinning of composite yarn. 3,848,403, Cl. 57-34.0hs.

Bodine, Albert G. Sonic retorting technique for in situ mining of carbonaceous material. 3,848,672, Cl. 166-249.000.

Boehmke, Gunther, to Bayer Aktiengesellschaft. Polyester containing sulphonic acid groups. 3,849,377, Cl. 260-49.000.

Boehringer Mannheim GmbH: *See—*
Hubner, Manfred; Heerdt, Ruth; Schmidt, Felix Helmut; Thiel, Max; and Weyer, Rudi, 3,849,417.

Boeing Company, The: *See—*
Stanley, Michael Richard; and Kimes, Lucas James, 3,848,832.

Bogachenko, Alexei Georgievich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Kumysh, Ilya Iosifovich; Tsykulenko, Anatoly Konstantinovich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Bondarenko, Oleg Petrovich; and Bogachenko, Alexei Georgievich, 3,849,588.

Bogart, George A., 49% to Klein, Arthur J. Adjustable seat assembly. 3,848,845, Cl. 248-393.000.

Bogri, Tibor: *See—*
Abraham, Nedumparambil A.; Bagli, Jehan F.; and Bogri, Tibor, 3,849,474.

Bogusz, Frank J. Vehicle anti-theft device. 3,849,663, Cl. 307-10.0at.

Bohn, Gerhard: *See—*
Ghibu, Michael; Bohn, Gerhard; and Schwarzler, Peter, 3,849,724.

Bohrick Corporation, The: *See—*
Thompson, John T.; and Cowan, Arnold A., 3,848,710.

Bolan, Peter Samuel; Bryant, Aramis Duane; Drejza, John Edward; Holovka, Charles Stephen; and Weber, Ludwig Wilhelm, to International Business Machines Corporation. Print disc assembly for a printer. 3,848,722, Cl. 197-53.000.

Boliden Aktiebolag: *See—*
Allgulin, Torkel, 3,849,537.
Nilsson, Bruno Yngve, 3,849,722.

Bollen, Romain Henri: *See—*
Jeurissen, Lambert Gaston; Bollen, Romain Henri; Ghys, Theofiel Hubert; and Heylen, Renaat Frans, 3,849,658.

Bolliand, Robert; and Saligny, Claude, to Rhone-Poulence Textile. Process of making a bulked padding web. 3,848,295, Cl. 19-65.00t.

Bom, Cornelis Johannes Gerardus: *See—*
Van. Der Lely, Ary; and Bom, Cornelis Johannes Gerardus, 3,848,677.

Bomoro Bocklenberg & Motte GmbH & Co., KG., Firma: *See—*
Wilfert, Karl; Gmeiner, Gunter; Grabner, Christian; and Nockemann, Ernst, 3,848,910.

Bond, Bonald S., to RCA Corporation. Collision prevention. 3,849,782, Cl. 343-112.0ca.

Bondarenko, Oleg Petrovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Kumysh, Ilya Iosifovich; Tsykulenko, Anatoly Konstantinovich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Bondarenko, Oleg Petrovich; and Bogachenko, Alexei Georgievich, 3,849,588.

Bookout, Floyd V., to Roch-Ola Manufacturing Corporation. Vending machine control circuit. 3,848,718, Cl. 194-1.00m.

Boone, Philip. Dispensing device. 3,848,822, Cl. 242-55.200.

Bordenca, Carl; and Derfer, John M., to SCM Corporation. Insecticidal compositions containing certain terpene ethers and pyrethrinoids. 3,849,571, Cl. 424-282.000.

Borg, Sven Christer; Hesson, Christer Ragnar; and Nilsson, Erik Henning, to Aktiebolaget Electrolux. Turning movement device for material handling apparatus. 3,848,753, Cl. 214-1.00b.

Borg-Warner Corporation: *See—*
Cummings, Gordon F., III, 3,848,622.

Born, Gunthard, to Messerschmitt-Bolkow-Blohm GmbH. Missile guidance system. 3,848,830, Cl. 244-3.160.

Bos, John R.: *See—*
Baker, William J.; Bos, John R.; and Klemm, Robert W., 3,848,789.

Bosch, Robert, G.m.b.H.: *See—*
Hofer, Gerald, 3,848,576.

Boser, Ronald J. Sewing machine cutting device. 3,848,555, Cl. 112-252.000.

Boshagen, Horst; and Plempel, Manfred, to Bayer Aktiengesellschaft. Antimycotic benzisothiazoline derivatives. 3,849,568, Cl. 424-270.000.

Bosshard, Rene: *See—*
Gallay, Jean-Jacques; Bosshard, Rene; and Brenneisen, Paul, 3,849,431.

Bott, John A. Ski rack for motor vehicles. 3,848,785, Cl. 224-42.10f.

Boucher, Raymond W.; Boudreau, Robert; and Conti, John A., to Hedstrom Co. Saddle support system. 3,849,008, Cl. 403-104.000.

Boudakian, Max M., to Olin Corporation. Halogenation of diaminopyridines in acidic media. 3,849,429, Cl. 260-296.00r.

Boudreau, Robert: *See—*
Boucher, Raymond W.; Boudreau, Robert; and Conti, John A., 3,849,008.

Bougon, Pierre P. A.: *See—*
Paris, Philippe Y. J.; Bougon, Pierre P. A.; and Guimard, Lucien, 3,849,597.

Bourdin, Francois; Costantini, Michel; Jouffret, Michel; and Lartigau, Guy, to Rhone-Poulenc S.A. Hydroxylation of aromatic compounds. 3,849,502, Cl. 260-613.00d.

Bourdon, Julien Louis, to Gemmer France. Ball and socket joint for rack and pinion steering gear. 3,849,009, Cl. 403-133.000.

Bourdon, Richard P., to Pervel Industries, Inc. Flock-texturing method and product. 3,849,236, Cl. 161-64.000.

Bourgeois, Louis: *See—*
Degueldre, Louis; Killens, Charles; and Bourgeois, Louis, 3,849,282.

Bourne, Kenneth Hugh; Davies, Evan Ellis; and Pitkethly, Robert Chalmers, to British Petroleum Company Limited, The. Inhibiting the coke forming tendency of sorbents. 3,849,299, Cl. 208-310.000.

Bourret, Phillip L.; and Yin, Simon. Sound film synchronization system and method. 3,848,975, Cl. 352-5.000.

Boustany, Kamel, to Monsanto Company. 2,5-Piperazinediones. 3,849,418, Cl. 260-268.0dk.

Bovensiepen, Hans-Friedrich; and Caspers, Willi A., to Walters, Peter. Lapping or honing machine. 3,848,365, Cl. 51-111.00r.

Bowen, Dorsie Mae: *See—*
Conaway, Mildred; Thompson, Alligene; Bowen, Dorsie Mae; Brown, Danny; and McGarrah, Larry, 3,848,266.

Bowen, Mack D., to Georgia Tech Research Institute. Device for separating solid or liquid particles from a gaseous medium. 3,848,550, Cl. 110-18.00r.

Bowley, Wallace William, 1/2 to Ritchie, William B., Jr. Floating wave barrier. 3,848,419, Cl. 61-5.000.

Bowman, William G., to Petro-Tex Chemical Corporation. Isoprene prepared by the catalytic dehydration of 2-methyl-2,3-butanediol. 3,849,512, Cl. 260-681.000.

Boyd, William C., to United States of America, Navy. Multiple target indicator and discriminator. 3,849,779, Cl. 343-7.400.

Boyle, James H.; and Ingalls, John E., to Howmet Corporation. Precision casting with variable angled vanes. 3,848,654, Cl. 164-34.000.

BPB Industries Limited: *See—*
Gwynne, Thomas, 3,849,235.

Brackley, Graham: *See—*
Jackson, Geoffrey N.; Pickard, Robert G.; Brackley, Graham; and Satchell, David W., 3,849,283.

Bradford, Jerry I.: *See—*
Taylor, Charles R.; Bernhard, Albert J.; Bradford, Jerry I.; and Williams, Donald J., 3,848,294.

Braet, August: *See—*
Mortimer, Frans H.; Jacobs, Gerard O.; Decoene, Frans J. G. C.; Braet, August; and Rowland-Hill, Edward W., 3,848,609.

Bramble, Reba H.: *See—*
Spillane, Leo J.; Alexander, Stephen H.; and Bramble, Reba H., 3,849,229.

Branch, Geoffrey Hindle; and Hall, James Edward, to Pilkington Brothers Limited. Apparatus for transferring sheet material. 3,848,752, Cl. 214-1.0bs.

Brandt, Gerald B., to Westinghouse Electric Corporation. Integrated optical and/or gate. 3,849,740, Cl. 331-94.50c.

Brandt, Roger; and Piltzecker, John William, to American Can Company. Treatment of thermoplastic tubing. 3,849,286, Cl. 250-325.000.

Brandt, Roy Earl: *See—*
Dulebohn, David H.; Landy, Arney, Jr.; and Brandt, Roy Earl, 3,849,624.

Branson Instruments, Incorporated: *See—*
Mims, Bruce L., 3,848,792.

Braslau, Norman; Cuomo, John J.; Harris, Erik P.; and Hovel, Harold J., to International Business Machines Corporation. Planar GaN electroluminescent device. 3,849,707, Cl. 357-17.000.

Brau, Maurice J.; and Reynolds, Richard A., to Texas Instruments, Incorporated. Enhancement of solid state recrystallization by induced nucleation. 3,849,205, Cl. 148-1.600.

Braun, Dieter; and Kortendieck, Wolfram, to Fortuna-Werke Maschinenfabrik AG. Machining tool. 3,848,285, Cl. 12-17.00r.

Breacain, Stephen J. Wheelchair anti-tip apparatus. 3,848,883, Cl. 280-5.320.

Breford, Glenn H., to Midway Industries, Inc. Fifth wheel trailer hitch. 3,848,894, Cl. 280-437.000.

Brenneisen, Paul: *See—*
Gallay, Jean-Jacques; Bosshard, Rene; and Brenneisen, Paul, 3,849,431.

Brenner, Max. Isolation and purification of 3,4-dihydroxy phenylalanine. 3,849,488, Cl. 260-519.000.

Brenot, Claude; and Mollard, Gaston, to Thompson-CSF. Electrical coupling between elements in relative motion in respect of each other. 3,848,711, Cl. 191-12.00r.

Breslow, David S., to Hercules Incorporated. Process of bonding using epoxy-azido adhesives. 3,849,230, Cl. 156-330.000.

Bretche, Serge Norbert Emile. Multi-directional connecting element for panels. 3,848,388, Cl. 52-753.00d.

Brewer's Unlimited, Inc.: *See—*
Garza, Adan C.; and Bavisotto, Vincent S., 3,849,070.

Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, to Firestone Tire & Rubber Company, The. Bead mechanism. 3,849,231, Cl. 156-403.000.

Bridger, Robert F.; Heiba, El-Ahmadi I.; and Stournas, Stamoulis, to Mobil Oil Corporation. Organic compositions containing alkali metal arylcarbamates. 3,849,320, Cl. 252-33.600.

Bridgestone Tire Company Limited: *See—*
  Ohkawa, Shunjiro; and Minagawa, Katsumo, 3,849,045.
  Suzuki, Yasuo; Arimura, Iwao; and Arai, Tatsuo, 3,849,220.
Brieschke, Ewald; Kiefer, Esich; and Rolniczak, Heinz, to Kautex-Werke Reinold Hagen GmbH. Apparatus for the blow molding of hollow bodies made of thermoplastic synthetic material. 3,849,049, Cl. 425-326.00b.
Brinly-Hardy Co., Inc.: *See—*
  Doering, Charles W., 3,849,043.
Brinning, Earl Edward: *See—*
  Merlino, Eugene Louis, Jr.; Brinning, Earl Edward; and Naeyaert, Roger Stanley, 3,849,631.
Bristol-Meyer Company: *See—*
  Thomas, Ralph H., 3,848,762.
British Petroleum Company Limited, The: *See—*
  Bourne, Kenneth Hugh; Davies, Evan Ellis; and Pitkethly, Robert Chalmers, 3,849,299.
British Steel Corporation: *See—*
  Hetherington, Matthew James; and Atkinston, Peter, 3,848,461.
Brock, Alan James; and Fulton, Douglas William, to S.A. Rubber Mills Pty. Ltd. Drip irrigation method. 3,849,639, Cl. 239-1.000.
Brody, Thomas P.: *See—*
  Reitboech, Herbert J. P.; and Brody, Thomas P., 3,849,633.
Brokl, Milan: *See—*
  Kerst, Al F.; Douros, John D., Jr.; and Brokl, Milan, 3,849,560.
Bromby, Norman Gunning. Reducing primary arylamine impurities in diarylamines. 3,849,495, Cl. 260-576.000.
Brooks, Frank W., to General Motors Corporation. Disc brake adjuster. 3,848,707, Cl. 188-71.900.
Brower, Stephen M.: *See—*
  Deaton, David W.; Brower, Stephen M.; and Durham, Marhsall P., Jr., 3,848,628.
Brown Boveri & Company Limited: *See—*
  Wagner, Karl Heinz; Muellerpoths, Reiner; and Hammel, Rudolf, 3,849,618.
Brown, Cicero C., to Well control apparatus. . 3,848,669, Cl. 166-73.000.
Brown, Danny: *See—*
  Conaway, Mildred; Thompson, Alligene; Bowen, Dorsie Mae; Brown, Danny; and McGarrah, Larry, 3,848,266.
Brown, Joel E.: *See—*
  Buchanan, James E.; and Brown, Joel E., 3,849,775.
Brown, John Robert, to Sunbeam Electric Limited. Kettles. 3,848,563, Cl. 116-118.00r.
Brown, Roland Clough. Visual-rotary-index card file. 3,848,941, Cl. 312-189.000.
Brownell, Lloyd E.: *See—*
  Isaacson, Raymond E.; and Brownell, Lloyd E., 3,849,330.
Browning, Walter P.; and Dodge, William L. Wind turbine powered line suspended device. 3,848,835, Cl. 244-155.00r.
Brozek, Chester W.: *See—*
  Hammer, Victor S.; and Brozek, Chester W., 3,848,905.
Bruce, Roger K.; Marhold, Werner; and Adickes, Cecil F., to Sterigard Corporation. Mold for fabricating the housing of a dispensing valve for pressurized dispensers. 3,849,053, Cl. 425-438.000.
Bruggencate, Teunis Ten: *See—*
  Frieling, Teunis; and Bruggencate, Teunis Ten, 3,849,227.
Brugger, Max: *See—*
  Rittel, Werner; Brugger, Max; Kamber, Bruno; Riniker, Bernhard; Sieber, Peter; and Greven, Hendrik Marie, 3,849,388.
Brun, Roger, to U.S. Philips Corporation. Amplitude corrector for the chrominance component of a colour television signal. 3,849,593, Cl. 358-27.000.
Brunetti, Heimo; Schwarzenbach, Kurt; and Schmidt, Andreas, to Ciba-Geigy Corporation. Bis-salicycloyl-hydrazines. 3,849,492, Cl. 260-559.00h.
Bruno, Marshall J.; Jarrett, Noel; and Slaugenhaupt, Burl L., to Aluminum Company of America. Treatment of molten aluminum with an impeller. 3,849,119, Cl. 75-68.00r.
Brush, Robert W., to Bendix Corporation, The. Electrical connector insert retainer. 3,848,957, Cl. 339-176.00m.
Bryant, Aramis Duane: *See—*
  Bolan, Peter Samuel; Bryant, Aramis Duane; Drejza, John Edward; Holovka, Charles Stephen; and Weber, Ludwig Wilhelm, 3,848,722.
Bryant, Richard C. Vehicle wiring adaptor. 3,849,664, Cl. 307-10.0ls.
Bryntse, Anders Ivar, to AB Bygg- och Transportekonomi (BT). Side loading fork unit for lift trucks. 3,848,754, Cl. 214-1.0bb.
Bub, Oskar: *See—*
  Raschack, Manfred; and Bub, Oskar, 3,849,570.
Bublitz, Donald E.: *See—*
  Kurihara, Norman H.; and Bublitz, Donald E., 3,849,415.
Bucalo, Louis, to Investors in Ventures, Inc. Valve with means for promoting ingrowth of tissue. 3,848,578, Cl. 128-1.00r.
Bucha, Harry C.; and Langsdorf, William P., Jr., to Du Pont de Nemours, E. I., and Company. Plant growth regulant method. 3,849,102, Cl. 71-76.000.
Buchanan, James E.; and Brown, Joel E., to Westinghouse Electric Corporation. AC analog to digital converter. 3,849,775, Cl. 340-347.0nt.
Buell, Kenneth Barclay, to Procter & Gamble Company, The. Tape fastening system for disposable diaper. 3,848,594, Cl. 128-284.000.
Bukalo, Alfred Iosifovich: *See—*
  Paton, Boris Evgenievich; Lakomsky, Victor Iosifovich; Melnik, Gary Alexandrovich; Chvertko, Anatoli Ivanovich; and Bukalo, Alfred Iosifovich, 3,849,584.
Bull, Brian S., to Coulter Electronics, Inc. Centrifuge apparatus for sedimentation study. 3,848,796, Cl. 233-25.000.
Bullard, Edward M.; and Schard, Malcolm P., to Mobil Oil Corporation. Resinous blend and oriented shrink film comprising polypropylene, polybutene and ethylene/butene copolymer. 3,849,520, Cl. 260-897.00a.
Bullinger, David John. Infantry attack vehicle with resilient armor. 3,848,508, Cl. 89-36.00h.
Bulova Watch Company, Inc.: *See—*
  Fried, Henry B., 3,848,484.
Bundy, Francis P., to General Electric Company. Power generating plant with nuclear reactor/heat storage system combination. 3,848,416, Cl. 60-644.000.
Bundy, Gordon L., to Upjohn Company, The. Natural 15-methyl and ethyl- 15-epi-PGE_1. 3,849,487, Cl. 260-514.00d.
Bundy, Otto M.: *See—*
  Seith, Robert E.; and Bundy, Otto M., 3,848,359.
Buntin, Robert R.; Keller, James P.; and Harding, John W., to Exxon Research and Engineering Company. Non-woven mats by melt blowing. 3,849,241, Cl. 161-169.000.
Burd, Samuel D., Jr.: *See—*
  Wise, John J.; and Burd, Samuel D., Jr., 3,849,290.
Burger King Corporation: *See—*
  Kubu, Stanley, 3,849,581.
Burke, Harold J., to General Motors Corporation. Shift lever bowl assembly. 3,848,478, Cl. 74-484.000.
Burkhardt, James W.: *See—*
  Bennett, John E.; Burkhardt, James W.; and Koftfield, Richard E., 3,849,281.
Burlington Industries, Inc.: *See—*
  London, Joe F., Jr., 3,848,404.
Burnett, Richard T., to Bendix Corporation, The. Application adjuster for disc brake. 3,848,705, Cl. 188-71.900.
Burnett, Roy Clair, to General Signal Corporation. Circuit integrity checking means for audio signal circuit. 3,849,772, Cl. 340-256.000.
Burns, Richard H.; Engelbrecht, Orest; and Welham, Brian H., to Bausch & Lomb Incorporated. Jewelled stabilized optic cell. 3,848,960, Cl. 350-16.000.
Burrough Wellcome Co.: *See—*
  Mentha, John W.; Shaffner, Janice V.; and Cresswell, Ronald M., 3,849,416.
Burroughs Corporation: *See—*
  Eisenberg, Mark F.; and Harmon, William J., Jr., 3,849,702.
  Harvey, Edgar Lloyd; and Levine, Joel Martin, 3,849,694.
  Kuchinsky, Saul; Shesser, Arthur B.; Somlyody, Arpad; and Fehnel, Richard B., 3,849,693.
  Maloney, Thomas C.; and Miller, Donald E., 3,849,688.
  Merlino, Eugene Louis, Jr.; Brinning, Earl Edward; and Naeyaert, Roger Stanley, 3,849,631.
Burroughs Wellcome & Co. (U.S.A.) Inc.: *See—*
  Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., 3,849,407.
Burroughs Wellcome Co.: *See—*
  Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., 3,849,470.
Burrows, W. Herbert. Zinc oxide recovery process. 3,849,121, Cl. 75-103.000.
Bush Boake Allen Limited: *See—*
  Jaggers, Brian George; Ufton, Keith Frederick; and Wagner, Horst Richard, 3,849,326.
Busseret, Robert, to Rhone-Progil. Method for the continuous preparation of alkylperoxydicarbonates. 3,849,468, Cl. 260-463.000.
Bussienne, Christian; and Mary, Dominique. Electro-mechanical load transfer device for dynamic storage. 3,848,755, Cl. 214-16.40a.
Bustos, Rafael T.; and Leach, James A., to Leggett & Platt Incorporated. Telephone mounting structure. 3,849,608, Cl. 179-146.00r.
Buta, John R., to Paxon Machine Company. Continuous strip feeding self-alignment apparatus. 3,848,788, Cl. 226-19.000.
Butula, Ivan, to Rhein-Chemie Rheinau GmbH. 4,5,6,7-Tetrahydrobenzotriazoles and process of making the same. 3,849,433, Cl. 260-308.00b.
Butz Engineering Corporation: *See—*
  Leibrick, Peter; and Terry, Nick H., 3,848,728.
Butz, Josef, to Flachglas AG Delog-Detag. Producing fiber reinforced resin panels with gelcoat fiber layer and lacquer protective. 3,849,226, Cl. 156-247.000.
Bynal Products Inc.: *See—*
  Kolling, Byron M., 3,848,797.
Byrne, Eugene C., to Actron Industries, Inc. Atmospheric compensation radiometer system. 3,849,645, Cl. 250-209.000.
C-H Products Corporation: *See—*
  Possell, Clarence R., 3,848,775.
Cahoon, John B., Jr., to United States of America, Atomic Energy Commission. Method for producing fueled moderator. 3,849,329, Cl. 252-301.10r.
Calamari, Timothy A., Jr.; Reeves, Wilson A.; Schreiber, Sidney P.; and Cooper, Albert S., Jr., to United States of America, Agriculture. Process for the mercerization of cotton fabrics with liquid ammonia and ammonia/amine solutions. 3,849,067, Cl. 8-115.00.
Calc Securities Systems, Inc.: *See—*
  Connery, Colin A., 3,849,614.

Caldwell, Henry Cecil, to Smith Kline Corporation. Novel vinylcarbamate derivatives of phenylpropanolamine. 3,849,573, Cl. 424-311.000.
Calspan Corporation: *See—*
  Piech, Kenneth Robert; and Walker, John Elwyn, 3,849,006.
Calvert, Thomas J., to Schlumberger Technology Corporation. Microwave logging apparatus having dual processing channels. 3,849,721, Cl. 324-6.000.
Calvino y Teijeiro, Benito Jose, to Magrini-Fabbriche Riunite Magrini-Scarpa e Magnano M.S.M. S.p.A. Self-blasting compressed-gas electric circuit breaker with improved control mechanism having pneumatic and resilient means for engaging the breaker contact. 3,849,616, Cl. 200-82.00r.
Cameron, Frank L., to Westinghouse Electric Corporation. Method of fabricating improved fuse elements. 3,848,445, Cl. 72-142.000.
Campbell, John H., to General Electric Company. Sequential discharge fluorescent lamp. 3,849,689, Cl. 313-190.000.
Campbell, John Stewart; and Davies, Phineas, to Imperial Chemical Industries, Limited. Catalytic process. 3,849,538, Cl. 423-213.500.
Campion, David John, to Cylinder Forming Limited. Cylinder forming. 3,848,449, Cl. 72-349.000.
Camras, Marvin. ITT Research Institute Video transducer system and cartridge therefor. 3,849,797, Cl. 360-93.000.
Canacho, Vasco G.: *See—*
  Anderson, James J.; Canacho, Vasco G.; and Kinney, Robert E., 3,849,368.
Canadian Patents and Development Limited: *See—*
  Kusters, Norbert L.; and Moore, William J. M., 3,849,727.
  Maitlis, Peter M.; White, Colin; Kang, Jung W.; and Gill, Devinder S., 3,849,459.
Candor, James T. Method and apparatus for removing and/or separating particles from fluid containing the same. 3,849,275, Cl. 204-180.00r.
Canon Kabushiki Kaisha: *See—*
  Ihara, Takashi, 3,849,128.
  Shoji, Akira; Yanagawa, Hitoshi; and Hirashima, Takashi, 3,848,982.
  Tajima, Akira, 3,848,969.
  Yamaji, Keizo; and Kurahashi, Akira, 3,848,989.
Cantarano, Marcus. Non-electrostatic method for producing electrographic image. 3,849,126, Cl. 96-1.00r.
Capital Enterprises, Inc.: *See—*
  Nichols, Robert A., 3,849,753.
Carborundum Company, The: *See—*
  Carpenter, James H., Jr.; and Ixer, Bernard W., 3,848,815.
  Economy, James; and Storm, Roger S., 3,849,362.
  McMurtry, Carl H.; and Murata, Yorihiro, 3,849,344.
Carbrey, Robert Lawrence, to Bell Telephone Laboratories, Incorporated. Polarity reversal switching circuit. 3,849,607, Cl. 179-86.00.
Cardy, Charles Frederick: *See—*
  Crampton, Clifford Archibald; and Cardy, Charles Frederick, 3,849,448.
Carey, Carlton F. Variable aperture X-ray shield. 3,849,649, Cl. 250-320.000.
Carlsen, Henning Gunnar. Pressure spring for a thermoprinter. 3,848,720, Cl. 197-1.00r.
Carmichael, Robert J.: *See—*
  Hazelett, Robert William; Wood, John Frederick Barry; and Carmichael, Robert J., 3,848,658.
Carpenter, James H., Jr.; and Ixer, Bernard W., to Carborundum Company, The. Granulating apparatus. 3,848,815, Cl. 241-74.000.
Carpetech Corporation: *See—*
  Morse, George A., 3,848,291.
Carter, Jack N. Hydraulic truck bed. 3,848,758, Cl. 214-501.000.
Caruso, Robert M.; and Musick, Charles R., to Combustion Engineering, Inc. Reactor megawatt demand setter. 3,849,637, Cl. 235-151.000.
Caspers, Willi A.: *See—*
  Bovensiepen, Hans-Friedrich; and Caspers, Willi A., 3,848,365.
Castillo, Adolfo: *See—*
  Jureit, John Calvin; Cotten, Howell J.; Castillo, Adolfo; and Leutwyler, Roy, 3,848,791.
Castor, Edward Earl: *See—*
  de Panafieu, Philippe; and Castor, Edward Earl, 3,848,898.
Castor, William M.: *See—*
  Turley, Robert R.; Castor, William M.; and Nunnally, Kenneth R., 3,849,339.
Catalano, James A., to Continental Can Company, Inc. Riveted modular conveyor. 3,848,732, Cl. 198-204.000.
Catallozzi, David J. Fixture support. 3,848,386, Cl. 52-706.000.
Caterpillar Tractor Company: *See—*
  Gobble, Glenn R.; and Loebs, Richard G., 3,849,078.
  Gobble, Glenn R.; and Loebs, Richard G., 3,849,122.
  Therkildsen, Henry T., 3,848,852.
Catlin, Robert T., to Remington Arms Company, Inc. Continuous quenching means for a moving wire. 3,848,859, Cl. 266-3.00r.
Ceccarelli, Pietro, to Olivetti, Ing. C., & C., S.p.A. Support of bent stiff wire for suspended files or the like, removable insertable into a furniture drawer. 3,848,748, Cl. 211-178.00r.
Celanese Corporation: *See—*
  Ferment, George R.; Prince, Arthur E., Jr.; and Sessa, Paul A., 3,849,529.
  McGinnis, Paul H.; McLaughlin, William D., Jr.; and Swander, Robert E., 3,849,040.
Centre National de Recherche Scientifique: *See—*
  Guyonnet, Jean-Francis, 3,848,313.
Centro-Maskin i Goteborg AB: *See—*.
  Johansson, Bengt, 3,849,088.
Cerny, Louis T.: *See—*
  Beck, Richard F.; and Cerny, Louis T., 3,848,534.
Champeau, Andre. Observation device. 3,848,961, Cl. 350-63.000.
Channon, Frederick R.; and Fischer, David L., to General Electric Company. Samarium compensation for nuclear reactor fuel. 3,849,248, Cl. 176-68.000.
Charboneau, Benny J.; and O'Connor, Alton J., to Walbro Corporation. Electronically controlled liquid fuel pump. 3,849,031, Cl. 417-417.000.
Charles, Richard J.; and Mitoff, Stephan P., to General Electric Company. Sealed sodium-iodine battery. 3,849,200, Cl. 136-83.00r.
Chase, Herbert S., to Lee, Raymond, Organization, Inc., The. Drawer for folding table. 3,848,545, Cl. 108-26.000.
Chasin, Mark: *See—*
  Hoehn, Hans; and Chasin, Mark, 3,849,411.
Chatillon, John, & Sons, Inc.: *See—*
  Hejzlar, Sid; and Zweig, Robert M., 3,848,463.
Chaudron, Georges: *See—*
  Montuelle, Jean; Chaudron, Georges; and Piaard-Legry, Gerard, 3,849,079.
Chedister, Conkling; and Beckman, Frank H., to Kulart Victor Corporation. Self-threading motion picture projector. 3,848,981, Cl. 352-157.000.
Chekotilo, Leonty Vasilievich: *See—*
  Tetjuev, Vladimir Alexandrovich; Medovar, Boris Izrailevich; Chekotilo, Leonty Vasilievich; Popov, Valery Georgievich; Tjurikov, Pavel Ivanovich; and Kosmatenko, Ivan Egorovich, 3,848,657.
Chemetron Corporation: *See—*
  Bachmann, Thomas H., 3,848,289.
Chemische Werk Huls Aktiengesellschaft: *See—*
  Maass, Gunter; Engel, Frederico; Bernemann, Paul; and Blumel, Harald, 3,849,363.
Chemische Werke Huls Aktiengesellschaft: *See—*
  Streck, Roland; and Weber, Heinrich, 3,849,509.
Chen, Tsuan-Tong. Pipe restraining device. 3,848,639, Cl. 138-103.000.
Cherry Electrical Products Corporation: *See—*
  Habecker, John W., 3,849,621.
Chertkoff, Abraham. Fetal extractor for use during birth. 3,848,606, Cl. 128-352.000.
Chevallier, Pierre, to Etablissements Genoud & Cie, Societe Anonyme. Cigarette lighter with baffle. 3,849,060, Cl. 431-344.000.
Chevron Research Company: *See—*
  Kozlowski, Robert H.; Sieg, Robert P.; and Scott, John W., 3,849,082.
  Miner, William R.; and Parker, Charles K., Jr., 3,849,318.
Chiba, Yoshio. Indicating apparatus. 3,849,769, Cl. 340-213.00r.
Chicago Fittings Corporation: *See—*
  Hammer, Victor S.; and Brozek, Chester W., 3,848,905.
Chick, Orest Nicholas; and Means, Graham Neville, to Polysar Limited-Polysar Limitee. Paper coated with compositions of polymeric materials. 3,849,183, Cl. 117-155.0ua.
Chiesa, Peter Jordan, Jr., to National Foam System, Inc. Film-forming fire fighting composition. 3,849,315, Cl. 252-3.000.
Chin, James; and Hartley, James C., Jr., to Uniroyal, Inc. Electrolessly plateable polymeric composition. 3,849,172, Cl. 117-47.00a.
Chinn, Leland J.: *See—*
  Zawadzki, Joseph F.; and Chinn, Leland J., 3,849,404.
Chino, Yasuyoshi: *See—*
  Sato, Ryozi; and Chino, Yasuyoshi, 3,849,498.
Chinon Industries Incorporated: *See—*
  Tsujimoto, Noboru; Maruyama, Katsuji; and Misawa, Haruo, 3,848,976.
Chizhov, Leonid Vladimirovich. Sample introduction system for gas chromatograph. 3,848,469, Cl. 73-422.0gc.
Christensen, Burton G.; Leanza, William J.; and Beattie, Thomas R., to Merck & Co., Inc. Amine salts of cis-propenylphosphonic acid. 3,849,482, Cl. 260-501.210.
Christopher, Roland L. Any angle hitch attachment. 3,848,895, Cl. 280-478.00r.
Chrysler Corporation: *See—*
  Dolan, Courtney F., 3,848,691.
  Nuss, Christopher, 3,848,309.
Chu, Pochen: *See—*
  Dwyer, Francis G.; and Chu, Pochen, 3,849,463.
Chubb Fire Security Limited: *See—*
  Evans, John L., 3,848,675.
Chukhanov, Zinovy Fedorovich: *See—*
  Chukhanov, Zinovy Zinovievich; Chukhanov, Zinovy Fedorovich; Panov, Vladimir Illarionovich; Nikolaev, Anatoly Mikhailovich; Tsuprov, Sergei Andreevich; and Lyashenko, Ivan Vasilievich, 3,848,536.
Chukhanov, Zinovy Zinovievich; Chukhanov, Zinovy Fedorovich; Panov, Vladimir Illarionovich; Nikolaev, Anatoly Mikhailovich; Tsuprov, Sergei Andreevich; and Lyashenko, Ivan Vasilievich. Method of conveying goods in containers along a tube line. 3,848,536, C. 104-147.00r.
Chupka, David E.: *See—*
  Marsh, Paul G.; and Chupka, David E., 3,849,245.
Chvertko, Anatoli Ivanovich: *See—*

- Paton, Boris Evgenievich; Lakomsky, Victor Iosifovich; Melnik, Gary Alexandrovich; Chvertko, Anatoli Ivanovich; and Bukalo, Alfred Iosifovich, 3,849,584.
- CH_2O, Inc.: *See—*
  - Courtright, Burr, 3,848,805.
- CH20, Inc.: *See—*
  - Courtright, Burr, 3,848,625.
- Ciardi, Albert A., Jr.: *See—*
  - Hendrickson, Paul E., 3,848,319.
- Ciba Geigy AG: *See—*
  - Roueche, Armand; Mueller, Willy; and Mory, Rudolf, 3,849,394.
- Ciba-Geigy AG: *See—*
  - Begrich, Rainer; and Seitz, Karl, 3,849,413.
  - Eigenmann, Gottfried; Kaiser, Leo; and Luethi, Christian, 3,849,155.
  - Mueller, Volkmar; Berendt, Hans-Ulrich; and Harris, Melvin, 3,849,162.
  - Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,849,163.
  - Weber, Kurt, 3,849,485.
- Ciba-Geigy Corporation: *See—*
  - Brunetti, Heimo; Schwarzenbach, Kurt; and Schmidt, Andreas, 3,849,492.
  - Gallay, Jean-Jacques; Bosshard, Rene; and Brenneisen, Paul, 3,849,431.
  - Renner, Alfred; and Haug, Theobald, 3,849,374.
  - Rittel, Werner; Brugger, Max; Kamber, Bruno; Riniker, Bernhard; Sieber, Peter; and Greven, Hendrik Marie, 3,849,388.
  - Weis, Claus, 3,849,422.
- Cibie Projecteurs: *See—*
  - Puyplat, Oliver, 3,849,642.
- Cicione, Robert J.; Najjar, Edward G.; Scanlon, Patricia M.; Ohlson, John L.; and Finn, Joseph F., to Grace, W. R., & Company. Method for producing wrinkle free permanently pressed cellulosic textile materials. 3,849,169, Cl. 117-143.00a.
- Cimarosti, Giordano: *See—*
  - Corradi, Bruno; Petrillo, Vincenzo; and Cimarosti, Giordano, 3,849,266.
- Cinqualbre, Louise: *See—*
  - Cinqualbre, Paul; and Cinqualbre, Louise, 3,848,581.
- Cinqualbre, Paul; and Cinqualbre, Louise. Apparatus for taking multiple samples of biological liquid. 3,848,581, Cl. 128-2.00f.
- Cities Service Company: *See—*
  - Wolford, Lionel T.; and Versnel, John, 3,849,371.
- Citizen Watch Company Limited: *See—*
  - Nihira, Shohachi, 3,848,527.
- Clampitt, Richard L.; and Hessert, James E., to Phillips Petroleum Company. Recovery of hydrocarbons. 3,848,673, Cl. 166-275.000.
- Clark, Burton Parker, to General Electric Company. Gun bolt. 3,848,351, Cl. 42-25.000.
- Clark Equipment Company: *See—*
  - Fisher, John F.; and Zeller, Burton S., 3,848,620.
  - Messner, John S.; and Jones, Robert E., 3,848,692.
  - Waclawek, Miczyslaw J., 3,848,409.
- Clark, John E., Jr., to A-Z International Tool Company. Sheared pipe cutter. 3,848,667, Cl. 166-55.600.
- Claxton, Patrick H.; and Keenan, Thomas A., to American Sterilizer Company. Low electrical leakage support. 3,848,714, Cl. 191-33.000.
- Clayson N. V.: *See—*
  - Mortimer, Frans H.; Jacobs, Gerard O.; Decoene, Frans J. G. C.; Braet, August; and Rowland-Hill, Edward W., 3,848,609.
- Clow Corporation: *See—*
  - Anderson, Richard H., 3,848,904.
- Coach and Car Equipment Corporation: *See—*
  - Harder, Arthur J., Jr., 3,848,925.
  - Harder, Arthur J., Jr., 3,848,937.
- Cobb, Jesse M.; and Schaad, William J., to Indak Manufacturing Corporation. Vehicular rotary electrical switch assembly with removable interposed non-conductive plug kill switch means. 3,849,612, Cl. 200-11.00j.
- Cochrane, Kenneth Alfred; and Holloway, Robert Geofrey, to McGregor, Robert, & Sons Limited. Device for introducing rods, dowels or the like into concrete paved carriageways. 3,849,016, Cl. 404-100.000.
- Cochrane, Robin Adam, to Girling Limited. Improvements in pressure-responsive valve assemblies. 3,848,619, Cl. 137-116.000.
- Cocuzza, Gioacchino, to Societa' Italiana Resine S.I.R. S.p.A. Process for the separation of monoethanolamine, diethanolamine, and triethanolamine from crude ethanolamine mixtures. 3,849,262, Cl. 203-38.000.
- Cofek, Henry R., to Geisco Associates. Photo-detector for optical inspection system. 3,849,004, Cl. 356-200.000.
- Coffen, David; and Fryer, Rodney, to Hoffmann-La Roche Inc. 2-Substituted-3H-1,4-benzodiazepines. 3,849,399, Cl. 260-239.0bd.
- Coffen, David Llewellyn; and Fryer, Rodney Ian, to Hoffmann-La Roche Inc. Process for preparing triazolobenzodiazepines. 3,849,434, Cl. 260-308.00r.
- Cogger, John F.: *See—*
  - Unfried, Happy H.; and Cogger, John F., 3,848,514.
- Coherent Radiation Laboratories, Inc.: *See—*
  - Mefferd, Wayne S., 3,849,531.
- Coleman, John H., to United States of America, Atomic Energy Commission. Method of oxygen detection and removal. 3,849,539, Cl. 423-219.000.
- Colgate-Palmolive Company: *See—*
  - Grand, Paul Sheldon, 3,849,548.
  - Hewitt, Gordon Trent, 3,849,348.
  - Suh, John T., 3,849,574.
- Colgate-Polmolive Company: *See—*
  - Di Salvo, Walter; Smith, Frank R., Jr.; and Kenney, Edward J., 3,849,327.
- Collins, Byron R., to General Electric Company. High intensity lamp containing arc extinguishing base. 3,849,691, Cl. 313-318.000.
- Colln, Reimer; Hofer, Wolfgang; Maurer, Fritz; and Rohe, Lothar, to Bayer Aktiengesellschaft. O-Ethyl-O-(3-methyl-4-methylmercaptophenyl)-phosphoric acid diester chloride. 3,849,524, Cl. 260-949.000.
- Coma, James G.: *See—*
  - Fowells, Robert W.; Damon, Robert A.; and Coma, James G., 3,849,387.
- Combuation Engineering, Inc.: *See—*
  - Jacobs, Louis John, 3,849,586.
- Combustion Engineering Inc.: *See—*
  - Bevilacqua, Frank, 3,849,257.
  - Blaskowski, Henry John; and Koucky, Robert Willis, 3,849,662.
  - Caruso, Robert M.; and Musick, Charles R., 3,849,637.
  - Jacobs, Louis John, 3,849,206.
  - Martucci, John Anthony, 3,849,655.
  - Prestridge, Floyd Leon, 3,849,285.
  - Schuss, Jack Ascher, 3,849,056.
- Commissariat a l'Energie Atomique: *See—*
  - Ferrand, Bernard; Forrat, Francis; Grange, Yves; Joubert, Jean-Claude; and Mareschal, Jean, 3,849,193.
  - Pezot, Jacques, 3,849,732.
  - Renaux, Charley, 3,848,423.
  - Stohr, Jacques Andre, 3,848,314.
- Commonwealth Scientific and Industrial Research: *See—*
  - Swift, Jean Drummond; Hawthorne, David Geoffrey; Loft, Bryan Clarence; and Solomon, David Henry, 3,849,149.
- Commonwealth Scientific and Industrial Research Organization: *See—*
  - Battaerd, Hendrik Adriaan Jacobus, 3,849,525.
- Compagnie General de Radiolgie: *See—*
  - Hommerin, Michel, 3,849,660.
- Compagnie General d'Electricite: *See—*
  - Pompon, Jean-Paul, 3,849,202.
- Compagnie Generale d'Electricite: *See—*
  - Feuillade, Georges; and Cord, Paul, 3,849,199.
- Compagnie Honeywell Bull (Societe Anonyme): *See—*
  - Khammous, Robert; Langlet, Andre; and Leclercq, Michel, 3,849,757.
- Conant, Barton C.; and Yao, Szee Ming, to Abbott Coin Counter Co., Inc. Coin processor having error-indicating system. 3,848,614, Cl. 133-8.00r.
- Conaway, Mildred; Thompson, Alligene; Bowen, Dorsie Mae; Brown, Danny; and McGarrah, Larry, to Bear Brand Hosiery Co. Method of securing a waistband to combination garment. 3,848,266, Cl. 2-237.000.
- Condolios, Elie; and Van Essen, Uilke, to N.V. Technische Maatschappij Bergmann and Societe Grenobloise d'Etudes et d'Applications Hydrauliques. Method and apparatus for separating particles from a liquid. 3,849,310, Cl. 210-196.000.
- Conger, Robert P.: *See—*
  - Palmer, Leon B.; and Conger, Robert P., 3,849,157.
  - Palmer, Leon B.; and Conger, Robert P., 3,849,158.
  - Palmer, Leon B.; and Conger, Robert P., 3,849,159.
- Congoleum Industries, Inc.: *See—*
  - Palmer, Leon B.; and Conger, Robert P., 3,849,157.
  - Palmer, Leon B.; and Conger, Robert P., 3,849,158.
  - Palmer, Leon B.; and Conger, Robert P., 3,849,159.
- Connery, Colin A., to Calc Securities Systems, Inc. Tamper switch device for detection of relative motion. 3,849,614, Cl. 200-61.410.
- Connor Engineering Corporation: *See—*
  - Day, Thomas L., 3,848,799.
- Conover, Lloyd H.; and Woodward, Robert B., to Pfizer Inc. D-ring substituted 6-deoxytetracyclines. 3,849,493, Cl. 260-559.0at.
- Consolidated Foods Corporation: *See—*
  - Bird, Stanford W.; Wasserman, Jerome D.; and Hatley, Earl L. (said Wesserman and Hatley assors. to), 3,848,795.
- Container Equipment Corporation: *See—*
  - Allen, Russell W., 3,848,397.
- Conti, John A.: *See—*
  - Boucher, Raymond W.; Boudreau, Robert; and Conti, John A., 3,849,008.
- Continental Can Company, Inc.: *See—*
  - Catalano, James A., 3,848,732.
  - Holk, Albert J., Jr., 3,848,557.
- Continental Oil Company: *See—*
  - Martin, Theodore T.; and Allen, Marvin C., 3,849,300.
- Control Switch, Inc.: *See—*
  - Hopkins, Alton W., 3,848,434.
- Controls Research Corporation: *See—*
  - Walker, Frank A., Jr., 3,849,611.
- Conversion Chemical Corporation: *See—*
  - Beckwith, Merton M.; and Fong, Jaan-Jiue, 3,849,218.
- Convertex, Ltd.: *See—*
  - Marosi, Michael N., 3,849,207.
  - Marosi, Michael N., 3,849,208.

- Conwicke, Joel A., to Du Pont de Nemours, E. I., and Company. Barium- or sirontium-containing glass frits for silver metallizing compositions. 3,849,142, Cl. 106-1.000.
- Cook, John W.: *See—*
  - Peterson, Robert S.; and Cook, John W., 3,848,443.
- Cooley, Richard F., to Owens-Illinois, Inc. Laser glass host compositions comprising TeO_2,PbO and ZnO. 3,849,739, Cl. 331-94.50e.
- Cooper, Albert S., Jr.: *See—*
  - Calamari, Timothy A., Jr.; Reeves, Wilson A.; Schreiber, Sidney P.; and Cooper, Albert S., Jr., 3,849,067.
- Cooperatieve Vereniging Suiker Unie U.A.: *See—*
  - Aartsen, Andreas Marinus, 3,849,583.
- Copeland Corporation: *See—*
  - Bergman, Ernest R., 3,848,702.
- Copeland, John W. Dental instrument. 3,848,336, Cl. 32-59.000.
- Corby, Neville Slater; Hunter, James Stuart; and Leng, John Lindley, to Imperial Chemical Industries Limited. Water-soluble azo dyestuffs containing cationic groups by coupling diazonium nitrophenyl compounds with homophthalimides. 3,849,393, Cl. 260-155.00.
- Corco, Inc.: *See—*
  - Schieser, Warren J., 3,848,776.
- Cord, Paul: *See—*
  - Feuillade, Georges; and Cord, Paul, 3,849,199.
- Cordes, Linus F.; and Garfinkel, Marvin, to General Electric Company. Schottky barrier diodes. 3,849,789, Cl. 357-15.000.
- Corn, Robert J., to United States of America, Navy. Closed-loop gun control system. 3,848,509, Cl. 89-41.0aa.
- Corning Glass Works: *See—*
  - Giffen, James W.; Duke, David A.; Dumbaugh, William H., Jr.; Flannery, James E.; MacDowell, John F.; and Megles, John E., 3,849,097.
- Corradi, Bruno; Petrillo, Vincenzo; and Cimarosti, Giordano, to Montecatini Edison S.p.A. Process for the electrolysis of alkali chloride solution. 3,849,266, Cl. 204-98.000.
- Cosco, Robert J.; and Pappas, John A., to GTE Sylvania Incorporated. Flash tube having improved cathode. 3,849,690, Cl. 313-217.000.
- Costa Tecnologie Speciali S.p.A.: *See—*
  - Giuffredi, Giancarlo, 3,848,318.
- Costantini, Michel: *See—*
  - Bourdin, Francois; Costantini, Michel; Jouffret, Michel; and Lartigau, Guy, 3,849,502.
- Costruba, Peter, to Angeles Metal Trim Co. Support structure for shelving. 3,848,364, Cl. 52-36.000.
- Cotten, Howell J.: *See—*
  - Jureit, John Calvin; Cotten, Howell J.; Castillo, Adolfo; and Leutwyler, Roy, 3,848,791.
- Coulter Electronics, Inc.: *See—*
  - Bull, Brian S., 3,848,796.
- Coulter Electronics Inc., mesne: *See—*
  - Nelson, John Russell, 3,848,962.
- Courtright, Burr, to CH20, Inc. Prime mover for and in wheel-line irrigation apparatus. 3,848,625, Cl. 137-344.000.
- Courtright, Burr, to CH_2O, Inc. Winch-driven irrigation apparatus. 3,848,805, Cl. 239-189.000.
- Couture, John W.: *See—*
  - Bantz, Walter J.; Couture, John W.; and Pittaro, Richard J., 3,848,460.
- Cowan, Arnold A.: *See—*
  - Thompson, John T.; and Cowan, Arnold A., 3,848,710.
- CPC International Inc.: *See—*
  - Armbruster, Frederick C.; and Kooi, Earl R., 3,849,194.
- Craig, Lloyd L. Exercise apparatus on pedestal for patients. 3,848,870, Cl. 272-67.000.
- Cramer, William H. Negative pressure underfire control system. 3,848,551, Cl. 110-18.00r.
- Crampton, Clifford Archibald; and Cardy, Charles Frederick. Vapor phase oxidation of benzene to maleic anhydride at low oxygen to benzene molar ratios and high benzene concentrations. 3,849,448, Cl. 260-346.80a.
- Crawford, Thomas G.; and Kearse, William E., to Westinghouse Electric Corporation. Tubing made from B-staged epoxy-resin composition. 3,848,640, Cl. 138-145.000.
- Creager, John E.; and Taylor, Robert G., to General Motors Corporation. Combination engine operated fuel pump and air pump. 3,849,029, Cl. 417-388.000.
- Cresswell, Ronald M.: *See—*
  - Mentha, John W.; Shaffner, Janice V.; and Cresswell, Ronald M., 3,849,416.
- Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., to Burroughs Wellcome & Co. (U.S.A.) Inc. 5-Benzyl pyrimidines intermediates. 3,849,407, Cl. 260-240.00r.
- Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., to Burroughs Wellcome Co. 5-Benzyl pyrimidines intermediates therefor and method. 3,849,470, Cl. 260-465.00f.
- Crosswell, Flay D.: *See—*
  - Linhart, James T.; Crosswell, Flay D.; and Galbreath, Gerald W., 3,848,920.
- Crowther, Ted J.; Jacobson, Charles F.; and Sutherlin, Kent K., to Optical Data Systems, Inc. Data storage and retrieval system. 3,849,766, Cl. 340-173.0lm.
- Crozier, Donald G.: *See—*
  - Weber, Kenneth E.; Crozier, Donald G.; and Hawley, Wilbur W., 3,849,264.
- CTS Corporation: *See—*
  - Scott, Kelley E., Jr.; Kemper, Daryl M.; Grove, Lloyd E.; and Kiess, Ronald J., 3,849,681.
- Culbertson, George W., to FMC Corporation. Clutch actuating mechanism. 3,848,717, Cl. 192-93.00a.
- Cummings, Gordon F., III, to Borg-Warner Corporation. Temperature modulated pressure regulating valve. 3,848,622, Cl. 137-468.000.
- Cunningham, Hugh: *See—*
  - Raetzsch, Carl W.; Darlington, William B.; and Cunningham, Hugh, 3,849,280.
- Cunningham, James W.: *See—*
  - Pavlik, Norman M.; and Cunningham, James W., 3,848,331.
- Cuntze, Ulrich: *See—*
  - Diery, Helmut; Cuntze, Ulrich; May, Adolf; and Milewski, Eckhard, 3,849,435.
- Cuomo, John J.: *See—*
  - Braslau, Norman; Cuomo, John J.; Harris, Erik P.; and Hovel, Harold J., 3,849,707.
- Curtiss-Wright Corporation: *See—*
  - Jones, Charles, 3,849,035.
- Cutler-Hammer, Inc.: *See—*
  - Link, Donald A.; and Williams, Fred H., 3,849,751.
- Cuzner, David E.; Dodman, Charles O. R.; and Heath, John S., to International Business Machines Corporation. Magnetic disc apparatus. 3,849,800, Cl. 360-97.000.
- Cylinder Forming Limited: *See—*
  - Campion, David John, 3,848,449.
- Daimler-Benz Aktiengesellschaft: *See—*
  - Wilfert, Karl; Gmeiner, Gunter; Grabner, Christian; and Nockemann, Ernst, 3,848,910.
- Dall'Armi, Georg V., to Siemens Aktiengesellschaft. Optical range measuring apparatus. 3,848,999, Cl. 356-4.000.
- D'Ambrosio, Anthony H. Multiple size slacks. 3,848,268, Cl. 2-237.000.
- Damon Corporation: *See—*
  - Hurtig, Carl R.; Kent, Robert L.; and Blumle, Leo J., 3,848,633.
- Damon, Robert A.: *See—*
  - Fowells, Robert W.; Damon, Robert A.; and Coma, James G., 3,849,387.
- Dana Corporation: *See—*
  - Enerson, Donald W.; and Warfield, Glenn R., 3,849,736.
- Danberg, Victor. Pulley for magnetic separation of solid wastes. 3,848,743, Cl. 209-218.000.
- Dane, Dan H., to United States of America, National Aeronautics and Space Administration. Orthotic arm joint. 3,849,668, Cl. 307-149.000.
- Daniel, James T.; Templeton, George E.; and Smith, Roy J., Jr., to United States of America, Agriculture. Control of aeschynomene sp. with Colletrotrichum gloeosporioides Penz. f. sp. aeschynomene. 3,849,104, Cl. 71-65.000.
- Daniel, Truman Knox, Jr.: *See—*
  - Bloejack, James William, Jr.; Daniel, Truman Knox, Jr.; and Rolison, Darrell Edward, 3,848,548.
- Daniels, Arthur L.: *See—*
  - Snover, John A.; Waibel, Joseph H.; and Daniels, Arthur L., 3,849,542.
- Daniels, David A.: *See—*
  - Wendler, Kenneth T.; and Daniels, David A., 3,849,322.
- Daniels, David A.; and Davis, William R., to M&T Chemicals Inc. Preparation of trineophyl tin halides. 3,849,460, Cl. 260-429.700.
- D'Antonio, Lawrence E. BCG as adjuvant in malaria vaccination. 3,849,551, Cl. 424-88.000.
- Daravingas, George V.: *See—*
  - Hall, Richard C.; Kidd, Norman D.; and Daravingas, George V., 3,849,579.
- Darlington, William B.: *See—*
  - Raetzsch, Carl W.; Darlington, William B.; and Cunningham, Hugh, 3,849,280.
- Darwent, Richard H., to Westinghouse Electric Corporation. Lift apparatus. 3,848,706, Cl. 187-86.000.
- Daumas, Jean-Claude; and Le Page, Madeleine. Catalyst support and oxychlorination catalyst embodying. 3,849,338, Cl. 252-441.000.
- David, John. Means to assure uniform flow of an abrasive solution. 3,848,366, Cl. 51-129.000.
- Davidson, Bruce R.; and Agneta, Agustus R., to Parfums Rochas, Inc. Pressure testing device for glass aerosol bottles. 3,848,459, Cl. 73-41.200.
- Davidson, William Ward, Jr., to Van Vlaanderen Machine Company. Printing press method of assembly. 3,848,320, Cl. 29-428.000.
- Davies, Evan Ellis: *See—*
  - Bourne, Kenneth Hugh; Davies, Evan Ellis; and Pitkethly, Robert Chalmers, 3,849,299.
- Davies, Gareth Morse, to Imperial Chemical Industries Limited. Furo[3,2-d] [1,2,3]diazaborines. 3,849,449, Cl. 260-347.200.
- Davies, Phineas: *See—*
  - Campbell, John Stewart; and Davies, Phineas, 3,849,538.
- Davis, Thomas Jefferson, Jr. Supporting device. 3,848,700, Cl. 182-181.000.
- Davis, William R.: *See—*
  - Daniels, David A.; and Davis, William R., 3,849,460.
- Day, Thomas L., to Connor Engineering Corporation. Ceiling air diffuser. 3,848,799, Cl. 236-49.000.
- Dayton Progress Corporation: *See—*
  - Gaggrave, Robert J., 3,848,452.
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  - Stevens, Harry A.; and Randolph, Allan E., Sr., 3,848,496.

- De Barbieri, Joseph L., to Beth-Con Realty, Inc. Safety barrier. 3,848,854, Cl. 256-65.000.
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- De Smedt, Frans Antoon: *See—*
  - Jeurissen, Lambert Gaston; and De Smedt, Frans Antoon, 3,849,379.
- Dea, Frank J.; and Nelson, Eric L., to Nelson Research & Development Company. Cyclic nucleotide therapeutic preparation. 3,849,553, Cl. 424-180.000.
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  - Deaton, David W.; Brower, Stephen M.; and Durham, Marhsall P., Jr., 3,848,628.
- Decoene, Frans J. G. C.: *See—*
  - Mortimer, Frans H.; Jacobs, Gerard O.; Decoene, Frans J. G. C.; Braet, August; and Rowland-Hill, Edward W., 3,848,609.
- Deep Oil Technology, Inc.: *See—*
  - Falkner, Chester B., 3,848,949.
- Degginger, Edward R.; and Frisco, John S., to Allied Chemical Corporation. Method and apparatus for the preparation and ejection of a viscous dilatant material. 3,848,802, Cl. 239-10.000.
- Degueldre, Louis; Killens, Charles; and Bourgeois, Louis, to Solvay & Cie. Metal electrodes and coatings therefor. 3,849,282, Cl. 204-290.00f.
- Dehlbom, Eugene K.; and Foshaug, Rockne H. Cable straightener. 3,848,450, Cl. 72-384.000.
- Dehler, Bernhard, to Metallwerk Max Brose & Co. Safety locking device for automobile reclining seats. 3,848,923, Cl. 297-366.000.
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  - Elias, Murray A., 3,848,851.
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- Denker, James M., to Nutron Corporation. Cams. 3,848,481, Cl. 74-567.000.
- Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
  - Kadowaki, Takashi; Dohi, Michio; and Yokobori, Katsuichi, 3,849,519.
- Dennis, Sam. Trailer hitch assembly. 3,848,896, Cl. 280-423.00r.
- Denzler, Eric-Alain, to Fratmann S.A. Manufacture of 1-alkenyl-2-aminomethyl pyrrolidines. 3,849,442, Cl. 260-326.850.
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  - Bordenca, Carl; and Derfer, John M., 3,849,571.
- Descamps, Marcel; and Inion, Henri, to Labaz. Indole derivatives in reducing inflammation. 3,849,564, Cl. 424-263.000.
- DeSpain, Jimmy F. Carrier garment-cushion. 3,848,267, Cl. 2-94.000.
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  - Allin, Frederick R., 3,848,451.
- Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
  - Hoffmann, Peter; Schreyer, Gerd; Weiberg, Otto; and Weigert, Wolfgang, 3,849,484.
  - Knorre, Helmut; and Leidl, Peter, 3,848,391.
- Dexter Corporation: *See—*
  - Fetscher, Charles A.; and Schweyen, Paul R., 3,849,383.
- Dexter Corporation, The: *See—*
  - Fetscher, Charles A.; and Rosso, Michael J., 3,849,187.
- Dhein, Rolf; Rudolph, Hans; Kreuder, Hans-Joachim; and Gebauer, Herbert, to Bayer Aktiengesellschaft. Coating with pulverulent mixtures of hydroxy containing polymers and caprolactam masked polyisocyanates. 3,849,160, Cl. 117-17.000.
- Di Salvo, Walter; Smith, Frank R., Jr.; and Kenney, Edward J., to Colgate-Polmolive Company. Manufacture of free-flowing particulate heavy duty synthetic detergent composition containing nonionic detergent and anti-redeposition agent. 3,849,327, Cl. 252-10.000.
- Dial, Ralph E.; Keyes, John J., Jr.; and Krewson, John W., Jr., to United States of America, Atomic Energy Commission. Magnetic temperature sensor. 3,848,466, Cl. 73-349.000.
- Diamond Shamrock Corporation: *See—*
  - Bennett, John E.; Burkhardt, James W.; and Koftfield, Richard E., 3,849,281.
  - Palm, Bert E.; and Kennedy, Alexander W., 3,849,141.
- Dickenson, Harvard G., to Valve Specialty Supply, Inc. Double block and bleed gate valve to control unidirectional meter proover sphere. 3,848,621, Cl. 137-268.000.
- Didier-Kellogg Industrieanlagenbau GmbH: *See—*
  - Flockenhaus, Claus; Simonis, Wolfgang; Beck, Kurt-Gunther; and Echterhoff, Heinrich, 3,849,258.
- Diepeveen, John C. Actuator for tool moving mechanism. 3,848,473, Cl. 74-53.000.
- Diery, Helmut; Cuntze, Ulrich; May, Adolf; and Milewski, Eckhard, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Imidazolinium salts as softening agents for textiles. 3,849,435, Cl. 260-309.600.
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  - Dika, Michael; and Dika, Jerry Felix, 3,848,648.
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- Dillard, John W.: *See—*
  - Tringali, Dominick; and Dillard, John W., 3,849,783.
- Dillinger, Lester L. Method of reconditioning a heat exchanger. 3,848,371, Cl. 51-241.500.
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- DiTirro, Domenic A. Fail safe apparatus for fluid actuated systems. 3,848,848, Cl. 251-31.000.
- Dix, James S.: *See—*
  - Reed, Jerry O.; and Dix, James S., 3,849,352.
- Dix, Robert M.; and Taylor, Carol O., to Texas Instruments, Incorporated. Floating annulus for gas parting to a moving heat exchanger. 3,849,652, Cl. 250-352.000.
- Dixon, Earl: *See—*
  - Mason, Robert J.; and Dixon, Earl, 3,849,746.
- Dobrovolsky, Evgeny Ivanovich: *See—*
  - Lykov, Mikhail Vasilievich; Rybalchenko, Gleb Fedorovich; Korotkov, Mikhail Alexeevich; Dobrovolsky, Evgeny Ivanovich; Rudenko, Inna Lukinichna; Avilov, Oleg Vladimirovich; and Bljumberg, Yakov Benedictovich, 3,849,233.
- Dochterman, Richard W., to General Electric Company. Mounting adapter means for dynamoelectric machine. 3,848,837, Cl. 248-14.000.
- Dodge, William L.: *See—*
  - Browning, Walter P.; and Dodge, William L., 3,848,835.
- Dodman, Charles O. R.: *See—*
  - Cuzner, David E.; Dodman, Charles O. R.; and Heath, John S., 3,849,800.
- Doering, Charles W., to Brinly-Hardy Co., Inc. Rotary brush sweeper and bagger. 3,849,043, Cl. 15-79.000.
- Doherty, John, Jr., to Texas Instruments, Incorporated. Thermally actuated valve assembly. 3,848,676, Cl. 169-37.000.
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  - Kadowaki, Takashi; Dohi, Michio; and Yokobori, Katsuichi, 3,849,519.
- Dolan, Courtney F., to Chrysler Corporation. Full time four wheel drive. 3,848,691, Cl. 180-44.00r.
- Dolfini, Joseph Edward, to Squibb, E. R., & Sons, Inc. 4-Substituted-Δ2-cephalosporin derivatives. 3,849,408, Cl. 260-243.00c.
- Domergue, Annick Martha Suzanne Simone: *See—*
  - Mingasson, Georges Raymond Henry; and Domergue, Annick Martha Suzanne Simone, 3,849,331.
- Doric Corporation: *See—*
  - Youra, Charles J., 3,848,495.
- Dorr-Oliver Incorporated: *See—*
  - Schall, Robert A., 3,849,033.
- Doss, Richard C.; and Gingerich, Leo L., to Phillips Petroleum Company. Chromate curable sealant compositions. 3,849,381, Cl. 260-75.00s.
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  - Jambor, Dorothy E., 3,848,947.
- Douglas, James Bruce. Drafting tables. 3,848,544, Cl. 108-6.000.
- Douros, John D., Jr.: *See—*
  - Kerst, Al F.; Douros, John D., Jr.; and Brokl, Milan, 3,849,560.
- Dow Chemical Company, The: *See—*
  - Hargash, Paul; and Karle, Franklin J., 3,848,470.
  - Kurihara, Norman H.; and Bublitz, Donald E., 3,849,415.
  - Mod, William A.; and Enos, James H., 3,849,118.
  - Motley, Herman R.; Morris, Earl F.; and Pavlich, Joseph P., 3,849,316.
  - Pitts, Charles A., 3,848,670.
  - Smith, Harry A., 3,849,375.
  - Snover, John A.; Waibel, Joseph H.; and Daniels, Arthur L., 3,849,542.
  - Tong, Yulan C., 3,849,420.
  - Turley, Robert R.; Castor, William M.; and Nunnally, Kenneth R., 3,849,339.
  - Zweigle, Maurice L., 3,849,361.
- Dowdeswell, Charles Vernon Roger. Reversible plough operating means. 3,848,678, Cl. 172-225.000.
- Downing, Donald M. Traffic control sign. 3,848,562, Cl. 116-63.00r.
- Downs, Thomas C., to General Motors Corporation. Combination apex and corner seal spring for rotary engine. 3,849,037, Cl. 418-121.000.
- Doyle, Gerald, to Exxon Research and Engineering Company. Disproportionation process. 3,849,513, Cl. 260-683.00d.
- Draft Systems, Inc.: *See—*
  - Fallon, Merton R., 3,848,631.
- Draper, Marshall D.; and Levy, Louis, to Riker Laboratories, Inc. Anti-inflammatory treatment. 3,849,578, Cl. 424-330.000.
- Dray, Walter L., to Bendix Corporation, The. Means for maintaining a fixed flow through a breathing regulator in an inhalation system. 3,848,617, Cl. 137-88.000.
- Drejza, John Edward: *See—*

  - Bolan, Peter Samuel; Bryant, Aramis Duane; Drejza, John Edward; Holovka, Charles Stephen; and Weber, Ludwig Wilhelm, 3,848,722.
- Drelich, Arthur H.; and Lukacs, George J., to Johnson & Johnson. Synthetic resin composition and methods of utilizing the same. 3,849,173, Cl. 117-62.100.
- Dresser Industries, Inc.: *See—*
  - Huslander, William L.; and Glover, Charles J., 3,848,638.
- Drostholm, Frede Hilmar. Method for making reinforced of filled resin products. 3,849,527, Cl. 264-35.000.
- Du Bose, Samuel R. Amphibious motorcycle. 3,848,560, Cl. 115-1.00r.
- Du Pont de Nemours, E. I., and Company: *See—*
  - Bakermans, Fransiscus Cornelius; and Thoms, William Charles, 3,848,316.
  - Begland, Robert Walter, 3,849,479.
  - Blake, Ralph Kingsley, 3,849,134.
  - Bucha, Harry C.; and Langsdorf, William P., Jr., 3,849,102.
  - Conwicke, Joel A., 3,849,142.
  - Fernandes, Harold, 3,849,177.
  - Ficklinger, Thomas Franklin; Jeter, Watt Nixon; and Likhyani, Kewal Krishan, 3,849,074.
  - Finley, Joseph Burton, 3,849,372.
  - Green, James Ralph, 3,849,181.
  - Grot, Walther Gustav, 3,849,243.
  - Johnson, Alexander Lawrence, 3,849,436.
  - Marsh, Frank Dennis, 3,849,465.
  - Middleton, William Joseph, 3,849,494.
  - Reilly, Thomas A.; Reitz, Charles F.; and Smith, Robert D., 3,848,660.
  - Siegle, John Carl; and Wolfe, Homer Bagenstose, 3,849,373.
  - Sleight, Arthur W., 3,849,544.
  - Wyeth, Nathaniel Convers; and Roseveare, Ronald Newman, 3,849,530.
- Dubeck, Michael, to Ethyl Corporation. Gasoline additive. 3,849,083, Cl. 44-72.000.
- Duffy, James J.: *See—*
  - Golborn, Peter; and Duffy, James J., 3,849,440.
- Duguay, Michel Albert: *See—*
  - Benes, Vaclav Edvard; and Duguay, Michel Albert, 3,849,604.
- Duke, David A.: *See—*
  - Giffen, James W.; Duke, David A.; Dumbaugh, William H., Jr.; Flannery, James E.; MacDowell, John F.; and Megles, John E., 3,849,097.
- Dulebohn, David H.; Landy, Arney, Jr.; and Brandt, Roy Earl, to Andrew Engineering Company. Wire electrode electric erosion device. 3,849,624, Cl. 219-69.00v.
- Dumas, Emile V. Standpipe vent system and fitting for multi-story buildings. 3,848,275, Cl. 4-211.000.
- Dumbaugh, William H., Jr.: *See—*
  - Giffen, James W.; Duke, David A.; Dumbaugh, William H., Jr.; Flannery, James E.; MacDowell, John F.; and Megles, John E., 3,849,097.
- Dumont Aviation Associates: *See—*
  - Smith, Jack Edward, 3,848,899.
- Duncan, John L.; and Duthie, Fredrick W., to Singer Company, The. Assembly of externally accessible brushes. 3,849,684, Cl. 310-242.000.
- Dunlop Limited: *See—*
  - French, Tom, 3,848,651.
- Durham, Marhsall P., Jr.: *See—*
  - Deaton, David W.; Brower, Stephen M.; and Durham, Marhsall P., Jr., 3,848,628.
- Durkop, Hermann, to Forval-Verkaufsgesellschaft H. Durkop & Co. Tank for fuel oil or other liquids. 3,848,765, Cl. 220-9.00a.
- Durst A.G. Fabrik Fototechnischer Apparate: *See—*
  - Muehloegger, Leopold, 3,848,997.
- Durvasula, Srirama S., to Honeywell Information Systems, Inc. Selection apparatus for matrix array. 3,849,768, Cl. 340-174.0tb.
- Duthie, Fredrick W.: *See—*
  - Duncan, John L.; and Duthie, Fredrick W., 3,849,684.
- Dwyer, Francis G.; and Chu, Pochen, to Mobil Oil Corporation. Prevention of silica pore obstruction in crystalline aluminosilicates. 3,849,463, Cl. 260-448.00c.
- Dwyer, Gregory J.; and Ferris, Walla L., to International Telephone and Telegraph Corporation. Fingers employing inserts to support work pieces in a flow solder machine. 3,848,864, Cl. 269-46.000.
- Dyer, James L., to Rewop Company. Tailgate release. 3,848,918, Cl. 296-57.00r.
- Dynamics Corporation of America: *See—*
  - Semrow, Walter J., 3,848,524.
- Dynamit Nobel Aktiengesellschaft: *See—*
  - Deneke, Klaus; Falkenhain, Wilhelm; and Hack, Peter, 3,849,532.
- Dynan, Forest J., to Rockwell International Corporation. Dual polarization responsive radar having improved response to small targets. 3,849,780, Cl. 343-7.00a.
- Dynell Electronics Corporation: *See—*
  - Molack, Michael A., 3,849,671.
- Dzalba-Lyndis, Serge Yvan: *See—*
  - Jannot, Michel Rene; Vaillant, Robert Guillaume; and Dzalba-Lyndis, Serge Yvan, 3,848,697.
- Earhart, Howard F.; Jacoby, Frederick J.; and Starck, Clemens B., to Eastman Kodak Company. Photographic articles and materials useful in their manufacture. 3,849,191, Cl. 117-226.000.
- Eastern Railway Company: *See—*
  - Beck, Richard F.; and Cerny, Louis T., 3,848,534.
- Eastman, James M., to Bendix Corporation, The. Fluidic compressor air bleed valve control apparatus. 3,849,020, Cl. 425-28.000.
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- Eastman Kodak Company: *See—*
  - Bartles, Edward C.; and Fraim, Raymond A., 3,848,342.
  - Earhart, Howard F.; Jacoby, Frederick J.; and Starck, Clemens B., 3,849,191.
  - Gade, John N.; and MacKay, James D., 3,848,315.
  - Gray, Theodore F., Jr.; and Barton, Kenneth R., 3,849,514.
  - Hamblen, David P.; and Higgins, George C., 3,849,657.
  - Stahly, Frederick A.; and Merrill, Stewart H., 3,849,165.
  - Wadsworth, Donald H.; and Perkins, William C., 3,849,144.
- Eaton, James W.; and Luck, Allan J., to Masonite Corporation. Composition shingle. 3,848,384, Cl. 52-420.000.
- Ebauches S.A.: *See—*
  - Berthoud, Francois, 3,849,011.
- Ebine, Mitsuo: *See—*
  - Takagi, Atsushi; Miura, Mitsuo; Suzuki, Akio; Kukino, Yoshinori; Amagai, Kiyoshi; Shimizu, Haruji; Satoh, Mitsutoshi; Kohno, Shoji; and Ebine, Mitsuo, 3,848,685.
- Ebner, Edwin D., 20% to Lee, Raymond, Organization, Inc., The. Snow mold. 3,848,846, Cl. 249-66.000.
- Eccettuato, Vittorio: *See—*
  - Saltini, Fabrizio; and Eccettuato, Vittorio, 3,849,634.
- Echterhoff, Heinrich: *See—*
  - Flockenhaus, Claus; Simonis, Wolfgang; Beck, Kurt-Gunther; and Echterhoff, Heinrich, 3,849,258.
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- Eckrich, Peter & Sons, Inc.: *See—*
  - Flesch, Keith E., 3,848,491.
- Economy, James; and Storm, Roger S., to Carborundum Company, The. Incorporation of fillers in insoluble, infusible oxybenzoyl polymers. 3,849,362, Cl. 260-33.20r.
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- Eisenberg, Mark F.; and Harmon, William J., Jr., to Burroughs Corporation. Display panel reset and safety timing circuit. 3,849,702, Cl. 315-169.0tv.
- Elder, Fred Grove: *See—*
  - Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,849,231.
- Electrohome Limited: *See—*
  - Remick, Cassius D., 3,849,090.
- Elgin, Joliet: *See—*
  - Beck, Richard F.; and Cerny, Louis T., 3,848,534.
- Elias, Murray A., to Dell Holdings Limited. Jacking device. 3,848,851, Cl. 254-108.000.
- Elkins, Vance V., Jr. Golf glove, system and method. 3,848,874, Cl. 273-183.00b.
- Elliott, James O.; and Keller, Chris F., Jr., to General Motors Corporation. Windshield wiper control circuit. 3,849,711, Cl. 318-443.000.
- Elmore, Richard R. System for anchoring modular housing units. 3,848,376, Cl. 52-169.000.
- Elphiac: *See—*
  - Trine, Joseph, 3,849,625.
- Elton, Richard L., to Sandoz-Wander, Inc. Thiosemicarbazones as antifertility agents. 3,849,575, Cl. 424-323.000.
- Emanuel, Nikolai Markovich: *See—*
  - Malievsky, Alexandr Dmitrievich; Vints, Viktor Vladimirovich; Emanuel, Nikolai Markovich; and Parfenov, Viktor Nikolaevich, 3,849,499.
- Emhart Corporation: *See—*
  - Wythe, Frederick Joseph; and Mylchreest, George Dudley, 3,849,101.
- Emhart Zurich S.A.: *See—*
  - Krenmayr, Willy, 3,848,742.
- Endou, Hirohide; Kawasaki, Jun; Fujimoto, Yoshiji; Nakane, Keiichi; and Kitazume, Yoshiaki, to Hitachi, Ltd. Multi-dimensional pattern recognition processor. 3,849,760, Cl. 340-146.30h.
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- Enebo, Lennart Eugen: *See—*
  - Mogren, Hakan Lars; Hedenskog, Gudmund Oscar; and Enebo, Lennart Eugen, 3,848,812.
- Enerson, Donald W.; and Warfield, Glenn R., to Dana Corporation. Frequency synthesizer having frequency control loop with keyed fixed frequency oscillator. 3,849,736, Cl. 331-1.00a.
- Engel, Frederico: *See—*
  - Maass, Gunter; Engel, Frederico; Bernemann, Paul; and Blumel, Harald, 3,849,363.
- Engelbrecht, Orest: *See—*

  - Burns, Richard H.; Engelbrecht, Orest; and Welham, Brian H., 3,848,960.
- Engelhard Minerals & Chemicals Corporation: *See*—
  - Miller, Harold C., 3,848,929.
- Engineering Plastics, Inc.: *See*—
  - Morse, John W., 3,848,306.
- Ennulat, Reinhard D., to United States of America, Army. Charge coupled signal processor. 3,849,651, Cl. 250-349.000.
- Enos, James H.: *See*—
  - Mod, William A.; and Enos, James H., 3,849,118.
- Enthone, Incorporated: *See*—
  - Kampe, Marcis M., 3,849,325.
- Epstein, Aaron Meyer. Variable-speed, positive-drive transmission providing output speeds from zero R.P.M. up to full output R.P.M. 3,848,474, Cl. 74-117.000.
- Epstein, Philip L.: *See*—
  - Wang, Kuei-Send; Epstein, Philip L.; and Lu, John Hsueh Chung, 3,849,764.
- E.R.A. Patents Limited: *See*—
  - Jackson, Geoffrey N.; Pickard, Robert G.; Brackley, Graham; and Satchell, David W., 3,849,283.
- Erhardt, Manfred, to Hurth, Carl, Maschinen-und Zahnradfabrik. Milling tool for working of grooves or slots. 3,848,512, Cl. 90-11.00a.
- Erickson, Vedrick A.: *See*—
  - Bauman, Jack L.; and Erickson, Vedrick A., 3,848,552.
- Ericsson, Bjorn: *See*—
  - Jysky, Goran; Mardla, Ilmar; and Ericsson, Bjorn, 3,848,686.
- ESB Incorporated: *See*—
  - Bernstein, Philip; and Varker, Alan E., 3,849,386.
- Eshelman, Cheston Lee. Tire bumper kit. 3,848,736, Cl. 206-223.000.
- Esso Research and Engineering Company: *See*—
  - Long, Robert Byron, 3,849,297.
  - Tarossi, Frank J., 3,848,559.
- Etablissement Public: Institut National de la Sante et la Recherche Medicale: *See*—
  - Beaumont, Jean-Louis, 3,849,546.
- Etablissements Genoud & Cie, Societe Anonyme: *See*—
  - Chevallier, Pierre, 3,849,060.
- Ethyl Corporation: *See*—
  - Adams, James M.; Hopper, Randall R.; Raley, Garland E.; and Rutherford, James K., 3,849,050.
  - Dubeck, Michael, 3,849,083.
  - Kuehnhanss, Gerhard O., 3,849,486.
  - Valdo, Alex R., 3,848,666.
- Eue, Ludwig: *See*—
  - Metzger, Carl; and Eue, Ludwig, 3,849,432.
- Evans, Arthur. Fixed point probe card and an assembly and repair fixture therefor. 3,849,728, Cl. 324-158.00f.
- Evans, John L., to Chubb Fire Security Limited. Foam-producing apparatus. 3,848,675, Cl. 169-15.000.
- Everitt, Scott F., to Acoustic Fiber Sound Systems, Inc. Loud speaker housing systems. 3,848,696, Cl. 181-156.000.
- Excelermatic, Inc.: *See*—
  - Kraus, Charles Edward, 3,848,476.
- Exxon Research and Engineering Company: *See*—
  - Buntin, Robert R.; Keller, James P.; and Harding, John W., 3,849,241.
  - Doyle, Gerald, 3,849,513.
  - Howell, William G., 3,848,794.
  - Plank, Don A., 3,849,516.
- Fa. International Pollution Control Systems, Inc.: *See*—
  - Jakubek, Peter, 3,849,311.
- Fabbrica Italiana Magneti Marelli, S.p.A.: *See*—
  - Giandinoto, Aldo; and Gilardelli, Ugo, 3,848,477.
- Faber, Kurt Heinrich Albert Erich, to Sandvik Aktiebolag. Cutting insert and cutting tool assembly. 3,848,303, Cl. 29-96.000.
- Faber, Ruth: *See*—
  - Wolff, Werner; Faber, Ruth; and Ruchlack, Kasimir, 3,849,556.
- Fagan, Arthur Wayne, to Union Oil Company of California. Packaging and purifying graphite. 3,848,739, Cl. 206-443.000.
- Falize, Claude: *See*—
  - Biarnais, Paul; Falize, Claude; and Sitaud, Gilbert, 3,849,475.
- Falk, Edward J., to Wagner Electric Corporation. Parking brake and wear adjustment means. 3,848,704, Cl. 188-71.800.
- Falk, Sidney, to Fort Lock Corporation. Bicycle lock carrying bracket. 3,848,783, Cl. 224-39.00r.
- Falkenhain, Wilhelm: *See*—
  - Deneke, Klaus; Falkenhain, Wilhelm; and Hack, Peter, 3,849,532.
- Falkner, Chester B., to Deep Oil Technology, Inc. Subsea button-type electrical connector. 3,848,949, Cl. 339-75.00m.
- Fallon, Merton R., to Draft Systems, Inc. Beer keg protective device. 3,848,631, Cl. 137-505.110.
- Fanini, Luigi. Module for furniture development. 3,848,942, Cl. 312-257.00r.
- Farah, Basil S.; and Schroeder, Herbert M., to Textron, Inc. Polyureaurethanes produced from a mixture of two polyamines. 3,849,360, Cl. 260-33.20r.
- Farbenfabrik Bayer Aktiengesellschaft: *See*—
  - Michael, Dietrich; Gilch, Heinrich; and Hechelhammer, Wilhelm, 3,849,154.
- Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See*—
  - Diery, Helmut; Cuntze, Ulrich; May, Adolf; and Milewski, Eckhard, 3,849,435.
  - Wolf, Erhard; Kohl, Hans; and Hartfelder, Gunter, 3,849,559.
- Fargo Mfg. Company, Inc.: *See*—
  - Kraft, Russell H., 3,848,956.
- Fariello, Leonard Anthony. Method and means for mounting coins and the like. 3,848,311, Cl. 29-160.600.
- Fast Load Control, Inc.: *See*—
  - Park, Robert H., 3,849,666.
- Fattore, Vittorio: *See*—
  - Manara, Giovanni; and Fattore, Vittorio, 3,849,337.
- Fehnel, Richard B.: *See*—
  - Kuchinsky, Saul; Shesser, Arthur B.; Somlyody, Arpad; and Fehnel, Richard B., 3,849,693.
- Feldhaus, James F.: *See*—
  - Lovness, William R.; and Feldhaus, James F., 3,848,363.
- Feldman, Martin Louis; Hagedorn, Donald William; and Gordon, John Edson, to American Cyanamid Company. Trisodium-monoaniline salt of 2-naphthol-3,6-disulfonic acid. 3,849,483, Cl. 260-501.210.
- Feldman, Rubin, to T.S.I., Inc. Thermal protective process and article coated with thermal protective composition. 3,849,178, Cl. 117-72.000.
- Fell, Charles Raymond. Apparatus for machining logs. 3,848,647, Cl. 144-3.00r.
- Ferment, George R.; Prince, Arthur E., Jr.; and Sessa, Paul A., to Celanese Corporation. Process for drawing polybenzimidazole fibrous materials. 3,849,529, Cl. 264-85.000.
- Fernandes, Harold, to Du Pont de Nemours, E. I., and Company. Process employing catalyst-coated yarn processing rolls. 3,849,177, Cl. 117-71.00r.
- Ferrand, Bernard; Forrat, Francis; Grange, Yves; Joubert, Jean-Claude; and Mareschal, Jean, to Commissariat a l'Energie Atomique. Method of preparation of single crystal films. 3,849,193, Cl. 117-235.000.
- Ferranti Limited: *See*—
  - Halley, David Walker; and Leather, Russell Allan, 3,848,946.
  - Swynford-Lain, Richard, 3,849,776.
- Ferris, Walla L.: *See*—
  - Dwyer, Gregory J.; and Ferris, Walla L., 3,848,864.
- Ferro Corporation: *See*—
  - Mimeault, Victor J., 3,849,152.
- Fetscher, Charles A.; and Rosso, Michael J., to Dexter Corporation, The. Encapsulant compositions for semiconductors. 3,849,187, Cl. 117-201.000.
- Fetscher, Charles A.; and Schweyen, Paul R., to Dexter Corporation. Molding compounds from hexahydrophthalic anhydride, triglycidyl isocyanaurate and a polyol. 3,849,383, Cl. 260-75.00n.
- Fetty, Warren Newton; Knerr, Richard Parke; Gillespie, Richard Lee; and Bettencourt, Pierre Andre, to Wham-O Manufacturing Company. Water squirt toy with protective sleeve. 3,848,808, Cl. 239-327.000.
- Feuillade, Georges; and Cord, Paul, to Compagnie Generale d'Electricite. Electrochemical generator with a zinc electrode. 3,849,199, Cl. 136-30.000.
- Feustel, James R.; Hoyt, Kenneth L.; and Valukonis, Jonas, to Ford Motor Company. Body support and impact absorbing frame system for a motor vehicle. 3,848,886, Cl. 280-106.00r.
- Ficklinger, Thomas Franklin; Jeter, Watt Nixon; and Likhyani, Kewal Krishan, to Du Pont de Nemours, E. I., and Company. Apparatus for mixing quickly reactive materials. 3,849,074, Cl. 23-285.000.
- Fields, Ellis K., to Standard Oil Company. Process for coupling organic molecules. 3,849,274, Cl. 204-158.00r.
- Fields, Richard W., to Velsicol Chemical Corporation. Method of retarding the regrowth on trees. 3,849,108, Cl. 71-88.000.
- Filippov, Vladimir Ivanovich; and Sumarokov, Mikhail Vasilievich. Device for burning liquid combustible wastes. 3,849,059, Cl. 431-331.000.
- Findlay, John A. Process for preparing methyl and ethyl 3,11-dimethyl-7-ethyltrideca-2,6,10-trienoates. 3,849,455, Cl. 260-410.90r.
- Finkl, A., & Sons Company: *See*—
  - Finkl, William F., 3,849,125.
- Finkl, William F., to Finkl, A., & Sons Company. Method of sulphur addition fume control. 3,849,125, Cl. 75-53.000.
- Finley, Joseph Burton, to Du Pont de Nemours, E. I., and Company. Viscosity-stable chloroprene sol polymer. 3,849,372, Cl. 260-45.95r.
- Finn, Joseph F.: *See*—
  - Cicione, Robert J.; Najjar, Edward G.; Scanlon, Patricia M.; Ohlson, John L.; and Finn, Joseph F., 3,849,169.
- Firestone Tire & Rubber Company, The: *See*—
  - Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,849,231.
- Fischer, Adolf: *See*—
  - Mangold, Dietrich; Fischer, Adolf; Rohr, Wolfgang; and Hamprecht, Gerhard, 3,849,467.
- Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Herbicide. 3,849,107, Cl. 71-92.000.
- Fischer, David L.: *See*—
  - Channon, Frederick R.; and Fischer, David L., 3,849,248.
- Fisher, Eugene Jay: *See*—
  - Lloyd, Keith Andrew; and Fisher, Eugene Jay, 3,849,333.
- Fisher, John F.; and Zeller, Burton S., to Clark Equipment Company. Fluid pressure modulator and system. 3,848,620, Cl. 137-116.300.
- Fisher, Julian Vernon, to Illinois Tool Works, Inc. Switch holder and actuating apparatus in a hinged closure appliance. 3,849,615, Cl. 200-61.810.
- Fives-Cail Babcock: *See*—
  - Vaillant, Christian; and Menissez, Jean Pierre, 3,848,817.

  - Vaillant, Christian; and Menissez, Jean-Pierre, 3,848,818.
- Flachglas AG Delog-Detag: *See*—
  - Butz, Josef, 3,849,226.
- Flachglas Aktiengesellschaft: *See*—
  - Wortmann, Hans-Jurgen, 3,849,098.
- Flachglas Aktiengesellschaft DELOG-DETAG: *See*—
  - Groth, Rolf, 3,849,244.
- Flagge, Bruce. Electro-mechanical sine/cosine generator. 3,849,720, Cl. 322-96.000.
- Flaherty, James H. Green pellet sizing screen. 3,848,744, Cl. 209-393.000.
- Flannery, James E.: *See*—
  - Giffen, James W.; Duke, David A.; Dumbaugh, William H., Jr.; Flannery, James E.; MacDowell, John F.; and Megles, John E., 3,849,097.
- Flavell, Evan R. Proportioned resistance exercise servo system. 3,848,467, Cl. 73-379.000.
- Fleck, Fritz: *See*—
  - Basel, Horst Aebli; Fleck, Fritz; Littlewood, Peter Stuart; and Mercer, Alec Victor, 3,849,406.
- Fleishman, Seymour. Disposable tongs. 3,848,906, Cl. 294-1.00r.
- Flesch, Keith E., to Eckrich, Peter & Sons, Inc. Slice receiving platter for slicing apparatus. 3,848,491, Cl. 83-77.000.
- Flockenhaus, Claus; Simonis, Wolfgang; Beck, Kurt-Gunther; and Echterhoff, Heinrich, to Didier-Kellogg Industrieanlagenbau GmbH. Recuperative coke oven. 3,849,258, Cl. 202-140.000.
- Flodell, Bertil G. Device for supplying an object propelled along a rail or the like with electrical current. 3,848,712, Cl. 191-30.000.
- Florists' Transworld Delivery Association: *See*—
  - Messmer, James I., 3,848,358.
- Floyd, Donald W.: *See*—
  - Powell, Harry C., Jr.; and Floyd, Donald W., 3,849,195.
- Fluck, Josef; Schaller, Kurt; and Zaugg, Roland, to Schild, A., S.A. Control mechanism for watch movements. 3,848,400, Cl. 58-68.000.
- Flynn, John, to Honeywell Inc. Detector array. 3,849,678, Cl. 307-311.000.
- FMC Corporation: *See*—
  - Belk, Wilber C., 3,848,724.
  - Culbertson, George W., 3,848,717.
  - Hills, William A., 3,849,522.
- Fokker, Herman: *See*—
  - Michels, Albertus Peter Johannes; Van Beukering, Henricus Cornelis Johannes; Fokker, Herman; and Meijer, Roelf Jan, 3,848,412.
- Foley, Charles W., to General Motors Corporation. Closure latch assembly. 3,848,909, Cl. 292-216.000.
- Folsom, Max H., to National Appliance Company. Method and apparatus for controlling gaseous environment. 3,848,569, Cl. 119-37.000.
- Fong, Jaan-Jiue: *See*—
  - Beckwith, Merton M.; and Fong, Jaan-Jiue, 3,849,218.
- Fontaine, Jean: *See*—
  - De Bergh, Guy; and Fontaine, Jean, 3,849,716.
- Ford Motor Company: *See*—
  - Feustel, James R.; Hoyt, Kenneth L.; and Valukonis, Jonas, 3,848,886.
  - Lacaze, Leonard, Jr., 3,848,695.
  - Maxey, Joel W., 3,849,014.
  - Morris, George R., 3,848,479.
  - Rao, V. Durga Nageswar, 3,848,663.
- Forrat, Francis: *See*—
  - Ferrand, Bernard; Forrat, Francis; Grange, Yves; Joubert, Jean-Claude; and Mareschal, Jean, 3,849,193.
- Forrest, Sanford I. Expandable garment waistband. 3,848,269, Cl. 2-237.000.
- Forster, Denis, to Monsanto Company. Preparation of amines from amine salts. 3,849,496, Cl. 260-583.00n.
- Forster, Johannes; Bezold, Karl-Heinz; and Neihage, Helmut, to Licentia Patent-Verwaltungs GmbH. Method for controlling a recitifier circuit with controlled rectifiers and associated quenching devices. 3,849,718, Cl. 321-40.000.
- Fort Lock Corporation: *See*—
  - Falk, Sidney, 3,848,783.
- Fortuna-Werke Maschinenfabrik AG: *See*—
  - Braun, Dieter; and Kortendieck, Wolfram, 3,848,285.
- Forval-Verkaufsgesellschaft H. Durkop & Co.: *See*—
  - Durkop, Hermann, 3,848,765.
- Foseco International Limited: *See*—
  - Philpotts, Andrew, 3,849,117.
- Foshaug, Rockne H.: *See*—
  - Dehlbom, Eugene K.; and Foshaug, Rockne H., 3,848,450.
- Foster, Betty J.; and Tummala, Rao R., to International Business Machines Corporation. Dielectric glass overlays and method for producing said glass compositions. 3,849,190, Cl. 117-219.000.
- Foster, John R.; Zawadzki, George Z.; and Godec, Maksimiljan, to Von Duprin, Inc. Conductor transfer assembly. 3,848,361, Cl. 49-167.000.
- Foster, Karl, to Westinghouse Electric Corporation. Cold roller leveling treatment of cube oriented silicon steel to remove coil set. 3,849,214, Cl. 148-111.000.
- Fowells, Robert W.; Damon, Robert A.; and Coma, James G. Process of forming polyolefin fibers. 3,849,387, Cl. 260-94.90b.
- Fowler, Alan Bicksler, to International Business Machines Corporation. Process for the elimination of interface states in MIOS structures. 3,849,204, Cl. 148-1.500.
- Fox, John William, to Project Laboratories Limited. Inflatable safety belt. 3,848,887, Cl. 280-150.0ab.
- Fox Pool Corporation: *See*—
  - Witte, Donald H., 3,848,378.
- Fraim, Raymond A.: *See*—
  - Bartles, Edward C.; and Fraim, Raymond A., 3,848,342.
- France Bed Co., Ltd.: *See*—
  - Ikeda, Minoru, 3,848,283.
- Franchi, Luigi, S.p.A.: *See*—
  - Zanoni, Ernesto, 3,848,511.
- Frank, Erich: *See*—
  - Kessler, Gustav; Frank, Erich; and Laumann, Volker, 3,849,232.
- Franklin Electric Co., Inc.: *See*—
  - Streater, August L., 3,849,704.
- Franklin Mint Corporation: *See*—
  - Kirkham, Kathleen E., 3,848,312.
- Franklin, Paul R., Jr. Holdover cooling unit. 3,848,429, Cl. 62-439.000.
- Franz, Henry H. Container filling apparatus. 3,848,645, Cl. 141-117.000.
- Fraser, Lawrence J., to Xerox Corporation. Line charge toner cleaning. 3,848,994, Cl. 355-15.000.
- Fratmann S.A.: *See*—
  - Denzler, Eric-Alain, 3,849,442.
- Freedman, David Daniel, to RCA Corporation. High speed programmable counter. 3,849,635, Cl. 235-92.0cc.
- French, Tom, to Dunlop Limited. Tire tread having drainage chambers. 3,848,651, Cl. 152-209.000.
- Frey, Otto, to Sulzer Brothers Ltd. Shank for bone implants. 3,848,273, Cl. 3-1.000.
- Frick, John G., Jr.; and Gautreaux, Gloria A., to United States of America, Agriculture. Method of increasing covering power of knitted cotton fabric. 3,849,066, Cl. 8-115.500.
- Fridrich, Elmer G., to General Electric Company. Optical system for providing uniform exposure of a photosensitive surface. 3,848,983, Cl. 354-1.000.
- Fried, Henry B., to Bulova Watch Company, Inc. Watch movement holder. 3,848,484, Cl. 81-6.000.
- Fried, John H.: *See*—
  - Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,849,565.
- Fried. Krupp Gesellschaft mit beschankter Haftung: *See*—
  - Hartwig, Jurgen; Scheffler, Ulrich; and Ulrich, Klaus-Herbert, 3,849,269.
- Fried. Krupp Gesellschaft mit beschrankter Haftung: *See*—
  - Helms, Horst, 3,849,636.
- Frieling, Teunis; and Bruggencate, Teunis Ten, to Stichting Ontwikkeling Verpakkingsmethaden In de Zuivelindustrie. Method for score sealing a foam plastic container. 3,849,227, Cl. 156-268.000.
- Frielingsdorf, Hans; Mueller-Tamm, Heinz; Hoehr, Lothar; and Kolk, Erich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of particulate catalyst compositions for the polymerization of olefins. 3,849,334, Cl. 252-429.00b.
- Frisch, Kurt C.; and Ashida, Kaneyoshi. Polyisocyanurate foam and process for producing the same. 3,849,349, Cl. 260-2.5aw.
- Frisco, John S.: *See*—
  - Degginger, Edward R.; and Frisco, John S., 3,848,802.
- Frohbach, Hugh F., to Stanford Research Institute. Electromechanical sweep generating system with the utilization of photocells. 3,849,698, Cl. 315-367.000.
- Frohlich, Alfons, to Opti-Holding AG. Slide fastener. 3,848,298, Cl. 24-205.10r.
- Fruhwald, John M.: *See*—
  - Johnson, Richard A.; and Fruhwald, John M., 3,849,706.
- Fryback, Melbourne G., to Sun Oil Company of Pennsylvania. Device for injecting a fluid into a fluidized bed of particulate material. 3,848,811, Cl. 239-552.000.
- Fryer, Rodney: *See*—
  - Coffen, David; and Fryer, Rodney, 3,849,399.
- Fryer, Rodney Ian: *See*—
  - Coffen, David Llewellyn; and Fryer, Rodney Ian, 3,849,434.
- Fuchs, Hugo; Ricker, Ernst; Schmidt, Franz; Schwartz, Erich; and Sperber, Heinrich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of butanediolformal. 3,849,444, Cl. 260-338.000.
- Fuchs, Rudolf; and Glieschke, Kurt, to Akzona Incorporated. Nip roll assembly for stuffer box crimping device. 3,848,300, Cl. 28-1.600.
- Fuhr, Werner: *See*—
  - Zirngibl, Hans; Fuhr, Werner; Jaschinski, Klemens; Beumer, Peter; and Weidmann, Walter, 3,849,543.
- Fuhrmann, Robert; Koff, Fred W.; and Pisanchyn, John, to Allied Chemical Corporation. Hydrogenation of lysine precursors. 3,849,481, Cl. 260-501.170.
- Fuji Denka Seizo Kabushiki Kaisha Kawasaki-Shi: *See*—
  - Miyamaoto, Nobuyuki; Nakamura, Kyosuke; and Nittani, Osamu, 3,849,268.
- Fuji Photo Film Co., Ltd.: *See*—
  - Hibino, Noburo; Seto, Kunihira; Kobayashi, Teruo; and Inoue, Kazuo, 3,849,139.
  - Iwano, Haruhiko; Tanaka, Mitsugu; Otsuki, Tesuo; and Arai, Atsuaki, 3,849,133.
  - Omichi, Takenori; Ikeda, Teppei; and Adachihara, Shunichi, 3,849,166.
  - Shiba, Keisuke; and Sato, Akira, 3,849,147.
  - Yoshida, Yoshinobu; and Arai, Atsuaki, 3,849,131.
- Fujii, Yozo: *See*—

Hongo, Eitaro; Yamada, Hirohiko; Fujii, Yozo; Masuda, Katsumi; Itou, Junichi; and Nakano, Takaaki, 3,849,452.
Fujikawa, Kanichi: *See—*
Shigehara, Itaru; Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Toki, Tadaaki; Takagi, Hidetoshi; Nasu, Rikuo; Yokomichi, Isao; Kimura, Fumio; and Someya, Shinzo, 3,849,503.
Fujikawa, Tetsuzo; Kawano, Masahisa; and Yamamoto, Masaru, to Kawasaki Jyukogyo Kabushiki Kaisha. Combustion promoting improvement in rotary engine. 3,848,574, Cl. 123-8.090.
Fujimoto, Hiroshi: *See—*
Matsui, Akio; Hasegawa, Yuji; and Fujimoto, Hiroshi, 3,849,356.
Fujimoto, Yoshiji: *See—*
Endou, Hirohide; Kawasaki, Jun; Fujimoto, Yoshiji; Nakane, Keiichi; and Kitazume, Yoshiaki, 3,849,760.
Fujimoto, Yoshiji; Hananoi, Toshihiro; Yasuda, Michio; Makihara, Hiroshi; Kuramizu, Masaru; Ota, Minoru; Kokido, Hiroshi; and Kadota, Shozo, to Hitachi, Ltd. Digital information processing apparatus for pattern recognition. 3,849,762, Cl. 340-146.30q.
Fujitsu Limited: *See—*
Takagi, Mikio; Nakayama, Kazufumi; Terada, Chiaki; and Kamioka, Hajime, 3,849,270.
Fujiwara, Huygene K.: *See—*
Blagdon, Peter A.; Malzahn, Wayne R.; and Fujiwara, Huygene K., 3,849,582.
Fujiwra, Keniti: *See—*
Kasahara, Masao; Namekawa, Toshihiko; Fujiwra, Keniti; Hirasawa, Shigeiti; and Sugiyama, Yasuo, 3,849,761.
Fukuda, Tadaji: *See—*
Kinoshita, Koichi; and Fukuda, Tadaji, 3,849,129.
Fukuda, Tsuguo: *See—*
Uematsu, Yutaka; and Fukuda, Tsuguo, 3,849,667.
Fukushima, Yasuo, to Toko Inc. Toroidal coil winding machine. 3,848,819, Cl. 242-4.00b.
Fuller, George A., Jr.; Langevin, Wilfred L.; Lutts, Carlton G.; and Neiley, Geoffrey C., Jr., to USM Corporation. Machines for stacking limp work pieces. 3,848,866, Cl. 271-180.000.
Fulton Boiler Works, Inc.: *See—*
Palm, Lewis J.; and Palm, Ronald B., 3,848,661.
Fulton, Douglas William: *See—*
Brock, Alan James; and Fulton, Douglas William, 3,849,639.
Funakubo, Eiichi; Matsuo, Tetsuo; Taira, Takeshi; Kamada, Taichi; Harada, Hiroshi; Tanimura, Shoichiro; and Kubo, Masanori, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Process for preparing purified normal paraffins. 3,849,298, Cl. 208-310.000.
Funakubo, Toshiei, to Kabushiki-Kaisha Eishin. Hole saw. 3,848,687, Cl. 175-394.000.
Furuya, Tadashi, to Nippon Electric Company, Limited. Base-band delay equalizer. 3,849,744, Cl. 333-28.00r.
Fuziya, Shigeru: *See—*
Ozawa, Jun; Isogai, Tokio; Ishikawa, Toshio; Yamagiwa, Tokio; Matsumura, Mutsuo; Nakano, Zenichi; and Fuziya, Shigeru, 3,849,590.
G & H Technology, Inc.: *See—*
McCormick, Larry L.; and Selk, Ben F., 3,848,950.
Gade, John N.; and MacKay, James D., to Eastman Kodak Company. Scroll winding and loading apparatus. 3,848,315, Cl. 29-200.00b.
Gaggrave, Robert J., to Dayton Progress Corporation. Die apparatus. 3,848,452, Cl. 72-448.000.
Gainer, John L.: *See—*
Kirwan, Donald J.; and Gainer, John L., 3,849,254.
Galbreath, Gerald W.: *See—*
Linhart, James T.; Crosswell, Flay D.; and Galbreath, Gerald W., 3,848,920.
Galisz, Laszlo; and Vali, Miklos. Rotary barbecue device. 3,848,523, Cl. 99-421.00h.
Gallay, Jean-Jacques; Bosshard, Rene; and Brenneisen, Paul, to Ciba-Geigy Corporation. Isothiocyanobenzazoles. 3,849,431, Cl. 260-306.60r.
Gan, Ramat: *See—*
Teitelbaum, Dvora; Gan, Ramat; Meshorer, Asher; Hirshfeld, Tsvi; Arnon, Ruth; and Sela, Michael, 3,849,550.
Ganz, Robert H. Packaging machine. 3,848,519, Cl. 93-53.0sd.
Gapp, Roland Howard; Alazraki, Marcos Daniel; and Harper, John, to Textron, Inc. Bimetal rivets. 3,848,389, Cl. 52-758.00d.
Garber, John W., Jr. Aquarium. 3,848,567, Cl. 119-5.000.
Garcin, Georges, to Ste. Nouvelle de Roulements (S. N. R.). Work feed devices for centreless grinding machines. 3,848,370, Cl. 51-237.000.
Gardineer, Bayard G.; and Panissidi, Hugo A., to International Business Machines Corporation. Linear hydraulic drive system. 3,848,515, Cl. 91-184.000.
Gardner-Denver Company: *See—*
Baker, William J.; Bos, John R.; and Klemm, Robert W., 3,848,789.
Garfinkel, Marvin: *See—*
Cordes, Linus F.; and Garfinkel, Marvin, 3,849,789.
Gargrave, Robert J.; and Holiga, Ludomil A., to Dayton Progress Corporation. Press adapter system for standardizing die use. 3,848,494, Cl. 83-109.000.
Garrison, Clarence A.: *See—*
Peck, Clifford S.; and Garrison, Clarence A., 3,849,057.
Garza, Adan C.; and Bavisotto, Vincent S., to Brewer's Unlimited, Inc. Apparatus for and method of determining oxygen and carbon dioxide in sealed containers. 3,849,070, Cl. 23-230.00r.
Gau, Georges, to Agence Nationale de Valorisation de la Recherche (Anvar). Method for separating hydrocarbons especially aromatic hydrocarbons and installations therefor. 3,849,261, Cl. 203-38.000.
Gauronski, John F., to Xerox Corporation. Copier/duplicator system. 3,848,995, Cl. 355-26.000.
Gautreaux, Gloria A.: *See—*
Frick, John G., Jr.; and Gautreaux, Gloria A., 3,849,066.
Geary, Milford. Fuselage flaps for an aircraft. 3,848,831, Cl. 244-45.00r.
Gebauer, Herbert: *See—*
Dhein, Rolf; Rudolph, Hans; Kreuder, Hans-Joachim; and Gebauer, Herbert, 3,849,160.
Gebhardt, Richard. Stow roller train for cargo. 3,848,727, Cl. 198-127.000.
Gebr. Schmeing: *See—*
Meyering, Otto; and Langenhoff, Hubert Heinrich, 3,848,644.
Gebrude Phetscher: *See—*
Pletscher, Oskar, 3,848,373.
Gedde, Ove Christopher. Process for electrolytically colouring of aluminum which has previously been anodically oxidized. 3,849,263, Cl. 204-35.00n.
Geesaman, Noah Gene; and Geesaman, Vivian B. Rotatable silverware holder. 3,848,943, Cl. 312-284.000.
Geesaman, Vivian B.: *See—*
Geesaman, Noah Gene; and Geesaman, Vivian B., 3,848,943.
Gegenheimer, Harold W.; Siebein, Walter A.; and Hancock, George J., to Baldwin-Gegenheimer Corporation. Ink level control system. 3,848,529, Cl. 101-363.000.
Geiersbach, Allois F.; and Gilmore, Thomas P., to Allis-Chalmers Corporation. Power rectifier having phase control angle of firing signals independent of supply frequency variation. 3,849,719, Cl. 321-69.00r.
Geisco Associates: *See—*
Cofek, Henry R., 3,849,004.
Geisler, Roland; and Konic, Wilhelm, to Neuhausser KG and Bergwerksverband GmbH. Concrete-displacement apparatus. 3,848,810, Cl. 239-417.300.
Gemmer France: *See—*
Bourdon, Julien Louis, 3,849,009.
Gendin, Gennady Semenovich. Earphone with frequency correction. 3,849,602, Cl. 179-1.00d.
General Cable Corporation: *See—*
Schmidt, Gertraud A., 3,849,192.
General Electric Company: *See—*
Bayer, Eric W., 3,849,752.
Bundy, Francis P., 3,848,416.
Campbell, John H., 3,849,689.
Channon, Frederick R.; and Fischer, David L., 3,849,248.
Charles, Richard J.; and Mitoff, Stephan P., 3,849,200.
Clark, Burton Parker, 3,848,351.
Collins, Byron R., 3,849,691.
Cordes, Linus F.; and Garfinkel, Marvin, 3,849,789.
Dochterman, Richard W., 3,848,837.
Fridrich, Elmer G., 3,848,983.
Greer, David L., 3,849,638.
Groundahl, Clayton M., 3,849,025.
Halloway, James H.; and Petersen, George E., 3,849,196.
Klompas, Nicholas, 3,849,023.
Kydd, Paul H., 3,848,307.
Leonard, Charles E., 3,848,608.
Linder, Bernd, 3,848,341.
Pitha, John J., 3,849,145.
Tachick, Henry N.; and Arndt, Richard H., 3,849,186.
General Kinematics Corporation: *See—*
Musschoot, Albert, 3,848,343.
General Motors Corporation: *See—*
Amann, Charles A.; and Ricketts, James M., 3,849,022.
Brooks, Frank W., 3,848,707.
Burke, Harold J., 3,848,478.
Creager, John E.; and Taylor, Robert G., 3,849,029.
Downs, Thomas C., 3,849,037.
Elliott, James O.; and Keller, Chris F., Jr., 3,849,711.
Foley, Charles W., 3,848,909.
Hamburg, James A.; and Whitney, Donald R., 3,848,471.
Herman, Stanley W., 3,848,793.
Martin, Ames R., 3,848,518.
Perger, Julius M., 3,848,323.
Perger, Julius M., 3,848,324.
Plumer, Roy D., 3,848,530.
Smith, George W.; and Hayden, Daniel B., 3,848,966.
General Signal Corporation: *See—*
Burnett, Roy Clair, 3,849,772.
General Tire & Rubber Company, The: *See—*
Monajjem, Freydoun, 3,848,369.
Gensler, Edwin G.: *See—*
Shoemaker, Edwin J.; Gensler, Edwin G.; and White, David B., 3,848,924.
Georgia Tech Research Institute: *See—*
Bowen, Mack D., 3,848,550.
Georgopoulos, Christos J.; and Ross, Charles R., to Raytheon Company. Digital data transmission system. 3,849,672, Cl. 307-235.000.
Gerace, Robert Eugene: *See—*
Abowitz, Gerald; Ruckdeschel, Frederick Robert; and Gerace, Robert Eugene, 3,849,628.

Gerardus, Henricus Wijnandus; and Overgoor, Bernardus Josephus Marie, to U.S. Philips Corporation. Wide-band differential amplifier. 3,849,735, Cl. 330-30.00d.
Gerber Farment Technology, Inc.: *See—*
Arel, Roger R., 3,848,490.
Gerber Garment Technology, Inc.: *See—*
Gerber, Heinz Joseph; and Pearl, David Raymond, 3,848,327.
Gerber, Heinz Joseph; and Pearl, David Raymond, to Gerber Garment Technology, Inc. Apparatus for working of sheet material. 3,848,327, Cl. 29-559.000.
Gerber Scientific Instrument Company, The: *See—*
Webster, Ronald B.; and Rich, Leonard G., 3,848,520.
Gerken, Roman: *See—*
Anderson, William S.; and Gerken, Roman, 3,848,390.
Germershausen, Raimund: *See—*
Scheipner, Robert Hans; Schlussler, Helmut; and Germershausen, Raimund, 3,848,464.
Geurts, Melle F.: *See—*
McArthur, Ralph F.; and Geurts, Melle F., 3,849,030.
Gewerkschaft Schalker Eisenhuette: *See—*
Pankow, Horst, 3,849,058.
Ghibu, Michael; Bohn, Gerhard; and Schwarzler, Peter, to Krauss-Maffei Aktiengesellschaft. Method and apparatus for measuring the gap spacing and relative transverse displacement of an electromagnetic core from an armature using magnetic field sensors. 3,89,724, Cl. 324-34.00d.
Ghys, Theofiel Hubert: *See—*
Jeurissen, Lambert Gaston; Bollen, Romain Henri; Ghys, Theofiel Hubert; and Heylen, Renaat Frans, 3,849,658.
Giandinoto, Aldo; and Gilardelli, Ugo, to Fabbrica Italiana Magneti Marelli, S.p.A. Device for guiding and resuming the axial clearance in screws of reduction worms, particularly for low power geared motor. 3,848,477, Cl. 74-425.000.
Giardina, Angelo R., to Westinghouse Electric Corporation. Steam generator. 3,848,572, Cl. 122-32.000.
Gibs, Gabriel Joseph: *See—*
Weiss, Martin Joseph; Gibs, Gabriel Joseph; Poletto, John Frank; and Remers, William Alan, 3,849,441.
Giffen, James W.; Duke, David A.; Dumbaugh, William H., Jr.; Flannery, James E.; MacDowell, John F.; and Megles, John E., to Corning Glass Works. Method for continuously hot forming strong laminated bodies. 3,849,097, Cl. 65-33.000.
Gilardelli, Ugo: *See—*
Giandinoto, Aldo; and Gilardelli, Ugo, 3,848,477.
Gilbert, Everett E.: *See—*
Siele, Victor I.; and Gilbert, Everett E., 3,849,414.
Gilch, Heinrich: *See—*
Michael, Dietrich; Gilch, Heinrich; and Hechelhammer, Wilhelm, 3,849,154.
Gill, Devinder S.: *See—*
Maitlis, Peter M.; White, Colin; Kang, Jung W.; and Gill, Devinder S., 3,849,459.
Gillespie, Richard Lee: *See—*
Fetty, Warren Newton; Knerr, Richard Parke; Gillespie, Richard Lee; and Bettencourt, Pierre Andre, 3,848,808.
Gilliatt, Charles L., to Raytheon Company. Microwave heating apparatus. 3,849,623, Cl. 219-10.550.
Gilman, Harold: *See—*
Stein, Theodore W.; Gilman, Harold; and Bobeck, Richard L., 3,849,451.
Gilmer, Thomas P., Jr., to Lectrosonics, Inc. Carrying case for PA system with stowed lectern. 3,848,944, Cl. 312-314.000.
Gilmore, Thomas P.: *See—*
Geiersbach, Allois F.; and Gilmore, Thomas P., 3,849,719.
Gilster, Kenneth W.: *See—*
Porter, James M.; Loweth, Carl V.; and Gilster, Kenneth W., 3,848,430.
Gingerich, Leo L.: *See—*
Doss, Richard C.; and Gingerich, Leo L., 3,849,381.
Ginn, Arthur H., to International Packings Corporation. High pressure seal. 3,848,881, Cl. 277-181.000.
Giorgi, Lewis A. Color correcting process. 3,849,153, Cl. 117-2.00r.
Girard, Andre; and Laurent, Jean, to Office National d'Etudes et de Recherches (O.N.E.R.A.). Method and device for estimating a gaseous component. 3,849,005, Cl. 356-201.000.
Girling Limited: *See—*
Cochrane, Robin Adam, 3,848,619.
Giuffredi, Giancarlo, to Costa Tecnologie Speciali S.p.A. Device for placing and seam folding the bottoms of supply valves on aerosol containers. 3,848,318, Cl. 29-208.00b.
Glass, Marvin, & Associates: *See—*
Morrison, Howard J., 3,848,357.
Morrison, Howard J., 3,848,869.
Glaxo Laboratories Limited: *See—*
Mead, Robert James, 3,849,569.
Gleim, William K. T.; and O'Hara, Mark J., to Universal Oil Products Company. Coal liquefaction process. 3,849,287, Cl. 208-8.000.
Gleim, William K. T., to Universal Oil Products Company. Process for the conversion of heavy hydrocarbon charge stocks. 3,849,292, Cl. 208-111.000.
Glieschke, Kurt: *See—*
Fuchs, Rudolf; and Glieschke, Kurt, 3,848,300.
Glockner, Hans: *See—*
Kuffner, Karl; and Glockner, Hans, 3,849,140.
Glover, Charles J.: *See—*
Huslander, William L.; and Glover, Charles J., 3,848,638.
Glover, Ernest Edward: *See—*
Jack, David; and Glover, Ernest Edward, 3,849,557.
Gmeiner, Gunter: *See—*
Wilfert, Karl; Gmeiner, Gunter; Grabner, Christian; and Nockemann, Ernst, 3,848,910.
Gobble, Glenn R.; and Loebs, Richard G., to Caterpillar Tractor Company. Sealing ring of stainless iron base alloy. 3,849,078, Cl. 29-183.000.
Gobble, Glenn R.; and Loebs, Richard G., to Caterpillar Tractor Company. Stainless iron base alloy metal-to-metal high speed seals. 3,849,122, Cl. 75-126.00a.
Godec, Maksimiljan: *See—*
Foster, John R.; Zawadzki, George Z.; and Godec, Maksimiljan, 3,848,361.
Goding, Justin Christian, to Xerox Corporation. Photocomposing apparatus. 3,848,996, Cl. 355-43.000.
Goele, Dhruv. Lady's belt. 3,848,271, Cl. 2-338.000.
Golborn, Peter; and Duffy, James J., to Hooker Chemical Corporation. Imidomethyl phosphonates. 3,849,440, Cl. 260-326.50a.
Gold, Paul A.: *See—*
Adler, Norman; Morgenthau, John L., Jr.; and Gold, Paul A., 3,848,773.
Goldsworthy Engineering, Inc.: *See—*
Karlson, Harald E., 3,848,405.
Goncharoff, Nikolai, to Motorola, Inc. Volume and tone controls for multichannel audio systems. 3,849,601, Cl. 179-1.00d.
Gondo, Hisashi: *See—*
Ishizaki, Keizo; Sekine, Hiroshi; Gondo, Hisashi; Wada, Koji; Kawano, Tsuyoshi; Watanabe, Hidekazu; Kanbayashi, Gou; and Maruyama, Tadasatsu, 3,849,209.
Goodacre, Cecil; and Leggett, Peter Alfred, to Lansing Bagnall Limited. Industrial lift trucks. 3,848,759, Cl. 214-730.000.
Goodell, John B., to Westinghouse Electric Corporation. Apparatus for measuring and controlling annulus diameters of images formed by a pincushion lens. 3,848,970, Cl. 350-189.000.
Goodrich, B. F., Company, The: *See—*
Kuts, Mathew, 3,848,501.
Morningstar, Marion G., 3,849,179.
Goodwin, Charles W., to PMCS Company, Inc. Interlocking bucking hinge and ladder combination. 3,848,699, Cl. 182-163.000.
Gordon, John. Pipe belling machine. 3,849,052, Cl. 425-387.000.
Gordon, John Edson: *See—*
Feldman, Martin Louis; Hagedorn, Donald William; and Gordon, John Edson, 3,849,483.
Goretzki, Jerome A.; Hendrickson, Kenneth E.; Mattson, Gary L.; and Mattson, Larry F., to International Business Machines Corporation. Stepper motor control system. 3,849,714, Cl. 318-685.000.
Gothberg, Yngve Roland, to Kommanditbolaget United Stirling (Sweden) AB & Co. Hot gas engine power control device. 3,848,413, Cl. 60-525.000.
Goto, Yasuhide: *See—*
Suzuki, Kensuke; Goto, Yasuhide; Iwasaki, Kazunari; and Sumitomo, Yoshiharu, 3,849,188.
Gottsmann, Hartmut; and Specovius, Joachim, to Licentia Patent-Verwaltungs-GmbH. Laser and method of making same. 3,849,790, Cl. 357-18.000.
Gould, Francis E.: *See—*
Shepherd, Thomas H.; and Gould, Francis E., 3,849,185.
Gould, Francis E.; and Ronel, Samuel H. Artificial skin. 3,849,238, Cl. 161-159.000.
Gould, Ronald R.: *See—*
Richards, Lawrence I.; and Gouid, Ronald R., 3,848,288.
Grabner, Christian: *See—*
Wilfert, Karl; Gmeiner, Gunter; Grabner, Christian; and Nockemann, Ernst, 3,848,910.
Grace, W. R., & Company: *See—*
Cicione, Robert J.; Najjar, Edward G.; Scanlon, Patricia M.; Ohlson, John L.; and Finn, Joseph F., 3,849,169.
Wendler, Kenneth T.; and Daniels, David A., 3,849,322.
Graham, Joseph A., Jr. Towel warmer. 3,849,629, Cl. 219-342.000.
Grain Processing Corporation: *See—*
Egger, Carl T.; and Olson, Robert E., 3,849,391.
Grand, Paul Sheldon, to Colgate-Palmolive Company. Cosmetic compositions. 3,849,548, Cl. 424-70.000.
Grange, Yves: *See—*
Ferrand, Bernard; Forrat, Francis; Grange, Yves; Joubert, Jean-Claude; and Mareschal, Jean, 3,849,193.
Grant, Norman H.: *See—*
McGregor, William H.; and Grant, Norman H., 3,849,390.
Grantt, David Lawrence; Stone, Dan Frederick; and Townsend, Timothy Joseph, said Grantt and Townsend assors. to said Stone, Dan Frederick. Insulated container pack. 3,848,766, Cl. 220-9.00f.
Graphic Controls Corporation: *See—*
Hubbard, James R., 3,849,143.
Grass Instrument Company: *See—*
Grass, Robert W., 3,849,734.
Grass, Robert W., to Grass Instrument Company. Signal processing apparatus. 3,849,734, Cl. 330-30.00d.
Gray, Ernest F. Jewelry clasp. 3,848,299, Cl. 24-230.0sc.
Gray, Theodore F., Jr.; and Barton, Kenneth R., to Eastman Kodak Company. Block polyester-polyamide copolymers. 3,849,514, Cl. 260-857.0pe.

Grebe, Kurt R., to International Business Machines Corporation. Masking of deposited thin films by use of a masking layer photoresist. 3,849,136, Cl. 96-36.200.

Greczin, John. Bobbin mounting disc. 3,848,433, Cl. 66-125.00r.

Green, James Ralph, to Du Pont de Nemours, E. I., and Company. Product and process. 3,849,181, Cl. 117-106.00r.

Green, Max L., to Relton Corporation. Apparatus for cutting holes in porcelainized metal. 3,849,019, Cl. 408-142.000.

Greene, James E., Jr., to Westinghouse Electric Corporation. Channel delay checkback apparatus. 3,849,763, Cl. 340-147.00r.

Greer, David L., to General Electric Company. Segmented associative logic circuits. 3,849,638, Cl. 235-152.000.

Greiner, James H., to International Business Machines Corporation. Process for forming reactive layers whose thickness is independent of time. 3,849,276, Cl. 204-192.000.

Grenci, Carl A. Valving machine. 3,848,485, Cl. 81-57.110.

Gresen Manufacturing Company: *See—*
Ohnesorge, Ralph R., 3,849,034.

Greven, Hendrik Marie: *See—*
Rittel, Werner; Brugger, Max; Kamber, Bruno; Riniker, Bernhard; Sieber, Peter; and Greven, Hendrik Marie, 3,849,388.

Grey, David S., to Polaroid Corporation. Compact seven element zoom lens with optical compensation. 3,848,967, Cl. 350-184.000.

Grey, David S., to Polaroid Corporation. Compact eight element zoom lens with optical compensation. 3,848,968, Cl. 350-184.000.

Griffin, Richard J. Combination protective cap and stand for a pressurized gas cylinder. 3,848,768, Cl. 220-85.00p.

Griffith, James R.: *See—*
O'Rear, Jacques G.; and Griffith, James R., 3,849,450.

Griffiths, Darrell J. L.; and Huang, Denis K., to Westvaco Corporation. Urea formaldehyde pigment. 3,849,378, Cl. 260-69.00r.

Groom Lemuel D., III; and Jordan, Lavell, Jr., to Texas Instruments Incorporated. Fast rise time oscillator. 3,849,741, Cl. 331-165.000.

Grosseau, Albert, to Societe Anonyme Automobiles Citroen. Hydraulic unit for a braking mechanism provided with an anti-locking system. 3,848,934, Cl. 303-21.00f.

Grot, Walther Gustav, to Du Pont de Nemours, E. I., and Company. Laminated of support material and fluorinated polymer containing pendant side chains containing sulfonyl groups. 3,849,243, Cl. 161-189.000.

Groth, Rolf, to Flachglas Aktiengesellschaft DELOG-DETAG. Heat-reflecting laminated safety glass pane. 3,849,244, Cl. 161-199.000.

Groundahl, Clayton M., to General Electric Company. Serpentine cooling channel construction for open-circuit liquid cooled turbine buckets. 3,849,025, Cl. 416-97.000.

Grove, Lloyd E.: *See—*
Scott, Kelley E., Jr.; Kemper, Daryl M.; Grove, Lloyd E.; and Kiess, Ronald J., 3,849,681.

Grow, Harlow B. Non-stop rapid transit system. 3,848,533, Cl. 104-18.000.

Gruber, Leon Lester, to RCA Corporation. Method of directly spacing a cathode-to-grid assembly for a cathode-ray tube. 3,848,301, Cl. 29-25.160.

Grundner, Warren Thorne, to Sybron Corporation. Polyalklene polyamine-aldehyde-ketone condensation polymer flocculants and retention aids. 3,849,307, Cl. 210-54.000.

Gryaznov, Vladimir Mikhailovich; Smirnov, Viktor Sergeevich; Mischenko, Alexandr Petrovich; and Aladyshev, Sergei Ivanovich. Catalytic reactor for carrying out conjugate chemical reactions. 3,849,076, Cl. 23-288.00r.

GTE Sylvania Incorporated: *See—*
Cosco, Robert J.; and Pappas, John A., 3,849,690.
Huston, Leroy S.; and Kulik, Joseph S., Jr., 3,849,687.
Roche, William J., 3,849,699.

Guglielmetti, Leonardo: *See—*
Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,849,163.

Guimard, Lucien: *See—*
Paris, Philippe Y. J.; Bougon, Pierre P. A.; and Guimard, Lucien, 3,849,597.

Gulf & Western Manufacturing Company (Hastings): *See—*
Pim, Norman L., 3,848,472.

Gulf States Asphalt Co. Inc.: *See—*
Spillane, Leo J.; Alexander, Stephen H.; and Bramble, Reba H., 3,849,229.

Gulf States Paper Corporation: *See—*
Seith, Robert E.; and Bundy, Otto M., 3,848,359.

Gullick Dobson Limited: *See—*
Allen, Archelaius Dawson; and Small, Fred, 3,848,420.

Gupta, Asoka, to Indian Iron & Steel Company Limited, The. Pelletising haematite iron ore fines. 3,849,112, Cl. 75-3.000.

Gurevich, Samuil Mordkovich; Zamkov, Vadim Nikolaevich; Prilutsky, Valery Pavlovich; Topolsky, Vladimir Filippovich; Podkopai, Nikolai Vasilievich; Manoilo, Sergei Afanasievich; and Kykhno, Semen Leonidovich. Flux for welding refractory and non-ferrous metls. 3,849,211, Cl. 148-26.000.

Gutehoffnungshutte Sterkrade Aktiengesellschaft: *See—*
Rumping, Stephanus Nicolaas Hendrick, 3,848,861.

Gutnick, Morton. Abortion facilitating device and process. 3,848,602, Cl. 128-344.000.

Guyonnet, Jean-Francis, to Centre National de Recherche Scientifique. Friction armature with friction and magnetic linings. 3,848,313, Cl. 29-191.200.

Gwynne, Thomas, to BPB Industries Limited. Cementitious building board with edge reinforcing strips. 3,849,235, Cl. 161-44.000.

Haag, Werner O.; and Whitehurst, Darrell Duayne, to Mobil Oil Corporation. Preparation of carboxylic acids by hydrogenolysis of esters. 3,849,457, Cl. 260-413.000.

Haas, Werner E. L.: *See—*
Adams, James E., Jr.; and Haas, Werner E. L., 3,848,965.

Habecker, John W., to Cherry Electrical Products Corporation. Illuminated push-button switch. 3,849,621, Cl. 200-310.000.

Hach Chemical Company: *See—*
Hach, Clifford C., 3,849,002.

Hach, Clifford C., to Hach Chemical Company. Method and apparatus for eliminating air during fluid turbidity measurement. 3,849,002, Cl. 356-103.000.

Hack, Peter: *See—*
Deneke, Klaus; Falkenhain, Wilhelm; and Hack, Peter, 3,849,532.

Haertle, Richard J., to Kleen Test Products, Inc. Method of forming an applicator construction. 3,849,225, Cl. 156-213.000.

Hafner, Joseph A., 1/2 to Hamilton, John, Hamilton, Cuddle and 1/2 to Melanson, Alcide. Extruded section and structures incorporating such section. 3,848,387, Cl. 52-735.000.

Hagedorn, Donald William: *See—*
Feldman, Martin Louis; Hagedorn, Donald William; and Gordon, John Edson, 3,849,483.

Hageman, Howard A., to Uniroyal, Inc. Sulfur-containing polyphenols. 3,849,500, Cl. 260-608.000.

Hagenbach, Robert J.: *See—*
Madrid, Robert W.; and Hagenbach, Robert J., 3,849,127.

Hagenbach, Robert J., to Xerox Corporation. Highly shape-classified , oxidized low carbon hypereutectoid electrostatographic steel carrier particles. 3,849,182, Cl. 117-100.00m.

Hagino, Hiroshi: *See—*
Nakayama, Kiyoshi; and Hagino, Hiroshi, 3,849,251.

Hakansson, Sven Anders Samuel: *See—*
Bengtsson, John Ingemar; Hakansson, Sven Anders Samuel; Lundholm, Sven Gunnar K:Son; and Lonnberg, Lars, 3,848,877.

Hakki, Basil Wahid, to Bell Telephone Laboratories, Incorporated. Multilayer antireflection coatings for solid state lasers. 3,849,738, Cl. 331-94.50h.

Halcon International, Inc.: *See—*
Stein, Theodore W.; Gilman, Harold; and Bobeck, Richard L., 3,849,451.

Haley, Kenneth M.; Koschak, Dennis F.; Molinaro, Lawrence J.; and Reed, Richard L., to Reserve Mining Company. Adjustable, sealed roll screen for classifying and conveying material-in-process such as taconite pellets. 3,848,741, Cl. 209-106.000.

Halgas, Frank A.: *See—*
Kerfoot, Charles S.; and Halgas, Frank A., 3,849,701.

Hall, Edward L.; and Philofsky, Elliott M., to Motorola, Inc. Electromigration resistant semiconductor contacts and the method of producing same. 3,848,330, Cl. 29-590.000.

Hall, Harry H. Bench tool for sheet metal bending. 3,848,454, Cl. 72-457.000.

Hall, James Edward: *See—*
Branch, Geoffrey Hindle; and Hall, James Edward, 3,848,752.

Hall, Richard C.; Kidd, Norman D.; and Daravingas, George V., to SCM Corporation. Process for reducing pickle bloating with dehydroacetic acid. 3,849,579, Cl. 426-49.000.

Hall-Jackson, John Alan, to Rank Organisation Limited, The. Manufacture of optical apparatus. 3,849,219, Cl. 156-73.000.

Halley, David Walker; and Leather, Russell Allan, to Ferranti Limited. Electric connectors. 3,848,946, Cl. 339-17.00f.

Halliday, Kenneth David, to Pyrotenax Limited. Electric heating device. 3,849,630, Cl. 219-535.000.

Halloway, James H.; and Petersen, George E., to General Electric Company. Ultrasonic cleaning of resin. 3,849,196, Cl. 134-1.000.

Hamano, Goro, to Matsushita Electrical Industrial Co., Ltd. Programmable logic controller. 3,849,765, Cl. 340-172.500.

Hamblen, David P.; and Higgins, George C., to Eastman Kodak Company. Electro-optical display device and method. 3,849,657, Cl. 250-461.000.

Hamburg, James A.; and Whitney, Donald R., to General Motors Corporation. Noise pollution level measuring circuit. 3,848,471, Cl. 73-557.000.

Hamilton, Cuddle: *See—*
Hafner, Joseph A., 3,848,387.

Hamilton, John: *See—*
Hafner, Joseph A., 3,848,387.

Hamm, Alton B. Distance and direction recording device and method. 3,848,340, Cl. 33-354.000.

Hammel, Rudolf: *See—*
Wagner, Karl Heinz; Muellerpoths, Reiner; and Hammel, Rudolf, 3,849,618.

Hammer, Victor S.; and Brozek, Chester W., to Chicago Fittings Corporation. High pressure fitting. 3,848,905, Cl. 285-286.000.

Hamprecht, Gerhard: *See—*
Mangold, Dietrich; Fischer, Adolf; Rohr, Wolfgang; and Hamprecht, Gerhard, 3,849,467.

Hananoi, Toshihiro: *See—*
Fujimoto, Yoshiji; Hananoi, Toshihiro; Yasuda, Michio; Makihara, Hiroshi; Kuramizu, Masaru; Ota, Minoru; Kokido, Hiroshi; and Kadota, Shozo, 3,849,762.

Hancock, George J.: *See—*

Gegenheimer, Harold W.; Siebein, Walter A.; and Hancock, George J., 3,848,529.

Handels, Roth, GmbH: *See—*
Hetz, Wolfgang, 3,849,533.

Haneishi, Tatsuo: *See—*
Arai, Mamoru; Haneishi, Tatsuo; Kayamori, Hisashi; Takiguchi, Yoo; Kitano, Noritoshi; and Kaneko, Susumu, 3,849,398.

Hanning, John R., to Aro Corporation, The. Pneumatic operated motor and brake for hoist. 3,848,716, Cl. 192-3.00r.

Hanscom, Genevieve I.: *See—*
Lazzarini, Louis P., 3,848,498.

Hanscom, Genevieve I., Magnuson, Robert, and Thompson, Louis J., as Trustees of the Estate of Magnuson, Roy M., deceased: *See—*
Lazzarini, Louis P., 3,848,498.

Hansen, Andrew C., to Universal Oil Products Company. Catalytic cracking process improvement. 3,849,294, Cl. 208-162.000.

Hanson, Alden B.; and Hanson, Chris A., to Hanson Industries, Inc. Ski boot with adjustable flexure means. 3,848,347, Cl. 36-2.5al.

Hanson, Chris A.: *See—*
Hanson, Alden B.; and Hanson, Chris A., 3,848,347.

Hanson Industries, Inc.: *See—*
Hanson, Alden B.; and Hanson, Chris A., 3,848,347.

Harada, Hiroshi: *See—*
Funakubo, Eiichi; Matsuo, Tetsuo; Taira, Takeshi; Kamada, Taichi; Harada, Hiroshi; Tanimura, Shoichiro; and Kubo, Masanori, 3,849,298.

Harautuneian, Andrew; and Penny, William H., to American Hospital Supply Corporation. Endotracheal tube with improved inflation retention means. 3,848,605, Cl. 128-351.000.

Harder, Arthur J., Jr., to Coach and Car Equipment Corporation. Transit vehicle seat. 3,848,925, Cl. 297-452.000.

Harder, Arthur J., Jr., to Coach and Car Equipment Corporation. Slide mechanism. 3,848,937, Cl. 308-6.00r.

Harding, John W.: *See—*
Buntin, Robert R.; Keller, James P.; and Harding, John W., 3,849,241.

Hardt, Jean, to Aluminum Suisse SA. Die for shaping metals. 3,848,453, Cl. 72-467.000.

Hargash, Paul; and Karle, Franklin J., to Dow Chemical Company, The. Sample collection and delivery apparatus. 3,848,470, Cl. 73-425.600.

Harmon, William J., Jr.: *See—*
Eisenberg, Mark F.; and Harmon, William J., Jr., 3,849,702.

Harper, John: *See—*
Gapp, Roland Howard; Alazraki, Marcos Daniel; and Harper, John, 3,848,389.

Harris, Erik P.: *See—*
Braslau, Norman; Cuomo, John J.; Harris, Erik P.; and Hovel, Harold J., 3,849,707.

Harris, Frederick John; and Raitt, John Stewart, to Scottish Agriculture Industries Limited. Plant foods. 3,849,103, Cl. 71-77.000.

Harris, Gerald R. Pivotal arm band saw. 3,848,493, Cl. 83-168.000.

Harris, Melvin: *See—*
Mueller, Volkmar; Berendt, Hans-Ulrich; and Harris, Melvin, 3,849,162.

Harrison, Ian T.: *See—*
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,849,565.

Hartfelder, Gunter: *See—*
Wolf, Erhard; Kohl, Hans; and Hartfelder, Gunter, 3,849,559.

Hartley, Ezra D. Pump. 3,849,026, Cl. 417-203.000.

Hartley, James C., Jr.: *See—*
Chin, James; and Hartley, James C., Jr., 3,849,172.

Hartmann, Eduard: *See—*
Schrempp, Klaus; Jettmar, Werner; Polster, Rudolf; and Hartmann, Eduard, 3,849,150.

Hartwig, Jurgen; Scheffler, Ulrich; and Ulrich, Klaus-Herbert, to Fried. Krupp Gesellschaft mit beschankter Haftung. Processing ores containing nickel and copper oxides. 3,849,269, Cl. 204-107.000.

Harvey, Edgar Lloyd; and Levine, Joel Martin, to Burroughs Corporation. Multiple position display panel having spurious glow suppressor. 3,849,694, Cl. 313-519.000.

Harvey, Richard D.; and Ladenburg, Kurt, to Penick & Ford, Limited. Process of immobilizing enzymes. 3,849,253, Cl. 195-68.000.

Harvey, Robert J., to Mirlin Corporation. Method for modifying sour and bitter taste. 3,849,555, Cl. 424-195.000.

Hasegawa, Katsuji, to Meinan Machinery Works, Inc. Sanding drum structure in a drum sander. 3,848,374, Cl. 51-373.000.

Hasegawa, Yuji: *See—*
Matsui, Akio; Hasegawa, Yuji; and Fujimoto, Hiroshi, 3,849,356.

Hasiotis, Christ S., to Xerox Corporation. Supported developer blade cleaning. 3,848,993, Cl. 355-15.000.

Hasselblad, Fritz Victor: *See—*
Hyden, Viktor Holger; and Hasselblad, Fritz Victor, 3,848,580.

Hast, Per Sigvard. Grass cutter. 3,848,401, Cl. 56-296.000.

Hatch Associates Limited: *See—*
Hatch, Gerlad Gordon; and Wasmund, Bert Orland, 3,849,587.

Hatch, Gerlad Gordon; and Wasmund, Bert Orland, to Hatch Associates Limited. Cooling devices for protecting refractory linings of furnaces. 3,849,587, Cl. 13-32.000.

Hatch, Jeffrey A.: *See—*
Lockie, Arthur M.; and Hatch, Jeffrey A., 3,848,955.

Hatley, Earl L.: *See—*
Bird, Stanford W.; Wasserman, Jerome D.; and Hatley, Earl L., 3,848,795.

Haug, Theobald: *See—*
Renner, Alfred; and Haug, Theobald, 3,849,374.

Hawke, Earle G., to Mason Company, The. Pressure sensitive device for operating a switch or the like. 3,848,517, Cl. 92-101.000.

Hawkins, Royal R., to Honeywell Inc. Vehicle steering control system. 3,848,690, Cl. 180-6.480.

Hawley, Margaret Grant, to Smith Kline Corporation. Display device. 3,848,348, Cl. 40-64.00r.

Hawley, Wilbur W.: *See—*
Weber, Kenneth E.; Crozier, Donald G.; and Hawley, Wilbur W., 3,849,264.

Hawthorne, David Geoffrey: *See—*
Swift, Jean Drummond; Hawthorne, David Geoffrey; Loft, Bryan Clarence; and Solomon, David Henry, 3,849,149.

Hayashi, Takao: *See—*
Kirimoto, Kazusuke; Hayashi, Takao; and Kojima, Hiroaki, 3,849,521.

Hayashi, Yoshiaki: *See—*
Omiya, Shoji; Hayashi, Yoshiaki; and Kuki, Akio, 3,849,796.

Hayashida, Yoshihiro, to Tokico Ltd. Device for detecting decrease of liquid in a liquid reservoir. 3,849,770, Cl. 340-244.00e.

Hayden, Daniel B.: *See—*
Smith, George W.; and Hayden, Daniel B., 3,848,966.

Hazel, John O., to Robertson, H. H., Company. Reversible trim strip with attached gasket for an underfloor electrical cable trench. 3,848,379, Cl. 52-221~~.000~~.

Hazelett, Robert William; Wood, John Frederick Barry; and Carmichael, Robert J., to Hazelett-Strip-Casting Corporation. Carriage orientation and lift system for a twin belt continuous metal casting machine. 3,848,658, Cl. 164-278.000.

Hazelett-Strip-Casting Corporation: *See—*
Hazelett, Robert William; Wood, John Frederick Barry; and Carmichael, Robert J., 3,848,658.

Hazeltine Corporation: *See—*
Reeber, Nicholas J.; and Saint John, Karl M., 3,848,856.

Hazen, Thamon E.; and Miner, John R., to Iowa State University Research Foundation, Inc. Ribbed floor and method of waste removal. 3,848,568, Cl. 119-28.000.

Heath, John S.: *See—*
Cuzner, David E.; Dodman, Charles O. R.; and Heath, John S., 3,849,800.

Hechelhammer, Wilhelm: *See—*
Michael, Dietrich; Gilch, Heinrich; and Hechelhammer, Wilhelm, 3,849,154.

Hedenskog, Gudmund Oscar: *See—*
Mogren, Hakan Lars; Hedenskog, Gudmund Oscar; and Enebo, Lennart Eugen, 3,848,812.

Hedstrom Co.: *See—*
Boucher, Raymond W.; Boudreau, Robert; and Conti, John A., 3,849,008.

Heeks, Robert E.: *See—*
Walters, David W.; Heeks, Robert E.; and Sullivan, Donald P., 3,849,146.

Heerdt, Ruth: *See—*
Hubner, Manfred; Heerdt, Ruth; Schmidt, Felix Helmut; Thiel, Max; and Weyer, Rudi, 3,849,417.

Hefren, Fred W. Stabilizer apparatus for road vehicles. 3,848,885, Cl. 280-94.000.

Heiba, El-Ahmadi I.: *See—*
Bridger, Robert F.; Heiba, El-Ahmadi I.; and Stournas, Stamoulis, 3,849,320.

Heiland, Wolfgang K., to United States of America, Agriculture. Doctoring apparatus. 3,848,734, Cl. 198-230.000.

Heimbach, Paul: *See—*
Wilke, Gunther; and Heimbach, Paul, 3,849,506.

Heine, Hans-Georg; Rosenkranz, Hans-Jurgen; and Rudolph, Hans, to Bayer Aktiengesellschaft. Thiomethylated benzophenones. 3,849,497, Cl. 260-591.000.

Heinrich, Peter, Jr.: *See—*
Niccum, Forest G.; and Heinrich, Peter, Jr., 3,849,314.

Heisler, Raymond A. Apparatus and method for orienting and case packing eared containers. 3,848,394, Cl. 53-26.000.

Hejzlar, Sid; and Zweig, Robert M., to Chatillon, John, & Sons, Inc. Slip-release linear force gauge for detecting compression and tension forces which exceed a standard force. 3,848,463, Cl. 73-141.0ab.

Heller, Paul R., to Westinghouse Electric Corporation. Liquid cooled rotor for dynamoelectric machines. 3,849,680, Cl. 310-54.000.

Helms, Horst, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Method and apparatus for determining the position of a vehicle. 3,849,636, Cl. 235-150.270.

Hendrickson, Kenneth E.: *See—*
Goretzki, Jerome A.; Hendrickson, Kenneth E.; Mattson, Gary L.; and Mattson, Larry F., 3,849,714.

Hendrickson, Paul E., 33 1/3% to Ciardi, Albert A., Jr. Procedure for fabricating ultra-small gold wire. 3,848,319, Cl. 29-423.000.

Hennequin, Andre, to Societe des Aciers Fins de l'Est. Atomizers. 3,848,809, Cl. 239-412.000.

Henrick, Clive A.; and Staal, Gerardus B., to Zoecon Corporation. Long chain aliphatic thiolesters of cyclopropionic acid. 3,849,466, Cl. 260-455.00r.

Henrie, Thomas A.: *See—*
Scheiner, Bernard J.; Lindstrom, Roald E.; and Henrie, Thomas A., 3,849,265.

Henry, Richard D. Submersible aircraft carrier. 3,848,558, Cl. 114-16.00r.

- Hensley, Albert L., Jr., to Standard Oil Company. Catalyst comprising zinc oxide, silica and alumina and processes employing same. 3,849,296, Cl. 208-216.000.
- Herbenar, Edward J., to TRW Inc. Dual seat socket joint. 3,849,010, Cl. 403-138.000.
- Herbst, Richard: *See—*
  - Bielfeldt, Friedrich Bernd; and Herbst, Richard, 3,849,048.
- Hercules Incorporated: *See—*
  - Bloejack, James William, Jr.; Daniel, Truman Knox, Jr.; and Rolison, Darrell Edward, 3,848,548.
  - Breslow, David S., 3,849,230.
  - Vandenberg, Edwin James, 3,849,364.
- Herman, Martin A. Universal gage with tilt-out uprights. 3,848,338, Cl. 33-174.0pb.
- Herman, Stanley W., to General Motors Corporation. Friction welder. 3,848,793, Cl. 228-2.000.
- Hesse, Kurt. Adaptor for an electrical power distributor track. 3,848,715, Cl. 191-45.00r.
- Hessel, Birgit: *See—*
  - Percs, Edmund E.; Stocker, Kurt F.; Blomback, Birger; Blomback, Margareta; and Hessel, Birgit, 3,849,252.
- Hessert, James E.: *See—*
  - Clampitt, Richard L.; and Hessert, James E., 3,848,673.
- Hesson, Christer Ragnar: *See—*
  - Borg, Sven Christer; Hesson, Christer Ragnar; and Nilsson, Erik Henning, 3,848,753.
- Hetherington, Matthew James; and Atkinston, Peter, to British Steel Corporation. Rotary ultrasonic testing apparatus. 3,848,461, Cl. 73-71.5us.
- Hetz, Wolfgang, to Handels, Roth, GmbH. Sorption agent for non solid metals. 3,849,533, Cl. 423-99.000.
- Hewitt, Gordon Trent, to Colgate-Palmolive Company. Detergent compositions. 3,849,348, Cl. 252-547.000.
- Heylen, Renaat Frans: *See—*
  - Jeurissen, Lambert Gaston; Bollen, Romain Henri; Ghys, Theofiel Hubert; and Heylen, Renaat Frans, 3,849,658.
- Hibino, Noburo; Seto, Kunihira; Kobayashi, Teruo; and Inoue, Kazuo, to Fuji Photo Film Co., Ltd. Polyethylene terephthalate film for use as roentgenographic film base. 3,849,139, Cl. 96-84.00r.
- Hickling, Colin D., to American Thermostat Corporation. Nitinol activated switch usable as a slow acting relay. 3,849,756, Cl. 337-382.000.
- Higashida, Yutaka: *See—*
  - Arimura, Ichiro; Higashida, Yutaka; and Kurashina, Kozo, 3,849,794.
- Higgins, George C.: *See—*
  - Hamblen, David P.; and Higgins, George C., 3,849,657.
- Hikita, Kenji: *See—*
  - Konishi, Masami; and Hikita, Kenji, 3,849,093.
- Hilgen, Hendrika; and Rekers, Casper J. N., to Akzo N.V. Process for recovering mercury from a gas containing mercury vapor. 3,849,267, Cl. 204-99.000.
- Hill, Donald F.: *See—*
  - Milstein, Donald; and Hill, Donald F., 3,849,288.
- Hill, Edward J. Travel totes. 3,848,787, Cl. 224-45.00t.
- Hills, William A., to FMC Corporation. Bis((1-oxo-2,6,7-trioxa-1-phosphabicyclo[2.2.2] oct-4-yl)methyl) 2,5-dibromoterephthalate. 3,849,522, Cl. 260-927.00r.
- Hilterhaus, Karl. Gaff-scale with lock. 3,848,689, Cl. 177-233.000.
- Hiltmann, Rudolf; Wollweber, Hartmund; Hoffmeister, Friedrich; and Kronebert, Hans-Gunther, to Bayer Aktiengesellschaft. N-Alkanoyl-N-(1-(heterocyclic amino) isopropyl)-2-aminopyridines in the treatment of pain. 3,849,563, Cl. 424-263.000.
- Hily, Claude, to U.S Philips Corporation. Objective system the entrance pupil of which lies outside the system. 3,848,971, Cl. 350-216.000.
- Hinds, James L.: *See—*
  - Shames, Oscar; Hinds, James L.; Palatucci, Gerald J.; and Raditz, Michael, 3,849,777.
- Hines, Edward, Lumber Co.: *See—*
  - Miles, Thomas R., 3,848,646.
- Hintz, Harold L.; and Webb, Joseph T., to Westvaco Corporation. Water resistant corrugated paperboard. 3,849,224, Cl. 156-208.000.
- Hirabayashi, Takashi: *See—*
  - Kuwamura, Hideaki; Kashiwa, Ichiro; Hirabayashi, Takashi; and Tamura, Tadayoshi, 3,849,346.
- Hirasawa, Shigeiti: *See—*
  - Kasahara, Masao; Namekawa, Toshihiko; Fujiwra, Keniti; Hirasawa, Shigeiti; and Sugiyama, Yasuo, 3,849,761.
- Hirashima, Takashi: *See—*
  - Shoji, Akira; Yanagawa, Hitoshi; and Hirashima, Takashi, 3,848,982.
- Hirata, Yoshimi: *See—*
  - Ando, Tetsuo; and Hirata, Yoshimi, 3,848,328.
- Hirooka, Masaaki: *See—*
  - Oshima, Teruo; Nagase, Tsuneyuki; Masuko, Fujio; Wada, Takeshi; Hirooka, Masaaki; and Taniguchi, Isoji, 3,849,385.
- Hirose, Kimiharu: *See—*
  - Kazaoka, Kenichi; Hirose, Kimiharu; Matsumoto, Hisao; and Takeshita, Yasuo, 3,848,888.
- Hirsch, Karl, to Hirsh, Karl, OHG Plastikarenerzeugung, Firma. Keeping means for keeping storage boxes for compact cassettes. 3,848,738, Cl. 206-387.000.
- Hirsh, Karl, OHG Plastikarenerzeugung, Firma: *See—*
  - Hirsch, Karl, 3,848,738.
- Hirshfeld, Tsvi: *See—*
  - Teitelbaum, Dvora; Gan, Ramat; Meshorer, Asher; Hirshfeld, Tsvi; Arnon, Ruth; and Sela, Michael, 3,849,550.
- Hitachi, Ltd.: *See—*
  - Endou, Hirohide; Kawasaki, Jun; Fujimoto, Yoshiji; Nakane, Keiichi; and Kitazume, Yoshiaki, 3,849,760.
  - Fujimoto, Yoshiji; Hananoi, Toshihiro; Yasuda, Michio; Makihara, Hiroshi; Kuramizu, Masaru; Ota, Minoru; Kokido, Hiroshi; and Kadota, Shozo, 3,849,762.
  - Inoue, Masaru; Kaneko, Toshio; Matsumoto, Koichi; Ishikawa, Makoto; and Akitomo, Nobuo, 3,849,001.
  - Masai, Tadahisa; and Atago, Takeshi, 3,849,024.
  - Nakashima, Yoichi; Sakamoto, Hisashi; Ishizuka, Takeshi; and Suzuki, Kensuke, 3,849,791.
  - Oguro, Tomokatsu, 3,849,737.
  - Otubo, Osamu; Terashima, Isamu; and Akutsu, Norio, 3,848,990.
  - Ozawa, Jun; Isogai, Tokio; Ishikawa, Toshio; Yamagiwa, Tokio; Matsumura, Mutsuo; Nakano, Zenichi; and Fuziya, Shigeru, 3,849,590.
  - Suzuki, Takaji; and Ogawa, Toshio, 3,848,586.
- Ho, Edmond Yu-Shang, to Bell Telephone Laboratories, Incorporated. Carrier recovery in vestigial sideband data receivers. 3,849,730, Cl. 325-329.000.
- Hockemeyer, Friedrich: *See—*
  - Nitzsche, Siegfried; Marwitz, Heinrich; and Hockemeyer, Friedrich, 3,849,359.
- Hodkinson, Harold, to Automotive Products Limited. Fluid pressure braking system for vehicles. 3,848,935, Cl. 303-22.00r.
- Hoehn, Hans; and Chasin, Mark, to Squibb, E. R., & Sons, Inc. Hydrazones of pyrazolopyridine carboxylic acids and esters. 3,849,411, Cl. 260-240.00g.
- Hoehr, Lothar: *See—*
  - Frielingsdorf, Hans; Mueller-Tamm, Heinz; Hoehr, Lothar; and Kolk, Erich, 3,849,334.
- Hoekstra, James, to Universal Oil Products Company. Method of catalyst manufacture. 3,849,343, Cl. 252-466.0pt.
- Hofer, Gerald, to Bosch, Robert, G.m.b.H. Fuel injection pump for internal combustion engines. 3,848,576, Cl. 123-139.0bd.
- Hofer, Wolfgang: *See—*
  - Colln, Reimer; Hofer, Wolfgang; Maurer, Fritz; and Rohe, Lothar, 3,849,524.
- Hoffberger, Charles C., II; and Rivlin, Charles A. Television screen light shield. 3,849,598, Cl. 178-7.820.
- Hoffenden-Richborough Limited: *See—*
  - Wilson-Haffenden, Philip, 3,848,650.
- Hoffman, Henry Tice, Jr., to American Can Company. Chemically filled polymeric articles. 3,849,168, Cl. 117-106.00r.
- Hoffman, Robert K., to Parker-Hannifin Corporation. Fluid line joint for a valve base plate. 3,848,900, Cl. 285-137.00r.
- Hoffman, Robert K., to Parker-Hannifin Corporation. Fluid line joint for a valve base plate. 3,848,901, Cl. 285-137.00r.
- Hoffmann, Peter; Schreyer, Gerd; Weiberg, Otto; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of percarboxylic acid. 3,849,484, Cl. 260-502.00r.
- Hoffmann-La Roche Inc.: *See—*
  - Coffen, David; and Fryer, Rodney, 3,849,399.
  - Coffen, David Llewellyn; and Fryer, Rodney Ian, 3,849,434.
- Hoffmeister, Friedrich: *See—*
  - Hiltmann, Rudolf; Wollweber, Hartmund; Hoffmeister, Friedrich; and Kronebert, Hans-Gunther, 3,849,563.
- Hoge, Daniel W. Crane tip alarm. 3,848,750, Cl. 212-69.000.
- Hogue, Lois M. Adapter key caps. 3,848,723, Cl. 197-102.000.
- Holiga, Ludomil A.: *See—*
  - Gargrave, Robert J.; and Holiga, Ludomil A., 3,848,494.
- Holk, Albert J., Jr., to Continental Can Company, Inc. Method for forming protective edge on easy opening container. 3,848,557, Cl. 113-121.00c.
- Holland, John G., Sr. Side boom pipe laying machine. 3,848,751, Cl. 212-145.000.
- Holland, Monte G., to Research Corporation. Method of reducing intraocular pressure in human eyes. 3,849,577, Cl. 424-330.000.
- Holland, Will W. Oil bath air filter element. 3,849,094, Cl. 55-330.000.
- Hollinshead, Clive, 1/2 interest to Weiner, Ted and Weiner, Gwendolyn Patricia. Friction-reducing petroleum mixtures and method of making same. 3,849,323, Cl. 252-56.00r.
- Hollis, Norman E.; Jutte, Gottfried W.; McCartney, Frank I.; and McHugh, John V., to Richardson Company, The. Method for producing battery terminal. 3,849,203, Cl. 136-135.00s.
- Holloway, Robert Geofrey: *See—*
  - Cochrane, Kenneth Alfred; and Holloway, Robert Geofrey, 3,849,016.
- Hollymatic Corporation, mesne: *See—*
  - Banike, Ronald A., 3,848,624.
- Holovka, Charles Stephen: *See—*
  - Bolan, Peter Samuel; Bryant, Aramis Duane; Drejza, John Edward; Holovka, Charles Stephen; and Weber, Ludwig Wilhelm, 3,848,722.
- Holzapfel, Jurgen, to Robot Foto und Electronic GmbH & Co. KG. Apparatus for monitoring traffic. 3,849,784, Cl. 346-107.0vp.
- Holzrichter, Robert A., to Warwick Electronics Inc. Brightness limiting circuit. 3,848,945, Cl. 315-30.000.
- Holzrichter, Robert A., to Warwick Electronics Inc. Signal translating channel with pre-shoot and over-shoot. 3,849,792, Cl. 358-37.000.

- Hommerin, Michel, to Compagnie General de Radiolgie. System for processing film. 3,849,660, Cl. 250-570.000.
- Honda Giken Kogyo Kabushiki Kaisha: *See—*
  - Tsuchiya, Toshio; and Takeuchi, Osamu, 3,848,936.
- Hondzinski, Leonard J., to Nuprin Corporation. Conveyor assembly. 3,848,538, Cl. 104-155.000.
- Hondzinski, Leonard J., to Nuprin Corporation. Conveyor assembly. 3,848,539, Cl. 104-155.000.
- Hondzinski, Leonard J., to Nuprin Corporation. Conveyor assembly. 3,848,540, Cl. 104-155.000.
- Hondzinski, Leonard J., to Nuprin Corporation. Conveyor belt. 3,848,541, Cl. 104-155.000.
- Honeywell Inc.: *See—*
  - Beiter, Glenn A., 3,849,661.
  - Flynn, John, 3,849,678.
  - Hawkins, Royal R., 3,848,690.
  - Larsen, Larry D.; and Kompelien, Arlon D., 3,849,685.
- Honeywell Information Systems, Inc.: *See—*
  - Durvasula, Srirama S., 3,849,768.
- Hongo, Eitaro; Yamada, Hirohiko; Fujii, Yozo; Masuda, Katsumi; Itou, Junichi; and Nakano, Takaaki, to Sumitomo Chemical Company, Limited. Process for producing alpha-anthraquinone-sulfonates with low mercury content. 3,849,452, Cl. 260-370.000.
- Hooker Chemical Corporation: *See—*
  - Golborn, Peter; and Duffy, James J., 3,849,440.
  - Pattison, Victor A., 3,849,425.
  - Pattison, Victor A., 3,849,426.
  - Pattison, Victor A., 3,849,427.
  - Pattison, Victor A., 3,849,428.
  - Weil, Edward D.; and Schlichting, Hans L., 3,849,477.
- Hoover, Troy Eugene: *See—*
  - Schwab, Helmut; and Hoover, Troy Eugene, 3,849,164.
- Hopkins, Alton W., to Control Switch, Inc. Yarn detector switch-lower. 3,848,434, Cl. 66-163.000.
- Hopper, Randall R.: *See—*
  - Adams, James M.; Hopper, Randall R.; Raley, Garland E.; and Rutherford, James K., 3,849,050.
- Horio, Teisuke: *See—*
  - Matsui, Masashi; and Horio, Teisuke, 3,848,694.
- Hornsveld, Eduard Maurice: *See—*
  - Van der Linde, Aart; and Hornsveld, Eduard Maurice, 3,849,215.
- Hosaka, Akio; Baba, Kosaku; and Wazawa, Kiyoshi, to Nissan Motor Company, Limited. Fault detector for motor vehicle safety device. 3,849,759, Cl. 340-52.00r.
- Hosking, John Trevor; and Blackham, Norman. Head-up display apparatus. 3,848,974, Cl. 351-174.000.
- Hostetler, William: *See—*
  - Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,849,231.
- Houlihan, William J.; and Nadelson, Jeffrey, to Sandoz-Wander, Inc. 2-Substituted-3-disubstituted-4,5,6,7-substituted or unsubstituted phthalimidines. 3,849,438, Cl. 260-325.000.
- Hovel, Harold J.: *See—*
  - Braslau, Norman; Cuomo, John J.; Harris, Erik P.; and Hovel, Harold J., 3,849,707.
- Howell, Wallace E. Air momentum anemometer. 3,848,465, Cl. 73-194.00r.
- Howell, William G., to Exxon Research and Engineering Company. Blast chamber. 3,848,794, Cl. 228-3.000.
- Howmet Corporation: *See—*
  - Boyle, James H.; and Ingalls, John E., 3,848,654.
- Hoyt, Kenneth L.: *See—*
  - Feustel, James R.; Hoyt, Kenneth L.; and Valukonis, Jonas, 3,848,886.
- Huang, Denis K.: *See—*
  - Griffiths, Darrell J. L.; and Huang, Denis K., 3,849,378.
- Hubbard, James R., to Graphic Controls Corporation. Ink storage composition. 3,849,143, Cl. 106-22.000.
- Huber, J. M., Corporation: *See—*
  - Abercrombie, William F., Jr., 3,849,151.
- Huber, Josef: *See—*
  - Stutz, Hans; and Huber, Josef, 3,848,820.
- Hubner, Manfred; Heerdt, Ruth; Schmidt, Felix Helmut; Thiel, Max; and Weyer, Rudi, to Boehringer Mannheim GmbH. Certain 2-benzenesulfonylaminopyrimidines. 3,849,417, Cl. 260-256.50r.
- Hudgins, Wayne A., to United States of America, Army. Shaft seal. 3,848,879, Cl. 277-80.000.
- Hudson, Arthur Franklin. Mounting for tool bits. 3,848,302, Cl. 29-96.000.
- Hughes, Elmer J. Sawhorse bracket. 3,848,701, Cl. 182-185.000.
- Hughes, George W. Inner tube sealing means. 3,848,652, Cl. 152-427.000.
- Hughes, Richard Swart; and Thompson, Julian L., to United States of America, Navy. Synchronously tuned laser transmitter and receiver. 3,849,742, Cl. 332-7.510.
- Hulten, Richard E., to McCord Corporation. Bumper assembly. 3,848,916, Cl. 293-88.000.
- Hunt, Alexander C.: *See—*
  - Kropp, Willis A., 3,848,763.
- Hunter Douglas International N.V.: *See—*
  - Van Schijndel, Marinus Johannes, 3,848,824.
- Hunter, James Stuart: *See—*
  - Corby, Neville Slater; Hunter, James Stuart; and Leng, John Lindley, 3,849,393.
- Hurth, Carl, Maschinen-und Zahnradfabrik: *See—*
  - Erhardt, Manfred, 3,848,512.
- Hurtig, Carl R.; Kent, Robert L.; and Blumle, Leo J., to Damon Corporation. Precise fluid-dividing apparatus. 3,848,633, Cl. 137-561.00a.
- Hush Company, Inc.: *See—*
  - Johnson, Howard R., 3,849,086.
- Huslander, William L.; and Glover, Charles J., to Dresser Industries, Inc. Pipe repair clamp. 3,848,638, Cl. 138-99.000.
- Huston, Leroy S.; and Kulik, Joseph S., Jr., to GTE Sylvania Incorporated. Tungsten-halogen lamp with tantolum getter. 3,849,687, Cl. 313-179.000.
- Hyden, Viktor Holger; and Hasselblad, Fritz Victor. Apparatus for controlled selective separation of undesirable constituents from blood to achieve a therapeutic effect. 3,848,580, Cl. 128-2.00f.
- Hyer, Harry J.; and Rudy, Thomas P., to United Aircraft Corporation. Preparation of liquid polynuclear ferrocene derivatives. 3,849,461, Cl. 260-439.0cy.
- I-T-E Circuit Breaker (Canada) Limited: *See—*
  - Orriss, William T., 3,849,748.
- I-T-E Imperial Corporation: *See—*
  - Wilson, George A., 3,848,637.
- Ibaugh, James Louis, to RCA Corporation. Electron discharge device having ellipsoid-shaped electrode surfaces. 3,849,644, Cl. 250-207.000.
- Ichiba, Terumichi; Shimba, Hiroshi; and Mukunashi, Hiroaki, to Sumitomo Electric Industries Ltd. Laminate tape including an adhesive resin ternary copolymer of ethylene, vinyl acetate and glycidyl methacrylate of glycidyl acrylate and laminate sheath cablemade therefrom. 3,849,591, Cl. 174-107.000.
- ICI Australia Limited: *See—*
  - Battaerd, Hendrik Adriaan Jacobus, 3,849,525.
  - Wisinski, Adam Prus, 3,848,507.
- Igarashi, Isemi; Nakamura, Hiroshi; and Sugiyama, Susumu, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method for producing a semiconductor strain sensitive element of an electromechanical semiconductor transducer. 3,848,329, Cl. 29-580.000.
- Ihara, Takashi, to Canon Kabushiki Kaisha. Process for producing a drum photosensitive member for electrophotography. 3,849,128, Cl. 96-1.500.
- Ikeda, Minoru, to France Bed Co., Ltd. Mattress. 3,848,283, Cl. 5-351.000.
- Ikeda, Noboru: *See—*
  - Iwasa, Junzo; Maruto, Shunsuke; Ikeda, Noboru; Nakamura, Keiji; and Shoji, Yukinobu, 3,849,561.
- Ikeda, Teppei: *See—*
  - Omichi, Takenori; Ikeda, Teppei; and Adachihara, Shunichi, 3,849,166.
- Ikeda, Tsukasa: *See—*
  - Maeda, Hidenori; Matsui, Yujiro; Ikeda, Tsukasa; and Mohri, Eikichi, 3,848,860.
- Illinois Railway Equipment Company: *See—*
  - Jensen, Finn; and Nadherny, Rudolph E., 3,848,912.
- Illinois Tool Works, Inc.: *See—*
  - Fisher, Julian Vernon, 3,849,615.
- Ilmeg AB: *See—*
  - Jysky, Goran; Mardla, Ilmar; and Ericsson, Bjorn, 3,848,686.
- Imada, Isuke: *See—*
  - Morimoto, Hiroshi; Watanabe, Masazumi; Imada, Isuke; and Nishikawa, Masao, 3,849,453.
- Image Analysing Computers Limited: *See—*
  - Ablett, Roger John Herbert, 3,849,793.
- Imamura, Kennosuke; Nabekawa, Shukichi; and Takada, Masao, to Nippon Chemical Industrial Co., Ltd. Process for the production of organic phosphoric acid esters. 3,849,439, Cl. 260-326.00e.
- Imamura, Tetsuya: *See—*
  - Tokiwa, Fumikatsu; and Imamura, Tetsuya, 3,849,347.
- Immel, Otto; and Schwarz, Hans-Helmut, to Bayer Aktiengesellschaft. Abrasive-resistant catalyst containing boric acid suitable for the rearrangement of ketoximes. 3,849,335, Cl. 252-432.000.
- Imperial Chemical Industries, Limited: *See—*
  - Campbell, John Stewart; and Davies, Phineas, 3,849,538.
  - Corby, Neville Slater; Hunter, James Stuart; and Leng, John Lindley, 3,849,393.
  - Davies, Gareth Morse, 3,849,449.
  - Jackson, Peter Frederick; and Reid, James Angus Wilson, 3,849,380.
  - Nield, Erich, 3,849,384.
  - Ousby, John Clark; and Turner, William Brian, 3,849,437.
  - Waddan, Dhafir Yusuf, 3,849,472.
- Inamoto, Inamoto; Nakayama, Hirokazu; Takenaka, Hidetsugu; and Kimura, Yoshitomo, to Kao Soap Co., Ltd. Diesters of 1,3-bis(carboxymethyl)adamantanes and process for preparing same. 3,849,473, Cl. 260-468.00g.
- Incentive Research Development AB: *See—*
  - Dinh-Nguyen, Nguyen; and Stenhagen, Einar August, 3,849,458.
- Indak Manufacturing Corporation: *See—*
  - Cobb, Jesse M.; and Schaad, William J., 3,849,612.
- Indian Iron & Steel Company Limited, The: *See—*
  - Gupta, Asoka, 3,849,112.
- Industrial Industries, Inc.: *See—*
  - King, Roy R., 3,848,521.
- Ingalls, John E.: *See—*
  - Boyle, James H.; and Ingalls, John E., 3,848,654.
- Ingham, Kenneth W. Musical toy. 3,848,504, Cl. 84-402.000.

Inion, Henri: *See—*

Descamps, Marcel; and Inion, Henri, 3,849,564.

Inmont Corporation: *See—*

Strecker, Larry A.; and Wood, James E., 3,849,354.

Inoue, Kazuo: *See—*

Hibino, Noburo; Seto, Kunihira; Kobayashi, Teruo; and Inoue, Kazuo, 3,849,139.

Inoue, Masakazu; Okamoto, Takehiko; and Nagai, Ikuo, to Toray Industries, Inc. Method of preparing highly concentrated resinous latex. 3,849,358, Cl. 260-29.7up.

Inoue, Masaru; Kaneko, Toshio; Matsumoto, Koichi; Ishikawa, Makoto; and Akitomo, Nobuo, to Hitachi, Ltd. Polarization interference correlation spectrometer. 3,849,001, Cl. 356-98.000.

Interlake, Inc.: *See—*

Thompson, Harry W., 3,848,747.

International Business Machines Corporation: *See—*

Bolan, Peter Samuel; Bryant, Aramis Duane; Drejza, John Edward; Holovka, Charles Stephen; and Weber, Ludwig Wilhelm, 3,848,722.

Braslau, Norman; Cuomo, John J.; Harris, Erik P.; and Hovel, Harold J., 3,849,707.

Cuzner, David E.; Dodman, Charles O. R.; and Heath, John S., 3,849,800.

Foster, Betty J.; and Tummala, Rao R., 3,849,190.

Fowler, Alan Bicksler, 3,849,204.

Gardineer, Bayard G.; and Panissidi, Hugo A., 3,848,515.

Goretzki, Jerome A.; Hendrickson, Kenneth E.; Mattson, Gary L.; and Mattson, Larry F., 3,849,714.

Grebe, Kurt R., 3,849,136.

Greiner, James H., 3,849,276.

Jackimiak, Paul D., 3,848,305.

Lankford, Larry G.; and Whittle, William R., 3,849,712.

International Chemical & Nuclear Corporation: *See—*

Robins, Roland K.; and Khwaja, Tasneem A., 3,849,397.

International Packings Corporation: *See—*

Ginn, Arthur H., 3,848,881.

International Standard Electric Corporation: *See—*

Paris, Philippe Y. J.; Bougon, Pierre P. A.; and Guimard, Lucien, 3,849,597.

International Telephone and Telegraph Corporation: *See—*

Dwyer, Gregory J.; and Ferris, Walla L., 3,848,864.

International Tool Sales, Inc.: *See—*

Swisher, James A., 3,848,931.

Intomart N.V.: *See—*

Van Baggem, Johannes Willhelmus, 3,849,729.

Investors in Ventures, Inc.: *See—*

Bucalo, Louis, 3,848,578.

Iowa State University Research Foundation, Inc.: *See—*

Hazen, Thamon E.; and Miner, John R., 3,848,568.

Ipsen, William J., Jr. Portable camping equipment. 3,848,279, Cl. 5-113.000.

Irani, Meherwan C., to One-half to Buell, Eugene F. Method for recovery of elements and compounds from aqueous solutions. 3,849,535, Cl. 423-140.000.

Irissou, Pierre Regis Marie Henri; and Sarda, Pierre Jean Francois Jacques. Adjustable stepping drive for motion-picture film. 3,849,715, Cl. 318-696.000.

Isaacson, Raymond E.; and Brownell, Lloyd E., to United States of America, Atomic Energy Commission. Continuous process for immobilizing radionuclides, including cesium and ruthenium fission products. 3,849,330, Cl. 252-301.10w.

Ishiguro, Tatsuo, to Nippon Electric Company. Facsimile signal transmission system. 3,849,595, Cl. 178-6.000.

Ishihara Sangyo Kaisha Ltd.: *See—*

Shigehara, Itaru; Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Toki, Tadaaki; Takagi, Hidetoshi; Nasu, Rikuo; Yokomichi, Isao; Kimura, Fumio; and Someya, Shinzo, 3,849,503.

Ishikawa, Makoto: *See—*

Inoue, Masaru; Kaneko, Toshio; Matsumoto, Koichi; Ishikawa, Makoto; and Akitomo, Nobuo, 3,849,001.

Ishikawa, Toshio: *See—*

Ozawa, Jun; Isogai, Tokio; Ishikawa, Toshio; Yamagiwa, Tokio; Matsumura, Mutsuo; Nakano, Zenichi; and Fuziya, Shigeru, 3,849,590.

Ishizaki, Keizo; Sekine, Hiroshi; Gondo, Hisashi; Wada, Koji; Kawano, Tsuyoshi; Watanabe, Hidekazu; Kanbayashi, Gou; and Maruyama, Tadasatsu, to Nippon Steel Corporation. Manufacturing method of high tension, high toughness steel. 3,849,209, Cl. 148-12.00f

Ishizuka, Takeshi: *See—*

Nakashima, Yoichi; Sakamoto, Hisashi; Ishizuka, Takeshi; and Suzuki, Kensuke, 3,849,791.

Isogai, Tokio: *See—*

Ozawa, Jun; Isogai, Tokio; Ishikawa, Toshio; Yamagiwa, Tokio; Matsumura, Mutsuo; Nakano, Zenichi; and Fuziya, Shigeru, 3,849,590.

Istituto Elettrotecnico Nazionale Galileo Ferraris: *See—*

Soardo, Paolo; and Pasta, Mario, 3,849,000.

Iten, Clemens A., to Morris, Philip, Incorporated. Blade dispenser with used blade vault. 3,848,770, Cl. 221-102.000.

Ito, Naganori; and Aikawa, Hiroshi, to Nissan Motor Company, Limited. Vehicle hydropneumatic suspension system. 3,848,862, Cl. 267-64.00r.

Itou, Junichi: *See—*

Hongo, Eitaro; Yamada, Hirohiko; Fujii, Yozo; Masuda, Katsumi; Itou, Junichi; and Nakano, Takaaki, 3,849,452.

ITT Industries, Inc.: *See—*

Perche, Maurice, 3,848,800.

Tippmann, Heinrich, 3,848,475.

van der Perk, Klaas Anthonie Jacob, 3,848,456.

Iwano, Haruhiko; Tanaka, Mitsugu; Otsuki, Tesuo; and Arai, Atsuaki, to Fuji Photo Film Co., Ltd. Process for forming photographic images by high speed diffusion transfer process. 3,849,133, Cl. 96-29.00r.

Iwasa, Junzo; Maruto, Shunsuke; Ikeda, Noboru; Nakamura, Keiji; and Shoji, Yukinobu. Anti-peptic ulcer substance from corydalis tubers. 3,849,561, Cl. 424-258.000.

Iwasaki, Kazunari: *See—*

Suzuki, Kensuke; Goto, Yasuhide; Iwasaki, Kazunari; and Sumitomo, Yoshiharu, 3,849,188.

Iwasaki, Yasuhiro; Tsukamoto, Hidehiko; Maeda, Nobutaka; and Takeuchi, Chikara, to Mitsubishi Jukogyo Kabushiki Kaisha. Arrangement for bending steel plates. 3,848,446, Cl. 72-168.000.

Ixer, Bernard W.: *See—*

Carpenter, James H., Jr.; and Ixer, Bernard W., 3,848,815.

Izumi, Hiroshi: *See—*

Katahira, Toshiaki; Izumi, Hiroshi; and Tokonami, Masao, 3,849,773.

Jack, David; and Glover, Ernest Edward, to Allen & Hansbury Limited. Pharmaceutical compositions containing 1,1-azo bis-(1H-imidazo (1,2a) pyridinium dibromide compounds and the use thereof. 3,849,557, Cl. 424-226.000.

Jackimiak, Paul D., to International Business Machines Corporation. Roll for contact fusing thermoplastic particles to substrates. 3,848,305, Cl. 29-132.000.

Jackson, Geoffrey N.; Pickard, Robert G.; Brackley, Graham; and Satchell, David W., to E.R.A. Patents Limited. Sputtering apparatus. 3,849,283, Cl. 204-298.000.

Jackson, Peter Frederick; and Reid, James Angus Wilson, to Imperial Chemical Industries Limited. Polyesters. 3,849,380, Cl. 260-75.00r.

Jacobs, Gerard O.: *See—*

Mortimer, Frans H.; Jacobs, Gerard O.; Decoene, Frans J. G. C.; Braet, August; and Rowland-Hill, Edward W., 3,848,609.

Jacobs, Louis John, to Combustion Engineering, Inc. Densification of hard chrome plated surfaces. 3,849,206, Cl. 148-6.200.

Jacobs, Louis John, to Combuation Engineering, Inc. Electric arc furnaces and refractory shapes therefor. 3,849,586, Cl. 13-32.000.

Jacobson, Charles F.: *See—*

Crowther, Ted J.; Jacobson, Charles F.; and Sutherlin, Kent K., 3,849,766.

Jacoby, Frederick J.: *See—*

Earhart, Howard F.; Jacoby, Frederick J.; and Starck, Clemens B., 3,849,191.

Jaggers, Brian George; Ufton, Keith Frederick; and Wagner, Horst Richard, to Bush Boake Allen Limited. Solid washing compositions. 3,849,326, Cl. 252-89.000.

Jakubek, Peter, to Fa. International Pollution Control Systems, Inc. Device for removing oil and the like from water contaminated by oil or the like. 3,849,311, Cl. 210-188.000.

Jambor, Dorothy E., to DOTCO Incorporated. Electrical circuit board terminal springclip. 3,848,947, Cl. 339-17.00r.

Janko, Bozidar: *See—*

Piazza, Richard Elliot; and Janko, Bozidar, 3,849,695.

Jannot, Michel Rene; Vaillant, Robert Guillaume; and Dzalba-Lyndis, Serge Yvan, to Societe Nationale Industrielle Aerospatiale. Acoustic damping and cooling of turbojet exhaust ducts. 3,848,697, Cl. 181-33.0hb.

Janssen, Joannes Franciscus: *See—*

Merz, Josef; Van Esdonk, Johannes; and Janssen, Joannes Franciscus, 3,848,973.

Japan Exlan Company Limited: *See—*

Takeya, Kenji; and Tanahashi, Kunio, 3,849,242.

Jarrett, Noel: *See—*

Bruno, Marshall J.; Jarrett, Noel; and Slaugenhaupt, Burl L., 3,849,119.

Jaschinski, Klemens: *See—*

Zirngibl, Hans; Fuhr, Werner; Jaschinski, Klemens; Beumer, Peter; and Weidmann, Walter, 3,849,543.

Jautelat, Manfred, to Bayer Aktiengesellschaft. Preparation of α-oximinonitriles. 3,849,469, Cl. 260-464.000.

Jensen, Finn; and Nadherny, Rudolph E., to Illinois Railway Equipment Company. Latch for hatch covers for hopper cars. 3,848,912, Cl. 292-256.500.

Jepsen, Milford L. Impingement shield. 3,848,842, Cl. 248-204.000.

Jeter, Watt Nixon: *See—*

Ficklinger, Thomas Franklin; Jeter, Watt Nixon; and Likhyani, Kewal Krishan, 3,849,074.

Jettmar, Werner: *See—*

Schrempp, Klaus; Jettmar, Werner; Polster, Rudolf; and Hartmann, Eduard, 3,849,150.

Jeurissen, Lambert Gaston; and De Smedt, Frans Antoon, to AGFA-Gevaert N.V. Process for the semi-continuous preparation of high-molecular weight linear polyesters. 3,849,379, Cl. 260-75.00m.

Jeurissen, Lambert Gaston; Bollen, Romain Henri; Ghys, Theofiel Hubert; and Heylen, Renaat Frans, to Agfa-Gevaert N.V. Radiographic recording element and its use in radiography. 3,849,658, Cl. 250-486.000.

Johansson, Bengt, to Centro-Maskin i Goteborg AB. Safety hood for grinding discs. 3,849,088, Cl. 51-269.000.

Johns-Manville Corporation: *See—*

Mikulak, John Paul, 3,849,240.

Johnson & Johnson: *See—*

Drelich, Arthur H.; and Lukacs, George J., 3,849,173.

Mesek, Frederick K., 3,848,598.

Johnson, Alexander Lawrence, to Du Pont de Nemours, E. I., and Company. Cyclization of 2-(3-aryl-5-pyrazolyl)benzoic acids, esters and amides to 2-arylpyrazolo [5-1-a]isoindol-8-ones. 3,849,436, Cl. 260-310.00r.

Johnson, Boyd R. Non-corrosive aquarium lamp assembly. 3,849,700, Cl. 315-72.000.

Johnson, Dale R., to Norfin, Inc. No-counter sorter-stacker. 3,848,867, Cl. 271-173.000.

Johnson, Graham Frederick. Method of and apparatus for rediussing an edge or edges of a metallic aerofoil blade. 3,849,273, Cl. 204-129.600.

Johnson, Howard R., to Hush Company, Inc. Supercharger for internal combustion engine carburetion. 3,849,086, Cl. 48-180.00c.

Johnson, Richard A.; and Fruhwald, John M., to Westinghouse Electric Corporation. Logarithmic computing circuit. 3,849,706, Cl. 317-27.00r.

Johnson Service Company: *See—*

Strawn, Charles F., 3,848,411.

Johnson Service Company, mesne: *See—*

Nettles, Robert G., 3,849,674.

Johnston, Richard L.: *See—*

Johnston, Richard L., 3,848,543.

Johnston, Richard L., to Johnston, Richard L. and Ruben, Sam L. Adjustable shelf structure. 3,848,543, Cl. 108-5.000.

Jones, Charles, to Curtiss-Wright Corporation. Intermediate housing section for a multi-rotor rotary internal combustion engine and method of manufacture thereof. 3,849,035, Cl. 418-60.000.

Jones, Raymond R.: *See—*

Schellenberg, James M.; and Jones, Raymond R., 3,849,745.

Jones, Robert E.: *See—*

Messner, John S.; and Jones, Robert E., 3,848,692.

Jonsson, Arne Gosta; and Torstensson, Nils Torsten Lennart, to Astra Lakemedel Aktiebolag. Protease inhibitors and method for preparation. 3,849,552, Cl. 424-115.000.

Jordache, Rene. Potters wheel heads. 3,849,054, Cl. 425-459.000.

Jordan, Ingo, to Lever Brothers Company. Sorting and stacking of food slices. 3,848,757, Cl. 214-152.000.

Jordan, Lavell, Jr.: *See—*

Groom Lemuel D., III; and Jordan, Lavell, Jr., 3,849,741.

Jorgensen, Jens L., to Minnesota Mining and Manufacturing Company. Pavement marking material containing a polyamide modified by a diphenolic acid. 3,849,351, Cl. 260-18.00n.

Joschko, Gunter; and Winter, Hans-Jurgen, to Ted Bildplatten Aktiengesellschaft AEG-Telefunken TELDEC. Scanning element. 3,848,876, Cl. 274-38.000.

Joslin, Frederick R., to United Aircraft Corporation. Electrochemical drilling. 3,849,271, Cl. 204-129.200.

Joubert, Jean-Claude: *See—*

Ferrand, Bernard; Forrat, Francis; Grange, Yves; Joubert, Jean-Claude; and Mareschal, Jean, 3,849,193.

Jouffret, Michel: *See—*

Bourdin, Francois; Costantini, Michel; Jouffret, Michel; and Lartigau, Guy, 3,849,502.

Jun, Mong-Jon: *See—*

Barzynski, Helmut; Jun, Mong-Jon; Saenger, Dietrich; and Volkert, Otto, 3,849,137.

Jureit, John Calvin; Cotten, Howell J.; Castillo, Adolfo; and Leutwyler, Roy. Apparatus for fabricating wooden frames. 3,848,791, Cl. 227-100.000.

Justice, Frank K., to Sperry Rand Corporation. Universal programmable digital testing interface line. 3,849,726, Cl. 324-73.00r.

Justice, James W. H., to Westinghouse Electric Corporation. Multi-picture TV system with audio and coding channels. 3,849,594, Cl. 278-5.600.

Jutte, Gottfried W.: *See—*

Hollis, Norman E.; Jutte, Gottfried W.; McCartney, Frank I.; and McHugh, John V., 3,849,203.

Jysky, Goran; Mardla, Ilmar; and Ericsson, Bjorn, to Ilmeg AB. Device for collecting drill dust and a sealing member intended for said device. 3,848,686, Cl. 175-209.000.

Kaartinen, Niilo H., to Packard Instrument Company Inc. Combustion apparatus and method for materials containing a radioactive isotope tracer. 3,849,069, Cl. 23-230.0pc.

Kabelschlepp Gesellschaft mit beschrankter Haftung: *See—*

Moritz, Werner, 3,848,407.

Kabushiki Kaisha Kohjin: *See—*

Suzuki, Kensuke; Goto, Yasuhide; Iwasaki, Kazunari; and Sumitomo, Yoshiharu, 3,849,188.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusha: *See—*

Ohashi, Shozo; Mori, Mitsuo; and Oyobe, Satoshi, 3,848,297.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*

Igarashi, Isemi; Nakamura, Hiroshi; and Sugiyama, Susumu, 3,848,329.

Komatsu, Noboru; Arai, Tohru; and Mizutani, Masayoshi, 3,848,847.

Kabushiki-Kaisha Eishin: *See—*

Funakubo, Toshiei, 3,848,687.

Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho: *See—*

Kawai, Yoshihiro, 3,849,613.

Kado, Masaru: *See—*

Kato, Yoshiro; and Kado, Masaru, 3,849,109.

Kadota, Shozo: *See—*

Fujimoto, Yoshiji; Hananoi, Toshihiro; Yasuda, Michio; Makihara, Hiroshi; Kuramizu, Masaru; Ota, Minoru; Kokido, Hiroshi; and Kadota, Shozo, 3,849,762.

Kadota, Tokuzo, to Matsuhita Electric Industrial Co., Ltd. Deflection coils producing pincushion and barrel deflection fields. 3,849,749, Cl. 335-210.000.

Kadowaki, Takashi; Dohi, Michio; and Yokobori, Katsuichi, to Denki Kagaku Kogyo Kabushiki Kaisha. Chloroprene elastomer composition. 3,849,519, Cl. 260-890.000.

Kahmann, Anthony J. Method of and apparatus for custom molding footwear. 3,848,286, Cl. 12-142.000.

Kaiser Industries Corporation: *See—*

Keagy, Edward, 3,848,659.

Kaiser, Leo: *See—*

Eigenmann, Gottfried; Kaiser, Leo; and Luethi, Christian, 3,849,155.

Kalle Aktiengesellschaft: *See—*

Steppan, Hartmut, 3,849,392.

Kalopissis, Gregoire, to Societe Anonyme dite: L'Oreal. Colored nail polishes. 3,849,547, Cl. 424-61.000.

Kalopissis, Gregoire, to Societe Anonyme dite: L'Oreal. Process and cosmetic compositions for the treatment of skin and scalp. 3,849,576, Cl. 424-330.000.

Kamada, Taichi: *See—*

Funakubo, Eiichi; Matsuo, Tetsuo; Taira, Takeshi; Kamada, Taichi; Harada, Hiroshi; Tanimura, Shoichiro; and Kubo, Masanori, 3,849,298.

Kamber, Bruno: *See—*

Rittel, Werner; Brugger, Max; Kamber, Bruno; Riniker, Bernhard; Sieber, Peter; and Greven, Hendrik Marie, 3,849,388.

Kaminsky, Daniel: *See—*

Von Strandtmann, Max; Klutchko, Sylvester; Kaminsky, Daniel; and Shavel, John, Jr., 3,849,446.

Kamioka, Hajime: *See—*

Takagi, Mikio; Nakayama, Kazufumi; Terada, Chiaki; and Kamioka, Hajime, 3,849,270.

Kampe, Marcis M., to Enthone, Incorporated. Alkaline bright zinc electroplating. 3,849,325, Cl. 252-79.100.

Kamyr Aktiebolag: *See—*

Richter, Johan C. F. C., 3,849,247.

Kanai, Tamaki: *See—*

Nakatsuji, Yasukuni; Kanai, Tamaki; Noda, Hiroshi; Miura, Sadayoshi; and Suzuki, Hideaki, 3,849,382.

Kanbayashi, Gou: *See—*

Ishizaki, Keizo; Sekine, Hiroshi; Gondo, Hisashi; Wada, Koji; Kawano, Tsuyoshi; Watanabe, Hidekazu; Kanbayashi, Gou; and Maruyama, Tadasatsu, 3,849,209.

Kanbe, Yoichiro. Emergency escaping device for high building. 3,848,698, Cl. 182-83.000.

Kanegafuchi Boseki Kabushiki Kaisha: *See—*

Ando, Satoshi; Matsui, Masao; and Ogata, Fumimaro, 3,849,044.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*

Funakubo, Eiichi; Matsuo, Tetsuo; Taira, Takeshi; Kamada, Taichi; Harada, Hiroshi; Tanimura, Shoichiro; and Kubo, Masanori, 3,849,298.

Kaneko, Susumu: *See—*

Arai, Mamoru; Haneishi, Tatsuo; Kayamori, Hisashi; Takiguchi, Yoo; Kitano, Noritoshi; and Kaneko, Susumu, 3,849,398.

Kaneko, Toshio: *See—*

Inoue, Masaru; Kaneko, Toshio; Matsumoto, Koichi; Ishikawa, Makoto; and Akitomo, Nobuo, 3,849,001.

Kang, Jung W.: *See—*

Maitlis, Peter M.; White, Colin; Kang, Jung W.; and Gill, Devinder S., 3,849,459.

Kanno, Kyusei, to Asahi Kogaku Kogyo Kabushiki Kaisha. Single lens reflex camera. 3,848,984, Cl. 354-38.000.

Kao Soap Co., Ltd.: *See—*

Inamoto, Inamoto; Nakayama, Hirokazu; Takenaka, Hidetsugu; and Kimura, Yoshitomo, 3,849,473.

Tokiwa, Fumikatsu; and Imamura, Tetsuya, 3,849,347.

Karle, Franklin J.: *See—*

Hargash, Paul; and Karle, Franklin J., 3,848,470.

Karlikowski, Jupp; and Michel, Hans, to Siemens Aktiengesellschaft. Etch-bleaching treatment of exposed and developed photo plates and films. 3,849,135, Cl. 96-36.000.

Karlson, Harald E., to Goldsworthy Engineering, Inc. Apparatus and method for producing no-twist center pull roving packages. 3,848,405, Cl. 57-71.000.

Kasahara, Masao; Namekawa, Toshihiko; Fujiwra, Keniti; Hirasawa, Shigeiti; and Sugiyama, Yasuo, to Mitsubishi Denki Kabushiki Kaisha. Communication system. 3,849,761, Cl. 340-146.10r.

Kashiwa, Ichiro: *See—*

Kuwamura, Hideaki; Kashiwa, Ichiro; Hirabayashi, Takashi; and Tamura, Tadayoshi, 3,849,346.

Katahira, Toshiaki; Izumi, Hiroshi; and Tokonami, Masao, to Matsushita Electric Industrial Co., Ltd. Apparatus for displaying characters and/or limited graphs. 3,849,773, Cl. 340-324.0ad.

Kato, Yoshiro; and Kado, Masaru, to Mitsui Toatsu Chemicals Inc. and Kumiai Chemical Industry Co., Ltd. Mixed herbicide composition. 3,849,109, Cl. 71-100.000.

Katoh, Yoshiki: *See—*

Rokugawa, Kyuji; Katoh, Yoshiki; Kuninaka, Akira; and Yoshino, Hiroshi, 3,849,249.

Katsuragawa Denki Kabushiki Kaisha: *See—*

Kinoshita, Koichi; and Fukuda, Tadaji, 3,849,129.

Katz, Howard M.: *See—*

Pryor, Rboert C.; and Katz, Howard M., 3,848,549.

Kaup, Friedel; and Warnke, Heinrich, to Miele & Cie. Method for coating steel parts with enamel. 3,849,175, Cl. 117-70.000.

Kautex-Werke Reinold Hagen GmbH: *See—*

Brieschke, Ewald; Kiefer, Esich; and Rolniczak, Heinz, 3,849,049.

Kaval, Paul W. Stove pipe elbow. 3,848,308, Cl. 29-157.00a.

Kawai, Yoshihiro, to Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho. Turn signal switch apparatus for motor vehicle. 3,849,613, Cl. 200-61.270.

Kawanishi, Yasuhiro: *See—*

Kurita, Yuko; Kawanishi, Yasuhiro; Yoshikawa, Katsuji; and Tanaka, Kiyoshi, 3,849,028.

Kawano, Masahisa: *See—*

Fujikawa, Tetsuzo; Kawano, Masahisa; and Yamamoto, Masaru, 3,848,574.

Kawano, Tsuyoshi: *See—*

Ishizaki, Keizo; Sekine, Hiroshi; Gondo, Hisashi; Wada, Koji; Kawano, Tsuyoshi; Watanabe, Hidekazu; Kanbayashi, Gou; and Maruyama, Tadasatsu, 3,849,209.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*

Matsui, Akio; Hasegawa, Yuji; and Fujimoto, Hiroshi, 3,849,356.

Kawasaki, Jun: *See—*

Endou, Hirohide; Kawasaki, Jun; Fujimoto, Yoshiji; Nakane, Keiichi; and Kitazume, Yoshiaki, 3,849,760.

Kawasaki Jyukogyo Kabushiki Kaisha: *See—*

Fujikawa, Tetsuzo; Kawano, Masahisa; and Yamamoto, Masaru, 3,848,574.

Kayamori, Hisashi: *See—*

Arai, Mamoru; Haneishi, Tatsuo; Kayamori, Hisashi; Takiguchi, Yoo; Kitano, Noritoshi; and Kaneko, Susumu, 3,849,398.

Kayser, Kenneth L. Blood-gas separating system for perfusate circulation. 3,849,071, Cl. 23-258.500.

Kazakov, Nikolai Efimovich; Shipitsin, Svyatoslav Sergeevich; Minchenko, Veniamin Alexandrovich; Kudryavtsev, Innokenty Mikhailovich; Zimin, Vladimir Afanasievich; and Pervitsky, Boris Antonovich. Extruder with rotating die head. 3,849,046, Cl. 425-208.000

Kazaoka, Kenichi; Hirose, Kimiharu; Matsumoto, Hisao; and Takeshita, Yasuo, to Aisin Seiki Kabushiki Kaisha. Seatbelt retractor. 3,848,888, Cl. 280-150.0sb.

Keagy, Edward, to Kaiser Industries Corporation. Apparatus for handling molds. 3,848,659, Cl. 164-405.000.

Kearse, William E.: *See—*

Crawford, Thomas G.; and Kearse, William E., 3,848,640.

Keenan, Thomas A.: *See—*

Claxton, Patrick H.; and Keenan, Thomas A., 3,848,714.

Keller, Chris F., Jr.: *See—*

Elliott, James O.; and Keller, Chris F., Jr., 3,849,711.

Keller, George E., II: *See—*

Albright, Charles W.; and Keller, George E., II, 3,849,075.

Keller, James P.: *See—*

Buntin, Robert R.; Keller, James P.; and Harding, John W., 3,849,241.

Kelso Marine, Inc.: *See—*

Linam, Richard Lee; and Sheehan, Hilary W., 3,849,626.

Kemmetmueller, Roland, to American Waagner-Biro Company, Inc. Bunker-boiler installations. 3,848,344, Cl. 34-168.000.

Kemper, Daryl M.: *See—*

Scott, Kelley E., Jr.; Kemper, Daryl M.; Grove, Lloyd E.; and Kiess, Ronald J., 3,849,681.

Kemper, Kate. Device for producing a continuous dough strip. 3,849,047, Cl. 425-238.000.

Kendall Company, The: *See—*

Schaar, Charles H., 3,848,599.

Kennecott Copper Corporation: *See—*

Skarbo, Roald R., 3,849,534.

Kennedy, Alexander W.: *See—*

Palm, Bert E.; and Kennedy, Alexander W., 3,849,141.

Kenney, Edward J.: *See—*

Di Salvo, Walter; Smith, Frank R., Jr.; and Kenney, Edward J., 3,849,327.

Kenon, Clarence. Golf set. 3,848,737, Cl. 206-315.000.

Kent, Francis Joseph; and Steinbrook, Seymour E., to Wean United, Inc. Control means for opposed rams of a press. 3,848,525, Cl. 100-48.000.

Kent, Raymond C., to Armstrong Cork Company. Method of making a non-woven needled fabric having a random linear streaked design. 3,849,223, Cl. 156-148.000.

Kent, Robert L.: *See—*

Hurtig, Carl R.; Kent, Robert L.; and Blumle, Leo J., 3,848,633.

Kerbit Pty. Ltd.: *See—*

Rochfort, William Phillip King, 3,849,017.

Kerfoot, Charles S.; and Halgas, Frank A., to Westinghouse Electric Corporation. Integrated dual voltage power supply. 3,849,701, Cl. 315-101.000.

Kern, Loyd Rupert, to Atlantic Richfield Company. Method of producing bitumen for a subterranean tar sand formation. 3,848,671, Cl. 166-248.000.

Kern, Walter, to Teradyne, Inc. High density terminal strip. 3,848,958, Cl. 339-148.00r.

Kerst, Al F.; Douros, John D., Jr.; and Brokl, Milan. 5-(5'Barbituri-lidene)-4-oxothiazolidine-2-imino HCl salt used as an antimicrobial agent. 3,849,560, Cl. 424-254.000.

Kerwin, Richard G.: *See—*

Milani, Dean L.; and Kerwin, Richard G., 3,848,582.

Kessler, Gustav; Frank, Erich; and Laumann, Volker, to Wiegand Karlsruhe GmbH. Falling film evaporator. 3,849,232, Cl. 159-13.00a.

Keyes, John J., Jr.: *See—*

Dial, Ralph E.; Keyes, John J., Jr.; and Krewson, John W., Jr., 3,848,466.

Khammous, Robert; Langlet, Andre; and Leclercq, Michel, to Compagnie Honeywell Bull (Societe Anonyme). Tantalum resistors with gold contacts. 3,849,757, Cl. 338-320.000.

Khwaja, Tasneem A.: *See—*

Robins, Roland K.; and Khwaja, Tasneem A., 3,849,397.

Kidd, Norman D.: *See—*

Hall, Richard C.; Kidd, Norman D.; and Daravingas, George V., 3,849,579.

Kiefer, Esich: *See—*

Brieschke, Ewald; Kiefer, Esich; and Rolniczak, Heinz, 3,849,049.

Kiess, Ronald J.: *See—*

Scott, Kelley E., Jr.; Kemper, Daryl M.; Grove, Lloyd E.; and Kiess, Ronald J., 3,849,681.

Kihlstedt, Per Gudmar, to AB Cold Bound Pellets. Method for purifying and agglomerating pyrite cinders. 3,849,111, Cl. 75-2.000.

Kikuchi, Makoto; Asano, Kiroaki; Otsu, Ikoo; and Saeki, Toyoaki, to Toyoda Koki Kabushiki Kaisha. Grinding apparatus for side surface of a workpiece. 3,848,362, Cl. 51-2.00k.

Kikumoto, Ryoji, to Mitsubishi Chemical Industries, Limited. Process for manufacturing 6-nitro-2-substituted hexanoic acid esters. 3,849,476, Cl. 260-478.000.

Kilgore, Roy L., to Lockheed Aircraft Corporation. Method and apparatus for supplying a temperature conditioned airflow to an open compartment in an explosion sustaining ambient surrounding. 3,848,662, Cl. 165-1.000.

Killens, Charles: *See—*

Degueldre, Louis; Killens, Charles; and Bourgeois, Louis, 3,849,282.

Kimberly-Clark Corporation: *See—*

Endres, Dan D., 3,848,595.

Endres, Dan D., 3,848,597.

Pennau, Karl L., 3,848,596.

Kimes, Lucas James: *See—*

Stanley, Michael Richard; and Kimes, Lucas James, 3,848,832.

Kimura, Fumio: *See—*

Shigehara, Itaru; Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Toki, Tadaaki; Takagi, Hidetoshi; Nasu, Rikuo; Yokomichi, Isao; Kimura, Fumio; and Someya, Shinzo, 3,849,503.

Kimura, Yoshitomo: *See—*

Inamoto, Inamoto; Nakayama, Hirokazu; Takenaka, Hidetsugu; and Kimura, Yoshitomo, 3,849,473.

King, Roy R., to Industrial Industries, Inc. Ventilating system. 3,848,521, Cl. 98-115.00k.

Kinnan, Frank R. Adjustable elbow for split conduit. 3,848,903, Cl. 285-179.000.

Kinney, Robert E.: *See—*

Anderson, James J.; Canacho, Vasco G.; and Kinney, Robert E., 3,849,368.

Kinoshita, Keijiro, to Nissan Motor Company, Limited. Hydraulic torque converter and power system incorporating same. 3,848,410, Cl. 60-347.000.

Kinoshita, Koichi; and Fukuda, Tadaji, to Katsuragawa Denki Kabushiki Kaisha. Electrophotographic element containing Se-Te alloy layers. 3,849,129, Cl. 96-1.500.

Kins Developments Limited: *See—*

Perry, Edward James; and Moumouloff, Paul, 3,848,664.

Kirimoto, Kazusuke; Hayashi, Takao; and Kojima, Hiroaki, to Asahi Glass Company, Ltd. Oil- and water-repellent composition comprising a polymer containing fluoroalkyl monomer units and an additive copolymer. 3,849,521, Cl. 260-900.000.

Kirkham, Kathleen E., to Franklin Mint Corporation. Method of producing a metal object with high relief and having a proof finish from powdered metal. 3,848,312, Cl. 29-160.600.

Kirwan, Donald J.; and Gainer, John L., to University of Virginia, The. Process for effecting enzymatic reactions in aerosols. 3,849,254, Cl. 195-116.000.

Kitano, Noritoshi: *See—*

Arai, Mamoru; Haneishi, Tatsuo; Kayamori, Hisashi; Takiguchi, Yoo; Kitano, Noritoshi; and Kaneko, Susumu, 3,849,398.

Kitazume, Yoshiaki: *See—*

Endou, Hirohide; Kawasaki, Jun; Fujimoto, Yoshiji; Nakane, Keiichi; and Kitazume, Yoshiaki, 3,849,760.

Kitrilakis, Sotiris, to Tecna Corporation. Intrauterine device. 3,848,590, Cl. 128-130.000.

Kittaka, Hirokazu: *See—*

Tabei, Kiyoshi; and Kittaka, Hirokazu, 3,848,406.

Klaenhammer, Bryan L., to Minnesota Mining and Manufacturing Company. Magnetic toner powder applicator. 3,849,161, Cl. 117-17.500.

Kleefeldt, Frank: *See—*

Watermann, Hans-Dieter; and Kleefeldt, Frank, 3,848,911.

Kleen Test Products, Inc.: *See—*

Haertle, Richard J., 3,849,225.

Klein, Arthur J.: *See—*

Bogart, George A., 3,848,845.

Kleinewefers Industrie Companie GmbH: *See—*

Lopata, Karl Peter, 3,848,439.

Kleinfeld, Jack M.: *See—*

Raymond, Delmar R.; and Kleinfeld, Jack M., 3,849,246.

Klemm, Robert W.: *See—*

Baker, William J.; Bos, John R.; and Klemm, Robert W., 3,848,789.

Kline, Granville B.: *See—*

Soper, Quentin F.; and Kline, Granville B., 3,849,110.

Klockner-Werke AG: *See—*

Krohm, Reinold, 3,848,729.

Klompas, Nicholas, to General Electric Company. Stator assembly. 3,849,023, Cl. 415-170.000.

Kloppenstein, King L., to Triangle Package Machinery Company. Liquid-repelling shield device. 3,848,688, Cl. 177-179.000.

Klutchko, Sylvester: *See—*

Von Strandtmann, Max; Klutchko, Sylvester; Kaminsky, Daniel; and Shavel, John, Jr., 3,849,446.

Knapp, Philip B., to Minnesota Mining & Manufacturing Co., mesne. Apparatus for manufacturing environmental seed cells. 3,849,041, Cl. 425-110.000.

Knerr, Richard Parke: *See—*

Fetty, Warren Newton; Knerr, Richard Parke; Gillespie, Richard Lee; and Bettencourt, Pierre Andre, 3,848,808.

Kniel, Ludwig, to Lummus Company, The. Fractionating LNG utilized as refrigerant under varying loads. 3,849,096, Cl. 62-23.000.

Knoll A.G. Chemische Fabriken: *See—*

Raschack, Manfred; and Bub, Oskar, 3,849,570.

Knorre, Helmut; and Leidl, Peter, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for gas-free packaging of molten alkali metal. 3,848,391, Cl. 53-7.000.

Knorre, Vadim Georgievich: *See—*

Tesner, Pavel Alexandrovich; Knorre, Vadim Georgievich; Podkopaev, Vladimir Fedorovich; Pakhtusova, Tamara Timofeevna; Baenkevich, Vsevolod Viktorovich; and Astakhov, Arkady Petrovich, 3,849,073.

Knowles, William S.; and Sabacky, M. Jerome, to Monsanto Company. Catalytic asymmetric hydrogenation. 3,849,480, Cl. 260-490.000.

Kobayashi, Masaaki: *See—*

Sato, Yasumasa; Matsuyama, Shigeru; and Kobayashi, Masaaki, 3,848,655.

Kobayashi, Teruo: *See—*

Hibino, Noburo; Seto, Kunihira; Kobayashi, Teruo; and Inoue, Kazuo, 3,849,139.

Kobe, Inc.: *See—*

McArthur, Ralph F.; and Geurts, Melle F., 3,849,030.

Kocher, Haribhajan S.: *See—*

Thettu, Raghulinga R.; and Kocher, Haribhajan S., 3,848,988.

Koda, Minoru; Shioyama, Tadao; and Nishiyama, Akio, to Matsushita Electric Industrial Co., Ltd. Video tape recorder in which the drum is rotated synchronously with signals on tape. 3,849,795, Cl. 360-73.000.

Koff, Fred W.: *See—*

Fuhrmann, Robert; Koff, Fred W.; and Pisanchyn, John, 3,849,481.

Koftfield, Richard E.: *See—*

Bennett, John E.; Burkhardt, James W.; and Koftfield, Richard E., 3,849,281.

Kohl, Hans: *See—*

Wolf, Erhard; Kohl, Hans; and Hartfelder, Gunter, 3,849,559.

Kohler, Erwin. Wig. 3,848,612, Cl. 132-53.000.

Kohno, Shoji: *See—*

Takagi, Atsushi; Miura, Mitsuo; Suzuki, Akio; Kukino, Yoshinori; Amagai, Kiyoshi; Shimizu, Haruji; Satoh, Mitsutoshi; Kohno, Shoji; and Ebine, Mitsuo, 3,848,685.

Koike, Hirotami; and Ueno, Katsuyoshi, to Nihon Denshi Kabushiki Kaisha. Scanning electron microscope. 3,849,647, Cl. 250-306.000.

Kojima, Hiroaki: *See—*

Kirimoto, Kazusuke; Hayashi, Takao; and Kojima, Hiroaki, 3,849,521.

Kokido, Hiroshi: *See—*

Fujimoto, Yoshiji; Hananoi, Toshihiro; Yasuda, Michio; Makihara, Hiroshi; Kuramizu, Masaru; Ota, Minoru; Kokido, Hiroshi; and Kadota, Shozo, 3,849,762.

Kolk, Erich: *See—*

Frielingsdorf, Hans; Mueller-Tamm, Heinz; Hoehr, Lothar; and Kolk, Erich, 3,849,334.

Kolling, Byron M., to Bynal Products Inc. Rubbish compactor-container with load release. 3,848,797, Cl. 232-43.100.

Kolm, Hubert Ernest: *See—*

Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,849,231.

Koltz, Irving Morton: *See—*

Wylie, Glenn John; and Koltz, Irving Morton, 3,848,356.

Komatsu, Noboru; Arai, Tohru; and Mizutani, Masayoshi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Casting method for aluminum or aluminum alloys and a mold therefor. 3,848,847, Cl. 249-115.000.

Kommanditbolaget United Stirling (Sweden) AB & Co.: *See—*

Bengtsson, John Ingemar; Hakansson, Sven Anders Samuel; Lundholm, Sven Gunnar K:Son; and Lonnberg, Lars, 3,848,877.

Gothberg, Yngve Roland, 3,848,413.

Kompelien, Arlon D.: *See—*

Larsen, Larry D.; and Kompelien, Arlon D., 3,849,685.

Konic, Wilhelm: *See—*

Geisler, Roland; and Konic, Wilhelm, 3,848,810.

Koninklijke Emballage Industrie Van Leer B.V.: *See—*

Naf, Willy B., 3,848,767.

Konishi, Masami; and Hikita, Kenji, to Nippondenso Co., Ltd. and Toyota Jidosha Kogyo Kabushiki Kaisha. Air cleaner for automobiles. 3,849,093, Cl. 55-316.000.

Koo, James Teh-Zen, to Bell Telephone Laboratories, Incorporated. Compensated IGFET flip-flop amplifiers. 3,849,673, Cl. 307-235.00r.

Kooi, Earl R.: *See—*

Armbruster, Frederick C.; and Kooi, Earl R., 3,849,194.

Koppers, Heinrich, Gesellschaft mit beschrankter Haftung: *See—*

Wiemer, Erich, 3,848,726.

Kordesch, Karl V., to Union Carbide Corporation. Anode and sensing cell for hydrazine fuel cell. 3,849,201, Cl. 136-86.00b.

Kornis, Gabriel; Steinhards, Arnolds; Nidy, Eldon George; and Vostral, Henry J., to Upjohn Company, The. Herbicidal composition and method. 3,849,106, Cl. 71-92.000.

Korotkov, Mikhail Alexeevich: *See—*

Lykov, Mikhail Vasilievich; Rybalchenko, Gleb Fedorovich; Korotkov, Mikhail Alexeevich; Dobrovolsky, Evgeny Ivanovich; Rudenko, Inna Lukinichna; Avilov, Oleg Vladimirovich; and Bljumberg, Yakov Benedictovich, 3,849,233.

Kortendieck, Wolfram: *See—*

Braun, Dieter; and Kortendieck, Wolfram, 3,848,285.

Koschak, Dennis F.: *See—*

Haley, Kenneth M.; Koschak, Dennis F.; Molinaro, Lawrence J.; and Reed, Richard L., 3,848,741.

Kosmatenko, Ivan Egorovich: *See—*

Tetjuev, Vladimir Alexandrovich; Medovar, Boris Izrailevich; Chekotilo, Leonty Vasilievich; Popov, Valery Georgievich; Tjurikov, Pavel Ivanovich; and Kosmatenko, Ivan Egorovich, 3,848,657.

Kossmann, Hans, to American Can Company. Apparatus method and valve for electrodepositing a coating on interior surfaces of container bodies. 3,849,284, Cl. 204-300.000.

Koucky, Robert Willis: *See—*

Blaskowski, Henry John; and Koucky, Robert Willis, 3,849,662.

Kozlowski, Robert H.; Sieg, Robert P.; and Scott, John W., to Chevron Research Company. Hydrocarbon conversion process. 3,849,082, Cl. 44-56.000.

Kraft, Russell H., to Fargo Mfg. Company, Inc. Self-sealing underground tap connector. 3,848,956, Cl. 339-98.000.

Kraklau, David M.; and Taylor, John H., to Advance Products Corporation. Surface indicator. 3,848,337, Cl. 33-174.00h.

Kramenic, Zdenek: *See—*

Zabrodsky, Zdenek; Augusta, Frantisek; and Kramenic, Zdenek, 3,848,641.

Krantz, H.: *See—*

Voswinckel, Gerhard, 3,848,826.

Kraus, Charles Edward, to Excelermatic, Inc. Traction roller transmission. 3,848,476, Cl. 74-206.000.

Krause, Hans-Dieter: *See—*

Sarstedt, Walter; Krause, Hans-Dieter; and Wisser, Hermann, 3,848,777.

Krauss-Maffei A.G.: *See—*

Bielfeldt, Friedrich Bernd; and Herbst, Richard, 3,849,048.

Krauss-Maffei Aktiengesellschaft: *See—*

Ghibu, Michael; Bohn, Gerhard; and Schwarzler, Peter, 3,849,724.

Krautkramer-Branson, Incorporated: *See—*

Bantz, Walter J.; Couture, John W.; and Pittaro, Richard J., 3,848,460.

Krenmayr, Willy, to Emhart Zurich S.A. Glass container inspection machine. 3,848,742, Cl. 208-111.700.

Krenzer, John, to Velsicol Chemical Corporation. Thiadiazole substituted triazines. 3,849,412, Cl. 260-248.0ns.

Kreuder, Hans-Joachim: *See—*

Dhein, Rolf; Rudolph, Hans; Kreuder, Hans-Joachim; and Gebauer, Herbert, 3,849,160.

Kreuz, Kenneth L.; and McMahon, Matthew A., to Texaco Inc. Motor fuel composition. 3,849,085, Cl. 44-78.000.

Krewson, John W., Jr.: *See—*

Dial, Ralph E.; Keyes, John J., Jr.; and Krewson, John W., Jr., 3,848,466.

Kroger, Harry; and Potter, Curtis N., to Sperry Rand Corporation. Method of manufacturing high frequency diode. 3,849,217, Cl. 156-11.000.

Krohm, Reinold, to Klockner-Werke AG. Scraper conveyor. 3,848,729, Cl. 198-171.000.

Kronebert, Hans-Gunther: *See—*

Hiltmann, Rudolf; Wollweber, Hartmund; Hoffmeister, Friedrich; and Kronebert, Hans-Gunther, 3,849,563.

Kropf, Manfred, to Triumph International Aktiengesellschaft. Cutting device for sewing machines. 3,848,554, Cl. 112-124.000.

Kropp, Willis A., to Hunt, Alexander C. Dual motion child resistant closure. 3,848,763, Cl. 215-225.000.

Krouse, Theodore L. Building structure fastener. 3,849,012, Cl. 403-188.000.

Kruger, Gunther, to Steele Chemicals Co., Ltd. 19-Oxygenated and 19-norΔ^{8}(14)-steroid compounds. 3,849,402, Cl. 260-239.55r.

- Krumkalns, Eriks V.; and White, William A., to Lilly, Eli, and Company. 3Benzylpyridines. 3,849,423, Cl. 260-294.80g.
- Kubo, Masanori: *See—*
  - Funakubo, Eiichi; Matsuo, Tetsuo; Taira, Takeshi; Kamada, Taichi; Harada, Hiroshi; Tanimura, Shoichiro; and Kubo, Masanori, 3,849,298.
- Kubu, Stanley, to Burger King Corporation. Extended storage life lettuce process and product. 3,849,581, Cl. 426-145.000.
- Kuchinsky, Saul; Shesser, Arthur B.; Somlyody, Arpad; and Fehnel, Richard B., to Burroughs Corporation. Multiple position display panel having segmented electrodes. 3,849,693, Cl. 313-519.000.
- Kuckertz, Wilhelm: *See—*
  - Uerlichs, Johannes; Muller, Rudolf; and Kuckertz, Wilhelm, 3,848,665.
- Kudryavtsev, Innokenty Mikhailovich: *See—*
  - Kazakov, Nikolai Efimovich; Shipitsin, Svyatoslav Sergeevich; Minchenko, Veniamin Alexandrovich; Kudryavtsev, Innokenty Mikhailovich; Zimin, Vladimir Afanasievich; and Pervitsky, Boris Antonovich, 3,849,046.
- Kuehn, Donald E.; and Lyon, J. Keith, to TRW Inc. Method of attaching a fastener to a support with an air operated gun. 3,848,322, Cl. 29-453.000.
- Kuehnhanss, Gerhard O., to Ethyl Corporation. Process of converting sultones to hydroxyalkylsulfonates. 3,849,486, Cl. 260-513.00r.
- Kuffner, Karl; and Glockner, Hans, to Agfa-Gevaert Aktiengesellschaft. Diffusion-resistant dispersible yellow couplers for the production of photographic color images. 3,849,140, Cl. 96-100.000.
- Kuhl, Hans. Energy transformer for securing a safety belt on a seat of a vehicle. 3,848,828, Cl. 242-107:300.
- Kuhlmann, Ugine: *See—*
  - Mingasson, Georges Raymond Henry; and Domergue, Annick Martha Suzanne Simone, 3,849,331.
- Kuki, Akio: *See—*
  - Omiya, Shoji; Hayashi, Yoshiaki; and Kuki, Akio, 3,849,796.
- Kukino, Yoshinori: *See—*
  - Takagi, Atsushi; Miura, Mitsuo; Suzuki, Akio; Kukino, Yoshinori; Amagai, Kiyoshi; Shimizu, Haruji; Satoh, Mitsutoshi; Kohno, Shoji; and Ebine, Mitsuo, 3,848,685.
- Kulart Victor Corporation: *See—*
  - Chedister, Conkling; and Beckman, Frank H., 3,848,981.
- Kulik, Joseph S., Jr.: *See—*
  - Huston, Leroy S.; and Kulik, Joseph S., Jr., 3,849,687.
- Kull, Leo. Rotating egg coloring device. 3,848,564, Cl. 118-13.000.
- Kumiai Chemical Industry Co., Ltd.: *See—*
  - Kato, Yoshiro; and Kado, Masaru, 3,849,109.
- Kumysh, Ilya Iosifovich: *See—*
  - Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Kumysh, Ilya Iosifovich; Tsykulenko, Anatoly Konstantinovich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Bondarenko, Oleg Petrovich; and Bogachenko, Alexei Georgievich, 3,849,588.
- Kuninaka, Akira: *See—*
  - Rokugawa, Kyuji; Katoh, Yoshiki; Kuninaka, Akira; and Yoshino, Hiroshi, 3,849,249.
- Kunsman, Laurence D. High strength high conductivity aluminum alloy windings in large core form transformers. 3,849,210, Cl. 148-12.700.
- Kuper, Heinrich: *See—*
  - Ortel, Gerhard, 3,849,222.
- Kurahashi, Akira: *See—*
  - Yamaji, Keizo; and Kurahashi, Akira, 3,848,989.
- Kuramizu, Masaru: *See—*
  - Fujimoto, Yoshiji; Hananoi, Toshihiro; Yasuda, Michio; Makihara, Hiroshi; Kuramizu, Masaru; Ota, Minoru; Kokido, Hiroshi; and Kadota, Shozo, 3,849,762.
- Kurashina, Kozo: *See—*
  - Arimura, Ichiro; Higashida, Yutaka; and Kurashina, Kozo, 3,849,794.
- Kurihara, Norman H.; and Bublitz, Donald E., to Dow Chemical Company, The. Chloro-p-dithiimo pyridazine-dicarbonitriles. 3,849,415, Cl. 260-250.0ac.
- Kurio, Noriyuki, to Toyo Kogyo Co., Ltd. Rotary piston type engine. 3,849,038, Cl. 418-142.000.
- Kurita, Yuko; Kawanishi, Yasuhiro; Yoshikawa, Katsuji; and Tanaka, Kiyoshi, to Sanyo Electric Co., Ltd. and Tokyo Sanyo Electric Co., Ltd. Structure for supporting a motor-compressor unit in a housing. 3,849,028, Cl. 417-363.000.
- Kuroishi, Kenitiro, to MHK Spring Co., Ltd. Occupant seat. 3,848,926, Cl. 297-452.000.
- Kusters, Norbert L.; and Moore, William J. M., to Canadian Patents and Development Limited. Current comparator for power and energy measurements. 3,849,727, Cl. 324-142.000.
- Kuts, Mathew, to Goodrich, B. F., Company, The. Fabric cutting. 3,848,501, Cl. 83-471.300.
- Kuwamura, Hideaki; Kashiwa, Ichiro; Hirabayashi, Takashi; and Tamura, Tadayoshi, to Lion Fat and Oil Company Limited. Process for preparing granular detergent composition. 3,849,346, Cl. 252-531.000.
- Kydd, Paul H., to General Electric Company. Manufacture of fluid-cooled gas turbine airfoils. 3,848,307, Cl. 29-156.80b.
- Kykhno, Semen Leonidovich: *See—*
  - Gurevich, Samuil Mordkovich; Zamkov, Vadim Nikolaevich; Prilutsky, Valery Pavlovich; Topolsky, Vladimir Filippovich; Podkopai, Nikolai Vasilievich; Manoilo, Sergei Afanasievich; and Kykhno, Semen Leonidovich, 3,849,211.
- Kyowa Hakko Kogyo Co., Ltd.: *See—*
  - Nakayama, Kiyoshi; and Hagino, Hiroshi, 3,849,251.
- Kyowa Hakko Kogyo Kabushiki Kaisha: *See—*
  - Nakayama, Kiyoshi; and Yoshida, Hajime, 3,849,250.
- La-Z-Boy Chair Company: *See—*
  - Shoemaker, Edwin J.; Gensler, Edwin G.; and White, David B., 3,848,924.
- Labaz: *See—*
  - Descamps, Marcel; and Inion, Henri, 3,849,564.
- Lacaze, Leonard, Jr., to Ford Motor Company. Apparatus for controlling an inflatable safety device. 3,848,695, Cl. 180-103.000.
- Ladenburg, Kurt: *See—*
  - Harvey, Richard D.; and Ladenburg, Kurt, 3,849,253.
- Laflin, Reginald E., to A.P.V. Paralec Limited. Furnaces. 3,849,585, Cl. 13-26.000.
- Lakomsky, Victor Iosifovich: *See—*
  - Paton, Boris Evgenievich; Lakomsky, Victor Iosifovich; Melnik, Gary Alexandrovich; Chvertko, Anatoli Ivanovich; and Bukalo, Alfred Iosifovich, 3,849,584.
- Lamberti, Vincent, to Lever Brothers Company. Ester-linked derivatives of carbohydrates as builders for detergent compositions. 3,849,341, Cl. 252-546.000.
- Lambrich, Hans Peter: *See—*
  - Peter, Rene; and Lambrich, Hans Peter, 3,849,696.
- Lancaster, Paul M.; and Paquet, Eugene H., to Whitney, W. A., Corporation. Press for punching holes in tubular members. 3,848,497, Cl. 83-192.000.
- Land, Edwin H., to Polaroid Corporation. Self-cleaning photographic transparency processing and projection system. 3,848,979, Cl. 352-48.00r.
- Landy, Arney, Jr.: *See—*
  - Dulebohn, David H.; Landy, Arney, Jr.; and Brandt, Roy Earl, 3,849,624.
- Langenhoff, Hubert Heinrich: *See—*
  - Meyering, Otto; and Langenhoff, Hubert Heinrich, 3,848,644.
- Langevin, Wilfred L.: *See—*
  - Fuller, George A., Jr.; Langevin, Wilfred L.; Lutts, Carlton G.; and Neiley, Geoffrey C., Jr., 3,848,866.
- Langlet, Andre: *See—*
  - Khammous, Robert; Langlet, Andre; and Leclercq, Michel, 3,849,757.
- Langsdorf, William P., Jr.: *See—*
  - Bucha, Harry C.; and Langsdorf, William P., Jr., 3,849,102.
- Lankford, Larry G.; and Whittle, William R., to International Business Machines Corporation. Adaptive numerically controlled machine tool responsive to deflection forces on the tool normal to the cutting path. 3,849,712, Cl. 318-561.000.
- Lansing Bagnall Limited: *See—*
  - Goodacre, Cecil; and Leggett, Peter Alfred, 3,848,759.
- Larox Research Corporation: *See—*
  - Lloyd, William G.; and Rowe, Donald R., 3,849,336.
- Larsen, Larry D.; and Kompelien, Arlon D., to Honeywell Inc. Ionization chamber with recessed radioactive body. 3,849,685, Cl. 313-54.000.
- Larsson, John Roland, to Aktiebolaget Assa. Pressure converter. 3,848,414, Cl. 60-593.000.
- Lartigau, Guy: *See—*
  - Bourdin, Francois; Costantini, Michel; Jouffret, Michel; and Lartigau, Guy, 3,849,502.
- Lashley, James C.: *See—*
  - Allen, James E.; Lashley, James C.; and Noelting, C. Bernard, 3,848,280.
- Laumann, Volker: *See—*
  - Kessler, Gustav; Frank, Erich; and Laumann, Volker, 3,849,232.
- Laurent, Daniel; and Ligones, Hubert, to Societe Dauphinoise Electrique. Ball-joint support device for a rail conductor of a current-collecting system. 3,848,713, Cl. 191-32.000.
- Laurent, Jean: *See—*
  - Girard, Andre; and Laurent, Jean, 3,849,005.
- Lawlor, James J., to P.D.Q. Plastics, Inc. Pallet. 3,848,546, Cl. 108-52.000.
- Lawrence, Lu. Method for comparison using simultaneous displays on a visual monitor. 3,849,596, Cl. 178-6.800.
- Lawrence, Thomas Russell; and Saltzberg, Burton R., to Bell Telephone Laboratories Incorporated. Interface apparatus for receiving and monitoring pilot signals which control a timing signal generator. 3,849,733, Cl. 328-155.000.
- Lazzarini, Louis P., 1/2 to Hanscom, Genevieve I. and 1/2 to Hanscom, Genevieve I., Magnuson, Robert, and Thompson, Louis J., as Trustees of the Estate of Magnuson, Roy M., deceased. Rotary slicer for fruits and vegetables. 3,848,498, Cl. 83-401.000.
- Le Page, Madeleine: *See—*
  - Daumas, Jean-Claude; and Le Page, Madeleine, 3,849,338.
- Leach, James A.: *See—*
  - Bustos, Rafael T.; and Leach, James A., 3,849,608.
- Leanza, William J.: *See—*
  - Christensen, Burton G.; Leanza, William J.; and Beattie, Thomas R., 3,849,482.
- Leather, Russell Allan: *See—*
  - Halley, David Walker; and Leather, Russell Allan, 3,848,946.

- LeBegue, Maurice K., to National Mine Service Company. Continuous mining machine with drive to angled end sections. 3,848,930, Cl. 299-76.000.
- Leclercq, Michel: *See—*
  - Khammous, Robert; Langlet, Andre; and Leclercq, Michel, 3,849,757.
- Lectrosonics, Inc.: *See—*
  - Gilmer, Thomas P., Jr., 3,848,944.
- Lee, Raymond, Organization, Inc., The: *See—*
  - Chase, Herbert S., 3,848,545.
  - Ebner, Edwin D., 3,848,846.
  - Wanless, Varney V., 3,848,649.
- Leggett & Platt Incorporated: *See—*
  - Bustos, Rafael T.; and Leach, James A., 3,849,608.
- Leggett, Peter Alfred: *See—*
  - Goodacre, Cecil; and Leggett, Peter Alfred, 3,848,759.
- Legler, John G., to Skil Corporation. Impact clutch mechanism. 3,848,680, Cl. 173-93.500.
- Lehtovaara, Jorma J., to Lonnstrom Oy. Method and apparatus for forming a support lug of a cathode starting sheet assembly. 3,848,326, Cl. 29-525.000.
- Leibrick, Peter; and Terry, Nick H., to Butz Engineering Corporation. Conveyor and sorting system. 3,848,728, Cl. 198-155.000.
- Leidig, Raymond H. Rim power hydraulic motor. 3,849,039, Cl. 418-165.000.
- Leidl, Peter: *See—*
  - Knorre, Helmut; and Leidl, Peter, 3,848,391.
- Leighton, Peter Watson, to Lucas Electrical Company Limited, The. Capacitors. 3,849,708, Cl. 317-260.000.
- Leistner, Werner, to Siemens Aktiengesellschaft. Pole element for a synchronous electric machine having a laminated link rotor. 3,849,683, Cl. 310-218.000.
- Lemanski, Chester G., to Mobil Oil Corporation. Use of thiadiazole hydrazones as bactericides. 3,849,567, Cl. 424-270.000.
- Leng, John Lindley: *See—*
  - Corby, Neville Slater; Hunter, James Stuart; and Leng, John Lindley, 3,849,393.
- Lengnick, Guenther Fritz, to Stauffer Chemical Company. Room temperature curable organopolysiloxanes. 3,849,462, Cl. 260-448.20d.
- Leonard, Charles E., to General Electric Company. Subject integument spatial stimulator. 3,848,608, Cl. 128-419.00r.
- Leutwyler, Roy: *See—*
  - Jureit, John Calvin; Cotten, Howell J.; Castillo, Adolfo; and Leutwyler, Roy, 3,848,791.
- Lever Brothers Company: *See—*
  - Jordan, Ingo, 3,848,757.
  - Lamberti, Vincent, 3,849,341.
  - Roberts, Allan, 3,849,184.
- Levey, John S. Decorative room air treating device. 3,848,803, Cl. 239-59.000.
- Levine, Joel Martin: *See—*
  - Harvey, Edgar Lloyd; and Levine, Joel Martin, 3,849,694.
- Levy, Leon M., to Selfix, Inc. Fixture assembly. 3,848,843, Cl. 248-224.000.
- Levy, Louis: *See—*
  - Draper, Marshall D.; and Levy, Louis, 3,849,578.
- Lewis, Richard L., to Bendix Corporation, The. Vehicle braking systems having height sensing proportioning valve. 3,848,932, Cl. 303-6.00c.
- Lewis, Sheldon N.; and Miller, George A., to Rohm and Haas Company. Process for the preparation of 3-isothiazolones and 3-hydroxyisothiazoles. 3,849,430, Cl. 260-302.00a.
- Libbey-Owens-Ford Company: *See—*
  - Maltby, Robert E., Jr.; and O'Connell, Thomas B., 3,849,099.
- Libit, Sidney M. Child-proof closures. 3,848,761, Cl. 215-220.000.
- Licentia Patent-Verwaltungs GmbH: *See—*
  - Forster, Johannes; Bezold, Karl-Heinz; and Neihage, Helmut, 3,849,718.
- Licentia Patent-Verwaltungs-GmbH: *See—*
  - Gottsmann, Hartmut; and Specovius, Joachim, 3,849,790.
- Liebman, Alfred A.: *See—*
  - Samuelsen, Bryan; and Liebman, Alfred A., 3,848,806.
- Liechti, Peter: *See—*
  - Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,849,163.
- Ligones, Hubert: *See—*
  - Laurent, Daniel; and Ligones, Hubert, 3,848,713.
- Likhyani, Kewal Krishan: *See—*
  - Ficklinger, Thomas Franklin; Jeter, Watt Nixon; and Likhyani, Kewal Krishan, 3,849,074.
- Lilly, Eli, and Company: *See—*
  - Delong, Donald C.; Lively, David H.; and Neuss, Norbert, 3,849,419.
  - Krumkalns, Eriks V.; and White, William A., 3,849,423.
  - Shields, James E., 3,849,389.
  - Soper, Quentin F.; and Kline, Granville B., 3,849,110.
- Linam, Richard Lee; and Sheehan, Hilary W., to Kelso Marine, Inc. Apparatus for controlling the welding pattern between weldment components. 3,849,626, Cl. 219-124.000.
- Linder, Bernd, to General Electric Company. Method of drying coated wires. 3,848,341, Cl. 34-25.000.
- Linder, Fritz. Substrate-containing test container. 3,849,256, Cl. 195-139.000.
- Lindstrom, Roald E.: *See—*
  - Scheiner, Bernard J.; Lindstrom, Roald E.; and Henrie, Thomas A., 3,849,265.
- Lines, Walter M.; Alsop, Alfred N.; and Ross, Edgar A. Wheeled trolley. 3,848,884, Cl. 280-36.00b.
- Lingl Corporation: *See—*
  - Lingl, Hans, 3,849,228.
- Lingl, Hans, to Lingl Corporation. Method and apparatus to construct wall panels. 3,849,228, Cl. 156-297.000.
- Linhart, James T.; Crosswell, Flay D.; and Galbreath, Gerald W. Cargo deflector panel. 3,848,920, Cl. 296-106.000.
- Link, Donald A.; and Williams, Fred H., to Cutler-Hammer, Inc. Electric circuit breakers. 3,849,751, Cl. 337-59.000.
- Linning, David Lees. Indicators for indicating accelerations in sports equipment which are swung in use. 3,848,873, Cl. 273-186.00a.
- Lion Fat and Oil Company Limited: *See—*
  - Kuwamura, Hideaki; Kashiwa, Ichiro; Hirabayashi, Takashi; and Tamura, Tadayoshi, 3,849,346.
- Lisk Savory Corporation: *See—*
  - Malisz, John M., 3,849,620.
- Littlewood, Peter Stuart: *See—*
  - Basel, Horst Aebli; Fleck, Fritz; Littlewood, Peter Stuart; and Mercer, Alec Victor, 3,849,406.
- Litton Systems, Inc.: *See—*
  - Rosenheck, Bernard M., 3,849,592.
- Lively, David H.: *See—*
  - Delong, Donald C.; Lively, David H.; and Neuss, Norbert, 3,849,419.
- Livingston, Clifton W. Mining method using control blasting. 3,848,927, Cl. 299-13.000.
- Livingston, David T., to Reinell Boats, Inc. Stringer system for glass fiber-reinforced boat hulls. 3,848,284, Cl. 9-6.000.
- Lloyd, Keith Andrew; and Fisher, Eugene Jay, to Union Carbide Corporation. Semi-conducting polymer system comprising a copolymer of ethylene-ethyl acrylate or vinyl acetate, ethylene-propylene-termonomer and carbon black. 3,849,333, Cl. 252-511.000.
- Lloyd, William G.; and Rowe, Donald R., to Larox Research Corporation. Palladium compositions suitable as oxidation catalysts. 3,849,336, Cl. 252-438.000.
- Lockard, Joseph Larue; and Rose, William Henry, to AMP Incorporated. Slide switch with individual slide operations. 3,849,610, Cl. 200-5.00r.
- Lockheed Aircraft Corporation: *See—*
  - Kilgore, Roy L., 3,848,662.
  - Weber, Kenneth E.; Crozier, Donald G.; and Hawley, Wilbur W. (said Weber and said Crozier assors. to), 3,849,264.
- Lockie, Arthur M.; and Hatch, Jeffrey A., to Westinghouse Electric Corporation. Electrical connector for tapping a concentric electrical cable. 3,848,955, Cl. 339-97.00r.
- Loebs, Richard G.: *See—*
  - Gobble, Glenn R.; and Loebs, Richard G., 3,849,078.
  - Gobble, Glenn R.; and Loebs, Richard G., 3,849,122.
- Loeffler, Earl Ferdnand: *See—*
  - Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,849,231.
- Loft, Bryan Clarence: *See—*
  - Swift, Jean Drummond; Hawthorne, David Geoffrey; Loft, Bryan Clarence; and Solomon, David Henry, 3,849,149.
- London, Joe F., Jr., to Burlington Industries, Inc. Intermittent texturized yarn and false-twist apparatus and process for producing the same. 3,848,404, Cl. 57-34.0hs.
- Long, Robert Byron, to Esso Research and Engineering Company. Process for removing metals from petroleum residua. 3,849,297, Cl. 208-251.00r.
- Lonnberg, Lars: *See—*
  - Bengtsson, John Ingemar; Hakansson, Sven Anders Samuel; Lundholm, Sven Gunnar K:Son; and Lonnberg, Lars, 3,848,877.
- Lonnstrom Oy: *See—*
  - Lehtovaara, Jorma J., 3,848,326.
- Loofbourow, Robert L. Storage of gas in underground excavation. 3,848,427, Cl. 62-260.000.
- Lopata, Karl Peter, to Kleinewefers Industrie Companie GmbH. Device for impregnating and dyeing wide textile webs. 3,848,439, Cl. 68-184.000.
- Lopker, Edwin B., to Pullman Incorporated, mesne. Belt for a vacuum filter. 3,849,313, Cl. 210-400.000.
- Lourigan, Ronald F., to Webster Electric Company, Inc. SCR commutation circuit for current pulse generators. 3,849,670, Cl. 307-108.000.
- Louthan, Rector P., to Philipps Petroleum Company. Process for making polymercaptans. 3,849,443, Cl. 260-327.00r.
- Lovness, William R.; and Feldhaus, James F., to Minnesota Mining and Manufacturing Company. Apparatus for treating objects with particles moved by magnetic force. 3,848,363, Cl. 51-7.000.
- Loweth, Carl V.: *See—*
  - Porter, James M.; Loweth, Carl V.; and Gilster, Kenneth W., 3,848,430.
- Lu, John Hsueh Chung: *See—*
  - Wang, Kuei-Send; Epstein, Philip L.; and Lu, John Hsueh Chung, 3,849,764.
- Lucas Electrical Company Limited, The: *See—*
  - Leighton, Peter Watson, 3,849,708.
- Lucas, Robert G., to Beloit Corporation. Variable curvature beam. 3,848,304, Cl. 29-116.0ad.
- Luck, Allan J.: *See—*

Eaton, James W.; and Luck, Allan J., 3,848,384.
Lueschen, William J.: *See—*
Sejpal, Vasant D.; Lueschen, William J.; and Weinstein, Bernard, 3,849,580.
Luethi, Christian: *See—*
Eigenmann, Gottfried; Kaiser, Leo; and Luethi, Christian, 3,849,155.
Lukacs, George J.: *See—*
Drelich, Arthur H.; and Lukacs, George J., 3,849,173.
Lummus Company, The: *See—*
Kniel, Ludwig, 3,849,096.
Lundholm, Sven Gunnar K:Son: *See—*
Bengtsson, John Ingemar; Hakansson, Sven Anders Samuel; Lundholm, Sven Gunnar K:Son; and Lonnberg, Lars, 3,848,877.
Luppino, Antonio, to PPG Industries, Inc. Tempering glass sheets. 3,849,100, Cl. 65-348.000.
Lutts, Carlton G.: *See—*
Fuller, George A., Jr.; Langevin, Wilfred L.; Lutts, Carlton G.; and Neiley, Geoffrey C., Jr., 3,848,866.
Lyashenko, Ivan Vasilievich: *See—*
Chukhanov, Zinovy Zinovievich; Chukhanov, Zinovy Fedorovich; Panov, Vladimir Illarionovich; Nikolaev, Anatoly Mikhailovich; Tsuprov, Sergei Andreevich; and Lyashenko, Ivan Vasilievich, 3,848,536.
Lykov, Mikhail Vasilievich; Rybalchenko, Gleb Fedorovich; Korotkov, Mikhail Alexeevich; Dobrovolsky, Evgeny Ivanovich; Rudenko, Inna Lukinichna; Avilov, Oleg Vladimirovich; and Bljumberg, Yakov Benedictovich; deceased (by Bljumberg, Anna Benedictovna; exectrix). Method of production of granulated product. 3,849,233, Cl. 159-48.00r.
Lyon, J. Keith: *See—*
Kuehn, Donald E.; and Lyon, J. Keith, 3,848,322.
M&T Chemicals Inc.: *See—*
Daniels, David A.; and Davis, William R., 3,849,460.
Ma, Gabriel W. C.; and Poulson, Don E. Method for interbody fusion of the spine. 3,848,601, Cl. 128-305.000.
Maass, Gunter; Engel, Frederico; Bernemann, Paul; and Blumel, Harald, to Chemische Werk Huls Aktiengesellschaft. Process for the production of homogenous rubber-silica mixtures. 3,849,363, Cl. 260-3.6aq.
MacAlpine, Alexander D. Coupling for connecting tandem trailer to bicycle. 3,848,890, Cl. 280-204.000.
MacDowell, John F.: *See—*
Giffen, James W.; Duke, David A.; Dumbaugh, William H., Jr.; Flannery, James E.; MacDowell, John F.; and Megles, John E., 3,849,097.
MacKay, James D.: *See—*
Gade, John N.; and MacKay, James D., 3,848,315.
Mackey, Walter J. Process of preparing skeletal-vascular casts. 3,848,346, Cl. 35-20.000.
Maddox, Jim, Jr.; and Tao, Fan-Sheng, to Texaco, Inc. Method of sweetening natural gas. 3,849,540, Cl. 423-224.000.
Madrid, Robert W.; and Hagenbach, Robert J., to Xerox Corporation. Electrostatographic process in which coated carrier particles are used. 3,849,127, Cl. 96-1.0sd.
Maeda, Hidenori; Matsui, Yujiro; Ikeda, Tsukasa; and Mohri, Eikichi, to Taisei Kensetsu Kabushiki Kaisha. Waste gas collecting device of converter. 3,848,860, Cl. 266-18.000.
Maeda, Nobutaka: *See—*
Iwasaki, Yasuhiro; Tsukamoto, Hidehiko; Maeda, Nobutaka; and Takeuchi, Chikara, 3,848,446.
Maeda, Tadao: *See—*
Nakamura, Toshio; Maeda, Tadao; Takenaka, Hiroshi; and Yamahira, Yoshiya, 3,849,558.
Maeder, Erwin: *See—*
Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,849,163.
Maggs, Frederick Arthur Pomroy: *See—*
Bailey, Alan; Maggs, Frederick Arthur Pomroy; and Williams, John Herbert, 3,849,332.
Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E. N-substituted fatty acid amide lubricants. 3,849,321, Cl. 252-46.700.
Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., to United States of America, Agriculture. N-substituted fatty acid amide lubricants. 3,849,454, Cl. 260-403.000.
Magrini-Fabbriche Riunite Magrini-Scarpa e Magnano M.S.M. S.p.A.: *See—*
Calvino y Teijeiro, Benito Jose, 3,849,616.
Maier, Ludwig, to Monsanto Company. Phosphorus compounds containing the atom skeleton P-(C-P)$_2$ or P-(C-P)$_3$. 3,849,523, Cl. 260-932.000.
Mainard, Douglas Raymond: *See—*
Beasley, Robert Malcolm; Mainard, Douglas Raymond; and Washington, Derek, 3,849,692.
Maitlis, Peter M.; White, Colin; Kang, Jung W.; and Gill, Devinder S., to Canadian Patents and Development Limited. Catalylic compounds and processes for their preparation. 3,849,459, Cl. 260-429.0cy.
Makeham, Sam Robert, to Massey-Ferguson (Australia) Limited. Sugar cane harvesters. 3,848,399, Cl. 56-13.900.
Makihara, Hiroshi: *See—*
Fujimoto, Yoshiji; Hananoi, Toshihiro; Yasuda, Michio; Makihara, Hiroshi; Kuramizu, Masaru; Ota, Minoru; Kokido, Hiroshi; and Kadota, Shozo, 3,849,762.
Malievsky, Alexandr Dmitrievich; Vints, Viktor Vladimirovich; Emanuel, Nikolai Markovich; and Parfenov, Viktor Nikolaevich. Method for preparing sulfoxides and sulfones. 3,849,499, Cl. 260-607.00a.
Malisz, John M., to Lisk Savory Corporation. Deadman control. 3,849,620, Cl. 200-157.000.
Malnaison, Nadella Ruid: *See—*
Pitner, Alfred, 3,848,939.
Maloney, Thomas C.; and Miller, Donald E., to Burroughs Corporation. Display panel having rows and columns of cells with wide viewing angle. 3,849,688, Cl. 313-188.000.
Maltby, Robert E., Jr.; and O'Connell, Thomas B., to Libbey-Owens-Ford Company. Scanning apparatus for measuring glass temperatures. 3,849,099, Cl. 65-158.000.
Malvin, Harry Herbert. Fluorescence cuvette. 3,849,654, Cl. 250-363.000.
Malzahn, Wayne R.: *See—*
Blagdon, Peter A.; Malzahn, Wayne R.; and Fujiwara, Huygene K., 3,849,582.
Mammino, Joseph: *See—*
Wells, John B.; and Mammino, Joseph, 3,849,132.
Manara, Giovanni; and Fattore, Vittorio, to Snam Progetti, S.p.A. Process for the preparation of oxidation catalysts and catalysts obtained thereby. 3,849,337, Cl. 252-439.000.
Mangold, Dietrich; Fischer, Adolf; Rohr, Wolfgang; and Hamprecht, Gerhard, to BASF Aktiengesellschaft. Substituted O-(aminosulfonyl)-glycolic anilides. 3,849,467, Cl. 264-456.00a.
Manjikian, Serop. Reverse osmosis water purifying system for household use. 3,849,305, Cl. 210-23.000.
Manning, Harold E., to Petro-Tex Chemical Corporation. Oxidative dehydrogenation with manganese ferrite catalysts. 3,849,511, Cl. 260-680.00e.
Manoilo, Sergei Afanasievich: *See—*
Gurevich, Samuil Mordkovich; Zamkov, Vadim Nikolaevich; Prilutsky, Valery Pavlovich; Topolsky, Vladimir Filippovich; Podkopai, Nikolai Vasilievich; Manoilo, Sergei Afanasievich; and Kykhno, Semen Leonidovich, 3,849,211.
Manuel, Larry N.; deceased (by Manuel, Ruby Joy; administratrix). Padlock case. 3,848,440, Cl. 70-55.000.
Manuel, Ruby Joy: *See—*
Manuel, Larry N., 3,848,440.
Manyek, Leonard F., to Stanray Corporation. Tandem wheel truing machine. 3,848,513, Cl. 90-16.000.
Marchione, Joseph H.; and Skubal, John J., to Atwood Vacuum Machine Company, The. Dual action conical door hinge system. 3,848,293, Cl. 16-163.000.
Mardla, Ilmar: *See—*
Jysky, Goran; Mardla, Ilmar; and Ericsson, Bjorn, 3,848,686.
Mareschal, Jean: *See—*
Ferrand, Bernard; Forrat, Francis; Grange, Yves; Joubert, Jean-Claude; and Mareschal, Jean, 3,849,193.
Marhold, Werner: *See—*
Bruce, Roger K.; Marhold, Werner; and Adickes, Cecil F., 3,849,053.
Marine Colloids Inc.: *See—*
Moirano, Arthur L., 3,849,395.
Marks, Alvin M. Forced closure dipolar electro-optic shutter and method. 3,848,964, Cl. 350-160.00r.
Marlin, Lawrence; and Schwarz, Eric George, to Union Carbide Corporation. Process for providing a backing on carpets. 3,849,156, Cl. 117-10.000.
Marosi, Michael N., to Convertex, Ltd. Aluminum element having integral sepia surface and method therefor. 3,849,207, Cl. 148-6.270.
Marosi, Michael N., to Convertex, Ltd. White, opaque conversion coating on aluminum. 3,849,208, Cl. 148-6.270.
Marsh, Frank Dennis, to Du Pont de Nemours, E. I., and Company. N-cyanoimines and N-cyanoaziridines. 3,849,465, Cl. 260-453.00r.
Marsh, Paul G.; and Chupka, David E., to Black Clawson Fibreclaim Inc. Separation of greasy liquids and recovery of paper fiber from municipal refuse. 3,849,245, Cl. 162-4.000.
Martin, Ames R., to General Motors Corporation. Sheet metal piston for transmissions and method of making a piston assembly. 3,848,518, Cl. 92-107.000.
Martin, Theodore T.; and Allen, Marvin C., to Continental Oil Company. Method for the separation of saturated from unsaturated compounds. 3,849,300, Cl. 208-310.000.
Martinez, Isidore M. Knee implant device. 3,848,276, Cl. 3-1.000.
Martucci, John Anthony, to Combustion Engineering, Inc. Light water reactor primary coolant leakage monitor. 3,849,655, Cl. 250-366.000.
Maruto, Shunsuke: *See—*
Iwasa, Junzo; Maruto, Shunsuke; Ikeda, Noboru; Nakamura, Keiji; and Shoji, Yukinobu, 3,849,561.
Maruyama, Katsuji: *See—*
Tsujimoto, Noboru; Maruyama, Katsuji; and Misawa, Haruo, 3,848,976.
Maruyama, Tadasatsu: *See—*
Ishizaki, Keizo; Sekine, Hiroshi; Gondo, Hisashi; Wada, Koji; Kawano, Tsuyoshi; Watanabe, Hidekazu; Kanbayashi, Gou; and Maruyama, Tadasatsu, 3,849,209.
Marvel Engineering Company: *See—*
Niccum, Forest G.; and Heinrich, Peter, Jr., 3,849,314.
Marwitz, Heinrich: *See—*
Nitzsche, Siegfried; Marwitz, Heinrich; and Hockemeyer, Friedrich, 3,849,359.

Mary, Dominique: *See—*
Bussienne, Christian; and Mary, Dominique, 3,848,755.
Masai, Tadahisa; and Atago, Takeshi, to Hitachi, Ltd. Vortex blower. 3,849,024, Cl. 415-213.00t.
Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Zechmeister, Hartwin, 3,849,080.
Mason Company, The: *See—*
Hawke, Earle G., 3,848,517.
Mason, Raymond J., to Minarik Electric Co. Motor speed control ciru-cit. 3,849,710, Cl. 318-331.000.
Mason, Robert J.; and Dixon, Earl, to United States of America, Navy. Mounting assembly for ferrimagnetic core in waveguide phase shifter. 3,849,746, Cl. 333-24.100.
Masonite Corporation: *See—*
Eaton, James W.; and Luck, Allan J., 3,848,384.
Maspero, Federico; and Perrotti, Emilio, to Snam Progetti, S.p.A. Hydrogen transfer process. 3,849,510, Cl. 260-680.00r.
Massa Division, Dynamics Corporation of America: *See—*
Massa, Frank, 3,849,679.
Massa, Frank, to Massa Division, Dynamics Corporation of America. Electroacoustic transducer with controlled beam pattern. 3,849,679, Cl. 310-8.200.
Massek, Peter: *See—*
Schmidt, Fritz; Matthaus, Gunther; and Massek, Peter, 3,849,589.
Massey-Ferguson (Australia) Limited: *See—*
Makeham, Sam Robert, 3,848,399.
Mast, Aquila D., to Sperry Rand Corporation. Hay roll forming machine. 3,848,526, Cl. 100-88.000.
Masuda, Katsumi: *See—*
Hongo, Eitaro; Yamada, Hirohiko; Fujii, Yozo; Masuda, Katsumi; Itou, Junichi; and Nakano, Takaaki, 3,849,452.
Masuko, Fujio: *See—*
Oshima, Teruo; Nagase, Tsuneyuki; Masuko, Fujio; Wada, Takeshi; Hirooka, Masaaki; and Taniguchi, Isoji, 3,849,385.
Mathews, Dixie I. Apertured article and protective cover therefor. 3,848,281, Cl. 5-337.000.
Matsko, John, to United States of America, Atomic Energy Commission. Process of making low density syntactic foams. 3,849,350, Cl. 260-2.50b.
Matsuda, Motonobu: *See—*
Nanba, Yasuhiro; and Matsuda, Motonobu, 3,849,786.
Matsuda, Yoshio: *See—*
Terada, Fumio; Matsuda, Yoshio; and Yamaguchi, Yoshiharu, 3,848,556.
Matsuhita Electric Industrial Co., Ltd.: *See—*
Kadota, Tokuzo, 3,849,749.
Matsui, Akio; Hasegawa, Yuji; and Fujimoto, Hiroshi, to Kawasaki Jukogyo Kabushiki Kaisha. Mixture for making a mold. 3,849,356, Cl. 260-29.300.
Matsui, Masao: *See—*
Ando, Satoshi; Matsui, Masao; and Ogata, Fumimaro, 3,849,044.
Matsui, Masashi; and Horio, Teisuke, to Nissan Motor Company, Limited. Torsional damper for motor vehicle drive train. 3,848,694, Cl. 180-70.00p.
Matsui, Yujiro: *See—*
Maeda, Hidenori; Matsui, Yujiro; Ikeda, Tsukasa; and Mohri, Eikichi, 3,848,860.
Matsumoto, Hisao: *See—*
Kazaoka, Kenichi; Hirose, Kimiharu; Matsumoto, Hisao; and Takeshita, Yasuo, 3,848,888.
Matsumoto, Koichi: *See—*
Inoue, Masaru; Kaneko, Toshio; Matsumoto, Koichi; Ishikawa, Makoto; and Akitomo, Nobuo, 3,849,001.
Matsumura, Mutsuo: *See—*
Ozawa, Jun; Isogai, Tokio; Ishikawa, Toshio; Yamagiwa, Tokio; Matsumura, Mutsuo; Nakano, Zenichi; and Fuziya, Shigeru, 3,849,590.
Matsuo, Tetsuo: *See—*
Funakubo, Eiichi; Matsuo, Tetsuo; Taira, Takeshi; Kamada, Taichi; Harada, Hiroshi; Tanimura, Shoichiro; and Kubo, Masanori, 3,849,298.
Matsushita Electric Industrial Co., Ltd.: *See—*
Arimura, Ichiro; Higashida, Yutaka; and Kurashina, Kozo, 3,849,794.
Katahira, Toshiaki; Izumi, Hiroshi; and Tokonami, Masao, 3,849,773.
Koda, Minoru; Shioyama, Tadao; and Nishiyama, Akio, 3,849,795.
Miyoshi, Seizo, 3,848,875.
Omiya, Shoji; Hayashi, Yoshiaki; and Kuki, Akio, 3,849,796.
Matsushita Electrical Industrial Co., Ltd.: *See—*
Hamano, Goro, 3,849,765.
Matsuyama, Shigeru: *See—*
Sato, Yasumasa; Matsuyama, Shigeru; and Kobayashi, Masaaki, 3,848,655.
Matsuzaki, Kunio: *See—*
Shimamura, Akira; and Matsuzaki, Kunio, 3,849,703.
Mattera, John A.; deceased (by Mattera, Sadie; executrix). Hydraulically actuated cable cutter and indentor. 3,848,334, Cl. 30-180.000.
Mattera, Sadie: *See—*
Mattera, John A., 3,848,334.
Matthaus, Gunther: *See—*
Schmidt, Fritz; Matthaus, Gunther; and Massek, Peter, 3,849,589.
Mattson, Gary L.: *See—*
Goretzki, Jerome A.; Hendrickson, Kenneth E.; Mattson, Gary L.; and Mattson, Larry F., 3,849,714.
Mattson, Larry F.: *See—*
Goretzki, Jerome A.; Hendrickson, Kenneth E.; Mattson, Gary L.; and Mattson, Larry F., 3,849,714.
Maurer, Fritz: *See—*
Colln, Reimer; Hofer, Wolfgang; Maurer, Fritz; and Rohe, Lothar, 3,849,524.
Maxey, Joel W., to Ford Motor Company. Expandable hub locking assembly. 3,849,014, Cl. 403-370.000.
May, Adolf: *See—*
Diery, Helmut; Cuntze, Ulrich; May, Adolf; and Milewski, Eckhard, 3,849,435.
Mayer, Friedrich, to Allgemeine Industrie Commerz. Device for producing a series of electrical pulses, whose frequency is proportional to the speed of rotation of the wheel of a motor vehicle. 3,848,878, Cl. 277-25.000.
Mayer, James F.; and Raimondi, Victor V., to Standard Oil Company. Flexible polyester based sealing composition. 3,849,367, Cl. 260-40.00r.
Mays, John D.; and McClannan, Jack L., to Standard Register Company, The. Coating composition for optical projection. 3,849,170, Cl. 117-36.300.
Maytag Company, The: *See—*
Rottering, Quintin N., 3,848,436.
Rottering, Quintin N., 3,848,437.
McAlister, Jimmie D. Rotary conveyor. 3,848,733, Cl. 198-211.000.
McArthur, Ralph F.; and Geurts, Melle F., to Kobe, Inc. Fluid operated pump with opposed pistons and valve in middle. 3,849,030, Cl. 417-393.000.
McCarthy, Jack N. Electric lamp cover adapter and cover. 3,849,640, Cl. 240-100.000.
McCartney, Frank I.: *See—*
Hollis, Norman E.; Jutte, Gottfried W.; McCartney, Frank I.; and McHugh, John V., 3,849,203.
McClannan, Jack L.: *See—*
Mays, John D.; and McClannan, Jack L., 3,849,170.
McClellan, Bingham A., to McClellan Industries, Inc. Rattle sounder for fishing lures. 3,848,353, Cl. 43-42.310.
McClellan Industries, Inc.: *See—*
McClellan, Bingham A., 3,848,353.
McClellan, William. Thermal shield. 3,848,897, Cl. 285-47.000.
McColl, Archibald Irvine, to Alexander M.S. Method and apparatus for fracturing oil and gas strata. 3,848,674, Cl. 166-299.000.
McCombs, Howard L., to Bendix Corporation, The. Control apparatus particularly for a plurality of compressor bleed valves of a gas turbine engine. 3,848,636, Cl. 137-624.270.
McCord Corporation: *See—*
Hulten, Richard E., 3,848,916.
McCormick, Larry L.; and Selk, Ben F., to G & H Technology, Inc. Electrical connector. 3,848,950, Cl. 339-90.00r.
McCoy, Frederic C. Process for converting ethoxylated alkyl mercaptans to their oil soluble form using alkylated phenols. 3,849,501, Cl. 260-609.00f.
McCullough, John R.: *See—*
Schramm, Harold J.; McCullough, John R.; and Yarnall, Joseph P., Jr., 3,848,623.
McDonald, Bernard. Ear, nose and throat examining instrument. 3,848,587, Cl. 128-9.000.
McDonald Products Corporation: *See—*
Beil, Volentin E., 3,848,769.
McDonnell, Douglas, Corporation: *See—*
Sheratte, Martin B., 3,849,324.
McDowell-Wellman Engineering Company: *See—*
Ban, Thomas E., 3,849,113.
Ban, Thomas Eugene, 3,849,115.
McElroy, David W., to Westinghouse Electric Corporation. Fluid-cooled transformer having a temperature responsive indicating and controlling device. 3,849,705, Cl. 317-14.00r.
McGann, John J., Jr. Locking device for door chains. 3,848,913, Cl. 292-264.000.
McGarrah, Larry: *See—*
Conaway, Mildred; Thompson, Alligene; Bowen, Dorsie Mae; Brown, Danny; and McGarrah, Larry, 3,848,266.
McGee, Paul D.; and Ulmer, Dalton C., to Motorola, Inc. Shipping and display carton assembly for an electronic device. 3,848,735, Cl. 206-45.250.
McGinnis, Paul H.; McLaughlin, William D., Jr.; and Swander, Robert E., to Celanese Corporation. Spinning apparatus with converging gas streams. 3,849,040, Cl. 425-72.000.
McGregor, Robert, & Sons Limited: *See—*
Cochrane, Kenneth Alfred; and Holloway, Robert Geofrey, 3,849,016.
McGregor, William H.; and Grant, Norman H., to American Home Products Corporation. H-Thr-Lys-Arg-OH and derivatives thereof. 3,849,390, Cl. 260-112.500.
McGrew-Edison Company: *See—*
Trelc, William F., 3,848,522.
McHugh, John V.: *See—*
Hollis, Norman E.; Jutte, Gottfried W.; McCartney, Frank I.; and McHugh, John V., 3,849,203.
McIlrath, William F. Strain control transducer. 3,848,462, Cl. 73-88.50r.

McKinlay, Philip F.; Smith, Harry D., Jr.; and Schultz, Ward E., to Texaco Inc. Inelastic neutron scattering methods to locate coal and oil shale zones. 3,849,646, Cl. 250-270.000.

McLaughlin, William D., Jr.: *See—*
  McGinnis, Paul H.; McLaughlin, William D., Jr.; and Swander, Robert E., 3,849,040.

McMahon, Matthew A.: *See—*
  Kreuz, Kenneth L.; and McMahon, Matthew A., 3,849,085.

McMullen, Charles H., to Union Carbide Corporation. Preparation of methyl alkanoates. 3,849,456, Cl. 260-410.90r.

McMurtry, Carl H.; and Murata, Yorihiro, to Carborundum Company, The. Solid diffusion sources containing phosphorus and silicon. 3,849,344, Cl. 252-500.000.

Mead Corporation, The: *See—*
  Sanders, Frederick W., 3,849,278.

Mead, Robert James, to Glaxo Laboratories Limited. Composition containing procaine penicillin. 3,849,569, Cl. 424-271.000.

Means, Graham Neville: *See—*
  Chick, Orest Nicholas; and Means, Graham Neville, 3,849,183.

Medical Research Laboratories, Inc.: *See—*
  Milani, Dean L.; and Kerwin, Richard G., 3,848,582.

Medovar, Boris Izrailevich: *See—*
  Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Kumysh, Ilya Iosifovich; Tsykulenko, Anatoly Konstantinovich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Bondarenko, Oleg Petrovich; and Bogachenko, Alexei Georgievich, 3,849,588.
  Tetjuev, Vladimir Alexandrovich; Medovar, Boris Izrailevich; Chekotilo, Leonty Vasilievich; Popov, Valery Georgievich; Tjurikov, Pavel Ivanovich; and Kosmatenko, Ivan Egorovich, 3,848,657.

Meeda Scientific Instrumentation Limited: *See—*
  Otsap, Ben Amy, 3,848,584.
  Otsap, Ben Amy; and Neuman, Eli, 3,848,585.

Mefferd, Wayne S., to Coherent Radiation Laboratories, Inc. Method of making a cored laser tube. 3,849,531, Cl. 264-92.000.

Megles, John E.: *See—*
  Giffen, James W.; Duke, David A.; Dumbaugh, William H., Jr.; Flannery, James E.; MacDowell, John F.; and Megles, John E., 3,849,097.

Meier-Windhorst, Christian August. Process for continuous treatment of webs with hot liquids. 3,849,068, Cl. 8-151.000.

Meijer, Roelf Jan: *See—*
  Michels, Albertus Peter Johannes; Van Beukering, Henricus Cornelis Johannes; Fokker, Herman; and Meijer, Roelf Jan, 3,848,412.

Meinan Machinery Works, Inc.: *See—*
  Hasegawa, Katsuji, 3,848,374.

Melanson, Alcide: *See—*
  Hafner, Joseph A., 3,848,387.

Mellen, George P., to United States of America, Army. Self-destruct fuze. 3,848,531, Cl. 102-70.00r.

Melnik, Gary Alexandrovich: *See—*
  Paton, Boris Evgenievich; Lakomsky, Victor Iosifovich; Melnik, Gary Alexandrovich; Chvertko, Anatoli Ivanovich; and Bukalo, Alfred Iosifovich, 3,849,584.

Menissez, Jean Pierre: *See—*
  Vaillant, Christian; and Menissez, Jean Pierre, 3,848,817.

Menissez, Jean-Pierre: *See—*
  Vaillant, Christian; and Menissez, Jean-Pierre, 3,848,818.

Mennesson, Andre Louis, to Societe Industrielle de Brevets et d'Etudes S.I.B.E. Carburettors provided with a starting device with an eccentric flap valve. 3,848,857, Cl. 261-39.00b.

Mentha, John W.: *See—*
  Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., 3,849,407.
  Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., 3,849,470.

Mentha, John W.; Shaffner, Janice V.; and Cresswell, Ronald M., to Burrough Wellcome Co. Method and intermediates for the preparation of pyrimidine compounds. 3,849,416, Cl. 260-256.40n.

Mercer, Alec Victor: *See—*
  Basel, Horst Aebli; Fleck, Fritz; Littlewood, Peter Stuart; and Mercer, Alec Victor, 3,849,406.

Merck & Co., Inc.: *See—*
  Christensen, Burton G.; Leanza, William J.; and Beattie, Thomas R., 3,849,482.
  Dempski, Robert E.; and Saboe, Joseph C., 3,849,549.
  Witzel, Bruce E.; and Shen, Tsung-Ying, 3,849,572.

Merlino, Eugene Louis, Jr.; Brinning, Earl Edward; and Naeyaert, Roger Stanley, to Burroughs Corporation. Punched card, badge and credit card reader. 3,849,631, Cl. 235-61.11b.

Merriam, Charles J. Non-ionic fluid thermometer for microwave oven. 3,849,622, Cl. 219-10.550.

Merrill, Stewart H.: *See—*
  Stahly, Frederick A.; and Merrill, Stewart H., 3,849,165.

Merriman, Henry H. High capacity inflatable hose fitting. 3,848,516, Cl. 92-92.000.

Mertanen, Pekka Henrikki, to Oy Wartsila AB. Bi-directional cylinder lock. 3,848,442, Cl. 70-366.000.

Merz, Josef; Van Esdonk, Johannes; and Janssen, Joannes Franciscus, to U.S. Philips Corporation. Prism holder for a digital light deflection system. 3,848,973, Cl. 350-287.000.

Mesek, Frederick K., to Johnson & Johnson. Disposable diaper with double contoured panel. 3,848,598, Cl. 128-287.000.

Meshberg, Philip. Childproof actuator assembly. 3,848,778, Cl. 222-402.110.

Meshorer, Asher: *See—*
  Teitelbaum, Dvora; Gan, Ramat; Meshorer, Asher; Hirshfeld, Tsvi; Arnon, Ruth; and Sela, Michael, 3,849,550.

Messerschmitt-Bolkow-Blohm GmbH: *See—*
  Born, Gunthard, 3,848,830.

Messmer, James I., to Florists' Transworld Delivery Association. Plant terrarium. 3,848,358, Cl. 47-34.000.

Messner, John S.; and Jones, Robert E., to Clark Equipment Company. Dual brake on drive and idler wheels of industrial trucks. 3,848,692, Cl. 180-52.000.

Metallwerk Max Brose & Co.: *See—*
  Dehler, Bernhard, 3,848,923.

Metzger, Carl; and Eue, Ludwig, to Bayer Aktiengesellschaft. Certain thiadiazolyl-containing-halogen-substituted-imidazolidinones. 3,849,432, Cl. 260-306.80d.

Meyer, Hans Rudolf: *See—*
  Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,849,163.

Meyering, Otto; and Langenhoff, Hubert Heinrich, to Gebr. Schmeing. . 3,848,644, Cl. Weaving shuttle.

Meylan, Jean-Luc, to Battelle Memorial Institute. Process for cooling and supporting a continuously cast metal bar. 3,848,656, Cl. 164-89.000.

MHK Spring Co., Ltd.: *See—*
  Kuroishi, Kenitiro, 3,848,926.

Miag Muhlenbau und Industrie GmbH: *See—*
  Schlimme, Gisbert; and Tschirner, Manfred, 3,849,255.

Michael, Dietrich; Gilch, Heinrich; and Hechelhammer, Wilhelm, to Farbenfabrik Bayer Aktiengesellschaft. Process for the continuous production of fibre-reinforced polyamide moulding compositions. 3,849,154, Cl. 117-4.000.

Michaels, Leonard H.; and Romine, Edward L., to Molex Incorporated. Connector housings and locking structures therefor. 3,848,951, Cl. 339-91.00r.

Michel, Hans: *See—*
  Karlikowski, Jupp; and Michel, Hans, 3,849,135.

Michels, Albertus Peter Johannes; Van Beukering, Henricus Cornelis Johannes; Fokker, Herman; and Meijer, Roelf Jan, to U.S. Philips Corporation. Method of supplying thermal energy to the heater of a hot-gas engine, as well as a hot-gas engine comprising a evice for carrying out the method. 3,848,412, Cl. 60-517.000.

Michigan Chemical Corporation: *See—*
  Anderson, Arnold L., 3,849,369.

Middleton, Thomas E., to Pre-Stress Concrete, Inc. Method for manufacturing a sheathed cable for use in post-tensioning concrete structures. 3,849,221, Cl. 156-145.000.

Middleton, William Joseph, to Du Pont de Nemours, E. I., and Company. Trifluoromethylbenzophenone O-acyloximes useful as crop yield increasers for plants. 3,849,494, Cl. 260-566.0ae.

Midway Industries, Inc.: *See—*
  Breford, Glenn H., 3,848,894.

Miele & Cie: *See—*
  Kaup, Friedel; and Warnke, Heinrich, 3,849,175.

Miklas, Edward J., to Petro-Tex Chemicals Corporation. Zinc ferrite oxidative dehydrogenation catalyst and method of preparation. 3,849,545, Cl. 423-594.000.

Mikulak, John Paul, to Johns-Manville Corporation. Self seal system for the installation of insulation. 3,849,240, Cl. 161-167.000.

Milan, Lucien, to U.S. Philips Corporation. Printing device comprising electro-magnets. 3,848,719, Cl. 197-1.00r.

Milani, Dean L.; and Kerwin, Richard G., to Medical Research Laboratories, Inc. Portable electrocardiographic signal apparatus. 3,848,582, Cl. 128-2.06r.

Miles, Thomas R., to Hines, Edward, Lumber Co. Method and apparatus for cutting lumber to random or specified clear lengths. 3,848,646, Cl. 144-3.00n.

Milewski, Eckhard: *See—*
  Diery, Helmut; Cuntze, Ulrich; May, Adolf; and Milewski, Eckhard, 3,849,435.

Miller, Donald E.: *See—*
  Maloney, Thomas C.; and Miller, Donald E., 3,849,688.

Miller, George A.: *See—*
  Lewis, Sheldon N.; and Miller, George A., 3,849,430.

Miller, Harold C., to Engelhard Minerals & Chemicals Corporation. Water applicator for a pavement grooving machine. 3,848,929, Cl. 299-39.000.

Miller, Herman, Inc.: *See—*
  Propst, Robert L., 3,848,278.

Miller, Marvin E., to Warwick Electronics Inc. Method and apparatus for static and dynamic convergence. 3,849,697, Cl. 315-13.00c.

Milligan, Charles L.: *See—*
  Patrick, Charles T., Jr.; and Milligan, Charles L., 3,848,600.

Million, Charles J. Means for and method of plotting plants. 3,848,360, Cl. 47-58.000.

Milstein, Donald; and Hill, Donald F., to Mobil Oil Corporation. Manufacture of transformer oils. 3,849,288, Cl. 208-14.000.

Mimeault, Victor J., to Ferro Corporation. Polysiloxane encapsulation of pigments. 3,849,152, Cl. 106-308.00q.

Mims, Bruce L., to Branson Instruments, Incorporated. Vibratory welding apparatus. 3,848,792, Cl. 228-1.000.

Minagawa, Katsumo: *See—*
  Ohkawa, Shunjiro; and Minagawa, Katsumo, 3,849,045.

Minagawa, Motonobu; Akutsu, Mitsuo; and Nakagawa, Kenichi, to Argus Chemical Corporation. Enhancement of resistance of olefin polymers to heavy metal catalyzed oxidative degradation. 3,849,370, Cl. 260-45.80n.

Minarik Electric Co.: *See—*
  Mason, Raymond J., 3,849,710.

Minchenko, Veniamin Alexandrovich: *See—*
  Kazakov, Nikolai Efimovich; Shipitsin, Svyatoslav Sergeevich; Minchenko, Veniamin Alexandrovich; Kudryavtsev, Innokenty Mikhailovich; Zimin, Vladimir Afanasievich; and Pervitsky, Boris Antonovich, 3,849,046.

Miner, John R.: *See—*
  Hazen, Thamon E.; and Miner, John R., 3,848,568.

Miner, William R.; and Parker, Charles K., Jr., to Chevron Research Company. Lubricating oil composition containing anti-wear agents. 3,849,318, Cl. 252-18.000.

Mingasson, Georges Raymond Henry; and Domergue, Annick Martha Suzanne Simone, to Kuhlmann, Ugine. 4-Naphthalimido cycloammonium-acrylic fiber compositions. 3,849,331, Cl. 252-301.20w.

Minnesota Mining & Manufacturing Co., mesne: *See—*
  Knapp, Philip B., 3,849,041.

Minnesota Mining and Manufacturing Company: *See—*
  Behymer, Donald James, 3,848,457.
  Jorgensen, Jens L., 3,849,351.
  Klaenhammer, Bryan L., 3,849,161.
  Lovness, William R.; and Feldhaus, James F., 3,848,363.
  Mitsch, Ronald A., 3,849,504.

Minolta Camera Kabushiki Kaisha: *See—*
  Nanba, Yasuhiro; and Matsuda, Motonobu, 3,849,786.

Miquel, Joseph. Magnetotherapeutic devices. 3,848,588, Cl. 128-41.000.

Mirlin Corporation: *See—*
  Harvey, Robert J., 3,849,555.

Misawa, Haruo: *See—*
  Tsujimoto, Noboru; Maruyama, Katsuji; and Misawa, Haruo, 3,848,976.

Mischenko, Alexandr Petrovich: *See—*
  Gryaznov, Vladimir Mikhailovich; Smirnov, Viktor Sergeevich; Mischenko, Alexandr Petrovich; and Aladyshev, Sergei Ivanovich, 3,849,076.

Mishcon, Lester; and Reagan, Donald W., to Singer Company, The. Cam section blocks for circular knitting machines. 3,848,432, Cl. 66-54.000.

Mitani, Toru: *See—*
  Nakagome, Takenari; Agui, Hideo; Mitani, Toru; and Nakashita, Mitsuo, 3,849,421.

Mitchell, Bruce. Rapid transit system. 3,848,535, Cl. 104-88.000.

Mitchell, Derek, to Proctor & Schwartz, Inc., mesne. Web winding machine. 3,848,823, Cl. 242-56.00a.

Mitoff, Stephan P.: *See—*
  Charles, Richard J.; and Mitoff, Stephan P., 3,849,200.

Mitsch, Ronald A., to Minnesota Mining and Manufacturing Company. Perfluoropolyethers and process for making. 3,849,504, Cl. 260-615.0bf.

Mitsubishi Chemical Industries, Limited: *See—*
  Kikumoto, Ryoji, 3,849,476.

Mitsubishi Chemical Industries, Ltd.: *See—*
  Arakawa, Tetsutaro; and Oka, Michio, 3,849,087.

Mitsubishi Denki Kabushiki Kaisha: *See—*
  Kasahara, Masao; Namekawa, Toshihiko; Fujiwra, Keniti; Hirasawa, Shigeiti; and Sugiyama, Yasuo, 3,849,761.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
  Iwasaki, Yasuhiro; Tsukamoto, Hidehiko; Maeda, Nobutaka; and Takeuchi, Chikara, 3,848,446.

Mitsui Toatsu Chemicals Inc.: *See—*
  Kato, Yoshiro; and Kado, Masaru, 3,849,109.

Miura, Mitsuo: *See—*
  Takagi, Atsushi; Miura, Mitsuo; Suzuki, Akio; Kukino, Yoshinori; Amagai, Kiyoshi; Shimizu, Haruji; Satoh, Mitsutoshi; Kohno, Shoji; and Ebine, Mitsuo, 3,848,685.

Miura, Sadayoshi: *See—*
  Nakatsuji, Yasukuni; Kanai, Tamaki; Noda, Hiroshi; Miura, Sadayoshi; and Suzuki, Hideaki, 3,849,382.

Miyakawa, Seinan; and Noda, Nobuhiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera shutter controls for extremely short exposure time. 3,848,986, Cl. 354-51.000.

Miyakoshi, Hisashi: *See—*
  Takase, Kunio; Miyakoshi, Hisashi; and Ohmura, Mitsuo, 3,848,418.

Miyamaoto, Nobuyuki; Nakamura, Kyosuke; and Nittani, Osamu, to Fuji Denka Seizo Kabushiki Kaisha Kawasaki-Shi. Method and system for preventing short-circuits in mercury cathode electrolytic cells. 3,849,268, Cl. 204-99.000.

Miyamoto, Hideaki: *See—*
  Yonekura, Saku; Miyamoto, Hideaki; and Namba, Akio, 3,848,998.

Miyata, Akira; Okubo, Hideyo; Tomita, Chikayoshi; and Suzuki, Akio, to Nippon Kokan Kabushiki Kaisha. Electroplating and conveying apparatus featuring rotation of articles to be plated relative to cathode member. 3,849,277, Cl. 204-202.000.

Miyazaki, Togo, to Nippon Electric Company, Limited. Plasma display panel comprising a first external electrode for each digit and a second external electrode for each segment. 3,849,686, Cl. 313-484.000.

Miyoshi, Seizo, to Matsushita Electric Industrial Co., Ltd. Automatic record player. 3,848,875, Cl. 274-10.00r.

Mizutani, Masayoshi: *See—*
  Komatsu, Noboru; Arai, Tohru; and Mizutani, Masayoshi, 3,848,847.

Mobil Oil Corporation: *See—*
  Anderson, James J.; Canacho, Vasco G.; and Kinney, Robert E., 3,849,368.
  Bridger, Robert F.; Heibā, El-Ahmadi I.; and Stournas, Stamoulis, 3,849,320.
  Bullard, Edward M.; and Schard, Malcolm P., 3,849,520.
  Dwyer, Francis G.; and Chu, Pochen, 3,849,463.
  Haag, Werner O.; and Whitehurst, Darrell Duayne, 3,849,457.
  Lemanski, Chester G., 3,849,567.
  Milstein, Donald; and Hill, Donald F., 3,849,288.
  Owen, Hartley, 3,849,291.
  Wise, John J.; and Burd, Samuel D., Jr., 3,849,290.

Mod, Robert R.: *See—*
  Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,849,321.
  Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,849,454.

Mod, William A.; and Enos, James H., to Dow Chemical Company, The. Production of magnesium metal. 3,849,118, Cl. 75-67.000.

Modrey, Henry J. Line coupling. 3,848,902, Cl. 285-237.00r.

Moffitt, Roy W., Company, The: *See—*
  Seedorf, Robert R., 3,848,528.

Mogren, Hakan Lars; Hedenskog, Gudmund Oscar; and Enebo, Lennart Eugen, to SCP-Exploatering AB. Process for extracting protein from microorganisms. 3,848,812, Cl. 241-2.000.

Mohri, Eikichi: *See—*
  Maeda, Hidenori; Matsui, Yujiro; Ikeda, Tsukasa; and Mohri, Eikichi, 3,848,860.

Moirano, Arthur L., to Marine Colloids Inc. Degraded modified seaweed extractive and compositions containing same and their production. 3,849,395, Cl. 260-209.00r.

Molack, Michael A., to Dynell Electronics Corporation. Phase detector circuitry. 3,849,671, Cl. 307-232.000.

Molex Incorporated: *See—*
  Michaels, Leonard H.; and Romine, Edward L., 3,848,951.

Molinaro, Lawrence J.: *See—*
  Haley, Kenneth M.; Koschak, Dennis F.; Molinaro, Lawrence J.; and Reed, Richard L., 3,848,741.

Mollard, Gaston: *See—*
  Brenot, Claude; and Mollard, Gaston, 3,848,711.

Monaghan Automated Systems, Inc.: *See—*
  Monoghan, Alfred C., 3,848,393.

Monajjem, Freydoun, to General Tire & Rubber Company, The. Apparatus for balance correcting pneumatic tires using reflective unbalance control. 3,848,369, Cl. 51-165.00r.

Monoghan, Alfred C., to Monaghan Automated Systems, Inc. Packaging machine and process. 3,848,393, Cl. 53-22.00a.

Monsanto Company: *See—*
  Boustany, Kamel, 3,849,418.
  Forster, Denis, 3,849,496.
  Knowles, William S.; and Sabacky, M. Jerome, 3,849,480.
  Maier, Ludwig, 3,849,523.

Montecatini Edison S.p.A.: *See—*
  Corradi, Bruno; Petrillo, Vincenzo; and Cimarosti, Giordano, 3,849,266.
  Seberini, Febo; Valvassori, Alberto; Tavazzani, Carlo; and Pagliari, Alberto, 3,849,518.

Montillier, Jean-Pierre, to Pitney-Bowes, Inc. Organic photoconductive composition and electrophotographic member. 3,849,130, Cl. 96-1.500.

Montuelle, Jean; Chaudron, Georges; and Piaard-Legry, Gerard, to Agence Nationale de Valorisation de la Recherche (Anvar). Metallic materials based on martensitic steel. 3,849,079, Cl. 29-183.500.

Moore, William J. M.: *See—*
  Kusters, Norbert L.; and Moore, William J. M., 3,849,727.

Morgan, John Edward, to Associated Pulp and Paper Mills Limited. Wet combustion of waste liquors. 3,849,536, Cl. 423-206.000.

Morgenthau, John L., Jr.: *See—*
  Adler, Norman; Morgenthau, John L., Jr.; and Gold, Paul A., 3,848,773.

Mori, Chiharu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Circuit for switching different resistance values corresponding to amount of light measured. 3,849,725, Cl. 324-65.00r.

Mori, Masashi. Mat foundation. 3,848,377, Cl. 52-169.000.

Mori, Mitsuo: *See—*
  Ohashi, Shozo; Mori, Mitsuo; and Oyobe, Satoshi, 3,848,297.

Morikuni, Yoshihiro: *See—*
  Tachibana, Yoshishige; and Morikuni, Yoshihiro, 3,848,438.

Morimoto, Hiroshi; Watanabe, Masazumi; Imada, Isuke; and Nishikawa, Masao, to Takeda Chemical Industries, Ltd. Quinone derivatives. 3,849,453, Cl. 260-396.00r.

Morita, Koji; and Sato, Tadashi, to Sony Corporation. Channel selecting control system for television tuner. 3,849,731, Cl. 325-464.000.

Moritz, Werner, to Kabelschlepp Gesellschaft mit beschrankter Haftung. Link structure for chains for supporting and guiding energy conveying conductors. 3,848,407, Cl. 59-78.100.

- Morley, Douglas, to August's Limited. Milling machines. 3,848,816, Cl. 241u74.000.
- Morningstar, Marion G., to Goodrich, B. F., Company, The. Internally coated reaction vessel and process for coating the same. 3,849,179, Cl. 117-97.000.
- Morris, Earl F.: *See—*
  - Motley, Herman R.; Morris, Earl F.; and Pavlich, Joseph P., 3,849,316.
- Morris, George R., to Ford Motor Company. Integral adjustment clutch fork. 3,848,479, Cl. 74-522.000.
- Morris, Philip, Incorporated: *See—*
  - Iten, Clemens A., 3,848,770.
- Morris, Wolford A. Food fryer with continuously filtered cooking oil. 3,849,309, Cl. 210-143.000.
- Morrison, Howard J., to Glass, Marvin, & Associates. Dueling figure toys. 3,848,357, Cl. 46-142.000.
- Morrison, Howard J., to Glass, Marvin, & Associates. Extensible riding toy. 3,848,869, Cl. 272-52.500.
- Morse, George A., to Carpetech Corporation. Cleaning head for cleaning carpets and the like in situ. 3,848,291, Cl. 15-322.000.
- Morse, John W., to Engineering Plastics, Inc. Process for producing a bearing. 3,848,306, Cl. 29-149.5nm.
- Mortimer, Frans H.; Jacobs, Gerard O.; Decoene, Frans J. G. C.; Braet, August; and Rowland-Hill, Edward W., to Clayson N. V. Axial flow type harvesting machines. 3,848,609, Cl. 130-27.00t.
- Mory, Rudolf: *See—*
  - Roueche, Armand; Mueller, Willy; and Mory, Rudolf, 3,849,394.
- Mosler Safe Company, The: *See—*
  - Novak, Warren D., 3,848,987.
  - Proios, Steve, 3,849,603.
- Motley, Herman R.; Morris, Earl F.; and Pavlich, Joseph P., to Dow Chemical Company, The. Spacer composition. 3,849,316, Cl. 252-8.50p.
- Motorola, Inc.: *See—*
  - Goncharoff, Nikolai, 3,849,601.
  - Hall, Edward L.; and Philofsky, Elliott M., 3,848,330.
  - McGee, Paul D.; and Ulmer, Dalton C., 3,848,735.
- Moumouloff, Paul: *See—*
  - Perry, Edward James; and Moumouloff, Paul, 3,848,664.
- Mrenna, Stephen A.; and Thomas, Glenn R., to Westinghouse Electric Corporation. Circuit breaker with handle indicating means. 3,849,747, Cl. 335-166.000.
- Muehloegger, Leopold, to Durst A.G. Fabrik Fototechnischer Apparate. Auxiliary lighting device for enlargers. 3,848,997, Cl. 355-71.000.
- Mueller, Volkmar; Berendt, Hans-Ulrich; and Harris, Melvin, to Ciba-Geigy AG. Process for preventing the staining of polyamide fibre material treated with fluorescent whiteners. 3,849,162, Cl. 117-33.50t.
- Mueller, Willy: *See—*
  - Roueche, Armand; Mueller, Willy; and Mory, Rudolf, 3,849,394.
- Mueller-Tamm, Heinz: *See—*
  - Frielingsdorf, Hans; Mueller-Tamm, Heinz; Hoehr, Lothar; and Kolk, Erich, 3,849,334.
- Muellerpoths, Reiner: *See—*
  - Wagner, Karl Heinz; Muellerpoths, Reiner; and Hammel, Rudolf, 3,849,618.
- Mukunashi, Hiroaki: *See—*
  - Ichiba, Terumichi; Shimba, Hiroshi; and Mukunashi, Hiroaki, 3,849,591.
- Muller, Erwin, to Bayer Aktiengesellschaft. Process for the preparation of polyether/polyester block copolymers. 3,849,515, Cl. 260-860.000.
- Muller, Paul Adolf; and Muster, Hans. Method of making webs of filter material. 3,849,526, Cl. 264-286.000.
- Muller, Rudolf: *See—*
  - Uerlichs, Johannes; Muller, Rudolf; and Kuckertz, Wilhelm, 3,848,665.
- Multivac Sepp Haggenmuller KG: *See—*
  - Vetter, Artur, 3,848,492.
- Mulvey, Philip A.; and Porter, Kenneth G., to Perfect Pump Co. High pressure reciprocating pump. 3,849,032, Cl. 417-454.000.
- Murata, Yorihiro: *See—*
  - McMurtry, Carl H.; and Murata, Yorihiro, 3,849,344.
- Musick, Charles R.: *See—*
  - Caruso, Robert M.; and Musick, Charles R., 3,849,637.
- Musschoot, Albert, to General Kinematics Corporation. Vertical lift conveyor. 3,848,343, Cl. 34-164.000.
- Muster, Hans: *See—*
  - Muller, Paul Adolf; and Muster, Hans, 3,849,526.
- Mylchreest, George Dudley: *See—*
  - Wythe, Frederick Joseph; and Mylchreest, George Dudley, 3,849,101.
- Nabekawa, Shukichi: *See—*
  - Imamura, Kennosuke; Nabekawa, Shukichi; and Takada, Masao, 3,849,439.
- Nadelson, Jeffrey: *See—*
  - Houlihan, William J.; and Nadelson, Jeffrey, 3,849,438.
- Naden, Robert W.: *See—*
  - Wilson, Robert J.; and Naden, Robert W., 3,848,383.
- Nadherny, Rudolph E.: *See—*
  - Jensen, Finn; and Nadherny, Rudolph E., 3,848,912.
- Naeyaert, Roger Stanley: *See—*
  - Merlino, Eugene Louis, Jr.; Brinning, Earl Edward; and Naeyaert, Roger Stanley, 3,849,631.
- Naf, Willy B., to Koninklijke Emballage Industrie Van Leer B.V. Container with lid. 3,848,767, Cl. 220-59.000.
- Nagai, Ikuo: *See—*
  - Inoue, Masakazu; Okamoto, Takehiko; and Nagai, Ikuo, 3,849,358.
- Nagase, Tsuneyuki: *See—*
  - Oshima, Teruo; Nagase, Tsuneyuki; Masuko, Fujio; Wada, Takeshi; Hirooka, Masaaki; and Taniguchi, Isoji, 3,849,385.
- Najjar, Edward G.: *See—*
  - Cicione, Robert J.; Najjar, Edward G.; Scanlon, Patricia M.; Ohlson, John L.; and Finn, Joseph F., 3,849,169.
- Nakagawa, Kenichi: *See—*
  - Minagawa, Motonobu; Akutsu, Mitsuo; and Nakagawa, Kenichi, 3,849,370.
- Nakagawa, Tadashi, to Seiko Koki Kabushiki Kaisha. Lens shutter with pre-view device for a photographic camera. 3,849,787, Cl. 354-156.000.
- Nakagome, Takenari; Agui, Hideo; Mitani, Toru; and Nakashita, Mitsuo, to Sumitomo Chemical Company, Limited. Process for the preparation of compound having antibacterial action and intermediate therefor. 3,849,421, Cl. 260-287.00r.
- Nakajima, Shigeo, to Taiheiyo Coal Mining Co., Ltd. Pantographic wall protector and automatic controlling device thereof. 3,848,928, Cl. 299-33.000.
- Nakamichi, Niro, to Nakamichi Research Incorporated. Magnetic recording and reproducing apparatus. 3,849,799, Cl. 360-96.000.
- Nakamichi Research Incorporated: *See—*
  - Nakamichi, Niro, 3,849,799.
- Nakamura, Hiroshi: *See—*
  - Igarashi, Isemi; Nakamura, Hiroshi; and Sugiyama, Susumu, 3,848,329.
- Nakamura, Keiji: *See—*
  - Iwasa, Junzo; Maruto, Shunsuke; Ikeda, Noboru; Nakamura, Keiji; and Shoji, Yukinobu, 3,849,561.
- Nakamura, Kyosuke: *See—*
  - Miyamaoto, Nobuyuki; Nakamura, Kyosuke; and Nittani, Osamu, 3,849,268.
- Nakamura, Sumio, to Olympus Optical Co., Ltd. Large-aperture telephoto lens. 3,848,972, Cl. 350-223.000.
- Nakamura, Toshio; Maeda, Tadao; Takenaka, Hiroshi; and Yamahira, Yoshiya, to Sumitomo Chemical Co., Ltd. Pharmaceutical compositions having controlled gastro-intestinal absorption. 3,849,558, Cl. 424-234.000.
- Nakane, Keiichi: *See—*
  - Endou, Hirohide; Kawasaki, Jun; Fujimoto, Yoshiji; Nakane, Keiichi; and Kitazume, Yoshiaki, 3,849,760.
- Nakanishi, Michio; Araki, Kazuhiko; Tahara, Tetsuya; and Shiroki, Masami, to Yoshitomi Pharmaceutical Industries, Ltd. Thieno-[2,3-e][1,4]diazepin-2-ones. 3,849,405, Cl. 260-239.30b.
- Nakanishi, Michio; Oe, Takanori; and Tashiro, Chiaki, to Yoshitomi Pharmaceutical Industries, Ltd. Piperazine derivatives. 3,849,410, Cl. 260-240.0tc.
- Nakano, Takaaki: *See—*
  - Hongo, Eitaro; Yamada, Hirohiko; Fujii, Yozo; Masuda, Katsumi; Itou, Junichi; and Nakano, Takaaki, 3,849,452.
- Nakano, Zenichi: *See—*
  - Ozawa, Jun; Isogai, Tokio; Ishikawa, Toshio; Yamagiwa, Tokio; Matsumura, Mutsuo; Nakano, Zenichi; and Fuziya, Shigeru, 3,849,590.
- Nakashima, Yoichi; Sakamoto, Hisashi; Ishizuka, Takeshi; and Suzuki, Kensuke, to Hitachi, Ltd. High break down voltage-combined semiconductor device suitable for fabrication of voltage multiplier rectifier circuit. 3,849,791, Cl. 357-72.000.
- Nakashita, Mitsuo: *See—*
  - Nakagome, Takenari; Agui, Hideo; Mitani, Toru; and Nakashita, Mitsuo, 3,849,421.
- Nakatsuji, Yasukuni; Kanai, Tamaki; Noda, Hiroshi; Miura, Sadayoshi; and Suzuki, Hideaki, to Teijin Limited. Polyesters from 2,6-naphthalenedicarboxylic acid and tris(2-hydroxyethyl) isocyanurate. 3,849,382, Cl. 260-75.00n.
- Nakayama, Hirokazu: *See—*
  - Inamoto, Inamoto; Nakayama, Hirokazu; Takenaka, Hidetsugu; and Kimura, Yoshitomo, 3,849,473.
- Nakayama, Kazufumi: *See—*
  - Takagi, Mikio; Nakayama, Kazufumi; Terada, Chiaki; and Kamioka, Hajime, 3,849,270.
- Nakayama, Kiyoshi; and Yoshida, Hajime, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for producing L-arginine by fermentation. 3,849,250, Cl. 195-29.000.
- Nakayama, Kiyoshi; and Hagino, Hiroshi, to Kyowa Hakko Kogyo Co., Ltd. Process for producing L-tryptophan. 3,849,251, Cl. 195-29.000.
- Namba, Akio: *See—*
  - Yonekura, Saku; Miyamoto, Hideaki; and Namba, Akio, 3,848,998.
- Namekawa, Toshihiko: *See—*
  - Kasahara, Masao; Namekawa, Toshihiko; Fujiwra, Keniti; Hirasawa, Shigeiti; and Sugiyama, Yasuo, 3,849,761.
- Nanba, Yasuhiro; and Matsuda, Motonobu, to Minolta Camera Kabushiki Kaisha. Light integrating type light detector circuit with photovoltaic cell. 3,849,786, Cl. 354-51.000.
- Nasu, Rikuo: *See—*

  - Shigehara, Itaru; Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Toki, Tadaaki; Takagi, Hidetoshi; Nasu, Rikuo; Yokomichi, Isao; Kimura, Fumio; and Someya, Shinzo, 3,849,503.
- National Appliance Company: *See—*
  - Folsom, Max H., 3,848,569.
- National Cash Register Company, The: *See—*
  - Schwab, Helmut; and Hoover, Troy Eugene, 3,849,164.
- National Ceiling Corporation: *See—*
  - Thompson, Neil J., 3,848,385.
- National Foam System, Inc.: *See—*
  - Chiesa, Peter Jordan, Jr., 3,849,315.
- National Mine Service Company: *See—*
  - LeBegue, Maurice K., 3,848,930.
- National Patent Development Corporation: *See—*
  - Shepherd, Thomas H.; and Gould, Francis E., 3,849,185.
- National Research Development Corporation: *See—*
  - Binns, Kenneth John, 3,849,682.
- NDM Corporation: *See—*
  - Patrick, Charles T., Jr.; and Milligan, Charles L., 3,848,600.
  - Patrick, Charles T., Jr., 3,849,366.
- Nebzydoski, John W., to Texaco Inc. Di and tri (hydrocarbylammonium) trithiocyanurate and lubricating oil compositions containing same. 3,849,319, Cl. 242-33.600.
- Neiderer, Thomas O.: *See—*
  - Niederer, Otto C., 3,848,730.
- Neihage, Helmut: *See—*
  - Forster, Johannes; Bezold, Karl-Heinz; and Neihage, Helmut, 3,849,718.
- Neiley, Geoffrey C., Jr.: *See—*
  - Fuller, George A., Jr.; Langevin, Wilfred L.; Lutts, Carlton G.; and Neiley, Geoffrey C., Jr., 3,848,866.
- Nelson, Eric L.: *See—*
  - Dea, Frank J.; and Nelson, Eric L., 3,849,553.
- Nelson, John Russell, to Coulter Electronics Inc., mesne. Slide mounting apparatus for microscopy. 3,848,962, Cl. 350-86.000.
- Nelson Research & Development Company: *See—*
  - Dea, Frank J.; and Nelson, Eric L., 3,849,553.
- Nelson, Richard E.: *See—*
  - Baumbach, Bertram W.; and Nelson, Richard E., 3,849,750.
- Nettles, Robert G., to Johnson Service Company, mesne. Signal comparator circuit for analog control systems. 3,849,674, Cl. 307-253.000.
- Neuhausser KG: *See—*
  - Geisler, Roland; and Konic, Wilhelm, 3,848,810.
- Neuman, Eli: *See—*
  - Otsap, Ben Amy; and Neuman, Eli, 3,848,585.
- Neuss, Norbert: *See—*
  - Delong, Donald C.; Lively, David H.; and Neuss, Norbert, 3,849,419.
- New England Nuclear Corporation: *See—*
  - Adler, Norman; Morgenthau, John L., Jr.; and Gold, Paul A., 3,848,773.
- Newman, Wilfred Harry, to Ozalid Company Limited. Pressure-sensitive transfer elements. 3,849,239, Cl. 161-160.000.
- Niccum, Forest G.; and Heinrich, Peter, Jr., to Marvel Engineering Company. Filter media inserts. 3,849,314, Cl. 210-493.000.
- Nichols, Robert A., to Capital Enterprises, Inc. Heater attachment device for a wall-mounted thermostat. 3,849,753, Cl. 337-102.000.
- Nidy, Eldon George: *See—*
  - Kornis, Gabriel; Steinhards, Arnolds; Nidy, Eldon George; and Vostral, Henry J., 3,849,106.
- Niederer, Dennis A.: *See—*
  - Niederer, Otto C., 3,848,730.
- Niederer, Otto C.; deceased (by Neiderer, Thomas O.; and Niederer, Dennis A.; executors). Egg washer. 3,848,730, Cl. 198-183.000.
- Nield, Erich, to Imperial Chemical Industries Limited. Process for preparing a polymer comprising acrylonitrile, an aromatic olefin and a terpene. 3,849,384, Cl. 260-80.780.
- Nihira, Shohachi, to Citizen Watch Company Limited. Printer with rotary roll column selecting means. 3,848,527, Cl. 101-93.00c.
- Nihon Denshi Kabushiki Kaisha: *See—*
  - Koike, Hirotami; and Ueno, Katsuyoshi, 3,849,647.
- Nikolaev, Anatoly Mikhailovich: *See—*
  - Chukhanov, Zinovy Zinovievich; Chukhanov, Zinovy Fedorovich; Panov, Vladimir Illarionovich; Nikolaev, Anatoly Mikhailovich; Tsuprov, Sergei Andreevich; and Lyashenko, Ivan Vasilievich, 3,848,536.
- Nilsson, Bruno Yngve, to Boliden Aktiebolag. Method and apparatus for digitally determining the complex electric field when carrying out prospecting operations. 3,849,722, Cl. 324-9.000.
- Nilsson, Erik Henning: *See—*
  - Borg, Sven Christer; Hesson, Christer Ragnar; and Nilsson, Erik Henning, 3,848,753.
- Nippon Chemical Industrial Co., Ltd.: *See—*
  - Imamura, Kennosuke; Nabekawa, Shukichi; and Takada, Masao, 3,849,439.
- Nippon Electric Company: *See—*
  - Ishiguro, Tatsuo, 3,849,595.
- Nippon Electric Company, Limited: *See—*
  - Furuya, Tadashi, 3,849,744.
  - Miyazaki, Togo, 3,849,686.
  - Shirato, Hajime, 3,849,767.
- Nippon Kokan Kabushiki Kaisha: *See—*
  - Miyata, Akira; Okubo, Hideyo; Tomita, Chikayoshi; and Suzuki, Akio, 3,849,277.
- Nippon Steel Corporation: *See—*
  - Asano, Hidejiro; and Ouyagi, Yashichi, 3,849,176.
  - Ishizaki, Keizo; Sekine, Hiroshi; Gondo, Hisashi; Wada, Koji; Kawano, Tsuyoshi; Watanabe, Hidekazu; Kanbayashi, Gou; and Maruyama, Tadasatsu, 3,849,209.
- Nippon Zeon Co., Ltd.: *See—*
  - Sato, Ryozi; and Chino, Yasuyoshi, 3,849,498.
- Nippon Zeon Company, Ltd.: *See—*
  - Yamaguchi, Kaoru; and Saito, Takashi, 3,849,355.
- Nippondenso Co., Ltd.: *See—*
  - Konishi, Masami; and Hikita, Kenji, 3,849,093.
- Nischk, Gunther: *See—*
  - Wolf, Gerhard Dieter; Blankenstein, Gunter; and Nischk, Gunther, 3,849,376.
- Nishikawa, Masao: *See—*
  - Morimoto, Hiroshi; Watanabe, Masazumi; Imada, Isuke; and Nishikawa, Masao, 3,849,453.
- Nishino, Tokiharu: *See—*
  - Shimano, Keizo; and Nishino, Tokiharu, 3,848,784.
- Nishiyama, Akio: *See—*
  - Koda, Minoru; Shioyama, Tadao; and Nishiyama, Akio, 3,849,795.
- Nishiyama, Ryuzo: *See—*
  - Shigehara, Itaru; Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Toki, Tadaaki; Takagi, Hidetoshi; Nasu, Rikuo; Yokomichi, Isao; Kimura, Fumio; and Someya, Shinzo, 3,849,503.
- Nissan Motor Company, Limited: *See—*
  - Hosaka, Akio; Baba, Kosaku; and Wazawa, Kiyoshi, 3,849,759.
  - Ito, Naganori; and Aikawa, Hiroshi, 3,848,862.
  - Kinoshita, Keijiro, 3,848,410.
  - Matsui, Masashi; and Horio, Teisuke, 3,848,694.
  - Takahashi, Koichi; Usui, Keizaburo; Aba, Eiichi; and Ozaki, Kiyotaka, 3,848,431.
- Nittani, Osamu: *See—*
  - Miyamaoto, Nobuyuki; Nakamura, Kyosuke; and Nittani, Osamu, 3,849,268.
- Nitto Boseki Co., Ltd.: *See—*
  - Tabei, Kiyoshi; and Kittaka, Hirokazu, 3,848,406.
- Nitzsche, Siegfried; Marwitz, Heinrich; and Hockemeyer, Friedrich, to Wacker-Chemie GmbH. Agents for the manufacture of organopolysiloxane coatings with repel adhesive substances. 3,849,359, Cl. 260-32.60r.
- Nockemann, Ernst: *See—*
  - Wilfert, Karl; Gmeiner, Gunter; Grabner, Christian; and Nockemann, Ernst, 3,848,910.
- Noda, Hiroshi: *See—*
  - Nakatsuji, Yasukuni; Kanai, Tamaki; Noda, Hiroshi; Miura, Sadayoshi; and Suzuki, Hideaki, 3,849,382.
- Noda, Nobuhiro: *See—*
  - Miyakawa, Seinan; and Noda, Nobuhiro, 3,848,986.
- Noelting, C. Bernard: *See—*
  - Allen, James E.; Lashley, James C.; and Noelting, C. Bernard, 3,848,280.
- Noguchi, Takeshi, to Sumitomo Electric Industries, Ltd. Friction pad for disc brake assembly. 3,848,708, Cl. 188-73.100.
- Noiles, Douglas G., to United States Surgical Corporation. Artificial hip joint. 3,848,272, Cl. 3-1.000.
- Noiles, Douglas G., to United States Surgical Corporation. Fluid control system for controlling intravenous flow rate. 3,848,634, Cl. 137-601.000.
- Norddeutsche Affinerie: *See—*
  - Schulze, Reinhold, 3,849,180.
- Nordeen, Erwin E.; and Olson, Clifford H., Jr., to Whirlpool Corporation. Adjustable wheel mounting means. 3,848,292, Cl. 15-339.000.
- Norfin, Inc.: *See—*
  - Johnson, Dale R., 3,848,867.
- Norgard, Edward J.: *See—*
  - Aanestad, Robert D.; Straub, Melvin J.; and Norgard, Edward J., 3,848,772.
- Norgren, C. A., Co.: *See—*
  - Smith, Leslie William; Wates, Michael John; and Tait, Robert John, 3,848,626.
- Norman, Telfer E. Smelting of copper-iron or nickel-iron sulfides. 3,849,120, Cl. 75-74.000.
- Norton Company: *See—*
  - Villani, Gerard J., 3,849,124.
- Novak, Warren D., to Mosler Safe Company, The. Cassette type sequence camera. 3,848,987, Cl. 354-212.000.
- Nunnally, Kenneth R.: *See—*
  - Turley, Robert R.; Castor, William M.; and Nunnally, Kenneth R., 3,849,339.
- Nuprin Corporation: *See—*
  - Hondzinski, Leonard J., 3,848,538.
  - Hondzinski, Leonard J., 3,848,539.
  - Hondzinski, Leonard J., 3,848,540.
  - Hondzinski, Leonard J., 3,848,541.
- Nuss, Christopher, to Chrysler Corporation. Pulley method of manufacture. 3,848,309, Cl. 29-159.00r.
- Nutron Corporation: *See—*
  - Denker, James M., 3,848,481.
- N.V. Technische Maatschappij Bergmann: *See—*

Condolios, Elie; and Van Essen, Uilke, 3,849,310.
O'Brien, Billy L.; and O'Brien, Heber P. Riser section apparatus. 3,848,421, Cl. 61-72.300.
O'Brien, Heber P.: *See—*
O'Brien, Billy L.; and O'Brien, Heber P., 3,848,421.
Ochiai, Takeshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Skid control system for vehicles. 3,848,933, Cl. 303-21.0be.
O'Connell, Thomas B.: *See—*
Maltby, Robert E., Jr.; and O'Connell, Thomas B., 3,849,099.
O'Connor, Alton J.: *See—*
Charboneau, Benny J.; and O'Connor, Alton J., 3,849,031.
Oe, Takanori: *See—*
Nakanishi, Michio; Oe, Takanori; and Tashiro, Chiaki, 3,849,410.
Office National d'Etudes et de Recherches (O.N.E.R.A.): *See—*
Girard, Andre; and Laurent, Jean, 3,849,005.
Ogata, Fumimaro: *See—*
Ando, Satoshi; Matsui, Masao; and Ogata, Fumimaro, 3,849,044.
Ogawa, Toshio: *See—*
Suzuki, Takaji; and Ogawa, Toshio, 3,848,586.
Ogihara, Masuo; and Watanabe, Masanori, to Seiko Koki Kabushiki Kaisha. Shutter assembly for a camera. 3,849,788, Cl. 354-226.000.
Oguro, Tomokatsu, to Hitachi, Ltd. Magnetron with choke structure for reducing harmonics in output. 3,849,737, Cl. 331-86.000.
O'Hara, Mark J.: *See—*
Gleim, William K. T.; and O'Hara, Mark J., 3,849,287.
Ohashi, Shozo; Mori, Mitsuo; and Oyobe, Satoshi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusha. Means for preventing inversion of movable bottom of silver collection can. 3,848,297, Cl. 19-159.00r.
Ohbayashi-Gumi, Ltd.: *See—*
Takase, Kunio; Miyakoshi, Hisashi; and Ohmura, Mitsuo, 3,848,418.
Ohkawa, Shunjiro; and Minagawa, Katsumo, to Bridgestone Tire Company Limited. Extrusion die device. 3,849,045, Cl. 425-131.100.
Ohlson, John L.: *See—*
Cicione, Robert J.; Najjar, Edward G.; Scanlon, Patricia M.; Ohlson, John L.; and Finn, Joseph F., 3,849,169.
Ohmura, Mitsuo: *See—*
Takase, Kunio; Miyakoshi, Hisashi; and Ohmura, Mitsuo, 3,848,418.
Ohnesorge, Ralph R., to Gresen Manufacturing Company. Orbital device. 3,849,034, Cl. 418-61.00b.
Ohshima, Syunji, to Sony Corporation. Sterephonic signal reproducing apparatus. 3,849,600, Cl. 179-1.00g.
Oka, Michio: *See—*
Arakawa, Tetsutaro; and Oka, Michio, 3,849,087.
Okamoto, Takehiko: *See—*
Inoue, Masakazu; Okamoto, Takehiko; and Nagai, Ikuo, 3,849,358.
O'Keeffe, Terence W., to Westinghouse Electric Corporation. Alignment of a patterned electron beam with a member by electron backscatter. 3,849,659, Cl. 250-492.000.
Okubo, Hideyo: *See—*
Miyata, Akira; Okubo, Hideyo; Tomita, Chikayoshi; and Suzuki, Akio, 3,849,277.
Olin Corporation: *See—*
Boudakian, Max M., 3,849,429.
Olin Mathieson Chemical Corporation: *See—*
Snyder, Amandus D.; and Taft, William K., 3,849,081.
Oliver, Janet. Inflatable bed pan. 3,848,274, Cl. 4-113.000.
Olivetti, Ing. C., & C., S.p.A.: *See—*
Ceccarelli, Pietro, 3,848,748.
Saltini, Fabrizio; and Eccettuato, Vittorio, 3,849,634.
Ollivier, Fred; and Ollivier, Gerald, to Pepro, Societe pour le Developpement et la Vente de Specialities Chemeques. Process for the transformation of the interior structure of clouds. 3,848,801, Cl. 239-2.00r.
Ollivier, Gerald: *See—*
Ollivier, Fred; and Ollivier, Gerald, 3,848,801.
Olsen, Ray, to Superior Outdoor Display Inc. Illuminated outdoor sign. 3,848,349, Cl. 40-132.00r.
Olson, Clifford H., Jr.: *See—*
Nordeen, Erwin E.; and Olson, Clifford H., Jr., 3,848,292.
Olson, Robert E.: *See—*
Egger, Carl T.; and Olson, Robert E., 3,849,391.
Olympus Optical Co., Ltd.: *See—*
Nakamura, Sumio, 3,848,972.
Omichi, Takenori; Ikeda, Teppei; and Adachihara, Shunichi, to Fuji Photo Film Co., Ltd. Method for providing subbing layer of photographic film. 3,849,166, Cl. 117-47.00a.
Omietanski, George M.; and Petty, Herbert E., to Union Carbide Corporation. Process for reacting weak acids with chloroalkyl substituted silicon compounds. 3,849,471, Cl. 260-448.20e.
Omiya, Shoji; Hayashi, Yoshiaki; and Kuki, Akio, to Matsushita Electric Industrial Co., Ltd. Rotary head magnetic recording and reproducing apparatus. 3,849,796, Cl. 360-85.000.
One-half to Buell, Eugene F.: *See—*
Irani, Meherwan C., 3,849,535.
O'Neal, John L. Apparatus for transporting flat glass and the like. 3,848,917, Cl. 296-3.000.
O'Neill, Edwin R. Safety device for protecting an operator's hands. 3,848,502, Cl. 83-814.000.
Ono, Yoshio, to Pioneer Electronic Corporation. Cartridge adapter. 3,849,798, Cl. 360-94.000.
Opti-Holding AG: *See—*
Frohlich, Alfons, 3,848,298.
Optical Data Systems, Inc.: *See—*
Crowther, Ted J.; Jacobson, Charles F.; and Sutherlin, Kent K., 3,849,766.
Oral Corporation: *See—*
Ruckstuhl, Raymond Charles, 3,849,260.
O'Rear, Jacques G.; and Griffith, James R., to United States of America, Navy. Bis(trifluoromethyl)epoxides. 3,849,450, Cl. 260-348.00r.
Orriss, William T., to I-T-E Circuit Breaker (Canada) Limited. Small circuit breaker having large contact separation. 3,849,748, Cl. 335-174.000.
Ort, Eldon L., to United States of America, Navy. Radar system. 3,849,781, Cl. 343-18.00e.
Ortel, Gerhard, to Kuper, Heinrich. Method for transversely assembling sheet strips such as veneers, strips of cardboard or the like. 3,849,222, Cl. 156-148.000.
Orton, Geoffrey Keith: *See—*
Smythe, George Edward; and Orton, Geoffrey Keith, 3,848,591.
Osaka Gas Co., Ltd.: *See—*
Takase, Kunio; Miyakoshi, Hisashi; and Ohmura, Mitsuo, 3,848,418.
Oseroff, Herbert B.; and Sparks, William J. Hand grips. 3,848,480, Cl. 74-558.500.
Oshima, Teruo; Nagase, Tsuneyuki; Masuko, Fujio; Wada, Takeshi; Hirooka, Masaaki; and Taniguchi, Isoji, to Sumitomo Chemical Company, Ltd. Curable olefin copolymers and process for producing the same. 3,849,385, Cl. 260-80.780.
Ostreicher, Robert: *See—*
Walz, Alfred; and Ostreicher, Robert, 3,849,717.
Ota, Minoru: *See—*
Fujimoto, Yoshiji; Hananoi, Toshihiro; Yasuda, Michio; Makihara, Hiroshi; Kuramizu, Masaru; Ota, Minoru; Kokido, Hiroshi; and Kadota, Shozo, 3,849,762.
Otis Engineering Corporation: *See—*
Sizer, Phillip S.; and Young, Carter R., 3,848,668.
Otsap, Ben Amy, to Meeda Scientific Instrumentation Limited. Integrated flow indicator. 3,848,584, Cl. 128-2.080.
Otsap, Ben Amy; and Neuman, Eli, to Meeda Scientific Instrumentation Limited. Peak flow indicator for fluids. 3,848,585, Cl. 128-2.080.
Otsu, Ikoo: *See—*
Kikuchi, Makoto; Asano, Kiroaki; Otsu, Ikoo; and Saeki, Toyoaki, 3,848,362.
Otsuki, Tesuo: *See—*
Iwano, Haruhiko; Tanaka, Mitsugu; Otsuki, Tesuo; and Arai, Atsuaki, 3,849,133.
Otubo, Osamu; Terashima, Isamu; and Akutsu, Norio, to Hitachi, Ltd. Electrophotographic color copying apparatus. 3,848,990, Cl. 355-4.000.
Ousby, John Clark; and Turner, William Brian, to Imperial Chemical Industries Limited. Nitrogen-containing compounds. 3,849,437, Cl. 260-325.000.
Ouyagi, Yashichi: *See—*
Asano, Hidejiro; and Ouyagi, Yashichi, 3,849,176.
Overgoor, Bernardus Josephus Marie: *See—*
Gerardus, Henricus Wijnandus; and Overgoor, Bernardus Josephus Marie, 3,849,735.
Overhead Door Corporation: *See—*
Youngs, Wilbur R., 3,848,653.
Owatonna Tool Company: *See—*
Anderson, Richard T.; and Setheny, Michael J., 3,848,749.
Owen, Harold W., to Pullman Incorporated. Welding jig. 3,848,863, Cl. 269-9.000.
Owen, Hartley, to Mobil Oil Corporation. High temperature catalytic cracking with low coke producing crystalline zeolite catalysts. 3,849,291, Cl. 208-78.000.
Owens-Illinois, Inc.: *See—*
Cooley, Richard F., 3,849,739.
Oy Wartsila AB: *See—*
Mertanen, Pekka Henrikki, 3,848,442.
Oyobe, Satoshi: *See—*
Ohashi, Shozo; Mori, Mitsuo; and Oyobe, Satoshi, 3,848,297.
Ozaki, Kiyotaka: *See—*
Takahashi, Koichi; Usui, Keizaburo; Aba, Eiichi; and Ozaki, Kiyotaka, 3,848,431.
Ozalid Company Limited: *See—*
Newman, Wilfred Harry, 3,849,239.
Ozawa, Jun; Isogai, Tokio; Ishikawa, Toshio; Yamagiwa, Tokio; Matsumura, Mutsuo; Nakano, Zenichi; and Fuziya, Shigeru, to Hitachi, Ltd. Gas filled electrical bushing with concentric intermediate electrodes. 3,849,590, Cl. 174-31.00r.
Packard Instrument Company Inc.: *See—*
Kaartinen, Niilo H., 3,849,069.
Page, Kenneth J.; and Van Buren, John. Velocity-actuated fuel control valve. 3,848,858, Cl. 261-63.000.
Page, Littleton D. Apparatus for maintaining the water level within a swimming pool to predetermined limits. 3,848,627, Cl. 137-392.000.
Pagliari, Alberto: *See—*
Seberini, Febo; Valvassori, Alberto; Tavazzani, Carlo; and Pagliari, Alberto, 3,849,518.
Pakhtusova, Tamara Timofeevna: *See—*
Tesner, Pavel Alexandrovich; Knorre, Vadim Georgievich; Podkopaev, Vladimir Fedorovich; Pakhtusova, Tamara Timofeevna; Baenkevich, Vsevolod Viktorovich; and Astakhov, Arkady Petrovich, 3,849,073.

Paladino, Dick. Oboe fingering system and mouthpiece. 3,848,503, Cl. 84-380.000.
Palatucci, Gerald J.: *See—*
Shames, Oscar; Hinds, James L.; Palatucci, Gerald J.; and Raditz, Michael, 3,849,777.
Palm, Bert E.; and Kennedy, Alexander W., to Diamond Shamrock Corporation. Pulverulent metal coating compositions. 3,849,141, Cl. 106-1.000.
Palm, Lewis J.; and Palm, Ronald B., to Fulton Boiler Works, Inc. Thermal fluid heater apparatus. 3,848,661, Cl. 165-1.000.
Palm, Ronald B.: *See—*
Palm, Lewis J.; and Palm, Ronald B., 3,848,661.
Palmer, Leon B.; and Conger, Robert P., to Congoleum Industries, Inc. Carpet embossing in register with print. 3,849,157, Cl. 117-11.000.
Palmer, Leon B.; and Conger, Robert P., to Congoleum Industries, Inc. Carpet embossing in register with print. 3,849,158, Cl. 117-11.000.
Palmer, Leon B.; and Conger, Robert P., to Congoleum Industries, Inc. Carpet embossing in register with print. 3,849,159, Cl. 117-11.000.
Panissidi, Hugo A.: *See—*
Gardineer, Bayard G.; and Panissidi, Hugo A., 3,848,515.
Pankow, Horst, to Gewerkschaft Schalker Eisenhuette. Gas burner for coke oven exhaust gas. 3,849,058, Cl. 431-264.000.
Panov, Vladimir Illarionovich: *See—*
Chukhanov, Zinovy Zinovievich; Chukhanov, Zinovy Fedorovich; Panov, Vladimir Illarionovich; Nikolaev, Anatoly Mikhailovich; Tsuprov, Sergei Andreevich; and Lyashenko, Ivan Vasilievich, 3,848,536.
Papa, Anthony Joseph; and Proops, William Robert, to Union Carbide Corporation. Polycarbamates of organic polyisocyanates. 3,849,445, Cl. 260-340.900.
Pappas, John A.: *See—*
Cosco, Robert J.; and Pappas, John A., 3,849,690.
Paquet, Eugene H.: *See—*
Lancaster, Paul M.; and Paquet, Eugene H., 3,848,497.
Parfenov, Viktor Nikolaevich: *See—*
Malievsky, Alexandr Dmitrievich; Vints, Viktor Vladimirovich; Emanuel, Nikolai Markovich; and Parfenov, Viktor Nikolaevich, 3,849,499.
Parfums Rochas, Inc.: *See—*
Davidson, Bruce R.; and Agneta, Agustus R., 3,848,459.
Paris, Philippe Y. J.; Bougon, Pierre P. A.; and Guimard, Lucien, to International Standard Electric Corporation. Simulator visualization device. 3,849,597, Cl. 178-6.800.
Park, Robert H., to Fast Load Control, Inc. Method for employment of fast turbine valving. 3,849,666, Cl. 307-85.000.
Parker, Charles K., Jr.: *See—*
Miner, William R.; and Parker, Charles K., Jr., 3,849,318.
Parker, Winfred E.: *See—*
Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,849,321.
Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,849,454.
Parker-Hannifin Corporation: *See—*
Hoffman, Robert K., 3,848,900.
Hoffman, Robert K., 3,848,901.
Parlato, Philip J., to Alarm Products International, Inc. Connector for alarm system door cord. 3,848,959, Cl. 339-200.000.
Parr, Eric W., to Wilkinson Sword Limited. Spirometers. 3,848,583, Cl. 128-2.080.
Partida, Pedro. Confining nozzle for spray gun. 3,848,807, Cl. 239-290.000.
Pas, John: *See—*
Way, Merton B.; and Pas, John, 3,848,853.
Pasta, Mario: *See—*
Soardo, Paolo; and Pasta, Mario, 3,849,000.
Patel, Nagar J., to Westinghouse Electric Corporation. Circuit breaker with reverse override device. 3,849,619, Cl. 200-153.0sc.
Paton, Boris Evgenievich; Lakomsky, Victor Iosifovich; Melnik, Gary Alexandrovich; Chvertko, Anatoli Ivanovich; and Bukalo, Alfred Iosifovich. Plasma arc torch. 3,849,584, Cl. 13-9.000.
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Kumysh, Ilya Iosifovich; Tsykulenko, Anatoly Konstantinovich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Bondarenko, Oleg Petrovich; and Bogachenko, Alexei Georgievich. Method of electrosag melting of metal ingots. 3,849,588, Cl. 13-34.000.
Patrick, Charles T., Jr.; and Milligan, Charles L., to NDM Corporation. Indifferent electrode in electrosurgical procedures and method of use. 3,848,600, Cl. 128-303.130.
Patrick, Charles T., Jr., to NDM Corporation. Epoxy resin compositions and processes for preparing same. 3,849,366, Cl. 260-37.0ep.
Patten, Thomas, to Picker Corporation. Automatic X-ray inspection system. 3,849,650, Cl. 250-321.000.
Patterson, James M. Dual trailer hitch attachment. 3,848,893, Cl. 280-417.000.
Pattison, Victor A., to Hooker Chemical Corporation. Resins containing pyridine N-oxide salts of carbamoyl halides. 3,849,425, Cl. 260-295.0ca.
Pattison, Victor A., to Hooker Chemical Corporation. Certain pyridinium carbamoyl compositions. 3,849,426, Cl. 260-295.0ca.
Pattison, Victor A., to Hooker Chemical Corporation. Certain pyridinium anilide halide compositions. 3,849,427, Cl. 260-295.00q.
Pattison, Victor A., to Hooker Chemical Corporation. Certain pyridinium carbamoyloxy compositions. 3,849,428, Cl. 260-295.0ca.
Pavlich, Joseph P.: *See—*
Motley, Herman R.; Morris, Earl F.; and Pavlich, Joseph P., 3,849,316.
Pavlik, Norman M.; and Cunningham, James W., to Westinghouse Electric Corporation. Method of producing molded stators from steel particles. 3,848,331, Cl. 29-596.000.
Paxon Machine Company: *See—*
Buta, John R., 3,848,788.
Payne, Betty Lou B.: *See—*
Payne, Linwood K., Jr., deceased, 3,849,478.
Payne, John C., 1/2 to Payne, Leslie J. Free-fall corner. 3,848,682, Cl. 175-5.000.
Payne, Leslie J.: *See—*
Payne, John C., 3,848,682.
Payne, Linwood K., Jr., deceased (by Payne, Betty Lou B.; executrix), to Union Carbide Corporation. Tetrahydro-1-naphthyl-N-methylcarbamates. 3,849,478, Cl. 260-479.00c.
P.D.Q. Plastics, Inc.: *See—*
Lawlor, James J., 3,848,546.
Pearl, David Raymond: *See—*
Gerber, Heinz Joseph; and Pearl, David Raymond, 3,848,327.
Pearson, Monry L.; and Walls, Lee C., to Raceway Products Corporation. Hopple. 3,848,571, Cl. 119-126.000.
Peck, C. S., Co., Inc.: *See—*
Peck, Clifford S.; and Garrison, Clarence A., 3,849,057.
Peck, Clifford S.; and Garrison, Clarence A., to Peck, C. S., Co., Inc. Jet flame cleaning and coating apparatus and method. 3,849,057, Cl. 431-158.000.
Peck, Theodore H., to Bausch & Lomb Incorporated. Microscope stage fingers. 3,848,963, Cl. 350-90.000.
Peebles, Roy M. Method for polishing a seaming roll. 3,848,372, Cl. 51-289.00r.
Penick & Ford, Limited: *See—*
Harvey, Richard D.; and Ladenburg, Kurt, 3,849,253.
Pennau, Karl L., to Kimberly-Clark Corporation. Fastening tape arrangement for disposable diapers. 3,848,596, Cl. 128-284.000.
Penny, William H.: *See—*
Harautuneian, Andrew; and Penny, William H., 3,848,605.
Pentapharm A.G.: *See—*
Percs, Edmund E.; Stocker, Kurt F.; Blomback, Birger; Blomback, Margareta; and Hessel, Birgit, 3,849,252.
Pepro, Societe pour le Developpement et la Vente de Specialities Chemeques: *See—*
Ollivier, Fred; and Ollivier, Gerald, 3,848,801.
Perche, Maurice, to ITT Industries, Inc. Booster for central heating installation with automatic regulation. 3,848,800, Cl. 237-8.00a.
Percs, Edmund E.; Stocker, Kurt F.; Blomback, Birger; Blomback, Margareta; and Hessel, Birgit, to Pentapharm A.G. Enzyme composition and process for the manufacture thereof. 3,849,252, Cl. 195-62.000.
Perfect Pump Co.: *See—*
Mulvey, Philip A.; and Porter, Kenneth G., 3,849,032.
Perger, Julius M., to General Motors Corporation. Method of forming stiffener ribs in a sheet metal panel. 3,848,323, Cl. 29-475.000.
Perger, Julius M., to General Motors Corporation. Method of forming a sheet metal door. 3,848,324, Cl. 29-475.000.
Perkins, William C.: *See—*
Wadsworth, Donald H.; and Perkins, William C., 3,849,144.
Permutit Company, Inc., The: *See—*
Anderson, John R., 3,849,306.
Perrotti, Emilio: *See—*
Maspero, Federico; and Perrotti, Emilio, 3,849,510.
Perry, Edward James; and Moumouloff, Paul, to Kins Developments Limited. Heating/cooling apparatus. 3,848,664, Cl. 165-22.000.
Persson, Jan Edward, to Atlas Copco Aktiebolag. Method and means for drilling. 3,848,683, Cl. 175-65.000.
Pervel Industries, Inc.: *See—*
Bourdon, Richard P., 3,849,236.
Pervitsky, Boris Antonovich: *See—*
Kazakov, Nikolai Efimovich; Shipitsin, Svyatoslav Sergeevich; Minchenko, Veniamin Alexandrovich; Kudryavtsev, Innokenty Mikhailovich; Zimin, Vladimir Afanasievich; and Pervitsky, Boris Antonovich, 3,849,046.
Peter, Lothar: *See—*
Peter, Oskar E.; and Peter, Lothar, 3,849,015.
Peter, Oskar E.: *See—*
Peter, Oskar E.; and Peter, Lothar, 3,849,015.
Peter, Oskar E.; and Peter, Lothar, to Peter, Oskar E. Symmetrical hub-to-shaft connection. 3,849,015, Cl. 403-370.000.
Peter, Rene; and Lambrich, Hans Peter, to RCA Corporation. Vertical convergence circuits. 3,849,696, Cl. 315-13.00c.
Petersen, George E.: *See—*
Halloway, James H.; and Petersen, George E., 3,849,196.
Peterson, Bertil G., to Tobin-Arp Manufacturing Company. Closed loop air filtration system. 3,849,091, Cl. 55-302.000.
Peterson, Robert S.; and Cook, John W., to Westinghouse Electric Corporation. Automatic control method and apparatus for a rolling mill. 3,848,443, Cl. 72-8.000.
Petrillo, Vincenzo: *See—*
Corradi, Bruno; Petrillo, Vincenzo; and Cimarosti, Giordano, 3,849,266.
Petro-Tex Chemical Corporation: *See—*
Bowman, William G., 3,849,512.
Manning, Harold E., 3,849,511.
Petro-Tex Chemicals Corporation: *See—*

  - Miklas, Edward J., 3,849,545.
- Petroshanoff, George J., to Tridair Industries. Device for inserting and clamping a printed circuit board. 3,848,953, Cl. 339-92.00m.
- Petty, Herbert E.: *See—*
  - Omietanski, George M.; and Petty, Herbert E., 3,849,471.
- Pezot, Jacques, to Commissariat a l'Energie Atomique. Pulse generator for delivering rectangular pulses having fast rise and fall times. 3,849,732, Cl. 328-59.000.
- Pfeifer, Jerome L., to Bendix Corporation, The. System for making binary acoustic holograms. 3,849,758, Cl. 340-5.00h.
- Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., to Syntex (U.S.A.) Inc. Xanthone carboxylic acid compounds for inhibiting asthma. 3,849,565, Cl. 424-283.000.
- Pfizer Inc.: *See—*
  - Conover, Lloyd H.; and Woodward, Robert B., 3,849,493.
- Pflanz, Herbert M., to Allis-Chalmers Corporation. Construction type vacuum interrupter. 3,849,617, Cl. 200-144.00b.
- Philipps Petroleum Company: *See—*
  - Louthan, Rector P., 3,849,443.
- Phillips Fibers Corporation: *See—*
  - Womer, Walter D., 3,848,829.
- Phillips, James L. Baffle means for heat exchanger, and method of fabrication thereof. 3,848,573, Cl. 122-149.000.
- Phillips Petroleum Company: *See—*
  - Clampitt, Richard L.; and Hessert, James E., 3,848,673.
  - Doss, Richard C.; and Gingerich, Leo L., 3,849,381.
  - Pryor, Rboert C.; and Katz, Howard M., 3,848,549.
  - Reed, Jerry O.; and Dix, James S., 3,849,352.
  - Snavely, Kenneth E., 3,849,345.
  - Zuech, Ernest A., 3,849,507.
- Phillips, Sam B., Jr. Parachute assembly. 3,848,834, Cl. 244-145.000.
- Philofsky, Elliott M.: *See—*
  - Hall, Edward L.; and Philofsky, Elliott M., 3,848,330.
- Philpotts, Andrew, to Foseco International Limited. Treatment of slags covering molten metals. 3,849,117, Cl. 75-24.000.
- Physician's Medical Patent Development Corporation: *See—*
  - Sackner, Marvin A., 3,848,604.
- Piaard-Legry, Gerard: *See—*
  - Montuelle, Jean; Chaudron, Georges; and Piaard-Legry, Gerard, 3,849,079.
- Piazza, Richard Elliot; and Janko, Bozidar, to Tektronix, Inc. Distributed deflection structure employing dielectric support. 3,849,695, Cl. 315-3.000.
- Pickard, Robert G.: *See—*
  - Jackson, Geoffrey N.; Pickard, Robert G.; Brackley, Graham; and Satchell, David W., 3,849,283.
- Picker Corporation: *See—*
  - Patten, Thomas, 3,849,650.
- Piech, Kenneth Robert; and Walker, John Elwyn, to Calspan Corporation. Method for extracting photometric information from aerial photographic imagery. 3,849,006, Cl. 356-209.000.
- Pilkington Brothers Limited: *See—*
  - Branch, Geoffrey Hindle; and Hall, James Edward, 3,848,752.
- Piltzecker, John William: *See—*
  - Brandt, Roger; and Piltzecker, John William, 3,849,286.
- Pim, Norman L., to Gulf & Western Manufacturing Company (Hastings). Cycloid press. 3,848,472, Cl. 74-52.000.
- Pioneer Electronic Corporation: *See—*
  - Ono, Yoshio, 3,849,798.
- Pisanchyn, John: *See—*
  - Fuhrmann, Robert; Koff, Fred W.; and Pisanchyn, John, 3,849,481.
- Pitha, John J., to General Electric Company. Cordierite binder composition. 3,849,145, Cl. 106-39.600.
- Pitkethly, Robert Chalmers: *See—*
  - Bourne, Kenneth Hugh; Davies, Evan Ellis; and Pitkethly, Robert Chalmers, 3,849,299.
- Pitner, Alfred, 1/2 to Malnaison, Nadella Ruid. Radial rolling bearing assembly. 3,848,939, Cl. 308-236.000.
- Pitney-Bowes, Inc.: *See—*
  - Eckert, Alton B., Jr.; and Steinmetz, John H., 3,849,632.
  - Montillier, Jean-Pierre, 3,849,130.
  - Riley, Gilbert N., 3,848,798.
- Pittaro, Richard J.: *See—*
  - Bantz, Walter J.; Couture, John W.; and Pittaro, Richard J., 3,848,460.
- Pitts, Charles A., to Dow Chemical Company, The. Valve assembly. 3,848,670, Cl. 166-224.000.
- Plaister, John Edward: *See—*
  - Baugh, Raymond Ernest; and Plaister, John Edward, 3,848,444.
- Plana, Roberto, to AMP Incorporated. Lamp housing assembly. 3,849,641, Cl. 240-151.000.
- Plank, Don A., to Exxon Research and Engineering Company. Grafted polyolefins as stabilizer components in polyolefins. 3,849,516, Cl. 260-876.00r.
- Plastronics Corporation: *See—*
  - Bird, Stanford W.; Wasserman, Jerome D.; and Hatley, Earl L. (said Bird, Stanford W., assor. to), 3,848,795.
- Plempel, Manfred: *See—*
  - Boshagen, Horst; and Plempel, Manfred, 3,849,568.
- Pletscher, Oskar, to Gebrude Phetscher. Method for the treatment of workpiece surfaces. 3,848,373, Cl. 51-313.000.
- Plumer, Roy D., to General Motors Corporation. Shot obturation system for fully telescoped caseless ammunition. 3,848,530, Cl. 102-38.000.
- Plummer, William T., to Polaroid Corporation. Projector apparatus and system employing unique screen. 3,848,980, Cl. 352-81.000.
- PMCS Company, Inc.: *See—*
  - Goodwin, Charles W., 3,848,699.
- Podkopaev, Vladimir Fedorovich: *See—*
  - Tesner, Pavel Alexandrovich; Knorre, Vadim Georgievich; Podkopaev, Vladimir Fedorovich; Pakhtusova, Tamara Timofeevna; Baenkevich, Vsevolod Viktorovich; and Astakhov, Arkady Petrovich, 3,849,073.
- Podkopai, Nikolai Vasilievich: *See—*
  - Gurevich, Samuil Mordkovich; Zamkov, Vadim Nikolaevich; Prilutsky, Valery Pavlovich; Topolsky, Vladimir Filippovich; Podkopai, Nikolai Vasilievich; Manoilo, Sergei Afanasievich; and Kykhno, Semen Leonidovich, 3,849,211.
- Polaroid Corporation: *See—*
  - Bennett, Stewart, 3,848,985.
  - Grey, David S., 3,848,967.
  - Grey, David S., 3,848,968.
  - Land, Edwin H., 3,848,979.
  - Plummer, William T., 3,848,980.
  - Scholz, Donald T., 3,848,977.
- Polc, Stephen D.; and Rhein, Charles F., to Armco Steel Corporation. Process for galvanizing high carbon steel wire. 3,849,167, Cl. 117-51.000.
- Poletto, John Frank: *See—*
  - Weiss, Martin Joseph; Gibs, Gabriel Joseph; Poletto, John Frank; and Remers, William Alan, 3,849,441.
- Pollitzer, Ernest L., to Universal Oil Products Company. Hydrocarbon conversion catalyst. 3,849,340, Cl. 252-455.00z.
- Polster, Rudolf: *See—*
  - Schrempp, Klaus; Jettmar, Werner; Polster, Rudolf; and Hartmann, Eduard, 3,849,150.
- Polysar Limited-Polysar Limitee: *See—*
  - Chick, Orest Nicholas; and Means, Graham Neville, 3,849,183.
  - Smith, Albert Ernest, 3,849,528.
- Pompon, Jean-Paul, to Compagnie General d'Electricite. Method of manufacturing a metal-air battery. 3,849,202, Cl. 136-86.00a.
- Popov, Valery Georgievich: *See—*
  - Tetjuev, Vladimir Alexandrovich; Medovar, Boris Izrailevich; Chekotilo, Leonty Vasilievich; Popov, Valery Georgievich; Tjurikov, Pavel Ivanovich; and Kosmatenko, Ivan Egorovich, 3,848,657.
- Popp, Walter· *See—*
  - Bauer, Johann; and Popp, Walter, 3,849,365.
- Porter, James M.; Loweth, Carl V.; and Gilster, Kenneth W., to Trane Company, The. Absorption refrigeration machine with second stage generator. 3,848,430, Cl. 62-476.000.
- Porter, Kenneth G.: *See—*
  - Mulvey, Philip A.; and Porter, Kenneth G., 3,849,032.
- Possell, Clarence R., to C-H Products Corporation. Valve structure for pressurized liquid dispenser. 3,848,775, Cl. 222-70.000.
- Potter, Curtis N.: *See—*
  - Kroger, Harry; and Potter, Curtis N., 3,849,217.
- Pottkotter, Aloysius H. Sheet material ornament with unfoldable upstanding fingers. 3,849,234, Cl. 161-17.000.
- Poulson, Don E.: *See—*
  - Ma, Gabriel W. C.; and Poulson, Don E., 3,848,601.
- Powell, Harry C., Jr.; and Floyd, Donald W. Ultrasonic cleaning. 3,849,195, Cl. 134-1.000.
- Powell, Walter W., to Anderson, Greenwood & Co. Valve. 3,848,632, Cl. 137-514.000.
- PPG Industries, Inc.: *See—*
  - Luppino, Antonio, 3,849,100.
  - Raetzsch, Carl W.; Darlington, William B.; and Cunningham, Hugh, 3,849,280.
  - Schweppe, John V., 3,848,565.
  - Temple, Chester S., 3,849,148.
- Pre-Stress Concrete, Inc.: *See—*
  - Middleton, Thomas E., 3,849,221.
- Precision Industries, Inc.: *See—*
  - Verwey, William G. A.; and Stanton, Stephen L., 3,848,790.
- Presiwich, John Richard, to Warwick Pump and Engineering Company Limited. Surface cleaning. 3,848,804, Cl. 239-160.000.
- Press, Irving D., to Resistoflex Corporation. Method of fabricating a constrictable tube valve element. 3,848,321, Cl. 29-432.200.
- Prestridge, Floyd Leon, to Combustion Engineering, Inc. Electric control system. 3,849,285, Cl. 204-305.000.
- Price, Walter V. Boat. 3,848,561, Cl. 115-39.000.
- Prilutsky, Valery Pavlovich: *See—*
  - Gurevich, Samuil Mordkovich; Zamkov, Vadim Nikolaevich; Prilutsky, Valery Pavlovich; Topolsky, Vladimir Filippovich; Podkopai, Nikolai Vasilievich; Manoilo, Sergei Afanasievich; and Kykhno, Semen Leonidovich, 3,849,211.
- Prince, Arthur E., Jr.: *See—*
  - Ferment, George R.; Prince, Arthur E., Jr.; and Sessa, Paul A., 3,849,529.
- Procter & Gamble Company, The: *See—*
  - Buell, Kenneth Barclay, 3,848,594.
- Procter Paint and Varnish Co., Inc.: *See—*
  - Schmidt, Richard, 3,848,396.
- Proctor & Schwartz, Inc., mesne: *See—*
  - Mitchell, Derek, 3,848,823.
- Proios, Steve, to Mosler Safe Company, The. Remote banking intercom system. 3,849,603, Cl. 179-1.00h.
- Project Laboratories Limited: *See—*

  - Fox, John William, 3,848,887.
- Proops, William Robert: *See—*
  - Papa, Anthony Joseph; and Proops, William Robert, 3,849,445.
- Propst, Robert L., to Miller, Herman, Inc. Pediatric bed. 3,848,278, Cl. 5-91.000.
- Pryor, Rboert C.; and Katz, Howard M., to Phillips Petroleum Company. Two-stage smokeless incinerator with fluidized bed first stage. 3,848,549, Cl. 110-8.00a.
- Pullman Incorporated: *See—*
  - Owen, Harold W., 3,848,863.
- Pullman Incorporated, mesne: *See—*
  - Lopker, Edwin B., 3,849,313.
- Puyplat, Oliver, to Cibie Projecteurs. Motor vehicle headlamps. 3,849,642, Cl. 240-413.000.
- Pyrotenax Limited: *See—*
  - Halliday, Kenneth David, 3,849,630.
- Quindar Electronics, Inc.: *See—*
  - Wang, Kuei-Send; Epstein, Philip L.; and Lu, John Hsueh Chung, 3,849,764.
- Quinley, Adrian L. Outboard motor anti-theft device. 3,848,441, Cl. 70-232.000.
- Raceway Products Corporation: *See—*
  - Pearson, Monry L.; and Walls, Lee C., 3,848,571.
- Raditz, Michael: *See—*
  - Shames, Oscar; Hinds, James L.; Palatucci, Gerald J.; and Raditz, Michael, 3,849,777.
- Raetzsch, Carl W.; Darlington, William B.; and Cunningham, Hugh, to PPG Industries, Inc. Electrolytic cell including means for preventing atomic hydrogen attack of the titanium backplate member. 3,849,280, Cl. 204-256.000.
- Rafeldt, Klaus. Refuse containers, particularly for vehicles. 3,848,841, Cl. 248-99.000.
- Raimondi, Victor V.: *See—*
  - Mayer, James F.; and Raimondi, Victor V., 3,849,367.
- Raitt, John Stewart: *See—*
  - Harris, Frederick John; and Raitt, John Stewart, 3,849,103.
- Raley, Garland E.: *See—*
  - Adams, James M.; Hopper, Randall R.; Raley, Garland E.; and Rutherford, James K., 3,849,050.
- Ralston Purina Company: *See—*
  - Blagdon, Peter A.; Malzahn, Wayne R.; and Fujiwara, Huygene K., 3,849,582.
- Ram Partitions Limited: *See—*
  - Rich, Harry M., 3,848,908.
- Rand, Robert B. Belt having interchangeable decorative strips. 3,848,270, Cl. 2-311.000.
- Randolph, Allan E., Sr.: *See—*
  - Stevens, Harry A.; and Randolph, Allan E., Sr., 3,848,496.
- Rank Organisation Limited, The: *See—*
  - Hall-Jackson, John Alan, 3,849,219.
- Rank Xerox, Ltd., mesne: *See—*
  - Takahashi, Isoji; and Sato, Masamichi, 3,849,171.
- Rao, V. Durga Nageswar, to Ford Motor Company. Rotary regenerator for a gas turbine engine with resilient mounts for positioning the regenerator. 3,848,663, Cl. 165-8.000.
- Rappold, Hermann, & Co., GmbH: *See—*
  - Uerlichs, Johannes; Muller, Rudolf; and Kuckertz, Wilhelm, 3,848,665.
- Raschack, Manfred; and Bub, Oskar, to Knoll A.G. Chemische Fabriken. Method of treating cardiac arrhythmia with 2-(2'-diethylaminoethyl)-3-phenyl-phthalimidine and its salts. 3,849,570, Cl. 424-274.000.
- Rauschelbach, Paul A., to Sperry Rand Corporation. Aircraft automatic flight control system. 3,848,833, Cl. 244-77.00d.
- Rausing, Hans Anders, to Sobrefina S.A. Packing container. 3,848,760, Cl. 215-12.000.
- Raymond, Delmar R.; and Kleinfeld, Jack M., to Black Clawson Fibreclaim, Inc., mesne. Recovery of paper fiber from waste material contaminated with grease wax and/or similar material. 3,849,246, Cl. 162-4.000.
- Raytheon Company: *See—*
  - Georgopoulos, Christos J.; and Ross, Charles R., 3,849,672.
  - Gilliatt, Charles L., 3,849,623.
- RCA Corporation: *See—*
  - Bond, Bonald S., 3,849,782.
  - Freedman, David Daniel, 3,849,635.
  - Gruber, Leon Lester, 3,848,301.
  - Ibaugh, James Louis, 3,849,644.
  - Peter, Rene; and Lambrich, Hans Peter, 3,849,696.
- Reactor Centrum Nederland: *See—*
  - Van der Linde, Aart; and Hornsveld, Eduard Maurice, 3,849,215.
- Read, Balfour. Rotary compressor with valve member pivoted to an eccentric piston. 3,849,036, Cl. 418-62.000.
- Reading, Hugh Thomas, to Readings of Lismore Pty., Limited. Magnetic separator. 3,849,301, Cl. 209-214.000.
- Readings of Lismore Pty., Limited: *See—*
  - Reading, Hugh Thomas, 3,849,301.
- Reagan, Donald W.: *See—*
  - Mishcon, Lester; and Reagan, Donald W., 3,848,432.
- Recker, Florian B. Direction indicator for coupling. 3,849,007, Cl. 403-27.000.
- Reckitt & Colman Products Limited: *See—*
  - Turner, Stephen, 3,849,505.
- Redcay, Paul Wilson, to United States of America, Army. Pulse doppler fuse. 3,849,778, Cl. 343-7.0pf.
- Reder, Gerard S. Boat trailer attachment. 3,848,892, Cl. 280-414.00r.
- Reeber, Nicholas J.; and Saint John, Karl M., to Hazeltine Corporation. Local correction apparatus for a color previewer. 3,848,856, Cl. 358-76.000.
- Reed, Jerry O.; and Dix, James S., to Phillips Petroleum Company. Flame retardant polyolefin compositions of improved color and melt stability. 3,849,352, Cl. 260-23.00h.
- Reed, Richard L.: *See—*
  - Haley, Kenneth M.; Koschak, Dennis F.; Molinaro, Lawrence J.; and Reed, Richard L., 3,848,741.
- Rees, Richard W.: *See—*
  - Yardley, John P.; Rees, Richard W.; and Smith, Herchel, 3,849,403.
- Reeves, Wilson A.: *See—*
  - Calamari, Timothy A., Jr.; Reeves, Wilson A.; Schreiber, Sidney P.; and Cooper, Albert S., Jr., 3,849,067.
- Reflect-O-Lite Manufacturing Company: *See—*
  - Salg, George, 3,848,764.
- Regehr, Ulrich. Louver arrangement for a liquid/gas separator. 3,849,095, Cl. 55-394.000.
- Reguitti, Silvana. Crib mattress adjusting device. 3,848,277, Cl. 5-11.000.
- Reid, James Angus Wilson: *See—*
  - Jackson, Peter Frederick; and Reid, James Angus Wilson, 3,849,380.
- Reilly, Thomas A.; Reitz, Charles F.; and Smith, Robert D., to Du Pont de Nemours, E. I., and Company. Plastic heat exchange apparatus and a method for making. 3,848,660, Cl. 165-1.000.
- Reinell Boats, Inc.: *See—*
  - Livingston, David T., 3,848,284.
- Reitboech, Herbert J. P.; and Brody, Thomas P., to Westinghouse Electric Corporation. Object identifying apparatus. 3,849,633, Cl. 235-61.12n.
- Reitz, Charles F.: *See—*
  - Reilly, Thomas A.; Reitz, Charles F.; and Smith, Robert D., 3,848,660.
- Rekers, Casper J. N.: *See—*
  - Hilgen, Hendrika; and Rekers, Casper J. N., 3,849,267.
- Rekker, Robert A. Method for forming pinch pleats for draperies. 3,848,782, Cl. 223-34.000.
- Reliable Electric Company: *See—*
  - Baumbach, Bertram W.; and Nelson, Richard E., 3,849,750.
  - Sedlacek, William S., 3,848,954.
- Relton Corporation: *See—*
  - Green, Max L., 3,849,019.
- Remers, William Alan: *See—*
  - Weiss, Martin Joseph; Gibs, Gabriel Joseph; Poletto, John Frank; and Remers, William Alan, 3,849,441.
- Remick, Cassius D., to Electrohome Limited. Electrostatic precipitator. 3,849,090, Cl. 55-143.000.
- Remington Arms Company, Inc.: *See—*
  - Catlin, Robert T., 3,848,859.
- Renaux, Charley, to Commissariat a l'Energie Atomique. Handling system for nuclear fuel assemblies. 3,848,423, Cl. 62-45.000.
- Renner, Alfred; and Haug, Theobald, to Ciba-Geigy Corporation. Storage stable mixtures of bis or tris imides and polyamines. 3,849,374, Cl. 260-47.0cp.
- Rensch, Eberhard G. Building frame structure. 3,848,382, Cl. 52-263.000.
- Research Corporation: *See—*
  - Holland, Monte G., 3,849,577.
- Reserve Mining Company: *See—*
  - Haley, Kenneth M.; Koschak, Dennis F.; Molinaro, Lawrence J.; and Reed, Richard L., 3,848,741.
- Resistoflex Corporation: *See—*
  - Press, Irving D., 3,848,321.
- Rewop Company: *See—*
  - Dyer, James L., 3,848,918.
- Rexomi A/S: *See—*
  - Zeuthen, Karl Gustav, 3,848,991.
- Reynolds, Richard A.: *See—*
  - Brau, Maurice J.; and Reynolds, Richard A., 3,849,205.
- Rhea, Lyle G. Refrigeration system and process. 3,848,424, Cl. 62-115.000.
- Rhein, Charles F.: *See—*
  - Polc, Stephen D.; and Rhein, Charles F., 3,849,167.
- Rhein-Chemie Rheinau GmbH: *See—*
  - Butula, Ivan, 3,849,433.
- Rheinmetall G.m.b.H., Firma: *See—*
  - Scheipner, Robert Hans; Schlussler, Helmut; and Germershausen, Raimund, 3,848,464.
- Rhodes, Raymond Dewey. Boat seat. 3,848,921, Cl. 297-184.000.
- Rhone-Poulenc S.A.: *See—*
  - Bourdin, Francois; Costantini, Michel; Jouffret, Michel; and Lartigau, Guy, 3,849,502.
- Rhone-Poulence Textile: *See—*
  - Bolliand, Robert; and Saligny, Claude, 3,848,295.
- Rhone-Progil: *See—*
  - Becuwe, Jacques, 3,849,077.
  - Biarnais, Paul; Falize, Claude; and Sitaud, Gilbert, 3,849,475.
  - Busseret, Robert, 3,849,468.
- Rich, Harry M., to Ram Partitions Limited. Locking device for sliding panels. 3,848,908, Cl. 292-189.000.
- Rich, Leonard G.: *See—*
  - Webster, Ronald B.; and Rich, Leonard G., 3,848,520.

Richards, Lawrence I.; and Gould, Ronald R., to Autoquip Corporation. Safety lock for bascule bridge. 3,848,288, Cl. 14-41.000.

Richards, Oran D. Hand grip testing device for body weighing scales. 3,848,468, Cl. 73-380.000.

Richardson, Brian Peter, to Sandoz Ltd.; a/k/a Sandoz AG. Method of treating nephrosis. 3,849,562, Cl. 424-261.000.

Richardson Company, The: *See—*

Hollis, Norman E.; Jutte, Gottfried W.; McCartney, Frank I.; and McHugh, John V., 3,849,203.

Richter, Johan C. F. C., to Kamyr Aktiebolag. Screening and feeding device for cellulose digesters. 3,849,247, Cl. 162-237.000.

Ricker, Ernst: *See—*

Fuchs, Hugo; Ricker, Ernst; Schmidt, Franz; Schwartz, Erich; and Sperber, Heinrich, 3,849,444.

Ricketts, James M.: *See—*

Amann, Charles A.; and Ricketts, James M., 3,849,022.

Rieter, James F., Jr., to Vapor Corporation. Air conditioning system for a locomotive cab. 3,848,428, Cl. 62-285.000.

Riker Laboratories, Inc.: *See—*

Draper, Marshall D.; and Levy, Louis, 3,849,578.

Riley, Gilbert N., to Pitney-Bowes, Inc. Credit system for postage meters. 3,848,798, Cl. 235-101.000.

Ring, Richard: *See—*

Tesoro, Giuliana C.; and Ring, Richard, 3,849,401.

Riniker, Bernhard: *See—*

Rittel, Werner; Brugger, Max; Kamber, Bruno; Riniker, Bernhard; Sieber, Peter; and Greven, Hendrik Marie, 3,849,388.

Rinnfors, Lars-Gunnar: *See—*

Wallgard, Gunnar Alexius; and Rinnfors, Lars-Gunnar, 3,848,836.

Rist, Otto. Machine for the automatic insertion of slot insulations or armatures of electrical machines. 3,848,317, Cl. 29-205.00e.

Ritchie, William B., Jr.: *See—*

Bowley, Wallace William, 3,848,419.

Rittel, Werner; Brugger, Max; Kamber, Bruno; Riniker, Bernhard; Sieber, Peter; and Greven, Hendrik Marie, to Ciba-Geigy Corporation. Analogues of human thyrocalcitonin. 3,849,388, Cl. 260-112.500.

Ritter Engineering Ltd.: *See—*

Ritter, Robert A.; and Turnbull, David G., 3,849,089.

Ritter, Robert A.; and Turnbull, David G., to Ritter Engineering Ltd. Process, system and apparatus and components thereof for the separation of gaseous components. 3,849,089, Cl. 55-33.000.

Rivlin, Charles A.: *See—*

Hoffberger, Charles C., II; and Rivlin, Charles A., 3,849,598.

Roberge, Kenneth Joseph, to Bell Telephone Laboratories, Incorporated. Tone ringer. 3,849,606, Cl. 179-84.00t.

Roberts, Allan; deceased (by Roberts, Margaret Agnes), to Lever Brothers Company. Treatment of paperboard. 3,849,184, Cl. 117-155.0ua.

Roberts, Margaret Agnes: *See—*

Roberts, Allan, 3,849,184.

Robertson, H. H., Company: *See—*

Hazel, John O., 3,848,379.

Robichaud, Edmund J. Adjustable toolholder. 3,848,486, Cl. 82-36.00r.

Robins, Roland K.; and Khwaja, Tasneem A., to International Chemical & Nuclear Corporation. 3',5' Cyclic monophosphate nucleosides. 3,849,397, Cl. 260-211.50r.

Robot Foto und Electronic GmbH & Co. KG: *See—*

Holzapfel, Jurgen, 3,849,784.

Roch-Ola Manufacturing Corporation: *See—*

Bookout, Floyd V., 3,848,718.

Roche, William J., to GTE Sylvania Incorporated. Single base, self-igniting fluorescent lamp. 3,849,699, Cl. 315-46.000.

Rochfort, William Phillip King, to Kerbit Pty. Ltd. Tandem wheel supports. 3,849,017, Cl. 404-108.000.

Rockwell International Corporation: *See—*

Dynan, Forest J., 3,849,780.

Samuelsen, Bryan; and Liebman, Alfred A., 3,848,806.

Rodot, Frederic. Transportation system. 3,848,537, Cl. 104-154.000.

Rohe, Lothar: *See—*

Colln, Reimer; Hofer, Wolfgang; Maurer, Fritz; and Rohe, Lothar, 3,849,524.

Rohm and Haas Company: *See—*

Lewis, Sheldon N.; and Miller, George A., 3,849,430.

Rohr, Wolfgang: *See—*

Mangold, Dietrich; Fischer, Adolf; Rohr, Wolfgang; and Hamprecht, Gerhard, 3,849,467.

Rokugawa, Kyuji; Katoh, Yoshiki; Kuninaka, Akira; and Yoshino, Hiroshi, to Yamasa Shoyu Kabushiki Kaisha. Production of synthetic polynucleotides. 3,849,249, Cl. 195-28.00n.

Rolison, Darrell Edward: *See—*

Bloejack, James William, Jr.; Daniel, Truman Knox, Jr.; and Rolison, Darrell Edward, 3,848,548.

Rolniczak, Heinz: *See—*

Brieschke, Ewald; Kiefer, Esich; and Rolniczak, Heinz, 3,849,049.

Rombach, Ingrad: *See—*

Walz, Alfred; and Ostreicher, Robert, 3,849,717.

Romine, Edward L.: *See—*

Michaels, Leonard H.; and Romine, Edward L., 3,848,951.

Ronel, Samuel H.: *See—*

Gould, Francis E.; and Ronel, Samuel H., 3,849,238.

Rose, William Henry: *See—*

Lockard, Joseph Larue; and Rose, William Henry, 3,849,610.

Rosenheck, Bernard M., to Litton Systems, Inc. Graphic data redundancy reduction for text and half-tone optical facsimile system. 3,849,592, Cl. 178-6.000.

Rosenkranz, Hans-Jurgen: *See—*

Heine, Hans-Georg; Rosenkranz, Hans-Jurgen; and Rudolph, Hans, 3,849,497.

Roseveare, Ronald Newman: *See—*

Wyeth, Nathaniel Convers; and Roseveare, Ronald Newman, 3,849,530.

Ross, Charles R.: *See—*

Georgopoulos, Christos J.; and Ross, Charles R., 3,849,672.

Ross, Edgar A.: *See—*

Lines, Walter M.; Alsop, Alfred N.; and Ross, Edgar A., 3,848,884.

Rosso, Michael J.: *See—*

Fetscher, Charles A.; and Rosso, Michael J., 3,849,187.

Rottering, Quintin N., to Maytag Company, The. Precleaning a laundry washing machine. 3,848,436, Cl. 68-12.00r.

Rottering, Quintin N., to Maytag Company, The. Precleaning a token-actuated laundry washing machine. 3,848,437, Cl. 68-12.00r.

Roueche, Armand; Mueller, Willy; and Mory, Rudolf, to Ciba Geigy AG. Monoazo pigments containing a hydroxynaphthoylaminoacridone radical. 3,849,394, Cl. 260-155.000.

Round Rock Lime Company, mesne: *See—*

Summer, James R., 3,849,061.

Rowe, Donald R.: *See—*

Lloyd, William G.; and Rowe, Donald R., 3,849,336.

Rowland-Hill, Edward W.: *See—*

Mortimer, Frans H.; Jacobs, Gerard O.; Decoene, Frans J. G. C.; Braet, August; and Rowland-Hill, Edward W., 3,848,609.

Royse, Edwin H. Apparatus for mixing fluids of different specific gravity. 3,848,618, Cl. 137-91.000.

Ruben, Sam L.: *See—*

Johnston, Richard L., 3,848,543.

Ruchlack, Kasimir: *See—*

Wolff, Werner; Faber, Ruth; and Ruchlack, Kasimir, 3,849,556.

Ruckdeschel, Frederick Robert: *See—*

Abowitz, Gerald; Ruckdeschel, Frederick Robert; and Gerace, Robert Eugene, 3,849,628.

Ruckstuhl, Raymond Charles, to Oral Corporation. Water distillation apparatus. 3,849,260, Cl. 202-181.000.

Rudenko, Inna Lukinichna: *See—*

Lykov, Mikhail Vasilievich; Rybalchenko, Gleb Fedorovich; Korotkov, Mikhail Alexeevich; Dobrovolsky, Evgeny Ivanovich; Rudenko, Inna Lukinichna; Avilov, Oleg Vladimirovich; and Bljumberg, Yakov Benedictovich, 3,849,233.

Rudloff, Bernard. Opening and individual separation of fibers. 3,848,296, Cl. 19-81.000.

Rudolph, Hans: *See—*

Dhein, Rolf; Rudolph, Hans; Kreuder, Hans-Joachim; and Gebauer, Herbert, 3,849,160.

Heine, Hans-Georg; Rosenkranz, Hans-Jurgen; and Rudolph, Hans, 3,849,497.

Rudy, Thomas P.: *See—*

Hyer, Harry J.; and Rudy, Thomas P., 3,849,461.

Rudzki, Henryk S. Purification of terephthalic acid. 3,849,489, Cl. 260-525.000.

Rumping, Stephanus Nicolaas Hendrick, to Gutehoffnungshutte Sterkrade Aktiengesellschaft. Dust shield for use with a motion transmitting rod. 3,848,861, Cl. 266-25.000.

Rumyantsev, Alexei Ilich: *See—*

Yarovinsky, Lazar Matveevich; and Rumyantsev, Alexei Ilich, 3,849,189.

Rundle, Frederick Stanley, to Shepard Niles Crane & Hoist Corporation. Latching mechanism for telescoping lifting apparatus. 3,848,703, Cl. 187-73.000.

Russell, Stanley L., to Stromberg-Carlson Corporation. Solid state continuity check circuit. 3,849,605, Cl. 179-16.0aa.

Rutherford, James K.: *See—*

Adams, James M.; Hopper, Randall R.; Raley, Garland E.; and Rutherford, James K., 3,849,050.

Ruti Machinery Works Ltd.: *See—*

Steiner, Alois, 3,848,642.

Rybalchenko, Gleb Fedorovich: *See—*

Lykov, Mikhail Vasilievich; Rybalchenko, Gleb Fedorovich; Korotkov, Mikhail Alexeevich; Dobrovolsky, Evgeny Ivanovich; Rudenko, Inna Lukinichna; Avilov, Oleg Vladimirovich; and Bljumberg, Yakov Benedictovich, 3,849,233.

S.A. Rubber Mills Pty. Ltd.: *See—*

Brock, Alan James; and Fulton, Douglas William, 3,849,639.

Saab-Scania Aktiebolag: *See—*

Wallgard, Gunnar Alexius; and Rinnfors, Lars-Gunnar, 3,848,836.

Sabacky, M. Jerome: *See—*

Knowles, William S.; and Sabacky, M. Jerome, 3,849,480.

Saboe, Joseph C.: *See—*

Dempski, Robert E.; and Saboe, Joseph C., 3,849,549.

Sackner, Marvin A., to Physician's Medical Patent Development Corporation. Suction catheter. 3,848,604, Cl. 128-350.00r.

Saeki, Toyoaki: *See—*

Kikuchi, Makoto; Asano, Kiroaki; Otsu, Ikoo; and Saeki, Toyoaki, 3,848,362.

Saenger, Dietrich: *See—*

Barzynski, Helmut; Jun, Mong-Jon; Saenger, Dietrich; and Volkert, Otto, 3,849,137.

Safariland Leather Products: *See—*

Schaefer, Roger W., 3,848,547.

Saint John, Karl M.: *See—*

Reeber, Nicholas J.; and Saint John, Karl M., 3,848,856.

Saito, Takashi: *See—*

Yamaguchi, Kaoru; and Saito, Takashi, 3,849,355.

Sakaide, Roy R.; and Shank, Clifford A., to Bausch & Lomb Incorporated. Multichannel bioluminescent sensors. 3,849,653, Cl. 250-361.000.

Sakamoto, Hisashi: *See—*

Nakashima, Yoichi; Sakamoto, Hisashi; Ishizuka, Takeshi; and Suzuki, Kensuke, 3,849,791.

Salg, George, to Reflect-O-Lite Manufacturing Company. Electrical box structure for securement to wall paneling without separate fasteners. 3,848,764, Cl. 220-3.600.

Saligny, Claude: *See—*

Bolliand, Robert; and Saligny, Claude, 3,848,295.

Salters, Roelof Herman Willem, to U.S. Philips Corporation. Method of manufacturing a semiconductor device and semiconductor device manufactured by using the method. 3,849,216, Cl. 148-187.000.

Saltini, Fabrizio; and Eccettuato, Vittorio, to Olivetti, Ing., C., & C., S.p.A. Electronic computer. 3,849,634, Cl. 235-92.0dp.

Saltzberg, Burton R.: *See—*

Lawrence, Thomas Russell; and Saltzberg, Burton R., 3,849,733.

Sample, Thomas E., Jr.: *See—*

Schievelbein, Vernon H.; and Sample, Thomas E., Jr., 3,849,328.

Samuelsen, Bryan; and Liebman, Alfred A., to Rockwell International Corporation. Throttling venturi valve. 3,848,806, Cl. 239-265.110.

Sanders, Frederick W., to Mead Corporation, The. Electrolytic system. 3,849,278, Cl. 204-237.000.

Sandoz Ltd.: *See—*

Basel, Horst Aebli; Fleck, Fritz; Littlewood, Peter Stuart; and Mercer, Alec Victor, 3,849,406.

Sandoz Ltd.; a/k/a Sandoz AG: *See—*

Richardson, Brian Peter, 3,849,562.

Sandoz-Wander, Inc.: *See—*

Elton, Richard L., 3,849,575.

Houlihan, William J.; and Nadelson, Jeffrey, 3,849,438.

Sandvik Aktiebolag: *See—*

Faber, Kurt Heinrich Albert Erich, 3,848,303.

Sankyo Company Limited: *See—*

Arai, Mamoru; Haneishi, Tatsuo; Kayamori, Hisashi; Takiguchi, Yoo; Kitano, Noritoshi; and Kaneko, Susumu, 3,849,398.

Sanner, George E., to Santron Corporation. Fluid flow control systems. 3,848,616, Cl. 137-78.000.

Santala, Teuvo, to Texas Instruments, Inc. Catalysts for conversion of nitrogen oxide pollutants in automotive exhaust gases. 3,849,342, Cl. 252-462.000.

Santana, Augustin Zabaleta. Rotary machine tool. 3,848,489, Cl. 82-61.000.

Santron Corporation: *See—*

Sanner, George E., 3,848,616.

Sanyo Electric Co., Ltd.: *See—*

Kurita, Yuko; Kawanishi, Yasuhiro; Yoshikawa, Katsuji; and Tanaka, Kiyoshi, 3,849,028.

Sarbello, Alfred J.: *See—*

Stella, Leo; and Sarbello, Alfred J., 3,848,938.

Sarda, Pierre Jean Francois Jacques: *See—*

Irissou, Pierre Regis Marie Henri; and Sarda, Pierre Jean Francois Jacques, 3,849,715.

Sarhadiam, Aram: *See—*

Ter-Gevorkian, Vrej, 3,848,345.

Sarstedt, Walter; Krause, Hans-Dieter; and Wisser, Hermann. Device for receiving and dispensing variable liquid quantities. 3,848,777, Cl. 222-386.000.

Satchell, David W.: *See—*

Jackson, Geoffrey N.; Pickard, Robert G.; Brackley, Graham; and Satchell, David W., 3,849,283.

Sato, Akira: *See—*

Shiba, Keisuke; and Sato, Akira, 3,849,147.

Sato, Masamichi: *See—*

Takahashi, Isoji; and Sato, Masamichi, 3,849,171.

Sato, Ryozi; and Chino, Yasuyoshi, to Nippon Zeon Co., Ltd. Method of preventing the polymerization of unsaturated aldehyde. 3,849,498, Cl. 260-601.00r.

Sato, Tadashi: *See—*

Morita, Koji; and Sato, Tadashi, 3,849,731.

Sato, Yasumasa; Matsuyama, Shigeru; and Kobayashi, Masaaki, to Aikoh Co., Ltd. Method of making a steel ingot. 3,848,655, Cl. 164-43.000.

Satoh, Mitsutoshi: *See—*

Takagi, Atsushi; Miura, Mitsuo; Suzuki, Akio; Kukino, Yoshinori; Amagai, Kiyoshi; Shimizu, Haruji; Satoh, Mitsutoshi; Kohno, Shoji; and Ebine, Mitsuo, 3,848,685.

Sayles, Chester M. Cover for a hunter's blind. 3,848,352, Cl. 43-1.000.

Scanlon, Patricia M.: *See—*

Cicione, Robert J.; Najjar, Edward G.; Scanlon, Patricia M.; Ohlson, John L.; and Finn, Joseph F., 3,849,169.

Scapicchio, Celestino G.: *See—*

Bakke, Even; and Scapicchio, Celestino G., 3,849,092.

Schaad, William J.: *See—*

Cobb, Jesse M.; and Schaad, William J., 3,849,612.

Schaar, Charles H., to Kendall Company, The. Contourable diaper. 3,848,599, Cl. 128-287.000.

Schaefer, Roger W., to Safariland Leather Products. Ballistic clip board. 3,848,547, Cl. 109-49.500.

Schaeff, Hans. Backhoe apparatus. 3,848,756, Cl. 214-138.00c.

Schall, Robert A., to Dorr-Oliver Incorporated. Air pressure-actuated double-acting diaphragm pump. 3,849,033, Cl. 417-454.000.

Schaller, Kurt: *See—*

Fluck, Josef; Schaller, Kurt; and Zaugg, Roland, 3,848,400.

Schard, Malcolm P.: *See—*

Bullard, Edward M.; and Schard, Malcolm P., 3,849,520.

Scheel, Henning W. Space-saving storage of flexible sheets. 3,848,821, Cl. 242-55.000.

Scheffler, Edward D., Jr., to AG Tec Inc. Fluid distributor apparatus. 3,848,635, Cl. 137-610.000.

Scheffler, Ulrich: *See—*

Hartwig, Jurgen; Scheffler, Ulrich; and Ulrich, Klaus-Herbert, 3,849,269.

Scheiner, Bernard J.; Lindstrom, Roald E.; and Henrie, Thomas A., to United States of America, Interior. Electro-oxidative method for the recovery of molybdenum from sulfide ores. 3,849,265, Cl. 204-86.000.

Scheipner, Robert Hans; Schlussler, Helmut; and Germershausen, Raimund, to Rheinmetall G.m.b.H., Firma. Underwater measuring buoy system. 3,848,464, Cl. 73-170.00a.

Schellenberg, James M.; and Jones, Raymond R., to Westinghouse Electric Corporation. Method and system for varying the characteristics of a dispersive delay line. 3,849,745, Cl. 333-31.00r.

Schering Aktiengesellschaft: *See—*

Eder, Ulrich; and Wiechert, Rudolf, 3,849,447.

Schibbye, Lauritz Benedictus, to Svenska Rotor Maskiner Aktiebolag. Refrigeration plants. 3,848,422, Cl. 62-84.000.

Schied, Thomas; and Wright, Edward J., to Sherman Car Wash Equipment Co. Safety shield. 3,848,542, Cl. 104-172.00b.

Schieser, Warren J., to Corco, Inc. Disposable reservoir package for liquid-dispenser having valve and operating float. 3,848,776, Cl. 222-105.000.

Schievelbein, Vernon H.; and Sample, Thomas E., Jr., to Texaco Inc. Process and composition for inhibiting scale deposition. 3,849,328, Cl. 252-180.000.

Schild, A., S.A.: *See—*

Fluck, Josef; Schaller, Kurt; and Zaugg, Roland, 3,848,400.

Schimke, Lloyd J. Measuring and dispensing cap. 3,848,774, Cl. 222-36.000.

Schlichting, Hans L.: *See—*

Weil, Edward D.; and Schlichting, Hans L., 3,849,477.

Schlimme, Gisbert; and Tschirner, Manfred, to Miag Muhlenbau und Industrie GmbH. Device for germinating and drying malt. 3,849,255, Cl. 195-129.000.

Schlumberger Technology Corporation: *See—*

Calvert, Thomas J., 3,849,721.

Young, David E., 3,848,629.

Schlussler, Helmut: *See—*

Scheipner, Robert Hans; Schlussler, Helmut; and Germershausen, Raimund, 3,848,464.

Schmeidl, Karl, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Rhodamine dye solutions. 3,849,065, Cl. 8-25.000.

Schmidt, Andreas: *See—*

Brunetti, Heimo; Schwarzenbach, Kurt; and Schmidt, Andreas, 3,849,492.

Schmidt, Felix Helmut: *See—*

Hubner, Manfred; Heerdt, Ruth; Schmidt, Felix Helmut; Thiel, Max; and Weyer, Rudi, 3,849,417.

Schmidt, Franz: *See—*

Fuchs, Hugo; Ricker, Ernst; Schmidt, Franz; Schwartz, Erich; and Sperber, Heinrich, 3,849,444.

Schmidt, Fritz; Matthaus, Gunther; and Massek, Peter, to Siemens Aktiengesellschaft. Current feeding arrangement for electrical apparatus having low temperature cooled conductors. 3,849,589, Cl. 174-21.00r.

Schmidt, Gertraud A., to General Cable Corporation. Method of applying and cooling low density polyethylene cable insulation. 3,849,192, Cl. 117-232.000.

Schmidt, Richard, to Procter Paint and Varnish Co., Inc. Means for depositing lids on filled containers and then seating said lids in sealing condition on such containers. 3,848,396, Cl. 53-43.000.

Schnettler, Richard A.: *See—*

Suh, John T.; and Schnettler, Richard A., 3,849,400.

Scholz, Donald T., to Polaroid Corporation. Multipurpose, audio-visual cassette system. 3,848,977, Cl. 352-14.000.

Schramm, Harold J.; McCullough, John R.; and Yarnall, Joseph P., Jr., to Schramm, Inc. Air trap. 3,848,623, Cl. 137-186.000.

Schramm, Inc.: *See—*

Schramm, Harold J.; McCullough, John R.; and Yarnall, Joseph P., Jr., 3,848,623.

Schreiber, Sidney P.: *See—*

Calamari, Timothy A., Jr.; Reeves, Wilson A.; Schreiber, Sidney P.; and Cooper, Albert S., Jr., 3,849,067.

Schrempp, Klaus; Jettmar, Werner; Polster, Rudolf; and Hartmann, Eduard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of pigment pastes for printing ink and varnish paint. 3,849,150, Cl. 106-288.00q.

Schreyer, Gerd: *See—*

Hoffmann, Peter; Schreyer, Gerd; Weiberg, Otto; and Weigert, Wolfgang, 3,849,484.

Schroeder, Herbert M.: *See—*

  - Farah, Basil S.; and Schroeder, Herbert M., 3,849,360.
- Schultz, Ward E.: *See—*
  - McKinlay, Philip F.; Smith, Harry D., Jr.; and Schultz, Ward E., 3,849,646.
- Schulze, Heinz, to VEB Pentacon Dresden Kamera- und Kinowerke. Photographic camera with preselectable diaphragm aperture. 3,849,785, Cl. 354-40.000.
- Schulze, Reinhold, to Norddeutsche Affinerie. Process for bonding particulate solid materials to a substrate. 3,849,180, Cl. 117-100.00b.
- Schupak, Grigory Bentsionovich: *See—*
  - Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Kumysh, Ilya Iosifovich; Tsykulenko, Anatoly Konstantinovich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Bondarenko, Oleg Petrovich; and Bogachenko, Alexei Georgievich, 3,849,588.
- Schuss, Jack Ascher, to Combustion Engineering, Inc. Computer based plant protection system. 3,849,056, Cl. 431-24.000.
- Schuster, Robert W.: *See—*
  - Eastman, James M.; and Schuster, Robert W., 3,849,021.
- Schwab, Helmut; and Hoover, Troy Eugene, to National Cash Register Company, The. Pressure-sensitive record unit comprising a mixture of two chromogenic compounds. 3,849,164, Cl. 117-36.800.
- Schwartz, Erich: *See—*
  - Fuchs, Hugo; Ricker, Ernst; Schmidt, Franz; Schwartz, Erich; and Sperber, Heinrich, 3,849,444.
- Schwarz, Eric George: *See—*
  - Marlin, Lawrence; and Schwarz, Eric George, 3,849,156.
- Schwarz, Hans-Helmut: *See—*
  - Immel, Otto; and Schwarz, Hans-Helmut, 3,849,335.
- Schwarzenbach, Kurt: *See—*
  - Brunetti, Heimo; Schwarzenbach, Kurt; and Schmidt, Andreas, 3,849,492.
- Schwarzler, Peter: *See—*
  - Ghibu, Michael; Bohn, Gerhard; and Schwarzler, Peter, 3,849,724.
- Schweppe, John V., to PPG Industries, Inc. Blanket feed binder applicator. 3,848,565, Cl. 118-234.000.
- Schweyen, Paul R.: *See—*
  - Fetscher, Charles A.; and Schweyen, Paul R., 3,849,383.
- Scigliano, Robert E. Receptacle-bird feeder. 3,848,570, Cl. 119-51.00r.
- SCM Corporation: *See—*
  - Bordenca, Carl; and Derfer, John M., 3,849,571.
  - Hall, Richard C.; Kidd, Norman D.; and Daravingas, George V., 3,849,579.
- Scott, John W.: *See—*
  - Kozlowski, Robert H.; Sieg, Robert P.; and Scott, John W., 3,849,082.
- Scott, Kelley E., Jr.; Kemper, Daryl M.; Grove, Lloyd E.; and Kiess, Ronald J., to CTS Corporation. Piezoelectric crystal units with malleable terminals and epoxy-filler sealant. 3,849,681, Cl. 310-9.100.
- Scottish Agriculture Industries Limited: *See—*
  - Harris, Frederick John; and Raitt, John Stewart, 3,849,103.
- SCP-Exploatering AB: *See—*
  - Mogren, Hakan Lars; Hedenskog, Gudmund Oscar; and Enebo, Lennart Eugen, 3,848,812.
- Seaman, Russell L.: *See—*
  - Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., 3,849,407.
  - Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., 3,849,470.
- Searle, G. D., & Co.: *See—*
  - Zawadzki, Joseph F.; and Chinn, Leland J., 3,849,404.
- Seberini, Febo; Valvassori, Alberto; Tavazzani, Carlo; and Pagliari, Alberto, to Montecatini Edison S.p.A. Process for preparing impact-resistant polymeric compositions containing graft copolymers. 3,849,518, Cl. 260-878.00r.
- Sedlacek, William S., to Reliable Electric Company. Clip terminal and applicator tool combination. 3,848,954, Cl. 339-97.00r.
- Seedorf, Robert R., to Moffitt, Roy W., Company, The. Multi-station printing system. 3,848,528, Cl. 101-115.000.
- Seidel, Joseph, to Westinghouse Electric Corporation. Iron electrode paste for alkaline battery plates. 3,849,198, Cl. 136-25.000.
- Seifert, Peter, to Black Clawson Company, The. Method and apparatus for screening paper fiber stock. 3,849,302, Cl. 209-273.000.
- Seiko Koki Kabushiki Kaisha: *See—*
  - Nakagawa, Tadashi, 3,849,787.
  - Ogihara, Masuo; and Watanabe, Masanori, 3,849,788.
- Seith, Robert E.; and Bundy, Otto M., to Gulf States Paper Corporation. Devices, systems and methods employing knitting fabric mulch. 3,848,359, Cl. 47-56.000.
- Seitz, Karl: *See—*
  - Begrich, Rainer; and Seitz, Karl, 3,849,413.
- Sejpal, Vasant D.; Lueschen, William J.; and Weinstein, Bernard, to American Home products Corporation. Aerosol dispensing system for anhydrous edible fat compositions. 3,849,580, Cl. 426-116.000.
- Sekine, Hiroshi: *See—*
  - Ishizaki, Keizo; Sekine, Hiroshi; Gondo, Hisashi; Wada, Koji; Kawano, Tsuyoshi; Watanabe, Hidekazu; Kanbayashi, Gou; and Maruyama, Tadasatsu, 3,849,209.
- Sela, Michael: *See—*
  - Teitelbaum, Dvora; Gan, Ramat; Meshorer, Asher; Hirshfeld, Tsvi; Arnon, Ruth; and Sela, Michael, 3,849,550.
- Selfix, Inc.: *See—*
  - Levy, Leon M., 3,848,843.
- Selk, Ben F.: *See—*
  - McCormick, Larry L.; and Selk, Ben F., 3,848,950.
- Seminiano, Herman J. Dry fire cartridge or shot shell. 3,848,350, Cl. 42-1.00n.
- Semrow, Walter J., to Dynamics Corporation of America. Apparatus for peeling vegetables. 3,848,524, Cl. 99-631.000.
- Senn, Werner Josef. Apparatus for deciphering cipher code present at information carriers in the form of character groups of the same number of digits. 3,849,599, Cl. 178-53.10r.
- Sessa, Paul A.: *See—*
  - Ferment, George R.; Prince, Arthur E., Jr.; and Sessa, Paul A., 3,849,529.
- Setheny, Michael J.: *See—*
  - Anderson, Richard T.; and Setheny, Michael J., 3,848,749.
- Seto, Kunihira: *See—*
  - Hibino, Noburo; Seto, Kunihira; Kobayashi, Teruo; and Inoue, Kazuo, 3,849,139.
- Shaffner, Janice V.: *See—*
  - Mentha, John W.; Shaffner, Janice V.; and Cresswell, Ronald M., 3,849,416.
- Shames, Oscar; Hinds, James L.; Palatucci, Gerald J.; and Raditz, Michael, to United States of America, Navy. Interrogator-transponder fruit reducer. 3,849,777, Cl. 343-6.51c.
- Shank, Clifford A.: *See—*
  - Sakaide, Roy R.; and Shank, Clifford A., 3,849,653.
- Shank, Wayne C., to Avco Corporation. Differential gearing for gas turbine engine. 3,848,482, Cl. 74-710.000.
- Sharrow, Clarence C. Load fasteners. 3,848,889, Cl. 280-179.00a.
- Shavel, John, Jr.: *See—*
  - Von Strandtmann, Max; Klutchko, Sylvester; Kaminsky, Daniel; and Shavel, John, Jr., 3,849,446.
- Shaw, Woodrow G.: *See—*
  - Blewitt, Donald D.; and Shaw, Woodrow G., 3,849,754.
  - Blewitt, Donald D.; and Shaw, Woodrow G., 3,849,755.
- Sheehan, Hilary W.: *See—*
  - Linam, Richard Lee; and Sheehan, Hilary W., 3,849,626.
- Sheehan, John F. Dental floss holder. 3,848,613, Cl. 132-92.00r.
- Shen, Tsung-Ying: *See—*
  - Witzel, Bruce E.; and Shen, Tsung-Ying, 3,849,572.
- Shepard Niles Crane & Hoist Corporation: *See—*
  - Rundle, Frederick Stanley, 3,848,703.
- Shepherd, Thomas H.; and Gould, Francis E., to National Patent Development Corporation. Method of preparing surgical sutures. 3,849,185, Cl. 117-161.0ub.
- Shepler, Terry H.: *See—*
  - Taft, David D.; and Shepler, Terry H., 3,849,353.
- Sheppard, Richard H. Dual hydraulic power steering system with hydrostatic control. 3,848,693, Cl. 180-79.20r.
- Sheratte, Martin B., to McDonnell, Douglas, Corporation. Functional fluids. 3,849,324, Cl. 252-78.000.
- Sherman Car Wash Equipment Co.: *See—*
  - Schied, Thomas; and Wright, Edward J., 3,848,542.
- Shesser, Arthur B.: *See—*
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  - Ichiba, Terumichi; Shimba, Hiroshi; and Mukunashi, Hiroaki, 3,849,591.
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  - Takagi, Atsushi; Miura, Mitsuo; Suzuki, Akio; Kukino, Yoshinori; Amagai, Kiyoshi; Shimizu, Haruji; Satoh, Mitsutoshi; Kohno, Shoji; and Ebine, Mitsuo, 3,848,685.
- Shindengen Kogyo Kabushiki Kaisha: *See—*
  - Shimamura, Akira; and Matsuzaki, Kunio, 3,849,703.
- Shioyama, Tadao: *See—*
  - Koda, Minoru; Shioyama, Tadao; and Nishiyama, Akio, 3,849,795.
- Shipitsin, Svyatoslav Sergeevich: *See—*
  - Kazakov, Nikolai Efimovich; Shipitsin, Svyatoslav Sergeevich; Minchenko, Veniamin Alexandrovich; Kudryavtsev, Innokenty Mikhailovich; Zimin, Vladimir Afanasievich; and Pervitsky, Boris Antonovich, 3,849,046.
- Shirai, Masayuki: *See—*
  - Toshioka, Tokuma; Takagi, Haruyuki; and Shirai, Masayuki, 3,848,368.
- Shirato, Hajime, to Nippon Electric Company, Limited. Memory circuit. 3,849,767, Cl. 340-173.0dr.
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  - Nakanishi, Michio; Araki, Kazuhiko; Tahara, Tetsuya; and Shiroki, Masami, 3,849,405.
- Shiurila, John, to Singer Company, The. Latch/unlatch mechanism for cassette holder door. 3,848,907, Cl. 292-81.000.
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  - Iwasa, Junzo; Maruto, Shunsuke; Ikeda, Noboru; Nakamura, Keiji; and Shoji, Yukinobu, 3,849,561.
- Showa Denko Kabushiki Kaisha: *See—*
  - Yoshida, Toyozi; Ushiyama, Kazuhisa; and Yamanaka, Minoru, 3,849,114.
- Shreev, George E., to Symmonds, Gene B. Ball bearing feeder. 3,848,771, Cl. 221-105.000.
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- Siebein, Walter A.: *See—*
  - Gegenheimer, Harold W.; Siebein, Walter A.; and Hancock, George J., 3,848,529.
- Sieber, Peter: *See—*
  - Rittel, Werner; Brugger, Max; Kamber, Bruno; Riniker, Bernhard; Sieber, Peter; and Greven, Hendrik Marie, 3,849,388.
- Sieg, Robert P.: *See—*
  - Kozlowski, Robert H.; Sieg, Robert P.; and Scott, John W., 3,849,082.
- Siegle, John Carl; and Wolfe, Homer Bagenstose, to Du Pont de Nemours, E. I., and Company. Polymeric UV stabilizers for substantially hydrocarbon polymers. 3,849,373, Cl. 260-47.0up.
- Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, to Ciba-Geigy AG. Process for the optical brightening of organic materials. 3,849,163, Cl. 117-33.50t.
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  - Dall'Armi, Georg V., 3,848,999.
  - Karlikowski, Jupp; and Michel, Hans, 3,849,135.
  - Leistner, Werner, 3,849,683.
  - Schmidt, Fritz; Matthaus, Gunther; and Massek, Peter, 3,849,589.
- Siemsen, Horst: *See—*
  - Wiese, Hans-Holger; and Siemsen, Horst, 3,848,731.
- Simonis, Wolfgang: *See—*
  - Flockenhaus, Claus; Simonis, Wolfgang; Beck, Kurt-Gunther; and Echterhoff, Heinrich, 3,849,258.
- Simonsen, James. Method and apparatus for custom molding shoes and boots. 3,848,287, Cl. 12-142.00p.
- Singer Company, The: *See—*
  - Duncan, John L.; and Duthie, Fredrick W., 3,849,684.
  - Mishcon, Lester; and Reagan, Donald W., 3,848,432.
  - Shiurila, John, 3,848,907.
- Sitaud, Gilbert: *See—*
  - Biarnais, Paul; Falize, Claude; and Sitaud, Gilbert, 3,849,475.
- Sizer, Phillip S.; and Young, Carter R., to Otis Engineering Corporation. Apparatus for treating wells. 3,848,668, Cl. 166-72.000.
- Skarbo, Roald R., to Kennecott Copper Corporation. Cobalt stripping. 3,849,534, Cl. 423-139.000.
- Skil Corporation: *See—*
  - Legler, John G., 3,848,680.
- Skinner, Davis A., to Union Oil Company of California. Calcium-strontium smoke inhibitors for diesel fuels. 3,849,084, Cl. 44-76.000.
- Skubal, John J.: *See—*
  - Marchione, Joseph H.; and Skubal, John J., 3,848,293.
- Slaugenhaupt, Burl L.: *See—*
  - Bruno, Marshall J.; Jarrett, Noel; and Slaugenhaupt, Burl L., 3,849,119.
- Sleight, Arthur W., to Du Pont de Nemours, E. I., and Company. Compound $Cd_2Os_2O_7$ having pyrochlore crystal structure. 3,849,544, Cl. 423-593.000.
- Slick Corporation, The: *See—*
  - Bakke, Even; and Scapicchio, Celestino G., 3,849,092.
- Small, Fred: *See—*
  - Allen, Archelaius Dawson; and Small, Fred, 3,848,420.
- Smirnov, Viktor Sergeevich: *See—*
  - Gryaznov, Vladimir Mikhailovich; Smirnov, Viktor Sergeevich; Mischenko, Alexandr Petrovich; and Aladyshev, Sergei Ivanovich, 3,849,076.
- Smit, Henry, to Tessell, Leslie E. Safety guard for presses. 3,848,721, Cl. 192-133.000.
- Smith, Albert Ernest, to Polysar Limited-Polysar Limitee. Microporous polymer sheets. 3,849,528, Cl. 264-49.000.
- Smith, Frank R., Jr.: *See—*
  - Di Salvo, Walter; Smith, Frank R., Jr.; and Kenney, Edward J., 3,849,327.
- Smith, George W.; and Hayden, Daniel B., to General Motors Corporation. Homeotropic alignment additive for liquid crystals. 3,848,966, Cl. 350-160.0lc.
- Smith, Harry A., to Dow Chemical Company, The. Latent curing epoxy resin-aromatic disulfonamide compositions. 3,849,375, Cl. 260-47.0en.
- Smith, Harry D., Jr.: *See—*
  - McKinlay, Philip F.; Smith, Harry D., Jr.; and Schultz, Ward E., 3,849,646.
- Smith, Herchel: *See—*
  - Yardley, John P.; Rees, Richard W.; and Smith, Herchel, 3,849,403.
- Smith, Jack Edward, to Dumont Aviation Associates. Pneumatic swivel assembly. 3,848,899, Cl. 285-98.000.
- Smith, John W. Tray unit. 3,848,745, Cl. 211-49.00d.
- Smith Kline Corporation: *See—*
  - Caldwell, Henry Cecil, 3,849,573.
  - Hawley, Margaret Grant, 3,848,348.
- Smith, Leslie William; Wates, Michael John; and Tait, Robert John, to Norgren, C. A., Co. Means for coupling fluid control components in fluid lines. 3,848,626, Cl. 137-269.000.
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  - Smith, Millard F.; and Anusauckas, Anthony V. (said Anusauckas assor. to), 3,848,417.
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- Smith, Richard E., to Xerox Corporation. Developer blade cleaning. 3,848,992, Cl. 355-15.000.
- Smith, Robert. Ophthalmic screen for motorists. 3,848,919, Cl. 296-97.00f.
- Smith, Robert D.: *See—*
  - Reilly, Thomas A.; Reitz, Charles F.; and Smith, Robert D., 3,848,660.
- Smith, Roy J., Jr.: *See—*
  - Daniel, James T.; Templeton, George E.; and Smith, Roy J., Jr., 3,849,104.
- Smythe, George Edward; and Orton, Geoffrey Keith, to U.S. Philips Corporation. Electronically-controlled gas pressure meter. 3,848,591, Cl. 128-145.800.
- Snam Progetti, S.p.A.: *See—*
  - Manara, Giovanni; and Fattore, Vittorio, 3,849,337.
  - Maspero, Federico; and Perrotti, Emilio, 3,849,510.
- Snavely, Kenneth E., to Phillips Petroleum Company. Conductive articles made from butadiene/styrene block copolymers and carbon black. 3,849,345, Cl. 252-511.000.
- Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A.: *See—*
  - Ando, Satoshi; Matsui, Masao; and Ogata, Fumimaro, 3,849,044.
- Snover, John A.; Waibel, Joseph H.; and Daniels, Arthur L., to Dow Chemical Company, The. Lithium magnesium aluminum hydride. 3,849,542, Cl. 423-644.000.
- Snyder, Amandus D.; and Taft, William K., to Olin Mathieson Chemical Corporation. Polybutadiene compositions and hydrocarbons thickened therewith. 3,849,081, Cl. 44-7.00e.
- Soardo, Paolo; and Pasta, Mario, to Istituto Elettrotecnico Nazionale Galileo Ferraris. Digital display optical pyrometer. 3,849,000, Cl. 356-45.000.
- Sobrefina S.A.: *See—*
  - Rausing, Hans Anders, 3,848,760.
- Societa' Italiana Resine S.I.R. S.p.A.: *See—*
  - Cocuzza, Gioacchino, 3,849,262.
- Societe Alsacienne de Constructions Atomiques de Telecommunications et d'Electronique (Alcatel): *See—*
  - De Bergh, Guy; and Fontaine, Jean, 3,849,716.
- Societe Anonyme Automobiles Citroen: *See—*
  - Grosseau, Albert, 3,848,934.
- Societe Anonyme D.B.A.: *See—*
  - Tourneur, Roger, 3,848,709.
- Societe Anonyme dite: L'Oreal: *See—*
  - Kalopissis, Gregoire, 3,849,547.
  - Kalopissis, Gregoire, 3,849,576.
- Societe Dauphinoise Electrique: *See—*
  - Laurent, Daniel; and Ligones, Hubert, 3,848,713.
- Societe des Aciers Fins de l'Est: *See—*
  - Hennequin, Andre, 3,848,809.
- Societe Grenobloise d'Etudes et d'Applications Hydrauliques: *See—*
  - Condolios, Elie; and Van Essen, Uilke, 3,849,310.
- Societe Industrielle de Brevets et d'Etudes S.I.B.E.: *See—*
  - Mennesson, Andre Louis, 3,848,857.
- Societe Nationale Industrielle Aerospatiale: *See—*
  - Jannot, Michel Rene; Vaillant, Robert Guillaume; and Dzalba-Lyndis, Serge Yvan, 3,848,697.
- Soes, Lucas, to AMP Incorporated, mesne. Zero insertion levered interference connection. 3,848,948, Cl. 339-64.00r.
- Solbeck, Erik. Extrusion apparatus. 3,849,051, Cl. 425-376.000.
- Solomon, David Henry: *See—*
  - Swift, Jean Drummond; Hawthorne, David Geoffrey; Loft, Bryan Clarence; and Solomon, David Henry, 3,849,149.
- Solvay & Cie: *See—*
  - Degueldre, Louis; Killens, Charles; and Bourgeois, Louis, 3,849,282.
- Someya, Shinzo: *See—*
  - Shigehara, Itaru; Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Toki, Tadaaki; Takagi, Hidetoshi; Nasu, Rikuo; Yokomichi, Isao; Kimura, Fumio; and Someya, Shinzo, 3,849,503.
- Somlyody, Arpad: *See—*
  - Kuchinsky, Saul; Shesser, Arthur B.; Somlyody, Arpad; and Fehnel, Richard B., 3,849,693.
- Sony Corporation: *See—*

  - Ando, Tetsuo; and Hirata, Yoshimi, 3,848,328.
  - Morita, Koji; and Sato, Tadashi, 3,849,731.
  - Ohshima, Syunji, 3,849,600.
- Soper, Quentin F.; and Kline, Granville B., to Lilly, Eli, and Company. Herbicidal method employing arylsulfonylureas or salts thereof. 3,849,110, Cl. 71-103.000.
- Sorrentino, Benjamin J. Method and apparatus for decontaminating a rinse liquid. 3,849,197, Cl. 134-10.000.
- Soya, Masahiro, to Tokico Ltd. System for detecting abnormalities in pipelines. 3,848,458, Cl. 73-40.50r.
- Sparks, William J.: *See—*
  - Oseroff, Herbert B.; and Sparks, William J., 3,848,480.
- Specovius, Joachim: *See—*
  - Gottsmann, Hartmut; and Specovius, Joachim, 3,849,790.
- Speed Fab-Crete Corporation: *See—*
  - Bloxom, David E., 3,848,381.
- Spendlove, Max J.: *See—*
  - Stanczyk, Martin H.; Sullivan, Paul M.; and Spendlove, Max J., 3,848,813.
- Sperber, Heinrich: *See—*
  - Fuchs, Hugo; Ricker, Ernst; Schmidt, Franz; Schwartz, Erich; and Sperber, Heinrich, 3,849,444.
- Sperry Rand Corporation: *See—*
  - Justice, Frank K., 3,849,726.
  - Kroger, Harry; and Potter, Curtis N., 3,849,217.
  - Mast, Aquila D., 3,848,526.
  - Rauschelbach, Paul A., 3,848,833.
  - Wathen, Robert Lucian, 3,848,914.
- Spillane, Leo J.; Alexander, Stephen H.; and Bramble, Reba H., to Gulf States Asphalt Co. Inc. Method of joining and sealing asphalt planks for a reservoir or the like. 3,849,229, Cl. 156-304.000.
- Spinner GmbH Elecktrotechnische Fabrik: *See—*
  - Treczka, Leo, 3,849,743.
- Springer, Joseph E. Quick release stopper rod for steel mill ladle. 3,848,781, Cl. 222-559.000.
- Squibb, E. R., & Sons, Inc.: *See—*
  - Dolfini, Joseph Edward, 3,849,408.
  - Hoehn, Hans; and Chasin, Mark, 3,849,411.
  - Vogt, Berthold Richard; Bernstein, Jack; and Weisenborn, Frank Lee, 3,849,490.
  - Yale, Harry Louis, 3,849,424.
- St. Clair, Mel. Therapeutic apparatus. 3,848,607, Cl. 128-400.000.
- Staal, Gerardus B.: *See—*
  - Henrick, Clive A.; and Staal, Gerardus B., 3,849,466.
- Stacee Manufacturing, Inc.: *See—*
  - Stanley, Edward I.; and Batchelor, Donald G., 3,849,055.
- Stacey, Eric J.; and Strycula, Eugene C., to Westinghouse Electric Corporation. Hybrid power filters employing both active and passive elements. 3,849,677, Cl. 307-295.000.
- Stahly, Frederick A.; and Merrill, Stewart H., to Eastman Kodak Company. Liquid electrographic development process. 3,849,165, Cl. 117-37.0le.
- Stanczyk, Martin H.; Sullivan, Paul M.; and Spendlove, Max J., to United States of America, Interior. Continuous process for mechanically separating materials contained in urban refuse. 3,848,813, Cl. 241-19.000.
- Standard Oil Company: *See—*
  - Fields, Ellis K., 3,849,274.
  - Hensley, Albert L., Jr., 3,849,296.
  - Mayer, James F.; and Raimondi, Victor V., 3,849,367.
- Standard Register Company, The: *See—*
  - Mays, John D.; and McClannan, Jack L., 3,849,170.
- Stanford Research Institute: *See—*
  - Frohbach, Hugh F., 3,849,698.
  - Swidler, Ronald; and Benedict, Harris M., 3,849,116.
- Stange, Klaus K., to Xerox Corporation. Donor apparatus. 3,848,566, Cl. 118-637.000.
- Stanley, Edward I.; and Batchelor, Donald G., to Stacee Manufacturing, Inc. Liquid fuel heater improvement. 3,849,055, Cl. 431-7.000.
- Stanley, Michael Richard; and Kimes, Lucas James, to Boeing Company, The. Aircraft engine installation. 3,848,832, Cl. 244-54.000.
- Stanray Corporation: *See—*
  - Manyek, Leonard F., 3,848,513.
- Stanton, Stephen L.: *See—*
  - Verwey, William G. A.; and Stanton, Stephen L., 3,848,790.
- Starck, Clemens B.: *See—*
  - Earhart, Howard F.; Jacoby, Frederick J.; and Starck, Clemens B., 3,849,191.
- Staubli Ltd.: *See—*
  - Wicker, Walter, 3,848,643.
- Stauffer Chemical Company: *See—*
  - Lengnick, Guenther Fritz, 3,849,462.
  - Teach, Eugene G., 3,849,464.
  - Weil, Edward D., 3,849,409.
  - Wolf, George Robert, 3,849,357.
- Ste. Nouvelle de Roulements (S. N. R.): *See—*
  - Garcin, Georges, 3,848,370.
- Steele Chemicals Co., Ltd.: *See—*
  - Kruger, Gunther, 3,849,402.
- Stein, Theodore W.; Gilman, Harold; and Bobeck, Richard L., to Halcon International, Inc. Epoxidation process. 3,849,451, Cl. 260-348.501.
- Steinback, Clarence I., to Acrometal Products, Inc. Method of forming a tape reel hub by extrusion. 3,848,310, Cl. 29-159.300.
- Steinbrook, Seymour E.: *See—*
  - Kent, Francis Joseph; and Steinbrook, Seymour E., 3,848,525.
- Steinbruchel, Armando B., to Aqua-Chem, Inc. Distillation apparatus. 3,849,259, Cl. 202-174.000.
- Steiner, Alois, to Ruti Machinery Works Ltd. Shed forming device. 3,848,642, Cl. 139-28.000.
- Steinhards, Arnolds: *See—*
  - Kornis, Gabriel; Steinhards, Arnolds; Nidy, Eldon George; and Vostral, Henry J., 3,849,106.
- Steinmetz, John H.: *See—*
  - Eckert, Alton B., Jr.; and Steinmetz, John H., 3,849,632.
- Stella, Leo; and Sarbello, Alfred J., to Terrington Company, The. Bearing and bearing seal. 3,848,938, Cl. 308-36.100.
- Stemmle, Denis J., to Xerox Corporation. Sheet sorting apparatus. 3,848,868, Cl. 271-173.000.
- Stenhagen, Einar August: *See—*
  - Dinh-Nguyen, Nguyen; and Stenhagen, Einar August, 3,849,458.
- Steppan, Hartmut, to Kalle Aktiengesellschaft. Process for the production of polycondensation products of aromatic diazonium compounds. 3,849,392, Cl. 260-141.000.
- Sterigard Corporation: *See—*
  - Bruce, Roger K.; Marhold, Werner; and Adickes, Cecil F., 3,849,053.
- Stevens, Harry A.; and Randolph, Allan E., Sr., to Dayton Progress Corporation. Die and spring assemblies having particular application to stripper plates. 3,848,496, Cl. 83-133.000.
- Stevens, J. P., & Co., Inc.: *See—*
  - Tesoro, Giuliana C.; and Ring, Richard, 3,849,401.
- Stichting Ontwikkeling Verpakkingsmethaden In de Zuivelindustrie: *See—*
  - Frieling, Teunis; and Bruggencate, Teunis Ten, 3,849,227.
- Stocker, Kurt F.: *See—*
  - Percs, Edmund E.; Stocker, Kurt F.; Blomback, Birger; Blomback, Margareta; and Hessel, Birgit, 3,849,252.
- Stohr, Jacques Andre, to Commissariat a l'Energie Atomique. Assembly of substantially parallel metallic surfaces. 3,848,314, Cl. 29-191.000.
- Stone, Dan Frederick: *See—*
  - Grantt, David Lawrence; Stone, Dan Frederick; and Townsend, Timothy Joseph, 3,848,766.
- Storandt, Duane L. Charcoal fire starter and grill. 3,848,577, Cl. 126-25.00b.
- Stork Amsterdam B.V.: *See—*
  - van der Winden, Johannes Bernardus, 3,848,746.
- Storm, Roger S.: *See—*
  - Economy, James; and Storm, Roger S., 3,849,362.
- Stournas, Stamoulis: *See—*
  - Bridger, Robert F.; Heiba, El-Ahmadi I.; and Stournas, Stamoulis, 3,849,320.
- Strandell, Per-Olof, to AB Metalform. Rolling method and a rolling mill for carrying out the method. 3,848,447, Cl. 72-199.000.
- Strasbaugh, Ray Howard. Cylometer. 3,848,339, Cl. 33-174.00a.
- Straub, Melvin J.: *See—*
  - Aanestad, Robert D.; Straub, Melvin J.; and Norgard, Edward J., 3,848,772.
- Strawn, Charles F., to Johnson Service Company. Control circuit for an electromechanical actuator. 3,848,411, Cl. 60-432.000.
- Streater, August L., to Franklin Electric Co., Inc. Lightning arrestor. 3,849,704, Cl. 317-13.00r.
- Streck, Roland; and Weber, Heinrich, to Chemische Werke Huls Aktiengesellschaft. Polyalkenamers and process for the preparation thereof. 3,849,509, Cl. 260-677.00r.
- Strecker, Larry A.; and Wood, James E., to Inmont Corporation. Cable sealant composition and method of sealing cable. 3,849,354, Cl. 260-28.50b.
- Stromberg-Carlson Corporation: *See—*
  - Russell, Stanley L., 3,849,605.
- Strycula, Eugene C.: *See—*
  - Stacey, Eric J.; and Strycula, Eugene C., 3,849,677.
- Studiengesellschaft Kohle m.b.H.: *See—*
  - Wilke, Gunther; and Heimbach, Paul, 3,849,506.
- Stull, Morton B. Captive dispensing cap construction. 3,848,779, Cl. 222-521.000.
- Stull, Morton B. Safety cap. 3,848,780, Cl. 222-546.000.
- Stutz, Hans: *See—*
  - Stutz, Hans; and Huber, Josef (said Huber assor. to said), 3,848,820.
- Stutz, Hans; and Huber, Josef, said Huber assor. to said Stutz, Hans. Method and apparatus for handling a yarn drawn at a high speed from a bobbin by a processing machine. 3,848,820, Cl. 242-18.00r.
- Successor Corporation: *See—*
  - Watkins, John E., 3,848,425.
- Sugiyama, Susumu: *See—*
  - Igarashi, Isemi; Nakamura, Hiroshi; and Sugiyama, Susumu, 3,848,329.
- Sugiyama, Yasuo: *See—*
  - Kasahara, Masao; Namekawa, Toshihiko; Fujiwra, Keniti; Hirasawa, Shigeiti; and Sugiyama, Yasuo, 3,849,761.
- Suh, John T.; and Schnettler, Richard A. 2-(Substituted anilino)-4,5-dihydro-3H-1,3-benzodiazepines. 3,849,400, Cl. 260-239.0ad.
- Suh, John T., to Colgate-Palmolive Company. α-Substituted-β-arylthioalkyl aminoacids, for increasing heart rate. 3,849,574, Cl. 424-319.000.
- Suhr, Poul. Apparatus for wrapping compressible articles. 3,848,398, Cl. 53-124.00c.
- Sullivan, Donald P.: *See—*

  - Walters, David W.; Heeks, Robert E.; and Sullivan, Donald P., 3,849,146.
- Sullivan, Edward F. Ring chucking apparatus. 3,848,882, Cl. 279-4.000.
- Sullivan, Paul M.: *See—*
  - Stanczyk, Martin H.; Sullivan, Paul M.; and Spendlove, Max J., 3,848,813.
- Sullivan, Richard A.: *See—*
  - Torpey, Wilbur N.; and Sullivan, Richard A., 3,849,304.
- Sulzer Brothers Ltd.: *See—*
  - Frey, Otto, 3,848,273.
- Sumarokov, Mikhail Vasilievich: *See—*
  - Filippov, Vladimir Ivanovich; and Sumarokov, Mikhail Vasilievich, 3,849,059.
- Sumitomo Chemical Co., Ltd.: *See—*
  - Nakamura, Toshio; Maeda, Tadao; Takenaka, Hiroshi; and Yamahira, Yoshiya, 3,849,558.
- Sumitomo Chemical Company, Limited: *See—*
  - Hongo, Eitaro; Yamada, Hirohiko; Fujii, Yozo; Masuda, Katsumi; Itou, Junichi; and Nakano, Takaaki, 3,849,452.
  - Nakagome, Takenari; Agui, Hideo; Mitani, Toru; and Nakashita, Mitsuo, 3,849,421.
- Sumitomo Chemical Company, Ltd.: *See—*
  - Oshima, Teruo; Nagase, Tsuneyuki; Masuko, Fujio; Wada, Takeshi; Hirooka, Masaaki; and Taniguchi, Isoji, 3,849,385.
- Sumitomo Electric Industries Ltd.: *See—*
  - Ichiba, Terumichi; Shimba, Hiroshi; and Mukunashi, Hiroaki, 3,849,591.
  - Noguchi, Takeshi, 3,848,708.
- Sumitomo, Yoshiharu: *See—*
  - Suzuki, Kensuke; Goto, Yasuhide; Iwasaki, Kazunari; and Sumitomo, Yoshiharu, 3,849,188.
- Summer, James R., to Round Rock Lime Company, mesne. Vertical kiln control. 3,849,061, Cl. 432-47.000.
- Sumrell, Gene: *See—*
  - Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,849,321.
  - Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,849,454.
- Sun Oil Company of Pennsylvania: *See—*
  - Fryback, Melbourne G., 3,848,811.
- Sunbeam Electric Limited: *See—*
  - Brown, John Robert, 3,848,563.
- Sundstrand Corporation: *See—*
  - Anderson, Richard A., 3,849,018.
- Superior Outdoor Display Inc.: *See—*
  - Olsen, Ray, 3,848,349.
- Superscope, Inc.: *See—*
  - Zielke, Darrell W., 3,848,825.
- Sutherlin, Kent K.: *See—*
  - Crowther, Ted J.; Jacobson, Charles F.; and Sutherlin, Kent K., 3,849,766.
- Suzuki, Akio: *See—*
  - Miyata, Akira; Okubo, Hideyo; Tomita, Chikayoshi; and Suzuki, Akio, 3,849,277.
  - Takagi, Atsushi; Miura, Mitsuo; Suzuki, Akio; Kukino, Yoshinori; Amagai, Kiyoshi; Shimizu, Haruji; Satoh, Mitsutoshi; Kohno, Shoji; and Ebine, Mitsuo, 3,848,685.
- Suzuki, Hideaki: *See—*
  - Nakatsuji, Yasukuni; Kanai, Tamaki; Noda, Hiroshi; Miura, Sadayoshi; and Suzuki, Hideaki, 3,849,382.
- Suzuki, Kensuke: *See—*
  - Nakashima, Yoichi; Sakamoto, Hisashi; Ishizuka, Takeshi; and Suzuki, Kensuke, 3,849,791.
- Suzuki, Kensuke; Goto, Yasuhide; Iwasaki, Kazunari; and Sumitomo, Yoshiharu, to Kabushiki Kaisha Kohjin. Electrostatic image-recording medium and method of making same. 3,849,188, Cl. 117-201.000.
- Suzuki, Takaji; and Ogawa, Toshio, to Hitachi, Ltd. Signal detection system. 3,848,586, Cl. 128-2.10b.
- Suzuki, Yasuo; Arimura, Iwao; and Arai, Tatsuo, to Bridgestone Tire Company Limited. Method for making cordless tires. 3,849,220, Cl. 156-110.0cl.
- Svenska Rotor Maskiner Aktiebolag: *See—*
  - Schibbye, Lauritz Benedictus, 3,848,422.
- Swander, Robert E.: *See—*
  - McGinnis, Paul H.; McLaughlin, William D., Jr.; and Swander, Robert E., 3,849,040.
- Sweet, Alvin H.; and Sweet, Don A. Non-slipping hand grip for tennis racket and the like. 3,848,871, Cl. 273-75.000.
- Sweet, Don A.: *See—*
  - Sweet, Alvin H.; and Sweet, Don A., 3,848,871.
- Swidler, Ronald; and Benedict, Harris M., to Stanford Research Institute. Boron binding plant growth agents. 3,849,116, Cl. 71-76.000.
- Swift, Jean Drummond; Hawthorne, David Geoffrey; Loft, Bryan Clarence; and Solomon, David Henry, to Commonwealth Scientific and Industrial Research. Modification of mineral surfaces. 3,849,149, Cl. 106-288.00b.
- Swisher, James A., to International Tool Sales, Inc. Tool bit for vibration attenuation. 3,848,931, Cl. 299-94.000.
- Swynford-Lain, Richard, to Ferranti Limited. Video tape recorders for recording plural radar information sources on a single track. 3,849,776, Cl. 343-5.0pc.
- Sybron Corporation: *See—*
  - Grundner, Warren Thorne, 3,849,307.
- Symmonds, Gene B.: *See—*
  - Shreev, George E., 3,848,771.
- Syntex (U.S.A.) Inc.: *See—*
  - Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,849,565.
- Syrjanen, Ahti, to Yhtyneet Paperitehtaat Oy Jylhavaara. Pulp grinder. 3,848,814, Cl. 241-37.000.
- Szappanyos, Bela J. Method of prophylaxis and therapy of species ulmus for Dutch Elm disease caused by Ceratocystis Ulmi. 3,849,566, Cl. 424-343.000.
- Tabei, Kiyoshi; and Kittaka, Hirokazu, to Nitto Boseki Co., Ltd. Glass fiber roving band for fiber reinforced plastics. 3,848,406, Cl. 57-149.000.
- Tachibana, Yoshishige; and Morikuni, Yoshihiro, to Toyo Boseki Kabushiki Kaisha. Apparatus for successively processing continuously connected textile fabric. 3,848,438, Cl. 68-22.00r.
- Tachick, Henry N.; and Arndt, Richard H., to General Electric Company. Elastomeric shield for an electrical conductor connector module and method of making same. 3,849,186, Cl. 117-201.000.
- Taft, David D.; and Shepler, Terry H., to Ashland Oil, Inc. Hot melt. 3,849,353, Cl. 260-27.000.
- Taft, William K.: *See—*
  - Snyder, Amandus D.; and Taft, William K., 3,849,081.
- Tahara, Tetsuya: *See—*
  - Nakanishi, Michio; Araki, Kazuhiko; Tahara, Tetsuya; and Shiroki, Masami, 3,849,405.
- Taiheiyo Coal Mining Co., Ltd.: *See—*
  - Nakajima, Shigeo, 3,848,928.
- Taira, Takeshi: *See—*
  - Funakubo, Eiichi; Matsuo, Tetsuo; Taira, Takeshi; Kamada, Taichi; Harada, Hiroshi; Tanimura, Shoichiro; and Kubo, Masanori, 3,849,298.
- Taisei Kensetsu Kabushiki Kaisha: *See—*
  - Maeda, Hidenori; Matsui, Yujiro; Ikeda, Tsukasa; and Mohri, Eikichi, 3,848,860.
- Tait, Robert John: *See—*
  - Smith, Leslie William; Wates, Michael John; and Tait, Robert John, 3,848,626.
- Tajima, Akira, to Canon Kabushiki Kaisha. Short physical length zoom lens. 3,848,969, Cl. 350-184.000.
- Takada, Masao: *See—*
  - Imamura, Kennosuke; Nabekawa, Shukichi; and Takada, Masao, 3,849,439.
- Takagi, Atsushi; Miura, Mitsuo; Suzuki, Akio; Kukino, Yoshinori; Amagai, Kiyoshi; Shimizu, Haruji; Satoh, Mitsutoshi; Kohno, Shoji; and Ebine, Mitsuo, to Takenaka Komuten Company, Ltd. Mud removing system by means of an excavator and an apparatus therefor.3,848,685, Cl. 175-206.000.
- Takagi, Haruyuki: *See—*
  - Toshioka, Tokuma; Takagi, Haruyuki; and Shirai, Masayuki, 3,848,368.
- Takagi, Hidetoshi: *See—*
  - Shigehara, Itaru; Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Toki, Tadaaki; Takagi, Hidetoshi; Nasu, Rikuo; Yokomichi, Isao; Kimura, Fumio; and Someya, Shinzo, 3,849,503.
- Takagi, Mikio; Nakayama, Kazufumi; Terada, Chiaki; and Kamioka, Hajime, to Fujitsu Limited. Process of manufacturing semiconductor devices. 3,849,270, Cl. 204-129.100.
- Takahashi, Isoji; and Sato, Masamichi, to Rank Xerox, Ltd., mesne. Method for cleaning background areas from developed recording surfaces. 3,849,171, Cl. 117-37.0le.
- Takahashi, Kihei, to Yoshida Kogy Kabushiki Kaisha. Registering device for gaps to be formed in a slide fastener chain. 3,848,500, Cl. 83-465.000.
- Takahashi, Koichi; Usui, Keizaburo; Aba, Eiichi; and Ozaki, Kiyotaka, to Nissan Motor Company Limited. Automotive vibration absorbing joint assembly. 3,848,431, Cl. 64-27.0nm.
- Takahashi, Ryohei: *See—*
  - Shigehara, Itaru; Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Toki, Tadaaki; Takagi, Hidetoshi; Nasu, Rikuo; Yokomichi, Isao; Kimura, Fumio; and Someya, Shinzo, 3,849,503.
- Takase, Kunio; Miyakoshi, Hisashi; and Ohmura, Mitsuo, to Osaka Gas Co., Ltd. and Ohbayashi-Gumi, Ltd. Underground storage tank for low temperature liquefied gas. 3,848,418, Cl. 61-.500.
- Takeda Chemical Industries, Ltd.: *See—*
  - Morimoto, Hiroshi; Watanabe, Masazumi; Imada, Isuke; and Nishikawa, Masao, 3,849,453.
- Takeda, Hideomi, to Asahi Kogahu Kogyo Kabushiki Kaisha. Automatic focusing apparatus. 3,849,643, Cl. 250-201.000.
- Takenaka, Hidetsugu: *See—*
  - Inamoto, Inamoto; Nakayama, Hirokazu; Takenaka, Hidetsugu; and Kimura, Yoshitomo, 3,849,473.
- Takenaka, Hiroshi: *See—*
  - Nakamura, Toshio; Maeda, Tadao; Takenaka, Hiroshi; and Yamahira, Yoshiya, 3,849,558.
- Takenaka Komuten Company, Ltd.: *See—*
  - Takagi, Atsushi; Miura, Mitsuo; Suzuki, Akio; Kukino, Yoshinori; Amagai, Kiyoshi; Shimizu, Haruji; Satoh, Mitsutoshi; Kohno, Shoji; and Ebine, Mitsuo, 3,848,685.
- Takeshita, Tsuneichi. Tetrapolymer-terpolymer blends. 3,849,517, Cl. 260-876.00r.
- Takeshita, Yasuo: *See—*

Kazaoka, Kenichi; Hirose, Kimiharu; Matsumoto, Hisao; and Takeshita, Yasuo, 3,848,888.
Takeuchi, Chikara: *See—*
Iwasaki, Yasuhiro; Tsukamoto, Hidehiko; Maeda, Nobutaka; and Takeuchi, Chikara, 3,848,446.
Takeuchi, Osamu: *See—*
Tsuchiya, Toshio; and Takeuchi, Osamu, 3,848,936.
Takeya, Kenji; and Tanahashi, Kunio, to Japan Exlan Company Limited. Antistatic fiber blend. 3,849,242, Cl. 161-176.000.
Takiguchi, Yoo: *See—*
Arai, Mamoru; Haneishi, Tatsuo; Kayamori, Hisashi; Takiguchi, Yoo; Kitano, Noritoshi; and Kaneko, Susumu, 3,849,398.
Tamarin, Bernard J. Magnetic rotary locking and release mechanism. 3,848,827, Cl. 242-107.700.
Tamura, Tadayoshi: *See—*
Kuwamura, Hideaki; Kashiwa, Ichiro; Hirabayashi, Takashi; and Tamura, Tadayoshi, 3,849,346.
Tanahashi, Kunio: *See—*
Takeya, Kenji; and Tanahashi, Kunio, 3,849,242.
Tanaka, Ichiro. Apparatus for mechanically cutting flanges from preshaped steel construction members. 3,848,499, Cl. 83-461.000.
Tanaka, Kiyoshi: *See—*
Kurita, Yuko; Kawanishi, Yasuhiro; Yoshikawa, Katsuji; and Tanaka, Kiyoshi, 3,849,028.
Tanaka, Mitsugu: *See—*
Iwano, Haruhiko; Tanaka, Mitsugu; Otsuki, Tesuo; and Arai, Atsuaki, 3,849,133.
Taniguchi, Isoji: *See—*
Oshima, Teruo; Nagase, Tsuneyuki; Masuko, Fujio; Wada, Takeshi; Hirooka, Masaaki; and Taniguchi, Isoji, 3,849,385.
Tanimura, Shoichiro: *See—*
Funakubo, Eiichi; Matsuo, Tetsuo; Taira, Takeshi; Kamada, Taichi; Harada, Hiroshi; Tanimura, Shoichiro; and Kubo, Masanori, 3,849,298.
Tanner, Charles L., to Tanner Engineering Company. Fluid seal. 3,848,880, Cl. 277-176.000.
Tanner Engineering Company: *See—*
Tanner, Charles L., 3,848,880.
Tao, Fan-Sheng: *See—*
Maddox, Jim, Jr.; and Tao, Fan-Sheng, 3,849,540.
Tarossi, Frank J., to Esso Research and Engineering Company. Centralized cargo handling system for cryogenic vessels. 3,848,559, Cl. 114-74.000.
Tashiro, Chiaki: *See—*
Nakanishi, Michio; Oe, Takanori; and Tashiro, Chiaki, 3,849,410.
Tavazzani, Carlo: *See—*
Seberini, Febo; Valvassori, Alberto; Tavazzani, Carlo; and Pagliari, Alberto, 3,849,518.
Taylor & Challen Limited: *See—*
Baugh, Raymond Ernest; and Plaister, John Edward, 3,848,444.
Taylor, Carol O.: *See—*
Dix, Robert M.; and Taylor, Carol O., 3,849,652.
Taylor, Charles R.; Bernhard, Albert J.; Bradford, Jerry I.; and Williams, Donald J., to Armour and Company. Handling live animals to prepare them for slaughter. 3,848,294, Cl. 17-45.000.
Taylor, John H.: *See—*
Kraklau, David M.; and Taylor, John H., 3,848,337.
Taylor, Robert G.: *See—*
Creager, John E.; and Taylor, Robert G., 3,849,029.
Teach, Eugene G., to Stauffer Chemical Company. Meta-thiocarbamilate ethers and sulfides. 3,849,464, Cl. 260-455.00a.
Tecna Corporation: *See—*
Kitrilakis, Sotiris, 3,848,590.
Ted Bildplatten Aktiengesellschaft AEG-Telefunken TELDEC: *See—*
Joschko, Gunter; and Winter, Hans-Jurgen, 3,848,876.
Teijin Limited: *See—*
Nakatsuji, Yasukuni; Kanai, Tamaki; Noda, Hiroshi; Miura, Sadayoshi; and Suzuki, Hideaki, 3,849,382.
Teitelbaum, Dvora; Gan, Ramat; Meshorer, Asher; Hirshfeld, Tsvi; Arnon, Ruth; and Sela, Michael, to Yeda Research and Development Co., Ltd. Therapeutic copolymer. 3,849,550, Cl. 424-78.000.
Tektronix, Inc.: *See—*
Piazza, Richard Elliot; and Janko, Bozidar, 3,849,695.
Telesco Brophey Limited: *See—*
Weber, Heinz, 3,848,740.
Temple, Chester S., to PPG Industries, Inc. Method of treating glass fibers to improve adhesion to polyolefins. 3,849,148, Cl. 106-287.0sb.
Templeton, George E.: *See—*
Daniel, James T.; Templeton, George E.; and Smith, Roy J., Jr., 3,849,104.
Tenen, Stan: *See—*
Berman, Herbert; and Tenen, Stan, 3,849,709.
Ter-Gevorkian, Vrej; deceased (by Sarhadiam, Aram; administrator). Chess wheel. 3,848,345, Cl. 35-8.00r.
Terada, Chiaki: *See—*
Takagi, Mikio; Nakayama, Kazufumi; Terada, Chiaki; and Kamioka, Hajime, 3,849,270.
Terada, Fumio; Matsuda, Yoshio; and Yamaguchi, Yoshiharu, to Yoshida Kogyo Kabushiki Kaisha. Method for producing a sliding clasp fastener. 3,848,556, Cl. 112-265.000.
Teradyne, Inc.: *See—*
Kern, Walter, 3,848,958.
Terashima, Isamu: *See—*
Otubo, Osamu; Terashima, Isamu; and Akutsu, Norio, 3,848,990.
Terrington Company, The: *See—*
Stella, Leo; and Sarbello, Alfred J., 3,848,938.
Terry, Nick H.: *See—*
Leibrick, Peter; and Terry, Nick H., 3,848,728.
Tesner, Pavel Alexandrovich; Knorre, Vadim Georgievich; Podkopaev, Vladimir Fedorovich; Pakhtusova, Tamara Timofeevna; Baenkevich, Vsevolod Viktorovich; and Astakhov, Arkady Petrovich. Tubular reactor for production of carbon black from acetylene by detonaion explosion. 3,849,073, Cl. 23-259.500.
Tesoro, Giuliana C.; and Ring, Richard, to Stevens, J. P., & Co., Inc. Fluoroalkyl aziridinopiopionates. 3,849,401, Cl. 260-239.00e.
Tessell, Leslie E.: *See—*
Smit, Henry, 3,848,721.
Tetjuev, Vladimir Alexandrovich; Medovar, Boris Izrailevich; Chekotilo, Leonty Vasilievich; Popov, Valery Georgievich; Tjurikov, Pavel Ivanovich; and Kosmatenko, Ivan Egorovich. Apparatus for electroslag melting of hollow ingots. 3,848,657, Cl. 164-252.000
Texaco Inc.: *See—*
Kreuz, Kenneth L.; and McMahon, Matthew A., 3,849,085.
Maddox, Jim, Jr.; and Tao, Fan-Sheng, 3,849,540.
McKinlay, Philip F.; Smith, Harry D., Jr.; and Schultz, Ward E., 3,849,646.
Nebzydoski, John W., 3,849,319.
Schievelbein, Vernon H.; and Sample, Thomas E., Jr., 3,849,328.
Walker, Thad O., 3,849,317.
Texas Instruments, Inc.: *See—*
Santala, Teuvo, 3,849,342.
Texas Instruments, Incorporated: *See—*
Brau, Maurice J.; and Reynolds, Richard A., 3,849,205.
Dix, Robert M.; and Taylor, Carol O., 3,849,652.
Doherty, John, Jr., 3,848,676.
Groom Lemuel D., III; and Jordan, Lavell, Jr., 3,849,741.
Textron, Inc.: *See—*
Farah, Basil S.; and Schroeder, Herbert M., 3,849,360.
Gapp, Roland Howard; Alazraki, Marcos Daniel; and Harper, John, 3,848,389.
Tezuka Kosan Kabushiki Kaisha: *See—*
Tezuka, Kunitoshi, 3,848,392.
Tezuka, Kunitoshi, to Tezuka Kosan Kabushiki Kaisha. Method for disposal of industrial wastes. 3,848,392, Cl. 53-21.00r.
Therachemie Chemisch Therapeutische GmbH: *See—*
Wiskott, Erik, 3,849,064.
Therkildsen, Henry T., to Caterpillar Tractor Company. Winch drum disconnect clutch. 3,848,852, Cl. 254-187.00r.
Thettu, Raghulinga R.; and Kocher, Haribhajan S., to Xerox Corporation. Moisture control device. 3,848,988, Cl. 355-3.00r.
Thettu, Raghulinga R.; and Williams, Edward G., to Xerox Corporation. Reinforced fuser roll construction. 3,849,062, Cl. 432-60.000.
Thiel, Max: *See—*
Hubner, Manfred; Heerdt, Ruth; Schmidt, Felix Helmut; Thiel, Max; and Weyer, Rudi, 3,849,417.
Thomas, Glenn R.: *See—*
Mrenna, Stephen A.; and Thomas, Glenn R., 3,849,747.
Thomas, Lynn Carol. Hair curler construction and case. 3,848,610, Cl. 132-39.000.
Thomas, Ralph H., to Bristol-Meyer Company. Container-snap-on closure assembly. 3,848,762, Cl. 215-224.000.
Thomas, Robert Lee. Umbrella mounting bracket. 3,848,838, Cl. 248-42.000.
Thompson, Alligene: *See—*
Conaway, Mildred; Thompson, Alligene; Bowen, Dorsie Mae; Brown, Danny; and McGarrah, Larry, 3,848,266.
Thompson, Harry W., to Interlake, Inc. Stacking frame. 3,848,747, Cl. 211-177.000.
Thompson, John T.; and Cowan, Arnold A., to Bohrick Corporation, The. Shock absorber, piston and valve structure. 3,848,710, Cl. 188-280.000.
Thompson, Julian L.: *See—*
Hughes, Richard Swart; and Thompson, Julian L., 3,849,742.
Thompson, Neil J., to National Ceiling Corporation. Modular ceiling construction. 3,848,385, Cl. 52-475.000.
Thompson-CSF: *See—*
Brenot, Claude; and Mollard, Gaston, 3,848,711.
Thoms, William Charles: *See—*
Bakermans, Fransiscus Cornelius; and Thoms, William Charles, 3,848,316.
Thomson-CSF: *See—*
Bareyt, Claude, 3,849,676.
Thornburg, Donald R., to Westinghouse Electric Corporation. Primary recrystallized textured iron alloy member having an open gamma loop. 3,849,212, Cl. 148-31.550.
Throner, Guy C. Traction splint. 3,848,589, Cl. 128-84.00c.
Throner, Guy C. Antiseptic catheter. 3,848,603, Cl. 128-349.00r.
Tighe, Charles I., Jr., to AMP Incorporated. Zero insertion force edge card connector. 3,848,952, Cl. 339-91.00r.
Tillman, Gary P. Conduit support clamp. 3,848,839, Cl. 248-54.00r.
Tippmann, Heinrich, to ITT Industries, Inc. Cone type friction gearing. 3,848,475, Cl. 74-192.000.
Tjurikov, Pavel Ivanovich: *See—*
Tetjuev, Vladimir Alexandrovich; Medovar, Boris Izrailevich; Chekotilo, Leonty Vasilievich; Popov, Valery Georgievich; Tjurikov, Pavel Ivanovich; and Kosmatenko, Ivan Egorovich, 3,848,657.
Tobin-Arp Manufacturing Company: *See—*

Peterson, Bertil G., 3,849,091.
Toby Enterprises: *See—*
Toby, Max E., 3,848,725.
Toby, Max E., to Toby Enterprises. Driven-article dropping machine and method. 3,848,725, Cl. 198-35.000.
Toki, Tadaaki: *See—*
Shigehara, Itaru; Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Toki, Tadaaki; Takagi, Hidetoshi; Nasu, Rikuo; Yokomichi, Isao; Kimura, Fumio; and Someya, Shinzo, 3,849,503.
Tokico Ltd.: *See—*
Hayashida, Yoshihiro, 3,849,770.
Soya, Masahiro, 3,848,458.
Tokiwa, Fumikatsu; and Imamura, Tetsuya, to Kao Soap Co., Ltd. Composition for pre-washing treatment of textiles. 3,849,347, Cl. 252-545.000.
Toko Inc.: *See—*
Fukushima, Yasuo, 3,848,819.
Tokonami, Masao: *See—*
Katahira, Toshiaki; Izumi, Hiroshi; and Tokonami, Masao, 3,849,773.
Tokyo Kikai Seisakusho, Ltd.: *See—*
Yonekura, Saku; Miyamoto, Hideaki; and Namba, Akio, 3,848,998.
Tokyo Sanyo Electric Co., Ltd.: *See—*
Kurita, Yuko; Kawanishi, Yasuhiro; Yoshikawa, Katsuji; and Tanaka, Kiyoshi, 3,849,028.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Uematsu, Yutaka; and Fukuda, Tsuguo, 3,849,667.
Tomita, Chikayoshi: *See—*
Miyata, Akira; Okubo, Hideyo; Tomita, Chikayoshi; and Suzuki, Akio, 3,849,277.
Tompkins, Leo L. Counter-wave pulse jet engine. 3,848,408, Cl. 60-248.000.
Tong, Yulan C., to Dow Chemical Company, The. Bis-(alkylthio- and alkylsulfonyl-) pentachloroquinolines. 3,849,420, Cl. 260-283.00s.
Tonsfeldt, Wayne S. Tool holder. 3,848,679, Cl. 172-762.000.
Topolsky, Vladimir Filippovich: *See—*
Gurevich, Samuil Mordkovich; Zamkov, Vadim Nikolaevich; Prilutsky, Valery Pavlovich; Topolsky, Vladimir Filippovich; Podkopai, Nikolai Vasilievich; Manoilo, Sergei Afanasievich; and Kykhno, Semen Leonidovich, 3,849,211.
Toray Industries, Inc.: *See—*
Inoue, Masakazu; Okamoto, Takehiko; and Nagai, Ikuo, 3,849,358.
Torpey, Wilbur N., to Autotrol Corporation. Method and apparatus for upgrading wastewater treatment plants. 3,849,303, Cl. 210-4.000.
Torpey, Wilbur N.; and Sullivan, Richard A., to Autotrol Corporation. Method for the primary and secondary treatment of wastewater in a unitary apparatus. 3,849,304, Cl. 210-14.000.
Torstensson, Nils Torsten Lennart: *See—*
Jonsson, Arne Gosta; and Torstensson, Nils Torsten Lennart, 3,849,552.
Toshioka, Tokuma; Takagi, Haruyuki; and Shirai, Masayuki. Apparatus for pneumatic tire uniformity correction. 3,848,368, Cl. 51-165.00r.
Totten, George A. Means for and method of dispensing medicinal tablets and capsules. 3,848,395, Cl. 53-35.000.
Tourneur, Roger, to Societe Anonyme D.B.A. Disc brake caliper and friction pad mounting structure. 3,848,709, Cl. 188-73.300.
Townsend, Timothy Joseph: *See—*
Grantt, David Lawrence; Stone, Dan Frederick; and Townsend, Timothy Joseph, 3,848,766.
Toyo Boseki Kabushiki Kaisha: *See—*
Tachibana, Yoshishige; and Morikuni, Yoshihiro, 3,848,438.
Toyo Kogyo Co., Ltd.: *See—*
Kurio, Noriyuki, 3,849,038.
Toyoda Koki Kabushiki Kaisha: *See—*
Kikuchi, Makoto; Asano, Kiroaki; Otsu, Ikoo; and Saeki, Toyoaki, 3,848,362.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Konishi, Masami; and Hikita, Kenji, 3,849,093.
Ochiai, Takeshi, 3,848,933.
Trane Company, The: *See—*
Porter, James M.; Loweth, Carl V.; and Gilster, Kenneth W., 3,848,430.
Treczka, Leo, to Spinner GmbH Elecktrotechnische Fabrik. Directional quarterwave coaxial coupler having means to axially move the coupling conductors. 3,849,743, Cl. 333-10.000.
Trelc, William F., to McGrew-Edison Company. Potisserie spit mounting means. 3,848,522, Cl. 99-421.00h.
Tri-State Oil Tool Industries, Inc.: *See—*
West, Thomas Douglas, 3,848,684.
Triangle Package Machinery Company: *See—*
Kloppenstein, King L., 3,848,688.
Tridair Industries: *See—*
Petroshanoff, George J., 3,848,953.
Trine, Joseph, to Elphiac. Induction heating device. 3,849,625, Cl. 219-10.790.
Tringali, Dominick; and Dillard, John W., to Universal Business Machines Incorporated. Time recorder. 3,849,783, Cl. 346-134.000.
Triumph International Aktiengesellschaft: *See—*
Kropf, Manfred, 3,848,554.
TRW Inc.: *See—*
Herbenar, Edward J., 3,849,010.
Kuehn, Donald E.; and Lyon, J. Keith, 3,848,322.
Tschirner, Manfred: *See—*
Schlimme, Gisbert; and Tschirner, Manfred, 3,849,255.
T.S.I., Inc.: *See—*
Feldman, Rubin, 3,849,178.
Tsubakimoto Chain Co., Ltd.: *See—*
Wada, Toru, 3,849,713.
Tsuchiya, Toshio; and Takeuchi, Osamu, to Honda Giken Kogyo Kabushiki Kaisha. Track device for vehicles. 3,848,936, Cl. 305-35.0eb.
Tsujimoto, Noboru; Maruyama, Katsuji; and Misawa, Haruo, to Chinon Industries Incorporated. Method and apparatus for synchronized shooting and projection of a movie and recording and playback of sound on a tape. 3,848,976, Cl. 352-17.000.
Tsukamoto, Hidehiko: *See—*
Iwasaki, Yasuhiro; Tsukamoto, Hidehiko; Maeda, Nobutaka; and Takeuchi, Chikara, 3,848,446.
Tsuprov, Sergei Andreevich: *See—*
Chukhanov, Zinovy Zinovievich; Chukhanov, Zinovy Fedorovich; Panov, Vladimir Illarionovich; Nikolaev, Anatoly Mikhailovich; Tsuprov, Sergei Andreevich; and Lyashenko, Ivan Vasilievich, 3,848,536.
Tsykulenko, Anatoly Konstantinovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Kumysh, Ilya Iosifovich; Tsykulenko, Anatoly Konstantinovich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Bondarenko, Oleg Petrovich; and Bogachenko, Alexei Georgievich, 3,849,588.
Tummala, Rao R.: *See—*
Foster, Betty J.; and Tummala, Rao R., 3,849,190.
Turley, Robert R.; Castor, William M.; and Nunnally, Kenneth R., to Dow Chemical Company, The. Method of preparing an improved dehydrogenation catalyst. 3,849,339, Cl. 252-455.00r.
Turnbull, David G.: *See—*
Ritter, Robert A.; and Turnbull, David G., 3,849,089.
Turner, Stephen, to Reckitt & Colman Products Limited. Bicyclic polyols. 3,849,505, Cl. 260-617.00f.
Turner, William Brian: *See—*
Ousby, John Clark; and Turner, William Brian, 3,849,437.
Tye, John M. Agricultural drill. 3,848,553, Cl. 111-87.000.
Uematsu, Yutaka; and Fukuda, Tsuguo, to Tokyo Shibaura Electric Co., Ltd. Intracavity second harmonic generator. 3,849,667, Cl. 307-88.300.
Ueno, Katsuyoshi: *See—*
Koike, Hirotami; and Ueno, Katsuyoshi, 3,849,647.
Uerlichs, Johannes; Muller, Rudolf; and Kuckertz, Wilhelm, to Rappold, Hermann, & Co., GmbH. Damper slide for hot blast slide dampers. 3,848,665, Cl. 165-168.000.
Ufton, Keith Frederick: *See—*
Jaggers, Brian George; Ufton, Keith Frederick; and Wagner, Horst Richard, 3,849,326.
Ulmer, Dalton C.: *See—*
McGee, Paul D.; and Ulmer, Dalton C., 3,848,735.
Ulrich, Klaus-Herbert: *See—*
Hartwig, Jurgen; Scheffler, Ulrich; and Ulrich, Klaus-Herbert, 3,849,269.
Umezu, Hideo. Plastic clamping ridged strap. 3,848,840, Cl. 248-73.000.
Unfried, Happy H.; and Cogger, John F., to United States of America, Navy. Fluidically controlled pneumatic to mechanical converters. 3,848,514, Cl. 91-3.000.
Union Carbide Corporation: *See—*
Albright, Charles W.; and Keller, George E., II, 3,849,075.
Ancker, Fred H., 3,849,174.
Kordesch, Karl V., 3,849,201.
Lloyd, Keith Andrew; and Fisher, Eugene Jay, 3,849,333.
Marlin, Lawrence; and Schwarz, Eric George, 3,849,156.
McMullen, Charles H., 3,849,456.
Omietanski, George M.; and Petty, Herbert E., 3,849,471.
Papa, Anthony Joseph; and Proops, William Robert, 3,849,445.
Payne, Linwood K., Jr., deceased, 3,849,478.
Union Oil Company of California: *See—*
Fagan, Arthur Wayne, 3,848,739.
Skinner, Davis A., 3,849,084.
Ward, John W., 3,849,293.
Uniroyal, Inc.: *See—*
Chin, James; and Hartley, James C., Jr., 3,849,172.
Hageman, Howard A., 3,849,500.
United Aircraft Corporation: *See—*
Hyer, Harry J.; and Rudy, Thomas P., 3,849,461.
Joslin, Frederick R., 3,849,271.
Wells, John C., 3,849,665.
United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Bailey, Alan; Maggs, Frederick Arthur Pomroy; and Williams, John Herbert, 3,849,332.
United States Banknote Corporation: *See—*
Anderson, William S.; and Gerken, Roman, 3,848,390.
United States of America
Agriculture: *See—*
Calamari, Timothy A., Jr.; Reeves, Wilson A.; Schreiber, Sidney P.; and Cooper, Albert S., Jr., 3,849,067.
Daniel, James T.; Templeton, George E.; and Smith, Roy J., Jr., 3,849,104.

        - Frick, John G., Jr.; and Gautreaux, Gloria A., 3,849,066.
        - Heiland, Wolfgang K., 3,848,734.
        - Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,849,454.
    - Army: *See—*
        - Ennulat, Reinhard D., 3,849,651.
        - Hudgins, Wayne A., 3,848,879.
        - Mellen, George P., 3,848,531.
        - Redcay, Paul Wilson, 3,849,778.
        - Siele, Victor I.; and Gilbert, Everett E., 3,849,414.
    - Atomic Energy Commission: *See—*
        - Cahoon, John B., Jr., 3,849,329.
        - Coleman, John H., 3,849,539.
        - Dial, Ralph E.; Keyes, John J., Jr.; and Krewson, John W., Jr., 3,848,466.
        - Isaacson, Raymond E.; and Brownell, Lloyd E., 3,849,330.
        - Matsko, John, 3,849,350.
    - Interior: *See—*
        - Scheiner, Bernard J.; Lindstrom, Roald E.; and Henrie, Thomas A., 3,849,265.
        - Stanczyk, Martin H.; Sullivan, Paul M.; and Spendlove, Max J., 3,848,813.
    - National Aeronautics and Space Administration: *See—*
        - Dane, Dan H., 3,849,668.
        - Winitz, Milton, 3,849,554.
    - Navy: *See—*
        - Boyd, William C., 3,849,779.
        - Corn, Robert J., 3,848,509.
        - Hughes, Richard Swart; and Thompson, Julian L., 3,849,742.
        - Mason, Robert J.; and Dixon, Earl, 3,849,746.
        - O'Rear, Jacques G.; and Griffith, James R., 3,849,450.
        - Ort, Eldon L., 3,849,781.
        - Shames, Oscar; Hinds, James L.; Palatucci, Gerald J.; and Raditz, Michael, 3,849,777.
        - Unfried, Happy H.; and Cogger, John F., 3,848,514.
        - Wolpert, John F., 3,848,510.
- United States Surgical Corporation: *See—*
    - Noiles, Douglas G., 3,848,272.
    - Noiles, Douglas G., 3,848,634.
- Universal Business Machines Incorporated: *See—*
    - Tringali, Dominick; and Dillard, John W., 3,849,783.
- Universal Oil Products Company: *See—*
    - Addison, George E., 3,849,295.
    - Gleim, William K. T.; and O'Hara, Mark J., 3,849,287.
    - Gleim, William K. T., 3,849,292.
    - Hansen, Andrew C., 3,849,294.
    - Hoekstra, James, 3,849,343.
    - Pollitzer, Ernest L., 3,849,340.
    - Van Tassell, Harry M., 3,849,508.
- University of Virginia, The: *See—*
    - Kirwan, Donald J.; and Gainer, John L., 3,849,254.
- Upjohn Company, The: *See—*
    - Birkenmeyer, Robert D., 3,849,396.
    - Bundy, Gordon L., 3,849,487.
    - Kornis, Gabriel; Steinhards, Arnolds; Nidy, Eldon George; and Vostral, Henry J., 3,849,106.
- U.S. Philips Corporation: *See—*
    - Beasley, Robert Malcolm; Mainard, Douglas Raymond; and Washington, Derek, 3,849,692.
    - Blavier, Arthur Victor Joseph, 3,849,627.
    - Brun, Roger, 3,849,593.
    - Gerardus, Henricus Wijnandus; and Overgoor, Bernardus Josephus Marie, 3,849,735.
    - Hily, Claude, 3,848,971.
    - Merz, Josef; Van Esdonk, Johannes; and Janssen, Joannes Franciscus, 3,848,973.
    - Michels, Albertus Peter Johannes; Van Beukering, Henricus Cornelis Johannes; Fokker, Herman; and Meijer, Roelf Jan, 3,848,412.
    - Milan, Lucien, 3,848,719.
    - Salters, Roelof Herman Willem, 3,849,216.
    - Smythe, George Edward; and Orton, Geoffrey Keith, 3,848,591.
    - Velzel, Christiaan Hendrik Frans, 3,849,003.
    - Voorman, Johannes Otto, 3,849,609.
- Ushiyama, Kazuhisa: *See—*
    - Yoshida, Toyozi; Ushiyama, Kazuhisa; and Yamanaka, Minoru, 3,849,114.
- USM Corporation: *See—*
    - Fuller, George A., Jr.; Langevin, Wilfred L.; Lutts, Carlton G.; and Neiley, Geoffrey C., Jr., 3,848,866.
- Usui, Keizaburo: *See—*
    - Takahashi, Koichi; Usui, Keizaburo; Aba, Eiichi; and Ozaki, Kiyotaka, 3,848,431.
- Vaillant, Christian; and Menissez, Jean Pierre, to Fives-Cail Babcock. Self-propelled crusher unit. 3,848,817, Cl. 241-101.700.
- Vaillant, Christian; and Menissez, Jean-Pierre, to Fives-Cail Babcock. Mobile crusher unit. 3,848,818, Cl. 241-101.700.
- Vaillant, Robert Guillaume: *See—*
    - Jannot, Michel Rene; Vaillant, Robert Guillaume; and Dzalba-Lyndis, Serge Yvan, 3,848,697.
- Valdo, Alex R., to Ethyl Corporation. Foamed metal bodies. 3,848,666, Cl. 165-168.000.
- Vali, Miklos: *See—*
    - Galisz, Laszlo; and Vali, Miklos, 3,848,523.
- Valukonis, Jonas: *See—*
    - Feustel, James R.; Hoyt, Kenneth L.; and Valukonis, Jonas, 3,848,886.
- Valvassori, Alberto: *See—*
    - Seberini, Febo; Valvassori, Alberto; Tavazzani, Carlo; and Pagliari, Alberto, 3,849,518.
- Valve Specialty Supply, Inc.: *See—*
    - Dickenson, Harvard G., 3,848,621.
- Van Baggem, Johannes Willhelmus, to Intomart N.V. System for determining the listening and viewing habits of wave signal receiver users. 3,849,729, Cl. 325-31.000.
- Van Beukering, Henricus Cornelis Johannes: *See—*
    - Michels, Albertus Peter Johannes; Van Beukering, Henricus Cornelis Johannes; Fokker, Herman; and Meijer, Roelf Jan, 3,848,412.
- Van Buren, John: *See—*
    - Page, Kenneth J.; and Van Buren, John, 3,848,858.
- Van Der Lely, Ary; and Bom, Cornelis Johannes Gerardus. Soil cultivating implements and screening elements. 3,848,677, Cl. 172-112.000.
- Van der Linde, Aart; and Hornsveld, Eduard Maurice, to Reactor Centrum Nederland. Method of heat treating welded Zr-Cb objects. 3,849,215, Cl. 148-127.000.
- van der Perk, Klaas Anthonie Jacob, to ITT Industries, Inc. Testing apparatus for shock absorbers on vehicles. 3,848,456, Cl. 73-11.000.
- van der Winden, Johannes Bernardus, to Stork Amsterdam B.V. Apparatus for diverting a row of cylindrical bodies alternately into two paths of travel. 3,848,746, Cl. 198-31.0ac.
- Van Esdonk, Johannes: *See—*
    - Merz, Josef; Van Esdonk, Johannes; and Janssen, Joannes Franciscus, 3,848,973.
- Van Essen, Uilke: *See—*
    - Condolios, Elie; and Van Essen, Uilke, 3,849,310.
- Van Schijndel, Marinus Johannes, to Hunter Douglas International N.V. Foil coiling machine. 3,848,824, Cl. 242-56.00a.
- Van Tassell, Harry M., to Universal Oil Products Company. Process for producing para-diethylbenzene. 3,849,508, Cl. 260-672.00t.
- Van Vlaanderen Machine Company: *See—*
    - Davidson, William Ward, Jr., 3,848,320.
- Vandenberg, Edwin James, to Hercules Incorporated. Finely divided crystalline polymers of 1,4-dihalo-2,3-epoxybutane. 3,849,364, Cl. 260-33.8ep.
- Vapor Corporation: *See—*
    - Alexander, William H., 3,848,849.
    - Rieter, James F., Jr., 3,848,428.
- Varker, Alan E.: *See—*
    - Bernstein, Philip; and Varker, Alan E., 3,849,386.
- VEB Pentacon Dresden Kamera- und Kinowerke: *See—*
    - Schulze, Heinz, 3,849,785.
- Velissaris, George. Billiard-type table with rotatable disk on playing surface having at least one ball aperture therethrough. 3,848,872, Cl. 273-125.00r.
- Velsicol Chemical Corporation: *See—*
    - Fields, Richard W., 3,849,108.
    - Krenzer, John, 3,849,412.
- Velzel, Christiaan Hendrik Frans, to U.S. Philips Corporation. Interferometer apparatus for measuring the roughness of a surface. 3,849,003, Cl. 356-109.000.
- Versnel, John: *See—*
    - Wolford, Lionel T.; and Versnel, John, 3,849,371.
- Verwey, William G. A.; and Stanton, Stephen L., to Precision Industries, Inc. Stitching head apparatus. 3,848,790, Cl. 227-90.000.
- Vetter, Artur, to Multivac Sepp Haggenmuller KG. Apparatus for longitudinally separating serially produced synthetic-resin packages. 3,848,492, Cl. 83-99.000.
- Viesturs, Eric A. Light weight flotation mattress. 3,848,282, Cl. 5-348.0wb.
- Villa-Real, Anthony-Euclid. Automatic elasto-valvular hypodermic sampling needle. 3,848,579, Cl. 128-2.00f.
- Villani, Gerard J., to Norton Company. Capacitor powder. 3,849,124, Cl. 75-177.000.
- Villax, Ivan. Process of dehalogenation and dehalogenation with simultaneous reduction of 11a-halo-6-deoxy-3-demethyl-6-methylenetetracyclines by hydrazine. 3,849,491, Cl. 260-559.0at.
- Vints, Viktor Vladimirovich: *See—*
    - Malievsky, Alexandr Dmitrievich; Vints, Viktor Vladimirovich; Emanuel, Nikolai Markovich; and Parfenov, Viktor Nikolaevich, 3,849,499.
- Visual Designs Mfg. Co.: *See—*
    - Barrett, Robert R., 3,848,844.
- Vittori, Angelo James. Front wheel drive cycle. 3;848,891, Cl. 280-250.000.
- Vogt, Berthold Richard; Bernstein, Jack; and Weisenborn, Frank Lee, to Squibb, E. R., & Sons, Inc. Cyclohexadienylamidoalkylphenylsulfonyl ureas. 3,849,490, Cl. 260-553.0da.
- Voitsekhovskaya, Faina Fedorovna: *See—*
    - Voitsekhovsky, Bogdan Vyacheslavovich; Voitsekhovskaya, Faina Fedorovna; and Voitsekhovsky, Bogdan Bogdanovich, 3,848,681.
- Voitsekhovsky, Bogdan Bogdanovich: *See—*
    - Voitsekhovsky, Bogdan Vyacheslavovich; Voitsekhovskaya, Faina Fedorovna; and Voitsekhovsky, Bogdan Bogdanovich, 3,848,681.
- Voitsekhovsky, Bogdan Vyacheslavovich; Voitsekhovskaya, Faina Fedorovna; and Voitsekhovsky, Bogdan Bogdanovich. Immersion hydropercussive device. 3,848,681, Cl. 173-125.000.

- Volkert, Otto: *See—*
    - Barzynski, Helmut; Jun, Mong-Jon; Saenger, Dietrich; and Volkert, Otto, 3,849,137.
- Von Duprin, Inc.: *See—*
    - Foster, John R.; Zawadzki, George Z.; and Godec, Maksimiljan, 3,848,361.
- Von Strandtmann, Max; Klutchko, Sylvester; Kaminsky, Daniel; and Shavel, John, Jr., to Warner-Lambert Company. Chromone-3-carboxylic acids. 3,849,446, Cl. 260-345.200.
- Voorhies, Alexis, Jr. Fluidized platinum reforming followed by fixed-bed platinum reforming. 3,849,289, Cl. 208-65.000.
- Voorman, Johannes Otto, to U.S. Philips Corporation. Hybrid circuit. 3,849,609, Cl. 179-170.0nc.
- Vostral, Henry J.: *See—*
    - Kornis, Gabriel; Steinhards, Arnolds; Nidy, Eldon George; and Vostral, Henry J., 3,849,106.
- Voswinckel, Gerhard, to Krantz, H. Continuous web winding apparatus. 3,848,826, Cl. 242-66.000.
- Vyskumny ustav automatizacie a mechanizacie: *See—*
    - Zubak, Jan, 3,849,272.
- Vyzkumny ustav bavlnarsky: *See—*
    - Zabrodsky, Zdenek; Augusta, Frantisek; and Kramenic, Zdenek, 3,848,641.
- Waaben, Sigurd Gunther, to Bell Telephone Laboratories, Incorporated. Low power flip-flop circuits. 3,849,675, Cl. 307-292.000.
- Wacker-Chemie GmbH: *See—*
    - Bauer, Johann; and Popp, Walter, 3,849,365.
    - Nitzsche, Siegfried; Marwitz, Heinrich; and Hockemeyer, Friedrich, 3,849,359.
- Wacker-Dearborn Corporation: *See—*
    - Wecker, Walter A., Sr., 3,849,312.
- Waclawek, Miczyslaw J., to Clark Equipment Company. Transmission system. 3,848,409, Cl. 60-345.000.
- Wada, Koji: *See—*
    - Ishizaki, Keizo; Sekine, Hiroshi; Gondo, Hisashi; Wada, Koji; Kawano, Tsuyoshi; Watanabe, Hidekazu; Kanbayashi, Gou; and Maruyama, Tadasatsu, 3,849,209.
- Wada, Takeshi: *See—*
    - Oshima, Teruo; Nagase, Tsuneyuki; Masuko, Fujio; Wada, Takeshi; Hirooka, Masaaki; and Taniguchi, Isoji, 3,849,385.
- Wada, Toru, to Tsubakimoto Chain Co., Ltd. Position detecting and maintaining device. 3,849,713, Cl. 318-675.000.
- Waddan, Dhafir Yusuf, to Imperial Chemical Industries Limited. Process for preparing 3-pentenenitrile. 3,849,472, Cl. 260-465.300.
- Wadsworth, Donald H.; and Perkins, William C., to Eastman Kodak Company. Light-sensitive compositions comprising polymers containing diarylcyclopropene moiety and process of using. 3,849,144, Cl. 96-35.100.
- Wagner Electric Corporation: *See—*
    - Falk, Edward J., 3,848,704.
- Wagner, Horst Richard: *See—*
    - Jaggers, Brian George; Ufton, Keith Frederick; and Wagner, Horst Richard, 3,849,326.
- Wagner, Karl Heinz; Muellerpoths, Reiner; and Hammel, Rudolf, to Brown Boveri & Company Limited. Gas supply plant for compressed gas-insulated switchgear. 3,849,618, Cl. 200-148.00r.
- Waibel, Joseph H.: *See—*
    - Snover, John A.; Waibel, Joseph H.; and Daniels, Arthur L., 3,849,542.
- Walbro Corporation: *See—*
    - Charboneau, Benny J.; and O'Connor, Alton J., 3,849,031.
- Walker, Frank A., Jr., to Controls Research Corporation. Manually operable keyboard switch assembly. 3,849,611, Cl. 200-5.00a.
- Walker, John Elwyn: *See—*
    - Piech, Kenneth Robert; and Walker, John Elwyn, 3,849,006.
- Walker, Thad O., to Texaco Inc. Additive for reducing gel strength in aqueous lime containing drilling fluids. 3,849,317, Cl. 252-8.50a.
- Wall, Eugene W.: *See—*
    - Wall, Harry W.; and Wall, Eugene W., 3,848,483.
- Wall, Harry W.; and Wall, Eugene W., to Wall Machine Works. Method of making router bits. 3,848,483, Cl. 76-101.00a.
- Wall Machine Works: *See—*
    - Wall, Harry W.; and Wall, Eugene W., 3,848,483.
- Wallgard, Gunnar Alexius; and Rinnfors, Lars-Gunnar, to Saab-Scania Aktiebolag. Car actuated inductive block control. 3,848,836, Cl. 246-63.00r.
- Wallington, Michael J., to Associated Electrical Industries Limited. Plural sample ion source. 3,849,656, Cl. 250-424.000.
- Walls, Lee C.: *See—*
    - Pearson, Monry L.; and Walls, Lee C., 3,848,571.
- Walters, David W.; Heeks, Robert E.; and Sullivan, Donald P., to Xerox Corporation. Direct-print light-developable silver halide emulsion containing cyclic dioxide or selenone as sensitizer. 3,849,146, Cl. 96-107.000.
- Walters, Peter: *See—*
    - Bovensiepen, Hans-Friedrich; and Caspers, Willi A., 3,848,365.
- Walz, Alfred; and Ostreicher, Robert; deceased (by Rombach, Ingrad; geb. Ostreicher). Circuit for operation of gas discharge lamps. 3,849,717, Cl. 321-15.000.
- Wang, Kuei-Send; Epstein, Philip L.; and Lu, John Hsueh Chung, to Quindar Electronics, Inc. Programmable frequency decoder. 3,849,764, Cl. 340-171.00r.
- Wanless, Varney V., 20% to Lee, Raymond, Organization, Inc., The. Safety device for hacksaw. 3,848,649, Cl. 145-35.00r.
- Ward, John W., to Union Oil Company of California. Hydrocracking process utilizing rejuvenated catalyst. 3,849,293, Cl. 208-111.000.
- Warfield, Glenn R.: *See—*
    - Enerson, Donald W.; and Warfield, Glenn R., 3,849,736.
- Warner, Gerhardt Allan; and Warner, Kurt E. Collapsible and foldable shelter. 3,848,615, Cl. 135-4.00r.
- Warner, Kurt E.: *See—*
    - Warner, Gerhardt Allan; and Warner, Kurt E., 3,848,615.
- Warner-Lambert Company: *See—*
    - Von Strandtmann, Max; Klutchko, Sylvester; Kaminsky, Daniel; and Shavel, John, Jr., 3,849,446.
- Warnke, Heinrich: *See—*
    - Kaup, Friedel; and Warnke, Heinrich, 3,849,175.
- Warwick Electronics Inc.: *See—*
    - Holzrichter, Robert A., 3,848,945.
    - Holzrichter, Robert A., 3,849,792.
    - Miller, Marvin E., 3,849,697.
- Warwick Pump and Engineering Company Limited: *See—*
    - Presiwich, John Richard, 3,848,804.
- Washington, Derek: *See—*
    - Beasley, Robert Malcolm; Mainard, Douglas Raymond; and Washington, Derek, 3,849,692.
- Wasmund, Bert Orland: *See—*
    - Hatch, Gerlad Gordon; and Wasmund, Bert Orland, 3,849,587.
- Wasserman, Jerome D.: *See—*
    - Bird, Stanford W.; Wasserman, Jerome D.; and Hatley, Earl L., 3,848,795.
- Watanabe, Hidekazu: *See—*
    - Ishizaki, Keizo; Sekine, Hiroshi; Gondo, Hisashi; Wada, Koji; Kawano, Tsuyoshi; Watanabe, Hidekazu; Kanbayashi, Gou; and Maruyama, Tadasatsu, 3,849,209.
- Watanabe, Masanori: *See—*
    - Ogihara, Masuo; and Watanabe, Masanori, 3,849,788.
- Watanabe, Masazumi: *See—*
    - Morimoto, Hiroshi; Watanabe, Masazumi; Imada, Isuke; and Nishikawa, Masao, 3,849,453.
- Watermann, Hans-Dieter; and Kleefeldt, Frank, to Arn. Kiekert Sohne. Motor vehicle door latch. 3,848,911, Cl. 292-216.000.
- Wates, Michael John: *See—*
    - Smith, Leslie William; Wates, Michael John; and Tait, Robert John, 3,848,626.
- Wathen, Robert Lucian, to Sperry Rand Corporation. Motor shiftable shock absorbing bumper. 3,848,914, Cl. 293-9.000.
- Watkins, John E., to Successor Corporation. Low pressure refrigeration system. 3,848,425, Cl. 62-174.000.
- Way, Merton B.; and Pas, John. Highway safety tire device. 3,848,853, Cl. 256-1.000.
- Wazawa, Kiyoshi: *See—*
    - Hosaka, Akio; Baba, Kosaku; and Wazawa, Kiyoshi, 3,849,759.
- Wean United, Inc.: *See—*
    - Kent, Francis Joseph; and Steinbrook, Seymour E., 3,848,525.
- Webb, Joseph T.: *See—*
    - Hintz, Harold L.; and Webb, Joseph T., 3,849,224.
- Weber, Heinrich: *See—*
    - Streck, Roland; and Weber, Heinrich, 3,849,509.
- Weber, Heinz, to Telesco Brophey Limited. Umbrella. 3,848,740, Cl. 135-25.00r.
- Weber, Kenneth E.; Crozier, Donald G.; and Hawley, Wilbur W., said Weber and said Crozier assors. to Lockheed Aircraft Corporation. Production of stain resistant, clear, sealed anodized films. 3,849,264, Cl. 204-35.00n.
- Weber, Kurt: *See—*
    - Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,849,163.
- Weber, Kurt, to Ciba-Geigy AG. Styrylbenzene derivatives, their manufacture and use. 3,849,485, Cl. 260-505.00r.
- Weber, Ludwig Wilhelm: *See—*
    - Bolan, Peter Samuel; Bryant, Aramis Duane; Drejza, John Edward; Holovka, Charles Stephen; and Weber, Ludwig Wilhelm, 3,848,722.
- Webster, Earle R., Jr. Incorporation of solid additives into molten aluminum. 3,849,123, Cl. 75-138.000.
- Webster Electric Company, Inc.: *See—*
    - Lourigan, Ronald F., 3,849,670.
- Webster, Ronald B.; and Rich, Leonard G., to Gerber Scientific Instrument Company, The. Line drawing photoexposure device with image rotating means. 3,848,520, Cl. 95-12.000.
- Wecker, Walter A., Sr., to Wacker-Dearborn Corporation. Filter bed assembly for cleansing cooking oils and the like. 3,849,312, Cl. 210-237.000.
- Weiberg, Otto: *See—*
    - Hoffmann, Peter; Schreyer, Gerd; Weiberg, Otto; and Weigert, Wolfgang, 3,849,484.
- Weidmann, Walter: *See—*
    - Zirngibl, Hans; Fuhr, Werner; Jaschinski, Klemens; Beumer, Peter; and Weidmann, Walter, 3,849,543.
- Weigert, Wolfgang: *See—*
    - Hoffmann, Peter; Schreyer, Gerd; Weiberg, Otto; and Weigert, Wolfgang, 3,849,484.
- Weight, Donald E. Bubble solution housing with cover-mounted tube and coil spring. 3,848,355, Cl. 46-7.000.
- Weil, Edward D., to Stauffer Chemical Company. Hexahydrotriazine phosphonate derivatives. 3,849,409, Cl. 260-248.0ns.

Weil, Edward D.; and Schlichting, Hans L., to Hooker Chemical Corporation. Thioalkylphenylcarbamates. 3,849,477, Cl. 260-479.00c.

Weiland, Edward E. Tubing connection. 3,848,855, Cl. 256-73.000.

Weiner, Gwendolyn Patricia: *See—*
Hollinshead, Clive, 3,849,323.

Weiner, Ted: *See—*
Hollinshead, Clive, 3,849,323.

Weinstein, Bernard: *See—*
Sejpal, Vasant D.; Lueschen, William J.; and Weinstein, Bernard, 3,849,580.

Weis, Claus, to Ciba-Geigy Corporation. Pyridine compounds. 3,849,422, Cl. 260-290.0hl.

Weise, Irvin B., to Anderson, Greenwood & Company. Relief valve. 3,848,630, Cl. 137-475.000.

Weisenborn, Frank Lee: *See—*
Vogt, Berthold Richard; Bernstein, Jack; and Weisenborn, Frank Lee, 3,849,490.

Weisenburger, August. Multispindle hand screwing device or brace. 3,848,488, Cl. 81-52.40r.

Weiss, Martin Joseph; Gibs, Gabriel Joseph; Poletto, John Frank; and Remers, William Alan, to American Cyanamid Company. Substituted heterocyclic derivatives of azepine. 3,849,441, Cl. 260-326.900.

Welham, Brian H.: *See—*
Burns, Richard H.; Engelbrecht, Orest; and Welham, Brian H., 3,848,960.

Welkowsky, Murray S.: *See—*
Allan, Frank V.; and Welkowsky, Murray S., 3,849,648.

Well control apparatus: *See—*
Brown, Cicero C., 3,848,669.

Wells, John B.; and Mammino, Joseph, to Xerox Corporation. Photoelectrophoretic imaging method employing a chromogenic reaction. 3,849,132, Cl. 96-1.300.

Wells, John C., to United Aircraft Corporation. Short circuit protected master-slave power supply. 3,849,665, Cl. 307-24.000.

Wendler, Kenneth T.; and Daniels, David A., to Grace, W. R. & Company. Alkylated tertiary amines as high-temperature antioxidants for ester based lubricants. 3,849,322, Cl. 252-49.900.

West, Thomas Douglas, to Tri-State Oil Tool Industries, Inc. Apparatus for rotary drilling. 3,848,684, Cl. 175-195.000.

Westerman, Hulan. Apparatus for skimming floating pollution from a liquid surface. 3,849,308, Cl. 210-98.000.

Westinghouse Electric Corporation: *See—*
Blewitt, Donald D.; and Shaw, Woodrow G., 3,849,754.
Blewitt, Donald D.; and Shaw, Woodrow G., 3,849,755.
Brandt, Gerald B., 3,849,740.
Buchanan, James E.; and Brown, Joel E., 3,849,775.
Cameron, Frank L., 3,848,445.
Crawford, Thomas G.; and Kearse, William E., 3,848,640.
Darwent, Richard H., 3,848,706.
Foster, Karl, 3,849,214.
Giardina, Angelo R., 3,848,572.
Goodell, John B., 3,848,970.
Greene, James E., Jr., 3,849,763.
Heller, Paul R., 3,849,680.
Johnson, Richard A.; and Fruhwald, John M., 3,849,706.
Justice, James W. H., 3,849,594.
Kerfoot, Charles S.; and Halgas, Frank A., 3,849,701.
Lockie, Arthur M.; and Hatch, Jeffrey A., 3,848,955.
McElroy, David W., 3,849,705.
Mrenna, Stephen A.; and Thomas, Glenn R., 3,849,747.
O'Keeffe, Terence W., 3,849,659.
Patel, Nagar J., 3,849,619.
Pavlik, Norman M.; and Cunningham, James W., 3,848,331.
Peterson, Robert S.; and Cook, John W., 3,848,443.
Reitboech, Herbert J. P.; and Brody, Thomas P., 3,849,633.
Schellenberg, James M.; and Jones, Raymond R., 3,849,745.
Seidel, Joseph, 3,849,198.
Stacey, Eric J.; and Strycula, Eugene C., 3,849,677.
Thornburg, Donald R., 3,849,212.

Weston, Billy J. Machine control. 3,849,669, Cl. 307-154.000.

Westvaco Corporation: *See—*
Griffiths, Darrell J. L.; and Huang, Denis K., 3,849,378.
Hintz, Harold L.; and Webb, Joseph T., 3,849,224.

Weyer, Rudi: *See—*
Hubner, Manfred; Heerdt, Ruth; Schmidt, Felix Helmut; Thiel, Max; and Weyer, Rudi, 3,849,417.

Wham-O Manufacturing Company: *See—*
Fetty, Warren Newton; Knerr, Richard Parke; Gillespie, Richard Lee; and Bettencourt, Pierre Andre, 3,848,808.

Wherry, Bernard. Tree balling spade. 3,848,915, Cl. 294-49.000.

Whirlpool Corporation: *See—*
Nordeen, Erwin E.; and Olson, Clifford H., Jr., 3,848,292.

White, Benjamin. Portable furniture device. 3,848,375, Cl. 52-36.000.

White, Colin: *See—*
Maitlis, Peter M.; White, Colin; Kang, Jung W.; and Gill, Devinder S., 3,849,459.

White, David B.: *See—*
Shoemaker, Edwin J.; Gensler, Edwin G.; and White, David B., 3,848,924.

White, William A.: *See—*
Krumkalns, Eriks V.; and White, William A., 3,849,423.

Whitehurst, Darrell Duayne: *See—*
Haag, Werner O.; and Whitehurst, Darrell Duayne, 3,849,457.

Whitney, Donald R.: *See—*
Hamburg, James A.; and Whitney, Donald R., 3,848,471.

Whitney, Robert W. Air circulation system for a refrigerator display case. 3,848,426, Cl. 62-255.000.

Whitney, W. A., Corporation: *See—*
Lancaster, Paul M.; and Paquet, Eugene H., 3,848,497.

Whittle, William R.: *See—*
Lankford, Larry G.; and Whittle, William R., 3,849,712.

Wicker, Walter, to Staubli Ltd. Reading mechanism of a dobby. 3,848,643, Cl. 139-68.000.

Wiechert, Rudolf: *See—*
Eder, Ulrich; and Wiechert, Rudolf, 3,849,447.

Wiegand Karlsruhe GmbH: *See—*
Kessler, Gustav; Frank, Erich; and Laumann, Volker, 3,849,232.

Wiemer, Erich, to Koppers, Heinrich, Gesellschaft mit beschrankter Haftung. Apparatus for transferring pallets between the upper and lower reaches of an endless conveyor system. 3,848,726, Cl. 198-108.000.

Wiese, Hans-Holger: *See—*
Wiese, Hans-Holger; and Siemsen, Horst, 3,848,731.

Wiese, Hans-Holger; and Siemsen, Horst, to Wiese, Hans-Holger. Toothed belt with armor and supporting elements for conveying or transporting means. 3,848,731, Cl. 198-193.000.

Wilfert, Karl; Gmeiner, Gunter; Grabner, Christian; and Nockemann, Ernst, to Bomoro Bocklenberg & Motte GmbH & Co., KG., Firma and Daimler-Benz Aktiengesellschaft. Door lock, especially for motor vehicle doors. 3,848,910, Cl. 292-216.000.

Wilke, Gunther; and Heimbach, Paul, to Studiengesellschaft Kohle m.b.H. 1,2-Dimethyl cyclooctadiene-1,5. 3,849,506, Cl. 260-666.00a.

Wilkinson Sword Limited: *See—*
Parr, Eric W., 3,848,583.

Willen, Charles. Tool holders for machine tools. 3,848,487, Cl. 82-36.00r.

Williams, Donald J.: *See—*
Taylor, Charles R.; Bernhard, Albert J.; Bradford, Jerry I.; and Williams, Donald J., 3,848,294.

Williams, Edward G.: *See—*
Thettu, Raghulinga R.; and Williams, Edward G., 3,849,062.

Williams, Fred H.: *See—*
Link, Donald A.; and Williams, Fred H., 3,849,751.

Williams, John Herbert: *See—*
Bailey, Alan; Maggs, Frederick Arthur Pomroy; and Williams, John Herbert, 3,849,332.

Williams, Raymond E. Sliding vane rotary combustion engine. 3,848,575, Cl. 123-8.110.

Willock, Charles B. Single needle alternating flow blood pump system. 3,848,592, Cl. 128-214.00r.

Wilson, Floyd Leroy. Hole punching fastener for sheet metal. 3,848,505, Cl. 85-19.000.

Wilson, George A., to I-T-E Imperial Corporation. High speed four-way valve. 3,848,637, Cl. 137-625.270.

Wilson, Robert J.; and Naden, Robert W. Structural surface metal shingle covering. 3,848,383, Cl. 52-533.000.

Wilson-Haffenden, Philip, to Hoffenden-Richborough Limited. Bottle closures. 3,848,650, Cl. 150-8.000.

Winitz, Milton, to United States of America, National Aeronautics and Space Administration. Reduction of blood serum cholesterol. 3,849,554, Cl. 424-180.000.

Winter, Hans-Jurgen: *See—*
Joschko, Gunter; and Winter, Hans-Jurgen, 3,848,876.

Wise, John J.; and Burd, Samuel D., Jr., to Mobil Oil Corporation. Upgrading of reformates by catalyst compositions selective for cracking low and high boiling paraffin components. 3,849,290, Cl. 208-66.000.

Wisinski, Adam Prus, to ICI Australia Limited. Pipeline for delivering cross-linked slurried explosive. 3,848,507, Cl. 86-1.00r.

Wiskott, Erik, to Therachemie Chemisch Therapeutische GmbH. Method and compositions for the dyeing of human hair. 3,849,064, Cl. 8-10.200.

Wisser, Hermann: *See—*
Sarstedt, Walter; Krause, Hans-Dieter; and Wisser, Hermann, 3,848,777.

Witte, Donald H., to Fox Pool Corporation. Stairs for swimming pools. 3,848,378, Cl. 52-184.000.

Witzel, Bruce E.; and Shen, Tsung-Ying, to Merck & Co., Inc. Biphenyleneacetic acid anti-inflammatory agents. 3,849,572, Cl. 424-304.000.

Wolf, Erhard; Kohl, Hans; and Hartfelder, Gunter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Tranquilizer composition and method of treatment. 3,849,559, Cl. 424-244.000.

Wolf, George Robert, to Stauffer Chemical Company. Pigmented masonry water repellent composition containing alkyltrialkoxy silane-alkyl orthosilicate reaction product silicone resin. 3,849,357, Cl. 260-29.6nr.

Wolf, Gerhard Dieter; Blankenstein, Gunter; and Nischk, Gunther, to Bayer Aktiengesellschaft. Aromatic polyamide compositions containing aromatic disulfimide compound having an affinity for basic dyes. 3,849,376, Cl. 260-47.0cz.

Wolfe, Homer Bagenstose: *See—*
Siegle, John Carl; and Wolfe, Homer Bagenstose, 3,849,373.

Wolff, Werner; Faber, Ruth; and Ruchlack, Kasimir. Insecticidal composition containing surface active diurethanes and thiophosphoric acid esters. 3,849,556, Cl. 424-213.000.

Wolford, Lionel T.; and Versnel, John, to Cities Service Company. Thermally stable flame retardant polypropylene compositions. 3,849,371, Cl. 260-45.75b.

Wollweber, Hartmund: *See—*
Hiltmann, Rudolf; Wollweber, Hartmund; Hoffmeister, Friedrich; and Kronebert, Hans-Gunther, 3,849,563.

Wolpert, John F., to United States of America, Navy. Bolt locking mechanism for reciprocating gun. 3,848,510, Cl. 89-173.000.

Womer, Walter D., to Phillips Fibers Corporation. Guide means for yarn handling apparatus. 3,848,829, Cl. 242-131.000.

Wood, James E.: *See—*
Strecker, Larry A.; and Wood, James E., 3,849,354.

Wood, John Frederick Barry: *See—*
Hazelett, Robert William; Wood, John Frederick Barry; and Carmichael, Robert J., 3,848,658.

Woods, Verle W. Granular pesticide. 3,849,105, Cl. 71-65.000.

Woodward, Robert B.: *See—*
Conover, Lloyd H.; and Woodward, Robert B., 3,849,493.

Wortmann, Hans-Jurgen, to Flachglas Aktiengesellschaft. Device for manufacturing double layer sheet glass. 3,849,098, Cl. 65-152.000.

Wray, William R. Analog information storage and retrieval system. 3,848,978, Cl. 352-30.000.

Wright, Edward J.: *See—*
Schied, Thomas; and Wright, Edward J., 3,848,542.

Wyckoff, Charles W., to Applied Photo Sciences, Inc., mesne. Color photography. 3,849,138, Cl. 96-74.000.

Wyeth, Nathaniel Convers; and Roseveare, Ronald Newman, to Du Pont de Nemours, E. I., and Company. Process for producing a biaxially oriented thermoplastic article. 3,849,530, Cl. 264-89.000.

Wylie, Glenn John; and Koltz, Irving Morton. Envelope having means for readily forming a hand puppet therefrom. 3,848,356, Cl. 46-11.000.

Wythe, Frederick Joseph; and Mylchreest, George Dudley, to Emhart Corporation. Cooling system for glass forming mold. 3,849,101, Cl. 65-355.000.

Xerox Corporation: *See—*
Abowitz, Gerald; Ruckdeschel, Frederick Robert; and Gerace, Robert Eugene, 3,849,628.
Adams, James E., Jr.; and Haas, Werner E. L., 3,848,965.
Fraser, Lawrence J., 3,848,994.
Gauronski, John F., 3,848,995.
Goding, Justin Christian, 3,848,996.
Hagenbach, Robert J., 3,849,182.
Hasiotis, Christ S., 3,848,993.
Madrid, Robert W.; and Hagenbach, Robert J., 3,849,127.
Smith, Richard E., 3,848,992.
Stange, Klaus K., 3,848,566.
Stemmle, Denis J., 3,848,868.
Thettu, Raghulinga R.; and Kocher, Haribhajan S., 3,848,988.
Thettu, Raghulinga R.; and Williams, Edward G., 3,849,062.
Walters, David W.; Heeks, Robert E.; and Sullivan, Donald P., 3,849,146.
Wells, John B.; and Mammino, Joseph, 3,849,132.

Xonics, Inc.: *See—*
Allan, Frank V.; and Welkowsky, Murray S., 3,849,648.

Yale, Harry Louis, to Squibb, E. R., & Sons, Inc. Process for preparing dihydropyridobenzoxa (or thia) zepines, intermediates and derivatives. 3,849,424, Cl. 260-294.80f.

Yamada, Hirohiko: *See—*
Hongo, Eitaro; Yamada, Hirohiko; Fujii, Yozo; Masuda, Katsumi; Itou, Junichi; and Nakano, Takaaki, 3,849,452.

Yamagiwa, Tokio: *See—*
Ozawa, Jun; Isogai, Tokio; Ishikawa, Toshio; Yamagiwa, Tokio; Matsumura, Mutsuo; Nakano, Zenichi; and Fuziya, Shigeru, 3,849,590.

Yamaguchi, Kaoru; and Saito, Takashi, to Nippon Zeon Company, Ltd. Aggregate composition containing synthetic thermoplastic resin pellets or fragments. 3,849,355, Cl. 260-28.50r.

Yamaguchi, Yoshiharu: *See—*
Terada, Fumio; Matsuda, Yoshio; and Yamaguchi, Yoshiharu, 3,848,556.

Yamahira, Yoshiya: *See—*
Nakamura, Toshio; Maeda, Tadao; Takenaka, Hiroshi; and Yamahira, Yoshiya, 3,849,558.

Yamaji, Keizo; and Kurahashi, Akira, to Canon Kabushiki Kaisha. Multicolor electrophotographic reproduction device. 3,848,989, Cl. 355-4.000.

Yamamoto, Masaru: *See—*
Fujikawa, Tetsuzo; Kawano, Masahisa; and Yamamoto, Masaru, 3,848,574.

Yamanaka, Minoru: *See—*
Yoshida, Toyozi; Ushiyama, Kazuhisa; and Yamanaka, Minoru, 3,849,114.

Yamasa Shoyu Kabushiki Kaisha: *See—*
Rokugawa, Kyuji; Katoh, Yoshiki; Kuninaka, Akira; and Yoshino, Hiroshi, 3,849,249.

Yanagawa, Hitoshi: *See—*
Shoji, Akira; Yanagawa, Hitoshi; and Hirashima, Takashi, 3,848,982.

Yao, Szee Ming: *See—*
Conant, Barton C.; and Yao, Szee Ming, 3,848,614.

Yardley, John P.; Rees, Richard W.; and Smith, Herchel, to American Home Products Corporation. 2,3,4,5-Tetrahydro-1,1,5,5-tetrasubstituted-1H-3-benzazepines. 3,849,403, Cl. 260-239.0bb.

Yarnall, Joseph P., Jr.: *See—*
Schramm, Harold J.; McCullough, John R.; and Yarnall, Joseph P., Jr., 3,848,623.

Yarovinsky, Lazar Matveevich; and Rumyantsev, Alexei Ilich. Flux coated electrode. 3,849,189, Cl. 117-205.000.

Yasuda, Michio: *See—*
Fujimoto, Yoshiji; Hananoi, Toshihiro; Yasuda, Michio; Makihara, Hiroshi; Kuramizu, Masaru; Ota, Minoru; Kokido, Hiroshi; and Kadota, Shozo, 3,849,762.

Yeda Research and Development Co., Ltd.: *See—*
Teitelbaum, Dvora; Gan, Ramat; Meshorer, Asher; Hirshfeld, Tsvi; Arnon, Ruth; and Sela, Michael, 3,849,550.

Yhtyneet Paperitehtaat Oy Jylhavaara: *See—*
Syrjanen, Ahti, 3,848,814.

Yin, Simon: *See—*
Bourret, Phillip L.; and Yin, Simon, 3,848,975.

Yokobori, Katsuichi: *See—*
Kadowaki, Takashi; Dohi, Michio; and Yokobori, Katsuichi, 3,849,519.

Yokomichi, Isao: *See—*
Shigehara, Itaru; Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Toki, Tadaaki; Takagi, Hidetoshi; Nasu, Rikuo; Yokomichi, Isao; Kimura, Fumio; and Someya, Shinzo, 3,849,503.

Yonekura, Saku; Miyamoto, Hideaki; and Namba, Akio, to Asahi Kasei Kogyo Kabushiki Kaisha and Tokyo Kikai Seisakusho, Ltd. Apparatus for the production of photopolymer plates. 3,848,998, Cl. 355-100.000.

Yoshida, Hajime: *See—*
Nakayama, Kiyoshi; and Yoshida, Hajime, 3,849,250.

Yoshida Kogy Kabushiki Kaisha: *See—*
Takahashi, Kihei, 3,848,500.

Yoshida Kogyo Kabushiki Kaisha: *See—*
Terada, Fumio; Matsuda, Yoshio; and Yamaguchi, Yoshiharu, 3,848,556.

Yoshida, Toyozi; Ushiyama, Kazuhisa; and Yamanaka, Minoru, to Showa Denko Kabushiki Kaisha and Shunan Denko Kabushiki Kaisha. Process for producing high carbon ferrochrome. 3,849,114, Cl. 75-3.000.

Yoshida, Yoshinobu; and Arai, Atsuaki, to Fuji Photo Film Co., Ltd. Color photographic diffusion transfer process. 3,849,131, Cl. 96-3.000.

Yoshikawa, Katsuji: *See—*
Kurita, Yuko; Kawanishi, Yasuhiro; Yoshikawa, Katsuji; and Tanaka, Kiyoshi, 3,849,028.

Yoshino, Hiroshi: *See—*
Rokugawa, Kyuji; Katoh, Yoshiki; Kuninaka, Akira; and Yoshino, Hiroshi, 3,849,249.

Yoshitomi Pharmaceutical Industries, Ltd.: *See—*
Nakanishi, Michio; Araki, Kazuhiko; Tahara, Tetsuya; and Shiroki, Masami, 3,849,405.
Nakanishi, Michio; Oe, Takanori; and Tashiro, Chiaki, 3,849,410.

Young, Carter R.: *See—*
Sizer, Phillip S.; and Young, Carter R., 3,848,668.

Young, David E., to Schlumberger Technology Corporation. Low flow safety valve with pressure lock. 3,848,629, Cl. 137-459.000.

Youngs, Wilbur R., to Overhead Door Corporation. Flexible closure panel and means for supporting same. 3,848,653, Cl. 160-120.000.

Youra, Charles J., to Doric Corporation. Die fixture. 3,848,495, Cl. 83-128.000.

Zabrodsky, Zdenek; Augusta, Frantisek; and Kramenic, Zdenek, to Vyzkumny ustav bavlnarsky. Weft inserter for travelling-wave shedding looms. 3,848,641, Cl. 139-12.000.

Zamkov, Vadim Nikolaevich: *See—*
Gurevich, Samuil Mordkovich; Zamkov, Vadim Nikolaevich; Prilutsky, Valery Pavlovich; Topolsky, Vladimir Filippovich; Podkopai, Nikolai Vasilievich; Manoilo, Sergei Afanasievich; and Kykhno, Semen Leonidovich, 3,849,211.

Zanoni, Ernesto, to Franchi, Luigi, S.p.A. Gas utilization device for automatic guns, more particularly for automatic shotguns. 3,848,511, Cl. 89-191.00a.

Zaugg, Roland: *See—*
Fluck, Josef; Schaller, Kurt; and Zaugg, Roland, 3,848,400.

Zawadzki, George Z.: *See—*
Foster, John R.; Zawadzki, George Z.; and Godec, Maksimiljan, 3,848,361.

Zawadzki, Joseph F.; and Chinn, Leland J., to Searle, G. D., & Co. Purification of 6,7-dihydro-17-hydroxy-3-oxo-3' H-cyclopropa[6,7]-17a-pregna-4,6-diene-21-carboxylic acid γ-lactones. 3,849,404, Cl. 260-239.570.

Zechmeister, Hartwin, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Rotationally symmetrical hollow compound body. 3,849,080, Cl. 29-191.200.

Zeller, Burton S.: *See—*
Fisher, John F.; and Zeller, Burton S., 3,848,620.

Zetlin, Lev. Structural member of sheet material. 3,849,237, Cl. 161-68.000.

Zeuthen, Karl Gustav, to Rexomi A/S. Electrophotographic copying apparatus. 3,848,991, Cl. 355-14.000.

Zielke, Darrell W., to Superscope, Inc. Semi-automatic cassette loader. 3,848,825, Cl. 242-56.00r.

Zifperer, Kenneth B. Expansion anchor. 3,848,506, Cl. 85-83.000.

Zimin, Vladimir Afanasievich: *See—*
Kazakov, Nikolai Efimovich; Shipitsin, Svyatoslav Sergeevich; Minchenko, Veniamin Alexandrovich; Kudryavtsev, Innokenty

Mikhailovich; Zimin, Vladimir Afanasievich; and Pervitsky, Boris Antonovich, 3,849,046.
Zirngibl, Hans; Fuhr, Werner; Jaschinski, Klemens; Beumer, Peter; and Weidmann, Walter, to Bayer Aktiengesellschaft. Making metal oxides with oxygen-containing gas pre-heated over Pd-Au-Ag-alloy electrode. 3,849,543, Cl. 423-592.000.
Zoecon Corporation: *See—*
Henrick, Clive A.; and Staal, Gerardus B., 3,849,466.
Zubak, Jan, to Vyskumny ustav automatizacie a mechanizacie. Process for exact electrochemical working of workpieces of different shape. 3,849,272, Cl. 204-129.250.
Zuech, Ernest A., to Phillips Petroleum Company. Alkylation of aromatic hydrocarbons using a compacted montmorillonite clay catalyst. 3,849,507, Cl. 260-671.00c.
Zweig, Robert M.: *See—*
Hejzlar, Sid; and Zweig, Robert M., 3,848,463.
Zweigle, Maurice L., to Dow Chemical Company, The. Method of preparing water-dispersible polymer compositions. 3,849,361, Cl. 260-33.20r.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF NOVEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Cornelius Co., The: *See—*
Estrem, Malcolm J. Re. 28,249.
Estrem, Malcolm J., to The Cornelius Co. Adjustable timer having rotating cam and wide range variable dwell. Re. 28,249, 11–19–74, Cl. 200—153.1.
Evans, John D., to Metals, Inc. Stock rack. Re. 28,244, 11–19–74, Cl. 108—157.
Gamewell, Joseph M.: *See—*
Stockford, William F., and Gamewell. Re. 28,246.
Gamewell Mechanical, Inc.: *See—*
Stockford, William F., and Gamewell. Re. 28,246.
Herbst, Robert, to Textron, Inc. Screwdown system for rolling mill. Re. 28,248, 11–19–74, Cl. 72—8.
Metals, Inc.: *See—*
Evans, John D. Re. 28,244.
Nupuf, Joseph S. Optical testing device and method of using the same. Re. 28,245, 11–19–74, Cl. 356—124.
Okayama, Shigeru, and K., and H. Takahashi. Automatic film developing apparatus. Re. 28,247, 11–19–74, Cl. 354—335.
Okayama, Kunihiro: *See—*
Okayama, Shigeru, and K., and Takahashi. Re. 28,247.
Stockford, William F., and J. M. Gamewell, to Gamewell Mechanical, Inc. High capacity prefabricated air conditioning system. Re. 28,246, 11–19–74, Cl. 62—298.
Takahashi, Hidehiko: *See—*
Okayama, Shigeru, and K., and Takahashi. Re. 28,247.
Textron, Inc.: *See—*
Herbst, Robert. Re. 28,248.

LIST OF PLANT PATENTEES

Moore, Ralph S. Miniature rose plant. 3,654, 11–19–74, Cl. 10.
Valepiano, Sergio: *See—*
Valepiano, Armando, and S. 3,653.
Valepiano, Armando, and S. Hybrid tea rose plant. 3,653, 11–19–74, Cl. 20.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See—*
Araujo, Antonino, Jr. 233,688.
Akioka, Yoshio: *See—*
Tamura, Masashi, and Akioka. 233,694.
Ambassador Snack Products, Inc.: *See—*
Arnold, Ethel A. 233,642.
American Home Products Corp.: *See—*
Neugebauer, Gunther. 233,665.
Araujo, Antonino, Jr., to Abbott Laboratories. Tubular hood for attachment to a flashlight thereby adapted for transillumination. 233,688, 11–19–74, Cl. D48—20.
Arnold, Ethel A., to Ambassador Snack Products, Inc. Food container. 233,642, 11–19–74, Cl. D7—76.
Askew, Aubrey, to Dunlop Ltd. Combined sole and heel unit for footwear. 233,637, 11–19–74, Cl. D2—320.
Battaglia, Thomas A. Stand for real estate sign. 233,706, 11–19–74, Cl. D96—12.
Bernstein, Bernard. Jewelry finding. 233,681, 11–19–74, Cl. D45—19.
Bernstein, Bernard. Jewelry finding. 233,682, 11–19–74, Cl. D45—19.
Bluem, Gary R., to Kroy Industries, Inc. Printer. 233,701, 11–19–74, Cl. D64—11.
Brown, Charles W.: *See—*
Brown, Norman C., C. W., and N. R. 233,662.
Brown, Norman C., C. W., and N. R. Trailer hitch. 233,662, 11–19–74, Cl. D12—162.
Brown, Norman R.: *See—*
Brown, Norman C., C. W., and N. R. 233,662.
Buckner, Betty J.: *See—*
Buckner, Clair T., and B. J. 233,675.
Buckner, Clair T., and B. J. Doll. 233,675, 11–19–74, Cl. D34—4.
Bunker Ramo Corp.: *See—*
Hilliard, William A. 233,655.
Hilliard, William A. 233,656.
Burkard, Eugene R. Suspensory support brief. 233,633, 11–19–74, Cl. D2—10.
Christiansen, Godtfred K., to Interlego A.G. Toy assembly element. 233,680, 11–19–74, Cl. D34—15.
Collins, S. J.: *See—*
Gilmore, Oscar P. 233,664.
Congoleum Industries, Inc.: *See—*
White, Gerald E. 233,705.
Current, Wayne A., to The Singer Co. Single bed hand operable knitting machine. 233,683, 11–19–74. Cl. D47—5.
Current, Wayne A., to The Singer Co. Double bed hand operable knitting machine. 233,684, 11–19–74, Cl. D47—5.
Dart Industries Inc.: *See—*
Montesi, Edward N. 233,644.
Dawn, Alan, to E. S. Perry Ltd. Balance scale for teaching. 233,659, 11–19–74, Cl. D10—90.
Dazey Products Co.: *See—*
McNair, Samuel L. 233,703.
Deaton, Charles U. Illuminator grid panel. 233,687, 11–19–74. Cl. D48—16.
Deutsche Texaco Aktiengesellschaft: *See—*
Geisler, Hans P. L. 233,691.
Diehl, Arne J., to The Hoover Co. Vacuum cleaner. 233,645, 11–19–74, Cl. D7—166.
Diehl, Arne J., to The Hoover Co. Vacuum cleaner. 233,646, 11–19–74, Cl. D7—166.
Diehl, Arne J., to The Hoover Co. Vacuum cleaner. 233,647, 11–19–74, Cl. D7—166.
Dunlop Ltd.: *See—*
Askew, Aubrey. 233,637.
Eastman Kodak Co.: *See—*
McClare, Andrew V. 233,700.
Ewers, Ronald L., to Game Time, Inc. Bicycle rack. 233,661, 11–19–74, Cl. D12—115.
Facer, Grant T., and J. A. Metzger, to Kaiser Aluminum & Chemical Corp. Metal flooring section for animal enclosures and the like. 233,663, 11–19–74, Cl. D13—1.
Family Products, Inc.: *See—*
Roche, David E. 233,641.
Fink, Robert N.: *See—*
Sturrock, James C. 233,670.
Ford Motor Co.: *See—*
Gollwitzer, Walter H., and Shenk. 233,660.
Funatsu, Kunio: *See—*
Naito, Masatoshi, Sawamura, Funatsu, and Furuyabu. 233,643.
Furuyabu, Noriharu: *See—*
Naito, Masatoshi, Sawamura, Funatsu, and Furuyabu. 233,643.
Game Time, Inc.: *See—*
Ewers, Ronald L. 233,661.
Gardisette International AG: *See—*
Schroeder, Peter E. 233,685.
Gay, Kenneth F., to Lawn Products, Inc. Fence picket for lawn edging or similar article. 233,671, 11–19–74, Cl. D28—1.
Geisler, Hans P. L., to Deutsche Texaco Aktiengesellschaft. Outdoor ground level lighting fixture. 233,691, 11–19–74, Cl. D48—31.
Gilmore, Oscar P., to S. J. Collins. Integral security shutter-window unit. 233,664, 11–19–74. Cl. D13—1.
Glory Kogyo Kabushiki Kaisha: *See—*
Tamura, Masashi, and Akioka. 233,694.
Gollwitzer, Walter H., and W. B. Shenk, Jr., to Ford Motor Co. Body for railway car or similar vehicle. 233,660, 11–19–74, Cl. D12—40.
Hanson Hawk, Inc.: *See—*
Holtzman, Norman. 233,693.
Harvey, Edward H. Toy construction piece. 233,678, 11–19–74. Cl. D34—15.
Hewson, Kenneth E.: *See—*
Sutton, Lawrence R., Ranno, and Hewson. 233,651.
Hilliard, William A., to Bunker Ramo Corp. Desk clock. 233,655, 11–19–74, Cl. D10—25.
Hilliard, William A., to Bunker Ramo Corp. Desk clock. 233,656, 11–19–74, Cl. D10—25.
Hnatko, Karl J., to Taconite Engineering & Mfg. Co. Gear case for magnetic separator drive. 233,698, 11–19–74, Cl. D55—1.
Holtzman, Norman, to Hanson Hawk, Inc. Compression tester. 233,693, 11–19–74, Cl. D52—6.
Hoover Co., The: *See—*
Diehl, Arne J. 233,645.
Diehl, Arne J. 233,646.
Diehl, Arne J. 233,647.
Interlego A.G.: *See—*
Christiansen, Godtfred K. 233,680.
Ivac Corp.: *See—*
Knute, Wallace L. 233,667.

Kaiser Aluminum & Chemical Corp. : *See*—
  Facer, Grant T., and Metzger. 233,663.
Kaysen, Raymond, to RCA Corp. Control unit for an antenna rotator. 233,668, 11-19-74, Cl. D26—13.
Kitson, Gerald L. Poultry cage divider panel. 233,673, 11-19-74, Cl. D30—2.
Knute, Wallace L., to Ivac Corp. Electrical connector. 233,667, 11-19-74, Cl. D26—1.
Koury, George F., to Pantasote Co. Garment for holding a diaper. 233,702, 11-19-74, Cl. D83—1.
Kroy Industries, Inc. : *See*—
  Bluem, Gary R. 233,701.
Lassiter, Everett D. : *See*—
  Wood, William A. 233,649.
Lawlor, John E., and J. E. Sgombick, to Xerox Corp. Container for booklets or the like. 233,654, 11-19-74, Cl. D9—202.
Lawn Products, Inc. : *See*—
  Gay, Kenneth F. 233,671.
Litsinger, Terry A., Sr. Wire helmet guard. 233,635, 11-19-74, Cl. D2—232.
Louks, Robert A. Wrench hand tool. 233,648, 11-19-74, Cl. D8—22.
Matsushita Electric Industrial Co., Ltd. : *See*—
  Mizuno, Koji. 233,689.
  Naito, Masatoshi, Sawamura, Funatsu, and Furuyabu. 233,643.
Maytag Co., The : *See*—
  Smith, Thomas R., Ross, and Swartz. 233,692.
McClare, Andrew V., to Eastman Kodak Co. Photographic printer. 233,700, 11-19-74, Cl. D61—1.
McNair, Samuel L., to Dazey Products Co. Hand held electric massager. 233,703, 11-19-74, Cl. D83—1.
Meehan, Max R. Emblem. 233,672, 11-19-74, Cl. D29—11.
Metzger, John A. : *See*—
  Facer, Grant T., and Metzger. 233,663.
Mizuno, Koji, to Matsushita Electric Industrial Co., Ltd. Combined radio receiver and flashlight. 233,689, 11-19-74, Cl. D48—24.
Montesi, Edward N., to Dart Industries Inc. Lettuce corer or the like. 233,644, 11-19-74, Cl. D7—147.
Naito, Masatoshi, F. Sawamura, K. Funatsu, and N. Furuyabu, to Matsushita Electric Industrial Co., Ltd. Toaster. 233,643, 11-19-74, Cl. D7—93.
Neugebauer, Gunther, to American Home Products Corp. Container for insecticides or similar article. 223,665, 11-19-74, Cl. D22—19.
Nielsen, Lloyd A. Rocking horse. 233,679, 11-19-74, Cl. D34—15.
Offredi, Giovanni. Armchair. 233,638, 11-19-74, Cl. D6—31.
Oxford Pendaflex Corp. : *See*—
  Saltz, Ira. 233,704.
Pantasote Co. : *See*—
  Koury, George F. 233,702.
Pardo, John, to The Procter & Gamble Co. Combined aerosol bottle and cap therefor. 233,653, 11-19-74, Cl. D9—63.
Payne, Donald L., to Pro Products, Inc. Combined try square-mitre square and angle finder. 233,695, 11-19-74, Cl. D52—6.
Performance Industries, Inc. : *See*—
  Sutton, Lawrence R., Ranno, and Hewson. 233,651.
Perry, E. S., Ltd. : *See*—
  Dawn, Alan. 233,659.
Piepenburg, Robert E. Potter's wheel. 233,696, 11-19-74, Cl. D55—1.
Plice, Gerald W., to Shure Brothers Inc. Microphone. 233,669, 11-19-74, Cl. D26—14.
Pro Products, Inc. : *See*—
  Payne, Donald L. 233,695.
Procter & Gamble Co., The : *See*—
  Pardo, John. 233,653.
  Reece, John S. 233,699.
RCA Corp. : *See*—
  Kaysen, Raymond. 233,668.
Ranno, Carl P. : *See*—
  Sutton, Lawrence R., Ranno, and Hewson. 233,651.
Reece, John S., to The Procter & Gamble Co. Paper toweling. 233,699, 11-19-74, Cl. D59—2.
Ritzow, Gerald R., and R. C. Aquarium stand. 233,674, 11-19-74, Cl. D30—12.
Ritzow, Roger C. : *See*—
  Ritzow, Gerald R., and R. C. 233,674.
Robinson, Benjamin P. Fish hook bend corrector. 233,666, 11-19-74, Cl. D22—31.
Robustelli, Armand W. Golf putter. 233,676, 11-19-74, Cl. D34—5.
Roche, David E., to Family Products, Inc. Insulated jug. 233,641, 11-19-74, Cl. D7—77.
Roddon, Mervyn D., to Ronson Corp. Combination lighter and pen. 233,690, 11-19-74, Cl. D48—27.
Ronson Corp. : *See*—
  Roddon, Mervyn D. 233,690.
Ross, Frank E. : *See*—
  Smith, Thomas R., Ross, and Swartz. 233,692.
Rowenta-Werke, GmbH : *See*—
  Stutzer, Franz A. 233,686.
Rubbermaid Inc. : *See*—
  Wooters, Dwight N. 233,639.
Saltz, Ira, to Oxford Pendaflex Corp. Ash tray. 233,704, 11-19-74, Cl. D85—2.
Salviato, Augusto. Bread basket. 233,640, 11-19-74, Cl. D7—20.
Sawamura, Fujio : *See*—
  Naito, Masatoshi, Sawamura, Funatsu, and Furuyabu. 233,643.
Schneider, Otto. Rubber boots. 233,636, 11-19-74, Cl. D2—272.
Schroeder, Peter E., to Gardisette International AG. Curtain fabric. 233,685, 11-19-74, Cl. D47—6.
Schroeder, Philip J., to Xerox Corp. Balance scale. 233,658, 11-19-74, Cl. D10—90.
Seefluth, Uwe C. Toy helicopter. 233,677, 11-19-74, Cl. D34—15.
Sgombick, John E. : *See*—
  Lawlor, John E., and Sgombick. 233,654.
Shenk, William B., Jr. : *See*—
  Gollwitzer, Walter H., and Shenk. 233,660.
Shure Brothers Inc. : *See*—
  Plice, Gerald W. 233,669.
Singer Co., The : *See*—
  Current, Wayne A. 233,683.
  Current, Wayne A. 233,684.
Smith, Thomas R., F. E. Ross, and W. J. Swartz, to The Maytag Co. Portable spin dryer. 233,692, 11-19-74, Cl. D49—1.
Snider, Dana R. Hospital gown. 233,634, 11-19-74, Cl. D2—17.
Sturrock, James C., to Robert N. Fink. Foot pedal for dictating machine. 233,670, 11-19-74, Cl. D26—13.
Stutzer, Franz A., to Rowenta-Werke, GmbH. Table lighter. 233,686, 11-19-74, Cl. D48—27.
Swartz, William J. : *See*—
  Smith, Thomas R., Ross, and Swartz. 233,692.
Sutton, Lawrence R., C. P. Ranno, and K. E. Hewson, to Performance Industries, Inc. Tackless carpet stripping. 233,651, 11-19-74, Cl. D8—266.
Taconite Engineering & Mfg. Co. : *See*—
  Hnatko, Karl J. 233,698.
Tamura, Masashi, and Y. Akioka, to Glory Kogyo Kabushiki Kaisha. Automatic coin counting machine. 233,694, 11-19-74, Cl. D52—4.
Tate, Inc. : *See*—
  Tate, James O. 233,697.
Tate, James O., to Tate, Inc. Shield for coffee machine burner plates. 233,697, 11-19-74, Cl. D55—1.
Tegner, Raymond U. H. Escutcheon plate. 233,650, 11-19-74, Cl. D8—181.
Terraillon : *See*—
  Zanuso, Marco. 233,657.
White, Gerald E., to Congoleum Industries, Inc. Soft surface floor covering or similar article. 233,705, 11-19-74, Cl. D92—4.
Wing, George S. Nut. 233,652, 11-19-74, Cl. D8—273.
Wood, William A., assignor of a fractional part interest to Everett D. Lassiter. Tent peg extractor or the like. 233,649, 11-19-74, Cl. D8—88.
Wooters, Dwight N., to Rubbermaid Inc. Accessories holder for a shower. 233,639, 11-19-74, Cl. D6—91.
Xerox Corp. : *See*—
  Lawlor, John E., and Sgombick. 233,654.
  Schroeder, Philip J. 233,658.
Zanuso, Marco, to Terraillon. Food scale. 233,657, 11-19-74, Cl. D10—89.

CLASSIFICATION OF PATENTS

ISSUED NOVEMBER 19, 1974

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	
94	3,848,267
237	3,848,266
	3,848,268
	3,848,269
311	3,848,270
338	3,848,271
CLASS 3	
1	3,848,272
	3,848,273
	3,848,276
CLASS 4	
113	3,848,274
211	3,848,275
CLASS 5	
11	3,848,277
91	3,848,278
113	3,848,279
202	3,848,280
337	3,848,281
348WB	3,848,282
351	3,848,283
CLASS 8	
10.2	3,849,064
25	3,849,065
115.5	3,849,066
115.7	3,849,067
151	3,849,068
CLASS 9	
6	3,848,284
CLASS 12	
17R	3,848,285
142P	3,848,286
	3,848,287
CLASS 13	
9	3,849,584
26	3,849,585
32	3,849,586
	3,849,587
34	3,849,588
CLASS 14	
41	3,848,288
CLASS 15	
246.5	3,848,289
321	3,848,290
322	3,848,291
339	3,848,292
CLASS 16	
163	3,848,293
CLASS 17	
45	3,848,294
CLASS 19	
65T	3,848,295
81	3,848,296
159R	3,848,297
CLASS 23	
230PC	3,849,069
230R	3,849,070
258.5	3,849,071
259	3,849,072
259.5	3,849,073
284	3,849,075
285	3,849,074
288R	3,849,076
294	3,849,077
CLASS 24	
205.1R	3,848,298
230SC	3,848,299
CLASS 28	
1.6	3,848,300
CLASS 29	
25.16	3,848,301
96	3,848,302
	3,848,303
116AD	3,848,304
132	3,848,305
149.5NM	3,848,306
156.8B	3,848,307
157A	3,848,308
159R	3,848,309
159.3	3,848,310
160.6	3,848,311
	3,848,312
183	3,849,078
183.5	3,849,079
191	3,848,314
191.2	3,848,313
	3,849,080
200B	3,848,315
203DT	3,848,316
205E	3,848,317
208B	3,848,318
423	3,848,319
428	3,848,320
432.2	3,848,321
453	3,848,322
475	3,848,323
	3,848,324
511	3,848,325
525	3,848,326
559	3,848,327
578	3,848,328
580	3,848,329
590	3,848,330
596	3,848,331
597	3,848,332
630E	3,848,333
CLASS 30	
180	3,848,334
CLASS 32	
14B	3,848,335
59	3,848,336
CLASS 33	
174PB	3,848,338
174A	3,848,339
174H	3,848,337
354	3,848,340
CLASS 34	
25	3,848,341
48	3,848,342
164	3,848,343
168	3,848,344
CLASS 35	
8R	3,848,345
20	3,848,346
CLASS 36	
2.5AL	3,848,347
CLASS 40	
64R	3,848,348
132R	3,848,349
CLASS 42	
1N	3,848,350
25	3,848,351
CLASS 43	
1	3,848,352
42.31	3,848,353
42.49	3,848,354
CLASS 44	
7E	3,849,081
56	3,849,082
70	3,849,084
72	3,849,083
78	3,849,085
CLASS 46	
7	3,848,355
11	3,848,356
142	3,848,357
CLASS 47	
34	3,848,358
56	3,848,359
58	3,848,360
CLASS 48	
180C	3,849,086
214	3,849,087
CLASS 49	
167	3,848,361
CLASS 51	
2K	3,848,362
7	3,848,363
111R	3,848,365
129	3,848,366
165R	3,848,368
	3,848,369
237	3,848,370
241S	3,848,371
269	3,849,088
289R	3,848,372
313	3,848,373
373	3,848,374
CLASS 52	
36	3,848,364
	3,848,375
157	3,848,367
169	3,848,376
	3,848,377
184	3,848,378
221	3,848,379
222	3,848,380
236	3,848,381
263	3,848,382
420	3,848,384
475	3,848,385
533	3,848,383
706	3,848,386
735	3,848,387
753D	3,848,388
758D	3,848,389
758H	3,848,390
CLASS 53	
7	3,848,391
21R	3,848,392
22A	3,848,393
26	3,848,394
35	3,848,395
43	3,848,396
124C	3,848,398
124D	3,848,397
CLASS 55	
33	3,849,089
143	3,849,090
302	3,849,091
	3,849,092
316	3,849,093
330	3,849,094
394	3,849,095
CLASS 56	
13.9	3,848,399
296	3,848,401
400.2	3,848,402
CLASS 57	
34HS	3,848,403
	3,848,404
71	3,848,405
149	3,848,406
CLASS 58	
68	3,848,400
CLASS 59	
78.1	3,848,407
CLASS 60	
248	3,848,408
345	3,848,409
347	3,848,410
432	3,848,411
517	3,848,412
525	3,848,413
593	3,848,414
595	3,848,415
644	3,848,416
CLASS 61	
.5	3,848,418
1F	3,848,417
5	3,848,419
45D	3,848,420
72.3	3,848,421
CLASS 62	
23	3,849,096
45	3,848,423
84	3,848,422
115	3,848,424
174	3,848,425
255	3,848,426
260	3,848,427
285	3,848,428
298	Re.28,246
439	3,848,429
476	3,848,430
CLASS 64	
27NM	3,848,431
CLASS 65	
33	3,849,097
152	3,849,098
158	3,849,099
348	3,849,100
355	3,849,101
CLASS 66	
54	3,848,432
125R	3,848,433
163	3,848,434
CLASS 68	
5D	3,848,435
12R	3,848,436
	3,848,437
22R	3,848,438
184	3,848,439
CLASS 70	
55	3,848,440
232	3,848,441
366	3,848,442
CLASS 71	
65	3,849,104
	3,849,105
76	3,849,102
	3,849,116
77	3,849,103
88	3,849,108
92	3,849,106
	3,849,107
100	3,849,109
103	3,849,110
CLASS 72	
8	Re.28,248
	3,848,443
10	3,848,444
142	3,848,445
168	3,848,446
199	3,848,447
349	3,848,449
384	3,848,450
402	3,848,451
448	3,848,452
457	3,848,454
467	3,848,453
CLASS 73	
1E	3,848,455
11	3,848,456
24	3,848,457
40.5R	3,848,458
41.2	3,848,459
67.5R	3,848,460
71.5US	3,848,461
88.5R	3,848,462
141AB	3,848,463
170A	3,848,464
194R	3,848,465
349	3,848,466
379	3,848,467
380	3,848,468
422GC	3,848,469
425.6	3,848,470
557	3,848,471
CLASS 74	
52	3,848,472
53	3,848,473
117	3,848,474
192	3,848,475
206	3,848,476
242.4	3,848,448
425	3,848,477
484	3,848,478
522	3,848,479
558.5	3,848,480
567	3,848,481
710	3,848,482
CLASS 75	
2	3,849,111
3	3,849,112
	3,849,113
	3,849,114
5	3,849,115
24	3,849,117
53	3,849,125
67	3,849,118
68R	3,849,119
74	3,849,120
103	3,849,121
126A	3,849,122
138	3,849,123
177	3,849,124
CLASS 76	
101A	3,848,483
CLASS 81	
6	3,848,484
52.4R	3,848,488
57.11	3,848,485
CLASS 82	
36R	3,848,486
	3,848,487
61	3,848,489
CLASS 83	
49	3,848,490
77	3,848,491
99	3,848,492
109	3,848,494
128	3,848,495
133	3,848,496
168	3,848,493
192	3,848,497
401	3,848,498
461	3,848,499
465	3,848,500
471.3	3,848,501
814	3,848,502
CLASS 84	
380	3,848,503
402	3,848,504
CLASS 85	
19	3,848,505
83	3,848,506
CLASS 86	
1R	3,848,507
CLASS 89	
36H	3,848,508
41AA	3,848,509
173	3,848,510
191A	3,848,511
CLASS 90	
11A	3,848,512
16	3,848,513
CLASS 91	
3	3,848,514
184	3,848,515
CLASS 92	
92	3,848,516
101	3,848,517
107	3,848,518
CLASS 93	
53SD	3,848,519
CLASS 96	
1SD	3,849,127
1R	3,849,126
1.3	3,849,132
1.5	3,849,128
	3,849,129
	3,849,130
3	3,849,131
29L	3,849,134
29R	3,849,133
35.1	3,849,144
36	3,849,135
36.2	3,849,136
67	3,849,137
74	3,849,138
84R	3,849,139
100	3,849,140
107	3,849,146
124	3,849,147
CLASS 98	
115K	3,848,521
CLASS 99	
421H	3,848,522
	3,848,523
631	3,848,524
CLASS 100	
48	3,848,525
88	3,848,526
CLASS 101	
93C	3,848,527
115	3,848,528
363	3,848,529
CLASS 102	
38	3,848,530
70R	3,848,531
87	3,848,532
CLASS 104	
18	3,848,533
26A	3,848,534
88	3,848,535
147R	3,848,536
154	3,848,537
155	3,848,538
	3,848,539
	3,848,540
	3,848,541
172B	3,848,542
CLASS 106	
1	3,849,141
	3,849,142
22	3,849,143
39.6	3,849,145
287SB	3,849,148
288B	3,849,149
	3,849,151
288Q	3,849,150
308Q	3,849,152
CLASS 108	
5	3,848,543
6	3,848,544
26	3,848,545
52	3,848,546
157	Re.28,244
CLASS 109	
49.5	3,848,547
CLASS 110	
7R	3,848,548
8A	3,848,549
18R	3,848,550
	3,848,551
CLASS 111	
77	3,848,552
87	3,848,553
CLASS 112	
124	3,848,554
252	3,848,555
265	3,848,556
CLASS 113	
121C	3,848,557
CLASS 114	
16R	3,848,558
74A	3,848,559
CLASS 115	
1R	3,848,560
39	3,848,561
CLASS 116	
63R	3,848,562
118R	3,848,563
CLASS 117	
2R	3,849,153
4	3,849,154
7	3,849,155
10	3,849,156
11	3,849,157
	3,849,158
	3,849,159
17	3,849,160
17.5	3,849,161
33.5T	3,849,162
	3,849,163
36.3	3,849,170
36.8	3,849,164
37LE	3,849,165
	3,849,171
47A	3,849,166
	3,849,172
51	3,849,167
62.1	3,849,173
65.2	3,849,174
70C	3,849,175
71M	3,849,176
71R	3,849,177
72	3,849,178
97	3,849,179
100B	3,849,180
100M	3,849,182
106R	3,849,168
	3,849,181
143A	3,849,169
155UA	3,849,183
	3,849,184

161UB	3,849,185
201	3,849,186
	3,849,187
	3,849,188
205	3,849,189
219	3,849,190
226	3,849,191
232	3,849,192
235	3,849,193
CLASS 118	
13	3,848,564
234	3,848,565
637	3,848,566
CLASS 119	
5	3,848,567
28	3,848,568
37	3,848,569
51R	3,848,570
126	3,848,571
CLASS 122	
32	3,848,572
149	3,848,573
CLASS 123	
8.09	3,848,574
8.11	3,848,575
139BD	3,848,576
CLASS 126	
25B	3,848,577
CLASS 127	
29	3,849,194
CLASS 128	
1R	3,848,578
2F	3,848,579
	3,848,580
	3,848,581
2.06R	3,848,582
2.08	3,848,583
	3,848,584
	3,848,585
2.1B	3,848,586
9	3,848,587
41	3,848,588
84C	3,848,589
129	3,848,590
145.8	3,848,591
214R	3,848,592
218DA	3,848,593
284	3,848,594
	3,848,595
	3,848,596
287	3,848,597
	3,848,598
	3,848,599
303.13	3,848,600
305	3,848,601
344	3,848,602
349R	3,848,603
350R	3,848,604
351	3,848,605
352	3,848,606
400	3,848,607
419R	3,848,608
CLASS 130	
27T	3,848,609
CLASS 132	
39	3,848,610
45	3,848,611
53	3,848,612
92R	3,848,613
CLASS 133	
8R	3,848,614
CLASS 134	
1	3,849,195
	3,849,196
10	3,849,197
CLASS 135	
4R	3,848,615
25R	3,848,740
CLASS 136	
25	3,849,198
30	3,849,199
83R	3,849,200
86A	3,849,202
86B	3,849,201
135S	3,849,203
CLASS 137	
78	3,848,616
88	3,848,617
91	3,848,618
116	3,848,619
116.3	3,848,620
186	3,848,623
242	3,848,624
268	3,848,621
269	3,848,626
344	3,848,625
392	3,848,627
434	3,848,628
459	3,848,629
468	3,848,622
475	3,848,630
505.1	3,848,631
514	3,848,632
561A	3,848,633
601	3,848,634
610	3,848,635
624.27	3,848,636
625.27	3,848,637
CLASS 138	
99	3,848,638
103	3,848,639
145	3,848,640
CLASS 139	
12	3,848,641
28	3,848,642
68	3,848,643
207	3,848,644
CLASS 141	
117	3,848,645
CLASS 144	
3N	3,848,646
3R	3,848,647
34A	3,848,648
CLASS 145	
35R	3,848,649
CLASS 148	
1.5	3,849,204
1.6	3,849,205
6.2	3,849,206
6.27	3,849,207
	3,849,208
12F	3,849,209
12.7	3,849,210
26	3,849,211
31.55	3,849,212
108	3,849,213
111	3,849,214
127	3,849,215
187	3,849,216
CLASS 150	
8	3,848,650
CLASS 152	
209R	3,848,651
427	3,848,652
CLASS 156	
11	3,849,217
18	3,849,218
73.6	3,849,219
110R	3,849,220
145	3,849,221
148	3,849,222
	3,849,223
208	3,849,224
213	3,849,225
247	3,849,226
268	3,849,227
297	3,849,228
304	3,849,229
330	3,849,230
403	3,849,231
CLASS 159	
13A	3,849,232
48R	3,849,233
CLASS 160	
120	3,848,653
CLASS 161	
17	3,849,234
44	3,849,235
64	3,849,236
68	3,849,237
159	3,849,238
160	3,849,239
167	3,849,240
169	3,849,241
176	3,849,242
189	3,849,243
199	3,849,244
CLASS 162	
4	3,849,245
	3,849,246
237	3,849,247
CLASS 164	
34	3,848,654
43	3,848,655
89	3,848,656
252	3,848,657
278	3,848,658
405	3,848,659
CLASS 165	
1	3,848,660
	3,848,662
8	3,848,663
22	3,848,664
155	3,848,661
168	3,848,665
	3,848,666
CLASS 166	
55.6	3,848,667
72	3,848,668
	3,848,669
224R	3,848,670
248	3,848,671
249	3,848,672
275	3,848,673
299	3,848,674
CLASS 169	
15	3,848,675
37	3,848,676
CLASS 172	
112	3,848,677
225	3,848,678
762	3,848,679
CLASS 173	
93.5	3,848,680
125	3,848,681
CLASS 174	
21R	3,849,589
31R	3,849,590
107	3,849,591
CLASS 175	
5	3,848,682
65	3,848,683
195	3,848,684
206	3,848,685
209	3,848,686
394	3,848,687
CLASS 176	
36R	3,849,257
68	3,849,248
CLASS 177	
179	3,848,688
233	3,848,689
CLASS 178	
5.6	3,849,594
6	3,849,592
	3,849,595
6.8	3,849,596
	3,849,597
7.82	3,849,598
53.1R	3,849,599
CLASS 179	
1D	3,849,601
	3,849,602
1G	3,849,600
1H	3,849,603
15AQ	3,849,604
16AA	3,849,605
84T	3,849,606
86	3,849,607
146R	3,849,608
170NC	3,849,609
CLASS 180	
6.48	3,848,690
44R	3,848,691
52	3,848,692
70P	3,848,694
79.2R	3,848,693
103	3,848,695
CLASS 181	
33HB	3,848,697
156	3,848,696
CLASS 182	
83	3,848,698
163	3,848,699
181	3,848,700
185	3,848,701
CLASS 184	
6.3	3,848,702
CLASS 187	
73	3,848,703
86	3,848,706
CLASS 188	
71.8	3,848,704
71.9	3,848,705
	3,848,707
73.1	3,848,708
73.3	3,848,709
280	3,848,710
CLASS 191	
12R	3,848,711
30	3,848,712
32	3,848,713
33	3,848,714
45R	3,848,715
CLASS 192	
3R	3,848,716
93A	3,848,717
133	3,848,721
CLASS 194	
1M	3,848,718
CLASS 195	
28N	3,849,249
29	3,849,250
	3,849,251
62	3,849,252
68	3,849,253
116	3,849,254
129	3,849,255
139	3,849,256
CLASS 197	
1R	3,848,719
	3,848,720
53	3,848,722
102	3,848,723
CLASS 198	
29	3,848,724
31AC	3,848,746
35	3,848,725
108	3,848,726
127	3,848,727
155	3,848,728
171	3,848,729
183	3,848,730
193	3,848,731
204	3,848,732
211	3,848,733
230	3,848,734
CLASS 200	
5A	3,849,611
5R	3,849,610
11J	3,849,612
61.27	3,849,613
61.41	3,849,614
61.81	3,849,615
82R	3,849,616
144B	3,849,617
148R	3,849,618
153LB	Re.28,249
153SC	3,849,619
157	3,849,620
310	3,849,621
CLASS 202	
140	3,849,258
174	3,849,259
181	3,849,260
CLASS 203	
38	3,849,262
39	3,849,261
CLASS 204	
35N	3,849,263
	3,849,264
86	3,849,265
98	3,849,266
99	3,849,267
	3,849,268
107	3,849,269
129.1	3,849,270
129.2	3,849,271
129.25	3,849,272
129.6	3,849,273
158R	3,849,274
180R	3,849,275
192	3,849,276
202	3,849,277
237	3,849,278
254	3,849,279
256	3,849,280
268	3,849,281
290F	3,849,282
298	3,849,283
300	3,849,284
305	3,849,285
CLASS 206	
45.25	3,848,735
223	3,848,736
315	3,848,737
387	3,848,738
443	3,848,739
CLASS 208	
8	3,849,287
14	3,849,288
65	3,849,289
66	3,849,290
78	3,849,291
111	3,849,292
	3,849,293
162	3,849,294
166	3,849,295
216	3,849,296
251R	3,849,297
310	3,849,298
	3,849,299
	3,849,300
CLASS 209	
106	3,848,741
111.7	3,848,742
214	3,849,301
218	3,848,743
273	3,849,302
393	3,848,744
CLASS 210	
4	3,849,303
14	3,849,304
38	3,849,306
54	3,849,307
98	3,849,308
116	3,849,305
143	3,849,309
188	3,849,311
196	3,849,310
237	3,849,312
400	3,849,313
493	3,849,314
CLASS 211	
49D	3,848,745
177	3,848,747
178R	3,848,748
CLASS 212	
8R	3,848,749
69	3,848,750
145	3,848,751
CLASS 214	
1BB	3,848,754
1BS	3,848,752
1B	3,848,753
16.4A	3,848,755
138C	3,848,756
152	3,848,757
501	3,848,758
730	3,848,759
CLASS 215	
12	3,848,760
220	3,848,761
224	3,848,762
225	3,848,763
CLASS 219	
10.55	3,849,622
	3,849,623
10.79	3,849,625
69V	3,849,624
124	3,849,626
131F	3,849,627
216	3,849,628
342	3,849,629
535	3,849,630
CLASS 220	
3.6	3,848,764
9A	3,848,765
9F	3,848,766
59	3,848,767
85P	3,848,768
259	3,848,769
CLASS 221	
102	3,848,770
105	3,848,771
CLASS 222	
1	3,848,773
36	3,848,774
70	3,848,775
105	3,848,776
145	3,848,772
386	3,848,777
402.11	3,848,778
521	3,848,779
546	3,848,780
559	3,848,781
CLASS 223	
34	3,848,782
CLASS 224	
39	3,848,783
42.1F	3,848,784
	3,848,785
42.45R	3,848,786
45T	3,848,787
CLASS 226	
19	3,848,788
CLASS 227	
76	3,848,789
90	3,848,790
100	3,848,791
CLASS 228	
1	3,848,792
2	3,848,793
3	3,848,794
CLASS 229	
23R	3,848,795
CLASS 232	
43.1	3,848,797
CLASS 233	
25	3,848,796
CLASS 235	
61.11B	3,849,631
61.11E	3,849,632
61.12N	3,849,633
92CC	3,849,635
92DP	3,849,634
101	3,848,798
150.27	3,849,636
151	3,849,637
152	3,849,638
CLASS 236	
49	3,848,799
CLASS 237	
8A	3,848,800
CLASS 239	
1	3,849,639
2R	3,848,801
10	3,848,802
59	3,848,803
160	3,848,804
189	3,848,805
265.11	3,848,806
290	3,848,807
327	3,848,808
412	3,848,809
417.3	3,848,810
552	3,848,811
CLASS 240	
41.3	3,849,642
100	3,849,640
151	3,849,641
CLASS 241	
2	3,848,812
19	3,848,813
37	3,848,814
74	3,848,815
	3,848,816
101.7	3,848,817
	3,848,818
CLASS 242	
4B	3,848,819
18R	3,848,820
55	3,848,821
55.2	3,848,822
56A	3,848,823
	3,848,824
56R	3,848,825
66	3,848,826
107.3	3,848,828
107.7	3,848,827
131	3,848,829
CLASS 244	
3.16	3,848,830
45R	3,848,831
54	3,848,832
77D	3,848,833
145	3,848,834
155R	3,848,835
CLASS 246	
63R	3,848,836
CLASS 248	
14	3,848,837
42	3,848,838
54R	3,848,839
73	3,848,840
99	3,848,841
204	3,848,842
224	3,848,843
245	3,848,844
393	3,848,845
CLASS 249	
66	3,848,846
115	3,848,847
CLASS 250	
201	3,849,643
207	3,849,644
209	3,849,645
270	3,849,646
306	3,849,647
315	3,849,648
320	3,849,649
321	3,849,650
325	3,849,286
349	3,849,651
352	3,849,652
361	3,849,653
363	3,849,654
366	3,849,655
424	3,849,656
461	3,849,657
486	3,849,658
492	3,849,659
570	3,849,660
571	3,849,661
CLASS 251	
31	3,848,848
314	3,848,849
CLASS 252	
3	3,849,315
8.5A	3,849,317
8.5P	3,849,316
18	3,849,318
33.6	3,849,319
	3,849,320
46.7	3,849,321
49.9	3,849,322
56R	3,849,323
78	3,849,324
79.1	3,849,325
89	3,849,326
109	3,849,327
180	3,849,328
301.1R	3,849,329
301.1W	3,849,330
301.2W	3,849,331
422	3,849,332
429B	3,849,334
432	3,849,335
438	3,849,336
439	3,849,337
441	3,849,338
455R	3,849,339
455Z	3,849,340
462	3,849,342
466PT	3,849,343
500	3,849,344
511	3,849,333
	3,849,345
531	3,849,346

545	3,849,347
546	3,849,341
547	3,849,348
CLASS 254	
30	3,848,850
108	3,848,851
187R	3,848,852
CLASS 256	
1	3,848,853
65	3,848,854
73	3,848,855
CLASS 260	
2.5AW	3,849,349
2.5B	3,849,350
18N	3,849,351
23H	3,849,352
27EV	3,849,353
28.5B	3,849,354
28.5R	3,849,355
29.3	3,849,356
29.6NR	3,849,357
29.7UP	3,849,358
32.6R	3,849,359
33.2R	3,849,360
	3,849,361
	3,849,362
33.6AQ	3,849,363
33.8EP	3,849,364
34.2	3,849,365
37EP	3,849,366
40R	3,849,367
45.75B	3,849,371
45.8N	3,849,370
45.8R	3,849,368
45.9R	3,849,369
45.95R	3,849,372
47CP	3,849,374
47CZ	3,849,376
47EN	3,849,375
47UP	3,849,373
49	3,849,377
69R	3,849,378
75M	3,849,379
75N	3,849,382
	3,849,383
75R	3,849,380
75S	3,849,381
79.1	3,849,386
80.78	3,849,384
	3,849,385
94.9B	3,849,387
112.5	3,849,388
	3,849,389
	3,849,390
123.5	3,849,391
141	3,849,392
155	3,849,393
	3,849,394
209R	3,849,395
210R	3,849,396
211.5AB	3,849,398
211.5R	3,849,397
239BB	3,849,403
239BD	3,849,399
	3,849,400
239E	3,849,401
239.3B	3,849,405
239.55R	3,849,402
239.57	3,849,404
239.7	3,849,406
240TC	3,849,410
240G	3,849,411
240R	3,849,407
243C	3,849,408
248NS	3,849,409
	3,849,412
	3,849,414
249.5	3,849,413
250AC	3,849,415
256.4N	3,849,416
256.5R	3,849,417
268DK	3,849,418
268PC	3,849,419
283S	3,849,420
287R	3,849,421
290HL	3,849,422
294.8F	3,849,424
294.8G	3,849,423
295CA	3,849,425
	3,849,426
	3,849,428
295Q	3,849,427
296R	3,849,429
302A	3,849,430
306.6R	3,849,431
306.8D	3,849,432
308B	3,849,433
308R	3,849,434
309.6	3,849,435
310R	3,849,436
325	3,849,437
	3,849,438
326E	3,849,439
326.5A	3,849,440
326.85	3,849,442
326.9	3,849,441
327R	3,849,443
338	3,849,444
340.9	3,849,445
345.2	3,849,446
	3,849,447
346.8A	3,849,448
347.2	3,849,449
348R	3,849,450
348.5L	3,849,451
370	3,849,452
396R	3,849,453
403	3,849,454
410.9R	3,849,455
	3,849,456
413	3,849,457
	3,849,458
429CY	3,849,459
429.7	3,849,460
439CY	3,849,461
448C	3,849,463
448.2D	3,849,462
448.2E	3,849,471
453R	3,849,465
455A	3,849,464
455R	3,849,466
456A	3,849,467
463	3,849,468
464	3,849,469
465F	3,849,470
465.3	3,849,472
468D	3,849,474
468G	3,849,473
475B	3,849,475
478	3,849,476
479C	3,849,477
	3,849,478
482P	3,849,479
490	3,849,480
501.17	3,849,481
501.21	3,849,482
	3,849,483
502R	3,849,484
505R	3,849,485
513R	3,849,486
514D	3,849,487
519	3,849,488
525	3,849,489
553DA	3,849,490
559AT	3,849,491
	3,849,493
559H	3,849,492
566AE	3,849,494
576	3,849,495
583N	3,849,496
591	3,849,497
601R	3,849,498
607A	3,849,499
608	3,849,500
609F	3,849,501
613D	3,849,502
613R	3,849,503
615BF	3,849,504
617F	3,849,505
666A	3,849,506
671C	3,849,507
672T	3,849,508
677R	3,849,509
680E	3,849,511
680R	3,849,510
681	3,849,512
683D	3,849,513
857PE	3,849,514
860	3,849,515
876R	3,849,516
	3,849,517
878R	3,849,518
890	3,849,519
897A	3,849,520
900	3,849,521
927R	3,849,522
932	3,849,523
949	3,849,524
CLASS 261	
39B	3,848,857
63	3,848,858
CLASS 264	
6	3,849,525
35	3,849,527
49	3,849,528
85	3,849,529
89	3,849,530
92	3,849,531
286	3,849,526
CLASS 266	
3R	3,848,859
18	3,848,860
25	3,848,861
CLASS 267	
64R	3,848,862
CLASS 269	
9	3,848,863
46	3,848,864
69	3,848,865
CLASS 271	
173	3,848,867
	3,848,868
180	3,848,866
CLASS 272	
52.5	3,848,869
67	3,848,870
CLASS 273	
75	3,848,871
125R	3,848,872
183B	3,848,874
186A	3,848,873
CLASS 274	
10R	3,848,875
38	3,848,876
CLASS 277	
3	3,848,877
25	3,848,878
80	3,848,879
176	3,848,880
181	3,848,881
CLASS 279	
4	3,848,882
CLASS 280	
5.32	3,848,883
36B	3,848,884
94	3,848,885
106R	3,848,886
150AB	3,848,887
150SB	3,848,888
179A	3,848,889
204	3,848,890
250	3,848,891
414R	3,848,892
417	3,848,893
423R	3,848,896
437	3,848,894
478R	3,848,895
CLASS 285	
47	3,848,897
61	3,848,898
98	3,848,899
	3,848,900
137R	3,848,901
	3,848,902
179	3,848,903
230	3,848,904
286	3,848,905
CLASS 290	
2	3,849,662
CLASS 292	
81	3,848,907
189	3,848,908
216	3,848,909
	3,848,910
	3,848,911
256.5	3,848,912
264	3,848,913
CLASS 293	
9	3,848,914
88	3,848,916
CLASS 294	
1R	3,848,906
49	3,848,915
CLASS 296	
3	3,848,917
57R	3,848,918
97F	3,848,919
106	3,848,920
CLASS 297	
184	3,848,921
219	3,848,922
366	3,848,923
434	3,848,924
452	3,848,925
	3,848,926
CLASS 299	
13	3,848,927
33	3,848,928
39	3,848,929
76	3,848,930
94	3,848,931
CLASS 303	
6C	3,848,932
21BE	3,848,933
21F	3,848,934
22R	3,848,935
CLASS 305	
35EB	3,848,936
CLASS 307	
10AT	3,849,663
10LS	3,849,664
24	3,849,665
85	3,849,666
88.3	3,849,667
108	3,849,670
149	3,849,668
154	3,849,669
232	3,849,671
235R	3,849,673
235	3,849,672
253	3,849,674
292	3,849,675
295	3,849,676
	3,849,677
311	3,849,678
CLASS 308	
6R	3,848,937
36.1	3,848,938
236	3,848,939
CLASS 310	
8.2	3,849,679
9.1	3,849,681
54	3,849,680
156	3,849,682
218	3,849,683
242	3,849,684
CLASS 312	
135	3,848,940
189	3,848,941
257R	3,848,942
284	3,848,943
314	3,848,944
CLASS 313	
54	3,849,685
179	3,849,687
188	3,849,688
190	3,849,689
217	3,849,690
318	3,849,691
379	3,849,692
484	3,849,686
519	3,849,693
	3,849,694
CLASS 315	
3	3,849,695
13C	3,849,696
	3,849,697
30	3,848,945
46	3,849,699
72	3,849,700
101	3,849,701
169TV	3,849,702
241P	3,849,703
367	3,849,698
CLASS 317	
13R	3,849,704
14R	3,849,705
27R	3,849,706
260	3,849,708
CLASS 318	
227	3,849,709
331	3,849,710
443	3,849,711
561	3,849,712
675	3,849,713
685	3,849,714
696	3,849,715
CLASS 321	
2	3,849,716
15	3,849,717
40	3,849,718
69R	3,849,719
CLASS 322	
96	3,849,720
CLASS 324	
6	3,849,721
9	3,849,722
30R	3,849,723
34D	3,849,724
65R	3,849,725
73R	3,849,726
142	3,849,727
158F	3,849,728
CLASS 325	
31	3,849,729
329	3,849,730
464	3,849,731
CLASS 328	
59	3,849,732
155	3,849,733
CLASS 330	
30D	3,849,734
	3,849,735
CLASS 331	
1A	3,849,736
86	3,849,737
94.5C	3,849,740
94.5E	3,849,739
94.5H	3,849,738
165	3,849,741
CLASS 332	
7.51	3,849,742
CLASS 333	
10	3,849,743
24.1	3,849,746
28R	3,849,744
31R	3,849,745
CLASS 335	
166	3,849,747
174	3,849,748
210	3,849,749
CLASS 337	
32	3,849,750
59	3,849,751
77	3,849,752
102	3,849,753
231	3,849,754
295	3,849,755
382	3,849,756
CLASS 338	
320	3,849,757
CLASS 339	
17F	3,848,946
17R	3,848,947
64R	3,848,948
75M	3,848,949
90R	3,848,950
91R	3,848,951
	3,848,952
92M	3,848,953
97R	3,848,954
	3,848,955
98	3,848,956
176M	3,848,957
198R	3,848,958
200	3,848,959
CLASS 340	
5H	3,849,758
52R	3,849,759
146.1R	3,849,761
146.3H	3,849,760
146.3Q	3,849,762
147R	3,849,763
171R	3,849,764
172.5	3,849,765
173DR	3,849,767
173LM	3,849,766
174TB	3,849,768
213R	3,849,769
244E	3,849,770
245	3,849,771
256	3,849,772
324AD	3,849,773
347DA	3,849,774
347NT	3,849,775
CLASS 343	
5PC	3,849,776
6.5LC	3,849,777
7PF	3,849,778
7A	3,849,780
7.4	3,849,779
18E	3,849,781
112CA	3,849,782
CLASS 346	
107VP	3,849,784
134	3,849,783
CLASS 350	
16	3,848,960
63	3,848,961
86	3,848,962
90	3,848,963
160LC	3,848,965
	3,848,966
160R	3,848,964
174	3,848,974
184	3,848,967
	3,848,968
	3,848,969
189	3,848,970
216	3,848,971
223	3,848,972
287	3,848,973
CLASS 352	
5	3,848,975
14	3,848,977
17	3,848,976
30	3,848,978
78R	3,848,979
81	3,848,980
157	3,848,981
CLASS 353	
27	3,848,982
CLASS 354	
1	3,848,983
4	3,848,520
38	3,848,984
40	3,849,785
41	3,848,985
51	3,848,986
	3,849,786
156	3,849,787
212	3,848,987
226	3,849,788
335	Re.28,247
CLASS 355	
3R	3,848,988
4	3,848,989
	3,848,990
14	3,848,991
15	3,848,992
	3,848,993
	3,848,994
26	3,848,995
43	3,848,996
71	3,848,997
100	3,848,998
CLASS 356	
4	3,848,999
45	3,849,000
98	3,849,001
103	3,849,002
109	3,849,003
124	Re.28,245
200	3,849,004
201	3,849,005
209	3,849,006
CLASS 357	
15	3,849,789
17	3,849,707
18	3,849,790
72	3,849,791
CLASS 358	
27	3,849,593
37	3,849,792
76	3,848,856
81	3,849,793
CLASS 360	
17	3,849,794
73	3,849,795
85	3,849,796
93	3,849,797
94	3,849,798
96	3,849,799
97	3,849,800
CLASS 403	
27	3,849,007
104	3,849,008
133	3,849,009
138	3,849,010
165	3,849,011
188	3,849,012
347	3,849,013
370	3,849,014
	3,849,015
CLASS 404	
100	3,849,016
108	3,849,017
CLASS 408	
46	3,849,018
142	3,849,019
CLASS 415	
28	3,849,020
30	3,849,021
116	3,849,022
170	3,849,023
213	3,849,024
CLASS 416	
97	3,849,025
CLASS 417	
203	3,849,026
223	3,849,027
363	3,849,028
388	3,849,029
393	3,849,030
417	3,849,031
454	3,849,032
	3,849,033
CLASS 418	
60	3,849,035
61B	3,849,034
62	3,849,036
121	3,849,037
142	3,849,038
165	3,849,039
CLASS 423	
82	3,849,532
99	3,849,533
139	3,849,534
140	3,849,535
206	3,849,536
210	3,849,537
213.5	3,849,538
219	3,849,539
224	3,849,540
242	3,849,541
592	3,849,543
593	3,849,544
594	3,849,545
644	3,849,542
CLASS 424	
12	3,849,546
61	3,849,547
70	3,849,548
78	3,849,549
	3,849,550
88	3,849,551
115	3,849,552
180	3,849,553
	3,849,554
195	3,849,555
213	3,849,556
226	3,849,557
234	3,849,558
244	3,849,559
254	3,849,560
258	3,849,561

CLASSIFICATION OF PATENTS

261	3,849,562
263	3,849,563
	3,849,564
270	3,849,567
	3,849,568
271	3,849,569
274	3,849,570
282	3,849,571
283	3,849,565
304	3,849,572
311	3,849,573
319	3,849,574
323	3,849,575
330	3,849,576
	3,849,577
	3,849,578
343	3,849,566
CLASS 425	
72	3,849,040
110	3,849,041
126R	3,849,042
131.1	3,849,045
131.5	3,849,043
	3,849,044
208	3,849,046
238	3,849,047
247	3,849,048
326B	3,849,049
363	3,849,050
376	3,849,051
387	3,849,052
438	3,849,053
459	3,849,054
CLASS 426	
49	3,849,579
116	3,849,580
145	3,849,581
152	3,849,582
162	3,849,583
CLASS 431	
7	3,849,055
24	3,849,056
158	3,849,057
264	3,849,058
331	3,849,059
344	3,849,060
CLASS 432	
47	3,849,061
60	3,849,062
185	3,849,063

Classification of Plants

P. —	10	3,654
P. —	20	3,653

Classification of Designs

D2—	10	233,633
	17	233,634
	232	233,635
	272	233,636
	320	233,637
D6—	31	233,638
	91	233,639
D7—	20	233,640
	76	233,642
	77	233,641
	93	233,643
	147	233,644
	166	233,645
		233,646
		233,647
D8—	22	233,648
	88	233,649
	181	233,650
	266	233,651
	273	233,652
D9—	63	233,653
	202	233,654
D10—	25	233,655
		233,656
	89	233,657
	90	233,658
		233,659
D12—	40	233,660
	115	233,661
	162	233,662
D13—	1J	233,663
	M	233,664
D22—	19	233,665
	31	233,666
D26—	1A	233,667
	13C	233,668
	D	233,670
	14J	233,669
D28—	1C	233,671
D29—	11R	233,672
D30—	2	233,673
	12	233,674
D34—	4A	233,675
	5GH	233,676
	15AE	233,679
	GG	233,678
		233,680
	KK	233,677
D45—	19R	233,681
		233,682
D47—	5	233,683
		233,684
	6E	233,685
D48—	16A	233,687
	20H	233,688
	24R	233,689
	27A	233,690
	R	233,686
	31	233,691
D49—	1A	233,692
D52—	4R	233,694
	6A	233,695
	R	233,693
D55—	1E	233,697
	G	233,698
	R	233,696
D59—	2A	233,699
D61—	1Q	233,700
D64—	11R	233,701
D83—	1A	233,702
	T	233,703
D85—	2H	233,704
D92—	4	233,705
D96—	12A	233,706

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1
Alaska	2
American Samoa	3
Arizona	4
Arkansas	5
California	6
Canal Zone	7
Colorado	8
Connecticut	9
Delaware	10
District of Columbia	11
Florida	12
Georgia	13
Guam	14
Hawaii	15
Idaho	16
Illinois	17
Indiana	18
Iowa	19
Kansas	20
Kentucky	21
Louisiana	22
Maine	23
Maryland	24
Massachusetts	25
Michigan	26
Minnesota	27
Mississippi	28
Missouri	29
Montana	30
Nebraska	31
Nevada	32
New Hampshire	33
New Jersey	34
New Mexico	35
New York	36
North Carolina	37
North Dakota	38
Ohio	39
Oklahoma	40
Oregon	41
Pennsylvania	42
Puerto Rico	43
Rhode Island	44
South Carolina	45
South Dakota	46
Tennessee	47
Texas	48
Utah	49
Vermont	50
Virginia	51
Virgin Islands	52
Washington	53
West Virginia	54
Wisconsin	55
Wyoming	56
U.S. Air Force	57
U.S. Army	58
U.S. Navy	59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

Patents

1	3,848,359
	3,848,441
	3,849,008
	3,849,668
3	3,848,881
4	3,848,330
	3,848,482
	3,848,666
	3,848,833
5	3,848,266
	3,849,104
6	3,848,274
	3,848,276
	3,848,286
	3,848,287
	3,848,290
	3,848,299
	3,848,339
	3,848,349
	3,848,352
	3,848,360
	3,848,364
	3,848,371
	3,848,383
	3,848,389
	3,848,395
	3,848,405
	3,848,415
	3,848,440
	3,848,451
	3,848,454
	3,848,473
	3,848,483
	3,848,485
	3,848,493
	3,848,495
	3,848,498
	3,848,502
	3,848,514
	3,848,523
	3,848,530
	3,848,533
	3,848,535
	3,848,547
	3,848,575
	3,848,584
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	3,848,587
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	3,848,603
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	3,848,610
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	3,848,710
	3,848,723
	3,848,725
	3,848,728
	3,848,750
	3,848,775
	3,848,781
	3,848,796
	3,848,803
	3,848,806
	3,848,807
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	3,848,825
	3,848,842
	3,848,863
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	3,848,880
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	3,848,893
	3,848,895
	3,848,897
	3,848,899
	3,848,907
	3,848,941
	3,848,949
	3,848,950
	3,848,953
	3,848,975
	3,849,013
	3,849,019
	3,849,026
	3,849,027
	3,849,030
	3,849,053
	3,849,082
	3,849,084
	3,849,116
	3,849,196
	3,849,207
	3,849,208
	3,849,248
	3,849,259
	3,849,264
	3,849,293
	3,849,305
	3,849,318
	3,849,323
	3,849,324
	3,849,329
	3,849,397
	3,849,415
	3,849,420
	3,849,461
	3,849,464
	3,849,466
	3,849,531
	3,849,553
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	3,849,771
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8	3,848,347
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	3,848,794
	3,849,004
	3,849,120
	3,849,560
	3,849,606
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	3,849,741
9	Re.28,248
	3,848,272
	3,848,282
	3,848,327
	3,848,417
	3,848,419
	3,848,474
	3,848,486
	3,848,490
	3,848,520
	3,848,524
	3,848,529
	3,848,607
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	3,848,634
	3,848,743
	3,848,778
	3,848,792
	3,848,798
	3,848,799
	3,848,859
	3,848,875
	3,848,928
	3,848,931
	3,848,938
	3,849,056
	3,849,070
	3,849,101
	3,849,130
	3,849,172
	3,849,197
	3,849,218
	3,849,250
	3,849,257
	3,849,271
	3,849,500
	3,849,632
	3,849,637
	3,849,640
	3,849,655
	3,849,662
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	3,849,665
	3,849,721
	3,849,728
	3,849,752
10	3,849,102
	3,849,177
	3,849,181
	3,849,230
	3,849,364
	3,849,372
	3,849,373
	3,849,436
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	3,849,479
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	3,849,544
12	3,848,429
	3,848,432
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	3,848,604
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	3,848,736
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	3,848,763
	3,848,779
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	3,849,571
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	3,849,598
13	3,848,372
	3,848,550
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	3,849,057
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15	3,848,601
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	3,848,325
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	3,849,018
	3,849,032
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	3,849,122
	3,849,125
	3,849,194
	3,849,206
	3,849,274
	3,849,284
	3,849,287
	3,849,292
	3,849,294
	3,849,295
	3,849,309
	3,849,312
	3,849,314
	3,849,340
	3,849,343
	3,849,367
	3,849,404
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	3,849,612

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18 3,848,267
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3,849,020
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3,849,419
3,849,423
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3,849,704
19 3,848,436
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3,848,568
3,848,617
3,848,733
3,848,922
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3,849,012
3,849,253
3,849,391
3,849,629
20 3,848,336
3,848,505
3,848,543
3,848,894
21 3,848,305
3,848,510
3,848,930
3,849,043
3,849,336
22 3,848,667
3,848,684
3,848,921
3,849,039
3,849,066
3,849,067
3,849,289
3,849,308
3,849,321
3,849,454
3,849,486
3,849,577
24 3,848,269
3,848,532
3,848,567
3,848,579
3,848,580
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3,848,645
3,848,790
3,848,813
3,848,815
3,848,970
3,849,450
3,849,745
3,849,775
25 3,848,291
3,848,306
3,848,386
3,848,448
3,848,481
3,848,570
3,848,613
3,848,633
3,848,676
3,848,773
3,848,786
3,848,822
3,848,866
3,848,890
3,848,892
3,848,958
3,848,962
3,848,967
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3,848,978
3,848,979
3,848,980
3,848,985
3,849,023
3,849,124
3,849,138
3,849,145
3,849,186
3,849,217
3,849,286
3,849,342
3,849,534
3,849,555
3,849,617
3,849,623
3,849,666
3,849,672
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3,849,690
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3,849,709
3,849,734
3,849,768
3,849,779
26 3,848,275
3,848,278
3,848,309
3,848,333
3,848,337
3,848,353
3,848,358
3,848,366
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3,848,695
3,848,721
3,848,785
3,848,787
3,848,789
3,848,850
3,848,853
3,848,855
3,848,864
3,848,882
3,848,886
3,848,900
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3,848,918
3,848,924
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3,849,010
3,849,014
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3,849,031
3,849,036
3,849,083
3,849,086
3,849,091
3,849,106
3,849,234
3,849,279
3,849,339
3,849,349
3,849,357
3,849,360
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3,849,462
3,849,487
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27 Re.28,249
3,848,292
3,848,310
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28 3,848,408
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3,849,035
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3,849,134
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3,849,159
3,849,168
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36 3,848,271
3,848,307
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3,849,006
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3,849,097
3,849,127
3,849,132
3,849,136
3,849,142
3,849,144
3,849,146
3,849,153
3,849,156
3,849,165
3,849,182
3,849,187
3,849,190
3,849,191
3,849,200
3,849,204
3,849,237
3,849,246
3,849,276
3,849,303
3,849,304
3,849,319
3,849,344
3,849,362
3,849,383
3,849,401
3,849,409
3,849,425
3,849,426
3,849,427
3,849,428
3,849,429
3,849,440
3,849,451
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3,849,470
3,849,477
3,849,501
3,849,592
3,849,605

3,849,614
3,849,620
3,849,628
3,849,638
3,849,657
3,849,671
3,849,707
3,849,712
3,849,756
3,849,763
3,849,774
3,849,789
37 Re.28,244
Re.28,246
3,848,341
3,848,404
3,848,435
3,848,565
3,849,040
3,849,407
3,849,416
38 3,848,774
39 Re.28,245
3,848,308
3,848,322
3,848,323
3,848,324
3,848,338
3,848,369
3,848,452
3,848,460
3,848,462
3,848,472
3,848,494
3,848,496
3,848,501
3,848,594
3,848,600
3,848,653
3,848,702
3,848,707
3,848,716
3,848,766
3,848,776
3,848,788
3,848,845
3,848,848
3,848,896
3,848,903
3,848,904
3,848,917
3,848,983
3,849,037
3,849,055
3,849,099
3,849,100
3,849,113
3,849,115
3,849,141
3,849,152
3,849,164
3,849,170
3,849,179
3,849,201
3,849,231
3,849,245
3,849,275
3,849,278
3,849,281
3,849,302
3,849,325
3,849,353
3,849,366
3,849,418
3,849,471
3,849,579
3,849,689
3,849,691
3,849,711
3,849,739
3,849,753
40 3,848,421
3,848,549
3,848,561
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3,848,621
3,848,627
3,848,673
3,849,285
3,849,300
3,849,316
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3,849,381
3,849,443
3,849,507
41 3,848,467
3,848,569
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3,848,625
3,848,646
3,848,649
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3,848,870
3,848,940
3,849,695
42 3,848,268

3,848,301
3,848,316
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3,848,344
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3,848,378
3,848,379
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3,848,433
3,848,434
3,848,445
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3,848,525
3,848,526
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3,848,558
3,848,572
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3,848,835
3,848,839
3,848,854
3,848,952
3,848,955
3,849,052
3,849,074
3,849,119
3,849,123
3,849,148
3,849,198
3,849,210
3,849,212
3,849,214
3,849,223
3,849,243
3,849,290
3,849,315
3,849,386
3,849,390
3,849,403
3,849,430
3,849,463
3,849,494
3,849,530
3,849,535
3,849,548
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3,849,551
3,849,573
3,849,594
3,849,610
3,849,619
3,849,633
3,849,644
3,849,659
3,849,673
3,849,677
3,849,680
3,849,705
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3,849,740
3,849,747
3,849,754
3,849,755
3,849,777
3,849,781
3,849,782
44 3,849,169
45 3,848,629
3,848,640
3,848,829
3,849,224
3,849,352
3,849,684
3,849,783
47 3,848,466
3,849,514
48 3,848,281
3,848,340
3,848,381
3,848,411
3,848,476
3,848,521
3,848,553
3,848,618
3,848,628
3,848,630
3,848,632
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3,848,668
3,848,669
3,848,670
3,848,671
3,848,700
3,848,739

3,848,751
3,848,834
3,848,838
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3,848,849
3,848,885
3,849,061
3,849,094
3,849,118
3,849,205
3,849,221
3,849,229

3,849,241
3,849,280
3,849,317
3,849,328
3,849,511
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3,849,516
3,849,540
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3,849,626
3,849,646
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49 3,848,795
3,849,700
50 3,848,351
3,848,608
3,848,658
51 3,848,509
3,848,548
3,848,770
3,848,879
3,849,195

3,849,254
3,849,651
3,849,720
52 3,849,778
53 3,848,284
3,848,426
3,848,450
3,848,551
3,848,832
3,848,867
3,849,105

3,849,330
3,849,387
54 3,848,270
3,848,915
3,849,075
3,849,445
3,849,478
55 3,848,279
3,848,304
3,848,402
3,848,430

3,848,595
3,848,596
3,848,597
3,848,717
3,848,947
3,849,071
3,849,225
3,849,400
3,849,574
3,849,670
3,849,719
3,849,751

DESIGN PATENTS

1 233,697
4 233,634
6 233,633
233,652
233,662
233,663
233,664
233,667
233,675
233,693

233,706
8 233,687
9 233,676
233,689
13 233,670
17 233,669
233,695
19 233,648
233,692
20 233,703

22 233,702
25 233,655
233,656
233,658
26 233,651
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233,661
233,673
233,696
27 233,642

233,672
233,698
233,701
30 233,679
33 233,641
34 233,666
233,683
233,684
36 233,653

233,654
233,681
233,682
233,700
233,704
233,705
37 233,649
39 233,635
233,639

233,645
233,646
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233,699
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55 233,650

PLANT PATENTS

6 3,654

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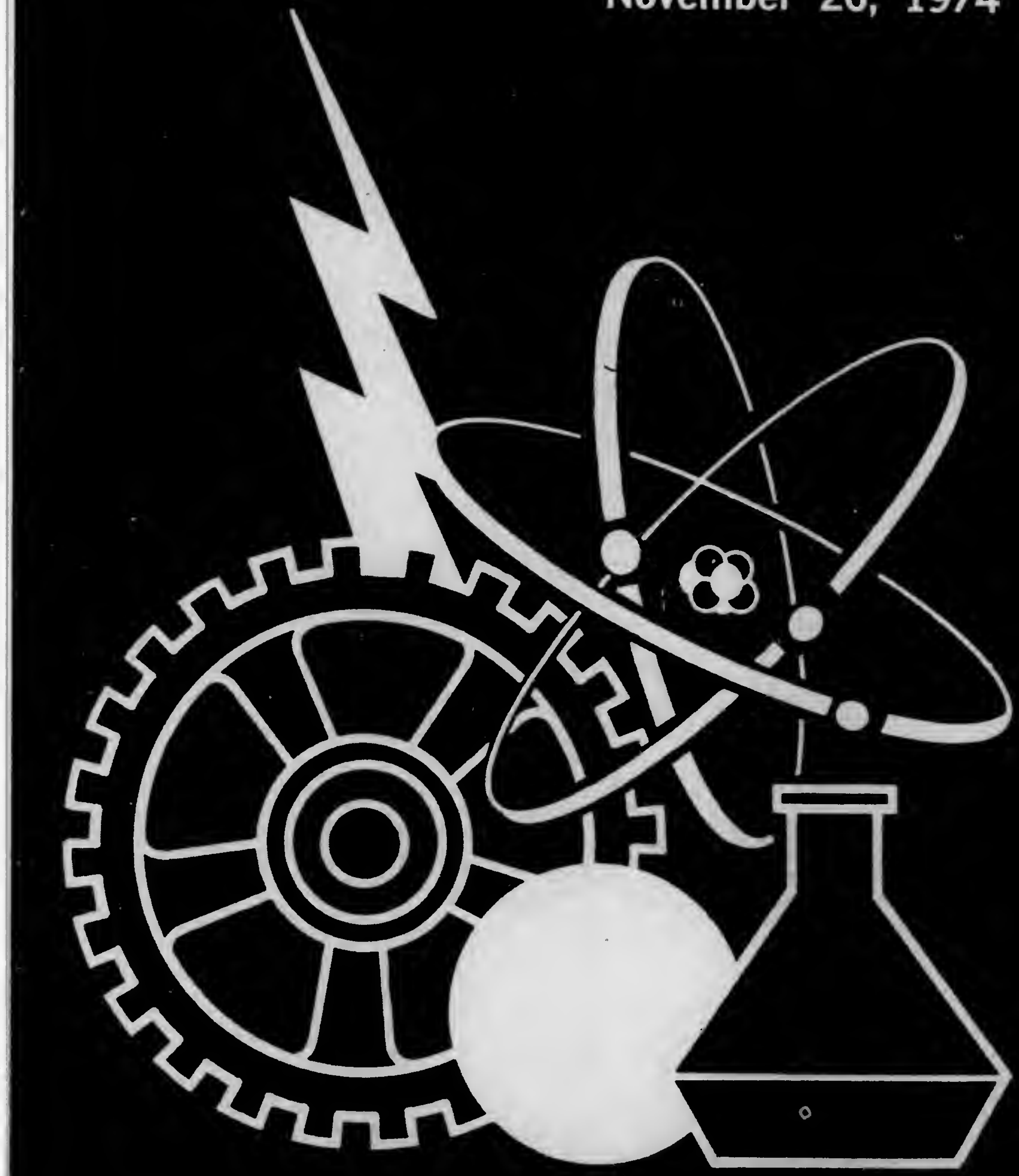

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November 26, 1974 Volume 928 Number 4

CONTENTS

Page

Patent and Trademark Notices

Patent Suits 1374

Patent Notices

Certificates of Correction for the Week of November 26, 1974 1376
Patents Available for Licensing or Sale 1376
Disclaimers 1378
Dedications 1379
National Technical Information Service 1379
Condition of Patent Applications 1383
Reissue Patents Granted (28,250) 1384
Plant Patents Granted (3,655) 1387

Patents Granted

General and Mechanical (3,849,801) 1388
Chemical (3,850,575) 1641
Electrical (3,851,090) 1769
Design Patents Granted (233,707) 1853
Index of Patentees . . . . . PI 1
Indices of Reissues, Plants and Designs . . . . . PI 47

Classification of

Patents (Including Reissues) . . . . . PI 51
Designs and Plants . . . . . PI 54

Geographical Index of Residence of Inventors

Patents (Including Reissues) . . . . . PI 55
Designs and Plants . . . . . PI 57

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PATENT OFFICE NOTICES

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,804,935, A. J. L. Hutchinson, VAPOR-LIQUID CONTACTING APPARATUS; **2,804,940,** same, PROCESS FOR DEHYDRATING GAS; **2,804,941,** same, VAPOR-LIQUID CONTACTING METHOD, **filed** Apr. 10, 1968, D.C. Kans. (Wichita), Doc. W–4137, *Maloney-Crawford Tank Corporation and The Fish Investment Corporation* v. *Sauder Tank Company, Inc.* Judgment—said patents held valid and infringed, June 6, 1974.

2,804,940. (See 2,804,935.)

2,804,941. (See 2,804,935.)

2,899,242, G. Bombardier, ENDLESS TREAD FOR MOTOR DRIVEN VEHICLES; **3,066,546,** L. D. Thostenson, PULLEY TRANSMISSION; **D. 222,995,** Y. Lapointe, SNOWMOBILE COWL, **filed** Sept. 5, 1972, D.C., N.D. Ohio (Cleveland), Doc. C72–936, *Bombardier Limited* v. *Rupp Industries, Inc.* Judgment—Court rendered judgment for plaintiff and holding that plaintiff has title to Patent 3,066,546 and on June 7, 1974 stipulations of counsel were filed dismissing the rest of the case, June 10, 1974.

2,977,986, Hinderer and Lyon, SINGLE-HANDLED VALVE; **3,324,884,** R. F. Dornaus, SINGLE-HANDLED VALVE STRUCTURE; **3,476,149,** same, **filed** Aug. 5,1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–1832–DWW, *Price-Pfister Brass Mfg. Co.* v. *American Standard, Inc.* Judgment, Claims 1, 2, 3, 6, 7, 8, 10, 18, 19 and 20 of 2,977,986 are valid, Claims 1, 2, 3, 4, 5, 7, 8, 9 and 10 of 3,324,884 are valid, claim of 3,476,149 is valid. Plaintiff is owner of patents; defendant has not infringed any of said claims of patents. Plaintiff take nothing by its complaint and the complaint be dismissed with prejudice. Defendant take nothing by its counterclaim and the counterclaim be dismissed with prejudice, entered June 13, 1974.

3,066,546. (See 2,899,242.)

3,092,252, Brause and Burns, PACKAGE OF OUTER UNSTERILE AND INNER STERILE COVERS FOR ENCLOSING A SUBSTANTIAL PORTION OF AN OBJECT HAVING AN UNSTERILE SURFACE, **filed** June 20, 1974, D.C., E.D. Wis. (Milwaukee), Doc. 74–255, *La Barge, Inc.* v. *Will Ross, Inc. and D. F. Labs, Inc.*

3,124,935, C. J. Foster, GRAVING DOCKS, **filed** Aug. 9, 1973, D.C., E.D. Va. (Newport News), Doc. CA–73–70–NN, *Christopher J. Foster, Inc.* v. *Newport News Shipbuilding and Dry Dock Company and Whitman, Requardt & Associates.* Case set for trial on Sept. 30, 1974.

3,145,291, H. B. Brainerd, IDENTIFICATION SYSTEM, **filed** Feb. 14, 1974, Court of Appeals, Mass. (Boston), Doc. 74–1059, *Sylvania Electric Products, Inc.* v. *Henry B. Brainerd,* The judgment of the District Court is affirmed, June 20, 1974.

3,170,031, S. Okamura, RECORDING SYSTEM WITH PROVISION FOR FAST OR SLOW REPRODUCTION, **filed** Jan. 16, 1970, D.C., S.D.N.Y., Doc. 70–203, *Nippon Electric Co. Ltd.* v. *Ampex Corporation, et ano.* Filed consent judgment, ordered that the complaint is hereby dismissed without prejudice, counterclaim is hereby dismissed, judgment entered July 16, 1973.

3,178,821, P. C. Kesling, ORTHODONTIC APPLIANCE, **filed** Feb. 4, 1972, D.C., S.D.N.Y., Doc. 72–C–532, *TP Laboratories, Inc. et al.* v. *Betta Orthodontic Supplies, Inc.* Filed final judgment on consent: Ordered that each of counterclaims by defendant against plaintiffs is dismissed with prejudice entered Apr. 13, 1973.

3,215,266, R. L. Dreyfus, PACKAGING, **filed** Oct. 23, 1969, D.C.N.J. (Newark), Doc. 1244–69, *W. R. Grace & Company* v. *P. Ballantine & Sons and Reynolds Metals Company.* Stipulation and order of dismissal of action, June 20, 1974.

3,235,886, D. S. Chisholm, PLASTIC GLOVE, **filed** in the D.C., N.D. Ohio (Cleveland), Doc. C70–348, *George A. Scharmer* v. *Carrollton Manufacturing Co. et al.* Order—Final judgment dismissing the complaint is entered in favor of all defendants; the counterclaims of defendant, Carrollton Manufacturing Co., are dismissed as moot, June 13, 1974.

3,246,336, Baribo, Porter, Turner and Wright, MOLASSES FEED BLOCKS AND METHOD OF PREPARATION AND USE, **filed** June 20, 1974, D.C., S.D. Iowa (Des Moines), Doc. 74–154–1, *A. E. Staley Manufacturing Company* v. *Promico, Inc. and Garry R. Todd, doing business as Todd Sales Company.*

3,294,139, J. R. Preziosi, PLASTIC PATCH, SELF-LOCKING THREADED FASTENERS AND METHOD OF MAKING SUCH FASTENERS, **filed** June 18. 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1663, *Amerace Corporation* v. *USM Corporation.*

3,324,884. (See 2,977,986.)

3,330,557, N. O. Young, MEANS FOR FORMING A RIGID LOOP FROM A LIMP LOOP, **filed** Mar. 29, 1972, D.C., S.D.N.Y., Doc. 72–C–1318, *Loopee Intl. Inc. et ano.* v. *Nadel & Sons Toy Corp.* Filed consent judgment—Defendant has infringed said patent and is perpetually enjoined, Oct. 27, 1972.

3,361,114, H. R. Axelrod, METHOD FOR FEEDING FISH AND OTHER AQUATIC ANIMALS, **filed** Apr. 23, 1970, D.C., S.D.N.Y., Doc. 70–C–1650, *Miracle Pet Products, Inc.* v. *Lormar Trading Corp. et al.* Filed consent judgment that defendants are permanently enjoined, Dec. 21, 1970.

3,363,723, W. B. Cunningham, DRIVE-IN RESTAURANT SERVING SYSTEM; **D. 211,010,** same, DRIVE-IN RESTAURANT, **filed** June 11, 1974, D.C., W.D. Okla. (Oklahoma City), Doc. 74–518–C, *Burger Train Systems, Inc.* v. *John Ballard, doing business as Ballard's Dairy Queen.*

3,397,158, Britain and Gemeinhardt, CELLULAR POLYURETHANES; **3,398,106,** Hostetler and Cox, TIN-CONTAINING CATALYST FOR ISOCYANATE REACTIONS, **filed** Sept. 5, 1969, D.C., S.D.N.Y., Doc. 69–3822, *M & T Chemicals Inc.* v. *Mobay Chemical Co., et ano.* The motions of Mobay Chemical Co. and Union Carbide Corp. are dismissed as moot in view of the stipulation of dismissal, May 11, 1970.

3,398,106. (See 3,397,158.)

3,476,149. (See 2,977,986.)

3,480,210, R. P. Perrinjaquet, RACE TRACK, **filed** Nov. 26, 1969, D.C., S.D.N.Y., Doc. 69–5233, *Mattel Inc.* v. *Topper Corp.* Filed stipulation and order that the above action is dismissed without prejudice, Mar. 30, 1973.

3,483,654, La Branche and Newman, UNDERCARRIAGE FOR TOY VEHICLES, **filed** Dec. 17, 1969, D.C., S.D.N.Y., Doc. 69–5558, *Mattel Inc.* v. *Topper Corporation.* Filed stipulation and order that the action is dismissed without prejudice, Mar. 30, 1973.

3,548,534, Beny, Meggs, and Ryan, MOVING APPARATUS FOR A VEHICLE TOY, **filed** Feb. 18, 1971, D.C., S.D.N.Y., Doc. 71–C–716, *Mattel, Inc.* v. *Topper Corporation.* Filed stipulation and order that the above action is dismissed without prejudice, Mar. 30, 1973.

3,610,889, R. N. Goldman, IDENTIFICATION CARD CONTROL SYSTEM, **filed** Mar. 6, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–480–WMB, *Telecredit, Inc.* v. *Burroughs Corporation.* Filed stipulation and order of dismissal with prejudice of the action and counterclaim entered Jan. 31, 1974.

3,636,903, Anderson and Munn, RECTANGULAR-DUCT FORMING MACHINE; **3,757,830,** same, RECTANGULAR AIR DUCT, **filed** Apr. 5, 1974, D.C. Idaho (Boise), Doc. 1–74–46, *Manufacturers Systems, Inc.* v. *King & Priest Machinery, Inc. and Conchemco, Inc.* Injunction filed enjoining defendant from further infringing said patents, June 21, 1974.

3,658,480, Kane and Weatherby, COAGULATION TIMING APPARATUS, AND METHOD, **filed** Aug. 2, 1973, D.C., E.D. Pa. (Philadelphia), Doc. 73–1756, *Bio/Data Corporation* v. *Alphamedics Manufacturing Corp. and Warner-Lambert Company.* Consent order—plaintiff is owner of patent, patent is valid and infringed, defendant is hereby enjoined. Complaint and counterclaims are dismissed with prejudice, Mar. 15, 1974.

3,701,298, Heller and Kelly, DE-REELING APPARATUS FOR ELECTRICAL COMPONENTS, **filed** Dec. 23, 1972, D.C.N.J. (Newark), Doc. C–2014–72, *Heller Industries, Inc. et al.* v. *Dundas Engineering & Manufacturing Co. et al.* Consent order—Dismissal of action in favor of plaintiff, Dec. 26, 1972.

3,703,175, D. W. Kern, SIMULATED PRE-FOLDED DIAPER CONSTRUCTION, **filed** June 20, 1974, D.C.S.C. (Greenville), Doc. C.A. 74–802, *Riegel Textile Corporation* v. *The Kendall Company.*

3,751,722, P. Richman, MOS INTEGRATED CIRCUIT WITH SUBSTRATE CONTAINING SELECTIVELY FORMED RESISTIVITY REGIONS; **3,806,741,** F. J. Smith, SELF-BIASING TECHNIQUE FOR MOS SUBSTRATE VOLTAGE, **filed** June 5, 1974, D.C., S.D.N.Y., Doc. 74–C–2430 LFM, *Standard Microsystems Corp.* v. *American Micro-Systems Inc.*

3,757,830. (See 3,636,903.)

3,806,741. (See 3,751,722.)

D. 211,010. (See 3,363,723.)

D. 222,995. (See 2,899,242.)

Certificates of Correction for the Week of Nov. 26, 1974

Re. 28,047
Re. 28,124
Re. 28,131
Re. 28,139
D. 232,019
3,528,895
3,593,562
3,598,897
3,611,565
3,635,899
3,651,301
3,669,116
3,669,928
3,681,910
3,682,868
3,687,929
3,688,003
3,694,440
3,697,579
3,702,295
3,702,363
3,717,460
3,718,443
3,720,693
3,734,166
3,736,451
3,740,868
3,742,189
3,743,257
3,746,508
3,746,531
3,747,335
3,747,360
3,751,246
3,752,862
3,754,971
3,755,752
3,758,543
3,761,294
3,761,903
3,762,847
3,764,268
3,764,450
3,765,382
3,767,867
3,770,542
3,771,152
3,773,774
3,775,142
3,775,446
3,775,788
3,776,954
3,777,957
3,779,874
3,780,165
3,781,996
3,783,697
3,784,535
3,784,646
3,785,389
3,786,028
3,787,433
3,787,534
3,787,700
3,788,126
3,788,585
3,789,834
3,790,541
3,790,547
3,790,654
3,790,703
3,795,288
3,795,310
3,796,973
3,798,293
3,798,314
3,799,303
3,799,621
3,799,947
3,800,115
3,800,460
3,801,487
3,801,521
3,802,787
3,803,273
3,803,604
3,804,443
3,804,709
3,804,781
3,804,892
3,804,912
3,805,058
3,805,493
3,806,948
3,807,628
3,807,872
3,808,267
3,808,973
3,809,764
3,809,957
3,810,427
3,810,845
3,810,885
3,811,260
3,811,851
3,811,880
3,812,324
3,813,179
3,813,279
3,813,464
3,814,462
3,814,751
3,815,204
3,816,144
3,816,548
3,816,825
3,816,901
3,817,549
3,817,575
3,818,419
3,819,192
3,819,945
3,819,960
3,820,293
3,820,340
3,820,381
3,820,395
3,820,411
3,820,561
3,820,586
3,820,745
3,820,995
3,821,479
3,821,624
3,821,653
3,822,129
3,822,172
3,822,823
3,823,202
3,823,221
3,823,223
3,823,383
3,823,722
3,824,024
3,824,103
3,834,170
3,824,361
3,824,826
3,825,274
3,825,317
3,825,347
3,825,405
3,825,525
3,825,561
3,825,738
3,825,894
3,826,084
3,826,528
3,826,531
3,826,594
3,826,831
3,826,868
3,826,955
3,827,102
3,827,262
3,827,531
3,827,583
3,827,618
3,827,660
3,827,770
3,828,012
3,828,022
3,828,230
3,828,371
3,828,377
3,828,434
3,828,651
3,829,019
3,829,167
3,829,247
3,829,331
3,829,779
3,830,096
3,830,282
3,830,359
3,830,870
3,831,012
3,831,229
3,831,290
3,831,472
3,831,742
3,831,966
3,831,980
3,831,988
3,832,103
3,832,254
3,832,277
3,832,551
3,832,613
3,832,839
3,832,853
3,832,938
3,832,963
3,833,099
3,833,712
3,833,922
3,834,002
3,834,981
3,835,011
3,835,039
3,835,287
3,835,532
3,835,596
3,835,744
3,835,866
3,836,279
3,836,405
3,836,409
3,836,486
3,836,519
3,836,860
3,837,050
3,837,472
3,837,759
3,837,799
3,837,836
3,837,868
3,837,905
3,838,348
3,838,360
3,838,361
3,838,555
3,839,035
3,839,499

Patents Available for Licensing or Sale

2,995,619. SYSTEM OF TELEVISION TRANSMISSION AND PHOTOGRAPHIC REPRODUCTION OF THE TELEVISED IMAGE. Samuel Freeman, 13 Birchwood Court East, Syosset, N.Y., 11791.

3,691,525. ANALOG CONVERTER. R. M. McClellan, Sr., 1622 Crestdale, Houston, Tex., 77055.

3,774,193. WATCHMAN'S TOUR ALARM SYSTEM. Tulio Vasquez Restrepo, Carrera 43A No. 30–91, Medellin, Colombia.

3,776,491. AIRCRAFT WITH COMPOUND WING. Robert F. Oulton, 655 Old County Road, #123, Belmont, Calif., 94002.

3,804,348. REGULATED WINDUP APPARATUS. Maschinenfabrik Zell J. Kruckels KG, Zell (Wiesental), Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,815,956. ROTARY ARMCHAIR. Mauser Kommanditgesellschaft, Koln, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,826,323. PROPELLING APPARATUS FOR SKIERS. Albert R. Mehne, 9 Susquehanna Road, Ossining, N.Y., 10562.

3,832,965. SUBMERSIBLE TRANSPORT APPARATUS. Paul J. Walker, P.O. Box 1212, Edmonton, Alberta, Canada.

3,843,111. MULTIPLE STOP. Norbert Neuhold, 16 Oaklawn Place, S.E., Calgary-Alta, Canada. T2V 3Z1.

The following 3 patents are offered by: Lothar J. Uhl, 7720 E. Jefferson, Detroit, Mich. 48214.

3,827,397. APPARATUS FOR COATING MOVING FILAMENTARY STANDS.
3,511,739. ARRAY OF REINFORCING STRANDS FOR REINFORCED SHEET MATERIAL.
3,272,679. APPARATUS FOR FORMING REINFORCED SHEET MATERIAL.

RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 3 patents.

Inquiries respecting licenses under RCA patent should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 30 Rockefeller Plaza, New York, N.Y., 10036.

3,814,633. THERMO-ELECTRIC MODULAR STRUCTURE AND METHOD OF MAKING SAME.
3,787,958. THERMO-ELECTRIC MODULAR STRUCTURE AND METHOD OF MAKING SAME.
3,794,526. THERMOELECTRIC GENERATOR.

General Motors Corporation is prepared to grant nonexclusive licenses under the following 12 patents upon reasonable terms.

Application for licenses may be addressed to the Director, Patent Section, General Motors Building, 3044 West Grand Boulevard, Detroit, Mich., 48202.

3,617,001. FUEL NOZZLE CONTAMINANT TRAP.
3,617,150. ROTOR DRUM.
3,618,455. FIRE CONTROL SYSTEM FOR AUTOMATIC FIREARMS.
3,619,082. TURBINE BLADE.
3,620,829. COATINGS FOR GERMANIUM SEMICONDUCTOR DEVICES.
3,627,444. WICK LINED VANES & THEIR MANUFACTURE.
3,628,277. ROUND EXTRACTOR FOR CASELESS FIREARM.
3,635,587. BLADE COOLING LINER.
3,636,332. DIVIDER-MULTIPLIER CIRCUIT.
3,636,335. TURBINE INLET TEMPERATURE COMPUTER.
3,645,094. FUEL PUMPING SYSTEM.
3,645,166. CASELESS AMMUNITION FIREARM.

General Electric Company is prepared to grant non-exclusive licenses under the following 211 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patent may be addressed to: Patent Counsel, Mobile Radio Prod. Dept., General Electric Co., Lynchburg, Va., 24502.

3,831,111. TEMPERATURE COMPENSATOR FOR A CRYSTAL OSCILLATOR.

Applications for licenses under the following 12 patents may be addressed to: Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky., 40225.

3,807,636. WATER POWERED DISHWASHER.
3,809,450. RACK LEVEL ADJUSTMENT SYSTEM IN A DISHWASHER.
3,813,942. WASHING APPLIANCE WITH TEMPERATURE INDICATING MEANS.
3,814,333. FOOD WASTE DISPOSER WITH OUTER WRAPPER.
3,814,363. ANGLED LEVELLING FOOT FOR DOMESTIC APPLIANCE.
3,821,961. FILL FUNNEL CONSTRUCTION FOR PLASTIC TUBS.
3,822,084. DOUBLE, REVERSED MOUNTING BOSS FOR PLASTIC TUB.
3,822,085. DISHWASHING MACHINE RACK LEVEL ADJUSTMENT SYSTEM.
3,822,464. METHOD OF JOINING A TUBE TO A ROLL FORGED SHEET.
3,826,102. REFRIGERATOR INCLUDING AUTOMATIC ICE MAKER AND WATER RESERVOIR.
3,826,553. FRONT LOADING DISHWASHER EMPLOYING PLASTIC TUB CONSTRUCTION.
3,827,730. WASTE FOOD DISPOSER MOUNTING ASSEMBLY.

Applications for license under the following 198 patents may be addressed to: General Electric Company, Aircraft Engine Group, 1000 Western Avenue, Lynn, Mass., 01910. Attention: Patent Counsel.

2,959,919. GAS IMPINGEMENT STARTER NOZZLE FOR TURBINES.
2,961,150. FRAME STRUCTURE FOR TURBO-MACHINE.

2,963,082. FLOW DIVIDER FOR FUEL SYSTEM.
2,999,631. DUAL AIRFOIL.
3,001,368. NEGATIVE GRAVITY HYDRAULIC SYSTEM.
3,002,497. VELOCITY LIMITED FLUID ACTUATOR WITH PRESSURE RESET.
3,024,605. THRUST REVERSER.
3,024,771. CONTROL SYSTEM FOR MOVABLE MEMBERS.
3,035,411. THRUST REVERSER ACTUATING MECHANISM.
3,042,349. REMOVABLE AIRCRAFT ENGINE MOUNTING ARRANGEMENT.
3,042,364. SEALING MECHANISM.
3,053,340. NOISE SUPPRESSION NOZZLE.
3,053,437. TURBO-FAN ROTOR HUB.
3,053,543. SEALING MEANS.
3,056,582. TURBINE STATOR CONSTRUCTION.
3,061,243. LIFT FAN SUPPORT ARRANGEMENT FOR AIRCRAFT.
3,070,284. TURBO-FAN ROTOR.
3,084,907. GAS TURBINE SCROLL MOUNT.
3,088,695. VTO INLET.
3,095,164. GAS COUPLING SYSTEM FOR VTOL AIRCRAFT.
3,098,355. STARTER NOZZLE FOR GAS TURBINE.
3,107,897. GAS TURBINE NOZZLE AND VANE ASSEMBLY.
3,110,857. MAGNETIC AMPLIFIER CIRCUIT.
3,132,842. TURBINE BUCKET SUPPORTING STRUCTURE.
3,136,126. IGNITOR.
3,140,475. ELECTROMAGNETIC POSITION TRANSLATING DEVICE.
3,142,155. GAS TURBINE ENGINE COOLING ARRANGEMENT.
3,143,334. FLOW PATH DESIGN.
3,144,255. SEALING MEANS UTILIZING LEAF MEMBERS.
3,146,585. TURBOJET CONTROL SYSTEM FOR PREVENTING COMPRESSOR STALL DUE TO INLET AIR DISTURBANCES.
3,154,243. LIGHTWEIGHT AXIAL FLOW ROTOR CONSTRUCTION.
3,154,690. STATIC SWITCHING APPARATUS.
3,154,920. CATALYTIC IGNITER.
3,156,253. PRESSURE REGULATING VALVE AND COMBINATION ON-OFF VALVE.
3,158,473. METHOD FOR PRODUCING COMPOSITE BODIES.
3,174,853. CHROMIUM BASE ALLOY.
3,176,934. VTOL AIRCRAFT.
3,181,297. WIDE MODULATION COMBUSTION SYSTEM FOR JET ENGINES.
3,186,165. TURBOFAN ENGINE SPEED SYNCHRONIZING ARRANGEMENT.
3,212,752. FLUID PRESSURE AND SPRING BIASED SEALED FLOW CONTROL VALVE.
3,214,904. VARIABLE AREA CONVERGENT-DIVERGENT NOZZLE AND ACTUATION SYSTEM THEREFOR.
3,216,258. TEMPERATURE MEASURING DEVICE.
3,226,987. GEAR ASSEMBLY.
3,227,176. WINDMILL CONTROL SYSTEM FOR MULTI-ENGINED AIRCRAFT.
3,229,186. FUNCTION GENERATING MAGNETIC AMPLIFER.
3,248,880. GAS TURBINE ENGINE LUBRICATION MEANS.
3,249,333. NOZZLE AREA TRIM MEANS.
3,262,645. THRUST VECTORING AND MODULATING APPARATUS.
3,267,667. REVERSIBLE FLOW FAN.
3,267,668. CONVERTIBLE RADIAL FLOW FAN.
3,267,673. RECUPERATOR FOR GAS TURBINE POWERPLANTS.
3,269,677. SELF-ALIGNING MOUNTING STRUCTURE.
3,270,500. AFTERBURNER FUEL CONTROL.
3,270,775. DIVERTER VALVE ASSEMBLY.
3,277,791. MOTION RESPONSIVE DEVICES.
3,279,192. VARIABLE AREA EXHAUST NOZZLE.
3,282,323. VISCOSITY RESPONSIVE DEVICES.
3,286,498. COMPRESSIVE FORMING.
3,289,413 FLUID APPARATUS FOR TURBOFAN ENGINES.
3,301,527. TURBINE DIAPHRAGM STRUCTURE.
3,302,404. LIGHTWEIGHT THRUST REVERSER.
3,303,653. LIGHTWEIGHT THRUST REVERSER.
3,303,867. GOVERNORS.
3,307,354. COOLING STRUCTURE FOR OVERLAPPED PANELS.
3,312,424. VTOL AIRCRAFT.
3,312,429. LIGHTWEIGHT THRUST REVERSER.
3,314,335. ACTUATOR LOCKING MECHANISM.
3,314,654. VARIABLE AREA TURBINE NOZZLE FOR AXIAL FLOW GAS TURBINE ENGINES.
3,315,468. COOLED FLAMEHOLDER ASSEMBLY.
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3,335,976. VTOL AIRCRAFT.
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3,339,832. PIPE CONNECTIONS FOR AIRCRAFT GAS TURBINES.
3,347,255. PRESSURIZING AND DRAIN VALVE.
3,347,467. COMBINATION JET EXHAUST NOZZLE AND THRUST REVERSER.
3,357,177. GAS TURBINE ENGINE FUEL CONTROL SYSTEM.
3,357,283. APPARATUS FOR REPLACEMENT OF SEALS.
3,357,632. SELF-SEALING CONTAINER.
3,357,664. TUBE SUPPORTS.
3,357.906. METHOD OF MAKING A WORKING SURFACE OF A TOOL-ELECTRODE FOR AN ELECTROCHEMICAL MACHINING APPARATUS.
3,356,126. COMPRESSOR BLADE.
3,358,210. VOLTAGE REGULATOR.
3,365,172. AIRCOOLED SHROUD SEAL.
3,369,366. JET ENGINE SUPPORT STRUCTURE.
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3,377,799. MECHANICAL INTEGRATORS AND CONTROL SYSTEMS EMPLOYING SAME.
3,377,848. TEMPERATURE INDICATING MEANS FOR GAS TURBINE ENGINES.
3,378,104. AIR-OIL SEPARATORS FOR USE IN GAS TURBINE ENGINES.
3,378,229. RADIAL FLOW TURBINE.
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3,383,095. LOCK FOR TURBOMACHINERY BLADES.
3,383,204. NICKEL-LITHIUM ALLOY PREPARATION.
3,384,567. ELECTROLYTE GUIDE MEMBER.
3,386,247. POWERPLANT WITH THRUST REVERSER.
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3,442,641. METALLIC BRAZING MIXTURE.
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3,452,542. GAS TURBINE ENGINE COOLING SYSTEM.
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3,482,967. BRAZING ALLOY.
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3,597,110. JOINT CONSTRUCTION.
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3,731,650. GAS DISTRIBUTOR FOR CASTING MOLD MANUFACTURE.
3,733,814. TRANSLATABLE ENGINE INLET PARTICLE SEPARATOR.
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3,770,211. GAS DISTRIBUTOR FOR CASTING MOLD MANUFACTURE.

Patents Withdrawn From Register

Nippon Gijutsu Boeki Co., Ltd., 32F Kasumigaseki Bldg., 2–5 Kasumigaseki, 3-chome, Chiyoda-ku, Tokyo 100, Japan, hereby withdraws the following patent from the Register of Patents Available for Licensing or Sale. The patent was listed as being available in the OFFICIAL GAZETTE as indicated below:

3,727,118. CONTACTLESS REVERSIBLE DEVICE IN AN ELECTRIC CAR. Oct. 15, 1974.

Disclaimers

3,350,275.—*Dominic A. Venier* and *James L. Lass,* San Jose, Calif. REACTOR FUEL ASSEMBLY DEVICE. Patent dated Oct. 31, 1967. Disclaimer filed Oct. 4, 1974, by the assignee, *General Electric Company.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 6, 7 and 8 of said patent.

3,376,302.—*Theodor Grauer,* Arlesheim, Basel-Land, Switzerland. PROCESS FOR THE PRODUCTION OF CHLORAMINO-S-TRIAZINES. Patent dated Apr. 2, 1968. Disclaimer filed Aug. 30, 1974, by the assignee, *Ciba-Geigy A.G.*

Hereby enters this disclaimer to claims 1 through 8 inclusive of said patent.

3,511,174.—*Hilary A. Raab,* Hammond, Ind. FLUID OPERABLE SYSTEM FOR BALING EQUIPMENT. Patent dated May 12, 1970. Disclaimer filed Oct. 24, 1972, by the assignee, *East Chicago Machine Tool Corporation.*

Hereby enters this disclaimer to claim 11 of said patent.

3,594,157.—*Thomas N. Hendrickson* and *Thomas J. Dagon,* Rochester, N.Y. ALKALINE CHLORINATION OF WASTE PHOTOGRAPHIC PROCESSING SOLUTIONS CONTAINING SILVER. Patent dated July 20, 1971. Disclaimer filed Oct. 2, 1974, by the assignee, *Eastman Kodak Company.*

Hereby disclaims the entire remaining term of said patent.

3,649,979.—*Douglas K. MacNiel,* Costa Mesa, Calif. SWIM FIN. Patent dated Mar. 21, 1972. Disclaimer filed Oct. 11, 1974, by the assignee, *U.S. Divers Co.*

Hereby enters this disclaimer to claims 1, 3, 4, 7, 8, 9, 13, 16 and 17 of said patent.

3,671,077.—*Charles T. Hoyt, John W. Haun,* and *Dwight L. Hensel,* Brillion, Wis., *Clarence M. Hansen,* East Lansing, Mich., *Walter G. Lovely,* Ames, Iowa, and *Hjalmar D. Bruhn,* Madison, Wis. FORAGE BLOWER. Patent dated June 20, 1972. Disclaimer filed May 6, 1974, by the assignee, *Sperry Rand Corporation.*

Hereby enters this disclaimer to claims 1–4 of said patent.

3,723,250.—*Knud Aunstrup,* Farum, *Otto Andresen,* Copenhagen, and *Helle Outtrup,* Vaerlose, Denmark. PROTEOLYTIC ENZYMES, THEIR PRODUCTION AND USE. Patent dated Mar. 27, 1973. Disclaimer filed May 1, 1974, by the assignee, *Novo Terapeutisk Laboratorium A/S.*

Hereby disclaims the portion of the term of the patent subsequent to July 4, 1989.

Dedications

3,283,140.—*Charles H. Rex,* Marblehead, Mass. STREET LUMINAIRE. Patent dated Nov. 1, 1966. Dedication filed July 29, 1974, by the assignee, *Johns-Manville Sales Corporation.*

Hereby dedicates to the Public Claims 1–13 of said patent.

3,292,769.—*Paul Zuppiger,* Carouge, Switzerland. VARYING SPEED CHAIN MECHANISM. Patent dated Dec. 20, 1966. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,293,303.—*Emil A. Lawton,* Columbus, and *Arthur Levy,* Worthington, Ohio. METHOD OF REACTING PENTABORANE (11) WITH AN ACETYLENIC COMPOUND. Patent dated Dec. 20, 1966. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,307,861.—*James W. Adam, Bernard Goobich,* and *Thomas M. Trainer,* Columbus, Ohio. COUPLING WITH A DEFORMABLE SEAL. Patent dated Mar. 7, 1967. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,503,727.—*Herbert C. Werner,* Lancaster, Pa. METHOD FOR GLASS TO GLASS SEALING UTILIZING SOFTENED AND RIGID CIRCUMFERENTIAL SEGMENTS. Patent dated Mar. 31, 1970. Disclaimer filed June 14, 1974, by the assignee, *RCA Corporation.*

Hereby dedicates the entire remaining term of said patent to the Public.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policy of each agency-sponsor.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each.

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

DEPARTMENT OF THE AIR FORCE
AF/JACP, Washington, D.C. 20314

Patent application 423,864. Performance Monitoring/Fault Location Test Set for Tropo-Radio Equipment. Filed Dec. 11, 1973. PC $4/MF $1.45.

Patent application 427,159. Acoustic Emission System for Solid Propellant Burn Rate Measurements. Filed Dec. 21, 1973, PC $4/MF $1.45.

Patent application 427,286. Method of, and Apparatus for, Simultaneously Forming Differently Configurated Grooves and Coolant Channels in, and for, Rocket Engine Composite Channel-Type Coolant-Type Coolant Wall Having a Complex Surface. Filed Dec. 21, 1973. PC $4/MF $1.45.

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U.S. DEPARTMENT OF AGRICULTURE
Federal Bldg., General Services Division,
Hyattsville, Md. 20782

Patent application 404,042. Aluminum Chlorhydroxide Catalyst Systems for Treatments To Give Wrinkle Resistant Textiles. Filed Oct. 5, 1973. PC $5.50/MF $1.45.

Patent application 404,979. Odor Free Hydroxymethonesulfonic Acid. Filed Oct. 10, 1973. PC $4/MF $1.45.

Patent application 406,407. Carbohydrate-Boron Alkoxide Compounds. Filed Oct. 15, 1973. PC $4/MF $1.45.

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Patent 3,768,243. Yarn Twist Control Apparatus for Electrostatic Spinner. Filed Mar. 28, 1972. Patented Oct. 30, 1973. Not available NTIS.

Patent 3,775,814. Electrostatic Yarn Bulking Apparatus. Filed Sept. 29, 1972. Patented Dec. 4, 1973. Not available NTIS.

Patent 3,790,639. Process for Producing a Water-Soluble Methylol Phosphine-Phenol Adduct. Filed Mar. 28, 1972. Patented Feb. 5, 1974. Not available NTIS.

Patent 3,796,596. Finishing Process Incorporating Improved Catalyst Systems To Produce Durable Flameproofed Cellulosic Textile Products With an Excellent Hand. Filed May 5, 1972. Patented Mar. 12, 1974. Not available NTIS.

U.S. ENVIRONMENTAL PROTECTION AGENCY
Room W513, 401 M St. SW., Washington, D.C. 20460

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health, Chief, Patent Office,
Westwood Bldg., Bethesda, Md. 20014

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U.S. DEPARTMENT OF INTERIOR
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TENNESSEE VALLEY AUTHORITY
Division of Law, Muscle Shoals, Ala. 35660

Patent 3,813,233. Production of Suspension Fertilizers From Wet-Process Orthophosphoric Acids. Filed Apr. 23, 1973. Patented May 28, 1974. Not available NTIS.

Department of the Air Force

AF/JACP, Washington, D.C. 20314

Patent 3,801,351. Treatment of High Modulus Graphite Fibers To Improve Their Bonding Characteristics. Filed May 5, 1972. Patented Apr. 2, 1974. Not available NTIS.

Department of Agriculture

Chief, Research Agreements and Patent Mgmt. Branch.
Federal Bldg., General Services Division,
Hyattsville, Md. 20782

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Patent 3,184,333. Wet-Strength Paper Comprising Highly Oxidized Periodate Oxystarch and Process of Preparing the Same. Filed Feb. 12, 1963. Patented May 18, 1965. Not available NTIS.

Patent 3,224,891. Composition for Paper Coating Containing Cyanoethylated Amylaceous Products. Filed Nov. 9, 1962. Patented Dec. 21, 1965. Not available NTIS.

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Patent 3,515,718. Hypochlorite Modified Cyanoethylated Starch Having Intact Granule Form. Filed July 13, 1967. Patented June 2, 1970. Not available NTIS.

Patent 3,749,585. Process for Preparing Citrus Puree. Filed May 5, 1971. Patented July 31, 1973. Not available NTIS.

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U.S. Environmental Protection Agency

Room W513, 401 M St. SW., Washington, D.C. 20460

Patent 3,634,231. Treatment of Sewage Digester Supernatant Liquor. Filed May 13, 1970. Patented Jan. 11, 1972. Not available NTIS.

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U.S. Department of Health, Education, and Welfare

National Institutes of Health, Chief, Patent Branch,
Westwood Bldg., Bethesda, Md. 20014

Patent 3,777,740. Method and Apparatus for Non-Invasively Visualizing Blood Vessels. Filed Oct. 21, 1971. Patented Dec. 11, 1973. Not available NTIS.

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U.S. Department of Interior

Branch of Patents, 18th and C Sts. NW.,
Washington, D.C. 20240

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Patent 3,817,723. Two-Stage Gasification of Pretreated Coal. Filed Mar. 23, 1972. Patented June 18, 1974. Not available NTIS.

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National Aeronautics and Space Administration

Assistant General Counsel for Patent Matters, NASA—
Code GP–2, Washington, D.C. 20546

Patent application 412,079. An Improved Geneva Mechanism. Filed Nov. 2, 1973. PC $4/MF $1.45.

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Patent 3,606,470. Rock Sampling. Patented Sept. 20, 1971. Not available NTIS.

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Patent 3,809,800. Means for Accommodating Large Overstrain in Lead Wires. Patented May 7, 1974. Not available NTIS.

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U.S. Atomic Energy Commission

Assistant General Counsel for Patents,
Washington, D.C. 20545

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Department of the Air Force

AF/JACP, Washington, D.C. 20314

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Patent 3,791,738. Ring Laser Utilizing an Optical Retardation Plate To Prevent Beam Locking. Filed Apr. 11, 1973. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,791,759. Turbine Pressure Attenuation Plenum Chambers. Filed June 7, 1972. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,792,017. Thermally Stable Quinoxaline Polymers and Method of Synthesis. Filed Oct. 19, 1972. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,792,280. Isotropic Neutron Spectrometer. Filed Nov. 3, 1972. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,792,358. Single Cycle Transmitter. Filed Dec. 15, 1972. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,792,363. Controllable Edge Sharpening System for Time Sequential Signals. Filed Apr. 26, 1972. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,793,014. Process for Fabricating Porous Beryllium Billets. Filed Mar. 15, 1973. Patented Feb. 19, 1974. Not available NTIS.

Patent 3,795,020. Portable, Folding Tray Retainer and Stand (Multipurpose). Filed May 23, 1972. Patented Mar. 5, 1974. No available NTIS.

Patent 3,795,150. System for Rapidly Positioning Gimbaled Objects. Filed Dec. 13, 1972. Patented Mar. 5, 1974. Not available NTIS.

Patent 3,795,452. Instrument for Automatically Inspecting Integrated Circuit Masks for Pinholes and Spots. Filed Feb. 28, 1973. Patented Mar. 5, 1974. Not available NTIS.

Patent 3,795,811. Method and Means for Equalizing the Response of Signal Channels in a Multiple Channel Improved System. Filed Mar. 20, 1973. Patented Mar. 5, 1974. Not available NTIS.

Patent 3,797,781. Deceleration Responsive Flow Valve. Filed Oct. 30, 1972. Patented Mar. 19, 1974. Not available NTIS.

U.S. Department of Agriculture

Chief, Research Agreements and Patent Mgmt. Branch,
Federal Building, General Services Division,
Hyattsville, Md. 20782

Patent 3,117,853. Composition for Inhibiting Seed and Fungal Spore Germination. Filed May 17, 1962. Patented Jan. 14, 1964. Not available NTIS.

Patent 3,193,409. Alkali-Stable Thin-Boiling Starches and Method of Making Same. Filed Jan. 16, 1963. Patented July 6, 1965. Not available NTIS.

Patent 3,226,406. Wax Ester Substitute for Jojoba Oil From the Seed of Limnathes Douglasii. Filed Jan. 3, 1963. Patented Dec. 28, 1965. Not available NTIS.

Patent 3,228,773. Methods for Producing Tempeh. Filed Dec. 13, 1962. Patented Jan. 11, 1966. Not available NTIS.

Patent 3,228,777. Single Application Linseed Oil-In-Water Emulsions for Curing and/or Preventing Spalling of Concrete. Filed Mar. 25, 1963. Patented Jan. 11, 1966. Not available NTIS.

Patent 3,258,475. Film-Forming Organometallic Derivatives of Fatty Acids. Filed Aug. 13, 1963. Patented June 28, 1966. Not available NTIS.

Patent 3,287,326. Glycerol Derivatives of Azelaaldehydic Acid and Poly(Ester-Acetals) Therefrom. Filed Aug. 11, 1965. Patented Nov. 22, 1966. Not available NTIS.

Patent 3,290,155. Process for Preparing Debittered Fullfat Soybean Materials. Filed Aug. 19, 1963. Patented Dec. 6, 1966. Not available NTIS.

Patent 3,294,781. Carbohydrate Aliphatic and Cyclic Acetals. Filed June 11, 1963. Patented Dec. 27, 1966. Not available NTIS.

Patent 3,427,224. Shortened Fermentation Process for Obtaining D-Mannitol. Filed Mar. 15, 1967. Patented Feb. 11, 1969. Not available NTIS.

Patent 3,436,305. Starch Polyethyleniminothiourethane Additives for Paper. Filed May 5, 1966. Patented Apr. 1, 1969. Not Available NTIS.

Patent 3,463,122. Process for Delayed Production of Japanese Beetle Larvae. Filed Sept. 25, 1967. Patented Aug. 26, 1969. Not available NTIS.

Patent 3,485,719. Continuous Process for Producing Xanthomonas Heteropolysaccharide. Filed Oct. 13, 1967. Patented Dec. 23, 1969. Not available NTIS.

Patent 3,491,040. Process for Isolating Vinyl-Type Component of Starch Graft Copolymers. Filed June 14, 1968. Patented Jan. 20, 1970. Not available NTIS.

Patent 3,522,238. Acidified Ethylenimine Modified Cereal Flours. Filed Jan. 11, 1968. Patented July 28, 1970. Not available NTIS.

Patent 3,536,630. Calcium Sequestration in Highly Alkaline Medium. Filed May 21, 1968. Patented Oct. 27, 1970. Not available NTIS.

Patent 3,562,113. Rapid Microbiological Production of Alpha-Galactosidase. Filed June 17, 1968. Patented Feb. 9, 1971. Not available NTIS.

Patent 3,585,129. Dual Thickness TLC Plates and Device Therefor. Filed Mar. 28, 1969. Patented June 15, 1971. Not available NTIS.

Patent 3,428,458. Microbiological Decontamination of Aflatoxin-Contaminated Edibles. Filed July 1, 1966. Patented Feb. 18, 1969. Not available NTIS.

U.S. Department of Health, Education, and Welfare

National Institutes of Health, Chief, Patent Branch,
Bethesda, Md. 20014

Patent application 461,442. Gel Slab Electrophoresis Cell and Electrophoresis Apparatus Utilizing Same. Filed Apr. 16, 1974. PC $4/MF $1.45.

Patent 3,780,936. Mixer-Separator for Automated Analytical Chemistry System. Filed Jan. 5, 1972. Patented Dec. 25, 1973. Not available NTIS.

Patent 3,780,992. Vibrating Pipette Probe Mixer. Filed July 17, 1972. Patented Dec. 25, 1973. Not available NTIS.

Patent 3,815,582. Modulated Sine Wave Flowmeter. Filed Mar. 23, 1972. Patented June 11, 1974. Not available NTIS.

U.S. Department of Agriculture

Chief, Research Agreements and Patent Mgmt. Branch,
Federal Bldg., General Services Division,
Hyattsville, Md. 20782

Patent application 410,581. Flame Retardant-Smolder Resistant Multiple Density Cotton Batting Products. Filed Oct. 29, 1973. PC $4/MF $1.45.

Department of the Air Force

AF/JACP, Washington, D.C. 20314

Patent application 374,830. Method and Apparatus for Suppressing Grating Lobes in an Electronically Scanned Antenna Array. Filed June 29, 1973. PC $4.50/MF $1.45.

Patent application 399,009. Weather Modification Utilizing Microencapsulated Material. Filed Sept. 20, 1973. PC $4/MF $1.45.

Patent application 405,721. Retrieval Assembly. Filed Oct. 11, 1973. PC $4/MF $1.45.

Patent application 412,854. Personnel Armor Suspension System. Filed Nov. 5, 1973. PC $4/MF $1.45.

Patent Application 412,855. Pulse Press Tester. Filed Nov. 5, 1973. PC $4/MF $1.45.

Patent application 412,856. Multi-Component Flow Injector Pump for a Flowing Gas Laser With Low Output Pressure. Filed Nov. 5, 1973. PC $4/MF $1.45.

Patent 3,781,130. Turbine Blade Manufactured of Self-Carrying Laminates. Filed June 27, 1972. Patented Dec. 25, 1973. Not available NTIS.

Patent 3,791,433. Filament-Wound, Toroidal Tire With Pneumatic Rim-Locking Tube. Filed July 13, 1972. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,791,738. Ring Laser Utilizing an Optical Retardation Plate To Prevent Beam Locking. Filed Apr. 11, 1973. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,800,127. Vertical Rate Reference Computer for Control of a VTOL or STOL Aircraft at a Constant Flight Path Angle. Filed Sept. 11, 1972. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,801,202. Stabilized, Optimizable, Gaseous Electrical Discharge. Filed Aug. 23, 1972. Patented Apr. 2, 1974. Not available NTIS.

Patent 3,801,350. High Modulus Graphite Fibers Having Improved Bonding Properties. Filed May 5, 1972. Patented Apr. 2, 1974. Not available NTIS.

Patent 3,801,351. Treatment of High Modulus Graphite Fibers To Improve Their Bonding Characteristic. Filed May 5, 1972. Patented Apr. 2, 1974. Not available NTIS.

Patent 3,801,988. Pressure Glove. Filed Nov. 1, 1971. Patented Apr. 9, 1974. Not available NTIS.

Patent 3,802,255. Fixture for Tensile and Stress Rupture Testing of Turbine Blades. Filed Mar. 8, 1972. Patented Apr. 9, 1974. Not available NTIS.

Patent 3,802,419. Respiration Monitor. Filed Apr. 11, 1972. Patented Apr. 9, 1974. Not available NTIS.

Patent 3,803,086. Vinyl-Substituted Siloxane and Siloxazane Polymers. Filed Feb. 5, 1973. Patented Apr. 9, 1974. Not available NTIS.

Patent 3,803,758. Dual Hologram Plate Holder. Filed May 21, 1973. Patented Apr. 9, 1974. Not available NTIS.

U.S. Department of Agriculture

Chief, Research Agreements and Patent Mgmt. Branch,
Federal Bldg., General Services Division,
Hyattsville, Md. 20782

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Patent application 404,976. Fiber Distribution and Ribbon Forming System. Filed Oct. 10, 1973. PC $4/MF $1.45.

Patent application 408,035. Pneumatic Apparatus for Blanching Heated or Roasted Peanuts. Filed Oct. 19, 1973. PC $4/MF $1.45.

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Patent application 445,742. Centrifugal Filtration Tube for Removal of the Mother Liquor From the Crystals in the Purification of a Chemical Compound by Recrystallization. Filed Feb. 25, 1974. PC $4/MF $1.45.

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Patent 3,173,887. Polyurethane Foams Using Esterified Dimer Acids. Filed Dec. 19, 1962. Patented Mar. 16, 1965. Not available NTIS.

Patent 3,183,215. Cross-Linked Poly (Ester-Acetals). Filed Apr. 16, 1962. Patented May 11, 1965. Not available NTIS.

Patent 3,217,046. Process for Producing Undecanedioic Acid From Plant Sources. Filed Nov. 27, 1962. Patented Nov. 9, 1965. Not available NTIS.

Patent 3,252,836. Process for Fractionating Film-Grade Amylose From Amylomaize Starch. Filed Oct. 16, 1963. Patented May 24, 1966. Not available NTIS.

Patent 3,261,669. Multiple Hydrogenation Insert. Filed Jan. 25, 1963. Patented July 19, 1966. Not available NTIS.

Patent 3,268,503. Method of Preparing Edible Soybean Characterized by Greatly Enhanced Water Absorption. Filed Apr. 23, 1962. Patented Aug. 23, 1966. Not available NTIS.

Patent 3,275,582. Carbohydrate Derived Polymers of Acrylonitrile. Filed Oct. 11, 1963. Patented Sept. 27, 1966. Not available NTIS.

Patent 3,285,880. Glycerol Derivatives of Azelaaldehydic Acid and Poly(Ester-Acetals) Therefrom. Filed Aug. 29, 1963. Patented Nov. 15, 1966. Not available NTIS.

Patent 3,314,801. Microbial Polysaccharide and Process. Filed Aug. 17, 1964. Patented Apr. 18, 1967. Not available NTIS.

Patent 3,419,586. Production of C18 Cyclic Acids in Aqueous Solvent. Filed Apr. 21, 1966. Patented Dec. 31, 1968. Not available NTIS.

Patent 3,442,832. Reinforced Rubber by Coprecipitation With Starch Xanthane or Pregelatinized Starch. Filed Sept. 19, 1966. Patented May 6, 1969. Not available NTIS.

Patent 3,477,904. Hydrazides of Fatty Quaternary Ammonium Salts of Glycine as Retention Agents. Filed Sept. 30, 1966. Patented Nov. 11, 1969. Not available NTIS.

Patent 3,485,779. Diisocyanate Modified Vegetable Oil Hydroxyl-Terminated Polyesteramide Coatings. Filed Oct. 19, 1967. Patented Dec. 23, 1969. Not available NTIS.

Patent 3,488,202. Linseed Oil Emulsion Paints. Filed May 18, 1967. Patented Jan. 6, 1970. Not available NTIS.

Patent 3,499,886. Azo Dyes of Starch Anthranilates and Process of Preparing Same. Filed July 18, 1967. Patented Mar. 10, 1970. Not available NTIS.

Patent 3,504,038. Ozonization of Vegetable Oils in an Improved Aqueous Medium. Filed June 24, 1966. Patented Mar. 31, 1970. Not available NTIS.

Patent 3,515,678. Selective Hydrogenation of Soybean Oil With Supported Copper Catalysts. Filed Aug. 10, 1967. Patented June 2, 1970. Not available NTIS.

Patent 3,522,197. Gluten Hydrolysate Derivatives and Compositions Comprising the Same. Filed Nov. 2, 1967. Patented July 28, 1970. Not available NTIS.

Patent 3,528,880. Production of bis(1,2 : 5,6-O-Isopropylidene-3-O-Thiocarbonyl-Alpha-D-Glucofuranose) Disulfide and Paper Containing Same. Filed Aug. 8, 1967. Patented Sept. 15, 1970. Not available NTIS.

Patent 3,531,490. S-Beta-(4-Pyridylethyl)-L-Cysteine. Filed Sept. 6, 1968. Patented Sept. 29, 1970. Not available NTIS.

Patent 3,536,579. Carbohydrate Trans-Fused Cyclic Carbonate Wet-End Additives for Paper. Filed Aug. 8, 1967. Patented Oct. 27, 1970. Not available NTIS.

Patent 3,771,957. Catalyst Assist Agents Using Leaving Group Effects. Filed June 29, 1972. Patented Nov. 13, 1973. Not available NTIS.

Patent 3,775,046. Process for Producing Varicolored Fabrics via the Selective Dyeing of Cellulosic Fabrics With Different Dye Types. Filed Nov. 5, 1971. Patented Nov. 29, 1973. Not available NTIS.

Patent 3,787,455. Vinyl Chloride Plastic Compositions and Certain Plasticizers Therefor. Filed May 7, 1971. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,787,589. Process for Preparing Carrot Juice. Filed Oct. 12, 1972. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,788,804. Process for Dyeing Durable Press Cellulosic Fabrics With Basic Dyes. Filed Mar. 28, 1972. Patented Jan. 29, 1974. Not available NTIS.

Patent 3,791,786. Process for Brown Mineral Dyeing of Cellulosics Without Oxidative Degradation (Tendering), from a Single Bath. Filed Apr. 5, 1972. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,794,640. Hexachlorocyclopentadiene Adducts of Unsaturated Amides. Filed Dec. 16, 1971. Patented Feb. 26, 1974. Not available NTIS.

Patent 3,796,540. Process for Whitening Durable-Press Cellulosic Fabrics With Basic Optical Brighteners. Filed Mar. 28, 1972. Patented Mar. 12, 1974. Not available NTIS.

U.S. Department of Health, Education, and Welfare

National Institutes of Health, Chief, Patent Branch,
Westwood Bldg., Bethesda, Md. 20014

Patent application 464,489. Mouse Feeding System. Filed Apr. 25, 1974. PC $4/MF $1.45.

Patent 3,796,634. Insolubilized Biologically Active Enzymes. Filed Mar. 19, 1970. Patented Mar. 12, 1974. Not available NTIS.

Patent 3,819,489. Bacteria Detector. Filed Sept. 9, 1971. Patented June 25, 1974. Not available NTIS.

Tennessee Valley Authority

Division of Law, Muscle Shoals, Ala. 35660

Patent 3,794,740. Ruminant Direct Feeding Suspension Supplement. Filed Mar. 31, 1972. Patented Feb. 26, 1974. Not available NTIS.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 9, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds· Inorganic Compositions: Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-8-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids, Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-18-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-14-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-11-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-17-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	4-10-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	4-9-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-3-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	3-1-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-18-73
DESIGNS, GROUP 290—C D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	6-4-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-21-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	1-4-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc ; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-14-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	2-27-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	3-22-74

Expiration of patents: The patents within the range of numbers indicated below expire during October 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents .... Numbers 2,811,722 to 2,814,801, inclusive
Plant Patents .... Numbers 1,656 to 1,660, inclusive

REISSUES

NOVEMBER 26, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,250

RECHARGEABLE ELECTRO-CHEMICAL CELL HAVING COMPLEX METAL FLUORIDE ELECTROLYTE

Seymour Senderoff, Fairview Park, Ohio, assignor to Union Carbide Corp., New York, N.Y.

Original No. 3,725,128, dated Apr. 3, 1973, Ser. No. 123,570, Mar. 12, 1971. Application for reissue May 31, 1973, Ser. No. 365,685

Int. Cl. H01m *36/00*

U.S. Cl. 136—6 LF **21 Claims**

1. A rechargeable thermal electrochemical cell having an anode, a cathode, and an electrolyte in contact with said anode and cathode, wherein, in the charged condition:

(a) said electrolyte comprises alkali metal fluometalate, wherein said *fluometalate* [metalate] is *fluoberyllate* [beryllate] or *fluozirconate* [zirconate];
(b) said anode consists essentially of a metal equal in activity to or less active in the electromotive series than the metal of said *fluometalate* [metalate]; and
(c) said cathode comprises nickel fluoride, silver fluoride, or copper fluoride.

28,251

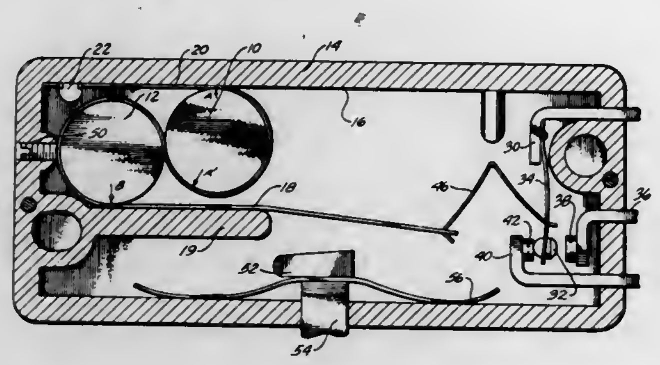
CRASH SENSING SWITCH

Lon E. Bell, Altadena, Calif., assignor to Technar Incorporated, Pasadena, Calif.

Original No. 3,688,063, dated Aug. 29, 1972, Ser. No. 117,560, Feb. 22, 1971. Application for reissue Sept. 27, 1973, Ser. No. 401,239

Int. Cl. H01h *35/14*

U.S. Cl. 200—61.53 **22 Claims**



1. A crash switch comprising a housing having an interior chamber, the chamber having first and second parallel guide surfaces, said second surface terminating at one end at an intermediate point within the chamber, a pair of cylindrical rollers, the diameters of the rollers being less than the normal distance between the first and second surfaces but greater than half said normal distance, a flexible spring band anchored at one end to the housing adjacent one end of the first surface, the band passing around a portion of each of the rollers in a substantially S-shaped path between the two surfaces, the other end of the band extending beyond said one end of the second surface such that movement of the rollers along the band extends from between the two parallel surfaces to a position beyond said one end of the second surface, spring means connected between said other end of the band and the housing for imparting tension to the band, and a re-set plunger extending into the chamber adjacent said one end of the second surface, the plunger having a portion movable toward and into engagement with the band for urging the band in a direction toward the first surface when the position of the rollers is beyond said one end of the second surface.

28,252

AROMATIC POLYMERS FROM DIHALOGENOBENZENOID COMPOUNDS AND ALKALI METAL HYDROXIDE

Dennis Arthur Barr, Welwyn, and John Brewster Rose, Letchworth, England, assignors to Imperial Chemical Industries Ltd., London, England

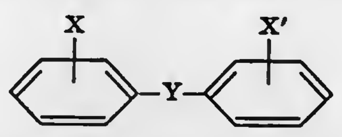
Original No. 3,634,355, dated Jan. 11, 1972, Ser. No. 714,899, Mar. 21, 1968, which is a continuation-in-part of application Ser. No. 580,290, Sept. 19, 1966. Application for reissue May 30, 1973, Ser. No. 365,086

Claims priority, application Great Britain, Sept. 24, 1965, 40,734/65; Jan. 31, 1966, 4,176/66, 4,177/66, 4,178/66; Mar. 7, 1966, 9,764/66; Mar. 23, 1967, 13,891/67, 13,892/67; Mar. 13, 1968, 12,231/68

Int. Cl. C08g *15/00, 23/00, 25/00*

U.S. Cl. 260—49 **10 Claims**

1. A method for the production of fiber and film-forming aromatic polymers whose molecular chains comprise benzenoid groups and oxygen atoms, in which a dihalogenobenzenoid compound having the formula



in which X and X′ are each a halogen atom and Y is $—SO_2—$, —SO—, —CO—, or a radical of the formula —Y′—A—Y″— in which Y′ and Y″ each is $—SO_2—$, —SO— or —CO— and A is a bivalent aromatic radical having both valencies linked to carbon atoms is caused to react with a substantially equivalent amount of an alkali metal hydroxide by the displacement of alkali metal halide in a polar liquid which is an ionizing solvent for alkali metal phenoxides and is stable under the reaction conditions employed, the reaction being concluded under anhydrous conditions and at a temperature between 150° C., and 350° C.

28,253

PRESSURE METERING VALVE

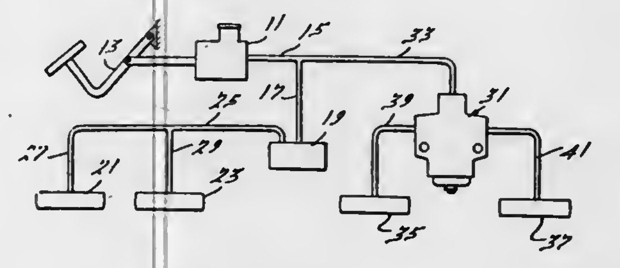
William Stelzer, Milford, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Original No. 3,278,241, dated Oct. 11, 1966, Ser. No. 479,379, Aug. 13, 1965. Application for reissue Aug. 4, 1973, Ser. No. 169,149

Int. Cl. B60T *8/26*

U.S. Cl. 303—6 C **39 Claims**

1. A metering valve for an automotive vehicle hydraulic brake system having disc brakes at one set of wheels and drum brakes at another set of wheels comprising a body having an inlet connected to a hydraulic pressure source and outlet means connected to said disc brakes, valve means in said body operable to block communication between said inlet and outlet means, differential pressure responsive means normally operable to hold said valve means open, said differential pressure responsive means being movable to effectuate closing of said valve means at a first level of pressure from said pressure source, said valve means being responsive to a second level of pressure from said pressure source to open said valve means whereby pressurization of said disc brakes above said first level is prevented until the pressure from said pressure source reaches said second level.



28,254

FLUID TEXTURIZING APPARATUS AND METHOD OF USE

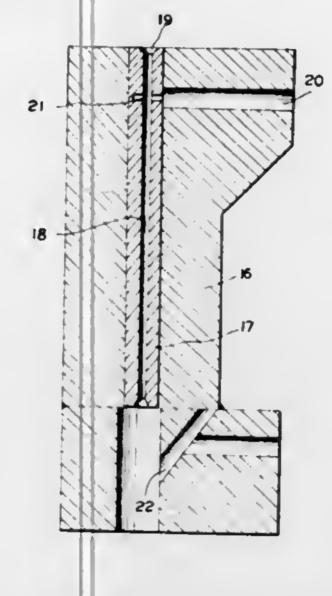
Michel Buzano, Villeurbanne, France, assignor to Rhone-Poulenc-Textile, Paris, France

Original No. 3,683,608, dated Aug. 15, 1972, Ser. No. 33,203, Apr. 30, 1970. Application for reissue Aug. 9, 1973, Ser. No. 387,027

Claims priority, application France, May 16, 1969, 6915940

Int. Cl. D02g *1/04, 1/16*

U.S. Cl. 57—77.3 **2 Claims**



1. A texturizing apparatus comprising:

a body having a first conduit and a second conduit, said second conduit being perpendicular to said first conduit; and

a hollow tube having outer dimensions substantially the same as the inner dimensions of said first conduit, said tube contacting said first conduit, said tube having a cylindrical conduit therethrough, said tube having a slit perpendicular to said cylindrical conduit said slit communicating said second conduit with said cylindrical conduit, said slit having a border intersecting said cylindrical conduit at a maximum of 180°, said second conduit being positioned so that fluid is directed non-tangentially to said cylindrical conduit the plane of the axis of said second conduit being perpendicular to the axis of said cylindrical conduit and the axis of said second conduit nonintersecting the axis of said cylindrical conduit.

28,255

ROTATING LOOP HALF-TONE REPRODUCTION

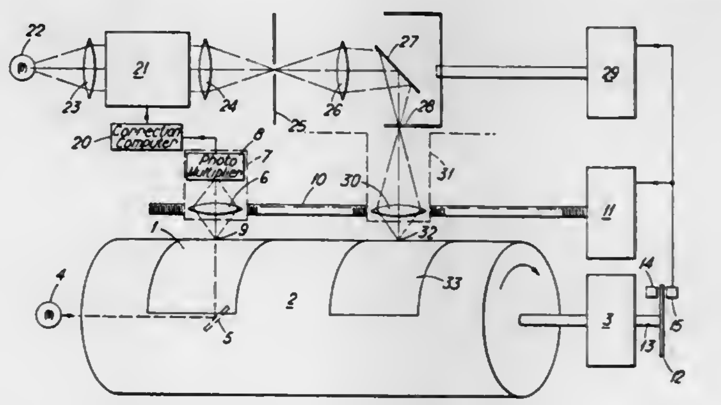
John E. Aughton, London, England, assignor to Crosfield Electronics Limited, London, England

Original No. 3,737,225, dated June 5, 1973, Ser. No. 212,434, Dec. 27, 1971. Application for reissue Sept. 4, 1973, Ser. No. 394,274

Claims priority, application Great Britain, Jan. 6, 1971, 692/71

Int. Cl. G03b *27/48*

U.S. Cl. 355—48 **5 Claims**



1. In image-reproduction apparatus including a light source, an optical system for deriving a light spot from said light source, means for obtaining relative motion between a light-sensitive sheet placed in the apparatus and the light spot derived from the light source, so that in an exposure operation the sheet is exposed element by element to the light spot, and means for modulating the light spot in accordance with tonal values of successively scanned elements of an image to be reproduced on the light-sensitive sheet, the improvement comprising a light-transmitting half-tone screen element, means for moving said screen elements through the light path between the light source and the light-sensitive sheet at a point in the light path conjugate with the light spot on the light-sensitive sheet, so that an image of the moving screen element is formed by the light spot at the light-sensitive surface, each portion of said screen element passing repeatedly through the light path during said exposure operation, and means synchronizing the movement of the screen element through the light path with the movement of the light spot over the light-sensitive sheet.

28,256

WHEEL CHAIR

Rodvinon I. Zamotin, P.O. Box 721, Miami Springs, Fla. 33160

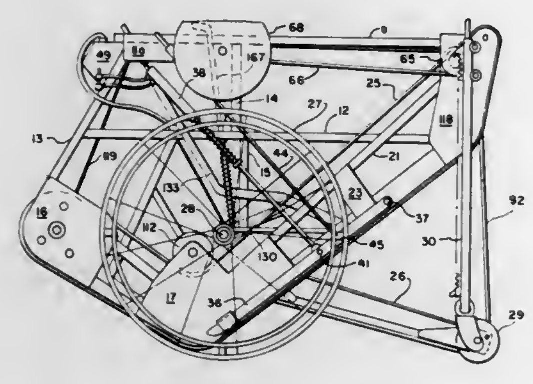
Original No. 3,602,522, dated Aug. 31, 1971, Ser. No. 799,411, Feb. 14, 1969. Application for reissue Apr. 9, 1973, Ser. No. 349,469

Int. Cl. A61g *5/00*

U.S. Cl. 280—5.22 **17 Claims**

1. A wheel chair capable of travelling on inclined irregular surfaces comprising a pair of side frames defining a seat therebetween; each of said side frames comprising: guide means, and endless belt on said guide means and having an upper run and a lower run, the lower run of said endless belt defining a generally V-shaped path from a front end in front of the seat to a rear end behind the seat, a main wheel rotatably mounted on the side frame and movable at least between a raised position above the said lower run and a lower position whereat the bottom of the wheel is positioned below the said lower run for engaging the ground, and a rear leg having a rear wheel

movable at least between a raised position above the lower run and a lower position sufficiently far below the lower run such that the chair is upright when the rear wheel is lowered, and wherein, when the main and rear wheels are in their raised positions, the rear part of the V-shaped lower run engages the ground, means for driving the endless belt about its guide means, a hydraulic shock absorber means operatively associated with said side frame for movement between a raised position above the level of the lower run and a lower position below the lower run, said shock absorber means comprising a bar extending forwardly along the rear part of the V-shaped lower run from a pivot connection with the side frame, such that when the wheel chair is supported on the said rear part of the lower run for movement along a surface onto a downward incline, said bar is pivotable about said pivot connection to its lower position to engage the inclined surface before the chair tips over a sufficient amount for the said rear part of the lower run to engage the incline, a retaining means for holding the bar in its raised position and a spring means for urging the bar to its lower position when the retaining means is released, a damping mechanism permitting movement of the bar downwardly away from the lower run under the action of the spring means and restricting movement of the bar upwardly to its raised position, said damping mechanism including a hydraulic piston and cylinder unit operatively connected to the side frame and to the bar, a fluid reservoir, an open passage from one end of the cylinder to the reservoir to permit free passage of fluid therein as the bar moves to its lower position, and two fluid lines leading from the reservoir to the other end of the cylinder, one of said two lines being a restricted passage and the other having a one-way valve permitting fluid to flow only from the reservoir to the cylinder, whereby when the bar is lowered, liquid flows from the reservoir through the one-way valve to the cylinder, and wherein during raising of the bar, liquid flows through the restricted passage to the reservoir.



28,257

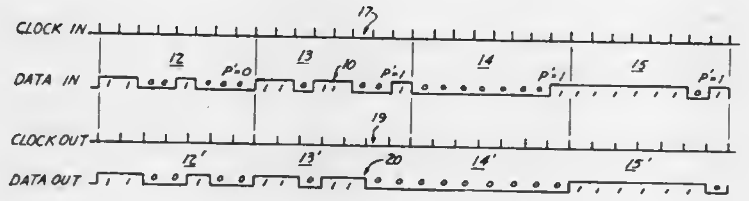
METHODS AND APPARATUS FOR REMOVING PARITY BITS FROM BINARY WORDS

William H. Spencer, Monrovia, and Brian K. Curtis, La Crescenta, Calif., assignors to Bell & Howell Co., Chicago, Ill.

Original No. 3,764,998, dated Oct. 9, 1973, Ser. No. 278,137, Aug. 4, 1972. Application for reissue Nov. 16, 1973, Ser. No. 416,712

Int. Cl. G06f *3/00, 5/06*

U.S. Cl. 340—172.5 **22 Claims**



1. In a method of removing *with the aid of first and second register means;* parity from bits a first continuous stream of binary words *including data bits and said parity bits and being* accompanied by a first series of clock pulses, the improvement comprising in combination the steps of:

shifting said first stream of binary words into said first register means with said first series of clock pulses;
identifying the parity bits in the first stream of binary words;
removing the identified parity bits *by transferring only data bits from said first register means to said second register means; and*
providing a second continuous stream of binary words in which [the binary words of] *data bits from* said first stream are expanded into the time periods of the removed parity bits; [and] *by*
providing a second series of clock pulses adapted to said expanded [binary words] *data bits* in the second stream *and by shifting said transferred data bits from said second register means with said second series of clock pulses.*

PLANT PATENTS

GRANTED NOVEMBER 26, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,655

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 16, 1973, Ser. No. 406,797

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the cultivar Dramatic by its approximately ½" larger flower size; one week later response; short treatment requirement for late winter and spring flowering; improved response to growth regulators; shorter and more spreading growth habit; improved form retention which provides greater bench life and home life, and by its orange-bronze rather than golden bronze to yellow flower color.

3,656

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 10, 1973, Ser. No. 404,983

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness by its 5¾"–6¼" flower size, early response of approximately nine weeks, less incurved flower form, superior form retention, large, light green foliage with less pronounced marginal indentation, strong, heavy stems in all seasons, an ivory white flower color, and by its tolerance of marginal temperatures for uniform bud initiation and development.

3,657

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 10, 1973, Ser. No. 404,982

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly by its less intense yellow flower color, a nine week response period, superior vigor and form retention, a flower size which ranges from 5¼" to 5¾" when expanded, a light, medium green foliage having moderately indented edges, and by its excellent tolerance of marginal temperatures for uniform bud initiation and development.

3,658

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 9, 1973, Ser. No. 404,808

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the parent cultivar Escapade by its ivory white flower color at finishing temperatures 60° F. or above; approximately ½" smaller flower size; approximately 2–4 days later flowering response; and by its lighter foliage color.

3,659

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Sept. 11, 1973, Ser. No. 396,129

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the cultivar Jumbo Albatross by its year round period of value in Coastal California; whiter flower color; more incurved flower form; better form retention, having approximately 2–4 days greater bench life; improved stem strength and stem caliper; 4–7 days earlier response; approximately 8 inches more vigor; approximately 1 inch larger flower size; less tolerant to marginal temperatures (56° F.) for uniform bud initiation; greater sensitivity to mildew, and by its requiring more attention to prompt lateral bud removal in order to obtain maximum flower size.

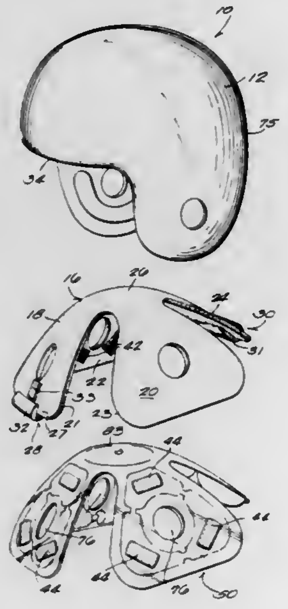
PATENTS

GRANTED NOVEMBER 26, 1974

GENERAL AND MECHANICAL

3,849,801
PROTECTIVE GEAR WITH HYDRAULIC LINER

M. C. Holt, and Walter F. Tomczak, both of Leesburg, Fla., assignors to Medalist Industries, Inc., Milwaukee, Wis.
Filed Dec. 20, 1972, Ser. No. 316,799
Int. Cl. A42b *3/02*
U.S. Cl. 2—3 R **15 Claims**



1. Protective gear comprising an outer shall, a hydraulic liner for said shell having an array of interconnected collapsible hydraulic fluid containing compartments, hydraulic fluid in said compartments, the interconnection of one compartment with another allowing displacement of hydraulic fluid from a deformed compartment to other compartments in said array, deformable highly porous hydraulic fluid surge mitigating means having substantial void space in said compartments for throttling hydraulic fluid flow within a compartment and between said interconnected compartments caused by deformation of said compartment and to dissipate and absorb the energy causing the deformation and to retain hydraulic fluid in the deformed compartment regardless of the displacement of some hydraulic fluid to other compartments.

3,849,802
TEMPERATURE PROTECTION SUIT

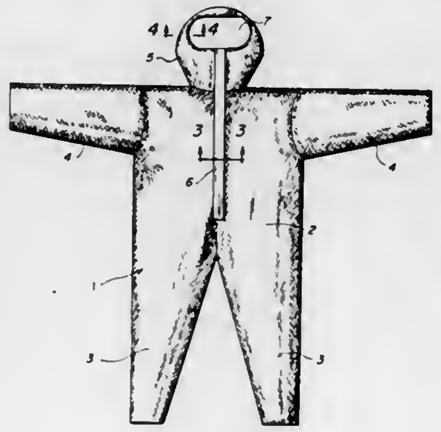
Gustaaf Frederik Govaars, Hilversum, Netherlands, assignor to Scientific Enterprises, Inc., Bloomfield, Colo.
Filed June 21, 1973, Ser. No. 372,349
Claims priority, application Netherlands, Dec. 29, 1972, 7317873
Int. Cl. A41d
U.S. Cl. 2—81 **13 Claims**

1. In a reversible temperature protection garment for the preservation and protection against heat and cold, the combination comprising:

an upper body portion to cover at least the upper torso of the wearer, said upper body portion having arm portions to cover the arms of the wearer, a hood portion extending up from the body portion to cover the head of the wearer, said hood portion having a front part covering a substantial portion of the face of the wearer and an elastic eye opening in the front part of the hood portion;

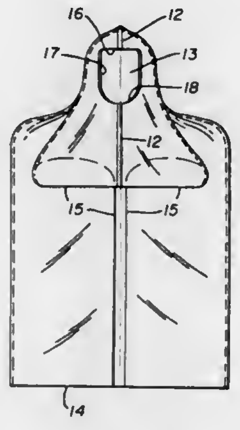
said upper body, arm and hood portions being made of the same material, said material being comprised of a layer of a very lightweight TYVEK fabric having at least one side coated with a very thin layer of shiny, heat reflective metal and the material is dull on the side opposite the shiny layer to form a very thin, extremely lightweight, strong, soft, drapable composite whereby the shiny layer reflects heat back to the body of the wearer when worn inside for protection against cold and reflects heat away from the body of the wearer when worn outside for protection against heat, said upper body and hood portions being split down the front from the eye opening to the bottom of the upper body portion; and

co-operating reversible releasable sealing fastening means extending along opposite marginal edges adjacent the split of the upper body and hood portions to seal the split closed all the way from the bottom of the body portion up to the eye opening.



3,849,803
EXPENDABLE RAINCOAT AND HOOD

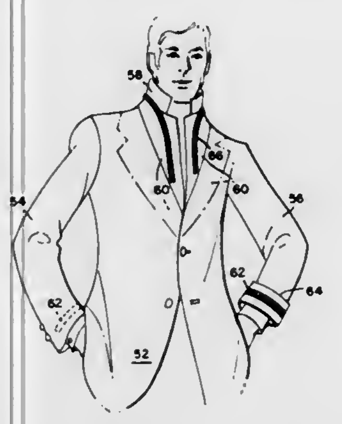
Donald J. Connors, 259 Berkshire Dr., Youngstown, Ohio 44512
Filed Apr. 25, 1973, Ser. No. 354,346
Int. Cl. A41d *3/08*
U.S. Cl. 2—84 **4 Claims**



1. An expendable raincoat consisting of a single section of flexible plastic film folded transversely to form a double thickness rectangular shape, one of the shorter ends thereof being seamed and having an opening formed in the seamed end and spaced inwardly of the longitudinal edges of said rectangular shape so that most of said seamed end with said opening therein can be moved to a position parallel with said longitudinal edges.

3,849,804
LIGHT REFLECTIVE SAFETY WEARING APPAREL

Richard Rakow, 3931 Illinois Ave., San Diego, Calif. 92104
Filed Sept. 6, 1973, Ser. No. 394,735
Int. Cl. A41d *1/02, 1/06, 27/20*
U.S. Cl. 2—98 **4 Claims**



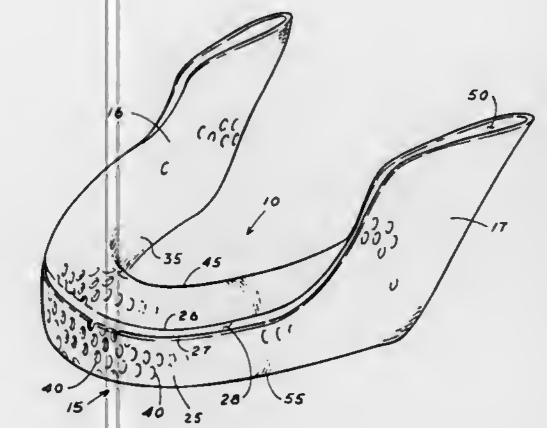
1. In an article of wearing apparel for a pedestrian for visually signaling the driver of a moving vehicle and thereby warning him of the presence of the pedestrian in or near the path of the vehicle when it is dark, the combination comprising

A. an outer garment for covering a portion of the body, said garment being provided with a pocket which may be turned inside out, being devoid of all means for signaling the driver, and being otherwise conventional in all respects, and

B. a light reflective material applied directly to an inner surface area of said pocket, said light reflective material being fully exposed to view when said pocket is turned inside out.

3,849,805
BONE INDUCTION IN AN ALLOPLASTIC TRAY

Donald L. Leake, Rolling Hills, Calif., and Morris Rappaport, deceased, late of Torrance, Calif. (Susan Rappaport, administratrix), assignors to The Attending Staff Association of the Los Angeles County Harbor General Hospital, Torrance, Calif.
Filed Nov. 1, 1972, Ser. No. 302,903
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **5 Claims**



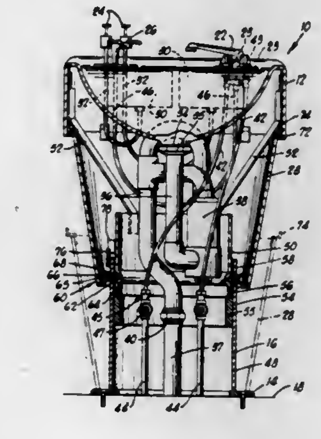
1. A tubular, non-metallic tray adaptable for reconstruction of long bones, having a plurality of pores penetrating the thickness of the non-metallic material, and having an elongate center passage coextensive with the length of the tray, comprising:

a substantially cylindrical outer peripheral surface portion, the opposite ends of which are in a close juxtaposition relationship to form a narrow slit, coextensive with the length of the tray, and

a radially innermost surface portion, the opposite ends of which are in a close juxtaposition relationship and abut said narrow slit, said innermost surface portion coextensive with the outer peripheral surface portion, and adjacent to the elongate center passage.

3,849,806
SHAMPOO BOWL ASSEMBLY

Bobby L. Strickland, 10913 N. McKinely, and Doyle E. Simpson, 1200 N.W. 104th St., both of Oklahoma City, Okla. 73114
Filed Aug. 17, 1973, Ser. No. 389,368
Int. Cl. A47k *7/12*
U.S. Cl. 4—159 **7 Claims**

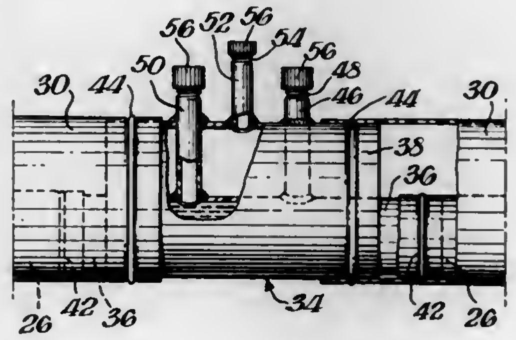


1. A shampoo bowl assembly secured to a floor and positioned adjacent to a plurality of chairs of the type that can be reclined, the chairs being in a circular relationship to the assembly, comprised of:

a base;
a bowl positioned on top of said base;
a swivel connecting said base to said bowl;
a hot and cold water faucet attached to said bowl;
flexible water lines connected to said hot and cold water faucets;
a drain disposed in the bottom of said drain;
a swivel drain pipe connected to said drain;
a hair trap disposed in said drain pipe;
at least one compartment disposed in said bowl for holding shampoo and the like;
means for dispensing shampoo from said compartment attached to said bowl;
a water sprayer attached to said bowl;
means for connecting hot and cold water to said sprayer attached thereto; and
a skirt attached to the bottom of said bowl and suspended therefrom enclosing a lower portion of said bowl and the upper portion of said base.

3,849,807
WAVE SUPPRESSING DEVICE FOR SWIMMING POOLS

Edward G. Lowe, P.O. Box 195 X, Mullica Hill, N.J. 08062
Filed Sept. 27, 1972, Ser. No. 292,675
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172 **7 Claims**



1. A wave suppressing device for swimming pools constructed and arranged to float in the pool at the periphery

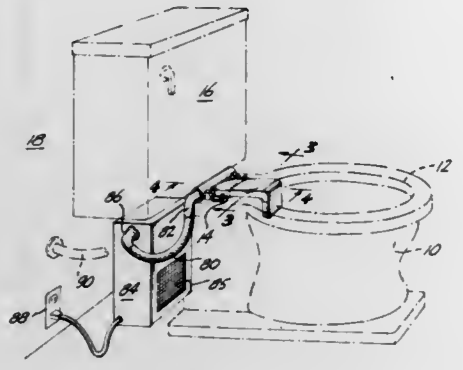
thereof, the device comprising a continuous ballast member including flexible tubing completely filled with water, and a continuous floatable member surrounding the ballast member having a volume greater than the ballast member and a density less than pool water, the continuous floatable member comprising a plurality of longitudinally oriented solid sections, and connectors securing the solid sections end-to-end, each connector comprising a central flange with pins extending from the opposite sides thereof.

3,849,808
TOILET EXHAUST MEANS

Carl O. L. Olson, 745 N. 103rd Ave., Seattle, Wash. 98133, and Vernon Goodwin, Jr., 7334 44th Ave. S.W., Seattle, Wash. 98136

Filed June 21, 1973, Ser. No. 372,162
Int. Cl. E03d *9/04*

U.S. Cl. 4—213 **7 Claims**



1. In a toilet apparatus comprised of a toilet bowl having an upper rear horizontal surface in which there is a pair of upstanding spaced-apart studs disposed transversely across said surface to receive means providing for the pivotal attachment of a seat to swing about an axis spaced above said horizontal surface sufficiently to establish a broad relatively shallow void above said horizontal surface and beneath said seat extending fore-and-aft between said studs; the improvement comprising: a tubular, manifold rearward of said void extending parallel to said studs;

separable coupling means between said manifold and said studs disengageable upon movement of said manifold along its longitudinal axis;

a tubular conduit having an inlet orifice located in the rear of said toilet bowl and including a rearwardly directed exhaust portion extending into said void;

a tubular nipple extending forward from said manifold and telescopically associated with said exhaust portion of said tubular conduit;

retainer means associated with said bowl and embracing said telescopically assembled conduit and nipple to preclude movement of said manifold along its longitudinal axis while said tubular conduit and said tubular nipple are telescopically assembled; and

suction-producing means operatively coupled to said manifold for withdrawing air from said bowl through said inlet-orifice.

3,849,809
DRAIN WITH CAPTIVE VANDAL-PROOF STOPPER

Earl L. Morris, and Theodore J. Sally, both of Whittier, Calif., assignors to Acorn Engineering Company, Industry, Calif.

Filed Mar. 31, 1972, Ser. No. 239,952
Int. Cl. A47k *1/14*

U.S. Cl. 4—295 **6 Claims**

1. A captive, pop-up fluid flow control device, said device being non-removable from the drain opening adjacent to the fluid containment side of the fluid container, which comprises: a body having a drain passageway therethrough and an inlet end and an outlet end;

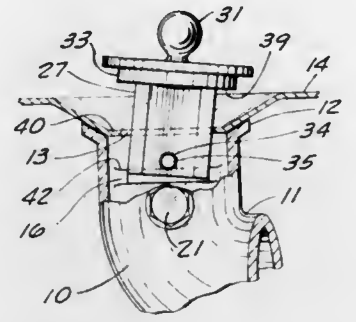
a rim formed as an integral part of the body and disposed within the drain passageway near the inlet opening thereto and projecting inwardly towards the center thereof; thereby forming a fluid shut-off seat;

means for connecting the inlet end of the body to the drain opening in said fluid container;

a stopper having a central stem and a top and a lower portion, wherein the top portion is engageable with the seat and the lower portion being operable within the body and having a transverse passageway therethrough;

means for spacing and guiding the lower portion of the stopper within the body and the drain opening in such a manner as to allow fluid communication between the drain opening and the fluid container;

means for raising and lowering the stopper to move the top towards and away from the seat;



a locking means adapted to be disposed within the transverse passageway, whose length is greater than the diameter of the opening in the rim wherein the ends of the locking pin are disposed beneath said rim and maintained therebeneath by the guiding and spacing means whereby the complete withdrawal of the lower portion of the stopper from the drain inlet is prevented; and

means within the body for passing the locking pin therethrough whereby the locking pin may be installed in the transverse passageway; and

means for supporting the ends of the locking pin disposed in the transverse passageway whereby said stopper may be maintained and disengaged from the seat after the top of the stopper is moved away from the seat, thereby placing the drain opening in fluid communication with the drain passageway.

3,849,810
PILLOW

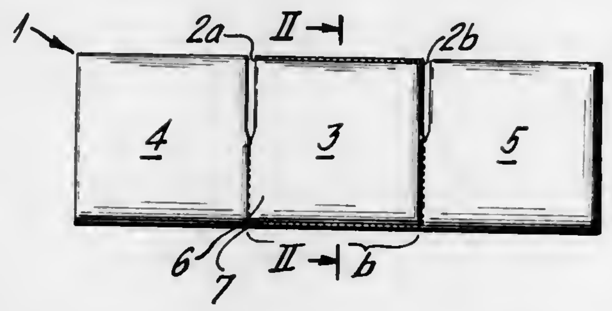
Felix Degen, Brighton, England, assignor to Marpal Aktiengesellschaft, Chur, Switzerland

Filed Apr. 27, 1973, Ser. No. 355,001

Claims priority, application Switzerland, Apr. 27, 1972, 6291/72

Int. Cl. A47c *27/22, 7/02*

U.S. Cl. 5—341 **2 Claims**



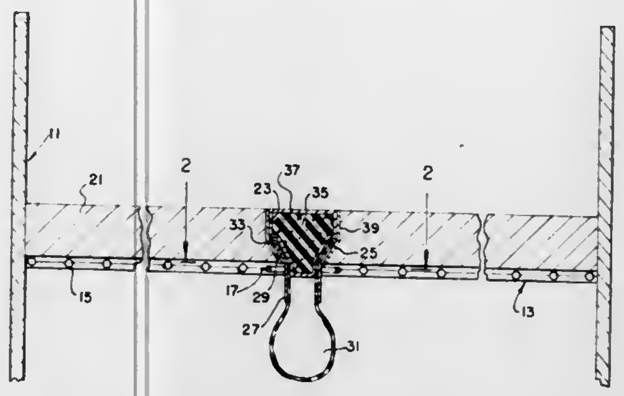
1. A pillow comprising a case having an opening therein, first fastening means operable to open and close said opening, a first main stuffing disposed in said case, a second auxiliary stuffing insertable into said case through said opening, and second fastening means operable to secure said auxiliary stuffing to said case in the region of said opening, said case comprising three interconnected sections extending side-by-side along the length of the pillow, said opening being arranged in the center one of said three sections and the main stuffing of said center section being thinner than the main stuffing of the two outer sections, said center section being foldable upon itself along a line extending longitudinally of the pillow and said pillow includes third fastening means operable to secure said center section in folded state.

3,849,811
WASTE DISPOSAL APPARATUS FOR HOSPITAL BEDS AND THE LIKE

Michael P. Cyll, Dearborn, Mich., assignor to George C. Lakatos, Wayne, Mich., a part interest

Filed Nov. 5, 1973, Ser. No. 412,660
Int. Cl. A61g *7/02*

U.S. Cl. 5—91 **4 Claims**



1. In a bed including a hospital bed having a frame, a spring and a mattress;

a waste disposal apparatus;

said mattress having an upright aperture therethrough cylindrical at the top and terminating in a frustoconical portion;

a funnel chute nested and supported within said aperture;

said funnel chute having a frustoconical upper portion cooperatively nested and supported in the frustoconical aperture of the mattress, and a cylindrical portion depending through and below said spring;

a plastic disposable bag depending axially below said spring having a throated upper end portion threaded through said funnel chute with its free open end folded over and retainingly engaging the funnel rim and suspended therefrom, said folded over portion of the bag being frictionally retained between the funnel chute and mattress;

and a plug of sponge rubber and having a washable plastic cover, snugly nested down into said mattress aperture with its top flush with the top surface of the mattress.

3,849,812
CHILDREN'S OR INFANTS FURNITURE

Frederick Bartholomew Walsh, 17 Grange Park Ave., Raheny, Dublin 5, Ireland

Filed Aug. 25, 1972, Ser. No. 283,893

Claims priority, application Great Britain, Sept. 1, 1971, 1110/71; Sept. 28, 1971, 1207/71; Oct. 5, 1971, 1244/71; Oct. 29, 1971, 1374/71; Dec. 16, 1971, 1589/71; Apr. 21, 1972, 529/72; May 25, 1972, 706/72; June 13, 1972, 825/72; Aug. 27, 1971, 1015/71

Int. Cl. A47d *9/02*

U.S. Cl. 5—108 **13 Claims**

1. A child's cot or crib comprising in combination:

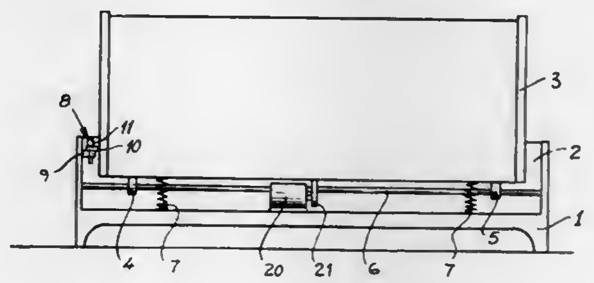
a base-frame,

a cradle-portion located adjacent said base-frame,

pivot means supporting said cradle-portion on said base-frame and defining an axis of pivotal movement about which said cradle-portion is capable of limited rocking movement,

resilient elements engaged between said cradle-portion and said base-frame, for cushioning said cradle-portion in its rocking movement about said pivotal axis,

drive means for actuating said cradle-portion in such rocking movement,



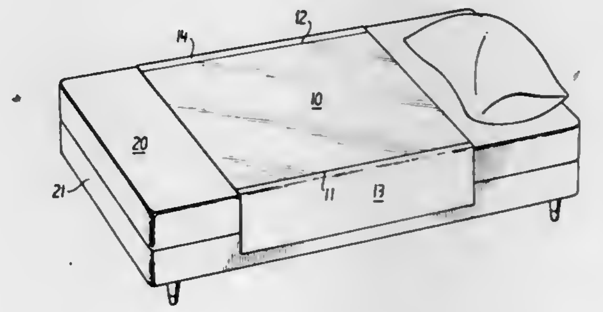
and releasable fastening means for selectively preventing movement of said cradle-portion relatively to said base-frame.

3,849,813
DRAWSHEET ENABLING USER TO EASILY SLIDE THEREON

Marion H. Neilson, 239 Gulf Dr., Venice, Fla. 33595

Filed July 18, 1972, Ser. No. 272,896
Int. Cl. A47c *23/00*

U.S. Cl. 5—334 R **8 Claims**



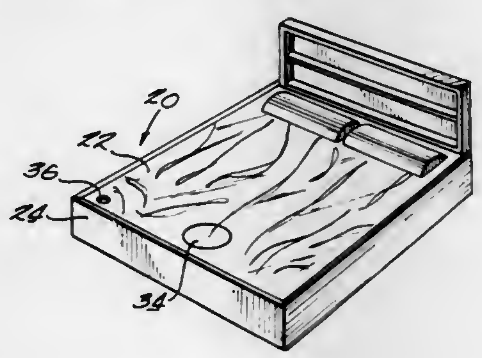
1. A sheet for use on a bed, having a central inner portion of substantially frictionless material selected from the group consisting of satin and sateen attached by attachment means to outer ends of normal sheeting material, such that the outer ends can be tucked into the bed to securely position the central inner portion in the area of the bed upon which the major portion of the user's body normally rests, to enable the user in contact with said central inner portion to slide easily thereover while the user's extremities in contact with the normal sheeting material can manuplate body position.

3,849,814
FLUID-CONTAINING STRUCTURE

Benjamin Ross, 300 N. State St., Chicago, Ill. 60610

Filed Nov. 2, 1971, Ser. No. 194,887
Int. Cl. A47c *27/08*

U.S. Cl. 5—348 WB **6 Claims**



1. An article capable of floatably supporting a human body which comprises:

a. a fluid-containing seamless structure molded from a flexible material, said structure having top, bottom and side surfaces of predetermined shape, said top surface having means for regulating the firmness of said structure;

b. a body of fluid contained within said structure and filling the same so as to exclude substantially all air therein;

c. means contained in the surface of the structure through which said structure is filled with said fluid; and

d. means for laterally supporting said structure so that one surface thereof may be used as a floatable support.

3,849,815

METHOD AND APPARATUS FOR STEAMING AND SMOOTHING OF CLOTHING IN A CLOSED CHAMBER

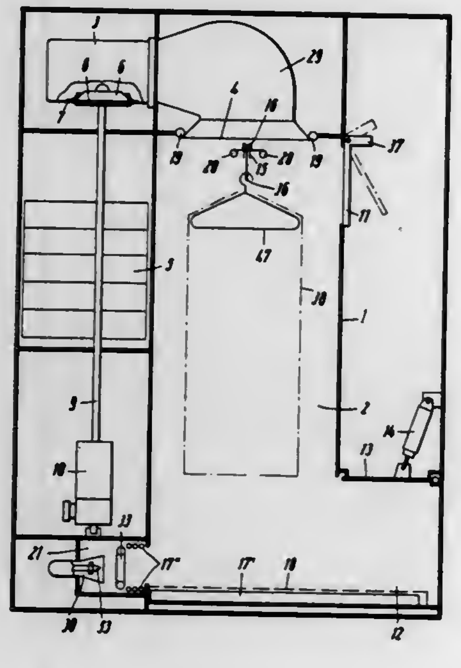
Manfred Frauendorf, Nurnberg, Germany, assignor to Normbau GmbH. Maschinen-Apparate-Werkzeuge & Co., Nurnberg, Germany

Filed Nov. 10, 1972, Ser. No. 305,253

Claims priority, application Germany, Nov. 12, 1971, 2156405

Int. Cl. D06c *1/04*

U.S. Cl. 8—149.1 **13 Claims**



1. A method for steaming and smoothing articles of clothing in a closed chamber comprising the steps of:

placing the articles of clothing at room temperature in the closed chamber;

injecting a pre-determined amount of steam in a short abrupt burst and at a limited excess pressure above atmospheric pressure into the chamber, wherein a vacuum is created in said chamber by the condensation of the moisture contained in said steam on the articles of clothing;

injecting a further pre-determined amount of steam in a short abrupt burst and at a limited excess pressure above atmospheric pressure into the chamber, wherein said articles of clothing are heated to a predetermined temperature, dependent upon the character of the articles of clothing to be smoothed, by the evaporation of the condensation on the articles of clothing;

dropping said pressure in said chamber to atmospheric pressure; and

blowing hot air in bursts along said articles of clothing from the top to the bottom.

3,849,816

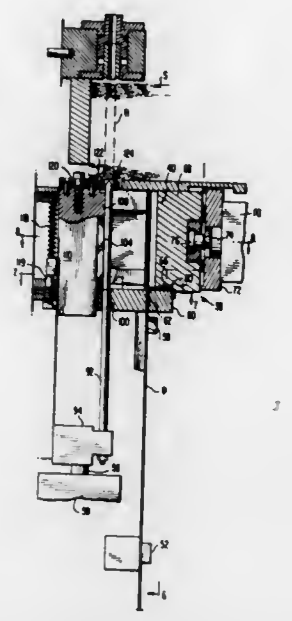
BINDING MACHINE

Albert J. Countryman, Clayville, N.Y., assignor to Ty-Lok Assembly Systems, Inc., Utica, N.Y.

Filed July 2, 1973, Ser. No. 376,033

Int. Cl. B42c *1/12*

U.S. Cl. 11—1 A **11 Claims**



1. A machine for automatically binding a stack of loose leaf sheets having aligned preformed round holes therein by means of a plastic flanged post binder member extending through at least one of the holes and formed from a flat web of formable plastic material, the machine comprising:

a. a binding station,

b. means for aligning the stack of loose leaf sheets at the binding station,

c. means for clamping the aligned stack of loose leaf sheets at the binding station,

d. cut-off means for cutting off a length of the flat web of plastic material required to form the flanged post member,

e. forming means for forming the cut of length of plastic material into a part cylindrical tubular form, C-shaped in section,

f. inserting means for inserting the so formed binder member into a hole of the clamped aligned stack, and

g. flange forming means for forming flanges on both ends of the cylindrical tubular form binder member flush with the opposite faces of the stack of loose leaf materials.

3,849,817

AUTOMATIC SHOE LASTING MACHINE

William H. Berrill, Leicester; David W. Halford, Birstall, and Arthur A. Bowler, Leicester, all of England, assignors to USM Corporation, Boston, Mass.

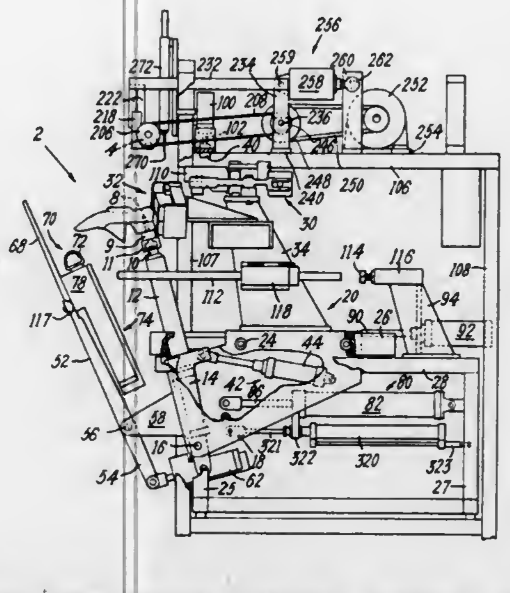
Filed Apr. 10, 1974, Ser. No. 459,693

Claims priority, application Great Britain, Apr. 13, 1973, 17810/73

Int. Cl. A43d *21/00*

U.S. Cl. 12—8.3 **9 Claims**

1. A machine for lasting shoes including means for wiping the margin of a shoe upper inwardly over the shoe bottom, a carriage, means for causing relative movement between the wiping means and the carriage lengthwise of a shoe supported on the carriage for progressively wiping selected portions of the shoe upper, means for supporting the shoe with one end at a predetermined location on the carriage, a measuring device movable on the carriage toward said location into engagement with the other end of the shoe for measuring the shoe length according to the extent of movement of the device, and means settable according to the shoe length for determining the relative operating positions of the wiping means and the carriage.



3,849,818

ADHESIVE CONTROL FOR SHOE LASTING MACHINE

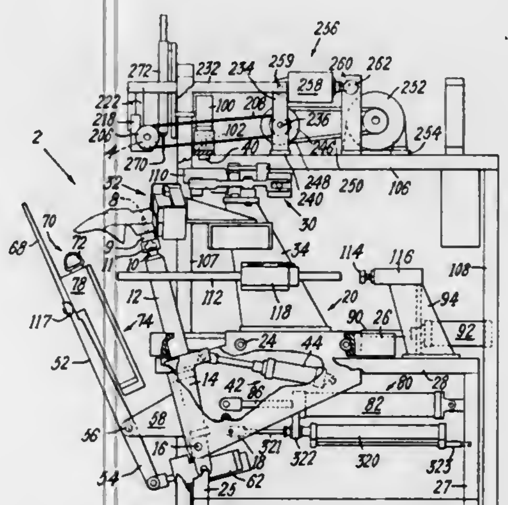
Brian H. Brailsford, Glenfield; Frank Bramley, Wigston, and Frank Hartshorn, Leicester, all of England, assignors to USM Corporation, Boston, Mass.

Filed Apr. 10, 1974, Ser. No. 459,692

Claims priority, application Great Britain, Apr. 13, 1973, 17813/73

Int. Cl. A43d *21/00*

U.S. Cl. 12—8.3 **5 Claims**



1. A machine for lasting shoes including means for lasting a shoe upper over a last on a support, means for causing relative movement between the lasting means and the support lengthwise of a shoe on the support to cause the shoe upper to be lasted progressively along the side of the shoe, a nozzle for applying adhesive progressively along the shoe bottom for securing the upper to the shoe bottom, as the upper is lasted, means for measuring the length of the shoe on the support and for varying the relative locations of the lasting means and the support according to the shoe length, template means for locating the nozzle widthwise during the lengthwise relative movement to cause the nozzle to follow the widthwise contour of the shoe bottom and, means controlled by the measuring means for varying the locating relation of the template means to the nozzle according to the measured shoe length.

ERRATUM

For Class 14—27 see:
Patent No. 3,849,821

3,849,819

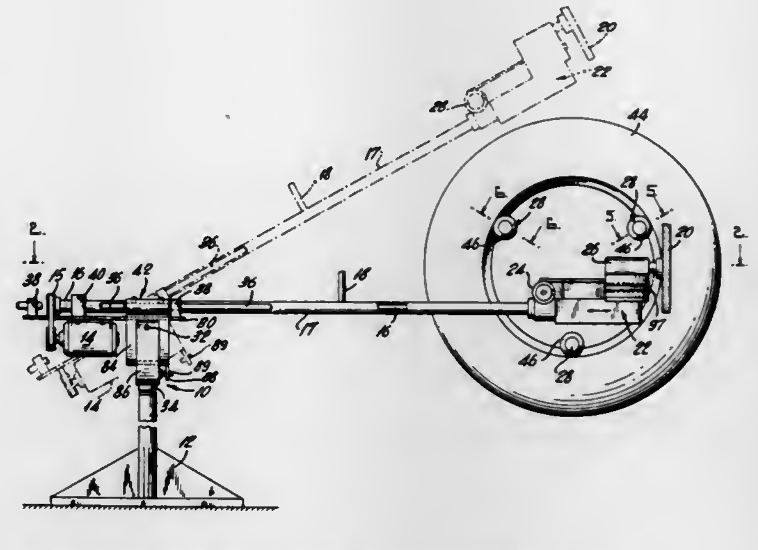
RENOVATING APPARATUS FOR TIRE INNER LINERS

Arthur J. Sullivan, Staten Island, N.Y., and Oliver G. Lewis, Westfield, N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed June 29, 1972, Ser. No. 267,467

Int. Cl. A46b *13/02*

U.S. Cl. 15—21 D **2 Claims**



1. A tubeless tire renovating apparatus comprising:

a. a fixed base member;

b. a first U-shaped support yoke pivotably attached at its middle to said base member to rotate in a horizontal plane about said base;

c. a second U-shaped support yoke pivotably attached at its ends to the ends of said first yoke whereby said second yoke may be moved relative to said first yoke in a vertical plane;

d. a pair of cylindrical sleeves rigidly attached to the ends of said second yoke;

e. a pair of rods passing through said sleeves and attached therein at their midpoints;

f. a support carriage plate having guides for said rods attached thereto, thereby permitting sliding movement of said carriage parallel to said rods;

g. motor mounted on said carriage plate for driving a rotatable shaft supported by bearings mounted on said carriage plate, said shaft extending beyond said plate;

h. a wire brush driven by said rotatable shaft through a double set of bevel gears disposed therebetween, said wire brush swivelably mounted in a housing in fixed relation to said shaft and containing means for swiveling said brush.

3,849,820

PALLET CLEANER

David Lang, Mineral Wells, Tex., assignor to Harsco Corporation, Harrisburg, Pa.

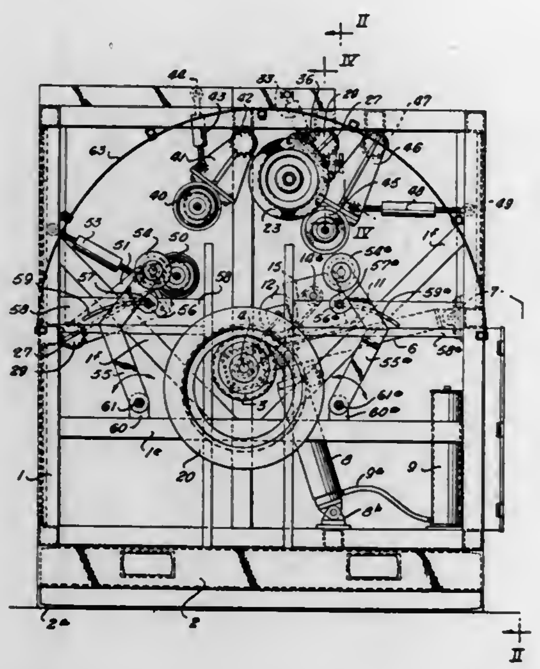
Filed Jan. 9, 1973, Ser. No. 322,100

Int. Cl. A46b *13/02*

U.S. Cl. 15—21 C **12 Claims**

1. In a device for cleaning the horizontal and vertical peripheral surfaces of concrete pipe casting pallets, said pallets having a central passage therethrough and a peripheral rim: a frame; a lifting roller having a peripheral rim thereabout arranged to pass through the passage in the pallet and engage the edge thereof to suspend the pallet thereon; first and second brushes rotatably supported by the frame arranged to engage surfaces of the pallet; bristles on said first brush en-

gageable with horizontal surfaces on the pallet; bristles on said second brush engageable with vertical surfaces on the pallet; means to raise the lifting roller to move the pallet into engagement with the bristles on the first and second brushes; means to rotate the lifting roller about a horizontal axis; and means to rotate the brushes.



3,849,821

SUBMERGED TUNNEL BRIDGE

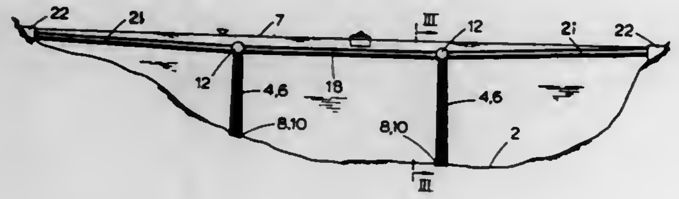
Arnulf Arild, Sandvika; John Creed, Ski; Olav Folkestad, Stabekk; Erik Odegard, Lillehammer; Anton Brandtzaeg, Trondheim; Arne Brigt Bru Selberg, Trondheim, and Nils Tangsrud, Trondheim, all of Norway, assignors to Norconsult A.S., Hovik, Norway

Filed Apr. 3, 1972, Ser. No. 240,722

Claims priority, application Norway, Apr. 2, 1971, 1261/71

Int. Cl. E01d *15/14*

U.S. Cl. 14—27 **7 Claims**



1. A submerged tunnel bridge of the type extending from opposite land connections across a body of water below the surface thereof, said tunnel bridge comprising:

at least one buoyant anchoring pontoon positioned at a predetermined position below said surface of said body of water;

tube-shaped tunnel bridge sections positioned at said predetermined position and connected between adjacent of said anchoring pontoons and to said opposite land connections;

anchoring means connected to said anchoring pontoons and to the bottom of said body of water for submerging and maintaining said anchoring pontoons and said tunnel bridge sections at said predetermined position below said surface of said body of water;

the net buoyancy of said tunnel bridge sections at said predetermined position being approximately zero; and

the buoyancy of said anchoring pontoons at said predetermined position being sufficient to sustain the weight of internal and external loads imparted to said tunnel bridge sections.

3,849,822

FOOTWEAR WIPING MACHINE

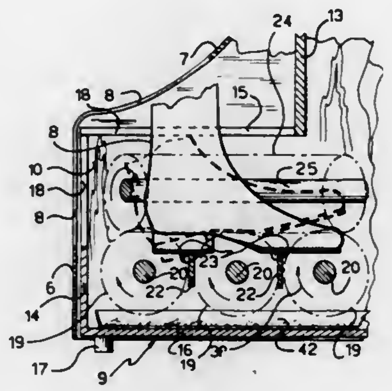
Gerard Ouellette, 17-4th Ave., South Roxboro, Province of Quebec, Canada

Filed July 23, 1973, Ser. No. 381,535

Claims priority, application Canada, July 26, 1972, 148027

Int. Cl. A47l *23/02*

U.S. Cl. 15—36 **4 Claims**



1. A footwear wiping machine comprising a housing having a front wall and an opening in said front wall for receiving a user's foot clad with footwear, a plurality of rotary brushes journalled in said housing, disposed below the level of said housing opening, in side-by-side relation with their rotational axes substantially parallel and substantially horizontally disposed transversely of said opening, power means to rotate said brushes and wherein said brushes are drivingly interconnected to rotate in the same direction and with their top portion away from said front wall, said brushes adapted to engage and wipe the sole of said footwear, and further including a pair of additional rotary brushes disposed above the plurality of brushes with their rotational axes horizontally disposed converging towards the back end of the housing opening to engage the top and sides of the upper of a footwear resting on said first-named brushes.

3,849,823

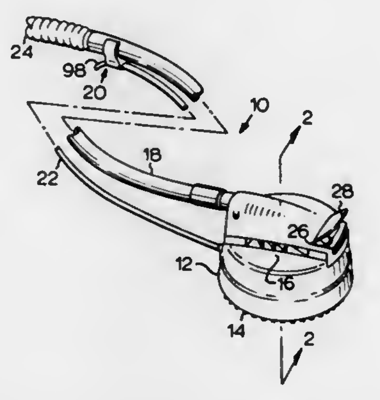
APPARATUS FOR SCRUBBING RUGS, FLOORS AND THE LIKE

Gerald James Adamson, Scarborough, and James Kenneth O'Grady, Toronto, Ontario, both of Canada, assignors to The Filter Queen Corporation Limited, Toronto, Ontario, Canada

Filed May 25, 1972, Ser. No. 257,038

Int. Cl. A47l *11/34*

U.S. Cl. 15—50 R **7 Claims**



1. A device for washing floor coverings such as carpets and the like, the device comprising:

a housing defining a generally cylindrical skirt disposed about an upright axis, and a reservoir above the skirt for storing soap solution and the like;

a valve assembly coupled to the housing and operable to permit soap solution to flow from the reservoir to within the skirt;

a brush mounted within the skirt for rotation about said upright axis and having bristles extending downwardly for engagement with the floor covering;

drive means coupled to the housing and operably coupled to the brush for rotating the brush to create relative movement between the bristles and the floor covering; and

a drive coupling connecting the drive means to the brush, the drive coupling comprising: an inner element coupled to the drive means; an outer element coupled to the brush and spaced axially below the inner element; generally upright straps connected at upper ends thereof to the inner element and at lower ends thereof to the outer element; spring means biasing the outer element axially downwards so that the bristles project downwardly beyond the skirt such that in use when the brush encounters a relatively high resistance to rotation, the straps move towards horizontal positions, the spring means is further stressed, and the brush moves upwards so that the skirt contacts the floor covering whereby the brush resistance is reduced and brush stalling is substantially obviated.

3,849,824

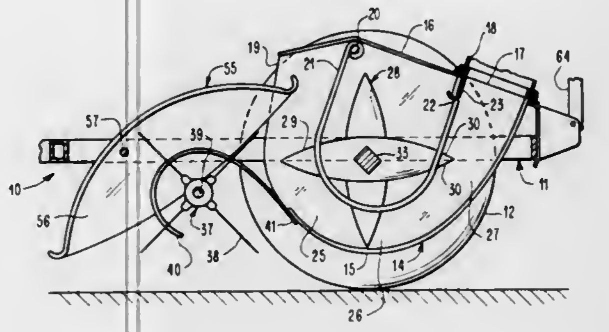
APPARATUS FOR COLLECTING DEBRIS

Charles W. Doering, Clarksville, Ind., assignor to Brinly-Hardy Co., Inc., Louisville, Ky.

Filed Mar. 16, 1973, Ser. No. 342,166

Int. Cl. E01h *1/04*

U.S. Cl. 15—83 **19 Claims**



1. An apparatus for collecting debris including:

a frame having wheels to support said frame;

a housing supported by said frame;

said housing having means to receive debris;

a plurality of blades disposed within said housing and mounted for rotation about an axis, said blades being spaced from each other in the axial direction;

means disposed within said housing between each adjacent pair of said blades and cooperating with said housing to form a debris confining chamber within said housing and a compression chamber within said housing between said receiving means and said debris confining chamber;

said blades advancing the debris from said receiving means to said compression chamber and from said compression chamber to said debris confining chamber to compress debris received by said receiving means by said blades advancing from said receiving means to said compression chamber, from said compression chamber to said debris confining chamber, and from said debris confining chamber to said receiving means;

said disposed means cooperating with said blades to substantially strip any debris from said blades prior to said blades advancing from said debris confining chamber to said receiving means;

said debris confining chamber having an outlet adapted to receive a debris containing device;

means to rotate said blades;

and means rotatably supported by said frame to pick up debris for collection and rotated when said blades are rotated.

3,849,825

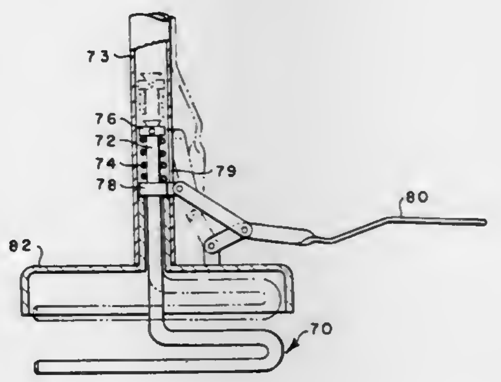
MOP HEAD SUPPORT TOOL

Willard H. Shortte, Jr., LaGrange, Ga., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 117,518, Feb. 22, 1971, Pat. No. 3,735,441. This application Mar. 6, 1973, Ser. No. 338,429

Int. Cl. A47l *13/24*

U.S. Cl. 15—152 **6 Claims**



1. A tool for supporting a mop head comprising an elongate handle and mop head retaining means attached to one end of said handle, said retaining means comprising a trough-shaped section having closed ends attached to said end of and extending generally perpendicular to the axis of the handle, a first rod-shaped section extending generally co-extensive with said trough-shaped section, a second rod-shaped section attached to said first section extending along the axis of said handle and operatively connected to the handle for movement into and out of the end of the handle to locate said first rod-shaped section in and out of mating relation with the troughshaped section to releasably grip and retain a mop head therebetween, and wherein said first rod-shaped section comprises first and second elongate portions extending in spaced generally parallel relation generally perpendicular to the axis of the handle, said portions being connected at one end with the other ends thereof forming an open side whereby a mop head may be readily inserted and retained therebetween and may be readily released therefrom by gravity when the open side is positioned in a downward facing direction.

3,849,826

VEHICLE POLISHING APPARATUS

Shigeo Takeuchi, Nagoya, Japan, assignor to Takeuchi Tekko Kabushiki Kaisha, Nagoya-shi, Aichi-ken, Japan

Filed July 3, 1973, Ser. No. 376,207

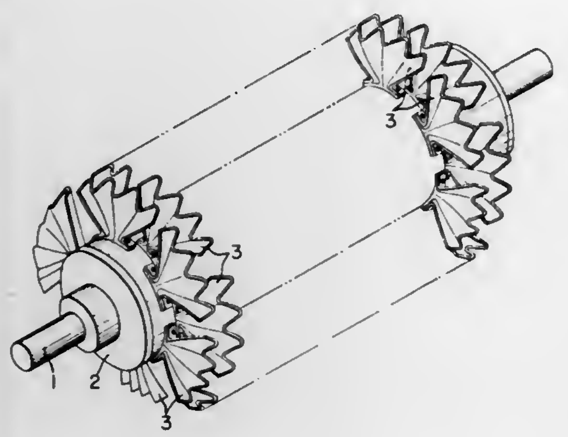
Claims priority, application Japan, Sept. 12, 1972, 47-105740

Int. Cl. B24d *13/04, 13/06*; **B60s** *3/06*

U.S. Cl. 15—230.14 **3 Claims**

1. A cylindrical rotary buffer for use in vehicle polishing apparatus, said buffer comprising a shaft, a cylindrical body fixedly mounted on said shaft, a multitude of radially fluted fan-shaped flexible elementary buffer elements, each buffer element having a base end and an outer end, and fastener means removably fastening said buffer elements at their base ends to the outer peripheral surface of said cylindrical body at spaced locations thereon with their outer ends spaced from each other, said buffer elements extending substantially in planes normal to the axis of said cylindrical body in staggered relation to each other and expanding radially outwardly from

their base ends to their outer ends with their outer peripheral edges corrugated in wave-like form, whereby said buffer elements can be readily replaced individually when damaged or worn out.

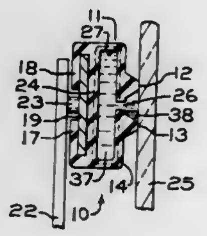


3,849,827

WINDOW WASHER SEAL ASSEMBLY

John P. Coropolis, Newark, and James A. Briscoe, Doyleto, both of Del., assignors to The B. F. Goodrich Company, New York, N.Y.

Filed May 21, 1973, Ser. No. 362,088
Int. Cl. B60s *1/46*
U.S. Cl. 15—250.01 **11 Claims**



1. A window washer and seal assembly comprising a tubular body of flexible, resilient material, a pair of blades extending along one face of said tubular body in spaced-apart relation providing a channel between said blades, mounting means on said tubular body for positioning said body in fixed relation to an associated window, means for communicating a fluid medium into said tubular body for distending said body and thereby biasing at least one of said blades into wiping engagement with said associated window and means for directing the fluid medium into said channel for wetting said associated window and said blades whereby said associated window may be washed and wiped when moved past said blades.

3,849,828

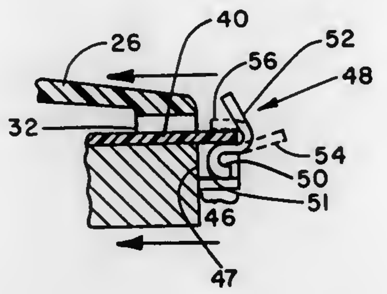
RETAINER CLIP FOR WINDSHIELD WIPER BLADES

Irwin C. Cone, Littleton, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Apr. 2, 1973, Ser. No. 347,582
Int. Cl. B60s *1/04*
U.S. Cl. 15—250.42 **12 Claims**

1. In a wiper assembly having a blade subassembly slidably connected to a pressure-distributing superstructure, said blade subassembly including a squeegee member having a wiping portion joined to a retention portion through a reduced neck and a backing strip having juxtaposed projections upstanding from a connecting bridge defining a longitudinal channel for receiving the retention portion of the squeegee lengthwise therein, and wherein said channel extends marginally beyond the respective ends of the squeegee to define end receiving portions, the improvement comprising:

a deformable clip having a squeegee stop portion securely engaged within at least one of the end receiving portions of the channeled backing strip, and an abutment portion, connected to the squeegee stop portion, which extends upwardly from the channel and above the connecting bridge of the backing strip, said abutment portion being deflectable whereby the blade subassembly may be detached from the superstructure without separating the clip from the blade subassembly.

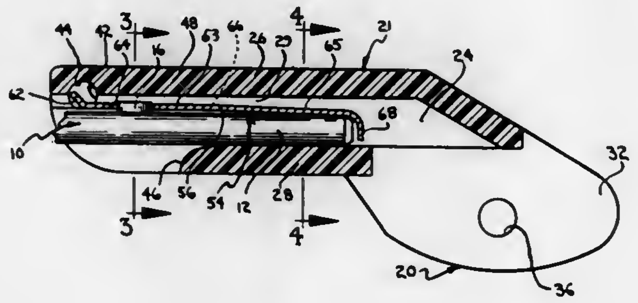


3,849,829

STRAIGHT END ARM CONNECTOR

Leo J. Wubbe, Beverly Shores, Ind.

Filed Oct. 26, 1972, Ser. No. 294,819
Int. Cl. B60s *1/40*
U.S. Cl. 15—250.32 **8 Claims**



1. A connector for a windshield wiper arm comprising a housing having an open end portion, an elongate spring means in said housing in alignment with said open end portion, said spring means having an anchoring portion, an attaching portion, and a retaining portion, said anchoring portion engaging the inside surface of said housing for preventing forward movement of said spring means, said attaching portion being secured in opposite side walls of said housing with the retaining portion being spring-urged toward the opposite inside surface of said housing, said spring means having an opening formed in said attaching portion and adapted to receive an abutment on an end portion of said windshield wiper arm, and said retaining portion of the spring means urging the end portion of the arm against said opposite inside surface of said housing whereby the wiper arm is positively connected to said connector.

3,849,830

TEST TUBE WASHER

William J. Wagner, 238 Covina Ave., Long Beach, Calif. 90803

Filed Sept. 18, 1973, Ser. No. 398,531
Int. Cl. A47l *7/00;* **B08h** *9/08*
U.S. Cl. 15—302 **8 Claims**

1. Apparatus for washing and aspirating a test tube comprising:

external means conformed for insertion into a test tube including a first internal cavity having formed therein a drain orifice proximate the bottom end across the exterior surface thereof;

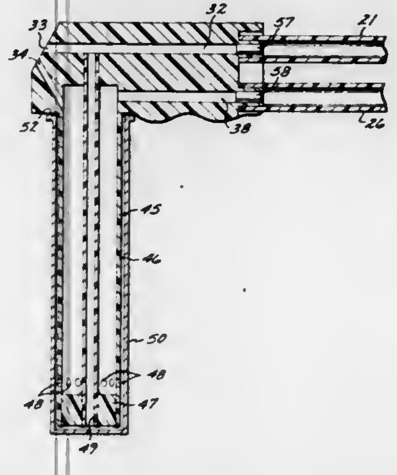
internal means mounted in said first internal cavity including a second internal cavity connected at the bottom end thereof to an aspiration orifice formed to communicate with the exterior of the bottom end of said external means;

handle means connected to top ends of said exterior and interior means for providing a grasping surface;

first manifold means formed in said handle means connected to said first interior cavity at a first end thereof and including a first vent port communicating to the exterior of said handle for selective closure by any digit of a hand and adapted to connect at a second end thereof to a source of wash solution, for selectively communicating the wash solution into said first interior cavity;

second manifold means formed in said handle means connected to said second internal cavity at a first end thereof and including a second vent port communicating to the exterior of said handle for selected closure by any digit of a hand and adapted to connect at a second end thereof to a vacuum for selectively withdrawing the wash solution received in said test tube; and

sealing means disposed on said external means for affecting a seal between said test tube and said external means.

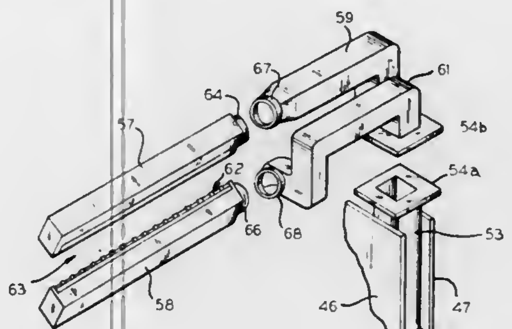


3,849,831

AIR DRYER EQUIPMENT

Walton DeVerter, Chicago, and John M. Lamberty, Des Plaines, both of Ill., assignors to Dee Electric Company, Chicago, Ill.

Filed Dec. 20, 1972, Ser. No. 316,884
Int. Cl. A47l *5/38*
U.S. Cl. 15—302 **7 Claims**



2. A power wash cleaning system for processing articles of manufacture,

said system comprising wash stations for washing said articles,

means for drying the articles of manufacture after the washing,

said drying means comprising air knife means for directing a stream of air at said articles,

said air knife means comprising a chamber,

said chamber having a polygonal cross section,

said chamber having a series of apertures for directing the air uniformly against the articles of manufacture passing proximate thereto,

means for supplying air under pressure into said chamber, and

said apertures being at one of the longitudinal meeting points of two sides of the said chamber.

4. The power wash cleaning system of claim 2 wherein said chamber is a parallelepiped comprising side walls and a pair of end walls,

an opening at one of said end walls for coupling said chamber to said means for supplying air,

said air chamber being closed at the other of said end walls, and

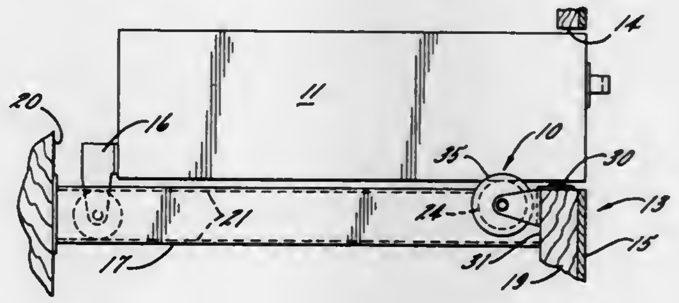
said apertures being along the junction of a pair of said side walls of said chamber.

3,849,832

CABINET DRAWER ROLLERS AND METHOD OF MOUNTING SAME

Richard L. Bildahl, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.

Filed May 2, 1972, Ser. No. 249,700
Int. Cl. B60b *33/00*
U.S. Cl. 16—18 **1 Claim**



1. A pair of roller assemblies for supporting a drawer on the crossrail of a cabinet including a right-hand bracket with an inverted, generally L-shaped body having a substantially horizontal leg with a vertical leg joined integrally with one end of said horizontal leg, a pair of parallel arms integrally connected with said vertical leg and extending outwardly therefrom beyond the one end of said horizontal leg, a left-hand bracket constructed substantially as a mirror image of said right-hand bracket, a roller journaled between the arms of each of said brackets to rotate about a substantially horizontal axis, and a frangible web normally connecting the free ends of the horizontal legs of each of said brackets to hold said brackets together in a unitary assembly to be broken apart along said web to separate the brackets for mounting at opposite ends of the crossrail.

3,849,833

COMPOSITE DRAWER HANDLE

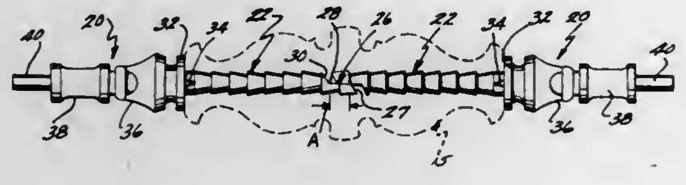
William Doyle Watt, Jr., Grand Rapids, Mich., assignor to Keeler Brass Company, Grand Rapids, Mich.

Filed Sept. 7, 1973, Ser. No. 395,183
Int. Cl. A47b *95/02*
U.S. Cl. 16—125 **12 Claims**

1. A composite handle comprising:

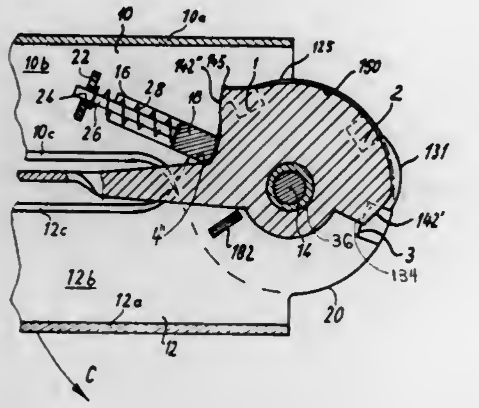
a substantially rigid handle member including an aperture extending longitudinally therethrough; and

a pair of bail end inserts, each including a shank having rearwardly extending serrations cooperating between said shank and the inner surface defined by said aperture of said handle member to secure said inserts in said member when said shanks are force-fitted into opposite ends of said aperture of said handle member, each insert further including aligning means at an end of said shank for interengaging the end of an insert fitted within said handle member from an opposite end thereof to align said bail end inserts and prevent relative rotation between them.



3,849,834
LOCKABLE HINGE JOINT

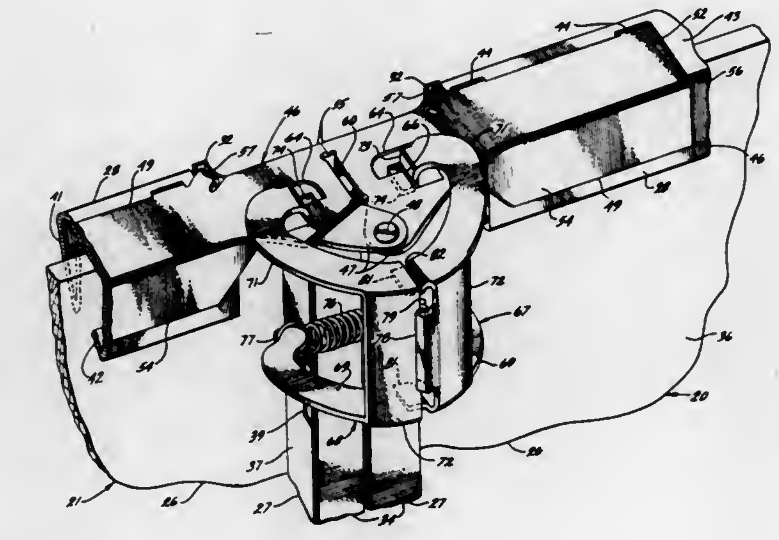
Otto Mayer, Muhlstrasse 76, D-7067 Pluderhausen, Germany
Filed Feb. 9, 1973, Ser. No. 330,900
Claims priority, application Germany, Feb. 11, 1972, 2206681The portion of the term of this patent subsequent to Feb. 22, 1989, has been disclaimed.
Int. Cl. E05d *11/10*
U.S. Cl. 16—145 **7 Claims**



1. A joint having two arms pivotable about a common axis and lockable with respect to each other in at least one predetermined angular position comprising:
- locking means mounted within a first arm for radial movement with respect to the common axis;
- a peripheral edge on the second arm extending concentrically about the common axis and having at least one locking detent formed thereon;
- biasing means for urging said locking means towards said peripheral edge;
- a release lever pivotable about the common axis relative to the arms and having a cam profile including an eccentric portion in relation to its center and rising to a first release face to a high point outside said peripheral edge, a blocking sector portion following the hign point and substantially concentric and slightly below said peripheral edge, a second release face following the blocking sector portion, and an abutting surface for confining the rotation of said release lever; and
- stop means positioned in the second arm for limiting the movement of said release lever relative to the second arm so that the travel of said release lever ends when the abutting surface strikes said stop means preventing the cam high point from engaging said locking means when an unlocking action is performed by said second release face.

3,849,835
SPRING HINGE FOR BIFOLD DOORS

Torsti T. T. Jerila, Baldwin Park, Calif., assignor to Acme General Corp., Monrovia, Calif.
Filed Sept. 19, 1972, Ser. No. 290,401
Int. Cl. E05f *1/14*
U.S. Cl. 16—182 **37 Claims**



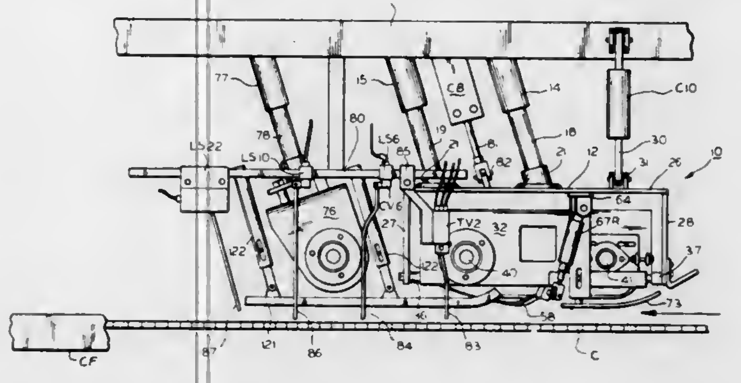
1. A spring hinge comprising:
- a first hinge leaf;
- a second hinge leaf;
- a hinge pivot interconnecting the first and second hinge leaves for pivoting between an open position and a closed position;
- a first spring support member having a general U-shape with a first end in pivotable engagement with the first hinge leaf;
- a second spring support member having a general U-shape with a first end in pivotable engagement with the second hinge leaf;
- said hinge pivot being on one side of a line between the loci of pivotable engagement of the respective spring support members with the hinge leaves in the closed position and not on the same side of the line in the open position;
- means for pivotably interconnecting the first and second spring support members in scissors fashion comprising a pivot having a pivot axis along the bight of the U, said pivot axis being substantially parallel to the pivot axis of the hinge pivot; and
- spring means on the same side of the pivot axis of the spring support members as is the pivot axis of the hinge pivot interconnecting the second ends of the respective spring support members for urging the second ends towards each other.

3,849,836
RIB CUTTING APPARATUS

Vincent E. Bernard, Cedar Falls, and Duane F. MacGregor, Bancroft, both of Iowa, assignors to Container Corporation of America, Chicago, Ill.
Filed Dec. 20, 1973, Ser. No. 426,816
Int. Cl. A22b *5/20*
U.S. Cl. 17—1 R **7 Claims**

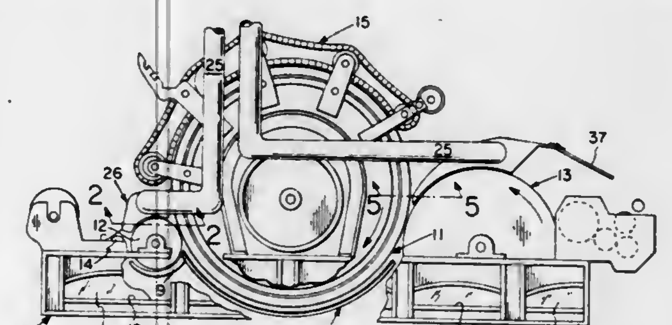
1. In an animal side processing machine having a frame and a conveyor movable with respect to said frame for conveying an animal side having a rib section therein remaining after previously cutting the loin therefrom, apparatus for cutting the remaining rib section from said animal side including the brisket thereof from said remaining animal side, said apparatus comprising:
- a. a rib knife support frame including a rib knife mounted thereon;
- b. means for tilting said rib knife support frame so that the end of the rib knife adjacent said brisket is raised by an

amount whereby the rib knife follows the curve of said brisket and the corresponding ends of said ribs;
- c. means for twisting said rib knife along the longitudinal axis thereof so as to present a cutting edge adjacent one end of said knife at an attitude to cut beneath the brisket of said rib section and close thereto and subsequently to change its attitude concomitantly with the change in attitude of said tilting means so as to cause said rib knife to emerge out of the remaining animal side and cause lean meat to remain intact therein.



3,849,837
AIR CONTROL SYSTEM FOR CARDING MACHINES

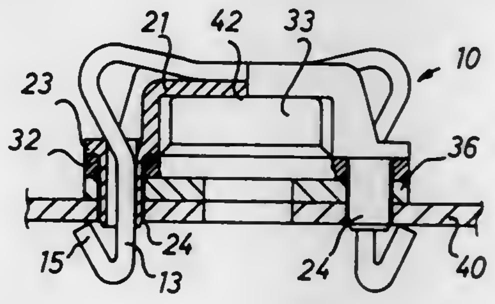
Oscar Bass, Jr., Charlotte; Robert Bain Jenkins, Sr., and Ivan Horvat, both of Gastonia, all of N.C., assignors to Jenkins Metal Shops, Inc., Gastonia, N.C.
Continuation-in-part of Ser. No. 494,391, Oct. 11, 1965, abandoned. This application Mar. 16, 1967, Ser. No. 623,721
Int. Cl. D01g *15/82*
U.S. Cl. 19—107 **2 Claims**



1. A vacuum system for controlling the disposition of waste generated by processing of a textile web on a carding machine having a lickerin, a main cylinder, and a doffer, said device comprising:
- a. first suction means arranged adjacent the point where the surfaces of the lickerin and main cylinder diverge to draw off surface air currents generated through rotation of the main cylinder and the lickerin;
- b. second suction means comprising a housing disposed above said doffer and having an opening arranged adjacent the point where the surfaces of the doffer and main cylinder converge to draw off surface air currents generated through rotation of the main cylinder at the nip of the main cylinder and the doffer;
- c. said first and second suction means cooperating with one another to reduce the air turbulence in the area beneath the main cylinder;
- d. a frame supporting said lickerin, main cylinder, and doffer and said frame including means enclosing the area beneath the lickerin, main cylinder, and doffer;
- e. a source of suction cooperatively connected to said first suction means, said source of suction providing a sufficient amount of suction through said opening to provide a negative pressure zone which is more attractive to the surface air currents than the atmosphere;
- f. said source of suction also being operatively connected to said second suction means, said source of suction providing sufficient suction to create a negative pressure zone which attracts a significant portion of the air currents created through the clockwise rotation of the main cylinder before these currents are delivered into the area beneath the main cylinder; and
- g. said first suction means comprising a nozzle including a top wall, a pair of spaced side walls depending from the top wall and extending toward the lickerin roll, each of said side walls having a suction orifice providing communication between the atmosphere and the interior of the nozzle, one of said side walls being positioned adjacent the point where the surfaces of the main cylinder and lickerin diverge, the other of said walls being positioned on the opposite side of the lickerin, and a pair of spaced end walls joined to the top and side walls.

3,849,838
DEVICES FOR FASTENING THE CASING OF A SEMICONDUCTOR COMPONENT TO A MOUNTING PLATE

Klaus Friedrich Hehl, Norderstedt, Germany, assignor to ITW-Ateco GmbH, Norderstedt, Germany
Division of Ser. No. 333,200, Feb. 16, 1973, Pat. No. 3,833,991. This application Feb. 20, 1974, Ser. No. 444,194
Int. Cl. A44b *21/00;* **H05k** *3/30;* **H02b** *1/04*
U.S. Cl. 24—73 C **8 Claims**



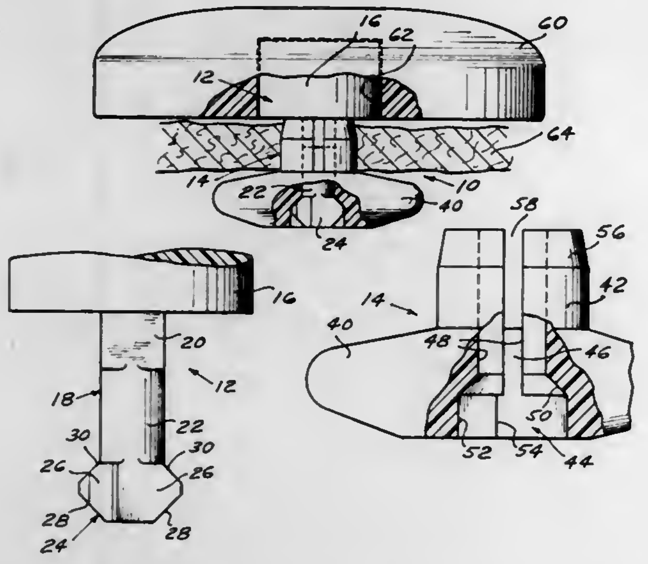
1. A device for fastening the casing of a semiconductor component to an apertured mounting place and, in particular, to a cooling sheet, said device comprising a substantially U-shaped bow of resilient material the web of which is designed to press against the cap of a semiconductor casing, said bow being provided at the free ends of its legs with reversely bent hooks, said legs being arranged to be drawn through apertures in said mounting plate by means of said reversely bent hooks which will anchor the legs of said bow on the opposite side of said mounting plate from the side against which the said casing bears, and an insulating member having a strip portion underlying said resilient bow and bushing members associated with said strip which are adapted to project through said apertures and insulate the walls of said apertures from the legs of said bow.

3,849,839
EASILY ATTACHABLE FASTENER

Eric Zimber, 20 Wendell St., Hempstead, N.Y. 11530
Filed July 2, 1973, Ser. No. 375,328
Int. Cl. A44b *1/32*
U.S. Cl. 24—109 **5 Claims**

1. A fastener comprising: a pin member, said pin member having a base and a post integrally extending from said base, said post having at least a shank section of square cross-section adjacent said base and having a head section, said head section having a pair of opposed laterally extending projections, said projections being chamfered; and a socket member of resilient material, said socket member having a base and a sleeve integrally extending from said base, said sleeve being slotted and said sleeve and said base having a communicating passageway divided into first, second and third axially displaced sections, said first section being remote from said base and having a cross section for accepting the

passage of the head section of said pin member only when in a particular relative rotational position, said first section having at least one dimension greater than the length of a side but less than a diagonal of the square cross section of said shank section of said pin member, said second section being frustoconical, said third section being within said base and having a substantially cylindrical form for receiving said head section so that the shank section of said pin member will be in the first section of said socket member and stop surfaces within said third section, whereby a relative rotation of said members by a first amount while said projections ride over the frustoconical surface of said second section results in a resilient spread of said sleeve so that any further rotation in the same direction is biased to continue until said stop surfaces in said third section of said socket member abut against the lateral projections of said pin member to lock the two members together.



3,849,840
METHOD FOR IMPARTING PRESSURE SENSITIVE ADHESION TO VELVET TYPE FASTENERS

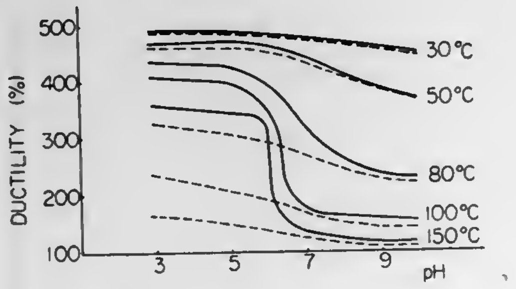
Fukuo Yamada; Yoshihiro Fukuda, Osaka, and Toru Uraya, Kobe, all of Japan, assignors to Kanebo Limited, Tokyo, Japan

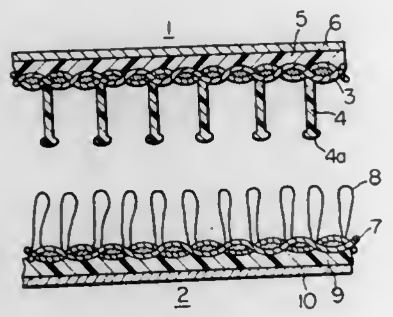
Filed Sept. 20, 1973, Ser. No. 399,114

Claims priority, application Japan, Sept. 26, 1972, 47-96937

Int. Cl. C09j *1/00, 3/14, 7/04*

U.S. Cl. 24—204 **8 Claims**





1. A method for imparting pressure sensitive adhesion to velvet type fasteners, comprising applying to the respective back surfaces of the male and female pieces of a velvet type fastener composed of synthetic fibers, a composition consisting of: 100 parts by weight of a polymer, containing at least 65 percent mol of an ester of an acrylic acid or methacrylic acid and from 0.2 to 5 parts by weight of glycidyl ester of an unsaturated organic acid; from 0.5 to 5 parts by weight of a zirconyl salt of organic acid, and; from 0.01 to 0.1 part by weight of a volatile acid addition salt of an organic amine.

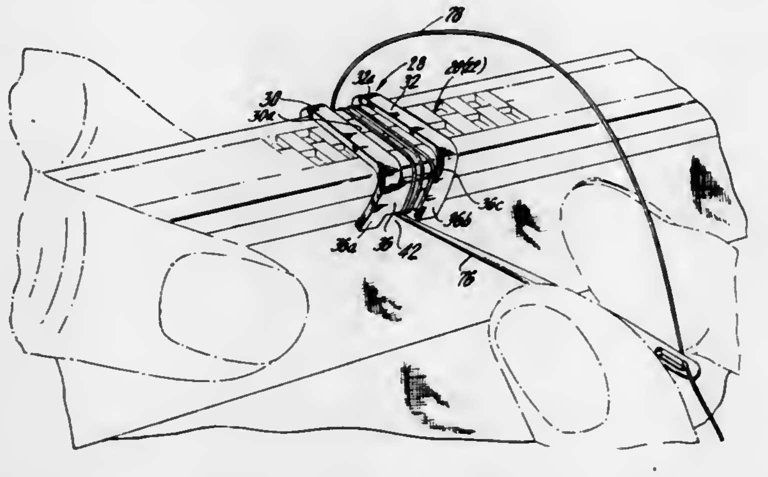
3,849,841
SEAM TYPE ZIPPER WITH ADJUSTABLE BOTTOM STOP

Andrew C. Borzner, Jr., Millburn, N.J., assignor to American Can Company, Greenwich, Conn.

Filed Jan. 2, 1973, Ser. No. 320,111

Int. Cl. A44b *19/00*

U.S. Cl. 24—205.11 R **19 Claims**



1. A seam type zipper including a pair of elongated tapes for attaching said zipper to a garment; a pair of elongated chains of engageable fastening elements attached to said tapes; fixed bottom stop means engaged with said chains of fastening elements, said fixed bottom stop means being attached in a permanent position and securing the terminal portions at one end of said chains of fastening elements in an engaged position; slider means engageable with said chains of fastening elements and movable longitudinally thereon, said slider means being movable longitudinally toward the free ends of said chains for engaging said fastening elements and being movable longitudinally in the opposite direction for disengaging said fastening elements; a selectively locatable bottom stop engageable with said chains elements at a selected point between the ends of said pair of elongated chains and spaced from said fixed bottom stop to provide a bottom stop for said slider means, said selectively locatable bottom stop having a top web and a pair of spaced side flanges extending from said web for engagement with said chains of fastening elements; said selectively locatable bottom stop having preformed thread guide surfaces forming a transversely extending thread receptacle for receiving thread attaching said selectively locatable bottom stop on said fastening elements at said selected point, said thread receptacle extending in a direction generally transverse to said longitudinally extending fastening elements and to the direction of movement of said slider means.

3,849,842
SLIDE FASTENERS

Tadahiro Yoshida, Fujisawa, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

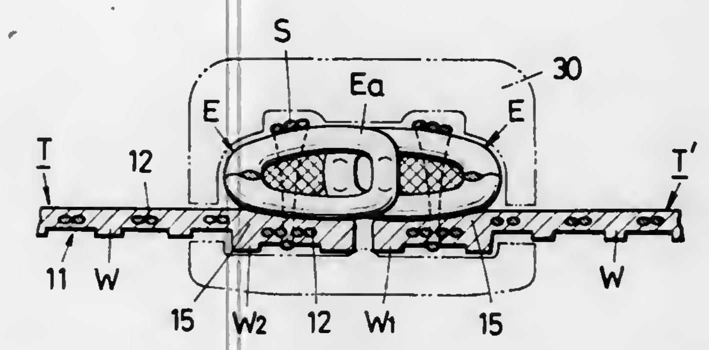
Filed Aug. 16, 1972, Ser. No. 280,998

Claims priority, application Japan, Aug. 18, 1971, 46-62746; Aug. 18, 1971, 46-62747; Aug. 18, 1971, 46-62748

Int. Cl. A44b *19/12*

U.S. Cl. 24—205.1 C **4 Claims**

1. A slide fastener comprising a pair of opposed carrier tapes of a warp-knitted structure, rows of interlocking fastener elements mounted thereon, each of said tapes having wales of warp stitches connected coursewise by laid-in weft threads and alternated with grooves greater in width than said wales, a plurality of reinforcing additional warp threads filling the bottom of said grooves substantially wale-to-wale solely along the longitudinal edge portion of said tape and a line of sewing stitches securing said row of fastener elements to said carrier tape and running through said additional warp threads in said groove adjacent the longitudinal edge of said carrier tape.



3,849,843
SLIDE FASTENER

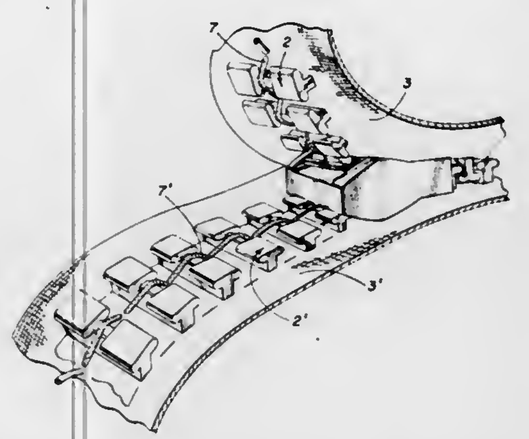
Herbert Alberts, Rua Capitao Luiz Romez 312, Sao Paulo, Brazil

Filed Apr. 26, 1973, Ser. No. 354,843

Claims priority, application Germany, May 17, 1972, 2223943

Int. Cl. A44b *19/08*

U.S. Cl. 24—205.12 **3 Claims**



1. A slide fastener assembly which comprises two mutually overlapping edge portions of flexible sheet elements, two stringers, two rows of engaging elements, the engaging elements of each row being secured to one of said stringers and spaced in the longitudinal direction of said stringers to define spaces of substantial length in which said stringer is exposed between adjacent engaging elements carried by it, each of said engaging elements comprises two engaging knobs and a bridge portion, which is disposed between said knobs and recessed from the outer ends thereof, said knobs and bridge portion of each engaging element protruding from and being aligned transversely to the stringer carrying them, said knobs having enlarged heads spaced from said stringer and stems connecting said heads to said stringer, each of said bridge portions having a rounded surface and being substantially flush with the associated stems transversely of said stringer, the two knobs and the bridge portion of each of said engaging elements defining a channel of given width, said knobs of each row being adapted to interengage with the knobs of the other row, and two sewing threads, each of which securing one of said stringers to one of said edge portions and being supported by the channels defined by the knobs and bridge portions of the associated row and extending through the exposed portions of said stringer and having uncontacted portions which in said spaces extend generally longitudinally of and are spaced from the associated stringer and are disposed between and laterally engageable by said knobs of the other row when said knobs of both rows are thus interengaged to connect said edge portions and said bridge portion having transversely of said stringer a dimension which is approximately twice the diameter of said thread.

3,849,844
APPARATUS FOR CRIMPING OF FILAMENTARY MATERIAL

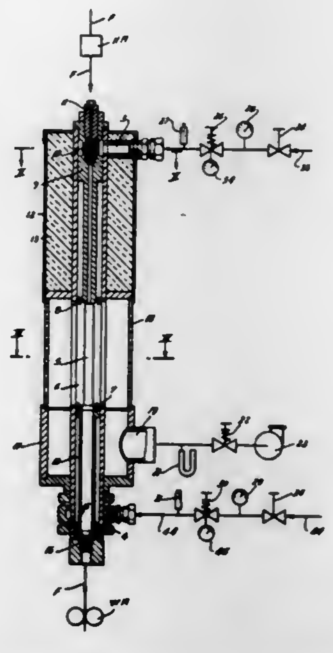
Ernst Bauch, Hordesholm, and Juergen Beltz, Neumuenster, both of Germany, assignors to Neumunstersche Maschinen- und Apparatebau Gesellschaft mbH, Nuemunster, Germany

Division of Ser. No. 207,826, Dec. 14, 1971, Pat. No. 3,802,038. This application Jan. 19, 1973, Ser. No. 325,012

Claims priority, application Germany, Dec. 16, 1970, 2061814; Mar. 9, 1971, 2111163

Int. Cl. D02g *1/00, 1/16*

U.S. Cl. 28—1.3 **13 Claims**



1. Apparatus for crimping filamentary materials, comprising first means surrounding an elongated space having axially spaced ends and radial venting ports intermediate the same; second means for entraining, heating and inserting with a stream of hot fluid into said enclosed space in the region of one of said ends and in a first direction a filamentary material to be crimped, so that such material becomes plasticized, advances toward the other of said ends and becomes crimped whereas said hot fluid vents radially through said venting ports; third means for admitting into said enclosed space, in the region of said other end and in a second direction counter to said first direction, a cool gas for cooling said crimped filamentary material and setting the crimp therein and for subsequent radial venting through said venting ports; and fourth means for withdrawing said filamentary material with set crimp from said enclosed space.

3,849,845
APPARATUS FOR NEEDLE-PUNCHING A WEB

Helmut Obenaus, Leonding, Austria, assignor to Dr. Ernst Fehrer Gesellschaft m.b.H. & Co. K. G. Textilmaschinenfabrik und Stahlbau, Linz, Austria

Filed Sept. 20, 1973, Ser. No. 399,064

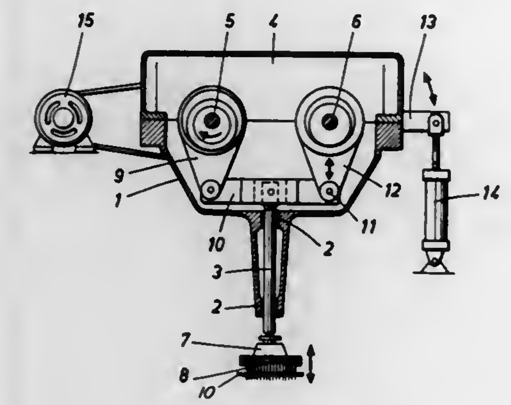
Int. Cl. D04h *18/00*

U.S. Cl. 28—4 R **4 Claims**

1. Apparatus for needle-punching a continuously advancing web, which comprises

a table formed with perforations and adapted to support said web as it is continuously advanced,
needle beam means spaced above said table,
needle board means carried by said needle beam means,
a multiplicity of needles which are carried by said needle

board means and depend therefrom and are in register with said perforations,
vertical push rod guides,
push rods connected to said needle beam means and vertically guided by said push rod guides and vertically reciprocable to impart to said needle beam means an up and down motion causing said needles to move into and out of said perforations,



driving eccentric shaft means,
a plurality of connecting rods connected to said driving eccentric shaft means,
a plurality of rocker levers, each of which has a fulcrum and is pivoted to one of said push rods and one of said connecting rods, and
adjusting means adapted to adjust said fulcrum of each of said rocker levers in height during the rotation of said driving eccentric shaft means.

3,849,846

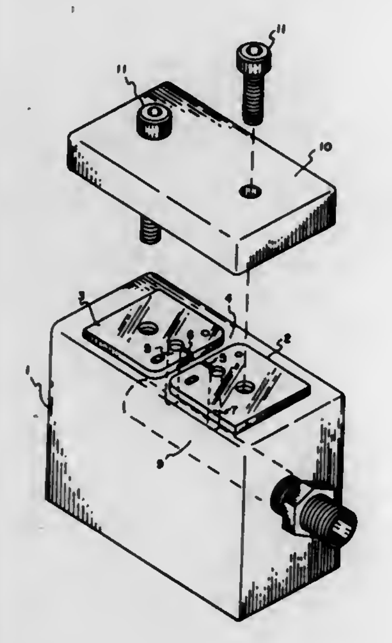
APPARATUS FOR FLUID TREATMENT OF YARN

Fredrick A. Ethridge, Charlotte, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.

Continuation-in-part of Ser. No. 152,307, June 11, 1971, abandoned. This application Apr. 24, 1973, Ser. No. 354,045

Int. Cl. D02g *1/16*

U.S. Cl. 28—1.4 **10 Claims**



1. A yarn processing jet of trilaminar construction comprising a yarn duct having at least one fluid entry port thereto, said duct being formed by a discontinuous inner lamina which is recessed from the edges of the outer lamina, the edges forming a portion of the entrance and exit of said duct are radiused in a manner such as to maintain a quadrilateral cross section in said duct.

3,849,847

PROCESS FOR STORING TEXTILE FILAMENTS IN KNITTED FORM

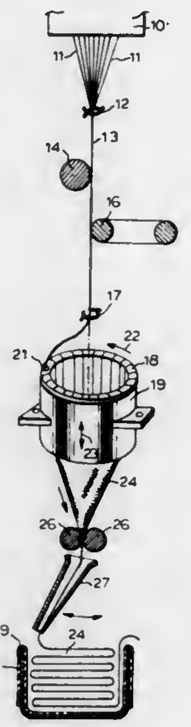
Claude Corbiere, Villa "Le Regal" 42, Riorges, France

Filed Nov. 28, 1972, Ser. No. 309,963

Claims priority, application France, Nov. 29, 1971, 71.42787

Int. Cl. D04b *19/00*

U.S. Cl. 28—72.16 **6 Claims**



1. A process for manufacturing textile filaments from a polymer comprising the steps of:
spinning the polymer into a filament yarn;
delivering the filament yarn to a circular one-cut knitting machine immediately after spinning;
knitting the filament yarn into a continuous nonrotating tubular structure;
advancing the knitted structure into a storage container;
cutting the knitted structure after a pre-determined amount of structure has accumulated;
stabilizing the filament yarn in the knitted structure while the knitted structure is in the storage container by atmospherically aging the knitted structure; and then
deknitting the filament yarn accumulated in the knitted structure to remove the slight twist imparted to the filament yarn during knitting of thee filament yarn, thus producing zero twist yarn for further processing.

3,849,848

METHOD FOR THE TREATMENT OF TEXTILE FIBRES

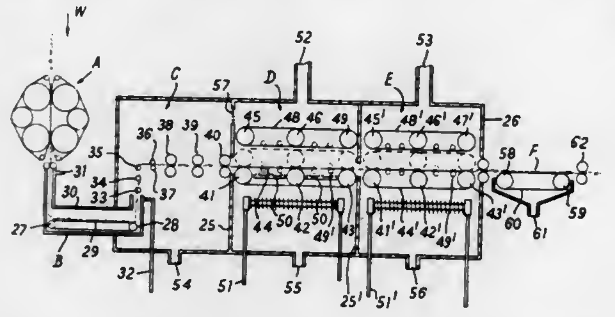
Ryo Umehara, and Fujio Bekku, both of Ichinomiya, Japan, assignors to I.W.S. Nominee Company Limited, London, England

Filed May 16, 1972, Ser. No. 253,797

Claims priority, application Japan, May 20, 1971, 46-83636

Int. Cl. D02g *3/36;* **D02j** *1/22*

U.S. Cl. 28—72.17 **21 Claims**



1. A method of crimping protein fibres comprising the steps of: applying to said fibres an aqueous solution containing at least 10 percent by volume of an alcohol; drafting said fibres; and releasing said drafting forces applied to said fibres whereby said fibres become crimped.

3,849,849

METHOD OF IDENTIFYING YARNS

Michael M. Gottlieb, New York, N.Y., assignor to Liberty Fabrics of New York, Inc., New York, N.Y.

Filed Apr. 27, 1973, Ser. No. 355,086

Int. Cl. D02h *3/00*

U.S. Cl. 28—72.5 **4 Claims**

1. A method of identifying yarns during the preparation of a warp of textured yarns which comprises the steps of:
arranging the yarns in accordance with a predetermined pattern utilizing a combination of stretch and set textured yarns;
at least partially winding the prearranged yarns on the warp;
relieving the tension of the warp yarns an amount sufficient so that the yarns assume a slack position; and
comparing the amount of slack displayed by the combination of yarns utilized in the pattern, those yarns displaying the greater amount of slack being identifiable as the set yarns whereas those with the lesser amount of slack being identifiable as the stretch yarns.

3,849,850

SYSTEM FOR AUTOMATED PRODUCTION OF SPARK PLUGS

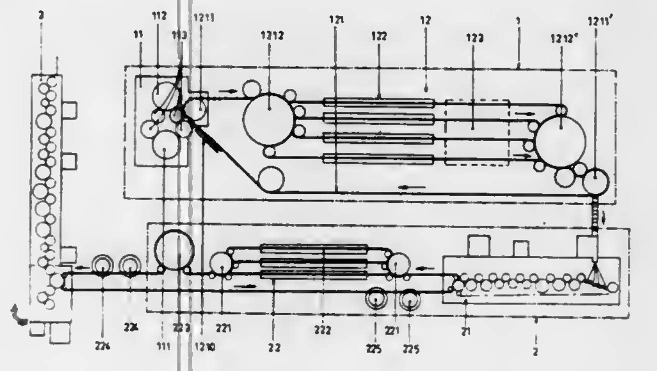
Rene Michel Goutard, Verrieres Le Buisson, France, assignor to Automatisme & Technique, Arcueil (Val de Marne), France

Filed Sept. 20, 1973, Ser. No. 398,927

Claims priority, application France, Sept. 22, 1972, 72.33739

Int. Cl. H01j *9/48*

U.S. Cl. 29—25.19 **22 Claims**



1. A system for automated production of spark plugs comprising:
a first insulator-production station, comprising insulator compressing means for forming insulators of compressed particulate dielectric material, machining means for shaping insulators and sintering means for sintering the insulators;
first transfer means for transferring the sintered insulators to a second station;
a second component-assembly station for receiving the sintered insulators from the first station and assembling central spark plug components, comprising means for inserting at least one electrically conductive elements into each insulator, together with a heat-curable cement, and curing means for subjecting the assembled insulators, conductive elements, and cement to heat to cure the cement and form complete central spark plug components;
second transfer means for transferring the central components to a third station;
and a third final assembly station for receiving the central components from the second station and assembling completed spark plugs, comprising means for mounting each central component in a conductive holder;
each of the first, second, and third stations operating at least partially in continuous kinematic motion;
at least one of the transfer means including storage means to compensate for limited differences in production rates in the two stations it interconnects;
and the parts of the spark plugs, prior to final assembly, being transferred within each station in vehicles which remain in the station and are not transferred to any other station.

3,849,851

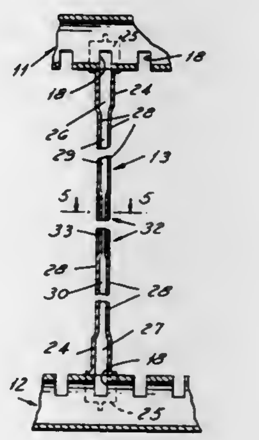
METHOD OF TREATING WELDED HEAT TRANSFER MEMBERS TO ELIMINATE WELD SCALE

Kenneth L. Kaltz, Edgefield, S.C., assignor to Tranter Manufacturing, Inc., Lansing, Mich.

Filed Sept. 27, 1972, Ser. No. 292,726

Int. Cl. B23k *31/02, 35/38*

U.S. Cl. 29—494 **10 Claims**



1. A method of weld-uniting a pair of hollow metal components of a heat transfer plate unit to leave a minimum of oxidized weld scale residue to one thereof, said one of which components being a hollow header of said unit presenting an interior surface along which a heat transfer liquid is to flow, comprising abrasively blasting the internally exposed surface area of said header component, including the zone of the desired weld union, to thoroughly cleanse said area of foreign matter including prior-occasioned scale or similar incrustation, and to abrasively roughen said area, engaging a surface of the other hollow component in face-to-face contact with the external surface of said one component at an external area of the latter corresponding to at least a part of said internally blasted surface opposed to said zone, and proceeding to weld said components at said external area.

3,849,852

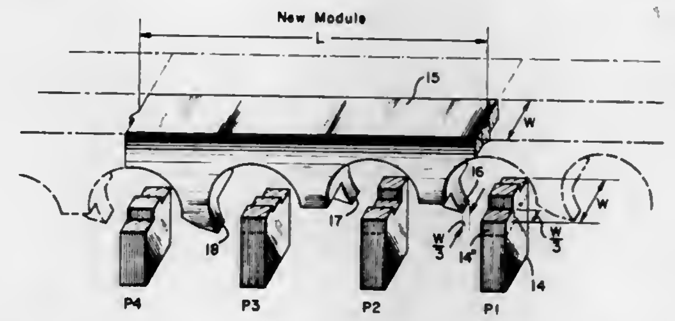
METHOD AND CUTTING EDGE ARRANGEMENT FOR MATERIAL REMOVAL

James Otis Billups, Moon, Va. 23119

Continuation-in-part of Ser. No. 167,985, Aug. 2, 1971, abandoned. This application June 4, 1973, Ser. No. 366,719

Int. Cl. B23p *15/42*

U.S. Cl. 29—95.1 **4 Claims**



1. A method of removing material from a workpiece comprising the steps of:

a. arranging a given number of tooth cutting edges to define a new multi-tooth module of given total width corresponding to the width *W* of the tooth cutting edge of an analogous module from a prior art tool having a given feed per tooth, wherein no two cutting edges within any one new module are in alignment in a direction either parallel or perpendicular to the relative motion between the module and workpiece; and

b. providing a width for each cutting edge constituting a fraction of said given width W, wherein said fraction is equal to said given width W divided by said given number of tooth cutting edges whereby the feed per tooth is increased over said given feed per tooth by a multiple equal to said given number of tooth cutting edges so that the cross-sectional area of a generated chip of width equal to the width of the cutting edge, and thickness equal to the feed per tooth, approaches a square.

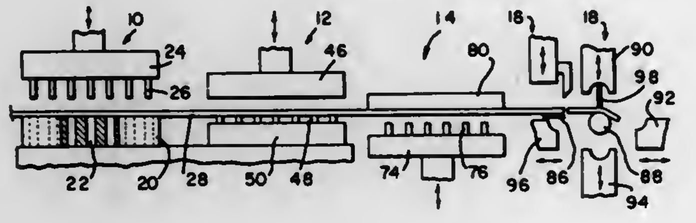
3,849,853
METHOD FOR PRODUCING A BEARING CAGE

Roger L. Iffland, Torrington, Conn., assignor to The Torrington Company, Torrington, Conn.

Division of Ser. No. 249,087, May 1, 1972, abandoned. This application Oct. 4, 1973, Ser. No. 403,664

Int. Cl. B21d *53/12*

U.S. Cl. 29—148.4 C **4 Claims**



1. In a method of forming a cage for use in bearings, the steps comprising:

forming substantially rectangular pockets in solid material, said pockets having longitudinal tapering sides through at least a part of the depth of the pockets;

corresponding portions of each longitudinal tapering side extending further into the pockets than the remaining portions;

and pressing the further extending portions to form projections in each longitudinal tapering side of the pockets.

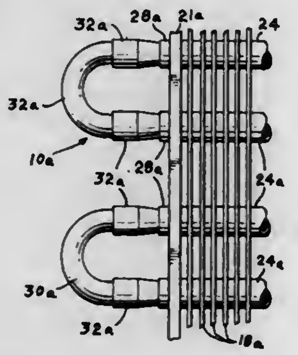
3,849,854
METHOD FOR MAKING EVAPORATOR OR CONDENSER UNIT

Harold Philip Mattioli, Simsbury, and Robert John Douglas, Windsor, both of Conn., assignors to Emhart Corporation, Bloomfield, Conn.

Filed Sept. 24, 1973, Ser. No. 400,419

Int. Cl. B21d *53/00*; **B21k** *29/00*; **B23p** *15/26*

U.S. Cl. 29—157.3 B **8 Claims**



1. A method for making an evaporator or condenser for refrigeration apparatus comprising the steps of providing a plurality of main tube sections made from one metal and defining a plurality of main tube ends, providing a plurality of transition tubes made from another metal, each of said transition tubes including at least one end portion having an outside diameter substantially equal to the inside diameter of an associated one of said main tube ends to generally interface in telescopic assembly therewith, telescopically assembling each one end portion in an associated one of said main tube ends to define a transition joint assembly, heating each transition joint assembly to a temperature below the melting temperature of both said one metal and said other metal, applying sufficient radially directed force simultaneously around each transition joint assembly while said transition joint assembly is in its heated condition to effect a solid state metallurgical joinder of said one end portion to said main tube end which eliminates the interface delineated by the mating surfaces thereof, providing a plurality of heat exchange plates having apertures therein for receiving therethrough each of said main tube sections and an associated transition tube joined thereto, thrusting said main tube sections through said heat exchange plates in generally parallel relation to dispose said plates in parallel spaced relation along said main tubes, providing at least one generally U-shaped connector tube made from said other metal and having a pair of connector tube ends, telescopically assembling each of said connector tube ends with an associated other end of said transition tube to form another tube joint, and bonding each of said connector tube ends to said other end of an associated one of said transition tubes.

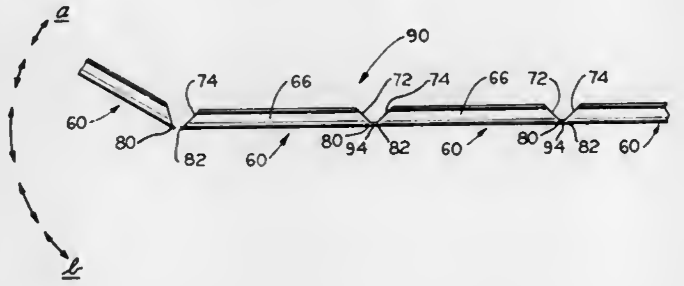
3,849,855
A STRAND OF INTEGRAL CLIP MEMBERS

John A. Dallen, Port Clinton, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Continuation of Ser. No. 136,848, April 23, 1971, abandoned. This application Apr. 18, 1973, Ser. No. 352,356

Int. Cl. B21c *37/02*

U.S. Cl. 29—193.5 **10 Claims**



1. A strand of integral clip members, each clip member including a substantially flat bazse portion having opposite longitudinal edges and leg members integral with said base portion and extending upwardly from said edges, each said leg member being reversely curved so othat one of said leg members has a substantially S-shaped cross-sectional configuration and the other of said leg members has a substantially bazckward S-shaped cross-sectional configuration, each leg member having an outwardly extending curved portion adjacent said base portion and merging into and inwardly curved portion, said leg members having terminal end portions extending outwardly from said inwardly curved portions and terminating at terminal ends facing outwardly of said base portion, said base portion having opposite base ends and said leg members having substantially V-shapnotches therein extending down to said base portion intermediate adjacent base ends.

3,849,856
GUIDE ROD FOR FEEDING CURTAIN SUSPENDERS INTO POSITION

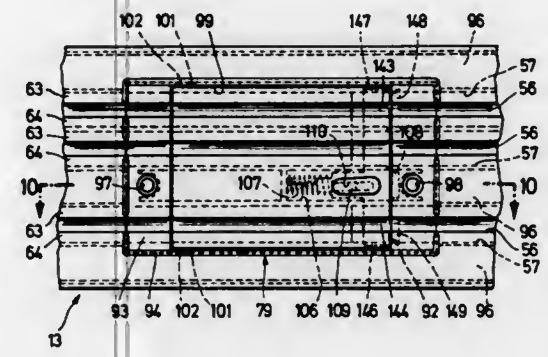
Rudolf Finkbeiner, Niederstetten, Germany

Division of Ser. No. 354,889, April 26, 1973. This application Apr. 8, 1974, Ser. No. 459,019

Claims priority, application Germany, Nov. 2, 1972, 2253600

Int. Cl. B23p *19/00*

U.S. Cl. 29—200 D **8 Claims**



1. A device for introducing and withdrawing curtain suspenders in the tracks of curtain rails by means of a guide rod comprising

a gate which in its closed condition has at least its lower side in alignment with the lower side of the curtain rail, the gate having therein runner grooves which are an extension of and in the same form as the runner grooves of the curtain rail and which align with the said curtain rail grooves when the gate is in the closed condition,

the curtain rail having therein a shallow rectangular cavity for receiving the gate,

said gate being pivotable about a pivoting axis situated at one end thereof in such a manner that the crosssection of the runner grooves situated at the other end of the gate is rendered accessible below the underside of the curtain rail,

said gate having its downward pivoting movement limited by stop means, and

said gate having a spring-loaded locking catch which retains the gate in the raised position, said locking catch being accessible from below for release.

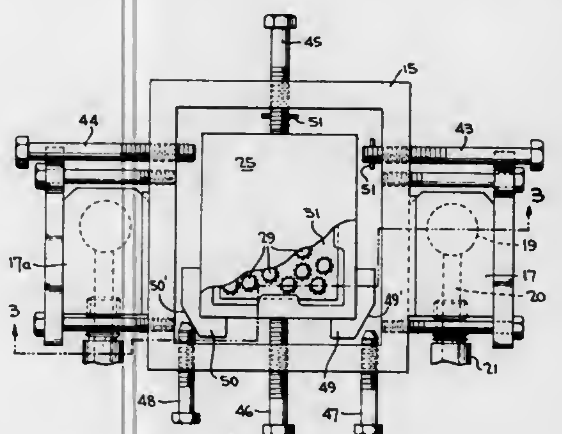
3,849,857
MACHINE ELEMENT ALIGNMENT POSITIONER

Malcolm G. Murray, Jr., 1907 McFarland, Baytown, Tex. 77520

Filed July 5, 1973, Ser. No. 376,568

Int. Cl. B23b *19/00*; **A47g** *29/00*; **F16c** *35/00*

U.S. Cl. 29—200 P **21 Claims**



1. A portable positioner for effecting three-dimensional alignment of one machine element or the like with another comprising a main body, a movable table on said body for support of said one machine element, a plurality of balls positioned between said table and said main body for allowing precise movement in the horizontal plane to provide for two-dimensional X and Z adjustment and means for vertically lifting said main body to provide for the third dimensional Y adjustment, whereby movement of said table in either plane does not upset previous adjustment in the other.

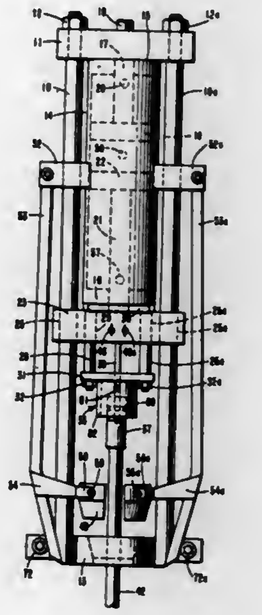
3,849,858
SWAGING APPARATUS

Jon K. Whitledge, Mantua, and Edward M. Kavick, Chardon, both of Ohio, assignors to Samuel Moore & Company, Mantua, Ohio

Filed Sept. 17, 1973, Ser. No. 397,718

Int. Cl. B23p *19/00*, *19/04*

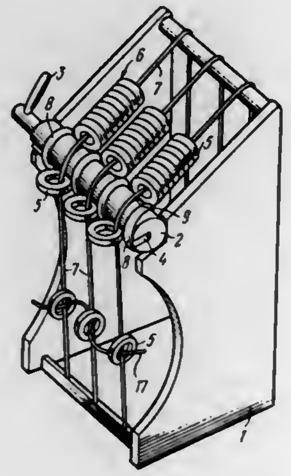
U.S. Cl. 29—200 B **10 Claims**



1. In an apparatus for swaging a fitting on the end of a hose, said fitting having a coupling end and an end having substantially concentric walls for insertion of a hose end therebetween, said apparatus comprising a die having a cavity therein, a pair of spaced rods disposed in a plane substantially parallel to the axis of the die cavity, means for supporting the die bridging a pair of ends of the rods and fixed thereto, a first cross-bar bridging the opposite ends of the rods and fixed thereto, a cylindrical housing having first and second end walls enclosing a cylindrical chamber, an opening through each end wall, a first piston rod fixed at one end to the said cross-bar and slidably disposed through the opening in the first end wall in fluid impervious relationships therewith, a piston carried by the said piston rod in the chamber, a second piston rod slidably disposed through the openings in said second end in fluid impervious relationship therewith, and carrying a second piston in said chamber, bracket means slidably mounting said housing on said rods, a second cross-bar slidably mounted on said rods and fixed to said piston outside said chamber, and means for introducing fluid under pressure into said chamber to actuate said second piston and said cylindrical housing longitudinally with respect to said first piston, an improved means for supporting and swaging said fitting on said hose end comprising a first plate member disposed on one side of said second cross-bar and a second plate member disposed on the opposite side of the cross-bar and lying in a plane substantially parallel to the first plate and to the longitudinal axis of the second cross-bar, means for slidably securing the plates to the cross-bar and for securing the plates together against relative movement, a pusher element fixed to said second plate having a cavity therein for enclosing the coupling end of the fitting, a cavity in said cross-bar having a common longitudinal axis with the cavity in the second cross-bar, a bore through the second plate and a bore through the pusher element having a longitudinal axis aligned with those of the cavities in the cross-

bar and pusher element and communicating therewith, and a mandrel having a head position secured in the said cavity of the cross-bar and an elongated body which extends through said bores and the cavity in the pusher element and adapted to extend into the fitting and support the said concentric walls while the fitting is pressed in the die cavity by the pusher element.

3,849,859
DEVICE FOR PIECE-BY-PIECE FEEDING AND LOCKING OF CORES STRUNG IN COLUMNS ON WIRES
Jury Alexandrovich Burkin, Tsvetnoi proezd 29, kv. 24, and Jury Emelyanovich Seleznev, Vesenny proezd, 4-a, kv. 16, both of Novosibirsk, U.S.S.R.
Filed Sept. 18, 1973, Ser. No. 398,556
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 MM **8 Claims**



1. A device for the piece-by-piece feeding and locking of cores strung in columns on wires, comprising a base, said wires carrying said cores strung in said columns thereon being fixed to the base, a batcher mounted on said base, said batcher including a roller provided with at least one longitudinal groove adapted to hold said cores, and an annular groove to accommodate said wires with cores strung in columns thereon, an additional wire embracing said roller, with said additional wire at the points of intersection with respect to said longitudinal groove and those portions of said longitudinal groove which are defined by adjacent portions of intersection defining sockets to receive said cores therein.

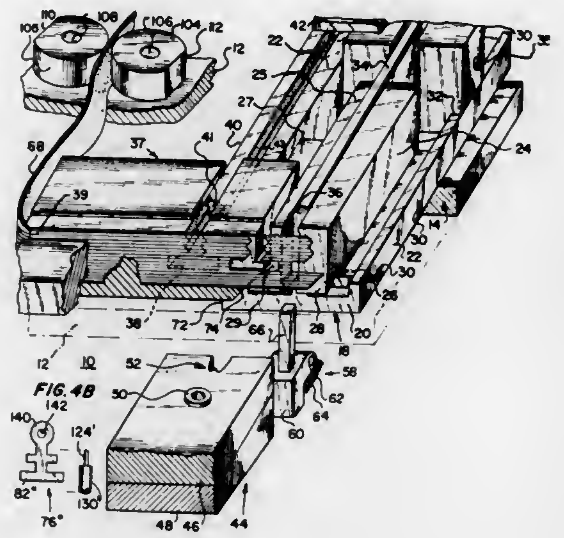
3,849,860
APPARATUS FOR FORMING AND APPLYING A STRAIN RELIEF SPLICE FROM A CONTINUOUS SUPPLY STRIP
Irwin Zahn, New York, N.Y.; Wilhelm R. Meisinger, Verona, N.J., and George Magnifico, New York, N.Y., assignors to General Staple Company, Inc., New York, N.Y.
Filed Mar. 5, 1973, Ser. No. 338,266
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 DS **22 Claims**

1. Apparatus for forming a strain relief splice from a continuous supply strip; said apparatus comprising:

first means for forming a predetermined length of said supply strip into a predetermined shape having a first portion which will be crimped about at least one wire and an integrally connected second portion which will be crimped about the insulated portion of said wire;

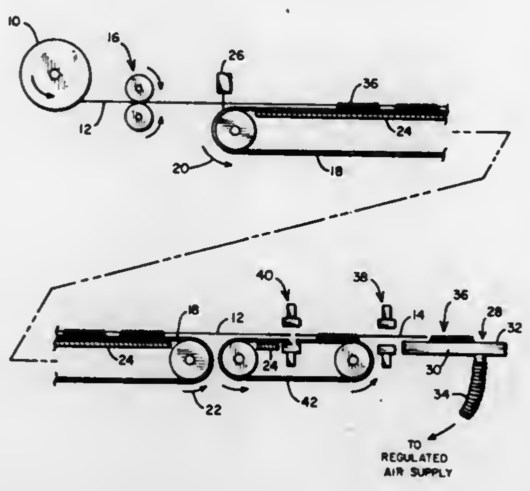
second means for bending said length into a generally U-shaped configuration;

a die having a generally U-shaped receptacle provided therein for the reception of said wire; and



third means for driving said length into said U-shaped receptacle whereby said first portion of said length will be crimped about said wire and said second portion of said length will be crimped about the insulated portion of said wire.

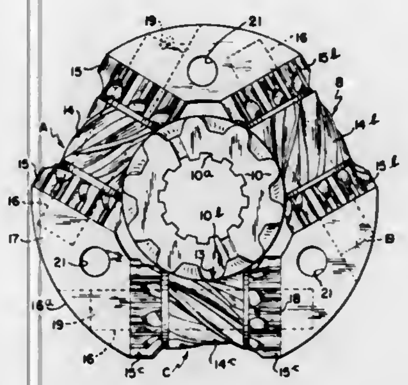
3,849,861
CORE PATCH STRINGING APPARATUS
Ronald A. Beck, Bloomington, and Dennis L. Breu, Stillwater, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Sept. 27, 1973, Ser. No. 401,469
Int. Cl. H01f *41/08*
U.S. Cl. 29—203 MM **5 Claims**



1. Apparatus for facilitating the stringing of a plurality of strands of wire through the apertures of an array of magnetic cores which are oriented on edge and affixed to a core patch with the core apertures aligned along a plurality of rows and columns comprising:

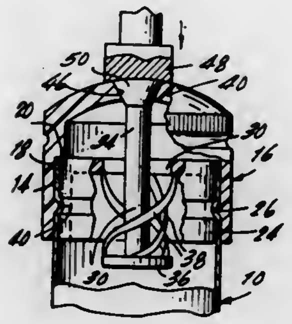
- a. means for sliding said core patch along said plurality of strands and away from a work station following the threading of said plurality of strands through the apertures in aligned columns of cores; and
- b. tension producing means for maintaining said strands in a taut condition as said patch is slid along said strands and away from said work station.

3,849,862
METHOD OF ASSEMBLING MULTIPLE GEAR DIFFERENTIAL
Robert N. Benjamin, 1830 Kathryn Dr., Westlake, Ohio 44145
Continuation of Ser. No. 265,247, June 22, 1972, abandoned. This application Aug. 6, 1973, Ser. No. 385,834
Int. Cl. B23q *17/00*
U.S. Cl. 29—407 **3 Claims**



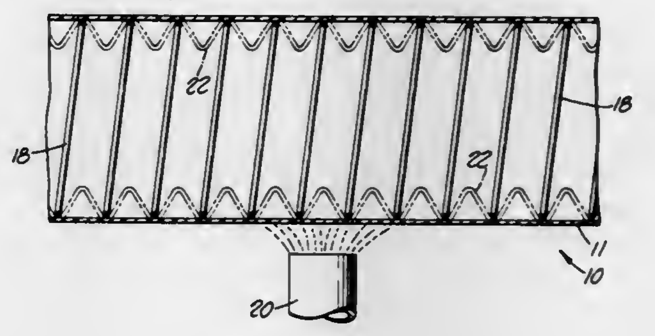
1. The method of assembling in a case, a differential gear mechanism comprising a central worm traction gear surrounded by a plurality of identical unitary transfer gear complexes each having a reversible balancing gear at each end and a worm wheel intermediate said balancing gears, said balancing gears and worm wheel being coaxial, each transfer gear complex being assembled in said case by means of a shaft for rotation with its axis parallel to a tangent to said worm gear and with its worm wheel meshing with said worm gear; said method including placing a reference index point near the periphery of said worm gear, and placing said transfer gear complexes in said case in positions corresponding to those arrived at by rotating said worm gear, and positioning each transfer gear complex with a selected reference point of the complex in the same relation to said reference index point as it passes, said reference point having the same relative position in each transfer gear complex, whereby eccentric oscillation of said worm gear is substantially eliminated.

3,849,863
PROCESS OF MAKING TUBE MOUNTED APPLICATOR
Gilbert Schwartzman, 20 Wilmot Cir., Scarsdale, N.Y. 10585
Division of Ser. No. 244,561, April 17, 1972, Pat. No. 3,794,213. This application June 19, 1973, Ser. No. 371,407
Int. Cl. B23p *19/00*
U.S. Cl. 29—436 **2 Claims**



1. A process of making an applicator having a container and cap, and a mounting ring provided with a valve assembly including a stem comprising the steps of surrounding the upper part of said container with said cap, force fitting said mounting ring into said container to lockingly assemble said container, said cap and said mounting ring with said stem extending through said mounting ring and projecting through said cap, and then heat and pressure shaping the end of the stem of the mounting ring projecting through said cap into a valve head.

3,849,864
METHOD OF MAKING BELLOWS
Walter A. Plummer, 3546 Crownridge Dr., Sherman Oaks, Calif. 91101
Continuation of Ser. No. 147,417, May 27, 1971, abandoned. This application May 22, 1973, Ser. No. 362,660
Int. Cl. B23p *19/04*
U.S. Cl. 29—454 **8 Claims**



1. That method of making a flexible axially extendable and contractable bellows having a readily opened and reclosed seam extending lengthwise thereof which comprises securing a pair of seam-forming thermoplastic tapes having interlocking but separable tongues and grooves along the opposite lateral edges of an elongated impervious non-woven sheet of homogenous heat reactive thermoplastic material having a high shrinkage coefficient, closing said seam and telescoping the resulting tubular assembly about a form having a generally annular axially spaced apart ridge forming means with the exterior thereof fully exposed and free of any encircling contractile means, heating said tubular assembly sufficiently to release the internal stresses therein causing said sheet material to heat shrink and contract against said form to form corrugation convolutions thereabout, and removing said form.

3,849,865
METHOD OF PROTECTING THE SURFACE OF A SUBSTRATE
Michael A. Gedwill, Lakewood, and Salvatore J. Grisaffe, Rocky River, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Oct. 16, 1972, Ser. No. 298,156
Int. Cl. B23p *3/00, 19/04*
U.S. Cl. 29—460 **10 Claims**

1. A method of protecting the surface of a substrate of a metallic base system selected from the group consisting of nickel and cobalt comprising the steps of

cladding said surface with a ductile, oxidation resistant metallic alloy foil, and

aluminizing the outermost surface portion of said foil thereby forming an outer aluminide coating thereon.

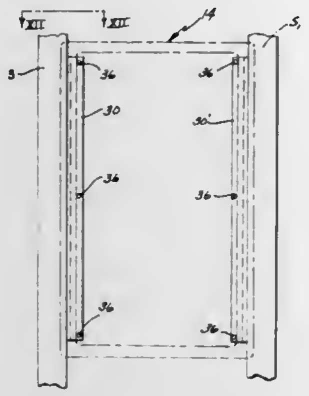
3,849,866
METHOD OF INSTALLING A WALL MOUNTED VACUUM CLEANING UNIT
Jacob C. Mol, Grand Rapids, Mich., assignor to Wal Vac, Inc., Grand Rapids, Mich.
Division of Ser. No. 217,890, Jan. 14, 1972, Pat. No. 3,783,472, which is a continuation-in-part of Ser. No. 37,211, May 14, 1970, abandoned. This application Oct. 19, 1973, Ser. No. 407,806
Int. Cl. B23p *21/00*
U.S. Cl. 29—469 **2 Claims**

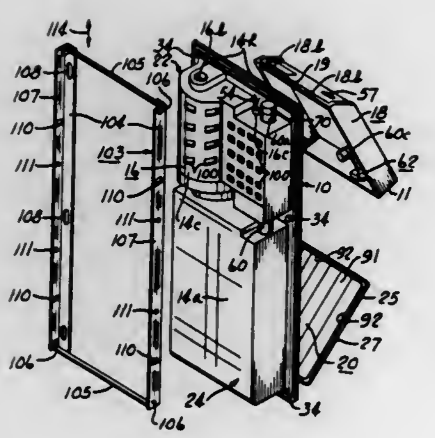
1. Method of installing a wall mounted vacuum cleaner unit having a housing means forming a receptacle compartment and a power compartment and including a main support frame for said compartments having a peripheral flange and a

mounting frame for said main support frame comprising the steps of

preparing an opening in an area of the wall into which the unit is to be installed,

initially installing the mounting frame between a pair of studs within the wall opening in a manner permitting selective inward and outward adjustment of the mounting frame,





adjusting, by installing the main support frame on the initially installed mounting frame, the main support frame within the wall opening compensating for wall thickness and insuring flush engagement of the main support frame peripheral flange relative to the wall surface, and thereafter

permanently securing said mounting frame to prevent said inward and outward adjusting of said mounting frame.

3,849,867
PROCESS OF JACKETING FUEL ELEMENTS

William E. Ray, Schenectady, N.Y., and John D. Sprowl, Opportunity, Wash., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 2, 1957, Ser. No. 687,839
Int. Cl. G21c *3/14*

U.S. Cl. 29—474.4 **7 Claims**

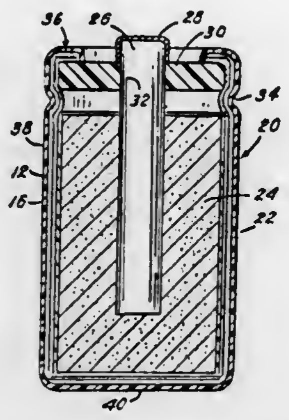
1. A process of integrally bonding a jacket of zirconium metal to a uranium core comprising applying a layer of iron onto said core, immersing the jacket into molten zinc chloride of a temperature of between about 410° and 460°C. and assembling said core and said jacket while both are immersed in a molten aluminum-silicon alloy.

3,849,868
METHOD OF MAKING MAGNESIUM ANODE BATTERY

Ernest M. Jost, Plainville, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 846,733, Aug. 1, 1969, abandoned. This application June 26, 1970, Ser. No. 59,858
Int. Cl. B23k *31/02*

U.S. Cl. 29—480 **1 Claim**



1. A method formmaking a magnesium battery anode in the form of a battery container comprising the steeps of providing a composite metal laminate material blank wherein said composite metal laminate material is selected from the group consisting of a laminate having a layer of steel solid-phase metallurgically bonded to a layer of magnesium material, a laminate having a layer of aluminum material solid-phasse metallurgically bonded on one face to a layer of steel and on an opposite face to a layer of magnesium material, said layer of aluminum in each of said composite materials being selected from the group consisting of commercially pure aluminum metal, an alloy consisting of 0.4 percent silicon (max.), 0.50 percent iron (max.), 0.10 percent copper (max.), 0.20–0.70 percent manganese, 3.5–4.5 percent magnesium, 0.05–0.25 percent copper, 0.25 percent zinc (max.), 0.15 percent titanium (max.), and the balance aluminum with not more than 0.15 percent of other constituents, an alloy consisting of 0.45 percent silicon (max.), 0.10 percent copper (max.), 0.10 percent manganese (max.), 2.2–2.8 percent magnesium, 0.15–0.35 percent chromium, 0.10 percent zinc (max.), and the balance aluminum with no more than 0.15 percent of other constituents, and an alloy consisting of 1.0–1.5 percent silicon, 0.20 percent copper (max.), 0.05 percent manganese (max.), 0.10 percent zinc (max.). snd the balance aluminum with no more than 0.15 percent of other constituents, and said layers of magnesium material being selected from the group consissting of commercially pure magnesium metal, an alloy consisting of 2.5–3.5 percent aluminum, 0.5–1.5 percent zinc, 0.2 percent manganese (max.), and the balance magnesium metal, and an alloy consisting of 1.5 percent aluminum (max.), 0.1–0.7 percent zinc, 0.05–0.5 percent calcium, 0.005 percent iron (max.) 0.002 percent nickel (max), 0.01–0.20 percent manganese, and the balance magnesium, and deep drawing said blank to form a hollow tubular metal battery container having an open end and a closed end and having said magnesium metal anode material layer disposed on the inner surface of said container.

3,849,869
METHOD FOR PRODUCING BIMETALLIC AND POLYMETALLIC BODIES WHEREIN THE METALS ARE JOINED TOGETHER BY METALLURGICAL BOND

Mario Boccalari, Saluggia Vercelli, Italy, assignor to Comitato Nazionale per l'Energia Nucleare-CNEN, Rome, Italy

Filed Jan. 2, 1973, Ser. No. 320,195
Int. Cl. B23k *31/02*

U.S. Cl. 29—481 **9 Claims**

1. A process for producing metal bodies particularly plugs and similar structural elements made up of at least two sections of different metals joined together by a metallurgical bond which process comprises the following steps:

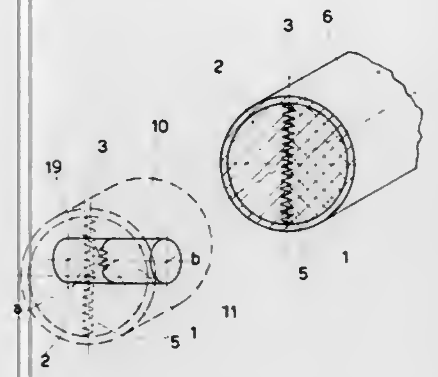
a. preparing a plurality of cylindrical blocks of same length, a pair at least of which are made of metals different from one another but with reciprocal metallurgical affinity, the blocks of said pair being provided each with a flat side face equal in area to a flat side face of the other block of said pair;

b. cleaning and degassing said blocks;

c. preparing a cylindrical casing a malleable metal adatped for receiving said blocks thereinto side by side in parallel relation;

d. cleaning and degassing said casing;

e. fitting said blocks into said cylindrical casing in such a way that said faces equal in area of each pair of blocks engage each other and in such a way that no appreciable voids be left among the blocks in the casing whereby an extrusion encased billet is formed;



f. evacuating said casing of any gases and sealing it vacuum tight;

g. heating the encased billet to a temperature at which all the billet components are in their plastic state:

h. extruding the billet through a die and obtaining a cylindrical composite bar in which the metal blocks comprising the starting billet are bonded together along their reciprocally engaging surfaces;

i. cutting through the extruded bar perpendicularly to its longitudinal axis to obtain bar segments long enough to contain the outline of the final product plug and removing the extruded casing or jacket by machining or by mechanical action;

j. machining each segment obtained as above to produce a plug which is defined by a cylindrical side surface of which the generatrices are not parallel to the extruded bar which plug contains at least one transition or bonding surface between two different metals within the extruded bar, the line of intersection of said transition surface and the plug surface being all contained on the side surface of the plug.

3,849,870
METHOD OF FABRICATING SELECTIVELY APPLIED FLOWABLE SOLDER JOINTS

Robert Franklin Cobaugh, Elizabethtown, and Kenneth Ronald Parmer, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 153,315, June 15, 1971, abandoned. This application Nov. 14, 1972, Ser. No. 306,498
Int. Cl. B23k *1/20*

U.S. Cl. 29—482 **4 Claims**

1. A method of assembling an elongated electrical terminal in a metalized aperture provided in a rigid substrate, comprising the steps of:

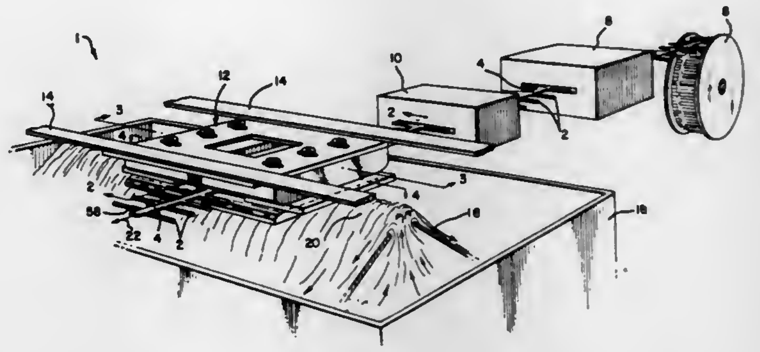
adhering a band of solder having a selected width to only a medial portion of the terminal, which medial portion is in spaced relationship from the ends of the terminal,

inserting said terminal in a metal lined aperture provided in a substantially rigid substrate,

locating said band of solder internally of said substrate aperture with said solder band providing masses of solder both internally of said substrate aperture and protruding from each open end of said substrate aperture,

heating said solder band to a fluid state,

wicking and flowing said solder masses while in a fluid state into said substrate aperture to substantially fill the clearance between said substrate aperture and said terminal and to form solder fillets outwardly of each end of said substrate aperture in surrounding relationship with said terminals,



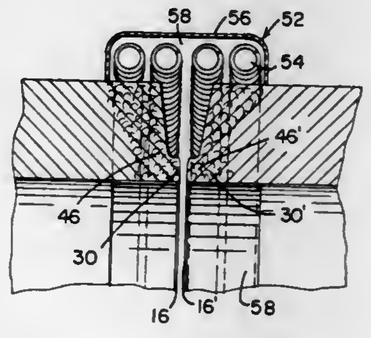
cooling said solder to form a unitary solidified solder joint comprising the solder masses filling the clearance between said substrate aperture and said terminal and the solder masses forming the fillets at the ends of said substrate aperture.

3,849,871
METHOD FOR WELDING PIPES

Clyde F. Kaunitz, Chicago, Ill., assignor to Herbert B. Neander, Oak Lawn, Ill., a part interest

Filed Aug. 6, 1973, Ser. No. 386,173
Int. Cl. B23k *1/20, 31/02*

U.S. Cl. 29—483 **13 Claims**



1. A method for securely and fluid tightly joining a pair of generally tubular members in end-to-end relationship, characterized by the steps of:

forming an axially extending root portion on an end of each tubular member having a lesser radial dimension than the radial thickness of the wall of each tubular member, to provide a peripheral welding groove when said members are brought into abutting co-axial relationship;

co-axially aligning said tubular members so that the ends of each of said tubular members having said axially extending root portions formed thereon are disposed in closely spaced relationship opposite and facing one another;

heating said closely spaced ends of said tubular members having said axially extending root portions to a sufficiently high temperature such that said root portions may be welded together;

forcing said tubular members axially toward one another to bring said axially extending root portions into intimate, abutting relationship with sufficient force to upset said root portions and weld these root portions together to form a solid and perfectly sealed root joint which joins said tubular members together; and,

applying weld metal in said welding groove formed by said root joint and said facing ends of said tubular members sufficient to fill said groove and completely form and seal the joint between said tubular members.

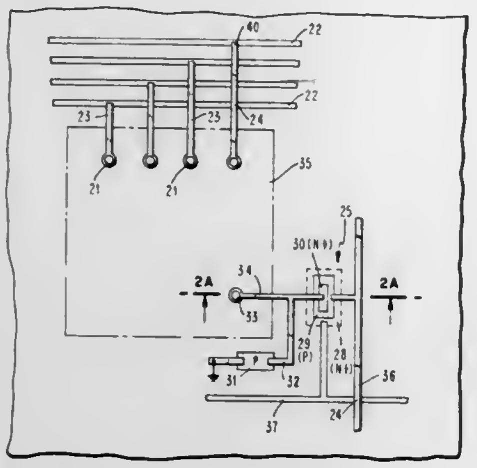
3,849,872
CONTACTING INTEGRATED CIRCUIT CHIP TERMINAL THROUGH THE WAFER KERF

Eric M. Hubacher, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 24, 1972, Ser. No. 300,075

Int. Cl. H01l *19/00, 7/66*

U.S. Cl. 29—574 **5 Claims**



1. In the testing of a monolithic integrated semiconductor circuit structure wherein each of a plurality of integrated circuits are formed on one of a plurality of chips on a wafer, said chips being separated by a wafer kerf, a method for externally accessing mechanically difficult to access chip terminals by a tester comprising

forming in said kerf, a test circuit comprising

at least one externally accessible circuit terminal,

at least one conductive bus bar connected to said at least one kerf terminal, and

connecting means for connecting each of a plurality of chip terminals on a plurality of chips to said conductive bus bar, said connecting means being normally inactive,

connecting a tester to said kerf terminal,

selectively activating said connecting means to provide conductive signal paths from selected chip terminals to said kerf terminal, and

dicing the wafer into the discrete chips by removing the kerf.

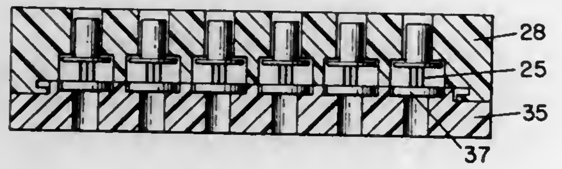
3,849,873
METHOD OF ASSEMBLING SEMICONDUCTOR DEVICES

Harry S. Coffin, King of Prussia, Pa., assignor to Computer Peripherals, Inc., Edina, Minn.

Filed June 7, 1973, Ser. No. 368,041

Int. Cl. H01j *7/00*

U.S. Cl. 29—576 **7 Claims**



1. A method of assembling the leads of a plurality of transistors into apertures of an associated insulating pad which comprises

a. supporting a plurality of transistors within apertures of a first supporting member and the leads extending in an outward direction;

b. confining said transistors in a vertical direction;

c. inverting said supported and confined transistors;

d. positioning a plurality of insulating pads having apertures in counter-sunk apertures of a second supporting member;

e. positioning the inverted confined transistors over the counter-sunk apertures of said second supporting member;

f. releasing the confined transistor to drop vertically into engagement with said insulating pads; and

g. agitating both first and second support members to position the leads of said transistor through the apertures of the insulating pads to the bottom of said counter-sunk apertures.

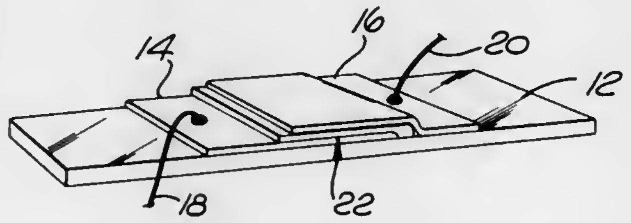
3,849,874
METHOD FOR MAKING A SEMICONDUCTOR STRAIN TRANSDUCER

Frederick J. Jeffers, Altadena, Calif., assignor to Bell & Howell Co., Chicago, Ill.

Continuation-in-part of Ser. No. 276,269, July 28, 1972, Pat. No. 3,805,601. This application Nov. 1, 1973, Ser. No. 411,985

Int. Cl. B01j *17/00*

U.S. Cl. 29—590 **10 Claims**



1. A method of making a semiconductor strain transducer for measuring strain forces to be investigated, comprising the steps of:

securing a first terminal electrode on a surface of a substrate which is flexible to said strain forces;

depositing a layer of piezoelectric semiconductor material having a hexagonal wurtzite crystal structure on said first terminal electrode to form a layer having major surfaces generally parallel to said substrate surface and a strain sensitive resistivity along its C axis, in a direction normal to said surfaces, which is strain sensitive by a gauge factor of at least 100, said semiconductor material having a single conductivity type along said C axis in said direction and between said major surfaces; and

applying a second terminal electrode on a surface portion of said semiconductor material layer opposite said substrate to define a current path parallel to said C axis.

3,849,875
HALL EFFECT MAGNETOMETER

John A. Woollam, Oberlin, Ohio; Harry A. Beale, Riverdale, and Ian L. Spain, Edgewater, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 254,173, May 17, 1972. This application Jan. 30, 1973, Ser. No. 327,969

Int. Cl. G01r *33/06*

U.S. Cl. 29—592 **3 Claims**

1. A method of making and using a Hall effect magnetometer comprising the steps of:

mixing bismuth and selenium in a stoichiometric ration of 2 bismuth atoms to 3 selenium atoms;

growing a single crystal of Bi_2Se_3;

cleaving the crystal to form a layer plane body;

disposing the body in a magnetic field variable from 0 tesla to 10 tesla at a temperature of from about 1.2K to 300K, said magnetic field being perpendicular to the layer plane body;

directing a current through the layer plane body in a direction perpendicular to the magnetic field; and

measuring voltage between two points on said layer plane body lying on a line perpendicular to the magnetic field and the direction of current flow.

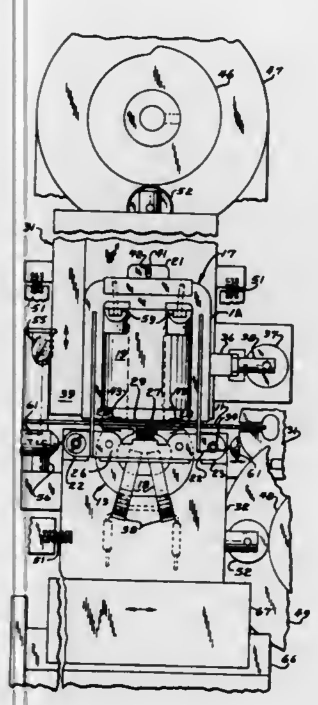
3,849,876
MANUFACTURE OF WATT-HOUR METERS WITH WELDED PRECISE TORQUING

Russell F. Graefnitz, Lafayette, Ind., assignor to Duncan Electric Company, Inc., Lafayette, Ind.

Filed Sept. 8, 1972, Ser. No. 287,232

Int. Cl. H02k *15/00*

U.S. Cl. 29—596 **7 Claims**



1. The method of assembling a pair of electromagnets to form a stator for a dynamoelectric instrument, including the steps of providing each electromagnet with spaced lugs of magnetic material adapted to slidingly engage similarly spaced lugs on the other electromagnet; placing the two electromagnets in approximately correct relationship to one another with the lugs slidingly engaged to each other, testing the stator as to torque characteristics, accurately adjusting the relationship between the two electromagnets to approach a chosen optimum of torque characteristics, and welding the two electromagnets in their exact relative relationship as a separate stator for mounting in a meter without disturbing their relationship.

3,849,877
METHOD FOR MAKING CONDUCTORS FOR FERRITE MEMORY ARRAYS

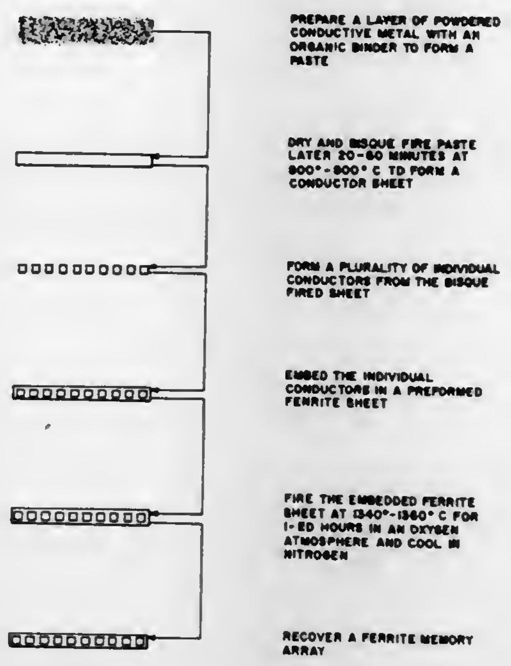
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Clarence H. Heckler, Jr., Palo Alto; Paul D. Baba, San Carlos, and Nutan C. Bhiwandker, Mt. View, all of Calif.

Filed Aug. 22, 1973, Ser. No. 390,466

Int. Cl. H01f *7/06*

U.S. Cl. 29—604 **10 Claims**

1. A method of forming a ferrite memory array comprising forming a layer of a metal conductor material paste composition comprising from 60 to 95 percent by weight of a powdered metal having good conductivity and a low reactivity with ferrites, and from 5 to 40 percent by weight of an organic binder together with an organic vehicle, drying said layer, bisque firing said dried layer at a first temperature below the melting point of said metal, thereby reducing the density of the conductor layer to a first degree by sintering said powdered metal together to form a conductor sheet, forming a plurality of individual conductors from the bisque fired sheet,


PREPARE A LAYER OF POWDERED CONDUCTIVE METAL WITH AN ORGANIC BINDER TO FORM A PASTE
DRY AND BISQUE FIRE PASTE LATER 20-60 MINUTES AT 800°-900° C TO FORM A CONDUCTOR SHEET
FORM A PLURALITY OF INDIVIDUAL CONDUCTORS FROM THE BISQUE FIRED SHEET
EMBED THE INDIVIDUAL CONDUCTORS IN A PREFORMED FERRITE SHEET
FIRE THE EMBEDDED FERRITE SHEET AT 1340°-1360° C FOR 1-20 HOURS IN AN OXYGEN ATMOSPHERE AND COOL IN NITROGEN
RECOVER A FERRITE MEMORY ARRAY

embedding said conductors in a ferrite sheet and then firing said ferrite sheet at a second and higher temperature than said first temperature to further shrink the conductor material at a rate compatible with the ferrite shrinkage.

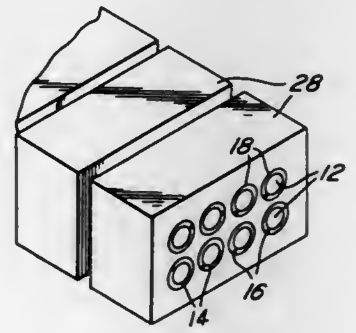
3,849,878
METHOD OF MAKING RESISTANCE ELEMENT

Floyd R. Rudd, North Wales, and George D. MacKenzie, Maple Glen, both of Pa., assignors to TRW, Inc., Cleveland, Ohio

Filed Dec. 4, 1972, Ser. No. 311,555

Int. Cl. H01c *17/00*

U.S. Cl. 29—610 **7 Claims**



1. A method of making electrical resistance elements comprising the steps of

winding a respective resistance wire helically around and along each of a plurality of elongated wire cores which cores are coated with an insulating material,

coating each of said wound cores with a protection layer,

arranging said wound cores in closely spaced parallel relation,

encapsulating said arranged wound cores in a block of plastic material,

cutting through said block and the wound cores at longitudinally spaced points along planes perpendicular to the longitudinal axes of the wound cores to form a plurality of wafers each of which contains a plurality of resistance elements, and

then separating said resistance elements from the plastic of the respective wafers.

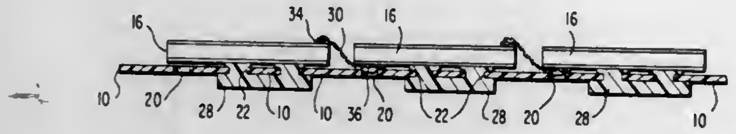
3,849,879
METHOD OF MAKING A COMPOSITE MAGNESIUM-TITANIUM CONDUCTOR

Henry A. Kuchek, Auburn, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Oct. 1, 1973, Ser. No. 402,563
Int. Cl. H01b *13/22*
U.S. Cl. 29—624 **9 Claims**

1. A method of making a titanium clad magnesium base alloy composite comprising at least partially filling a hollow titanium body with a molten magnesium base alloy containing at least about 0.05 weight per cent lithium and then solidifying the molten alloy to form a composite.

3,849,880
SOLAR CELL ARRAY

Joseph Gabrial Haynos, Rockville, Md., assignor to Communications Satellite Corporation (Comsat), Washington, D.C.
Continuation-in-part of Ser. No. 883,993, Dec. 12, 1969, abandoned. This application July 20, 1972, Ser. No. 273,578
Int. Cl. H05k *3/30*
U.S. Cl. 29—626 **14 Claims**

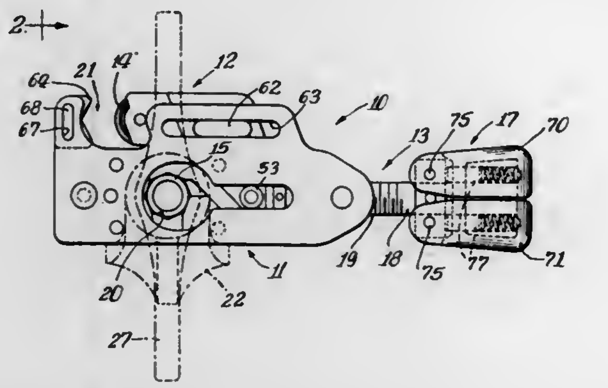


1. The method of forming a solar cell array comprising:

a. preparing an array substrate by forming a group of apertures in each region of said substrate on which a solar cell is to be placed, the position of each said group corresponding to the to-be-formed junction between a cell bottom electrode and an interconnector,
b. adhering, by means of an adhesive, a plurality of cells bottom-down on said regions of said substrate to result in a matrix of cells adhered to said substrate, said adhesive being placed with respect to each said cell and region so as to leave said region in the vicinity of said group of apertures uncoated with said adhesive,
c. placing electrical interconnectors between the top electrodes of the cells in each column of cells in said matrix and the bottom electrodes of the cells in one of the adjacent columns of cells,
d. bonding said interconnectors to said top electrodes, and
e. bonding, through said groups of apertures, said interconnectors to said bottom electrodes.

3,849,881
TOOL CONSTRUCTION

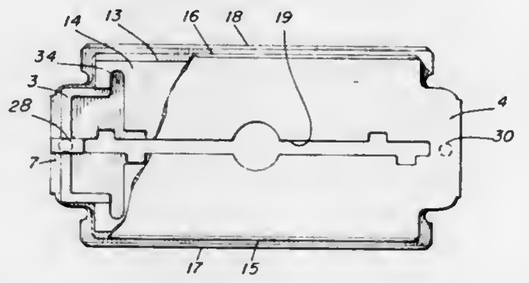
Richard V. Strybel, Elk Grove Village, Ill., assignor to Imperial-Eastman Corporation, Chicago, Ill.
Filed June 22, 1973, Ser. No. 372,792
Int. Cl. B23d *21/08*
U.S. Cl. 30—102 **17 Claims**



1. A tool construction for use with workpiece tubes comprising: means for holding a tube against axial displacement having adjustably spaced tube engaging elements defining a peripherally closed tube receiving space of polygonal shape and arranged to engage a tube to be held at at least 6 circumferentially spaced positions; a tube cutter having adjustably spaced tube supporting and tube cutting means integral with said tube holding means; and means for adjusting the spacing of the tube holding means and the tube cutter including manually operable means for providing a low torque adjustment of said cutter to advance the cutting means into a tube held by said supporting means while the tool is swung about the tube and selectively rearranged to provide a high torque adjustment of said holder means to effectively prevent axial displacement of the cut tube in said holding means.

3,849,882
SHAVING UNIT FOR SAFETY RAZOR

Frank A. Ferraro, Grumbull, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Jan. 14, 1974, Ser. No. 432,920
Int. Cl. B26b *21/54, 21/22*
U.S. Cl. 30—346.58 **10 Claims**



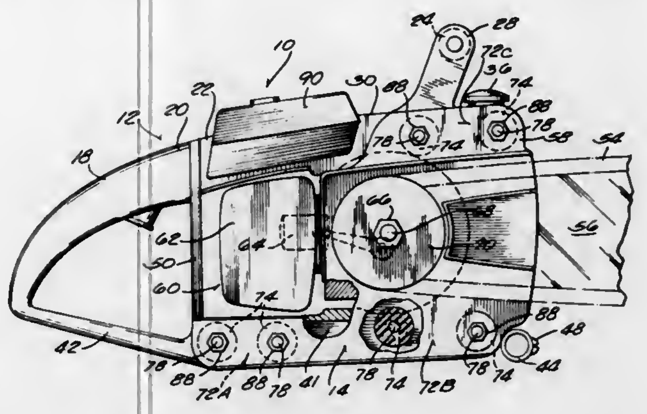
1. A shaving unit for a double edge safety razor, said shaving unit comprising:

a. a first transversely elongated member including a pair of transversely extending opposite sides and a transverse aperture, each one of the first member opposite sides having a cutting edge;
b. a second transversely elongated member including a pair of transversely extending opposite sides and a transverse aperture, each one of the second member opposite sides having a cutting edge, said second member being positioned above said first member with the aperture of said second member being positioned above the aperture of said first member and with the cutting edges of said second member being positioned upwardly and inwardly of the cutting edges of said first member;
c. a transversely elongated spacer member positioned between said first member and said second member and comprising a transversely extending aperture vertically aligned with the apertures of said first and second members, and a rib at each end of said spacer aperture, each one of the ribs including a raised portion having a thickness greater than the remainder of the rib and at least approximately equal to the thickness of the non-rib portions of the spacer member; and
d. means for permanently bonding said first and second members to said spacer member at the raised portion of each one of the ribs.

3,849,883
CHAIN SAW

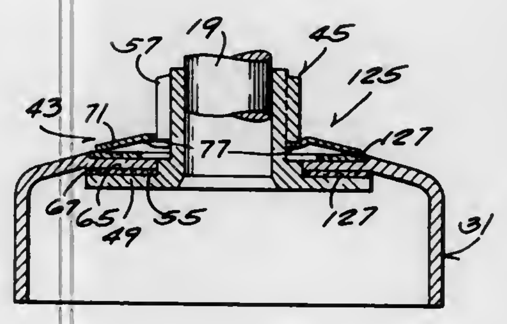
Bruno Kolorz, Bensfort Bridge, Ontario, Canada, assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Jan. 2, 1974, Ser. No. 429,929
Int. Cl. B27b *17/02*
U.S. Cl. 30—381 **12 Claims**

1. A chain saw comprising a power unit including a generally vertically extending support frame, a vertically extending cutter bar mounted on said support frame, a cutting chain carried on said cutter bar, and an engine mounted on said support frame for driving said cutting chain, a tank assembly including an integral gas tank and a generally vertical side portion juxtaposed said support frame, a longitudinally extending rear handle connected to said tank assembly, a generally transversely extending front handle connected to said tank assembly, and resilient mounting means interposed said support frame and said tank assembly for supporting said power unit from said tank assembly and for vibrationally isolating said engine and said cutter bar from said handles.



3,849,884
CHAIN SAW TORQUE LIMITING CENTRIFUGAL CLUTCH ASSEMBLY

Uwe F. Arff, Peterborough, Ontario, Canada, assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Aug. 10, 1973, Ser. No. 387,340
Int. Cl. B27b *17/10*
U.S. Cl. 30—383 **13 Claims**

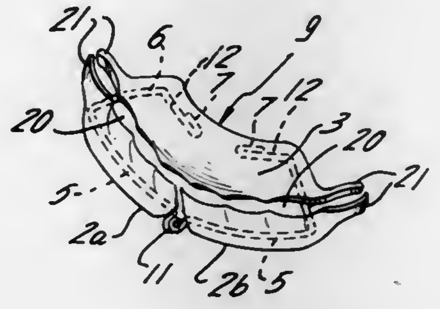


1. A centrifugal clutch assembly including a sprocket driver, a clutch drum supported for rotation independently of and co-axially with said sprocket driver and including a cylindrical surface adapted for releasable driving connection with a drive shaft in response to drive shaft rotation above a predetermined speed and a radially extending surface, and slip clutch means comprising said radially extending clutch drum surface, a cooperating surface extending radially on said sprocket driver in facing relation to said radially extending clutch drum surface, and means for holding said radially extending surfaces in frictional engagement with each other for torque transmission between said frictionally engaged radially extending surfaces only below a predetermined torque level.

3,849,885
TOOTH ALIGNER

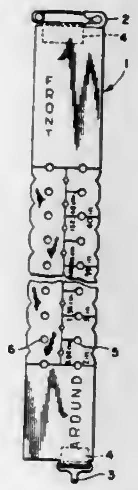
Lenford L. Robins, 1420 St. Peters Ave., Bronx, N.Y. 10461
Filed Dec. 28, 1973, Ser. No. 429,073
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 B **10 Claims**

1. An improved tooth aligner comprising
substantially arcuate first and second tooth aligning members, spaced apart to permit the insertion of a row of teeth therebetween, and
wire support means joining said first tooth aligning member to said second tooth aligning member into a predetermined tooth aligning orientation, said wire support means including a substantially arcuate forward portion cooperating with said first tooth aligning member, and a pair of support arms extending from the ends of said forward portion to said second tooth aligning member, and a coiled portion disposed intermediate of said ends of said forward portion for maintaining said first tooth aligning member in its prescribed arcuate configuration, to thereby properly align teeth disposed between said first and second tooth aligning members.



3,849,886
TAPE MEASURE

Nola D. Weyrick, and Thora Weyrick, both of 2317 Fairdale Ave., Cleveland, Ohio 44109
Filed Jan. 12, 1973, Ser. No. 322,947
Int. Cl. A41h *1/02*
U.S. Cl. 33—2 R **5 Claims**



1. A tape measure comprising an elongated flexible strip having two side by side series of longitudinally spaced apart apertures between its ends; pin means at one end of said strip from which said strip is adapted to be suspended from the shoulder at the front and back of a person being measured for tailoring of a garment; hook means at the other end of said strip for hooking into selected apertures of one series of apertures when making circumferential measurements of such person; front and back identification markers detachably secured to the respective front and back sides of said strip in alignment with selected apertures of the other series of apertures to denote and record such front and back measurements; and circumference identification markers detachably secured to one side of said strip in alignment with the selected apertures of said one series of apertures.

3,849,887

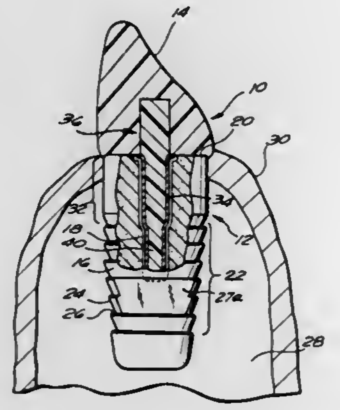
DENTAL IMPLANT

Herbert Brainin, Los Angeles, Calif., assignor to Vitredent Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 228,843, Feb. 24, 1972, Pat. No. 3,797,113, which is a continuation-in-part of Ser. No. 42,069, June 1, 1970, Pat. No. 3,717,932. This application Mar. 16, 1973, Ser. No. 342,169The portion of the term of this patent subsequent to Feb. 27, 1990, has been disclaimed.

Int. Cl. A61c *13/00*

U.S. Cl. 32—10 A **15 Claims**



1. A dental implant for insertion into an alveolar cavity in the jaw of a vertebrate to form the root section of an artificial tooth comprising:
   - a member having a shape generally corresponding to said cavity and being capable of being inserted in said cavity and formed, at least in the portion forming the surfaces for engagement with the alveolus, from a carbon material which is chemically, biologically and physically compatible with tissues of the oral cavity of vertebrates, said carbon material being isotropic and microcrystalline in structure and being selected from the group consisting of vitreous, glassy and pyrolytic carbons, enlarged groove means for accommodating relatively rapid bone and tissue ingrowth for rendering the implant relatively immobile during the early stages of the implantation procedure; and
   - means for facilitating the securing to the member of a crown section forming with said member the artificial tooth.

3,849,888

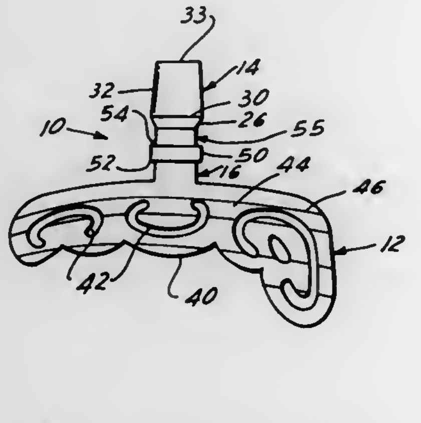
BONE ADAPTING TISSUE PACKING POST SYSTEM

Leonard I. Linkow, Cedarhurst, N.Y., assignor to Oratronics, Incorporated, New York, N.Y.

Filed Oct. 19, 1973, Ser. No. 407,948

Int. Cl. A61c *13/00*

U.S. Cl. 32—10 A **12 Claims**



1. In an oral implant for permanently implanting an artificial tooth supporting structure in a jawbone adjacent the fibromucosal tissue of a patient's mouth, comprising

A. a relatively thin blade portion adapted to be seated directly into the jawbone to a suitable depth,

B. a comparatively massive support portion substantially wider than said blade portion adapted to extend outwardly of the jawbone for mounting an artificial tooth structure, and

C. a neck portion operatively connecting said blade portion with said support portion;

The improvement wherein said neck portion has an enlarged substantially horizontally-extending peripheral flange with a blade-facing surface and a support-facing surface spaced from said support position; said blade-facing defining a bone-adaptor providing initially automatic limitation on the depth of insertion of said implant by abutment against the jawbone and thereafter protection of the underlying surface of the jawbone from outside influences, and said support-facing surface defining in conjunction with the flange-facing surface of said support portion and the length of said neck portion therebetween a tissue-packer to receive fibromucosal tissue after insertion of said implant, whereby said tissue-packer encourages regeneration of fibromucosal tissue about said neck portion length.

3,849,889

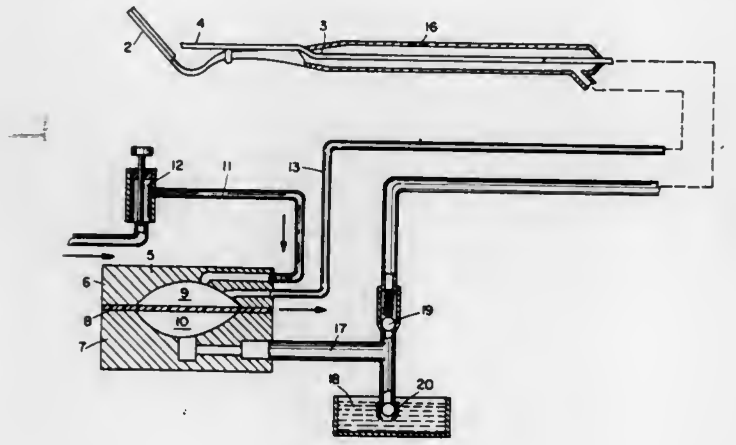
DENTAL MOUTH MIRROR

Jan Rosander, Goteborg, Sweden, assignor to Whaledent, Inc., New York, N.Y.

Filed Oct. 17, 1972, Ser. No. 298,451

Int. Cl. A61c *19/02*

U.S. Cl. 32—22 **7 Claims**



1. A dental mouth mirror in combination with a rinsing device said mirror comprising a mirror member connected to a handle member, said mirror member including a mirror surface,

said rinsing device comprising a nozzle provided on said handle member, said nozzle being directed toward said mirror surface, first canal means connected to said nozzle for transporting rinsing liquid to said nozzle, actuating means disposed on said handle member for effecting a flow of a predetermined amount of said rinsing liquid through said nozzle and onto said mirror surface to remove foreign matter from said mirror surface, pump means provided with a membrane member to define a first chamber on one side of said membrane member and a second chamber on an opposite side of said membrane member, compressed air means connected to one opening in said first chamber, second canal means connecting said actuating means to another opening in said first chamber so that a stream of air flows through said first chamber when said actuating means is open, said first canal means being connected to an opening in said second chamber, and a supply of said rinsing liquid communicating with said second chamber,

whereby closing said actuating means causes an instantaneous air pressure increase in said first chamber thereby deflecting said membrane member into said second chamber to force said predetermined amount of said rinsing liquid present in said second chamber out through said first canal means and through said nozzle onto said mirror surface.

ERRATUM

For Class 33—2 see:
Patent No. 3,849,886

3,849,890

MICROMETER WITH DIGITAL READING

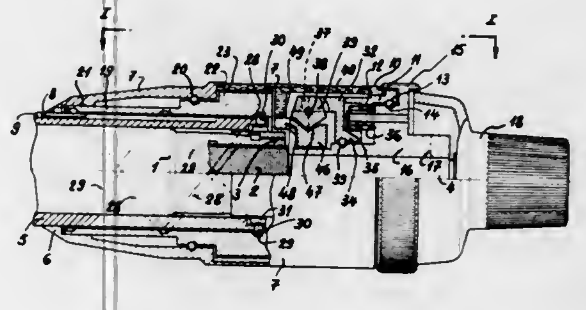
Jean-Pierre Jeannet, Lausanne; Jean-Pierre Leuba, Renens, and Gildo Vadi, Cottens, all of Switzerland, assignors to Tesa S.A., Renens, Switzerland

Filed Aug. 6, 1973, Ser. No. 386,180

Claims priority, application Switzerland, Sept. 24, 1972, 13916/72

Int. Cl. G06m *1/00*

U.S. Cl. 33—166 **4 Claims**



1. A micrometer with digital reading comprising:
   - a. a movable micrometer screw threadedly engaged in a fixed support;
   - b. a body axially fixed to said micrometer screw, said body angularly fixed to said support;
   - c. a bushing coaxial to said micrometer screw and rotatably arranged in said body, said bushing movable with said micrometer screw;
   - d. a plurality of indicator prisms whose faces carry a plurality of digits, each of said indicator prisms rotatably mounted on a shaft secured to said bushing tangentially to an imaginary circle concentric to the axis of the micrometer screw;
   - e. a window disposed in said body and exposing some of said indicator prisms to view; and
   - f. a radial cam mounted under all the indicator prisms, said radial cam angularly fixed to the body and arranged therein concentrically to the axis of the micrometer screw, said radial cam engaging said prisms according to a radial direction relative to the axis of the micrometer screw, whereby said indicator prisms are rotated upon their shafts as said bushing is rotated.

3,849,891

GEAR TOOTH PROFILE TESTING MECHANISMS

Alan Pratt, and Robert Andrew Ashfield, Huddersfield, England, assignors to David Brown Gear Industries Limited, Huddersfield, England

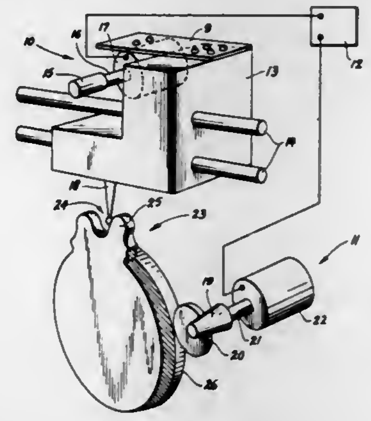
Filed Jan. 20, 1972, Ser. No. 219,476

Claims priority, application Great Britain, Jan. 27, 1971, 3340/71

Int. Cl. G01b *5/20, 7/28*

U.S. Cl. 33—179.5 D **5 Claims**

1. A mechanism for checking the tooth flank profile of an involute gear in situ on a rotatable member in a gear-producing machine comprising first means for generating an electrical signal in the form of pulses proportional in number to the angular displacement of a first input shaft, a first transmission means for transferring motion from a cylindrical surface on said rotating member to said input shaft of said first generating means, a member having a gear contacting portion carried on means constraining said portion of said member to movement along a linear path parallel to a line tangential to the gear's base circle and in contact with a tooth flank of the gear, second means for generating an electrical signal in the form of pulses proportional in number to the rotation of a second input shaft, a second transmission means fixably mounted with respect to said member and engaging a surface on said machine parallel to said path for producing a rotational displacement of said second shaft proportional to the linear displacement of said member, and means for comparing the phase of the signals produced by said first and second generating means including circuit means for establishing an initial phase relationship between said signals, the transmission means associated with one of said two generating means being adjustable to make allowance for the ratio of the circumference of said gear's base circle and said adjustable transmission means comprising an elongated tapered roller in frictional engagement with a motion transferring element the relative position of which along said tapered roller is adjustable.



3,849,892

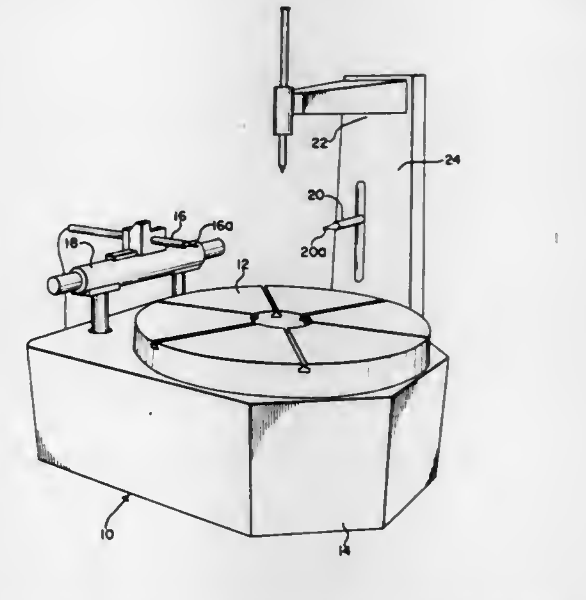
GEAR CHECKING MACHINE

Edward Francis Fabish, Chicago; James Robert Tookey, Rolling Meadows, and Richard Telman Thompson, Chicago, all of Ill., assignors to Illinois Tool Works, Inc., Chicago, Ill.

Filed June 21, 1973, Ser. No. 372,144

Int. Cl. G01b *5/20, 7/28*

U.S. Cl. 33—179.5 R **6 Claims**



1. A gear checking system for measuring a characteristic of a gear comprising a base member for rotatably supporting the

gear, support means carried by said base member, rotating drive means for driving said support means and said gear so they rotate together, at least one means for measuring displacement including a fixed portion and a relatively movable element which engages said gear, and signal means responsive to displacements of said movable element with respect to said fixed portion so as to provide an indication of the desired characteristic of said gear as a function of said displacement, linear drive means carried by said base member for providing linear movement of said measuring means proportionally in response to pulses at the input of said linear drive means, pulse source means comprising pulse generating means the output of which is coupled to the input of said rotating drive means, encoder means coupled to said support means constructed to produce pulses in response to rotational movements of said support means, first rate factoring means also coupled to said encoder, the repetition rate of said pulses from said encoder means being proportional to the rate of rotation of said support means, the input of said first rate factoring means being coupled to receive said pulses from said encoder means as input pulses and constructed to provide a series of output pulses to the input of said linear drive means, first control means coupled to said first rate factoring means for selectively controlling the ratio of the pulse repetition rates of said input pulses to said first rate factoring means and said output pulses from said first rate factoring means, wherein said fixed portion of said measuring means is driven by said linear drive means along a linear path representing an errorless gear characteristic and said movable element and said signal means provide an indication of errors in said gear characteristic as said gear is rotatably driven, recording means having a recording medium for recording the output of said signal means which is representative of said errors in said gear characteristic, including recording drive means for driving the recording medium of said recording means comprising second rate factoring means for supplying output pulses to said recording drive means at a rate appropriate for the gear characteristic that is being measured, said second rate factoring means having its input coupled to said pulse source means so as to receive a sequence of the pulses that are developed in said pulse source means as input pulses.

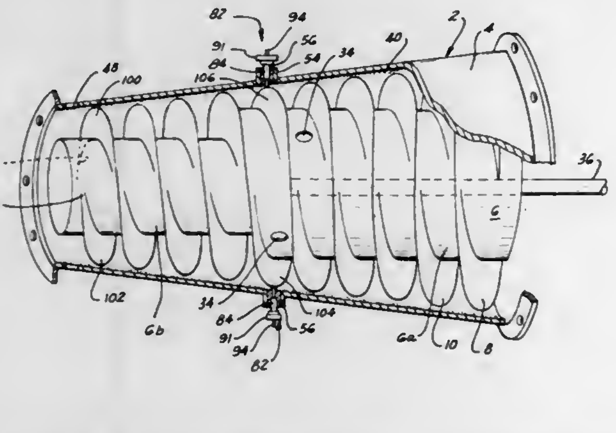
3,849,893
ROTATING MACHINE WEAR GAUGING MEANS AND METHOD

George S. Ormsby, Houston, Tex., assignor to Pioneer Centrifuging Company, Houston, Tex.

Filed Feb. 4, 1972, Ser. No. 223,210

Int. Cl. G01b *5/14*

U.S. Cl. 33—181 R **1 Claim**



1. A method of measuring wear and conveyance capacity of a blade of a scroll type conveyor at least partially encased in a housing while retaining the conveyor in assembled condition comprising the steps of:

a. determining a critical conveyance capacity portion of said blade;

b. determining a wear portion of said blade distal said critical conveyance capacity portion having wear characteristics more conveniently measured than those of said critical conveyance capacity portion;

c. relating the amount of wear of said wear portion to the amount of wear of and to the conveyance capacity of said critical conveyance capacity portion;

d. exposing an aperture in said housing at a location generally aligned with said wear portion;

e. clearing a path through a bed of sediment interior to said aperture;

f. aligning a radially outer edge of said wear portion of said blade with said aperture;

g. measuring the distance from said edge to a reference point radially and longitudinally fixed with respect to the axis of said conveyor;

h. combining the measurement obtained in step (g) with the relationship obtained in step (c) to determine the amount of wear of and the conveyance capacity of said critical conveyance capacity portion.

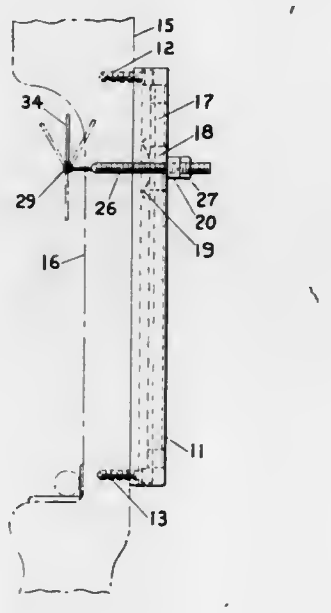
3,849,894
A VERTICALITY INDICATOR AND ADJUSTABLE SIGHTING DEVICE FOR ARCHERY BOWS

George D. Brougham, P.O. Box 37,–R.D. No. 2, Gillett, Pa. 16925

Filed July 20, 1973, Ser. No. 381,252

Int. Cl. F41g *1/00*; **F41b** *5/00*

U.S. Cl. 33—265 **5 Claims**



1. An archery bow sight adapted to be mounted on the side of a conventional bow, comprising:

a. a U-shaped channel member having a channel formed therein with a bottom wall and side walls;

b. mounting means for attaching said member to a bow;

c. a guide bar disposed within the channel formed by said member and secured thereto, said bar being of relatively smaller cross section than the channel in said member;

d. a sleeve slideable over said bar;

e. resilient means attached to said sleeve and cooperating with said bottom wall, establishing firm contact therewith, but permitting the sliding of said sleeve over said bar;

f. a sight carrying arm affixed to said sleeve in a position transverse to said channel member;

g. a sighting element comprising a bolt threadably supported in said arm in a direction transverse thereto, carrying at one end a sight bead;

h. a tubular support affixed to said arm in the direction parallel to said bolt and adjacent thereto;

i. an insert in the form of a rod of L-shaped configuration positioned within the tubular confines of said support and adapted to be moved in the direction transverse to said arm and having at one end a tubular channel; and

j. a rotatable verticality reference means, comprising a bent pin rotatably supported in said channel and extending in a direction vertical from said sight carrying arm, the rotational setting of said pin by a user of a bow indicating the angle of verticality desired with respect to the angular position of a bow as held by a user.

3,849,895
DEVICE FOR SMOOTHING A HEADING INDICATED BY A COMPASS

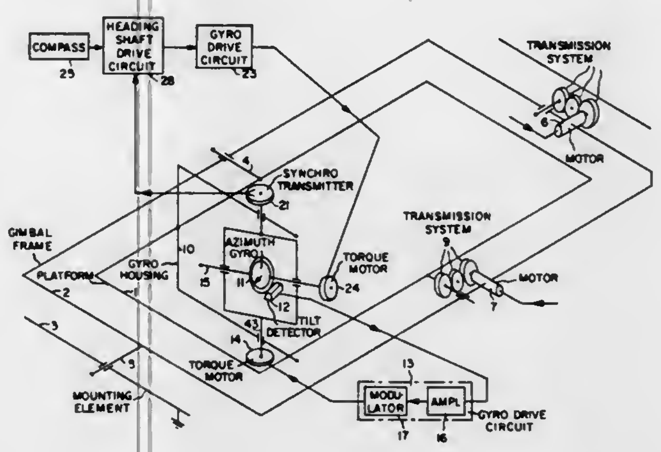
Johannes Bos, Hengelo, Netherlands, assignor to N.V. Hollandse Signaalapparaten, Hengelo, Netherlands

Filed Dec. 9, 1971, Ser. No. 206,311

Claims priority, application Netherlands, Dec. 14, 1970, 7018173

Int. Cl. G01c *19/36*

U.S. Cl. 33—317 D **6 Claims**



1. A smoothing system for a heading indicated by a compass, comprising:

a compass for sensing a heading direction;

an azimuth gyro for holding an azimuth direction;

a heading shaft for indicating a heading direction;

a first differential device sensing the difference between the direction indicated by said heading shaft and the direction sensed by said compass;

a second differential device sensing the difference between the azimuth direction held by said azimuth gyro and the closest one of a multiplicity of predetermined fixed directions relative to the direction indicated by said heading shaft;

a smoothing azimuth gyro drive circuit normally responsive to the sensed difference from said first differential device for altering the azimuth direction held by said azimuth gyro in the direction which tends to reduce the sensed difference from said first differential device, but during run-up responsive instead to the sensed difference from said second differential device for altering the azimuth direction held by said azimuth gyro in the direction which tends to reduce the sensed difference from said second differential device; and

a heading shaft drive circuit normally responsive to the sensed difference from said second differential device for altering the heading direction indicated by said heading shaft in the direction which tends to reduce the sensed difference from said second differential device, but during run-up responsive instead to the sensed difference from said first differential device for altering the heading direction indicated by said heading shaft in the direction which tends to reduce the sensed difference from said first differential device,

whereby during run-up, the direction indicated by said heading shaft is directly slaved to the heading direction sensed by said compass and the azimuth direction held by said azimuth gyro is directly slaved to the closest of a multiplicity of predetermined directions established relative to the direction indicated by said heading shaft, but thereafter said heading shaft is indirectly slaved to the heading direction sensed by said compass via the azimuth gyro and smoothing azimuth gyro drive circuit, thereby yielding a heading indicated by said heading shaft which is also smoothed.

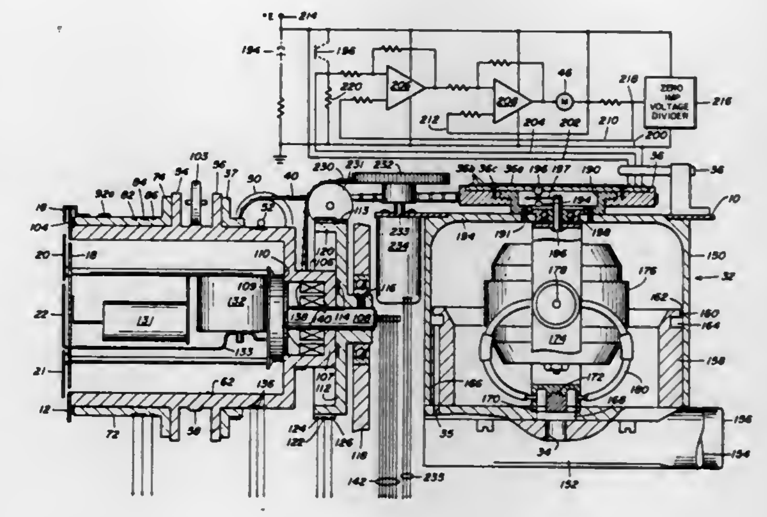
3,849,896
DIRECTIONAL GYRO INDICATOR SYSTEM

James R. Younkin, Fayetteville, Ark., assignor to Edo-Aire Mitchell Industries, Inc., Mineral Wells, Tex.

Filed Apr. 3, 1972, Ser. No. 240,382

Int. Cl. G01c *19/28*

U.S. Cl. 33—318 **16 Claims**



1. A directional gyro indicator for aircraft comprising:

a. a generally horizontal barrel having a heading card normal to the barrel axis and located at the front end of said barrel,

b. a directional gyro supported behind said barrel and having an outer gimbal disposed on a vertical axis,

c. a tracking disk rotatably mounted on said vertical outer gimbal axis of said gyro,

d. pickoff means for detecting the angular displacement between said tracking disk and said outer gimbal and for producing an error signal indicative of such displacement,

e. toothed belt transmission means coupling said tracking disk and said barrel for equal rotation of said disk and barrel without relative slippage therebetween,

f. servo motor drive means for said transmission means responsive to the error signal from said pickoff means for slaving said tracking disk to said gyro, and

g. friction clutch means in said barrel for decoupling said heading card from said tracking disk to facilitate setting said card relative to said tracking disk.

3,849,897
FLUIDIC CLINOMETER CONTROL APPARATUS

Costas E. Markakis, 12 Aravantinou St., Ekali, Athens, and George N. Vamvakoussis, Spiridon Trikoupi 39-41, Athens, both of Greece

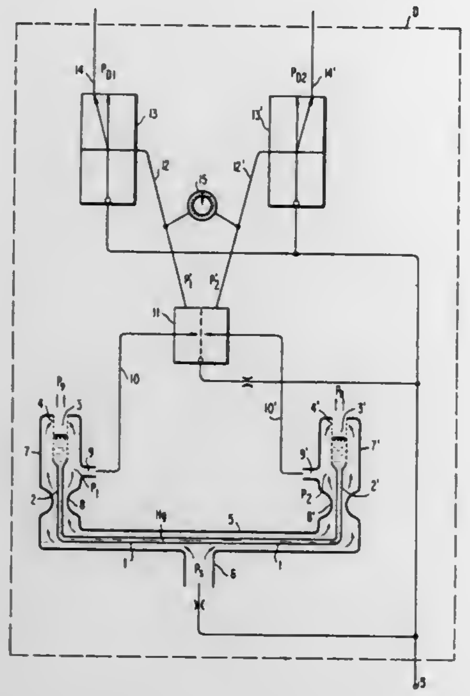
Filed Nov. 23, 1973, Ser. No. 418,303

Int. Cl. G01c *9/22*

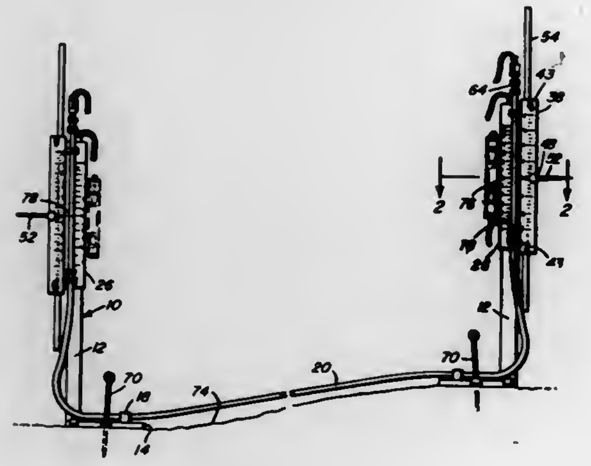
U.S. Cl. 33—365 **13 Claims**

1. A fluidic clinometer for automatically controlling the operation of servomechanisms, comprising a substantially U-shaped tube with its legs terminating in chambers of equal size, which are open to the atmosphere and are formed of microporous material, of a porosity permitting the passage of air, or other similar fluid, therethrough but inhibiting the escape of liquid from within the chambers; a suitable liquid partially filling the tube up to about the middle of the height of the chambers when the leg connecting part of the U-shaped tube is horizontal and the legs are vertical; a substantially U-shaped, fluidtight casing of greater diameter than the tube

concentrically enclosing said tube throughout, thus forming an annular air passage between said tube and said casing, and said casing being provided with a fluid inlet medially of its connecting part and with a fluid outlet in each of its legs, the outlets being adapted to communicate with and control servomechanisms.

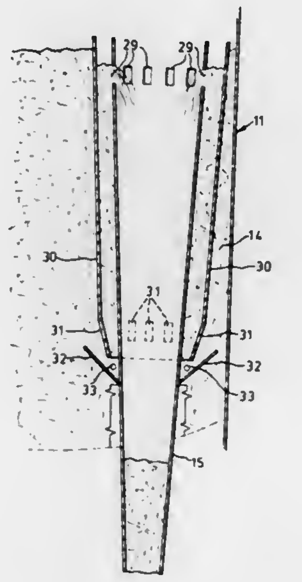


3,849,898
ELEVATION INDICATING APPARATUS
Harry E. Turloff, 3378 Clyde Dr., Port Huron, Mich. 48060
Filed Aug. 9, 1972, Ser. No. 279,241
Int. Cl. G01c *5/04*
U.S. Cl. 33—367 **10 Claims**



1. A pair of upright stands, a pair of supports mounted on said stands for adjustable positioning therealong, clamp means carried by each of said supports, transparent vertical tubular members removably supported from said supports by said clamp means for adjustable longitudinal shifting relative to said supports, a flexible hose section extending between and communicating the lower ends of said tubular member, said stands including vertically extending first scales thereon relative to which said supports are adjustable, said scales each including predetermined portions thereof spaced the same distance above the lower ends of said stands, said predetermined portions of said first scales comprising corresponding mid-portions thereof, said first scales each comprising a double scale including top-to-bottom reversed upper and lower sections thereof extending above and below the corresponding predetermined portion thereo, each of said supports having a vertically extending second scale thereon corresponding to the first mentioned scale but with the upper and lower sections thereof reversed top-to-bottom relative to the corresponding upper and lower sections of the first scales, said tubular members being longitudinally shiftable relative to the corresponding second scales, said supports comprising sleeve members slidable on said stands, the upper and lower ends of said supports including portions registered relative to corresponding portions of the upper and lower sections of the corresponding first scales when said supports are in predetermined positions on said stands.

3,849,899
REGULATING FLUIDIZED BEDS
Ronald James Jenkinson, Weybridge, England, assignor to Exxon Research and Engineering Company, Linden, N.J.
Filed Apr. 27, 1973, Ser. No. 354,944
Claims priority, application Great Britain, May 5, 1972, 21009/72
Int. Cl. F26b *3/08*
U.S. Cl. 34—10 **15 Claims**

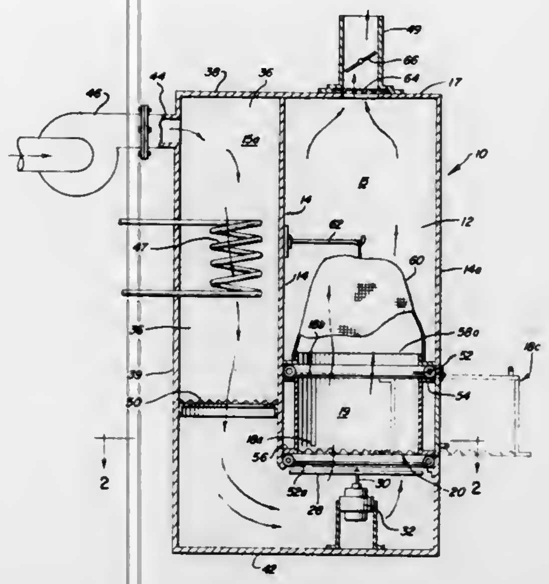


1. A method of regulating the weight of particulate solids in a fluidized bed contacting zone into which particulate solids are passed for fluidization by a fluidizing fluid and out of which particulate solids pass, the method comprising substantially disengaging particulate solids leaving the contacting zone from fluidizing fluid by passing the existing solids under the lip of an underflow weir, which underflow weir provides at least part of a containing wall of the contacting zone, into a space defined by the underflow weir and an overflow weir which is laterally separated from the underflow weir, whereby the solids pack in said space to an apparent density which is substantially independent of the degree of fluidization in the contacting zone, and causing the solids to pass over the overflow weir.

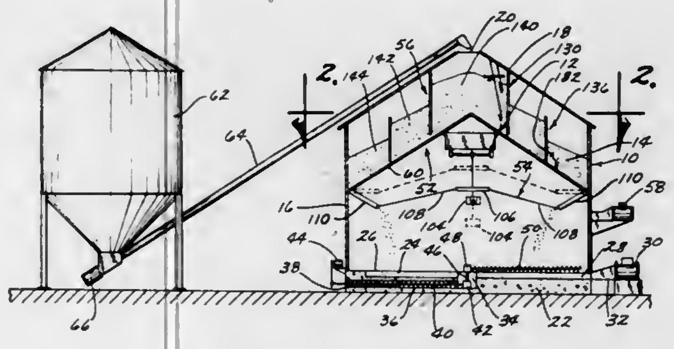
3,849,900
FLUID BED AIR DISTRIBUTION APPARATUS AND DRYING METHOD
Robert F. Dale, Brookfield; Thomas P. Rhodes, Whitefish Bay, and Joseph M. DeNucci, Beloit, all of Wis., assignors to Universal Foods Corporation, Milwaukee, Wis.
Filed July 2, 1973, Ser. No. 376,039
Int. Cl. F26b *3/08*
U.S. Cl. 34—10 **11 Claims**

1. A fluidized bed apparatus for drying of particulate material which comprises:
- a. a vertically disposed fluidizing chamber adapted to contain a product for drying, said chamber having air inlet and outlet passage means;
- b. means for passing a current of air through the fluidizing chamber;

- c. a product supporting means extending across said inlet passage, said means comprising a screen-like element having a plurality of apertures which permit the passage of air through said means but is capable of supporting the product to be dried thereon;
- d. a disc shaped element rotatably mounted below the product supporting means and substantially coextensive therewith adapted to interrupt a current of air passing through the chamber, said disc being provided with apertures therein, the apertures having an area of from one-sixth to one-half of the open area of said retaining means; and
- e. a means for rotating said disc to direct currents of air in rotating fashion through the product supporting means and through product in said chamber.



3,849,901
APPARATUS FOR DRYING GRAIN
Vernon H. Sietmann; Raymond L. Smith, both of Laurel, and Larry S. Keese, Gilman, all of Iowa
Filed May 29, 1973, Ser. No. 364,955
Int. Cl. F26b *19/00*
U.S. Cl. 34—44 **19 Claims**



1. An apparatus for drying granular material in a grain bin having an enclosure forming wall, a roof mounted over the wall, and a base floor for the wall, the apparatus comprising: a floor mounted in the upper part of the bin, said floor being inclined and sloping downwardly from the center of the bin toward and in contacting relation with the wall whereby granular material disposed on said floor is normally prevented from falling onto said base floor, said floor having a plurality of spaced apart openings formed therein adjacent said wall through which the granular material can fall,

a valve means positioned below each of said openings and being movable between open and closed positions to permit granular material to fall through said openings and to prevent granular material from falling through said openings respective,

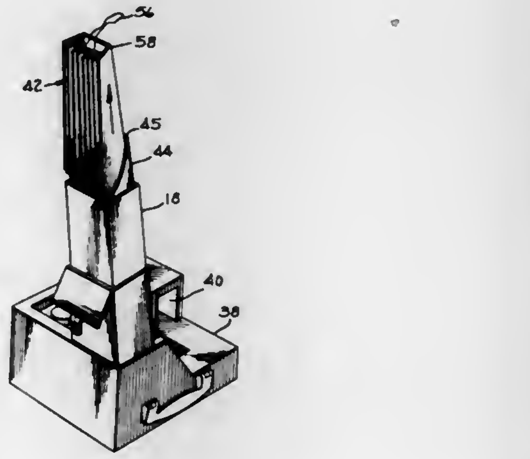
means for opening and closing said valve means,

means for supplying drying air within the bin and below said floor,

a thermostat means on said floor for sending the temperature of the granular material thereon,

said thermostat means being operatively connected to said means for opening and closing said valve means so that said valve means will be opened when said thermostat means senses a first predetermined temperature and so that said valve means will be closed when said thermostat means senses a second predetermined temperature.

3,849,902
COLLAPSIBLE HAIR DRYER
Joseph H. Clark, Jr., Trumbull, and Donald K. Harmon, Monroe, both of Conn., assignors to General Electric Company, Bridgeport, Conn.
Filed Nov. 8, 1973, Ser. No. 413,801
Int. Cl. A45d *20/24*
U.S. Cl. 34—99 **16 Claims**



1. A hair dryer comprising,

a housing enclosing means for producing a flow of heated air,

a collapsible hood arranged to be positioned on a user with means for distributing heated air to the head,

duct means connected to said hood for directing air from said producing means to said hood including telescoping tubular duct means,

said duct means being manually selectively extensible and foldable on common housing axes,

said hood being collapsible for storage in the duct means,

means connecting said duct means to said housing,

whereby the duct means containing the stored hood may be folded into the housing for storage when not in use.

3,849,903
ROTARY DEHYDRATOR HAVING ANTI-DISCHARGE STRUCTURE FOR MOISTURE-LADEN MATERIALS
Wallace L. McGehee, Kansas City, Mo., assignor to American Pollution Prevention Co., Inc., Minneapolis, Minn.
Filed Oct. 29, 1973, Ser. No. 410,495
Int. Cl. F26b *11/02*
U.S. Cl. 34—132 **2 Claims**

1. In a rotary dehydrator:

an elongated, tubular drum mounted for rotation about its longitudal axis;

a pair of stationary end walls for said drum,

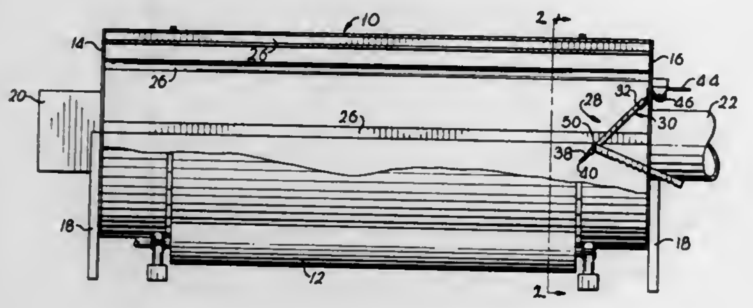
one of said end walls having an inlet to the interior of said drum for introducing moisture-laden materials and a heated stream of air into the drum, the opposite end wall having an outlet from the drum for discharging dehydrated materials entrained within said airstream from the drum;

means within said drum for repeatedly lifting and tumbling the materials into and through said airstream as said drum is rotated and as the materials advance toward said opposite end wall; and

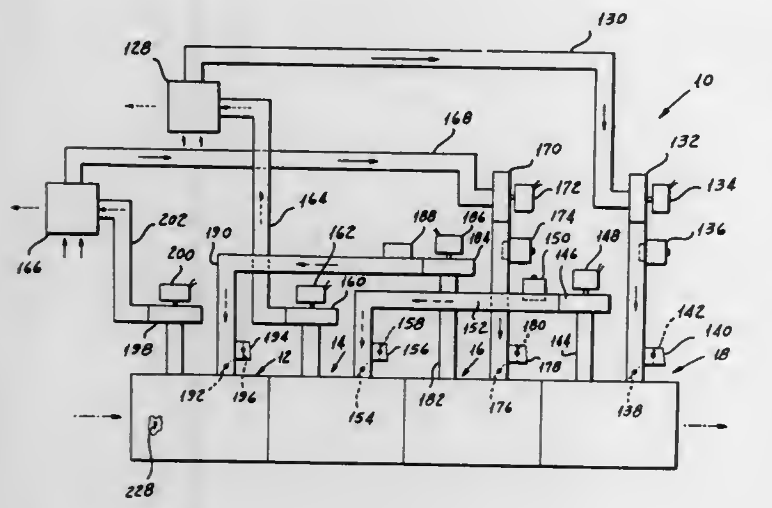
an inclined baffle overlying said outlet for obstructing access to the latter by the tumbling materials and those entrained within said airstream for preventing the discharge of those materials not sufficiently dehydrated to be carried out the outlet with said airstream,

said baffle having an upper and a lower end,

said baffle being extensible for varying the position of said lower end with respect to said outlet.

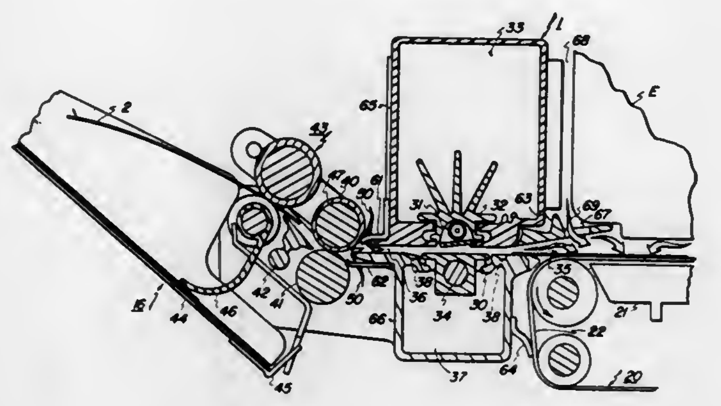


3,849,904
HORIZONTAL FLAT BED THROUGH DRYING SYSTEM
Joseph A. Villalobos, Ramsey, N.J., assignor to AER Corporation, Ramsey, N.J.
Filed Apr. 4, 1973, Ser. No. 347,895
Int. Cl. F26b *13/10*
U.S. Cl. 34—155 **32 Claims**



1. A system for drying a wet web of fibrous material including in combination, a plurality of drier units each including an air input section and an air outlet section, means mounting said units in series between a wet web end of said system and a dry web end thereof, a support of air pervious material for carrying said web through said units between said sections in a direction from said wet end to said dry end, means for supplying heated fresh air to the input section of one of said units relatively adjacent to said dry end of said system, means independent of said fresh air supplying means for recycling air from the outlet section of said one unit directly to the input section of another unit relatively adjacent to said wet end of said system, and means for removing air from the outlet section of said other unit.

3,849,905
FUSING APPARATUS
David P. Bierworth, and Frank R. Hynes, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 4, 1973, Ser. No. 421,710
Int. Cl. F26b *13/04*
U.S. Cl. 34—155 **10 Claims**



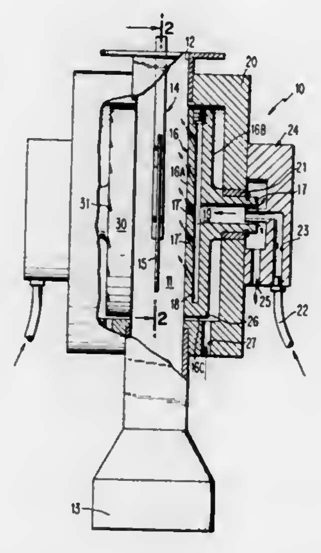
1. In a fusing apparatus for heat fusing a toner image to a sheet of final support material including:

a fuser having a source of heat radiation for application to said sheet, said fuser defining a fusing zone wherein said heat source is effective to fuse said image to said sheet, and a flow of air at said zone; the improvement wherein said apparatus further includes;

first transport means for transporting said sheet, said transport means being located adjacent said fuser, an air channel being defined between said transport means and said fuser; and

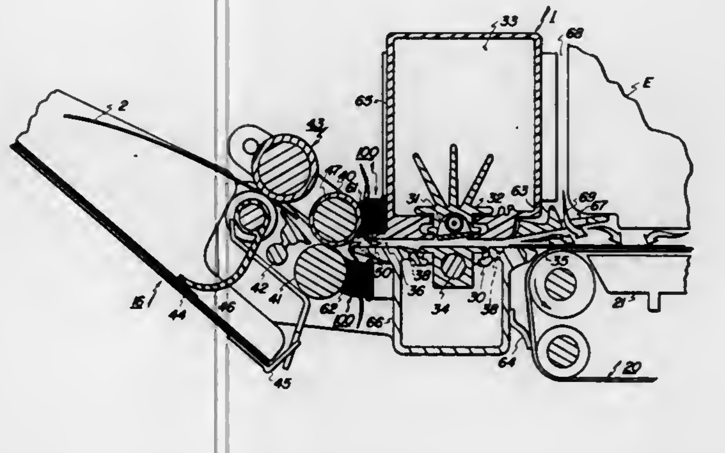
means cooperating with said fuser for reducing curl of said sheet during fusing, said curl reducing means comprising at least one seal extending over a gap between said fuser and said transport means for limiting air flow at said zone to an amount at which curl of said sheet is substantially reduced.

3,849,906
ROTARY FLUID APPLICATOR
Howard Eugene Hansen, Fishkill; Robert Joseph Straub, Poughkeepsie, and Edward Martin Tuczynski, Hudson all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 7, 1973, Ser. No. 413,753
Int. Cl. F26b
U.S. Cl. 34—229 **10 Claims**



1. Apparatus for applying a fluid medium to a workpiece, said apparatus comprising: a chamber; a rotatably mounted disk in said chamber; means for suspending a workpiece in said chamber adjacent said disk, a plurality of angulated slots in the surface of said disk to provide a flow of fluid media from one surface of said disk at an oblique angle to said workpiece, and scallops on said disk, and means to provide a flow of fluid medium against said scallops to effect a rotation of said disk as said fluid is ejected from said one surface thereof.

3,849,907
FUSING APPARATUS
Thomas Lynch, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 4, 1973, Ser. No. 421,709
Int. Cl. F26b *25/00, 13/04*
U.S. Cl. 34—242 **11 Claims**



1. In a fusing apparatus for heat fusing a toner image to a sheet of final support material including:

a fuser having a source of heat radiation for application to said sheet, said fuser defining a fusing zone wherein said heat source is effective to fuse said image to said sheet, and a flow of air at said zone; the improvement wherein said apparatus further includes:

means cooperating with said fuser for reducing curl of said sheet during fusing, said curl reducing means comprising at least one seal adjacent said zone for limiting air flow at said zone to an amount at which curl of said sheet is substantially reduced, said seal comprising an elongated member having a brush-like configuration.

3,849,908
METHOD AND MEANS FOR TRAINING DRIVERS TO OPERATE AUTOMOBILES
James L. Sturgeon, 4544 Via de la Plaza, Yorba Linda, Calif. 92686
Continuation-in-part of Ser. No. 212,797, Dec. 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 13,537, Feb. 24, 1970, abandoned. This application Mar. 12, 1973, Ser. No. 340,091
Int. Cl. G09b *19/16*
U.S. Cl. 35—11 **2 Claims**

1. A method of teaching a pupil to drive, which includes,

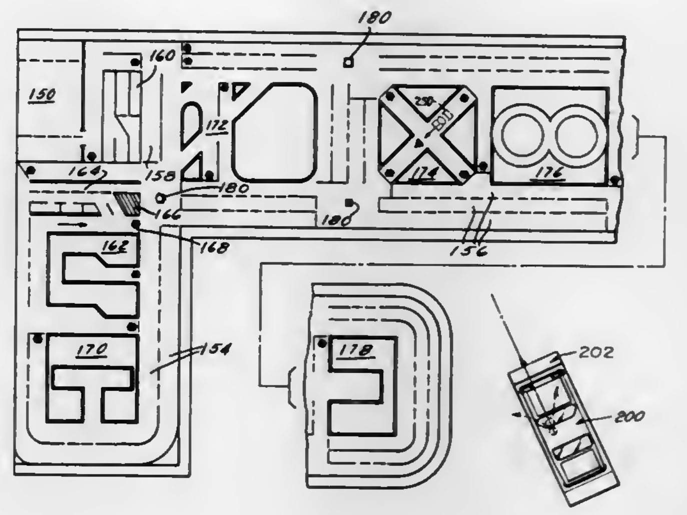
providing a tethered automobile mounted on a stationary platform with the automobile front wheels resting upon rollers which enable the front wheels to turn without movement of the automobile along the ground,

applying driving force to rotate the front wheels of the automobile while enabling the pupil to conduct steering movement of the front wheels from side to side,

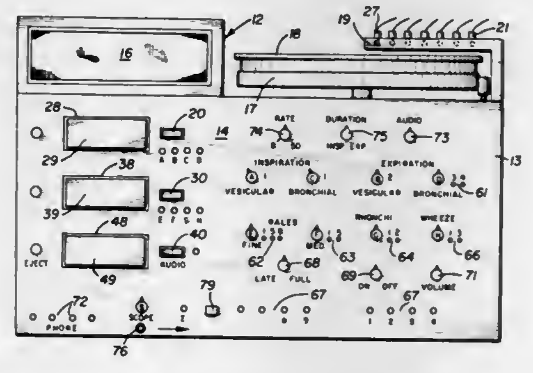
positioning a driving range within the range of vision of the pupil in the tethered automobile,

causing a second automobile to be driven along a predetermined path of movement on the driving range while under the observation of the pupil in the tethered automobile; and

causing the pupil to perform steering motions in the tethered automobile corresponding to the observed movements of the second automobile.



3,849,909
RESPIRATORY SOUNDS TEACHING APPARATUS
Abe Ravin, 45 S. Dahlia St., Denver, Colo. 80222
Filed Nov. 2, 1973, Ser. No. 412,214
Int. Cl. G09b *23/28*
U.S. Cl. 35—17 **19 Claims**



1. Apparatus useful in connection with the teaching of diagnostic procedures related to patient respiratory sounds comprising a source of separate continuously repetitive sound related signals, signal gating means for controlling the release of said separate sound signals on a cyclic basis to simulate patient breathing functions inclusive of separately identifiable inspiration and expiration time intervals within each cycle, and means for changing the proportionate time distribution within each cycle for said separate inspiration and expiration time intervals.

3,849,910
TRAINING APPARATUS FOR FIREARMS USE
Robert B. Greenly, Sunnyvale, Calif., assignor to The Singer Company, Binghamton, N.Y.
Filed Feb. 12, 1973, Ser. No. 332,036
Int. Cl. F41g *3/26*
U.S. Cl. 35—25 **17 Claims**

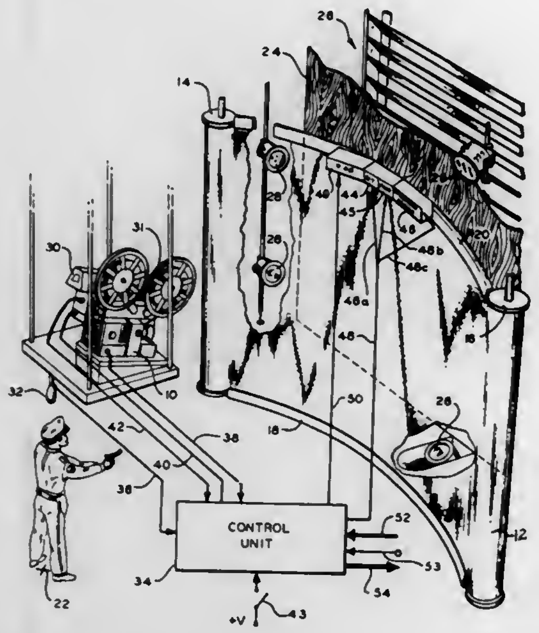
1. In a process for simulating firearms use situations wherein a trainee discharges a firearm at a screen on which a target is displayed and a projectile penetrates the screen, a method of automatically scoring the trainee's response, comprising the steps of:

a. providing first electrical signals defining at least one area of the target displayed on the screen;

b. directing electromagnetic radiation toward one side of said screen to pass through any aperture therein made by the fire projectile;

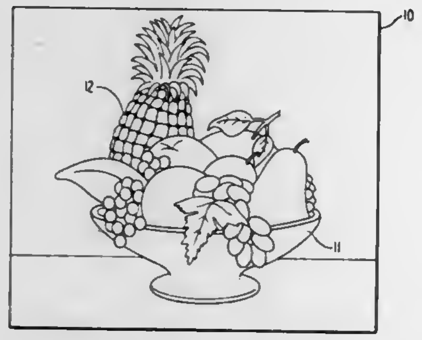
c. detecting radiation passing through said aperture to generate a second electrical signal indicative of the location of said aperture; and

d. comparing the value of said first electrical signals with said second electrical signal to determine the degree of correlation between said aperture location and said target area.



3,849,911
PAINTING GUIDE KIT

Lineaus W. Longenecker, R.D. No. 4, Manheim, Pa. 17545
Filed Apr. 6, 1973, Ser. No. 348,798
Int. Cl. G09b *11/10*
U.S. Cl. 35—26 **6 Claims**



1. An art kit, for aid in applying paint to art board, canvas, or panel, including a plurality of sheets comprising

a. a sheet which is a depiction of a completed painting, containing representations of objects colored in paint;

b. at least one guide sheet containing a coded drawing representing the depiction of element (a), wherein the code of said coded drawing corresponds to the color shades of objects in said element (a);

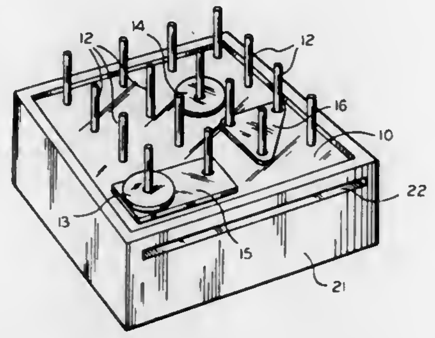
c. a guide sheet indicating the code in elements (b) and the amounts of basic colors to be mixed to achieve said respective color shade;

whereby basic colors are mixed in accordance with element (c) to obtain shades of color in accordance with the code of element (c) corresponding to the objects coded in element (b) and applied to an art board, canvas or panel to produce at least a portion of element (a), and

d. at least one opaque guide sheet containing a linear outline sketch of the subject of said painting which linear outline sketch may be transferred to said art board, canvas or panel.

3,849,912
EDUCATIONAL TOY

Ronald Kemnitzer, 1732 Cambria Dr., East Lansing, Mich. 48823
Filed Oct. 10, 1973, Ser. No. 405,168
Int. Cl. G09b *1/10*
U.S. Cl. 35—28.3 **8 Claims**



1. An educational toy for teaching color mixing, shape identity, and sequence comprising:

an illuminated surface which is at least partially transparent;

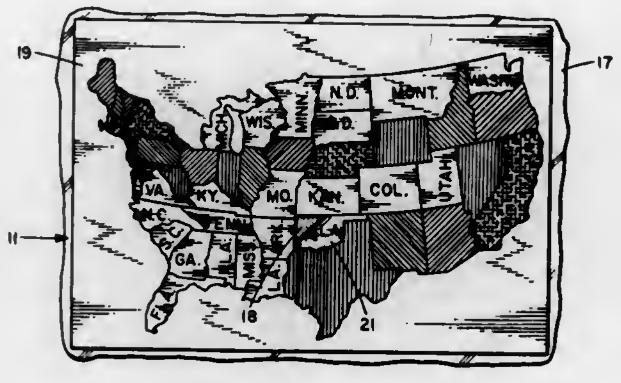
a plurality of ordered dowels projecting from said illuminated surface;

a lighting means which illuminates said illuminated surface from the side opposite said dowels; and,

a plurality of at least partially transparent playing pieces of assorted colors and geometric shapes, each piece including at least one alignment means so that the piece can be aligned upon said ordered dowels in an intelligible manner, said pieces being capable of overlapping one another.

3,849,913
DISPLAY MAP DEVICE FOR INDICATING THE EXTENT OF THE TRAVELS OF A MOTORIST

Bradford A. Williams, Sr., 8231 Driftwood Dr., Norfolk, Va. 23518
Filed Nov. 30, 1970, Ser. No. 93,541
Int. Cl. G09b *29/00*
U.S. Cl. 35—42 **8 Claims**



1. A display map device for indicating the extent of the travels of a motorist, comprising:

a base sheet of transparent material carrying depicted thereon an outline map showing the overall border configuration of at least a portion of a nation or the like having a plurality of subdivisions, said outline map further showing the border configurations of said subdivisions;

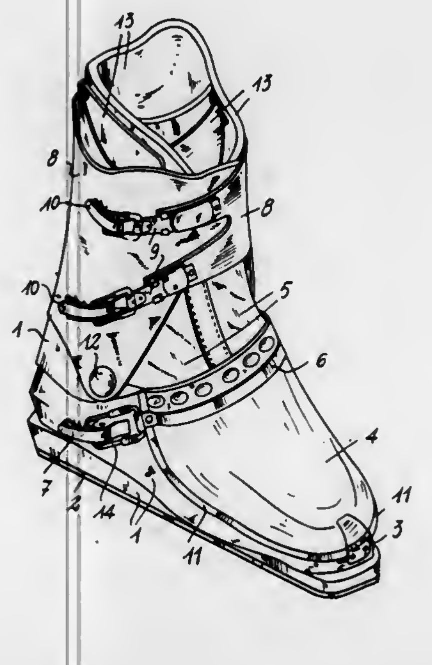
a first layer of transparent, pressure sensitive adhesive coating the face side of said base sheet carrying said outline map, said first layer of adhesive being adapted to be firmly pressed into contact with the interior surface of a motor vehicle window to mount said display map device on said motor vehicle;

a second layer of transparent, pressure sensitive adhesive coating the reverse side of said base sheet carrying said outline map at least throughout the extent of the total area depicted by said outline map; and

a plurality of protective sheet elements overlying and adhering to said second layer of adhesive, each of said protective sheet elements corresponding in size, shape, and positioning to one of said subdivisions depicted by said outline map, each of said protective sheet elements being separately readily removable from contact with said second layer of adhesive to permit a correspondingly sized and shaped display element formed of sheet material having a contrasting surface to be pressed in lieu thereof into contact with said second layer of adhesive to be viewed through said motor vehicle window, said first layer of adhesive, said base sheet, and said second layer of adhesive.

3,849,914
SKI BOOT

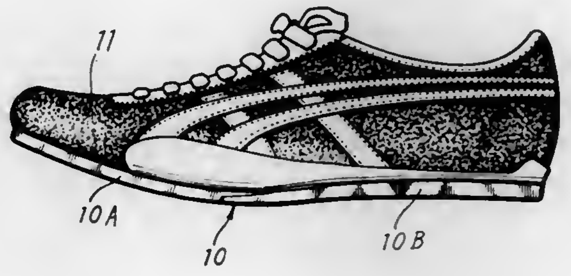
Giovanni Marco Bertele, Lurago D'Erba, Italy, assignor to F.B. S.A.S. dia Bertele Giovanni Marco, Lurago D'Erba (Como), Italy
Filed Aug. 20, 1973, Ser. No. 389,697
Claims priority, application Italy, Sept. 1, 1972, 22976/72
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 AL **3 Claims**



1. A ski boot comprising a shaped shell defining a seat for receiving a shoe, said shell having an aperture for introducing said shoe in said receiving seat, said shell including portions forming the sides, the sole and the ankle part of the ski boot, said aperture extending substantially along the entire length of the sides of the ski boot, a cover means hingedly connected to said shell at the tip thereof, sheath members of flexible material fixed to said shell and said cover means, locking members for locking said cover means in superimposed relationship on said aperture, said cover means and said shell being made of substantially rigid and tough material, and sealing means disposed along the edge of said aperture, said cover means having a closed position in which it rests on said sealing means.

3,849,915
SPORT SHOE

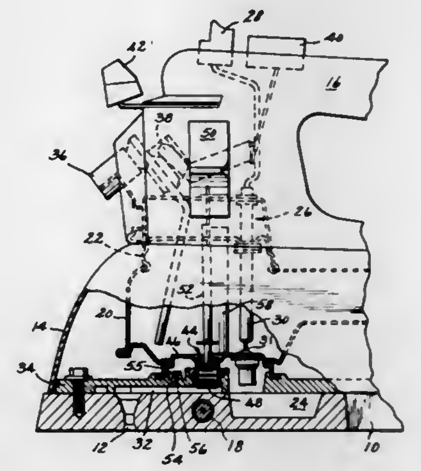
Masanobu Inohara, Akashi, Japan, assignor to Onitsuka Co., Ltd., Kobe, Japan
Filed July 30, 1973, Ser. No. 383,800
Claims priority, application Japan, Mar. 1, 1973, 48-24971; Mar. 26, 1973, 48-12519; May 8, 1973, 48-18261
Int. Cl. A43c *15/00*
U.S. Cl. 36—67 B **12 Claims**



1. A sport shoe comprising a sole and an upper mounted on the sole, the sole having a lower surface provided with a plurality of recesses each having a rounded inner wall surface, and a plurality of metallic spikes extending from non-recessed portions of the lower surface of the sole, the effective length of each spike being between the lower surface of the sole and the lower end of the spike, each spike having a longitudinal axis and a lower axially extending portion, the lower portion of each spike having a uniform cross-section throughout the length thereof, the lower end of each lower portion having a planar surface crossing the axis of the spike.

3,849,916
SELF-CLEANING STEAM IRON

William E. Davidson, Ontario, and Kaj Toft, Upland, both of Calif., assignors to General Electric Company, Bridgeport, Conn.
Filed Nov. 10, 1972, Ser. No. 305,574
Int. Cl. D06f *75/06*
U.S. Cl. 38—77.83 **6 Claims**



1. In a steam iron having a water tank and steam generating soleplate with ports, steam control means including a valve to start and stop a metered flow of water from the tank to a soleplate steam generating cavity, the improvement in means to purge the iron through the soleplate comprising,

a coverplate overlying the soleplate to define steam passages therebetween,

means connecting the cavity and passages to admit steam thereto,

said means comprising a separate continuously open conduit through said coverplate, a substantially large separately-controlled opening in said tank communicating directly with the inner surface of the soleplate,

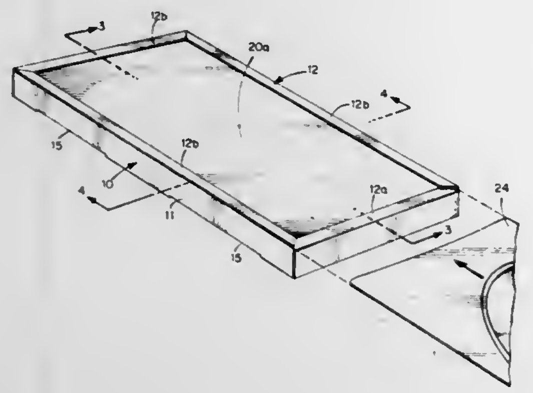
whereby the tank water may be suddenly dumped onto the soleplate to empty rapidly through said ports.

3,849,917
DISPLAY COMPONENT

George G. Bergh, and Robert G. Bergh, both of Plainville, Mass., assignors to Bergh Bros. Co., Inc., Attleboro Falls, Mass.

Filed June 7, 1973, Ser. No. 367,786
Int. Cl. G09f *3/18*

U.S. Cl. 40—16 **4 Claims**



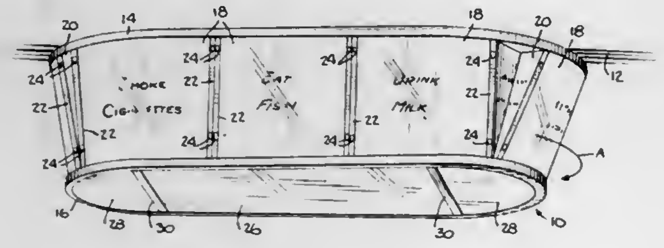
1. A display component for use for example as a lid for a box or other like container, said component comprising: a continuous multi-sided wall member, upper and lower flange means extending laterally and inwardly from the upper and lower edges respectively of said wall member, said upper flange means including a first upper flange member on one side of said wall member, said first upper flange member lying in a first plane which extends transversally to the wall member, said upper flange means further including second upper flange members extending inwardly from the remaining sides of said wall member, said second upper flange members lying in a second plane which is substantially parallel to and spaced vertically above said first plane, a support member located within the confines of said wall member between said upper and lower flange means, said support member having a planar surface lying in a third plane directly adjacent to said first plane and spaced vertically beneath said second plane, said planar surface cooperating with said second upper flange members to provide means for retaining therebetween an insert which may be slidably inserted over said first upper flange member to a position located within the confines of said wall member.

3,849,918
CONTINUOUS DISPLAY DEVICE

Dante V. Mazzocco, Sr., 394 Ridge Rd., Hartsdale, N.Y. 10530

Filed July 23, 1973, Ser. No. 381,401
Int. Cl. G09f *11/28*

U.S. Cl. 40—32 **23 Claims**



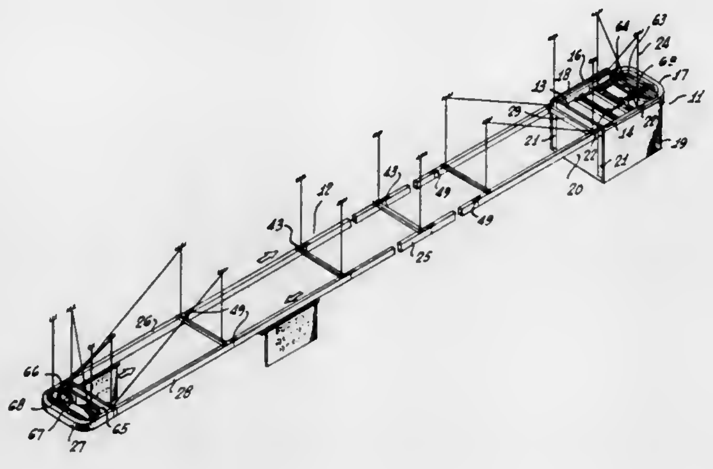
21. A visual display apparatus comprising a support structure adapted to be suspended from a ceiling light fixture, a plurality of visual display panels having upper and lower edges, means for supporting said panels and moving same so that their upper edges follow a first closed path around said fixture and their lower edges follow a second closed path of a different length than and located below and horizontally offset with respect to said first path so that said panels remain tilted from vertical for convenient viewing, and lamps supported by said support structure for providing back illumination for said display panels.

3,849,919
DYNAMIC ADVERTISING DISPLAY SYSTEM

Elmer Gravelle, La Mirada, and John J. Casparro, Canoga Park, both of Calif., assignors to Don Fedderson Productions, Studio City, Calif.

Filed Dec. 14, 1973, Ser. No. 424,864
Int. Cl. G09f *11/28*

U.S. Cl. 40—32 **10 Claims**



1. A dynamic advertising display system comprising:

an enclosed storage magazine for holding a plurality of display panels in side by side relationship in a storage area and including a receiving station on one side of said storage area and a discharge station on the opposite side of said storage area and said magazine having means for lateral shifting of said panels from said receiving station to said storage area and from said storage area to said discharge station;

means defining a horizontal display path communicating with said discharge station and extending away therefrom and returning to said receiving station and communicating therewith, said display path including an elongated tubular track of rectangular configuration having a slot longitudinally running along the bottom wall thereof, the inner surfaces of the bottom wall adjacent said slot defining lower roller support surfaces, each side wall carrying an opposed aligned inwardly extending flange spaced above the bottom wall, said flanges separating said track interior into an upper chamber and a lower chamber, the inner edges of said flanges spaced apart to define an upper slot for communication between said lower chamber and said upper chamber and the upper surfaces of said flanges defining an upper roller of support surface;

means for carrying each of said panels along said display path and for shifting panels within said magazine, said means including an elongated carrier body from which each said panel depends, said carrier body provided with at least one upstanding post, a portion of which extends through said lower slot of said track and carries a caster assembly for travel along said lower roller support surface of said lower chamber, the ends of said carrier body defining a camming surface for contacting a carrier in said receiving chamber and laterally urging it out of said receiving chamber into said storage area and for concurrently shifting a carrier out of said storage area into said discharge station; and

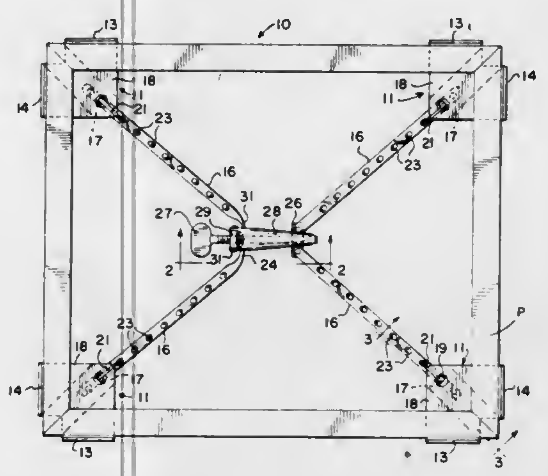
drive means comprises a motor driven endless cable continuously circulating from said discharge station through said tubular track and to said receiving station, said cable carrying means cooperating with said track upper chamber for engaging said post of each said carrier in said discharge station for movement around said display path and for disengaging from said post said receiving station.

3,849,920
QUICK RELEASE AND ADJUSTABLE PICTURE FRAME CLAMP

Leonard D. Trowbridge, 16200 Woodbridge, Harvey, Ill. 60426

Filed Feb. 22, 1974, Ser. No. 444,972
Int. Cl. G09f *1/12*

U.S. Cl. 40—155 **6 Claims**



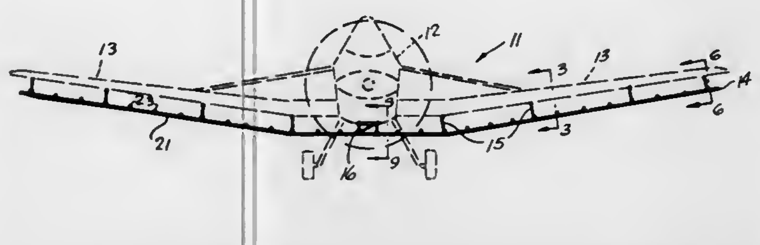
1. A picture frame clamp comprising four corner brackets having wall means for engaging the four corners of a picture frame so as to maintain the corners at right angles relative to each other, diagonally extending strap means attached to each of said corners, a bight connecting two of said strap means, threaded block means connecting the two remaining ones of said strap means, and toggle clamp means connecting said bight and said block for moving said corner brackets toward each other to clamp the corners of a picture frame, and away from each other to release the picture frame.

3,849,921
AIRPLANE-MOUNTED SIGN

Gerald P. Nelson, 508 Maria St., Kenner, La. 70062

Filed Dec. 14, 1973, Ser. No. 425,169
Int. Cl. G09f *21/06*

U.S. Cl. 40—212 **10 Claims**



1. A load-supporting frame assembly for use with an aircraft having laterally extending wings, said assembly comprising:

a. a frame located below said wings,

b. connecting means rigidly supporting a first portion of said frame on said aircraft,

c. suspension means spaced from said connecting means and swingably supporting a second portion of said frame remote from said first portion to prevent horizontal forces from being imposed upon the wings,

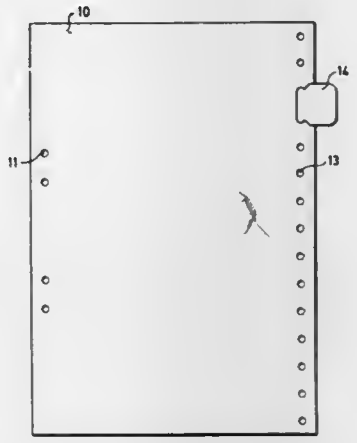
d. said connecting means and suspension means cooperating to permit substantially normal flexure of said wings.

3,849,922
GUIDE-SHEET SUCH AS A GUIDE-LEAF, A GUIDE-CARD, OR THE LIKE HAVING A DETACHABLE STUB

John Carl Erik Sahlin, Sergels vag 11 C, S-217 57 Malmo, Sweden

Filed July 27, 1972, Ser. No. 275,571
Int. Cl. B42f *21/06*

U.S. Cl. 40—360 **2 Claims**



1. In a guide-sheet comprising a sheet having a number of individual holes regularly spaced along a margin of the sheet, and at least one stub of substantially rectangular form attached to the sheet in an arbitrary position along the margin by means of two hooks provided one at each of two opposite edges of the stub in the same plane as the rest of the stub, said hooks being inserted into two holes and each of the hooks being separated from the associated edge by a notch, the inner end of which is defined by a curved edge portion forming a round transition between the hook and the rest of the stub, and being inclined towards an imaginary extension of one of two other opposite edges of the stub, the improvement that the sheet comprises a thin and easy-flexible sheet of a material which is elastically yieldable in relation to the stub, having a row of round holes along said edge, and that the two hooks of said stub are arranged adjacent the other one of said other two opposite edges, the distance between the round transitions of the notches of the hooks being slightly greater than the spacing of any two selected holes in the sheet such that the stub when the hooks thereof are inserted into two of said selected holes has a tight fit between the holes and the round transition which causes the hooks to press into the sheet to slightly deform the sheet at the selected holes, providing a wedging action of said hooks which exerts pressure against the edge of each of the holes, said stub being adapted to rotate about each of said hooks inwardly toward said sheet from an exposed position thereof to an unexposed position wherein said stub is spaced from the edge of the sheet without the necessity of detaching the stub from said sheet, rotation of said stub being accomplished by a snap-action created by movement of said hooks as they press against each of said selected holes of said sheet.

3,849,923
DESICCATING CARTRIDGE FOR FIREARM BARRELS

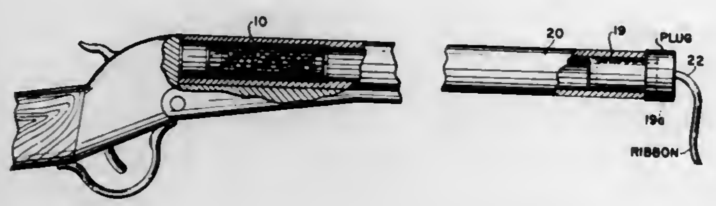
Edward J. Hawkins, 13508 S. Normandie Ave., Gardena, Calif. 90249

Filed Nov. 12, 1973, Ser. No. 414,897
Int. Cl. F41c *27/08*

U.S. Cl. 42—1 N **5 Claims**

1. A desiccant cartridge for use in a firearm, said firearm having a firing chamber, a firing pin, a muzzle, and a barrel having a bore therein, said cartridge being insertable into the firing chamber of the firearm, said cartridge including: a hollow shell case having a porous forward wall; a quantity of molecular sieve adsorbent material contained in said hollow

shell case; and a removable impervious plug having a hollow end portion dimensioned to extend coaxially over the forward end of said shell case in friction fit therewith, and having a closed end portion dimensioned to be inserted into the muzzle of the firearm as a closure for the bore of the barrel thereof.



3,849,924

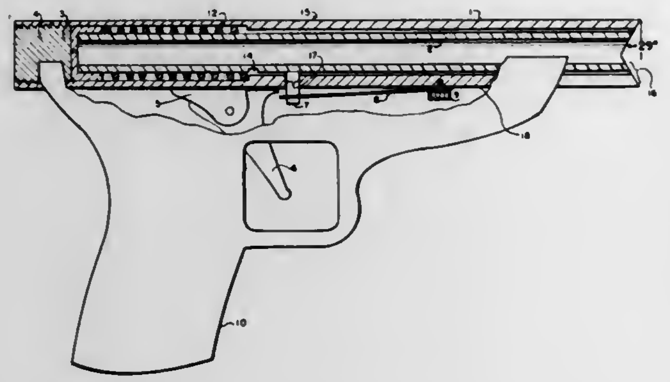
MUZZLE-LOADING PISTOL

Frank Truxal Whitlinger, P.O. Box 230, Clarion, Pa. 16214

Filed July 12, 1972, Ser. No. 271,149

Int. Cl. F41c *7/00*

U.S. Cl. 42—51 **1 Claim**



1. A muzzle-loading pistol having an outer barrel and an inner barrel, a trigger, and a sear, said outer barrel being of aluminum and closed at its rear end by a steel breech plug, said inner barrel being of steel and slidable within said outer barrel, said inner barrel having an apertured steel end cap at its rear end, said outer barrel having an opening in one side thereof permitting the insertion of an explosive cap between said breech plug and the end cap of said inner barrel, a coil spring surrounding said inner barrel and biasing said inner barrel rearwardly against said breech plug, said sear engaging a notch in said inner barrel for holding said inner barrel in a forward position spaced from said breech plug, and said trigger releasing said sear from said inner barrel notch and allowing said inner barrel to move rearwardly to compress said explosive cap between said breech plug and said end cap and ignite powder in said inner barrel through the aperture in said end cap.

3,849,925

REPEATER GUN, ESPECIALLY RIFLE

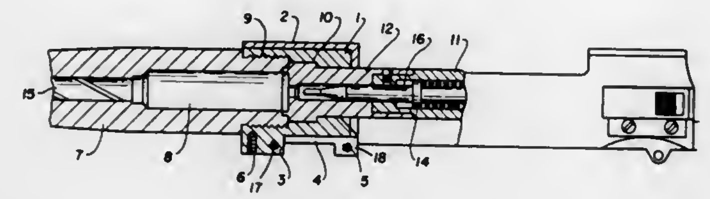
Klaus K. Mayer, Lindenhof 38, 576 Neheim-Huesten, Germany

Filed May 21, 1973, Ser. No. 362,097

Int. Cl. F41c *21/00*

U.S. Cl. 42—75 B **8 Claims**

1. In a repeater gun with exchangeable barrels having threaded ends attachable to a breech mechanism including a forwardly open breech housing having a retaining shoulder at its rear end, the improvement comprising a hollow cylinder coupling member having a barrel end and a rear end inserted into said breech housing with said coupling member rear end resting against said retaining shoulder, means for locating and securing said cylinder coupling member in said breech housing, said cylinder coupling member further comprising a front portion adjacent to said barrel end, an intermediate portion, and a rear portion adjacent to said rear end, and a circumferential inner shoulder of given inner diameter separating said front portion from said intermediate portion of the coupling member, as well as further shoulder means separating said intermediate portion from said rear portion and having an inner diameter smaller than said given inner diameter, said coupling member further comprising an inner threading inside said front portion whereby a threaded barrel end screwed into said inner threading rests against said circumferential inner shoulder of the coupling member and simultaneously forms with said further shoulder means and with said intermediate portion a bolt head receiving space.



3,849,926

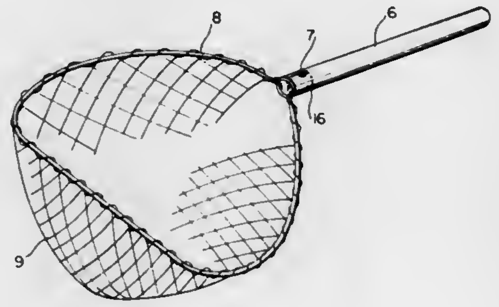
DIP NET

Sam Fox, 630 N. Pulaski St., Baltimore, Md. 21217

Filed July 6, 1973, Ser. No. 377,025

Int. Cl. A01k *77/00*

U.S. Cl. 43—11 **5 Claims**



1. Means for attaching a relatively rigid hoop to a tubular handle comprising, in combination, a tightly fitting plug inserted into one end of said handle, a pair of parallel channels running along opposite sides of said plug, a crossbore connecting said channels intermediate the ends of said plug, a hoop having a pair of parallel arms extending radially outward from said hoop along the channels in said plug and having their terminal portions turned inwardly into opposite ends of said crossbore whereby said hoop and handle are held in relatively rigid association.

3,849,927

DEVICE AND METHOD FOR PREVENTING ENTRAPMENT OF SEA MAMMALS

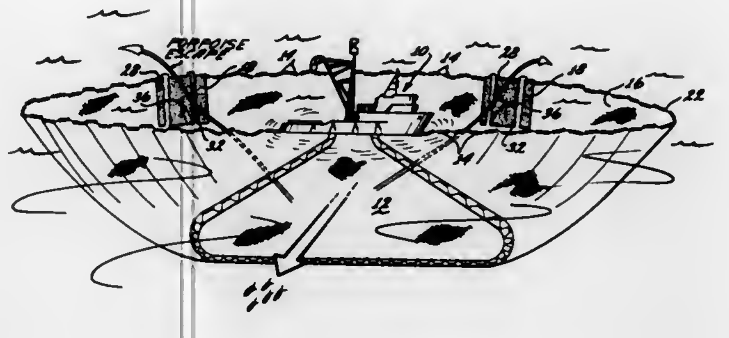
John T. Gonsalves, 600 Anita St., Space No. 39, Chula Vista, Calif. 92011

Filed Aug. 27, 1973, Ser. No. 391,744

Int. Cl. A01k *73/12*

U.S. Cl. 43—14 **7 Claims**

1. The step in the method of preventing entrapment of sea mammals while purse seining for other species of fish, the seine being of the type having floats at the top of the webbing, which step comprises disposing a material, of the type having the characteristic of preventing entanglement thereof with the nose of the seal mammal, onto the inner side of the webbing of the seine with the upper edge supported by the floats at substantially water level.



3,849,928

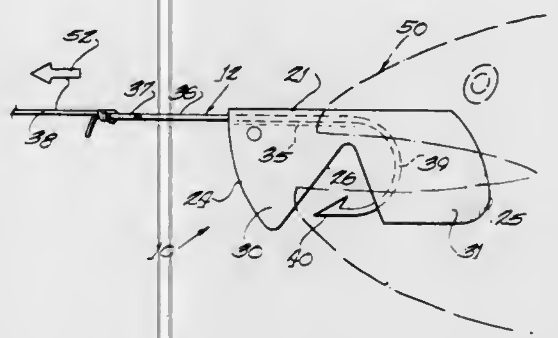
ANTI-SNAG FISH LURE

Burl T. Collins, Sr., 2802 E. Pearl St., Sioux Falls, S. Dak. 57103

Filed Apr. 29, 1974, Ser. No. 465,065

Int. Cl. A01k *83/00, 85/00*

U.S. Cl. 43—37 **4 Claims**



1. An anti-snag fishing lure comprising a longitudinally extending body member having a substantially inverted U-shaped cross-sectional configuration having a bight portion and opposed leg portions, a channel defined longitudinally between said leg portions, a slot extending vertically through each of said leg portions to define a front wing member and a back wing member in each leg portion, a fishing hook having a shank and a curved end portion terminating in a barbed terminal end, said fishing hook disposed in said channel with said shank extending longitudinally along an interior surface of said bight portion, said curved portion and terminal barbed end being completely enclosed between said back wing leg portions, and said fish hook being slidable longitudinally of said body between an inoperative position where the fish hook is completely enclosed in said body and an operative position where the barbed terminal end projects out of the body member into said slot for engagement with the mouth of a fish to capture the same.

3,849,929

BUOYANT FISHING LINE

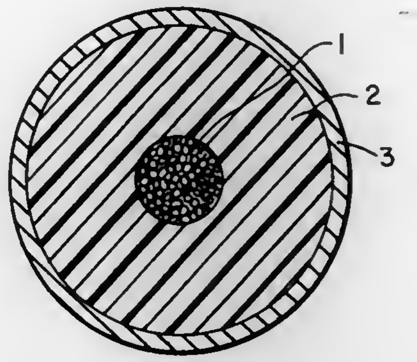
Leon L. Martuch, Midland, Mich., assignor to Scientific Anglers, Inc., Midland, Mich.

Filed Jan. 27, 1972, Ser. No. 221,148

Int. Cl. A01k *91/00*

U.S. Cl. 43—44.98 **9 Claims**

1. A buoyant fishing line dimensioned to be suitable for fly casting and including a flexible castable filamentous line having a braided configuration with an open center, a foamed thread-like core substantially completely occupying said open center and extending the length thereof to impart buoyancy to said fishing line, and a flexible surface coating on said filamentous line.



3,849,930

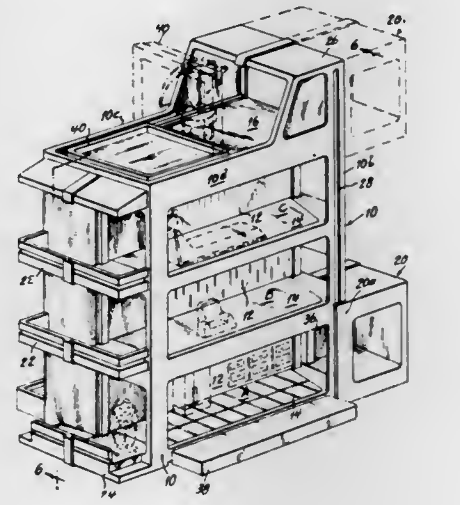
TOY PLAYHOUSE AND ACCESSORIES

Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner Bros., Inc., East Paterson, N.J.

Filed Nov. 16, 1972, Ser. No. 307,318

Int. Cl. A63h *33/00*

U.S. Cl. 46—12 **14 Claims**



1. A toy playhouse comprising:

a. a rectilinear frame including vertically and horizontally disposed structural members,

b. a partition, centrally and vertically disposed throughout the height of the frame dividing the frame into two separate sections,

c. panels disposed horizontally in the same plane as the horizontal structural members of the frame and secured and supported by the horizontal structural members, said horizontal panels dividing each section of the frame into vertically oriented sub-sections, said frame, partition, and panels decorated, oriented and assembled to effect a simulation of two separate and diverse buildings constructed back-to-back and each building exposing to view a vertical array of rooms,

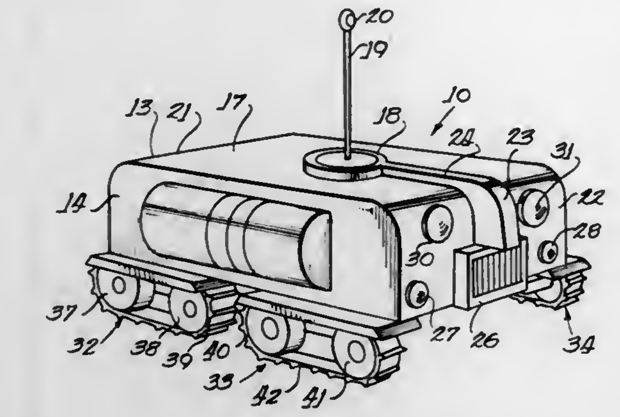
d. a horizontally disposed roof panel covering both sections of the playhouse, and

e. an elevator cab and elevator guideway, said elevator cab and elevator guideway disposed at one end of the playhouse with said elevator cab divided into two separate sections by a central vertically disposed panel, each of said sections oriented to serve the vertical array of rooms of one of the simulated buildings.

3,849,931

DIRECTION SEEKING TOY VEHICLE

Jesse Gulley, Jr., 1140 S. Keeler, Chicago, Ill. 60624
Filed July 27, 1973, Ser. No. 383,407
Int. Cl. A63h *33/26*
U.S. Cl. 46—244 **5 Claims**



1. An electrically operated direction seeking toy vehicle to be powered by self contained battery means, comprising in combination:

a body member having spaced apart sides, a top, a posterior, aspect, and an anterior aspect, forming an outer configuration to give the general appearance of a particular type of vehicle being designed to travel over various kinds of terrains such as rocks or grass and the like, said anterior aspect of said body member including a longitudinally disposed divider member extending forwardly of the forwardmost part of said anterior aspect;

drive wheel means rotatably secured to said body member and arranged to transport said body member in both turning and straight line maneuvering, said drive wheel means being formed of a pair of independent drive wheel units, one drive wheel unit associated with each side of said body member, each of said drive wheel units including a pair of front and rear tractor drive wheel units, each tractor drive unit including a pair of independent wheel members and a resilient gripping tractor belt passing over each of said pair of independent wheel members to effect simultaneous rotation thereof, each of said drive wheel units being operated to rotate at the same speed for effecting straight line travel of said direction seeking toy vehicle, and each of said drive wheel units being operated at different speeds with respect to one another to effect a turning action of said direction seeking toy vehicle, said turning maneuvering action being effected as a result of an external light control signal to be directed toward the direction seeking toy vehicle;

drive motor means coupled to said drive wheel means to transfer motive power thereto when said drive motor means is electrically energized, said drive motor means including a pair of independently energized electric battery powered drive motor units, each of said battery powered drive motor units being coupled to its associated said front and rear tractor drive units to provide means for driving said tractor drive units at a speed which is proportional to the speed of rotation of their associated battery powered motor drive unit;

relay means secured within said interior portion of said body member and arranged to be energized by self contained battery means when they are positioned within said body member in suitable receiving brackets;

photo electric responsive means secured to said anterior aspect of said body member to be receptive of external light beam energy which is directed toward said anterior aspect of said body member; and

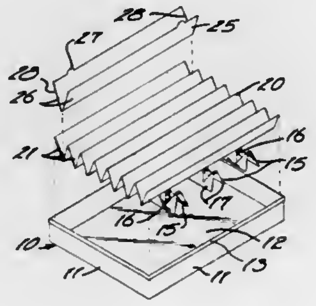
said battery powered drive motor units each is formed so as to include a double ended shaft extending in opposite directions from a drive motor housing, each end of said double ended shaft having a gear connection coupled to each one of said front and rear tractor drive units, said front and rear tractor drive units including a gear shaft extending inwardly of said body member, with said gear shafts of one set of front and rear tractor drive units facing the gear shafts of the tractor drive units being coupled to the double ended gear shafts of the associated drive motor units;

whereby the direction of travel of said direction seeking toy is controlled in response to the direction from which external light beams impinge upon the anterior aspect of said body member, such that a light beam directed in alignment with said longitudinally disposed divider member will cause said direction seeking toy vehicle to travel forwardly in a straight line whereas a light beam directed toward said anterior aspect from one side or the other side of said longitudinally directed divider member will cause said direction seeking toy vehicle to turn toward the direction of the light source.

3,849,932

PLANT STARTING APPARATUS

J. Henry Adams, 64 Onyx Ave., Walla Walla, Wash. 99326
Filed June 6, 1973, Ser. No. 367,567
Int. Cl. A01g *9/10*; **B65d** *5/48*
U.S. Cl. 47—37 **2 Claims**



1. In a plant starting apparatus:

an upwardly-open watertight rectangular container having upright side and end walls extending about a horizontal bottom wall;

a corrugated trough support having an upper surface presenting a plurality of elongated parallel grooves and ridges extending from one end of the trough support to the other, the trough support being releasably supported within the container with top edges of the upright container side and end walls at an elevation above that of the ridges of the corrugations;

a plurality of elongated troughs, each complementary in cross section to the grooves within the corrugated trough support, said troughs being individually releasably supported within the respective grooves;

each trough having opposed open ends loosely abutting opposed upright end walls of the container; and

transverse support elements having spaced slots formed therein complementary in configuration to the cross-sectional shape of the corrugations of said corrugated trough support, the transverse support elements extending between the opposed side walls and being releasably held within the container to support the corrugated trough support elevationally above the bottom wall of the container.

3,849,933

DEVICE WITH UNBALANCED ROTATABLE MEMBERS

Donald J. Kuntz, 361 Sullivan Rd., Aurora, Ill. 60504
Continuation-in-part of Ser. No. 280,051, Aug. 11, 1972, abandoned. This application Feb. 21, 1974, Ser. No. 444,309
Int. Cl. A63h *5/00*
U.S. Cl. 46—52 **12 Claims**

1. An amusement device comprised of:

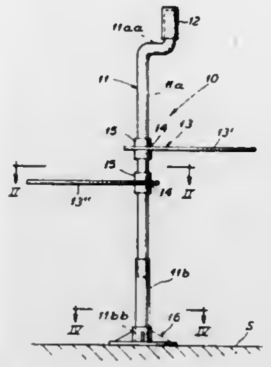
a cylindrical axially extending upright member, said upright member having a first means at one end thereof for manual grasping and a second means at an end opposite said one means for contacting a support surface;

at least one plate-like member which includes a center of gravity and at least one aperture for encircling said upright member, said aperture being positioned at a rotational axis of said plate member located between said center of gravity and an outer peripheral border of said plate member; and

an axially movable support means having an opening for snugly encircling said upright member and surfaces outwards of said opening for supporting said plate member at a select location on said upright member while allowing said plate member to freely rotate about said upright members;

said plate member being mounted via said aperture therein onto said upright member and being located between said first and second means of said upright member via said support means for free rotation about said upright member,

whereby select movement of said first means of the upright member causes said plate member to rotate on said rotational axis and about said upright member.



ERRATUM

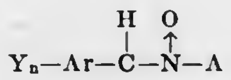
For Class 47—37 see:
Patent No. 3,849,932

3,849,934

ALPHA-ARYL-N-LOWER ALKYL NITRONE-CONTAINING COMPOSITIONS USEFUL AS ANTI-FUNGAL AGENTS

Kenneth P. Dorschner, and James A. Albright, both of Jacksonville, Fla., assignors to SCM Corporation, Cleveland, Ohio
Division of Ser. No. 139,867, May 3, 1971, Pat. No. 3,740,441. This application Jan. 11, 1973, Ser. No. 322,681
Int. Cl. A01n *9/02*
U.S. Cl. 47—57.6 **7 Claims**

1. A seed protected against attack by soil fungi, said seed being coated with an effective fungicidal amount of about 0.2–4 percent by weight of an α-phenyl-N-C_{1-4} alkyl nitrone of the formula:



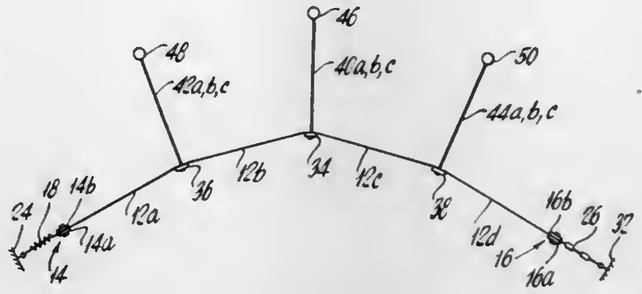
$$Y_n\text{—Ar—}\overset{\overset{\large H}{|}}{C}\text{—}\overset{\overset{\large O}{\uparrow}}{N}\text{—A}$$

where "Y" is a substituent selected from the group consisting of chloro, bromo, fluoro, hydroxyl, C_{1-4} alkyl, C_{1-4} alkoxy, and nitro; "Ar" is phenyl; A is C_{1-4} alkyl; and "n" is 0–2.

3,849,935

IMPACT-ABSORBING BOUNDARY STRUCTURE FOR SPORTS ARENAS

Creighton J. Hale, Williamsport, Pa., assignor to Little League Baseball, Inc., Williamsport, Pa.
Filed Apr. 16, 1973, Ser. No. 351,531
Int. Cl. E01f *13/00*
U.S. Cl. 49—34 **6 Claims**



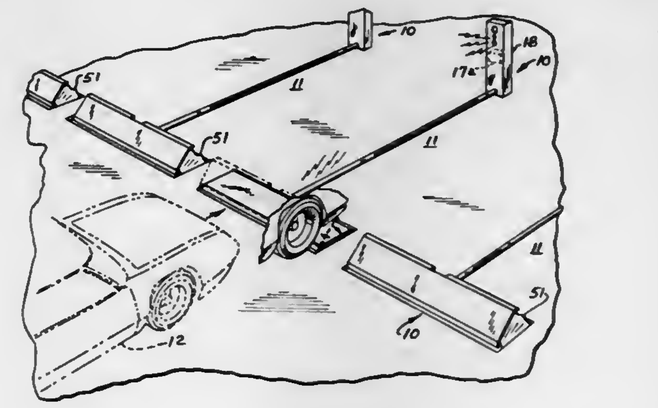
1. An impact-absorbing boundary structure for preventing injury to a human body moving into contact with said boundary structure, comprising:

1. a supple boundary sheet;
2. first and second end support means connected to first and second ends of said boundary sheet, respectively, and at least one intermediate support means connected to said boundary sheet at a position intermediate of said first and second ends thereof;
3. at least first and second connecting means attached to said first and second end support means to enable connection of said boundary sheet to first and second end support structures, respectively; and
4. at least one non-rigid connecting means attached to said at least one intermediate support means for tensioned connection to an associated intermediate support structure spaced away from said boundary sheet to exert tension between said boundary sheet and the associated intermediate support structure and thereby dispose said boundary sheet in at least two chordal segments.

3,849,936

PARKING STALL BARRIER

Vincent M. Geraci, 5701 N. Sheridan Rd. Apt. 25T-Hollywood Towers, Chicago, Ill. 60660
Filed Mar. 12, 1973, Ser. No. 340,554
Int. Cl. E01f *13/00*
U.S. Cl. 49—35 **37 Claims**



1. A remote control vehicular parking stall barrier apparatus comprising:

a barrier member;

means for mounting the barrier member in a vehicular parking stall;

switch means associated with said barrier to be operated by at least one of the wheels of a vehicle as it is brought into or from the stall;

a remote control signal receiver;

means for selectively guiding the barrier to a stall blocking position, and to a retracted position allowing ingress and egress by the vehicle relative to the stall;

means for permitting operation of the signal receiver only when said switch means is operated;

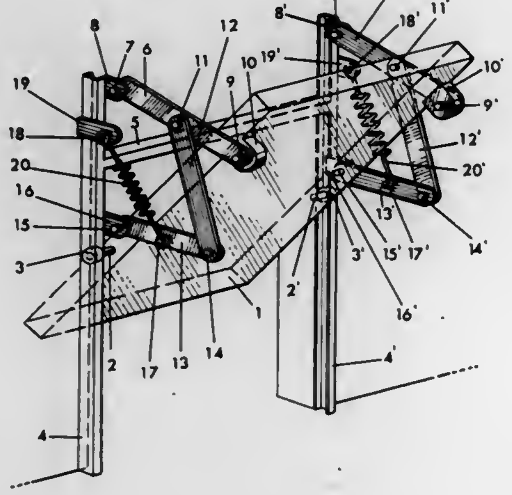
means for releasably retaining said barrier in the retracted position and in said stall blocking position;

controlled means for transmitting a signal to the receiver; and

means responsive to concurrent operation of the signal receiver by said controlled means and operation of the switch means to release said releasable retaining means for permitting movement of the barrier to the retracted position upon the vehicle entering said stall, and permitting movement of the barrier to the stall blocking position upon the vehicle leaving said stall.

3,849,937
OVERHEAD DOOR

Ernesto Blumenthal, Vidal 3188, Buenos Aires, Argentina
Filed July 9, 1973, Ser. No. 377,436
Claims priority, application Argentina, May 11, 1973, 247986
Int. Cl. E05d *15/40*
U.S. Cl. 49—205 **6 Claims**



1. An improved door comprising:

a vertically displaceable panel, said panel including lateral edges and two substantially planar faces;

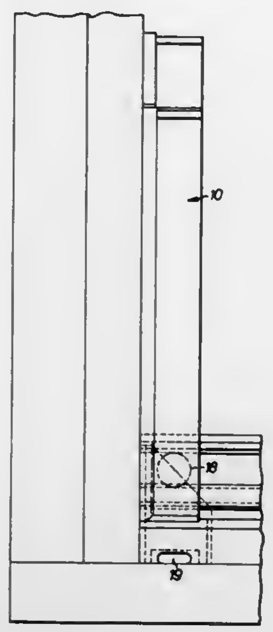
two substantially vertical, lateral tracks for guiding the vertical displacement of said panel, said tracks being mounted adjacent to a doorframe;

two main arms articulating at one end about a first joint on said lateral tracks and at the other end about a joint on said panel;

two arm assemblies, said assemblies including a guide arm articulating about a second joint on said lateral tracks below the first articulation joint of the corresponding main arm and a support arm articulating about a third joint on the corresponding main arm and articulating about a fourth joint on the corresponding guide arm, said support arm having a guide means including a pusher element mounted on the adjacent lateral edge of said door panel for moving said panel off of a dead center; and elastic means articulating with said lateral tracks and said arm assemblies for balancing said panel, wherein said panel is capable of rotational and translational movement.

3,849,938
WINDOW FRAME

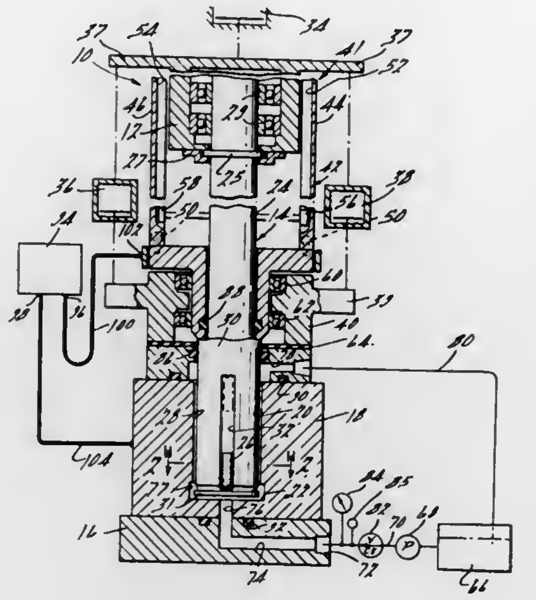
Norman Thompson, Wightwick, England, assignor to Beta Aluminium Products, Limited, Shropshire, England
Claims priority, application Great Britain, May 26, 1972, 24863/72
Filed May 21, 1973, Ser. No. 362,330
Int. Cl. E06b *1/70*
U.S. Cl. 49—471 **11 Claims**



1. In a window frame which includes a hollow lower sill which serves as a reservoir with a valve-controlled outlet communicating with the interior of the sill and the valve having a flap which permits free flow of water from the interior of the sill whilst preventing the entry of air into said interior, the improvement wherein the flap is a resilient element mounted in a synthetic plastics block which fits in said hollow lower sill.

3,849,939
HONING APPARATUS AND METHOD EMBODYING BORE GAUGING MEANS

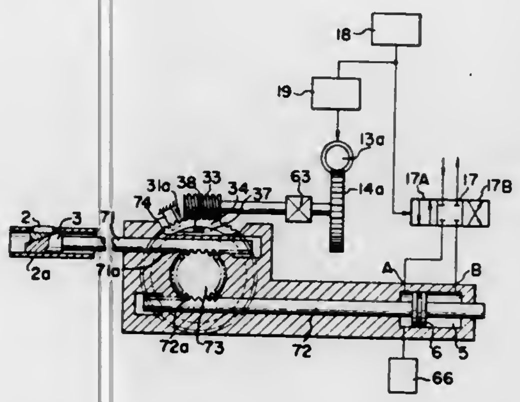
Myron P. Ellis, Royal Oak, and Karl H. Kaake, Detroit, both of Mich., assignors to Micromatic Industries, Inc., Detroit, Mich.
Division of Ser. No. 172,121, Aug. 16, 1971, Pat. No. 3,772,164. This application June 29, 1973, Ser. No. 376,402
Int. Cl. B24b *1/00, 49/02;* **C23b** *5/56*
U.S. Cl. 51—34 J **2 Claims**



1. A method of finishing and gauging the cross-sectional dimensions of a bore defined by a surface of a workpiece with a tool including a gauging portion and at least one abrasive member adjustable outwardly relative to said gauging portion comprising the steps of providing relative movement between the abrasive member and the workpiece surface, flowing a fluid under pressure into said bore, advancing said tool including said gauging portion into said bore to create a fluid pressure, and measuring the pressure of said fluid in said bore created by said gauging portion as said tool is advanced into said bore.

3,849,940
HONING MACHINE

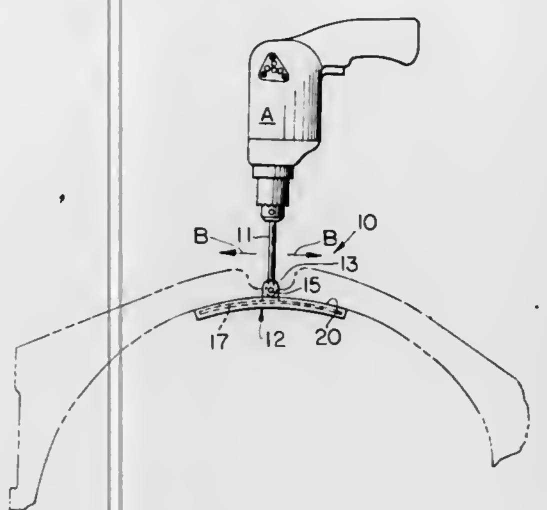
Tsutomu Yoshino, Hiroshima; Shinichi Nanba, Hiroshima-ken; Norihiro Fujimoto, Hiroshima-ken, and Hideo Araki, Hiroshima-ken, all of Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima-ken, Japan
Filed Aug. 1, 1973, Ser. No. 384,758
Claims priority, application Japan, Aug. 11, 1972, 47-80416; Aug. 22, 1972, 47-83873; Aug. 22, 1972, 47-83874; Aug. 26, 1972, 47-85659
Int. Cl. B24b *5/40*
U.S. Cl. 51—34 C **8 Claims**



1. A honing machine comprising a honing stone supported for rotation with a rotary shaft, means for rotating said honing stone, advance means for feeding said honing stone radially outwardly of said rotary shaft, and said advance means including a combination of a constant pressure advance mechanism and a constant speed advance mechanism and selecting means for automatically selecting one of said two mechanisms which is faster in advance speed than the other for feeding the honing stone.

3,849,941
TIRE BUFFING TOOL AND METHOD

Dwaine Ralph Barnes, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Nov. 19, 1973, Ser. No. 416,953
Int. Cl. B60c *25/16*
U.S. Cl. 51—168 **7 Claims**



1. An internal buffing tool for tube-type tires comprising:

an elongated shaft having a hub at one end thereof;

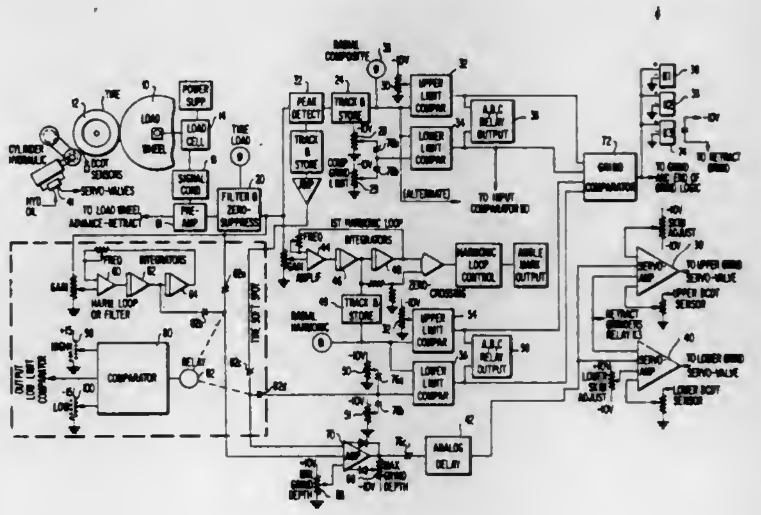
an elastomer coated plate having a pivot housing centrally disposed thereon and projecting from one side thereof, said coated plate having an internal flat spring steel member fixedly connected to said pivot housing with elastomer layers bonded to its opposite sides;

a pivot connection between said pivot housing and said hub operable to allow said coated plate to be aligned parallel with said elongated shaft and rotated therewith when said coated plate is positioned normal to said shaft; and

an abrasive surface bonded to said elastomer coated plate on the side with the projecting pivot housing whereby the tool can be inserted into a tube-tire through a puncture and said coated plate oriented normal to said shaft as it is rotated and pulled outwardly to abrade the internal surface areas of the tube-tire surrounding the puncture as the coated plate flexes to the internal contour of said area.

3,849,942
HARMONIC COMPOSITE GRIND

Freydoun Monajjem, Mayfield, Ky., assignor to The General Tire & Rubber Company, Akron, Ohio
Division of Ser. No. 241,246, April 5, 1972, Pat. No. 3,817,003. This application Feb. 21, 1974, Ser. No. 444,491
Int. Cl. B24b *99/16*
U.S. Cl. 51—165 R **3 Claims**



1. Apparatus for automatically grinding pneumatic tires to correct both for radial composite road force variations and a harmonic of said force variations comprising in combination:

means mounting a tire for rotation about a first fixed axis;

grinding means for removing small amounts of rubber from the tread shoulder of a tire;

a load wheel mounted on an axis parallel to said first axis; means to rotate said tire in contact with said load wheel so as to positively rotate said load wheel;

means for sensing force variations caused by the force reactions between said tire and said load wheel and for converting said force variations to first analog electrical signals;

peak detector means connected to receive said signals;

storage means connected to receive and store said signals; means providing a pair of further signals, the magnitude of which are pre-determined and proportional to the acceptable amount of composite radial force variation and the maximum amount beyond which a tire may not be ground;

comparator means connected to receive and compare said first analog signals with said further pair of signals;

means for driving said grinding means if said analog lies between said pair of signals and to continue to grind said tire until said analog reaches a predetermined value;

means for generating second analog signals which are a harmonic of said first analog signals;

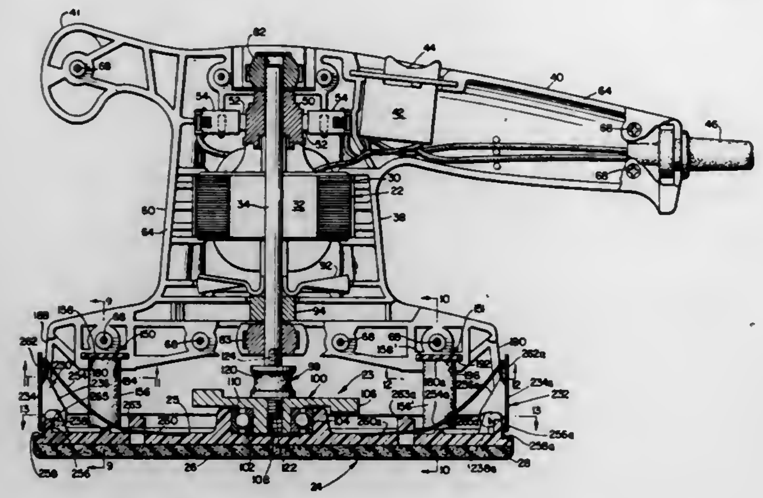
means for comparing said second analog with predetermined reference signals;

means for driving said grinding means if said second analog lies between predetermined limits; and
means for terminating the grinding of the tire when said second analog signal falls to a predetermined value.

3,849,943
POWER OPERATED SANDING MACHINE

Robert A. Thomas, Shreveport, La.; Jerry Wayne Sellers, Lexington, and Roger Wayne Murley, Medina, both of Tenn., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Feb. 26, 1973, Ser. No. 335,929
Int. Cl. B24b *23/04, 23/08*
U.S. Cl. 51—170 MT **14 Claims**

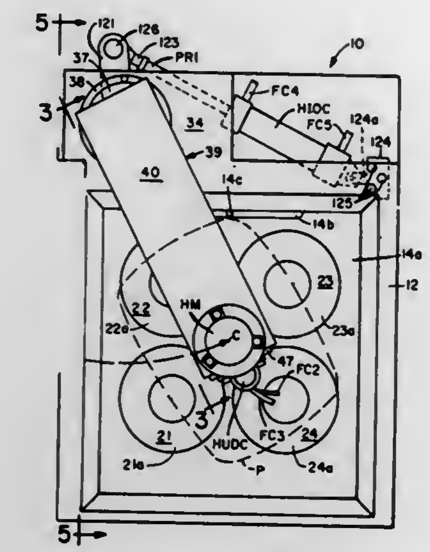


1. In a hand-manipulatable, power-operated sanding machine, a housing, a base plate, a pad secured to said base plate and providing a backing for a sheet of sandpaper, means comprising a motor supported by said housing for imparting motion to the assembly of said base plate and said pad, a plurality of posts carried by said housing for suspending said base plate from said housing, said posts being formed from elastically deformable material to permit motion of said base plate relative to said housing by operation of said motor, and cooperating means on said base plate and the lower end of each of said posts for providing a detachable bayonet like connection between said base plate and the lower end of each post.

3,849,944
TRANSFER AND GRINDING APPARATUS

Burton A. Noll, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 5, 1973, Ser. No. 412,665
Int. Cl. B24b *47/02*
U.S. Cl. 51—215 CP **8 Claims**



1. Apparatus for transferring a rectangular viewing panel for a cathode ray or television picture tube between an article receiving and pickup station and a grinding station and flat grinding the annular sealing edge of the skirt portion of said panel, such apparatus comprising, in combination;
- a. at said receiving and pickup station,
  - I. a platform having a horizontal upper surface for receiving and supporting said panel with said sealing edge contacting said upper surface, and
  - II. a jig on said upper surface of said platform for positioning of said panel with the vertical centerline of the face plate portion thereof in vertical axial alignment with a selected point on such upper surface, such jig including a circularly arcuate vertical surface having a horizontal radius corresponding to the largest radius of said annular sealing edge with the geometric center of the arc of such arcuate vertical surface coinciding with said selected point on the upper surface of said platform;
- b. at said grinding station,
  - I. an even number of rotatably supported grinding wheels having upwardly disposed flat circular grinding faces of equal diameters and extending in a common horizontal plane, such faces radially symmetrically disposed about an axial centerline vertical to said plane and intersecting with a circularly arcuate line extending horizontally from said selected point on said upper surface of said platform, said grinding wheels being spaced from each other such that each said grinding face can at times contact all points on said sealing edge of said panel when such edge rests on such grinding faces with said vertical centerline of said face plate portion of the panel coinciding with said axial centerline,
  - II. first motor means for rotating adjacent ones of said grinding wheels in opposite directions when such motor means are energized; and
- c. adjacent said pickup station and said grinding station,
  - I. a rotatable vacuum chuck for picking up and supporting said panel and means for supporting such chuck for vertical movement thereof and arcuate horizontal movement of the chuck through a circularly arcuate path of travel lying vertically above said circularly arcuate line and extending parallel therewith,
  - II. second motor means for rotating said chuck when such second motor means are energized,
  - III. third motor means for vertically moving said chuck to lowered panel pickup and edge grinding positions, and to raised panel transfer positions accordingly as such third motor means are energized in first and second modes, respectively;
  - IV. fourth motor means for horizontally moving said chuck through said circularly arcuate path of travel to said pickup station and to said grinding station accordingly as such fourth motor means are energized in first and second modes, respectively, and
  - V. valve means for supplying and terminating negative pressure to said chuck accordingly as such valve means are deenergized and energized, respectively.

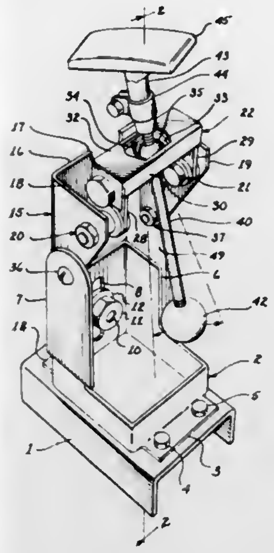
3,849,945
PRECISION TOOL FOR CABOCHONS AND JEWELRY

Leo K. Lindzy, 2668 Hogan Ave., Mesa, Ariz. 85205

Filed Aug. 1, 1973, Ser. No. 384,623
Int. Cl. B24b *19/26;* **B23q** *1/12*
U.S. Cl. 51—229 **4 Claims**

1. A manually operated tool for selectively maintaining and orienting cabochons and jewelry adjacent grinding and polishing wheels, said tool comprising in combination:
- A. a base for mounting said tool in proximity to the grinding and polishing wheels;
- B. holding means for securing the cabochon or jewelry to a shaft;
- C. positioning means disposed intermediate said base and said holding means, said positioning means including:
  - 1. first means for raising and lowering said holding means with respect to said base;

  - 2. second means for moving said holding means toward and away from the grinding and polishing wheels; and
  - 3. third means for pivoting said holding means about two axes, said third means including:
    - a. an apertured holder;
    - b. a ball disposed within said holder generally coincident with the aperture of said holder;
    - c. a socket disposed within said holder, said socket retaining said ball coincident with the aperture while permitting rotation of said ball;
    - d. said holding means extending through said socket and being radially secured to said ball;

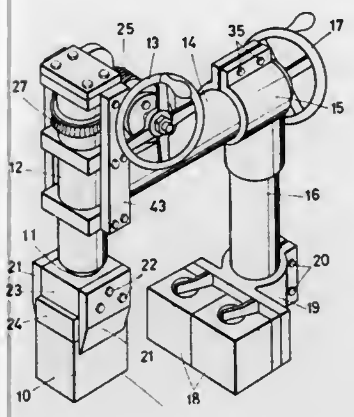


    - e. said handle being secured to said ball diametrically opposed to said holding means; whereby, said ball permits manual orientation of said holding means about two axes; and
    - f. pivot means for pivoting said holder, said pivot means providing coarse pivotal movement of said holding means and said ball providing fine pivotal movement of said holding means;
- D. a handle secured to said holding means; whereby, the cabochon or jewelry secured to said holding means may be manually oriented adjacent the grinding or polishing wheels to work the surface of the cabochon or jewelry.

3,849,946
COMMUTATOR GRINDER

Taketoshi Ogura, Tokyo, Japan, assignor to Sanwa Kiko Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1973, Ser. No. 414,187
Claims priority, application Japan, June 4, 1973, 48-62037
Int. Cl. B24b *19/26*
U.S. Cl. 51—244 **6 Claims**

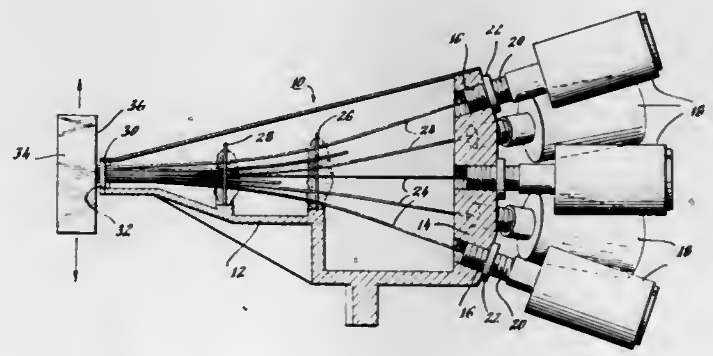


1. A commutator grinder to be mounted on a commutator machine for reconditioning the surface of the commutator in situ, comprising in combination:
a block of abrasive material;
a first support rod carrying said block of abrasive material at its lower end;
a sleeve adapted to slidably receive said first support rod;
infeed means for moving said first support rod up and down relative to said sleeve in order to infeed said block of abrasive material with respect to the commutator;
a second support rod coupled to said sleeve at a right angle thereto;
a hollow arm adapted to slidably receive said second support rod;
traverse feed means for moving said second support rod back and forth relative to said arm in order to impart traversing motion to said block of abrasive material with respect to the commutator; and
a standard having electromagnet means adapted to releasably attach the commutator grinder to the commutator machine, said arm being coupled to the upper end of said standard at a right angle thereto.

3,849,947
METHODS OF SQUARING ELEMENTS WITH A SURFACE IN WHICH THEY ARE MOUNTED

Bela Bunkoczy, Shelton, Conn., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed July 16, 1973, Ser. No. 379,646
Int. Cl. B24b *1/00*
U.S. Cl. 51—281 R **4 Claims**



1. A method of squaring the print wires of a wire matrix print head to the front face of the print head, the front face of the print head through which said print wires project being of a material which is harder then the material of said print wire, comprising the steps of:
adjusting the position of all of said print wires so that they extend slightly from said front face; and
grinding the extending portions of the wires with an element having an abrasive surface, the material of said abrasive surface having a hardness which is greater than that for the material of said print wires but less than that for the material of said front face; and
terminating said grinding step when the material of said abrasive surface starts being worn away by the harder material of said front face.

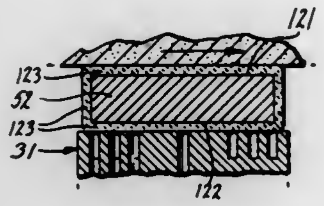
3,849,948
METHOD FOR MAKING A DIELECTRICALLY ISOLATED SEMICONDUCTOR STRUCTURE

Albert P. Youmans, Cupertino, and Lionel A. Kirton, Saratoga, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Division of Ser. No. 51,610, July 1, 1970, Pat. No. 3,740,000.
This application Dec. 29, 1972, Ser. No. 319,771
Int. Cl. B24b *1/00*
U.S. Cl. 51—310 **1 Claim**

1. In a method for fabricating a semiconductor structure, providing a semiconductor body, providing a wafer mounting block, placing wax on the wafer mounting block, heating the wafer mounting block to melt the wax, placing the semiconductor body on the wafer mounting block, applying pressure

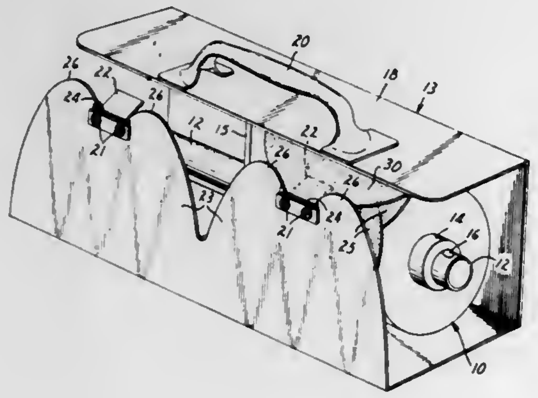
to the semiconductor body to squeeze out excess wax so that a substantially uniform thickness of wax is disposed between the wafer mounting block and the semiconductor body, cooling the wafer mounting block to harden the wax, polishing an exposed surface of the semiconductor body while it is carried by the wafer mounting block to provide a first polished planar surface, removing the semiconductor body from the wafer mounting block, covering said polished surface with a protective material which has a substantially uniform thickness over the polished surface, providing a vacuum chuck and securing the semiconductor body to the vacuum chuck so that the polished surface faces the vacuum chuck with the protective material engaging the vacuum chuck and removing material from the semiconductor body to provide a second planar surface which is spaced from and is parallel to said first polished planar surface.



3,849,949
ROLL OF PRESSURE SENSITIVE ADHESIVE, ADHESIVE COATED ABRASIVE DISCS AND DISPENSER

Armin H. Steinhauser, St. Paul, and Eugene L. Baratto, White Bear Twp., Ramsey County, both of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Oct. 10, 1972, Ser. No. 295,842
Int. Cl. B24d ***11/00***
U.S. Cl. 51—406 **3 Claims**

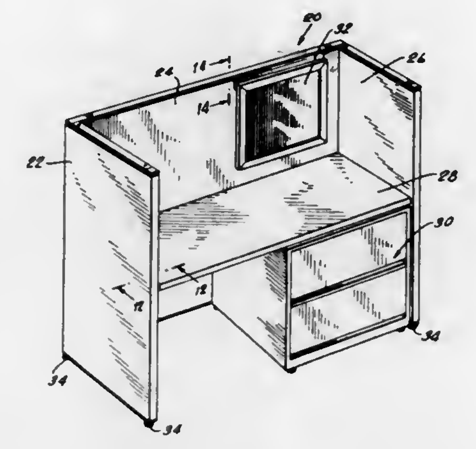


1. An abrasive disc product comprising a convolutely wound concatenation of coated abrasive discs having disposed on the side opposite the coated abrasive a pressure-sensitive adhesive, each of said discs being joined to at least one other disc along a perforated line substantially tangent to the discs and said line being less than half the radius of the discs and with the adhesive coating placed in releaseable contact with the abrasive coating to maintain the wound roll and permit easy separation and application of the discs.

3,849,950
FUNCTIONAL AND DECORATIVE TRIM AND SUPPORT BRACKET STRUCTURES

Don C. Albinson, Coopersburg;; William I. Stephens, Telford; Charles R. Cawley, Jr, Barto, and Richard Baier Hopkins, Pennsburg, all of Pa., assignors to Knoll International, Inc., New York, N.Y.

Division of Ser. No. 119,457, March 1, 1971. This application Mar. 2, 1973, Ser. No. 337,284
Int. Cl. E04h ***1/12***
U.S. Cl. 52—27 **4 Claims**

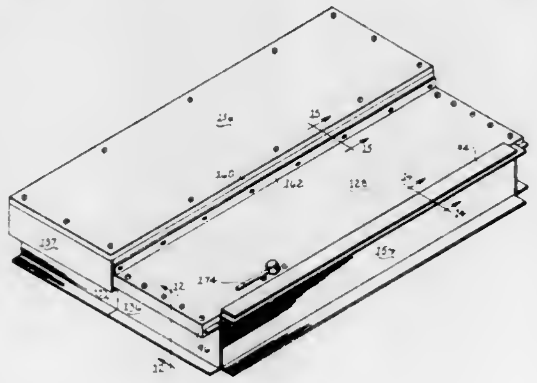


1. Panel structure, comprising a pair of panels having abutting edge portions, and a bracket for supporting a fixture, said bracket comprising a vertically extending leg positioned between said abutting edge portions, an means attached to said leg and extending from said abutting edge portions for supporting a fixture, said bracket including a hoirizontally extending leg supported on the top edge of at least one of said panels.

3,849,951
STORM DOOR

Emory A. Howle, Rt. 4, Tahoka, Tex. 79373

Filed May 16, 1973, Ser. No. 360,738
Int. Cl. E02d ***29/14;*** **E04b** ***7/16***
U.S. Cl. 52—19 **6 Claims**



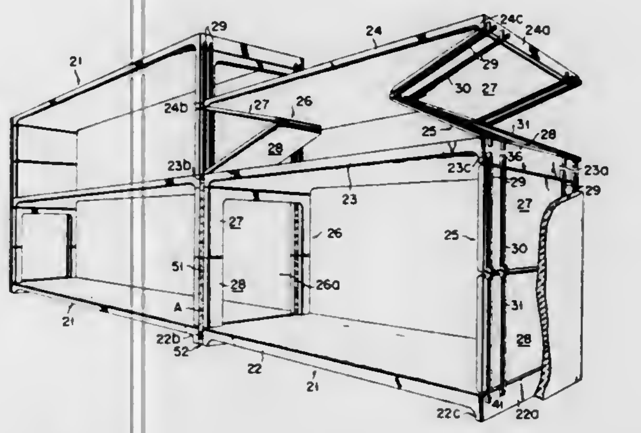
1. In a storm cellar having
a. an underground room,
b. stairs leading from the underground room to the surface of the ground,
c. a rectangular doorway at head of the stairs above the ground,
a door over the doorway,
e. the doorway angling downward from a high edge at the room side to a low edge at the top stair step;
f. the improved method of entering and leaving the cellar comprising:
g. approaching the door at the low edge,
h. unlatching the door at a point on the outside of the door near the low edge,
j. sliding the door open laterally,
k. walking down the steps,
m. sliding the door closed laterally,

n. latching the door at a point on the inside of the door above half-way between the high edge and low edge of the door, then
o. unlatching the door at a point on the inside of the door above half-way between the high edge and low edge of the door,
p. sliding the door open laterally,
g. walking up the stairs,
r. sliding the door closed laterally, and
s. latching the door at a point on the outside of the door near the low edge.

3,849,952
CAPSULE-UNIT HOUSE

Tadashi Hanaoka, Kawasaki, Japan, assignor to Misawa Homes Co. Ltd., Tokyo, Japan

Filed Feb. 2, 1973, Ser. No. 329,095
Claims priority, application Japan, Feb. 5, 1972, 47-13504; Feb. 9, 1972, 47-14169; Feb. 29, 1972, 47-21189; Dec. 29, 1972, 47-1912
Int. Cl. E04h ***1/04***
U.S. Cl. 52—79 **3 Claims**

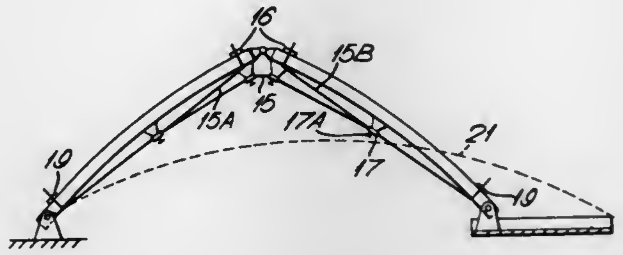


1. A capsule-unit housing comprising; a plurality of serially arranged structure assemblies each comprising; a plurality of horizontal structure elements disposed one above another, and a pair of supporting means foldable at a center thereof; first and second connecting members on the ends of the horizontal structure elements; said supporting means including a plurality of parallel arranged structural shape assemblies each comprising a lower structural shape having the lower end pivoted to one of said first connecting members on any one of the horizontal structure elements and a first connecting portion provided on the upper end, and an upper structural shape having the upper end pivoted to said second connecting member on the horizontal structure just above any one of the horizontal structure elements and a second connecting portion provided on the lower end and pivoted to said first connecting portion of the lower structural shape; each of said upper and lower structural shapes being provided on both lateral sides with first and second flanges; locking means which comprises first holes bored through the first connecting members and the lower ends of the lower structural shapes pivoted thereto, first pins inserted into said first holes, second holes bored through the first connecting portions of the lower structural shapes and the second connecting portions of the upper structural shapes pivoted thereto, second pins inserted into said second holes, third holes bored through the second connecting members and the upper ends of the upper structural shapes pivoted thereto, and third pins inserted into said third holes; and a filler filled between said supporting means of the adjacent structure assemblies and fixed thereto.

3,849,953
ARCHED BUILDING ASSEMBLY FORMED OF RESILIENTLY, FLEXIBLE MEMBERS

Edwin J. Cohen, 20 Moreland Ct., Lyndale Ave., London, N.W. 2, England

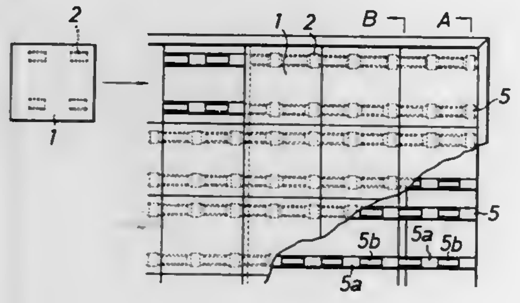
Filed Dec. 8, 1972, Ser. No. 313,294
Claims priority, application Great Britain, Dec. 10, 1971, 57557/71
Int. Cl. E04b ***1/32, 1/344***
U.S. Cl. 52—86 **2 Claims**



1. In a building assembly having an elongate building member, the improvement comprising:
said building member including first and second elongate sub-members positioned in end-to-end relation, said first sub-member having one end thereof positioned closely adjacent one end of said second sub-member, said first and second sub-members each being bendable into an arched shape;
said building member also including a resiliently bendable connector connected between the adjacent one ends of said first and second sub-members, said connector having less resistance to bending than said sub-members;
first anchor means stationarily positioned adjacent one end of said building member and pivotally connected to the other end of said first sub-member;
second anchor means positioned adjacent and interconnected to the other end of said building member, said second anchor means including an elongated guide extending in a direction toward said first anchor means and a shoe slidably mounted on said guide, said shoe being pivotally connected to the other end of said second sub-member;
said first and second sub-members respectively having first and second guide means fixed thereon in spaced relation from said other ends thereof;
tensioning means for simultaneously yet individually resiliently flexing said first and second sub-members and said connector to camber said building member upwardly into the shape of a pointed arch, said connector defining the apex of said arch and said first and second sub-members being individually flexed upwardly into an arched shape and defining the sides of said arch;
said tensioning means including an elongated flexible cable extending from said first anchor means through said first and second guide means to said second anchor means, whereby tensioning of said cable causes said shoe to move toward said first anchor means and causes said building member to be cambered upwardly; and
said flexible connector consisting of an elongated, elastically bendable rodlike element extending between and

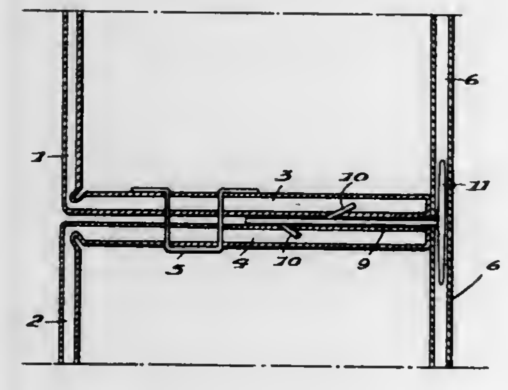
fixedly connected to the corresponding one ends of said first and second sub-members, said rodlike element being bent by said tensioning means into an arch-shape defined by a first radius which is rather small, and said first and second sub-members being bent by said tensioning means into an arch-shape defined by a second radius which is large relative to said first radius.

3,849,954
EASILY REPLACEABLE WALL PANEL STRUCTURE
Toshio Sugita, 495 Kikuna, Kouhoku-ku, Yokohama, Japan
Filed Mar. 27, 1973, Ser. No. 345,327
Int. Cl. E04b *2/88*
U.S. Cl 52—235 **4 Claims**



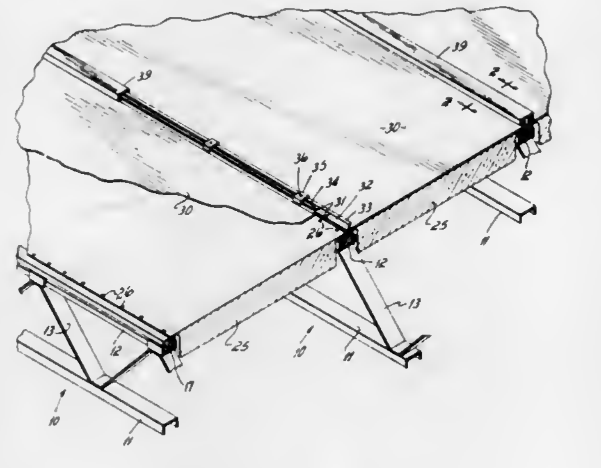
1. An improved wall panel structure, comprising:
a plurality of stays screwed to a wall and in parallel relationship;
a plurality of rectangular shafts positioned transversely to said stays and coupled thereto, said shafts being in parallel relationship, each said shaft having a groove therein, said groove extending longitudinally of said shaft and having U-and T-shaped cross-sections at alternating intervals longitudinally of said shaft; and
a panel having four sides, opposite sides thereof being in parallel relationship, a plurality of engaging hooks extending from two opposite sides of said panel and adapted to be inserted into the grooves of two rectangular shafts in the region of the U-shaped cross-sections thereof, said panel thereafter being slidably shifted along said grooves until said engaging hooks are in regions of the grooves having T-shaped cross-sections, whereby said panel may be firmly retained by two rectangular shafts.

3,849,955
BUILDING PANEL CONNECTORS
Herbert G. Yates, Yardley, Pa., assignor to Panokraft Corporation of Canada Limited, Dorval, Quebec, Canada
Filed Nov. 21, 1972, Ser. No. 308,437
Int. Cl. F16b *5/00*
U.S. Cl. 52—285 **7 Claims**



1. A connector for joining together panels of building material at angles to each other, comprising a sheet adapted to be dis[illegible] between portions of panels, the sheet having prongs extending in opposite directions therefrom, the prongs having pointed ends to engage in the adjoining portions of the panels, the pointed ends of the prongs being directed towards an edge of the sheet extending outwardly from between said panel portions for joining to a second wall panel at an angle thereto, and means forming a row of teeth along said edge for insertion into an edge portion of the second panel.

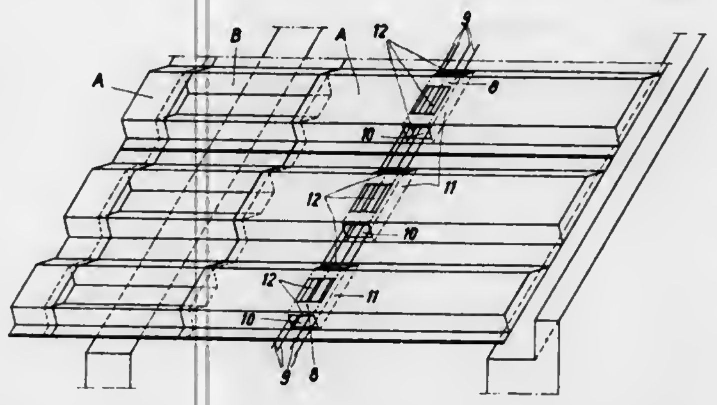
3,849,956
FLOATING ROOF DECK CONSTRUCTION
Howard W. Collins, 5716 Trenton-Franklin Rd., Middletown, Ohio 45042
Filed Nov. 1, 1972, Ser. No. 302,842
Int. Cl. E04b *7/00*
U.S. Cl. 52—376 **3 Claims**



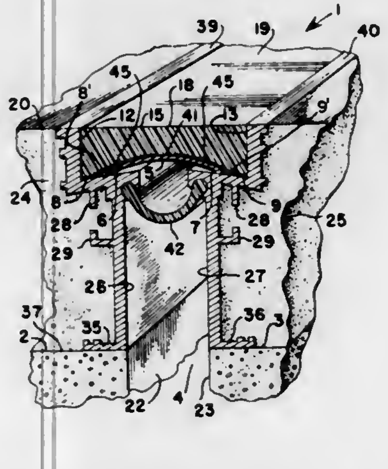
1. A deck structure comprising,
a plurality of longitudinally extending spaced parallel beams,
elongated nailers secured for longitudinal sliding movement on top of said beams,
a plurality of elongated, flat sheets of steel extending longitudinally between said beams,
upwardly projecting L-shaped flanges at the longitudinal edges of said sheets, said flanges terminating in inwardly projecting horizontal legs,
a plurality of longitudinally spaced clips straddling the edges of adjacent flanges and having portions extending downwardly and under the edges of said legs,
a fastener projecting through each clip into said nailer,
a watertight strip of felt overlying adjacent flanges, said strip being wrapped downwardly around said legs,
and a longitudinally extending cap overlying said strip and clinched around said legs.

3,849,957
REINFORCED CONCRETE RIBBED CEILING
Aloys Bastgen, Eifelstr. 8, 5561 Wengerohr, Germany
Continuation of Ser. No. 141,582, May 10, 1971, abandoned. This application June 4, 1973, Ser. No. 366,407
Int. Cl. E04b *1/16*
U.S. Cl. 52—327 **1 Claim**

1. A reinforced concrete ribbed ceiling comprising supporting structure means for providing scaffolding, shuttering and integral load-carrying capacity including a lower thin steel skin bent to form a plurality of upwardly opening trapezoidal channels, said channels being spaced apart a distance equal to the width of a channel opening, downwardly opening trapezoidal channels being defined therebetween, a wire reinforcing network spot welded to the upper side of said skin and spanning its entire longitudinal and transverse extent, and stirrup means in said trapezoidal channels spot welded to the channel skin and having portions extending above said channels and spot welded to said reinforcing network, a bottom strip spanning transversely across the skin bottom, a plurality of upright head plates closing the downwardly opening channels at opposite sides of said bottom strip, the downwardly opening channels including apertures in their closed channel bottoms and inclined channel sides between head plates, concrete carried by said skin embedding said reinforcing network and said stirrup means, the channel skin, stirrup means, and concrete of the channels forming integral longitudinal ribs, and concrete filling the transverse rectangular channels between the bottom plate and the head plates integral with concrete in the upwardly opening trapezoidal channels forming a transverse rib.

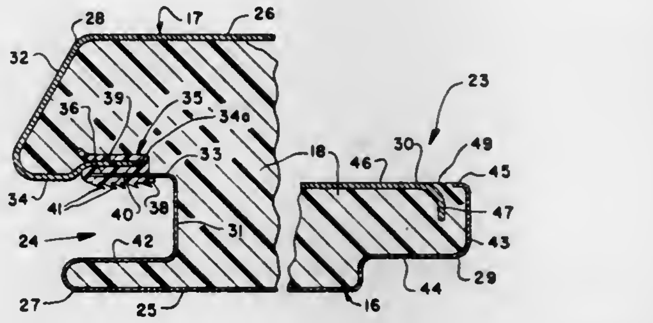


3,849,958
EXPANSION JOINT COVER ASSEMBLY
Claude P. Balzer; Edward M. Corman; Almer A. Reiff, and Michael D. Henry, all of Wichita, Kans., assignors to Balco, Inc., Wichita, Kans.
Filed Aug. 15, 1973, Ser. No. 388,470
Int. Cl. E04b *1/68*
U.S. Cl. 52—396 **11 Claims**



1. An expansion joint cover assembly for structural sections disposed in spaced relation and defining an elongated joint therebetween, at least one of said sections including a horizontal upper surface said assembly comprising:
- a. first and second elongated base members each adapted to be secured to a respective one of a first and second spaced structural sections in opposed relation, said base members each having a surface spaced below said upper surface and intersecting a joint face of the respective structural section, said base member surface being inclined relative to said upper surface;
- b. an elongated bridging member for spanning a joint for the length thereof between the structural sections, said bridging member having opposite side edge portions each slidingly engaging said surface of a respective one of said base members; and
- c. a cured resilient joint filler material positioned for supporting engagement by said bridging member and having opposite side edges thereof each bonded to a respective one of said base members, said joint filler material having an exposed surface coplanar with said horizontal upper surface; said inclination of the surfaces of the base members and the sliding engagement of said side edge portions of bridging member therewith cooperating in response to movement of the structural members for maintaining of the upper surface of the filler material substantially level with said horizontal upper surface of said sections.

3,849,959
BUILDING PANEL AND LATERALLY ADJUSTABLE JOINT PRODUCED THEREBY
Robert G. Lindner, Sewickley, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.
Filed Nov. 14, 1972, Ser. No. 306,190
Int. Cl. E04b *2/88*; **E04c** *2/13*
U.S. Cl. 52—403 **7 Claims**

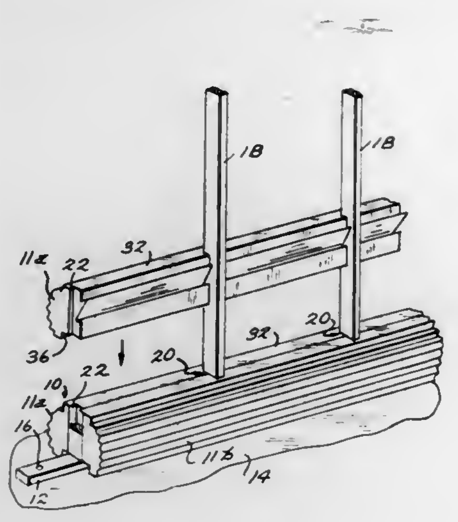


1. A building panel comprising:
a liner sheet and a facing sheet having central webs disposed in spaced-apart confronting relation and presenting opposed first longitudinal sides and opposed second longitudinal sides;
a foamed plastic core disposed between and bonded to the liner and facing sheets;
side walls, one connected to each of said first longitudinal sides and extending toward the other sheet;
terminal flanges, one connected to each of said side walls, said terminal flanges confronting one another and extending in opposite directions generally parallel with said central webs;
an S-shaped non-metallic flexible strip having oppositely opening recesses;
one of said terminal flanges extending into each of said oppositely opening recesses;
said opposed second longitudinal sides being spaced-apart;
a tongue including said second longitudinal sides; and
a longitudinal recess presented between said first longitudinal sides and being defined in part by a flexible strip segment of said S-shaped non-metallic strip and the side wall of said liner sheet.

3,849,960
MODULAR BUILDING CONSTRUCTION
David A. Henry, Bradenton, Fla., and Myron J. Larimer, Sturgis, Mich., assignors to said Larimer, by said Henry
Continuation-in-part of Ser. No. 146,415, May 24, 1971, Pat. No. 3,742,665. This application May 7, 1973, Ser. No. 357,578
Int. Cl. E04c *1/08*
U.S. Cl. 52—569 **8 Claims**

1. An elongated wall module for use in constructing a wall of a building comprising two longitudinal half-modules each forming a longitudinal half of the wall module; each half-module having a first face engageable with a corresponding first face of the other half module; each half-module being constructed of molded plastic material and having a plurality of spaced apart channels in its respective first face extending transversely to the longitudinal dimension of the module from a second face to a third face, the channels in one of the half-modules cooperating with the channels in the other half-module to form parallel passages for receiving structural

members of a wall frame; the second face of each half-module having a longitudinally extending rib projecting therefrom and



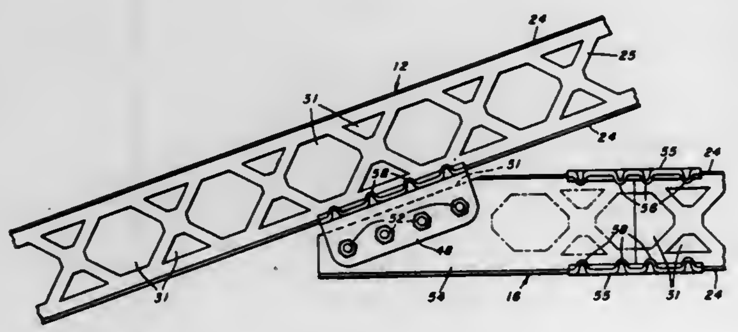
the third face of each half-module having a longitudinally extending groove therein.

3,849,961
T-CLIP TRUSS AND RAFTER SYSTEM OF ROOF CONSTRUCTION

Jacob M. Gwynne, 11 Hazelwood Cir., Willingboro, N.J. 08046

Filed Mar. 26, 1973, Ser. No. 344,720
Int. Cl. E04c *3/09*

U.S. Cl. 52—639 **9 Claims**



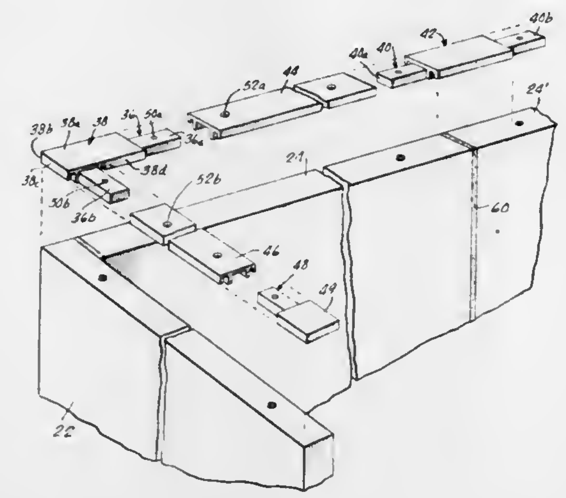
1. A truss structure for a building construction comprising elongated upper and lower structural chords each having longitudinally extending web and flange portions, with said flange portions having means for centering clips on said chords, and longitudinally extending raised portions located on each side of the flange portions and projecting beyond the general plane of the flange portions, at least one elongated bracing strut extending between said upper and lower chords, clips connecting the strut to said chords, and having flanges provided with opposed extensions, said flanges and extensions engaging the flange portions of said chords, a leg depending from the flange of each clip fastened to the ends of said strut, and centering means cooperating with the centering means of said chords placing the webs of the chords in alignment with each other and with the axis of said strut, means fastening the depending legs of said clips to ends of said strut, and, the flanges and extensions of said clips being clinched on the flange portions of said chords by forcing the ends of said extensions around and behind the raised portions on the flanges of said chords, and crimped on the flange portions of said chords by displacing material of the chord flange portions and the clip flanges and extensions in directions normal to the planes thereof at multiple locations therealong to prevent relative, longitudinal movement of said clips and chords.

3,849,962
FUNCTIONAL AND DECORATIVE TRIM

Don C. Albinson, Coopersburg; William I. Stephens, Telford; Charles R. Cawley, Jr., Barto, and Richard Baier Hopkins, Pennsburg, all of Pa., assignors to Knoll International, Inc., New York, N.Y.

Continuation of Ser. No. 119,457, March 1, 1971, abandoned. This application Oct. 29, 1973, Ser. No. 410,440
Int. Cl. E04f *19/02*

U.S. Cl. 52—717 **1 Claim**



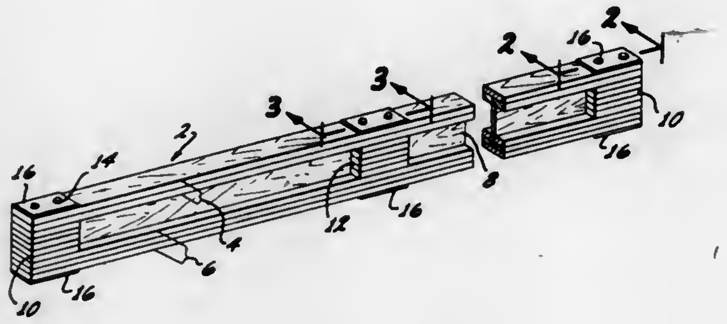
1. Structure serving as decorative trim and also to join panels together and to provide a support for the "hanging" of an item attached to an L-shaped support bracket, comprising a base portion having a lower surface adapted to bear against the top edge of one or more panels, and a flange portion overlying all of said base portion and in vertical registry with the base portion, said flange portion having an outer part which extends outwardly to one side of said base portion and then downwardly terminating above the level of said lower surface of said base portion so as to provide a support for the L-shaped support bracket, said flange portion and said outwardly extending outer part thereof that extends outwardly to one side of said base portion having over the entirety thereof an upwardly exposed outer surface that lies substantially in a single, horizontal plane.

3,849,963
BEAM CONSTRUCTION

Harold J. Harmon, 15069 Valley Blvd., Fontana, Calif. 92335

Filed May 4, 1973, Ser. No. 357,162
Int. Cl. E04c *3/14*

U.S. Cl. 52—729 **21 Claims**



1. A construction member comprising:
an upper chord;
a lower chord;
a web interconnecting the upper and lower chords;
a plurality of link blocks positioned in stacked relation between the upper and lower chords at the ends of said chords;

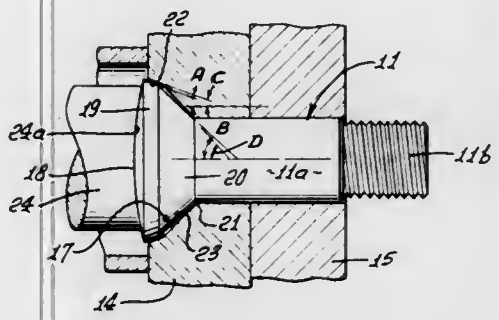
said link blocks each having a depth which is substantially less than the distance between the upper and lower chords;
said web having a length which is less than the length of said upper and lower chords;
said link blocks in each stack of link blocks being joined to each other and each stack of link blocks being joined to said upper and lower chords;
said web having ends, and
each of said ends being joined to a plurality of link blocks, whereby the stack of link blocks at each of the ends of the chords fixes the position of the ends of the upper and lower chords and also the position of the web with respect to the upper and lower chords in securing the chords and the web together as a construction member.

3,849,964
CORROSION BLOCKING FASTENER

Franklin S. Briles, 3600 Catamaran, Corona Del Mar, Calif.

Filed Aug. 15, 1973, Ser. No. 388,386
Int. Cl. F16b *35/06, 5/00*

U.S. Cl. 52—758 F **8 Claims**



1. In a fastener having an axially extending shank receivable in a work bore and a head receivable in forcible engagement with the work material forming a counterbore, the improvement comprising

a. the head having an end face, a first forwardly tapered section located forwardly of said end face and a second forwardly tapered section located forwardly of the first section, the taper angularity of the second section substantially exceeding the taper angularity of the first section,
b. the taper angularity of the first section being less than about 10°, and the axial length of the first section being within the range of 0.140 inches to 0.020 inches,
c. and including the work wherein said counterbore has first and second tapers receiving the head first and second sections, the counterbore first taper substantially parallel to the taper of the head first section, and there being interference between the head first section and the counterbore first taper of between substantially 0.003 and 0.008 inches.

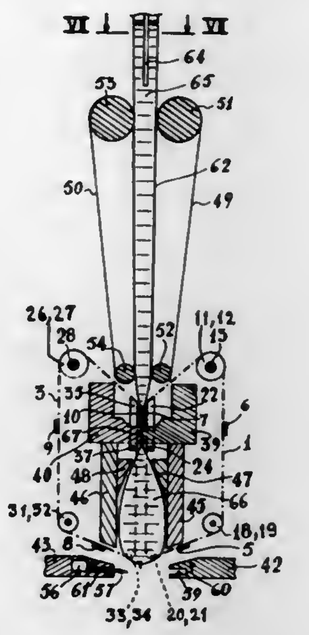
3,849,965
METHOD AND DEVICE FOR THE PROTECTION OF THE TRANSVERSAL SEALS DURING THE FORMATION OF PACKAGING CONTAINERS

Antonio Dominici, Perugia, Italy, assignor to Quepor S. A., Fribourg, Switzerland

Filed Apr. 16, 1973, Ser. No. 351,646
Claims priority, application Italy, Apr. 24, 1972, 49820/72
Int. Cl. B65b *9/02, 51/26*

U.S. Cl. 53—28 **7 Claims**

1. In a method for forming, filling and sealing tubular packages an improved process for the protection of the transversal seals during the continuous formation of packaging containers by transversally sealing a longitudinally sealed hose of packaging material and thereafter cutting said seals along their centerlines, wherein the improvement comprises the steps of clamping said hose during the application of a transversal seal along a line spaced above said transversal seal, maintaining said



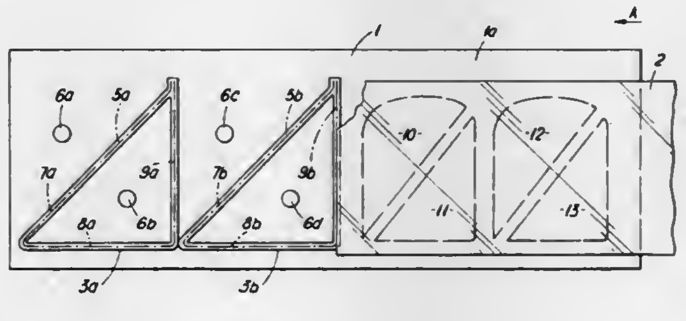
clamping action during a pair of travel of said seal from a pair of sealing jaws to the cutting jaws, and releasing the clamping action after the seal is gripped between said cutting jaws.

3,849,966
PACKING METHOD AND APPARATUS

Leslie Raymond Preston, 163 Princes Gardens, Acton, London; Victor James Pope, 56 Wrights Ln., Prestwood, Great Missenden, and John Stagg, Oakdenca Tree Ln., Parksprings, Fulmer, all of England

Filed Apr. 26, 1971, Ser. No. 137,363
Int. Cl. B65b *43/04, 67/08*

U.S. Cl. 53—29 **7 Claims**



1. A method of packaging articles which have a substantially straight side disposed opposite to an apex portion, said method comprising the steps of:

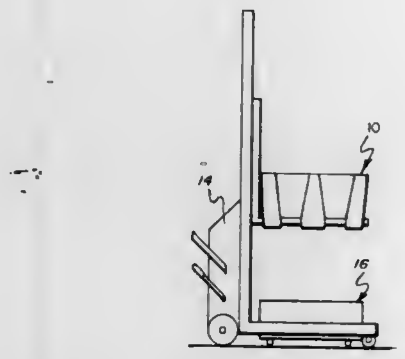
a. placing pairs of the articles in a longitudinal array between the juxtaposed portions of a folded sheet of heat sealable film, said longitudinal array extending parallel to the film fold line with the articles arranged to have their substantially straight sides parallel and the apex portion of one article diagonally opposite the apex portion of the other article; and,
b. sealing together the said juxtaposed film portions in a triangular array along three seal lines to form separable packages, the three seal lines forming a right triangle with one line being perpendicular to said fold line, said triangle encompassing one article in each of said pairs, one of said seal lines forming a seal line for the next succeeding article; and, the other of said articles in said pair being encompassed by a seal line formed in the previous sealing step, the film fold line, and one of said seal lines forming said right triangle.

3,849,967

METHOD FOR PACKING AND HANDLING MATERIAL

William R. Angermeier, and Benjamin Gary Wofford, c/o Industrial Design, Inc., 5018 Park Rd., Charlotte, N.C. 28209

Filed Oct. 30, 1972, Ser. No. 301,824
Int. Cl. B65b *1/00, 69/00*
U.S. Cl. 53—35 **2 Claims**



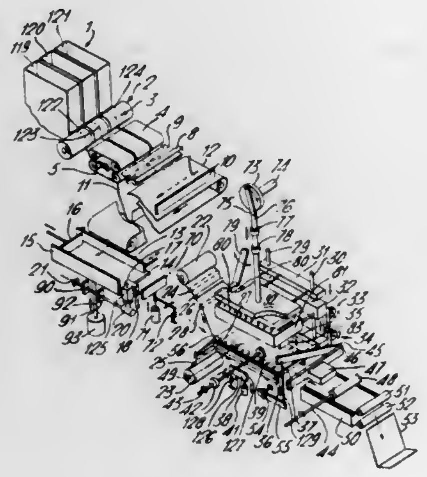
1. The method of handling material from a source for the material to a point of use, which method comprises the steps of packing said material at said source in stackable, open top, bulk bins, having a false bottom incorporated in a bottom structure allowing access for mechanical handling of said bins as a stacked group or individually in adding them to or removing them from a stacked group, stacking the packed bins at said source for shipment, delivering the stacked bins to said point of use, and employing the delivered bins separately at said point of use on display stands incorporating a jacking mechanism to present the packed material for removal and use while periodically raising said false bottom by said display stand jacking mechanism to maintain remaining packed material available at a top bin level, said bins being separately handled mechanically for stacking at said source and employment at said point of use while being handled mechanically as a stacked group between said source and point of use whereby manual handling of the packed material is required only during packing thereof at said source.

3,849,968

APPARATUS FOR PACKING AND DISPENSING THIN OBJECTS

Kazuma Tateisi, Kyoto, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 207,076, Dec. 13, 1971, abandoned. This application Nov. 14, 1973, Ser. No. 415,654
Int. Cl. B65b *57/14, 9/02, 35/50*
U.S. Cl. 53—54 **7 Claims**



1. An apparatus for dispensing money in envelopes, wherein the apparatus is responsive to a card inserted therein bearing first data, comprising:

means for reading said first data, said first data being uniquely associated with second data stored in the apparatus;

means actuated by a customer for entering information into the apparatus;

comparing means for comparing information entered by said customer with said second data; and,

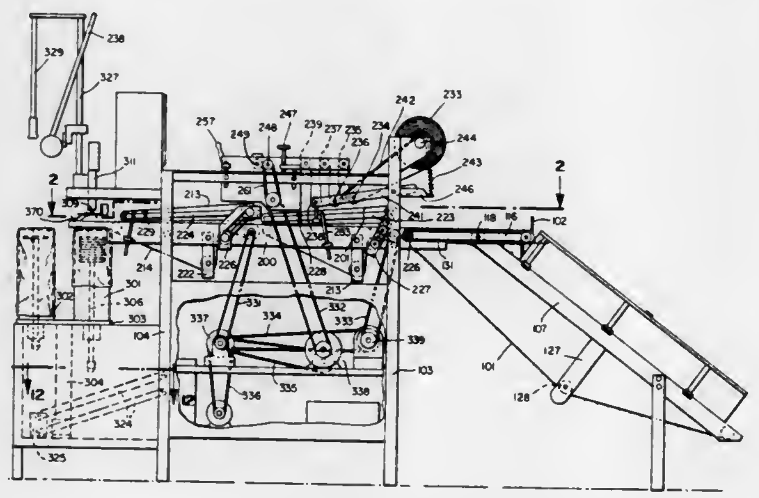
paper money dispensing means actuated upon a correct comparison between said information and said second data to dispense a selected amount of paper money in the form of bills to the customer, wherein said paper money dispensing means comprises: means for storing said bills; means for removing one or more bills from said storing means; means for arranging said one or more bills in a predetermined manner; means for positioning said removed bill between overlying portions of envelope material; means including a press head and a support member vertically spaced therefrom for forming an envelope enclosing said bills from said overlying portions of envelope material, said press head including an elongated rib positioned adjacent the periphery of the underside of said press head and projecting therefrom for sealing said overlying portions of said envelope material so as to form an envelope substantially about said bills, said elongated rib having two ends, one end of which terminates in the vicinity of the other end thereof, leaving an opening in the otherwise sealed envelope sufficiently large to permit inspection of the enclosed bills, but not so large as to permit removal of the bills from the envelope without disturbing the seal thereof; and, means for delivering said envelope with the bills therein to said customer.

3,849,969

FOOD PACKING MACHINE

Eugene H. Paules, Red Lion, Pa., assignor to ExCel Engineering, Inc., Red Lion, Pa.

Filed Aug. 22, 1973, Ser. No. 390,370
Int. Cl. B65b *57/12*
U.S. Cl. 53—74 **19 Claims**



1. Apparatus for applying wrapping material to individual items comprising:

a. Input conveyor means for supplying said items, one at a time at predetermined intervals;

b. receptacle means including packaging means for collating said items after wrapping material is applied;

c. motive means for passing said items along a path from said input conveyor means to said receptacle means;

d. supply means for inserting wrapping material for said items into the path, said wrapping material adhering to said items as they are moved past said supply means;

e. first control means, responsive to passage of said items into said motive means, for actuating said supply means; and

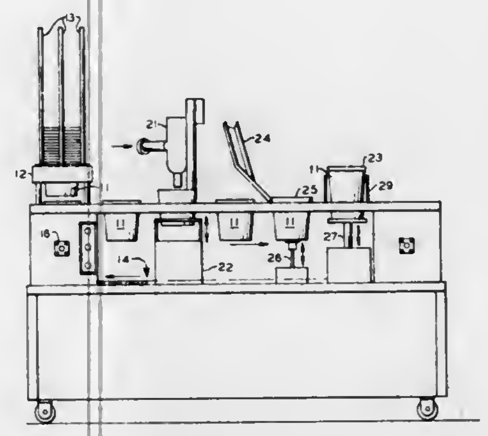
f. second control means, responsive to passage of said items from said motive means, for regulating the packaging at said receptacle means.

3,849,970

WORM-TYPE DISPENSER FOR RIMMED CONTAINERS

Alfred W. Kinney, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 15, 1973, Ser. No. 370,532
Int. Cl. B65b *7/28;* **B65h** *3/28*
U.S. Cl. 53—282 **7 Claims**



1. In an apparatus for dispensing rimmed containers having a generally circular cross section from a stack thereof comprising a plurality of feed cylinders, each of said feed cylinders having a groove in the cylindrical surface thereof extending in a generally spiral form from the top of said cylindrical surface to the bottom of said cylindrical surface, each groove having an inner wall generally parallel to the cylindrical surface of the respective feed cylinder and upper and lower sidewalls, means for positioning said plurality of feed cylinders in a circular array which is coaxial with said stack of containers with the cylindrical axes of said feed cylinders being parallel to the elongated axis of said stack of containers, with each of said plurality of feed cylinders being positioned to simultaneously receive in the groove thereof the rim of a container in said stack, and means for simultaneously rotating said feed cylinders to dispense a rimmed container from said stack, the improvement comprising at least one of said feed cylinders having a bead extending outwardly along at least a portion of the length of the inner wall of the groove thereof, said bead having a width less than the width of the groove in which it is located and being spaced from the upper and lower sidewalls thereof, and said bead extending outwardly from said inner wall a predetermined distance so that the diametrical distance of a circular relationship formed by said grooves container rim is reduced by said at least one bead to be sufficiently less than the diameter of said rim to cause the container rim which contacts said bead to be compressed inwardly so that the maximum outside diameter of the compressed portion is substantially less than the original maximum outside diameter of the uncompressed rim, whereby a corrugation is formed in the outer most wall of the rim of the container being dispensed

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3,849,971

A TOOL FOR SEALING A CONTAINER, SUCH AS A CUP, BOTTLE, JAR OR THE LIKE

Folke Evert Granseus, Vintrie, and Ingvar Helmer Borgstrom, Malmo, both of Sweden, assignors to Aktiebolaget Platmanufaktur, Malmo, Sweden

Filed Feb. 22, 1973, Ser. No. 334,809
Claims priority, application Sweden, Feb. 24, 1972, 2284/72
Int. Cl. B65b *7/28;* **B67b** *5/00*
U.S. Cl. 53—329 **3 Claims**

1. A tool for sealing a container, such as a cup, bottle, jar or the like, comprising a body;

an air inlet provided by said body;

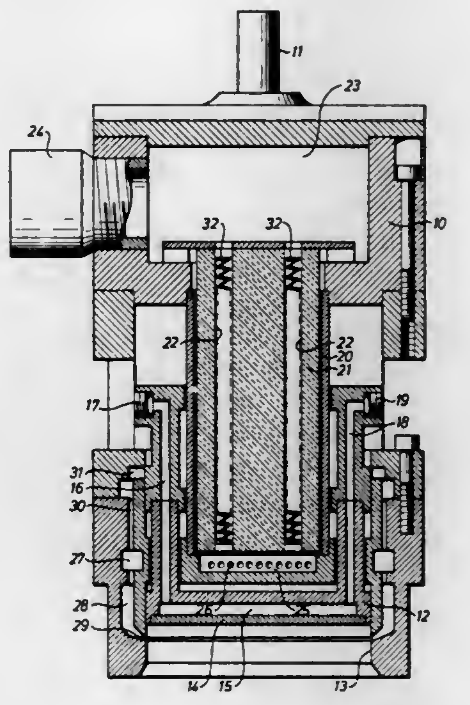
an air outlet provided by said body to the outside thereof;

an annular air nozzle provided on said body;

means forming a passage between said air inlet on the one hand and said air outlet and said air nozzle on the other hand;

heating means in said passage;

a slide displaceable in the body between outer and inner positions for controlling the air outlet and the air nozzle, said air outlet and said air nozzle being closed and open, respectively, when the slide is in said inner position and open and closed, respectively, when the slide is in said outer position;



a cooling surface supported by the slide; and

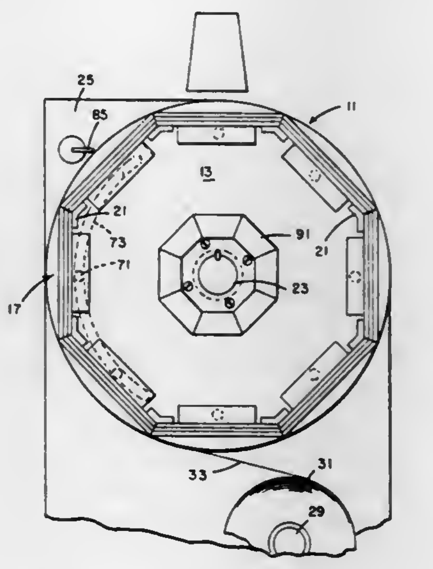
means for circulating a coolant in contact with the cooling surface, hot air being discharged around the periphery of the cooling surface when this is applied onto a cap on a container and the slide is moved to the inner position by being pressed against the cap.

3,849,972

WRAPPING APPARATUS

Carl R. Pepmeier, Spotsylvania, Va., and Edward G. Lowe, Gloucester, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Apr. 13, 1973, Ser. No. 350,767
Int. Cl. B65b *11/38*
U.S. Cl. 53—329 **4 Claims**

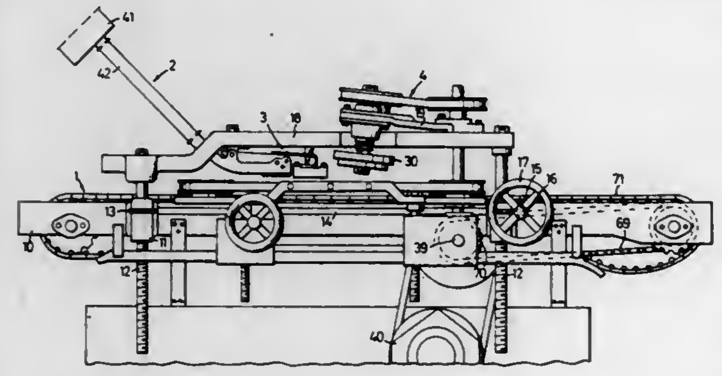


1. An article wrapping apparatus including a drum having only one end wall and a peripheral wall, said peripheral wall formed of a series of like, rectangular, planar members each having an opening extending therethrough and which are joined in end-to-end relationship to together define a polygon, means for rotating said drum including a stationary plate

disposed in directly adjacent, spaced relationship with the drum end wall and a shaft fixed substantially centrally of said end wall and extending through and supported for rotation by said plate, means at one location for delivering a continuous web of wrapping material onto successive portions of the outer surface of said drum peripheral wall and across the openings in said planar members as the drum is rotated, vacuum means for retaining the delivered web on the successive portions of the drum peripheral wall as they travel from the one location to slightly beyond a second location spaced circumferentially from such one location, a separate blade fixed to each of said planar members at like ends thereof, each of said blades forming a portion of the outer surface of the drum peripheral wall and each having an edge which is aligned with the end of the planar member to which it is fixed, a stationary knife at the second location in position to be engaged by said balde edges as the drum is rotated to thereby effect severance of the web into separate sheets whereby at a third location, outwardly of said drum and circumferentially spaced from the second location, individual articles to be wrapped may be urged against the separate sheets of wrapping material and into and through the respective drum openings underlying such sheets and be removed from the open end of said drum, and resilient means carried by and projecting into the openings of the respective planar members for smoothing traveling portions of the separate sheets of wrapping material onto individual articles as they are passed through such openings.

3,849,973
APPARATUS FOR CLOSING JARS OR OTHER CONTAINERS WITH CAPS

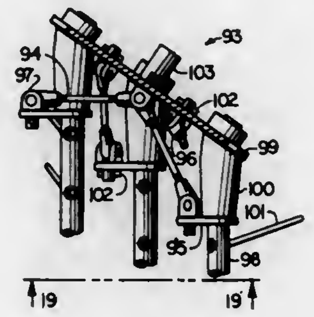
Einar Zetterberg, Professorsgatan 4B, 214 53 Malma, Sweden
Filed Jan. 24, 1973, Ser. No. 326,505
Claims priority, application Sweden, Jan. 24, 1972, 786/72
Int. Cl. B65b *7/28;* **B67b** *1/06*
U.S. Cl. 53—331.5 **8 Claims**



1. Apparatus for tightening caps, having a top and a downwardly directed mantle, on filled containers, the apparatus comprising:
frame means;
conveyor means operable to move filled containers through said frame means at a speed;
means operable to preliminarily tighten the caps on the filled containers;
first wheel means operable to engage a peripheral portion of the top surface of each cap with a peripheral portion of a lower surface of said first wheel means, the lower surface being generally perpendicular to the rotation axis of said first wheel means, said first wheel means being resiliently mounted on said frame means such that said first wheel means presses against the top surface of each cap in the axial direction of the filled containers, said first wheel means being mounted at one side of said conveyor means and being rotatable such that the speed of the lower surface engaging the top of a cap exceeds the speed of said conveyor means and is directed in the direction of movement of the filled containers through said frame means; and
second wheel means operable to engage the peripheral portion of the top surface of each cap with a peripheral portion of a lower surface of said second wheel means, the lower surface being generally perpendicular to the rotation axis of said second wheel means, said second wheel means being resiliently mounted on said frame means such that said second wheel means presses against the top surface of each cap in the axial direction of the filled containers, said second wheel means being mounted at the other side of said conveyor means and being rotatable such that the speed of the lower surface of said second wheel means which engages the top of a cap is less than the speed of said conveyor means and is directed in the direction of movement of the filled containers through said frame means.

3,849,974
MATERIALS HANDLING DEVICES

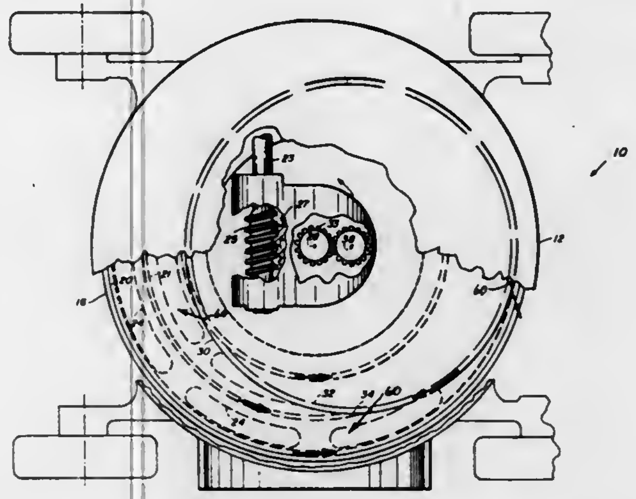
William E. James, 76 Welsh Tract Rd. No. 307, Newark, Del. 19711
Division of Ser. No. 99,580, Dec. 18, 1970, Pat. No. 3,751,888. This application Mar. 1, 1973, Ser. No. 337,113
Int. Cl. A01d *57/02*
U.S. Cl. 56—226 **11 Claims**



8. A crop harvesting machine of the type which is adapted for traveling in a forward direction, mowing standing crop material and sweeping it into said machine comprising:
a crop cutting means extending transversely to said forward direction for cutting said standing crop material; and,
a feed table means mounted behind said crop cutting means for providing a support for cut crop material as it is swept rearwardly from said crop cutting means, said feed table means defining a surface which is inclined rearwardly away from said crop cutting means;
a reel-type crop sweeping means extending transversely to said forward direction for sweeping said standing crop material into said cutting means and for thereafter sweeping said cut crop material rearwardly over said feed table, said reel-type crop sweeping means having a reel axis of elongation about which said crop sweeping means revolves which is transverse to said forward direction, said crop sweeping means comprising:
elongated crop-engaging tines rotatable about said reel axis and axially moveable relative to said reel axis to sweep said standing crop material rearwardly over said cutting means and thereafter over said feed table; and a tine rotating means for rotating said crop engaging tines about axes separate from said reel axis to vary the attitudes of said tines in response to the axial movement of said crop-engaging tines relative to said reel axis.

3,849,975
CUTTING MEANS EMPLOYING ECCENTRIC ROTATIONAL CUTTING ACTION

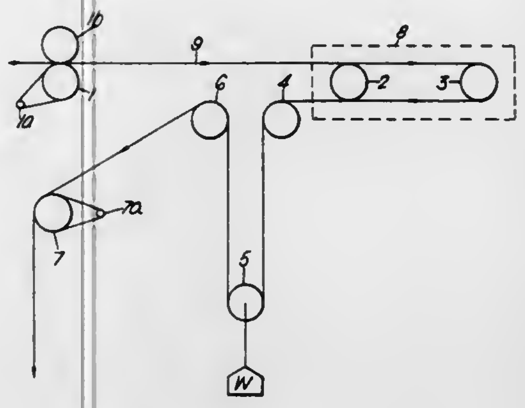
Roy W. Cummings, P.O. Box 340, Lake Helen, Fla. 32744
Filed Oct. 29, 1973, Ser. No. 410,789
Int. Cl. A01d *55/18*
U.S. Cl. 56—295 **5 Claims**



1. Grass cutting means comprising:
a housing;
a cutting member rotatably mounted in said housing;
a cutting edge support having a raised cutting surface extending into said cutting member;
a cylindrical member positioned in said housing and having an opening therein;
a cutting edge about the periphery of said opening in said member; and
means for rotating said cylindrical member in said cutting member such that the direction of attack of said cylindrical member cutting edge across said raised cutting surface is other than normal to said raised cutting edge at any intersecting point therebetween.

3,849,976
HIGH MODULUS TIRE CORD

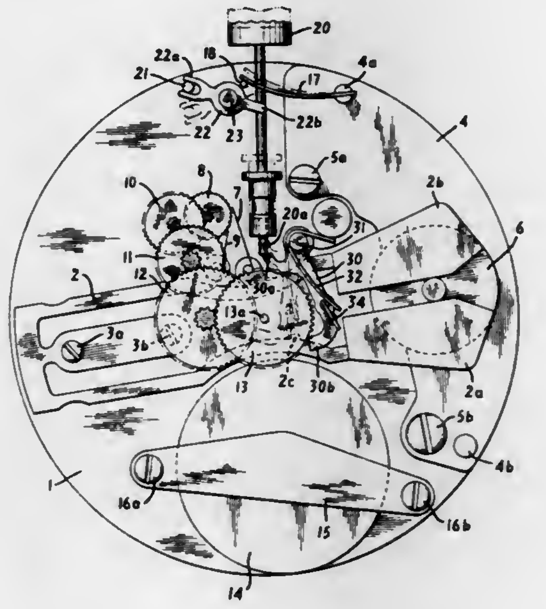
Derek Kenyon, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England
Division of Ser. No. 859,522, July 22, 1969, abandoned, which is a continuation of Ser. No. 665,351, Sept. 5, 1967, abandoned. This application Apr. 10, 1972, Ser. No. 242,459
Claims priority, application Great Britain, Sept. 13, 1966, 40816/66
Int. Cl. D02g *3/48*
U.S. Cl. 57—140 R **3 Claims**



1. A polyamide yarn or cord having an L_s modulus above 60 a tensile strength T above 8 and a heat contraction H_c below 4 percent, the parameters L_s, T, and H_c being measured as described herein.

3,849,977
DEVICE FOR REGULATING THE HANDS OF A TIMEPIECE

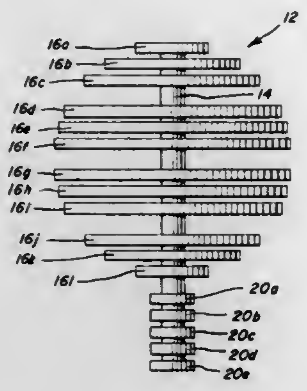
Yoshiyuki Hirose, Tokyo, and Yasukazu Kawamura, Funabashi, both of Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan
Filed Dec. 27, 1972, Ser. No. 318,761
Claims priority, application Japan, Dec. 27, 1971, 46-1558
Int. Cl. G04c *3/02, 13/06*
U.S. Cl. 58—23 TF **5 Claims**



1. In a timepiece having a set of movable hands for indicating the time: a mechanical oscillator mounted to undergo oscillatory movement; electric circuit means coacting with said oscillator for sustaining oscillatory movement of said oscillator once same is set into oscillatory motion; transmitting means for transmitting the oscillatory movement of said oscillator to said set of hands to effect timed movement of said hands; a crown manually movable between a hands-setting position and a hands-running position; means operative during movement of said crown from said hands-running position to said hands-setting position for rendering both said electric circuit means and said transmitting means ineffective and operative during movement of said crown from said hands-setting position to said hands-running position for rendering both said electric circuit means and said transmitting means effective and for imparting a mechanical shock to said oscillator to mechanically start same into oscillatory motion, said means for rendering said electric circuit means ineffective and effective comprising a power switch connected to said electric circuit means and movable to an open position to cut off power to said electric circuit means thereby rendering same ineffective during movement of said crown from said hands-running position to said hands-setting position and movable to a closed position to turn on power to said electric circuit means thereby rendering same effective during movement of said crown from said hands-setting position to said hands-running position, said means for rendering said transmitting means ineffective and effective including a pivotal lever pivotal in one direction into releasable engagement with said transmitting means during movement of said crown from said hands-running position to said hands-setting position to releasably lock said transmitting means against movement thereby rendering same ineffective and pivotal in another direction out of engagement with said transmitting means during movement of said crown from said hands-setting position to said hands-running position to unlock said transmitting means and free same for further movement thereby rendering same effective, said means for imparting a mechanical shock comprising a resilient member mounted on said lever and movable into striking engagement with said oscillator during initial pivotal movement of said lever in said another direction to thereby start said oscillator into oscillatory motion.

3,849,978
TIME INDICATING MEANS

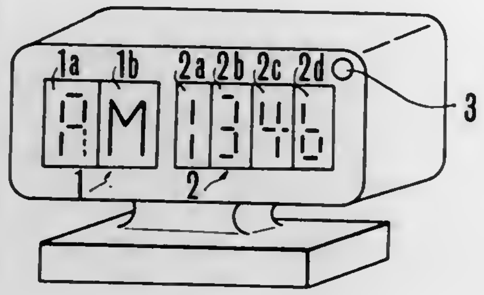
Edward W. Davis, Box 203, West Baden, Ind. 47469
Filed Feb. 9, 1973, Ser. No. 331,227
Int. Cl. G04b *19/30, 45/00, 19/06*
U.S. Cl. 58—50 R **18 Claims**



1. In an instrument for indicating time, indicating means, comprising: a plurality of indicating elements arranged in spaced apart relationship lengthwise along an elongated standard, each element defining a 360° time indicating reference strip whereby its time indication may be seen from any point of observation laterally of the instrument, and means arranging said indicating element in four relatively spaced clusters of three elements in any number of 12 elements along said standard whereby each cluster may represent a 3-hour increment of time and each of the four clusters of three elements may represent a one-quarter hour increment of time.

3,849,979
ELECTRONIC DIGITAL CLOCKS

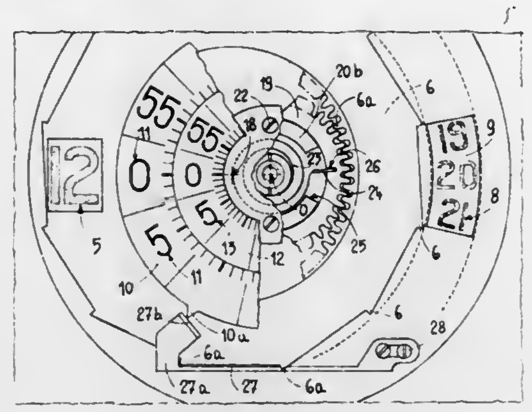
Mikiharu Tanji, Omattacho, Japan, assignor to ISE Electronics Corporation, Ise City Mie, Prefecture, Japan
Filed July 24, 1973, Ser. No. 382,271
Int. Cl. G04b *19/30*
U.S. Cl. 58—50 R **1 Claim**



1. In an electronic digital clock of the type wherein letters are displayed by luminous display tubes driven by an electronic driving circuit, the improvement which comprises each of said luminous display tubes having a cathode electrode, a grid electrode and a plurality of luminous electrodes which are arranged to display a predetermined letter and are driven by time signals produced by said electronic driving circuit, and means responsive to the brightness of the ambient light for varying the brightness of said luminous display tubes including a photoelectric element connected for each said tube to said cathode electrode to vary its bias potential.

3,849,980
JUMPING-DIAL WRIST-WATCH WITH DATE INDICATOR

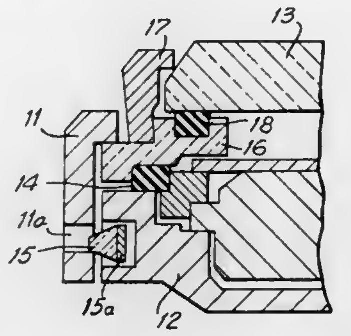
Jean Laesser, Villeret, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland
Filed Mar. 26, 1974, Ser. No. 454,960
Claims priority, application Switzerland, Mar. 29, 1973, 4515/73
Int. Cl. G04b *19/24, 19/06*
U.S. Cl. 58—58 **1 Claim**



1. A jumping-dial wrist-watch with date indicator comprising a resilient connecting member between the hour-wheel and the hours indicator, which is submitted to the action of a retaining member which, operated by a cam rigid with the minutes indicator, releases the said hours indicator once per hour, permitting it to make an instantaneous jump during which the next numeral of the hours numerals comes opposite a window for the reading of the hours, said date indicator being constituted by an annular disc coaxial to the center of the movement, the hours indicator being constituted by a crown-shaped member innerly toothed, eccentered with respect to the center of the movement, so as not to mask the date indicator, the inner toothing of the hours indicator meshing with a driving wheel which is coaxial to the center of the movement and connected to the said resilient device.

3,849,981
WATERTIGHT WATCH CASE

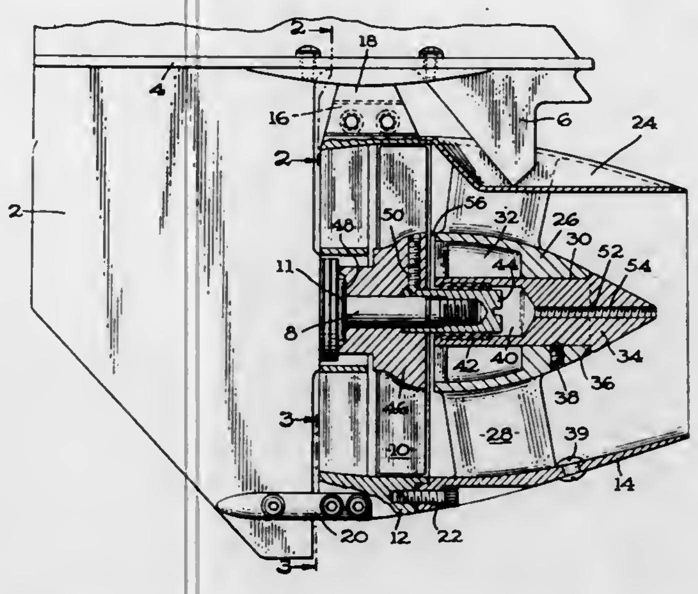
Yasutaka Tarusawa, Okaya, and Yoshinori Futami, Suwa, both of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Oct. 31, 1973, Ser. No. 411,501
Claims priority, application Japan, Nov. 2, 1972, 47-109936
Int. Cl. G04b *37/08*
U.S. Cl. 58—90 R **5 Claims**



1. An improved water-tight crystal mounting for a watch of the type having a frame for supporting a watch crystal, a gasket respectively overlying and underlying said frame, an inner case body releasably connected to said underlying gasket, a bezel retaining said crystal against said overlying gasket and an outer casing cooperatively connecting said frame and said inner case body, said improvement comprising an auxiliary means for releasably connecting said frame and said bezel for thereby reinforcing the seal of said crystal against said overlying gasket, said reinforced seal being undisturbed by successive releases of said outer casing and said inner case body for access to an encased movement.

3,849,982
MARINE JET PROPULSION APPARATUS

Kimball P. Hall, Shoreham, N.Y., assignor to Hall Marine Corporation, Shoreham, N.Y.
Filed Apr. 3, 1972, Ser. No. 240,693
Int. Cl. B63h *11/02*
U.S. Cl. 60—221 **13 Claims**



1. Marine propulsion apparatus comprising a front tubular element and a rear tubular element, the interior surface of said front element being in the form of a surface of revolution about a central axis, the rear end of said front element conforming in size and shape to the front end of said rear element, releasable means securing said front end of said rear element to the rear end of said front element in fixed, contiguous relation, whereby said elements constitute a single continuous tubular casing, a bearing support within said rear element, said support having an opening therethroudh co-axial with said axis, means connecting said support in fixed relation to and spaced from the interior surface of said rear element, a bearing unit disposed in said opening, said bearing unit having an internal bearing surface co-axial with said axis and being insertable into and removable from said opening through the rear end of said rear element, means releasably connecting said bearing unit in fixed relation to said support, an outboard motor transmission housing, means securing the front end of said front element to said housing, a power-driven shaft extending rearwardly from said housing in alignment with said axis, the rear end of said shaft being rotatably supported in said bearing unit, a bladed impeller unit in said front element mounted on said shaft for rotation therewith, and a gas discharge duct extending downwardly and rearwardly from said housing, said rear element having an external channel in its top portion extending rearwardly and in alignment with the outlet end of said gas discharge duct.

3,849,983
PROPELLANT LINER FOR ACTIVE COOLING

Charles C. Cherry, McGregor, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Nov. 20, 1972, Ser. No. 308,189
Int. Cl. F02k *9/04*
U.S. Cl. 60—255 **5 Claims**

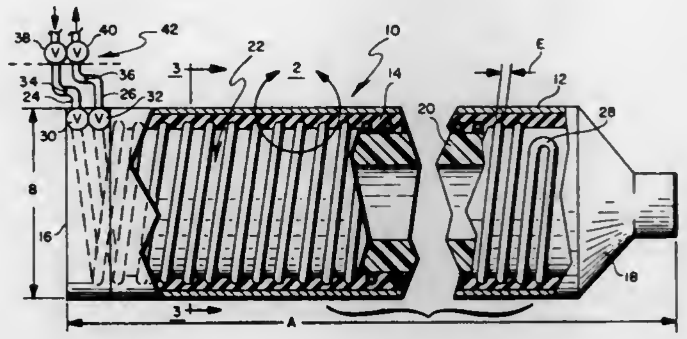
1. A device for cooling the solid propellant grain of a missile carried aloft by an aircraft during captive and free flight comprising:

a solid propellant grain,

a liner disposed about the length of said solid propellant grain between said grain and a missile case,

a spirally wrapped conduit means disposed in said liner along its entire length,

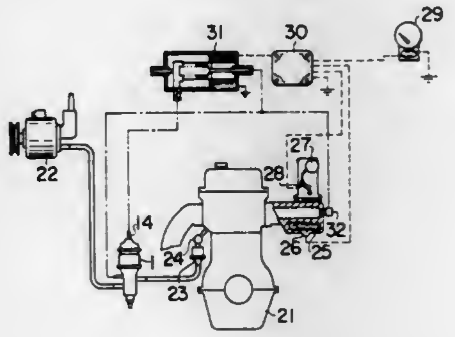
a source of cooling fluid from said aircraft, said cooling fluid being directed through said conduit to cool said solid propellant grain, and



quick disconnect means in said conduit between said aircraft and said missile to assure release of said missile from said aircraft.

3,849,984
MEMBER FOR CONTROLLING EXHAUST GAS PURIFYING DEVICE

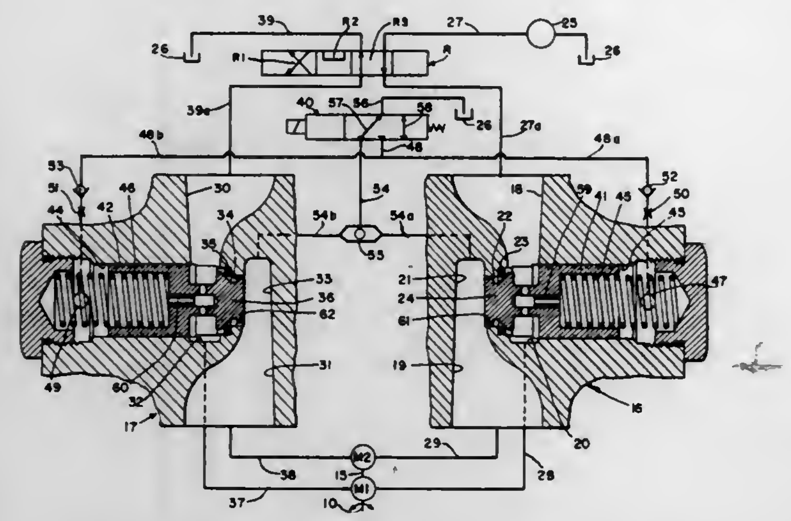
Tadahide Toda; Tetsuro Nagano, and Takashi Kato, all of Sosono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan
Filed Mar. 28, 1973, Ser. No. 345,688
Claims priority, application Japan, Apr. 19, 1972, 47-45545
Int. Cl. F02b *75/10*
U.S. Cl. 60—290 **8 Claims**



1. An exhaust gas purifying device for use in supplying secondary air into the exhaust system of an internal combustion engine, comprising a first valve located in the path of the secondary air into the exhaust system and displaceable between a first position for supplying secondary air into the exhaust system and a secondary position for discharging the secondary air into the atmosphere, a second valve for regulating the supply of manifold negative pressure from the internal combustion engine into said first valve, first means for operating said second valve, second means for detecting various operating conditions of the internal combustion engine, said second means connected to said first means for operating said second valve for transmitting an input signal to said first means so that said second valve regulates the supply of manifold negative pressure to said first valve whereby said first valve is disposed in the first or second position based on the operating conditions of the engine checked by said second means, and said second means comprise an engine cooling water temperature detector, a fast idle cam position detector and a vehicle speed detector each connected to said first means and each of said engine cooling water temperature detector, fast idle cam position detector and vehicle speed detector being arranged so that predetermined conditions for each of said detectors must be detected before said first means operates said second valve.

3,849,985
CONTROL SYSTEM FOR MULTIPLE MOTOR HYDRAULIC MEANS

Frank W. Ratliff, and James R. McBurnett, both of Corinth, Miss., assignors to Tyrone Hydraulics, Inc., Corinth, Miss.
Filed Dec. 4, 1972, Ser. No. 311,791
Int. Cl. F16k *39/48*
U.S. Cl. 60—483 **8 Claims**

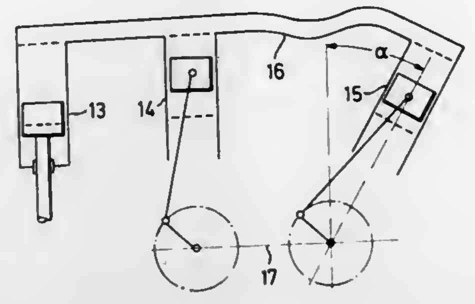


1. A fluid control system for power means having first and second hydraulic motors connected to deliver power to a power shift and each of said motors having first and second passages extended from opposite sides thereof for supply and discharge of operating fluid, the control system comprising first and second valve devices each having first and second cavities and a valve seat around a port interconnecting the first and second cavities, the first and second cavities of the first valve device being connected respectively with the first passages of the two motors and the first and second cavities of the second valve device being connected respectively with the second passages of the two motors, and each of said devices having a valve cooperating with said seat and movable to open and close said port, first connection means providing for connection of the first cavity of the first valve device with a source of hydraulic operating fluid, second connection means providing for connection of the first cavity of the second valve device with reservoir, said two valve devices providing for operation of only the first motor when the two valves are closed and for operation of both motors when the two valves are open, each of said valve devices having fluid pressure means for operating the valves including a pressure fluid chamber at that side of the valve acting to move the valve against the valve seat and thereby close the port upon build-up of pressure in said pressure fluid chamber, each valve device having a restricted orifice interconnecting said first cavity thereof and its fluid pressure valve operating chamber, and each valve having a discharge line with a restricted orifice for connecting its fluid pressure valve operating chamber with reservoir.

3,849,986
HYDRAULIC EXCITER OF VIBRATIONS FOR A VIBRATORY COMPACTOR

Gulertan Vural, Emmelshausen, Germany, assignor to Koehring GmbH-Bomag Division, Boppard, Germany
Filed June 22, 1973, Ser. No. 372,622
Claims priority, application Germany, June 24, 1972, 2231106
Int. Cl. F15b *7/00*
U.S. Cl. 60—537 **5 Claims**

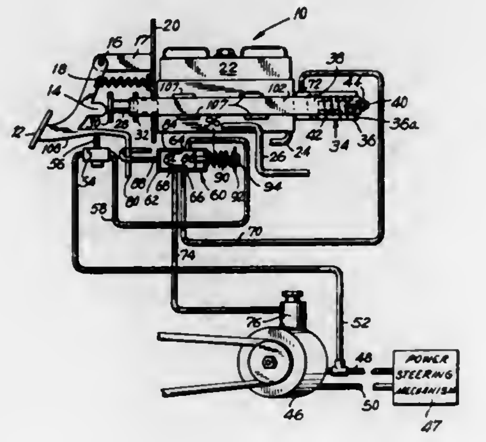
1. An hydraulic exciter for vibrations for a vibratory compactor comprising:
- relatively movable exciter piston and cylinder means, one of which is adapted to be connected to a compacting member for transmitting power thereto as said piston means moves relative to the said cylinder means; and
- means for causing back and forth movements of said piston means relative to said cylinder means, including
- first and second pump cylinders,
- first and second pump pistons disposed respectively in said first and second pump cylinders,
- conduit means continuously filled with hydraulic fluid connecting one side of said exciter cylinder means with one side of each of said pump cylinders,



- means for driving said first and second pump pistons back and forth in their respective pump cylinders at the same frequency, and
- means for adjusting the phase relationship between the two pump pistons in their respective pump cylinders to adjust the volume of fluid supplied during each cycle to said exciter cylinder means and hence to adjust the amount of movement of said exciter piston means relative to said exciter cylinder means.

3,849,987
DUAL CONTROL HYDRAULIC BRAKE SYSTEM FOR MOTOR VEHICLES

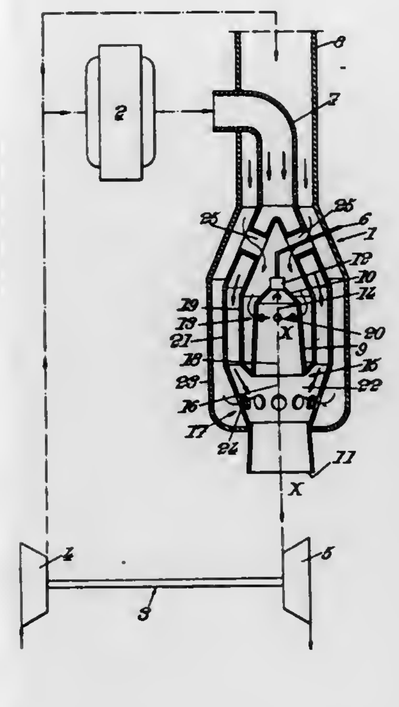
Jesse R. Hollins, 40 Stoner Ave., Great Neck, N.Y. 11021
Filed Aug. 31, 1973, Ser. No. 393,632
Int. Cl. F15b *7/00*
U.S. Cl. 60—547 **10 Claims**



1. A dual control hydraulic brake system for an engine driven motor vehicle comprising a hydraulic master cylinder, said hydraulic master cylinder including a master cylinder control element which upon being moved causes the motor vehicle brakes to be applied, a brake pedal, a pump having a pressurized fluid discharge line and a reservoir line, a hydraulic motor spaced from and in fluid isolation from said hydraulic master cylinder, a control valve for controlling communication between said hydraulic motor and said pump pressurized fluid discharge line and said pump reservoir line, means for controlling operation of said control valve as said brake pedal is depressed, a yoke linking said master cylinder control element to said hydraulic motor, and means for moving said master cylinder control element in unison with said yoke when said pump is operative and fluid from said pump is directed to said hydraulic motor causing the motor vehicle brakes to be applied and for allowing said master cylinder control element to move independently of said yoke upon failure of said pump to operate when said brake pedal is depressed.

3,849,988
COMBUSTION CHAMBERS FOR INTERNAL COMBUSTION ENGINES EQUIPPED WITH A TURBO-COMPRESSOR UNIT WITH REHEATING UPSTREAM OF THE TURBINE

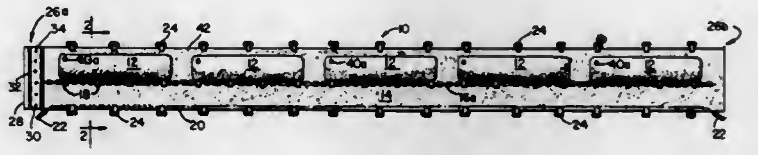
Jean Melchior, Paris, France, assignor to Etat Francais, Paris, France
Filed Mar. 29, 1973, Ser. No. 345,966
Claims priority, application France, Apr. 6, 1972, 72.12112
Int. Cl. F02b *37/04*
U.S. Cl. 60—606 **21 Claims**



1. Combustion chamber for a turbo-compressor unit associated with an internal combustion engine operable for reheating gases upstream of the turbine of said turbo-compressor unit, said combustion chamber being adapted to be supplied with fuel and at the same time by exhaust gases emerging from the engine and by fresh air taken through a bypass pipe connected between the outlet of the compressor and the inlet of said turbine of said turbo-compressor unit in bypass relation to the engine, said combustion chamber comprising a tubular element having a closed end and an open end, at least one fuel injector located toward the closed end of the tubular element, a primary air intake conduit adapted to communicate with said bypass pipe and having an outlet arranged to introduce fresh air into the tubular element in a combustion zone in the vicinity of its closed end, an exhaust gas intake conduit adapted to communicate with the exhaust outlet of the engine and having an oulet arranged to introduce the exhaust gases into the tubular element in the neighborhood of its open end at a mixing zone located downstream of said combustion zone and wherein the primary air or the products of combustion thereof with the fuel first meet the exhaust gases, said exhaust gas conduit outlet being oriented to effect said introduction with minimum load loss and in the direction of the open end of said tubular element, and a secondary air intake conduit adapted to communicate with said bypass pipe and having an outlet arranged to introduce fresh air into the tubular element downstream of the upstream end of said mixing zone, said secondary air conduit outlet being arranged to introduce fresh air in the form of a jet stream oriented in a direction transverse to the flow of the exhaust gases in said mixing zone such that the flow of secondary air into said mixing zone is opposed by the flow of the exhaust gases in said mixing zone whereby the interaction of the secondary air jet stream with the exhaust gas stream varies the ratio of primary air to secondary air entering said tubular element in accordance with the flow of exhaust gases into said mixing zone.

3,849,989
INFLATABLE BARRIER FOR SUBSTANCES FLOATING ON WATER

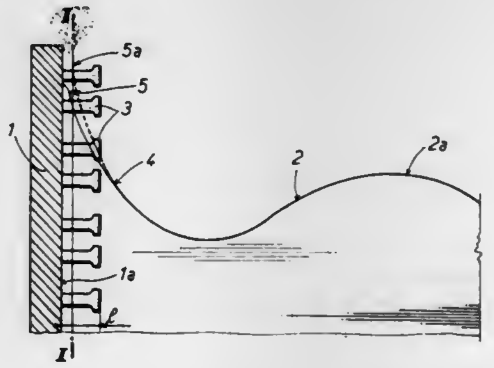
Paul Preus, Box 1002, Toms River, N.J. 08753
Filed May 25, 1973, Ser. No. 363,954
Int. Cl. E02b *3/04, 15/04*
U.S. Cl. 61—1 F **4 Claims**



1. A floating barrier for substances floating on water comprising:
- a floatation means including plurality of inflatable chambers hingedly connected in end to end relationship, each of said chambers being divided into plural independent subchambers by flexible wall means disposed therein and liquid impervious skirt means depending from said floatation means to provide a liquid barrier below the water line thereof.

3,849,990
ANTI-HEAVE PROTECTIVE SYSTEM

Jacques Edouard Lamy, Fontenay-Aux-Roses, France, assignor to C. G. Doris (Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines), Paris, France
Filed Jan. 17, 1973, Ser. No. 324,305
Claims priority, application France, Jan. 18, 1972, 72.01560
Int. Cl. E02b *3/06*
U.S. Cl. 61—3 **11 Claims**



1. Protective system against the heaving action of waves of water comprising a bulky obstacle means having a spreading-out surface and providing a substantially uninterrupted impingement area of substantial extent athwart the wave path and exposed to the impact of successive surges of the heave to induce along said spreading-out surface alternate ascending and descending motions of a mass of water of a thickness greater than a limit layer of water, and means providing a multiplicity of energy dissipating material elements distributed over and projecting in front of said spreading-out surface a distance sufficient to penetrate into said mass of water beyond said limit layer, said elements serving to slow down ascending and descending water motions and phaseshift the same with respect to the heave.

3,849,991
IRRIGATION SYSTEM

Paul Niederwemmer, Im Birkenbusch 7, 44 Munster, Germany
Filed Sept. 13, 1972, Ser. No. 288,774
Int. Cl. E02b *13/00*
U.S. Cl. 61—13 **2 Claims**

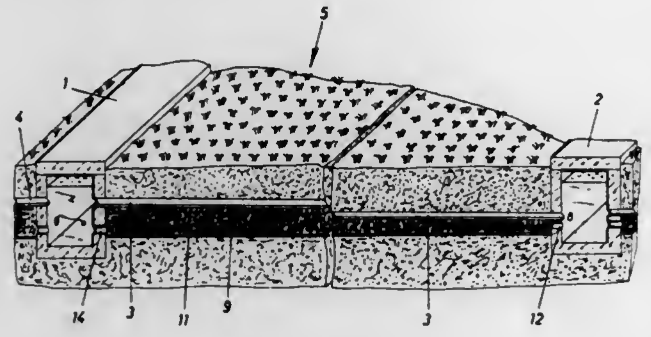
1. A water system for a field comprising in combination:
- means, including main and perpendicular water afferent

ditches extending completely around the field, for trapping water in the field;

a subsurface water system for said field connected to said ditches;

a drip screen system mounted in communication with at least one of said ditches; and

means for selectively controlling the flow of water between said ditches and said subsurface irrigation system to selectively water, drain, and flood the field, wherein said drip screen systems comprise:



a. a three-part elevated tank having a top chamber, intermediate chamber, and bottom chamber, extending longitudinally of each of said perpendicular water afferent ditches;

b. said lower chamber of each tank having longitudinally spaced openings formed therein to communicate with a respective water afferent ditch; and

c. a drip screen unit extending longitudinally in each of said upper and intermediate chambers.

3,849,992
REINFORCING ELEMENTS FOR STABILIZATION OF ROCKS

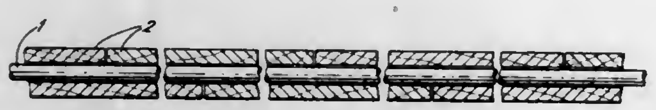
John Michael Murphy, Mansfield, England, assignor to Exchem Holdings Limited, London, England

Filed May 23, 1973, Ser. No. 363,149

Claims priority, application Great Britain, June 5, 1972, 26102/72

Int. Cl. E02d *3/00, 11/00*

U.S. Cl. 61—45 B **13 Claims**



1. A method of reinforcing an underground rock formation positioned above a coal seam being mined by the longwall system, which method comprises drilling into the rock formation a substantially horizontal borehole having a diameter less than 50 mm. and a length in excess of about 40 feet; inserting into the borehole in stages a reinforcing assembly comprising a plurality of lengths of longitudinally extending annular segments fixedly disposed in longitudinally staggered relationship with respect to each other about a coaxially arranged inner tube, said assembly being made up from a plurality of the lengths of said annular segments while being inserted into the borehole, and the insertion of the reinforcing assembly being continued until the inner end thereof lies adjacent to the inner end portion of the borehole and the outer end of the reinforcing assembly lies adjacent to the mouth of the borehole; feeding a bonding composition through the inner tube of the reinforcing assembly so as to cause the bonding composition to flow out of the inner end of the reinforcing assembly and back along the annular space between the assembly and the wall of the borehole; continuing the feeding of the bonding composition until the said annular space is substantially full of bonding composition; and thereafter allowing the bonding composition to harden so as to bond the reinforcing assembly to the rock formation.

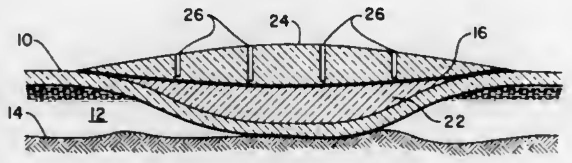
3,849,993
METHOD FOR CONSTRUCTING SEA ICE ISLANDS IN COLD REGIONS

Joel P. Robinson, Los Angeles, and Paul J. Durning, La Habra, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed July 23, 1973, Ser. No. 382,006

Int. Cl. E02b *17/00;* **F25c** *1/02*

U.S. Cl. 61—46 **10 Claims**



1. A method for constructing an artificial sea ice island in a marine body covered by a floating sheet of ice, which comprises:

placing a water impervious membrane on the surface of said floating sheet of ice;

thereafter placing sea water on said sheet of ice covered by said water impervious membrane under ambient conditions such that the water is frozen to form an ice body having a mass sufficiently large that the draft of the ice body exceeds the depth of the marine body whereby the ice island is permanently grounded and the surface of the island raised above that of the surrounding floating ice;

establishing a plurality of wells in the ice body above said impervious membrane for the drainage of brine from the ice body; and

removing accumulated brine from said wells.

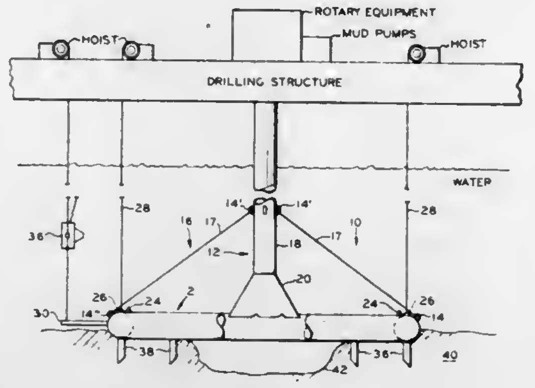
3,849,994
GUIDE BASE AND METHOD FOR SETTING SAME

Ed O. Seabourn, Norfolk, England, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 24, 1973, Ser. No. 400,162

Int. Cl. E21b *43/01;* **B63b** *35/00*

U.S. Cl. 61—46.5 **10 Claims**



1. A guiding apparatus comprising:

a frame having an opening;

first means for releasably securing the frame to a drilling means positioned in said opening; and

second means for contacting and severing a portion of said first means in response to the movement of the drilling means through the frame opening for releasing said drilling means from said frame.

3,849,995
METHOD AND APPARATUS FOR DRILLING AND BOLTING A MINE ROOF

Will B. Jamison, Bethel Park, Pa., assignor to Consolidation Coal Company, Pittsburgh, Pa.

Division of Ser. No. 286,744, Sept. 6, 1972, abandoned. This application May 18, 1973, Ser. No. 361,520

Int. Cl. E21c *11/02*

U.S. Cl. 61—63 **4 Claims**

1. Apparatus for inserting permanent roof supports in a mine roof at a preselected location while providing temporary roof support adjacent the preselected location comprising,

a self-propelled vehicle having apparatus for inserting permanent roof supports in a mine roof,

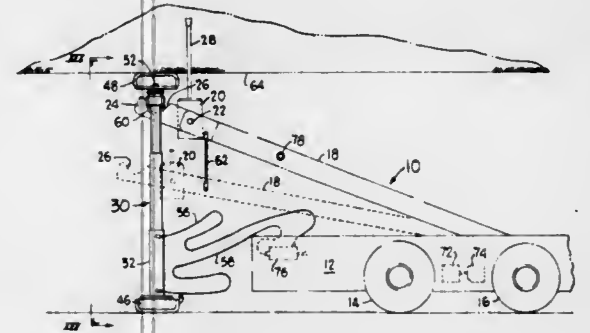
a portable roof support having an upper portion operable to engage the mine roof and a lower portion operable to engage the mine floor,

telescopic means connected between said roof support upper portion and said roof support lower portion, said telescopic means arranged to extend and urge said portable roof support upper portion and said lower portion against said mine roof and floor respectively to support the mine roof,

power operated means in said self-propelled vehicle to extend said telescopic means,

flexible means connecting said power operated means to said telescopic means, said flexible means having sufficient length to permit said self-propelled vehicle to maneuver adjacent to said portable roof support, and

means on said self-propelled vehicle for engaging said portable roof support to transport said portable roof support on said self-propelled vehicle.



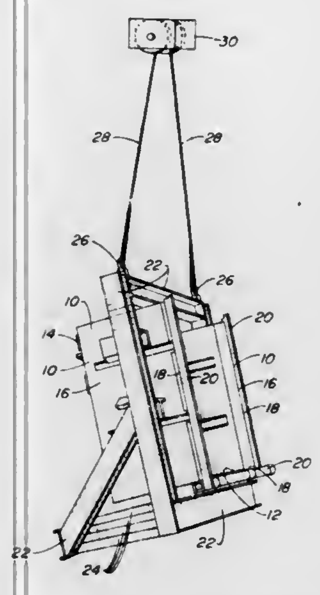
3,849,996
METHOD AND APPARATUS FOR POSITIONING A COFFERDAM

John R. Mittleman, Arlington, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 2, 1974, Ser. No. 430,120

Int. Cl. B63c *11/00, 11/30*

U.S. Cl. 61—68 **6 Claims**



1. A water-tight device for permitting periodic repairs to surfaces below a waterline of a body of water comprising:

a. a water-tight cofferdam having a floor, a rear wall, and two side walls, said two side walls and said floor having edges for abutting against said underwater object to be repaired;

b. said cofferdam including means for effecting a water-tight seal between said cofferdam and said submerged object, said means being attached to edges of said two side wall and said floor for abutting against said underwater object to be repaired, said cofferdam having a center of gravity, said rear wall being on one side of said center of gravity and said means for effecting a water-tight seal being on the other side of said center of gravity;

c. a plurality of weights;

d. means for supporting said weights attached to said cofferdam, said means and said weights having a center of gravity located a horizontal distance from said center of gravity of said cofferdam in a direction away from the surface of the underwater object to be repaired and below the center of gravity of said cofferdam; and

e. means for supporting said cofferdam, said plurality of weights, and said means for supporting said weights attached to the water tight device above the center of gravity of said cofferdam, and a horizontal distance from the center of gravity of said weight of said means for supporting said weights toward the surface of the underwater object to be repaired.

3,849,997
SUBMARINE PIPELINES

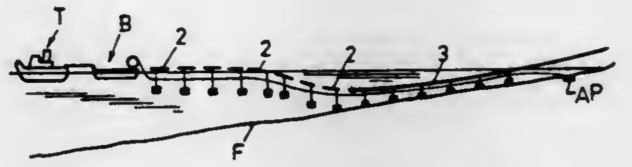
Gordon Shields Gower, French's Forest, New South Wales, Australia, assignor to Nabalco Engineering Pty. Ltd., New South Wales, Australia

Filed May 25, 1973, Ser. No. 363,969

Claims priority, application Australia, May 29, 1972, 9126/72

Int. Cl. F16l *1/00*

U.S. Cl. 61—72.3 **10 Claims**



1. A submarine pipeline comprising:

lengths of pipe preassembled on shore in end-to-end relationship;

the pipeline having an overall positive buoyancy and having been propelled seaward from the shore as a continuous length for laying in a desired location relative to the sea bed;

variable buoyancy pipeline support means on the pipeline including at least one buoyancy chamber having been connected to a barge and connected to the leading edge of the pipeline prior to positioning of the pipeline in relation to the sea bed;

anchors on the support means and anchored to the sea bed according to the contour of the sea bed having been progressively applied thereto through the use of control means located on the barge for varying the buoyancy of the support means;

the pipeline progressively in engagement with of its buoyancy;

the anchors imparting a negative buoyancy to the pipeline to locate the pipeline relative to the sea bed;

each anchor including an anchor weight and rollers spaced above the anchor weight;

the rollers engaging the pipeline whereby the latter can be propelled seawards past the applied anchors;

each buoyancy chamber adapted to have its degree of buoyancy selectively varied for interconnection with controls of the control means; and

the pipeline having been moved seaward through the provision of a continuous thrust against the supporting means by propelling means located on shore and connected to the pipeline.

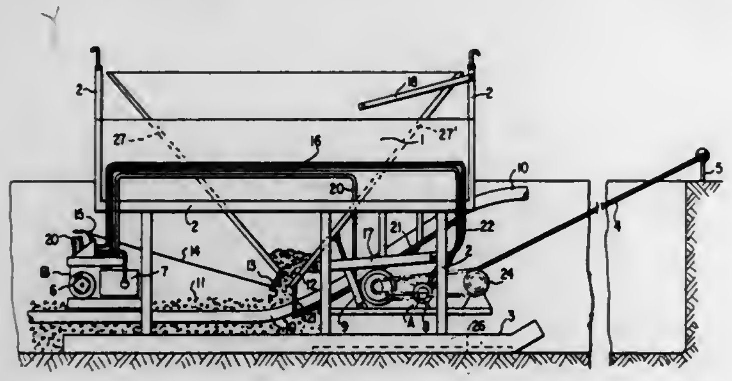
3,849,998
TILE EMBEDDING MACHINE

Melvin E. Thacker, R.F.D. Rt. No. 2, Leesburg, Loudoun County, Lucketts, Va. 22075

Filed June 20, 1973, Ser. No. 371,605

Int. Cl. F16l *1/00;* E03f *1/00*

U.S. Cl. 61—72.5 **8 Claims**



1. Improvement in a machine to operate alone for embedding a line of tile and gravel together in a trench for dispersal of polluting liquids, the machine comprising a frame and supporting means therefor to move along the trench bottom, a hopper for gravel movably mounted for adjustment of its height within the frame and having front and rear walls sloped to a bottom throat cross-wise of the trench centrally of the frame, the said supporting means comprising a bottom plate covering and formed to ride upon the trench bottom under the front wall of the hopper, in combination with means forwardly of the throat to direct a line of tile to decline beneath the throat to a lowest bottom position rearwardly of the throat, and in combination with means for slow, smooth advance of the machine, comprising prime mover means mounted on the frame, a winch mounted on the forward end of the frame and adapted to receive a cable to anchor ahead of the machine and to wind on the winch to advance the machine, and hydraulic means operatively connected to the prime mover means and to the winch to drive the winch, and means connected to the winch to reduce the speed of advance of the machine as the cable winds.

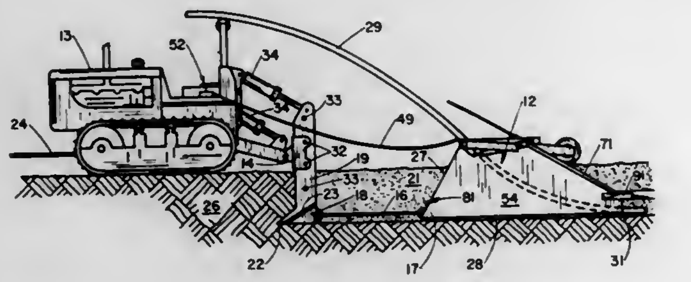
3,849,999
TRAILER TYPE MOLE UNIT

Eugene R. Coffey, P.O. Box 1267, Montrose, Colo. 81401

Filed Nov. 2, 1973, Ser. No. 412,213

Int. Cl. F16l *1/00;* A01f *11/00*

U.S. Cl. 61—72.6 **21 Claims**



1. Mole apparatus for use with mobile tractor equipment to place conduit beneath earth surfaces that may be of irregular contour wherein a tractor mounted ripper tooth with separate depth control is provided comprising a separate mole implant unit for use behind the said ripper tooth of operative height whereby a portion of the mole unit is adjacent or above the earth surface for all selected penetration depths of said ripper tooth and mole, said mole unit having front and side plates providing an entrance opening at a position above the earth surface for introduction of a main conduit and a guide passage therethrough for directing said conduit along a path to the bottom of said mole whereby said conduit is deposited and placed at the bottom of the earth structure disturbed by the ripper tooth and mole unit, a leading edge on said mole unit disposed at a rearwardly inclined angle upwardly from the bottom of said mole, a tow connection for extension between the bottom of said ripper tooth and the front lower bottom of said mole for the transmission of towing force from said ripper tooth to said mole unit, said tow connection being inclusive of means flexibly interconnecting said ripper tooth and mole unit whereby said mole is adapted for independent movement and rotation with respect to horizontal and vertical axis of reference, and stabilization means interconnected to said mole for engagement with the surface of the supporting earth for holding said mole in substantially vertically oriented positions as the ripper tooth and mole are moved over irregular earth surfaces.

3,850,000
TUNNELLING SHIELDS

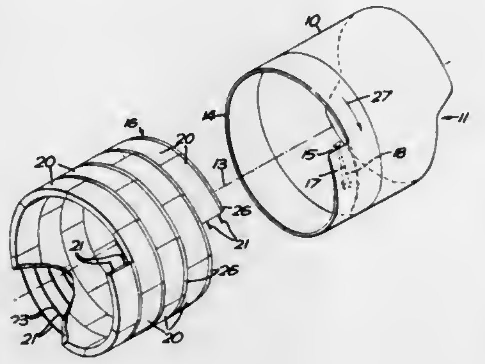
Rupert John Sidney McBean, Surrey, England, assignor to Kinnear Moddie (Concrete) Limited, London, England

Filed Feb. 27, 1973, Ser. No. 336,332

Claims priority, application Great Britain, Mar. 2, 1972, 9751/72

Int. Cl. E01g *3/02*

U.S. Cl. 61—85 **13 Claims**



1. A tunnelling shield for use in erecting a spiral tunnel lining, the shield being of cylindrical form and having forward and rearward parts which are rotatable relatively to one another about the shield axis, the rearward part of the shield having a trailing end which has a spiral form extending between a step facing generally around the shield, so that in use the end of the shield can engage a partially erected spiral lining to support the ground adjacent the lining and each additional segment can be located in the shield adjacent said step and attached to the previously erected segment, the shield having means for rotating said rearward part of the shield with respect to the forward part of the shield in the opposite direction to which the step faces to withdraw the shield from the newly erected segment means to advance the shield along the tunnel simultaneously with said rotation of the rearward part of the shield.

3,850,001
LNG SHIP TANK INERT GAS GENERATION SYSTEM

Stephen A. Locke, Glen Ellyn, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed June 15, 1973, Ser. No. 370,431

Int. Cl. F17c *7/02*

U.S. Cl. 62—50 **6 Claims**

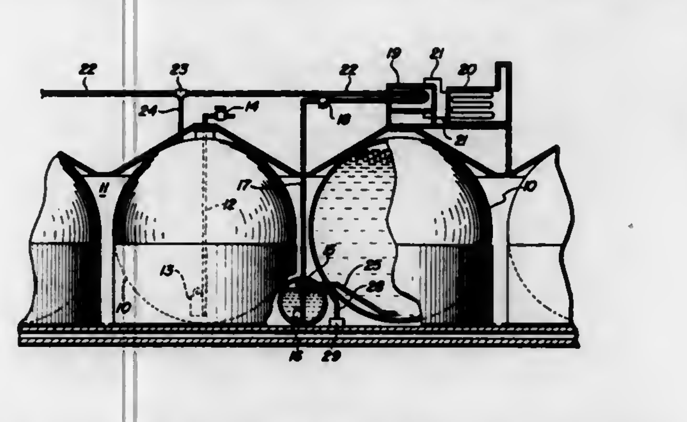
1. An apparatus for selectively inerting a storage tank containing inflammable liquefied gas, the apparatus comprising: an enclosed supply tank containing liquefied inert gas;

an enclosed storage tank containing a liquefied gas having a lower temperature than the liquefied inert gas;

a vaporizer for vaporizing the liquefied inert gas;

a conduit from the vaporizer to the storage tank for injecting the vaporized inert gas into the storage tank; and

heat transfer means thermally connecting the supply tank to the storage tank for transferring heat from the supply tank to the storage tank to maintain the inert gas in a liquefied state as long as the enclosure is not being inerted.



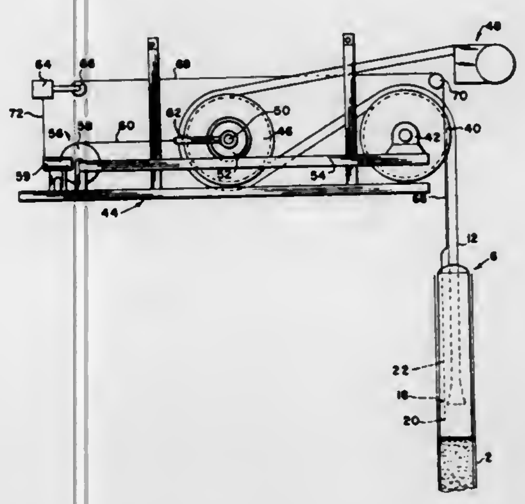
3,850,002
SYSTEM FOR HANDLING FRAGMENTED ICE

Crosby Field, 8029 Harbor View Ter., Brooklyn, N.Y. 11209

Filed June 20, 1972, Ser. No. 264,613

Int. Cl. G21c *3/00, 9/00*

U.S. Cl. 62—67 **10 Claims**



1. The method of depositing a column of fragmented ice which comprises the steps of, entraining ice fragments in air to form a composite ice-air stream, passing said ice-air stream in a downward direction to the bottom of the zone where the column is to be formed, performing primary ice separation by stopping the downward movement of the air and the continued movement of the ice fragments by the combined action of gravity and momentum, discharging the air upwardly through a closed passageway having a cross-sectional area such that the rate of air flow is less than that at which the ice particles will be entrained, and utilizing the accumulated ice to reduce the tendency for air to be discharged downwardly.

3,850,003
AIR DEFROST AIR CURTAIN DISPLAY CASE

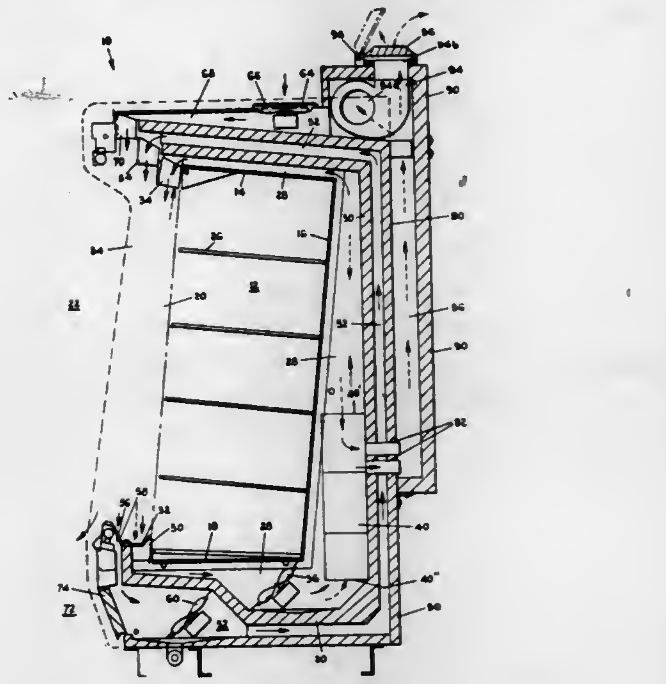
Sterling Beckwith, Menlo Park, Calif., and William C. Johnston, Atlanta, Ga., assignors to Kysor Industrial Corporation, Cadillac, Mich.

Filed Apr. 5, 1974, Ser. No. 458,104

Int. Cl. F25d *21/12*

U.S. Cl. 62—82 **13 Claims**

1. In an air curtain refrigerated display cabinet, said cabinet having an access opening in one side communicating a storage and display space within the cabinet with the ambient atmosphere, at least two outlet nozzles, an inner one and an adjacent one, extending across the upper edge of the access opening, and corresponding inner and adjacent inlet members extending across the lower edge of said opening; an inner passage and an adjacent passage connecting said inlet members with respective ones of said outlet nozzles; circulating means in each of said passages for circulating panels of air through said passages and across the access opening from said outlet nozzles to said inlet members; refrigeration evaporator coil means in said inner passage for cooling circulated air flowing therepast; the improvement comprising: air defrost means comprising a housing forming at least one plenum chamber; defrost air conduit means from said inner passage,



adjacent said evaporator coil means, to said plenum chamber; air discharge outlet means from said plenum chamber to the ambient atmosphere; and air propulsion means operably associated with said plenum chamber, said conduit means, and said discharge outlet means arranged to simultaneously draw ambient defrost air into said inner outlet nozzle and into said inner inlet member, through said inner passage to said evaporator coil means, across said coil means from both directions, through said conduit means to said plenum chamber, and out said discharge outlet means to the ambient atmosphere.

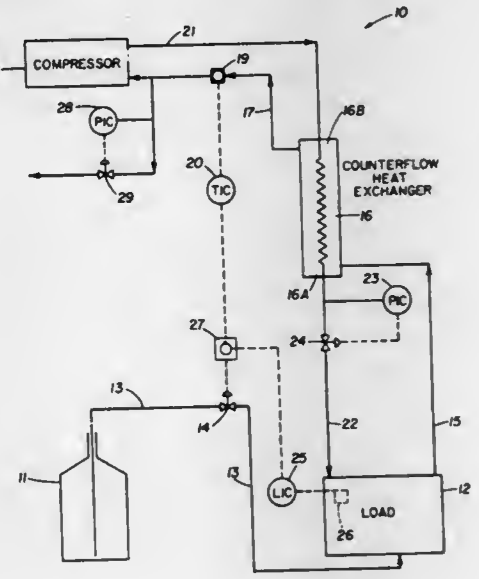
3,850,004
CRYOGENIC HELIUM REFRIGERATION SYSTEM

Peter C. Vander Arend, Center Valley, Pa., assignor to Carpenter Technology Corporation, Reading, Pa.

Filed June 27, 1973, Ser. No. 374,119

Int. Cl. F25b *19/00*

U.S. Cl. 62—115 **14 Claims**



1. In a cyrogenic helium refrigeration system for cooling a refrigeration load to a predetermined temperature by means

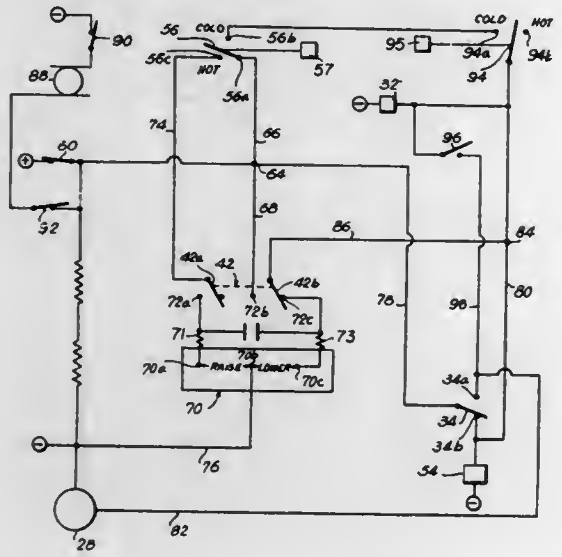
of liquid helium at a predetermined pressure, said refrigeration load requiring liquid helium at said pressure at a predetermined flow rate to maintain its normal operating temperature, the steps of feeding liquid helium at said pressure to said refrigeration load from an external supply, feeding helium vaporized by said load through the primary circuit of a heat exchanger as a coolant, compressing the outflow from the primary circuit, then feeding the pressurized helium through the secondary circuit of said heat exchanger and cooling the same below the helium inversion temperature, expanding the cooled highpressure helium isenthalpically to further lower its temperature, then feeding the expanded and cooled helium to said refrigeration load at about said predetermined pressure and at a rate which is less than the rate at which helium is fed from said load to said heat exchanger primary circuit, and removing warm helium from said system at a rate substantially equal to said flow rate from said external supply.

3,850,005

ICE CUBE MAKING MACHINE

William F. Sayles, 47 McKeever Pl., Brooklyn, N.Y. 11225
Filed Sept. 27, 1966, Ser. No. 582,278
Int. Cl. F25c *1/08, 1/18*

U.S. Cl. 62—135 **15 Claims**



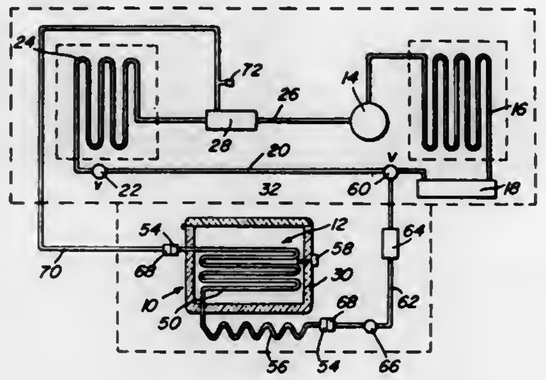
1. A machine for making ice cubes and having an ice cube making and an ice cube harvesting cycle comprising a collection bin for receiving said ice cubes, a freezing chamber for containing said ice cubes during said ice cube making cycle, an evaporator assembly in heat exchanging relation with said freezing chamber, storage assembly means including a reservoir for circulated water furnished to said freezing chamber during said ice cube making cycle and for supply water furnished to said machine during said ice cube harvesting cycle including plate means for acting as a bottom closure for said freezing chamber during said ice cube making cycle, water transporting means for circulating water to said freezing chamber, temperature responsive control means comprising first and second thermostatically actuated switches responsive to the detection of a first predetermined relatively lower temperature in said freezing chamber for terminating said ice cube making cycle and responsive to the detection of a second predetermined relatively higher temperature in said freezing chamber for terminating said ice cube harvesting cycle and driving means responsive to said control means detecting said first predetermined relatively lower temperature for positioning said storage assembly means whereby said plate means directs said ice cubes dislodged from said freezing chamber into said collection bin during said ice cube harvesting cycle and responsive to said control means detecting said second predetermined relatively higher temperature for positioning said storage assembly means whereby said plate means said bottom closure position relative to said freezing chamber during said ice cube making cycle.

3,850,006

PORTABLE COOLING UNIT FOR CONNECTION WITH AUTOMOBILE AIR CONDITIONER

Howard W. Redfern, 121 Lookout Dr., and William P. Coleman, 631 Martin St., both of Clarksville, Tenn. 37040
Filed June 22, 1973, Ser. No. 372,767
Int. Cl. F25b *41/04*

U.S. Cl. 62—216 **7 Claims**



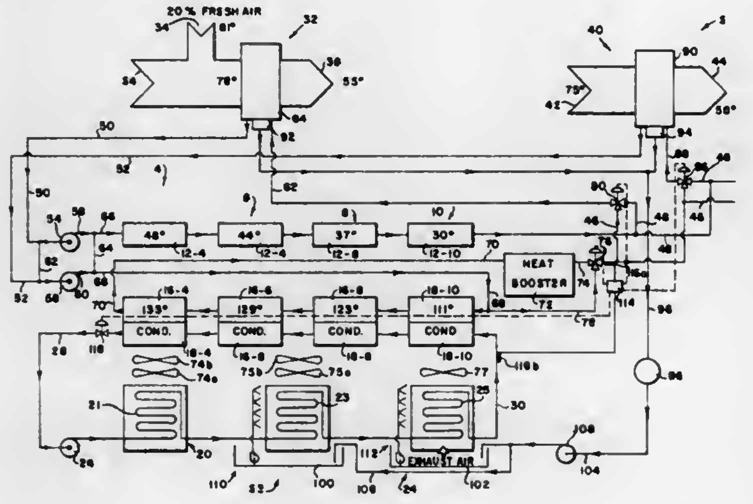
1. A portable cooler for use in combination with a refrigeration system comprising an insulated portable cabinet, a cooling unit mounted in said cabinet, and quick connect and disconnect coupling means detachably connecting the cooling unit with the refrigeration system for flow of refrigerant through the cooling unit when coupled therewith and enabling the cooling unit and portable cabinet to be carried to a desired location remote from the refrigeration system when the cooling unit is disconnected from the refrigeration system, said refrigeration system being the air conditioning system of an automobile with the portable cooler adapted to be mounted in the trunk space or other space within the automobile to enable food products, beverages or the like to be refrigerated when the automobile is being driven over the road and the portable cooler removed from the automobile and carried to a desired location at any time.

3,850,007

AIR CONDITIONING SYSTEM AND METHOD

Alden Irving McFarlan, 691 Dorian Rd., Westfield, N.J. 07090
Continuation of Ser. No. 260,211, June 6, 1972, abandoned. This application Jan. 24, 1974, Ser. No. 436,355
Int. Cl. F28d *5/00*

U.S. Cl. 62—305 **13 Claims**



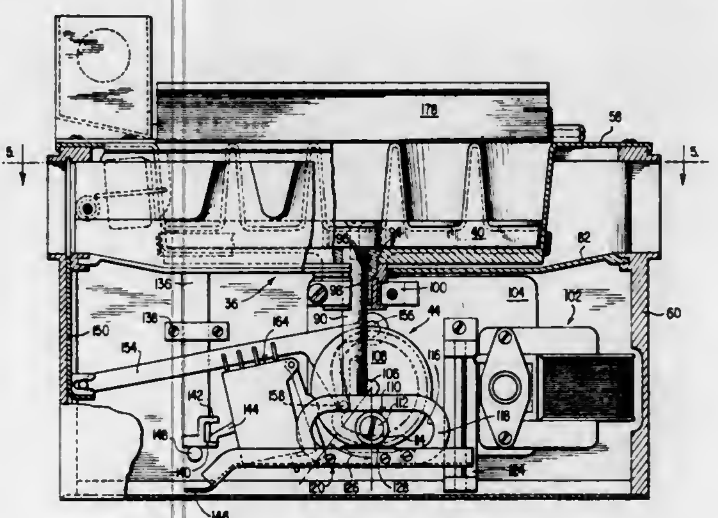
1. In an air conditioning system for a plurality of zones one of which requires cooling while another requires heating, the combination of, a plurality of refrigeration units each of which has an evaporator-chiller through which liquid flows to provide staged cooling for a stream of chilled liquid and condenser means through which liquid flows to provide a stream of hot liquid, means to supply said chilled liquid and said hot liquid for utilization to cool air and to form condensate and to heat air as is required for said zones, heat sink means comprising first and second cooling towers through which cooling liquid flows in series after being heated in condenser means of said refrigeration units, said first cooling tower effecting the cooling of said cooling liquid solely by heat exchange relationship with the outside air and said second cooling tower including means to evaporate condensate water in a stream of air to cool said cooling liquid.

3,850,008

ICE MAKER

Lauren L. Frazier, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Division of Ser. No. 318,715, Dec. 27, 1972. This application Dec. 19, 1973, Ser. No. 425,989
Int. Cl. F25c *1/14*

U.S. Cl. 62—353 **5 Claims**



1. An icemaker comprising a mold providing ice piece forming cavities; an ejector mounted for generally vertical movement in the mold between an icemaking-ice harvest initiating position and an ice harvest terminating position; a generally vertical rod connected to the ejector; means for vertically moving the rod and the ejector comprising driving means having an output rotatable about a horizontal axis transverse to the rod, a member rigid with the rod providing a generally horizontal slot transverse to the axis, a follower rigid with the output spaced from the axis thereof and disposed in the slot, the follower defining a circular path of movement having a nadir at the ejector icemaking-ice harvest initiating position; and means for stopping the follower at the nadir.

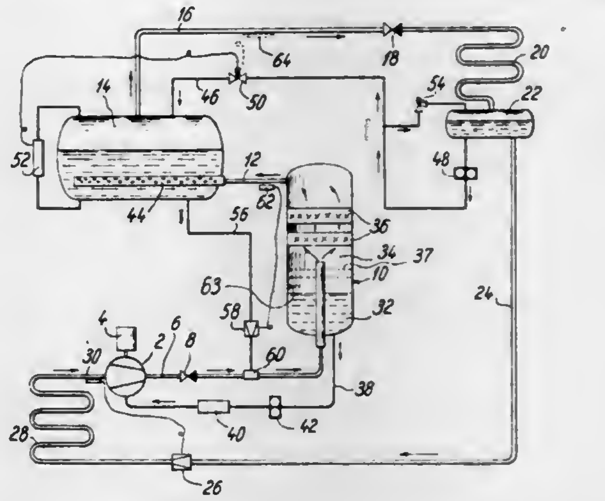
3,850,009

CLEANING OF PRESSURIZED CONDENSABLE GAS

Vagn Hovgaard Villadsen, Viby J., Denmark, assignor to Aktieselskabet Thomas Ths. Sabroe & Co., Hojbjerg, Denmark
Filed July 18, 1973, Ser. No. 380,242
Int. Cl. F25b *43/02*

U.S. Cl. 62—473 **4 Claims**

1. A compressor system comprising a compressor for discharging a compressed, condensable gas in the gaseous phase thereof and an oil separator for separating oil from the discharged gas, said oil separator being divided in a primary separator having an oil collection chamber from which the separated oil is let out from the separator and a secondary separator mounted downstream of the flow of gas from the primary separator and containing an amount of the gas in the condensed phase thereof, said secondary separator including means for bringing the gas flow into washing contact with the condensed gas for washing out oil from the gas flow, the secondary separator having a gas outlet from which the gas flow thus cleaned is fed to a condenser for condensing at least some of the gas, the condenser having a receiver for the condensed gas, said receiver being connected to the secondary separator so as to be operable to supply condensed gas thereto, the secondary separator further having an outlet for condensed gas connected to means for injecting condensed gas into the flow of gaseous gas passing the compressor, at an injection place located upstream of the point of introduction of the gas flow into the primary separator.

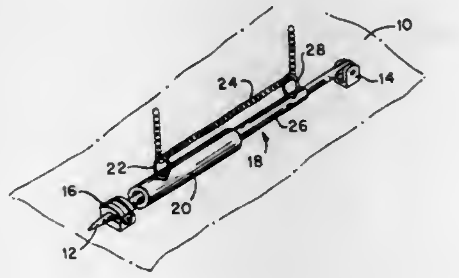


3,850,010

ADJUSTABLE ACCESSORY FOR ATTACHING A BROOCH TO A BAND

Joseph C. Noto, 152 Emily Ave., Elmont, N.Y. 11003
Substitute for Ser. No. 252,024, May 10, 1972,. This application Jan. 7, 1974, Ser. No. 431,366
Int. Cl. A44c *13/00*

U.S. Cl. 63—2 **7 Claims**



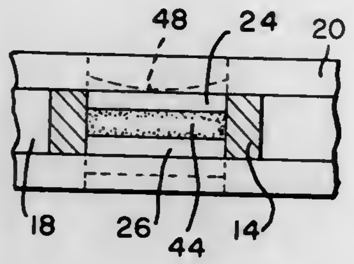
1. A jewelry accessory for transforming an article of jewelry having a pin mounted between a hinge and pin catch that are permanently spaced apart by a fixed axial dimension into a band-attached ornament, said accessory comprising;

- a. a first elongated sleeve member having a length within the range of from ¾ inch to 1 ¼ inches adapted to slide over the pin of said article of jewelry, said first sleeve member being provided with loop means fixed thereon proximate one end, adapted for threading banding therethrough;
- b. a second elongated sleeve member adapted to slide over the pin of said article of jewelry and adapted to telescope within said first sleeve member, said second sleeve member being provided with loop means fixed thereon proximate one end, adapted for threading banding therethrough; and
- c. restraining means for holding said first and second telescoping members in a selectively adjusted predetermined axial relationship with their combined lengths being in the range from 1 inch to 2 ¼ inches, substantially corresponding to the length of said pin, whereby said accessory may be fully extended between said pin catch and hinge with said loop means thereof in corresponding adjusted relation thereby providing means for holding said article of jewelry properly balanced when banded.

3,850,011
LATCH PIVOT FOR LATCH NEEDLE

Richard W. Shepard, and Albert S. Ashmead, both of Torrington, Conn., assignors to The Torrington Company, Torrington, Conn.

Filed June 23, 1972, Ser. No. 265,706
Int. Cl. D04b *35/04*
U.S. Cl. 66—122 **4 Claims**



1. A knitting machine needle comprising: a metal blade with a slot forming opposite side walls:

a latch having a pivot hole therethrough;

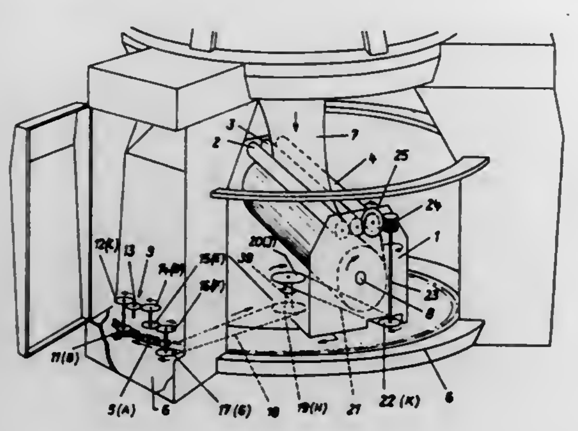
a pivot including cylindrical portions of the opposite side walls of the slot extending into the pivot hole in the latch, the inside surfaces of said cylindrical portions being spaced apart, the thickness of at least one of the cylindrical extending portions along at least a portion of its diameter being less than the thickness of the side wall from which it was formed, the outside surface of said at least one cylindrical extending portion being concave;

and a solidified splash of metal which was melted from said cylindrical portion causing said thickness less than the thickness of the side wall from which the cylindrical portion was formed, said solidified splash of metal being fused to the two cylindrical portions.

3,850,012
CIRCULAR KNITTING MACHINE COMPRISING A FABRIC DRAW OFF DEVICE

Norbert Paul Bourgeois, Troyes, France, assignor to Etudes et Bonneterie S.A., Lausanne, Switzerland

Filed Sept. 18, 1972, Ser. No. 289,881
Claims priority, application Switzerland, Nov. 9, 1971, 16270/71
Int. Cl. D04b *15/88*
U.S. Cl. 66—151 **4 Claims**



1. A circular knitting machine having a stationary frame and comprising:

a rotary assembly mounted on said stationary frame;

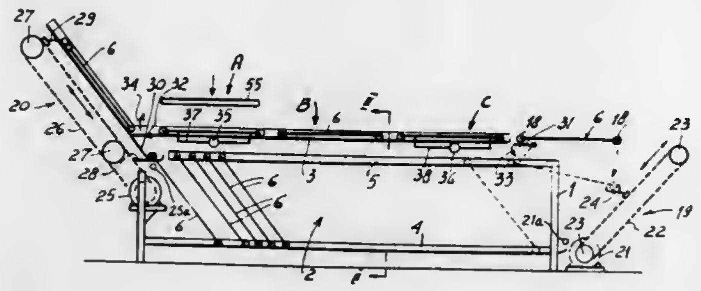
a fabric draw-off device mounted on said rotary assembly and rotating therewith, said drawoff device comprised of at least one knitting traction roller operatively disposed substantially diametrically of said rotary assembly, knitted fabric being tangentially driven thereon; and

mechanical transmission means operatively coupled between said rotary assembly and said at least one knitting traction roller and forming an uninterrupted kinematic chain for positively driving said at least one traction roller, said mechanical transmission means comprised of a first rotary command element coaxially connected to said draw off device, and rotating therewith, a second rotary command element coaxial to said first rotary command element, means connected to said second command element and said at least one traction roller for transmitting rotation from said second command element to said at least one traction roller and gear box means positioned on said stationary frame of the rotary knitting machine and coupled to both said first and second rotary command elements for controlling said second rotary command element from the movement of said first rotary command element, said gear box means comprised of at least one pinion said at least one pinion being removably mounted there in and being interchangeable with a pinion of a different diameter to vary the rotative speed of said second command element.

3,850,013
MACHINE FOR CLAMPING AND DRYING HIDES, PARTICULARLY BOVINE, SHEEP AND GOAT SKINS

Diego Polvara, Viale Lombardia, Brugherio, Italy (20047)

Filed Feb. 12, 1973, Ser. No. 331,415
Claims priority, application Italy, Feb. 17, 1972, 020692/72
Int. Cl. C14b *1/58*
U.S. Cl. 69—1 **9 Claims**

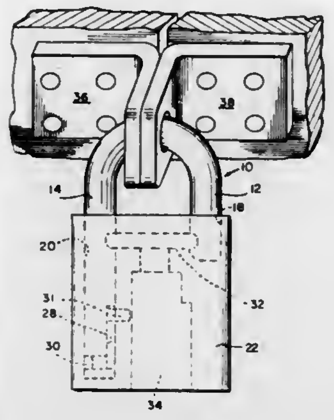


1. A machine for clamping, stretching and drying hides, comprising a drying oven having a tunnel-like interior with an inlet opening for the hides to be dried and an outlet opening for the dried hides, an outside guide rail track external to said oven and extending from a zone near said outlet opening to a zone near said inlet opening and arranged in a substantially horizonatal plane above said drying oven, a pair of internal guide rail tracks arranged within the tunnel-like interior of said drying oven comprising an internal lower guide rail track and an internal elevated guide rail track vertically at a distance from said lower guide rail track, a plurality of frame carriages for the hides to be stretched thereon and movable along said external and internal guide rail tracks, said frame carriages having at least a first and a second carriage axle at a distance from each other and defining a frame plane, said first and second carriage axles having each on each of their ends roller means adapted to slidably engage said guide rail tracks, the arrangement being such that when the frame carriages are on said outside guide rail track the frame planes extend parallel to the horizontal plane in which said outside guide rail track is arranged and when said frame carriages are on said pair of internal guide rail tracks the roller means of one of the axles of a frame carriage slidably engage the elevated guide rail track and the roller means of the other of said axles slidably engage the lower guide rail trach so that the said frame plane extends transverse to said horizontal plane, said frame carriages further comprising extendable plate members for the hides to be stretched thereon and clamping means for said hides, the machine further comprising transfer means for transferring said frame carriages from said outside guide rail tracks on to said internal guide rail tracks, driving means for said transfer means and for said frame carriages and control means for said driving means.

3,850,014
ANTI-SHATTER PADLOCK SHACKLE, AND PROCESS

Max L. Flack, Indianapolis, Ind., assignor to Best Lock Corporation, Indianapolis, Ind.

Filed Apr. 9, 1973, Ser. No. 349,115
Int. Cl. E05b *15/16, 67/06*
U.S. Cl. 70—53 **7 Claims**

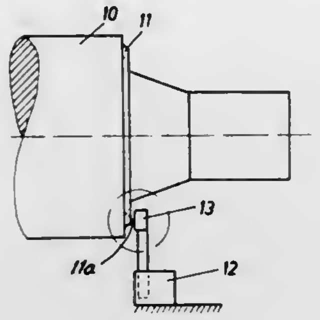


1. A padlock shackle or the like locking bar resistant to cutting and shattering, comprising a bar member composed on the inside of a hardened steel composition of relatively high carbon content in excess of about 0.8% and correspondingly high hardness, and having at its surface a decarburized layer of relatively low carbon content and reduced hardness, forming a relatively soft and ductile casing about the hardened steel interior, said bar having a Rockwell hardness at a level of about 0.035 inch inward from the surface in excess of Rockwell C-55, and a Rockwell hardness at the surface less than C-47.

3,850,015
ROLL GAP DETECTION

Karl-Heinz Andresen, Bremen, Germany, assignor to Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung, Bremen, Germany

Filed May 18, 1973, Ser. No. 361,473
Claims priority, application Germany, May 20, 1972, 2224833
Int. Cl. B21b *37/08*
U.S. Cl. 72—31 **10 Claims**



1. Apparatus for detecting the width of the gap between two rolls in a rolling mill comprising:

a reference annulus on a front end of each of said rolls rotating therewith, each said annulus having a planar, ring-shaped surface with concentric edges;

a pair of transducers disposed respectively adjacent the annuli but axially displaced therefrom and mounted in the stand of the mill, each transducer having a pair of pick ups of particular respective disposition to the edges, for being responsive to radial dimensions of the respective adjacent annulus and to a shift of the said surface transverse to the axis of rotation of the respective roll, and providing a constant output for constant disposition of the axis of the respective roll in relation to the respective transducer;

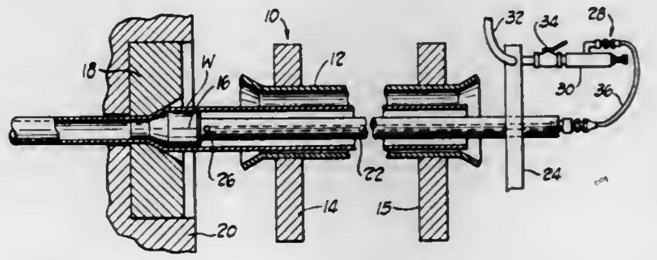
first circuit means respectively connected to the pick ups and providing a balanced output when the pick ups of a transducer have the desired disposition relative to the said edges, the first circuit means providing two outputs respectively for the two transducers; and

second circuit means connected to the circuit means for combining the two outputs to provide a signal representative of the gap.

3,850,016
METHOD AND APPARATUS FOR CONTROLLED LUBRICATION DURING METAL DRAWING

William D. Stofey, Wickliffe, and H. Edward Judd, Newbury, both of Ohio, assignors to Etna Products, Inc., Chagrin Falls, Ohio

Filed July 30, 1973, Ser. No. 383,558
Int. Cl. B21c *9/00*
U.S. Cl. 72—45 **5 Claims**

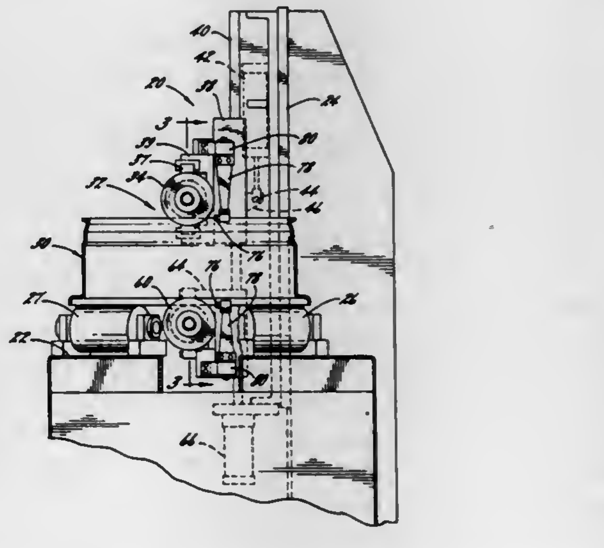


1. In the art of metal drawing, a method of supplying a measured quantity of lubricant to the metal during drawing, the steps comprising: segregating a measured quantity of lubricant from a source; injecting the quantity under pressure into a passage having a discharge adjacent the metal being drawn, causing flow of lubricant from the passage; and after a predetermined time delay subsequent to completion of the injecting, temporarily reducing the pressure in the passage upstream from the discharge to a pressure less than that at the discharge to stop flow of lubricant from the discharge, whereby the amount of lubricant discharged from the passage is accurately controlled.

3,850,017
TRUCK RIM EDGE DEBURRING APPARATUS

Vernon Fencl, Northbrook, and Alberts Roze, Chicago, both of Ill., assignors to Grotnes Machine Works, Inc., Chicago, Ill.

Filed Nov. 12, 1973, Ser. No. 414,704
Int. Cl. B21h *1/10*
U.S. Cl. 72—70 **5 Claims**



1. Apparatus for removing sharp corners on the peripheral edges at the outer ends of a formed rim for trucks and the like

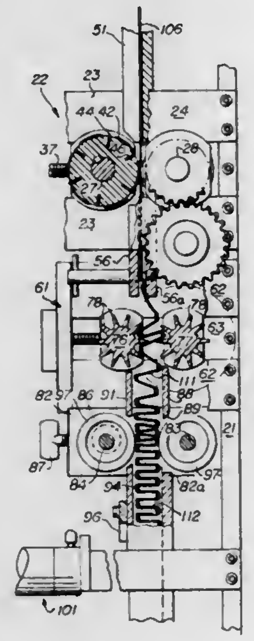
comprising in combination, a frame having an operating station adapted to receive the rim, column means disposed substantially parallel to the axis of the rim in said operating station, means including a pair of spaced apart V rolls carried by said column, actuator means for moving said roll means toward one another so that said V rolls engage the end edges of said rim and apply pressure thereto, and means for rotating said rolls for removing the sharp edges about the entire periphery of the rim.

3,850,018
RADIATOR FIN-TUBE CONSTRUCTION AND METHOD

Sidney S. Drosnin, 2087 10th Ave., San Francisco, Calif. 94116

Filed Sept. 24, 1973, Ser. No. 399,688
Int. Cl. B21d *53/04*

U.S. Cl. 72—186 **6 Claims**



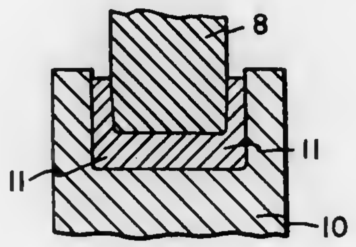
1. Apparatus for forming radiator fin stock from a thin ribbon of sheet metal comprising a frame, a first stand having an upper rotary member and a lower rotary member rotatably mounted in said frame in vertical alignment, means for rotating said rotary members together, said rotary members having mating louver forming dies and transverse mating combs, alternate combs formed with pluralities of male and female teeth, said teeth shaped to form rectangular holes in said ribbon as it is advanced by said rotary members said dies and combs positioned in said rotary members to form on said ribbon longitudinally elongated louvers separated by short gaps and rectangular holes in said gaps, there being narrow areas at said gaps between said holes and said louvers, a second stand comprising at least one star-shaped roll rotating synchronously with said rotary members and hold down plates between said stands, one said plate terminating spaced from said second stand, said star-shaped roll positioned to be engaged by said ribbon and having a peripheral speed less than that of said rotary members to reduce the linear speed of said ribbon and cause the ribbon to form incipient folds at said narrow areas as said ribbon travels from said rotary members to said star-shaped roll; and a third stand having means to form said ribbon into a shape with parallel first panels each formed with louvers and flat short second panels containing said holes, said flat panels perpendicular to said first panels.

3,850,019
METHOD OF PRODUCING A METAL STRIP INCLUDING A LONGITUDINAL CHANNEL BY ROLL-FORM REDUCTION OF A MULTI-GAGE STRIP

Robert S. Bray, and Claude D. Tapley, both of Cheshire, Conn., assignors to Anaconda American Brass Co., Waterbury, Conn.

Filed Nov. 28, 1972, Ser. No. 310,158
Int. Cl. B21b *1/12*

U.S. Cl. 72—199 **4 Claims**



1. A method of continuously forming a metal strip including a channel portion comprising

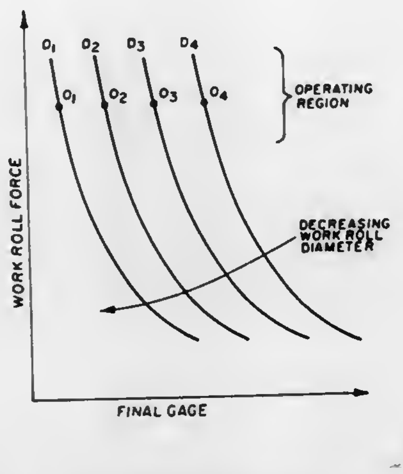
1. rolling a metal strip to varying thicknesses which rolled multi-gage strip has when viewed in a cross section taken perpendicular to the longitudinal axis of the strip portions of substantially different thicknesses and thereafter;
2. passing the multi-gage strip between a pair of rolls shaped and positioned with respect to one another to reshape the strip through rotating portions of the strip about an axis parallel to the longitudinal axis of the strip so that at least two of said portions are rotated a sufficient distance to form said channel portion and to simultaneously reduce the cross-sectional area of the strip to the extent required to accomplish an acceptable degree of dimensional accuracy in the formed strip whereby a formed strip having a channel configuration is produced.

3,850,020
ROLLED STRIP SHAPE CONTROL USING WORK ROLL SCREWDOWN CHANGES

Richard Roy Webster, and Norman Paul Mueller, both of Pittsburgh, Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed Dec. 10, 1973, Ser. No. 423,653
Int. Cl. B21b *1/24*

U.S. Cl. 72—199 **5 Claims**



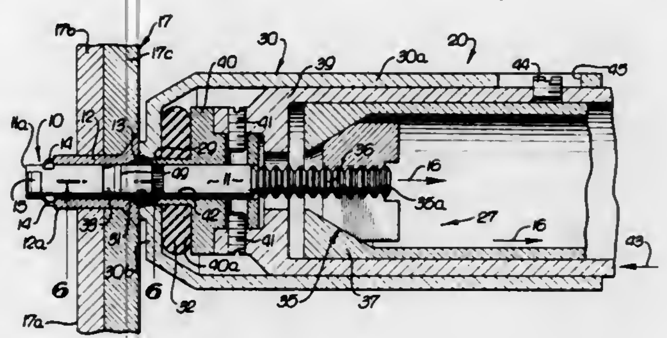
1. A method of controlling the shape of a rolled strip delivered from a rolling mill which contains a work roll and means to vary roll force created by said work roll, comprising: rolling a strip to final gauge while subjecting said strip to from about 0.25 percent to about 6 percent elongation in length while using a work roll size and a roll force within a range that, for said roll size, does not produce significant variation in final strip gage; and varying said roll force within said range during rolling to improve the shape of the strip.

3,850,021
PULLING HEAD FOR INSTALLING BLIND RIVETS

Lloyd Sylvester Binns, 11781 West St., Garden Grove, Calif. 92640

Filed Oct. 30, 1972, Ser. No. 302,266
Int. Cl. B21j *15/34*

U.S. Cl. 72—391 **8 Claims**



1. A pulling head for installing blind rivets of the type having a mandrel, a sleeve and a locking collar, and adapted for use with a conventional riveter having a drawbar, collet and jaws assembly for gripping and pulling said mandrel, said pulling head comprising:

a single anvil assembly including a cylindrical anvil for transmitting a reaction force to the rivet locking collar continuously throughout the rivet installation cycle,

a non-force transmitting shroud surrounding the forward portion of said anvil assembly, an end of said shroud having a central locking collar receiving opening configured to limit deformation of said collar during force transmission prior to insertion of said collar into the locking groove os said mandrel, and

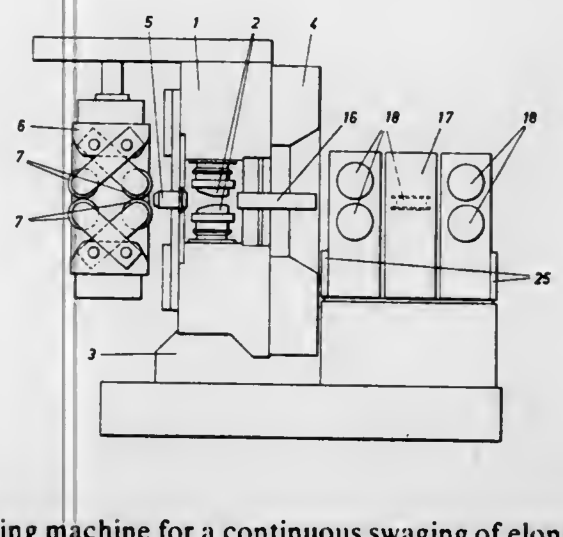
spacer means for separating said anvil assembly and said shroud end prior to said collar insertion, and compressible to permit limited relative motion of said anvil assembly toward said shroud end, said anvil thereby urging said collar out of said opening and into said locking groove.

3,850,022
SWAGING MACHINE FOR A CONTINUOUS SWAGING OF ELONGATED WORKPIECES

Bruno Kralowetz, and Gottfried Blaimschein, both of Steyr, Austria, assignors to Fried. Krupp Huttenwerke AG, Bochum, Germany

Filed Apr. 13, 1973, Ser. No. 350,738
Claims priority, application Austria, May 3, 1972, 3822/72
Int. Cl. B21d *43/08*

U.S. Cl. 72—426 **4 Claims**



1. A swaging machine for a continuous swaging of elongated workpieces, which comprises

a swaging box having a workpiece entrance and a workpiece exit defining opposite ends of a path on which a workpiece can travel through said box,

at least two dies which are mounted in said box and operable to blow at the same time on a workpiece longitudinally extending on said path and to oscillate so as to impart to said workpiece an advance along said path,

a set of feed rollers preceding said workpiece entrance, and a set of feed rollers succeeding said workpiece exit,

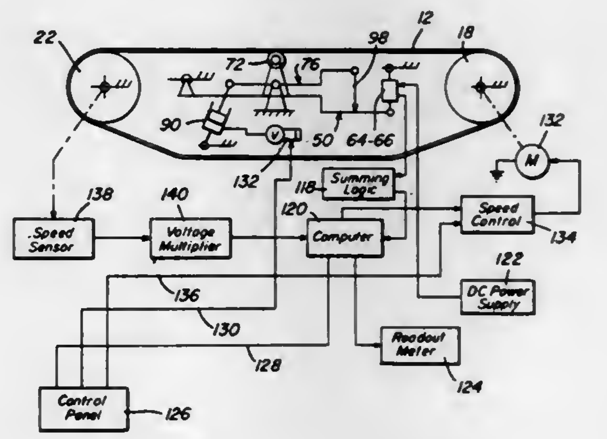
said sets of feed rollers being arranged to engage a workpiece longitudinally extending on said path and operable to control the travel of said workpiece along said path independently of said advance imparted to said workpiece by the oscillation of said dies.

3,850,023
SCALE CALIBRATION MONITORING DEVICE

Ralph R. McDonald, Carlsbad, N. Mex., assignor to Commerce Bank and Trust Bank, Eddy County, N. Mex.

Filed Aug. 20, 1973, Ser. No. 389,437
Int. Cl. G01c *25/00*; **G01g** *19/52, 23/00*

U.S. Cl. 73—1 B **14 Claims**



1. In combination with a continuously moving conveyor on which material travels in one direction past a weighing station at which a weighing device is in engagement with the conveyor for sensing the weight of said material, a system for calibrating the weighing device comprising test means for displacing the conveyor out of engagement with the weighing device during test intervals, reference means responsive to said displacement of the weighing device for loading the same, adjusting means for correcting readout of the weighing device in response to variations in weight sensed during said test intervals, and means connected to the weighing device for correcting readout of the weighing device in response to asymmetrical loading of the conveyor.

3,850,024
METHOD AND APPARATUS FOR SENSING FLATNESS OF METAL SHEET

Masao Ando, and Yukiyasu Takeda, both of Nagoya, Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan

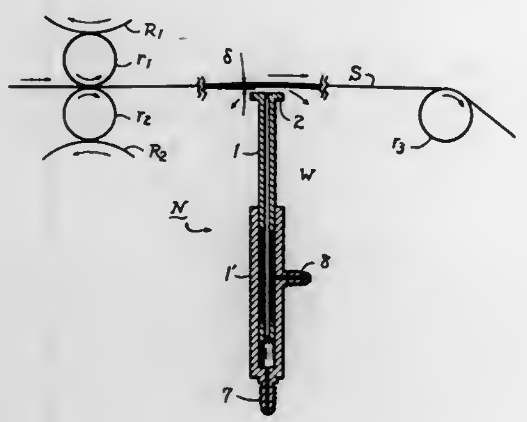
Filed Nov. 19, 1973, Ser. No. 416,813
Claims priority, application Japan, Nov. 17, 1972, 47-116073; Oct. 27, 1973, 48-121137
Int. Cl. G01b *13/22, 13/16*

U.S. Cl. 73—37.7 **9 Claims**

1. A method of sensing flatness of a sheet freely running between successive rollers under a predetermined tension, by comparing up-and-down longitudinal displacement between a plural number of gas-jetting nozzles arranged in a lateral direction of the sheet, spacedly apart and each of the nozzles is slidably supported by at least a cylinder spacedly fixed in a suspended state in the longitudinal direction due to a balance between the jet reaction and a force to urge said nozzle upward comprises the steps of:

arranging a plural number of sensing units including said nozzles underneath said sheet at a right angle thereto;

feeding compressed gas at a controllably predetermined pressure through each of said nozzles to form a thin layer of gas around the nozzle opening,



applying a controllable force to urge said nozzle upwardly by applying to said nozzle another pressure of gas which is independently controllable from said gas jetting pressure.

3,850,025

METHOD OF PNEUMATICALLY CONTROLLING A THREAD OR A THREAD BUNDLE GUIDED AT RIGHT ANGLES WITH RESPECT TO AT LEAST ONE AIRSTREAM AND APPARATUS FOR IMPLEMENTING THE METHOD

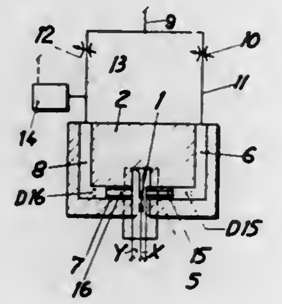
Christian Reufer, Luzern, and Dieter Guldenfels, Muttenz, both of Switzerland, assignors to Rieter Machine Works Ltd., Winterthur and Societe de la Viscose Suisse, Emmenbrucke, both of, Switzerland

Filed May 3, 1973, Ser. No. 356,900

Claims priority, application Switzerland, May 19, 1972, 7450/72

Int. Cl. G01b *13/08*

U.S. Cl. 73—37.7 **7 Claims**



1. Method of pneumatically controlling a thread or a thread bundle through two airstreams directed in front of and opposite to each other comprising the steps of: guiding the thread at right angles to the two airstreams; detecting changes of one of the airstreams caused by changes in the thread thickness or by the absence of the thread; maintaining the airstreams of different intensities and guiding the thread nearer to the airstream of higher intensity whereby the pressure changes of the airstream of smaller intensity are detected and corresponding signals are generated.

3,850,026

METHOD AND A DEVICE, FOR DETERMINING THE CROSS-SECTIONAL DIMENSIONS OF THE INNER SPACE OF ELONGATED, TUBULAR BODIES

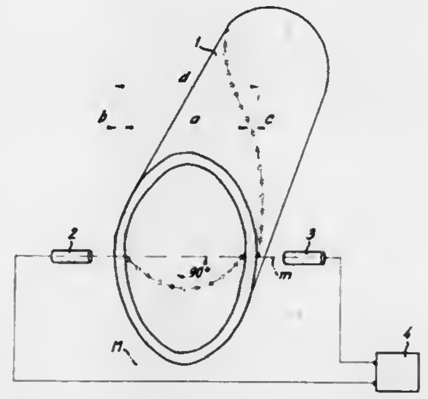
Svend Aage Lund, Birkerod; Hans Nielsen Hansen, Herlev; Heige Alfred Holst, Copenhagen, and Allan Northeved, Bagsvaerd, all of Denmark, assignors to Atomenergikommissionen, Copenhagen, Denmark

Filed Sept. 24, 1971, Ser. No. 183,464

Claims priority, application Denmark, Oct. 6, 1970, 5086/70

Int. Cl. G01n *29/00*

U.S. Cl. 73—67.5 R **5 Claims**



1. A method of mapping the cross-sectional dimensions of elongated tubular bodies by the use of measuring means along a measuring line fixed in relation to the measuring means and extending transversely of the longitudinal axis of a tubular body, the method comprising the steps of: providing relative movement between the tubular body and the measuring means to successively bring the measuring means into positions corresponding to the cross-sectional dimensions to be measured, activating the measuring means to measure along the measuring line the distances from points fixed in relation to the measuring means to the external surface of the tubular body, activating the measuring means to measure the wall thicknesses of the tubular body corresponding to the points of external surface to which the distances were measured, calculating from the measured values thus determined the external cross-dimension of the tubular body by subtracting the distances from said points fixed in relation to said measuring means to said external surface from the distance between said two fixed points, calculating from the measured values thus determined the internal cross-dimension of the tubular body by subtracting the distances from said points fixed in relation to said measuring means to said external surfaces and said wall thicknesses from the distance between said two fixed points, and registering the values thus calculated.

3,850,027

IMMERSION ULTRASONIC INSPECTION SYSTEM OF THE WHOLE SURFACE OF ROLLED FLAT BAR

Akito Nakanishi, Nishinomiya; Hisashi Nakazawa, Akashi; Kazuyoshi Yamashima, Nishinomiya; Toshio Shiraiwa, Ikoma, and Hisao Yamaguchi, Akashi, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Mar. 2, 1973, Ser. No. 337,711

Claims priority, application Japan, Mar. 9, 1972, 47-23567

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.8 S **8 Claims**

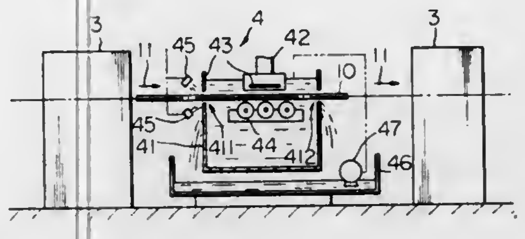
1. An immersion ultrasonic inspection system which comprises in combination:

A. an immersion tank containing a liquid medium with means for maintaining a liquid level;

B. inlet means below the level of the liquid medium for introducing a flatbar to be inspected into the liquid medium and exit means below the level of the liquid medium for removing the flat bar therefrom;

C. liquid medium projecting means disposed for projecting liquid to said inlet for prewetting a flat bar passing therein;

D. a plurality of probes disposed on opposite sides of the flat bar to be inspected, said probes disposed within the immersion tank for projecting ultrasonic surface waves onto flat surfaces of the bar;



E. flat bar transferring means provided with guide rolls for transferring the bar to be inspected into the immersion tank and thereafter transferring the bar out of the immersion tank; and

F. electric circuit means for detecting the inspection results of the probes.

3,850,028

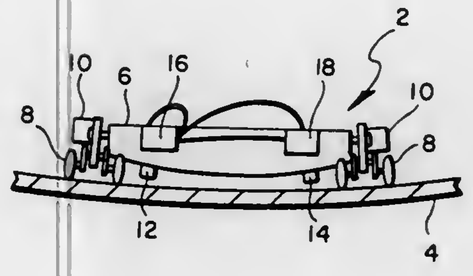
METHOD FOR ULTRASONIC INSPECTION

Robert B. Thompson; George A. Alers, both of Thousand Oaks, and Marion A. Tennison, Camarillo, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 16, 1972, Ser. No. 307,284

Int. Cl. G01n *29/04*

U.S. Cl. 73—71.5 US **2 Claims**



1. The method of generating elastic surface waves in a test object formed of electrically conductive material, said method comprising the steps of:

applying a static magnetic field to said test object, and positioning an alternating current conductor in the field along a serpentine path lying parallel to the surface of said test object and oriented to induce eddy currents in said test object flowing in directions transverse to said static magnetic field when an alternating current source is connected to said conductor, said serpentine path including a plurality of adjacent parallel portions extending transversely across said magnetic field such that the direction of current flow through each of said parallel portions at any given time is opposite to the direction of current flow through each adjacent one of said parallel portions.

3,850,029

APPARATUS FOR MEASURING THE COMPRESSIBILITY OF CIGARETTES AND THE LIKE

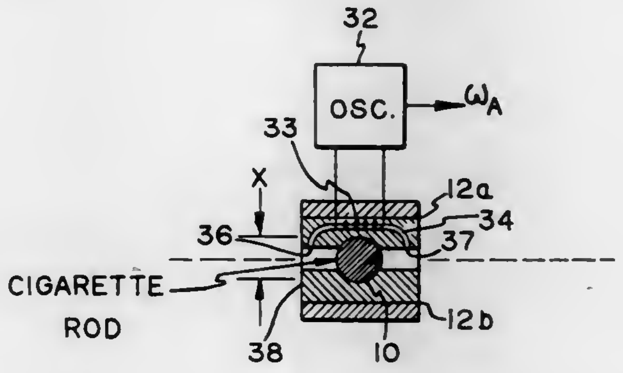
S. Keith Swanson, Saratoga, Calif., assignor to Measurex Corporation, Cupertino, Calif.

Filed July 16, 1973, Ser. No. 379,761

Int. Cl. G01n *3/42*

U.S. Cl. 73—81 **5 Claims**

1. Apparatus for measuring the compressibility of a continuously moving uncut rod-shaped object where compressibility is defined as $\Delta X/\Delta F$ where ΔX is the displacement of said object when subjected to the force, ΔF, said apparatus comprising: first and second contact pairs spaced along the line of movement of said object for slidably gripping and compressing said object; means for applying a different known forces to said first and second contact pairs tending to compress said object in two places said means including pivotal mounting means for said contact pairs disposed on opposed sides of said rod-shaped object; gauge means included in said contact pairs, for sensing the distances between the contacts of each pair while said contacts slidably grip and compress said object in response to said force applying means; means for indicating the distance between the contacts of each pair by first and second electric signals respectively; and means for finding the difference between such signals, such difference being proportional to said compressibility.



3,850,030

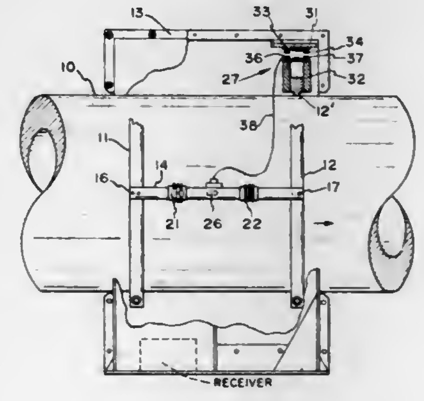
APPARATUS FOR MEASURING THE TORSION OF A ROTATING SHAFT

Alan J. Adler, Palo Alto, Calif., assignor to Acurex Corporation, Mountain View, Calif.

Filed Oct. 1, 1973, Ser. No. 402,024

Int. Cl. G01l *3/10*

U.S. Cl. 73—136 A **2 Claims**



1. A torsionmeter for measuring the torque of a large diameter rotating shaft under adverse ambient conditions comprising: a pair of spaced collars clamped onto said shaft and rotatable therewith; a unitary elongated link bridging said two collars and lying substantially parallel to the axis of rotation of said shaft, each end of said link being rigidly affixed to respective collars; strain gauge means electrically connected to a bridge and affixed to said link so that said bridge cancels the effect of shaft bending but provides an electrical indication of shaft torsion, said link including a pair of spaced waist portions of reduced cross-section and said strain gauge means being affixed to said waist portions; and mechanically noncontacting means for supplying said bridge with power and for receiving said electrical indication of shaft torsion.

3,850,031

PROCESS AND APPARATUS FOR DETERMINING THE VARIATION OF TENSILE STRESSES IN COLD-ROLLED STRIP OVER THE WIDTH THEREOF

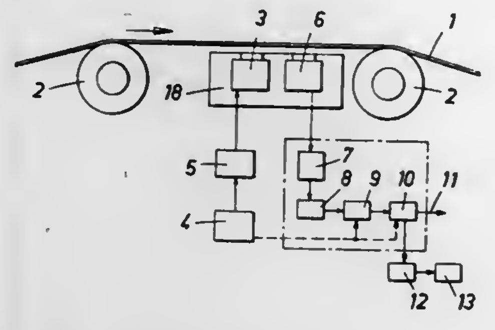
Werner Schwenzfeier; Manfred Gfrerer, and August Herzog, all of Leoben, Austria, assignors to Vereinigte Osterreichische Eisen-und Stahlwerke-Alpine Montan Aktiengesellschaft, Vienna, Austria

Filed Sept. 7, 1973, Ser. No. 395,294

Claims priority, application Austria, May 23, 1973, 4468/73

Int. Cl. G01l *1/10*

U.S. Cl. 73—143 **30 Claims**



1. A process of determining the variation of the tensile stresses in cold-rolled strip over the width thereof, which comprises

pulling said strip over two parallel supports, which are spaced in and extend transversely to the longitudinal direction of the strip,

exciting each of a plurality of longitudinal zones of said strip between said supports to vibrate at its natural frequency by means which are out of contact with the strip,

detecting the vibration of each of said longitudinal zones at its natural frequency by means which are out of contact with said strip, and

generating signals which are representative of the frequency of said detected vibration of each of said longitudinal zones as a measure of the tensile stress in said longitudinal zone.

3,850,032

ROLLER ASSEMBLY FOR DEFLECTING A STRIP AND FOR MEASURING THE TENSION OF SAID STRIP AT DIFFERENT POINTS SPACED ACROSS THE WIDTH OF SAID STRIP

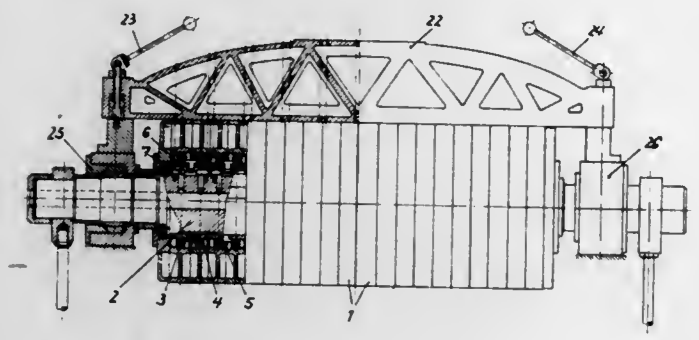
Alexander Rodach, Pforzheim, and Hans Weber, Engelsbrand uber Neuenburg, both of Germany, assignors to Frau Irma Ungerer, Pforzheim, Germany

Filed Feb. 2, 1973, Ser. No. 329,221

Claims priority, application Germany, Apr. 8, 1972, 2217007

Int. Cl. G01l *5/10*

U.S. Cl. 73—144 **5 Claims**



1. A roller assembly having strip-deflecting and strip tension-measuring properties, comprising

a stationary axle,

a plurality of juxtaposed rings rotatably mounted on said axle and having each a strip-contacting and deflecting portion,

a plurality of bearings, each of which surrounds said axle and is surrounded by one of said rings and comprises an inner race facing said axle,

a plurality of spring rings, each of which surrounds said axle and is surrounded by said inner race of one of said bearings and has a mounting portion secured to said axle and an engaging portion which is opposite to said mounting portion and has a radially inner side and a radially outer side, which engages the associated inner race adjacent to said strip-contacting portion of the associated deflecting ring, and

a plurality of pressure gages, each of which is disposed between said axle and said engaging portion of one of said spring rings and engages said engaging portion on the radially inner side thereof.

3,850,033

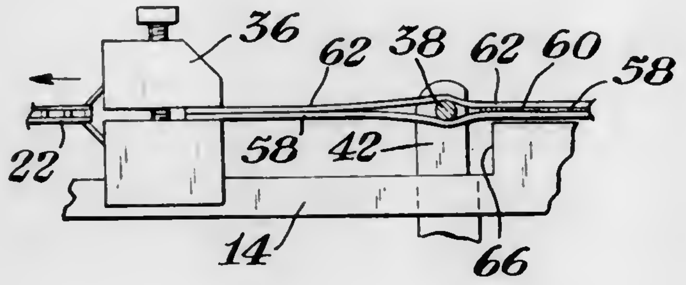
GLUEABILITY TESTER

John A. Schmitt, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 23, 1973, Ser. No. 381,949

Int. Cl. G01n *19/04*

U.S. Cl. 73—150 A **8 Claims**



1. A glueability tester useful for automatically determining the time required to build up bond strength of a glued laminate of a first and second strip of web materials and the force required to separate the glued laminate, comprising means for coating the first strip with a uniform coating of adhesive, means for joining the second strip to the adhesive coated first strip to form a laminate with a center adhesive layer, means for separating the laminated first and second strips, said means for separating including a separator bar positioned between the first and second strip with the bar in line with the adhesive layer whereby the angle during separation between the first and second strips is minimized and means for measuring and recording the force required to separate the laminated first and second strips.

3,850,034

APPARATUS FOR DETECTING PRESSURE DISTRIBUTION

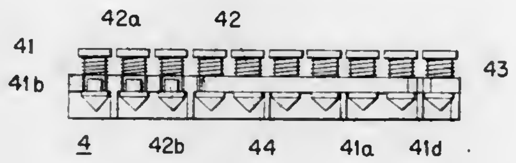
Kazuo Tsuchiya, and Susumu Usami, both of Nagoya, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi Prefecture, Japan

Filed June 26, 1973, Ser. No. 373,808

Claims priority, application Japan, June 30, 1972, 47-76503

Int. Cl. G01m *19/00;* A61b *19/00*

U.S. Cl. 73—172 **4 Claims**



1. An apparatus for detecting pressure distribution comprising a transparent plate and a pressure-sensitive structure disposed on said transparent plate, characterized in that said pressure-sensitive structure comprises a pin-holding unit board made of a relatively hard material provided with a plurality of holes and having on its underside a support and a plurality of pins each having its lower portion made of a material capable of being resiliently deformed under pressure and slidably held in the hole of said pin-holding unit board, said lower portion of said pin having a pointed end which is held opposite to said transparent plate.

3,850,035

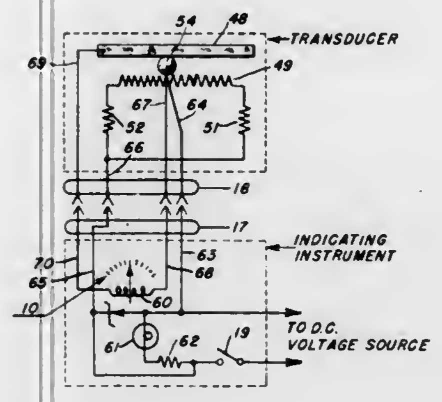
LOAD MEASURING APPARATUS

Richard W. Seabury, Jr., Towaco, N.J., assignor to R F L Industries, Inc., Boonton, N.J.

Filed Aug. 17, 1973, Ser. No. 389,232

Int. Cl. G01l *5/10*

U.S. Cl. 73—143 **5 Claims**



1. Apparatus comprising,
- a — a core member secured to a base,
- b — a cylindrical barrel,
- c — means mounting the barrel for rotation about the axis of the core member,
- d — elastically-deformable means opposing rotation of the barrel relative to the core member,
- e — a multi-turn winding disposed within said barrel,
- f — movable contact means establishing electrical contact with turns of said winding,
- g — drive means imparting movement to the said movable contact means in correspondence with rotation of the said barrel,
- h — an electrical instrument having a movable coil,
- i — a source of d.c. voltage connected across the center turn of said winding and both ends of the winding, and
- j — circuit elements connecting the said movable coil across the center turn of the winding and the said movable contact means.

3,850,036

RESPIRATORY GAS SAMPLER

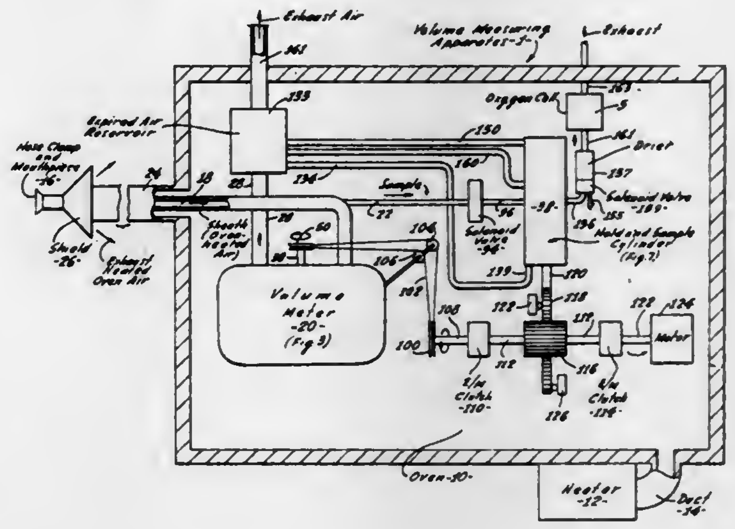
Clifford Sanctuary, Palos Verdes Estates; Donald C. Woods, Big Bear City, and John A. Bachman, Woodland Hills, all of Calif., assignors to Del Mar Engineering Laboratories, Los Angeles, Calif.

Division of Ser. No. 243,369, April 12, 1972, Pat. No. 3,818,901. This application July 20, 1973, Ser. No. 380,977

Int. Cl. G01n *1/22*

U.S. Cl. 73—198 **5 Claims**

1. Apparatus for extracting a gas sample from a system passing a particular volume of gas in a particular time period, said sample being proportional to the total volume of gas for that period, said apparatus comprising: metering means for measuring the total volume of gas passed for the particular time period; a cylinder; a piston in said cylinder; means coupling said metering means to said piston to drive said piston in a first direction to draw said sample into said cylinder at a rate proportional to the volume of gas flow being measured by said volume metering means; drive means coupled to said piston for moving said piston in the opposite direction in said cylinder; and means for selectively coupling said metering means and said drive means to said piston.



3,850,037

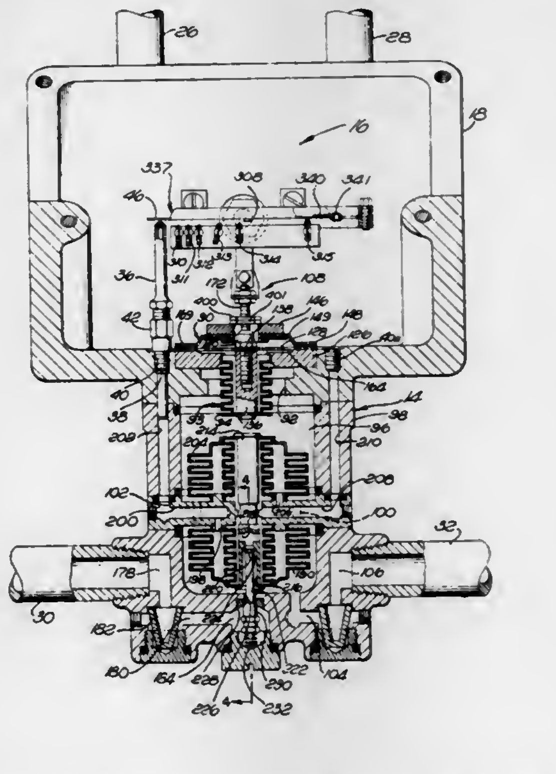
FLOW METER AND FUNCTION GENERATOR THEREFOR

Victor Nicholas Lawford, Pasadena; Richard Paul Granada, West Covina, and Peter Elderton, Fountain Valley, all of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed July 9, 1973, Ser. No. 377,200

Int. Cl. G01p *5/14*

U.S. Cl. 73—205 R **19 Claims**



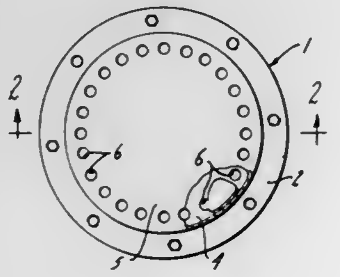
1. A function generator comprising: a base; an input member movably mounted on said base; means actuable to move said input member in a first predetermined direction fixed relative to said base, said means being adapted to move said input member a distance which is an input function of a predetermined variable; an air relay fixed relative to said base, said air relay having an air exhaust nozzle fixed therewith and extending in a second predetermined direction relative thereto, said nozzle having an orifice to allow air to escape therefrom, said air relay having an output member movable in said second predetermined direction and in a direction opposite thereto; a lever; connection means mounting said lever on said input member in a manner such that movement of said

input member in said first direction and in a direction opposite thereto causes the flow rate of the air vented through said nozzle orifice to decrease and to increase, respectively, by moving said lever respectively toward and away from said nozzle orifice, movement of said lever toward said orifice causing said output member to move in a direction opposite the direction of movement of said lever, movement of said lever away from said orifice again causing said output member to move in a direction opposite to the direction of movement of said lever; and means including a plurality of fulcrums mounted on said output member, said lever being mounted on said input member in a manner such that said lever is held against one of said fulcrums over one portion of the range of movement of said input member, and is held against another of said fulcrums over a second portion of the range of movement of said input member, said one portion of the range being different from the said other portion thereof, said air relay having an air inlet to receive air at a constant pressure, and an air outlet, the one and the other of said fulcrums having a spacing and locations on said output member such that when air of a constant pressure is supplied to the air inlet of said air relay, the pressure in the outlet of said air relay is substantially a curvilinear function of said input member movement.

3,850,038
BI-MATERIAL CONDITION SENSORS

Paul E. Thoma, Burlington, and Louis D. Atkinson, New Berlin, both of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Oct. 11, 1972, Ser. No. 296,668
Int. Cl. G01k *5/68*
U.S. Cl. 73—363.5 **17 Claims**



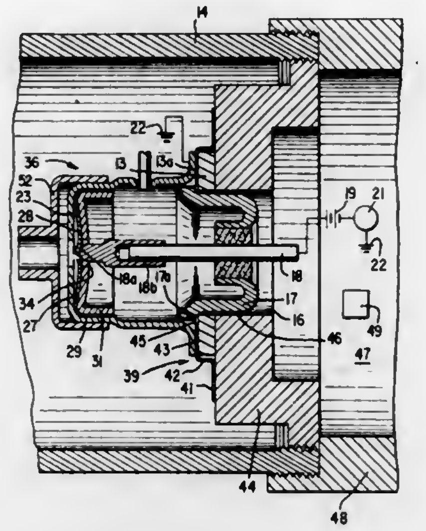
1. A bi-material condition sensing element having integral inner and outer portions and at least a pair of outer mounting means for establishing a detectable deflection in accordance with a sensed condition, said element including superimposed materials with different coefficients of expansion with respect to a selected condition and said mounting means being spaced from each other about the outer portion and said mounting means being adapted to be essentially rigidly mounted, comprising the improvement of a plurality of separate opening means located within said element and within at least one of said materials with said material completely surrounding each opening means, said opening means being located in spaced relation to said mounting means and in spaced relation to each other, said opening means establishing and controlling the deflection characteristic of the element to said sensed condition.

3,850,039
TEMPERATURE COMPENSATED PRESSURE SENSOR AND MOUNTING MEANS THEREFOR

Harold G. Brakebill, Concord, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed June 14, 1973, Ser. No. 370,199
Int. Cl. G01l *13/06, 7/08*
U.S. Cl. 73—420 **7 Claims**

1. In a device for sensing variations in a control fluid pressure P1 of a fluid in a first pressure chamber independently of and unaffected by pressure variations caused by temperature changes in said first chamber, said device including a cylindrical housing having an apertured base, a diaphragm movable by fluid pressure forming a second fluid pressure chamber in said housing, means for supporting said diaphragm in said second fluid pressure chamber, and signal means including said diaphragm and a connector pin normally engaged by said diaphragm when said second fluid pressure chamber is charged to a reference fluid pressure P2 and said control fluid pressure P1 remains a selected value, a determined variation in said control fluid pressure P1 causing said diaphragm to move relative to said connector pin to actuate said signal means and indicate said variation in control fluid pressure P1, the improvement comprising;

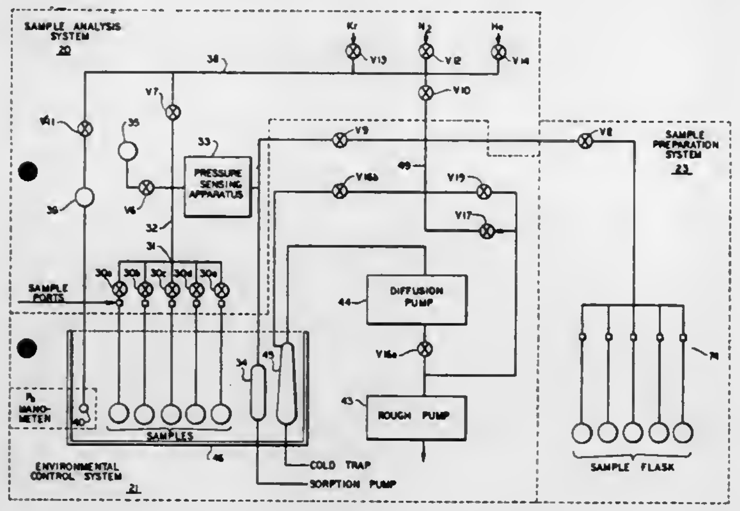


- pressure responsive means for releasably mounting said housing within an end wall and between said first fluid pressure chamber and a third fluid pressure chamber, said pressure responsive means rupturing upon a determined increase of fluid pressure in said third pressure chamber.

3,850,040
SORPTION ANALYSIS APPARATUS AND METHOD

Clyde Orr, Jr., Atlanta; Warren P. Hendrix, Lawrenceville; Ronnie W. Camp, Norcross, all of Ga., and Paul D. Coulter, Strongsville, Ohio, assignors to Micromeritics Instrument Corporation, Norcross, Ga.

Filed Aug. 17, 1972, Ser. No. 281,276
Int. Cl. G01n *15/08*
U.S. Cl. 73—432 PS **38 Claims**

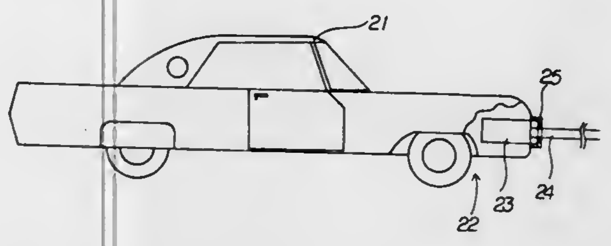

SAMPLE ANALYSIS SYSTEM 20
Kr
N2
He
V13
V12
V14
V10
38
PRESSURE SENSING APPARATUS
DIFFUSION PUMP
ROUGH PUMP
SAMPLE PORTS
MANOMETER
SAMPLES
ENVIRONMENTAL CONTROL SYSTEM 21
COLD TRAP
SORPTION PUMP
SAMPLE PREPARATION SYSTEM 23
SAMPLE FLASK

1. In an apparatus for selectively indicating the surface area and the pore volume distribution of a sample of porous material in a sample flask in response to the quantity of gas adsorbed or desorbed by the sample when the sample and the gas are at a predetermined temperature in the sample flask and the gas is at a predetermined pressure in the sample flask; temperature control means for maintaining a sample flask and a sample and a gas within said sample flask at a predetermined temperature; means for substantially evacuating the atmosphere within said sample flask; operation control means for changing the quantity of said gas within said sample flask by successive increments of gas, the amount of each of said increments of gas being responsive to the adsorbed or desorbed quantity of said gas within said sample flask resulting from a previous one of said increments of gas and the total quantity of gas changed by all of said increments of gas being sufficiently large to cause said gas within said sample flask to be at a predetermined pressure; and indicating means responsive to said total quantity of gas changed by all of said increments of gas for selectively indicating the surface area and the pore volume distribution of said sample.

3,850,041
TOTAL STOPPING DISTANCE INDICATOR

Herbert S. Seaman, 16 Windsor Dr., Ashland, Mass. 01721

Filed Aug. 6, 1973, Ser. No. 385,686
Int. Cl. G01p *3/36;* **B60q** *1/00*
U.S. Cl. 73—495 **10 Claims**

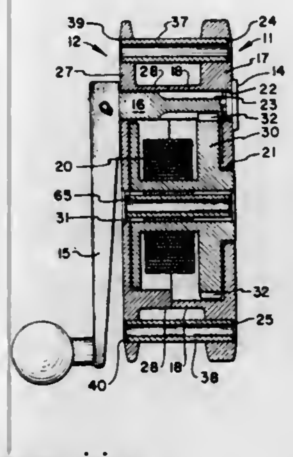


1. A motor vehicle stopping distance indicator for mounting on motor vehicles and comprising:
- speed responsive means for determining the speed of the vehicles; and
- a stopping indicator comprising a variable light source means for projecting ahead of the vehicle a visible light beam having a variable length responsive to said speed responsive means so as to indicate the total safe stopping distance of the vehicle by making the length of the projected beam equal to the distance normally required to stop the vehicle under predetermined conditions.

3,850,042
DRIVE MEANS

Henry R. Lifferth, Fortine County of Lincoln State, Mont. 59918

Division of Ser. No. 167,992, Aug. 2, 1971, Pat. No. 3,765,651. This application Sept. 19, 1973, Ser. No. 398,658
Int. Cl. F16h *27/04, 1/06, 55/04*
U.S. Cl. 74—84 **2 Claims**

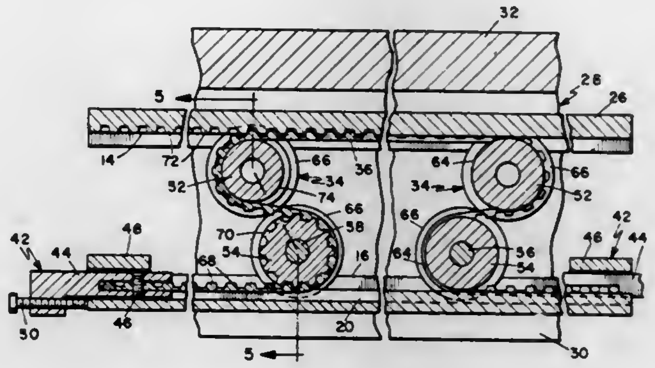


1. Drive means comprising
- a driven member having at least two continuous, parallel rows of notches thereon, the notches of each row being offset with respect to the notches of each other row;
- a rotatable drive member comprising an elongate shaft having a longitudinal central axis, a plurality of crank pins formed along the drive member such that there is at least one crank pin for each of the rows of notches, each of said crank pins forming an eccentric axis with respect to the axis of the elongate shaft; and
- means mounting said driven member and said drive member such that rotation of the drive member about its longitudinal central axis will sequentially move the crank pins into and out of the notches of said rows of notches, said rows each being positioned to receive at least one of said pins to thereby rotate said driven member.

3,850,043
ROLLER BAND APPARATUS

John W. Tarbox, 12936 Caminito de las Olas, Del Mar, Calif. 92014

Filed Jan. 11, 1974, Ser. No. 432,563
Int. Cl. F16h *19/02*
U.S. Cl. 74—89.2 **15 Claims**



1. A roller-band apparatus comprising:
- an inflexible elongated channelled rail having spaced apart, parallel opposed surfaces;
- each of said surfaces each comprising a pair of co-planar tracks with a space extending longitudinally therebetween, the tracks being in opposed relation and extending longitudinally of the rails;
- a flexible band having an end portion in each of said spaces and an intermediate portion looped into an inclined S-shaped configuration;
- a pair of rollers, each having rolling contact portions with an annular depression therebetween, said contact portions engaging said opposed surfaces, the combined diameters of certain portions of the rollers being greater than the distance between said surface, the rollers being entrapped as an inclined cluster in the loops of said band with the band riding in said annular depressions;
- means to tension said band; and
- said rollers having anti-drift means engaging said tracks.

3,850,044
BICYCLE TRANSMISSION

Donald H. Hagen, 4213 61st Ave. No., Minneapolis, Minn. 55429

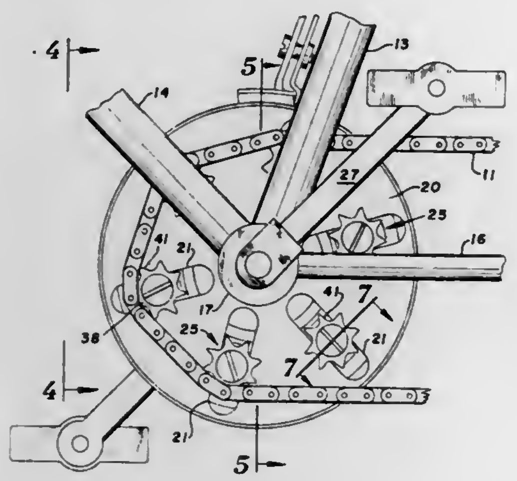
Filed May 10, 1973, Ser. No. 359,120
Int. Cl. F16h *55/54*
U.S. Cl. 74—230.23 **8 Claims**

1. A transmission for a bicycle or similar chain driven vehicle which vehicle includes a pedal, crank arrangement, said transmission including:
- a. a first drive plate arranged for driving rotation with the pedal crank arrangement;
- b. a plurality of individual chain engaging elements arranged on said drive plate and being radially moveable thereon;
- c. means for adjustably positioning said chain engaging elements on said drive plate;

d. said chain engaging elements including arcuate sprocket members mounted for rotation in one direction relation to said drive plate;

e. said means for adjustably positioning said chain engaging elements including:

1. a scroll plate member defining at least one path of ever increasing radius thereon, said scroll plate being mounted for free rotation and being positioned adjacent said drive plate;



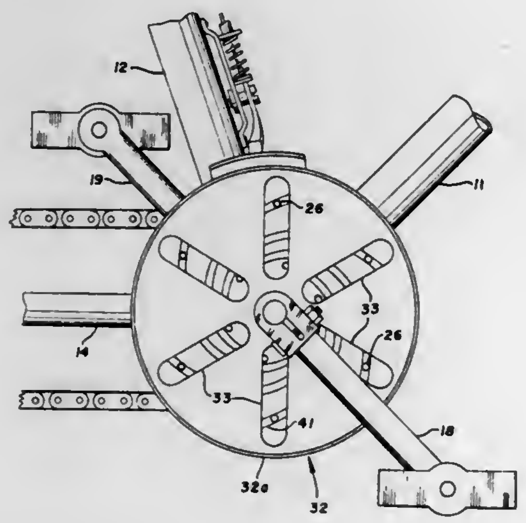
2. guide means extending from said chain engaging elements into said path;

3. radially extending guides on said drive plate, said guide means arranged to move radially within said guides;

f. means for providing relative rotation between said drive and said scroll plate whereby said chain engaging elemetns are driven by the guides to vary the radial positions thereof; and,

g. said means for providing relative rotation between said drive and scroll plates including brake means shiftable into braking engagement with said scroll plate.

3,850,045
EXPANSIBLE SPROCKET FOR BICYCLES
Donald H. Hagen, 2201 Washington Ave. N., Minneapolis, Minn. 55401
Filed July 18, 1973, Ser. No. 380,210
Int. Cl. F16h *35/02*
U.S. Cl. 74—244 **4 Claims**



1. A transmission for bicycles or the like which includes a source of rotary power and which is designed to drive a positive connection element such as a chain, which transmission includes;

a. first drive member connected to said rotary power source having a plurality of individual sprocket members arranged for straight line radial movement and positioning thereon;

b. control and positioning means provided on each of said sprockets for radial positioning thereof;

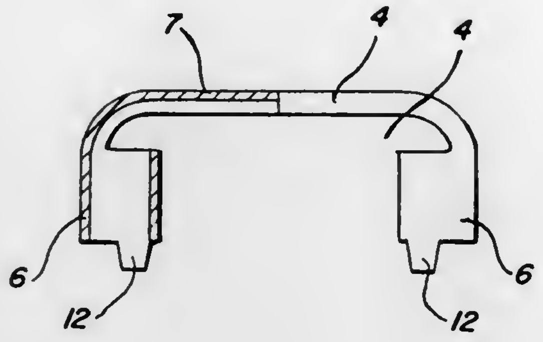
c. a first plate member having an arcuately radially increasing control path thereon and arranged to receive a selected portion of said control and positioning means therein;

d. a second plate member having an arcuately radially increasing control path thereon in opposed relation to said control path of said first member and arranged to receive a selected portion of said control and positioning means therein;

e. means for selectively breaking one of said first or second plate members whereby said control and positioning means will be moved along said control paths and,

f. the control paths providing a common radially communicating path.

3,850,046
BALL NUT SCREW
Sven Walter Nilsson, Partille, Sweden, assignor to SKF Industrial Trading and Development Company B.V., Amsterdam, Netherlands
Filed Apr. 5, 1973, Ser. No. 348,138
Claims priority, application Sweden, Apr. 17, 1972, 5050/72
Int. Cl. F16h *55/22*
U.S. Cl. 74—459 **6 Claims**



1. A ball nut screw assembly comprising a screw member, a nut member circumscribing said screw member, means defining a ball path between said screw and nut members, balls engageable in said ball path, means defining a groove in the outer peripheral surface of said nut member terminating at opposite ends in bores communicating with said ball path, a recirculation member including an elongated roof shaped portion completely recessed in said groove and forming therewith a recirculation channel and cylindrical portions at opposite ends of said roof shaped portion engage able in said bores and extending towards said ball path, and means integral with said nut member for securing said recirculation member to said nut member.

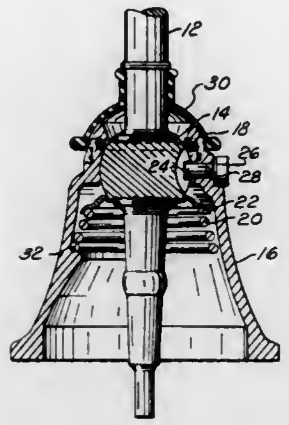
3,850,047
O-RING GEAR SHIFT LEVER ISOLATOR
Alan R. Davis, Plainwell, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed July 14, 1972, Ser. No. 271,950
Int. Cl. G05g *9/12;* **B25g** *3/38;* **F16c** *11/08*
U.S. Cl. 74—473 P **7 Claims**

1. A transmission shift mechanism comprising, in combination:

a shift lever having a ball means intermediate its ends;

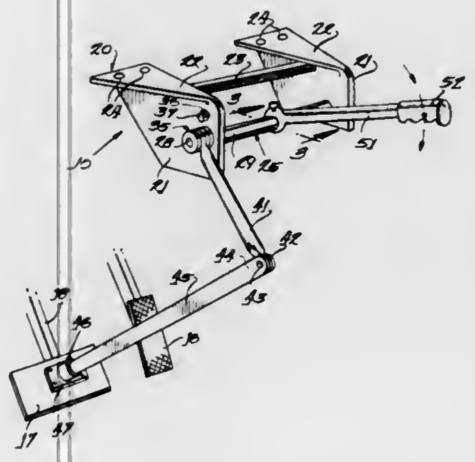
a housing means having an annular recess to support said ball portion of the shift lever along its horizontal plane against transverse movement of said shift lever;

a vented elastomeric means seated in the annular recess of said housing means; and



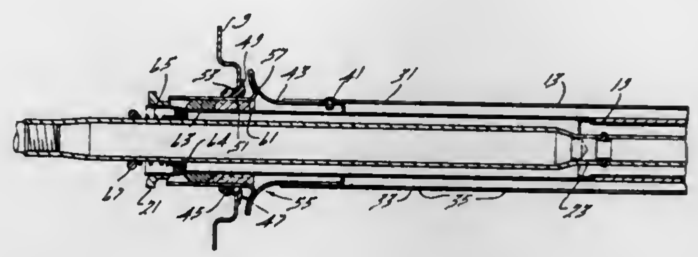
a spring means for biasing said ball portion upwardly against said elastomeric and housing means.

3,850,048
HAND OPERATED ACTUATING DEVICE FOR A VEHICLE BRAKE PEDAL
Pearl K. Moore, 1200 Chestnut St., Nelsonville, Ohio 45764
Filed Oct. 3, 1973, Ser. No. 403,322
Int. Cl. G05g *1/00, 11/00, 1/14*
U.S. Cl. 74—491 **5 Claims**



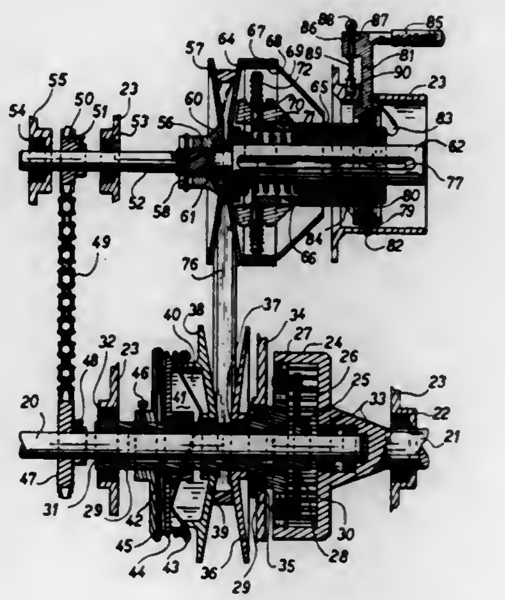
1. A hand operated actuating device for the operation of a vehicle brake pedal and intended for attachment to a vehicle equipped with a brake-operating pedal, the device comprising a bracket member adapted to be mounted to a dashboard of the vehicle within the vehicle passenger compartment, the bracket including a pair of opposed confronting vertical side members each having a horizontally extending flange portion formed integrally with the top edge thereof and extending horizontally outwardly therefrom in opposed directions, a cross member fixedly securing the side members together in their spaced relationship, a shaft extending horizontally between the vertical side members and journaled at its opposite end to the side members for rotation relative thereto, a linkage mechanism having one end fixedly connected to the shaft for rotation therewith, the opposite end of the linkage mechanism adapted to be fixedly attached to the vehicle brake pedal, and a lever arm operatively associated with the shaft and projecting outwardly therefrom substantially normal to the axis thereof and operable to effect rotation of the shaft in opposite directions about its axis to effect the extension and retraction of the linkage mechanism relative thereto in a manner to effect the depressing and release of the brake pedal so as to actuate and de-actuate the vehicle brake.

3,850,049
ENERGY ABSORBING STEERING COLUMN
Don Adams, III, Ferndale, and Robert J. Smith, Warren, both of, Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed May 14, 1973, Ser. No. 360,294
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 **11 Claims**



1. An energy absorbing steering column comprising a steering wheel, a steering shaft connected to said wheel and adapted to extend through an opening in a floorboard of a vehicle, a tubular jacket surrounding said shaft between said floorboard and said steering column, and a movable die means inside the lower end of said tubular jacket, said movable die means being resiliently connected to said floorboard and movable toward said floorboard and angularly with respect thereto, said die means and jacket initially moving toward said floorboard together when a force of a predetermined magnitude is applied to the upper end of said column, said die means after it is prevented from further movement by said floorboard, causing said jacket to fold back upon itself, thereby absorbing energy.

3,850,050
CONTINUOUSLY VARIABLE AUTOMATIC TRANSMISSION
John Lemmens, 248 Rue Mayrand, St. John, Quebec, Canada
Filed Feb. 6, 1973, Ser. No. 330,028
Int. Cl. F16h *37/08*
U.S. Cl. 74—689 **19 Claims**



1. A continuously variable automatic transmission comprising an input shaft, a differential gear train having first gear means, second gear means, and third gear means, a proportional speed drive operatively connected between said input shaft and one of said first, second, and third gear means to rotate the same, a continuously variable V-belt drive operatively connected between said input shaft and another one of said first, second, and third gear means and including one expansible pulley operatively connected to said input shaft,

another expansible pulley connected to said another one of said first, second, and third gear means, and a V-belt running on said pulleys, each of said expansible pulleys comprises a pair of flanges, one flange of each respective pulley on opposite sides of said V-belt being axially displaceable, the other flange of each respective pulley on opposite sides of said V-belt being axially fixed, an output shaft connected to the last one of said first, second and third gear means, centrifugal control means connected to said one axially displaceable flange of said one expansible pulley and to said input shaft and responsive to the rotational speed of the latter to continuously vary the speed ratio of said continuously variable V-belt drive as a function of said rotational speed, resilient means between said flanges of said one pulley urging the flanges thereof apart, and torque responsive cam means connected to the displaceable flange of said another pulley urging said flanges towards each other, said centrifugal control means comprising a plurality of weights in cam relation with the side of said displaceable flange of said one pulley opposite said V-belt, and a mount radially slidably mounting said weights.

3,850,051

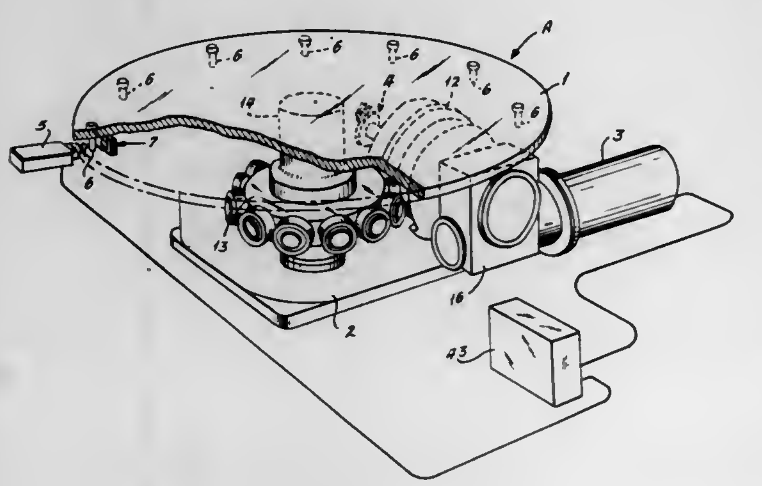
PRECISION FUNCTIONING VARIABLE SPEED INDEXING APPARATUS

Duane W. Woltjen, Manchester, Mo.; Donald E. Dillard, Granite City, Ill., and Thomas C. Kilwin, Bridgeton, Mo., assignors to UMC Industries, Inc., St. Louis, Mo.

Filed Sept. 1, 1972, Ser. No. 285,849

Int. Cl. B23b *29/32*

U.S. Cl. 74—821 **16 Claims**



1. A variable speed indexing apparatus of the type provided for first rapid movement of a work supporting member generally between predetermined work stations, with a reduction in the speed of movement of said work supporting member as it approaches a work station in preparation for its complete stoppage at a precisely set location, an indexing drive connected for moving said work supporting member, drive means operatively coupled for rotating said indexing drive, a stationary base supporting said work supporting member for movement, switch means which upon actuation providing for a sequential reduction in the speed of movement of said work supporting member and its complete stoppage at a precise work station, said apparatus includes an indexed portion mounting said work supporting member and being movably mounted upon the stationary base, braking means cooperating with said stationary base and the indexed portion to secure said portion in place and after it has arrived at a precise work station, said braking means includes a first member connected to said base, a second member secured to said indexed portion and maintained in proximity with said first member, shiftable means attaching to said first member and disposed for being urged into contact with said second member to fix said indexed portion with respect to its base, said first member being formed as an annular sleeve rigidly secured to said stationary base, said second member also being formed as an annular sleeve and secured to said indexed portion and maintained proximate and concentric with said first sleeve, said shiftable means comprising a shim shiftably fixed to said first sleeve and capable of being urged into contact with said second sleeve to fix the positioning of said indexed portion.

3,850,052

DEVICE FOR ADJUSTING THE END FEED POSITION OF OSCILLATING FEED MECHANISMS

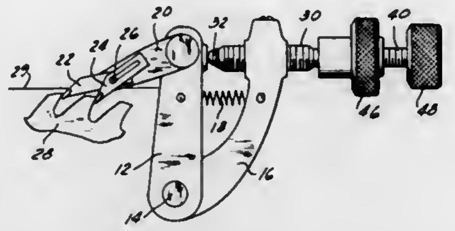
Ott Stier, Graetersteig, Germany, assignor to Vollmer Werke Maschinenfabrik GmbH

Filed Jan. 15, 1974, Ser. No. 433,457

Claims priority, application Germany, Jan. 16, 1973, 7301530

Int. Cl. B23d *51/16*

U.S. Cl. 76—77 **7 Claims**



1. A device for adjusting the end feed position of an oscillating feed mechanism which comprises a rock shaft, a first lever freely mounted on said shaft, a feed pawl mounted on said first lever, a second lever fixedly mounted on said rock shaft, a spring biasing the first lever towards the second lever, a bushing threaded through the second lever by means of coarse threads, a bolt slideable in the bushing engaging the first lever, and fine threads connecting the bolt and bushing whereby the bolt is quickly shifted by the coarse threads of the bushing and second lever to vary the spacing of the first and second levers and is then adjusted in the bushing by the fine threads to accurately position the first lever relative to the second lever.

3,850,053

CUTTING TOOL AND METHOD OF MAKING SAME

Harold Paul Bovenkerk, Worthington, Ohio, assignor to General Electric Company, Columbus, Ohio

Filed Nov. 16, 1972, Ser. No. 307,187

Int. Cl. B21k *5/12*

U.S. Cl. 76—101 R **6 Claims**

1. The method of making a diamond-tipped tool which comprises the steps of:

positioning in an enclosure a formed mass of metal-cemented carbide and a mass of nondiamond carbonaceous material in contact therewith, the carbide being selected from the group consisting of tungsten carbide, titanium carbide, tantalum carbide, and mixtures thereof, and the cementing metal being selected from the group consisting of cobalt, nickel, and iron, and mixtures thereof;

applying pressures in excess of 45 kilobars to the contents of said enclosure while heating said contents to temperatures in the range of 1,400°-1,600°C;

reducing the temperature of said contents;

reducing the pressure on said contents; and

removing said contents from said enclosure.

3,850,054

COMPOSITE DRILL

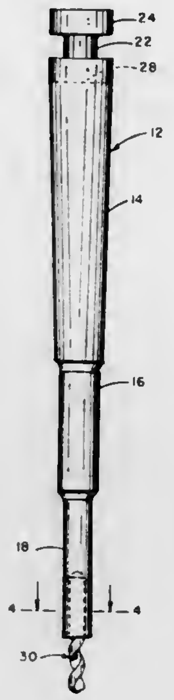
Bernard Weissman, 304 Ashland Pl., Brooklyn, N.Y. 11213

Division of Ser. No. 123,135, March 11, 1971, Pat. No. 3,726,014. This application Dec. 14, 1972, Ser. No. 315,002

Int. Cl. B21k *5/02*

U.S. Cl. 76—108 R **2 Claims**

1. A method of forming a composite drill including a drill bit retaining body and a drill bit for drilling channels in teeth, said method comprising forming said body with an elongate extent and opposite end portions from a high heat conductive material having a heat conductive capacity of greater magnitude than said drill bit to draw heat from drill bit and discharge the heat into surrounding environment when drilling the channels, anodizing said body a predetermined color associated with said drill bit for differentiating said drill bit from other drill bits of a different nature which are associated respectively with similar composite drills, forming an axially extending bore in one of said end portions of said body, positioning a shank of said drill bit in said bore of said body, and interposing a self-hardening adhesive in said bore between said shank and said one end portion of said body to define securing means for permitting rotation of said body relative to said drill bit at a predetermined frictional resistance of lesser magnitude than that magnitude required for causing tooth fracture.



3,850,055

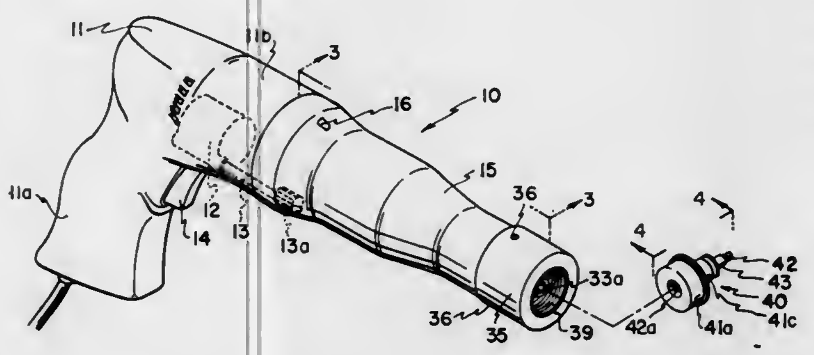
FASTENER TOOL

Lee Triplett, Magna, Utah, assignor to Expando Products Company, Salt Lake City, Utah

Filed Sept. 21, 1973, Ser. No. 399,435

Int. Cl. B25b , *17/00*

U.S. Cl. 81—52.4 A **3 Claims**



1. A fastener tool comprising

a housing;

a motor in said housing;

an inner gripping means for engaging an inner head of a fastener;

means connecting said inner gripping means to said motor, whereby operation of said motor rotates said inner gripping means, said means including clutch means having a pair of clutch plates biased into driving engagement one with the other;

switch means carried by the housing for starting and stopping said motor means; and

an outer gripping means carried by said housing and surrounding said inner gripping means, said outer gripping means being adapted to engage and hold an outer member of a fastener that is received and turned by said inner gripping member and including a spring coiled in the direction of rotation of the inner gripping means, said spring surrounding and spaced from the inner gripping means and having one end fixed with respect to said housing.

3,850,056

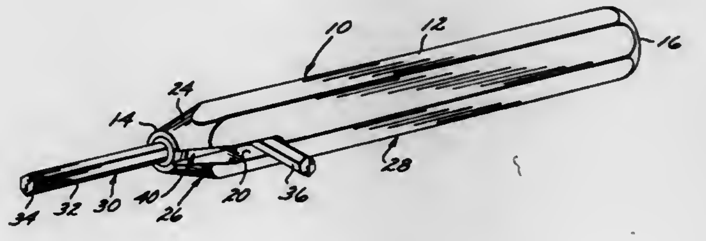
DRIVER TOOL

Gerald F. Allen, 532 Bucknell Ave., Claremont, Calif. 91711

Continuation of Ser. No. 173,032, Aug. 19, 1971, abandoned. This application Jan. 18, 1974, Ser. No. 434,596

Int. Cl. B25b *13/54*

U.S. Cl. 81—71 **6 Claims**



1. A driver tool which comprises an elongated body having a forwardly opening, generally cylindrical and smooth-surfaced axial bore and having a forwardly opening longitudinal slot extending laterally between the bore and the outside of the body, an L-shaped tool key having a shank and a lateral arm joined at an elbow, a cylindrical bushing coaxially engaged over the key shank with the lateral arm of the key disposed adjacent one end thereof, said bushing being axially slidably engageable in said bore with the lateral arm of the key engaged in said slot generally rearwardly of the bushing and extending outwardly of said body and the shank of the key generally coaxial with the body and projecting forwardly therefrom and retention means of elastomeric material comprising an O-ring in a circumferential groove in the bushing and directly engaging the smooth surface of the bore throughout the circumference thereof and being radially compressed thereby and thereby frictionally retaining the bushing and key in the body whereby said bushing and key may be slidably ejected from said bore by pushing forwardly on said outwardly extending lateral arm with a finger of the user's hand holding said tool.

3,850,057

COMBINATION TORQUEING AND RATCHETING WRENCH

James Preston Evans, Oklahoma City, Okla., assignor to Paul H. Johnson, Tulsa, Okla.

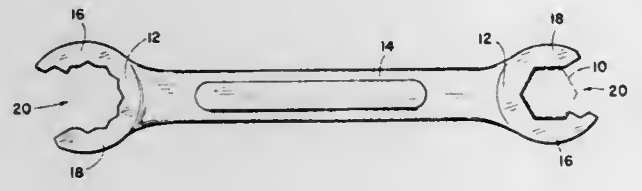
Filed Nov. 23, 1973, Ser. No. 418,549

Int. Cl. B25b *13/02*

U.S. Cl. 81—119 **4 Claims**

1. A combination torqueing and ratcheting wrench for a hexagonal member in which the distance between opposing faces is Y and the length along a face is Z comprising:

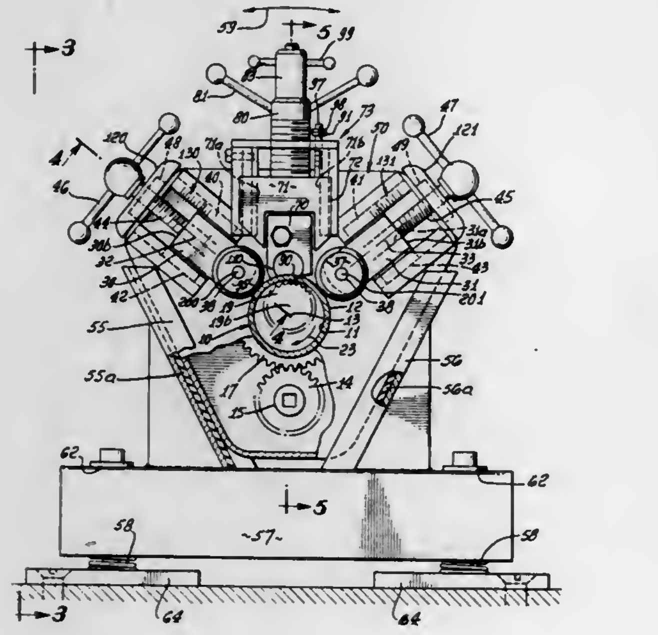
a body having a handle portion extending in one direction and spaced apart jaws in the opposite direction, one of the jaws being a torqueing jaw and the other being a backup jaw, the spacing between the jaws configured to engage at least portions of at least five sides of a hexagonal member whereby a hexagonal member therein may be torqued by rotation of the handle relative to the member in either direction, the jaws having at the outer ends an open space therebetween, the torqueing jaw having, at the outer end thereof a notch formed of two planer surfaces, one being a torqueing surface and the other a positioning surface, the torqueing and positioning surface intersecting at an angle of 120°, the backup jaw having, at the outer end thereof, a backup surface, the backup surface being parallel the torqueing jaw torqueing surface and spaced from it a distance slightly greater than Y, the length of the torqueing surface being less than ½ Z.



3,850,058
PIPE CUTTING EQUIPMENT

George Bachmann, 945 Metro Dr., Monterey Park, Calif. 91754

Filed May 11, 1973, Ser. No. 360,403
Int. Cl. B23b *3/04, 3/22*
U.S. Cl. 82—101 **12 Claims**



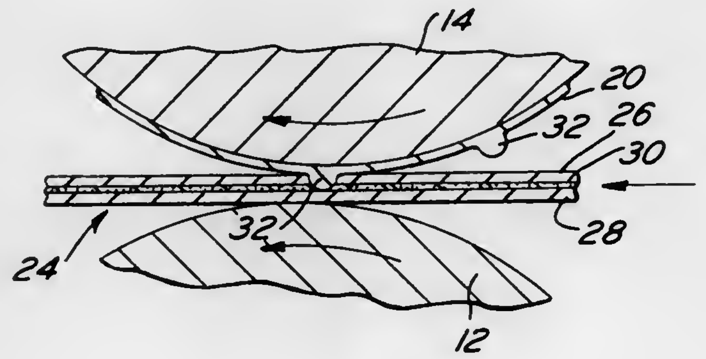
1. In apparatus for cutting pipe having inner and outer surfaces and an axis, the combination comprising

a. drive means engageable with one of said inner and outer surfaces for rotating the pipe relative to said apparatus,
b. thrust exerting means engageable with the other of said inner and outer surfaces for locating the pipe with presentation toward the drive means, said thrust exerting means including first and second supports and two rollers carried thereby and spaced apart about the pipe axis, the supports being carried for adjustable movement toward and away from said axis to accommodate roller engagement with pipe of different diameters,
c. cutting structure engageable with the pipe to cut a groove in the pipe and extending about the pipe axis in response to pipe rotation relative to said apparatus,
d. body structure carrying said drive means, thrust exerting means and cutting structure, and
e. a base releasably mounting said body structure for tilting in accordance with tilting of the pipe axis during said relative rotation.

3,850,059
DIE AND METHOD FOR CUTTING LABELS AND THE LIKE

Pierson S. Kang, Pennsauken, N.J., assignor to Chempar Corporation, Montgomeryville, Pa.

Filed Jan. 8, 1973, Ser. No. 321,623
Int. Cl. B26f *1/44;* **B26d** *3/08*
U.S. Cl. 83—7 **5 Claims**



1. A method for cutting label sheets and the like of the type comprising a facing layer, a pressure sensitive adhesive on the back of said facing layer, and a protective backing layer underlying said pressure sensitive adhesive, the steps comprising providing a cutting die, said die comprising a base, a raised cutting edge extending from said base, the lateral extent of said cutting edge defining a pattern to be cut in said sheets and the profile of said cutting edge remote from said base being rounded, bringing said cutting die into cutting engagement with said facing layer, and forcing said cutting edge through said facing layer, whereby portions of said facing layer on either side of the cut made by said cutting edge are cammed away from each other but said backing layer is neither cut nor crushed by the cutting edge of said die.

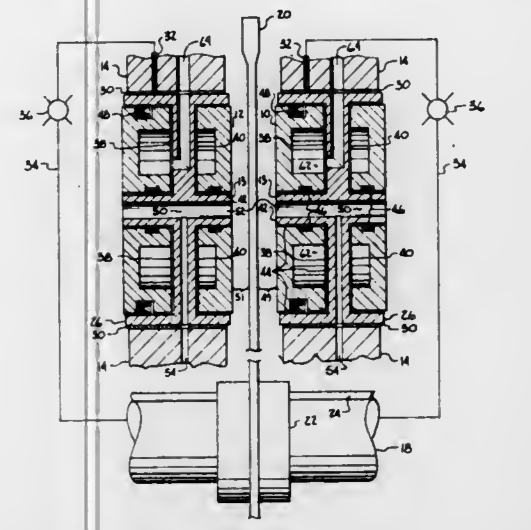
3,850,060
METHOD AND APPARATUS FOR GUIDANCE OF SAW BLADES UTILIZING BERNOULLI EFFECT

William H. Wilcox, deceased, late of Stockton, Calif. (by Elizabeth Wilcox, executrix), assignor to Sun Studs, Inc., Roseburg, Oreg.

Filed Feb. 20, 1973, Ser. No. 333,980
Int. Cl. B27b *5/28*
U.S. Cl. 83—13 **9 Claims**

1. A guide assembly for a saw blade which comprises:

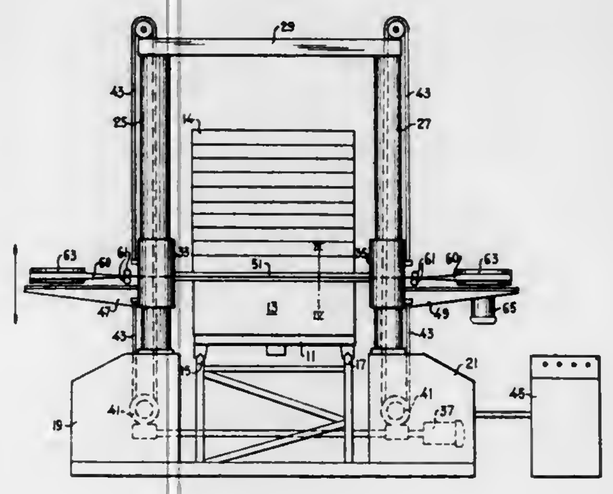
a. a pair of saw guides, each guide having a substantially flat face;
b. mounting means for holding said saw guides in opposed facing relationship to one another on either side of said saw blade such that the face of each guide is spaced a predetermined distance from a respective side of said saw blade when said saw blade is in a normal undeflected position, so as to form a gap of predetermined size between each said guide face and said undeflected saw blade;
c. means for introducing a pressurized fluid into each of said gaps so as to cause said fluid to flow through said gaps;
d. said predetermined size of each said gap being such as to cause said flow of fluid to exert a suction on each side of said undeflected saw blade in accordance with the Bernoulli principle, and further being such as to cause said suction to decrease if the respective gap size is decreased and to increase if the respective gap size is increased due to blade deflections, so as to provide a restoring force responsive to deflections of said saw blade.



3,850,061
CUTTING APPARATUS

Roland T. Wirstrom, Barrstigen 6, 702 21 Orebro, Sweden

Filed Sept. 20, 1973, Ser. No. 399,343
Claims priority, application Sweden, Sept. 20, 1972, 12110/72
Int. Cl. B29c *17/10;* **B29d** *7/18*
U.S. Cl. 83—4 **14 Claims**



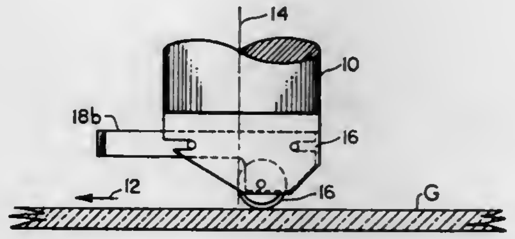
1. Apparatus for cutting a block of plastic material into sheets and for forming a pile of such sheets, said apparatus comprising:

a. a reciprocating table adapted to support and convey at least one block of plastic material in a first direction and in a direction reverse to said first direction,
b. cutting means having first and second opposed cutting edges, which cutting edges are disposed in substantially the same horizontal plane in the normal position thereof,
c. means for vertically adjusting said cutting means at each reversal of table movement direction so that at least one block of plastic material carried by said table is carried during the movement of said table in said first direction into the region of and beyond said cutting means such that the block is cut by said first cutting edge, and after cutting of the block by said first cutting edge the block is carried during table movement in the reverse direction into the region of and beyond the cutting means such that the block is cut by said second cutting edge,
d. means for guiding said cutting means comprising a vertically adjustable beam having means defining slits for receiving said cutting means, and
e. means for providing pivotal movement of said beam in either direction from said normal position about a horizontal axis such that said cutting edges can be rotated to a desired angle relative to the direction of motion of said table.

3,850,062
GLASS CUTTER

Thomas A. Insollo, Bristol, Conn., assignor to The Fletcher-Terry Company, Farmington, Conn.

Filed Oct. 12, 1973, Ser. No. 405,822
Int. Cl. B26d *3/08;* **C03b** *33/10*
U.S. Cl. 83—12 **4 Claims**

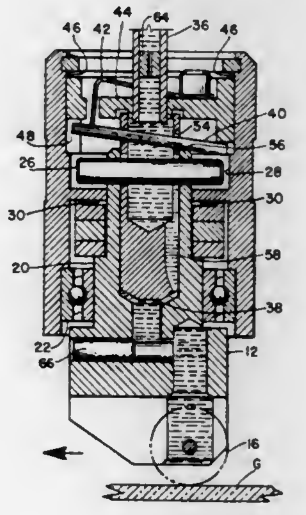


1. A glass cutter for use in a glass cutting machine having a head adapted to horizontally traverse a sheet in a forward direction, and comprising a bifurcated holder member fixed in the head, said holder member furcations defining a downwardly and forwardly open slot therebetween, a generally U-shaped retainer formed from a resilient material and having the legs of the U projecting forwardly when inserted in said holder member slot, said legs projecting forwardly beyond said holder member to permit manual squeezing of said legs and the forward removal of said retainer from said holder slot, said retainer having an axle spanning the legs of the U for rotatably supporting a glass cutting wheel in the space between the legs of the U-shaped retainer, and means for restraining said retainer in said holder member whereby said retainer is restricted to forward and rearward movement in said holder when the legs of the U-shaped retainer are so squeezed.

3,850,063
VALVED PILLAR POST FOR GLASS CUTTING WHEEL

Edward Joseph Witkoski, Burlington, Conn., assignor to The Fletcher-Terry Company, Farmington, Conn.

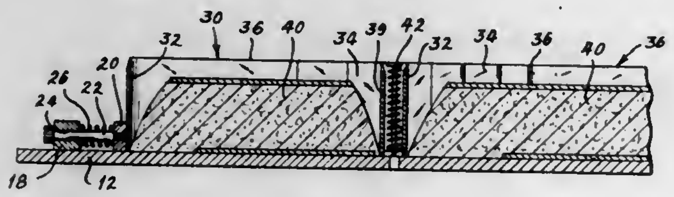
Filed Oct. 17, 1973, Ser. No. 407,311
Int. Cl. B26d *3/08;* **C03b** *33/10*
U.S. Cl. 83—12 **7 Claims**



1. A valved self-aligning pillar post for use in a glass cutting machine and comprising in combination:

a. a head having a lower bifurcated portion in which the glass cutting element is adapted to be rotatably mounted, said head having an upstanding stem portion,
b. an elongated annular sleeve in which said head stem portion is received for at least limited angular rotation and in which said head stem portion is slidably received for limited vertical movement in said sleeve,
c. spring biasing means acting between said head and said sleeve to urge the head downwardly,
d. said head having a passageway defined in part by a vertical bore in said stem portion, and said bifurcated portion defining a lower region of said passageway which communicates with the space between the furcations and in the area of the glass cutting element,
e. a valve element in said stem bore and having a lower end adapted to seat in the lower end of said bore to close said passageway,
f. mechanical motion amplifying means connecting said valve element to said sleeve to move said element upwardly in response to upward movement of said head to open said passageway in response to upward movement of the head.

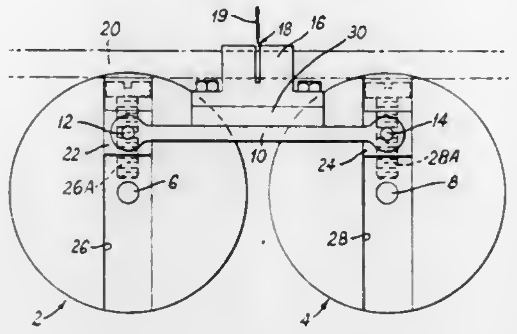
3,850,064
DIE FOR CUTTING STACKED SHEET MATERIAL
Ralph J. Dwyer, Clayton, Mo., assignor to Independent Die and Supply Company, St. Louis, Mo.
Filed Jan. 10, 1974, Ser. No. 432,218
Int. Cl. B26d *7/06, 1/10, 3/24*
U.S. Cl. 83—124 **7 Claims**



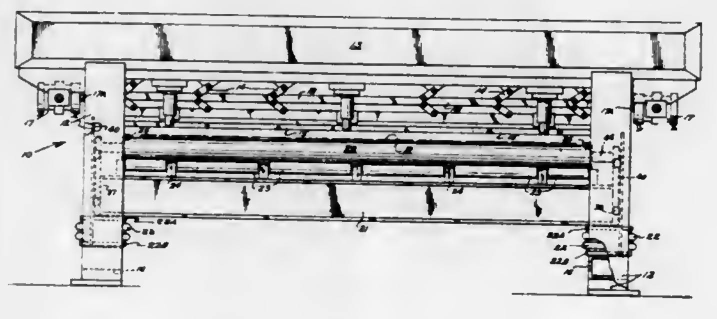
1. A die assembly for cutting layered sheet material; said die assembly comprising: a base, individual cutting dies mounted side-by-side on the base and at least some of the dies being shiftable in the direction which increases the spacing between adjacent dies, and resilient means urging the dies together.

3,850,065
ROD MAKING MACHINES
Francis A. M. Labbe, Neuilly-sur-Seine, France; Edward George Preston; Paul Dimgli, and Ivan Yehudi Hirsh, all of Deptford, England, assignors to Molins Limited, London, England
Continuation of Ser. No. 190,496, Oct. 19, 1971, abandoned. This application July 12, 1973, Ser. No. 378,451
Claims priority, application Great Britain, Oct. 20, 1970, 49844/70
Int. Cl. A24c *5/28*
U.S. Cl. 83—310 **9 Claims**

1. A ledger for a rod-making machine comprising two rotary members arranged to rotate at the same speed about parallel axes; a connecting member which is pivotally connected to radially adjustable parts on both rotary members cooperating with radially oriented adjustment screws comprising first adjustment means, the pivot axes both being at the same distance from the axes of rotation of the respective rotary members, and the four axes being at all times at the four corners of a parallelogram so that the connecting member stays in the same orientation while the rotary members rotate; a rod support which is carried by the connecting member and has a U-shaped cross-section for engaging partly round the underside of the rod to support the rod during each cut, and including a transverse slot for receiving a knife during cutting; and second adjustment means for adjusting the height of the rod support relative to at least one of the rotary members independently of the operation of said first adjustment means to maintain said rod support at a fixed predetermined elevation during each stroke when adjustment of said radially adjustable parts is made.

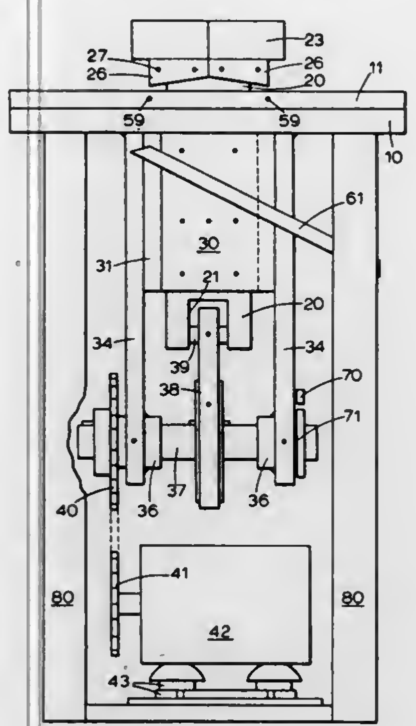


3,850,066
SUPPORT MECHANISM FOR A CLIPPING MACHINE ANVIL
Ernest P. Shaughnessy, Portland, Oreg., assignor to E. V. Proentice Co., Portland, Oreg.
Filed Sept. 10, 1973, Ser. No. 396,053
Int. Cl. B27l *5/08*
U.S. Cl. 83—356.2 **7 Claims**



1. In a clipping machine having a reciprocating blade actuated at intervals for cutting material at desired intervals, the improvement comprising,
an anvil having a material supporting surface subject to wear,
a beam below said anvil,
support means disposed along said beam and supporting the anvil,
fluid charged means supporting said beam and biasing said support means and hence said anvil upwardly to a desired height for optimum blade and anvil cooperation, said fluid charged means responsive to variable internal pressures and thereby positionable through a vertical stroke permitting substantial blade-anvil clearance for clearing of material from the clipping machine,
a control system for regulating communication of said fluid charged means with a pressure source, and
limit means adjacent the anvil ends limiting upward travel of the anvil,
said fluid charged means urging said anvil upwardly against said limit means whereby gradual wear of the anvil surface is compensated for by elevation of the anvil axis.

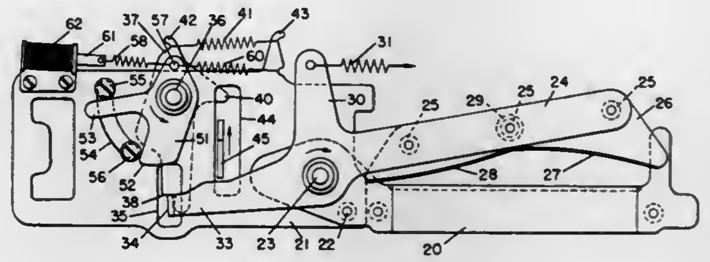
3,850,067
NOTCHING MACHINES
Sidney George Davey, 32 Estridge Way Tonbridge, Kent, England
Claims priority, application Great Britain, Sept. 27, 1972
Filed May 3, 1973, Ser. No. 356,929
Int. Cl. B26d *3/14*
U.S. Cl. 83—524 **11 Claims**



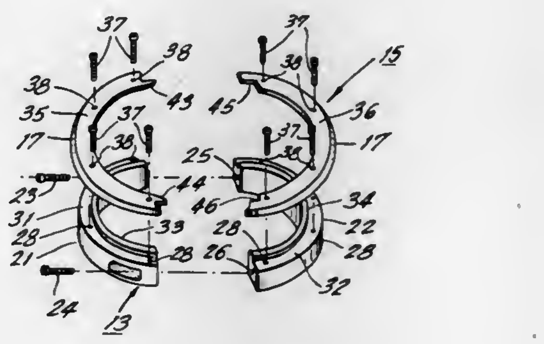
1. A workpiece notching machine comprising a work table have an opening, a die plate, means securing said die plate to said table, a lower notching blade carried by said die plate, a ram extending normal to and through said work table opening and having elongate side faces, an upper notching blade carried by said ram above said work table and positioned for shearing co-operation with said lower notching blade, tubular housing means supporting said ram side faces and guiding said ram in rectilinear movement, said tubular housing means comprising massive housing walls having upper edges secured to said work table, said housing walls extending downwardly from said work table in close supporting and guiding relation with each said elongate side face of said ram over a substantial continuous vertical length of each side face of said ram, whereby to provide for maintenance of accurate relative location of said upper and lower notching blades during a notching cycle, drive means for driving said ram downwardly closely guided and supported by said housing means to effect such shearing of a workpiece between said upper and lower notching blades, said drive means including a drive transmission shaft extending transversely of said ram housing means, and said housing means including further massive wall members extending downwardly from said table closely adjacent said ram and having upper edges secured to said work table, said further massive wall members being provided with journal means journalling said drive transmission shaft, and means drivingly connecting said shaft to said ram, said connecting means being disposed intermediate said further massive wall members, whereby during a notching cycle the loading between said blades is taken in a short efficient closed load path from said upper blade straight down said ram and connecting means, a short distance each way along said shaft and straight back up said housing means to said work table and said lower blade.

3,850,068
RECORD MATERIAL CUTTING MECHANISM
William R. Bradam, Cambridge, Ohio, assignor to NCR Corporation, Dayton, Ohio
Filed July 31, 1973, Ser. No. 387,662
Int. Cl. B26d *3/14*
U.S. Cl. 83—529 **15 Claims**

1. In a data terminal device constructed and arranged to perform a plurality of recording operations on a record member, a mechanism for selectively controlling the width of cut on the record member including
a. stationary knife means;
b. movable knife means cooperating with said stationary knife means to cut across a record member positioned therebetween when moved in a cutting direction;
c. first actuating means engaging said movable knife means for normally moving said knife in a cutting direction;
d. means movable to a plurality of control positions in the path of movement of said movable knife means for limiting the length of movement of said movable knife means in a cutting direction commensurate to the control position of said limiting means;
e. second actuating means engaging said limiting means for normally moving said limiting means to a first control position for limiting the movement of the knife means to cut the record member a first predetermined depth; and
f. a selectively operable actuating means engaging said limiting means for moving said limiting means to a second control position when operated whereby the knife means cuts the record member a second predetermined depth.



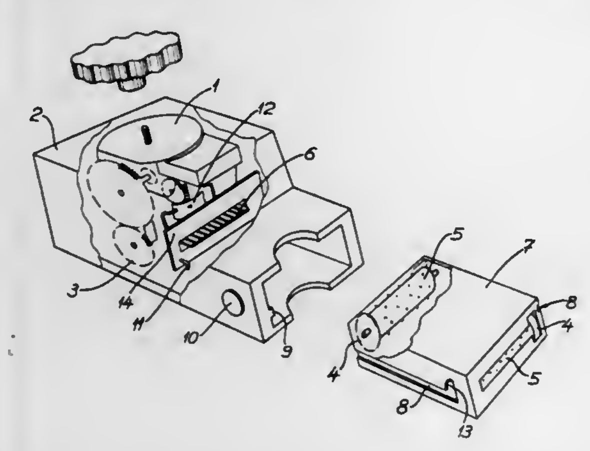
3,850,069
MOUNTING OF ROTARY SPLIT SLITTING KNIVES
Lawrence J. Saunders, Elmont, N.Y., assignor to S & S Corrugated Paper & Machinery Co., Inc., Brooklyn, N.Y.
Filed Jan. 21, 1974, Ser. No. 435,336
Int. Cl. B26d *1/12;* **B23d** *35/00*
U.S. Cl. 83—665 **6 Claims**



1. An assembly including an annular head selectively mountable along the length of a drive shaft and an annular blade removably mounted to said head; said head including first and second separable arcuate portions mated at the ends thereof at first and second head joints; said blade including a circular cutting edge along the outer edge thereof; said blade also including first and second arcuate sections having, respectively, first and second parts of said cutting edge mated at the ends thereof at first and second blade joints whereat the ends of the cutting edge parts abut; said blade joints being angularly displaced from said head joints; in the vicinity of each of said blade joints one of said blade sections having an end projection bridging the head joint adjacent thereto, and the other of said blade sections having an end notch to receive the end projection.

3,850,070
MUSIC BOX

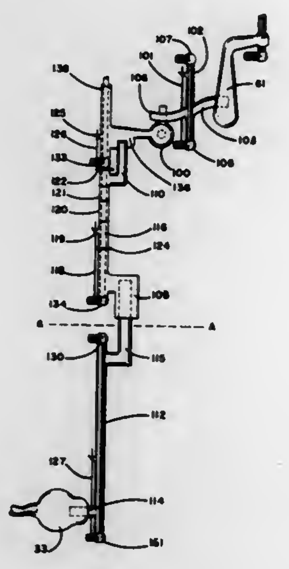
Adolphe R. Laurent, Sainte-Croix, Switzerland, assignor to Lador S.A., Sainte-Croix, Switzerland
Filed Apr. 22, 1974, Ser. No. 463,188
Claims priority, application Switzerland, June 15, 1973, 8692/73
Int. Cl. G10f *1/06*
U.S. Cl. 84—95 **5 Claims**



1. A cassette music box comprising, in combination: a case including a motor, a gear train operatively connected to the motor, a comb-like plate with a plurality of tuned teeth, and means defining a recess in the case for receiving a cassette; and at least one cassette, said cassette including hollow cassette body adapted to fit in said recess of the case, at least one roller-like member rotatably mounted in said body, a plurality of asperities selectively disposed on said member, a wheel fixed for rotation with said member, and means for defining at least one opening in said body through which said asperities and said wheel are accessible; said combination further comprising means for releasably holding said cassette in said recess in a position in which (a) said gear train is in driving engagement with said wheel and (b) said asperities are disposed to operatively cooperate with said teeth upon rotation of said member.

3,850,071
OBOE FINGERING SYSTEM AND MOUTHPIECE

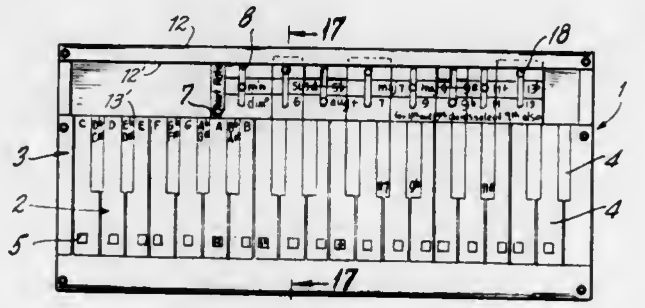
Dick Paladino, 4221 San Bernardino Ave., Las Vegas, Nev. 89102
Division of Ser. No. 349,625, April 9, 1973, Pat. No. 3,789,721, which is a continuation-in-part of Ser. No. 234,481, May 15, 1972, abandoned. This application Nov. 15, 1973, Ser. No. 416,028
Int. Cl. G10d *7/00*
U.S. Cl. 84—380 A **1 Claim**



1. In an oboe or English horn, a key arrangement comprising:
first, second, and third keys to be actuated by the first, second and third fingers of the left hand, said keys located on the upper portion of said instrument;
first and second octave holes located above said first key;
first and second octave hole covers biased toward the open position;
a single octave key having means connected thereto for closing both said octave hole covers when said octave key is not depressed;
a tone hole located on the lower portion of said instrument corresponding to D natural and an overlying combined D natural key and tone hole cover; and
a vent hole and cover therefor laterally displaced from said first finger left hand tone hole cover, means cooperating with said octave key and said D natural key for opening said laterally displaced vent hole cover when both said octave and D natural keys are simultaneously depressed and for closing said vent hole cover when either or both of said octave and D natural keys are undepressed.

3,850,072
IMPROVEMENTS IN OR RELATING TO INSTRUCTIONAL APPARATUS FOR USE IN LEARNING THE CONSTRUCTION OF MUSICAL CHORDS

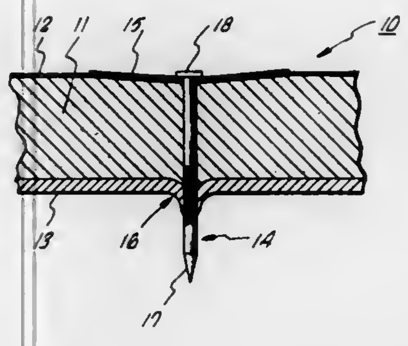
Dudley Kilburn Maurice Fuller, 18 Addison Way, London N.W. 11, England
Filed Sept. 5, 1972, Ser. No. 286,226
Int. Cl. G09b *15/02;* **G10b** *15/00*
U.S. Cl. 84—471 **4 Claims**



1. An instructional apparatus for converting a chord symbol into its constituent notes comprising, in combination, outer case means, including a cover portion bearing a representation of a keyboard of the pianoforte type and having spaced apart facing longitudinal edges defining an opening therein extending along said keyboard representation, said cover portion further being formed with windows therethrough each aligned with a respective key of the keyboard representation; a master slide slideable within said outer case means longitudinally of the keyboard representation and transversely of the keys thereof; and a plurality of slide assemblies mounted on said master slide for sliding movement therealong perpendicular to the keyboard representation and each provided with means enabling the slide assembly to be slid; said master slide being provided with an indicator portion located in said opening and including an indicator alignable with a selected key of the keyboard representation, and being formed with parallel slots extending perpendicular to the keyboard representation and spaced longitudinally of the keyboard representation, and including slots in said indicator portion, the slots receiving means securing each slide assembly to said master slide; said indicator portion having, adjacent each slot therein, chord symbols marked thereon; said slide assemblies carrying markings thereon adapted to register with said windows for exposure therethrough; whereby said master slide may be moved longitudinally of said keyboard representation into a selected position according to the key note indicated by a chord symbol, after which at least one selected slide assembly may be moved perpendicularly to the keyboard representation in its associated slots in said master slide in accordance with the interval in the chord symbol so that appropriate markings on the slide assemblies appear in the windows of the appropriate keys to indicate the constituent notes of the chord symbol required.

3,850,073
FASTENER

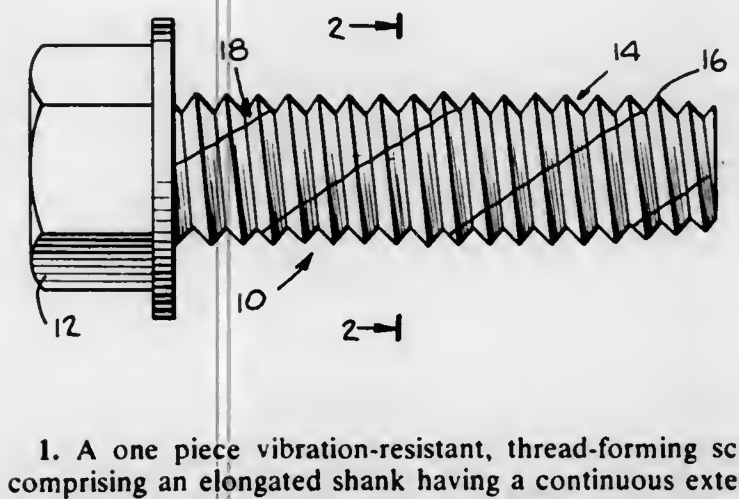
Kenneth L. Hayes, Visalia, Calif., assignor to Berryfast, Inc., Tulare, Calif.
Filed Mar. 7, 1973, Ser. No. 338,864
Int. Cl. E01b *9/06;* **F16b** *15/06*
U.S. Cl. 85—20 **11 Claims**



1. A fastener adapted for attaching roofing insulation to a sheet metal base comprising
a shank of a nominal diameter and terminating at one end in a head and at the opposite end in a point,
means forming a circumferential threaded portion on only a part of the shank, said circumferential threaded portion being located intermediate of and remote from the head and point and tapering inwardly in outer diameter and outwardly in inner diameter in the direction of the point so that the threads originate and terminate in shank portions of said nominal diameter, and
means forming a plurality of longitudinal helical grooves in the threaded portion.

3,850,074
VIBRATION-RESISTANT THREAD-FORMING SCREW

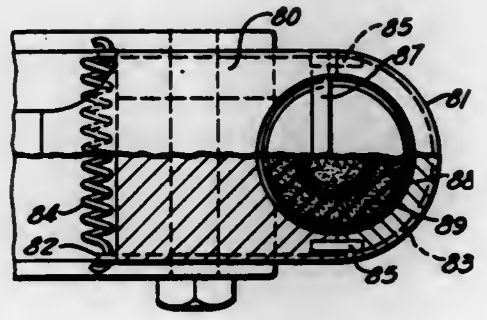
Leon Simons, New City, N.Y., assignor to NL Industries, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 54,716, July 14, 1970, abandoned, and a continuation-in-part of Ser. No. 07,280, Jan. 30, 1970, abandoned. This application May 8, 1972, Ser. No. 251,023
Int. Cl. F16b *39/30*
U.S. Cl. 85—46 **5 Claims**



1. A one piece vibration-resistant, thread-forming screw comprising an elongated shank having a continuous exterior thread and a plurality of exterior lobes distributed circumferentially about said shank and extending spirally therealong in an angular direction opposite from said thread, said shank having in any plane normal to its axis an inner solid core portion of circular configuration and said lobes projecting outwardly beyond said core portion, being integral therewith, and being uniformly distributed circumferentially about said axis, each lobe having in the direction in which the shank is turned when threaded into a body a relatively long leading leg and a relatively short trailing leg, said leading leg continuing to progress gradually away from said core portion in said direction of turning out to a point of maximum distance from the shank axis where it meets its associated trailing leg which returns abruptly from said point toward said axis in said direction of turning of said shank into a body, each trailing leg being concave at its innermost region where it adjoins the circular core portion and forms a junction with the leading leg of the next lobe, said threads having crests and roots both conforming to the lobular configuration with said thread having a uniform radial dimension between its crest and root throughout the extent thereof, said point of maximum distance on each lobe being located substantially in axial alignment with a junction between two other immediately axially adjacent lobes.

3,850,075
MINE ANCHOR-LINE CUTTER WITH FLARE

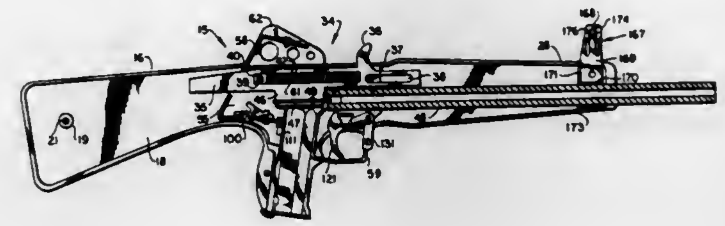
Robert Temple, Swissvale, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed June 14, 1956, Ser. No. 591,368
Int. Cl. B63g *7/02*
U.S. Cl. 89—1 B **3 Claims**



1. The combination with a mine anchor-line cutter having an anvil and an explosively driven chisel, of a buoyant flare, a flare holder, and a band extending around the holder and the anvil in the path of the chisel where the band will be cut when the cutter is fired under water to sever an anchor-like, whereby the flare will be released, the flare containing a chemical adapted when moistened to generate gas that will produce a flame on reaching the surface of the water.

3,850,076
FIREARM APPARATUS

Maxwell G. Atchisson, Apt. 1, Building 14, Sussex Cir., Marietta, Ga. 30060
Filed May 3, 1972, Ser. No. 250,006
Int. Cl. F41c *7/00*
U.S. Cl. 89—196 **16 Claims**



1. A bolt assembly for a firearm comprising:
a bolt housing defining an interior channel to receive a bolt member for reciprocal sliding movement therein;

a bolt member received in said channel;

means within said channel maintaining said bolt member in spaced apart relation with said channel;

at least one bolt member retaining means operatively interconnected between said bolt housing and said bolt member to define a predetermined extent of reciprocal sliding movement of said bolt member relative to said bolt housing;

a resilient member received within said interior channel of said bolt housing and operatively positioned to bias said bolt member in a first direction of said sliding movement; said bolt housing including a pair of generally elongate wall members which are spaced apart to define said interior channel;

said means within said channel including means disposed within said interior channel in confronting relation on said wall members to define confronting spaced apart surfaces along which said bolt member moves for said sliding movement; and

said bolt member having spaced apart surfaces positioned for sliding contact with said spaced apart surfaces defined by said means disposed on said wall members.

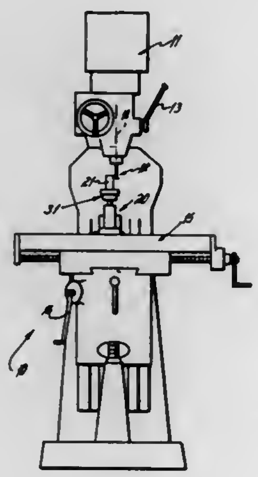
3,850,077
THREADER ATTACHMENT

Wayne O. Garrett, Amelia, Ohio, assignor to Hansco, Inc., Cincinnati, Ohio

Filed Jan. 9, 1974, Ser. No. 431,685

Int. Cl. B23g *1/32, 1/36*

U.S. Cl. 90—11.62 **8 Claims**



1. An attachment for use in cutting threads by axially advancing a workpiece relative to a rotating cutter which is offset from the workpiece, while turning the workpiece about its axis,

said attachment comprising,

a bearing member presenting an elongated cylindrical bore with a longitudinal axis,

means for mounting said member to a support,

a workpiece carrier having an elongated shaft received within said bore, said bore forming a bearing for the shaft and supporting and guiding the shaft for both rotational and axial movement relative to it,

said workpiece carrier having workpiece attachment means at an end thereof for attaching a workpiece to it so that the workpiece will project axially from the carrier and outwardly beyond said bore,

externally threaded means in said bore mounted by and extending axially from said shaft at an end thereof opposite from said attachment means,

said bearing member presenting a cross-bore which intersects the axis of said bore at a right angle thereto,

a cross-guide slidably received in said cross-bore and extending across the axis of said bore, said bearing member supporting said cross-guide on either side of said axis,

said cross-guide presenting internally threaded means having an axis extending transversely through said cross-guide, and sized to receive said externally threaded means, said internally threaded means being alignable with respect to the axis of said bore, by movement of the cross-guide in the cross-bore, so that said externally threaded means can be threaded into it,

said workpiece carrier being advanceable in said bore by turning said carrier so that said externally threaded means is advanced by said internally threaded means.

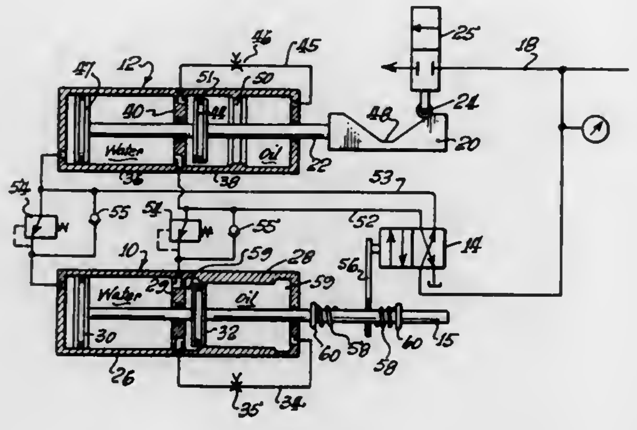
3,850,078
SYSTEM FOR AUTOMATIC PERIODIC IRRIGATION

Daniel D. Polizzi, 630 W. 8th St., Upland, Calif. 91786

Filed Mar. 17, 1972, Ser. No. 235,638

Int. Cl. F15b *21/02;* **F01l** *31/00;* **F15b** *15/22*

U.S. Cl. 91—38 **9 Claims**



1. The combination with a pressurized pipeline for conveying fluid over terrain, of means to carry out a complete operating cycle with a given time interval between cycles, comprising:

operating means to carry out said operating cycle, said operating means being connected to the pipeline for actuation by the pressurized fluid;

a fluid-pressure-actuator means to measure said time interval, said measuring means being connected to the pipeline for actuation by the pressurized fluid,

said measuring means having a reciprocative output member operable with opposite strokes which displaces a volume of fluid at a retarded rate on each of its opposite strokes; and

means to reverse said output member automatically in response to each of its opposite strokes,

said operating means being responsive to the measuring means for operation with said time interval between operations,

said measuring means measuring said time interval on each of its opposite strokes,

said operating means having a reciprocative output member operating with opposite strokes to carry out said operating cycle on each stroke,

said operating means displacing a given volume of fluid on each stroke and including means to retard the displacement to determine the duration of the operating cycle,

said reversing means comprising a reversing valve means responsive to each stroke of the measuring means, said valve means being operatively connected both to the measuring means and to the operating means to reverse the measuring means and the operating means on each stroke of the measuring means,

said valve means including two 4-way valves to control the measuring means and the operating means respectively.

3,850,079
COMPRESSED AIR-OPERATED DRIVE-IN APPARATUS

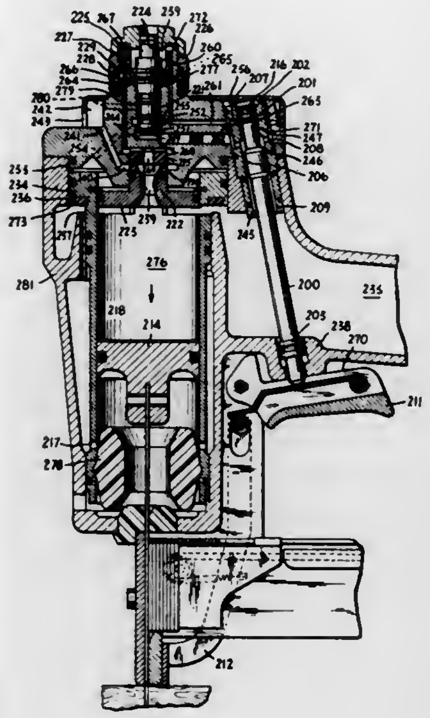
Hellmuth Fehrs, Hamburg, Germany, assignor to Joh. Friedrich Behrens, Ahrensburg, Germany

Filed July 27, 1971, Ser. No. 166,346

Claims priority, application Germany, July 30, 1970, 2037815

Int. Cl. F01l *25/02;* **F15b** *13/042*

U.S. Cl. 91—308 **22 Claims**



1. A compressed air-operated drive-in apparatus to drive-in fasteners such as nails, staples or the like, comprising a housing, a working cylinder having an axis in said housing, a driving piston mounted in said working cylinder for reciprocation along said axis, means to receive compressed air in said housing,

said housing having atmosphere passage means leading to the atmosphere, main control valve means having means to control the application of said compressed air to the piston to move it in the working cylinder, and to allow said piston to move air in the cylinder to said atmosphere passage means, manually actuable release valve means to control actuation of said main control valve means, servo control valve means, said servo control valve means comprising two oppositely effective biasing chambers, one of them being a release valve chamber, said release valve means having means to connect said release valve chamber with the compressed air in the housing when said release valve is actuated, and to connect said release valve chamber to said atmosphere passage means when the release valve is not actuated, said other chamber being a repetition chamber, a control passage, said main control valve means comprising means to communicate said control passage with said compressed air receiving means when the main control valve means is open and to communicate said control passage with the atmosphere passage means when the main control valve means is closed, means to connect said repetition chamber in communication with said control passage, both the main control valve means and the servo control valve means being arranged for movement along the axis of said piston and said cylinder.

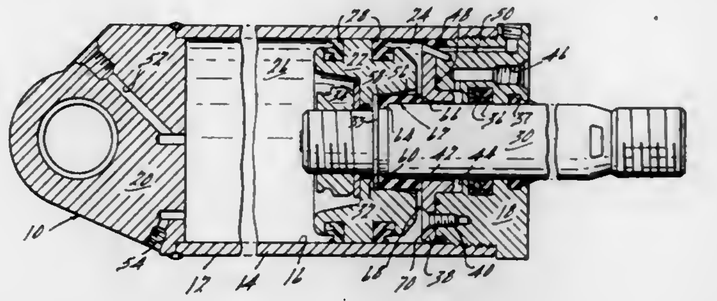
3,850,080
SEAL FOR NON-BOTTOMING PISTON CYLINDER ASSEMBLY

George A. Ekstrom, Churchville, Pa., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 28, 1973, Ser. No. 345,825

Int. Cl. F15b *15/22*

U.S. Cl. 91—395 **2 Claims**



1. In a piston cylinder assembly having a housing with a body portion intermediate first and second heads, the body and heads defining together a cavity, a piston within the cavity in sliding engagement with the body portion, and a rod connected to the piston and extending out of the cavity through the first head, the rod and the first head defining therebetween an annular opening communicating the cavity with the exterior of the housing; the improvement wherein:

the rod defines a stepped down portion; and

an annular resilient member encircles the rod and includes

- a. an annular foot extending radially inwardly toward the stepped down portion, and
- b. an axially extending body member having an annular end face, intermediate the piston and the first head, which abuts the first head, and seals the annular opening upon movement of the resilient member toward the first head and entraps a quantity of fluid between the piston and the first head, thereby preventing contact between the piston and first head and causing the entrapped fluid to press radially against the resilient member toward the axis of the rod and thereby urge the foot of the resilient member toward the stepped down portion.

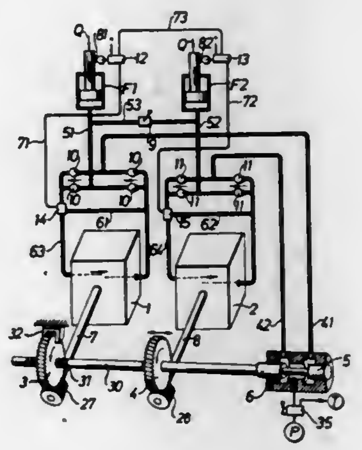
3,850,081
DEVICE FOR DIVIDING A FLUID FLOW INTO PREDETERMINED PROPORTIONS

Karl Evert Anders Joelson, Lenhovda, Sweden, assignor to AB Vabyma, Molndal, Sweden

Filed Apr. 11, 1972, Ser. No. 242,966

Int. Cl. F01b *25/04;* **F15b** *11/22*

U.S. Cl. 91—413 **2 Claims**



1. A device for driving a liquid flow to and from first and second consumers in a predetermined proportion between the

consumers, comprising: first and second flow value gauges comprising hydraulic rotation motors, connected between one of said consumers and a flow generator, comparator means driven with low energy consumption by said flow value gauges for sensing the difference between the flow values obtained from the flow value gauges, and valve means controlled by said comparator means for regulating the flow amounts to and from the consumers for maintaining said predetermined flow proportion between the consumers, characterized in that each of the flow value gauges has a rotary output shaft which is coupled by means of a worm drive to a worm wheel on another shaft, one of said worm wheels being fixed to said other shaft while the other worm wheel is in engagement with a thread on said other shaft, said valve means being controlled by said other shaft.

3,850,082
FLUID FLOW CONTROL ELEMENTS

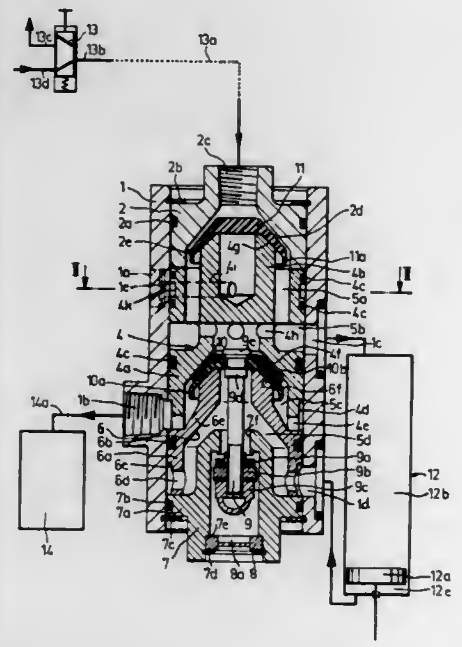
Thomas Nussbaumer, Zug, Switzerland, assignor to Adeola AG, Zug, Switzerland

Filed Nov. 28, 1972, Ser. No. 310,008

Claims priority, application Switzerland, Nov. 30, 1971, 17398/71

Int. Cl. F15b *11/08*

U.S. Cl. 91—461 **10 Claims**



1. A fluid flow control element including a body, first and second pairs of opposed generally conical surfaces formed within said body, a first space defined between said first pair of opposed surfaces and a second space defined between said second pair of opposed surfaces, a passage terminating in the central region of each of said surfaces, a cap-shaped seal received in said first space and a further cap-shaped seal received in said second space, each of said seals being displaceable by fluid pressure and adapted to seal either of said passages terminating in the surfaces defining the respective space, said body including a first outlet leading to the passage terminating in one surface of said first pair of opposed surfaces, a second outlet connected to the passage terminating in the other of said first pair of opposed surfaces, a third outlet connected to said first space, said first space being also connected to the passage terminating in one surface of said second pair of opposed surfaces, a fourth outlet connected to said second space, a fifth outlet connected to the passage terminating in the other surface of said second pair of opposed surfaces, a sixth outlet, and a further passage connected to said sixth outlet, said further passage being connected to said other passage connected to the fifth outlet, and a valve seat in said further passage and a valve element adapted to seat on said valve seat and block said further passage, and a rod connecting said valve element to said cap-shaped seal in said second space, so that the position of said valve element in said further passage depends on the position of said cap-shaped seal in said second space.

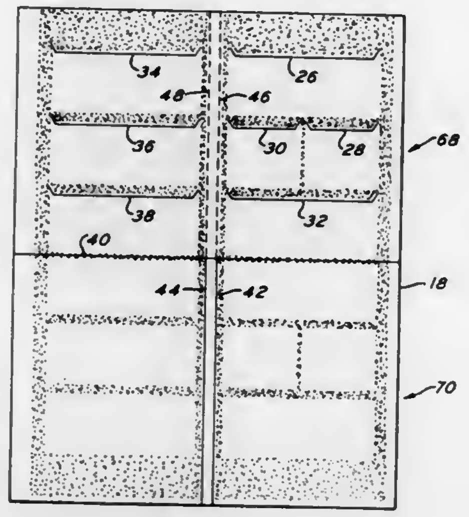
3,850,083
METHOD OF MAKING RECEIPTS FOLDER

Floyd B. Falcon, 58 Ridge Rd., Phoenixville, Pa. 19460

Filed Sept. 18, 1972, Ser. No. 289,895

Int. Cl. B31b *49/04*

U.S. Cl. 93—35 PC **9 Claims**



1. A method of making a folder comprising the steps of printing indicia on one face of a sheet, die cutting slits on one half of said printed sheet, applying a transverse score line across the middle of the sheet, applying a bonding agent to the opposite face of said sheet in a pattern adjacent to said slits, then folding said sheet along said score line so that the bonding agent is between the sheet halves and joins the sheet halves, and then folding the sheet halves in a central region along a line perpendicular to said score line so that the folder resembles a book with the slits on the inside faces and cooperating with said pattern to define pockets into which loose documents may be inserted.

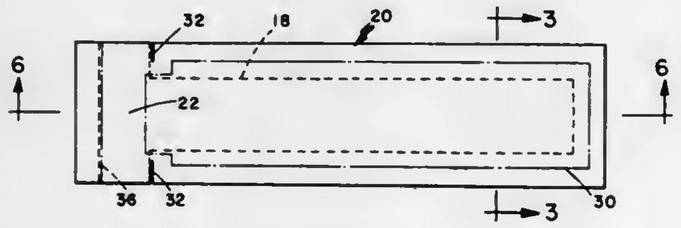
3,850,084
METHOD OF MAKING A TEMPERATURE PROBE COVER

Charles F. Fowler, 5157 Park West Ave., San Diego, Calif. 92117, and Samuel G. Dawson, 1869 Hidden Mesa Rd., El Cajon, Calif. 92020

Division of Ser. Nos. 230,790, March 1, 1972, which is a continuation-in-part of Ser. No. 85,388, Oct. 30, 1970, abandoned. This application Oct. 26, 1973, Ser. No. 409,926

Int. Cl. B31b *49/04*

U.S. Cl. 93—35 R **4 Claims**



1. The method of making a sterilized cover for a temperature probe comprising,

enclosing an elongated thin sheath of virtually non-porous sheet material having one open end only with an elongated jacket of virtually non-porous sheet material open at one end only, with the open ends being adjacent,

securing the sheath to the jacket with a sealing band adjacent the open ends,

and scoring the jacket at a point adjacent the sealing band on the side opposite said open ends.

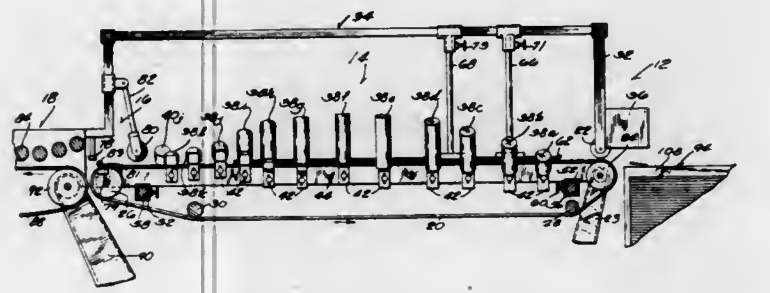
3,850,085
METHOD AND APPARATUS FOR FABRICATING AN ELONGATED CARTON

Lee E. Klemm, N93 W25465 Bittersweet Ct., Sussex, Wis. 53089

Filed May 11, 1973, Ser. No. 359,319

Int. Cl. B31b *1/36*

U.S. Cl. 93—49 M **10 Claims**



1. Apparatus for fabricating a carton from a carton blank comprising:

a forming means for continuously and progressively folding the outer side panels of a carton from one end to the other as the carton is moved through said forming means, said forming means including two sets of stationary roller assemblies mounted on opposite sides of the travel path of the carton, one of said roller assemblies adapted to progressively fold one outer panel of the carton blank and the other of said roller assemblies adapted to progressively fold the other outer side panel of the carton blank;

a gluing means for applying adhesive to one of said side panels before it makes contact with the other of said side panels;

a compression means for compressing said side panels into overlapping contact with each other after the adhesive has been applied thereto;

drive means for driving a carton through said forming means, said drive means including a powered conveyor belt and a stationary roller mounted adjacent the top surface of said belt at the inlet end of said forming means; and

an elongated hold-down means for maintaining the central portion of the carton blanks in a horizontal position as the outer side panels are being folded by the action of said roller assemblies on said side panels, said hold-down means further adapted to force the cartons into frictional engagement with said powered conveyor belt to thereby aid said drive means in driving the carton blanks through the forming means.

3,850,086
EXHAUST VALVE FOR SELECTIVE REMOVAL OF SMOKE AND FUME LADEN AIR

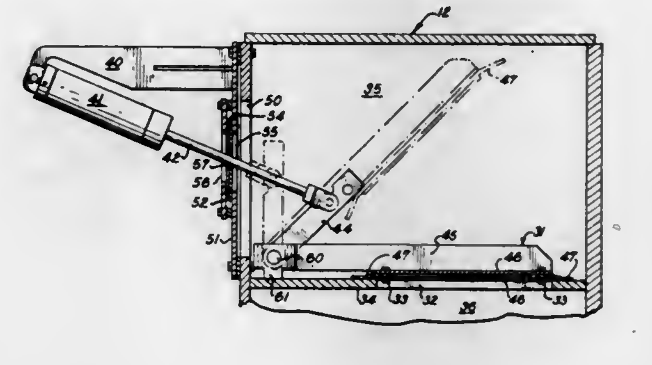
Joseph J. Walters, and Verdun R. McGibbon, Coatesville, both of Pa., assignors to Lukens Steel Company, Coatesville, Pa.

Division of Ser. No. 88,876, Nov. 12, 1970, Pat. No. 3,701,514. This application June 8, 1972, Ser. No. 260,752

Int. Cl. F23j *11/12*

U.S. Cl. 98—115 LH **15 Claims**

1. A valve arrangement adapted for use with the exhaust system of a burning table for cutting metal plate by a cutting torch which comprises a chamber for receiving smoke from a burning table which includes a metal plate defining the top of said chamber, an opening through said metal plate, a covering member for said opening disposed relative to the top of said plate for covering said opening, said covering member having a periphery corresponding to the surface of said plate around said opening, said covering member including a resilient lip sealing member surrounding said periphery, said resilient lip sealing member forming with said plate's upper surface surrounding said opening a substantially air-tight seal due to the weight of said covering member for providing a flow communication of smoke from said chamber through said opening, means for raising and lowering said covering member connected thereto, a further chamber above said opening receiving smoke through said opening, exhaust means exhausting said smoke from said further chamber, and sensor means adapted to respond to light emanating from a burning table torch which produces smoke in the vicinity of said exhaust system operatively connected to said means for raising and lowering said covering member whereby said covering member is automatically raised to uncover said opening when said sensor means responds to light emanations and is automatically lowered to cover said opening when said sensor no longer receives light emanations.



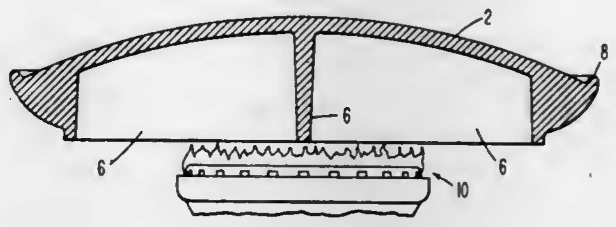
3,850,087
CREPE GRIDDLE FOR MAKING THIN UNIFORM CREPES

John A. Landblom, 1019 11th St., Boulder, Colo. 80302, and Arthur W. Mecklenburg, 755 Grant Pl., Boulder, Colo. 80448

Filed Apr. 4, 1973, Ser. No. 347,716

Int. Cl. A47j *37/10*

U.S. Cl. 99—422 **4 Claims**



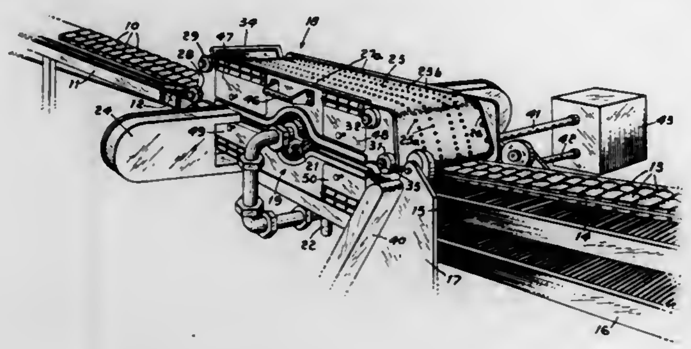
1. A batter cooking device, comprising: a heat conductive body having a continuous convex cooking surface, a lip, said lip continuously surrounding said continuous convex cooking surface, said continuous convex cooking surface extending to said lip extending axially in the same direction as said convex cooking surface wherein said convex cooking surface protrudes above said lip of said batter cooking device and a plurality of heat conductive support fins continuously joined to the surface of said cooking device opposed to said continuous convex cooking surface.

3,850,088

SLICING AND FILLING APPARATUS

Hubert E. Tobey, Milton; John W. Hood, East Brunswick, and Richard L. Twiford, Kendall Park, all of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed May 16, 1972, Ser. No. 253,716
Int. Cl. A21c *9/04*
U.S. Cl. 99—450.2 **19 Claims**



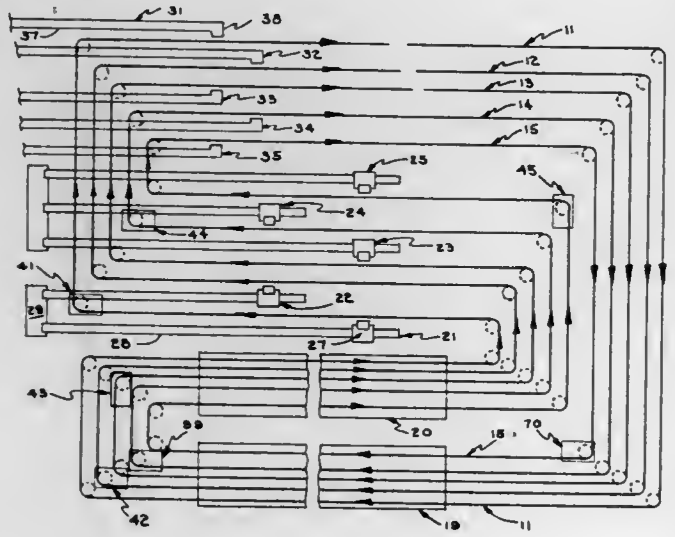
1. Slicing and filling apparatus comprising:
a pair of symmetrically shaped vacuum chamber assemblies. mounted opposite each other and exerting a suction force on a predetermined spacing between the two assemblies;
means mounted on said assemblies for conveying a product to be sliced and filled through said apparatus;
a knife edge mounted to pass through said spacing to slice said product into two portions;
depositing means positioned between said assemblies; and said conveying means conveys one portion over and one portion under said depositing means to enable depositing of a filling on one portion of said product, and said conveying means to rejoin said two portions together.

3,850,089

FOOD PROCESSING SYSTEM

Edward A. Johnson, Chicago; Wendelin H. Miedaner, Homewood, and Warren E. Larson, Downers Grove, all of Ill., assignors to Swift & Company, Chicago, Ill.

Division of Ser. No. 85,370, Oct. 30, 1970,. This application Feb. 5, 1973, Ser. No. 329,325
Int. Cl. A23l *3/04*
U.S. Cl. 99—483 **6 Claims**



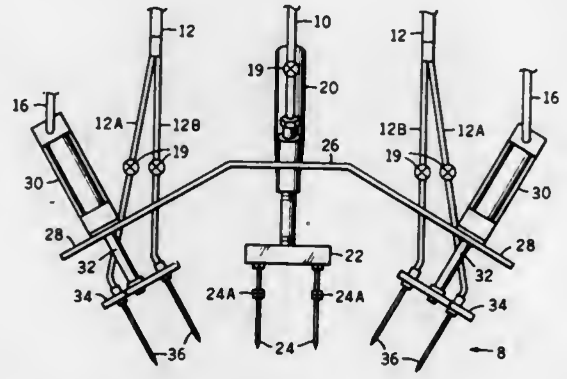
1. An improved system for continuously thermally processing packaged food items, said system comprising: an endless carrier trained in a closed path; a first elongated tank containing a body of heated liquid beneath a first portion of said path; a second elongated tank containing a body of chilled liquid beneath a second portion of said path; a plurality of open compartmented carriages having open sides suspended equally spaced beneath said endless carrier, said carrier being trained to convey said carriages through said first and second tanks; a plurality of longitudinal guides positioned adjacent the path of said carriages within each of said first and second elongated tanks whereby to confine food items in the compartments of said carriages; a loading station alongside said path in advance of said first tank whereat separate food items are inserted in each of the compartments of said carriages; an unloading station along said path following said second tank whereat said food items are ejected from said carriages; and a variable speed drive means connected to power said endless carrier at a rate selected to provide a desired interval of time for each carriage to traverse the length of said first tank.

3,850,090

POULTRY PROCESSING APPARATUS

Roger E. Walters, Trussville, Ala., and William C. Reinke, University City, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Feb. 28, 1973, Ser. No. 336,856
Int. Cl. A22c *21/00, 17/00*
U.S. Cl. 99—533 **9 Claims**



1. Apparatus for simultaneously injecting a material into the breast and thigh and drum portion of a poultry carcass comprising: a needle assembly for injecting the material into the poultry carcass connected to a source of injection material, said needle assembly including a pair of spaced needles adapted for injecting both sides of the breast portion of a poultry carcass, a pair of opposed arms on said needle assembly each at a predetermined angle to said pair of breast injection needles, and actuation means on each of said arms responsive to an applied force for movement toward and away from said poultry carcass when said breast injection needles are inserted into the poultry carcass, each of said actuation means having connected thereto at least one injection needle adapted for injecting the thigh and drum portion of the poultry carcass.

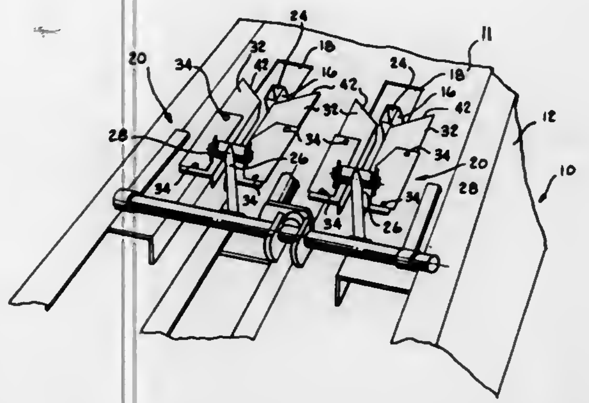
3,850,091

NEEDLE SLOT BAFFLES FOR BALERS EMPLOYING AUTOMATIC TYING DEVICES

Irwin D. McIlwain, Lancaster, Pa., and Thomas B. Moody, North Battleford, Saskatchewan, Canada, assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Feb. 16, 1973, Ser. No. 333,071
Int. Cl. B65b *13/28*
U.S. Cl. 100—19 R **8 Claims**

1. In a baler having a wheel supported main frame, a longitudinally extending bale case mounted on the main frame and having a platform, two side walls and a top in which are included openings, a reciprocating plunger within said bale case which operates to compress any material within the bale case, a tying mechanism mounted on said bale case above the openings and needles initially positioned below the platform of the bale case which needles when activated move through said case, and through the openings in the top of the bale case to a position in contact with the tying mechanism, the improvement comprising: a baffle assembly mounted directly above said openings for preventing any material in the bale chamber from being conveyed by the tying needles into the tying mechanism, said baffle assembly comprising at least one plate for each of said openings, the plates extending substantially over said openings so that at least one-half of said openings are covered, and means for rigidly mounting said plate directly above and substantially over said openings.

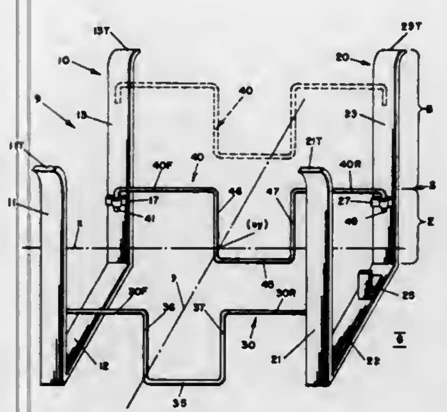


3,850,092

STACKING AND BUNDLING DEVICE FOR NEWSPAPERS, MAGAZINES, AND OTHER RECTANGULAR SHEET MATERIALS

Jerome J. Montgomery, Omaha, Nebr., assignor to Rodney Earl Montgomery and Margaret Worthman Montgomery, both of Bronxville, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,314
Int. Cl. B65b *13/00*
U.S. Cl. 100—34 **4 Claims**



1. A stacking and bundling device for newspapers, magazines, and similar rectangular sheet materials and including a substantially horizontal uniplanar shelf means elevated above a suitable underlying planar substrate, the horizontal shelf-plane being defined by a pair of mutually perpendicular intersecting horizontal axes including a longitudinally extending major *x*-axis and a transversely extending minor *y*-axis, said shelf means being cross-wise slotted vertically therethrough and along said intersecting horizontal axes whereby the shelf means includes four isolated distinct quadrants, said stacking and bundling device comprising:

A. A pair of substantially parallel uniplanar U-shaped members located on opposite sides of said *y*-axis, each U-member including an upright first-leg and an upright second-leg located on opposite sides of said *x*-axis and also a transversely extending spacer-leg adapted to abuttably rest upon said underlying substrate, the two first-legs and the two second-legs together wholly providing a skeletal bin means commencing and extending loftily upwardly from the said shelf-plane; and

B. A pair of substantially parallel longitudinally extending elongate connector-bars including a first-bar and a second-bar located on opposite sides of said major *x*-axis, each said connector-bar being singularly constructed of a single length of permanently formed sturdy construction material and occupying a single vertical plane, the first-bar being removably connected to the two first-legs and the second-bar being removably connected to the two second-legs, each said connector-bar comprising the following three longitudinally extending horizontal elements along the length thereof:

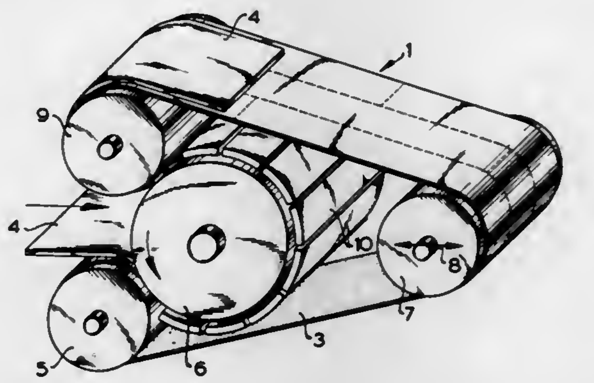
   i. two horizontally aligned lineal portions defining in elevation the said shelf-plane, the four total said horizontal portions wholly providing the four isolated quadrants of the connector-bars type shelf means; and
   ii. A horizontal medial linear portion located between the said two horizontally aligned lineal portions and also located in elevation below the said shelf-plane.

3,850,093

STEEL BELT FOR A ROTARY PRESS

Rolf Gersbeck, Hannover, Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hannover-Kleefeld, Germany

Filed Feb. 8, 1973, Ser. No. 330,750
Claims priority, application Germany, Feb. 12, 1972, 2206710
Int. Cl. B02c *11/08;* **B30b** *15/34*
U.S. Cl. 100—93 RP **4 Claims**



1. A rotary press for the continuous temperature and pressure treatment of materials fed thereto comprising:

a. a heated drum, including radiant heating means adjacent said drum for heating the same by radiation,
b. a plurality of rollers, including upper and lower rollers spaced partially above and below said heated drum at the inlet side thereof and a tension roller at the opposite side of said heated drum, said upper and lower rollers being positioned closely adjacent said heated drum for maintaining pressure on said material as it passes around said drum, the improvement comprising;
c. an endless steel belt looped around said rollers in pressure engagement with said material as it passes around in direct contact with said heated drum, said belt comprising a plurality of relatively narrow belt sections longitudinally welded at their adjoining edges, which edges are thereafter polished smooth for uniform, non-abrading contact with said material, and a dark coloured heat-absorbing coating provided on the entire inner face of said endless steel belt.

3,850,094

TRASH COMPRESSOR AND RECEPTACLE

Harry W. Shontz, 2023 Warren St., Davenport, Iowa 52804

Continuation-in-part of Ser. No. 275,277, July 26, 1972, abandoned. This application Sept. 4, 1973, Ser. No. 393,921
Int. Cl. B30b *1/04*
U.S. Cl. 100—219 **5 Claims**

1. A trash compressor comprising:
a receptacle having rigid bottom and a vertical wall divided into first and second vertical portions, said first vertical portion being rigidly fastened to said bottom;

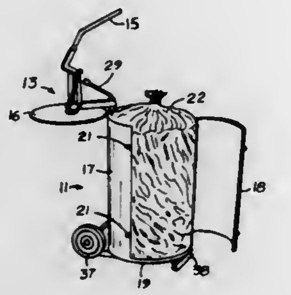
hinge means connected between one of the vertical edges of said first vertical portion and an adjacent edge of said second vertical portion;

latching means connected between the other vertical edge of said first vertical portion and the adjacent other edge of said second vertical portion,

a movable compressive member adapted to fit horizontally within said receptacle with enough space between the edge of said compressive member and said vertical wall to accommodate a trash bag that generally conforms to the inside shape of said receptacle;

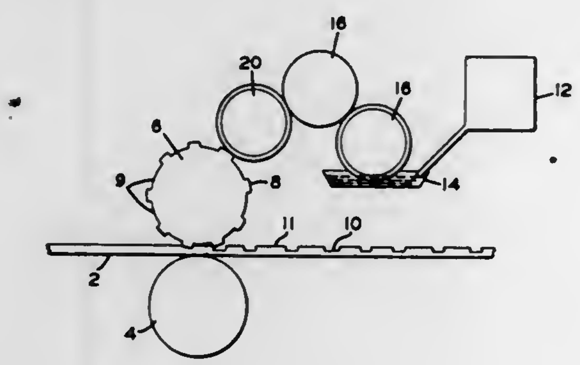
pivotal means for mounting said compressive member to said first portion of said wall to permit movement of said compressive member horizontally with respect to the top opening of said receptacle; and

lever means connected to said compressive member and operable while said compressive member is aligned over said opening to lower said compressive member into said receptacle for compressing trash contained therein, and said latching means being disengageable to permit outward rotation of said second vertical portion about said hinge means, the opening in said vertical wall resulting from outward rotation of said second vertical portion being sufficiently large to permit a filled trash bag to be removed readily in a horizontal direction from said receptacle.



3,850,095
EMBOSSING AND VALLEY PRINTING OF CARPETS BY HOT MELT INK

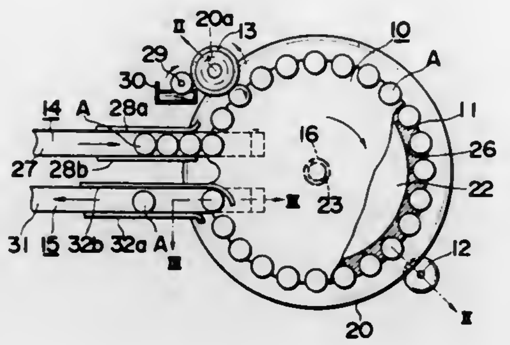
Robert W. Snyder, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
Filed Feb. 19, 1970, Ser. No. 12,725
Int. Cl. D06c *23/04*
U.S. Cl. 101—32 **1 Claim**



1. The method of embossing and valley printing a carpet which is provided with a plurality of raised fibers capable of being embossed to such a degree as to form depressed areas, the steps comprising; heating a hot melt ink to a flowable state, transferring the ink from a heated reservoir through appropriate transfer structure to a heated embossing roll, applying the hot melt ink to only the raised areas of the heated embossing roll, then passing the carpet under the embossing roll to emboss the carpet with a plurality of depressed areas, said depressed areas being formed by the hot melt coated raised areas of the embossing roll, simultaneously with the embossing, transferring the hot melt ink to the depressed areas of the carpet, and cooling the ink to both hold the embossed carpet fibers in place and at the same time provide a color decoration to the embossed areas of the carpet.

3,850,096
APPARATUS FOR PRINTING AND DRYING ROTATABLE OBJECTS

Shin-Ichi Taniguchi, Nara, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan
Filed Feb. 12, 1973, Ser. No. 331,881
Claims priority, application Japan, Feb. 14, 1972, 47-15491
Int. Cl. B41f *17/22*
U.S. Cl. 101—40 **4 Claims**



1. A high speed printing apparatus for objects having a curved surface, an external radius, and a region whereon printing is to be performed, comprising:

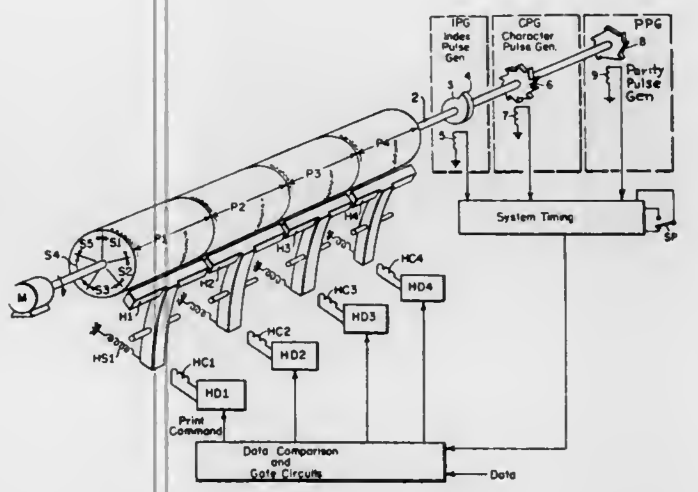
a rotary hollow transport drum, the interior thereof being in communication with a pressure reduction means whereby the pressure within the interior of said rotary hollow transport drum may be reduced below atmospheric pressure, said rotary hollow transport drum having a plurality of pockets formed in the periphery thereof in parallel to its rotational axis, said pockets each having two curved end portions and a curved central portion intermediate said two end portions, the radius of each of said end portions being approximately equal to the external radius of said objects, and said central portion having a radius slightly larger than said radius and the distance between said end portions being longer than said region on said objects whereon printing is to be performed whereby an object will be positioned within a pocket in contact with said end portions and separated from said central portion, each of said pockets being in communication with the interior of said hollow transport drum through the central portions of said pockets whereby a suction force is created in said pockets due to the reduced pressure within said transport drum such that said objects are held within said pockets by the suction force, air flowing into the hollow transport drum through the central portion of said pockets in the region between said objects and said central portion of said pockets due to said suction force, said objects being able to rotate therein during a printing process;

a rotary transfer roll positioned adjacent the periphery of said rotary hollow transport drum for contacting and transferring printed information therefrom to objects being held in the pockets of said transport drum, said transfer roll operatively coupled to said transport drum and being rotated synchronously with the rotation of said transport drum, and said transfer roll contacting the objects being printed with sufficient pressure such that said objects rotate as information is transferred thereto, said objects having printing thereon being rotated by said transfer roller to face the central portion of said pockets, the printed information being rapidly dried by the air flowing into the hollow transport drum, due to the suction force, through the central portion of said pockets in the region between said objects and said central portion of said pockets; and

means operatively located for loading successive objects into the pockets of said transport drum for printing, and means operatively located for removing objects which have received the printed information thereon from the transfer roll from the pockets of the transport drum after the printed information dries.

3,850,097
HIGH SPEED PRINTERS WITH STAGGERED FONTS

David F. Sweeney, Alamo, Calif., assignor to Mohawk Data Sciences Corporation, East Herkimer, N.Y.
Continuation of Ser. No. 178,371, March 8, 1962, abandoned.
This application Apr. 18, 1973, Ser. No. 352,162
Int. Cl. B41j *5/00*
U.S. Cl. 101—93 C **19 Claims**



1. A printer comprising:

a print wheel bearing two fonts of character types on different sectors of the wheel and in different columns of its circumferential surface;

a hammer having a face positioned to strike against said character types and having a width sufficient to span each column;

means for rotating said print wheel so that the fonts pass by the hammer face one at a time sequentially;

means for actuating said hammer when a selected character type in either of said fonts is in striking position; and

means for inhibiting the operation of said actuating means during the passage of one of said fonts for at least those wheel revolutions in which the actuating means is operated to actuate said hammer during the passage of the other of said fonts.

3,850,098
PLURAL HIGH-SPEED PRINTING APPARATUS

Tadao Morohashi, Yokohama, Japan, assignor to NCR Corporation, Dayton, Ohio
Filed Dec. 21, 1973, Ser. No. 427,037
Int. Cl. B41j *9/10, 1/48*
U.S. Cl. 101—93 C **10 Claims**

1. In a data printing system, the combination of

a. a constantly rotating type wheel with a single set of printing characters arranged around the periphery of said type wheel;

b. a plurality of printing hammers positioned around the periphery of said type wheel for printing the same character on a plurality of record members;

c. a constantly rotating hammer actuating member positioned adjacent each of said printing hammers for actuating said hammer upon movement of the hammer into engagement with said actuating member;

d. means for moving each hammer into engagement with said actuating member when operated;

e. first means coupled to said type wheel for generating a pulse representing the home position of said type wheel;

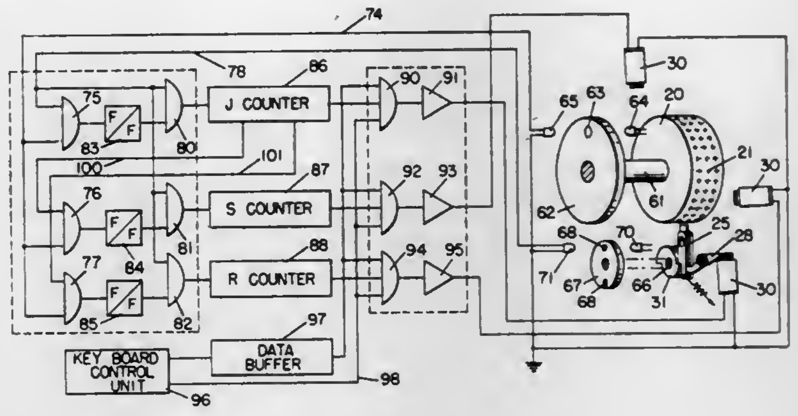
f. second means coupled to one of said actuating members for generating pulses in accordance with the actuating position of the hammer actuating member;

g. first means responsive to a coincidence between said generated pulses to provide a first control pulse representing the characters on the type wheel in a printing position with one of said hammers and a plurality of delayed pulses representing the same characters in a printing position with the other of said hammers;

h. second means responsive to a coincidence between the pulses from said first generating means and said delayed pulses to provide second control pulses representing the same characters on the type wheel in a printing position with each of the other of said hammers;

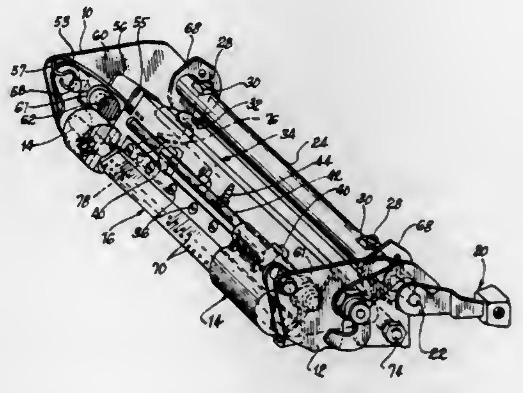
i. means for generating timed pulses representing the character to be printed;

j. and third means responsive to the coincidence of said character pulses and the first and second control pulses to sequentially operate each of said moving means to print the same character on the record members.



3,850,099
WASHING ROLLER AND WIPER BLADE MECHANISM FOR DUPLICATING MACHINES

Wallace J. Laben, Chicago, Ill., assignor to A. B. Dick Company, Niles, Ill.
Filed Oct. 24, 1973, Ser. No. 409,268
Int. Cl. B41f *35/04*
U.S. Cl. 101—425 **10 Claims**



1. In a duplicating machine or the like wherein a surface becomes contaminated and is subjected to repeated cleaning operations, a washing roller for applying cleaning fluid to the

contaminated surface, a delivery means for delivering metered amounts of the cleaning fluid into position for pick-up of the fluid by the washing roller, and a wiper engaging said washing roller for purposes of removing contaminated cleaning fluid from the washing roller subsequent to contact of the fluid with the surface to be cleaned, the improvement wherein said wiper comprises an elongated blade extending parallel with the axis of said washing roller, and means for holding said blade in engagement with said washing roller, said blade defining a plurality of perforations in the area of engagement with the washing roller whereby contaminated material including used cleaning fluid is adapted to pass through the perforations during contact of the wiper blade with the washing blade, said perforations comprising holes between 0.03 and 0.06 inches in diameter with the distance between holes being between about 0.1 and 0.20 inches.

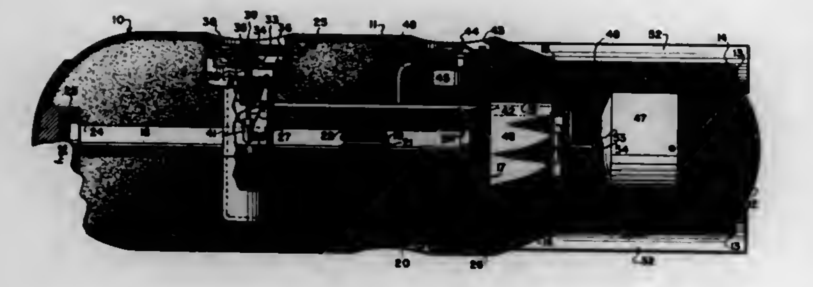
3,850,100
MINE FIRING CONTROL SYSTEM

Whitman D. Mounce, and Ralph W. Mann, both of Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 28, 1943, Ser. No. 500,399

Int. Cl. F42b *22/04*

U.S. Cl. 102—18 **29 Claims**



1. In a device of the class described, the combination of a source of electrical energy having positive and negative terminals, a pair of resistors, a first condenser having one plate connected to said positive terminal and the other plate connected in series with one of said resistors to said negative terminal, a second condenser having one plate connected to said positive terminal and the other plate connected in series with the other of said resistors to said negative terminal, a potentiometer connected between said other plates of said condensers, a center tap on said potentiometer, electroresponsive means connected between said center tap and the negative terminal of said source of energy, and means for selectively discharging said condensers.

3,850,101
ELECTRICAL PRIMER

Vernon K. Sower, Box 91, Bayfield, Colo. 81122

Filed July 26, 1973, Ser. No. 383,033

Int. Cl. F42b *9/08*

U.S. Cl. 102—46 **9 Claims**

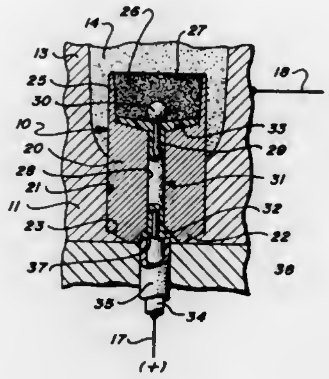
1. In a firearm cartridge having a metal casing, including at least a base and a hollow tubular body portion integral with said base containing a propellant charge, an electrically fired primer comprising:

a. a solid cylindrical metal primer body having a cavity in one end thereof and an axial bore connecting said cavity to the opposite end thereof, a portion of said primer body being of reduced diameter;

b. a propellant initiating material filling said cavity;

c. an electrical conductor extending from said opposite end through said bore into contact with said propellant initiating material; and

d. a dielectric material filling the space between said conductor and the wall of said bore, said primer body being adapted to extend slidably within an axial passage through said base so that said one end lies within the propellant charge and said opposite end is adjacent the external surface of the base, the wall of said passage having an interface with said reduced diameter portion of said primer body.



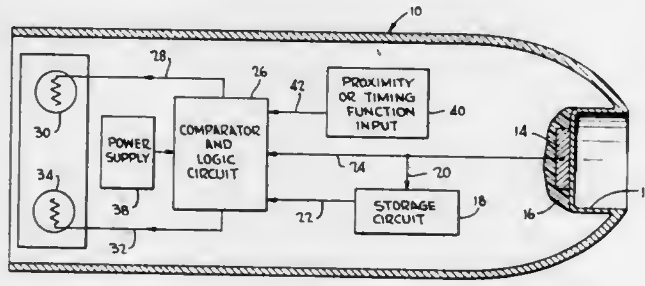
3,850,102
PIEZOELECTRIC MULTI-PURPOSE DEVICE FOR PROJECTILES (U)

Warren P. Morrow, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 21, 1970, Ser. No. 12,519

Int. Cl. F42c *11/02*

U.S. Cl. 102—70.2 GA **11 Claims**


10
28
26
42
PROXIMITY OR TIMING FUNCTION INPUT
40
30
POWER SUPPLY
COMPARATOR AND LOGIC CIRCUIT
14
34
38
24
20
12
STORAGE CIRCUIT
18
32
22
16

1. An environmental sensing device for use in both spin and non-spin projectile fuzes, comprising:

a. a chamber located in the nose section of the fuze body to receive air impinging thereon while said projectile is in flight;

b. a piezoelectric crystal affixed to the inner wall of said chamber;

c. storage means connected to said crystal to receive a first voltage signal generated in response to the setback forces produced as a result of the launching of the projectile;

d. means for receiving a second voltage signal generated by said crystal in response to its vibrations created by the air impinging upon said chamber while said projectile is in flight whereby the amplitude of said second voltage signal is proportional to the velocity of said projectile;

e. comparator circuitry for determining whether said first and second voltage signals fall with certain predefined voltage limits and time intervals established for the particular gun and projectile under consideration;

f. logic circuitry for producing an arming signal at a first output only upon the plural receipt of valid first and second voltage signals from said comparator means;

g. arming means for receiving said arming signal from said first output to arm said fuze; and

h. point detonating means for actuating the fuze detonator comprising receiving means for a third voltage signal generated by said crystal in response to the impact of said fuze with the target area and means within said logic circuitry for producing a detonation signal at a second output in response thereto.

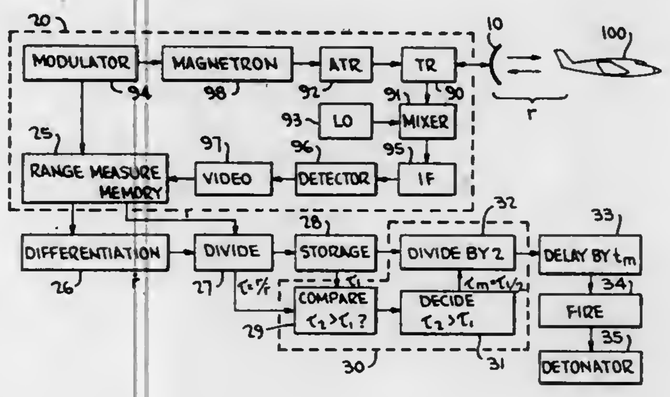
3,850,103
COMPUTER INTERCEPTOR PROXIMITY FUZE

Philip Krupen, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 4, 1973, Ser. No. 421,550

Int. Cl. F42c *13/04*

U.S. Cl. 102—70.2 P **4 Claims**



1. A pulsed radar proximity fuze for obtaining maximum lethal detonation comprising:

a. means for computing the separation distance between said fuze and a target;

b. means for determining the value of the differentiation of said distance;

c. means for computing the ratio of said distance to the value of said differentiation of said distance;

d. means for detecting the extremum value of said ratio;

e. means for calculation of one half of said extremum ratio;

f. means for counting time and issuing a first output electrical signal after a preset value is obtained; and

g. means for detecting said first output electrical signal and as a result of said detection issuing a fire signal.

3,850,104
HOLDER FOR PYROTECHNICAL DELAY COMPOSITION

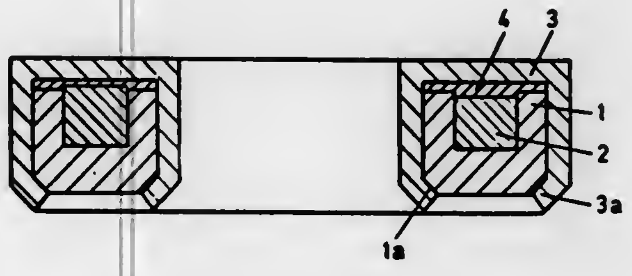
Bjorn Herman Olof Simmons, Karlskoga, Sweden, assignor to AB Bofors, Bofors, Sweden

Filed Mar. 30, 1973, Ser. No. 346,537

Claims priority, application Sweden, Apr. 14, 1972, 4865/72

Int. Cl. F42c *9/10*

U.S. Cl. 102—85.2 **9 Claims**



1. A holder for a pyrotechnical delay composition comprising a base part having a channel-shaped recess, a gasless combustible pyrotechnical delay composition disposed within said recess, a covering part affixed to said base part in covering relation to said recess, at least one of said parts including a plurality of holes therein a selected one of which is adapted to receive a device operative to cooperate with said composition, and a deformable member fabricated of a material which is incapable of participating in the combustion of said delay composition, said deformable member being disposed between said base part and said covering part in contiguous relation to the upper surface of said composition, said base part and covering part being attached to one another in pressure engagement with said deformable member, the pressure imposed on said deformable member being operative to cause said material to deform into close surface conformity with the upper surface of said composition entirely across said recess regardless of the extent to which said composition fills said recess.

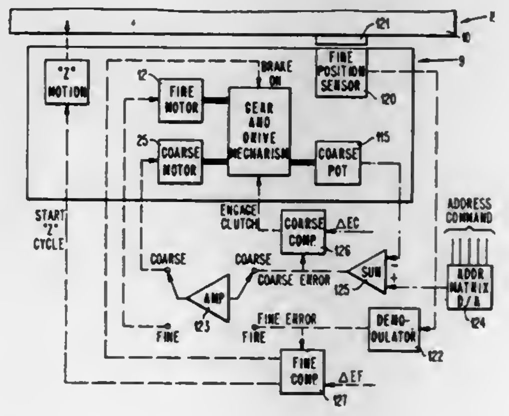
3,850,105
APPARATUS FOR TRANSFERRING ARTICLES THROUGH VARIOUS PROCESSING SECTORS OF A MANUFACTURING SYSTEM

Jesse Aronstein; Arkady Leoff, both of Poughkeepsie; John J. Murphy, Fishkill, and Winfield S. Ruder, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,563

Int. Cl. G05b *1/06, 11/18*

U.S. Cl. 104—1 R **3 Claims**



1. Apparatus for positioning a moveable member comprising:

A. track means for controlling the movement of said moveable member along a predetermined path;

B. means for reversibly driving said member along said path through and to any one of a plurality of locations thereon;

C. means for continuously generating a first analog signal representing the location of said member along any point of said path including any point between and at said locations;

D. means for generating a second analog signal corresponding to a specified new location for said member along said path;

E. means for continuously generating a difference signal, from said first and second signals representative of the distance and direction of said member from and to, respectively, said new location with said drive means responsive thereto for moving said member to said new location;

F. means to stop said member at said desired location;

G. wherein said second signal generating means comprises an address circuit means for generating a digitally coded electrical signal specifying a said desired new location for said member, and for converting said digitally coded electrical signal to a representative said second analog signal;

H. wherein said first signal generating means comprises a motion sensing means coupled to said drive means for continuously producing said first analog signal representing the position of said member along any point of said path;

I. wherein said summing means comprises a summing amplifier for generating said difference signal amplifier; and

J. including means for generating a tolerance signal representing permissible deviation of said member from coincidence with a said desired location; means for comparing said difference signal with said tolerance signal and generating a coincidence signal therebetween; and means responsive to said coincidence signal to activate said stopping means;

K. wherein said activating means comprises means for generating a fine tolerance signal representing a smaller permissible deviation of said member from coincidence with said specified location; position representing stop means comprising a magnet at each said desired location along said path; means on said member for sensing said magnet and generate a fine difference signal therebetween; means for comparing said fine difference signal with said fine signal and on coincidence therebetween generating a stop signal for said drive means.

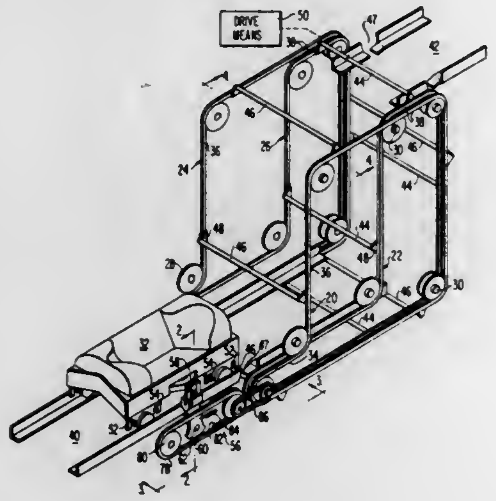
3,850,106
ELEVATOR APPARATUS

Bert Krivec, Waukesha, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Nov. 30, 1973, Ser. No. 420,499

Int. Cl. B61b *3/00*

U.S. Cl. 104—127 **23 Claims**



1. Elevator apparatus for moving from one level to another the cars of a unit carrier system having a plurality of cars which travel along predetermined paths, said apparatus comprising:

1. a first pair of controlled-pathway propulsion means mounted in parallel, spaced relationship a distance apart slightly in excess of the width of the broadest car in said unit carrier system, each of said first pair of controlled-pathway propulsion means having:
   a. an entry leg which is located parallel to or in the same plane as a first one of said predetermined paths at a stopping point on said first predetermined path, extends generally in the direction of said first predetermined path at said stopping point, and is at least slightly longer than a first distance equal to the longest car in said unit carrier system,
   b. an exit leg which is located parallel to or in the same plane as a second one of said predetermined paths, which second predetermined path is at a different level than said first predetermined path, and extends generally in the direction of said second predetermined path, and
   c. an intermediate leg which connects said entry and exit legs;
2. a first plurality of vertical lift pick-up bars carried by said first pair of controlled-pathway propulsion means and spanning the distance therebetween in a direction at least generally perpendicular to the entry legs of said first pair of controlled-pathway propulsion means, said first plurality of bars being spaced by a distance at least slightly longer than said first distance;
3. a second pair of controlled-pathway propulsion means mounted in parallel, spaced relationship immediately adjacent to and parallel to said first pair of controlled-pathway propulsion means, each of said second pair of controlled-pathway propulsion means having:
   a. an entry leg which is located parallel to or in the same plane as said first predetermined path at said stopping point and extends generally in the direction of said first predetermined path at said stopping point,
   b. an exit leg which is located parallel to or in the same plane as said second predetermined path, extends generally in the direction of said second predetermined path, and is at least slightly longer than said first distance, and
   c. an intermediate leg which connects said entry and exit legs and which parallels the corresponding intermediate legs of said first pair of controlled-pathway propulsion means;
4. a second plurality of vertical left pick-up bars carried by said second pair of controlled-pathway propulsion means and spanning the distance therebetween in a direction at least generally perpendicular to the entry legs of said second pair of controlled-pathway propulsion means, each one of said second plurality of vertical lift pick-up bars being associated with a corresponding one of said first plurality of vertical lift pick-up bars and spaced therebehind by a second distance, which second distance is less than the length of the shortest car in said unit carrier system, at least one of said first and second pluralities of vertical left pick-up bars being carried by its associated controlled-pathway propulsion means at a level at least slightly outside the plane connecting the respective one of said pairs of controlled-pathway propulsion means;
5. means for driving said first and second pairs of controlled-pathway propulsion means at the same speed and in the same direction;
6. first lodgment means for one of said first plurality of vertical lift pick-up bars located on the underside of said cars at a point close enough to the front end thereof when said cars are stopped at said stopping point so that said first lodgment means is located in front of the center of gravity of said cars under any possible load conditions;
7. means for positioning a car stopped at said stopping point in a position such that one of said first plurality of vertical left pick-up bars will lodge in said first lodgment means, thereby drawing said car forward along the entry legs of said first pair of controlled-pathway propulsion means; and
8. second lodgment means for said second plurality of vertical lift pick-up bars located on the underside of said cars said second distance back from said first lodgment means provided that said second distance is sufficiently long so that said second lodgment means is located behind the center of gravity of said cars under any possible load conditions, whereby the one of said second plurality of vertical lift pick-up bars associated with the one of said first plurality of vertical lift pick-up bars which has lodged in said first lodgment means will lodge in said second lodgment means,

whereby said car will be moved from the level of said first predetermined path to the level of said second predetermined path while remaining in a horizontal position.

3,850,107
APPARATUS FOR SECURING AND TRANSPORTING HEAVY LOADS

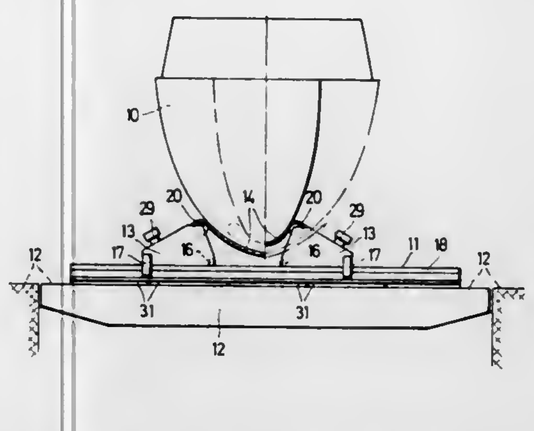
Karl Klinkhammer, 3b Lohbreite, 4800 Bielefeld, and Siegfied Bley, 81 Westrasse, 4904 Enger-Westerenger, both of Germany

Filed Mar. 15, 1973, Ser. No. 341,721

Claims priority, application Austria, Mar. 20, 1972, 2326/72

Int. Cl. A63g *21/00*

U.S. Cl. 104—134 **12 Claims**



1. Apparatus for securing a heavy load, more particularly a ship, in a fixed position during the lifting and moving thereof and for transporting such heavy load, wherein the invention comprises a plurality of adjacent support members, said support members extending transversely to the length of the load to be secured and transported and carrying two supporting blocks thereon, said supporting blocks being spaced from one another and displaceable relative to each other, and a flexible supporting band extending between said two supporting blocks, said band, upon displacement of said supporting blocks relatively to each other automatically conforming to the outline of the load to be secured and transported, said flexible band carrying said load.

3,850,108
ARMATURE ASSEMBLY AND MAGNETICALLY SUSPENDED VEHICLE

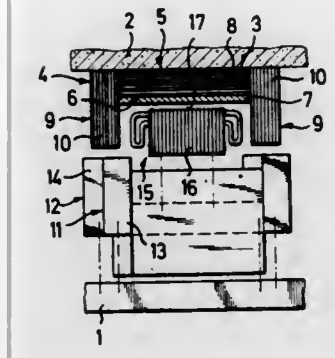
Gunther Winkle, Munich, Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munchen, Germany

Filed Jan. 16, 1973, Ser. No. 324,131

Claims priority, application Germany, Jan. 17, 1972, 2202027

Int. Cl. B61b *13/08*

U.S. Cl. 104—148 MS **10 Claims**



1. A suspension and drive system for an electromagnetically suspended and guided vehicle, the system comprising a track, a magnetically permeable rail extending along said track, a vehicle adapted to travel along said track, a first electromagnetic means on said vehicle confronting said rail and juxtaposed therewith for producing a first closed magnetic field therethrough for suspending and guiding said vehicle relative to said track, a continuous high-conductivity reaction layer formed longitudinally directly on said rail and integral therewith while having an electrical conductivity in excess of that of the body of the rail, and a one-sided linear induction motor forming second electromagnetic means carried by said vehicle independently of said first electromagnetic means and interacting with said layer for propelling said vehicle along said track.

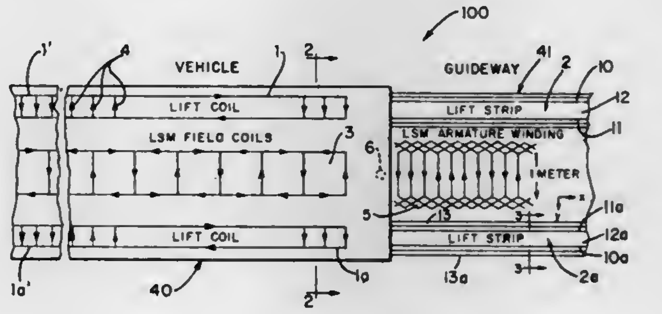
3,850,109
TRANSPORTATION SYSTEM EMPLOYING MAGNETIC LEVITATION, GUIDANCE AND PROPULSION

Richard D. Thornton, Concord, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 30, 1973, Ser. No. 355,382

Int. Cl. B61b *13/08*

U.S. Cl. 104—148 SS **11 Claims**



1. A transportation system employing magnetic levitation having, in combination, a vehicle carrying a number of relatively long and thin superconducting coils capable, when energized, of generating fields at least of the order of 0.1 to 0.4 Tesla at a distance of 10 to 25 centimeters from the vehicle lower surface, said coils being disposed over a substantial length of the vehicle on either side of the lower half of the vehicle and having distributed end turns to minimize loss, a guideway comprising I-strips on either side thereof, said strips being spaced on the order of one-third to one times the vehicle width and located substantially under the corresponding superconducting vehicle coils, said I-strips comprising two longitudinal conducting members with conducting material between the longitudinal members but with most of the mass concentrated in the longitudinal members, the orientation angle and the location of the I-strips being such as to provide both levitation and guidance to the vehicle.

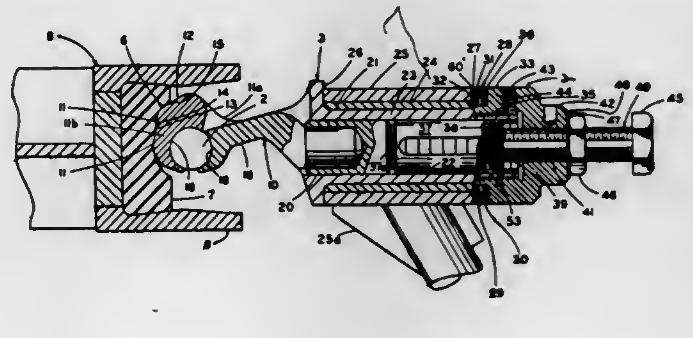
3,850,110
AN AERIAL ROPE TRAMWAY

Walter V. Berry, Pittsburgh, and Paul J. Hunziker, Zelienople, both of Pa., assignors to Pullman Incorporated, Chicago, Ill.

Division of Ser. No. 174,754, Aug. 25, 1971, Pat. No. 3,785,296. This application May 14, 1973, Ser. No. 359,812

Int. Cl. B61b *7/20*

U.S. Cl. 104—223 **3 Claims**



1. An aerial rope tramway including a cable, an outer fixed cable clamp, an inner movable clamp, a chair connected to

the outer clamp and resilient means for urging the movable clamp against said cable between the fixed and movable clamps,
- said outer clamp having a cable end including a knuckle means,
- a bull wheel for driving the cable and including a resilient liner, said liner having a surface means including a concave surface means for receiving and engaging the knuckle means of the outer clamp,
- said knuckle means having an outer generally vertical flat surface and an upper generally partially horizontal and diagonal surface connected to the upper end of said flat surface and extending in a sloped direction upwardly and outwardly away from said surface means of said resilient liner, and
- said concave surface means of said resilient liner being complementary to said flat and upper surfaces of said knuckle means for effectively restraining the chair from swinging outwardly by centrifugal force as it comes around the bull wheel during operation of said tramway.

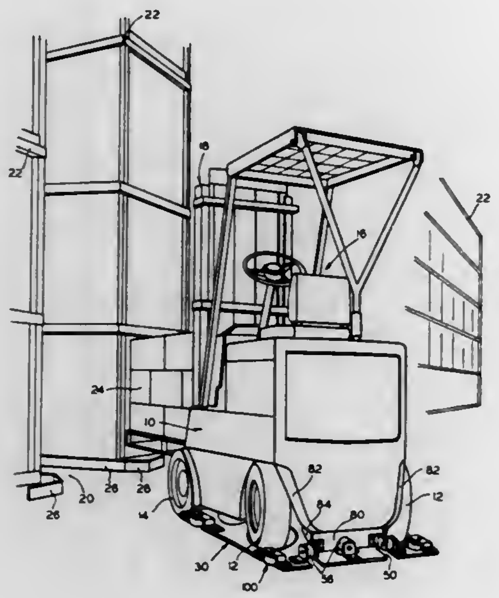
3,850,111
VEHICLE MOUNTED PLATE HAVING GUIDE ROLLERS

Howard C. Hansen, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Oct. 23, 1973, Ser. No. 408,786

Int. Cl. B60r *19/00;* **B61f** *9/00;* **B61g** *19/00*

U.S. Cl. 104—245 **15 Claims**



1. A guide plate assembly for wheeled vehicles having a frame means, comprising means supporting the guide plate assembly from the vehicle frame, said guide plate assembly including a base plate adjacent the vehicle supporting surface and extending in a plane under the vehicle frame and under a plane which passes through the axes of rotation of the wheels, and side guide roller means mounted at each side of the base plate extending at least partially above and peripherally outwardly of the base plate for guiding the vehicle in a track between guide rails.

3,850,112
FILLER DEVICE

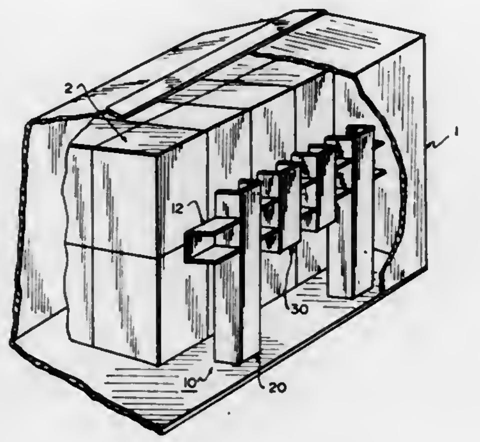
Ray Jaski, 26 Sheffield Ln., Oakbrook, Ill. 60521

Filed May 13, 1971, Ser. No. 143,068

Int. Cl. B61d *45/00;* **B60p** *7/16*

U.S. Cl. 105—489 **8 Claims**

1. A filler device to prevent lateral movement of a load having a plurality of stacked items lying on a horizontal support surface within a transporting vehicle by plugging the space between a lateral side of the load and the sidewall of the transporting vehicle comprising
- a horizontal disposed U-shaped means having a pair of arms and a base creating a bearing surface substantially contacting at least a pair of items adjacent the interface between two of the stacked items and extending along the longitudinal axis thereof in confrontation to a lateral wall of a load,
- a plurality of vertical support members respectively having at least one longitudinal edge and a base surface adapted to confront the sidewall of a transporting vehicle carrying the load,
- said arms of the U-shaped means and the edge of the plurality of support members each including complimentary attachment means adapted to integrally interconnect the U-shaped means and the plurality of support members to plug the space between the load and the transporting vehicle for stabilization of the load therein,
- said support members having a lower end in bearing contact with the horizontal support surface of the transporting vehicle to provide substantially sole vertical support of the U-shaped means,
- a plurality of vertical elements having a U-shaped configuration and having a length less than the length of the vertical support member and
- said vertical elements having a bearing surface to contact the sidewall of the transporting vehicle to provide additional support of the load.



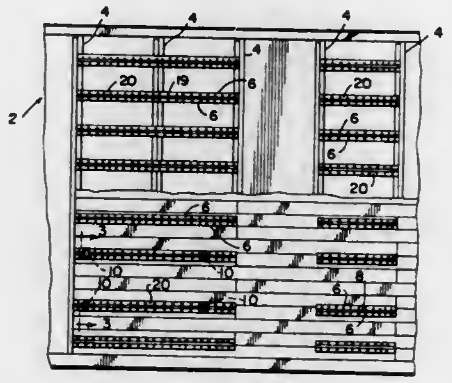
3,850,113
LADING RETENTION APPARATUS

George Sichak, Chicago, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Apr. 29, 1974, Ser. No. 465,196

Int. Cl. B61d *45/00*

U.S. Cl. 105—482 **11 Claims**



1. A lading retention device for restraining lading within a cargo compartment comprising:
- a pair of elongated lengthwise extending and vertically spaced belt rails, each belt rail having a first wall engaging inner plate portion and a second intermediate sloped plate portion and third outer plate portion generally parallel to the inner plate portion, said outer plate portion having a plurality of apertures extending along its length, each outer portion of each rail facing the outer portion of the other rail and defining an elongated lengthwise slot between the rails when placed on the wall of a cargo compartment,
- an anchor for a lading strap and having a base disc portion adapted to be disposed in a pocket formed behind the two rails between the sloped plate portions thereof and said anchor having a shaft portion extendable through and outwardly of the slot between the rails and said anchor having a belt coupling portion with a belt slot and connecting with said shaft portion outwardly of said rails,
- said elongated lengthwise slot between said rails being of sufficient height to only allow the shaft portion through but not the disc portion, and
- said disc portion having lugs projecting outwardly thereform and couplable in vertically spaced apertures of the adjacent rails for holding the anchor in a fixed position when tied to lading.

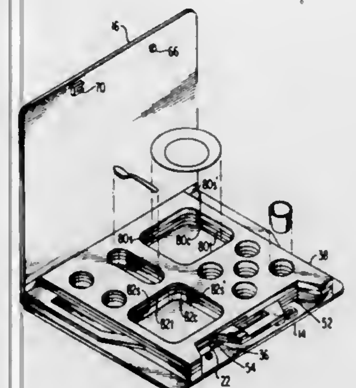
3,850,114
PORTABLE ARTICLE CONTAINING TABLE CONSTRUCTION

Harry Ganteaume, Hacienda San Pablo, Turmero Edo. Aragua, Venezuela

Filed Mar. 26, 1973, Ser. No. 344,627

Int. Cl. A47b *3/00, 85/00*

U.S. Cl. 108—38 **7 Claims**



1. A portable collapsible table construction for containing articles when collapsed comprising: a central table section, a pair of lateral table sections secured to said central table section on respective opposite sides thereof for pitoval movement about generally parallel axes between first positions wherein said lateral and central table sections lie in a substantially common plane one with the other to define a substantially continuous co-planar table surface and second positions wherein said lateral table sections lie in spaced generally parallel planes extending generally normal to a plane containing said central table section, a central support carried by said central table section for supporting said table when said lateral table sections lie in said first positions thereof and lying in a plane generally parallel to and between the planes containing said lateral table sections when in their second positions, a pair of lateral table supports pivotally connected to said central support for pivotal movement about axes generally normal to said parallel axes, said lateral table support being pivotal between first positions underlying and supporting the lateral table sections when said lateral table sections lie in their first positions and second positions in planes generally parallel to and between the planes containing the lateral table sections when the latter lie in their second positions, a pair of terminal supports respectively pivotally secured to said lateral table supports adjacent the edges thereof remote from the pivotal connections between the lateral table supports and the central support, said terminal supports being pivotal relative to said lateral table supports between first positions underlying and supporting said lateral table sections when the lateral table sections lie in their first positions and second positions lying in planes generally parallel to and between the planes containing said table sections when the latter lie in their second positions, each of said lateral table supports, said central support and said terminal supports having a plurality of openings therethrough in respective registration one with the other when said lateral table supports and said terminal supports lie in their second positions to define a plurality of discrete chambers having a depth substantially equal to the combined thicknesses of said lateral, terminal and central supports for receiving and storing articles, said lateral table sections constituting in part end closure members for said chambers when the lateral table sections lie in their second positions, and means for releasably securing said lateral table sections in their second positions with said lateral table supports, said terminal supports, and said central support disposed therebetween and in generally parallel planes therewith.

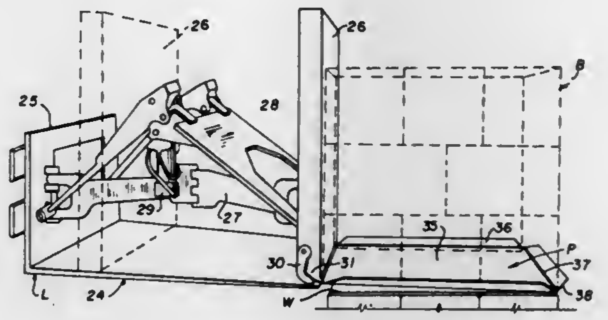
3,850,115
SLIP PALLET OF EXPANDED FOAM MATERIAL

Ronald C. Mackes, Northglenn, Colo., assignor to BQB Industries, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 243,507, March 27, 1972, Pat. No. 3,776,145. This application Sept. 17, 1973, Ser. No. 397,666

Int. Cl. B65d *19/00*

U.S. Cl. 108—51 **3 Claims**



1. A slip pallet for holding a load of cardboard boxes, or the like, and carried by a platen which slides underneath the slip pallet and its box load for loading and unloading the same onto and off from the platen, said pallet comprising:
- a tough, pliable sheet of single thickness of synthetic thermoplastic resin having a thickness in the range of approximately 20 to 125 mils;
- a central area whereon the box load is placed;
- a tab means alongside at least one edge of this central area folded upwardly along the edge of the central area to be gripped and held whenever the platen is moving underneath the pallet from the tab side;
- a modified upper surface at the central area adapted to enhance the contact thereof with the cardboard surfaces of the box load upon the pallet sufficient to increase the static frictional resistance between the box load and the pallet to a degree which exceeds the sliding frictional resistance between the pallet and the platen, and
- wherein said synthetic thermoplastic resin is reduced in density by foaming the same.

3,850,116
SLIP PALLET REINFORCED WITH FILLERS

Ronald C. Mackes, Northglenn, Colo., assignor to BQP Industries, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 243,507, March 27, 1972, Pat. No. 3,776,145. This application Sept. 17, 1973, Ser. No. 397,669

Int. Cl. B65d *19/00*

U.S. Cl. 108—51 **12 Claims**

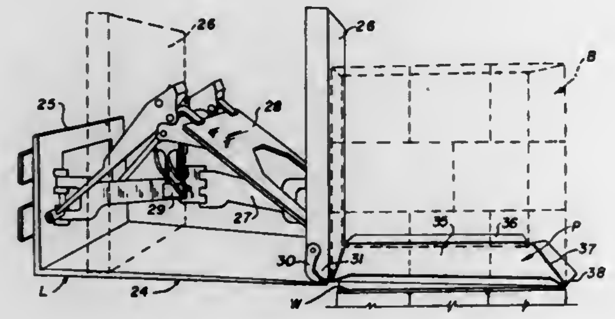
1. A slip pallet for holding a load of cardboard boxes, or the like, and carried by a platen which slides underneath the slip

pallet and its box load for loading and unloading the same onto and off from the platen, said pallet comprising:

a tough, pliable sheet of single thickness of synthetic thermoplastic resin having a thickness in the range of approximately 20 to 125 mils;

a central area whereon the box load is placed;

a tab means alongside at least one edge of this central area folded upwardly along the edge of the central area to be gripped and held whenever the platen is moving underneath the pallet from the tab side;



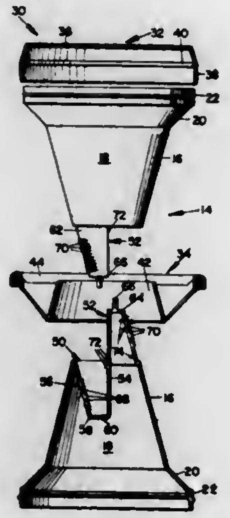
a modified upper surface at the central area adapted to enhance the contact thereof with the cardboard surfaces of the box load upon the pallet sufficient to increase the static frictional resistance between the box load and the pallet to a degree which exceeds the sliding frictional resistance between the pallet and the platen, and

a filler blended into the resin.

3,850,117
KNOCK-DOWN FURNITURE

Arnold C. Martinelli, Lake Shore Dr., Rawdon, Quebec, Canada

Filed Jan. 3, 1973, Ser. No. 320,832
Int. Cl. A47b *3/06*
U.S. Cl. 108—150 **5 Claims**

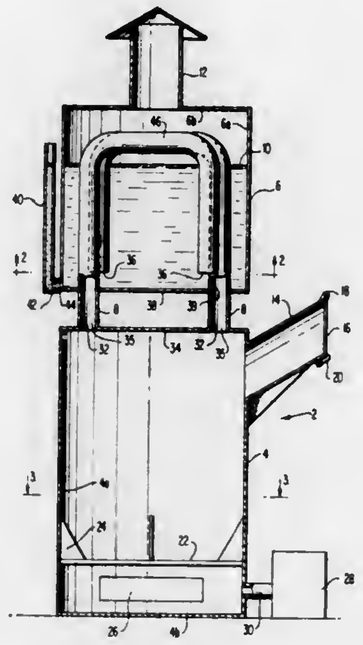


1. Patio or garden furniture of the knock-down type comprising a pedestal and a top releasably affixed thereto, the pedestal comprising a pair of identical half-parts, each half-part having a recess and a projection complemental to each other, whereby the half-parts may be mated when inverted with the projections of each half-part fitting into the recesses of the other half-part in telescopic manner and wherein the top is a table top having a pair of concentric locking rings depending therefrom, the locking rings being selectively engageable with pedestals of different sizes.

3,850,118
ANTI-POLLUTING INCINERATOR

Lesley W. Blair, 605 Third Ave., N.W., Pocahontas, Iowa 50574

Filed Aug. 27, 1973, Ser. No. 391,823
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **5 Claims**



1. An anti-pollution incinerator comprising,

a closed firebox,

a water tank supported above the firebox, with the bottom of the water tank spaced above the firebox, whereby to reduce the transfer of heat from the firebox to the tank,

curved tube means extending upwardly from the firebox and having a downwardly directed open end terminating above the bottom of the water tank,

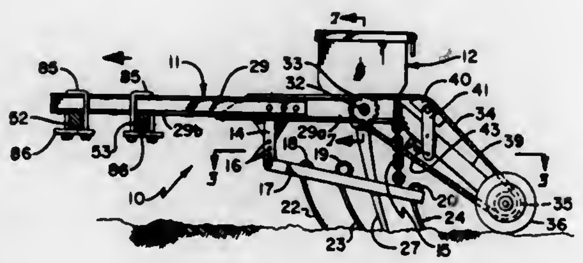
means for exhausting combustion gases from the top of the tank, and

means for forcing air into the firebox, whereby to supply combustion air to material in the firebox and to force gaseous products of combustion via the curved tube means into water in said tank.

3,850,119
COVER CROP PLANTER

Gene V. Wolsky, 265 Viking Dr., Valley City, N. Dak. 58072

Filed Jan. 2, 1973, Ser. No. 320,095
Int. Cl. A01c *5/00*
U.S. Cl. 111—85 **6 Claims**



1. A cover crop planter for planting relatively narrow rows of a cover crop while the field is being cultivated, said cover crop planter being designed for attachment to and support by a relatively wide tillage implement having a frame comprising a plurality of spaced beam members extending longitudinally of said implement and transversely to the direction of movement thereof, tillage tools secured to said frame, wheels for supporting the frame, and means for raising the frame with respect to the wheels to withdraw the tillage tools from engagement with the ground, said planter comprising:

a planter frame having a forwardly extending portion designed to be placed over and engage at least two spaced beam members of a tillage implement frame, said planter frame having an overall width which is relatively small compared with the width of such a tillage implement,

at least three longitudinally and laterally spaced, readily detachable, clamping means carried by said planter frame and positionable to clamp rigidly said forwardly extending portion of said planter frame to two spaced longitudinal beam members of such an implement frame so that when said implement frame is raised with respect to its wheels the entire planter frame is also raised,

a seed hopper carried by said planter frame and having a plurality of seed delivery spouts extending downwardly therefrom to adjacent the ground,

said delivery spouts being disposed in a row extending transversely of the planter,

a first row of resilient earth working tools directed rearwardly adjacent their point of contact with the earth, said earth working tools being carried by a tool support adjustably secured to said planter frame and being disposed ahead of said spouts, each of said tools being aligned with one of said spouts for forming seed receiving grooves,

a second row of resilient earth working tools directed rearwardly adjacent their point of contact with the earth, said second row of tools also being carried by said support but being disposed to the rear of said spouts, each earth working tool being laterally displaced from a corresponding one of the spouts so as to act to cover the seeds in the grooves,

means for pivotally securing said tool support to said frame at any of various vertical pivotal positions to define a vertically adjustable horizontal pivotal axis for said tool support and to enable the vertical position of the tools to be adjusted to accommodate for variations in the height of the frame of the tillage implement to which the planter is attached,

and a flexible member for limiting the downward pivotal movement of said tool support,

said cover crop planter having no elements which control the operation of the cultivator to which it is attached so that upon release of said clamping means and detachment of said planter from the cultivator, the latter can be used without alteration as a cultivator.

3,850,120
NARROW GAUGE TUFTING MACHINE

Obie R. Jackson, Dalton, Ga., assignor to B & J Machinery Company, Inc., Dalton, Ga.

Filed Feb. 1, 1973, Ser. No. 328,839
Int. Cl. D05c *15/22*
U.S. Cl. 112—79 R **5 Claims**

1. A tufting machine for forming a narrow gauge pile fabric or the like comprising

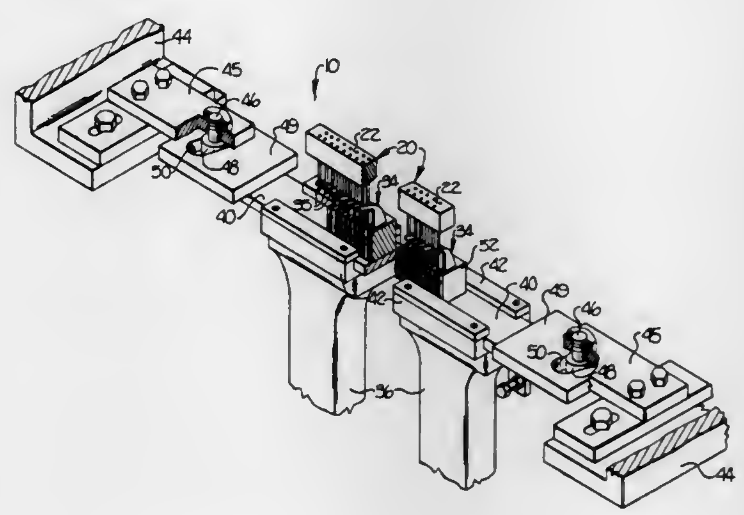
a frame,

means mounted on said frame for feeding elongate backing material longitudinally along a path of travel,

multiple pairs of tufting needles mounted on said frame for reciprocation in a direction transverse to the path of travel and arranged to carry yarns through the backing material to form rows of tufts therein, the needles of each of said pairs being both longitudinally and laterally spaced from each other to define an oblique direction, and said pairs of needles being laterally spaced from each other a distance substantially corresponding to the lateral spacing of the needles of each pair so that the rows of tufts formed in the backing material are substantially equally spaced,

means for concurrently reciprocating said multiple pairs of tufting needles to carry the yarns through the backing material, and

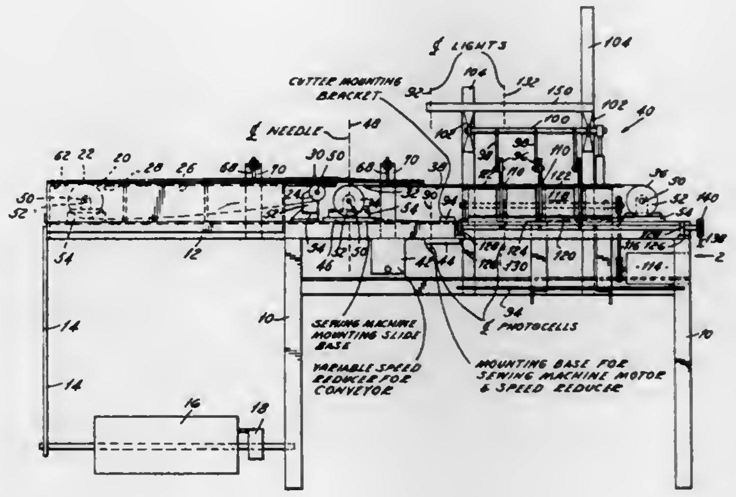
looper means mounted on said frame and operatively associated with said pairs of needles for forming pile from the yarns carried by the needles, said looper means comprising a plurality of loopers disposed beneath said path of travel of the backing material and corresponding in number to the number of pairs of needles, means mounting said loopers for reciprocation in said oblique direction such that each looper is adapted to operatively engage both of the needles of the associated pair, and means for reciprocating said loopers in said oblique direction and in timed relation with the reciprocation of said pairs of tufting needles.



3,850,121
HEMMING MACHINE

Billy Logan Speer, Campbellsville, Ky., assignor to Spear Systems, Inc., Campbellsville, Ky.

Filed Nov. 6, 1972, Ser. No. 304,064
Int. Cl. D05b *35/02*
U.S. Cl. 112—121.29 **10 Claims**

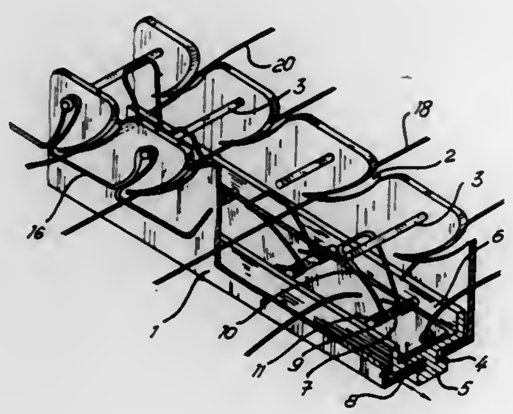

℄ LIGHTS
CUTTER MOUNTING BRACKET
℄ NEEDLE
SEWING MACHINE MOUNTING SLIDE BASE
VARIABLE SPEED REDUCER FOR CONVEYOR
℄ PHOTOCELLS
MOUNTING BASE FOR SEWING MACHINE MOTOR & SPEED REDUCER

1. A hemming machine, comprising; means to convey a piece of cloth past sewing means, progressive folding means adjacent said conveyor means adapted to double fold an edge of the cloth piece prior to sewing, said folding means including progressive elevating means to lift an edge portion of the cloth piece, progressive forming means overlying and parallel to said conveyor having a marginal edge extending angularly to the path of said conveyor under said elevating means to double fold and tuck a portion of the cloth piece under said elevated edge portion of said cloth piece.

3,850,122

BROKEN THREADS DETECTING DEVICE IN EMBROIDERY MACHINES

Daniele Daeli, Daverio, Italy, assignor to Metalmeccanica, S.p.A., (Varese), Italy
Filed Mar. 2, 1973, Ser. No. 337,745
Claims priority, application Italy, Mar. 25, 1972, 22399/72
Int. Cl. D05b *69/36;* **B65h** *63/02*
U.S. Cl. 112—218 R **6 Claims**



1. A device for detecting the breaking of a thread, particularly on an embroidery machine with automatic color and ratio change

comprising a spring biased oscillatable lever for each needle defining a first electrical contact; a second fixed electrical contact for each lever, said lever being movable under said spring bias with respect to said second fixed electrical contact and retained in a position out of contact with said fixed contact due to the tensioning of the corresponding thread and being spring biased to a position of closed contact upon ceasing of said tensioning due to the breaking of said thread;

a disconnecting means associated with said lever energizable to bring simultaneously out of possible contact with its respective fixed electrical contact all of the oscillatable levers defining electrical contacts at the start of each color and/or ratio changing step on the machine; and retractable spring means to immediately thereafter return into operation only the contact-bearing levers corresponding to the needles starting to work, said spring means operating in response to the tensioning of the threads of said needles starting to work.

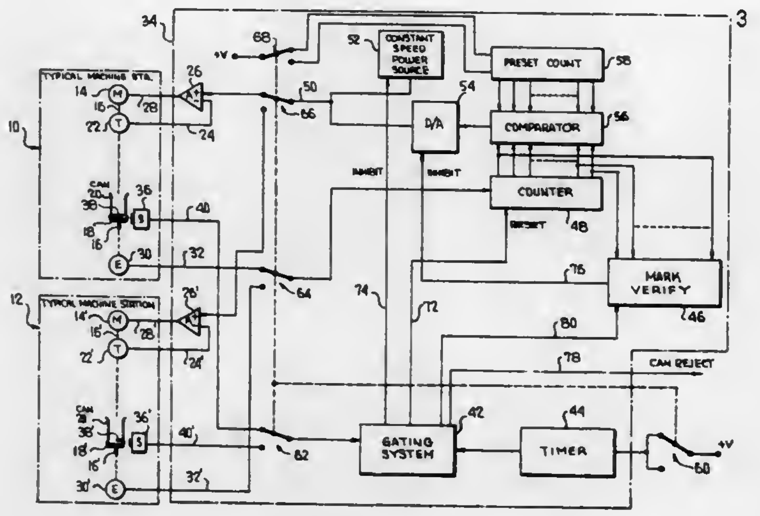
3,850,123

CAN REGISTRATION AND POSITION SYSTEM

James J. LaRocca, LaGrange; John G. McGrail, River Forest, and Richard A. Mazur, Downers Grove, all of Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed Aug. 21, 1973, Ser. No. 390,242
Int. Cl. B21d *43/14*
U.S. Cl. 113—113 C **11 Claims**

1. In a machine for performing a work operation on a can or like tubular body while the body is in a predetermined position, the body having circumferentially extending orientation means thereon, the combination of:

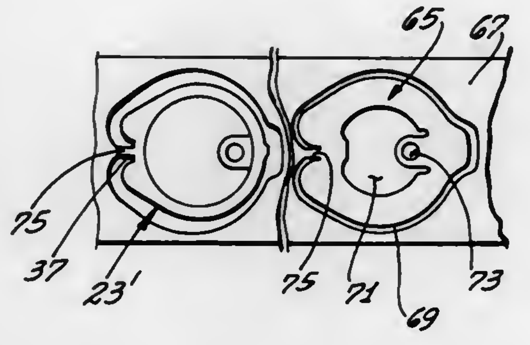
- a support for said body;
- drive means for rotating said support;
- scanning means positioned to look fixedly at said body for producing signals indicative respectively of the presence and absence of said orientation means as the body is rotated with respect to said scanning means; and
- control means for controlling said drive means to stop said support with said body in said predetermined position, said control means including pulse generating means connected with said support for generating a large number of pulses per revolution of said body, counter means for counting said pulses starting from a selected reference point of said orientation means, and variable power source means connected to said counter means and to said drive means for supplying said drive means with decreasing power in response to increasing count by said counter means.



3,850,124

EASY OPENING CONTAINER WALL

Omar L. Brown, Dayton, Ohio, assignor to Ermal C. Fraze, Dayton, Ohio
Division of Ser. No. 64,291, Aug. 17, 1970, Pat. No. 3,720,349. This application Feb. 12, 1973, Ser. No. 331,645
Int. Cl. B21d *51/44*
U.S. Cl. 113—121 C **16 Claims**



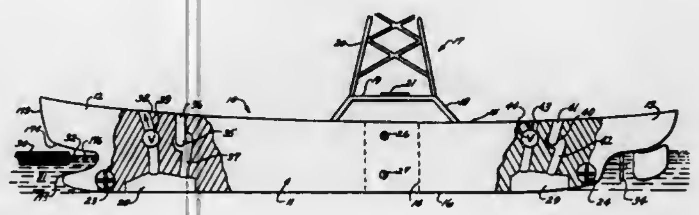
1. A method of making a tab of the type attachable to an easy opening container wall to initiate severance of a segment of the container wall wherein said tab includes a body having a lifting end movable away from the container wall and an attachment portion for fastening to the container wall and means defining an opening to accommodate a user's finger, said method comprising:

- providing a strip of sheet material,
- forming in said strip a tab blank having a body and an inner and outer peripheral surface,
- said tab blank being integrally connected to said strip by web means at a junction located at that portion of the blank formable into the lifting end of said tab,
- forming an inner curl on the inner peripheral surface of said blank to protect the user's finger from laceration,
- forming an outer curl on the outer peripheral surface of said blank which is continuous along the longitudinal sides of the tab body, said outer curl in the region of said web means including portions adjacent to but spaced from said web means, and
- severing said web means at the junction of said body so that the line of severance is recessed towards said body whereby said adjacent portions of said outer curl prevent contact between a user's finger and said line of severance.

3,850,125

ICEBREAKING

Edward O. Anders, Houston, Tex., assignor to Global Marine, Inc., Los Angeles, Calif.
Filed Sept. 24, 1971, Ser. No. 183,466
Int. Cl. B63b *35/10*
U.S. Cl. 114—40 **31 Claims**



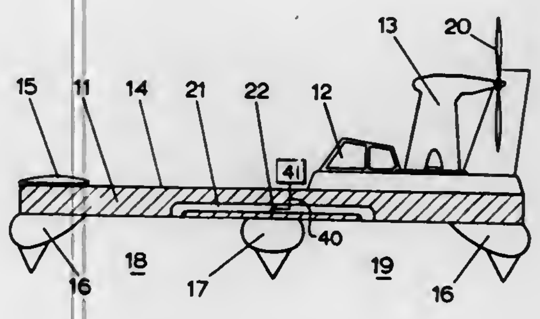
1. An improved vessel for use in ice-covered waters comprising

- a. a hull having
  - 1. a bow portion of icebreaking configuration and
  - 2. a pitching chamber therein spaced along the hull from the longitudinal center of bouyancy thereof and communicable through the hull below the waterline,
- b. means selectively operable for cyclically applying compressed air to the chamber essentially directly to water therein for rapidly displacing water substantially completely therefrom and for rapidly admitting water to the chamber thereby to directly shift the position of the center of buoyancy along the vessel without change in the location of the vessel center of gravity to produce cyclic pitching movements of the hull, which cyclic motions have a period measured in terms of several seconds and an amplitude of at least a foot measured at the ends of the hull, and
- c. means for operating the selectively operable means at a selectable frequency within a range of frequencies each of which has a period of several seconds.

3,850,126

FLUID CUSHION SUPPORTED VEHICLES

John Charles Leonard, Isle of Wight, England, assignor to British Hovercraft Corporation Limited, Yeovil, Somerset, England
Filed Apr. 19, 1973, Ser. No. 352,678
Claims priority, application Great Britain, May 5, 1972, 21071/72
Int. Cl. B63b *1/38*
U.S. Cl. 114—67 A **9 Claims**



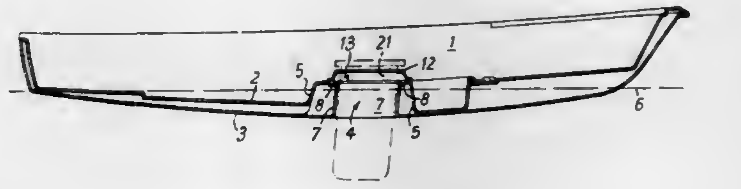
1. A payload carrying ground effect vehicle comprising:

- a vehicle structure having a front portion and a rear portion, the front portion comprising means for carrying the major part of the weight of the payload,
- boundary means extending downwardly from the vehicle structure for defining a cushion area beneath said front and rear portions, the boundary means restricting the lateral escape of pressurized fluid within the cushion area so that pressurized fluid within the cushion area supports the weight of the vehicle,
- partition means extending transversely across the vehicle for separating the entire cushion area into a forward cushion compartment and a rearward cushion compartment situated below the front and rear portions of the vehicle, respectively,
- passage means for delivering primary pressurized fluid from the vehicle body directly and simultaneously into both said forward and said rearward compartments, said passage means defining means for delivering a higher volume flow of pressurized fluid to the forward compartment to create a higher cushion pressure in the forward compartment, such that the pressures in the forward and rearward compartments will provide correct trim of the vehicle when operating with full payload,
- and at least one passage placing said forward and rearward compartments into fluid communication with each other, a variable valve means in said passage for varying the size of the passageway and hence the flow of fluid between said forward and rearward compartments to adjust the pressure difference between said forward and rearward compartments and correct the trim of the vehicle when it is carrying less than a full payload.

3,850,127

CENTREBOARD CASING CONSTRUCTIONS FOR SAILING BOATS

David C. Thorpe, London, England, assignor to Richmond Marine Limited, Twickenham, Middlesex, England
Filed Nov. 13, 1972, Ser. No. 305,900
Claims priority, application Great Britain, Jan. 3, 1972, 00075/72
Int. Cl. B63b *41/00*
U.S. Cl. 114—138 **18 Claims**



1. A new article of manufacture comprising a device for extending the vertical height of a centre-board slot in a sailing boat hull of the type including a hull bottom having a centre-board slot therethrough and the slot extending above the hull bottom through a centre-board housing projecting upwardly from the hull bottom, said device including a vertically extending casing the lower part of which has a horizontally extending aperture adapted for alignment with an upper end of the slot in the centre-board housing, said aperture being of a horizontal length to have received therein the full horizontal dimension of the centre-board for which said device is intended, and connecting means for connecting and sealing the lower part of the casing to the upper part of the centre-board housing.

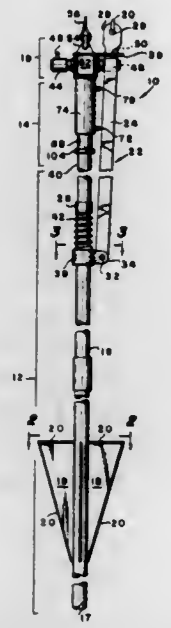
3,850,128

VIBRATORY ANCHOR

Jack Lovell, McLean, Va., assignor to Ocean Science and Engineering, Inc., Rockville, Md.
Filed July 16, 1973, Ser. No. 379,707
Int. Cl. B63b *21/26*
U.S. Cl. 114—206 R **4 Claims**

1. An anchor assembly for penetrating formations beneath a body of water comprising a vibratory drive unit, an anchor

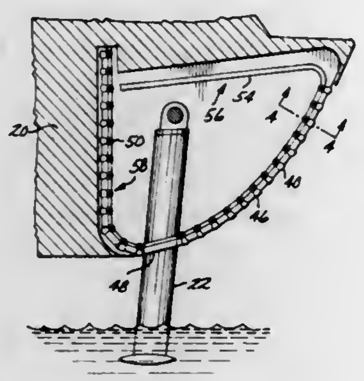
section, connecting means releasably connecting said drive unit to said anchor section, said anchor section comprising an elongated hollow tubular shaft having a top end and a bottom end, a plurality of equi-spaced plates tapered from top to bottom attached to said shaft adjacent the bottom end and extending radially outwardly from said shaft, beveled edges on said plates, said bottom end of said shaft being open and having tapered edges and extending below said plates, said connecting means connecting the top end of said shaft to said drive means; said connecting means comprising an annular housing connected to said drive unit, an annular split sleeve slidably received in said housing, a lug on the top end of said shaft and received in said split sleeve, said housing causing said sleeve to tightly grip said lug, and means for selectively shifting said sleeve out of said housing to release said lug, tether means and means attaching said tether means to said shaft.



3,850,129

CONTINUOUS BOW CLOSURE FOR HYDROFOIL BOAT

Nicolaas De Vogel, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Sept. 28, 1973, Ser. No. 401,787
Int. Cl. B63b *1/28*
U.S. Cl. 114—66.5 H **11 Claims**



1. A continuous strut-hull closure means for hydrofoil boats employing retractable struts, comprising in combination:

a. strut means pivotally mounted and supported within said hydrofoil hull and adapted to rotate along one defined arc about said strut means pivot support from a hydrofoil boat hull-borne strut retracted position towards a hydrofoil foil-borne strut extended position, and vice versa;

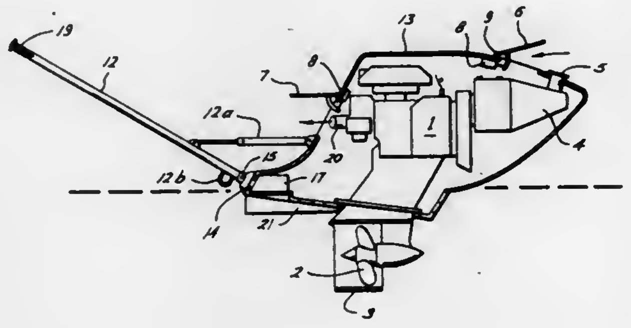
b. said hull provided with a slot, which is disposed parallel to an imaginary line connecting gunwale to keel, to accomplish strut/hull protrusion and strut arc movement through said slot length between said retracted position to said extended position, and

c. an elongated closure means, slidably arranged in said slot for continuously complementing and closing said slot, comprising a first, second and third portion wherein said second portion is engaged about said strut at said strut/-hull protrusion and wherein said third portion closes said slot in said strut retracted position and said first portion closes said slot in said strut extended position.

3,850,130

WATER SKI TOWING DEVICE

Ernest E. Heuschober, Rt. 5, Paris, Tex. 75460
Filed Feb. 16, 1973, Ser. No. 333,181
Int. Cl. A63c *11/10*
U.S. Cl. 115—6.1 **1 Claim**

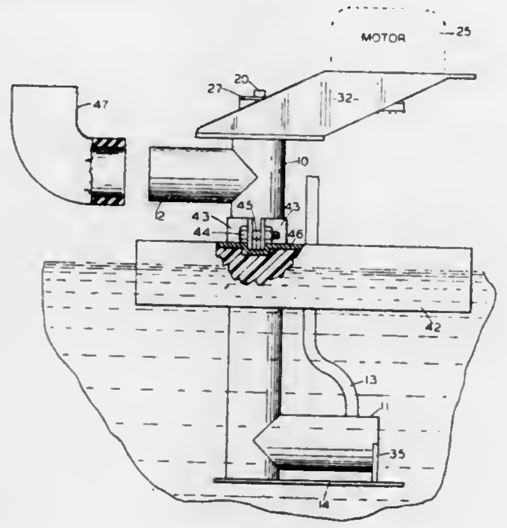


1. In a towing device for use on water, an engine, a propulsion means driven by said engine, a housing in which said engine is mounted, means for directing a flow of air through said housing and electronically actuated means for sealing said housing against water entrance respondent to upset of the device, a pivotally mounted handle on said housing movable to a selected rigid position and engine control means mounted in said handle and operable at the extended end thereof, said housing being provided with laterally extended wings having a buoyant filler, and having downwardly extended, tapered stabilizing fins similarly filled with a buoyant filler.

3,850,131

MOBILE LIQUID-AERATING PUMP

James H. Jones, Rt. 1, Box 134, Fordyce, Ark. 71742
Division of Ser. No. 263,811, June 19, 1972, Pat. No. 3,807,708. This application Jan. 16, 1974, Ser. No. 433,963
Int. Cl. B63h *11/08*
U.S. Cl. 115—11 **3 Claims**

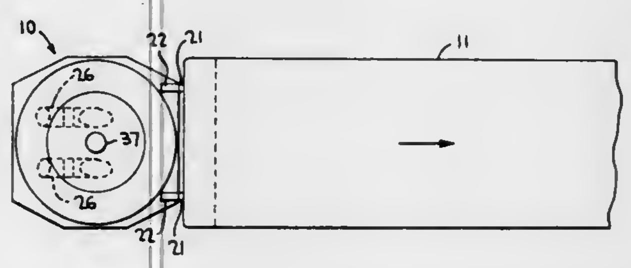


1. A self-propelled fish pond aerating craft comprising a water-aerating pump, said pump having a vertically disposed tubular casing and oppositely facing tubular intake and discharge members joined to the casing at the respective lower and upper ends thereof, a float adapted to support said pump while partially submerged in a body of water, adjustable clamping means secured to said casing and engaging the upper surface of said float, said clamping means being positioned to dispose the discharge member above the top of the float and the intake member below the bottom of the float, an air-water mixing chamber mounted within said intake member, a tubular air inlet member in communication with said mixing chamber and extending upwardly through said float and terminating thereabove, and rotatable impeller means in said casing effective to move air and water from the respective inlet and intake members to said discharge member, said impeller means turbulently mixing the air and water, the jet reaction of the water moving through the intake member combining with the jet reaction of the air-water mixture moving through said discharge member to propel the craft along a path defined by a vertical plane passing through the axes of the intake and discharge members.

3,850,132

STEERING UNIT FOR MARINE CRAFT

William M. Jackson, 1701 Lobdell No. 92, Baton Rouge, La. 70806
Continuation of Ser. No. 247,718, April 26, 1972, abandoned. This application Jan. 2, 1974, Ser. No. 429,853
Int. Cl. B63b *21/00*
U.S. Cl. 115—12 R **8 Claims**



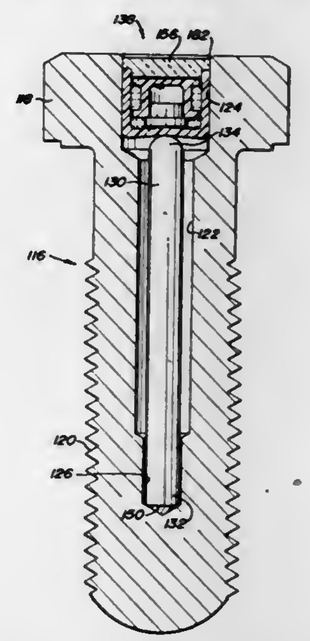
1. A marine unit capable of being mounted either forward or aft of a barge for steering purposes, comprising a hull having a horizontal bottom wall section and a side wall section of circular horizontal cross-section varying in diameter between the smallest diameter at said bottom wall section to the largest at the top of said side wall section, a flat deck extending over the entirety of said hull, means mounting said hull to the underside of said deck for rotation of said hull about its central vertical axis relative to said deck, means on said deck for connecting it to the barge thereby rendering it stationary relative to said hull, propulsion devices for movement of fluid therethrough between the forward and aft ends thereof and being mounted within said hull for rotation therewith on opposite sides of said vertical axis, and means for actuating each of said propulsion devices independently of one another, whereby actuation of both said propulsion devices together serves to propel the unit and barge forwardly while actuation of one of said propulsion devices serves to rotate said hull with respect to said deck for steering of the barge by said propulsion devices in a prescribed direction.

3,850,133

STRAIN INDICATOR AND METHOD

Robert Carol Johnson, Pittsburgh, Pa., assignor to Modulus Corporation, Cleveland, Ohio
Filed Nov. 29, 1972, Ser. No. 310,445
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 R **16 Claims**

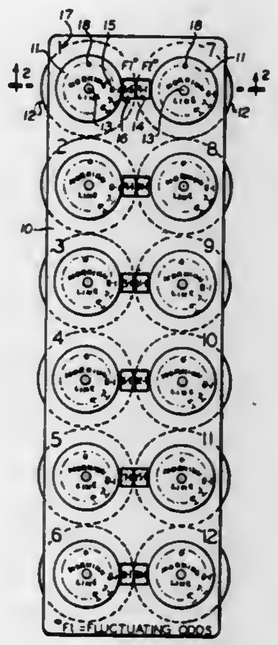
1. An indicator comprising in combination:
a first member,
a second member fastened to said first member and having a first end and a second end,
a fluid holding member having a window,
said second member being located entirely outside of said fluid holding member,
said fluid holding member fastened to said first member adjacent said second end of said second member,
a light-absorbing indicator fluid in said fluid holding member,
an indicator member disposed in said fluid, said indicator member including an indicator area disposed substantially adjacent said window,
means maintaining said indicator area in close proximity to said window with said first member in an unstressed condition,
means operable to move said indicator member in response to movement of said second member, whereby;
upon a change of length of said first member as a result of a stressed condition in said first member said second member and said indicator member are caused to move and said indicator fluid is caused to flow between said indicator area and said window thus giving a visual indication of a change in length of said first member.



3,850,134

TALLYING DEVICE

Vincent J. Colasuono, 935 Utica Ave., Brooklyn, N.Y. 11203
Filed Aug. 8, 1973, Ser. No. 386,681
Int. Cl. G09f *9/00*
U.S. Cl. 116—133 **13 Claims**



1. A tallying device for indicating two values for visual comparison thereof comprising:

- a. a supporting sheet,
- b. an upper disc rotatably mounted on the upper side of the support sheet at a fixed location,
- c. a lower disc rotatably mounted on the lower side of the support sheet at a fixed location, for rotation independently of the rotation of the upper disc, the lower disc being coaxial with respect to the upper disc and being of greater diameter than the upper disc, the lower disc forming with the upper disc, a disc pair,
- d. the supporting sheet extending over at least a portion of the lower disc part disposed radially outwardly of the upper disc,
- e. an aperture in the supporting sheet exposing to viewing a portion of the upper face of the lower disc disposed radially outwardly of the upper disc,
- f. indicia about the peripheral portion of the upper disc representing one of said values, g. indicia about the peripheral portion of the lower disc rotatably under said aperture, representing the other of said values,

whereby the upper disc can be rotated to place said first value alongside said aperture in the supporting sheet, and the lower disc can be rotated to place said second value under said aperture so that it is visible therethrough, the said values thereby being placed side-by-side for comparison.

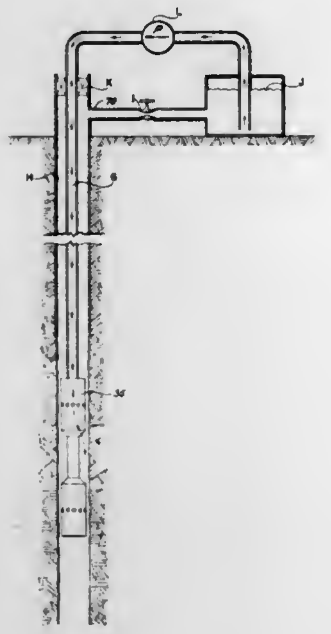
3,850,135
ACOUSTICAL VIBRATION GENERATION CONTROL APPARATUS

Edward M. Galle, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Feb. 14, 1973, Ser. No. 332,472

Int. Cl. B06b *3/00*

U.S. Cl. 116—137 A **12 Claims**



1. Acoustical vibration generation and control apparatus comprising:
- pump means;
- an acoustical oscillator connected with and driven by the pump means;
- an acoustical load means to receive the fluid output of the acoustical oscillator;
- a coupling means connecting the oscillator output with the acoustical load means;
- a fluid return line connected with the acoustical load means;
- control means to selectively control the average pressure in said apparatus.

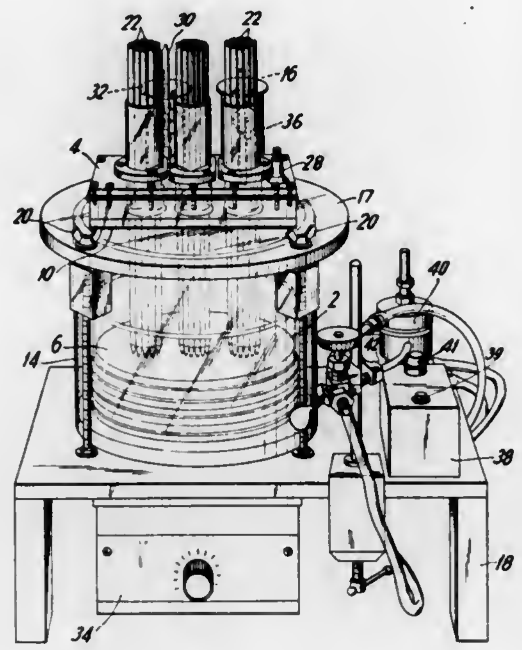
3,850,136
POSITIVE PRESSURE COATING DEVICE

Joseph G. Ruzzo, Schenectady, N.Y., assignor to General Electric Company, Milwaukee, Wis.

Filed May 24, 1972, Ser. No. 256,466

Int. Cl. B05c *7/04*

U.S. Cl. 118—5 **7 Claims**



1. A positive pressure device for coating the internal surfaces of open-ended, hollow, elongated structures with uniform, adherent, fluid coatings, said device comprising
- i. a pressurizable container for said fluid, having an open-ended, hollow, elongated structure-receiving opening in the top thereof;
- ii. removable holding fixture means attached to the top of said container in pressure tight relationship for holding at least one bundle of said open-ended hollow, elongated structures vertically extending into said container, said fixture means being provided with means for gripping said bundle and said fixture means being adapted to provide that the open ends of said elongated structures can be dipped in said fluid in said container;
- iii. means for pressurizing the surface of said fluid when said open-ended hollow, elongated structures are dipped in said fluid;
- iv. a vertical, open-ended hollow, elongated control structure dipping into said fluid; and
- v. means associated with said control structure for interrupting and releasing said pressure responsive to said fluid rising to a predetermined height in said control structure.

3,850,137
APPARATUS FOR USE IN PROCESSES FOR PRODUCING COATINGS ON SURFACES

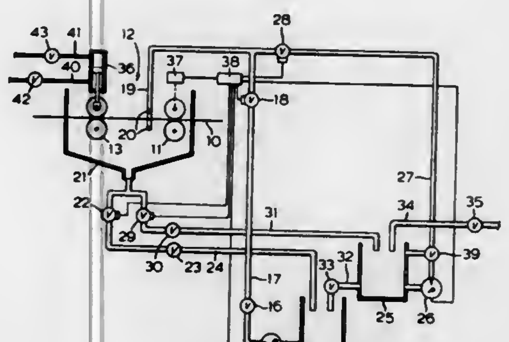
Michael Ward Prust, 397 Kerman Ave., Town of Grimsby, Ontario, and Wayne Charles Glassman, 156 Drewry Ave., Town of Willowdale, Ontario, both of Canada

Filed Aug. 31, 1972, Ser. No. 285,313

Int. Cl. B05c *5/00, 11/10*

U.S. Cl. 118—8 **6 Claims**

1. Apparatus for the application of a liquid composition to a surface of a moving strip at an application station, the apparatus comprising means for moving the strip through the liquid application station, applying means at the station for applying the liquid composition and a rinse liquid to the surface, a source of the liquid composition to be applied, feeding means coperative to feed liquid composition from the source thereof to the applying means, a source of rinse liquid, feeding means operative to feed rinse liquid from the source thereof to the applying means, means responsive to slowing or stopping of the strip resulting in exposure of the strip at the station to liquid composition for longer than a predetermined period of time for stopping operating of the liquid composition feeding means and starting operation of the rinse liquid feeding means to rinse liquid composition from the strip at the station, liquid composition return means at the station for receiving excess liquid composition and returning it to the source thereof, rinse liquid return means at the station receiving excess rinse liquid and returning it to the source thereof; and pipe means including valve means connecting the source of liquid composition with the source of rinse liquid to permit the supply of rinse liquid to the liquid composition source for replenishment of the liquid composition.



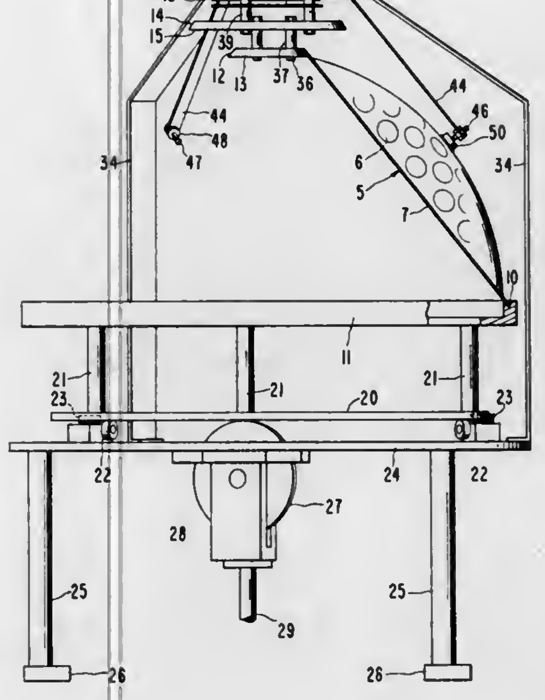
3,850,138
SUBSTRATE CARRYING APPARATUS FOR USE IN COATING EQUIPMENT

Carlo Luigi Patono, Turin, Italy, assignor to Varian S.p.A. Leini, Turin, Italy

Filed June 22, 1972, Ser. No. 265,403

Int. Cl. C23c *13/08*

U.S. Cl. 118—49 **7 Claims**



1. Apparatus for carrying substrates comprising means forming a circular driving track, a plurality of substrate supporting discs each having a circular rim supportable on said track, support means above said track having a circular support surface positioned so that when the lower portion of each said disc rests on said track the upper portion of each said disc rests against said support surface, means for rotating said track, positioning means for holding said discs in fixed spacial relation to each other as they travel around the axis of said track, said positioning means comprising a positioning arm for each of said discs, means interconnecting the upper ends of said arms, a first bearing contact surface on the lower portion of each of said arms, a second bearing contact surface on each of said discs and engageable by one of said first bearing contact surfaces, said first bearing contact surfaces being disengageable from said second bearing contact surfaces by outward movement of said first bearing contact surfaces relative to said second bearing contact surfaces, said arms being flexible in an outward direction to accomplish said disengagement of said first and second bearing contact surfaces, an abutment surface positioned below said interconnecting means to support said interconnecting means when said discs are removed, and said interconnecting means being spaced above said abutment surface when the bearing surfaces on said arms engage the bearing surfaces on said discs.

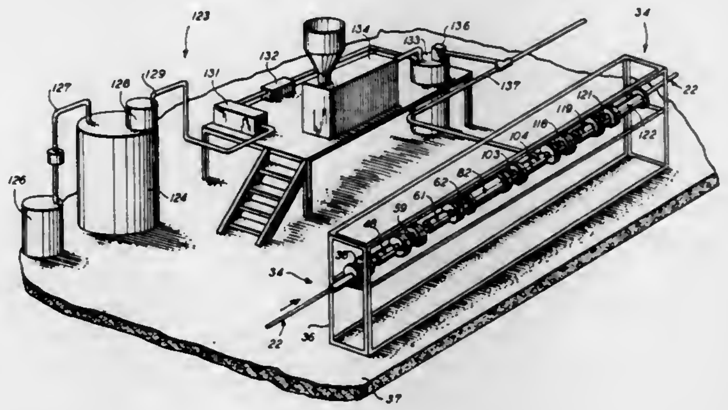
3,850,139
APPARATUS FOR MANUFACTURING WATERPROOF CABLE

Edward L. Franke, Jr., Perry Hall; William J. Hyde, and Randy G. Schneider, both of Baltimore, all of Md., assignors to Western Electric Company, New York, N.Y.

Division of Ser. No. 155,055, June 21, 1971, Pat. No. 3,767,454. This application June 13, 1973, Ser. No. 369,673

Int. Cl. C23c *13/08*

U.S. Cl. 118—50 **3 Claims**



1. Apparatus for applying a compound to a stranded article, which comprises:
- means for evacuating air from interstices of successive portions of the stranded article;
- a compound-applying section;
- means for moving the air-evacuated successive portions of the stranded article through the compound-applying section;
- means for moving amounts of the compound in a semifluid state into the compound-applying section and into contact with the successive portions of the stranded article to facilitate the drawing of portions of the semifluid compound into the air-evacuated interstices of the successive portions of the stranded article;
- a compound-conditioning section whereat the compound is placed in a jelly-like state;
- means for moving the compound-filled stranded article through the compound in conditioning section whereat the semifluid compound is conditioned to place the compound in a jelly-like state so that the compound is nonflowable and is retained within the interstices of the

stranded article independently of any other supporting structure;

means for cooling the air-evacuated successive portions of the stranded article after the portions have been moved through the means for evacuating air and prior to the entry of the portions into the compound-applying section to place in a jelly-like state any portions of the compound which are drawn from the compound-applying section toward the means for evacuating air to preclude entry of the compound into the means for evacuating air;

means for preheating petrolatum to a selected temperature to place the petrolatum in a semifluid state;

a mixing tank;

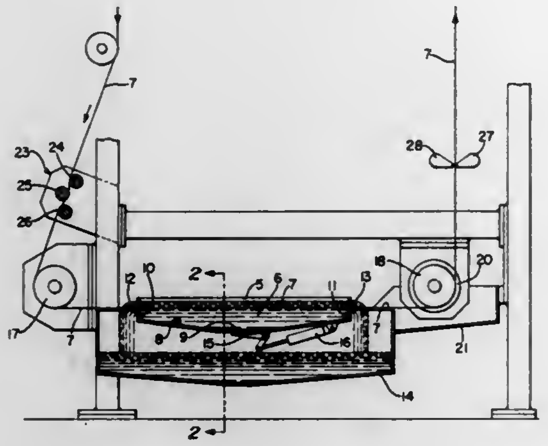
means for pumping selected amounts of the preheated petrolatum into the mixing tank;

means for extruding selected amounts of low-density polyethylene into the mixing tank at a temperature consistent with the preheated temperature of the petrolatum;

means for controlling the mixing tank to mix selected preheated amounts of the petrolatum and the low-density polyethylene within the mixing tank to prepare a blended compound, and

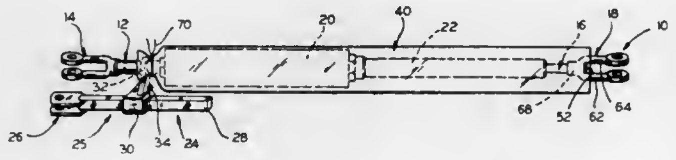
means for pumping the blended compound directly from the mixing tank to the compound-applying section.

3,850,140
WEIR TYPE FABRIC SATURATOR
Edward E. Hunter, 2573 Benton St., Akron, Ohio 44312
Filed July 19, 1973, Ser. No. 380,638
Int. Cl. B05c *3/12*
U.S. Cl. 118—405 **6 Claims**



1. An apparatus used in coating fabric with a liquid for promoting the bond between warp cords of the fabric and elastomeric material, comprising:
- a. a reservoir for holding liquid coating, having a pair of weirs formed in opposed walls of the reservoir;
- b. a storage tank operatively associated with said reservoir for receiving liquid coating overflowing the weirs;
- c. a quick-drain flap valve disposed at the bottom of said reservoir for releasing liquid coating in said reservoir to said tank;
- d. means for circulating liquid coating from said tank to said reservoir such that liquid coating overflows said weirs;
- e. means upstream and downstream of said reservoir for guiding fabric across said weirs and through liquid coating overflowing said weirs to effect coating of the fabric;
- f. said downstream guide means comprising a roll member having flange elements at the ends thereof comprising splash guards; and
- g. said downstream guide roll member being in communication with said tank such that liquid coating, leaving the coated fabric as the fabric contacts said roll member, returns to said tank.

3,850,141
BAG TYPE COVER ARRANGEMENT FOR SHIELDING BRAKE ADJUSTERS DURING MANUFACTURE OF RAILROAD CARS
Eugene W. Schmitt, Chicago, Ill., assignor to P.E.P. Inventions, Inc., Chicago, Ill.
Filed June 27, 1973, Ser. No. 373,951
Int. Cl. B05c *11/16*
U.S. Cl. 118—505 **4 Claims**



1. A shield for covering a brake adjuster from contamination by blasting or paint application,

said shield comprising a tube of flexible material proportioned to be received over said adjuster and extend between opposite end portions of said adjuster,

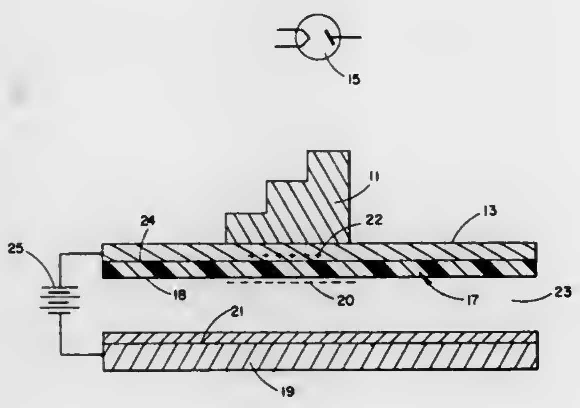
and means for anchoring the respective ends of said tube to said opposite end portions, respectively,

said anchoring means comprising:

one of the ends of said tube having opposed sides of said tube bonded together at an area limited to adjacency with the longitudinal axis of the tube to form a pair of radially aligned openings whereby said tube may be slipped over one of said opposite end portions of said adjuster to bring said tube bonded portion in abutting relation with said one of said opposite end portions and to receive a pair of parallel arms of said adjuster in said radially aligned openings,

and tie band means for binding the other end of said tube against the other of said opposite end portions.

3,850,142
IMAGE DEVELOPMENT AMPLIFICATION
Alex E. Jvirblis, and Walter Roth, both of La Jolla, Calif., assignors to Diagnostic Instruments Inc., St. Louis, Mo.
Filed July 9, 1971, Ser. No. 161,228
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **16 Claims**



1. Apparatus for developing a latent electrostatic image comprising:

an electrically conductive plate;

an electrically insulative substrate mounted on said plate, said insulative substrate adapted to have a latent electrostatic image formed on an exposed surface thereof and an opposite polarity mirror image charge induced on the other surface thereof which mirror image charge tends to degrade and interfere with development of the latent image;

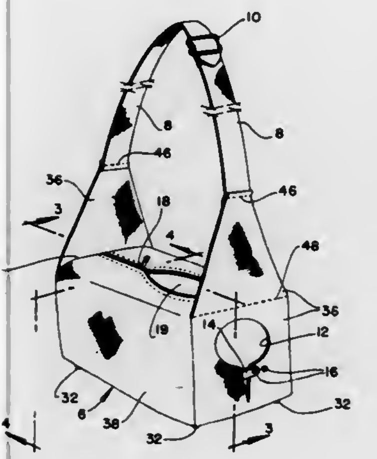
a capacitance; and

means for connecting said capacitance between said conductive plate and a potential different from that of said conductive plate during development of said image thereby to accept and dissipate the mirror image charge from said other surface of said substrate and reduce said induced charge whereby the development of the latent image is enhanced.

3,850,143
METHOD OF HANDLING SHRIMP
Yosuke Hirono, Crystal River, Fla., assignor to Ralston Purina Company, St. Louis, Mo.
Filed Sept. 5, 1972, Ser. No. 286,099
Int. Cl. A01k *61/00*
U.S. Cl. 119—2 **21 Claims**

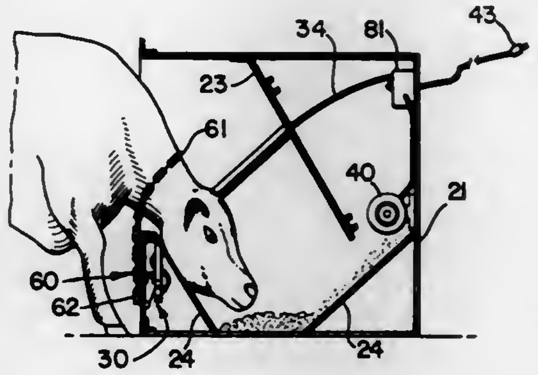
1. A method of spawning, hatching and shipping nauplii shrimp comprising the steps of: placing gravid female shrimp into spawning tanks; retaining the gravid female shrimp in the tank for a period of time sufficient for the eggs to be spawned; collecting the spawned eggs from the tanks; hatching the spawned eggs to obtain a nauplii shrimp; collecting the nauplii shrimp; placing the nauplii shrimp into a shipping container and controlling the temperature of the sea water during the shipment of the nauplii shrimp to prevent the shrimp from progressing beyond the beginning of the protozoeal stage of growth during the shipment thereof and thereafter acclimating the shrimp in sea water under desired conditions for the subsequent growth thereof.

3,850,144
PET CARRIER
Mary Lou Springer, Rt. 1, Hale Center, Tex. 79041, and Lisle K. Borom, No. 3 Pine Pl., Roswell, N. Mex. 88201
Filed Aug. 17, 1973, Ser. No. 389,354
Int. Cl. A01k *29/00*
U.S. Cl. 119—19 **9 Claims**



1. A carrier for an animal, which carrier comprises;
- a. an elongated, rectangular bag,
  - 1. said bag having a longitudinal top opening substantially throughout the length thereof,
  - 2. a zipper fastening element closing said opening when in one position and opening said opening when in another position,
- b. said bag having a generally round opening formed in an end thereof,
  - 1. a slitted opening extending radially outward from said generally round opening so as to make the combined openings of a size to admit the head of an animal therethrough,
  - 2. a strap member secured to the end of said bag on one side of said slitted opening and extending thereacross,
  - 3. fastening means on the opposite end of said strap,
  - 4. complementary fastening means on the end of said bag adjacent said slitted opening to interengage with said fastening means on said strap, when said strap is in one position, so the round portion of the opening will surround the neck of the animal in relatively close fitting relation,
- c. strap portions extending upwardly from each end of said bag, which portions are of a length to pass over the shoulder of the person carrying the bag.

3,850,145
SUPPLEMENTAL FEEDER
David Alfred Yoder, 1893 Jermain Dr., Columbus, Ohio 43219, and Daniel Alvin Lapp, 5928 Game Farm Rd., Urbana, Ohio 43078
Filed Oct. 5, 1973, Ser. No. 403,763
Int. Cl. A01k *5/02*
U.S. Cl. 119—51 R **8 Claims**



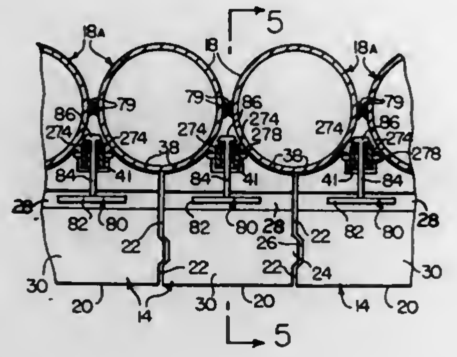
1. In an apparatus for the supplemental feeding of selected animals of a group from a feed delivery system, and wherein each selected animal has a magnetically attractable passive device hanging from its neck;

a trough for receiving feed from the feed delivery system having a front member with a top edge over which the animal places its neck when feeding from said trough, said top edge being of predetermined height to prevent entry into said trough of said passive device,

control means operatively connected to the feed delivery system including a pair of horizontally spaced electric switches, each having an actuating lever including a magnet which through gravity assumes an off position near the inside face of said front member and below the top edge thereof a distance operatively coordinated with said passive device, said front member being provided with a magnetically influenced portion to separate the magnet from the passive device, said magnetically influenced portion being of a material which does not attract said magnet, each switch being in on position when its magnet moves forward to a position closer to or at the inside face of said front member in response to the presence of said passive device at the outside face of said front member at its respective magnetically influenced portion thereby activating the feed delivery system to deliver feed to said trough; the two magnetically influenced portions being predeterminedly spaced horizontally to enable magnet movement in response to the swinging and horizontal movement of the passive device as the animal's head and neck are moved.

3,850,146
BOILER TUBE SHIELDING WALL

Robert G. Graham, 2433 N. Nine Mile Rd., Sanford, Mich. 48657, and Douglas J. Frame, 3774 Lancaster Dr., Sterling Heights, Mich. 48077
Division of Ser. No. 323,872, Jan. 15, 1973,. This application Feb. 22, 1974, Ser. No. 444,855
Int. Cl. F22b *37/66*
U.S. Cl. 122—6 A **23 Claims**



1. In a wall of ceramic fire brick or tile to shield at least a portion of a water wall of substantially parallel closely adjacent but spaced apart boiler tubes, secured together to form an impenetrable water wall by lateral rib members affixed to said boiler tubes and to each other, and extending vertically upwardly in and from the burner region of a boiler tube furnace area, from direct impingement of burner-produced flames and combustion gases upon the facing exposed surfaces of said boiler tubes, and to deflect a significant portion of the heat generated by said flanges and combustion gases into the superheat region of the boiler unit thereabove, the improvement combination comprising

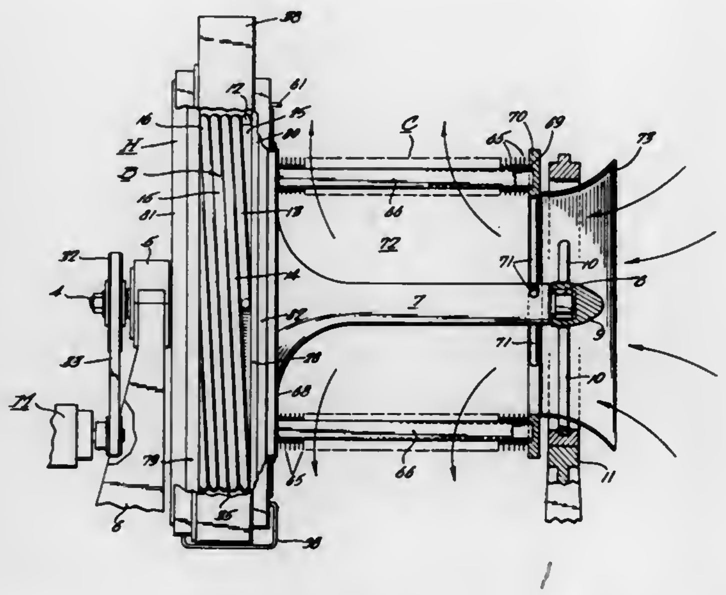
- at least one pair of said parallel closely adjacent but spaced apart vertically extending boiler tubes, a plurality of shielding tiles for said boiler tubes, means to support said plurality of shielding tiles in substantially vertical files adjacent the said facing exposed surfaces of said boiler tubes, said support means being fixedly secured to said boiler tubes,
- and free-floating tile retaining means comprising a bar device manually removably engageable with said support means and a free-floating tile retaining clip manually removably engageable with an upper portion of each said tile in said files and with said bar device, to secure each said tile in shielding relationship to said boiler tubes,
  - each of said tiles comprising a unitary ceramic body having a distal front face, lateral side walls, a proximal rear face, and a top wall surface having a transverse slot therein,
  - one of said side walls having a longitudinally extending rib portion and the other of said side walls having a longitudinally extending recess complementary to said rib portion,
  - said rib portion and recess being aligned with each other transversely of said body,
- whereby said tiles are relatively free-floating with the expansion and contraction movements of said boiler tubes, and said rib portions and recesses of laterally adjacent tiles dovetail with each other when said tiles are arranged in parallel side-by-side relationship.

3,850,147
ROTARY BOILERS AND COMBUSTORS

William A. Doerner, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 19, 1973, Ser. No. 417,275
Int. Cl. F22b *5/00*
U.S. Cl. 122—11 **26 Claims**

1. A rotary boiler-combustor comprising:

- a cylindrical housing rotatable about its axis,
- a coaxial annular boiler extending circumferentially of said housing and rotatable therewith, said housing and boiler adapted to be rotated at a predetermined speed to maintain in the boiler an annular body of boiler liquid having a liquid/vapor interface spaced a predetermined distance radially from said axis,
- means operable to rotationally drive the housing-boiler unit at said predetermined speed,
- means defining an annular combustion zone circumscribing said rotary boiler comprising a stationary annular partition spaced radially outward from the boiler,
- means for supplying combustion fuel and air to the combustion zone,
- rotation of said housing-boiler unit relative to the surrounding combustion zone being operable to mix said combustion fuel and air and provide the desired combustion fuel/air mixture in said zone,
- means to ignite said fuel/air mixture in said combustion zone and cause combination thereof to heat the liquid in the boiler and generate pressure vapor therein,



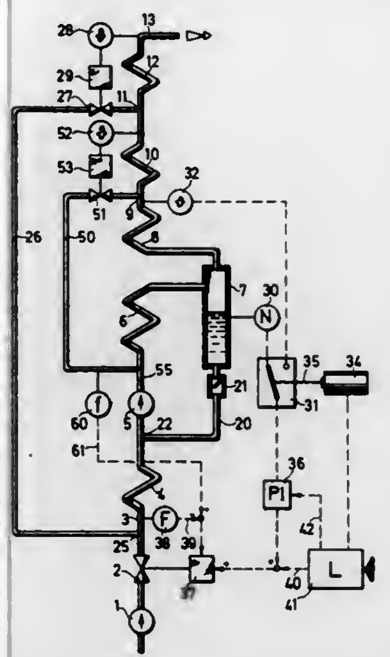
- a stationary hood structure circumscribing the rotatable housing-boiler unit defining a combustion gas exhaust chamber surrounding the stationary partition member in radially spaced relation thereto,
- a pre-heater for liquid supplied to the boiler rotatable with said housing-boiler unit and comprising an array of a plurality of axially spaced coaxial annular fins having a plurality of parallel heat exchange tubes extending longitudinally therethrough, said pre-heater being disposed circumferentially of the housing in radially spaced circumscribing relating to said stationary partition member and operable at said predetermined speed of rotation to pump said combustion gases through the pre-heater to the surrounding combustion gas exhaust chamber,
- and means for supplying boiler liquid through said preheater heat exchange tubes to the boiler at a predetermined rate correlated to the rate of vaporization of the liquid in the boiler to maintain the liquid/vapor interface in the boiler at said predetermined distance from the rotation axis of said housing-boiler unit.

3,850,148
FORCED THROUGH-FLOW STEAM GENERATOR HAVING A SUPERIMPOSED FORCED CIRCULATION

Fritz Laubli, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland
Filed June 12, 1973, Ser. No. 369,193
Claims priority, application Switzerland, June 12, 1972, 8688/72
Int. Cl. F22g *5/12*
U.S. Cl. 122—479 S **3 Claims**

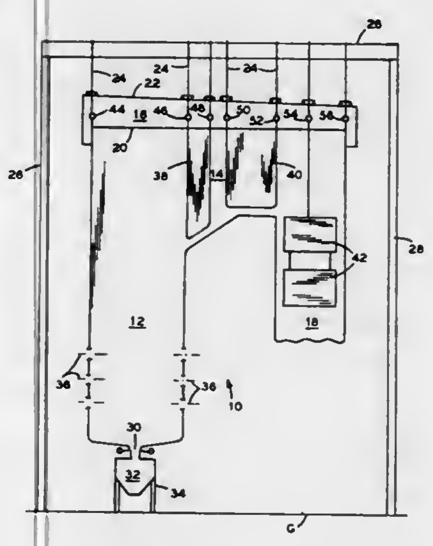
1. A forced through-flow steam generator comprising

- a main working fluid path including, in series, a feed pump, a feed valve, a circulation pump, an evaporator, a water/-steam separator and at least two superheaters;
- a circulation path including a line extending from said separator to said main working fluid path upstream of said circulation pump;
- a water injection line extending from said main working fluid path between said circulation pump and said evaporator to an injection point in said main working fluid path between said superheaters, and an injection valve in said line for controlling the flow therethrough in response to the temperature downstream of said superheaters; and
- means for regulating the feed water flow including a first device for measuring the flow delivered downstream of said feed pump, a second device for measuring the flow in said water injection line, and a controller connected to each said device and to said feed valve for adjusting the feed water flow from said feed pump in dependence upon the flow rate measured by said first device to tend to maintain the feed water flow at a set value and in dependence upon the flow rate measured by said second device to tend to increase the feed water flow as the flow rate measured by said second device increases.



3,850,149
CASING CONSTRUCTION

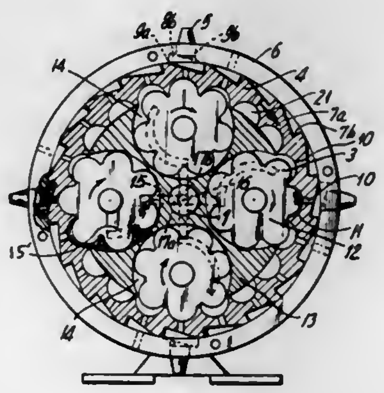
Edward J. Piaskowski, Massillon, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.
Filed Dec. 12, 1973, Ser. No. 424,144
Int. Cl. F22b *37/36*
U.S. Cl. 122—494 **8 Claims**



1. In combination with a vapor generator, structure defining a setting, a gas passageway situated within said setting, means for introducing combustion gases through said passageway, the setting having a roof formed of spaced first and second metal coverings, the first covering being disposed subjacent to the second covering and the space therebetween being at least partly filled with an insulating material, at least one upright member extending throuugh said roof, the upright member being rigidly connected to said first covering, the improvement comprising means allowing thermal expansion and contraction of said first covering and upright member independent of the second covering, said last named means including having the second covering formed of a base portion having at least one elongated opening of generally rectangular configuration, the base portion including an upturned flange projecting from each of the sides defining said opening, at least two coplanar raised portions disposed above said flanges, said raised portions being spaced from one another, and said upright member extending between the flanges and raised portions in spaced relation thereto, plate means disposed above the raised portions and including an opening to accommodate passage therethrough of the upright member, said plate means being rigidly connected to the upright member and cooperating therewith and with the raised portions to cover said elongated opening.

3,850,150
SPUR PISTON MOTION ROTARY COMBUSTION ENGINE

Joseph B. Plevyak, 19 Jefferson St., Newton, N.J. 07860
Filed Sept. 5, 1972, Ser. No. 286,411
Int. Cl. F02b *53/08*
U.S. Cl. 123—8.35 **4 Claims**



1. An internal combustion engine comprising in combination: an outer motor housing having a first inner circular surface defining a first annular cavity therein of circular cross-section; mounted rotatably within the first cavity a first inner member of second circular radially-outer perimeter surface defining spaced points; there being along the first circular inner surface a plurality of spaced recesses each (a) having at least one substantially upright wall extending radially outwardly from the first inner surface as one wall of the first cavity with the uprightly extending wall extending in a plane substantially transversely to curvature of the circular inner surface and (b) having a slanted wall extending angularly from the first inner surface in an intersecting direction with the substantially upright wall; there being second cavity-defining walls extending radially inwardly in intersecting directions with one-another of the walls to define a second cavity between each two consecutive ones of said spaced points, as a part of the first inner member's point-defining outer perimeter second surface substantially flushly mounted within the first circular annularly-extending inner surface; the first inner circular annular member having in transverse cross-section therethrough circular configuration defining an inner corrugated annular third surface with equally spaced second ridges and third cavities spaced therearound the third inner annular surface, there being at least one passage extending from each respective said corrugated third cavity to a corresponding second cavity defined between adjacent points of the outer periphery of the first inner circular member; mounted within the second inner annular surface of the first rotatable inner

member, a rotatably mounted second inner member mounted for rotation around an axis fixedly located relative to the outer circular housing and the first inner annular rotatable member, the second inner rotatable member having a third corrugated outer perimeter surface with fourth cavities and third ridges of corresponding dimensions to those of the third cavities and second ridges of the first rotatable inner annular surface of the inner annular member; gear means operatively connected to at least one of the first and second inner rotatable member such that motion thereof around its fixed-positioned axis is transmittable to a drive shaft; means for providing fuel to a cavity of at least one of the corrugated surfaces and means for exhausting combustion residual gases therefrom at a point diametrically across the second inner rotatable corrugated member; and the second inner rotatable corrugated member being mounted such that during revolution thereof each of the second inner rotatable member's third ridges consecutively mesh with corrugation third cavities of the inner annular corrugated third surface; combustion-ignition means for igniting fuel vapors within at least one of said outer annular member's spaced recesses; and an inner mounting element fixedly positioned relative to said outer annular housing and within the annulus cavity thereof concentrically thereof, the inner mounting element defining a plurality of semi-circular cavities between radially outwardly extending legs, and there being a plurality of said inner rotatable corrugated members, with one said second member mounted in each semi-circular cavity for its respective rotation.

3,850,151
FAILURE WARNING DEVICE FOR EXHAUST GAS RECIRCULATION SYSTEM

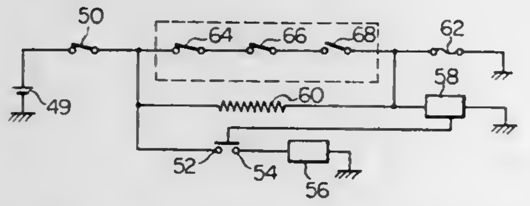
Toshihiro Mawatari, Yokosuka; Takashi Kunugi; Masanori Harada, and Kenichi Sasaki, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Sept. 7, 1973, Ser. No. 394,988

Int. Cl. F02m *25/06*

Claims priority, application Japan, Oct. 3, 1972, 47-114764; Sept. 9, 1972, 47-90636

U.S. Cl. 123—119 A **10 Claims**



1. A failure warning device for an exhaust gas recirculation system for an internal combustion engine, the exhaust gas recirculation system having an exhaust gas recirculation conduit, an intake vacuum actuated metering valve to meter exhaust gas flow through the recirculation conduit, the metering valve having a diaphragm, one side of which communicates through a conduit with the engine intake system and the other side of which communicates with the atmosphere, said device comprising: an ignition switch which is closed when the internal combustion engine is operating; an alarm; a relay; and a detector to detect inoperability of said metering valve; said relay being actuated by said detector to energize said alarm in response to inoperability of said metering valve if said ignition switch is closed.

3,850,152
VEHICLE INTERNAL COMBUSTION ENGINE AIR INTAKE HEATING MEANS

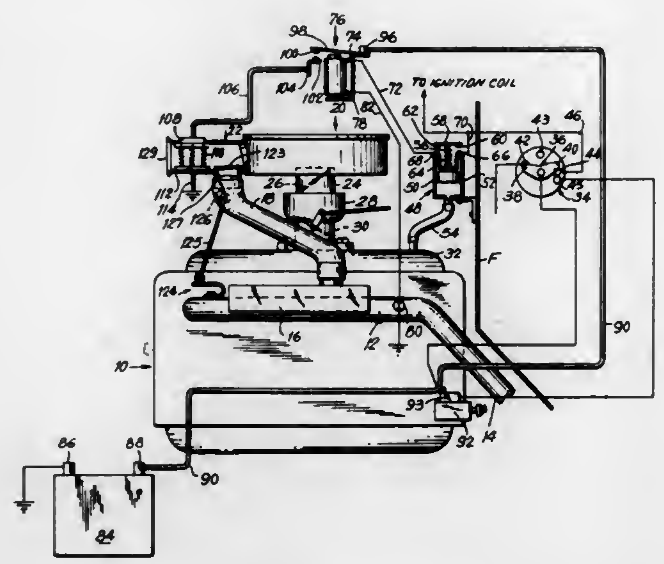
Jesse R. Hollins, 40 Stoner Ave., Great Neck, N.Y. 11021

Filed Sept. 28, 1972, Ser. No. 292,925

Int. Cl. F02m *31/00*

U.S. Cl. 123—122 H **4 Claims**

1. A motor vehicle internal combustion engine air intake heating system for directing heated air to the carburetor of the internal combustion engine comprising an internal combustion engine, said internal combustion engine having an air filter housing, a first conduit having a first end and a second end, said first conduit first end communicating with said air filter housing, said first conduit second end communicating with atmosphere, a carburetor, means communicating said air filter housing to said carburetor, means communicating said carburetor to said internal combustion engine, an exhaust manifold for said internal combustion engine, electrical heating means located in said first conduit intermediate said first and second ends thereof, a shroud in a heat transfer relation with said exhaust manifold, a second conduit communicating said shroud to said first conduit at a point between said air filter housing and said electrical heating means, a first valve positioned to control the flow from said second conduit to said first conduit, a thermal responsive means responsive to engine temperature, linkage means connecting said thermal responsive element to said first valve so that said first valve prevents communication between said first and second conduits when said thermal responsive means is at a first temperature and progressively allows communication between said second conduit and said first conduit as said thermal responsive means increases in temperature, a motor vehicle source of electrical energy, a relay means for connecting said motor vehicle source of electrical energy to said electrical heating means, said relay means including a relay having first and second terminals, means for controlling the operation of said relay, said relay control means including a vacuum-operated fluid motor, said vacuum-operated fluid motor including a fluid movable work element, electrical connecting means movable with said movable work element, means connecting said electrical connecting means to one terminal of said relay for a given position of said fluid movable work element, a thermal switch responsive to the temperature of said internal combustion engine, means connecting said thermal switch to be remaining terminal of said relay, said thermal switch opening upon being above a predetermined temperature and being closed upon being below a predetermined temperature, an ignition switch, said ignition switch including a movable contact blade and an engine on contact, and means connecting said source of electrical energy to said electrical connecting means when said movable contact blade is in contact with said engine on terminal.



3,850,153
CARBURETOR DEVICE FOR AN ENGINE

Jacques Sigwald, Taverny, France, assignor to Automobiles Peugeot, Paris and Regie Nationale Des Usines Renault, Billancourt, both of, France

Filed Nov. 28, 1972, Ser. No. 310,109

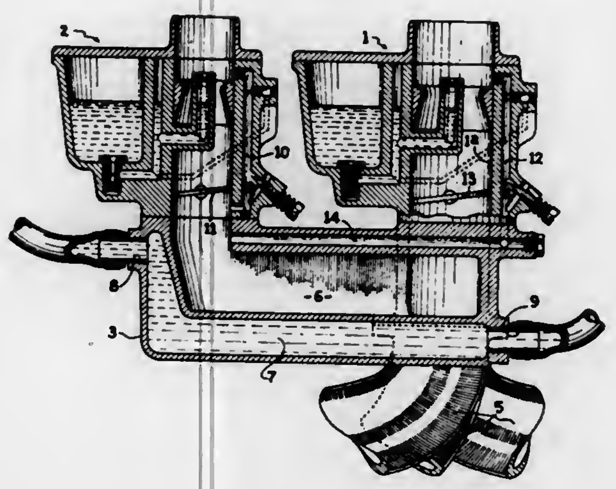
Claims priority, application France, Jan. 21, 1972, 72.02021

Int. Cl. F02m *13/04, 31/14*

U.S. Cl. 123—127 **4 Claims**

1. A device for feeding a mixture of air and fuel to a multiple-cylinder internal combustion engine, comprising a large

main carburetor for feeding fuel at full load and having a large-section outlet and a throttle controlling the section of the outlet, a small carburetor for feeding fuel at low loads and having a small-section outlet of smaller section than said large-secstion outlet and a throttle controlling the section of the outlet of the small carburetor, induction pipes for connection to each of the cylinders of the engine, the induction pipes being interconnected at a junction, the large carburetor being located adjacent to and substantially in vertical alignment with said junction and the large-section outlet communicating substantially directly with said junction, the small carburetor being disassociated from the main carburetor and being more remote from said junction than the main carburetor, and means defining a mixture heating passage interposed between and interconnecting the outlet of the small carburetor and said junction of the induction pipes downstream of the throttle controlling the outlet of the main carburetor with respect to the flow of the mixture to said junction, means for heating said mixture heating passage substantially throughout the length of said mixture heating passage between the outlet of the small carburetor and said junction, the main carburetor comprising an idling circuit having an outlet and means defining a second passage which puts the idling circuit outlet in communication with an upstream end of the heating passage remote from said junction and adjacent the small caburetor and downstream of the throttle of the small carburetor.



3,850,154
FUEL CONTROL FOR EXTERNALLY IGNITED INTERNAL COMBUSTION ENGINES

Asoke Chattopadhayay, Norf, and Hans-Jurgen Muller, Gelsenkirchen, both of Germany, assignors to Deutsche Vergaser GmbH & Co. K.G.

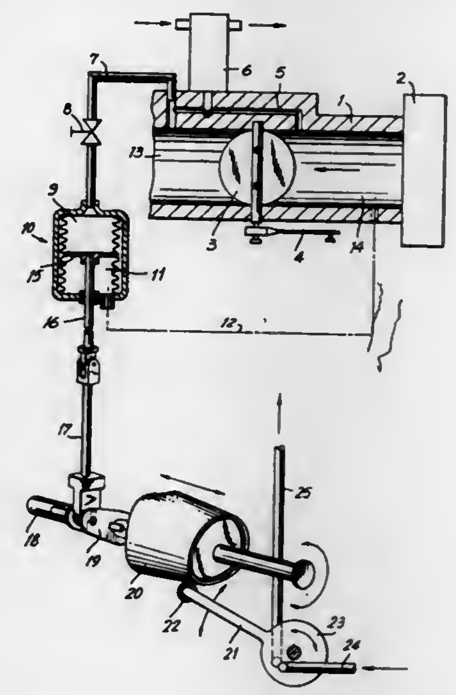
Filed June 14, 1973, Ser. No. 370,058

Claims priority, application Germany, June 19, 1972, 2229619

Int. Cl. F02d *1/04, 1/06*

U.S. Cl. 123—140 CC **3 Claims**

1. Fuel control for externally ignited internal combustion engines, comprising; a movable spatial ballistic cam responsive, in a first instance, to engine rotational speed; fuel dosage means adapted to have movements of said cam communicated thereto, said cam being displaceable along its longitudinal axis; a throttle valve; means for rotating said cam about its longitudinal axis, in a second instance, dependent upon a differential pressure of the combustion air for said engines upstream and downstream of said throttle valve; a bypass passageway circumventing said throttle valve; and valve means in said passageway for directly regulating the pressure differential in dependence upon the temperature of said engine.



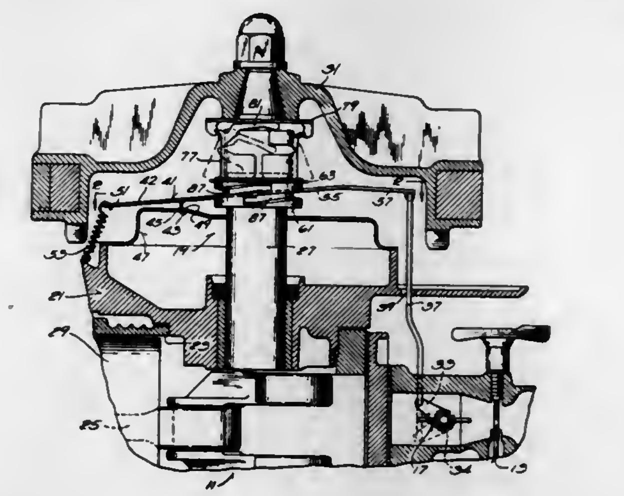
3,850,155
ENGINE ROTATIONAL DIRECTION CONTROL

Edward E. Thomas, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 260,288, June 6, 1972. This application Feb. 25, 1974, Ser. No. 445,081

Int. Cl. F02b *77/00*

U.S. Cl. 123—198 R **16 Claims**



1. Apparatus for controlling the direction of engine rotation comprising an internal combustion engine, a shaft driven by said engine, a carburetor mounted on said engine and including a throttle valve movable between opened and closed positions, and means connecting said throttle valve to said shaft for displacing said throttle valve toward said closed position for preventing engine operation in response to rotation of said shaft in one direction.

3,850,156
COMPOSITE ARCHERY BOW

Frank E. Eicholtz, 3372 N. Mountain View Dr., San Diego, Calif. 92116

Filed June 1, 1973, Ser. No. 366,251

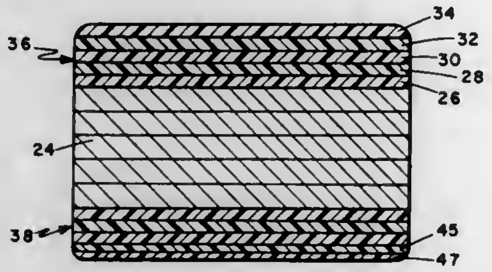
Int. Cl. F41b *5/00*

U.S. Cl. 124—23 R **4 Claims**

1. A composite archery bow comprising:
a wood core having an upper limb and a lower limb,

a plurality of fiber reinforced layers on the back and face of said wood core,

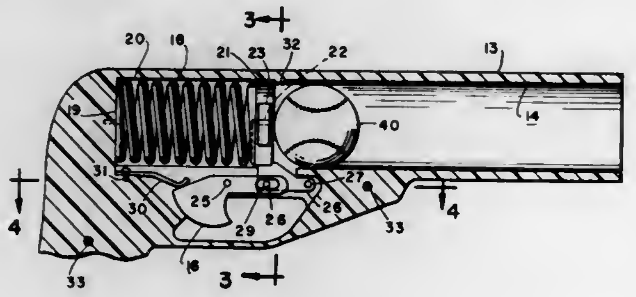
at least a first one of said fiber reinforced layers on each of said back and said face of said wood core having a fiber axial orientation at a substantial angle to a plane including the longitudinal axis of said core and perpendicular to said layers, but said axial orientation being less than 90° to said plane.



the fibers in the corresponding layers in the corresponding sides of said upper and lower limbs of said wood core being oppositely oriented,

at least a second one of said fiber reinforced layers on each of said back and said face of said core having a fiber axial orientation substantially equal but oppositely directed from the angular orientation of said first layers.

3,850,157
A SPRING TYPE BALL PROJECTING DEVICE
Alvin Prokupek, 4400 Prospect, Downers Grove, Ill. 60515
Filed Oct. 16, 1972, Ser. No. 297,914
Int. Cl. F41b *7/00*
U.S. Cl. 124—27 **1 Claim**



1. A practice aid for propelling a baseball comprising:

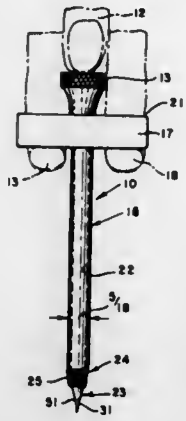
a hand gun body having an elongated bore defining an axis and disposed within said body for receiving a baseball therein, said body providing a closure portion at one end of the bore;

propelling means disposed within said bore and comprising an axially retractable compression spring having coaxial end portions extending outwardly from opposite ends of the spring and a thrusting member axially moveable within said bore between retracted and extended positions, said spring end portions extending into apertures in said closure portion and said thrusting member for holding the latter in axial alignment with the bore;

a trigger means including a pawl disposed within said bore at said retracted position and operative thereat to engage said thrusting member; and

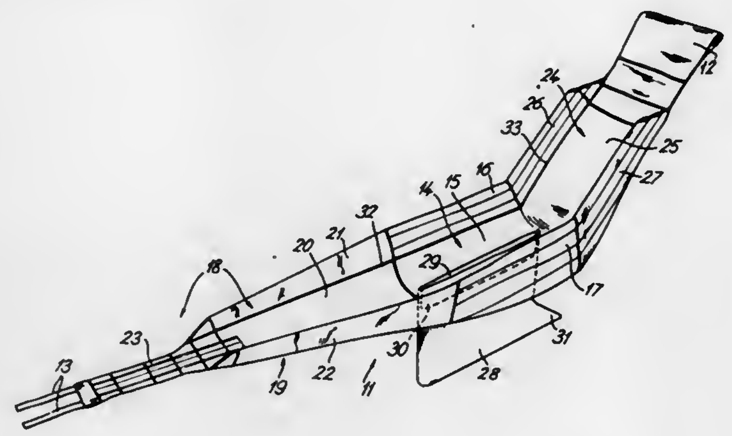
a projection within said bore disposed directly opposite said pawl and said pawl being operative to engage said thrusting member at said retracted position, said projection and said pawl cooperatively operable to retain said thrusting member in a substantially normal relation to the axis of said bore at said retracted position and said trigger means operative to displace said pawl out of said bore to release the thrusting member with attendant movement of said thrusting member transversely of the bore out of engagement with said projection in response to the action of said spring.

3,850,158
BONE BIOPSY INSTRUMENT AND METHOD
Elias George Elias, 391 Woodbridge Ave., Buffalo, N.Y. 14214, and Youssef George Elias, 92-16 34th Ave., Jackson Hts., Apt. 7G, Queens, N.Y. 11372
Filed July 9, 1973, Ser. No. 377,652
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 B **5 Claims**



1. A biopsy instrument for securing optimal samples of bone for pathological and diagnostic studies comprising an elongated, tubular sheath defining a cylindrical, axial through passage, said tubular sheath at its proximal end having a head portion and at its opposite distal end having an external conical wall portion converging toward the distal end to define with the axial passage wall an annular cutting edge; and a rod-like obturator slide fitted into said sheath passage, said obturator at its proximal end having a head portion engaging the opposed end face of said sheath head portion and a distal end protruding beyond the distal end of said sheath and comprising oppositely facing flats extending from said annular cutting edge and converging toward the distal end of the obturator to define a diametrically directed wedge shaped blade.

3,850,159
DEVICE FOR COLLECTING ANIMAL URINE
John Arthur Langley, Bury St. Edmunds, England, assignor to National Research Development Corporation, London, England
Filed July 17, 1973, Ser. No. 379,924
Claims priority, application Great Britain, July 20, 1972, 34042/72
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 F **4 Claims**



1. A device for collecting horse urine comprising:

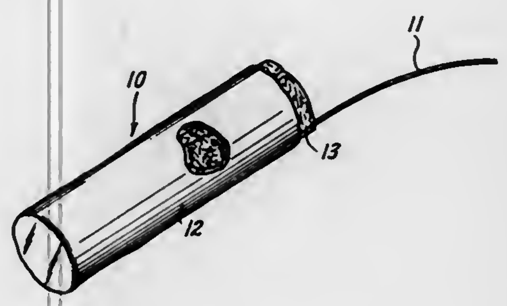
a channel portion having a floor part and two upstanding side wall parts;

a receptacle suspended below said channel portion and communicating therewith by way of an aperture in the floor part of said channel portion;

a guide portion having a floor part and two upstanding side wall parts constituting an extension of said channel portion and a further portion in the form of a flat sheet of material extending from the floor part of said guide portion so as to be positioned to intercept the flow of urine from the horse when attached to a horse; and

means for attaching the device to a horse with the upstanding side wall parts of said channel portion being located beneath and clear of the belly of the horse.

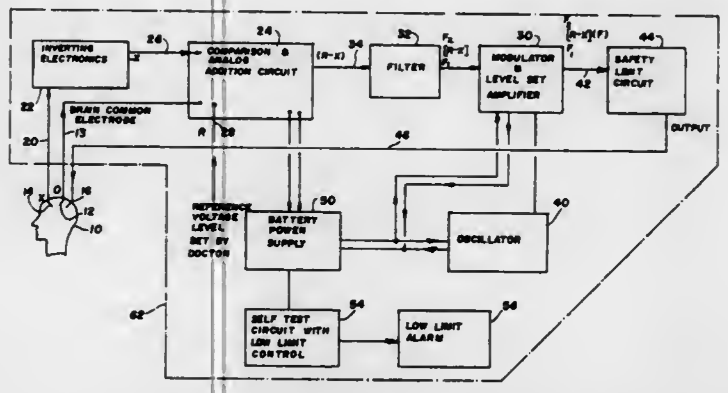
3,850,160
DIAGNOSTIC TAMPON AND THE USE THEREOF FOR COLLECTING CELLULAR MATERIAL
Judy Wynne Denson, Rt. One Box 87, Tazewell, Va. 24651
Continuation-in-part of Ser. No. 332,718, Feb. 15, 1973, abandoned. This application Feb. 6, 1974, Ser. No. 440,166
Int. Cl. A61f *13/20*
U.S. Cl. 128—2 B **6 Claims**



3. A method for collecting and examining cellular material from the vaginal cavity which comprises:

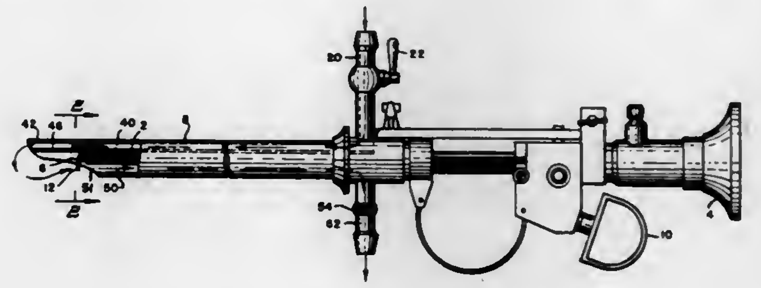
- a. inserting a tampon, the surface of which is covered with a film of polycarbonate, into the vaginal cavity;
- b. withdrawing the tampon;
- c. removing the film from the tampon and placing it on a slide;
- d. fixing and staining the cellular material on the film; and
- e. examining the stained cellular material on the slide.

3,850,161
METHOD AND APPARATUS FOR MONITORING AND COUNTERACTING EXCESS BRAIN ELECTRICAL ENERGY TO PREVENT EPILEPTIC SEIZURES AND THE LIKE
Saul Liss, 555 E. 27th St., Paterson, N.J. 07514
Filed Apr. 9, 1973, Ser. No. 348,864
Int. Cl. A61b *5/04;* **A61n** *1/00*
U.S. Cl. 128—2.1 R **10 Claims**



1. Apparatus for monitoring, analyzing and when required counteracting excess brain electrical energy of a patient to prevent epileptic seizures and the like, said apparatus including: (a) three electrodes adapted to be implanted in the brain being monitored, each electrode connected through conductors to a constantly energized and connected electronic circuit, said electrodes including a first implantable electrode adapted to be placed in a zero activity point of the brain, the electrical output from this first electrode detecting the levels of normal and abnormal electrical energy and feeding this output as a signal to the electronics circuit portion of the apparatus, a second implantable electrode adapted to be placed in a typical point of detection area of the brain, the output from this electrode sent as a signal from this area to the electronic circuit, and a third implantable electrode adapted to be placed in a typical point of control of the same brain, this electrode receiving countermotive forces from the electronic circuit when said circuit so determines; (b) an electronic means and an amplifier means in said electronic circuit, said electronic means receiving the output of the implantable second electrode and inverting this output after which the resulting electrical signal is fed to said amplifier means of the electronic circuit, said amplifier means providing a comparison and addition means to incoming signals; (c) a conductor connected to the first electrode, said conductor being connected to said amplifier means and carrying the electrical energy level of the zero activity portion of the brain to the amplifier which analyzes and compares this energy level in relation to previously established normal; (d) means for sending a reference voltage to the amplifier comparison and addition circuit, this reference voltage established and set by the operator in accordance to previously determined electrical thresholds of the brain of the patient in which the electrodes are to be implanted, this reference voltage being compared by and in said amplifier circuit and where necessary a vector addition is made by this amplifier circuit to add voltage to the inverted received voltage; (e) a circuit means in the electronic circuit for receiving and monitoring the signal from the comparison and addition circuit means and when this signal exceeds a set level amplifies this signal a determined amount; (f) a circuit means providing both passive and active electronic network means for receiving the monitored and amplified signal indicative of excess energy outputs from the second electrode and within predetermined maximum limits provides a countermotive force which is sent through a conductor to the third electrode which force quells this storm in the brain, and (g) a power means connected to the electrical circuit to supply a constantly "on" power necessary to energize the electrical circuit to normal operating levels.

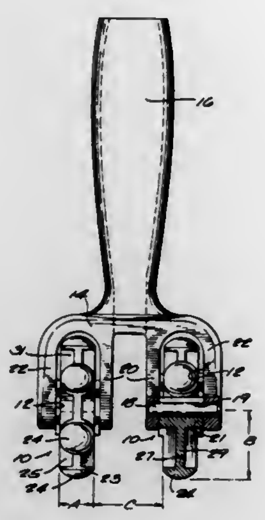
3,850,162
ENDOSCOPE WITH CONTINUOUS IRRIGATION
Jose J. Iglesias, 1341 North Ave., Elizabeth, N.J. 07208
Continuation-in-part of Ser. No. 268,806, July 3, 1972,. This application June 8, 1973, Ser. No. 368,186
Int. Cl. A61b *1/06, 1/12*
U.S. Cl. 128—6 **2 Claims**



1. A urological endoscopic instrument, comprising an elongated cylindrical beaked sheath through which an instrument is extended axially to a position outside the sheath for performing a urological procedure, a telescope tube extending longitudinally and interiorly of the sheath and being concentric therewith and having an objective lens at its distal end, an inflow conduit extending longitudinally and interiorly of the sheath above the telescope tube and having its distal end distal to the objective lens, an external connection at the proximate end of the inflow conduit, the interior of the sheath below the conduit providing an outflow conduit having its distal end proximate to the objective lens, and a second external connection at the proximate end of the sheath which communicates with the outflow conduit.

3,850,163
STRIDE AND KNEAD MASSAGER

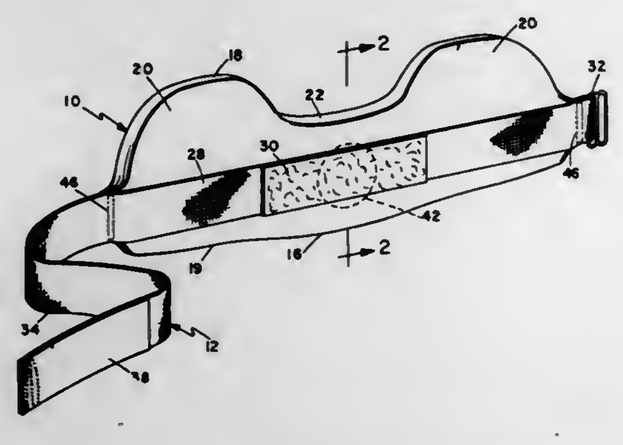
Mathew Andis, Sr., 120 S. Vincennes Cir., Racine, Wis. 53402
Filed May 23, 1973, Ser. No. 362,999
Int. Cl. A61h *15/00*
U.S. Cl. 128—57 **7 Claims**



1. A manual massaging device including two independently movable kneading wheels with circumferentially spaced kneading projections having centers angularly separated by 60°, said kneading rollers including semi-spherical tip portions.

3,850,164
CERVICAL COLLAR

Glenn F. Hare, 326 Arroyo Dr., Encinitas, Calif. 92024
Filed Jan. 14, 1974, Ser. No. 432,877
Int. Cl. A61h *1/02*
U.S. Cl. 128—75 **4 Claims**

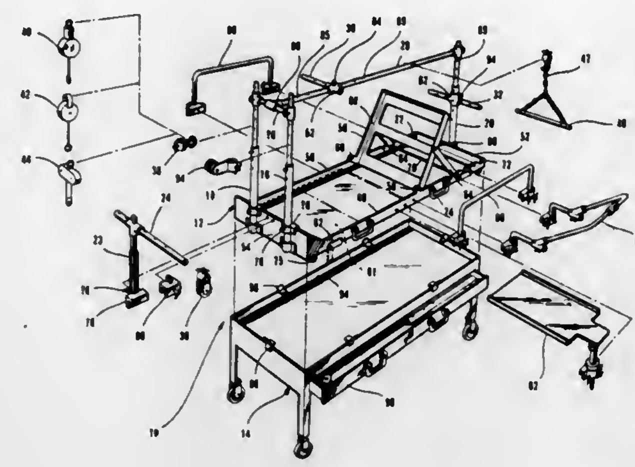


1. A cervical collar for being fixed around a person's neck that has possible spinal injuries comprising,

a pad of high density, flexible foam material having an upper edge and a lower edge with a length that is slightly smaller than the circumference of a user's neck and a width between said edges at the mid-portion of said pad that allows the pad to fit under the user's chin with said upper edge or abutting against the lower jaw of the user supporting the user's head in an upright position,
said mid-portion of said pad having a hole that is spaced inwardly from said edges for receiving the outward projection of the user's throat allowing said pad to fit against the user's neck with a relieving of the pressure in the throat area,
a soft foam insert positioned in said hole,
said pad and insert are enclosed by a knit type material,
a strap secured to said material on one side of said pad and extending the length of said pad for drawing said pad against the user's neck,
and said strap substantially covering one side of said hole.

3,850,165
PORTABLE TRACTION SYSTEM

Guy C. Throner, 1335 Via Madronas Dr., Saratoga, Calif. 95070
Filed Dec. 11, 1972, Ser. No. 313,770
Int. Cl. A61f *5/04*
U.S. Cl. 128—84 C **3 Claims**



1. A portable traction system for maintaining a patient in uninterrupted traction therapy during his transfer between a hospital and another location, and also during his entire recovery period whether in the hospital, at home, or elsewhere, comprising in combination:

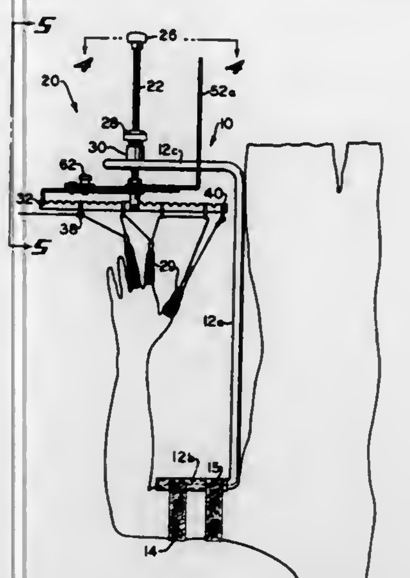
1. a hand-transportable stretcher-like traction frame for hand carrying a patient while in traction therapy, said frame including horizontally disposed side and end elements interconnected to establish a peripheral base structure for a patient-supportive mattress and traction-exerting equipment, said frame positionable on and freely removable from a hospital bed, home bed, hospital gurney, or other suitable foundation without interruption of traction therapy;
2. an adjustable back rest mounted on the base structure for supporting a mattress and a patient in a plurality of positions between prone and full sitting;
3. a mattress residing on the base structure and adjustable back rest;
4. a traction superstructure including elongated traction bars secured in an upright attitude to the bass structure for providing a traction-force support for spring-type traction-exerting equipment; and
5. spring-type traction exerting means secured to the traction superstructure for safely exerting traction on a patient both while being moved from one location to another and also while stationary at any location;

whereby said traction system provides the combined functions of a stretcher, a bed, and a traction apparatus in a unitary structure that is freely movable from one location to another while providing continuous traction therapy on a patient.

3,850,166
FRACTURE REDUCTION SYSTEM

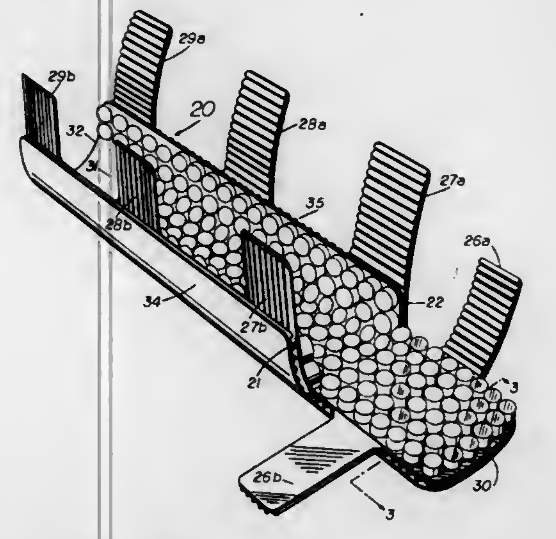
Simon Tamny, and Sandi R. Tamny, both of Longbrook Rd., Lorain, Ohio 44053
Filed Mar. 30, 1973, Ser. No. 346,462
Int. Cl. A61f *5/04*
U.S. Cl. 128—84 C **19 Claims**

1. A portable system for the reduction of lower limb fractures including apparatus which comprises a frame including restraint means adapted to engage only the upper limb and including means adapted to engage the digital end of the lower limb and to impose forces on the exterior of the digital end of the lower limb while concurrently restraining an axially distributed region of the upper limb in rigid attachment to said frame, and first means connected to the frame for providing independent coaxial relative linear and rotational displacement of the fractured segments of the lower limb, said system configured such that, when applied to reduce a lower limb fracture, the apparatus and the lower and upper limbs are in static equilibrium with respect to all reductive forces exerted on the digital end of the lower limb by the apparatus without restraint by other external forces.



3,850,167
SPLINT

Wayne C. Seeley, 238 Pleasant Crescent Rd., York, Pa. 17402
Filed Aug. 9, 1973, Ser. No. 387,188
Int. Cl. A61f *5/04*
U.S. Cl. 128—87 R **5 Claims**



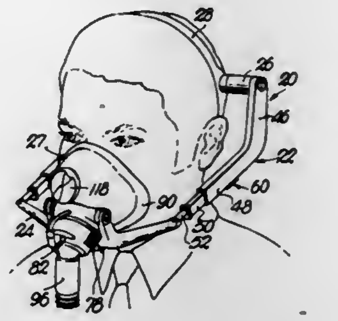
1. A splint comprising
a. A body member comprising one sheet of flexible corrugated material which is doubled back and adhesively secured upon itself in a pre-stressed condition to form a trough-like structure for receiving a limb, said member having upwardly extending curved opposing supporting side walls, and
b. Connector means extending from and being integral extensions said sheet of corrugated material adapted to secure the limb to the splint.

3,850,168
OXYGEN MASK APPARATUS

James F. Ferguson, Independence, and William C. Wissmeuller, Kansas City, both of Mo., assignors to Puritan-Bennett Corporation, Kansas City, Mo.
Filed Sept. 21, 1971, Ser. No. 182,449
Int. Cl. A62b *7/14*
U.S. Cl. 128—146.7 **1 Claim**

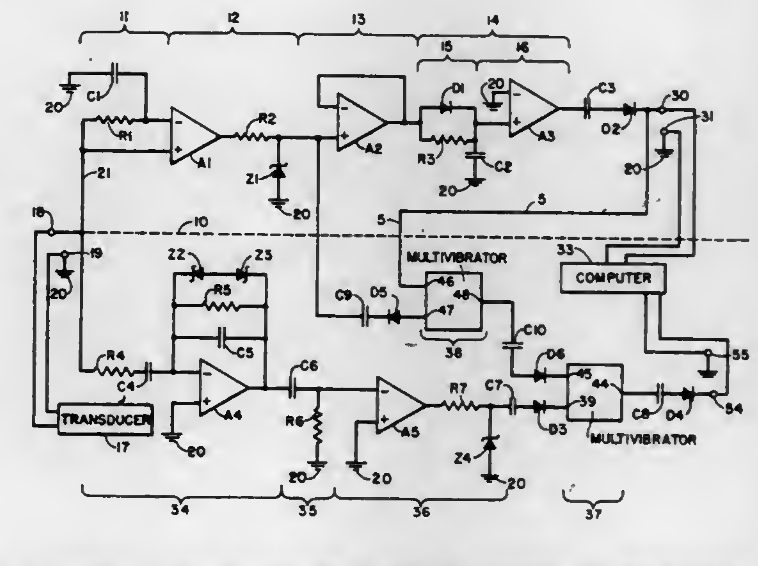
1. In head-worn breathing apparatus having a breathing mask assembly adapted to cover the nose and mouth of the wearer during use, the combination with said assembly of:

an open frame including a pair of elongated, spaced apart, fore-and-aft extending side members adapted to be disposed on opposite sides of the wearer's head during use, and structure at the normally forward ends of said members for supporting said mask assembly between the members, said structure including a yoke pivotally supporting the assembly for swinging of the latter about a generally horizontal axis extending between said members, and means pivotally joining said yoke with the forward ends of the members for swinging of the latter about respective generally vertical axes relative to the yoke;
a head piece supported between said members at the rear ends of the latter having a single substantially rigid, generally planar, open ring, crown-engaging element pivotally mounted on each of said members for tilting movement about a generally horizontal axis and adapted to retain the frame on the wearer with said assembly in alignment with the wearer's nose and mouth; and
yieldable means associated with said frame for yieldably biasing the assembly against the wearer's crown.



3,850,169
CIRCUIT FOR DETECTING INITIAL SYSTOLE AND DICROTIC NOTCH

Vernon D. Gebben, Bay Village, and John A. Webb, Jr., North Ridgeville, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Jan. 30, 1973, Ser. No. 327,921
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 P **11 Claims**



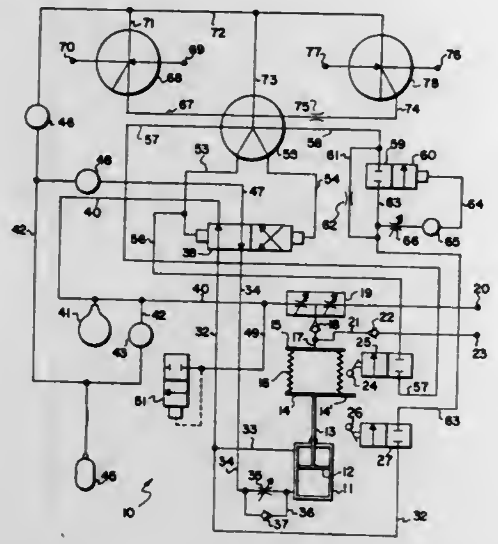
1. Circuitry for producing from a transducer generated electrical analog of an arterial pressure waveform an initial systole spike and a dicrotic notch spike, said circuitry comprising:

low pass filter circuit means;
a first comparator having a first input adapted to be connected to said transducer and a second input adapted to be connected to said transducer through said low pass filter circuit means;
a second comparator having input means and output means;
unidirectional low pass filter circuit means;

means for connecting said unidirectional low pass filter means between an output of said first comparator and said input means of said second comparator;
first unidirectional coupling means having one end connected to said output means of said second comparator to provide discrete initial systole pulses at its other end;
a differentiator circuit having input means and output means;
a third comparator having input means and output means;
a high pass filter connected between said output means of said differentiator and said input means of said third comparator;
means for connecting said input means of said differentiator to said trnasducer;
gate means having input means and output means;
second unidirectional coupling means connected between said output means of said third comparator and said input means of said gate to supply set pulses to said gate;
means for resetting said gate each time the voltage applied to said second input means of said first comparator becomes greater than the voltage applied to said second input means of said first comparator; and
third unidirectional coupling means having one end connected to said output means of said gate to produce a dicrotic notch voltage pulse at its other end.

3,850,170
OXYGEN POWERED VOLUME CYCLED RESPIRATOR WITH OXYGEN AIR MIX

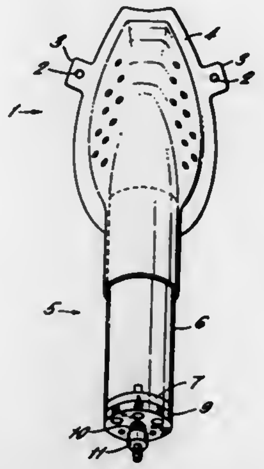
Lyndon S. Cox, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed July 26, 1972, Ser. No. 275,373
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.8 **10 Claims**



1. An oxygen-powered respirator utilizing only pressurized oxygen as its power source, said respirator comprising:
  a. means for supplying oxygen to power said respirator and mixing a predetermined percentage of said oxygen with air to form breathing gas;
  b. delivery means having a delivery stroke and a refill stroke for supplying a predetermined amount of said breathing gas to a patient; and
  c. control means operatively associated with said pressurized oxygen power source and said delivery means and adapted to cyclically and reciprocally stroke said delivery means to provide said breathing gas to a patient during alternate predetermined periods of an inspiratory cycle, said control means comprising:
    1. fluid amplifier means and interface valve means, said fluid amplifier means being operatively associated with and controlled in whole or in part by said delivery means and adapted to activate said interface valve means to reciprocally stroke said delivery means;
    2. first Schmitt trigger means adapted to control said fluid amplifier means together with said delivery means, said first Schmitt trigger means including means for receiving a predetermined allowable overpressure setting, means for sensing the pressure of said breathing gas at the patient, and means for providing a first output signal whenever said sensed pressure at the patient exceeds said predetermined allowable pressure setting, said first output signal causing said fluid amplifier means to activate said interface valve means to interrupt the delivery stroke and to commence the refill stroke of said delivery means; and
    3. second Schmitt trigger means adapted to control said fluid amplifier means together with said delivery means and said first Schmitt trigger means, said second Schmitt trigger means including means for receiving a predetermined inspiratory pressure setting, means for sensing the inspiratory pressure of said breathing gas at the patient and means for providing a second output signal whenever said sensed inspiratory pressure drops below said predetermined inspiratory pressure setting, said second output signal causing said fluid amplifier means to activate said interface valve means to interrupt the refill stroke and to commence the delivery stroke of said delivery means.

3,850,171
MEDICAL FACE MASKS

Graham John Ball, and Ivor John Martin Fehr, both of Basingstoke, England, assignors to Vickers Limited, London, England
Filed May 16, 1973, Ser. No. 360,788
Int. Cl. A62b *7/02*
U.S. Cl. 128—203 **5 Claims**



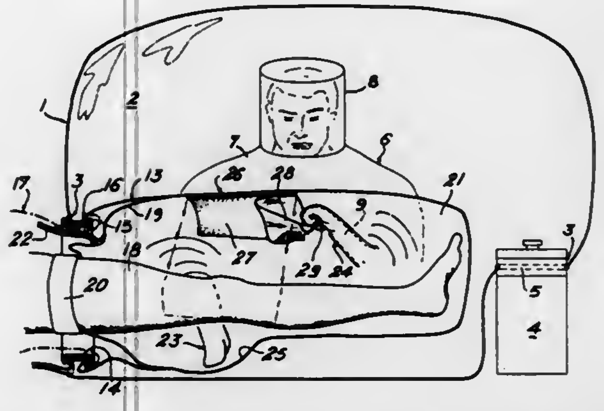
1. A medical face mask comprising a hollow body portion adapted to fit over the nose and mouth of a patient, said body portion having an inlet opening and at least one outlet opening, and an inlet portion including a venturi throat in communication with said inlet opening and having first and second apertured members, said second apertured member being fast with said inlet portion and including a plurality of apertured, said second aperture member including gas inlet means for introduction of a gas into said venturi throat, and said first apertured member being rotatably mounted to said second apertured member and including a plurality of apertures adapted for registry with selected apertures of said second member to permit selectable amounts of air into said venturi throat.

3,850,172
GAS-TIGHT ENCLOSURES FOR SURGICAL OPERATIONS

Jean-Pierre Cazalis, 3 avenue d'Austerlitz, 78 600 Maisons Laffitte, France
Filed June 5, 1973, Ser. No. 367,118
Claims priority, application France, June 5, 1972, 72.20173
Int. Cl. A61b *19/00*
U.S. Cl. 128—204 **13 Claims**

1. A gas-tight enclosure for surgical operations, comprising a wall flexible and extensible under the influence of a gas at

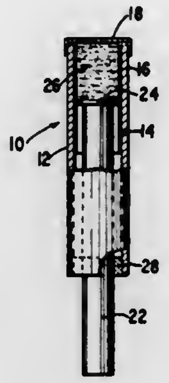
a pressure slightly above atmospheric pressure, means integral with said wall including gloves and pieces of clothing of the diver's suit-type giving a surgeon access to said enclosure while maintaining it gas-tight,
at least one hollow appendage extending inwardly of said enclosure forming a gas-tight sterile enclosure having an open proximal end portion attached to said wall to receive a given part of a patient's body and a closed distal end portion, an annular web secured to said appendage at the proximal end thereof, a garter-like member secured to said web adapted to clasp about the part of the patient's body from the outside to close said appendage,



an inlet orifice opening into and for introducing into the space defined by the part of the patient's body, said appendage and said web, an inert gas to inflate said appendage against the gas pressure within said enclosure,
an operative-field integral with said appendage having a removable self-adhesive coating on the inside surface of said appendage, whereby, once said coating has been removed, said operative field can be applied against the part of the patient's body.

3,850,173
FLUSHABLE VAGINAL APPLICATOR

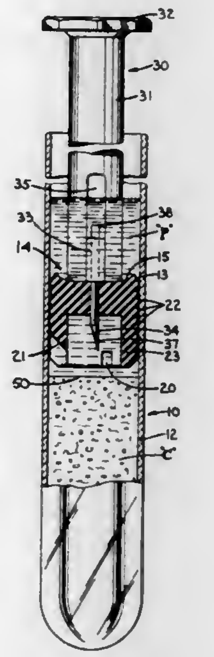
Barry H. Dash, Englewood Cliffs, N.J., assignor to American Home Products Corporation, New York, N.Y.
Filed Apr. 30, 1973, Ser. No. 355,393
Int. Cl. A61m *31/00*
U.S. Cl. 128—261 **2 Claims**



1. A single use vaginal medicament applicator comprising:
A. A low wet strength first cylindrical body member having a distal end,
  1. An oil and water resistant cylindrical liner disposed inside said first cylindrical body member extending along and adjacent said distal end thereof,
  2. Means for providing a medicament protection and discharge means comprising a frangible oil and water resistant seal fixedly connected to the outer end of said liner and to said first cylindrical body distal end;
B. A low wet strength second cylindrical body member slidably received within said first cylindrical body member and said liner with one end extending outside thereof,
  1. An oil and water resistant plunger diaphragm mounted on the end of said second cylndrical member extending inside said liner and defining a chamber and sealing the contents of said liner and constituting a means to expel the contents from the liner by force applied to said second cylindrical member.

3,850,174
PLASMA SEPARATOR ASSEMBLY

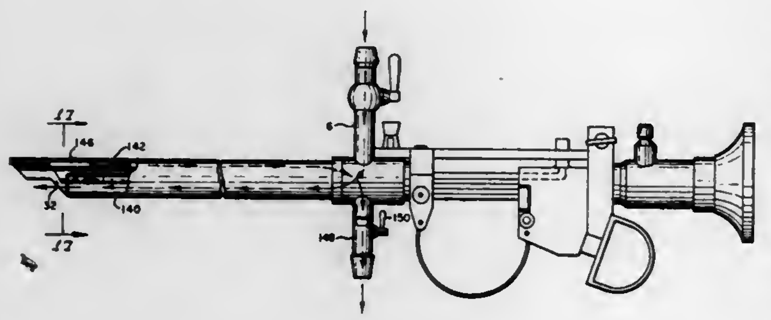
Waldemar A. Ayres, Rutherford, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.
Filed Mar. 14, 1973, Ser. No. 341,044
Int. Cl. A61b *5/14*
U.S. Cl. 128—272 **12 Claims**



1. An assembly for collecting blood and anti-coagulant treated blood and for separating said blood into its light liquid phase and its heavy, substantially cellular phase which comprises;
  a blood collection container having at least one open end;
    a stopper-piston slidably mounted in said open end made of a self-sealing, elastomeric, pierceable material which functions as a stopper to seal said open end of said blood collection container when emplaced therein and which functions as a piston when moving from its position at the open end of said container to a position within said container which is intermediate to the ends thereof;
  said stopper-piston having;
    i. a lower tubular body portion having slidingsealing means positioned around the outer periphery thereof and integrally formed therewith, said tubular body portion with sealing means being of a dimension such that when inserted in said container, a sliding seal is made with the inner walls of said container; and
    ii. an upper solid body portion having integrally formed means on the outer periphery thereof for (a) engaging the rim of the open end of said container when the stopper-piston functions as a stopper and for (b) forming a seal with the inner walls of said container when the stopper-piston functions as a piston; and
means for sliding said stopper-piston downwardly into said collection chamber when it contains blood separated into its light and heavy phases, so as to establish an impermeable barrier separating the light liquid phase from the heavy phase of blood which comprises a pusher having,
  A. a blunt end for pressing against the upper surface of said stopper-piston; and
  B. a tubular member mounted at said blunt end and being capable of piercing said stopper-piston to form a passage therethrough, said tubular member having open ends so that upon piercing said stopper-piston there is fluid communication via said member between the upper and lower surfaces of the stopper-piston and whereby an axial force exerted against said pusher will cause the light phase to be conducted through the tubular member, enabling the stopper-piston to move downwardly.

3,850,175
RESECTOSCOPE WITH CONTINUOUS IRRIGATION

Jose J. Lglesias, 1341 North Ave., Elizabeth, N.J. 07208
Filed July 3, 1972, Ser. No. 268,806
Int. Cl. A61b *17/32*
U.S. Cl. 128—303.15 **10 Claims**

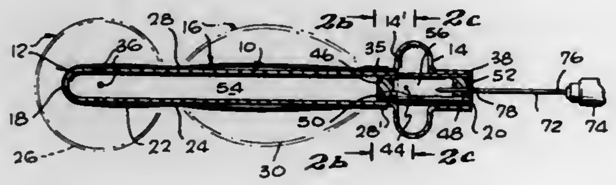


1. A urological endoscopic instrument, comprising an elongated cylindrical beaked sheath,

a tube within and extending longitudinally of the sheath with its distal end within the beak of the sheath, and being of less cross sectional area than the sheath to provide between the sheath and the tube an inflow conduit for irrigating fluid for the operative field,
means at the proximate end of the sheath for supplying irrigating fluid to the inflow conduit,
a telescope having a tubular shaft within and extending longitudinally of the tube and being of less cross sectional area than the tube to provide between the tube and the telescope shaft an outflow conduit for turbid fluid from the operative field,
an outflow connection at the proximate end of the tube for removal of turbid fluid from the outflow conduit,
the telescope having an objective lens at the distal end of the shaft which is proximate to the distal end of the tube.

3,850,176
NASAL TAMPON

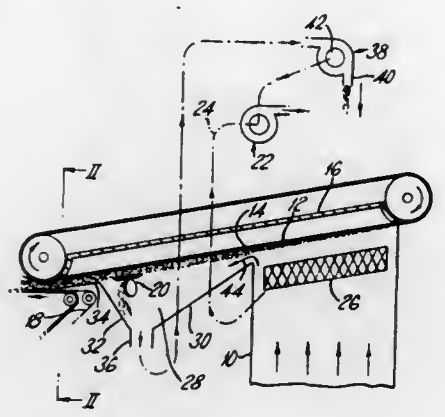
George H. Gottschalk, 8618 S. Sepulveda Blvd., Los Angeles, Calif. 90045
Continuation-in-part of Ser. No. 224,172, Feb. 7, 1972, abandoned. This application Oct. 9, 1973, Ser. No. 404,267
Int. Cl. A61b *17/12*
U.S. Cl. 128—325 **11 Claims**



1. A self-retaining nasal tampon comprising an elongated flexible tube open at one end and closed at its opposite end, a hollow self-sustaining bulb carried on said tube adjacent the open end portion thereof, and having a substantially larger diameter than the diameter of said tube, at least one inflatable member surrounding and sealingly attached to said tube remote from said bulb, said inflatable member being free to expand and form an inflated bag, passage means communicating the interior of said tube with said inflatable member to permit inflation thereof by fluid introduced into said tube and said inflatable member via passage means, said bulb being sufficiently rigid to be self-sustaining in the absence of internal pressure and thereby to prevent aspiration of the nasal tampon by a patient whether the inflatable member is inflated or deflated, and sealing means positioned in said tube adjacent said bulb, said sealing means having an inner portion in communication with said passage means and an outer portion located and arranged to permit communication between said inner portion and a source of fluid under pressure to permit inflation of said inflatable member, and to prevent deflation of said inflatable member after inflation thereof, a second inflatable member sealingly attached to said tube and disposed around said flexible tube intermediate the ends thereof and between said first mentioned inflatable member disposed around said closed end of said tube, and said bulb, said second inflatable member being free to expand and form an inflatable bag around the intermediate portion of said tube, said inflatable members being independently inflatable, second passage means communicating the interior of said tube and said second inflatable member to permit inflation thereof by fluid introduced into said second inflatable member, second sealing means positioned within said tube and spaced from said first mentioned sealing means, said second sealing means having an inner face in communication with said second passage means and an exterior face located and arranged to permit communication between said last mentioned inner face and a source of fluid under pressure, to permit inflation of said second inflatable member, and to prevent deflation of said second inflatable member upon inflation thereof.

3,850,177
CIGARETTE MAKING MACHINES

Francis A. M. Labbe, Neuilly-sur-Seine, France, assignor to Molins Limited, London, England
Filed Oct. 19, 1971, Ser. No. 190,549
Claims priority, application Great Britain, Oct. 20, 1970, 49843/70
Int. Cl. A24c *05/18*
U.S. Cl. 131—66 **13 Claims**



1. A cigarette making machine comprising an elongated air-pervious conveyor, a channel extending towards the conveyor for directing tobacco towards the conveyor to form a cigarette filler stream on the conveyor, and suction means substantially coextensive with the operative length of the conveyor for compressing the filler stream thereon and for drawing air through the channel and towards the conveyor, characterized in that the machine includes a cover which extends along the conveyor to define a cover space extending from the channel and along and adjacent to the surface of the filler stream opposite to the conveyor, which space is under suction as a result of the transmission of suction through the conveyor from the said suction means, and including means for producing an air flow from the channel and into and through the cover space, moving substantially parallel to and in the same direction as the conveyor, which air flow entrains any particles of tobacco which become separated from the filler stream.

3,850,178
HAIR SETTING COMPOSITION AND METHOD OF USE

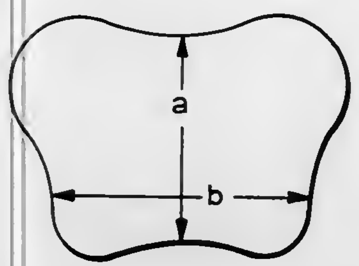
Daniel Schoenholz, Basking Ridge, N.J., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Sept. 15, 1971, Ser. No. 180,926
Int. Cl. A45d *3/00, 19/00;* **A61k** *7/00*
U.S. Cl. 132—7 **13 Claims**

1. A hair setting composition comprising an aqueous or alcoholic aqueous medium having dispersed therein:

a. an effective amount of a film-forming carboxylic resin having a molecular weight of at least 30,000 wherein the carboxylic moiety comprises at least about 5% by weight of the resin, said resin being substantially completely soluble in said composition and selected from:
   i. a copolymer of maleic acid and methyl vinyl ether,
   ii. a copolymer of a monoalkyl ester (C1C4) of maleic **Cand methyl vinyl ether,**
   iii. a copolymer of vinyl acetate, crotonic acid and at least one vinyl ester of an alpha-branched saturated aliphatic carboxylic acid having at least five carbon atoms, and
   iv. a copolymer of acrylamide, N-tert. butylacrylamide, acrylic acid and N-vinylpyrrolidone,
b. a non-toxic and non-color generating zinc or zirconium metal compound in an amount effective to form metal salt linkages with said carboxylic moiety, and
c. a volatile alkali in an amount effective to form with said metal compound a complex which is initially soluble in said hair setting composition when the pH of the composition is at least 8.5.

3,850,179
METHOD OF MAKING WIGS OR THE LIKE

Kenji Takeya; Jiro Shimizu, and Shinsaku Minami, all of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan
Filed Dec. 28, 1973, Ser. No. 429,299
Claims priority, application Japan, Jan. 12, 1973, 48-6400
Int. Cl. A41g *3/00*
U.S. Cl. 132—5 **1 Claim**



1. A method of making wigs or the like characterized by sewing, as wefted hairs, the synthetic fibers in which respectively four concave arcs and convex arcs are arranged alternately on the peripheral edge part of the fiber cross-section, the relation of

$$1.0 \quad b/a \quad 3.5 \qquad (1)$$

is maintained between the short diameter a and long diameter *b* connecting the opposed concave arcs and intersecting rectangularly with each other and the drape index K (cm.$^{-3}$) obtained by dividing the bending deflection Y (cm.) at the free end of a cantileter on the entire length of which the dead-weight of the wig forming fibers is uniformly distributed by the fourth power of the span length *l* of the cantilever from the fixed end to the free end is maintained in the range of

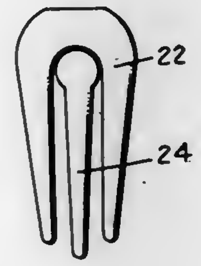
$$0.07 \times 10^{-5} \quad K \quad 0.16 \times 10^{-5} \qquad (2)$$

and then heat-setting the wefted hairs as curled.

3,850,180
HAIR DETANGLER

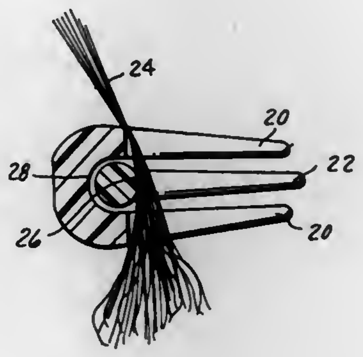
William D. Ryckman, Jr., and Fredrick T. Meeks, both of Asheboro, N.C., assignors to General Electric Company, Bridgeport, Conn.
Filed Mar. 27, 1973, Ser. No. 345,451
Int. Cl. A45d *24/00*
U.S. Cl. 132—11 A **6 Claims**

1. A hair detangling device having a supporting handle,
power means in said handle providing rapid reciprocating movement,
a pair of spaced outer comb means supported from said handle,
separate comb means attached to said powered reciprocating means and disposed to be straddled by said spaced comb means,
said separate comb means having teeth longer than said straddling spaced comb means, the teeth of said separate comb means being transversely spaced from the teeth of said outer comb means and longitudinally aligned to substantially avoid pinching, squeezing, or shearing of the hair,
whereby a shaking and detangling movement only is applied to the hair in all hair-engaging positions of the comb means.



3,850,181
HAIR DETANGLER

Fred E. Baker, Asheboro, N.C., assignor to General Electric Company, Bridgeport, Conn.
Filed Aug. 20, 1973, Ser. No. 389,669
Int. Cl. A45d *24/00*
U.S. Cl. 132—11 A **6 Claims**



1. For use with a hair detangler having a hand support and power means in a housing providing rapid reciprocating movement,

a pair of spaced outer comb means supported on the housing, and
separate comb means attached for reciprocation by the power means and disposed to be straddled by said spaced comb means,
said separate comb means having teeth longer than said straddling comb means, and
having the root surface between its teeth recessed below the root surface of said outer comb means,
whereby hair under tension does not touch the root surface of said separate comb means and a shaking and detangling movement only is applied to the hair.

3,850,182
DENTAL FLOSS OR TAPE HOLDER FOR USE ON A TOOTHBRUSH

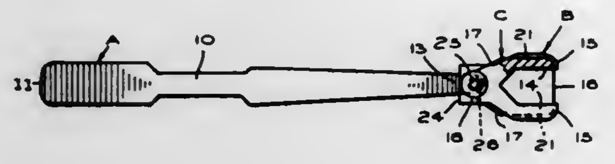
David H. Clark, Jr., 72 E. 3rd Ave., San Mateo, Calif. 94401
Continuation-in-part of Ser. No. 310,811, Nov. 30, 1972, abandoned. This application Jan. 14, 1974, Ser. No. 433,346
Int. Cl. A61c *15/00*
U.S. Cl. 132—92 R **4 Claims**

1. In a dental floss or tape holder for use on a toothbrush:
a. a flat body having a pair of spaced arms, each arm having a tip, the arms being made to support a strand of dental floss

or tape, with the strand having a teeth-cleaning section stretched between the tips;

b. means on the body operable for anchoring the ends of the strand in place to maintain the teeth-cleaning section taut;

c. the body being provided with a socket extending rearwardly thereinto from a forward end of the body along a medial plane of the body, the socket being dimensioned to have the outer end of a conventional toothbrush handle slidably telescoped endwise thereinto to support the holder on the handle, the forward end portion of the body extending entirely around the socket so as to encase the outer end of the handle and providing a protective covering thereover, when the holder is supported on the handle;



d. the body defining substantially parallel upper and lower planes, and the socket and spaced arms being confined between these planes, with arms projecting endwise beyond the handle in prolongation with the handle, when the body is supported on the handle;

e. the socket having a bottom wall disposed to limit endwise telescoping of the holder over the outer end of the handle.

3,850,183
LIPSTICK AND SIMILAR HOLDER

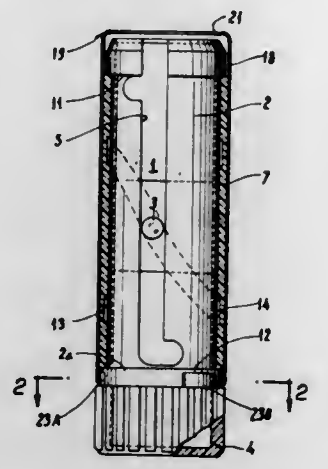
Ralph Gruska, Saint Maur, France, assignor to Ejectoret S.A., Geneva, Switzerland

Filed Feb. 20, 1973, Ser. No. 333,631

Claims priority, application France, Mar. 14, 1972, 72.08757

Int. Cl. A45d *40/26*

U.S. Cl. 132—88.7 **4 Claims**



1. A holder for a lipstick or a similar stick of pasty material, comprising: a substantially cylindrical inner sleeve of plastic material having a cylindrical sleeve portion defining a slot; an outer sleeve of plastic material having a slot and rotatably mounted on said inner sleeve; a stick holding cup provided with an outer radially extending lug engaging said slots, one of said slots being longitudinal and the other slot being helical; and a metallic protecting tube force fitted over said outer sleeve, said inner sleeve further comprising an operating knob and an intermediate portion connecting said operating knob to said cylindrical sleeve portion at one end of said sleeve portion, said connecting portion being located beyond the corresponding end of said outer sleeve, and a corresponding terminal portion of said metallic tube surrounding said connecting portion to define a circumferential clearance delimited by the outer surface of said connecting portion and the inner surface of said terminal portion, one of said surfaces delimiting said clearance having a plurality of unequally spaced projections adapted for frictional engagement with the other one of said clearance delimiting surfaces, said projections providing within said circumferential clearance a plurality of arcuate zones wherein said surfaces are in frictional engagement with each other alternating with a plurality of zones of unequal width wherein said surfaces are spaced from each other, and said metallic tube being in frictional engagement with said inner sleeve only at said spaced projections.

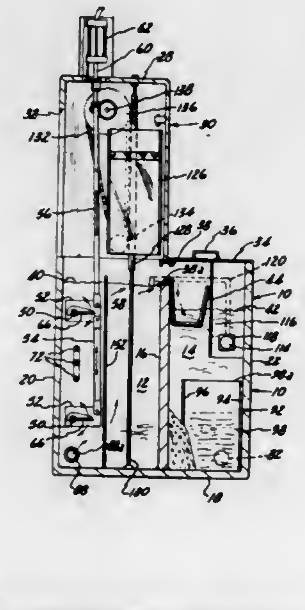
3,850,184
PARTS TREATING APPARATUS

Charles G. Fossati, Grosse Pointe Park, and Francis B. Dalton, Tecumseh, both of Mich., assignors to Service Tectonics, Inc., Blissfield, Mich.

Continuation-in-part of Ser. No. 249,881, May 3, 1972, abandoned. This application Jan. 19, 1973, Ser. No. 325,178

Int. Cl. B08b *3/10, 15/02*

U.S. Cl. 134—56 R **32 Claims**



1. A parts treating apparatus comprising

a treating liquid containing tank having a treating compartment and a separator compartment, said compartments separated by a substantially vertical wall having a top edge over which liquid flows from the treating compartment to the separator compartment;

means agitating said liquid in said treating compartment only, and means ensuring substantial quiescence of the liquid in said separator compartment for settlement of foreign matter to a lower portion thereof;

means selectively alternatively recirculating liquid from a level above settled foreign matter in said separator compartment into said treating compartment and draining liquid from either or both of said compartments;

means automatically maintaining a selected liquid volume in said tank; and

handling means arranged for lowering and raising parts to be treated into and out of said treating compartment and restricting same from interference with said agitating means.

3,850,185
MEANS IN A DISHWASHING MACHINE FOR STARTING THE OPERATIONAL CYCLE THEREOF

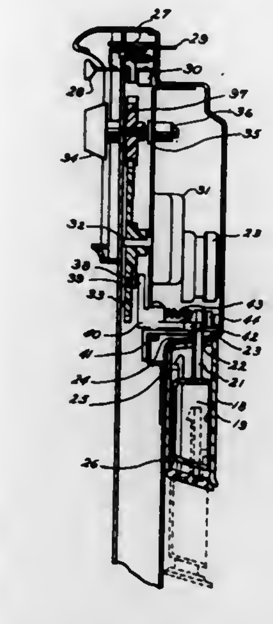
Lauren W. Guth, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed May 31, 1973, Ser. No. 365,453

Int. Cl. B08b *3/02*

U.S. Cl. 134—58 DL **9 Claims**

1. In an automatic dishwashing machine having a wash chamber with a latchable access door and an electrically energizable sequence control means for conducting the machine through its operational cycle, the improvement therewith comprising a switching arrangement adapted to respond to manual latching of the access door such that initial energization of the sequence control means to begin the cycle occurs as an incident of the latching action, a manually pre-settable dispensing apparatus disposed to be in communication with the wash chamber and adapted to dispense during the cycle, and wherein the switching arrangement includes a first switch in the energizing circuit of the sequence control means, and the first switch being adapted to be opened as a function of the dispensing of the dispensing apparatus and closable in response to the dispensing apparatus being pre-set.



3,850,186
GARDEN UMBRELLA

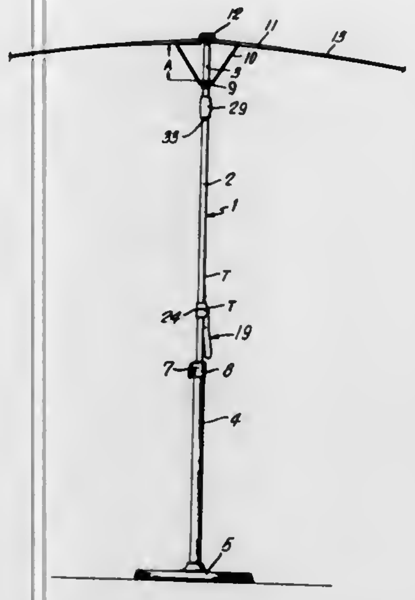
Heinz Weber, Hilden, and Klaus Thur, Solingen, both of Germany, assignors to Telesco Brophey Limited, Montreal, Quebec, Canada

Filed Jan. 18, 1973, Ser. No. 324,802

Claims priority, application Germany, Jan. 29, 1972, 2204217

Int. Cl. A45b *17/00*

U.S. Cl. 135—20 M **4 Claims**



1. In a tiltable garden umbrella including a support stick having linearly alignable first and second tubular members with the second member hinged to the first member for pivotal movement from linear alignment with the first member to a tilted position; the improvement comprising a crown carrier member slidably mounted for relative movement within the second member; a crown fixed to the crown carrier member; dome ribs hinged to the crown and to struts which in turn are hinged to the second stick member; leverage means provided on the first stick member; tension connecting means provided between the crown carrier member and the leverage means disposed within the first member; hinge connection means between the first and second members having an axis extending tranversely of the stick; the crown carrier member including a pivot member having a transverse axis parallel and substantially adjacent the axis of the hinge connection means of the first and second stick member; the tension connecting means being pivotally connected to said pivot member of the crown carrier member and to the leverage means whereby the connecting means remains substantially in the same plane within the first member at the pivot member whether the second member is aligned or in a tilted position.

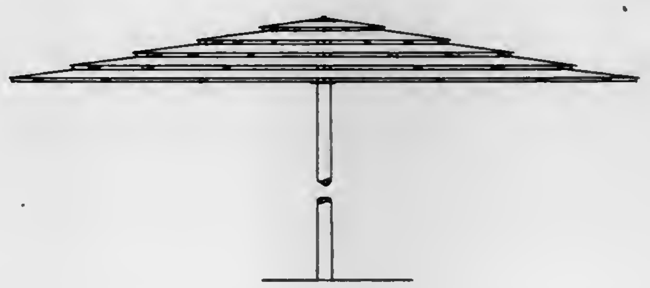
3,850,187
DYNA-SHADE

Melvin Roger Haisler, Rt. 5 Box 75, Denton, Tex. 76201

Filed Apr. 9, 1973, Ser. No. 348,968

Int. Cl. A45b *11/00*

U.S. Cl. 135—20 R **6 Claims**



1. An umbrella-shaped shade-providing structure, comprising:

a central column adapted for attachment in the ground on the like;

a plurality of first radially extending frame members and a first column mount means mounting said first radially extending frame members onto said column;

each of said first radially extending frame members sloping downwardly from said first column mount means;

a plurality of second radially extending frame members and a second column mount means mounting said second radially extending frame members for lateral extension into connection with said first radially extending frame members;

a plurality of cover segments mounted on said first radially extending frame members; and

said first radially extending frame members having a plurality of offsets therein to provide offset strut segments for receiving said cover segments to form a plurality of offset cover segments which cooperate to provide shade while decreasing wind resistance and allowing the ventilation of heat.

3,850,188
FOLDING UMBRELLA

Kazo Saito, No. 9-374 Ohtorinakamachi, Osaka, Japan

Filed Dec. 15, 1972, Ser. No. 315,659

Claims priority, application Japan, Mar. 31, 1972, 47-32427

Int. Cl. A45b *25/14, 25/16*

U.S. Cl. 135—25 R **21 Claims**

1. A folding umbrella, comprising:

a contractile center rod movable between a collapsed storage position and an extended use position;

a ferrule fixedly secured to the center rod directly adjacent the upper end thereof;

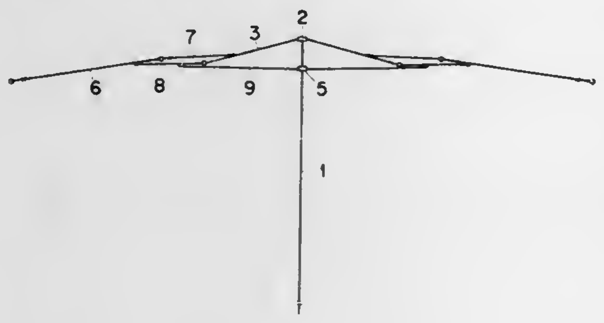
a runner slidably mounted on said center rod intermediate the ends thereof; and

a collapsible rib assembly movable between a collapsed storage position and an extended position, said rib assembly including a main rib, an end rib, a connecting link, an auxiliary link and a strut;

said main rib having the upper end thereof pivotally connected to said ferrule and the lower end thereof pivotally connected to the inner end of said auxiliary link;

said end rib being carried by said auxiliary link and spaced from said main rib;

said connecting link having the outer end thereof pivotally connected to the upper end of said end rib and the inner end thereof pivotally connected to said main rib at a location disposed between the upper and lower ends of said main rib; and

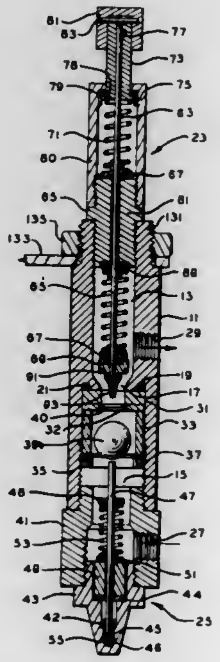


said strut being pivotally connected at the inner end thereof to said runner and having the outer end thereof pivotally connected to one of said auxiliary link, said connecting link and said end rib, including the pivotal joints thereof.

3,850,189
SAFETY VALVE HAVING SEALED RESET MEANS

John L. Follett, Fair Haven, N.Y., assignor to Follett Valves, Inc., Fair Haven, N.Y.

Filed May 30, 1972, Ser. No. 257,655
Int. Cl. F16k *17/28, 17/36, 17/38*
U.S. Cl. 137—39 **6 Claims**



1. In an automatic shut-off valve of the type wherein the valve is automatically closed by the movement of a pallet into engagement with a valve seat in response to presence of an unsafe condition, apparatus to re-set the pallet after the valve has operated comprising:

a. a guide member having a hole axially aligned with the center of the valve seat and positioned on the side of said valve seat opposite the pallet;

b. a rod movable in said guide member between a first and second position, said first position being spaced from the plane of the valve seat and said second position passing through said plane to force said pallet away from said seat;

c. plunger means permanently attached to the end of said rod closest to said seat, said plunger means having a diameter less than the hole in said seat but greater than the diameter of said rod;

d. an element slidable on said rod placed adjacent said plunger means and having sealing means inserted on the circumference of its end closest said seat, said closest end being of a diameter greater than the hole in said seat;

e. a first spring encircling said rod between said element and said guide member;

f. a second spring encircling said rod on the opposite side of said guide member from said first spring, and being stronger than said first spring;

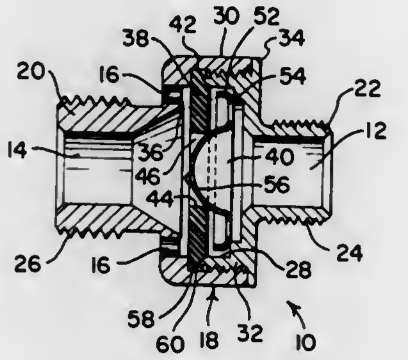
g. stop means affixed to the other end of said rod; and

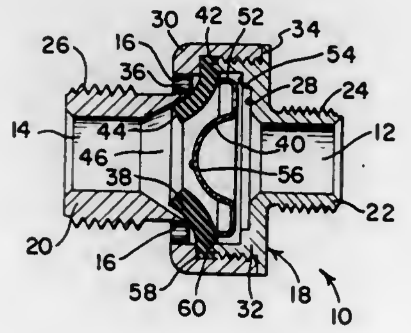
h. sealing means around said rod to prevent leakage between said rod and said guide member, said sealing means comprising a spring shoulder between said guide and said second spring, said shoulder being hollowed on the end which contacts said guide member and containing in the inner portion of said hollow an oiled felt washer and in the outer portion of said hollow a silicone washer, said silicone washer having an outer diameter greater than the size of said hollow and an inner diameter smaller than the size of said rod thereby causing sealing on its inner and outer surface.

3,850,190
BACKFLOW PREVENTER

Donald E. Carlson, Highland Park, Ill., assignor to Mark Controls Corporation, Evanston, Ill.

Filed Sept. 17, 1973, Ser. No. 397,828
Int. Cl. F16k *45/00*
U.S. Cl. 137—218 **10 Claims**





1. A backflow preventer comprising:

a housing having an inlet passage and an outlet passage;

a generally annular diaphragm having an outer peripheral region fixed to said housing between the inlet and outlet passages and, having a central opening bounded by an inner region; said diaphragm being flexible and resilient for movement downstream from a relaxed position in response to pressurization of the inlet passage;

a valve seat surrounding the outlet passage radially between the diaphragm outer and inner regions and spaced downstream from the diaphragm in its relaxed position;

a vent passage radially outside said valve seat and communicating across said valve seat with said outlet passage in the relaxed position of said diaphragm;

a check member disposed on the upstream side of said diaphragm and having a valve surface engageable with said inner region; and

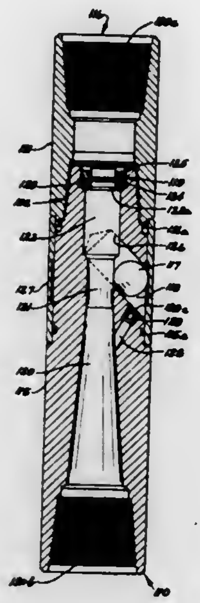
spaced stop means for permitting limited movement of said check member between an upstream position wherein the valve surface engages said inner region in the relaxed position of the diaphragm and a downstream position wherein said diaphragm engages said valve seat and said valve surface remains in engagement with said inner region;

the portion of said diaphragm radially inside said valve seat being movable further downstream to permit flow through said central opening.

3,850,191
CHECK VALVE ASSEMBLY

Cicero C. Brown, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.

Filed Jan. 9, 1973, Ser. No. 322,226
Int. Cl. F16k *15/04*
U.S. Cl. 137—271 **9 Claims**



1. A check valve assembly for permitting unrestricted flow in one direction and limited flow in the reverse direction comprising:

a. a valve body, having walls the exterior of which are cylindrical and substantially uniform in diameter throughout the length of said valve body, said walls surrounding a longitudinal flowbore comprising first and third concentric sections connected by a second concentric section of restricted diameter;

b. seat means carried by said valve body at one end of said third flow bore section;

c. recess means in said valve body walls communicating with said flowbore wear the junction of said second and third flowbore sections;

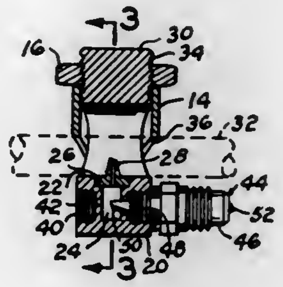
d. ball closure means carried in said recess means out of said flowbore but movable into said flowbore for sealing engagement with said seat means, in response to a predetermined rate of reverse flow through said check valve assembly, to block reverse flow of fluids through said check valve assembly;

e. equalizing passage means in said valve providing fluid communication between said recess mean and said first flowbore section, said equalizing passage being provided with replaceable orifice means, changing of which regulates the reverse flow rate to which said ball closure member is responsive for blocking flow through said check valve assembly.

3,850,192
LINE TAPPING SERVICE VALVE CLAMP

John W. Mullins, P.O. Box 20524, Oklahoma City, Okla. 73120

Filed Feb. 26, 1973, Ser. No. 335,636
Int. Cl. B23b *41/08;* **F16e** *41/04*
U.S. Cl. 137—318 **1 Claim**



1. A tubular line clamp, comprising:

a cylindrical body having external threads at one end portion and having a laterally open slot intermediate its ends forming an arcuate line nesting recess facing toward its threaded end portion;

a nut threadedly engaging said external threads;

a follower comprising a sleeve surrounding the externally threaded end portion of said body and movable toward the other end of said body by said nut,

said follower having a transverse recess in at least one of its end surfaces and cooperating with the body recess in gripping an intermediate portion of a line,

said body being coaxially bored from its body nesting recess surface to form a socket,

said body being counterbored coaxial with the socket,

a centrally bored line piercing tip within the counterbore communicating with the socket and projecting, coaxial with said body from the surface of the arcuate line nesting recess, a distance greater than the thickness of the wall of a line to be pierced,

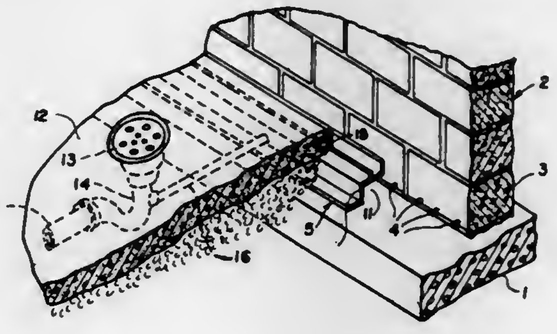
said body having a lateral service valve receiving bore formed on an axis normal to the axis of the socket and terminating inwardly of the surface of the body in close spaced relation with respect to the body surface defining the perimeter of the socket and forming a frangible wall between the inward limit of the lateral bore and the socket; and,

a service valve having an end portion disposed within the lateral bore and having a wall piercing tip movable toward the frangible wall.

3,850,193
EXPANSION JOINT AND DRAIN CONDUIT FOR FOUNDATION WALLS

Ralph F. Guzzo, R.D. No.1, Amity, Pa. 15311

Filed Oct. 9, 1973, Ser. No. 404,428
Int. Cl. E02d *52/302*
U.S. Cl. 137—362 **2 Claims**



1. In a building having a footer, a foundation wall supported on said footer and a concrete floor having a perimetrical end supported on said footer; the improvement comprising a drain

conduit of stepped cross-section having a horizontal end flange supported on said footer and a vertically upwardly extending end flange resting against the lowermost portion of said wall to provide a drain channel extending along the joint between said foundation wall and footer, a plurality of drain tubes connecting the riser flange of said drain conduit to a sewer, said drain conduit also having an integral vertically upwardly extending flange in spaced parallel relationship with said vertical end flange, and a strip of expansible material extending between said vertical flanges and between the perimeter of said floor slab and the interior vertical surface of said lowermost portion of the foundation wall so as to take up for thermal expansion and contraction of the floor slab to prevent formation of a leakage opening between said slab and foundation wall.

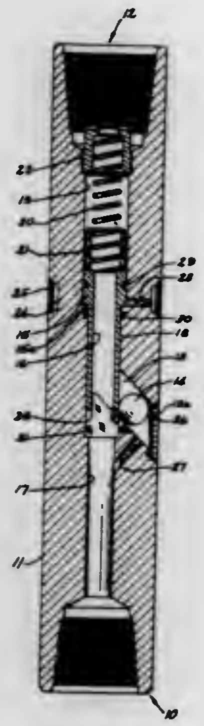
3,850,194
CHECK VALVE ASSEMBLY

Cicero C. Brown, Houston, Tex., assignor to Brown Oil Tool, Inc., Houston, Tex.

Filed Jan. 9, 1973, Ser. No. 322,217

Int. Cl. F16k *15/18*

U.S. Cl. 137—496 **13 Claims**



1. A check valve assembly for permitting unrestricted flow in one direction and limited flow in the reverse direction comprising:

a. a valve body having a longitudinal flowbore therethrough and a recess in its walls communicating with said flowbore;

b. seat means carried by said valve body within said flowbore;

c. closure means, comprising a ball member, carried by said valve body for movement from a normally open position in which said ball member is disposed in said recess and in which flow through said flowbore is unrestricted, to a closed position engaging said seat means, in which reverse flow through said valve body is prevented;

d. reciprocable sleeve means carried by said valve body for movement from a first position, preventing movement of said ball member from said open position, to a second position, allowing movement of said ball member to said closed position, said sleeve means, when is said first position, substantially blocking said recess and protecting said recess and ball member from erosive flow in said flowbore; and

e. a pressure equalizing passage providing fluid communication between said recess and said flowbore at a point downstream of said sleeve means.

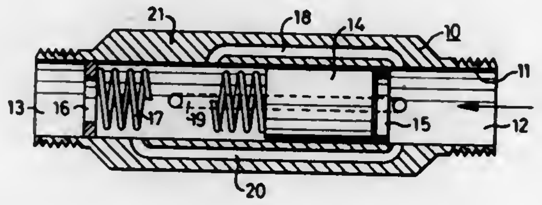
3,850,195
FLUID PRESSURE VALVE

Eskil A. I. Olsson, Frustunavagen 43, 125 40 Alvsjo, Sweden

Filed Apr. 30, 1973, Ser. No. 355,642

Int. Cl. F16k *17/26*

U.S. Cl. 137—503 **19 Claims**



1. A fluid pressure valve for a fluid line for limiting the pressure drop thereacross in at least one flow direction to a predetermined maximum value, comprising:

a housing having an inlet, an outlet, an axial bore in the housing interconnecting the inlet and the outlet,

a piston mounted in the bore for axial movement therein, the upstream side of the piston being subjected to inlet pressure in the inlet and the downstream side of the piston being subjected to outlet pressure in the outlet,

biasing means for biasing the piston against the action of the inlet pressure,

a plurality of by-pass channels extending axially within the housing to interconnect the inlet and the outlet for fluid communication therebetween and spaced apart circumferentially,

the piston being movable to an initial position in the bore under the action of the outlet pressure and of the biasing means acting in one direction and the force of the inlet pressure in the other direction,

said channels being so positioned axially relative to the piston that each channel is open at the inlet and the outlet for fluid communication therebetween in the said initial position of the piston, and as the piston moves from said initial position upon increasing pressure drop across the piston, a successively increasing number of said by-pass channels are closed to prevent fluid flow therethrough.

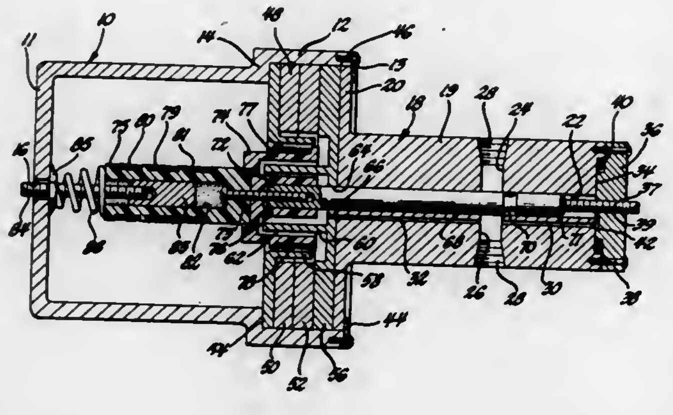
3,850,196
METERING ROD WITH POSITION INDICATING MEANS

Douglas I. Fales, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 5, 1973, Ser. No. 412,574

Int. Cl. F16k *31/04, 37/00*

U.S. Cl. 137—554 **3 Claims**



1. A valve comprising, in combination: a case; a fluid flow passage; a bore intersecting said fluid flow passage; a rod axially movable within said bore, a portion of said rod varying axially in diameter for variation of fluid flow through said fluid flow passage with axial movement of said rod, spring means in said case biasing said rod to a first position; a magnet in said case; driving coil means fixed to said rod adjacent said magnet, said driving coil being adapted to co-act upon the application of an electric voltage thereto with said magnet against the bias of said spring means to position said rod axially in accordance with the voltage applied thereto; and a linear differential transformer in said case, said linear differential transformer comprising a magnetically permeable member fixed with respect to said case and differential coil means fixed with respect to said rod, said differential coil means having input means for the application of electric energy thereto and output means, said differential transformer being adapted to produce an output voltage at said output means upon the application of electric energy to said input means, said output voltage varying with the axial position of said rod.

3,850,197
INSPIRATION/EXPIRATION VALVE

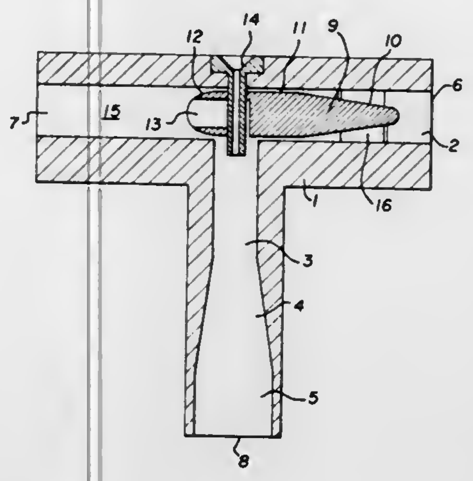
Heini Ernst, Witterswil, Switzerland, assignor to Hoffmann-LaRoche Inc., Nutley, N.J.

Claims priority, application Switzerland, Mar. 27, 1972, 4512/72

Filed Mar. 15, 1973, Ser. No. 341,432

Int. Cl. F16k *51/00*

U.S. Cl. 137—561 R **7 Claims**



1. A device having use as a valve, via which a gas or liquid stream may be led from a first connection to a second connection while an oppositely directed stream arriving by way of this second connection is led to a third connection, comprising:

a first channel extending between said first and second connections;

a second channel intersecting via one of the ends thereof said first channel and with the other end thereof defining said third connection; and

an oblong flow-immersed body longitudinally disposed in said first channel in the region of intersection with said second channel, said body having an angled boring leading from the end portion of the body facing said second connection to the side surface of the body at a portion thereof facing the region of intersection of said first and second channels,

said flow-immersed body having a cross-section which widens from the two ends of said body towards the central portion thereof such that proximate said central portion said first channel is restricted by said body to a narrow passage for gas or liquid flow.

3,850,198
VALVE HOUSING

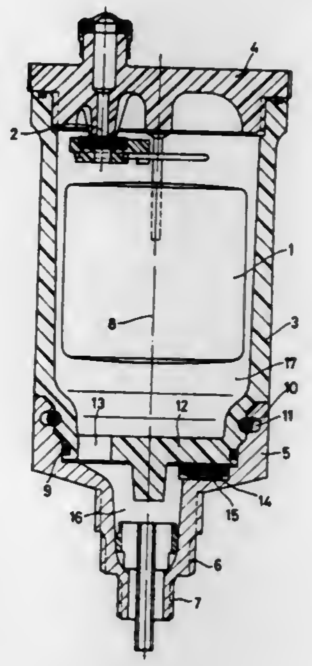
Bernhard Braukmann, Mosbach, Germany, assignor to Braukmann Armaturen AG, Rothrist, Switzerland

Filed Dec. 21, 1972, Ser. No. 317,220

Int. Cl. F16k *11/10*

U.S. Cl. 137—613 **7 Claims**

1. An automatic air vent including at least two relatively movable housing sections having mutually co-operative parts adapted for close fitting engagement, guide means mounted on one of said parts being engageable with a helical groove provided in the other of said parts, a sealing ring mounted on the other of said parts coaxial with the helical groove for providing a seal between said mutually cooperative parts, and a closure member mounted on one of the said housing sections for opening and closing an aperture provided in the other housing section, wherein upon relative movement of the housing sections the guide member is displaced relative to the helical groove to move the closure member towards or away from the aperture, one of the said housing sections having removable ventilator means when said aperture is closed.



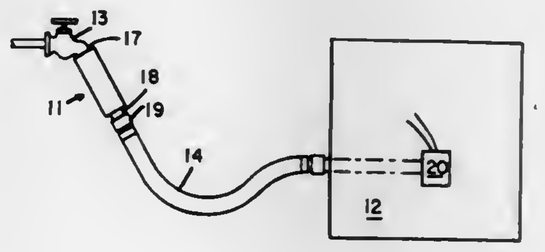
3,850,199
SHUT OFF DEVICE

Allan V. Stone, 33 Summit Rd., Port Washington, N.Y. 11050, and Francis J. Martin, 5 Skyline Dr., Huntington, N.Y. 11743

Division of Ser. No. 205,163, Dec. 6, 1971, Pat. No. 3,779,213. This application Oct. 26, 1973, Ser. No. 410,088

Int. Cl. F16k *17/12*

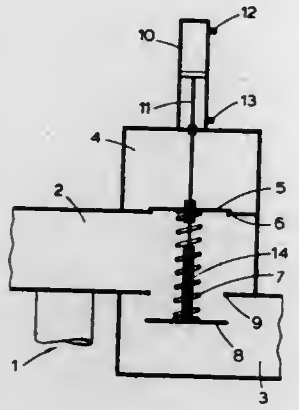
U.S. Cl. 137—624.11 **21 Claims**



1. In combination, a household automatic washing machine connected to a water feed line by a flexible hose, said washing machine having automatically and cyclically operated valve means to permit the water to flow into said machine from said hose for a period of time and then to stop said flow of water, and a device through which the water passes on its way to the hose, said device comprising means controlled by the flow through the device for shutting off the flow to said hose after a predetermined time period of flow which is longer than the longest time period of flow permitted by said automatically operated valve means in the washing machine cycle.

3,850,200
VALVE ARRANGEMENT FOR INTRODUCING BACK WASH AIR IN FILTERS FOR AIR OR GAS CLEANING

Rolf Johan Flebu, Bjornsvikveien 25, 1312 Slependen, Norway
Filed Mar. 2, 1973, Ser. No. 337,603
Claims priority, application Norway, Mar. 7, 1972, 722/72
Int. Cl. F16k *11/00, 31/30*
U.S. Cl. 137—625.5 3 Claims



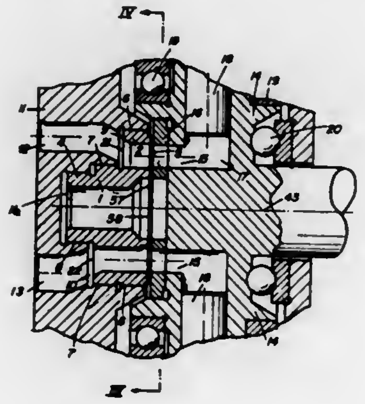
1. An improved valve arrangement for use with duct filters in air or gas cleaning apparatus, adapted to be interposed between a filter chamber and an adjacent discharge duct, for introducing backwash air in a shock-like manner to clean the filter, comprising in combination:

a. a filtered air valve having a valve seat in an opening between the filter chamber and the discharge duct;
b. a backwash air duct adjacent said filter chamber;
c. a backwash air valve having a valve seat in an opening between the filter chamber and the backwash air duct;
d. a compressed air cylinder having a piston and couplings for supplying compressed air to the opposite sides of the piston to impart backward movement thereto for backwash cleaning or forward movement for normal discharge of filtered air through the discharge duct;
e. a piston rod extending from said piston through said backwash air duct and through said filter chamber, and rigidly connected to said filtered air valve for normally maintaining the same in open position during filtering, the backwash air valve being slidably mounted on said piston rod and normally maintained in closed position due to the pressure difference between the backwash air duct and the filter chamber; and
f. a helical spring mounted on and surrounding said piston rod and having one end engaging said filtered air valve connected to said piston and the other end engaging said backwash air valve slidably mounted on said piston rod; whereby on supplying compressed air to said cylinder for backwash cleaning, the piston rod moves to close the filtered air valve against its valve seat and compress said helical spring until the combined actions of the spring and compressed air suddenly open the backwash air valve from its valve seat to produce a shockwave of backwash air into the filter chamber, the cleaning action being terminated by supplying compressed air to said cylinder to move the piston rod to return the filtered air valve to normal open position.

3,850,201
THRUST MEMBER FOR FLUID-OPERATED ROTARY AGGREGATES

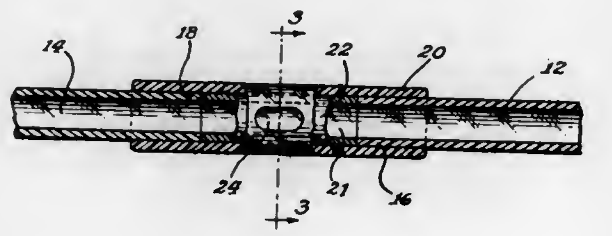
Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan
Filed May 9, 1973, Ser. No. 358,803
Claims priority, application Austria, May 15, 1972, 4236/72
Int. Cl. F01b *13/04*
U.S. Cl. 137—625.21 30 Claims

1. In a hydraulic or pneumatic aggregate, a combination comprising a housing having a socket; a channeled rotor mounted in said housing said having a face facing said socket; and a thrust member mounted in said socket and movable axially of said rotor, said member including a control portion having an annular control face adjacent to said face of said rotor, a first end face facing away from said control face, and a cylindrical peripheral surface, an eccentric second portion adjacent to said first end face and having a second end face facing away from said control portion and a second cylindrical peripheral surface, and a third portion adjacent to said second end face and having a third cylindrical peripheral surface coaxial with said first peripheral surface, said peripheral surfaces sealingly engaging said housing and said member defining with said housing first and second annular pressure chambers respectively adjacent to said first and second end faces whereby the fluid in said chambers urges said control face toward said face of said rotor, said member further having first and second passages respectively extending between said control face and said first and second end faces, said control face having first and second pressure fluid zones having first and second centers and respectively including the corresponding ends of said first and second passages and said first and second faces respectively having third and fourth pressure fluid zones with third and fourth centers, the diameters of said peripheral surfaces, the eccentricity of said second position, the outer diameter of said control face and the configuration of said ends of said passages in said control face being such that the distance between the axis of said control portion and said first and second centers respectively equal or closely approximate the distances between the axis of said control portion and said third and fourth centers.



3,850,202
INJECTION SITE FOR A FLOW CONDUIT

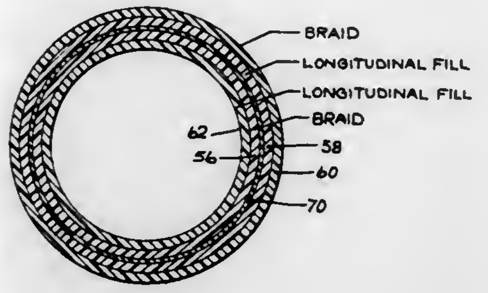
Brian E. Morgan, 620 E. ShaBonee Tr., Mount Prospect, Ill. 60056
Filed Aug. 15, 1972, Ser. No. 280,904
Int. Cl. F16l *11/12;* **A61m** *5/00*
U.S. Cl. 138—103 11 Claims



1. In a fluid flow conduit, an injection site which comprises a housing, and an elastomeric wall maintained under radial compression and enclosed within said housing, said wall along its entire length defining a portion of said fluid flow conduit, and said compression being sufficient to prevent leakage through said wall after said wall is punctured with a needle.

3,850,203
POROUS TUBE DEVICE FOR BILATERAL OSMOTIC PROCESSES

Samuel M. Shobert, 17760 Dragoon Tr., Mishawaka, Ind. 46544
Filed Dec. 29, 1972, Ser. No. 319,613
Int. Cl. B01d *25/08;* **F16l** *9/12*
U.S. Cl. 138—125 2 Claims

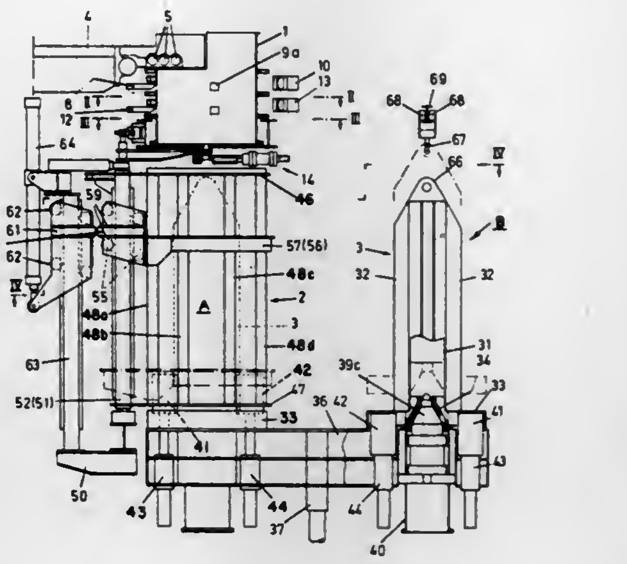


1. An osmotic tube device for use in separating fluids by osmosis comprising a first self-supporting tubular lamination of fiber-reinforced resin having a multiplicity of passages extending through the wall thereof, a semipermeable osmotic membrane on the exterior of said first lamination in intimate engagement therewith, and a second self-supporting tubular lamination of fiber-reinforced resin having a multiplicity of passages through the wall thereof on the exterior of said membrane and in intimate engagement therewith, said first and second laminations being of such strength and rigidity to support said membrane under the conditions of bilateral osmosis, said passages providing paths for solvent passing through said membrane, said first and second laminations each comprising at least two contiguous layers of glass-fiber reinforcement, said layers being embedded within and bonded to each other by cured resinous material, said material being discontinuous and having voids therein thereby providing said passages in said layers between glass fibers, one of said layers including a plurality of longitudinally extending substantially straight circumferentially adjacent strands of glass fibers, the other of said layers including strands of glass fibers extending in the form of a first helix in one circumferential direction and a second helix in the opposite circumferential direction, and said other layer surrounding said one layers, said other layer being a braided seamless tube with the strands thereof contiguous.

3,850,204
PRODUCT HANDLING APPARATUS

Albert Hauck, Friedrichstrasse 84, 59 Siegen, Germany
Filed Mar. 16, 1973, Ser. No. 341,933
Claims priority, application Germany, Mar. 17, 1972, 2219944
Int. Cl. B21f *11/00*
U.S. Cl. 140—2 14 Claims

1. For use with a conveyor carrying a product length which is arranged thereon in a series of overlapping non-concentric rings, and whereby because of previous manufacturing operations, the rings making up the front and/or tail end sections of the product length are unacceptable while the rings making up the remaining intermediate section of the product length are acceptable, an apparatus for separating the unacceptable rings from the acceptable rings and for collecting the acceptable and unacceptable rings in separate coils, said apparatus comprising: reforming means for receiving the rings from the delivery end of the conveyor, said reforming means defining a vertical path of ring descent along which the rings drop in a helical formation under the influence of gravity; a plurality of coil forming means, each of which is movable into and out of a ring receiving position underlying said reforming means and at which position the rings dropping from said reforming means are received and accumulated in coil form by said coil forming means; first and second vertically spaced independently operable intercepting means for interrupting the descent of rings through said reforming means, and for temporarily supporting rings above said coil forming means; and, separating means located beneath said first and second intercepting means between said reforming means and said coil forming means, said separating means being operable to sever a product strand connecting rings accummulated in said coil forming means to rings temporarily supported by said intercepting means.

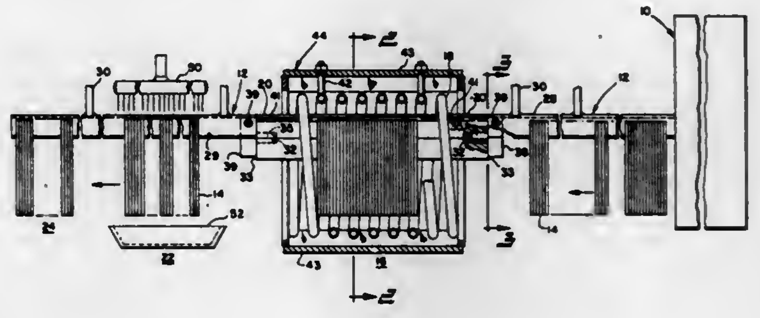


3,850,205
METHOD AND APPARATUS FOR MANUFACTURING SPLIT RETAINING RINGS AND THE LIKE

Nicholas D. Frailly, Massillon, Ohio, assignor to Eaton Corporation, Cleveland, Ohio
Filed June 21, 1973, Ser. No. 372,359
Int. Cl. B21f *37/02*
U.S. Cl. 140—88 18 Claims

1. A method for making stress relieved split retaining rings and the like from spring wire comprising the steps of:

permanently forming said spring wire into the shape of said split ring having a gap between opposed ends;



positioning a plurality of said rings into generally vertical side-by-side contact with the gaps on the tops thereof to form a generally horizontally extending stack of rings;

transferring said stack onto a supported horizontally extending rod having an upwardly extending generally inverted "V" shaped projection in cross section for receipt within said gaps for simultaneously aligning each ring in said stack on said rod so that each ring gap is aligned with one another;

moving said stack onto a non-conductive portion of said rod within an electrically conductive coil; and

applying alternating electric current at predetermined frequencies for a sufficient time to said coil to heat said stack of rings to a predetermined temperature whereby said rings are uniformly stressed relieved and said gaps are closed to a predetermined dimension.

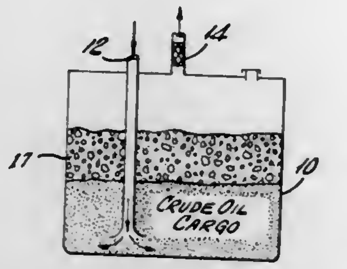
3,850,206
FOAMED VAPOR BARRIER

Gerard P. Canevari, Cranford, and William M. Cooper, Jr., Basking Ridge, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Dec. 6, 1972, Ser. No. 312,580

Int. Cl. B65b *3/04*

U.S. Cl. 141—1 **4 Claims**



1. A method of suppressing vaporization of crude oil during the loading of substantially hydrocarbon-free containers comprising the steps of supplying a foam formed from an aqueous solution of a foam forming agent to said container sufficient to cover the bottom and having a depth adequate to serve as a barrier to hydrocarbon vapors formed from the crude oil during loading, loading said crude oil under said foam, and venting hydrocarbon-free vapor from above said foam during loading of said oil.

3,850,207
APPARATUS FOR STERILISING THE OUTSIDE OF THE FILLING PIPE IN AN ASEPTIC PACKAGING MACHINE

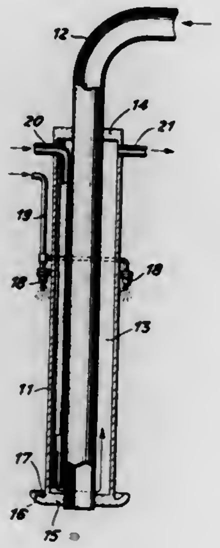
Willi Loliger, and Rudolf Schmied, both of Konolfingen, Switzerland, assignors to Alpura Koreco, Knolfingen, Switzerland

Filed July 7, 1972, Ser. No. 269,540

Claims priority, application Switzerland, July 9, 1971, 10097/71

Int. Cl. B65b *55/00*

U.S. Cl. 141—90 **11 Claims**



1. Apparatus for sterilising the outside of a filling pipe in an aseptic packaging machine, in which the filling pipe projects into the interior of a flexible tube being formed continuously from packaging material in web form, characterized in that the filling pipe is provided with a receiver dish for a vaporisable, chemically acting sterilising liquid at its lower end, with supply and distribution means for said liquid located around the periphery and above the end of the filling pipe and with means for vaporising the sterilising liquid in said dish.

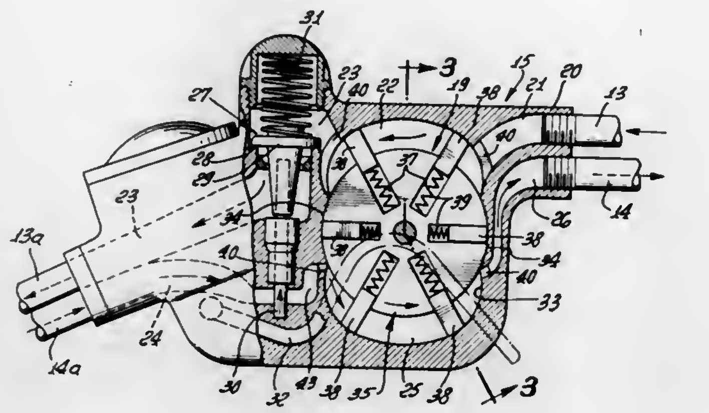
3,850,208
POSITIVE DISPLACEMENT VAPOR CONTROL APPARATUS FOR FLUID TRANSFER

Chester C. Hamilton, 904 Westminister Ave., Alhambra, Calif. 91803

Filed Mar. 3, 1972, Ser. No. 231,580

Int. Cl. B65b *31/00*

U.S. Cl. 141—59 **2 Claims**



1. In combination with a closed system including pump means for forcibly transferring a vaporizable liquid from a liquid supply tank at a variable flow rate via a liquid conduit to a liquid receiving chamber in which vapor of said liquid has accumulated, which system includes a vapor conduit communicating with said accumulated vapor and providing passage thereof out of contact with liquid in said liquid transfer conduit from said chamber to said supply tank;

positive displacement fluid metering means connected in series relation with said vapor conduit and drivable at variable drive speed for displacing vapor effectively positively along said vapor conduit toward said supply tank at a rate proportional to said drive speed and substantially independent of the relative pressures normally existing in the receiving chamber and the supply tank, and

positive displacement rotary means connected in series with said liquid conduit for deriving rotary movement proportional to the rate of liquid flow therein and for driving said metering means at a drive speed proportional to said rotary movement,

whereby said volume of vapor displaced toward said supply tank maintains a predetermined proportion to the volume of liquid flowing to said receiving chamber, substantially independently of the rate of said liquid flow.

3,850,209
FILLING DEVICE FOR ELECTRIC STORAGE BATTERIES

Herbert Zweigardt, Breslauer Str. 8, 6233 Kelheim, Germany

Filed Mar. 20, 1973, Ser. No. 342,976

Claims priority, application Germany, Apr. 20, 1972, 7214990

Int. Cl. B65b *57/06*

U.S. Cl. 141—198 **4 Claims**

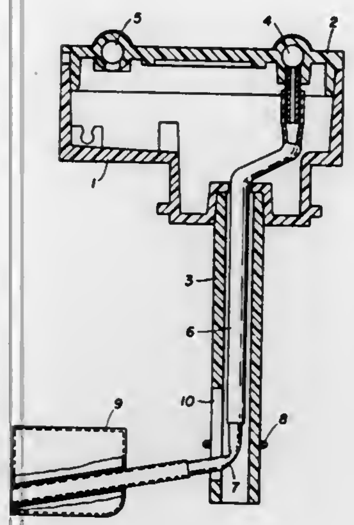
1. In an electric storage battery cell having a battery casing closed by a lid, with a hole therein, the battery casing containing a battery liquid and a set of plates, a filling device located in the hole in the lid which comprises:

a. a filling plug including a water feed tube, and a guide tube, the guide tube extending downward into the interior of said battery casing, the guide tube including an opening in the lower part thereof;

b. a flexible valve tube having a first and a second end, the first end being connected to the water feed tube and the second end being open;

c. the valve tube passing downward through the guide tube, out the opening in the lower portion thereof and forming a bend;

d. a set ring located on the lower portion of said guide tube adjacent the opening in the lower portion thereof and the valve tube passing under the set ring forming a bend about the set ring; and,



e. a float attached to the valve tube between the open end thereof and the bend whereby as said float rises the interior passage of said valve tube at said bend is closed.

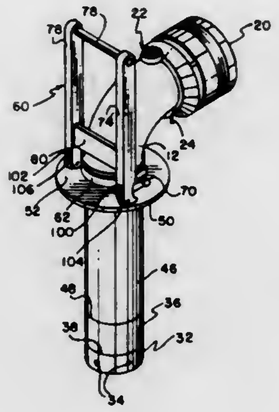
3,850,210
LIQUID FILL ASSEMBLY

Daniel W. Buxton, Topeka, Kans., assignor to George A. Sutton, Topeka, Kans., a part interest

Filed Apr. 2, 1973, Ser. No. 346,719

Int. Cl. B65b *3/04;* **B67c** *3/34*

U.S. Cl. 141—312 **8 Claims**



1. In a liquid fill assembly of the type wherein a cam means of bifurcated form is provided for actuating radial movement of an annular sealing means and is disposed about and straddles a fill pipe and is pivoted to the latter for oscillatory movement about an oscillatory axis lying in a plane normal to the axis of the fill pipe between sealing and unsealing positions, and wherein said sealing means includes a tubular seal operating member disposed exteriorly about and which is axially slidable on the fill pipe with the cam means including two portions in camming engagement with the operating member on substantially opposite sides of the fill pipe; the improvement comprising each of said portions of said cam means being constituted of a roller that is mounted for rotation about an axis substantially parallel to said oscillatory axis and which is in rolling engagement with the operating member.

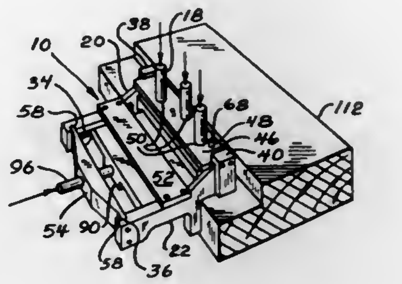
3,850,211
MORTISE TOOL

Mark Ganier, 9553 S. Green, Chicago, Ill. 60643

Filed June 7, 1973, Ser. No. 367,790

Int. Cl. B27m *3/00;* **B27g** *17/08*

U.S. Cl. 144—27 **1 Claim**



1. A mortise tool for use in making a cavity particularly adapted for receipt of a portion of a hinge comprising, a frame adapted for mounting on a member into which a cavity is to be formed, a stop connected to said frame for positioning the frame adjacent to one edge of a surface into which the cavity is to be formed, an edge cutter movably mounted on the frame and being adapted for engagement with the member with which the frame is in engagement, said edge cutter having a blade engageable with the surface of said member for making a cut in said surface defining a portion of the periphery of the cavity, and a bottom cutter movably mounted on the frame and being adapted for engagement with the member for cutting a flat bottom to the cavity substantially parallel to said surface of the member, wherein the frame includes a head having a base edge adapted for engaging the surface, said stop includes a side edge perpendicular to the base edge, said edge cutter including a blade stop mounted thereon for engagement with said surface to limit the depth to which the blade may penetrate the surface, said edge cutter including a plurality of guide pins fixed thereon and movably connected to the frame for limiting the motion of the blade to a direction perpendicular to said surface, said blade and the edge of the surface defining a closed figure, a pair of spaced parallel longitudinal grooves in said frame slideably receiving the bottom cutter, said longitudinal grooves being perpendicular to the side edge of the stop, said longitudinal grooves being spaced from the base edge to determine the depth of the cut of the bottom cutter to be substantially equal to the depth of penetration into the surface by the edge cutter blade, and said edge cutter having its bottom portion recessed and the bottom cutter having its upper portion recessed to receive a chip between the edge cutter and the bottom cutter; and including a plurality of impact drive pins movably mounted in the frame and engageable with the edge cutter to deliver an impact force to the edge cutter for driving the edge cutter blade into said surface, and an impact drive pin movably mounted in the frame and connected to the bottom cutter for delivering an impact load to the bottom cutter.

3,850,212
RADIALLY EXPANDING ROTATABLE APPARATUS FOR SUPPORTING TIRES

Wilhelm Brey, Cuyahoga Falls, Ohio, assignor to Lodi Division of Intercole Automation, Inc., Lodi, Calif.

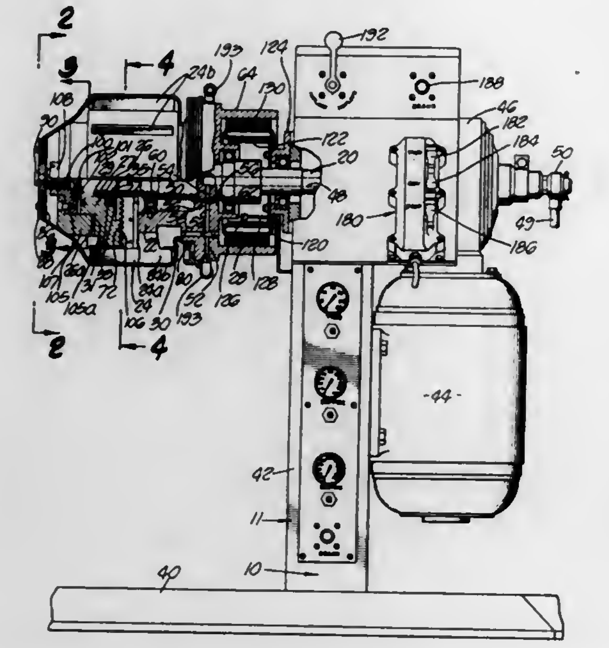
Filed Nov. 12, 1973, Ser. No. 414,975

Int. Cl. B25h *5/00*

U.S. Cl. 144—288 A **3 Claims**

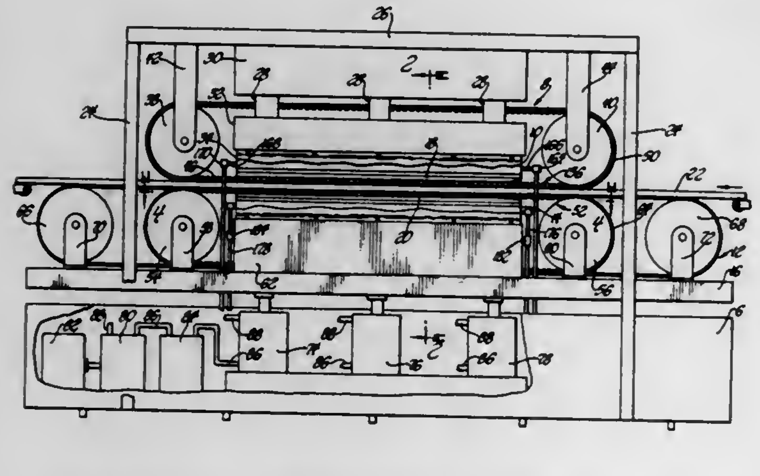
1. Tire supporting apparatus comprising: a frame; a shaft rotatably supported on said frame; a jaw support member rotatably mounted on said shaft; a plurality of jaw members carried by said jaw support member for radial movement relative to the axis of rotation of said shaft and each having a section with helically extending threads formed thereon; a scroll wheel rotatably mounted on said shaft and formed with helically extending threads engaged with the threads of said

jaw member sections, said scroll wheel having an opening therein; and a drive member affixed to said shaft and having a section extending axially with respect to said shaft into said opening in said scroll wheel, said section of said drive member having an arcuate length less than the arcuate length of said opening, so that rotation of said shaft causes said section of said drive member to impact with the corresponding end of said opening.



3,850,213
CONTINUOUS PRESS

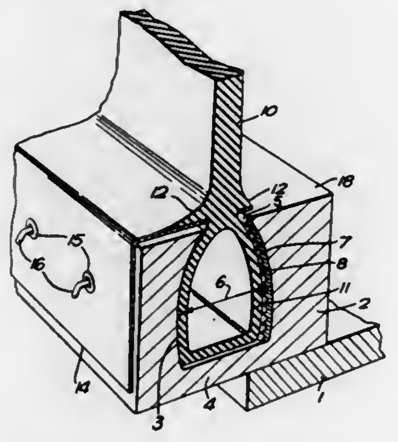
Clyde D. Keaton, 48 Dickinson St., Woodstown, N.J. 08098
Filed Sept. 26, 1973, Ser. No. 400,754
Int. Cl. B27d *3/02, 3/04*
U.S. Cl. 144—281 B **16 Claims**



1. Apparatus for simultaneously pressing and conveying a workpiece comprising a first platen having plural cams rotatably mounted thereon, a first set of rails disposed side-by-side with each rail mounted upon a different one of the cams, a second platen having plural cams rotatably mounted thereon, a second set of rails disposed side-by-side with each rail of the second set mounted upon a different one of the cams on the second platen, the first and second set of rails facing in a direction toward each other and spaced apart to accept a workpiece therebetween, means for rotating the cams to impart orbital motion to the rails, said orbital motion being in a plane parallel to said direction, the orbital motion of the first set of rails being clockwise and the orbital motion of the second set of rails being counterclockwise, said orbital motion of a first rail in the first set of rails being of opposite phase from the orbital motion of a first rail in the second set of rails, said orbital motion of a second rail in the first set of rails being phase displaced by a predetermined phase angle from the phase of the orbital motion of said first rail in the first set of rails, and said orbital motion of a second rail in the second set of rails being phase displaced by said predetermined phase angle from the phase of the orbital motion of said first rail in the second set of rails.

3,850,214
CONTAINERS

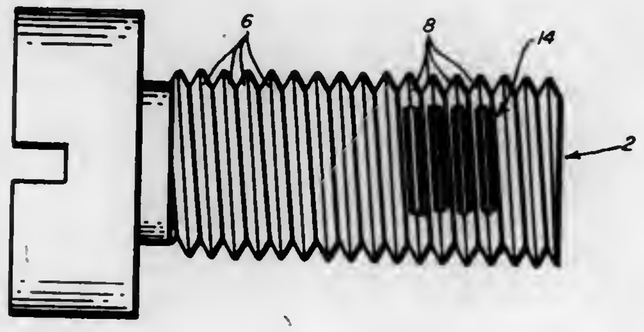
Christopher Daniel Dowling Hickey, Hinchley Wood, Esher, England, assignor to Airflex Containers Limited, London, England
Filed Oct. 20, 1972, Ser. No. 299,249
Int. Cl. B65d *51/16*
U.S. Cl. 150—.5 **7 Claims**



1. A packaging device comprising an envelope of flexible impermeable sheet material; an inflatable flexible tube disposed along an edge of the envelope; a rigid structural member having a channel therein; means forming part of the channel retaining said tube in said channel in an inflated state; and valve means for evacuation of air from the device and collapse of said envelope into closely fitting movement restraining engagement with goods within said device.

3,850,215
SELF-LOCKING FASTENERS

Roger W. Orlomoski, North Brookfield, Mass., assignor to Litton Industrial Products, Inc., Holden, Mass.
Continuation-in-part of Ser. No. 200,933, Nov. 22, 1971,. This application Aug. 28, 1972, Ser. No. 284,006
Int. Cl. F16b *39/30*
U.S. Cl. 151—22 **17 Claims**



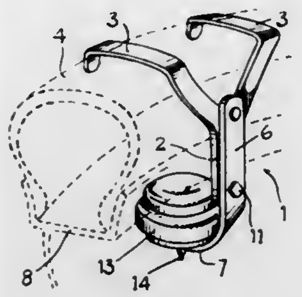
1. A self-locking threaded fastener for use with mating fasteners manufactured to a standard thread configuration;

said locking fastener being provided with mechanical means for smoothly compressing to accommodate tightly fitting soft mating threads without galling or scoring, and for consistently deflecting upon engagement with a standard mating thread to provide consistent and repeatable locking action;

said mechanical means constituting an integral protrusion extending from one flank of at least one turn of the thread of said locking fastener substantially beyond the normal flank of said thread, and extending away from the flank over at least a substantial portion of one turn of said thread to form a groove between the rib and the remainder of the thread, said protrusion being in the form of a resiliently yieldable rib having a crest, the rib having an external generally rectilinear cross-sectioned surface located in its entirety substantially beyond the normal flank of said thread adjacent the crest which rib, prior to assembly with a mating thread, constitutes a generally rectilinear cross-sectioned bearing surface which will make surface contact with the flank of the mating thread by virtue of its orientation to form an angle of inclination with the axis of the fastener which is substantially equal to the angle of inclination of the contacting surface of the mating thread, said rib having a second external surface interconnecting said bearing surface with the remaining crest portion of said thread via said groove, and a third external surface interconnecting said bearing surface with the root of said thread.

3,850,216
TIRE ATTACHMENT FOR TRACTION ON ICE OR SNOW

Salvatore Sanvitale, via Buccella 6, Trento, Italy
Filed Nov. 5, 1973, Ser. No. 412,979
Claims priority, application Italy, Nov. 9, 1972, 82225/72
Int. Cl. B60c *27/04, 27/10, 27/20*
U.S. Cl. 152—225 **4 Claims**



1. Tire attachment for traction on ice or snow which comprises: a plurality of traction members transversely engaging the road-surface of the tire and extending laterally and radially toward the center of the wheel; at least one inflatable tube for blocking securely said members onto said tire surface, said tube engaging the inner surface of the wheel's rim, said tube having an air inlet valve for inflation purposes.

3,850,217
PNEUMATIC TIRES

Reginald Harold Edwards; Geoffrey Lionel Coulter, both of Sutton Coldfield, and Alan Michael Dodd, Walsall, all of England, assignors to Dunlop Limited, London, England
Filed Apr. 24, 1973, Ser. No. 353,937
Claims priority, application Great Britain, Mar. 5, 1972, 20501/72
Int. Cl. B60c *17/00, 19/12*
U.S. Cl. 152—330 RF **16 Claims**

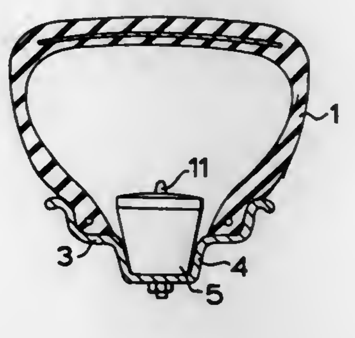
1. A pneumatic tire and wheel assembly capable of being run in a deflated condition comprising:

a. a pneumatic tire having an interior surface and mounted upon a wheel rim to define therewith an inflation chamber;

b. means for lubricating the interior surface of the tire when operated in a deflated condition comprising at least two ingredients of a lubricant composition, at least one of said ingredients being a lubricating material;

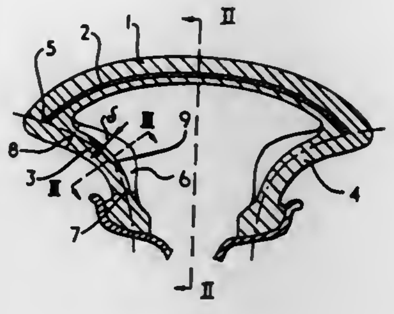
c. enclosing means within said inflation chamber for enclosing separately from one another said at least two ingredients;

d. said enclosing means being adapted to release said at least two ingredients into the inflation chamber upon deflation or substantial loss of inflation pressure to permit said at least two ingredients to mix to form said lubricant composition.



3,850,218
PNEUMATIC TIRE FOR VEHICLE WHEELS

Italo Bertelli, and Giorgio Tangorra, both of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milano, Italy
Filed Mar. 26, 1973, Ser. No. 345,068
Claims priority, application Italy, Mar. 28, 1972, 22464/72
Int. Cl. B60c *17/00, 9/02, 9/18*
U.S. Cl. 152—353 C **9 Claims**



1. A pneumatic tire for vehicle wheels comprising

a reinforced tread having a given width and side edges and two sidewalls made of elastomeric material, extending from said tread side edges and terminating in beads for a rigid wheel rim,

said given width of the tread being wider than any other part of the tire and being reinforced over substantially the whole of its width by an annular structure which is substantially inextensible under the tire inflation pressure in both its circumferential and lateral directions, said annular structure extending to at least the midline of said sidewalls,

said sidewalls having a cross-sectional shape whose midline, over substantially the whole length between said edges of the tread reinforcement and the bead, is convex with respect to the interior of the tire under the tire inflation pressure, each of said sidewalls having in combination a bending stiffness, curvature and thickness sufficient to constrain the sidewall between said side edges of the inextensible tread reinforcement and the bead seat on the wheel rim, whereby on inflation of the tire and under service conditions the sidewalls are placed under compression stress, said sidewalls having at least one end zone with a bending stiffness lower than the stiffness of the remaining zone,

wherein at least on one of the surfaces of one sidewall grooves are present, whose direction forms an angle not greater than 45° with the radial planes of the tire, the pitch and the size of said grooves defining a plurality of ribs along which propagate the stresses exerted on said sidewalls.

3,850,219

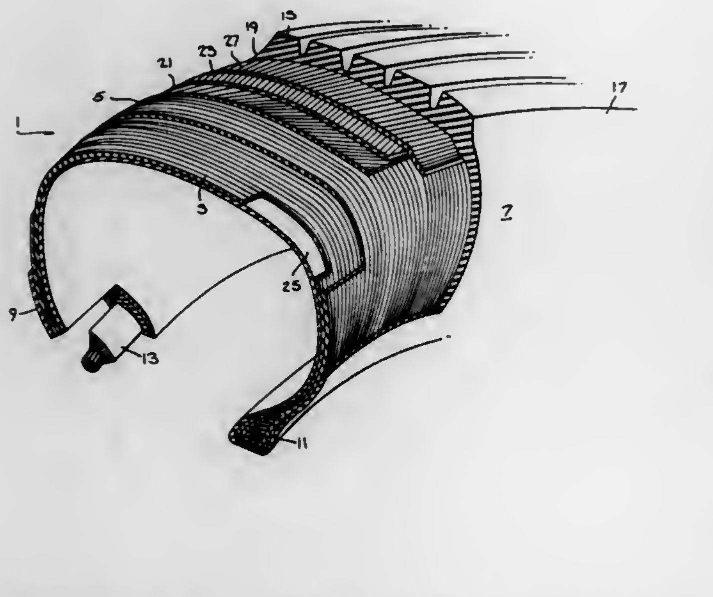
STEEL-BELTED RADIAL PLY TIRES WITH 0° TEXTILE CAP HAND

Robert H. Snyder, Grosse Pointe Park, Mich., assignor to Uniroyal, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 281,890, Aug. 18, 1972, abandoned. This application Feb. 21, 1973, Ser. No. 334,198

Int. Cl. B60c *9/10*

U.S. Cl. 153—361 DM **12 Claims**



1. A pneumatic tire, comprising a radial ply carcass, a tread overlying the crown region of said carcass, a belt interposed between said tread and said crown region of said carcass in circumferentially surrounding relation to the latter, said belt including at least two plies of belt cords of high modulus material extending parallel to one another in each belt ply and being crossed with respect to the cords of each next adjacent belt ply, said belt cords in each belt ply being inclined at an angle between about 16° and about 30° with respect to the median equatorial plane of the tire, and each of said belt plies having a respective width approximately equal to that of the tread, and a cap band having at least one layer of textile cords interposed between the radially outwardmost one of said belt plies and said tread in direct contact with said last-named belt ply, said cap band having a width at least equal to that of the widest of said belt plies, said textile cords in said cap band being substantially parallel to one another and to the median equatorial plane of the tire, and said textile cords in said cap band being longitudinally prestressed through an elongation thereof by between about 1 percent and about 5 percent from their unstressed condition for exerting a compressive stress on said belt to maximize the uniformity of the tire in its geometrical and performance characteristics.

3,850,220

DIVIDED RIM AND TIRE ASSEMBLIES

William Eric Mitchell, Coventry, England, assignor to Dunlop Limited, London, England

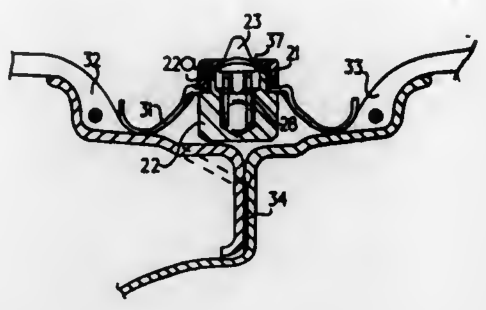
Filed May 4, 1973, Ser. No. 357,185

Claims priority, application Great Britain, May 6, 1972, 21253/72; July 6, 1972, 31617/72

Int. Cl. B60c *17/04, 5/00*

U.S. Cl. 152—400 **14 Claims**

1. A tire bead retaining member for a pneumatic tire and divided rim assembly comprising an annular band of sheet material having a diameter and width such as to enable the band to be fitted around the base portion of the rim to engage and hold in spaced-apart relationship the beads of an associated tire seated on the rim, the annular band having a single corrugation projecting radially outwardly from the rim into the inflation chamber of the tire to act as a support for the interior surface of the tire tread when run in a deflated condition and extending circumferentially around the rim, the sides of the corrugation being provided with radially outwardly turned flanges, one at each side, each flange being smoothly curved so as to present a convex sealing surface to its respective tire bead in the toe region thereof and to form an air-tight seal for the inflation chamber of the tire.



3,850,221

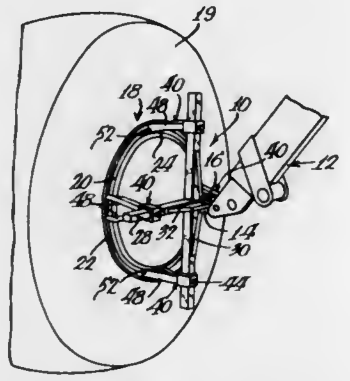
TIRE CHANGING TOOL

Francis L. Zrostlik, and John J. Collins, both of Garner, Iowa, assignors to Iowa Mold Tooling Co., Inc., Garner, Iowa

Filed Apr. 16, 1973, Ser. No. 351,443

Int. Cl. B60c *25/06*

U.S. Cl. 157—1.33 **2 Claims**



1. A tire repair tool for use in the repair or changing of pneumatic tires of vehicles employing split rims; said tire repair tool including a spider assemblage having means for positively confining the parts of a split rim to prevent injury to the user of the tool comprising: four equally spaced radially extending arms, each arm having a pusher unit mounted thereon, each pusher unit including an aperture for slidable receipt of the associated arm, means for locking the pusher unit at a desired location on the associated arm, and a notch-like split rim engaging surface extending generally transverse to the axis of said aperture; brace means extending from the center of said assemblage along a portion of the length of each arm, and means for securing said assemblage to a boom, at least some of the arms including means defining tool receiving apertures extending generally transverse to the length of the associated arm so that a bar-like tool may be inserted in one of said tool receiving apertures to assist in manipulating said tire repair tool when mounted on a boom.

3,850,222

RECAPPING LARGE TIRES

Daniel Lejuene, Clermont-Ferrand, France, assignor to Compagnie Generale Des Etablissements Michelin raison sociale Michelin & Cie, Clermont-Ferrand (Puy-de-Dome), France

Filed July 25, 1972, Ser. No. 274,981

Claims priority, application France, Aug. 2, 1971, 71.28339

Int. Cl. B29h *21/08*

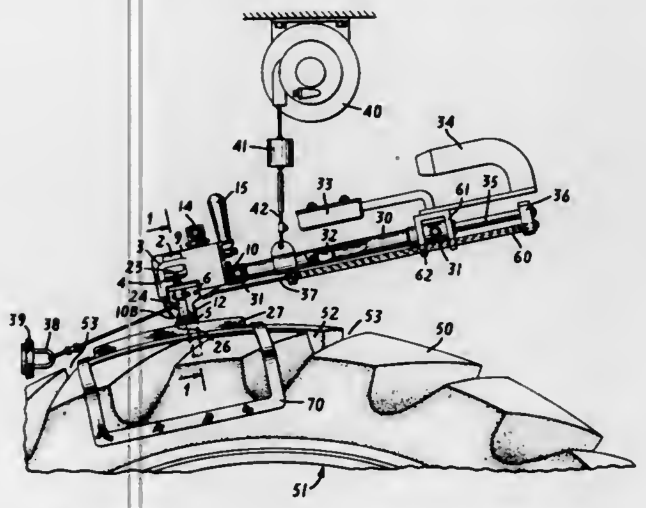
U.S. Cl. 157—13 **8 Claims**

1. A tool for cutting grooves in a tire tread, comprising a transformer having a primary and secondary, means for supplying the primary with current of low voltage at a frequency between 50 and 1,000 hertz, at least a portion of the secondary being formed as a blade having a shape corresponding to the profile of the grooves to be cut,

further comprising drive means for hauling the tool to enable the blade to cut grooves in the tire tread,

wherein the drive means comprises a hydraulic jack having a first part connected to and movable with the tool and a second part movable with respect to the first part, and means for anchoring the second part, whereby relative movement of the two parts displaces the tool, and

wherein the means for anchoring the second part of the jack comprises a traction cable, means connecting one end of the traction cable to said second part of the jack, a fixed support having a plurality of points of attachment, and means connecting the other end of said traction cable to said fixed support at a selected one of said points of attachment, the selection of the point of attachment being variable in dependence on the desired direction of the cut.



3,850,223

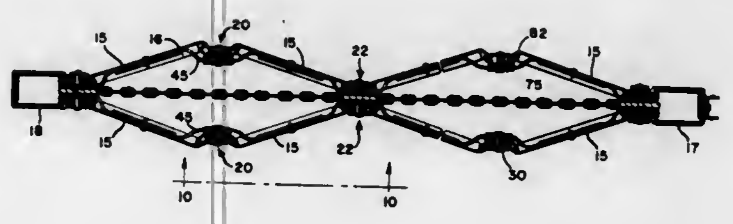
FOLDING SPACE DIVIDER

Melvin W. Tompkins, New Castle, Ind., assignor to American Standard Inc., New York, N.Y.

Filed May 14, 1973, Ser. No. 359,976

Int. Cl. E06b *3/94, 9/06*

U.S. Cl. 160—84 R **4 Claims**



1. A decorative space divider of the double folding type having all-metal major panel components providing improved fire resistance, comprising:

opposed double folding walls consisting of two series of indentical, vertical-extending sheet metal panels arranged in opposed pairs of panels, each of said panels having peak edges and valley edges,

said series of panels further having opposed series of vertical sheet metal hinges at said peak edges carried by said panels and pivotally joined with the adjacent vertical peak edges,

means at said valley edges common to each of said series including an opposed pair of sheet metal hinges identical with said peak hinges pivotally joined with adjacent valley edges of said panels,

said sheet metal hinges comprising channel members with opposite, generally inwardly-directed, double-wall flanges defining straight sections of sheet metal,

said panel edges being formed with generally C-shaped retainers which are received in partially encircling relation to said flanges, said retainers further defining a nose portion which abuts against the outer surface of the associated said flange, and an inner inwardly turned end which abuts against the inner surface of said flange,

means joining each said opposed pair of metal hinges together into a unitary structure, said hinges at said peaks and hinges at said valleys providing for the expanding and contracting movement of the opposed series of panels, and

trolley means supporting said space divider for extending and folding movement, said trolley means having trolley plates joining with the space divider at said valley.

3,850,224

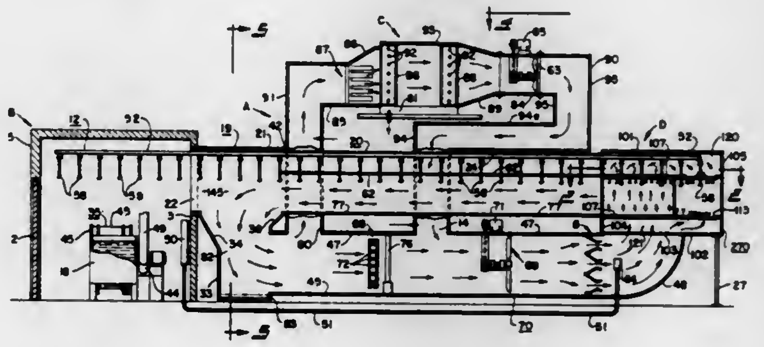
PROCESS AND APPARATUS FOR DRYING SHELL MOLDS

Albert Vidmar, Mentor, and John M. Webb, Chagrin Falls, both of Ohio, assignors to Sherwood Refractories, Inc., Cleveland, Ohio

Filed July 30, 1973, Ser. No. 384,105

Int. Cl. B22c *9/14*

U.S. Cl. 164—4 **22 Claims**



1. A process for forming and drying layers of refractory material over destructible patterns to form shell molds comprising providing a plurality of drying tunnels, each having a narrow passage of small cross-sectional area to permit longitudinal movement of the patterns and to facilitate rapid flow of air over the patterns, providing an air-conditioned work room at the open ends of said tunnels having an atmosphere independent of said tunnels, forcing air through said tunnels at a velocity of at least 1,000 feet per minute, repeatedly coating each pattern in the work room by dipping it into a slurry of refractory material and dusting it with refractory particles, repeatedly drying each coated pattern by conveying it through one of said tunnels for at least several minutes and by directing a large number of air jets laterally against the coated pattern at a velocity of at least 1,000 feet per minute in an impact drying zone, and controlling the temperature and humidity of the air supplied to said jets and to said tunnels to maintain predetermined wet-bulb and dry-bulb temperatures, the wet-bulb temperature being maintained about equal to the pattern temperature and at least 10° below the dry-bulb temperature.

3,850,225

START-UP METHOD AND APPARATUS FOR CONTINUOUS CASTING

Ralph R. McNitt, Okemos, and Edward J. Fox, Grand Ledge, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 27, 1973, Ser. No. 401,436

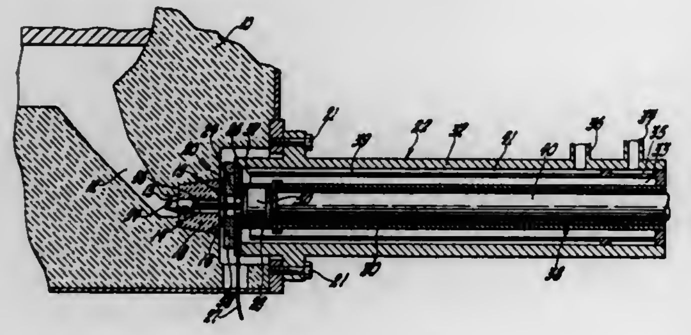
Int. Cl. B22d *11/08*

U.S. Cl. 164—82 **6 Claims**

1. Continuous casting apparatus and a starting bar therefor comprising:

a holding vessel having an opening at the base thereof,

a detachable open ended mold assembly attached to said vessel about said opening in fluid flow relation, said assembly including (a) a refractory spacer ring disposed adjacent said opening in sealing relation thereto and having a substantially greater internal dimension than said opening; (b) a refractory nozzle having an internal dimension substantially less than said spacer ring and at least as large as said opening; (c) a primary solidification chill mold positioned in snug contact with said nozzle having an internal dimension substantially greater than said nozzle and forming a shoulder at the junction thereof; (d) a further solidification mold portion adjacent said primary mold portion, said mold portions having progressively diminishing internal dimensions in a direction away from said vessel opening, and

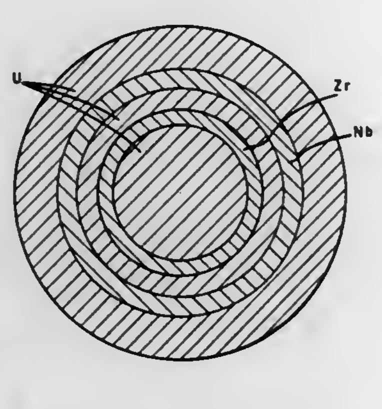


a starter bar means including (a) a sleeve portion adapted for separate insertion into said primary mold portion having one larger dimensioned end thereof adapted in its operative position for engagement with said nozzle shoulder and for sealing engagement with said primary mold portion; (b) an elongated bar portion adapted for insertion into the said mold through the outlet end thereof to a fully inserted position including a fusable plug end portion adapted for snug insertion into said vessel opening in said fully inserted position; (c) a chill portion receivable within at least a portion of said sleeve operative to locate and support said sleeve in its operative position and (d) an enlarged portion located within said sleeve in the said fully inserted position, said enlarged portion, said chill portion and said sleeve cooperatively forming a cavity for receiving molten metal and a mechanical grip for holding solidified metal.

3,850,226
METHOD OF CASTING A CONSUMABLE ELECTRODE

Jerry L. Cadden; Donald W. Hackett, both of Oak Ridge, and Fred A. Harris, Knoxville, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 17, 1973, Ser. No. 351,895
Int. Cl. B22d *19/00*
U.S. Cl. 164—108 **3 Claims**

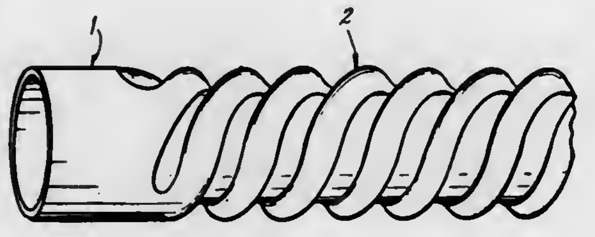


1. A method for forming a solid consumable electrode from a plurality of elemental metal constituents, comprising the steps of rolling at least two of the higher melting point constituents into elongated cylindrical shapes with respective different diameters and with different weight proportions, placing said rolled constituents one within the other into an elongated cylindrical mold having a larger inside diameter than the outside diameter of the largest of said rolled constituents, heating a third constituent having a lower melting point than said first two constituents in a separate crucible until it is molten, and pouring said molten third constituent into said mold around and within said first two cylindrical constituents within said mold to form said solid consumable electrode, said first two constituents being respectively zirconium and niobium, and said third constituent being uranium, whereby said electrode will have the improved properties of heat conduction and electricity conduction during a subsequent arc-melting of said electrode to produce an ingot of alloy having desired weight proportions and chemical properties.

3,850,227
PROCESS FOR IMPROVING HEAT TRANSFER EFFICIENCY AND IMPROVED HEAT TRANSFER SYSTEM

James A. Ford, North Haven, Conn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 136,726, April 23, 1971, Pat. No. 3,789,915, which is a continuation-in-part of Ser. No. 822,686, May 7, 1969, abandoned. This application Nov. 24, 1972, Ser. No. 309,072
Int. Cl. F18f *13/18*
U.S. Cl. 165—1 **6 Claims**



1. An improved heat transfer system having improved heat transfer efficiency and high corrosion resistance including:

A. providing an enhanced metal tubing having a wall thickness of from 0.010 inch to 1.0 inch, an enhanced central section, a relatively smooth entrance end and a relatively smooth exit end, said metal tubing consisting essentially of from 0.5 to 4.0 percent iron, balance essentially copper, said enhanced central section having an irregular surface with a series of protrusions therein;

B. a first entrance tube sheet affixed to the entrance end of the enhanced tubing;

C. a second exit tube sheet affixed to the exit end of the enhanced tubing;

D. a first fluid passing through the enhanced tubing; and

E. a second fluid in contact with the external walls of the enhanced tubing in heat exchange relationship with the first fluid.

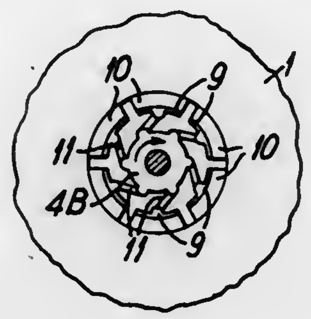
3,850,228
THERMAL REGENERATORS

Mark Cary Sedgwick Barnard, Kenilworth, England, assignor to Leyland Gas Turbines Limited, Warwickshire, England

Division of Ser. No. 204,266, Dec. 2, 1971, abandoned. This application Aug. 6, 1973, Ser. No. 385,639

Claims priority, application Great Britain, Dec. 18, 1970, 60113/70
Int. Cl. F28d *19/00*
U.S. Cl. 165—8 **2 Claims**

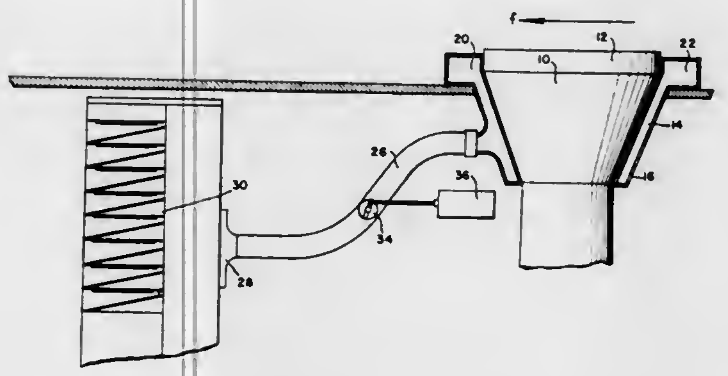
1. A thermal regenerator of the kind having a rotary disc-type matrix, in which the matrix has at its central zone a plurality of members composed of a high-temperature elastomeric material which serves to transmit, to the matrix, driving torque from an axial drive-shaft each said elastomeric member comprising segmental metal members, each carrying a facing pad of the elastomeric material conforming to the cylindrical central bore of the matrix, said segmental metal members being mounted on the axial drive-shaft by means of pinned links.



3,850,229
AIR INTAKE SYSTEM

Andre E. Pelabon, Paris, France, assignor to ANF Frangeco S.A., Courbevoie, France

Filed Apr. 13, 1973, Ser. No. 350,812
Int. Cl. B60h *3/00*
U.S. Cl. 165—44 **5 Claims**



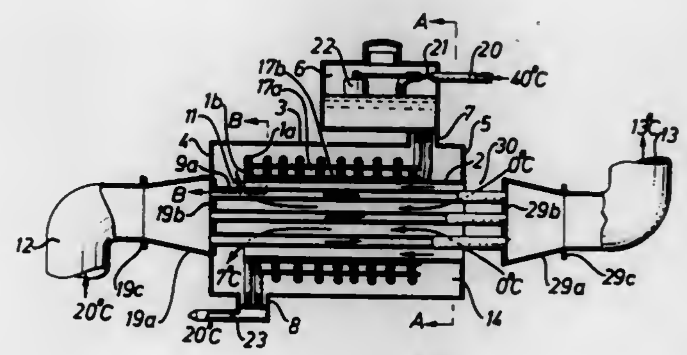
1. In a self-propelled railway car of the type wherein the motive power is supplied by a thermal engine having an air intake filter means for communication with the exterior of the car, and an exhaust means for combustion geses, said railway car being provided with an opening in the roof for the egress of said combustion gases, said exhaust means comprising an upwardly extending tubular structure for conveying said gases from a thermal engine, the upper end of the tubular structure terminating above the roof line of the car, a wall surrounding said tubular structure spaced outwardly therefrom defining an enclosed space, said enclosed space being provided with a pair of inlet orifices disposed above said roof line and on opposite sides of said tubular structure for alternatively receiving air from the exterior of the car in response to movement of the car in alternative directions, said enclosed space also being provided with an outlet conduit in the interior of the car for distributing warmed air from said enclosed space to said intake filter means.

3,850,230
HEAT-EXCHANGER

Peter Heinrich Erwin Margen, Nykoping, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden

Filed Apr. 2, 1973, Ser. No. 347,176
Claims priority, application Sweden, Apr. 6, 1972, 4470/72
Int. Cl. F28d *7/04;* **F28f** *21/06, 1/08*
U.S. Cl. 165—66 **5 Claims**

1. A heat-exchanger comprising an axially elongated inner cylindrically shaped wall, an axially elongated outer cylindrically shaped wall laterally enclosing and spaced radially outwardly from said inner wall and forming an axially extending annular shaped flow space therebetween, first means associated with said inner and outer walls for closing the opposite ends of the annular space, said inner wall in cooperation with said first means arranged to form an inlet into said annular space located at one end thereof, second means in cooperation with said outer wall for forming an outlet from said annular space at the opposite end from said inlet, heat transmitting surfaces formed of plastic disposed within said annular space and comprising at least a first corrugated plastic tube and second corrugated plastic tube with the corrugations extending transversely of the axial direction of said tubes, said first corrugated plastic tube helically wound about said inner wall within said annular space and extending in the axial direction through said annular space, said second corrugated plastic tube helically wound about and spaced radially outwardly from said helically wound first tube within said annular space and extending in the axial direction through said annular space, said second tube being spaced radially inwardly from said outer wall so that flow can pass in the axial direction through said annular space between said first and second tubes and between said second tube and the inner surface of said outer wall, plastic strips located within and extending in the axial direction of said annular space between said inner tube and said first tube and between said first and second tubes for supporting and spacing said first and second tubes, said plastic strips spaced apart in the circumferential direction of said inner wall to afford flow through said annular space to pass between and over the outer surfaces of said first and second tubes, third means for circulating hot water as a heat transfer medium through said first and second plastic tubes for passing the hot water in indirect heat transfer relationship with air flowing as a heat transfer medium over said tubes in axial flow from the inlet to the outlet of said annular space affording substantially perpendicular and countercurrent flow relationship to the helically wound coils of said inner and outer tubes.



3,850,231
LMFBR INTERMEDIATE HEAT EXCHANGER

Ronald Boyd Creek, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed May 24, 1973, Ser. No. 363,786
Int. Cl. F28b *7/00*
U.S. Cl. 165—83 **12 Claims**

1. A heat exchanger for the indirect transfer of heat from a heating fluid to a fluid to be heated comprising:

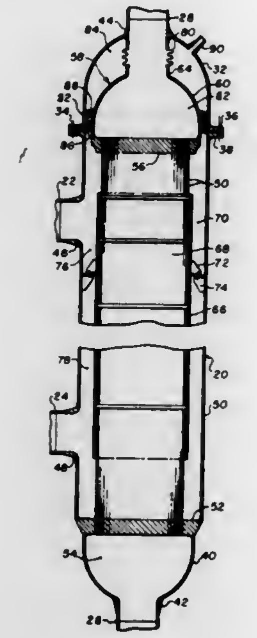
a. an elongated shell defining a pressure vessel having a heated fluid outlet nozzle adjacent one end thereof;

b. a pair of axially spaced tube sheets disposed within said vessel, one of said tube sheets being fixedly attached to said shell and the other of said tube sheets cooperating with a closure cover to form a floating head defining a heated fluid outlet plenum;

c. a bundle of substantially parallel tubes having their opposite ends attached to said tube sheets;

d. means for circulating heating fluid through said vessel exteriorly of said tubes;

e. means for passing fluid to be heated through said tubes in indirect heat transfer relation to said heating fluid;
f. means establishing fluid communication between said heated fluid outlet nozzle and said plenum including a first annular bellows connected between said floating head and said shell;



g. a second annular bellows connected between said floating head and said shell in spaced relation from said first bellows and cooperating therewith to define a substantially closed space therebetween; and
h. means for supplying an inert gas to said closed space.

3,850,232
REACTOR COOLING SYSTEM WITH AN EVAPORATION TANK

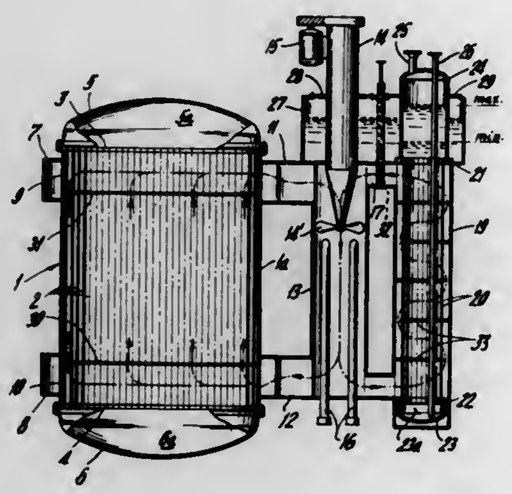
Oskar Wanka, Deggendorg/Donau; Friedrich Gutlhuber, Metten, and Hermann Graf, Hengersberg, all of Germany, assignors to Deggendorfer Werft und Eisenbau GmbH, Deggendorf/Donau, Germany

Filed Feb. 14, 1973, Ser. No. 332,492

Claims priority, application Germany, Feb. 16, 1972, 2207166

Int. Cl. F28d *15/00*

U.S. Cl. 165—107 **11 Claims**



1. A reactor cooling system comprising a reactor vessel having a heat carrier inlet and a heat carrier discharge spaced from said heat carrier inlet, a pump housing having a pump housibg inlet connected to said heat carrier discharge and a pump housing outlet connected to the said heat carrier inlet, a cooler housing adjacent said pump housing having a cooler housing inlet connected to said pump housing discharge and a cooler housing discharge connected to said pump housing inlet, said reactor vessel, said pump housing and said cooler being substantially cylindrical and coextensive in length and the connection of said cooler housing to said pump housing being in parallel to the connection of said reactor vessel to said pump housing with corresponding interconnected inlets and outlets of said reactor vessel, said pump housing and said cooler being at substantially the same levels, an expansion tank having a liquid heat carrier mounted directly on top of and communicating with said pump housing and said cooler and maintaining a liquid heat carrier level in said tank above the level of said pump housing, a separator for the coolant mounted directly on top of said cooler housing and having a liquid coolant therein at a top level above said cooler housing, said cooler housing having a lower coolant chamber and coolant pipes connected between said coolant chamber and said separator, said cooler housing having a heat carrier passage around said coolant pipes, and a cooler housing inlet and cooler housing discharge connected to said pump housing for the flow of the heat carrier therethrough to said pump housing.

3,850,233
REACTION APPARATUS FOR CARRYING OUT ENDOTHERMIC CHEMICAL PROCESSES

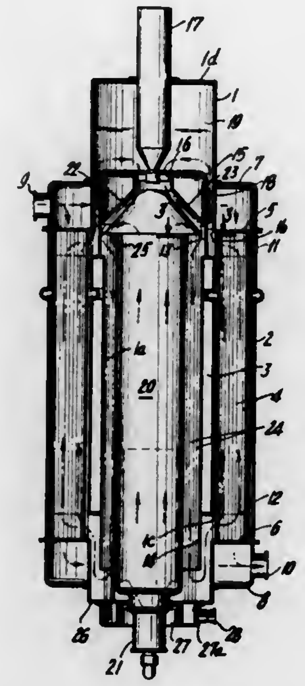
Oskar Wanka, and Jeno Mihalyi, both of Deggendorf, Donau, Germany, assignors to Deggendorfer Werft und Eisenbau GmbH, Deggendorf/Donau, Germany

Filed June 18, 1973, Ser. No. 371,302

Claims priority, application Germany, June 21, 1972, 2230127

Int. Cl. F28d *15/00*

U.S. Cl. 165—107 **5 Claims**



1. A reaction apparatus comprising a long cylindrical inner tubular wall, a short cylindrical outer tubular wall shorter than said inner tubular wall located outside of said inner tubular wall and intermediate its length, an annular tube sheet arranged at each end of said outer tubular wall closing the space between said inner and outer tubular walls at respective ends of said outer tubular wall, a plurality of contact tubes adapted to contain a catalyst extending between and seated in said annular tube sheets at respective ends of said outer tubular wall, inlet means defining an inlet for reaction gases connected to said annular tube sheet adjacent one end of said outer tubular wall for the inflow of reaction gases through said contact tubes, outlet means defining an outlet for reaction gases connected to said annular tube sheet adjacent the opposite end of said inner tubular wall for the outflow of reaction gases, wall means closing each end of said inner tubular wall and defining a heat carrier expansion chamber within said inner tubular wall adjacent one end, a pump having an impeller in said heat carrier expansion chamber for circulating the heat carrier, and an annular hollow body in said heat carrier expansion chamber surrounding said impeller and defining a central passage for the discharge of the heat carrier by said impeller through said inner tubular wall, said inner tubular wall having an inflow opening therethrough adjacent said annular tube sheet which is remote from said impeller for the inflow of heat carrier over said contact tube toward said annular tube sheet adjacent said impeller, said inner tubular wall also having an outflow opening adjacent the end which is in proximity to said impeller communicating with the space between said inner tubular member and the exterior of said annular hollow body, and heating means within said inner tubular member for heating said carrier as it is circulated by said pump impeller, said heating means comprising a burner, the interior of said inner tubular wall forming a combustion chamber for the generation of combustion gases by said burner, a heating gas tube bundle arranged between said combustion chamber and said contact tubes having one end communicating with said combustion chamber at the end thereof opposite to said burner and an opposite end having a discharge for the combustion gases, and means defining a passage for the heat carrier over said gas heating tubes within said inner tubular member and for flow from said gas heating tubes through the inflow opening over said contact tubes.

3,850,234
HEAT EXCHANGERS

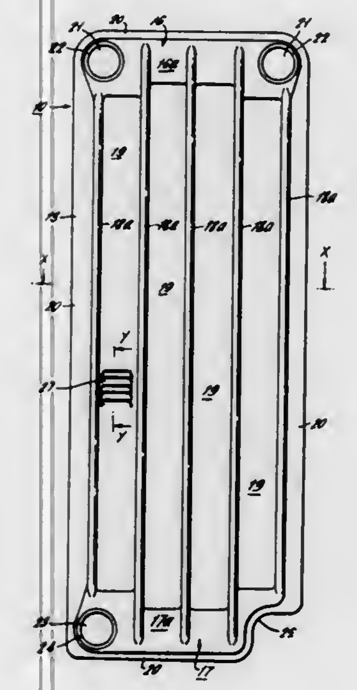
Gordon Fowler, Wantage, England, assignor to Delanair Limited, Berking, Essex, England

Filed Sept. 10, 1973, Ser. No. 395,383

Claims priority, application Great Britain, Sept. 8, 1972, 41931/72

Int. Cl. F28d *1/02*

U.S. Cl. 165—153 **5 Claims**



1. A heat exchanger comprising
a plurality of planar modules disposed in side-by-side parallel relation one to the other, each of said modules being defined by a pair of metal sheets joined together in face-to-face relationship,
a header tank formed by and between each pair of sheets at each end of each module, each header tank being a fluid-tight compartment for a first fluid,
a plurality of tubes in each module formed by and between the pair of sheets that define said module, said tubes interconnecting those header tanks at opposed ends of said module to permit flow of said first fluid between each module's header tanks,
connecting means integral with each header tank of each module, said connecting means defining a port in its associated header tank, and the connecting means of one module being connected to the connecting means of an adjacent module to join corresponding header tanks of adjacent modules, thereby permitting flow of said first fluid between modules, and
louvers in each module to provide heat exchange surfaces over which a second fluid may flow in a direction normal to the plane of said modules.

3,850,235
HEAT EXCHANGER

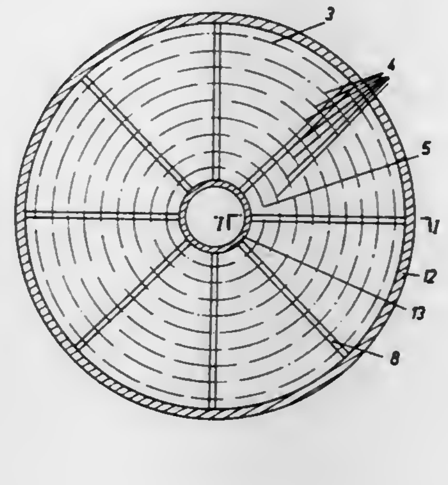
Georg Beckmann, Vienna; Kurt Fritz, Klosterneuburg, and Josef Lippitsch, Graz, all of Austria, assignors to Waagner-Biro Aktiengesellschaft, Vienna, Austria

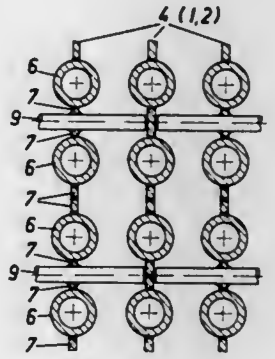
Filed Aug. 2, 1972, Ser. No. 277,285

Claims priority, application Austria, Aug. 3, 1971, 6748/71

Int. Cl. F28f *9/00*

U.S. Cl. 165—162 **12 Claims**

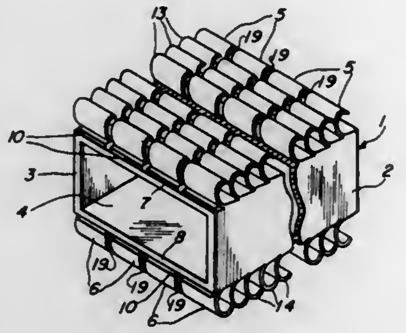




1. In a heat exchanger particularly for use as a steam generator for a nuclear power plant, a plurality of curved tubular walls equidistantly arranged with respect to each other around a central axis with each of said walls having an inner concave side directed toward said axis and an outer convex side directed away from said axis, each of said walls including an elongated tube having a hollow interior through which a heat-exchanging medium is adapted to flow and each of said walls further including a fin means fixed to said tube thereof at least partially along said tube for forming a vibration-resistant, unitary tubular wall structure, each of said tubular walls including a plurality of tubular portions which are axially spaced from each other and which are welded one to the next by way of said fin means.

3,850,236
HEAT EXCHANGERS

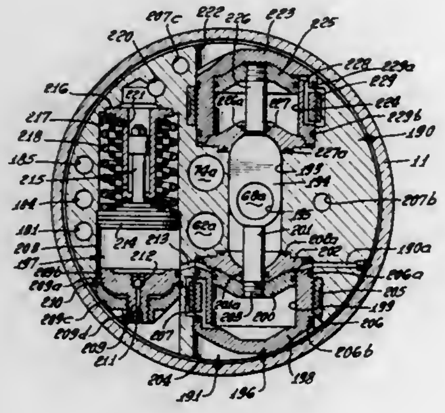
Joseph M. O'Connor, Chicago, and Stephen F. Pasternak, Park Ridge, both of Ill., assignors to Peerless of America, Incorporated, Chicago, Ill.
Filed Mar. 26, 1973, Ser. No. 344,918
Int. Cl. F28f *1/16*
U.S. Cl. 165—181 **3 Claims**



1. A heat transfer element comprising
- a. an elongated tubular member substantially rectangular in transverse cross-section, having two oppositely disposed elongated walls,
- b. a plurality of elongated fins projecting from said walls and extending transversely to the length thereof,
- c. said fins having
  - 1. elongated base portions
    - a. integral with said walls, and
    - b. spaced from each other longitudinally of said walls,
  - 2. convex surfaces facing away from one end portion of said tubular member, and
  - 3. free end portions
    - a. disposed at the sides of said fins remote from said walls, and
    - b. disposed in abutting engagement with said convex surfaces of adjacent ones of said fins,
- d. adjacent ones of said fins together with said walls defining elongated tubular passages extending traversely to the length of said walls.

3,850,237
MUDLINE EMERGENCY SHUTOFF FOR OFFSHORE WELLS

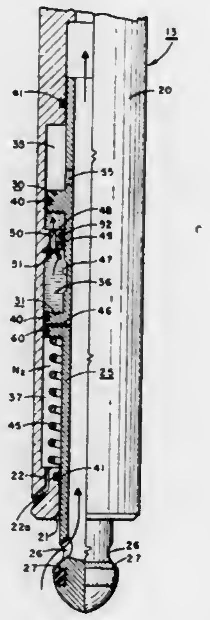
Arthur G. Ahlstone, Ventura, and Josef A. Bartos, Villa Park, both of Calif., assignors to Vetco Offshore Industries, Inc., Ventura, Calif.
Filed Nov. 1, 1971, Ser. No. 194,187
Int. Cl. E21b *7/12*
U.S. Cl. 166—.5 **30 Claims**



1. In apparatus for producing an offshore well, wherein a platform is at the surface of the water, wellhead equipment is located at the mudline, and a conductor pipe extension extends between the platform and the wellhead equipment: casing hanger means movable from the platform through the conductor pipe extension and incorporated in said wellhead equipment, production fluid conduit means extending into the well from said casing hanger means, shutoff valve means movable from the platform through the conductor pipe extension and supported on said casing hanger means, extension conduit means adapted to extend through the conductor pipe extension from said shutoff valve means to said platform, said shutoff valve means having a passage communicating between said production fluid conduit means and said extension conduit means, a valve member movable through the conductor pipe extension and shiftable between a first position at which said passage is open and a second position at which said passage is closed, control fluid pressure operated means movable through the conductor pipe extension and adapted to hold said valve member in said first position, and means for moving said valve member to said second position upon reduction in control fluid pressure.

3,850,238
METHOD OF OPERATING A SURFACE CONTROLLED SUBSURFACE SAFETY VALVE

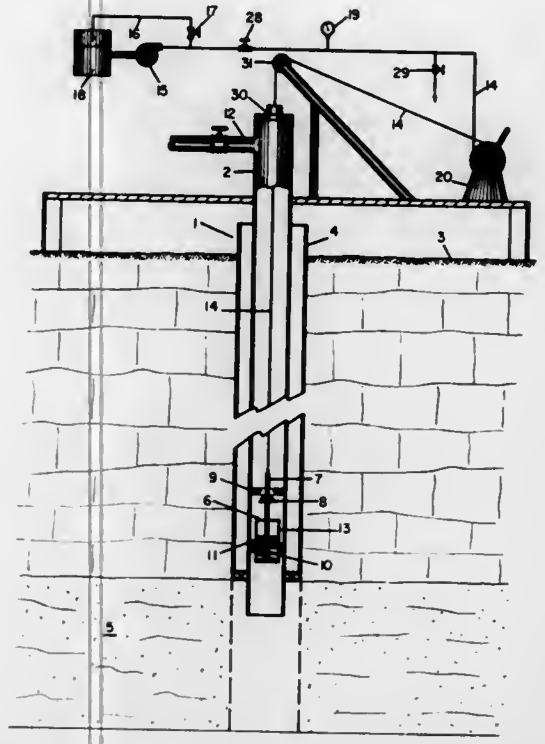
Tom H. Hill, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.
Division of Ser. No. 294,399, Oct. 2, 1972, Pat. No. 3,794,112.
This application Oct. 25, 1973, Ser. No. 409,536
U.S. Cl. 166—314 **2 Claims**



1. A method for operating a subsurface safety valve used in closing off flow of well fluids through a well tubing comprising the steps of:
- periodically reducing momentarily at the surface the flow of fluids from a well tubing to cause a pressure pulse to travel down the well tubing from the surface to the subsurface valve;
- said pressure pulse causing a flow tube component of said valve to move from a third position in which said valve is fully open to an initial second position in which said valve is also fully open;
- said flow tube moving under normal operating well fluid pressures from its initial second position towards said third position thereof; and
- said flow tube moving to its first position in which said valve is closed from its third position thereof under normal operating well pressures.

3,850,239
STORM CHOKE

Gary W. Rosewald, Tulsa, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.
Filed Oct. 3, 1972, Ser. No. 294,744
Int. Cl. E21b *33/03, 43/12*
U.S. Cl. 166—72 **11 Claims**

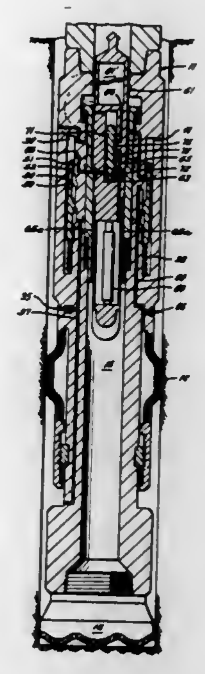


1. In a producing well having a production tubing which extends below the surface to a producing reservoir, a storm choke which comprises:
- a. a valve seat located within the production tubing,
- b. an operable valve disc located within the production tubing, the disc being adapted to engage and mate with the valve seat when the disc is operated,
- c. operating means for urging the valve disc to move toward a position which is opposite from normal with regard to engagement of the disc with the valve seat, said operating means comprising a cylinder secured to the inner wall of the production tubing, said cylinder having a sealed but expansible chamber therein for a contained fluid, which is relatively compressed when the valve disc is secured in a normal position with regard to engagement with the valve seat and relatively expanded when the disc is released for movement, and
- d. fluid activated means in the production tubing for selectively securing the valve disc in a normal position with regard to engagement with the seat and for releasing the disc for movement by the operating means, said fluid activated means comprising a piston within said cylinder, the piston being attached to the valve disc, a fluid-conveying tubing which leads from the cylinder and up through the production tubing, and means located at the surface for pumping fluid into the cylinder through the conveying tubing and for controlling fluid pressure in the cylinder.

3,850,240
TOOL FOR RUNNING ON A DRILL STRING IN A WELL BORE

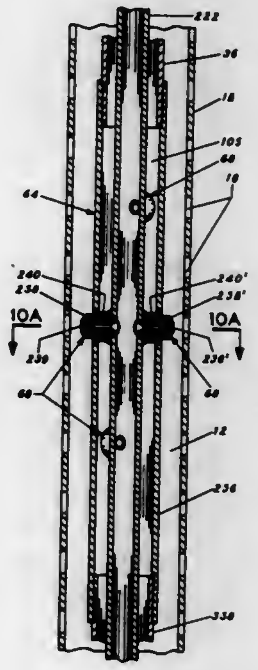
George E. Conover, Houston, Tex., assignor to Lynes, Inc., Houston, Tex.
Filed June 14, 1972, Ser. No. 262,611
Int. Cl. E21b *47/06*
U.S. Cl. 166—162 **32 Claims**

1. In a tool for running on a drill string in a well bore to seal off the well bore adjacent the tool, the subcombination including:
- a. a body for connection in the drill string, said body having a longitudinal bore therethrough;
- b. reinforced inflatable packer means carried by said body for inflation to seal off the well bore;
- c. bore close off means movable through the drill string for seating in said body; and
- d. control valve means carried on said body and having means responsive to well bore pressure and pressure in the drill string whereby said control valve is movable in one direction in response to increasing pressure differential between the drill string above said bore close off means when seated and the well bore above said packer means to communicate said packer means with the drill string for inflation of said packer means and movable in the opposite direction in response to decreasing pressure differential between the drill string above said bore close off means when seated and the well bore above said inflated packer means to communicate said packer means with the well bore for deflation thereof.



3,850,241
HIGH PRESSURE JET WELL CLEANING

Stanley O. Hutchinson, Bakersfield, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Continuation of Ser. No. 274,692, July 24, 1972, abandoned, which is a division of Ser. No. 150,536, June 7, 1971, Pat. No. 3,720,264. This application July 10, 1973, Ser. No. 377,983
Int. Cl. E21b *21/00*
U.S. Cl. 166—222 **2 Claims**



1. Apparatus for jet washing a well liner positioned in a well comprising first tubing means forming a well flow path from

the earth's surface to a location adjacent a well liner positioned in a well, a source of high pressure liquid for supplying liquid at pressures in excess of 6,000 psi, conduit means connecting said source of high pressure liquid to said first tubing means and jet tool means for jetting said high pressure liquid at said well liner, said jet tool means comprising an inner tubular member connected to the lower end of said first tubing means and having at least one hole in the wall thereof, a jet seat member fixedly connected to said inner tubular member, said jet seat member having a central internally threaded opening aligned with said hole and an externally threaded jet body having a central opening of no greater than 1/16th inch in diameter formed therein threadably engaged in said jet seat member, the internal threads and the external threads being mateable whereby said jet body may be rotated to provide axial movement of said jet body with respect to said jet seat member.

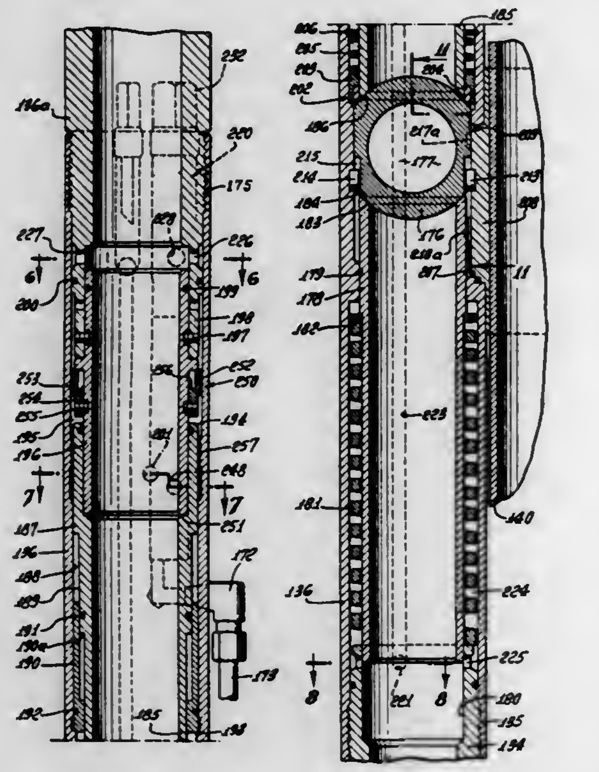
3,850,242
SUBSURFACE SAFETY VALVE

Talmadge L. Crowe, Houston, Tex., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 286,151, Sept. 5, 1972, Pat. No. 3,797,573, which is a division of Ser. No. 243,806, April 13, 1972, Pat. No. 3,771,603. This application Nov. 3, 1972, Ser. No. 303,482

Int. Cl. E21b *43/12;* **F16k** *17/00*

U.S. Cl. 166—224 A **20 Claims**



1. In a subsurface shutoff valve for wells adapted to be supported in a well fluid production pipe: a body having a flow passage therethrough; shutoff valve means including a member shiftable between a first position closing said passage and a second position at which said passage is open; actuator means for shifting said member between said positions, including means defining a control fluid pressure chamber for moving said member to said second position and means responsive to the pressure of well fluid in the production pipe for biasing said member to said first position upon reduction in the pressure of control fluid in said chamber; and means providing a fluid by-pass establishing fluid communication between locations in said flow passage on opposite sides of said member, and valve means separate from said shutoff valve means controlling said by-pass and having a pressure responsive area subject to the direct application thereto of the pressure of control fluid in said chamber for initially opening said by-pass equalizing the well fluid across said shutoff valve means before said member is moved toward said second position from said first position.

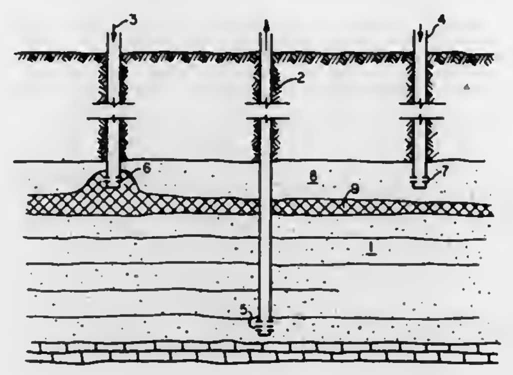
3,850,243
VERTICAL DOWNWARD GAS-DRIVEN MISCIBLE BLANKET FLOODING OIL RECOVERY PROCESS

Joseph C. Allen, Bellaire, and Jack F. Tate, Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed May 4, 1973, Ser. No. 357,417

Int. Cl. E21b *43/16*

U.S. Cl. 166—267 **17 Claims**



1. In a method of recovering petroleum from a subterranean, petroleum-containing formation penetrated by at least one injection well completed high in the formation and by at least one production well completed low in the formation, of the type wherein a quantity of conventional hydrocarbon solvent for petroleum miscible with the petroleum contained in the formation is injected into the top of the formation and thereafter a gaseous drive fluid is injected into the top of the formation to displace the solvent vertically downward through the petroleum formation, the improvement which comprises: mixing with the conventional hydrocarbon solvent a dense solvent for petroleum having a density greater than the density of the conventional hydrocarbon solvent for petroleum, the mixture of conventional hydrocarbon solvent for petroleum and dense solvent having a resulting density less than the density of the formation petroleum and greater than the density of the conventional hydrocarbon solvent.

3,850,244
POLYMER FLOODING PROCESS

John S. Rhudy; William B. Gogarty; Bruce L. Knight, all of Littleton, and James H. Fullinwider, Aurora, all of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed June 13, 1973, Ser. No. 369,641

Int. Cl. E21b *43/22*

U.S. Cl. 166—273 **19 Claims**

1. In a process of recovering hydrocarbon from a hydrocarbon-bearing subterranean formation having at least one injection means in fluid communication with at least one production means and wherein polymer solution is injected into the formation to displace hydrocarbon toward the production means through which hydrocarbon is recovered, the improvement comprising injecting a first solution comprised of a substantially uniform molecular weight polymer of sufficient concentration and sufficient molecular weight to substantially effect permeability reduction of the formation rock, and then injecting a second solution comprised of a polymer that will not substantially effect further permeability reduction of the formation rock but of a sufficient polymer concentration to impart increased viscosity to the polymer solution for more favorable mobility control in the displacement of hydrocarbon from the formation.

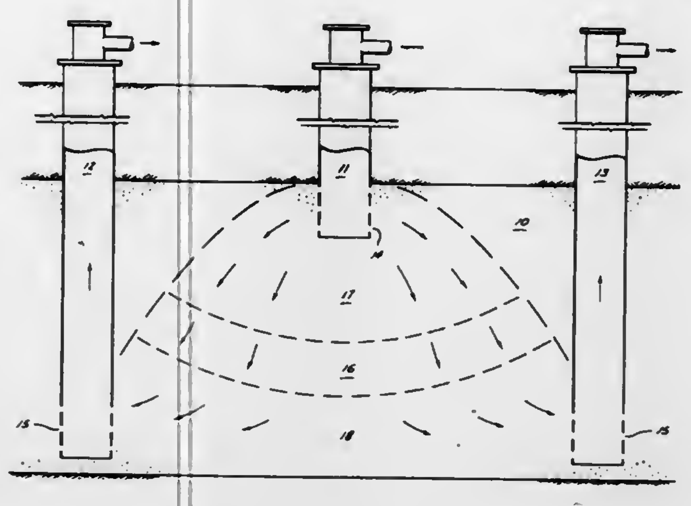
3,850,245
MISCIBLE DISPLACEMENT OF PETROLEUM

Joseph C. Allen, Bellaire, and Jack F. Tate, Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed May 4, 1973, Ser. No. 357,409

Int. Cl. E21b *43/16*

U.S. Cl. 166—274 **12 Claims**



1. A process for recovering petroleum from a reservoir comprising:

a. introducing a slug of solvent for the petroleum into the reservoir which solvent has a density greater than water,

b. introducing, following the solvent, a gaseous driving fluid into the reservoir, to force the solvent through the reservoir wherein the interface between the solvent and the driving fluid approaches a substantially horizontal position, and

c. producing the petroleum and solvent at a point below the point of introduction of the solvent.

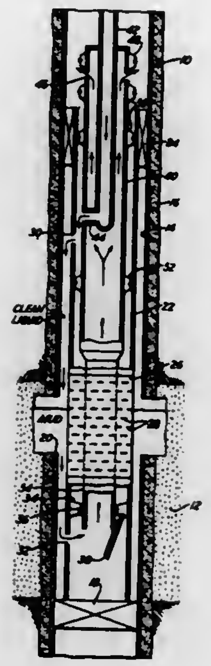
3,850,246
GRAVEL PACKING METHOD AND APPARATUS

Jack Bruno Despujols, Houma, La., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed July 11, 1973, Ser. No. 378,053

Int. Cl. E21b *43/04, 43/10*

U.S. Cl. 166—278 **4 Claims**



1. A method of gravel packing a well containing liquid having finely divided solid particles suspended therein comprising placing a liner including a screen between the upper and lower ends thereof through the interval to be packed, setting a packer engaging the liner above the screen to close the upper end of the annulus surrounding the screen, thereafter circulating a clean liquid downwardly into and through the annulus below the packer and upwardly through wash pipe extending through the screen while preventing flow through the screen to wash finely divided solids from the annulus surrounding the screen, circulating a slurry of gravel in a liquid below the packer into the annulus surrounding the screen to fill the annulus with gravel, delivering liquid from the slurry upwardly through the wash pipe, and removing the wash pipe from the screen.

3,850,247
PLACING ZONES OF SOLIDS IN A SUBTERRANEAN FRACTURE

John M. Tinsley, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Aug. 27, 1973, Ser. No. 391,917

Int. Cl. E21b *43/2*

U.S. Cl. 166—280 **8 Claims**

1. A method of fracturing a subterranean formation which comprises the steps of:

a. contacting a subterranean formation with a pad liquid at a pressure sufficient to produce a fracture in said formation;

b. injecting said pad liquid into said produced fracture at a rate sufficient to open said fracture to a width sufficient to accept solids sufficient for maintaining said fracture in said open position;

c. introducing at least one stage of carrier liquid and displacement liquid into said produced fracture at a rate sufficient to extend said fracture into said formation wherein said stage consists essentially of one volume of said carrier liquid followed by about 0.25 to about 1.5 volumes of said displacement liquid per unit volume of said carrier liquid and further wherein said carrier liquid contains said solids supported therein; and

d. reducing the rate of injecting liquid into said fracture to thereby permit said fracture to close on said solids.

3,850,248
METHOD OF USING A SPACER FLUID FOR SPACING DRILLING MUDS AND CEMENT

Leroy I. Carney, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Nov. 19, 1973, Ser. No. 417,431

Int. Cl. E21b *43/16*

U.S. Cl. 166—291 **4 Claims**

1. A method for enhancing the completion of cased bore holes drilled into the earth using drilling mud comprising:

preparing a water-in-oil emulsion spacer fluid containing approximately equal amounts of hydrocarbon oil and fresh water, and further containing an effective amount of an emulsifier comprising a fatty acid amide of from 16 to 22 carbon atoms adsorbed on a solid particulate carrier;

incorporating in the spacer fluid, an effective amount of a viscosity increasing agent and a surfactant-dispersant to facilitate addition to the spacer fluid of the hereinafter described quantity of weighting material, said surfactant-dispersant comprising a mixture of waste sulfite liquor and an oleyl amide;

selecting a cementing composition for cementing the casing in the bore hole by placement of the cement in the annulus around the casing;

adding weighting material to said spacer fluid in a quantity sufficient to impart a weight to the spacer fluid which does not exceed the weight of said cementing composition, and is not less than the weight of the drilling mud used in drilling the bore hole;

circulating into said annulus in an upward direction in the bore hole and behind drilling mud in the annulus to displace the drilling mud, a quantity of said spacer fluid, followed by a quantity of said cementing composition, so that said spacer fluid is interposed between the cementing composition and drilling mud over a sufficient interval to prevent any intermixing of the cementing composition and drilling mud.

3,850,249
METHOD FOR DELAYING THE SETTING OF AN ACID-ETTABLE LIQUID IN A TERRESTRIAL ZONE

Patrick H. Hess, Diamond Bar, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed July 19, 1972, Ser. No. 273,256

Int. Cl. E21b *33/13*

U.S. Cl. 166—295 **11 Claims**

1. The method of setting an acid-settable liquid in a terrestrial zone or formation, said zone or formation being at a temperature in the range −10°C. to 175°C., which comprises:
1. dissolving in said liquid in parts by weight an amount of a delayed latent catalyst in the range from about 2 to 20 parts per 100 parts of the liquid;
  2. introducing the resulting solution into said zone or formation;
  3. maintaining said liquid in the formation for a period sufficient for the liquid to set and in the range from about 1 to 24 hours; said liquid being a pumpable organic liquid which sets at a pH below 5, selected from the group consisting of:
  a. hydroxylic acid-settable liquids;
  b. nonhydroxylic acid-settable liquids containing at least an effective amount of a hydroxylic acid-settable liquid; and
    c. nonhydroxylic acid-settable liquids containing at least an effective amount of a soluble diluent selected from the group consisting of:
    1. water,
    2. one or more substantially neutral organic compounds of the formula $R(OH)_n$, in which n is 1, 2 or 3 and R is an organic radical, and
    3. a mixture of the compounds of (2) and water;

said catalyst being a mixture of a component which releases a strong acid and a basic component wherein the mixture contains an amount of base in the range from 0.02 to 0.98 equivalent per equivalent of releasable strong acid from the acid-releasing component, said basic component being one or more suitable bases selected from the group consisting of organic and inorganic salt-forming bases having a pK_b of less than about 13.5; and said acid-releasing component being one or more substantially neutral compounds selected from the group consisting of organic compounds which release a strong acid under solvolytic conditions at a rate in the range of from about 10^{-3} to 10^{-6} equivalents of the acid per liter per minute at said temperature, said strong acid being a Bronsted acid and having a pK_a measured in water at 18°C below 3.

3,850,250
WELLBORE CIRCULATING VALVE

John C. Holden, and Gary Q. Wray, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Sept. 11, 1972, Ser. No. 288,187

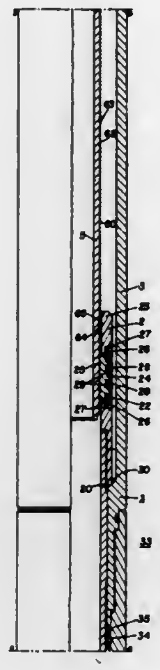
Int. Cl. E21b *33/00*

U.S. Cl. 166—315 **11 Claims**

1. Apparatus for use in testing well formations comprising: actuating means responsive to hydraulic pressure for producing vertical, reciprocal motion for an indefinite number of times;

valve means responsive to unidirectional motion for allowing fluid communication from an annulus area exterior to a test string to an open bore within the test string after a selected number of unidirectional motions; and

means connecting said actuating means to said valve means for transferring unidirectional movement to said value means from the reciprocal movement produced by said actuating means.



3,850,251
MOBILE BALLAST CLEANING MACHINE

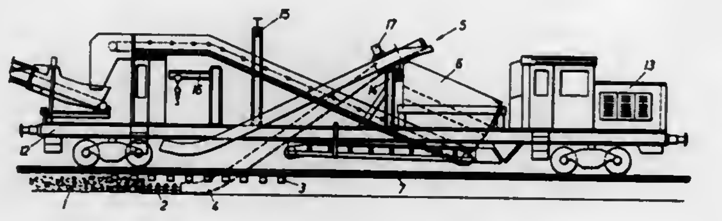
Erna Plasser; Josef Theurer, both of Johannesgasse 3, Vienna, Austria (A-1010), and Egon Schubert, Lainzerstr 24b/8, Vienna, Austria

Filed Aug. 13, 1973, Ser. No. 387,723

Claims priority, application Austria, Sept. 14, 1972, 7910/72

Int. Cl. E01b *27/00*

U.S. Cl. 171—16 **10 Claims**



1. A mobile ballast cleaning machine comprising
1. a frame movable on a track including rails mounted on ties supported by ballast,
2. an endless bucket chain mounted on the frame,
3. guide means carrying the bucket chain, the guide means including
  a. a pair of guide arms mounted laterally of the frame and guiding the bucket chain between a first position wherein the bucket chain is immersed in the ballast underneath the track ties and extends widthwise transversely of the track, and a ballast discharge position above the track,
4. means for adjusting the width of the bucket chain in the first position transversely of the track, and
5. a ballast cleaning screen arranged to receive ballast discharge at the discharge position.

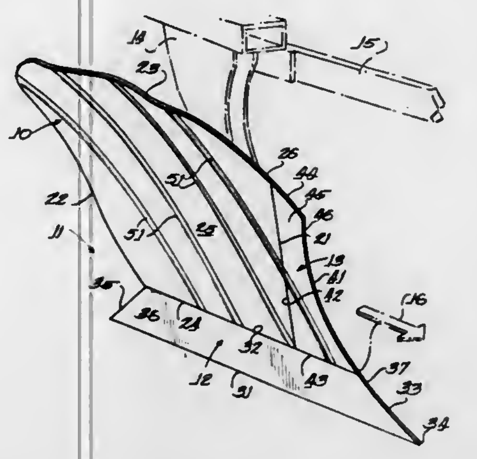
3,850,252
PLOW MOLD BOARD

James A. Ingalls, R.R. 1, Joliet, Ill. 60431

Filed Aug. 20, 1973, Ser. No. 390,072

Int. Cl. Ao1b *15/08*

U.S. Cl. 172—760 **6 Claims**



1. An improved mold board for a plow intended for attachment to a hitch adapted for attachment to a pulling tractor or the like for pulling the plow through the ground to be tilled, the plow having a frame and a plow share mounted on the frame, the improvement comprising a curved sheet of material constituting the mold board of the plow adapted to be mounted on the frame in a position above the plow share and adjacent to the top thereof, the mold board projecting upwardly and rearwardly therefrom with the top edge portion curving outwardly away from the frame in a manner to direct the dirt to the side and turn a smooth furrow behind the plow during the plowing operation, the mold board having a leading edge, a trailing edge, a top end, a bottom end adapted to be disposed adjacent the plow share, a ground engaging front surface, and a back surface adapted to be connected to the frame, and a plurality of uniformly spaced apart diagonally extending equal sized projections formed on the ground engaging front surface extending in a diagonally forward direction from the top end to the bottom end thereof adjacent the plow share top edge.

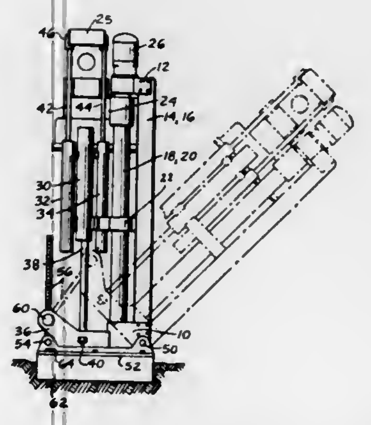
3,850,253
EXCAVATING MACHINE

Homer B. Lupton, Mercer Island, Wash., and Donald W. Busby, Denver, Colo., assignors to Subterranean Tools Inc., Commerce City, Colo.

Filed Dec. 1, 1972, Ser. No. 311,346

Int. Cl. E21c *1/10*

U.S. Cl. 173—23 **6 Claims**



1. In a drilling machine, especially a compact machine for use in mining operations; a frame comprising a pair of laterally spaced columns, a base member extending laterally between and fixed to the lower ends of said columns, and a frame member extending laterally between and fixed to the upper ends of said columns, upper and lower crossheads slidably guided on said columns, a motor driven chuck rotatably supported on said upper cross head, first cylinder-piston means having first piston means connected to said base member and extending upwardly therefrom and first cylinder means in which said first piston means is reciprocable, and second cylinder-piston means having second piston means operatively connected to said upper cross-head and extending downwardly therefrom and second cylinder means in which said second piston means is reciprocable, the axes of said cylinder-piston means being parallel to said columns, said first and second cylinder means being disposed in parallel adjacent relation and being at least partially coextensive in the axial direction, said lower cross-head being fixedly connected to and supporting said first and second cylinder means and being slidably guided on said columns for movement thereon between said upper crosshead and said base member, the upper ends of said second piston means being disposed forwardly of said frame member and passing thereby during operation of said machine.

3,850,254
SUCTION DEVICE FOR EXTRACTING DRILL CHIPPINGS

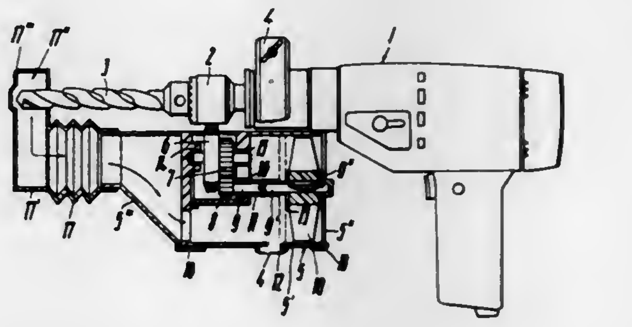
Rudiger Hirdes, Tippelsberger Strasse, D-463 Bochum, Germany

Filed July 6, 1973, Ser. No. 377,051

Claims priority, application Germany, July 6, 1972, 2233125

Int. Cl. B25d *17/14*

U.S. Cl. 173—75 **6 Claims**



1. A drill apparatus comprising a drill including a housing, a motor, and a chuck for attaching a tool; and a suction means surrounding at least a portion of the tool for extracting drill chippings made by the tool, the suction means drivable connected to the motor and operable therewith, wherein the suction means comprises a dust exhauster including a fan wheel releasably attached to the drill, and a transmission for operably connecting the fan wheel and chuck whereby the fan wheel is driven by the chuck through the transmission.

3,850,255
POWER DRIVEN HAMMERS OR THE LIKE

Heinrich P. Koehler, Camillus, N.Y., assignor to Rockwell International Corporation, Pittsburgh, Pa.

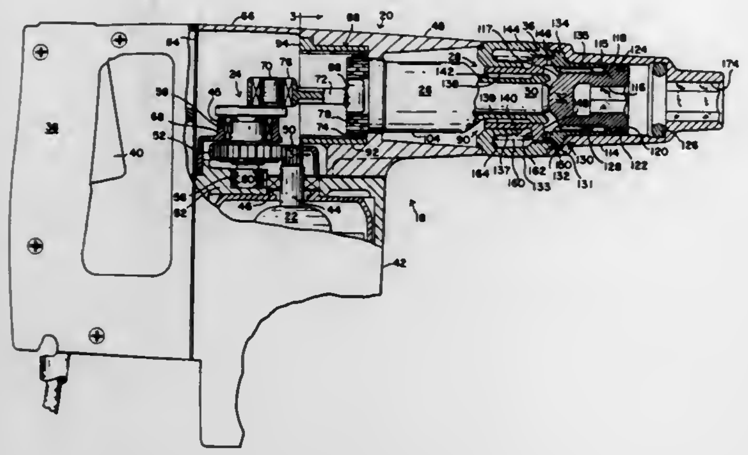
Filed Aug. 4, 1969, Ser. No. 847,294

Int. Cl. E21c *3/04;* **B25d** *9/04, 9/06*

U.S. Cl. 173—110 **21 Claims**

1. A power driven device, comprising: a casing; a tool holder; means mounting said tool holder for rotation in said casing; a cyclically operable impact imparting mechanism for imparting axial impacts to said tool holder; means for reciprocating said impact imparting mechanism in said casing; and means so drive-connecting said impact imparting mechanism to said tool holder that, in each cycle of operation of said impact imparting mechanism, said mechanism rotatably advances said tool holder, said drive connecting means comprising rotatably mounted, axially aligned input and output means; first means so drive-connecting said impact imparting mechanism to said input means that said input means is rota-

tively oscillated as said impact imparting mechanism reciprocates; second means for so drive-connecting said input means to said output means that said output means is rotatively advanced by said input means as said input means moves in one of its directions of movement only; and third means connecting said tool holder to said output means for rotation therewith, all of the first means connecting the impact imparting mechanism to said input means and said input means being rectilinearly movable in said casing along the axis along with said input and output means are aligned.



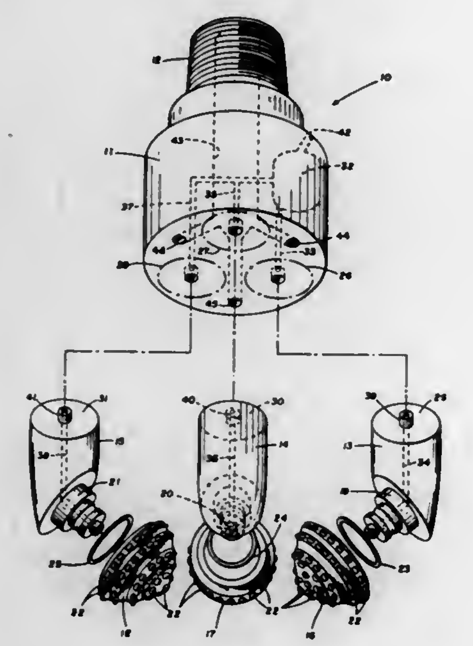
3,850,256
ROCK BIT WITH ONE PIECE BODY AND DEPENDING ARMS

Robert William McQueen, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sept. 21, 1973, Ser. No. 399,579

Int. Cl. E21b *9/10*

U.S. Cl. 175—228 **5 Claims**



1. A rotary rock bit, comprising:

a main body having a single main body parting face, said main body parting face having a planar main body surface;

at least one arm body having an arm body parting face, said arm body parting face having a planar arm body surface with said arm body parting face in abutting relationship with said main body parting face; and

a cutter rotatably mounted upon said arm body.

3,850,257
SYSTEM FOR PREVENTION OF ERRORS IN SCALE MEASUREMENT DUE TO TEMPERATURE VARIATIONS

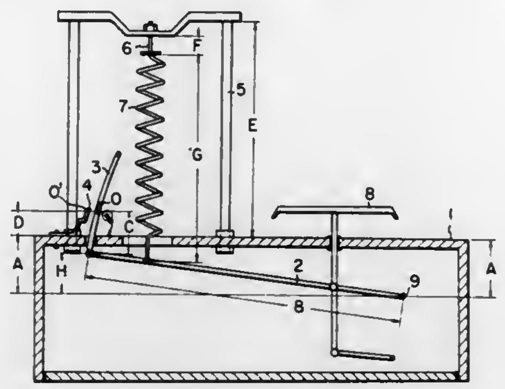
Takeharu Teraoka, No. 24-25, Kugahara 6-chome, Oota-ku, Tokyo, Japan

Filed Nov. 7, 1973, Ser. No. 413,493

Claims priority, application Japan, Nov. 15, 1972, 47-114934; Nov. 30, 1972, 47-120103

Int. Cl. G01g *3/18*

U.S. Cl. 177—226 **13 Claims**



1. In a scale having parts with linear dimensions and coefficients of expansion comprising a frame having a top with guide means; a weighing table having a supporting arm; slidably mounted for up and down movement through said guide means; a lever pivoted at its one end and pivotably connected intermediate its length to the said arm; at least one spring having a linear coefficient of expansion (g) and a length (G) from one end to an opposite second end, said one end of said spring being connected to said lever between said arm and the other end of the lever opposite to the pivoted end of said lever; a support mounted on the frame for suspending the spring, said support having an upright member of length (E) and a linear coefficient of expansion (e) and a top supported on said upright member having a spring arm connected to said spring at the end extending away from said lever of length (F) and a linear coefficient of expansion (f); a code plate having graduations thereon at spaced intervals including an intermediate zero graduation, having a linear coefficient of expansion (c), one end of the code plate being fastened to the end of said lever opposite to the pivoted end of the lever and having a length (C) located between the end of the code plate fastened to the lever and the zero graduation on the code plate; a reading member mounted on the frame and alignable with the code plate for reading the graduations thereon, the reading member having a linear coefficient of expansion (d) and a vertical height (D) extending from part of the frame at which the reading member is mounted to the zero point of alignment of the reading member with the code plate, the lever having a linear coefficient of expansion (h) and vertical distance (H) being the height measured between the end of the lever to which the code plate is fastened and the point at which the other end of the lever is pivoted, the improvement wherein said parts of the scale have the linear dimensions and coefficients of expansion defined according to the relation

$$E \cdot e = D \cdot d + F \cdot f + G \cdot g - H \cdot h - C \cdot c,$$

whereby errors in weighing are eliminated due to variation of the zero position alignment of the code plate with the reading member of the scale due to changes in temperature.

3,850,258
CONTROL LEVER FRICTION CLUTCH

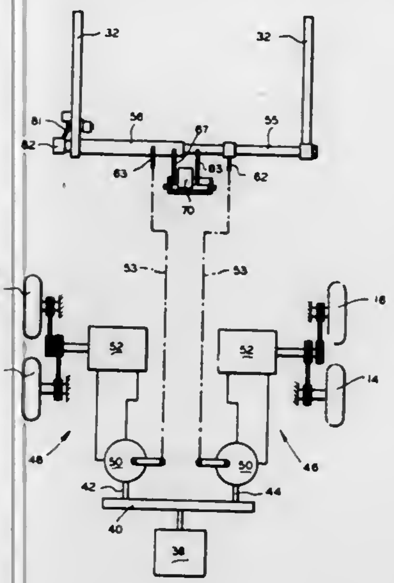
James J. Bauer, Lisbon, N. Dak., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Apr. 20, 1973, Ser. No. 353,177

Int. Cl. B62d *11/04*

U.S. Cl. 180—6.48 **4 Claims**

1. The combination comprising first and second separate variable output drive means, a first rotatable shaft operatively connected to said first drive means so that rotation of said first shaft varies the output of said first drive means, a second rotatable shaft operatively connected to said second drive means so that rotation of said second shaft varies the output of said second drive means, a first clutch element connected to said first rotatable shaft, a second clutch element connected to the second rotatable shaft, spring means biasing said first and second clutch elements apart so that said first and second rotatable shafts can be rotated independently of each other, centering means interconnecting said first and second rotatable shafts tending to return said shafts to a centered position coinciding with a neutral drive position with respect to both first and second variable output drive means, the ends of said shafts being in juxtaposed relationship on one side, a control lever secured on the opposite side to the first shaft, a second control lever, a hinge securing the second control lever on the second shaft on the opposite side having a hinge axis extending transversely of the axis of rotation of said first and second shafts, said second clutch element being connected to the second control lever above the hinge axis, said first clutch element being connected to the first shaft and extending opposite the second clutch element such that said clutch elements may be engaged by pivoting said second control lever about the hinge axis.



3,850,259
WALKING VEHICLE

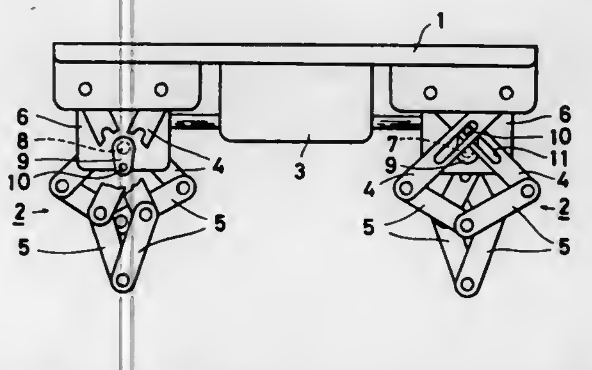
Kiichi Ikeda; Kintaro Taguchi; Taketoshi Nozaki, and Shuntetsu Matsumoto, all of Tokyo, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Mar. 30, 1973, Ser. No. 346,321

Claims priority, application Japan, May 30, 1972, 47-53731; Apr. 27, 1972, 47-50043

Int. Cl. B62d *57/02*

U.S. Cl. 180—8 E **4 Claims**



1. A walking vehicle which comprises in combination, a main body, four leg mechanisms, one of said four leg mechanisms disposed at each of four edge locations of the main body for supporting and driving the main body, each of said leg mechanisms having two upper linkages each having an elongated slot disposed along its body, and two lower linkages movably joined at one end, said upper linkages connected rotatably at their upper ends to the main body at their lower ends one each respectively to a lower linkage, said upper linkages crossed to form a generally X-shape, a rotating member disposed at each leg mechanism and having an eccentric pin disposed thereon, said pin projecting each of the elongated slots of the upper linkages, and means for rotating each rotating member relative each other such that one leg mechanism is rotated about 180° out of phase relative to an adjacent leg mechanism whereby walking movement of the vehicle is effected.

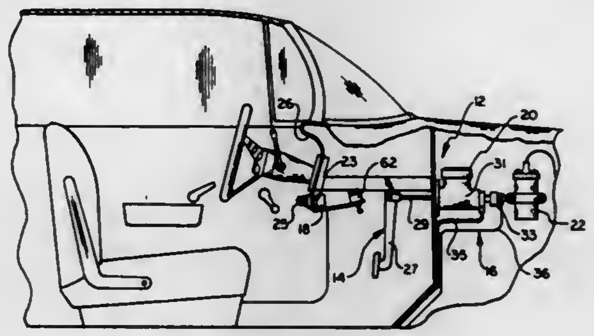
3,850,260
AUTO WARM-UP THEFT PREVENTING APPARATUS

Gerhard E. Obermeit, 500 S. King St., Mount Hope, Kans. 67108

Filed Feb. 12, 1973, Ser. No. 331,579

Int. Cl. B60r *25/08*

U.S. Cl. 180—114 **4 Claims**



1. A theft preventing apparatus, comprising:

a. a power supply,

b. a first switch member connected to said power supply to receive current therefrom,

c. a second switch member connected to said power supply to receive current therefrom,

d. a control circuit connected to said first switch member and said second switch member and connected to an ignition circuit for energization of a vehicle,

e. said control circuit having a third switch member, a fourth switch member, and a fifth switch member

f. means for passing current from said first switch member to said third switch member to said ignition circuit; from said first switch member to said fourth switch member to said ignition circuit; and from said second switch member to said fifth switch member to said fourth switch member, whereby, under one set of conditions, said first switch member is operable in closed condition to energize said ignition circuit for normal vehicle operation and, under a second set of conditions, said third switch member in the opened condition with said first switch member and said fourth switch member in the closed condition operate to energize said ignition circuit and, under a third set of conditions, operation of said second switch member operates to open said fourth switch member and de-energize said ignition circuit.

3,850,261
WIDE BAND WIDTH SINGLE LAYER SOUND SUPPRESSING PANEL

Horst W. W. Hehmann, Cincinnati, and Edwin B. Smith, Mason, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

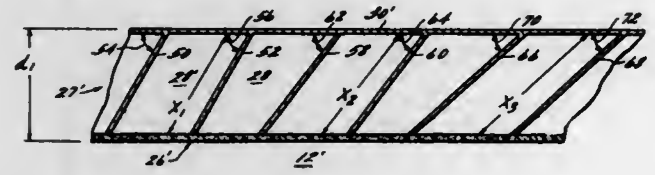
Filed Mar. 1, 1973, Ser. No. 337,137

Int. Cl. E04b *1/82*

U.S. Cl. 181—33 G **1 Claim**

1. A sound-wave suppressing panel for use in a duct, the panel substantially circumscribing the duct and including:

a first sound-wave permeable wall partially defining the duct;
a second wall, impermeable to sound-waves, spaced radially from the first wall and therewith defining a substantially annular gap;
a first plurality of circumferentially extending and axially spaced sound-wave impermeable partitions extending substantially between said first and second walls for dividing the gap into a plurality of resonator cavities;



wherein said first and second walls are spaced apart by a distance d defined by the relationship

$$f_H = C/2\pi \quad OA/l_{eff}d,\ l_{eff} \approx t + k\,(2r);$$

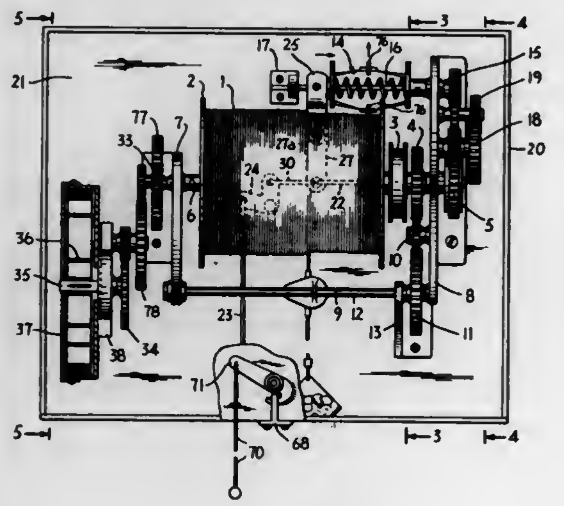
and said preselected pairs of partitions are canted with respect to said second wall to define a cavity length x defined by the relationship

$$f_{14} = n\,C/4x,\ n = 1, 3, 5, \ldots;$$

where $f_H < f_{14}$.

3,850,262
ESCAPE MACHINE

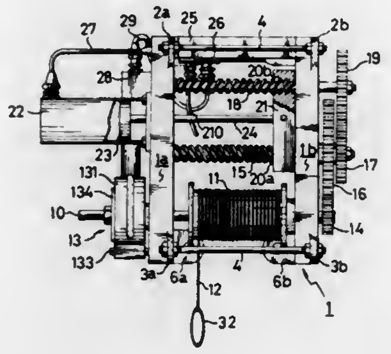
Sigeiti Simizu, 26-14, 6-chome Yutakacho, Shinagawa-ku, Tokyo, Japan
Filed Apr. 4, 1973, Ser. No. 347,708
Int. Cl. A62b *1/10*
U.S. Cl. 182—5 **7 Claims**



1. An escape device to rescue persons or articles from a multistoried building, comprising a frame; a belt; a receptacle adapted to be secured to one end of the belt for holding the person or article to be rescued; a drum rotatably mounted on the frame and having the belt about its outer periphery, said belt being capable of being wound on or unwound from said drum; drive means attached to the drum for rotating said drum; control means mounted on the frame and including at least one governor operatively connected to the drive means for regulating the rate at which the belt can be wound or unwound; a transmission assembly for transmitting motive force from the drum to the governor, thereby to rotate said governor, only when the drum rotates in a direction for unwinding the belt, said transmission assembly having locking means therein operable only when the drum operates in said direction; a braking assembly mounted on the frame and operatively connected to the governor and to the drive means; and means attached to the braking assembly for actuating the latter; said braking assembly comprising a braking wheel cooperable with the driving means and adapted to brake the drum, a first lever means attached to the frame and operatively connected to the governor, a second lever means attached to said means for actuating the braking assembly, and connecting means for joining the first and second lever means and for joining the first lever means to said frame.

3,850,263
APPARATUS FOR FIRE ESCAPING FROM HIGH BUILDING

Shi-Chi Chin, Tainan, China /Taiwan, assignor to Johnson Enterprise Co., Ltd., Taipei, China /Taiwan
Filed Nov. 8, 1973, Ser. No. 413,790
Int. Cl. A62b *1/12*
U.S. Cl. 182—73 **6 Claims**



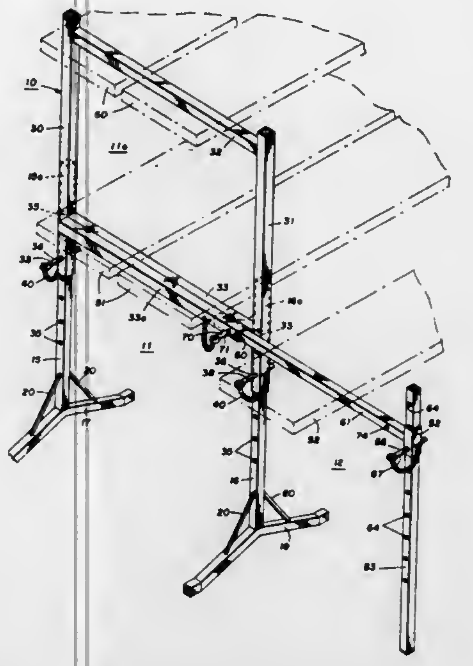
1. Apparatus for fire escaping from a high building comprising a frame, a winch having a cable thereon rotatably mounted on said frame, a gear train driven by said winch, a pair of parallelly disposed screw rods having threads in reversed direction to each other and being driven by said gear train, a plate with a pair of nuts matching said pair of reversely threaded screw rods and slidably mounted thereon, a hydraulic cylinder having a piston driven by the slide motion of said plate, a hydraulic selecting pump actuated by said hydraulic cylinder, a brake control cylinder actuated by said selecting pump, and a brake assembly controlling the rotation of said winch, whereby upon rotation of the winch caused by the unwinding of the winch cable due to the falling of an escaper hanging on the cable end, pressure is built up in the hydraulic cylinder and passes through the selecting pump to actuate the brake assembly to stop the motion of the winch, and upon release of said brake assembly, rotation of the winch is resumed to start the whole cycle all over again so that the escaper reaches the ground in intermittent stop-and-go intervals without undergoing gravitational acceleration.

3,850,264
GROUND SUPPORTED SCAFFOLDING

Ralph C. Salinas, 604 N. Fifth, Waco, Tex. 76702
Filed Mar. 22, 1973, Ser. No. 343,953
Int. Cl. E04g *1/22*
U.S. Cl. 182—178 **4 Claims**

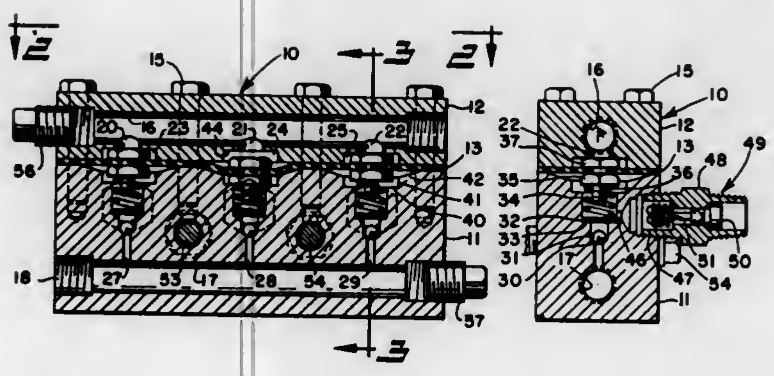
1. In a scaffold assembly of the type having a support structure for supporting materials receiving platforms and a separate workman's platform, the improvement wherein said support structure comprises:

a. a first platform support for supporting a materials receiving platform comprising a ground engaging base portion, frame means vertically adjustable with respect to said base portion and defined by a pair of laterally spaced vertically extending leg portions and at least one horizontally extending support beam,
b. elongated sleeve means disposed between said leg portions and defining an elongated channel extending transverse to said vertically extending leg portions and parallel to said at least one horizontally extending support beam, said sleeve means being rigidly secured to said frame means immediately adjacent said support beam in a manner which maintains said channel stationary with respect thereto,
c. a second platform support laterally movable between a first support position extending from said first platform support for supporting a workman's platform and a second stored position retractably retained within the confines of said first platform support; said second platform support comprising an elongated horizontal beam for supporting said workman's platform and telescopically received within the elongated channel of, and supported by, said sleeve means; substantially the entire length of said elongated horizontal beam being disposed within the horizontal span of the pair of laterally spaced leg portions of said frame means when said second platform support is disposed in said second stored position, and
d. means for releasably locking said second platform support in the first support position and the second support position.



3,850,265
LUBRICATING DEVICE

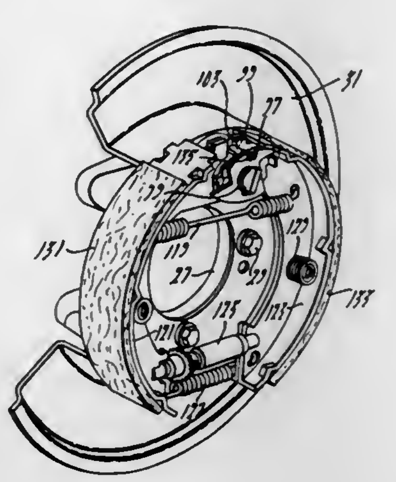
Warren A. Blower, Brecksville, and Allen R. Scott, Parma Heights, both of Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio
Filed Aug. 21, 1970, Ser. No. 65,904
Int. Cl. F16n *7/30*
U.S. Cl. 184—7 D **9 Claims**



1. A lubricator for machinery including a distributor device having at least one distribution line leading therefrom, a diaphragm in said distributor device, an air chamber on one side of said diaphragm and a lubricant chamber on the other side of said diaphragm, and stop means to limit diaphragm movement, said stop means including two opposed outwardly projecting members on each side of said diaphragm adapted alternately to engage shoulders in said air chamber and said lubricant chamber in accordance with the pressure in said air chamber, whereby when said air chamber is pressurized a predetermined quantity of lubricant is forced by the diaphragm from said lubricant chamber through said distribution line.

3,850,266
PARKING BRAKE

Arthur W. Hesskamp, Birmingham; Paul B. Hellens, Southfield, and Albert J. Di Matteo, Metamora, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Aug. 3, 1973, Ser. No. 385,614
Int. Cl. F16d *63/00*
U.S. Cl. 188—70 R **10 Claims**



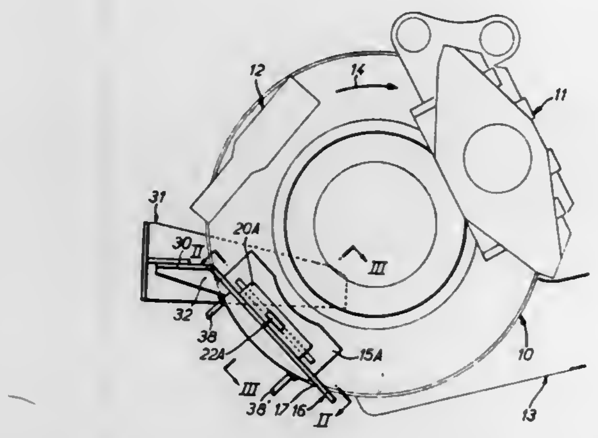
1. Parking brake apparatus for a vehicle wheel having a disc brake, said disc having a drum portion, support means, a pair of brake shoe assemblies having linings engageable with the drum portion, and means to move said shoe assemblies toward said drum portion, said means including spreader means located between the upper ends of said shoe assemblies, said spreader means including a rotatable shaft, and means connected to said shaft for engaging the adjacent ends of said shoe assemblies and forcing them apart upon rotation of said shaft, said means connected to said shaft including a pair of generally flat rotatable plate members, one of which is secured to said shaft for rotation therewith and the other of which is mounted on said shaft for sliding and rotating movement with respect thereto, said members having means thereon for transferring rotary movement of said shaft to movement of said shoe assemblies, said means on said members comprising a pair of shoulders on one of said members and a plurality of tabs extending generally axially relative to the shaft on the other member, two of which extend in one generally axial direction and are engaged by said shoulders and two others of which extend in an opposite generally axial direction and engage said shoe assemblies.

3,850,267
HEAT COLLECTOR AND SUPPORT FOR DISC BRAKES

Jean Odier, Antony, France, assignor to Societe Anonyme Francais du Ferodo, Paris, France
Filed Feb. 12, 1973, Ser. No. 331,894
Claims priority, application France, Feb. 16, 1972, 72.05122
Int. Cl. F16d *65/84*
U.S. Cl. 188—71.6 **11 Claims**

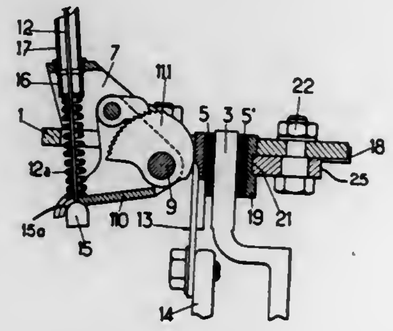
1. A device such as a brake, slowing down device, clutch or the like, of the kind comprising a rotating disc subjected to heating of any kind, two heat-collector shoes distinct from any braking shoe and disposed on each side of said disc, and a guide-support comprising a sole-plate having a window therein defined by sides for passage of said disc, substantially along a chord of said disc, and for the reception with a lateral clearance of said two heat-collector shoes, the sides of said window which are on each side of said disc having each a

flange over at least part of their length, operating means associated with the corresponding heat-collector shoe and supported by said flanges, said operating means comprising a substantially V-shaped elastic blade having a curved central portion engaged in an opening in the corresponding said flange for the retention of said blade, each said blade having two lateral wings elastically supported against the associated heat-collector shoe for urging said shoe toward said disc.



3,850,268
SELF-LOCKING DISC BRAKE MECHANISM

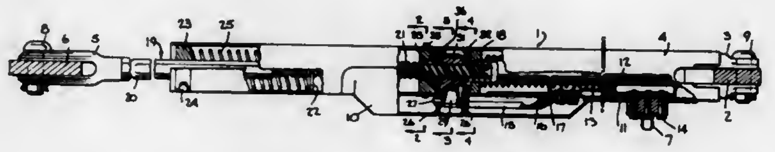
Michel Guettier, Rueil-Malmaison, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt and Automobiles Peugeot, Paris, both of, France
Filed July 10, 1973, Ser. No. 377,935
Claims priority, application France, July 19, 1972, 72.26083
Int. Cl. F16d *55/46*
U.S. Cl. 188—72.2 **2 Claims**



1. A self-energizing brake mechanism for braking a rotatable disc, comprising a floating supporting member freely movable in a direction perpendicular to said disc only, a lever arm rotatably mounted on said supporting member, a first cam rotatably mounted on said supporting member, connecting means for locking said first cam to said lever arm in an adjusted angular relation, a first braking element slidingly mounted on said supporting member for movement perpendicular to said disc only and including resilient means for biasing it away from said disc, the surface of first braking element opposite to said disc being engagable with said first cam so as to be brought into engagement with a face of said disc when said first lever arm is operated, a second braking element mounted on said supporting member on the opposite face of said disc for limited movement tangentially of said disc, and for movement perpendicular to the disc, said second braking element having in its face opposite to said disc a flat bottom recess and including resilient means for biasing it to a position substantially midway of said limited movement, and a second cam rotatably mounted on said supporting member on an axis located in a diametral plane of said disc, said second cam having a cam surface engaging the flat bottom of said recess, said cam surface having a generally curved configuration of a radius greater than the perpendicular distance between said axis and said bottom.

3,850,269
SLACK ADJUSTER

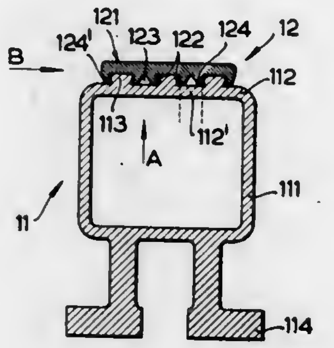
Robert G. Beacon, Sparta, N.J., assignor to Ellcon-National, Inc., Totowa, N.J.
Filed June 18, 1973, Ser. No. 371,031
Int. Cl. F16d *65/66*
U.S. Cl. 188—202 **10 Claims**



1. In a slack adjusting device comprising a pull rod having a threaded portion, a housing and adjusting nut interconnecting said pull rod and said housing and having threads engaging said threaded portion, relative rotation between said nut and said rod being produced upon the application of a force to said rod directed longitudinally thereof thereby permitting relative movement of said rod and said housing longitudinally with respect to each other, and arresting means for arresting said relative rotation but permitting a predetermined amount of longitudinal relative movement of said rod and said housing when said relative rotation is arrested, the combination therewith of braking means in addition to said arresting means and actuated by at least one of said rod, said housing and said nut upon occurrence of said predetermined amount of relative movement for opposing said relative rotation between said rod and said nut, the force applied by said braking means to oppose said relative rotation being at least equal to 50 percent of the force required to prevent said relative rotation in the absence of said arresting means.

3,850,270
LIVE RAIL AND SHOE CONSTRUCTION

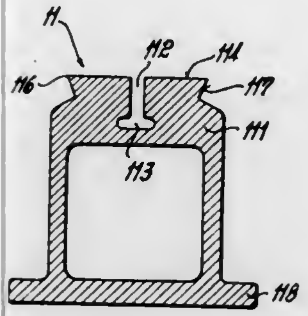
Willi Hillmann, Kamen, Germany, assignor to Paul Vahle KG, Kamen, Germany
Filed Aug. 14, 1973, Ser. No. 388,095
Claims priority, application Germany, Sept. 11, 1972, 2244492
Int. Cl. B60m *1/34*
U.S. Cl. 191—29 **5 Claims**



1. The combination of a rail and slide surface for the supply of current to movable current comsumers, comprising a metallic base (**11**) forming a live rail and a slide surface (**12**) fitting with the base and arranged thereon, of a wear-resistant metal, in which on the surface of the base facing the slide surface there are provided a plurality of dove-tail shaped projections (**113**) extending along the length of the base, the slide surface having U-shaped recesses (**122**) in the contact surface which grip said projections, the flanks of the recesses engaging against the corresponding flanks of the projections, and in which the base has web portions on on which said projections are formed, and the slide surface between the U-shaped recesses is provided with grooved recesses (**123**), thereby forming legs (**124**) on the slide surface, the aligned surface parts of the web being bent into the grooved recesses, whereby the legs of the slide surface between the U-shaped recesses and the grooved recesses are bent against the corresponding flanks of the dove-tail shaped projections (**113**).

3,850,271
THIRD RAIL FOR CURRENT CONSUMERS WITH LARGE CURRENT REQUIREMENT AND HIGH SPEED

Willi Hillmann, Kamen B R D, Germany, assignor to Paul Vahle KG, Kamen, Germany
Filed Oct. 29, 1973, Ser. No. 410,895
Claims priority, application Germany, Sept. 29, 1973, 2349127
Int. Cl. B60m *1/34*
U.S. Cl. 191—29 DM **8 Claims**

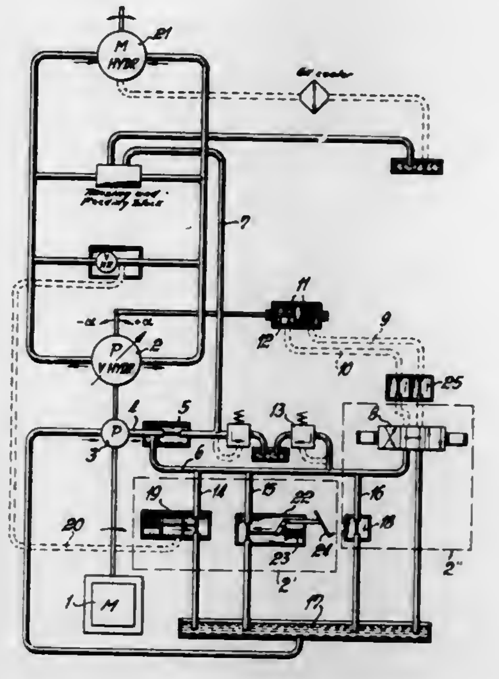


1. A third rail for the supply of current to movable current consumers movable along the third rail, comprising a base of metal and a slide surface element formed of a wear-resistant metal arranged on and interfitting with the base, in which the wall part of the base facing the slide surface element is provided with a longitudinally extending slot having a generally T-shape, and in which the slide surface element comprises a correspondingly folded sheet metal section with a leg intermediate its width having an enlarged head fitting in the T-shaped slot and having its longitudinal edges extending beyond the longitudinal edges of the base and bent into engagement with the longitudinal edges of the base.

3,850,272
HYDROSTATIC REVERSIBLE VEHICLE DRIVE CONTROLLED BY BRAKE APPLICATION

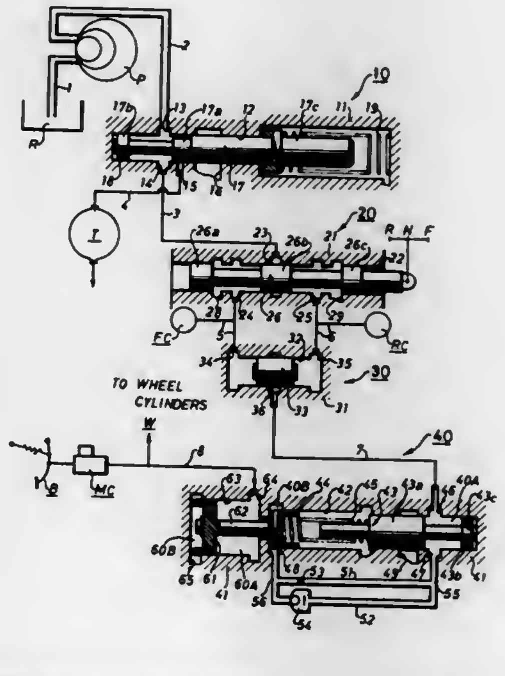
Udo Reinecke, Dortmund-Kirchhorde; Helmut Jurgensmann, Westhofen; Josef Riedhammer; Helmut Stangl, both of Horb, and Gerhard Beutler, Nagold, all of Germany, assignors to Orenstein & Koppel Aktiengesellschaft, Berlin and Brueninghaus Hydraulik GmbH, Horb, both of, Germany
Filed Mar. 12, 1973, Ser. No. 340,002
Claims priority, application Germany, July 21, 1972, 2264442
Int. Cl. B60k *29/02*
U.S. Cl. 192—4 B **3 Claims**

1. A control device for a hydrostatic reversible driving system with a braking device, which includes: a main hydraulic circuit comprising a hydrostatic pump having a pump body portion pivotable in opposite directions and equipped with an adjusting device, and hydraulic motor means, and also includes a hydraulic control circuit comprising a driving engine, a control pump drivingly connected to said driving engine so as to rotate at a speed proportional to the speed of said driving engine, said control pump also being hydraulically connected to said hydraulic control circuit, and driving direction control valve means operatively connected to said adjusting device, said hydraulic control circuit also comprising: fluid reservoir means, a main control conduit, first and second and third branch conduits branching off from said main control conduit and arranged in parallel to each other and communicating with said fluid reservoir means, rigid orifice means interposed in said first branch conduit, output control valve means operatively connected to said main hydraulic circuit and interposed in said second conduit, adjustable orifice means interposed in said third conduit and movable from a closed position to an open position and vice versa, and spring means associated with said adjustable orifice means and continuously urging the same to its closed position, said adjustable orifice means being operatively connected to said braking device so as to be movable to its open position in conformity with the actuation of said braking device.



3,850,273
BRAKE CONTROLLED PRESSURE MODULATING CLUTCH VALVE

Noboru Murakami, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed Sept. 17, 1973, Ser. No. 397,920
Claims priority, application Japan, Sept. 19, 1972, 47-93911
Int. Cl. B60k *29/02*
U.S. Cl. 192—4 A **6 Claims**



1. An inching control system for a vehicle having a manual shift valve for selectively supplying the line pressure from a pressure source of the vehicle at a predetermined value to

fluid-actuated clutch engaging mechanisms and a hydraulic braking system for arresting the movements of the vehicle, comprising

a modulator valve for modulating the line pressure to be supplied to said clutch engaging mechanisms responsive to the operation of said manual shift valve, said modulator valve including a housing, a valve spool reciprocable within a cylindrical bore of said housing and forming a first pressure chamber to be selectively connected with said clutch engaging mechanisms and to modulate the line pressure, a modulator piston reciprocable within said bore and forming a second pressure chamber which is directly connected with said first pressure chamber by a passage way having an orifice, said modulator piston being provided with a pressure receiving area which is larger than that of said valve spool and a resilient means interposed between said valve spool and modulator piston for normally biasing said valve spool to its inoperative position; and

inching means directly connected to said modulating piston for controlling the movements of said modulator piston in response to the operation of said braking system to effect the inching movements of the vehicle, whereby the movements of said modulator piston regulate instantly the line pressure to be supplied into said clutch engaging mechanisms during the inching movements of the vehicle.

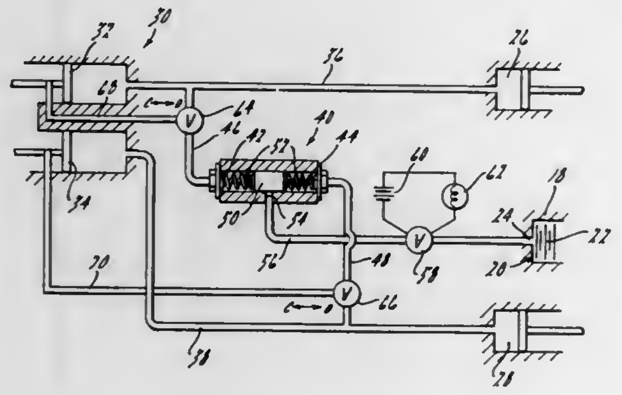
3,850,274
DIFFERENTIAL LOCK-UP RESPONSIVE TO BRAKE MALFUNCTION

Douglas H. McLean, Grosse Ile, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 22, 1974, Ser. No. 463,082

Int. Cl. B60k *29/02*

U.S. Cl. 192—4 A **5 Claims**



1. A brake device for a vehicle having first and second brakable wheels on opposite sides of the vehicle with first and second axles being connected to respective ones of the wheels, which brake device comprises:

dual master brake cylinders;

first hydraulic line means for connecting one of the master brake cylinders to a first wheel brake cylinder associated with the brakes of the first wheel, these elements defining a first hydraulic brake system;

second hydraulic line means for connecting the other master brake cylinder to a second wheel brake cylinder associated with the brakes of the second wheel, these elements defining a second hydraulic brake system;

a hydraulically actuated differential lock clutch having a supply port through which hydraulic fluid is applied to the differential clutch for operation thereof from an unactuated condition in which the axles to each of the wheels are freely rotatable relative to each other, to an actuated condition in which the two axles are locked together so that they rotate as a unit;

a hydraulic shuttle valve having a pair of terminal ports and a central port, the shuttle of the valve assuming a neutral position which closes the central port when balancing pressures are applied to different surfaces thereof through the pair of terminal ports;

third hydraulic line means for connecting at least a portion of the first hydraulic brake system to one terminal port of the hydraulic shuttle valve;

fourth hydraulic line means for connecting at least a portion of the second hydraulic brake system to the other terminal port of the hydraulic shuttle valve, and

fifth hydraulic line means for connecting the central port of the hydraulic shuttle valve to the supply port of the hydraulic differential lock clutch;

whereby when pressure is lost in either the first or the second hydraulic brake systems, the shuttle valve is actuated to interconnect the hydraulic brake system having full pressure with the differential lock clutch so that the clutch is operated and the first and the second axles are locked together and a straight line braking of the vehicle occurs although braking pressure is applied to the brakes of only the one wheel which has full pressure in its brake system.

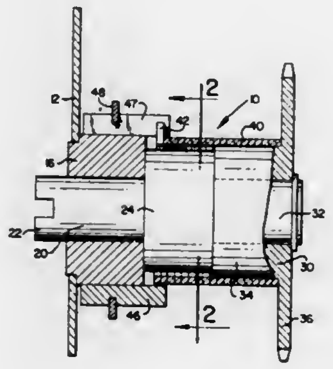
3,850,275
SPRING CLUTCH WITH AUTOMATIC DISCONNECT FEATURE

Elton L. Helander, Guilford, Conn., assignor to Helander Products, Inc., Clinton, Conn.

Filed Dec. 26, 1972, Ser. No. 318,372

Int. Cl. F16d *11/06*

U.S. Cl. 192—26 **4 Claims**



1. A helical spring clutch, with automatic disengageable feature when stopped, said clutch comprising:

- a. a fixed block having an outer cylindrical surface and defining a bearing;
- b. a helical clutch spring;
- c. an output member journalled in said bearing and having a cylindrical clutch surface selectively engageable by a portion of said clutch spring;
- d. an input member rotatable concentrically with said output member and engageable by an opposite end portion of said clutch spring;
- e. a collar attached to the end of said clutch spring remote from said input member opposite end portion, said collar fabricated from a material with high frictional or braking characteristics;
- f. said collar having an inner cylindrical surface rotatably mounted on said fixed outer surface of said block, said surfaces normally exerting a braking torque on said remote end of said clutch spring to cause said spring to normally wrap down on said output clutch surface during driving motion of said input member, and said braking surfaces allowing manual relative rotation between said collar and said output clutch surface when said input member is stopped; and
- g. means for urging said inner collar surface into engagement with said fixed block surface.

3,850,276
DELAYED ACTION TORQUE CONTROLLED CENTRIFUGAL CLUTCH

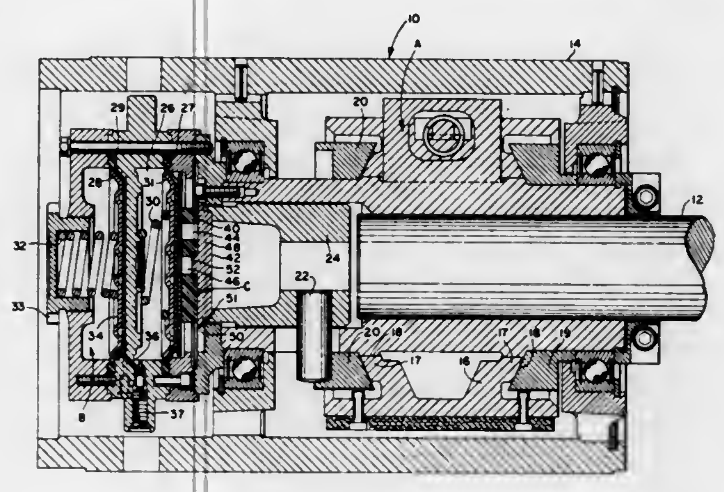
Kiritkumar R. Patel, Brooklyn, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Claims priority, application Germany Aug. 5, 1971, 2139256

Filed Feb. 28, 1973, Ser. No. 336,661

Int. Cl. F16d *43/14*

U.S. Cl. 192—105 BA **3 Claims**



1. In a centrifugally controlled coupling of selectively delayed action comprising a revolvable driving member, a revolvable driven member, an intermediate coupling member revolvable together with said driving member and radially outwardly movable due to centrifugal force into coupling engagement with said driven member, force transmitting means movable longitudinally relative to said driving member in a given direction parallel to the axis of revolution, said force transmitting means being biased towards said intermediate member and having a cam surface in engagement with said intermediate member for applying a radially inward force on said intermediate member, adjustable time-delay means comprising a dampening device having a fluid displacing means operatively connected with said force transmitting means for movement by said force transmitting means in said given direction, said dampening device being provided with a variable volume hydraulic chamber cooperating with said fluid displacing means to receive hydraulic fluid displaced thereby, and adjustment means for adjusting the time flow rate of fluid to said variable volume hydraulic chamber, said improvement comprising:

a resiliently, longitudinally compressible cushion of a molded elastomeric material having a plurality of circumferentially spaced apertures therethrough interposed between said time-delayed means and said force transmitting means, said cushion absorbing the initial longitudinal impact load of said force transmitting means and being compressed by said force transmitting means when said intermediate member moves into initial engagement with said driven member, and said cushion being expanded against the bias of said time-delayed means to exert a gradually decreasing bias through said force transmitting means opposing said centrifugal force of said intermediate coupling member.

3,850,277
CLUTCH ASSEMBLY

Kazuma Adachi, Yao, Japan, assignor to Kabushiki Kaisha Daiken Seisakusho, Osaka Pref., Japan

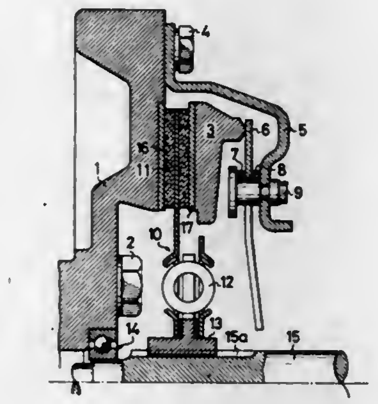
Filed Dec. 29, 1972, Ser. No. 319,719

Claims priority, application Japan, Jan. 19, 1972, 47-478926

Int. Cl. F16d *55/02*

U.S. Cl. 192—107 **3 Claims**

1. A clutch assembly comprising a clutch disc having clutch facings made of cerametallic or like material, a flywheel having a friction surface to be brought into frictional contact with one of the facings, the friction surface including separate segments made of heat-treated hard steel plate and fixed to the flywheel, and a pressure plate urged in a direction to press the facing against the friction surface of the flywheel, a clutch cover supporting said pressure plate for conjoint rotation with the flywheel, the pressure plate having a friction surface to be brought into frictional contact with the other facing, and the second-mentioned friction surface including separate segments made of heat-treated hard steel plate and fixed to the pressure plate thereby improving the durability of the friction surfaces of the flywheel and the pressure plate.



3,850,278
PRINTING NEEDLE FOR A NEEDLE PRINTING MECHANISM

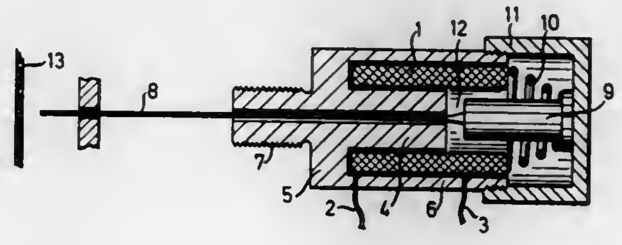
Hans-Peter Mihm, Munich, and Erich Moser, Taufkirchen, both of Germany, assignors to Rena Buromaschinenfabrik GmbH & Co., Deisenhofen near Munich, Germany

Claims priority, application Germany, Aug. 5, 1971, 2139256

Filed Aug. 7, 1972, Ser. No. 278,623

Int. Cl. B41j *3/44*

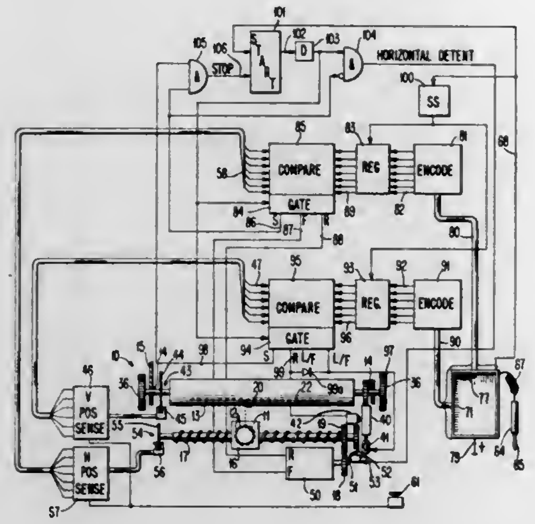
U.S. Cl. 197—1 R **3 Claims**



1. A printing needle device for a printing mechanism comprising a printing needle and an enlarged diameter, substantially cylindrical armature adjacent one end thereof, said printing needle having an elongate, relatively small diameter printing wire and a relatively short, enlarged diameter end portion adjacent said armature, said enlarged diameter end portion terminating and being integral with said printing wire, said printing needle including a somewhat tapered portion integrally joining said printing wire and enlarged end portion, said armature having a diameter exceeding that of said enlarged end portion, the armature having an opening which substantially exceeds the printing wire diameter, said enlarged end portion of the printing needle being inserted in said opening and substantially fully housed therein to connect with said armature, whereby to facilitate manufacture of and enhance reliability of a printing wire-armature interconnection.

3,850,279
PRINT POINT POSITIONING CONTROL FOR A CHARACTER-BY-CHARACTER PRINTER

Robert A. Kolpek, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 26, 1972, Ser. No. 318,300
Int. Cl. B41j *5/30*
U.S. Cl. 197—19 **2 Claims**

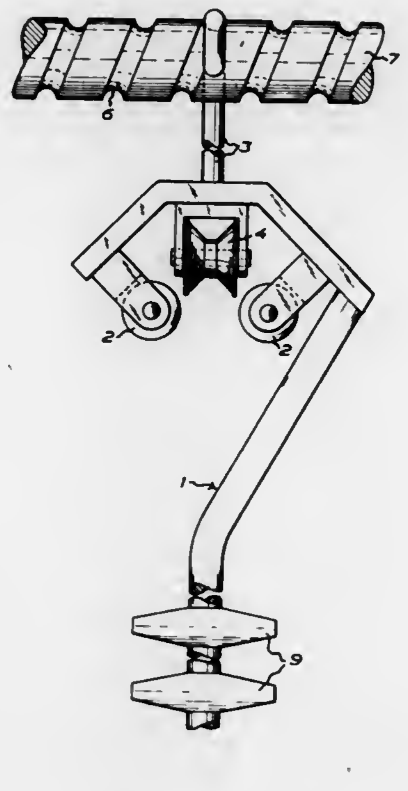


1. A serial page printer having an elongated cylindrical platen for supporting a writing page and character by character printing mechanism positioned adjacent said platen and defining a printing point therebetween, carrier means for movably supporting at least one of said platen and said printing mechanism to enable movement of said printing point along a writing line, further means for rotatably supporting said platen to enable movement of said printing point relative to said page to different writing lines, forward and reverse drive mechanism for moving said printing point laterally along said writing line, and forward and reverse line feed mechanism for moving said printing point vertically between writing lines, wherein the improvement comprises:

- a format simulation control panel simultaneously displaying a format simulation area representative of at least a portion of a plurality of writing lines and including columnar position transducing means and writing line position transducing means responsive to manual designation of a point on said panel for generating respective columnar and writing line position indicative signals,
- manually operable means for generating a start control signal, and
- control means comprising:
  - first encoding means responsive to said columnar position indicative signal for generating a control output that is numerically representative of the columnar location of the manually designated point on said panel,
  - second encoding means responsive to said writing line position indicative signal for generating a control output that is numerically representative of the writing line location of the manually designated point on said control panel,
  - first print point position sensing means having an output that is numerically representative of the current column position of the print point defined by said platen and printing mechanism,
  - second print point position sensing means having an output that is numerically representative of the current writing line defined by the rotational position of said platen,
  - first compare means for comparing the output of said first print point position sensing means with the output of said first encoding means for operating said forward and reverse drive mechanism to eliminate any difference therebetween,
  - second compare means for comparing the output of said second print point position sensing means with the output of said second encoding means for operating said forward and reverse line feed mechanism to eliminate any difference therebetween, and
- means responsive to said start control signal for enabling operation of said forward and reverse drive mechanism and said forward and reverse line feed mechanism under the control of said first and second compare means respectively.

3,850,280
SUSPENSION YOKE FOR THE CONVEYANCE OF GOODS

Olof Ohrnell, Torgilsgatan 17 B, 502 41 Boras, Sweden
Filed Mar. 13, 1973, Ser. No. 340,894
Int. Cl. B61b *3/00*
U.S. Cl. 198—1 **1 Claim**

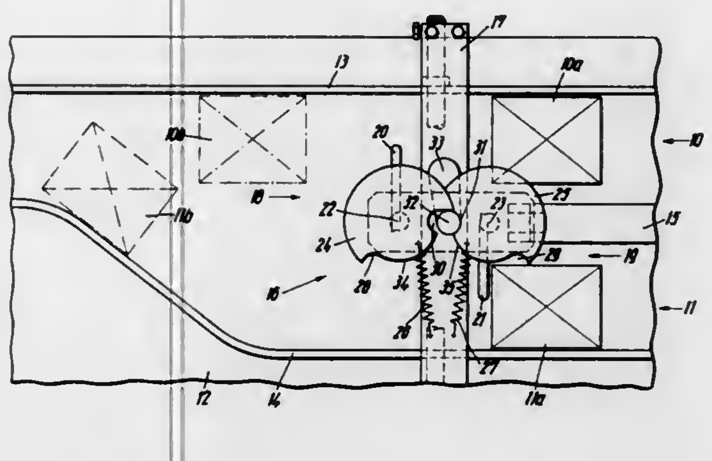


1. A universal suspension yoke for use in a conveyor system including separate and independent rotating tube conveyors, screw conveyors, and inclined rod conveyors, said suspension yoke comprising:

- a yoke frame;
- wheel means rotatably mounted at an angle on said yoke frame for selective independent engagement with a rotating tube conveyor of said conveyor system and for imparting movement to said suspension yoke along said rotating tube conveyor;
- hook means mounted on said yoke frame for selective independent engagement with a screw conveyor of said conveyor system and for imparting movement to said suspension yoke along said screw conveyor;
- roller means rotatably mounted on said yoke frame for selective independent engagement with an inclined rod conveyor of said conveyor system and for allowing downward movement of said suspension yoke due to the effect of gravity thereon along said inclined rod conveyor; and said wheel means, said hook means, and said roller means being mounted on said yoke frame for separate and nonsimultaneous movement along said rotating tube conveyor, said screw conveyor, and said inclined rod conveyor, respectively.

3,850,281
DEVICE FOR BRINGING TOGETHER OBJECTS BEING DELIVERED IN TWO LINES

Heinz Focke, and Oskar Balmer, both of Verden/Aller, Germany, assignors to Foche & Pfuhl, Verden/Aller, Germany
Filed Mar. 28, 1973, Ser. No. 345,821
Claims priority, application Germany, Apr. 8, 1972, 2217075
Int. Cl. B65g *47/26*
U.S. Cl. 198—32 **6 Claims**

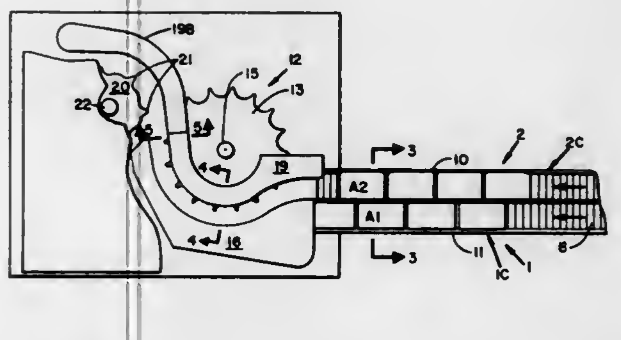


1. A device for combining two lines of objects, more particularly containers, arranged spaced apart from each other or in groups to form a single line comprising:

- a. blocking arms pivotable about axes perpendicular to the plane of said two lines, said axes located between said two lines and said blocking arms normally extending into the lines perpendicular to the direction of travel of the objects to prevent passage of said objects,
- b. locking discs attached to said blocking arms so as to be pivotable therewith, said discs having a cam surface on at least a portion of their peripheries, and
- c. movable locking means engaging said cam surfaces on said locking discs to prevent rotation of one locking disc and its associated blocking arm while allowing rotation of said other locking disc and blocking arm out of the path of travel of its corresponding line to allow passage of said object thereby.

3,850,282
ARTICLE STACKING MECHANISM

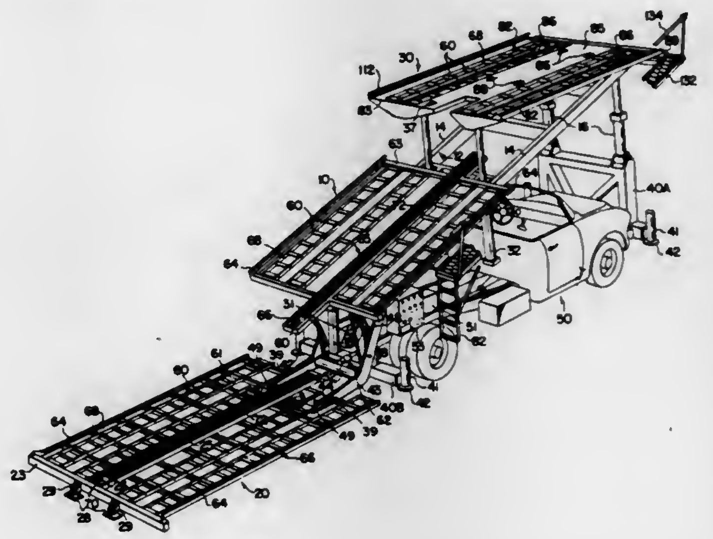
Rodney K. Calvert, Dunwoody, and Roy A. Johnson, Marietta, both of Ga., assignors to The Mead Corporation, Dayton, Ohio
Filed Feb. 27, 1973, Ser. No. 336,162
Int. Cl. B65g *57/03*
U.S. Cl. 198—35 **9 Claims**



1. An article stacking mechanism comprising movable conveyor means for changing the relative elevations of a pair of articles initially disposed near each other and carried by said conveyor means, the change in elevation being such that the bottom of one article is disposed at a level above the top of the other article upon completion of the change in relative elevations of the articles, movable article engaging means including at least two vertically spaced starwheels respectively engageable with the articles for imparting transverse relative movement to said articles so as to establish positions of substantially vertical alinement therebetween, and guide means disposed alongside at least a part of the periphery of each of said starwheels and laterally spaced therefrom in a manner to receive a row of articles therebetween.

3,850,283
AIR CARGO CONTAINER LOADER

Arnold B. Nordstrom, Torrance, Calif., assignor to Aircraft Mechanics, Inc., Colorado Springs, Colo.
Filed May 5, 1972, Ser. No. 250,522
Int. Cl. B65g *37/00*
U.S. Cl. 198—88 **23 Claims**



1. A multi-section conveyor comprising a support structure, lower, median, and upper conveyor sections mounted on said support structure, and means for moving said sections relative to one another between positions in which they are alternately (a) longitudinally inclined in end-to-end, coplanar, coacting relationship with each contiguous section and (b) disposed in vertically offset discontinuous relationships with one another; said median section being mounted with an adjustable longitudinal inclination that determines the common inclination of the sections in their coplanar relationship; said lower section being mounted for rotation about its ground-supported end remote from said median section as it moves between its inclined position coplanar with said median section and a generally horizontal disposition in said discontinuous relationship; and said upper section being mounted for rotation about its end remote from said median section as it moves between its inclined position coplanar with said median section and a generally horizontal position in said discontinuous relationship.

3,850,284
CONTAINER SEALING MACHINE SIDE BELT SYSTEM

Cecil P. Roberts, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Nov. 6, 1972, Ser. No. 303,938
Int. Cl. B65g *15/14*
U.S. Cl. 198—165 **5 Claims**

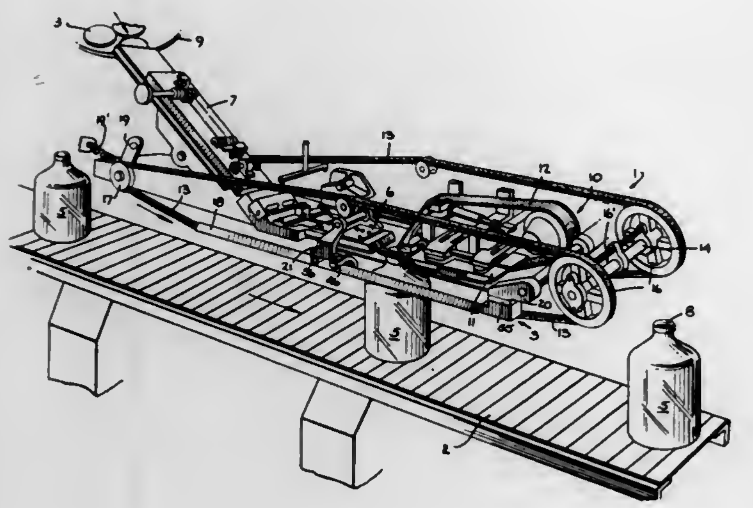
1. In a side belt assembly for a straight line container sealing machine having a driven support conveyor with a horizontal upper run for carrying containers in single file beneath a sealing means and having a pair of endless side belts for gripping containers moving on said support conveyor with each side belt being mounted on spaced pulleys positioning them with container engaging runs of the side belts above and directed longitudinally of the support conveyor, the improvement comprising:

a pair of elongated back-up bars mounted on the sealing machine above the support conveyor and each engaging and guiding said runs of the side belts;

back-up bar mounting means including means for adjustably positioning the back-up bars about their longitudinal axis for setting the container engaging positions of the inner surfaces of the side belts;

said mounting means comprising a pair of spaced support arms supporting each of said back-up bars with one arm of each pair having a pivotal coupling to the back-up bars permitting the back-up bars to tilt about their longitudinal axes and the other arms of each pair having an adjustable coupling for fixing the tilted position of the back-up bars about said pivotal coupling; and

said adjustable couplings comprising arcuate bearings on said back-up bars, arcuate slotted foot members on said other arms for slidably engaging said bearings, and coupling belts passing through said slots for adjustably coupling said foot members to said bearings.



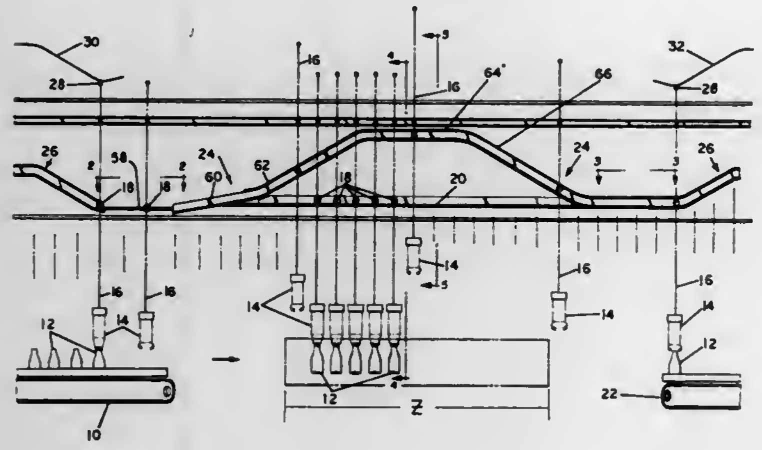
3,850,285
ARTICLE TRANSPORT APPARATUS

John R. Johnson, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed July 26, 1973, Ser. No. 382,733

Int. Cl. B65g *17/12*

U.S. Cl. 198—179 **13 Claims**



1. In an apparatus of the type, wherein a plurality of chucks linked together into an endless chain are moved in an endless path by a conveying means which supports said plurality of chucks, grasping means carried by said chucks pick up articles from an article inlet station, said chuck including at least one carrier member attached to and movable by said conveying means and a main spindle slidably mounted in said carrier member, said grasping means being attached to one end of said main spindle, said chucks transport said articles through a treatment zone in single file, and said grasping means release said articles at a remote removal station after treatment, the improvement in said apparatus which comprises:

a follower block attached to said main spindle;

a shaft slidably mounted in a hole extending through said follower block, said shaft extending beyond said follower block on both sides thereof;

a cam follower mounted on said shaft on the portion of said shaft extending beyond one side of said follower block;

first cam means for holding said main spindle in a location such that said articles will be transported through said treatment zone in a preferred orientation if said grasping means pick up an article;

second cam means for raising said main spindle to a location such that said grasping means will be clear of said treatment zone if said grasping means do not pick up an article, said second cam means including:

a. a first inclined plate cam section positioned to contact the extending portion of said shaft opposite said cam follower only if an article is not picked up by said grasping means, said plate cam sections extending from a location adjacent the normal pick-up location of said articles to a location adjacent the end of said article inlet station, said plate cam being shaped to push the extending portion of said shaft through said follower block and thereby increase the extension of said cam following beyond said follower block;

b. a ramp cam section positioned to engage said cam follower, said ramp cam section connecting with the end of said plate cam section and terminating adjacent the beginning of said treatment zone; and

c. a control cam section positioned to engage said cam follower as it leaves said ramp cam section only when said cam follower has been extended by said inclined plate cam section; and

third cam means for lowering said main spindle to pick up articles at said inlet station and for raising said main spindle at said removal station.

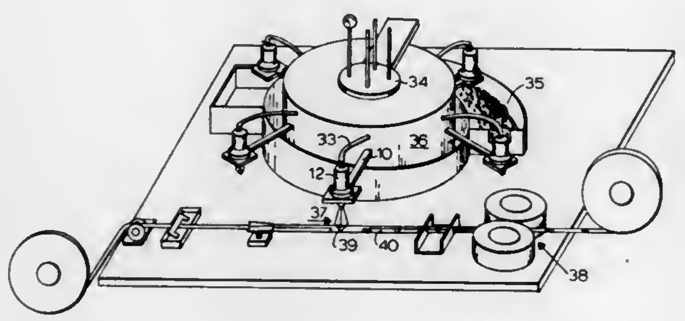
3,850,286
SEED SELECTOR

Carlton D. Tobin, Jr., Hollister, Calif., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 217,317, Jan. 12, 1972, abandoned. This application May 14, 1973, Ser. No. 360,311

Int. Cl. B65g *29/00*

U.S. Cl. 198—210 **4 Claims**



1. In a seed-tape manufacturing device having a rotating device with a series of seed selectors arranged in a series around the circumference of a circle on individual arms, which move down into a seed storage device to pick up a seed and then move up and later release said seed on to a seed tape, the combination therewith wherein said seed selector for lifting up a single seed from said seed storage device and for later lowering and releasing the seed, includes in combination

a vertical cylinder having a lower end provided with a lower radial wall having a central opening that flares outwardly in the downward direction, and an upper radial wall, and having a port at its upper end,

a piston in said cylinder actuable by fluid flow through said port, and

three spring wire fingers anchored to the lower end of said piston and extending out through said central opening and spreading apart therebelow, each said finger having an inwardly hooked end.

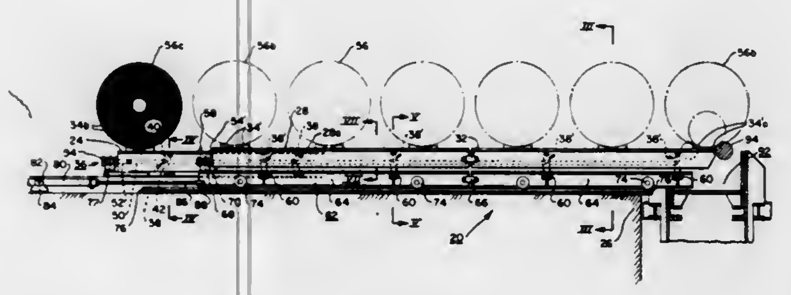
3,850,287
TRANSFER BEAM CONVEYOR

Andrew J. Petros, Oakdale, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa.

Filed Feb. 5, 1973, Ser. No. 329,538

Int. Cl. B65g *25/04*

U.S. Cl. 198—219 **9 Claims**



1. A conveyor construction for conveying articles at a substantially constant elevation, said conveyor construction comprising a longitudinally stationary but vertically movable first support structure, a longitudinally and vertically movable second support structure, said second support structure being supported from carriage means substantially coextending therewith by a number of toggle mechanisms spaced therealong, said carriage means extending generally parallel with said first support structure, said toggle mechanisms being actuated by a drawbar extending along the length of said second support structure, means mounted on said carriage means for reciprocating said drawbar for raising and lowering said second support structure relative to said carriage means, a plurality of load bearing stations spaced along the length of each of said support structures and laterally alignable one with the other, means for reciprocating said carriage means and said second support structure between positions of longitudinally lateral alignment of said second support stations with successively adjacent first support stations, and means for raising and lowering said first support structure for vertically lateral alignment of said stations at said constant elevations.

3,850,288
VERTICAL LIFT CONVEYOR

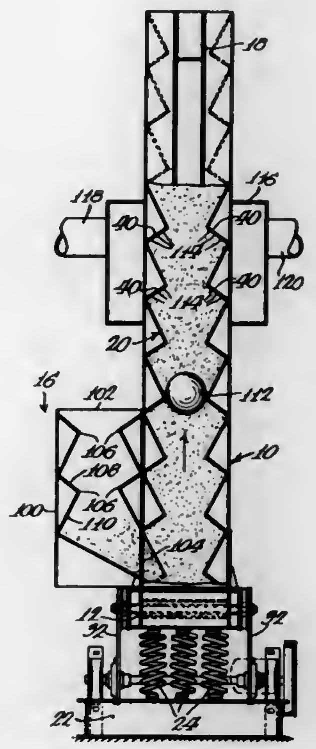
Albert Musschoot, c/o General Kinematics Corporation, 132 W. Northwest Hwy., Barrington, Ill. 60010

Continuation-in-part of Ser. No. 843,531, July 22, 1969. This application Feb. 25, 1971, Ser. No. 118,633

Int. Cl. B65g *27/00*

U.S. Cl. 198—220 BA **6 Claims**

1. A lift conveyor of the vibratory type including a stationary base, a tubular non-horizontally elongated lift assembly having an inlet at its lower end and an outlet at its upper end, said lift assembly including a plurality of inwardly directed projections extending between said ends with each projection being defined by an upper surface and a lower surface with the upper surface having a longer length than the lower surface; vibrating means associated with said lift assembly for moving said lift assembly up and down in a non-horizontal direction, and operative to accelerate said lift assembly in a downward direction at a rate greater than the rate of acceleration of gravity; and means associated with said inlet for precluding backflow of material during movement of said lift assembly in a downward direction.



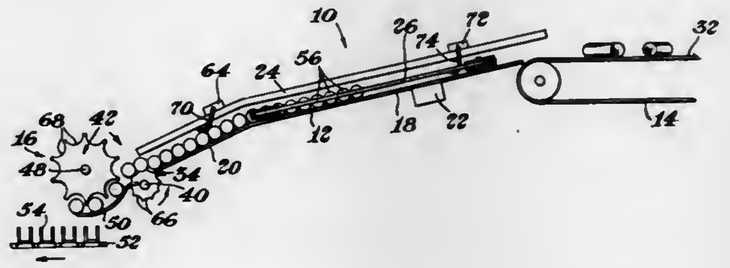
3,850,289
CONVEYOR SYSTEM FOR CYLINDRICAL OBJECTS

R. Douglas Behr, and Harold L. Hearns, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 28, 1972, Ser. No. 248,697

Int. Cl. B65g *47/24*

U.S. Cl. 198—276 **16 Claims**

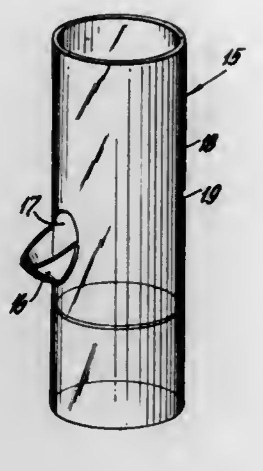


1. In apparatus for imparting alignment to a stream of uniformly sized objects of cylindrical shape, the combination comprising, a sloped surface means designed for gravity induced roll of such objects downwardly thereon, a pair of opposed, movable side rail means extending generally in the direction of slope of said surface means and defining therebetween a lane on the surface means through which said objects pass, said lane being wider than the axial length of said objects, means for delivering a stream of such objects to said surface means for roll of the same downwardly thereon and through said lane, said surface means being substantially level in the direction transverse to the direction of slope, whereby those objects properly centered on said lane, and which have an initial axial orientation normal to the direction of slope, may roll in a generally true and straight manner down said surface means without engaging either such side rail means, and further whereby those objects that have a skewed orientation, will by virtue of such orientation, select one or the other of said side rail means, and make contact therewith as the

same pass through said lane, and means to move said side rail means in a manner whereby responsive to said skewed object making contact with that rail means as it has selected, its trailing end is displaced angularly forward thereby inducing an automatic straightening effect on such object.

3,850,290
DISPLAY BIN

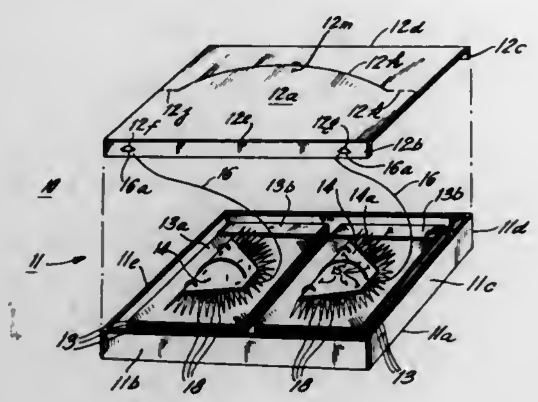
Thomas Vincent Murphy, 362 Grone St., Oradell, N.J. 07649
Filed Oct. 2, 1970, Ser. No. 77,455
Int. Cl. B65d *5/50, 5/72, 25/54*
U.S. Cl. 206—44 R **1 Claim**



1. A display bin for product comprising:
a unitary plastic envelope to contain the product, said evelope being self-supporting in a vertical plane and capable of assuming various cross-sectional shapes, and
a former mounted within the envelope to impart the desired cross-sectional shape to the envelope and to support the product within the envelope, said former being readily removable to facilitate shipping of the bin in an unassembled condition,
wherein the plastic envelope is substantially taller than its width dimension and including stress-relief apertures at predetermined locations in said envelope to permit folding of the envelope for shipping purposes and said apertures being sufficiently large to permit dispensing of product therethrough.

3,850,291
COMBINED SHIPPING AND DISPLAY MEANS

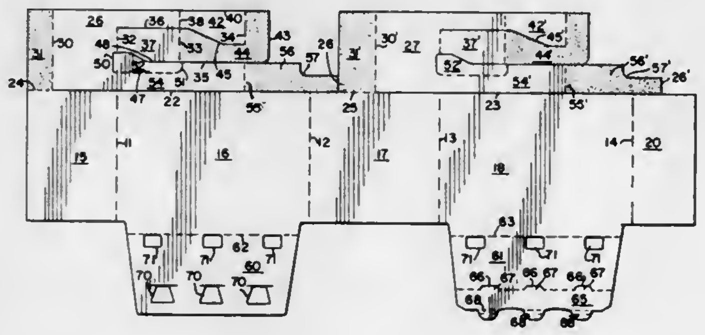
John Kinderman, Newtown Township, Pa., assignor to Brite Star Manufacturing Company, Inc., Philadelphia, Pa.
Filed June 4, 1973, Ser. No. 366,968
Int. Cl. B65d *77/00*
U.S. Cl. 206—44.11 **4 Claims**



1. A container for storing and displaying collapsible decorative objects comprising
a rectangular shaped base having upstanding walls along each of its sides forming a shallow tray portion;
a lid having a rectangular shaped portion and a pair of flaps extending downwardly from at least two opposite sides of said lid;
said lid having score lines for folding said lid whereby said flaps engage one another;
a center portion of said lid having a slit extending between said score lines to form an edge extending beyond said score lines when said lid is folded;
an opening being provided adjacent said slit for suspending said lid upon a suitable support;
said tray containing a plurality of packages, each containing a collapsible decorative object; at least one additional of said decorative object being positioned upon said packaged objects;
said additional object having a mounting string;
said string being secured to said lid so as to be extended from its collapsed position when said lid is removed from said tray and mounted upon a support for display purposes.

3,850,292
BOTTLE CARRIER

Guelfo A. Manizza, Blauvelt, N.Y., and Edwin L. Arneson, Hillsdale, N.J., assignors to Federal Paper Board Company, Inc., Montvale, N.J.
Filed Dec. 6, 1972, Ser. No. 312,571
Int. Cl. B65d *5/46, 5/48*
U.S. Cl. 206—181 **12 Claims**



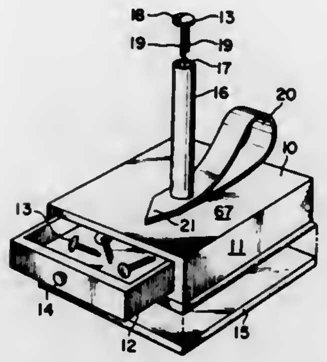
1. A multi-cellular article carrier which is formed from an elongate blank of foldable sheet material cut and scored to provide, in erected condition, hingedly connected body forming side, end wall and bottom wall panels, a multi-panel longitudinal partition and handle structure extending in depending relation from the top edges of said end wall panels and connected at its opposite ends to center portions of the end wall panels by glue tabs, said glue tabs being integrally hinged to the top edges of the end wall panels and extending down along the inside faces of said end wall panels, and cross partition forming strap members which are spaced longitudinally so as to divide the space on each side of the longitudinal partition and handle structure into a plurality of bottle accommodating cells of equal size, which cross partition forming strap members are taken from panels in the longitudinal partition structure and are each connected at one end thereof by a glue tab to the inside face of a side wall panel, with the opposite end of each of said cross partition strap members extending to an integral hinge connection with the panel of said longitudinal partition and handle structure from which the strap member is taken.

3,850,293
BOW MAKING KIT

Josephine J. Scaringi, 1054 Swinton Ave., Bronx, N.Y. 10465
Filed Jan. 8, 1973, Ser. No. 322,001
Int. Cl. B65d *79/00*
U.S. Cl. 206—223 **5 Claims**

1. A kit for the fabricating of decorative bows from pre-cut ribbons, comprising, in combination,

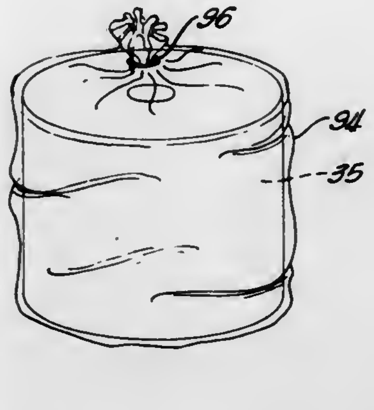
a bow making device having a cylindrical shaped member having a lower fixed end and an upper free end, a base member mounting the lower fixed end of said cylindrical member, said free end of the cylindrical member containing an axial hole,
pre-cut ribbons for the forming of decorative bows, each of said pre-cut ribbons containing a stamped hole at each end of a size to fit over the free end of said cylindrical member and to slide on said cylindrical member, and
split leg tacks, the legs of which fit into the axial hole of said



cylindrical member, decorative bows being fabricated by folding said pre-cut ribbons and putting each of the two end holes of each ribbon over the cylindrical member, installing the split legs of one of said tacks into the axial end hole of the cylindrical member, and then withdrawing the ribbons off the cylindrical member together with the tack so that the holes of the folded ribbons are anchored on the legs of the tack, and then bending the legs of the tack so as to fasten the ends of all the folded ribbons together to form a decorative bow.

3,850,294
PACKAGE OF SATURATED UNSIZED GLASS FILAMENTS

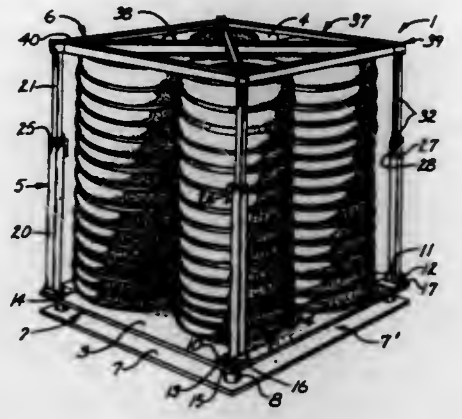
Thomas E. Philipps, Granville, and James C. Belue, Sylvania, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Continuation of Ser. No. 138,843, April 29, 1971, abandoned, which is a continuation of Ser. No. 2,760, Jan. 14, 1970, abandoned, which is a division of Ser. No. 493,505, Oct. 6, 1965, Pat. No. 3,498,770. This application Aug. 4, 1972, Ser. No. 277,949
Int. Cl. B65d *81/22, 85/67*
U.S. Cl. 206—205 **8 Claims**



1. A package of roving of unsized continuous filaments of glass, said package being saturated with water whereby the filaments are maintained in group orientation in the roving by the water.

3,850,295
TIRE SHIPPING AND STORAGE STRUCTURE

Billy B. Black, 3343 N.W. Brickyard Rd., Topeka, Kans. 66618
Continuation-in-part of Ser. No. 187,983, Oct. 12, 1971, abandoned. This application May 14, 1973, Ser. No. 359,704
Int. Cl. A47f *5/10*
U.S. Cl. 206—304 **17 Claims**



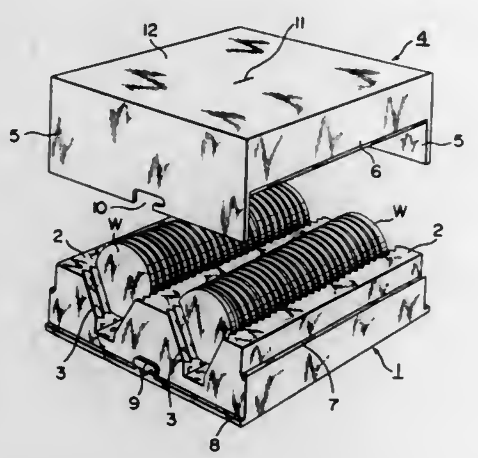
1. A tire shipping and storage structure comprising:
a. a base member having substantially horizontal deck portion adapted to support at least one stack of tires, said deck portion having peripheral edges;
b. a plurality of standards mounted on the deck portion adjacent peripheral edges and extending upwardly therefrom;
c. a top member having portions engageable with respective top tires of the stacks of tires supported on the deck portion;
d. cooperating means on said top member and on said standards to secure said top member on said standards and in spaced relation with the deck portion and to hold tires compressed therebetween, said tires being held only by the base member deck portion and the top member; and
e. means on said standards to permit adjusting the spacing between said top member and the deck portion of said base member in response to pressure longitudinally of said standards.

3,850,296
DEVICE AND METHOD FOR ACCOMMODATING SEMICONDUCTOR WAFERS

Teruhito Hirata; Shoichiro Ohga, both of Annka, and Tomoji Kaya, Tokorozawa, all of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan
Filed July 19, 1972, Ser. No. 273,030
Claims priority, application Japan, July 21, 1971, 46-54321; Sept. 6, 1971, 46-68709
Int. Cl. B65d *85/30, 85/62*
U.S. Cl. 206—334 **12 Claims**

1. A device for storing and transporting circular semiconductor wafer disks comprising, in combination, a block-type holder defining at least one generally V-shaped groove extending longitudinally thereof, each groove having opposing upwardly diverging walls and each wall being formed with a plurality of longitudinally spaced parallel transverse grooves with outwardly diverging surfaces, corresponding transverse grooves in the two walls lying in the same transverse plane to receive respective wafers engaging surfaces of the transverse grooves at the wafer edges only, with the wafers in upright position; a covering element cooperable with said holder to enclose the wafers, and having a top wall and side walls; and a pad of compressed foam material, sealed in a plastic bag and maintained compressed by atmospheric pressure on the plastic bag, positioned in said covering element above wafers in said holder and confined by said side walls of said covering

element; said top wall of said covering element being formed with a slit therein to receive a piercing tool to pierce said sealed plastic bag for expansion of said foam material pad into engagement with wafers in said holder and with said top wall.



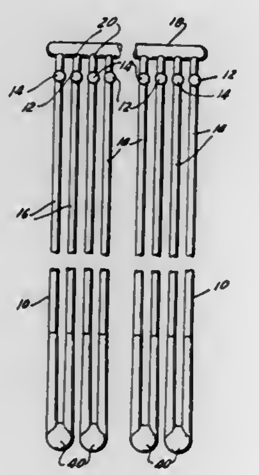
3,850,297
ASSEMBLY OF ATTACHMENTS

Francis G. Merser, Framingham Center, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Apr. 12, 1973, Ser. No. 350,350

Int. Cl. B65d *85/24*

U.S. Cl. 206—346 **19 Claims**



1. An assembly of a plurality of connected attachments, each said attachment comprising a filament and a pair of object-penetrating parts, one at each end of said filament, said assembly comprising a mounting element and severable connecting means between said mounting element and said object-penetrating parts respectively, whereby both ends of said attachments are connected to said mounting element.

3,850,298
CARRYING AND STORAGE CASE FOR LIQUID APPLICATOR

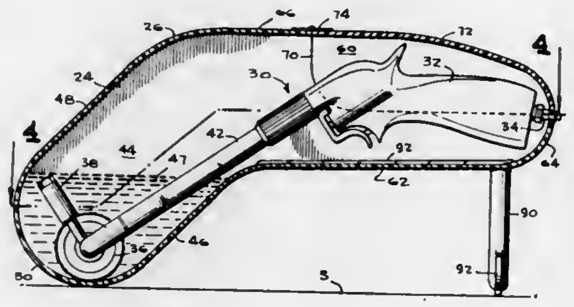
James D. Jolly, McQuady, Ky. 40153

Filed Apr. 10, 1973, Ser. No. 350,613

Int. Cl. B05c *11/16;* **B65d** *11/02*

U.S. Cl. 206—349 **6 Claims**

1. A carrying and storing container for a liquid applicator of the type having a cylindrical roller with connector means connecting the roller and a handle extending in a direction generally perpendicular to the axis of the roller spaced from the roller, said container comprising a hollow shell member defining a completely closed internal chamber including an inclined roller receiving compartment oriented at an acute angle with respect to the horizontal and of a width sufficient to permit said roller to be positioned therein, said roller receiving compartment being of sufficient depth to permit the holding of solvent liquid in said roller receiving compartment to a depth sufficient to immerse a roller positioned in the roller receiving compartment, said internal chamber also including a closed handle receiving compartment extending unitarily in a generally horizontal direction from the upper extent of said inclined roller receiving compartment and oriented at an obtuse angle with respect to said inclined roller receiving compartment, said portion of the shell member defining said handle receiving compartment including a pivotal closure member hingedly connected to another portion of said shell member and a protrusion member extending downwardly from the portion of said shell defining the lower extent of said handle receiving chamber to engage a supporting surface for supporting the portion of said shell defining said handle receiving compartment in horizontal orientation when the container is positioned on a horizontal support surface said protrusion member comprising a T-shaped handle-leg defined by a vertical leg portion and a horizontal handle portion extending perpendicularly from the lower end of said vertical leg portion.



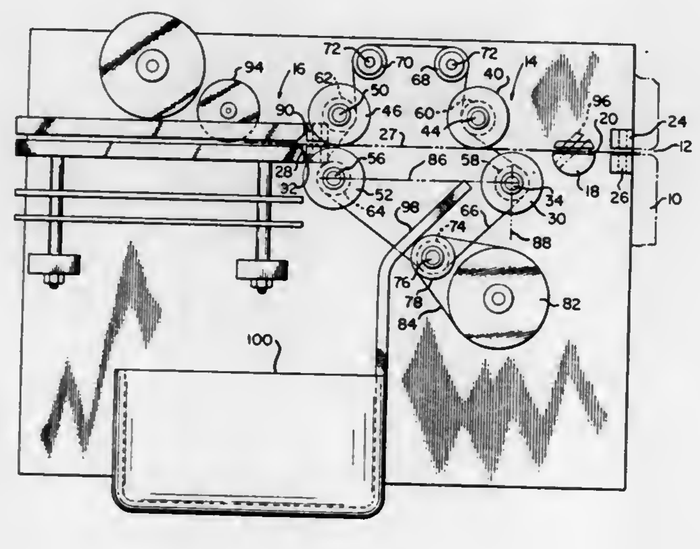
3,850,299
CARD TRANSPORT AND CAPTURE MECHANISM

Carl E. Kreitzer, St. Petersburg, Fla., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 3, 1973, Ser. No. 420,926

Int. Cl. B07c *5/342*

U.S. Cl. 209—73 **11 Claims**



1. A card transport and capture mechanism for use with a cabinet having an end wall with an opening therein to receive a card; comprising:

a guide member moveably mounted in said cabinet and having a slot therein;

drive means for moving said guide member to a first position in which said slot is misaligned with said opening to prevent the passage of a card therethrough, and to a second position in which said slot is aligned with said opening to permit the passage of a card therethrough;

a card utilization means;

feed means for feeding a card inserted in said opening through said slot in a first direction to said card utilization means and thereafter feeding said card in a reverse direction out of said opening when said guide member is in said second position; and

a card collection means located inside said cabinet and adjacent to said drive means;

said card utilization means being effective to produce a signal when a card fed thereto is to be captured to actuate said drive means to move said guide member to said first position, whereupon a card being fed in said reverse direction towards said opening by said feed means is deflected from said opening by said guide member and enters said card collection means.

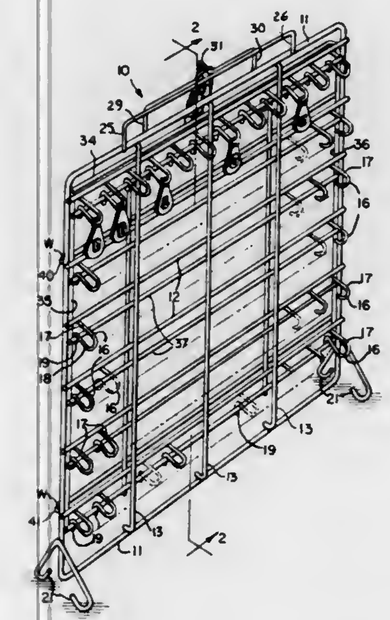
3,850,300
ANTI-THEFT DISPLAY RACK

Ira Bruce Young, Jr., 4215 Cromwell Rd., Chattanooga, Tenn. 37403

Filed July 5, 1973, Ser. No. 376,618

Int. Cl. A47f *5/01;* **E05b** *73/00*

U.S. Cl. 211—4 **10 Claims**



1. An anti-theft display rack, comprising: a pair of open wire frame members connected together for relative sliding movement therebetween; one of said wire frame members including an open wire frame, a plurality of spaced apart, substantially parallel support bars fixed at opposite ends to the frame in spanning relation thereto, and a plurality of spaced apart, substantially U-shaped article support hooks having spaced apart legs and fixed at one leg thereof to the support bars at spaced locations along the length of the bars, the other leg of the hooks spaced from said one leg so that said other leg may be inserted through an opening in an article to support the article on the hook; and the other of said frame members slidably supported on said one frame member and including an open, wire locking frame having a plurality of spaced apart, substantially parallel, elongate locking bars fixed at opposite ends to the frame in spanning relation thereto, said locking bars being substantially parallel to the support bars and movable with the locking frame toward the support bars and hooks and into a locked position closely adjacent the said otehr legs of the hooks and cooperable with the hooks to prevent removal of an article from the hooks; locking means connected with the frame members to lock the frame members together in said locked position; and means supporting the rack in upright position.

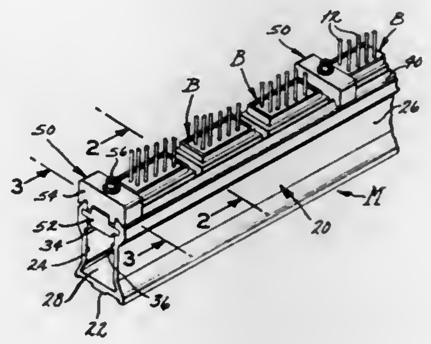
3,850,301
MOUNT FOR ELECTRICAL JUNCTION BLOCKS

Ralph E. Flenige, Breckenridge Hills, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Mar. 14, 1973, Ser. No. 341,299

Int. Cl. A47f *7/00;* **H01r** *9/00*

U.S. Cl. 211—26 **11 Claims**



1. A mount for junction blocks to which electrical wires are connected and having a pair of generally flat and parallel side faces, one of which has a rib projected from it and the other of which has a groove opening out of it; said mount comprising: a track having opposed sidewalls which are resiliently mounted with respect to one another and are spaced apart a distance substantially equal to the spacing between the side faces on the block so that block will fit between the sidewalls, one of the sidewalls having a longitudinally extending rib projecting from it for entry into the groove on the block and the other sidewall having a longitudinally extending groove in it for receiving the rib on the block, each sidewall further having a beveled surface which is inclined relative to the general direction of the wall and faces away from the space between the walls, each sidewall further having a slideway extending longitudinally along it; a slide spanning the space between the sidewalls and engaged with the slideways along the sidewalls such that it will move along the slideways unless otherwise restricted, the slide being shorter than the space between the outer edges of the slideways so that the walls can move together without interference from the slide; a cap overlying the slide and bridging the space between the two sidewalls, the cap having beveled surfaces which abut the beveled surfaces of the sidewalls; and a screw extended through the cap and threaded into the slide for drawing the slide and cap together, whereby the beveled surfaces on the cap will move down the beveled surfaces on the sidewalls so as to urge the sidewalls together, thereby clamping the blocks tightly between them, and whereby the friction between the cap and slide and the sidewalls is increased, thereby securing the cap and slide firmly in place on the track and preventing movement of the blocks longitudinally of the track.

3,850,302
MAGAZINE DISPLAY RACK

Melvin Cohen, 58 Heights Rd., Wayne, N.J. 07470

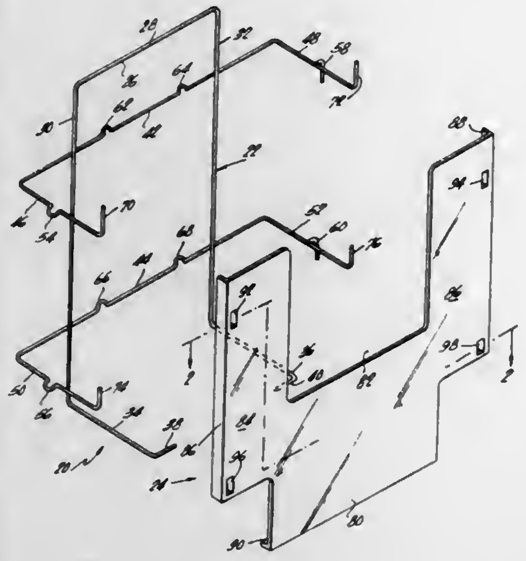
Filed Feb. 9, 1973, Ser. No. 331,189

Int. Cl. A47f *5/08*

U.S. Cl. 211—88 **4 Claims**

1. A magazine display rack comprising a wire mounting member and a retaining member, said wire member having a substantially U-shaped spine provided with resilient substantially horizontally extending article supporting legs having feet at the ends thereof extending substantially normal to said legs, said wire member including at least one substantially U-shaped support having vertically extending hand portions attached thereto, having at least a pair of substantially horizontally extending arms, said retaining member including a front wall having a plurality of eyes affixed thereto for receiving said arms, said front wall having side flanges on opposite sides of said front wall, said eyes being contiguous to said side

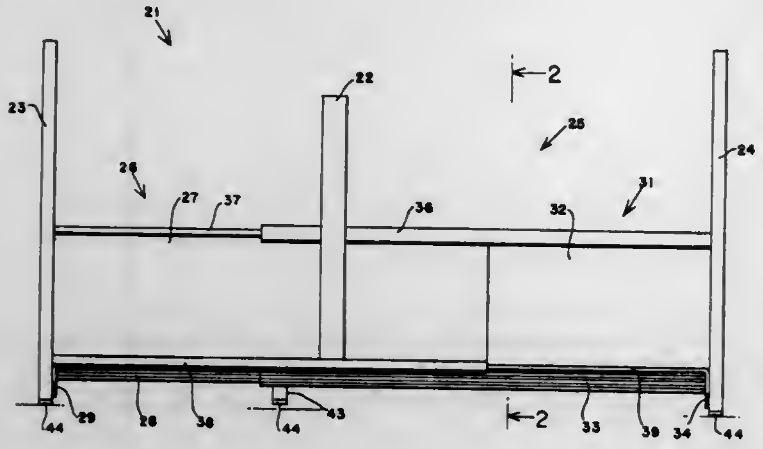
flanges, said front wall having a flange adjacent the bottom thereof, said feet resiliently engaging said flange, and the distance between said hand portions and said feet being



greater than the distance between said eyes and said flange for locking said hand portions in said eyes and for stressing said legs to better support magazines thereon.

3,850,303
ADJUSTABLE STORAGE RACK

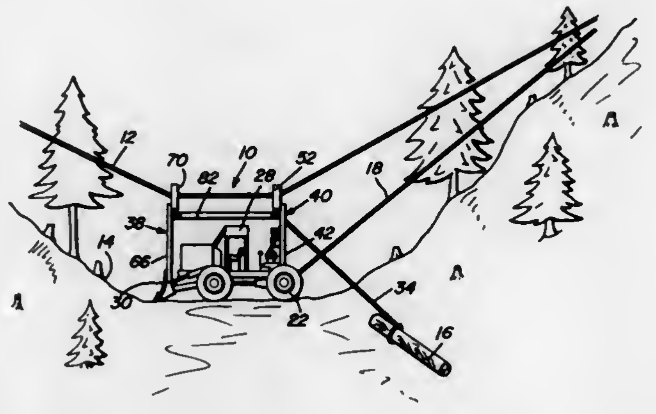
Allen R. Franklin, 84 Brister's Hill Rd., Concord, Mass. 01742
Filed Sept. 5, 1972, Ser. No. 286,153
Int. Cl. A47f *5/10*
U.S. Cl. 211—134 **9 Claims**



1. An adjustable storage rack comprising:
a pair of upright walls;
a shelf assembly comprising a set of telescopic sections connecting said end walls and permitting adjustment of the spacing between said end walls, each of said telescopic sections comprising a plate bent at substantially 90° along a longitudinal axis to form a shelf portion for supporting articles and a back portion for retaining articles supported by said shelf portion, each of said telescopic sections including as opposite edges parallel to said longitudinal axis a received edge and an open hemmed edge, said received edge of each said telescopic section being received by said open hemmed edge of another of said telescopic sections and being longitudinally slidable therein, and wherein said shelf assembly is so mounted on said end walls that the front edges of said shelf portions are slightly elevated relative to said longitudinal bends.

3,850,304
RADIO CONTROLLED SKYLINE SKIDDER

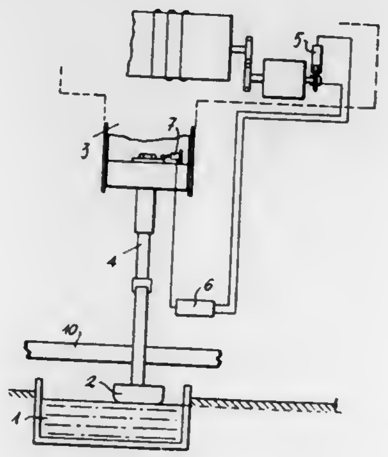
Willard M. Howell, Rt. 1 Box 176, Lyons, Oreg. 97358
Filed May 4, 1973, Ser. No. 357,096
Int. Cl. B66c *17/06*
U.S. Cl. 212—7 **6 Claims**



1. A skidder for use with a skyline cable and snubber cable usable to move the skidder over rough terrain, said skidder comprising a vehicle having front and rear towers and a powered winch for reeling and unreeling a logging cable by which logs may be pulled from a point remote from the vehicle to a point adjacent said vehicle, means on the towers for releasably attaching the vehicle to a skyline cable so that said vehicle may be so positioned and oriented on a rough terrain to facilitate log movement from a tree cutting or felling area to a landing or yarding area, each of said towers including roller guide means for receiving a skyline cable, a portion of said roller guide means being detachable to provide an entranceway and exitway for mouting the towers onto a skyline cable, said tower on the rear of the vehicle including a roller guide assembly for a cable connected with a power winch to enable the cable to be utilized for pulling logs in substantially any lateral direction from the vehicle, the rear tower including a tie-down winch having a guy line connected therewith for anchoring the skidder in a direction opposite to the forces exerted on the skidder by pulling logs.

3,850,305
APPARATUS FOR AUTOMATIC AND CONTROLLED POSITIONING OF ANODES IN ELECTROLYTIC CELLS FOR PRODUCING FERROUS AND NONFERROUS METALS

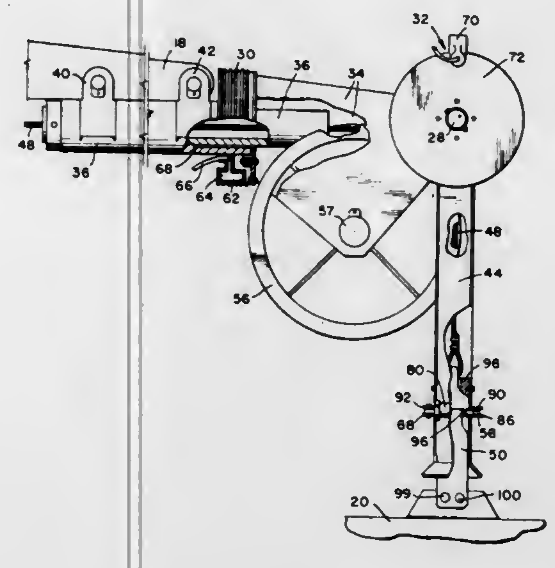
Gianmario Messina, Via Don Luigi Palazzolo 7, Torre Boldone, Italy (24020)
Filed May 14, 1973, Ser. No. 359,692
Claims priority, application Italy, May 19, 1972, 2932/72
Int. Cl. B66c *17/00*
U.S. Cl. 212—21 **1 Claim**



1. An apparatus for automatically controlling the positioning of anodes in electrolytic cells for producing ferrous and nonferrous metals, associated with anode lifting and moving means, comprising:
a bidirectional electronic counter;
a first transducer, responsive to the exertion of weight by said anode on said lifting means as said lifting means begins to lift said anode, for producing a count start pulse to said counter;
a body member movable with movement of said anode lifting means;
a second transducer, responsive to movement of said body member, for producing a series of pulses to said counter representative of the net movement of said anode lifting means in a predetermined direction; from an operating electrolytic bath position to a position on a reference plane;
said first transducer adapted to be responsive to the releasing of exertion of weight by said anode on said lifting means as said lifting means positions said anode on said reference plane for producing a count stop pulse to said counter.

3,850,306
CRANE ATTACHMENT FOR DAMPENING SWINGING MOTION

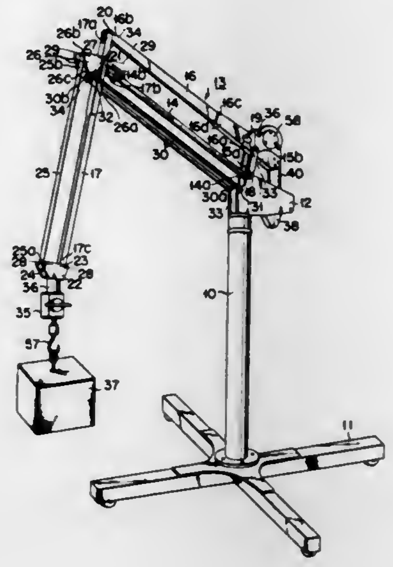
Charles S. Mundy, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 3, 1966, Ser. No. 591,932
Int. Cl. B66c *23/94, 23/52*
U.S. Cl. 212—58 R **12 Claims**



1. In combination with a lifting cable crane, apparatus to substantially dampen swinging motion of a load suspended from the cable comprising:
a stiff connector connected at one end to the lifting cable and at an opposite end to the load;
retainer means for restrainably engaging said stiff connector;
means pivotally connecting the retainer means to the crane; braking means;
means for connecting the braking means to the crane; and means including the retainer means for connecting the braking means to the load when the stiff connector is engaged with the retainer means,
said braking means for braking pivotal movement of the retainer means so that swinging motion of the load is retarded when the stiff connector and the retainer are engaged.

3,850,307
ARTICLE HANDLING APPARATUS

Kenro Motoda, Tokyo, Japan, assignor to Motoda Electronics Co., Ltd., Tokyo, Japan
Filed Nov. 13, 1973, Ser. No. 415,447
Claims priority, application Japan, Nov. 14, 1972, 47-113438
Int. Cl. B66c *23/04*
U.S. Cl. 212—59 R **8 Claims**



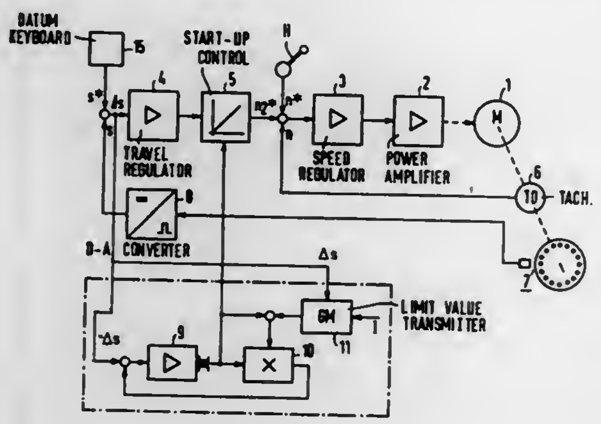
1. An article handling apparatus including a support on which a support head is rotatably mounted; an arm comprising first and second links parallel to each other, third and fourth links parallel to each other, a first pivot to which said first and fourth links are pivoted, a second pivot to which said second and fourth links are pivoted, a third pivot to which said first and third links are pivoted and a fourth pivot to which said second and third links are pivoted, said arm being pivotally supported on said support head through said second link; control means provided on one end of said first link; holding means for holding an article disposed below the control means; driving means provided on that one end of the third link which is remote from the first link so that a drive of said driving means is controlled by said control means; a mount provided on the third link and falling on a straight line passing said one end of said first link and second pivot, string-like power transmitting means having one end secured to the mount and operated by said driving means to cause the arm to be swung about the second pivot; and adjusting means having a rotary member wound by that intermediate portion of the power transmitting means which is between the mount and the driving means, said adjusting means being movable horizontally on said support head thereby enabling a force applied to said power transmitting means always to be directed in a vertical direction.

3,850,308
APPARATUS FOR ACCOMMODATING THE PENDULUM ACTION OF A LOAD CARRIED BY A ROPE FROM A TRAVELLER

Siegfried Meyer, Erlangen, and Rolf Klingf, Reutles, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Continuation of Ser. No. 140,445, May 5, 1971, abandoned. This application Mar. 1, 1973, Ser. No. 336,951
Claims priority, application Germany, May 9, 1970, 2022745
Int. Cl. B66c *19/00*
U.S. Cl. 212—132 **6 Claims**

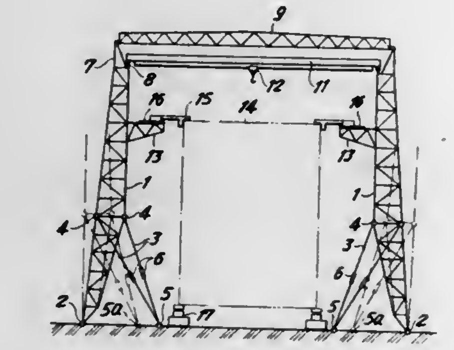
1. Apparatus for accommodating the pendular movements of a load suspended by a rope on the traveller of a crane having a drive for said traveller including a speed regulating device, comprising an automatic regulating means for accelerating the traveller during the first portion of its travelled dis-

tance and for decelerating the traveller during the last portion of the distance so that the traveller and the load come to a standstill almost at the same time, said apparatus comprising, start-up means for said drive connected in series with said speed regulating device; a datum means to receive operator supplied distance of traveller movement and the pendular length of the load; an electronic calculator interconnecting said datum means and said drive means to calculate a traveller speed so that said distance is traversed in one or more whole periods of pendular movement, said calculator supplying a signal to said speed regulating device so that there is an interval of acceleration for the traveller, an interval of whole periods of pendular movements during which said traveller travels at said calculated speed and a final interval of deceleration when the traveller and the pendular movement come to a substantial stop at said distance.



3,850,309
APPARATUS FOR ASSEMBLING HULL MODULES

Kazuo Maeda, Chiba, Japan, assignor to Mitsui Shipbuilding and Engineering Co., Ltd., Chuoku, Tokyo, Japan
Filed Apr. 24, 1973, Ser. No. 354,102
Claims priority, application Japan, Apr. 28, 1972, 47-42775
Int. Cl. B66c *23/78*
U.S. Cl. 212—145 **2 Claims**



1. In apparatus for use in assembling hull modules for shipbuilding, comprising at least one pair of upwardly-extending spaced-apart main supports each supported on the ground, rail means on each of said main supports, beam means extending between said main supports and supported on said rail means for motion along said rails, the region between said main supports and beneath said beam means being adapted to hold hull modules during assembly, the improvement wherein: at least one of said main supports is pivotably anchored to the ground at one end thereof so as to be pivotable toward and away from the other of said main supports;

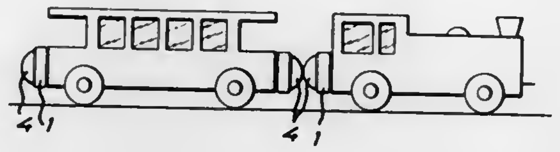
said apparatus comprising anchor means secured to the ground between said main supports, and auxiliary support means pivotably secured to said anchor means and to said at least one main support for supporting said one main support in predetermined angular positions;

said anchoring means comprising at least two anchor devices secured to the ground within said region at different distances from the bottom of said one main support;

said auxiliary support means being detachably securable to either of said anchor devices to permit change in the angle of support of said one main support thereby to change the available space within said region.

3,850,310
COUPLING DEVICES FOR TOY VEHICLES

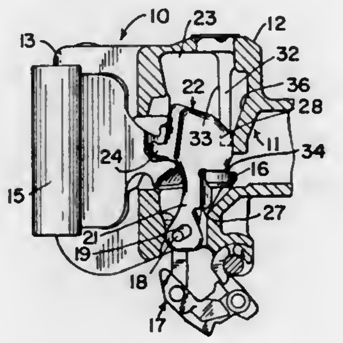
Rolf Peter Osthall, Osby, Sweden, assignor to Brio Scanditory AB, Osby, Sweden
Filed Aug. 6, 1973, Ser. No. 386,186
Claims priority, application Sweden, Jan. 26, 1973, 7310837
Int. Cl. B61g *3/00*
U.S. Cl. 213—75 TC **4 Claims**



1. A coupling device for vehicles which comprises a pair of coupling contact members each made of magnetically conductive material and having a convex surface; a pair of permanent magnets; and a pair of fastener means, one of said fastener means being operable to fixedly secure one permanent magnet and one coupling contact member to one vehicle, and the other fastener means being operable to fixedly secure the other permanent magnet and other coupling contact member to another vehicle, said permanent magnets being positioned between their respective coupling contact members and associated vehicles and with the north pole of one magnet facing toward the south pole of the other magnet to establish mutually attractive magnetic forces transmitted through said coupling contact members when their convex surfaces are in contact.

3,850,311
LOCK GUIDE STRUCTURE FOR A RAILWAY VEHICLE COUPLER

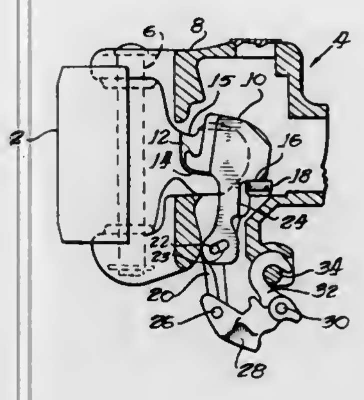
Horst Thomas Kaufhold, Chicago, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.
Filed Oct. 19, 1973, Ser. No. 408,196
Int. Cl. B61g *3/08*
U.S. Cl. 213—146 **8 Claims**



1. In a coupler for a railway vehicle including a coupler housing having a knuckle side and a guard arm side, a knuckle mounted on said knuckle side for movement between a closed position and an open position, a lock chamber, a lock movable in said lock chamber between a release position releasing said knuckle for movement to said open position and a lock position locking said knuckle in said closed position, and lock guide means for guiding said lock from said release position to said lock position as said knuckle moves to said closed position, the improvement comprising lock guide on said guard arm side including a lock guide surface having a first guiding surface section contiguous to a second guiding surface section extending substantially normal to and from the longitudinal axis of said housing, said first guiding surface section extending from and inclined at an acute angle relative to said first guiding surface section to assure unimpeded locking movement as said lock moves from said release position to said lock position.

3,850,312
LOCKSET SEAT EXTENSION ON TYPE E COUPLER

William Frederick Baker, Sr., Alliance, Ohio, assignor to AMSTED Industries Incorporated, Chicago, Ill.
Filed June 18, 1973, Ser. No. 370,833
Int. Cl. B61g *3/08*
U.S. Cl. 213—147 **4 Claims**

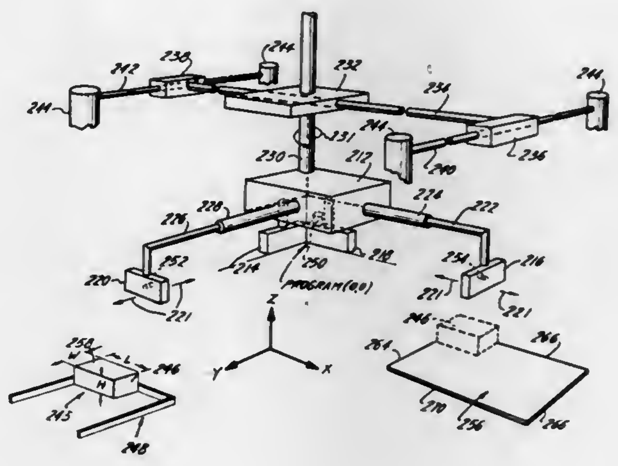


1. In an AAR Standard E Coupler having a knuckle pivoted to a head and having a knuckle thrower affording support for a lockset seat of the lock in its lockset position whereat the bottom of the lock's fulcrum is aligned with a lower edge of an upwardly sloping surface of said knuckle; the improvement which consists of a downward extension on said lockset seat extending downwardly at least the order of 0.125 of an inch and not more than the order of 0.218 of an inch below a corresponding lockset seat of an AAR Standard E lock as measured from a plane including the base of the lock's fulcrum.

3,850,313
PALLETIZING APPARATUS

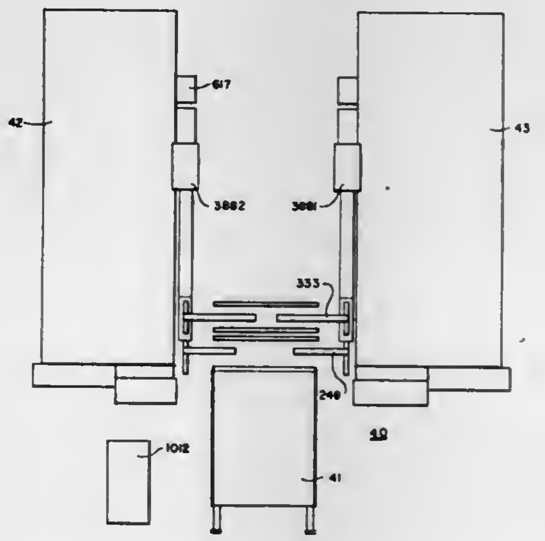
Michael I. Rackman, Brooklyn, N.Y., and George C. Devol, 990 Ridgefield Rd., Wilton, Conn. 06897, assignors to said Devol, by said Rackman and Paul S. Martin, Flushing, N.Y.
Division of Ser. No. 814,788, April 9, 1969, Pat. No. 3,586,176. This application June 21, 1971, Ser. No. 155,251
Int. Cl. B65g *57/20*
U.S. Cl. 214—1 BB **10 Claims**

1. Apparatus for transferring articles to a receiving area including an article transfer mechanism having an article holder, means for operating the article holder through desired paths in space, control means including means for storing a program for controlling said operating means to execute repeatedly a basic sequence of operations which includes seizing an article at a pick-up location, transferring the article to a particular location in the receiving area, releasing the article, and returning the article holder to a pick-up location, said article holder having article-calipering means cooperable with an article to be transferred to the receiving location for measuring at least one dimension thereof, and means responsive to said calipering means for modifying the control of the operating means by that part of said stored program that relates to the motion of the article holder at the receiving area in successive program cycles to transfer successive articles automatically to successive positions in said receiving area displaced from said particular location in the receiving area by distances that are a function of the measurement output of the article-calipering means.



3,850,314
MACHINE FOR COOLING AND STACKING FLAT PRINTED ARTICLES

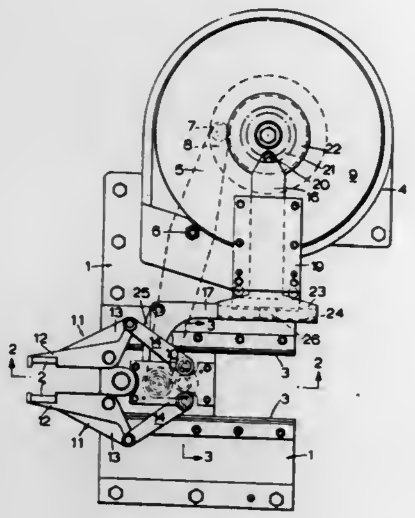
Kenneth R. Runyan, Milford; Quentin E. Honnert, Cincinnati, and Ronald H. Porter, Milford, all of Ohio, assignors to Multifold-International, Inc., Milford, Ohio
Filed May 31, 1972, Ser. No. 258,180
Int. Cl. B65g *57/11*
U.S. Cl. 214—6 P **3 Claims**



1. In a machine for loading articles onto a skid, skid handling apparatus which comprises a skid lift, means for supporting skids at a skid loading level, means for advancing the skids along the skid loading level toward the skid lift, means on the skid lift for drawing one of the skids onto the skid lift at the skid loading level, the means for drawing the skid onto the skid lift being constructed to discharge the skid at a stack loading level, means for advancing the skid at the stack loading level to a stack receiving station, means at the stack receiving station for advancing stacks of articles onto the skid, the means for advancing stacks of articles onto the skid including a transfer table having elongated transfer belt means, the transfer table being raisable and lowerable at the stack receiving station between a raised position in which the transfer belt means extends through slot means in the skid and a lowered position free of the skid, means for advancing a stack of articles onto the transfer belt means when the transfer table is in raised position, and means for advancing the transfer belt means to advance the stack above the skid, the stack being deposited on the skid when the transfer table is lowered.

3,850,315
RECIPROCATING FEED MECHANISM

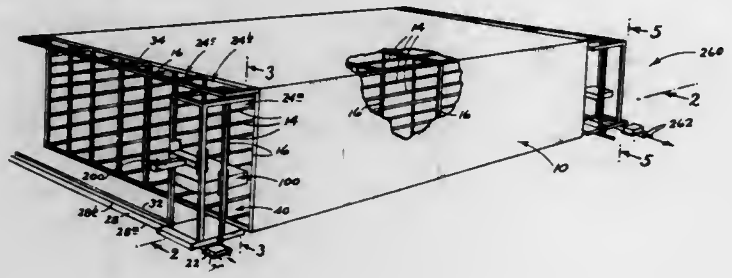
John Edward Plaister, Bromsgrove, and Raymond Ernest Baugh, Walsall, both of England, assignors to Taylor & Challen Limited, Birmingham, England
Filed July 19, 1973, Ser. No. 380,868
Claims priority, application Great Britain, July 21, 1972, 34157/72; Sept. 1, 1972, 40541/72
Int. Cl. B21d *43/10*
U.S. Cl. 214—8.5 C **6 Claims**



1. A reciprocating feed mechanism suitable for feeding individual blanks between the dies of a coining press comprising a reciprocating slide, a pair of gripper arms mounted on said slide to grip the individual blanks, cam means having first and second cam surfaces, a first linkage mechanism which includes a cam follower engaging said first cam surface and which is connected to said slide so as to reciprocate the latter as said cam rotates, a second linkage mechanism which includes a cam follower engaging said second cam surface and which is connected to said pair of gripper arms so as to operate the latter as said cam rotates, said second linkage mechanism including a sliding connection which allows the slide and gripper arms to be operated independently.

3,850,316
APPARATUS FOR LOADING AND UNLOADING VERTICALLY STACKED RACKS

Robert A. Schmitt, Vancouver, Wash., assignor to Columbia Machine, Inc., Vancouver, Wash.
Filed Jan. 28, 1974, Ser. No. 437,399
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 C **16 Claims**



1. Apparatus for loading articles onto a selected one of a set of elongate, vertically stacked racks adapted to receive such articles at an infeed set of their ends wherein each rack has upper and lower guides defining a channel therebetween for receiving and confining upper and lower marginal edge portions of a plurality of articles received thereon disposed in end-to-end relationship in a row, said apparatus comprising

an elongate infeed conveyor disposed below and adjacent the infeed ends of the racks operable to carry articles substantially horizontally and in succession toward the infeed ends of the racks,

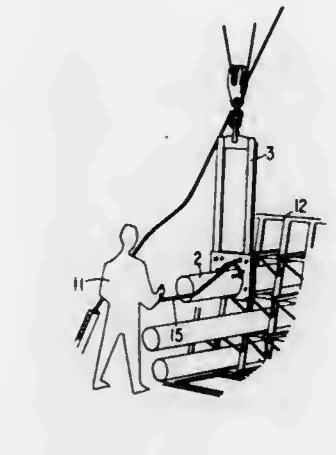
a vertically movable pusher spaced outwardly from the infeed ends of the racks adjustable selectively to at least two vertically spaced positions, each generally in axial alignment with a different one of said racks, said pusher including a pusher head shiftable under power toward and away from the infeed end of a rack with which it is aligned,

an elevator positioned between the infeed ends of the racks and the pusher and adjacent the conveyor, said elevator including opposed, laterally spaced lifting arms adapted to receive and hold a plurality of articles carried thereto by said conveyor with the articles held on the arms in a row in end-to-end relationship, each arm having upper and lower guide means thereon defining a channel therebetween for slidably receiving and confining upper and lower marginal edge portions of articles held on the arms, lift means operable to shift said lifting arms vertically between a lowered position adjacent said conveyor for receiving articles therefrom and selected raised positions wherein the channels defined by the guide means of the lifting arms are substantially in axial alignment with the channels defined by the guides of a rack with which the pusher is aligned, and means mounting said lifting arms for shifting substantially horizontally toward and away from the infeed ends of said racks, and

means for shifting said lifting arms substantially horizontally between a first position spaced horizontally outwardly from the infeed ends of the racks and a second position contiguous the infeed end of a selected rack with the guide channels of said lifting arms and rack joined to define a substantially continuous guide path for articles which may be pushed from the elevator onto the rack by operation of said pusher.

3,850,317
DEVICE FOR STORING AND HANDLING MATERIAL AND ROD FORM

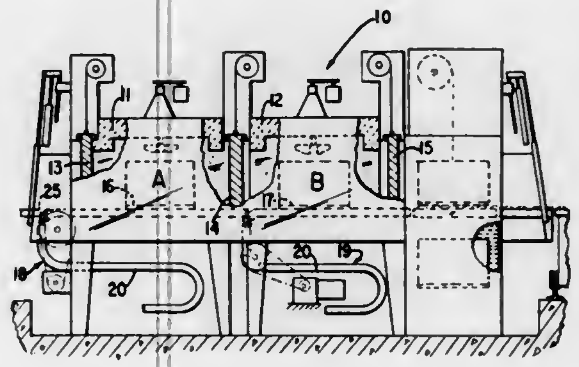
Jacques Lumier, Ispra, Italy, assignor to European Atomic Energy Community (Euratom), Luxemburg, Luxembourg
Filed June 21, 1973, Ser. No. 372,259
Claims priority, application Luxembourg, June 29, 1972, 65630
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 R **3 Claims**



1. A device for storing and handling material in the form of large diameter rods, said device comprising a body portion including a large diameter rod supporting surface, two self-locking gripper arms, first means pivotally mounting said arms on said body portion, said arms being mounted in a criss-cross manner, said gripper arms having a locking action proportional to the weight of the rod being handled, second means pivotally connected to each end of a respective one of said gripper arms and adapted to slide vertically in said body portion a distance proportional to the diameter of the rod being handled, the gripper arms having their other ends provided with at least one locating rod, said locating rod being disposed parallel to the longitudinal axis of the large diameter rods being handled, said large diameter rods being received between said supporting surface and said gripper arms, a vertical rack for holding said large diameter rods in a horizontal position in which a portion of said large diameter rods extends beyond the front of said rack so as to provide a lifting and gripping area for said supporting surface and gripper arms and a movable support means, connected to said second means, for moving said gripper arms adjacent said rack to facilitate a transfer of said large diameter rods between said rack and said body portion and gripper arms.

3,850,318
MULTIPLE TRAY PUSHER FURNACE

Hobart L. Wentworth, Barrington, Ill., assignor to Sola Basic Industries, Inc., Milwaukee, Wis.
Filed Jan. 17, 1974, Ser. No. 434,101
Int. Cl. F27b *9/38*
U.S. Cl. 214—24 **5 Claims**



1. A materials handling device comprising a plurality of snake chain conveyors disposed serially in alternating pairs and single conveyors along a work path, each of said conveyors comprising a track having curved and straight portions with a straight portion extending along the work path and the remaining portions extending below said work path, a plurality of interconnected link means for movement in said track and a pusher head attached to said link means adjacent an end and extending upwardly to push a tray along the work path, said conveyors being staggered such that a single conveyor will push along a portion of the work path and a pair of conveyors will push along the next succeeding portion of the work path.

3,850,319
CORRUGATED BOARD BUNDLE STACKER

Frank J. Di Frank, Toledo, Ohio, and Daniel L. Greiwe, Chicago, Ill., assignors to Owens-Illinois, Inc., Toledo, Ohio
Division of Ser. No. 205,016, Dec. 6, 1971, Pat. No. 3,770,144. This application Apr. 24, 1973, Ser. No. 354,009
Int. Cl. B65g *57/08*
U.S. Cl. 214—152 **2 Claims**

1. The method of handling multiple blanks of corrugated paperboard that are accumulated from the exit of a corrugator into bundles with the plural bundles being ejected at right angles to the machine direction of the corrugator, comprising the steps of:

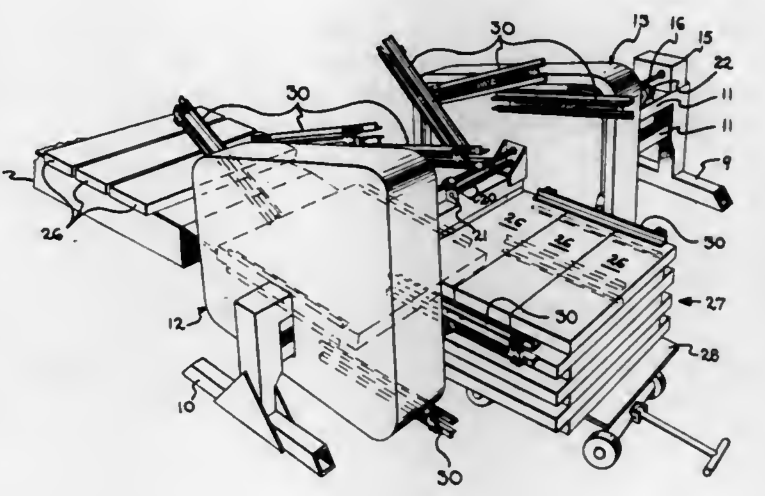
grasping a group of at least two of said bundles, on opposite sides along the longitudinal dimension of said group of bundles and wherein said bundles have identical transverse dimensions;

moving the grasped group of bundles to a remote position overlying a stacking position;

releasing said group of bundles at said stacking position;

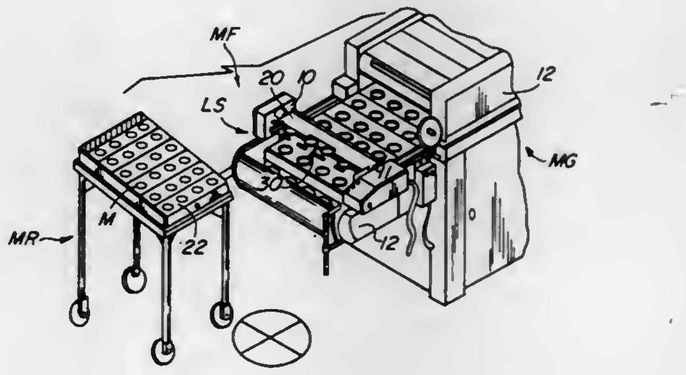
simultaneously with the moving of said group of bundles to said remote position, shifting said group of bundles sequentially and alternately to the right and to the left to thereby cause formation of a stratified stack at said stacking station having layers horizontally displaced to the right and to the left relative to the vertical centerline of said stack in an alternating pattern; and

repeating the foregoing steps in overlapping sequence.



3,850,320
ELECTRIC-POWERED GRIDDLE-LOADING MECHANISM

Eugene M. Noel, 42 Kingston Rd., Newton Highlands, Mass. 02161
Filed July 2, 1973, Ser. No. 375,916
Int. Cl. B65g *47/04*
U.S. Cl. 214—314 **8 Claims**



1. An electric-powered, semi-automatic doughpiece loading mechanism for mounting on continuous process muffin griddles above a flight of moving griddle cups having a particular array thereon and using interchangeable trays with top panels provided with a like array of doughpiece cups therein comprising:

a. a frame having spaced frame members fixedly mounted on the continuous process griddle in transverse relation to the moving griddle flight thereunder;

b. a tray guide fixedly mounted between the spaced frame members in transverse relation thereto for guiding the insertion of a tray therein;

c. a tray locating station pivotally mounted between the spaced frame members in transverse relation thereto and in horizontal sliding relation thereon with the said tray guide for locating a tray with relation to the loading mechanism;

d. a top electric-powered, tray locating station rotary actuator mounted on the frame members for upending the tray locating station and a tray thereon for dumping doughpieces therefrom;

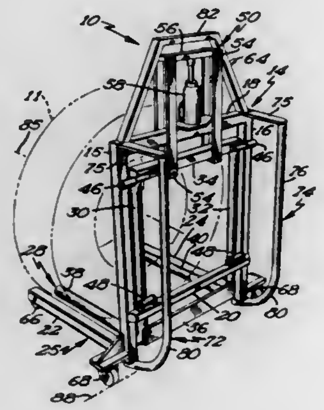
e. a receiver assembly having an array of cups thereon like that of the said tray pivotally mounted between the spaced frame members in transverse relation thereto and in vertical relation with said tray locating station for receiving doughpieces dumped from said tray;

f. a bottom electric-powered, receiver assembly rotary actuator mounted on the frame members for upending the receiver assembly and the said cups thereon and dumping doughpieces therefrom; and

g. a coordinating electrical switch means for coordinating, in time and space, the upending of the tray locating station and the upending of the receiver assembly with the flight of moving griddle cups below.

3,850,321
WHEEL DOLLY

Sep Jacob Virnig, 620 N. 8th St., Medford, Wis. 54451
Filed Sept. 28, 1973, Ser. No. 401,889
Int. Cl. B60b *29/00*
U.S. Cl. 214—331 **10 Claims**



1. A wheel dolly for use on a floor-like surface for manipulating and transporting a vehicle wheel during servicing, comprising:

a rigid framework including a base and a pair of generally upright support members, said base including a pair of legs spaced laterally apart, one of said legs extending forwardly from the lower end of each said upright support member so as to be positioned on each lateral side of the vehicle wheel to confine the wheel therebetween;

a carriage carried by said framework, mounted thereto for upward and downward movement relative thereto, and including wheel support means extending forwardly relative to said support members to receive and support the vehicle wheel thereon with the wheel axis being generally horizontal;

a lifting mechanism attached to said framework and to said carriage for raising and lowering said carriage relative to said framework;

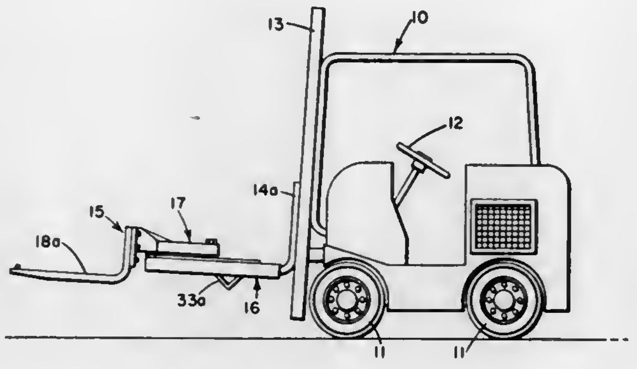
a first pair of casters, said casters being mounted adjacent the free end of each said leg to permit rolling movement of said legs relative to the floor;

a second pair of casters, mounted to said framework adjacent the bottom and rear thereof to permit said framework to be rolled on the floor and said second pair of casters defining a first generally horizontal axis passing therethrough at the point of contact between casters and floor; and

fulcrum means attached to said framework adjacent the bottom and rear thereof and spaced from the floor, defining a second generally horizontal axis through said fulcrum means, substantially parallel to said first axis and rearward thereof so an operator may swing said framework to a supine position by applying rearwardly directed force to said framework adjacent its top to pivot said framework rearwardly about said first axis until said fulcrum means contacts the floor, said framework then pivoting about said second axis until the axis of the wheel supported on said framework swings from the generally horizontal orientation to an upright orientation to facilitate convenient servicing of inner and outer rim areas of the wheel by the operator further, said carriage being pivotally mounted to said lifting mechanism for bodily shifting of said carriage in a plane passing through said upright support members.

3,850,322
SIDE LOADING DEVICE FOR FORK LIFT TRUCKS

Ray P. Miles, Macedonia, and Andrew E. Szucs, Fairview Park, both of Ohio, assignors to The Cooperloy Corporation, Cleveland, Ohio
Filed Apr. 3, 1973, Ser. No. 347,573
Int. Cl. B66f *9/06*
U.S. Cl. 214—620 **1 Claim**



1. A side loading fork lift device adapted for use with permanently forward extending fork lifts of a fork lift truck and the like comprising:

a. a pair of horizontal, parallel fork receiving members and plate means secured between and across the tops of said receiving members to form a platform;

b. rigid shaft means centrally disposed vertically on said platform;

c. a rotatable swing arm assembly including horizontal plate means disposed on said platform forwardly of said shaft means, and comprising hub means adapted to securely engage and to rotate at least 180° on said shaft means;

d. an arcuate bearing surface disposed on the underside of said swing arm plate means adapted to contact the surface of said plateform and move thereon in an arcuate path;

e. a pair of parallel fork means mounted on and disposed forwardly of said rotatable swing arm assembly;

f. chain and hook means secured to the rear of said platform and detachably securable to said truck, whereby said device is retained on said fork lifts of said truck;

g. said fork receiving members including means adapted to detachably secure spacer means within said receiving members, whereby forks of a truck narrower than said receiving members can be received and snugly retained;

h. a circular series of holes in said platform each adapted to match with a hole in said swing arm plate means, retaining pin means on said swing arm assembly adapted to be placed through matched hole means and thereby retain said swing arm assembly in a desired position on said platform;

i. heel means disposed within the extremities of said parallel fork receiving members to assist in retaining loads therein;

j. leg stands disposed on the undersides of said fork receiving members.

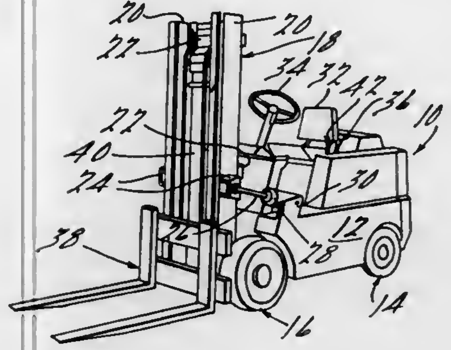
3,850,323
OVERLOAD PROTECTION DEVICE WITH DIFFERENTIAL PRESSURE SENSING

George A. Ekstrom, Churchville, Pa., assignor to Eaton Corporation, Cleveland, Ohio
Filed Dec. 27, 1972, Ser. No. 319,068
Int. Cl. B66f *9/20*
U.S. Cl. 214—673 **11 Claims**

1. An overload protection device for a vehicle having a frame, load carriage mounted for substantially vertical movement on a mast which is pivotally mounted on said frame for tilting motion relative thereto and two motors operatively connected between said frame and said mast to tilt said mast, the overload protection device comprising:

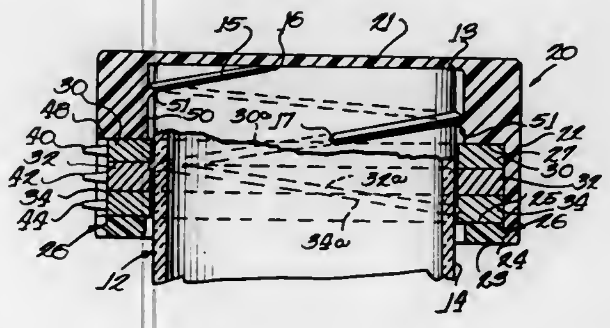
means for generating a signal at each motor representative of the magnitude of the force on the motor needed to maintain the mast at its position relative to the frame;

means for comparing the signals from each motor and for transmitting the signal representative of the greatest magnitude of force on the motors, means operative for receiving the transmitted signal and for preventing tilting of the mast in at least one direction relative to the frame by preventing operation of the two motors in at least their corresponding direction when the magnatude of the transmitted signal is above a given preselected magnitude.



3,850,324
THREADED COMBINATION LOCK SAFETY CAP

Karl A. Meyer, 171 N. Atlantic Ave., Apt. 27, Cocoa Beach, Fla. 32931
Filed Nov. 29, 1973, Ser. No. 420,281
Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*
U.S. Cl. 215—206 **6 Claims**



1. A container closure structure and container used in conjunction therewith, comprising:

a hollow container for receiving a given quantity of material to be restricted from use by small children;

a neck portion formed on said container to function as an access opening for filling said container and for removing said material therethrough, said neck portion having cylindrical side walls terminating at a mouth edge of said neck portion;

a spiral screw thread disposed about said topmost portion of said neck portion and extending from said mouth edge at least substantially one complete time spirally about the circumference of said neck portion, said spiral screw thread having an initiating point adjacent said mouth edge and a terminating point spaced downwardly from said mouth edge;

a closure assembly fashioned to firmly fit said neck portion to seal the container and prevent said material from being removed from said container, said closure assembly comprising:

a cap to fit over said neck portion and form a seal about the mouth edge of said neck portion;

an integral peripheral circumferally depending flange portion associated with the circumferal edges of said cap and depending downwardly therefrom, said flange portions having a dimension and configuration to freely fit over said neck portion, said flange portion having a terminal edge about the bottom thereof;

said cap portion having formed interiorly thereof a spiral projecting ridge adapted to engage said threaded neck portion to retain said neck portion mouth edge in sealing engagement with said cap undersurface;

an annular recess formed interior of said flange portion and opening out of said terminal edge thereof and defining a top annular shoulder portion thereabout;

a retaining ring formed about the inner peripheral terminal edge portion of said flange portion and projecting inwardly thereof a distance to underlie said top shoulder portion, the top surface of said retaining means defining a bottom shoulder portion in confronting relationship with said top shoulder portion;

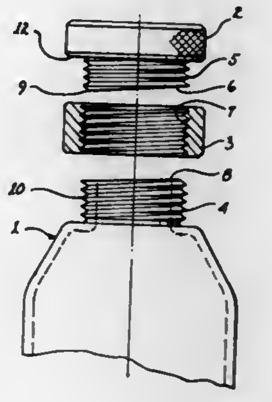
a plurality of substantially flat circular locking rings axially displaced and aligned with each other and disposed for free rotative movement in said annular recess intermediate said top and bottom shoulder portions;

a spiral screw formed integrally with an interior surface of each of said locking rings, said locking rings movable about their axes between positions where said grooves are misaligned so as to prevent threaded engagement of said neck portion screw thread therewith, and to a position where said grooves are in alignment to define a continuous spiral groove therethrough adapted to receive said neck portion spiral thread therein in a manner to permit said closure assembly to be unthreaded from said neck portion to provide access to said contents of said container; and

positioning tab means associated with each of said locking rings to enable manual relative movement of said locking means with respect to said retaining means and said cap means to allow for alignment of said spiral grooves in accord with preselected positioning of said positioning means exteriorly of said flange portion for easy application and removal of said closure assembly from said neck portion and whereby misalignment of said spiral grooves prevents inadvertent and unauthorized removal of said closure assembly from said neck portion.

3,850,325
CHILD PROOF MEDICINE BOTTLE CAP

Richard Eugene MacLeod, 2380 W. Irvington Rd., Tucson, Ariz. 85706
Filed Aug. 13, 1973, Ser. No. 388,336
Int. Cl. B65d *55/02*
U.S. Cl. 215—218 **7 Claims**



1. A child proof cap assembly for containers, said assembly comprising:

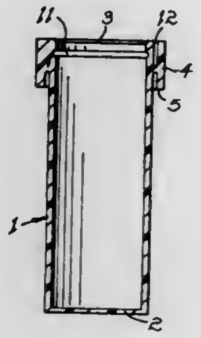
a. an externally threaded sleeve extending from the container and forming the mouth of the container, the extremity of said sleeve being terminated at a bias;

b. a cap having an externally threaded stud extending therefrom, the extremity of said stud being terminated at a bias;

c. an internally threaded collar for engaging said sleeve and said stud to retain said sleeve and said stud in axial alignment with one another and limit axial displacement between said sleeve and said stud; whereby said collar forces engagement between the biased extremity of said sleeve with the biased extremity of said stud as a result of independent rotation of said cap with respect to said sleeve, which engagement causes a frictional interlock between said stud and said sleeve to prevent removal of said cap from the container.

3,850,326
SAFETY CLOSURE

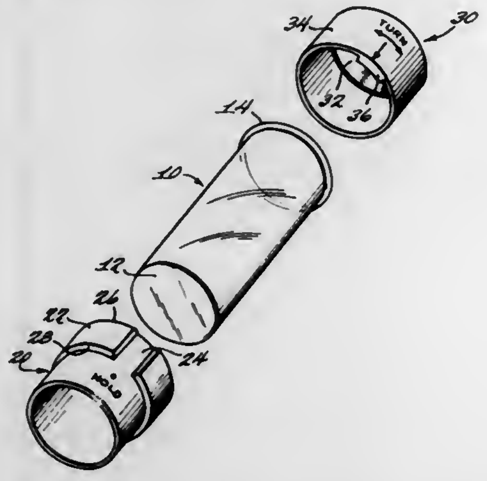
Louis Ryles, Edwardstown, Australia, assignor to Medical Plastics Pty. Limited, Edwardstown, Australia
Filed Jan. 11, 1973, Ser. No. 322,682
Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*
U.S. Cl. 215—224 **14 Claims**



1. A rigid closure member for a container, the closure member being shaped to give the appearance of a conventional screw cap with longitudinal flutes, serrations, ribs or ridges on its outer surface, an opening in the top of the closure member, a snap on lid adapted to open and close the opening and be retained in its closed position to give the appearance of the top of the closure member, the closure member having a portion of its outer surface which is displaceable inwardly to allow a finger of the user to engage under the snap on lid to overcome the snap action of the lid, the displaceable portion being a portion that is not readily distinguishable from the remainder of the closure member.

3,850,327
CHILD-PROOF CONTAINER CLOSURE

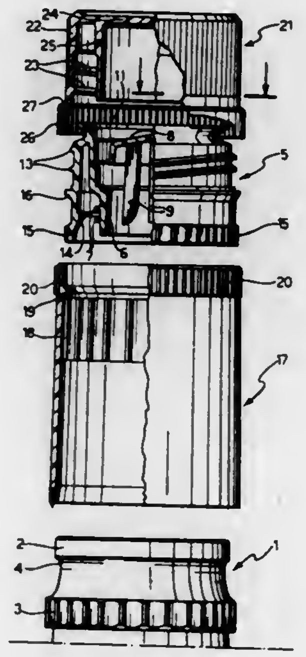
Earl Robinson, 9141 Indiana, Lawrence, Kans. 66044
Filed Feb. 5, 1973, Ser. No. 329,545
Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*
U.S. Cl. 215—225 **1 Claim**



1. Combination closure for cylindrical containers wherein the container is a vial having a retaining rim provided to receive in frictional engagement therewith a snap-on cap comprising:
- a vial;
- a restraining ring receiving said vial in frictional engagement permitting rotary and axial movement therewith having a lower annular member and an enlarged discontinuous upper annular member forming a gap; and a cover, telescoping over said ring and said vial, formed with a lug projecting radially inwardly freely passing through said gap and upon relative rotation of said cover and said ring frictionally engaging lower face of said upper member urging upper face of said ring against the retaining rim of said vial and thereby causing sealing engagement between said cover and open end of said vial.

3,850,328
BOTTLE CLOSURE ARRANGEMENT

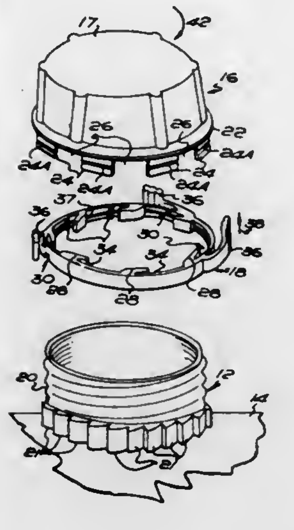
Piergiacomo Guala, Alessandria, Italy, assignor to Angelo Guala Di Piergiacomo E Roberto Guala & C. S.A.S., Alessandria, Italy
Filed July 9, 1973, Ser. No. 377,380
Claims priority, application Italy, July 29, 1972, 69490/72
Int. Cl. B65d *41/20*
U.S. Cl. 215—252 **4 Claims**



1. A closure arrangement with incorporated guarantee seal for bottles of the type having first and second spaced annular ridges on the neck thereof, said second annular ridge having teeth thereon, said closure arrangement comprising:
- a pourer body snap engageable over said first of said annular ridges,
- an externally toothed ridge on said pourer body,
- a screw threaded portion on said pourer body,
- a screw cap engageable on said screw threaded portion of said pourer body,
- a toothed annular band,
- a plurality of frangible stalks interconnecting said toothed annular band and the lower edge of said cap,
- a tubular sleeve engageable on the neck of said bottle,
- a toothed portion at the upper end of said tubular sleeve, said teeth of said toothed annular band engaging said teeth of said toothed portion of said tubular sleeve,
- means interengaging said tubular sleeve and said pourer body to prevent relative separating axial movement thereof,
- internal teeth on said tubular sleeve engageable with said teeth on said second circumferential ridge of the neck of the bottle and also with said teeth on said externally toothed ridge on said pourer body whereby said cap, said pourer body and said tubular sleeve are all locked together against relative angular movement and against angular movement with respect to said bottle, removal of said cap being possible only by rupturing said frangible stalks to separate said cap from said annular band.

3,850,329
TAMPERPROOF CLOSURES FOR CONTAINERS

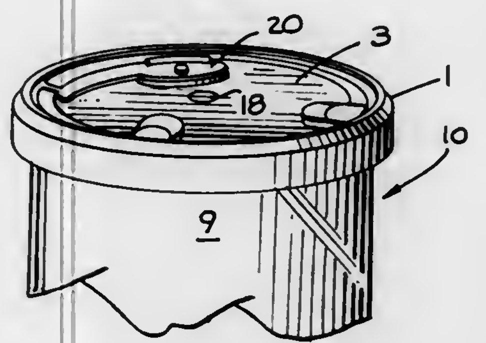
Peter G. Robinson, Hull, England, assignor to Parsons Brothers Limited, East Yorkshire, England
Filed July 9, 1973, Ser. No. 377,262
Claims priority, application Great Britain, July 19, 1972, 33673/72
Int. Cl. B65d *55/08*
U.S. Cl. 215—254 **14 Claims**



1. A tamperproof closure which comprises a closure cap and a separate catch ring and which is for the tamperproof closuring of a container having a screw threaded region to which the cap may be screwed to close the container and a peripheral region adjacent the screw threaded region which has at least one abutment, said cap having means defining a support ring over which the catch ring is adapted to be placed and said catch ring having at least one inwardly directed projection which extends through the support ring so as to ride along the peripheral region of the container as the cap is being screwed thereto but to engage said abutment of the container when the cap closes same to prevent the cap from being unscrewed, and said catch ring further being adapted to be broken so that it can be removed prior to and enabling the cap to be unscrewed from the container.

3,850,330
COMPOSITE CLOSURE CAP

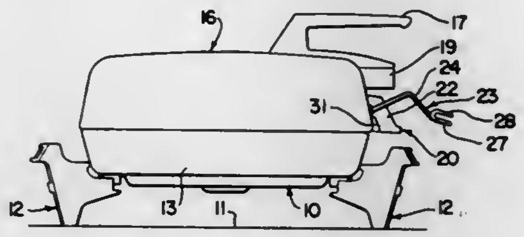
Carl E. Koontz, Thornville, and Josef Faber, Lancaster, both of Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio
Filed Jan. 8, 1973, Ser. No. 321,784
Int. Cl. B65d *43/02*
U.S. Cl. 215—262 **8 Claims**



1. In a composite press-on, lift-off closure cap having a plastic molded outer container engaging ring including container engaging lugs and a metal cover mounted in said ring, the improvement comprising a closed vent positioned in the central portion of said cover defined by a score line, said ring having means for facilitating cap removal integrally formed thereon during the molding operation of the plastic material of the ring for assisting in lifting the cap against the sealing forces including the vacuum forces of vacuum sealed packages comprising a penetrator positioned adjacent to said plastic ring and coupled thereto by a plurality of spaced bridge members and having a vent opening button thereon, one of said bridge members being positioned for acting as a hinge for controlling movement of said penetrator from its position adjacent to said plastic ring to a second position over said vent, and the other of said bridges being frangible to release said penetrator for said movement.

3,850,331
BROILER LID FOR FRYPANS AND THE LIKE

Berton R. Oxel, Louisville, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Apr. 13, 1973, Ser. No. 350,681
Int. Cl. B65d *7/42*
U.S. Cl. 220—335 **7 Claims**



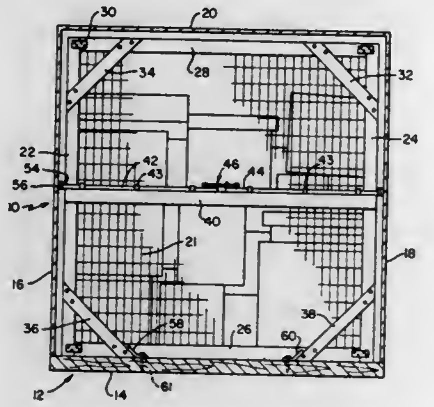
1. For use with an open top vessel adapted to be supported on a generally underlying surface and having upstanding side walls, the improved combination comprising,
- a lid having a lower portion cooperable with said vessel for selective support of said lid on said vessel in top-closing relation therewith,
- and support means carried by said lid for selective support of the latter in an elevated position vertically spaced above said vessel,
- said support means including a leg having a pivot connection with said lid and said leg having a portion spaced from said pivot connection which is bifurcated to closely straddle said vessel upstanding side wall,
- means cooperable with said leg providing a predetermined support position about said pivot connection in which said lid and leg are so inter-related that with said leg straddling said vessel side wall, said lid will be supported on said pan by said leg with said lid in registry with said vessel open top but in spaced relation above and generally parallel with said vessel,
- said pivot connection of said leg with said lid providing for movement of said leg from its support position aforesaid to provide for disposition of said lid on said vessel in top-closing relation therewith without interference from said leg.

3,850,332
PORTABLE CARGO BULKHEAD

Ortho S. Marko, 598 Barbara Dr., Tipp City, Ohio 45371
Continuation-in-part of Ser. No. 224,902, Feb. 9, 1972, abandoned. This application May 18, 1973, Ser. No. 361,478
Int. Cl. B65d *1/24*
U.S. Cl. 220—22 **10 Claims**

1. A portable cargo bulkhead for use in an enclosure such as a container, van or the like comprising:
- a peripheral frame being of slightly smaller dimension than the internal dimension of the enclosure;
- cargo retaining means secured internally from said peripheral frame;

- a horizontal brace connected between opposed frame members;
- a pair of elongated rods mounted on said brace for slidable movement therealong;
- friction engaging pads attached to the outer end of each of said rods;
- actuating means having open and closed conditions, said actuating means connected to each of said rods for moving said rods relative to said brace wherein said engaging pads are moved from a nonengaging position to an engaging position whereby said engaging pads frictionally engage the walls of the enclosure in the engaging position;

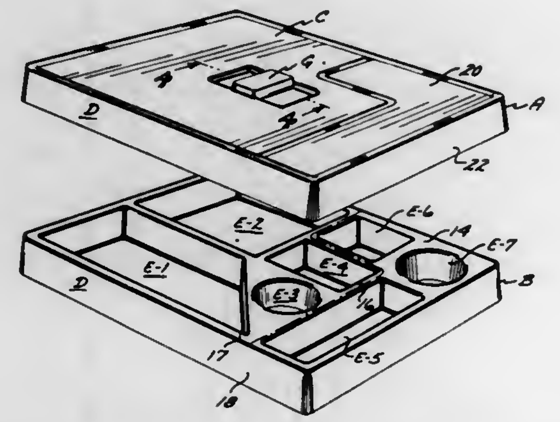


- a vertically adjustable stanchion for mounting in the enclosure adjacent one side of the enclosure, said stanchion having ceiling and floor engaging members for respectively engaging the ceiling and floor when said stanchion is adjusted wherein said stanchion is independently and self-supportingly secured in a vertical position; and
- pivot means detachably connecting said frame with said stanchion wherein said frame may be pivoted about said stanchion when said engaging pads are in the nonengaging position and wherein said frame may be detached from said stanchion with said stanchion remaining in position.

3,850,333
DISPOSABLE FOOD TRAY AND CLOSURE MEMBER

Donald E. Reichert, 2650 S. Patton Ave., San Pedro, Calif. 90731

Filed June 11, 1973, Ser. No. 368,975
Int. Cl. A45c *11/20;* **B65d** *1/24, 1/36*
U.S. Cl. 220—20 **5 Claims**



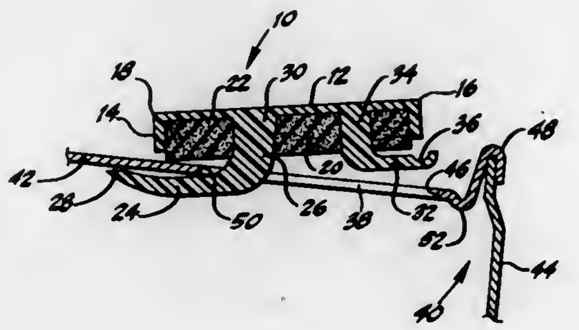
1. A light weight portable disposable device capable of holding a plurality of different foods, with a first portion of said foods maintained in a hot condition and a second portion of foods in a cold condition, said device including:

- a. a first sheet formed from a heat insulating material that has a plurality of spaced openings formed therein, with said sheet at the periphery of each of said openings developing into a downwardly extending cup in which one of said foods may be disposed, and an elongate seal area that occupies an intermediate position on said sheet, with the said seal area serving to divide said cups into first and second portions said first portion of said cups serving to hold said foods that are hot, said second portion of said cups serving to hold said foods that are cold, and a continuous side wall that extends downwardly and outwardly from the outer periphery of said sheet at a wedging angle to at least as great a depth as the depth of the deepest of said pockets;
- b. a closure member that includes a second sheet formed from a heat insulating material that has a second endless sidewall extending downwardly and outwardly from the periphery thereof at a wedging angle, with said closure member when moved downwardly relative to said first sheet and in alignment therewith having said second sidewall removably and frictionally grip said first said wall with a sufficient force to remain disposed thereon until said first sheet and closure member are forcefully separated from one another; and
- c. heat insulated sealing means on said second sheet that are so disposed as to contact said seal area when said closure member is disposed on said first sheet with said first and second side walls in frictional engagement with one another, with said closure member and sealing means cooperating with said first sheet and seal area to completely enclose said first and second portions, and with heat from food in said cups in said first portion being retained therein for a prolonged period of time due to said cups being formed from said heat insulating material that minimizes transfer of heat thereto to the ambient atmosphere, and said first and second sheets and heat insulated sealing means minimizing the transfer of heat from hot food in said first portions of cup to cold food in said second portions of said cups.

3,850,334
CONTAINER CLOSURE

Franklin Eugene Wharton, 1308 Sartori Ave., Torrance, Calif. 90501

Filed July 23, 1973, Ser. No. 381,480
Int. Cl. B65d *39/00*
U.S. Cl. 220—243 **8 Claims**



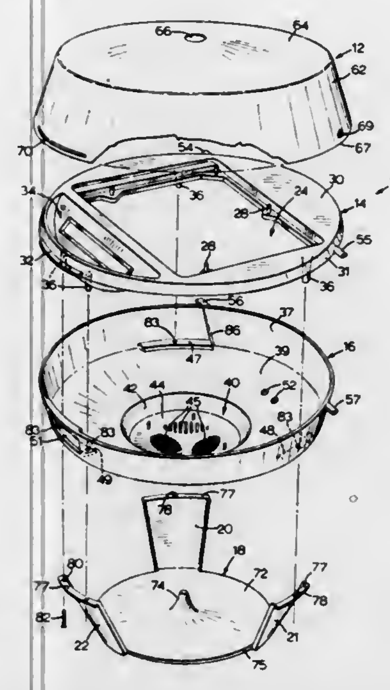
1. A device for sealing an opening in the end wall of a container having at least one end wall and a side wall, the opening having two ends, a first end adjacent the juncture of the end wall and the side wall, and a second end spaced inwardly from the juncture of the end wall and the side wall, which device comprises:

- a. a plate having a first end adapted to be positioned generally over the first end of the opening and a second end adapted to be positioned generally over the second end of the opening;
- b. a pad of resilient material attached to one surface of the plate and adapted to sealingly close the opening in the end wall of the container;
- c. a hook-shaped lever arm swinging out from a first end positioned below the pad of resilient material and then upwardly to a second end at a position spaced from the plate and below the plane of the plate;
- d. means attaching the first end of the lever arm to the plate towards the second end thereof so that the lever arm may be slid through the opening, the second end of the lever arm being positioned below and bearing against the end wall so as to compress the pad into sealing position when the plane of the plate is parallel to the plane of the end wall;
- e. means for compressing the pad below the first end of the plate into sealing position on the end wall of the container to complete the seal.

3,850,335
CONTAINER AND LID CONSTRUCTION

Charles E. Kreutzweiser, Kitchener, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada

Filed Nov. 21, 1972, Ser. No. 308,426
Int. Cl. B65d *43/16*
U.S. Cl. 220—337 **9 Claims**



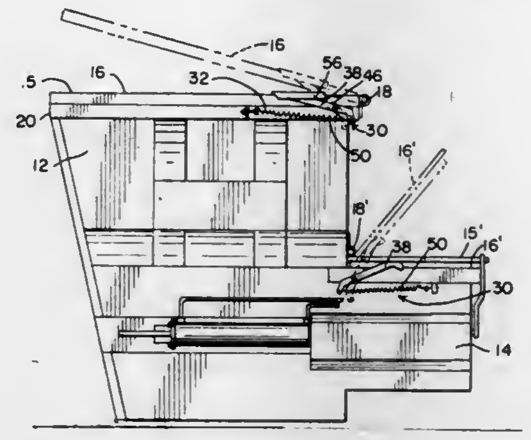
1. A container comprising a body portion and a lid portion, one of said portions supporting two spaced-apart pins, the other of said portions defining two pocket means adapted to receive said pins, the lid portion having a substantially circular periphery and being resiliently distortable to permit said pins to enter said pocket means, said pins in said pocket means defining hinge means between said portions, the hinge means lying along a chord of said circular periphery.

3,850,336
COUNTERBALANCE APPARATUS FOR A REFUSE CONTAINER LID

Evelio Acosta, Hialeah, Fla., assignor to Hydraulic Equipment Systems & Fabricating, Inc., Hialeah, Fla.

Filed Feb. 26, 1973, Ser. No. 335,546
Int. Cl. B65d *43/16*
U.S. Cl. 220—335 **8 Claims**

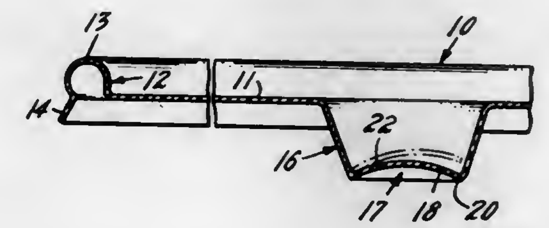
1. In an apparatus for storing and/or compacting refuse or the like and including container means for receiving such refuse, said container means having an access opening for receiving such refuse at its top, and closure means hingedly mounted on said container means and movable with respect to said container means to cover said access opening, the improvement comprising, closure balance means to control the closing movement of said closure means relative to said container means to prevent said closure means from abruptly slamming or falling freely to a closed position means and/or said container means and injury to operating personnel, said closure balance means including lift arm means pivotally mounted on said container means and resilient means, said resilient means having one end connected to said container means and the opposite end connected to said lift arm means, said resilient means thereby urging said lift arm means to move pivotally relative to said container means such that a portion of said lift arm means engages a portion of said closure means with sufficient force balancing the gravitational pull on said closure means that the closing movement of said closure means is thereby controlled, said closure balance means further including mounting plate means mounted on said container means and extending along and adjacent an upper edge thereof, said mounting plate means having outwardly extending flange means formed at its opposite ends, a rearward end of said mounting plate means being disposed adjacent the hinged junction of said closure means and said container means, the outward flange of said mounting plate means disposed at the opposite, forward end of said mounting plate means having an opening formed therein to receive adjustable bolt means therethrough, said bolt means being mounted on said flange means through said opening by fastening means at one end, the opposite end of said bolt means being attached to one end of said resilient means, said lift arm means being pivotally mounted on said mounting plate near said rearward end of said mounting plate means, one end of said lift arm means being connected to the end of said resilient means opposite said bolt means, said resilient means thereby urging said lift arm means to move pivotally relative to said mounting plate means, said flange disposed at said rearward end of said mounting plate means functioning as a stop means to prevent pivoting movement of said lift arm means therebeyond.



3,850,337
VENTING HOT DRINK CLOSURE

Kenneth Jay Parks, Ringwood, N.J., assignor to American Can Company, Greenwich, Conn.

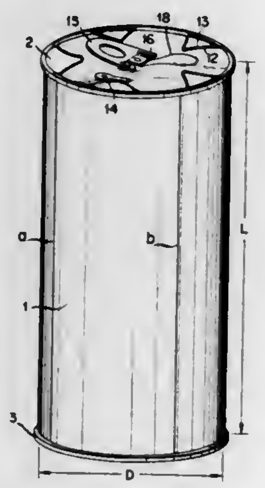
Filed Jan. 26, 1973, Ser. No. 327,620
Int. Cl. B65d *51/16*
U.S. Cl. 220—335 **7 Claims**



1. A closure comprising a disc-like body having means at its periphery for effecting attachment to a container, a frustroconical indentation in the face of said disc having an upwardly reverse indentation therein, and at least one hinged flap formed in said reverse indentation, said flap being defined by a peripheral cut score in a portion of the base of said frustroconical indentation which forms a resilient hinge and an integral connecting portion which resiliently retains said hinge in a normally closed position but openable to permit venting and closing after venting.

3,850,338
CAN CAPABLE OF BEING FOLDED INTO A DEFINITE FORM BY HAND

Michio Hatada, 1 Shirahata-Higashi-cho, Yokohama, Japan
Filed Oct. 2, 1973, Ser. No. 402,740
Claims priority, application Japan, Oct. 5, 1972, 47-99410
Int. Cl. B65d *17/20*
U.S. Cl. 220—6 **10 Claims**



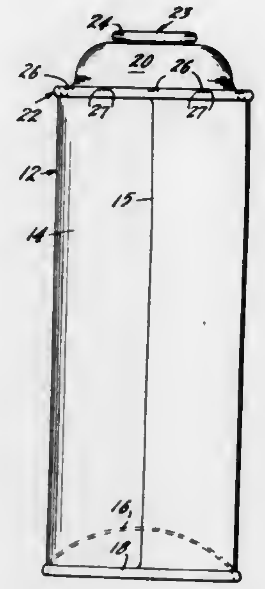
1. A can capable of being folded into a predetermined form by hand said can comprising:

a. a cylindrical portion,
b. a first groove on at least one surface of said cylinder said groove running parallel to the axis of said cylinder;
c. second and third grooves on said at least one surface parallel to said axis of said cylinder, said second and third grooves being respectively equally spaced on each side of said first groove;
d. a fourth groove on said at least one surface parallel to the axis of said cylinder; said fourth groove positioned between said second and third groove;
e. a top and bottom on the ends of said cylinder said top and bottom having parallel stripping grooves therein; and
f. pull ring means coupled to said stripping grooves for separating a portion of said top and bottom along said stripping grooves by applying a pulling force to said pull ring means;
g. wherein said can is folded into said predetermined shape by the application of force to said cylinder after said portion of said top and bottom have been separated whereby said can collapses along said first, second, third and fourth grooves.

3,850,339
TRIPLE SCORE PRESSURE RELIEF SYSTEM FOR AN AEROSOL CONTAINER

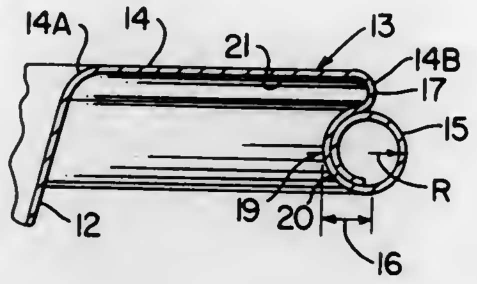
Christian Frederick Kinkel, Prospect Heights, Ill., assignor to American Can Company, Greenwich, Conn.
Filed May 7, 1973, Ser. No. 357,606
Int. Cl. B65d *83/14;* **B05b** *7/32*
U.S. Cl. 220—89 A **11 Claims**

1. In a pressurized aerosol dispenser container having a tubular body closed at one end and a metal end wall closing the other end, the end wall being secured to the tubular body by an annular convoluted seam, the improvement for safely venting excessive internal pressure, comprising: a plurality of venting scores, and an anti-fracture score flanking each side of each of said venting scores, said venting and anti-fracture scores penetrating partially through the metal of the end wall and extending from at least a portion of the most interior layer of the seam to the top portion of the seam, whereby when the internal pressure within the container increases and threatens to cause rupture of said container, the end wall will buckle outwardly causing the residual of said venting scores to fracture to thereby produce a plurality of vents to permit the pressurized contents to escape safely therethrough.



3,850,340
NESTABLE CONTAINER AND APPARATUS FOR AND METHOD OF MAKING SAME

Frederik A. Siemonsen, Richmond, and Robert F. Bublitz, Chester, both of Va., assignors to Reynolds Metals Company, Richmond, Va.
Division of Ser. No. 92,446, Nov. 24, 1970, Pat. No. 3,695,084, which is a continuation-in-part of Ser. No. 86,866, Nov. 4, 1970, abandoned. This application July 14, 1972, Ser. No. 272,060
Int. Cl. B65d *7/48, 21/02*
U.S. Cl. 220—74 **7 Claims**

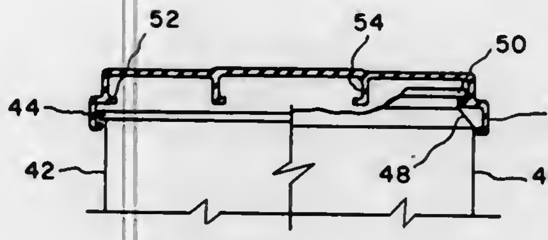


1. A container comprising

a. a side wall,
b. an annular flange extending outwardly from said side wall,
   1. said annular flange having a substantially planar top surface and a bottom surface,
c. an outer arcuate portion having an outer surface adjoining said substantially planar top surface and an inner surface adjoining said bottom surface,
d. and a reverse toroidal bead adjoining said outer arcuate portion,
   1. said bead having a first annular increment facing toward said side wall so that the extension of said inner surface becomes the first annular increment of said bead and a second annular increment facing away from said side wall so that the extension of said outer surface becomes the second annular increment of said bead,
   2. said bead lying beneath the substantially planar top surface and having at least a portion thereof arranged within and beneath the outer peripheral edge of said outer surface,
e. and said outer arcuate portion providing vertical spacing between said flange and said bead.

3,850,341
CLOSURE FOR A PLURALITY OF DIFFERENT SIZED OPENINGS

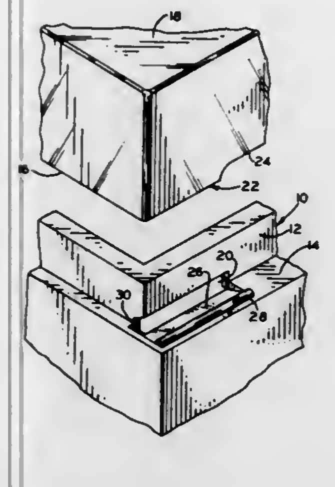
Philip D. Bart, 27 Keith Dr., Monsey, N.Y. 10952
Filed Jan. 26, 1972, Ser. No. 220,859
Int. Cl. B65d *43/10*
U.S. Cl. 220—212 **1 Claim**



1. A closure member, for use with a plurality of different sized rimmed openings, comprising a cover portion, a first closure portion extending downward from said cover portion and including an inwardly extending rib portion for frictionally engaging one of said rimmed openings, a second closure portion extending downward from said cover portion and including an inwardly extending rib portion for frictionally engaging another sized one of said rimmed openings, said first closure portion being relatively narrower than said second closure portion and concentrically positioned within said second closure portion of said cover portion, and a third closure portion, concentrically positioned relative to said first and second closure portions, extending downwardly from said second closure portion and including an inwardly extending rib portion for frictionally engaging another sized one of said rimmed openings.

3,850,342
HINGE DEVICE FOR DUST COVER

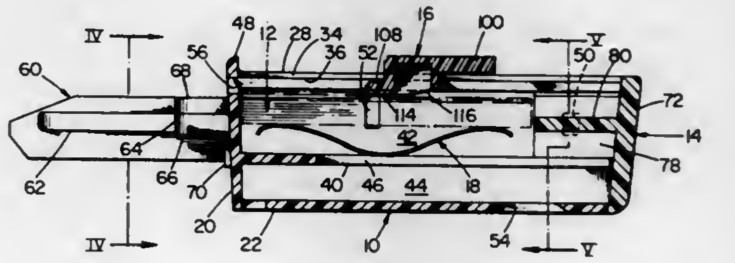
Mykola Dsjuba, Fort Wayne, Ind., assignor to The Magnavox Company, Ft. Wayne, Ind.
Filed Dec. 1, 1972, Ser. No. 311,060
Int. Cl. A47b *81/06*
U.S. Cl. 220—331 **10 Claims**



1. In a record changer cabinet, the combination comprising a first member having a generally vertical outwardly facing wall, said wall having an upper edge and an upwardly facing ledge formed on said wall, said ledge protruding outwardly from said wall below said upper edge and extending in a horizontal direction, a second member having a downwardly extending rim resting on said ledge when said cabinet is in a closed position, hinge means including first and second cooperating elements, said first and second cooperating elements being normally disengaged so that said cabinet may be readily opened by straight vertical movement of one of said members away from the other of said members when said members are in the closed position, said first element being formed on a mating elongated section of said wall in the region of said ledge, said second element being formed on an elongated section of said rim, said ledge having a ramp means disposed adjacent to said first element and inclined downwardly toward said first element, said ramp means being normally disengaged from said second element and coactable therewith to cam said second element into engaged cooperation with said first element, said coperating first and second elements being engageable in response to tilting of said second member from its closed position to an open position relative to said first member for defining a pivot region about which said second member is pivotal on said first member between closed and open positions.

3,850,343
MOLDED PLASTIC RAZOR BLADE DISPENSER

Richard J. Petrillo, Norwell, Mass., assignor to The Gillette Company, Boston, Mass.
Filed June 4, 1973, Ser. No. 366;562
Int. Cl. B65d *83/10*
U.S. Cl. 221—102 **2 Claims**



1. A razor blade magazine comprising:

an elongated body member of molded plastic, said body member having a lower wall, a pair of side walls extending upwardly from said lower wall, a front end wall extending between said side walls at one end of said body, a dispensing aperture in said front wall, the other end of said body having a transverse opening therein, a pair of first longitudinally extending flange portions, each said first flange portion extending inwardly from the upper end of its each associated side wall, a recess open upwardly and open to the side at the junction of each side wall and associated first flange portion each said recess extending along the longitudinal length of said body member, the inner edges of said first flange portions being spaced to define a first slot extending the longtudinal length of said body member from said transverse opening to said front wall, a pair of second longitudinally extending flange portions, each said second flange portion extending inwardly from its side wall intermediate a first flange portion and said lower wall, the inner edges of said second flange portion defining a second longitudinally extending slot below said first slot, said second flange portions dividing said body into upper and lower

a stack of new blade units located within and extending longitudinally of said upper compartment, each said new blade unit having a cutting edge located adjacent the inner surface of one of said side walls;

biasing structure in said upper compartment, supported on said second flange portions and urging said stack of new blade units upwardly so that the uppermost blade unit in said stack is in engagement with a surface of each of said first flange portions, and in register with said dispensing aperture;

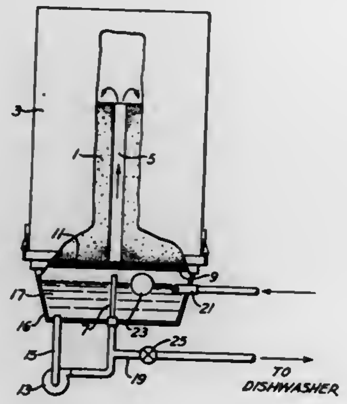
an end plug of molded plastic received in and closing said transverse opening, said end plug having two vertical side walls, each said end plug side wall adapted to mate with an inside surface of the adjacent side wall of said body member, a second latch surface in cooperating engagement with said first latch surface to secure said end plug in said transverse opening, and a horizontal reinforcing web extending between said end plug side walls along the lengths thereof, said web being centrally located intermediate the upper and lower ends of said end plug side walls in alignment with said second latch surface,

and a blade pusher slidable in said first slot, said blade pusher having a handle portion that overlies upper surfaces of said first flange portions, a depending flange portion on each side of said handle portion that is received in each said recess and restricts the movement of said side walls outwardly away from one another and maintains said first and second latch surfaces in cooperating engagement, a neck portion depending from said handle portion between said flange portions and disposed within said first slot, and a blade pusher portion located below said neck portion for engaging the uppermost blade unit in said stack and sliding said uppermost blade unit from the stack through said dispensing aperture as said pusher is slid along said first slot in the direction of said dispensing aperture.

3,850,344
INVERTED DRUM FEEDER FOR POWDERED DETERGENT

Richard Lee Burge, and Charles Peter Wilson, both of Glenview, Ill., assignors to Calgon Corporation, Robinson Township, Pa.

Filed July 28, 1972, Ser. No. 276,063
Int. Cl. B67d *5/372*
U.S. Cl. 222—67 **6 Claims**



1. Apparatus for dissolving detergent comprising a flat screen and a flat support plate therefor for retaining finely divided detergent in an inverted drum, said support being perforated and having a large opening near its center, and, in combination therewith, means for inverting said drum together with said flat screen and flat support plate therefor, reservoir means positioned below the inverted drum to collect and store detergent solution, and means for directing a single stream of detergent solution upwards through said central opening and into the detergent.

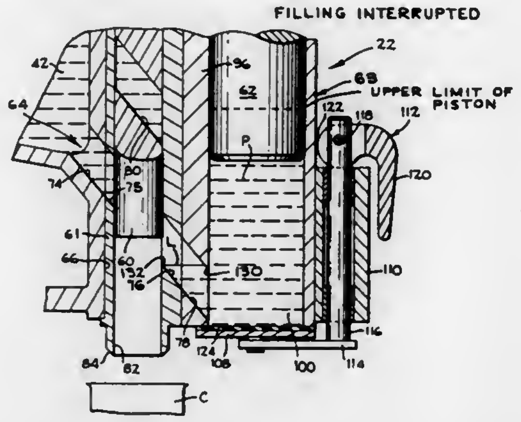
3,850,345
FILLING VALVE

Robert D. Merritt, Rossville, Ill., assignor to FMC Corporation, San Jose, Calif.

Filed Nov. 28, 1973, Ser. No. 419,735
Int. Cl. B67d *5/34*
U.S. Cl. 222—168.5 **9 Claims**

1. In a container filling machine of the type having a rotatable supply tank mounting a measuring cylinder and piston assembly and a valve assembly including a valve plunger and a valve casing providing a filling nozzle; ports interconnecting said valve assembly, said supply tank and said measuring cylinder, means for raising said piston to charge the measuring cylinder with product from said supply tank, and means for lowering the piston to pump the product charge through the open valve into a container beneath the nozzle, the improvement comprising:

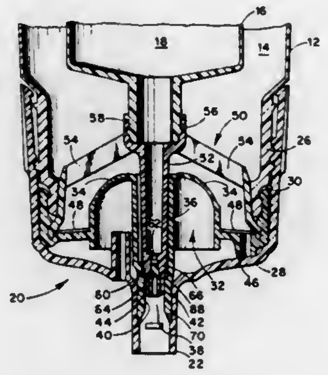
a. said valve casing having an upright bore forming a nozzle open to atmosphere at its lower end;
b. said measuring cylinder having an upright bore with a closed bottom disposed alongside said valve casing; and
c. cooperative ports in said measuring cylinder and said valve casing forming a fluid conducting port descending diagonally from said valve casing bore into said measuring cylinder bore;
d. the lowermost intersection of said port with the bore of said valve casing being above the uppermost intersection of said port with the bore of said measuring cylinder so that the lower portion of said port and said measuring chamber bore form a U-tube, atmospheric pressure acting on the liquid in said port supporting the column of liquid in the measuring chamber for preventing gravitational draining of said U-tube through the nozzle end of the valve casing when said valve plunger has opened said port and liquid has drained from the upper portion of said port.



3,850,346
HAND SQUEEZABLE, PLURAL CHAMBERED, LIQUID DISPENSER

James E. Richardson, Weston, and Harvey H. Groves, Westport, both of Conn., assignors to Cambridge Research and Development Group, Westport, Conn.

Filed Apr. 10, 1972, Ser. No. 242,323
Int. Cl. B67d *39/00*
U.S. Cl. 222—145 **15 Claims**



1. A plural chambered dispenser for dispensing first and second liquids comprising:

a first, flexible, chamber defining container adapted to contain the first liquid;

a second, compressible, chamber defining container positioned within said first container and adapted to contain the second liquid, said second container having substantially no shape memory and a smaller volume than said first container whereby pressure exerted upon said first container is transmitted through the first liquid to said second container;

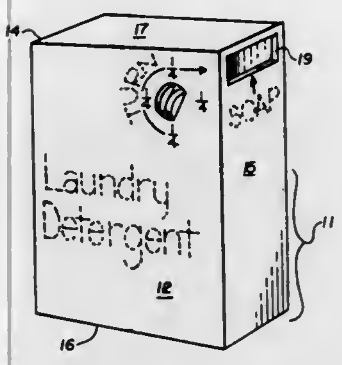
a fluid actuated first outlet valve means fluidly coupled to said first container through a capillary tube; and,

a second outlet valve means fluidly coupled to said second container through another capillary tube, said second outlet valve means being actuated in response to the actuation of said first valve means with the opening and closing of the second outlet valve means occurring after and before the opening and closing, respectively, of the first valve means.

3,850,347
COMBINATION DISPENSER PACKAGE WITH PORTION MEASURING MEANS FOR DISPENSING CONTROLLED AMOUNTS OF FLUENT MATERIALS

Charles O. Hill, Round Rock, Tex., assignor to Gayle Pate Hill and Thomas W. Budnick, both of Austin, Tex., part interest to each

Filed June 14, 1973, Ser. No. 369,879
Int. Cl. G01f *11/10*
U.S. Cl. 222—368 **10 Claims**



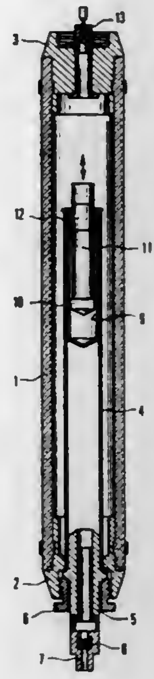
1. A combination dispenser package with portion measuring means for dispensing controlled amounts of fluent materials, comprising:

A. a conventional consumer package with an output dispensing port near the upper end of the consumer package;
B. scooping and portion measuring apparatus having a plurality of portion measuring pockets built into said consumer package and positioned to deliver measured portions of fluent material to and through the output port of said consumer package;
C. rotatable control means for causing said measuring apparatus to separate and dispense one portion of said fluent material from said dispenser package;
D. a reverse question mark shaped partition structure located in an upper corner of said dispenser package adjacent to the output port dividing the interior of said dispenser package into a separate material storage compartment and a separate measuring chamber housing the scooping and measuring apparatus with said partition structure having
   1. glue tabs to secure the partition in its proper position within the dispenser package, and
   2. a rectangular port opening through said partition structure adapted to permit granular material to gravity feed flow from the material storage compartment through said rectangular port into one of the pockets of the scooping and portion measuring apparatus when the dispenser package is held with the dispensing port pointed downward and which will permit unused granular material to be swept back through the same opening in said partition structure into the storage compartment when the package is held in upright position and the control means for the scooping and measuring device is rotated such that there is no surplus granular material in the scooping and measuring apparatus to leak out after usage.

3,850,348
APPARATUS FOR INJECTION OF LIQUID

Michel Bessot, Saint Christophe; Claude Delacote, Laxou; Jean-Jacques Lion, Jarville, and Francois Valentin, Nancy, all of France, assignors to Etablissement Public: Agence Nationale de Valorisation de la Recherche Anvar, Neuilly S/Seine, France

Filed Feb. 9, 1973, Ser. No. 331,181
Claims priority, application France, Feb. 11, 1972, 72.04651
Int. Cl. A61m *5/00*
U.S. Cl. 222—386.5 **2 Claims**



1. Apparatus for slowly injecting a liquid comprising an inner cylinder casing of flexible material for containing the liquid to be injected; a closed transparent outer cylindrical casing surrounding said inner cylindrical casing; means providing restricted egress of liquid from said inner cylindrical casing including an outlet tube communicating with said inner cylindrical casing and extending through said outer cylindrical casing in sealed relation thereto; means for admitting fluid under pressure into said outer cylindrical casing and outside of said inner cylindrical casing to press upon the latter in a collapsing sense to force liquid from said inner cylindrical casing through said outlet tube; a cylinder fitted within one end of said inner cylindrical casing which is remote from the communication of the latter with said outlet tube, said cylinder having a closed end within said inner cylindrical casing and an open opposite end; and a pressure indicator piston member reciprocable in said cylinder and having a portion projecting beyond said opposite end of the latter, said piston member being movable relatively to said inner cylindrical casing in response to fluid pressure in said outer cylindrical casing, whereby the moved position of said indicator piston member relative to said inner cylindrical casing indicates the fluid pressure acting on said inner cylindrical casing, the pressure indicating position of said indicator piston member being visible through said transparent outer cylindrical casing.

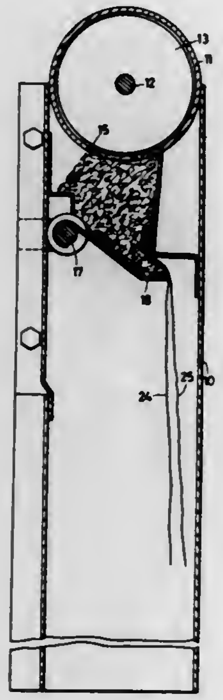
3,850,349
VALVE UNIT FOR REGULATING THE DISCHARGE OF GRANULAR OF POWDERED PRODUCTS

Camillo Pirovano, Cernusco Lombardone, Italy, assignor to Soc. AZA di Pirovano & C.s.a.s., Cernus, Lombardone (Como), Italy

Filed Dec. 13, 1971, Ser. No. 207,170
Claims priority, application Italy, Jan. 7, 1971, 19108/71
Int. Cl. B67d *3/00*
U.S. Cl. 222—529 **6 Claims**

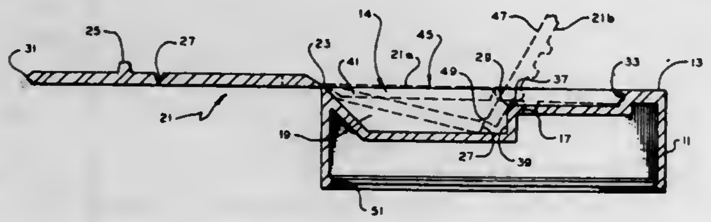
1. A valve unit for regulating the discharge of granular or powdered materials, comprising a valve body having an inlet

and an outlet, said body having at least a deformable wall portion, and a valve member between said inlet and said outlet and which can be moved between an open position, where the inlet and the outlet are in mutual communication relationship, and a closed position where said valve member provides a sealtight joint against said deformable wall portion of the valve body so as to cut off any communication between said inlet and outlet, said valve member being a vane which can be rotated at a side which is pivoted on a rigid wall portion of said valve body, the opposite side of said vane providing said sealtight joint against the deformable wall portion of the valve body, said vane being movable between said open position and said closed position, said vane being flush with the inner surface of said valve body when in said open position, said vane extending transversely of said valve body in said closed position, said deformable wall portion being deformed by said vane in said closed position, seepage occurring in said closed position being directed along a path of varying flow direction, said deformable wall portion being a flexible suspended member, said vane having an auxiliary suspended flexible member engaging the flexible member of said deformable wall portion when said vane is in closed position to form said sealtight joint.



3,850,350
SHAKER CAP

Edward J. Towns, Convent Station, and Anthony Thomas Brindisi, Fairfield, both of N.J., assignors to Safety Packaging Corporation, Hanover, N.J.
Filed Dec. 6, 1973, Ser. No. 422,285
Int. Cl. B65d *47/00*
U.S. Cl. 222—556 **12 Claims**



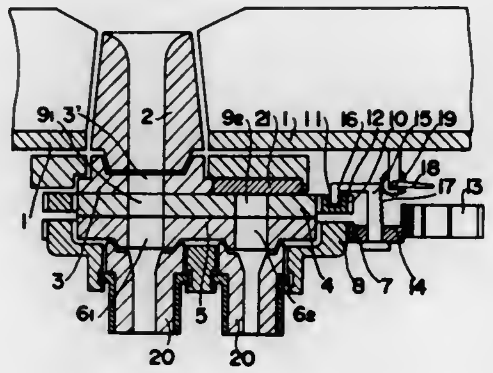
1. An improved shaker cap comprising:

a. a hollow cylindrical member open on the bottom and containing on the inside of the bottom means for attachment to a container and having a top portion comprising:

1. a solid annular portion adjacent the sides of the cylindrical member surrounding a two level circular recess, with a first higher level containing at least one hole therethrough and a second lower level, said higher and lower levels divided along a line parallel to a diameter of the cylinder with the higher level being of smaller size;
2. a gap in said annular portion on the side of said lower level centered on a line perpendicular to said diameter;
3. a cover hinged by a first hinge to the side of said cylinder at said gap having a circular portion which is matched to fit said circular recess; and
4. said top being hinged by a second hinge along a diameter parallel to the separation of said levels.

3,850,351
SLIDING NOZZLE ASSEMBLY

Tetsuya Yoshihara, Fukuyama, Japan, assignor to Nippon Kokan Kabushiki Kaisha; Kokankikai Kogyo Kabushiki Kaisha and Tokyo Yogyo Kabushiki Kaisha, all of Tokyo, Japan
Filed Feb. 11, 1974, Ser. No. 441,510
Claims priority, application Japan, Feb. 12, 1973, 48-16419
Int. Cl. B65d *5/72, 25/40, 25/38*
U.S. Cl. 222—566 **1 Claim**



1. A sliding nozzle assembly mounted at the bottom plate of a metallurgical vessel for pouring molten steel therethrough comprising a top nozzle, a lower retaining plate of refractory material mounted at the lower surface of said top nozzle and having a plurality of runner openings, a sliding plate of refractory material placed beneath said lower retaining plate and having a plurality of runner openings, and driving means provided on one side of said lower retaining and sliding plates to rotate said lower retaining and sliding plates independently of each other.

3,850,352
DEVICE FOR CARRYING EYE GLASSES AND WRITING IMPLEMENTS

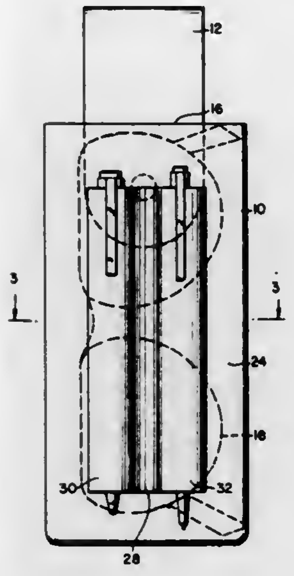
Lawrence Reiner, Brooklyn, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed May 9, 1973, Ser. No. 358,528
Int. Cl. A45c *1/04*
U.S. Cl. 224—26 B **1 Claim**

1. A device for carrying eye glasses and writing implements comprising:

a vertically elongated hollow rectangular case open at its top end, said case having first and second opposite major surfaces with a vertically elongated zipper in the first surface to provide access to the interior of the case, the second major surface having two parallel vertical slots spaced inwardly from its outer edges, the case being adapted to removably receive a folded pair of eye glasses;

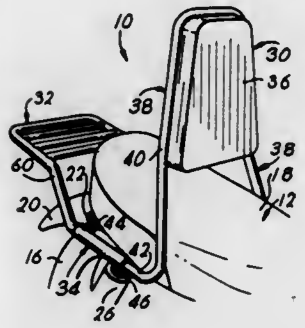
means at the upper end of the case adapted to be detachably secured to the waist belt of a user whereby the case can hang downward therefrom, said means including a belt engaging hook; and

a pair of adjacent but horizontally spaced vertically elongated U shaped elements formed from a unitary structure which when attached to said second major surface forms pockets which are closed except for open top and bottom ends, the structure having opposite vertically extending edges which extend through said slots, and then at right angles thereto and parallel to the inside surface of said second major surface to hold the structure in place, the pockets being located on the outside of the second major surface of the case and being adapted to removably receive pens, pencils or other writing implements.



3,850,353
BACKREST AND LUGGAGE CARRIER ASSEMBLY FOR MOTORCYCLES

Jerry W. Foulds, 11801 Fremont, Kansas City, Mo. 64134
Filed June 4, 1973, Ser. No. 366,702
Int. Cl. B62j *7/04;* **B60n** *1/06*
U.S. Cl. 224—31 **14 Claims**



1. For use with a vehicle having a wheel-supported, fore-and-aft extending frame and a seat mounted on said frame, an accessories assembly including:

a first accessory component comprising a backrest for the operator of the vehicle adapted to extend upwardly from said seat and having a pair of legs spaced apart for disposition on opposite lateral sides of said frame;

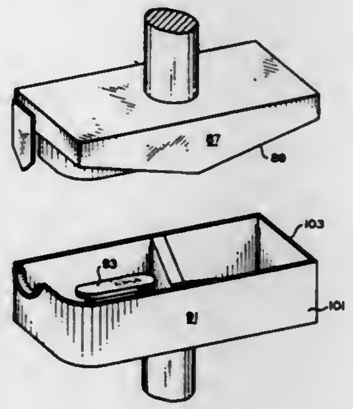
a pair of mounting members removably receiving said legs in telescoping relationship thereto;

means for affixing said members to said frame on said opposite sides thereof whereby to permit selective removal and replacement of said operator backrest from the vehicle while said members remain in place thereon; and

a second accessory component having spaced-apart legs, said mounting members removably receiving the legs of said second component in telescoping relationship thereto simultaneously with those of said operator backrest.

3,850,354
TRIMMING ARTICLES FROM INTEGRALLY ATTACHED WEB

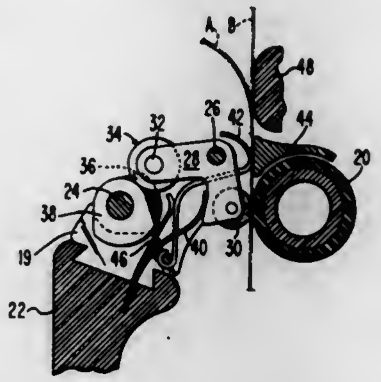
Edward C. Held, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 57,490, July 23, 1970, Pat. No. 3,695,799, which is a division of Ser. No. 622,615, March 13, 1967. This application Sept. 5, 1972, Ser. No. 286,355
Int. Cl. B26f *3/02*
U.S. Cl. 225—1 **3 Claims**



1. A process for trimming at least one article from an integrally attached web comprising: positioning said at least one article in a die; applying a stress at at least one point on the periphery of said article with a means having a dull edge, there being no contact between said die and said means to apply said stress to initiate at least one tear; and propagating said at least one tear around the entire periphery of said at least one article.

3,850,355
FORM FEED DEVICE WITH VARIABLE SPLIT

James Downie, Cumbernauld, England, and Vijai Prakash, Larbert, Scotland, assignors to Burroughs Corporation, Detroit, Mich.
Filed Aug. 6, 1973, Ser. No. 386,094
Claims priority, application Great Britain, Oct. 13, 1972, 47416/72
Int. Cl. B65h *17/20*
U.S. Cl. 226—110 **6 Claims**



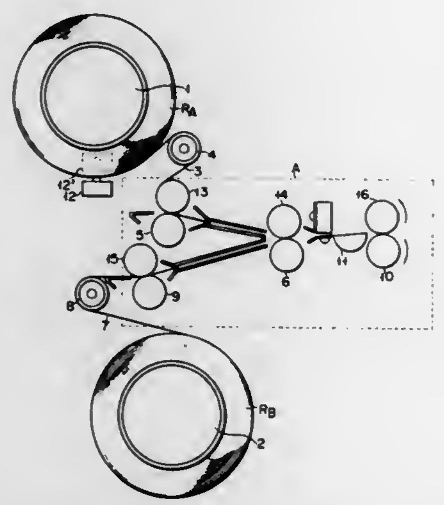
1. In a form feed device of a bookkeeping machine having spaced from each other and in horizontal extension, parallel means comprising drive roll means, rotatable cam shaft means and a base,

a plurality of pressure roll assemblies spacedly arranged along said parallel means,

each of said assemblies comprising in combination: support means being attached to said base, two cams fixed on said cam shaft means, said cam shaft means extending through all of said assemblies, with said cams being 90° out of phase with respect to each other, pressure roll carrying means pivotally arranged in said assembly, said pressure roll carrying means having a pressure roll at the end which faces the drive roll means and a horizontally shiftable cam roll means on the other end, said cam roll means being shiftable against either one of the two cams, and means biasing said pressure roll carrying means against the drive roll means.

3,850,356
ROLL TYPE COPYING PAPER SUPPLY DEVICE

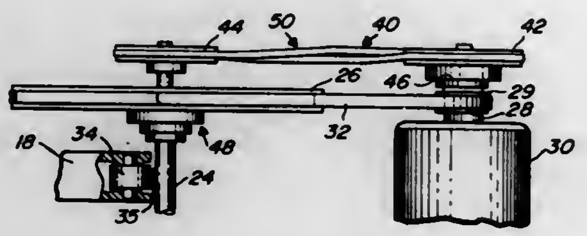
Yoshiharu Abe, and Kenzo Ito, both of Tokyo, Japan, assignors to Copyer Co., Ltd., Tokyo, Japan
Filed Dec. 26, 1973, Ser. No. 428,035
Claims priority, application Japan, Dec. 29, 1972, 47-1543
Int. Cl. B65h *17/42*
U.S. Cl. 226—110 **4 Claims**



1. A roll type copying paper supply device comprising at least two loading members on which rolls of copying paper of different width are respectively loaded, feeding members each disposed corresponding to the rolls of copying paper to feed the paper from the rolls, means for selecting one of the rolls of copying paper, detecting means for detecting the width of the copying paper, and circuit means to operate selected one of the feeding members to feed the corresponding copying paper from the roll of copying paper in response to the selecting means and detecting means, whereby the selected one of copying paper is fed independent of positions in which the rolls of copying paper are loaded on the loading members.

3,850,357
FAST-FORWARD TAPE DRIVE MEANS FOR CARTRIDGE TAPE PLAYER

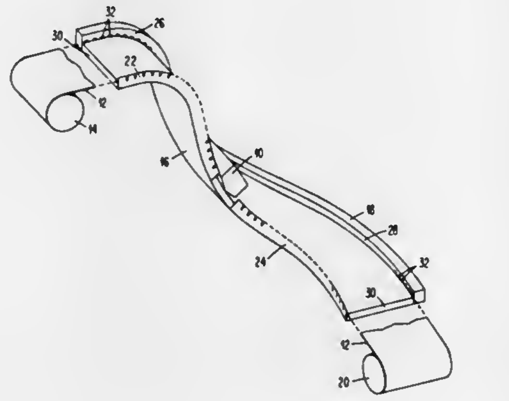
Melvin A. Lace, Prospect Heights, Ill., assignor to Motorola, Inc., Chicago, Ill.
Filed Mar. 1, 1974, Ser. No. 447,463
Int. Cl. B65h *17/22*
U.S. Cl. 226—178 **8 Claims**



1. In a cartridge tape player, tape drive means including a capstan drive shaft mounted rotatably therein for engaging the pressure roller in a tape cartridge inserted into the player for driving the recording tape therein through the cartridge in a first direction, a flywheel mounted on said capstan shaft, drive motor means including a rotatably driven output drive shaft, a hub mounted on said output drive shaft and first belt means looped about said hub and said flywheel for driving said capstan shaft rotatably in a first direction at a first speed upon electrical energization of said motor means in a first sense, fast-forward tape drive means coupled to said tape drive means and including in combination: first pulley wheel means coupled to said output drive shaft, first one-way clutch means engageable in a first rotatable direction and disengageable in a second rotatable direction coupling said first pulley wheel means to said output drive shaft, second pulley wheel means coupled to said capstan shaft, second one-way clutch means disengageable in said first rotatable direction and engageable in said second rotatable direction coupling one of said flywheel and said hub to said capstan shaft and drive motor means output drive shaft, respectively, second belt means looped about said first and second pulley wheel means for coupling the latter, said second belt means being crossed over in figure eight fashion, said drive motor means driving said first pulley wheel means rotatably in a direction opposite from said first direction of rotation upon energization of said drive motor means in a second, opposite electrical sense, to drive said capstan shaft in said first rotatable direction at a second speed, greater than said first speed for transporting said tape more rapidly through said cartridge in said first direction.

3,850,358
CONTINUOUS COMPLIANT GUIDE FOR MOVING WEB

Michael L. Nettles, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation-in-part of Ser. No. 210,034, Dec. 20, 1971, abandoned. This application Feb. 26, 1973, Ser. No. 335,609
Int. Cl. B65h *23/32*
U.S. Cl. 226—198 **23 Claims**



1. Apparatus for guiding a web over an arcuate path both immediately before and immediately after a work station to achieve highly accurate guiding of the web past the work station, said apparatus comprising:

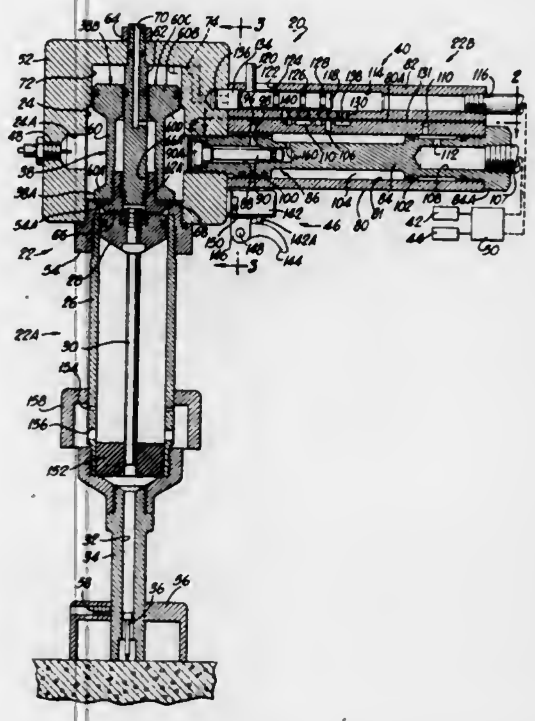
a compliant edge guide for guiding the web in the same lateral position along the arcuate path irrespective of variations in the width of the web or variations in the dynamic forces on the web;

means for mounting said compliant guide continuously along the arcuate path both before and after the work station;

said compliant guide being both transversely and pivotally compliant with a low spring constant whereby guide forces applied to the web are nearly constant and uniform continuously along the arcuate path both before and after the work station irrespective of deflection of the guide by the web.

3,850,359
FASTENER DRIVING TOOL

Allen R. Obergfell, Park Ridge, Ill., assignor to Fastener Corporation, Franklin Park, Ill.
Filed May 11, 1973, Ser. No. 359,235
Int. Cl. B25c *1/08*
U.S. Cl. 227—10 **17 Claims**



1. A power actuated fastener driving tool comprising

a housing having a forward head portion and a rearwardly extending handle portion,

a cylinder and a fastener receiving structure included in said head portion,

fastener driving means including driver means movable relative to the fastener receiving structure and a driver operating piston slidable within the cylinder,

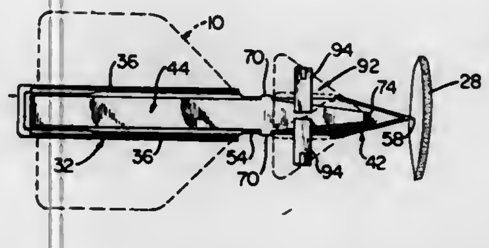
a combustion chamber in the housing,

fluid actuated valve means for controlling communication between the cylinder and the chamber to selectively admit gases from the chamber into the cylinder,

and manually operable control means on the handle portion of the housing for selectively supplying a combustible mixture to the chamber and controlling the operation of the valve means.

3,850,360
TAG APPLYING TOOL

Eugene B. Ritchey, Rt. 3, Box 58, Brighton, Colo. 80601
Filed Oct. 19, 1973, Ser. No. 407,919
Int. Cl. B25c *1/00*
U.S. Cl. 227—67 **19 Claims**



1. A tag applying tool for use in combination with a tag of generally flat resilient material formed with a laterally extensive base, a narrow neck connected at its aft end to the forward end of the base, and an anchoring head connected at its aft end to the forward end of the neck and provided with a narrow leading end and rearwardly diverging wings defining detent shoulders at the forward end of the neck, the tool comprising:

a main body having a fore and aft longitudinal axis and a handle to be gripped by an operator;

narrow elongate retainer means for holding the tag having means at the aft end to pivotally mount said retainer means on the aft end of the main body for application of driving force to the retainer means and having a piercing point at the forward end to pierce the element to be tagged;

the retainer means being adapted in operative position to lie adjacent to the upper edge of the main body and substantially parallel thereto, and being substantially longer than the main body to extend beyond the forward end thereof in operative position;

a bracket longitudinally movably mounted on the main body and extending forwardly beyond the forward end of the main body;

crimping means mounted on the forward end of the bracket and extending upwardly therefrom;

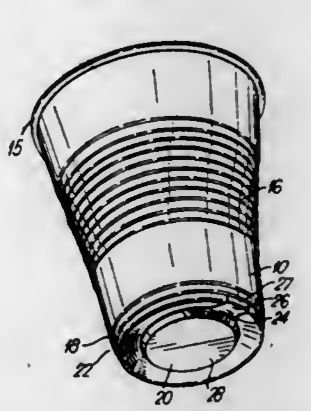
the retainer means being adapted to receive the tag with its anchoring head in flatwise engagement with the forward portion of the retainer means and spaced rearward of the piercing point and movable down into juxtaposition with the crimping means to cause the latter to engage the wings and fold them one over another and over the retainer means to reduce the lateral extent of the wings;

the retainer means being adapted to be forced by forward movement of the main body through the element to be tagged to an extent sufficient to carry the wings beyond the remote side of the element;

and the bracket and crimping means being movable rearward with respect to the main body by contact with the adjacent side of the element to release the wings and allow them to spread to anchoring position.

3,850,361
CONTAINERS

Robert H. Day, Bracknell, and James Blyth, Banbury, both of England, assignors to ITW Limited and Mars Limited, both of Slough, England
Filed Sept. 13, 1972, Ser. No. 288,609
Claims priority, application Great Britain, Sept. 16, 1971, 43230/71
Int. Cl. B65d *1/12, 81/36*
U.S. Cl. 229—1.5 B **1 Claim**



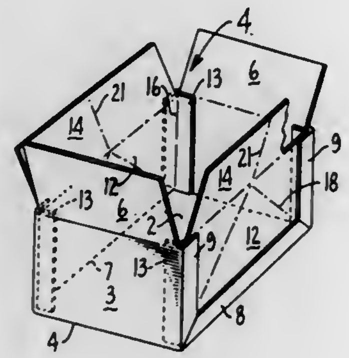
1. A disposable plastic cup comprising an outer cup and an inner cup disposed within said outer cup with an insulating air space therebetween, the upper end of said inner cup curled outwardly and downwardly over the upper end of said outer cup to join said inner and outer cups together and to form a drinking rim, the bottom wall of said inner cup being substantially flat, the bottom wall of said outer cup having a circular center portion, a first annular wall extending upwardly from said circular center portion, a second annular wall extending from the top of said first annular wall downwardly and outwardly to the lower end of the side wall of said outer cup whereby said first and second annular walls form an annular upwardly projecting supporting rib immediately beneath said flat bottom wall of said inner cup, the junction of said first and

second annular walls being formed as a circular weakened line which is discontinuous over one segment thereof, and radial weakened lines extending from the ends of said circular weakened line to the side wall of said outer cup to form a frangible tab for fracturing and removing said circular center portion.

3,850,362
CONTAINER CONSTRUCTION AND METHOD THEREFOR

Ray H. Stollberg, Concord, and Joseph W. Leakey, Danville, both of Calif., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Oct. 13, 1972, Ser. No. 297,413
Int. Cl. B65d *5/36*
U.S. Cl. 229—41 R **12 Claims**



1. A blank construction for a collapsible container of flexible sheet material having score lines arranged for folding of the container to collapsed condition when empty comprising three blanks securable together; a first of said blanks comprising a central substantially rectangular bottom wall panel, a substantially rectangular side wall panel hingedly connected to each of a pair of opposite edges of the bottom wall panel, a securing flange hingedly connected to each of the remaining edges of said bottom wall panel, and a securing flange hingedly connected to each edge of each side wall panel; a second and third of said blanks, each comprising a substantially rectangular side wall panel and a securing flange hingedly connected to each of opposite edges of each of the latter side wall panels; the securing flanges on said bottom wall panel being securable to the side wall panels of said second and third blanks and the remaining securing flanges of said blanks being at the upright corners of the container when set up with a pair of flanges at each corner, one of such corner flanges being an inside flange for adhesive bonding to the inside surface of the adjacent side wall panel, and the other of said flanges at each corner being an outside flange for adhesive bonding to the outside surface of the adjacent side wall panel; each of the hinge connections of said inside securing flanges including spaced apart openings coincident with the hinge connection to relieve stress at the corner when stress is placed on the corner as the container is collapsed from set-up condition.

3,850,363
CARTON

Lester G. Jacobs, 3241 Airway St. S.E., Wenatchee, Wash. 98801

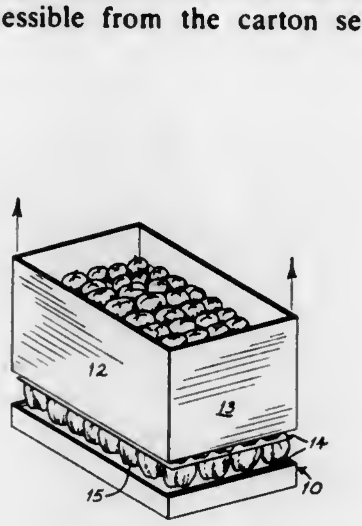
Filed July 16, 1973, Ser. No. 379,345
Int. Cl. B65d *5/54, 85/34*
U.S. Cl. 229—51 R **1 Claim**

1. In a carton for fresh produce having a carton section of rectangular configuration including a bottom wall assembly and full height side and end walls joined about the bottom wall assembly, the side and end walls being open across their upper edges for reception of produce in vertically stacked layers on horizontal trays arranged parallel to the bottom wall assembly, the improvement comprising:

a single length of flexible cord located circumferentially about the interior surfaces of the side and end walls of the carton section at an elevation adjacent to the bottom wall assembly;

at least one end of the cord being secured to the carton section;

the remaining end of the cord being fixed to a tab formed on the carton adjacent to said one end of the cord, and manually accessible from the carton section exterior,



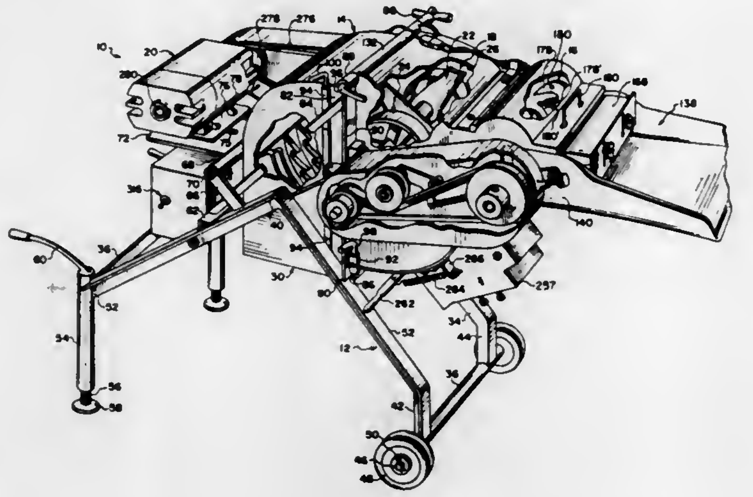
whereby the tab and cord can be manually pulled outward of the carton section to sever the side and end walls of the carton section without disturbing the produce as arranged in the trays;

the cord being located about the side and end walls at a height above the bottom wall assembly substantially equal to the elevation of the first tray above the bottom wall assembly.

3,850,364
PORTABLE COMPOST GRINDING APPARATUS

Raymond E. Robbins, Rt. No. 1, Lowell, Ark. 72745

Filed Aug. 15, 1973, Ser. No. 388,452
Int. Cl. B02c *13/06*
U.S. Cl. 241—51 **26 Claims**

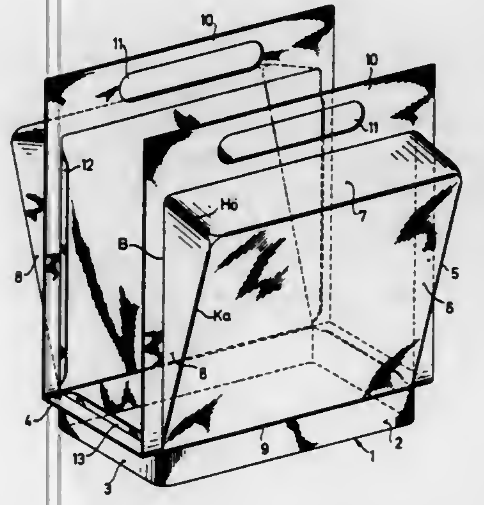


1. A compost grinder comprising: a housing having circumferentially spaced inlet and discharge openings and opposite axially aligned air intake openings, comminuting means arranged within said housing and including rotary cutter means arranged for rotation about a horizontal axis substantially coaxial with said air intake openings within said housing and stationary cutter means arranged between said rotary cutter means and said discharge opening, feed means arranged to transport composting material to said comminuting means in a radial direction relative to said rotary cutter means, drive means, including a motor, operably connected to said rotary cutter means, means coupling said rotary cutter means to said feed means synchronously to drive same, and fan means associated with said rotary cutter means for operation therewith, said fan means arranged adjacent to said air intake openings whereby air is introduced axially into said housing simultaneously with the operation of said rotary cutter means propelling the composting material through the comminuting means and the discharge opening.

3,850,365
PORTABLE CASE

Werner Dietrich, Wiesbaden, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Sept. 20, 1973, Ser. No. 399,085
Claims priority, application Germany, Sept. 23, 1972, 7235172
Int. Cl. B65d *5/00, 5/42*
U.S. Cl. 229—52 B **4 Claims**



1. A one-piece wrapping case comprising a rectangular dish-shaped base portion having a planar bottom and planar sides and ends perpendicular to the bottom, said ends being higher than said sides,

cover means hinged to each of said sides along a bendable edge, said cover means comprising a planar cover wall, a rectangular cover top wall perpendicular to the planar cover wall and to two parallel cover side walls,

the cover walls each having the shape of a right-angled triangle, the hypotenuse of which corresponds to the length of the cover means edge, and the height of each cover side wall corresponding to half the width of the end walls of the base portion, and

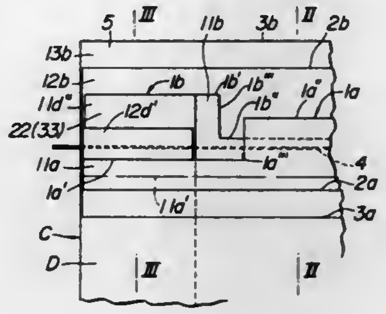
flange means projecting from the edges of the cover side walls and the cover top walls.

3,850,366
MULTI-LAYER BAGS

Akio Saito, No. 1417 Futasegawa-cho, Kakegawa-shi, Shizuoka-ken, Japan

Filed Mar. 11, 1971, Ser. No. 123,243
Int. Cl. B65d *31/02*
U.S. Cl. 229—55 **4 Claims**

1. A multi-layer bag comprising a plurality of layers of bag forming material, said layers being superposed relative to each other to form a front sheet and a rear sheet, gussets formed at both longitudinal side edges of said bag between said front sheet and said rear sheet, the upper edges of at least some of the layers being displaced in the longitudinal direction to define stepwise bonding margins which are folded back and bonded to said front sheet so as to seal the mouth of said bag, and a bag opening cord disposed across said bag near said mouth and secured between said layers with the opposite ends projecting beyond said side edges, said cord being positioned such that said bag can be opened

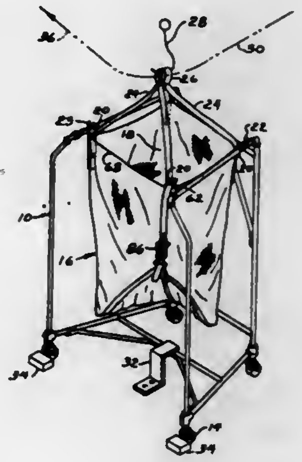


by pulling the cord without breaking at least the innermost layer.

3,850,367
LAUNDRY SLING BAG

Charles J. Fortriede, Highland Heights, Ky., assignor to McGraw-Edison Company, Elgin, Ill.

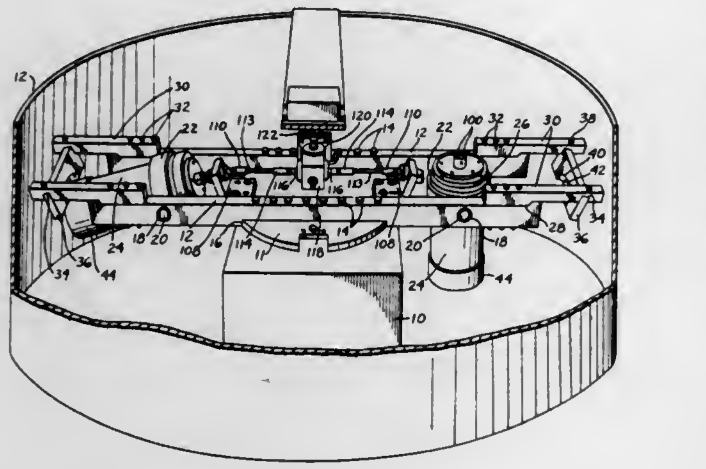
Division of Ser. No. 165,989, July 26, 1971, Pat. No. 3,743,122. This application Feb. 9, 1973, Ser. No. 331,323
Int. Cl. B65d *29/00*
U.S. Cl. 232—1 B **7 Claims**



1. A sling bag, comprising a tubular form of fabric having parallel top and bottom tube lines, means secured to the tubular form adjacent the top tube line suited for suspending the bag, the lower edge of the tubular form having an irregular hem line where approximately half of the hem line is shorter than or above the bottom tube line and where the approximate other half of the hem line is longer than or below the bottom tube line, the shorter hem line side of the bag being smoothly contoured from the bottom tube line at both sides of the bag half to a single maximum relieved portion generally centered between the sides and the longer hem line side of the bag being smoothly contoured from the bottom tube line at both sides of the bag half across two defined closure flaps each located generally one-fourth the way in to a relieved center portion shorter than the flaps, said closure flaps being defined to cross the open tube bottom and be secured relative to the bag at the shorter hem line side to close the bag, and quick release means including catch means on the ends of the two defined closure flaps for releasably holding the flaps closed.

3,850,368
APPARATUS FOR CENTRIFUGAL COMPACTION

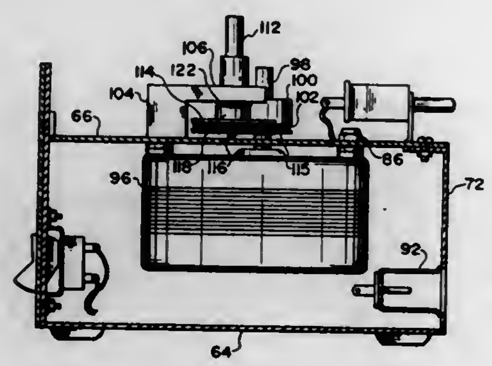
Benjamin Clark Boeckeler, Greensburg, Pa., assignor to Kennametal Inc., Latrobe, Pa.
Filed Feb. 12, 1973, Ser. No. 331,792
Int. Cl. B04b *9/08*
U.S. Cl. 233—25 **7 Claims**



1. In an apparatus for the centrifugal compaction for granular materials, a support, means engaging said support and defining a first axis of rotation thereof, flasks pivotally mounted on said support in circumferentially distributed relation and radially spaced from said first axis, each flask being swingable outwardly at the bottom in response to rotation of said support, chamber means carried by each flask and having a cavity adapted to receive a slurry consisting of the said granular material to be compacted and a liquid, a drive shaft on said first axis for rotating said chamber means about respective second axes extending angularly to said first axis as said support rotates about said first axis, said second axes being inclined at a predetermined angle to a plane perpendicular to said first axis, drive means responsive to outward swinging movement of the lower ends of said flasks on said support for drivingly connecting said chamber means to said drive shaft, and means on said support for engaging and halting said flasks at said predetermined angle of inclination to said plane.

3,850,369
CENTRIFUGE FOR PREPARING PLATELET RICH PLASMA

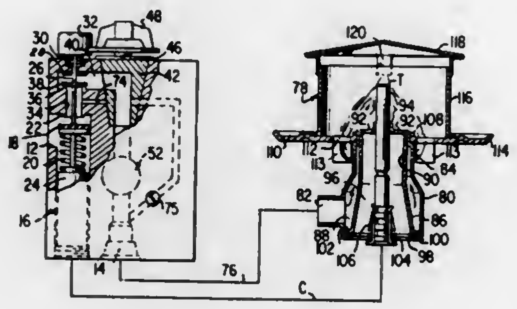
Brian S. Bull, Loma Linda, Calif.; Oscar Proni, Hollywood, and Loran V. Melnick, Miami, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.
Filed Mar. 8, 1973, Ser. No. 339,403
Int. Cl. B04b *9/10*
U.S. Cl. 233—26 **10 Claims**



1. A centrifuge device comprising a centrifuge head mounted for rotation, sample holder means arranged on said centrifuge head for receiving at least one elongate sample container on the circumference of said centrifuge head, each sample container having an open end and being oriented on said centrifuge head with its open end closer to the rotational axis of said centrifuge head and such that the long axis of said container intersects a plane normal to said rotational axis at an angle between approximately 70° and 90°, drive means including a drive motor, for rotating said centrifuge head, timing means operative on said drive means for rotating said centrifuge head in timed cycles and said drive means including spinner means coaxially mounting said centrifuge head to enable free rotation of said centrifuge head, said spinner means having engaging means mounted thereon and said centrifuge head having depending post means arranged to be engaged by said engaging means to drive said centrifuge head only when the spinner means is rotated and to be released therefrom when rotation of said spinner means ceases, means to effect cessation of rotation of said spinner means immediately upon de-energization of said drive motor whereby to permit free rotation of said centrifuge head on a gradually diminishing rate to assume a rest condition.

3,850,370
GASEOUS FUEL BURNER SYSTEM

Jay R. Katchka, Long Beach, and Henry C. Braucksiek, Buena Park, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.
Division of Ser. No. 98,246, Dec. 15, 1970, Pat. No. 3,762,639. This application Aug. 28, 1973, Ser. No. 392,403
Int. Cl. F23n *1/00*
U.S. Cl. 236—15 A **5 Claims**



1. In a fuel burning system, the combination comprising burner apparatus operative at dual rates for alternately sustaining a high rate flame and a low rate flame,

control valving means disposed between said burner apparatus and a source of fuel, and being operative to deliver fuel flows at a high rate and low rate,

said burner apparatus including a burner housing having an inlet chamber, outlet port means from said inlet chamber and a single inlet port for said inlet chamber,

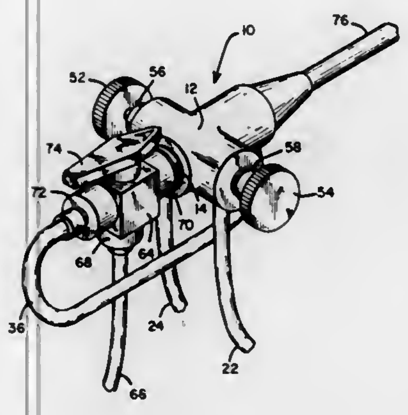
a single fuel conduit between said control valving means and the single inlet port for said inlet chamber whereby said burner housing produces a high rate flame or a low rate flame in accordance with the rate of fuel flow delivered by said control valving means,

said burner housing including a second chamber, aperture means establishing communication between said inlet chamber and said second chamber, and outlet ports at an end of said second chamber whereby a flame is sustained at the outlet ports from said second chamber and at the outlet port means from said inlet chamber to define the high rate flame, and

said control valving means including a thermostatic control device movable between controlling positions to change the rate of fuel flow between its high and low rates.

3,850,371
HAND HELD SPRAY GUN

James A. Trapp, 2425 W. County Rd. C-2, Saint Paul, Minn. 55113
Filed Mar. 25, 1974, Ser. No. 454,448
Int. Cl. B05b *15/02*
U.S. Cl. 239—113 **2 Claims**



1. A washing apparatus comprising:

a. an inlet means adapted to be connected to a high pressure water supply;

b. a tubular wand;

c. first and second fluid flow paths connected between said inlet means and one end of said tubular wand;

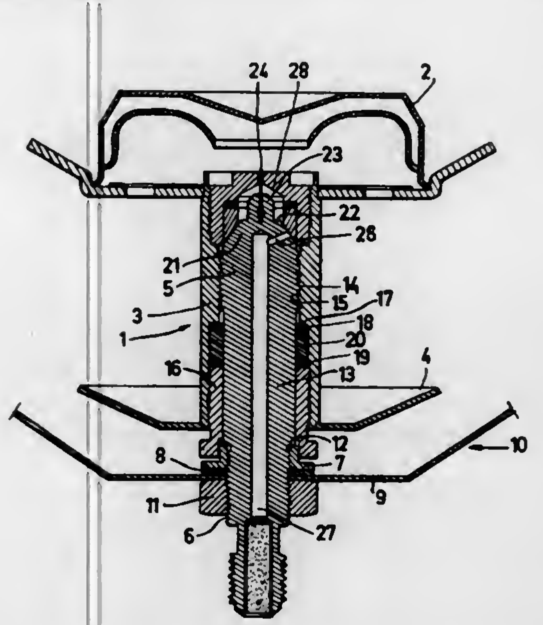
d. means disposed between said inlet means and said first and second fluid flow paths for selectively directing the flow of water alternatively through said first path, said second path or blocking the flow of water through either said first or second paths;

e. means disposed in said first fluid flow path for allowing the introduction of chemicals therein when water flows through said first fluid flow path; and

f. means including first and second valves connected between said last named means and first and second reservoirs which are adapted to contain chemical solutions.

3,850,372
STOVE AND BURNER ASSEMBLY

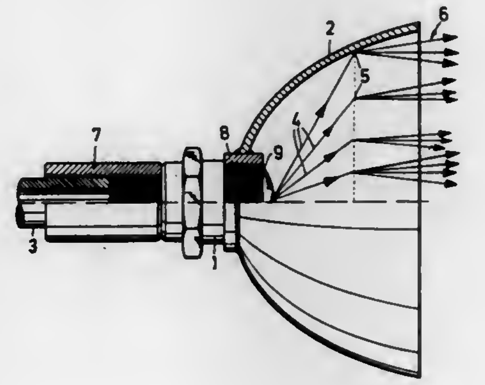
Harald Finnstrand, Branford, Conn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 350,950, April 13, 1973, Pat. No. 3,807,381. This application Jan. 17, 1974, Ser. No. 434,244
Int. Cl. B05b *15/02;* **F23d** *13/28*
U.S. Cl. 239—123 **3 Claims**



1. A burner assembly of the type utilizing liquid fuel comprising concentric inner and outer members rotatable with respect to each other to produce relative axial movement therebetween, said outer member including a burner nozzle, a fuel passage defined in said inner member and extending to a valve surface on said inner member and a cavity defined between said members, an axially movable member in said cavity having a surface adapted to seal said valve surface, and a resilient member between said insert and said outer member.

3,850,373
ATOMIZING DEVICE

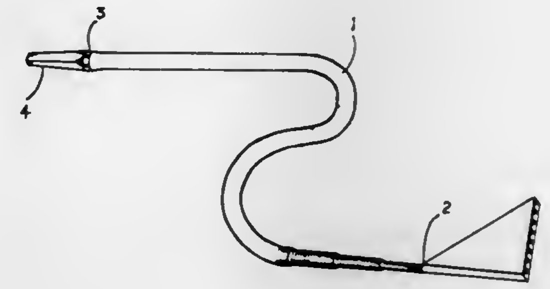
Erhard Grolitsch, Strauchergasse 23, Graz, Austria
Filed July 11, 1973, Ser. No. 378,260
Int. Cl. B05b *1/26*
U.S. Cl. 239—499 **19 Claims**



1. In an atomizing device; a concave reflector having a central axis of symmetry and closed on one axial side and open on the other axial side, conduit means for supplying fluid under pressure to a point on said axis near the closed side of said reflector, atomizing means at said point operable to atomize the fluid supplied thereto into particles, said atomizing means supplying said particles at high velocity along a conical path which has the apex at said atomizing means and the base intersecting the surface of said reflector in a region axially between the atomizing means and the open side of the reflector whereby the particles are further broken up by the impingement thereof against said surface.

3,850,374
CAMPFIRE STARTING DEVICE

Sam Snoddy, 524 Isabella, El Paso, Tex. 79922
Filed Feb. 9, 1973, Ser. No. 331,192
Int. Cl. B05b *9/08, 61/30;* **C10l** *11/08*
U.S. Cl. 239—530 **1 Claim**



1. A device for use as an aid when starting a campfire or the like by discharging air at a desired location, said device comprising a rigid mouthpiece having a tubular passageway therethrough, said mouthpiece adapted to be held in the mouth of a user with air being blown through the passageway when the user exhales or blows through the passageway, an elongated tube connected to said mouthpiece at one end thereof, said tube being flexible throughout its length and forming a continuation of said passageway, and an elongated rigid nozzle con-

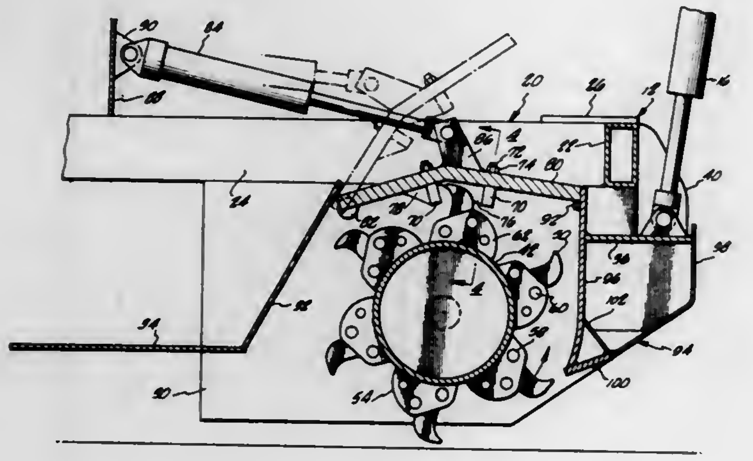
nected to the end of the tube remote from the mouthpiece, said nozzle being provided with a passageway forming a continuation of the passageway in the mouthpiece and flexible tube for discharge of air therefrom directly onto a desired point of a campfire, said nozzle having a length sufficient to enable the end thereof connected to the tube to be grasped and handled in a manner to position the other end into the desired location in a campfire with the grasping hand spaced from the fire to reduce the possibility of burns, said nozzle being constructed of fire resistant material, said mouthpiece, tube and nozzle being oriented in compact relation for positioning in a garment pocket or the like and being light in weight to facilitate carrying thereof by backpacking campers or the like, said mouthpiece including a one-way valve assembly therein to prevent the user from inhaling through the nozzle and tube, said nozzle including a sectional telescopically adjustable tube member, the outermost tube member being laterally enlarged into fan-shaped configuration and having a plurality of apertures for discharge of air or breath.

ERRATUM

For Class 241—51 see:
Patent No. 3,850,364

3,850,375
MOBILE SHREDDER

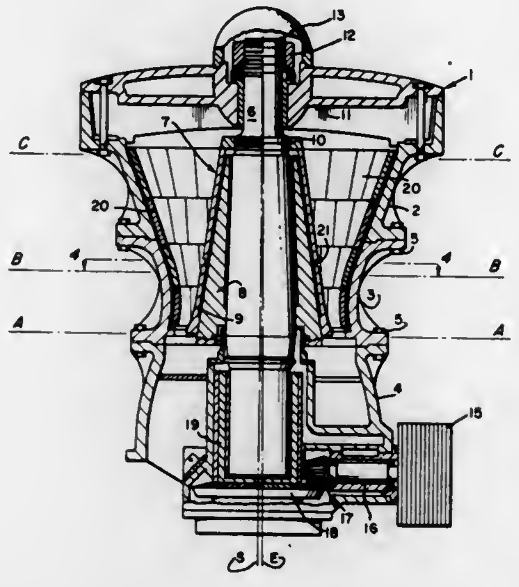
Fred Avery Ford, 49 Summit Ave., Redlands, Calif. 92373
Filed Jan. 11, 1974, Ser. No. 432,606
Int. Cl. B02c *21/02*
U.S. Cl. 241—101.7 **14 Claims**



1. A mobile shredder mounted to a heavy-duty carrier and comprising
- a support frame adjustably mounted to the heavy-duty carrier;
- a drum rotatably mounted to said support frame, the axis of said drum being substantially horizontal and said drum being exposed to the ground over which the carrier is directed;
- means for forcibly rotating said drum;
- a plurality of shredding elements mounted to said drum and extending outwardly therefrom;
- means fixed to said support frame cooperating with said shredding elements for shredding material introduced to said shredder; and
- a breaker bar assembly rigidly mounted to said support frame substantially parallel to the axis of said drum, said breaker bar assembly terminating at a line near the outermost path of said shredding elements.

3,850,376
MANTLE FOR A GYRATORY CRUSHER

Edwin C. Mertz, Lehighton, Pa., assignor to Fuller Company, Catasugua, Pa.
Filed June 25, 1973, Ser. No. 373,572
Int. Cl. B02c *2/04*
U.S. Cl. 241—207 **19 Claims**



1. A mantle for use with a gyratory crusher including a normally fixed concave and a head mounted for gyratory movement relative to said concave whereby when said head gyrates, material between said concave and said head is crushed, said mantle comprising:
- wearable material generally shaped as a truncated cone adapted to be mounted on the head of a crusher and having an area of greatest stress when material is being crushed; said mantle having at least one groove in the surface thereof above the area of greatest stress for compensating for deformation of the wearable material caused by stress applied to the wearable material when material between the concave and the head is crushed whereby said groove will decrease in area when the wearable material deforms.

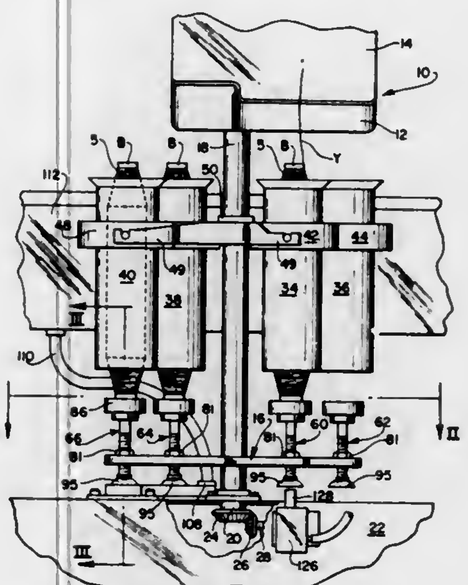
ERRATUM

For Class 242—129 see:
Patent No. 3,850,394

3,850,377
APPARATUS FOR READYING WOUND BOBBINS

Thomas Edgar Pitts, Cranston, and William Emil Stoppard, Warwick, R.I., assignors to Leesona Corporation, Warwick, R.I.
Filed July 24, 1973, Ser. No. 382,144
Int. Cl. B65h *49/12*
U.S. Cl. 242—18 R **10 Claims**

1. Apparatus for readying a bobbin wound with a supply of yarn thereon and having a bore axially therethrough comprising, carrier means for supporting said bobbin in a reserve position and an active unwinding position, means operable to provide a zone of negative pressure through the bore of said bobbin when said bobbin is in said reserve position, said zone of negative pressure acting to induce the outer unwinding end of the yarn on the bobbin into the bore, and means for actuating said carrier means to move said bobbin from said reserve position to said active unwinding position after the yarn end has been deposited in said bore.

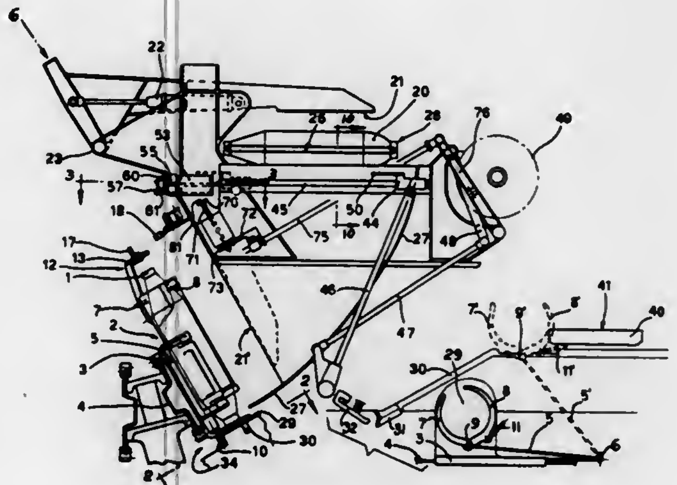


ERRATUM

For Class 242—65 see:
Patent No. 3,850,462

3,850,378
METHOD AND APPARATUS FOR PLACING A COP WITH ITS THREAD DRAWN OUT IN A MOVABLE STORAGE POINT

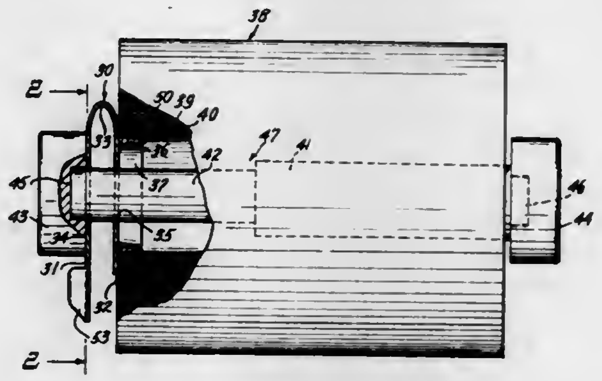
Luciano Savio, Pordenone, Italy, assignor to Officine Savio S.p.A., Pordenone, Italy
Filed June 2, 1972, Ser. No. 259,154
Claims priority, application Italy, June 9, 1971, 83358/71
Int. Cl. B65h *54/22*
U.S. Cl. 242—35.5 R **21 Claims**



1. A method for placing a cop with its thread drawn out into a container comprising movable storage point, comprising the steps of: detecting the presence or absence of a cop in a container; moving the container detected as being empty through a first travel path to bring it to a cop loading station; moving the container detected as containing a cop through a second travel path, said first travel path being different from said second travel path of a container detected as containing a cop; opening said container in said loading station; detecting the thread end of a wound cop; loading said cop and thread-end into said empty container separately; and discharging a cop from a container into which it has been loaded when its thread-end has not been detected.

3,850,379
BRAKE ACCESSORY FOR ROLLS OF TOILET PAPER AND THE LIKE

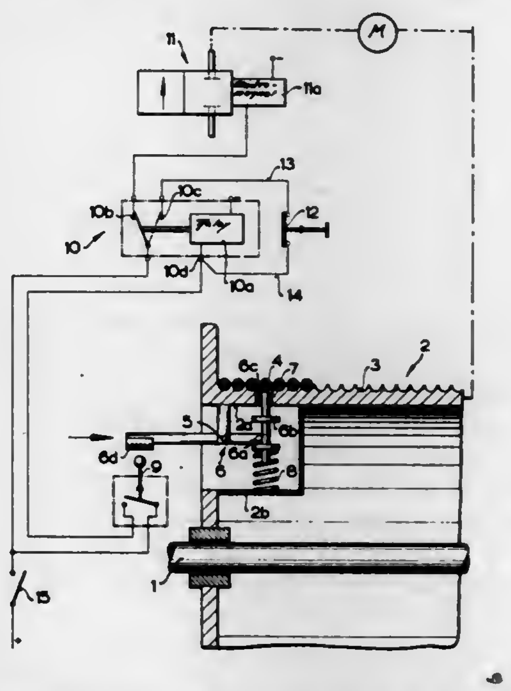
Mitchel Stern, 28 S. Fourth St., Camden, N.J. 08101
Filed Feb. 22, 1973, Ser. No. 334,616
Int. Cl. A47k *10/32*
U.S. Cl. 242—55.2 **3 Claims**



1. As a new article of manufacture, a brake for a roll of paper positioned outwardly of the paper comprising a spring clip made of a single piece of material and comprising first and second legs having registering openings therein, a curved section interconnecting said legs together, a collar affixed to the outer surface of said second leg and having an opening therein that registers with the openings in said first and second legs, said first leg being longer than said second leg, in combination with first and second paper holders having recesses therein, a roll of paper having a cylindrical core therein, said collar snuggly fitting in one end of said core, and a support unit including telescoping elements having their end portions engaging the recesses of the paper holders, one of said telescoping section extending through said collar and through the registering openings in said spring clip, said spring clip being interposed between one of said paper holders and said roll of paper whereby pressure is exerted on the roll of paper to prevent the paper from being unwound too rapidly.

3,850,380
SAFETY DEVICE FOR CABLE WINCH DRUM

Wilhelm Kranefeld, Wetter-Ruhr, Germany, assignor to Orenstein & Koppel Aktiengesellschaft, Berlin, Germany
Filed June 7, 1972, Ser. No. 260,582
Claims priority, application Germany, June 9, 1971, 2128614
Int. Cl. B65h *63/00, 25/14;* **B66h** *1/48*
U.S. Cl. 242—54 R **1 Claim**

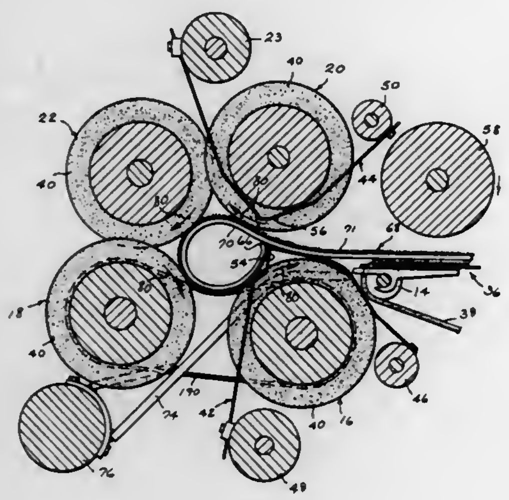


1. In combination with a winch drum having peripheral grooves for receiving more than two layers of windings of a

cable, a safety stopping device which includes: lever means journalled and pivotally supported within said drum internally thereof for safety reasons and having a first arm within said drum and a second arm projecting axially outwardly from said drum, said drum having a bore leading from the interior of said drum through the latter into that one of said grooves which is intended to receive that cable winding which when being lifted out of said one groove is intended to initiate the stopping of said drum, mandrel means provided with an abutment connected to said first arm and located within said drum and normally extending into said bore, said mandrel means with said abutment being prevented from extending into said one groove by the cable winding in said one groove, pressure spring means for safety reasons continuously urging said mandrel means to move into said one groove, fluid motor means drivingly connected to said drum for driving the same, and control means operatively connected to said motor means for controlling the latter, said control means including magnetically operated fluid valve means for controlling flow of fluid to said motor means, a holding relay having contacts to energize said magnetically actuated fluid valve means to hold said valve means open to supply fluid to said motor means, said relay when energized opening said contacts and closing a holding circuit, switch means having an operating arm engageable by said second arm in response to said mandrel means moving into said one groove when the cable winding in said one groove leaves the latter to close said switch means and energize said relay to thereby cause the supply of working medium to said motor means to stop automatically, and a manual switch in said holding circuit for said relay to deenergize said relay and open said valve means.

3,850,381
DEVICE FOR ROLLING SECTIONS OF CARPET

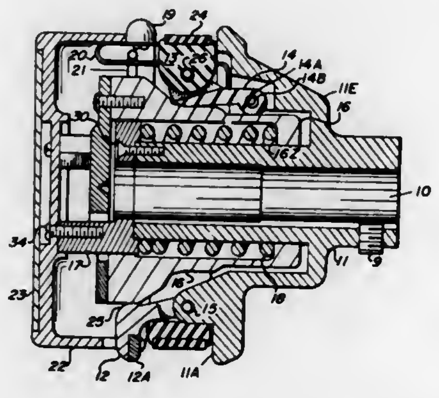
Arthur Ronald Moore, 3512 Hilly Ln., Elkhart, Ind. 46514
Filed Apr. 18, 1972, Ser. No. 245,080
Int. Cl. B65h *17/12*
U.S. Cl. 242—66 **10 Claims**



1. A device for rolling a section of carpet having a face for walking upon and a back, comprising roller means engageable with the leading edge of said carpet section for forming said edge into a roll, means causing rotation of said roller means in one set of directions for rolling said carpet section with its back out and in an opposite set of directions for rolling said carpet section with its face out, and guide means associated with said roller means for assisting in said rolling of the carpet section, said guide means being shiftable between operative and inoperative positions depending upon whether said carpet section is to be rolled with its back or face out, said rolling device having feed and discharge ends, said roller means including an upper roller and two lower rollers, conveyor means for directing the advancement of said carpet section into said feed end and between said upper and lower rollers, said roller rotating means causing said lower rollers to rotate in the direction of advancement of said carpet section and causing said upper roller to rotate in a direction opposite to said advancement of said carpet section for rolling the section with its back out, said roller rotating means causing said lower rollers to rotate in a direction opposite to said advancement of said carpet section and causing said upper roller to rotate in the direction of said advancement of said carpet section for rolling the section with its face out, said guide means including finger means, one of said lower rollers being located nearer said feed end than the other of said lower rollers, each lower and upper rollers having a peripheral edge adapted to contact said carpet section and urge said section into a roll, said finger means being associated with each of said one lower roller and upper roller and being shiftable between an operative position in which said finger means projects beyond the periphery of its associated roller to direct said carpet section away from such associated roller upon entry of the carpet section between said upper and lower rollers and an inoperative position in which said finger means is located within the periphery of its associated roller to permit contact of the carpet section with such associated roller, means for shifting each finger means between its said operative and inoperative positions, the finger means associated with said upper roller being located in its said operative position and the finger means associated with said one lower roller being located in its said inoperative position when said carpet section is to be rolled with its back out, and said finger means associated with said upper roller being located in its said inoperative position and said finger means associated with said one lower roller being located in its said operative position when said carpet section is to be rolled with its face out, and wherein said conveyor means is adapted to contact the back of said carpet section and to feed said section between said upper and lower rollers at a constant feed rate whether rolling said carpet section with its face in or face out, said upper and lower rollers adapted to contact the back of said carpet section in rolling the section with its back out and to contact the face of said section in rolling the section with its face out, said roller rotating means including means for increasing the rotational speed of said upper and lower rollers, relative to the speed of said conveyor means, when said carpet section is rolled with its face out.

3,850,382
SEMIAUTOMATIC FILE REEL HUB

Richard Grant Clingerman, and O. Roger McAllister, both of Oklahoma City, Okla., assignors to Honeywell Information Systems Inc., Waltham, Mass.
Filed Sept. 28, 1972, Ser. No. 293,214
Int. Cl. B65h *19/02*
U.S. Cl. 242—68.3 **8 Claims**



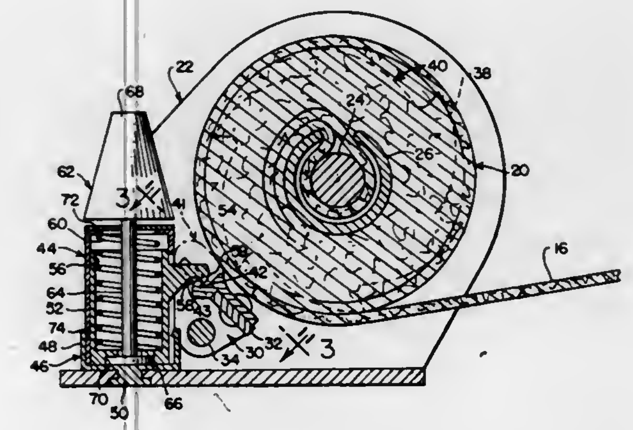
1. A hub assembly for a tape transport mechanism on which reels are automatically loaded, comprising:

A. a hub base, adapted to be fixed on a tape drive shaft, and having a flange portion for engaging one side of a reel;
B. clamp elements, pivotally mounted on said hub base, for selectively engaging the other side of a tape reel and press the tape reel against said flange portion;
C. collets, movably mounted on said hub base, for radial movement towards a reel engaging position;

D. a cam, slidably mounted coaxially with said hub base, having surface portions adapted to selectively drive said clamp elements and said collets into reel engaging positions;
E. a spring element, between said hub base and said cam, for driving said cam in a direction such that said clamp elements and said collets engage a mounted reel.

3,850,383
SEAT BELT RETRACTOR APPARATUS

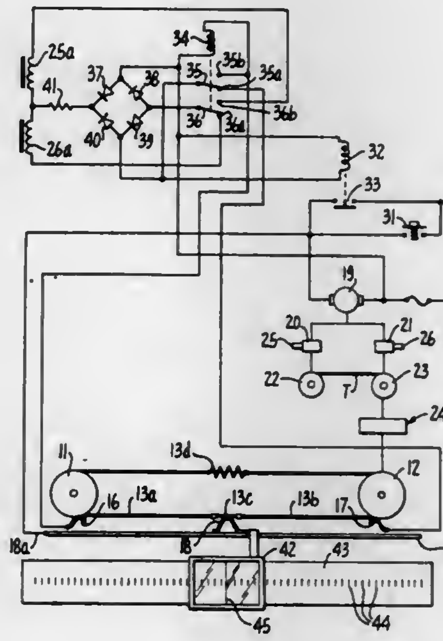
Gerald F. Lewis, 1850 Columbia, Berkley, Mich. 48072
Filed Mar. 8, 1972, Ser. No. 232,822
Int. Cl. A62b *35/02;* **B65h** *63/00*
U.S. Cl. 242—107.4 **15 Claims**



1. In a seat belt retractor; the combination of a frame having a reel rotatably supported thereon; a seat belt wound on the reel; reel bias means urging the reel to a belt retracted position; latching means resisting rotation of the reel in a belt extended direction; the latching means including ratchet means revolvable with the reel and a latch element rotatably positioned on the frame, latch bias means urging the latch element to a latched position in engagement with the ratchet means so as to prevent belt extending rotation of the reel, belt follower means fixed to the latch element for moving the latch element to an unlatched position out of engagement with the reel by contact with the belt when retracting thereby permitting rotation of the reel in both belt retracted and belt extended directions; and inertia operated means operative to engage the latch element for maintaining the latch element in the unlatched position, the inertia operated means also being operative to disengage the latch element so as to release the latch element in response to inertia forces of a certain magnitude acting upon the inertia operated means in any direction so as to permit the latch element to be moved by the latch bias means to the latched position and thereby restrain belt extending rotation of the reel, the inertia operated means including pendulum means, support means on the frame supporting the pendulum means for movement in any direction from a set position to an unset position in response to the inertia forces of the certain magnitude, the pendulum means being arranged so as to return to the set position upon removal of the inertia forces, locking means maneuverable, when the pendulum means is moved from the set position to the unset position thereof, by the pendulum means from a locked position in which the latch element is engaged by the locking means so as to maintain the latch element in the unlatched position when moved thereto by the belt to an unlocked position in which the latch element is disengaged by the locking means so as to release the latch element for return to the latched position.

3,850,384
MECHANICAL ANALOG COMPUTER AND LENGTH MEASURING APPARATUS

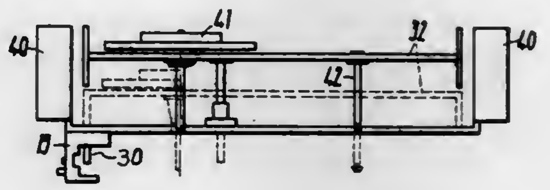
Lyle Gilbert Priest, Palo Alto, Calif., assignor to Information Design, Inc., Menlo Park, Calif.
Division of Ser. No. , , and a continuation-in-part of Ser. No. 156,660, June 25, 1971, Pat. No. 3,710,221. This application Oct. 24, 1972, Ser. No. 299,887
Int. Cl. B65h *59/38;* **G03b** *1/02;* **G11b** *15/13*
U.S. Cl. 242—191 **9 Claims**



1. An analog computer device comprising means defining first and second grooved surfaces, each formed in a spiral about an axis and having substantially the same radial pitch; a flexible cord, one portion of said cord being wound around the first grooved surface, a second portion wound around said second grooved surface, and a third portion intermediate said first and second portions tangentially extending from said first and second grooved surfaces at equal radial distances from the axis of each spiral; and means rotatably mounting said means defining first and second grooved surfaces upon their spiral axes, a rotation thereof resulting in a winding up of said cord upon one grooved surface and unwinding said cord from the other grooved surface, the length of unwound cord remaining substantially constant.

3,850,385
CASSETTE TYPE TAPE RECORDER

Horst Rubi, Himmelsthur, Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Germany
Filed July 14, 1972, Ser. No. 271,681
Claims priority, application Germany, July 17, 1971, 2135886
Int. Cl. G11b *15/24, 15/29, 15/10*
U.S. Cl. 242—198 **16 Claims**



1. Cassette loaded tape recorder comprising
a guide holder (**15**) for a cassette (**29**) adapted to locate the cassette in the recorder and to guide the cassette in a linear path during broadside insertion thereof and during removal thereof from the recorder by a broadside motion of the cassette;

carrier means (32) adapted to carry the drive mechanism (41) for the tape in the cassette, said carrier being movable between driving engagement position with the cassette and a released position;

carrier operating means (FIG. 1; FIG. 2; FIGS. 3,4,40) adapted to be engaged by a surface of the cassette (29) during its insertion in said path and linked to said carrier means (32) to effect movement thereof into cassette engaged position only after the cassette has substantially reached its operating position, said carrier operating means comprising an over-center spring means (18) connected to the carrier means (32), the carrier operating means including a projection (30) adapted to be engaged by the cassette (29) and connected to said spring means (18) to move the spring means upon engagement of the cassette and projection until the dead center position of the spring means is reached and the spring means then moves the carrier means (32), and with it the cassette locking means (42) into cassette engaged position without substantial further motion of the cassette;

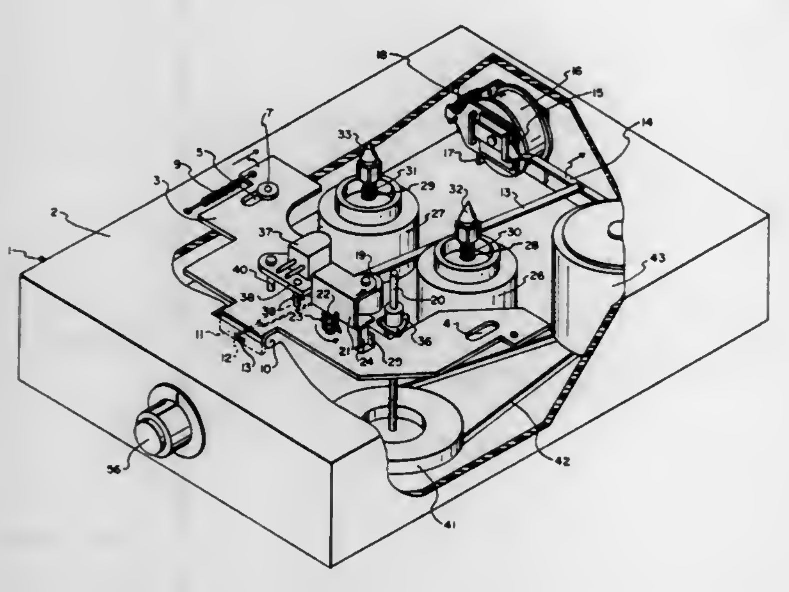
carrier guide means (42) guiding movement of the carrier means (32) upon movement of the carrier means after complete insertion of the cassette in a direction transverse to the guide path;

and cassette locking means (42), movable with said carrier means and locking the cassette in position upon movement of the carrier means into cassette engaged position.

3,850,386
TAPE TRANSPORT ARRANGEMENT

Joseph J. Zimmermann, Elm Grove, Wis., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 15, 1972, Ser. No. 315,754
Int. Cl. B11b *15/32;* G03b *1/04*
U.S. Cl. 242—203 4 Claims

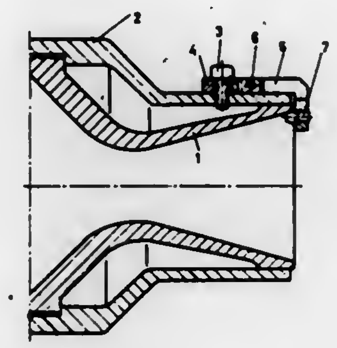


1. In a tape transport arrangement for transferring a length of tape from one location to another, first drive means for moving said tape in a first direction; second drive means for moving said tape in a second direction opposite to said first direction; transport control means, connectible to a source of electrical potential, for differentially applying an operating potential to said first and second drive means whereby said tape may be selectively moved in said first or second directions; third driving means for moving said tape at a predetermined rate; and tape drive control means responsive to the current supplied to said first and second drive means falling within a predetermined range of currents to cause said third driving means to move said tape at said predetermined rate.

3,850,387
DEFLECTION DEVICE FOR ROCKET MOTOR PROPELLED PROJECTILES

Bjorn Ove Bjornson, and Yngve Bertil Stradalen, both of Karlskoga, Sweden, assignors to AB Bofors, Bofors, Sweden

Filed July 16, 1973, Ser. No. 379,661
Claims priority, application Sweden, July 31, 1972, 9944/72
Int. Cl. F42b *13/30*
U.S. Cl. 244—3.22 5 Claims

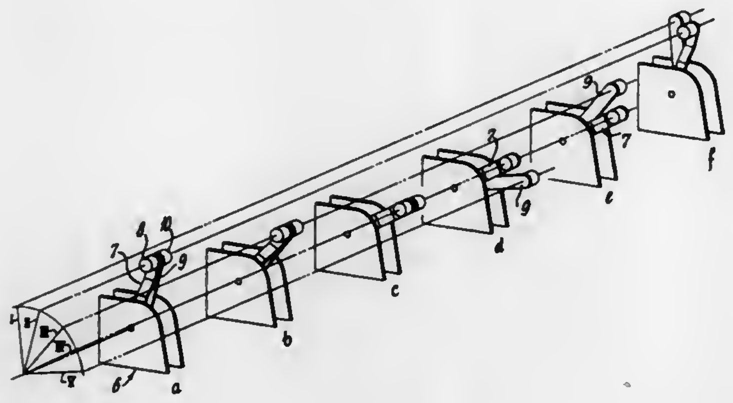


1. A deflection device for rocket motor propelled projectiles, comprising a deflection member in the form of a flap arranged to achieve a deflecting pulse through deflection of the direction of the jet of gas flowing out through the nozzle of the rocket motor, the deflection member being rotatably supported from an active position, in which it extends into the exhaust area of the nozzle and is blocked by means of a locking member which can be released, to an inactive position outside the exhaust area of the nozzle, said locking member consisting of a pin made of a material that is sensitive to erosion under the influence of the jet of gas.

3,850,388
INTEGRATED LIFT/DRAG CONTROLLER FOR AIRCRAFT

John W. Olcott, Basking Ridge; Edward Seckel, Princeton, and David R. Ellis, Hopewell, all of N.J., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 23, 1972, Ser. No. 237,491
Int. Cl. B64c *13/12*
U.S. Cl. 244—75 R 2 Claims



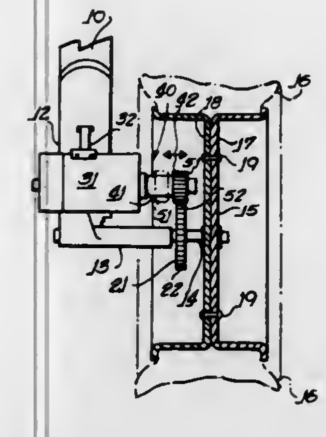
1. In a powered aircraft having horizontal fixed wing structure and an L/D alteration system, including adjustable flaps attached to said wing structure, means for controlling said L/D alteration system including an L/D control lever for actuation and control of the extent of operation of the L/D altering system; throttle means, including a throttle lever, and means coupling said throttle lever with said L/D control lever, whereby movement of said L/D control lever produces coodinated changes in engine power and L/D alteration, said L/D control lever including spring means for producing a force

gradient when said L/D lever is moved improperly with respect to said throttle lever.

3,850,389
LANDING GEAR WHEEL DEVICE FOR AIRCRAFT

Donald R. Dixon, 4639 Grove St., West Palm Beach, Fla. 33406

Filed May 4, 1973, Ser. No. 357,464
Int. Cl. B64c *25/38*
U.S. Cl. 244—103 S 1 Claim



1. A landing gear wheel device for an aircraft including a landing gear having a landing wheel rotatably mounted about a shaft projecting outwardly from a landing strut, the device comprising:

an electrically powered motor mounted on the strut and having its axis disposed substantially parallel to the axis of the wheel and spaced radially therefrom;

a first circular gear wheel concentrically mounted to the wheel adjacent one side thereof and having gear teeth disposed about its peripheral edge surface;

an axially reciprocally movable longitudinally disposed drive shaft having one end connected to the motor with the free end thereof extending axially away from the motor in a direction toward the landing wheel;

a second gear wheel mounted to the free end of the drive shaft and disposed in a plane parallel to the first gear wheel and having gear teeth disposed about the peripheral edge surface thereof complementary to the gear teeth on the first gear wheel;

the gear teeth of the first gear wheel and second gear wheel adapted to drivingly mesh together;

the drive shaft being automatically slidably movable in a first axial direction toward the landing wheel upon the electrical energization of the motor to engage the first and second gear wheels in a manner to drivingly rotate the landing wheel in a forward direction, and the drive shaft being automatically axially slidably movable in a second direction opposed to the first direction upon the electrical de-energization of the motor to disengage the first and second gear wheels permitting free rotative movement of the landing wheel;

an air speed indicator operable to continuously indicate the air speed of the aircraft, the indicator including a movable pointer to indicate such air speed on a suitably marked scale;

a variable resistant rheostat assembly including a resistance coil and a sliding contact operable thereover to selectively vary the resistance of the rheostat assembly;

linkage means mechanically interconnecting the air speed indicator pointer to the rheostat assembly sliding contact for the automatic simultaneous movement of the sliding contact with the pointer member to vary the electrical resistance of the rheostat assembly as a direct function of the indicated air speed of the aircraft in an automatic manner;

an electrical power source;

circuit means connecting the motor in electrical series relationship to the power source and to the rheostat assembly with the rheostat effecting the varying of the speed of the motor;

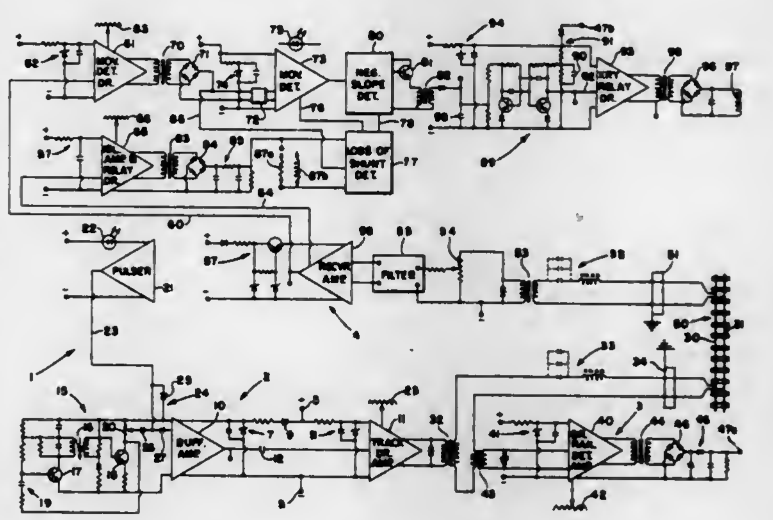
a switch device interposed in series circuit arrangement between the power source and the motor for energizing and de-energizing the motor; and

the rheostat assembly disposed in series circuit arrangement with the motor and the power source for automatically controlling the speed of rotation of the motor in accordance with the air speed of the aircraft as indicated by the air speed indicator pointer member so that upon closing the switch device the drive shaft automatically effects engagement of the first and second gear wheels to rotate the landing wheel in a forward direction at a speed substantially equal to the air speed of the aircraft which in turn is substantially equal to the landing speed of the aircraft upon the wheel engaging the ground during the landing, the speed of the wheel thus automatically varying with the variance of the aircraft air speed to rotate at substantially the same speed as the landing speed of the aircraft to minimize any scraping or sliding tendencies of the landing wheel upon contact with the ground.

3,850,390
RAILWAY SIGNAL SYSTEM WITH SPEED DETERMINED MOVEMENT DETECTOR

Willard L. Geiger, Chagrin Falls, Ohio, assignor to Erico Rail Products Company, Cleveland, Ohio

Filed Apr. 9, 1973, Ser. No. 348,944
Int. Cl. B61l *23/04*
U.S. Cl. 246—128 34 Claims

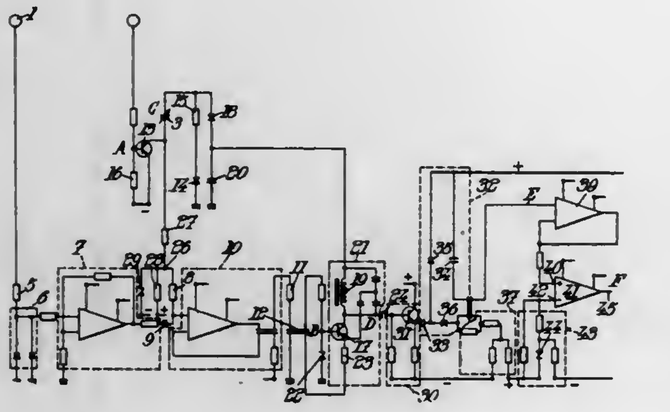


1. A railway signal system for producing an output signal indicative of the occurrence of an approaching train on a track comprising a transmitter and a receiver; said transmitter including means for producing an AC signal, means coupling said means for producing to said track for transmitting said AC signal in said track, means for monitoring the power level of said AC signal; and said receiver including receiver means coupled to said track for receiving said AC signal, said receiver means including means for detecting said AC signal to effect production of said output signal in response to changes in said AC signal occurring upon the approach of a train, said means for detecting including means for responding to changes in said AC signal effected by an approaching train located beyond the island defined between connections of said means for transmitting and said receiver means to said track; and said means for monitoring being also coupled to said receiver means and including means for causing at least a portion of said receiver means to produce said output signal when the power level of said AC signal coupled to said track drops below a minimum level.

3,850,391

SAFETY DEVICES FOR A SYSTEM FOR AUTOMATICALLY DRIVING A VEHICLE

Gabriel Yves Marie, Neuilly/Marne, France, assignor to Regie Autonome des Transports Parisiens et Inter-Elec, Paris and Aubervilliers, France
Filed Aug. 31, 1973, Ser. No. 393,521
Claims priority, application France, Sept. 5, 1972, 72.31389
Int. Cl. B61l *3/08*; **G01p** *3/12*; **B60l** *15/22*
U.S. Cl. 246—182 R 9 Claims



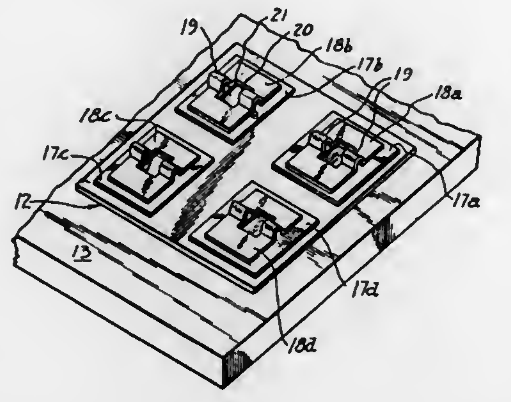
1. A safety device for a system for automatically driving a vehicle adapted to control the effective speed thereof in dependence on a given operating program, the system comprising means adapted to supply a space signal to the vehicle each time it has travelled a section of its path, the length of the signal being an increasing function of the desired speed of the vehicle at the corresponding place on its path in the system comprising a control device on the vehicle, the device using the space signals to give braking or traction orders to the vehicle traction and braking means, depending on whether the vehicle has travelled through the section in a time greater or less than a predetermined time, the system also comprising a generator actuated by the space signals and adapted to supply a variable signal at the moment when the vehicle has travelled through each section of its path, the value of the signal being dependent on the time taken by the vehicle to travel through the section, the safety device being supplied by the variable signal produced by the generator, and adapted to replace the orders given by the control device by an emergency braking order when the maximum values of the signals generated by the generator remain below a threshold value associated with the predetermined time at the corresponding sections, the safety device being characterised in that it comprises trigger means enabling it to supply a braking order, on the one hand, only after the vehicle has travelled a length slightly different from a predetermined distance greater than the longest of the track sections after the appearance of a varaible signal whose maximum value is less than the threshold value, and, on the other hand, if the maximum value has not exceeded the threshold value over the predetermined distance.

3,850,392

EQUIPMENT SECURITY DEVICE

James Scott Gassaway, 2356 Glendow Ave., Los Angeles, Calif. 90064
Filed Jan. 2, 1973, Ser. No. 320,553
Int. Cl. F16b *41/00*; **E05b** *73/00*
U.S. Cl. 248—19 10 Claims

1. An equipment mounting security device comprising an adhesive pad adapted to be adhered to a mounting surface, a cover assembly adapted to cover the adhesive pad so that said pad is essentially exposed only to said mounting surface and the underside of said cover, means within the cover lockably attaching the cover assembly to the pad, means for attaching an equipment to the outside of said cover from a position within the cover between the cover and the pad and accessible only when said cover assembly is unlocked and separated from the pad, said adhesive pad when adhered to a mounting surface requiring many times the amount of force in tension or shear to separate the pad from the surface than the amount of force required to separate the pad from the surface by peeling the pad from the surface.



3,850,393

BABY BOTTLE HOLDER

Harold J. Marquard, 2444 N. Harding, Chicago, Ill. 60647
Filed Nov. 15, 1972, Ser. No. 306,596
Int. Cl. A47c *15/00*
U.S. Cl. 248—102 6 Claims

1. A baby bottle holder comprising in combination,

a pliable plate member having a mat of fine plastic fibers on one side,

adjustable strap means for suspending said pliable plate member in a vertical plane,

a clamp member carried by said base member on the side opposite said mat of plastic fibers,

said clamp member adapted to detachably receive a bottle with the longitudinal axis of the bottle extending along and spaced from said vertical plane of the base member,

a stand member comprising,

a planar base portion and an upper horizontally disposed arched member,

said arched member having an arched top surface mat of fine plastic fibers adapted to universally attach to the mat of fine plastic fibers on said plate member whereby said bottle holder is adapted to be suspended about the neck of the user by said strap means and also adapted to be supported on said stand member through the respective mat surfaces at selected angles along said arched surface and at selected pivotal positions about said pivotal means,

said stand member including a rod member formed into a base loop, an arched parallel pair of support arms and an elongated tongue member,

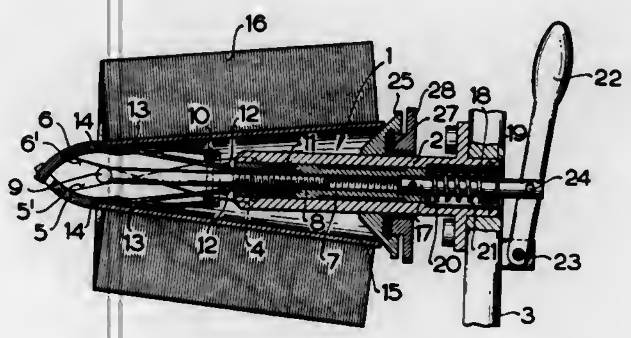
said base loop and said tongue member being essentially in a plane below said support arms, and

said arched plate member includes parallel slot means to engage said support arms in a snap-fit relationship.

3,850,394

BOBBIN HOLDER

Hans Raasch, Rheydt; Dietmar Engelhardt, and Wilhelm Maassen, Monchengladbach, all of Germany, assignors to W. Schlafhorst & Co., Monchengladbach, Germany
Filed May 18, 1973, Ser. No. 361,461
Claims priority, application Germany, May 26, 1972, 2225556
Int. Cl. B65h *49/00*
U.S. Cl. 242—129.7 10 Claims



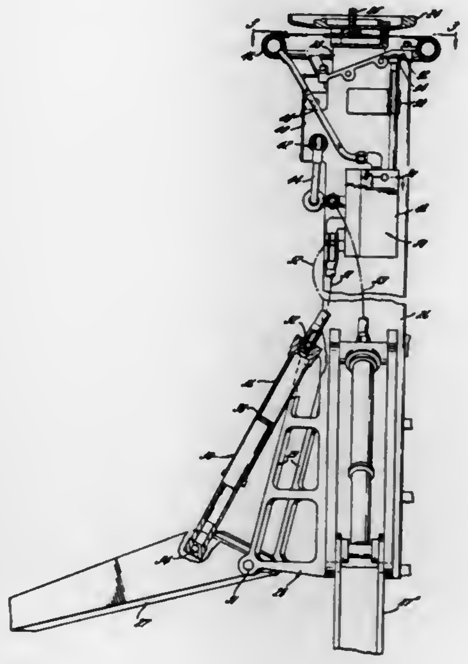
1. Bobbin holder for receiving and securing a conical or cylindrical tube, comprising a support sleeve having an axis, a conical clamping ring axially movably mounted on said support sleeve, a pair of spreading levers each having a free end, pivot means for pivoting said levers toward or away from each other in a plane which includes the axis of said support sleeve, said clamping ring and said spreading levers being spaced from each other in axial direction of said support sleeve, said pivot means being closer than said free ends of said levers to said clamping ring, said clamping ring having a portion thereof of minimum diameter facing toward said pivot means, said clamping ring and said pair of spreading levers thereby being adapted to engage respective ends of the tube and thus secure the tube on the bobbin holder.

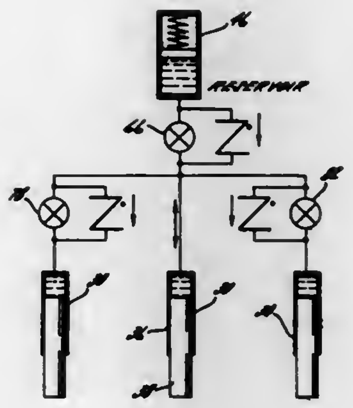
3,850,395

ACTUATOR CONTROLLED INSTRUMENT SUPPORT STAND

Chadwell O'Connor, 2024 Galaxy Dr., Newport Beach, Calif. 92660
Filed Oct. 15, 1973, Ser. No. 406,542
Int. Cl. F16m *11/38*
U.S. Cl. 248—171 5 Claims

1. In an instrument support structure including, a column, a plurality of legs pivoted at the lower end of said column for swinging movement between positions adjacent the column to positions extending from the column to define a base for supporting the column upright, a plurality of struts including fluid actuators each connected between said column and one of said legs so as to define one extendable strut for each of the legs, a reservoir mounted on said column and containing fluid, means including a valve for selectively (1) opening said reservoir to all of said actuators so that, when so opened, the struts extend and the legs pivot to their base defining positions, (2) shutting off said reservoir while allowing intercommunication of fluid between the actuators, (3) shutting off intercommunication of fluid between the individual actuators so as to lock the struts at given lengths and thus lock the legs in given positions, the improvement comprising, said valve including additional selective means for permitting one of said leg actuators to be manually pumped for drawing fluid from said reservoir on the suction stroke and forcing fluid into the other actuators on the pressure stroke of said one leg actuator.

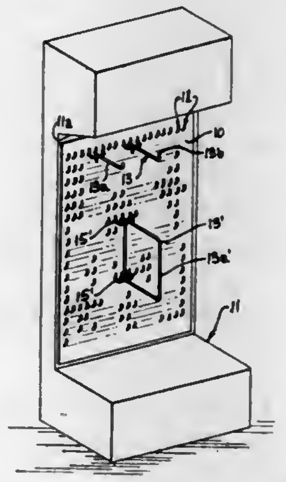




3,850,396

ARTICLE SUPPORT

Arthur A. Orlandi, Rockford, Ill., assignor to Commercial Wire and Display Prod. Corporation, Rockford, Ill.
Filed June 1, 1973, Ser. No. 366,132
Int. Cl. F16m *13/00*
U.S. Cl. 248—223 13 Claims

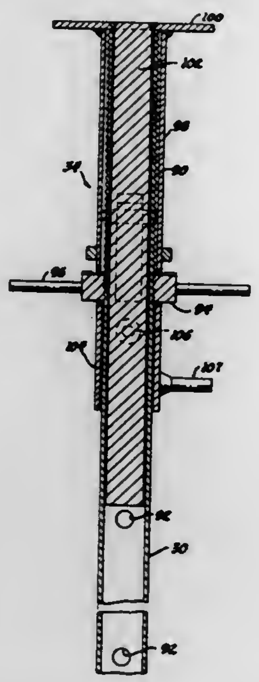


1. An apertured board for use with article support brackets of the type having a front board engaging member adapted to engage the front side of the apertured board, and at least one pair of laterally spaced hook members each having a shank

portion extending rearwardly from the front board engaging member and a generally upright finger portion extending upwardly from the shank portion and offset rearwardly from the front board engaging member a distance to engage the rear side of the board, the board having horizontal rows of apertures arranged so that selected pairs of said apertures in each row are laterally spaced apart a distance corresponding to the spacing of the hook members on the article support brackets, the improvement wherein each aperture in at least one row of said apertures has a vertical leg portion of a width and height closely corresponding to the width and height of said generally upright finger portions on the hook members to allow passage of the finger portions therethrough while in an upright position, each aperture of said one row of apertures having a second leg portion inclined laterally and downwardly from the lower end of said vertical leg portion of the respective aperture at an acute angle to the vertical to a location laterally offset to one side of the vertical leg portion a distance greater than the width of said generally upright finger portions of the hook members, said second leg portion having a width sufficient to allow passage of said shank portions of the hook members therealong while the finger portions of the hook members are in a generally upright position.

3,850,397
SHORING JACK

Jacob H. Kutchai, 630 Merrick, Detroit, Mich.
Division of Ser. No. 65,137, Aug. 19, 1970. This application Mar. 29, 1972, Ser. No. 239,099
Int. Cl. F16m *11/02*; **B66f** *3/08*
U.S. Cl. 248—354 S **2 Claims**



1. A jack screw assembly for use in a shoring system comprising a hollow jack staff having a threaded portion, a nut on the threaded portion for vertical travel thereover, a load-bearing sleeve bearing against the nut, and extending over the jack staff to the end thereof, and an internal shaft fixed to the sleeve but extending vertically into the jack staff a distance greater than the length of the threaded portion.

3,850,398
ADJUSTABLE TRAY

Frank J. Kantor, Norco, Calif., assignor to David James Corporation, Corona, Calif.
Filed June 15, 1973, Ser. No. 370,209
Int. Cl. F16m *13/00*
U.S. Cl. 248—225 **10 Claims**

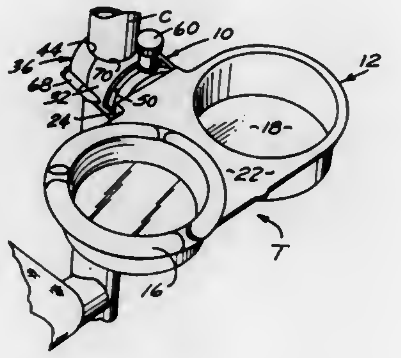
1. Holding means comprising, in combination, supported means and a clamping assembly, said clamping assembly being removably attachable to a segment of rigid tubing for support of said supported means near said tubing;

said clamping assembly comprising clamp means adapted to embrace said tubing and associated fastening means for securing said clamp means tightly in place around said tubing;

said supported means having an integral bayonet lug extending laterally outwardly therefrom;

said clamping assembly including an outer shell and an internal member with a slot mounted for reciprocal movement between limits within said shell;

said clamping assembly having a receptive hollow for said bayonet lug, the receptive hollow being partially defined by said slot and the character of said reciprocal movement being such as to permit free insertion of said bayonet lug into said receptive hollow in one position of said internal member, after which movement of the internal member within said outer shell causes concurrent movement of the bayonet lug and supported means and consequent interlocking of said supported means and said clamping assembly;



said clamping assembly including associated moving and locking means to permit manual movement of said internal member between said limits, and locking of that member in any position of said movement within said outer shell;

the parts of said holding means serving to permit installation of said supported means for use near said tubing by attaching said clamping assembly to the tubing and securing it in place thereon with said associated fastening means, assuring adjustment of the position of said internal member so that said receptive hollow can receive said bayonet lug, fully inserting said bayonet lug into said receptive hollow, moving said internal member and said supported means to a desired orientation of the latter and locking said internal member in place by means of said moving and locking means.

3,850,399
HANGER CLAMP FOR SPLICING HEAD

Terence I. McClymont, Stony Brook, N.Y., and Maurice H. LaFond, Sterling, Mass., assignors to Plessey Incorporated, New York, N.Y.
Filed June 18, 1973, Ser. No. 370,748
Int. Cl. A47b *96/06*
U.S. Cl. 248—229 **12 Claims**

1. Clamping means for securing a bar to a horizontally extending hanger comprising:

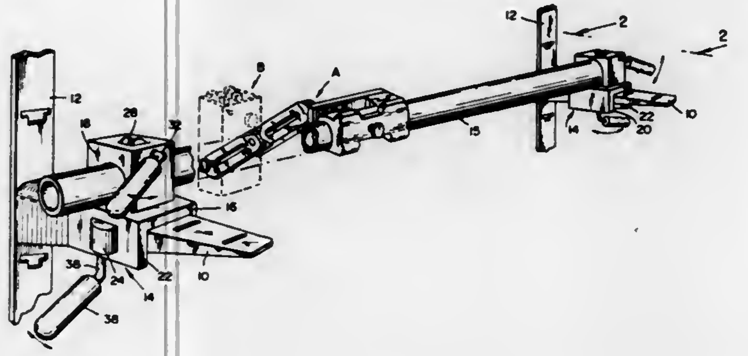
an upper clamping block and a lower clamping block;

said lower clamping block being of inverted-U shape and having a pair of parallel, downwardly extending legs forming a channel wider than said hanger;

first rotatable cylindrical cam means mounted in an opening in one said leg and adapted to clamp said hanger between said cam means and the other said leg upon rotation from an open position to a locked position;

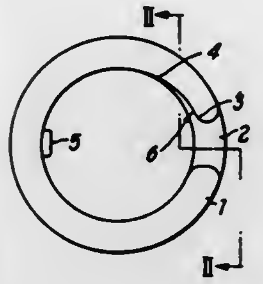
said upper clamping block being of inverted-U shape having a pair of parallel, downwardly extending legs secured to the top of said lower clamping block and forming therewith an orifice of larger dimensions than said bar transverse to the channel in said lower clamping block; and

second rotatable cylindrical cam means mounted in an opening in said upper clamping block communicating with said orifice and adapted to clamp said bar between said cam and the opposite wall of said orifice upon rotation from an open position to a locked position.



3,850,400
DEVICE FOR HOLDING A STUB END A SPINDLE

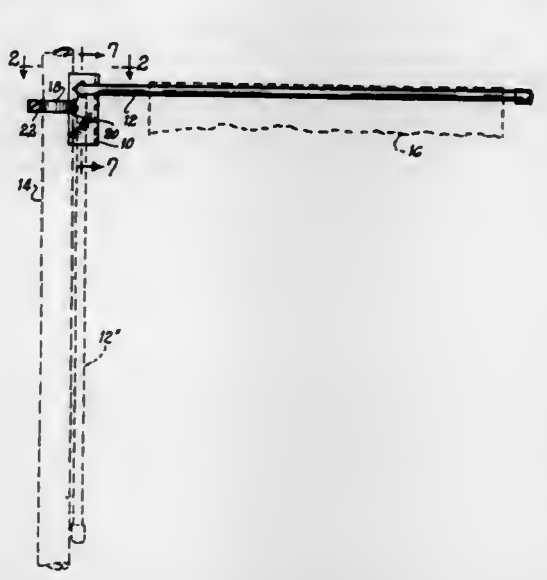
Ronald Charles Cooper, Ilford, England, assignor to Ilford Limited, Ilford, Essex, England
Filed May 22, 1973, Ser. No. 362,938
Claims priority, application Great Britain, May 26, 1972, 24945/72
Int. Cl. B65g *13/11*
U.S. Cl. 248—251 **5 Claims**



1. A device adapted for imprisoning a stub end of a spindle-type element and comprising a drum having a drum slot which is open at the periphery of the drum on at least one face thereof, a locking ring having a central opening into which said drum fits in coaxial alignment, which ring is provided with an axially aligned ring slot which is open from the external surface of said ring to the inner surface thereof and which extends only part way from one annular frontal face of said ring through an annular portion of the axial thickness of said ring; and which ring is rotatable about the common axis of said drum and said ring, from a position in which said drum slot and said ring slot are in register to a position wherein said two slots are angularly displaced relative to each other, and has at least one cam recess extending on the inner surface of said annular portion and being of maximum depth at said ring slot, and gradually merging with the inner wall of said central ring; and biassing means provided in engagement with said drum and with said ring and tending to angularly displace said drum and ring relative to one another about said common axis to move said drum slot out of register with said ring slot and into facing said cam recess of said ring and toward where said recess merges with said inner wall of said central ring opening.

3,850,401
PIVOTAL SUPPORT DEVICE

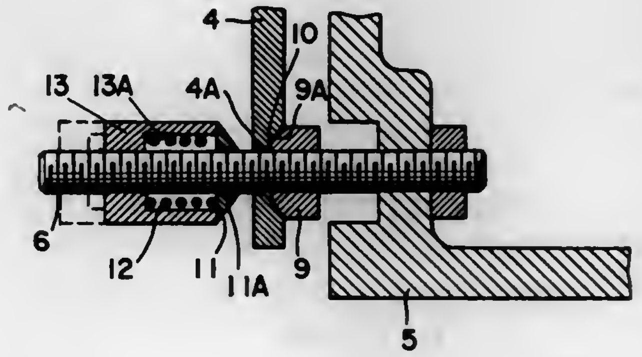
Robert R. Snediker, Winnetka, Ill., assignor to Chicago Show Printing Company, Morton Grove, Ill.
Filed July 17, 1973, Ser. No. 380,084
Int. Cl. A47f *5/00*
U.S. Cl. 248—291 **4 Claims**



1. A support comprising a basc member adapted to be mounted on a generally upstanding member, said base member being formed of a channel member having opposing spaced walls, each of said walls having an opening therein with each opening having at least two locking notches about the periphery thereof, an elongate arm adapted to carry visual display material thereon, said arm being pivotally mounted on the base member and including a finger positioned through the opening of each of the walls of the base member, said finger having at least two nipples thereon, said nipples being spaced each from the other and being adapted to engage in a locking relation a locking notch in each opening, and spring means constantly urging the nipples in locking engagement with the notches whereby the arm is pivoted by displacing the finger against the action of the spring means and rotating the arm about the finger until the nipples engage the other of the locking notches.

3,850,402
DEVICE FOR ADJUSTING AND FIXING PARTS REQUIRING FINE ADJUSTMENTS, PARTICULARLY PARTS OF AN OPTICAL SYSTEM

Tomohiko Ando, Yokohama, Japan, assignor to Ricoh Co. Ltd., Tokyo, Japan
Filed Apr. 12, 1973, Ser. No. 350,362
Claims priority, application Japan, Apr. 17, 1972, 47-37744
Int. Cl. F16m *13/00*
U.S. Cl. 248—476 **4 Claims**



1. A device for adjusting and fixing a part requiring fine adjustment with respect to a main body, such as in an optical system, comprising:

a. a plurality of studs secured to the main body and each adapted to extend through matching openings formed in the part to be adjusted;

b. a plurality of adjusting nuts, each partially formed with a spherical surface and threadably engaging one of said studs on one side of the part to be adjusted with the spherical surface maintained in contact with a conical recess formed in the part to be adjusted so that said adjusting nuts function as positioning means for the part to be adjusted;

c. a plurality of spacers, each formed with a straight edge and mounted on one of said studs on the other side of the part to be adjusted with the straight edge in contact with the surface of the part to be adjusted;

d. a plurality of springs, each mounted on one of said studs and acting on one of said spacers so that each spacer is maintained in contact with the surface of the part to be adjusted; and

e. a plurality of fixing nuts each threadably engaging one of said studs and supporting one end of said springs so as to fix and exert a clamping force on the device.

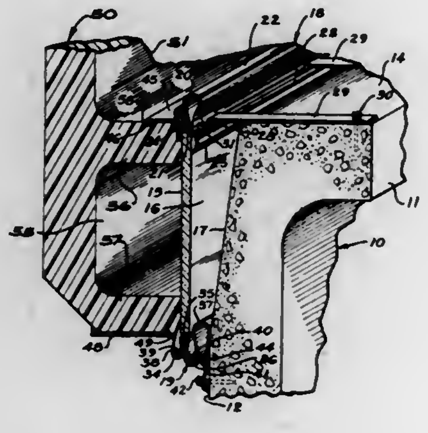
3,850,403
TILE-SETTING AND MOLD FORM APPARATUS

William J. Stegmeier, 1021 C Shary Cir., Concord, Calif. 94520

Filed Oct. 20, 1972, Ser. No. 299,207

Int. Cl. E04g *11/02*

U.S. Cl. 249—27 **29 Claims**



1. In apparatus for forming a molded concrete deck along the upwardly extending wall of a swimming pool and for concurrently holding a narrow band of tile along said wall while said band is being secured thereto: elongated support means adapted to be secured to such wall; means for securing said support means to said wall in generally horizontal disposition therealong; an elongated mold form section having a surface portion configurated in the finished shape to be imposed thereby upon such deck and having also body portion means adapted to be disposed along such wall in facing orientation therewith; and means for securing said mold form to said support to orient the same therewith in generally horizontal disposition along such wall.

3,850,404
TILE-SETTING APPARATUS

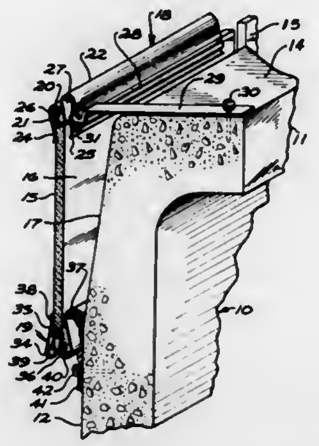
William J. Stegmeier, 1021 C Shary Cir., Concord, Calif. 94520

Filed Oct. 20, 1972, Ser. No. 299,208

Int. Cl. E04g *11/02*

U.S. Cl. 249—27 **9 Claims**

1. Apparatus for setting tile along an upwardly extending wall comprising: an elongated upper support adapted to be secured to such wall and supportingly engage a plurality of side-by-side tiles adjacent the upper edges thereof; and an elongated lower support adapted to be secured to such sidewall a spaced distance below said upper support and supportingly engage a plurality of side-by-side tiles adjacent their lower edges; said upper and lower supports respectively defining downwardly facing and upwardly facing seats constructed to receive the upper and lower edges of said side-by-side tiles therein to positively locate the same in aligned justaposition; said lower support being provided with a spacer along the wall-facing side of said seat to separate the same and any tile therein from said sidewall to assure a mortar-accommodating space therealong, and comprising a plurality of successive convolutions defining said seat and spacer, one of said convolutions being downwardly extending and adapted to have a fastener project therethrough to secure said lower support to such wall as aforesaid.



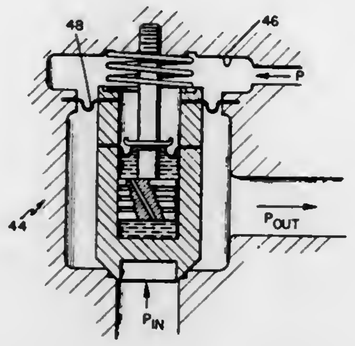
3,850,405
CONTAMINANT RESISTANT VALVE

Albert H. White, Wethersfield, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed July 5, 1973, Ser. No. 376,325

Int. Cl. F16k *31/165*

U.S. Cl. 251—61.5 **3 Claims**



1. A contaminant resistant valve comprising:

a housing having a cavity therein and first and second ports communicating with the cavity;

a valve seat surrounding the first port;

a guide shaft, having a cylindrical surface, secured to the housing and extending into the cavity;

a valve element, having a recess therein with a cylindrical surface, positioned in the cavity for axial movement between seated and unseated positions such that the respective cylindrical surfaces are in sliding engagement whereby movement of the valve element is guided by the shaft, such that the guide shaft is axially spaced from the base of the recess when the valve element is seated to thereby define a first chamber and such that the valve element is in spaced relationship to the wall of the cavity whereby it does not slide therealong during movement between the seated and unseated positions;

a diaphragm extending across the recess and fixedly secured to the wall thereof and the shaft to seal at least a portion of the recess from the cavity, the diaphragm being spaced from the cylindrical surface of the recess which slidingly engages the guide shaft to define a second chamber separated from the first chamber by the area of cylindrical surface engagement;

hydraulic oil in the first and second chambers for damping and lubricating the sliding engagement between the valve element and the guide shaft;

passage means to fluidly interconnect the first and second chambers for enabling oil trapped in the first and second chambers to be displaced during valve element movement; and

whereby contaminants in the fluid entering the cavity via the first port and leaving the cavity via the second port will not hinder movement of the valve element.

3,850,406
DOUBLE SEALING VALVE

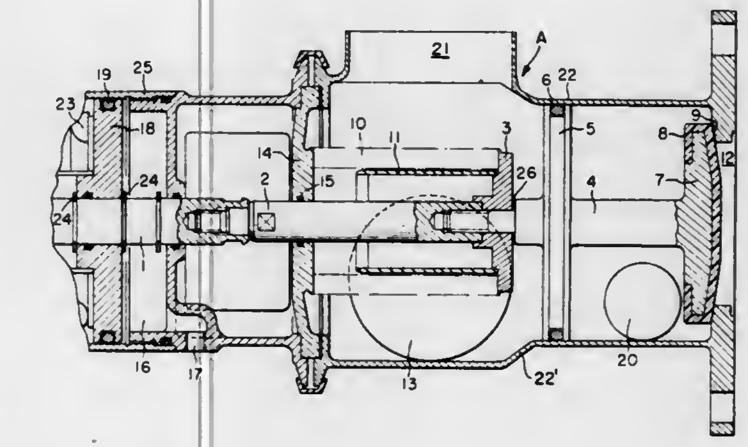
Katsuto Okada; Shoichi Yamanami; Akichika Ishibashi, and Hirotaka Watanabe, all of Tokyo, Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

Filed July 23, 1973, Ser. No. 381,776

Claims priority, application Japan, Aug. 3, 1972, 47-91543

Int. Cl. F16k *1/06*

U.S. Cl. 251—210 **3 Claims**



1. A valve comprising:

a. a valve body having two ports for flow of a liquid through the body in a predetermined path;

b. an elongated valve shaft mounted in the body for longitudinal movement between a valve opening position and a valve closing position;

c. a valve head and a piston ring mounted on the shaft for movement therewith in longitudinally spaced relationship, the valve head being axially spaced from the piston ring;

d. a valve seat in the body bounding a first portion of the path,
  1. the body having a constricted wall portion bounding a second portion of the path;

e. a drainage valve mounted in the constricted wall portion; and

f. actuating means for moving the shaft between said positions,
  1. the valve head sealingly engaging the valve seat and the piston ring sealingly engaging the wall portion in the valve closing position of the valve shaft, the drainage valve being sealed off by the valve head and piston ring in the valve closing position.

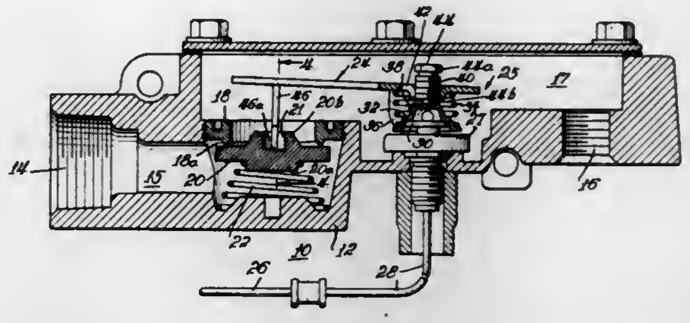
3,850,407
SAFETY VALVE

George F. Sekera, Jr., Hinsdale, Ill., assignor to Harper-Wyman Company, Hinsdale, Ill.

Filed Aug. 8, 1973, Ser. No. 386,523

Int. Cl. F16k *31/44*

U.S. Cl. 251—242 **7 Claims**



1. A safety valve comprising a fluid chamber having an inlet and an outlet, an annular valve seat defining a flow passage in said chamber between said inlet and outlet, a valve member including a recess on one side thereof and mounted for movement toward and away from said valve seat for closing and opening said flow passage, biasing means urging said valve member in one direction relative to said seat and valve actuator means urging said valve member in a direction opposite to said one direction in response to a sensed condition, said actuator means comprising a lever mounted for pivotal movement in said chamber about an axis spaced from said valve member, said lever including a body and an integrally formed tongue extending from said body at a point spaced from said axis, said tongue projecting into said recess of said valve member for moving the same, and power means responsive to said sensed condition for biasing said lever to pivot about said axis.

3,850,408
UNDERWATER WEAPON

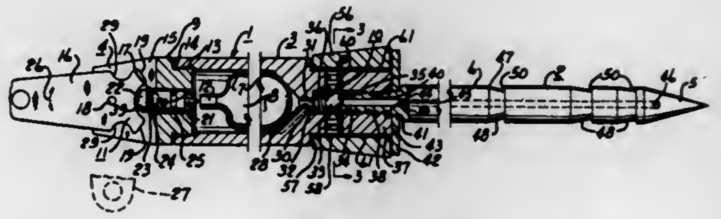
Thomas Shelnick, Pittsburgh, Pa., assignor to The Shelnick Corporation, Pittsburgh, Pa.

Division of Ser. No. 223,458, Feb. 4, 1972, Pat. No. 3,751,843.

This application Aug. 10, 1973, Ser. No. 387,318

Int. Cl. F16k *31/528*

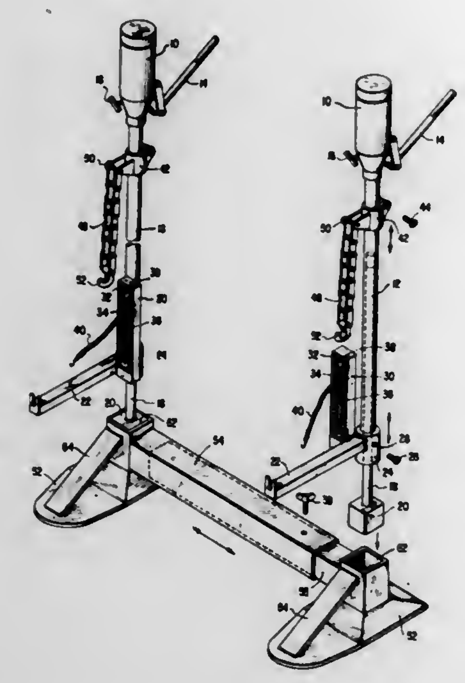
U.S. Cl. 251—251 **3 Claims**



1. A valve adapted to be selectively operated from multiple positions around the valve housing comprising an annular valve casing having a valve chamber with an inlet and outlet, a valve seat in said chamber defining said outlet, a valve biased to normally seat in said valve seat to close off said outlet, at least three apertures through said casing symmetrically and radially disposed relative to the axis of said outlet and communicating with said chamber, valve actuators in each of said apertures contacting said valve and each having portions thereof exposed above the outside surface of said casing which are depressable to displace said valve off said seat, an annular sleeve member retained on said casing over and in contact with all of said exposed portions of said actuators such that said valve is unseated by pressing said ring at any position thereabout.

3,850,409
DUAL HYDRAULIC JACK AND HOLDING DEVICE

Oliver Thurston Davis, and Norman R. Jones, both of Rt. 1, Dunlap, Tenn.
Filed Mar. 23, 1973, Ser. No. 344,440
Int. Cl. B66f *7/12, 3/00*
U.S. Cl. 254—89 H **3 Claims**



1. A dual jacking device comprising:

a. a base having spaced-apart floor plates, said floor plates being movable relative to each other and securable against further movement at any desired position, said floor plates further having vertically extending tubular elements secured thereto,

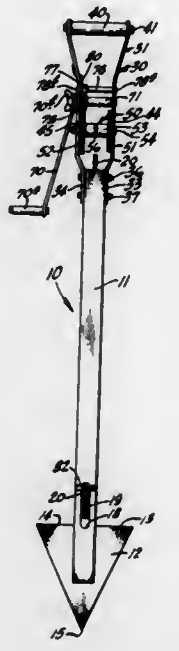
b. two vertically upstanding jacking means mounted on said base in spaced-apart relationship, each of said jacking means further comprising a hydraulic pump, a lifting column secured to said pump, and a piston positioned in said column and movable relative to said column upon actuation of said pump, said tubular elements being capable of receiving one end of said piston, and

c. first and second lifting means secured to each of said jacking means for supporting an object relative to said jacking means.

3,850,410
PORTABLE HAND OPERATED WINCH

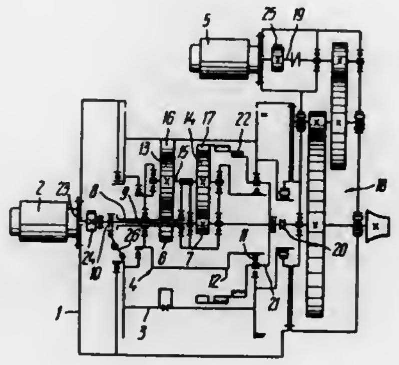
Joe H. Kemp, 204 Dallas Rd., Grapevine, Tex. 76051
Filed Mar. 12, 1973, Ser. No. 340,362
Int. Cl. B66d *1/04*
U.S. Cl. 254—186 HC **10 Claims**

1. A portable hand operated winch including: an elongate tubular handle member having an earth engaging blade member at one end thereof; a supporting yoke at the opposite end of the handle member, said yoke having gripping handle means thereon extending outwardly from the end of said yoke opposite the elongate handle member; a reel spool having a shaft rotatably mounted in the yoke member beyond the handle member and inwardly from the gripping handle means; crank means for rotating the reel spool; a flexible line connected at one end to the reel spool and extending therefrom through a bore in the tubular handle member to the end thereof adjacent the earth engaging member; a sheave on the handle member adjacent the earth engaging member about which line is movable outwardly and inwardly through the bore in the handle member; said tubular handle member having an opening in the wall thereof adjacent the sheave through which the flexible line passes; and pulling connecting means on the free end of the line, whereby the reel may be rotated by the crank means to wind the line through the tubular handle inwardly or outwardly and through the opening of the handle member to move the pulling connecting means toward and away from the handle member.



3,850,411
HOISTING WINCH

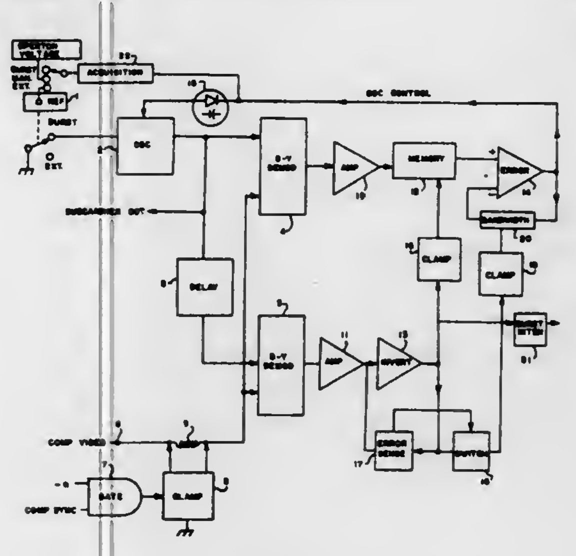
Felix Fedorovich Vavilov, ulitsa Demonstratsy 75, kv. 38, Tula; Jury Leonidovich Leonov, ulitsa Zhurkovskogo 1, kv. 10; Alexei Maximovich Sedov, ulitsa Entuziastov 1, kv. 1, both of Khabarovsk, and Dmitry Stepanovich Kamsky, ulitsa Mira, 25, kv. 19, Navoi, all of U.S.S.R.
Filed June 1, 1973, Ser. No. 366,214
Int. Cl. B66d *1/24*
U.S. Cl. 254—186 R **1 Claim**



1. A hoisting winch comprising: a winch frame; a drive arranged on said frame; a winding drum mounted on said frame; a planetary gear built into said drum and consisting of: two sun wheels of different diameters, arranged coaxially in said drum, a carrier provided freely in said drum, planet pinions interconnected in pairs and borne by said carrier and respectively in constant mesh with said sun wheels, two epicycles of different diameters, which are in constant mesh with said planet pinions, one of said epicycles connected to said drum and the other arranged with the possibility of free travel under load within the rotation plane; a clutch coupling intended for alternative connection of said sun wheels with said drive; additional drive mounted on said frame and kinematically coupled with said other epicycle to increase the rotation speed of said drum; and braking mechanisms for said drives.

3,850,412
FREQUENCY AND PHASE ACQUISITION IN A COLOR SUBCARRIER REGENERATOR

Ronald A. Olson, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Continuation of Ser. No. 286,107, Sept. 5, 1972, abandoned. This application Feb. 25, 1974, Ser. No. 445,518
Int. Cl. H04n *9/46*
U.S. Cl. 358—10 **9 Claims**



1. A system for acquiring the frequency and phase of the subcarrier signal generated by a subcarrier regenerator circuit in a TV vectorscope, comprising:

means for receiving an external composite video signal, said external composite video signal including a burst reference portion;

means for generating a sine-wave signal at or near the subcarrier frequency, said means including a tunable oscillator;

means for comparing said sine-wave signal to said burst portion and producing a first control voltage proportional to the difference therebetween;

means for manually producing a second control voltage; and

means for selectively receiving said first control voltage and said second control volage to provide thereoutof a correction voltage for tuning said tunable oscillator.

3,850,413
FOUNDRY MIXING MACHINE

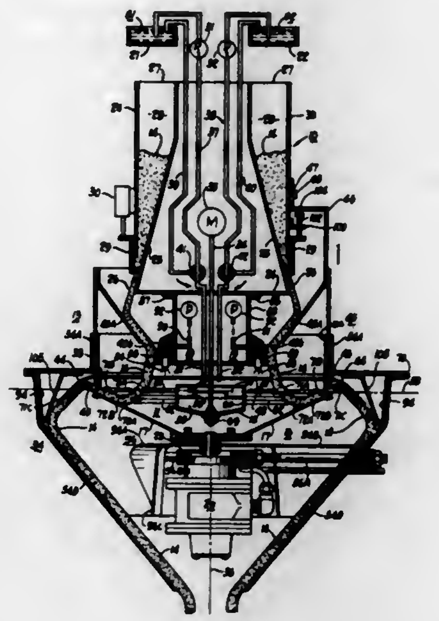
Edward J. Rebish, Euclid, Ohio, assignor to Acme-Cleveland Corporation, Cleveland, Ohio
Continuation-in-part of Ser. No. 211,925, Dec. 27, 1971, Pat. No. 3,773,299. This application Nov. 13, 1972, Ser. No. 305,839
Int. Cl. B28c *5/04*
U.S. Cl. 259—4 **18 Claims**

1. A foundry machine for mixing a mold material component and a binder component, comprising in combination,

mixer means for dispersing the binder component in a geometric direction,

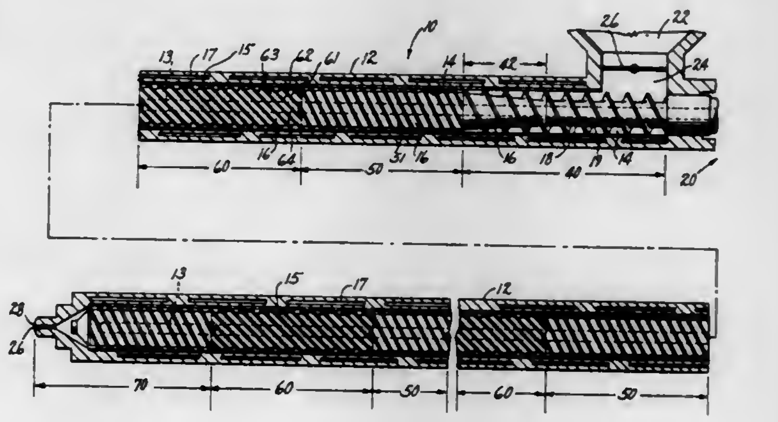
means for directing the binder component to said mixer means,

and means for establishing the mold material component to traverse said geometric direction a first time to mix with the binder component and to subsequently traverse said geometric direction a second time to enable additional mixing thereby and to again traverse said geometric direction a third time.



3,850,414
HOMOGENIZING EXTRUDERS

Hans R. Scharer, Wallingford, Conn.
Filed Dec. 26, 1972, Ser. No. 318,679
Int. Cl. B01f *7/02, 7/08*
U.S. Cl. 259—191 **8 Claims**



1. An extruder for the processing of thermoplastic material comprising: a body having a bore extending generally longitudinally therethrough, having a feed opening for the introduction of material to be processed, said opening being disposed in said body generally at one end of said bore, and having a discharge opening generally at the opposite end of said bore; and a rotor disposed in said bore for rotary movement therein defining a feed section, a mixing section and a discharge section; means for rotating said rotor; a first helical thread convolution disposed on said rotor forming a primary flight extending substantially continuously throughout said feed, mixing and discharge sections, said adjacent convolutions of said thread forming a channel therebetween for conveying said material; a second helical thread convolution disposed on said rotor forming a secondary flight extending substantially coextensively with said primary flight and in said channel between said primary flights forming two adjacent channels between said adjacent primary flights, said first of said channels being that channel between said primary flight and said secondary flight in the direction opposite rotation being denoted a primary channel and the second of said two channels being that channel between said

secondary flight and said next adjacent primary flight in the direction opposite rotation being denoted a secondary channel; said primary channel including a dam disposed therein at the exit end of said mixing section, said secondary channel including a dam disposed therein at the entrance end of said mixing section whereby material traversing said mixing section is controlled to enter said section via said primary channel and exit said section via said secondary channel after having been extruded over said secondary flight.

3,850,415
SCREW EXTRUDER FOR SYNTHETIC PLASTICS MATERIAL

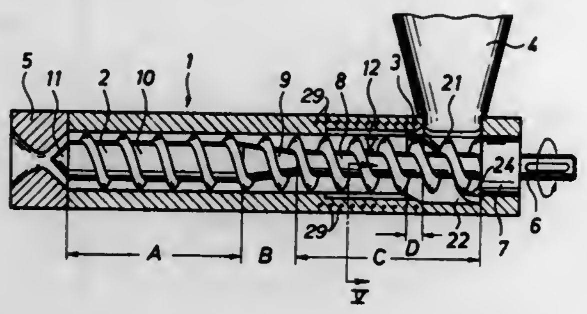
Gerhard Hansen, Heerberg 87, D 7161 Laufen am Kocher, Germany

Filed Mar. 12, 1973, Ser. No. 340,058

Claims priority, application Germany, Mar. 25, 1972, 2214715

Int. Cl. A21c *1/06*

U.S. Cl. 259—191 **8 Claims**



1. A screw extruder for plastic comprising
a stationary housing having an interior wall defining an axially extending bore, and
a screw within said housing
  said screw and housing having a filling zone, a compression zone and an homogenizing zone;
  said housing having a filler opening in said filling zone, the inner diameter of said bore being greater along the axial dimension of said filler opening than in the remainder of said bore;
  the interior wall of said housing defining a substantially continuous conical taper from said greater inner diameter to the adjacent portion of said bore; and
an inwardly protruding, generally axially extending rib fixedly attached to the inner wall of said housing at the location of said greater inner diameter, said rib extending into and terminating at said taper,
  the inner radial limits of said rib being defined by the inner radius of said compression and homogenizing zones.

3,850,416
SLAG DEPTH INDICATOR

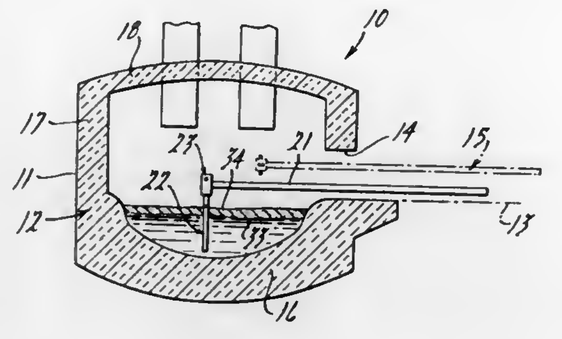
Paul L. Jackson, Dearborn, Mich., assignor to Ford Motor company, Dearborn, Mich.

Filed Jan. 4, 1974, Ser. No. 430,975

Int. Cl. F27d *21/04*

U.S. Cl. 266—1 R **8 Claims**

1. Apparatus for determining slag depth in a vessel, comprising:
a. a lance having sufficient length to extend above, through and below the most extreme slag condition anticipated for said vessel,
b. support means for controllably positioning said lance over said slag and for permitting said lance to be inserted through said slag while said support means remains above said slag,
c. indicator means of said lance for permitting alignment of a predetermined location on said lance in contact with the exposed surface of said slag, and



d. coating means on and along substantially the entire length of said lance, said coating being effective to pyrolyze upon contact with said molten slag.

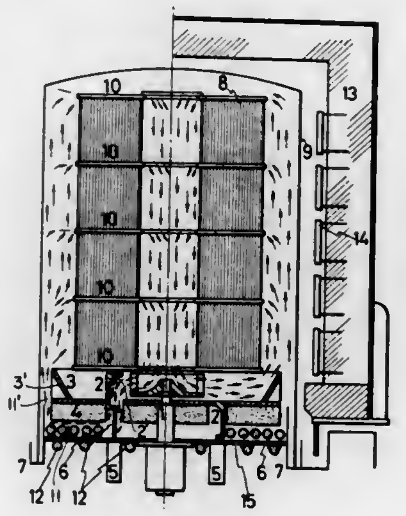
3,850,417
SYSTEM FOR ACCELERATED COOLING OF LOADS IN CONTROLLED ATMOSPHERE FORCED CIRCULATION TYPE FURNACES

Salvador Guinea Elorza, Bilbao, Spain, assignor to Guinea Hermanos Ingenieros, S.A., Bilbao, Spain

Filed Dec. 20, 1972, Ser. No. 316,694

Int. Cl. C21d *9/46*

U.S. Cl. 266—5 C **6 Claims**



1. A system for accelerating the cooling of a load in a furnace having a centrally located ventilator fan for recirculating gas through a main furnace chamber containing said load, said system comprising:
an insulating-refractory layer positioned beneath said main furnace chamber, said fan being positioned on top of said insulating-refractory layer centrally thereof in said main furnace chamber, whereby gas recirculated by said fan is directed radially outwardly from said fan above said insulating-refractory layer;
a bottom metal plate forming the base of said furnace spaced below said insulating-refractory layer;
said insulating-refractory layer and said plate forming therebetween a cooling chamber;
cooling coils positioned within said cooling chamber;
an annular space continuously connecting the outermost extent of said cooling chamber with said main furnace chamber;
a plurality of openings extending upwardly through said insulating-refractory layer from said cooling chamber, at positions inwardly of said outermost extent thereof, to said main furnace chamber at positions thereof immediately adjacent the periphery of said fan;

collecting valve means vertically movable in each of said openings, from a first lower position not interferring with said gas directed radially outwardly from said fan, to a second upper position interferring with said gas directed radially outwardly from said fan; and
each of said collecting valve means having thereon means directed toward said periphery of said fan for intercepting substantially all of said gas directed radially outwardly from said fan, when said collecting valve means are in said second position, and for directing said thus intercepted gas through said openings into said cooling chamber, whereafter said gas is cooled in said cooling chamber, passed through said annular space into said main furnace chamber thereby cooling said load, and then returned to said fan.

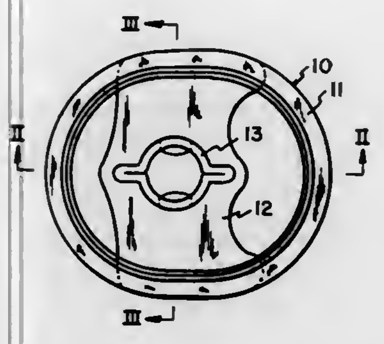
3,850,418
HIGH ELONGATION VOIDED ELASTOMERIC BUSHINGS AND METHOD AND MEANS FOR THEIR ASSEMBLING

Gary L. Hipsher, Logansport, Ind., and Robert D. Vosburgh, Birmingham, Mich., assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Feb. 9, 1973, Ser. No. 330,910

Int. Cl. F16k *1/36*

U.S. Cl. 267—57.1 A **3 Claims**



1. A high elongation voided elastomeric bushing comprising an outer sleeve member, an inner sleeve member spaced apart from and within said outer sleeve member, and a voided elastomeric insert compressively positioned between said inner and outer sleeve member, said insert having at least one void therein and being elongated at least 30%.

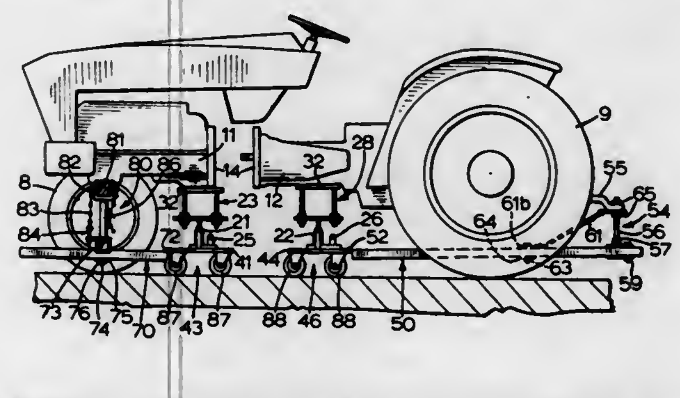
3,850,419
TRACTOR SPLITTER

Gerald Craig, 351 Marlbourough St., Brantford, Ontario, Canada

Filed Apr. 5, 1973, Ser. No. 347,995

Int. Cl. B66f *5/04, 7/28*

U.S. Cl. 269—17 **12 Claims**



1. Apparatus for supporting a tractor when split at its midsection between its front and rear wheels, comprising a first jack having a wheeled base and having a support elevatable to take the weight of the forward part of said midsection, a second jack having a wheeled base and having a support elevatable to take the weight of the rearward part of said midsection, first connecting means extending forwardly from the first jack and firmly connectable to a front part of the tractor to ensure that the first jack stably rolls with the front wheels of the tractor, second connecting means extending rearwardly from the second jack and firmly connectable to a rear part of the tractor to ensure that the second jack stably rolls with the rear wheels of the tractor, the first and second jacks being independently adjustable to hold the forward and rearward parts of said midsection at exactly the same elevation ensuring perfect alignment of said forward and rearward parts, and means extending between the bases of the jacks and the supports to lock the supports in positions to which they have been elevated by the jacks.

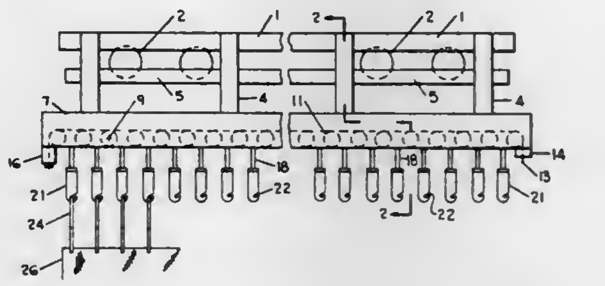
3,850,420
GLASS SHEET CARRIER

William E. Marceau, Horsham; William G. Bates, Sellersville, and Thomas J. Mroczek, Lansdale, all of Pa., assignors to Selas Corporation of America, Dresher, Pa.

Filed Nov. 28, 1973, Ser. No. 419,704

Int. Cl. B23g *1/20, 3/00;* **B66c** *1/44*

U.S. Cl. 269—46 **4 Claims**



1. A sheet glass carrier comprising an elongated rigid frame, an elongated flexible element, means to attach said element by its ends at spaced points on said frame, thereby to provide a length of said element extending along said frame, a plurality of spaced supports on said frame under and engaging the length of said flexible element to keep it substantially straight, rods loosely mounted on and depending from said element between adjacent supports and a pair of glass tongs mounted on and depending from each rod.

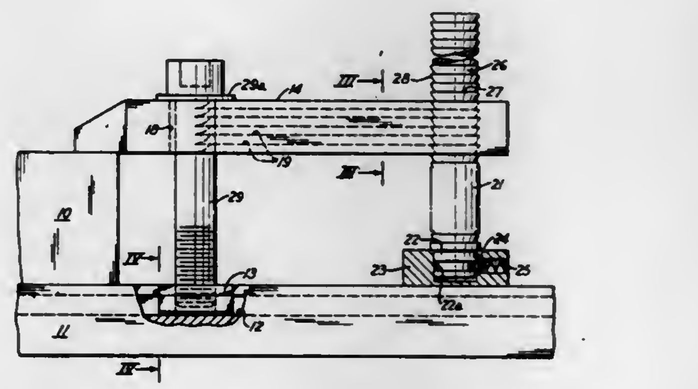
3,850,421
CLAMP APPARATUS

Robert M. Orris, Rd. No. 3, Box 379, Greensburg, Pa. 15601

Filed Apr. 23, 1973, Ser. No. 353,377

Int. Cl. B23q *3/02;* **B25b** *5/10*

U.S. Cl. 269—91 **7 Claims**



1. A clamp apparatus comprising, in combination:
a clamp bar having an elongated slot bounded within a rectangular shape of the clamp bar, said slot extending along a predetermined length of the bar for developing a

clamping force upon the clamp bar to hold a workpiece in a desired location upon a load-bearing surface;

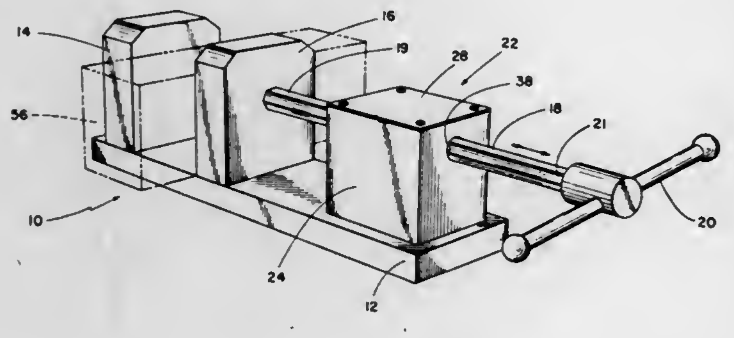
a plurality of parallel and spaced-apart teeth projecting into said slot from said clamp bar, said teeth having terminal ends within said slot at opposite sides thereof to thereby define an enlarged opening extending through said clamp bar;

a compression rod including a plurality of teeth for mating engagement with the teeth projecting into said slot, said compression rod being constructed for longitudinal positioning within said enlarged opening in the clamp bar and displaced along said slot to bring a plurality of teeth thereof into mating engagement with the teeth projecting into the slot, said teeth of the compression rod being spaced apart and lying in parallel planes that are perpendicular to the longitudinal axis of the compression rod, and

a clamp bolt constructed to pass through said enlarged opening to the slot in the clamp bar for holding said compression rod captive within said slot while at the same time maintaining mating engagement between said teeth in the slot and a plurality of teeth on the compression rod, said bolt including a stop member at one end thereof for engaging the top surface of the clamp bar, said bolt further including a threaded portion for developing a clamping force upon said clamp bar.

3,850,422
QUICK-ACTING VISE

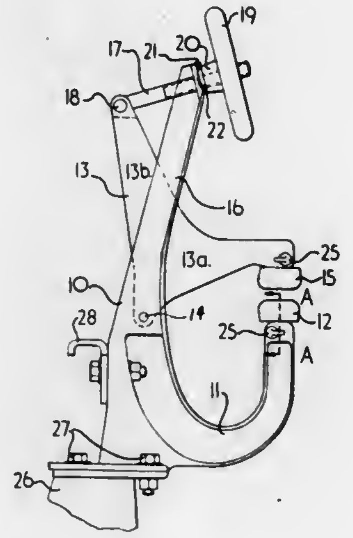
Edward Kwas, 4837 N. Opal, Norridge, Ill. 60656
Filed Feb. 15, 1974, Ser. No. 442,922
Int. Cl. B25b *1/02*
U.S. Cl. 269—196 **12 Claims**



1. A clamping device comprising a fixed jaw, a locking assembly, support means mounting said fixed jaw and said locking assembly in spaced apart relationship, said locking assembly including a block fixed to said support means said block having a cavity therein and aligned openings in the end walls thereof which communicate with said cavity and which are coaxial on an axis generally perpendicular to said fixed jaw, cam means in said cavity positioned to engage a cam forming wall surface in said cavity, said cam means having a bore therethrough, a spindle slidably received through said bore, said bore and spindle having similar cross sections, a movable jaw positioned between said fixed jaw and said block and connected to one end of said spindle, and means in said cavity urging said cam means against the end of said cavity farthest from said fixed jaw, said cam means, said cavity, said spindle and said openings being configured, dimensioned and arranged so that when said spindle is rotated, the frictional engagement between said spindle, said bore and said openings, and between said cam means and a wall surface of said cavity cause said spindle to be moved axially towards said fixed jaw and then locked in place with said cam means bearing against a wall surface of said cavity, wall surfaces of said bore bearing against said spindle and said spindle bearing against wall surfaces of said openings.

3,850,423
TIRE REPAIR DEVICE

Derek Hogg, Sutton Coldfield; Roger Anthony Wilson, Cross Lanes, and John Fairburn Asakam, Sutton Coldfield, all of England, assignors to Dunlop Limited, London, England
Filed Dec. 5, 1972, Ser. No. 312,324
Claims priority, application Great Britain, Dec. 9, 1971, 57167/71
Int. Cl. B29h *5/16*
U.S. Cl. 269—238 **8 Claims**



1. A tire repair device comprising a support member having an upwardly extending portion, an upper frame member pivotally connected to the support member to rotate about a horizontal axis, a lower frame member in the form of a cantilever rigidly connected to the support member, an upper jaw on the upper frame member, a lower jaw on the lower frame member, the size and configuration of at least one jaw and associated frame member being such that a tire may be freely positioned with said jaw inside the tire, the upper jaw being capable of being moved downwards towards the lower jaw on pivoting of the upper frame member with respect to the support member to sandwich between the jaws that portion of a tire which is in need of repair, which portion may be located anywhere in the tire, a screw threaded shaft pivotally connected to the upper frame member, a hand wheel carried on the shaft, the shaft being capable of being pivoted about a horizontal axis from an open position to a closing position where it is substantially horizontal and the hand wheel engages the upwardly extending portion of the support member whereby rotation of the hand wheel causes the upper frame member to rotate with respect to the support member and the upper jaw to be urged downwards towards the lower jaw.

3,850,424
FABRIC FOLDING DEVICE FOR LAYING-UP MACHINES IN THE READY-MADE GARMENT INDUSTRY

Mario Fonio, Via Ticino 131, Galliate (Novara), Italy
Filed Mar. 27, 1972, Ser. No. 238,378
Claims priority, application Italy, Apr. 27, 1971, 23703/71
Int. Cl. B65h *29/46*
U.S. Cl. 270—31 **3 Claims**

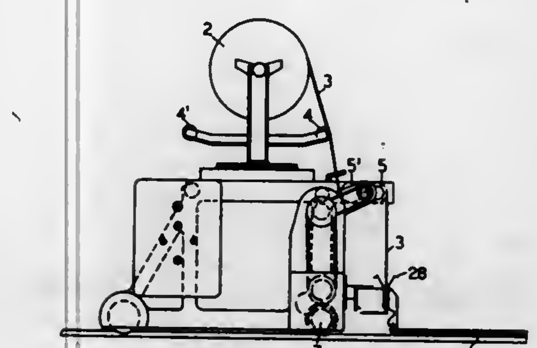
1. A fabric feeding device for laying-up machines of the type for laying out multiple layers of fabric for cutting into garment sections, comprising:

a. a pair of puller rollers for advancing the fabric to a feed position for forming layers by the machine;

b. a parallelogram-like frame for rotatably supporting said puller rollers in spaced and parallel relation;

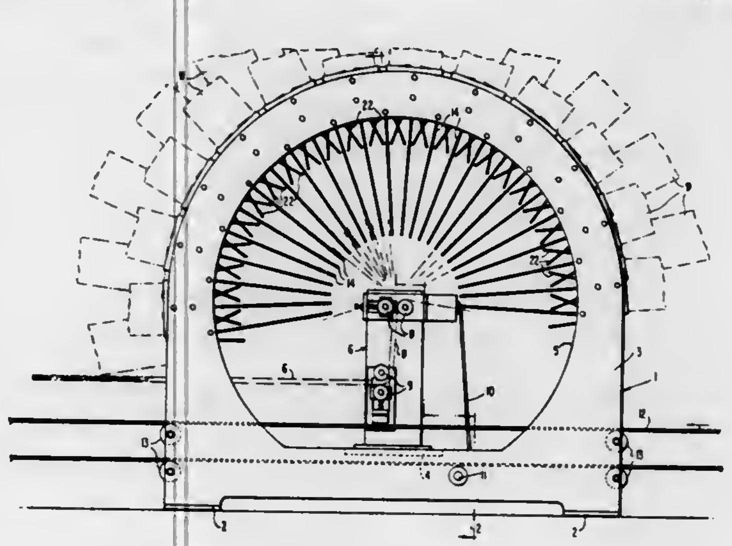
c. drive means for rotating said puller rollers in opposite directions within said parallelogram-like frame;

d. means mounting said parallelogram-like frame for rotation around a central axis to locate said puller rollers in a first substantially vertical position to effect the threading of the fabric therebetween and to a second substantially horizontal position for advancing the fabric for release and layering by the machine and a locking means for maintaining said puller rollers in said second position.



3,850,425
INTERFOLDING MACHINE

Nicholas Marcalus, Wyckoff, and Jesse B. Snaw, Paterson, both of N.J., assignors to Marcal Paper Mills, Inc., Elmwood Park, N.J.
Filed Apr. 17, 1973, Ser. No. 351,854
Int. Cl. B41l *1/30, 43/04*
U.S. Cl. 270—40 **15 Claims**

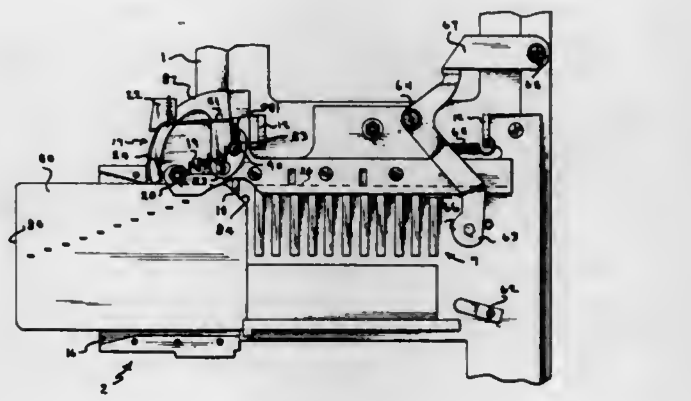


1. A machine for interfolding webs of material comprising a plurality of elongated folding plates extending in side-by-side converging relation, each of alternate plates having a folding edge extending longitudinally thereof at one side of the plurality of plates and each of the alternate intermediate plates having a folding edge extending longitudinally thereof at the opposite side of the plurality of plates, means for feeding webs of material to receiving end portions of the folding plates and extending along the folding edge of each of the folding plates, and folding fingers extending transversely of each of the plates adjacent the receiving end portions thereof for folding the opposite edge portions of the web thereover in overlapping relation with the lateral edges of adjacent webs.

3,850,426
A CARD READER HAVING AUTOMATIC CARD POSITIONING MEANS

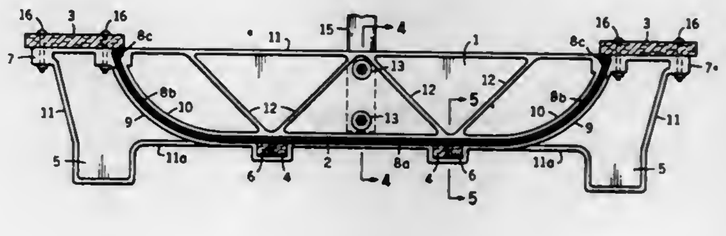
Bryce Wilson Blair, Hershey, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Continuation of Ser. No. 48,941, June 22, 1970, abandoned, which is a continuation of Ser. No. 655,941, July 25, 1967, abandoned. This application Feb. 11, 1972, Ser. No. 225,631
Int. Cl. B65h *9/10*
U.S. Cl. 271—238 **4 Claims**

1. In a card reader, a card receiving channel into which a card to be read may be inserted, said card having a leading edge and a trailing edge both being substantially transverse to the axis of motion of said card, positioning means normally out of engagement with the card movable against the trailing edge of the card for moving it in its plane to position it in a predetermined reading locating in the channel, means for operating the positioning means, means for locking said positioning means in an inoperative position adjacent the inlet of the channel, and means engageable by the leading edge of the card to release said locking means whereby said positioning means is freed to move and position the card under control of the operating means, said means engageable by the leading edge comprising a finger extending laterally into the channel, the finger being mounted for movement laterally of the channel and in the plane thereof to release the locking means, the card being substantially rectangular in shape with one corner thereof being removed to form a camming surface for moving the finger.



3,850,427
SANDBOX WITH SHEET MEMBER BOTTOM AND END WALL PORTIONS AND GROOVE STRUCTURE THEREFOR

Arnold H. Schwab, St. Louis, Mo., assignor to A. H. Schwab Co., St. Louis, Mo.
Filed Mar. 21, 1973, Ser. No. 343,385
Int. Cl. A63g *31/00*
U.S. Cl. 272—1 A **3 Claims**



1. In a sandbox:

a. a pair of opposed side members each having a groove therein, each groove including a straight horizontal intermediate portion adjacent to a lower edge of the side member and upwardly extending end portions continuing from said intermediate portion,

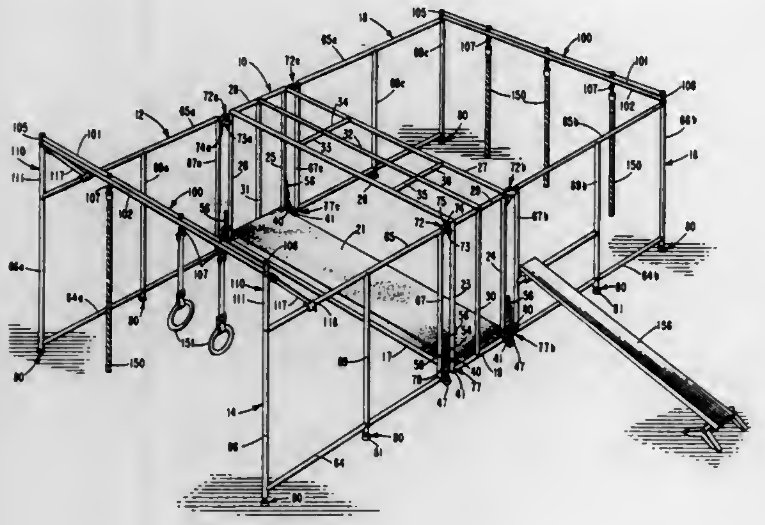
b. a sheet member providing integral bottom and end wall portions, the opposite side margins of said sheet member extending into said grooves,

c. transverse members extending between said side members, and secured at their ends thereto, and

d. said transverse members including seat boards each seat board having sufficient extent in a substantially horizontal plane to provide a flat seat for a child, and at least one bottom brace bar in underlying relation to said sheet member.

3,850,428
GYMNASTIC APPARATUS

Richard H. Zuber, Palatine, Ill., assignor to Porter Equipment Company, Shiller Park, Ill.
Filed Nov. 15, 1972, Ser. No. 306,874
Int. Cl. A63b *9/00*
U.S. Cl. 272—58 **12 Claims**



1. A gymnastic apparatus for supporting exercise and play devices comprising:

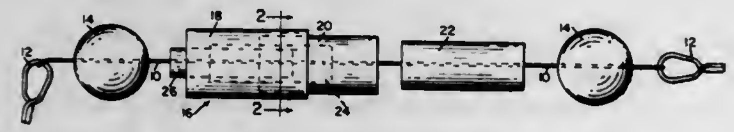
a self-supporting main section having a base and first and second substantially vertical posts attached to said base and defining therebetween a first side of said main section,

first and second substantially vertically oriented wing sections pivotally attached respectively to said first and second posts, each of said wing sections being movable between a folded position alongside said main section and an extended position extending outwardly of said main section, and

connector means attachable to said wing sections at points spaced from said main section when said wing sections are in said extended position to connect said wing sections together, said connector means comprising a beam attached to the upper portions of said wing sections whereby hanging exercise and play devices may be suspended therefrom.

3,850,429
INFANTS EXERCISE AND AMUSEMENT DEVICE

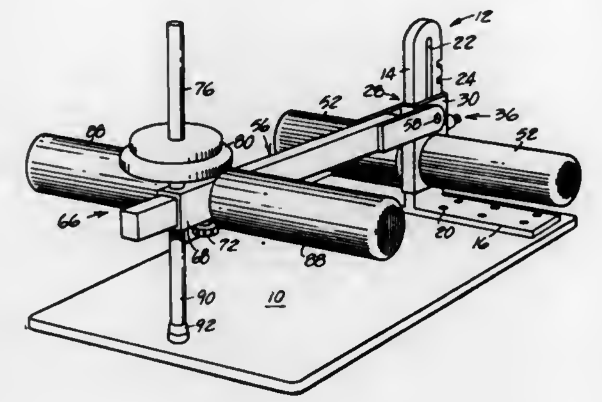
Daisy E. Clifford, 68 Oak Ave., Northboro, Mass. 01532
Filed Apr. 15, 1974, Ser. No. 460,749
Int. Cl. A63h *5/00;* **A63b** *7/00*
U.S. Cl. 272—80 **7 Claims**



1. An infant's exercise and amusement device comprising a flexible cord, a series of nestable hollow elements of differing diameters on the cord, each element being open-ended and slidable into and out of certain other said elements along the cord.

3,850,430
EXERCISE DEVICE

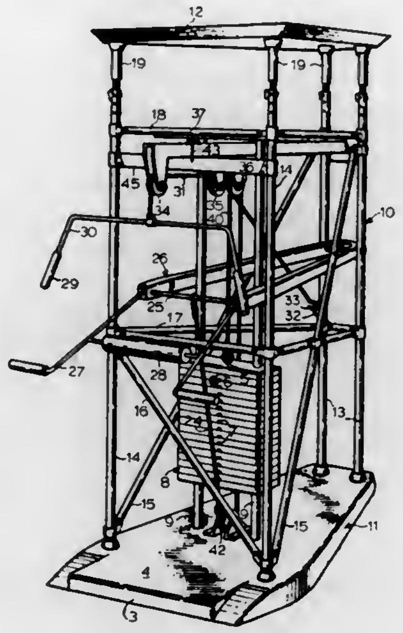
Richard A. Hamilton, 130 Gossonia Pk., Auburn, Calif. 95603
Filed May 17, 1973, Ser. No. 361,068
Int. Cl. A63b *23/04*
U.S. Cl. 272—81 **13 Claims**



1. An exercise device comprising:
- a. a main base member,
- b. a height adjustment post secured to said main base member,
- c. counter resistance means slidably supported by said height adjustment post,
- d. a pivot arm pivotally attached to said counter resistance means,
- e. and resistance transfer means for applying a downward force to the leg of an exercisor during elevation thereof and slidably secured to said pivot arm whereby hamstring reinforcement of the quadriceps is elicited during terminal extension of the knee.

3,850,431
MULTIPLE USE EXERCISING DEVICE

Louis A. Winans, 696 Casanova Ave. No. 2, Monterey, Calif. 93940
Filed June 28, 1972, Ser. No. 267,175
Int. Cl. A63b *21/00, 21/20*
U.S. Cl. 272—81 **9 Claims**



1. A unitary and body conditioning exercise machine for use in an enclosed rom said machine incorporating a single vertical stack of individual weights and permitting a wide range of exercises, comprising:

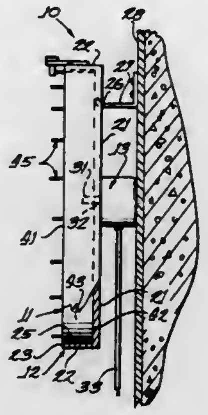
an upstanding frame disposed to rest in a stable condition on a floor area and to extend upwardly to the vicinity of a ceiling;

telescoping means for firmly communicating the upper end of said upstanding frame with the ceiling to firmly hold said frame in place between the floor and ceiling to permit a wide range of exercises to be carried out on said machine;

force translation means interconnecting a single vertical stack of individual weights with a plurality of progressive resistive exercise stations accessible exteriorly of said frame, said exteriorly accessible stations including a first station located near the bottom of said upstanding frame to permit the performance of lower torso exercises, said first station having means to transmit the lifting force of said multiple stacked weights to a press bar lever located in the intermediate region of said upstanding frame and a second station located near the upper end of said upstanding frame to permit the performance of over-the-head progressive resistive exercises, said force translation means comprising a first and second pulley system, said first pulley system incorporating a series of pulleys affixed to said frame and translating the lifting force of said single vertical stack of individual weights to said first station near the bottom of said upstanding frame, said first pulley system including a guy wire attached to said press bar, said guy wire being connectably disconnectible with said first station, and said second pulley system incorporating a series of pulleys affixed to said frame and translating the lifting force of said weights to said station near the upper end of said upstanding frame, horizontal pulley bar, said first and said second pulley systems each having respective center pulleys appended from said horizontal pulley bar swivel mounted on said fame, said pulley bar being movable orthogonally with respect to the vertical axis of said upstanding frame, said pulleys being appended so that the interior edge of each pulley can be placed, alternately, over the center of gravity of said single stack of weights.

3,850,432
DART AND ROULETTE BOARD

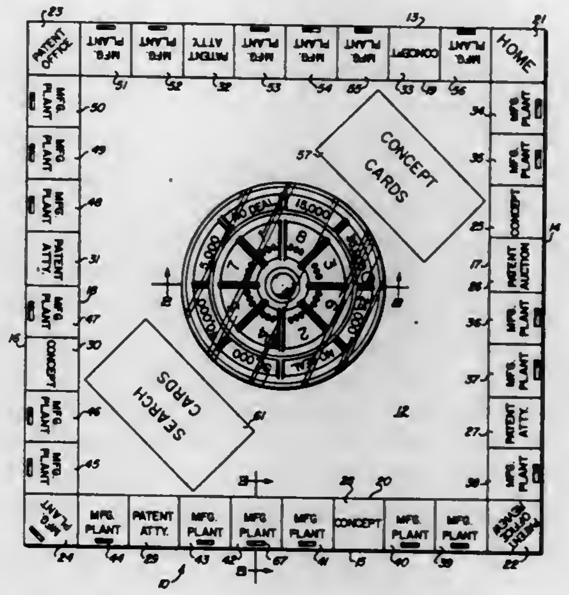
Clifford G. Crocker, 428 Campfield Ave., Hartford, Conn. 06114
Filed Sept. 12, 1973, Ser. No. 396,530
Int. Cl. A63b *71/02*
U.S. Cl. 273—105.2 **3 Claims**



1. A dart and roulette board comprising a circular frame having a circular back surface with cylindrical side walls extending outwardly normal thereto from the peripheral edges of the back surface and terminating in a forward most end edge defining a vertical plane parallel to the back surface and spaced outwardly therefrom, a circular compartment defined interiorly of the side walls and back surface in the frame and concentric therewith, a circular disc of a diameter slightly less than the diameter of the frame compartment and of a thickness slightly less than the depth of the compartment and adapted to be received in the compartment concentric therewith, the disc having a front face surface forming a target imprinted thereon and formed of a dart supporting material adapted to receive and retain the pointed ends of conventional type darts therein, a back surface parallel to the face surface, and peripheral cylindrical side walls interconnecting the peripheral edges of the face and back surfaces, an electric motor mounted to the exterior surface of the frame back surface and having a shaft driven thereby projecting axially therefrom through an axial opening provided in the frame back surface with the shaft terminal end projecting into the frame compartment centrally thereof, said motor shaft terminal end disposed concentrically with the disc and connected to the disc back surface to support the disc in spaced apart juxtaposition with the frame back surface and with the disc peripheral side wall surfaces in juxtaposition with the interior frame side walls and spaced slightly therefrom, the target face of the disc disposed substantially co-planar with the plane defined by the outer ends of the frame side walls, the electric motor operative to rotate the disc about its axis upon energization of the motor, a source of electric energy, an electrical cord adapted to interconnect the electric motor to the source of electric energy, an electrical switch interposed in the electrical cord adapted to energize and de-energize the electric motor, a plurality of circumferally spaced axially projecting pins disposed angularly about the peripheral edges of the target face and projecting outwardly therefrom, a flexible pointer connected to the frame and projecting normal to the target face adapted to coact with successive pins exposed thereto during the rotation of the disc about its axis, the pointer being pivotally mounted between an operative pin engaging position disposed forwardly of the plane of the target face of the disc and an inoperative position disposed rearwardly from the plane of the target face of the disc, and a multiplicity of radially extending lines and concentric circular lines imprinted on the disc face and having numbers associated therewith defining a target on the disc face.

3,850,433
BOARD GAME INVOLVING PATENT TRANSACTIONS

John Michael Purlia, 8908 Shelbyville Rd., No. 6, Louisville, Ky. 40222
Filed Feb. 7, 1974, Ser. No. 440,344
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 AD **10 Claims**

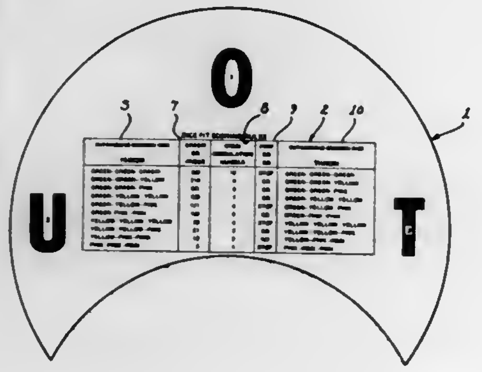


1. In a board game,
- a. a rectangular board having a playing surface and four side edges,
- b. a plurality of playing sections arranged in alignment along each of said side edges, one of said playing sections constituting the starting point of the game and another section displaying a symbol representing the Patent Office;
- c. one playing section along each side edge displaying a

symbol denoting an inventive concept and another playing section along that side edge displaying a symbol denoting the office of a patent attorney, and remaining playing sections along this side edge displaying symbols denoting manufacturing plants of different character;

- d. a plurality of concept cards, each of which identifies an invention related to a particular manufacturing plant denoted on a playing section, there being a concept card for each manufacturing plant section on said board;
- e. a plurality of search cards, each of which displays the result of a patentability search;
- f. a plurality of patent cards, each of which identifies an invention on a concept card and displays the cost of the patent of that card;
- g. a plurality of playing pieces of different colors;
- h. a plurality of property chips of colors corresponding to the colors of the playing pieces;
- i. a supply of playing money, and
- j. a chance device for determining the number of playing sections over which a playing piece is moved and also the price of certain transactions involving patents.

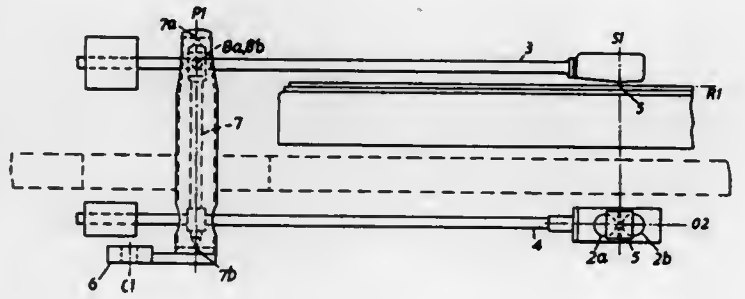
3,850,434
OUTRAGEOUS GAME
Laurence R. Ockenfels, 1006 E. Palmecroft Drive, Tempe, Ariz. 85281
Filed May 23, 1973, Ser. No. 362,940
Int. Cl. A63f *3/00*
U.S. Cl. 273—135 AC **5 Claims**



1. A game device for a plurality of players and embodying property acquisition sub-games, transaction sub-games and confrontation sub-games, said game device comprising in combination:

- a. a game board, said game board being divided into three playing sections;
- b. a plurality of dice for indicating one of a plurality of combinations in response to a roll of said dice;
- c. a first one of said sections comprising:
  - i. alpha numeric indicia representative of games determining the initial standings of each of the players;
  - ii. a grid for determining the amount of property to be distributed to a player in response to a roll of said dice, said grid comprising a first column listing all possible rolls of said dice, and a second column listing the numerical value of the property to be distributed to each player corresponding to each roll of said dice;
- d. a second one of said sections comprising alpha numeric symbology representative of a plurality of individual transaction sub-games available to the players and an envelope defining the boundaries of a bank for storing the property which is not in the possession of one of the players;
- e. a third one of said sections comprising alpha numeric demarcations for identifying a plurality of confrontation sub-games resolved by rolling said dice; and
- f. a plurality of power cards having written information disposed on each side, each of said cards providing a player with the power to alter the course of play in accordance with the written information; whereby, the property distributed to each of the players in said first section, the transactions conducted in said second section and the confrontations resolved in said third section may be altered by use of one of said power cards.

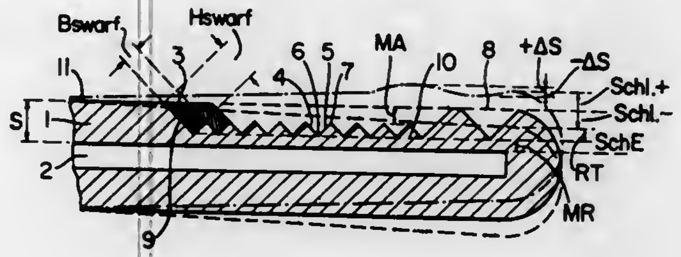
3,850,435
GRAMOPHONE PICKUP GUIDANCE MECHANISMS
Richard Wykeham Beaufoy Birch, Strelley Barn, Woodham Mortimer, Maldon, Essex, England
Continuation of Ser. No. 140,081, May 4, 1971, abandoned. This application Dec. 20, 1973, Ser. No. 426,894
Claims priority, application Great Britain, May 13, 1970, 23287/70
Int. Cl. G11b *3/10*
U.S. Cl. 274—23 A **15 Claims**



1. A pickup guidance mechanism for a gramophone disc record player in which a gramophone disc record having a spiral groove containing a recorded signal is rotatable by turntable means which define a record axis of rotation and a record plane at right angles thereto, comprising:

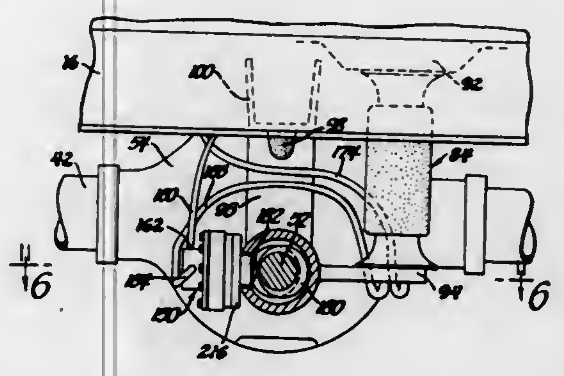
- A. a pickup which can receive a stylus for engaging said spiral groove on the record and which experiences deflections to opposite sides of a symmetry plane when engaged with said groove upon rotation of the record on the turntable means;
- B. a first or pickup arm holding the pickup for guidance thereof across the record and pivoted for rotation in a plane parallel to the record plane about an axis which lies in the symmetry plane and is remote from the pickup;
- C. a slave arm mounted for rotation in a plane parallel to the record plane and pivotally supporting said first arm at said first arm axis;
- D. a radiation propagation and sensing system having elements so disposed in relation to the first arm and the record axis as to afford, in a position of the first arm in which tracking error is zero, i.e., when the symmetry plane is normal to the radial plane of the record containing an axis parallel with the record axis and passing through the point of engagement with the record of the stylus in its undeflected position a radiation path which includes a line joining the record axis with said axis parallel with the record axis or a segment of that line,
  one of said elements of the system being mounted in said radiation path on said axis parallel with the record axis so as to be movable with said first arm and to effect, during operative engagement of the stylus on the record, on movement of said first arm, a change in the distribution of radiation sensed by the system thereby to produce, when said first arm is in a position other than said position thereof in which tracking error is zero, a command signal; and
- E. correcting means responsive to said command signal and adapted to rotate the slave arm to effect movement of said first arm towards said position thereof in which tracking error is zero.

3,850,436
METHOD FOR CUTTING GRAMOPHONE RECORDS, AND ARTICLES PRODUCED THEREBY
Erich Rabe, Nurnberg, Germany, assignor to Polyband Gesellschaft Fur Tontrager mbH & Co. KG, Munich, Germany
Continuation of Ser. No. 811,121, March 27, 1969, abandoned. This application Aug. 10, 1971, Ser. No. 170,606
Claims priority, application Germany, Mar. 27, 1968, 1772070
Int. Cl. G11b *3/72*
U.S. Cl. 274—42 R **10 Claims**



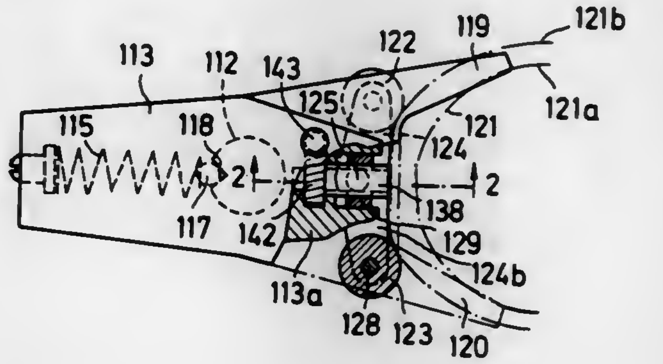
1. A gramophone record comprising a master of recording material in the surface of which are cut grooves which cooperate with a pick-up needle and which have a modulation of frequency corresponding to that of a recorded signal, the grooves being cut into the original recording material to such a depth that a sharp groove crest is formed from the intersection of the walls of adjacent grooves regardless of the groove spacing and modulation amplitude, the lowest points of said grooves being spaced from a constant flat cutting plane only by an amount proportional to the modulation signal.

3,850,437
LEVELING SYSTEM WITH A SINGLE OFFSET MOUNTED AIR SPRING
Robert E. Owen, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 17, 1972, Ser. No. 307,378
Int. Cl. B60g *17/00*
U.S. Cl. 280—6 R **7 Claims**



1. A vehicle rear suspension leveling system comprising: a rear axle housing having wheel means on either end thereof, means on said axle housing defining a pair of spaced apart spring seats, chassis frame cross member located above said axle housing having opposite end portions thereon, a pair of spaced apart primary spring means each having a first end thereon supported on one of said spring seats and an opposite end thereon supported on one of said cross member end portions, said spring means serving to yieldably maintain said chassis cross member at a predetermined position above said axle housing under first vehicle load conditions, a differential housing on said axle housing located between the opposite ends thereof, differential gear means within said housing including a pinion member, a drive shaft extending from said differential housing adapted to be connected to power output means for driving said gear means to transfer power from the output means to said wheel assemblies, compressor means including a driven member operated by said differential pinion to compress air, a tubular air spring sleeve having upper and lower ends, said sleeve having rolling lobes at each end thereof; a piston sealed to each of said lobes including a bell-shaped outer surface for supporting each of said lobes for rolling movement with respect thereto, means connecting one of said pistons connected to said cross member at a point offset from the center of said cross member, the other of said pistons connected offset of said differential housing on side opposite to said differential pinion driven compressor, said sleeve having a length greater than its diameter to permit free, relative movement between said pistons in response to suspension movement, means to direct air from said compressor means into said air spring sleeve to vary the height thereof only when the vehicle is driven and to produce a spring force supplemental to that of said primary spring means, and means for controlling air flow from said compressor means to said air spring sleeve for automatically maintaining a predetermined height relationship between said chassis cross member and said axle housing in response to changes in vehicle load.

3,850,438
FRONT SUPPORTING MECHANISM FOR SKI SAFETY BINDINGS
Brigitte Sittmann, Stuttgart, Germany, assignor to Verinigte Baubeschlagfabriken Gretsch & Co. GmbH, Stuttgart, Germany
Filed July 3, 1972, Ser. No. 268,443
Claims priority, application Germany, July 5, 1971, 2133267
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 T **40 Claims**



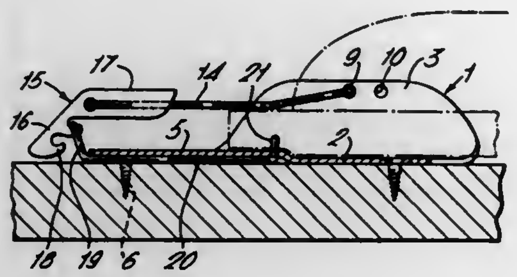
1. A ski-boot end supporting mechanism for ski safety bindings comprising:

- a support jaw unit with two lateral supporting arms for holding respective opposite lateral sides of an end section of a ski boot,
- attaching means for attaching the support jaw unit to a ski, additional support means arranged between said arms for additionally supporting the ski boot,
- and adjusting means for adjustably moving said additional support means and said arms relative to and independently of one another in the longitudinal direction of the ski, said adjusting means including force transmitting guiding means arranged at substantially the same vertical height above said ski as said additional support means.

3,850,439
SKI-BINDINGS
Odd Guttulsrud, Havnabakken 12B, Oslo 8, Norway
Filed Jan. 23, 1973, Ser. No. 326,015
Claims priority, application Norway, Feb. 11, 1972, 397/72
Int. Cl. A63c *9/10*
U.S. Cl. 280—11.35 B **5 Claims**

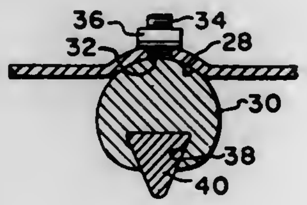
1. In a ski-binding of the type wherein a forwardly directed clamp is mounted in upright ears on a footplate, said clamp being, with a downwardly directed pressure, retained by a member which cooperates with the leading end of the clamp,

and thereby presses the leading portion of the boot sole against the upper face of the footplate, while the boot sole engages upright lugs provided on the footplate, an improvement wherein the retaining member comprises a locking member in the form of a two-armed lever pivotally mounted on the leading end of the clamp, said locking member including at least one hook-shaped tooth facing rearwardly towards the boot, said tooth being engaged, in the locked position of the binding, with a complementary locking loop mounted at the leading portion of the footplate, said footplate including an extension and said complementary locking loop being secured to said extension and extending transversely of the ski, said loop including legs which are extended and bent inwardly beneath the footplate and have free ends which are bent to approximate right angles upwardly and passed through orifices provided in the footplate so that said upwardly bent ends form said upright lugs.



3,850,440
SNOWMOBILE SKI

Donald G. Reedy, both of 491 Somerset, Saginaw, Mich. 48603, and George R. Pattullo, both of Caro, Mich.
Division of Ser. No. 209,569, Dec. 20, 1971, Pat. No. 3,739,458. This application Apr. 10, 1973, Ser. No. 349,823
Int. Cl. B62m *27/02*
U.S. Cl. 280—28 **1 Claim**



1. A ground-engageable ski adapted to be mounted on a snowmobile for turning movement about a generally vertical steering axis interjacent the ends of said ski, to steer the snowmobile, comprising:

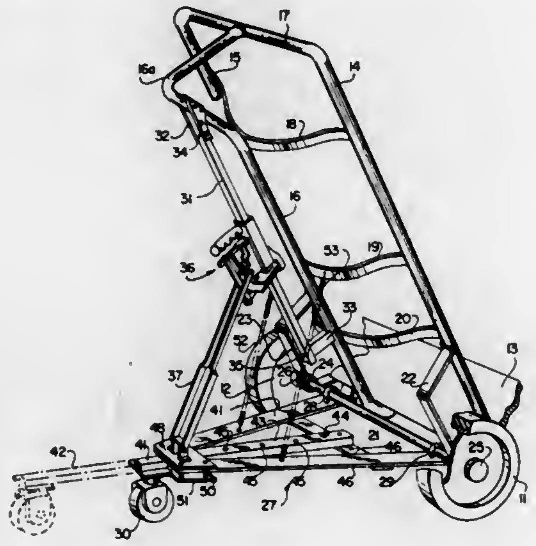
an elongate ski runner having an upturned forward end adapted to be connected to said snowmobile;

an elongate wear rod mounted on the underside of said runner and having an elongate slot in the underside thereof, and being of a length substantially lesser than the length of said rod a, predetermined greater portion of said slot being rearward of said axis than forward thereof; and a one piece wear rail being disposed in said slot in abutting relation with opposite end walls thereof, said wear rail comprising material which is harder than, and which has a different coefficient of thermal expansion than, said wear rod;

a portion of said wear rod being formed over the underside of said rail to secure it in said slot.

3,850,441
ADJUSTABLE HAND TRUCK

Jack Peters, 24008 Bessemer St., Woodland Hills, Calif. 91364, and Easton D. New, 12783 Telfair St., Sylmar, Calif. 91342
Filed Oct. 20, 1972, Ser. No. 299,563
Int. Cl. B62b *1/08*
U.S. Cl. 280—47.2 **9 Claims**



1. In a tiltable hand truck having a pair of main wheels rotating on an axle, a support platform, and at least two upwardly extending frame rails, the improvement which comprises:

- a. a generally V-shaped secondary frame means having its bifurcated ends pivotally mounted about an axis of rotation parallel to the axle supporting said main wheels, said secondary frame being substantially parallel to the ground when said secondary frame is in use and with said bifurcated ends lying inwardly of said main wheels,
- b. at least one auxiliary wheel operatively connected to said secondary frame,
- c. an upwardly extending support rail mounted on said truck parallel to said upwardly extending frame rails,
- d. adjustable gripping means for reciprocating along and fixably gripping said support rail at a plurality of points along said support rail,
- e. linkage means linking said adjustable gripping means to said secondary frame at the junction of said bifurcated ends to securely fix said secondary frame means at a specific angle to said parallel frame rails at a specific point along said support rail, said angle being varied as the gripping means reciprocates along said support rail.

3,850,442
BOWLING BAG CART

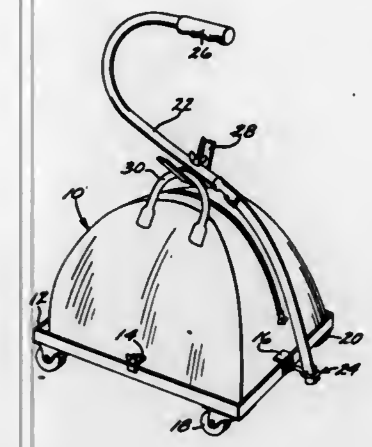
Frank Wehner, 5806 Guatamala Way, Buena Park, Calif. 90620
Filed July 9, 1973, Ser. No. 377,359
Int. Cl. B62b *3/00*
U.S. Cl. 280—47.37 **11 Claims**

1. For hauling bags of the kind that have an upper handle, a cart comprising in combination;

a wheeled platform having a steerable wheel at one end;

a cart handle connected and extending upwardly from said one end of the platform; and

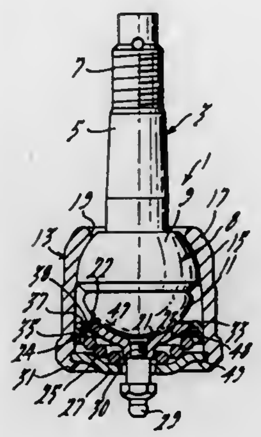
connecting means fixed to the handle at a point along its length for connecting the cart handle to the handle of the bag;



the cart handle being connected to the cart such that it is free to turn about an axis which is substantially vertical when the platform is horizontal.

3,850,443
BALL JOINT

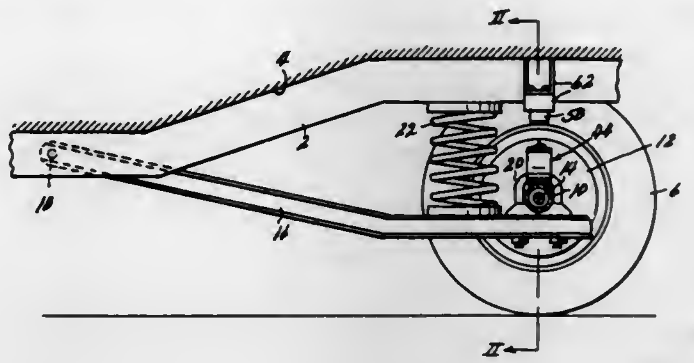
Morris Hassan, Trenton, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Division of Ser. No. 367,066, June 4, 1973, Pat. No. 3,820,907. This application Dec. 13, 1973, Ser. No. 424,499
Int. Cl. B60g *3/18*
U.S. Cl. 280—96.2 R **2 Claims**



1. Ball joint wheel suspension apparatus comprising a lower control arm and an upper control arm, steering knuckle having a wheel spindle thereon, a wheel mounted on said spindle, a first ball joint assembly connecting said knuckle to said lower control arm and a second ball joint assembly connecting said spindle to said upper control arm, said first ball joint assembly comprising a housing having a socket portion, an opening in said socket portion, a stud extending through said socket portion, said stud having a shank and a first spherical portion adjacent said shank, a second spherical portion adjacent said first spherical portion and within said housing, means connecting said shank to said knuckle, a pressure plate engaging said second spherical portion, a pusher element engaging said pressure plate, resilient means biasing said pusher element and said pressure plate toward said second spherical portion, said pressure plate being adapted to move toward said opening and keep said first spherical portion seated in said socket portion as said first spherical portion and said socket portion wear, and retaining means in said socket portion located a predetermined distance from said pusher element and extending into the path of movement of said pusher element but not said pressure plate to limit the amount of movement of said pusher element toward said opening.

3,850,444
OVERLOAD SPRINGS FOR AUTOMOTIVE VEHICLES

Oliver L. Wright, Box 206, and Wilbur D. Wright, Box 81, both of Lincoln, Mo. 65338
Filed Feb. 21, 1973, Ser. No. 334,241
Int. Cl. B60g *11/40*
U.S. Cl. 280—124 R **4 Claims**

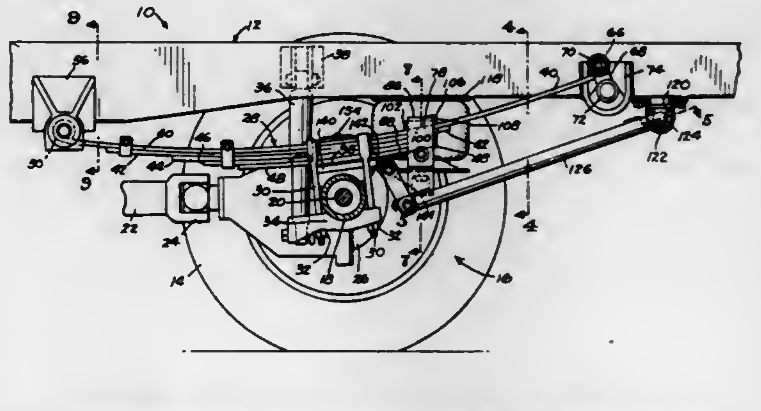


1. An overload spring device for use with an automotive vehicle in which the chassis is supported above the wheels thereof by vertically yieldable suspension springs, said device comprising:

- a. a normally relaxed overload spring mounted on a base consisting of a portion of said vehicle vertically movable with the wheels thereof, and including a resilient leg supported at one end above said base in the manner of a cantilever,
- b. a bumper member mounted on the vehicle chassis and operable, whenever said suspension springs have yielded to a predetermined degree, to engage said spring leg intermediate its ends and to deflect it downwardly, and
- c. an abutment member mounted at the free end of said spring leg, said abutment member normally being spaced above said base but engaging said base when said spring leg is deflected downwardly to a predetermined degree, whereafter said spring leg constitutes a beam supported at both ends.

3,850,445
COMBINED AIR SPRING AND LEAF SPRING SUSPENSION

David R. Borns, and William C. Pierce, both of Muskegon, Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.
Filed Feb. 11, 1974, Ser. No. 441,669
Int. Cl. B60g *11/46*
U.S. Cl. 280—124 F **31 Claims**



1. Land vehicle suspension structure which comprises,

an axle with wheels mounted thereon,

a pair of leaf springs secured to said axle adjacent said wheels, each spring having end portions adapted to be secured to a vehicle frame forwardly and rearwardly of said axle,

means forming a beam which extends generally parallel to said axle,

anchor means anchoring said beam in load transmitting relation to each of said leaf springs at a location longitudinally intermediate said axle and one of said end portions, air spring means mounted on said beam and being adapted to transmit vertical load between said beam and a vehicle frame,

lever means adapted to be secured to a vehicle frame and being connected to follow vertical movement of portions of said axle relative to such vehicle frame,

said axle portions being axially oppositely displaced from the axial center of said axle,

and torsion means operable to resist at least certain swinging movements of said lever means incidental to vertical movement of said axle portions.

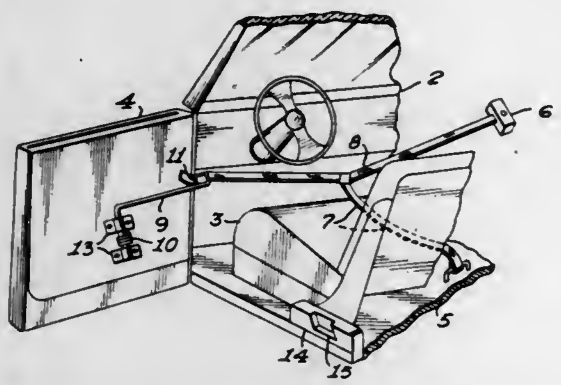
3,850,446
MOTOR VEHICLE SEAT BELT APPARATUS

Emory N. Hogensen, 13840 Edbrooke Ave., Riverdale, Ill. 60627

Filed May 10, 1971, Ser. No. 104,296

Int. Cl. B60r *21/00*

U.S. Cl. 280—150 SB **9 Claims**



1. The combination of a vehicle having a front hinged side door adjacent the vehicle seat and a seat belt apparatus comprising an arm having an angled end piece, means pivotally mounting said end piece on the inner side of said door for pivoting about an axis extending upwardly and rearwardly in the vertical plane of the door such that the free portion of said arm at an angle of said end piece is swingable about said axis toward and away from the door, spring means biasing said free arm portion downwardly against said door, a buckle connected to the outer end of said swingable arm portion; a seat belt connected at one end thereof to said buckle and at its opposite end to the floor rearwardly of the seat, a shoulder strap attached at one end to the vehicle roof above and to the rear of the seat back, the opposite end of said strap attached to an intermediate portion of the seat belt, a recess on the door sill for receiving said arm outer end when said arm is against the door in the closed position thereof so that the door overlies said arm end in the recess and thereby serves as a releasable arm locking means whereby when the door is swung from a closed to an open position said seat belt and shoulder strap are shifted by the upward rotation of said swingable arm portion from an occupant body restraining position to a forward elevated position away from the occupant to permit convenient passage between open door and seat.

3,850,447
VEHICLE OCCUPANT RESTRAINT DEVICE

Yasuo Nagazumi, Tokyo, and Kenichi Mori, Yokohama, both of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

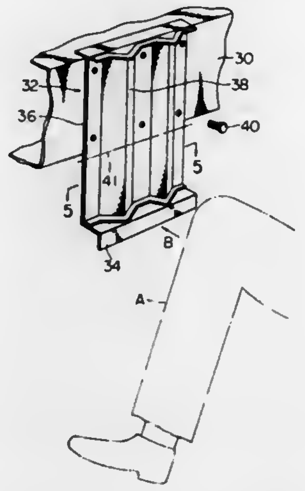
Filed July 9, 1973, Ser. No. 377,267

Claims priority, application Japan, July 10, 1972, 47-80547; July 10, 1972, 47-80548

Int. Cl. B60r *21/04*

U.S. Cl. 280—150 B **3 Claims**

1. A restraint device for a vehicle having a rigid frame member disposed in front of a passenger in the vehicle, said device restraining the movement of the passenger during rapid deceleration, said device comprising a shock absorbing member including a base plate secured to the frame member and extending vertically downwardly therefrom and a corrugated plate substantially coextensive with and securely attached to said base plate with the corrugations extending vertically therealong, and an impact receiving member attached to the free bottom end of and extending transversely of said shock absorbing member to receive the force of impact of the knees of the passenger during rapid deceleration whereby the shock absorbing member is deformed along a line transversely of the downwardly extending corrugations.



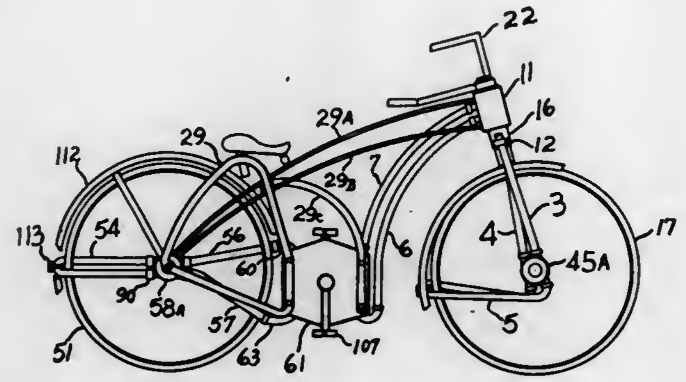
3,850,448
PRESSURIZED DRIVING MECHANISM

George A. Stewart, R.D. No. 2, Branchville, N.J. 07826

Filed July 13, 1972, Ser. No. 271,540

Int. Cl. B62m *1/10*

U.S. Cl. 280—216 **9 Claims**



1. In a fluid transmission apparatus, the combination of a bodily operated rotary pump means that supplies pressurized driving power to a distantly located rotary means, which are driven thereby, and which have the ability to allow pressurized fluid to by-pass the pressurizing mechanism, allowing for a reciprocal action of constantly flowing drive fluid for a period of time a fluid driven rotary element said bodily operated rotary pump means having a plurality of ports that convey pressurized fluid to and from said fluid driven rotating element and further including a pressurized fluid control means in a pressurized fluid circuit which makes it possible to turn said fluid driven rotating element 360° in a steering manner.

3,850,449
ANTIJACKKNIFING DEVICE

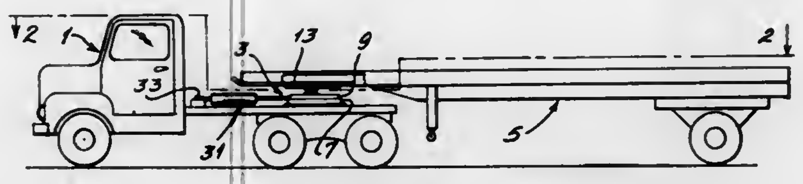
James H. Link, 712 S. Broadway, St. Louis, Mo. 63102, and Jess L. Watts, 10027 Schuessler Rd., St. Louis, Mo. 63128

Filed Mar. 19, 1973, Ser. No. 342,687

Int. Cl. B62d *53/06, 53/00*

U.S. Cl. 280—432 **11 Claims**

1. In a motor and trailer vehicle combination comprising a motor vehicle and a trail vehicle, means coupling said vehicles to each other for relative pivotal movements in the horizontal plane, an antijackknifing device comprising a variable length link connected at its opposite ends to said respective vehicles at points spaced from the pivotal axis of said coupling means whereby movement of said vehicles from aligned relation with each other changes the length of said link, means for selectively locking said link against changes in length, said link being arranged such that relative movements of said vehicles away from aligned relationship causes changes in the length of said link in one direction and relative movements of said vehicles toward aligned relationship causes changes in the length of said link in the opposite direction, and means independent of said locking means to facilitate changes in the length of said link solely in said opposite direction and thereby facilitate return movements of said vehicles toward aligned relationship though said locking means remains locked.



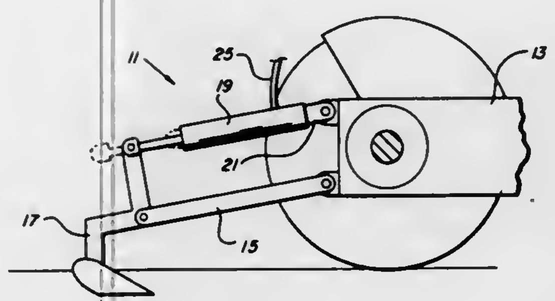
3,850,450
TOP LINK APPARATUS

Glynn E. Hadskey, Baton Rouge, La., assignor to James M. Rowe, Forest City, Ark.

Filed Nov. 27, 1973, Ser. No. 419,423

Int. Cl. B60d *1/04*

U.S. Cl. 280—479 R **6 Claims**



1. A top link apparatus for use with a tractor having a three-point hitch system, said apparatus comprising:

a. body means having a first end for pivotally mounting to the rear end of the tractor and having a second end;

b. hydraulic motor means fixedly mounted in said body means, said hydraulic motor means having a rotatable drive member;

c. screw means mounted in said body means and fixedly attached to said drive member of said hydraulic motor means for rotational movement therewith; and

d. extension means having a first end non-rotatably mounted in said body means and having a second end extending from said second end of said body means, said first end of said extension means being coactively attached to said screw means for causing movement of said extension means between extended and contracted positions as said screw means is rotated by said drive member of said hydraulic motor means, said extension means including a nut member fixedly attached to said first end for coactively engaging said screw means and including anti-rotation plate means fixedly attached to said first end for preventing said extension means from rotating with said screw means through said nut member thereby causing longitudinal movement of said extension means relative to said screw means as said screw means is rotated by said drive member of said hydraulic motor means.

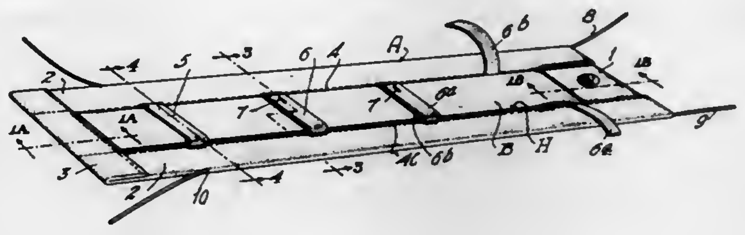
3,850,451
SAFETY SHIELD FOR FLANGED PIPE COUPLING

Roy A. Matthiessen, 30 Sandy Hill Rd., Westfield, N.J. 08610

Filed Feb. 2, 1973, Ser. No. 329,028

Int. Cl. F16l *55/00*

U.S. Cl. 285—13 **6 Claims**



1. A shield for a pipe joint comprising an elongated one-piece pliable fabric body of a length and width to be wrapped around a pipe coupling with its ends overlapped, means for separably connecting said ends together, a pliable fabric liner strip confined wholly within the boundries of said body and extending centrally longitudinally of said body and slidably contacting one side of the body, and means separably holding said liner strip on the body against unintended displacement therefrom and providing for relatively longitudinal sliding of said liner strip and said body during wrapping of the shield around a pipe coupling.

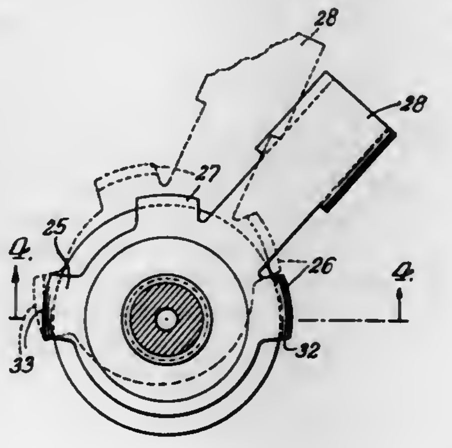
3,850,452
ONE-PIECE CAN TAPPER CONNECTOR

Richard V. Strybel, Elk Grove Village, Ill., assignor to Imperial-Eastman Corporation, Chicago, Ill.

Filed Apr. 19, 1973, Ser. No. 352,661

Int. Cl. F16l *35/00*

U.S. Cl. 285—38 **19 Claims**

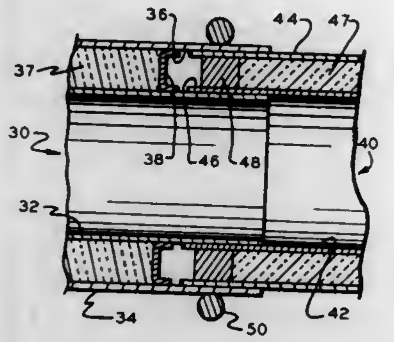


1. For use in connecting a dispensing valve to a container having an outlet portion defining an annular lip, a connector comprising: an annular body having a plurality of fixed turned lugs arranged to embrace the container lip; a generally diametrically opposite pair of said lugs being spaced apart a distance slightly less than the outer diameter of the container lip to have an interference fit therewith; a lever projecting from said annular body for manually swinging of the connector about the engagement of one of said pair of lugs with the container lip to urge the other of said pair of lugs forcibly against the container lip for effecting an inteference fit between said pair of lugs and the container lip thereby removably fixedly securing the connector to the container outlet portion; and means on said body for selective mounting and removal of a dispensing valve thereon with the connector retained fixedly on the container.

3,850,453
METHOD AND APPARATUS FOR CONNECTING INSULATING CONDUITS

David R. Bentley, Temperance, Mich., and Neil A. Alexander, Toledo, Ohio, assignors to Questor Corporation, Toledo, Ohio

Filed Oct. 4, 1972, Ser. No. 294,850
Int. Cl. F16l *11/12*
U.S. Cl. 285—47 **13 Claims**



1. Apparatus for conducting vehicle engine exhaust gases and insulating the conducted gases from ambient external temperatures including first and second conduits in an assembled relationship, comprising

a. a first conduit means including a smaller first inner tube and a larger first outer tube surrounding and spaced from said first inner tube,

b. a second conduit means including a second smaller inner tube and a second larger outer tube surrounding and spaced from said second inner tube,

c. said first and second inner tubes being sized to enable a reception of an end of one inner tube into an end of the other inner tube to provide a slidable connection of said two inner tubes while maintaining a substantially gas-tight joint at the resultant overlap of the inner tubes,

d. said first and second outer tubes being sized to enable a sliding reception of an end of one outer tube into an end of the other outer tube to connect the first and second conduit means at the resultant overlap of the outer tubes while maintaining an insulating space between said inner and outer tubes,

e. means extending perimetrically around the outside of the overlapped portion of said outer tubes for clamping the cooler outside tubes together thereby effecting a mechanical tie between the outer tubes of said first and second conduit means and preventing relative movement therebetween said inner tubes having no restraining connection to said outer tubes throughout their length thereby enabling the inner tubes to maintain a sliding longitudinal connection in response to expansion and contraction from exposure to exhaust gases, thus confining exhaust gases within the inner tube and maintaining the integrity of the insulating space to minimize heat loss to enable improved treatment of vehicle exhaust emissions, and

f. means for supporting said inner tubes of said first and second conduit means within the outer tubes of said first and second conduit means.

3,850,454
PIPE COUPLINGS

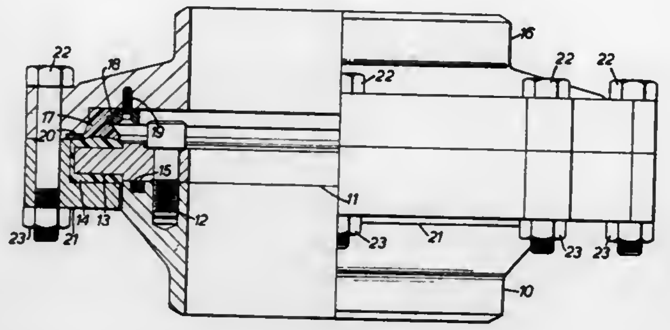
Arthur Loftus Paddington, Shifnal, England, assignor to British Ropes Limited, Yorkshire, England

Filed Feb. 26, 1973, Ser. No. 335,668
Claims priority, application Great Britain, Mar. 15, 1972, 12030/72; Sept. 15, 1972, 42832/72
Int. Cl. F16l *17/00*
U.S. Cl. 285—98 **12 Claims**

1. A pipe coupling in the form of a swivel joint, comprising: a first annular pipe attachment member having a flange thereon;

a second annular pipe attachment member formed with an annular radially inwardly directed channel;

an annular member of self-lubricating material having a U-shaped cross-section, said U-shaped annular member being located about and in contact with said flange and abutting said channel of said second annular pipe attachment member, said U-shaped annular member including a convex surface portion; and



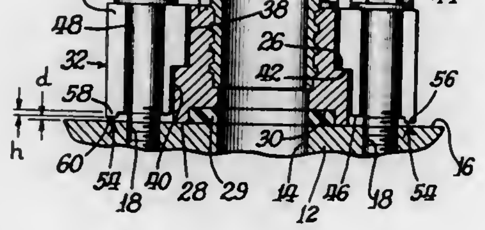
lip sealing means carried on said second annular pipe attachment member, said lip sealing means including a sealing surface abutting said convex surface portion of said annular member under pressure so as to operate as a pressure seal for liquid passing through said first and second pipe attachment members;

whereby said first annular pipe attachment member is freely rotatable with respect to said second annular pipe attachment member.

3,850,455
STRAIN-LIMITING CONNECTOR

Warren J. Stafford, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 17, 1972, Ser. No. 307,419
Int. Cl. F16l *13/04, 35/00*
U.S. Cl. 285—114 **7 Claims**



1. A strain-limiting connector comprising;

a support member having an outer surface thereon;

a removable object mountable in tightly clamped relation against said support member;

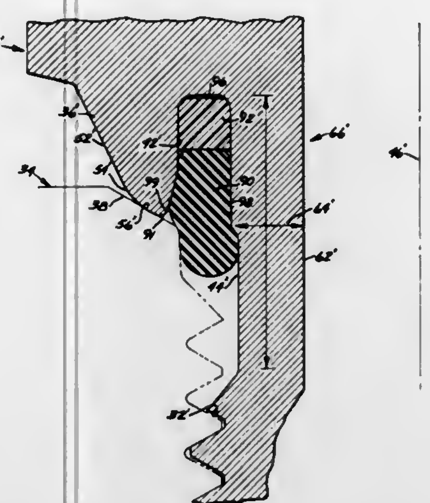
a body of substantially rigid deflectable material mountable on said support member in a predetermined maximum internally stressed condition including gripping means for engagement with said removable object; and

stop means on the body in spaced relation to said gripping means and being disposed in predetermmined precisely outwardly spaced relation from said outer surface upon engagement of said gripping means with the removable object for delayed engagement of said stop means with said outer surface only after subsequent deflective movement of said body toward the support member to limit further deflection of said body to said predetermined maximum internally stressed condition.

3,850,456
LIP SEAL FITTINGS

Francis J. Hanback, Palos Verdes, and Norman F. Robinson, Manhattan Beach, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Continuation-in-part of Ser. No. 117,656, Feb. 22, 1971, Pat. No. 3,730,563. This application Feb. 28, 1973, Ser. No. 336,789
Int. Cl. F16l *15/00*
U.S. Cl. 285—114 **7 Claims**



1. A fitting for redundant sealed attachment to a boss comprising:

a body portion constructed about an axis;

a threaded portion at a first end of said body portion adapted to engage with the boss;

a semi-flexible cantilevered lip extending toward said first end portion from said body portion, said lip having a lip tip including a lip tip surface for engagement with the boss to sealably mate therewith, an inner surface having a substantially circumferential portion parallel to the axis of said fitting and a frustroconical portion expanding in diameter from said substantially circumferential portion to adjacent said lip tip, and an outer circumferential surface which slopes inwardly toward said lip tip at an angle of less than 60° to said inner circumferential surface;

an O-ring positioned adjacent said lip tip between said lip tip and said body portion to provide a redundant seal for said sealable mating of said lip tip and the boss, said O-ring extending axially forwardly of said lip tip and adapted to sealingly engage the boss;

means for maintaining said O-ring positioned adjacent said lip tip; and

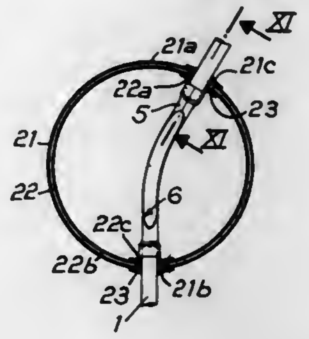
an elongated thread relief portion adjacent said thread portion and spaced juxtaposed said lip, said thread relief portion being longer than said lip, said body portion further including an inner circumferential surface defining a bore which extends from said first end axially at least partly through said fitting, whereby said inner circumferential surface of said body portion and said thread relief portion thereof define therebetween a weakened portion which can stretch in response to forces applied thereto.

3,850,457
INSPECTION HOLE BASE FOR UNDERGROUND PIPES

Claude Bigotte, Marseille, and Pierre Viazzi, Bormes-Les-Mimosas, both of France, assignors to I.C.O.F.I.

Filed Nov. 1, 1972, Ser. No. 302,732
Claims priority, application France, Nov. 3, 1971, 71.40034
Int. Cl. F16l *45/00;* **E02d** *29/12*
U.S. Cl. 285—121 **4 Claims**

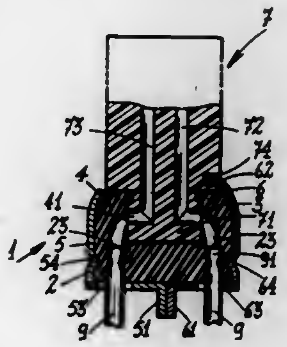
1. Inspection hole base for underground pipes, comprising two thin-walled, co-axial first and second envelopes of different diameters fitted in one another with a slight clearance and in a sealed manner and each of said two envelopes having at least three openings through its wall, two of said openings in said first envelope being circular and diametrically opposite and the third one of said openings in said first envelope being spaced by a predetermined distance in a first circumferential direction from one of said two openings, two of said openings in said second envelope being circular and diametrically opposite and the third one of said openings in said second envelope being spaced by substantially said predetermined distance in a second, opposite circumferential direction from one of said two openings in said second envelope, a pair of said openings of said first envelope being aligned with a pair of said openings of said second envelope for the passage of pipes therethrough, an upwardly open channel which is adapted to connect the ends of the pipes converging at said base, and seals made of an elastic material, placed on the peripheries of at least one of each of said aligned openings, said seals comprising, on the outside, peripheral lips which tightly grip the thin wall of at least one of the envelopes and on the inside, a suction member which is adapted to be tightly applied around a pipe passing through said aligned openings.



3,850,458
LEAK-TIGHT CONNECTOR FOR HYDRAULIC OR PNEUMATIC INTEGRATED CIRCUIT MODULE

Jean Gachot, 26, avenue de Paris, Soisy Sous Montmorency, Val d'Oise, and Simeon Lekarski, 138 boulevard de la Republique, Saint Cloud, Hauts de Seine, both of France

Filed Apr. 12, 1973, Ser. No. 350,528
Claims priority, application France, Apr. 28, 1972, 72.15188
Int. Cl. F16l *39/00*
U.S. Cl. 285—137 R **4 Claims**

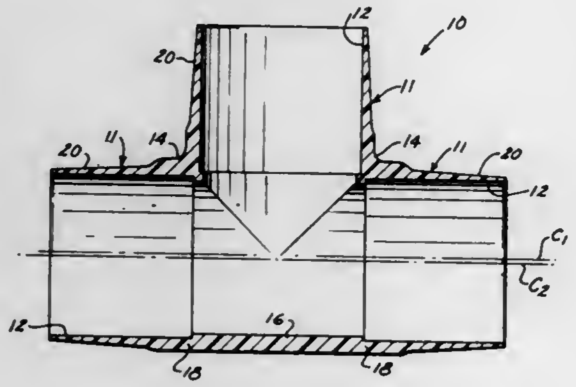


1. In a leak-tight connector for linking external tube elements with a module comprising integrated fluid-circuits, said module having openings which are spaced at intervals on at least one face of said module, said connector comprising a base means which forms a housing that accomodates that portion of the module in which said openings are located, said base means being pierced by ducts spaced at intervals corresponding to the spacing of the openings in the module, the outside end of each said duct in the base means being open to receive the end of an external tube element, clamping means for locking the module within the housing and applying the base means in a leak-tight manner to each face of the module

on which said openings are located; the improvement wherein said housing is delimited by two elastically deformable and opposite side sections having openings for the said ducts of the base means, and said clamping means being applied to said side sections and pressing them in a leak-tight manner against two opposite faces of the module.

3,850,459
REINFORCED PLASTIC PIPE FITTINGS

James J. Blumenkranz, Hollywood, and Charles W. Putzier, Los Angeles, both of Calif., assignors to R & G Sloane Manufacturing Company, Inc., Los Angeles County, Calif.
Continuation of Ser. No. 148,368, June 1, 1971, abandoned. This application July 27, 1973, Ser. No. 383,281
Int. Cl. F16l *47/00*
U.S. Cl. 285—156 **17 Claims**



1. A plastic pipe fitting designed for the transport of fluid under pressure comprising:
   a. a wall defining a first socket adapted to receive the end portion of a plastic pipe in mating relationship therein,
      1. said wall having a first thickness (t_f) adjacent to the inner end of said first socket,
      2. the minimum value of said first thickness being determined by the formula:

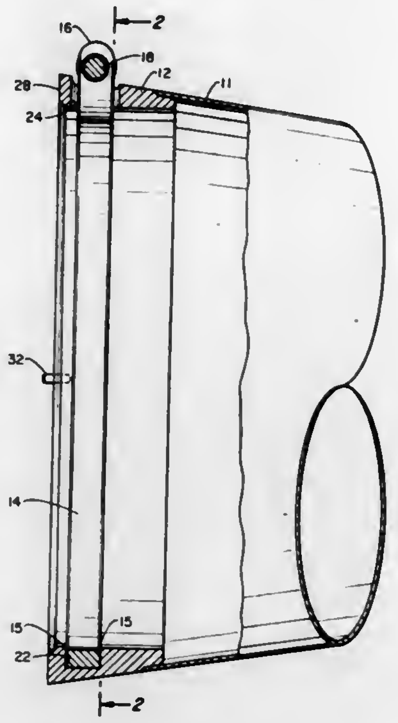
$$t_f = D_p/[(D_p/t_p) - 2]$$

where:
   D_p = outer diameter of said plastic pipe; t_p = wall thickness of said plastic pipe;
   b. a branch socket having a longitudinal axis extending at an angle to the longitudinal axis of said first socket;
   c. a crotch area at the point of intersection of said sockets, said crotch area having a crotch wall thickness that is approximately 1.4 to 1.6 times greater than said first wall thickness;
   d. said first wall thickness being determined at a point transversely aligned with said crotch area;
   e. the outer surface of said first socket wall viewed at the crotch area being eccentric with respect to the longitudinal axis of said first socket.

3,850,460
HIGH STRENGTH STRUCTURAL CONNECTOR

Clyde C. Cole, 5298 Harvard St., Ventura, Calif. 93003
Filed Apr. 23, 1973, Ser. No. 353,283
Int. Cl. F16l *39/00*
U.S. Cl. 285—321 **5 Claims**

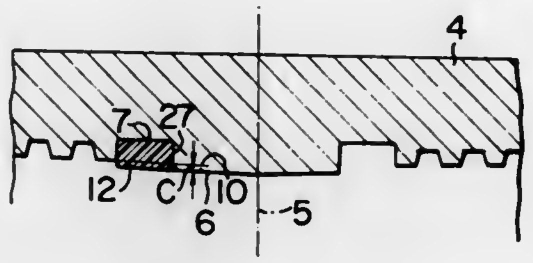
1. A quick connect-disconnect fastening device for joining the ends of tubular members, comprising:
   a cylindrical sleeve attached to one end of a first tubular member; said sleeve having a recessed ear groove on the inner wall;
   a clamp ring assembly adapted to sit in the recessed ear groove of the sleeve;
   a cylindrical stem attached to one end of a second tubular member; said stem having a shoulder and a projecting flange with a V-shaped groove adapted to be in juxtaposition with the recessed groove in the cylindrical sleeve when the stem and sleeve are mated; and



   means for tightening the clamp ring to draw the stem and sleeve together with a high impingement force.

3,850,461
THREADED TUBE JOINT STRUCTURE FOR A CASING

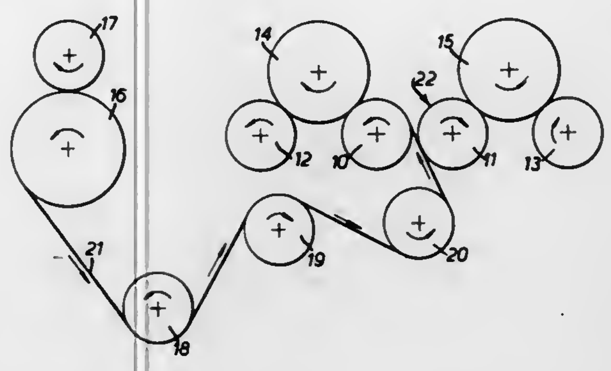
Yasuhide Fujioka; Takeshi Ryujin, both of Kainan; Shuji Yoshida, and Mitami Inagaki, both of Wakayama, all of Japan, assignors to Kainan Steel Tube Co., Ltd., Kainan and Sumitomo Metal Industries Limited, Osaka, Japan
Filed Mar. 30, 1973, Ser. No. 346,303
Claims priority, application Japan, Mar. 31, 1972, 47-32954; Mar. 31, 1972, 47-32959
Int. Cl. F16l *25/00*
U.S. Cl. 285—322.2 **4 Claims**



1. A threaded tube joint for a casing, comprising a tapered male-threaded portion of a metal tubing section, and a metal tubular coupler having a female thread thereon in threaded engagement with said male-threaded portion, said coupler having an inner flaring threadless surface portion extending parallel to and toward said tubing section by a constant amount from the taper profile formed at the crest of the female threads, said coupler also having an annular inner groove located between said inner flaring surface and the forwardmost thread of said coupler, a packing of tetrafluoroethylene located within said groove, said tubing section having threadless forward end portion of the same taper as that of said flaring surface of said coupler, and a forward side wall surface of said groove nearer the center of said coupler being in metal-to-metal force contact with a forward end portion of the forwardmost thread of said tubing section, a first metal-to-metal seal being formed between said threadless surface portion and said threadless forward end portion, and a second seal being formed between said packing and said forwardmost thread of said tubing section.

3,850,462
STRIPPING OF THIN FILMS

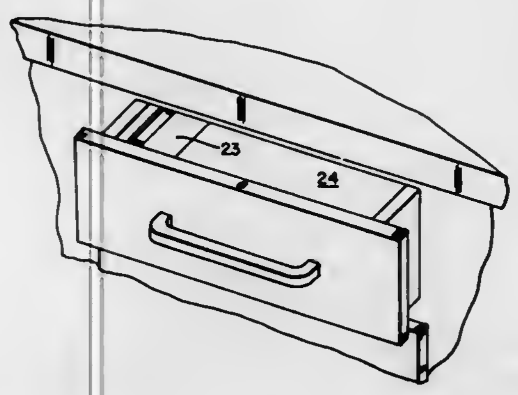
John Norman Cheetham, Ashtead, and Ratilal Lalji Shah, London, both of England, assignors to Yarsley Research Laboratories Limited, Chessington, Surrey, England
Filed May 8, 1973, Ser. No. 358,386
Claims priority, application Great Britain, May 8, 1972, 21368/72
Int. Cl. B65h *17/08*
U.S. Cl. 242—65 **5 Claims**



1. Apparatus for stripping a continuous thin film web from a support web, comprising a pair of closely spaced stripping rolls having rotational axes in a horizontal attitude and parallel with each other, drive means operatively coupled to said stripping rolls for driving them in opposite rotational directions, a pair of freely rotatable idler rolls one positioned on one side of said pair of stripping rolls and the other positioned on the other side of said pair of stripping rolls, each idler roll being parallel with and spaced from an adjacent one of said stripping rolls, a pair of take-up rolls, each resting on a respective one of said stripping rolls and its adjacent idler roll, whereby each said take-up roll is adapted to be driven by its contact with said stripping roll to accumulate a roll of one of said webs and to rise, relative to said stripping roll and associated idler roll as said web accumulates thereon, and means preventing axial movement of said take-up rolls relative to said stripping and idler rolls.

3,850,463
LATCH ASSEMBLY

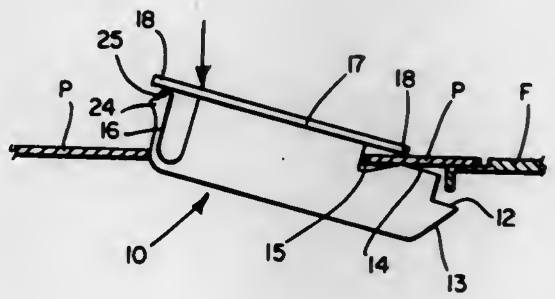
Donald B. Hawkins, P.O. Box 1203, Tracy, Calif. 95376
Filed Nov. 23, 1973, Ser. No. 418,750
Int. Cl. E05c *5/00*
U.S. Cl. 292—67 **9 Claims**



1. A latch assembly for selectively preventing motion in a first direction of a first member with respect to a second member, comprising;
   a latch arm secured to said first member and including a lug extending therefrom adapted to engage said second member only from said first direction,
   a first slot and a second slot spaced apart and extending through said latch arm,
   securance means extending through said first and second slots for pivotally and translatably securing said latch arm to said first member, and
   spring means for resiliently urging said lug toward said second member.

3,850,464
SLAM-LATCH

Robert H. Bisbing, 854 Grove Ave., Springfield, Pa. 19064, and James H. Vickers, 854 E. Chester Pike, Ridley Park, Pa. 19078
Division of Ser. No. 363,070, May 23, 1973,. This application June 3, 1974, Ser. No. 475,400
Int. Cl. E05c *1/10*
U.S. Cl. 292—175 **3 Claims**



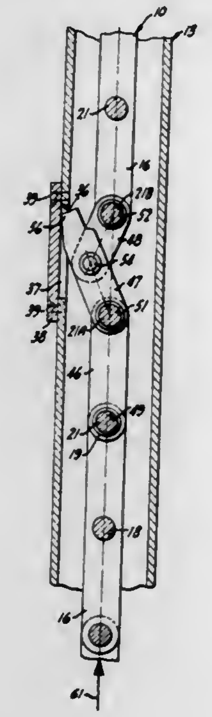
1. A latch of the sliding-action slam type for installation in an opening in a door panel for releasably retaining said door panel relative to a frame, said latch comprising:
   a. a latch body having a shaped recess at its forward end for receiving cooperatively the edge of the panel at the forward edge of the panel opening;
   b. said latch body at its forward end having a first portion which projects forwardly beyond said recess for retaining said latch body in said panel and for guiding said latch body in its back-and-forth sliding movements;
   c. said latch body at its forward end having a second portion which projects forwardly beyond said first portion, said second portion being adapted to cooperate with said frame when said latch body is in its forward position to maintain said door panel in latched position relative to said frame;
   d. said latch body having a flexible leg element at its rearward end, the upper end of said leg element being spaced rearwardly from the main portion of said latch body and adapted to flex forwardly during snap-in insertion of the latch body into the panel opening and to thereafter snap back into said spaced position;
   e. the upper end of said flexible leg element being shaped to receive the rearward edge of the panel opening for spring biasing the latch body forwardly toward latching position;
   f. the upper end of said leg element being also shaped for engaging the under-surface of the panel for retaining the latch body within said panel opening.

3,850,465
SELF-ACTING LOCK FOR ARTICULATED, ROLLING GRILLES

Martin Arthur Hill, Novato, and Russell Wardlaw, San Rafael, both of Calif., assignors to Cookson Company, San Francisco, Calif.
Filed Nov. 19, 1973, Ser. No. 416,968
Int. Cl. E05c *3/02*
U.S. Cl. 292—231 **5 Claims**

1. Self-acting lock structure for articulated, rolling grilles of the type adapted to be rolled up at one end for unbarring a closure, the combination comprising guide structure adapted to be fixedly secured on opposite sides of the opening with which the grille is associated, and serving to maintain the

movement of the grille in a defined path, said guide structure being configurated to conceal from view the side portions of the grille and including lock abuttment means disposal laterally to one side of the path of grille movement and internally of the guide structure, a plurality of links extending in the direction of grille movement, a plurality of parallel disposed grille rods extending laterally of said links across the opening, the links being mounted upon said rods and interconnected forming chains of links, said chains of links including end-links and intermediate links, all having rod receiving holes therein through which said grille rods extend, said chain of end-links including a set of locking links, including a pivot link and a lock-link, said lock-link having a hole in one end and a first one of said grille rods being received in said hole, said pivot link having a hole in one end and a second one of said grille rods being received in said hole, means pivotally interconnecting said pivot link to said lock-link in an over-center pivot connection, said lock-link including an extension projecting away from said pivot connection and engaging said second grille rod when the grille is rolled and unrolled from said one end, and said extension being disposed so as to clear said lock abuttment means in the guide structure, the intermediate links laterally aligned with said set of locking links having rod receiving holes greater in size than the rod diameter permitting movement of the grille rods with respect to the intermediate links serving to shorten the distance between said first and second grille rods when lifting forces are applied to the other end portion of the grille, serving to move said first grille rod towards the second grille rod, the arrangement of said locking links and said pivot connection being such that converging movement of the first and second grille rods shifts said pivot connection laterally outwardly and presents the extension on said lock-link for engagement with said lock abuttment means so as to deter further movement of the grille structure with respect to the guide structure in response to movement forces applied at said other end of the grille.



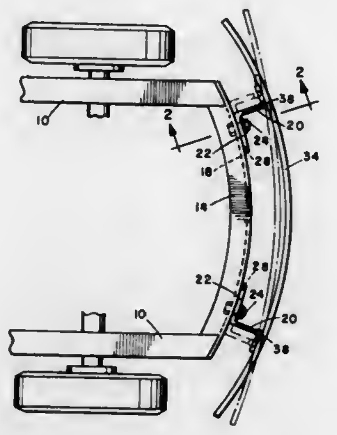
3,850,466
VEHICLE BUMPER AND FRAME MOUNTING

Alfonso F. Yepis, 231 Garrett Ave., Chula Vista, Calif. 92010
Filed Aug. 14, 1972, Ser. No. 280,453
Int. Cl. B60r *19/04*
U.S. Cl. 293—89 **2 Claims**

1. Improvements in frame mountings for a vehicle bumper, comprising:

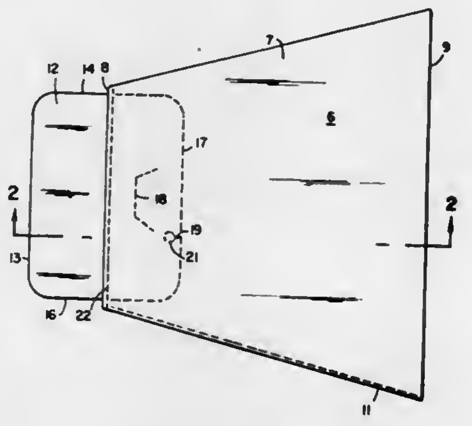
rigid parallel side frame structure including rigid frame members and terminal non-extensible cross frame structure between said side members as integral portions of the vehicle chassis;

a pair of support brackets each having a hinge for connection with said bumper and having slotted flanges with bolt elements extending through the slots of the slotted flanges and through said terminal cross frame structure on said frame structure permitting sliding movement of the brackets, under impact conditions, away from each other only, except in re-establishment of the normal non-impact positioning of the brackets.



3,850,467
SOIL CLEAN UP DEVICE

Leonard Gregory Johnson, Novato, Calif., assignor to Safe-T-All Corporation, San Rafael, Calif.
Filed June 20, 1973, Ser. No. 371,899
Int. Cl. A47l *13/52*
U.S. Cl. 294—1 R **4 Claims**

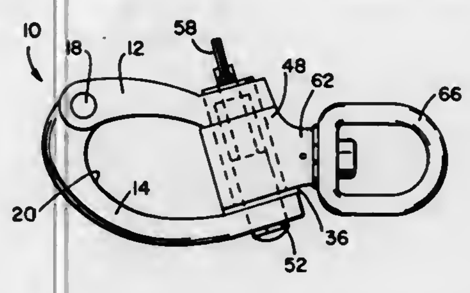


1. A soil clean-up device comprising a flexible sleeve of a size to receive a human hand and forearm and having a central portion with opposite first and second ends at least said first end being open to receive said hand and forearm, a relatively stiff approximately rectangular sheet positioned to extend into said second end and having a leading edge outside said sleeve and having a trailing edge inside said second end of said sleeve, and means for securing said second end of said sleeve to said trailing edge of said sheet.

3,850,468
SNAP SHACKLE

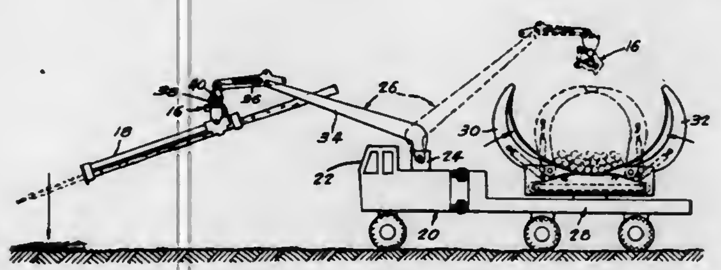
Stefan K. Hultin, Capistrano Beach, Calif., assignor to Nicrometal Marine Hardware Co., Inc., San Francisco, Calif.
Filed July 13, 1973, Ser. No. 378,990
Int. Cl. F16g *15/08*
U.S. Cl. 294—83 R **8 Claims**

1. A snap shackle comprising, a body member, a hook, pivot means connecting one end of the hook to one end of the body member, articulated swivel means at the other end of the body member for permitting an attached line to swing and to rotate freely with respect to the body member said swivel means including a swivel disposed between spaced-apart, opposed ends of the body member and the hook and mounted for swinging movement about a swivel axis intersecting said opposed ends of the body member and the hook, and a release pin mounted within the swivel for reciprocating movement along said swivel axis and having an end portion projecting from an end of the swivel for engagement with an opening in the end of the hook.



3,850,469
APPARATUS FOR DELIMBING AND LOADING FULL-LENGTH TREES

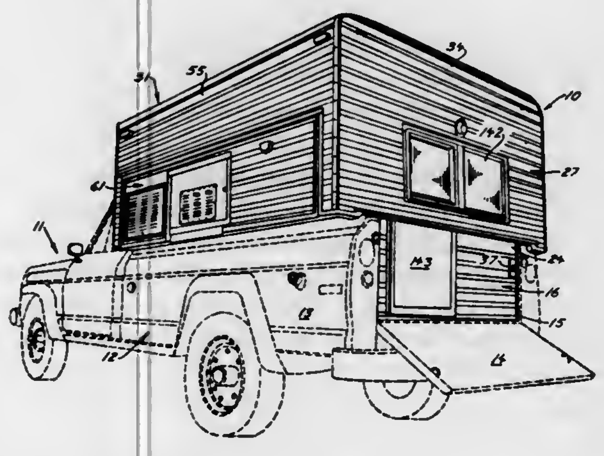
Rudy Vit, 19 Hemlock Rd., Ste. Therese, Quebec, Canada
Division of Ser. No. 153,389, June 15, 1971, Pat. No. 3,735,786. This application Apr. 16, 1973, Ser. No. 351,370
Claims priority, application Great Britain, June 16, 1970, 29171/70
Int. Cl. B66c *1/12*
U.S. Cl. 294—88 **2 Claims**



1. An apparatus for bunching trees, including a pair of pivoting arms mounted on a frame, a flexible cable-like member extending between the ends of the pivoting arms, said flexible cable-like member being crossed and looping around an extensible-retractable means, for effectively tightening or slackening the loop formed by the cable-like member.

3,850,470
EXPANDABLE HOUSING UNIT

Roy Kay Trelle, 8175-19 Ave., Burnaby, British Columbia, Canada
Filed Aug. 13, 1973, Ser. No. 387,917
Int. Cl. A47f *13/06*
U.S. Cl. 296—23 C **7 Claims**

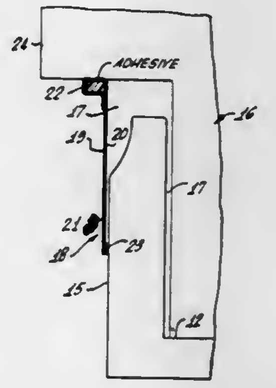


1. An expandable housing unit including:

a. a roofless lower housing section having four walls and a floor,
b. a roofed upper housing section having four walls mounted over the lower housing section for telescopic movement a raised position and a lowered position,
c. means for moving the upper housing section between said positions,
d. an opening in at least one wall of the lower housing section extending substantially from end to end thereof,
e. a drawer having end walls mounted in the opening,
f. a roof section over the drawer lying below and clear of the lower edge of an adjacent wall of the upper housing section when the latter is fully raised,
g. means for mounting the drawer for movement between a retracted position within the lower housing section and an extended position projecting outward therefrom with said means including:
  i. a rail having an inboard portion secured to an end wall of the lower housing section,
  ii. and having an outboard portion hingedly connected to the inboard portion for swinging movement between a substantially vertically upstanding position co-extensive with the inboard portion,
  iii. an elongated support member secured to an adjacent end wall of the drawer for engaging the rail and supporting the drawer thereon,
  iv. a plurality of rollers mounted on the support member for movement between the retracted positions above the support member and extended positions extending below the support member for engagement with the rail so as to provide rolling support for the drawer on the rail and,
  v. manually operative means for moving the rollers between said positions.

3,850,471
WEATHER PROTECTIVE SKIRT

Gail Vernon Johnson, 6934 Estrella Ave., Desert Hot Springs, Calif. 92240
Filed Dec. 26, 1973, Ser. No. 428,431
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 MC **2 Claims**

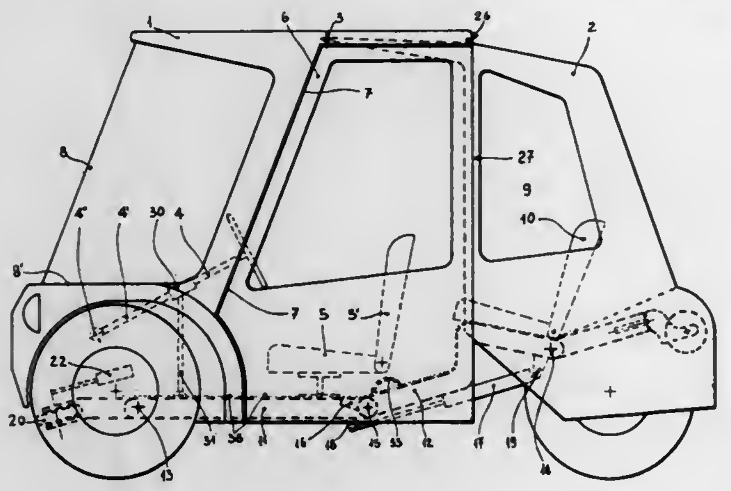


1. In combination with a vehicle having an open bed and carrying a camper body thereon, the circumference of the camper body being smaller than the circumference of the bed thereby to define a peripheral space between the camper body and the periphery of the bed, a weather protective skirt extending aound the camper body adjacent the peripheral space and extending to the exterior peripheral edge of the vehicle bed and removably attached thereto to provide a weatherproof seal between the vehicle and the camper, the weatherproof skirt comprising a flexible elongated skirt of material, at least the exterior face of which is water and water resistant, a strip of insulative material affixed to the flexible skirt and extending along a longitudinal edge thereof, the longitudinal edge carrying the insulative strip being permanently mounted on the camper body and a magnetic strip carried on the inner face of the flexible skirt adjacent the opposite longitudinal edge thereof and magnetically attached to the peripheral edge of the bed of the vehicle.

3,850,472

PIVOTALLY COLLAPSIBLE MOTORCAR

Pierluigi Greppi, 22050 Perledo, Italy
Filed Jan. 25, 1972, Ser. No. 220,623
Claims priority, application Italy, Jan. 25, 1971, 19734
Int. Cl. B62d *39/00*
U.S. Cl. 296—27 5 Claims

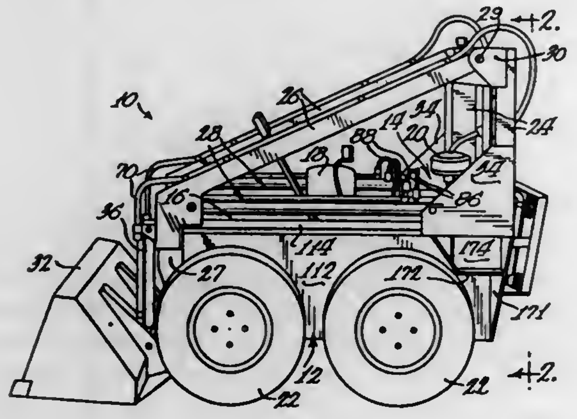


1. A small collapsible motorcar having a body enclosing a passenger space and a chassis, the body being in two parts, means pivotally interconnecting the two parts at the top of the two parts for relative vertical swinging movement about a horizontal axis between collapsed and extended positions, the chassis being in two parts, means pivotally interconnecting the two chassis parts for relative vertical swinging movement about a horizontal axis, and means pivotally interconnecting each chassis part with one of said body parts for relative vertical swinging movement about a horizontal axis, all said horizontal axes being parallel to each other, one of said body parts telescoping within the other said body part.

3,850,473

FRAME STRUCTURE FOR LOADER

Mortimer J. Huber, St. Paul, Minn., assignor to J. I. Case Company
Division of Ser. No. 252,997, May 15, 1972. This application May 7, 1973, Ser. No. 358,178
Int. Cl. B62d *21/16*
U.S. Cl. 296—28 R 4 Claims

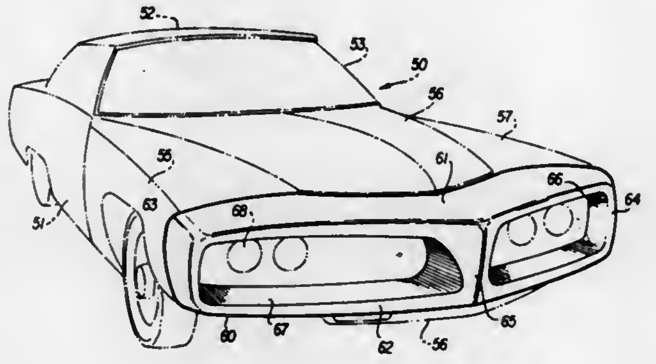


1. A frame structure for a tractor vehicle adapted to support a pair of lift arms with a material handling member attached to the lift arms comprising; a rigid plate bent at selected locations to produce a body having a bottom wall, transversely spaced upright side walls and outwardly directed flanges at the upper ends of said side walls; and upright stanchion extending above each flange at one end of said body; rigidifying means adjacent opposite ends of said body, said rigidifying means at said one end including an inverted U-shaped member including a base and a pair of legs extending from the base, said base and legs being sealed to said bottom and side walls and cooperating therewith to define a fuel compartment.

3,850,474

AUTOMOTIVE BODY COMPONENTS

Ralph A. Welch, 2470 Lane Rd., Columbus, Ohio 43220
Filed Mar. 10, 1972, Ser. No. 233,434
Int. Cl. B62d *29/04;* C08f *29/12, 47/10*
U.S. Cl. 296—31 P 12 Claims

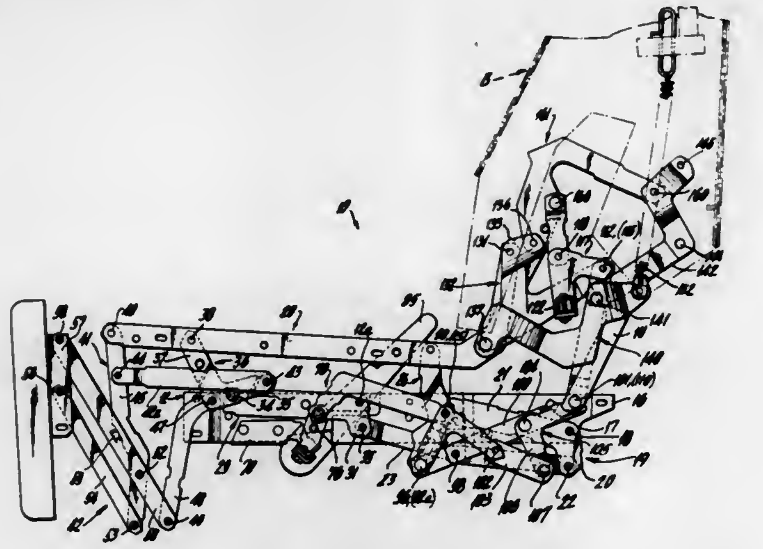


1. A molded impact-resistant automotive body component comprising a first portion adapted to be located in the area of probable impact and an attachment portion and means integral with said first portion, said component having an elastic memory whereby it can be impacted and return to its initial position, said component adapted to resist aging and weather, said component being made of a composition comprising a blend of 50 percent by volume of isotactic polypropylene and 50 percent by volume polystyrene-polybutadiene-polystyrene block copolymer composition.

3,850,475

LOUNGER RECLINER WITH BACKREST UP AND DOWN AND HARDWARE THEREFOR

Alex J. Katz, West Orange; Robert J. Caldwell, Bloomfield, both of N.J., and Izchak Cycowicz, Brooklyn, N.Y., assignors to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed July 25, 1973, Ser. No. 382,392
Int. Cl. A47c *1/035*
U.S. Cl. 297—85 11 Claims

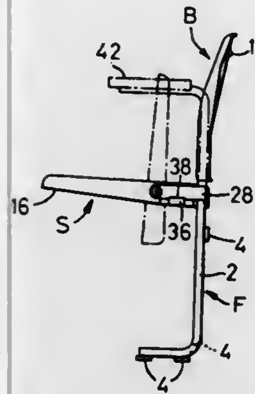


6. Hardware for a recliner chair having a frame, a seat and a backrest and comprising a frame mounting plate, manual handle means pivoted to said plate and having a handle and an fixed to the handle, a primary actuator link pivoted to said arm on an axis spaced from and parallel to the pivotal connection of said manual handle means to said frame mounting plate, a seat link adapted to be attached to the seat of said chair, a rear carrier link, a rear bell crank pivoted to said frame mounting plate, means to pivot said rear bell crank to said rear carrier link, means to pivotally connect said rear carrier link to said seat link, a backrest mounting link adapted to be attached to the backrest of said chair, means controlled by said primary actuator link to raise and lower said backrest mounting link, said means controlled by said primary actuator link including means to lock said rear carrier link against being raised relative to said frame mounting plate when said seat link is in upright sitting position and said manual handle is in one predetermined position, in which position said backrest mounting link is in lowered position, and to permit rotation of said rear carrier link about its pivotal connection to said rear bell crank, after said manual handle means has been swung to another position, in which position the backrest mounting link is in raised position, such rotation of said rear carrier link being caused by rearward movement of said seat link.

3,850,476

TIP-UP SEATING

Robin Day, London, England, assignor to Hille International Limited, Hertfordshire, England
Filed Aug. 27, 1973, Ser. No. 391,547
Claims priority, application Great Britain, Aug. 29, 1972, 40034/72
Int. Cl. A47c *1/02*
U.S. Cl. 297—335 9 Claims



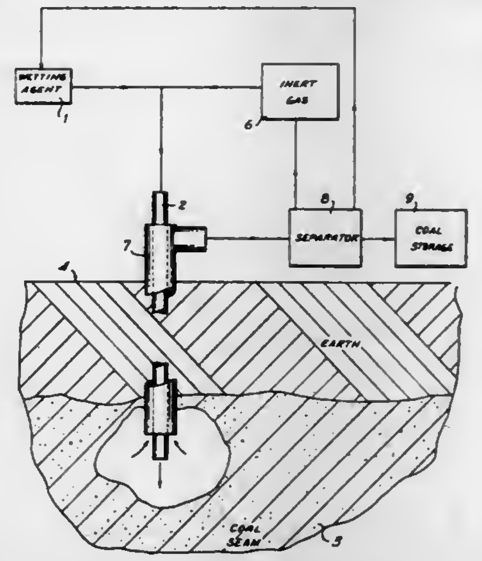
1. A chair with a tip-up seat comprising a mounting and support frame having two spaced tubular metal uprights joined by at least one cross member, an injection moulded back rest member having socket means adjacent its side edges receiving the upper ends of the tubular uprights, seat brackets secured to and extending forwardly from the uprights, an injection moulded seat member having a peripheral downturned flange, metal reinforcing members extending parallel to and within the flange adjacent each side edge of the seat member and secured to the seat member, bushings extending from each side of the seat member through said flange and said reinforcing members, hinge pins extending through said seat brackets into said bushings hinging the seat member to the support frame, the reinforcing members being formed with out-turned flanges which engage the seat brackets when the seat member is tipped down.

3,850,477

CHEMICAL COMMINUTION AND MINING OF COAL

Robert G. Aldrich, Manlius; Douglas V. Keller, Jr., Lafayette, and Richard G. Sawyer, Syracuse, all of N.Y., assignors to Syracuse University Research Corporation, Syracuse, N.Y.
Division of Ser. No. 232,324, Feb. 18, 1972, Pat. No. 3,815,826. This application June 29, 1973, Ser. No. 375,280
Int. Cl. E21c *41/04*
U.S. Cl. 299—5 6 Claims

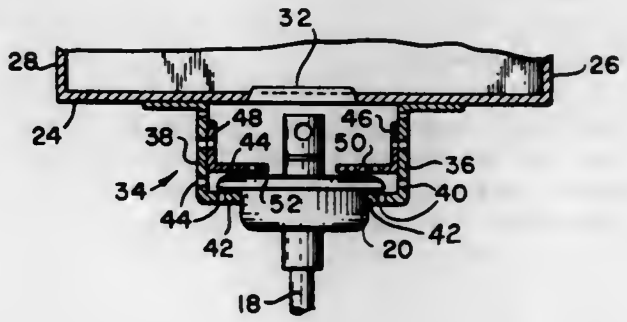
1. A method of mining sub-surface coal comprising the steps of forming at least one opening into a sub-surface stratum of solid coal, injecting into said sub-surface stratum an effective amount of a compound selected from the group consisting of substantially anhydrous liquid ammonia, anhydrous gaseous ammonia, anhydrous methanol, anhydrous methanol containing about one-fourth mole of sodium hydroxide per liter, anhydrous ethanol, anhydrous ethanol containing about one-fourth mole of sodium hydroxide per liter, anhydrous isopropanol, anhydrous isopropanol containing about one-fourth mole of sodium hydroxide per liter, glacial acetic acid, 70 percent ethylamine, 40 methylamine, pure acetone, 3 percent hydrogen peroxide and a mixture consisting of 150 ml of anhydrous methanol, 50 ml of distilled water and one-fourth mole of sodium hydroxide, said compounds being capable of reducing interlayer forces at natural interfaces present in said coal, injecting an inert gas into the region of said sub-surface stratum of coal treated with said compound at a rate high enough to form a suspension of coal particles in said inert gas, and leading said suspension of comminuted coal in inert gas to the surface for collection of said comminuted coal.



3,850,478

ACCUMULATOR APPARATUS AND METHOD

Stanley E. Hurd, Sunnyvale, Calif., assignor to The Hotch & Merriweather Machinery Company, Hayward, Calif.
Filed Feb. 22, 1973, Ser. No. 334,594
Int. Cl. B65g *51/02*
U.S. Cl. 302—2 R 2 Claims



1. An apparatus for conveying and accumulating articles comprising a perforated deck plate having a plurality of slots arranged along said deck plate for issuing air jets having a flow component extending along the deck plate, a plenum chamber on one side of said deck plate for supplying air under pressure through said slots, means for supplying air under pressure to said plenum chamber, a member mounted on the other side of said deck plate in confronting relationship to said plurality of slots for supporting and guiding articles handled by said apparatus, said supporting and guiding member comprising a pair of spaced wall portions extending outwardly from said deck plate and having inwardly extending spaced flange means for receiving and supporting an article in operative relationship to air jets issued through said slots, a pair of top guide members mounted on said wall portions and having inwardly extending spaced flange means for overlying guiding said articles being handled, and perforations in said flange means and said top guide members of said supporting and guiding member for dissipating air issued through said slots.

3,850,479

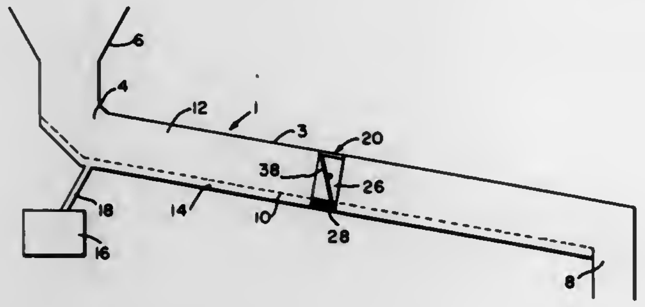
FLOW GATE FOR A FLUIDIZING GRAVITY CONVEYOR

Donald S. Boyhont, Nazareth; Marvyn L. Souders, Allentown, and David M. Matweecha, Bethlehem, all of Pa., assignors to Fuller Company, Catasauqua, Pa.

Continuation of Ser. No. 224,643, Feb. 8, 1972, abandoned. This application Aug. 13, 1973, Ser. No. 387,862

Int. Cl. B65g *53/46, 53/52*

U.S. Cl. 302—29 **4 Claims**



1. For use in combination with a fluidizing gravity conveyor for pulverulent material including an elongated conduit having a top, bottom and sidewalls, a gas permeable deck mounted therein dividing the conduit into an upper material chamber and a lower plenum chamber and an inlet for material to be conveyed and an outlet, a material flow control apparatus comprising:

- an open body member including wall means dividing the body member into an upper flow path having a bottom wall defined by said wall means, a top and sidewalls and adapted to communicate with the upper material chamber of the conveyor and a lower flow path adapted to communicate with the lower plenum chamber of the conveyor;
- a gate member mounted in the upper flow path for rotation about an axis parallel to said wall means and located above the center of said upper flow path and below top wall;
- motor means operatively connected to said gate member for rotating said gate member between a position which permits material to flow through the upper flow path and a position which prevents material from flowing through the upper flow path;
- a seal ring extending around said gate means for sealingly engaging the top, the bottom wall and the sidewalls of the upper flow path when said gate means is in a position to prevent material from flowing through the upper flow path to thereby prevent material from flowing through the upper flow path;
- said gate member being dimensioned to substantially conform in shape to the upper flow path whereby when said gate member is rotated to a position which permits material to flow through the upper flow path, said upper flow path being uniform for substantially the complete distance between said sidewalls along said bottom wall; and means operatively associated with said gate member for controlling said motor means.

3,850,480

PROPORTIONAL SKID CONTROL SYSTEM

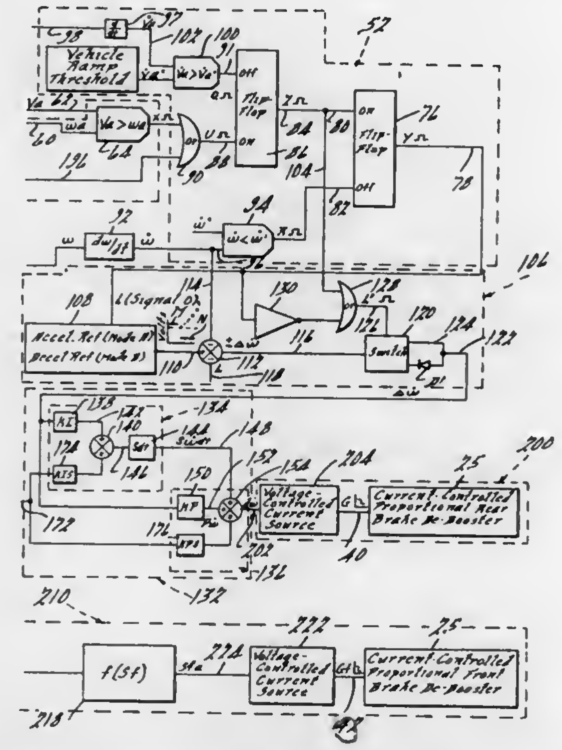
Thomas M. Atkins, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Aug. 3, 1970, Ser. No. 60,321

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 CG **25 Claims**

1. A control system for the brake system for at least one wheel of a wheeled vehicle comprising: sensing means for sensing the acceleration of the wheel and for providing a first signal representation of the acceleration of the wheel and control system means including means responsive to a preselected magnitude of said first signal representative of a preselected magnitude of wheel deceleration for providing an error signal representative of the difference between said first signal and the preselected magnitude of said first signal, said control system means further including brake control means for maintaining the magnitude of said first signal proximate to said preselected magnitude of said first signal so that the wheel will continue to decelerate proximate said preselected magnitude of wheel deceleration, whereby wheel departure is controlled to a desired magnitude.



3,850,481

BRAKE CONTROL DEVICE FOR VEHICLES

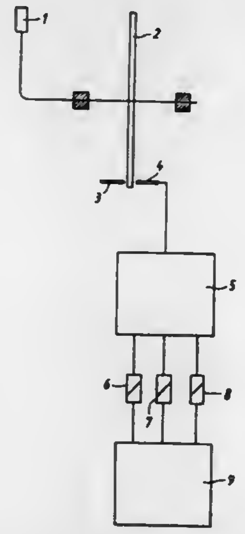
Hans-Jorg Wurth, Lohhof, Germany, assignor to Knorr-Bremse GmbH, Munich, Germany

Filed Jan. 9, 1974, Ser. No. 431,981

Claims priority, application Germany, Jan. 9, 1973, 2300905

Int. Cl. B60t *13/62*

U.S. Cl. 303—25 **14 Claims**



1. In a brake control device for railway vehicles and the like having a remote indicator for the state of connection of a plurality of control lines for controlling a plurality of valves connected to a source of control energy to introduce a predetermined level of brake pressure into a brake cylinder in response to particular connections of the control lines, the combination of means for defining a plurality of control paths corresponding to the plurality of control lines, said paths being equal in length or subtending equal angles and the sequence of said paths being designated by position *m* beginning at 0, 1, 2 . . . , each path comprising an alternating series of 2^m sensing and non-sensing zones, means comprising a plurality of sensing elements for sensing the sensing and non-sensing zones of said paths, one of said sensing elements being located opposite the path of the highest position and a pair of sensing elements located opposite each of any further paths and spaced longitudinally thereon, one of said pair of sensing elements being positioned before and the other after the sensing elements of the highest position path or of the corresponding elements of the next highest position path, and monitor means connected to said sensing elements for selecting in each state of connection of the control lines only one of the two sensing elements of the second higher position path with respect to the position of the location of the sensing element of the highest position path over a sensing or non-sensing zone and for selecting one of two sensing elements of the next lower position path by a selected sensing element of a path with respect to the sensing element of the highest position path.

3,850,482

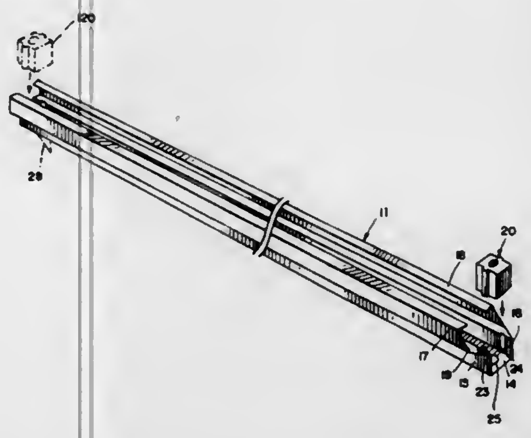
METHOD OF INSTALLING DRAWER GUIDE, AND STRUCTURE

Kenneth H. Gutner, 3285 Dato, Highland Park, Ill. 62249

Continuation-in-part of Ser. No. 121,025, March 4, 1971, Pat. No. 3,702,717. This application Oct. 16, 1972, Ser. No. 297,844

Int. Cl. F16c *21/00*

U.S. Cl. 308—3.6 **4 Claims**



1. A method of installing a drawer guide comprising the steps of inserting a rigid block into the forward end of an elongated channel-shaped metal guide, said guide having opposed rib-receiving grooves in the channel sidewalls adjacent said forward end and a screw passing bore in the channel bottom wall aligned with said grooves, said block having a generally rectangular solid configuration with integral vertically extending ribs on two opposite sides for receipt in said grooves, said block also having a vertical bore therethrough adapted to receive a wood screw and aligned with said ribs, positioning said block containing guide over a front parting rail of a furniture piece and centrally of a drawer opening, inserting a wood screw through said bores and securing said screw to said front parting rail, and securing the rear of said guide to a rear parting rail of said furniture piece.

3,850,483

PERMANENT ASSEMBLIES INCLUDING THERMOPLASTIC COMPONENTS AND METHOD OF ASSEMBLY

Maurice Roberts, and David Peasley, both of Tyseley, England, assignors to Girling Limited, Birmingham, England

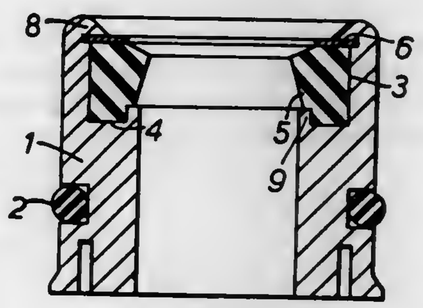
Filed June 30, 1972, Ser. No. 269,287

Claims priority, application Great Britain, July 2, 1971, 31175/71

Int. Cl. F16j *15/18*

U.S. Cl. 308—4 R **4 Claims**

1. A piston rod guide comprising a body having an axial passage therethrough, a counter bore at one end of said passage defining a recess of greater diameter than said passage and having a shoulder at the inner end of said recess, a radially inwardly deformed annular portion integral with the wall of said recess and axially spaced from said shoulder, and an annular seal of elastomeric material received in said recess and permanently locked in position in axially compressed condition between said inwardly deformed portion and said shoulder.



3,850,484

SLIDE-GUIDE FOR MOTOR CAR SEATS

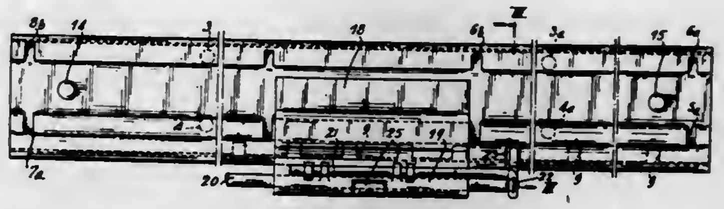
Maurice Claude Cousin, Flers, France, assignor to A & M Cousin et Cie. Establissements Cousin Freres, Le Bais de Flers, Flers, Orne, France

Filed Mar. 1, 1973, Ser. No. 337,121

Claims priority, application France, Mar. 6, 1972, 72.07741

Int. Cl. F16c *17/00*

U.S. Cl. 308—6 R **6 Claims**



1. A slide-guide for a seat comprising:

- a rigid elongated guide with a channel-shaped cross-section having: a flat central portion, upwardly extending side walls, and borders extending outwardly from said side walls, the upper surface of said borders forming guide bearing races;
- an elongated slide having a central web spaced apart from said flat central portion of said guide, and having folded-under sides spaced from said borders and encompassing portions of said borders within their folds, the under surface of said slide facing said guide bearing races forming slide bearing races; and
- rolling bearings positioned in said races between said guide and said slide, whereby said bearings permit guided movement of said slide relative to said guide without contact between said slide and said guide.

3,850,485

BEARING ASSEMBLY

George A. Zimmer, Ithaca, N.Y., and Hilarius S. Struttman, St. Charles, Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 278,139, Aug. 4, 1972, Pat. No. 3,807,819. This application Aug. 30, 1973, Ser. No. 393,114

Int. Cl. F16c *21/00*

U.S. Cl. 308—194 **2 Claims**

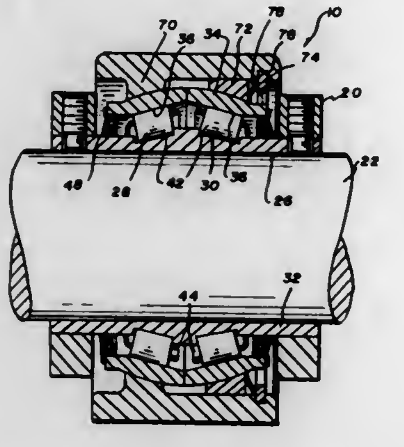
1. A self-aligning bearing comprising: A housing adapted to be fixed to a support and having a generally cylindrically surfaced opening therethrough with a depending ring portion having a spherical inner surface:

- a bearing assembly in said opening, said bearing assembly comprising;
- an inner race having a central cylindrical opening for receiving a shaft and outer spaced frusto-conical raceways;

an outer race having an outer spherical surface and inner spaced frustro-conical raceways, said outer spherical surface engaging the inner spherical surface of said depending ring portion of said housing;

sets of rollers, each set being between opposed inner and outer raceways and in rolling contact therewith;

ring insert means having a continuous outer cylindrical surface and a continuous inner spherical surface between said cylindrical surface of said housing and said spherical



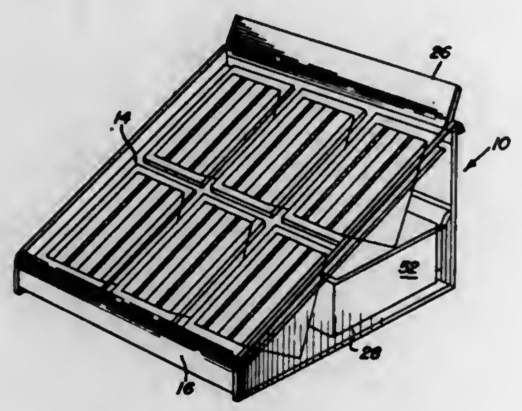
surface of said outer race and opposite one set of rollers, said housing ring portion being opposite the other set of rollers;

means for retaining said ring insert means in said housing permitting limited lateral movement of said bearing assembly therein;

said bearing having limited pivotable movement relative to said housing in response to shaft misalignment relative to said support.

3,850,486
COOLED COUNTER DISPLAY CASE FOR PACKAGED EDIBLE PRODUCTS

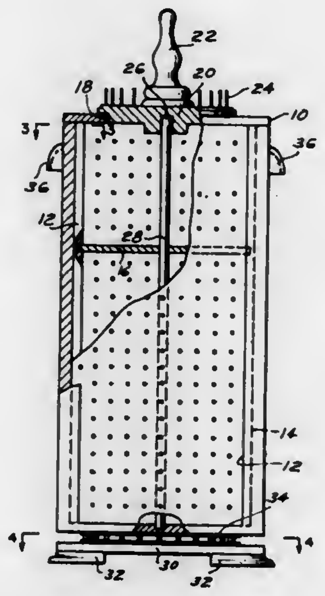
Leo C. Saxe, 10907 Annapolis Rd., Bowie, Md. 20716
Filed Apr. 24, 1973, Ser. No. 354,097
Int. Cl. A47f *3/04;* **A47b** *77/08*
U.S. Cl. 312—116 **5 Claims**



1. A display case for food products and the like comprising a display panel having openings therein by virtue of which the major portion of the displayed food products are disposed to one side of the panel, an enclosed space inwardly of the panel, and coolant means in the enclosed space for cooling the enclosed space and the food products oriented inwardly of the display panel with the food products forming a closure for openings in the display panel which receive the food products therethrough, said display panel being removably supported on peripheral wall structure defining the enclosed space of the display case to enable removal of the panel and food products therein as a unit from the display case, said display case including end walls having guide channels therein removably receiving the side edges of the display panel.

3,850,487
SEWING CADDY

Floyd O. Batchelor, San Francisco, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Aug. 14, 1973, Ser. No. 388,193
Int. Cl. A47f *9/06*
U.S. Cl. 312—252 **1 Claim**



1. A sewing caddy comprising:

a vertically elongated hollow rectangular cabinet having a circular opening at the horizontal top, sid cabinet having recessed outer walls lined with pegboard;

a circular horizontal spool rack disposed rotatably in the opening, said rack having a plurality of vertical spool receiving prongs extending upward from the top;

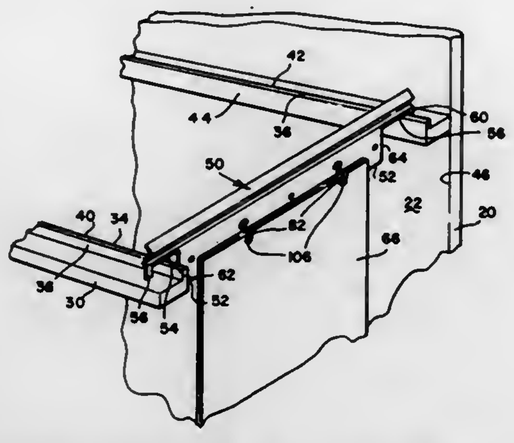
first means secured to said rack for rotating same with respect to the cabinet, the first means including a vertical shaft extending axially downward through the cabinet to a recess in the bottom thereof, the top end of the shaft fitting with clearance into a central vertical recess in the bottom of the rack, and a center disposed knob secured to the top of the rack and extending vertically upward;

a horizontal base; and

a horizontal turntable disposed between the bottom of the cabinet and the base and securing the bottom of the cabinet to the base in such manner that the cabinet can be rotated about a vertical axis without rotating the base.

3,850,488
MEANS FOR FILING DOCUMENTS

Abram G. Elias, 2908 Fallwood Ln., San Jose, Calif. 95132, and Peter G. Elias, 6 Wedgewood Dr., Winnepeg, Manitoba, Canada
Continuation-in-part of Ser. No. 238,040, March 27, 1972, abandoned. This application Jan. 29, 1973, Ser. No. 327,743
Int. Cl. A47b *63/00;* **B42f** *15/00*
U.S. Cl. 312—184 **5 Claims**



1. Document filing apparatus, comprising:

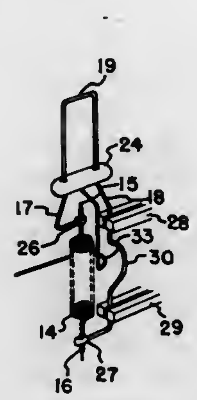
a frame including rail support means and first and second elongated substantially horizontally-disposed rails each

being of equal width and each having opposite inner and outer sides, said first and second rails being disposed in horizontal spaced-apart relationship with said inner sides of said rails facing each other; and

a plurality of elongated document-supporting bars each having a load carrying upper portion and a document carrying lower portion, each said upper portion extending the full length of said bar and being generally concavo-convex in cross section to provide supporting strength for said bar and to provide a relatively compact horizontal nesting relationship with other like bars positioned adjacent to each other, said lower portion being generally planar in configuration with an upper boundary thereof affixed to a lower boundary of said upper portion, said lower portion having first and second notches formed therein proximate the ends of said bar, said notches opening downwardly away from said upper portion for receiving respective ones of said rails when said bar is positioned thereupon, that part of said lower portion extending between said first and second notches including a plurality of fastening means each comprised of an integral flexible fastener and opening means for affixing documents to said supporting bar, the end-most parts of said lower portion forming stops of equal length extending in a direction longitudinal of said bar, said first and second notches each having a longitudinal length greater than the combined widths of said first and second rails and the length of one of said stops such that when said first end of said bar is raised, said bar may be moved in said longitudinal direction toward said second rail far enough that said one end may be lowered to clear said inner side of said first rail while said second notch is still engaged with said second rail, thus allowing said second notch to thereafter be disengaged from said second rail by longitudinal movement of said bar beneath said first rail and in a direction away from said second rail while said bar is tilted to an inclined position and said second end of said bar is raised slightly to clear said second rail wherein said flexible fastener and opening means includes an elongated strap having an enlarged head segment at one end, the other end of said strap remaining unsevered from said lower portion, the severed strap and head segment leaving a generally key-shaped opening in said lower portion whereby when said strap is used to form a loop for affixing documents to said supporting bar, said head segment may be locked within said opening by slipping said head segment through that part of the opening formerly occupied by the elongated portion of the strap.

3,850,489
METHOD OF MANUFACTURE OF AN INCANDESCENT LAMP

Robert A. Jarc, Kent, and Fredrick Ritzinger, Parma, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Dec. 14, 1973, Ser. No. 424,875
Int. Cl. H01j *9/38*
U.S. Cl. 316—20 **5 Claims**



1. The method of manufacturing an incandescent lamp comprising the steps of:

a. positioning a unitary piece of wire, having two unattached ends and a premeasured bend, in a holding means having at least one movable jaw;

b. aligning the legs of a tungsten filament with the ends of said unitary piece of wire;

c. clamping the ends of said wire around the legs of said tungsten filament;

d. moving said movable jaw in a direction away from the bend in said wire thereby straightening said premeasured bend and stretching said filament;

e. severing said unitary wire to form two discrete lead-in conductors;

f. attaching the ends of said discrete lead-in conductors to foliated portions which are attached to outer lead-in conductors to form a mount;

g. placing an envelope over said mount;

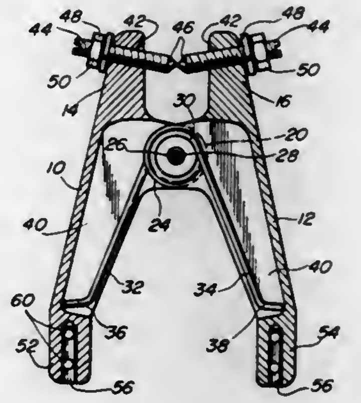
h. pinch sealing said foil portions in said envelope;

i. flushing and filling said envelope with a fill gas mixture; and

j. tipping said envelope to form a finished lamp.

3,850,490
GROUNDING CLAMPING LEVER

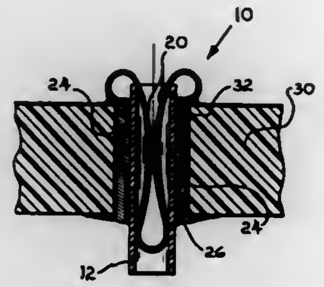
William J. Zehr, Des Plaines, Ill., assignor to The Protectoseal Company, Bensenville, Ill.
Filed Oct. 25, 1973, Ser. No. 409,439
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R **2 Claims**



1. A grounding clamp of the class described comprising a pair of identical handle members, each handle member having a jaw member on one end and a pair of laterally and inwardly extending ears, the distance between each pair of ears being identical, one pair of said ears arranged to overlap the other pair of ears, said pairs of ears having aligned apertures, means pivotally securing said ears together, each of said handles having an elongated cut-out, a helical compression spring wound around said means interiorally of said ears and having the ends of said spring extending rearwardly in said cut-outs, the ends of said spring being bent substantially at right angles laterally outwardly with the terminal ends of said spring abutting against the inner surface of said handle, said jaw bored and threaded downwardly and inwardly toward said pairs of ears receiving an elongated case-hardened set screw, the inward ends of said set screws being pointed and the points abutting each other when in place in said jaws, the individual centerlines of said set screws intersecting at an acute angle, whereby when said handles are compressed towards each other the set screws will tend to approach a common center line.

3,850,491
CIRCUIT BOARD SOCKET

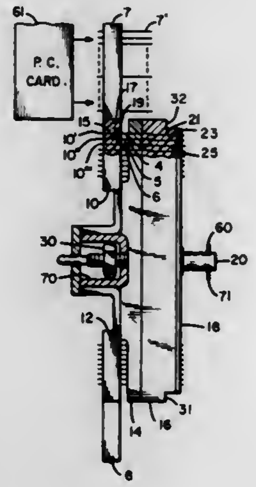
Bob Mouissie, Berlicum, Netherlands, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Apr. 19, 1973, Ser. No. 352,522
Claims priority, application Netherlands, Feb. 12, 1973, 7301938
Int. Cl. H05k *1/02, 1/08*
U.S. Cl. 339—17 C **2 Claims**



1. In a circuit board socket of the type having a metal spring and solder contact, the improvement comprising a general cylindrical body open at both ends and formed of a material to which solder does not adhere, with the contact fitted over one edge of the body at one end with spring contact within the body and the solder contact extending along an exterior surface of the body away from such end.

3,850,492
INTER-MODULE CONNECTOR SYSTEM

Robert P. Moore, Warminster, Pa., assignor to Sperry Rand Corporation, Blue Bell, Pa.
Filed July 16, 1973, Ser. No. 379,900
Int. Cl. H01r *13/54;* **H05k** *1/04*
U.S. Cl. 339—18 R **8 Claims**

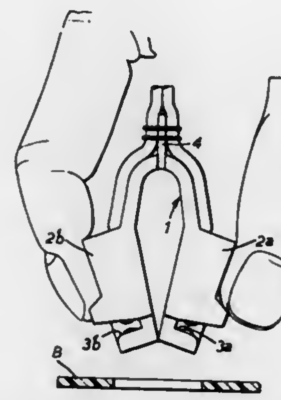


1. A circuit connecting arrangement comprising:
- a. First and second independent connector means, each of said connector means having a plurality of first male pins attached thereto which are positioned in rows and columnar fashion and wherein said pins are separated from one another by a specified center-to-center spacing and within a specified tolerance range;
- b. means juxtaposed to said connector means and coupled to said male pins for aligning thereof within a first tolerance range

said first tolerance range being less than said specified tolerance range;
- c. third connector means juxtaposed to said aligning means and further coupled to said pins wherein said third connector means includes a corresponding female receptacle for receiving each said first male pin after being brought within said first tolerance range by said aligning means; each said receptacle having a male extension oriented in a direction opposite from said receptacle and extending through said third connector means;
- d. conductor means connecting certain of said male extensions located at said first independent connector means with certain of said male extensions located at said second independent connector means whereby one-to-one interconnections are provided.
- e. frame means;
- f. means for holding said first and second connector means, said aligning means, and said conductor means in a juxtaposed and fixed orientation to said frame means.

3,850,493
MULTIWAY CONNECTOR FOR A PRINTED CIRCUIT BOARD

Antony Brasher Clewes, Sherwood, and Denis William Tuckwood, Beeston, both of England, assignors to TRW Inc., Cleveland, Ohio
Filed Sept. 21, 1972, Ser. No. 291,020
Claims priority, application Great Britain, Sept. 24, 1971, 44757/71
Int. Cl. H01r *13/54*
U.S. Cl. 339—59 M **20 Claims**

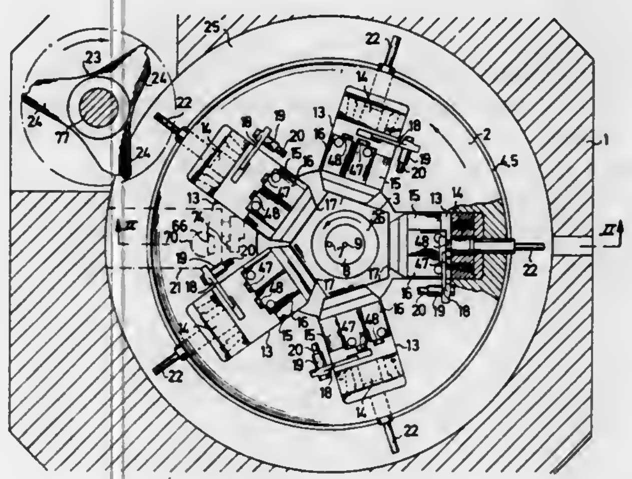


1. A multiway connector for a printed circuit board having opposed edge portions and face portions and the face portions having conductors thereon; the connector comprising a body portion of an electrially insulative material having two board-engaging portions moveable relative to one another in a direction generally parallel to the eventual plane of a printed circuit board when engaged by the connection means on each board-engaging portion for engagement respectively with suitably spaced opposed edge portions of a printed circuit board, and a plurality of contact members distributed on the board-engaging portions the contact members being mounted in the body portion of the connector and comprising contact making portions having opposed spaced apart limbs for engagement with conductors on at least one face portion of the board.

3,850,494
ROTARY PRESS

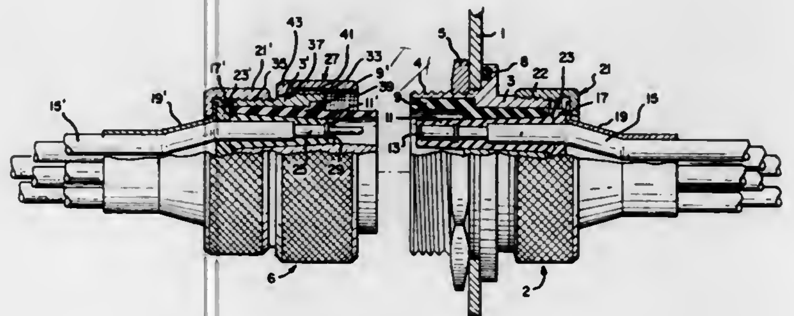
Heinrich Nebendorf, Wuppertal, Germany, assignor to Gebr. Hilgeland, Wuppertal, Germany
Filed Nov. 14, 1973, Ser. No. 415,618
Claims priority, application Germany, Nov. 30, 1972, 2258647
Int. Cl. B21d *28/00*
U.S. Cl. 72—339 **12 Claims**

1. In a press; first and second tool carriers rotatable in unison on respective ones of spaced parallel axes, said first tool carrier surrounding said second tool carrier, radially inwardly opening pockets in said first tool carrier, support members connected to said second tool carrier for rotation therewith and each radially reciprocable in a respective said pocket, a tool set pertaining to each pocket comprising a first tool on said first tool carrier stationary in the pocket and second and third tools moveably mounted on each support member, means for moving said second and third tools into operative relation with the respective said first tool alternately on successive revolutions of said tool carriers, and feed means for feeding workpieces to said tool sets on alternate revolutions of said tool carriers.



3,850,495
MULTI-PIN SHIELDED HIGH VOLTAGE CONNECTOR

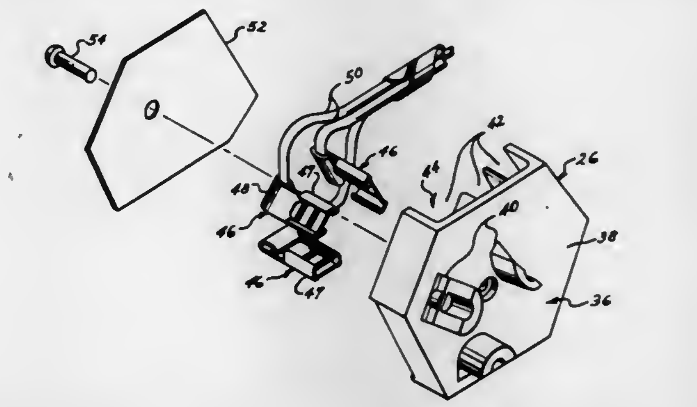
Douglas Wade Glover, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed June 6, 1973, Ser. No. 367,665
Int. Cl. H01r *13/52*
U.S. Cl. 339—60 M **4 Claims**



1. A multi-pin high voltage electrical connector, which comprises:
- a. an electrically conductive shell,
- b. an electrically insulating insert positioned within said shell and mating with said shell, said insert having plural tapered apertures extending therethrough and a washer positioned at the rear of said insert,
- c. a tapered boot of electrically insulating material positioned in each of said apertures and in intimate contact with said insert, said boot having forward and rearward ends,
- d. means applying a force against said rearward end of said boot to form a seal therewith,
- e. a mating member forming a pressure seal at the forward end of said boot, leads extending through said means applying a force and terminating within each said boot and in intimate contact with each said boot, wherein said means applying a force further includes a ferrule positioned between said washer and said pressure applying means, said leads extending outwardly through said ferrule.

3,850,496
CONNECTOR BLOCK FOR HERMETIC MOTOR COMPRESSOR

Joe T. Hague, Tyler, Tex., assignor to General Electric Company, Louisville, Ky.
Filed June 28, 1973, Ser. No. 374,529
Int. Cl. H01r *13/62, 21/02*
U.S. Cl. 339—64 M **10 Claims**



1. In a hermetically enclosed motor compressor assembly having a housing provided with an opening in which is disposed a terminal assembly having a plurality of spaced metal conductor pins projecting through and extending beyond the inner and outer sides of said terminal assembly, the improvement comprising:
- a connector block having a body portion of dielectric material for electrically connecting said motor compressor to said internally projecting conductor pins;
- said body portion having openings formed in one face thereof equal in number and spacing to the number of said conductor pins;
- channel means formed in said body portioncommunicating from each of said openings to a common outlet; portion communicating
- conductors disposed in said channel means having flag receptacles secured on one end thereof for insertion through said openings and having the other ends extending through said outlet to be connected to said motor compressor;
- said flag receptacles including a crimped portion located in said channel means and a flag portion projecting through said openings substantially perpendicular to said conductor element;
- projections formed on the body portion adjacent one side of each of said openings and extending substantially parallel to the flag portion of said receptacle to engage said flag portion and restrict movement thereof in one direction, the side of said openings opposite each of said projections being left open;
- second projections formed in each of said channel means in alignment with and below each of said first projections to engage said crimped portion of said flag receptacle to restrict movement of said flag receptacle in an opposite direction thereby maintaining said flag receptacle in relative alignment with a cooperating conductor pin for insuring the axial insertion of all of said flag receptacle on corresponding conductor pins.

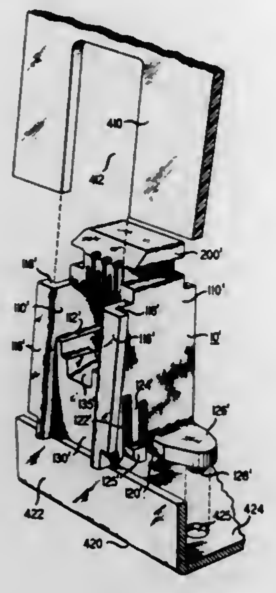
3,850,497
CONNECTOR

Charles Louis Krumreich; Albert Eugene Mulbarger, Jr., both of Indianapolis, and Stephen William Walden, Morral Township, Shelby County, all of Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation-in-part of Ser. No. 232,804, March 8, 1972, abandoned. This application Apr. 2, 1973, Ser. No. 346,724
Int. Cl. H01r *11/08;* **H02b** *1/02*
U.S. Cl. 339—126 R **12 Claims**

1. A connector comprising:

a dielectric enclosure including a plurality of spaced orifices that extend from the front to the rear of the enclosure, each orifice comprising a bore portion at the forward end thereof and a counter bore portion at the rear end thereof, the enclosure further including a plurality of grooves at the front end thereof, each groove being associated with an individual orifice and extending transversely to the longitudinal axis of that orifice, the grooves being exposed to the exterior of the enclosure; and

a plurality of contact assemblies, each of which comprises a spring contact, an insulated conductor, and a splicing member the rear portion of which embraces the insulated conductor and the forward portion of which clamps a bared end of the conductor to an end of the spring contact, the forward portion of each splicing member being accommodated in the bore portion of an individual orifice and the rear portion being accommodated in the counter bore portion of the orifice, the spring contact extending from the front end of the orifice and including a first portion positioned within the transverse groove associated with the orifice and a second portion extending rearwardly from the first portion.



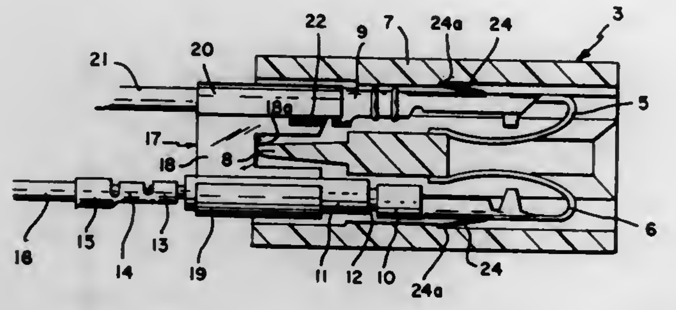
3,850,498
FILTER ASSEMBLY FOR PRINTED CIRCUIT BOARD CONNECTORS

Ferdinand William Schor, Altedena, Calif., assignor to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 147,570, May 27, 1971, Pat. No. 3,720,903. This application Dec. 14, 1972, Ser. No. 315,051

Int. Cl. H01r *3/00*

U.S. Cl. 339—147 R **6 Claims**



1. An electrical connector assembly comprising:

a first spring contact having a terminal adapted to be connected to a flexible lead;

a filter element having a pin extending from at least one end thereof;

a second spring contact having a terminal connected to said pin, said terminal of said second spring contact being shorter than said terminal of said first spring contact; and an electrically conductive strap comprising:

a first curved surface at one side of the strap at least partially closed on itself;

a second curved surface at the other side of the strap at least partially closed on itself, said second surface being recessed with respect to said first surface at one end of said strap;

an intermediate portion joined with and extending between said first curved surface and said second curved surface; said first curved surface of said strap resiliently engaging the exterior of said terminal of said first spring contact and said second curved surface of said strap resiliently engaging the exterior of said filter without contacting said shorter terminal of said second spring contact.

3,850,499
CONTACT STRIP

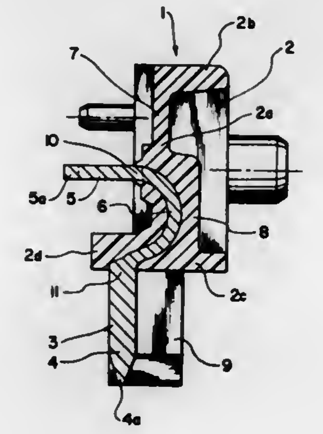
Gerhard Bauerle, Willsbach, and Oswald Hubner, Neuenstadt, both of Germany, assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed June 11, 1973, Ser. No. 368,632

Claims priority, application Germany, June 12, 1972, 6722190

Int. Cl. H01r *13/50*

U.S. Cl. 339—156 R **7 Claims**



1. A contact strip for use with a plurality of socket contacts carried by a printed circuit board comprising:

a plastic body having a pair of integrally formed elongate transverse narrow walls with each wall having a minor cross-sectional dimension and a major cross-sectional dimension with the major cross-sectional dimension of one wall extending in a respective direction transverse to the major cross-sectional dimension of the other wall;

a plurality of spaced blade contacts, each of said blade contacts including an integrally formed contact leg at one end of the respective blade contact with each contact leg extending in one direction from one wall of said body;

a connector leg integrally formed at the other end of each blade contact extending in another direction substantially perpendicular to the respective contact leg and from the other wall of said body;

and a substantially semi-circular transition section extending along an arc having a portion following the major cross-sectional dimension of each wall and integrally formed between the connector leg and contact leg of each blade contact with each transition section continuously embedded in each wall of said body between the respective legs to enable the simultaneous receipt of a respective leg of each of said blade contacts in a respective socket contact without fracturing one of said walls.

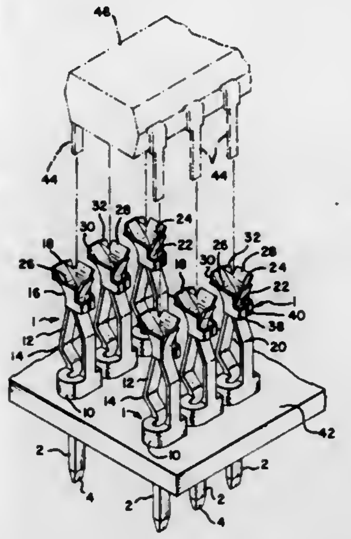
3,850,500
STAMPED AND FORMED POST AND MINIATURE SPRING RECEPTACLE

Robert Franklin Cobaugh, and Jay Merlin Heisey, Elizabethtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 93,204, Nov. 27, 1970, abandoned. This application Sept. 11, 1972, Ser. No. 288,852

Int. Cl. H01r *13/12*

U.S. Cl. 339—258 R **2 Claims**



1. A unitary post and receptacle comprising: at least one longitudinal post, spaced spring legs connected to said post, each of said legs having a laterally flared end portion, laterally flared spaced sidewall portions connected to one of said legs, the other of said legs being connected to said post for cantilever spring action, said flared sidewall portions and said flared end portions define a tapered receptacle extending generally between said spring legs, one of said legs being substantially in line longitudinally with said post and being provided with flared corner tabs and a kerf disposed between each of said tabs, and a corresponding one of said flared sidewall portions.

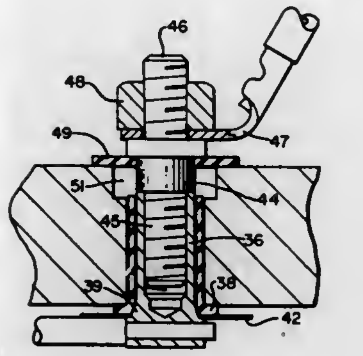
3,850,501
FEEDTHROUGH ELECTRICAL TERMINAL FOR HOLLOW LIQUID COOLED SHAFT OF A DYNAMOELECTRIC MACHINE

John L. Butterfield, and James L. Wenzel, both of Erie, Pa., assignors to General Electric Company, Wilmington, Mass.

Filed Apr. 9, 1973, Ser. No. 349,056

Int. Cl. H01r *7/08, 7/02*

U.S. Cl. 339—263 R **4 Claims**



1. In a separable, feedthrough, electrical terminal for a hollow liquid filled shaft, the combination comprising:

a. a liquid filled, hollow shaft,

b. a passage means through the wall of the shaft,

c. a cylindrical, insulating, bushing member positioned in said passage means,

d. a female terminal member positioned in said bushing and having a portion projecting into the interior of said hollow shaft and adapted to have a lead means connected thereto, the remaining portion of said female terminal member extending partially into the interior of said bushing,

e. a male terminal member adapted to engage said female member and having a portion projecting outside of the shaft wall and adapted to have a lead means connected thereto,

f. said female terminal member having a tapered shoulder portion which also extends partially into the interior of said bushing to exert a wedging action on said bushing when said male and female members are engaged thereby forcing at least a portion of said bushing outwardly against the wall of said passage to prevent leakage of the liquid out of said shaft.

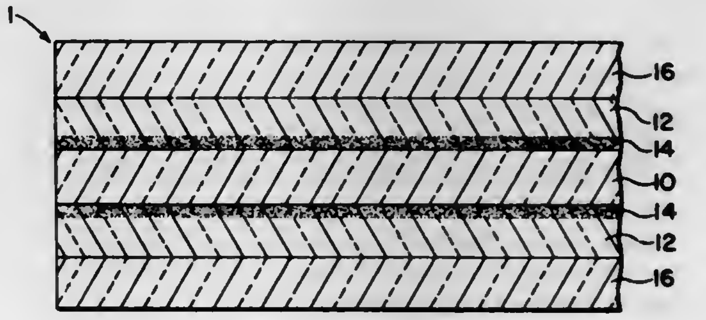
3,850,502
OPTICAL LENS ELEMENTS HAVING INFRARED ABSORBER

Stanley M. Bloom, Waban, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

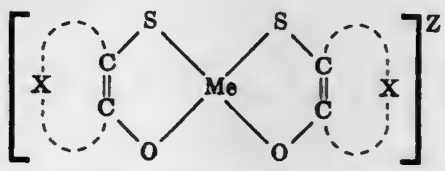
Division of Ser. No. 225,261, Feb. 10, 1972, Pat. No. 3,806,462, which is a continuation-in-part of Ser. No. 841,259, July 14, 1969, abandoned. This application Dec. 13, 1973, Ser. No. 424,547

Int. Cl. G02b *1/08, 5/22;* **G02c** *7/02*

U.S. Cl. 350—2 **10 Claims**



1. A plastic optical lens system including an infrared absorber of the formula:



wherein Me is a metal selected from the group consisting of nickel, cobalt, zinc, copper, palladium or platinum which will provide a complex that is an effective infrared absorber; each X represents the number of atoms necessary to complete the same or different ring selected from the group consisting of a phenyl ring, a naphthyl ring, a substituted phenyl ring, a substituted naphthyl ring, a five membered heterocyclic ring containing either nitrogen, sulfur or oxygen and substituted derivatives of such heterocyclic rings; Z is the integer 1 or 2 and represents the anionic charge on the complex and Y is a cation that can balance the charge on Z.

3,850,503
ASYMMETRIC WAVEGUIDE PAIR ACOUSTIC SURFACE WAVE SWITCH

Leslie Allen Riseberg, Sudbury, Mass., and Warner Curtis Scott, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 26, 1972, Ser. No. 300,953

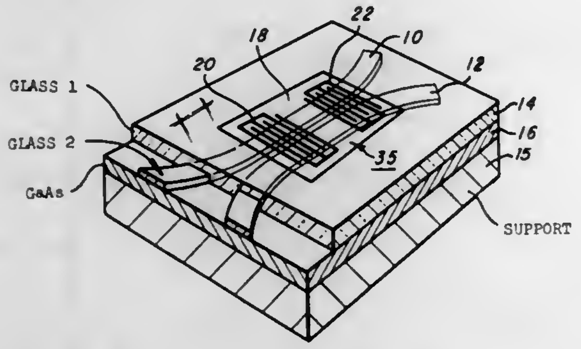
Int. Cl. G02b *5/14*

U.S. Cl. 350—96 WG **8 Claims**

1. An asymmetric waveguide pair switch comprising:

a substrate having a major surface;

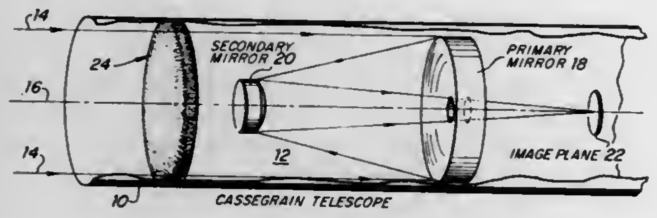
- a first dielectric medium disposed on said major surface of said substrate, said first dielectric medium having a first preselected index of refraction and being patterned to define a pair of spaced apart waveguides extending across said major surface of said substrate;
- each of said pair of waveguides having a preselected propagation constant at which propagation of a signal therethrough can be supported;
- a second dielectric medium covering said waveguides and having a second index of refraction lower than said preselected index of refraction of said first dielectric medium defining said waveguides;



- a film of piezoelectric material disposed on said dielectric medium in overlying relation with respect to a portion of said pair of waveguides;
- surface wave transducer means defined on said film for generating an acoustic surface wave therein to interact with at least one of said pair of waveguides; and
- the propagation constant of the portion of said one waveguide operably associated with said surface wave transducer means being changeable to a value corresponding to the fundamental mode of propagation of the other waveguide in response to the interaction of said acoustic surface wave therewith such that a signal being propagated through the other waveguide may be switched to said at least one waveguide.

3,850,504
TELESCOPE WITH INFLATABLE DOOR

John Bisbee, Carlisle, Mass., assignor to Itek Corporation, Lexington, Mass.
Filed Dec. 20, 1972, Ser. No. 316,776
Int. Cl. G02b *23/16*
U.S. Cl. 350—65 **3 Claims**

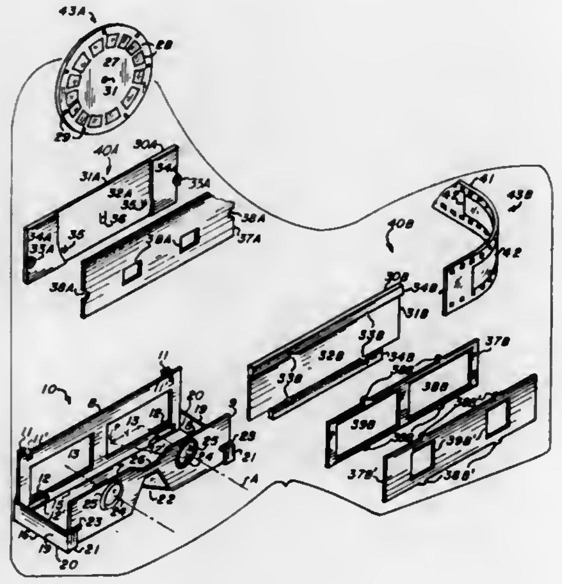


1. A telescope adapted to orbit the earth and having a system to selectively protect the telescope from environmental damage and comprising:

- a. a telescope having a primary mirror for gathering radiation travelling along the optical axis of the telescope and reflecting it back to a secondary mirror which then further reflects the radiation to an image plane, said secondary mirror being positioned along said optical axis such that it presents an area of obstruction to radiation travelling along the optical axis which prevents radiation from reaching the primary mirror, whereby the effective aperture of said telescope is reduced because of said area of obstruction;
- b. a housing for supporting and enclosing said telescope, said housing having an aperture through which the telescope may be pointed at objects of interest;
- c. an inflatable door means supported by said housing within said aperture in said housing and also adjacent to said secondary mirror and within said area of obstruction of said secondary mirror such that said door means in its deflated condition does not further reduce the effective aperture of said telescope; and
- d. means for selectively inflating said door to prevent access to the telescope through said aperture in said housing, whereby environmental damage to the telescope may be prevented by shutting out corrosive gases and intense radiation from the sun.

3,850,505
UNIVERSAL STEREOSCOPIC VIEWING DEVICE

Harvey L. Ratliff, Jr., Amarillo, Tex., assignor to Jetru Inc., Amarillo, Tex.
Filed Mar. 15, 1973, Ser. No. 341,482
Int. Cl. G02b *27/22*
U.S. Cl. 350—133 **11 Claims**

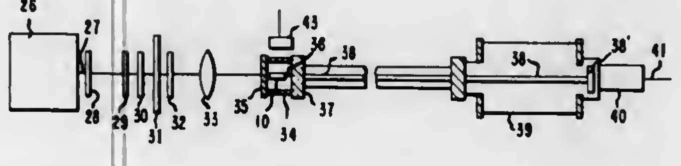


1. A stereoscopic viewing device for use with differently dimensioned transparency slide holders for holding differently dimensioned stereoscopic transparencies, each of said slide holders having a white translucent back portion and an opaque front portion with said front and back portions having positioning elements for holding said front portion in abutment with said back portion, with said front portion having first stereoscopically coupled apertures for framing the two views of a stereoscopic transparency positioned between the front and back portions, and with said back portion having a thin flat part for providing diffuse light behind said stereoscopic transparency and a thick flat part for providing a transverse slot between said thin flat part and said front portion to hold said stereoscopic transparency with said two views framed in front of said thin part and behind said apertures when said positioning elements hold said front portion in abutment with said back portion, said stereoscopic viewing device comprising:

an advanced portion, a rear portion, two lateral portions, and a central portion, folding depressions separating said advanced, rear, and two lateral portions from said central portion, said rear portion being foldable along the folding depression separating it from said central portion into a viewing position making a fixed angle with said central portion and having retaining snaps and a pair of stereoscopically coupled lenses which each produce the relation $K \cong \theta/Y$ over wide angles of view where θ is the angle a ray entering the eye of an observer makes with the optical axis of the lens, Y is the distance from the optical center of the object plane of said lens to the point of origin of said ray measured along a line perpendicular to said optical axis and passing through said optical center, and K is a predetermined property of the lens which has a predetermined value that is substantially constant throughout wide-angle values of θ, said advanced portion having retaining snaps, second stereoscopically coupled apertures which allow Y values large enough for wide-angle θ values, and means for receiving and retaining any one of said slide holders with the optical centers coinciding in said first and second apertures and being foldable along the folding depression separating it from said central portion into a viewing position that puts said stereoscopic transparency at the object plane of said lenses when said transparency is in one of said slide holders which is retained by said means, and said two lateral portions being foldable along the folding depressions separating them from said central portion into positions perpendicular to said central portion and having ribs and snaps for holding said advanced and rear portions in the folded viewing position when said snaps of said lateral portions are snapped under the snaps of said advanced and rear portions.

3,850,506
MODULATION BY A MAGNETIC FIELD OF ELECTROMAGNETIC RADIATION PRODUCED BY THE DECAY OF TRIPLET STATES

Robert C Johnson, and Richard E. Merrifield, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. Nos. 162,208, July 13, 1971, abandoned, which is a continuation-in-part of Ser. No. 853,183, Aug. 26, 1969, Pat. No. 3,656,835, which is a continuation-in-part of Ser. No. 724,420, April 26, 1968, abandoned, and which is a continuation-in-part of Ser. No. 646,883, June 26, 1967, abandoned. This application Aug. 1, 1973, Ser. No. 384,445
Int. Cl. G02f *1/02*
U.S. Cl. 350—160 P **6 Claims**

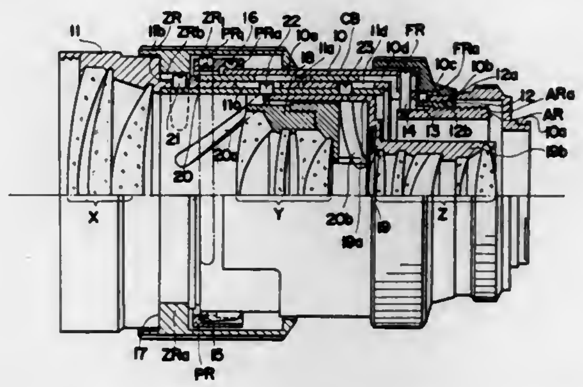


1. A method of determining the variation in magnetic field strength on a magnetized surface which comprises

- applying to said surface, and in the magnetic field thereof, a sheet composed of a solid matrix containing embedded therein a plurality of discrete volumes having a size between about 10 μ and about 500 μ, and in an amount of from 5 to 95 percent by weight of said sheet of a substance composed of single crystals or liquid droplets in which mobile triplets can be created and in which said triplets subsequently decay with emission of electromagnetic radiation derived from delayed fluorescence, or, in the presence of paramagnetic quenching phosphorescence, said matrix being inert to said substance and transparent to exciting and emitted radiation,
- generating mobile triplets in said substance whereby said triplets decay with the production of emitted radiation modulated by the magnetic field strength of the surface and
- detecting the radiation emitted by said surface.

3,850,507
VARIFOCAL LENS ASSEMBLY FOR CAMERA

Kyozo Uesugi, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Sept. 10, 1973, Ser. No. 395,451
Claims priority, application Japan, Sept. 20, 1972, 47-94197
Int. Cl. G02b *15/16, 7/10*
U.S. Cl. 350—187 **7 Claims**



1. A varifocal lens assembly for use in association with photographic, motion picture and television cameras which comprises:

- an optical system including at least three coaxially arranged lens groups;
- a fixed barrel having one end adapted to be detachably coupled to the front of the camera;
- a first mounting stationarily carrying a first one of said lens groups and axially movable in relation to said fixed barrel;
- a second mounting stationarily carrying a second one of said lens groups and capable of undergoing rotary and axial movement;
- a third mounting stationarily carrying the rest of said lens groups and capable of undergoing rotary and axial movement;
- a distant adjusting ring;
- a zoom control ring;
- pivotal means pivotable in response to rotation of said distant adjusting ring, said zoom control ring being operatively associated with said pivotable means such that pivotal movement of said pivotable means causes said zoom control ring to axially move; and
- means capable of undergoing rotary and axial movement and operatively associated with said first to third mountings in such a manner that, when said zoom control ring is thus moved in the axial direction, all of said mountings can be axially moved in the same predetermined distance in synchronism with each other thereby permitting said first to third lens groups to perform the focusing operation and, when said zoom control ring is manually rotated, said second and third mountings are axially moved in indivudially predetermined distances for varying the focal length of said varifocal lens assembly, said first mounting being axially moved in response to rotation of said zoom control ring, only when said pivotable means is pivoted, for compensating for variation in the position of the focal point that has been fixed by rotating said distance adjusting ring so that the picture image remains in focus all times during zooming operation.

3,850,508
METHOD AND APPARATUS FOR TESTING THE DOPING CONCENTRATION OF SEMICONDUCTORS

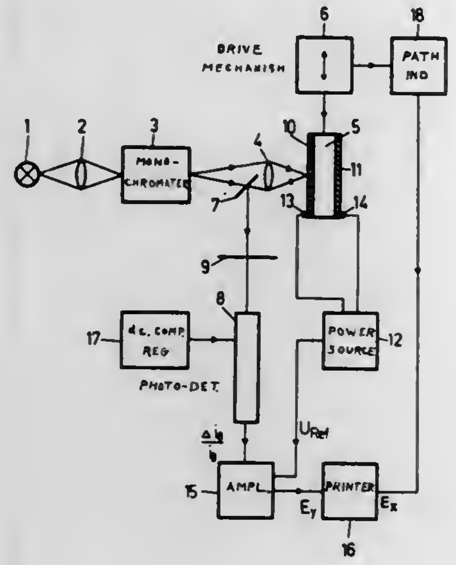
Roland Sittig, and Wolfgang Zimmerman, both of Nussbaumen, Switzerland, assignors to Brown Boveri & Company Limited, Badin, Switzerland
Filed Nov. 14, 1972, Ser. No. 306,445
Claims priority, application Switzerland, Nov. 23, 1971, 16946/71
Int. Cl. G01n *21/48*
U.S. Cl. 356—209 **21 Claims**

1. The method of testing the doping concentration existing below the surface of a semiconductor body which comprises the steps of:

illuminating a surface portion of the semiconductor body by means of a beam of monochromatic light,

generating an electric field within the semiconductor body which has a direction substantially perpendicular to the surface being tested,

effecting relative movement between the semiconductor body and the incident light beam in a direction perpendicular to the beam,

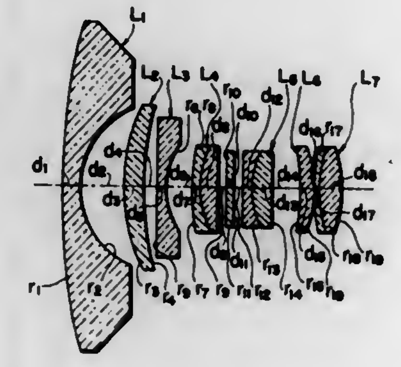


detecting the monochromatic light reflected from correspondingly different surface portions of the semiconductor body, and

measuring the corresponding variations produced in the amount of the light reflected from the different surface portions of the semiconductor body, said variations in the reflected light being indicative respectively of the doping concentrations existing below the different surface portions of the semiconductor body.

3,850,509
FISHEYE LENS SYSTEM

Jihei Nakagawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Nov. 30, 1972, Ser. No. 310,968
Claims priority, application Japan, Dec. 7, 1971, 46-98326
Int. Cl. G02b *9/64*
U.S. Cl. 350—214 **3 Claims**



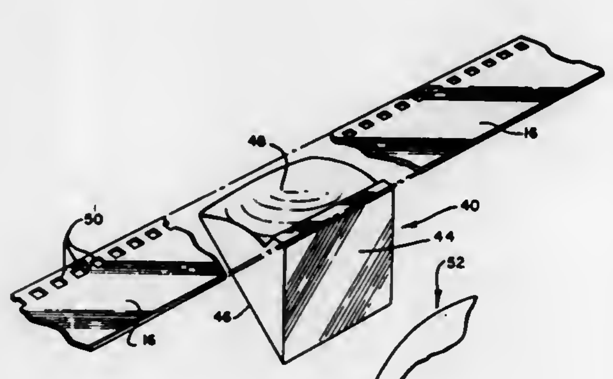
1. A fisheye lens comprising a first lens, a second lens, a third lens, a fourth doublet lens, a fifth doublet lens, a sixth lens and a seventh doublet lens wherein said first lens is a negative meniscus lens with its convex surface positioned on the object side, said second lens is a positive meniscus lens with its convex surface positioned on the object side, said third lens is a negative lens, said fourth doublet lens is a cemented biconvex lens, said fifth doublet lens is a cemented biconvex lens, said sixth lens is a positive meniscus lens with its convex surface positioned on the image side and said seventh doublet lens is a cemented biconvex lens; said lens system satisfying the following conditions:

(1) $0.67f < f_{123} < 0.77f$
(2) $3.6f < f_2 < 4.4f$
(3) $0.4f < r_8 < f$
(4) $20 < \nu_4 - \nu_5 < 30$
(5) $10f < r_9$
(6) $0.58f < r_{13} < 0.66f$

wherein the reference symbol f represents the focal length of said lens system as a whole, f_{123} represents the total focal length of said first, second and third lenses, f_2 represents the focal length of said second lens, r_8 represents the radius of curvature of the cemented surface of said fourth doublet lens, ν_4 and ν_5 represent Abbe's numbers of said cemented biconvex lens of said fourth doublet lens, r_9 represents the radius of curvature of the lens surface on the image side of said cemented biconvex lens of said fourth doublet lens and r_{13} represents the radius of curvature of the cemented surface of said cemented biconvex lens of said fifth doublet lens.

3,850,510
NOVEL PRISMATIC ELEMENT

Philip G. Baker, Peabody, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Division of Ser. No. 214,591, Jan. 3, 1972, Pat. No. 3,807,842.
This application June 25, 1973, Ser. No. 372,803
Int. Cl. G02b *5/04*
U.S. Cl. 350—286 **14 Claims**



1. A prism, comprising:

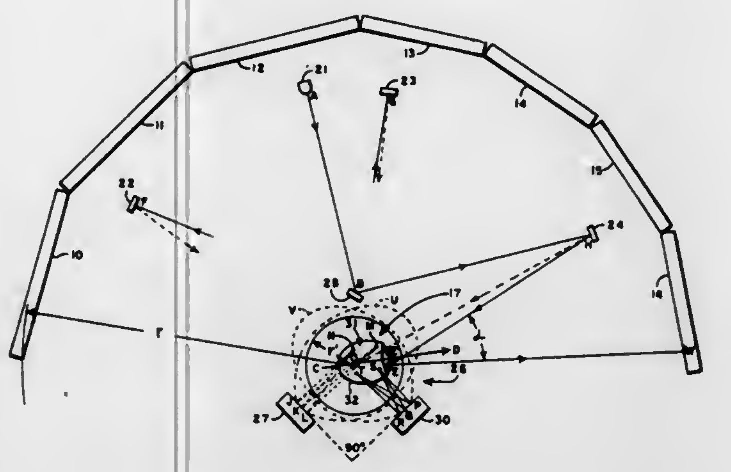
a first transparent face having a given optical axis, said first transparent face permitting illumination from a light source to enter said prism;

a reflective surface angularly disposed with respect to said first transparent face for redirecting substantially all of said illumination entering said prism through said first transparent face; and

a second face connecting said first transparent face with said reflective surface, said second face including a transparent convex portion having an optical axis substantially normal to the optical axis of said first transparent face, said transparent convex portion being operative to permit the exiting of substantially all of said redirected illumination, and a second portion for connecting said transparent convex portion with said first transparent face, said transparent convex portion and said second portion extending no further than a plane normal to said first transparent face and passing through the point of intersection of said first transparent face with said second portion, whereby the physical size of said prism is minimized for a given size of said first transparent face.

3,850,511
OCULOMETRY SYSTEM EMPLOYING SONIC DETERMINATION OF THE POSITION AND THE DIRECTION OF THE OBSERVER'S HEAD

John Merchant, Needham, Mass., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 1, 1973, Ser. No. 411,797
Int. Cl. A61b *3/00*
U.S. Cl. 351—7 **5 Claims**



1. Apparatus for determining the fixation point, of an observer free to move and turn within a substantial volume of observation space, on a surface at least partially surrounding said space, comprising, in combination:

an oculometer, including focus adjusting means, having an optical axis and giving an output representative of the transverse and axial displacement of the observer's gaze vector from the axis;

adjustable mirror means for extending said axis into said observation space from each of a plurality of nominal directions spaced in azimuth therearound;

means for determining the location of the observer's eye in said observation space and adjusting said nominal directions of said mirror means so that said axis when extended in each direction reaches the observer's eye;

means for determining the observer's head direction and further adjusting said mirror means to select the one of said nominal directions most nearly aligned therewith;

means for determining the axial displacement of the observer's eye from said oculometer and adjusting the focus of the oculometer in accordance therewith; and

means modifying the output of said oculometer in accordance with the first named adjustment of said mirror means and with said axial displacement, to determine the gaze vector of the observer.

3,850,512
MULTIPURPOSE AUDIO-VISUAL CASSETTE WITH ISOLATION LOOP

Donald T. Scholz, Watertown, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed June 28, 1973, Ser. No. 374,507
Int. Cl. G03b *31/02*
U.S. Cl. 352—14 **21 Claims**

1. A film handling cassette comprising:

a housing;

a strip of sound photographic film disposed within said housing;

an opening formed within said housing for receiving means for incrementally advancing said film strip within said housing;

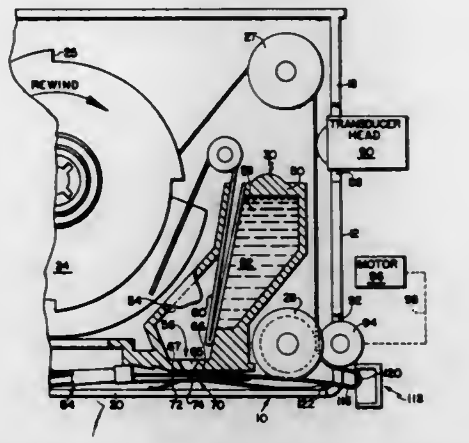
audio memory means formed on a portion of said film strip; aperture means for receiving a sound recording and playback head into said cassette in operable association within said audio memory means, said aperture means being configured to receive a substantially constant speed capstan for moving said film strip and said audio memory means past said sound recording and playback head at a substantially constant speed; and

mens cooperating with the movement of said film strip for guiding said film strip along a given path between said opening and said aperture means for automatically forming a free loop in said film strip thereby isolating the incremental advancement of said film strip at said opening from said sound recording and playback head, said means for guiding said film strip and for forming a loop in said film strip including:

a first roller, engageable with said film strip, said film strip passing between said first roller and said capstan;

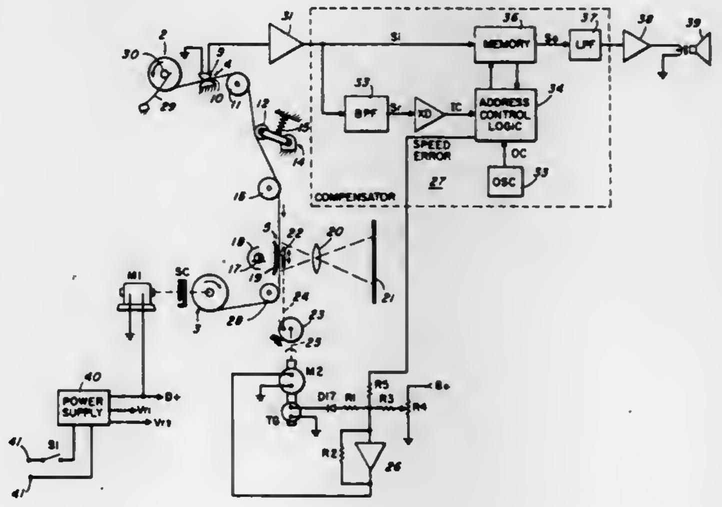
means for selectively constricting the movement of said film strip at various points along said given path within said housing, whereby said loop in said film strip is formed at a different point along said given path; and

guiding means formed as part of said housing for selectively guiding said loop in said film strip out of said housing.



3,850,513
ANALOG INFORMATION STORAGE AND RETRIEVAL SYSTEM

William R. Wray, Brookline, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Oct. 2, 1972, Ser. No. 294,486
Int. Cl. G03b *31/02*
U.S. Cl. 352—25 **4 Claims**



1. A sound motion picture projection system, comprising means forming a projection station at a first location, means forming a playback station comprising transducer means adapted to reproduce an audio signal at a second location spaced from said first location, means for mounting a strip of motion picture film on which a series of photographic images, an accompanying sound signal, and a pilot signal are recorded for movement along a path between said projection station and said playback station, incremental drive means at said projection station for incrementally moving a strip of film

along said path, means located along said path between said projection station and said playback station for damping accelerations of film moving along said path to produce a relatively uniform film speed at said playback station when the film is moved incrementally past said playback station, means controlled by said transducer means for reproducing a composite signal comprising superimposed sound and pilot signals from a strip of film moving past said playback station, means responsive to said composite signal for reproducing said pilot signal, means for storing samples of the reproduced composite signal at a rate not greater than twice the frequency of said reproduced pilot signal and at times corresponding to equal amplitudes of said pilot signal, a loudspeaker, and means for applying stored samples from said storage means to said loudspeaker in the order in which they were stored at a fixed rate.

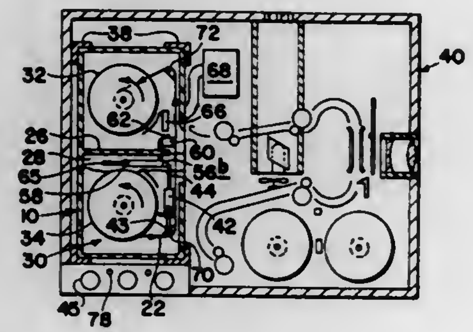
3,850,514
MOTION PICTURE SYSTEM

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 126,307, March 19, 1971, Pat. No. 3,719,416, which is a division of Ser. No. 738,464, June 28, 1968, Pat. No. 3,655,277. This application Oct. 10, 1972, Ser. No. 296,096

Int. Cl. G03b *23/03*

U.S. Cl. 352—130 **6 Claims**



1. Photographic apparatus for use with a compact multipurpose photographic film handling cassette including a housing configured to be first mounted in a camera to facilitate film exposure operations and then in said apparatus, a strip of exposed unprocessed film stored within such housing, a normally inoperative film processing station within such housing, a normally inoperative film drying station within such housing and means responsive to externally mounted drive means for progressively transporting such film strip within such housing through such processing station and such drying station, said apparatus comprising:

a housing adapted to receive such cassette;

means for rendering such cassette drying station operable; and

means for driving such film strip transporting means of such cassette so that, with such cassette mounted in said apparatus and such cassette processing station rendered operable, such unprocessed film strip may be processed and dried within such cassette.

3,850,515
COHERENT LIGHT ARRAY FOR USE IN IMAGE PROJECTION SYSTEMS

Jack J. Burch, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

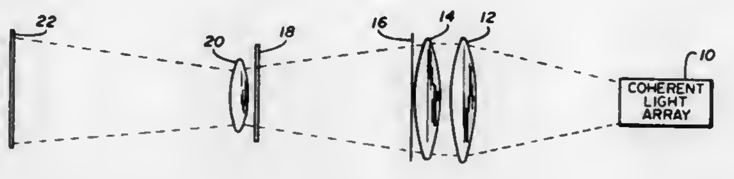
Division of Ser. No. 055,322, July 16, 1970, Pat. No. 3,702,929. This application May 1, 1972, Ser. No. 249,257

Int. Cl. G02b *3/08, 19/00;* **F21m** *1/00*

U.S. Cl. 353—102 **18 Claims**

1. A light projection system comprising:

a substantially coherent array light source for providing a plurality of spherically radiating, substantially mutually coherent light beams spaced around a circular path,



means for rotating said light beams along said circular path,

means for directing said light beams through image producing means, and

means for projecting said image.

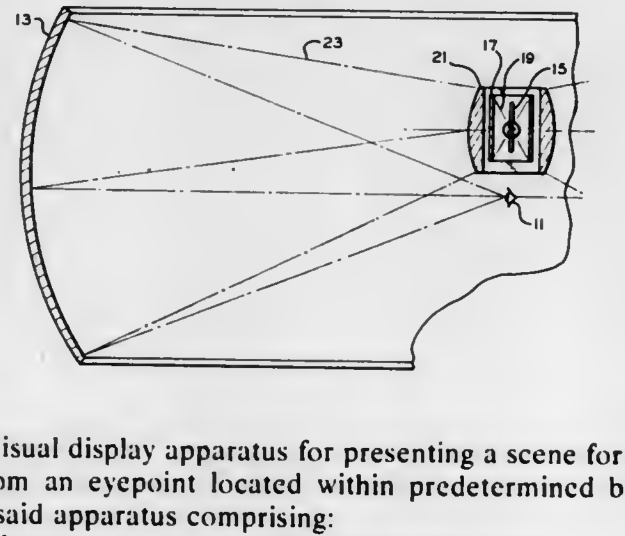
3,850,516
POINT LIGHT SOURCE SYSTEM

Richard B. Mallinson, and Richard A. Mecklenborg, both of Binghamton, N.Y., assignors to The Singer Company, New York, N.Y.

Continuation of Ser. No. 113,161, Feb. 8, 1971, abandoned. This application Dec. 7, 1972, Ser. No. 313,023

Int. Cl. G03b *21/00;* **G09b** *9/08;* **G02b** *3/06*

U.S. Cl. 353—122 **3 Claims**



1. Visual display apparatus for presenting a scene for viewing from an eyepoint located within predetermined boundaries, said apparatus comprising:

a light source having a width approaching zero;

a curved projection screen at least partially encircling said light source and suitable for displaying information, said screen subtending a horizontal angle of substantially 360°;

a curved transparency containing information suitable for display on said projection screen which transparency at least partially encircles said light source and is located between said light source and said projection screen; and

a curved lens having substantially a toroidal shape with a horizontal circumference of substantially 360° located between said screen and said transparency and which at least partially encircles said transparency and said light source whereby light from said source is modulated by information on said transparency and is projected on said screen to provide a panoramic display of said information.

3,850,517
HIGH SPEED PRINTOUT SYSTEM

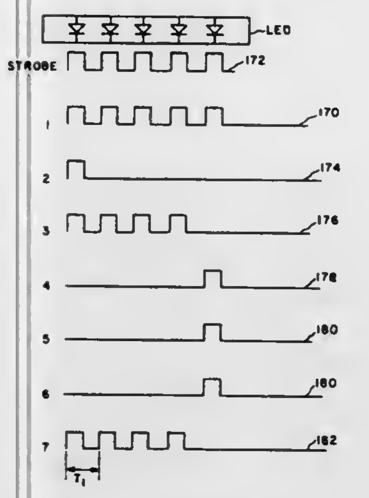
Joseph F. Stephany, Sodus, and Samuel W. Ing, Jr., Webster, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Sept. 25, 1972, Ser. No. 292,029

Int. Cl. B41b *13/10*

U.S. Cl. 354—12 **5 Claims**

1. A character printing arrangement comprising a photoreceptive surface adapted for continuous movement in a predetermined direction, means for charging said photoreceptive surface, means for selectively discharging portions of said area to form a character pattern of charged and discharged portions of said area on a line by line basis, said pattern thereby forming an electrostatic image, said means including a linear array of solid state light emitting devices positioned transversely with respect to said movement, logic selection means coupled to each segment of a plurality of segments of said devices, each said segment including a plurality of said devices, said logic selection means energizing selected devices within each of said segments with a predetermined sequence over a plurality of line positions formed by the movement of said surface with respect to said array, said logic selection means including a plurality of storage units, each coupled to a respective one of said devices, a memory, a plurality of gates each coupled to a respective one of said storage units, one input of each gate coupled to said memory, decoding means having a plurality of outputs, each output common to an input of each gate corresponding to a common segment of said devices, means for sequentially energizing each successive decoder output and thereby enabling successive segments, means for reading character line information related to a character corresponding to an enabled segment into said storage units associated with said segment, mean responsive to completion of said decoder sequences for causing said storage units to energize said selected devices, control means coupled to said logic selection means and responsive to selection of a desired character for printing to initiate said predetermined sequence corresponding to said character in said logic selection means, means positioned on said surface and responsive to said electrostatic latent image for developing said image to form said printed character, a counter for advancing said memory on a line by line basis, and means coupling the last stage of said decoder to said counter for advancing said counter.



3,850,518
OSCILLOSCOPE PHOTOGRAPHING SYSTEM

Kazu Suzuki, and Kazuo Shimo, both of Tokyo, Japan, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 27, 1973, Ser. No. 392,392

Claims priority, application Japan, Aug. 28, 1972, 47-85963

Int. Cl. G03b *29/00, 13/20*

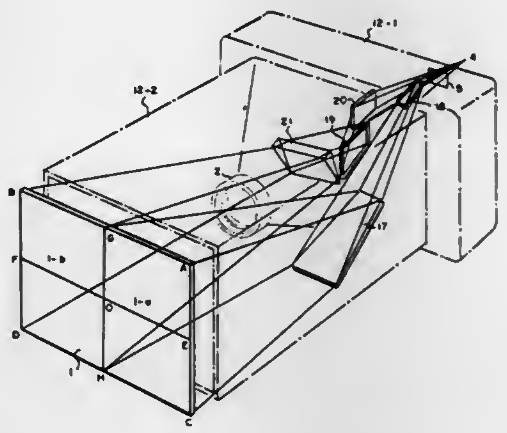
U.S. Cl. 354—76 **3 Claims**

1. Apparatus for photographing an image on the screen of an oscilloscope, the apparatus comprising:

a chamber having an opening at one end and having means for mounting said apparatus with said opening adjacent the screen of an oscilloscope, and having means for mounting a camera attachable thereto at a location remote from said opening in optical alignment with an axis substantially normal to the screen to be photographed when positioned in said opening;

a port in said chamber remote from said opening for viewing the screen of an oscilloscope positioned in said opening; optical means interposed between said port and said opening for providing two separate light paths by each of which only a separate portion of a screen positioned in said opening may be viewed;

said optical means including at least a first pair of mirrors in one of said light paths for reflecting light therealong from said opening to said port in a direction along a path which intersects a screen positioned in said opening at an



angle which is different from the angle at which the other light path intersects a screen positioned in said opening; and

means supporting said camera and said optical means and port in fixed spatial relationship for movement thereof along an axis substantially normal to a screen positioned at said opening.

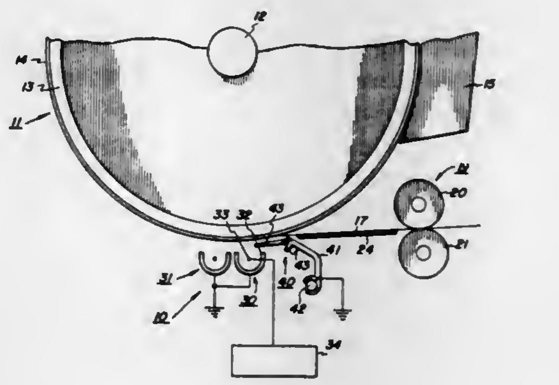
3,850,519
XEROGRAPHIC IMAGE TRANSFER APPARATUS

Donald J. Weikel, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 12, 1973, Ser. No. 323,159

Int. Cl. G03g *15/16*

U.S. Cl. 355—3 R **12 Claims**



1. In an image transfer apparatus including:

a photoconductive plate;

means for bringing a sheet of final support material into contact with said plate at a transfer region;

means for transferring a toner image from said plate to said sheet, said transferring means including a corona generator for generating a corona stream comprising corona discharge means extending across said plate and a shield partially enclosing said discharge means and having an opening facing said plate;

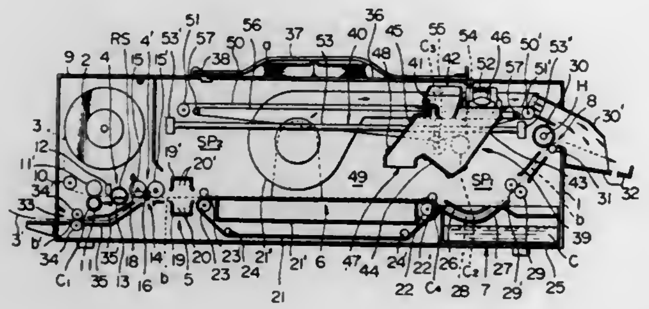
the improvement comprising:

a conductive baffle positioned between said plate and said generator, said baffle including means for guiding said sheet into contact with said plate prior to said sheet being exposed to said corona stream, a portion of said baffle extending partially between said opening and said plate.

3,850,520
ELECTROPHOTOGRAPHIC COPYING MACHINE OF OPTICAL SYSTEM-MOVING TYPE

Takaji Washio, and Tatsuo Aizawa, both of Osaka, Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed July 16, 1973, Ser. No. 379,340
Claims priority, application Japan, July 20, 1972, 47-73087
Int. Cl. G03g *15/00*
U.S. Cl. 355—13 **13 Claims**

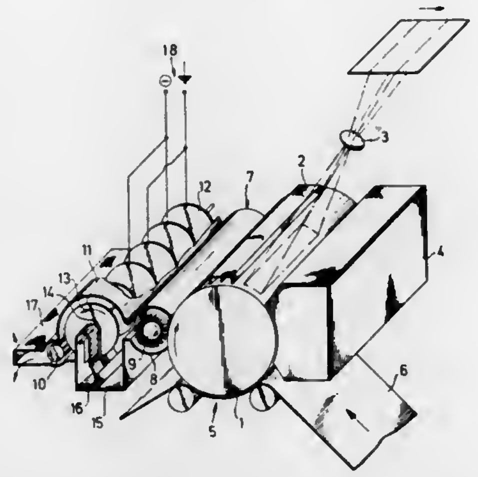


1. An electrophotographic copying machine which comprises a machine frame defining a passage for the transfer of electrophotographic copying paper, a zone for a device for feeding a roll-like electrophotographic copying paper, a zone for a device for cutting the roll-like electrophotographic paper, a zone for a device for charging said paper, a light exposure zone, a zone for a device for developing exposed paper and a zone for a device for drying or fixing developed paper, said zones being disposed along said passage in the order recited above; a transparent plate mounted in the upper portion of said machine frame to support thereon an original to be copied; an optical system optically connecting said transparent plate with the passage for the transfer of electrophotographic copying paper and forming an image corresponding to an image of the original on the electrophotographic copying paper at said light exposure zone, said optical system being movably disposed between said passage and said transparent plate; means for controlling an optical scan range and a corresponding cut length of the copying paper operatively mounted in the machine frame; optical system-detecting means for detecting the moving optical system and movably mounted intermediate said passage and said transparent plate; first copying paper forward end-detecting means movably mounted in the copying paper transfer passage to detect the forward end of the moving copying paper, said optical system-detecting means and first copying paper forward end-detecting means being interlocked with each other for movement along the copying paper transfer passage; second copying paper forward end-detecting means movably mounted in said passage in the light exposure zone so that when the forward end arrives at a position for initiation of the light exposure, said detecting means detects this arrival and stops the movement of the copying machine; a paper cutting device disposed in the corresponding zone and coupled to said first copying paper forward end-detecting means and actuated by a signal transmitted from said first copying paper forward end detecting means to cut the copying paper into a length corresponding to a determined optical exposure scan range of the original; and means for moving the optical system and operatively coupled thereto, whereby the travel of the optical system for light exposure is initiated by a signal transmitted from said second copying paper forward end-detecting means, actuated when the forward end of the copying paper arrives at a position for initiation of the light exposure, and return travel of the optical system is initiated by a detecting signal transmitted by said optical system-detecting means, whereby the light exposure is completed in correspondence to the length of said determined optical exposure scan range of the original.

3,850,521
ELECTROPHOTOGRAPHIC COPYING APPARATUS

Wolfram Saupe, Mammolshain, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed May 30, 1973, Ser. No. 365,279
Int. Cl. G03g *15/00;* **A47l** *13/40;* **B08b** *7/00*
U.S. Cl. 355—15 **10 Claims**



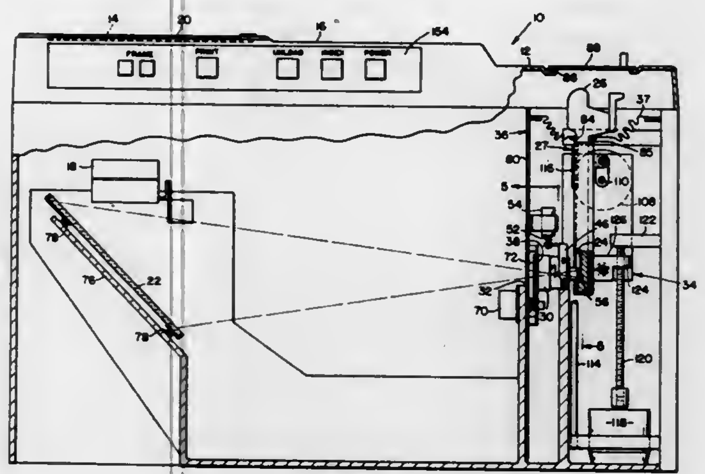
1. Electrophotographic copying apparatus comprising
- a. a reusable photoconductor,
- b. a charging station for the uniform electrostatic charging of this photoconductor,
- c. an exposure station for the image-wise exposure of the charged photoconductor,
- d. a developing station for developing the photoconductor by means of charged toner particles,
- e. a transfer station for transferring the charged toner image from the photoconductor onto a copy material,
- f. a cleaning station for removing residual charged toner from the photoconductor, and
- g. a suction device equipped with a filter, where the toner-laden air issuing from the cleaning station is drawn off and the charged toner is separated by the filter, said filter being positioned closely behind the cleaning station and comprising at least two electrode surfaces opposite to each other which are so constructed and arranged within the suction device in such a manner that the air current loaded with charged toner passes between them, and at least one of the electrodes is grounded and at least one of the electrodes is connected to or capable of connection to a high voltage source.

3,850,522
MICROFICHE CAMERA

Rodney D. Vane, 9 Harvest Rd., Fairport, N.J. 14450, and Paul W. Harrison, 2390 Prospect Ave., Hackensack, N.J. 07601

Filed Oct. 29, 1973, Ser. No. 410,569
Int. Cl. G03b *27/32*
U.S. Cl. 355—54 **7 Claims**

1. A microfilm camera comprising:
- a. a housing;
- b. a flat, horizontal, transparent document platen on a top wall of said housing on which a document to be microfilmed is positioned face-down;
- c. a light source located in said housing below said document platen;
- d. a film holder;
- e. an x-y slide system for moving said film holder in x and y directions,
- f. a lens mounted in a lens mount, said lens mount being positioned between said document platen and said film holder;
- g. said lens including a format mask, and including means for moving said lens temporarily toward said film holder and said format mask into contact with film held thereby during each exposure, and means for moving said lens away from said film holder and said format mask out of contact with film held thereby, immediately after each exposure;
- h. a shuttter adjacent said lens system; and

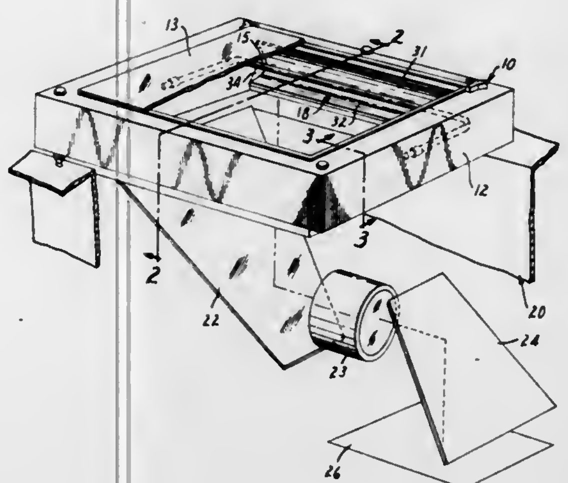


- i. an inner light-tight wall enclosing said film holder and including a flexible bellows having a film pack receiving aperture therein, said aperture including light-tight sealing means, whereby a film pack can be inserted partway through said bellows in light-tight relationship thereto.

3,850,523
PHOTOCOPIER LIGHT BOX

James Edward Skavnak, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 13, 1973, Ser. No. 379,167
Int. Cl. G03b *27/54*
U.S. Cl. 355—70 **2 Claims**



1. A photocopier light box with a small depth to width ratio, comprising:

a support frame including a flat, transparent, rectangular platen for supporting an original document,

a pair of tubular Xenon flash lamps mounted in said support frame below said platen, one said lamp extending parallel to, spaced from, and along the length of each of the longitudinal edges of said platen, and

a pair of cylindrically shaped specular reflectors, one parallel to each of said lamps along the length of said platen, each said reflector having a generally hyperbolic cross section above its associated lamp and immediately adjacent said platen and a generally elliptical cross section below the lamp,

said lamps and reflectors combining to produce a predetermined illumination pattern at said platen.

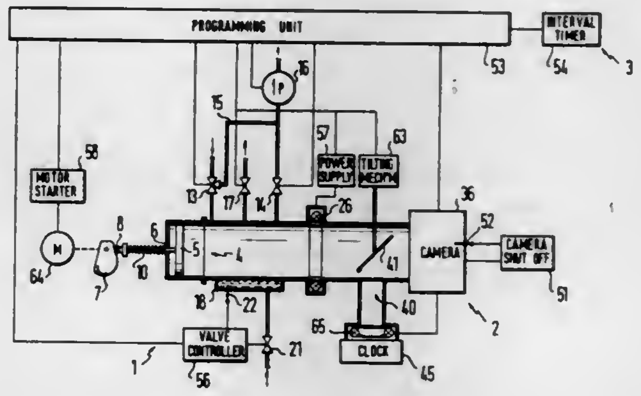
ERRATUM

For Class 356—209 see:
Patent No. 3,850,508

3,850,524
COUNTER FOR CONDENSATION NUCLEI IN AIR

Hans Joachim Kanter, Garmisch-Partenkirchen, Germany, assignor to Max-Planck-Gesellschaft zur Forderund der Wissenschaften e.v., Gottingen, Germany

Filed Mar. 16, 1973, Ser. No. 341,989
Claims priority, application Germany, Mar. 24, 1972, 2214463
Int. Cl. G01m *1/00, 21/00*
U.S. Cl. 356—37 **10 Claims**



1. A counter arrangement for counting condensation nuclei in ambient air comprising, in combination:
- a. a receiver bounding a cavity therein;
- b. inlet valve means operable for admitting said air to said cavity when said valve means is open;
- c. suction means for withdrawing admitted air from said cavity;
- d. decompression valve means operable to be opened for directly connecting said cavity to said ambient air;
- e. a piston member movable into and outward of said receiver between two terminal positions for decreasing and increasing the effective capacity of said cavity;
- f. saturating means for saturating said air in said cavity with moisture, said saturating means including a receptacle, and level control means operable for maintaining in said receptacle a constant level of water exposed to said cavity;
- g. a camera focused on a portion of said cavity;
- h. illuminating means operable for illuminating said portion of said cavity; and
- i. programming means for cyclically operating said inlet valve means, said suction means, said decompression valve means, said piston member, said saturating means, and said illuminating means in timed sequence.

3,850,525
SIMULTANEOUS MULTIPLE MEASUREMENTS IN LASER PHOTOMETERS

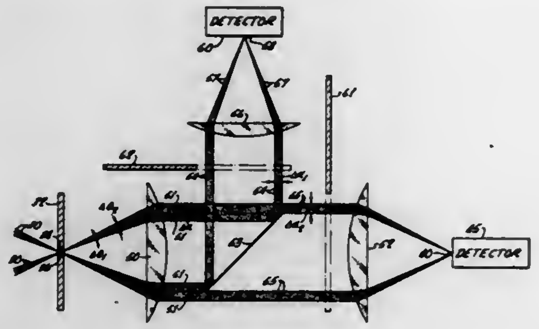
Wilbur I. Kaye, Fullerton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed July 9, 1973, Ser. No. 377,775
Int. Cl. G01n *21/52;* **G01j** *3/44*
U.S. Cl. 356—73 **16 Claims**

1. In a laser photometer of the type including means for focusing a laser beam onto a sample, means for receiving a cone of light issuing from said sample in an incremental angle $\Delta\theta$ at a selectable angle θ, means for focusing said cone of light onto the aperture of a field stop, and detector means for measuring the radiant power passing through said aperture in said field stop, the improvement comprising:

first means for collimating the rays of light passing through said aperture in said field stop thereby forming a cylinder of light having an incremental thickness $\Delta\alpha$;

second means positioned in the path of said collimated rays for focusing said rays onto said detector means; and



third means interposed between said first and second means for intercepting a portion of said rays within a first cylinder having an incremental thickness $\Delta\alpha_1$ and for passing to said detector means only the remaining portion of said rays within a second cylinder having an incremental thickness $\Delta\alpha_2$.

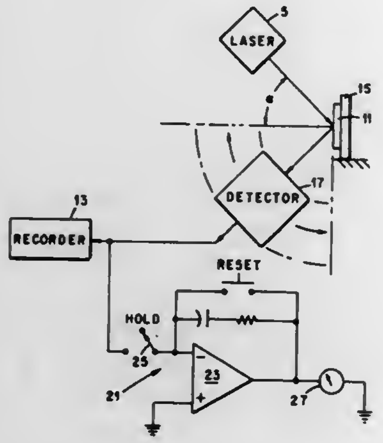
3,850,526
OPTICAL METHOD AND SYSTEM FOR MEASURING SURFACE FINISH

Harry S. Corey, III, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Mar. 16, 1973, Ser. No. 342,131

Int. Cl. G01b *9/02*

U.S. Cl. 356—109 **10 Claims**



1. An optical method for measuring roughness of a machined part surface having periodic surface irregularities of a roughness within a known range, comprising the steps of:

directing a beam of monochromatic, coherent light of a wave length greater than the roughness of said surface onto said surface at a fixed oblique angle of incidence in a plane normal to the lay direction of said periodic surface irregularities so as to produce a diffraction pattern of specular reflectance of said beam from said surface;

recording the intensities of said diffraction pattern at predetermined angles of reflectance so that the predominant lobe of said pattern is recorded at a preselected amplitude;

comparing said recorded intensities with identically recorded diffraction pattern intensities from standard surfaces of known roughness at said predetermined angles of reflectance to determine the roughness of said workpiece surface.

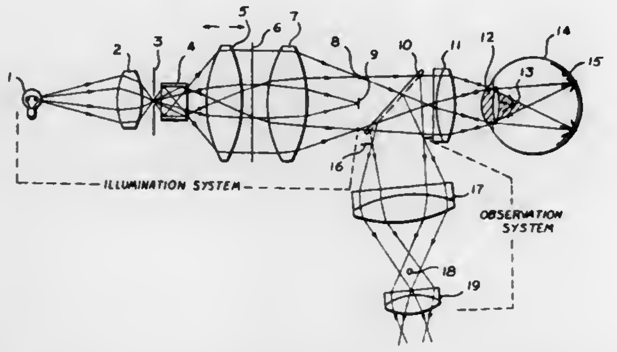
3,850,527
APPARATUS AND METHOD FOR DETECTING AND VIEWING TRANSPARENT OBJECTS IN THE VITREOUS HUMOR

John Talley Winthrop, Wellesley; Raoul Fredrik Van Ligten, Marlboro, and Kenneth Charles Lawton, Framingham, all of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Feb. 12, 1973, Ser. No. 331,918

Int. Cl. G01n *21/46*

U.S. Cl. 356—129 **16 Claims**



1. A method of detecting and observing an abnormal transparent object in an eye which object has an index of refraction different from that of the surrounding medium, which comprises projecting light from an annular light source into the interior of said eye through the pupil, imaging said annular light source on the retina, collecting light reflected from the retina and producing an image of the transparent object using light deflected by said object after reflection from the retina whereby said object may be detected and observed.

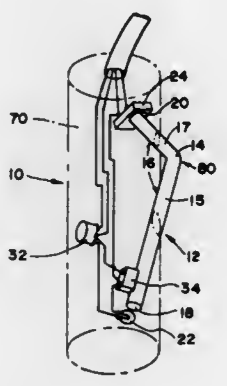
3,850,528
REFRACTOMETER GAUGE

Anthony B. DeBellis, 231 Kriss Rd., Danville, Calif. 94526

Filed July 25, 1973, Ser. No. 382,309

Int. Cl. G01n *21/22*

U.S. Cl. 356—133 **9 Claims**



1. A refractometer for measuring the relative change in the index of refraction of a fluid comprising:

a rod having an obtuse angular bend formed intermediate the ends thereof;

a source of light, having a wave length to which said rod is transparent, positioned adjacent to one end of said rod; means disposed adjacent to the other end of said rod from said light source for detecting variations of light intensity transmitted through said rod; and

means for maintaining the angularly bent portion of said rod immersed in said fluid, whereby the relative change in intensity of light detected by said detecting means is a function of the relative change in refractive index of said fluid.

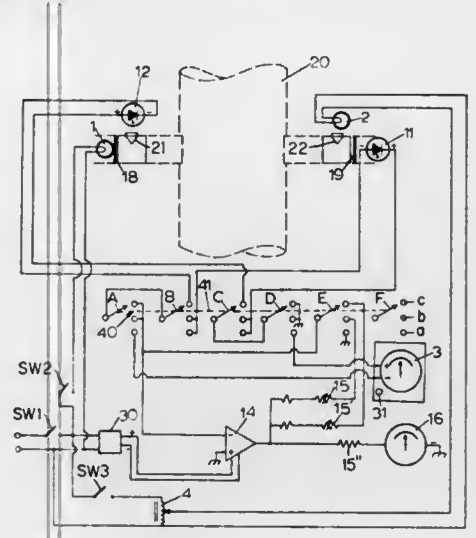
3,850,529
DEVICE FOR CALIBRATING A TRANSMISSOMETER

Richard D. Brugger, 4818 Walker Blvd., Erie, Pa. 16509

Filed Oct. 26, 1972, Ser. No. 300,915

Int. Cl. G01n *21/12, 21/26*

U.S. Cl. 356—207 **6 Claims**



1. A method of calibrating an opacity meter having a first light source and a second light source, a first sensor and a second sensor, a calibration meter, an operational amplifier, supporting said first light source and said first sensor on a first side of an opaque medium,

and supporting said second light source and said second sensor on a second side of said opaque medium,

connecting a first constant means and a second constant means to said opacity meter,

setting the intensity of said second light source by

- a. connecting the light from said first light source impinging on said first sensor, adjusting said opacity meter to a first selected reading;
- b. adjusting the intensity of said second light source to give said first selected reading on said opacity meter with light from said second light source impinging on said first sensor;
- c. adjusting said constants by adjusting said first constant means to give a second selected reading on said calibration meter with light from said first light source impinging on said second sensor;
- d. and setting said second constant means to give said second selected reading.

3,850,530
METHOD AND APPARATUS FOR MEASURING LIGHT WHICH FLICKERS

Naoyuki Uno; Katsuhiko Nomura, both of Kawagoe; Tadazumi Sakazaki, Tokyo; Koichiro Watanabe, Funabashi; Katsuhiko Miyata, Kawasaki, and Fumio Urano, Wako, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

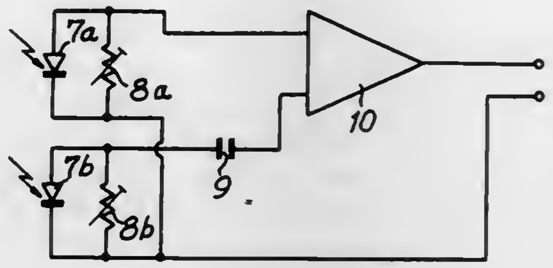
Filed Nov. 27, 1972, Ser. No. 309,780

Claims priority, application Japan, Dec. 1, 1971, 46-97498

Int. Cl. G01j *1/44*

U.S. Cl. 356—226 **9 Claims**

1. In a method for measuring light which is present at an object to be photographed and which has flickering and steady components, the steps of simultaneously receiving said light in an identical manner at a pair of substantially identical photosensitive means while positioning the pair of photosensitive means substantially identically with respect to said light and providing with said pair of photosensitive means a pair of substantially identical signals, respectively, each having an AC component corresponding to the flickering light component and a DC component corresponding to the steady light component, electrically altering either one of said signals into a form according to which the AC component thereof when arithmetically combined with the AC component of the other signal will produce cancelling of the AC components of both signals, and then arithmetically and simultaneously combining the altered and non-altered signals for eliminating said AC components and providing only a DC output to be subsequently used for purposes such as indicating light intensity with a light meter or controlling the operation of a camera shutter, so that by elimination of the AC components the influence of the flickering light on the light measurement is eliminated.



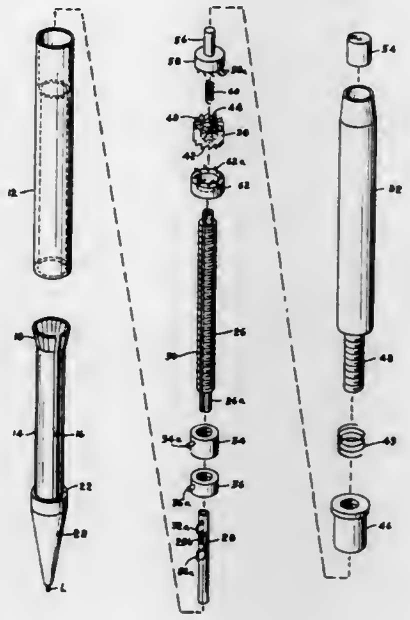
3,850,531
AUTOMATICALLY FEEDING LEAD PENCIL

Walter Thomas Ackermann, Watertown, Conn., assignor to Indevco Corporation, Watertown, Conn.

Filed Nov. 7, 1972, Ser. No. 304,545

Int. Cl. B43k *21/16, 21/02*

U.S. Cl. 401—65 **9 Claims**



1. An automatically feeding mechanical lead pencil comprising:

- a. a tubular external barrel;
- b. an elongated longitudinally slotted sleeve rotatably disposed within the barrel in snug friction fit and terminating outward of the barrel in a tapered end having an axial lead-receiving bore and means engaging the barrel to limit movement of the barrel toward the said tapered end;
- c. a tubular externally threaded and longitudinally slotted drive screw disposed within the sleeve and having one end journaled for rotation in the bore of the tapered end and capable of longitudinal movement with respect thereto, means limiting the longitudinal movement of the screw in the direction of the tapered end, the thread-receiving bore and the opening in the tubular screw being coaxial;
- d. nut means surrounding the drive screw and threadedly engaging the threads on the outside of the drive screw and having key means reciprocally disposed in the slot in the sleeve;

e. lead-engaging means slidably disposed in the drive screw and having an outward projection extending out through the slot in the drive screw and engaged by the nut means; and

f. drive means connected between the other end of the drive screw and the external barrel and adapted to bias the drive screw toward the pointed end and limit the longitudinal movement of the lead with respect to the barrel in a direction away from the tapered end and to convert slight longitudinal movements of the lead relative to the barrel as produced in natural handwriting into the rotary movement of the screw relative to the sleeve and nut means for the purpose of driving the lead outward of the pencil at a rate complementary to lead usage.

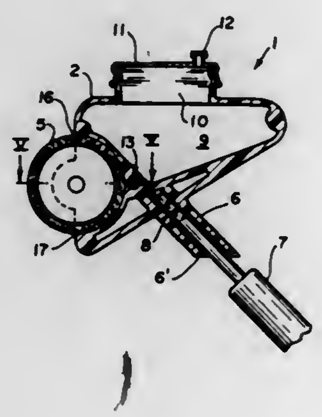
3,850,532

DRIPLESS ROLLER PAINTER

Henry R. Kaiser, 248 Sleepy Hollow Rd., Pittsburgh, Pa. 15216

Filed Feb. 14, 1973, Ser. No. 332,243
Int. Cl. B44d *3/28*

U.S. Cl. 401—219 **1 Claim**



1. A vertically compact roller painting assembly comprising a housing for containing a supply of paint, said housing comprising a top wall portion having a filler cap, a front wall portion of concave, substantially semi-cylindrical shape throughout the entire width and through substantially the entire height of said front wall portion, and a bottom wall portion extending angularly upwardly from a position immediately below said front wall portion to a rear wall portion, a roller having a peripheral portion of pervious material for applying paint, said roller being rotatably mounted on the sides of said front wall portion so that said peripheral portion snugly fits in said concave front wall portion of the housing and well below said top wall portion, valve means located within said front wall portion immediately adjacent said roller peripheral portion, said valve means comprising a cylindrical opening, extending through the body of said front wall portion, centrally of said concave portion, having a plurality of longitudinally spaced, diametrically extending holes extending throughout the entire thickness of said front wall portion and a cylindrical tube snugly fitted in said cylindrical opening and having a plurality of correspondingly sized and spaced pairs of diametrically extending holes throughout the entire length thereof adapted to become into registry with said holes in said front wall portion in the "open" position of said valve means and out of registry therewith in the "closed" position to close the flow of paint to said roller peripheral portion in response to turning of said tube about its axis, said control means comprising a control knob extending from one end of said tube to effect said turning of said tube from the "on" to the "off" position and to intermediate open position to selectively control the rate of flow of paint, and a detachably mounted handle extending angularly downwardly and outwardly of said bottom wall portion of said roller in a direction away from said roller.

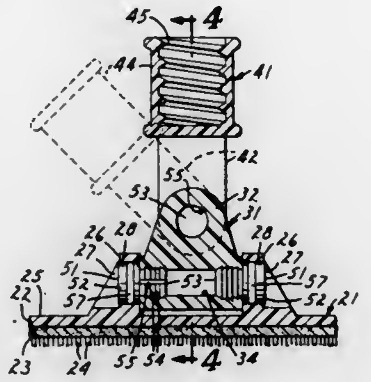
3,850,533

POSITIONAL UNIVERSAL JOINT

James E. Thielen, New Brighton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 269,415, July 6, 1972, , which is a continuation-in-part of Ser. No. 79,212, Oct. 8, 1970, abandoned. This application May 31, 1973, Ser. No. 365,753
Int. Cl. F16d *3/28*

U.S. Cl. 403—58 **3 Claims**



1. A positionable universal joint comprising:

a. a pair of bifurcate holding members each arm of which has an opening therethrough, each opening having a smooth wall, the plane of the openings of a complementary pair of arms being substantially parallel and axially aligned;

b. a connecting member having a pair of spaced bores therethrough, each bore being aligned with one said axially aligned pair of openings in said holding member arms;

c. a plurality of locking plugs securing said holding members and said connecting member in cooperative complementary pivotal positionable relationship, each said locking plug having a shank and a head portion, the shank portion of a locking plug extending into one end of a bore to create a tight friction fit with said connecting member and the head portion thereof being circumferentially grooved and extending into an opening in a holding member, and

d. a compressible resilient friction ring supported in said groove of each of said locking plugs, each said friction ring having an outer diameter slightly larger than the diameter of the opening receiving it and an inner circumference about the same as that of the groove which supports it, whereby insertion of the head portion into its opening compresses the ring to provide frictional resistance to pivotal movement of said holding members and said connecting member.

3,850,534

CHAIR CONNECTOR

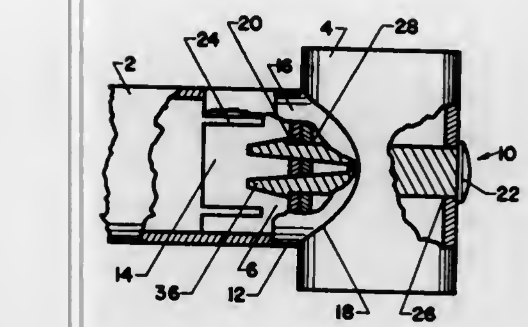
Robert W. O'Halloran, 1146 Harrison St., Hollywood, Fla. 33020

Filed Dec. 7, 1972, Ser. No. 312,924
Int. Cl. F16b *7/00*

U.S. Cl. 403—190 **2 Claims**

1. A device for connecting together a first tubular member to a second tubular member at a substantially perpendicular angle comprising:

a cylindrical member having a first end portion and a second end portion, said first end portion having a smaller circumferential exterior diameter than said second end portion, said second end portion havinga surface configuration curved and adapted to receive and abut against said second tubular exterior surface, said cylindrical member having a transverse wall coupled across said second cylindrical member end portion opening, said transverse wall having an aperture disposed substantially in a central portion, and a locking pin, said pin having a first end having a flanged enlarged diametrically end portion, and a second end having a bifurcated tapered end portion, said bifurcating end portions being resilient and receivable through said cylindrical member transverse wall aperture, said bifurcated end portions having flanged circumferential diameter portions which are engageable within said cylindrical member transverse wall aperture whereby said second tubular member may be lockably engaged to said cylindrical member with the bifurcated second end portion of said pin positioned within said transverse wall aperture portion.



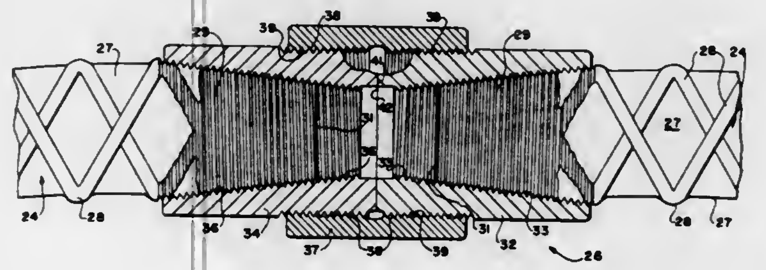
3,850,535

CONNECTING MEANS AND METHOD FOR FORMING REINFORCING ROD CONNECTION

George H. Howlett, and James W. Howlett, both of Oakland, Calif., assignors to Hewlett Machines Works, Berkeley, Calif.

Filed Sept. 11, 1972, Ser. No. 287,920
Int. Cl. F16b *7/18*

U.S. Cl. 403—305 **6 Claims**



1. In a high strength, slack-free, reinforcing rod connection including a pair of metallic reinforcing rods mounted in aligned end-to-end relation and connecting means mounted on and connecting said rods, said rods each being formed with a threaded convergently tapered connecting section at the juxtaposed ends thereof, the improvement of said connecting means comprising:

a. a first coupler having a tapered threaded bore therein formed for and mounted in mating threaded engagement with the connecting section on a first of said rods, said first coupler being threaded onto said connecting section to a position removing all slack in an axial direction between said first coupler and said first of said rods;

b. a second coupler having a tapered threaded bore therein formed for and mounted in mating threaded engagement with the connecting section on a second of said rods, said second coupler being threaded onto said connecting section to a position removing all slack in an axial direction between said second coupler and said second of said rods; and

c. coupler linking means formed to extend between said first coupler and said second coupler and formed for releasable securement thereto solely by manipulation of said linking means, said linking means and said first coupler and said second coupler being adapted for removal of all of the slack in an axial direction between said linking means and said first coupler and said linking means and said second coupler during securement of said linking means thereto, and said linking means being mounted in secured relation to both said first coupler and said second coupler to provide a high strength slack-free connection.

ERRATUM

For Class 403—350 see:
Patent No. 3,850,538

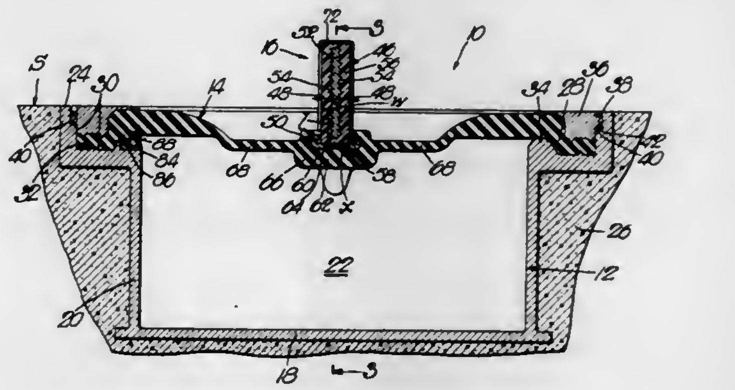
3,850,536

LIGHT-REFLECTIVE ROAD MARKER

Elliott H. Kone, Branford, Conn., assignor to Traffic Standard Incorporated, New Haven, Conn.

Filed Dec. 22, 1971, Ser. No. 210,802
Int. Cl. E01f *9/04*

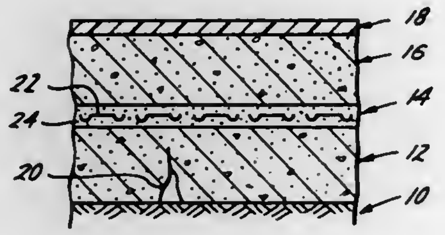
U.S. Cl. 404—11 **5 Claims**



1. A road marker, providing a cup-like casing having a bottom and being open at the top; a molded resilient diaphragm peripherally anchored to the casing and extending across the casing to close the same; an elongated, substantially flat and rigid reflector lens with opposite faces; and a lens mount in said diaphragm, providing a rigid longitudinal holder permanently molded in said diaphragm substantially in the middle thereof and below said casing top whereby said holder imparts its rigidity to a portion of the diaphragm surrounding said holder, and a rigid longitudinal mounting base on and integral with said lens, with said base being received in and locked to said holder for holding said lens on said diaphragm with said faces in normally erect disposition thereon, and said lens being of a height normally to project with said faces above said casing top, said diaphragm portion, holder and lens including its locked base in said holder together forming a rigid unit tilting about a longitudinal axis of said holder on impact with one of said lens faces of a plow blade on its pass over said casing top, said diaphragm being on opposite sides of said portion thereof of adequate expanse to yield to the lens in its tilt out of the way of a passing plow blade, and said diaphragm being sufficiently spaced from said casing bottom to yield on the ride of a vehicle tire over said casing top and lens.

3,850,537
PAVEMENT CONSTRUCTION

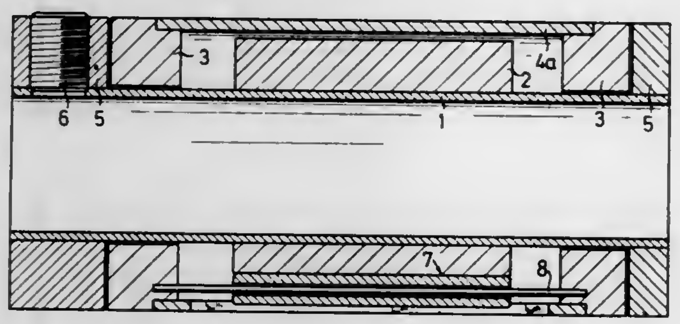
Douglas Bynum, Jr., 17511 Loring Ln., Houston, Tex. 77040
Filed Oct. 31, 1972, Ser. No. 302,422
Int. Cl. E01c *11/00*
U.S. Cl. 404—17 **5 Claims**



1. In a pavement construction of the type including upper and lower layers of concrete, the improvement comprising:
an intermediate layer, disposed between said upper and lower layers, said intermediate layer being formed of a matrix of rubber tire rings embedded in sand.

3,850,538
CLAMP COUPLING

Otto Hachtmann, Alemannstrasse 21, 300 Hanover, Germany
Filed Jan. 2, 1973, Ser. No. 320,152
Int. Cl. B65h *75/30*
U.S. Cl. 403—350 **7 Claims**

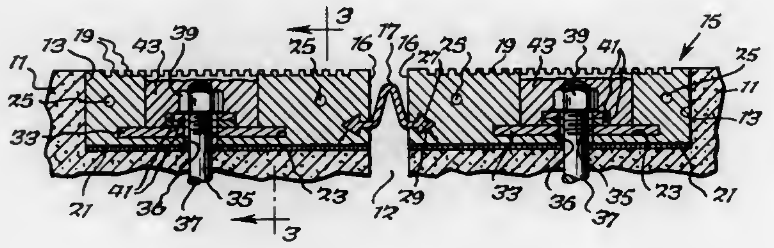


1. A clamp coupling, comprising a hollow shaft, a star wheel fixed upon said shaft, a hollow collar device enclosing said star wheel and rotatably mounted upon said wheel, round clamping members, bendable and elastic axles extending through said collar device and carrying said clamping members, said collar device having outer openings through which said star wheel can push said clamping members and means holding the ends of said axles, whereby the radial distance of the ends of said axles from the longitudinal axis of the coupling is unvariable, and closure rings fixed upon said hollow shaft upon opposite sides of said collar device.

3,850,539
GAP-SEALING DEVICE

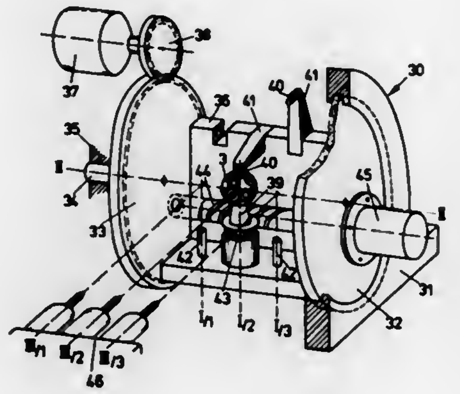
Thomas C. Bowman, Buffalo, and Stewart C. Watson, Williamsville, both of N.Y., assignors to Watson-Bowman Associates, Inc., Buffalo, N.Y.
Filed June 5, 1972, Ser. No. 259,513
Int. Cl. E01c *11/02*
U.S. Cl. 404—69 **16 Claims**

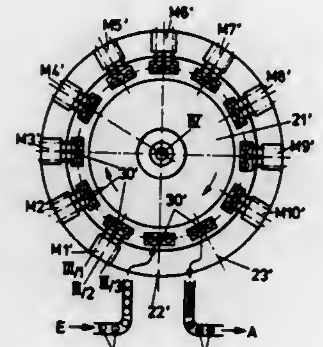
1. A gap-sealing device particularly suitable for bridges, over-passes, ramps, and the like which comprises: a pair of longitudinally extending, laterally spaced anchor members provided with longitudinally spaced means for fastening them to supports, each of said members being substantially rectangular in cross-section, formed of relatively hard elastomeric material, and provided with a longitudinal passage therethrough, said members having in their facing edges channels extending longitudinally of said members, each of said channels comprising a narrow opening and an enlarged inner portion and having a slit in the wall of said enlarged inner portion thereof whereby to form a hinged lip at the lower edge of said anchor member adjacent said channel; a reinforcing plate extending through said passage and having substantially the same cross-section as said passage; and an elongated, flexible, impermeable web of elastomeric material extending longitudinally between and joining said anchor members, said web having enlarged side edge portions removably engaged directly in said channels; and said web being clamped in said channels.



3,850,540
APPARATUS FOR THE PRODUCTION OF CONNECTORS FOR SPACE FRAMEWORKS OR THE LIKE

Max Mengeringhausen, Wurzberg, Germany, assignor to Mero AG, Zug, Switzerland
Division of Ser. No. 222,111, Jan. 31, 1972, Pat. No. 3,826,584. This application Feb. 6, 1974, Ser. No. 440,185
Claims priority, application Germany, Feb. 8, 1971, 2105824
Int. Cl. B23b *39/20*
U.S. Cl. 408—50 **1 Claim**

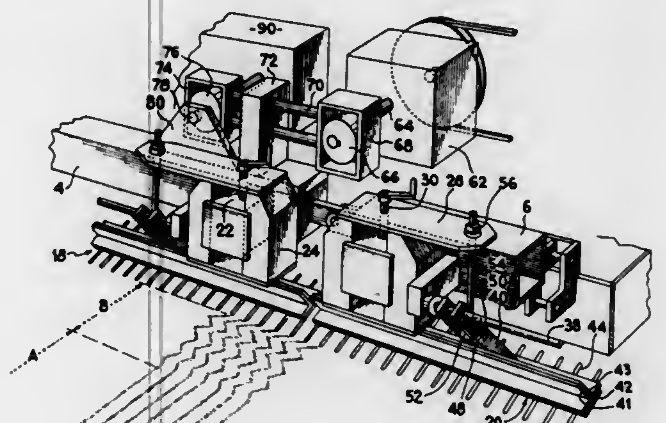




1. Apparatus for forming and producing accurately spaced holes in spherical and polyhedral connector blanks comprising, support means, a plurality of clamping means disposed laterally in spaced relationship on said support means, each of said clamping means adapted to engage a respective connector blank and having an axis (I) about which said clamping means and its respective clamped blank are rotatable relative to said support means, means connected to said support means for rotating said support means about a further axis (II), the axes (I) of the clamping means being disposed perpendicular to the axis of rotation (II) of said support means, drive means for rotating said clamping means about the axes of rotation (I), machining means positioned adjacent said support means, said machining means including a plurality of tools disposed laterally in spaced relationship corresponding to the spacing of said clamping means, each of said tools having a rotational axes (III) intersecting the axis (I) of the corresponding clamping means and axis of rotation (II) of the support means at one point, whereby the connector blanks may be oriented in space about their respective centers to thereby permit machining of each connector blank over its entire peripheral area without requiring rechucking thereof, an indexing table, a plurality of said support means mounted on said indexing table adjacent the outer periphery thereof, a plurality of machining means fixedly disposed in spaced relation adjacent the clamping means whereby said clamping means are successively moved adjacent said machining means by said indexing table, each said machining means having a plurality of tools corresponding to the plurality of clamping means, said tools having rotational axes (III), and the tool axes (III) of each machining means intersecting the axes of rotation (I and II) of the corresponding support means and said plurality of clamping means in individual points associated with the clamping means.

3,850,541
VIBRATING COMB STRUCTURE FOR A ROAD SURFACE LAYER

Paulin Baillet, Nancy; Rene Simonin, St-Max, and Jean-Claude Fouard, Saulxures les Nancy, all of France, assignors to Societe Chimique, Routiere Et D'Entreprise Generale S.C.R.E.G., Paris, France
Filed Aug. 16, 1973, Ser. No. 388,789
Claims priority, application France, Aug. 22, 1972, 72.29895
Int. Cl. E01c *19/38*
U.S. Cl. 404—114 **13 Claims**



1. A vibrating comb structure for a road surfacing machine and comprising a frame for connecting to a road surface finisher or like machine, slideways carried by the frame, two girders slidably mounted on the slideways, means for articulating the girders in end-to-end relation so that they are movable together along their longitudinal axes, a comb carrier mounted on each one of the girders, a comb carried by each carrier, a motor secured to the frame and having a rotary output shaft, and a transmission system for converting the movement of rotation of the motor output shaft into two simultaneous reciprocating movements of the girders along the slideways.

ERRATUM

For Class 408—50 see:
Patent No. 3,850,540

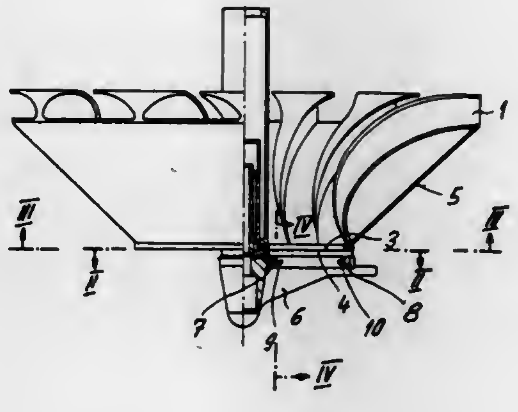
3,850,542
TREATMENT OF CHLORINE-CONTAMINATED SULFURYL FLUORIDE WITH UNSATURATED COMPOUNDS

Robert D. Barnard, Walnut Creek, and Robert H. Meyer, Concord, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.
Filed Mar. 12, 1973, Ser. No. 340,525
Int. Cl. C01b *17/45*
U.S. Cl. 423—468 **5 Claims**

1. A method for converting molecular chlorine contained in sulfuryl fluoride to innocuous or readily separable chlorine compounds, comprising
contacting chlorine-contaminated sulfuryl fluoride with at least one unsaturated compound having at least one carbon-to-carbon double or triple bond which is not sterically hindered or deactivated to chlorine adduction by other moieties within said unsaturated compound,
the amount of said unsaturated compound contacted being such as to provide at least one reactive multiple bond per molecule of chlorine to be converted.

3,850,543
SURFACE VENTILATION ROTOR

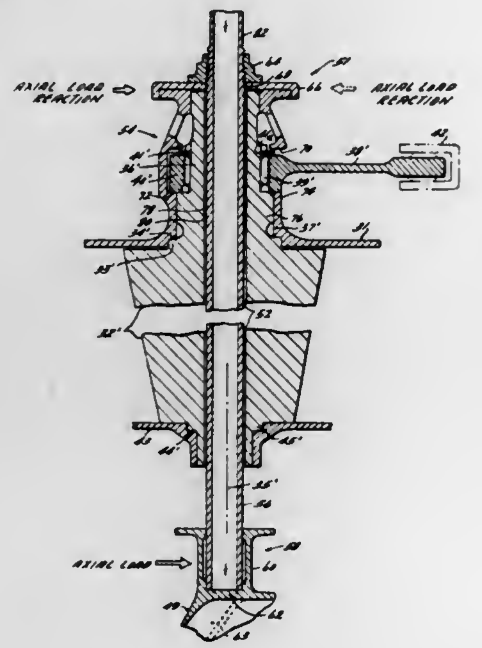
Joseph Richard Kaelin, Villa Seeburg, CH-6374 Buochs, Switzerland
Filed Nov. 22, 1972, Ser. No. 308,827
Int. Cl. F01d *15/08*
U.S. Cl. 415—121 B **1 Claim**



1. A surface ventilation rotor having an axis of rotation and being adapted for circulating and introducing oxygen or an oxygen mixture into a liquid located in an activation tank of a clarification plant, the inside of which rotor is subdivided by means of blades into a plurality of liquid conveying channels having an inlet side,
- a first cutting member located on the inlet edges of said blades, said first cutting member having at least one cutting edge extending perpendicular to said rotational axis;
- a second cutting member comprising at least one cutting edge fixed with respect to said first cutting member and cooperating therewith to obtain a changing shearing angle as said first cutting member rotates, at least one of said cutting edges being fluted as seen from an axial direction; and
- adjusting means provided for adjusting the position of the cutting edges of said second cutting member relative to the cutting edge of said first cutting member.

3,850,544
MOUNTING ARRANGEMENT FOR A BEARING OF AXIAL FLOW TURBOMACHINERY HAVING VARIABLE PITCH STATIONARY BLADES

John J. Ciokajlo, Loveland, Ohio, assignor to General Electric Company, Cincinnati, Ohio
Filed Nov. 2, 1973, Ser. No. 412,321
Int. Cl. F04d *29/46, 29/56;* **F01d** *5/00*
U.S. Cl. 415—149 11 Claims

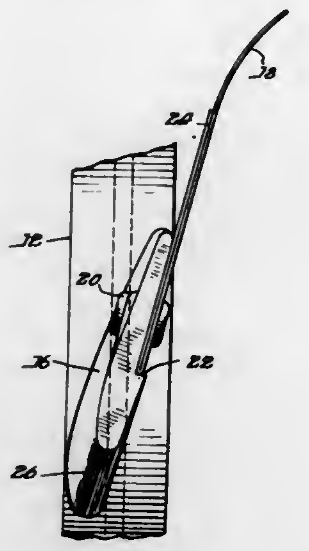


1. A mounting arrangement for securing a main shaft bearing of axial flow turbomachinery of the type having at least one stage of variable pitch stationary blades, the mounting arrangement comprising:
- a. an annular outer casing supporting said blades;
- b. a main frame for supporting said main shaft bearing, said main frame including a plurality of bosses; and
- c. a plurality of supports for securing said main frame to said outer casing wherein each said blade of a selected stage has a support associated therewith, each said support including:
  - i. a rod disposed in a passage in said associated blade, wherein said blade is freely rotatable independently of said rod,
  - ii. said outer casing wherein said outer casing includes a first retaining means for restraining said rod from movement in a radially inward direction and second retaining means for restraining said rod from movement in a direction normal to the axis of said rod, and
  - iii. one of said bosses wherein said boss is restrained from radially inward and axial movement by said rod.

3,850,545
FLEX FAN

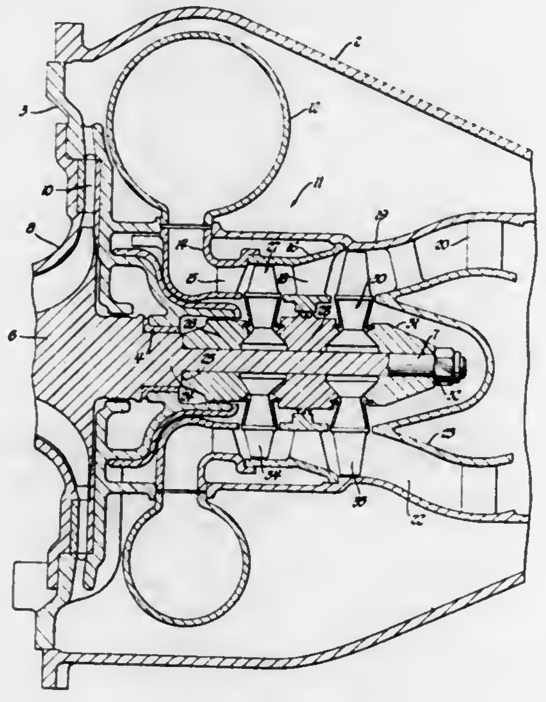
Thomas J. Weir, Indianapolis, Ind., assignor to Hayes-Albion Corporation, Jackson, Mich.
Filed Sept. 7, 1972, Ser. No. 286,895
Int. Cl. F04d *29/38*
U.S. Cl. 416—132 2 Claims

1. An automotive fan comprising:
- a one-piece cast member including a hub and a plurality of spider arms projecting radially from said hub;
- said spider arms being skewed to the plane of said hub and having a rounded thickened leading edge and curved front and rear faces merging into said leading edge such that said spider arms are aerodynamically shaped to decrease the sensitivity of said fan to stalling and including a L-shaped recess in one face of each of said arms for receiving flexible fan blades;
- a curved one-piece flexible fan blade, having a free end, attached to each of said spider arms in said recess such that the leading edges of said fan are defined entirely by said spider arms, the outer face of said blade is substantially aligned with the recessed face of said spider arm and said blades abut said spider arms along the entire length of said blades.



3,850,546
TURBOMACHINE ROTOR

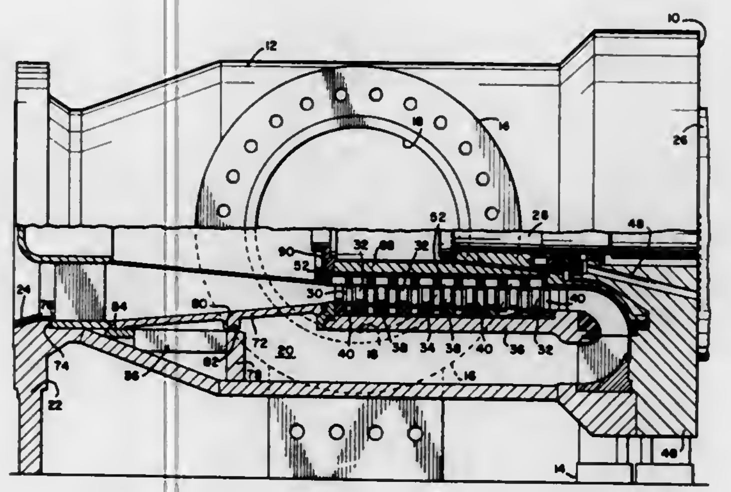
George W. Mason, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Division of Ser. No. 120,485, March 3, 1971, Pat. No. 3,746,469. This application Mar. 22, 1973, Ser. No. 343,933
Int. Cl. F01d *5/30*
U.S. Cl. 416—212 2 Claims



1. A turbomachine rotor stage comprising, in combination, a shaft, a first abutment means on the shaft, a second abutment means on the shaft movable axially of the shaft, a wheel including a hub held on the shaft between the abutment means, and means cooperating with the shaft and the second abutment means to urge the abutment means together against the wheel hub; the wheel comprising a ring of laterally abutting elements extending radially from the shaft, each element including a sector of the hub, a connecting portion extending outwardly from the hub sector, a platform at the outer end of the connecting portion, and a blade extending from the platform, the hub sectors being mechanically interlocked directly with and bonded directly to the adjacent hub sectors.

3,850,547
ROTOR BLADE MOUNTING ARRANGEMENT

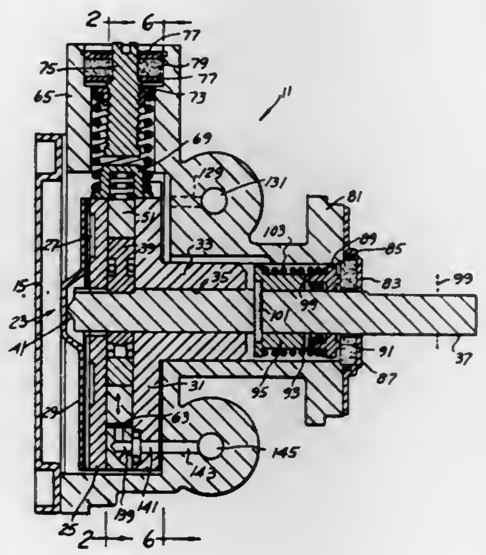
Fred Canova, Phillipsburg; Leroy M. Krouse, Easton; Hanns Hornschuch, Easton; Paul Hermann, Easton, all of, and Joseph A. Dopkin, Hopewell, N.J., assignors to Ingersoll-Rand Company, New York, N.Y.
Division of Ser. No. 235,501, March 17, 1972, Pat. No. 3,773,430. This application Aug. 1, 1973, Ser. No. 384,451
Int. Cl. B64c *27/48;* **F04d** *29/34*
U.S. Cl. 416—215 1 Claim



1. An arrangement for mounting rotor blades on a rotor shaft, for use in a gas compressor, comprising:
- a blade mounting ring, said ring having a central aperture for engagement with and about the periphery of a rotor shaft, and means for receiving a rotor blade therewithin; at least one rotor blade, having a mounting head on one end thereof; wherein
- said mounting head and said blade mounting ring have boreholes formed therethrough for receiving means for pivotally securing said blade to said mounting ring; and
- said mounting head further has means on at least one side thereof for nesting a vibration-dampening element thereat in contacting engagement with said one side; wherein
- said mounting head has a single tang projecting therefrom, at a first side thereof, and a single tang receiving recess formed in a side thereof opposite to said first side, for effecting an interengagement of said latter single tang and recess with a recess and tang, respectively, of mounting heads disposed in adjacency thereto; and
- said nesting means comprises an arcuate, substantially semi-circular cut-out; and further including
- a pivot pin in penetration of both said mounting head and said blade mounting ring boreholes; and
- a second rotor blade having a mounting head on one end thereof; wherein
- said second rotor blade is pivotally pinned to said blade mounting ring, in immediate adjacency to said one rotor blade; and
- said second rotor blade mounting head has an arcuate, substantially semi-circular cut-out formed therein which cut-out aligns with, and defines a substantially fully circular void with, said arcuate cut-out in said mounting head of said one rotor blade and resilient means nested within said device for maintaining said single tang and recess in a normal spaced apart relationship relative to a respective recess and tang disposed in adjacency thereto, and for damping vibration of said one and said second rotor blades.

3,850,548
OIL BURNER PUMP

Warren H. DeLancey, 1580 Prospect Rd., Apt. H-4, Elyria, Ohio 44035
Filed Feb. 12, 1973, Ser. No. 331,611
Int. Cl. F04b *49/00*
U.S. Cl. 417—220 15 Claims



1. In a variable capacity pump having a body with a liquid inlet port and a discharge outlet adapted for connection to a nozzle;
- a cylinder within the body formed by a hollow casing, and front and rear pump plates secured thereto;
- a pump stator slidably mounted in said cylinder engaging said pump plates and having an cylindrical opening therethrough;
- a rotor with radially movable vanes mounted in said opening with the vanes adapted to move over the boundary of said opening for a pump action, receiving liquid through a port in said rear pump plate and discharging liquid through a port in said front plate;
- the improvement comprising a drive shaft mounted and journalled in said body extending through said pump plates and secured to said rotor;
- opposed extensions on said stator slidably movable respectively within a radial first slot extending through said casing;
- and a radial second slot extending into said casing;
- said second slot outwardly of one stator extension defining a discharge chamber adapted to receive pumped fluids;
- there being a cut off valve opening in said casing adapted for connection to said discharge outlet;
- said cut off valve opening including a seat in said chamber, and a soft valve on one stator extension normally in registry with said seat;
- a spring retainer within said pump body normally spaced radially outward of the other stator extension and supported upon said pump plates;
- an air release spring interposed between said retainer and said stator extension, yieldably resisting radial outward movement thereof;
- and a discharge pressure spring coaxial of and interposed between said retainer and said body normally holding said retainer during initial movement of said stator towards and into engagement with said retainer, so that initial low pressure air delivered to said chamber lifts the soft valve from said seat for delivery to said nozzle;
- solid liquid subsequently pumped to said chamber of progressively increasing pressure causing the stator to move further radially outward against the action of said dis-

charge pressure spring, further opening said valve to reach an equilibrium of volume of pumped liquid delivered to said nozzle.

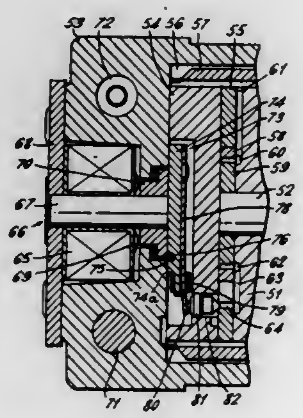
3,850,549
OIL PUMP FOR HEATING INSTALLATIONS

Gunnar Lyshoj Hansen, and Jorgen Rono-Clausen, both of Noroborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Division of Ser. No. 170,773, Aug. 11, 1971, Pat. No. 3,752,602. This application Feb. 22, 1973, Ser. No. 334,694

Int. Cl. F04b *39/08*

U.S. Cl. 417—310 **2 Claims**



1. A pump assembly comprising a casing, pumping element mounted in said casing, fluid intake and exhaust passages formed in said casing, said casing forming a low pressure chamber fluidly connected to said intake passages, passage means between said intake and exhaust passages, a valve in said passage means biasable to an open position by pressurized fluid in said exhaust passages, electromagnetic means housed in said casing including an armature plate in said low pressure chamber and spring means for biasing said armature plate to a predetermined position when said electromagnetic means is deactivated, a leaf spring attached to said armature plate and having one end thereof engage said valve for biasing it to a closed position when said armature plate is biased to said predetermined position and spindle means between said armature plate and said casing to allow a swinging movement for said armature plate.

3,850,550
CENTRIFUGAL PUMP AND MOTOR

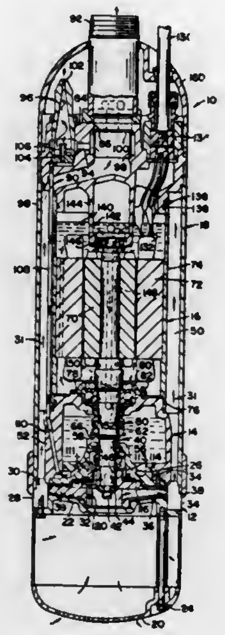
Donald A. Kaessen, Ashland, Ohio, assignor to Hydr-O-Matic Pump Company, Hayesville, Ohio

Filed Aug. 5, 1971, Ser. No. 169,353

Int. Cl. F04b *17/00*

U.S. Cl. 417—372 **10 Claims**

1. A centrifugal pump and motor comprising
an impeller and housing means therefor forming an impeller chamber adapted to pump water containing abrasive means, said housing means including a back wear ring,
an axial diffuser,
a motor in axial alignment with said impeller,
a common shaft for the motor rotor and the impeller,
tubular means encompassing said motor for the length thereof and connecting to said axial diffuser for flow of pumped liquid therethrough for cooling the motor,
an outlet means connecting to said tubular means,
means on said outlet means journalling an end of the shaft thereon, and
a vortex separator connected to said outlet means to receive part of the pumped material, and means connecting to the vortex separator for flow of its clear liquid output to said chamber adjacent said wear ring for flushing the said wear ring.



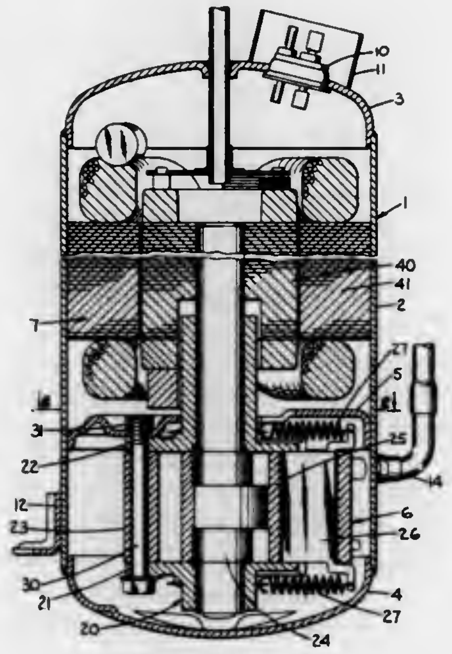
3,850,551
COMPRESSOR HOUSING

Ernest A. Gamache, West Caldwell, N.J., and Milton M. Kosfeld, Louisville, Ky., assignors to Fedders Corporation, Edison, N.J.

Filed May 24, 1973, Ser. No. 363,491

Int. Cl. F04b *35/04*

U.S. Cl. 417—410 **3 Claims**



1. A rotary compressor including:
a. a cannular housing member;
b. a mounting plate affixed within said cannular member and perpendicular to the walls of said cannular member;
c. means on said mounting plate for attaching the compressor pump;
d. a motor stator assembly held within said cannular member, on one side of said mounting plate, by the walls of said cannular member;
e. a compressor pump within said cannular member, on the side of said mounting plate opposite said motor stator assembly;
f. a motor rotor assembly attached to the shaft of said pump;
g. attachment means for securing said pump body to said mounting plate through said means on said mounting plate; and
h. means for aligning the motor rotor and motor stator in said pump body.

3,850,552
ROTARY PRESSURISED-FLUID DEVICE WITH COAXIAL ANNULAR UNITS HAVING RECIPROCATING PARTITIONS

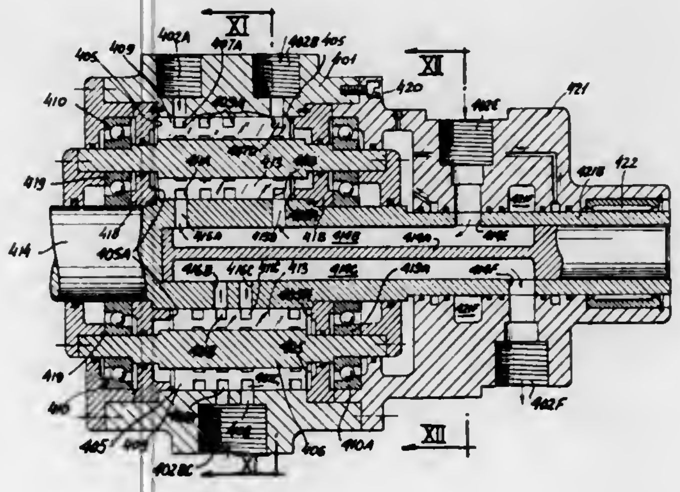
Jean Pierre Marcel, 20, rue E. Roux, Ruelle 16, France

Filed Jan. 11, 1972, Ser. No. 217,024

Claims priority, application France, Jan. 14, 1971, 71.01087; Mar. 9, 1971, 71.08052

Int. Cl. F01c *1/00;* **F03c** *3/00;* **F04c** *1/00*

U.S. Cl. 418—6 **3 Claims**



1. A rotary pressurized fluid device usable as a pump, a compressor or a motor, comprising first and second coaxial annular units of revolution capable of turning one relative to the ohter on an axis common thereto and having mating faces in sliding engagement, at least one cylinder constituted by an annular groove of uniform cross-section formed coaxially between said two coaxial annular units in at least one of said mating faces, at least one piston secured to one of said two coaxial annular units and sealingly engaged in said at least one cylinder, radial guide grooves cut in the other of said two units transversely to said cylinder, mobile partitions slidably reciprocable in said guide grooves so as to divide said cylinder in cooperation with said piston into work-chambers, cams carried by said piston-carrying unit for reciprocating said mobile partitions upon said units rotating one with respect to the other and fluid inlet and outlet orifices communicating respectively with two orifices located on each side of said piston, said other of said units being arranged inside said one of said units and forming a so-called second unit, said device further comprising a third coaxial unit arranged inside said second unit and also capable of turning relative therewith in a fluid tight manner, at least one further cylinder constituted by an annular groove of uniform cross-section formed between said second and third unit, at least one further piston secured to one of said second and third units and sealingly engaged in said further cylinder, further guide grooves cut in the other of said second and third units transversally to said further cylinder, further mobile partitions slidably reciprocable in said further guide grooves so as to divide said further cylinder together with said further piston into further work-chambers, further cams carried by said further piston-carrying unit for reciprocating said further mobile partitions upon relative rotations of said second and third units, and further fluid inlet and outlet orifices communicating respectively with two orifices located on each side of said further piston.

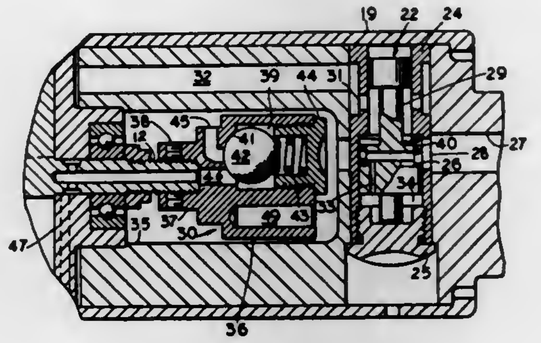
3,850,553
STALL TORQUE AIR SHUT-OFF CONTROL FOR PNEUMATIC NUT RUNNERS

William K. Wallace, Barneveld, N.Y., assignor to Chicago Pneumatic Tool Company, New York, N.Y.

Filed Oct. 15, 1973, Ser. No. 406,143

Int. Cl. G05d *13/34*

U.S. Cl. 418—43 **7 Claims**



1. A centrifugally operable pressure air relief valve unit comprising a body having an axially extending hub adapted for connection with a rotor shaft in axial extension of the shaft and for rotation with the shaft, a chamber within the body having a ball valve seat connecting with a vent port through the body, an air inlet port to the chamber adapted for connection with a source of pressure air, a ball valve axially movable in the chamber relative to the seat in response to centrifugal forces created by rotation of the unit, and a spring normally biasing the ball valve closed upon its seat; wherein the seat is concaved having an axis extending parallel to and in eccentric relation to the longitudinal axis of the body, the vent port is coaxial with the axis of the seat, a portion of the inlet port extends through the valve seat in parallel eccentric relation to the axis of the latter, and the ball valve in its seated condition having a closed relation to the vent port and a partially closed relation to the inlet port.

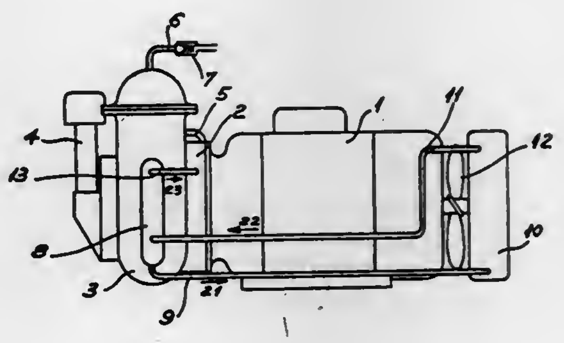
3,850,554
ROTARY COMPRESSORS WITH INJECTION OF LIQUID

Bernard Zimmern, c/o S. J. Rudy, 8 E. 44th St., New York, N.Y. 10017

Filed Apr. 5, 1973, Ser. No. 348,220

Int. Cl. F01c *21/04;* **F04c** *29/02;* **F01m** *1/00*

U.S. Cl. 418—84 **5 Claims**



1. An air compressor set comprising a motor driven rotary compressor, a reservoir partially filled with water connected to the high pressure outlet of the compressor, an injection inlet in the compressor, a water circulation system including a cooling heat exchanger having an inlet connection with a water outlet of the reservoir and having an outlet connection with the injection inlet of the compressor, and means controlling flow of water from the water outlet of the reservoir to the heat exchanger comprising a control valve, and a float in the

reservoir connected for actuating the valve, the valve having a partially open condition in a top position of the float and a fully open condition in a bottom position of the float.

3,850,555
SEGMENTAL MOLD

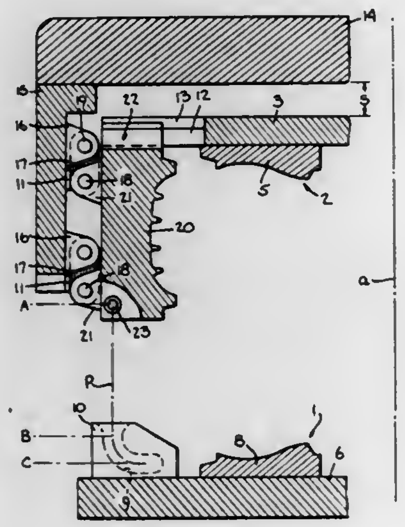
Lambert Pasch, Nutheim, Germany, assignor to Uniroyal AG, Auchen, Germany

Filed Mar. 23, 1973, Ser. No. 344,186

Claims priority, application Germany, Apr. 17, 1972, 2218562

Int. Cl. B29h *5/02, 5/08*

U.S. Cl. 425—46 **14 Claims**



1. A segmental mold comprising: an upper and a lower annular sidewall-shaping member coaxially confronting one another; carrier means for effecting movement of at least one of said members axially relative to the other of said members; an annular array of tread-shaping segments concentrically interposed between said members; linkage means for effecting movement of said segments both axially in parallel relation and radially from an open annular array wherein said segments are spaced from one another to a closed annular array of reduced extent wherein said segments abut one another and define a tire-curing mold cavity, said linkage means pivotally interconnecting respective ones of said segments to said carrier means and having a vertical at-rest locked position in parallel alignment with a common axis of said segments, said linkage means when in said vertically locked position preventing said segments from being moved axially relative to said carrier means and radially into a closed annular array; linkage unlocking means secured to said lower member and operatively associated with a lower end of each said segment for initiating movement of said linkage means out of their respective locked positions to, thereby, permit movement of said segments into a closed annular array, said linkage unlocking means including releasable means operatively associated with the lower end of each of said segments for restraining said segments against axial movement relative to one another and relative to said lower member when said carrier means and thereby said upper member are initially raised relative to said lower member and for (b) thereafter releasing said segments from said lower member entirely upon further elevation of said carrier means and thereby said upper member relative to said lower member to permit a complete opening of the mold; and coupling means for interconnecting said segments to said upper member, said coupling means comprising portions of said segments which interfit with corresponding portions of said upper member, said interfitting portions being slidable horizontally relative to one another during movement of said segments radially from an open annular array to a closed annular array

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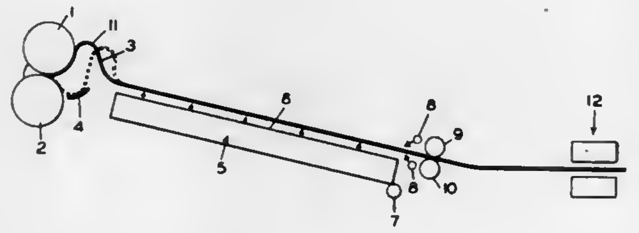
3,850,556
COOLING SLIDE

John H. Young, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 243,271, April 12, 1972,. This application June 4, 1973, Ser. No. 366,465

Int. Cl. B29c *25/00;* **B29d** *7/20*

U.S. Cl. 425—71 **2 Claims**



1. An apparatus for forming a product consisting of consolidating roll means which is used to convert bulk thermoplastic material into sheet form and push the formed sheet in an initial processing direction, including in the sheet processing direction beyond the consolidating roll means an inclined slide structure means with a top surface and an inlet and outlet end, said slide having a fluid medium flowing down the top surface of the slide, said formed sheet moving down the slide on the fluid medium from the inlet end to the outlet end of the slide, means at the oulet end of the slide for retarding movement of the sheet down the slide, said retarding means positively grapsing and conveying the sheet from the slide at a speed less than the speed the sheet is fed onto the slide by the consolidating roll means, said speed difference being greater than that which would occur from just simple sheet size shrinkage such that the sheet is formed with a free-standing hump therein at the inlet end of the slide said retarding means functions with the consolidating roll means and their speed difference to operate as a means to form beyond the retarding means an end product with compressive stresses therein.

3,850,557
CONTAINER FOR MANUFACTURING SINTERED PRODUCTS

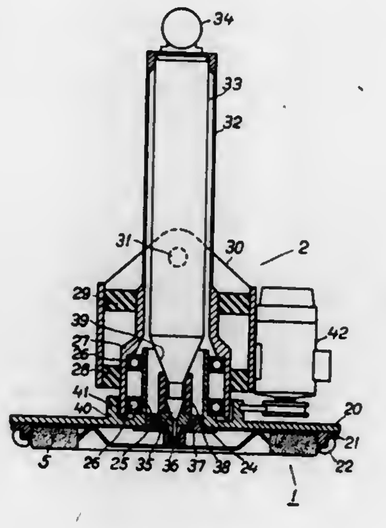
Stan Henrik Danieli, and Arne Sundstrand, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Dec. 3, 1973, Ser. No. 420,924

Claims priority, application Sweden, Dec. 5, 1972, 15816/72

Int. Cl. B30b *5/02, 11/00*

U.S. Cl. 425—78 **3 Claims**



1. Container for manufacturing an annular product, starting from a powder which is introduced into the container and

thereafter sintered in the container under pressure to form a solid body by inserting it into a pressure furnace and therein simultaneously subject it to high temperature and an all-sided pressure from a pressure medium enclosed in the pressure furnace, said container comprising plates which at their outer parts form a forming space and at their central part form a disc-shaped central portion with a central opening and an annular wrinkle and a disc-shaped gap extending between the central opening and the said forming space.

3,850,558
INSTALLATION FOR MANUFACTURING RESIN BASED CONCRETE

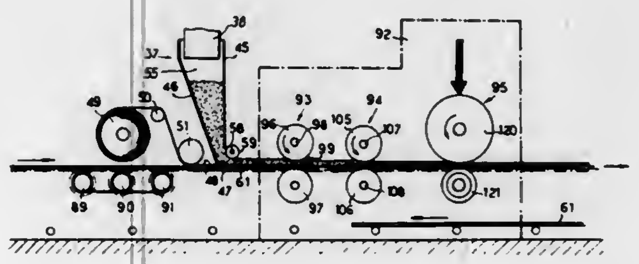
Robert Michel Henri Payraudeau, Nantes, France, assignor to Bordon Chemical Company, Fecamp and Technab, Les Brouzils, both of, France

Filed Feb. 14, 1973, Ser. No. 332,497

Claims priority, application France, Feb. 15, 1972, 72.05044

Int. Cl. B29c *5/10*

U.S. Cl. 425—101 **17 Claims**



1. Installation for manufacturing resin-based concrete panels, comprising a continuous mobile path constituted by a series of rigid plates, rollers supporting said plates, drive means for said plates, said plates having front faces with means for mutually immobilizing them both longitudinally and transversely with the preceding plates, means for disassembling the plates from one another at the end of said path and for returning each of the plates rapidly to the beginning of said path, a bin overhanging said path in the vicinity of the beginning thereof to deposit thereon continuously a layer of aggregate mixture and hardening resinous agglomerating compound, said bin having an output orifice means including a roller, adjacent said output orifice to partially limit the same for smoothing the layer, at least one roller downstream of the smoothing means for effecting precompacting of the layer with the latter supported on the rigid plates and passing through an interval of a fixed height, a roller subject to a relatively high pressure for compacting the pre-compacted layer, means for continuing to drive the thus hardened layer, after disassembling the support plates, to a subsequent panel-cutting station, a height adjustable table for removing a plate after disassembly thereof from said series and suction means for supporting the strip portion previously supported by the removed plate.

3,850,559
APPARATUS FOR VULCANIZING RUBBER MOLDS

Nathan H. Mintz, East Brunswick, N.J., and Edward H. Kamke, Jr., Sepulveda, Calif., assignors to Unisil Molds, Inc., Freehold, N.J.

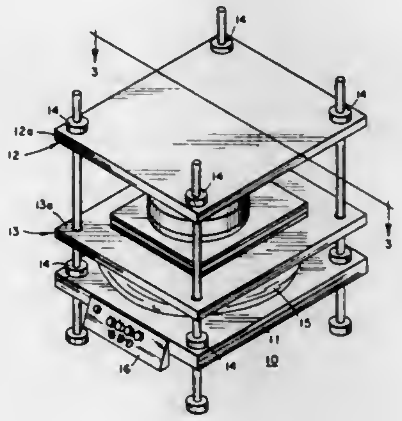
Filed Apr. 18, 1973, Ser. No. 352,336

Int. Cl. B29c *1/00*

U.S. Cl. 425—144 **14 Claims**

1. In a system for vulcanizing rubber contained in a mold frame and surrounding a workpiece, the rubber, when ultimately vulcanized, forming a permanent mold in which models of the workpiece can be cast, the mold frame having opposing surfaces which are compressible so as to apply a pressure to the rubber during processing toward vulcanization; an improved apparatus for automatically applying prescribed pressures and temperatures to the rubber, comprising:

a pair of spaced parallel platen assemblies adapted to receive the mold frame and engage the opposing surfaces thereof, said platen assemblies containing heating elements;



a temperature sensor positionable within the rubber in the mold frame;

control means coupled to said temperature sensor and responsive thereto for generating pressure control signals; and

means responsive to said pressure control signals for actuating at least one of said platen assemblies to apply predetermined pressures to said opposing surfaces.

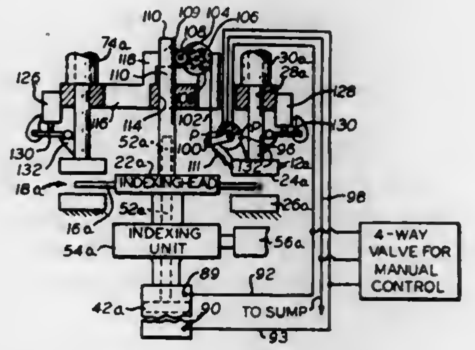
3,850,560
MOLD OPENING CONTROL

John J. Farrell, Green Brook, N.J., assignor to Farrell Patent Company, Dunellen, N.J.

Filed Aug. 27, 1973, Ser. No. 391,764

Int. Cl. B29d *23/03*

U.S. Cl. 425—150 **8 Claims**



1. In a molding machine having multiple stations at which operations are performed successively and a core rod support that moves intermittently to carry core rods to different stations successively, the combination comprising a mold at one of the stations, the mold having two parts one of which moves toward and from the other to close and open the mold, a first motor for moving one part of the mold with respect to the other part, means for moving the core rod support up and down to raise the core rods when the mold opens so that the core rods clear the mold part toward and from which the other mold part moves, the means for moving the core rod support up and down including a second motor, a control valve that regulates the control of working fluid to one of the motors to control the operation of that motor, an element that moves in unison with the movable part of the mold, another element that moves in unison with the indexing head, the control valve being connected with one of said elements for movement as a unit therewith, and an operating part of the control valve

connected with the other of said elements, the operating part of the control valve determining the flow of working fluid in accordance with the resultant motion imparted to said control valve by both of said motors.

3,850,561

METHOD AND APPARATUS FOR PRODUCING BARKY CHOCOLATE

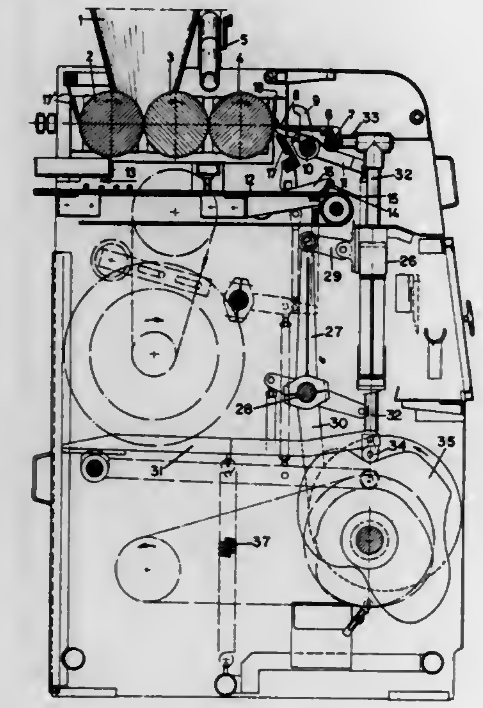
Josef Ernst Marie Bensdorp, Bussum, Netherlands, assignor to Bensdorp International N.V., Bassum, Netherlands

Filed Apr. 14, 1972, Ser. No. 243,947

Claims priority, application Netherlands, Apr. 16, 1971, 7105135

Int. Cl. A23g *1/20*

U.S. Cl. 425—223 **3 Claims**



1. Apparatus for producing chocolate in the form of barkies comprising: a chocolate paste reservoir; a horizontal roller mounted for rotation about its axis; means for applying paste from the reservoir as a film onto the horizontal roller; a scraper having a free edge engageable with the surface of said roller to thereby scrape the film from the roller onto that surface of the scraper which faces upstream with respect to the direction of rotation of the roller; a collecting plate having a free edge adjacent the upstream surface of the scraper for receiving the film scraped from the roller; and means mounting the collecting plate for swinging movement about a horizontal axis parallel to the axis of the roller so that the plate can move away from the scraper.

3,850,562

APPARATUS FOR PRODUCING HOLLOW MOLDED ARTICLES

Setsuyuki Takeuchi; Nobukuni Ibe, both of Hanishina-gun; Fumio Iriko, Tokyo, and Yoshihiko Yuzawa, Yokohama, all of Japan, assignors to Showa Denko Kabushiki Kaisha and Nissei Plastics Industrial Co., Ltd.

Filed Jan. 24, 1973, Ser. No. 326,392

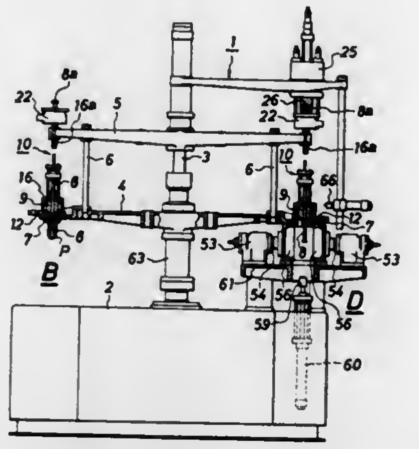
Claims priority, application Japan, Jan. 29, 1972, 47-10902; Jan. 29, 1972, 47-10903

Int. Cl. B29d *23/03*

U.S. Cl. 425—242 B **14 Claims**

1. An apparatus for producing hollow molded articles by injecting thermoplastic material into an injection mold to form a parison, stretching said parison in one direction and simultaneously or thereafter blowing said stretched parison in a blow mold, which comprises:

a base;
an intermittently rotatable turntable mounted on the base and having a plurality of positioning portions in positions corresponding to respective operation stages, a first of said stages being provided with a vertically movable stretch-blow device having a blowing block and a vertical stretching rod;
horizontally separable neck molds attached on the lower surfaces of mold supporting plates, said mold supporting plates being engaged with said positioning portions of said turntable;
a hydraulic mold clamping device provided with an injection mold consisting of a cavity mold attached on a stationary plate, a neck mold fitted on said cavity mold by mold supporting plates, and a core supported by a movable plate to form a mold cavity for a parison,
a horizontal injection device to inject thermoplastic material into said mold cavity;



a transferring device at an injection or second one of said stages, said transferring device being vertically movable and rotatable to exchange the neck mold on the injection mold and the mold supporting plate attached to the neck mold on the injection mold with a neck mold and its attached mold supporting plate on the turntable;
a heating mantle in a heating or third one of said stages, said mantle re-heating the cooled parison from the injection stage;
a blow mold provided on the base, said blow mold being separable in the horizontal direction by hydraulic means so as to receive the re-heated parison; and
a hydraulic cylinder in a stretch-blow or fourth one of said stages, said cylinder being actuable to stretch said parison to the bottom surface of said mold cavity by depressing said stretching rod.

3,850,563

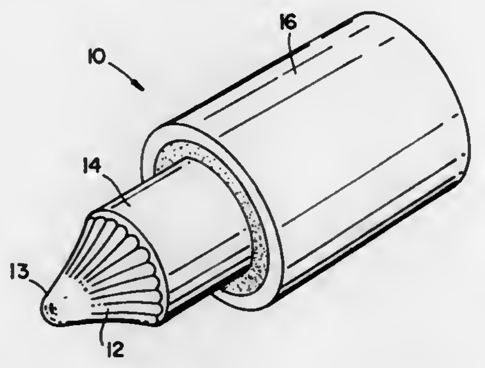
SYSTEM AND METHOD FOR CONFECTIONARY MOLDING

Timothy S. Milonas, and Janet O. Milonas, both of 278 Dennis Dr., Daly City, Calif. 94015

Filed Mar. 16, 1973, Ser. No. 341,818

Int. Cl. B28b *7/34*

U.S. Cl. 425—275 **6 Claims**



1. A molding apparatus for forming confectionary articles comprising:

a male mold constructed of porous earthen material, said mold comprising a convex protrusion having an exterior molding surface formed to the desired interior shape of the confectionary article and a longitudinal enclosure extending from the convex protrusion, said protrusion adapted to be dipped into a confectionary bath to form a confectionary layer thereon;
porous heat conductive material disposed within the mold adjacent the exterior molding surface thereof; and
fluid contained within the longitudinal enclosure and permeating the porous heat conductive material and the porous earthen material, said fluid cooled so as to conduct heat away from the molding surface, said heat conduction enhanced by the porous heat conductive material.

3,850,564

ASYMMETRICALLY LOADABLE PRESS FOR PRODUCING PANELS

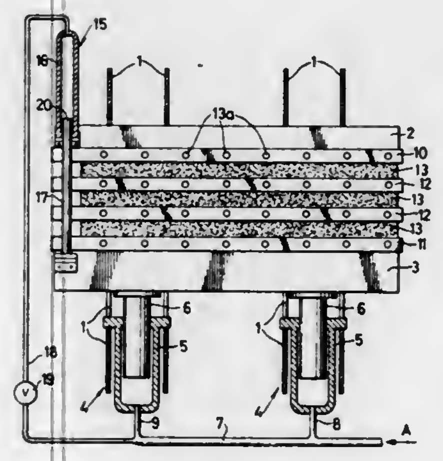
Wilhelm Hutter, Krefeld, Germany, assignor to Becker & van Hullen, Niederrheinische Maschinenfabrik, Krefeld, Germany

Filed Dec. 5, 1972, Ser. No. 312,300

Claims priority, application Germany, Dec. 6, 1971, 2160340

Int. Cl. B29c *3/00*

U.S. Cl. 425—338 **4 Claims**



1. An asymmetrically loadable press for the manufacture of panels, especially of chipboard panels, said press having a movable platen (3) which is movable by hydraulic press devices (4) actuated by fluid pressure from a pressure source (7), and a stationary table (2), characterized in that said press is adapted to be loaded asymmetrically between said platen (3) and said table (2) with material to be pressed, leaving uncovered areas (14, 14*a*) on the platen and table at one end of the press; and hydraulic countersupports (15) on laterally opposite sides of the press at said one end thereof, connecting said stationary table and movable platen, said countersupports each comprising cylinders (16, 16*a*) and pistons (17, 17*a*); a conduit line (18) connecting said hydraulic countersupport cylinders (16) to said pressure source (7), whereby said hydraulic countersupports are actuated with pressure fluid supplied to the hydraulic press devices (4), and said hydraulic countersupports (15) exerting an equalizing force on said movable platen (3) and stationary table (2) in the direction to oppose closing together of said movable platen and stationary table; the magnitude of said equalizing force being approximately equal to the compressive pressure that would have been exerted by said material if said uncovered areas (14, 14*a*) were covered, thereby balancing the pressure distribution exerted against said asymmetrically loaded press table and platen.

3,850,565

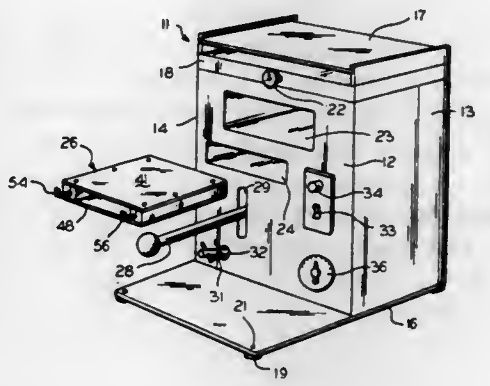
APPARATUS FOR MANUFACTURING PRE-INKED STAMPS

Richard Curren, Chicago, Ill., assignor to Consolidated Business Products, Addison, Ill.

Filed Oct. 29, 1973, Ser. No. 410,467

Int. Cl. A01j *21/00*

U.S. Cl. 425—385 **8 Claims**



1. Apparatus for embossing porous material for use in pre-inked stamps,
the apparatus comprises cabinet means,
said cabinet means having a base thereon which extends beyond one side of said cabinet,
press means mounted on said base and surrounded by said cabinet,
means for controlling said press means extending through said one side of said cabinet,
chase means for holding said porous material juxtaposed to a die to emboss said porous material with the holygraphics desired for the pre-inked stamps,
said porous material and die being normally larger than the dimensions of said chase thereby requiring the use of said press means to close said chase, and
hot plate means near the top of said cabinet for heating said closed chase, whereby said porous material is heated under pressure and embossed with the holygraphics.

3,850,566

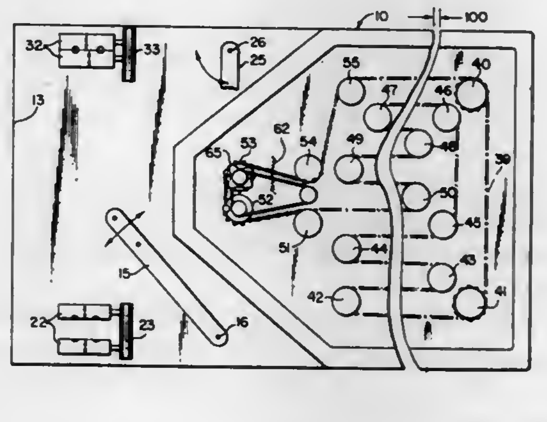
PARISON OVEN HAVING IMPROVED DISCHARGE STATION

Lawrence A. Moore, Rockford, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Dec. 22, 1972, Ser. No. 317,761

Int. Cl. B29d *23/03*

U.S. Cl. 425—387 B **14 Claims**



1. An apparatus for forming parisons into finished articles comprising:
an oven means for heating parisons to a forming temperature, a blow molding means for blow molding the heated parisons into finished articles and a transfer means for transferring the heated parisons from a discharge station in the oven to the blow molding means,

said oven including a continuously progressing conveyor means for carrying parisons through the oven and a delay means for momentarily reducing to substantially zero the absolute velocity of a portion of the conveyor means at the discharge station, during which moment the transfer means can grasp heated parisons therefrom for removal from the oven, and during which moment the conveyor means continues said continuous progressing movement.

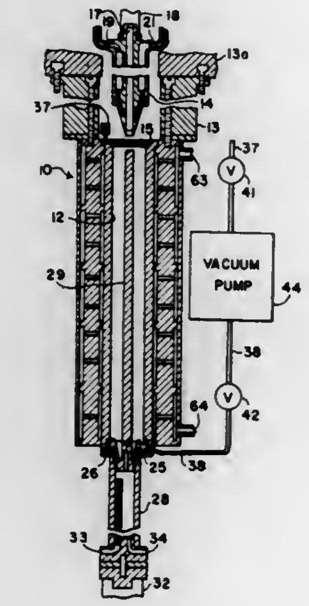
3,850,567
EVACUATED, DISPLACEMENT COMPRESSION MOLD

Wilbur C. Heier, Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 197,689, Nov. 11, 1971, Pat. No. 3,780,151. This application July 13, 1973, Ser. No. 379,049

Int. Cl. B29d *1/00, 23/00;* **B24g** *1/00*

U.S. Cl. 425—405 R **4 Claims**



1. Apparatus for molding long, thin-wall tubular articles from thermosetting plastics molding compounds comprising:

a. an elongated female mold having a cavity extending therethrough of at least the length of the tubular article to be molded,

b. a tubular insert secured in one end of said female mold, c. said tubular insert having an inwardly tapering surface portion and provided with spiral threads on said tapered surface,

d. an elongated force mandrel of substantially the same diameter as the smallest internal diameter of said tapered tubular insert and received through said insert into said female mold to thereby form a space between said force mandrel and said female mold cavity for molding the tubular article,

e. a balance mandrel received by the opposite end of said female mold and serving with said force mandrel to dictate one end configuration of the tubular article to be molded,

f. means for applying a vacuum to the female mold cavity after loading thereof with a thermosetting molding compound and closing of the mold with said force and said balance mandrels,

g. means for heating the entire mold assembly to raise the temperature of all cavity surfaces to a controlled level,

h. means for applying a pressure on said balance mandrel which combined with the increased temperature causes the thermosetting compound to plasticize and become hydrostatic,

i. means for applying a pressure on said force mandrel to overcome the force applied to said balance mandrel and thereby displace the hydrostatic thermosetting compound,

j. said means for heating the entire mold assembly then serving to increase the mold temperature sufficiently to effect final curing of the molding compound.

3,850,568
EXTRUSION DIE WITH ADJUSTABLE PROFILE

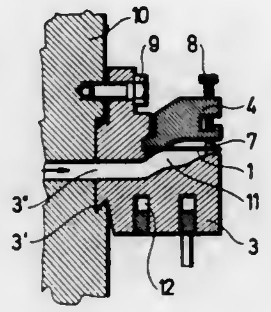
Zoltan Bartha; Vince Fodor, and Gyula Subotics, all of Budapest, Hungary, assignors to Orszagos Gumiipari Vallalat, Budapest, Hungary

Filed Feb. 8, 1973, Ser. No. 330,645

Claims priority, application Hungary, Feb. 11, 1972, OA 494

Int. Cl. B29f *3/04*

U.S. Cl. 425—466 5 Claims



1. An adjustable extrusion die comprising an extrusion head having an extrusion cavity in said head, two opposed lips defining between them an extrusion orifice through which material from said cavity is extruded and shaped, at least one of said lips comprising at least one resilient metal strip that extends transversely of the direction of extrusion, means securing to the die the edge of said strip which is upstream with respect to the direction of extrusion, the edge of said strip which is downstream with respect to the direction of extrusion being free to move transversely of said direction, and a row of support elements extending along and contacting said downstream edge of said strip on the side of said strip opposite the side past which material is extruded, and means adjustably mounting said support elements for movement in a direction perpendicular to the length of the strip and perpendicular to said direction of extrusion thereby to alter the contour of said orifice.

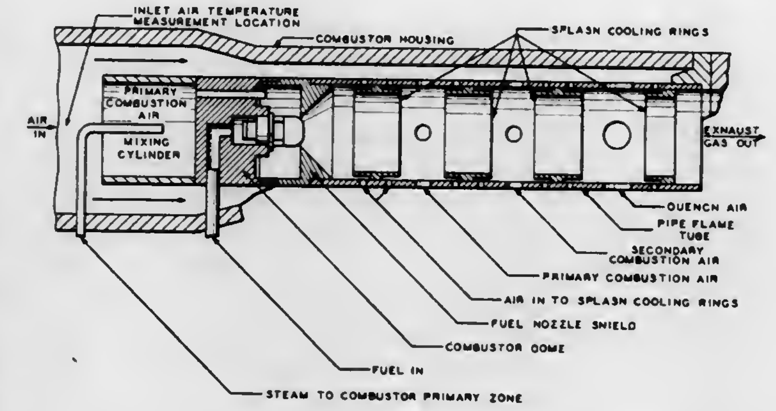
3,850,569
PROCESS FOR REDUCING NITRIC OXIDE EMISSIONS FROM BURNERS

Henry E. Alquist, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 213,440, Dec. 29, 1971, abandoned. This application Sept. 7, 1973, Ser. No. 395,112

Int. Cl. F23j *7/00*

U.S. Cl. 431—4 **4 Claims**



1. In a process for mixing a fuel with air and steam to form a combustible mixture and combusting said mixture in a combustion zone, the improvement comprising: controlling the mixing of the fuel and steam for maintaining the ratio of steam to fuel of said mixture in said combustion zone at values in the range of about 0.4 to about 0.95 pound steam/pound fuel for reducing the amount of nitric oxide emitted during combustion of the mixture.

3,850,570
LIGHTERS

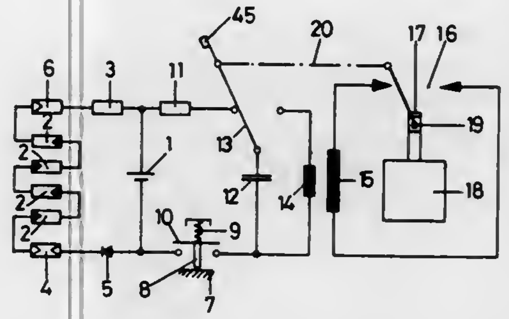
Hermann Remy, Dietzenbach-Steinberg, and Adolf Lamprecht, Hausen, both of Germany, assignors to Rowenta-Werke, GmbH, Offenbach/Main, Germany

Continuation-in-part of Ser. No. 273,400, July 20, 1972,. This application Feb. 19, 1974, Ser. No. 443,396

Claims priority, application Germany, Feb. 24, 1973, 2309355

Int. Cl. F23q *2/28*

U.S. Cl. 431—255 **9 Claims**



1. An electrically ignited gas lighter including at least one photoelectric transducer for converting light energy into electrical energy, electrical storage means connected to said at least one photoelectric transducer for storing electrical energy developed thereby during illumination thereof, an ignition circuit including means selectively operable to energise gas ignition means from said electrical storage means for lighting the lighter, a gas valve operable with said means operable to energise gas ignition means, and at least one light refracting optical element associated with said at least one photoelectric transducer to enhance capture thereby of light incident thereupon.

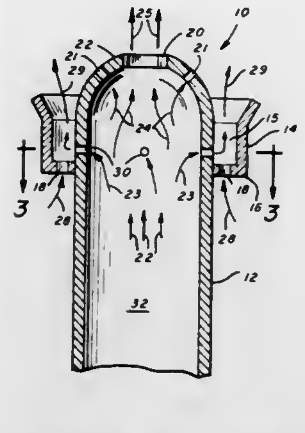
3,850,571
HIGH ENERGY FLAME BURNER

John S. Zink, and Robert D. Reed, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed Nov. 10, 1972, Ser. No. 305,236

Int. Cl. F23d *13/36*

U.S. Cl. 431—349 **4 Claims**



1. A burner producing a long, small diameter, rod-like flame, comprising:

a. a pipe for carrying fuel at greater than atmospheric pressure;

b. at least one primary fuel discharge orifice of selected area at the distal end;

c. a plurality of smaller secondary openings arranged around said primary orifice and directed laterally outward;

d. a plurality of smaller tertiary orifices arranged upstream of said secondary openings to direct a minor fraction of the total fuel approximately perpendicular to the axis of said pipe; and

e. a diversion baffle having a downstream end located between said secondary and tertiary orifices, said baffle forming an annulus space opposite said tertiary orifices, and a plurality of openings in said baffle to direct inspirated air into said annulus space.

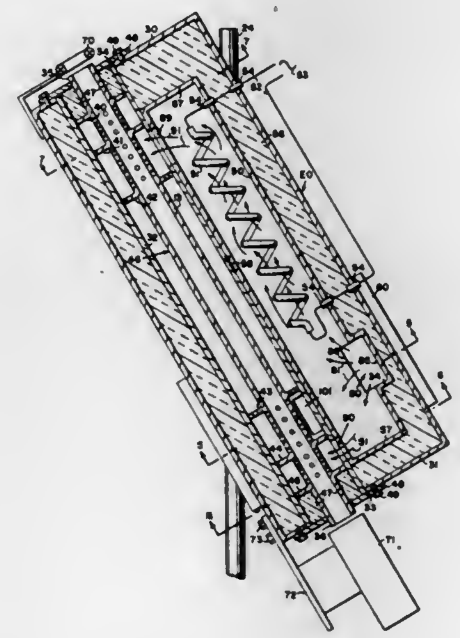
3,850,572
GRAVITY FLOW DISCRETE ARTICLE GAS FLOW ISOLATED THERMAL TREATMENT DEVICE AND METHOD

Everett Howard Andrus, Rt. No. 4, Watertown, Wis. 53094

Filed Mar. 8, 1974, Ser. No. 449,364

Int. Cl. F27b *9/14;* **S27b** *5/16*

U.S. Cl. 432—11 **10 Claims**



1. In a device for heat treating small discrete metal articles the combination of

a bayonet,

said bayonet comprising a tubular member having an inlet end and an outlet end,

said tubular member devoid of closure means at its ends,

a first end plate extending from said tubular member near its inlet end,

a second end plate extending from said tubular member near its outlet end,

at least three baffle members extending from said tubular member between said first end plate and said second end plate,

a shroud tube,

said bayonet slidably received in said shroud tube,

the outer peripheries of said end plates and said baffle members being slidably engaged with the interior of said shroud tube,

said end plates and said baffle members defining spaces between the exterior of said tubular member and the interior of said shroud tube,

apertures in the wall of said tubular member communicating its interior with a plurality of said defined spaces,

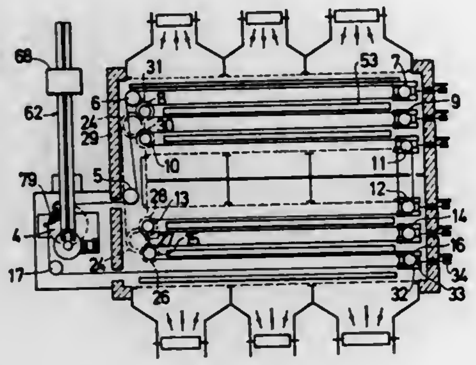
blower means and heater means to provide heated gas having an elevated temperature and a substantial pressure and velocity,

means to introduce said heated gas into a plurality of said defined spaces, and

means to withdraw said heated gas from a plurality of said defined spaces, duct means to cycle said withdrawn gas to said blower means and thence to said spaces into which said gas is introduced.

3,850,573
PARISON FEEDING AND DELIVERING APPARATUS

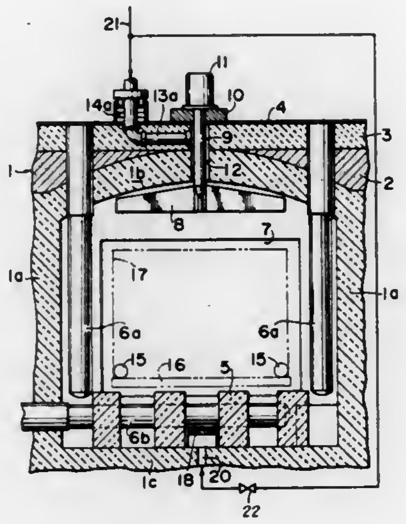
Shinsuke Yoshikawa, and Yuji Sawa, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha and Mitsui Toatsu Chemicals Inc., both of Tokyo, Japan
Filed Aug. 7, 1973, Ser. No. 386,463
Claims priority, application Japan, Aug. 10, 1972, 47-79474; Aug. 10, 1972, 47-93260
Int. Cl. F27b *9/24*
U.S. Cl. 432—124 **4 Claims**



1. In a parison feeding and delivering apparatus for uniformly heating parisons by delivering the same from outside a parison heating furnace into a parallel passage arranged in said furnace and lying in a zig zag line making several turns at both sides of said furnace, and which comprises a parison delivery conveyor consisting of two horizontal endless chains situated one above the other and having carrier pins vertically mounted thereto, an apparatus provided outside of the heating furnace for feeding parisons to said delivery conveyor, and a plurality of sprockets for keeping said endless chains in driven or rotating status, the improvement wherein: a driving shaft of the parison feeding apparatus and sprockets on chain turning positions at one side of the furnace are driven by the same driving means, other sprockets on chain turning positions at the other side of the furnace are held by sliding plates supported by guide means, said sliding plates being biased from outside of the furnace by wires leading to springs, said parison carrier pins are freely rotatable around the axis of the vertical connection pins, and rotatable teeth for rotating the pins mounted on said parison carrier pins are engaged with fixed linear teeth during passage along the chains after being aligned with the phase of the fixed linear teeth by way of a fixed spring, which contacts the rotatable teeth prior to contact of said rotatable teeth with said fixed linear teeth.

3,850,574
ATMOSPHERIC FURNACE APPARATUS

Keishichi Namba, Yokohama, Japan, assignor to Tokyo Netsushori Kogyo Kabushiki Kaisha, Kanagawa-ken, Japan
Filed Apr. 9, 1973, Ser. No. 349,323
Claims priority, application Japan, Apr. 7, 1972, 47-34917
Int. Cl. F27b *1/08, 3/02*
U.S. Cl. 432—203 **5 Claims**



1. A gas atmospheric furnace for carburizing and carbonitriding treatment of steel articles comprising a first gas inlet for introducing an atmosphere gas into the furnace under forced pressure, a fan for stirring the atmosphere gas introduced by said first gas inlet, said first gas inlet leading into a passageway formed along and around the shaft of the fan, and a second gas inlet located on the opposite side of the furnace from the first gas inlet, ,said second gas inlet introducing an atmosphere gas of normal temperature to cool the then relatively elevated gas adjacent the second gas inlet to thus maintain an even temperature of the gases within the furnace.

CHEMICAL

3,850,575
TANNING COMPOSITION AND PROCESS

Reid S. Larsen, 762 S. 850 East, Bountiful, Utah 84010
Filed Jan. 11, 1973, Ser. No. 322,815
Int. Cl. C14c *3/02, 3/04*
U.S. Cl. 8—94.19 R **5 Claims**

1. A tanning composition comprising arsenic trioxide; a polar solvent; a liquid organic cleanser and ground asbestos together with a salt of carbonic acid selected from the group consisting of sodium carbonate, sodium bicarbonate, potassium carbonate and potassium bicarbonate.

3,850,576
DIAGNOSTIC COMPOSITION FOR THE DETECTION OF UROBILINOGEN

Walter Rittersdorf, Mannheim-Waldhof; Dieter Berger, Viernheim; Hans-Georg Rey, and Peter Rieckmann, both of Mannheim-Waldhof, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany
Filed Dec. 11, 1972, Ser. No. 314,067
Claims priority, application Germany, June 19, 1972, 2229611
Int. Cl. G01n *33/16*
U.S. Cl. 23—230 B **25 Claims**

1. Diagnostic composition for the detection of urobilinogens, which diagnostic composition comprises at least one organic or inorganic acid and at least one diazonium salt selected from the group consisting of:

a. stable phenyl-diazonium, pyrrole-diazonium and pyrazole-diazonium salts annellated with an isocyclic or heterocyclic aromatic system in a mesomerizable and sterically unhindered position of the phenyl, pyrrole or pyrazole ring;
b. stable phenyl-diazonium, pyrrole-diazonium and pyrazole-diazonium salts wherein the phenyl, pyrrole or pyrazole ring is substituted with an iso-cyclic or heterocyclic aromatic system in a mesomerizable and sterically unhindered position of the phenyl, pyrrole and pyrazole ring;
c. stable phenyl-diazonium, pyrrole-diazonium and pyrazole-diazonium salts wherein the phenyl, pyrrole or pyrazole ring is substituted via a vinylene linkage with an iso-cyclic or heterocyclic aromatic system in a mesomerizable and sterically unhindered position of the phenyl, pyrrole or pyrazole ring;
d. a pyridine-diazonium or pyrazole-diazonium salt containing, in a mesomerizable position of the pyridine or pyrazole ring, at least one polyatomic electron donor group substituent with at least one mesomerizable electron pair and wherein the ring may contain additional substituents, with the proviso that the sum of the Hammet sigma values of all the substituents, and of the ring hetero atoms in said diazonium salts does not exceed the value of +0.6.

3,850,577
RAPID EXTRACTION METHOD FOR SERUM THYROXINE

Fuad Salameh Ashkar, Miami, Fla., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Oct. 31, 1973, Ser. No. 411,517
Int. Cl. G01n *33/16*
U.S. Cl. 23—230 B **5 Claims**

1. In a method of determining the total serum thyroxine in a serum sample, said method comprising:

extracting the thyroxine from the thyroxine binding globulin in the serum sample;
mixing a tracer amount of thyroxine globulin saturated with radioactively labeled thyroxine with the thyroxine extracted from the thyroxine binding globulin in the serum sample;
placing an ion exchange resin in intimate contact with said mixture;
incubating the combined mixture and ion exchange resin;
measuring with suitable detecting means the initial radioactivity of the combined mixture and ion exchange resin;
removing the mixture; and
measuring with suitable detecting means the residual radioactivity in the ion exchange resin;
the improvement comprising extracting the thyroxine from the thyroxine binding globulin in a serum sample by placing a buffer in contact with said serum sample, said buffer comprising a glutamate salicylate mixture.

3,850,578
PROCESS FOR ASSAYING FOR BIOLOGICALLY ACTIVE MOLECULES

Harden M. McConnell, 421 El Escapado, Palo Alto, Calif. 94305
Continuation-in-part of Ser. No. 339,755, March 12, 1973,.
This application Feb. 19, 1974, Ser. No. 443,550
Int. Cl. G01n *33/16;* **C12k** *1/04*
U.S. Cl. 23—230 B **11 Claims**

1. A method for assaying for an organic composition which is a compound having at least one epitopic site, an antibody capable of specifically binding to a specific eiptopic site or complement in an unknown suspected of containing one of said organic composition which comprises:

combining in an aqueous buffered medium under complement lysing conditions;
1. said unknown;
2. sacs enclosing an aqueous solution, substantially isotonic with said medium, of stable free radicals at a concentration sufficient to provide peak broadening of the EPR spectrum of said free radical, and having at least one epitopic site at the surface of said sacs;
3. antibody capable of binding to said epitopic sites of said sac; and
4. complement; with the proviso that the amount of antibody or complement in said medium is known in the absence of said unknown, when antibody or complement respectively are being detected in said unknown and at least one of said epitopic sites of said sacs and said compound are the same, when said compound is being determined;

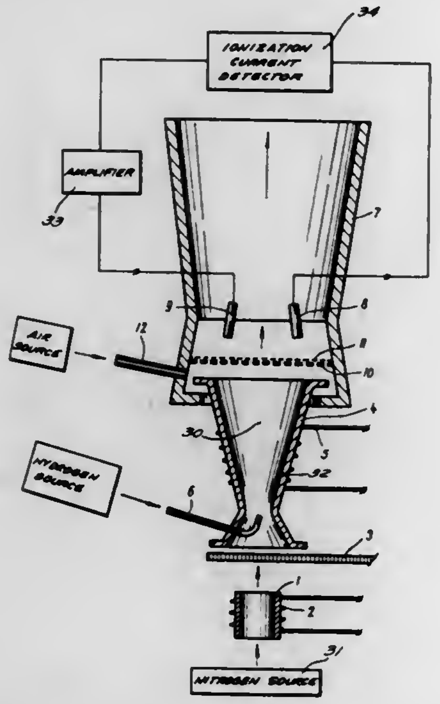
whereby lysis of said sac occurs upon the binding of antibody and complement to said sac; and
determining at least one point of the EPR spectrum of said medium as compared to the EPR spectrum of said medium at a known concentration of said organic composition.

3,850,579
IONIZATION CURRENT DETECTOR FOR CHROMATOGRAPHIC ANALYSIS

Hanniel Dubsky, Brno, Czechoslovakia, assignor to Ceskoslovenska akademie ved, Praha, Czechoslovakia
Filed May 14, 1973, Ser. No. 359,854
Claims priority, application Czechoslovakia, May 15, 1972, 3259-72
Int. Cl. G01n *31/12*
U.S. Cl. 23—254 EF **9 Claims**

1. In an ionization apparatus for the chromatographic analysis of a test sample:

- an elongated nozzle including a central chamber having input and output ends and an intermediate portion, and a gas port disposed at the nozzle periphery in radial communication with the intermediate portion of the chamber;
- means disposed in axially spaced relation to the input end of the nozzle for directing a first heated gas axially toward the input end of the nozzle chamber;
- conveyer means for transporting a test sample to a position axially aligned with and intermediate the directing means and the input end of the nozzle chamber whereby the



heated first gas from the directing means volatilizes the test sample;

- means for passing a heated second gas through the nozzle gas port and into the intermediate portion of the nozzle chamber to form a partial vacuum in the nozzle and to thereby draw the volatilized test sample into the nozzle chamber for admixture with the second gas; and
- means associated with the output end of the nozzle chamber for ionizing the volatilized test sample passing through the nozzle chamber.

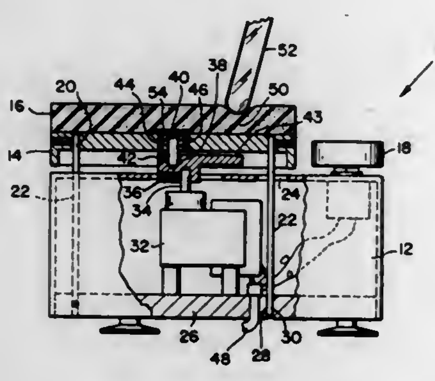
3,850,580
LABORATORY MIXER

Darrlle DeForest Moore, and William Joseph Walsh, both of Dubuque, Iowa, assignors to Sybron Corporation, Rochester, N.Y.

Filed Mar. 15, 1973, Ser. No. 341,462

Int. Cl. B01l *9/00;* **B01f** *11/00*

U.S. Cl. 23—259 5 Claims



1. In a laboratory mixer having a base, a plate supported above the base and an eccentric drive means mounted on the base and operatively connected to the plate to shake the plate, the improvement comprising a substantially flat resilient foamed rubber pad fixed to the upper surface of said plate to receive thereon a vessel to be agitated, the degree of agitation imparted to said vessel being determined solely by the force with which said vessel is pressed against said pad.

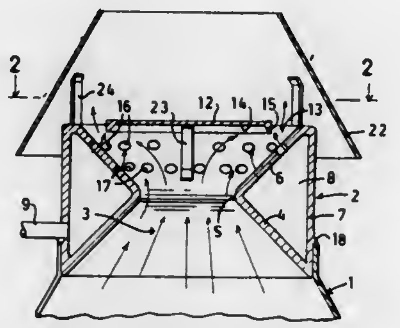
3,850,581
SMOKE CONSUMER

Richard E. Hills, and Walter H. Patterson, both of 2543 Quincy Rd., Oroville, Calif. 95965

Filed Sept. 16, 1971, Ser. No. 181,093

Int. Cl. F23d *13/20;* **F23g** *7/06*

U.S. Cl. 23—277 C 1 Claim



1. A smoke consuming device for positioning on the discharge end of a stack comprising;

- a. a body having a vertically extending passageway with a circular open upper end and a circular open lower end,
- b. the wall of said passageway tapering inwardly from its opposite open ends to an annular throat of restricted diameter intermediate said open ends,
- c. an outer wall spaced outwardly of the wall of said passageway and extending therearound, said outer wall and said wall of said passageway being connected at said upper and lower ends to provide an annular fuel chamber between said outer wall and the wall of said passageway, and the angle of the upper portion of the wall of said passageway disposed between said throat and its upper open end being approximately 45° relative to horizontal,
- d. a horizontal, circular deflector plate coaxial with said upper open end spaced within the latter cooperating with said open upper end to define an annular discharge aperture for products of combustion, and means for positioning the lower end of said body on a stack for passage of smoke from the latter into the lower end of said passageway,
- e. means for supplying fuel to said chamber,
- f. a pair of horizontally disposed axially spaced annular rows of spaced openings formed in said upper portion of the wall of said passageway directed at an angle of approximately 45° relative to horizontal and toward the underside of the outer marginal portion of said deflector plate providing flame openings for directing the flames of ignited fuel directed in and said outer marginal portion of said deflector plate,
- g. the underside of said deflector plate being formed with a recess extending to substantially the outer edge of said deflector plate, and a depending flange around said plate at its outer edge,
- h. the ratio between the total area of said circular aperture and the area within said throat being approximately 1.8 to 1.

3,850,582
APPARATUS FOR CONTROLLED ADDITION OF FLUIDIZED PARTICLES TO A PROCESSING UNIT

Edward C. Luckenbach, Mountainside, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 883,815, Dec. 10, 1969, abandoned. This application Jan. 10, 1973, Ser. No. 322,440

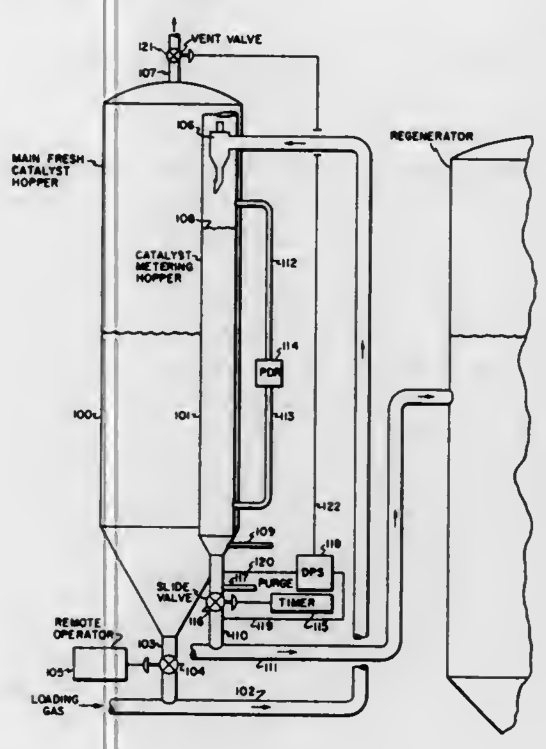
Int. Cl. B01j *9/16, 9/20*

U.S. Cl. 23—288 S 9 Claims

1. An apparatus for adding fresh make-up catalyst to a process unit which comprises:

- a. a main fresh catalyst vessel containing solid fresh make-up catalyst particles;

- b. a metering vessel located within the main vessel
- c. a catalyst transfer line connecting the main catalyst vessel with the metering vessel for transfer of fresh make-up catalyst from the main vessel to the metering vessel;
- d. a gas line communicating with said metering vessel for fluidizing the catalyst therein;



- e. valve means for controlling withdrawal of fluidized catalyst from said metering vessel for transfer to said process unit; and
- f. means for measuring and recording the pressure differential across the fluidized bed of catalyst in the metering vessel so that the quantity of fresh catalyst added to the process unit may be determined during any period of time.

3,850,583
SINTERED METAL CONTAINING TITANIUM CARBIDE PARTICLES AND METHOD FOR MAKING SAME

Kenneth E. Kueny, Muskegon, Mich., assignor to Sealed Power Corporation, Muskegon, Mich.

Filed Feb. 26, 1973, Ser. No. 335,709

Int. Cl. B22f *1/00*

U.S. Cl. 29—182.7 18 Claims

1. The method of forming a metal part comprising the steps of: preparing a mixture of powdered material having about 0.25 to 60 percent by weight ferro titanium and about 0.1 to 10 percent by weight carbon the remainder of said powdered material being substantially iron based powder; compacting said mixture and heat sintering said mixture above the melting temperature of the ferro titanium powder whereby the ferro titanium melts and dissolves available carbon in the surrounding matrix to form titanium carbide particles.

3,850,584
FUEL ELEMENT CAN FOR A NUCLEAR REACTOR

Horst Bohm, Karlsruhe; Hans Ulrich Borgstedt, Karlsruhe-Waldstadt; Manfred Ruhle, Frankfurt am Main, and Peter Wincierz, Oberursel, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main and Gesellschaft fur Kernforschung mbH, Karlsruhe, both of, Germany

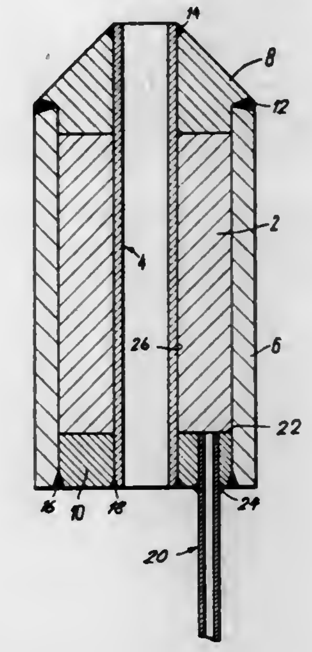
Filed Mar. 8, 1971, Ser. No. 121,728

Claims priority, application Germany, Mar. 7, 1970, 2010871

Int. Cl. B32b *15/00*

U.S. Cl. 29—194 5 Claims

1. A fuel-element can for a nuclear reactor comprising a body of vanadium-alloy base material of high mechanical strength and a metallic inner lining which resits corrosion by nuclear fuel extrusion-bonded to said body of said base material, said vanadium-alloy base material consisting essentially by weight of the following:



40-99.7%	vanadium;
0.1-50%	titanium
0-1%	each of the elements beryllium and boron;
0-2%	each of the elements zirconium and hafnium; the total of which is not in excess of 3%;
0-3%	silicon;
0-10%	each of the elements aluminum, manganese, iron, cobalt, nickel, tantalum, or tungsten;
0-20%	each of the elements chromium and molybdenum;
0-30%	columbium;
0.03-0.4%	Oxygen;
0-02%	nitrogen; and
0-0.2%	carbon; the total of the elements oxygen, nitrogen and carbon being not in excess of 0.4%,

said lining being selected from the group which consists essentially of

- a. pure iron, ferrous alloys of high-grade steels having a body-centered-cubic-crystal lattice at the operating temperature and containing up to 30 percent by weight of at least one of the elements chromium, nickel and cobalt and up to 10 percent by weight of at least one of the elements titanium, aluminum, molybdenum, columbim, and tantalum, in a total amount up to 50 percent by weight;
- b. nickel, cobalt and alloys of nickel or cobalt with up to 30 percent by weight of at least of one of the elements chromium, iron, molybdenum, cobalt and up to 10 percent by weight of at least one of the elements titanium, aluminum, columbium, tantalum, which have a total not in excess of 50 percent; and
- c. zirconium alloys with up to 4 percent by weight of each of the alloying elements coipper, vanadium, molybdenum, chromium, iron and tungsten, which elements are present in total up to 6 percent by weight, carbon, nitrogen or oxygen being present in said liniong in an amount by weight below 0.01 percent or any content of carbon, nitrogen or oxygen in excess of 0.01 percent by weight being present in an innocuous form.

3,850,585
COMPOSITE ARTICLE

Thomas E. Webb, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Continuation of Ser. No. 78,276, Oct. 5, 1970, abandoned. This application Dec. 18, 1972, Ser. No. 316,177

Int. Cl. B32b *15/00*

U.S. Cl. 29—197.5 7 Claims

1. A clad article having a cladding of 1,100 aluminum on a core alloy consisting essentially of aluminum, about 2 to 3

percent copper, about 0.2 to 0.6 percent magnesium and up to about 0.4 percent manganese by weight.

3,850,586
GELLED HYDROCARBON COMPOSITION

Akira Iwama, Tokyo; Mitsuru Toyoguchi, Yokohama; Kikuo Takehara, and Yasumasa Hamuro, both of Kyoto, all of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto-shi, Kyoto-fu and Mitsubishi Oil Company, Tokyo-to, both of, Japan

Filed Mar. 30, 1973, Ser. No. 347,405

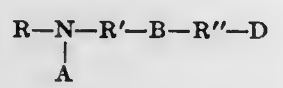
Claims priority, application Japan, Apr. 13, 1972, 47-037438; July 8, 1972, 47-068407

Int. Cl. C10l *7/00*

U.S. Cl. 44—7 A **16 Claims**

1. A gelled hydrocarbon composition comprising essentially at least 80 wt. percent of a liquid hydrocarbon having a boiling point of 30° to 390°C as an internal phase, at least 0.05 wt. percent of water as an external phase and at least 0.05 wt. percent of a gelling agent selected from the group consisting of

i. a gelling agent having the following formula (I), alone or mixture of two or more kinds of the gelling agent, or a 9 : 1 to 1 : 9 parts by weight mixture of the gelling agent with a surface active agent having an amide, carboxyl or alkyleneoxide group in the molecule as a hydrophilic group



$$R{-}\underset{\displaystyle A}{\underset{|}{N}}{-}R'{-}B{-}R''{-}D \qquad \text{(I)}$$

wherein R, R' and R'' are alkyl group or $(CH_2)_p$ wherein p is an integer of from 0 to 50, inclusive; A is hydrogen, R'B, R, R''', RNH_2, $R'''NH_2$ or R'''D wherein R''' is alkyl group or $(CH_2)_q$ and q is an integer of from 0 to 50, inclusive; B is $[(CH_2)_mNH]_n$ wherein m and n are an integer of from 0 to 50, inclusive; D is COOH or its inorganic or organic salt, and

ii. a 9 : 1 to 1 : 9 by weight mixture of a nonionic surface active agent of the formula:

$$Z[(OR)_nOH]_m$$

wherein Z is a group capable of being oxyalkylated, OR is alkyleneoxide, n is 1 to 2,000 or more, inclusive, and m is a numeral determined according to the number of the functional groups of Z,

and a water-soluble carboxylic acid or its water soluble salt.

3,850,587
LOW-TEMPERATURE FLOW IMPROVES IN FUELS

Kenneth A. Frost, Jr., San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 29, 1973, Ser. No. 420,243

Int. Cl. C10l *1/24, 1/22, 1/18*

U.S. Cl. 44—62 **8 Claims**

1. A flow-improver composition comprising a mixture of

1. a C8 to C28 hydrocarbyl succinamic acid mono- or disubstituted on the nitrogen atom with C8 to C28 hydrocarbyl groups or a C1 and C30 hydrocarbyl amine salt thereof or mixtures thereof,
2. an ethylene-vinyl acetate polymer containing from 10 to 40 weight percent vinyl acetate and having a molecular weight between 800 and about 10,000; and
3. a C7 to C20 aromatic monocarboxylic acid;

wherein said succinamic acid is present in an amount from 0.25 to 50 weight parts for each weight part of said polymer and said aromatic monocarboxylic acid is present in an amount from 0.02 to 4 weight parts for each weight part of said succinamic acid.

3,850,588
PRODUCTION OF SYNTHESIS GAS RICH IN CARBON MONOXIDE

Robert J. White, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. Nos. 34,834, May 5, 1970, Pat. No. 3,759,677, and Ser. No. , , Continuation-in-part of Ser. No. 39,116, May 20, 1970, abandoned, and Ser. No. , , Continuation-in-part of Ser. No. 134,067, April 14, 1971, abandoned. This application Feb. 14, 1973, Ser. No. 332,865

Int. Cl. C10j *3/00*

U.S. Cl. 48—209 **12 Claims**

1. In a process for the production of a synthesis gas rich in carbon monoxide which comprises reacting in a reaction zone maintained at an elevated temperature a solid organic feed material with carbon dioxide, the improvement comprising introducing into a reaction zone maintained at a temperature from about 1,000° to 2,000°F. a solid organic feed comprising chemically combined carbon, hydrogen and oxygen with said combined oxygen comprising at least 20 weight percent of the solid organic feed and wherein for each pound of the organic feed introduced into the reaction zone an amount of carbon dioxide in the range from 10 to about 300 standard cubic feet is introduced therein.

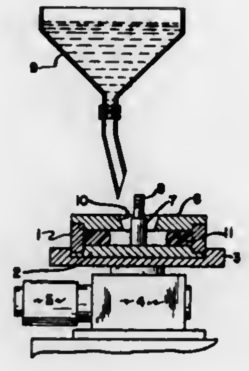
3,850,589
GRINDING TOOL HAVING A RIGID AND DIMENSIONALLY STABLE RESIN BINDER

Vernon K. Charvat, Bay Village, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 813,377, May 15, 1959, abandoned, which is a continuation of Ser. No. 829,665, July 27, 1959, abandoned, Continuation-in-part of Ser. Nos. 854,468, Nov. 20, 1959, abandoned, and Ser. No. 12,303, March 2, 1960, abandoned, and Ser. No. 15,135, March 15, 1960, abandoned. This application Aug. 23, 1963, Ser. No. 304,002

Int. Cl. B24d *3/28, 3/32*

U.S. Cl. 51—296 **13 Claims**



1. A grinding tool comprising an essentially rigid, dimensionally stable body of cellular polyurethane resin binder selected from the group consisting of aromatic polyether polyurethanes and aromatic polyester polyurethanes, and granular abrasive dispersed uniformly and embedded therein, the grains comprising such abrasive being spaced only slightly apart and said resin being capable of slight local stubborn resilient yielding action to an extent allowing corresponding slight local individual movement of said grains exposed at the tool face relative to other adjacent grains in such face, but said body as a whole being sufficiently rigid to support the grinding face of said tool to make a grinding cut of precise predetermined depth under operating pressures in use, such slight local yielding action of said resin at such grinding face being sufficient to ensure readjustment of the positions of individual grains protruding excessively from such face under such operating pressures to bring such protruding grains into substantially the same plane as the other adjacent grains in the portion of the tool face under pressure contact with the work, whereby the work load is sustained by substantially all said grains across such face, simultaneously to permit the making of a deep precision cut in the work by such face while nevertheless producing a relatively smooth finish thereon and without premature dislodgment of such excessively protruding grains from such face.

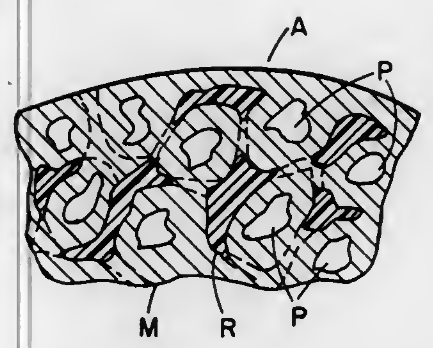
3,850,590
AN ABRASIVE TOOL COMPRISING A CONTINUOUS POROUS MATRIX OF SINTERED METAL INFILTRATED BY A CONTINUOUS SYNTHETIC RESIN

Jack Rigler Chalkley, Tuffley, and David Meirion Thomas, Gloucester, both of England, assignors to Impregnated Diamond Products Limited, Tuffley Crescent, Gloucester, England

Continuation-in-part of Ser. No. 76,372, Sept. 28, 1970, which is a continuation-in-part of Ser. No. 870,411, Oct. 1, 1969, abandoned. This application June 26, 1972, Ser. No. 266,412

Int. Cl. C08g *51/12*

U.S. Cl. 51—298 **25 Claims**



1. An abrasive tool the abrasive part of which consists of abrasive particles embedded in a continuous porous matrix of sintered metal and held in the metal phase, said sintered metal selected from the group consisting of: copper, copper-tin alloy, tin, iron, cobalt, nickel, silicon, zinc, silver, aluminum, chromium, manganese, and magnesium, and alloys thereof, the continuous porous metal matrix having a specific porosity of between 10 percent and 50 percent and being infiltrated by a resinoid material, the resinoid phase being substantially continuous throughout the porous sintered metal matrix and selected from the group consisting of: epoxide, polyester, polyurethane, phenolic, aminoplastic, polyamide, polyamidimide, alkyd, furan, silicone, acrylic, polyacetal, and polycarbonate resins, the abrasive particles being at least as hard as aluminum oxide.

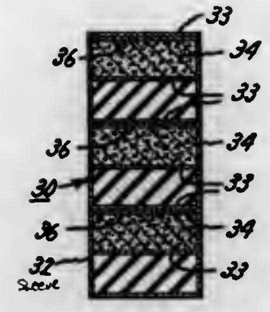
3,850,591
PROCESS FOR PREPARATION OF HIGH PRESSURE APPARATUS REACTION VESSEL CONSTRUCTION

Robert H. Wentorf, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 144, Jan. 2, 1970, Pat. No. 3,609,818. This application July 1, 1971, Ser. No. 158,976

Int. Cl. B24d *3/08*

U.S. Cl. 51—307 **4 Claims**



1. In a process for the preparation of a reaction vessel to be introduced into a high pressure, high temperature apparatus for the conduct of high pressure, high temperature compaction of crystalline material selected from the group consisting of diamond, cubic boron nitride and mixtures thereof during which preparation said crystalline material together with catalyst metal, to enable the conversion of the hexagonal form of said crystalline material to the cubic form thereof, are placed within a protective metal enclosure and said protective metal enclosure in turn is assembled within a series of interfitting inner and outer elements, the outer element of said reaction vessel being in the shape of a hollow wall and being made from electrically non-conductive, thermally insulating material, means being located adjacent said outer element for conducting electrical current into and out of said reaction vessel for heating same, the improvement in said preparation comprising,

a. forming said outer element from a deformable pressure-transmitting material selected from the group consisting of salt and talc and

b. arranging a single mass of said crystalline material in the form of a volume having a plurality of major surfaces and a single concentration of said catalyst metal within said protective metal enclosure, said single concentration of metal being contiguous with only one major surface of said mass,

whereby during the conduct of the compaction process at a temperature rendering molten said concentration of catalyst metal, the compaction front will advance through said mass of crystalline material in a single general direction due to the mechanical instability of the compaction system.

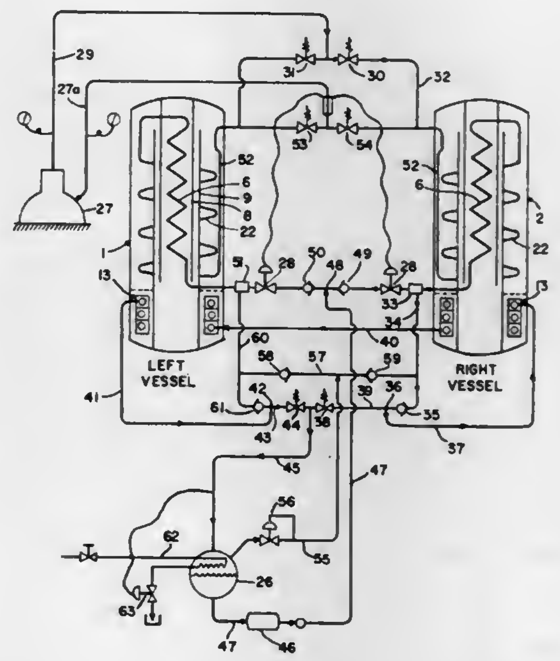
3,850,592
HEAT PUMP DRYER

Lowell E. Huffman, Wilmington, Del., assignor to Deltech Engineering, Inc., New Castle, Del.

Filed Nov. 24, 1972, Ser. No. 309,007

Int. Cl. B01d *53/04*

U.S. Cl. 55—33 **23 Claims**



1. A process for drying gas which comprises passing a stream of the gas to be treated through a refrigeration zone, circulating a refrigeration medium at low temperature in heat transfer relationship with the stream of gas in the refrigeration zone to cool the gas to a temperautre at which a substantial amount of the moisture in the stream is condensed, thereafter passing the stream of gas through a bed of moisture adsorptive material, causing the stream of the gas to be treated to flow through a second bed of moisture adsorptive material when the first named bed reaches a predetermined level of saturation, thereafter continuing to cycle the stream through one bed and then the other bed, compressing the refrigeration

medium after it leaves the refrigeration zone, and circulating the compressed refrigeration medium in heat transfer relationship with the offstream bed thereby using the latent heat of condensation absorbed during cooling of the gas in the refrigeration zone to heat the offstream bed for the purpose of regenerating the offstream bed.

3,850,593

APPARATUS AND PROCESS FOR THE SEPARATION OF INERT GASES FROM GAS MIXTURE CONTAINING CARBON DIOXIDE

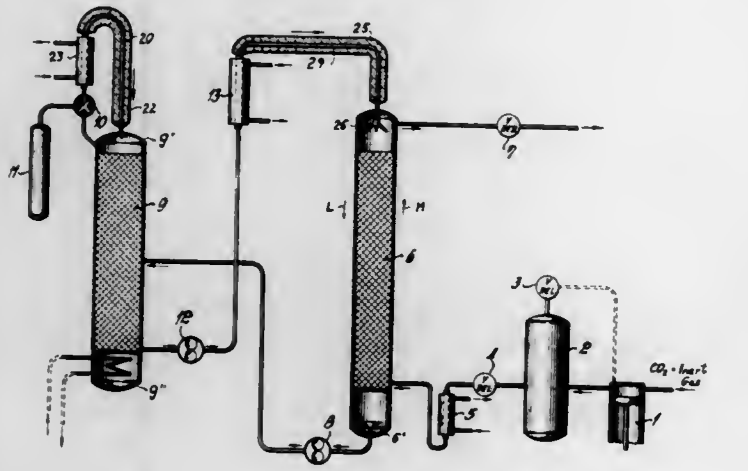
Holger Beaujean, and Manfred Laser, both of Julich, Germany, assignors to Kernforschungsanlage Julich G.m.b.H., Jullch, Germany

Filed June 23, 1972, Ser. No. 265,726

Claims priority, application Germany, June 25, 1971, 2131507

Int. Cl. B01d *53/14;* **F25j** *3/02*

U.S. Cl. 55—66 **10 Claims**



1. A process for the removal of inert gases from a gas stream containing same together with carbon dioxide, comprising the steps of intimately contacting said gas stream with liquid carbon dioxide to solubilize inert gas in the liquid carbon dioxide and produce a liquid phase;

rectifying said liquid phase to separate a fractionrich in the inert gas therefrom and to produce a liquid carbon dioxide fraction; and

recirculating the liquid carbon dioxide fraction into intimate content with further quantities of the gas stream.

3,850,594

FILTERING METHOD UTILIZING A DOUBLE-WALL FILTER BAG CONSTRUCTION

Frank Higgins, Millington, N.J., assignor to Summit Filter Corporation, Summit, N.J.

Division of Ser. No. 370,515, June 15, 1973, Pat. No. 3,826,066. This application Feb. 26, 1974, Ser. No. 446,061

Int. Cl. B01d *46/02*

U.S. Cl. 55—97 **5 Claims**

1. A method of filtering contaminants from contaminant laden air comprising:

A. forcibly passing air into a filter housing inlet and out a filter housing outlet, said outlet possessing an interior flange proximate said outlet;

B. said contaminant laden air being caused to pass through a double-wall filter bag system contained within a filter housing, said system being characterized as containing:

i. an elongated cylindrical cage mounted in said housing between said inlet and said outlet and including:

a. circumferentially spaced side members defining openings therebetween;

b. a plurality of vertically spaced cage rings interconnecting said side members, and a top ring supported on said housing flange and mounting said cage in said housing;

c. said cage having open inlet and outlet ends;

ii. a double-wall filter bag having an upper outwardly directed flange seated on said interior flange and suspendably mounting said bag in said housing;

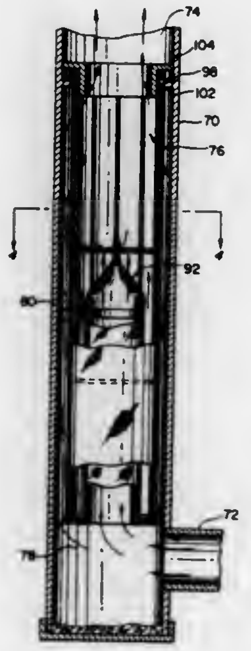
iii. said double-wall filter bag including:

a. an outer cylindrical bag engaged over and encompassing the exterior of said cage and being in coaxial spaced relationship from the inner wall of said housing and defining therebetween an annular gas flow passage;

b. a generally cylindrical inner bag mounted within said cage in coaxial spaced relationship from the inner wall thereof, and from the inner wall of said outer bag, and defining between said spaced outer and inner bags an annular gas flow chamber terminating in an inner open outlet end of said double-wall filter bag;

c. said inner bag having an upper end formed by closing the wall material to a flattened terminal closed end having a transverse opening therethrough;

d. a transverse wire loosely inserted through said transverse opening with the ends thereof connected to said cage in supporting said inner bag in a relatively taut condition within said outer bag and permitting a sliding suspension and vibratory movement of said inner bag with respect to said outer bag during a reverse gas flow cleaning cycle for said double-wall filter bag;



e. an annular bottom wall interconnecting the bottoms of said outer and inner bags in said spaced relationship and integrating the bags into a unitary bag having a gaseous medium flow inlet and proximate said housing inlet;

f. said inner bag extending from said inlet end of said double-wall filter bag a substantial distance toward but terminating prior to an opposite open outlet end of said double-wall filter bag;

g. said outer bag at said open outlet end thereof being in substantially air sealed engagement with said inner flange;

h. said inner and outer bags consisting of a gas permeable and particle contaminant impermeable flexible cloth filter bag; and

iv. said cage and the transverse support wire for said inner bag maintaining the substantially coaxial relationship of said inner and outer bags during operation as a filtering system;

C. passing said contaminant laden air through said filter housing inlet thus causing said air to pass along said annular gas flow passage and through the outer bag from the exterior thereof into said annular flow chamber between said bags, and through the inner bag from the interior thereof into said annular flow chamber, gas in said annular flow chamber passing therethrough to and exiting from said open outlet end, with contaminants being collected on the outer surface of said outer bag and the inner surface of said inner bag.

3,850,595

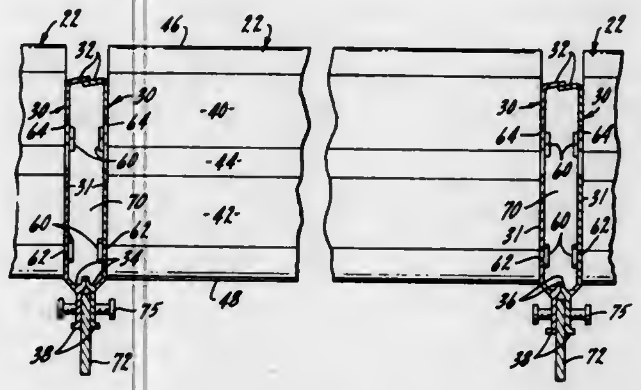
DRIFT ELIMINATOR ASSEMBLY

James F. Forchini, Healdsburg, and Ronald M. Garcia, Santa Rosa, both of Calif., assignors to Ecodyne Corporation, Chicago, Ill.

Filed Oct. 5, 1972, Ser. No. 295,320

Int. Cl. B01d *47/00*

U.S. Cl. 55—257 **5 Claims**



1. In combination with a liquid cooling tower having an air inlet, an air outlet, and means for directing currents of air along a path of travel from said inlet to said outlet in substantially horizontal, intersecting relationship to liquid gravitating within the tower, a drift eliminator assembly within the tower, disposed to remove droplets of liquid entrained in said air immediately prior to discharge of said air through said outlet; said drift eliminator assembly comprising:

a. a plurality of drift eliminator panels secured together in an end to end relationship;

b. each of said panels including a plurality of longitudinally extending drift eliminator blades positioned one above the other and supported at their respective ends by a pair of side plates;

c. said side plates of longitudinally adjacent panels being secured together so as to define an integral drain channel therebetween;

d. said side plates having openings integral therewith and said eliminator blades being inclined so as to permit liquid collected on said blades to flow through said openings into said drain channel;

e. each of said side plates includes first and second flanges extending longitudinally outward therefrom towards the adjacent side plate such that corresponding first flanges and corresponding second flanges of adjacent side plates are in contact with one another so as to form said integral drain channel therebetween;

f. said first flanges include connecting ears integral therewith for receipt of fastening means therethrough so as to secure together longitudinally adjacent side plates; and

g. vertically extending support members secured between adjacent pairs of said connecting ears for suspending said drift eliminator assembly within said tower.

3,850,596

GAS-SOLIDS SEPARATOR WITH ACCESS PLATFORM

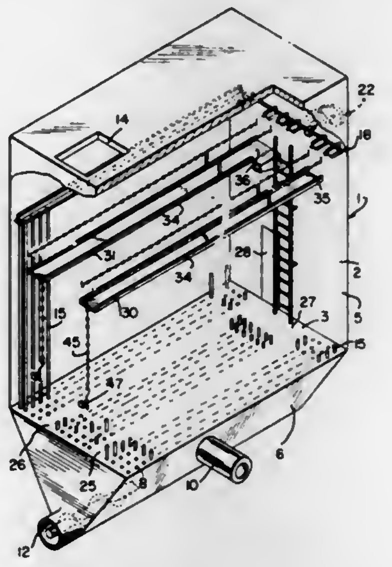
Ervin Fisher, Berea, Ohio, and Frederick O. Olson, Whitehall, Pa., assignors to Fuller Company, Catasauqua, Pa.

Filed Sept. 13, 1972, Ser. No. 288,626

Int. Cl. B01d *46/02*

U.S. Cl. 55—341 **9 Claims**

1. In a gas-solids separator for filtering gases including a housing, a tube sheet mounted in and dividing said housing into an upper and lower chamber and having a plurality of openings therein; a plurality of elongated filters mounted in rows in one of said chambers, means for securing one end of each of said filter to said tube sheet so that each is flow connected to one of said openings whereby communication between said chambers is solely through said openings and said filters when the separator is filtering gases; means for supporting the other end of said filters in said one of said chambers, means for supplying gas to be filtered to one of said chambers and means for exhausting filtered gas from the other of said chambers; means for permitting access to the means for supporting the other end of said filters comprising: at least one platform pivotally mounted in said housing between adjacent rows of filters; said platform being dimensioned to be wider than the distance between adjacent rows of the filters, and means operatively connected to said platform for changing the position of said platform from a first nonoperating position to a second operating position including means for pivoting said platform about its own longitudinal axis parallel to the axis of said rows when it is desired to gain access to the means for supporting the other end of the filters.



3,850,597

Patent Not Issued For This Number

3,850,598

PORTABLE VENTILATING APPLIANCES

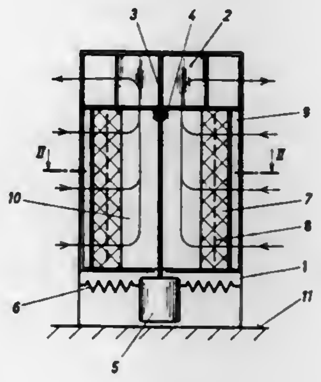
Hans-Georg Boehm, Kronberg, Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Germany

Filed Feb. 6, 1973, Ser. No. 329,985

Claims priority, application Austria, Feb. 14, 1972, 1159/72

Int. Cl. B01d *53/04;* **F24f** *13/00*

U.S. Cl. 55—387 **4 Claims**

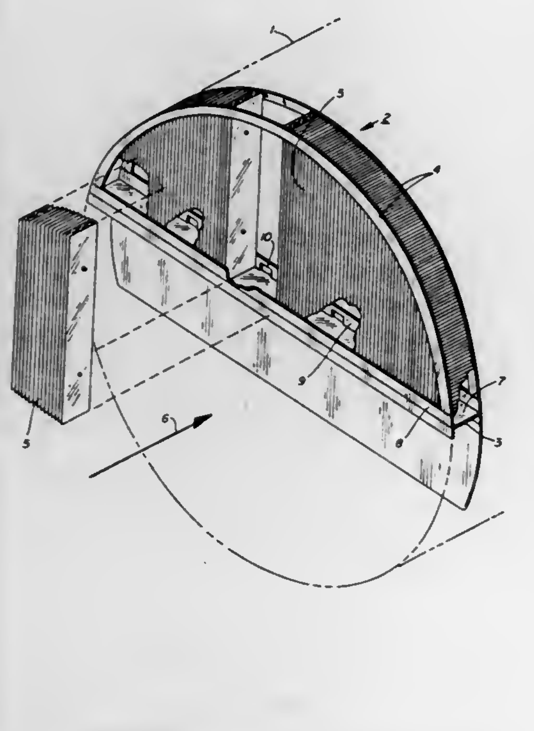


1. A portable ventilating appliance comprising a freestanding upright columnar housing having lower peripheral

openings and upper openings, a fan wheel mounted at the upper end of the housing for rotation about a vertical axis within the housing, a filter mounted in said housing below the fan wheel and comprising a filter wall around said axis so that air is drawn by the fan wheel through said lower openings and the filter wall and expelled through said upper openings, an electric driving motor for the fan wheel positioned in the housing below the filter and a substantially vertical drive shaft passing through the filter within the filter wall and coupling the motor to the fan wheel.

3,850,599
MEANS FOR SEPARATING ENTRAINED LIQUID

Billy C. Calkin, and Neely E. Lowrie, both of Tulsa, Okla., assignors to Combustion Engineering Inc., New York, N.Y.
Filed Sept. 24, 1973, Ser. No. 399,903
Int. Cl. B01d *45/08*
U.S. Cl. 55—440 **2 Claims**



1. A unit including separator plates to be mounted in a horizontal vessel and in the horizontal flow path through the vessel in which entrained liquid of gases impact upon the plate surfaces to separate from the gases, including; a plurality of modules positioned side-by-side, each module comprising:

a. a series of the plates which are parallel and vertically extended and spaced a predetermined distance apart, and b. means extending through the plate surfaces to maintain the plates spaced and parallel; a framework for the plurality of modules, comprising:
a. a track member extending horizontal and transverse the flow path of fluids and in support of the lower end of the modules, and
b. strips extending up from the ends of the track member along the walls of the vessel and along the sides and tops of the modules to completely capture the modules and retain them in the flow path of the fluids as a unit; conduits extending down through the horizontal track member to direct liquid flowed to the track from the modules to a collection of liquid below the unit; the modules adjacent the walls of the vessel being cut to match the curvature of the vessel walls and nest within the framework strips extending up from the ends of the track member; and the track is provided with an opening in its side through which each module may be first inserted and then moved horizontally along the track and into its final position within the framework.

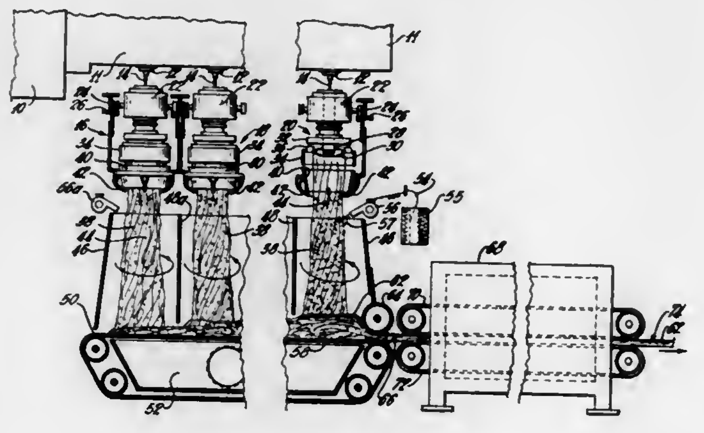
3,850,600
FILTER MEDIA

John W. Monsted, Jr., Glenshaw, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed July 5, 1973, Ser. No. 376,429
Int. Cl. B01d *39/16*
U.S. Cl. 55—524 **4 Claims**

1. A filter of felted-fibers carrying mechanically electrified resin particles in which the felt consists essentially of wool fibers and acrylic fibers, each fiber being present in an amount at least about 10 percent by weight effective to improve dust collection efficiency and the retention of dust collection efficiency under charge degrading conditions.

3,850,601
METHOD OF PRODUCING A BOARD OF FIBROUS GLASS

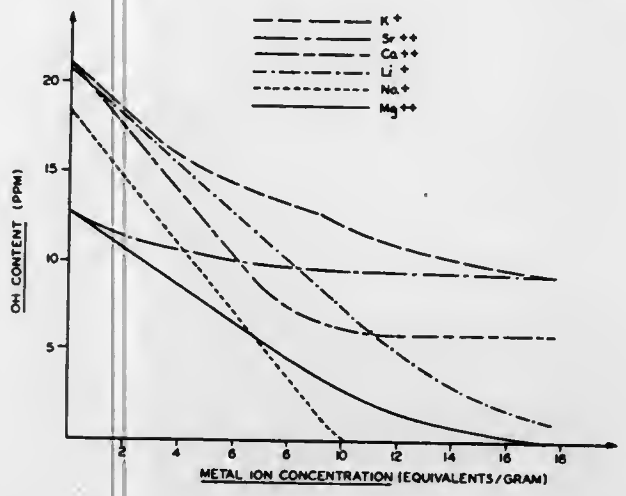
Stuart H. Stapleford, Atlanta, Ga., and Charles E. Nutter, Hebron, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Continuation of Ser. No. 874,428, Nov. 6, 1969, abandoned. This application June 18, 1973, Ser. No. 371,013
Int. Cl. C03c *25/02;* **C03b** *37/00*
U.S. Cl. 65—3 **1 Claim**



1. A method of producing a thermal insulating roofing board of bonded, randomly positioned and spacedly related individual, discontinuous glass fibers with short bundles or strands of multiple glass filaments distributed in intermixed and bonded relation with the individual glass fibers throughout a narrow stratum of the board, said method comprising drawing individual fibers from molten glass and directing them downwardly in spaced and randomly positioned relation toward a transversely traveling receiving surface, dividing the descending fibers into separate groups, said groups positioned successively in the direction of travel of the receiving surface, combining a dispersed settable binder with the fibers of each group, combining and intermingling short bundles or strands of definite predetermined lengths and containing hundreds of glass filaments with the individual fibers and dispersed binder of the group of fibers leading the succession of groups in the direction of travel of the receiving surface, while leaving other groups free of such strands, whirling the fibers of the leading group around a vertical axis to mix together the fibers, the strands, and binder thereof, maintaining the groups of fibers separated throughout their full downward travel, collecting the fibers, the dispersed binder of all groups and the fibrous glass strands of the leading group as a pack upon the receiving surface, compressing the pack and setting the dispersed binder to dimensionally stabilize the pack in board form by cohering the fibers throughout the pack and cohering the fibers and the strands in the surface stratum thereof constituting the fibers and strands of the leading group deposited last upon the pack in the movement of the receiving surface.

3,850,602
SALT VAPOR ATMOSPHERE TREATMENT OF QUARTZ CRYSTAL GRANULES

Rolf Bruning, Bruchkobel, Germany, assignor to Heraeus-Schott Quarzschmelze GmbH, Hanau/Main, Germany
Filed Dec. 18, 1972, Ser. No. 316,312
Claims priority, application Germany, Jan. 7, 1972, 2205560
Int. Cl. C03b *23/20, 5/16*
U.S. Cl. 65—18 **8 Claims**



1. Process for the manufacture of substantially bubble-free and OH-free amorphous quartz glass from quartz crystal granules having a pre-determined OH content which comprises:

a. doping said quartz crystal granules with a salt or mixture of salts whose cation is selected from the group of lithium, sodium, potassium, magnesium, calcium, strontium and silver, each salt having, at temperatures in the range from 800° to 1,700°C., a vapor pressure of at least 5 mm Hg, in a quantity corresponding at least to the —OH content of said quartz crystal granules,
b. stirring the doped quartz crystal granules for a period of at least 30 seconds in a reaction chamber heated to a temperature ranging from 800 to 1,700°C. having an atmosphere enriched with salt vapor, thereby causing a partial pressure to form corresponding to the vapor pressure of said salt,
c. flooding the tumbled quartz crystal granules with a water vapor-free gas at a temperature ranging from 800° to 1,700°C., and
d. melting the gas-flooded quartz crystal granules under a water vapor-free atmosphere.

3,850,603
TRANSIENT ELECTRIC POTENTIAL DIFFERENCE IN GLASS BY ELECTRIC FIELD COOLING

Cyril F. Drake, and Ian F. Scanlan, both of Harlow, England, assignors to International Telephone and Telegraph Corporation, Nutley, N.J.
Continuation-in-part of Ser. No. 221,038, Jan. 26, 1972, abandoned, which is a continuation-in-part of Ser. No. 48,765, May 5, 1970, abandoned. This application Nov. 15, 1973, Ser. No. 416,126
Claims priority, application Great Britain, June 9, 1969, 29063/69
Int. Cl. C03c *15/00*
U.S. Cl. 65—30 **1 Claim**

1. A method of producing a transient electric potential difference in a glass comprising:

heating a mixture of 25 mole percent of Na_2O, 20 mole percent of CdO or CaO, 10 mole percent of GeO_2 or SiO_2, and 45 mole percent of P_2O_5 in a muffle furnace held at 1,300° C;

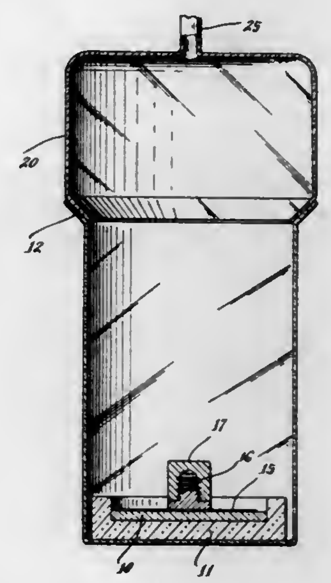
forming a one square centimeter plate of said glass having a thickness of 1mm;

heating said glass to its transformation temperature; and

cooling said glass from its glass transformation temperature to at least 100° C below its annealing temperature, while applying an electric field of 500 volts/cm^2 to said glass plate resulting in structural reorientation of the electric dipoles in the glass.

3,850,604
PREPARATION OF CHALCOGENIDE GLASS SPUTTERING TARGETS

Richard M. Klein, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.
Division of Ser. No. 313,740, Dec. 11, 1972, Pat. No. 3,791,995. This application Oct. 12, 1973, Ser. No. 406,066
Int. Cl. C03c *29/00;* **H01j** *9/00*
U.S. Cl. 65—32 **8 Claims**

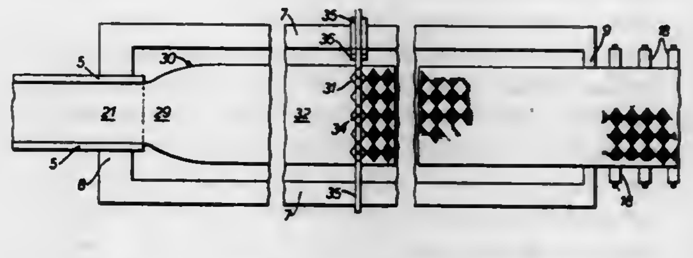


1. A method of making a chalcogenide sputtering target comprising the steps of:

a. placing chalcogenide glass in a mould;
b. placing a flat inert mesh with a connector fixedly attached on top of said glass;
c. placing a removable inert weight on said connector for forcing said mesh into said glass when said glass is heated;
d. heating said glass to a temperature above the softening point of said glass for a predetermined amount of time to insure a good physical bond between said glass and said mesh; and
e. slowly cooling said glass to ambient conditions.

3,850,605
MANUFACTURE OF PATTERNED GLASS

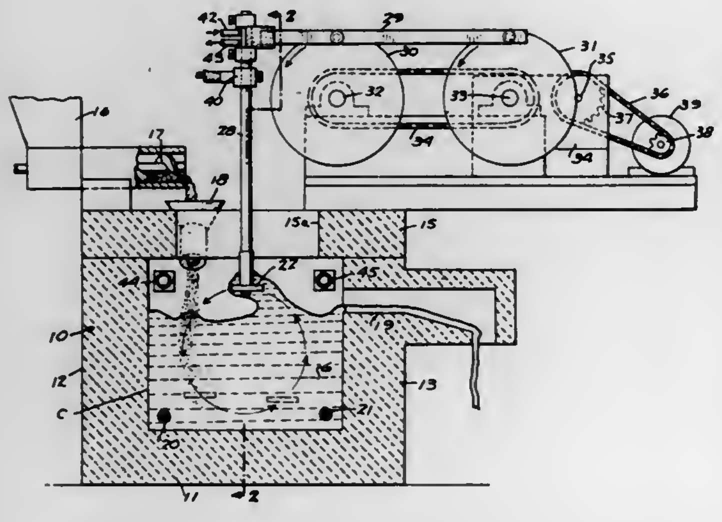
William Ramsey Maltman, Prescot, and Colin Robert Howard, Liverpool, both of England, assignors to Pilkington Brothers Limited, Liverpool, Lancashire, England
Filed Sept. 11, 1972, Ser. No. 287,716
Claims priority, application Great Britain, Sept. 17, 1971, 43507/71
Int. Cl. C03b *18/02;* **C03c** *21/00*
U.S. Cl. 65—99 A **25 Claims**



1. A method of manufacturing patterned glass comprising locating in contact with a surface of the glass which is at a temperature at which it is electrically conductive, a molten

body of an electrically conductive material for modifying the glass which body is shaped to a configuration progenitive of a pattern to be introduced into the glass, effecting relative movement between the shaped molten body and the glass, connecting an electrical supply to the molten body and to the glass, and switching that supply to engender electrically a predetermined ionic migration between the molten body and the glass in a time period during said relative movement, said time period being defined by a supply pulse width of the switched supply which is related to the speed of said relative movement and is sufficient to produce a pattern element of modified glass ins aid glass surface which pattern element exhibits its derivation from the configuration of the molten body.

3,850,606
METHOD FOR MELTING GLASS-MAKING MATERIALS
Robert R. Rough, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed July 2, 1973, Ser. No. 375,532
Int. Cl. C03b *5/18*
U.S. Cl. 65—178 **3 Claims**



1. A method of melting glassmaking materials to form a homogeneous molten glass having gaseous inclusions comprising the steps of:

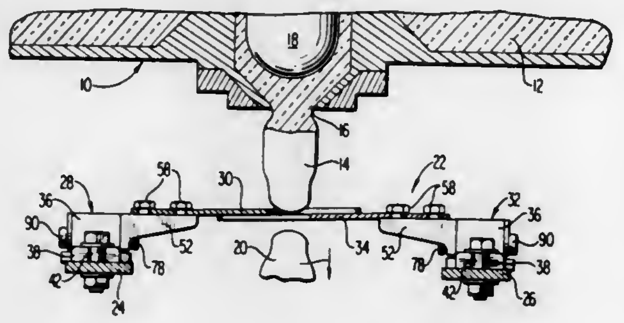
applying heat to glass forming materials to produce a mass of molten glass;

adding glassmaking batch material to the molten glass;

applying additional heat to the molten glass by passing an electric current between at least one stationary electrode and a moving electrode to constantly change the location of the electric heating point to mix the added unmelted glassmaking material and distribute them rapidly through the molten glass so as to locate heat at the point of addition of the glassmaking materials;

continuing to move the electrode so as to draw the newly added batch rapidly under the surface of the existing molten glass and to agitate both the molten glass and added glassmaking materials wherein said moving electrode is moved in a generally circular path so that a portion of its path moves out of the molten glass, and back into the molten glass; and contacting the unmelted glassmaking materials added to the surface of the batch and moving them rapidly downward, mixing them into said molten glass thereby rapidly melting the unmelted glass materials.

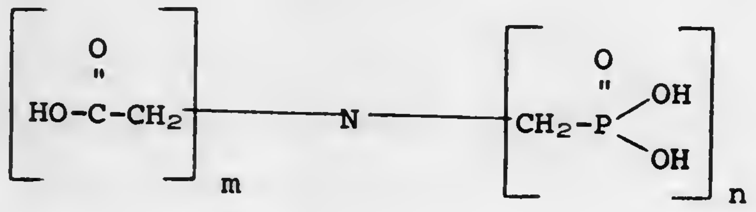
3,850,607
SELF-ALIGNING SHEAR BLADE HOLDERS
John E. Cook, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Nov. 30, 1970, Ser. No. 93,711
Int. Cl. C03b *5/38*
U.S. Cl. 65—334 **11 Claims**



1. In a shear mechanism for cutting gobs of glass from a stream of molten glass issuing from a furnace and including a pair of opposed cooperating shear blades mounted one each on the ends of a pair of operating arms supported for oscillating movement toward and away from one another to move the shear blades between an open position to permit the stream of molten glass to flow therebetween and a closed position in overlaying contacting relation to shear a gob of glass from the stream, the improvement which comprises a pair of blade mounting assemblies each supporting one of said blades on its associated operating arm by means of a fixed bearing with a blade support pivotally mounted on said bearing for limited pivotal movement about a generally horizontal axis extending below and in the general direction of movement of the respective blades upon movement of said operating arms, each mounting means having friction means type alignment retaining means providing limited frictional resistance to said pivotal movement, which frictional resistance tends to retain said shear blades in their respective adjusted alignment positions after initial contact with one another establishing such alignment and whereby each of said blades may rotate a limited amount upon contact with one another to facilitate accurate alignment said friction means includes first shoulder means on said fixed bearing and second shoulder means on said blade support, and spring means urging said first and said second shoulder means into friction contact with one another.

3,850,608
METHOD OF PLANT GROWTH REGULATION
Philip C. Hamm, Glendale, Mo., assignor to Monsanto Company, St. Louis, Mo.
Continuation-in-part of Ser. No. 41,108, May 27, 1970, abandoned, which is a continuation-in-part of Ser. No. 769,409, Oct. 21, 1968, Pat. No. 3,556,762, and a continuation-in-part of Ser. No. 668,208, Sept. 15, 1967, abandoned, which is a continuation-in-part of Ser. No. 567,093, July 22, 1966, abandoned. This application Oct. 30, 1972, Ser. No. 302,387
Int. Cl. A01n *9/36*
U.S. Cl. 71—76 **32 Claims**

1. A method for retarding the growth of turfgrass which comprises applying to said turfgrass an effective, growth retarding amount of a compound selected from (a) acids of the formula

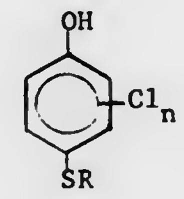


$$\left[HO-\overset{O}{\overset{\|}{C}}-CH_2 \right]_m N \left[CH_2-\overset{O}{\overset{\|}{P}}\begin{matrix} OH \\ OH \end{matrix} \right]_n$$

wherein *m* and *n* are unlike integers selected from 1 and 2, and (b) the alkali metal, ammonium and lower alkyl ammonium salts of such acids, said amount being insufficient to exert a herbicidal effect on said turfgrass.

3,850,609
POLYCHLORO PARATHIO PHENOLS
William E. Bissinger, Akron; Donald E. Hardies, Wadsworth, and Jerome M. Lavanish, Akron, all of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 76,651, Sept. 28, 1970, Pat. No. 3,723,538. This application Sept. 11, 1972, Ser. No. 288,220
Int. Cl. A01n *9/12*
U.S. Cl. 71—98 **18 Claims**

1. A method of killing weeds which comprises applying to the soil in the vicinity of the weeds a phytocidal amount of a compound represented by the formula:



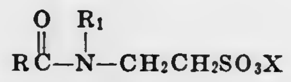
wherein

n is 3 or 4; and

R is lower alkyl, lower alkenyl, or lower cycloalkyl.

3,850,610
HERBICIDAL METHOD
Joseph P. Copes, Easton, Pa., assignor to GAF Corporation, New York, N.Y.
Filed Oct. 18, 1971, Ser. No. 190,289
Int. Cl. A01n *9/14*
U.S. Cl. 71—103 **9 Claims**

1. A method for the post-emergence control of weeds which comprises contacting said weeds with an herbicidal composition including an inert carrier and, as an active constituent, a compound of the formula

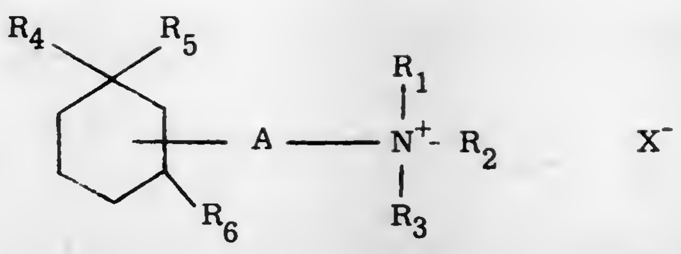


$$R\overset{O}{\overset{\|}{C}}-\overset{R_1}{\overset{|}{N}}-CH_2CH_2SO_3X$$

wherein R is alkyl containing 3 to 11 carbon atoms; R_1 is alkyl containing 4 to 12 carbon atoms and X is an alkali metal atom and applying said herbicidal composition in a quantity which is herbicidally toxic to said weeds.

3,850,611
METHOD FOR INHIBITING PLANT GROWTH WITH QUATERNARY AMMONIUM SALTS
Kazuo Nakanishi; Hideo Yagi; Takashi Iwata; Hisae Haruta; Kazuhiko Yoshida, and Akira Matui, all of Osaka, Japan, assignors to Fujisawa Pharmaceutical Co. Ltd., Osaka, Japan
Filed Mar. 22, 1971, Ser. No. 127,010
Claims priority, application Japan, Apr. 6, 1970, 45-29540; Mar. 28, 1970, 45-26098; Mar. 25, 1970, 45-25544; Mar. 28, 1970, 45-26097; June 2, 1970, 45-48343
Int. Cl. A01n *9/20*
U.S. Cl. 71—121 **41 Claims**

1. A method for inhibiting plant growth which comprises applying, as an effective ingredient, at least one of a quaternary ammonium salt of the formula:



wherein A is a lower alkylene, a lower alkenylene or a lower alkadienylene; R_1 and R_2 are each lower alkyl; R_3 is a lower alkyl, a halo (lower) alkyl, a lower alkynyl, phenyl(lower)-alkyl which may have one or more halogen atoms as substituents on the phenyl ring, a lower alkenyl, a hydroxy (lower) alkyl; R_4, R_5 and R_6 are each lower alkyl having 1 to 3 carbon atoms; X is chloride, bromide or iodide; the cyclohexyl ring in the above formula may have one double bond; and an inert carrier.

3,850,612
PROCESS FOR PREPARING FINELY PARTICLED NICKEL POWDERS HAVING A SPHEROIDAL FORM
Franco Montino, Casale Monferrato, and Luigi Colombo, Arona, both of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy
Filed Sept. 19, 1973, Ser. No. 398,852
Claims priority, application Italy, Sept. 25, 1972, 29635/72
Int. Cl. C22b *23/00;* **B22f** *5/00, 9/00*
U.S. Cl. 75—.5 **8 Claims**

1. In a process for preparing very finely divided, homogeneous metallic nickel powder of spheroidal shape, with a granulometric range between 0.03 and 0.7 microns and with a very narrow granulometric spectrum, by reduction with H_2 of a hydroalcoholic suspension of nickel hydroxide at temperatures between room temperature and 200°C, under partial pressures of H_2 between 20 and 100 atm., in the presence of bis-acrylonitrile-nickel in quantities between 15 and 0.5 g/mole of $Ni(OH)_2$, and optionally in the presence of pyridine in a quantity between 1 and 20 grams/liter of the suspension, the improvement wherein the reduction reaction is conducted in the presence of a sulphur compound selected from the class consisting of hydrogen sulphide and alkali metal and alkaline earth sulphides in quantities corresponding to between 2 and 50 mg sulphur/mole of nickel hydroxide.

3,850,613
TREATMENT OF STEEL MILL WASTE DUSTS CONTAINING ZINC
John E. Allen, Lake Forest, Ill., assignor to Ferro-Carb Agglomeration Ltd., Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 359,776, May 14, 1973. This application Dec. 19, 1973, Ser. No. 426,335
Int. Cl. C21b *1/28*
U.S. Cl. 75—4 **4 Claims**

1. In the operation of steel mills and iron foundries, the method of disposing of iron- and carbon-containing wastes which also contain zinc oxide to obtain a product containing the iron in the wastes without the zinc and oxide which comprises (1) mixing the particulate waste with a bituminous binder having a ball and ring softening point below 212°F and being free of combustibles volatile at 500°F, and with sufficient added carbonaceous solid to reduce any zinc oxide present to zinc metal, to produce a mix containing between 2and 15 percent of binder; (2) briquetting the mix; (3) treating the briquettes to ensure sufficient mechanical strength to feed the briquettes to (4) a heating step where the briquettes are heated at 1,800° to 2,500°F for a time sufficient to reach the volatilization temperature of all t he zinc contained therein, whereby any zinc oxide present is converted to zinc metal and the zinc metal is converted to zinc vapor; (5) removing the zinc vapor from the vicinity of the briquettes with

a gas stream containing a reactant which converts the zinc vapor to zinc oxide; and (6) recovering the zinc oxide.

3,850,614
PRODUCTION OF TUNGSTEN AND CARBIDE POWDER

William H. Bleecker, Pleasant Ridge, Mich., assignor to Carmet Company, Pittsburgh, Pa.
Division of Ser. No. 35,879, May 8, 1970, abandoned. This application July 31, 1972, Ser. No. 276,819
Int. Cl. C22b *57/00*
U.S. Cl. 75—.5 BB **3 Claims**

1. A method of making tungsten powder which comprises chemically reducing to tungsten oxide a tungsten compound containing less than 100 ppm total of the elements sodium, potassium, and calcium and chemically reducing said tungsten oxide to tungsten powder with dry hydrogen having a dew point not higher than −30°F by passing said oxide through a reduction zone while flowing said dry hydrogen therethrough in a direction concurrent with the oxide.

3,850,615
METHOD OF ILMENITE REDUCTION

James W. Reeves, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del., 1
Continuation-in-part of Ser. No. 92,539, Nov. 24, 1970, abandoned, which is a continuation-in-part of Ser. No. 680,522, Nov. 3, 1967, abandoned. This application Nov. 9, 1972, Ser. No. 305,082
Int. Cl. C22b *5/10*
U.S. Cl. 75—26 **3 Claims**

1. An improved process for effecting chemical reduction of the iron content of a ferrotitaniferous ore to the metallic state wherein the reducing agent is solid carbonaceous material and the reduction reaction is initiated and maintained solely by means of heat applied to the reactants, said process comprising the continuous steps of:

A. feeding to a fluid bed reactor chamber reactants which consist essentially of
  1. solid components composed of
    a. 20 to 60 percent by weight of ferrotitaniferous ore in a particle size range of about 80 to 100 mesh, said ore being preheated to 900° to 1100°C. and having its iron content in the ferrous form, and
    b. the remainder by weight being preheated solid carbonaceous reducing agent in particulate form essentially all of which is 20–150 mesh size, at least 25 percent of said reducing agent being coarse particles of about 20–40 mesh size which remains a part of the ore-reducing agent mixture and at least 25 percent of said reducing agent being fine particles of about 80–150 mesh size which remains a part of the fluidizing medium, and
  2. reformer gas, preheated to from about 950°C. to 1100°C.,

the solid components being maintained in a fluid state in said chamber by upward flow of said reformer gas therethrough and further being maintained at a temperature of 1100° to 1100°C. without direct heat by control of the temperature of the preheated reactants,

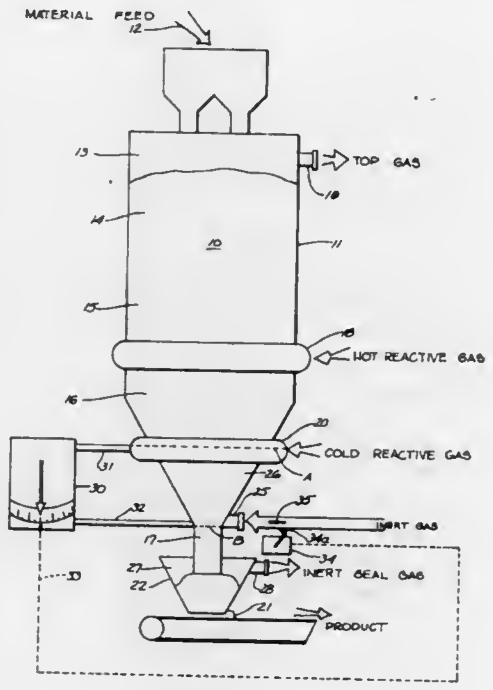
B. removing from said chamber an ore fraction, in which at least 90 percent by weight of the iron content thereof is in the metallic state, and an off-gas fraction, each of said fractions containing unoxidized fine particles of said solid reducing agent, and

C. separating said solid reducing agent from each of said fractioins, applying further heat thereto in a zone remote from said chamber, and recycling same along with make-up ore and reducing agent to said chamber.

3,850,616
INERT GAS SEAL FOR PRODUCT DISCHARGE FROM A SHAFT FURNACE

Clyde L. Cruse, Jr., Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio
Filed Oct. 29, 1973, Ser. No. 410,876
Int. Cl. C21b *13/02*
U.S. Cl. 75—34 **11 Claims**

1. In a method for the gaseous treatment of sized material in a gravity feed shaft furnace having in succession a top portion, a preheat zone, a reaction zone, a cooling zone and a product discharge portion, said method including the steps of introducing material into said top portion to establish a downwardly descending column of material being treated, introducing hot reactive gas into said reaction zone for passage upwardly through said column in said reaction and preheat zones, withdrawing spent reactive gas from said top portion, introducing a cold reactive gas into said cooling zone, and withdrawing cooled treated material from said product discharge portion, the improvement which comprises introducing a cold inert gas intermediate said cooling zone and said product discharge portion, maintaining substantially the same pressure in said furnace at the point of introduction of said cold reactive gas and at the point of introduction of said cold inert gas whereby to create an isobaric zone there between, maintaining said product discharge portion below said point of introduction of said cold inert gas at a lower pressure than that of said isobaric zone, and withdrawing only cold inert gas from the lower presssure product discharge portion.



3,850,617
REFINING OF STAINLESS STEEL

Joseph S. Umowski, 83 Sherman Ave., Cedar Grove, N.J. 07009
Continuation-in-part of Ser. No. 64,669, April 14, 1970, abandoned, which is a continuation of Ser. No. 622,961, March 14, 1967, abandoned. This application Nov. 10, 1971, Ser. No. 197,279
Int. Cl. C21c *7/10*
U.S. Cl. 75—49 **4 Claims**

1. In a process of refining a chrome alloy steel melt containing between approximately 8 and 20 percent chromium whereby excessive carbon content is reduced to minimal content with little or no loss of other desirable alloying ingredients, the steps of transferring an initial chrome alloy steel melt obtained from a furnace, and containing approximately 1 to 6 percent carbon, into a crucible at or near 1,300°C, sealing said crucible in a vessel connected to means for reducing the pressure in said vessel, injecting gaseous oxygen in the form of a high velocity stream directed toward the surface of the melt, while maintaining a pressure of less than one atmosphere over the melt at all times and continuously reducing said pressure, said gas being injected at a rate controlled to maintain the melt at a temperature between 1,600° and 1,800°C, until the desired carbon concentration is approached, then further reducing the oxygen flow rate while slowly mixing said oxygen with an inert gas to an increasingly rich inert gas concentration, the oxygen flow being terminated when oxidation of carbon in the melt has reduced the carbon content to a desired level, maintaining the melt temperature between approximately 1,600°C and 1,800°C, and reducing the percentage of residual carbon to approximately between 0.002 and 0.08 percent depending upon the percentage of chrome being between approximately 8 and 20 percent, said melt temperature and flow of inert gas being maintained until oxygen and oxidation products of carbon are essentially completely removed from said vessel.

3,850,618
DEMOLYBDENUM REFINING METHOD OF MOLYBDENUM CONTAINING ALLOY STEEL MATERIAL

Takao Seya, 3-30-7, Nishigahara, Kita-ku, Tokyo, and Kazutaka Naguro, 2-14-11 Nishi, Takaido, Suginami-ku, Tokyo, both of Japan
Filed Mar. 19, 1973, Ser. No. 342,438
Int. Cl. C21c *7/04*; C22c *33/00*
U.S. Cl. 75—51 **6 Claims**

1. A molybdenum reduction method of refining a melt of molybdenum alloy steel that includes chromium, silicon, carbon, phosphorus and manganese comprising the following steps:

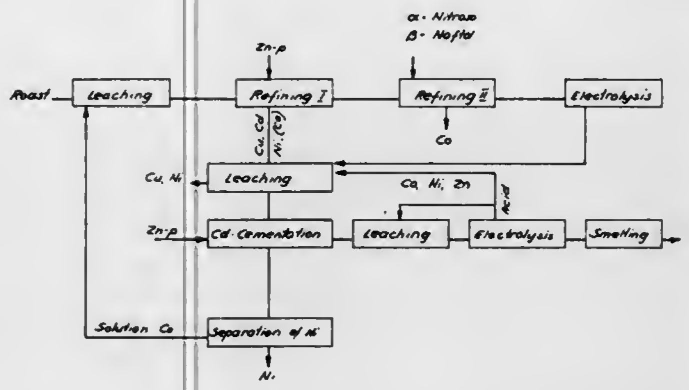
effecting oxidation of said molten steel whereby chromium is oxidized below 1 percent and silicn, carbon, phosphorus and manganese are oxidized below 0.1 percent and said molten steel contains more than 0.02 percent of oxygen;

effecting introduction of a chargingmaterial of a stream of an oxidizing gas rich in oxygen and at least one compound selected from the group consisting of an oxide of an alkali metal, alkali earth metal and salts of said alkali metal and alkali metal, to produce an oxide of molybdenum; and

effecting the transfer of said oxide of the alkali metal and alkali earth metal and the formed double salt of the oxide of molybdenum from the molten bath.

3,850,619
PROCESS FOR PRODUCING CADMIUM

Sigmund Peder Fugleberg, Kokkola, Finland, assignor to Outokumpu Oy, Outokumpu, Finland
Filed Jan. 14, 1971, Ser. No. 106,387
Claims priority, application Finland, Jan. 14, 1970, 10670/70
Int. Cl. C22b *17/00*
U.S. Cl. 75—71 **6 Claims**



1. A method for facilitating recovery of cadmium from a cadmium sulfate solution derived from an electrolytic zinc process comprising (a) adding a reducing agent to a cadmium sulfate solution containing in solution the following impurities: lead and at least one metal selected from the group consisting of cobalt and nickel, and at least one metal selected from the group consisting of cooper, zinc, arsenic, and antimony, and containing undissolved copper and arsenic or undissolved copper, arsenic, and antimony, to cement substantially all dissoved metal, (b) filtering the solution to remove the cemented metal impurities except lead and undissolved copper and arsenic or copper, arsenic, and anitmony, and (c) adding a salt of at least one metal selected from the group consisting of strontium and barium to the filtrate to remove the lead, thereby producing pure cadmium solution.

3,850,620
PYROMETALLURGICAL PROCESS FOR PRODUCING METALLIC COPPER FROM COPPER SULFIDE CONCENTRATES

Nickolas John Themelis, Stamford, Conn.; Russell R. Beck, and John V. Wagner, both of Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.
Filed Apr. 18, 1973, Ser. No. 352,723
Int. Cl. C22b *15/00*
U.S. Cl. 75—74 **7 Claims**

1. A pyrometallurgical process for producing metallic copper from copper sulfide concentrates, comprising substantially continuously feeding a copper fulfide concentrate and a flux therefor into a conventional, air-blow, copper converter vessel, said vessel containing a high quality, molten bath that, except for accumulating slag and still unmelted feed, consists substantially only of high grade copper matte having a copper content approximately within the range of about 70 percent to about 80 percent copper and a depth at least covering the tuyere openings so as to be adequate for blowing; blowing said bath with oxygen-enriched air having an oxygen content within the range of about 25 percent to about 35 percent by weight, while introducing and maintaining above said bath sufficient heat additional to the exothermic heat of reaction of the bath to effect smelting of said concentrate and flux, the said feeding, blowing with air, and introducing of additional heat, and the degree of oxygen enrichment of said air, being controlled to substantially maintain the said high quality of the molten bath of copper matte; periodically halting the continuous feeding and the blowing end, during the halting periods, skimming off from said bath either slag alone or both slag and matte, the quantity of matte skimmed off being substantially no more than will leave said bath of matte sufficiently deep to cover the tuyere openings for blowing purposes, whereby the smelting reaction condition is maintained within said converter vessel from skimming period to skimming period; continuing the continuous feeding of copper sulfide concentrates, the blowing of said bath with said oxygen-enriched air, the introduction of additional heat, and the control thereof between the skimming periods; and treating the matte skimmed off from said converter vessel in a separate converter vessel for the production of metallic copper.

3,850,621
HIGH-SPEED TOOL STEELS

Edmund Haberling; Heinrich Kiesheyer, both of Krefeld, and Hanshermann Weigand, Tonisvorst, all of Germany, assignors to Deutsche Edelstahlwerke Gesellschaft mit beschrankter Haftung, Krefeld, Germany
Filed Dec. 26, 1973, Ser. No. 428,312
Claims priority, application Germany, Dec. 27, 1972, 2263576
Int. Cl. C22c *39/14*
U.S. Cl. 75—126 A **3 Claims**

1. A high-speed tool steel possessing high wear resistance combined with good ductility and machinability, consisting essentially of

0.8	to 1.8	% carbon,
3.5	to 10	% chromium,
1	to 13	% tungsten,
1	to 10	% molybdenum,
0.5	to 5	% vanadium,
0	to 10	% cobalt,
	balance iron,	

wherein the silicon content is not less than 0.5 percent and is determined by the formula

$\% \mathrm{Si} = 2.7 (\%\mathrm{C}) - 0.1 (\%\mathrm{W}) - 0.14 (\%\mathrm{Mo}) - 0.5 (\%\mathrm{V}) + 0.3.$

3,850,622
HIGH STRENGTH ZINC ALLOYS

Robert Wayne Balliett, Beaver Falls, Pa., assignor to St. Joe Minerals Corporation, New York, N.Y.

Filed May 8, 1973, Ser. No. 358,275

Int. Cl. C22c *17/00*

U.S. Cl. 75—178 AM **4 Claims**

1. Zinc base alloys having improved mechanical properties consisting essentially of 20 to 24 percent by weight of aluminum, 0.3 to 10 percent by weight of copper, 0.01 to 0.1 percent by weight of magnesium, 0.005 to 0.3 percent by weight of at least one of the metals calcium, lithium and sodium, and the balance zinc.

3,850,623
METHOD FOR REDUCING URANIUM TETRAFLUORIDE TO METALLIC URANIUM

Otto P. Sheller, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Jan. 19, 1961, Ser. No. 83,853

Int. Cl. C22b *61/04*

U.S. Cl. 75—84.1 R **7 Claims**

1. The method of preparing metallic uranium from UF_4 which comprises heating a reaction mixture comprising UF_4, calcium in excess of the stoichiometric amount required to reduce said UF_4, anignition agent and lithium until said mixture ignites, and separating the resulting metal from the resulting slag, said lithium being provided in said mixture in a proportion sufficient to produce a lithium fluoride content of approximately 15 to 30 mole percent in said slag, and said ignition agent being selected from the group consisting of iodine and a finely divided mixture of magnesium with an alkali metal iodate and an alkali metal peroxide.

3,850,624
METHOD OF MAKING SUPERALLOYS

Gerald W. Hulit, Ridgewood, and John C. Subelka, Dover, both of N.J., assignors to Howmet Corporation, Dover, N.J.

Filed Mar. 6, 1973, Ser. No. 338,435

Int. Cl. C22c *19/00*

U.S. Cl. 75—171 **6 Claims**

1. In the vacuum casting of nickel-base superalloys consisting essentially (by weight of the alloy) of 7 to 20 percent chromium, 0.5 to 7 percent aluminum, 0.5 to 6 percent titanium, 0.02 to 0.25 percent carbon, up to 0.2 percent zirconium, up to 0.02 percent boron, up to 3 percent hafnium, and at least 10 percent of an amount of a matrix-strengthening element selected from the group consisting of 0 to 20 percent cobalt, 0 to 10 percent molybdenum, 0–13 percent tungsten, 0–6 percent tantalum, 0–5 percent columbium and 0 to 1.5 percent vanadium, and the balance nickel, the method of minimizing tendency of the alloy in the molten state to wet and upon solidification to adhere to a refractory vessel in which it is contained under vacuum in the molten condition which comprises introducing into a substantially oxygen-free and sulfur-free melt of such alloy an amount of magnesium sufficient to incorporate in cooled and solidified shapes cast therefrom a residual retained amount of elemental magnesium in the range from 0.001 to 0.02 percent by weight of the alloy, and casting and solidifying the magnesium-containing melt in a mold.

3,850,625
ZINC ALLOY CONTAINING NITROGEN

Anguel Tonchev Balevski; Ivan Dimov Nikolov; Vasilka Petrova Dimova, and Stoyan Nedkov Zadgorski, all of Sofia, Bulgaria, assignors to Institute Po Metaloznanie I Techno Logia Na Metalite, Sofia, Bulgaria

Filed Oct. 16, 1973, Ser. No. 406,848

Claims priority, application Bulgaria, Oct. 16, 1972, 21636

Int. Cl. C22c *17/00*

U.S. Cl. 75—178 R **1 Claim**

1. A zinc base alloy, consisting essentially of (all percentages are by weight):

iron	0.05 - 0.5%
nitrogen	0.0005 - 0.5%
lead	an effective amount up to 0.015%
copper	an effective amount up to 0.007%
cadmium	an effective amount up to 0.015%
zinc	the remainder

3,850,626
IMAGING MEMBER AND METHOD

Ray H. Luebbe, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 26, 1973, Ser. No. 335,982

Int. Cl. G03g *5/00*

U.S. Cl. 96—1 M **18 Claims**

1. An imaging method which comprises the steps of:

a. providing an imaging member comprising an electret having coated thereon an electrically photosensitive imaging layer said layer being structurally fracturable in response to the combined effects of an applied electric field and exposure to electromagnetic radiation to which it is sensitive and residing on said imaging layer a receiver sheet;

b. providing a first conductive surface in contact with said electret and a second conductive surface in contact with said receiver sheet and electrically interconnecting said surfaces whereby an electric field is established across said member;

c. exposing said imaging layer to electromagnetic radiation to which it is sensitive;

d. separating said member while under said field whereby said imaging layer fractures in imagewise configuration providing a positive image on one of said electret and receiver and a negative image on the other.

3,850,627
ELECTROPHORETIC IMAGING METHOD

John B. Wells, Rochester; Paul C. Swanton, Webster; John W. Weigl, West Webster, and Edward Forest, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 104,389, Jan. 6, 1971, abandoned. This application Sept. 20, 1972, Ser. No. 290,618

Int. Cl. G03g *13/22*

U.S. Cl. 96—1.3 **18 Claims**

1. A method of imaging which comprises the steps of:

a. providing a layer of a suspension of finely divided particles in an insulating carrier liquid on the surface of a first electrode said first electrode comprising a photoconductive layer having a thickness of up to about 5 microns;

b. applying an electrical field across said suspension until at least a portion of said particles in said suspension migrate to said first electrode to form a relatively uniform particulate layer thereon;

c. exposing said photoconductive layer to a pattern of electromagnetic radiation to which said photoconductive layer is sensitive, and simultaneously;

d. applying an electrical field between said first electrode and a second electrode having an electrically insulating surface in contact with said suspension until at least a portion of said particles on said first electrode exchange charge with said first electrode in areas corresponding to illuminated areas of said photoconductive layer and migrate away from said first electrode to form an image on said second electrode.

3,850,628
ELECTROSTATIC MODULATOR FOR CONTROLLING FLOW OF CHARGED PARTICLES

Gerald L. Pressman, San Jose, Calif., assignor to Electroprint, Inc., Cupertino, Calif.

Continuation of Ser. No. 85,070, Oct. 29, 1970, Pat. No. 3,694,200. This application Sept. 22, 1972, Ser. No. 291,487

Int. Cl. G03g *5/04*

U.S. Cl. 96—1.5 **7 Claims**

1. A method for modulating a flow of ions using an apertured screen having all its surfaces formed of an insulative material formed to a predetermined thickness on the first face of the screen greater than on the second face comprising:

establishing like charges over the entire surface of said screen and distributing said charges to provide a greater surface potential on the first face than on the second thereby providing a uniform charge inequality between the faces of the screen with the electric fields of substantially uinform magnitude and orientation extending within the screen apertures between the first and second faces;

selectively dissipating the distributed charges over the first face of the screen in accordance with a pattern to be reproduced thereby selectively reducing, cancelling and reversing electric fields extending within the apertures;

and directing the flow of ions through the screen apertures for selectively enhancing, passing and blocking the flow of particles in accordance with the pattern.

3,850,629
PHOTOSENSITIVE MATERIALS IN ELECTROPHOTOGRAPHY

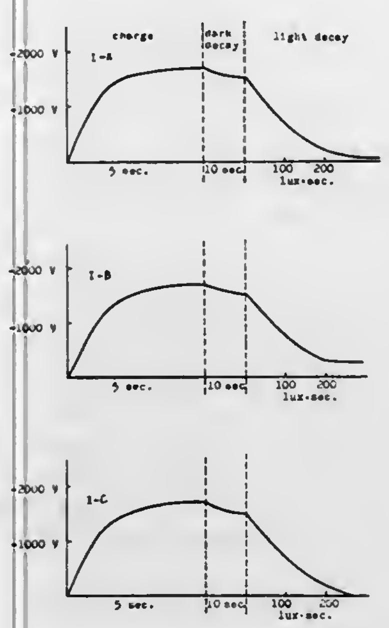
Shinichi Ogo, and Yoshiki Hayashi, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 3, 1972, Ser. No. 294,591

Claims priority, application Japan, Oct. 6, 1971, 46-79053

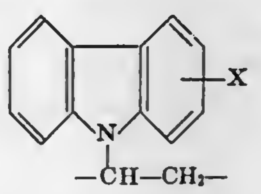
Int. Cl. G03g *5/04*, *7/00*

U.S. Cl. 96—1.5 **6 Claims**



1. A photosensitive material for use in a layer of an electrophotographic plate comprising:

a. a photoconductive insulating polyvinyl carbazole having a recurring unit of the formula:



wherein X is hydrogen, halogen, nitro, alkyl, aryl, alkyl aryl, amino or alkylamino;

b. an isocyanate present in at least 5 but less than 30 parts by weight per 100 parts by weight of said polyvinyl carbazole and

c. an additive selected from the group consisting of plasticizers, binders or both.

3,850,630
XEROGRAPHIC PLATE CONTAINING PHOTOINJECTION INDIGOLD PIGMENTS

Paul J. Regensburger, Webster, and James J. Jakubowski, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 94,068, Dec. 1, 1970, , which is a continuation-in-part of Ser. No. 14,466, Feb. 26, 1970, abandoned. This application Dec. 18, 1972, Ser. No. 315,960

Int. Cl. G03g *5/00*

U.S. Cl. 96—1.5 **28 Claims**

1. An electrophotographic plate having a photoreceptor binder layer consisting essentially of photosensitive particles dispersed in an active transport binder in an unoriented fashion in an amount of from about 0.1 to 5 percent by volume of said binder, said binder and particles being compatible so as to support efficient photogenerated charge injection from said photosensitive particles, said photosensitive particles comprising a pigment being selected from the class of indigoid pigments, and said active transport binder consisting essentially of a material selected from the group consisting of electron transport and hole transport materials, said binder material being capable of supporting the injection and transport of photogenerated charges from said photosensitive particles through said binder material and being substantially transparent in the wavelength region of from about 4800 to 6800 Angstrom Units.

3,850,631
PHOTOCONDUCTIVE ELEMENT WITH A POLYVINYLIDENE FLUORIDE BINDER

Yasuo Tamai, Tokyo, Japan, assignor to Rank Xerox, Ltd., London, England

Filed Apr. 24, 1973, Ser. No. 354,058

Int. Cl. G03g *5/04*

U.S. Cl. 96—1.5 **7 Claims**

1. A method of providing improved electrophotographic plates comprising providing an electroconductive base, coating a mixture comprising polyvinylidene fluoride and a photoconductive powder thereover to form an electrophotographic member, said polyvinylidene fluoride having a molecular weight range of between 50,000 and 1,000,000 and said polyvinylidene fluoride and photoconductive powder being present in a ratio of photoconductive powder to polyvinylidene fluoride of from 2:1 to 6:1, drying said member prior to heat treating, heat treating said member at a temperature of from 190°C to 320°C for from 5 minutes to 2 hours, allowing said member to cool, and polishing said member.

3,850,632
ELECTROPHOTOGRAPHIC PHOTOSENSITIVE PLATE
Masahiro Hukase; Makoto Tomono, and Sigero Inowa, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed July 26, 1972, Ser. No. 275,212
Claims priority, application Japan, July 26, 1971, 46-55877
Int. Cl. G03g *5/00, 5/02*
U.S. Cl. 96—1.8 **6 Claims**

5. An electrophotographic photosensitive plate which comprises, on a support of an inorganic material selected from the group consisting of aluminum, zinc, brass, copper, and electroconductive glass, a photoconductive layer made of a substance selected from the group consisting of selenium, selenium-tellurium, zinc oxide, lead oxide and cadmium sulfide and a protective polymer coating layer coated on the opposite surface of said photoconductive layer, said protective coating having a thickness not greater than one micron and comprising a polyvinyl butyral having a butyralation degree of 57 to 65 mole percent and a cellulose derivative compatible with said polyvinyl butyral, said polyvinyl butyral being present in said coating in an amount varying from 50 to 90 percent, by weight, and said cellulose derivative being present in said coating in an amount ranging from 10 to 50 percent, by weight, said protective polymer coating layer having a volume resistivity no greater than 10^{15} ohm - cm.

3,850,633
PROCESS FOR THE PRODUCTION OF HOLOGRAMS
Roland Moraw, Naurod; Gunther Schadlich, and Renate Schadlich, both of Wiesbaden, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
Filed May 19, 1972, Ser. No. 255,136
Claims priority, application Germany, May 21, 1971, 2125110
Int. Cl. G03c *5/04, 5/18*
U.S. Cl. 96—27 H **16 Claims**

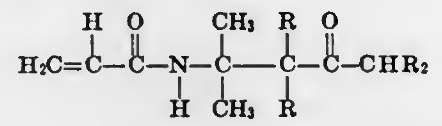
1. A process for the production of holograms wherein a phase hologram of an image is recorded, which process comprises exposing a transparent light-sensitive reproduction material, having a light-sensitive layer on a transparent support, to an object beam and a reference beam of actinic coherent light whereby a phase hologram of the object is produced, said light-sensitive layer consisting essentially of a light-sensitive compound selected from the group consisting of an aromatic diazonium compound, a quinone diazide, and an aromatic nitrone,

whereupon a visible image is immediately reconstructible from the obtained hologram by passing non-actinic coherent light through the exposed transparent light-sensitive reproduction material,

and then recording at least one further hologram onto the same material by means of actinic light, either on the same area by varying the spatial frequency or by varying the plane of the incident beams, or on another area of said material, whereupon the images from the different holograms are independently reconstructible.

3,850,634
METHOD OF FORMING A PHOTORESIST WITH ACRYLAMIDE PHOTOPOLYMERS
Fred W. Steele, and Joseph L. Sannella, both of Muncie, Ind., assignors to Ball Corporation, Muncie, Ind.
Filed July 19, 1973, Ser. No. 380,789
Int. Cl. G03c *1/70*
U.S. Cl. 96—35.1 **5 Claims**

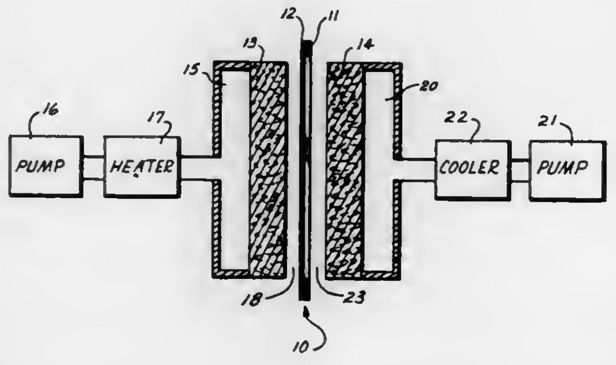
1. A method of forming a photoresist comprising forming on a substrate a coating comprising an acrylamide selected from the group consisting of N-3-oxohydrocarbon-substituted acrylamide having the general formula:



$$H_2C=C(H)-C(=O)-N(H)-C(CH_3)(CH_3)-C(R)(R)-C(=O)-CHR_2$$

wherein R is hydrogen, methylol, or a lower alkyl radical, and a partial condensate of said N-3-oxohydrocarbon-substituted acrylamide, a solvent comprising a mixture of ethylene glocol monomethyl ether acetate and methylene chloride, and a photoinitator, evaporating the solvent therefrom to leave a dry film upon said surface, exposing the film to ultraviolet light to effect crosslinking in the area of exposure, and developing the film to remove the non-exposed portions therefrom to form the photoresist.

3,850,635
METHOD AND APPARATUS FOR DEVELOPING HEAT PROCESSABLE PHOTOGRAPHIC FILM
Minard A. Leavitt, Sepulveda, Calif., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.
Filed Aug. 3, 1972, Ser. No. 277,665
Int. Cl. G03c *5/24, 5/30*
U.S. Cl. 96—48 HD **9 Claims**



1. A method for developing a heat processable photosensitive material the rate of processing of which is directly related to the temperature of the material, the photosensitive material having first and second approximately parallel surfaces, selected portions of the first surface having been exposed to light, the method comprising the steps of:

supplying heat to the first surface of the material at a sufficient rate to maintain the first surface at a high temperature where the material is processed at a rapid rate;

removing heat from the second surface of the material at a sufficient rate to maintain the second surface of the material at a lower temperature than the first surface where the material is processed at a lower rate than the first surface or a negligible rate; and

terminating the supply of heat to the first surface after the first surface is processed to completion but before the second surface is processed to completion.

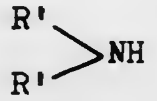
3,850,636
TREATMENT OF SILVER HALIDE PHOTOGRAPHIC MATERIAL
Isao Shimamura; Kiyoshi Imai; Jyunya Nakajima, and Haruhiko Iwano, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Sept. 24, 1973, Ser. No. 399,897
Claims priority, application Japan, Sept. 26, 1972, 47-96466
Int. Cl. G03c *5/26*
U.S. Cl. 96—50 R **7 Claims**

1. In a method for the development of an exposed silver halide photographic material including a prehardening treatment with an aldehyde hardener prior to developing, the

improvement which comprises treating said silver halide photographic material between said prehardening and said developing with a bath containing a compound represented by the following general formula (I)

$$R\text{-}NH_2 \qquad (I)$$

in which R represents $-SO_3M$, $-SO_2NH_2$, $-CH_2COOM$ or $-C(CH_2OH)_3$ and M represents an atom or group capable of imparting water solubility, or the following general formula (II)



(II)

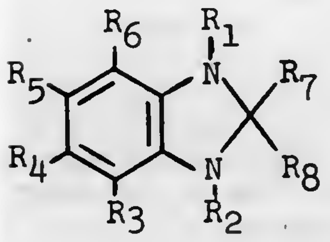
p in which R′ represents $-CH_2COOM$ or $-CH_2CH_2OH$ and M has the same meaning as described above.

3,850,637
PROCESSES FOR OBTAINING POSITIVE IMAGES IN SILVER HALIDE COMPOSITIONS
Francis John Evans, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Division of Ser. No. 123,005, March 10, 1971, Pat. No. 3,761,276. This application Jan. 18, 1973, Ser. No. 324,610
Int. Cl. G03c *5/24*
U.S. Cl. 96—64 **8 Claims**

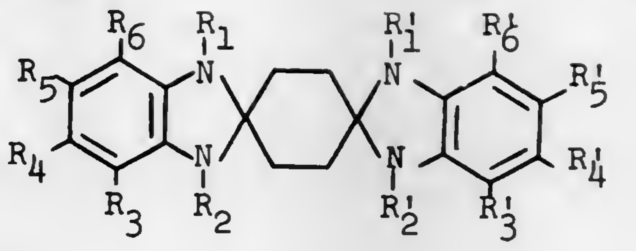
1. A process for producing a positive image in a silver halide photographic element comprising (1) imagewise-exposing a photographic element comprising a support and coated thereon at least one layer of silver halide emulsion which comprises silver halide grains which have metal dopants occluded therein and which have been chemically sensitized on the surface thereof (a) to a level which will provide a density of less than 0.4 when developed in Kodak Developer DK–50 for 5 minutes at 27°C after imagewise exposure when the emulsion is coated at a coverage of between about 300 to about 400 mg of silver per square foot and (b) to at least a level which would provide a density of 0.5 in an undoped silver halide emulsion of the same grain size and halide composition when coated, exposed and developed in like manner, and then (2) either (a) developing in a silver halide surface developer in the presence of a fogging agent or (b) light-flashing the exposed silver halide emulsion during development in a silver halide surface developer.

3,850,638
BENZIMIDAZOLE NUCLEATING AGENTS
Roland George Willis, and William Robert Schleigh, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 2, 1973, Ser. No. 347,291
Int. Cl. G03c *1/48, 5/24, 5/30, 1/28*
U.S. Cl. 96—64 **41 Claims**

1. In a process for developing internal latent image silver halide emulsions to produce direct positive photographs, the improvement which comprises carrying out the development with a surface silver halide developer in contact with a nucleating amount of a benzimidazole of the structure:



or the structure:

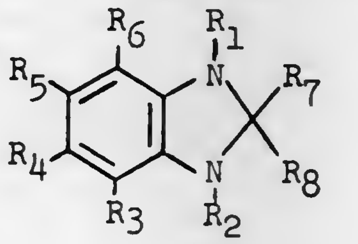


wherein
R_1, R_2, R'_1 and R'_2 are independently selected from the group consisting of hydrogen, alkyl, benzyl, phenyl, halogen or alkyl substituted benzyl, halogen, alkoxy or alkyl substituted phenyl, acetyl, halogen or phenyl substituted acetyl, and amino; R_3, R_4, R_5, R_6, R'_3, R'_4, R'_5 and R'_6 6′ are independently selected from the group consisting of hydrogen, alkyl, alkoxy, nitro, cyano, nitrile amino, amino, benzyl, phenyl, halogen or alkyl substituted benzyl, halogen, alkyl or alkoxy substituted phenyl, halogen and ester;

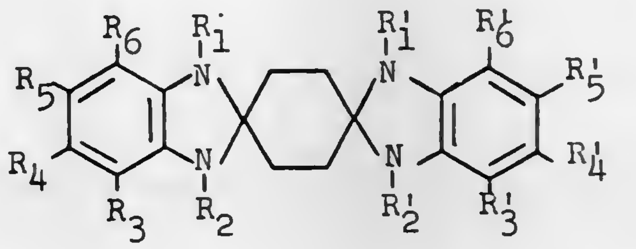
R_7 and R_8 are selected from the group consisting of hydrogen, alkyl, benzyl, phenyl, halogen or alkyl substituted benzyl, halogen, alkyl or alkoxy substituted phenyl, amino, alkoxy, cyano, halogen and ester, or are taken together to represent the carbon atoms necessary to complete a 5- or 6-membered cycloalkyl ring;

at least one of the group R_1 and R_7, R_2 and R_8, R_1 and R_2, R'_1 and R'_2 can be taken together to represent the atoms necessary to complete at least one heterocyclic ring.

16. A photographic element comprising a support having deposited thereon at least one layer comprising a silver halide internal-image photographic emulsion and at least one layer in water-permeable association with said silver halide layer comprising a nucleating amount of benzimidazole of the structure:



or the structure:



wherein

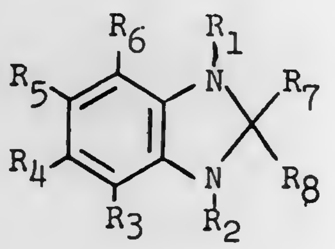
R_1, R_2, R'_1 and R'_2 are independently selected from the group consisting of hydrogen, alkyl, benzyl, phenyl, halogen or alkyl substituted benzyl, halogen, alkoxy or alkyl substituted phenyl, acetyl, halogen or phenyl substituted acetyl, and amino;

R_3, R_4, R_5, R_6, R'_3, R'_4, R'_5 and R'_6 are independently selected from the group consisting of hydrogen, alkyl, alkoxy, nitro, cyano, nitrile amino, amino, benzyl, phenyl, halogen or alkyl substituted benzyl, halogen, alkyl or alkoxy substituted phenyl, halogen and ester;

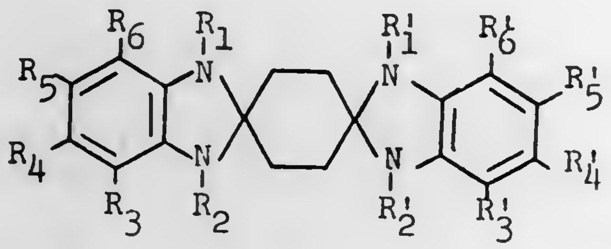
R_7 and R_8 are selected from the group consisting of hydrogen, alkyl, benzyl, phenyl, halogen or alkyl substituted benzyl, halogen, alkyl or alkoxy substituted phenyl, amino, alkoxy, cyano, halogen and ester, or are taken together to represent the carbon atoms necessary to complete a 5- or 6-membered cycloalkyl ring;

at least one of the groups R_1 and R_7, R_2 and R_8, R_1 and R_2, R'_1 and R'_2 can be taken together to represent the atoms necessary to complete at least one heterocyclic ring.

29. A photographic silver halide surface developer composition containing a nucleating amount of a benzimidazole of the structure:



or the structure:



wherein

R_1, R_2, R'_1 and R'_2 are independently selected from the group consisting of hydrogen, alkyl, benzyl, phenyl, halogen or alkyl substituted benzyl, halogen, alkyl or alkoxy substituted phenyl, acetyl, halogen or alkyl substituted acetyl, and amino;

R_3, R_4, R_5, R_6, R'_3, R'_4, R'_5 and R'_6 are independently selected from the group consisting of hydrogen, alkyl, alkoxy, nitro, cyano, nitrile amino, amino, benzyl, phenyl, halogen or alkyl substituted benzyl, halogen, alkyl or alkoxy substituted phenyl, halogen and ester;

R_7 and R_8 are selected from the group consisting of hydrogen, alkyl, benzyl, phenyl, halogen or alkyl substituted benzyl, halogen, alkyl or alkoxy substituted phenyl, amino, alkoxy, cyano, halogen and ester, or are taken together to represent the carbon atoms necessary to complete a 5- or 6-membered cycloalkyl ring;

at least one of the groups R_1 and R_7, R_2 and R_8, R_1 and R_2, R'_1 and R'_2 can be taken together to represent the atoms necessary to complete at least one heterocyclic ring.

3,850,639
HYDROPHILIC COLLOID SILVER HALIDE EMULSION HARDENED WITH A BIS(VINYL-SULFONYLMETHYL) ETHER AND AN ACRYLIC COMPOUND

Dale S. Dallon, and Mary K. De Seyn, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 7, 1973, Ser. No. 357,975
Int. Cl. G03c *1/30*
U.S. Cl. 96—67 **8 Claims**

1. In a photographic element comprising a support and at least one layer comprising photosensitive silver halide and at least one layer comprising a reaction product of

i. at least one hardenable hydrophilic colloid, and

ii. a hardener composition in a concentration sufficient to increase the melting point of said hydrophilic colloid at least about 5°C;

the improvement which comprises using as a hardener composition a combination of

a. bis(vinylsulfonylmethyl)ether and

b. an acrylic hardener selected from the group consisting of diacrylamide, N-methacryloylacrylamide and N,N'-diacryloylurea;

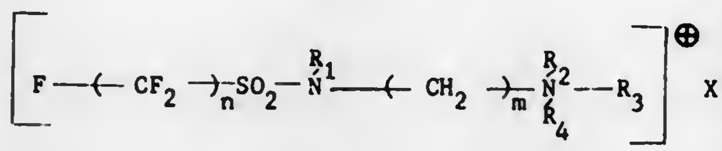
the weight ratio of (a) to (b) in said hardener composition being from about 5:1 to about 1:5.

3,850,640
COATING QUALITY AND REDUCING STATIC SIMULTANEOUSLY

John M. Babbitt, and James F. Houle, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of Ser. No. 230,450, Feb. 29, 1972, Pat. No. 3,775,126. This application July 25, 1973, Ser. No. 382,618
Int. Cl. G03c *1/38, 1/90*
U.S. Cl. 96—67 **44 Claims**

1. An element comprising a support, a radiation sensitive material, at least one layer (i) comprising a hydrophilic colloid and at least one anionic surfactant, and contiguous to said layer (i) a layer (ii) containing a mixture of at least one cationic surfactant and at least one nonionic surfactant, said layer (ii) being farther from said support than is said layer (i); said mixture comprising

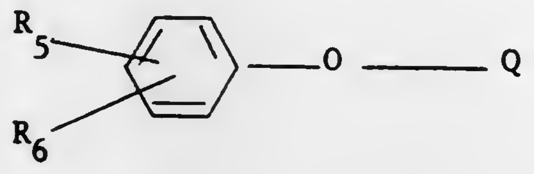
A. at least one cationic surfactant having the formula (I):



$$\left[F-\left(CF_2\right)_n-SO_2-\overset{R_1}{N}-\left(CH_2\right)_m-\underset{R_4}{\overset{R_2}{N}}-R_3\right]^{\oplus}X^{\ominus}$$

wherein *n* is an integer of from 1 to 9, *m* is an integer of from 1 to 6, R_1 is hydrogen or a lower alkyl group of from 1 to 4 carbon atoms, R_2, R_3 and R_4 are independently selected alkyl groups of from 1 to 6 carbon atoms, and X^- is an anionic moiety; and

B. at least one non-ionic surfactant having the formula (II):



wherein R_5 is an alkyl group of from 6 to 18 carbon atoms, R_6 is hydrogen or an alkyl group of from 1 to 18 carbon atoms and Q is a polyether group comprising from about 3 to 15 units of hydroxypropylene oxide, said polyether group comprising n-propylene and isopropylene moieties; the weight ratio of said cationic surfactant to said nonionic surfactant in said mixture being from about 2:1 to about 1:75, respectively.

3,850,641
ANTISTATIC LIGHT-SENSITIVE PHOTOGRAPHIC MATERIAL

Koichi Horigome; Kazuyoshi Aoki; Hisashi Yamaguchi; Hiroshi Horiuchi; Tsuneo Wada, all of Tokyo, and Hiroyuki Inokuma, Shiroyama, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed July 13, 1972, Ser. No. 271,535
Claims priority, application Japan, July 15, 1971, 46-52095
Int. Cl. G03c *1/82, 1/04, 1/76*
U.S. Cl. 96—87 A **8 Claims**

1. A light-sensitive silver halide photographic material comprising a film support and a light-sensitive silver halide emulsion layer on one side of the film support, an ethylene oxide addition polymer of a phenyl-formalin condensate, in which the molar proportion of ethylene oxide is not more than 30 moles per structural unit of the phenol-formalin condensate, said addition polymer being present in an outer layer on the other side of the film support or in an outer layer on the light-sensitive layer, or in the light-sensitive layer at least at the outer surface thereof.

3,850,642
MULTILAYER RADIATION SENSITIVE ELEMENT HAVING CONTROLLED TRIBOELECTRIC CHARGING CHARACTERISTICS

William J. Bailey, Jr.; James F. Houle, and Gilden R. Van Norman, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation of Ser. No. 163,450, July 16, 1971, abandoned. This application Jan. 21, 1974, Ser. No. 435,359
Int. Cl. G03c *1/78*
U.S. Cl. 96—87 A **49 Claims**

1. A multilayer radiation sensitive element of the type subject to triboelectric charging upon impact and dissociation with another usually dissimilar material said element having a surface thereof modified against generation of triboelectrical charges sufficient in electrical potential to cause static discharges, said element comprising a base and at least one radiation sensitive layer and including at at least one surface thereof at least one charge control agent in an amount sufficient to limit the triboelectric charging of said surface to an electrical charge of from about −10 to about +10 esu/cm² as determined by impact electrification of 20 psi impact pressure at 5 percent relative humidity and 70°F. against a stainless steel or anodized aluminum impacting surface; said charge control agent being selected from the group consisting of:

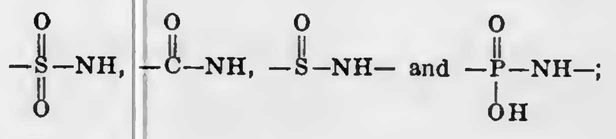
A. surfactant materials having the generic structure:

$$[A-Z(CH_2)_n-D]+X^-$$

wherein:

A is a member selected from the group consisting of hydrocarbon chains, partially fluorinated hydrocarbon chains, and fluorocarbon chains;

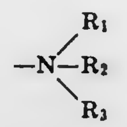
Z is a member selected from the group consisting of:



$$-\underset{\underset{O}{\|}}{\overset{\overset{O}{\|}}{S}}-NH,\ -\overset{\overset{O}{\|}}{C}-NH,\ -\overset{\overset{O}{\|}}{S}-NH-\ \text{and}\ -\underset{\underset{OH}{|}}{\overset{\overset{O}{\|}}{P}}-NH-;$$

n is an integer ranging from 1 to 8,

D is



wherein R_1, R_2 and R_3 are selected from the group consisting of hydrogen, lower alkyl and aryl; and

X is an anion;

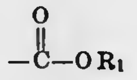
B. compounds of the following structural formula:

$$R-\overset{\frown}{\underset{\smile}{Z}}-X-Y-M$$

wherein:

Z represents the atoms necessary to constitute a member selected from the group consisting of aromatic hydrocarbon rings and alicyclic structures;

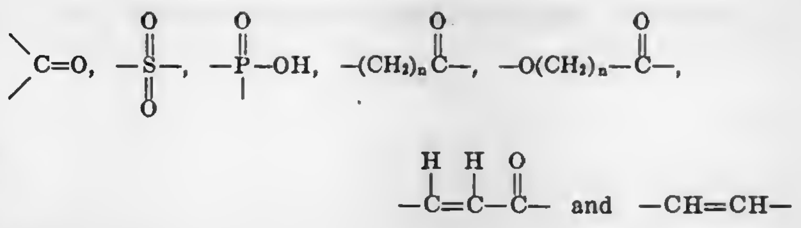
R is selected from the group consisting of single and multiple substitutions of members selected from the group consisting of halogen, nitro, nitroso, hydroxyl, carboxy, cyano, alkoxy, aryloxy, substituted alkoxy, and



$$-\overset{\overset{O}{\|}}{C}-OR_1$$

wherein R_1 is selected from the group consisting of alkyl, aryl, substituted alkyl or substituted aryl;

X is a member selected from the group consisting of:



wherein

n=an integer from 1 to 10;

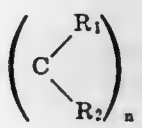
Y is a member selected from the group consisting of (1) O when M is a member selected from the group consisting of hydrogen, ammonium, metallic cations, and amine salt residues; (2) NH when M is H; and (3) C=O when M is selected from the group consisting of phenyl and substituted phenyl;

C. multifunctional carboxylic acids of the general formula:

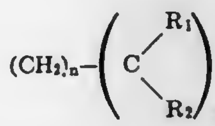
$$HOOC-R-COOH$$

wherein R is selected from the group consisting of:

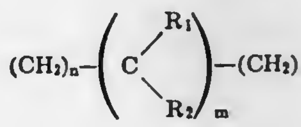
(1)



(2)

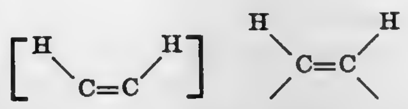


(3)



and

(4)



wherein if R=(1) or (2) and R_1 is hydrogen, R_2 is selected from the group consisting of halogen, nitro, aryl, substituted aryl, hydroxyl;

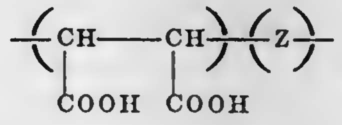
wherein if R=(3).c8 R_1 and R_2 are selected from the group consisting of hydrogen, halogen, nitro, carboxyl, aryl, substituted aryl, alkyl and substituted alkyl;

n and *m* are integers;

and wherein R_1 is H, R_2 is a member selected from the group consisting of hydroxyl, hydrogen, halogen, nitro, carboxy, aryl, substituted aryl, alkyl and substituted alkyl;

D. polymeric compounds having structural formulas selected from the group consisting of:

I.

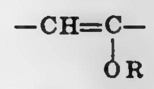


$$-\!\left(\underset{\underset{COOH}{|}}{CH}-\underset{\underset{COOH}{|}}{CH}\right)\!-\!\left(Z\right)\!-$$

wherein Z is selected from the group consisting of:

a. $-CH_2-CH_2^-$;

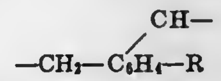
(b)



$$-CH=\underset{\underset{OR}{|}}{C}-$$

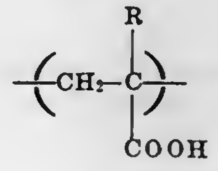
wherein R is lower alkyl; and

(c)



wherein R is selected from the group consisting of lower alkyl, halogen, hydroxyl and nitro groups;

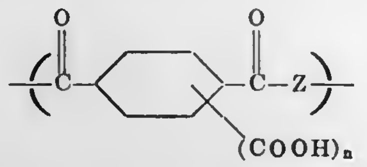
II.



$$-\!\left(CH_2-\underset{\underset{COOH}{|}}{\overset{\overset{R}{|}}{C}}\right)\!-$$

wherein R is selected from the group consisting of hydrogen and methyl;

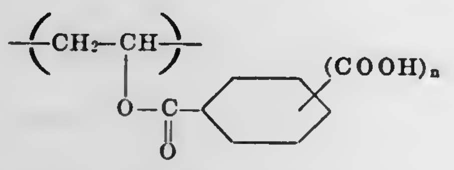
III.



wherein Z represents the atoms necessary to complete a memeber selected from the group consisting of:

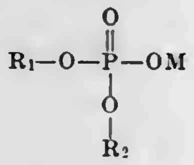
(a) a polyester; (b) a polyamide and (c) a polycarbonate and *n* is an integer from 1 to 4;

IV.



wherein *n* is an integer from 1 to 4; and

- V. polymers containing both hydroxyl and aromatic carboxylic acid groups;
- E. compounds of the formula



$$R_1-O-\overset{\overset{\displaystyle O}{\|}}{P}-OM \quad (\text{with } -O-R_2 \text{ on } P)$$

wherein 1. R_1 is $CH_3-(CH_2)_n$ and *n* is an integer ranging from about 1 to about 19, then R_2 is selected from the group consisting of H, R_1 and R_1 with a different value for *n*;

2. R_1 and R_2 are selected from the group consisting of unsaturated hydrocarbon, aryl and substituted aryl residues;
3. R_1 represents the atoms of a polymeric structure in which case R_2 is selected from the group consisting of H and as defined in (1) and (2) above; and

M is selected from the group consisting of H, NH_4 and alkali metal cations; and

F. mixtures thereof.

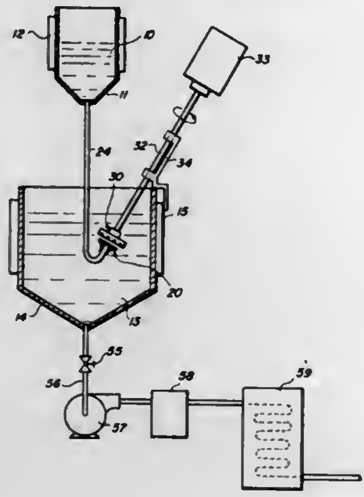
3,850,643
PROCESS FOR MAKING COUPLER DISPERSIONS

Benjamin A. Johnson; Stephen L. Royal, and Robert A. Ackerman, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 166,897, July 28, 1971, Pat. No. 3,773,302. This application May 4, 1973, Ser. No. 357,444

Int. Cl. G03c *1/40*

U.S. Cl. 96—100 **6 Claims**



1. A method of preparing a generally uniform and crystal-free coupler dispersion having a particle size of 1 micron or less which comprises the steps of:

introducing a flow of coupler/coupler solvent solution into an open-end gap formed by the facing surfaces of a rotatable plate member and a fixed member having a central opening and arranged in an aqueous gelatin solution, the facing surface of at least one of said members being provided with recesses forming a circuitous path from the center to the peripheral edge thereof; and

maintaining a flow of said aqueous gelatin solution through said opening;

whereby the flows of said coupler/coupler solvent solution and of said aqueous gelatin solution are thoroughly mixed during movement through said gap and said path to the open-end of said gap for expulsion into said aqueous gelatin solution.

3,850,644
SILVER HALIDE GRAINS PRECIPITATED IN THE PRESENCE OF A PHOSPHORIC ACID AMIDE SENSITIZER

Wilhelm Saleck, Schildgen; Wolfgang Himmelmann, Opladen; Gerhard Balle, and Karl-Erwin Schnalke, both of Koeln, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

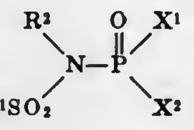
Filed Nov. 29, 1972, Ser. No. 310,635

Claims priority, application Germany, Dec. 4, 1971, 2160207

Int. Cl. G03c *1/28*

U.S. Cl. 96—107 **2 Claims**

1. A process for the preparation of photographic silver halide emulsions comprising the steps of precipitating the silver halide in a gelatin emulsion, physically ripening, flocculating and solidifying the precipitated silver halide emulsion, and then chemically ripening the emulsion, including adding a sensitizer from the group consisting of noble metal salts and sulfur compounds after the solidifying step wherein the improvement comprises in the preparation of the emulsion adding to the gelatin emulsion during precipitation of silver halide a phosphoric acid amide to sensitize the emulsion said amide is of the following formula:



in which

R^1 is (1) a saturated or olefinically unsaturated alkyl group, (2) phenyl, (3) cyclopentyl or cyclohexyl;

R^2 represents (1) hydrogen, (2) a saturated or olefinically unsaturated alkyl group, (3) phenyl or (4) cyclopentyl or cyclohexyl;

X^1 stands for halogen or unsubstituted hydroxyl;

X^2 represents halogen, unsubstituted hydroxyl or an unsubstituted amino group, said amide being added in an amount in the range of 150 mg – 8 g per mol of silver halide and then chemically ripening the emulsion in the presence of said phosphoric acid amide.

3,850,645
NON-POLYMERIC PEPTIZERS FOR SILVER HALIDE SUSPENSIONS

Arthur Herman Herz, and David Frank O'Brien, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

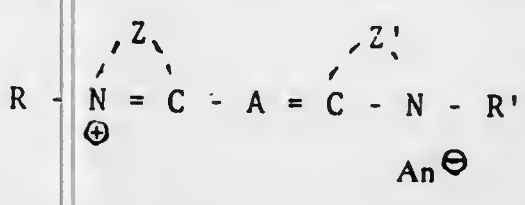
Filed Aug. 14, 1973, Ser. No. 388,316

Int. Cl. G03c *1/24, 1/00*

U.S. Cl. 96—114.7 **16 Claims**

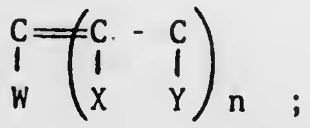
1. A process for preparing dispersions of silver halides comprising:

- A. reacting a water-soluble silver salt with a water-soluble halide in aqueous solution in the presence of gelatin whereby a stabel gelatino-silver halide photographic emulsion is formed;
- B. adding to said silver halide emulsion at least one dye of the structure



wherein:

A is nitrogen or



n is 0, 1 or 2;

An⁻ is an acid anion;

W, X and Y are independently selected from the group consisting of hydrogen, alkyl radicals, aryl radicals, cycloalkyl radicals and alkaryl radicals; and R and R′ are independently selected from the group consisting of alkyl radicals, aryl radicals, cycloalkyl radicals and alkaryl radicals; and

Z and Z′ each represents the non-metallic atoms necessary to complete a heterocyclic nucleus containing five or six atoms in the heterocyclic ring;

- C. hydrolyzing said gelatin in the presence of said dye by means of at least one proteolytic enzyme;
- D. separating the silver halide and said dye adsorbed thereto, and
- E. redispersing said silver halide.

3,850,646
LIGHT SENSITIVE PHOTOGRAPHIC ELEMENT

Hans Max Wagner, 49 George Fifth Ave., and Wojciech Maria Przezdziecki, 4 Dover Court Gardens, both of Pinner, Middlesex, England

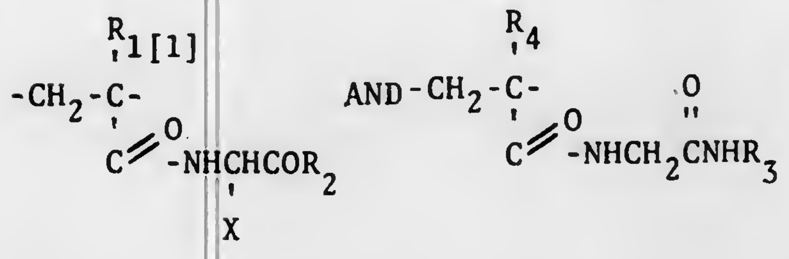
Filed Mar. 24, 1970, Ser. No. 20,467

Int. Cl. G03f *7/08*

U.S. Cl. 96—115 R **2 Claims**

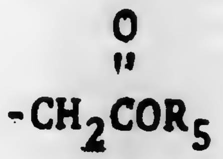
1. A photographic element comprising a support having coated thereon a light-sensitive layer comprising a polymer that is soluble in lower alkyl monohydric alcohols and a sensitizing amount of aryl azide having organic solvent solubility, such that in the layer, exposed azide-sensitized polymer is rendered insoluble in lower alkyl monohydric alcohols, said polymer being selected from the group consisting of copolymers comprising:

I. from 10 to 75 mole percent of at least one recurring acryloylpeptide unit having a formula selected from the group consisting of:



wherein:

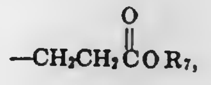
- A. R_1 is selected from the group consisting of: 1. a hydrogen atom, and 2. a methyl radical;
- B. R_2 is a lower alkyl radical;
- C. R_3 is selected from the group consisting of:
  1. an alkyl radical having from one to seven carbon atoms, and
  2. a radical having the formula



$$-CH_2\overset{\overset{\displaystyle O}{\|}}{C}OR_5$$

wherein R_5 is a lower alkyl radical;

- D. R_4 is selected from the group consisting of:
  1. a hydrogen atom, and
  2. a lower alkyl radical;
- E. X is selected from the group consisting of:
  1.

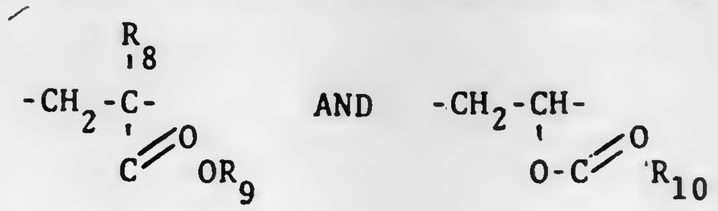


$$-CH_2CH_2\overset{\overset{\displaystyle O}{\|}}{C}OR_7,$$

wherein R_7 is a lower alkyl radical;

  2. a lower alkyl radical, and
  3. a hydrogen atom; and

II. from 25 to 90 mole percent of at least one recurring unit having a formula selected from the group consisting of:



- A. R_8 is selected from the group consisting of:
  1. a hydrogen atom, and
  2. a methyl radical; and
- B. R_9 and R_{10} are each a lower alkyl radical having 1 to 4 carbon atoms.

3,850,647
CERMET PROTECTIVE COATING

Vasanth Kumar Bhat, Fort Thomas, and Alan Richard Shapter, Cold Spring, both of Ky., assignors to The Ceramic Coating Company, Newport, Ky.

Filed Sept. 29, 1972, Ser. No. 293,673

Int. Cl. C09d *5/10*

U.S. Cl. 106—1 **5 Claims**

1. A cermet protective coating composition consisting essentially of 35–60 parts by weight of glass frit consisting of 25–35 weight percentage Na_2O, CaO and ZnO, 30–40 weight percentage $Al_2O_3$and B_2O_3, and 30–40 weight percentage SiO_2, and 40–65 parts by weight of metal powder consisting of 85–95 parts by weight of aluminum, 5–10 parts by weight of zinc, and 0–5 parts by weight of cadmium.

3,850,648
FLOWABLE HECTOGRAPHIC COMPOSITIONS

Guenther Riedel, Heidelberg, and Rudolf Waechter, Limburgerhof, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Nov. 14, 1972, Ser. No. 306,437

Claims priority, application Germany, Nov. 16, 1971, 2156762

Int. Cl. C09k *3/00;* **C09d** *11/06*

U.S. Cl. 106—14.5 **8 Claims**

1. A flowable hectographic composition consisting essentially of (a) a hectographic dye, (b) a wax and (c) as a viscosity stabilizer an alkoxylated fatty acid alkanolamide in a concentration of from 1 to 20% by weight of the total weight of the hectographic composition.

3,850,649
LATENT IMAGE PRINTING

Donald D. Buerkley, Inver Grove Heights Village, and Heinz E. Lange, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

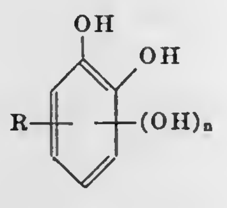
Filed Aug. 5, 1971, Ser. No. 169,524

Int. Cl. C09d *11/00*

U.S. Cl. 106—21 **12 Claims**

1. A quick set ink for providing printed, invisible entries on an absorbent offset grade paper-like sheet, said quick set ink comprising:

1. at least 10% by weight of a color-forming component consisting essentially of a solid particulate polyhydroxyaromatic iron-complexing color-forming reactant having the formula



wherein *n* is selected from 0 and 1, and R represents a radical selected from the group consisting of a monovalent aliphatic radical of greater than 4 carbon atoms, —CO—OR′, and —CO—R′, wherein R′ is a monovalent aliphatic radical of greater than 4 carbon atoms, the numerical average particle size of the particles of said color-forming reactant being within the range of about 0.5 to about 5 microns, and, as a vehicle for said particles,

2. at least 40% by weight of a color stable, two phase, quick set vehicle free of metallic driers having tack, viscosity, hydrophobicity, and pigment carrying capacity suitable for use in conventional wet lithographic offset printing, and
3. 0–3% by weight of wax; said quick set ink being hydrophobic and having a viscosity in the range of 300–3,400 poise at room temperature, the most volatile component in said quick set ink having a boiling point greater than 200°C.

3,850,650
PRODUCTION OF SILICATE FOAMS

Wulf Von Bonin; Ulrich Nehen, both of Leverkusen, and Ulrich Von Gizycki, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 26, 1972, Ser. No. 318,068

Claims priority, application Germany, Mar. 25, 1972, 2214609; Dec. 31, 1971, 2165912

Int. Cl. C04b *35/16*

U.S. Cl. 106—75 **8 Claims**

1. Process for the production of a foam having a silicate skeleton which comprises mixing in aqueous solution a water-soluble silicate, a hardener which liberates acid in water comprising at least one member selected from the group consisting of carboxylic acid anhydrides, carboxylic acid chlorides, chloroformic acid esters and sulfochlorides, and at least one foaming agent selected from the group consisting of alkanes, alkenes, halogen-substituted alkanes, halogen-substituted alkenes and dialkyl ethers, based on the mixture the silicate content being about 5 to 50 percent by weight, the content of the hardener between about 0.01 and 60 percent by weight and the content of the foaming agent between about 0.01 and 50 percent by weight, and bringing the mixture to a temperature above the boiling point of the foaming agent, whereby said mixture foams.

3,850,651
CEMENTING COMPOSITIONS AND CONCRETES AND MORTARS DERIVED THEREFROM

Frederic James Duncan, and Ronald George Chappell, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 20, 1973, Ser. No. 343,169

Claims priority, application Great Britain, Apr. 13, 1972, 17069/72

Int. Cl. C04b *7/02*

U.S. Cl. 106—90 **16 Claims**

1. A method of preparation of a concrete or mortar which comprises curing a cement composition comprising:

i. an inorganic cement; and

ii. an aqueous dispersion of a copolymer derived from (a) one or more alkyl acrylates and/or alkyl methacrylates having from 1 to 8 carbon atoms in the alkyl group and (b) an ethylenically-unsaturated carboxylic acid copolymerizable therewith,

the said curing being effected, after a period of initial setting, at an elevated temperature of at least 40°C.

3,850,652
MULTI-PURPOSE MEMBRANE

Kunitami Asaka, Tokyo, and Masanori Ishihara, Hiratsuka, both of Japan, assignors to Anne Company Ltd., Tokyo, Japan

Continuation of Ser. No. 98,207, Dec. 14, 1970, abandoned. This application June 21, 1973, Ser. No. 372,004

Int. Cl. C08b *21/24*

U.S. Cl. 106—197 R **6 Claims**

1. A multi-purpose membranous material having high flexibility and mechanical strength, being non-absorbable by other materials in contact therewith, capable o holding body fluids during use and readily dispersing when disposed of in water after use, said membranous material being formed at least in part of a hydroxyalkylated cellulose selected from the group consisting of compounds of the formula:

$$(C_6H_7O_2)_n \,.\, (R_1\ )_{n1} \times (R_2)_{n2} \times (R_3)_{n3},$$

where n is a number indicating the degree of polymerization and is defined by the equation $3n = n_1 + n_2 + n_3$; R_1 is the hydroxyethoxyl radical which has an affinity for water, R_2 is the methoxyl radical which has an affinity for organic solvents, but not for water, and R_3 for the hydroxy radical which has an affinity for water, the number of ethoxyl radicals in R_1 being one or two, and the degrees of substitution for R_1 and R_2 being 1.7—2.0 and 0.25—0.3, respectively.

3,850,653
METHOD FOR PROCESSING KAOLIN CLAY PIGMENT AND IMPROVED PRODUCT THEREOF

William E. Zentz, Jr., Iselin, N.J., assignor to Engelhard Minerals and Chemicals Corporation, Woodbridge, N.J.

Continuation-in-part of Ser. Nos. 116,219, Feb. 17, 1971, Pat. No. 3,725,100, and Ser. No. 263,560, June 16, 1972, abandoned, said Ser. No. 116,219, is a continuation-in-part of Ser. No. 813,277, April 3, 1969, abandoned, and Ser. No. 887,384, Dec. 22, 1969, abandoned, said Ser. No. 263,560, is a continuation-in-part of Ser. No. 116,219,. This application Jan. 16, 1973, Ser. No. 324,109The portion of the term of this patent subsequent to Apr. 3, 1990, has been disclaimed.

Int. Cl. C08h *17/06;* **C08k** *1/12*

U.S. Cl. 106—288 B **13 Claims**

1. In the wet processing of kaolin clay to produce a clay coating pigment wherein kaolin clay is provided in the form of an acidic flocculated aqueous pulp which is filtered to remove acidic pulp water and the filtered clay is washed to provide an acid clay filter cake amenable to deflocculation with a clay dispersant, the improvement, whereby the opacifying power of the clay is increased without adversely affecting the clay rheology, which improvement comprises mixing into said acidic flocculated pulp, before the pulp is filtered, a small amount of a colorless source of polyvalent metal cations and a small amount of a colorless source of borate ions, said sources being added in amounts insufficient tc neutralize or to deflocculate the pulp but being sufficient to improve the opacity of coatings pigmented with the clay.

3,850,654
ALPHA-2,9-DIFLUOROQUINACRIDONE

Edward E. Jaffe, Union, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 223,757, Feb. 4, 1972, Pat. No. 3,793,327. This application Oct. 18, 1973, Ser. No. 407,562

Int. Cl. C08h *17/14*

U.S. Cl. 106—288 Q **1 Claim**

1. A pigment having an average particle size of less than 0.2 micron and composed of the compound 2,9-difluoroquinacridone in a polymorphic form, designated as the α crystal form, which is characterized by an X-ray diffraction pattern exhibiting: lines of strong intensity with interplanar spacings of 5.90 A and 3.24 A; lines of intermediate intensity with interplanar spacings of 15.77 A, 6.46 A, 3.74 A; and lines of weak intensity with interplanar spacings of 7.96 A, 5.27 A, 4.25 A, 3.97 A, 3.52 A, and containing, on a weight basis, 1 to 20% of the aluminum salt of quinacridone disulfonic acid.

3,850,655
DRYING AND SUBSEQUENT REDISPERSION OF MATERIALS

Roger William Adams, Cornwall, England, assignor to English Clays Lovering Pochin & Company, Limited, Cornwall, England

Filed Jan. 19, 1973, Ser. No. 325,031

Claims priority, application Great Britain, Jan. 21, 1972, 3111/72

Int. Cl. C09c *1/02, 1/28*

U.S. Cl. 106—309 **12 Claims**

1. A method of preparing and drying fine particles comprising a slightly water-soluble carbonate so as to facilitate subsequent redispersion thereof, which method comprises forming an aqueous suspension which contains fine particles of the slightly water-soluble carbonate, from 0.01 percent to 0.5 percent by weight based on the weight of the slightly water-soluble carbonate of a water-soluble carbonate and at least 7.5 percent by weight, based on the weight of slightly water-soluble carbonate, of a fine particulate aluminosilicate material, of which at least 60 percent by weight consists of particles smaller than 2 microns equivalent spherical diameter, and subjecting the mixture thus obtained to a drying process.

3,850,656
TYPING ERROR CORRECTION SYSTEM

William E. Brown, 413 Fall Creek Dr., Richardson, Tex. 75080

Division of Ser. No. 54,368, July 13, 1970, Pat. No. 3,756,514. This application Apr. 14, 1972, Ser. No. 244,299

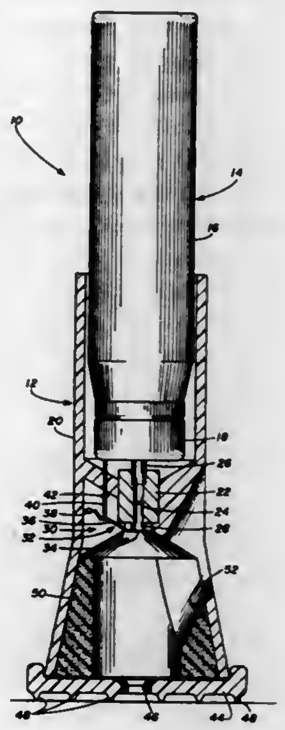
Int. Cl. B32b *35/00*

U.S. Cl. 117—2 TC **5 Claims**

1. A method of applying a predetermined amount of material comprising a correction fluid to a predetermined area of a surface having a typing error contained therein and thereby correcting the error which comprises:

positioning an aperture formed through a mask in alignment with the predetermined area of the surface having the typing error contained therein;

thereafter discharging a metered quantity of the material comprising a correction fluid from an aerosol container thereof across an open space separating the container and the mask toward the aperture in the mask so that the predetermined amount of the material passes through the aperture and onto the predetermined area and the remainder of the metered quantity of the material is retained; and



thereafter drying the material to form an opaque layer covering the error and characterized by a smooth surface finish.

3,850,657
METHOD OF SEALING LEAKS IN CLOSED COOLING SYSTEMS

Maurice Bodmer, Nussbaumen; Demund Hartinger, Rutihof-Baden, and Albert Huber, Morlken, all of Switzerland, assignors to Brown Boveri & Company Limited, Baden, Switzerland

Filed Sept. 26, 1972, Ser. No. 293,641

Claims priority, application Switzerland, Oct. 13, 1971, 14846/71

Int. Cl. C09k *3/12*

U.S. Cl. 117—2 R **3 Claims**

1. A method for sealing leaks in a closed cooling system using water as the working medium which comprises, introducing into the water an easily reducible metal oxide selected from the group consisting of copper, silver, gold, tin, nickel, cadmium, lead, cobalt, platinum, rhodium, iridium and palladium, wherein the mole ratio of metal cation is from 10^{-8} to 1 molar, introducing a reducing agent into said water in a concentration of between 10^{-6} and 1 molar, so as to cause electroless precipitation of the metal whereby leaks in the closed cooling system are sealed.

3,850,658
MULTIFILAMENT POLYETHYLENE TEREPHTHALATE YARN

Climaco Alberto Gomez, Colonial Heights; William Dorne Braswell, and Robert Moore Marshall, both of Chester, all of Va., assignors to Allied Chemical Corporation, Morristown, N.J.

Filed Feb. 5, 1973, Ser. No. 329,487

Int. Cl. B32b *27/36;* **D06m** *13/52*

U.S. Cl..117—7 **7 Claims**

1. A synthetic filamentary yarn comprised of polyethylene terephthalate filaments which are first coated with from about 0.3 to about 0.6 weight percent based on the weight of the yarn of a liquid composition consisting essentially of about 10 to about 20 weight percent of said composition of each hexadecyl stearate and refined coconut oil, about 3.0 to about 6.0 weight percent of said composition of ethoxylated tallow amine, about 10 to about 20 weight percent of said composition of ethoxylated lauryl alcohol, about 8.0 to about 12.0

weight percent of said composition of sodium salt of alkylarylsulfonate, about 1.0 to about 3.0 weight percent of said composition of dinonyl-sodium-sulfosuccinate, about 1.0 to about 3.0 weight percent of said composition of an antioxidant selected from the group consisting of 4,4′-butylidene-bis-(6-tert-butyl-m-cresol), thio-bis-(di-sec-amylphenol), trinonyl phenol phosphite, and 2,2-methylene-bis-(4-methyl-6-tert-nonylphenol), about 35 to 50 weight percent of said composition of white mineral oil having a boiling point of between 510°F. and 620°F. wherein at least about 0.15 to about 0.30 weight percent is retained on said yarn, and then coated with from about 0.05 to about 2.0 weight percent, based on the weight of the finished yarn, of an oxidized polyethylene wax having an average molecular weight between about 1,000 and about 4,000 and an oxygen content between about 3 percent and about 6 percent by weight.

3,850,659

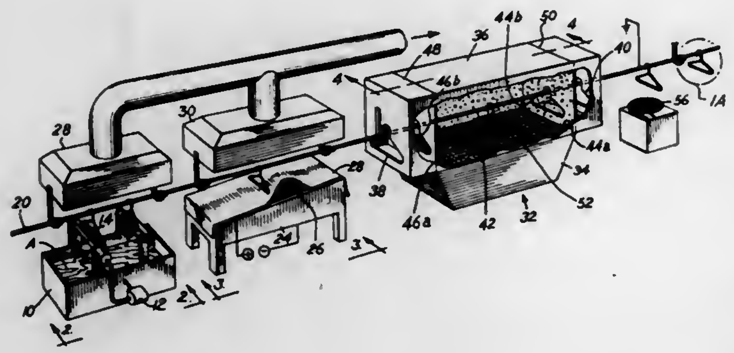
METHOD OF FLOCKING METAL ARTICLES

Tracy W. Barnes, Peoria, Ill., assignor to Laidlaw Corporation, Peoria, Ill.

Filed Dec. 11, 1972, Ser. No. 314,138

Int. Cl. B05b *5/02;* **B44c** *1/08;* **B44d** *1/092*

U.S. Cl. 117—17 **6 Claims**



1. A method for flocking a metal article comprising:

a. applying a film of liquid adhesive to the surface of the article;

b. providing an enclosed space containing a mass of flock fibers and foraminous electrode means for imparting an electrostatic charge to said fibers, said fibers being characterized by the ability to pack together under pressure;

c. directing a plurality of air streams intermittently for short time periods against the surface of said mass to lift fibers from the mass, entrain them in the air and carry them past said electrode means, thereby at least partially filling the space above said mass with charged fibers;

d. passing said article through said space while charging the article oppositely to the electrostatic charge on the fibers, thus causing the fibers in said space to deposit on the liquid adhesive film; and

e. drying the film to cause it to set and lock the fibers to the surface of the metal article.

3,850,660

METHOD FOR COATING THE INNER SURFACE OF METAL PIPES

Keizo Inamura; Tadayoshi Tatsuno, and Toshio Okoshi, all of Hiratsuka, Japan, assignors to Kansai Paint Company Limited, Amagasaki-shi, Hyogo-ken, Japan

Filed Mar. 20, 1973, Ser. No. 342,939

Claims priority, application Japan, Mar. 25, 1972, 47-29911

Int. Cl. B05b *5/02;* **B44d** *1/094*

U.S. Cl. 117—17 **4 Claims**

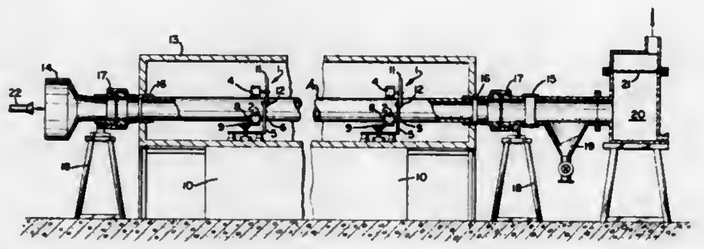
1. A method for coating the inner surface of a metal pipe having an inner diameter of 1–15 cm with a dry coating composition, which comprises the steps of:

a. rotating said metal pipe electrically grounded at a rate of at least 1 R.P.M.,

b. pre-heating said metal pipe at a temperature of from a softening point of said coating composition to a temperature lower than a melting point thereof,

c. feeding negatively charged dry particles of a coating composition into the interior of the metal pipe from one end of the pipe,

d. sucking air at the same time from the other end of the metal pipe so as to form an airstream carrying the particles and flowing in the interior of the pipe at a flow rate of 2–15 m/sec. and to allow the particles to deposit electrostatically on the inner surface of the pipe, and



e. fusing the deposited particles at a reduced pressure of up to about 100 mm Hg to form a continuous film on the inner surface of the pipe.

3,850,661

PROCESS FOR IMPREGNATING POROUS, INORGANIC SUBSTRATES OR ROADWAYS

Bernd Dreher, Aersh/Bl, and Wolfgang Schneider, Allschwil, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 59,667, July 30, 1970, abandoned. This application Apr. 19, 1972, Ser. No. 245,647

Claims priority, application Switzerland, Aug. 5, 1969, 11884/69

Int. Cl. B32b *13/12;* **C08g** *30/14*

U.S. Cl. 117—123 D **4 Claims**

1. In a process for impregnating porous, inorganic substrates for roadways with curable liquid epoxide resincuring agent composition, the improvement which consists in using as the curable, liquid composition a mixture consisting essentially of (1) a liquid polyglycidyl-ether containing at least two glycidyl groups or poly-(β-methylglycidyl)-ether containing at least two β-methylglycidyl groups said polyglycidyl ether or poly-β-methylglycidyl)ether being derived from an aliphatic polyol containing at least 2 hydroxyl groups and 2 to 12 carbon atoms; and (2) a cycloaliphatic or cycloaliphatic-aliphatic polyamine which is liquid at room temperature and contains at least one primary amino group.

3,850,662

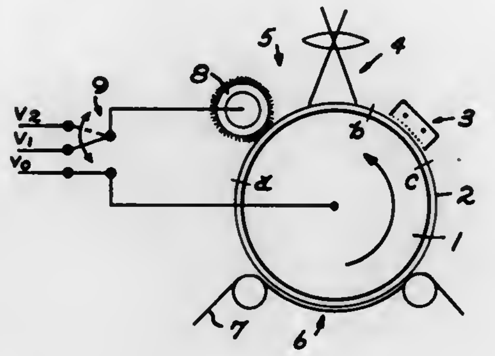
ELECTROPHOTOGRAPHIC DEVELOPING PROCESS AND APPARATUS

Helmut Jahn, Frankfurt, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Aug. 17, 1972, Ser. No. 281,271

Int. Cl. G03g *13/08*

U.S. Cl. 117—17.5 **6 Claims**



1. An electrophotographic process comprising: electrostatically charging the surface of a photoconductor to form a uniform change, exposing a first zone of said charged photoconductor surface to a light image to form a latent charge image thereby leaving a second zone adjacent to said first zone uniformly charged,

passing said first and second zones past means for developing a latent charge image,

applying a first potential to said developing means to form a first electrical field between said developing means and said first zone while said first zone is passing so as to develop said latent charge image of said first zone and

applying a second potential, different from said first potential, to said developing means to form a second electrical field between said developing means and said second zone of said uniform charge of said second zone.

3,850,663

CELLULOSE COATED CARRIERS

Robert Joseph Hagenbach, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 18,316, Feb. 5, 1970, abandoned. This application Nov. 17, 1972, Ser. No. 307,747

Int. Cl. G03g *9/02, 13/08*

U.S. Cl. 117—17.5 **6 Claims**

1. An electrostatographic developer mixture comprising finely divided toner particles electrostatically clinging to the surface of carrier beads, each of said carrier beads comprising a core having a uniform coating thereon comprising a polymeric cellulose ester wherein said coating exhibits a volume resistivity of between about 10^{10} and about 10^{14} ohm-centimeters at 23°C.

3,850,664

BARRIER COAT METHOD OF COATING SUBSTRATES WITH CORROSION RESISTANT COATINGS

Alfred J. Siegmund, Jr., Houston, Tex., assignor to Napko Corporation, Houston, Tex.

Filed June 12, 1972, Ser. No. 261,964

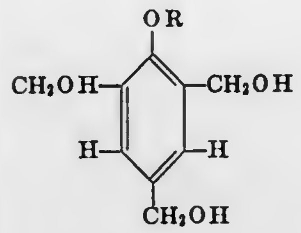
Int. Cl. B44d *1/094*

U.S. Cl. 117—18 **5 Claims**

1. The process of depositing on a metal surface an organic coating highly resistant to corrosive substances which comprises:

1. heating the metal to an elevated temperature,

2. applying a barrier coat consisting of a solution in ethyleneglycolmonoethyletheracetate of a binder consisting of between 30 and 40 percent by weight of a phenolic intermediate selected from the group having the formula



where "R" is an aliphatic unsaturated organic radical at least 3 carbon atoms in length, a solid 1,2 epoxy resin having a melting point of 125° C. and an epoxide equivalent of 2,000–2,500, and phosphoric acid, present at a concentration of between 1 and 5 percent of the total binder by weight,

3. allowing the barrier coat to dry at an elevated temperature and then applying a topcoating consisting of a powdered, solid epoxy resin containing trimellitic anhydride, and

4. curing said coating at an elevated temperature.

3,850,665

PROCESS FOR FORMING A METAL OXIDE COATING ON A SUBSTRATE AND RESULTING PRODUCTS

Emile Plumat, Gilly, and Robert Posset, Mont/S/Marchienne, both of Belgium, assignors to Glaverbel Watermael-Boitsfort, Brussels, Belgium

Filed July 6, 1972, Ser. No. 269,378

Claims priority, application Luxembourg, July 8, 1971, 63485

Int. Cl. B32d *17/06;* **G02b** *5/20;* **C03c** *17/22*

U.S. Cl. 117—33.3 **19 Claims**

1. In a process for forming a metal oxide on a substrate comprising applying at least one metal compound to the substrate and thermally converting said compound to a metal oxide coating, the improvement wherein the metal compound is an acetyl acetonate coprecipitate of two or more metals dissolved in a solvent, and said solvent being selected from the group consisting of an aprotonic solvent, a substituted or unsubstituted monocarboxylic acid, an amine or diamine solvent and mixtures of two or more of said solvents.

3,850,666

PROCESS OF FORMING MOSAIC PHOSPHOR SCREEN OF COLOR PICTURE TUBE

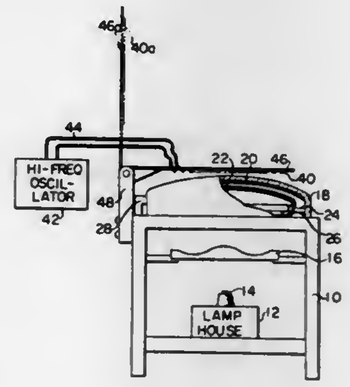
Takeo Fujimura; Koji Nakamura, and Kazuhiko Hayakawa, all of Kyoto, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed July 20, 1972, Ser. No. 273,459

Claims priority, application Japan, July 27, 1971, 46-56288

Int. Cl. C03c *3/28, 17/00;* **H01j** *1/54*

U.S. Cl. 117—33.5 CM **3 Claims**



1. In a process of forming a mosaic phosphor screen on the face plates of shadow mask color picture tubes, including the steps of applying a phosphor coating to one side of a face plate, positioning a shadow mask over the phosphor coating on said face plate, selectively exposing the coating to a beam of ultraviolet radiation emitted from a point source through holes in the shadow mask, and processing the exposed coating to form a mosaic of phosphor dots in a predetermined pattern on the internal surface of the face plate, the improvement which comprises:

heating the shadow mask to cause a predetermined deformation thereof; and

simultaneously irradiating the layer of phosphor material through the holes in the thus deformed shadow mask.

3,850,667
SYNTHETIC PAPER AND PROCESS

Kaneyasu Tani; Shozo Imoto; Shiro Kawazoe, all of Tokyo; Wachio Ichihara, Kawaguchi; Tatsuhiko Nagai, Tokyo; Hiroaki Noguchi, Ageo, all of Japan; Bunkichi Yamada, deceased, late of Katsuta, Japan, and by Fumiko Yamada, legal representative, Katsuta, Japan, assignors to Nippon Kakoh Seishi Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 42,584, June 1, 1970, abandoned, which is a continuation-in-part of Ser. Nos. 610,481, Jan. 20, 1967, Pat. No. 3,515,567, and Ser. No. 789,941, Jan. 8, 1969, abandoned, each is a continuation-in-part of Ser. No. 596,083, Nov. 22, 1966, abandoned. This application June 29, 1972, Ser. No. 267,341

Claims priority, application Japan, Nov. 27, 1965, 40-72486; Jan. 26, 1966, 41-4092; Feb. 4, 1966, 41-6126; Feb. 21, 1966, 41-10092; Feb. 23, 1966, 41-10512; Apr. 4, 1966, 41-20692; May 14, 1966, 41-30549

Int. Cl. B41m *5/14;* **D21h** *5/00*

U.S. Cl. 117—36.7 **9 Claims**

1. A process for producing a dimensionally stable synthetic paper which is a thermoplastic polymer film comprising a first layer substantially free of micropores having at least one ink-receptive, opaque, microporous surface layer integral therewith; said paper being characterized by an opacity of at least 50%, the bonding strength binding said first layer and said surface layer being of sufficient strength so that the product is substantially free from picking when printed with number twelve tack inks; and by a capacity to be clarified without distortion by the application of elevated pressure at temperatures up to 35°C above the softening point of the film during a period of about one to three seconds; which process comprises initially treating at least one surface of a thermoplastic polymer film with a liquid which dissolves and swells the polymer under conditions such that from about 0.001% to 0.3% by weight, based on the total weight, of the polymer dissolves, treating said film with a coagulating agent and thereafter drying said film.

3,850,668
IMPREGNATION OF GRAPHITE WITH RUTHENIUM COMPOUNDS

John Philip Heffer, London, England, assignor to Johnson, Matthey & Co. Limited, London, England

Filed June 5, 1972, Ser. No. 259,674

Int. Cl. B01k *3/08;* **B44d** *1/20*

U.S. Cl. 117—47 R **5 Claims**

1. A method of treating a porous body of carbon or graphite with ruthenium comprising removing gaseous fluid from the body, contacting the body with a solution of ruthenium acetylacetonate, evaporating the solvent so as to leave the ruthenium compound in contact with the body, and heating the body so as to cause the ruthenium acetylacetonate within the pores of the body to decompose.

3,850,669
METAL SPRAYING PROCESS

Hiroshi Mino, Hiroshima, and Shozo Miyanishi, Nakaouchi, both of Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima-ken, Japan

Filed Sept. 25, 1972, Ser. No. 291,631

Int. Cl. B44d *1/097, 1/52*

U.S. Cl. 117—48 **10 Claims**

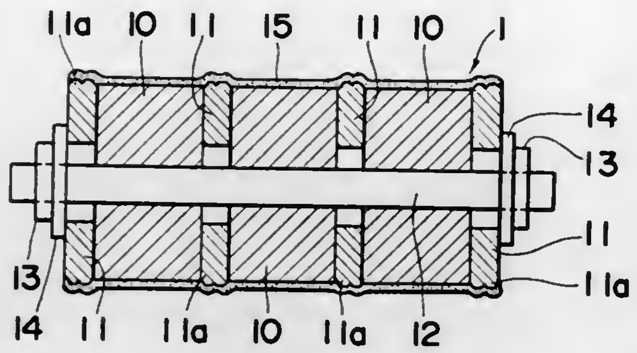
1. A metal spraying process which comprises the steps of: mounting a plurality of mechanical parts in a row side by side on a supporting structure;

placing a partition plate between each two adjacent members of and at each end of the row of said mechanical parts, with the peripheral portion of said partition plate extending radially outwardly from the peripheral surface of each said mechanical parts, said partition plate being made of metallic material of similar bondable quality as said mechanical parts and having a peripheral edge on both sides of said partition plate, at least one of said peripheral edges being a bevel surface which is substantially obliquely outwardly inclined relative to the peripheral surface of the adjacent mechanical part;

spraying a molten metal which is capable of being sprayed and which will bond to the metallic material of said mechanical parts and said partition plates on the entire peripheral surfaces of said mechanical parts and said partition plates by effecting relative movement between said mechanical parts and partition plates and a spraying device, whereby a metallic coating is formed which is bonded tightly to each peripheral surface of said mechanical parts and the bevel surface of said partition plate, said resultant metallic coating having a dummy joint portion substantially along the boundary between each mechanical part and the partition plate adjacent thereto,

giving an impact to said resultant metallic coating for causing brittle fracture thereof along said dummy joint portions; and

separating said mechanical parts with said metallic coating thereon from said partition plates to produce individual metal coated mechanical parts.



3,850,670
PIPELINE COVERING WITH PROTECTIVE SOIL SLIP COATINGS AND METHOD FOR MAKING SAME

Milton Wesley Gregory, Englewood, Colo.; Bernard John Olszyk, Somerville, N.J., and Oscar Pierce Bowles, Dallas, Tex., assignors to Johns-Manville Corporation, New York, N.Y.

Filed Sept. 13, 1972, Ser. No. 288,632

Int. Cl. B44d *1/44;* **B32b** *11/02, 27/12*

U.S. Cl. 117—64 R **3 Claims**

1. A process for the production of a coated asbestos felt composition which comprises:

a. forming an asbestos felt saturated with bituminous material,

b. heating a polymeric resin selected from the group consisting of polyethylene, polypropylene and 160°–180°F. AMP microcrystalline wax to a temperature above the melting point of the resin and in the range of 200°F to 450°F,

c. depositing the melted resin on one surface of said felt in a quantity sufficient to cover said surface and to penetrate into at least a portion of the outer most layer of said felt adjacent to said surface,

d. cooling the deposited resin to form an at least partially solidified coating on said felt,

e. controlling the thickness of the coating of said resin on the said surface by passing the coated felt under and in contact with a doctor blade heated to a temperature above the melting point of said resin and not exceeding 500°F to melt at least a portion of the surface layer of said coating, remove excess resin, and level the surface of said coating, and

f. cooling and solidifying said resin to form a solid flexible coating on said surface, the underside of said coating being interlocked with the outermost portion of said felt adjacent to said surface.

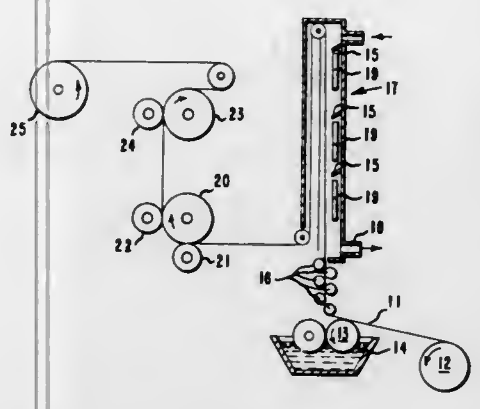
3,850,671
PROCESS FOR DRYING AND CRYSTALLIZING COATINGS

Eugene D. Petty, Jr., Seaford, Del., and Samuel R. Sberna, Circlesville, Ohio, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 713,721, March 18, 1968,. This application Sept. 27, 1972, Ser. No. 292,505

Int. Cl. B44d *1/44*

U.S. Cl. 117—64 C **5 Claims**



1. In a continuous process for drying a coalescible vinylidene chloride copolymer coating applied from an aqueous system to an oriented polyethylene terephthalate film base which process comprises:

a. advancing the coated film; and

b. drying the coated film until it is in a substantially moisture-free state by subjecting the coated film to radiant heat in a stream of air flowing countercurrent to the direction of travel of the advancing film, while maintaining the film at a temperature of about 60° to 90°C.;

the improvement wherein the vinylidene chloride copolymer coating is then crystallized, without distortion of the polyethylene terephthalate film, by

c. contacting the dried coated film with a roll having a polished surface and heated to a temperature of about 115° to 120°C. wherein said film is urged into contact with said heated roll at its line of initial contact by an elastomer-covered nip roll for a period of time sufficient to heat the coating to a temperature of about 110° to 120°C.

3,850,672
COATED SYNTHETIC PAPER AND A METHOD OF PRODUCING THE SAME

Kaneyasu Tani; Yukio Fushino, both of Tokyo; Taiji Nakajima; Hiroaki Noguchi, both of Ageo; Yutaka Kurita, Tokyo; Satoshi Murakoshi, and Hiroo Wakayama, both of Ichikawa, all of Japan, assignors to Nippon Kakoh Seishi Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 193,546, Oct. 28, 1971, and a continuation-in-part of Ser. No. 728,793, May 13, 1968. This application Dec. 7, 1972, Ser. No. 312,945

Claims priority, application Japan, May 25, 1967, 42–33301; Nov. 28, 1967, 42–76251, Dec. 31, 1967, 42–85249

Int. Cl. B44d *5/00*

U.S. Cl. 117—76 R **27 Claims**

1. A coated synthetic paper from about 15 to 300 microns in thickness comprising a plastic film coated on at least one side with from about 5 to 40 grams per square meter of an opaque, printable, pigment containing coat comprising two layers, the top layer containing for each **100** parts of pigment from about 12 to 20 parts of an anionic latex type binder, from about 0.2 to 0.7 part of dispersing agent and from about 2 to 20 parts of satin white, from 0.75 to 4.5 parts of a non-ionic surfactant protective agent and from 0.15 to 3 parts of a heat sensitive coagulating agent, selected from the group consisting of water soluble salts of divalent lead, zinc, magnesium, calcium, strontium and barium and trivalent chromium and aluminum in combination with a member of the group consisting of sulfate, phosphite, nitrate and isocyanate and halogen ions; polyvinyl methyl ether, polypropylene glycol; and cationic surface active agents having both a hydrophobic group selected from the group consisting of higher alkyl amines, higher alkyl halides and higher fatty acids, and a hydrophilic group consisting of pyridine, inorganic acids, ethylene oxide, ethanolamines, a symmetrical diamines, aminoethanolamine and polyethylene-polyamines.

3,850,673
FLEXIBLE SHEET MATERIAL

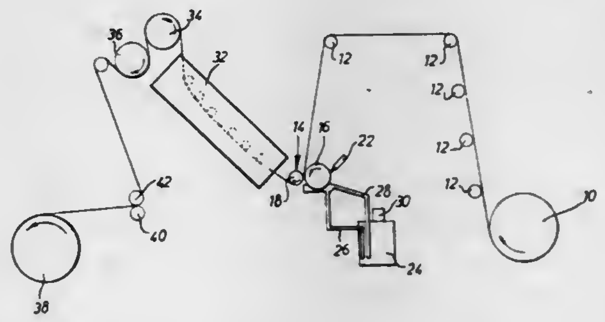
Stanley Nelson, New Mills, near Stockport, England, assignor to J & J. Makin Limited, Rochdale, Lancashire, England

Continuation-in-part of Ser. No. 709,537, March 1, 1968, abandoned. This application Feb. 23, 1972, Ser. No. 228,512

Claims priority, application Great Britain, Mar. 4, 1967, 10357/67; Mar. 18, 1967, 12828/67

Int. Cl. B44d *1/16*

U.S. Cl. 117—76 A **13 Claims**



1. A readily strippable wall covering comprising

a wall covering sheet including a fibrous backing surface, coated with the dried residue of an aqueous dispersion comprising

a wax-aluminum-protein-rosin complex in water disposed on said fibrous backing surface in the form of a plurality of discontinuous portions incompletely covering said fibrous backing surface being adapted to receive a water-based adhesive such that the adhesive can be directly applied against said fibrous backing surface between said discontinuous portions, said wax being a paraffin wax having a melting point in the range between 45°C. and 60°C., the aluminum component being an aluminum salt of a low molecular weight aliphatic carboxylic acid, the protein being an acid protein colloid and said rosin being a natural wood rosin, the ratio by weight of said paraffin wax to said rosin being from 10:1 to 1:4,

the amount of said material applied to said fibrous backing surface being within the range 2 gm/sq. meter to 12 gm/sq. meter to partially reduce a direct bonding between said adhesive and said fibrous backing surface, and the residual moisture content of the fibrous sheet material being from 5 to 12 percent.

3,850,674
METHOD OF COATING A FIBERGLASS LAMINATE AND THE COATED LAMINATE

Gail H. Clarke, Jr., Guilford, and Ralph A. Colafati, III, New Haven, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 30, 1973, Ser. No. 355,990

Int. Cl. B32b *17/04;* **C08f** *29/16*

U.S. Cl. 117—76 T **7 Claims**

1. In a method of treating a fiberglass laminate to provide a coating thereon having improved peel and erosion resistance, wherein said laminate is coated with a polymer selected

from the group consisting of copolymers of hexafluoropropylene and vinylidene fluoride and terpolymers of tetrafluoroethylene, vinylidene fluoride and hexafluoropropylene and thereafter cured for at least 2 hours at a temperature of 60°–350°F., the improvement comprising:

first coating said laminate with a primer comprising an uncrosslinked hexafluoropropylene-vinylidene fluoride copolymer which has been provided with active crosslink sites and which has a Mooney Viscosity of 25–40.

3,850,675

USE OF ULTRAVIOLET LIGHT TO CURE UNCURED SURFACE LAYER RESULTING FROM AIR INHIBITION IN PRECEDING HIGH ENERGY IONIZING RADIATION CURING PROCESS

Lewis S. Miller, Bellevue, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Continuation-in-part of Ser. No. 93,856, Nov. 30, 1970, abandoned. This application Jan. 15, 1973, Ser. No. 323,716
Int. Cl. B44d *1/50*
U.S. Cl. 117—93.31 **8 Claims**

1. In a process wherein curing of a polymerizable film is effected by exposure thereof to ionizing radiation and after said exposure there remains on a surface of said film a thin undercured layer resulting from inhibition of said curing by oxygen, the improvement comprising exposing said undercured layer to ultraviolet light for a time sufficient to complete the cure of said layer.

3,850,676

COATED CARRIER PARTICLES FOR ELECTROSTATOGRAPHIC DEVELOPMENT

Robert W. Madrid, 160 Jacobs Rd., Macedon, and Robert J. Hagenbach, 235 Westmoreland Dr., Rochester, both of N.Y.
Continuation-in-part of Ser. No. 585,739, Oct. 11, 1966, abandoned. This application Apr. 9, 1970, Ser. No. 27,114
Int. Cl. B05c *7/14;* B44d *1/02;* C03c *25/00*
U.S. Cl. 117—100 A **3 Claims**

1. A carrier particle for electrostatographic developer mixtures comprising a particulate core surrounded by a thin outer layer, said thin outer layer comprising from about 1 to about 20 microns in thickness of a blend of a polyphenylene oxide resin and a solid terpolymer of (1) from about 5 to about 94.5 percent, by weight of an unsaturated silicon free organic compound (2) from about 94.5 to about 5 percent, by weight of an unsaturated silicon free organic compound different from the compound of (1) and (3) from about 0.5 to about 50 percent, by weight of a polymerizable organosilicon compound selected from the group consisting of silanes, silanols, and siloxanes having from one to three hydrolyzable groups and an organic group attached directly to a silicon atom containing less than 8 carbon atoms and an unsaturated carbon to carbon linkage, the weight ratio of said polyphenylene oxide to said terpolymer being from about 90:10 to about 25:75.

3,850,677

RESIN COATED RICE HULLS, COMPOSITIONS CONTAINING THE SAME AND PROCESSES FOR MAKING SUCH COMPOSITIONS

Ramesh C. Vasishth, Burnaby, British Columbia, Canada, assignor to Cor Tech Research Limited, Richmond, British Columbia, Canada
Filed Dec. 14, 1972, Ser. No. 314,973
Int. Cl. B44d *1/09;* C08g *51/14;* C08h *17/14*
U.S. Cl. 117—100 A **19 Claims**

1. A composition of matter that can be fabricated into a composite article of manufacture by curing comprising rice hulls carrying thereon a substantially water immiscible, caustic-free, thermosetting phenol formaldehyde resin, said resin being of a type that in its uncured state has a viscosity above 100 Krebb units at 120°F.

3,850,678

PENTACHLOROPHENOL COATED WITH A POLYGLYCOL

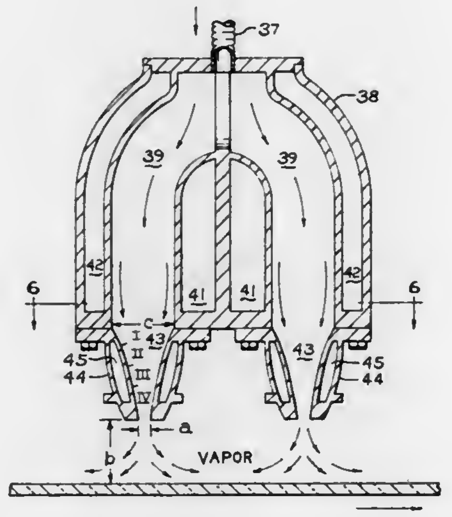
William David Watson, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Apr. 2, 1973, Ser. No. 347,164
Int. Cl. B05c *7/14*
U.S. Cl. 117—100 A **3 Claims**

1. Free flowing particulate pentachlorophenol consisting essentially of pentachlorophenol and about 0.3 to about one percent by weight of at least one polyglycol of the group consisting of polyethylene glycol of at least about 200 average molecular weight and polypropylene glycol of about 200–300 average molecular weight.

3,850,679

CHEMICAL VAPOR DEPOSITION OF COATINGS

John F. Sopko, New Kensington, Pa., and Krishna Simhan, Fischbach, Germany, assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Dec. 15, 1972, Ser. No. 315,393
Int. Cl. C23c *11/00*
U.S. Cl. 117—106 R **13 Claims**



1. A method of applying a coating to a substance by directing a gaseous mixture comprising at least one coating reactant through a nozzle against a substrate comprising:

a. vaporizing the coating reactant and mixing coating reactant vapors and a carrier gas to form said gaseous mixture; and

b. directing said gaseous mixture through said nozzle at a nozzle exit Reynolds number of at least about 2500.

3,850,680

METHOD OF MAKING COATED GYPSUM BOARD

William L. McKinnon, 5575 Banff Ct., Concord, Calif. 94521
Division of Ser. No. 264,464, June 20, 1972,. This application July 13, 1973, Ser. No. 379,100
Int. Cl. C03c *25/02*
U.S. Cl. 117—123 D **4 Claims**

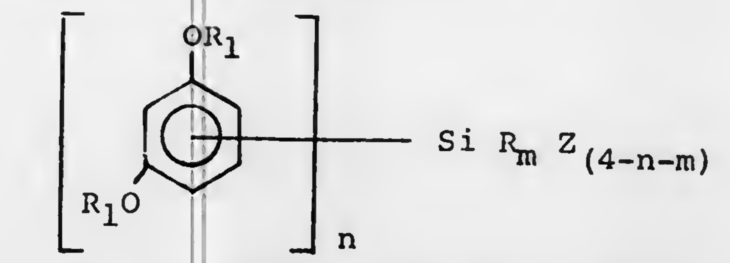
1. Method of making a gypsum board, one face of which is adapted to firmly adhere to set concrete placed against said face in unset condition and subsequently permitted to set in place, said method comprising preparing an admixture of wax and vinyl polymer emulsions containing from 2 parts wax to 1 part polymer to 1 part wax to 4 parts polymer and from 1.5 parts to 5 parts water for each part wax and polymer, all parts being by weight, applying a coating of said admixture to one face of the gypsum board, and drying said coating.

3,850,681

GLASS FIBER REINFORCED ELASTOMERS

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Division of Ser. No. 98,813, Dec. 16, 1970, Pat. No. 3,705,075. This application July 10, 1972, Ser. No. 270,377
Int. Cl. B32b *17/02, 17/10*
U.S. Cl. 117—126 GS **8 Claims**

1. Glass fibers having a thin coating on the surfaces thereof, said coating comprising a coupling agent in the form of a compound having the formula



wherein Z is a readily hydrolyzable group, *n* is an integer from 1 to 3, *m* is an integer from 0 to 2, R is selected from the group consisting of hydrogen and an organic group other than resorcinol, and R_1 is selected from the group consisting of hydrogen and C_1 to C_3 alkyl, and the silanols and polysiloxanes thereof.

3,850,682

ESTERS OF POLYOXYALKYLENE GLYCOLS AND MIXED DIBASIC ACIDS AS FIBER FINISHES

Robert J. Sturwold, and Fred O. Barrett, both of Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio
Continuation-in-part of Ser. No. 223,752, Feb. 4, 1972, Pat. No. 3,769,215. This application June 7, 1972, Ser. No. 260,516
Int. Cl. D06m *13/20;* C08g *17/14*
U.S. Cl. 117—138.8 F **5 Claims**

1. A lubricated fiber comprising a polyester having deposited thereon about 0.1 to 10% by weight of an ester obtained by the reaction of 1.5 to 2.1 mols polyoxyethylene glycol having a molecular weight from about 300 to about 4000 and recurring alkylene groups containing from 2 to 4 carbon atoms with one mol of a mixture of dibasic acids consisting of 5 to 95 mol percent short-chain dibasic hydrocarbon acids containing 2 to 12 carbon atoms, said ester having 70% or more of the carboxyl groups reacted.

3,850,683

IRON STAIN INHIBITORS

Robert E. Hill, Webster Groves, Mo., assignor to Koppers Company, Inc., Pittsburgh, Pa.
Filed June 12, 1973, Ser. No. 369,222
Int. Cl. B27k *3/18, 5/00*
U.S. Cl. 117—147 **16 Claims**

1. A method for treating wood to prevent the iron staining of the wood comprising applying to the wood a dispersion of a finely divided insoluble Group II Metal salt selected from group consisting of beryllium, magnesium, calcium, strontium, barium, zinc, cadmium and mercury.

3,850,684

PROTECTIVE COATING FOR MATERIALS EXPOSED TO MOLTEN ALUMINUM AND ITS ALLOYS

Elton S. Gamble, Trumbull, Conn., assignor to Olin Corporation, New Haven, Conn.
Division of Ser. No. 188,611, Oct. 12, 1971, Pat. No. 3,754,949. This application Feb. 20, 1973, Ser. No. 333,887
Int. Cl. C04b *35/02, 35/10*
U.S. Cl. 117—169 R **9 Claims**

1. A protectively coated structural part for contact with molten metal, said structural part coated to a thickness of at least 0.002 inch with a coating composition of a mixture of finely divided powders consisting essentially of:

A. 30 to 70 percent by weight of a refractory material consisting essentially of tri-calcium phosphate,
B. 10 to 30 percent by weight of aluminum oxide,
C. 2 to 8 percent by weight of a smoothing agent,
D. 3 to 10 percent by weight of raw Kaolin clay, and
E. 12 to 45 percent magnesium orthoborate.

3,850,685

THIN LAYER SEMICONDUCTOR DEVICE

Yoshio Sakai, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Oct. 26, 1972, Ser. No. 300,949
Claims priority, application Japan, Oct. 26, 1971, 46-84808
Int. Cl. H01l *7/36*
U.S. Cl. 117—201 **3 Claims**

1. A process for preparing a thin layer semi-conductor device consisting of a mixed crystal of $InSb_{(1-x)}As_x$ in which x satisfies the following relationship

$$0<x<0.3$$

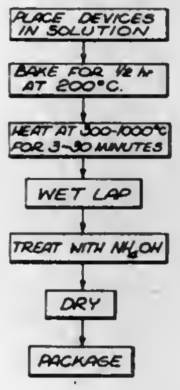
which comprises in a vacuum forming a thin layer of said mixed crystal of indium-antimony-arsenic on a heated substrate by evaporating indium antimonide by heating said indium antimonide and simultaneously evaporating arsenic by heating said arsenic, whereby said vaporized indium antimonide and said vaporized arsenic are deposited on said substrate as mixed crystals of said indium-antimony-arsenic.

3,850,686

PASSIVATING METHOD

Dervin L. Flowers, Scottsdale, Ariz., assignor to Teledyne Semiconductor, a division of Teledyne, Inc., Mountain View, Calif.
Continuation-in-part of Ser. No. 120,020, March 1, 1971, Pat. No. 3,770,498. This application Nov. 6, 1972, Ser. No. 304,187
Int. Cl. B44d *1/18, 1/14*
U.S. Cl. 117—201 **10 Claims**

1. In a method for passivating a semiconductor device which includes the steps of applying to a surface thereof to be passivated a formulation of a passivating amount of at least one oxide of an element selected from Groups IIA, IIB, IIIA, IIIB, IVA, VA, VB, VIA and VIB of the Periodic Table, in a solvent for dissolving said oxide, said solvent being substantially free of carbonyl groups and constituted to wet said surface, and heating said surface with said applied oxide thereon, the improvement according to which there is added to said formulation about 0.1–50 parts of glass particles per 1000 parts of said formulation, said glass particles having a diameter range of about 500 A - 20 microns.


PLACE DEVICES IN SOLUTION
BAKE FOR ½ hr AT 200°C.
HEAT AT 300-1000°C FOR 3-30 MINUTES
WET LAP
TREAT WITH NH4OH
DRY
PACKAGE

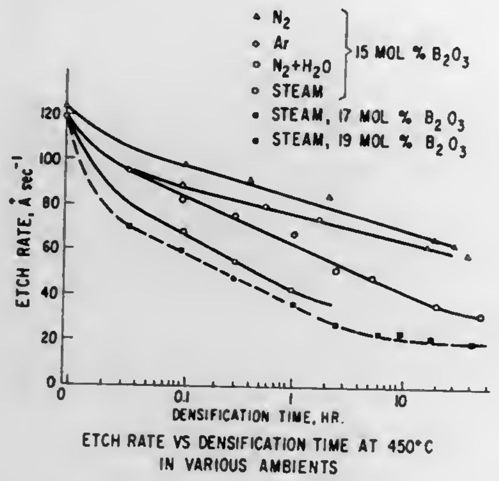
3,850,687
METHOD OF DENSIFYING SILICATE GLASSES

Werner Kern, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 26, 1971, Ser. No. 146,866

Int. Cl. B44d *1/14*

U.S. Cl. 117—217 7 Claims



ETCH RATE VS DENSIFICATION TIME AT 450°C IN VARIOUS AMBIENTS

1. A process comprising vapor-depositing a layer of a borosilicate glass on a substrate and then heating said layer in an atmosphere of water vapor at a temperature of the order of about 400° to 450° C for a time sufficient to appreciably densify said layer.

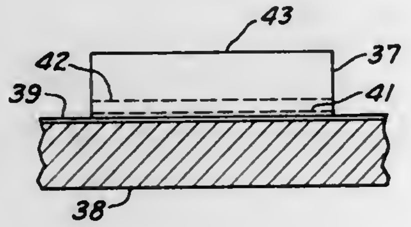
3,850,688
OHMIC CONTACT FOR P-TYPE GROUP III-V SEMICONDUCTORS

Ira E. Halt, Chesterland, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 213,660, Dec. 12, 1971, abandoned. This application Dec. 18, 1972, Ser. No. 316,130

Int. Cl. B44d *1/18, 1/14*

U.S. Cl. 117—217 6 Claims



1. A method of making an ohmic contact to a p-type Group III–V material, comprising the steps of depositing a layer of gold onto a surface of said material, depositing a layer comprising zinc over the gold layer, depositing a layer of gold over said last named layer, and heating to sinter the deposited layers at least partially into said surface of the material.

3,850,689
PROCEDURES FOR COATING SUBSTRATES WITH SILICON CARBIDE

Malcolm Basche, West Hartford, Conn., and Roy Fanti, Springfield, Mass., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation of Ser. No. 566,098, July 18, 1966, abandoned. This application Apr. 8, 1970, Ser. No. 26,556

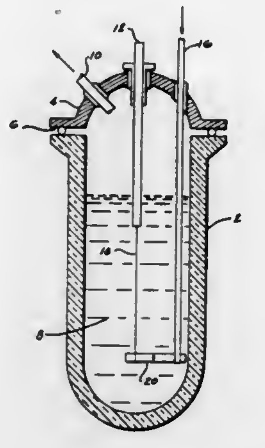
Int. Cl. B32b *15/02;* **B44d** *1/42;* **C03c** *25/02*

U.S. Cl. 117—229 15 Claims

1. A method for depositing a thin, adherent oxidation and corrosion resistant silicon carbide coating on a filamentary base material to produce a structural composite filament which comprises:

selecting a filamentary base material which has a melting point which exceeds the formation temperature of silicon carbide; and

continuously passing a hot surface of the filamentary base material through liquid organosilicon halide, the temperature of said hot surface being sufficiently high to cause the organosilicon halide immediately surrounding said hot surface to film boil, decompose, and deposit on said filamentary base material an adherent coating of oxidation and corrosion resistant silicon carbide.



3,850,690
METHOD OF MAKING MnGaGe FILMS

Kenneth Lee, and James Carr Suits, both of Saratoga, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 23, 1973, Ser. No. 335,405

Int. Cl. H01f *10/02*

U.S. Cl. 117—240 8 Claims

1. A method of making a fine grain ferromagnetic film of MnGaGe crystallizing in the tetragonal structure upon a substrate comprising the steps of:

depositing a layer of Mn and a layer of (Ga + Ge) in the desired compositional amount based on the final desired composition in any desired order upon a substrate maintained at a temperature between substantially 150°C to 250°C as a first layer and a second layer upon said first layer;

annealing the superimposed deposited layers at a temperature between substantially 200°C and 475°C until a homogeneous composition is achieved; and

cooling the film-substrate combination, whereby a ferromagnetic film of MnGaGe crystallizing in the tetragonal structure and having a grain size of less than 0.5 micron is formed upon the substrate.

3,850,691
PROCESS FOR CLEANING RAILWAY RAIL AND IMPROVING THE TRACTION

Carl E. Bleil, Birmingham, and Fay E. Gifford, Lathrup Village, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 26, 1973, Ser. No. 354,473

Int. Cl. B08b *1/04, 7/02;* **B61c** *15/10*

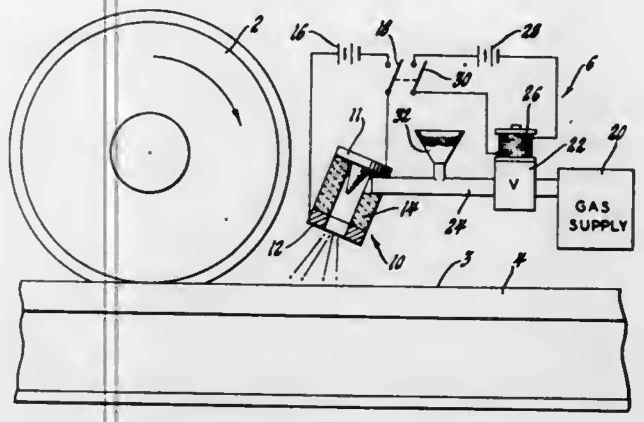
U.S. Cl. 134—4 4 Claims

1. A process for improving the traction of a locomotive wheel on a railroad rail which comprises:

heating to the molten state a substance which becomes solid, friable and abrasive upon contact with the railroad rail,

depositing a coat of the substance on the wheel-contacting surface of the railroad rail ahead of the locomotive wheel, whereupon the coat of the substance solidifies,

and crushing the solidified coat of the substance under the locomotive wheel, whereupon the rail is scoured and traction is improved by the crushed substance.



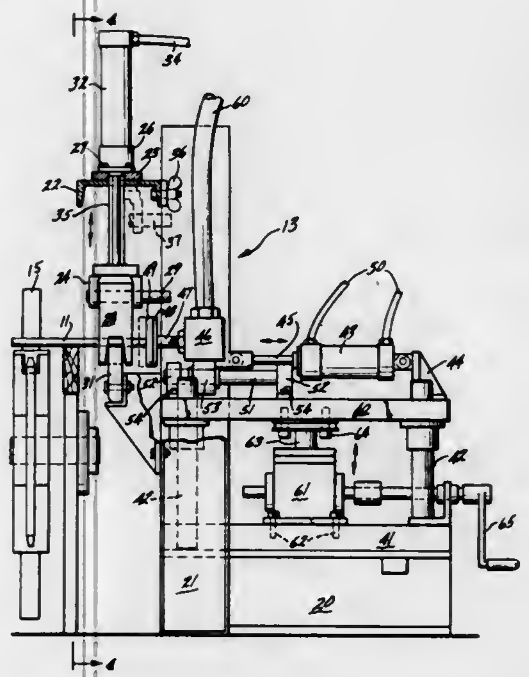
3,850,692
METHOD FOR SIMULTANEOUSLY CLEANING A PLURALITY OF TUBES HAVING OPEN ENDS

Don T. Van Allman, Alton, and Robert C. Voss, East Alton, both of Ill., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 167,637, July 30, 1971, Pat. No. 3,765,050. This application June 19, 1973, Ser. No. 371,405

Int. Cl. B08b *9/04*

U.S. Cl. 134—8 8 Claims



1. A method of cleaning the interior of tubes having open ends which comprise: providing a quantity of tubes in a storage station; placing several of said tubes on a conveyor; advancing said conveyor to a fixed work station;

clamping the tubes firmly at said work station extending a plurality of mouth portions of a cleaning apparatus located at said work station to communicate with an open end of said tubes;

securing a fluid-tight connection between said mouth portions and said open ends;

simultaneously introducing a fluid under pressure into all of said tubes and flushing the interior of said tubes;

moving said mouth portions away from said open ends to break the fluid-tight connection;

advancing said tubes from said work station to a collection station; and

repeating the above steps intermittently and automatically.

3,850,693
CORROSION INHIBITOR FOR ALKALINE ALUMINUM CELLS

Karl V. Kordesch, Lakewood, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Oct. 26, 1972, Ser. No. 301,069

Int. Cl. H01m *11/00*

U.S. Cl. 136—86 24 Claims

1. An electrolyte suitable for use in alkaline aluminum galvanic cells, said electrolyte comprising an aqueous solution of an alkali metal hydroxide and an inhibitor system consisting essentially of (a) mercury, as a sparingly soluble mercury compound or a mercury complex of limited dissociation, and (b) a soluble stannate salt or a soluble zincate salt or both a soluble stannate salt and a soluble zincate salt, wherein said mercury is present in said electrolyte in a concentration within the range of from about 0.0005 M to about 0.01 M, wherein the concentration of said stannate in said electrolyte is within the range of from about 0.01 M to about 0.2 M, and wherein the concentration of said zincate in said electrolyte is within the range of from about 0.05 M to about 0.5 M, as zinc oxide.

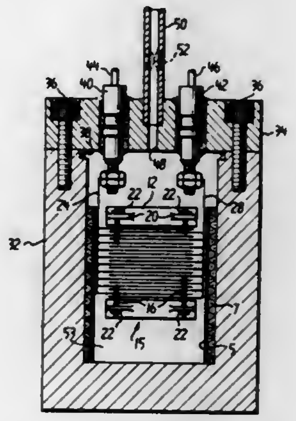
3,850,694
LOW PRESSURE NICKEL HYDROGEN CELL

James D. Dunlop, Gaithersburg; Martin William Earl, and Gerrit Van Ommering, both of Adelphi, all of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Nov. 27, 1972, Ser. No. 309,837

Int. Cl. H01m *27/26*

U.S. Cl. 136—86 A 7 Claims



1. An improved rechargeable power cell of the type that comprises a hermetically sealed container, said container including therein positive electrode means comprising NiOOH in the charged state and Ni $(OH)_2$ in the discharged state, negative electrode means comprising a catalyst mounted on a conductive support, said catalyst being a material capable of dissociating molecular hydrogen to monatomic hydrogen, an alkaline electrolyte, electrolyte retaining means disposed between said positive electrode means and said negative electrode means and a supply of hydrogen wherein the improvement comprises:

a hexagonal rare-earth intermetallic hydride disposed within said container out of contact with said electrolyte, said intermetallic hydride being a material capable of absorbing and desorbing hydrogen in response to changes in pressure.

3,850,695
VOLTAGE REGULATOR SYSTEM FOR USE WITH FUEL CELL BATTERY

Helmut Keller, Reutlingen; Jurgen Bregler, Stuttgart; Helmut Rhein, and Horst Jahnke, both of Gerlingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 22, 1973, Ser. No. 325,541

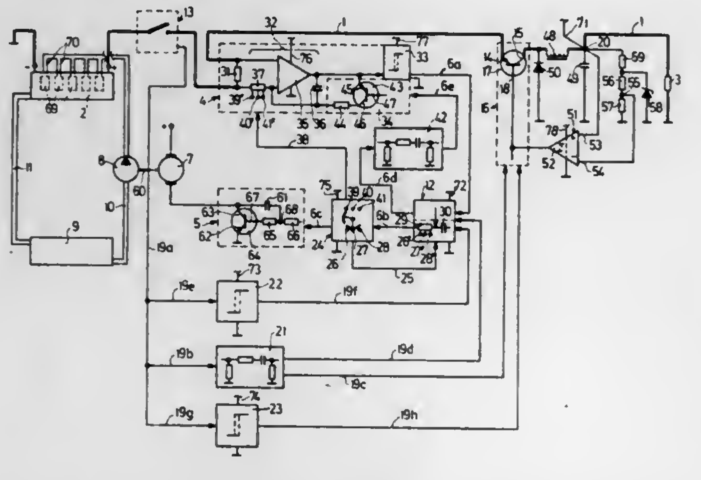
Claims priority, application Germany, Feb. 5, 1972, 2205543

Int. Cl. H01m *27/00, 31/04*

U.S. Cl. 136—86 B 21 Claims

1. A voltage regulator system for a load circuit (1) energized by a fuel cell battery (2) comprising:

a battery fuel storage tank (9);
means including a pump (8) for supplying fuel from said tank to said battery;
an electric motor (7) for driving said pump;
control means (5) arranged to energize said electric motor; monitoring means (4) responsive to the current drawn by said load circuit and having an output switch (33) adapted to be switched from a rest condition to an operated condition whenever a particular specific quantity of electricity has passed through said load;
a circuit connected to said battery (2) for supplying power to a load (3) including, in series, a main switch (13) between said battery (2) and said monitoring means (4), a measuring element (31) forming part of said monitoring means, and the switching path (14–15) of an electrically controllable switch (16);
means for supplying a control voltage necessary to make said switching path (14–15) of said electrically controllable switch (16) conducting initially in response to the closing of said main switch (13) and to maintain said switching path conducting in response to the condition of the portion of said load circuit (1) on the load side of said electrically controllable switch (16), the voltage across said portion of said load circuit also serving as a supply voltage for activating elements of said monitoring means other than said measuring element thereof; and



connecting circuit means for causing said control means to activate said motor every time said output switch is switched to its operated condition, to reset said output switch to its rest condition and after an interval to deenergize said motor, said connecting circuit means including a monostable flipflop (12) for producing control pulses, the duration of which determines the intervals during which said motor is energized and said pump is in operation.

3,850,696
PURGE TIMER FOR A FUEL CELL

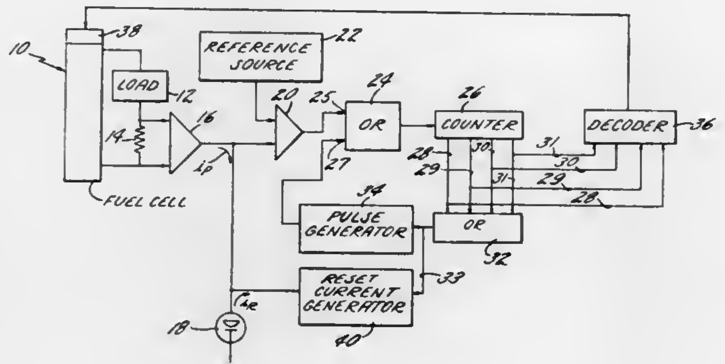
Warren S. Summers, Tolland, and Francis G. Charest, East Hartford, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation of Ser. No. 259,416, June 5, 1972, abandoned. This application Feb. 25, 1974, Ser. No. 445,192

Int. Cl. H01m ***27/00, 31/04***

U.S. Cl. 136—86 B **3 Claims**

1. A purge control for a fuel cell comprising
means responsive to the current generated by said fuel cell for producing a plating current proportional thereto,
means including an electrolytic cell receiving said plating current and producing a voltage pulse upon the occurrence of a predetermined ampere-hours output by said fuel cell,
a binary counter adapted to produce an output count which varies from zero to a preselected binary number and then returns to zero,
means connecting said voltage pulse with said binary counter, said voltage pulse producing a change in the output of said counter from a zero state to a binary one state in response thereto,
pulse generator means actuated by the occurrence of a binary state other than zero in the output of said counter for producing a series of timing pulses at equal preselected time intervals,
means for connecting said timing pulses with said binary counter to cause said counter to advance its output count from a binary one to a binary zero,



purge means for said fuel cell,
means responsive only to the presence of a binary one in the output of said counter for causing actuation of said purge means for a time equal to one of said time intervals,
means responsive only to the presence of a binary state other than zero in the output of said counter for producing a reset current adapted to reset said electrolytic cell, and means connecting said reset current with said electrolytic cell.

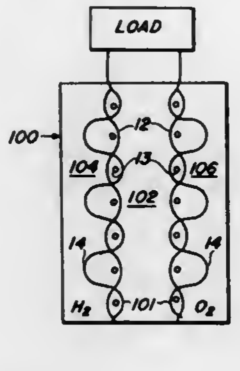
3,850,697
PROCESS FOR MAKING ELECTROCHEMICAL ELECTRODES

Perry H. Brown, Norwell, and Maurice H. Tremblay, Westboro, both of Mass., assignors to Brunswick Corp., Chicago, Ill.

Division of Ser. No. 5,882, Jan. 26, 1970, which is a continuation-in-part of Ser. No. 861,024, Sept. 25, 1969, abandoned. This application Oct. 12, 1971, Ser. No. 188,376

Int. Cl. H01m ***13/04***

U.S. Cl. 136—120 FC **4 Claims**



1. The process of making an electrochemical electrode comprising the steps of:
a. forming the pile of a pile fabric with a composite metal wire, said wire comprising a plurality of metal filaments surrounded by a sacrificial metal matrix; and
(b) removing the sacrificial metal matrix thereby providing the metal filament piles of the electrode.

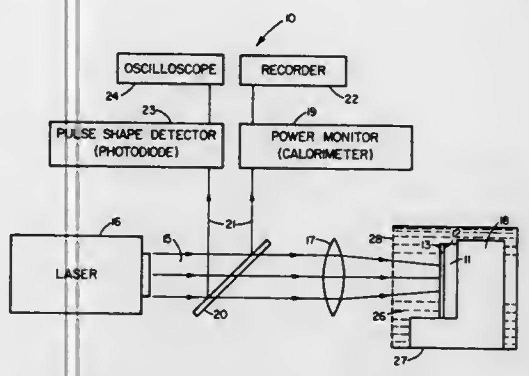
3,850,698
ALTERING MATERIAL PROPERTIES

Philip J. Mallozzi, and Barry P. Fairand, both of Columbus, Ohio, assignors to Industrial Materials, Limited, Columbus, Ohio

Filed June 23, 1972, Ser. No. 265,799

Int. Cl. C21d ***7/00;*** **C22f** ***3/00***

U.S. Cl. 148—4 **21 Claims**


10
OSCILLOSCOPE
RECORDER
24
22
23
19
PULSE SHAPE DETECTOR (PHOTODIODE)
POWER MONITOR (CALORIMETER)
21
16
LASER
18
20
17
28
26
27
11

1. A method of altering properties by providing shock waves in a metallic target comprising
attaching to a surface of the target a layer of solid or liquid overlay material, and
directing a laser pulse of high power density to the layer of overlay material such as to provide about 10 to 10,000 Joules per square centimeter of energy density in about 10 to 10,000 nanoseconds,
wherein the thickness of the target plus any overlay that is absorbent to the laser radiation is at least about 2 micrometers greater than the mean free path of the radiation therein.

3,850,699
PROCESS FOR MANUFACTURING HOT-DIP ALUMINIZED PEARLITIC MALLEABLE CAST IRON AND BLACK HEART MALLEABLE CAST IRON PRODUCTS

Adam Gierek, and Lech Bajka, both of Katowice, Poland, assignors to Politechnika Slaska IM. W. Pstrowskiego, Gliwice, Poland

Filed Sept. 11, 1972, Ser. No. 288,161

Claims priority, application Poland, Sept. 15, 1971, 150514

Int. Cl. C23c ***1/00;*** **C23f** ***5/02;*** **C23c** ***1/08***

U.S. Cl. 148—6.11 **7 Claims**

1. A method of producing aluminized iron castings selected from the group consisting of aluminized pearlitic malleable iron castings with lamellar or coagulated cementite, and black heart malleable iron castings, said method comprising dipping into a hot bath containing aluminum or aluminum alloys, an iron casting which has not yet been subjected to graphitizing annealing, said iron casting being selected from the group consisting of white cast iron castings, black heart malleable cast iron castings, and pearlitic malleable cast iron castings, and heating the iron casting now provided with a protective aluminum coating from said bath to a temperature to effect graphitizing annealing of said iron casting and simulltaneous annealing of the coating to provide homogenity of the structure of the casting and the coating.

3,850,700
METHOD AND MATERIALS FOR COATING METAL SURFACES

Ferdinand P. Heller, Philadelphia, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Filed Oct. 18, 1971, Ser. No. 190,409

Int. Cl. C23f ***7/08***

U.S. Cl. 148—6.15 Z **7 Claims**

1. A method for finishing artilces having both stel and galvanized surfaces comprising applying a zinc phosphate coating to said surfaces by contacting them with a zinc phosphating solution containing from about 0.2 to about 2.0 grams/liter chlorate, from about 0.03 to about 1.0 grams/liter nitrite calculated as NO_2, and from about 0.01 **l to about** 5.0 grams/liter fluoride, calculated as F, rinsing said coated surfaces with a dilute acidulated rinse, thereafter baking said coated and rinsed surfaces at a temperature between about 300°F and about 400°F for about 2 to about 10 minutes, and thereafter applying a paint to said surfaces electrophoretically.

3,850,701
ANODE COATED WITH MAGNETITE AND THE MANUFACTURE THEREOF

Reiichi Itai, and Hideo Kanai, both of Maebashi, Japan, assignors to The Japan Carlit Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1973, Ser. No. 409,682

Claims priority, application Japan, Apr. 6, 1973, 48-38749

Int. Cl. C23c ***11/10;*** **B01k** ***3/04***

U.S. Cl. 148—6.35 **4 Claims**

1. A process for manufacturing an anode coated with magnetite comprising electrodepositing iron onto an electric conductive corrosion-resistant metallic substrate, such as titanium, zirconium, tantalum, niobium, and the like in an electrolytc containing ferrous sulfate, dipping said iron deposited substrate into a solution containing about 10 – 30 g/l ammonium ferric oxalate for about 20 min under a reduced pressure of 10 – 30 mm Hg abs., and then heating said treated substrate at 550 – 700°C for about 2 – 5 hrs. in an atmosphere of a hydrogen/steam gaseous mixture consisting of hydrogen of a content in a range of 10 – 25 percent by volume and steam of a content in a range of 75 – 90 percent by volume.

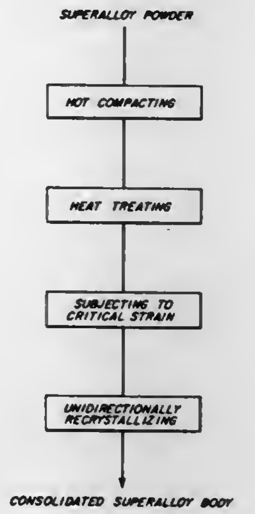
3,850,702
METHOD OF MAKING SUPERALLOY BODIES

Edward R. Buchanan, Burnt Hills, N.Y., assignor to General Electric Corporation, Schenectady, N.Y.

Filed Oct. 1, 1973, Ser. No. 402,306

Int. Cl. B22f ***3/16***

U.S. Cl. 148—11.5 F **8 Claims**


SUPERALLOY POWDER
HOT COMPACTING
HEAT TREATING
SUBJECTING TO CRITICAL STRAIN
UNIDIRECTIONALLY RECRYSTALLIZING
CONSOLIDATED SUPERALLOY BODY

1. A method of making nickel-base superalloy bodies characterized by an aligned elongated grain or amonocrystalline structure comprising the steps of:
a. hot compacting a nickel-base superalloy powder to form a relatively dense solid consisting essentially of a γ' precipitate phase within a γ matrix,
b. solution heat treating the dense solid at a temperature below the incipient melting point and high enough to dissolve a substantial portion of the γ' phase,
c. subjecting the material to a sufficient strain below the recrystallization temperature to permit subsequent recrystallization, and
d. unidirectionally recrystallizing the strained material in a

temperature gradient below the incipient melting temperature and above the γ' solvus temperature to form a body having an aligned elongated grain or monocrystalline structure.

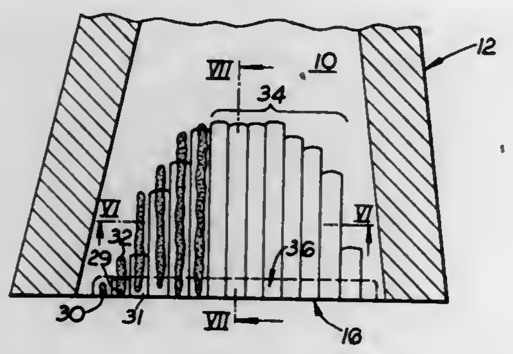
3,850,703
STAINLESS STEEL OF IMPROVED DUCTILITY

Wesley Kalita, New Kensington, Pa., assignor to Allegheny Ludlum Industries Inc., Pittsburgh, Pa.
Continuation of Ser. No. 162,474, July 14, 1971, abandoned, which is a division of Ser. No. 860,036, Sept. 22, 1969, abandoned. This application Apr. 12, 1973, Ser. No. 350,657
Int. Cl. C21d *9/48;* **C22c** *39/18*
U.S. Cl. 148—12 EA **6 Claims**

1. A method of manufacturing stainless steel strip, sheet or the like less than 0.02 inches thickness which comprises hot rolling to band gage stainless steel consisting essentially of up to 0.06% carbon, 0.2 to 1.0% manganese, 13 to 14% chromium, 0.2 to 1.0% silicon, 0.1 to 0.3% aluminum, 0.05 to 0.15% titanium and the balance iron with usual steelmaking residuals and thereafter cold rolling said hot rolled band direct to a thickness less than 0.02 inches without intermediate annealing.

3,850,704
SCARFING

James Taggart, Consett, England, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein
Filed Feb. 8, 1973, Ser. No. 330,756
Claims priority, application Great Britain, Feb. 15, 1972, 6920/72
Int. Cl. B23k *7/00, 7/04*
U.S. Cl. 148—9.5 **9 Claims**

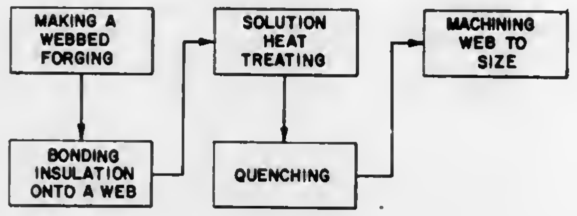


1. A method of scarfing the inner wall surface of haematite iron ingot moulds using a flame torch, characterized in that a jet of air or oxygen is directed towards that area of the inner wall surface of the mould being scarfed to remove any slag and impurities from the surface and to move such slag and impurities from the path of the flame torch and wherein a first strip of the surface is scarfed, the slag and impurities being moved, by the jet, to one side of the strip, and a second strip is then scarfed on the other side of the strip, slag and impurities being moved from the second strip onto the first strip, the process being repeated until the whole surface has been scarfed.

3,850,705
LOW OIL-CANNING ALUMINUM ALLOY FORGINGS

Charles P. Furney, Jr., Delmont, and Richard Couchman, New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Sept. 4, 1973, Ser. No. 393,954
Int. Cl. C22f *1/04*
U.S. Cl. 148—13.1 **12 Claims**

1. A method for making a heat treated aluminum alloy forging exhibiting reduced oil-canning in oil-canning-susceptible sections, comprising the steps of bonding insulation onto both sides of an oil-canning-susceptible section of an aluminum alloy forging with a bonding means for maintaining a bond during heating for solution heat treatment, solution heat treating the thus-insulated forging, and, with the insulation still on said section, subjecting the solution heat treated forging to a quench for maintaining precipitable components of the alloy in solution in the oil-canning-susceptible section, whereby, upon machining, said section will exhibit reduced oil-canning.



3,850,706
$Mn^{1-X}M^X$GaGe FERROMAGNETIC MATERIALS WHERE M COMPRISES TRANSITION METALS

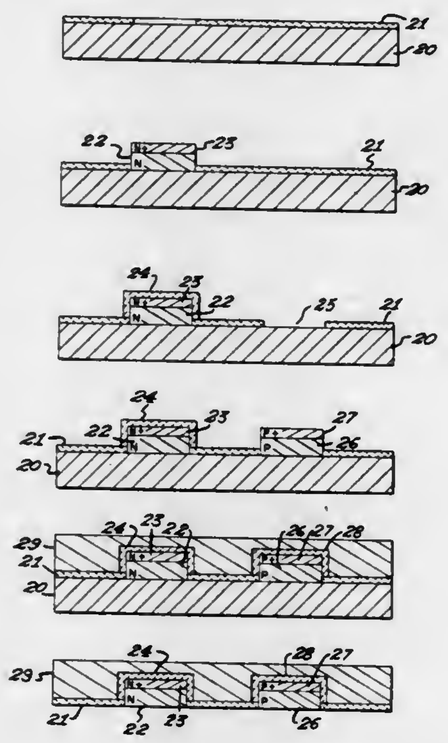
George Bryan Street, Palo Alto, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 15, 1972, Ser. No. 289,513
Int. Cl. C04b *35/00*
U.S. Cl. 148—31.55 **14 Claims**

1. A ferromagnetic composition consisting essentially of the composition in atomic proportions of

$Mn_{1-x}M_xGaGe$, where $0 < x$ limit of solid solubility of M within the tetragonal MnGaGe structure, and M is chosen from the group consisting of Fe, Ni, Co, Cu, Cr, V, Ti.

3,850,707
SEMICONDUCTORS

Roy J. Bestland, Palm Beach Gardens, Fla., assignor to Honeywell Inc., Minneapolis, Minn.
Division of Ser. No. 395,237, Sept. 9, 1964, abandoned. This application Mar. 23, 1967, Ser. No. 643,759
Int. Cl. H01l *7/36;* **B01j** *17/00;* **H01l** *27/12*
U.S. Cl. 148—175 **5 Claims**



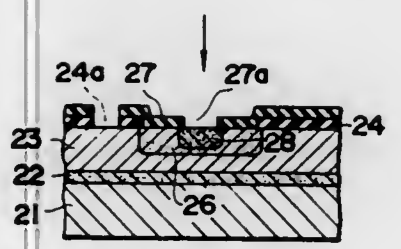
1. A process of producing a master chip of semi-conductive material for production of integrated circuit semiconductor devices having dielectrically isolated single crystal regions of P and N type conductivity comprising:

- A. Forming a silicon oxide layer on at least one surface of a body of single crystal silicon material,
- B. Exposing at least one limited region of said silicon material by removing portions of the oxide coating,

- C. Epitaxially depositing silicon of a first conductivity type on the exposed portion of said silicon material to predetermined thickness,
- D. Producing a silicon oxide layer over the epitaxially deposited first conductivity type material,
- E. Exposing at least one second limited region of said silicon material by removing portions of the oxide coating,
- F. Epitaxially depositing silicon of a second conductivity type on the exposed portions of said silicon material to a predetermined thickness,
- G. Producing a silicon oxide layer over the epitaxially deposited second conductivity type material,
- H. Depositing a poly crystalline silicon material over the assembly to a predetermined thickness,
- I. Removing all of the original single crystal silicon material to thereby produce a body containing islands of single crystal silicon material of opposite conductivity type dielectrically isolated from one another.

3,850,708
METHOD OF FABRICATING SEMICONDUCTOR DEVICE USING AT LEAST TWO SORTS OF INSULATING FILMS DIFFERENT FROM EACH OTHER

Ichiro Imaizumi; Tadao Kaji; Akio Hayasaka, all of Kokubunji, and Keijiro Uehara, Kita, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 29, 1971, Ser. No. 193,854
Claims priority, application Japan, Oct. 30, 1970, 45-95083
Int. Cl. H01l *7/44*
U.S. Cl. 148—187 **4 Claims**



1. A method of fabricating a semiconductor device comprising the steps of:

- a. preparing a semiconductor substrate;
- b. forming a first insulating layer on said substrate;
- c. providing a first mask by forming at least one hole in said first insulating layer, so as to expose a portion of the surface of said substrate;
- d. diffusing at least one impurity of a first conductivity type into said substrate through the surface thereof exposed by step (c);
- e. forming a second insulating layer on the remaining part of said first insulating layer and the exposed portion of the surface of said substrate, said second insulating layer having a different property from said first insulating layer;
- f. providing a second mask by forming at least one hole in said second insulating layer within an area thereof delimited by the hole of said first mask which exposes said portion of the surface of said substrate, so as to expose a part of the surface of said substrate;
- g. diffusing at least one impurity of a second conductivity type into said substrate through the surface thereof exposed by step (f);
- h. forming another hole in said second insulating layer, said hole being delimited partly by the edge of the hole of said first mask, and
- i. forming a metal layer on the portion of the surface of said substrate exposed by step (h).

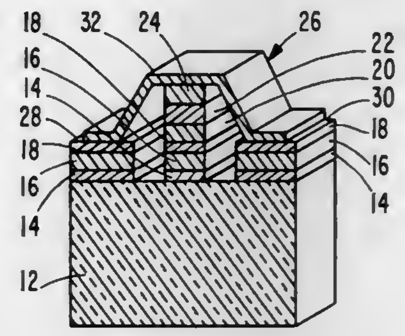
3,850,709
NON-SOLVATED PARTICULATE ALUMINUM HYDRIDE COATED WITH A CYANO-CONTAINING COMPOUND USEFUL IN SOLID PROPELLANTS

Donald L. Schmidt, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed July 1, 1963, Ser. No. 292,166
Int. Cl. C06d *5/06*
U.S. Cl. 149—6 **6 Claims**

1. A substantially non-solvated particulate aluminum hydride having a surface coating of a cyano group containing compound, said cyano group containing compound being a member selected from the group consisting essentially of aliphatic nitriles, aromatic nitriles, hydrogen cyanide and cyanogen.

3,850,710
METHOD OF MAKING A QUASI-MONOLITHIC INTEGRATED CIRCUIT STRUCTURE

Cheng Paul Wen, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Nov. 6, 1972, Ser. No. 304,010
Int. Cl. C23f *1/02;* **H01l** *7/50*
U.S. Cl. 156—3 **7 Claims**

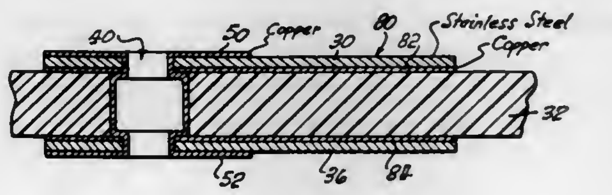


1. A method for making a quasi-monolithic integrated circuit structure which comprises the steps of:

- a. growing at least one epitaxial conductivity region of a semiconductor material on a substrate of a semiconductor material;
- b. depositing a first metallic layer on said epitaxial conductivity region;
- c. depositing a second metallic layer upo a substrate of an insulating material;
- d. bonding said first metallic layer to said second metallic layer; and
- e. removing portions of said conductivity regions in order to form isolted semiconductor devices interconnnected by said bonded metallic layers.

3,850,711
METHOD OF FORMING PRINTED CIRCUIT

Larry R. Conley, Fountain Valley, Calif., assignor to Accra-Paint Arrays Corporation, Santa Ana, Calif.
Division of Ser. No. 311,738, Dec. 7, 1972, Pat. No. 3,786,172. This application Sept. 26, 1973, Ser. No. 400,743
Int. Cl. C23f *1/02*
U.S. Cl. 156—11 **6 Claims**



1. A method for constructing a weldable and solderable circuit board comprising:

- applying a first layer of weldable and electrically conductive material over a base of insulative material;
- applying a second layer of solderable and electrically conductive material over said first layer;
- applying a first resist in a predetermined first pattern over said second layer;
- applying a first etchant that is effective against both said weldable and solderable materials, over uncovered and resist-covered regions of said layers for a period to etch away both of said layers down to said base;
- applying a second resist in a predetermined second pattern over said second layer to leave predetermined weldable connector regions uncovered; and
- applying a second etchant which is effective against the material of said second layer but which is substantially ineffective against the material of said first layer, over uncovered and resist-covered regions of said layers for a period to etch away the second layer, to thereby leave weldable and solderable connector regions.

3,850,712
METHOD OF ETCHING A TITANIUM OR TITANIUM ALLOY PART

Trevor Broughton, Etwall, and Brian William Forman, Burton-On-Trent, both of England, assignors to Rolls-Royce Limited, London, England

Filed June 12, 1972, Ser. No. 261,815

Claims priority, application Great Britain, June 17, 1971, 28367/71

Int. Cl. C23f *1/00*

U.S. Cl. 156—18 **6 Claims**

1. A method of etching a titanium or titanium alloy part comprising contacting the part with a mixture consisting essentially of nitric acid, hydrofluorosilicic acid and water, and continuing contact with said mixture until a matt surface is produced on said part adapted for improved visual detection of flaws therein.

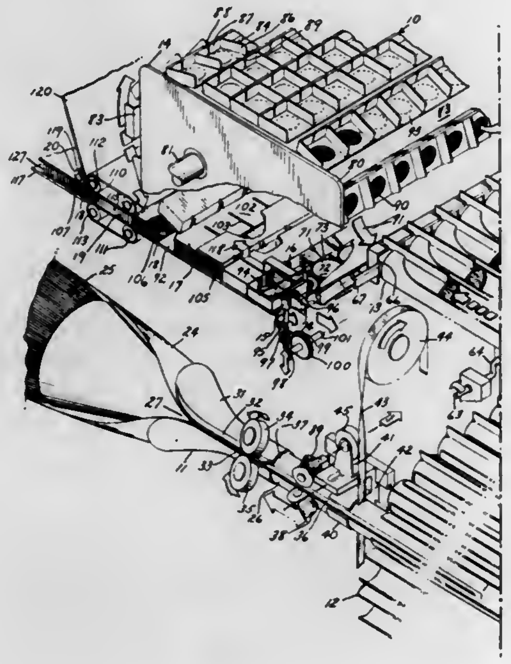
3,850,713
DEVICE FOR MANUFACTURING ARTICLES HAVING A NON-WOVEN PILE

Walter Hurtes, 433 W. 34th St., New York, N.Y. 10001

Filed Feb. 12, 1973, Ser. No. 331,658

Int. Cl. D04h *11/00*

U.S. Cl. 156—72 **17 Claims**



1. A device for forming articles having a nonwoven pile on at least one surface thereof comprising: means for forming a plurality of pile units, each including laterally compressed axially oriented fibers of substantially uniform length held in juxtaposed relation to each other only by lateral compression applied to the periphery of the pile unit such that upon release of the peripherally applied lateral compression the fibers of the pile unit are movable relative to each other, means for providing a surface to receive a plurality of said pile units, means for serially transferring pile units from said forming means to said surface, said last mentioned means including wall structure having portions each selectively engageable with the free ends of oriented fibers comprising a pile unit, means for delivering pile units each into endwise engagement with a wall portion while maintaining the fibers of the pile unit held together only by lateral compression, vacuum means communicating with said wall portion for maintaining said pile unit in contact with said wall ,portion, and maintaining said fibers in relatively compressed condition during transfer to said surface; and means disengaging said fibers from said wall portion after transfer of said fibers to said surface; whereby said compressed fibers may expand in a direction perpendicular to the axis of said pile unit to merge with the fibers of adjacent pile units, and means for adhering the ends of said expanded fibers to a planar web to form said article.

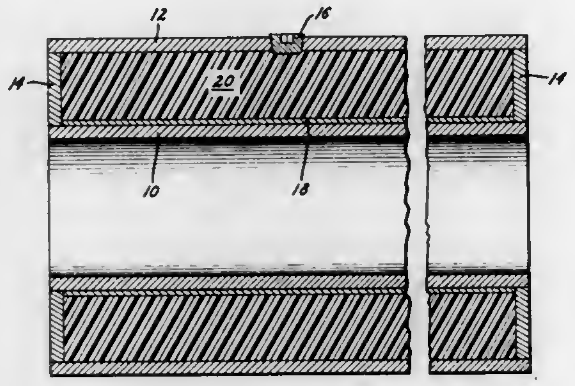
3,850,714
THERMAL INSULATION STRUCTURE

Alexander S. Adorjan, Pearland, Tex., assignor to General Electric Company, New York, N.Y.

Division of Ser. No. 167,258, July 29, 1971,. This application Apr. 6, 1973, Ser. No. 348,499

Int. Cl. B32b *5/18*

U.S. Cl. 156—77 **5 Claims**



1. A method of producing a double-walled heat insulating structure comprising:
- placing the outer wall concentrically about the inner wall; filling the cavity between the inner and outer walls with a polyurethane foam blown with a fluorinated hydrocarbon;
- hermetically sealing the ends of the inner and outer walls; evacuating the cavity to a pressure below 0.01 mm of mercury; and
- refilling the cavity with a gaseous fluorinated hydrocarbon to a pressure which is maximized without exceeding that at which it will condense in its operating temperature range.

3,850,715
METHOD FOR COOLING HEAT BLOATED INORGANIC ARTICLES

Aksel Jebens, Hosle, and Richard Hoegh Westergaard, Oslo, both of Norway, assignors to Sentralinstitutt for industriell forskning, Forshingsveien, Norway

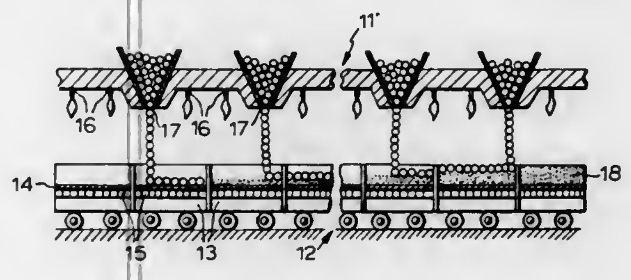
Continuation-in-part of Ser. No. 142,992, May 13, 1971, abandoned. This application June 29, 1972, Ser. No. 267,457

Claims priority, application Norway, May 15, 1970, 1874/70

Int. Cl. B32b *5/18*

U.S. Cl. 156—78 **10 Claims**

1. In a method for producing an article of inorganic foam comprising depositing a number of layers of heat bloatable inorganic material successively to build up the article to the desired thickness, bloating each layer before a succeeding layer is deposited and cooling the bloated article, the improvement comprising reducing the total cooling time by starting to force cool the article from the bottom surface after at least two layers have been deposited and before the last layer is deposited and controlling the forced cooling to produce a temperature gradient between the top surface and the bottom surface of between 80°C and 600°C.



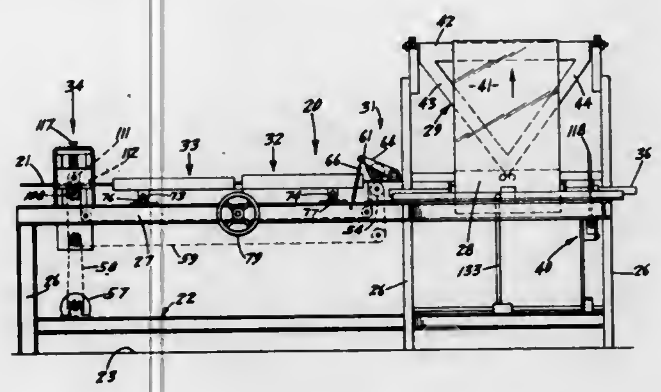
3,850,716
FLAME SEALING METHOD

Richard T. Podvin, Minneapolis, Minn., assignor to RPR Industries, Inc., Minneapolis, Minn.

Continuation of Ser. No. 214,327, Dec. 30, 1971, abandoned. This application Dec. 20, 1973, Ser. No. 426,500

Int. Cl. B32b *31/26*

U.S. Cl. 156—82 **20 Claims**



1. A method of sealing together adjacent longitudinal portions of heat-sealable sheet material comprising: continuously moving the sheet material and longitudinal portions thereof in an elongated path determined by the longitudinal length of the sheet material, subjecting the sheet material to substantially constant tension along the longitudinal length of the sheet material as the sheet material continuously moves in the elongated path, forming linear aligned longitudinal edges along adjacent longitudinal portions of the sheet material as the sheet material moves along the elongated path, said longitudinal edges being extended along the elongated path of movement of the sheet material, applying an elongated flame to a substantial length of said linear edges to longitudinally seal during movement of said sheet material along the elongated path, said flame being extended along the elongated path of movement of the sheet material, cooling a linear longitudinal portion of said linear seal as the seal moves away from said flame in said elongated path.

3,850,717
PRESTRESSING AND DAMPING OF PIEZO CERAMIC TYPE NOZZLES

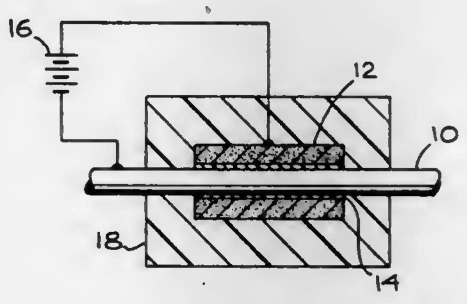
Robert L. Keur, Niles, and Gerry B. Andeen, Menlo Park, both of Calif., assignors to A. B. Dick Company, Chicago, Ill.

Filed Dec. 3, 1973, Ser. No. 420,769

Int. Cl. B29c *27/00*

U.S. Cl. 156—86 **4 Claims**

1. The method of bonding a piezoelectric cylinder to a cylindrical nozzle comprising
- applying a bonding agent to cover a portion of the outer surface of said nozzle,
- fitting said piezoelectric cylinder over said portion of the outer surface of said nozzle covered by said bonding agent,
- applying a potential to said piezoelectric cylinder to cause it to expand radially,



- maintaining said applied potential until said bonding agent has hardened, and
- removing said potential from said piezoelectric cylinder to allow said cylinder to press down on said bonding agent and outer surface of said nozzle.

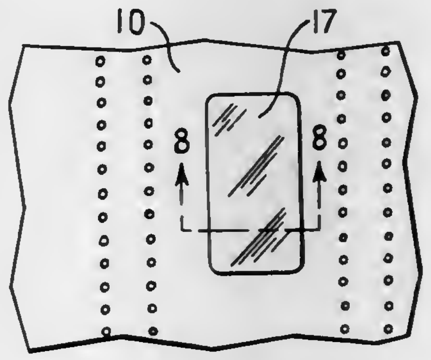
3,850,718
METAL PATCHING PLATE AND METHOD OF APPLYING THE SAME TO DAMAGED SURFACES

Simon J. Trapani, 1921 Hillside Dr., Burlingame, Calif. 94010

Continuation-in-part of Ser. No. 159,658, July 6, 1971, abandoned. This application Feb. 20, 1973, Ser. No. 334,064

Int. Cl. B32b *35/00*

U.S. Cl. 156—94 **5 Claims**



1. A patching structure adapted to patch a damaged panel member, said structure comprising a metal plate having a gauge such as to resist deformation in normal usage and being backed with a layer of high density foam, said foam being coated on each of its two principal sides with a pressure sensitive adhesive layer, one of said adhesive layers serving to bond the foam to the back of the plate and the other adhesive layer being covered with a protective liner capable of being readily stripped away from the structure.

3,850,719
APPARATUS FOR AND METHOD OF TIRE STITCHING

Jean Rene Leblond; Guy Emile Danneels, both of Compiegene, and Maurice Avrelien Lambert, Machemont, all of France, assignors to Uniroyal S.A., Clairoix, France

Filed June 23, 1972, Ser. No. 265,927

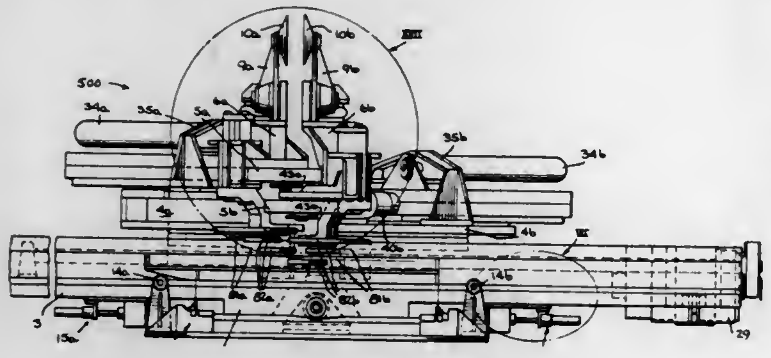
Claims priority, application France, July 13, 1971, 71.25785

Int. Cl. B29h *17/02, 17/08, 17/18*

U.S. Cl. 156—128 R **17 Claims**

1. A tire stitching apparatus for rolling and stitching the various surfaces of a tire mounted on a tire building drum, the apparatus comprising:

a. at least one stitching roller;
b. a profile-defining cam having a peripheral edge configuration for defining the path and penetration of said roller over a surface to be rolled;
c. first follower means in positive mechanical contact with said profile-defining cam for following the peripheral edge of said profile-defining cam;
d. means supporting said roller and responsive to said first follower means for positively guiding said roller over said tire surface along said predetermined path at said desired depth of penetration; and



e. means, including an orientation-defining cam having a peripheral edge configuration for defining the angular orientation of said roller relative to said surface to be rolled and second follower means for following the peripheral edge of said orientation-defining cam for control of the orientation of said roller, for continuous orienting said roller at a substantially normal angle of incidence relative to said tire surface as said roller is guided over said tire surface by said supporting means.

3,850,720

METHOD OF BONDING A BALLOON SLEEVE TO A CATHETER LUMEN TUBE

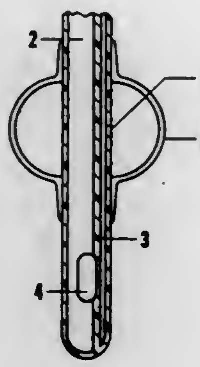
Michael Henry Collins, Tring Herts, England, assignor to G. D. Searle & Co., Ltd., Bucks, England

Filed Jan. 26, 1973, Ser. No. 327,200

Claims priority, application Great Britain, Feb. 1, 1972, 4757/72; Feb. 1, 1972, 4758/72; Feb. 1, 1972, 4760/72

Int. Cl. B32b *31/00;* **A61m** *25/00*

U.S. Cl. 156—155 **5 Claims**



1. A method of producing a catheter in which end margins of a balloon sleeve are adhesively secured to a lumen tube of a material having higher polar properties than that of the sleeve, which method consists of the steps of

dusting at least the inner surface of said sleeve with a soluble plastic powder before assembly of the tube and the sleeve;

locating the sleeve in position around the tube;

contacting said plastic powder with an organic cleaning fluid to dissolve the powder at least from the end margins of the sleeve;

exposing at least the end margins of said sleeve to a halogen medium;

adhesively securing said end margins of the sleeve to the tube; and

maintaining contact pressure at the adhesively secured end margins by means of at least one elastic band having an interior diameter in its unstressed configuration which is smaller than the outside diameter of the lumen tube.

3,850,721

METHOD OF CLEANING AND TRANSFERRING SEMICONDUCTORS

Wolfgang Curt Schubert, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 25,491, April 3, 1970, Pat. No. 3,755,048. This application Feb. 21, 1973, Ser. No. 334,341

Int. Cl. B32b *31/00;* **B08b** *3/10, 7/04*

U.S. Cl. 156—155 **8 Claims**

1. A method of cleaning and transferring semicondctors comprising:
a. gluing a wax-solvent wetted transfer membrane to the exposed surfaces of a plurality of semiconductor chips secured by wax to a supporting member;
b. heating said supporting member to a temperature sufficient to soften said wax and release said chips from said supporting member;
c. immersing said transfer membrane and said chips glued thereto in a bath of said wax-solvent for a period of time sufficient to remove any wax residue from said chips;
d. thereafter removing said transfer membrane and said attached chips from said wax-solvent and securing a receiving membrane to the exposed surfaces of said chips;
e. immersing said chips and said membranes attached thereto in a bath of glue-solvent for a period of time sufficent to release said transfer membrane from said chips;
f. thereafter cleaning said chips and attached receiving membrane in a fluid solvent for said glue.

3,850,722

COMPONENT FOR TRANSMITTING FORCES

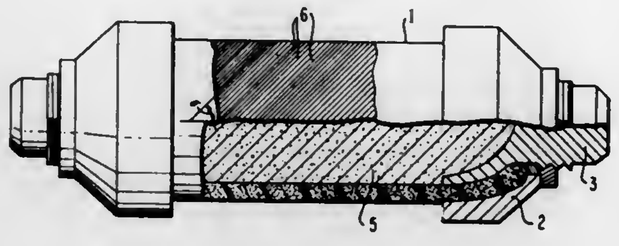
Holger Kreft, Karlsfeld, Germany, assignor to Maschinenfabrik Augsburg Nurberg Aktiengesellschaft, Munich, Germany

Filed Sept. 18, 1972, Ser. No. 289,643

Claims priority, application Germany, Aug. 1, 1972, 2237775; Sept. 18, 1971, 2146783

Int. Cl. B65h *81/02*

U.S. Cl. 156—172 **30 Claims**



1. A method of manufacturing a component for transmitting forces comprising placing an inner member of end fitting at the end portions of a longitudinally extending self-supporting core member made from plastic or aerated plastic material, winding a fiber coated with an unhardened plastic about the core member beyond the length thereof and about each inner member of each end fitting, placing an outer member of the end fitting onto the inner member of the end fitting and the portion of the plastic coated fiber wound on the inner member such that the wound fiber portion is disposed between a portion of the inner and outer members of the end fitting, and hardening the plastic coated fiber to bond the wound fiber portion to the inner and outer members of the end fittings and to said core member, whereby said component having a fiber mid-section portion and an end fitting at each end is formed.

3,850,723

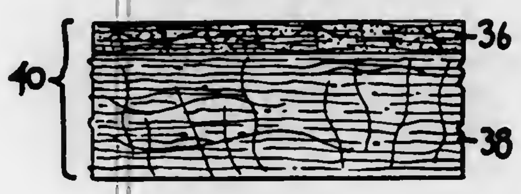
METHOD OF MAKING A STAMPABLE REINFORCED SHEET

Richard H. Ackley, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 182,029, Sept. 20, 1971, abandoned, which is a division of Ser. No. 22,534, March 25, 1970, Pat. No. 3,664,909. This application Nov. 21, 1973, Ser. No. 417,992

Int. Cl. B29h *9/02*

U.S. Cl. 156—180 **2 Claims**



1. A method of making a stampable, reinforced thermoplastic resinous sheet comprising impregnating with a thermoplastic composition a composite fibrous mat structure, said structure being binder free before impregnation and containing a mat of fibrous glass strands free of binder and a mat of unstranded glass filaments free of binder, said mats being disposed one above the other and contiguous with each other to thereby form said composite fibrous mat structure and wherein the unstranded glass filaments are free to move relative to each other when the thermoplastic composition impregnates said fibrous mat structure and is in a flowable state and forming the resinous fibrous mat structure and thermoplastic impregnant into the shape of a sheet.

3,850,724

APPARATUS AND METHOD FOR FABRICATION OF CARRYING BAGS

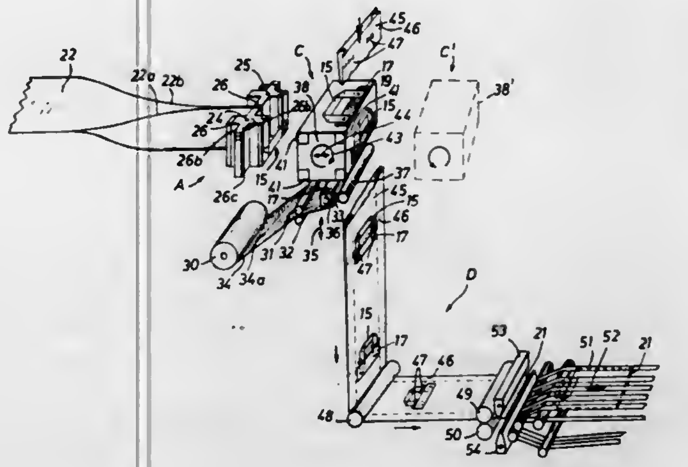
Hans Lehmacher, Im Hummerich, Mondorf Uber Troisdorf, Germany

Division of Ser. No. 76,336, Aug. 24, 1970, abandoned. This application June 8, 1972, Ser. No. 261,115

Claims priority, application Germany, Aug. 29, 1969, 1943929; May 13, 1970, 2023310

Int. Cl. B31b *1/14;* **B32b** *31/18;* **B29c** *27/62*

U.S. Cl. 156—201 **17 Claims**



1. In a method for fabrication of carrying bags each comprising two opposed like body main panels of thermoplastic film and provided on each panel with an inverted U-shaped hand grip element of thermoplastic film material projecting above the bag-mouth-defining top edges of the said panels, the steps of:

folding a flat web of thermoplastic film grip element stock about its longitudinal mid axis to bring longitudinal half sections into opposed face-to-face relation in a folded web;

successively transversely severing the folded web at right angles to said axis to produce end-to-end folded strips;

engaging the free end regions of, and drawing apart, the opposed halves of each severed strip and imparting a 90° twist in each half thereby bringing corresponding parts of each strip half into a spaced parallel coplanar relation as legs of a squarely U-shaped said element and joined by a yoke portion;

providing on terminal areas of said legs adhesive means whereby said grip element may be secured to the panel-forming thermoplastic film; and

securing end portions of the legs of each said grip element, on a thermoplastic film at a region destined to become a respective bag mouth margin.

3,850,725

ADHESION OF MATERIALS COATED WITH ACTIVATABLE FUSIBLE ADHESIVE

Paul Spielau; Erich Betke, both of Troisdorf-Spich, and Manfred Simon, Niederkassel, all of Germany, assignors to Dynamit Nobel AG, Troisdorf, Postfach, Germany

Filed Oct. 21, 1971, Ser. No. 191,561

Claims priority, application Germany, Oct. 31, 1970, 2053587; Oct. 21, 1970, 7038817

Int. Cl. B32b *7/14*

U.S. Cl. 156—291 **6 Claims**

1. In the adhesion of a first material coated with an activatable fusible adhesive to a second identical or different material to form a multiple-layer structure, the improvement which comprises using a fusible adhesive whose open time is about between 10 and 60 seconds, subjecting the adhesive-coated first material to pressure-free activation by infrared radiation at an activation time of about 0.5 to 10 seconds, then pressing the first and second materials together without additional heat input, and adjusting the relative positions of the first and second materials while the adhesive is still open.

3,850,726

VINYLIDENE CHLORIDE COPOLYMER

David R. Smith, and Howard Peterson, both of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation-in-part of Ser. No. 819,956, April 28, 1969, abandoned, Division of Ser. No. 868,209, Oct. 21, 1969, Pat. No. 3,714,106. This application July 10, 1972, Ser. No. 270,417

Int. Cl. C09j *7/02;* **B44d** *1/02*

U.S. Cl. 156—306 **11 Claims**

1. A coated substrate comprising a vinylidene chloride copolymer coating bonded to a substrate, said vinylidene chloride copolymer coating comprising a copolymer of: (A) 70 to 95 percent by weight of vinylidene chloride, (B) 0.5 to 30 percent by weight of a hydroxyalkyl ester of an alpha, betaethylenically unsaturated carboxylic acid, (C) 0.3 to 3 percent by weight of a sulfoalkyl ester of an alpha, betaethylenically unsaturated acid, (D) 0 to 5 percent by weight of ethylenically unsaturated carboxylic acid and (E) up to 29.5 percent by weight of ethylenically unsaturated monomer containing no free acid or hydroxyalkyl groups and other than (A), (B), (C) or (D) to prevent premature crystallization of the copolymer prior to application and to impart flexibility and heat-sealing properties to the copolymer coating, said copolymer containing at least 2 percent by weight in total of said monomers (B) and (E) to prevent premature crystallization of the copolymer.

3,850,727
METHOD OF FABRICATION OF FURAN RESIN BONDED, FIBER REINFORCED ARTICLES

Keith B. Bozer; Lloyd H. Brown, both of Crystal Lake, and Robert H. Fox, Hoffman Estates, all of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

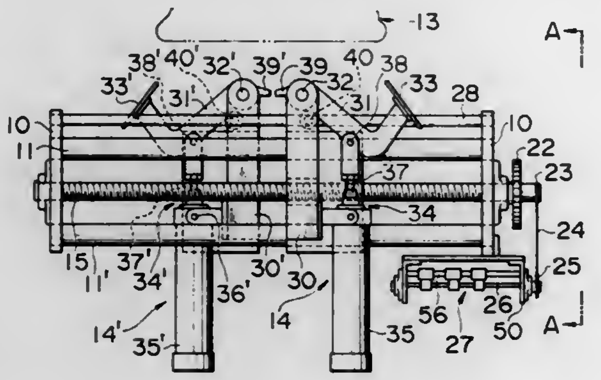
Filed Apr. 16, 1973, Ser. No. 351,131
Int. Cl. C09j *5/00;* **B32b** *27/42, 17/04*
U.S. Cl. 156—335 **22 Claims**

1. A method of fabricating fiber reinforced furan resin bound articles comprising the steps: applying a catalyzed liquid furan resin binder to a surface; and embedding fiber reinforcement in the layer; said catalyzed furan resin binder comprising a liquid furan resin having homogeneously admixed therein an effective catalytic amount of aromatic or heterocyclic acid chloride selected from those acid chlorides which, when present in said furan resin in an amount sufficient to provide 1 percent hydrolyzable chloride based on the weight of the resin, will give a gel time between 8 and 120 minutes.

3,850,728
STITCHING APPARATUS

Shoji Takahashi, Tokyo, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 29, 1972, Ser. No. 319,466
Claims priority, application Japan, Dec. 31, 1971, 47-669
Int. Cl. B29h *17/08, 17/18*
U.S. Cl. 156—358 **4 Claims**

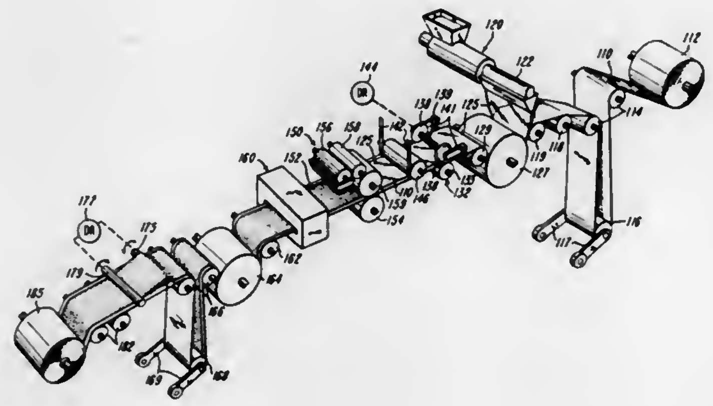


1. Stitching apparatus for stitching uncured tire components to build a green tire on a revolving building drum comprising, in combination, a pair of stitching assemblies each including a travelling carrier movable parallel to the axis of said building drum, a stitcher disc arm pivotally mounted at one end thereof on said travelling carrier, a stitcher disc mounted on the other end of said stitcher disc arm so that said stitcher disc is rotatable about the axis thereof, the major surfaces of said disc being inclined through an acute angle from a line connecting the pivot of said arm and the central point of said disc and angled from said axis of the building drum, urging means for urging said arm toward the surface of said building drum; travelling means including a pair of guide members mounted on a frame for guiding said carriers in parallel with said axis of the building drum, a pair of screw rods screwed with said carriers, respectively, said screw rods being rotatably mounted on said frame, driving means for forwardly and reversely rotating said screw rods so as to move said carriers in opposite directions, control means having an elongated cam rod extending parallel to said guide member with first and second portions parallel to each other and an intermediate portion connecting said first and second portions and slanted from said first and second portions, a follower rod mounted on said carrier so as to slidably abut said cam rod, and a stop projection mounted on said one end of the arm so as to be engageable with said follower rod before passing through said intermediate portion, whereby said urging means is prevented from urging said arm during a time interval from the instant when said follower rod reaches said intermediate portion passing through said first portion where said stop projection is engaged with said follower rod to the instant when said following rod reaches the second portion of said cam rod passing through said intermediate portion where said stop projection is disengaged from said following rod to urge said arm toward the surface of said building drum by said urging means.

3,850,729
APPARATUS AND METHOD FOR PRODUCING A BUSINESS FORM ARTICLE

William T. Paulson, Kettering, Ohio; David M. Davidson, deceased, late of Dayton, Ohio (by Clara A Davidson, executrix); L. Eldean Gilbert, West Milton, Ohio; Henry Gabbard, Xenia, Ohio, and Richard D. Bemus, Troy, Ohio, assignors to The Standard Register Company, Dayton, Ohio

Continuation-in-part of Ser. No. 156,704, June 25, 1971, Pat. No. 3,776,755, which is a continuation-in-part of Ser. No. 800,167, Feb. 18, 1969, abandoned. This application July 12, 1973, Ser. No. 378,547
Int. Cl. B32b *31/12, 31/18*
U.S. Cl. 156—390 **11 Claims**



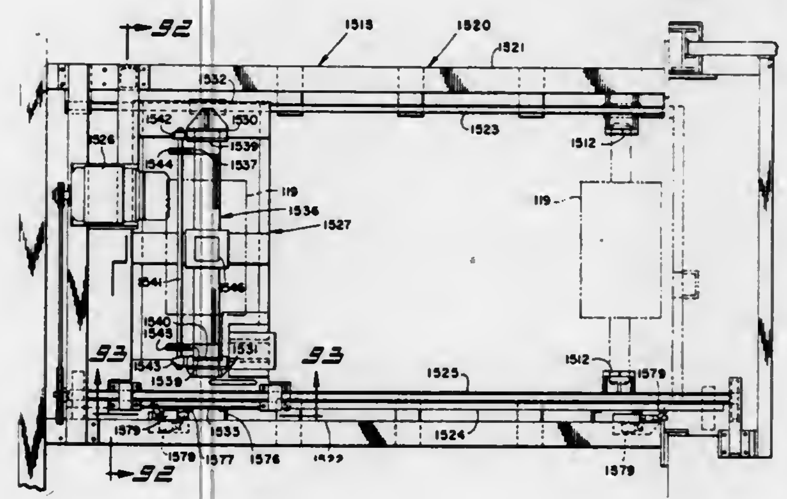
1. Apparatus for producing a continuous business form article, comprising means for directing a paper web from a supply roll along a predetermined path, means for extruding a continuous thin film of plastics material onto the paper web, means for producing a releasable bond between the thin film and the paper web including means for precisely controlling the pressure of the film against the paper web, means for coating a layer of image transfer material onto at least a portion of the film, and means for rewinding the paper web while the composite film and the layer of image transfer material are carried by the paper web.

3,850,730
DRUM INDEXING MECHANISM

Wilhelm Brey, Cuyahoga Falls, Ohio; William Hostetler, Santa Ana, Calif.; Earl Ferdnand Loeffler, Akron, Ohio; Hubert Ernest Kolm, Louisville, Ohio, and Fred Grove Elder, Atwater, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 10,579, Feb. 11, 1970, Pat. No. 3,700,526. This application Sept. 15, 1971, Ser. No. 180,837
Int. Cl. B29h *17/20*
U.S. Cl. 156—394 **5 Claims**

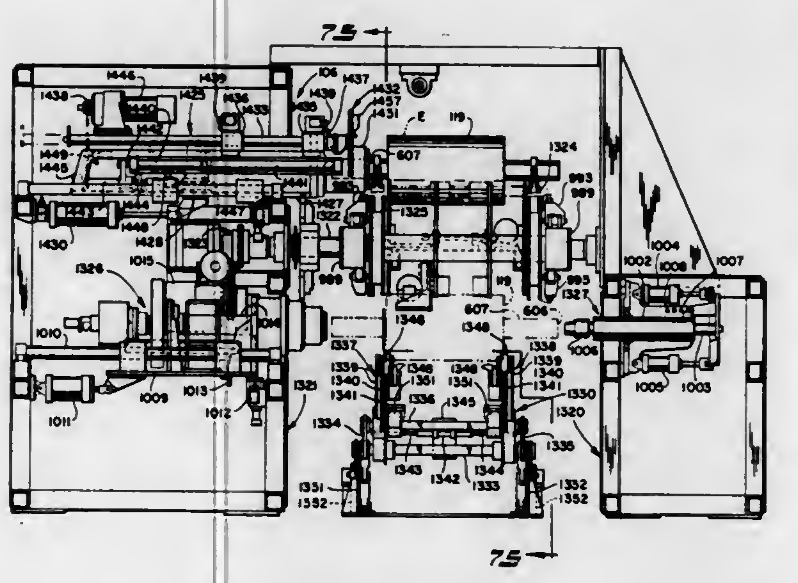
1. A mechanism for indexing a tire building drum, to arcuately space the splices of material wrapped on the drum, comprising:
a. a plurality of spaced pulleys;
b. flexible belt means reeved around the pulleys for engaging a shaft extending from the drum, between a pair of adjacent pulleys;
c. means for rotating at least one of the pulleys to drive the belt and rotate the drum shaft engaged thereby; and
d. at least one cam means for stopping rotation of said at least one pulley when the drum is in a predetermined arcuate position, where the splice of material wrapped thereon is in staggered relation to the splice of material about to engage the drum.



3,850,731
TIRE DISCHARGE MECHANISM

Wilhelm Brey, Cuyahoga Falls, Ohio; William Hostetler, Santa Ana, Calif.; Earl Ferdnand Loeffler, Akron, Ohio; Hubert Ernest Kolm, Louisville, Ohio, and Fred Grove Elder, Atwater, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 10,579, Feb. 11, 1970, Pat. No. 3,700,526. This application Sept. 15, 1971, Ser. No. 180,921
Int. Cl. B29h *17/16*
U.S. Cl. 156—414 **3 Claims**



1. A mechanism for discharging a green tire carcass from its building drum supported on a building machine, comprising
1. a substantially annular plate,
2. means to move said plate axially over and parallel to the building drum,
3. ring segments arcuately spaced about said plate,
4. means to adjust said segments radially on said plate, and
5. shoulders on said segments to support the tire carcass by its bead when the building drum is collapsed.

ERRATA

For Classes 156—455 thru 176—50 see:
Patents Nos. 3,850,774 thru 3,850,796

3,850,732
ZIRCONIUM RINSE FOR PHOSPHATE COATED METAL SURFACES

Robert Eric Binns, Abington, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Continuation-in-part of Ser. No. 94,531, Dec. 2, 1970, Pat. No. 3,695,952. This application Aug. 17, 1972, Ser. No. 281,357
Int. Cl. B01k *5/02;* **C23f** *15/00*
U.S. Cl. 204—181 **7 Claims**

1. A method for rinsing a metal surface having a phosphate conversion coating thereon, comprising applying to the surface an aqueous composition consisting essentially of water, at least .05 grams/liter of zirconium, expressed as ZrO_2, wherein the source for the zirconium in said composition is a water soluble zirconium compound, and a stabilizing agent selected from the group consisting of gluconic acid and salts thereof, and citric acid and salts thereof, present in an amount such that for each part by weight of zirconium there is at least .5 parts by weight of stabilizing agent; and wherein the pH of the composition is within the range of from about 3 to about 8.5.

3,850,733
METHOD OF FORMING FOUNDRY MOULDS

Ervin I. Szabo, Manotick, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ontario, Canada

Filed Sept. 11, 1972, Ser. No. 288,041
Claims priority, application Canada, Nov. 26, 1971, 128672
Int. Cl. B01k *5/02*
U.S. Cl. 204—181 **6 Claims**

1. A method of forming foundry moulds, comprising treating particles of a refractory material which are substantially free from ionic contamination to expose fresh, uncontaminated surfaces of the particles and render the particles electrophoretically mobile when in suspension, dipping a mould former with an electrically conductive surface in a suspension of the treated particles containing a metal sol binder selected from the group colloidal silica, colloidal alumina, colloidal zirconia, colloidal hafnia, colloidal thoria and colloidal titania, and which is substantially free from ionic contamination, applying a direct electrical potential between the mould former electrically conductive surface and the suspension to electrophoretically deposit refractory particles from the suspension as a coating on to the electrically conductive surface, removing the mould former with the coating thereon from the suspension, applying further refractory particles to the coating to form a foundry mould therefrom, and then separating the foundry mould from the mould former.

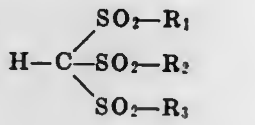
3,850,734
PROCESS FOR DEPOSITING A FILM

Girish Girdhar Parekh, Stamford, and Werner Josef Blank, Wilton, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 130,526, April 1, 1971, Pat. No. 3,723,374. This application Oct. 2, 1972, Ser. No. 294,041
Int. Cl. B01k *5/02;* **B44d** *1/36;* **C23b** *13/00*
U.S. Cl. 204—181 **9 Claims**

1. In a process for hard-coating a metal substrate, the improvement which comprises: coating said metal substrate with a water dispersed composition comprising (A) from about 40% to about 95%, by weight, of an anionic acrylic polymer, said polymer containing from 2.5% to 50% by weight of monomer units providing carboxyl groups or from 0.5% to 10% by weight of monomer units providing alcoholic hydroxyl groups or mixtures of the same, (B) from about 4.9% to about 50%, by weight, of an amino aldehyde cross-linking agent, said

agent being unetherified, partially or completely etherified, and (C) from about 0.1% to about 10%, by weight, of a tris sulfonyl methane having the structure:



wherein R_1, R_2, and R_3 are each an alkyl radical of from 1 to 18 carbon atoms or an aromatic radical, while radicals are the same or different,

said percentage of (C) being based on the overall solids content of said (A) and (B), depositing a film ranging from about 0.6 to about 1 mil in thickness, heat treating the so-coated metal substrate at a temperature from about 210°F. to about 350°F., and recovering a hard-coated substrate impervious to organic solvents.

3,850,735

PROCESS FOR DEPOSITING A FILM

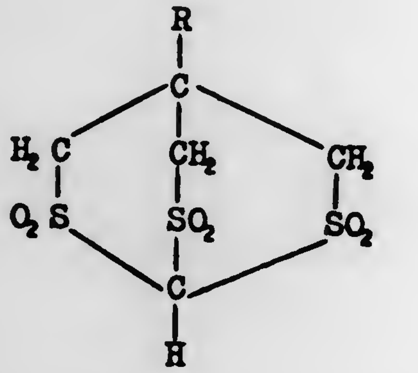
Girish Girdhar Parekh, Stamford, and Werner Josef Blank, Wilton, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 130,448, April 1, 1971, Pat. No. 3,719,627. This application Oct. 2, 1972, Ser. No. 294,042

Int. Cl. B01k *5/02;* **C23b** *13/00;* **B44d** *1/36*

U.S. Cl. 204—181 **9 Claims**

1. In a process for depositing a film on a metal substrate, the improvement which comprises: coating said metal substrate with a water dispersed composition comprising (A) from about 40% to about 95%, by weight, of an anionic acrylic resin, said resin containing from about 1.0% to about 25% carboxyl groups or from about 0.5% to about 10% alcoholic hydroxyl groups or mixtures of the same, (B) from about 4.9% to about 50%, by weight of a fully etherified amino aldehyde cross-linking agent, and (C) from about 0.1% to about 10%, by weight, of a cyclic trisulfone having the structure:



wherein R is an alkyl radical of from 1 to 4 carbon atoms, said percentage of (C) being based on the overall solids content of said (A) and (B), depositing a film ranging from abaout 0.6 to about 1 mil in thickness, heat treating the so-coated metal substrate at a temperature from 210°F. and 350°F., and recovering a hard-coated substrate, impervious to organic solvents.

3,850,736

DEVICE FOR MEASURING ACCELERATED CORROSION RATE

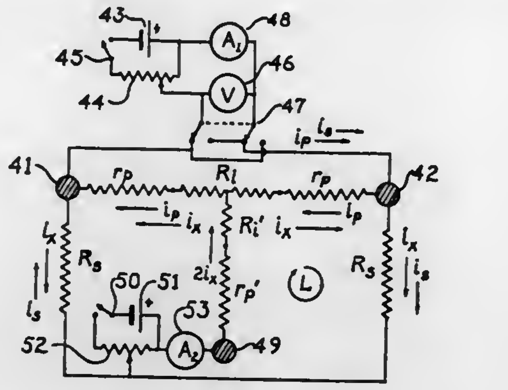
Robert G. Seyl, 1123 Mulford St., Evanston, Ill. 60202

Division of Ser. No. 791,653, Jan. 16, 1969, Pat. No. 3,694,324. This application Sept. 25, 1972, Ser. No. 291,967

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 C **2 Claims**

1. A device for cathodically polarizing two duplicated electrodes with substantially no interference with corrosion current measurement made with said electrodes, including an anode terminal for connecting to an anode electrode, a source of variable DC voltage with positive pole connected to said anode terminal, a current indicating meter in series with said source of variable DC voltage, two duplicated isolation resistors each connected at one end to the negative pole of said variable voltage delivery system, said indicating meter being in a series circuit with said anode terminal and said isolation resistors, and two cathode terminals each connected to the other end of one of said two isolation resistors and for connection to the two duplicated electrodes.



3,850,737

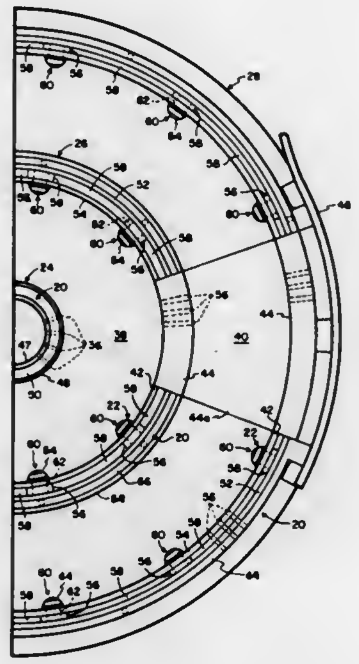
ELECTROPLATING BARREL WITH INTERNAL ANODE AND CATHODE

Kenneth Lui, Fountain Valley, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 26, 1972, Ser. No. 317,960

Int. Cl. C23b *5/78*

U.S. Cl. 204—213 **13 Claims**



1. An electroplating barrel for plating work parts comprising:

a plating drum having at least one plating chamber for containing said parts, means for placing parts in and removing parts from each chamber, cathode and soluble anode means within said drum adjacent each chamber with said anode means exposed for contact by plating solution in the chamber and said cathode means exposed for contact by both plating solution and work parts in the chamber, said cathode and anode means being rigidly fixed to and forming structural elements of the drum;

means for shielding said anode means of each chamber against contact by work parts in the chamber;

electrical terminals connected to said cathodes and anode means and accessible externally of said drum for connection to a d-c voltage source; and

means supporting said drum for rotation.

3,850,738

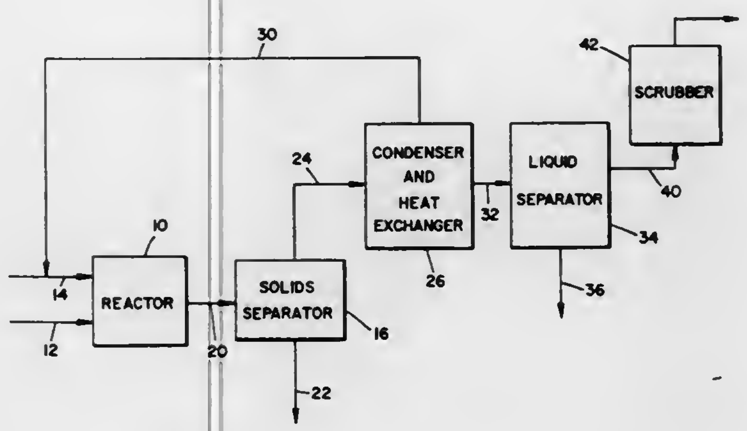
BITUMINOUS COAL LIQUEFACTION PROCESS

A. Theodore Stewart, Jr., Woodside, and Gene H. Dyer, San Rafael, both of Calif., assignors to Bechtel International Corporation, San Francisco, Calif.

Filed Dec. 6, 1973, Ser. No. 422,497

Int. Cl. C10g *1/06*

U.S. Cl. 208—8 **5 Claims**



1. A method for liquefying bituminous and subbituminous coal to provide high yields of C_7+ liquid fuel fractions which comprises:

contacting for a period of 1 to 5 minutes in a reaction zone a charge consisting of comminuted coal as a relatively cool flowable aqueous slurry, supercritical water, and hydrogen, wherein said water is at a temperature sufficient to maintain a temperature in the reaction zone in the range of 380° to 650°C, and the pressure in the reaction zone is maintained in the range of about 230 to 700 atm., whereby said coal is rapidly raised to the temperature of the reaction zone, and wherein the weight ratio of total water to coal in the reaction zone is in the range of from about 1 to 10:1, and the amount of water in said slurry is less than about one-half of the total amount of water introduced into said reaction zone;

separating said effluent into a solid phase and a supercritical fluid phase while substantially maintaining the temperatures and pressures of said reaction zone;

condensing said supercritical fluid phase into an organic phase enriched in C_7+ hydrocarbons and an aqueous phase; and

recovering said organic phase.

3,850,739

RETORTING OIL SHALE WITH SPECIAL PELLETS AND PRECOKING STAGE

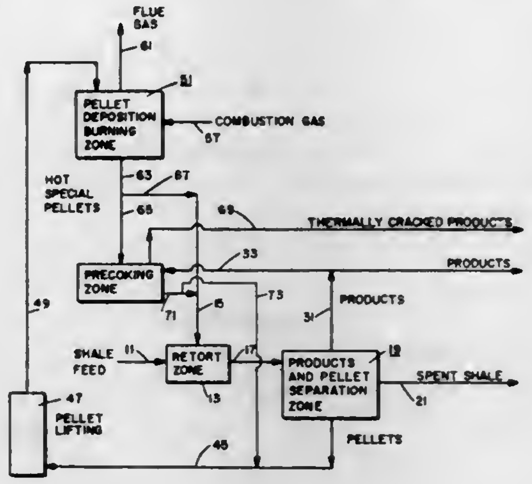
Donald K. Wunderlich, and James L. Skinner, both of Richardson, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 308,136, Nov. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 304,074, Nov. 6, 1972, abandoned, which is a continuation-in-part of Ser. No. 284,288, Aug. 28, 1972, abandoned. This application Oct. 26, 1973, Ser. No. 410,099

Int. Cl. C10b *53/06*

U.S. Cl. 208—11 **50 Claims**

1. In a method for retorting of crushed oil shale containing carbonaceous organic matter and mineral matter wherein pellets have been heated in a burning zone to a burning zone exit temperature of between 1,000°F and 1,400°F mainly by a combustion of a combustible carbon-containing deposition on said pellets, and wherein oil shale is retorted in a retort zone to gas and oil products, and solid particulate spent shale by contacting said oil shale with a sufficient amount of said heated pellets passed to said retort zone to provide at least 50 per cent of the heat required to vaporize a major portion of the carbonaceous matter from said oil shale and to heat said crushed oil shale from its retort zone inlet temperature to a retort zone outlet temperature of between 800°F and 1,150°F, and wherein said gas and oil products are separated and recovered, the improvement comprising passing at least a portion of said heated pellets from said heating zone to a thermal precoking zone and at the same time passing at least a portion of said oil products to said thermal precoking zone into contact with said pellets in said thermal precoking zone to effect some thermal stabilization and cracking of said oil products and to at least partially deposit a combustible coke-like deposition on the pellets passed to said thermal precoking zone, and thereafter eventually passing the pellets with said combustible coke-like deposition deposited thereon from said thermal precoking zone to said burning zone.



3,850,740

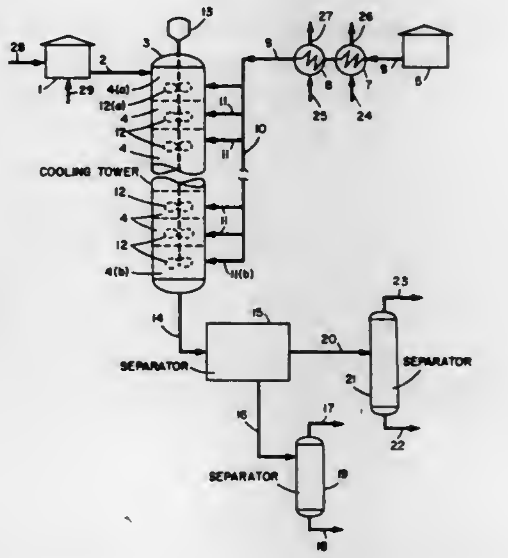
PARTIAL PREDILUTION DILUTION CHILLING

David A. Gudelis, and David H. Shaw, both of Sarnia, Ontario, Canada, assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Aug. 29, 1972, Ser. No. 284,647

Int. Cl. C10g *43/08*

U.S. Cl. 208—33 **7 Claims**



1. A process for the dewaxing of a waxy residual petroleum oil stock having a viscosity ranging between about 125 and 175 SUS at 210°F, said process comprising:

a. mixing said residual oil stock with between about 0.3 and 2 volumes of a predilution solvent per volume of oil stock, thereby depressing the cloud point of said residual oil stock and forming a first mixture comprising said predilution solvent and said residual oil stock;

b. introducing said first mixture at a temperature above the depressed cloud point of said residual oil stock into a cooling zone divided into a plurality of stages and passing said mixture from stage to stage of said cooling zone;

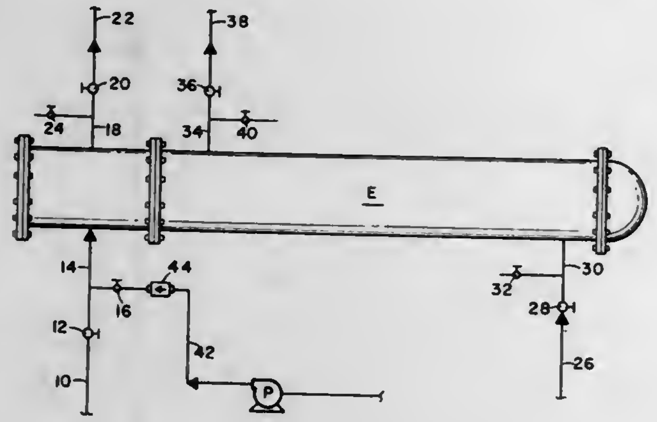
c. introducing dewaxing solvent into at least a portion of said stages of said cooling zone at a plurality of spaced points therealong;

d. mixing said dewaxing solvent with at least a portion of said first mixture as it passes from stage to stage of said cooling zone under conditions of high agitation, thereby forming a second mixture comprising said dewaxing solvent, said predilution solvent and said residual oil stock; and,

e. cooling said residual oil stock contained in said second mixture as it passes from stage to stage of said cooling zone, thereby reducing the temperature of said residual oil stock to below its depressed cloud point and precipitating at least a portion of said wax therefrom under said conditions of high agitation.

3,850,741
METHOD OF CLEANING HEAT EXCHANGERS

Joseph W. Callahan, Sulphur, La., and Gene R. Laningham, Houston, Tex., assignors to Cesco, Inc., Houston, Tex.
Filed May 23, 1973, Ser. No. 363,279
Int. Cl. C23g *5/02;* **C10g** *9/16*
U.S. Cl. 208—48 R **11 Claims**



1. A method for removing carbonaceous fouling from shell and tube heat exchangers used in hydrocarbon processes which comprise the steps of:

a. displacing a process stream on one side of the heat exchanger with a hydrocarbon solvent having at least about 50 wt. percent aromatic content, a Kauri-butanol value of at least about 90 and a minimum initial boiling point of at least about 350°F and an end point temperature of at least about 500°F, and retaining said solvent in said one side of the heat exchanger;

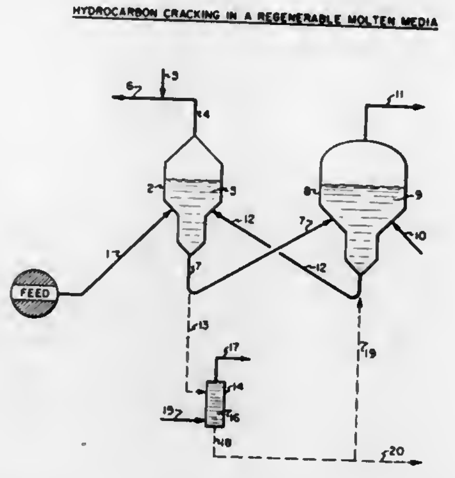
b. heating the solvent being retained in one side of the exchanger by passing a process stream through the other side of the heat exchanger as in normal operation of the heat exchanger for a period of at least about 8 hours to remove the carbonaceous fouling; and

c. displacing the solvent and removed fouling with the process stream.

3,850,742
HYDROCARBON CRACKING IN A REGENERABLE MOLTEN MEDIA

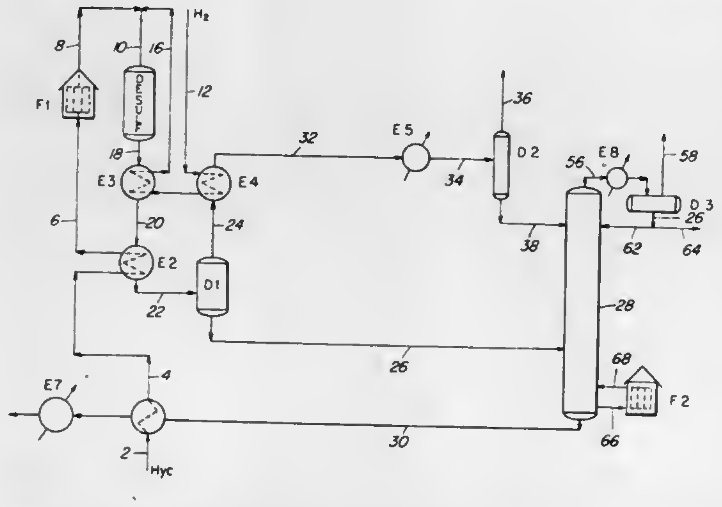
John J. Dugan; James P. Higgins, and Juan M. Salva, all of Sarnia, Ontario, Canada, assignors to Exxon Research and Engineering Company, Linden, N.J.
Continuation-in-part of Ser. No. 186,771, Oct. 5, 1971, abandoned. This application Aug. 14, 1972, Ser. No. 280,185
Int. Cl. C10g *11/02*
U.S. Cl. 208—114 **71 Claims**

1. A processs for cracking a hydrocarbon feedstock which comprises contacting said feedstock with a regenerable molten media comprising a glass-forming oxide selected from the group consistingn of oxides of boron, vandium silicon, tungsten, molybdenum and mixtures thereof in combination with an alkali metal compound selected from the group consisting of alkali metal oxides, alkali metal hydroxides, alkaline earth metal oxides, alkaline earth metala hydroxides and mixtures thereof wherein the mole ratio of the alkali metal compound expressed as the oxide thereof to the glass-forming oxide is at least about 1, at a temperature from above the melting point of said media to about 2,500°F. for a time sufficient to form cracked hydrocarbon products.



3,850,743
CATALYTIC HYDRODESULFURIZATION PROCESS

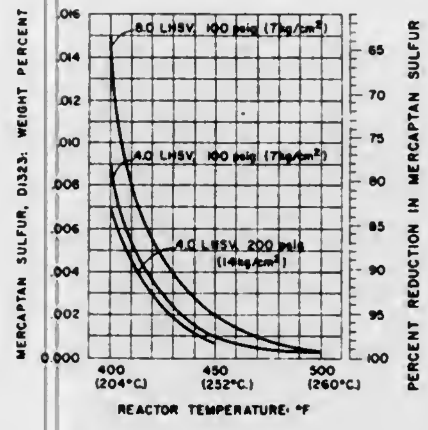
Alfred M. Peiser, Rocky Hill; Michael J. Antal, Trenton, both of N.J., and Gustave J. Weiss, New York, N.Y., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Mar. 12, 1973, Ser. No. 340,492
Int. Cl. C10g *23/00*
U.S. Cl. 208—209 **9 Claims**



1. In a process for desulfurizing hydrocarbons and separating the product effluent thereof into non-condensable hydrogen containing gas, hydrocarbon conversion products boiling below the hydrocarbon charge and a high boiling desulfurized product a method for improving the operating efficiency of the process which comprises passing the effluent of the desulfurization reaction sequentially through a plurality of indirect heat exchange zones, the first heat exchange zone being relied upon to provide heat to a hydrogen rich recycle gas stream and the second heat exchange zone being relied upon to provide heat to the hydrocarbon charge to be desulfurized, said sequence of indirect heat exchange zones being heated duty sized to reduce the temperature of the desulfurization effluent only sufficient to recover a liquid product stream thereof at an elevated temperature substantially supporting the temperature maintained in the bottom portion of a downstream product fractionating zone, recovering a high temperature vaporous material stream from the liquid product thus obtained, using the high temperature vaporous material to indirectly preheat hydrogen rich gas introduced to the process, further coding the vaporous material to a temperature permitting the separation of non-condensable hydrogen containing gaseous components from condensable liquid material, passing condensable liquid material to an upper portion of said fractionating zone as reflux material and passing the liquid product stream of elevated temperature separated from said high temperature vaporous material to a lower portion of said fractionating zone.

3,850,744
METHOD FOR UTILIZING A FIXED CATALYST BED IN SEPARATE HYDROGENATION PROCESSES

Robert A. Plundo, Greensburg; Thomas C. Readal, McCandless Township, and James R. Strom, O'Hara Township, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Feb. 27, 1973, Ser. No. 336,384
Int. Cl. C10g *31/14*
U.S. Cl. 208—210 **27 Claims**



1. A relatively low pressure hydrotreating process performed in a first and relatively low pressure reactor comprising passing a first feed oil comprising middle distillate straight run feed oil and hydrogen downwardly over a hydrodesulfurization catalyst that has been deactivated in a prior relatively high pressure hydrodesulfurization process, said prior process being operated in a second and high pressure reactor in downflow operation with a second feed oil at a pressure of at least 600 psi and at a temperature between 650° and 800°F. until said catalyst permanently possessed insufficient desulfurization activity for said high pressure process, said catalyst thereupon being removed from said second reactor and charged to said first and low pressure reactor for hydrotreatment of said first feed oil at a pressure no higher than about 150 psi and at a temperature between 400° and 550°F.

3,850,745
PROCESS FOR REMOVING SULFUR FROM CRUDE OIL

Robert D. Ellender, Jr., Star Route 2, Box 357, Sulphur, La. 70663
Filed Dec. 3, 1973, Ser. No. 421,127
Int. Cl. C10g *19/00*
U.S. Cl. 208—226 **8 Claims**

1. A crude oil desulfurization process which comprises:

a. contacting said crude oil with a calcium carbonate-containing material at atmospheric pressures and temperatures less than about 100°F. to form a partially desulfurized crude oil product and a residue product; and

b. separating said desulfurized crude oil product from said residue product.

3,850,746
HYDRODENITROGENATION OF HYDROCARBON FEEDSTOCKS WITH A CATALYST COMPOSITE OF CHRYSOTILE AND HYDROGENATION METAL

Harry E. Robson, Baton Rouge, La., assignor to Esso Research and Engineering Company, Linden, N.J.
Division of Ser. No. 233,368, March 9, 1972, , which is a division of Ser. No. 68,324, Aug. 31, 1970, Pat. No. 3,729,429. This application Aug. 24, 1973, Ser. No. 391,355
Int. Cl. C10g *23/02*
U.S. Cl. 208—254 H **7 Claims**

1. A process for the hydrodenitrogenation of a nitrogen-containing hydrocarbon feedstock boiling above about 180°C. which comprises contacting said feedstock with hydrogen and a catalyst composite comprising a chrysotile combined with a hydrogenation component.

3,850,747
HYDROCARBON CONVERSION USING AN IRIDIUM-GOLD CATALYST

John H. Sinfelt, Berkeley Heights, and Allan E. Barnett, Westfield, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.
Continuation-in-part of Ser. No. 883,601, Dec. 9, 1969,. This application Nov. 1, 1971, Ser. No. 194,461
Int. Cl. C10g *35/06;* **C07c** *15/00, 5/22*
U.S. Cl. 208—139 **2 Claims**

1. A hydrocarbon conversion process which comprises contacting a hydrocarbon material, under conversion conditions, with a catalyst comprising a refractory support in association with greater than 0.1 wt. % iridium, based on total catalyst, and 0.1 to 1.0 wt. % of gold, based on total catalyst, said iridium and gold being present on said refractory support in an atomic ratio varying from 1:10 to 10:1, the surface area of said iridium and gold on said support being at least 200 square meters per gram of said iridium and gold as determined by carbon monoxide chemisorption techniques, said catalyst containing less than about two atoms of sulfur per atom of iridium and gold and being substantially free of alkali and alkaline earth metal constituents.

3,850,748
METHOD OF PRODUCING ANIMAL CELLS IN SUSPENSION CULTURE

Roland A. Cook, Indianapolis, and Frederick T. Counter, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Filed June 28, 1973, Ser. No. 374,729
Int. Cl. C12k *9/00*
U.S. Cl. 195—1.8 **12 Claims**

1. A method of producing animal cells in suspension culture which comprises:

A. adding a population of at least about 10^5 of the cells per ml. to a suspension culture medium comprising:

Ingredient	Concentration Range (mg./l.)
NaCl	2410–2950
KCl	140–170
$NaH_2PO_4.H_2O$	500–600
$MgSO_4.7H_2O$	70–85
$NaHCO_3$	360–450
glucose	3150–3850
l-arginine	151–185
l-cystine	34–42
l-histidine	44–54
l-valine	66–80
l-isoleucine	76–92
l-leucine	76–92
l-lysine	85–101
l-methionine	21.5–26.5
l-phenylalanine	46–56
l-threonine	68–84
l-tryptophan	14.5–17.5
l-tyrosine	51–63
l-glutamine	525–640

l-alanine	12.5–13.5
l-asparagine.H_2O	21.5–26.5
l-aspartic acid	19–23
l-glutamic acid	20.5–25.5
l-proline	16–20
l-serine	15–18
glycine	11–13
choline chloride	1.4–1.8
folic acid	1.4–1.8
i-inositol	2.9–3.5
nicotinamide	1.4–1.8
d-calcium pantothenate	1.4–1.8
pyridoxal hydrochloride	1.4–1.8
riboflavin	0.14–0.18
thiamine hydrochloride	1.4–1.8
methyl cellulose, 15 cps	110–130
tryptose phosphate broth powder	1150–1400
blood serum	10–200 ml./l.

distilled pyrogen-free water q.s. to 1000 ml.;

B. said medium being contained in a culture vessel substantially all the medium-contacting surfaces of which are resinous, organic, polymeric surfaces;

C. culturing the cells, said culturing comprising the steps of:
1. agitating the medium sufficiently to keep the cells in suspension, but not so vigorously as to cause foaming of the medium or denaturation of components of the medium;
2. maintaining the temperature of the medium at about 32°C. to about 41°C.;
3. maintaining the pH of the medium at about 6.8 to about 7.2;
4. periodically removing part of the medium;
5. periodically replacing the medium removed with fresh medium;
6. periodically dispersing aggregates of cells; and
7. periodically removing a quantity of cells sufficient to maintain the cell population at about 10^5 to about 10^6 cells per milliliter.

3,850,749
PREPARATION OF OLIGORIBONUCLEOTIDES

Gabriel Kaufmann, and Uriel Z. Littauer, both of Rehovot, Israel, assignors to Yeda Research and Development Co., Ltd., Rehovoth, Israel

Filed June 12, 1972, Ser. No. 262,143

Claims priority, application Israel, June 11, 1971, 37076

Int. Cl. C12d *13/06*

U.S. Cl. 195—28 N **6 Claims**

1. A process for the preparation of oligoribonucleotides of defined and predetermined sequence containing the natural 3′-5′-internucleotide linkage, which comprises:
(a) reacting a desired oligonucleotide with a 2′(3′)-O-acyl nucleoside diphosphate in the presence of polynucleotide phosphorylase,
(b) isolating the product from the reaction mixture, and
(c) removing the 2′(3′)-O-acyl blocking group.

3,850,750
PREPARATION OF D-(−) PANTOIC ACID AND/OR D-(−) PANTOYL LACTONE

Raymond P. Lanziolotta, San Jose, Calif., assignor to Syntex Corporation, Republic of Panama, Panama

Filed June 4, 1973, Ser. No. 366,296

Int. Cl. C12d *1/02*

U.S. Cl. 195—30 **9 Claims**

1. A microbiological process for preparing optically active isomers selected from the group consisting of D–[−] pantoic acid; D–[−] pantoyl lactone and mixtures thereof; which comprises contacting a substrate comprising α-ketopantoic acid or α-ketopantoyl lactone with a culture of the fungus *Byssochlamys fulva* in a *Byssochlamys fulva* nutrient medium under aerobic conditions at pHs of about from 2 to 4, temperatures of about from 25° to 37°C and substrate concentrations of about from 1 to 6 grams of substrate per 100 ml. of the culture-nutrient medium.

3,850,751
ENZYMES IMMOBILIZED ON POROUS INORGANIC SUPPORT MATERIALS

Ralph A. Messing, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 16, 1973, Ser. No. 332,807

Int. Cl. C07g *7/02*

U.S. Cl. 195—63 **8 Claims**

1. An immobilized enzyme composite comprising an enzyme adsorbed to the inner surface of a porous, essentially non-siliceous ceramic body having an average pore diameter at least as large as the largest dimension of the enzyme and between about 100A and 500A, the porous ceramic body consisting of agglomerated metal oxide particles selected from the group consisting of alumina, titania, and zirconia and mixtures thereof and the porous ceramic body being a particle having a particle size between about 4 and about 200 mesh, U.S. Standard Sieve.

3,850,752
PROCESS FOR THE DEMONSTRATION AND DETERMINATION OF LOW MOLECULAR COMPOUNDS AND OF PROTEINS CAPABLE OF BINDING THESE COMPOUNDS SPECIFICALLY

Antonius Hermanus Wilhelmus Maria Schuurs, and Bauke Klass Van Weemen, both of Oss, Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Filed Oct. 29, 1971, Ser. No. 193,702

Claims priority, application Netherlands, Nov. 10, 1970, 7016396The portion of the term of this patent subsequent to Apr. 4, 1989, has been disclaimed.

Int. Cl. G01n *31/14, 33/16*

U.S. Cl. 195—103.5 R **13 Claims**

1. Process for the demonstration and determination of a low molecular weight organic compound by means of an antibody against said low molecular weight compound, comprising the steps of:
a. providing a given quantity of the coupling product of said low molecular weight organic compound with an enzyme;
b. providing a corresponding given quantity of an insolubilized antibody against said low molecular weight organic compound;
c. contacting a sample of a fluid containing the low molecular weight organic compound to be determined with said components (a) and (b) to form a reaction mixture; and
d. determining the enzyme activity of the liquid or the solid phase of the resulting reaction mixture, which activity is a measure of the quantity of low molecular weight organic compound to be determined.

4. Process for the demonstration and determination of a low molecular weight organic compound by means of a protein capable of reacting to bind said low molecular weight organic compound specifically, comprising the steps of:
a. providing a given quantity of the coupling product of said low molecular weight organic compound with an enzyme;
b. providing a corresponding given quantity of an insolubilized specific binding protein having more than one valency capable of reacting to bind said low molecular weight organic compound specifically;
c. contacting a sample of a fluid containing the low molecular weight organic compound to be determined with said components (a) and (b) to form a reaction mixture; and
d. determining the enzyme activity of the liquid or the solid phase of the resulting reaction mixture, which activity is a measure of the quantity of low molecular weight organic compound to be determined.

6. Process for the demonstration and determination of a specific binding protein having two or more binding sites by means of a low molecular weight organic compound capable of reacting to bind said protein specifically; comprising the steps of:
a. providing a given quantity of the coupling product of said low molecular weight organic compound and an enzyme;
b. providing a corresponding given quantity of an insolubilized specific binding protein having two or more binding sites capable of binding said low molecular weight organic compound;
c. contacting a sample of a fluid containing the protein to be determined with said components (a) and (b) to form a reaction mixture; and
d. determining the enzyme activity of the liquid phase of the resulting reaction mixture, which activity is a measure of the quantity of the specific binding protein to be determined.

3,850,753
CULTIVATION OF AEROBIC MICROORGANISMS

Ichiro Chibata, Suita; Shigeki Yamada, Toyonaka; Mitsuru Wada, Nara; Nobuhiko Izuo, Yamatotakada, and Totaro Yamaguchi, Yono, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Mar. 13, 1973, Ser. No. 340,879

Claims priority, application Japan, Mar. 23, 1972, 47-29302

Int. Cl. C12b *1/20*

U.S. Cl. 195—109 **5 Claims**

1. In a method of cultivating an aerobic microorganism in an aqueous nutrient medium under aeration, agitation and/or shaking, the improvement which comprises carrying out the cultivation in the presence of a water immiscible inert liquid fluorocarbon having one to 20 carbon atoms.

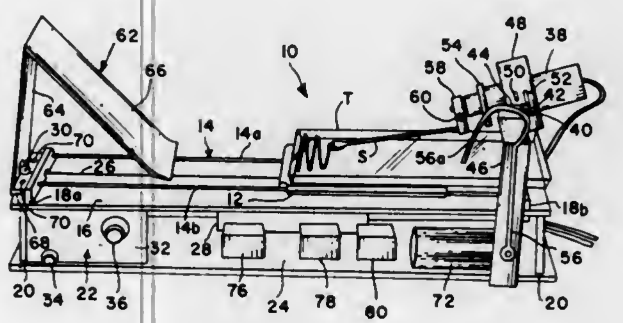
3,850,754
AUTOMATIC INOCULATING APPARATUS

Judd R. Wilkins, and Stacey M. Mills, both of Hampton, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 24, 1973, Ser. No. 326,364

Int. Cl. C12b *1/02*

U.S. Cl. 195—127 **10 Claims**



1. And automatic inoculating aparatus for inoculating element selected from the group consisting of a cotton swab and inoiculating loop, said aparatus comprising
a movablke carriage for supporting the container for the culture to be inoculated,
swabbing means for automatically swabbing the container to be inoculated, said swabbing means including as an inoculating element a cotton swab or an inoculating loop, a support arm for supporting the inoculating element and swabbing motor means for imparting a predetermined motion to said support arm,
actuator means for controlling the positioning of said swabbing means relative to said carriage such that said support arm is moved between a first, operative position wherein the inoculating element carried thereby contacts the container and a second inoperative position wherein the inoculating element is out of contact with the container, and
drive means for causing longitudinalk movement of said carriage relative to said swabbing means to provide inoculation of the container carried by said carriage along the length thereof.

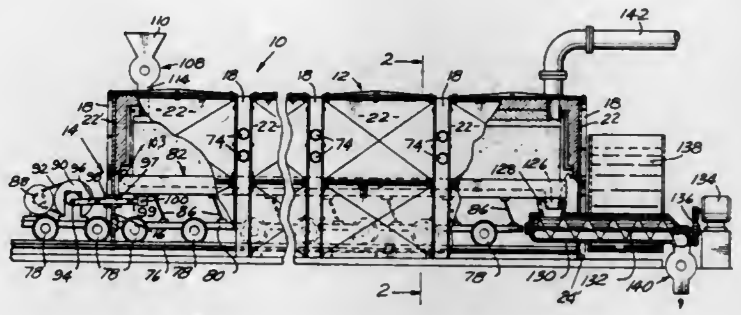
3,850,755
APPARATUS FOR PYROLYTIC DECOMPOSITION OR HEAT TREATMENT OF MATERIAL

James A. Welty, 3964 Seventh St., Riverside, Calif. 92501

Filed Apr. 23, 1973, Ser. No. 353,711

Int. Cl. C10b *7/04*

U.S. Cl. 202—119 **9 Claims**



1. Apparatus for pyrolytic decomposition of organic material, comprising:
an enclosed chamber comprising a structural framework, an air-tight outer shell, and an inner ceramic lining for thermal insulation and to reflect heat;
said outer shell being made up of a plurality of plates mounted on said framework and separately removable therefrom to provide access from the outside to any desired portion of said lining for repair purposes;
said lining comprising a plurality of separate ceramic blocks which are loose-fitting for expansion, and the blocks forming the side walls of said chamber being joined together at their abutting edges by removable keys seated in grooves in the blocks;
the blocks forming the side walls of said lining having portions thereof standing on supports formed by said framework;
said blocks being individually removable for replacement purposes by first withdrawing said keys from opposite side edges of the block to be removed;
means for heating the interior of said chamber up to a temperature at which pyrolytic decomposition of said material takes place;
a conveyor mounted within said chamber and extending the length thereof, said conveyor having a receiving end and a discharge end;
supply means, including a first air lock, for introducing material from outside said chamber to said receiving end of said conveyor;
discharge means, including a second air lock, for receiving the charred residue from said discharge end of said conveyor, and removing it from said chamber; and
means for drawing off gases generated by the pyrolytic decomposition of said material.

3,850,756
COAL CHARGING APPARATUS FOR A BATTERY OF HORIZONTAL COKE OVENS

Rolf Rossow, Bochum, Germany, assignor to Dr. C. Otto & Comp., G.m.b.H., Bochum, Germany

Filed July 26, 1973, Ser. No. 382,929

Claims priority, application Germany, Aug. 4, 1972, 2238373

Int. Cl. C10b *35/00, 27/04*

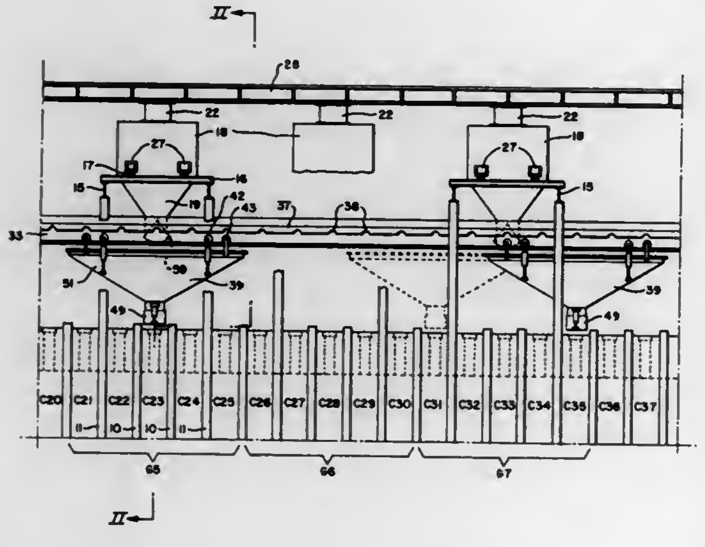
U.S. Cl. 202—262 **16 Claims**

1. A coal charging apparatus to load coal through charging holes into oven chambers of a battery of horizontally-arranged coke ovens, the charging holes for one oven chamber being arranged with respect to charging holes for another oven chamber to define rows of spaced-apart charging holes extending in a direction along the length of said coke ovens, said charging holes having removable covers supported by the roof of the oven chambers, said charging apparatus comprising:

transport means for conveying coal above the charging holes of said coke ovens,

a plurality of storage bins each including a closable outlet for storing coal received from said transport means,

frame means for supporting said storage bins at fixed and stationary locations above said coke ovens,



coal charging hoppers including coal receiving openings in constant, said opening communication with and disposed below the closable outlet of each of said storage bins, said hoppers being movable in a direction defined by said row of spaced-apart charging holes, and

a feed pipe having a lower end adapted to form a dust-tight connection with a charging hole for conveying coal from a coal charging hopper through a charging hole into an oven chamber.

3,850,757
DISTILLATION OF DIACETYLENICALLY UNSATURATED AROMATIC HYDROCARBONS
Jesse M. Looney, 611 Colgate, Big Spring, Tex. 79720
Continuation-in-part of Ser. No. 105,726, Jan. 11, 1971, abandoned. This application June 25, 1973, Ser. No. 373,179
Int. Cl. B01d *3/34;* **C07c** *7/00*
U.S. Cl. 203—9 **3 Claims**

1. A process for the distillation of high boiling diacetylenically unsaturated aromatic hydrocarbons comprising subjecting to distillation conditions within a distillation zone a distillation mixture consisting essentially of said high boiling diacetylenically unsaturated aromatic hydrocarbon and a high boiling aromatic hydrocarbon diluent, said diluent having a minimum boiling point at least 5°C. higher than the boiling point of said diacetylenically unsaturated aromatic hydrocarbons being distilled and being present in an amount greater than 15 volume percent of the mixture resulting from its admixture with the diacetylenically unsaturated compounds being distilled, said distillation being carried out under vacuum sufficient to maintain a maximum distillation temperature below 150°C., and separating overhead pure diacetylenically unsaturated aromatic hydrocarbon whereby polymerization of said diacetylenically unsaturated aromatic hydrocarbon during distillation is substantially prevented.

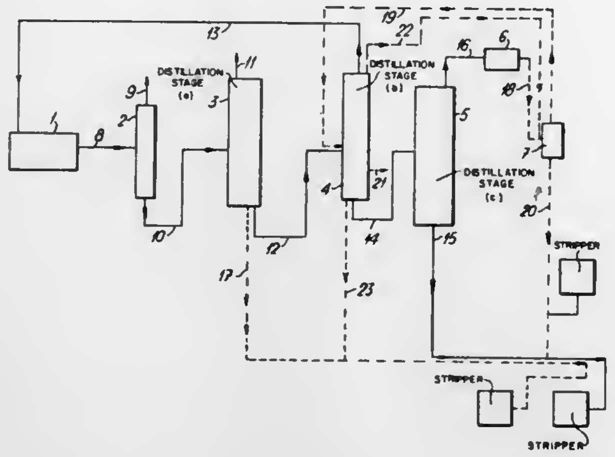
3,850,758
PURIFICATION OF CRUDE MALEIC ANHYDRIDE BY TREATMENT WITH DIMETHYLBENZOPHENONE
Addison M. Smith, Buffalo, and Eugene B. Recla, Hamburg, both of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.
Filed July 2, 1973, Ser. No. 376,099
Int. Cl. B01d *3/34;* **C07c** *57/14*
U.S. Cl. 203—38 **4 Claims**

1. A process for purifying crude maleic anhydride which comprises heating a solution of crude maleic anhydride in dimethylbenzophenone at total reflux at a temperature of at least 230°C, for at least 15 minutes and thereafter separating the maleic anhydride from the dimethylbenzophenone by distillation.

3,850,759
PURIFICATION OF PARTIALLY FLUORINATED CYCLOBUTANES
William M. Hutchinson, 3604 S.E. Woodland Rd., Bartlesville, Okla. 74003
Filed Oct. 23, 1973, Ser. No. 408,481
Int. Cl. B01d *3/36;* **C07c** *23/06*
U.S. Cl. 203—58 **4 Claims**

1. A process of separating a close-boiling mixture of partially fluorinated cyclobutanes containing 4 to 6 fluorine atoms which comprises subjecting said mixture to ozeotropic distillation in the presence of an entraining agent selected from the group consisting of methyl formate, ethyl formate and propylene oxide.

3,850,760
SEPARATION OF ISOPROPYL-AMINES BY PLURAL STAGE DISTILLATION
Paul Otto Lenel, and William Featherstone, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England
Filed Jan. 15, 1973, Ser. No. 323,350
Int. Cl. B01d *3/00;* **C07c** *85/02*
U.S. Cl. 203—84 **8 Claims**



1. A process for the separation of mono- and di-isopropylamine from a reaction stream containing these amines, acetone and water which comprises the following steps

i. distilling the reaction stream in a first distillation stage (a) so as to take off pure mono-isopropylamine overhead and passing the bottoms product to a second distillation stage (b) in which,

ii. acetone and the remaining mono-isopropylamine is removed as an overhead product and the bottoms product comprising di-isopropylamine and water is passed to a third distillation stage (c),

iii. in which a mixture of water and di-isopropylamine is taken off overhead and sent to storage following which,

iv. the mixture of water and di-isopropylamine is phase-separated to give a di-isopropylamine rich phase and a water rich phase and at predetermined time intervals the di-isopropylamine rich phase is recycled as feed to the second distillation stage (b) at which time the bottoms product from (a) is recycled as feed to (a) or stored or sent to a separate stripper and substantially pure di-isopropylamine is removed as a sidestream from distillation stage (b).

ERRATA

For Classes 204—181 thru 204—213 see:
Patents Nos. 3,850,732 thru 3,850,737

3,850,761
CYANIDE DECOMPLEXING
James W. Ross, Richmond, Va., assignor to Orion Research Incorporated, Cambridge, Mass.
Filed Mar. 1, 1973, Ser. No. 336,934
Int. Cl. G01n *27/46;* **C01b** *21/00, 31/00*
U.S. Cl. 204—1 T **5 Claims**

1. Method of decomplexing a cyanide complex of Cu^+, Ni^{++} or Cr^{+++} in aqueous solution preparatory to electrochemical measurement of cyanide ion activity, comprising the steps of heating an acidified solution of said cyanide complex in the presence of a water-soluble sequestering agent at a temperature below the boiling point of said acidified solution for a sufficient time to effect substantially complete dissociation of said cyanide from said complex, said sequestering agent being capable of forming, with the metal of said complex, a complex having a stability constant of sufficient magnitude relative to the stability constant of the corresponding cyanide complex so that the cyanide is freed into said solution from its complex and thereafter adjusting the pH of the solution to a basic value in excess of about 10 so that substantially all of the cyanide in the solution remains in the form of free ions.

3,850,762
PROCESS FOR PRODUCING AN ANODIC ALUMINUM OXIDE MEMBRANE
Alan W. Smith, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Aug. 13, 1973, Ser. No. 387,872
Int. Cl. C23b *7/00, 5/48, 5/50*
U.S. Cl. 204—11 **5 Claims**

1. The method of making a porous membrane for water desalination comprising the steps of:

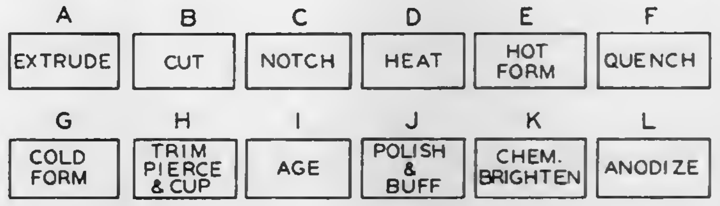
a. forming an oxide coating on a sheet of aluminum in an anodizing solution which produces an oxide, said oxide comprising a generally porous layer and a non-porous layer;

b. removing any of said sheet of aluminum remaining after said anodization of said sheet of aluminum;

c. removing said non-porous layer of oxide; and,

d. treating said generally porous layer so that it allows the flow of water but restricts the flow of salts.

3,850,763
METHOD OF PRODUCING A VEHICLE BUMPER
Fredrick W. Zinnbauer, Dearborn, and Jack C. Ferner, Detroit, both of Mich., assignors to Reynolds Metals Company, Richmond, Va.
Filed Nov. 14, 1973, Ser. No. 415,766
Int. Cl. C23b *9/02;* **C22d** *1/04*
U.S. Cl. 204—33 **21 Claims**



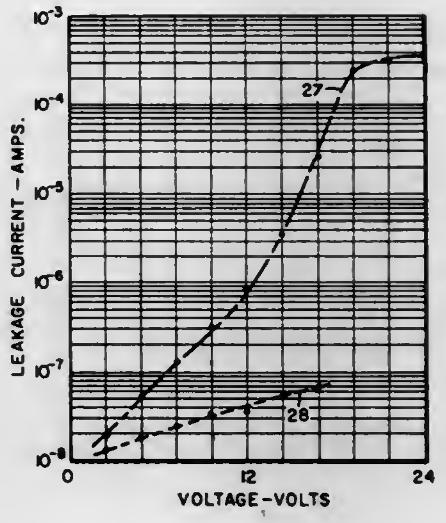
1. A method of producing an automotive vehicle bumper from an extruded blank of a heat treatable, age hardenable aluminum alloy, said blank being of a length suitable for producing the bumper, comprising:

a. solution heat treating and hot working the blank to a preliminary bumper contour by the steps of:
   1. heating the blank to a solution heat treating temperature for the alloy,
   2. working the blank while hot to form the preliminary contour, and
   3. quenching the hot worked blank to a temperature at which the temper of the alloy is unstable,

b. cold working the blank while the temper of the alloy is unstable from the preliminary contour to a second bumper contour which conforms to and is dimensionally stable with respect to prescribed dimensional parameters for the bumper, and

c. ageing said dimensionally stable blank.

3,850,764
METHOD OF FORMING A SOLID TANTALUM CAPACITOR
Andrew Herczog, Painted Post; Joseph M. Power, Corning, and James W. Smith, Painted Post, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Apr. 11, 1974, Ser. No. 459,878
Int. Cl. C23f *17/00;* **H01g** *9/16*
U.S. Cl. 204—38 A **8 Claims**



1. The method of forming a solid tantalum capacitor comprising the steps of prociding a porous tantalum slug, anodizing the surface of said tantalum slug to form a dielectric layer thereon, depositing a coating of manganese nitrate over said dielectric layer, heating the composite so formed to a temperatuere of between 225°C. and about 300°C. for a period of time sufficient to convert said manganese nitrate to a layer manganese dioxide, then subjecting said composite to reanod-

ization, depositing a second coating of manganese nitrate over the exposed surface of said composite, and reheating said composite at a temperature of between 175°C. and 225°C. for a period of time sufficient of convert said second coating of manganese nitrate to manganese dioxide, said reheating temperature being at least 25°C. less than the first heating temperature.

3,850,765
BRIGHT SOLDER PLATING

George A. Karustis, Jr., Westfield, and Elizabeth P. Leahy, North Caldwell, both of N.J., assignors to Oxy Metal Finishing Corporation, Warren, Mich.

Filed May 21, 1973, Ser. No. 362,595

Int. Cl. C23b *5/38*

U.S. Cl. 204—43 S **7 Claims**

1. An aqeuous acidic composition suitable for electroplating a bright tin-lead alloy of high solderability, comprising:

a. 3.5 – 60 g/l divalent tin;
b. 30 – 45 wt. percent divalent lead, based on the total of lead and tin in the bath;
c. 6–12 g/l formaldehyde;
d. at least 0.1 g/l of an aryl primary amine;
e. at least 0.001 g/l of a condensation product of an aromatic aldehyde and an aromatic amine; and
f. a surfactant combination comprising:
    1. an anionic surfactant;
    2. an amphoteric surfactant; and
    3. a non-ionic surfactant.

3,850,766
ELECTROPLATING BRIGHTENER COMPOSITIONS AND PROCESS

John C. Kosmos, Hasbrouck Heights, N.J., assignor to Sterwin Chemicals, Inc., New York, N.Y.

Filed Mar. 28, 1974, Ser. No. 455,526

Int. Cl. C23b *5/10, 5/46*

U.S. Cl. 204—50 Y **12 Claims**

7. An electroplating brightener composition for addition to zinc or cadmium alkaline cyanide electroplating baths comprising an aqueous solution containing, in parts by weight:

Sodium lignin sulfonate	1.1–4.8
Veratraldehyde	1.0
Vanillin	0.1–2.5
Corn syrup or glucose	1.7–5.0

and a molar equivalent amount of sodium bisulfite equal to the total molar equivalent amount of the vanillin and veratraldehyde.

9. An electroplating brightener composition for addition to zinc still plating alkaline cyanide electroplating baths comprising an aqueous solution containing, in parts by weight:

Sodium lignin sulfonate	1.1–4.8
Veratraldehyde	1.0
Vanillin	0.1–2.5
Corn syrup or glucose	1.7–5.0
Ammonium heptamolybdate	0.017–0.2

and a molar equivalent amount of sodium bisulfite equal to the total molar equivalent amount of the vanillin and veratraldehyde.

3,850,767
ELECTROLYTIC TREATMENT OF STAINLESS STEEL HAVING AN OXIDIC FILM

Anthony Northcott Skedgell, Birmingham; Victor Albert Smith, Warley, and Thomas Ernest Evans, Solihull, all of England, assignors to The International Nickel company, Inc., New York, N.Y.

Filed Oct. 27, 1972, Ser. No. 301,640

Claims priority, application Great Britain, Nov. 3, 1971, 51164/72

Int. Cl. C23b *11/02*

U.S. Cl. 204—56 R **9 Claims**

1. A process for hardening an oxidic film on iron-base, chromium-containing, corrosion-resistant alloy formed by treatment of said alloy in an aqueous solution of sulfuric acid and chromic acid which process comprises treating said alloy having said film on the surface thereof as a cathode in an aqueous solution having a pH in excess of about 0.5, containing in ionic form metal from the group consisting of aluminum, titanium, vanadium, chromium, molybdenum, tungsten, manganese, iron, cobalt, nickel, copper, zinc, tin and silicon and having the pH regulated within a special range for each type of ion so that oxide will be deposited at said cathodic surface in preference to metal.

3,850,768
METHOD OF CONTROLLING THE SUPPLY OF AL O DURING THE OPERATION OF A CELL FOR ELECTROLYTIC RECOVERY OF ALUMINUM

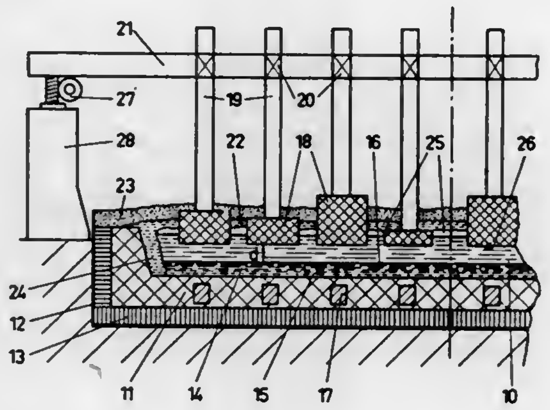
Wolfgang Schmidt-Hatting, Chippis; Kiranendu Chaudhuri, Gampel, and Peter Bachofner, Liebefeld, all of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed July 10, 1973, Ser. No. 378,233

Claims priority, application Switzerland, July 18, 1972, 10750/72

Int. Cl. C22d *3/12*

U.S. Cl. 204—67 **2 Claims**



1. A method of controlling the supply of Al_2O_3 by at least two combined voltage and current intensity or Amperage measurements during the operation of a cell for electrolytic recovery of aluminum, comprising the following operations carried out successively: (a) measuring the cell current intensity at a normal working point; (b) thereafter making a first reduction of the current intensity by at least 5 percent and at most 8 percent in one or more steps until attainment of cell stability and straightness of the voltage-current graph, the percentages being of the current intensity at the working point; (c) subsequently measuring the values of voltage and current intensity of the cell at a time period between one-half of one minute and 2 minutes after the first current intensity reduction, this constituting the first of said combined measurements; (d) making thereafter, a second reduction of current intensity to a total current intensity reduction of at most 25 percent, but at least of 10 percent more than the first reduction, up to at latest 10 minutes after the first current intensity reduction; (e) subsequently measuring the values of voltage and current intensity of the cell at a time period between one- half of one minute and 2 minutes after the second current intensity reduction, this constituting the second combined measurement; (f) thereafter restoring the current intensity to the normal working point; (g) extrapolating to the cell voltage E_o at cell current equalling zero from the values of voltage and current intensity after the first current intensity reduction and after the second current intensity reduction; (h) determining the concentration of Al_2O_3 in the cell on the basis of the relationship between the term E_o of the EMF independent of current density and the Al_2O_3 concentration: (i) supplying a larger or smaller addition of Al_2O_3 to the electrolyte at each servicing of the cell, if the Al_2O_3 concentration departs downwards or upwards from a predetermined value.

3,850,769
METHOD FOR THE ELECTROLYTIC POLISHING OF NIOBIUM STRUCTURES

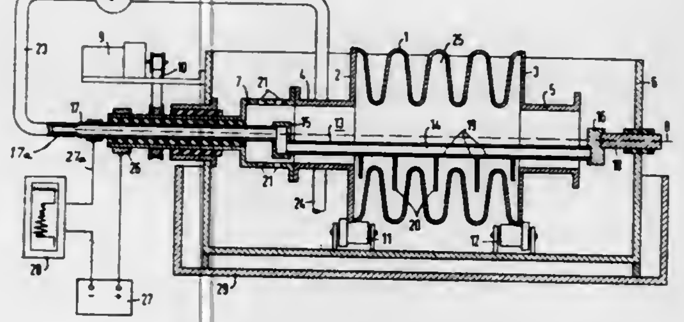
Heinrich Diepers, Erlangen-Bruck, and Otto Schmidt, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 15, 1972, Ser. No. 289,543

Claims priority, application Germany, Sept. 18, 1971, 2146794

Int. Cl. C23b *3/06;* **B01k** *3/04*

U.S. Cl. 204—129.43 **7 Claims**



1. A method for electrolytically polishing a hollow niobium structure having at least one opening therein comprising the steps of

a. partially immersing the hollow niobium structure in an aqueous electrolytic bath containing sulphuric acid and hydrofluoric acid,
b. orienting said structure so that an interior vapor space is provided in said structure above said bath communicating exteriorly thereof,
c. inserting an elongated cathode into said structure and disposing it so that gases generated at said cathode will pass directly into said vapor space without contacting the immersed surfaces of said structure,
d. rotating said structure stepwise through successive angular displacements so that the separate portions of the entire interior surface of the structure are successively immersed in said bath
e. maintaining said structure at rest for a preselected time interval between each stepwise movement thereof and during each said interval
    1. applying a constant voltage between said cathode and said structure as an anode to cause damped current oscillations to be superimposed on the electrolytic current,
    2. disconnecting said voltage before said oscillations cease,
    3. continuing said structure at rest until any oxide layer formed on said immersed portion of said structure is dissolved.

3,850,770
RADIATION CURABLE COMPOSITIONS FROM ACRYLURETHANE RESINS

Kiyoshi Juna; Takeo Imai; Hiroyuki Nakayama; Nobuyuki Kita; Kiyohiko Asada, and Tetsuo Aihara, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 81,136, Oct. 15, 1970, abandoned. This application Apr. 12, 1973, Ser. No. 350,400

Claims priority, application Japan, Oct. 24, 1969, 44-84628

Int. Cl. B01j *1/10;* **C08f** *29/36;* **C08g** *41/04*

U.S. Cl. 204—159.19 **7 Claims**

1. A photopolymerizable composition for printing plates comprising (1) 40 to 80% by weight of unsaturated acrylurethane resin prepared by reacting a diisocyanate monomer with a polyhydric alcohol having a molecular weight of up to about 2,000 such that 0.8 to 1.2 moles of the diisocyante monomer reacts with the stoichiometric equivalent of the hydroxyl groups, and then reacting said reaction product with a polymerizable acrylate ester or methacrylate ester having a hydroxyl group such that one stoichiometric equivalent of free isocyanate groups remaining in said reaction product reacts with 0.9 to 1.2 of the stoichiometric equivalent of the hydroxyl groups, (2) 60 to 20% by weight of a polymer which is compatible with said unsaturated acrylurethane resin and is soluble in dilute aqueous alkali solutions or alcohols, said polymer being selected from the group consisting of half esters or their metal salts obtained by reacting anhydrides of di- or tricarboxylic acids with cellulose derivative, half esters obtained by reacting polyvinyl alcohol or partially saponified polyvinyl alcohol with anhydrides, of di- or tricarboxylic acids, copolymers prepared by copolymerizing acrylic acid or methacrylic acid with vinyl monomers, half esters prepared by reacting copolymers containing 20 to 80% by weight of acrylate esters having hydroxyl group with vinyl monomers, alcohol-soluble nitrocellulose, and alcohol-soluble nylons and mixtures thereof, and (3) 0.001 to 5% by weight of a photo-sensitizer which is capable of hardening said unsaturated acrylurethane resin under irradiation of actinic rays.

3,850,771
MAKING OF USEFUL PRODUCTS FROM CELLULOSE-ONTAINING GARBAGE

Ronald A. Penque, Glen Ridge, N.J., assignor to Biocel Corporation, Glen Ridge, N.J.

Filed Jan. 8, 1971, Ser. No. 105,123

Int. Cl. B29b *1/00;* **C08d** *9/08*

U.S. Cl. 264—176 **9 Claims**

1. A method of making a useful product comprising xanthating solid waste selected from anaerobically treated garbage, aerobically treated garbage, composted garbage or comminuted garbage containing cellulose to form cellulose xanthate, mixing said xanthated solid waste with other such solid waste, and treating said mixture to reconvert the cellulose xanthate in situ to form a binder throughout the solid waste mass.

3,850,772
ELECTRODEPOSITION OF ORGANOPOLYSILOXANE-CONTAINING COATINGS TO PROVIDE IMPROVED GLOSS AND WEATHER RESISTANCE

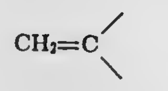
Kazys Sekmakas, Chicago, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 660,931, Aug. 16, 1967, , which is a continuation-in-part of Ser. Nos. 478,736, Aug. 10, 1965, abandoned, and Ser. No. 605,607, Dec. 29, 1966, Pat. No. 3,468,836. This application Aug. 27, 1971, Ser. No. 175,763

Int. Cl. B01k *5/02*

U.S. Cl. 204—181 **13 Claims**

1. A method of electrodepositing on the anode a film characterized by improved gloss and weather resistance from an aqueous bath comprising passing a unidirectional electrical current through an aqueous bath having dispersed therein an aminoplast resin in admixture with a solution addition copolymer having at least 1% of organopolysiloxane condensed therein, said copolymer having an acid value of from 12 to 100, an hydroxy value of at least 10 and the major weight proportion of the copolymer consisting of monomers containing a single



$$CH_2{=}C\langle$$

group to provide a copolymer which is essentially linear, said organopolysiloxane containing an average of at least 1.2 silicon OH or alkoxy groups per molecule and being condensed with hydroxy groups to eliminate from 50 to 95% of the water or alcohol of reaction from the silicon OH or alkoxy groups and thereby incorporate the same into said copolymer in the form of an ether, said aminoplast resin being present in an amount of from 1 to 40% by weight, based on total resin, said aqueous bath having a solids content of from 4 to 20% by weight and containing at least 12% of water miscible organic solvent, based on the weight of said resin, and said addition copolymer being dispersed in said aqueous bath in the form of a salt of said copolymer with a base, whereby said current will deposit a water insoluble film of said copolymer and said aminoplast on said anode, and baking said film to cure the same whereby the siloxane content of said addition copolymer will enhance the gloss and exterior durability of the electrodeposited film.

3,850,773

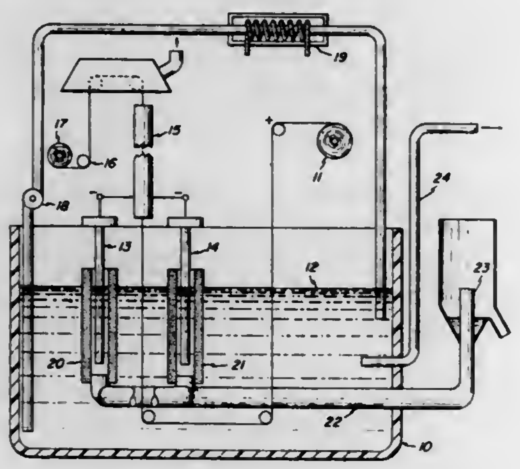
METHOD FOR MAKING POLYIMIDE COATED CONDUCTORS IN A CONTINUOUS MANNER

John H. Lupinski, Scotia, N.Y., and James M. McQuade, Fort Wayne, Ind., assignors to General Electric Company, Schenectady, N.Y.

Filed June 23, 1972, Ser. No. 265,535

Int. Cl. B01k ***5/02;*** **C23b** ***13/00***

U.S. Cl. 204—181 **11 Claims**



1. A continuous method for coating electrical conductor with polyamide acid which comprises, continuously passing the electrical conductor into an electrocoatable polyamide acid salt bath having at least one other electrode at a different electrical potential than said electrical conductor and effecting the electrodeposition of polyamide acid onto said electrical conductor from said electrocoatable polyamide acid salt bath which is a member selected from the class consisting of

A. a mixture of
  i. particulated polyamide acid having less than 25 ppm of titratable chloride
  ii. water
  iii. aprotic solvent
  iv. base

where the ratio of ii/iii can have a value of from 3.75:1 and (i) can be present at from 2 to 15 percent by weight of the mixture,

and

B. a mixture of v. polyamide acid
  vi. water
  vii. aprotic solvent
  viii. base

where the ratio of vi/vii can have a value of from 0.5 to 3.75 and (v) can be present at from 2 to 15 percent by weight of the mixture, where said electrocoatable polyamide acid salt bath is being continuously maintained within the aforedescribed solid concentration and aprotic-water solvent ratios during the continuous electrocoating of said electrical conductor by the use of a membrane which is employed to isolate the cathode in the electrocoating bath, which is semipermeable during continuous electrocoating conditions to allow for the selective transport of base, water and aprotic solvent into the cathode compartment and substantially preventing transport of polyamide acid into such cathode compartment, while make up polyamide acid salt mixture is being continuously introduced into the bath.

3,850,774

APPARATUS FOR LABELLING CONTAINERS SUCH AS BOTTLES

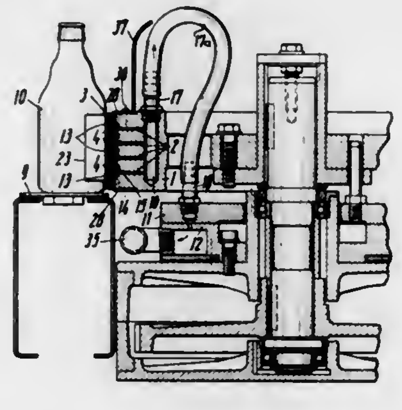
Bruno Schonig, and Ernst Schlacht, both of Berlin, Germany,, assignors to Johann Weiss Maschinenfabrick und Apparatebau GmbH, Berlin, Germany

Filed Dec. 26, 1972, Ser. No. 318,467

Claims priority, application Germany, Jan. 25, 1972, 2203996

Int. Cl. B44c ***1/24***

U.S. Cl. 156—455 **19 Claims**



1. Apparatus for labelling objects, such as bottles, used in combination with a conveyor belt which supplies and carries away the objects comprising a label store, means to pass labels from the store to a distributor, a label distributor arranged adjacent one edge of the conveyor belt and a counter-suppoort arrangement for the objects facing the label distributor and adjacent the other edge of the conveyor belt, said label distributor comprising an endless, yieldable belt which has a stretch parallel to the conveyor belt, guide members mounting said distributor belt and rotatable about axes perpendicular to the supporting surface of the conveyor belt, the distributor belt being driven by at least one of said guide members with the speed of travel of the conveyor belt, the distributor belt having at least one group of aligned openings subject to suction for gripping the labels, and means whereby a sub-atmospheric air pressure is adapted to be admitted from a suction air source to the said openings through a fixed rotary slide valve, the improvement comprising: fluid communication passages from the front surface to the rear surface of said distributor belt; at least one of said guide members being a rotary cylinder, on the external circumference of which open at least one group of substantially radially directed bores having associated means which can be brought into communication with the suction air source by way of the rotary slide valve as long as said cylinder bores are in communication with

fluid communication passages arranged in the distributor belt and during the passage of the distributor belt past a station where the distributor picks up a label until that part of the belt travel where the distributor carried label reaches an object which is on the conveyor belt and in position to be labelled.

3,850,775

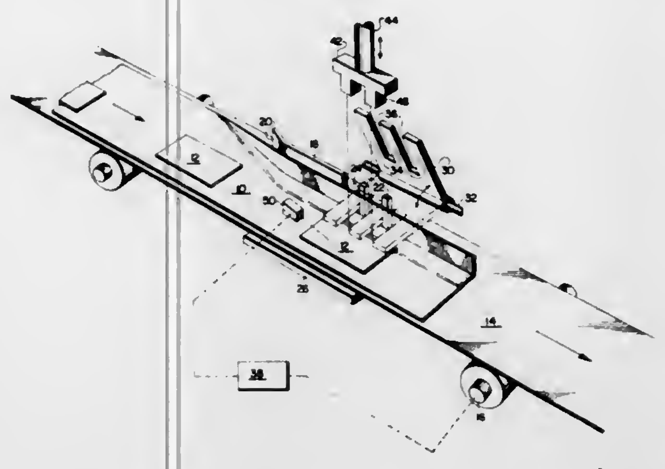
LAMINATING APPARATUS

Louis O. Bruneau, Weston, and Richard Gulbrandsen, Beverly, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 9, 1973, Ser. No. 339,847

Int. Cl. B32b ***31/00;*** **B30b** ***15/34***

U.S. Cl. 156—463 **4 Claims**



1. Apparatus for folding and laminating a web having a plurality of articles positioned thereon at spaced intervals so that the edge of said web may be folded against said articles and laminated thereto, said apparatus comprising web advancing means, first folding means positioned to deflect a longitudinal edge of the advancing web out of the plane of the remainder of the web, said first folding means including a portion provided with aperture means therein, second folding means including means extending through the aperture means provided in said first folding means to further fold the edge of the web over towards the remainder of the web, said second folding means having at least one opening provided therein overlying the folded edge of the web, and laminating means movable into sealing contact with the folded edge of the web, said laminating means including a projection positioned to extend through each opening provided in said second folding means to spot laminate the web, said apparatus further comprising means to control said web advancing means to sequentially advance respective articles positioned on the web to a position contiguous to said second folding means and said laminating means and to stop the advancement of the web during the operation of said laminating means.

3,850,776

APPARATUS FOR JOINING A TUBULAR THERMOPLASTIC CONTAINER JACKET, BY MEANS OF ULTRASONICS TO A THERMOPLASTIC END CAP TO FORM A LIQUID-TIGHT SEAL

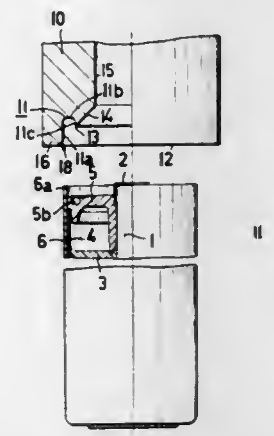
Ernst Karobath, Einsiedeleigasse 16; Leopold Rippel, Czartoryskigasse 3/5; Hans Schmidinger, Rotenmuhlgasse 46, and Wolfgang Pulitzer, Dempschergasse 19/4,, all of Vienna,, Austria

Division of Ser. No. 205,583, Dec. 7, 1971,. This application Dec. 11, 1972, Ser. No. 313,871

Int. Cl. B23k ***27/00***

U.S. Cl. 156—475 **11 Claims**

1. An apparatus for joining a projecting end portion of a cylindrically shaped thermoplastic jacket to a circularly shaped thermoplastic cap located within said jacket, apparatus comprising a sonotrode having a working end for generating ultrasonic oscillations, said working end having an annular recess defined therein and a part extending away from the outer wall of said recess in a direction perpendicular to the aixs defined by said recess, said outer wall having a diameter approximately the same as the diameter of said jacket, the bottom of said recess being the portion whereat said ultrasonic oscillations are converted to heat when said apparatus is in use



and whereby when said apparatus is used, said extended part of said working end engages said projecting end portion of said jacket to crimp said projecting end portion radially inward and to weld said jacket to said cap without contacting the bottom of said recess with said cap.

3,850,777

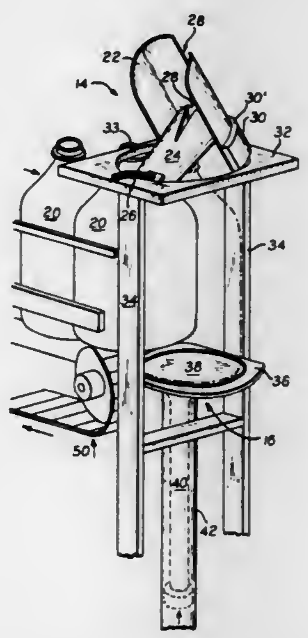
CONTAINER BANDING APPARATUS

Peter D. Mare, Upper Saddle River, N.J., and Albert L. Ross, Dix Hills, N.Y., assignors to Flip-On Packaging Inc., Long Island City, N.Y.

Filed Sept. 27, 1972, Ser. No. 292,692

Int. Cl. B32b ***1/08***

U.S. Cl. 156—494 **2 Claims**



1. Apparatus for banding containers comprising:

a. band applying and container positioning means adapted to receive thereover an opened container band;
b. means for inserting containers to be banded upwards into said applying and positioning means with a container band thereover;
c. means for removing banded containers from said applying and positioning means; and
d. said applying and positioning means including an arcuate member and a spring loaded tongue member adapted to receive an opened or semi-opened band thereover and a container to be banded upwards thereinto, the movement of said container upwards fully opening and/or stretching the band thereon which is adapted to slide from the arcuate and tongue members onto the container upon removal of the container therefrom, thereby banding same.

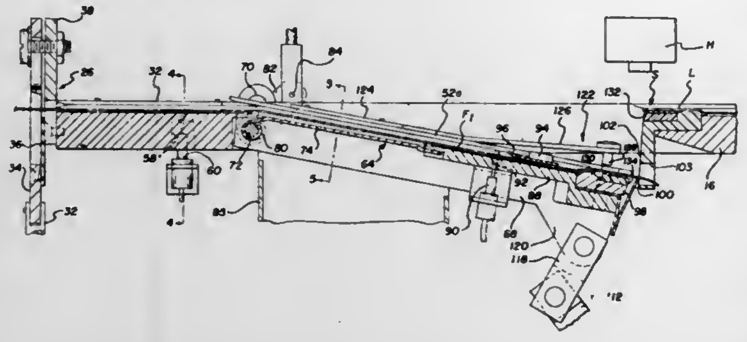
3,850,778
FILMSTRIP HANDLING DEVICE

Oliver W. Gnage, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 27, 1973, Ser. No. 336,292

Int. Cl. B31f *5/00;* **B65h** *69/02;* **G03d** *15/04*

U.S. Cl. 156—502 **11 Claims**



1. In an apparatus for successively moving a series of strips to and past a splicing station wherein the lead end of each strip is adapted to be spliced to the tail end of a preceding strip, a guideway for guiding said strips during such movement comprising:

a base;

a segmented guide track supported by said base, said guide track having, in order, an entrance section, a mid-section, and an exit section, the junction between said mid-section and said exit section being located at said splice station; said entrance section having drive means for selectively advancing successive strips along said segmented track to said splice station;

said mid-section being selectively pivotable about an axis between a first position out of alignment with said exit section and a second position in alignment therewith, said axis being located perpendicular to the forward direction of travel of said strip in said entrance section to maintain the continuity of the travel path of said strip between said entrance section and said mid-section;

means for pivoting said mid-section about said axis; and

means operable as said mid-section is pivoted from said first position to said second position for trimming the lead end of a strip in said mid-section to prepare said lead end for splicing in said splice station.

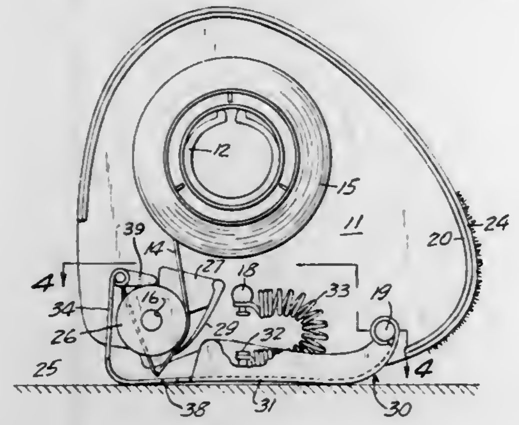
3,850,779
TAPE APPLICATOR

Walter C. Pearson, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 27, 1973, Ser. No. 383,192

Int. Cl. B32b *31/18*

U.S. Cl. 156—523 **4 Claims**



1. In a dispenser for pressure-sensitive adhesive tape comprising in combination

an applying and buffing member having a buffing surface;

a blade movable to and out of a severing position relative to said buffing surface,

guide means for positioning the blade adjacent the buffing surface,

a guard member movable relative to said buffing surface to an operative position adjacent to said buffing surface to expose said buffing surface to an adjacent tape receiving surface from a normal position spaced from said buffing surface when said buffing surface is spaced from a said receiving surface, and

means connecting said blade to said guard member to move said knife in said guide means from said severing position when said guard member is moved to said operative position adjacent said buffing surface and to said severing position when said guard member is returned to said normal position.

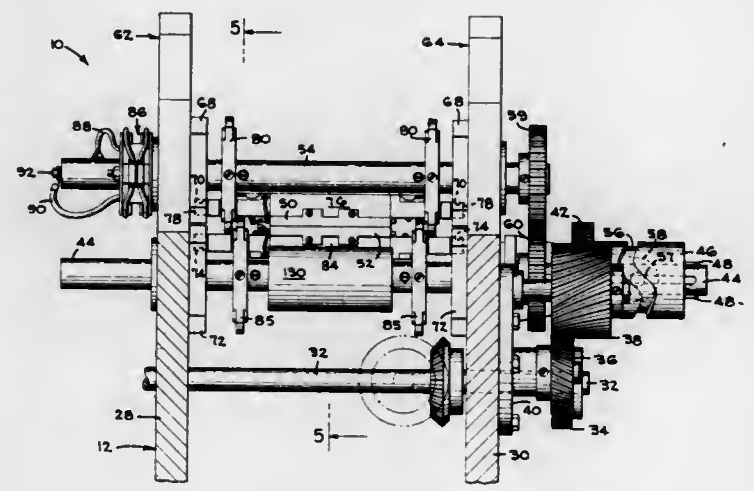
3,850,780
EXTENDED DWELL HEAT SEALER

Donald C. Crawford, and Michael R. Nack, both of Green Bay, Wis., assignors to FMC Corporation, San Jose, Calif.

Continuation of Ser. No. 173,980, Aug. 23, 1971, abandoned. This application June 4, 1973, Ser. No. 367,057

Int. Cl. B30d *15/34;* **B23d** *25/02*

U.S. Cl. 156—583 **8 Claims**



1. In a web handling machine for advancing a web and having a web contacting device such as a seal bar or the like, a control system for said web contacting device comprising a driven rotary shaft extending across the path of a moving web, laterally spaced drive yokes mounted on said shaft and straddling the web, a support bar parallel to said shaft, a slide block rotatably mounted on each end of said support bar and slidably mounted on the adjacent drive yoke for movement toward and away from the axis of said shaft, cam follower means mounted on each end of said support bar, camming means engaged by each of said cam follower means for guiding said support bar in an irregular orbit about the axis of said shaft, said orbit including a path parallel to the path of web motion, a web contacting device carried by said support bar, and a drive train connected to said driven shaft for regulating the instantaneous angular velocity of said shaft to render the velocity of said web contacting device along said path equal to that of the web.

3,850,781
SIMULATED TREE

Elizabeth L. Anderson, 3713 Fairfax Way, South San Francisco, Calif. 94080

Filed Sept. 28, 1973, Ser. No. 401,826

Int. Cl. A47g *33/06*

U.S. Cl. 161—23 **4 Claims**

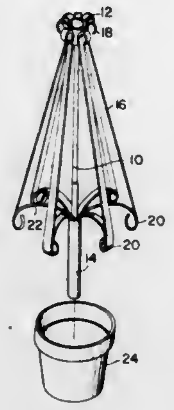
1. A simulated tree comprising:

a vertical shaft having a circular cross section;

a hollow sleeve disposed concentrically about the lower end of the shaft and extending upward therealong for a predetermined distance;

a ring encircling the top end of the shaft;

a plurality of equidistantly spaced elongated members secured at their upper ends to the ring and extending downward and outward, the lower ends of these members extending below the top end of the sleeve and defining points on a horizontal circle having a diameter substantially larger than that of either ring or sleeve, said points being equidistantly spaced; and



means secured to the top end of the sleeve and the adjacent part of the shaft, said means extending outward and secured to the lower ends of said members.

3,850,782
DECORATIVE SEPARATOR

Dean J. Rief, and William S. McKinney, both of Huntington Beach, Calif., assignors to Rief Enterprises, Inc., Gardena, Calif.

Filed Dec. 4, 1972, Ser. No. 311,475

Int. Cl. A41g *1/00*

U.S. Cl. 161—25 **7 Claims**

1. A decorative separator comprising:

at least one elongated plastic runner, said runner having inner and outer end surfaces and first and second lateral surfaces;

a plurality of decorative members;

means for attaching said decorative members to said runner so that a plurality of said decorative members project outwardly from the outer end surface of said runner;

an elongated plastic retainer for receiving said runner therein, said retainer including first and second flanges generally confronting said first and second lateral surfaces, respectively;

locking means on said flanges and the lateral surfaces for attaching said runner to said retainer;

said locking means including a recess in one of said first flange and said first lateral surface and a cooperating projection on the other of said first flange and said first lateral surface, said recess being adapted to receive said projection; and

said runner and said retainer being resiliently deformable.

3,850,783
PATTERNED RUGS AND CARPETS

Robert I. Peters, Taylors, and David B. Parlin, Greenville, both of S.C., assignors to Bigelow-Sanford, Inc., Greenville, S.C.

Filed Aug. 25, 1972, Ser. No. 283,395

Int. Cl. D03d *27/06*

U.S. Cl. 161—63 **14 Claims**

1. An ornamental dual-patterned tuft pile carpet having back material, repeat color patterned pre-printed warp, said pre-printed warp being formed in a higher and lower tuft pile textured pattern with the latter pattern correlated and combined with said repeat color patterned warp.

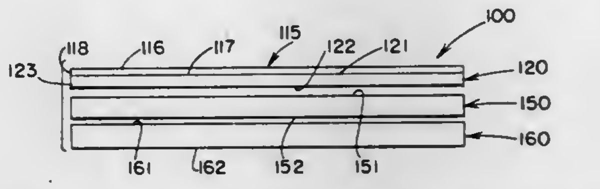
3,850,784
RELEASE LINER FOR PRESSURE SENSITIVE ADHESIVE

Ardis R. Lavender, Hines, Ill., assignor to Ardis S. Lavender, Hines, Ill.

Filed Jan. 26, 1973, Ser. No. 326,849

Int. Cl. C09j *7/02*

U.S. Cl. 161—88 **28 Claims**



1. A release liner for a water insoluble, pressure sensitive adhesive, comprising a film having a water impermeable side and a water holding side, whereby said release liner placed on a water insoluble, pressure sensitive adhesive with said water holding side in contact with the adhesive provides a protective release liner which is easily removable to expose the adhesive in condition for use.

3,850,785
REINFORCED CARBON FABRICS

Allan J. McQuade, Ashland, and Gilbert N. Arons, Newton Highlands, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 191,557, Oct. 21, 1971, abandoned. This application Aug. 14, 1973, Ser. No. 388,309

Int. Cl. B32b *7/14, 31/00*

U.S. Cl. 161—88 **3 Claims**

1. A reinforced activated-carbon fabric formed by laminating an activated-carbon fabric constructed of activated-carbon yarns having a breaking strength of less than 1 gm/denier to at least one other non-carbon fabric in such a manner as not to poison the activated-carbon and so as not to substantially reduce the permeability of the fabric layers wherein the lamination is accomplished by

a. placing a layer of hot-melt adhesive fabric or netting between said activated-carbon fabric layer and said non-carbon fabric layer,

b. subjecting said combined layers to sufficient heat and pressure for such time as to cause said hot-melt adhesive to fuse and flow, and

c. removing said source of heat and pressure whereby said fused adhesive solidifies bonding said fabric layers together to produce a laminated fabric having substantially the same air permeability as the original fabric layers.

3,850,786
ADHESIVE PRODUCTS

Robert Jeffries, Bloomfield, and Martin M. Grover, Upper Montclair, both of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

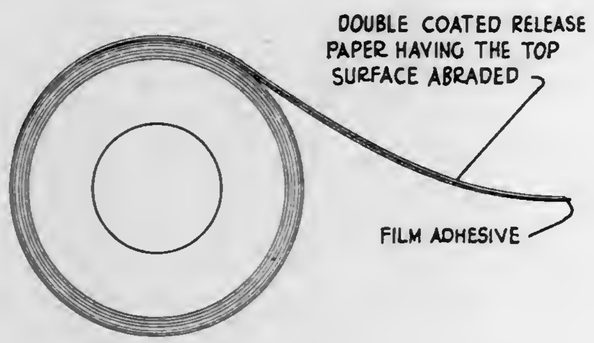
Continuation of Ser. Nos. 181,905, Sept. 5, 1971, , and Ser. No. , , Division of Ser. No. 720,868, April 12, 1968, Pat. No. 3,615,992. This application Mar. 12, 1973, Ser. No. 340,295

Int. Cl. B32b *3/00*

U.S. Cl. 161—164 **5 Claims**

1. A composited adhesive product comprising film adhesive interleaved with a coextensive sheet material having release

coating on both major surfaces, the first surface of said sheet material being in contact with said film adhesive and the other surface of said sheet material having a part of its release coating removed by being abraded, the abraded release surface being rendered microrough to an extent such that it retains the necessary release characteristics to permit winding and unwinding of the product in roll form, without an additional interleaved release paper, while at the same time providing preferential adhesion to pressure-sensitive adhesive tape which may be applied thereto in order to remove the release coated sheet material from the adhesive film.



3,850,787

MANUFACTURE OF FLAT GLASS UTILIZING A REACTION TO TRACTION ACROSS THE WIDTH OF THE MOLTEN GLASS

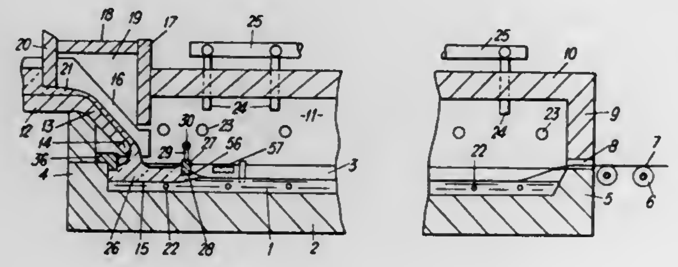
Albert Sidney Robinson, Birkdale, Southport; David Gordon Loukes, Eccleston Park, Prescot, and Jack Lawrenson, Windle, St. Helens, all of England, assignors to Pilkington Brothers Limited, Lancashire, England

Filed Sept. 11, 1972, Ser. No. 287,713

Claims priority, application Great Britain, Sept. 16, 1971, 43269/71The portion of the term of this patent subsequent to Nov. 6, 1990, has been disclaimed.

Int. Cl. C03b *18/02*

U.S. Cl. 161—165 **34 Claims**



1. A method of manufacturing flat glass comprising pouring molten glass at a controlled rate on to a bath of molten metal to form a pool of molten glass on the bath, controlling forward flow of molten glass from the pool by means of an elongate member wettable by the molten glass and extending transversely across the downstream end of the pool and contacting the forwardly flowing glass, heating the glass in the region of that member tomaintain the forwardly flowing glass in that region at a viscosity which is lower than the viscosity of molten glass of the pool upstream of said member but at a viscosity at which the glass also wets onto said member so as further to regulate that forward flow, drawing a ribbon of glass along the bath from said lower viscosity forwardly flowing glass by accelerating the forward flow by traction applied to the glass ribbon acting against reaction forces distributed across the ribbon width and created by said wetting of the glass on to the member, and cooling the ribbon to condition it for stability at a desired thickness as it is drawn along the bath away from the member.

3,850,788

GLASS-REINFORCED COMPOSITE MATERIALS

Ian Robert Kennedy Greig, Warrington, and John Mackenzie Jackson, Newburgh, near Wigan, both of England, assignors to Dilkington Brothers Limited, St. Helens, Lancashire, England

Filed Nov. 21, 1973, Ser. No. 417,834

Claims priority, application Great Britain, Nov. 21, 1972, 53764/72

Int. Cl. C03c *17/32*

U.S. Cl. 161—168 **12 Claims**

1. A method for making a glass-reinforced composite material, comprising applying a powdered, partially polymerised epoxy resin material to fresh surfaces of a ribbon of film glass so as to form a continuous flexible surface coating on both sides of the ribbon, cutting or breaking the ribbon to form coated flakes of glass most of which have an aspect ratio of between 100 and 200, forming the flakes into an assemblage of a desired shape with a glass content of between 20% and 70% by weight, and completing the polymerisation of the epoxy resin material to bond the assemblage together and thereby form the composite material.

3,850,789

ASBESTOS FIBER-FILLED BITUMEN SOUND DEADENING LAMINATES

Herbert William Kingsbury, Chislehurst, England, assignor to British Uralite Limited, Rochester, Kent, England

Filed June 26, 1972, Ser. No. 266,127

Claims priority, application Great Britain, June 28, 1971, 30204/71

Int. Cl. B32b *11/02, 19/08*

U.S. Cl. 161—205 **12 Claims**

1. A component which is prone to vibration and applied to at least part of the surface thereof a sound deadening layer comprising one or more self-supporting sheets of asbestos fiber-filled bitumen, the total thickness of the sound deadening layer being at least 1.5 mm; and wherein in each sheet the weight ratio of asbestos fibers to bitumen is in the range of from 40:60 to 60:40, and in each sheet the asbestos fibers are in the form of a plurality of discrete laminae lying parallel to the plane of the sheet whereby the sheet can be delaminated for splicing with an adjacent sheet.

3,850,790

TRANSPARENT COMPOSITE FILM OF METHYL METHACRYLATE-BUTADIENE-STYRENE AND POLYVINYLIDENE CHLORIDE

Marcel Denervaud, Fribourg, Switzerland, assignor to Denervaud S.A. Technoplastic, Villars-sur-Glane, Switzerland

Filed Sept. 7, 1972, Ser. No. 286,887

Claims priority, application Switzerland, Sept. 20, 1971, 13692/71

Int. Cl. B32b *27/08;* **B29c** *5/06*

U.S. Cl. 161—253 **4 Claims**

1. A process for producing a composite plastic film which consists essentially of:

extruding a first support film of methyl methacrylate-butadiene-styrene terpolymer in a thickness of 0.1 to 1.1 mm.,

blow extruding a second film of polyvinylidene chloride in a thickness of 0.01 to 0.05 mm.,

contacting said first and second films in laminating relationship to form a composite and applying sufficient heat and pressure to said composite to effect mutual bonding between said first and second films.

3,850,791

ASBESTOS-BASED FRICTION MATERIAL

Michael R. Guittard, Courbevois, France, assignor to Ferodo Limited, Manchester, England

Continuation-in-part of Ser. No. 326,480, Jan. 24, 1973, abandoned. This application Mar. 20, 1974, Ser. No. 453,103

Int. Cl. D21h *5/18*

U.S. Cl. 162—145 **8 Claims**

1. A friction material comprising a paper or board material impregnated with a synthetic thermoset resin, wherein said paper or board material constitutes from 60 to 80% by weight of the friction material and said resin constitutes from 20 to 40% by weight of the friction material, and said paper or board material consists essentially of

a. from 2 to 20% by weight (based on the weight of said paper or board material) of amosite asbestos;

b. from 6 to 96% by weight of chrysotile asbestos;

c. from 0 to 90% by weight of an organic fibre; and

d. from 0 to 20% by weight of an inorganic filler other than asbestos.

3,850,792

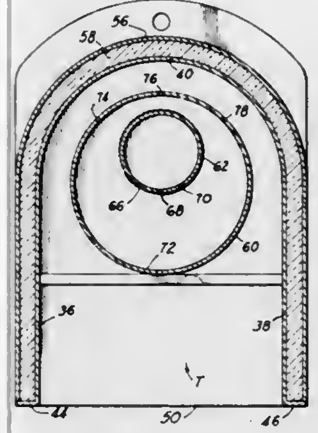
STEAM DRYING DEVICE FOR PAPER MAKING MACHINE

Rohe V. Pennington, Rte. 9, Albion Dr., Rome, Ga. 30161

Filed Oct. 26, 1972, Ser. No. 301,167

Int. Cl. D21f *5/00;* **F26b** *13/10*

U.S. Cl. 162—290 **6 Claims**



1. In a papermaking machine having travelling web-supporting means, headbox means for depositing stock onto said web-supporting means, and suction means for removing water from the stock downstream of said headbox means to form a progressively dewatered paper web, the improvement which comprises:

means positioned opposite said suction means for applying a high mass rate flow blanket of steam substantially at atmospheric pressure to said web substantially uniformly throughout a plan-view area extending across said web and an area sufficient to dewater the web by evaporation without damaging the web by steam impingement thereagainst, said means for applying a high mass rate flow blanket of steam comprising a housing having a substantially uniform transverse dimension substantially to encompass the width of said web and presenting an unrestricted discharged throat of sufficient plan view area to deliver steam at said high mass flow rate without damaging said web, a final steam delivery chamber having openings facing away from said throat, and delivering steam into said housing, at least one further steam delivery chamber within said final delivery chamber having openings facing toward said throat, said openings in said final delivery chamber and said further chamber being sized to reduce the pressure of said steam in stages to provide substantially atmospheric pressure steam at a sufficient mass flow rate to dewater said web by evaporation.

3,850,793

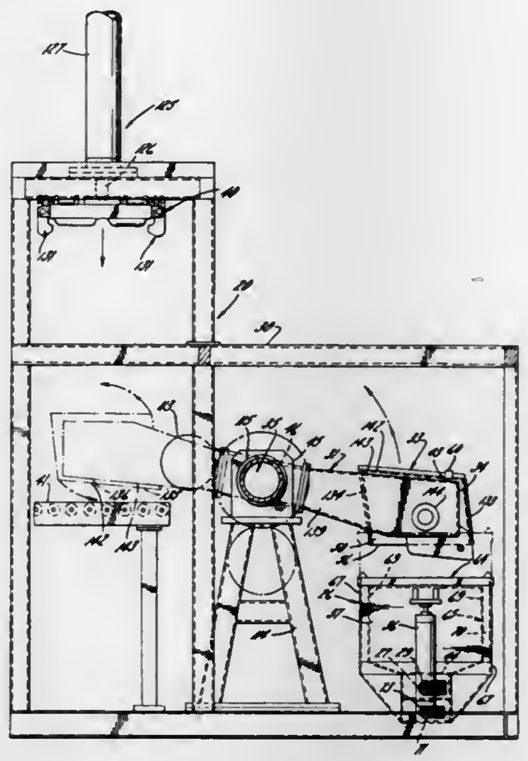
MOLDING MACHINE FOR PRODUCING UNIFORM PULP PRODUCTS

Lloyd H. Hornbostel, and Clarence R. Knutsen, both of Beloit, Wis., assignors to Center For Management Services And Applied Research, Inc., Beloit, Wis.

Filed Mar. 23, 1973, Ser. No. 344,276

Int. Cl. D21j *3/00*

U.S. Cl. 162—391 **31 Claims**



1. A machine for molding an article from a pulp slurry, said machine including a frame, an arm mounted on said frame, a perforate mold on said arm for forming said article from the pulp in the slurry, a vacuum source communicating with said mold through a passage, a stock pan containing said slurry mounted on said frame and being movable relative to said mold from a retracted position to an advanced position to immerse said mold in the slurry whereby the slurry is drawn from said pan by said vacuum to form said article on the mold, means for controlling the molding of the article so that the density of the pulp throughout the thickness of the article is relatively uniform, said means including a bleed port opening into said passage and permitting outside air to be drawn into said passage by said vacuum so the vacuum applied to said mold builds up gradually, a press mounted on said frame and adapted to squeeze excess water from the article after the latter is formed on the mold, means for rotating said arm on said frame to carry said mold between said stock pan and said press, and means for ejecting said article from the mold after the excess water is removed from the article.

3,850,794

GAS-COOLED NUCLEAR REACTOR

Erwin Laurer, and Hans-Peter Schabert, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

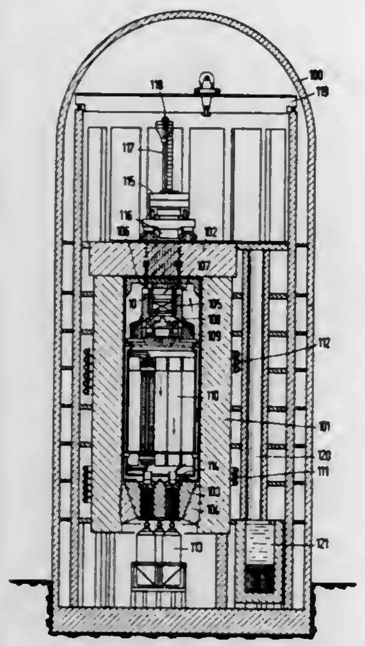
Continuation of Ser. No. 821,030, May 1, 1969, abandoned. This application Mar. 8, 1972, Ser. No. 232,915

Int. Cl. G21c *19/20*

U.S. Cl. 176—30 **9 Claims**

1. In a gas-cooled nuclear reactor, a pressure vessel, a grid-like core support plate with crosspieces defining a plurality of cells having a square cross section, each cell having suspended therein nine fuel elements, each fuel element having a square cross section, eight of said nine fuel elements being vertically disposed about a centrally located ninth fuel element to form a square, each of said eight fuel elements having two adjoining sides formed with an indentation located at the level of said core support plate, said indentations being equal to substan-

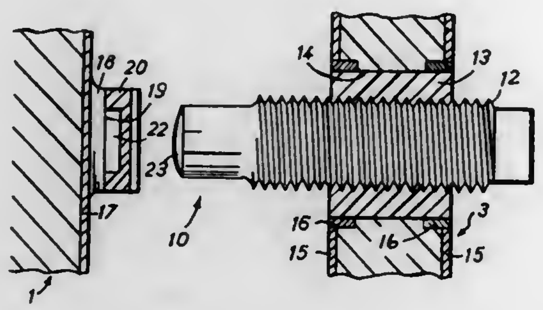
tially half the thickness of the crosspieces of the core support plate defining the cells thereof, said indentations being provided with suspension hooks for engagement with the crosspieces of the core support for suspending each of said eight fuel elements in the core support plate, said centrally located



ninth fuel element having a uniform square cross section over the entire length thereof and provided with laterally projecting mounting strips at its upper end with the strips supporting the ninth fuel element by resting on the top surfaces of the surrounding eight fuel elements.

3,850,795
MEANS FOR ADJUSTABLE CLAMPING SKIRT BETWEEN PRESSURE VESSEL AND CORE

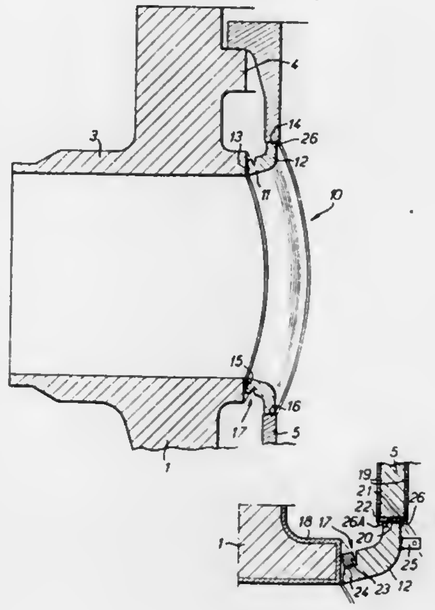
Paul Thome, Saint-Cloud, France, assignor to Babcock-Atlantique, S.A., Paris, France
Filed May 1, 1972, Ser. No. 249,034
Int. Cl. G21c *19/00*
U.S. Cl. 176—50 **7 Claims**



1. A nuclear reactor system comprising a generally cylindrical pressure vessel having an inner surface, a reactor core within said pressure vessel, jacketing enclosing said reactor core, a skirt interposed between said jacketing and the inner surface of said pressure vessel, wedging means for adjustably clamping said skirt between said pressure vessel and said jacketing, said wedging means having a plurality of screw jacks protruding through said skirt, said skirt further having a generally cylindrical structure having a plurality of holes formed therein, a plurality of sleeves each individual to a respective one of said screw jacks, said sleeves being received in said holes formed in said skirt, said sleeves having threaded apertures formed in the centers thereof to accommodate said respective screw jacks, said skirt also having a corrosion resistant plating formed on surfaces of said skirt, said skirt holes terminating in annular recesses that are formed in said plating and concentric with said holes, and a plurality of rings each received within a respective recess and welded to individual sleeves and said adjacent plating.

3,850,796
LEAKPROOF CONNECTION MEANS BETWEEN HOOP AND NOZZLE OF PRESSURE VESSEL

Paul Thome, Saint-Cloud, France, assignor to Babcock-Atlantique, SA, Paris, France
Filed May 10, 1972, Ser. No. 252,050
Int. Cl. G21c *15/00*
U.S. Cl. 176—50 **4 Claims**



1. A reactor system for operation at elevated temperature comprising a pressure vessel having inlet and discharge nozzles, a distribution hoop within said pressure vessel having a fluid passage opening in alignment with a respective one of said inlet and discharge nozzles, sleeve means interposed between said hoop opening and said respective nozzle to establish a leakproof connection between said hoop and said nozzle, said sleeve having a groove in the surface thereof to accommodate stresses that are developed between said hoop and said pressure vessel, wherein said hoop further comprises a hollow metal cylinder, two layers of anti-corrosion metal each on respective inner and outer hoop surfaces, a ring of metal within said hoop fluid passage opening, and a bead of anti-corrosion weld metal joining said ring to said anti-corrosion metal layers on said hoop.

3,850,797
METHOD OF STERILIZING REVERSE OSMOSIS WATER TREATMENT UNITS

Charles E. Lyall, Deerfield, Ill., assignor to Culligan International Company, Northbrook, Ill.
Filed June 12, 1973, Ser. No. 369,173
Int. Cl. B01d *13/00;* **A61l** *9/00, 13/02*
U.S. Cl. 210—23 **7 Claims**

1. A method of treating a semi-permeable membrane in a reverse osmosis unit having an activated period and a downtime period to sterilize said membrane and extend its useful life, which comprises:

immersing said membrane in an aqueous solution having a pH in the range of 4.5 to 6, said solution comprising a mixture of water, acetic acid and a bacterial fungal growth inhibitor compatible with said acid; and

maintaining said solution in contact with said membrane for at least a portion of said down-time period of the reverse osmosis unit.

3,850,798
METHOD FOR SEPARATING A POLYPEPTIDE FROM MICROORGANISMS

John Axel Sjoquist, Hassjevagen 12, Uppsala, Sweden
Filed Oct. 25, 1973, Ser. No. 409,561
Claims priority, application Sweden, Nov. 6, 1972, 14329/72; Feb. 8, 1973, 7301778
Int. Cl. B01d *15/08*
U.S. Cl. 210—31 C **7 Claims**

1. A method for separating a polypeptide from microorganisms, said polypeptide having the ability of binding at least one immunoglobulin at the Fc-part of the latter, from a liquid containing the polypeptide in a mixture with substances of an impurifying nature, characterized in that the liquid containing said polypeptide is contacted with a solid phase consisting of or containing a polymeric substance which is insoluble in said liquid and which has at least one immunoglobulin or its Fc-fragment bound thereto, the Fc-part of said immunoglobulin or the Fc-fragment thereof being able to bind the polypeptide so that said polypeptide is bound to the Fc-part of the immunoglobulin or to the Fc-fragment thereof but not the substances of the impurifying character, whereupon the liquid with remaining impurities is separated from the solid phase and bound polypeptide is optionally also separated from said solid phase.

3,850,799
PROCESS FOR FLOCCULATION OF SOLIDS FROM AQUEOUS SUSPENSIONS

Charles H. Ludwig, Bellingham, Wash., assignor to Georgia-Pacific Corporation, Portland, Oreg.
Division of Ser. No. 305,909, Nov. 13, 1972, Pat. No. 3,795,665. This application Nov. 2, 1973, Ser. No. 412,155
Int. Cl. B01d *21/01*
U.S. Cl. 210—47 **14 Claims**

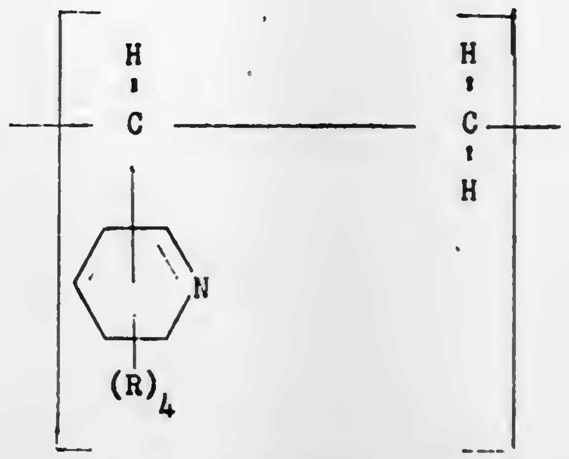
1. A process for the flocculation of solids from aqueous suspensions of finely divided solids, which comprises treating the suspension with from 1 to 1,000 parts per million of a water-soluble composition of lignin cross-linked with polyoxyalkylene linkages to flocculate the finely divided solids dispersed in the aqueous suspension, settling the flocculated soids, and separating the flocculated solids from the suspension, said composition of lignin being cross-linked with polyoxyalkylene linkages to the extent that the lignin composition has an intrinsic viscosity greater than 0.2 dl/g, said linkages having a molecular weight of from 120 to 1,000 prepared by reacting the lignin as an aqueous solution at a concentration of at least 20 weight percent with a polyoxyalkylene compound selected from the group consisting of polyoxyalkylene di-esters of monosulfonic acids and polyoxyalkylene dihalides under alkaline conditions, said di-esters and dihalides having oxyalkylene repeating units of from two to four carbon atoms.

3,850,800
SEWAGE AND WATER TREATMENT WITH POLYACID HALIDE MODIFIED COPOLYMERS OF VINYLPYRIDINES AND ACRYLAMIDE OR METHACRYLAMIDE

Richard C. Doss, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 227,657, Feb. 18, 1972, Pat. No. 3,810,877. This application Jan. 28, 1974, Ser. No. 436,978
Int. Cl. C02b *1/20*
U.S. Cl. 210—54 **15 Claims**

1. A method of conditioning an aqueous medium to aid in the separation therefrom of solid matter contained therein, which comprises contacting said medium with a polyacid halide modified vinylpyridine copolymer consisting essentially of the reaction product of a polyacid halide and an unmodified copolymer; said unmodified copolymer containing recurring units represented by the following formulas:

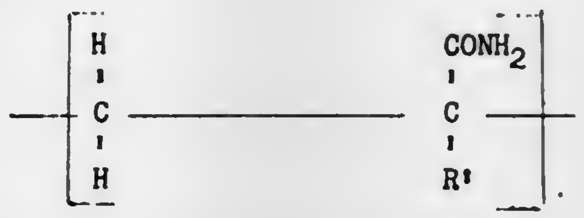
(I)



wherein each unit R independently is selected from hydrogen and alkyl groups; and

and

(II)



$$-\left[\begin{array}{ccc}\mathrm{H} & & \mathrm{CONH_2}\\ | & & |\\ \mathrm{C} & \text{———————} & \mathrm{C}\\ | & & |\\ \mathrm{H} & & \mathrm{R'}\end{array}\right]-.$$

wherein R′ is hydrogen or methyl; the recurring units represented by formula (I) constituting from about 1 to about 50 weight percent of the total of the recurring units of formula (I) and the recurring units of formula (II); said polyacid halide having the formula $R''(COX)_m$ wherein X is chlorine or bromine, R″ is selected from a valence bond, a saturated hydrocarbon radical, or an aromatic hydrocarbon radical, *m* is an integer of from 2 to 4, and R″ is a hydrocarbon radical when *m* is more than 2; the amount of said polyacid halide employed being in the range of about 0.01 to about 20 weight percent based on the amount of said unmodified copolymer; said modified copolymer haaving an inherent viscosity in the range of about 0.5 to about 12, when measured at 30°C in a 0.2 molar aqueous sodium chloride solution at a polymer concentration of 0.01 gram per 100 milliliters of solution.

3,850,801
WASTE WATER PURIFICATION SYSTEM

Philip J. Pearson, Milwaukee, Wis., assignor to McQuay-Perfex Inc., Minneapolis, Minn.
Filed June 7, 1973, Ser. No. 367,716
Int. Cl. C02b *3/04;* **C02c** *1/04*
U.S. Cl. 210—86 **19 Claims**

1. A home waste water treatment system, comprising:

a. a primary holding tank for receiving raw sewage, and for holding the sewage while it undergoes anaerobic decomposition;

b. a multiple stage biological oxidation tank having a plurality of successive compartments separated by baffles, and including a plurality of discs spaced from one another and mounted on a shaft for rotation about a generally horizontal axis so that the surfaces of said discs are alternately submerged within said compartments and exposed to the atmosphere;

c. means for pumping anaerobically treated sewage from said primary holding tank to a first compartment of said multiple compartment biological oxidation tank, thereby transferring partially aerobically treated material from the first compartment to successive compartments;

d. a clarifier tank having a tapered lower portion;

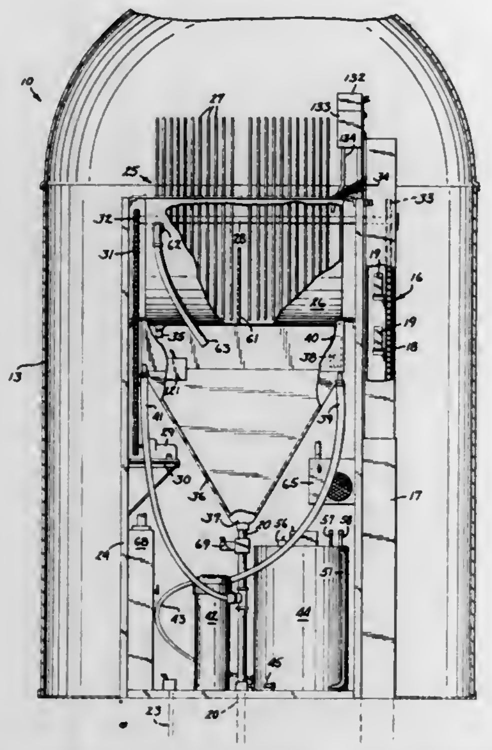
e. means for conveying aerobically treated material from the final compartment of the biological oxidation tank to the clarifier tank;

f. means for returning accumulated sludge from the bottom of the clarifier tank to the primary holding tank;

g. a sterilizer operable to destroy bacteria in fluids applied thereto by heating the fluid, said sterilizer having an inlet and an outlet;

h. a heat exchanger connected to said inlet and said outlet of said sterilizer, said heat exchanger operable to transfer heat from fluid at said outlet to fluid at said inlet; and
i. means for collecting the supernatant from said clarifier tank and for conveying said supernatant to said heat exchanger and to the inlet of said sterilizer.

5. A home waste water treatment unit, comprising:
a. a septic tank for receiving sewage to be treated and for holding the sewage while it undergoes anaerobic decomposition;
b. a frame;
c. a biological oxidation tank attached to said frame near the upper portion thereof, said tank having a plurality of compartments separated by baffle means;
d. a disc assembly rotatably mounted in said biological oxidation tank, said disc assembly comprising a plurality of discs spaced from one another and mounted on a shaft for rotation within said compartments about a generally horizontal axis;

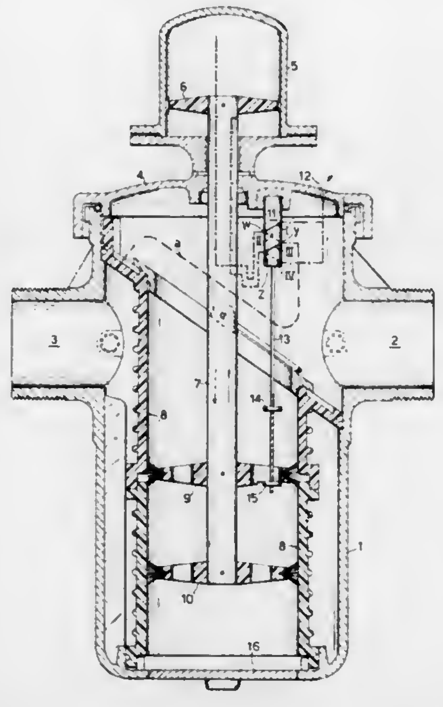


e. means for mounting said shaft in said biological oxidation tank near the normal liquid level therein, so that the surfaces of said discs are alternately submerged and exposed to air;
f. means for pumping anaerobically treated sewage from the septic tank and for conveying it to a compartment at one end of said biological oxidation tank, thereby displacing partially treated sewage to successive compartments;
g. a clarifier tank attached to said frame generally beneath said biological oxidation tank, said clarifier tank having a tapered lower portion;
h. means for conveying aerobically treated sewage from the top of the liquid level in the final compartment of said boilogical oxidation tank to said clarifier tank for settling of sludge to form a clarified supernatant;
i. means including a dump valve for periodically returning accumulated sludge from the bottom of the clarifier tank to the septic tank; and
j. means for collecting the supernatant from the clarifier tank.

3,850,802
SELF-CLEANING FILTER

Benjamin Berger, Galilee, Israel, assignor to Bermoid Irrigation Controls, Galilee, Israel
Filed Jan. 18, 1973, Ser. No. 324,806
Int. Cl. B01d *27/12, 29/39*
U.S. Cl. 210—106 **3 Claims**

1. A filter comprising an upwardly extending casing, an upwardly extending tubular filter element positioned within said casing, an inlet port and an outlet port located in the upwardly extending walls of said casing and said ports spaced apart on said casing with said filter element positioned between said inlet port and outlet port so that water flowing into said casing through said inlet port must pass through the walls of said filter element before exiting through said outlet port, wall means mounted on the upper end of said casing and forming a closed chamber separated from the interior of said casing, said closed chamber forming a hydraulic cylinder having its cylindrical axis extending in the upwardly extending direction of said casing, a piston positioned within and movably displaceable through said hydraulic cylinder in the direction of its cylindrical axis and dividing the interior of said closed chamber into an upper chamber and a lower chamber, a rod secured to said piston and extending from said closed chamber into said casing and being arranged therein within the interior of said tubular filter element with the axis of said rod in approximately parallel relation with the tubular axis of



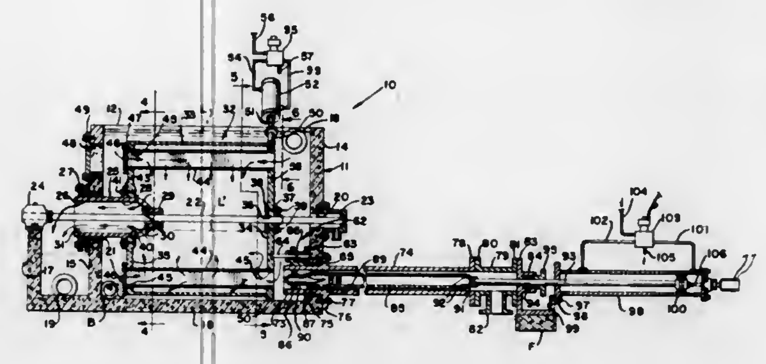
said filter element, at least one brush fixed to the lower end of said piston rod and arranged with its circumferential periphery in contact with the interior surface of said filter element, first conduit means connecting the interior of said casing with said upper chamber, second conduit means connecting the interior of said casing with said lower chamber, a four-way valve in connection with said first and second conduit means for regulating the flow of water from within said casing into said upper and lower chambers in said closed chamber, and a mechanical switch-over means operatively associated with said four-way valve and operatively connected to said piston rod and being controlled by the up and down movement of said rod within said casing for selectively directing the flow of water from said casing into one of said upper and lower chambers for effecting the displacement within said closed chamber of said piston, said casing being open at its upper end to the atmosphere and said first and second conduits arranged to provide communication alternatively between the atmosphere and the water in said casing with said upper and lower chambers.

3,850,803
ATMOSPHERIC PRESSURE FILTER

Renard P. Adams, 925 Delaware Ave., Buffalo, N.Y. 14209
Filed June 27, 1973, Ser. No. 374,130
Int. Cl. B01d *33/00*
U.S. Cl. 210—142 **16 Claims**

1. An atmospheric pressure filter comprising a container for liquid to be filtered, a horizontal tubular filter drum rotatably supported in the container beneath the level of liquid in the container, said drum including a liquid impervious, tubular side wall and opposite spaced apart liquid impervious end

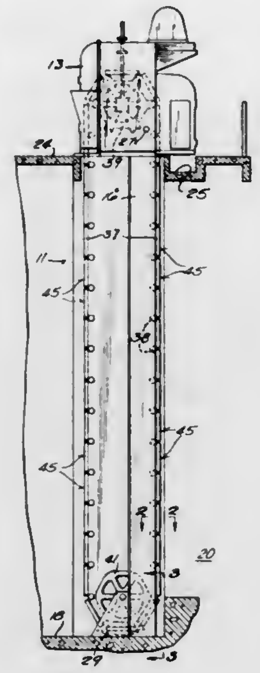
walls, a plurality of parallel, spaced apart open ended liquid pervious filter tubes secured at their opposite ends to the drum end walls and extending within the drum the length of the drum between the end walls and opening at their opposite ends outwardly through the end walls for flow of liquid from the container into the open ends of the filter tubes and through the sides of the filter tubes into the drum, an outlet for filtered liquid in one end of the drum, means operatively connected with the drum to rotate the drum and to intermittently stop the drum at predetermined increments of rotation, and at least one filter tube cleaning probe supported adjacent one end of the drum in position to be inserted lengthwise in



an open end of a filter tube when the drum is stopped, means connected with the cleaning probe to move the probe into the tube and progressively along the length of the tube to clean the filter tube, said filter tube cleaning probe including means engaging and dislodging contaminants from the inside of the filter tube, said cleaning probe also including means to effect reverse flow of filtered liquid through the filter tube only over a small portion of the length of the fulter tube at a time and movable to progressively clean the filter tube over its entire length and thus requiring only a small amount of backwash liquid to obtain a large pressure differential across the filter tube to clean the filter tube.

3,850,804
SCREENS FOR WATER INTAKE SYSTEMS

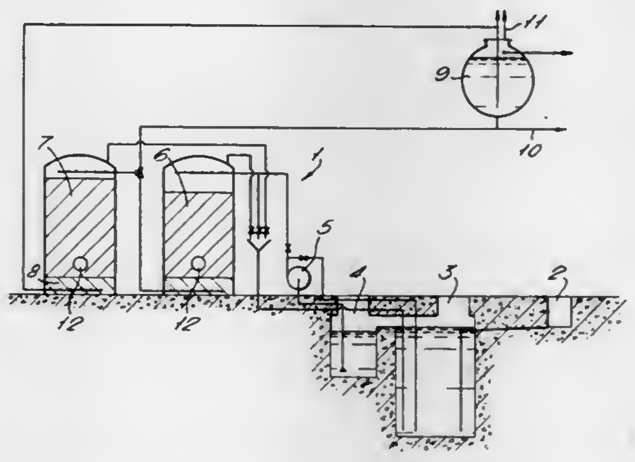
Robert F. Taylor, Milwaukee; Donald A. Strow, Hales Corners, and Hosein Mansouri, New Berlin, all of Wis., assignors to Rex Chainbelt Inc., Milwaukee, Wis.
Filed Dec. 22, 1972, Ser. No. 317,841
Int. Cl. B01d *33/32*
U.S. Cl. 210—155 **7 Claims**



1. A screen assembly to comprise one of a series of a traveling water screen unit having parallel chains for supporting the same, said screen comprising a rigid frame and a removable screen insert, the frame having upright end members, upper and lower flanged cross-members and an intermediate cross-brace, the insert being disposed to fit between said end members and against the cross-brace and the flanges of said cross-members, and shelf means attached to said cross-brace and overlying the insert to secure the latter in said frame, said screen insert comprising a rigid, rectangular perforate panel of nominal thickness and of a width and height substantially equal to the distances respectively between said end members and said cross members.

3,850,805
FILTER SYSTEMS

Allan Armstrong, Manchester, England, assignor to Sutcliffe, Speakman & Co., Ltd., Lancashire and Alan Pond Equipment Limited, Harlow, Essex, England
Filed June 21, 1972, Ser. No. 264,942
Claims priority, application Great Britain, June 23, 1971, 29435/71
Int. Cl. B01d *23/24*
U.S. Cl. 210—167 **4 Claims**



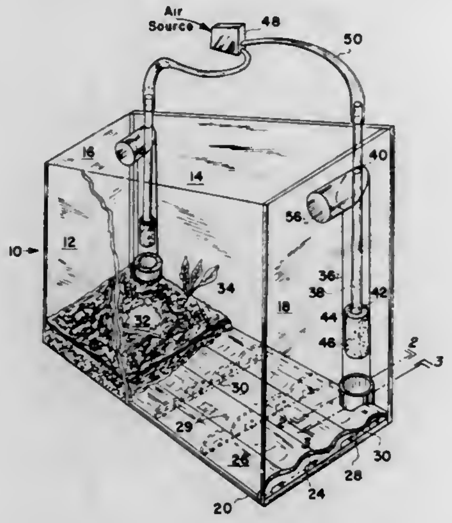
1. A filter and water reclamation system for use with a washing apparatus, comprising tank means for receiving contaminated water to be filtered, pump means, first filter bed means with inlet and outlet means, filter element means in said first filter bed means comprising sand on a bed of graded gravel adapted to remove grit and other foreign bodies from said contaminated water, second filter bed means with inlet and outlet means, filter element means in said second filter bed means comprising a bed of activated carbon for removing detergent and/or wax from said contaminated water, reservoir means wherein clean water is collected after passage through said first and second filter means prior to passage to said washing apparatus, conduit means connecting said tank means, pump means, first and second filter bed means, and reservoir means in series for permitting contaminated water from said tank means to be cycled through said filter bed means to said reservoir means, and auxiliary conduit means connected between said reservoir means and the outlet means of said second filter bed means for permitting backwashing of said second filter bed means by means of the clean water contained within said reservoir means, whereby the water passing from said outlet means of said second filter means to said reservoir means is substantially clean of grit and other foreign bodies and free of detergent and/or wax.

3,850,806
FILTER AND WATER RECIRCULATION SYSTEM

Harvey K. Cohen, 400 Cozine Ave., Brooklyn, N.Y. 11207
Continuation-in-part of Ser. No. 127,292, March 23, 1971, Pat. No. 3,720,318. This application Mar. 8, 1973, Ser. No. 339,141The portion of the term of this patent subsequent to Mar. 13, 1990, has been disclaimed.
Int. Cl. E04h *3/20*
U.S. Cl. 210—169 **8 Claims**

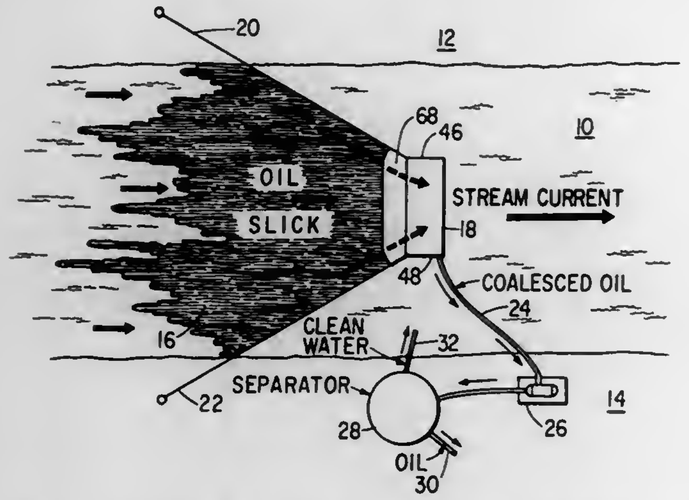
1. For an aquarium with water, an undergravel aquarium filter and water recirculation system having a base member

adapted to rest below said gravel, a rigid outer water-carrying tube carrying water from the bottom of the aquarium and discharging the water on top of the water within the aquarium, a rigid inner air-carrying tube located within said outer water-carrying tube to discharge air into the path of flow of the water being carried by said water-carrying tube, said water-carrying tube having a substantially vertical portion and a substantially horizontal portion connected together to carry said water vertically upward and discharge said water respectively, said substantially horizontal portion including an aperture located substantially directly above said vertical portion, said inner air-carrying member being passed through said aperture to descend within the vertical portion, and means for permanently fixedly securing said inner member at a selected height with respect to said water-carrying member, said inner tube being substantially coaxial with the vertical portion of said water-carrying member, said horizontal portion being located above the water level within said aquarium, said height being set by pushing and pulling said rigid inner tube downwardly or upwardly, respectively, with respect to said outer tube by manipulating said inner tube from the portion of said inner tube projecting above the aperture in said outer tube.



3,850,807
SYSTEM FOR REMOVING FLOATING OIL FROM WATER

Loyd W. Jones, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.
Filed Oct. 15, 1971, Ser. No. 189,663
Int. Cl. E02b *15/04*
U.S. Cl. 210—170 **6 Claims**

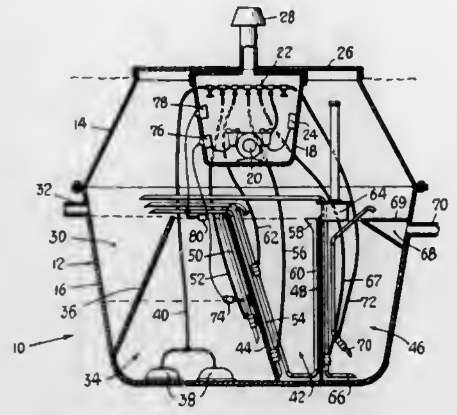


1. An apparatus for removing floating oil from a flowing inland stream of oily water which comprises:

a coalescing bed of elemental sulfur supported in said stream;
means to divert at least the upper portion of said stream through said coalescing bed to cause the oil to coalesce;
means to remove said coalesced oil.

3,850,808
A WASTEWATER TREATMENT SYSTEM

Werner Hoermann, c/o New England Wastewater Systems Inc., Rt. 100, P.O. 412, West Dover, Vt. 05356
Filed Oct. 19, 1972, Ser. No. 298,860
Int. Cl. C02c *1/08*
U.S. Cl. 210—195 **1 Claim**

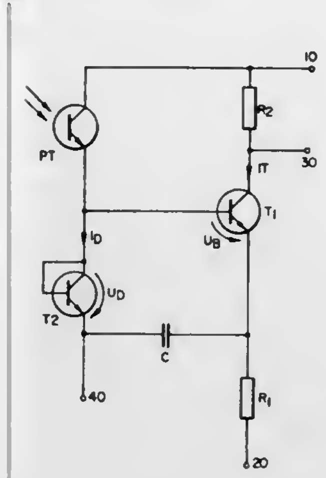


1. A wastewater treatment system comprising, in combination:

a. a storage treatment tank having a receiving chamber for accommodating waste products to be processed, said receiving chamber having a perforated filter screen constituting one wall portion thereof,
b. said treatment tank having an aeration chamber adjoining the receiving chamber and communicating therewith through said filter screen, to receive fluid comprising solids and liquids therefrom, the perforations of said screen enabling solid particles smaller than a predetermined size to pass therethrough to said aeration chamber, but blocking particles having a size larger than said predetermined value,
c. diffusing means for introducing air under pressure into said aeration chamber, for aerating the fluid contents thereof,
d. said tank further having a first settling chamber for separating solid portions of said fluid from liquid portions thereof,
e. means for transferring to said first settling chamber aerated fluid from an area in the aeration chamber which is substantially below the upper surface of said fluid but is above the bottom level of the chamber, whereby neither dense solid portions nor floating scum is passed to said first settling chamber,
f. said tank further having a second settling chamber adapted to receive liquid from said first settling chamber,
g. feedback means connected with said receiving chamber and with said first settling chamber, for returning the higher density portions of the contents of the latter to the receiving chamber for further processing,
h. said storage treatment tank further having an outlet and means connected therewith for discharging portions of the contents of said second settling chamber,
i. aerating and distribution means connected with said storage treatment tank outlet for providing further aeration of the effluent from said outlet,
j. said aerating and distribution means comprising a distribution box having an elbow constituting an inlet therefor,
k. said distribution box further comprising an aeration chamber,
l. diffusing means for introducing air under pressure into said distribution box aeration chamber, for aerating the fluid contents thereof, and
m. a settling chamber for receiving fluid from said distribution box aeration chamber and for separating solid portions of said fluid from liquid portions thereof,
n. said distribution box further comprising outlet means communicating with said distribution box settling chamber, for discharging portions of the contents thereof.

3,850,809
FAULT DETECTOR FOR PAPER WEBS

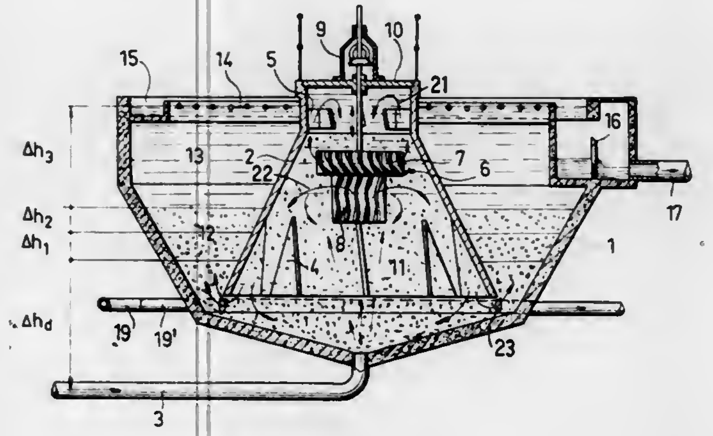
Pentti Mannonen, Myyrmaki, Finland, assignor to Oy Stromberg Ab
Filed Apr. 30, 1973, Ser. No. 355,704
Claims priority, application Finland, Nov. 22, 1972, 3287/72
Int. Cl. H01j *39/12*
U.S. Cl. 250—206 **13 Claims**



1. An amplification circuit for a photoelectric device, said circuit comprising a transistor connected across first and second terminal means adapted for connection across a first d.c. potential supply source, said transistor having a control electrode and further having first and second current-passing electrodes connected via connection means to said first and second terminal means respectively, a load means comprising a diode junction, said load means connected in series with said photoelectric device across third and fourth terminal means adapted for connection across a second d.c. potential supply source, said photoelectric device connected to said third terminal means and said load means connected to said fourth terminal means, means connecting said control electrode of said transistor to the junction between said load means and said photoelectric device, and output terminal means connected to said first current-passing electrode of said transistor for deriving an output potential therefrom, said transistor having diode junction characteristics substantially the same as those of the first-named said diode junction.

3,850,810
APPARATUS FOR THE TREATMENT AND THE CLARIFICATION OF WASTE WATER

Paul B. Teodoroiu, Bucharest, Romania, assignor to Institutul De Proiectari Pentru Industria Chimica Anorganica Si a Ingrasamintelor (Ipran), Bucharest, Romania
Filed Sept. 14, 1972, Ser. No. 289,064
Int. Cl. B01d *21/14*
U.S. Cl. 210—208 **8 Claims**

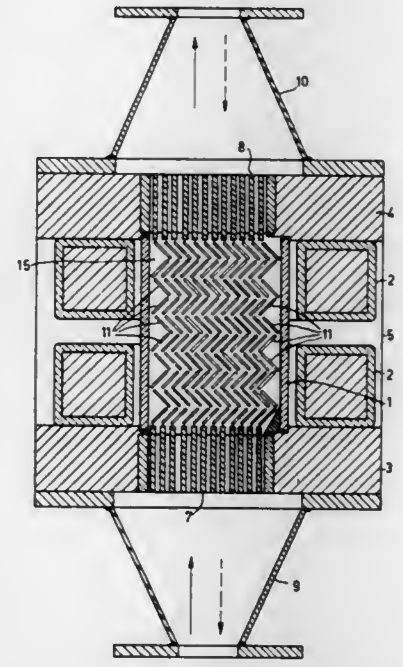


1. An apparatus for the treatment of water containing solid particles in suspension, comprising:

an outer basin centered on a vertical axis and provided with an inlet for water to be treated;
a downwardly diverging open-bottomed housing centered on said axis within said basin above said inlet, said housing being spaced from the bottom of said basin by a peripheral clearance whereby a mixing chamber in said housing communicates with a surrounding annular space in said basin;
an agitator in said chamber having a body in the form of a stepped cylinder with a larger-diameter portion and a smaller-diameter portion centered on said axis for rotation thereabout, said body being provided with upper and lower peripheral vanes of opposite pitch on said larger-diameter portion and said smaller-diameter portion, respectively;
drive means for rotating said body in a sense causing said upper vanes to exert a generally radially outward thrust with an upward component and said lower vanes to exert a generally radially outward thrust with a downward component upon a mixture of said water with a flocculating agent in said chamber with resulting circulation and homogenization of the mixture; and
collector means in said annular space for discharging clear water from a supernatant liquid layer overlying a layer of sludge formed by the flocculation of solid particles upon emergence of said mixture from said chamber.

3,850,811
MAGNETIC FILTER

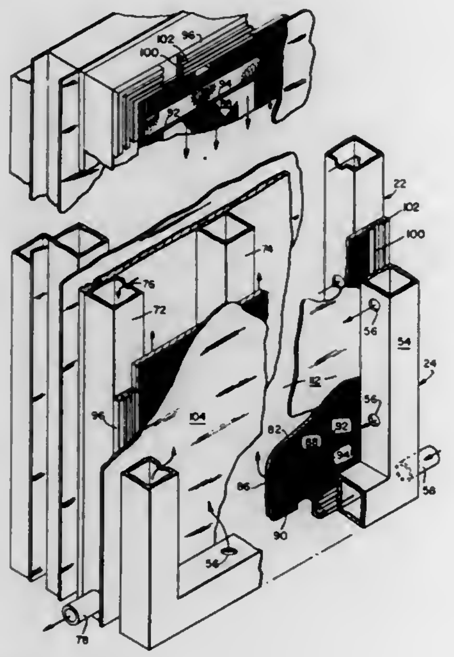
Barrie Neil Wheelock, Bexley Heath, England, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 265,258, June 22, 1972, abandoned. This application Feb. 1, 1974, Ser. No. 438,657
Claims priority, application Great Britain, June 25, 1971, 29940/71
Int. Cl. B01d *35/06*
U.S. Cl. 210—223 **5 Claims**



1. A magnetic filter for trapping and removing ferromagnetic contaminates from a fluid flowed selectively upstream and downstream through said filter, comprising a housing defining a fluid duct therethrough, the duct having a central axis with upstream and downstream ends thereof, a filtering grid situated in said duct and formed of a plurality of magnetizable strips comprising a first row of strips, each strip having an axis which is oblique to said duct axis, said strips forming a zigzag path with each strip having an upstream and a downstream end corresponding to said duct ends, and the upstream end of each strip having a side part thereof, the downstream end of each strip is adjacent and spaced from the side part of the upstream end of a strip that is downstream therefrom with a gap defined between said adjacent ends, the filter further

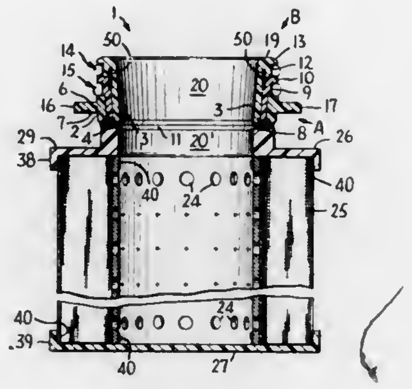
comprising at least one additional row of strips similar to the first row and parallel thereto defining a fluid passage between said two rows, and means for selectively magnetizing and de-magnetizing said strips, whereby said ferromagnetic contaminants will be entrapped in said gaps when said fluid flows in a downstream direction while the strips are magnetized, and said trapped contaminants are flushed out of the filter when said fluid is flowed in an upstream direction while said strips are de-magnetized.

3,850,812
PLATE AND FRAME TYPE FILTERING APPARATUS
John Russel Schneider, P.O. Box 878, Belvedere, Calif. 94920
Filed Aug. 21, 1972, Ser. No. 282,070
Int. Cl. B01d *25/12*
U.S. Cl. 210—231 **7 Claims**



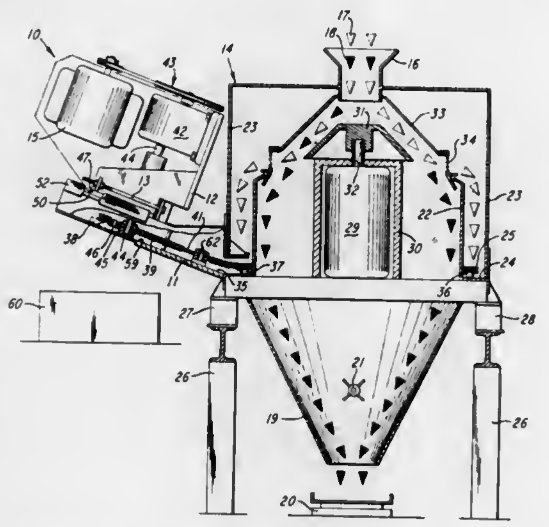
1. A liquid filtering apparatus comprising:
a plurality of plate and frame sections arranged in an alternating sequence;
means for supporting said sections in a generally upright vertical position;
linking means for connecting said sections together while allowing them to be separated a predetermined amount to facilitate the insertion of filter media between adjacent plate and frame sections;
controllable actuator means for pressing said sections together when filtering is being accomplished and for separating the sections when filter media is being changed;
an inlet conduit for supplying liquid to be filtered and means for connecting it in parallel to said frame sections;
an outlet conduit for removing filtered liquid connected in parallel to said plate sections;
all of said plate and said frame sections having hollow peripheral cavities surrounding a central space with openings spaced along the inner surfaces of said cavities communicating with the surrounded space; and base means on each plate section for supporting a layer of filter media,
said hollow peripheral cavities of said plate and frame sections being formed by hollow tubular structure having a generally rectangular cross-section and connected together at their ends in a rectangular frame-like configuration,
said inlet conduit communicating with a fluid conduit defined by the interior of said frame section hollow tubular structure and surrounding the central space defined by said frame,
said outlet conduit communicating with a fluid conduit defined by the interior of said plate section hollow tubular structure and surrounding the central space defined by said plate section hollow tubular structure.

3,850,813
END CAPS WITH PERIPHERAL GROOVES FOR TUBULAR FILTER ELEMENTS AND PROCESS FOR MAKING THE SAME
David B. Pall, Roslyn Estate, and Sidney Krakauer, Glen Cove, both of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.
Filed Oct. 27, 1972, Ser. No. 301,695
Int. Cl. B01d *27/00*
U.S. Cl. 210—232 **43 Claims**



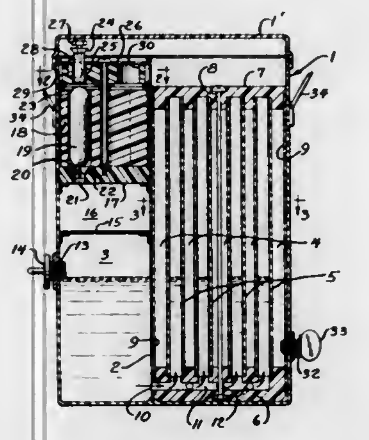
1. A filter element end cap having at least one peripheral groove, for use in capping tubular filter elements, which comprises a composite of abutting concentric components capable of being bonded together in one piece; of which components two abutting components provide the sides of each peripheral groove and one of these two components provides the base; the total number of such components being at least equal to the number of peripheral grooves, plus one; and the outermost component is an annulus; the composite having one face shaped to be bonded to one end of a tubular filter element in a fluid-tight seal to cap the tubular element, and having another face shaped to attach the capped filter element in fluid-flow connection to a fluid system in a fluid-tight seal, with a sealing element in at least one peripheral groove, the peripheral grooves having fixed dimensions after bonding together of the concentric components, and having smooth sides and base for fluid-tight sealing engagement with a sealing element and a fluid system.

3,850,814
SCRAPER CONVEYOR FOR A CENTRIFUGAL SEPARATOR
Robert H. Dudley, Portage, Mich., assignor to Prab Conveyors, Inc., Kalamazoo, Mich.
Continuation of Ser. No. 268,706, July 3, 1972, abandoned.
This application Feb. 20, 1974, Ser. No. 444,054
Int. Cl. 209 *13;* **B01d** *21/26*
U.S. Cl. 210—298 **6 Claims**



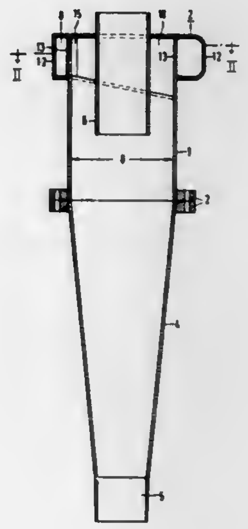
1. An apparatus for the centrifugal separation of larger solid particles from liquids and for removing finely divided solid materials entrained in the liquid after the first separation of the larger particles from the liquid which comprises in combination,
a centrifugal separator for separating large particles from liquid and finely divided particles comprising a centrally positioned motor, a rotary distributing cone mounted above and driven by said motor, a separating bowl provided with a peripheral screen enveloping the motor and cone, and a liquid-receiving trough;
a scraper conveyor in the liquid-receiving trough of the centrifugal separator;
duct means mounted on the outside of said liquid-receiving trough and communicating with said trough for transporting remaining finely divided solid particles out of the liquid-receiving trough;
endless chain situated in said liquid receiving trough and said duct means;
a plurality of spaced flights attached to said chain for traversing the bottom portion of said liquid-receiving trough;
frame means mounted on said duct means;
sprocket means situated in said duct means and drivably engaging said chain; and
motor means mounted on said frame means and drivably connected to said sprocket means.

3,850,815
PORTABLE REVERSE OSMOSIS UNIT
David H. Furukawa, Poway, Calif., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Aug. 13, 1973, Ser. No. 387,880
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **7 Claims**



1. In a portable reverse osmosis purification unit having a multiple number of pressure recharging elements therein and suitable for the production of potable water from contaminated or brackish water, the combination comprising:
a. a carryiing container having a vertically disposed feed water storage section having fill means thereto and a vertically disposed purified water collection section adjacent thereto and provided with a water withdrawl means therefrom;
b. a plurality of vertically disposed osmotic membrane coated porous separation means positioned internally in said collection section and having pure water collection section disposed thereabout;
c. fluid distributing means connecting said feed water storage section and said plurality of vertically disposed porous separation means thereby to uniformly distribute feed water thereto;
d. a gas receiving section above and adjacent to and in communication with said feed water storage section;
e. a gas cartridge holding section with at least one gas holding cartridge therein in communication with said gas receiving section, said cartridge holding section including a rotatable means having multiple cartridge holding passageways therein, one of said passageways having said communication with said gas receiving section, whereby upon discharge of one gas holding cartridge another of said cartridges may be rotated into position for discharge from said one of said passageways;
f. a movable cartridge puncturing means adjacent to said one of said passageways whereby, upon actuation thereof, pressurized gas is released from the cartridge in said one of said passageways to produce gas pressure on the liquid in said storage section to in turn force purified liquid through said membrane coated separation means into said water collection section of said container; and
g. means to replace gas cartridges in said container.

3,850,816
CYCLONE
Christian Koch, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Continuation of Ser. No. 167,968, Aug. 2, 1971, abandoned.
This application Dec. 5, 1973, Ser. No. 421,783
Claims priority, application Great Britain, July 31, 1970, 2038045
Int. Cl. B01d *21/26*
U.S. Cl. 210—512 **5 Claims**



1. A cyclone structure for separting specifically a heavier substance from a flowing medium containing such substance, comprising: a cylindrical member, a conical member connected to said cylindrical member, an inlet duct in communication with said cylindrical member for the passage of said medium containing said substance therethrough, said inlet duct having an end portion generally in the forom of a venturi nozzle and including, in succession, a continuously narrowing first duct portin, a second duct portion of uniform cross section being connected to said first duct portion, and a continuoiusly widening third duct portion connected to said second duct portion, said second duct portion having the narrowest cross-section namely, a maximum cross-sectional area of $0.05\ D^2$, where D is the diameter of said cylindrical member and at least said second and third duct portions respectively being curved spirally about the axis of an connected to said cylindrical member so as to supply said flowing medium containing such substance in substantially tangential direction into said cylindrical member of said structure.

3,850,817
DRILLING FLUID
Horst Barthel, Hamburg, Germany, assignor to Verwaltungsgesellschaft m.b.H. Oil Base Germany, Hamburg, Germany
Filed May 19, 1972, Ser. No. 255,130
Claims priority, application Germany, May 22, 1971, 2125550
Int. Cl. C10m *3/04*
U.S. Cl. 252—8.5 B **8 Claims**

1. An aqueous drilling fluid free of drilling clay comprising a substantially saturated aqueous solution of a chloride or

sulfate salt of magnesium, containing as drilling additives in amounts effective to provide deep drilling characteristics to the aqueous drilling fluid magnesium carbonate and a water soluble ammonium salt, the molar proportion of magnesium carbonate, calculated as magnesium oxide, to ammonium salt being about 4 moles of magnesium oxide to at least 1 mole of the ammonium salt.

3,850,818

ANTISTATIC SOFTENING COMPOSITION CONTAINING A QUATERNARY AMMONIUM SALT AND A ETHENOXY QUATERNARY AMMONIUM SALT

Mamoru Katsumi, and Toshio Sato, both of Wakayama, Japan, assignors to Kao Soap Co. Ltd., Chuo-ku, Tokyo, Japan

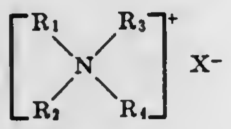
Filed Sept. 19, 1972, Ser. No. 290,345

Claims priority, application Japan, Sept. 23, 1971, 46-74276

Int. Cl. D06m *13/46*

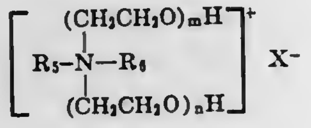
U.S. Cl. 252—8.8 **7 Claims**

1. An antistatic softening composition, consisting essentially of 4–10 percent by weight of a quaternary ammonium salt of the formula (I):



(I)

wherein R_1 and R_2 each represent an alkyl group of C_{14}–C_{22}, R_3 and R_4 each represent an alkyl group of C_1–C_3, benzyl group or $-(C_2H_4O)_nH$ ($n = 1 - 3$) and X represents Cl, Br or $C_2H_5SO_4$, 0.1–5 percent by weight of an ethenoxy quaternary ammonium salt of the formula (II):



$$\left[\begin{array}{c}(CH_2CH_2O)_mH\\ |\\ R_5-N-R_6\\ |\\ (CH_2CH_2O)_nH\end{array}\right]^+ X^-$$

(II)

wherein R_5 represents an alkyl group of C_{10}–C_{22}, R_6 represents an alkyl group of C_1–C_3 or benzyl group, X represents Cl, Br or $C_2H_5SO_4$ and *m* and *n* each represent an integer of more than 1 inclusive, with the privisio that $m + n$ is 20–100, 0.5–15 percent by weight of one or more additives selected from the group consisting of alcohols of lower than C_3 inclusive, glycols, glycerol, sorbitol and urea, the balance of said composition being water.

3,850,819

LOW FUMING SPIN FINISH FOR NYLON WEAVING YARNS

Barry Michael Shay, Wilmington, Del., assignor to ICI United States Inc., Wilmington, Del.

Filed Aug. 25, 1972, Ser. No. 283,928

Int. Cl. D06m *13/46*

U.S. Cl. 252—8.75 **4 Claims**

1. A nylon spin finish composition which is compataible with polyacrylic acid size applied therewith consisting essentially of:

a. 30–50 percent of lubricant selected from the group consisting of soybean oil, coconut oil, triesters of fatty acids having 8 to 10 carbon atoms of 1,1,1-trimethylolethane and 1,1,1-trimethylolpropane;
b. 10–30 percent by weight of diethyl sulfate quarternary of 1-hydroxy ethyl-2-heptadecenyl-imidazoline;
c. 20–60 percent by weight of an emulsifier selected from the group consisting of polyoxyethylene)20)sorbitan monolaurate, poloxyethylene(8) nonylphenol and polyoxethylene(40)sorbitol hexaoleate.

3,850,820

ANTIFRICTION STRUCTURAL MATERIAL PRODUCED FROM COMPOSITION COMPRISING CARBORANE-CONTAINING POLYMER BINDERS AND SOLID LUBRICANT

Vasily Vladimirovich Korshak, ulitsa Gubkins, 4, kv. 81; Irina Alexandrovna Gribova, ulitsa Vavilova, 12, kv. 31; Alla Nikolaevna Chumaevskaya, ulitsa Novatorov, 40, korpus 4, kv. 24; Boris Mikhailovich Mgeladze, Profsojuznaya ulitsa, 28, kv. 35; Nina Ivanovna Bekasova, Profsojuznaya ulitsa, 43, B, kv. 15; Ljudmila Grigorievna Komarova, B. Akademicheskaya ulitsa, 53a, kv. 6; Svetlana Vasilievna Vinogradova, ulitsa Miklukho-Maklaya, 30, korpus 2, kv. 63; Petr Maximilianovich Valetsky, Mazhorov pereulok, 4, kv. 5; Alexandr Ivanovich Kalachev, ulitsa Ordzhonikidze, 9/1, kv. 35a; Evgenia Kuzminichna Lyamenkova, Streletskaya ulitsa, 44, kv. 68, all of Moscow; Ljudmila Alexandrovna Glivka, stantsia pobeda, ulitsa Proletarskaya, 3, kv. 1, Moskovskaya oblast; Tamara Andreevna Burtseva, ulitsa Fersmana, 3, kv. 28, and Tatyana Mikhailovna Babchinitser, ulitsa Miklukho-Maklaya, 29, korpus 1, kv. 356, both of Moscow, all of U.S.S.R.

Continuation of Ser. No. 289,886, Sept. 16, 1972, abandoned. This application Oct. 29, 1973, Ser. No. 410,306

Claims priority, application U.S.S.R., Sept. 16, 1971, 1695225

Int. Cl. C10m *7/52*

U.S. Cl. 252—12 **12 Claims**

1. A composition for preparing an antifriction structural material comprising 10 to 50 percent by weight of a polymer binder selected from the group consisting of polyesters, polyamides, polyimides, and polyoxadiazoles containing carborane units attached to the polymer chain thereof, and 90 to 50 percent by weight of an inorganic heat resistant solid lubricant.

3,850,821

BEARINGS

Masayuki Horikawa, Tokyo, Japan, assignor to Oiles Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. Nos. 606,389, Dec. 30, 1966, abandoned, and Ser. No. 851,717, Aug. 20, 1969, Pat. No. 3,606,657, and Ser. No. 140,739, May 6, 1971, abandoned. This application June 11, 1973, Ser. No. 368,510

Int. Cl. C10m *7/26, 7/24, 7/22*

U.S. Cl. 252—12.2 **7 Claims**

1. A method of making impregnated bearings from a polyacetal resin material containing organic lubricant which is liquid at room temperature and/or at the melting point or a temperature less than the melting point of the resin, said method comprising the steps of mixing a polyacetal resin with from 2 to 15 percent by weight of lubricant, at a temperature not lower than the melting point of the said resin to melt them together, cooling the melt system to solidifying the impregnated product, forming powder from the impregnated product and molding into bearings.

3,850,822

ASHLESS OIL ADDITIVE COMBINATION COMPOSED OF A NITROGEN-CONTAINING ASHLESS DISPERSANT PHOSPHOSULFURIZED OLEFIN AND PHOSPHOROTHIONYL DISULFIDE

David E. Steere, Sarnia, and Edwin C. Younghouse, Cranford, Ontario, both of Canada, assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed July 14, 1972, Ser. No. 271,718

Int. Cl. C10n *1/32*

U.S. Cl. 252—34.7 **8 Claims**

1. An additive package for use in lubricating oil for an internal combustion engine which comprises in combination 30 to 80 wt. percent of a nitrogen-containing ashless dispersant, 3.0 to 30 wt. percent of a phosphosulfurized olefinic hydrocarbon and 3.0 to 30 wt. percent of a phosphorothionyl disulfide of phenol or of a C_1–C_{18} alkyl phenol, said nitrogen-containing ashless dispersant being selected from the class consisting of salts, amides, and imides derived by condensation of an aliphatic hydrocarbyl polyamine with a hydrocarbyl monocarboxylic acid, hydrocarbyl dicarboxylic acid, or hydrocarbyl acid anhydride, said acid or acid anhydride having a total of from about 50 to 250 carbon atoms

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3,850,823

METHOD FOR PRODUCING CORROSION INHIBITING COMPOSITIONS

Manley Kjonaas, Hammond, Ind., assignor to Atlantic Richfield Company, New York, N.Y.

Continuation-in-part of Ser. No. 82,800, Oct. 21, 1970, Pat. No. 3,730,895. This application Feb. 26, 1973, Ser. No. 335,850

Int. Cl. C10m *1/54*

U.S. Cl. 252—40.7 **21 Claims**

1. A method for producing a corrosion inhibitor concentrate comprising lubricating oil, at least one cloudy type overbased alkali or alkaline earth metal dispersant comprising at least one carboxylate and at least one oil-insoluble carbonate, and a corrosion inhibiting amount of a water soluble salt which comprises:

1. contacting a mixture comprising said lubricating oil, said carboxylate and at least one hydroxide selected from the group consisting of alkali metal hydroxide, alkaline earth metal hydroxides and mixtures thereof, with carbon dioxide to react with at least a major portion of said hydroxide and form solid carbonate particles the major portion of which have a maximum dimension of at least 60A, and substantially all of the particles in said carbonate-containing mixture have a maximum dimension less than about 3 microns;
2. contacting said carbonate-containing mixture with said water-soluble salt to form a substantially uniform composition in the presence of sufficient water to solubilize the water soluble salt; and
3. substantially dehydrating the composition to form said corrosion inhibitor concentrate wherein substantially all of the particles of said water soluble salt have a maximum dimension of less than 5 microns.

3,850,824

SYNTHETIC AIRCRAFT TURBINE OIL

John W. Nebzydoski; Edwin L. Patmore, both of Fishkill, and Isaac D. Rubin, Wappingers Falls, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed May 17, 1973, Ser. No. 361,094

Int. Cl. C10m *1/48*

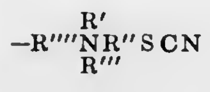
U.S. Cl. 252—46.7 **10 Claims**

1. A synthetic lubricating oil composition comprising a major portion of an aliphatic ester base oil having lubricating properties formed from the reaction of a pentaerylthritol or trimethylolpropane and an organic monocarboxylic acid having from about 2 to 18 carbon atoms per molecule containing:

a. from about 0.01 to 2.5 weight percent of an ammonium thiocyanate represented by the formula:

$$RN^+R'R''R'''S^-CN$$

in which R is a hydrocarbyl or amino-substituded hydrocarbyl group having from 1 to 30 carbon atoms or a radical having the formula:



$$-R''''\overset{R'}{\underset{R'''}{N}}R''SCN$$

in which R'''' is a bridging polymethylene radical having from 2 to 4 carbon atoms, and R', R'' and R''' represent hydrogen or a hydrocarbyl group having from 1 to 30 carbon atoms,

b. from about 0.001 to 0.10 weight percent of 3-amino-1H-1,2,4-triazole,
c. from about 0.3 to 5 percent by weight of the lubricating oil composition of an alkyl or alkaryl phenyl naphthylamine in which the alkyl radical has from 3 to 12 carbon atoms,
d. from about 0.3 to 5 percent of a dialkydiphenylamine in which the alkyl radicals have from 4 to 12 carbon atoms, and
e. from about 0.25 to 10 percent of a trihydrocarbyl phosphate in which said hydrocarbyl radical contains an aryl ring and contains from about 6 to 18 carbon atoms.

3,850,825

SULFURIZED FATTY OILS

Paul C. Vienna, Calumet City, and Marvin J. Den Herder, Olympia Fields, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Jan. 2, 1973, Ser. No. 320,076

Int. Cl. C10m *1/38*

U.S. Cl. 252—48.6 **5 Claims**

1. A sulfurized fatty oil composition consisting essentially of a blend of (a) about 80 weight percent to about 95 weight percent prime burning lard oil and (b) about 5 weight percent to about 20 weight percent alkyl oleate sulfurized to contain about 8 weight percent to about 12 weight percent bound sulfur and not more than 0.3 weight percent free sulfur, said alkyl oleate being a mixture of alkyl esters of saturated and unsaturated fatty acids having 14 to 18 carbons containing at least 50 weight percent unsaturated fatty acids with not more than 10 weight percent of unsaturated fatty acids containing conjugated double bonds in the unsaturated fatty acid fraction and said alkyl group having 1 to 3 carbon atoms.

3,850,826

LUBRICATING OIL ADDITIVES

Louis de Vries, Greenbrae, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 20, 1973, Ser. No. 333,586

Int. Cl. C10n *1/32*

U.S. Cl. 252—51.5 A **5 Claims**

1. A lubricating oil composition comprising a major amount of an oil of lubricating viscosity and in an amount sufficient to provide dispersancy:

the reaction product of an alkyl, aryl or alkaryl polyisocyanate with a cooligomer in a mol ratio of about 0.4–1:1 at a temperature of about 0°–200°C;

said cooligomer is the reaction product of a hydrocarbyl-substituted succinic acid or anhydride, wherein the hydrocarbyl group contains at least 30 carbon atoms, with a polysecondary hydrocarbyl amine containing from 2 to 12 amino nitrogen atoms, none of which is a primary amino nitrogen atom and at least two of which are secondary amino nitrogen atoms, in a mol ratio of about 1:1–2 at a temperature of 100°–200°C.

3,850,827

SPERM OIL SUBSTITUTE FROM BLEND OF CARBOXYLIC ACID ESTERS OF GLYCOLS

Robert L. Zipf, Parma Heights, Ohio, assignor to Werner G. Smith, Inc., Cleveland, Ohio

Filed Apr. 19, 1971, Ser. No. 135,501

Int. Cl. C10m *3/20, 1/26*

U.S. Cl. 252—56 S **2 Claims**

1. A lubricant comprising a blend consisting essentially of fatty acids each having from 10 to 24 carbon atoms and mono-esters and di-esters of said fatty acids with glycols selected from the class consisting of simple glycols, each having from 2 to 6 carbon atoms, polymers thereof having molecular weights up to 282, and mixtures thereof, at least 10 percent by weight of said total mono-esters and di-esters being mono-esters, said blend having a hydroxyl number in the range of

about 15 to about 70, an acid number less than 15, a pour point below 30°F., an S.U.S. viscosity at 100°F. in the range of about 90 to about 120 and an iodine number from 0 to 190.

3,850,828
GREASE COMPOSITION

Stanley Charles Dodson, Leatherhead, and Robert Henry Newman, Weybridge, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Nov. 27, 1972, Ser. No. 309,680

Claims priority, application Great Britain, Nov. 29, 1971, 55306/71

Int. Cl. C10m *5/10, 7/14*

U.S. Cl. 252—59 **5 Claims**

1. A grease composition which consists essentially of a lubricating base oil thickened to a grease consistency with from 1 to 20% weight of a polymer mixture, said polymer mixture consisting of an atactic polypropylene of melt index above 50 and a molecular weight below 100,000, and a polyethylene of density above 0.94 grm/cc and molecular weight of 20,000 to 500,000, the weight ratio of said atactic polypropylene to polyethylene being from 1:1 to 10:1.

3,850,829
DEVELOPING LIQUID FOR ELECTROSTATIC IMAGES

Ian Edward Smith, Lockleys; Peter John Hastwell, North Adelaide, and Marinus Cornelus Vermeulen, Valley View, all of Australia, assignors to Savin Business Machines Corporation, Valhalla, N.Y.

Filed July 5, 1972, Ser. No. 269,054

Int. Cl. G03g *9/04*

U.S. Cl. 252—62.1 **15 Claims**

1. A developing liquid composiiton adapted to develop a latent electrostatic image to form a transferable visible image on a photoconductive surface includng in combination a light isoparaffinic hydrocarbon carrier liquid means having a kauributanol number of less than 30, a tacky organosol means formed by dissolving a high molecular weight resing polymert in an aromatic hydrocarbon solvent, said high molecular weight resin being insoluble in the light isoparaffinic hydrocarbon carrier liquid and having electrophoretic properties, said organosol means being dispersed in said carrier liquid means, release agent means adapted to facilitate the transfer of said visible image from the photoconductor to a supporting surface, said release agent means being insoluble in said carrier liquid means and present in said composition between 6% and 30% by weight of said high molecular weight resin polymer, both said organosol means and said release agent means having such electrophoretic properties that both will codeposit on said latent electrostatic image from said developing liquid, the composition being such that the transfer of the developed image from the photoconductive surface to said supporting surface is facilitated.

3,850,830
LIQUID DEVELOPER CONTAINING EXTENDER BODY PARTICLES

Osamu Fukushima; Masamichi Sato, and Yasuo Tamai, all of c/o Fuji Photo Film Co., Ltd., No. 105, Oaza Mizonuma, Asaka-shi, Saitama-ken, Japan

Continuation of Ser. No. 94,967, Dec. 3, 1970, abandoned. This application Nov. 13, 1972, Ser. No. 306,242

Int. Cl. G03g *9/04*

U.S. Cl. 252—62.1 **6 Claims**

1. An electrostatorgraphic liquid developer comprising an insulating liquid vehicle having a volume resistivity greater than about 10^{10} ohm-cm and dispersed therein charged colored toner particles and white extender body pigment particles selected from the group consisting of calcium carbonate, aluminum hydroxide, and mixtures thereof; said extender body pigment particles being present in from about one tenth to about ten times the amount of the charged colored toner particles and having a particle size of from about 0.01 to about 5 microns, said toner particles having a size of from about 0.01 to about 1 micron; said extender body pigment particles having a positive charge, both said charged toner particles and said charged body pigment particles being capable of being simultaneously deposited from said liquid developer in response to a charge of opposite polarity on the latent image areas of an imaging surface and said charged body pigment particles being capable of preferential deposition in the background portions of said imaging surface.

3,850,831
LIQUID DETERGENT COMPOSITIONS CONTAINING SURFACTANTS AND PEROXIDE BLEACHING AGENTS

Karl Martin Edvin Hellsten, Odsmal, and Seppo Olavi Santamaki, Lindome, both of Sweden, assignors to Mo Och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed July 10, 1972, Ser. No. 270,388

Int. Cl. C11d *7/54*

U.S. Cl. 252—99 **16 Claims**

1. A liquid detergent composition consisting essentially of from about 5 to about 35 percent by weight of a water-soluble inorganic per compound bleaching agent which is a solid and which is stable at ambient temperature selected from the group consisting of the water-soluble alkali metal and ammonium perborates, percarbonates, persulfates and perpyrophosphates, from about 5 to about 35 percent by weight of an organic surfactant selected from the group consisting of anionic, cationic, nonionic and ampholytic surfactants, and an amount within the range from about 5 to about 30 percent by weight sufficient to form a liquid composition of a polyhydric alcohol or ether thereof which is liquid at ambient temperature and selected from the group consisting of polyhydric alcohols having from two to about three hydroxyl groups and from 2 carbon atoms to about 6 carbon atoms, and polymeric polyoxyalkylene alcohols having a molecular weight within the range from about 100 up to about 4,000, and mono- and polyethers thereof having at least one free hydroxyl group and an alkyl group having from one to about four carbon atoms, the polyoxyethylene glycols having a molecular weight within the range from about 100 to about 400, and the polyoxypropylene and polyoxybutylene glycols having a molecular weight within the range from about 100 to about 4,000, the composition being substantially free from liquid water.

3,850,832
WASHING, RINSING AND CLEANSING AGENT COMPOSITIONS CONTAINING FURAN-MALEIC ANHYDRIDE COPOLYMER SEQUESTERING AGENTS

Bernd Wegemund, Hilden; Hans-Jurgen Lehmann, and Edmund Schmadel, both of Mettmann, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

Filed Dec. 12, 1972, Ser. No. 314,337

Claims priority, application Germany, Dec. 17, 1971, 2162673

Int. Cl. C11d *3/20, 7/26*

U.S. Cl. 252—99 **16 Claims**

1. Washing, rinsing and cleansing compositions consisting essentially of (a) from 5 percent to 95 percent by weight of at least one compound having a cleaning action selected from the group consisting of (1) anionic surface-active compounds, non-ionic surface-active compounds, amphoteric surface-active compounds, and mixtures thereof, (2) organic builder salts and inorganic builder salts, and (3) mixtures of (1) and (2), and (b) from 95 to 5 percent by weight of at least one copolymercarboxylate sequestering agent capable of sequestering alkaline earth metal ions prepared from approximately equal molar amounts of maleic acid and furan, and having a molecular weight of from about 300 to 20,000, said copolymer-carboxylate sequestering agents being present as water-soluble salts capable of complex formation with alkaline earth metal ions.

3,850,833
SCOURING CLEANSER COMPOSITION

Mark J. Kocelch, Franklin Park, and William Chirash, New Providence, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 109,608, Jan. 25, 1971, abandoned. This application Mar. 14, 1973, Ser. No. 341,211

Int. Cl. C11d *7/54*

U.S. Cl. 252—99 **12 Claims**

1. A colored solid particle consisting essentially of water soluble carrier particles selected from the group consisting of sodium chloride, potassium chloride and sodium sulfate, said carrier particles having coated thereon a mixture consisting essentially of a water soluble alkali metal bromide salt, a water dispersible pigment stable in the presence of hypohalide-liberating bleaching agents and a colorant extender selected from the group consisting of propylene glycol, polyethylene glycol 300 and propylene glycol phenol ether.

3,850,834
SOAP COMPOSITIONS CAPABLE OF DISPERSING LIME SOAPS

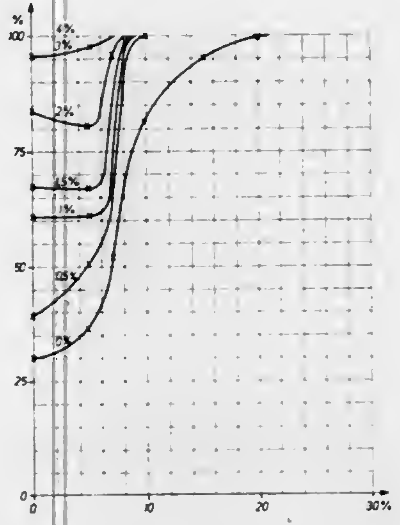
Karl Martin Edvin Hellsten, Odsmal, and Anderson William Klingberg, Kallered, both of Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed July 19, 1971, Ser. No. 163,858

Claims priority, application Sweden, July 2, 1970, 9169/70

Int. Cl. C11d *1/14, 9/46, 9/48*

U.S. Cl. 252—117 **12 Claims**



1. A solid soap composition in bar or cake form capable of substantially completely dispersing lime soap at temperatures as low as 40°c. and a soap concentration of as low as 1 gram per liter in water having a hardness of 20°, consisting essentially of a water-soluble fatty acid soap selected from the group consisting of the alkali metal soaps, ammonium soaps, and organic amine soaps of the saturated and unsaturated fatty acids having from about 10 to about 22 carbon atoms, an amount within the range from about 5 to about 15 percent by weight of the soap of free fatty acid having from about 10 to about 22 carbon atoms, and an amount within the range from about 0.5 to about 3 percent by weight of the soap of an alkyl or alkyl phenol oxyalkylene ether sulfate having the formula $R_1—(OR_2)_n—OSO_3M$ in which R_1 is selected from the group consisting of alkyl groups having from about 10 to about 20 carbon atoms and alkyl phenol groups having from one to three alkyl groups at least one having from about eight to about 15 carbon atoms and the others havig from one to 15 carbon atoms ; R_2 is an oxylakylene unit selected from the group consisting of oxyethylene oxypropylene and oxybutylene units and mixtures thereof, and contains an average from from one to about ten oxyalkylene groups, M is selected from the group consisting of alkali metals, ammonium, and organic amines having from about three to about twelve carbon atoms and from none to about three hydroxyl groups, and *n* is a number from 1 to 10.

3,850,835
METHOD OF MAKING GRANULAR ZIRCONIUM HYDROUS OXIDE ION EXCHANGERS, SUCH AS ZIRCONIUM PHOSPHATE AND HYDROUS ZIRCONIUM OXIDE, PARTICULARLY FOR COLUMN USE

Laurence B. Marantz, Sherman Oaks, and Clifford M. Moran, San Gabriel, both of Calif., assignors to CCI Life Systems, Van Nuys, Calif.

Filed Nov. 8, 1971, Ser. No. 196,805

Int. Cl. C02b *1/44;* **C01g** *25/02*

U.S. Cl. 252—182 **13 Claims**

1. A process for producing a granular zirconium hydrous oxide ion exchanger of a predetermined particle size distribution comprising the steps of:

selecting an aqueous solution of a reagent wherein the reagent is selected from the group consisting of the water soluble phosphates and the bases which provide a hydroxyl ion in aqueous solution;

reacting the reagent with a granular zirconium compound to form a granular zirconium hydrous oxide ion exchanger product, in the reagent solution, of a particle size distribution determined by that of the granular zirconium compound, said reaction being accomplished by adding to the reagent solution, in granular form, a granular zirconium compound which is more soluble in the aqueous reagent than said granular ion exchanger product formed therein and allowing the zirconium compound to react with the reagent for at least a sufficient time to substantially convert the zirconium compound to said granular ion exchanger product in the reagent solution; and

recovering said ion exchanger product.

3,850,836
AIR ACTIVATED HYDROGEN PEROXIDE OXALATE ESTER-FLUORESCER CHEMILUMINESCENT SYSTEM

Herbert P. Richter; Carl A. Heller, both of China Lake; William P. Norris, Ridgecrest, and William S. McEwan, China Lake, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 6, 1972, Ser. No. 304,189

Int. Cl. C09k *3/00*

U.S. Cl. 252—188.3 CL **4 Claims**

1. A method for generating light from chemical energy which comprises:

a. preparing a light-producing formulation by adding under oxygen-free conditions at ambient temperature an organic compound selected from the group consisting of anthrahydroquinone, 2-ethylanthrahydroquinone, 2-tertiarybutylanthrahydroquinone and 2-hydroxy-2-phenylacetophenone to an oxalate ester - fluorescer component which will react with hydrogen peroxide to give light; and

b. exposing said formulation to air whereby light is emitted having a life of from 30 minutes to 24 hours.

3,850,837

PREPARATION OF RARE-EARTH OXYSULFIDE LUMINESCENT MATERIAL

Dilip K. Nath, Mayfield, Ohio, assignor to General Electric Company, Cleveland, Ohio

Filed Aug. 11, 1972, Ser. No. 279,931

Int. Cl. C09k *1/14*

U.S. Cl. 252—301.4 S **5 Claims**

1. A method for preparation of a crystalline rare earth oxysulfide luminescent material selected from the oxysulfides of yttrium, gadolinium, lanthanum, and lutetium which comprises:

a. heating a rare earth oxide mixture in H_2S gas to elevated temperatures in the range from about 500°C to 700°C with a sulfurizing compound selected from the group consisting of KHS and a potassium compound which reacts to form KHS upon heating with H_2S until the oxysulfide material is produced in accordance with the formula $Ln_{(2-x)}Ln'_xO_2S$ wherein Ln is one or more of Y, Gd, La, and Lu; Ln′ is one or more of Dy, Er, Eu, Ho, Nd, Pr, Sm, Tb, and Tm; and x is in the range 0.0002 to 0.2, and

b. recrystallizing the oxysulfide material by heating with an alkali metal sulfide in an inert atmosphere to elevated temperatures in the range from about 1050°C to 1450°C.

3,850,838

DISPERSIBILITY OF WATER-SOLUBLE GUMS

John D. Guckenberger, Collinsville, Ill.; Dudley S. Titus, St. Louis, Mo., and Knut Toft, Dramen, Norway, assignors to Mallinkrodt, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 70,510, Sept. 8, 1970, abandoned. This application July 10, 1972, Ser. No. 270,211

Int. Cl. B01f *3/12*

U.S. Cl. 252—363.5 **3 Claims**

1. The method of forming a readily dispersible and dissoluble alcoholinsoluble hydrocolloid selected from the group consisting of alginic acid and water-soluble salts thereof, karaya, tragacanth, carrageen, guar and carboxymethyl cellulose which comprises thoroughly intermixing particles of said hydrocolloid with sufficient carbohydrate binder soluble in both water and alcohol and an aqueous alcoholic solvent to substantially coat the surface of said particles, said alcoholic solvent containing sufficient alcohol to prevent hydration of the hydrocolloid but insufficient alcohol to prevent dissolution of the binder, continuing said mixing until granules are formed, and drying the granules.

3,850,839

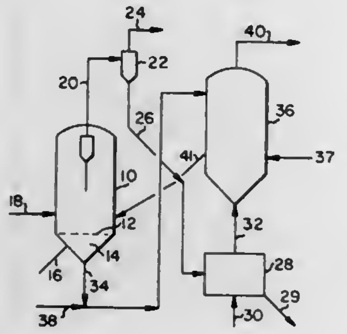
MANUFACTURE OF SYNTHESIS GAS

Leonard Seglin, New York, N.Y., and Ralph Tracy Eddinger, Princeton Junction, N.J., assignors to Cogas Development Company, Princeton, N.J.

Filed Feb. 11, 1971, Ser. No. 114,642

Int. Cl. C07c *1/02*

U.S. Cl. 252—373 **7 Claims**



1. In the process of making synthesis gas by the gasification of a carbonaceous solid with steam in a fluidized bed, the improvement of providing heat to the process comprising burning fines separated from the synthesis gas stream withdrawn from above the fluidized bed, contacting the combustion gases from the combusted fines with preformed inert refractory pebbles of substantially spherical shape for sufficient time to heat the pebbles, introducing the heated pebbles into the gasification zone, the pebbles being of such size and specific gravity that they are not fluidized with the carbon in the bed and sink by gravity to the bottom of the gasifier, and circulating the pebbles out of the bottom of the gasifier, after they have given up heat to the reaction taking place in the gasifier, to be reheated.

3,850,840

WATER GAS SHIFT PROCESS

Clyde L. Aldridge, 6022 S. Pollard Parkway, Baton Rouge, La. 70808, and Theodore Kalina, 16 Sunrise Drive, Morris Plains, N.J. 07950

Continuation-in-part of abandoned application Ser. No. 875,243, Nov. 10, 1969. This application Feb. 11, 1972, Ser. No. 225,632

Int. Cl. C01b *1/03, 2/06;* **C10k** *3/04*

U.S. Cl. 252—373 **15 Claims**

1. A process for the preparation of hydrogen and carbon dioxide which comprises (a) contacting carbon monoxide and steam with a chromia-promoted ferric oxide catalyst to form a reaction mixture, said contacting being conducted at a temperature above the dew point temperature of the reaction mixture and in the range of about 600° to about 1000° F. and a pressure below the dew point pressure of the reaction mixture and in the range of about atmospheric to about 3000 p.s.i.g.; and (b) contacting at least a portion of the effluent from step (a) at a temperature above the dew point temperature of the reaction mixture and varying from about 200° to 700° F. and at a pressure below the dew point pressure of the reaction mixture and ranging from about atmospheric to about 3000 p.s.i.g. with a catalyst comprising (i) an alkali metal compound derived from an acid having an ionization constant of less than about 1×10^{-3}, and (ii) a hydrogenation-dehydrogenation component selected from the group consisting of (a) a metal composition comprising vanadium, molybdenum, tungsten, cobalt, tantalum or niobium materials or mixtures thereof or (b) mixtures of materials comprising a vanadium, molybdenum, tungsten, cobalt, tantalum or niobium materials or mixtures thereof with a nickel, iron or chromium material or mixtures thereof, the weight ratio of said hydrogenation-dehydrogenation component to said alkali metal compound, each calculated on the basis of the oxides thereof, being less than 5:1.

3,850,841

SHIFT PROCESS FOR NEW CATALYST

Clyde L. Aldridge, Baton Rouge, La., and Theodore Kalina, Morris Plains, N.J., assignors to Exxon Research and Engineering Company

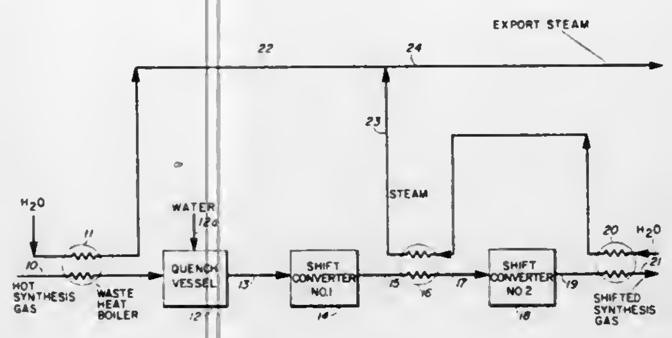
Continuation-in-part of abandoned application Ser. No. 875,244, Nov. 10, 1969. This application Feb. 11, 1972, Ser. No. 225,633

The term of this patent subsequent to Nov. 24, 1991, has been disclaimed

Int. Cl. C01b *1/03, 2/06, 3/04*

U.S. Cl. 252—373 **22 Claims**

1. A process for the preparation of hydrogen and carbon dioxide which comprises introducing a gas mixture containing monoxide and steam at a temperature varying from about 300° to 700° F. into a first shift reaction stage and contacting said gas mixture therein with a catalyst to form a reaction mixture, cooling at least a portion of said reaction mixture from said first stage to a temperature of about 300° to about 700° F. and introducing at least a portion of said cooled reaction mixture to at least one additional shift reaction stage and contacting the same therein with a catalyst, the temperature within each said reaction stage being maintained above the dew point temperature of the reaction mixture and the pressure within each said reaction stage being maintained below the dew point pressure of said reaction mixture and ranging from about atmospheric to about 3,000 p.s.i.g., the catalyst in each reaction stage comprising (i) an alkali metal compound derived from an acid having an ionization constant of less than about 1×10^{-3} and (ii) a hydrogenation-dehydrogenation component selected from the group consisting of (a) a metal composition comprising vanadium, molybdenum, tungsten, cobalt, tantalum or niobium materials or mixtures thereof or (b) mixtures of materials comprising vanadium, molybdenum, tungsten, cobalt, tantalum or niobium materials or mixtures thereof with a nickel, iron or chromium material or mixtures thereof, the weight ratio of said hydrogenation-dehydrogenation component to said alkali metal compound, each calculated on the basis of the oxides thereof, being less than 5:1.



3,850,842

POLYMERIZATION CATALYSTS

Paolo Longi, Umberto Giannini, and Romano Mazzocchl, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Continuation of abandoned application Ser. No. 53,022, July 7, 1970. This application Aug. 30, 1972, Ser. No. 284,712

Claims priority, application Italy, July 8, 1969, 19,319/69

Int. Cl. B01j *11/84*

U.S. Cl. 252—429 C **18 Claims**

1. A catalyst for the polymerization of olefins and consisting essentially of the product by mixing

(a) a catalyst-forming component which is selected from the group consisting of

$$Al(C_2H_5)_3,\ Al(C_2H_5)_2Cl,\ Al(iC_4H_9)_3,\ Al(iC_4H_9)_2Cl,$$
$$Al_2(C_2H_5)_3Cl_3,\ Al(C_2H_5)_2H,\ Al(iC_4H_9)_2H,$$
$$Al(C_2H_5)_2Br,\ LiAl(iC_4H_9)_4 \text{ and } LiiC_4H_9,$$

with (b) a catalyst-forming component obtained by contacting (1) a titanium compound having the general formula

$$M_2TiX_{n+2}$$

in which M is an alkali metal, the substituents X_n are halogen atoms and n is the valence of the titanium, with (2) a support consisting of an active anhydrous magnesium dihalide characterized in that, in its X-rays spectrum, the reflection which is most intense in the X-rays spectrum of the normal, inactive magnesium dihalide is markedly decreased in intensity, and in that it has a surface area greater than 3 m.^{2}/g.

3,850,843

PROCESS FOR PREPARING CARBONYL CATALYST

Taiseki Kunugi, Kaoru Fujimoto, and Hiromichi Arai, Tokyo, and Yoshihisa Watanabe, Ami, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

No Drawing. Continuation of abandoned application Ser. No. 808,645, Mar. 19, 1969. This application Nov. 27, 1972, Ser. No. 309,814

Claims priority, application Japan, Mar. 23, 1968, 43/18,621; Mar. 14, 1969, 44/18,904

Int. Cl. C07c *45/04*

U.S. Cl. 252—429 R **5 Claims**

1. A process for the preparation of a catalyst for producing an aliphatic aldehyde or aliphatic ketone of 2 to 8 carbon atoms, which comprises contacting active carbon with an aqueous solution of an acid selected from the group consisting of hydrochloric acid, hydrobromic acid, sulfuric acid, nitric acid, acetic acid, formic acid, oxalic acid, monochloroacetic acid and benzene sulfonic acid and a metal salt selected from the group consisting of chloride, bromide, iodide, fluoride, sulfate, phosphate, nitrate, cyanide, chlorate, perchlorate, formate, acetate, monochloroacetate, benzoate and naphthenate of at least one platinum metal selected from the group consisting of palladium and rhodium so as to adsorb said metal salt thereon, wherein said aqueous acid solution is a solution of said salt of said platinum metal dissolved in an aqueous solution of an acid so that atomic ratio R expressed by the following formula

$$R = (m \cdot n + p \cdot q)/a$$

m is the mol number of said salt of palladium or salt of rhodium to be dissolved,

n is the number of electric charge of the acid radical of said salt of palladium or salt of rhodium,

p is the mol number of the acid in the aqueous acid solution dissolving said salt of palladium or salt of rhodium,

q is the number of the electric charge of the acid radical of said acid, and,

a is the mol number of said salt of palladium or salt of rhodium, is at least 4.

the concentration of said salt being maintained less than the saturation concentration throughout the period of contact with active carbon.

3,850,844

METHOD FOR THE PREPARATION OF A CARRIER USABLE FOR MANUFACTURING A CATALYST TO BE USED FOR CARRYING OUT A CATALYTIC REACTION OF HYDROCARBONS

Takeo Ao, Osaka, Japan, assignor to Osaka Yogyo Kabushiki Kaisha, Osaka Prefecture, Japan

No Drawing. Continuation-in-part of application Ser. No. 75,287, Sept. 24, 1970, which is a continuation-in-part of application Ser. No. 869,904, Oct. 27, 1969, both now abandoned. This application Dec. 22, 1972, Ser. No. 317,683

The term of this patent subsequent to Nov. 6, 1990, has been disclaimed

Int. Cl. C04b *35/10, 35/48, 35/56*

U.S. Cl. 252—429 R **9 Claims**

1. A method for the preparation of a catalyst carrier which comprises:

(I) pulverizing a member selected from the group consisting of Al_2O_3, SiC and ZrO_2 into particles which pass through a Tyler Standard sieve having a mesh of 65 to 325,

(II) mixing said particles with a binder which comprises:
  (A) 0.1 to 2.8% by weight of starch produced by pre-treating a starch-containing raw material with an organic or inorganic acid for 1 to 3 days at atmospheric pressure until the outer skin of the raw material is destroyed, heating the pre-treated raw material at a temperature of 100 to 300° C. for 40 to 80 minutes to produce a lump of starch and then pulverizing the resultant lump of starch,
  (B) 0.05 to 2.5% by weight of a member selected from the group consisting of sodium carbonate, calcium chloride and magnesium sulfate, and
  (C) 0.05 to 2.5% by weight of a member selected from the group consisting of aluminum chloride, silicon chloride and zirconium chloride with the proviso that (1) the total weight of components A, B and C do not exceed 0.2 to 3% of the particles of step I, and (2) that the ratio of $A/A+B+C$ is between 0.38 and 0.98, $B/A+B+C$ is between 0.017 and 0.945 and $C/A+B+C$ is between 0.017 and 0.945;
(III) molding said mixture into a predetermined shape, and
(IV) calcining the shaped mixture at about 600° C. to about 1350° C. for 1 to 5 hours to produce said carrier.

3,850,845

METAL OXIDE PASTE DISPERSIONS AND USE AS CURING AGENTS

Glenn C. Vickery, Barberton, Ohio, assignor to Basic Incorporated, Cleveland, Ohio

No Drawing. Filed Apr. 25, 1973, Ser. No. 354,339

Int. Cl. B01j *11/52*

U.S. Cl. 252—430 **9 Claims**

1. A paste co-dispersion comprising a mixture of from about 30 to about 80 parts by weight of magnesium oxide and from about 10 to about 60 parts by weight of zinc oxide, the oxides having an average particle size of up to about 10 microns, a non-aqueous liquid vehicle, and an oil-soluble or oil-dispersible surface active agent.

3,850,846

CATALYST SULFIDING PROCEDURE

Stanley Kravitz, Joseph H. Coone, Jr., and Edward L. Cole, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Apr. 19, 1973, Ser. No. 352,802

Int. Cl. B01j *11/74*

U.S. Cl. 252—439 **9 Claims**

1. A process for the in situ sulfiding of a catalyst which comprises charging a mixture of a particulate catalyst comprising a Group VIII metal oxide on a support comprising a refractory inorganic oxide and encapsulated hydrolyzable solid sulfur-containing compound to a reaction zone to form a catalyst bed therein, heating the mixture to remove the encapsulating material from said compound, hydrolyzing said compound to produce H_2S within said catalyst bed thereby effecting in situ sulfiding of said catalyst.

3,850,847

PROCESS FOR PREPARING ULTRA STABLE EXHAUST CATALYST OF IMPROVED ACTIVITY

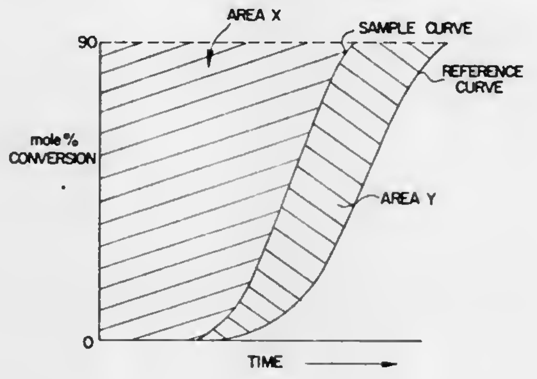
James Richard Graham, Columbia, Michael V. Ernest, Baltimore, and James Michael Maselli, Columbia, Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Dec. 19, 1972, Ser. No. 316,647

Int. Cl. B01j *11/06*

U.S. Cl. 252—462 **2 Claims**

1. A process for preparing an ultra-stable catalyst for the conversion of the noxious components of exhaust gases to innocuous entities consisting essentially of:
(a) impregnating a support selected from the group consisting of alumina, mullite, silica, cordierite, and silica-alumina of sufficient surface area with a solution of a soluble salt of cerium which upon calcination provides cerium oxide on the support,
(b) calcining the impregnated support in air by heating to a temperature of about 1000° to 2000° F. to convert the cerium to oxide form,



(c) contacting the impregnated support with a sufficient quantity of a solution of a salt of a noble metal selected from the group consisting of platinum, palladium and mixtures thereof, and a soluble cerium salt to impart a noble metal content of 0.01 to 5 percent and a final cerium oxide content of 2 to 90 percent with respect to the support,
(d) calcining to about 900° to 1200° F. for about 2–6 hours, and
(e) recovering the catalyst product.

3,850,848

PACKING MATERIAL FOR USE IN GEL PERMEATION CHROMATOGRAPHY AND METHOD OF MANUFACTURING THE SAME

Nobuyuki Baba, Kyoto, and Shozo Sato, Yamato, Japan, assignors to Mitsubishi Kasei Kogyo Kabushiki Kaisha (also known as Mitsubishi Chemical Industries Limited), Tokyo, Japan

Filed July 20, 1972, Ser. No. 273,460

Claims priority, application Japan, July 31, 1971, 46/57,608

Int. Cl. B01p *11/06*

U.S. Cl. 252—463 **8 Claims**

1. A method for manufacturing zinc spinel or a mixture of zinc spinel and η-alumina having pores of uniform radius and adapted for use in gel permeation chromatography, comprising the steps of treating a mixed solution of a zinc salt and an aluminum salt of a monobasic acid selected from the group consisting of chlorides and nitrates of said metals with a solution of an acid carbonate selected from the group consisting of ammonium bicarbonate and sodium bicarbonate to precipitate aluminum hydroxide gel and zinc hydroxide gel, the atomic ratio of zinc to aluminum in said mixed solution being in the range of from 5:95 to 33.3:66.7; heat aging said precipitate in the presence of pressurized carbon dioxide for at least 5 hours at a temperature of from 150° to 250° C. and at a pH of from 5.5 to 7.5, and then calcining the heat aged precipitate at a temperature of from 900 to 1200° C. to produce zinc spinel or zinc spinel containing η-alumina having a similar crystal structure to that of said zinc spinel.

3,850,849

FORMED ALUMINA BODIES FOR CATALYTIC USES

Joseph R. Kiovsky and Jeffrey W. Meacham, Kent, Ohio, assignors to Norton Company, Worcester, Mass.

No Drawing. Continuation-in-part of abandoned application Ser. No. 256,225, May 24, 1972. This application Jan. 16, 1973, Ser. No. 324,107

Int. Cl. B01j *11/06*

U.S. Cl. 252—463 **3 Claims**

1. A shaped, large pored, high porosity, high strength alumina catalyst body having a total porosity of at least

0.9 cc./gm., at least 0.5 cc./gm. of pores larger than 100 angstroms diameter, at least 0.35 cc./gm. of pores larger than 350 angstroms diameter and at least 0.30 cc./gm. of pores larger than 1000 angstroms in diameter, said porosity being exclusive of any pore volume produced by adding a particulate burnout material, a surface area from 10 to over 280 square meters per gram, said bodies consisting of at least 99 weight percent of alumina exclusive of combined or adsorbed water and exclusive of added catalytic metal or metal oxides, said alumina being predominantly in a form selected from the group consisting of boehmite, gamma alumina, delta alumina, theta alumina, alpha alumina and mixtures thereof.

3,850,850

METHOD OF MAKING A METHANOL SYNTHESIS CATALYST

Bruce Moffatt Collins, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Jan. 15, 1973, Ser. No. 323,349

Claims priority, application Great Britain, Jan. 21, 1972, 3,007/72

Int. Cl. B01j *11/06, 11/22*

U.S. Cl. 252—465 **7 Claims**

1. A method of making a catalyst precursor which method comprises forming a first precipitate comprising compounds, thermally decomposable to oxides, of at least one divalent metal from the group consisting of zinc, manganese, and magnesium and at least one trivalent metal from the group consisting of aluminum and chromium whose oxides are capable of forming together a mixed oxide having the spinel structure, forming a second precipitate comprising one or more copper compounds thermally decomposable to oxides, washing, drying and calcining the two precipitates to form the metal oxides, the two precipitates being mixed either prior to or subsequent to calcining.

3,850,851

PROCESS FOR THE PRODUCTION OF A CATALYST FOR OXIDATION OF AMMONIA

Edgar Koberstein, Alzenau, and Klaus-Peter Muller, Grossauheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany

No Drawing. Filed Aug. 21, 1972, Ser. No. 282,044

Claims priority, application Germany, Aug. 27, 1971, P 21 42 897.7

Int. Cl. B01j *11/22*

U.S. Cl. 252—474 **16 Claims**

1. A process for the production of a catalyst suitable for the oxidation of ammonia to oxides of nitrogen which are used for the production of nitric acid comprising forming cobalt oxide doped with 0.1–10 atom percent of lithium into shape, then calcining in air or oxygen at 300–700° C. and subsequently tempering at 700–900° C. in a reaction gas mixture of air and 8–10 volume percent of ammonia to stabilize the form.

3,850,852

DETERGENT COMPOSITIONS CONTAINING AN ALKALI METAL CARBONATE

William Frederick Soutar Neillie, Birkenhead, and John Barry Tune, Wirral, England, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Aug. 16, 1972, Ser. No. 281,087

Claims priority, application Great Britain, Aug. 17, 1971, 38,475/71

Int. Cl. C11d *3/10, 3/065*

U.S. Cl. 252—536 **12 Claims**

1. A detergent composition comprising from about 5 to 40% of an anionic, nonionic, amphoteric or zwitterionic detergent active compound, from about 30% to 70% of an alkali metal carbonate detergency builder, from about 1% to 30% of an organic monomeric polycarboxylic sequestrant for calcium ions and from about 0.05% to 15% of an anti-deposition agent for inhibiting the deposition of calcium carbonate formed by reaction between the alkali metal carbonate detergency builder and calcium ions in hard water during use of the composition, the percentages being expressed by weight of the composition.

3,850,853

DETERGENT COMPOSITION

Hideo Marumo, 5–4 Nishikubo 3-chome, Musashino-shi, Tokyo 180, Japan

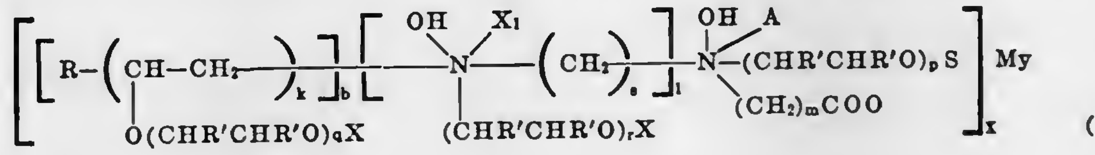
No Drawing. Original application Aug. 2, 1971, Ser. No. 168,413, now Patent No. 3,719,613. Divided and this application Aug. 23, 1972, Ser. No. 283,039

Claims priority, application Japan, Aug. 4, 1970, 45/68,145; May 10, 1971, 46/30,390, 46/30,391

Int. Cl. C11d *1/18, 1/38*

U.S. Cl. 252—548 **8 Claims**

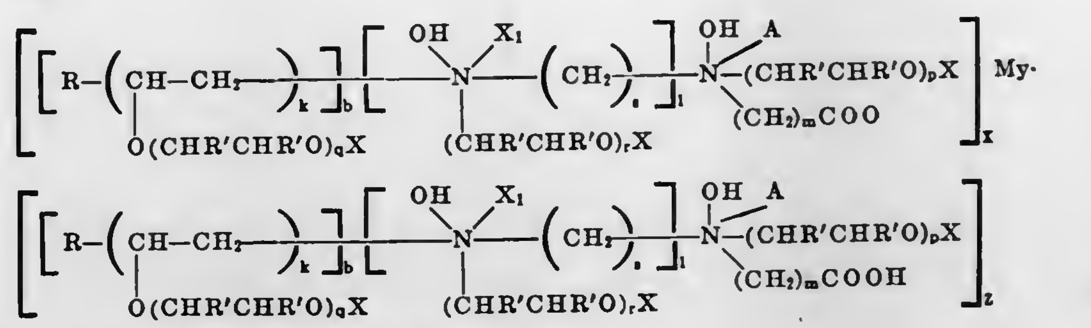
1. A detergent composition comprising one of the water-insoluble metal salts of an amphoteric surface active agent which are expressed by the general formulas:



$$\left[\left[R-\left(\underset{\substack{|\\ O(CHR'CHR'O)_qX}}{CH}-CH_2-\right)_k\right]_b\left[-\underset{\substack{|\\ (CHR'CHR'O)_rX}}{\overset{OH\quad X_1}{N}}-(CH_2)_s-\right]_l\overset{OH\quad A}{N}\begin{matrix}-(CHR'CHR'O)_pS\\ (CH_2)_mCOO\end{matrix}\right]_x My$$

(V),

and



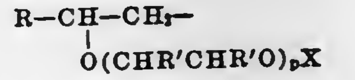
$$\left[\left[R-\left(\underset{\substack{|\\ O(CHR'CHR'O)_qX}}{CH}-CH_2-\right)_k\right]_b\left[-\underset{\substack{|\\ (CHR'CHR'O)_rX}}{\overset{OH\quad X_1}{N}}-(CH_2)_s-\right]_l\overset{OH\quad A}{N}\begin{matrix}-(CHR'CHR'O)_pX\\ (CH_2)_mCOO\end{matrix}\right]_x My\cdot$$

$$\left[\left[R-\left(\underset{\substack{|\\ O(CHR'CHR'O)_qX}}{CH}-CH_2-\right)_k\right]_b\left[-\underset{\substack{|\\ (CHR'CHR'O)_rX}}{\overset{OH\quad X_1}{N}}-(CH_2)_s-\right]_l\overset{OH\quad A}{N}\begin{matrix}-(CHR'CHR'O)_pX\\ (CH_2)_mCOOH\end{matrix}\right]_z$$

(VI)

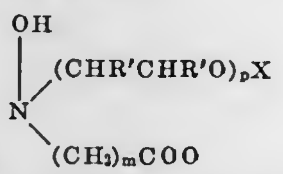
wherein:

R represents a hydrocarbon group having 6–30 carbon atoms;
R′ represents hydrogen or CH_3;
m represents an integer of 1 to 3;
p represents an integer of 1 to 2;
X represents hydrogen, $(CH_2)_mCOO$ or $(CH_2)_mCOOH$;
X_1 is X or nothing with the proviso that when X_1 is nothing there is no OH group bonded to nitrogen;
b represents an integer of 1 to 2;
k represents an integer of 0 to 1;
q and r each represent an integer of 0 to 2;
l (small L) represents an integer of 0 to 5;
s represents an integer of 1 to 4;
M represents an alkaline earth metal;
x, y and z each represent an integer determined by the valency of the metal;
A represents either —$(CHR'CHR'O)_pX$ or



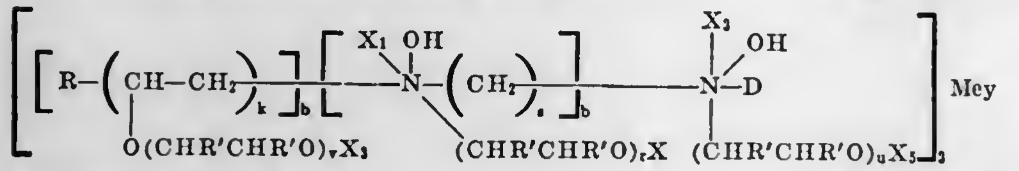
$$R-\underset{\substack{|\\ O(CHR'CHR'O)_pX}}{CH}-CH_2-$$

and which are selected from the metal salts of an amphoteric surface active agent having in the molecule the following common group:



$$\overset{\displaystyle OH}{\underset{}{N}}\begin{matrix}(CHR'CHR'O)_pX\\(CH_2)_mCOO\end{matrix}$$

said water insoluble metal salt being blended with at least one substance expressed by the general formula:



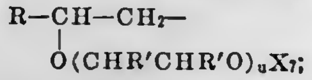
$$\left[\left[R-\left(\underset{\displaystyle O(CHR'CHR'O)_vX_3}{CH}-CH_2\right)_k\right]_b\left[-\overset{\displaystyle X_1\ OH}{\underset{\displaystyle (CHR'CHR'O)_rX}{N}}-\left(CH_2\right)_s\right]_b-\overset{\displaystyle X_3\ OH}{\underset{\displaystyle (CHR'CHR'O)_uX_5}{N}}-D\right]_3 Me_y \quad (VII)$$

wherein:

u, *v* and *w* each represent an integer of 3 to 100;

Me represents an alkaline earth metal;

D represents either —$(CHR'CHR'O)_uX_6$ or



$$R-\underset{\displaystyle O(CHR'CHR'O)_uX_7;}{CH}-CH_2-$$

X_1 and X_2 represent hydrogen or $(CH_2)_mCOO$ with the proviso that when X_1 and X_2 are not $(CH_2)_mCOO$, nitrogen will be tertiary nitrogen; and

X_3, X_4, X_5, X_6 and X_7 each represent hydrogen or $(CH_2)_mCOO$.

3,850,854
NOVEL DETERGENT COMPOSITION

Ira Weil, New York, N.Y., assignor to Lever Brothers Company, New York, N.Y.

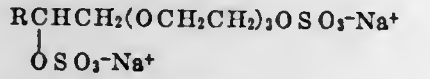
No Drawing. Application Oct. 30, 1969, Ser. No. 872,731, now Patent No. 3,686,098, which is a continuation-in-part of abandoned application Ser. No. 564,556, July 12, 1966. Divided and this application Jan. 14, 1972, Ser. No. 218,019

Int. Cl. C11d *1/14, 3/04*

U.S. Cl. 252—551 **1 Claim**

1. A detergent composition consisting essentially of:

(a) from about 4% to about 85% by weight of a water-soluble salt of a dianionic detergent compound of the general formula



$$R\underset{\displaystyle OSO_3^-Na^+}{CH}CH_2(OCH_2CH_2)_3OSO_3^-Na^+$$

where $R=n\text{-}C_{13-18}H_{27-37}$; and

(b) from about 1% to about 80% by weight of a water-soluble, innocuous salt of a metal selected from the class consisting of calcium, magnesium, strontium, barium and aluminum; the mole ratio of metallic ion derived from said metal to said water-soluble salt of a detergent compound being from about 1.2 to about 16, said composition being phosphate-free.

3,850,855
PHOTOLYTIC POLYISOBUTYLENE OXIDE RESIN MOLDED PRODUCTS OF VANISHING TYPE

Hirotaka Toba, Tokyo, and Kazunobu Tanaka, Masahiko Kusumoto, Shoji Watanabe, and Nagayoshi Tsukane, Saitama, Japan, assignors to Daicel Ltd., Osaka, Japan

Filed Mar 9, 1973, Ser. No. 339,852

Claims priority, application Japan, Mar. 14, 1972 47/25,903

Int. Cl. C08g *23/06*

U.S. Cl. 260—2 A **13 Claims**

1. A photolytic polyisobutylene oxide molded product consisting essentially of a major proportion of polyisobutylene oxide resin, and sufficient photosensitizer or photosensitive resin, or both, so that the weight loss of said molded product is in the range of 5 to 50 wt. percent per 1 mm. thickness when irradiated with a 200 watt high pressure mercury lamp at a distance of 5 cm. at 40° C. for 120 hours in air.

3,850,856
HYDROXYL-ENDED EPIHALOHYDRIN POLYMERS BY CATIONIC POLYMERIZATION

Max Peter Dreyfuss, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Aug. 20, 1973, Ser. No. 390,029

Int. Cl. C08g *23/14*

U.S. Cl. 260—2 A **14 Claims**

1. A process for the manufacture of a hydroxyl-ended polymer which comprises polymerizing an epihalohydrin in the presence of from about 0.03 part to 15.0 parts by weight of water or ethylene glycol, based on 100 parts by weight of the epihalohydrin, and with the use of catalytic amounts of a trialkyl oxonium salt of an HMF_6 acid wherein M is an element selected from the group consisting of phosphorus, arsenic and antimony.

3,850,857
PROCESS FOR THE POLYMERIZATION OF EPIHALOHYDRIN EMPLOYING A TRIALKYL OXONIUM SALT OF AN HMF₆ ACID AS CATALYST

Max Peter Dreyfuss, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Aug. 20, 1973, Ser. No. 390,030

Int. Cl. C08g *23/14*

U.S. Cl. 260—2 A **13 Claims**

1. A process for the preparation of epihalohydrin polymers which comprises polymerizing epihalohydrin in the presence of a catalytic amount of a trialkyl oxonium salt of an HMF_6 acid wherein M is an element selected from the group consisting of phosphorus, arsenic and antimony.

3,850,858
HOT MELT PRESSURE SENSITIVE ADHESIVES

Vernon K. Park, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 28, 1973, Ser. No. 401,741

Int. Cl. C08f *15/00, 19/00*

U.S. Cl. 260—27 BB **12 Claims**

1. An adhesive composition capable of being used as a hot melt pressure sensitive adhesive comprising a blend of (1) 30 to 60 weight percent amorphous polyolefin, (2) 10 to 30 weight percent of at least one tackifying resin selected from the group consisting of hydrocarbon resins, polyterpene resins and rosin esters, (3) 10 to 30 weight percent rubbery block copolymers of styrene and butadiene or styrene and isoprene, (4) 5 to 15 weight percent low molecular weight polybutylene, (5) 5 to 15 weight percent polyisobutylene and (6) 0.5 to 2 weight percent crystalline polypropylene.

3,850,859
DIFFICULTLY INFLAMMABLE POLYURETHANES AND PROCESS FOR MAKING THEM

Joachim Wortmann, Hermulheim, and Franz-Josef Dany and Joachim Kandler, Lechenich, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 146,785, May 25, 1971. This application Mar. 15, 1973, Ser. No. 341,800

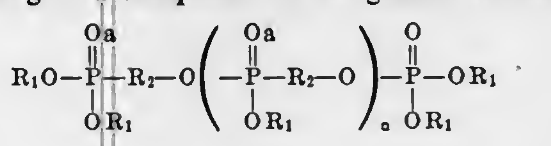
Claims priority, application Germany, July 23, 1970, P 20 36 592.8

Int. Cl. C08g *22/44, 51/58*

U.S. Cl. 260—2.5 AJ **5 Claims**

1. A fire-resistant polyurethane foam prepared by incorporating into the reactant mixture used to prepare the polyurethane foam—the said reactant mixture consisting essentially of an organic di- or polyisocyanate, a polyetherpolyol compound having a hydroxyl number of between 46 milligrams and 520 milligrams of KOH/gram

or a polyesterpolyol compound having a hydroxyl number of 60 milligrams of KOH/gram and having an activator, an expanding agent and a cell regulator therein—a fire resistance imparting product in an amount between about 5 and 50 weight percent, based on the amount of the poylyether or polyester polyol compound, the product consisting of a compound of the general formula (I)

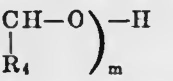


$$R_1O-\overset{\displaystyle O_a}{\underset{\displaystyle OR_1}{\overset{\|}{P}}}-R_2-O\left(-\overset{\displaystyle O_a}{\underset{\displaystyle OR_1}{\overset{\|}{P}}}-R_2-O\right)_n-\overset{\displaystyle O}{\underset{\displaystyle OR_1}{\overset{\|}{P}}}-OR_1 \quad (I)$$

In which

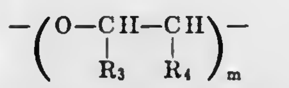
a stands for 1 or 0 and 1

n stands for a number of between 0 and 4, R_1 stands for at least one halogenated alkyl radical selected from the group consisting of a 2-chloroethyl radical and a 2,3-dibromopropyl radical, and at least one hydroxyl-containing radical of the general formula (II)



$$-\left(\underset{\displaystyle R_3}{CH}-\underset{\displaystyle R_4}{CH}-O\right)_m-H \quad (II)$$

and R_2 stands for a radical of the general formula (III)



$$-\left(O-\underset{\displaystyle R_3}{CH}-\underset{\displaystyle R_4}{CH}\right)_m- \quad (III)$$

R_3, R_4, in formulae (II) and (III) above standing for a hydrogen atom, a methyl radical or a chloromethyl radical and *m* standing for a whole number of between 1 and 4.

3,850,860
PROCESS FOR DYEING EXPANDABLE THERMOPLASTIC POLYMERS

Stuart B. Smith, Chelmsford, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.

No Drawing. Continuation-in-part of abandoned application Ser. No. 245,303, Apr. 13, 1972. This application June 28, 1973, Ser. No. 374,608

Int. Cl. C08j *1/26;* **D06p** *3/00*

U.S. Cl. 260—2.5 B **17 Claims**

1. A process for the non-aqueous dyeing of expandable alkenyl aromatic polymer in particulate form whereby substantially uniform dyeing throughout the interior of the polymer particles is achieved by uniformly distributing on said polymer a mixture consisting essentially of (i) an organic liquid-soluble dye, (ii) about 0.05 to 1.0 part per 100 parts of polymer of a dyeing adjuvant which is an organic liquid in which the polymer being dyed is substantially soluble, said organic liquid having an atmospheric boiling point of about 20° C. to 100° C. and being an aromatic hydrocarbon, a cycloaliphatic hydrocarbon, a halogenated hydrocarbon or a ketone and (iii) about 0.1 to 5.0 part per 100 parts of polymer of an inert organic diluent in which the polymer being dyed is substantially insoluble until said dye is uniformly dispersed throughout the polymer.

3,850,861
PREPARATION AND FORMULATION OF POLYURETHANE FOAMS

Hubert J. Fabris and Robert J. Herold, Akron, and Edwin M. Maxey, Kent, Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Nov. 24, 1972, Ser. No. 309,234

Int. Cl. C08g *22/14*

U.S. Cl. 260—2.5 BE **4 Claims**

1. A process for the preparation of a polyurethane which comprises

(1) chemically reacting
  (A) an organic polyisocyanate and
  (B) a copolymer selected from the class consisting of
    a copolymer of a lower alkyl acrylate or methacrylate with a polyalkylene ether itaconate having an equivalent weight of about 100 to 3000 per hydroxyl groups and containing one to three hydroxyl groups per molecule;
    a copolymer of styrene with a polyalkylene ether itaconate having an equivalent weight of about 100 to 3000 per hydroxyl group containing one to three hydroxyl groups per molecule; and
    a coploymer of a vinyl compound selected from vinyl chloride, vinylidene chloride and vinyl acetate with a polyalkylene ether maleate having an equivalent weight of about 100 to 3000 per hydroxyl group and containing one to three hydroxyl groups per molecule; and
(2) recovering a polyurethane of improved physical and chemical properties including increased tensile strength, increased modulus of elasticity and inceased solvent resistance.

3,850,862
BLENDS OF A BIODEGRADABLE THERMOPLASTIC DIALKANOYL POLYMER AND A NATURALLY OCCURRING BIODEGRADABLE PRODUCT

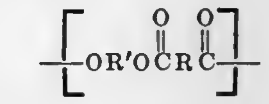
Robert A. Clendinning, New Providence, James E. Potts, Millington, and Walter D. Niegisch, Watchung, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed July 28, 1972, Ser. No. 275,973

Int. Cl. C08g *53/14, 54/18*

U.S. Cl. 260—7.5 **20 Claims**

1. A blend comprising (i) from about 5 to about 95 weight percent of biodegradable thermoplstic dialkanoyl polymer, said polymer having a reduced viscosity value of at least about 0.1 and upwards to about 10 and being further characterized in that at least about 10 weight percent of said thermoplastic dialkanoyl polymer is attributable to recurring units of the formula



$$-\left[OR'O\overset{\displaystyle O}{\overset{\|}{C}}R\overset{\displaystyle O}{\overset{\|}{C}}\right]-$$

wherein R represents a divalent aliphatic hydrocarbon radical, and wherein R' is of the group consisting of divalent aliphatic hydrocarbon radicals and divalent aliphatic oxa-hydrocarbon radicals, and (ii) from about 5 to about 95 weight percent of naturally occurring biodegradable product, based on the total weight of said blend.

3,850,863
BLENDS OF A BIODEGRADABLE THERMOPLASTIC OXYALKANOYL POLYMER AND A NATURALLY OCCURRING BIODEGRADABLE PRODUCT

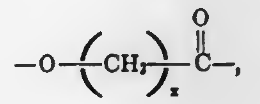
Robert A. Clendinning, New Providence, James E. Potts, Millington, and Walter D. Niegisch, Watchung, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed July 28, 1972, Ser. No. 275,974

Int. Cl. C08g *51/14, 51/18*

U.S. Cl. 260—7.5 **27 Claims**

1. A blend comprising (i) from about 3 to about 97 weight percent of biodegradable thermoplastic oxyalkanoyl polymer, said polymer having a reduced viscosity value of at least about 0.1 and upwards to about 12 and being further characterized in that at least about 10 weight percent of said thermoplastic oxyalkanoyl polymer is attributable to recurring oxyalkanoyl units of the formula



$$-O-\left(CH_2\right)_x-\overset{\displaystyle O}{\overset{\|}{C}}-,$$

wherein x is an integer having a value of 2 to 7, with the proviso that x does not equal 3; and (ii) from about 97 to about 3 weight percent of naturally occurring biodegradable product, based on the total weight of said blend.

3,850,864
COMPOUND TO MAKE PRODUCTS, PER SE AND TO CAST OTHER MATERIALS

David U. Emerson, 12615 NE. 30th St., Bellevue, Wash. 98005

No Drawing. Continuation-in-part of abandoned application Ser. No. 145,536, May 20, 1971. This application Dec. 6, 1972, Ser. No. 312,775

Int. Cl. C08g *51/18*

U.S. Cl. 260—17.2 **13 Claims**

1. A composition of materials forming a compound used to form spaces to receive casting materials, and used to make products per se, comprising:

(a) an alginate from a group consisting of an alkali metal and ammonium alginates;
(b) phenolic resin microspheres of an average diameter of about 0.0017 inch; and
(c) water

wherein the practical range of proportions by weight in preparing 500 grams, is from about 2:1:7 to 1:5:14 parts respectively of said alginate, phenolic resin microspheres, and water.

3,850,865
VINYL POLYMER COATING COMPOSITIONS

Roger Garnier, Lyon, Roger Hogenmuller, Sainte-Foy-les-Lyon, and Jacques Massebeuf, Serezin-du-Rhone, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Continuation of abandoned application Ser. No. 45,570, June 11, 1970. This application July 24, 1973, Ser. No. 382,074

Int. Cl. C08f *15/16, 45/52*

U.S. Cl. 260—28.5 AV **10 Claims**

1. A coating composition which comprises:

(a) about 5 to 40% by weight of a vinyl polymer obtained by polymerisation of monomers, at least 65% by weight of which are vinyl esters of saturated branched aliphatic monocarboxylic acids having from 9 to 11 carbon atoms, the carboxyl groups of which are bonded to tertiary and/or quaternary carbon atoms and from 0 to 35% by weight of which is vinyl chloride, a vinyl ester of a saturated aliphatic straight chain monocarboxylic acid or a vinyl ester of an aromatic acid of the benzene series; and
(b) about 60 to 95% by weight of a mixture of saturated, straight chain, aliphatic hydrocarbons containing 18 to 35 carbon atoms and having a melting point between 34 and 70° C.

3,850,866
GLASS FIBER REINFORCED ELASTOMERS

William E. Uffner, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation

Original application Apr. 24, 1972, Ser. No. 230,723, now Patent No. 3,787,224. Divided and this application Sept. 17, 1973, Ser. No. 398,133

Int. Cl. C08f *45/52, 43/08;* **B32b** *17/10*

U.S. Cl. 260—28.5 B **5 Claims**

1. A composition for the treatment of glass fibers consisting essentially of an aqueous ammoniacal system having a solids content of 2 to 10 parts by weight of a resorcinol-aldehyde resin, 20 to 60 parts by weight of a butadiene-styrene vinyl pyridine terpolymer, 15 to 40 parts by weight of a dicarboxylated butadiene-styrene resin in which the ratio of styrene to butadiene is at least 50/50, and 3 to 30 parts by weight of an incompatible microcrystalline paraffin wax.

3,850,867
NON-STICK COATING COMPOSITIONS OF FLUOROCARBON RESIN PARTICLES AND AQUEOUS SLIP OF SINTERED GLAZE PARTICLES

Louis Hartmann, Rumilly, France, assignor to S. A. Tefal, Rumilly, France

No Drawing. Filed Mar. 20, 1973, Ser. No. 343,146

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 F **8 Claims**

1. A non-stick coating composition for coating metal surfaces consisting essentially of an aqueous dispersion of fluorocarbon resin particles, a non-ionic wetting agent and an aqueous slip consisting of sintered glaze particles having a melting point substantially between 500 and 600° C., the percentages of the fluorocarbon resin particles and of the sintered glaze particles being substantially as follows:

fluorocarbon resin particles: between 30% and 50% by weight of the composition;
sintered glaze particles: between 10% and 30% by weight of the composition.

3,850,868
ORGANIC FLATTING AGENTS AND METHOD OF PREPARATION

Marco Wismer, Gibsonia, Karl F. Schimmel, Verona, and Rodger G. Temple, Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Apr. 3, 1973, Ser. No. 347,604

Int. Cl. C08g *37/08*

U.S. Cl. 260—29.3 **30 Claims**

1. A method of preparing solid inert beads comprising a fully polymerized urea or phenol-formaldehyde resin comprising the steps of:

(A) reacting a urea or a phenol and a formaldehyde, wherein the molar ratio of the urea to the formaldehyde is from about 1:1 to about 3:0.5 and wherein the molar ratio of the phenol to the formaldehyde is from about 1:1 to about 1:3, in a basic aqueous medium to form a prepolymer;
(B) blending said prepolymer with a hydroxyfunctional protective colloid-forming material;
(C) polymerizing the prepolymer by acidifying the mixture thus formed under agitation, thereby forming particulate beads and agglomerating said beads to a gross particle size of from about 1 micron to about 50 microns; and
(D) collecting said urea or phenol-formaldehyde particulate beads.

3,850,869
GLASS FIBER SIZING COMPOSITION AND RESULTANT PRODUCT WITH HIGH RESISTANCE TO ABRASION

John Gilbert Mohr, Naumee, Ohio, assignor to Johns-Manville Corporation, Greenwood Village, Colo.

No Drawing. Filed Jan. 2, 1973, Ser. No. 320,025

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 MN **9 Claims**

1. An aqueous glass sizing composition for filament glass fibers which consists essentially of 0.5 to 15 weight percent of poly(vinyl acetate); 0.1 to 5 percent of a polyethylene glycol having a molecular weight in the range of 200 to 6000; 0.01 to 0.6 weight percent of a polyester compatible methacrylic silane; 0.01 to 1.0 percent of a cationic alkyl amide reaction product of a C_5 to C_{20} alkyl carboxylic acid and an ethylene amine, and the balance de-ionized water, the composition having a pH of not greater than 6 and a solids content in the range of 1–22 percent.

3,850,870
POLYMERIC IMPRESSION MOLDING MATERIALS HAVING GOOD DIMENSIONAL STABILITY

Masato Kawakami, Ryotaro Ono, Minoru Furuichi, and Shigeru Kato, Yokohama, Japan, assignors to Japan Synthetic Rubber Company Limited, Tokyo, Japan

Continuation-in-part of abandoned application Ser. No. 138,570, Apr. 29, 1971. This application Aug. 30, 1973, Ser. No. 393,189

Claims priority, application Japan, May 1, 1970, 45/37,307, 45/37,308

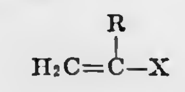
Int. Cl. C08d *7/02;* **C08f** *47/00*

U.S. Cl. 260—29.7 PT **10 Claims**

1. An impression material comprising a coagulated mixture of an inorganic electrolyte, at least one latex emulsion selected from the group consisting of natural rubber and synthetic rubber latices and at least one emulsion selected from the group consisting of emulsions of polycyclopentadiene and a polymer in which cyclopentadiene in 1,4- or 1,2-form is polymerized to a series of five-member rings of carbon atoms, with an approximate molecular weight of

$$[\eta]^{30°}_{\text{toluene}} = 0.1 \text{ to } 5.0$$

and a homopolymer or copolymer of vinyl monomers having the general formula



$$H_2C{=}C(R){-}X$$

wherein X represents a hydrogen atom, alkyl group having C_1–C_{20}, an aryl group, halogen, nitrile group, carboxyl group, carboalkoxy group, or acyloxy group, and R represents a hydrogen atom, alkyl group having C_1–C_{10} or alkenyl group having C_2–C_{10}, the amount of said polycyclopentadiene being from 10 to 50 percent based on the weight of latex and the amount of vinyl polymer is 10 to 50 percent based on the latex.

3,850,871
ACRYLIC ORGANOSOL COATING COMPOSITION CONTAINING A PLASTICIZER OF A DIBASIC ACID/GLYCOL/MONOBASIC ACID PLASTICIZER

Aloysius N. Walus, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 31,764, Apr. 24, 1970. This application Sept. 18, 1972, Ser. No. 290,138

Int. Cl. C08f *45/36*

U.S. Cl. 260—31.6 **4 Claims**

1. An acrylic organosol coating composition consisting essentially of:

about 10–60% by weight of film-forming constituents dispersed in organic liquid wherein the film-forming constituents consist essentially of a graft copolymer comprising a backbone (A) and one or more side chains (B), the backbone (A) being a polymeric segment of units (a) and up to 15% by weight of units (b), said (b) units providing available active grafting sites for graft polymerization, and each side chain (B) above being a polymeric segment, (A) and (B) being different from each other, and (a) and (B) each being composed of at least 50% by weight of units of esters of acrylic, methacrylic acid and/or ethacrylic acid, provided that such that either (A) or (B) if prepared as a separate polymeric entity, is substantially soluble in said organic liquid, whereas, the other of (A) or (B), if prepared as a separate polymeric entity, is substantially insoluble in the same organic liquid; wherein the (a) monomer units of the (A) segment consist of methyl methacrylate and the (b) monomer units of the (A) segment consist of allyl methacrylate and the monomer units of the (B) segment are selected from the group consisting of 2-ethylhexyl acrylate or acrylonitrile; and

1–28% by weight, based on the total weight of the coating composition, of a plasticizer consisting of the esterification product of about 30 to 35 mole percent adipic acid, about 43 to 48 mole percent of neopentyl glycol and about 20 to 25 mole percent of benzoic acid, wherein the plasticizer has a hydroxyl number of not greater than 40.

3,850,872
GLASS FIBER REINFORCED ELASTOMERS

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation

No Drawing. Filed Dec. 21, 1972, Ser. No. 317,435

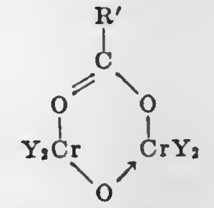
Int. Cl. C08g *51/10;* **C08f** *45/10*

U.S. Cl. 260—37 EP **13 Claims**

1. A method for the manufacture of glass fiber-reinforced elastomeric products in which an elastomer constitutes a continuous phase in which the glass fibers are distributed, comprising the steps of blending an oily material in the form of an epoxide with an elastomer containing a vulcanizing agent to form a substantially uniform blend thereof, combining the blend with glass fibers having a thin coating on the surfaces thereof, said coating comprising a glass fiber anchoring agent selected from the group consisting of an organo silane having the formula

$$[Q{-}R{-}]_n SiZ_{(4-n)}$$

wherein Q is a functional group selected from the group consisting of an amino group, a mercapto group, an epoxy group and a hydroxy group, R is a divalent organic radical, Z is a readily hydrolyzable group and n is an integer from 1 to 3, the corresponding silanols and polysiloxanes thereof, and a Werner complex compound having the formula



wherein Y is halogen and R′ is a functional group selected from the group consisting of amino alkyl, hydroxy alkyl and an epoxy group, and heating the resulting composite of glass fibers and the blend to vulcanize the elastomer whereby the epoxide reacts with the functional group to securely bond the glass fibers to the elastomer.

3,850,873
MOLDING COMPOSITIONS OF POLYOXYMETHYLENES AND GLASS FIBERS

Rolf Wurmb, Heidelberg, Wilhelm Schuette, Speyer, Heinz-Ulrich Werther, Ludwigshafen, and Franz Schmidt, Mannheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Mar. 2, 1973, Ser. No. 337,641

Claims priority, application Germany, Mar. 2, 1972, P 22 09 985.0

Int. Cl. C08g *41/04*

U.S. Cl. 260—37 AL **3 Claims**

1. An improved thermoplastic molding composition of ployoxymethylenes selected from the group consisting of homopolymers of formaldehyde and copolymers of formaldehyde or trioxane, said homopolymers having thermally stable end groups and said copolymers containing more than about 50% of oxymethylene groups and at least about 0.1% of the comonomer having at least two vicinal carbon atoms, from 10 to 60% by weight of glass fibers, and from 0.5 to 10% by weight, based on the total weight of the mixture, of a high molecular weight polyurethane exhibiting thermoplastic properties, said polyurethane having been prepared from polyesters, polyethers such as polyethyleneglycol ethers, polypropyleneglycol ethers or polyacetals having free hydroxyl end

groups and polyisocyanates using chain-extending agents such as low molecular weight polyols.

3,850,874
FRICTION ELEMENT COMPOSITION

Frank S. Grazen, Melvin L. Buike and Frank M. Bryzinsky, New York, N.Y., assignors to Hooker Chemicals & Plastic Corporation

No Drawing. Application Oct. 12, 1971, Ser. No. 188,596, now Patent No. 3,767,612, which is a continuation of abandoned application Ser. No. 872,737, Oct. 30, 1969, Divided and this application Dec. 20, 1972, Ser. No. 316,957

Int. Cl. C08g *37/18, 51/10*

U.S. Cl. 260—38 **9 Claims**

1. A friction element composition comprising a friction imparting abrasive agent, an inorganic filler and a binder composition comprising a non-hydroxyalkylated hydroxy aromatic hydrocarbon aldehyde resole containing substantially no etherified aromatic hydroxyl groups and an hydroxyalkylated hydroxy aromatic hydrocarbon aldehyde resole containing less than about 0.5 percent of the aromatic hydroxyl originally present in the hydroxy aromatic hydrocarbon aldehyde condensate.

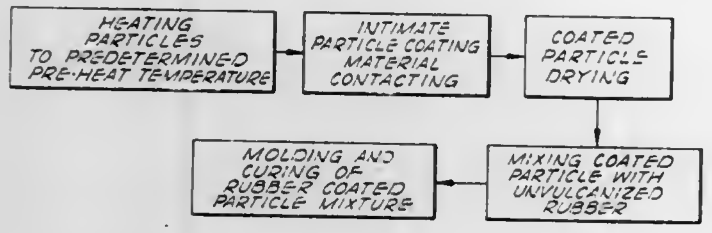
3,850,875
METHOD OF COATING PARTICLES AND MANUFACTURING OF TIRE TREAD RUBBER FORMULATIONS AND THE LIKE

Bruce H. Robson, Oklahoma City, Okla., assignor to R. M. Akers, Oklahoma City, Okla.

Filed Sept. 25, 1972, Ser. No. 291,939

Int. Cl. B29h *17/38;* **B60c** *11/80;* **C08c** *11/08*

U.S. Cl. 260—42.14 **2 Claims**


HEATING PARTICLES TO PREDETERMINED PRE-HEAT TEMPERATURE
INTIMATE PARTICLE COATING MATERIAL CONTACTING
COATED PARTICLE DRYING
MIXING COATED PARTICLE WITH UNVULCANIZED RUBBER
MOLDING AND CURING OF RUBBER COATED PARTICLE MIXTURE

1. A method for manufacturing vehicle tire treads having particles of abrasive material embedded in the tire tread rubber formulation thereof, comprising:
- preheating the particles to a predetermined preheat temperature level sufficient for the particles to coact with a coating material;
- intimately contacting the preheated particles with the coating material bondable to the tire tread rubber formulation, the heat generated with the intimately contacting coating material and a portion of the coating material being bonded generally about the outer peripheral surface of the particles;
- drying the coated particles;
- mixing the dried coated particles with the unvulcanized tire tread rubber formulation; and
- molding and curing the coated particle-tire tread rubber formulation mixture to form the tire tread.

3,850,876
PRODUCTION OF THERMALLY STABILIZED ACRYLIC FIBERS AND FILMS

Andrew H. Di Edwardo, Parsippany, Robert Dix, Wayne, and John Riggs, Berkeley Heights, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Original application June 1, 1972, Ser. No. 258,788, now Patent No. 3,779,983, dated Dec. 18, 1973. Divided and this application Apr. 20 1973, Ser. No. 353,045

Int. Cl. C08f *27/06, 45/54*

U.S. Cl. 260—45.7 S **23 Claims**

1. In a proces for the stabilization of an acrylic fibrous material or film selected from the group consisting of an acrylonitrile homopolymer and acrylonitrile copolymers containing at least about 85 mol percent of acrylonitrile units and up to about 15 mol percent of one or more monovinyl units copolymerized therewith by heating in an oxygen-containing atmosphere, the improvement comprising:

(a) providing said acrylic fibrous material or film in intimate association with about 0.2 to 10 percent by weight of an alkali metal salt of an organic sulfonate, with said alkali metal salt of an organic sulfonate being incorporated therein in a nonpolymerized form and being capable of promoting the thermal stabilization thereof, and

(b) heating said acrylic fibrous material or film at a temperature of about 240 to 310° C. until a stabilized fibrous material or film is formed which retains its original configuration substantially intact and which is non-burning when subjected to an ordinary match flame.

3,850,877
PIPERIDINE STABILIZERS FOR POLYMERS

Barry Cook, Manchester, England, assignor to Ciba-Geigy Corporation

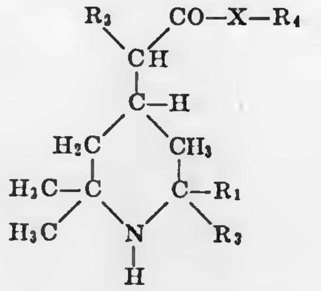
No Drawing. Filed July 17, 1973, Ser. No. 380,042

Claims priority, application Great Britain, July 28, 1972, 35,489/72

Int. Cl. C08f *45/60;* **C08g** *51/60*

U.S. Cl. 260—45.8 N **13 Claims**

1. A composition comprising a polymer and an ultraviolet light stabilizing amount of a compound of the formula

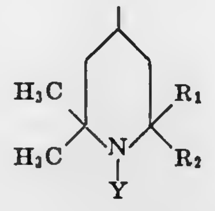


wherein

R_1 and R_2 are the same or different and each is a straight- or branched alkyl residue having from 1 to 12 carbon atoms or R_1 and R_2, together with the carbon atom to which they are bound form a cycloalkyl residue having from 5 to 12 carbon atoms,

R_3 is hydrogen, a straight- or branched alkyl residue having from 1 to 4 carbon atoms, an aralkyl residue having from 7 to 9 carbon atoms, or a cycloalkyl residue having 5 to 6 carbon atoms

R_4 is hydrogen, a hydrocarbyl residue having from 1 to 20 carbon atoms, either unsubstituted or substituted by halogen, or interrupted by one or more oxygen or sulphur atoms, or R_4 has the structure:



wherein Y is hydrogen or a straight- or branched alkyl residue having from 1 to 12 carbon atoms, an alkenyl residue having from 3 to 12 carbon atoms or an aralkyl residue having from 7 to 12 carbon atoms and R_1 and R_2 have their previous significance;

X is —O—, —S— or $>NR_5$ wherein R_5 has the same significance as R_3; or R_4 and R_5, together with the nitrogen atom to which they are bound form a heterocyclic residue having from 4 to 10 carbon atoms.

3,850,878
TRIS(HALOALKYL) N-HYDROCARBYLCARBAMATES AS FLAME RETARDANT AGENTS

Timothy P. Murtha, Ernest A. Zuech, and Roy A. Gray, Bartlesville, Okla., assignors to Phillips Petroleum Company

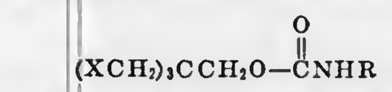
No Drawing. Filed Aug. 30, 1972, Ser. No. 284,704

Int. Cl. C07c *125/06;* **C09k** *3/28*

U.S. Cl. 260—45.9 R **9 Claims**

1. A polymeric composition comprising a polyolefin and at least one of the compounds selected from

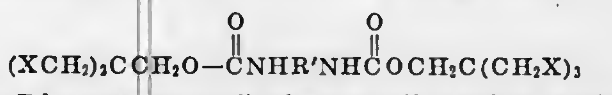
(I)



$$(XCH_2)_3CCH_2O-\overset{O}{\overset{\|}{C}}NHR$$

wherein R represents a monovalent acyclic radical, a monovalent cyclic radical or combination thereof, and X represents bromine, chlorine, or iodine; and

(II)



$$(XCH_2)_3CCH_2O-\overset{O}{\overset{\|}{C}}NHR'NH\overset{O}{\overset{\|}{C}}OCH_2C(CH_2X)_3$$

wherein R′ represents a divalent acyclic radical, a divalent cyclic radical or combination thereof, and X is as previously defined.

3,850,879
POLY(PHENYLENE OXIDE) PLASTIC COMPOSITIONS CONTAINING HALOGENATED ARYL FLAME RETARDANTS

Arnold L. Anderson, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

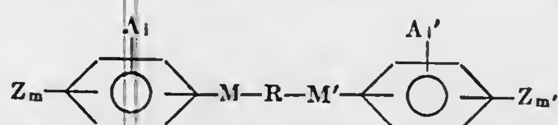
No Drawing. Continuation-in-part of abandoned application Ser. No. 260,240, June 6, 1972. This application Feb. 8, 1973, Ser. No. 330,844

The term of this patent subsequent to Sept. 3, 1991, has been disclaimed

Int. Cl. C08g *51/58*

U.S. Cl. 260—45.9 R **29 Claims**

1. A plastic composition containing poly(phenylene oxide) having incorporated therein a flame retardant which is a halogenated aryl compound having the formula:



wherein Z is selected from the group consisting of bromine or chlorine; *m* and *m′* are integers having a value of 1–5; *i* and *i′* are integers having a value of 0–2; M and M′ are each independent and are selected from the group consisting of oxygen, —NH— or sulfur with the proviso that M and M′ cannot concurrently be oxygen in both cases; A is selected from the group consisting of chlorine, cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halo-phenyl, benzyl, or halo-benzyl; and R is selected from the group consisting of

(a) kalylene group having from one to six carbon atoms

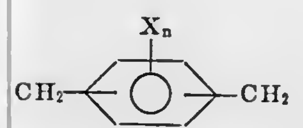
(b) $CH_2—CH(OH)—CH_2$

(c) $CH_2—CH(CH_2OH)—CH_2$

(d) $(CH_2)_w—O—(CH_2)_w$

where $w=1–6$

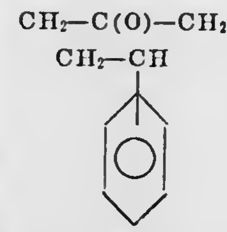
(e)



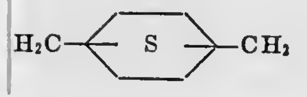
where $X=H$, Cl, Br
$n=4$

(f) $CH_2—C(O)—CH_2$

(g)



(h)



where S=saturated ring

3,850,880
PROCESS FOR THE PREPARATION OF GRANULAR POLYURETHANES AND PRODUCT OBTAINED THEREBY

Christer Lennart Hakanson and Hermann Pius Schmid, Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

No Drawing. Filed Nov. 22, 1972, Ser. No. 308,667

Claims priority, application Sweden, Dec. 8, 1971, 15,764/71

Int. Cl. C08g *22/04, 22/38*

U.S. Cl. 260—75 NE **7 Claims**

1. A process for the preparation of polyurethane elastomers in the form of granules or powders by reacting an essentially anhydrous linear dihydroxy compound, a diisocyanate and a chain extender, the improvement comprising reacting the linear dihydroxy compound with a molar excess of diisocyanate to the formation of a prepolymer, said pre-polymer being dissolved in a chemically inert and anhydrous solvent, adding to the resulting solution the chain extender in a slight molar deficit relative to the above-mentioned molar excess of diisocyanate, then adding a volatile tertiary amine as a catalyst and allowing the reaction to proceed until the initially clear solution gradually passes into a dispersion, and then subjecting said dispersion to a steam treatment while vaporizing the catalyst and the solvent, and separating the resulting polyurethane from the aqueous phase obtained.

3,850,881
STABILIZATION OF POLYMERS CONTAINING ESTER LINKAGES

Guenther Kurt Hoeschele, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

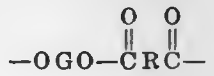
No Drawing. Filed Apr. 30, 1973, Ser. No. 355,943

Int. Cl. C08g *51/62*

U.S. Cl. 260—45.75 N **8 Claims**

1. A stabilized copolyetherester composition consisting essentially of (a) a copolyetherester having a multiplicity of recurring long chain ester units and short chain ester units joined head-to-tail through ester linkages, said long chain ester units being represented by the formula

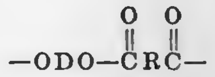
I



$$-OGO-\overset{O}{\overset{\|}{C}}R\overset{O}{\overset{\|}{C}}-$$

and said short chain units being represented by the formula

II



$$-ODO-\overset{O}{\overset{\|}{C}}R\overset{O}{\overset{\|}{C}}-$$

where G is a divalent radical remaining after the removal of terminal hydroxyl groups from a poly(alkylene oxide) glycol having a molecular weight of about 400–6000 and a carbon to oxygen ratio of about 2.0–4.3; R is a divalent radical remaining after removal of carboxyl groups from a didicarboxylic acid having a molecular weight less than about 300 and D is a divalent radical remaining after removal of hydroxyl groups from a diol having a molecular weight less than about 250; provided said short chain ester units amount to about 15–95 percent by weight of said copolyetherester; said copolyetherester being stabilized against thermal degradation by the inclusion therein of a mixture of

(a) a 0.2–5 weight percent of a diaryl amine and

(b) 0.1–3 weight percent of a nickel salt of a Schiff base derived from salicyl aldehyde and an aromatic amine or amino pyridine,

said weight percentages being based on the weight percent of copolyetherester.

3,850,882

FLAME RETARDED COMPOSITIONS AND ADDITIVE SYSTEMS THEREFOR

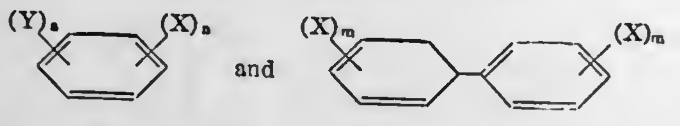
John H. Underwood, Charlotte, N.C., and James S. Dix, Greenville, and Jerry O. Reed, Mauldin, S.C., assignors to Phillips Petroleum Co., Bartlesville, Okla.

No Drawing. Continuation-in-part of abandoned application Ser. No. 203,830, Dec. 1, 1971. This application May 16, 1973, Ser. No. 360,961

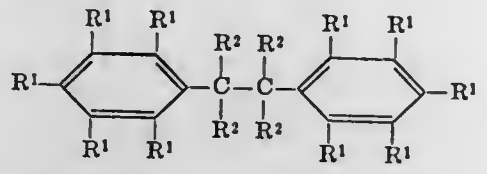
Int. Cl. C08f *45/56, 45/58*

U.S. Cl. 260—45.75 R **6 Claims**

1. A flame-retardant composition comprising a normally flammable polymer of an olefin consisting of carbon and hydrogen and containing from 2 to 8 carbon atoms having admixed therein a stabilizing amount of a flame-retarding additive system which consists essentially of the admixture of (a) a halogen-containing aryl compound selected from those of the formulas



wherein X is selected from chlorine or bromine, Y is a hydrocarbon radical of 1 to 20 carbon atoms, *n* is an integer of 3 to 6, *m* is an integer of 3 to 5, and *a* is an integer of 0 to 3; (b) stannic oxide; and (c) a hydrocarbon compound of the formula



wherein R^1 is hydrogen or a hydrocarbon radical free of olefinic or acetylenic unsaturation and R^2 is an alkyl radical containing from 1 to 4 carbon atoms and wherein said compound (a) is present in an amount in the range of 0.5 to 20 parts per hundred parts of polymer, (b) is present in an amount in the range of 0.1 to 10 parts per hundred parts of polymer, and (c) is present in an amount in the range of 0.05 to 10 parts per hundred parts of polymer.

3,850,883

POLYOLEFIN COMPOSITION STABILIZED AGAINST METAL-INDUCED OXIDATION

Mitsuo Masaki, Satoshi Matsunami, Toshio Yoshikawa, and Nagayoshi Sakamoto, Ichihara, Japan, assignors to Ube Industries, Ltd.

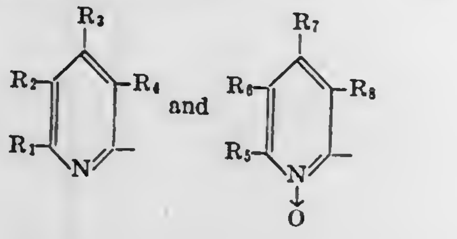
No Drawing. Filed Feb. 7, 1974, Ser. No. 440,313

Claims priority, application Japan, Aug. 24, 1973, 48/94,307

Int. Cl. C08f *45/62*

U.S. Cl. 260—45.75 K **13 Claims**

1. A polyolefin composition which comprises 100 weight parts of polyolefin and 0.001∼5 weight parts of a pyridinethiol-tin compound having the general formula of $RS—SnX_2—SR'$ wherein each of R and R′ represents a group which is selected from the class consisting of groups having the general formulae



wherein each of R_1–R_8 represents a group which is selected from the class consisting of hydrogen atom, a halogen atom, nitro group, nitroso group, an amino group, cyano group, carboxyl group, a carbamoyl group, a thiocarbamoyl group, an alkoxycarbonyl group having carbon atoms of 2–11, hydroxyl group, a hydrazinocarbonyl group, mercapto group, acyloxy, alkoxy and acylamino groups each having carbon atoms of 1–10, and a group selected from the class consisting of phenyl group and the substituted group thereof, linear and branched alkyl groups each having carbon atoms of 1–12 and the substituted groups thereof, linear and branched alkenyl groups each having carbon atoms of 2–12 and the substituted groups thereof and aralkyl and alkaryl groups each having carbon atoms of 7–12 and the substituted groups thereof wherein the substituents in the substituted groups are groups selected from the class consisting of a halogen atom and the above-mentioned groups, and not less than two groups among each of R_1–R_4 and R_5–R_8 represent groups selected from the class consisting of hydrogen atom and unsubstituted linear and branched alkyl groups each having carbon atoms of 1–12 and X represents an atom which is selected from the class consisting of fluorine, chlorine, bromine and iodine.

3,850,884

BIS-(β-AMINOACRYLYL) DERIVATIVES USED AS HEAT STABILIZERS FOR CHLORINATED POLYMERS

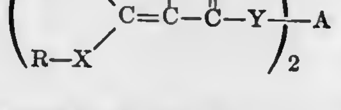
Richard G. Parker, Brecksville, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Original application Oct. 29, 1971, Ser. No. 193,998, now Patent No. 3,784,565. Divided and this application May 7, 1973, Ser. No. 357,867

Int. Cl. C08f *45/60*

U.S. Cl. 260—45.85 N **6 Claims**

1. A composition comprising a chlorine-containing polymer and from about 0.1 part to about 5 parts by weight based upon 100 parts by weight of the polymer of a compound of the formula



wherein X is selected from the group consisting of —O— and —S—; Y is selected from the group consisting of —O— and —S—; R is selected from the group consisting of an alkyl radical containing 1 to about 24 carbon atoms and an aryl radical containing 6 to 18 carbon atoms; R′ is —H, $—CH_3$, or $—C_2H_5$; and A has the formula

$$—(CH_2)_n—R_A—(CH_2)_n—$$

wherein R_A is a cyclic hydrocarbon radical selected from from the group consisting of benzene, naphthalene, and cycloalkyl radicals containing 5 to 8 carbon atoms in the ring, and $n=0$ to 6.

3,850,885

METHOD FOR MAKING POLYETHERIMIDES

Tohru Takekoshi, Scotia, N.Y., and John E. Kochanowski, Pittsfield, Mass., assignors to General Electric Company

No Drawing. Filed Nov. 23, 1973, Ser. No. 418,523

Int. Cl. C08g *20/32*

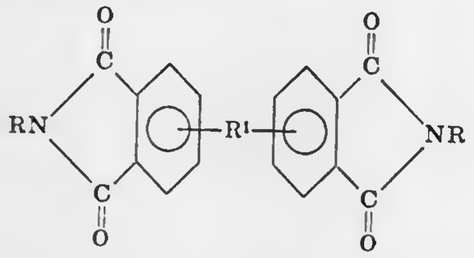
U.S. Cl. 260—47 CZ **11 Claims**

1. A method for making a polyetherimide which comprises

(1) effecting the removal of organic amine of the formula,

$$RNH_2$$

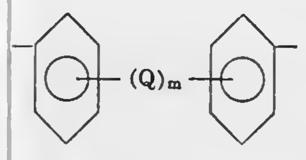
from a melt consisting essentially of a mixture of bisimide of the formula



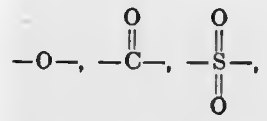
and at least an equal molar amount of such bisimide of an organic diamine of the formula,

$$NH_2—R^2—NH_2$$

In the presence of an effective amount of a catalyst, selected from the class consisting of a Group II–b, Group III–b, Group IV–b and Group V–b element, oxides of such elements, and salts of such elements, where the vapor pressure of the organic amine is greater under atmospheric conditions than the vapor pressure of the organic diamine, where R is a monovalent $C_{(2-20)}$ organic radical selected from $C_{(2-8)}$ alkyl radicals and $C_{(6-20)}$ aromatic radicals, R^1 is selected from $C_{(6-30)}$ aromatic radicals, and R^2 is a divalent organo radical selected from the class consisting of (a) aromatic hydrocarbon radicals having from 6–20 carbon atoms and halogenated derivatives thereof, (b) alkylene radicals, $C_{(2-8)}$ alkylene terminated polydiorganosiloxane cyclo-alkylene radicals having from 2–20 carbon atoms, and (c) divalent radicals included by the formula,



where Q is a member selected from the class consisting of



$$—O—,\ —\overset{\overset{\large O}{\|}}{C}—,\ —\underset{\underset{\large O}{\|}}{\overset{\overset{\large O}{\|}}{S}}—,$$

—S—, $—C_xH_{2x}—$ and *x* is a whole number from 1 to 5 inclusive, and *m* is 0 or 1.

3,850,886

NEUTRALIZED POLY(OXYALKYLENE)-POLYESTER-POLY(MONOSULFIDE) - POLYTHIOL BASED SEALANTS

Richard C. Doss, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Apr. 27, 1973, Ser. No. 355,026

Int. Cl. C08g *23/20*

U.S. Cl. 260—76 **10 Claims**

1. A process of producing a polymercaptan-terminated polymeric composition curable to sealants and coating formulations having improved properties which comprises:

(a) reacting
  (1) a mercaptoalkanoic acid having the formula $HS(CR_2)_nCOOH$ wherein R is selected from the group consisting of hydrogen and alkyl radicals having from 1–5, inclusive, carbon atoms, the maximum number of carbon atoms in all R groups being 10, and *n* is an integer ranging from 1–5, with
  (2) a thiodialkanoic acid having the formula $HOOC(CR_2)_nS(CR_2)_nCOOH$ wherein R and *n* are as defined above, the maximum number of carbon atoms in all R groups being 20, and
  (3) a poly(oxyalkylene)-polyol having on average more than two pendent hydroxy groups per molecule and a molecular weight in the range 200–20,000, the amount of (3) present being in the range 0.8–1.2 equivalents of pendent hydroxy groups for each equivalent of carboxylic groups of the mercaptoalkanoic and thiodialkanoic acids,
(b) neutralizing the polymercaptan-terminated polymer thus produced by admixing therewith an alkaline earth metal hydroxide in an amount sufficient to reduce the acid number (mg. KOH/g. polymer) of said polymer to a value less than about one, and
(c) formulating the neutralized polymer without separation of the alkaline earth metal salts and any unreacted alkaline earth metal hydroxide produced with non-elastomeric components including fillers, plasticizers, antioxidants, and adhesion promoters.

3,850,887

LACTAM COPOLYAMIDES FOR ADHESIVE USE

Francis R. Halas, Chelsea, and Conrad Rossitto, Andover, Mass., assignors to USM Corporation, Flemington, N.J.

No Drawing. Filed Sept. 13, 1972, Ser. No. 288,562

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 L **2 Claims**

1. A linear copolyamide useful as a hot melt adhesive for bonding fabrics, said copolyamide having a molecular weight of from about 8,000 to about 20,000, a softening point (ring and ball) in the range of from about 110° C. to about 175° C. and a melt viscosity at 180° C. of from about 450,000 to 750,000 cps. (Brookfield viscometer using low shear rotor), said copolyamide being a product of reacting and polymerizing a mixture of, based on the total copolyamide forming reagents, from about 50 to about 70 mol percent of at least one lactam having a carbon chain of from 6 to 13 carbon atoms, from about 15 to about 35 mol percent of at least one aliphatic dibasic acid having from 11 to 13 carbon atoms and from about 10 to about 25 mol percent of an aliphatic dibasic acid having from 6 to 10 carbon atoms and a stoichiometric amount of at least one diamine for reaction with said acid and aliphatic dibasic acid having from 6–10 carbon atoms, said diamine comprising at least about 70 mol percent of a linear aliphatic diamine having a carbon chain of from 2 to 13 carbon atoms and an amount effective sterically to interfere with close association of chains of the copolyamide up to 30 mol percent of a diamine of which the hydrogens of the amine groups are hindered by other groups in the compound.

3,850,888

PROCESS FOR PRODUCING POLY-p-PHENYLENE TEREPHTHALAMIDE FROM SOLUTION OF p-PHENYLENE DIAMINE AND MOLTEN TEREPHTHALOYL CHLORIDE

James Allen Fitzgerald, Richmond, Va., and Kewal Krishan Likhyani, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 7, 1972, Ser. No. 312,955

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R **1 Claim**

1. A continuous process for producing poly(p-phenylene terephthalamide) comprising impinging a liquid stream comprising a 5–10% by weight solution of p-phenylene diamine in hexamethylphosphoramide at a temperature of about 10° C. to 30° C. against a stream of molten terephthaloyl chloride at a temperature of from 85–120° C. in a mixing zone, the streams being introduced continuously and at such rate as to provide a liquid reaction mixture from substantially stoichiometric amounts of the diamine and acid halide, substantially completely removing the liquid reaction mixture from the mixing zone within one second after introduction of the streams into said zone and introducing the liquid reaction mixture into a first polymerization zone with vigorous agitation to achieve distribution of the ingredients, cooling the mixture to a temperature of less than about 95° C. and substantially completely removing the product from the first polymerization zone within about 4 to 15 seconds and forwarding it to a second polymerization zone and mixing the product at a shearing stress sufficient to liquify any gel that forms at a shear rate of at least 100 $sec.^{-1}$ while cooling the product to a temperature not greater than 95° C. and substantially completely removing the crumblike product from the second polymerization zone within 1 to about 15 minutes.

3,850,889

ORDERED POLYMERIC AMIDES

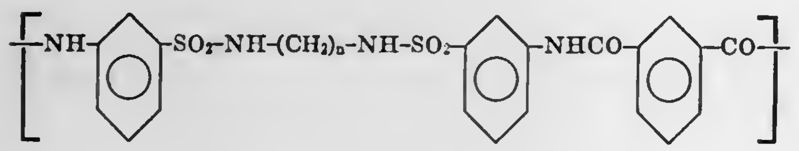
Ray McKinney, Jr., Raleigh, and William L. Hofferbert, Jr., Durham, N.C., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 29, 1972, Ser. No. 319,134

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R **2 Claims**

1. A linear fiber and film forming polymer consisting essentially of regularly recurring structural units having the formula:



wherein n is an integer of from 6 to 12.

3,850,890

PROCESS FOR THE ANIONIC POLYMERIZATION OF PYRROLIDONE WITH FLUORO- OR CHLORO-FLUORO OLEFIN AS ACTIVATOR

Aldemaro Ciaperoni, Bollate, Italy, assignor to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed June 8, 1973, Ser. No. 368,314

Claims priority, application Italy, June 9, 1972, 25,463/72

Int. Cl. C08g *20/18*

U.S. Cl. 260—78 P **12 Claims**

1. A process for the anionic polymerization of pyrrolidone to a fiber-forming polypyrrolidone which comprises polymerizing said monomer in contact with a catalytic system consisting essentially of an alkali metal or quaternary ammonium pyrrolidonate and, as activator, a substituted olefin having the general formula

$$CF_2{=}CFX$$

wherein X is F, Cl, CF_3, CF_2Cl, $CFCl_2$ or CCl_3.

3,850,891

PROCESS FOR THE PREPARATION OF MULTI-FUNCTIONAL PEROXYDIESTERS

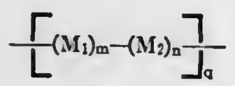
James E. Crawford, Adrian, Mich., assignor to Owens-Illinois Inc.

No Drawing. Continuation of abandoned application Ser. No. 177,116, Sept. 1, 1971. This application Jan. 15, 1973, Ser. No. 323,993

Int. Cl. C07c *69/60;* **C08f** *1/60, 27/12*

U.S. Cl. 260—78.5 T **24 Claims**

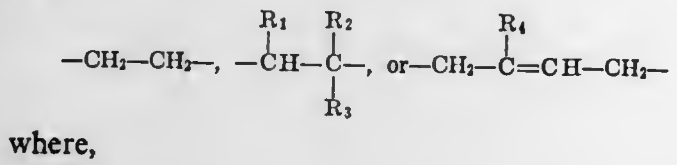
1. A process for the preparation of a linear copolymer having pendant peroxydiester functionality from an acid salt of a linear copolymer and an acyl halide, which comprises: mixing the acid salt of a linear copolymer of the formula



$$-\!\left[(M_1)_m-(M_2)_n\right]_q\!-$$

wherein

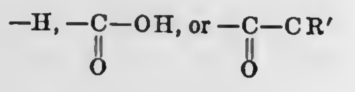
M_1 is



$$-CH_2-CH_2-,\ -\overset{R_1}{C}H-\underset{R_3}{\overset{R_2}{C}}-,\ \text{or}-CH_2-\overset{R_4}{C}=CH-CH_2-$$

where,

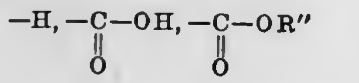
R_1 is



$$-H,\ -\underset{\underset{O}{\|}}{C}-OH,\ \text{or}\ -\underset{\underset{O}{\|}}{C}-CR'$$

with R′ being $-CH_3$, $-C_2H_5$,

R_2 is



$$-H,\ -\underset{\underset{O}{\|}}{C}-OH,\ -\underset{\underset{O}{\|}}{C}-OR''$$

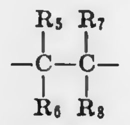
or phenyl

R_3 is $-H$, $-CH_3$, $-OR''$

with R″ being an alkyl of 1 to 4 carbon atoms,

R_4 is $-H$, $-F$, $-Cl$, $-Br$ or $-CH_3$

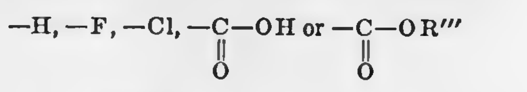
M_2 is



$$-\underset{R_6}{\overset{R_5}{C}}-\underset{R_8}{\overset{R_7}{C}}-$$

where,

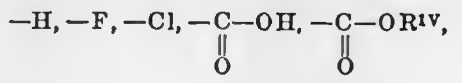
R_5 and R_6 are independently selected from



$$-H,\ -F,\ -Cl,\ -\underset{\underset{O}{\|}}{C}-OH\ \text{or}\ -\underset{\underset{O}{\|}}{C}-OR'''$$

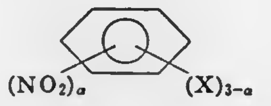
with R‴ being $-CH_3$ or $-C_2H_5$

R_7 and R_8 are independently selected from



$$-H,\ -F,\ -Cl,\ -\underset{\underset{O}{\|}}{C}-OH,\ -\underset{\underset{O}{\|}}{C}-OR^{IV},$$

phenyl or



with

R^{IV} being an alkyl of 1 to 8 carbon atoms, and

X is a halogen

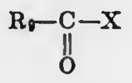
α is 0 to 3

m is 1 to 1000

n is 1 to 1000

q is 4 to 1000,

with an acyl halide of the formula



$$R_9-\underset{\underset{O}{\|}}{C}-X$$

wherein

R_9 is an alkyl of 1 to 7 carbon atoms, alkenyl of 1 to 4 carbon atoms, aryl or substituted aryl, and

X is a halogen

in a reaction medium, comprising water or mixtures of water and lower alkyl alcohols and in the presence of hydrogen peroxide or ozone at temperatures ranging from about −15° C. to 200° C. so as to form said linear copolymer having pendant peroxydiester functionality.

3,850,892

PHYSIOLOGICALLY COMPATIBLE PLASTIC CONTACT LENSES AND A METHOD FOR THEIR PRODUCTION

Mitchel Shen, Kensington, Robert B. Mandell, Moraga, and Lawrence Stark, Berkeley, Calif. assignors to Biocontacts, Inc.

No Drawing. Continuation-in-part of abandoned application Ser. No. 215,137, Jan. 3, 1972. This application Nov. 30, 1972, Ser. No. 310,865

Int. Cl. C08f *27/12*

U.S. Cl. 260—80.72 **8 Claims**

1. The process for lowering the glass transition temperature of a solid, cross-linked polymer obtained by polymerizing polymerizable components including at least one monomer selected from

$$R^1R^2C{=}CR^3CO_2H \text{ and } R^1R^2C{=}CR^3CO_2Z$$

wherein R^1 and R^2 are the same or different, and they are either alkyl groups having a carbon atom content less than 6 or hydrogen; R^3 is hydrogen or methyl, and Z is an alkyl group having a carbon atom content from 1–11, a hydroxyalkyl group having a carbon atom content of from 2–11 or an alkoxyalkyl group having a carbon atom content from 3–11; said polymerizable components containing from about 0.1 to about 10 mols of cross-linking agent per 100 mols of polymerizable components and said polymer containing at least 10 weight percent, calculated as free carboxyl groups, of pendant carboxylic substituent groups, said substituent groups being selected from the group consisting of carboxyl, alkyl carboxylate ester having from 1–11 carbon atoms, carboxylic acid anhydride groups and mixtures thereof which comprises treating the resultant solid, cross-linked polymer by one or more chemical conversion reactions of the group:

(a) direct esterification of said pendant carboxyl and carboxylic acid anhydride groups by contacting the solid polymer with an alcohol having from 1–15 carbon atoms for a time sufficient and under conditions to effect esterification;

(b) indirect esterification of said carboxyl and carboxylic acid anhydride groups by contacting said carboxyl and carboxylic acid anhydride groups with an acid halide forming reagent under reaction conditions and subsequently contacting the resultant acid halide groups with an alcohol having from 1 to 15 carbon atoms at reaction conditions; and

(c) transesterifying said alkyl carboxylate ester groups to higher alkyl carboxylate groups by contacting said polymer with an alcohol having from 2–15 carbon atoms and a greater number of carbon atoms than said alkyl carboxylate ester group at reaction conditions.

3,850,893

SECONDARY ACCELERATORS FOR VULGANIZATION OF RUBBER

Pyong-Nae Son, 2106 Ayers Ave., Akron, Ohio 44313

No Drawing. Filed Sept. 24, 1973, Ser. No. 400,341

Int. Cl. C08c *11/50;* **C08d** *13/28;* **C08f** *29/02*

U.S. Cl. 260—80.78 **8 Claims**

1. A sulfur vulcanizable rubber compound containing in the accelerator portion of the compound a mixture of a primary accelerator and a secondary accelerator, said secondary accelerator comprising a 2-acyl substituted tetraalkylguanidine.

3,850,894

PROCEDURE FOR THE PRODUCTION OF POLYMERS AND COPOLYMERS OF ISOBUTYLENE AND POLYMERS OBTAINED

Aldo Priola, Sebastiano Cesca, and Giuseppe Ferraris, San Donato Milanese, and Mario Bassaredda Boy and Paolo Giusti, Pisa, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy.

No Drawing. Filed Nov. 15, 1972, Ser. No. 306,900

Claims priority, application Italy, Nov. 26, 1971, 31,723/71

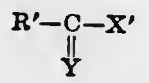
Int. Cl. C08d *1/26, 3/04, 3/10*

U.S. Cl. 260—85.3 R **6 Claims**

1. Process for the production of butyl rubber through the copolymerization of isobutylene and isoprene wherein the improvement comprises conducting the copolymerization in the presence of a catalytic system consisting essentially of:

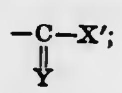
(a) a metalorganic compound of aluminum represented by the formula AlR_3 or AlR_2X wherein X is a halogen atom; R is a hydrocarbon radical with from 1 to 10 carbon atoms or hydrogen; and

(b) a haloid of an organic acid or thioacid represented by the general formula



$$R'-\underset{\underset{Y}{\|}}{C}-X'$$

in which X′ is a halogen atom; R′ is an alkylic residue, cycloalkylic, alkylarylic, alkylcycloalkylic, or is equal to X′ or is represented by the formula



$$-\underset{\underset{Y}{\|}}{C}-X';$$

and Y is oxygen or sulphur.

3,850,895

PROCESS FOR THE PRODUCTION OF POLYMERS AND COPOLYMERS OF ISOBUTYLENE OF HIGH MOLECULAR WEIGHT

Aldo Priola, Sebastiano Cesca, and Giuseppe Ferraris, San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

No Drawing. Filed Nov. 15, 1972, Ser. No. 306,901

Claims priority, application Italy, Nov. 26, 1971, 31,724/71

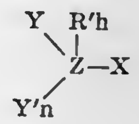
Int. Cl. C08d *1/26, 3/10, 3/02*

U.S. Cl. 260—85.3 R **6 Claims**

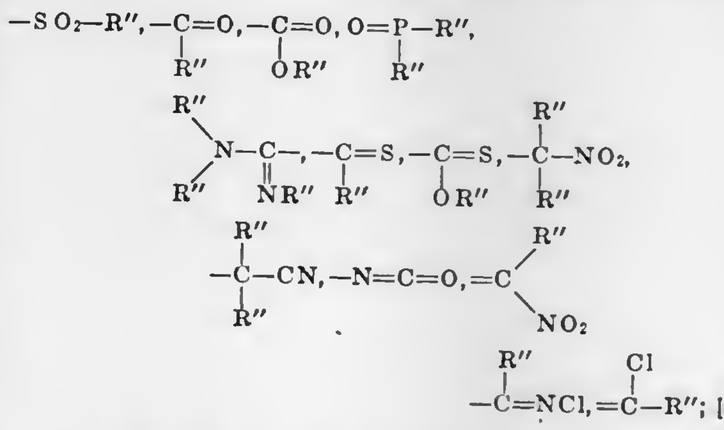
1. Process for the production of butyl rubber through the copolymerization of isobutylene and isoprene wherein the improvement comprises conducting the copolymerization reaction in the presence of a catalytic system consisting essentially of:

(a) a metalorganic compound of aluminum having the formula AlR_3 or AlR_2X wherein X is a halogen atom and R is a hyrocarbon radical with from 1 to 10 carbon atoms, or hydrogen; and

(b) a compound containing a mobile halogen group or at least one in which the halogen group is easily exchangeable due to the presence of an electrophilic group represented by the formula



wherein X is an atom of halogen, Z is nitrogen, carbon or phosphorous; R′ is a hydrocarbon radical with from 1 to 10 carbon atoms, or hydrogen, or is equal to X; Y is a member of the group consisting of



[a.s.o.]

Y′ is equal to Y, or to R′; Y or Y′ may be a bivalent radical linked through a double bond directly to Z; Y and Y′ may be connected to each other closing themselves cyclically on Z; R″ is an alkylic or arylic radical, simple or substituted; n and h are 0 or 1.

3,850,896

PROCEDURE FOR THE PRODUCTION OF POLYMERS AND COPOLYMERS OF ISOBUTYLENE AND COMPOSITIONS OBTAINED

Aldo Priola, Sebastiano Cesca, and Giuseppe Ferraris, San Donato Milanese, and Mario Baccaredda Boy and Paolo Giusti, Pisa, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

No Drawing. Filed Nov. 15, 1972, Ser. No. 306,902

Claims priority, application Italy, Nov. 26, 1971, 31,722/71

Int. Cl. C08d *1/26, 3/04, 3/10*

U.S. Cl. 260—85.3 R **5 Claims**

1. Process for the production of butyl rubber through the copolymerization of isobutylene and isoprene wherein the improvement comprises conducting the copolymerization reaction in the presence of a catalyst system consisting essentially of:

(a) a metalorganic composition of aluminum represented by the formula AlR_3 or AlR_2X wherein X is an atom of halogen, and R is a hydrocarbon radical having from 1 to 10 carbon atoms, or hydrogen;

(b) a haloid of an inorganic acid represented by the general formula $Z_nMeX_mY_p$ in which Me is an element belonging to the 5°, 6° or 7° group of the periodic system; *n* and *m* are whole numbers; *p* is a whole number or zero and the sum $2n+m+p$ is equal to the valency of said element; Z is oxygen or sulphur; X is a halogen atom; Y is an organic residue selected from the alkylic, arylic, cyclohexylic, etheric, esteric, ammidic, acetylacetonic and oximic functional groups; and wherein the molar ratio of compound (b) to compound (a) is between 0.5 and 10^{-4}.

3,850,897

PROCEDURE FOR THE PRODUCTION OF POLYMERS AND COPOLYMERS OF ISOBUTYLENE

Aldo Priola, Sebastiano Cesca, and Giuseppe Ferraris, San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy
No Drawing. Filed Nov. 17, 1972, Ser. No. 307,499
Claims priority, application Italy, Nov. 26, 1971, 31,727/71
Int. Cl. C08d *1/26, 3/04, 3/10*
U.S. Cl. 260—85.3 R 18 Claims

1. Process for the production of copolymers of isobutylene and a conjugated diene, wherein the copolymerization reaction is conducted in the presence of a catalyst system consisting essentially of: (i) a metalorganic compound of aluminum represented by the formula

$$RAl(YR')X$$

in which R is hydrogen, cycloalkyl, or aryl; R′ is a hydrocarbon radical selected from those listed for R; Y is an atom of oxygen, or of sulphur, or nitrogen bound to two hydrocarbon radicals; and X is an atom of halogen; and (ii) a co-catalyst selected from the following:

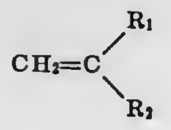
(a) Brönsted acids;
(b) alkyl haloids, haloids of organic or inorganic acids, or compounds containing atoms of activated halogen;
(c) Lewis acids; and
(d) Compounds represented by the formula $X'_nMeY'_m$ in which X′ is an atom of halogen, Y′ is oxygen, sulphur or a functional group selected from the alkoxy, ester, amide, alkyl, cycloalkyl, aromatic, arene, phosphine, acetylacetone and oxime radicals; Me is a metal chosen from Ti, Sn, Zn, Si, B, Al, Hg, Pb, W, Sb, Ge, V, Zr, As, Bi and Mo; and *m* and *n* are whole numbers whose sum is equal to the valency of Me except in the case in which Y is oxygen or sulphur, when it becomes $2m+n$; and wherein the molar ratio between compound (ii) and compound (i) is less than 1.

3,850,898

ANIONIC HIGH MOLECULAR FLOCCULANTS

Fumio Ide, Yahide Kotake, and Satoshi Korenaga, Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan
No Drawing. Filed Mar. 16, 1973, Ser. No. 341,832
Claims priority, application Japan, Mar. 16, 1972, 47/26,775; Dec. 28, 1972, 48/1,808
Int. Cl. C08f *15/02*
U.S. Cl. 260—86.1 R 9 Claims

1. A process for the preparation of a high molecular fluocculant with a molecular weight greater than 1,000,000 determined by measurement of viscosity of an aqueous solution containing an excess of neutral salts which comprises polymerizing 55 to 95 weight percent of at least one (i) of acrylic or methacrylic acids and 45 to 5 weight percent of at least one (ii) of monomers represented by the formula



$$CH_2{=}C(R_1)(R_2)$$

wherein R_1 is a hydrogen or methyl and R_2 is $—COOR_3$ radical wherein R_3 is alkyl, aryl or alkylaryl groups or —CN radical in water medium with stirring to produce a suspension of a copolymer which is insoluble under the polymerization conditions but soluble in neutral or alkaline water, adding said suspension into at least one of hydroxides of an alkali metal or ammonia dissolved in at least one of alcohols of C_1 to C_6 or a water-containing alcohol with stirring thereby obtaining an alcohol suspension of a water-soluble copolymer with its carboxyl group being completely or partially neutralized, and then removing the copolymer in form of particles followed by drying.

3,850,899

PROCESS FOR POLYMERIZING OLEFINS AND CATALYST THEREFOR

Shigeru Wada, Otake, Hidesaburo Oi, Yamaguchi-ken, Norio Matsuzawa and Hiroshi Nishimura, Otake, and Juntaro Sasaki, Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan
No Drawing. Filed June 14, 1971, Ser. No. 153,014
Claims priority, application Japan, June 15, 1970, 45/51,054; July 17, 1970, 45/62,301, 45/62,302
Int. Cl. B01j *11/84;* **C08f** *1/56*
U.S. Cl. 260—88.2 R 2 Claims

1. In a process for polymerizing or copolymerizing a monomer selected from the group consisting of ethylene, propylene, 1-butene, 4-methyl-1-pentene, styrene, 1-pentene, 1-hexene and 3-methyl-1-butene in the presence of a catalyst composed of a pulverized titanium trichloride component and an organo-aluminum compound, the improvement wherein said monomer is polymerized or copolymerized in the presence of a catalyst comprising:

(A) a titanium trichloride composition obtained by pulverizing a component consisting of an aluminum-containing titanium trichloride component prepared by the reduction of titanium tetrachloride with metallic aluminum, until the α- or γ-type crystal structure of said titanium trichloride cannot be identified in the X-ray diffraction pattern, and extracting the resulting titanium trichloride composition with a solvent mixture of an inert organic solvent:

(1) selected from the group consisting of aromatic hydrocarbons having 6 to 20 carbon atoms, saturated aliphatic hydrocarbons having 3 to 20 carbon atoms, alicyclic hydrocarbons having 3 to 18 carbon atoms, acyclic or cyclic olefins of 2 to 20 carbon atoms, unsaturated aliphatic hydrocarbon halides of 2 to 20 carbon atoms, saturated aliphatic hydrocarbon halides of 1 to 20 carbon atoms, halogenated aromatic hydrocarbons having 6 to 16 carbon atoms and carbon disulfide; and a member selected from the group consisting of the following organic solvents;

(2) an oxygen-containing organic solvent selected from the group consisting of saturated aliphatic monoethers having 2 to 32 carbon atoms having an alkyl radical, aliphatic ethers of 3 to 20 carbon atoms having at least one unsaturated aliphatic hydrocarbon radical, aromatic ethers of 7 to 16 carbon atoms having a saturated alkyl or aryl radical, monoethers and diethers of 7 to 16 carbon atoms which are halogenated and contain at least one aromatic radical, saturated alkyl esters of saturated aliphatic monocarboxylic acids having an aliphatic monocarboxylic acid residual group with 1 to 21 carbon atoms and a saturated alkyl group with 1 to 16 carbon atoms, unsaturated alkyl esters of saturated aliphatic monocarboxylic acids having a saturated aliphatic monocarboxylic acid residual group with 1 to 8 carbon atoms and an unsaturated alkyl group with 2 to 12 carbon atoms, alkyl esters of unsaturated aliphatic monocarboxylic acids having an unsaturated aliphatic monocarboxylic acid residual group with 2 to 12 carbon atoms and a saturated or unsaturated alkyl group with 1 to 10 carbon atoms, saturated alkyl esters of aromatic monocarboxylic acids having an aromatic monocarboxylic acid residual group with 7 to 18 carbon atoms and a saturated alkyl group with 1 to 20 carbon atoms, saturated aliphatic monoalcohols having 1 to 18 carbon atoms, monohydric and dihydric phenols having 6 to 16 carbon atoms, saturated aliphatic monoketones having 3 to 20 carbon atoms, saturated aliphatic diketones having 4 to 12 carbon atoms, aromatic monoketones having 7 to 18 carbon atoms, aromatic monocarboxylic acids having 7 to 18 carbon atoms, saturated aliphatic monocarboxylic acids having 1 to 20 carbon atoms, saturated aliphatic carboxylic acid halides having 2 to 12 carbon atoms and aromatic carboxylic acid halides having 7 to 15 carbon atoms;

(2)′ a nitrogen-containing organic solvent selected from the group consisting of nitrogen-containing heterocyclic amines having 5 to 18 carbon atoms selected from the pyridine, quinoline and acridine series, saturated aliphatic secondary amines of 2 to 24 carbon atoms, aromatic secondary amines having 6 to 20 carbon atoms, saturated aliphatic tertiary amines having 3 to 18 carbon atoms, aromatic tertiary amines having 8 to 30 carbon atoms, aromatic mononitriles having 7 to 15 carbon atoms, aromatic monoisocyanates having 7 to 11 carbon atoms and aromatic azo compounds having 12 to 20 carbon atoms; and

(2)″ a Si-containing organic solvent selected from the group consisting of tetrahydrocarbylsilanes having saturated alkyl radicals, aryl radicals or mixtures thereof of 4 to 50 carbon atoms, tetrahydrocarbylsilanes having an unsaturated alkyl radical of 5 to 28 carbon atoms, alkyl hydrogenosilanes of 1 to 30 carbon atoms having an Si-H bond, aryl hydrogenosilanes of 6 to 30 carbon atoms having an Si-H bond, alkyl halogenosilanes of 3 to 30 carbon atoms having an Si-halogen bond, aryl halogenosilanes of 6 to 30 carbon atoms having an Si-halogen bond, trialkyl silylamines of 6 to 9 carbon atoms, triphenyl silylamine, trimethyl(N - methylamino) silane, trimethyl(N - diethylamino)silane, saturated alkylsilanes having at least one Si-O-C bond of 2 to 8 carbon atoms, aryl silanes having at least an Si-O-C bond of 9 to 12 carbon atoms. $C_1–C_{10}$ aliphatic mono-or $C_7–C_{11}$ aromatic mono-carboxylic acid esters of trialkyl silanols having 3 to 10 carbon atoms, alkylaryl silanols having 8 to 20 carbon atoms or triaryl silanes of 18 to 30 carbon atoms, trialkyl silicon isocyanates having 3 to 10 carbon atoms, dialkyl aryl silicon isocyanates having 8 to 15 carbon atoms, trialkyl silicon isocyanates having 18 to 30 carbon atoms, polysilmethylenes of the formula

$$CH_3SiCH_2[(CH_3)_2SiCH_2]_xSi(CH_3)_3$$

wherein *x* is an integer of 1 to 10, linear polyalkyl or polyaryl polysilanes of 6 to 80 carbon atoms, α, γ-dihaloalkylpolysiloxanes of the formula

$$X(R_2SiO)_xSiR_2X$$

wherein X is a halogen atom, and
$x=1$ to 1000,
polyalkyl cyclopolysilanes having 12 to 120 carbon atoms, polyaryl cyclopolysilanes having 12 to 120 carbon atoms, organopolysiloxanes of the formula

$$R(R'R''''SiO)_xSiR_3$$

wherein
R, R′ and R″″ may be the same or diffferent and represent an alkyl group having 1 to 4 carbon atoms, an aryl group having 6 to 8 carbon atoms, or hydrogen,
and *x* is an integer of 1 to 1000,
alkyl cyclopolysiloxanes of the formula

$$(R'''HSiO)_y$$

wherein
R‴ is an alkyl group having 1 to 4 carbon atoms, and *y* is an integer of 3 to 8,
alkyl cyclopolysiloxanes of the general formula

$$(R''''_2SiO)_z$$

wherein
R″″ is an alkyl group having 1 to 4 carbon atoms, and *z* is an integer of 3 to 9,
aryl cyclopolysiloxanes of the formula

$$(Q_2SiO)_p$$

wherein
Q is an aryl group having 6 to 8 carbon atoms, and *p* is an integer of 3 to 6,
alkyl or aryl polysilazanes of 6 to 50 carbon atoms having an Si-N-Si bond and a molecular weight of not more than 1000; and then separating said extracted titanium trichloride composition from the solvent mixture, the amount of said mixed solvent being 1 to 100 parts by weight per part of the pulverized aluminum-containing titanium trichloride component, and the amount of the solvent (2) or (2)″ being 0.005–10.0 parts by weight per part of said titanium trichloride component and the amount of solvent (2)′ being 0.005–0.5 part by weight per part of said titanium trichloride component; and

(B) an organoaluminum compound selected from the group consisting of trialkyl aluminum, dialkylaluminum halide, dialkylaluminum alkoxide, alkylaluminum alkoxy halide, reaction products of these with an electron-donor compound, reaction products of these with an alkali metal complex fluoride of a transition metal, reaction products of an alkylaluminum dihalide with an electron-donor compound, reaction products of an alkylaluminum dihalide with an alkali metal halide, and reaction products of an alkylaluminum dihalide with an alkali metal complex fluoride of a transition metal.

3,850,900

PROCESS FOR MICRO-CRYSTALLIZATION OF POLYVINYLIDENE FLUORIDE ARTICLES

Masahiro Segawa, Iwaki, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Continuation of abandoned application Ser. No. 830,799, June 5, 1969. This application Oct. 2, 1972, Ser. No. 294,300
Claims priority, application Japan, June 10, 1968, 43/39,872
Int. Cl. C08f *3/22*
U.S. Cl. 260—92.1 2 Claims

1. A process for microcrystallization of polyvinylidene fluoride article in molded or coated form which consists of the steps of:

(a) heating an article consisting essentially of crystallized polyvinylidene fluoride which has once been heated to melt and then cooled to solidify at a temperature between a temperature at which the polyvinylidene fluoride begins to melt and a temperature approximately 10° C. higher than the melting point of polyvinylidene fluoride to remelt only a portion

of the polyvinylidene fluoride article, while maintaining the original shape thereof as molded or coated; and
(b) gradually cooling the article to create extremely fine crystals of polyvinylidene fluoride of approximately 1 micron in diameter.

3,850,901
POLYVINYL ALCOHOL FIBERS

Shoichi Tanaka, 550–1 Yasue; and Susumu Kousaka, 1273–4 Nakasho, both of Kurashiki, Japan; and Toshio Kimura, 2–208 Katsuragi-cho, Nara, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 90,816, Nov. 18, 1970. This application Nov. 7, 1972, Ser. No. 304,577

Claims priority, application Japan, Nov. 25, 1969, 44/94,790; Apr. 30, 1970, 45/37,354

Int. Cl. C08f *3/34*

U.S. Cl. 260—91.3 3 Claims

1. Polyvinyl alcohol fibers comprising an essentially water insoluble polyvinyl alcohol having an average degree of polymerization of from about 1200 to 3500 and containing a residue of boric acid or a water soluble borate salt thereof in an amount of from 0.2 to 0.9% by weight of polyvinyl alcohol, said fibers being characterized by a half-width of (100) reflection (β) of 0.98 to 1.40 and an I_M/I_{30} of from 0.40 to 0.48 derived from the azimuthal X-ray intensity distribution at the angle of diffraction of 19.2°.

3,850,902
PROCESS FOR CASTING EYEGLASS FRAMES

Richard T. Metcalfe, Sturbridge, Peter R. Ramirez, Southbridge, and Chester M. Slyk, Auburn, Mass., assignors to American Optical Corporation Southbridge, Mass.

No Drawing. Continuation of abandoned application Ser. No. 816,371, Apr. 15, 1969. This application July 22, 1971, Ser. No. 165,589

Int. Cl. B29c *25/00;* **B29d** *12/02*

U.S. Cl. 264—102 8 Claims

1. A process for casting eyeglass frames or parts thereof comprising
- (a) forming a liquid mixture of substantially 100% reactive quantities of a dihydric phenol epoxy composition and a hardener,
  - (i) said liquid mixture characterized by a viscosity of less than 20,000 centipoises at 25° C.;
  - (ii) said liquid mixture being capable of being polymerized or cured at a temperature of approximately 200° F.;
- (b) heating said liquid mixture to decrease its viscosity and enhance ease of degassing
  - (i) maintaining the liquid mixture in a pourable liquid-casting condition during said heating;
- (c) casting said preheated mixture into a mold having eyeglass frame or parts cavities of a desired configuration at a rate to prevent formation of gas bubbles in said liquid mixture;
- (d) heating said mold and said contained liquid to a temperature of at least 170° F. sufficient to polymerize or cure said liquid mixture;
- (e) removing polymerized or cured eyeglass frames or parts from said mold at an elevated temperature thereby causing distortion of said frames or parts, degating and removing flash from said frames and parts; and
- (f) subjecting the eyeglass frames or parts to a liqui cooling bath to restore cast configuration
  - (i) said eyeglass frames or parts thereof characterized by the property, upon deformation after completion of curing or polymerization, of returning to its original cast configuration when heated to a temperature in the range 100 to 150° F.

3,850,903
PLASMA VOLUME EXPANDER PREPARED FROM COHN IV PRECIPITATE USING BLOCK COPOLYMERS OF ETHYLENE OXIDE AND POLYOXYPROPYLENE

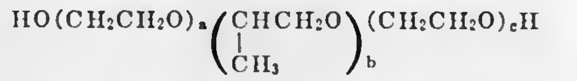
Luis A. Garcia, 19941 Carmania Lane, Huntington Beach, Calif. 92646; Jose R. Boullon, 12672 Twintree Lane, Garden Grove, Calif. 92640; and Samia S. Mankarious, 2728 Canary Drive, Costa Mesa, Calif. 92626

No Drawing. Filed June 21, 1973, Ser. No. 372,362

Int. Cl. C07g *7/00*

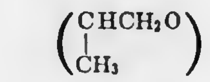
U.S. Cl. 260—112 B 4 Claims

1. A process for the preparation of a blood fraction containing a high concentration of albumin, α- and β-globulins suitable for intravenous administration comprising fractionating Cohn Precipitate IV–4 by thoroughly admixing with about 0.5% to about 2% calcium phosphate, separating the resulting precipitate therefrom and thoroughly admixing the retained supernatant with about 0.05% to 0.2% fibrinogen and then thoroughly admixing with a compound of the formula



$$HO(CH_2CH_2O)_a\left(\begin{matrix}CHCH_2O\\ |\\ CH_3\end{matrix}\right)_b(CH_2CH_2O)_cH$$

wherein *a* and *c* are integers such that the hydrophile portion represented by (CH_2CH_2O) constitutes at least about 50% of the molecule and *b* is an integer such that the hydrophobic portion represented by



$$\left(\begin{matrix}CHCH_2O\\ |\\ CH_3\end{matrix}\right)$$

has a molecular weight of at least about 950 to a concentration of from about 13.5% to about 17.5% at a pH of about 6–7, separating the resulting precipitate therefrom and thoroughly admixing the retained supernatant with said compound to a concentration of from about 18% to about 20% at a pH of about 4–5, and recovering the resulting precipitate for retention as the desired blood fraction.

3,850,904
PSYCHOPHARMACOLOGICALLY ACTIVE D-GLU OR D-HIS CONTAINING PEPTIDES

Hendrick Marie Greven, Heesch, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

No Drawing. Filed May 14, 1973, Ser. No. 359,923

Claims priority, application Netherlands, May 24, 1972, 7206941

Int. Cl. A61k *17/06, 27/00;* **C07c** *103/52*

U.S. Cl. 260—112.5 5 Claims

1. A peptide of the formula:

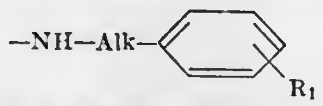
A-Glu(Q)-His-X

in which one of the amino radicals Glu(Q) or His is present in the D-form; in which

A is selected from the group consisting of H-L-Met, H-L-Met(→O), H-L-Met(→O_2) desamino-Met, desamino-Met(→O), desamino-Met(→O_2), and the moiety: H_2N-B-CO- in which B is alkylene having 1–6 carbon atoms;

Q is selected from the group consisting of OH and NH_2;

X is selected from the group consisting of hydroxy; (N-phenylalkyl) amino of the formula



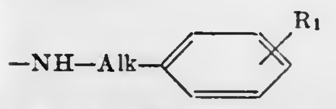
in which Alk is alkylene with 1–6 carbon atoms, and R_1 is selected from the group consisting of hydrogen and hydroxy; and -L-Phe-Y;

Y is selected from the group consisting of hydroxy, descarboxyl-lysyl, descarboxy - arginyl, -L-Lys-Z, -L-Arg-Z, -D-Lys-Z, and -D-Arg-Z;

Z is selected from the group consisting of hydroxy, (N-β-indolyl-ethyl) amino, -L-Trp-OH,

-L-Trp-Gly-OH,

-L-Phe-OH, -L-Phe-Gly-OH, and (N-phenylalkyl) amino of the formula



in which Alk is alkylene with 1–6 carbon atoms, R_1 is selected from the group consisting of hydrogen and hydroxy;

and functional derivatives of said peptide selected from the group consisting of pharmaceutically acceptable acid addition salts, derivatives in which one or more free amino groups are substituted by acyl derived from an aliphatic carboxylic acid with 1–6 carbon atoms, unsubstituted amides or lower alkyl (1–6 C) substituted amides of those peptides having a free carboxyl group, esters derived from aliphatic or phenylaliphatic alcohols with 1–18 carbon atoms, and metal complexes thereof.

3,850,905
CONVERSION OF ALDOSE SUGARS TO KETOSE SUGARS

Leon Tumerman, Deerfield, and Jules H. Guth, Mount Prospect, Ill., assignors to Kraftco Corporation, Glenview, Ill.

No Drawing. Filed Oct. 30, 1972, Ser. No. 301,823

Int. Cl. C07c *47/18;* **C13k** *9/00*

U.S. Cl. 260—209 R 19 Claims

1. In a method for the manufacture of ketose sugars from aldose sugars comprising providing a solution of aldose sugar, adding an alkali or alkaline earth aluminate catalyst to said solution to provide a reaction mixture, maintaining said reaction mixture at a temperature sufficient to substantially convert the aldose sugar to ketose sugar, adjusting the pH of said reaction mixture to within the range of 6 to 8 so as to precipitate said aluminate moiety of said aluminate catalyst and provide a reaction mixture containing an aluminum hydroxide precipitate in a sugar solution, the improvement comprising controlling the concentration of said aluminum hydroxide in said reaction mixture at a level of less than about 8 percent by weight, providing a flowing stream of said reaction mixture, moving said flowing stream of said reaction mixture at a flow rate of at least about 1 foot per second in a direction substantially parallel to a membrane while maintaining a pressure differential of from about 2 p.s.i.g. to about 2,000 p.s.i.g. across said membrane during said movement of said reaction mixture and transferring said sugar solution through said membrane.

3,850,906
NOVEL Δ^4/Δ^5-DEHYDROCARDENOLIDES AS WELL AS PROCESS FOR THEIR PREPARATION

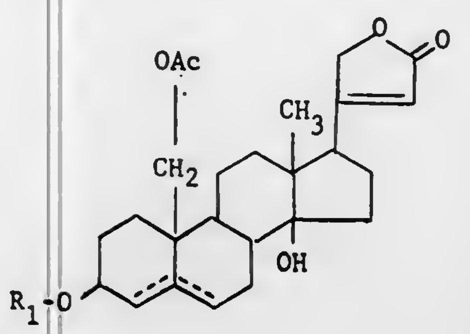
Johannes Herrmann Hartenstein, Wittental, Germany, assignor to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Nov. 15, 1972, Ser. No. 306,640

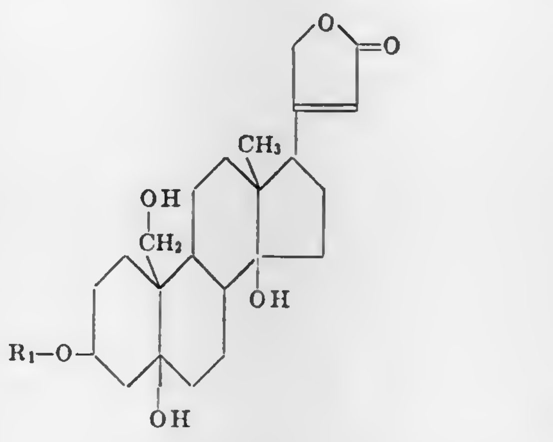
Int. Cl. C07c *173/02*

U.S. Cl. 260—210.5 7 Claims

1. A process for preparing compounds of the formula

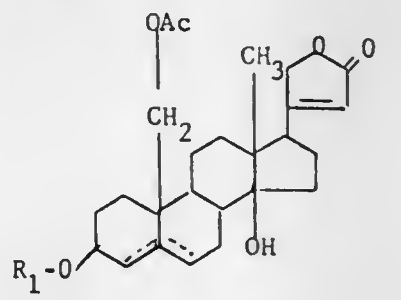


which consists essentially of mixing compounds of the formula II



II

wherein R_1 is 2 - tetrahydropyranosyl, digitoxosyl, cymarosyl, rhamnosyl or strophanthobiosyl; Ac is acetyl and the dotted line denotes a 4,5- or 5,6- double bond, with equivalent or excess amounts of a trialkyl orthoacetate in the presence of an acid catalyst selected from the group consisting of hydrochloric acid, sulfuric acid, perchloric acid, p-toluene-sulfonic acid, methane sulfonic acid, and sulfonic acids in the form ion exchange resins at a temperature between 0° and the boiling point of the reaction mixture in an inert organic solvent to form compounds of formula III



III

wherein Ac is acetyl; R_1 is 2 - tetrahydropyranosyl; O-acetyldigitoxosyl, O - acetylcymarosyl, O,O,O - triacetylrhamnosyl or O,O,O,O - tetracetylstrophanthobiosyl and the dotted line denotes a 4,5- or 5,6- double bond and hydrolyzing the acetate groups of the sugar moieties of compounds of formula III, wherein Ac and R_1 are as hereinbefore defined, with base selected from the group consisting of potassium bicarbonate and ammonia.

3,850,907
LIPASE-INHIBITOR EXTRACTED FROM *ARACHIS HYPOGEA, BRASSICA NAPUS* VAR. *ARVENSIS* OR *PAPAVER SOMNIFERUM* AND A PROCESS FOR EXTRACTION

Eugen Werle, Karl Hochstrasser, and Herbert Feuth, Munich, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 11, 1973, Ser. No. 359,260

Claims priority, application Germany, May 26, 1972, P 22 25 647.9

Int. Cl. C07g *17/00*

U.S. Cl. 260—236.5 6 Claims

1. A process for the production of a lipase-inhibitor containing substance which comprises comminuting the seeds of groundnuts, selected from *Arachis hypogea, Brassica napus* var. *arvensis* and *Papaver somniferum* extracting said comminuted seeds by contacting the same with a lipid solvent to form an extract containing a lipase-inhibitor containing substance and recovering said lipase-inhibitor containing substance from said extract.

3,850,908

AMINOACYLOXYMETHYL ESTERS OF PENICILLINS

Welf von Daehne, Frihedsvej, Erling Knud Frederiksen, Holte, Vagn Ole Godtfredsen, Vaerlose, and Schneur Rachlin, Horsholm, Denmark, assignors to Lovens Kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark

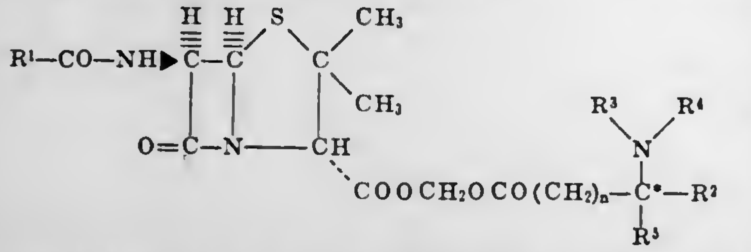
No Drawing. Filed Mar. 5, 1971, Ser. No. 121,547

Claims priority, application Great Britain, Mar. 12, 1970, 11,995/70; Aug. 26, 1970, 41,167/70

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **17 Claims**

1. A penicillin ester of the formula



in which formula the asterisk indicates the possibility of an asymmetric carbon atom, *n* indicates an integer from 0 to 1, R^1 is selected from the group consisting of phenoxymethyl, benzyl, dimethoxyphenyl, 5-methyl-3-phenyl-4-isoxazolyl, and 5-methyl-3-*o*-chlorophenyl-4-isoxazolyl; R^2 is selected from the group consisting of hydrogen, straight and branched alkyl with from 1 to 4 carbon atoms, methylthioethyl, carbomethoxy carbomethoxymethyl, phenyl, benzyl, and indolylmethyl; R^3, R^4, and R^5 are each selected from the group consisting of hydrogen, methyl and ethyl, with the proviso that R^4 and R^5 together with the nitrogen and carbon atom between them can form part of a tetrahydropyrrole ring, and pharmaceutically acceptable salts thereof.

3,850,909

AROMATIC SUBSTITUTED AMIDINES

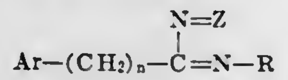
Franklyn W. Gubitz, Nassau, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 796,187, Feb. 3, 1969, now Patent No. 3,697,505. This application Oct. 26, 1971, Ser. No. 192,559

Int. Cl. C07d *41/04, 41/08*

U.S. Cl. 260—239 B **44 Claims**

1. A compound of the formula



$$\mathrm{Ar{-}(CH_2)_n{-}\overset{\substack{N=Z\\|}}{C}{=}N{-}R}$$

wherein Ar is unsubstituted pyridyl or phenyl substituted by from one to three substituents selected from the group consisting of halogen, trifluoromethyl, trifluoromethoxy, nitro, lower-alkoxy, lower-alkylthio, lower-alkylsulfoxy, lower-alkylsulfonyl, amino, lower - akanoylamino, bis (methylsulfonyl)amino, sulfamyl, lower - alkylsulfamyl, and di-lower-alkylsulfamyl; *n* is 0; N=Z is unsubstituted polymethylenimino having from 7 to 9 ring members; and R is lower-alkyl, lower-alkenyl, cycloalkyl of 3–6 ring members, cycloalkyl-lower-alkyl wherein cycloalkyl has 3–6 ring members, phenyl-lower - alkyl, hydroxyl-lower-alkyl, or lower-alkanoyloxy-lower-alkyl.

3,850,910

PROCESS FOR THE RECOVERY OF PURE ϵ-CAPROLACTAM

Reijer Goettsch, Beek, Limburg, and Herman M. A. Vos, Urmond, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed Oct. 30, 1972, Ser. No. 301,726

Claims priority, application Netherlands, Oct. 29, 1971, 7114904; Aug. 25, 1972, 7211586

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 A **6 Claims**

1. In a process for the recovery of pure ϵ-caprolactam containing less than 5 meq. of ionogenic substances per kg. of lactam, obtained by intramolecular conversion of cyclohexanone oxime with the aid of an acid catalyst from the group consisting of sulphuric acid, oleum and sulphur trioxide, and extraction of the reaction mixture after dilution with water and, optionally after partial neutralization of the sulphuric acid, with a water-immiscible organic solvent for the lactam, the improvement comprising neutralizing the resulting solution of lactam in the organic solvent with aqueous ammonia to a pH of at least 4.5 (measured at 20° C.), thereby forming an emulsion of an aqueous 15–40% wt. ammonium sulphate solution emulsified in the organic solvent, washing the emulsion with a counterflow of demineralized water in a weight ratio of 4–20 parts thereby reextracting the lactam from the organic solvent to produce an ϵ-caprolactam solution with less than 5 meq. of ionogenic substances per kg. of lactam, while the resulting aqueous lactam solution is evaporated, optionally after having been freed of organic ionogenic compounds on cation and anion exchangers.

3,850,911

STEROID SYNTHESIS

Gordon Alan Hughes, Conshohocken, Pa., and Herchel Smith, 500 Chestnut Lane, Wayne, Pa. 19087; said Hughes assignor to Herchel Smith

Continuation-in-part of abandoned applications Ser. No. 57,904, Sept. 23, 1960, Ser. No. 91,341, Feb. 24, 1961, Ser. No. 137,535, Sept. 12, 1961, Ser. No. 195,000, May 15, 1962, and Ser. No. 196,557, May 16, 1962, This application Oct. 4, 1962, Ser. No. 228,384

Claims priority application Great Britain, Sept. 22, 1960, 32,670/60, 32,671/60

Int. Cl. C07c *169/08, 169/22, 173/00*

U.S. Cl. 260—239.5 **7 Claims**

1. A chemical compound having a cyclopentanophenanthrene carbon-carbon skeleton containing at least 19 and up to a maximum of 40 carbon atoms and in which at least the B and the C ring are at least partially hydrogenated, including a nucleus selected from the group consisting of saturated and unsaturated gonane and 8-isogonane nuclei having up to a maximum of five (5) double bonds and having as a part thereof in the 13-position a monovalent polycarbon alkyl radical having 2 to about 16 carbon atoms, said rings and the 13 and other positions of the nucleus being identified according to steroid nomenclature.

3,850,912

N¹-(1,2-DIHYDRO-2-OXO-4-PYRIMIDINYL)-SULFANILAMIDES

Hermann Bretschneider, Innsbruck, Hans Fliri, Lochau, and Wilhelm Klotzer, Innsbruck, Austria, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

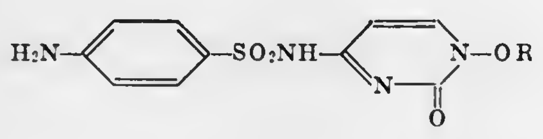
No Drawing. Filed Oct. 10, 1973, Ser. No. 404,956

Claims priority, application Switzerland, Oct. 20, 1972, 15,417/72

Int. Cl. A61k *27/00;* **C07d** *5/34*

U.S. Cl. 260—239.75 **7 Claims**

1. A sulfanilamide of the formula



wherein R is lower alkyl, allyl or lower alkoxy-lower alkyl and pharmaceutically acceptable alkali metal salts and salts with strong organic bases thereof.

3,850,913

NOVEL BASIC INDOLINE DYESTUFFS

Hubertus Psaar, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

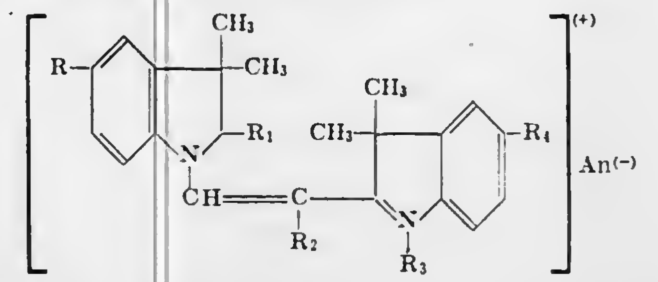
No Drawing. Filed June 22, 1972, Ser. No. 265,319

Claims priority, application Germany, June 22, 1971, P 21 30 790.4

Int. Cl. C09b *23/00*

U.S. Cl. 260—240.8 **12 Claims**

1. Basic dyestuff of the formula



wherein

R and R_4, independently of each other, are hydrogen, alkyl of 1–6 carbon atoms, cyclopentyl, cyclohexyl, phenyl, naphthyl, phenylalkyl of 1–6 carbon atoms in the alkyl portion, alkoxy of 1–6 carbon atoms, naphthyloxy, phenyloxy, benzyloxy, alkylamino of 1–6 carbon atoms, cyclohexylamino, phenylamino, naphthylamino, benzylamino, acetylamino, ethylureido, sulfonamido, alkylsulfonamido of 1–6 carbon atoms, phenylsulfonamido, naphthylsulfonamido, carbomethoxy, carboxamido, halo, cyano, or the aforesaid radicals wherein the alkyl portion or the aromatic ring is further substituted by halo, hydroxy, cyclohexyl, cyclopentyl, alkoxy of 1–6 carbon atoms, benzyloxy, phenyloxy, alkoxycarbonyl of 1–6 carbon atoms in the alkyl portion, cyano, aminocarbonyl, amino, alkylamino of 1–6 carbon atoms, dialkylamino of 1–6 carbon atoms in each alkyl portion, acetylamino, sulfonylamino, mercapto, alkylmercapto of 1–6 carbon atoms, or phenylmercapto; and additionally wherein the aromatic ring is substituted by alkyl of 1–6 carbon atoms;

R_1 is alkyl of 1–6 carbon atoms, phenylalkyl of 1–6 carbon atoms in the alkyl portion, or the aforesaid radicals wherein the alkyl portion or the aromatic ring is further substituted by halo, hydroxy, cyclohexyl, cyclopentyl, alkoxy of 1–6 carbon atoms, benzyloxy, phenyloxy, alkoxycarbonyl of 1–6 carbon atoms in the alkyl portion, cyano, aminocarbonyl, amino, alkylamino of 1–6 carbon atoms, dialkylamino of 1–6 carbon atoms in each alkyl portion, acetylamino, sulfonylamino, mercapto, alkylmercapto of 1–6 carbon atoms, or phenylmercapto; and additionally wherein the aromatic ring is substituted by alkyl of 1–6 carbon atoms;

R_2 is hydrogen, alkyl of 1–6 carbon atoms, cyano, carboxamido, alkylsulfonyl of 1–6 carbon atoms, or said alkyl or alkylsulfonyl wherein the alkyl portion is further substituted by halo, hydroxy, cyclohexyl, cyclopentyl, alkoxy of 1–6 carbon atoms, benzyloxy, phenyloxy, alkoxycarbonyl of 1–6 carbon atoms in the alkyl portion, cyano, aminocarbonyl, amino, alkylamino of 1–6 carbon atoms, dialkylamino of 1–6 carbon atoms, in each alkyl portion, acetylamino, sulfonylamino, mercapto, alkylmercapto of 1–6 carbon atoms, or phenylmercapto;

R_3 is alkyl of 1–6 carbon atoms, phenylalkyl of 1–6 carbon atoms in the alkyl portion, or the aforesaid radicals wherein the alkyl portion or the aromatic ring is further substituted by halo, hydroxy, cyclohexyl, cyclopentyl, alkoxy of 1–6 carbon atoms, benzyloxy, phenyloxy, alkoxycarbonyl of 1–6 carbon atoms in the alkyl portion, cyano, aminocarbonyl, amino, alkylamino of 1–6 carbon atoms, dialkylamino of 1–6 carbon atoms in each alkyl portion, acetylamino, sulfonylamino, mercapto, alkylmercapto of 1–6 carbon atoms, or phenylmercapto; and additionally wherein the aromatic ring is substituted by alkyl of 1–6 carbon atoms; and

$An^{(-)}$ is an anion.

3,850,914

NOVEL ALKYL-BENZOXAZOLYL-p-PHENYL STILBENES

Christian Luthi, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

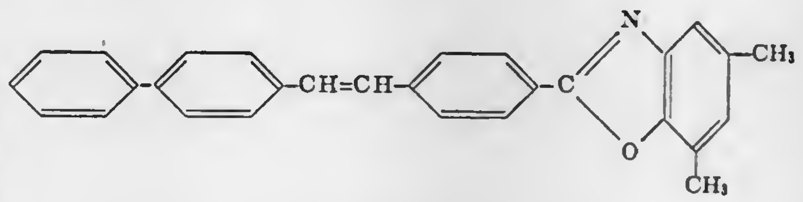
No Drawing. Filed Sept. 28, 1972, Ser. No. 293,283

Claims priority, application Switzerland, Oct. 7, 1971, 14,584/71

Int. Cl. C09b *23/00*

U.S. Cl. 260—240 CA **1 Claim**

1. An alkyl-benzoxazolylstilbene derivative of the formula



3,850,915

2,6-DICHLOROBENZALDEHYDE HYDRAZONES

William F. Bruce, Havertown, Pa., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Original application Sept. 3, 1971, Ser. No. 177,883, now Patent No. 3,775,405, dated Nov. 27, 1973. Divided and this application May 7, 1973, Ser. No. 358,235

Int. Cl. C09b *23/00*

U.S. Cl. 260—240 G **5 Claims**

1. A compound selected from the group consisting of 2,6-dichlorobenzaldehyde [4 - (2,6 - dichlorobenzylideneamino)-5-methyl-4H-1,2,4-triazol-3-yl]hydrazone, 2,6-dichlorobenzaldehyde (4-hydroxy-6-methyl-2-pyrimidinyl)-hydrazone, N-(2,6 - dichlorobenzylideneamino)bicarbamimide, and 4-(2,6-dichlorobenzylideneamino)-3,5-bis-(2,6-dichlorobenzylidenehydrazino)-4H-1,2,4-triazole.

3,850,916

7-AMINO - 3-[S-(1,2,3 - TRIAZOLE - 5-YL)-THIOMETHYL]-3-CEPHEM - 4 - CARBOXYLIC ACID AND SALTS THEREOF

Leonard Bruce Crast, Jr., Clay, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

No Drawing. Application July 29, 1971, Ser. No. 167,534, now Patent No. 3,759,904, dated Sept. 18, 1973, which is a continuation-in-part of abandoned application Ser. No. 107,448, Jan. 18, 1971. Divided and this application Mar. 26, 1973, Ser. No. 345,031

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **2 Claims**

1. 7 - amino - 3 - [S-(1,2,3-triazole-5-yl)-thiomethyl]-3-cephem-4-carboxylic acid.

3,850,917

5,7-DIAMINO-SUBSTITUTED THIAZOLO[5,4-d] PYRIMIDINES AND SALTS THEREOF

Erich Muller, Josef Nickl, Josef Roch, and Berthold Narr, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

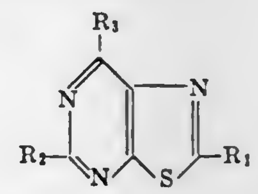
No Drawing. Filed Nov. 9, 1972, Ser. No. 305,128

Claims priority, application Germany, Nov. 11, 1971, P 21 55 963.7; Oct. 5, 1972, P 22 48 792.9

Int. Cl. C07d *99/10*

U.S. Cl. 260—243 B **5 Claims**

1. A compound of the formula



wherein
R_1 is hydrogen, phenyl or methyl,
R_2 is
- (a) heterocyclic amino selected from the group consisting of piperazino, where the 4-position is optionally formyl-, acetyl-, benzoyl-, p-toluenesulfonyl-, carbamoyl-, benzyl-, methyl- or hydroxyethyl-substituted; hexahydro-1, 4-diazepino; hexahydro - 1,4-thiazepino; morpholino; thiomorpholino; 1-oxido-thiomorpholino; or 1,1-dioxido-thiomorpholino; where each of these heterocycles may optionally have from one to two methyl substituents attached to ring carbon atoms; or
- (b) acyclic amino selected from the group consisting of (hydroxy-ethyl)-amino; di-(hydroxy-alkyl of 2 to 6 carbon atoms)-amino; N-methoxy-alkyl of 2 to 3 carbon atoms)-N-(hydroxyethyl)-amino; N-(dihydroxy-propyl)-N-(lower alkyl)-amino; N-(dihydroxy-lower alkyl)-N-(methyl or cyclohexyl)-amino; N-(dihydroxy-propyl)-N-(hydroxy-alkyl of 2 to 6 carbon atoms)-amino; or N-(amino-ethyl) amino; and

R_3 is heterocyclic amino selected from the group consisting of piperazino, where the 4-position is optionally carbethoxy-, carbamoyl-, phenethyl- or hydroxy-lower alkyl-substituted; hexahydro-1, 4-diazepino; morpholino; thiomorpholino; 1 - oxido-thiomorpholino; or 1,1-dioxido-thiomorpholino; where each of these heterocycles may optionally have from one to two methyl substituents attached to ring carbon atoms;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3,850,918

2-AMINO-4,6-DISALICYLOYL-HYDRAZINO-s-TRIAZINES

Helmut Muller, Binningen, Basel-Land, and Siegfried Rosenberger, Riehen, Basel-Stadt, Germany, and Kurt Schwarzenbach, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

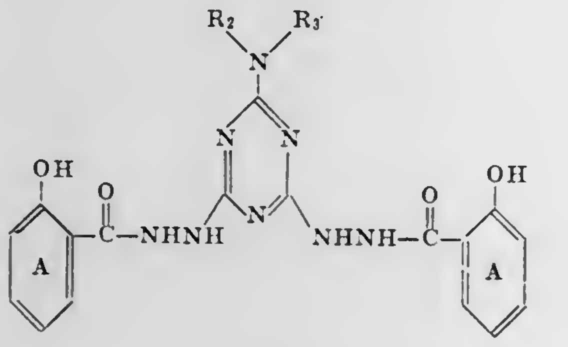
No Drawing. Filed June 7, 1971, Ser. No. 150,757

Claims priority, application Switzerland, June 17, 1970, 9,182/70; Oct. 2, 1970, 14,666/70

Int. Cl. C07d *87/42*

U.S. Cl. 260—247.2 A **6 Claims**

1. A compound of the formula



(1)

wherein R_2 and R_3, independently of one another, is hydrogen, alkyl of 1 to 18 carbon atoms, cyclohexyl, benzyl, unsubstituted phenyl or phenyl substituted by 1 or 2 alkyl groups of 1 to 8 carbon atoms each, or R_2 and R_3 conjointly, with the inclusion of the nitrogen atom, is pyrrolidino, piperidino, morpholino or hexamethyleneimino radicals, and the rings A are unsubstituted or are substituted by 1 or 2 alkyl groups of 1 to 8 carbon atoms each, an alkoxy group of 1 to 18 carbon atoms or 1 to 3 chlorine atoms.

3,850,919

THIENO[3,4-d]PYRIMIDINES

Paul Croisier, Waterloo, Belgium, assignor to UCB, Societe Anonyme, Saint-Gilles-lez-Brussels, Belgium

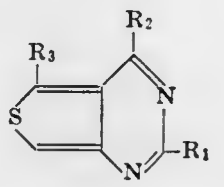
No Drawing. Filed July 13, 1971, Ser. No. 162,255

Claims priority, application Great Britain, July 14, 1970, 34,144/70

Int. Cl. C07d *87/46*

U.S. Cl. 260—247.1 L **6 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein:
- R_1 is a member selected from the group consisting of chloro and propyl,
- R_2 is a member selected from the group consisting of morpholino, 2-methyl-morpholino and 3-methyl-morpholino, and
- R_3 is a member selected from the group consisting of hydrogen and methyl, and

the addition salts thereof with pharmaceutically acceptable acids.

3,850,920

N-HALO-3-MORPHOLINONE

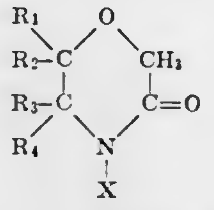
Wilhelm E. Walles, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Oct. 30, 1967, Ser. No. 679,227, now Patent No. 3,591,601, dated July 6, 1971. Divided and this application Jan. 4, 1971, Ser. No. 103,918

Int. Cl. C07d *87/30*

U.S. Cl. 260—247.7 J **2 Claims**

1. A compound of the formula



wherein X is chlorine or bromine, R_1 and R_3 are each hydrogen, a tertiary alkyl of 1–4 carbon atoms, or phenyl, and R_2 and R_4 are each hydrogen or a tertiary alkyl of 1–4 carbon atoms.

3,850,921

DERIVATIVES OF 2,3-NORBORNANEDICARBOXAMIDE

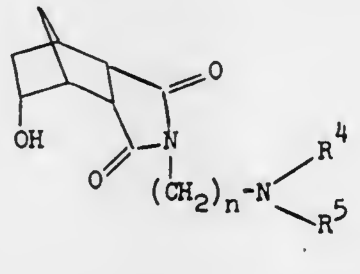
Ichiro Matuo, Tokyo, Japan, and Sadao Ohki, 6–24–705 Sengoku 1-chome, Bunkyo-ku, Tokyo, Japan; said Matuo assignor to said Ohki

No Drawing. Filed Sept. 20, 1972, Ser. No. 290,596

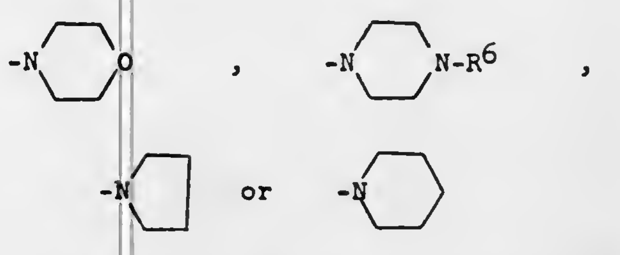
Int. Cl. C07d *27/50*

U.S. Cl. 260—247.2 A **12 Claims**

1. A compound having the formula



in which *n* is an integer of 2 to 4 inclusive and each of R^4 and R^5 are H or (lower)alkyl or when taken together with the nitrogen a radical of the formula



in which R^8 is (lower)alkyl; or an acid addition salt thereof.

3,850,922

5 - ENDO-BENZOYLOXY - N - [AMINO(LOWER) ALKYL]BICYCLO[2.2.1]HEPTANE - 2,3 - DI-ENDO-CARBOXYLIC ACID IMIDES

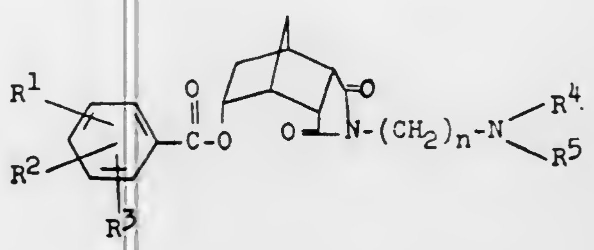
Ichiro Matuo, Tokyo, Japan, and Sadao Ohki, 6–24–705 Sengoku 1-chome, Bunkyo-ku, Tokyo, Japan; said Matuo assignor to said Ohki

No Drawing. Continuation-in-part of application Ser. No. 290,596, Sept. 20, 1972. This application Sept. 13, 1973, Ser. No. 396,909

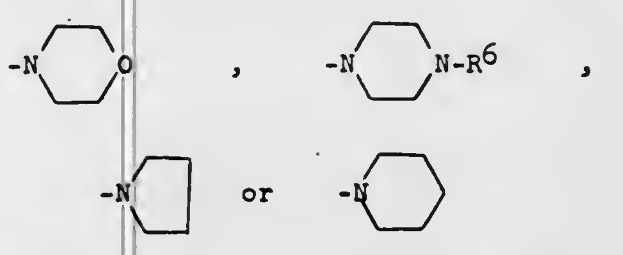
Int. Cl. C07d *87/42*

U.S. Cl. 260—247.2 A **32 Claims**

1. A compound having the formula



wherein R^1, R^2 or R^3 is H, Cl, Br, F, (lower)alkyl nitro, OH or (lower)alkoxy, *n* is an integer of 2 to 4 inclusive and R^4 and R^5 are H, (lower)alkyl or when taken together with the nitrogen a radical of the formula



in which R^6 is (lower)alkyl; or a pharmaceutically acceptable acid addition salt thereof.

3,850,923

PROCESS FOR PREPARING 1,5-DIACYL-3,7-ENDO-METHYLENE-1,3,5,7-TETRAAZACYCLOOCTANES

Victor I. Siele, Succasunna, N.J., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Sept. 4, 1973, Ser. No. 394,238

Int. Cl. C07d *55/14*

U.S. Cl. 260—248 NS **12 Claims**

1. A process for the preparation of a 1,5-diacyl-3,7-endomethylene-1,3,5,7-tetraazacyclooctane, which comprises reacting hexamethylenetetramine and a monocarboxylic acid anhydride of the general formula $(RCO)_2O$, wherein R is hydrogen, phenyl or an alkyl radical containing 1 to 6 carbon atoms, in the presence of water.

3,850,924

PROCESS FOR PREPARING HERBICIDAL TRIAZINES

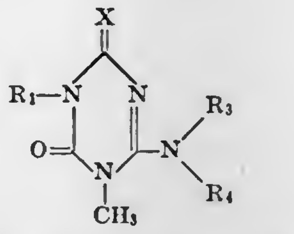
Julius Jakob Fuchs and Joel Benjamin Wommack, Jr., Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 5, 1973, Ser. No. 348,324

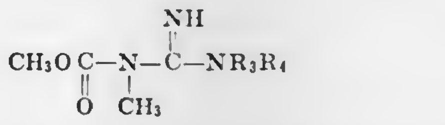
Int. Cl. C07d *55/18*

U.S. Cl. 260—249.5 **5 Claims**

1. A process for preparation of compounds of the formula:



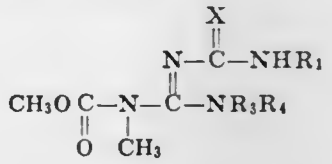
which comprises the following steps in sequence:
- A: reacting a methylating agent of the formula CH_3Z with methoxycarbonylcyanamide to form N-methoxycarbonyl-N-methylcyanamide;
- B: reacting the product of step A with an amine of the formula R_3R_4NH to form a compound of the formula:



$$\underset{\underset{O}{\|}}{CH_3OC}-\underset{\underset{CH_3}{|}}{N}-\overset{\overset{NH}{\|}}{C}-NR_3R_4$$

(7);

- C: reacting the product of step B with an isocyanate or isothiocyanate of the formula R_1NCX to form a compound of the formula:



$$\underset{\underset{O}{\|}}{CH_3OC}-\underset{\underset{CH_3}{|}}{N}-\overset{\overset{\overset{X}{\|}}{N-C-NHR_1}}{\overset{\|}{C}}-NR_3R_4 \ ;$$

- D: treating the product of step C with a base M′OR to cyclize and form the desired product;

wherein, in the above formulae:
- R_1 is C_2–C_8 alkyl, C_5–C_8 cycloalkyl, norbornyl, methylcyclohexyl, methylcyclopentyl, phenyl, or chlorophenyl;
- R_3 is hydrogen or methyl;
- R_4 is C_1–C_4 alkyl;
- X is oxygen or sulfur; provided that when X is sulfur, R_3 is methyl;
- Z is iodide or $—O—SO_2—OCH_3$;
- M′ is alkali metal; and
- R is hydrogen or C_1–C_4 alkyl.

3,850,925

2-MONO- AND 2-DIALKYLAMINOQUINOXALINES

Klaus Sasse, Schildgen, Ingeborg Hammann, Cologne, Günter Unterstenhöfer, Opladen, and Paul-Ernst Frohberger, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

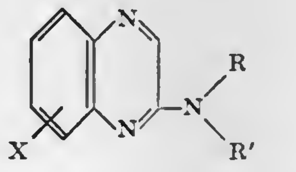
No Drawing. Filed Aug. 28, 1972, Ser. No. 284,378

Claims priority, application Germany, Sept. 8, 1971, P 21 44 879.3

Int. Cl. C07d *51/78*

U.S. Cl. 260—250 Q **9 Claims**

1. A 2-aminoquinoxaline or a salt of a 2-aminoquinoxaline of the formula



in which
- R is alkyl or alkenyl each of 3 or 4 carbon atoms,
- R′ is hydrogen or R, and
- X is chloro, dichloro or trifluoromethyl.

3,850,926
2-(N-SUBSTITUTED-PHENYLAMINO)-IMIDAZOLINES-(2)

Helmut Stähle, Herbert Köppe, Werner Kummer, and Helmut Wick, Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 219,535, Jan. 20, 1972. This application Aug. 21, 1972, Ser. No. 282,357

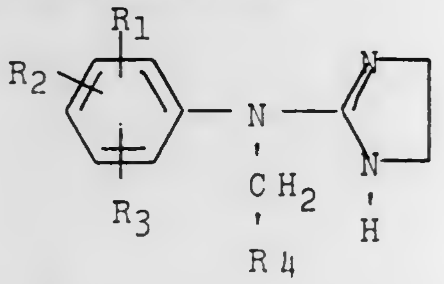
Claims priority, application Germany, Jan. 21, 1971, P 21 02 733.8; Feb. 23, 1972, P 22 08 434.0

The term of this patent subsequent to Jan. 2, 1990, has been disclaimed

Int. Cl. C07d *49/34*

U.S. Cl. 260—253 **7 Claims**

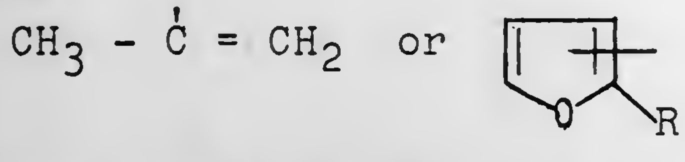
1. A compound of the formula



wherein

R_1, R_2 and R_3 are each hydrogen, fluorine, chlorine, bromine, methyl, ethyl or methoxy, or one of them is trifluoromethyl or cyano while the others are hydrogen, and

R_4 is



$CH_3-\overset{|}{C}=CH_2$ or

where R_5 is hydrogen, methyl or ethyl, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3,850,927
5-BENZYL PYRIMIDINES INTERMEDIATES THEREFORE, AND METHOD

Ronald M. Cresswell, Scarsdale, John W. Mentha, Hartsdale, and Russell L. Seaman, Chappaqua, N.Y., assignors to Burroughs Wellcome Co.

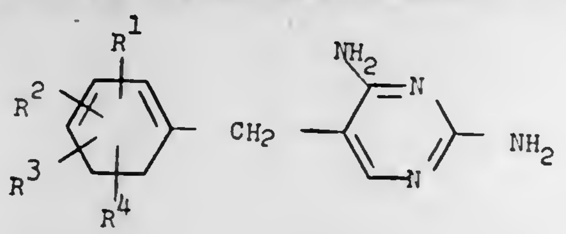
No Drawing. Original application Mar. 4, 1970, Ser. No. 16,606 now U.S. Pat. No. 3,697,512. Divided and this application June 15, 1972, Ser. No. 263,112

Claims priority, application Great Britain, Mar. 6, 1969, 11,908; Mar. 6, 1969, 11,909; May 16, 1969, 25,171; June 13, 1969, 30,247

Int. Cl. C07d *51/42*

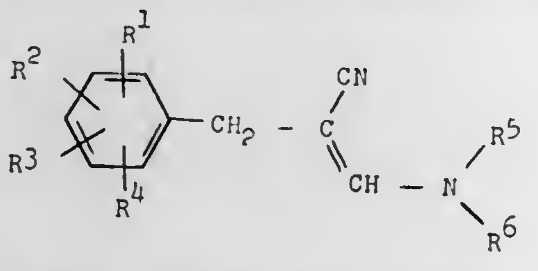
U.S. Cl. 260—256.4 N **8 Claims**

1. The method of preparing a compound of formula I



(I)

comprising the step of reacting a compound of formula II



(II)

with guanidine carbonate in a polar aprotic solvent at an elevated temperature above room temperature to about 160° C. wherein R^1–R^4 are the same or different, and each is hydrogen, halogen, lower alkyl, lower alkoxy or benzyloxy, or R^3 and R^4 taken together may be methylenedioxy when both R^1 and R^2 are hydrogen, and wherein NR^5R^6 is primary amino or secondary amino of not less than one or more than twelve carbon atoms selected from the group consisting of monoalkylamino, dialkylamino, anilino or naphthylamino wherein the phenyl or naphthyl thereof may be substituted with one or more positions with lower alkyl, lower alkoxy and halogen, N-ethylanilino, pyrrolidino, piperidino N-methylanilino, piperazino, benzylamino and morpholino, and wherein the lower alkyl and lower alkoxy are each of 1 to 4 carbon atoms.

3,850,928
SUBSTITUTED 6-ALKYLAMINO-2-PHENYL-5-PYRIMIDINE CARBOXYLIC ACIDS

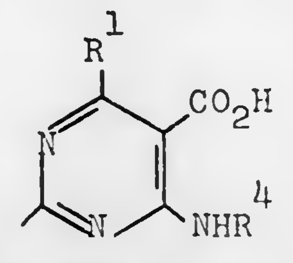
Dong H. Kim, Wayne, and Arthur A. Santilli, Havertown, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 142,015, May 10, 1971, now Patent No. 3,775,412, which is a continuation-in-part of application Ser. No. 874,049, Nov. 4, 1969, now Patent No. 3,631,044, dated Dec. 28, 1971. This application Sept. 4, 1973, Ser. No. 394,963

Int. Cl. C07d *51/42*

U.S. Cl. 260—256.4 C **2 Claims**

1. A compound selected from those having the structure:



R^1 is hydrogen or methoxy;
R^2 is phenyl, halophenyl, lower alkylphenyl or lower alkoxyphenyl; and
R^4 is lower alkyl.

3,850,929
(1,2,5)THIADIAZOLO[3,4-b]PYRAZINES

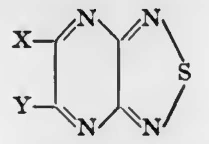
Yulan C. Tong, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 19, 1973, Ser. No. 342,517

Int. Cl. C07d *51/76*

U.S. Cl. 260—250 BC **9 Claims**

1. A compound represented by the formula



wherein X and Y independently represent chloro. bromo, lower alkoxy, mono- or di-lower alkylamino, lower alkylthio, NC— or H; wherein when X or Y is lower alkylthio, NC— or H, the other Y or X is the same; and wherein when X or Y is lower alkoxy, the other Y or X is not mono- di-lower alkylamino.

3,850,930
METHOD OF OBTAINING URIC ACID FROM NATURAL PRODUCTS

John D. Douros, Jr., Littleton, and Ira T. Warder, Jr., Lakewood, Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Oct. 7, 1970, Ser. No. 80,517

Int. Cl. C07d *57/60*

U.S. Cl. 260—255 **31 Claims**

1. The method of obtaining uric acid from a waste material containing uric acid comprising the steps of:

collecting suitable uric acid bearing waste material promptly after it has been produced;

drying said promptly collected waste material within a period of eight days after it has been produced at a temperature of from between 140° F. to 390° F. for a period of time until the moisture content is reduced to no more than 15% weight of water;

milling and collecting a fraction of at least −80 mesh of the milled and dried waste material;

extracting said fraction material a first time with an alkaline-brine solution having a pH of greater than 9;

acidifying the mother liquor of said first extracted material with an acid in a solution having a pH of from 1 to 5.5;

extracting the precipitated material from the acidified solution a second time by dissolving said precipitate in an alkaline-brine solution having a pH of greater than 9; and

acidifying said second extracted material to a pH of from 1 to 5.5 thereby precipitating the pure uric acid so produced from the supernatant liquid.

3,850,931
4-(SUBSTITUTED ANILINO)-2-PHENYL-5-PYRIMIDINECARBOXYLIC ACID ESTERS

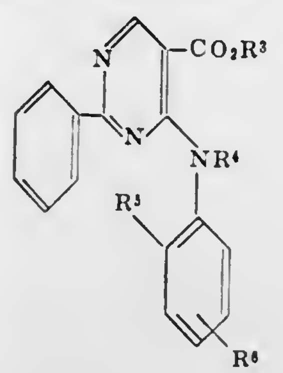
Dong H. Kim, Wayne, and Arthur A. Santilli, Havertown, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Original application June 25, 1971, Ser. No. 156,941, now Patent No. 3,759,922. Divided and this application May 25, 1973, Ser. No. 364,191

Int. Cl. C07d *51/42*

U.S. Cl. 260—256.4 N **8 Claims**

1. A compound having the formula



(II)

where

R^3 is hydrogen or lower alkyl;
R^4 is hydrogen or lower alkyl;
R^5 is hydroxy, lower alkoxy, or lower alkanoyl; and
R^6 is hydrogen, halogen, or nitro.

3,850,932
5-[2-CARBOXY AND 2-CARBOALKOXY-PHENYLAMINO]-1,2,4-TRIAZOLO-QUINAZOLINES

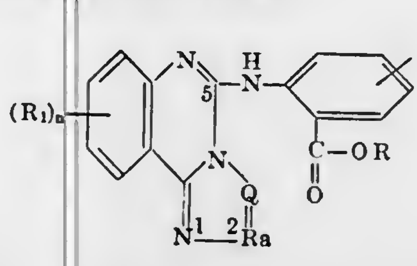
Faizulla G. Kathawala, West Orange, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed June 28, 1973, Ser. No. 374,464

Int. Cl. C07d *5/42*

U.S. Cl. 260—256.4 F **15 Claims**

1. A compound of the formula:



wherein

Q and R_a are different and either a nitrogen atom or a =CR′— function;
R is hydrogen, alkyl of 1 to 4 carbon atoms or a pharmaceutically acceptable cation;
R^0 is hydrogen, alkyl of 1 to 4 carbon atoms, halo of atomic weight of from 18 to 36, alkoxy of 1 to 4 carbon atoms or trifluoromethyl;
R′ represents hydrogen or alkyl of 1 to 4 carbon atoms;
R_1 represents halo of atomic weight of from 18 to 80, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, trifluoromethyl or, when *n* is 2, the two R_1 together form methylenedioxy; and
n is 0, 1 or 2, and when 2, then R_1 may be the same or different; provided that *n* is 1 when R_1 is trifluoromethyl.

3,850,933
2,3,6,7-TETRAHYDRO - 2,2 - DIMETHYL-5,7-DIOXO-8 - HYDRONITROGENO - 5H - THIAZOLO[3,2-c] PYRIMIDINE - 3 - CARBOXYLIC ACIDS, ESTERS AND ALKALI METAL SALTS AND THE PREPARATION THEREOF

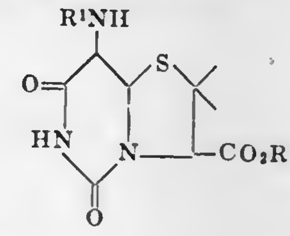
Abraham Nudelman, Bala Cynwyd, and Ronald J. McCaully, Malvern, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Mar. 28, 1973, Ser. No. 345,803

Int. Cl. C07d *99/10*

U.S. Cl. 260—256.5 R **14 Claims**

1. A compound of the formula:



in which

R^1 is a member selected from the group consisting of —H, alkanoyl of 1 to 6 carbon atoms, phenylacetyl, phenoxyacetyl, 4-phenoxybutanoyl and benzoyl; and
R^2 is a member selected from the group consisting of —H, *p*-nitrobenzyl and *p*-methylbenzyl.

3,850,934
6,7,8,9-TETRAHYDRO-7a,11a-ETHANOOXYINDOLO [1,2-h][1,7]NAPHTHYRIDIN-10(11H)-ONES

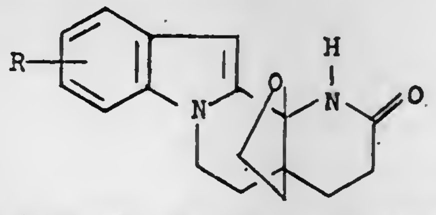
David Llewellyn Coffen, Glen Ridge, and David Allen Katonak, Clifton, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed June 8, 1973, Ser. No. 368,430

Int. Cl. C07d *39/10*

U.S. Cl. 260—293.53 **7 Claims**

1. A compound of the formula



wherein R is hydrogen, amino, nitro, halogen, hydroxy, lower alkyl or lower alkoxy.

3,850,935
PROCESS FOR PRODUCING PIPERIDINE DERIVATIVES BY DEGRADING QUATERNARY PIPERIDINIUM SALTS

Masaru Nakao and Kikuo Sasajima, Toyonaka, Isamu Maruyama and Masaharu Takayama, Minoo, Shigenari Katayama, Takarazuka, Keiichi Ono and Izumi Yanagihara, Osaka, Yoshihiro Tanaka, Takarazuka, Junki Katsube, Toyonaka, Shigeho Inaba, Takarazuka, and Hisao Yamamoto, Nishinomiya, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

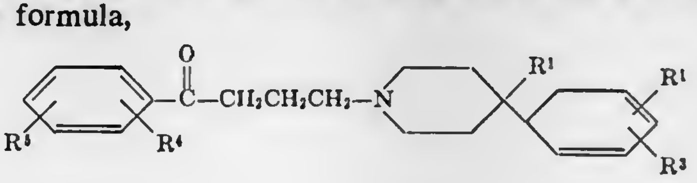
No Drawing. Filed Oct. 3, 1972, Ser. No. 294,512

Claims priority, application Japan, Oct. 16, 1971, 46/81,797, 46/81,798

Int. Cl. C07d *29/06*

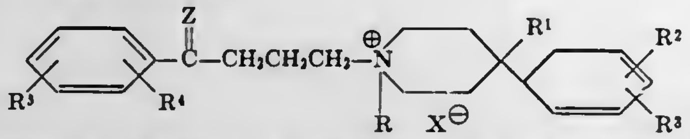
U.S. Cl. 260—293.52 **5 Claims**

1. A process for producing a piperidine compound of the formula,



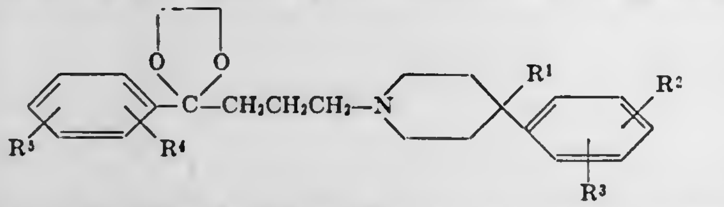
(I)

wherein R^1 is hydroxy, alkyl having up to 4 carbon atoms, alkoxy having up to 4 carbon atoms, alkanoyl having up to 5 carbon atoms, alkanoyloxy having up to 5 carbon atoms, carboxy, alkoxycarbonyl having up to 5 carbon atoms, carbamoyl, N-(C_1–C_3 alkyl)carbamoyl, N-di (C_1–C_3 alkyl)carbamoyl, N-(C_1–C_4 alkanoyl)aminomethyl or N-(C_1–C_4 alkoxycarbonyl)aminomethyl; R^2 and R^3 are respectively hydrogen, hydroxy, alkyl having up to 4 carbon atoms, alkoxy having up to 4 carbon atoms, halogen or trifluoromethyl; R^4 is hydrogen, halogen, nitro or (C_1–C_4)alkanoylamino and R^5 is halogen, which comprises degrading a quaternary piperidinium salt of the formula,



(II)

wherein R is benzyl or 2-phenethyl; X is halogen; Z is oxygen or ethylenedioxy; and R^1, R^2, R^3, R^4 and R^5 are as defined above, and in case where Z is ethylenedioxy, hydrolyzing the resulting ketal compound of the formula,



wherein R^1, R^2, R^3, R^4 and R^5 are as defined above, to regenerate the carbonyl function.

3,850,936
INDOLE FUSED HETEROCYCLIC ANALGESIC COMPOUNDS

David R. Herbst, Wayne, and Herchel Smith, Bryn Mawr, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Application May 19, 1970, Ser. No. 38,913, which is a continuation-in-part of abandoned application Ser. No. 889,867, Dec. 22, 1969, which is a continuation-in-part of abandoned application Ser. No. 839,629, July 7, 1969, which is a continuation-in-part of abandoned application Ser. No. 632,105, Apr. 19, 1967, which is a continuation-in-part of abandoned application Ser. No. 536,076, Feb. 21, 1966, which in turn is a continuation-in-part of abandoned application Ser. No. 428,842, Jan. 28, 1965. Divided and this application Aug. 10, 1972, Ser. No. 279,413

Int. Cl. C07d *39/12*

U.S. Cl. 260—293.53 **13 Claims**

1. 2,3,5,6,11,11b-hexahydro - 11,11b - dimethyl-1H-indolizino[8,7-*b*]indole and the pharmaceutically acceptable non-toxic acid addition salts thereof.

3,850,937
DERIVATIVES OF 6-(γ-DIALKYLAMINO) ALKOXY 4,7-DIMETHOXY BENZOFURAN

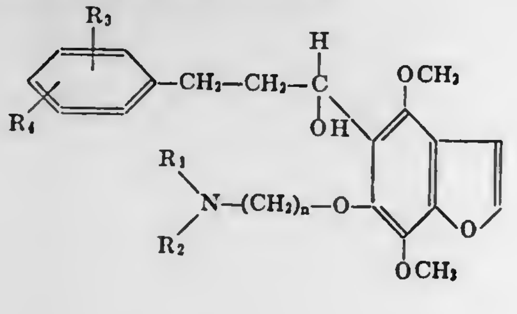
Claude P. Fauran, Paris, Jeannine A. Eberle, Chatou (Yvelines), Guy M. Raynaud, Paris, Bernard M. Pourrias, Meudon-la-Foret, and Guy B. Bourgery, Colombes, France, assignors to Delalande S.A., Courbevoie, Hauts-de-Seine, France

No Drawing. Filed July 25, 1972, Ser. No. 274,997
Claims priority, application France, July 26, 1971, 7127284; July 3, 1972, 7224020

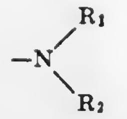
Int. Cl. C07d *87/32*

U.S. Cl. 260—293.58 **7 Claims**

1. A compound of the formula



wherein



$$-N\genfrac{}{}{0pt}{}{R_1}{R_2}$$

is pyrrolidino, piperidino, morpholino or perhydroazepino;

R_3 and R_4 each is H, halogen, OH or alkoxy having 1 to 4 carbon atoms, R_3 and R_4 being the same or different, or R_3 together with R_4 being methylenedioxy; and

n is 2 or 3

and the pharmaceutically acceptable acid addition salts thereof.

3,850,938
ω-[4′-(3″-INDOLYL)-PIPERIDINO]-ALKYL-ARYLKETONES

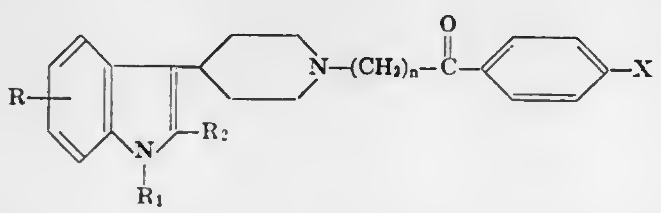
Pierre Henri Derible, Le-Perreux, and Jean-Paul Lavaux, Paris, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Filed July 18, 1973, Ser. No. 380,407
Claims priority, application France, July 28, 1972, 7227263

Int. Cl. C07d *29/28*

U.S. Cl. 260—293.61 **11 Claims**

1. A compound selected from the group consisting of a compound of the formula



wherein R is selected from the group consisting of hydrogen and alkoxy of 1 to 5 carbon atoms, R_1 and R_2 are individually selected from the group consisting of hydrogen and alkyl of 1 to 5 carbon atoms, *n* is 2 or 3 and X is selected from the group consisting of hydrogen, fluorine, chlorine and bromine and their non-toxic, pharmaceutically acceptable acid addition salts.

3,850,939
5-NITRO-2-THIAZOLYLTHIOPYRIDINE, 1-OXIDES

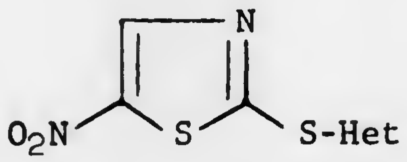
Edward F. Elslager and Donald F. Worth, Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

No Drawing. Filed Feb. 20, 1973, Ser. No. 333,667

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 D **8 Claims**

1. 5 - nitro - 2 - thiazolylthio-substituted heterocyclic compounds that are represented by the formula



where Het represents a member of the class consisting of 2-pyridyl, 1-oxide; 4-methyl-2-pyridyl, 1-oxide; 6-methyl-2-pyridyl, 1-oxide; 3-chloro-2-pyridyl, 1-oxide; 5-chloro-2-pyridyl, 1-oxide; 5-bromo-2-pyridyl, 1-oxide and 3,5-dichloro-2-pyridyl, 1-oxide.

3,850,940
INTERMEDIATE PYRAZOLOPYRIDINE CARBONITRILES

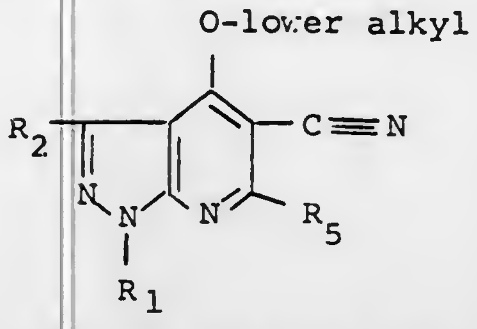
Theodor Denzel, Nurnberg, and Hans Hoehn, Tegernheim, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Application Nov. 24, 1972, Ser. No. 309,291, which is a continuation-in-part of abandoned application Ser. No. 211,675, Dec. 23, 1971. Divided and this application Sept. 24, 1973, Ser. No. 400,277

Int. Cl. C07d *31/46*

U.S. Cl. 260—294.9 **5 Claims**

1. A compound of the formula



wherein R_1 is hydrogen, lower alkyl, phenyl or phenyl-lower alkylene, and R_2 and R_5 each is hydrogen, methyl or ethyl.

3,850,941
2-ALKYL-3-ACYLPYRAZOLO[1,5-a]PYRIDINES

Tsutomu Irikura, Tokyo, Masayuki Hayashi, Ageo, Kikuo Koshirae and Yoshitaka Kudo, Urawa, Junji Hatayama, Kitamoto, and Etsuko Hetsugi, Urawa, Japan, assignors to Kyorin Seiyaku Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Mar. 20, 1973, Ser. No. 343,002
Claims priority, application Japan, Mar. 30, 1972, 47/32,033

Int. Cl. C07d *31/36*

U.S. Cl. 260—295 F **13 Claims**

1. 2-Isopropyl-3-isobutyryl-pyrazolo[1,5-a]pyridine.

3,850,942
3-PYRIDYL-9H-DIBENZO[c,f]-s-TRIAZOLO [4.3-a]AZEPINE

Jackson B. Hester, Jr., Galesburg, and Jacob Szmuszkovicz, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 227,916, Feb. 22, 1972. This application Dec. 8, 1972, Ser. No. 313,208

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 P **3 Claims**

1. 3 - (2 - pyridyl)-9H-dibenzo[c,f]-s-triazolo[4,3-a] azepine.

3,850,943
CERTAIN TETRAHALO-4-PYRIDINOLS AND DERIVATIVES

Roy Dennis Bowden, Runcorn, John Walter Slater, Bracknell, and Brian Graham White, Crowthorne, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Aug. 14, 1972, Ser. No. 280,198
Claims priority, application Great Britain, Aug. 25, 1971, 39,836/71; Mar. 15, 1972, 12,081/72

Int. Cl. C07d *31/30*

U.S. Cl. 260—297 R **3 Claims**

1. A selective herbicidal pyridine compound selected from the group consisting of 2-fluoro-3,5,6-tribromo-4-hydroxy-pyridine, 2,5,6-trifluoro - 3 - bromo-4-hydroxy-pyridine, 2,6 - difluoro - 3 - bromo-4-chloro-4-hydroxy-pyridine, 2 - fluoro - 3,5 - dibromo-6-chloro-4-hydroxy-pyridine and 2,6-difluoro-3,5-diodo-4-hydroxy-pyridine, and the alkyl ethers of 1 to 4 carbon atoms in the alkyl radical of the said substituted 4-hydroxypyridines.

3,850,944
5-(3′-PYRIDYL)-2-MERCAPTOIMIDAZOLE AND DERIVATIVES THEREOF

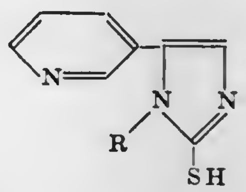
Michio Tanaka, Omiya, Katsuyuki Ohtsuka, Kitakatsushika, Masayoshi Obata, Omiya, Koji Amemiya, Tokyo, Katsumasa Saga, Funabashi, and Sadaaki Kano and Teru Kumada, Tokyo, Japan, assignors to Kaken Chemical Co., Ltd., Tokyo, Japan

No Drawing. Filed July 27, 1973, Ser. No. 383,120
Claims priority, application Japan, July 29, 1972, 47/75,522

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 G **2 Claims**

1. 5 - (3′ - Pyridyl) - 2 - mercaptoimidazole and derivatives thereof having the formula



wherein R represents hydrogen, lower alkyl, allyl, phenyl, a lower alkyl substituted phenyl group, lower alkoxy or a halogen atom.

3,850,945
3-THIAZOL-2′-OXY-AMINOPROPANOL CARDIOVASCULAR AGENTS

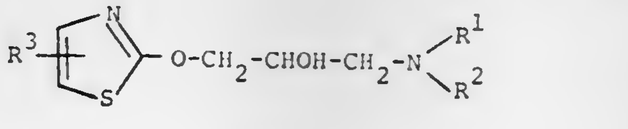
John A. Edwards, Los Altos, Calif., assignor to Syntex (U.S.A.) Inc.

No Drawing. Continuation-in-part of abandoned application Ser. No. 193,172, Oct. 27, 1971. This application Sept. 15, 1972, Ser. No. 289,730

Int. Cl. C07d *91/30*

U.S. Cl. 260—302 R **40 Claims**

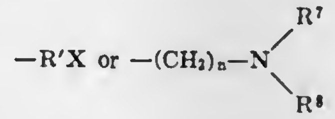
1. A compound selected from the group having the formula:



(I)

wherein

R^1 and R^2 are independently selected from the group of hydrogen, lower alkyl, cycloalkyl having from 3 through 7 ring atoms, lower alkenyl, phenyl, phenylalkyl having up to 12 carbon atoms and alkylphenyl having up to 10 carbon atoms, hydroxy lower alkyl, (lower alkoxy) lower alkyl, and the groups having the formulas

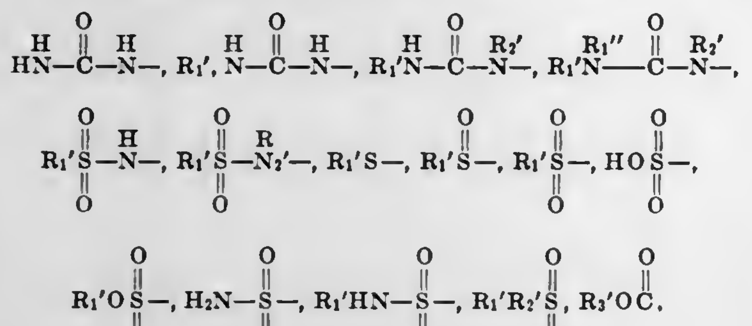


$$-R'X \text{ or } -(CH_2)_n-N\genfrac{}{}{0pt}{}{R^7}{R^8}$$

wherein R′ is lower alkyl, X is morpholine, piperidine or pyrrolidine; R^7 and R^8 are independently hydrogen or lower alkyl and *n* is a whole integer of from 1 through 4; or

R^1 and R^2 together with the nitrogen atom to which they are joined form a nitrogen heterocycle selected from the group morpholine, piperidine, or pyrrolidine;

R^3 is a substituent on the thiazole ring at either the 4- or 5-position selected from the group of hydrogen, lower alkyl, lower cycloalkyl, lower alkoxy, hydroxy (lower alkyl), acyloxy (lower alkyl) wherein said acyloxy is free of aliphatic unsaturation and has from one through 12 carbon atoms, halo, trifluoromethyl, acyl having from one through 12 carbon atoms and free of aliphatic unsaturation, carboxy, cyano, amine, lower alkylamino, lower dialkyl amino, and groups having the formulas:

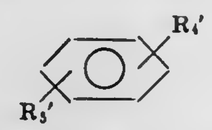


$$\overset{H}{HN}-\overset{\overset{O}{\|}}{C}-\overset{H}{N}-,\ R_1',\ \overset{H}{N}-\overset{\overset{O}{\|}}{C}-\overset{H}{N}-,\ R_1'\overset{H}{N}-\overset{\overset{O}{\|}}{C}-\overset{R_2'}{N}-,\ R_1'\overset{R_1''}{N}-\overset{\overset{O}{\|}}{C}-\overset{R_2'}{N}-,$$

$$R_1'\underset{\underset{O}{\|}}{\overset{\overset{O}{\|}}{S}}-\overset{H}{N}-,\ R_1'\underset{\underset{O}{\|}}{\overset{\overset{O}{\|}}{S}}-\overset{R}{N_2'}-,\ R_1'S-,\ R_1'\overset{\overset{O}{\|}}{S}-,\ R_1'\underset{\underset{O}{\|}}{\overset{\overset{O}{\|}}{S}}-,\ HO\underset{\underset{O}{\|}}{\overset{\overset{O}{\|}}{S}}-,$$

$$R_1'O\underset{\underset{O}{\|}}{\overset{\overset{O}{\|}}{S}}-,\ H_2N-\underset{\underset{O}{\|}}{\overset{\overset{O}{\|}}{S}}-,\ R_1'HN-\underset{\underset{O}{\|}}{\overset{\overset{O}{\|}}{S}}-,\ R_1'R_2'\underset{\underset{O}{\|}}{\overset{\overset{O}{\|}}{S}},\ R_3'O\overset{\overset{O}{\|}}{C}.$$

and



wherein R_1', R_1'' and R_2' are independently selected from the group of lower alkyl, phenyl and phenylalkyl having up to 12 carbon atoms; R_3' is alkyl having from 1 through 11 carbon atoms, cycloalkyl having from 5 through 7 carbon atoms, phenyl or phenylalkyl having up to 12 carbon atoms; R_4' and R_5' are independently selected from the group of hydrogen, lower alkyl, hydroxy (lower alkyl) and halo; and pharmaceutically acceptable salts thereof.

3,850,946

3-THIAZOL-5′-OXY-AMINOPROPANOL CARDIOVASCULAR AGENTS

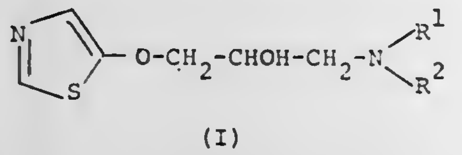
John A. Edwards, Los Altos, Calif., assignor to Syntex (U.S.A.) Inc.

No Drawing. Filed July 10, 1972, Ser. No. 269,974

Int. Cl. C07d *91/30*

U.S. Cl. 260—302 R **12 Claims**

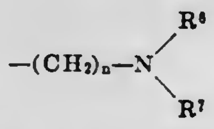
1. A compound selected from the group having the formula:



(I)

wherein

R^1 and R^2 are independently selected from the group of hydrogen, lower alkyl, cycloalkyl having from 3 through 7 ring atoms, phenyl, phenylalkyl having up to 10 carbon atoms, alkylphenyl having up to 10 carbon atoms, hydroxy lower alkyl, (lower alkoxy) lower alkyl, adamantyl, and the group having the formulas —R′X or



$$-(CH_2)_n-N{<}^{R^6}_{R^7}$$

wherein R′ is lower alkyl, X is morpholino, pyrrolidino, or piperidino, R^6 and R^7 are independently hydrogen or lower alkyl, and n is a whole integer of from 2 to 6; or

R^1 and R^2 together with the nitrogen atom to which they are joined form a nitrogen heterocycle selected from the group of morpholine, pyrrolidine, and piperidine;

and pharmaceutically acceptable salts thereof.

3,850,947

3-THIAZOL-4′-OXY-AMINOPROPANOL CARDIOVASCULAR AGENTS

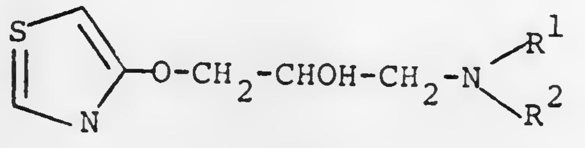
John A. Edwards, Los Altos, Calif., assignor to Syntex (U.S.A.) Inc.

No Drawing. Filed July 10, 1972, Ser. No. 269,971

Int. Cl. C07d *91/30*

U.S. Cl. 260—302 R **12 Claims**

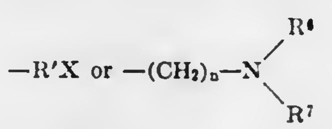
1. A compound selected from the group having the formula:



(I)

wherein

R^1 and R^2 are independently selected from the group of hydrogen, lower alkyl, cycloalkyl having from 3 through 7 ring atoms, phenyl, phenylalkyl having up to 10 carbon atoms, alkylphenyl having up to 10 carbon atoms, hydroxy lower alkyl, (lower alkoxy) lower alkyl, adamantyl, and the group having the formulas



$$-R'X \text{ or } -(CH_2)_n-N{<}^{R^6}_{R^7}$$

wherein R′ is lower alkyl, X is morpholino, pyrrolidino, or piperidino, R^6 and R^7 are independently hydrogen or lower alkyl, and *n* is a whole integer of from 2 to 6; or

R^1 and R^2 together with the nitrogen atom to which they are joined form a nitrogen heterocycle selected from the group of morpholine, pyrrolidine, and piperidine;

and pharmaceutically acceptable salts thereof.

3,850,948

CERTAIN 3a,4 - DIHYDRO-8-CHLORO-6-PHENYL-THIAZOLO[3,2-H] - 1,4 - BENZODIAZEPIN - 1 (2H)-ONES

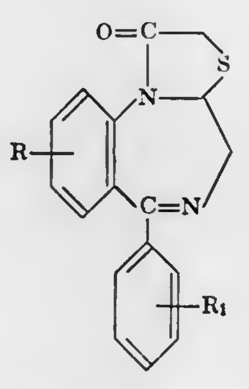
David Llewellyn Coffen, Glenridge, and Rodney I. Fryer, North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed July 27, 1973, Ser. No. 383,362

Int. Cl. C07d *99/10*

U.S. Cl. 260—306.7 R **2 Claims**

1. A compound of the formula



wherein R is selected from the group consisting of hydrogen, halogen, lower alkyl, trifluoromethyl, nitro, cyano, lower alkoxy and lower alkylthio; R_1 signifies hydrogen or halogen

and the pharmaceutically acceptable acid addition salts thereof.

3,850,949

PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY INCLUDING INDOLINE DERIVATIVES

Hisatake Ono, Syu Watarai, and Harumi Katsuyama, Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

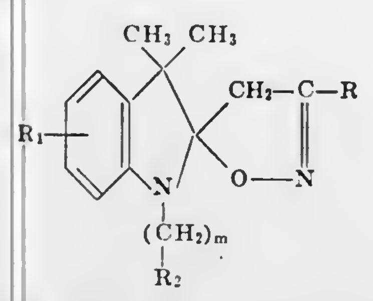
No Drawing. Filed Oct. 6, 1971, Ser. No. 187,190

Claims priority, application Japan, Oct. 6, 1970, 45/87,788

Int. Cl. C07d *85/16*

U.S. Cl. 260—307 F **4 Claims**

1. A compound of the formula



wherein R_1 is hydrogen atom, halogen atom, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, alkoxycarbonyl having alkyl having 1 to 4 carbon atoms, nitro, R_2 is hydrogen atom, hydroxyl, alkoxycarbonyl having alkyl having 1 to 4 carbon atoms, cyan or phenyl, R is substituted phenyl (where the substituent is hydrogen atom, halogen atom, alkyl having 1 to 4 carbon atoms, or alkoxy having 1 to 4 carbon atoms), *m* is an integer from 1 to 4.

3,850,950

BENZENESULFONYL UREAS AND PROCESS FOR THEIR MANUFACTURE

Walter Aumuller, Kelkheim, Taunus, Rudi Weyer, Frankfurt am Main, Volker Hitzel, Lorsbach, Taunus, and Manfred Hubner, Ludwigshafen (Rhine), Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

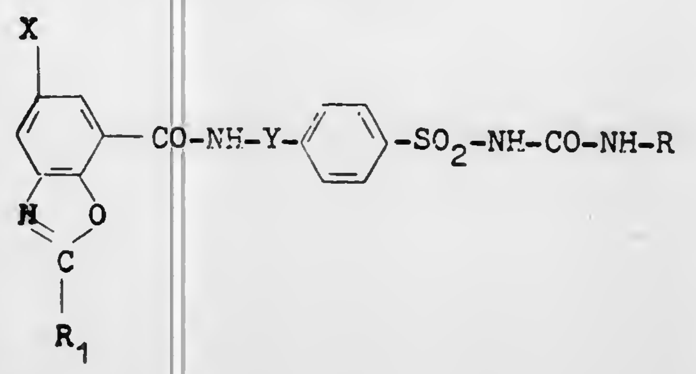
No Drawing. Filed May 24, 1973, Ser. No. 363,414

Claims priority, application Germany, May 26, 1972, P 22 25 544.3

Int. Cl. C07d *85/48*

U.S. Cl. 260—307 D **7 Claims**

1. Sulfonyl ureas of the formula



in which

R_1 is hydrogen, methyl, ethyl, phenyl,

X is hydrogen, chlorine, bromine or methyl,

Y is $-CH(CH_3)-CH_2-$, $-CH_2-CH(CH_3)-$ or, preferably, $-CH_2-CH_2-$,

R is alkyl having from 3 to 6 carbon atoms, cycloalkyl, alkylcycloalkyl, cycloalkylalkyl, cycloalkenyl, alkylcycloalkenyl each having from 5 to 9 carbon atoms, cyclohexenylmethyl, chlorocyclohexyl, bicycloheptenylmethyl, bicycloheptylmethyl, bicycloheptenyl, bicycloheptyl, nortricyclyl, adamantyl and phenylalkyl having from 1 to 2 alkyl carbon atoms and the physiologically tolerable salts thereof.

3,850,951

TRIAZOLOBENZODIAZEPINE 5N-OXIDE DERIVATIVES

Kanji Meguro and Yutaka Kuwada, Takarazuka, Hyogo, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Aug. 20, 1971, Ser. No. 173,635

Claims priority, application Japan, Aug. 26, 1970, 45/74,749

Int. Cl. C07d *57/02*

U.S. Cl. 260—308 C **1 Claim**

1. The compound 8-chloro-2-methyl-6-phenyl-2,4-dihydro - 1H - s - triazolo[4,3-a][1,4]benzodiazepin-1-one 5N-oxide.

3,850,952

5-OXO-1β-CYCLOPENTANE HEPTANOIC ACID DERIVATIVE

Chan-Hwa Kuo, South Plainfield, David Taub, Metuchen, and Norman L. Wendler, Summit, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Sept. 20, 1972, Ser. No. 290,590

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 **3 Claims**

1. 3β-acetoxy-2α-R_2-carbonyl - 5 - oxo-1β-cyclopentaneheptanoic acid, 5-cyclic ethylene acetal and loweralkyi esters thereof, wherein R_2 is imidazol-1-yl or chloro.

3,850,953

IMIDAZOLE INSECTICIDES

Patrick Mamalis, Reigate, Eric Arther Stuart La Croix, Dorking, and Solomon Ezekiel Mhasalker, Worcester Park, England, assignors to Beecham Group Limited, Brentford, Middlesex, England

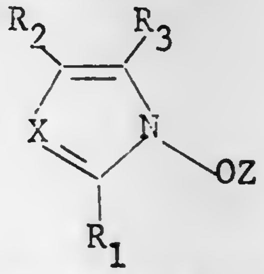
No Drawing. Filed Oct. 27, 1972, Ser. No. 301,677

Claims priority, application Great Britain, Nov. 13, 1971, 52,810/71, 52,811/71

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 **25 Claims**

1. A compound of the formula:



wherein R_1 is hydrogen or alkyl of 1 to 6 carbon atoms, R_2 and R_3 are the same or different and each is hydrogen or alkyl of 1 to 6 carbon atoms,

X is N or N→O, and

Z is $CONR_4R_5$ wherein R_4 is hydrogen, alkyl of 1 to 6 carbon atoms, benzyl or phenyl and R_5 is hydrogen, alkyl of 1 to 6 carbon atoms or phenyl.

3,850,954

1-ACYL-3-AMINOSULFONYL-2-IMINO-BENZIMIDAZOLINES

Arno Widdig, Blecher, Engelbert Kühle, Bergisch-Gladbach, Ferdinand Grewe, Burscheid, and Helmut Kaspers, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

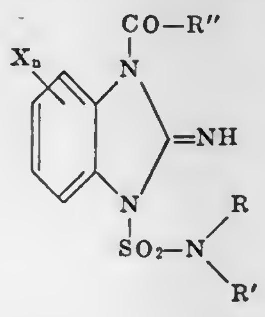
No Drawing. Filed Feb. 2, 1973, Ser. No. 329,000

Claims priority, application Germany, Feb. 9, 1972, P 22 06 011.3

Int. Cl. C07d *49/38*

U.S. Cl. 260—309.2 **5 Claims**

1. A 1-acyl-3-aminosulfonyl-2-imino-benzimidazoline of the formula



in which

X is halogen, lower alkyl or lower alkoxy,
n is 0, 1 or 2,
R and R′ each independently is alkyl of 1 to 6 carbon atoms, or
R and R′ together with the linking nitrogen atom are pyrrolidino, piperidino or morpholino, or
R″ is alkyl of 1 to 6 carbon atoms optionally substituted by lower alkoxy or halogen, cycloalkyl of 3 to 8 carbon atoms, benzyl or phenyl optionally substituted by at least one of chlorine or methyl, or alkoxy of 1 to 6 carbon atoms.

3,850,955

N-(TRIFLUOROMETHYL- AND TRIFLUOROMETHYLHALOPHENYL)MALEIMIDES

Donald E. Bublitz, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Nov. 17, 1972, Ser. No. 307,609

Int. Cl. C07d *27/18*

U.S. Cl. 260—326.5 FM **6 Claims**

1. The compound which is N-(3′-trifluoromethylphenyl)maleimide.

3,850,956

FUSED IMIDAZOLIDINE DERIVATIVES

Willem Jacob van der Burg, Heesch, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

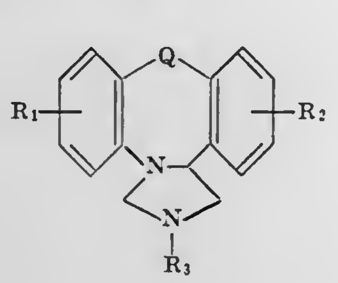
No Drawing. Filed Sept. 22, 1972, Ser. No. 291,188

Claims priority, application Netherlands, Oct. 5, 1971, 7113679

Int. Cl. C07d *57/02, 57/04*

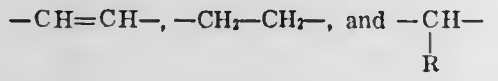
U.S. Cl. 260—309.7 **2 Claims**

1. A compound selected from the group consisting of a compound of the formula:



in which

Q is selected from the group consisting of a single bond,



$$-CH{=}CH-,\ -CH_2-CH_2-,\ \text{and}\ -\underset{R}{CH}-$$

in which R is selected from the group consisting of hydrogen and alkyl of 1–6 carbon atoms,
R_1 and R_2 are selected from the group consisting of hydrogen, halogen, hydroxy, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, and trifluoromethyl, and
R_3 is selected from the group consisting of hydrogen, alkyl of 1–6 carbon atoms, and phenylalkyl of 7–9 carbon atoms, and functional derivatives thereof selected from the group consisting of a pharmaceutically acceptable acid addition salt, a pharmaceutically acceptable quaternary ammonium compound, and a N²-nitrogen oxide.

3,850,957

2,3-DIHYDROIMIDAZO[1,2-a]INDOLES

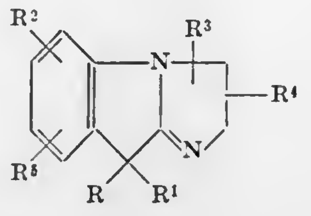
Alan Chapman White, Windsor, and Robin Michael Black, Wraysbury, England, assignors to John Wyeth & Brother Limited, Maidenhead, Berkshire, England
No Drawing. Filed Dec. 8, 1972, Ser. No. 313,232

Claims priority, application Great Britain, Dec. 14, 1971, 1,250/71

Int. Cl. C07d *49/34*

U.S. Cl. 260—309.6 **7 Claims**

1. A compound selected from the group consisting of bases having the formula



and the acid addition salts of said bases with pharmaceutically acceptable acids, wherein R represents hydroxy or lower alkoxy, R¹ represents phenyl or phenyl monosubstituted with halo, lower alkyl, lower alkoxy or trifluoromethyl, R² and R⁵, are selected from the group consisting of hydrogen, hydroxyl, lower alkyl, lower alkoxy, halo (lower) alkyl and halogen, and R³ and R⁴ are selected from the group consisting of hydrogen and lower alkyl.

3,850,958

METHOD FOR THE PRODUCTION OF SEROTONIN FROM COFFEE WAX

Siddik Iyimen, Saarbrucken, Gunter Lehmann, Bischmisheim, Otto Neunhoeffer, Homburg, Saar, and Otto Vitzthum, Bremen, Germany, assignors to HAG Aktiengesellschaft, Bremen, Germany

No Drawing. Filed Nov. 16, 1972, Ser. No. 307,311

Claims priority, application Germany, Nov. 16, 1971, P 21 56 944.8

Int. Cl. C07d *27/56*

U.S. Cl. 260—326.15 **1 Claim**

1. A process for the separation of serotonin from coffee wax comprising the steps of:

A. Adding methanol to said coffee wax to dissolve a fraction containing the serotonin along with other components in Supernatant A and leave an insoluble residue;
B. Adding water to Supernatant A to precipitate an Intermediate Product I containing serotonin;
C. Separating the precipitate and taking it up in methylene chloride to form a Supernatant B containing serotonin and leave an insoluble residue;
D. Separating Supernatant B and adding benzine thereto to precipitate an Intermediate Product II containing serotonin;
E. Taking up Intermediate Product II in an alkali melt, and diluting the melt with water to form an alkaline solution containing serotonin;
F. Adjusting the pH of the solution to an acid value to separate dissolved carboxylic acids and form Supernatant C; and
G. Separtaing Supernatant C and adjusting the pH to about 6 to thereby form an aqueous solution containing free serotonin.

3,850,959

SUBSTITUTED ALDEHYDES

André Allais, Les Lilas, and Jean Meier, Coeuilly-Champigny, and Jacques Dubé, Eaubonne, France, assignors to Roussel-UCLAF, Paris, France

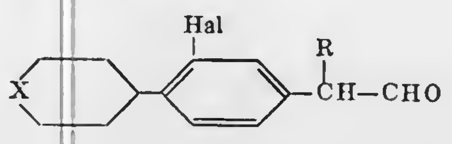
No Drawing. Continuation-in-part of application Ser. No. 243,455, Apr. 12, 1972, now Patent No. 3,772,332, dated Nov. 13, 1973, which is a continuation of abandoned application Ser. No. 55,221, July 15, 1970. This application Sept. 13, 1973, Ser. No. 396,703

Claims priority, application France, July 18, 1969, 6924537

Int. Cl. C07d *65/04;* **A61k** *27/00*

U.S. Cl. 260—327 TH **4 Claims**

1. A compound of the formula



wherein Hal is halogen, X is selected from the group consisting of oxygen and sulfur and R is alkyl of 1 to 4 carbon atoms.

3,850,960

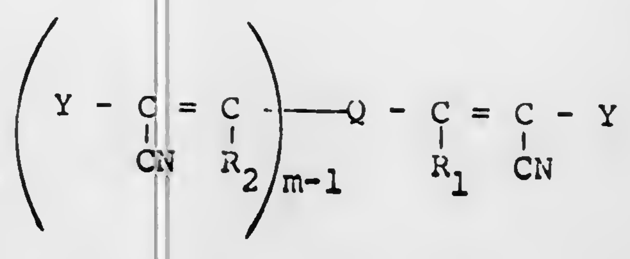
DERIVATIVES OF α-CYANACRYLIC ACID

Lajos Avar, Binningen, Basel-Land, and Kurt Hofer, Munchenstein, Basel-Land, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed May 4, 1971, Ser. No. 140,267
Int. Cl. C07d *5/44, 63/24*

U.S. Cl. 260—329.3 **9 Claims**

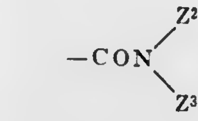
1. A compound of the formula



$$\left(Y-\underset{CN}{C}=\underset{R_2}{C}-\right)_{m-1}Q-\underset{R_1}{C}=\underset{CN}{C}-Y$$

where

Q is diphenylene sulphide or diphenylene oxide and, when *m* represents the number 1, may be substituted not more than twice by halogen and/or alkyl or alkoxy,
R_1 and R_2, independently of each other, are alkyl or alkenyl,
Y is —CN, —COOZ₁ or



$$-CON\begin{matrix}Z^2\\Z^3\end{matrix}$$

Z_1 is alkyl, cycloalkyl or phenyl and may be substituted by lower alkyl, lower alkoxy, chloro, or phenyl,
Z_2 and Z_3 conjointly and together with the N atom stand for pyrrolidino, piperidino, hexamethyleneimino or morpholino or, independently of each other, stand for hydrogen or one of the groups named in the definition of Z_1, and *m* is 1 or 2,
the total number of carbon atoms in Z_1, Z_2, Z_3, R_1, R_2 and any substituent on Q being no more than 20.

3,850,961

1H-3-AMINO DERIVATIVES OF CYCLOPENTA(β) THIANAPHTHENE

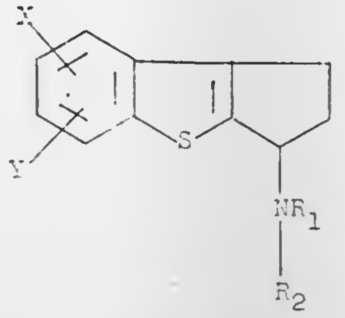
John T. Suh, Mequon, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 599,744, Dec. 7, 1966, now Patent No. 3,497,528, Ser. No. 9,947, Feb. 9, 1970, now Patent No. 3,682,967, and Ser. No. 224,273, Feb. 7, 1972, now abandoned. This application Sept. 21, 1973, Ser. No. 399,293

Int. Cl. A61k *27/00;* **C07d** *63/22*

U.S. Cl. 260—330.5 **4 Claims**

1. A compound selected from compounds of the formula



wherein X and Y are hydrogen, halo and trifluoromethyl, and R_1 and R_2 are selected from hydrogen, lower alkyl and aralkyl of 7 to 13 carbon atoms, and pharmaceutically acceptable salts thereof.

3,850,962

2,4-DIAMINO-5-(3-ALKOXY-4,5-METHYLENEDIOXYBENZYL)PYRIMIDINE

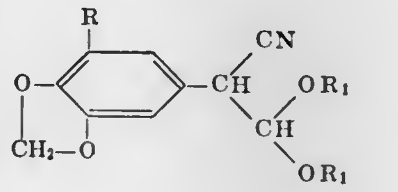
Emanuel Grunberg, North Caldwell, and Max Hoffer, Nutley, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Dec. 1, 1971, Ser. No. 203,869, now Patent No. 3,787,409. Divided and this application Oct. 10, 1973, Ser. No. 404,954

Int. Cl. C07d *13/10*

U.S. Cl. 260—340.5 **1 Claim**

1. A compound of the formula



wherein R is lower alkoxy and R_1 is lower alkyl of 1–7 carbon atoms.

3,850,963

PREPARATION OF DIHYDROCOUMARIN AND OF ALKYL DERIVATIVES THEREOF

Jozef A. Thoma, Sittard, Johannes J. M. Deumens, Limbricht, and Egidius J. M. Verheijen, Sittard, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands
Filed Feb. 23, 1973, Ser. No. 335,114

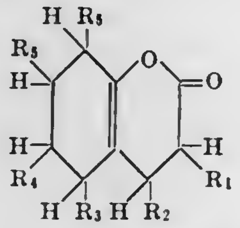
Claims priority, application Netherlands, Feb. 26, 1972, 7202539

Int. Cl. C07d *7/26*

U.S. Cl. 260—343.2 R **8 Claims**

1. Process for the preparation of compounds selected from the group consisting of dihydrocoumarin and alkyl

substituted derivatives of dihydrocoumarin comprising heating to a temperature of about 150 to about 400° C. in the presence of a catalytc amount of a dehydrogenation catalyst selected from the group consisting of palladium, platinum, iridium, rhodium, nickel, cobalt or ruthenium, a compound of the formula:



wherein each of R_1, R_2, R_3, R_4, R_5 and R_6 each independently represents hydrogen or a lower alkyl, provided that the total number of carbon atoms of the R_1–R_6 substituents is at most 10 and recovering said dihydrocoumarin compound from the reaction mixture.

3,850,964
METHOD FOR MAKING AROMATIC BIS(ETHER ANHYDRIDE)S

Frank J. Williams III, Scotia, N.Y., assignor to General Electric Company

No Drawing. Filed Mar. 30, 1973, Ser. No. 346,471

Int. Cl. C07d *7/18*

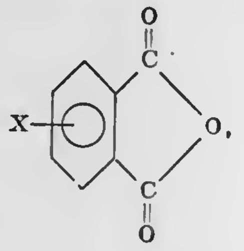
U.S. Cl. 260—345.2 **8 Claims**

1. A method for making aromatic bis(ether anhydride)s which comprises,

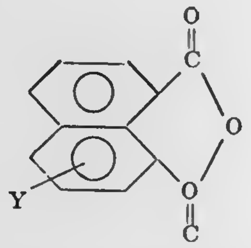
(1) effecting reaction between an alkali diphenoxide of the formula

M—O—R—O—M,

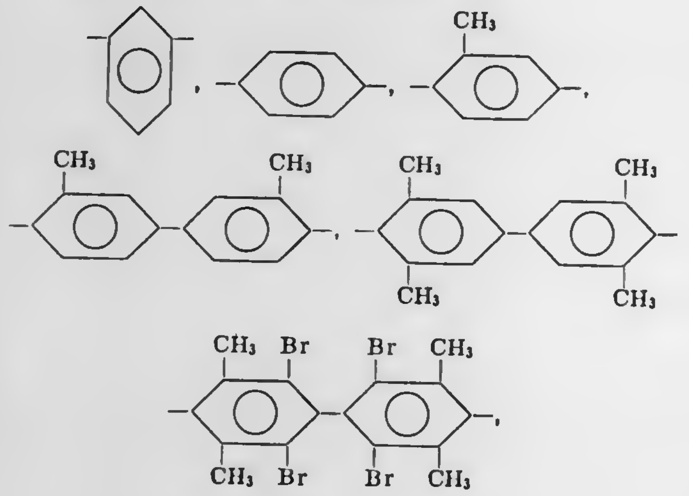
and an aromatic anhydride selected from the class consisting of



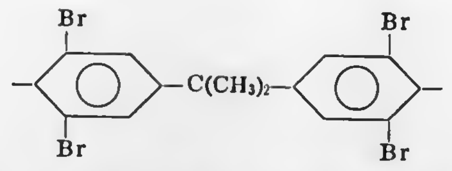
and



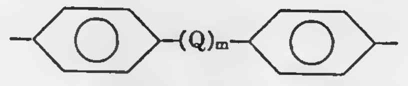
(2) recovering from (1), said aromatic bis(ether anhydride), where X and Y are selected from the class consisting of nitro and halogen radicals, M is an ion of an alkali metal, and R is a divalent aromatic radical having from 6–30 carbon atoms and selected from the class consisting of



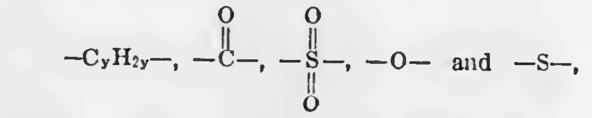
and



and (b) divalent organic radicals of the formula



where Q is a member selected from the group consisting of divalent radicals of the formulas



$$-C_yH_{2y}-,\quad -\overset{O}{\overset{\|}{C}}-,\quad -\underset{O}{\underset{\|}{\overset{O}{\overset{\|}{S}}}}-,\quad -O-\ \text{and}\ -S-,$$

where —*m* is 0 or 1, *y* is a whole number from 1 to 5.

3,850,965
METHOD FOR MAKING AROMATIC ETHER ANHYDRIDES AND PRODUCTS MADE THEREBY

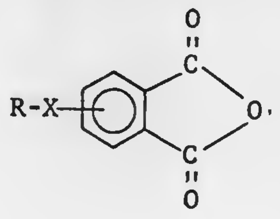
Frank J. Williams III, Scotia, N.Y., assignor to General Electric Company

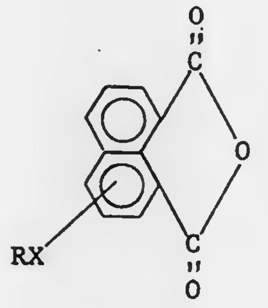
No Drawing. Filed Mar. 30, 1973, Ser. No. 346,472

Int. Cl. C07d *7/18*

U.S. Cl. 260—345.2 **19 Claims**

1. A method for making aromatic ether anhydrides of the formulas,



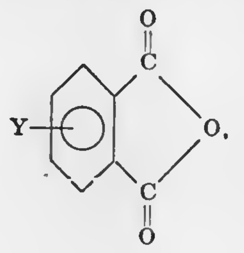


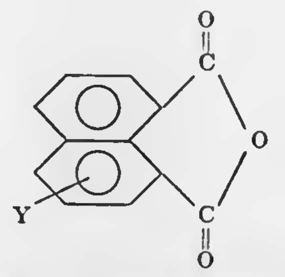
which comprises,

(1) effecting reaction between an alkali metal phenoxide of the formula

R—X—M,

and a nitro- or halo-substituted aromatic anhydride selected from compounds of the formulas,





where Y can be nitro, chloro, fluoro, bromo, or iodo, (2) and recovering from the resulting mixture of (1), an aromatic ether anhydride, where M is an ion of an alkali metal selected from sodium, potassium, lithium and rubidium, and R is an aromatic radical having from 6–13 carbon atoms selected from the class consisting of phenyl, tolyl, xylyl, naphthyl, anthryl, and halogenated derivatives thereof, and X is a divalent radical selected from —S— and —O—.

3,850,966
2-METHYL-3-METHYLSULFONYL CHROMONES

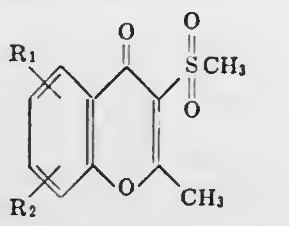
Marvin P. Cohen, New Milford, Max von Strandtmann, Rockaway Township, and John Shavel, Jr., Mendham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed May 14, 1973, Ser. No. 359,813

Int. Cl. C07d *7/34*

U.S. Cl. 260—345.2 **11 Claims**

1. A compound of the formula:



wherein R_1 and R_2 are hydrogen, lower alkyl having 1 to 6 carbon atoms, lower alkoxy having 1 to 6 carbon atoms, carbocyclic aryl having 6 to 10 carbon atoms, halogen or R_1 and R_2 taken together with the benzene ring forming naphthalene.

3,850,967
PURIFICATION OF BENZOPHENONE TETRACARBOXYLIC DIANHYDRIDE USING A SILICA CONTAINING ADSORBENT

Joseph C. Suatoni, New Kensington, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Apr. 5, 1971, Ser. No. 131,430

Int. Cl. C07c *63/32*

U.S. Cl. 260—346.3 **13 Claims**

1. A method for the selective separation of organic acidic impurities from admixture with at least one benzophenone tetracarboxylic dianhydride which comprises:

dissolving said admixture in a solvent selected from the group consisting of acetone and a cyclic mono or diether containing only carbon, hydrogen and etheric oxygen bonds and having from four to ten carbon atoms; and

contacting said solution under conditions such that the solvent is maintained in the liquid phase with a porous silica containing adsorbent having from 50 to 100 weight percent silica; a surface area from 100 $m.^2$/gram to 600 $m.^2$/gram and an average pore diameter within the range of 20 A. to 800 A.

3,850,968
N-FURFURYLPHENYLALANINE

Shigeshi Toyoshima and Seizo Kanao, Tokyo, Takeshi Toyoda, Sagamihara and Tadashi Suyama, Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Original application Sept. 4, 1970, Ser. No. 69,993, now Patent No. 3,801,633. Divided and this application Mar. 13, 1973, Ser. No. 340,644

Claims priority, application Japan, Sept. 6, 1969, 44/70,716

Int. Cl. C07d *5/00*

U.S. Cl. 260—347.3 **2 Claims**

1. N-furfurylphenylalanine.

3,850,969
PROCESS FOR THE PREPARATION OF HYDROXY SUBSTITUTED AMINIMIDES

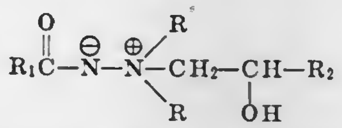
Robert A. Grimm, Lakeville, and Edward A. Sedor, Edina, Minn., assignors to Ashland Oil, Inc., Columbus, Ohio

No Drawing. Filed May 28, 1971, Ser. No. 148,164

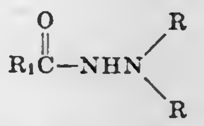
Int. Cl. C07c *103/12, 103/22, 121/02*

U.S. Cl. 260—404.5 **8 Claims**

1. A proces for the preparation of a tertiary amine mono-amide corresponding to the formula:



wherein R_1 represents alkyl, hydroxy alkyl, alkoxy, alkenyl, phenyl or cyanoalkyl; R is alkyl, and R_2 is hydrogen, alkyl, phenyl or hydroxy methyl; which comprises reacting at a temperature between about 40° and 80° C. stoichiometrical amounts of a hydrazide having the formula:



wherein R_1 and R have the above-indicated meanings; and an oxirane oxygen containing compound selected from the group consisting of styrene oxide, glycidol and a 1,2-alkylene oxide.

3,850,970
NOVEL ORGANOTIN COMPOUNDS

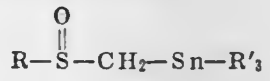
Donald J. Peterson, Cincinnati, and James F. Ward, Fairfield, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Mar. 8, 1973, Ser. No. 339,449

Int. Cl. C07f *7/22*

U.S. Cl. 260—429.7 **12 Claims**

1. A compound of the formula



$$R-\overset{O}{\overset{\|}{S}}-CH_2-Sn-R'_3$$

wherein R is C_1 to C_{14} alkyl, aryl or substituted aryl wherein the aryl substituents are selected from the group consisting of C_1 to C_4 alkyl, C_1 to C_4 alkoxy, halogen and nitro, and R′ is C_1 to C_{10} alkyl.

3,850,971
POROUS SILICIC ACID AND ITS PRODUCTION

Erich Termin, Laufenburg, Arnold Lenz, Cologne-Stammheim, and Otto Bleh, Bergheim, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Dec. 15, 1970, Ser. No. 98,244

Claims priority, application Germany, Dec. 18, 1969, P 19 63 439.0

Int. Cl. C07f *7/04*

U.S. Cl. 260—448.8 R **7 Claims**

1. Process for making porous silicic acid gel which comprises contacting methyl or ethyl silicate, or polymethyl or polyethyl silicate in the presence of a hydrolysis activating substance, with about 70 to 120% of the stoichiometric amount of water with stirring under conditions to achieve homogeneity to effect hydrolysis and produce solid silicic acid having a specific surface of about 50 to 1000 $m.^2$/g., separating the solid silicic acid from the liquid and drying the resulting porous silicic acid.

3,850,972
PHENYL ESTERS OF BROMOMETHANESULFONIC ACID

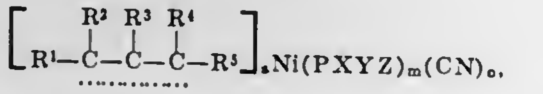
Christian T. Goralski, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Nov. 9, 1972, Ser. No. 305,106
Int. Cl. C07c *143/68*
U.S. Cl. 260—456 R **5 Claims**

1. A phenyl ester of bromomethane sulfonic acid which is substituted in the o-, m- or p-position of the phenyl ring with a (2,2 - dichloro - 1,1 - difluoroethoxy) group and, when so substituted in the p-position, optionally having 2,6 - dibromo substitution in the phenyl ring.

3,850,973
HYDROCYANATION OF CONJUGATED DIOLEFINS

William C. Seidel, Orange, Tex., and Chadwick A. Tolman, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Sept. 26, 1973, Ser. No. 401,072
Int. Cl. C07c *121/04*
U.S. Cl. 260—464 **10 Claims**

1. A prcoess of hydrocyanating a hydrocarbon conjugated diolefin having from 4 to 12 carbon atoms which comprises contacting the diolefin with hydrogen cyanide at a temperature in the range of −50° C. to 150° C. in the presence of a catalyst consisting essentially of a π-allyl nickel complex of the formula



$$\left[R^1-\overset{R^2}{\overset{|}{C}}-\overset{R^3}{\overset{|}{C}}-\overset{R^4}{\overset{|}{C}}-R^5\right]_a Ni(PXYZ)_m(CN)_n,$$

wherein R^1 to R^5 are of the group consisting of hydrogen and alkyl radicals having from one to nine carbon atoms, at least one of R^1, R^2, R^4 and R^5 being an alkyl radical, wherein a pair of alkyl radicals may be cojoined to form an alkylene radical, which radical together with the allyl group forms a cycloaliphatic ring having from five to eight carbon atoms,

wherein PXYZ is a sigma-pi bonding ligand in which X is OR, Y and Z are R or OR and R is an aryl radical or an alkyl hydrocarbyl radical having up to 18 carbon atoms and the R radicals of a given ligand are so chosen that the ligand has a cone angle of 130° to 170°,

wherein "*a*" has a value of 1, "*m*" has a value of 1–2, and "*n*" has a value of 1.

3,850,974
PRODUCTION OF NITRILES

Glen D. Lichtenwalter, Hinsdale, and Edgar S. Hammerberg, Chicago, Ill., assignors to Akzona Incorporated, Asheville, N.C.
No Drawing. Filed May 23, 1973, Ser. No. 362,967
Int. Cl. C07c *121/10*
U.S. Cl. 260—465 B **14 Claims**

1. In a method for the single stage conversion of a carboxylic acid selected from the group consisting of a fatty acid containing from 8 to 24 carbon atoms, a tall oil acid, and phenylstearic acid, in the liquid state, to the corresponding nitrile by reaction with gaseous ammonia in the presence of a dehydration catalyst, the improvement comprising the steps of:

(a) reacting a downwardly moving stream of an acid selected from the group consisting of a fatty acid, a tall oil acid, and phenylstearic acid, in the liquid state, with an upwardly moving countercurrent stream of gaseous ammonia, in a single stage reaction zone, the molar ratio of ammonia to acid being between 1:1 and about 3:1, in the presence of a dehydration catalyst, the residence time of said reactants in said zone being between about 10 and about 60 minutes;

(b) maintaining the temperature of the reactants in said zone between about 300° C. and about 380° C., the nitrile formed remaining in the liquid state, the temperature and flow rate of the gaseous ammonia being effective to maintain the water formed in the reaction in the vapor state and to effect reduced backmixing of the water and its removal from the reaction stage with substantially no condensation thereof and substantially to recirculation or back-flow of liquid phases in the reaction system.

3,850,975
CATALYTIC COMPOSITION AND ITS APPLICATIONS TO THE PRODUCTION OF UNSATURATED NITRILES AND TO THE OXIDATION OF OLEFINS

Vittoria Fattore and Bruno Notari, San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., Milan, Italy
Filed Apr. 14, 1971, Ser. No. 133,886
Claims priority, application Italy, Apr. 14, 1970, 23,270/70
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.3 **9 Claims**

1. Process for the preparation of acrylonitrile which comprises contacting, at a temperature of from 300° C. to 500° C., a gaseous mixture of propylene, ammonia and oxygen in the presence of a catalyst consisting essentially of a mixture of uranium oxide and tellurium oxide wherein the Te/U atomic ratio is in the range from 2 to 5.

3,850,976
PROCESS FOR THE PRODUCTION OF UNSATURATED ALDEHYDE CYANHYDRINS

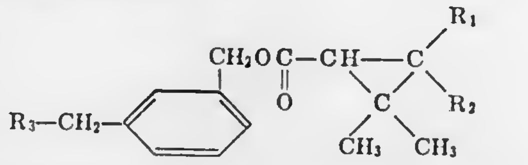
Chisei Shibuya, Oi-machi, Shunji Ouchi, Tokyo, and Shigeyoshi Hayashi, Asaka, Japan, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany
No Drawing. Filed Apr. 27, 1973, Ser. No. 355,020
Claims priority, application Japan, May 15, 1972, 47/47,228
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.6 **7 Claims**

1. A process for the production of cyanhydrins of aldehydes selected from the group consisting of acrolein, methacrolein and crotonaldehyde which comprises reacting the aldehyde with an excess of hydrogen cyanide at a temperature of from about −50° C. to +30° C. in a reaction inert, polar organic solvent in the presence of a catalytically effective quantity of ammonia and carbon dioxide or of a compound which decomposes on heating to form ammonia and carbon dioxide.

3,850,977
3-SUBSTITUTED-BENZYL CYCLOPROPANECARBOXYLATES

Nobushige Itaya, Minoo, Toshio Mizutani, Hirakota, Shigeyoshi Kitamura, Toyonaka, Nobuyuki Kameda, Takarazuka, Keimei Fujimoto, Kyoto, and Yositosi Okuno, Toyonaka, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan
No Drawing. Continuation of abandoned application Ser. No. 827,886, May 26, 1969. This application Oct. 21, 1971, Ser. No. 191,539
Claims priority, application Japan, June 6, 1968, 43/40,767, 43/40,769
Int. Cl. C07c *69/74, 69/76*
U.S. Cl. 260—468 H **5 Claims**

1. A 3-substituted-benzyl cyclopropanecarboxylate represented by the formula,

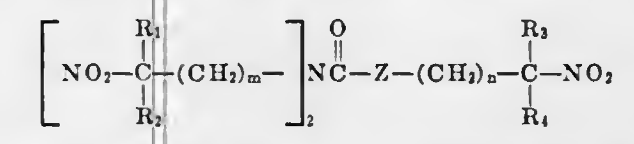


wherein R_1 is a hydrogen atom or a methyl group; R_2 is methyl, 2-methyl-1-propenyl, 2-methoxycarbonyl-1-propenyl or phenyl when R_1 is a hydrogen, or methyl group when R_1 is a methyl group; and R_3 is a phenyl group which may be substituted by a chlorine atom or a methyl group.

3,850,978
SYNTHESIS OF N,N-BIS(2-FLUORO-2,2-DINITROETHYL) CARBAMATES

William H. Gilligan, Washington, D.C., and Mortimer J. Kamlet, Silver Spring, Md., assignors to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed Nov. 28, 1973, Ser. No. 419,755
Int. Cl. C07c *125/06*
U.S. Cl. 260—482 C **16 Claims**

1. A compound of the formula



$$\left[NO_2-\underset{R_2}{\overset{R_1}{C}}-(CH_2)_m-\right]_2 N\overset{O}{\overset{\|}{C}}-Z-(CH_2)_n-\underset{R_4}{\overset{R_3}{C}}-NO_2$$

wherein R_1, R_2, R_3 and R_4 vary independently and are selected from the group consisting of F and NO_2, Z is selected from the group consisting of O and NH, and *m* and *n* vary independently and are integers of from 1 to 2.

3,850,979
INTERMEDIATES FOR THE PREPARATION OF 1,3-DIHYDRO-2H-1,4-BENZODIAZEPIN-2-ONES

Ronald J. McCaully, Malvern, Pa., assignor to American Home Products Corporation, New York, N.Y.
Original application Feb. 26, 1969, Ser. No. 802,345, now Patent No. 3,763,171, dated Oct. 2, 1973. Divided and this application Feb. 15, 1973, Ser. No. 332,975
Int. Cl. C07c *103/32*
U.S. Cl. 260—490 **5 Claims**

1. A composition of matter having the structure 2,2-dilower - alkanoyloxy - 2′ - aroyl - 4′ - chloro - acetanilide, wherein aroyl is benzoyl or *o*-chlorobenzoyl.

3,850,980
PRODUCTION OF ESTERS

Duncan Clark, William Derek Walsh, and Walter Edward Jones, Norton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Continuation-in-part of applications Ser. No. 139,835 and Ser. No. 139,836, both Sept. 22, 1961, and Ser. No. 296,435 and Ser. No. 296,438, both July 22, 1963, both now abandoned. This application Oct. 29, 1965, Ser. No. 505,745
Claims priority, application Great Britain, Sept. 28, 1960, 33,285/60; Feb. 23, 1961, 6,693/61; Mar. 23, 1961, 10,688/61; Aug. 30, 1961, 31,223/61, 31,224/61
Int. Cl. C07c *67/04, 69/34, 69/80*
U.S. Cl. 260—497 A **6 Claims**

1. A process for producing an unsaturated ester of a carboxylic acid which comprises passing an α-olefine hydrocarbon containing up to 20 carbon atoms into a liquid medium containing a palladous salt, a hydrocarbon carboxylic acid selected from the group consisting of hydrocarbon aromatic and saturated aliphatic mono- and di-carboxylic acids, carboxylate ions additional to any provided by self-ionisation of the carboxylic acid, a redox system, less than 10% by weight of water and at least 10% by weight, based on the weight of said carboxylic acid, of an organic polar solvent selected from the group consisting of urea, lower alkanoic acid amides and such amides substituted with at least one alkyl on the nitrogen atom, lower alkyl nitriles, benzonitrile, di-lower alkyl sulphoxides, sulpholane and esters of a hydrocarbon aromatic or saturated aliphatic mono- or di-carboxylic acid different from the ester produced but corresponding in the acid radical to the ester being produced.

3,850,981
LIQUID PHASE OXIDATION OF p-XYLENE TO TEREPHTHALIC ACID

John C. Trebellas and Hubert H. Thigpen, Corpus Christi, Tex., and Wallace M. Mays, Novato, Calif., assignors to Celanese Corporation, New York, N.Y.
Continuation of abandoned application Ser. No. 721,704, Apr. 16, 1968. This application May 14, 1971, Ser. No. 143,604
Int. Cl. C07c *63/02*
U.S. Cl. 260—524 R **17 Claims**

1. A continuous process for the liquid phase oxidation of m-xylene or p-xylene to the corresponding benzene dicarboxylic acid comprising:

(a) continuously feeding m-xylene and/or p-xylene, acetaldehyde, an oxygen-containing gas, acetic acid and a soluble cobalt salt catalyst to a reactor having a gas phase and a liquid-solid slurry phase, the amount of oxygen-containing gas being sufficient to provide at least 3.25 moles oxygen per mole of xylene, the weight ratio of acetaldehyde to xylene being at least 0.2:1, the weight ratio of acetic acid to xylene being from about 3:1 to 15:1 and the amount of catalyst being sufficient to provide about 0.1 to 2.5% cobalt metal based on the combined weight of xylene, acetic acid and acetaldehyde,

(b) maintaining backmixing conditions in the liquid-solid slurry phase of said reactor, maintaining in said reactor a steady state concentration of aromatic benzene dicarboxylic acid precursors of less than 3% by weight of the liquid-solid slurry phase present, a temperature of from 120–140° C., a pressure of at least 95 p.s.i.g., and maintaining the average residence time of the reactants in the reactor such that at least 98.6% of the xylene fed is converted to some other product and

(c) continuously withdrawing form said reactor a portion of the liquid-solid slurry phase and a portion of the gaseous phase and recovering terephthalic acid from said portion withdrawn from said liquid-solid slurry phase.

3,850,982
DICARBOXYLIC ACID PURIFICATION PROCESS

Richard V. Norton, Wilmington, Del., assignor to Sun Research and Development Co., St. Davids, Pa.
No Drawing. Filed Jan. 15, 1973, Ser. No. 323,478
Int. Cl. C07c *63/14, 63/38, 51/42*
U.S. Cl. 260—525 **8 Claims**

1. A process for purifying a phthalic acid or a naphthalene dicarboxylic acid made by ammoxidation and subsequent hydrolysis which consists of contacting said acid at a temperature between about 130° to about 210° C. with an alkyl-substituted aromatic hydrocarbon or a partially reduced aromatic hydrocarbon, said hydrocarbons containing from 7 to about 12 carbon atoms, and separating purified dicarboxylic acid.

3,850,983
SEPARATION OF TEREPHTHALIC FROM PARATOLUIC ACID FROM SOLUTIONS THEREOF IN WATER AND/OR ACETIC ACID

Chang Man Park, Naperville, Ill., assignor to Standard Oil Company, Chicago, Ill.
Filed Oct. 15, 1973, Ser. No. 406,301
Int. Cl. C07c *63/26*
U.S. Cl. 260—525 **6 Claims**

1. In a process of purification of terephthalic acid (TA) containing p-formylbenzoic and p-toluic acids as main impurities and lesser amounts of color-body impurities, other heavy end by-products, and multifunctional impurities by the catalytic hydrogenation at a temperature in the range from 225 to 300° C. of a solution substantially saturated with such impure TA at said temperature in a liquid phase of solvent comprising water or acetic acid

containing 0 to 45 weight percent water, cooling the resulting solution containing p-toluic acid as the main impurity in quantity to crystallize TA at a temperature in the range of 50–165° C. and separating crystalline TA from mother liquor; the improvement comprising crystallizing TA by cooling the solution through flash evaporation of a portion of solvent from the temperature range of 225 to 300° C. down to a lower temperature having 180° C. as the minimum temperature and a lower pressure sufficient to maintain remaining solvent in the liquid phase at such lower temperature; subjecting the suspension of crystalline TA in remaining solvent to a classification-liquid displacement system operated at such lower temperature wherein a substantial portion of the remaining liquid solvent solution of p-toluic acid and other undesirable impurities are removed and a concentrated crystalline TA suspension is diluted with fresh solvent at such lower temperature and reconcentrated as a means for displacing substantially all remaining original solvent solution of p-toluic acid and other undesirable impurities, and forming a new suspension of crystalline TA in hot fresh solvent; depressurizing and quenching said new suspension of crystalline TA by the addition thereto of cold fresh solvent in an amount to depressurize to atmospheric pressure and cool down to at least the boiling point of the fresh solvent at atmospheric pressure, and separating crystalline TA from fresh solvent at atmospheric pressure.

3,850,984

PROCESS FOR SEPARATING SODIUM NITRILOTRIACETATE FROM A MIXTURE CONTAINING THE SAME AND SODIUM CHLORIDE

Charles M. Selwitz, Monroeville, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Sept. 27, 1971, Ser. No. 184,281
Int. Cl. C07c *99/12*
U.S. Cl. 260—534 E **3 Claims**

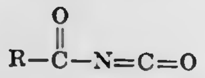
1. A process for separating sodium nitrilotriacetate from a mixture containing the same, wherein the mixture contains from about 50 to 85 percent of sodium nitrilotriacetate and from about 15 to about 50 percent by weight of sodium chloride, which consists in maintaining an aqueous slurry thereof, wherein from about 37 to about 47 percent by weight is water, at a temperature of about +5° to about −25° C. for about one minute to about five hours, separating solids from said slurry and then recovering a fraction richer in sodium nitrilotriacetate from the remaining liquid than was present in the mixture.

3,850,985

PROCESS FOR THE PRODUCTION OF ACYLISOCYANATES

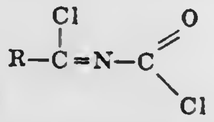
Hermann Hagemann, Cologne-Flittard, Germany, assignor to Bayer Aktiengesellschaft
No Drawing. Continuation of abandoned application Ser. No. 70,928, Sept. 9, 1970. This application Feb. 23, 1973, Ser. No. 335,196
Int. Cl. C07c *119/04*
U.S. Cl. 260—545 R **6 Claims**

1. A process for the production of acylisocyanates of the formula;



$$R-\overset{\overset{O}{\|}}{C}-N=C=O$$

comprising reacting at a temperature of from about −10° C. to about 150° C. one equivalent of an *a*-chloroalkylidene carbamic acid chloride of the formula:



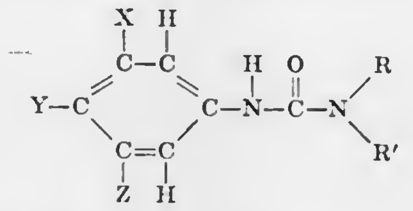
wherein R in the above formulas is halogen, hydrogen, alkyl of up to 18 carbon atoms; aryl, aralkyl, or alkaryl of up to 12 carbon atoms; aroxy of up to 10 carbon atoms or alkoxy of up to 6 carbon atoms; with from about 0.7 to about 1.3 equivalents of an anhydrous chlorophosphoric acid, methane sulphonic acid, chloromethane sulphonic acid, benzene sulphonic acid, dodecylbenzene sulphonic acid, tolylene sulphonic acid, dichloroacetic acid, trichloroacetic acid, trifluoroacetic acid, chlorosulphonic acid or fluorosulphonic acid.

3,850,986

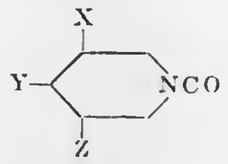
SOLVENT-FREE PROCESS FOR 3-(HALOPHENYL)-1,1-DIALKYL UREAS

James Bernard Platz, Pasadena, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed July 20, 1971, Ser. No. 164,478
Int. Cl. C07c *127/18*
U.S. Cl. 260—553 A **12 Claims**

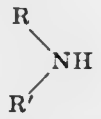
1. In the process for preparing herbicidal 3-(halophenyl)-1,1-dialkyl substituted ureas of the formula:



wherein R is an alkyl group of 1–2 carbon atoms, R′ is an alkyl group of 1–4 carbon atoms, X and Z are selected from the group consisting of hydrogen and halogen, and Y is selected from the group consisting of hydrogen, halogen, alkyl and alkoxy with the alkyl radical in said alkyl and alkoxy substituents containing up to 4 carbon atoms, with at least one and at most two of X, Y, and Z being halogen, comprising subjecting a mixture of a phenyl isocyanate of the formula:



and an amine of the formula:



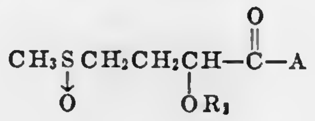
wherein X, Y, Z, R and R′ are as defined above, to reaction conditions to provide the substituted urea; the improvement for carrying out the process under anhydrous solvent-free conditions in high yield, wherein the improvement comprises adding the amine and the isocyanate to the reactor vessel concurrently while agitating with the amine which is in a gaseous state under pressure to provide a stoichiometric excess of amine while maintaining the temperature of the reactants at a temperature in excess of the melting point of the substituted urea that is formed.

3,850,987

COMPOUNDS USEFUL AS FEED SUPPLEMENTS

Frank R. Haglid, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Original application Mar. 12, 1971, Ser. No. 123,848, now Patent No. 3,761,518. Divided and this application June 11, 1973, Ser. No. 369,115
Int. Cl. C07c *103/00*
U.S. Cl. 260—561 S **2 Claims**

1. A compound of the structure



$$CH_3\underset{\overset{\downarrow}{O}}{S}CH_2CH_2\underset{\underset{OR_1}{|}}{C}H-\overset{\overset{O}{\|}}{C}-A$$

where

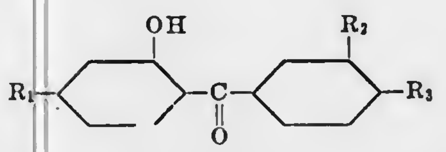
A is —MR_1R_2;
R_1 and R_2 are H or an alkyl group of one to five carbon atoms;
R_3 is H.

3,850,988

PURIFICATION OF BENZOPHENONES

William R. Ruby, Woodland Park, N.Y., assignor to GAF Corporation, New York, N.Y.
No Drawing. Filed Sept. 7, 1971, Ser. No. 178,470
Int. Cl. C07c *49/82*
U.S. Cl. 260—591 **13 Claims**

1. In a method for the purification of a crude, highly colored arylphenone of the following formula



wherein R_2 is H or OH, R_1 and R_3 are H, OH or OR wherein R is a C_1 to C_{12} alkyl group, which arylphenone is prepared by reacting a benzothiahalide or a benzonitrile with a hydroxy substituted benzene at a temperature of between 35° C. and 50° C., said method comprising contacting said crude arylphenone with an activated clay, the improvement which comprises dissolving said crude arylphenone in a non-polar solvent selected from the group consisting of benzene, toluene, chlorobenzene, ortho-, meta-, or para-dichlorobenzene, xylene, nitrobenzene, ortho-, meta, or para-dinitrobenzene, n-pentane, n-hexane, n-heptane, 1,2-dichloroethane, trichloroethane and mixtures thereof, and then treating the resulting solution with said activated clay.

3,850,989

2,2,2 - TRICHLORO - 4′ - TERT BUTYLACETOPHENONE

Reginoldus Havinga, Schalkhaar, and Pieter Dirk Swaters, Lochem, Netherlands, assignors to Akzo N.V., Arnhem, Netherlands
No Drawing. Filed Apr. 3, 1973, Ser. No. 347,563
Claims priority, application Netherlands, Apr. 21, 1972, 7205384
Int. Cl. G07c *49/80*
U.S. Cl. 260—592 **1 Claim**

1. 2,2,2-Trichloro-4′-*tert*.butylacetophenone.

3,850,990

OXIDATION OF OLEFINS

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
No Drawing. Continuation-in-part of abandoned application Ser. No. 775,150, Nov. 12, 1968. This application July 3, 1972, Ser. No. 268,487
Int. Cl. C07c *45/04*
U.S. Cl. 260—604 AC **8 Claims**

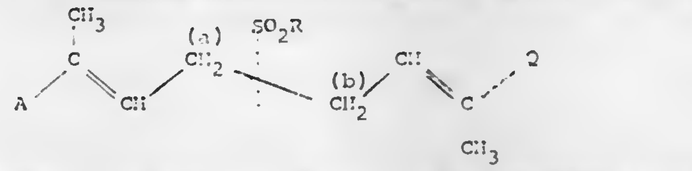
1. The oxidation of a hydrocarbon olefin having from 2 to about 10 carbons to a carbonyl product selected from the class consisting of ketones and aldehydes having the same number of carbon atoms as the olefin which comprises contacting said olefin in the absence of molecular oxygen with a catalytic amount of a Group VIII noble metal containing catalyst in the presence of an aqueous solution having a pH from 2 to about 6 and containing from 5 to about 90 percent ammonium nitrate; and maintaining the temperature of the contacting from 25° to about 300° C. and the pressure from 1 to about 1000 atmospheres to oxidize said olefin and convert at least a portion of said ammonium nitrate to molecular nitrogen.

3,850,991

SULPHONES WITH 1,6-DIMETHYL-HEXA-1,5-DIENYLENE CHAIN

Pierre Chabardes, Lyon, Marc Julia, Paris, and Albert Menet, La Mulatiere, France, assignors to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed Feb. 1, 1973, Ser. No. 328,624
Claims priority, application France, Feb. 2, 1972, 7203483; Apr. 10, 1972, 7212478
Int. Cl. C07c *147/04*
U.S. Cl. 260—607 A **14 Claims**

1. A sulphone corresponding to the general formula:



(I)

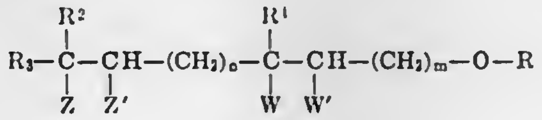
in which the sulphonyl group —SO_2R replaces a hydrogen atom on carbon atom (a) or (b), R represents an alkyl of 1 to 4 carbon atoms, phenyl, or alkylphenyl of 1 to 4 carbon atoms in the alkyl and A and Q, which may be the same or different, represent (a) a hydrocarbon radical containing $5n+1$ carbon atoms (n being an integer of 1 to 5), which can contain a sulphonyl group and, when n is at least 2, can contain a 2,6,6-trimethyl-cyclohexenyl radical or such a radical substituted by =O or —OH; (b) a methyl radical, which is unsubstituted or substituted by a halogen or by a sulphide or sulphone group or (c) a primary alcohol group —CH_2OH, an ether thereof or an ester thereof with an inorganic or organic acid, with the proviso that Q and A are not both 6-(2,6,6-trimethyl-cyclohex-1-enyl)-4-methyl-hexa-1,3,5-trienyl radicals, and are not such that the compound of formula I contains a 1,5-dimethyl-3 or 4-sulphonyl-1,5-hexadienylene radical.

3,850,992

ALIPHATIC INDANYL ETHERS

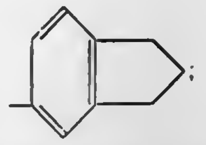
John W. Baum, Palo Alto and John D. Diekman, Menlo Park, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.
No Drawing. Filed July 20, 1971, Ser. No. 164,437
Int. Cl. C07c *43/20*
U.S. Cl. 260—612 D **21 Claims**

1. A compound selected from those of the following formula (A):



$$R_3-\underset{\underset{Z}{|}}{\overset{\overset{R^2}{|}}{C}}-\underset{\underset{Z'}{|}}{C}H-(CH_2)_n-\underset{\underset{W}{|}}{\overset{\overset{R^1}{|}}{C}}-\underset{\underset{W'}{|}}{C}H-(CH_2)_m-O-R \qquad (A)$$

wherein,
R is



m is zero or one; n is one or two; each of R^1, R^2 and R^3 is lower alkyl; each of W and W′ is hydrogen or together a carbon-carbon bond; Z is hydrogen, hydroxy, lower alkoxy, or lower alkyl; and
Z′ is hydrogen or together with Z a carbon-carbon bond, provided that when m is zero—then each of W and W′ is hydrogen.

3,850,993

RECOVERY OF ETHER IN THE PRODUCTION OF ETHANOL BY ETHYLENE HYDRATION

Robert L. Kylander, Tuscola, Ill., and Richard H. Du Von, Jr., Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.
Continuation-in-part of abandoned application Ser. No. 149.058, June 1, 1971. This application Apr. 17, 1973, Ser. No. 351,931
Int. Cl. C07c *29/04, 41/00*
U.S. Cl. 260—614 A **6 Claims**

1. In a process for the production of ethanol by ethylene hydration, which comprises (1) reacting ethylene

and water vapor in the presence of a hydration catalyst at temperatures of from 200° to 315° C. and under pressures of from 400 to 1500 p.s.i.g. to obtain a gaseous reaction mixture containing ethanol, diethyl ether, ethylene and water vapor; (2) cooling the reaction mixture within a high pressure separator zone maintained at temperatures of from 15° to 110° C. and under pressures of from 400 to 1500 p.s.i.g. to condense and separate at least a portion of the ethanol and water from the reaction mixture; and (3) recycling the residual, uncondensed gases;

the improvement which comprises recovering at least 2% of the diethyl ether in the uncondensed gases removed from step (2) by

(a) contacting the gases with liquid ethanol of from 50 to 200 proof while maintaining the liquid-gas mixture at contact temperatures of from 15° to 110° C. and at presures of from 400 to 1500 p.s.i.g. to absorb the diethyl ether in the liquid ethanol, and

(b) recovering the diethyl ether from the ethanol stream.

3,850,994

PROCESS FOR THE PREPARATION OF 2,2-BIS-(4-HYDROXY - 3,5 - DICHLOROPHENYL)-PROPANE AND 2,2 - BIS-(4-HYDROXY-3-CHLOROPHENYL)-PROPANE

Gunter Zoche, Bonn-Beuel, Hermann Richtzenhain, Schwellenbach, and Roshdy Ismail, Neunkirchen, Germany, assignors to Dynamit Nobel AG., Troisdorf, Germany

No Drawing. Continuation of abandoned application Ser. No. 869,323, Oct. 24, 1969. This application June 12, 1972, Ser. No. 261,827

Claims priority, application Germany, Sept. 15, 1969, P 19 46 610.5

Int. Cl. C07c *37/22, 37/44*

U.S. Cl. 260—619 A **10 Claims**

1. A process for the purification of 2,2-bis-(4-hydroxy-3,5-dichlorophenyl)-propane obtained by chlorinating 2,2-bis(4-hydroxyphenyl)-propane which comprises forming a solution of said 2,2-bis-(4-hydroxy-3,5-dichlorophenyl)-propane by admixing the same with at least one aliphatic halogenated hydrocarbon solvent thereof selected from the group consisting of methylene chloride, methyliodide, ethylbromide, trans-1,2 - dichloroethylene, 1,2-dichloroethane, 1,2-dibromoethane, and 1,4-dichlorobutane, adding water thereto whereby causing a chlorinated product to precipitate and crystallize therefrom; separating said chlorinated product from said water and said aliphatic halogenated hydrocarbon solvent and recovering 2,2-bis-(4-hydroxy-3,5-dichlorophenyl)propane from said chlorinated product.

3,850,995

CONVERSION OF AROMATIC ALDEHYDES TO PHENOLIC COMPOUNDS

Theodore Horlenko and James Henry George, Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 860,027, Sept. 22, 1969. This application May 1, 1970, Ser. No. 33,931

Int. Cl. C07c *37/00*

U.S. Cl. 260—621 G **8 Claims**

1. A process for converting toluene to phenol, which process comprises:

continuously introducing a gaseous feedstock consisting essentially of toluene and an oxidation initiator selected from the group consisting of benzaldehyde, benzyl alcohol, and mixtures thereof, together with molecular oxygen in such an amount that the molar ratio of oxygen to benzaldehyde is about 1:1 to 20:1 and the molar ratio of organic compounds to oxygen is about 1:1 to 10:1, into a reaction zone maintained at superatmospheric pressure and at a temperature of from about 250° C. to about 450° C.;

reacting said feedstock in said reaction zone, to form a crude reaction mixture comprising benzaldehyde, phenol, toluene, and bibenzyl;

continuously withdrawing said crude reaction product from said reaction zone;

cooling said reaction product below the liquefaction temperature of the aldehyde and phenolic components thereof;

recovering phenol from said cooled crude reaction product; and

recycling to the reaction zone at least a fraction of the components of said crude reaction product including at least a portion of the benzaldehyde contained therein.

3,850,996

TREATMENT OF THE HEAVY ENDS FRACTION OF CUMENE HYDROPEROXIDE CLEAVAGE REACTION MIXTURE

Joseph R. Nixon, Jr., Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Oct. 8, 1970, Ser. No. 79,221

Int. Cl. C07c *37/38*

U.S. Cl. 260—621 A **7 Claims**

1. A continuous process for treating the heavy ends fraction of cumene hydroperoxide cleavage reaction mixture to recover therefrom hydrocarbons and phenol substantially free of acetophenone, which comprises: introducing said heavy ends fraction into a distillation column having an upper fractional distillation zone and a lower pyrolysis zone, establishing and maintaining the contents of said column at about 275–420° C. and at about 5–50 p.s.i.g.; withdrawing vaporous phenol-hydrocarbons fraction from the top of said column; and withdrawing from the bottom of the column a liquid acetophenone-pyrolysis residue fraction at a rate selected to give a residence time of the pyrolyzable portion of said heavy ends fraction and the pyrolysis residue thereof of about 5–100 hours.

3,850,997

2-CHLORO-5-n-PENTYLRESORCINOL

Arnold Brossi, Verona, and Antonino Focella and Sidney Teitel, Clifton N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Jan. 22, 1969, Ser. No. 793,191, now abandoned. Divided and this application Sept. 16, 1971, Ser. No. 181,227

Int. Cl. C07c *39/24*

U.S. Cl. 260—623 R **1 Claim**

1. The compound 2-chloro-5-n-pentylresorcinol.

3,850,998

SEPARATION OF MONOCHLORO-O-XYLENES

Heinz Eilingsfeld, Frankenthal, and Manfred Patsch, Ludwigshafen, Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Jan. 12, 1973, Ser. No. 323,136

Int. Cl. C07c *25/04*

U.S. Cl. 260—650 R **9 Claims**

1. A process for the separation of an o-xylene mixture consisting essentially of 3-chloro-o-xylene and 4-chloro-o-xylene, said process comprising:

alkylating the o-xylene mixture at a temperature of from —20° C. to 100° C. with one to two moles per mole of 3-chloro-o-xylene of a compound selected from the group consisting of tert.-butyl chloride, tert.-butyl bromide, tert.-butanol, isobutene, diisobutene, 1,1,3,3-tetramethyl butanol-(1), 1,1,3,3-tetramethyl butyl-(1) chloride and 1,1,3,3-tetramethylbutyl-(1) bromide in the presence of a Friedel-Crafts catalyst employed in an amount of from 0.01 to 1 mole per mole of 3-chloro-o-xylene;

separating a non-alkylated 4-chloro-o-xylene-fraction from the resulting 3-chloro-5-alkyl-o-xylene; and

then dealkylating the alkyl radical from the isolated 3-chloro-5-alkyl-o-xylene.

3,850,999

PROCESS FOR THE MANUFACTURE OF 3,4-DICHLOROBUTENE-1

Klaus Gehrmann, Hurth-Knapsack, Alexander Ohorodnik, Erftstadt-Liblar, Udo Dettmeier, Okriftel, and Heinz-Josef Berns, Hurth-Berrenrath, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, Germany

Filed Aug. 4, 1972, Ser. No. 277,873

Claims priority, application Germany, Aug. 18, 1971, P 21 41 312.7

Int. Cl. C07c *21/02*

U.S. Cl. 260—654 R **2 Claims**

1. A process for the manufacture of 3,4-dichlorobutene-1, wherein butadiene and chlorine are reacted continuously in a reaction zone at temperatures between 210 and 270° C.; the resulting reaction gases are cooled; gaseous butadiene in excess is recycled to the reaction zone; condensate, which is obtained upon effecting the cooling step, and which consists essentially of 3,4-dichlorobutene-1, cis- and trans-1,4-dichlorobutenes-2, minor proportions of butadiene, 1-chlorobutadiene-(1,3) and high boiling contaminants ($bp_{760} > 155°$ C.) is introduced into a stripping zone; the condensate is stripped therein, leaving a base product, at temperatures between 40 and 120° C. by passing nitrogen gas therethrough, so as to isolate 1-chlorobutadiene-(1,3) and butadiene overhead and recycle them to the reaction zone, in which the 1-chlorobutadiene-(1,3) is converted to high-boiling, higher-chlorinated substances, and thereafter said base product containing the remainder of said condensate therein is delivered to an isomerization stage; 1,4-dichlorobutene-2 in said remainder is heated to temperatures between 85 and 110° C. in the presence of a catalyst containing CuCl and thereby isomerized therein to 3,4-dichlorobutene-1; the 3,4-dichlorobutene-1 is distilled off continuously overhead and a residual base product is delivered to a distilling zone maintained at temperatures between 85 and 110° C.; distillate, which substantially contains 1,4-dichlorobutene-2 is removed overhead under reduced pressure and recycled to the isomerization stage; and the high-boiling contaminants ($bp_{760} > 155°$ C.), which accumulate in the bottom portion of the distilling zone, are removed therefrom.

3,851,000

INCREASING POLYMER FUNCTIONALITY THROUGH METALLATION OF LOW MOLECULAR WEIGHT LIQUID POLYMERS WITH MENTHYLLITHIUM

Charles M. Selman and Henry L. Hsieh, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed July 12, 1973, Ser. No. 378,632

Int. Cl. C07f *1/02*

U.S. Cl. 260—665 R **9 Claims**

1. A process of lithiating liquid conjugated diene polymers which comprises treating said liquid conjugated diene polymer as polydienyllithium with a menthyllithium under metallation conditions.

3,851,001

HYDROGENATION OF AROMATIC HYDROCARBONS TO THE CORRESPONDING SATURATED HYDROCARBON

Robert M. Suggitt, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Oct. 31, 1973, Ser. No. 411,551

Int. Cl. C07c *5/10*

U.S. Cl. 260—667 **7 Claims**

1. A process for the production of cyclohexane having a purity of at least 99.5% which comprises forming a mixture consisting essentially of benzene and cyclohexane, passing said mixture in the presence of added hydrogen into a hydrogenation zone and into contact with a supported platinum catalyst promoted with between about 0.01 and 5.0 wt. percent thallium based on the catalyst composite and separating from the hydrogenation zone effluent product cyclohexane having a purity of at least 99.5%.

3,851,002

ISOMERIZATION OF DIMETHYLNAPHTHALENES

Isao Oka, Takeo Shima, Takanori Urasaki, and Makoto Ogasawara, Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Filed Aug. 28, 1972, Ser. No. 284,110

Int. Cl. C07c *5/24, 15/24*

U.S. Cl. 260—668 A **11 Claims**

1. A process for isomerizing dimethylnaphthalenes by contacting the same as dispersed in a carrier gas with silica-alumina catalyst at vapor phase under elevated temperatures, characterized in that the dimethylnaphthalene are contacted with the catalyst of which at least 80% by weight have the particle sizes ranging from 7 to 150 mesh, at the temperatures ranging from 260 to 350° C.

3,851,003

DEHYDROGENATION METHOD AND MULTICOMPONENT CATALYTIC COMPOSITE FOR USE THEREIN

Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 102,059, Dec. 28, 1970, now Patent No. 3,725,304. This application Mar. 5, 1973, Ser. No. 337,983

Int. Cl. C07c *5/18*

U.S. Cl. 260—668 D **21 Claims**

1. A method for dehydrogenating a dehydrogenatable hydrocarbon selected from the group consisting of normal paraffin hydrocarbons containing 2 to 30 carbon atoms per molecule, alkylaromatic hydrocarbons where the alkyl group contains 2 to 6 carbon atoms, and naphthenes, comprising contacting the hydrocarbon, at dehydrogenation conditions, with a catalytic composite consisting essentially of a tin component in combination with a platinum component on a carrier material and prepared by the method which comprises:

(a) impregnating a high surface area, porous carrier material with a solution of a complex chlorostannate (II) chloroplatinate anionic species, said solution being stabilized in contact with said carrier material with an aqueous halogen acid; and thereafter,

(b) drying and calcining the impregnated carrier material.

3,851,004

HYDROCARBON ALKYLATION PROCESS USING CATALYST REGENERATION

Chang-lee Yang, Ossining, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Sept. 27, 1973, Ser. No. 401,178

Int. Cl. C07c *3/52*

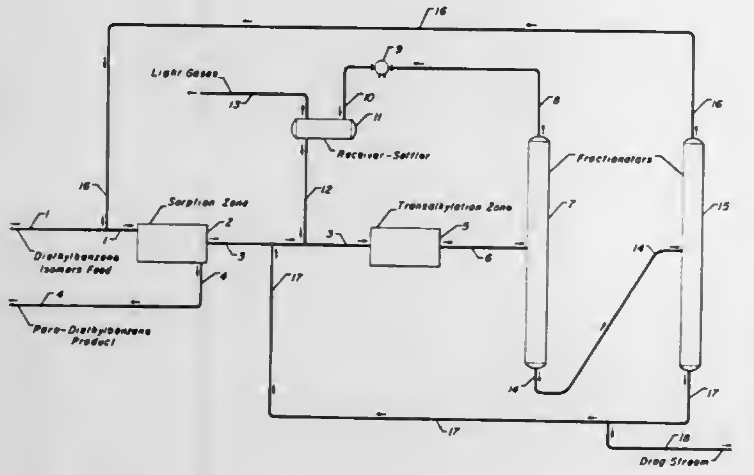
U.S. Cl. 260—671 C **9 Claims**

1. In an alkylation process in which an alkylatable organic compound is contacted and reacted with an

alkylation agent in a catalytic conversion zone containing a catalyst composition comprising at least one hydrogenation agent of the group of nickel, platinum, palladium, ruthenium and rhodium and a three-dimensional crystalline zeolitic molecular sieve having a pore diameter large enough to adsorb ortho-diethylbenzene, an alkali metal content of less than 3.5 weight percent on a solids basis, an SiO_2/Al_2O_3 molar ratio of at least 2.0, said contact and reaction being continued until the alkylation activity of the catalyst has decreased, the improvement which comprises periodically contacting and hydrogenating the catalyst composition at a temperature of from 80° F. to 572° F. with a liquid solution of hydrogen in a saturated hydrocarbon having from 4 to 12 carbon atoms, said solution containing at least 0.1 mole percent dissolved hydrogen, until the alkylation activity of the catalyst is improved.

3,851,005
PROCESS FOR PRODUCING PARA-DIETHYLBENZENE

Dennis J. Ward, South Barrington, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Aug. 10, 1973, Ser. No. 387,396
Int. Cl. C07c *3/62*
U.S. Cl. 260—672 T **9 Claims**



1. A process for producing a para-diethylbenzene product from a feedstock comprising a mixture of para-diethylbenzene, meta-diethylbenzene and ortho-diethylbenzene, which comprises the steps of:

(a) contacting said feedstock, in admixture with at least a portion of an intermediate-boiling stream formed as hereinafter specified, with a zeolitic crystalline aluminosilicate sorbent in a sorption zone at sorption conditions to separate para-diethylbenzene from said admixed feedstock and intermediate-boiling stream and to form a para-diethylbenzene-lean stream comprising meta-diethylbenzene and ortho-diethylbenzene, and recovering the resulting separated para-diethylbenzene from said sorption zone as said product;

(b) removing said para-diethylbenzene-lean stream from said sorption zone, contacting at least a portion of said para-diethylbenzene-lean stream, at least a portion of a low-boiling stream formed as hereinafter specified and at least a portion of a high-boiling stream formed as hereinafter specified with a transalkylation catalyst in a transalkylation zone at transalkylation conditions, and recovering from said transalkylation zone a transalkylation zone effluent comprising benzene, ethylbenzene, para-diethylbenzene, meta-diethylbenzene, ortho-diethylbenzene and polyethylbenzenes; and

(c) separating at least a portion of said transalkylation zone effluent to form said low-boiling stream comprising benzene and ethylbenzene, said intermediate-boiling stream comprising para-diethylbenzene, meta-diethylbenzene and othro-diethylbenzene, and said high-boiling stream comprising polyethylbenzenes.

3,851,006
PROCESS FOR THE SEPARATION OF PINENE ISOMERS

Armand J. De Rosset, Clarendon Hills, and Richard W. Neuzil, Downers Grove, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed July 23, 1973, Ser. No. 382,099
Int. Cl. C01b *33/28;* **C07c** *13/00;* **C09f** *3/02*
U.S. Cl. 260—675.5 **16 Claims**

1. A process for separating pinene isomer from a feed mixture containing pinene isomers which process comprises contacting said mixture at adsorption conditions with a crystalline aluminosilicate adsorbent selected from the group consisting of type X structured and type Y structured zeolites containing at the exchangeable cationic sites within said zeolite at least one cation selected from the group consisting of lithium, sodium, potassium, rubidium, cesium, beryllium, magnesium, calcium, strontium, barium, manganese, copper, cadmium, silver, zinc, and combinations thereof, whereby to selectively adsorb said pinene isomer from said feed mixture, and thereafter recovering the adsorbed pinene isomer from said adsorbent.

3,851,007
PROCESS FOR THE PREPARATION OF 9-CIS-TRICOSENE

Karl Eiter, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Oct. 10, 1973, Ser. No. 405,195
Claims priority, application Germany, Oct. 11, 1972, P 22 49 679.3
Int. Cl. C07c *11/00*
U.S. Cl. 260—677 R **8 Claims**

1. A process for the preparation of 9-tricosyne comprising reacting an acetylide of an α-acetylene of the formula

$$HC{\equiv}C{-}R$$

with a 1-haloalkane of the formula

$$Hal{-}R'$$

wherein one of R and R′ is a straight chain alkyl radical of 8 carbon atoms and the other is a straight chain alkyl radical of 13 carbon atoms, and the halogen is bromine or iodine.

3,851,008
OXYDEHYDROGENATION OF MIXED C_4 STREAM

Robert A. Stowe, Kenneth E. Coulter, and David K. Winegardner, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Dec. 11, 1972, Ser. No. 314,246
Int. Cl. C07c *5/18*
U.S. Cl. 260—680 E **6 Claims**

1. A method of oxydehydrogenating a mixed C_4 stream containing straight and branched chain alkanes and straight and branched chain alkene hydrocarbons and having an n-C_4 to iso C_4 mol ratio of from about 95:5 to about 40:60, comprising: feeding a mixture of (1) said C_4 hydrocarbons at a space velocity of about 100 v./v./h. to about 500 v./v./h. at STP, steam at a mole ratio based on the hydrocarbon of from about 10 v./v./h. to about 40 v./v./h. and a gas-containing molecular oxygen in a quantity sufficient to provide from about .1 to about .5 mole ratio of oxygen per mole of hydrocarbon over a strontium nickel phosphate catalyst at a temperature of from about 500° to about 700° C., thereby converting at least a portion of said straight chain alkanes and alkenes to corresponding compounds having a greater degree of unsaturation and converting at least a portion of the branched chain alkanes and alkenes to inorganic oxides of carbon and a mixture of ethylene and propylene.

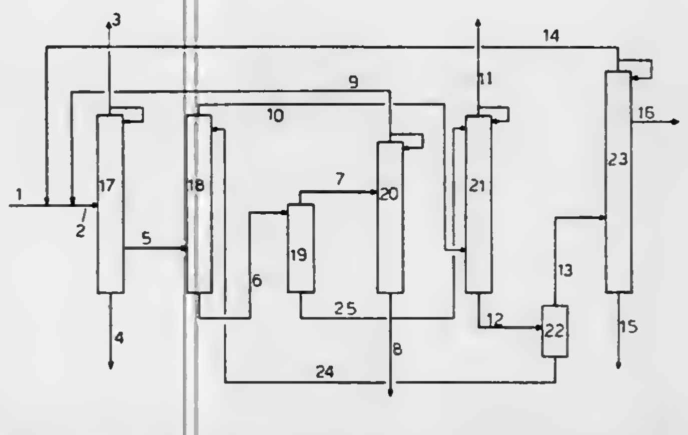
3,851,009
OXIDATIVE DEHYDROGENATION PROCESSES

Robert S. Cichowski, San Luis Obispo, Calif., assignor to Phillips Petroleum Company
No Drawing. Original application May 6, 1971, Ser. No. 140,969, now Patent No. 3,784,483. Divided and this appplication July 20, 1973, Ser. No. 381,018
Int. Cl. C07c *5/18*
U.S. Cl. 260—680 E **5 Claims**

1. A process for the oxidative dehydrogenation of a dehydrogenatable hydrocarbon feedstock having from 2 to 12 carbon atoms which comprises contacting said feedstock in the vapor phase under dehydrogenation conditions with a catalyst consisting essentially of cobalt, iron, phosphorous and combined oxygen, wherein the phosphorous:cobalt atomic ratio is in the range of 0.01–0.5:1, and the oxygen is present in an amount sufficient to satisfy the valence requirements of said cobalt, iron and the iron:cobalt atomic ratio is in the range of 0.01–3:1, phosphorous.

3,851,010
PROCESS FOR THE SEPARATION OF ISOPRENE

Carlo Rescalli, Alessandro Ginnasi, and Pierluigi Rebora, San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy
Filed Jan. 26, 1973, Ser. No. 327,238
Claims priority, application Italy, Jan. 28, 1972, 19,885/72
Int. Cl. C07c *7/08*
U.S. Cl. 260—681.5 **5 Claims**



1. Process for recovering isoprene of polymerization grade from a mixture of C_4 and C_5 hydrocarbons including isoprene, comprised of the following steps:

(a) ratification wherein C_4 hydrocarbons, low boiling acetylenic compounds, 70% to 90% of isopentane are withdrawn as overhead, and dimerization and polymerization products 30% to 60% of the high boiling hydrocarbons present in the feed are withdrawn as bottom product, and the stream containing isoprene is withdrawn in vapor phase from a plate of the exhaust section of a rectifier;

(b) a first extractive distillation, utilizing reflux and solvent, selected from the group consisting of N-formylmorpholine, morpholine and mixtures of said compounds with each other and with water, obtained by subjecting to flash evaporation the bottom stream of a second extractive distillation step, wherein monocyclopentadiene, high boiling acetylenic compounds and 40% to 70% of pentadienes present in said stream are withdrawn as bottom product and a stream containing raw isoprene is withdrawn as overhead with olefines, cyclopentene, and C_5 saturated hydrocarbons;

(c) stripping the bottom stream of the first extractive distillation step by separating the solvent from monocyclopentadiene and other hydrocarbons, wherein the solvent is recovered as bottom product and monocyclopentadiene and other hydrocarbons soluble in the solvent are discharged as overhead;

(d) rectification of the overhead hydrocarbon stream from the stripping step (c) wherein monocyclopentadiene, the high boiling acetylenic compounds and 40% to 70% based on the feedstock of the diene compounds are withdrawn as bottom product and isoprene contained in the stream coming from stripping step (c) is discharged as overhead product and sent to the rectification column of step (a);

(e) second extractive distillation of the raw isoprene stream obtained from the first extractive distillation step (b) wherein said stream is fed in vapor phase and the C_5 saturated and olefinic compounds are withdrawn as overhead, the solvent necessary therefor being withdrawn from the bottom of the stripping column of step (c);

(f) flash evaporation of the streams discharged as bottom product in the extractive distillation step (e), the liquid phase being recycled to the top of the first extractive column for supplying said column both with the extractive solvent and the hydrocarbon stream necessary for the reflux, the vapor phase constituted by isoprene essentially impure for cyclopentene and cyclopentane being sent to a further rectification step;

(g) rectification eliminating as bottom product the still present heavy compounds, cyclopentene, cyclopentane and the remaining pentadienes, withdrawing as overhead a stream of isoprene containing traces of low boiling compounds, which stream is recycled to the rectification column of step (a) withdrawing in liquid phase from a plate of the upper section of the rectification column polymerization grade isoprene.

3,851,011
ETHYLENE-PROPYLENE COPOLYMER OIL PREPARATION USING VANADIUM-ALUMINUM CATALYST

Richard S. Stearns, Malvern, Irl N. Duling, West Chester, and David S. Gates, Swarthmore, Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.
No Drawing. Continuation-in-part of applications Ser. No. 78,190, Oct. 5, 1970, now Patent No. 3,737,477, Ser. No. 78,191, Oct. 5, 1970, now Patent No. 3,676,521, and Ser. No. 220,362, Jan. 24, 1972. Said applications Ser. No. 78,190 and Ser. No. 78,191 are continuations-in-part of application Ser. No. 621,443, Mar. 8, 1967 now abandoned, and said application Ser. No. 220,362 is a continuation-in-part of said applications Ser. No. 78,190 and Ser. No. 78,191. This application July 7, 1972, Ser. No. 269,625
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **12 Claims**

1. Process of preparing a synthetic copolymer oil which comprises contacting a mixture comprising ethylene and propylene in solution or liquid phase at a temperature in the range of 0–125° C., with a catalyst system formed from (a) an aluminum alkyl chloride, and (b) a compound having the formula $VOCl_{3-n}(RO)_{0+n}$, wherein R represents an alkyl radical, and wherein n has the value of zero, one or two, said ethylene and propylene being maintained in the reaction zone for reaction in monomeric mol ratio to yield copolymer containing 29–71 mol percent ethylene, the rest consisting essentially of propylene and said reaction zone being maintained under hydrogen partial pressure in the range of 20–2000 p.s.i.a. and sufficiently high to yield copolymer oil having a maximum average number molecular weight of 4000.

3,851,012

RUBBER COMPOSITIONS CONTAINING A HEAT HARDENABLE PHENOLIC RESIN BASED ON A MIXTURE OF A DIHYDROXY DIPHENYL ALKANE AND A PARA-SUBSTITUTED ALKYL PHENOL

William I. Wertz, East Brunswick, and Stanley H. Richardson, Millington, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Aug. 7, 1972, Ser. No. 278,277

Int. Cl. B32b *27/42;* **C08d** *9/10;* **C08g** *37/16*

U.S. Cl. 260—845 17 Claims

1. A composition consisting essentially of a heat hardenable phenolic resin which is the condensation reaction product of a mixture containing an aldehyde, a para-substituted alkyl phenol and a dihydroxy diphenyl alkane wherein the aldehyde is present in an amount of about 0.9 mole to about 3 moles of aldehyde per mole of phenol and the dihydroxy diphenylalkane is present in an amount of about 0.25 mole to about 1.5 moles per mole of said alkyl phenol; and a rubber selected from the group consisting of natural rubbers, synthetic diene rubbers, chlorohydrin rubbers, and allylglycidyl ether-propylene oxide rubbers in an amount of about 50 to about 400 percent by weight based on the weight of said heat hardenable resin.

3,851,013

POLYESTER-ACRYLUREA THERMOSETTING MOULDING COMPOSITIONS

Hermann Perrey, Hans Jürgen Rosenkranz, Oskar Walter, and Hans Rudolph, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

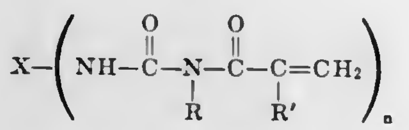
No Drawing. Filed Apr. 9, 1973, Ser. No. 349,257

Claims priority, application Germany, Apr. 12, 1972, P 22 17 568.4

Int. Cl. C08f *21/00*

U.S. Cl. 260—870 2 Claims

1. A thermosetting moulding composition which is free-flowing at room temperature, said moulding composition comprising (1) a polyester of an α,β-ethylenically unsaturated dicarboxylic acid and a polyhydric alkanol and (2) a compound of the formula



$$X-\left(NH-\overset{O}{\overset{\|}{C}}-\underset{R}{\underset{|}{N}}-\overset{O}{\overset{\|}{C}}-\underset{R'}{\underset{|}{C}}=CH_2\right)_n$$

wherein X is an aliphatic, cycloaliphatic or aromatic radical, *n* is the valency of X, R is hydrogen, alkyl or aryl and R′ is hydrogen or methyl.

3,851,014

METHOD FOR MAKING RUBBER MODIFIED RESINS

William O. Dalton, Hampden, Mass., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of abandoned application Ser. No. 322,245, Jan. 9, 1973. This application Oct. 1, 1973, Ser. No. 402,235

Int. Cl. C08f *41/12*

U.S. Cl. 260—876 R 9 Claims

1. In a process for the manufacture of resins of the type where rubber particles of alkadiene rubber grafted with monovinylidene aromatic monomer and alkene nitrile monomer are generally uniformly dispersed in a matrix of copolymer of monovinylidene aromatic monomer and alkene nitrile monomer, the improvement which comprises the steps of:

(A) admixing together, while maintaining a temperature of from about 120 to 180° C. on a 100 weight percent total mixture basis

(1) from about 50 to 90 weight percent of a first composition comprising from about 40 to 80 weight percent on a total first composition basis of a first copolymer of monovinylidene aromatic monomer/alkene nitrile monomer having a weight average molecular weight from about 75,000 to 500,000 with the balance up to 100 weight percent thereof being monomers selected from the group consisting of monovinylidene aromatic monomer and alkene nitrile monomer, the respective weight ratio of monovinylidene aromatic monomer to alkene nitrile monomer in said first copolymer and also in said monomers ranging from about 90:10 to 10:90, said first composition being initially in the physical form of a homogeneous hot melt and having an initial temperature of from about 130 to 180° C.

(2) from about 50 to 10 weight percent of a second composition comprising from about 30 to 70 weight percent on a total second composition basis of graft copolymer, from about 0.01 to 50 weight percent of a second copolymer of monovinylidene aromatic monomer/alkalene nitrile monomer having a weight average molecular weight of from about 50,000 to 500,000, from about 70 to 30 weight percent of an organic liquid having a boiling point in the range of from about 25 to 150° C. at atmospheric pressure and further being characterized by being substantially non-chemically reactive with said graft copolymer and by causing said graft copolymer to swell by not more than about 25 percent by volume, and from about 0 to 15 weight percent of water, said graft copolymer having a substrate of an alkadiene elastomer whose glass phase transition temperature is below about −20° C., a superstrate of a copolymer of monovinylidene aromatic monomer and alkene nitrile monomer, a graft ratio of from about 5 to 75 parts by weight superstrate for each 100 parts by weight of substrate, and a weight average particle size in the range of from about 0.25 to 2.0 microns, the respective weight ratio of monovinylidene aromatic monomer to alkene nitrile monomer in said second copolymer and also in said graft copolymer superstrate ranging from about 90:10 to 10:90, said second composition being initially in the physical form of a dispersion of said graft copolymer in said organic liquid and having an initial temperature ranging from about 0° C. up to the boiling point of said organic liquid, and

(B) placing the so-admixed said first composition and said second composition in a flash vaporization zone for a time of less than about 10 minutes, said flash vaporization zone being at a temperature of from about 120 to 280° C. and at a pressure of from about 0.001 to 800 mm. Hg abs. while maintaining such admixture in a physical form such that, for a period of time of at least about 1 minute in said zone, such admixture has a ratio of total surface area to total volume thereof at any given time of at least about 2.5:1, and while removing vapors evolved from such admixture in said zone, the combination of such conditions in said zone being such that the devolatilized composition thereafter removed from said zone comprises at least about 97 weight percent on a total devolatilized composition basis of combined said first and said second copolymers of monovinylidene aromatic monomer/alkene nitrile monomer and said graft copolymer.

3,851,015

METHOD FOR COPOLYMERIZING MONOMERS OF DIFFERENT TYPES

Elias Agouri and Philippe Mornet, Pau, Claude Parlant, Arthez-de-Bearn, and Jacques Rideau, Pau, France, assignors to Societe Nationale des Petroles d'Aquitaine, Courbevois, France

No Drawing. Continuation-in-part of application Ser. No. 227,265, Feb. 17, 1972, which is a continuation of application Ser. No. 851,077, Aug. 18, 1969, both now abandoned. This application Mar. 16, 1973, Ser. No. 342,193

Int. Cl. C08f *15/00*

U.S. Cl. 260—878 B 15 Claims

1. A process for the production of copolymers from monomers of different types by polymerization in two successive steps, of which the first consists in polymerizing a first monomer in the presence of a coordinated anionic catalyst system comprising organometallic compounds of a metal of the Groups IA, IIA, IIIA, or mixtures thereof of Mendeleev's Periodic Table of Elements, associated with a transition metal compound of Groups IV to VIII of said Table and the second is a radical polymerization in the presence of a catalyst selected from the group consisting of oxygen, hydroperoxides, peroxides, persalts and peracides affecting the non-deactivated polymer formed in the first step, and a second monomer which is polymerized by free radicals wherein that the reaction medium of the first step contains an amount in the range from 0.01 to 100 moles of an adjuvant per mole of transition metal compound which increases the proportion of the second monomer in the second step, fixed on the polymer of the first step, this adjuvant being a compound MY_n, in which M is a metal selected from the group consisting of boron and Group IIB of Mendeleev's Periodic Table of the Elements, *n* is the valency of M, and Y represents a member selected from the group consisting of a monovalent hydrocarbyl, a hydrogen atom, and a halogen, said first monomer selected from the group consisting of olefins, phenyl-substituted olefins, and diolefins and said second monomer selected from the group consisting of vinyl acetate, vinyl chloride, vinylidene chloride, alkyl acrylate, alkyl methacrylate, sodium acrylate, zinc acrylate, sodium methacrylate, zinc methacrylate, acrylonitrile, methacrylonitrile, alkylaminoalkyl acrylate, dialkylaminoalkyl acrylate, alkylaminoalkyl methacrylate, dialkylaminoalkyl methacrylate, vinylpyridine, vinylprrolidone, vinyl ether, vinyl thioether, vinylsilane, styrene, methylstryene, chlorostyrene, and butadiene monoepoxide.

3,851,016

PROCESS FOR THE PRODUCTION OF TRANSPARENT, IMPACT-RESISTANT POLYMERS OF VINYL CHLORIDE

René Nicolet and Walter Gutmann, Fribourg, Switzerland, assignors to Lonza Ltd., Basel, Switzerland

No Drawing. Filed June 30, 1972, Ser. No. 267,984

Claims priority, application Switzerland, July 1, 1971, 9,724/71

Int. Cl. C08f *15/26*

U.S. Cl. 260—884 14 Claims

1. A process for the production of transparent, impact-resistance, weather-resistant polymers of vinyl chloride by the polymerization of vinyl chloride according to the emulsion polymerization process in the presence of polymers of acrylic acid esters, comprising polymerizing the vinyl chloride in the presence of 2 to 10 percent by weight of a polymer of 2-ethylhexylacrylate containing at least 50 percent by weight 2-ethylhexylacrylate at temperatures of 50 to 70° C. and under absolute pressures amounting to 65 to 99% of the saturation pressure of the vinyl chloride at the polymerization temperature and under the conditions of the emulsion polymerization, the maximum average and the minimum average particle diameters of the polymer of 2-ethylhexylacrylate being selected, as a function of the concentration of the polymer of 2-ethylhexylacrylate in the polymer of the vinyl chloride, according to the following equations:

maximum average particle diameter in $m\mu=310-(24$ times the concentration of the polymer of 2-ethylhexylacrylate in percent by weight);

minimum average particle diameter in $m\mu=33-(3.3$ times the concentration of the polymer of 2-ethylhexylacrylate in percent by weight).

3,851,017

THIXOTROPIC ANAEROBIC COMPOSITION

Gerhardt P. Werber, Guilford, Conn., assignor to Loctite Corporation, Newington, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 89,025, Nov. 12, 1970. This application June 14, 1972, Ser. No. 262,891

Int. Cl. C08f *29/12, 37/18*

U.S. Cl. 260—897 B 6 Claims

1. A thixotropic liquid anaerobic composition which comprises a polymerizable acrylate ester monomer, a peroxy polymerization initiator capable of polymerizing said monomer in the substantial absence of oxygen, and from about 5% to about 60% by weight of an organic thixotropic agent comprising finely powered polyethylene substantially insoluble in the balance of the anaerobic composition, said thixotropic agent being used in an amount sufficient to produce a Brookfield viscosity at 2½ revolutions per minute of at least about 5000 centipoise, said Brookfield viscosity at 2½ revolutions per minute being at least about 50% greater than the Brookfield viscosity at 20 revolutions per minute.

3,851,018

CROSSLINKED FLUOROELASTOMER AND COMPOSITION CONTAINING SAME

Thomas James Kelly, Metarie, La., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 31, 1973, Ser. No. 384,375

Int. Cl. C08f *15/40, 29/22*

U.S. Cl. 260—900 3 Claims

1. A crosslinked fluoroelastomer which is a copolymer containing interpolymerized units in an amount equal to

(A) about 2–10 mole percent of a perfluorodivinyl ether of the formula $CF_2=CF-O(CF_2)_n-O-CF=CF_2$ wherein *n* is a whole number of 2–24,

(B) about 50–85 mole percent of vinylidene fluoride,

(C) about 5–48 mole percent of hexafluoropropylene or pentafluoropropylene and

(D) from 0 to about 40 mole percent of tetrafluoroethylene or a perfluoroalkyl perfluorovanyl ether, said fluoroelastomer having an insolubility value of about 30–100%.

3,851,019

SECONDARY PHOSPHORIC ACID ESTERS AND SALTS THEREOF

Bertil Hogberg, Hans Fex, Torsten Perklev, Sten Veige, Helsingborg and Bo Fredholm, Nyhamnslage Sweden, assignors to Aktiebolaget Leo, Helsingborg, Sweden

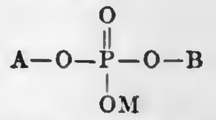
No Drawing. Filed Aug. 14, 1972, Ser. No. 280,276

Claims priority, application Great Britain, Aug. 17, 1971, 38,579/71, 38,580/71; Jan. 31, 1972, 4,508/72, 4,509/72

Int. Cl. A01n *9/36;* **C07f** *9/08*

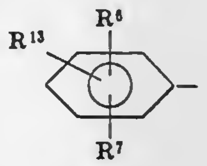
U.S. Cl. 260—946 37 Claims

1. A novel secondary phosphoric acid ester compound having the general formula

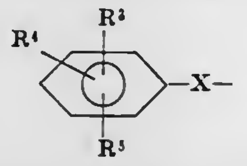


$$A-O-\underset{OM}{\underset{|}{\overset{O}{\overset{\|}{P}}}}-O-B \qquad (I$$

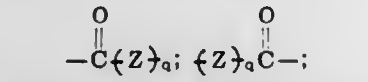
wherein M is selected from the group consisting of hydrogen; and a pharmaceutically acceptable inorganic and organic cations; and wherein A is



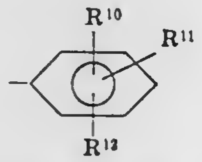
wherein one and only one of the substituents R^6, R^7, and R^{13} always represents a group R, located in any of the ortho, meta and para positions relative to the phosphoric acid ester group, the group R having the formula



wherein X is selected from the group consisting of;


$$-\overset{\overset{O}{\|}}{C}\!\left(Z\right)_q;\ \left(Z\right)_q\overset{\overset{O}{\|}}{C}-;$$

wherein *q* is selected from the group consisting of zero and one; and wherein Z is selected from the group consisting of: straight saturated hydrocarbon chains having at most 3 carbon atoms; and straight hydrocarbon chains having 2 and 3 carbon atoms and containing one double bond; Z above may be substituted by one substituent selected from the group consisting of: lower alkyl; lower alkenyl; cyclopentyl; cyclohexyl; phenyl; phenyl substituted in m- or p-position by one substituent selected from the group consisting of lower alkyl, lower alkoxy, -F, -Cl, -Br, and $-CF_3$; benzyl; benzyl substituted in m- or p-position by one substituent selected from the group consisting of lower alkyl, lower alkoxy, -F, -Cl, -Br, and $-CF_3$; benzylidene; benzylidene substituted in m- or p-position by one substituent selected from the group consisting of lower alkyl, lower alkoxy, -F, -Cl, -Br, and $-CF_3$; wherein B in the general formula (I) above is selected from the group consisting of: alkyl; having one to eight carbon atoms, inclusive, being at most di-substituted; cycloalkyl, namely cyclopentyl and cyclohexyl, being at most di-substituted; 1- and 2-naphthyl, both naphthyls being at most di-substituted; 2-, 3- and 4-biphenylyl, any biphenylyl being at most di-substituted; and

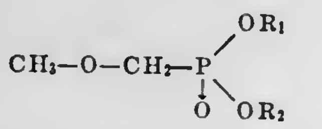


wherein the substituents in B, when B is alkyl, having one to eight carbon atoms, inclusive; cycloalkyl; naphthyl; and biphenylyl, are selected from the group consisting of lower alkyl, lower alkoxy, -F, -Cl, -Br, and $-CF_3$; wherein R^3, R^4, R^5, R^6, R^7, R^{10}, R^{11}, R^{12}, and R^{13} above are selected from the group consisting of: hydrogen; lower alkyl; lower alkenyl; lower alkoxy; hydroxy; $-O-CO-R^{14}$; -F; -Cl; -Br; $-CF_3$; where R^{14} is lower alkyl.

3,851,020
BIS(HALOALKYL)METHOXYMETHANE PHOSPHONATES

Daniel Balde, Levallois Perret, and Georges Nagy, Montrouge, France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France
No Drawing. Filed July 7, 1972, Ser. No. 269,620
Claims priority, application France, July 15, 1971, 7125823
Int. Cl. C07f *9/40*
U.S. Cl. 260—950 **4 Claims**

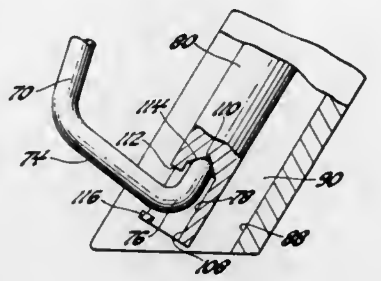
1. Esters of methoxymethanephosphonic acid of the general formula


$$CH_3-O-CH_2-\underset{\underset{O}{\downarrow}}{P}\begin{matrix}\diagup OR_1\\ \diagdown OR_2\end{matrix}$$

wherein R_1 and R_2 each is an alkyl radical containing 2, 3 or 4 carbon atoms substituted at position 2 with at least one atom of bromine or chlorine.

3,851,021
CARBURETOR

John W. Moulds, Penfield, N.Y., assignor to General Motors Corporation, Detroit, Mich.
Filed July 26, 1973, Ser. No. 382,685
Int. Cl. F02m *7/22*
U.S. Cl. 261—50 A **4 Claims**



1. A carburetor comprising a mixture conduit, a fuel bowl, a fuel passage having an inlet receiving fuel from said fuel bowl and an outlet discharging fuel into said mixture conduit and extending upwardly from said inlet to said outlet, a metering orifice disposed in said fuel passage, a metering rod reciprocably disposed in said passage inlet, said metering rod having a portion disposed in said orifice for controlling fuel flow from said fuel bowl through said passage and said orifice to said mixture conduit, said metering rod having an axially extending cavity formed in its lower end and a window opening laterally into the lower end of said cavity, and a hanger disposed generally vertically in said fuel bowl and having a hooked portion at its lower end, said hooked portion being received through said window and extending into the upper portion of said cavity and supporting said metering rod for reciprocation within said fuel passage, said metering rod further having means defining a lower edge of said window to prevent accidental uncoupling of said metering rod from said hanger.

3,851,022
PLASTIC FORMING METHOD

Frank J. Passarelli, 10635 Wilshire Blvd., Apt. 506, Los Angeles, Calif. 90024
Continuation-in-part of abandoned application Ser No. 90,823, Nov. 18, 1970. This application Jan. 15, 1973, Ser. No. 323,510
Int. Cl. B29d *27/00*
U.S. Cl. 264—51 **3 Claims**

1. A plastic molding process comprising:

placing an upper mold section adjacent a lower mold section to achieve a confined region wherein one of said mold sections is substantially transparent;

including a light reflective sheet of material upon one of the molding surfaces of said mold sections defining one of the wall surfaces for said confined area;

locating a quantity of expandable thermoplastic beads within said confined region;

subjecting the beads to incandescent radiant heat energy sufficient to cause complete expanding and fusing together of the beads to completely fill the volume of the confined region forming an integral sheet-like mass, this subjecting step includes reflecting the heat energy back through the mass after the initial passing of a portion of the heat energy through said transparent mold section and reflection by said reflective sheet back through the mass;

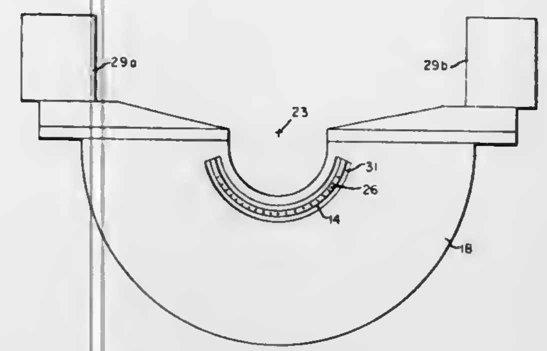
removing the resultant formed mass from the confined region;

transferring the resultant formed mass to a final forming section while continuously maintaining application of heat energy to said mass; and

molding the mass into a particular configuration within the final forming section.

3,851,023
PROCESS FOR FORMING A WEB

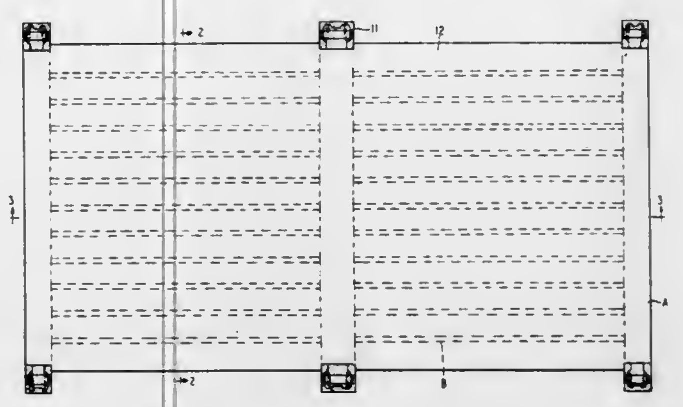
Dale Merrill Brethauer, Wilmington, Del., and Jean Paul Prideaux, Richmond, Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 2, 1972, Ser. No. 303,044
Int. Cl. B29d *3/00;* **D01d** *7/00*
U.S. Cl. 264—24 **3 Claims**



1. In a process for forming fibrous sheets that includes the steps of entraining a web in a gaseous stream flowing in a generally horizontal path toward one location on a baffle, directing and oscillating said web and said stream from said one location in a plurality of downward radial directions in a substantially vertical plane through ambient gas toward a collecting means, electrostatically charging the web, and collecting said web on said collecting means as a fibrous sheet, the improvement comprising: converging said stream below said baffle in said downward radial directions within a shield presenting substantially equal flow impedances in said radial directions for a distance of from 30 to 60 percent of the distance from said one location to said collecting means thereby maintaining the stream entrained web substantially as formed by said baffle and preventing premature mixing with said ambient gas.

3,851,024
REINFORCED CONCRETE CONSTRUCTION METHOD

Alan Sidney Cull, Lapstone, New South Wales, and Nessib Abdallah, Forestville, New South Wales, Australia, assignors to International Property Investments Limited, Hamilton, Bermuda
Continuation of abandoned application Ser. No. 34,975, May 6, 1970. This application Apr. 6, 1972, Ser. No. 241,517
Claims priority, application Australia, May 13, 1969, 54,893/69
Int. Cl. E04b *1/16;* **E04g** *21/02*
U.S. Cl. 264—34 **4 Claims**



1. A staged method of constructing a monolithic reinforced concrete multi story structure comprising:

(1) erecting column form members in their final position,

(2) securing together a first part of the reinforcement bars of a reinforced beam as a self-contained truss adapted to be supported in final position in the completed structure, and forming the truss to be sufficiently strong and stiff to support during construction without supports other than the column form members its own weight, any necessary attached formwork, loads applied to it during construction including loads from other structural members, the remaining part of the reinforcement for each beam and the wet concrete necessary to complete each beam,

(3) placing the truss substantially at its points of support in the completed structure and supporting said truss thereat,

(4) mounting the remaining part of the reinforcement bars for the beam on the column form members,

(5) pouring the concrete to complete the column form members and engage the continuity reinforcement bars of the beam supported therefrom and provide a stable frame for immediate repetition of steps (1)–(5) inclusive at the next higher story or in another area,

(6) attaching the concrete framework to the truss of the engaged beam member,

(7) forming as in step (2), the first part of the reinforcement bars as trusses for secondary joists,

(8) supporting the reinforcement trusses for the secondary joists substantially at their points of support in the completed structure.

(9) mounting and securing any remaining parts of the reinforcement bars for said secondary joists,

(10) pouring the concrete to complete the primary beam engaged with the previously poured column form members and immediately repeating steps (6) to (10) inclusive at the next level or in another area,

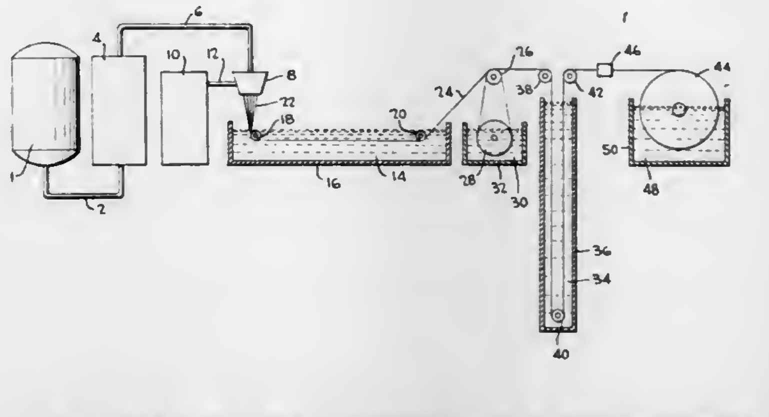
(11) allowing the reinforced concrete primary framing members from steps (1)–(10) to strengthen before imposing further loads of secondary joist and/or slab member forms and concrete,

(12) completing the secondary joist and/or slab form members and pouring the concrete for the secondary joists and slab when the primary frame has gained sufficient strength, and

(13) repeating steps (11)–(12) for the next level now reaching the required strength.

3,851,025
PROCESS FOR FORMING HOLLOW POLYBENZIMIDAZOLE FILAMENTS FOR REVERSE OSMOSIS APPLICATIONS

Michael J. Ram, West Orange, N.J., assignor to Celanese Corporation, New York, N.Y.
Filed Jan. 22, 1973, Ser. No. 325,779
Int. Cl. B01d *13/00*
U.S. Cl. 264—41 **25 Claims**



1. A process for the production of a semipermeable polybenzimidazole membrane in the form of a hollow filament which is suitable for use in reverse osmosis applications comprising:

(a) providing a solution of about 5 to 30 percent by weight based upon the weight of the total solution of polybenzimidazole polymer in N,N-dimethylacetamide solvent,

(b) extruding said solution through a concentric hollow jet spinneret while continuously introducing a liquid alkane having 8 to 15 carbon atoms into the center portion of said extruded solution, said liquid alkane being immiscible with said extruded solution,

(c) coagulating said resulting solution to form a hollow filament containing said liquid alkane within the center portion thereof by contact of the exterior surface thereof with a non-solvent for said polybenzimidazole polymer which is miscible with N,N-dimethylacetamide and immiscible with said liquid alkane,

(d) washing said resulting hollow filament with a liquid which is miscible with N,N-dimethylacetamide and immiscible with said liquid alkane to remove residual N,N-dimethylacetamide while preserving said liquid alkane within the center portion thereof, and

(e) annealing said resulting hollow filament containing said liquid alkane within the center portion thereof by contact of the exterior thereof with an organic liquid at a temperature of about 120 to 260° C. which is a non-solvent for said polybenzimidazole polymer, with said organic liquid being provided at a temperature below the boiling point of said liquid alkane.

3,851,026

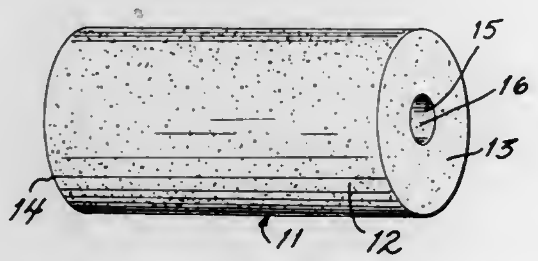
METHOD OF MAKING FLUID PURIFICATION DEVICE

Donald E. Heskett, Villa Park, and John B. Heskett, Lombard, Ill., assignors to Morton-Norwich Products, Inc.

Continuation of application Ser. No. 86,043, Nov. 2, 1970, now abandoned, which, in turn, was a division of application Ser. No. 581,507, filed on Sept. 23, 1966, now Pat. No. 3,538,020, dated Nov. 3, 1970, which was a continuation-in-part of application Ser. No. 490,802, filed Sept. 28, 1965, now abandoned. This application Apr. 2, 1973, Ser. No. 346,965

Int. Cl. B29d *23/03*

U.S. Cl. 264—54 **7 Claims**



1. A method of making a fluid treating device having a porous body of abutting surface-active aggregate particles, the surface areas of which are substantially freely exposed, which aggregate particles are bound together by a polyurethane binder, said method comprising:

(a) applying a liquid blowing agent to substantially cover the entire surface of a plurality of surface-active aggregate particles, said blowing agent being a material which when reacted with a urethane prepolymer produces gas generation;

(b) combining the thus treated surface-active aggregate particles with liquid reactants which include a urethane prepolymer to form an aggregate-liquid reactant mass;

(c) shaping said aggregate-liquid reactant mass into a desired product configuration by confining said mass in a product-shape defining mold, said aggregate particles while in said mold being in abutting relationship to each other, and said liquid reactants being used in amounts which will provide a polyurethane binder having a volume which is less than the interstitial volume between said abutting aggregate particles; and

(d) reacting said liquid reactants and blowing agent to produce a polyurethane binder while simultaneously generating a gas at the surface of said aggregate particles by the chemical reaction of said blowing agent with said liquid reactants to separate the polyurethane binder from the surfaces of said aggregate particles which are thus bound together in abutting relationship to each other by said polyurethane binder in a unitary structure wherein the surfaces of said bound aggregate particles are rendered substantially free of said polyurethane binder by said gas generation to produce said porous fluid treating device.

3,851,027

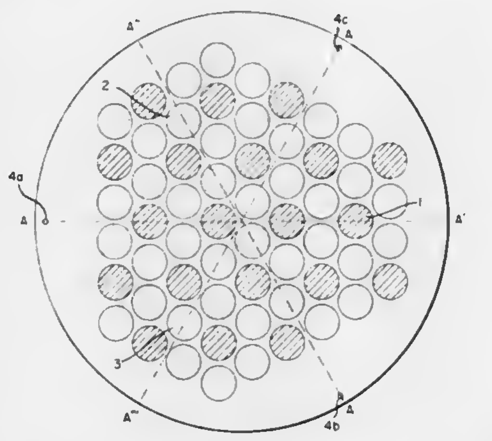
SHOCK-BONDING OF HARD PARTICLES

Anthony S. Balchan, Hagerstown, Md., and George R. Cowan, Woodbury, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 2, 1973, Ser. No. 320,060

Int. Cl. C01b *31/06*

U.S. Cl. 264—84 **8 Claims**



1. In a process for shocking hard particles so as to bond them together by explosively propelling a projectile toward a body of solid material containing the particles in a manner such that the projectile collides with said body of solid material in an axially progressive manner at conforming collision surfaces, thereby introducing a shock wave into the body of solid material, the improvement which comprises

(a) forming said body of solid material from (1) a carrier matrix having dispersed therethrough interstices in which the hard particles are amassed into aggregates and (2) a matrix-containment means, said matrix having a post-shock deformability which is greater than that of said particles, and having a lower degree of porosity than said aggregates, whereby the motion of said aggregates is retarded in the direction of shock travel, the peak pressure of the shock wave induced in the hard-particle aggregates being at least about 100 kilobars; and

(b) after the collision, separating the bonded bodies present in the interstices from the matrix.

3,851,028

METHOD FOR SHAPING EXTRUSION-MOULDED ARTICLES MADE OF SYNTHETIC PLASTICS MATERIAL

Siegfried Beyer, 22 Saalburgstrasse,
6 Nieder Eschbach, Germany

Continuation of abandoned application Ser. No. 28,633, Apr. 15, 1970. This application June 9, 1972, Ser. No. 261,480

Claims priority, application Germany, Apr. 24, 1969, P 19 20 837.8

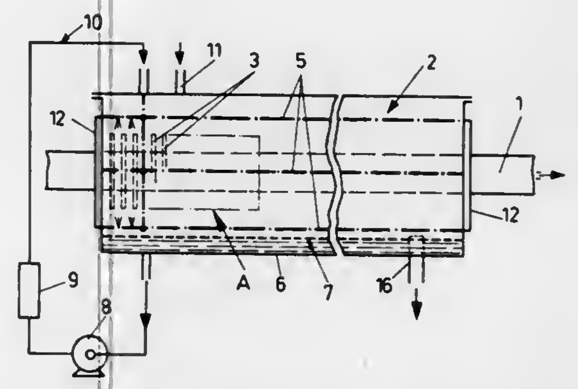
Int. Cl. B29c *17/07, 25/00*

U.S. Cl. 264—89 **7 Claims**

1. Method for shaping hollow extruded articles of synthetic thermoplastic which comprises

(1) passing a still warm hollow, extruded article through a zone sealed off at the inlet and outlet and containing a low pressure gaseous medium created by applying suction to said zone, the interior of said hollow article being under atmospheric pressure;

(2) dimensioning said hollow article by the action of said suction and cooling said hollow article simultaneously in said zone while applying said suction to said zone;



(3) dimensioning said hollow article in said zone by passing said hollow article in the presence of said low pressure gaseous medium through spaced apart shaping plates arranged one behind the other in said zone, said plates having apertures corresponding to the profile of said hollow article, said suction conforming said hollow article to the apertures of said shaping plates; and

(4) simultaneously cooling said hollow article in said zone by spraying said hollow article between said shaping plates with a cooling liquid from sources located near said shaping plates and extending along said hollow article and said shaping plates thereby forming a hardened boundary layer on the surface of said hollow article immediately after extrusion which stabilizes and supports said hollow article as it passes through said zone.

3,851,029

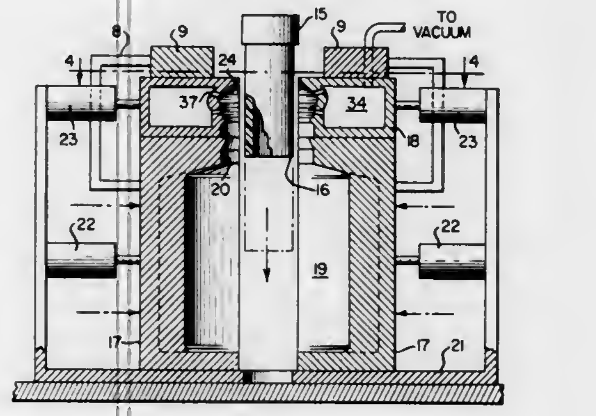
METHOD FOR MOLDING AND SEALING THERMOPLASTIC CONTAINERS

Walter G. Cornett III, Wilmette, and Donald G. Gaspar, Burbank, Ill., assignors to Respiratory Care, Inc., Arlington Heights, Ill.

Filed Mar. 7, 1973, Ser. No. 338,878

Int. Cl. B29c *17/07, 17/10*

U.S. Cl. 264—89 **10 Claims**



1. A method for making a container fabricated of thermoplastic material having at least one neck terminating in a protective cap covering a breachable sealing membrane, said cap and said membrane being integrally formed with said container comprising:

vertically extruding a heat softened tubular thermoplastic member into a vertically aligned and contiguous first confining zone and second confining zone;

pinching closed the said tubular member near substantially the bottom of said second zone;

forming at least two neck-like constrictions from said tubular member substantially at the top of said second zone;

pinching closed, to form an integral breachable sealing membrane, all but one of said neck-like constrictions substantially near the top thereof;

severing said tubular member near substantially the top of said first zone, thereby providing each neck-like constriction with an upwardly extending tubular portion;

providing fluid pressure through the neck-like constriction not pinched closed whereby the tubular member is inflated to the extent permitted by said second confining zone;

then pinching closed the severed upwardly extending tubular portion and forming a removable cap from the closed tubular portion above the said breachable sealing membrane; and,

pinching closed the severed upwardly extending tubular portion extending upwardly from the neck-like constriction through which fluid pressure was provided and forming a removable cap from the closed tubular portion.

3,851,030

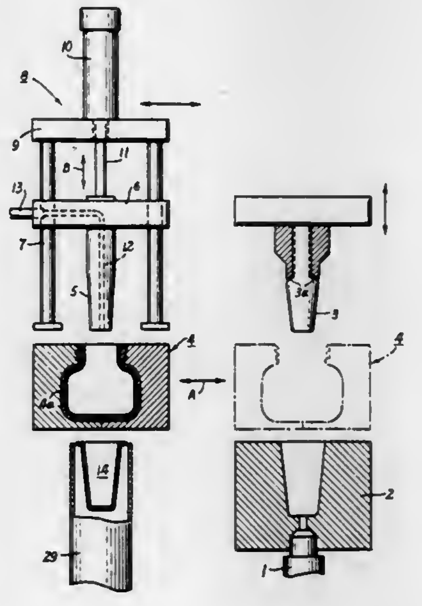
METHOD FOR THE PRODUCTION OF COMPOSITE CONTAINERS

Emery I. Valyi, 5200 Sycamore Ave.,
Riverdale, N.Y. 10471

Original application Dec. 23, 1971, Ser. No. 211,314, now Patent No. 3,768,940, dated Oct. 30, 1973. Divided and this application Feb. 7, 1973, Ser. No. 330,274

Int. Cl. B29c *17/07;* **B29d** *3/02*

U.S. Cl. 264—97 **10 Claims**

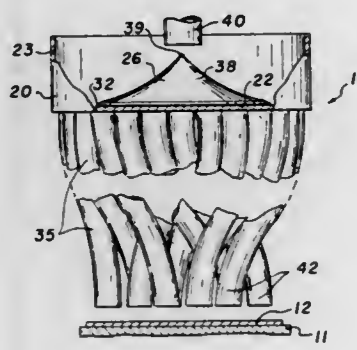


1. In the method of making a composite plastic article in the injection blow molding process wherein a parison is injection molded on a blow core in a parison mold, is transferred on the blow core to a blow mold and blown therein into the form of the finished article, the improvement comprising shifting the blow mold with the finished

article therein to a discharge station, removing the finished article at said discharge station, inserting a preformed liner into said blow mold, returning the blow mold with the liner therein into the path of the blow core, transferring the liner to the blow core, and then injection molding plastic in the parison mold about the liner to form a composite parison.

3,851,031
METHOD FOR FELTING WAFERS IN WAFERBOARD PRODUCTION

William L. Watkins, Hudson Bay, Saskatchewan, Canada, assignor to MacMillan Bloedel Research Limited, Vancouver, British Columbia, Canada
Filed Dec. 27, 1972, Ser. No. 318,739
Claims priority, application Canada, Nov. 24, 1972, 157,385
Int. Cl. B29j *5/00*
U.S. Cl. 264—109 **6 Claims**



1. The method of felting wood wafers in waferboard production, which comprises directing the wafers on to a spinning cone within a confined space and to be thrown radially off said cone into the open upper ends of a plurality of tubes arranged around the cone, the lower ends of said tubes being arranged in spaced rows extending transversely of and spaced above a path along which supporting plates are moved, said tubes distributing the wafers evenly on to the moving plates across the width thereof to form thereon felted mats of predetermined thickness and density.

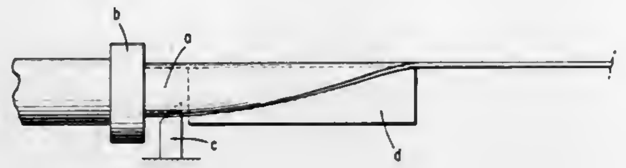
3,851,032
PROCESS OF PREPARING A SOLID FINE CRYSTALLINE PARACETAMOL POLYMER COMPLEX COMPOSITION

Roderic Stafford Andrews, Christopher George Barlow, and John Lewis Livingstone, Newcastle-upon-Tyne, England, assignors to Sterling Drug Inc., New York, N.Y.
No Drawing. Filed Apr. 23, 1973, Ser. No. 353,631
Int. Cl. A61j *3/10;* **B29j** *5/00;* **C09c** *1/56*
U.S. Cl. 264—109 **8 Claims**

1. A method of preparing a composition containing paracetamol in fine crystalline form which is suitable for direct tablet compression, which method comprises providing a hot aqueous solution containing paracetamol, and from 1% to 15%, by weight on the weight of the paracetamol, of a polymer selected from homopolymers and copolymers of vinyl acetate and vinyl pyrrolidone dissolved in said hot aqueous solution, being heated to at least 95° C. while avoiding excessive heating tending to cause the polymer to cross-link or to break down, cooling this solution with gentle stirring, recovering a solid fine crystalline paracetamol polymer complex composition therefrom, said composition when subjected to Raman spectroscopy, electron microscopy and X-ray crystallographic analyses indicating that the polymer is distributed throughout each crystal associated as a complex, admixing conventional tabletting excipients therewith, and forming tablets by direct tablet compression of the mixture.

3,851,033
METHOD OF FORMING REINFORCED FLAT SHEET BY EXTRUSION OF A TUBE, SLITTING AND OPENING TUBE TO A FLAT SHAPE WHILE SUPPORTING SAME

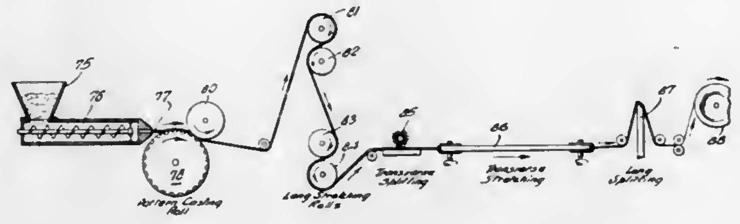
Nino Madonini, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy
Filed Dec. 14, 1972, Ser. No. 314,984
Claims priority, application Italy, Dec. 17, 1971, 32,525/71; Netherlands, Nov. 7, 1972, 7215039
Int. Cl. B29d *7/16*
U.S. Cl. 264—146 **3 Claims**



1. A method of making a substantially flat, wire-reinforced elastomeric strip which comprises extruding an uncured elastomeric tube having circumferentially spaced wires which extend longitudinally therethrough with areas of uncured elastomeric material therebetween, splitting the tube longitudinally through one of said areas as it is extruded, and flattening the resulting slit tube into a flat reinforced strip while supporting it at substantially all points as it passes from its circular cross-section to a flat band on a surface having a configuration both transversely and longitudinally which conforms substantially with the configuration of the tube wall as it bends from its circular cross-section into a flat band thereby preventing collapse of the elastomeric portions between the wires with the formation of undulations in the tube, whereby the resulting flat, wire-reinforced elastomeric strip is substantially free from compressive stresses and undulations between the wires.

3,851,034
METHODS OF MAKING SHEET MATERIAL

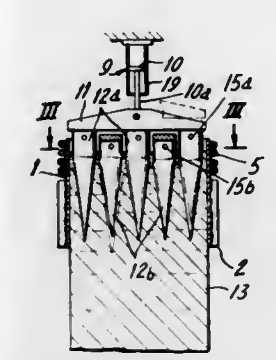
Carlyle Harmon, Scotch Plains, N.J., and William Sibbach, Longmeadow, Mass., assignors to Johnson & Johnson
Application July 7, 1970, Ser. No. 52,989, now Patent 3,746,607, which is a continuation-in-part of abandoned application Ser. No. 595,152, Nov. 17, 1966. Divided and this application Sept. 20, 1972, Ser. No. 290,671
Int. Cl. B29h *7/18*
U.S. Cl. 264—147 **9 Claims**



1. A method of producing sheet material having a predetermined pattern of film areas interconnected by fibrous areas comprising: forming a film of an orientable, crystalline polymer, said film comprising a predetermined pattern of film areas and a remainder portion, said predetermined pattern of film areas being less capable, after stretching of said film in a direction, of being split into fibers than said remainder portion, stretching the film in a direction to an extent whereby said remainder portion is capable of being split into fibers, and treating the film to fibrillate said remainder portion into fibrous areas comprising a multiplicity of fine fibers uniformly distributed throughout said fibrous areas, said fibrous areas interconnecting said film areas.

3,851,035
METHOD AND APPARATUS FOR THE PRODUCTION OF BLOCKS FROM SODIUM HYDROXIDE SOLUTION

Hans Kuhnlein, Fullinsdorf, Switzerland, assignor to Hch. Bertrams Aktiengesellschaft, Basel, Switzerland
Original application Nov. 27, 1970, Ser. No. 93,165, now Patent No. 3,709,648. Divided and this application July 12, 1972, Ser. No. 271,185
Claims priority, application Switzerland, Dec. 3, 1969, 18,130/69
Int. Cl. B28b *1/54;* **B29c** *25/00*
U.S. Cl. 264—148 **5 Claims**



1. A method of producing solid blocks from a liquid such as molten sodium hydroxide, comprising the steps of providing an upright shaft open at both ends; initially blocking the lower end of the shaft; filling the shaft to a predetermined level with the liquid; positioning at least one stationary downwardly tapered cooling element and at least one upwardly and downwardly movable downwardly tapered cooling element in the liquid at the upper end of the shaft; cooling the liquid in the shaft to form a solid; unblocking the lower end of the shaft; supplying the liquid to the shaft above the formed solid; at least partially retracting each movable cooling element upwardly from the solid for flow of the liquid into the space between each movable cooling element and the solid to solidify the liquid in contact with each movable cooling element; then moving each movable cooling element downwardly to force the solid downwardly in the shaft to leave a space between each stationary cooling element and the solid for receipt and solidification of additional liquid in contact with the stationary cooling element; each stationary cooling element blocks upward movement of the solid during retraction of each movable cooling element upwardly of the shaft; and cyclically repeating the upward and downward movement of each movable cooling element to force a continuous length of the solid out of the lower end of the shaft.

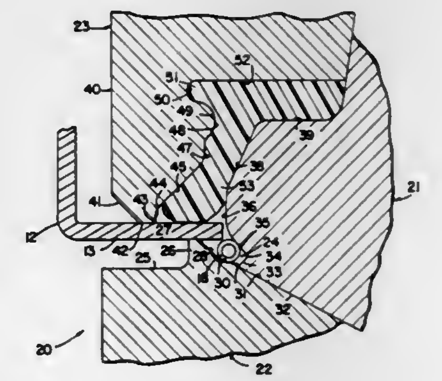
3,851,036
METHOD OF MAKING HOLLOW FIBERS

L. S. Tzentis, Zurich, Switzerland, assignor to Dow Badische Company, Williamsburg, Va.
No Drawing. Continuation of abandoned application Ser. No. 851,284 Aug. 19, 1969. This application Sept. 13, 1971, Ser. No. 180,227
Int. Cl. D01f *7/00*
U.S. Cl. 264—182 **13 Claims**

1. In the known process comprising solution spinning polyacrylonitrile homopolymers or copolymers containing at least 80% by weight acrylonitrile and up to 20% by weight of one or more vinyl monomers through a round orifice into a first bath to superficially coagulate the fiber; passing the superficially coagulated fiber into a second bath; washing the fiber; stretching the fiber; and drying the fiber; wherein the spinning solution and said first and second baths all contain a member selected from the group consisting of an aqueous saline solvent, an aqueous saline solvent containing an aliphatic alcohol containing less than 6 carbon atoms; dimethyl acetamide, dimethyl formamide, and dimethyl sulfoxide; the improvement which comprises forming hollow fiber without the addition of foaming agents by spinning said solution into said first bath wherein the concentration of the selected member is maintained in an amount of 5 to 65% by weight in 95 to 35% by weight water and the temperature of said first bath is maintained at −20 to +25° C., and maintaining the fiber in said first bath for from about 13 to about 40 seconds and thereafter passing the superficially coagulated fiber into said second bath wherein the concentration of said selected member is maintained in an amount less than that in the first bath and less than 35% by weight in more than 65% water and the temperature of said second bath is maintained at 30 to 120° C. and maintaining said fiber in said second bath from about 1 to 15 seconds.

3,851,037
METHOD FOR MOLDING DUAL-LIP SHAFT SEALS WITH A GARTER SPRING MOLDED INTO THE AUXILIARY LIP

Frank A. Day, Farmington, and James A. Repella, Madison Heights, Mich., assignors to Federal-Mogul Corporation, Detroit, Mich.
Filed May 3, 1971, Ser. No. 139,618
Int. Cl. B29d *3/00*
U.S. Cl. 264—229 **2 Claims**



1. A method for molding an integral molded dual-lip seal having a spring molded into the auxiliary lip, said method employing a mold having a plurality of members and providing a pair of facing converging walls that act to define said auxiliary lip, one of said facing walls being of lesser diameter than the other at any radial plane through them both, one of said members being a mold core providing at least said lesser diameter wall, said mold core also including a mold wall of larger diameter than the widest diameter portion of said lesser diameter wall and joined to said lesser diameter wall, comprising:

stretching a garter spring that is of smaller diameter than said larger diameter wall and passing it while stretched around said larger diameter wall and to its juncture with said lesser diameter wall,

then snapping said garter spring initially into its final position against said facing converging mold walls that are to define the auxiliary lip,

spacing said spring from the sealing edge of that lip by the size of the spring coils relative to the convergence of the walls,

preventing said spring from assuming a free or rest position and maintaining it in a stretched position positively by engagement with said walls,

preventing retraction of the spring from its correct position by the same walls extending radially outwardly so that before filling said mold with elastomer the spring is snapped into its said final position, where it is stretched less than it would be in any direction in which it can move,

filling said mold with elastomer, and

curing said elastomer.

3,851,038

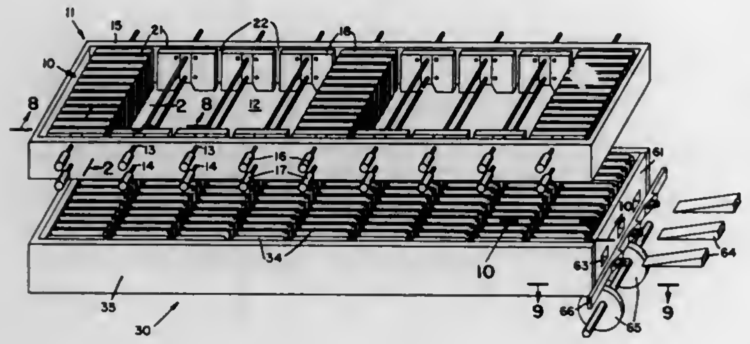
METHOD OF DEPOSITING A STACK OF REINFORCING MEMBERS IN A MOLD AND MOLDING

Leonard S. Meyer, Columbia, S.C., assignor to Sybron Corporation, Rochester, N.Y.

Filed Aug. 2, 1972, Ser. No. 277,332

Int. Cl. B29d *3/02;* **B32b** *31/04*

U.S. Cl. 264—261 **5 Claims**



1. A method of molding reinforced plastic articles comprising:

assembling preformed solid reinforcing members in a plurality of layers in a transfer jig having a plurality of removable support members extending across said jig in substantially parallel relationship with each other to form a stack of reinforcing members, at least some of said members having intersecting orientation;

transferring the stack of reinforcing members to a mold wherein the reinforcing members are embedded in a hardenable liquid resin by positioning the jig above the mold and removing said support members one at a time, beginning at one end of the mold and proceeding across the mold, to gradually lower the stack of reinforcing members as a unit into the mold; and

curing the liquid resin.

3,851,039

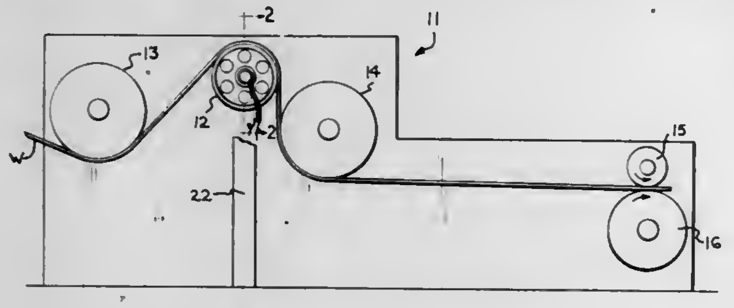
METHOD FOR THE TREATMENT OF A CRAZED SURFACE OF A WEB EXPANDED POLYSTYRENE

Maurice W. Blackwelder, Dix Hills, N.Y., assignor to Owens-Illinois, Inc.

Filed Dec. 20, 1972, Ser. No. 316,759

Int. Cl. B29c *25/00;* **B29d** *27/00;* **B44d** *5/00*

U.S. Cl. 264—321 **7 Claims**



1. In the manufacture of sheetlike expanded polystyrene, said sheetlike polystyrene having shallow, dense opposed major surfaces with a thick core of reduced density therebetween and integral therewith, said sheetlike polystyrene comprising residual blowing agent which is capable of expansion, when heated to a temperature which will soften said sheetlike polystyrene, to increase the thickness and reduce the density thereof, one of said opposed major surfaces being crazed and subject to damage by abrasion during mechanical handling of said sheetlike polystyrene, the method of repairing said crazed surface to improve its abrasion resistance without materially changing the thickness or density of said sheetlike polystyrene and without materially reducing the gloss of the other of said opposed surfaces, said method comprising the steps of: heating said one of said opposed surfaces of said sheetlike expanded polystyrene to soften said surface, so that particles present thereon will be fused to said surface, and quickly cooling the heated surface of said sheetlike polystyrene below the softening point thereof before the heat penetrates into said sheetlike polystyrene to an appreciable depth.

3,851,040

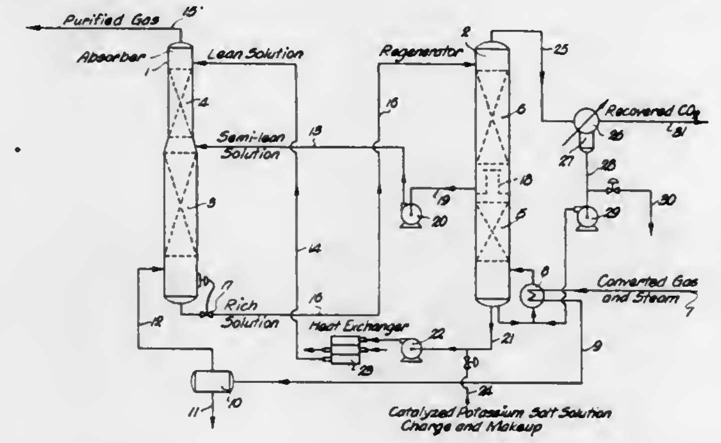
METHOD OF PURIFYING AND CONCENTRATING LITHIUM IONS

Giulio Alberti, Casal Palocco, Isola 33, Villino 47, and Maria Antonietta Massucci, Via Enrico Toti 3, both of Rome, Italy

No Drawing. Continuation-in-part of abandoned application Ser. No. 846,586, July 31, 1969. This application Sept. 29, 1972, Ser. No. 293,587

Int. Cl. B01d *11/00;* **C01g** *56/00*

U.S. Cl. 423—181 **1 Claim**



1. A method of purifying and concentrating lithium ions from an aqueous solution wherein they are contained together with other ions which method comprises adding to said solution a caustic solution to obtain a solution wherein the concentration of hydroxyl ions is equal at least to the lithium ion concentration; percolating the solution so obtained through a bed consisting of crystalline thorium acid arsenate having the formula $Th(HAsO_4)_2$ and an ion exchange capacity ranging between 1.40 and 3.55 meq./g. toward the lithium ion to thereby obtain thorium and lithium arsenate; washing said thorium and lithium arsenate with water previously alkalized at a pH from 9 to 10; percolating a hydrochloric acid solution through said thorium and lithium arsenate to elute the lithium ions therefrom whereby a concentrated and purified lithium solution is obtained and the thorium arsenate is restored to its initial form.

3,851,041

METHOD FOR REMOVING ACID GASES FROM GASEOUS MIXTURES

Allen G. Eickmeyer, 8126 El Monte,
Prairie Village, Kans. 66208

Application Mar. 25, 1970, Ser. No. 22,505, which is a continuation-in-part of abandoned application Ser. No. 523,926, Feb. 1, 1966, which is a continuation-in-part of abandoned application Ser. No. 432,334, Feb. 12, 1965, which is a continuation-in-part of abandoned application Ser. No. 291,532, June 28, 1963, which is a continuation-in-part of abandoned application Ser. No. 231,963, Oct. 22, 1962, which in turn is a continuation-in-part of abandoned application Ser. No. 209,221, July 11, 1962. Divided and this application Mar. 15, 1971, Ser. No. 124,251

Int. Cl. B01d *53/34*

U.S. Cl. 423—223 **10 Claims**

1. An absorption-desorption process for selectively removing CO_2 or H_2S from a gaseous mixture containing the same in combination with other gases, comprising the steps of:

contacting said gaseous mixture with a hot aqueous solution comprising from about 15 to 40 weight percent of a potassium salt selected from the group consisting of potassium carbonate, potassium borate, and mixtures thereof, and a smaller amount within the range of from about 2.0 to 16.7% by weight of an amine borate chosen from the group consisting of monoethanolamine borate, diethanolamine borate, an ethylene polyamine borate, and a borate of the reaction product of an ethylene polyamine and ethylene oxide, in an absorption stage to thereby catalyze the absorption of at least a portion of the CO_2 or H_2S from said gaseous mixture;

maintaining said hot solution at an elevated temperature of at least about 56° C.;

regenerating the hot aqueous solution containing the absorbed CO_2 or H_2S in a regenerating stage by steam stripping at least a portion thereof from the solution; and

recycling at least a portion of said regenerated solution for absorptive contact with said gaseous mixture while maintaining said solution at a temperature of at least said level of 56° C.

3,851,042

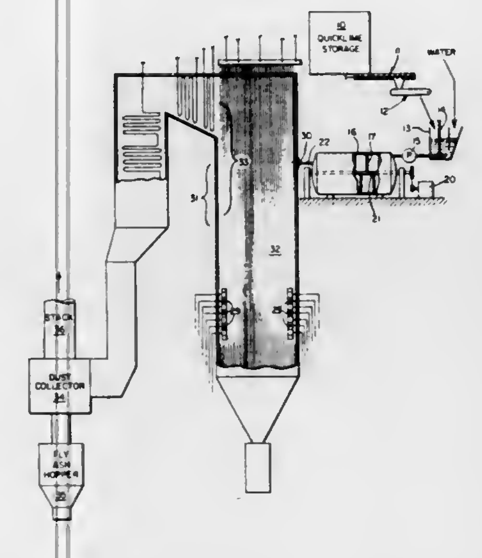
METHOD FOR CONTROLLING AIR POLLUTION

Leonard John Minnick, Cheltenham, Pa., assignor to Foster Wheeler Corporation, Livingston, N.J.

Continuation-in-part of application Ser. No. 822,824, June 8, 1969. This application Nov. 23, 1971, Ser. No. 201,315

Int. Cl. B01d *53/34*

U.S. Cl. 423—244 **11 Claims**



1. In a method of desulphurizing flue gas produced from combustion of a fuel selected from the group consisting of coal and oil, the steps which comprise burning said fuel under conditions which produce finely-divided fly ash particles and sulphur-bearing ingredients in the flue gas, continuously mixing quicklime and water and forcing said mixture into high pressure intimate contact, thus causing a reaction to take place under pressure with development of steam and production of a fully hydrated lime and continuously injecting a stream of said fully hydrated lime and said steam under pressure, while said line is still in its freshly formed state into the aforesaid flue gas while said flue gas is at a temperature of about 1200° F.–2400° F.

3,851,043

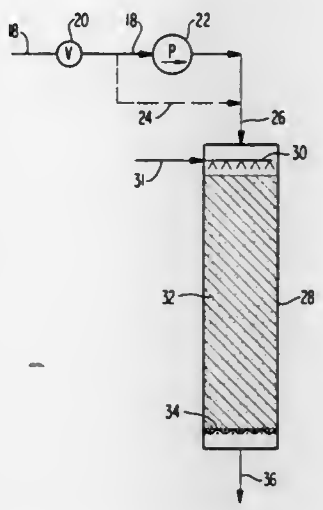
DISPOSING OF EXHAUST GAS FROM AN ETHYLENE OXIDE STERILIZER

Donald A. Gunther, Erie, Pa., assignor to American Sterilizer Company

Filed July 3, 1972, Ser. No. 268,647

Int. Cl. A61l *9/00, 3/02;* **B01d** *47/00*

U.S. Cl. 423—245 **7 Claims**



1. Method of disposing of gas from an ethylene oxide sterilizer comprising

removing said gas from the sterilizer without exposing the same to the atmosphere,

passing said gas through a column containing an elongate bed of strong acid cation-active ion exchange resin in the hydrogen form and water coating said resin to function as a reaction solvent phase whereby the ethylene oxide in said gas reacts with the resin and is bound thereto as hydroxyethyl group,

venting gas which is free of ethylene oxide.

3,851,044

BONE SEEKING TECHNETIUM 99M STANNOUS PHOSPHATE COMPLEX

Norman Adler, Arlington, and Leopoldo Lazaro Camin, Lexington, Mass., assignors to New England Nuclear Corporation, Boston, Mass.

No Drawing. Filed Sept. 13, 1972, Ser. No. 288,577

Int. Cl. A61k *27/04;* **C01g** *1/00*

U.S. Cl. 423—249 **12 Claims**

1. A metabolizable radioactive bone seeking composition for in vivo concentrating ^{99m}Tc in the skeletal structure of mammals comprising a technetium-99m-stannous-phosphate complex, the phosphate moiety of which comprises pyrophosphate, said phosphate moiety containing no more than 25% by weight of linear polyphosphate of formulation $P_nO_{3n+1}{}^{-(n+2)}$ having a molecular weight greater than pyrophosphate.

3,851,045

LANTHANIDE TRANSITION METAL TERNARY CHALCOGENIDES

Paul Christopher Donohue, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 9, 1973, Ser. No. 414,289

Int. Cl. C01b *19/00, 17/00;* **C01f** *17/00;* **C01g** *29/00*

U.S. Cl. 423—263 **7 Claims**

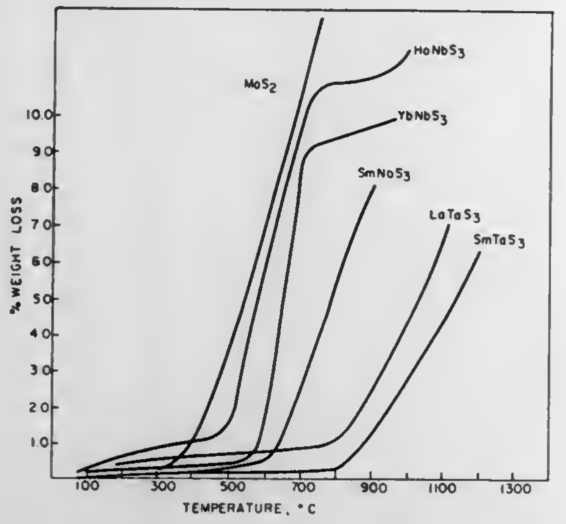
1. Ternary chalcogenides of the formula

$$Ln^{+3}M^{+4}X_3^{-2}$$

wherein

Ln^{+3} is a trivalent cation selected from the group consisting of bismuth, yttrium and the lanthanide elements of atonic number 57 through 71 inclusive.

M^{+4} is a tetravalent transition metal cation selected from the group consisting of titanium, vanadium, niobium and tantalum,



X^{-2} is a divalent chalcogenide anion selected from the group consisting of sulfur and selenium, and

the ionic radius ratio

$$\frac{r_{\mathrm{Ln}^{+3}}+r_{\mathrm{M}^{+4}}}{r_{\mathrm{X}^{-2}}}$$

is at least 0.82.

3,851,046

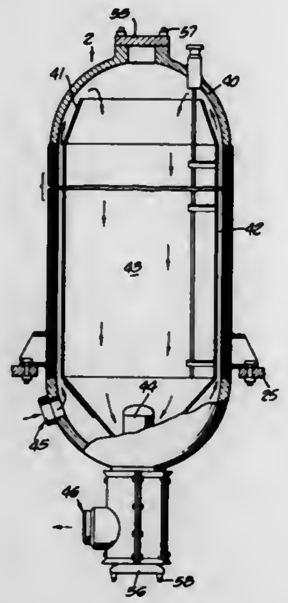
AMMONIA SYNTHESIS PROCESS

Lee E. Wright, West Covina, and Allan E. Pickford, Palos Verdes Estates, Calif., assignors to C. F. Braun & Company, Alhambra, Calif.

Original application Feb. 8, 1971, Ser. No. 113,333, now Patent No. 3,721,532. Divided and this appplication Sept. 27, 1972, Ser. No. 292,591

Int. Cl. C01c *1/02*

U.S. Cl. 423—359 **3 Claims**



1. In a process for synthesizing ammonia at high pressure from a feed gas stream containing hydrogen and nitrogen, the steps comprising passing said feed gas stream in heat exchange relationship with a partially synthesized gas having a temperature from about 800 to 1100° F. to increase the temperature of said feed gas stream to about 650–800° F. and reduce the temperature of said partially synthesized gas, passing said heat exchanged feed gas stream directly from said heat exchange step to a synthesis converter and subjecting the same to synthesis conditions to produce partially synthesized gas, and thereafter passing said heat exchanged partially synthesized gas directly from said heat exchanger to a synthesis converter and subjecting said partially synthesized gas to further synthesis therein.

3,851,047

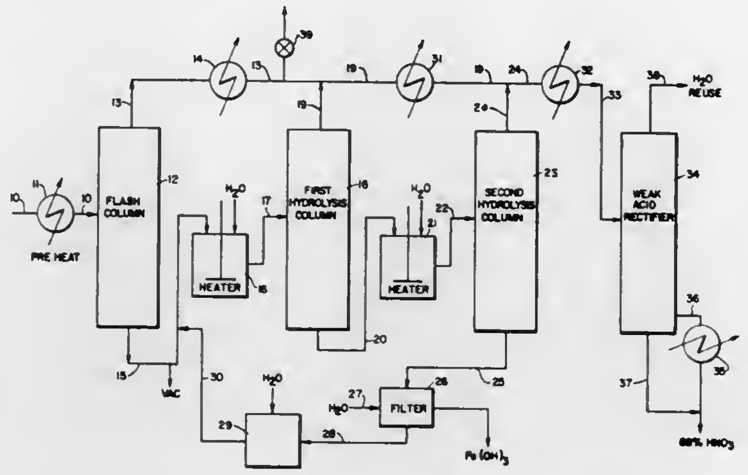
METHOD FOR CONTINUOUSLY PROCESSING WASTE NITRIC ACID SOLUTIONS

Derek W. Bailey, Denver, Colo., assignor to Brunswick Corporation

Filed Dec. 21, 1972, Ser. No. 317,170

Int. Cl. C01b *21/42*

U.S. Cl. 423—390 **7 Claims**



1. A method for continuously processing nitric acid solutions containing ferric nitrate to produce substantially pure nitric acid and ferric oxide wherein substantially no insoluble nitrogen oxide gases are evolved, comprising:

(a) flash evaporating said solution at about the boiling temperature of an azeotropic mixture of nitric acid and water,

(b) recovering substantially pure nitric acid as the overhead from said flash evaporation, and

(c) separating ferric hydroxide and recovering ferric oxide from the bottoms of said flash evaporation.

3,851,048

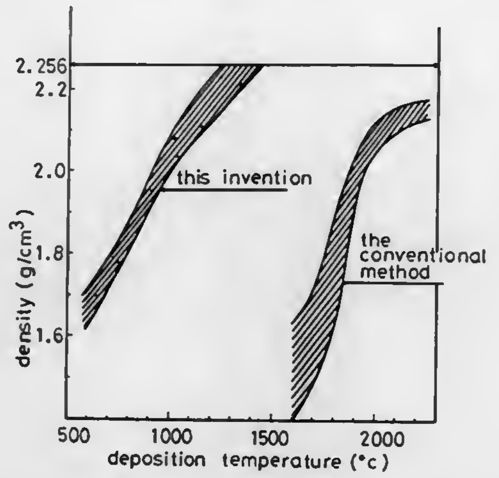
METHOD FOR PRODUCING ISOTROPIC PYROLYTIC CARBON

Tadashi Araki, Kiro Asano, and Jun Yamada, Tokyo, Hisao Imaizumi, Urawa, and Takao Awao, Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Original application Dec. 28, 1970, Ser. No. 101,621, now abandoned. Divided and this application July 11, 1972, Ser. No. 270,604

Int. Cl. C09c *1/48*

U.S. Cl. 423—458 **1 Claim**



1. A process for the production of isotropic pyrolytic carbon which comprises vaporizing a material having a vapor pressure of at least 5 mm. Hg at 490° C. and at least two condensed rings, bringing the said vaporized material into contact with a preheated substrate heated to a temperature of 600–1500° C., thereby depositing said isotropic pyrolytic carbon as a coating on said substrate, and rapidly cooling said coated substrate and recovering said isotropic pyrolytic carbon from said coated substrate.

3,851,049

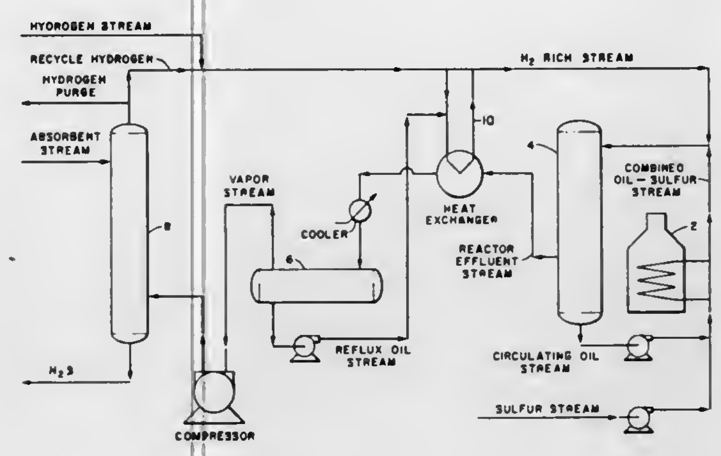
METHOD FOR PREPARING HYDROGEN SULFIDE

John H. Smith, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed June 14, 1972, Ser. No. 262,908

Int. Cl. B01j *9/00;* **C01b** *17/16*

U.S. Cl. 423—564 **2 Claims**



1. Method for preparing hydrogen sulfide which comprises the steps of:

(a) contacting elemental sulfur with a hydrocarbon oil of low volatility;

(b) hydrogenating at a temperature of from about 300° F. to about 800° F. and at a pressure of about 100 p.s.i.g. the sulfur in said oil in the presence of a hydrodesulfurization catalyst selected from the group consisting of sulfides of one or more metals from Groups VIB and Group VIII of the periodic table on an alumina support to form H_2S;

(c) separating the H_2S produced in step (b) from the oily solution, and

(d) stripping said H_2S of excess hydrogen and recovering the final product of hydrogen sulfide.

3,851,050

RECOVERY OF SULFUR FROM SO_2-CONTAINING REGENERATION OFF-GASES

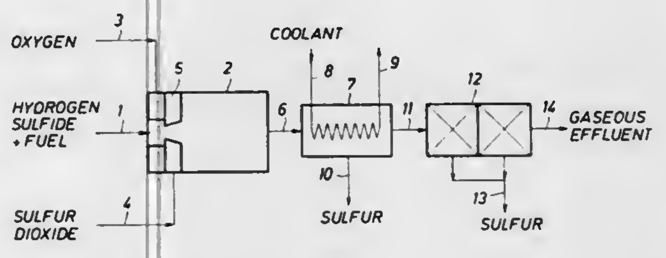
Willem Groenendaal, The Hague, Netherlands, Walter M. Lenz, Etobicoke, Ontario, Canada, and Philippus Loof, The Hague, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Sept. 6, 1973, Ser. No. 394,711

Claims priority, application Great Britain, Sept. 15, 1972, 42,920/72

Int. Cl. C01b *17/04*

U.S. Cl. 423—574 **11 Claims**



1. In a process for the removal of sulfur dioxide from gas mixtures with a solid acceptor for sulfur dioxide wherein the solid acceptor is regenerated with the production of a regeneration off-gas rich in sulfur dioxide, the improvement which comprises recovering the sulfur value from said regeneration off-gas by:

(a) introducing said sulfur dioxide-containing regeneration off-gas into the thermic reaction zone of a Claus process in which zone hydrogen sulfide is partially combusted with an oxygen-containing gas to produce sulfur dioxide, the mole percentage of sulfur dioxide in the introduced regeneration off-gas to the sulfur dioxide produced by partial combustion being at least 25%;

(b) maintaining the temperature in the thermic reaction zone at least 700° C. whereby hydrogen sulfide and sulfur dioxide react to form elemental sulfur;

(c) withdrawing from said thermic reaction zone a gaseous effluent containing the formed sulfur and unreacted hydrogen sulfide and sulfur dioxide, and

(d) separating formed sulfur from the gaseous effluent and passing the gaseous effluent to a catalytic reaction zone wherein an additional amount of elemental sulfur is formed and subsequently recovered.

3,851,051

SOFT GELATIN CAPSULE CONTAINING HIGH WATER CONTENT FILL

John J. Miskel, Bloomfield Hills, Warren W. Kindt, East Detroit, and Edward C. Connor, Warren, Mich., assignors to R. P. Scherer Corporation

No Drawing. Filed July 17, 1970, Ser. No. 55,993

Int. Cl. A61j *3/07;* **A61k** *9/04*

U.S. Cl. 424—37 **5 Claims**

1. A filled one piece soft leak-tight gelatin capsule consisting essentially of a shell formed from a formulation comprising gelatin, initially 16–40 parts by weight of water, based on the total weight of said formulation, and plasticizer, and a solid fill contained within said shell,

said fill consisting essentially of:

a set rigid gel system of gelatin, casein, collagen, albumin, soya protein, or soya peptone in the form of a water-soluble macromolecular gel lattice matrix which contains from at least 5% to as much as 20% by weight of water, and an active medicinal ingredient in aqueous solution, suspension or dispersion, the ratio of said active ingredient to said matrix being from 1:1 to 7:1 by weight,

the water in said fill being in moisture equilibrium with the water in said shell and having substantially no deteriorating effect upon said shell.

3,851,052

STABILIZED E-SERIES PROSTAGLANDINS

Donald C. Monkhouse, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Nov. 8, 1972, Ser. No. 304,814

Int. Cl. A61k *9/00, 27/00*

U.S. Cl. 424—45 **9 Claims**

1. A stabilized pharmaceutical composition comprising a biologically active prostaglandin of the E-series and a storage stabilizing amount of an alkali or alkaline earth metal sulfite salt.

3,851,053

BIOCIDAL ELASTOMERIC COMPOSITION AND METHOD FOR DISPERSING BIOCIDES THEREWITH

Nathan F. Cardarelli, Copley, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,528

Int. Cl. A01n *9/00*

U.S. Cl. 424—78 **1 Claim**

1. In a method of preparing a biocidal composition comprising dissolving from 0.02 to 20 parts by weight of bis(tri-n-butyl tin) oxide in a vulcanized matrix of 100 parts by weight of neoprene plus 4 to 100 parts by weight of carbon black per 100 parts of said neoprene, the proportion of said carbon black in the range given being se-

lected to yield a desired rate of release of said bis(tri-n-butyl tin) oxide by said composition to the environment, wherein the maximum number of parts of said bis(tri-n-butyl tin) oxide is the number equal to the limit of the parts of said bis(tri-n-butyl tin) oxide soluble in the said 100 parts of neoprene, the improvement whereby from about 1 to about 90 parts by weight of said bis(tri-n-butyl tin)oxide in addition to the said number of parts of said bis(tri-n-butyl tin)oxide is combined in said composition, said improvement comprising the addition to said neoprene plus carbon black of a mixture of said 1 to 90 parts of said bis(tri-n-butyl tin)oxide in physical combination with microballoons, said microballoons being characterized as minute spheres 10–60 microns in diameter, with wall thicknesses ranging from 0.1 to about 3 microns and bulk density of about 0.100 to 0.150 g./cc.

3,851,054
ANTIBIOTIC 235A AND PROCESS FOR PREPARATION

Louis Chaiet, Springfield, N.J., and Justo Mata, Madrid, Spain, assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of application Ser. No. 704,949, Feb. 12, 1968, which is a continuation of application Ser. No. 313,477, Oct. 3, 1963, both now abandoned. This application Oct. 20, 1969, Ser. No. 867,968

Int. Cl. A61k *21/00*

U.S. Cl. 424—122 **5 Claims**

1. The process for Producing Antibiotic 235A which comprises cultivating *Streptomyces lavendulae* (NRRL 3076) or *Streptomyces avidinii* (NRRL 3077) in an aqueous nutrient medium until subtantial antibiotic activity is produced and imparted to the said nutrient.

3,851,055
METHOD OF TREATING TARDIVE DYSKINESIA USING L-PROLYL L-LEUCYL GLYCINE AMIDE

John Herbert Cavanaugh, Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Mar. 1, 1973, Ser. No. 337,221

Int. Cl. C07c *103/52*

U.S. Cl. 424—177 **3 Claims**

1. A method of reducing the involuntary movements associated with tardive dyskinesia comprising administering at least an effective amount of L-prolyl L-leucyl glycine amide to patients suffering from tardive dyskinesia.

3,851,056
METHOD OF DEPRESSING FATTY ACIDS AND TRIGLYCERIDES

Harald Stork, Mannheim-Feudenheim, Felix Helmut Schmidt, Mannheim-Seckenheim, Max Thiel, Mannheim, Erich Fauland, Mannheim-Waldhof, and Wolfgang Kampe, Heddesheim, Germany, assignors to Boehringer Mannheim GmbH

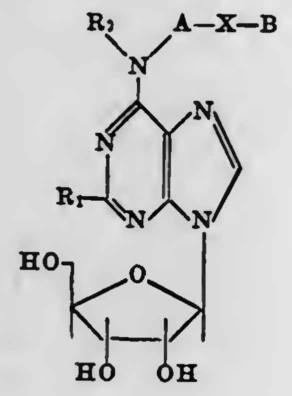
No Drawing. Filed Oct. 14, 1971, Ser. No. 189,409

Claims priority, application Germany, Oct. 27, 1970, P 20 52 596.6

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 **22 Claims**

1. Method of depressing fatty acids and triglycerides in mammals, which comprises administering to the afflicted mammal in need of such therapy an effective amount of a compound of the general formula



wherein

R_1 is hydrogen, chloride, hydroxyl or amino;
R_2 is hydrogen, lower straight-chained or branched alkyl;
A is a valency bond or saturated or unsaturated straight-chained, lower branched or cyclic alkylene, unsubstituted or substituted by hydroxyl, carboxyl or lower acyloxy;
X is a valency bond or, if A is alkylene, can also be oxygen, sulfur, imino, lower alkylated imino, or lower acylated imino;
B is unsubstituted or substituted phenyl or naphthyl wherein the substituents are from 1 to 3 members of the group consisting of chloro or fluoro, lower alkyl, chloro- or fluoro-alkyl, alkoxy, aryloxy of from 6 to 10 carbon atoms, lower acyloxy, alkylthio, carboxy and hydroxyl and wherein any two substituents in B can together also represent a dioxomethylene bridge;

and the pharmacologically compatible salts thereof.

3,851,057
DEXTRAN DERIVATIVES FOR THE REDUCTION OF BLOOD LIPIDS

Fumio Kuzuya, Nagoya, Japan, assignor to Meito Sangyo Kabushiki Kaisha, Nagoya, Japan

No Drawing. Filed Sept. 22, 1972, Ser. No. 291,286

Claims priority, application Japan, Sept. 23, 1971, 46/73,795

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 **7 Claims**

1. An orally administered agent for the reduction of blood lipids, comprising diethylaminoethyl dextran having an intrinsic viscosity of 0.88 to 1.81 and a degree of substitution of 1.3–2.0 or its pharmaceutically acceptable acid salt, and a pharmaceutical carrier.

3,851,058
METHODS FOR IMPROVING THE FEED INTAKE OF HEALTHY RUMINANTS EMPLOYING CERTAIN BENZODIAZEPINES

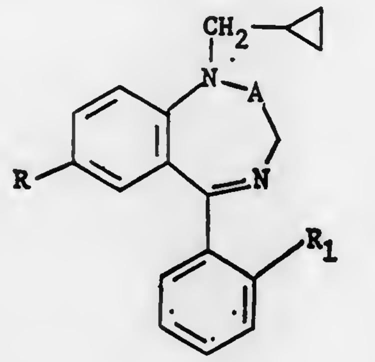
Clifton A. Baile, Glen Mills, Carol Lynn McLaughlin, Malvern, and Robert Lee Webb, West Chester, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Filed Sept. 6, 1973, Ser. No. 394,902

Int. Cl. A61k *27/00*

U.S. Cl. 424—244 **7 Claims**

1. A method of inducing polyphagia in immature healthy ruminant animals comprising administering to said animals internally in a feed composition or as an implant an effective polyphagic inducing but nontoxic quantity of a compound having the formula:



in which:

A is keto or methylene;
R is trifluoromethyl or halo; and
R_1 is trifluoromethyl, halo or, when A is keto, hydrogen.

3,851,059
METHOD FOR THE STIMULATION OF APPETITE IN PATIENTS

John D. Prugh, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation of abandoned application Ser. No. 9,049, Feb. 5, 1970. This application Aug. 14, 1972, Ser. No. 280,683

Int. Cl. A61k *27/00*

U.S. Cl. 424—267 **1 Claim**

1. A method for the stimulation of appetite in human patients having a low appetite or who exhibit symptoms of malnutrition which comprises administering to said patient an effective appetite stimulating amount of from 0.1 to 50 mg. of 1-methyl-4-(10,11-dihydro-10-oxo-5H-dibenzo[a,d]cyclohepten-5-ylidene)piperidine or an acid addition salt thereof.

3,851,060
COMPOSITION AND METHODS FOR TREATING NEMATODE INFECTIONS

Robert Beck Burrows, Ardsley, and Arthur Page Phillips, Tuckahoe, N.Y., assignors to Burroughs Wellcome Co.

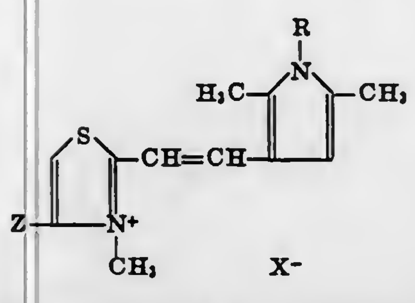
No Drawing. Original application Mar. 2, 1970, Ser. No. 15,944, now abandoned. Divided and this application Jan. 6, 1972, Ser. No. 215,926

Claims priority, application Great Britain, Mar. 7, 1969, 12,158/69

Int. Cl. A61k *27/00*

U.S. Cl. 424—270 **32 Claims**

1. An orally ingestible nematode infection treatment composition for mammals which comprises a therapeutically acceptable solid carrier and an effective non-toxic nematode infection treatment amount of a salt of the formula



where R is selected from the class consisting of alkyl having 1 to 6 carbon atoms, and phenyl optionally substituted by one or more halogen atoms, alkyl groups having 1 to 4 carbon atoms or alkoxy groups having 1 to 4 carbon atoms; Z is selected from the class consisting of phenyl, *p*-halophenyl, *p*-alkoxyphenyl where the alkoxy has 1 to 6 carbon atoms, biphenylyl, *p*-alkoxybiphenylyl where the alkoxy has 1 to 6 carbon atoms, and naphthyl; and X^- is the anion of a pharmaceutically acceptable acid.

3,851,061
CERTAIN GERANYL ETHERS USED TO CONTROL INSECTS

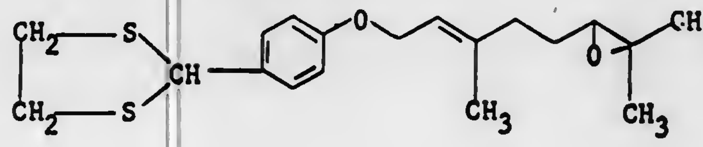
Hwalin Lee, San Francisco, Ferenc M. Pallos, Pleasant Hill, and Julius J. Menn, Saratoga, Calif., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Application Mar. 29, 1971, Ser. No. 129,192, now Patent No. 3,766,208, which is a continuation-in-part of application Ser. No. 856,140, Sept. 8, 1969, which in turn is a continuation-in-part of abandoned application Ser. No. 815,224, Apr. 10, 1969. Divided and this application Aug. 21, 1972, Ser. No. 282,646

Int. Cl. A01n *9/12, 9/28*

U.S. Cl. 424—277 **1 Claim**

1. A method of impeding the metamorphosis of *Tenebrio molitor* comprising applying thereto at its larval stage a metamorphosis inhibiting effective amount of a compound of the formula:



3,851,062
METHOD OF SUPPRESSING WEIGHT GAIN

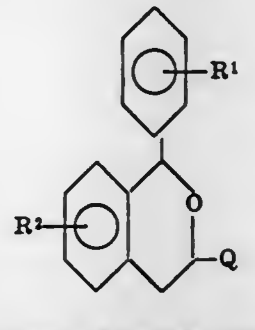
Murle K. Klohs, 19901 Nordhoff St., Tarzana, Calif. 91324; and Francis J. Petracek, Bloomington; and Nobuyuki Sugisaka, New Brighton, Minn. (both % 3M Center, St. Paul, Minn. 55101)

No Drawing. Filed Aug. 1, 1973, Ser. No. 384,713

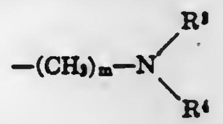
Int. Cl. A61k *27/00*

U.S. Cl. 424—283 **10 Claims**

1. A method for producing anorectic effects in mammals in need thereof which comprises administering to said mammals an effective dose between 0.1 and 10 milligrams per kilogram of body weight of a compound of the formula



wherein R^1 is hydrogen, fluorine, chlorine or trifluoromethyl, R^2 is hydrogen, fluorine or chlorine in the 6 or 7 position, and Q is 2-imidazolinyl or



$$-(CH_2)_m-N\begin{matrix}R^3\\ \\R^4\end{matrix}$$

wherein R^3 and R^4 are independently hydrogen or lower alkyl, *m* is zero, one or two and the alkylene chain $—(CH_2)_m—$ may contain a substituent methyl group or pharmaceutically acceptable salts thereof.

3,851,063
TREATMENT OF PAIN, FEVER OR INFLAMMATION

Tsung-Ying Shen, Westfield, Howard Jones, Holmdel, and Bruce E. Witzel, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

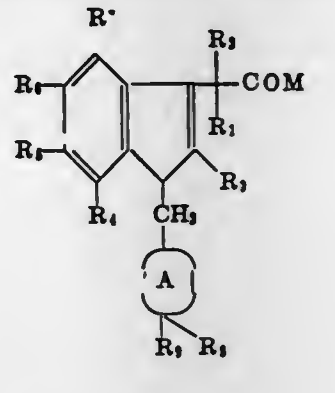
No Drawing. Filed July 21, 1972, Ser. No. 274,038

The term of this patent subsequent to Apr. 3, 1990, has been disclaimed

Int. Cl. A61k *27/00*

U.S. Cl. 424—303 **3 Claims**

1. A method of treating pain, fever or inflammation which comprises administering to a host a therapeutically effective amount of a compound of the formula:



wherein:

R_1 is hydrogen;
R_2 is hydrogen or C_{1-5} loweralkyl;
R_3 is hydrogen, C_{1-5} loweralkyl or C_{1-5} haloloweralkyl;
R_4 is hydrogen;
R_5 is hydrogen, C_{1-5} loweralkyl or halo;
R_6 is hydrogen, C_{1-5} loweralkoxy, halo, C_{2-5} loweralkanoyl, C_{1-5} diloweralkylamino, CN, allyloxy, propargyloxy, nitro or halo C_{1-5} loweralkoxy;
R_7 is hydrogen;
R_8 is hydrogen or halo;

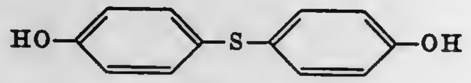
R_9 is hydrogen, halo, C_{1-5} loweralkylsulfinyl, C_{1-5} loweralkylthio, C_{1-5} loweralkyl, C_{1-5} diloweralkylsulfonyl, NO_2, C_{1-5} loweralkoxy;

M is hydroxy, C_{1-5} loweralkoxy, methoxymethoxy, diethylaminoethoxy, pivaloyloxymethoxy, phenoxy or alkali, or alkali earth salt; and

Ar is phenyl.

3,851,064
DIPHENYLSULFIDES AS HYPOLIPIDEMICS
Mario G. Buzzolini, Convent Station, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Continuation-in-part of abandoned application Ser. No. 318,030, Dec. 26, 1972. This application Oct. 9, 1973, Ser. No. 404,196
Int. Cl. A61k *27/00*
U.S. Cl. 424—337 **11 Claims**

1. A pharmaceutical composition in the form of a tablet, capsule, dispersible powder, granule, syrup or elixir useful in the treatment of lipidemia in mammals comprising as an active ingredient thereof a compound of the formula



or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier therefor, said compound being present in said composition in an amount sufficient to provide a daily dosage of from about 150 milligrams to about 4000 milligrams of said compound.

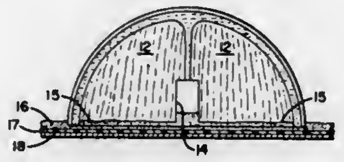
3,851,065
METHOD OF AND COMPOSITION FOR STABILIZING *TRANS*-DIETHYLSTILBESTROL IN ANIMAL FEED RATIONS
Nelson H. Ludwig, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
No Drawing. Filed Feb. 13, 1970, Ser. No. 11,301
Int. Cl. A23k *1/22*
U.S. Cl. 424—346 **5 Claims**

1. A composition adapted for incorporation into animal feed rations which comprises an intimate admixture of between about 0.22 percent and about 95 percent by weight of *trans*-diethylstilbestrol and between about 5 percent and about 99.78 percent by weight of urea wherein a multiplicity of particles of *trans*-diethylstilbestrol and urea are in adherent contact with one another.

3,851,066
METHOD FOR PREPARING PROTEIN ENRICHED YEAST-RAISED BAKED PRODUCTS
Roy Kenneth Langhans, Newark, Del., assignor to ICI America Inc., Wilmington, Del.
No Drawing. Filed Aug. 30, 1971, Ser. No. 176,287
Int. Cl. A21d *2/14, 2/16, 2/26*
U.S. Cl. 426—21 **4 Claims**

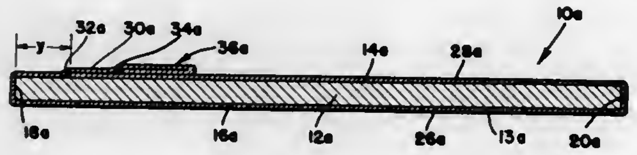
1. In the preparation of a yeast-raised, flour containing bakery product, which comprises preparing a dough mix from flour, yeast, water, shortening, sugar, and salt and thereafter baking said mix, the improvement which comprises incorporating with the dough ingredients from about 5–20 percent by weight based on the weight of the flour of an edible protein source containing 70–90 percent by weight protein and from about 0.1 percent to about 2.5 percent by weight of said flour of an emulsifier selected from the group consisting of succinylated monoglycerides, ethoxylated fatty acid partial esters of sorbitol and sorbitan, ethoxylated fatty acid partial esters and complete esters of isosorbide, ethoxylated fatty acid acyclic monohydride alcohols having 11 to 16 carbon atoms, and blends of these emulsifiers with monoglycerides, said fatty acid components in said esters and monoglycerides having 12 to 22 carbon atoms and the mol ratio of ethylene oxide to monoglyceride in said polyethoxylated derivatives being within the range of 4 to 40.

3,851,067
PREPARED CITRUS FRUIT HALVES AND METHOD OF MAKING THE SAME
Don S. Bryan, % Lake Garfield Nurseries Company, P.O. Box 154, Bartow, Fla. 33830
Continuation-in-part of application Ser. No. 129, Jan. 2, 1970, now Patent No. 3,707,383. This application Jan. 8, 1973, Ser. No. 321,582
Int. Cl. A23b *7/16*
U.S. Cl. 426—90 **14 Claims**



1. A prepared, edible, natural fresh citrus half of increased shelf life comprising a citrus half including the rind, said citrus half having a cut face embedded in a layer of edible gel carried on a flat non-absorbent platen, said gel layer of sufficient thickness to retain the natural juices of said citrus half against evaporation and spillage and compromising an edible hydrophilic colloid gel from the group consisting of low methoxy pectin, locust bean gum and mixtures thereof.

3,851,068
CHEESE PACKAGE
George Howard Kraft, Wilmette, Ill., assignor to Kraftco Corporation, Chicago, Ill.
Continuation of abandoned application Ser. No. 801,978, Feb. 25, 1969. This application Nov. 29, 1971, Ser. No. 203,063
Int. Cl. B65b *25/06*
U.S. Cl. 426—130 **4 Claims**



1. In a cheese package comprising a single relatively thin slice of cheese having a pair of generally parallel faces, a pair of opposed end edges, and a pair of opposed side edges, and a rectangular sheet of flexible wrapping material enclosing said slice with an overlapping edge portion of said sheet overlying an overlapped edge portion of said sheet, said overlapping edge and said overlapped edge being unsealed across the face of the slice, the marginal edges of said sheet extending beyond the end edges of said slice and being joined together to provide a readily separable seal, said package being openable by initially grasping said overlapping edge portion of said sheet and applying a force thereto sufficient to separate the seal between the marginal edges of said sheet; the improvement which comprises locating the edge of said overlapped portion along a line substantially parallel with one side edge of said slice, said edge location of said overlapped portion being immediately adjacent said parallel side edge, said adjacent edge location of said overlapped portion being no greater than three eighths of an inch in a slice having a total width of three and one-half inches between said parallel side edge and the side edge opposed to said parallel side edge.

3,851,069
TOBACCO FLAVORED CANDY
Samuel J. Hachtman, 1108 N. Harlem, River Forest, Ill. 60305
No Drawing. Filed Oct. 5, 1971, Ser. No. 186,775
Int. Cl. A23g *3/00;* **A23l** *1/26*
U.S. Cl. 426—175 **1 Claim**

1. Tobacco flavored candy wherein said candy contains flavor which comprises about 4% vanilla, about 15% glycerin, about 3% furfurol, about 9% ethyl butyrate, about 2% ethyl acetate, and about 67% propylene glycol in a candy base material, all percentages being by weight.

3,851,070
HIGH NUTRITION FOOD SPREADS
Frank E. Sessoms, Nashville, Tenn., and Michael E. Hardy, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Continuation of abandoned application Ser. No. 157,772, June 28, 1971. This application Aug. 28, 1973, Ser. No. 392,361
Int. Cl. A23d *5/00;* **A23j** *3/00*
U.S. Cl. 426—177 **10 Claims**

1. A high nutrition food spread comprising from 20 to 35 weight percent of hydrated and subsequently dried soy protein, from 10 to 25 weight percent of sweetener, from 1.5 to 3 weight percent of a substantially completely hydrogenated vegetable oil hardstock, from 3 to 10 weight percent of emulsifier, from 0.2 to 1.0 weight percent of citric acid, and the balance comprising a basestock liquid triglyceride, flavoring and coloring; said hydrated and subsequently dried soy protein being prepared by hydrating soy protein selected from the group consisting of soy flours, soy concentrates and soy isolates with water at a water-to-protein ratio of from 1:1 to 3:1 and drying the hydrated soy protein.

3,851,071
STERILE EFFERVESCENT BEVERAGE AND PROCESS FOR PREPARING SAME
Paul G. Roehrig, Northridge, Nicholas C. Pappas, Van Nuys, and Robert E. Durbin, Saugus, Calif., assignors to Carnation Company, Los Angeles, Calif.
No Drawing. Continuation-in-part of abandoned application Ser. No. 34,512, May 4, 1970. This application June 28, 1973, Ser. No. 374,618
Int. Cl. A23l *1/00, 3/00*
U.S. Cl. 426—190 **14 Claims**

1. A process for preparing a sterile effervescent beverage which comprises

preparing a sterile aerated aqueous phase by contacting a sterile, volatile, edible gas with a sterile aqueous liquid under conditions adapted to dissolve in said aqueous liquid an amount of said gas sufficient to provide an effervescent character to said beverage,

maintaining said sterile aerated aqueous phase at a temperature below about 55° F.,

preparing a syrup phase having a solids content of between about 25%–75% and comprising a homogeneous mixture of carbohydrate, fat, protein, and water,

sterilizing said syrup phase,

maintaining the sterile syrup phase at a temperature no higher than that of the sterile aerated aqueous phase,

aseptically introducting said sterile aerated aqueous phase and said sterile syrup phase into a sterile container in a sterile atmosphere having a temperature below about 300° F., the amounts of said sterile aerated aqueous phase and said sterile syrup phase introduced into said container being sufficient to provide an effervescent beverage having a solids content of between about 5% and 25% by weight, and

sealing said container with a sterile cover in a sterile atmosphere.

3,851,072
FOOD FLAVOR PELLETS WITH MEAT TEXTURE
Eric G. Huessy, Eden Prairie, Minn., assignor to Peavey Company, Minneapolis, Minn.
No Drawing. Filed May 29, 1973, Ser. No. 364,949
Int. Cl. A23l *1/26*
U.S. Cl. 426—199 **3 Claims**

1. An edible food flavoring pellet for incorporation in dry food systems which comprises:

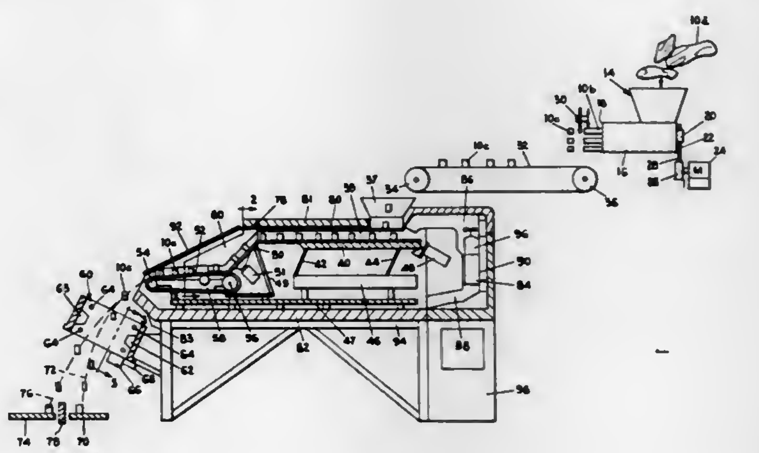
(a) a homogeneous mixture having a wheat flour, soy flour, and vegetable tow base with the following formulation:

Ingredient:	Percentage Range
Wheat Flour	30–35
Hydrogenated Vegetable Oil	12–15
Soy Flour	12–15
Vegetable Protein	8–12
Water	3–5
Glycerin	1–2
Xanthan Gum	0.03–0.06
Flavoring Components	balance

3,851,073
SWEETENING AGENT
Marvin K. Cook, Westbury, N.Y., assignor to MacAndrews & Forbes Company, Camden, N.J.
No Drawing. Filed Aug. 3, 1972, Ser. No. 277,657
Int. Cl. A23l *1/26*
U.S. Cl. 426—217 **4 Claims**

1. A sweetening agent comprising ammoniated glycyrrhizin and a 5′-nucleotide in an amount which represses the licorice flavor of the ammoniated glycyrrhizin.

3,851,074
MEAT PROCESSING
Robert M. Gillespie, Grand Rapids, Mich., assignor to Sortex Company of North America, Inc., Lowell, Mich.
Filed Oct. 13, 1972, Ser. No. 297,347
Int. Cl. A22c *18/00*
U.S. Cl. 426—231 **13 Claims**



1. A method for processing trim meat pieces having lean meat portions and fat portions, said method comprising the steps of:

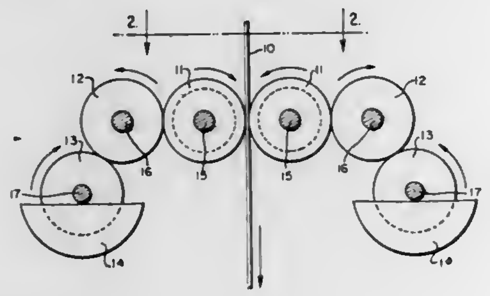
separating said trim meat into a plurality of substantially regular size chunks in a manner such that said trim meat tends to be separated into chunks of higher lean meat content and chunks of higher fat content;

passing said meat chunks seriatim through a photometric sensing zone and therein photometrically detecting an optical property of said meat chunks related to the content of lean meat therein; and

thereafter sorting said meat chunks in accordance with the value of the optical property of said meat chunks thus detected to thereby separate said chunks of high lean meat content from said chunks of high fat content.

3,851,075
PROCESS FOR IMPARTING DESIGN ON SURFACES OF FOOD MATERIAL

Lawrence W. Wisdom, Dallas, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.
Filed Sept. 8, 1972, Ser. No. 287,455
Int. Cl. A21a *8/02;* A23l *1/27*
U.S. Cl. 426—250 **4 Claims**



1. A process for continuously imprinting a bacon-like appearance on a ribbon of food material which comprises continuously passing said ribbon of food material between two rolls, each of said rolls having ridges thereon, the ridges on one roll being directly opposite the ridges on the other roll, applying an edible dye having a color which simulates the coloring of the lean portion of bacon to said ridges, said ridges making contact with the surface of said ribbon, thereby applying said dye thereto to print stripes on said ribbon, said stripes being in register on both sides of said ribbon, thereby creating alternating stripes of light color which simulate the appearance of the fatty portion of bacon and stripes of a color which simulate the appearance of the lean portion of bacon on each surface of said ribbon, thereafter cutting said ribbon into pieces and frying said pieces.

3,851,076
LIQUID FOOD PRESERVATION

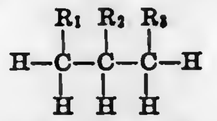
Akira Okuhara, and Masatoshi Saiki, Noda, and Nobuo Saito, Nagareyama, Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda Noda-shi, Japan
Original application Mar. 6, 1970, Ser. No. 17,059. Divided and this application Sept. 11, 1972, Ser. No. 287,809
Claims priority, application Japan, May 30, 1969, 44/41,653; Dec. 19, 1969, 44/101,612; Oct. 18, 1968, 43/75,591
Int. Cl. A23b *7/00;* A23l *1/02*
U.S. Cl. 426—262 **7 Claims**

1. A process for preserving liquid foods which comprises decolorizing melanoidins in a liquid food by contacting the liquid food which is a melanoidin-containing liquid food selected from the group consisting of soy sauce, amino acid solution, mirin, wine and fruit juice with a metal consisting of Zn in powder or foil form in a container selected from the group consisting of a container made of glass, a container made of plastic, a container made of paper, a container made of metal coated with plastic and a container made of metal coated with lacquer.

3,851,077
METHOD FOR PRESERVING FRESHLY SLAUGHTERED MEAT

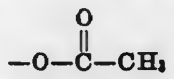
Mathias Stemmler and Heinz Stemmler, both of Konrod Adenauer Ufer 35, Cologne, Germany
No Drawing. Filed Aug. 18, 1972, Ser. No. 281,928
Claims priority, application Germany, Apr. 27, 1972, P 22 20 685.5
Int. Cl. A23b *1/00*
U.S. Cl. 426—265 **3 Claims**

1. An improved method for preserving freshly slaughtered meat consisting of applying to said meat as an edible coating a di- or triglyceride of a fatty acid of the formula



$$\mathrm{H-\underset{H}{\overset{R_1}{C}}-\underset{H}{\overset{R_2}{C}}-\underset{H}{\overset{R_3}{C}}-H}$$

wherein either R_1 or R_2 is an esterified fatty acid having 12 to 22 carbon atoms; and the other R_1 or R_2, and R_3 are



$$\mathrm{-O-\overset{O}{\overset{\|}{C}}-CH_3}$$

groups, said edible acetylated monoglycedire being maintained at about 1 to 160 C. when in contact with said meat.

3,851,078
TREATMENT OF ANIMAL FLESH

Ali Khayat, Huntington Beach, George W. Courtney, San Pedro, and Howard J. Dunn, Lomita, Calif., assignors to Ralston Purina Company, St. Louis, Mo.
No Drawing. Filed Feb. 1, 1973, Ser. No. 328,797
Int. Cl. A22c *25/00*
U.S. Cl. 426—268 **7 Claims**

1. A method of treating tuna-type fish prior to the cooking thereof comprising the step of: applying to the uncooked fish a quantity of material selected from the group of cysteine and homo-cysteine sufficient to prevent the formation of color.

3,851,079
PROCESS FOR PREPARING EDIBLE PROTEIN FIBERS

Takashi Sakita, Yokohama, Japan, assignor to Nisshin Oil Mills, Ltd.
No Drawing. Filed June 23, 1972, Ser. No. 265,451
Claims priority application Japan, Feb. 1, 1972, 47/10,946
Int. Cl. A23j *3/00*
U.S. Cl. 426—276 **7 Claims**

1. Process for preparing edible protein fibers which comprises (a) dissolving a protein curd separated from defatted soybeans with aqueous alkali to form a spinning dope; (b) extruding said spinning dope through fine holes into a coagulating bath to form protein fibers, said coagulating bath consisting essentially of a aqueous solution of from about 3% to about 5% by weight of organic acids, from about 3% to about 7% by weight neutral inorganic salts and from about 0.5% to about 2% by weight hydrogen peroxide, and said coagulating bath having a pH of at least 2.5; and (c) subsequently washing the coagulated fibers.

3,851,080
FRESH MEAT IN A PREDOMINATELY CARBON DIOXIDE ENVIRONMENT

James R. Lugg, Salinas, and Ralph L. White, San Jose, Calif., assignors to Transfresh Corporation, Salinas, Calif.
No Drawing. Filed Sept. 14, 1972, Ser. No. 289,172
Int. Cl. A23b *1/00*
U.S. Cl. 426—312 **5 Claims**

1. In the process of refrigerated storage or refrigerated shipment of fresh meat, the improvement which consists essentially of maintaining said meat in a controlled gaseous atmosphere of carbon dioxide, about 35–75 volume percent; molecular oxygen, about 21–28 volume percent; and the remainder essentially molecular nitrogen during the period of controlled storage or shipment.

3,851,081
PREPARATION OF A PUFFED SNACK FOOD

Edward Epstein, Arlington Heights, Ill., assignor to Beatrice Foods, Chicago, Ill.
No Drawing. Filed Sept. 13, 1972, Ser. No. 288,669
Int. Cl. A21d *2/34, 2/36*
U.S. Cl. 426—343 **7 Claims**

1. A method for puffing an expandable mass of foodstuff comprising dispersing in the mass between 3% and

20% by weight of a solid, relatively dry and non-sticky protein gel in divided form and said gel having a melting point of between 250° F. and 550° F. and containing from 5% to 15% by weight of moisture, and subjecting the mixture to an elevated temperature of at least 250° F. for a time sufficient to puff the foodstuff.

3,851,082
COLLAGEN DISPERSIONS

Robert A. Whitmore, Philadelphia, and Howard W. Jones, New Britain, Pa., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Original application May 19, 1972, Ser. No. 254,958, now abandoned. Divided and this application Aug. 30, 1973, Ser. No. 393,252
Int. Cl. A23j *1/10*
U.S. Cl. 426—350 **1 Claim**

1. A process for preparing a proteinaceous substitute for a meat product such as bacon, comprising the following steps:
- (a) preparing a viscous liquid collagen dispersion having a pH of about 5.6, containing about 6.0 to 7.0% solids, and that is capable of forming a gel which will not melt upon prolonged boiling in water;
- (b) heating the collagen dispersion to about 70° C. for about one hour, and then lowering the temperature of the dispersion to about 50° C.;
- (c) adding to the dispersion of step (b) a volume of cooking oil about equal to one volume of the dispersion;
- (d) mixing the mixture of step (c) to emulsify the oil in the dispersion; and
- (e) cooling the oil emulsified dispersion to produce a firm proteinaceous product that, while withstanding a frying temperature of about 170°, retains its firmness and shrinks less than about 20%.

3,851,083
PROCESS FOR FORMING STABLE FOOD PIECES

Betty L. Brooking, Minneapolis, and William F. Wright, St. Paul, Minn., assignors to The Pillsbury Company, Minneapolis Minn.
Filed Oct. 25, 1972, Ser. No. 300,628
Int. Cl. A23d *5/00*
U.S. Cl. 426—363 **4 Claims**

1. A method of preparing solid, flexible, water dispersible food pieces having impact strength against shattering and of unitary construction in that any given 300 mm. portion thereof will have substantially the same uniform distribution of food constituents as another portion thereof, said method comprising the steps of
- (a) providing minute droplets of an edible fat encapsulated within a hardened shell of a hydrophilic film former,
- (b) forming a stable dispersion comprising in part an external phase, said external phase comprising a homogeneous continuous dispersion of 10 parts by weight of a hydrophilic film former, at least 1 part by weight to 70 parts by weight of an edible humectant and water,
- (c) incorporating into said dispersion as an internal phase thereof, edible fat globules in two physical forms, one form comprising said fat globules encapsulated within the hardened shells of the hydrophilic film former and additional fat globules free from said hardened coatings and dispersed uniformly within the external phase, the total fat being present in an amount ranging from about 150 parts by weight to about 1 part by weight of fat for each 10 parts by weight hydrophilic film former, the fat encapsulated within the hardened shells being present in the amount of from about 1 part for each 2 parts of the free fat to about 2 parts to each 1 part of free fat, the minute droplets of edible fat encapsulated within hardened shells comprise a normally liquid fat and the free fat comprises a normally plastic fat and an effective amount of an emulsifier is added to the dispersion to reduce encapsulation of the free fat and reduce oil loss of the free fat during forming of the pieces, and
- (d) maintaining the moisture level of the stable dispersion to provide a food piece having a moisture content from at least about 7% by weight to about 20% by weight to thus provide a solid food piece having impact strength against shattering and retaining its flexibility throughout storage without having a endency to lose fat during fabrication and forming into pieces.

3,851,084
METHOD OF PRODUCING LAMINATED COMESTIBLE PRODUCTS

Jack L. Rossen, Englewood, Robert C. Miller, Ringwood, and Gary Gellman, Pomona, N.J., assignors to Nabisco, Inc., New York, N.Y.
Filed July 5, 1972, Ser. No. 269,259
Int. Cl. A23l *1/18*
U.S. Cl. 426—343 **17 Claims**

1. A method of producing laminated food products which comprises the steps of processing edible dough forming starch containing materials to produce a plurality of dissimilar doughs each of which is in a viscous molten state, moving streams of said different doughs under high fluid pressure into contact to form a layered stream of dough, and moving said layered stream through a restricted passageway under conditions producing total laminar flow to strongly bond the contacting different dough layers.

3,851,085
HYDROPROCESSING OF WHEAT

Nelson E. Rodgers, Wayzata, and Rolf Gunnar Gidlow, North St. Paul, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.
Continuation-in-part of application Ser. No. 154,532, June 18, 1971. This application Feb. 15, 1973, Ser. No. 332,945
Int. Cl. A23l *1/10*
U.S. Cl. 426—373 **46 Claims**

1. A method for hydroprocessing wheat, rye and oats to separate the endosperm from the husk and the germ tissues, said process comprising the steps of:
- (a) steeping 1 part by weight of grain selected from the group consisting of wheat, rye and oats in at least 1.5 parts by weight of an aqueous acid steeping medium at temperatures ranging from about 18° C. to about 45° C. until the grain has sorbed steeping medium equivalent to about 56% to about 95% by weight of the grain, said steeping medium containing acid in concentration and quantity sufficient to maintain the pH of said steeping medium external of the grain between 0.8 and 2.5 and to reduce the internal pH of the hydrated grain to between 2.5 and 4.0;
- (b) macerating the hydrated grain to split the husk and expose the endosperm as a plastic mass while maintaining at least 90% by weight of the husk and the germ above a minimum dimension of 300 microns;
- (c) dispersing the macerated grain in an aqueous dispersing medium to a solids concentration of from 4% to about 30% and maintaining the pH of said dispersion between about 2.4 and 3.4; the dispersing shear being sufficient to disengage the endosperm from the husk and the germ tissues; and,
- (d) separating said dispersion into a particulate husk and germ fraction and an endosperm dispersion while maintaining throughout the process substantially all of the starch granules in an intact, ungelatinized form and maintaining substantially all of the gluten protein in a dispersible and substantially undenatured state with respect to doughing function.

3,851,086
DEFLUORINATED PHOSPHATE FEED SUPPLEMENT PRODUCTION

Arthur N. Baumann, Lakeland, Fla., assignor to International Minerals & Chemical Corporation
No Drawing. Filed Apr. 5, 1972, Ser. No. 241,439
Int. Cl. A23k *1/175*
U.S. Cl. 426—381 **11 Claims**

1. The process for producing an animal feed ingredient which comprises mixing a phosphatic material of the group consisting of comminuted triple superphosphate and a combination of comminuted phosphate rock and phosphoric acid, a volatile anion alkali metal compound and a volatile anion calcium compound in amounts such that in the mixture CaO/P_2O_5 mole ratio is from about 2.20 to about 2.25 and the alkali metal oxide/P_2O_5 mole ratio is from about 0.65 to about 0.70, and calcining the mixture at a temperature from about 2250° to about 2650° F. while actively agitating the same in contact with a gaseous atmosphere containing at least about 5% water vapor for a period of time sufficient to yield a product having an elemental P/F weight ratio over 50.

3,851,087
PROCESS FOR COUNTERCURRENT POMACE WASHING

Radford L. Nowlin, 4124 S. Soderquist Road, Turlock, Calif. 95380
Original application Jan. 8, 1971, Ser. No. 105,015, now Patent No. 3,749,002. Divided and this application Feb. 28, 1973, Ser. No. 336,882
Int. Cl. C12f *3/08;* **C12g** *1/00*
U.S. Cl. 426—425 **2 Claims**

1. A method of recovering alcohol or sugar from pomace obtained in the production of fermented or unfermented juices comprising the steps of:

(a) introducing a wash liquid into one end of a housing, there being a screen reel disposed within said housing with one end of said screen reel in the vicinity of said one end of said housing;
(b) advancing the wash liquid toward the opposite end of said screen reel while maintaining the lower portion of said screen reel submerged in the liquid wash;
(c) introducing pomace into said screen reel at said opposite end of said screen reel;
(d) submerging the pomace in the advancing wash liquid;
(e) lifting the pomace along the inner wall of said screen reel above the wash liquid by rotating said screen reel to permit partial draining of the pomace;
(f) dropping the pomace from the inner wall of said rotating screen reel onto a conveyor advancing through the screen reel;
(g) advancing the pomace on said conveyor toward said one end of said rotating screen reel;
(h) dropping the pomace while being advanced by said conveyor from said conveyor and into the liquid wash to be resubmerged in the liquid wash;
(i) repeating the steps of lifting the pomace above the liquid wash, partially draining the pomace, dropping the pomace onto said conveyor, advancing the pomace on said conveyor through the screen reel and dropping the pomace from said conveyor for resubmergence in the liquid wash for exposing and re-exposing the pomace to the countercurrent flow of liquid wash;
(j) removing the liquid wash at said opposite end of said housing; and
(k) recovering alcohol or sugar from said liquid wash.

3,851,088
METHOD FOR LAMINATING SHEET DOUGH

Robert J. Albrecht, River Edge, and Alexander J. Stanley, Milltown, N.J., assignors to Nabisco, Inc., New York, N.Y.
Filed Oct. 24, 1972, Ser. No. 300,386
Int. Cl. A21d *6/00*
U.S. Cl. 426—502 **6 Claims**

1. The method of laminating a sheet of dough upon a supporting surface which comprises providing the supporting surface with an upwardly concave channel at a laminating station, the longitudinal axis of the channel being parallel to the length of the supporting surface, feeding a sheet of dough along guide means disposed in a plane lying radially and axially of the channel toward the upper surface of the concave part of the supporting surface, oscillating said guide means and thus the dough sheet being fed along said radial axial path about the longitudinal axis of the channel, laying the dough sheet as it leaves the guide means into the upwardly concave channel and bending it into conformity therewith, longitudinally displacing the supporting surface and the guide means relative to each other, and correlating the speed of longitudinal displacement between the supporting surface and the guide means and the frequency of oscillation of the radial path of travel of the dough sheet to produce a predetermined desired degree of overlap of successive angularly disposed upwardly concave laps of dough sheet on the supporting surface at the laminating station.

3,851,089
METHOD FOR CONTINUOUSLY PANNING DOUGH

Victor F. Gugler, 8920 Helen Ave., Sun Valley, Calif. 91352
Original application Mar. 15, 1971, Ser. No. 124,052, now Patent No. 3,739,900. Divided and this application Feb. 7, 1973, Ser. No. 330,229
Int. Cl. A21d *8/02*
U.S. Cl. 426—503 **4 Claims**

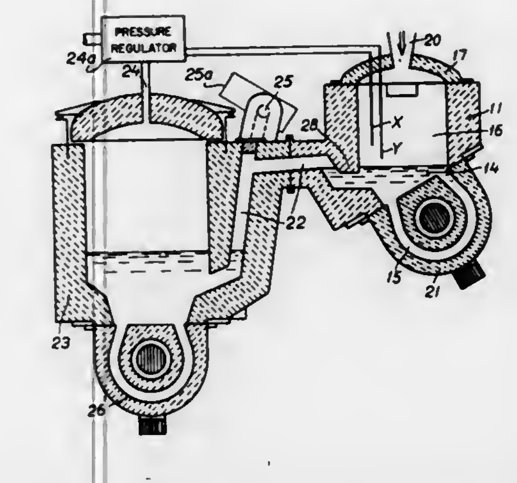
1. A process for placing dough pieces in an orderly array in a series of pans comprising the steps of:

moving a series of pans under and in a forward direction of movement of dough on a dough conveyor;
halting forward movement of a lead one of said series of pans to arrest forward movement of said series of pans when said lead pan is under a forward end of said dough conveyor and while arresting said series of pans against forward movement laterally moving said lead pan to one side to catch dough pieces falling from said forward end of said dough conveyor at laterally spaced locations on said lead pan;
releasing said lead pan for forward movement of said series of pans to a new position under said forward end of said dough conveyor; and
again arresting said lead pan and said series of pans against forward movement while laterally moving said lead pan to an opposite side to catch dough pieces at different laterally spaced locations on said lead pan.

ELECTRICAL

3,851,090
MEANS FOR MELTING, HOLDING AND TAPPING METALS OR METAL ALLOYS

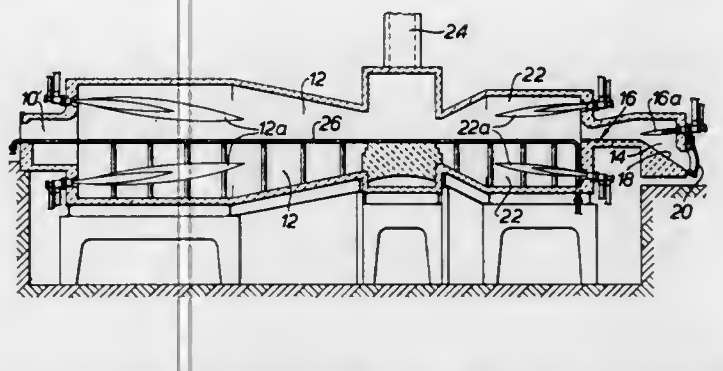
Kare Folgero, and Bengt Fredrickson, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Mar. 19, 1973, Ser. No. 342,368
Claims priority, application Sweden, Mar. 29, 1972, 4050/72
Int. Cl. H05b *5/00;* **F27d** *3/14*
U.S. Cl. 13—26 **7 Claims**



1. Apparatus for forming metallic charging material into a melt and holding and tapping said melt, and comprising a first channel-type induction furnace having a melting hearth in which said melt is formed, a second channel-type induction furnace having a holding hearth in which said melt is held, a melt-feeding conduit connecting said melting hearth to said holding hearth and means for applying gas pressure on said melt in said holding hearth; wherein the improvement comprises said first furnace being small as compared to said second furnace and said second furnace being positioned at a lower level than said first furnace.

3,851,091
FURNACE FOR REHEATING SLABS OR BILLETS

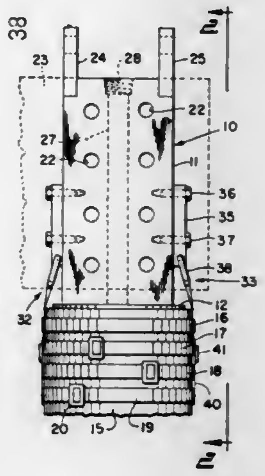
William Robert Laws, Worcester Park, England, assignor to British Steel Corporation, London, England
Filed Oct. 26, 1973, Ser. No. 410,273
Claims priority, application Great Britain, Nov. 10, 1972, 52047/72
Int. Cl. F27d *11/06*
U.S. Cl. 13—26 **13 Claims**



11. In a heating furnace having a heating zone and a soaking zone for reheating metal workpieces, a plurality of skids in the heating zone extending longitudinally of the furnace for supporting metal workpieces as they pass through the furnace heating zone, and a plurality of heat sources located within the furnace for heating metal workpieces passing therethrough, the improvement comprising: a plurality of elongated, transverse flux-type, electric induction heaters located in the soaking zone below the level of the tops of the skids and disposed in space, parallel relationship in alignment with the skids for applying heat in localized bands to the portion of the undersurface of the workpieces which supported them on the skids during their passage through the heating zone.

3,851,092
HOSE RETAINING DEVICE FOR LIQUID COOLED FLEXIBLE ELECTRICAL CABLE

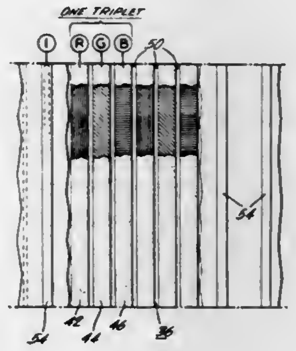
Lawrence M. Talley, Bay Village, Ohio, assignor to Wateredge-Uniflex, Inc., Avon Lake, Ohio
Filed Mar. 27, 1974, Ser. No. 455,223
Int. Cl. H01b *7/34*
U.S. Cl. 174—19 **10 Claims**



1. A liquid cooled flexible electrical cable comprising a terminal having a projecting end adapted to be fixed to a conductor, a hose surrounding said terminal, clamp means encircling said hose and clamping the same to said terminal to form a liquid-tight connection between said hose and terminal, and retainer means extending between said clamp means and said projecting end to maintain the hose connected to said terminal on continued use and flexing of said cable.

3,851,093
COLOR TELEVISION DISPLAY SYSTEM AND METHOD FOR REDUCING VISIBILITY OF GEOMETRIC PATTERN OF COLORED-LIGHT SOURCES, AND METHOD FOR FABRICATION THEREOF

David E. Sunstein, 464 Conshohocken State Rd., Bala-Cynwyd, Pa. 19004
Filed July 12, 1971, Ser. No. 161,835
Int. Cl. H04n *9/22*
U.S. Cl. 358—67 **22 Claims**



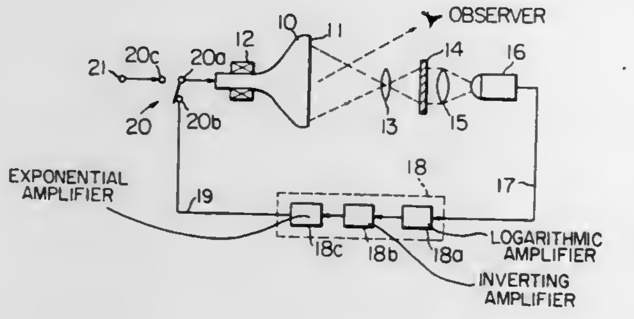
1. In electronic color-image display apparatus comprising an array of similar adjacent groups of elements for producing intensity-modulatable observable colors, said groups extending throughout the image-display area, each of said elements in each of said groups being energizable to display light of a

color differing from that displayed by one or more others of said elements in said group for producing an image for viewing from a viewing position in front of said array, said elements extending along lines generally parallel to each other thereby imparting a visually-observable line structure to said image, and means for energizing said elements sequentially along a direction transverse to said elements to an extent dependent upon the corresponding values of an image-brightness controlling signal, thereby to cause said array to produce said image, said groups recurring along said direction at intervals which are substantially one-half the spatial period, measured along said direction, of the highest-frequency component of the brightness variations in image content desired to be displayed, the improvement comprising:

- optical diffusing means positioned between said array and said viewing position for optically spreading the apparent location of the source of the light from said elements, the extent of said spreading along said transverse direction being substantially equal to or greater than said intervals of recurrence of said groups thereby to reduce substantially the visibility of said line structure at said viewing position, but insufficient to degrade substantially the display of said highest-frequency component.

3,851,094
IMAGE PICK-UP-DISPLAY SYSTEM

Kaoru Sasabe; Hiroaki Kotera; Takashi Misaki, and Toshihide Hane, all of Osaka, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan
Filed July 19, 1972, Ser. No. 273,077
Claims priority, application Japan, July 26, 1971, 46-56212; July 27, 1971, 46-56622; Aug. 7, 1971, 46-59678; Sept. 8, 1971, 46-69888; Sept. 8, 1971, 46-69889; Sept. 8, 1971, 46-69891; Sept. 9, 1971, 46-70194
Int. Cl. H04n *5/14*
U.S. Cl. 178—6.8 **2 Claims**

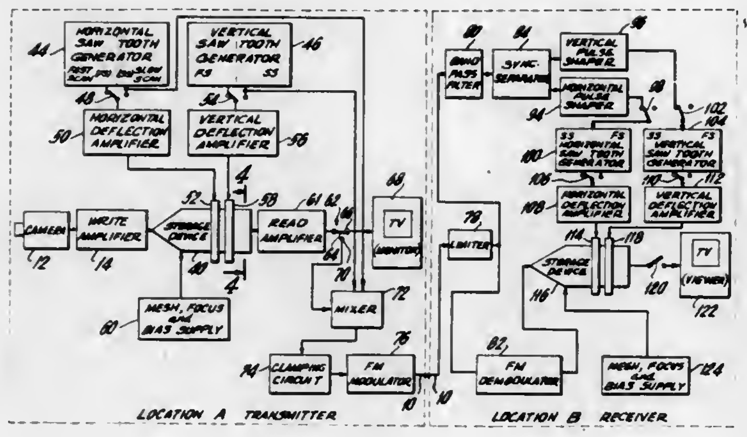


1. Apparatus for the reproduction of an image, comprising: a cathode ray tube having a layer of white phosphor, means for producing a beam of electrons for scanning said screen to produce a scanning light beam and a visible image, the intensity of said electron beam being dependent upon a control signal supplied to said cathode ray tube;

- an object positioned to receive said scanning beam of light emitted by said screen; and
- a feedback loop including a photosensitive element for producing an electrical signal in response to said light beam passing from said object, means for delaying said signal for the duration of a picture element, means for comparing between said signal and said delayed signal to produce a differential signal, means for amplifying said differential signal for controlling the intensity of said electron beam such that a given increment in the intensity of the light from said object produces an opposite increment in the intensity of the electron beam.

3,851,095
COMMUNICATION SYSTEM FOR TRANSMITTING VIDEO INFORMATION THROUGH MEDIA OF RESTRICTED BANDWIDTH

Ben Kleinerman, New Hyde Park, N.Y., assignor to Telescan Communications Systems, Inc., E. Meadow, N.Y.
Filed Aug. 7, 1972, Ser. No. 278,440
Int. Cl. H04n *7/12*
U.S. Cl. 178—6.8 **5 Claims**



1. A communication system for transmitting video images from a first location to a second location via a transmission line comprising:

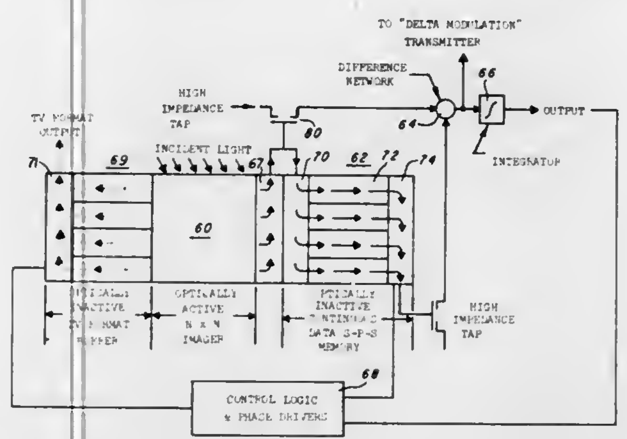
- A. means for converting a visual image to a series of frames of electrical signals at a fast TV scan rate at the first location;
- B. means coupled to said converting means for storing only the signal of a single such frame;
- C. means for converting said single frame stored electrical signal to a slow scan TV signal of the single frame;
- D. means for receiving said single frame slow scanned TV signal at the second location via the transmission line, said receiving means including;
  - i. limiter means for eliminating AM signals from the received signal,
  - ii. means for providing FM demodulation of said signal coupled to the output of said limiter,
  - iii. a bandpass filter coupled to the output of said limiter,
  - iv. a sync separator coupled to the output of said bandpass filter, and
  - v. means for generating vertical and horizontal sync pulses coupled to the output of said sync separator;
- E. means for storing said single frame received slow scan signal;
- F. means for converting the stored single frame received slow scan signal to repetitious signals of said single frame at a fast TV scan rate; and
- G. means for converting the repetitious fast scan TV signals of said single frame to an optical image corresponding to the visual image.

3,851,096
SURVEILLANCE SYSTEM

Dean R. Collins, and Jerry D. Holmes, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Nov. 3, 1972, Ser. No. 303,441
Int. Cl. H04n *3/14, 7/12, 7/18*
U.S. Cl. 178—6.8 **11 Claims**

1. In a system for detecting a change in the status of signals corresponding to a preselected monitored target, the combination comprising:

- a. a plurality of first charge transfer device shift registers each comprising a plurality of optical resolution elements, said first plurality of shift registers together defining an array of resolution elements, each said resolution element effective to generate a signal corresponding to a target image area incident thereon during an integration period;
- b. high impedance tap means for providing from said first shift registers a non-destructive readout of said signals corresponding to said target image in a preselected sequence;
- c. charge transfer device shift register storage means for receiving said signals from said first shift register devices;
- d. said first shift registers including means for receiving clock pulses for reading out signals from said first shift registers for application to said high impedance tap means and for inputting to said shift register storage means;


TO "DELTA MODULATION" TRANSMITTER
DIFFERENCE NETWORK
66
HIGH IMPEDANCE TAP
OUTPUT
TV FORMAT OUTPUT
64
80
INCIDENT LIGHT
INTEGRATOR
71
69
67
70
62
72
74
60
OPTICALLY INACTIVE TV FORMAT BUFFER
OPTICALLY ACTIVE N x N IMAGER
OPTICALLY INACTIVE CONTINUOUS DATA S-P-S MEMORY
HIGH IMPEDANCE TAP
68
CONTROL LOGIC & PHASE DRIVERS

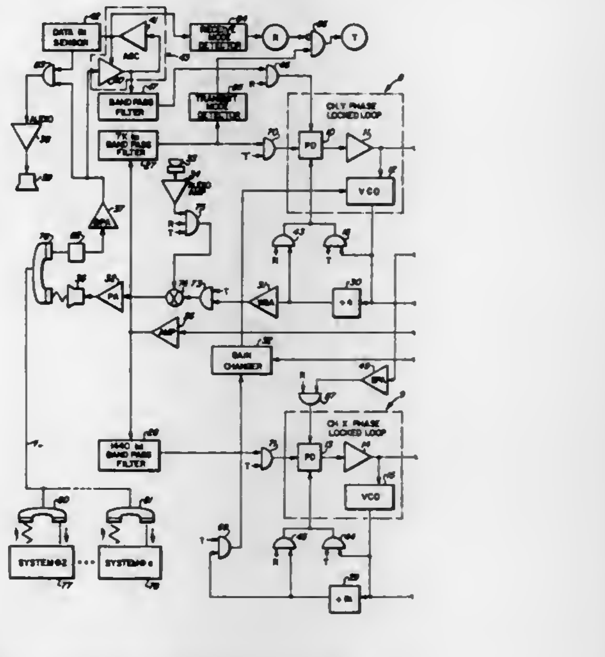
- e. said shift register storage means including means for receiving clock pulses for synchronous inputting of signals from the first shift register means and reading out of signals from said shift register storage means, signals from said first shift register means corresponding to target-related signals generated by said resolution elements during a first integration period, and signals from said shift register storage means corresponding to target-related signals generated by said resolution elements during a second integration period previous to said first integration period; and
- f. signal processing means for simultaneously receiving said signals from said high impedance tap means and from said shift register storage means for providing comparison output signals on a resolution element by resolution element basis between target-related signals during said first and second integration periods.

3,851,097
METHOD AND APPARATUS FOR CONVEYING GRAPHIC INFORMATION OVER A TELEPHONE QUALITY COMMUNICATIONS LINK

James L. Rodgers, Tempe, Ariz., assignor to Talos Systems, Inc., Scottsdale, Ariz.
Filed Apr. 3, 1973, Ser. No. 347,387
Int. Cl. G08c *21/00*
U.S. Cl. 178—19 **5 Claims**

1. Apparatus for encoding graphic information into a single signal comprising:

- A. a writing pen;
- B. a writing surface;
- C. first variable frequency means coupled to said pen and responsive to the position of said pen in a first dimension to assume a first operating frequency corresponding thereto, said first variable frequency means having a first predetermined range about a first center frequency;
- D. second variable frequency means coupled to said pen and responsive to the position of said pen in a second dimension to assume a second operating frequency corresponding thereto, said second variable frequency means having a second predetermined range about a second center frequency differing from said first center frequency;
- E. a first frequency divider coupled to the output of said first variable frequency means for deriving a subharmonic

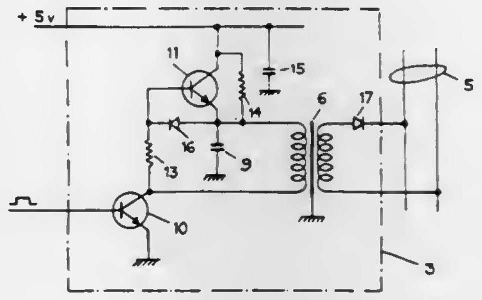


of said first operating frequency; and

- F. means coupling said first frequency divider to said second variable frequency means for frequency modulating said second operating frequency with said sub-harmonic of said first operating frequency.

3,851,098
PULSE TRANSMITTER FOR TRANSMISSION LINE

Benoit A. M. Pingault, Asnieres, France, assignor to International Standard Electric Corporation, New York, N.Y.
Filed June 14, 1973, Ser. No. 370,192
Claims priority, application France, June 16, 1972, 72.21736
Int. Cl. H03k *5/00*
U.S. Cl. 178—68 **6 Claims**



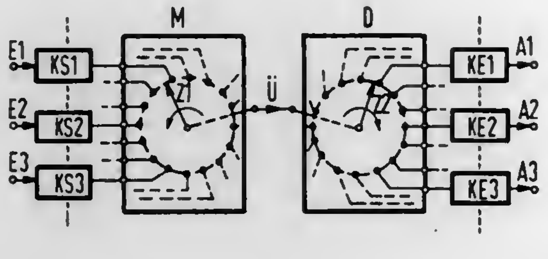
1. A pulse transmitter for use with a two-wire transmission line comprising:

- a transformer having a primary winding and a secondary winding coupled across said two-wire transmission line;
- a storage capacitor having one terminal coupled to one terminal of said primary winding and the other terminal connected to ground, discharge of said storage capacitor through said primary winding producing a pulse for application to said two-wire transmission line;
- a first normally non-conductive transistor having its base coupled to a control input, its emitter connected to ground and its collector coupled to the other terminal of said primary winding, a control signal of given polarity applied to said control input rendering said first transistor conductive to discharge said storage capacitor; and
- a second normally non-conductive transistor having its base coupled to said one terminal of said primary winding, its emitter coupled to said one terminal of said storage ca-

pacitor and its collector coupled to a power supply having a predetermined polarity, said second transistor being rendered conductive by a reciprocal current peak amplitude produced in said transformer after said storage capacitor produces said pulse to recharge said storage capacitor by a charging current having an amplitude proportional to said reciprocal current peak amplitude.

3,851,099
TIME-DIVISION MULTIPLEX SYSTEM

Konrad Reisinger, Zorneding, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Gernamy
Filed Aug. 1, 1973, Ser. No. 384,414
Claims priority, application Germany, Aug. 30, 1972, 2242639
Int. Cl. H04j *3/04*
U.S. Cl. 178—50 **6 Claims**



1. Apparatus for the transmission of binary coded data signals and continuous signals from separate channels over a common channel using the time division multiplex principle wherein a fixed character frame is used, comprising:

first shift register means for receiving said data signals and continuous signals,

identifying circuit means for sensing the presence of a start signal in said first shift register and for producing an output signal responsive thereto,

code counter means for registering the elements of a siad data signal and including reset means which operates responsive to the presence said identifying circuit output signal,

phase correction circuit means for producing clock pulses at predetermined intervals in relation to the data signals to be transmitted,

second shift register means having a number of stages corresponding to the number of elements in a said data signal, means for coupling the contents of said first shift register means, in series, to said second shift register means in synchronism with said clock pulses from said phase correction circuit means,

third shift register means having a number of stages corresponding to the number of information elements in a said data signal plus one additional stage,

means for connecting, in parallel, the information elements from a data signal stored in said second shift register means to said third shift register means,

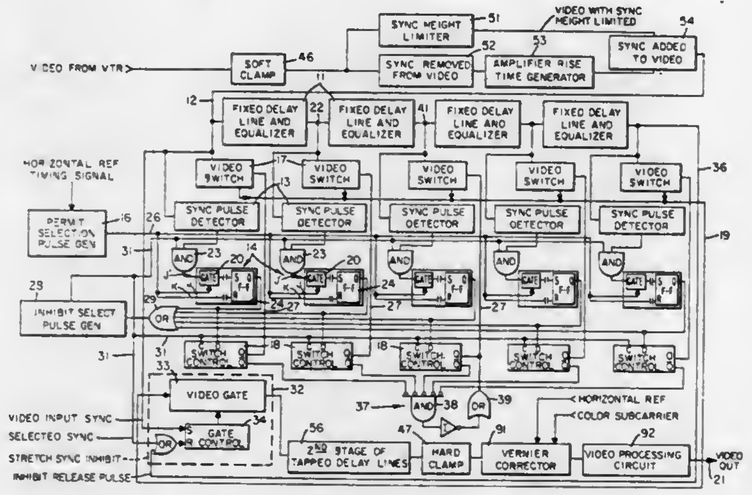
evaluating circuit means for determining the states of the first and last stages of said second shift register for distinguishing data signals from continuous signals and for placing information in said one stage of said third shift register means indicating the outcome of said determination,

means for causing the transfer of information elements of a said data signal contained in said second shift register means into said third shift register means if the first stage of said second shift register contains a start signal, said code counter means has reached its final position and said third shift register means is not being read out and

means for reading out said third shift register means upon sampling of the channel associated with the data signal currently contained in said third shift register means.

3,851,100
TIME-BASE ERROR CORRECTION SYSTEM

William F. Herzog, Campbell, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Division of Ser. No. 240,729, April 3, 1972, Pat. No. 3,748,386. This application June 14, 1973, Ser. No. 370,137
Int. Cl. H04l *7/00*
U.S. Cl. 178—69.5 R **6 Claims**

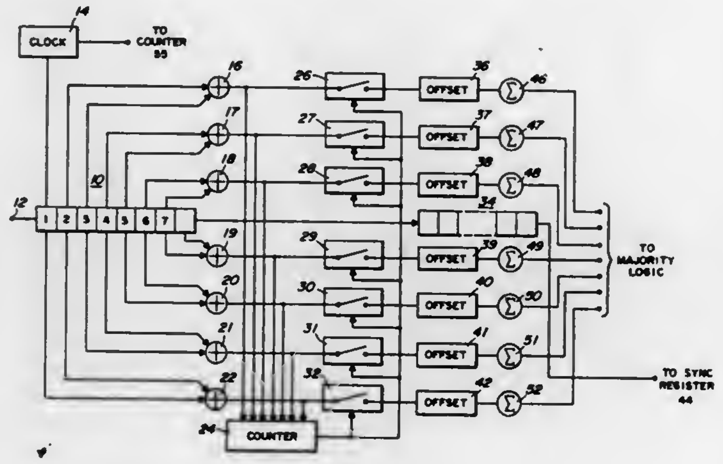


5. In a time-base error correction system having a plurality of serially connected delay lines disposed to receive a video signal therethrough, detection means comparing a reference synchronizing signal with the video signal at each of a plurality of taps along said delay lines, and switching means connecting a selected one of said taps to a video output in response to the detection of the first occurring video synchronizing signal at one of said taps following the reference synchronizing signal, the combination with said delay lines, detection means and switching means comprising;

AND logic means connected to said switching means and being responsive to a condition in which none of said taps are selected for connection to said video output, circuit means connected and responsive to said logic means operating said switching means to connect a predetermined one of said taps to said video output.

3,851,101
ADAPTIVE PHASE SYNCHRONIZER

John En, Palatine, and Daniel P. Brown, Elmhurst, both of Ill., assignors to Motorola, Inc., Chicago, Ill.
Filed Mar. 4, 1974, Ser. No. 447,627
Int. Cl. H04l *7/00*
U.S. Cl. 178—69.5 R **10 Claims**



1. An adaptive phase synchronizing system for synchronizing the phase of a received digital signal having a plurality of bits, each bit having a predetermined bit interval, to correspond to the phase of a local clock, said system comprising:

means for receiving said digital signal;

sample and storage means connected to said receiving means for taking a predetermined number, n, of samples of said received digital signal during each bit interval, said sample and storage means including a shift register having $n + 1$ stages for storing said samples;

n modulo 2 adders, each having two inputs connected to a different pair of adjacent ones of said $n + 1$ stages, and an output, each of said modulo 2 adders being responsive to the samples stored in the stages connected thereto to provide a transition signal when the last mentioned samples are unequal;

a counter connected to the output of each of said modulo 2 adders, said counter being responsive to said transition signals for providing an error signal when more than one transition signal is simultaneously provided by said modulo 2 adders;

accumulator means coupled to the output of each of said modulo 2 adders, said accumulator means being responsive to said modulo 2 adder means for a predetermined sampling period once during each bit interval for counting the number of transition signals provided by each of said modulo 2 adders and providing a count signal having a value representative of said number of transition signals provided by each one of the modulo 2 adders, said accumulator means including means for reducing the value of each of said count signals corresponding to the modulo 2 adders not providing transition signals during said predetermined sampling period;

switch means connected to said accumulator means and said counter, said switch means being responsive to said counter for rendering said accumulator means nonresponsive to said modulo 2 adders for the predetermined sampling period concurrent with the presence of said error signal, or the absence of a transition from 0 to 1 or from 1 to 0;

majority logic means connected to said accumulator means and responsive to the accumulator means having the highest value count signal to provide a sample identifying signal at an output terminal thereof for identifying one of said n samples having a transition adjacent thereto;

delay means connected to said sample and storage means for receiving and delaying said samples;

variable phase shifting means connected to said delay means for receiving delayed samples therefrom, said variable phase shifting means including a shift register having a second predetermined number, p, of stages greater than the predetermined number, n;

logic means coupled to said majority logic means and said variable phase shifting means for selecting n adjacent ones of said p stages in response to said sample identifying signal; and

data generating means coupled to said n adjacent ones of said p stages selected by said logic means, said data generating means being responsive to the samples present in one of said selected n stages for generating one data bit in response to said last mentioned samples during each bit interval of said received digital signal.

3,851,102
TIME-DIVISION MULTIPLEX TELEPHONE SYSTEM INCLUDING MEANS FOR RECORDING CHARGES

Herbert Bauernfeind, Nieder-Eschbach, and Manfred Goller, Frankfurt/Main, both of Germany, assignors to Telefonbau und Normalzeit G.m.b.H., Frankfurt/Main, Germany
Filed Feb. 8, 1973, Ser. No. 330,830
Claims priority, application Germany, Feb. 16, 1972, 2207101
Int. Cl. H04m *15/00*
U.S. Cl. 179—7.1 TP **6 Claims**

1. A time-division multiplex telephone system having automatic charge-recording means including

a. a plurality of subscriber statins (A,B) each provided with terminal equipment (TSA, TSB);

b. a plurality of special transmission lines (L_1, L_2) each terminating in a transfer unit (AUe1, AUe2);

c. a time-divided voice bus (SS);

d. means for connecting said terminal equipment (TSA, TSB) of each of said plurality of subscriber stations (A, B) and for connecting said transfer unit (AUe1, AUe2) of each of said plurality of special lines (L_1, L_2) to said voice bus (SS), said connecting means including amplitude sample transmitters (APSA, APSB, APSAUe1, APSAUe2) and amplitude sample receivers (APEA, APEB, APEAUe1, APEAUe2), one of said amplitude sample transmitters and one of said amplitude sample receivers connecting said terminal equipment of each of said plurality of subscriber stations and connecting each said transfer unit of each of said plurality of special lines to said voice bus;

e. control lines (SLS) carrying timing signals to said amplitude sample transmitters (APSA, APSB, APEAUe1, APEAUe2) and control lines (SLE) carrying timing signals to said amplitude sample receivers (APEA, APEB, APEAUe1, APEAUe2) to sequentially allocate a time slot to one of said amplitude sample transmitters (APEA, APEB, APEAUe1, APEAUe2) and to one of said amplitude sample receivers (APEA, APEB, APEAUe1, APEAUe2);

f. a plurality of charge meters (GZA, GZB) each for one of said plurality of subscriber stations (A, B);

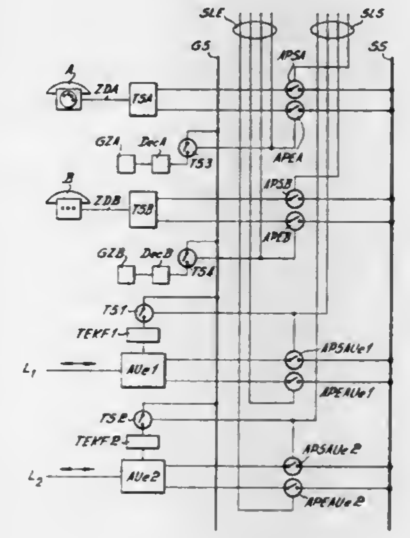
g. a plurality of charge-pulse-receivers (TEKF1, TEKF2) each connected to one of said transfer units (AUe1, AUe2) to receive charge pulses received by said transfer units;

h. a charge-pulse-transmitting bus (GS);

i. first gates (TS1, TS2) connecting said plurality of charge-pulse-receivers (TEKF1, TEKF2) to said charge-pulse-transmitting bus (GS);

j. means connecting said charge-pulse-transmitting bus (GS) to said plurality of charge meters (GZA, GZB) including decoders (Dec A, Dec B) and second gates (TS3, TS4); and

k. conductor means interconnecting said control lines (SLS) carrying timing signals to said amplitude sample transmitters (APSA, APSB, APEAUe1, APEAUe2) and first gates (TS1, TS2) and conductor means interconnecting said control lines (SLE) carrying timing signals to said amplitude sample receivers (APEA, APEB, APEAUe1, APEAUe2) and said second gates (TS3, TS4) for controlling said first gates and for controlling said second gates by signals carried by said control lines.



3,851,103

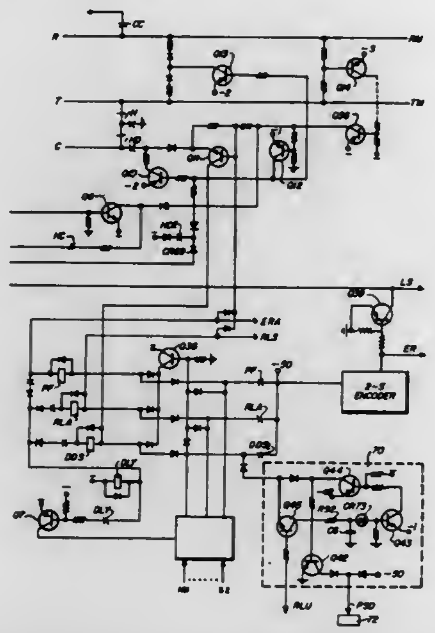
COMMUNICATION SYSTEM BLOCKED CALLS METERING LATCH ARRANGEMENT

Truman R. Mila, Batavia, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 17, 1973, Ser. No. 398,297

Int. Cl. H04m *15/32*

U.S. Cl. 179—9 **3 Claims**



1. In a common control communication switching system including a sender for forwarding a call to a toll switch, said toll switch operating a delay dial relay means within said sender until it is ready to receive said call, the common control within said system initiating a release cycle by forwarding a release signal to said sender if said toll switch fails to accept said call within an established time interval, and a meter means for keeping a record of the number of times said toll switch fails to accept a call from a sender, an electronic latch within said sender for operating said meter means comprising a first transistor rendered conductive when said release signal is coupled to said sender, a second transistor rendered conductive upon said first transistor being rendered conductive and coupled with said first transistor to hold it conductive until said release signal is removed, and a third transistor coupled with said second transistor and said meter means and providing an output signal to advance the count of said meter means when said electronic latch is set.

3,851,104

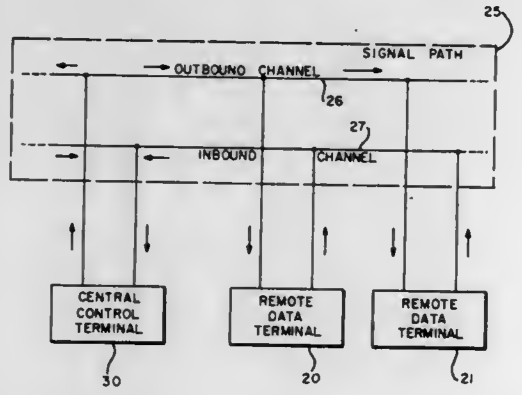
DIGITAL COMMUNICATIONS SYSTEM

David G. Willard, Hollis, N.H.; Michael S. Cogan, Saugus, Mass.; Maurice G. Vacherot, Billerica, Mass., and John W. Shay, Carlisle, Mass., assignors to The Mitre Corporation, Bedford, Mass.

Filed Apr. 11, 1973, Ser. No. 350,043

Int. Cl. H04j *3/04*

U.S. Cl. 179—15 BY **20 Claims**



1. A time division multiple access digital communications system for providing a communication link over a common signal path between at least two remote terminals, said system having a plurality of multiple bit digital message signals, each of said signals being disposed in a one of a plurality of time slots in a repetitive framed time sequence, comprising:

a. a common signal path,

b. a plurality of remote subscriber terminals connected

c. to said common signal path, and

d. a central control terminal connected to said path having means for allocating predetermined numbers of time slots to selected ones of said remote terminals during each of said framed sequences, said predetermined number of slots being for transmission of digital sign-on request signals by the respective ones of said selected terminals to direct said central control terminal to link the requesting remote terminal to said signal path, said predetermined number of slots for providing said control terminal to be responsive to said sign-on request signals of the respective ones of said selected terminals during a predetermined proportion of each of said framed sequences,

whereby said allocation of said predetermined number of time slots provides the respective ones of said remote terminals with a predetermined mean time for access to said signal path.

3,851,105

TIME DIVISION SWITCHING NETWORK EMPLOYING SPACE DIVISION STAGES

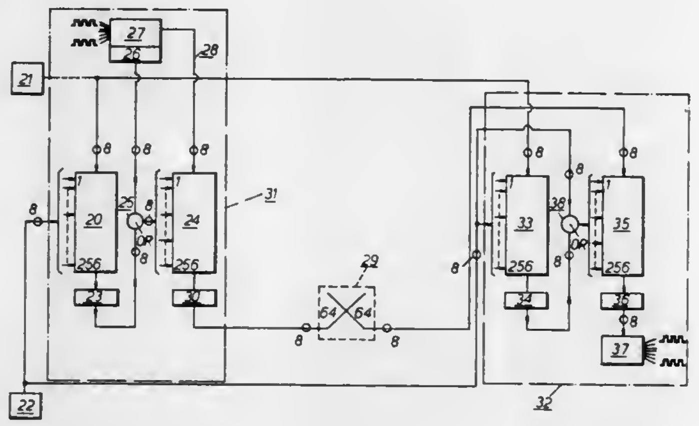
Albert Regnier, Issy-les-Moulineaux; Kevork Kevorkian, St. Germain-en-Laye, and Jean Paul Lager, La Celle St. Cloud, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 25, 1972, Ser. No. 291,995

Claims priority, application France, Oct. 12, 1973, 73.7136594

Int. Cl. H04j *3/00*

U.S. Cl. 179—15 AT **6 Claims**



1. A time-division switching network for processing a large number of channels wherein each channel incorporates a set of elementary network time slots comprising, an input time-division stage, an output time division stage, and a plurality of space-division stages, each time-division stage including independent parallel groups connected to the space-division stages, each group comprising a control memory and a speech memory, the control memory including a plurality of rows equal in number to the number of elementary network time slots, the speech memory including a plurality of rows equal in number to the number of channels in the group, and the number of channels in each group being equal to half the number of elementary network time slots.

3,851,106

METHOD FOR INCREASING IN A SIGNAL WITH A GIVEN BAND WIDTH THE AMOUNT OF INFORMATION TRANSFERRED PER TIME UNIT

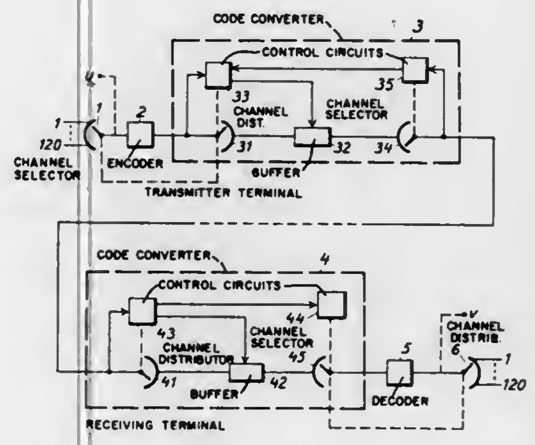
Anton Christian Jacobaeus, Stockholm, Sweden, assignor to Telefonaktiebolaget L. M. Ericsson, Stockholm, Sweden

Filed June 29, 1973, Ser. No. 374,908

Claims priority, application Sweden, July 19, 1972, 9500/72

Int. Cl. H04j *3/04*

U.S. Cl. 179—15 AP **10 Claims**



1. In a PCM-word transmission system, the method for increasing for a signal of given bandwidth the amount of information transferred per unit time comprising the steps of: at a transmitting terminal converting the signal to PCM-words in a first PCM-word format, examining the information content of the PCM-words in order to classify the PCM-words according to a preselected rule in a first category with low information value or in a second category with high information value, assigning to the PCM-words classified in the first category first marking bits having a first bit pattern and assigning to the PCM words classified in the second category second marking bits having a second bit pattern, for PCM-words in the first category transmitting only the assigned first marking bits in a second PCM-word format while for PCM-words in the second category transmitting both such PCM-words and their assigned second marking bits in a third PCM-word format; and at a receiving terminal examining the received marking bits to determine whether the received marking bits are to first or second marking bits, for each of said first marking bits generating a PCM-word of the first category but in the first PCM-word format, and for each of said second marking bits converting its associated PCM-word of the second category into a corresponding PCM-word of the second category but in the first PCM-word format.

3,851,107

FAULT DETECTING DEVICE FOR MULTIPLEX SIGNAL TRANSMISSION SYSTEM

Sigeyuki Akita, Kariya, Japan, assignor to Nippon Soken, Inc., Nishlo-shi, Aichi-ken, Japan

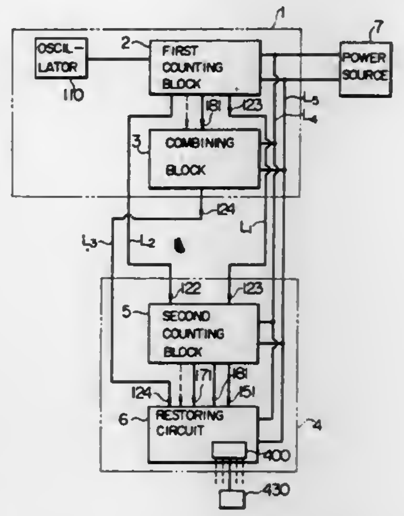
Filed Oct. 4, 1973, Ser. No. 403,611

Claims priority, application Japan, Oct. 5, 1972, 47-100481

Int. Cl. H04j *3/14*

U.S. Cl. 179—15 BF **3 Claims**

1. In a multiplex signal transmission system comprising a transmitter for generating a synchronous signal, a timing signal and a level signal having information to be transmitted superposed on the designated addresses, and a receiver including signal generating means for receiving said signals to generate a reset signal and a transfer signal, and restoring means for receiving said reset signal, said transfer signal and said level signal to generate an actuation signal, a fault detecting circuit comprising detecting means for generating a signal by detecting the fact that said level signal has superposed information on all the addresses, and means connected to said restoring means to block said actuation signal upon the generation of said detected signal.



3,851,108

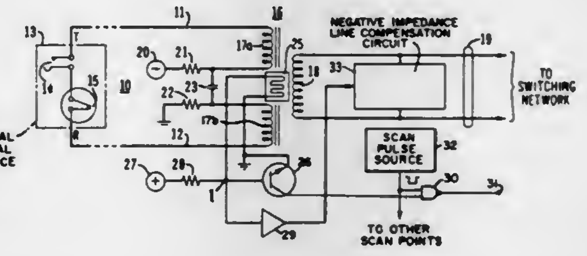
COMMUNICATION LINE SUPERVISORY CIRCUIT

Laimons Freimanis, Chicago, Ill., assignor to Bell Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 20, 1972, Ser. No. 316,915

Int. Cl. H04m *3/22*

U.S. Cl. 179—18 F **4 Claims**



1. In a communication system, in combination, a subscriber line loop, a transformer having a primary winding means defining a dc path in said loop and a secondary winding, a transmission line including said secondary winding, said transformer having a core presenting an air gap, means for detecting direct current in said loop comprising a detection circuit including a current source and magnetoresistor means controlled responsive to a magnetic field applied thereto in said air gap for controlling the magnitude of said direct current in said detection circuit, output circuit means for generating an analog signal indicative of the magnitude of said current in said detection circuit, and compensating circuit means connected across said transmission line operated responsive to said analog signal for compensating for loss introduced in said line loop.

3,851,109

TELEPHONE CONTROL SYSTEM

Robert F. Downs, 12049 Arroyo Dr., Santa Ana, Calif. 92705, and Jerry J. Humphrey, 4961 Van Buren, Yorba Linda, Calif. 92686

Filed May 3, 1973, Ser. No. 356,814

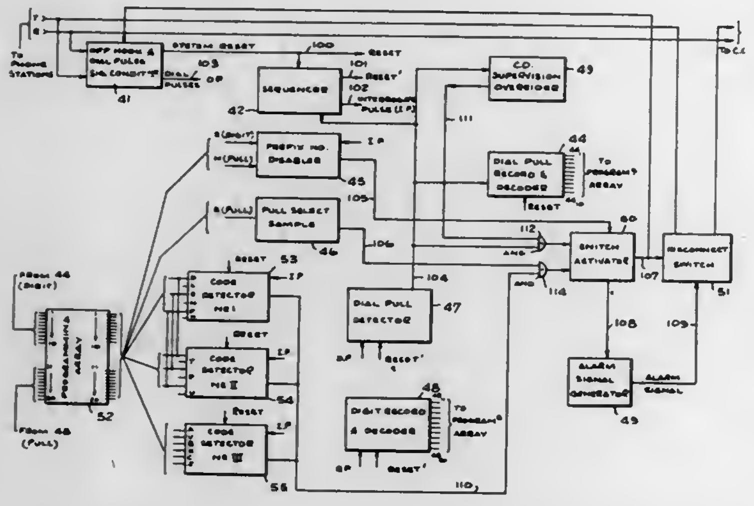
Int. Cl. H03k *21/22*; **H04m** *1/66*, *3/38*

U.S. Cl. 179—18 DA **13 Claims**

1. Apparatus associated with a telephone line for prohibiting unauthorized calls from being completed by a telephone connected to the line, said apparatus comprising:

first signal generating means responsive to dialing signals on the line for providing a first sequential plurality of output signals on a first plurality of output lines, each of said first output signals being functionally related to the digit dialed on each dial pull;

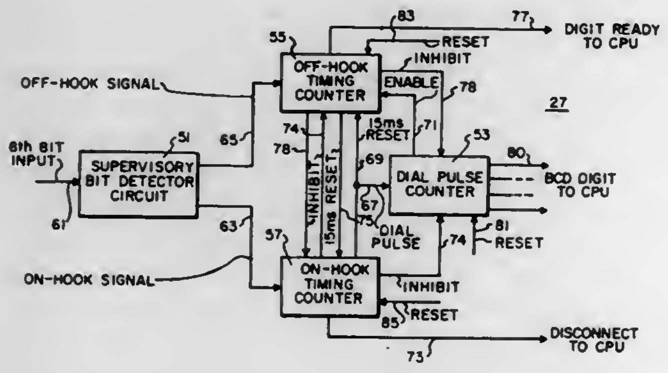
second signal generating means responsive to dialing signals on the line for providing a second sequential plurality of output signals on a second plurality of output lines, each of said second output signals being functionally related to the number of digits dialed;



code detection means responsive to said first and said second plurality of output signals for generating an initiation signal responsive to the detection of the absence of selected dialed digit sequences, the sequences being selectable as a function of the manner of interconnection of said first and second plurality of output lines with said code detection means;

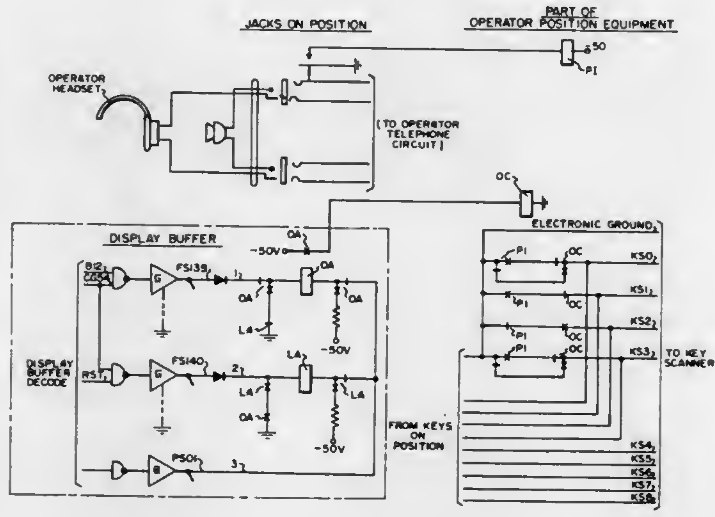
means associated with the line and responsive to said initiation signal for blocking call completion.

3,851,110
DIGITAL DIAL PULSE RECEIVER
Michael J. Kelly, Melrose Park, and Charles J. Simon, Hinsdale, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Sept. 12, 1973, Ser. No. 396,624
Int. Cl. H04j ***3/12***
U.S. Cl. 179—18 EB **8 Claims**



1. A digital dial pulse receiver circuit for use with switching exchanges of telephone communication systems comprising pulse detecting means for detecting the on-hook off-hook supervisory state of a calling party line and generating on-hook off-hook pulses corresponding thereto, respectively, first counter means incrementable by said on-hook pulses and providing therefrom first output signals responsive to the occurrences of said first counter means attaining a lower preselected count state and a second output signal responsive to said first counter means attaining a higher preselected count state, second counter means incrementable by said off-hook pulses and providing therefrom first output signals responsive to the occurrences of said second counter means attaining a lower preselected count state and a second output signal responsive to said second counter means attaining a higher preselected count state, said first and second counter means being resettable by said first output signals from said second counter means and said first output signals from said first counter means, respectively, third counter means incrementable by said first output signals of said first counter means, the accumulated count state thereof being representative of the numerical value of a dialed digit, said second output signal of said first counter means being effective to signal a calling party disconnect condition and said second output signal of said second counter means being effective to signal the completion of a dialed digit.

3,851,111
TSPS-HEADPHONE PLUG MESSAGES
John Young, Addison, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Sept. 14, 1973, Ser. No. 397,566
Int. Cl. H04m ***5/00***
U.S. Cl. 179—51 R **3 Claims**



1. An operator's position staffing condition indication arrangement for use in a system having a central control unit and a group of operator positions, with a data link having a local terminal coupled to the control unit and a remote terminal coupled to said group, having a transmitter and receiver at each terminal;

each position having an N-conductor key bus with keys having contacts to connect a potential to selected conductors of the bus in a code designating the key, the key busses of the positions being scanned by the scanner, which supplies signals to the remote transmitter to send messages identifying the position and the key code;

a display buffer having relays with contacts connected to light lamps and to control other functions at the positions, the display buffer relays being operated in response to messages received via the remote terminal receiver, with data designating a position and a function;

said arrangement comprising a position indication relay and means to operate it responsive to plugging in of an operator's headset and release it responsive to unplugging of the headset, the position indication relay having contacts to connect potential to conductors of the key bus for a "staffed" code, so that a corresponding message is sent to the common control unit via the data link;

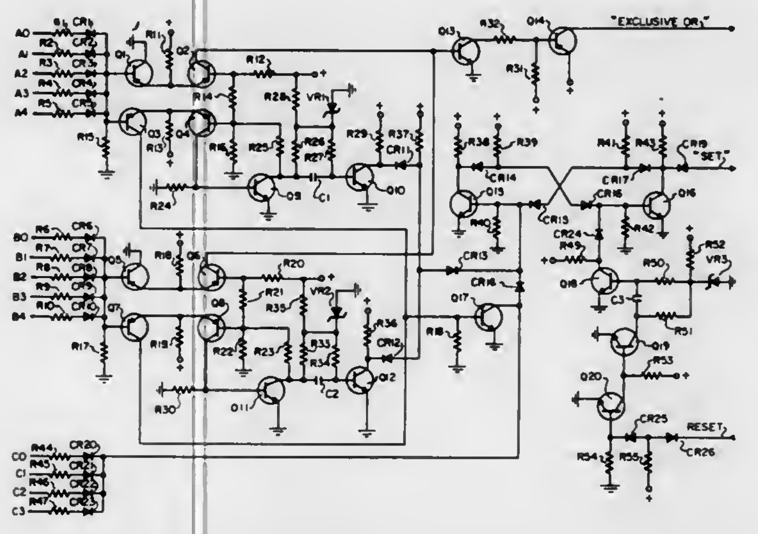
and an acknowledgement "position occupied" message is returned;

a "position occupied" display buffer relay which is operated and locked in response to the "position occupied" message, "position occupied" contact means operated in response to the "position occupied" relay being operated, the "position occupied" contact means being effective to disconnect the potential from the bus for the "staffed" code while the position indication relay remains operated;

means comprising contacts of the position indication relay and said "position occupied" contact means effective upon release of the position indication relay upon unplugging of the headset to apply potential to conductors of the key bus for an "unstaffed" code, so that a corresponding message is sent to the common control unit via the data link, and an acknowledgement "position not occupied" message is returned;

means responsive to the "position not occupied" message to release the "position occupied" relay, which via said "position occupied" contact means causes the potential to be removed from the key bus for the "unstaffed" code.

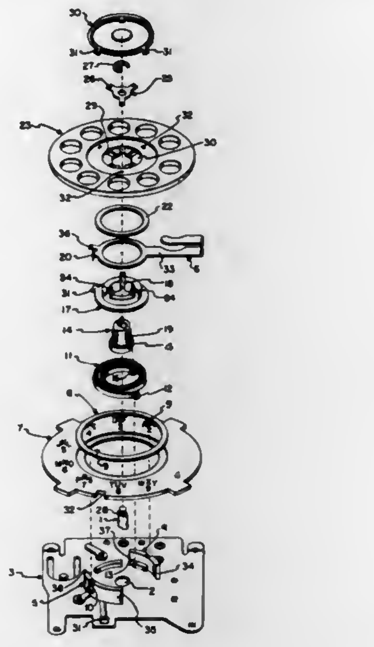
3,851,112
DATA DETECTOR WITH VOICE SIGNAL DISCRIMINATION
Lawrence J. Kusan, Glendale Heights, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Apr. 26, 1973, Ser. No. 354,567
Int. Cl. H04m ***1/50***
U.S. Cl. 179—84 VF **11 Claims**



1. A data detector for use with a data receiver connected to a communication channel over which voice signals and tone signals are received, said data detector comprising: first gating means connected to said data receiver operated in response to concurrent receipt of a plurality of signals in a first band of frequencies; second gating means connected to said data receiver operated in response to concurrent receipt of a plurality of signals in a second band of frequencies; and signal generating means connected to said first and to said second gating means, including an output circuit connection to said data receiver, operated in response to either said first or second gating means to generate an output signal to inhibit operation of said data receiver.

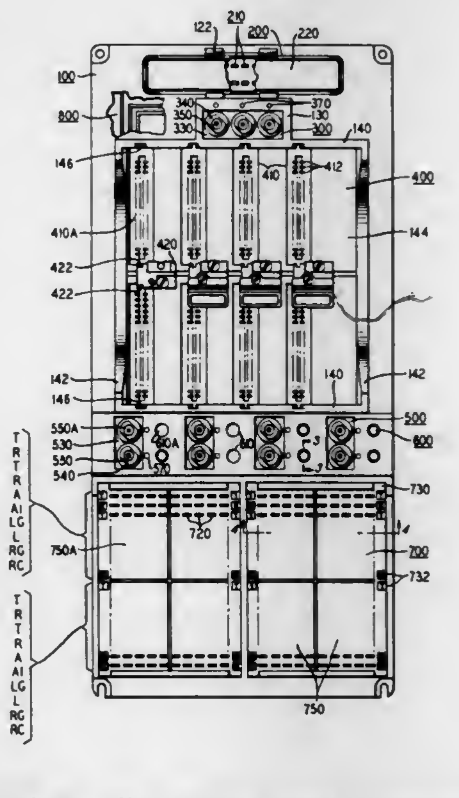
3,851,113
FINGER STOP FOR A MOVABLE FINGER STOP-TYPE ROTARY DIAL
Charles E. Blackmon, Jr., Huntsville, Ala., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed July 9, 1973, Ser. No. 377,665
Int. Cl. H04m ***1/23***
U.S. Cl. 179—90 FW **4 Claims**

1. In a rotary dial for a telephone, wherein said dial includes a mounting plate having a pair of projections extending upward therefrom, and a finger wheel supported above said mounting plate for selective rotation, the improvement comprising a movable finger stop cooperable with said finger wheel for limiting the rotation of said finger wheel, said finger stop having a primary arm portion extending between first spaced apart sides of said projections and into the area encompassed by said finger wheel and a secondary arm portion



extending between second spaced apart sides of said projections, whereby said first and second sides of said projections in cooperation with said primary and secondary arm portions respectively prevent said finger stop and hence said finger wheel from being rotated in excess of a predetermined amount.

3,851,114
TELEPHONE DISTRIBUTION PANEL
Stanley Edward Bush; Charles William Lewis; William John McKelvey, all of Boulder; Donald Leiman Merwede, Longmont; Kenneth Joseph Roberge, and George Edwin Saltus, both of Boulder, all of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 30, 1973, Ser. No. 384,091
Int. Cl. H04q ***1/14***
U.S. Cl. 179—98 **8 Claims**



1. A telephone distribution panel comprising a support including a plurality of connectors, a like plurality of fuse sockets, and a like plurality of terminal arrays, means for electrically connecting each connector to an individual fuse

socket and terminal array, each connector having the same physical location relative to the other connectors as the fuse socket to which it is connected has to the other fuse sockets and the terminal array to which it is connected has to the other terminal arrays.

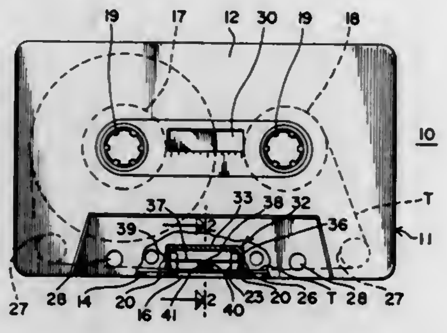
3,851,115
SELF-CONTAINED LOW CROSSFEED TAPE CASSETTE ASSEMBLY

Edward C. Zacaroli, Utica, N.Y., assignor to Hamilton Digital Controls, Inc., Utica, N.Y.

Filed Oct. 4, 1971, Ser. No. 186,073

Int. Cl. G11b *5/00, 23/10*

U.S. Cl. 179—100.2 C **7 Claims**



1. A magnetic tape cassette comprising a case having an aperture in a peripheral wall thereof for exposing tape for engagement by a magnetic transducer head, a tape carrying reel disposed in said case, guide means for leading magnetic tape from said reel along a path registering with said aperture with the front face of said tape directed outwardly through said aperture, a pressure pad of high magnetic permeability supported in said case and bearing on the rear face of said tape in registry with said aperture and resilient means engaging said pressure pad for urging said pad toward said tape and said tape toward said transducer head.

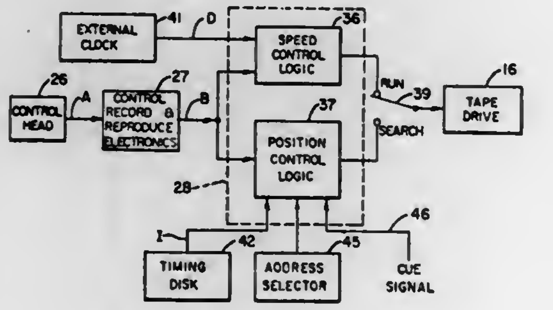
3,851,116
AUTOMATIC MAGNETIC TAPE INFORMATION RETRIEVAL SYSTEM WITH SPEED AND POSITION TAPE DRIVE CONTROL

Max R. Cannon, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 887,904, Dec. 24, 1969, abandoned. This application Dec. 10, 1971, Ser. No. 206,917

Int. Cl. G11b *15/52*

U.S. Cl. 179—100.2 S **19 Claims**



1. In a magnetic tape information retrieval system, the combination of:

a magnetic tape having segments of recorded information on at least one information track and a control track on the tape coextensive with said information track, said control track having consecutively numbered control pulses, said control pulses having a distinguishable portion occurring at regular intervals recorded thereon and defining a succession of address segments along the control track,

tape drive means for moving said magnetic tape in either direction,

means for reproducing said control pulses,

a tape drive control connected to said tape drive means including means producing a train of periodic reference pulses, a speed control circuit operative in the run mode including means for detecting differences in frequency between said reproduced control pulses and the train of periodic reference pulses, and means for generating a difference signal to vary the speed of said tape drive means whereby the positions of said control and reference pulses are synchronized, and a position control circuit operative in the search mode including means producing timing pulses synchronized with tape speed, means responsive to said synchronized timing pulses for decoding said reproduced control pulses independently of the tape speed, and means for comparing the decoded control pulses with the next selected address segment number, and means for generating a difference signal of a polarity and magnitude related to the direction and distance respectively to said next selected address segment number on said magnetic tape.

3,851,117
ELECTROMAGNETIC SOUND PICKUP FOR THE REPRODUCTION OF QUADROPHONIC SOUND RECORDINGS AND THE LIKE

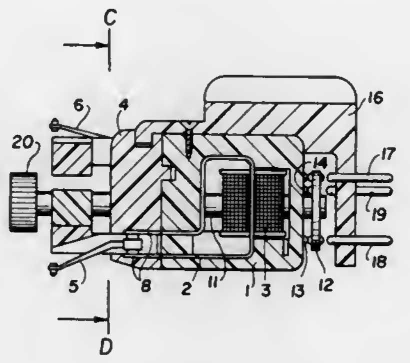
Hans-Robert Kuhn, Kiel, Germany, assignor to Electroacustic GmbH, Kiel, Germany

Filed Apr. 18, 1973, Ser. No. 352,189

Claims priority, application Germany, June 21, 1972, 2230203

Int. Cl. H04r *11/12*

U.S. Cl. 179—100.41 K **7 Claims**



1. An electromagnetic sound pickup for use in the production of quadrophonic sound recordings and the like comprising a housing, pole pieces each having two parts, one of said parts carrying an induction coil and being fixedly mounted on said housing, the other of said parts being detachably assembled to said one part which is fixed to said housing, a magnetic armature associated with each detachably assembled part of said pole pieces, a needle carrier connected to each said magnetic armature, said needle carrier being supported so that it can be elastically deflected, each said magnetic armature and connected needle carrier defining a structural unit forming a scanning device, at least two scanning devices, each suited for different frequency ranges, a common mounting means rotatably mounted on said housing, each of said scanning devices together with its associated part of said pole pieces being mounted on said mounting means, whereby rotation of said mounting means causes each said other part of said pole pieces to selectively be brought into contact with the one part of said pole piece that is fixed to said housing.

3,851,118
ELECTROACOUSTIC TRANSDUCER HAVING A PREFORMED NON-MAGNETIC CENTERING SLEEVE

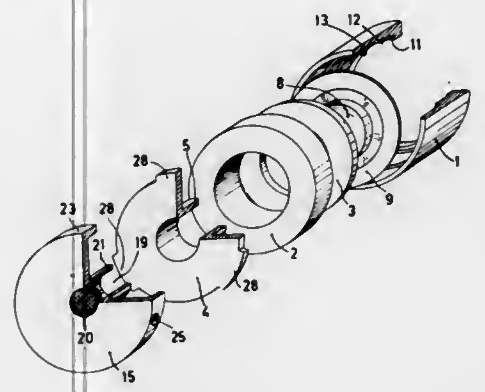
Derk Kleis; Adriaan Hanneman; Cornelis Penning, and Gerrit Schenkel, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 16, 1970, Ser. No. 3,424

Claims priority, application Netherlands, Jan. 17, 1969, 6900876

Int. Cl. H04r *9/04*

U.S. Cl. 179—115.5 PC **20 Claims**



1. An electroacoustic transducer device comprising a magnet system that includes an annular permanent magnet ring and first and second pole plates arranged one on each side thereof, the first of said pole plates being rigidly secured to a soft-iron core which is centrally arranged with respect to the two pole plates and together with the second pole plate forms an annular effective air-gap, a preformed casing that includes a centering sleeve made of a non-magnetic material for centering the core relative to the second pole plate, said centering sleeve enclosing the magnet system and having an inner surface provided with at least two axially spaced abutment members which correspond respectively to the locations of the first and second pole plates.

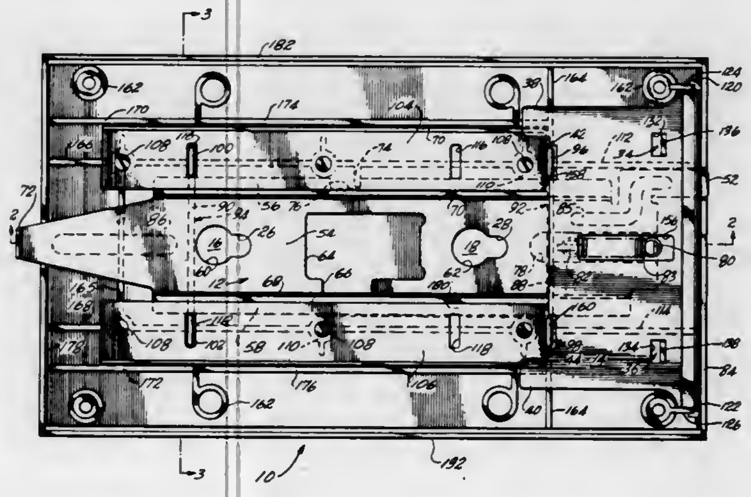
3,851,119
WALL MOUNT FOR TELEPHONES

Council A. Tucker, Los Angeles, Calif., assignor to American Telecommunications Corporation, El Monte, Calif.

Filed Apr. 9, 1973, Ser. No. 348,956

Int. Cl. H04m *1/11*

U.S. Cl. 179—146 R **19 Claims**



1. An improved wall mount for mounting telephones against a wall to a telephone service outlet installed in the wall comprising:

a. a base adapted to lie flush against the wall and having a mounting surface adapted to mount a telephone instrument;

b. means in the base to loosely retain a plug and to couple the telephone instrument to the service outlet through the plug upon installation of the mount on the outlet;

c. guide means in the base for guiding the mount during installation into a predetermined lateral and elevational position with respect to the telephone outlet and electrically coupling the plug to the service outlet;

d. a latch translationally mounted in the base for selective movement between an open and a closed position, the latch having at least one opening with a periphery disposed in the closed position of the latch to neck in behind the head of a headed stud of the outlet and secure the mount to the outlet at the stud around a substantial portion of the head;

e. means biasing the latch into the closed position; and

f. means for opening the latch externally of the base by overcoming the biasing means upon the application of a force to the opening means.

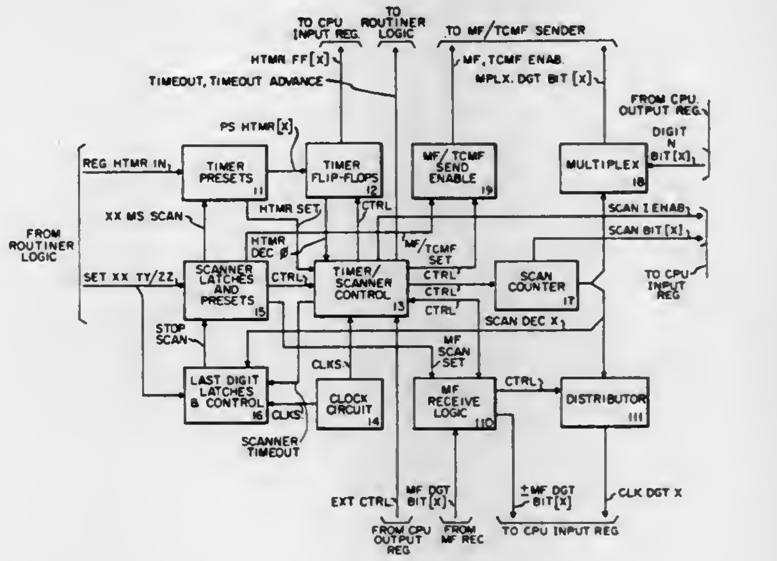
3,851,120
COMBINED TIMING-OUTPULSING-SCANNING CIRCUIT

Thomas W. Crosley, Northlake, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed June 15, 1973, Ser. No. 370,560

Int. Cl. H04m *3/24*

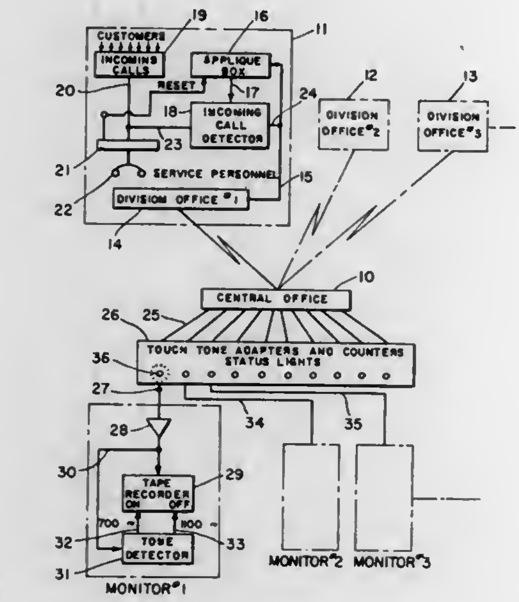
U.S. Cl. 179—175.2 R **2 Claims**



1. A variable time interval measuring circuit for measuring a time interval as set by external control apparatus and comprising: a source of time pulses, a time interval binary counter means operably connected to said source of timed pulses, setting means operated by said external control apparatus to set said counter to a particular count, a decode means operated to produce an output upon said counter reaching said particular count, said decode means being arranged to decode only an all zero condition of said counter, a first plurality of register means, a first and a second coding means connecting each said register means to said setting means, whereby each said register means upon operation by said external control apparatus is effective to control said time interval measuring circuit to measure a first particular interval and a second particular interval, a second plurality of register means, each of said second plurality of register means upon operation by said external control apparatus effective to permit the restart of said first register means a plurality of times corresponding to the setting thereof, connect means connecting said second plurality of register means to said first plurality of register means, and control means connected to said second plurality of register means and operated from said output of said decode means to register an operation thereof.

3,851,121
AUTOMATIC REMOTE SERVICE MONITORING SYSTEM

Howard Arthur Marvin, Claremont, Calif., assignor to General Telephone Company of California, Santa Monica, Calif.
Filed Dec. 10, 1973, Ser. No. 423,282
Int. Cl. H04m *3/22*
U.S. Cl. 179—175.2 C **5 Claims**



1. A method of automatically monitoring at a central office, service calls between customers and a remote division office, comprising the steps of:

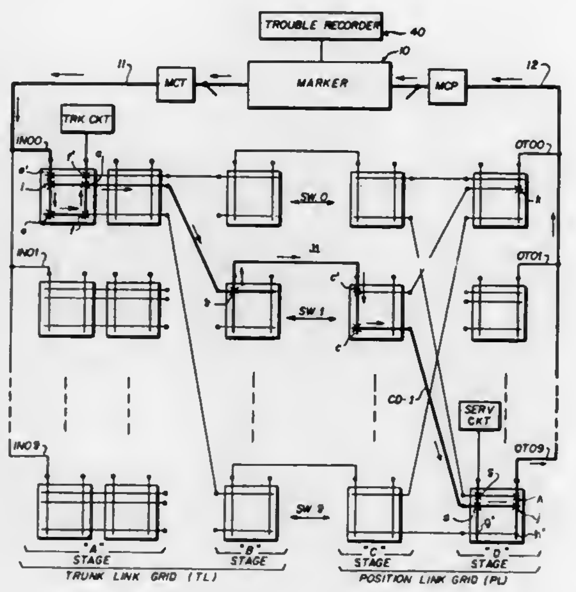
a. generating at the central office an enabling code and sending it over a telephone line from the central office to the division office;
b. intercepting and utilizing said enabling code at the division office to initiate operation of an incoming call detector;
c. generating ON and OFF tone control signals at the division office in said incoming call detector indicating initiation and termination respectively of telephone calls between customers and service personnel at the division office, and passing said telephone calls and said tone control signals back to said central office;
d. receiving said telephone calls and tone control signals at said central office; and,
e. initiating and terminating operation of a tape recorder in response to receiving said ON and OFF tone control signals respectively at said central office

whereby said telephone calls between customers and said division office are automatically recorded for subsequent review at said central office.

3,851,122
PATH VERIFICATION ARRANGEMENT FOR AUTOMATICALLY TESTING CONDITIONS

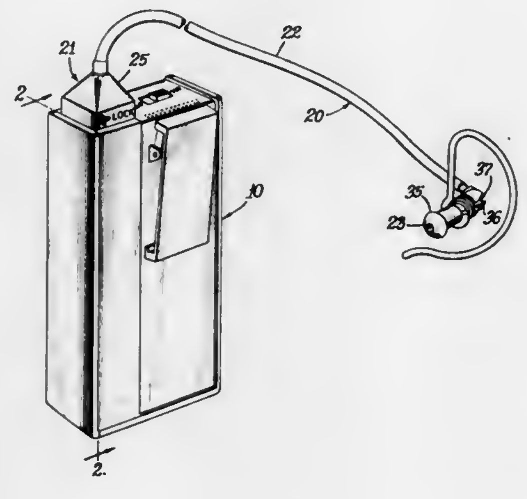
John C. Gibson, Oak Lawn, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Continuation of Ser. No. 268,986, July 5, 1972, abandoned. This application Jan. 17, 1974, Ser. No. 437,595
Int. Cl. H04m *3/24*
U.S. Cl. 179—175.23 **1 Claim**

1. A path verification method for automatically testing connections established through a switching matrix which comprises a plurality of switches, each of which is formed of a plurality of stages consisting of crosspoint switching matrices and a plurality of links and junctors connecting said stages to provide a plurality of transmission paths between any particular trunk circuit inlet and service circuit outlet thereof under the control of a marker, the first and last stage of each of said switches having at least one vertical thereof forming a verification inlet and a verification outlet, respectively, said marker being operable to establish a transmission path between any trunk circuit inlet and any service circuit outlet by closing selected ones of said crosspoints in respective ones of said plurality of stages comprising the steps of coupling said marker in multiple to one verification inlet of each of the first stages of each of said switches and to one verification outlet of each of the last stages of said switches, operating said marker to close selected ones of said crosspoints in said first and last stages to establish a path verification circuit from said marker through said switching matrix back to said marker via said one verification inlet and a trunk circuit inlet of said first stage, said one verification outlet and a service circuit outlet of said last stage and the same transmission path established through said switching matrix, testing by said marker the continuity of the established path verification circuit.



3,851,123
MECHANICAL AUDIO COUPLING DEVICE

Richard D. Lipinski, Coral Springs, and Raymond E. Hagood, Lauderhill, both of Fla., assignors to Motorola, Inc., Chicago, Ill.
Filed Oct. 19, 1973, Ser. No. 408,219
Int. Cl. H04r *1/10*
U.S. Cl. 179—182 R **4 Claims**

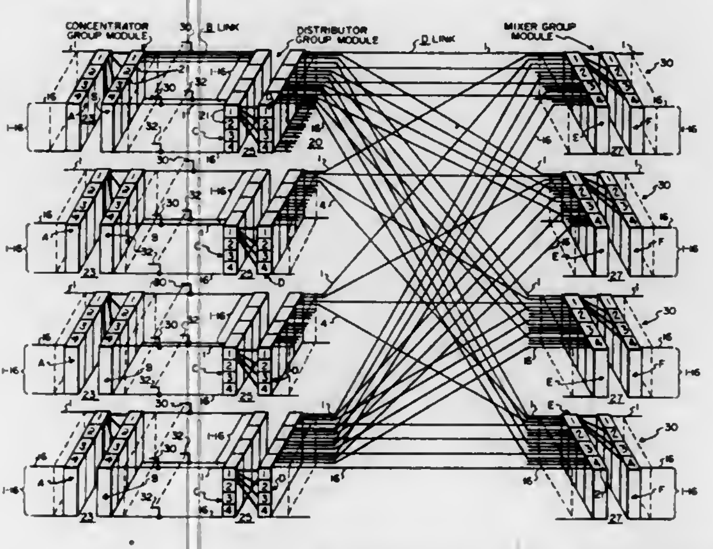


1. In combination with a pocket type, portable radio receiver having a horn type electrical to audible energy transducer an improved earpiece assembly comprising:

a. connecting means including a hollow housing with an enlarged inlet opening and tapering to a substantially reduced outlet opening, said connecting means further including means for removably engaging said housing to the radio receiver with the inlet opening thereof in an overlying position relative to the transducer outlet;
b. sound carrying conduit having an inner diameter approximately the same size as the outlet opening of said housing with one end fixedly engaged in a coaxial relationship to the outlet opening of said housing; and
c. earplug means fixedly attached to the other end of said conduit for directing audible energy from the transducer into a human ear.

3,851,124
CROSSPOINT MATRIX ARRANGEMENT FOR SPACE-DIVISION COMMUNICATION SWITCHING NETWORK

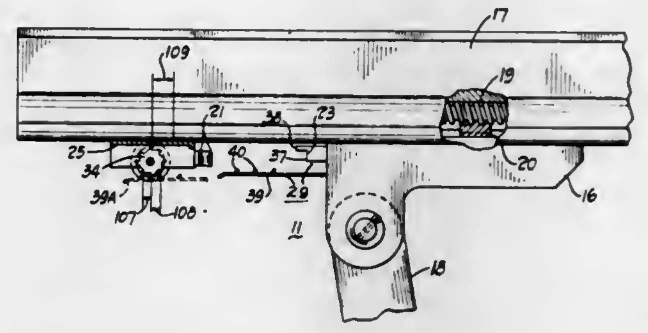
Ronald C. J. Garavalia, Naperville, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Dec. 4, 1972, Ser. No. 312,017
Int. Cl. H04q *3/42*
U.S. Cl. 179—18 GF **7 Claims**



1. A crosspoint matrix arrangement for a space-divided communication switching network including a plurality of square arrays of crosspoint connections having input terminals and output terminals equal in number to the number of input terminals respectively, said matrix arrangement comprising first, second, and third order switching means including a corresponding plurality of said square arrays, respectively, said square arrays being associated in first and second space-divided switching stages for said first order switching means, third and fourth space-divided switching stages for said second order switching means and fifth and sixth space-divided switching stages for said third order switching means, a predetermined number of said square arrays corresponding to the number of input terminal connections for each of said square arrays providing a space-related grouping of said square arrays within each of said first, third and fifth stages and a corresponding identical space-related grouping of said square arrays within each of said second, fourth and sixth stages, respectively, each of said square arrays within a selected spacerelated grouping of said first, third and fifth stages having an output terminal thereof connected to an input terminal of each of said square arrays within an associated one of said identical space-related groupings of said second, fourth and sixth stage arrays, respectively, a plurality of said space-related groupings and said identical space-related groupings provided in each of said first, second and third order switching means, said plurality thereof being equal in number to the number of input terminal connections to said square arrays of each space-related grouping of said first, third and fifth stages, respectively, each of the output terminals of a selected one of said identical space-related groupings of said second switching stage being connected to an associated input terminal of a different one of said space-related groupings of said third switching stage and each of the input terminals of a selected one of said space-related groupings of said fifth switching stage being connected to an associated output terminal of a different one of said identical space-related groupings of said fourth switching stage, respectively, for interconnecting said first, second and third order switching means.

3,851,125
DOOR OPERATOR CONTROL

Andrew F. Deming, Alliance, and Alvin J. Carli, Sebring, both of Ohio, assignors to The Alliance Manufacturing Company, Inc., Alliance, Ohio
Filed Nov. 23, 1973, Ser. No. 418,545
Int. Cl. E05f *15/16*
U.S. Cl. 200—47 **24 Claims**

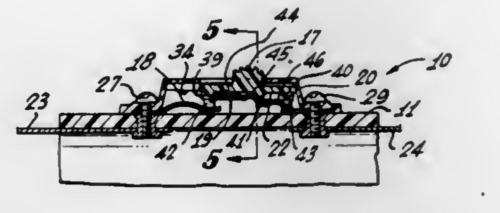


1. A door operator control including a motor having an output connected to move the door between open and closed limit positions, said door being adapted to have a changing limit position due to changing ambient conditions,

said control including limit switch means,
actuator means for said limit switch means,
means connecting said switch means to control said motor output in at least one of opening and closing movements, and cycling means connected to relatively move the point of switch actuation by said actuator means in accordance with changes in a limit position of the door.

3,851,126
FLASHLIGHT SWITCH

Donald A. Keller, San Dimas, Calif., assignor to Pro-Light Inc., Los Angeles, Calif.
Filed Sept. 21, 1973, Ser. No. 399,756
Int. Cl. F21v *23/04;* **H01h** *9/02*
U.S. Cl. 200—60 **4 Claims**



1. In a flashlight having an insulated body, the combination comprising:

first and second terminals integral with the body;
a fixed contact strip secured to said first terminal and extending toward said second terminal exteriorly along the body;
a resilient movable contact strip secured to said second terminal and extending toward said first terminal in partly overlapping relationship with said fixed contact strip, said movable contact strip being generally arcuate in shape with at least one convex hump of relatively small radius intermediate its ends;
a hollow switch cover having side walls and a top wall, said switch cover being removably secured to the flashlight body to surround said fixed and movable contact strips, and said top wall having an elongated opening therethrough; and
a switch button sized to fit under said switch cover to overlie said movable contact strip and protrude partly through said elongated opening, said switch button having at least two transverse ribs thereunder, and being movable between an "off" position, in which both of said ribs are positioned on the side of said convex hump closer to said

second terminal, and an "on" position, in which both of said ribs are positioned on the opposite side of said convex hump and said movable contact strip is thereby cammed into electrical contact with said fixed contact strip, said switch button also being movable to an intermediate position, between said "off" and "on" positions, in which said ribs straddle said convex hump and in which said resilient movable contact strip is movable into momentary contact with said fixed contact strip by momentary depression of said switch button, whereby said ribs and said convex hump coact as a detent to provide positive retention of said switch button in any of said "off" "on" and intermediate positions.

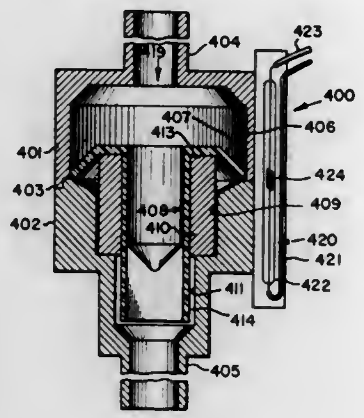
3,851,127
HOT LIQUID DISPENSER REVERSE FLOW SENSOR WITH CHECK VALVE SLIDER AND MAGNETICALLY OPERATED SWITCH

John A. Gardner, Jr., Tewksbury, and Merle S. Brown, Cohasset, both of Mass., assignors to Jet Spray Cooler, Inc., Waltham, Mass.

Division of Ser. No. 177,597, Sept. 3, 1971, Pat. No. 3,790,028, which is a continuation-in-part of Ser. No. 887,671, Dec. 23, 1969, abandoned. This application Aug. 9, 1973, Ser. No. 387,004

Int. Cl. H01h *35/24*

U.S. Cl. 200—61.86 **4 Claims**



1. A reverse flow sensor comprising,
- a housing having a chamber with an inlet and an outlet,
- a magnet carried by a slider for movement within said chamber, said slider having a passageway permitting all flow of fluid from said inlet therethrough in one direction and impeding fluid flow from said outlet in a second direction so that fluid flow toward said second direction acts to move said slider in said second direction to block flow from said outlet to said inlet,
- and magnetic responsive means associated with said housing for reacting to movement of said slider.

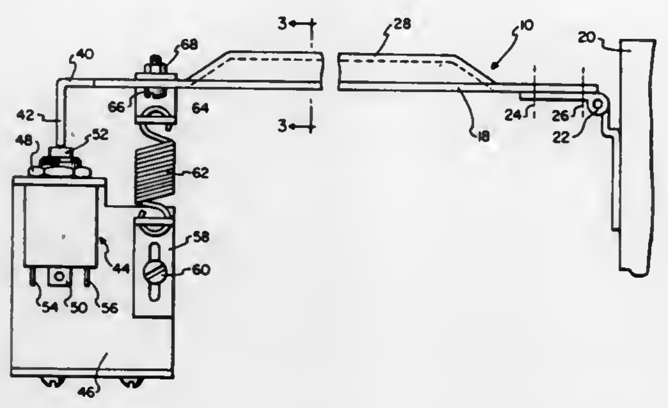
3,851,128
LIFT FORCE FAN FAILURE DETECTOR, assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jan. 2, 1974, Ser. No. 430,008

Int. Cl. H01h *35/40*

U.S. Cl. 200—81.9 R **5 Claims**

1. A tan failure detector apparatus associated with a system having a fluid flow producing assembly that provides circulation, said fan failure detector apparatus comprising:
- central thin plate element rotatably mounted at one end and disposed above the flow output of the fluid flow producing assembly, said plate element including a cenrtral flow portion oriented at a small angle relative to the fluid flow direction so as to produce a lift force substantially perpendicular to the fluid flow on said flat plate, said plate element further including switch engaging means carried at the end opposite said rotatably mounted end; 39 switch means including actuating means carried by said system and located adjacent the switch engaging means of said plate element, said switch means further including a set of contacts which are controlled by said actuating means; and



- means for urging said flat plate element and said switch engaging means toward said switch means so as to actuate said switch means when insufficient fluid flow is present from said fluid flow producing assembly, sufficient fluid flow producing a lift force on said plate element overcoming said urging means and deactuating said switch means, said urging means being mounted between said system and said flat plate element.

3,851,129
FORK TRUCK OPERATED SWITCH

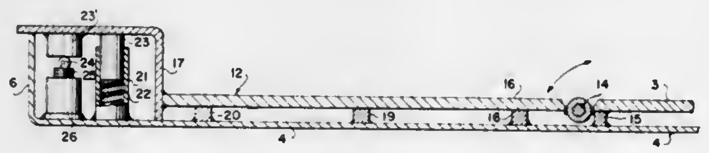
Edward T. Kornylak, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio

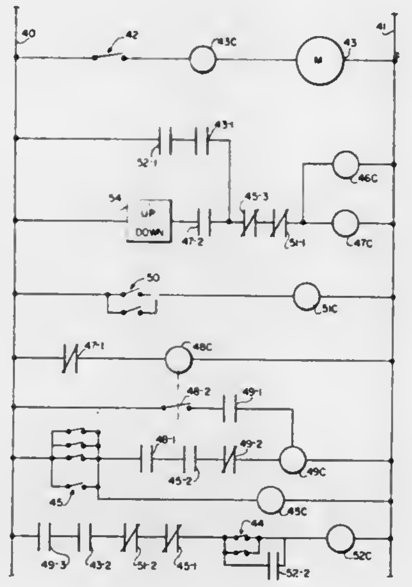
Filed Oct. 23, 1973, Ser. No. 408,423

Claims priority, application Switzerland, Mar. 22, 1973, 4164/73

Int. Cl. H01h *3/16*

U.S. Cl. 200—86 R **13 Claims**





1. A treadle operated safety switch device, particularly for loading openings of a vertical conveyor, comprising: a stationary base adapted to be mounted on a floor adjacent a conveyor loading and unloading area, having one end of the base being adjacent the loading and unloading area, an opposite end and opposed side walls between said opposite ends; first switch plate means adjacent said one end and extending generally from side to side above said base and being mounted for movement toward and away from said base; second switch plate means extending from side to side adjacent said opposite end above said opposite end above said base and mounted for movement toward and away from said base; third switch plate means extending from side to side between said first and second switch plate means above said base, and being mounted for vertical movement toward and away from said base: spring means between each of said switch plate means and said base for normally biasing the respective switch plate means away from said base with a predetermined spacing therebetween under no load conditions with a predetermined force resisting downward movement of the respective switch plate means; and switch means between each of said switch plate means and said base having an open contact position and a closed contact position, being movable between said positions by movement of the respective switch plate means toward and away from said base; said spring means of said third and second switch plate means having a force sufficient to resist changing the position of the associated switch means upon receiving a load substantially that of a normal human being, but being overcome to change the position of the associated switch means upon receiving a load on the associated switch plate means at least as great as that of a conventional forklift truck; said spring means of said first switch plate means having an effective force resisting change in position of the associated switch means that is substantially less than the spring means force of said third and second switch plate means and being readily overcome by a load within the range of an average human being to change the position of the switch means of said first switch plate means; and circuit means for stopping the associated conveyor upon a change in position of the switch means of either said first switch plate means or said third switch plate means by a load being applied thereto.

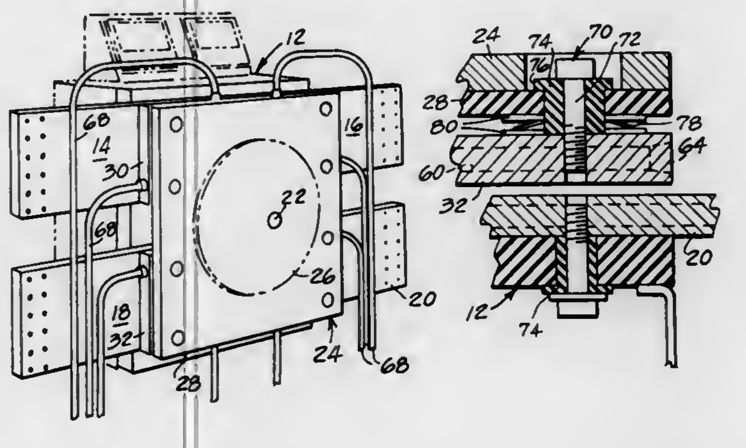
3,851,130
POLARITY REVERSING SWITCH FOR HIGH CURRENT LOADS

Peter C. Paulson, Pinole, Calif., assignor to Electro-Coatings, Inc., Moraga, Calif.

Filed July 5, 1973, Ser. No. 376,382

Int. Cl. H01h *21/66, 1/62*

U.S. Cl. 200—153 R **4 Claims**



1. In a high capacity polarity reversing switch of the type including a stationary base member having two pairs of stationary terminals, a movable member having internal terminal engaging conductors and being operable in a first position to form a circuit between pairs of said stationary terminals and in a second position to form a circuit between different pairs of said stationary terminals, and means axially alined relative to said base for selectively engaging and disengaging said members in circuit forming positions, the improvement comprising rigid conductor bars constituting said terminal engaging conductors, means for supporting said rigid conductor bars for movement relative said movable member toward and away therefrom and toward and away from said stationary terminals, means for resiliently biasing said rigid conductor bars away from said movable member and toward said stationary terminals, said stationary terminals formed by cylindric conductive members having one end mounted to said base member and the other end protruding therefrom toward said conductor bars, said protruding end being arcuately convex so as to make contact with said conductor bars irrespective of misalinement of said movable member relative said base member, said conductor bar supporting means comprising first and second stub shafts attached to said conductor bars and extending therefrom, means for guiding said stub shafts for sliding movement in said movable member, said guiding means being disposed so that said stub shafts lie on opposite sides of said cylindric conductive members when the respective conductive bar is in contact with the convex surface of said cylindric conductive member, and wherein said resilient biasing means comprises first and second compression springs circumscribing respective said shafts intermediate said movable member and said conductor bar, said conductor bars and stationary terminals defining a plurality of fluid passages therethrough, and means for supplying a cooling fluid to said passages.

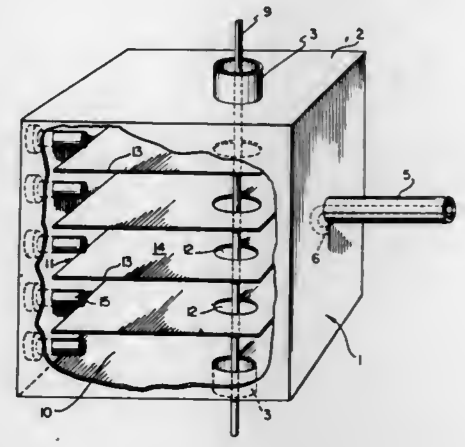
3,851,131
MULTIMODE MICROWAVE CAVITIES FOR MICROWAVE HEATING SYSTEMS

Donald A. Johnston, and Walter A. Voss, both of Edmonton, Alberta, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed June 28, 1973, Ser. No. 374,753

Int. Cl. H05b *9/06;* **H01p** *7/06*

U.S. Cl. 219—10.55 **5 Claims**



1. A multimode microwave applicator comprising:
- a cavity having two pairs of parallel side walls and parallel end walls;
- a coupling structure connected to a transmission line and mounted through a first one of said walls for providing power to said cavity;
- a number of spaced metallic vanes mounted within the cavity transverse to the electric field, forming resonators within said cavity; and
- a second one of said walls consisting of a slotted array coupled to a further cavity.

3,851,132
PARALLEL PLATE MICROWAVE APPLICATOR

Allan L. VanKoughnett, Ottawa, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

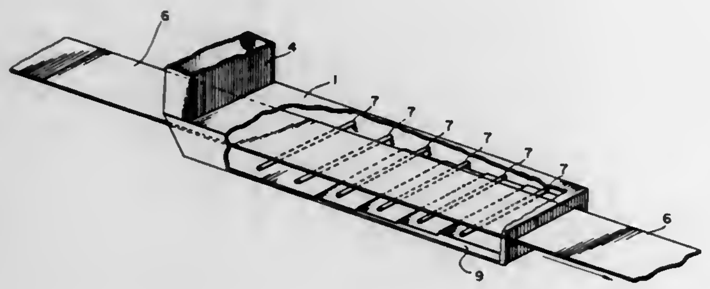
Filed Dec. 10, 1973, Ser. No. 423,551

Int. Cl. H05b *9/06*

U.S. Cl. 219—10.55 A **12 Claims**

1. A microwave applicator for subjecting a workpiece to dielectric heating as it moves therethrough, comprising:

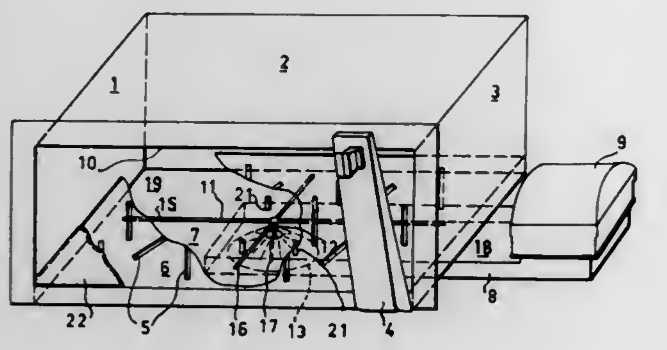
a. a rectangular waveguide of cross-sectional dimensions A and B where $A>B$;
b. means for exciting said waveguide principally in the TE_{01} mode to provide a substantially uniform electric field intensity across the dimension A; and



c. at least first and second means mounted within the length of said waveguide and suitably spaced to provide an electric field of increased intensity through multiple reflections between said mounted means.

3,851,133
MICROWAVE OVEN WITH ANTENNA CHAMBER, ANTENNA, AND RADIATION SLOTS

Hans G. E. Dygve, and Per Olov G. Risman, both of Huskvarna, Sweden, assignors to Husqvarna Vapenfabriks Aktiebolag, Huskvarna, Sweden
Filed Feb. 20, 1974, Ser. No. 444,153
Claims priority, application Sweden, Mar. 7, 1973, 7331742
Int. Cl. H05b *9/06;* **H01q** *21/26*
U.S. Cl. 219—10.55 **8 Claims**



1. A microwave oven for processing food with microwave radiation and comprising:

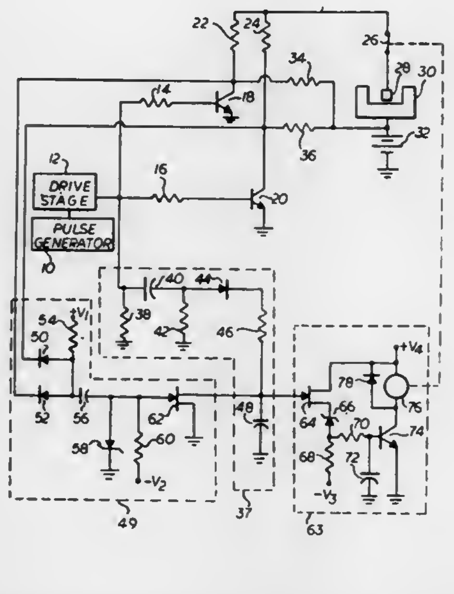
an oven chamber, the top and bottom walls of which are spaced apart by substantially no more than one wavelength of said microwave radiation, said oven chamber having a door for access thereto and at least one side thereof having a plurality of radiation openings for the introduction of said microwave energy thereto;

antenna chamber means disposed adjacent to said at least one side of said oven chamber so that said radiation openings radiatively communicate said antenna chamber means with said oven chamber;

antenna means disposed in said antenna chamber, said antenna means having feeding means connnected thereto for receiving said microwave radiation located substantially in the center of said antenna chamber means and having structural distributing elements which lie in a plane substantially parallel to said radiation openings in said at least one side of said oven chamber.

3,851,134
ELECTRICAL DISCHARGE MACHINING POWER SWITCH SHORT CIRCUIT DETECTION

Eiichi Takarada, 1423 Vassar Rd., Rockford, Ill. 61103
Filed Nov. 5, 1973, Ser. No. 412,702
Int. Cl. B23k *9/16*
U.S. Cl. 219—69 S **5 Claims**

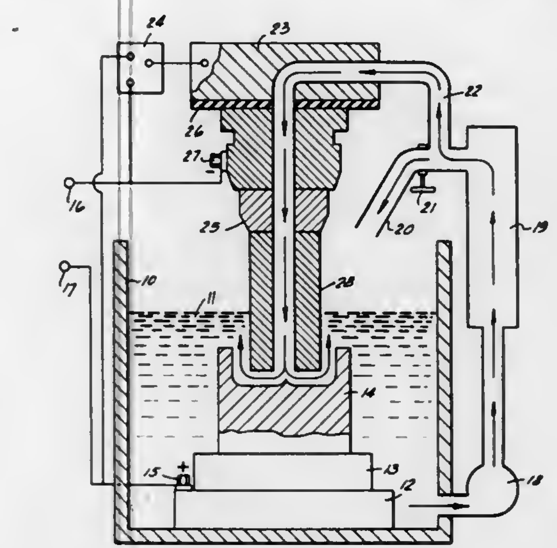


1. In an electrical discharge machining assembly including pulse-generating means for supplying pulses of a predetermined frequency and duty cycle, at least one electrode and conductive workpiece defining therebetween an ionizable gap, and a circuit including at least one power switch means coupling said pulse-generating means with said electrode and workpiece whereby pulses are passes through said gap to machine said workpiece; the improvement comprising a storage network coupled with said circuit for storing energy representative of said pulses, a sensing network coupled with the output of said power switch means for sensing a short circuit condition at said power switch means and coupled with said storage network for discharging said energy in the absence of said short circuit condition, and a control network coupled with said storage network for actuation thereby when said energy is not discharged, said control network coupled with said circuit for interrupting the machining of said workpiece when actuated by said storage network.

3,851,135
ELECTRICAL DISCHARGE MACHINING PROCESS EMPLOYING BRASS ELECTRODE, SILICONE OIL DIELECTRIC, AND CONTROLLED VOLTAGE PULSES

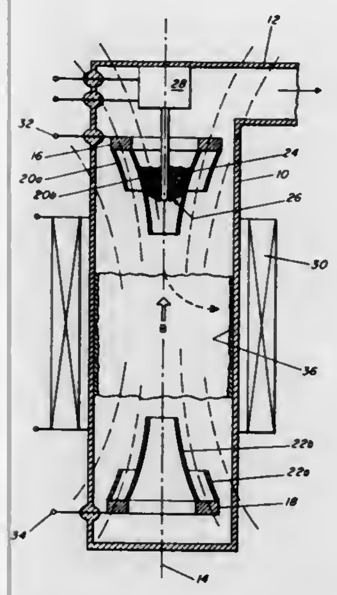
Donald J. Moracz, Maple Heights, and Edward J. Stachura, Lyndhurst, both of Ohio, assignors to TRW Inc., Cleveland, Ohio
Filed Nov. 9, 1973, Ser. No. 414,404
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 M **7 Claims**

1. A method for electrical discharge machining of a workpiece which comprises positioning a brass electrode in closely spaced relation to the workpiece, injecting a silicone oil dielectric under positive pressure through said electrode and at said workpiece, and applying a pulsating voltage between said electrode and said workpiece, the pulses of said voltage having a pulse duration ranging from 4 to 200 microseconds and an on time of from 20 to 80 percent of the period of the pulses.



3,851,136
PROCESS AND EQUIPMENT FOR THE TREATMENT OF A MATERIAL BY MEANS OF AN ARC DISCHARGE PLASMA

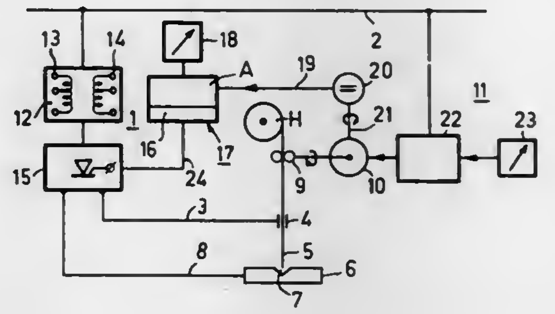
Gerhart Venus, and Erwin Meyer, both of Munich, Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Gottingen, Germany
Filed May 16, 1973, Ser. No. 360,967
Claims priority, application Germany, July 29, 1972, 2237378
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 P **2 Claims**



1. In a process for the treatment of a metal compound capable of forming a volatile metal halide, which process includes the following steps: (a) producing an arc discharge plasma in a region of a discharge vessel between two axially spaced electrodes (b) maintaining the average pressure in said region at less than one atmosphere; (c) producing a magnetic field running substantially parallel to the axis forming the connection line between said electrodes the value of which in at least one part of said region has such a high value that the product $\omega\pi$ of the electron gyration frequency ω in the plasma and the time π within which on an average electron transmits its impulse to the ions of the plasma is greater than 1, and that the arc discharge plasma in said region as a whole in itself rotates around a middle magnetic field line to which the plasma is substantially symmetrical; and (d) bringing said metal compound into a part of said region close to the mid point of said magnetic field under said condition of $\omega\pi > 1$, whereby said plasma effects a chemical reduction of said metal compound and said reduced metal compound travels to a space lying radially outside of said region; wherein the improvement comprises recovering said reduced metal compound from the space lying radially outside of said region by (i) introducing a halogen or halide into said vessel and contacting said reduced metal compound therewith, whereby said reduced metal compound is converted into a vaporous volatile metal halide, (ii) removing said volatile metal halide in vapor form from said vessel, and (iii) further treating said volatile metal halide such as decomposing said volatile metal halide to obtain substantially pure metal.

3,851,137
WELDING APPARATUS WITH CONSUMABLE WELDING WIRE

Johannes Gerardus Verhagen, Emmasingel, Eindhoven, Netherlands; Edmond Joannes Josef Dekeyser, Bierges Lez Wavre, Belgium; Jan Cyrille Martin Claes, and Gerardus Antonius Maria Willems, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 23, 1973, Ser. No. 353,883
Claims priority, application Netherlands, May 17, 1972, 7206615
Int. Cl. B23k *9/10*
U.S. Cl. 219—131 F **10 Claims**



1. A consumable electrode electric arc welding apparatus comprising, an adjustable welding voltage source with electronically controlled control devices connected in a welding current circuit that includes a workpiece and a consumable wire electrode, a wire electrode feed device including a motor driving the consumable wire electrode and provided with a wire feed rate meter, a program device coupled to said wire feed device for adjusting the welding source and the wire feed rate, wherein the improvement comprises a control unit having output terminals connected to a control input of the electronically controlled control devices and a first input connected to the output of the wire feed rate meter for controlling the control devices in accordance with the wire feed rate, the control unit comprising control elements for obtaining a desired relationship between wire-feed rate and welding source voltage, and said program device includes controls which are connected to the wire feed device for adjusting the wire feed rate.

3,851,138
DIFFUSION BONDING OF BUTT JOINTS

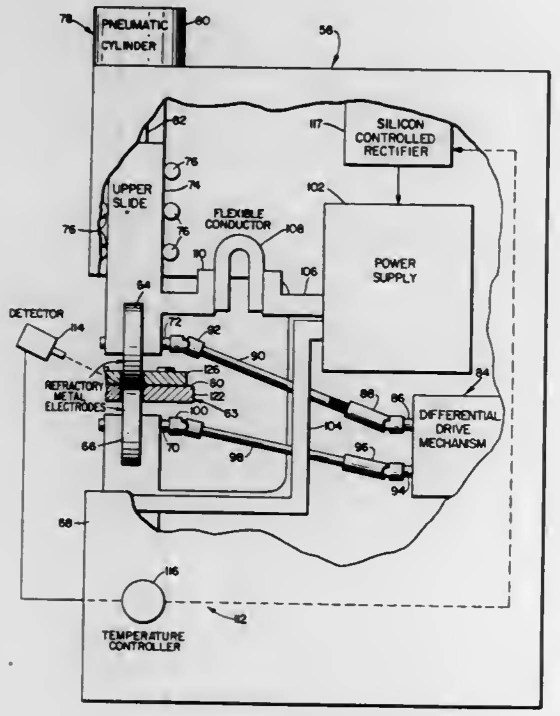
Arthur G. Metcalfe, San Diego, and Fred K. Rose, Chula Vista, both of Calif., assignors to International Harvester Company, San Diego, Calif.
Continuation-in-part of Ser. No. 226,570, Feb. 16, 1972, which is a division of Ser. No. 856,526, Sept. 8, 1969, Pat. No. 3,644,698. This application Aug. 6, 1973, Ser. No. 385,721
Int. Cl. B23k *11/06*
U.S. Cl. 219—83 **13 Claims**

1. A dynamic diffusion bonding method of butt joining two metallic members into a unitary structure by forming a continuous bond therebetween, comprising the steps of:

a. maintaining the two members to be joined in side-by-side relationship between a support means and a rotatable electrode with the joint between said members extending from said support means toward said electrode;

b. exerting a localized pressure on successive increments of said members in the region of the joint therebetween by biasing said electrode against both of said members and toward the support means and concomitantly effecting relative movement between said members and said electrode;

c. simultaneously with the exertion of said localized pressure, locally heating only the portions of the members on which the pressure is exerted in the regions of the members adjacent the joint therebetween, said heating being accomplished by passing an electrical current from said electrode through the members being butt joined to the supporting means; and



d. so regulating the current density through the members being joined as to maintain the maximum temperature of each of said members below the melting point of the material of which said member is composed and thereby prevent melting of the members but high enough to exceed the yield stress of the material from which each said member is fabricated in a region contiguous to the joint therebetween and produce sufficient expansion of the members toward each other and sufficient localized plastic flow of each of the members being joined to insure essentially complete metal-to-metal contact between said members over the area of said joint to permit a diffusion of atoms of the materials of which said members are composed across said joint which will produce a continuous bond between said members.

3,851,139
MAGNETIC PULSE WELDING USING SPACED PROXIMITY CONDUCTOR

Wallace C. Rudd, Larchmont, N.Y., assignor to Thermatool Corp., Stamford, Conn.

Continuation-in-part of Ser. No. 159,277, July 2, 1971, Pat. No. 3,794,805. This application Dec. 6, 1973, Ser. No. 422,347

Int. Cl. B23k *11/02*

U.S. Cl. 219—101 13 Claims

1. Apparatus for forge welding together adjacent, coextensive portions of a pair of electrically conductive members comprising

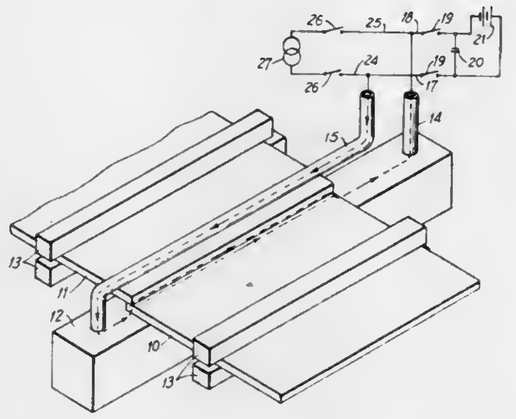
means for establishing a current path in at least one of said portions,

elongated proximity conductor means disposed in closely spaced relationship to said portions,

means establishing electrically conductive contact between one end of the proximity conductor means and one end of said current path in said one portion,

a source of pulsed current,

means for selectively connecting said source of pulse current between the other end of the current path in said one



portion and the other end of the proximity conductor means,

a source of alternating heating current for heating at least said one portion to an elevated forge welding temperature, and

means for selectively connecting said source of heating current between the other end of the current path in said one portion and the other end of the proximity conductor means.

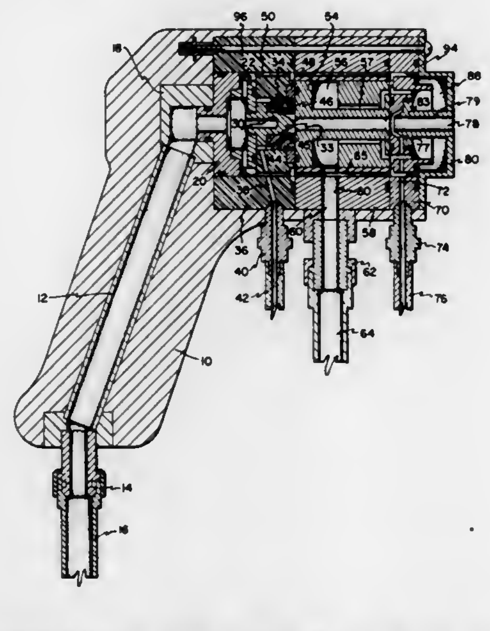
3,851,140
PLASMA SPRAY GUN AND METHOD FOR APPLYING COATINGS ON A SUBSTRATE

Robert G. Coucher, Salt Lake City, Utah, assignor to Kearns-Tribune Corporation, Salt Lake City, Utah

Filed Mar. 1, 1973, Ser. No. 337,005

Int. Cl. B23k *9/00*

U.S. Cl. 219—121 P 12 Claims



1. A fluid distribution ring solely for use on an electric plasma spraying device comprising a substantially circular ring member having slanted tubular primary openings and at least one secondary opening extending from the outside to the inside surfaces of said ring, said primary openings being characterized by their ability to direct a major portion of a fluid passing through said openings to a focal point positioned along the axis of said ring to provide a substantially linear flow component and said secondary opening being characterized by its ability to direct a minor portion of said fluid tangentially along the inner surface of said ring to provide a substantially helical flow component.

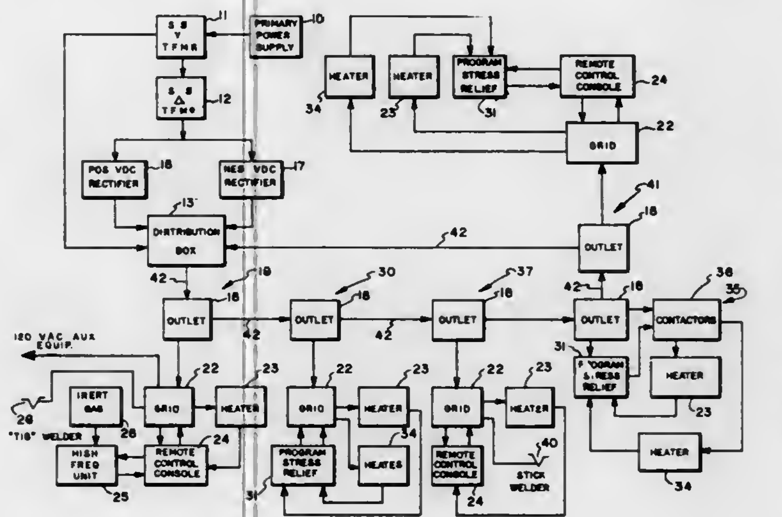
3,851,141
WORK PIECE HEATING AND WELDING CONTROL SYSTEM

Peter J. Cooper, Newport Beach, Calif., assignor to Cooperheat, Mountain View, Calif.

Filed Apr. 27, 1973, Ser. No. 355,185

Int. Cl. B23k *9/10*

U.S. Cl. 219—132 27 Claims



1. A metal joining control system of the type used at construction sites requiring simultaneous discrete welding operations at a plurality of widely dispersed locations and energized by an electrical power source comprising means connected to said electrical power source for providing commercial AC power, means for converting said AC power to dual polarity DC power, means for distribution of said AC and dual polarity DC power to said widely dispersed locations, means for termination of said AC and dual polarity DC power at said widely dispersed locations, a grid console at each of said locations for receiving said distributed AC and DC electrical power, and a remote control console at each of said locations connected to said grid console for controlling electrical power consumed in joining metal articles in said discrete welding operations.

3,851,142
WELD ROD CONTAINING MANGANESE

Robert A. Bishel, Huntington, W. Va., assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 239,531, March 29, 1972, Pat. No. 3,778,588. This application Dec. 10, 1973, Ser. No. 423,291The portion of the term of this patent subsequent to Dec. 11, 1990, has been disclaimed.

Int. Cl. B23k *35/22*

U.S. Cl. 219—146 2 Claims

1. In a welding electrode particularly adapted to be coil-fed to automatic welding machines and to weld cast iron at high rates using an open-arc comprising a tubular sheath of metal containing about 45 percent to about 100 percent by weight of nickel with the balance, if any, being essentially iron enclosing a core comprising a mixture of powders containing, in per cent by weight of core ingredients, about 0.7 percent to about 3.5 percent of metallic magnesium, about 5 percent to about 25 percent graphite and about 30 percent to about 75 percent calcium fluoride, the balance of said core comprising slag forming and metallic ingredients said core being balanced with respect to said tubular sheath such that said tubular sheath comprises about 55 percent to about 80 percent by weight of the total electrode, such that the total per cent of metallic nickel plus metallic iron in the total electrode is about 65 percent to about 80 percent and such that the ratio of nickel to metallic iron in the total electrode is at least about 0.67, the improvement comprising including in the core about 15 percent to about 30 percent by weight of manganese to provide up to about 7.5 percent by weight of manganese in the total weld rod.

3,851,143
WELD ROD

Robert A. Bishel, Huntington, W. Va., assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 239,531, March 29, 1972, Pat. No. 3,778,588. This application Dec. 10, 1973, Ser. No. 423,292

Int. Cl. B23k *35/22*

U.S. Cl. 219—146 1 Claim

1. In a welding electrode particularly adapted to be coil-fed to automatic welding machines and to weld cast iron at high rates using an open-arc comprising a tubular sheath of metal containing about 45 percent to about 100 percent by weight of nickel with the balance, if any, being essentially iron enclosing a core comprising a mixture of powders containing, in per cent by weight of core ingredients, about 0.7 percent to about 3.5 percent of metallic magnesium, about 5 percent to about 25 percent graphite and about 30 percent to about 75 percent calcium fluoride, the balance of said core comprising slag forming and metallic ingredients said core being balanced with respect to said tubular sheath such that said tubular sheath comprises about 55 percent to about 80 percent by weight of the total electrode, such that the total per cent of metallic nickel plus metallic iron in the total electrode is about 65 percent to about 80 percent and such that the ratio of nickel to metallic iron in the total electrode is at least about 0.67, the improvement comprising lowering the carbon content to within a range of about 3 to 5 percent by weight of the core ingredients to increase the strength of weldments made with the welding electrode.

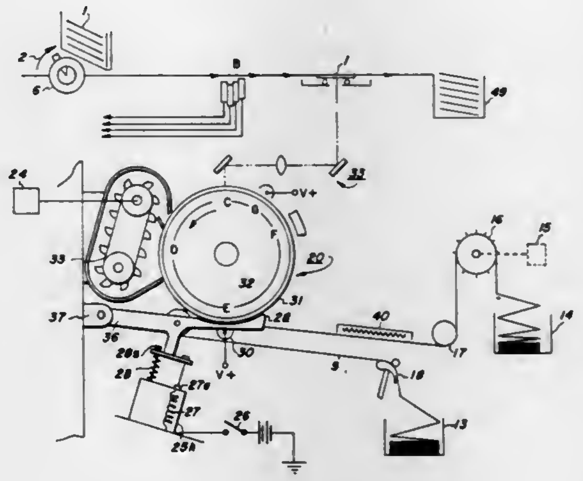
3,851,144
FEEDBACK FUSER FOR 730S

Mark A. Hutner, Glenview, Ill., assignor to Xerox Corporation, Stamford, Conn.

Filed May 24, 1973, Ser. No. 363,440

Int. Cl. H05b *1/00*

U.S. Cl. 219—216 25 Claims



1. Apparatus for regulating the fusing of electroscopic particles to successive portions of a support base moved through a fuser assembly wherein said fuser assembly includes means for softening said electroscopic particles and control means therefor, said electroscopic particles corresponding to documents selectively reproduced from a series of documents scanned for such purposes, said apparatus comprising:

means for sensing at least one ambient condition of such fuser assembly;

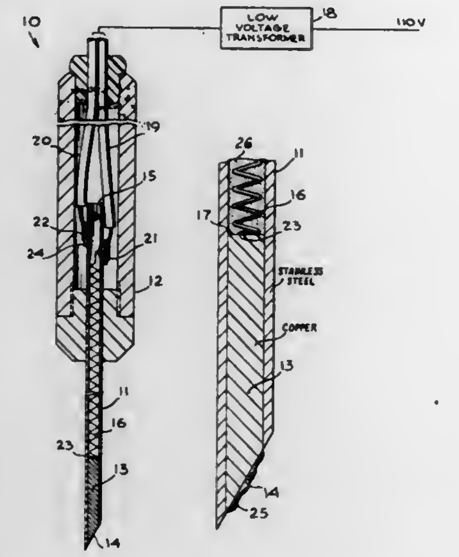
means for generating print signals for the document to be selectively reproduced; and

means for varying the operation of said control means in accordance with the number of documents not selected for reproduction occurring intermediate successive selected documents and in accordance with at least one ambient condition.

3,851,145

MICRO-MINIATURE SOLDER IRON

Akio Fukanaga, 2055 Colby Ave., Los Angeles, Calif. 90025
Filed Mar. 26, 1973, Ser. No. 344,919
Int. Cl. H05b *1/00;* **B23k** *3/04*
U.S. Cl. 219—236 **10 Claims**



1. A soldering tip for use in a miniature soldering iron comprising:

a hollow support tube of stainless steel material open at its forward end;

a rod of copper wire swaged in the bore of said support tube, the dimensions of the support tube being such that the outside diameter of the soldering tip is not greater than .025 inch;

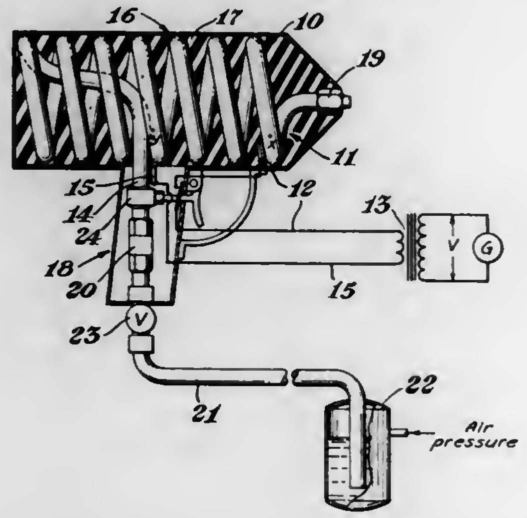
a heating element disposed in said tube adjacent the rod;

said rod having a rear end adjacent said heating element and a forward end terminating in a shaped working end surface, the side surfaces of said rod being completely encased by the forward end of said support tube, the shaped working end surface of the rod being flush with the open end of the support tube and being exposed through said open end.

3,851,146

APPARATUS FOR VAPOR GENERATION

Foster C. Bennett, Columbus, Ohio, assignor to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 208,296, Dec. 15, 1971, abandoned. This application Sept. 15, 1972, Ser. No. 289,483
Int. Cl. H05b *1/00;* **F22b** *1/28;* **B05b** *1/24*
U.S. Cl. 219—300 **2 Claims**



1. An apparatus for converting a volatilizable organic liquid or mixture of liquids into superheated vapors which consists essentially of:

a tubular metal member which is electrically conductive but has a resistance to the flow of an electrical current and which member defines a flow path for the liquid to be vaporized and for the vaporized liquid,

a vapor flow control member at one end of said tubular metal member, said vapor control member having a vapor outlet orifice, a manually actuated open-close liquid flow control member at the opposite end of said tubular metal member for selectively controlling liquid flow into said tubular metal member,

a source of electrical energy connected at a pair of spaced points to said tubular metal member by means arranged to be controlled concurrently with and in on-off corresponding relationship with said liquid flow control member whereby electrical energy is caused to flow through a predetermined segment of said tubular metal member to heat the tubular metal member to a temperature to vaporize the liquid flowing therethrough,

a source of volatilizable organic liquid connected in flow communication with the tubular metal member through said liquid flow control member, said source of liquid being under superatmospheric pressure whereby the liquid therein is caused to flow into the tubular metal member when the liquid flow control member is opened, the tubular metal member being heated to such a temperature and the length of the heated portion of the tubular metal member, the bore of the tubular metal member and the orifice of said vapor flow control member being of such a size relative to each other such that the liquid supplied under pressure into the tubular metal member will vaporize and said vapor will be heated to above its boiling point at a rate to maintain a pressure of vapor at the vapor flow control member sufficient to propel the vapors from the apparatus at least about one foot,

said means connecting said electrical energy source to said tubular metal member including connectors in current flowing contact with the respective ends of said tubular metal member,

said electrical energy source being connected in circuit with said connectors and said connecting means further including a switch associated with said liquid flow control member in concurrent similarly functioning open-close relation to said liquid control member for controlling application of energy to said connectors from said source whereby electrical current is caused to flow through the tubular member to heat the member to a temperature adequate to vaporize the liquid flowing therethrough,

a connector connecting said tubular metal member through said liquid flow control member to said source of vaporizable organic liquid,

said tubular metal member, vapor flow member, and said liquid flow control member being capable of withstanding superatmospheric pressures and a temperature of 1,200°F. and said electrical energy connectors and switch being capable of withstanding five to ten KVA alternating current power,

said tubular metal member electrically and thermally insulated by a shield and a handle associated with said shield and containing the liquid flow control member and the switch, said vapor control member projecting from one end of the shield.

3,851,147

BLAST COIL HEATER

Ernest G. Hachmeister, Saint Louis, Mo., assignor to Industrial Engineering & Equipment Company, St. Louis, Mo.
Filed Apr. 2, 1973, Ser. No. 347,234
Int. Cl. H05b *3/02;* **F24h** *3/04;* **H01c** *1/02*
U.S. Cl. 219—375 **4 Claims**

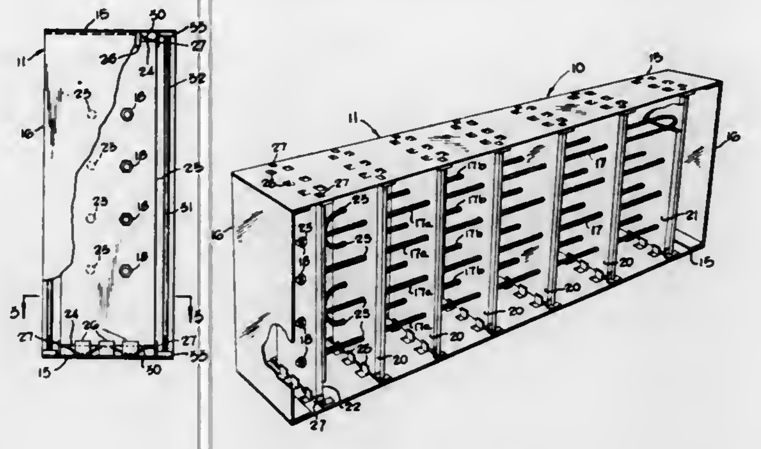
1. A blast coil heater unit, comprising:

a. an open frame including opposed elongate side members disposed in spaced relation,

b. a plurality of elongate coil portions disposed in side-by-side relation with said side members,

c. a plurality of transversely disposed, unitary ceramic support partitions disposed in spaced relation along the length of said frame side members and having opposed ends, each partition including a plurality of apertures extending therethrough, said apertures receiving and supporting the coil portions and the partitions being substantially unsupported intermediate their ends,

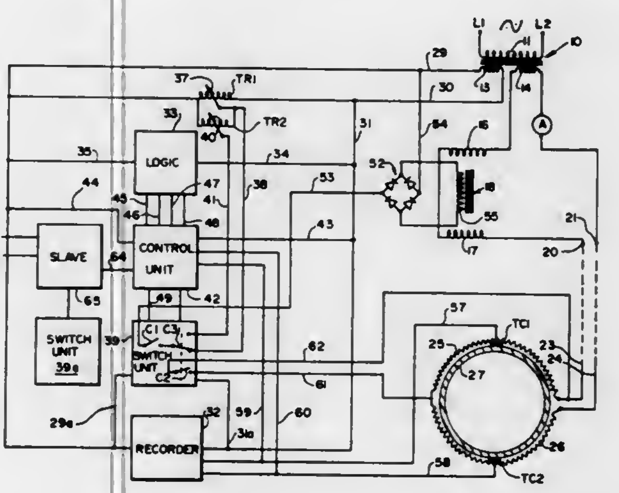
d. means attaching said ceramic partition ends to said frame substantially without tensioning said partitions including resilient means disposed between said ends and said frame side members to cushion said partitions.



3,851,148

POWER CONTROL METHOD AND APPARATUS

Heinz E. Schonert, Terrance, British Columbia, and Robert H. Jones, Willowdale, Ontario, both of Canada, assignors to Western Stress Relieving Services Inc., Mississauga, Ontario, Canada
Filed Sept. 18, 1973, Ser. No. 398,326
Claims priority, application Great Britain, Sept. 22, 1972, 43988/72
Int. Cl. H05b *1/02*
U.S. Cl. 219—503 **17 Claims**



1. Power supply and control apparatus for pre-weld heating and weld stress relief, comprising:

a. first and second electrical resistance heating elements;

b. means for connecting said first and second electrical resistance heating elements in series with one another for heating different workpiece zones;

c. a power input transformer for supplying electrical power to said first and second electrical resistance heating elements;

d. a saturable reactor connected between said transformer and said first and second electrical resistance heating elements for controlling the supply of electrical power from said transformer to said first and second electrical resistance heating elements;

e. first voltage control means for providing a first control voltage to said satruable reactor to provide a predetermined electrical power to said first and second electrical resistance heating elements;

f. second voltage control means for providng a second control voltage to said saturable reactor to control said saturable reactor for providing a lower electrical power to said first electrical resistance heating element;

g. first and second temperature responsive means respectively associated with said first and second electrical resistance heating elements for providing temperature signals corresponding to the temperatures of the respective workpiece zones of said first and second electrical resistance heating elements;

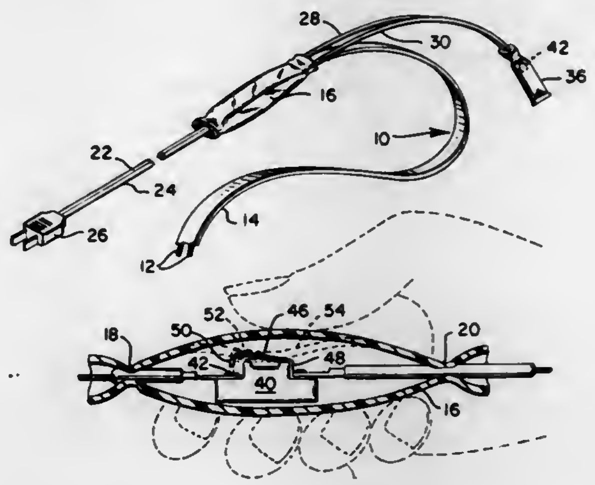
h. means for comparing the temperature signals from said first and second temperature responsive means and providing an output signal when the difference between the temperature signals exceeds a predetermined amount; and

i. switch means responsive to said output signal for disconnecting said first voltage control means from said saturable reactor and connecting said second voltage control means to said saturable reactor.

3,851,149

ELECTRICAL HEATING CABLE WITH INDICATOR LIGHT AND MANUAL TEST DEVICE

William Carmen Daley, West Hartford, Conn., assignor to Smith-Gates Corporation, Farmington, Conn.
Filed Nov. 29, 1973, Ser. No. 420,263
Int. Cl. H05b *3/36, 3/56*
U.S. Cl. 219—528 **3 Claims**



1. An electrical heating cable assembly comprising:

a relatively thin, flexible heating cable including an elongated electrically conductive resistance heating element embedded in an elongated flexible insulator;

a thermostat electrically connected adjacent said heating element for controlling energization of the latter and having at least one exposed terminal;

visual indicating means comprising a small indicator light enclosed within a substantially translucent indicator envelope,

said visual indicating means being electrically connected to said thermostat and heating element and operable on closing of said thermostat for indicating energization of said heating element;

a test device electrically connected in parallel with said thermostat and operable manually to energize temporarily said heating element and indicating means,

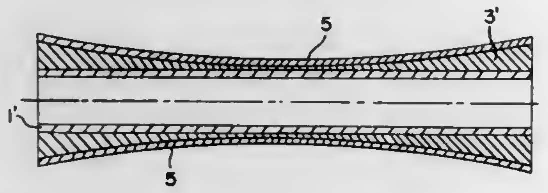
and a substantially translucent envelope disposed about said thermostat and test device,

said test device comprising a movable metal conductor electrically connected at one end with one side of said thermostat and having its other end disposed adjacent said exposed terminal,

said other end of said conductor being normally spaced from said exposed terminal to open a circuit parallel with said thermostat,
and said other end of said conductor being urged into contact with said exposed terminal to complete said parallel circuit on the application of manual pressure to an intermediate portion of the conductor via said translucent envelope.

3,851,150
ELECTRICAL RESISTANCE TUBULAR HEATING CONDUCTOR WITH AXIALLY VARYING POWER DISTRIBUTION

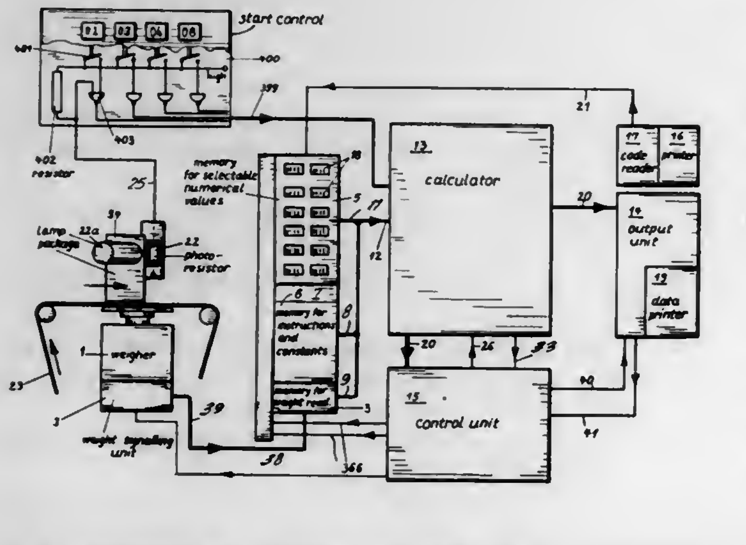
Gerhard Von Holzen, Erbslet, Switzerland, assignor to Gesellschaft Zur Fordenung Der Forschung an der Eidg. John Hochschule, Zurich, Switzerland
Filed Nov. 7, 1972, Ser. No. 304,312
Claims priority, application Switzerland, Nov. 19, 1971, 16858/71
Int. Cl. H05b *3/10, 3/42*
U.S. Cl. 219—553 **5 Claims**



1. An electrical resistance heating conductor having an axially varying electrical power distribution, comprising:
a metallic tubular body of electrical resistance material having approximately constant wall thickness; and
a metallic layer of electrical resistance material coated on said tubular body and metallically and integrally connected thereto, said metallic layer forming a tube and being of continuously axially varying thickness, largest at both ends, and having an axial section appearing as a smooth bent curve.

3,851,151
WEIGHING AND PRICE CALCULATING DEVICE

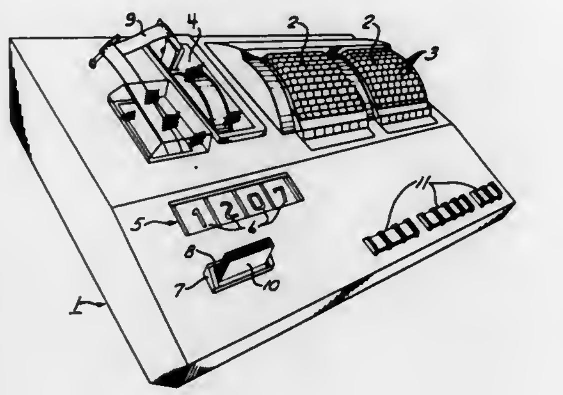
Adolf Stambera, Dinkelsbuhlstr. 11, Stuttgart-Bad Cannstatt, and Eberhard Schmid, Beethovenstrasse 14, Schwieberdingen, both of Germany
Continuation-in-part of Ser. No. 87,570, Nov. 6, 1970, abandoned. This application Dec. 14, 1972, Ser. No. 315,120
Int. Cl. G06k *15/02;* **G01g** *23/16;* **G06f** *15/20*
U.S. Cl. 235—61.9 R **5 Claims**



1. A weighing and price calculating device comprising a weigher, a calculator connected to said weigher and adapted to receive signals therefrom corresponding to the weights of goods passed to said weigher, a data distributor connected to said calculator, and a printer coupled to said data distributor for printing out signalled weights and prices calculated therefrom on to labels to accompany the weighed goods; the improvement which includes a first memory connected to the weigher, for receiving a series of digits representing the weight of the goods on the weigher; a second memory in which is stored a series of digits representing the price per unit weight of the material being weighed; a sensing device positioned adjacent to the weigher and adapted to generate an output electrical pulse when the goods are moved away from the weigher; a calculator coupled to said first and second memories for multiplying the weight of the goods with the price per unit weight; a control circuit connected to said sensing device for actuation to start a multiplication sequence when said electrical pulse is received; said calculator adapted to provide a price for the goods in digit form and to apply the price to an output circuit; and a printer coupled to the calculator output circuit for printing the price of the goods on the label.

3,851,152
READ-OUT DATA ENTRY SYSTEM FOR A PLURALITY OF SUPER-IMPOSED DATA ENTRY CARDS

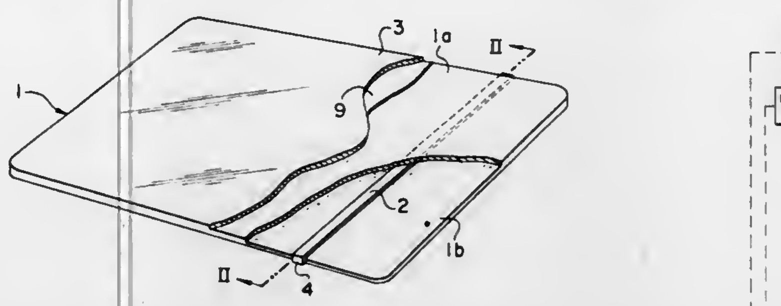
Kazukuni Nii, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan
Continuation-in-part of Ser. No. 101,935, Dec. 28, 1970, abandoned. This application Mar. 5, 1973, Ser. No. 338,410
Int. Cl. G06k *7/04, 21/00*
U.S. Cl. 235—61.11 C **4 Claims**



1. In data entry apparatus including card reading means having an entry slot adapted to receive a plurality of superimposed data entry cards, said superimposed cards characterized in that each of said cards is provided with a designated code area represented by a plurality of perforations therein, the designated code area of any one of said cards being out of alignment with the designated code area of any other of said cards when said cards are in aligned and superimposed relation, the non-designated code areas of each of said cards totally perforated to prevent the hampering of the reading of the designated code areas of all of the remaining superimposed cards thereby permitting said data entry reading means to read out all the data information simultaneously on each of said superimposed cards when inserted in said entry slot, said superimposed cards further characterized in being of different selective heights as inserted in said entry slot to visually display the written heading on each of said cards to permit visual inspection for correctness of grouping of said cards as superimposed.

3,851,153
MAGNETIC CARD

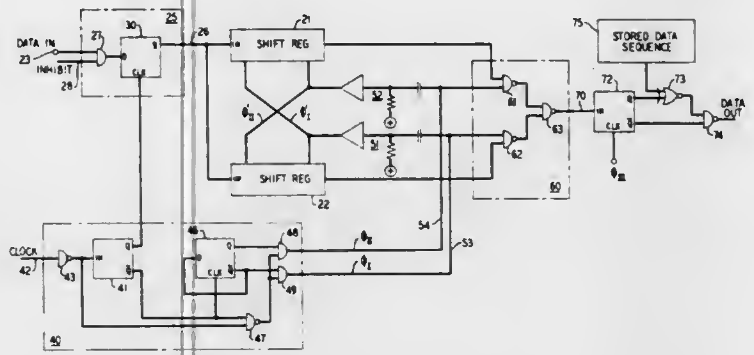
Shigeharu Matsumoto, 9-2 Iidakashi 3 Chome, 9-2 Iidakashi 3-chome, and Eiji Matsumoto, 4-6 Fujimi 2-chome, both of Chiyoda-ku, Tokyo, Japan
Filed Mar. 12, 1973, Ser. No. 339,973
Claims priority, application Japan, Mar. 16, 1972, 47-27025
Int. Cl. G11b *25/04;* **G06k** *19/08, 7/06*
U.S. Cl. 235—61.12 M **7 Claims**



1. A thin identification type card or the like for operation with a terminal device having contacts therein comprising: a substrate of plastic sheet material; indicia printed on said substrate; a magnetic layer on said substrate; a verification conductor having a pair of terminals on said substrate, said conductor terminals being disposed to align with contacts in said terminal device; and means connected to said terminal device responsive to said magnetic layer.

3,851,154
OUTPUT PREVIEW ARRANGEMENT FOR SHIFT REGISTERS

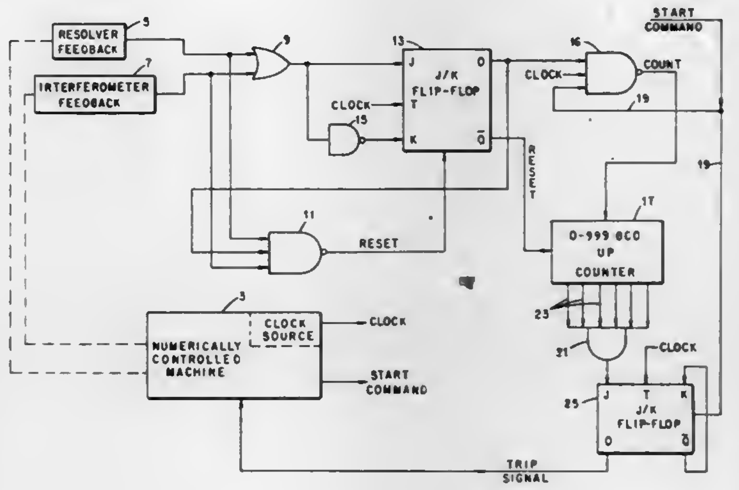
David Beecham, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.Y.
Filed Dec. 19, 1973, Ser. No. 426,077
Int. Cl. H03k *23/24*
U.S. Cl. 235—92 SH **3 Claims**



1. A shift register apparatus comprising
first and second shift registers each having N stages, each stage including input and output sections having transmission gates,
first and second shift register drive phases,
means for applying the first shift register drive phase to the transmission gate of the input section of the first shift register and to the transmission gate of the output section of the second shift register,
means for applying the second shift register drive phase to the transmission gate of the output section of the first shift register and to the transmission gate of the input section of the second shift register,
means for inserting input data bits having a predetermined bit rate alternately into the first and second shift registers, and
means for gating output signals from the last stage of the first shift register concurrently with the second shift register drive phase and for gating output signals from the last stage of the second shift register concurrently with the first shift register drive phase.

3,851,155
PHASE DISPLACEMENT DETECTION SYSTEM

Robert E. Hewgley, Jr., Oak Ridge, Tenn., and Michael S. Tuckman, Gales Ferry, Conn., assignors to The United States of America as repesented by the United States Atomic Energy Commission, Washington, D.C.
Filed June 6, 1973, Ser. No. 367,682
Int. Cl. G06m *3/02*
U.S. Cl. 235—92 PS **8 Claims**



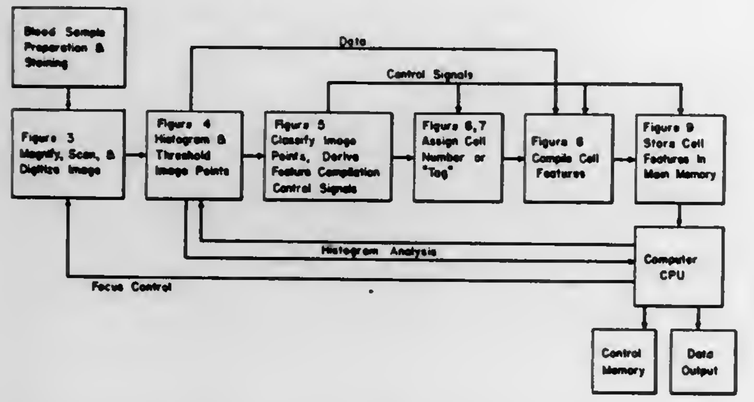
1. A device for monitoring the phase displacement of a pair of signals, comprising:
a counter having a count trigger input and a reset input;
a clock pulse source;
a first gating means having first and second inputs connected to receive respective ones of said pair of signals for generating a signal at an output thereof when the leading one of said pair of signals is detected;
a second gating means having an input connected to said clock pulse source, at least one enabling input connected to the output of said first gating means, and an output connected to said count trigger input of said counter for gating clock pulses to said counter when enabled by said signal from said first gating means;
a third gating means having first, second, and third inputs, said first and second inputs of said third gating means connected to receive respective ones of said pair of signals and said third input of said third gating means connected to the output of said first gating means for resetting said counter when the trailing one of said pair of signals is detected; and
an output circuit means for detecting a preselected maximum count of clock pulses registered by said counter and generating an output signal indicative of an excess phase displacement of said pair of signals as determined by said preselected count being registered by said counter between the time of detection of said leading one and said trailing one of said pair of signals.

3,851,156
ANALYSIS METHOD AND APPARATUS UTILIZING COLOR ALGEBRA AND IMAGE PROCESSING TECHNIQUES

James E. Green, 56 Coffey St., Boston, Mass. 02122
Filed Sept. 5, 1972, Ser. No. 286,043
Int. Cl. G01n *33/16*
U.S. Cl. 235—151.3 **59 Claims**

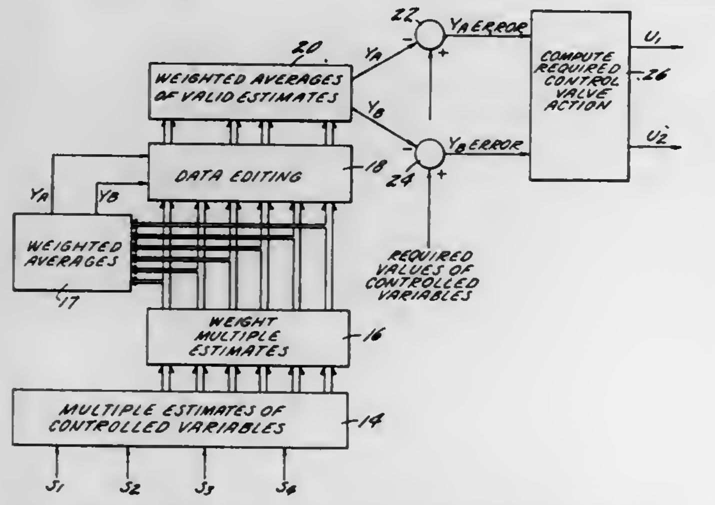
1. A method of analyzing an illuminated subject comprising the steps of:
1. producing a first signal representing a first predetermined wavelength band of the subject modified illumination at a region in said subject;
2. producing a second signal representing a second predetermined wavelength band of the subject modified illumi-

nation at said region, said first and second wavelength bands being selected to produce a differential contrast between said region and at least on other region in said subject; and,


Blood Sample Preparation & Staining
Data
Control Signals
Figure 3 Magnify, Scan, & Digitize Image
Figure 4 Histogram & Threshold Image Points
Figure 5 Classify Image Points, Derive Feature Compilation Control Signals
Figure 6,7 Assign Cell Number or "Tag"
Figure 8 Compile Cell Features
Figure 9 Store Cell Features in Main Memory
Computer CPU
Histogram Analysis
Focus Control
Control Memory
Data Output

3. algebraically combining with thresholding said first and second signals to classify said subject region in at least one of a predetermined number of categories.

3,851,157
SELF-CORRECTING FEEDBACK CONTROL SYSTEM
Stanley H. Ellis, Palm Beach Gardens, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed July 9, 1973, Ser. No. 377,867
Int. Cl. F02k *9/00*; **G05b** *23/02*
U.S. Cl. 235—150.1 **16 Claims**


20
22
Y_AERROR
Y_A
Y_B
Y_BERROR
24
WEIGHTED AVERAGES OF VALID ESTIMATES
COMPUTE REQUIRED CONTROL VALVE ACTION
U_1
26
U_2
DATA EDITING
18
Y_A
Y_B
WEIGHTED AVERAGES
17
REQUIRED VALUES OF CONTROLLED VARIABLES
WEIGHT MULTIPLE ESTIMATES
16
MULTIPLE ESTIMATES OF CONTROLLED VARIABLES
14
S_1
S_2
S_3
S_4

1. In a control system for a controlled device having a pair of actuators for regulating the controlled device, said actuators being responsive to first and second variables of operation of said controlled device, said controlled device having connected therewith a plurality of sensors each of which is adapted to produce a signal which is indicative of a condition of operation of said controlled device and which is a function of at least one of the variables of operation of said controlled device, the improvement which consists of producing from said sensor signals an estimate of said one variable of operation comprising

means for scaling each of said sensor signals as a function of its relationship to said one variable of operation,

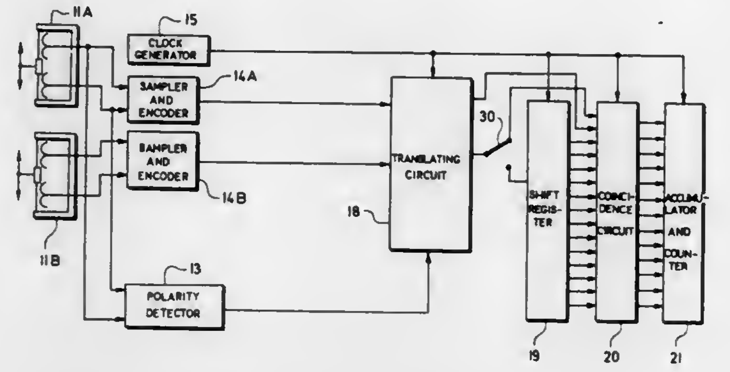
means for generating from a plurality of pairs of said scaled sensor signals a plurality of estimate signals indicative of the value of said one variable of operation,

means for producing from said estimate signals an average signal indicative of the average of said plurality of estimate signals,

means responsive to the difference between each of said estimate signals and said average signal for setting to zero any of said estimate signals which are outside a predetermined range,

and means for producing a revised average signal of said one variable in response to the remaining estimate signals.

3,851,158
METHOD AND APPARATUS FOR DERIVING THE MEAN VALUE OF THE PRODUCT OF A PAIR OF ANALOG QUANTITIES
Jan Zaruba Pfeffermann, Prague, Czechoslovakia, assignor to Ceske Vysoke Uceni Technicke, Stavebni Ustav, Prague, Czechoslovakia
Filed June 29, 1973, Ser. No. 374,932
Int. Cl. G06g *7/16*
U.S. Cl. 235—150.52 **7 Claims**



1. Apparatus for generating a quantity proportional to the mean value of the product of first and second time-dependent analog quantities over a prescribed first interval, which comprises: first conversion means responsive to the first quantity for generating a first pulse train whose frequency of pulse occurrence during each portion of the first interval corresponds to the magnitude of an amplitude sample of the first quantity during said portion; second conversion means responsive to the second quantity for generating a second pulse train whose frequency of pulse occurrence during each portion of the first interval corresponds to the magnitude of an amplitude sample of the second quantity during said portion; means for generating a train of clock pulses; first means responsive to the output of the first conversion means and the clock pulse generating means for generating a third pulse train each pulse occurrence of which coincides with a particular clock pulse period succeeding a pulse occurrence in the first pulse train; second means responsive to the outputs of the second conversion means and to the clock pulse generating means for generating a fourth pulse train each pulse occurrence of which coincides with a particular clock pulse period succeeding a pulse occurrence in the second pulse train;

means responsive to the outputs of the third and fourth pulse train generating means for generating a fifth pulse train that exhibits a pulse upon each coincidence of pulses in the third and fourth pulse trains; and

means for counting the pulses of the fifth pulse train generated during the first interval, the resulting number of pulses representing the mean value of the product of the first and second quantities over said interval.

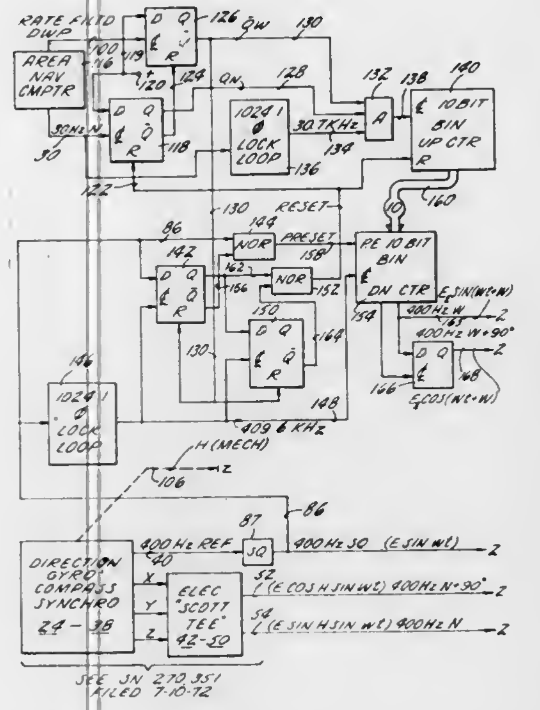
3,851,159
ELECTRONIC WAYPOINT BEARING CONVERTER
John E. Games, Granby, and Clarence Casper, Jr., Windsor, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Aug. 2, 1973, Ser. No. 385,204
Int. Cl. G01s *3/04*
U.S. Cl. 235—150.27 **6 Claims**

1. An electronic waypoint bearing indicator converter responsive to first input signals derived from an area navigation computer, indicative of true bearing of a way point, and second input signals derived from a directional gyro compass with respect to a synchro carrier signal, indicative of aircraft heading, to provide output signals indicative of relative way point bearing, said synchro carrier signal also being provided as an input to said converter, said converter comprising:

first electronic circuit means responsive to said first input signals and to said synchro carrier signal for providing first intermediate signals at the frequency of said synchro carrier signal and having a phase related to said synchro carrier signal in proportion to the true bearing of the way point as indicated by said first input signals;

second electronic means responsive to said second input signals for providing second intermediate signals at the frequency of said synchro carrier signal the magnitude of which varies as a function of the heading of said aircraft;

third electronic circuit means for combining said first intermediate signals and said second intermediate signals so as to provide a plurality of third intermediate signals, the magnitudes of which vary as a function of the heading of said aircraft and the phase of which vary from the phase of said synchro carrier signal as a function of the true bearing of the way point; and



fourth electronic circuit means responsive to said third electronic circuit means for providing said output signals as a function of weighted sums and differences of said plurality of third intermediate signals.

3,851,160
MEASURE VALUE METHOD AND APPARATUS
Ulrich Stefan Heimprecht, Darmstadt, Germany, assignor to Gebr. Hofmann KG, Darmstadt, Germany
Filed Sept. 20, 1973, Ser. No. 399,340
Claims priority, application Germany, Oct. 16, 1972, 2250717
Int. Cl. G06g *1/16*
U.S. Cl. 235—151.3 **5 Claims**

1. Apparatus for evaluating a measurement value in a testing stand, comprising

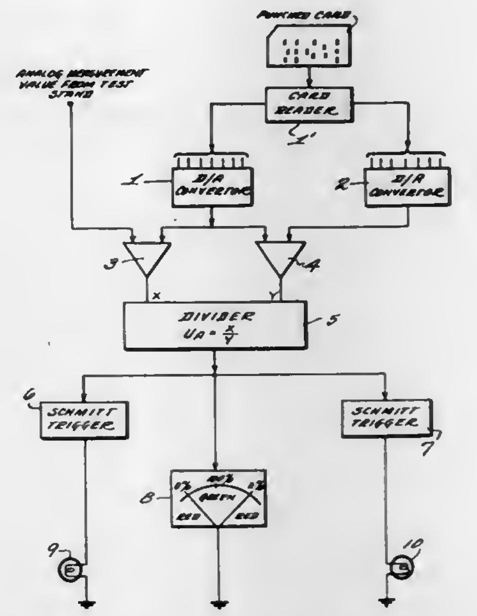
storage means for storing upper and lower tolerance values in respect to a part to be tested, digital-analog converter means for converting the stored tolerance values into analog signals,

first difference-forming means for forming a difference between the signals corresponding to the lower and the upper tolerance values,

second difference-forming means for forming a difference between the signals corresponding to the measurement value and one of the tolerance values,

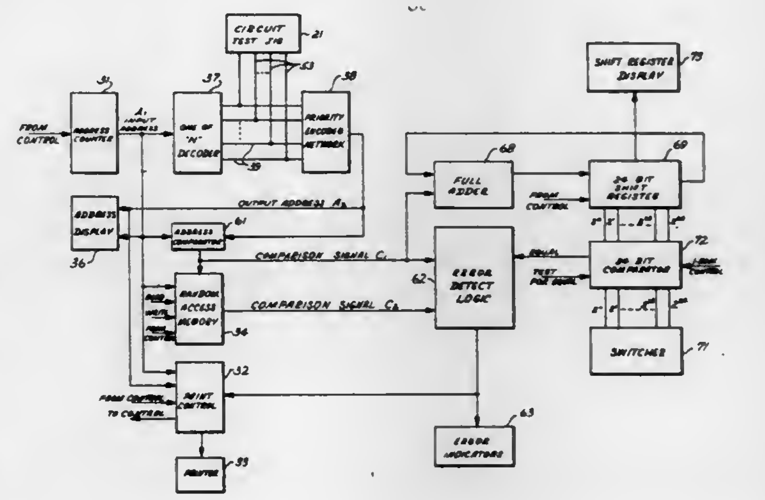
the first and second difference-forming means being connected to receive the output signals of the digital-analog converter means,

dividing means connected to the outputs of the first and second difference-forming means, and



display means connected to the dividing means for displaying the result of the comparison between the measurement value and the upper and lower tolerance values.

3,851,161
CONTINUITY NETWORK TESTING AND FAULT ISOLATING
Andrew P. Sloop, Pasadena, Calif., assignor to Burroughs Corporation, Detroit, Mich.
Filed May 7, 1973, Ser. No. 358,040
Int. Cl. G01r *31/02*
U.S. Cl. 235—151.3 **40 Claims**



1. A method of testing a circuit network having a plurality of circuit nodes having an ordered array of addresses some of which circuit nodes may be electrically interconnected comprising the steps of:

applying a test signal to one circuit node having a selected address;

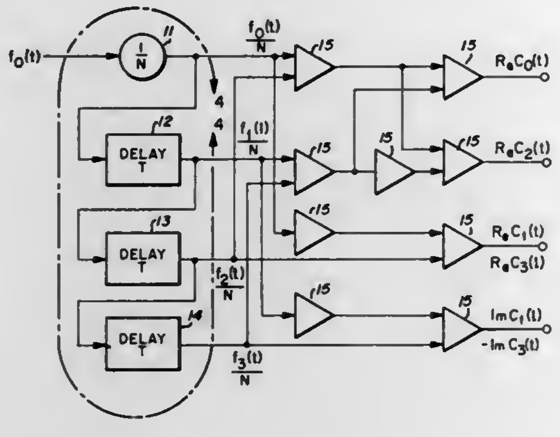
detecting the presence or absence of the test signal on all circuit nodes simultaneously; and

determining the address of the highest order circuit node on which the test signal appears, thereby identifying the highest order circuit node to which said one circuit node is electrically connected.

3,851,162
CONTINUOUS FOURIER TRANSFORM METHOD AND APPARATUS

Robert M. Munoz, Los Altos, Calif., assignor to The United States of America as represented by the Administration of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 18, 1973, Ser. No. 352,382
Int. Cl. G06f *15/34*
U.S. Cl. 235—156 **22 Claims**

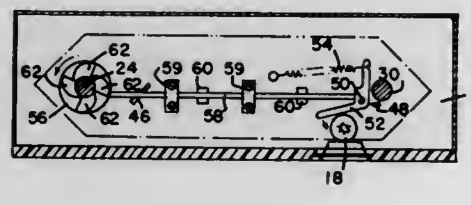


1. In a method for continuous analog analysis for a time varying input function $f(t)$ in the time domain into at least one of its Fourier Frequency components $C_m(t)$ the steps of:
   continuously producing N signal components $f_m(t)/N$ ranging from $f_0(t)/N$ to $f_{N-1}(t)/N$ wherein each signal component except $f_0(t)/N$ is delayed an amount T from the previous signal component;
   continuously combining separated ones of said signal components $[f_m(t)]\,f_m(t)/N$ together so as to produce at least one continuous output function $C_m(t)$ corresponding to one of the Fourier frequency components of the time varying input function $f(t)$ to be frequency analyzed.

3,851,163
PHOTOFLASH ASSEMBLY WITH SERIALLY ADVANCING PERCUSSIVE LAMPS

John C. Stacy, Watsontown, Pa., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Nov. 21, 1973, Ser. No. 417,956
Int. Cl. G03b *15/02*
U.S. Cl. 240—1.3 **18 Claims**

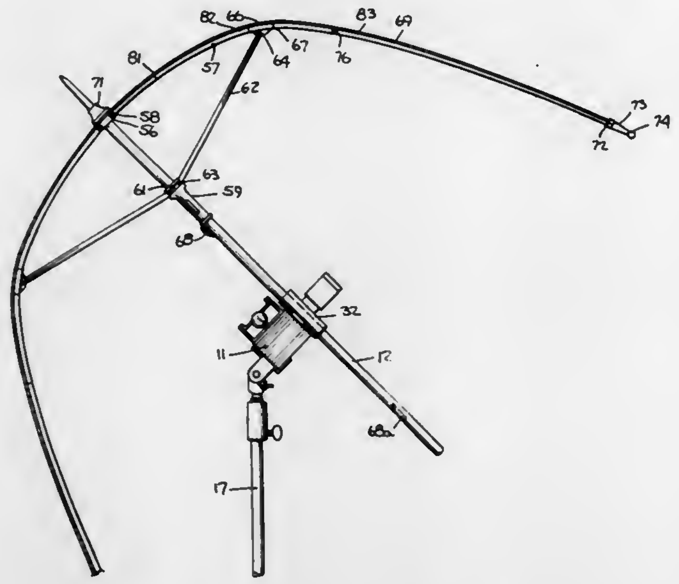


1. A photoflash assembly comprising, in combination:
a base member;
a plurality of percussively-ignitable flashlamps movably supported on said base member;
means for controlling the path of travel of said movable flashlamps;
means for moving said plurality of flashlamps along said controlled path of travel to advance said flashlamps sequentially to a firing position;
preenergized striker means supported at a fixed position on said base member;
latching means mounted on said base and normally holding said striker in a cocked condition;
said photoflash assembly being receivable on a camera having means for firing one of said flashlamps, and the cocked arrangement of said latching means and said striker means being accessible to be actuated by said camera firing means for releasing said striker means to fire a flashlamp at said firing position;
and means for cocking said striker means after release thereof, whereby said striker means may be successively released and recocked to successively fire each new flashlamp sequentially advanced to said firing position.

3,851,164
UMBRELLA LIGHT

Charles Intrator, 788 Columbus Ave., New York, N.Y. 10025

Filed Dec. 4, 1973, Ser. No. 421,516
Int. Cl. G03b *15/02*
U.S. Cl. 240—1.3 **20 Claims**

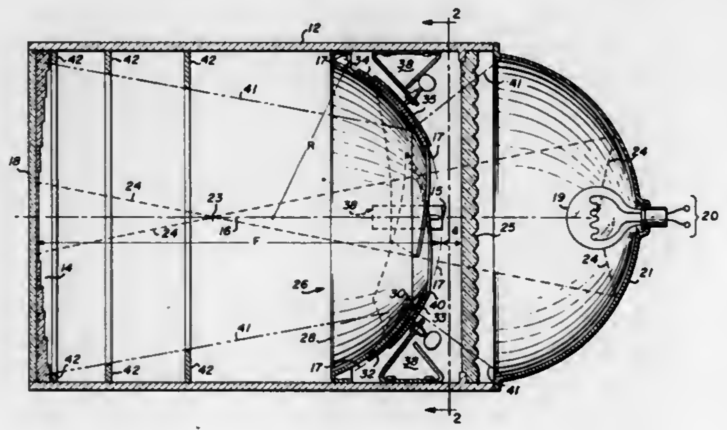


1. In an umbrella lighting apparatus having a source of continuous light and a foldable umbrella for reflecting light from said source, said umbrella comprising a central shaft, long ribs carrying a light-reflective fabric covering and short ribs connected to said long ribs and said shaft, the improvement wherein said umbrella is so shaped that in its open position it has a central portion, adjacent its apex, whose fabric surface faces in a direction to reflect the light in a direction which is principally axial of said shaft, bounded by a zone whose fabric surface faces in a direction which is principally radial of said shaft, and means for mounting said light source at an axial level which is within said fabric covering.

3,851,165
DIRECTIONAL SIGNAL BEACON

James C. Beck, La Canada; Earnest D. Hartzler, San Jose, and Harrie W. Nielsen, Pasadena, all of Calif., assignors to The Singer Company, Binghamton, N.Y.

Filed July 2, 1973, Ser. No. 376,098
Int. Cl. F21v *13/04*
U.S. Cl. 240—41.3 **11 Claims**

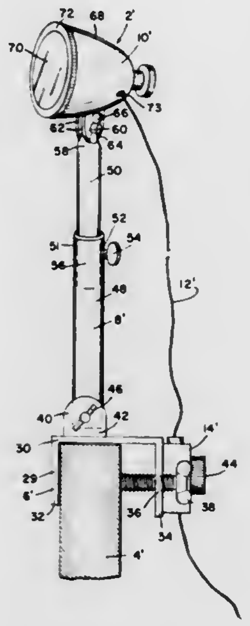


1. A signal beacon having a predetermined field of view comprising:
a converging lens mounted within an opening of a support housing, said lens having a predetermined focal plane which includes a focus point along the optical axis of said lens at a known distance from said lens;
a light source positioned substantially on said optical axis of said converging lens and spaced at a distance from said lens greater than said known distance;
light reflecting means positioned on said optical axis such that said light source is located between said reflecting means and said lens for directing illumination reflected from said reflecting means parallel with said optical axis and toward said converging lens;
shutter mechanism located between said lens and said light source defining an aperture for controlling the area of said converging lens receiving reflected illumination from said light reflecting means; and
a lenticulated light-transmissive surface spaced between said shutter mechanism and said light source along said optical axis at a distance greater than said known distance for producing a multiplicity of light points such that said directional signal beacon provides a scintillating appearance within a predetermined field of view.

3,851,166
BOAT UTILITY LIGHT APPARATUS

Theodore D. Kohler, 84-965 Farrington Hwy., Apt. 815, Waianae, Hawaii 96792

Filed Mar. 7, 1974, Ser. No. 449,100
Int. Cl. B60q *1/00*
U.S. Cl. 240—57 **7 Claims**



1. A boat utility light apparatus comprising
a sealed beam automobile-type lamp with power input terminals and a circular lens with a circumferential edge, a flexible power conductor line electrically connecting the power input terminals of the lamp to a source of electric power,
a weather-tight housing surrounding the lamp, comprising
   a. a hollow, approximately hemispheric fairing which fairing is formed with a circular aperture in a planar face through which aperture light is projected from the lamp, and which fairing is formed with a power line aperture through which the power line is passed and sealed in place in a weather-tight fashion,
   b. an O-ring seat within the fairing adjacent to and concentric with the circular aperture in the fairing,
   c. an inner O-ring positioned between the "O" ring seat and the circumferential edge of the lamp,
   d. an outer O ring, positioned around an exterior portion of the circumferential edge of the lamp, and
   e. a removable, annular locking ring, coaxially attached to the fairing to form a rim surrounding the circular aperture in the hemispheric fairing, which locking ring is so dimensioned that the outer O-ring, the circumferential edge of the lamp, and the inner O-ring are pressed between the locking ring and the O-ring seat,
a telescoping member, a distal end of which is attached to the housing so that it is capable of supporting the housing, and
a clamp assembly attached to a proximal end of the telescoping member, which clamp assembly serves to fix the utility light apparatus to a structural component of a boat.

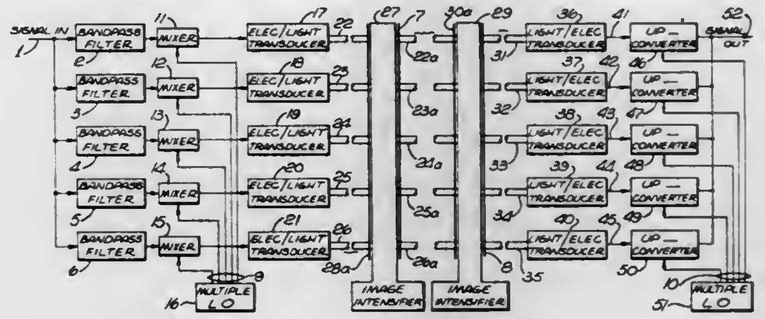
ERRATUM

For Class 250—206 see:
Patent No. 3,850,809

3,851,167
LIGHT-GUIDE COMMUNICATION SYSTEM WITH IMAGE INTENSIFIER REPEATER ELEMENTS

Arnold M. Levine, Chatsworth, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 11, 1972, Ser. No. 313,876
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 **10 Claims**



1. A system for distance transmission of plural signals having information content, comprising:
first means for converting said signals into a plurality of intensity modulated light beams each corresponding to a signal channel;
light guide means including a plurality of fiber optic light waveguides, at least one of which is connected to receive and conduct a corresponding one of said intensity modulated light beams of a corresponding signal channel;
second means responsive to said light guide means for discretely converting each of said modulated light beams into corresponding amplitude modulated electrical signals;
and third means including at least one image intensifier having an input and an output and being inserted at a point along the length of said light guide means, said light guide means being interrupted by insertion of said intensifier in series, said third means thereby operating to receive a mosaic of light patterns at said input comprising the light output of each fiber of said light guide at said insertion point to produce a corresponding intensified mosaic of light patterns at said output and to apply said output light patterns discretely to corresponding discrete fibers of said light guide continuing from said output of said image intensifier.

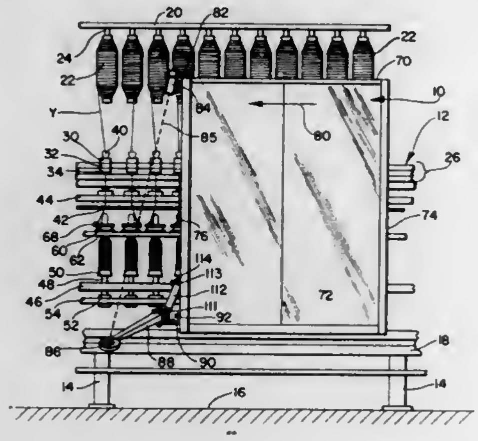
3,851,168
OBJECT SENSING APPARATUS

Robert S. Erbstein, Coventry, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Aug. 23, 1973, Ser. No. 391,156

Int. Cl. H01j *39/12*

U.S. Cl. 250—221 **9 Claims**



1. Apparatus for sensing the presence of an object in the path of a travelling mechanism movable by drive means over a fixed path into which objects or persons may enter comprising, a source of electrical energy, means in circuit with said electric energy to receive said energy and thereby provide an output signal modulated to produce a signal with modulation components different from ambient light conditions, radiant energy emitting means for receiving said signal and producing a radiation output beam from said signal, radiation sensitive means for receiving said modulated radiation output from said emitting source and transmitting a control signal derived therefrom and including said modulation components, filter means for detecting from said control signal the presence of said modulation components in said radiation output, drive control means sending said drive means to a zero speed state when the modulation components in said radiation output of said control signal drop below a predetermined value due to interruption of said beam, and movable reflection means mounted on said travelling mechanism to move therewith to form a radiant energy beam path between said emitting means and said radiation sensitive device, the reflection means being mounted so it is movable out of said beam path to interrupt said beam between said emitting means and the radiation sensitive device by encountering an object introduced in the travel path of said mechanism.

3,851,169
APPARATUS FOR MEASURING AEROSOL PARTICLES

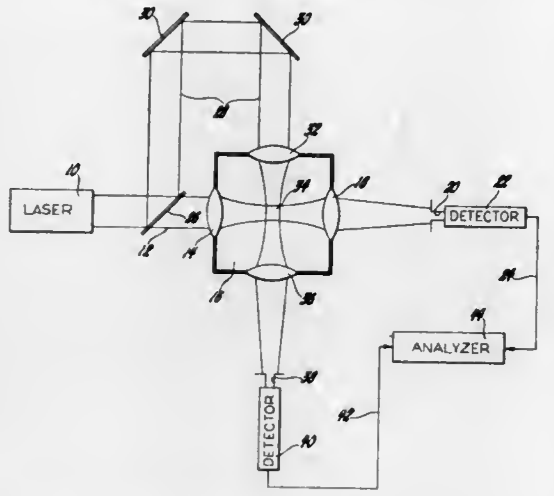
Frederick R. Faxvog, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1973, Ser. No. 418,373

Int. Cl. G06m *7/00*

U.S. Cl. 250—222 PC **3 Claims**

1. Apparatus for measuring particle sizes in an aerosol comprising
- means for producing a first light beam,
- means for focusing the beam to a small focal spot within the aerosol,
- first detection means responsive to the beam for sensing the light intensity thereof and for determining the amplitude of extinction pulses produced by particles passing through the beam,
- and means for optically limiting the effective sampling volume of the apparatus including:
- means for producing a second light beam intersecting the first beam at its point of focus,
- means for focusing the second beam to a second small focal spot at the intersection of the beams thereby defining a small sampling volume common to both beams,
- second detection means responsive to the second beam for sensing the light intensity thereof and for producing a gating pulse upon detection of an extinction pulse caused by particles passing through the second beam,
- and a coincidence circuit responsive to the extinction pulses of the first and second detection means for registering only those pulses from the first detection means corresponding to coincident pulses from the second detection means,
- whereby only those particles passing through the small sampling volume are ultimately measured and registered.



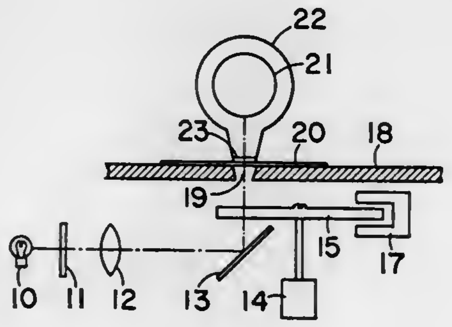
3,851,170
DEVICE FOR SIMULTANEOUSLY DISPLAYING THE DENSITIES OF BASIC COLORS OF A COLOR ORIGINAL

Makoto Kitai, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed June 13, 1973, Ser. No. 369,548

Int. Cl. G01j *3/50*

U.S. Cl. 250—226 **1 Claim**



1. A multi-color density display device for color scanning an original comprising: a light source for emitting a beam of light; a photoelectric converter; a densitometer disposed between the light source and the original, so that the beam from the light source enters said photoelectric converter after passing through the original, said densitometer having a color-filter disk rotatably mounted therein which disk has a plurality of color scanning filters and monochrome filters arranged along the circumference at predetermined regular intervals so as to permit the beam of light to respectively pass therethrough prior to entrance to said photoelectric converter which thereupon provides output signals representative thereof; a density converter coupled to said photoelectric converter for converting said output signals into color-density signals each corresponding to the color being scanned; a plurality of photoelectric switches operatively disposed in relation to the upper and lower sides of the filters on said color-filter disk; a waveform shaping circuit coupled to said photoelectric switches for shaping a timing signal emitted from said photoelectric switches representative of the rotational movements of said disc; a driving pulse generator coupled to said waveform shaping circuit for generating trigger pulses and reset pulses corresponding to each color being scanned, from the timing signals applied to the waveform shaping circuit; a digital converter operatively coupled to said density converter and said pulse generator for sampling each of said color-density signals with respective corresponding ones of said trigger pulses for converting said color-density signals into digital signals; and a digital display means operatively coupled to said digital converter and said pulse generator for displaying each of said color-density signals in synchronization with corresponding ones of said trigger pulses fed thereto, each corresponding one of said digital signals being maintained in said display means until reset by a reset signal from said pulse generator corresponding to a subsequent color being scanned.

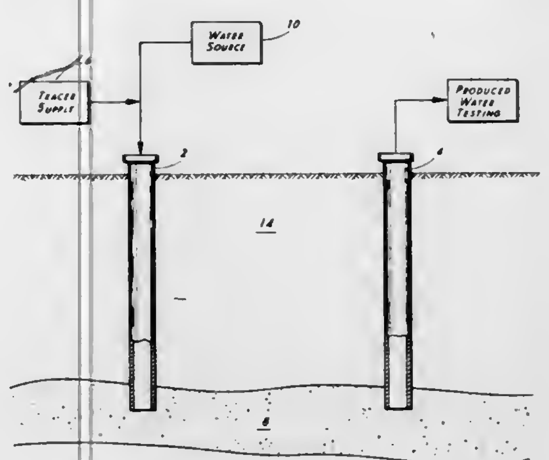
3,851,171
METHOD FOR TRACING THE FLOW OF WATER IN SUBTERRANEAN FORMATIONS

Burton B. Saniford, Placentia, and Robert K. Knight, Fullerton, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Oct. 10, 1973, Ser. No. 404,931

Int. Cl. G01t *1/00*

U.S. Cl. 250—259 **15 Claims**



1. A method for tracing the flow of water which comprises adding a water-soluble substituted poly(hydroxyalkyl) bis (triazinylamino)stilbene to the water at an origin point, recovering a sample of water at a recovery point, and analyzing the sample for the presence of said agent.

3,851,172
COMPOUND ELECTRON LENS FOR ELECTRON MICROSCOPE AND THE LIKE

Susumu Ozasa, and Shozo Kasai, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

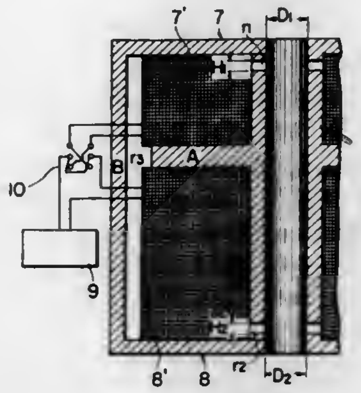
Filed Dec. 15, 1972, Ser. No. 315,455

Claims priority, application Japan, Dec. 15, 1971, 46-100977

Int. Cl. H01j *37/26*

U.S. Cl. 250—311 **9 Claims**

1. A compound electron lens comprising:
- at least two annularly wound exciting coils disposed coaxially;
- magnetic cover means surrounding said exciting coils to form a closed magnetic circuit common to said exciting coils;
- at least one magnetic pole portion formed in the annular hollow of each of the coils;
- magnetic path means disposed between the two exciting coils to form a magnetic path extending from said magnetic pole portion to said cover means;
- air gap means positioned in said magnetic path means for bypassing flux generated by the coils and flowing through the closed magnetic circuit;
- means for supplying exciting current to the individual coils; and
- means for switching the polarity of the exciting current supplied to one of the coils with respect to the other coil so that spherical aberration is minimized over a wide range of magnifications.



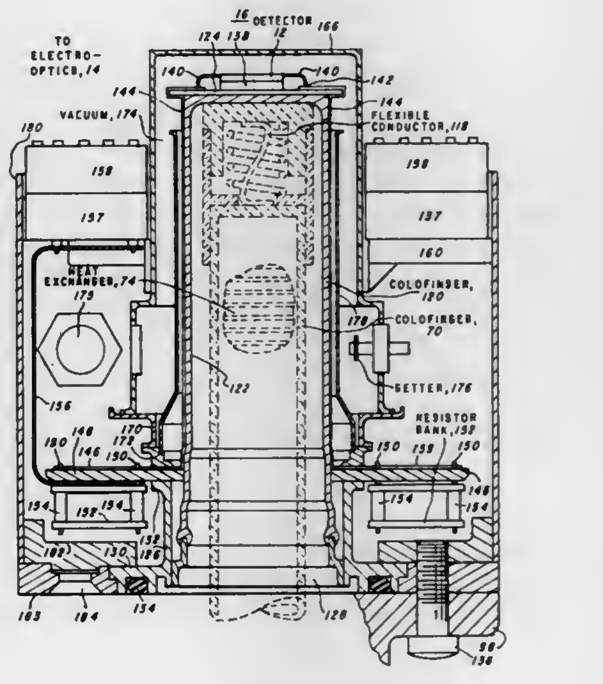
3,851,173
THERMAL ENERGY RECEIVER

Carol O. Taylor, Anna, and Stephen L. Whicker, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 25, 1973, Ser. No. 373,352

Int. Cl. G01b *19/34*

U.S. Cl. 250—332 **16 Claims**



1. An infrared receiver comprising:
- a. an infrared detector in a scanning path of infrared energy emanating from a source thereof for producing electrical signals representative of impinging infrared energy;
- b. a detector-vacuum module including an elongated vacuum chamber one end wall of which forms a first cold finger having integral therewith a seat portion rigidly supporting the infrared detector thereon, and an electrical conductor means coupled to the detector for collecting the electrical signals produced by the detector;
- c. a refrigerator means having a motor driven compressor, a cooling member including a second elongated cold finger, means for selectively coupling the second cold finger of the cooling member in sealing engagement within and in conductive contact with said end of the first cold finger of the detector-vacuum module for cooling the detector to an operative temperature for producing the electrical signals, said detector-vacuum module removably attached to said cooling member; and
- d. an electro-optical system coupled to the electrical con-

ductor means of the detector-vacuum module for processing video signals from the electrical signals produced by the infrared detector.

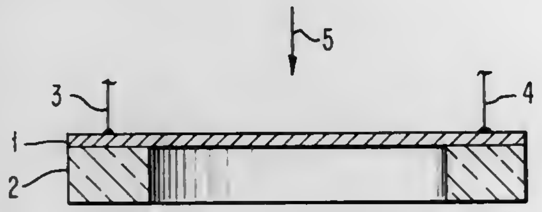
3,851,174
LIGHT DETECTOR FOR THE NANOSECOND-DC PULSE WIDTH RANGE

Eugene Edward Tynan, Mahopac, and Robert J. Von Gutfeld, New York, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 4, 1973, Ser. No. 357,317

Int. Cl. G01j *3/00*

U.S. Cl. 250—336 **34 Claims**



1. A detector of electromagnetic waves comprising:
a thin film of conductive material having an induced anisotropy,
means for establishing a temperature gradient in said film in a direction normal to the plane of said film, and
at least a pair of contacts electrically conneced to said film for developing an electrical signal between them.

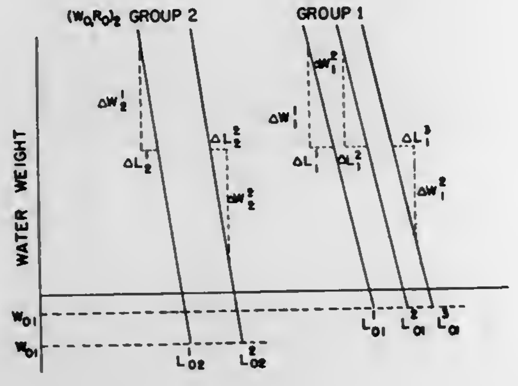
3,851,175
MOISTURE GAUGE WITH OPACITY TYPE COMPENSATION

Erik B. Dahlin, Saratoga, and Carolyn M. Bjorklund, Palo Alto, both of Calif., assignors to Measurex Corporation, Cupertino, Calif.

Continuation of Ser. No. 301,521, Oct. 27, 1972, abandoned. This application Mar. 25, 1974, Ser. No. 454,722

Int. Cl. G01j *3/34*

U.S. Cl. 250—339 **5 Claims**



1. In a method of measuring the moisture content of a moving sheet of paper being manufactured by a paper machine with a dual wavelength radiation type gauge that provides a first output signal, R, representative of the ratio of the absorption of radiation in a band highly sensitive to absorption by water and in a nearby band that is relatively less sensitive to absorption by water, the steps comprising: generating a second signal, L, functionally related to the opacity of said moving sheet of paper; and combining said second signal with said first signal to produce a third signal, W, indicative of the water weight per unit area of said moving sheet of paper in accordance with the relationship

$$W - W_o = (R - R_o)\ (\alpha L + \beta)/[1 + (\alpha/\theta)\ (R - R_o)]$$

where W_o, R_o, α, β, and θ are constants whereby said moisture measurement is relatively insensitive to fiber variations.

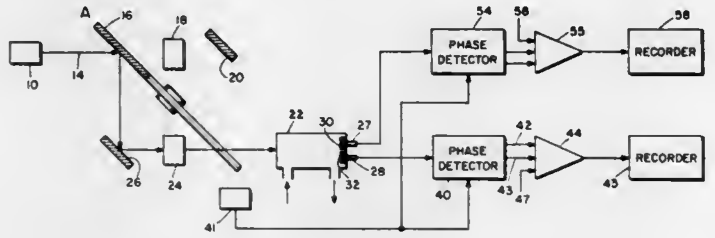
3,851,176
PLURAL GAS NON-DISPERSIVE INFRARED ANALYZER

Michel L. Jeunehomme, Novi, and Malcolm C. Johnson, Orchard Lake, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 5, 1973, Ser. No. 412,994

Int. Cl. G01m *21/26*

U.S. Cl. 250—343 **13 Claims**



1. A non-dispersive infrared analyzer for indicating individual concentrations of plural component gases in a sample gas mixture, comprising
means providing a beam of infrared radiation;
means for directing said beam sequentially along separate paths, said paths being equal in number to the number of component gases to be analyzed in said sample gas mixture;
a plurality of filter cells, each of which is filled with a known concentration of one of said component gases, one of said filter cells being positioned in each of said separate beam paths so as to be illuminated by radiation from said source and each to absorb therefrom radiation at wavelengths dependent upon the composition of gas in said illuminated cell and to transmit radiation at other wavelengths;
a sample cell filled with the gas mixture to be analyzed;
means for directing into said sample cell radiation transmitted by said filter cells in said separate paths;
a plurality of radiation detectors positioned to detect radiation transmitted by said sample cell, said detectors being equal in number to the number of said separate paths;
a plurality of optical filters, one each preceding one each of said detectors, said filters each transmitting different bands of wavelengths of radiation, each said band corresponding to the wavelengths absorbable by the gas in each of said filter cells, said filters each rejecting substantially all radiation having wavelengths outside the transmission band associated with each said filter; and
demodulating means for each of said radiation detectors, each said demodulating means operating synchronously with said beam directing means and providing signals for comparing detector output when said beam passes through the one of said filter cells containing gas absorptive of the wavelengths transmitted by said optical filter associated with said detector with output of said detector when said beam passes through a different one of said filter cells.

3,851,177
SCINTILLATION CAMERA WITH IMPROVED LINEARITY

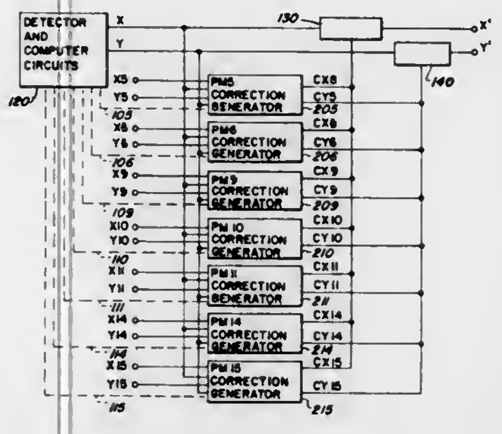
Nicolaas Van Dijk, Zandvoort, and Gerardus Huibrecht Kulberg, Amstelveen, both of Netherlands, assignors to G. D. Searle & Co., Chicago, Ill.

Filed Feb. 23, 1973, Ser. No. 335,327

Int. Cl. G01t *1/20*

U.S. Cl. 250—366 **7 Claims**

1. In combination:
a scintillation camera comprising a single crystal scintillator, a plurality of photomultiplier tubes spaced from said scintillator with overlapping fields of view thereof, circuit means coupled to said photomultiplier tubes for producing coordinate electrical signals representing spatial coordinates of interaction of a gamma ray with said scintillator, and display means for displaying said electrical signals in the form of a spatially positioned dot of light, said camera having an inherent characteristic non-linear spatial response such that a displayed map of a uniform spatial distribution of gamma rays interacting with said scintillator comprises a non-uniform spatial distribution of dots having a characteristic denser clustering of dots in regions of said map corresponding to locations of central areas of central ones of said photomultiplier tubes, said denser clustering being explained at least in part by the observed phenomenon that a gamma ray interaction at a particular location in said scintillator near the spatial position of a central axis of a particular one of said central photomultiplier tubes produces coordinate electrical signals representing an apparent location nearer said central axis of said particular photomultiplier tube; and
signal correction circuitry coupled to the aforesaid circuit means and operative to produce corrected coordinate electrical signals representing more accurately said spatial coordinates of interaction comprising
a plurality of correction signal generators, each being associated with one of said central ones of said photomultiplier tubes and operating in response to a gamma ray interaction in a portion of said scintillator near said associated photomultiplier tube to produce correction signals; and
circuit means for combining said correction signals and said coordinate electrical signals to produce said corrected coordinate electrical signals.


DETECTOR AND COMPUTER CIRCUITS
X
Y
130
140
X'
Y'
120
PM5 CORRECTION GENERATOR
PM6 CORRECTION GENERATOR
PM9 CORRECTION GENERATOR
PM10 CORRECTION GENERATOR
PM11 CORRECTION GENERATOR
PM14 CORRECTION GENERATOR
PM15 CORRECTION GENERATOR
215

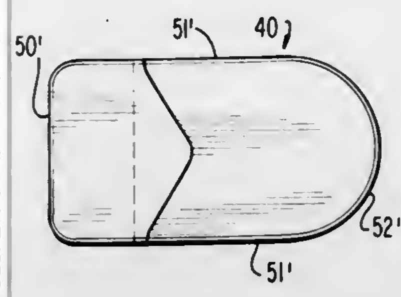
3,851,178
CONTOUR DENTAL X-RAY FILM

John V. Borden, 3815 Chanel Rd., Annandale, Va. 22003

Filed Mar. 7, 1973, Ser. No. 338,821

Int. Cl. G01n *23/04*

U.S. Cl. 250—478 **19 Claims**



1. An elongated X-ray film strip having end margins and side margins, one of said end margins being curved and defined approximately by the intersection of a plane disposed generally at right angles to the path of radiant energy from a source of X-rays positioned to produce an image on said film strip disposed in said plane and the soft tissues covering the body contours of a human jaw.

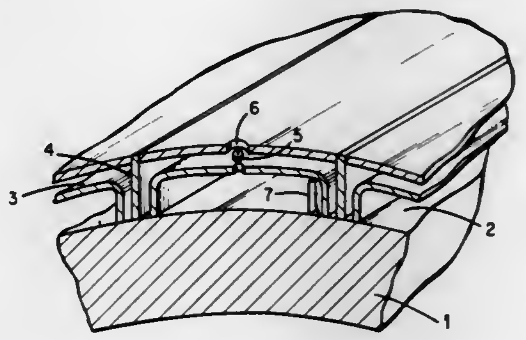
3,851,179
SHIPPING CASK NEUTRON AND HEAT SHIELD

Alvin R. Irvine, Knoxville, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Feb. 5, 1974, Ser. No. 439,794

Int. Cl. G21f *5/00*

U.S. Cl. 250—506 **7 Claims**



1. An improved shipping container for radioactive materials comprising a gamma shield encompassing said materials within said container, a radially extending fin network in welded attachment with and external to said gamma shield, a plurality of cover plates in welded attachment with the outer extremities of said fin network to thus provide a plurality of closed chambers, said cover plates forming the external housing of said container, a plurality of respective neutron shield housings positioned within respective ones of said chambers and defining a respective air space therebetween, and respective neutron shielding materials positioned within and substantially filling respective ones of said neutron shield housings, said shielding materials comprising a mixture of lithium hydroxide and sodium hydroxide, each of said shield housings provided with a fusible plug in one wall thereof, and each of said closed chambers provided with an evacuation port, said ports adapted to be sealed after evacuation of each of said respective air spaces, whereby said evacuated air spaces serve to prevent formation of significant thermal conduction bridges under normal temperature conditions between said gamma shield and said respective chamber cover plates but to provide thermal conducting bridges therebetween under a sustained high temperature expansion of said respective mixtures into said respective air spaces.

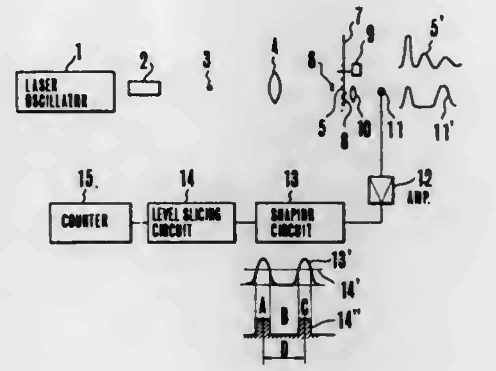
3,851,180
APPARATUS FOR MEASURING THE DIAMETER OF FINE WIRES

Kazuhiro Kato; Noboru Murata, both of Tokyo, and Goro Kobayashi, Oisomachi, all of Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed June 18, 1973, Ser. No. 371,187

Int. Cl. G01b *7/12*

U.S. Cl. 250—550 **3 Claims**



1. Apparatus for measuring the diameter of a fine wire, comprising means for irradiating the fine wire with parallel

laser beams in the diametric direction thereof thereby forming a Fraunhofer diffraction image, an optical filter for making the level of the signal at the optical center of said Fraunhofer diffraction image to be equal to the level of the signal subjected to a predetermined number of diffractions, a photoelectric transducer responsive to said two signals, a shaping circuit connected to the output of said photoelectric transducer, a level slicing circuit connected to the output of said shaping circuit and a counter connected to the output of said level slicing circuit, said counter operating to count and display the distance between the centers of said center signal and of said signal subjected to a predetermined number of diffractions.

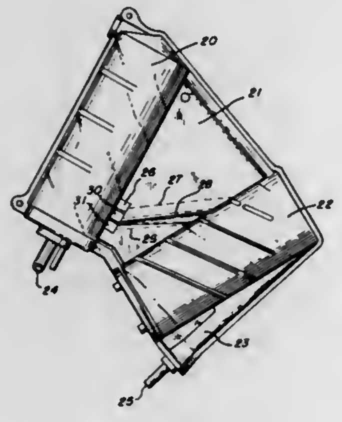
3,851,181
BLOOD LEVEL DETECTOR

James E. Heule, Plymouth, Minn., assignor to Audronics, Inc., Minneapolis, Minn.

Filed Nov. 7, 1973, Ser. No. 413,692

Int. Cl. G01n *21/26*

U.S. Cl. 250—577 23 Claims



1. Apparatus for use with a blood oxygenator of the type having a transparent section enclosing the blood flow, wherein the level of blood in said section provides a measure of flow rate, comprising:

a. a plurality of optical sensors affixed to the transparent section, each sensor having a light-emitting element and a light-responsive element;

b. electronic circuit means for energizing said light-emitting elements and for connecting to said light-responsive element for converting received light signals into voltage signals;

c. a voltage memory circuit switchably coupled to each of said sensors, said memory circuit having means for storing a predetermined voltage level representative of a first sensed blood level, and means of providing said voltage level at an output terminal;

d. a voltage comparison circuit connected to each of said electronic circuit means for converting light signals and to said voltage memory circuit output terminal, said comparison circuit having an output signal representative of the difference between said electronic circuit means voltage signals and said memory voltage;

e. trigger circuit means connected to said voltage comparison circuit output and responsive to predetermined difference voltage levels, for generating an output signal when said difference voltage levels exceed a predetermined value; and

f. alarm means connected to said trigger circuit output, for providing an alarm indication in response to said trigger circuit output signals.

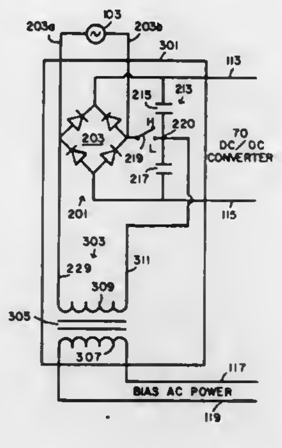
3,851,182
BIAS TRANSFORMER FOR DUAL VOLTAGE INPUT OFF-LINE CONVERTERS

Kenneth Andrew Wallace, Columbus, Ohio, assignor to North Electric Company, Galion, Ohio

Filed Sept. 4, 1973, Ser. No. 394,254

Int. Cl. H02j ; H02m

U.S. Cl. 307—23 15 Claims



1. Circuit means containing means for connecting said circuit means to a source of AC input voltage of a first value and alternatively of a second value, said circuit means containing first means for providing a single level DC output voltage in response to input voltage of said first and alternatively said second value and second means for providing a single level AC output voltage in response to input voltage of said first and alternatively said second value, said second means comprising a transformer the entire primary winding of which is connected by said first means directly to said source of first value and alternatively indirectly through said first means to said source of second value.

3,851,183
ELECTRETS, TO METHODS AND DEVICES FOR MANUFACTURING THEM AND TO ASSEMBLIES COMPRISING ELECTRETS

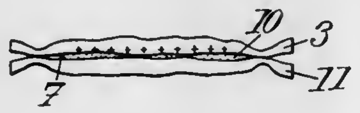
Jacques Lewiner, Saint-Cloud, and Danielle Legros, Paris, both of France, assignors to Agence Nationale de Valorisation de la Recherche (Anvar), Paris, France

Filed June 29, 1972, Ser. No. 267,544

Claims priority, application France, July 2, 1971, 24291/71

Int. Cl. H04r *19/00*

U.S. Cl. 307—88 ET 8 Claims



1. A foil electret, comprising an electrically-charged dielectric foil having a charged surface, a fluid medium of high dielectric strength permanently in intimate contact with said charged surface, and means for maintaining said fluid medium in intimate contact with said charged surface comprising a further member which is imperious to said fluid medium and which sealed in fluid tight relationship to said foil along a continuous line which surrounds said charged surface.

3,851,184
SELF-HOLDING UNIT HAVING A RESET DELAY CIRCUIT

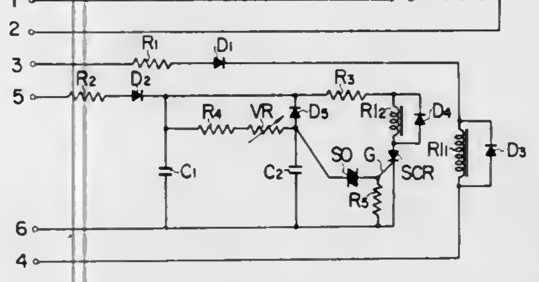
Takeshi Ukai, Tokyo, and Kiyoshi Oshima, Yokohama, both of Japan, assignors to Ricoh Co. Limited, Tokyo, Japan

Filed May 22, 1973, Ser. No. 362,873

Claims priority, application Japan, May 24, 1972, 47-051470

Int. Cl. H01h *47/18*

U.S. Cl. 307—141 R 3 Claims



1. A self-holding unit having a delay circuit comprising relay means operative upon application of an operation pulse for holding itself in its two setting positions selectively, a first capacitor adapted to be charged by a signal pulse, a resistor and a second capacitor connected in series with the first capacitor to form an RC time constant circuit, and switch means adapted to be rendered conductive when said second capacitor is charged to a predetermined voltage upon discharge said first capacitor for permitting application of the operation pulse from both said capacitors to said relay means for setting said relay means to one of its said positions.

3,851,185
BLANKING CIRCUIT

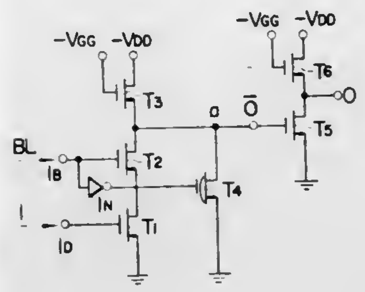
Yoshikazu Hatsukano; Kosei Nomiya, and Hiroto Kawagoe, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 29, 1972, Ser. No. 319,444

Claims priority, application Japan, Dec. 29, 1971, 46-3476

Int. Cl. H03k *19/08, 19/20*

U.S. Cl. 307—205 11 Claims



1. A blanking circuit comprising a plurality of field effect transistors connected in series between ground and a load connected to a power source, an inverter circuit having an input connected to the gate electrode of one of said plurality of field effect transistors, means to apply an input signal to the gate electrode of a field effect transistor other than said one field effect transistor, means to apply a blanking signal to said gate electrode of said one field effect transistor, means to obtain an output from said load, and an additional field effect transistor connected between the drain electrode of said one field effect transistor and ground, the gate electrode of said additional field effect transistor being connected to the output of said inverter circuit, whereby the level of that part of said output signal which is determined by said blanking signal can be altered.

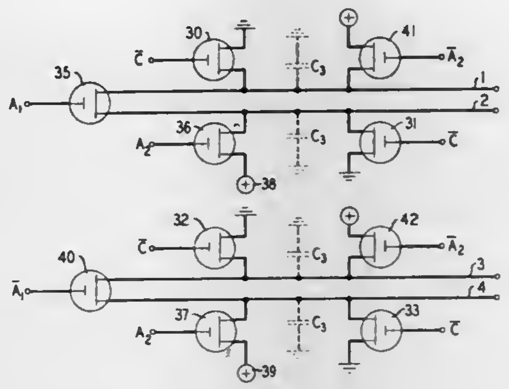
3,851,186
DECODER CIRCUIT

James Teh-Zen Koo, Wescosville, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 9, 1973, Ser. No. 414,220

Int. Cl. H03k *19/08*

U.S. Cl. 307—205 6 Claims



1. In combination, at least two pairs of output terminals, a plurality of input terminals to which binary input signals and reference potential levels are to be supplied, at least one MOS device associated with each pair of output terminals and having its source and drain electrodes respectively connected thereto, a pair of MOS devices associated with each terminal of each pair of output terminals, each device of each such pair of devices having one of its source and drain electrodes connected to its associated terminal and the other one of its source and drain electrodes connected to one of said input terminals to which reference potential levels are to be supplied, and means connecting the gate electrodes of all of said devices to said input terminals to which binary input signals are to be supplied.

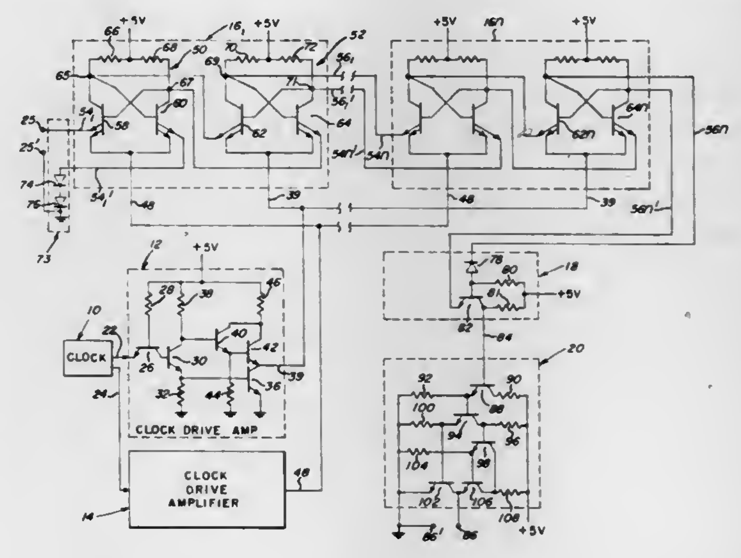
3,851,187
HIGH SPEED SHIFT REGISTER WITH T-T-L COMPATIBILITY

Henry C. Pao, 1105 Lexington St., Waltham, Mass. 02154; Richard L. Donnerstein, 37 Crescent St., Cambridge, Mass. 02138, and Stephen A. Steiner, 6 Fair Oaks Ter., Lexington, Mass. 02173

Continuation of Ser. No. 121,376, March 5, 1971, abandoned. This application July 31, 1972, Ser. No. 276,541

Int. Cl. G11c *19/00;* **H03k** *21/00*

U.S. Cl. 307—221 R 3 Claims

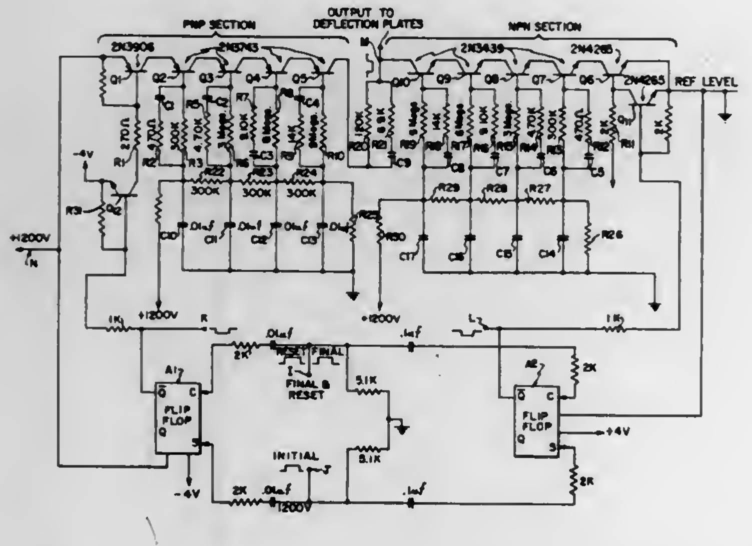


1. A shift register having a plurality of successively coupled storage stages, each such storage stage comprising: an input and an output bistable multivibrator, each one thereof having a pair of directly coupled transistors, the collector electrode of each one of the pair of transistors of the input bistable multivibrator being connected, respectively, to an emitter

electrode of a different one of the pair of transistors of the output bistable multivibrator; and a differential sensor, connected between the collector electrodes of the pair of transistors of the output bistable multivibrator, for detecting the condition of such output bistable multivibrator by sensing the relative polarity of a voltage developed between such collector electrodes.

3,851,188
TRANSISTORIZED HIGH VOLTAGE COMPLEMENTARY SWITCH FOR PULSING A NUCLEAR GENERATOR

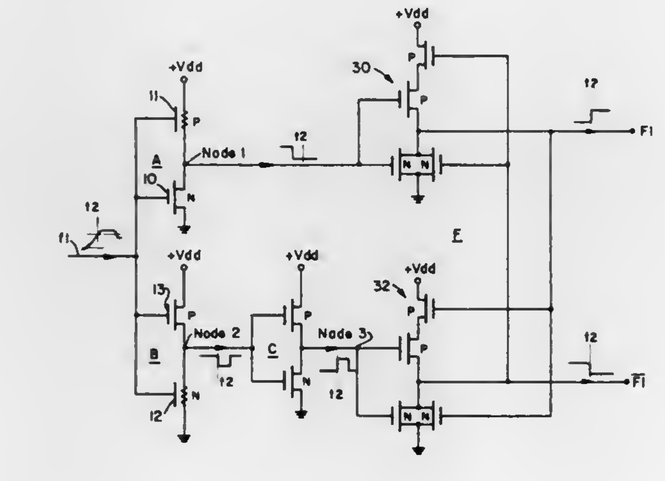
Robert A. Van Cleave, Jr., Stafford, Tex., assignor to Texaco Inc., New York, N.Y.
Continuation-in-part of Ser. No. 148,130, May 28, 1971, abandoned. This application Aug. 22, 1972, Ser. No. 282,732
Int. Cl. H03k *17/00*
U.S. Cl. 307—255 **4 Claims**



1. Circuitry for delivering large amplitude voltage pulses at high repetition rates with each pulse having a relative short pulse width and fast rise and decay times, comprising a plurality of PNP transistors, each transistor having an emitter, collector and base, said PNP transistors being serially connected such that the emitter of each PNP transistor of the plurality of PNP transistors, except a first PNP transistor, is connected to the collector of a preceding PNP transistor; a plurality of NPN transistors, each transistor having an emitter, collector and base, said NPN transistors being serially connected such that the emitter of each NPN transistor of the plurality of NPN transistors, except for a first NPN transistor, is connected to the collector of a preceding NPN transistor; first circuit means including an output terminal for coupling the collectors of a last PNP transistor of the plurality of PNP transistors and of a last NPN transistor of the plurality of NPN transistors to said output terminal; second circuit means, including an RC ladder network, coupled to the bases of all PNP transistors, except the first PNP transistor, for dividing voltages among said coupled PNP transistors and regulating the conduction time thereof; third circuit means, including an RC ladder network, coupled to the bases of all NPN transistors, except the first NPN transistor, for dividing voltages among said coupled NPN transistors and regulating the conduction thereof; a pair of input terminals; first pulse means connected to the input terminals for providing a pulse output having a predetermined amplitude referenced to a large amplitude voltage in response to a first pulse applied to one input terminal and to a second pulse applied to the other input terminal; second pulse means connected to the input terminals for providing a pulse output, having said predetermined amplitude references to ground, in response to said first pulse applied to said one input terminal and to said second pulse applied to said other input terminal; means connected to said first pulse means for providing a large amplitude voltage to said first pulse means and to the emitter of said first PNP transistor; means connected to said second pulse means for providing a ground reference to said second pulse means and to the emitter of said first NPN transistor; means connecting said bases of said first PNP transistor and said first NPN transistor to said first and second pulse means, respectively, for driving said pluralities of transistors in accordance with the outputs from said first and second pulse means so that a pulse appears at said output terminal having an amplitude corresponding to said large amplitude voltage with respect to ground.

3,851,189
BISTABLE DIGITAL CIRCUITRY

Norman E. Moyer, Newport Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed June 25, 1973, Ser. No. 373,210
Int. Cl. H03k *3/286*
U.S. Cl. 307—279 **6 Claims**

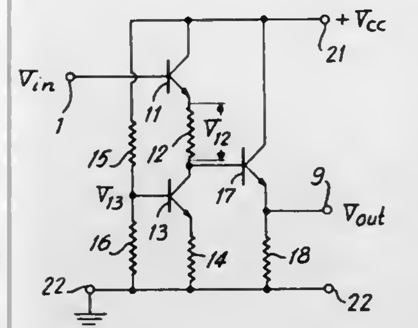


1. Logical storage means comprising:
complementary threshold circuit means including a pair of complementary MOS inverter circuits having inputs for receiving digital signals, and outputs; said threshold circuit means having unbalanced transfer characteristics providing separated high and low threshold levels near high and low supply potentials, respectively,
bistable circuit means having a plurality of inputs coupled to said threshold circuit outputs for receiving complementary high and low logical level input signals to provide a stable state condition, said bistable state circuit means including outputs for providing high and low level logical signals indicating the stable state of the bistable circuit means, and
said bistable circuit means comprises NOR gates having cross-coupled outputs.

3,851,190
LEVEL SHIFTING CIRCUIT

Masayuki Hongu, Tokyo, and Yoshio Hishiki, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Nov. 9, 1973, Ser. No. 414,421
Claims priority, application Japan, Nov. 13, 1972, 47-130613
Int. Cl. H03k *17/14;* **H03f** *3/42*
U.S. Cl. 307—310 **8 Claims**

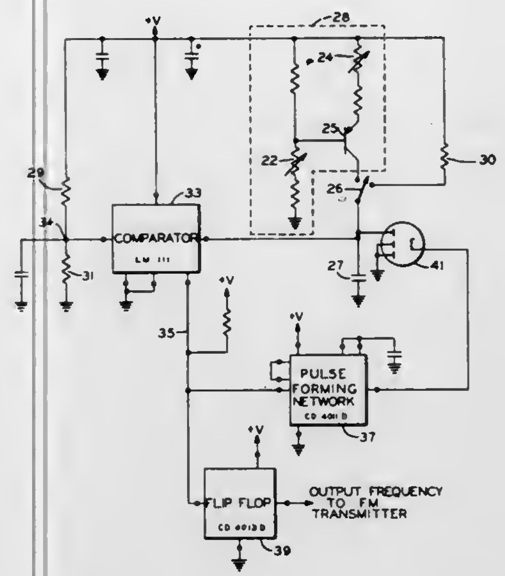
1. A level shifting circuit, comprising:
first and second transistors of one conductivity type, each transistor having base, emitter and collector electrodes;
input means for supplying an input signal referenced to a first DC voltage level to the base electrode of said first transistor;
first and second voltage terminals for providing a reference potential thereacross;
means for connecting the collector electrode of said first transistor to one of said voltage terminals;
means including a first resistor for connecting the emitter electrode of said first transistor to the collector electrode of said second transistor;
means including a second resistor for connecting the emitter electrode of said second transistor to the other of said voltage terminals;
bias means for supplying a bias voltage to the base electrode of said second transistor;
output means including a third transistor of said one conductivity type having base, emitter and collector electrodes;
means for connecting the collector electrode of said second transistor to the base electrode of said third transistor;
means for connecting the emitter and collector electrodes of said third transistor between said first and second voltage terminals; and



an output terminal connected to one of the emitter and collector electrodes of said third transistor for deriving an output signal thereat referenced to a second DC voltage level;
the resistance values of said first and second resistors admitting of a ratio such that the difference between said first and second DC voltage levels is maintained substantially constant notwithstanding variations in temperature.

3,851,191
TELETHERMOMETER TRANSMITTER

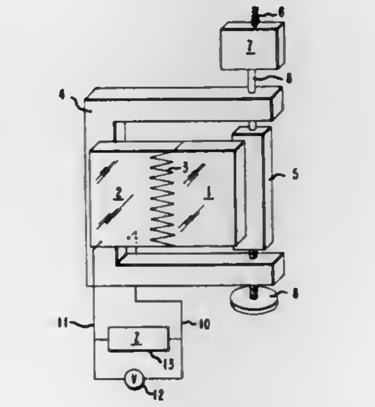
George F. Deebel, New Haven; Bernard M. Doden, and Myron J. Morris, both of Fort Wayne, all of Ind., assignors to The Magnavox Company, Ft. Worth, Ind.
Filed Apr. 14, 1972, Ser. No. 244,154
Int. Cl. H01v *3/00*
U.S. Cl. 307—310 **29 Claims**



1. A device for sensing a temperature and for generating an electrical signal having a frequency which is a substantially linear function of the temperature sensed comprising:
means for generating a current having a magnitude which is a substantially linear function of the temperature being sensed;
a capacitor adapted to be charged by said current;
a voltage standard;
means for comparing the voltage on said capacitor and said voltage standard and providing an output signal each time the voltage on said capacitor equals the voltage standard;
first means responsive to said output signals for discharging said capacitor; and
second means responsive to said output signals for providing an electrical signal the frequency of which is a function of the repetition rate of said output signals.

3,851,192
ELECTROMECHANICAL TRANSDUCERS USING COUPLED FERROELECTRIC-FERROELASTIC CRYSTALS

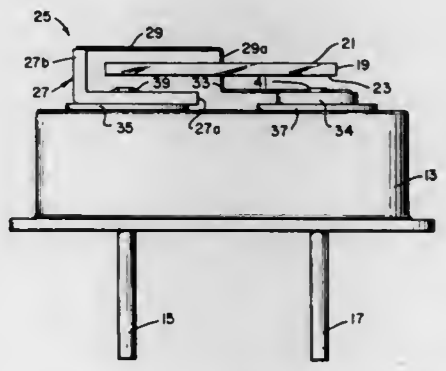
Richard B. Flippen, and Edward M. Hogan, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 27, 1973, Ser. No. 428,717
Int. Cl. H01v *7/02;* **H04r** *17/00*
U.S. Cl. 310—8 **9 Claims**



1. An electromechanical transducer comprising a crystal plate of a coupled ferroelectric/ferroelastic material exhibiting uniaxial properties cut with faces essentially perpendicular to the plane of domain walls, said plate being divided into two domains by a zig-zag domain wall,
said plate having an electrode on each opposing face of said plate;
a mechanical system coupled to said plate whereby displacement by said mechanical system moving said zig-zag domain wall;
said electrodes being connected in a circuit including a series electrical impedance corresponding to a selected mechanical function, whereby a voltage across said impedance is correlated with said mechanical function.

3,851,193
HORIZONTAL CRYSTAL MOUNTING ASSEMBLY

George E. Ritter, Mission Viejo, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Dec. 10, 1973, Ser. No. 423,595
Int. Cl. H04r *17/00*
U.S. Cl. 310—9.4 **5 Claims**



1. A quartz crystal assembly comprising in combination:
a. a casing having a base transpierced by two spaced-apart terminal posts;

- b. a quartz crystal wafer, with its major faces extending parallel to said base;
- c. means for making electrical contact from one of said posts to the upper face of said wafer, said means including:
  1. a U-shaped bracket having one arm fastened to the base of said casing, the bight of the U extending around the edge of said wafer and the other arm of the U extending over said wafer from its edge towards its center, said other arm having an extended, substantially flat surface over said wafer, and
  2. a flexible wire lead attached to said surface and to the center of the upper face of said wafer; and
- d. means for making electrical contact from the other of said posts to the lower major face of said wafer:
  1. said means terminating in a second flexible wire bonded to the center of the lower face of said wafer.

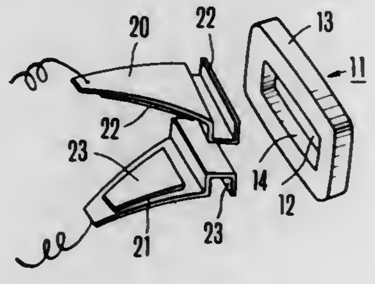
3,851,194
ANTI RESONANT ELECTRODES FOR A PIEZOELECTRIC TRANSFORMER

Takehiko Kawada, Yokohama, Japan, assignor to Denki Onkyo Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 148,413, June 1, 1971, abandoned. This application May 21, 1973, Ser. No. 362,462

Int. Cl. H04r *17/00*

U.S. Cl. 310—9.7 **6 Claims**



1. A piezoelectric transformer comprising a ferroelectric piezoelectric vibrating element including a driving region provided with driving electrodes on the opposite surfaces thereof and an output region provided with an output electrode; terminals for said driving electrodes, each of said terminals comprising a relatively wide and thin metal sheet, a portion of which contacts said driving electrode and extending with a region which does not contact said driving electrode or the support for said element; a vibration absorbing resilient layer applied to at least one side of said region and connecting means separate from said region for urging said terminals against said driving electrodes into firm electrical contact at the node of mechanical vibration of the fundamental vibration mode of said vibrating element.

3,851,195
BOUNDARY LAYER CONTROL AS A MEANS OF INCREASING POWER OUTPUT OF SUPERSONIC MHD GENERATORS

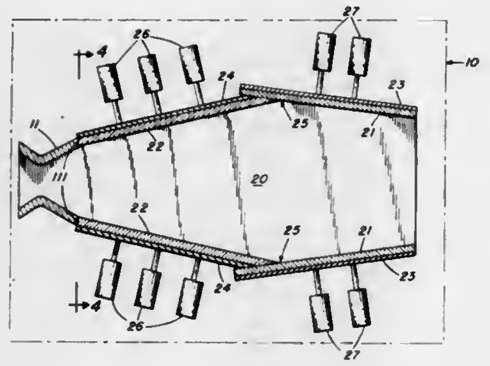
Bert Zauderer, Bala Cynwyd, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 257,216, May 26, 1972, abandoned. This application Aug. 29, 1973, Ser. No. 392,607

Int. Cl. H02k *45/00*

U.S. Cl. 310—11 **10 Claims**

1. In a constant gas velocity magnetohydrodynamic (MHD) generator,
- a generator section having two rigid, oppositely disposed insulator walls and two rigid oppositely disposed electrode walls, said walls contacting each other to form a chamber; and
- means for moving said insulator walls to prevent the boundary layer of the ionized fluid used in said generator from separating from the chamber walls as the fluid flows through the chamber.



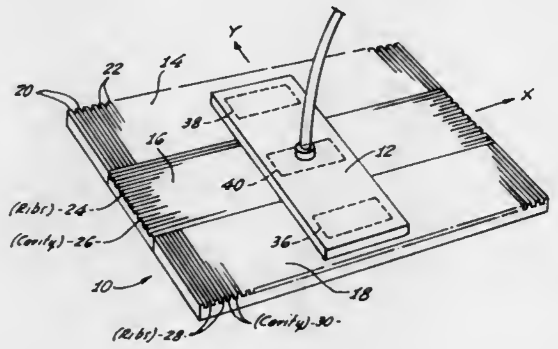
3,851,196
PLURAL AXIS LINEAR MOTOR STRUCTURE

Walter Edwin Hinds, Los Angeles, Calif., assignor to Xynetics, Inc., Canoga Park, Calif.

Continuation-in-part of Ser. No. 178,753, Sept. 8, 1971, abandoned. This application Apr. 5, 1973, Ser. No. 348,008

Int. Cl. H02k *41/02*

U.S. Cl. 310—12 **20 Claims**



1. A positioning system for providing a controlled relative displacement in first and second coordinate directions, including
- a first member forming a platen having at least two separate areas and with each one of the areas corresponding to a different one of the coordinate axes and with each of the areas being provided with a plurality of first portions defining a first energy level and spaced from one another by second portions defining a second energy level different from the first energy level and with the first and second portions in a first one of the separate areas being spaced from one another along the first coordinate direction and with the first and second portions in the other one of the separate areas being spaced from one another along the second coordinate direction, and
- a second member disposed relative to the first member for movement relative to the first member along each of the first and second coordinate directions independent of the movement along the other coordinate direction and with the second member including first means disposed in contiguous relationship to the first area of the first member and energizable for producing a first force between the second member and the first portions in the first area of the first member to provide an independent displacement of the second member relative to the first member in the first coordinate direction in accordance with such energizing and with the second member including second means disposed in contiguous relationship to the second area of the first member and energizable for producing a second force between the second member and the first portions of the second area of the first member to provide an independent displacement of the second member relative to the first member in the second coordinate direction in accordance with such energizing.

3,851,197
CARTRIDGE TYPE BRUSH HOLDER

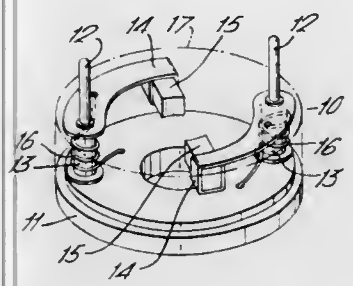
Yoshiaki Watanabe, Kyoto, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Nov. 2, 1972, Ser. No. 303,127

Claims priority, application Japan, Nov. 9, 1971, 46-104807

Int. Cl. H02k , *5/00*

U.S. Cl. 310—40 MM **5 Claims**



1. A brush holder cartridge for use in a micromotor, wherein the micromotor includes a casing having inner and outer surfaces, the brush holder cartridge comprising:
- a support member;
- a pair of brush holders secured to said support member, said pair of brush holders operative to hold a pair of brushes positioned therein in contact with a commutator of said micromotor; and
- a cartridge cap, which cartridge cap engages said support member such that said support member and said cartridge cap substantially enclose said brush holders and brushes about said commutator, said cartridge cap being held in engagement with said support member by frictional contact between said cartridge cap and the inner surface of the micromotor casing when said brush holder cartridge is operatively positioned in said micromotor.

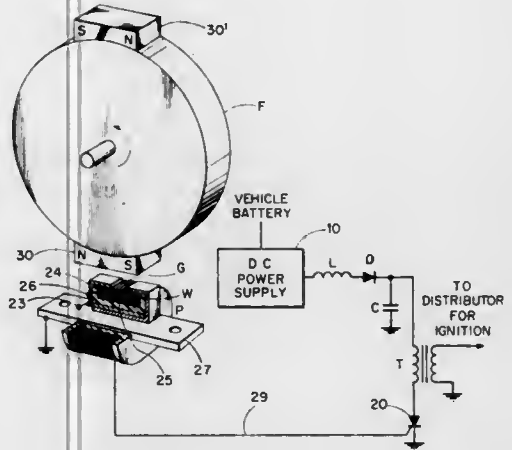
3,851,198
ELECTRICAL DISCHARGE ADVANCE SYSTEM AND METHOD

Floyd M. Minks, Rt. 1, Box 66, Kissimmee, Fla. 32741, and Floyd A. Minks, Box 252, Ridgetop, Tenn. 37152

Filed Sept. 17, 1971, Ser. No. 181,401

Int. Cl. H02k *39/00*

U.S. Cl. 310—70 R **4 Claims**



1. A system for controlling the timing of the spark ignition of an internal combustion engine, said system comprising means for producing an ignition voltage at a sparkplug in response to an input voltage of predetermined amplitude and polarity, and means for producing said input voltage, the last-mentioned means comprising means for producing a magnetic field, magnetic pickup means, means for varying the coupling of said field and said pickup means repetitively in synchronism with the operation of the engine such that the flux waveform through said pickup means comprises a first portion increasing gradually from zero in a first direction followed by a second portion of much greater amplitude in the opposite direction, followed by a third portion of substantially the same amplitude and direction as the first-mentioned portion, said flux waveform producing at the output of said pickup means a voltage waveform comprising a first portion of a first polarity gradually increasing from zero, followed by a second portion of much greater amplitude and of the opposite polarity, followed by a third portion of substantially the last-mentioned amplitude and of the first polarity, followed by a fourth portion of the said opposite polarity and of amplitude substantialy the same as the first-mentioned voltage waveform portion, said first polarity of said voltage waveform being said predetermined polarity, the amplitude of said first portion of said voltage waveform being less than said predetermined amplitude below a predetermined engine speed at which discontinuous spark advance is desired and being at least as great as said predetermined amplitude above said predetermined engine speed, and the amplitude of said third portion of said voltage waveform being at least as great as said predetermined amplitude below said predetermined engine speed, whereby said third portion of said voltage waveform activates the production of said ignition voltage below said predetermined engine speed and said first portion of said voltage waveform activates the production of said ignition voltage above said predetermined engine speed.

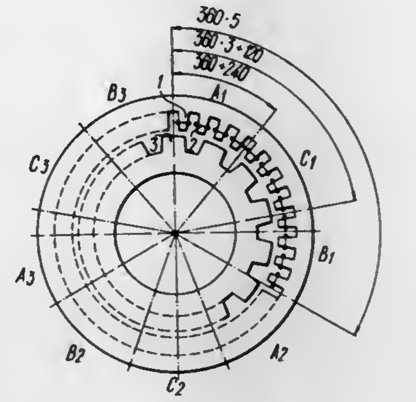
3,851,199
INDUCTOR GENERATOR

Voldemar Voldemarovich Apsit, ulitsa V. Latsisa, 2a, kv. 21; Mikhail Ivanovich Schukin, ulitsa ieriko, 45, kv. 41; Vladislav Alexandrovich Pugachev, ulitsa Moskovskaya, 266, korpus 5, kv. 73; Valery Dementievich Yablunovsky, ulitsa Reznas, 7, kv. 13, all of Riga; Grigory Grigorievich Alexandrovsky, ulitsa Tobolskaya, 47, kv. 53, Kharkov; Jury Ivanovich Zimichev, Moskovsky prospekt, 202, kv. 63, Kharkov, and Ivan Arkhipovich Borovik, Maskovsky prospekt, 89, kv. 7, Kharkov, all of U.S.S.R.

Filed Dec. 26, 1973, Ser. No. 428,902

Int. Cl. H02k *19/20*

U.S. Cl. 310—168 **1 Claim**

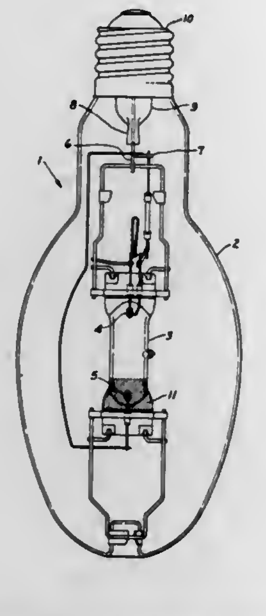


1. An inductor machine comprising: a toothed stator; a multiphase armature winding arranged upon the teeth of the stator with a constant tooth pitch close, but not equal, to π electrical degrees; a windingless toothed rotor which is enveloped by said stator; a ring field winding producing a common magnetic flux in said stator and said rotor; each phase of said armature winding consisting of at least three series-connected and symmetrically arranged branches with a displacement therebetween in electrical degrees being multiple to 2π; each

said branch consisting of coils arranged upon adjacent teeth of the stator, the number of the latter teeth being different from the doubled number of the teeth of the windingless toothed rotor by a value equal to the doubled number of the branches.

3,851,200
HEAT AND LIGHT REFLECTIVE COATING ON QUARTZ LAMP

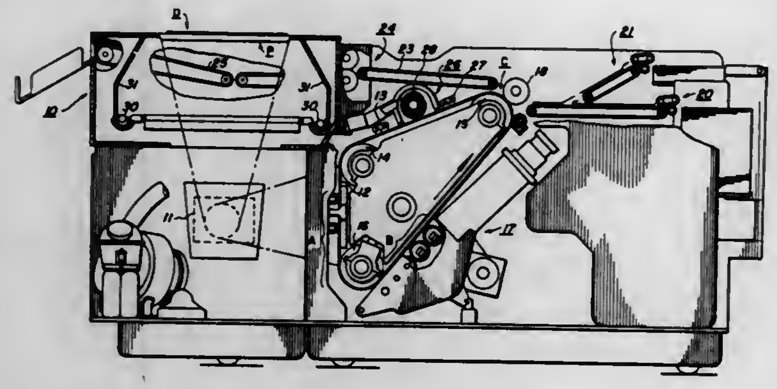
Gene I. Thomasson, Chesterland, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed Dec. 11, 1972, Ser. No. 313,875
Int. Cl. H01k *1/32*
U.S. Cl. 313—113 **5 Claims**



1. An electric lamp comprising a sealed quartz envelope containing radiation generating means,
and a hard, scratch-resistant heat and light reflective coating on a portion of the outside thereof,
said coating comprising a reflective metal oxide powder having an index of refraction greater than 1.75, and 20 to 60 percent by weight of finely ground up glass substantially free of alkali metal,
the glass particles in said coating having been heat-softened and re-fused to cause the metal oxide particles to be bound to each other and to the quartz in a lightly sintered particulate coating.

3,851,201
LAMP ASSEMBLY

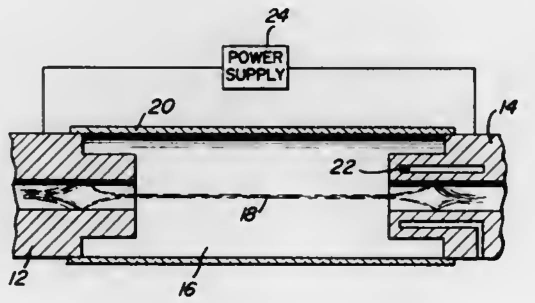
Richard A. Orrvick, Palmyra, and Ihor Kulbida, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed May 29, 1973, Ser. No. 364,793
Int. Cl. H01j *5/16;* **F21v** *7/09*
U.S. Cl. 313—113 **4 Claims**



1. A lamp assembly for flash illuminating a document to be reproduced on a reproduction machine comprising:
a reflector;
dielectric clamp means mounted on said reflector, said clamp means having a contoured surface formed thereon for engagement with one side of a tubular arc discharge lamp, said clamp means inculding spring clip means disposed opposite said contoured surface, said spring clip means having a shoulder formed thereon;
a tubular arc discharge lamp, said lamp being retained in the lamp assembly between said contoured surface and said spring clip in a predetermined position relative to said reflector by said spring clip means; and
a trigger wire positioned along side said lamp parallel to the axis thereof, said wire being looped around said spring clip and retained thereon by said shoulder, said shoulder positioning said wire along side said lamp at the desired location on the periphery of said lamp relative to said reflector.

3,851,202
METHOD AND APPARATUS FOR INCREASING THE USEFUL LIFE OF A QUARTZ ENVELOPE IN A HIGH POWER LIGHT SOURCE

Harden Henry Troue, Indianapolis, Ind., assignor to Union Carbide Corporation, New York, N.Y.
Filed Nov. 27, 1972, Ser. No. 309,808
Int. Cl. H01j *5/04*
U.S. Cl. 313—221 **4 Claims**

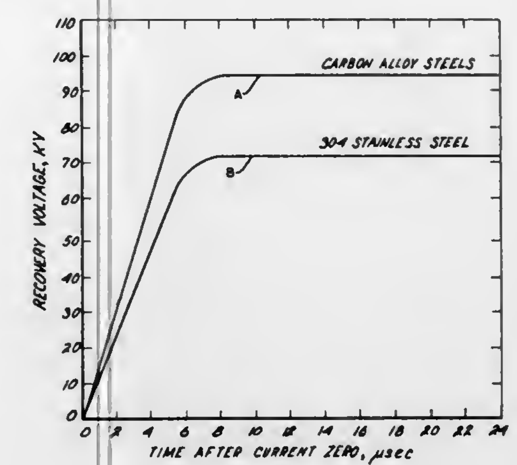


1. A method for increasing the useful life of a quartz medium for use as a light transmitting member in a plasma arc light source having a swirling gas flow of substantially argon passed thereabout and wherein said quartz medium is in the form of a tubular shell surrounding said arc and defining the arc chamber comprising adding an additive to said quartz in an amount of at least 3 parts per million and selected from the group consisting of titanium and an oxide of titanium.

3,851,203
VACUUM ARC DEVICES WITH IMPROVED ARCING SHIELDS

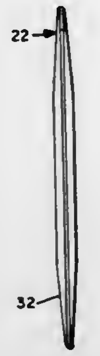
Lawson P. Harris, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed July 30, 1973, Ser. No. 383,684The portion of the term of this patent subsequent to Oct. 30, 1990, has been disclaimed.
Int. Cl. H01j *19/30;* **H01h** *33/66*
U.S. Cl. 313—233 **8 Claims**

1. A vacuum arc device adapted to sustain a high current arc between a pair of spaced arc-electrodes during arcing and comprising:
an hermetically sealed envelope evacuated to a pressure of 10^{-5} torr or less and including, a_1. a cylindrical sidewall member and a pair of oppositely disposed endwall members in vacuum-tight seal to define a reaction chamber,
  a_2. at least a portion of at least one of said members comprising a high voltage insulator capable of providing electrical insulation of high integrity between the central portions of said endwall members;
b. a pair of primary arc-electrodes inwardly depending from the central portion of said endwall members and adapted to define therebetween a primary arcing gap and to sustain a high current arc across said gap; and
c. shield means disposed within said envelope between said arcing gap and said high voltage insulator and effective to prevent conducting material ejected from said gap during arcing from depositing upon said high voltage insulator, c_1. said shield means being fabricated from a vacuum refined carbon alloy steel containing 0.2 to 0.5 weight percent carbon and no more than 5 weight percent of any single metallic additive and no more than 10 weight percent of all additives therein exhibiting a hardness as evidenced by a Rockwell C value of at least 30 and a tensile strength of at least 100,000 psi, a ductility of at least 5 percent elongation of a standard 2 inch long sample of standard ductility test cross section and having substantial freedom from sorbed gases and gas-forming impurities therein so as to permit its use in close proximity to said arc-electrode while said arc-electrodes sustain arcing current densities of approximately 200 amperes/cm² for a half cycle of power alternating voltage without the emission of any substantial quantity of gaseous material inconsistent with continued maintenance of said low pressure after arcing,
  c_2. said shield means further characterized by a voltage holdoff strength of between approximately 90 and 100 kilovolts and a rate of recovery after arcing of approximately 15 kilovolts per microsecond.



3,851,204
ROTATABLE ANODE FOR X-RAY TUBES

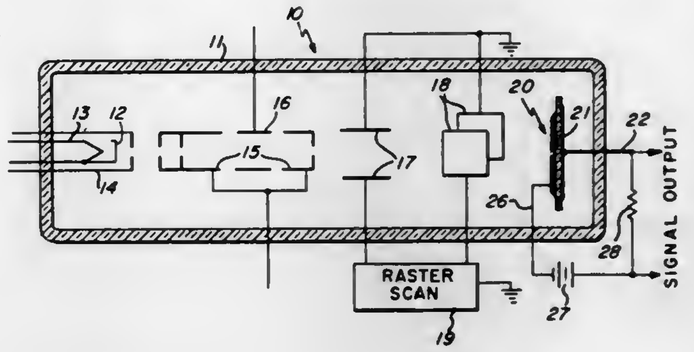
Fred J. Rollfinke, Carlisle, Pa., assignor to General Electric Corporation, Milwaukee, Wis.
Filed Mar. 2, 1973, Ser. No. 337,311
Int. Cl. H01j *35/08*
U.S. Cl. 313—330 **4 Claims**



1. A rotatable anode for an X-ray tube comprising:
a circular disc mountable for rotation about an axis;
said disc having oppositely disposed continuous annular faces adjacent its periphery;
said annular faces being mutually and symmetrically inclined toward a plane through and disc pérpedicular to said axis.

3,851,205
JUNCTION TARGET MONOSCOPE

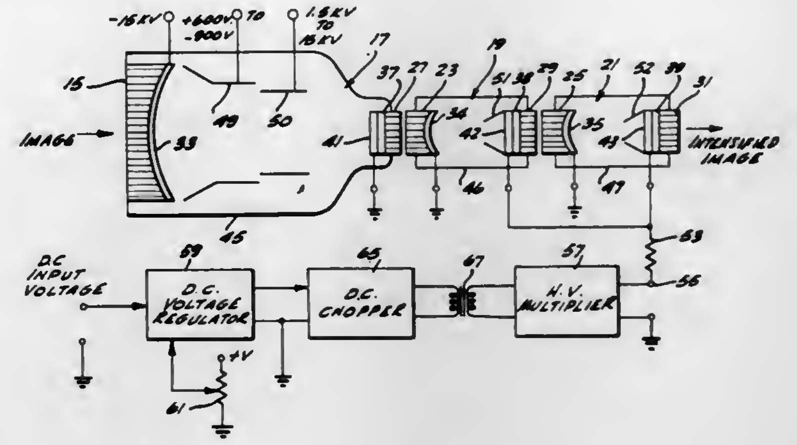
Amos Picker, Sharon, Mass., assignor to Raytheon Company, Lexington, Mass.
Division of Ser. No. 228,732, Feb. 23, 1972, abandoned, which is a continuation of Ser. No. 37,552, May 15, 1970, abandoned.
This application Jan. 26, 1973, Ser. No. 327,047
Int. Cl. H01j *31/48*
U.S. Cl. 315—11 **10 Claims**



1. In combination:
a visual display device;
a signal generating device; and
means for feeding signals derived from the output of said signal generating device to said visual display device;
said signal generating device comprising:
  a source of electrons and a signal output structure;
  means for directing electrons from said source to said output structure at velocities which will produce charge carrier multiplication in a semiconductor region of said output structure; and
  control means interposed between said source and said output structure for varying the portion of said electrons directed toward said output structure which produce charge carrier multiplication in said output structure.

3,851,206
GAIN CONTROLLABLE IMAGE INTENSIFICATION SYSTEM

Jay M. Hansen, Santa Monica, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed June 4, 1969, Ser. No. 830,592
Int. Cl. H01j *29/52*
U.S. Cl. 315—30 **11 Claims**



1. A system for intensifying an image comprising:
a plurality of intensifier means cascade coupled to one another in sequence for respectively increasing the brightness of an image of a scene, each of said plurality of intensifier means operating to develop an output image of the scene at a more intensified brightness level than that presented thereto, each of said intensifier means

having the ability to be cut off before the next succeeding intensifier means in said sequence;

power supply means coupled to each of said plurality of intensifier means for simultaneously applying variable operating potentials at other than zero potential to said plurality of intensifier means; and

sensing means, coupled to said power supply means, being substantially responsive to the amplitude of the photocurrent in the last intensifier means in said sequence for causing the operating potentials to be varied as a function thereof in order to control the gain of said plurality of intensifier means and the brightness of the output image of the scene as a function of the amplitude of the photocurrent being sensed.

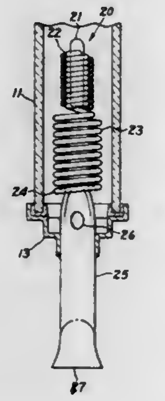
3,851,207
STABILIZED HIGH INTENSITY SODIUM VAPOR LAMP

Charles L. McVey, Shaker Hts., Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 1, 1972, Ser. No. 277,095

Int. Cl. H01j *17/34, 61/06*

U.S. Cl. 315—49 **9 Claims**



1. A high intensity sodium vapor stabilized discharge lamp comprising a slender tubular ceramic envelope, closures sealing the ends of said envelope, electrodes in opposite ends of said envelope, a filling of sodium, mercury, and inert gas within said envelope, said lamp containing in operation an excess pool of sodium-mercury amalgam at the lower end, the lower electrode comprising an electron-emissive portion and a resistive heater portion interposed between the emissive portion and the lower closure and through which lamp current flows to reach the emissive portion, said resistive heater portion being supported by the lower closure and supporting the emissive portion.

3,851,208
LIGHTING SYSTEM

Thomas F. Carmichael, Drayton Plains, and Richard J. Maier, Pontiac, both of Mich., assignors to Syncro Corporation, Oxford, Mich.

Continuation of Ser. No. 157,328, June 28, 1971, abandoned. This application Aug. 9, 1973, Ser. No. 387,137

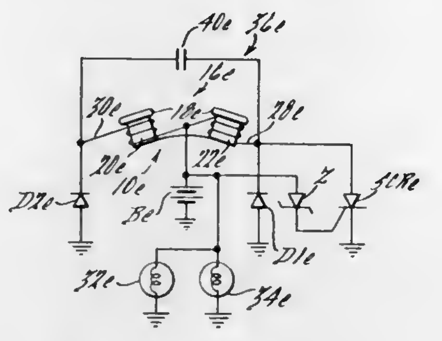
Int. Cl. B60q *1/26*

U.S. Cl. 315—79 **15 Claims**

1. In a lighting circuit for a vehicle having a generator, having generating windings for providing an output voltage, driven by an engine with the speed of the engine varying the speed of the vehicle and with the speed of the generator and hence output voltage varying with the speed of the engine, a circuit comprising:

conductor means electrically connecting light of the vehicle to the generating windings of the generator with the generator windings normally providing a low voltage to the lights over a low engine speed range whereby the illumination from the lights is not at a desirable level;

resonant circuit means externally connected to the generating windings of the generator for providing a resonant voltage condition with the generating windings for boosting the voltage to the lights over said preselected low engine speed range whereby adequate illumination will be obtained over substantially the entire speed range of the engine including said preselected low engine speed, said resonant circuit means comprising a capacitor connected directly across said windings having a magnitude selected relative to the inductance of the remainder of the circuit to provide resonance at an engine speed within said preselected low engine speed range; and



regulating circuit means connected to the windings and including a controlled conduction device responsive to a preselected control potential connected directly across said windings for providing a low impedance across said windings for controlling the output voltage of the windings to prevent excessive voltage.

3,851,209
DISCHARGE LAMP STARTING APPARATUS

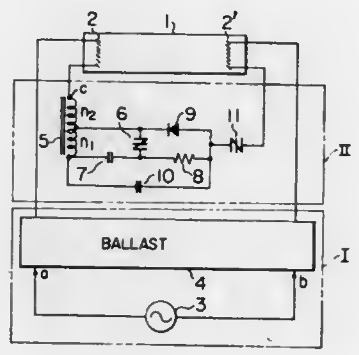
Matsushita Electric Industrial Co., Ltd., Osaka; Toyoharu Murakami, Osaka; Yutaki Niguchi, Moriguchi; Kazutaka Nishimura, and Yukio Shimizu, both of Hanno, all of Japan, assignors to Shindengen Electric Manufacturing Co., Ltd., Tokyo and Matsushita Electric Works, Ltd., Osaka, all of, Japan

Filed Feb. 6, 1973, Ser. No. 330,098

Claims priority, application Japan, Feb. 7, 1972, 47-15967

Int. Cl. H05b *41/18*

U.S. Cl. 315—99 **4 Claims**



1. A starting apparatus for a hot cathode start fluorescent discharge lamp having a cathode at each end, said starting apparatus being connected in series with said cathodes and comprising:

a. a pulse generating circuit including a pulse transformer having a primary winding and a secondary winding coupled to one of the cathodes of said fluorescent discharge lamp, a first capacitor and a first bi-directional diode thyristor connected in series across the ends of the primary winding of said pulse transformer, and a resistor having one end thereof connected to the junction of said first capacitor and said first thyristor;

b. a diode having one end connected to one end of the primary winding of said pulse transformer;

c. a second capacitor having one end connected to the other end of said primary winding; and

d. a second bi-directional diode thyristor connected between the other ends of said resistor, diode and second capacitor and the other cathode of said fluorescent discharge lamp.

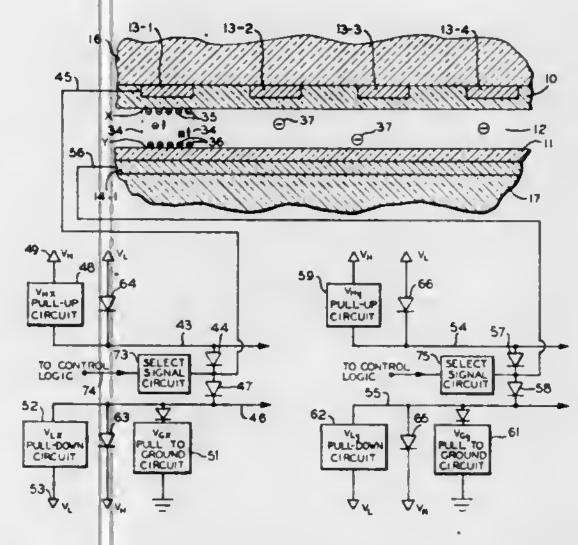
3,851,210
METHOD OF DRIVING AND ADDRESSING GAS DISCHARGE PANELS BY INVERSION TECHNIQUES

Jerry D. Schermerhorn, Swanton, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed June 22, 1973, Ser. No. 372,553

Int. Cl. H05b *37/00, 39/00*

U.S. Cl. 315—169 R **37 Claims**



1. The method of operating a multicelled gas discharge display/memory device having a first array of electrodes and a second array of electrodes arranged so that each of a plurality of cells are comprised of proximate portions of electrodes in said first and second arrays, a volume of ionizable gas in the vicinity of said proximate portions, and a dielectric layer intermediate at least one of said electrode proximate portions and said volume of gas, said cells having the bistable characteristic that cells in an "on state" of discharge have an "on state" cell wall charge on said dielectric layer and are retained in an "on state" and cells in an "off state" have an "off state" cell wall charge and are retained in an "off state" in response to the application of an alternating sustainer voltage having a sustaining value across the first and second electrode arrays, comprising: imposing a first portion of the alternating sustainer voltage which cyclically pulsates between voltage values on the first array of electrodes; and imposing a second portion of the alternating sustainer voltage which cyclically pulsates between voltage values with greater magnitude than the magnitude of the first portion of the second array of electrodes during the imposition of the first portion, the sum of the absolute values of the magnitudes of the first and second portions during at least a portion of each alternation of said sustainer equalling the magnitude of the sustaining voltage for the device.

3,851,211
SUSTAIN SEQUENCE CIRCUITRY FOR GAS PANEL DISPLAY DEVICES

James C. Greeson, Jr., Woodstock, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

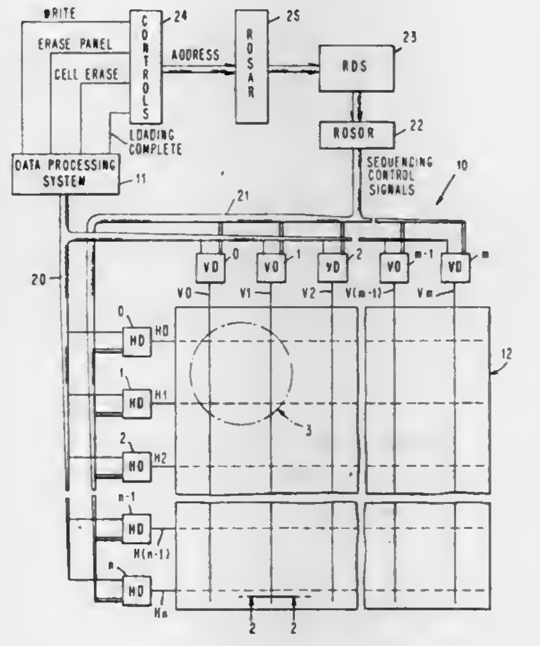
Filed June 28, 1973, Ser. No. 374,590

Int. Cl. H05b *37/00*

U.S. Cl. 315—169 TV **1 Claim**

1. In a gas panel display device having a gas panel including a first plurality of first parallel lines and a second plurality of second parallel lines extending across said first lines and defining a multiplicity of illuminable cells, each cell further comprising panel means supporting said lines in spaced relationship, dielectric wall means overlying said lines, and an ignitable gas between said wall means, the combination of:

- a plurality of selectively operated drivers each connected to a different one of said lines for selectively applying sustain, write and erase signals to operate said cells;
- and means for controlling the operations of said drivers comprising
  - sequencing control means operatively connected to selectively apply sequences of signals to said drivers for writing data representations into said cells, erasing said representations from said cells and sustaining representations within said cells,
  - receiving means for receiving asynchronously command signals for initiating write and erase sequences,
  - and cycle control means responsive to said receiving means for initiating write and erase sequences only at the end of a sustain sequence;
- said cells being arranged in a first set and a second set with the cells of each set being located between the cells of the other set;



- said sequencing control means being operative during a sustain sequence to sustain bias said first set of cells at one time and thereby fire any previously fired cells of said first set and to sustain bias said second set at another time and thereby fire any previously fired cells of said second set, whereby the peak current of each driver is proportional to the maximum number of cells in either of said sets along said line connected to each driver, said sequencing control means being further operative to bias one set to a neutral level while the other set is at a sustain level so as to electrostatically shield those cells undergoing a sustain bias, said sequence of sustain signals being such that at the end of a sustain cycle the wall charges associated with those cells of said first and second sets, which cells were fired during the sustain cycle, are at different states of positive and negative charges;
- said sequencing control means being further operative during the beginning of each write cycle to apply a bias to certain ones of said cells at a given time and to apply a similar bias to the remaining cells at a different time, whereby all wall charges of all of the cells are in a predetermined state of charge before any data is written into such cells.

3,851,212
PLASMA DISPLAY PANEL INDUCTION PREVENTING SYSTEM

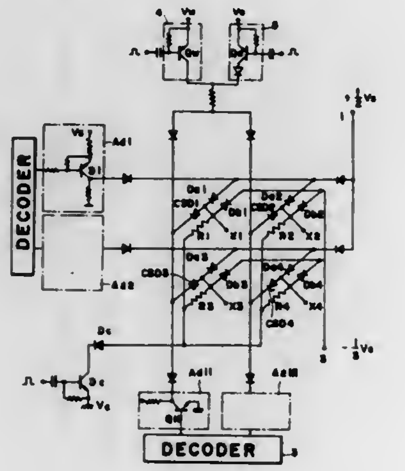
Shozo Umeda, Kakogawa; Hiroshi Furuta, Akashi; Teruo Toba, Akashi; Hiroshi Goto, Akashi, and Hiroyuki Ishizaki, Akashi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed June 28, 1973, Ser. No. 374,622

Claims priority, application Japan, June 30, 1972, 47-65743

Int. Cl. H05b *37/00*

U.S. Cl. 315—169 TV **12 Claims**



1. A system for preventing undesired effects from voltages induced in a plasma display comprising first and second sets of plural electrodes disposed to intersect each other and define at each such intersection a discharge cell, and wherein circuit means are provided for supplying an alternating sustain voltage to said cells, the amplitude of which is sufficient only to maintain an existing discharge, and wherein an addressing voltage applied to a selected electrode of each said first and second sets serves to establish an address voltage at a corresponding selected cell which exceeds the firing voltage of the cell and establishes a discharge therein, and system comprising:

- means for applying an addressing voltage to a selected one of the electrodes of at least one of said first and second sets of electrodes, including, for each electrode,
  - a first diode having a relatively short charge storage time and a second diode having a relatively long charge storage time connected in series to said first diode at a junction and commonly poled for conduction, said junction being connected to the electrode, and
  - means for applying a forward current to said diodes associated with a selected electrode, and
  - means for supplying an addressing voltage to the cathode of said second diode, selectively as to each selected electrode, thereby to apply the addressing voltage to the selected electrode by reverse conduction of said second diode in accordance with the pre-stored charge therein, and
- means operative simultaneously with said addressing voltage means for coupling at least those electrodes disposed immediately adjacent a selected electrode to a potential of a level selected with respect to that of said addressing voltage to suppress voltages induced in said adjacent electrodes when an addressing voltage is applied to a selected electrode.

3,851,213
ARRANGEMENT FOR GENERATING MODULATED ATOMIC RESONANCE

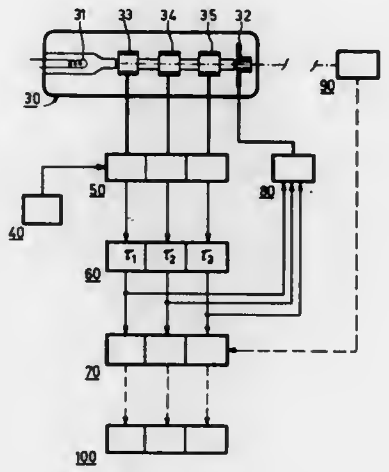
Hendrik Bessel Bart Van Dam, and Zeger Van Gelder, both of Emmasingel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 25, 1972, Ser. No. 300,510

Claims priority, application Netherlands, Oct. 28, 1971, 7114824

Int. Cl. H05b *41/00;* **H01j** *17/00*

U.S. Cl. 315—174 **6 Claims**



1. Apparatus for generating modulated atomic resonance radiation, comprising:

- an enclosure filled with rare gas and having a window through which generated resonance radiation may pass; a cathode and an anode inside said enclosure between which a positive column discharge may be established;
- a sputtering electrode inside said enclosure containing the material of which modulated atomic resonance radiation is desired, said sputtering electrode being positioned to sputter said material between said cathode and anode where a positive column discharge may be established;
- first periodic pulse generating means connected to said sputtering electrode for applying pulses thereto at a pulse repetition rate of between 10 and 10^4 pulses per second and a duty cycle of between 0.5 and 10^{-4};
- second periodic pulse generating means connected between said cathode and anode for establishing a pulsatory positive column discharge therebetween having a pulse repetition rate equal to the pulse repetition rate of said first periodic pulse generating means, the pulses of said second pulse generating means being time delayed with respect to the pulses from said first pulse generating means, said time delay being less than twice the pulse duration of the pulses of said first pulse generating means.

3,851,214
LOW POWER SEALED OPTICALLY THIN RESONACE LAMP

Robert A. Young, R.R. 2, Loretto, Ontario, Canada

Filed Dec. 12, 1973, Ser. No. 426,616

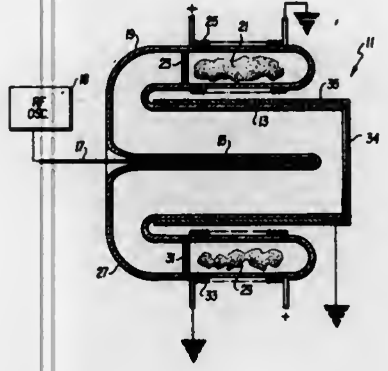
Int. Cl. H05b *41/24*

U.S. Cl. 315—267 **17 Claims**

1. A resonance lamp comprising

- a dielectric closed body having a predetermined vacuum therein;
- a reentrant coaxial hollow glass element integral within said body and extending from one end thereof substantially the length of said body;
- an electrical conductor within said element;
- an ultraviolet transparent window at the other end of said body;
- two hollow arms integral with and extending from said body;

- a high purity rare gas filling within said body at a pressure of 1 to 2 torr;
- a source of diatomic gas in one of said arms;



- an electrically conductive sheathing adjacent the exterior of said glass body;
- a getter in the other said arm for removing gases from said body; and
- means for separately heating each of said arms.

3,851,215
DEFLECTION COIL SYSTEM FOR COLOUR TELEVISION

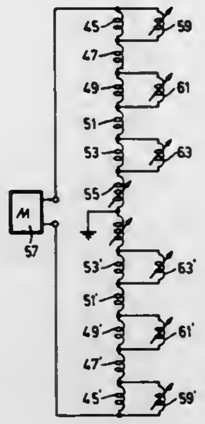
Jacky Charles Dekeijser, and Albert Jan Kuiper, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 20, 1972, Ser. No. 290,651

Claims priority, application Netherlands, Sept. 21, 1974, 7112929

Int. Cl. H01j *29/70*

U.S. Cl. 315—27 XY **10 Claims**



1. A deflection coil system for a colour television display tube, comprising deflection coils for electron beam deflection in the horizontal and the vertical direction, respectively, each coil being a single coil and consisting of a number of turns of a conductive wire, each of the coils for at least one of the two deflection directions being divided into a number of series-connected sections in that at least one turn which is situated between the first and the last turn of the coil is provided with a tapping, characterized in that at least one of the sections of each of the coils for at least one deflection direction, is connected in parallel with a circuit means of adjustable impedance for adjusting the dynamic convergence.

3,851,216
OVER-CURRENT PROTECTIVE APPARATUS FOR A POWER CIRCUIT

Geoffrey Clarke, Swindon, and Geoffrey John Harris, Purton, both of England, assignors to Square D Company, Park Ridge, Ill.

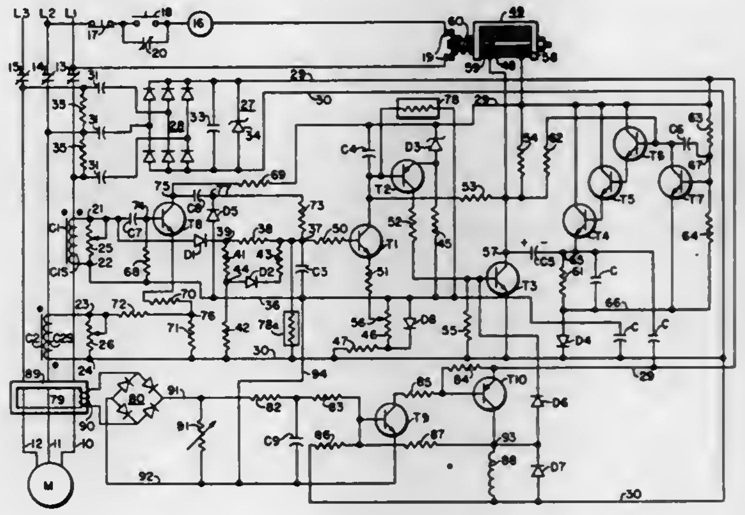
Claims priority, application Great Britain, Nov. 1, 1972, 50351/72

Filed Oct. 29, 1973, Ser. No. 410,927

Int. Cl. H02h *7/08*

U.S. Cl. 317—13 R **11 Claims**

1. A protective apparatus for actuating a switching device in response to abnormal alternating current flow in a power circuit comprising: a storage device, circuit means energized by the current in the power circuit for charging the storage device at a non-linear timed rate in response to the magnitude of current in the power circuit, a bistable switching device, a direct current source activated by the presence of current in the power circuit, a timing capacitor energized by the direct current source during periods of current flow in the power circuit, a level detecting circuit means having an input responsive to the charge on the storage device and providing an output to the switching device for switching the switching device from a second to a first of its bistable states when the charge on the storage device reaches a predetermined level, and a timing circuit means having an input responsive to the charge on the timing capacitor and providing an output to the switching device for switching the device to the second of its bistable states when the charge on the timing capacitor decreases to a predetermined level a predetermined time after the switching device is switched to the first bistable state.



3,851,217
VOLTAGE SURGE ARRESTER

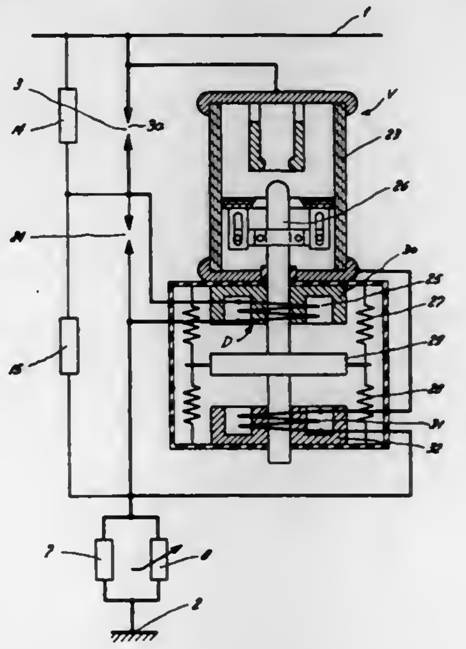
Joachim Amsler, Seon, and Walther Otto, Birrwil, both of Switzerland, assignors to Sprecher Schuh AG, Aaru, Switzerland

Filed Aug. 15, 1973, Ser. No. 388,640

Claims priority, application Switzerland, Sept. 8, 1972, 13201/72

Int. Cl. H02h *9/06*

U.S. Cl. 317—16 **8 Claims**



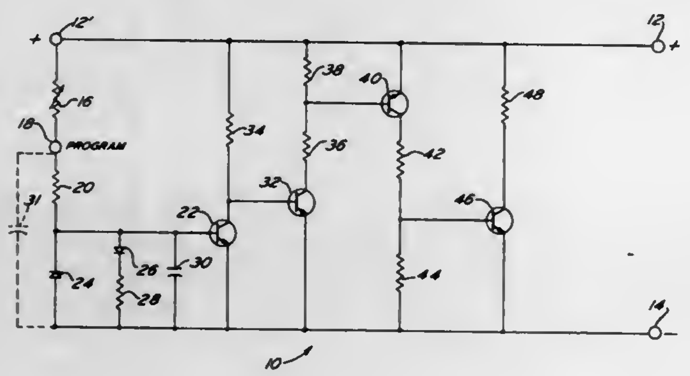
1. An overvoltage arrester comprising at least one response element which becomes conductive upon occurrence of an

overvoltage which exceeds a certain boundary value, said overvoltage appearing at connection terminals of the overvoltage arrester, at least one extinguishing element for interrupting an arc supplied by the follower current, at least one arrester resistor connected in series with the extinguishing element, parallel impedances for controlling the voltage distribution, said extinguishing element comprising a switch, and an electro-dynamic drive for actuating said switch, said switch being connected in parallel with the response element, the switch in its rest state being opened and possessing a flashover voltage which is above the response voltage of the response element.

3,851,218
DIRECT CURRENT SOLID STATE CIRCUIT BREAKER

Robert A. York, Mechanicsburg, Pa., assignor to Flight Systems, Inc., Mechanicsburg, Pa.

Filed July 2, 1973, Ser. No. 375,428
Int. Cl. H02h *3/08*
U.S. Cl. 317—33 R **4 Claims**



1. A direct current circuit breaker for interrupting a direct current circuit when the current exceeds a programmable value, said circuit breaker using only solid state devices and comprising:

a positive terminal and a negative terminal for connecting said circuit breaker in the direct current circuit to be controlled, said positive terminal and negative terminal being the only two terminals for connecting the circuit breaker into the direct current circuit;

said circuit breaker being adapted so that a load may be connected common to either the positive or negative terminal of said circuit breaker;

first means for generating a voltage drop including a solid state switch connected in series between said positive and negative terminals and through which the current being controlled normally flows;

programmable voltage drop means connected in circuit with said first voltage drop means for generating a voltage drop equal to the voltage drop across said first voltage drop means said programmable voltage drop means being changeable within a range to change the value of the current at which said circuit breaker will interrupt the direct current circuit;

solid state means to control whether said solid state switch is conductive or non-conductive, said solid state control means including solid state devices responsive to the voltage drop across the programmable voltage drop means;

said solid state control means including a current source, said current source normally providing current for biasing said solid state devices to maintain said solid state switch in a conductive condition;

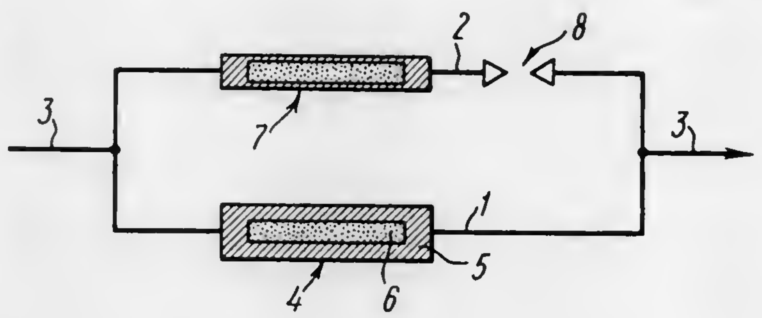
said solid state means being connected to be responsive to the voltage drop across said programmable voltage drop means for diverting the biasing current from said solid state devices when the voltage drop exceeds a predetermined value to thereby make said solid state switch non-conductive; and

said programmable voltage drop means and said solid state devices being connected to form a regenerative circuit for enhancing the turn-off time of said solid state switch.

3,851,219
CIRCUIT-OPENING DEVICE FOR INTERRUPTING HEAVY CURRENTS BY MEANS OF AN EXPLOSIVE CHARGE

Konstantin Isaakovich Kozorezov, Universitetsky prospekt 21, korpus, 1, kv. 29; Vitaly Vasilievich Semchenko, ulitsa 26 Bakinskikh Komissarov, 8, korpus 3, kv. 32, and Georgy Ivanovich Mikhailu, ulitsa Volgina 23, korpus 1, kv. 52, all of Moscow, U.S.S.R.

Filed Dec. 26, 1973, Ser. No. 428,901
Int. Cl. H01h *39/00;* **H02h** *5/00*
U.S. Cl. 317—40 A **2 Claims**

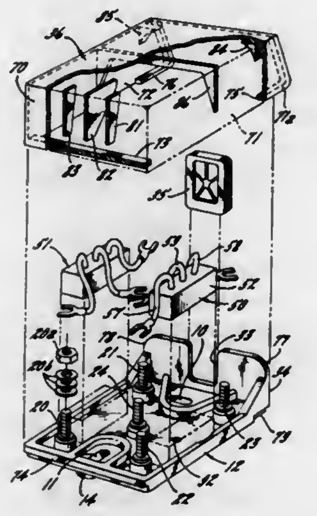


1. A circuit-opening device for interrupting heavy currents by means of an explosive charge, wherein the place where a circuit is opened is in the form of two parallel branches, the first of which includes only an explosive circuit-breaker while the second branch includes a series-combination of an explosive circuit-breaker and an operating current relay, so that initially no current flows through the relay and, when the circuit is being opened, the first branch is interrupted first, the current is transferred to the second branch and then the second branch is interrupted after a time delay sufficiently long to allow the circuit-breaker of the first branch to form a gap capable of withstanding all subsequent circuit voltages.

3,851,220
MODULAR FAIL-SAFE TELEPHONE STATION PROTECTOR

Joseph T. Charles, 4902 Tollview Dr., Rolling Meadows, Ill. 60008

Continuation-in-part of Ser. No. 289,541, Sept. 15, 1972, abandoned. This application Dec. 12, 1973, Ser. No. 423,922
Int. Cl. H02h *9/06*
U.S. Cl. 317—61.5 **8 Claims**

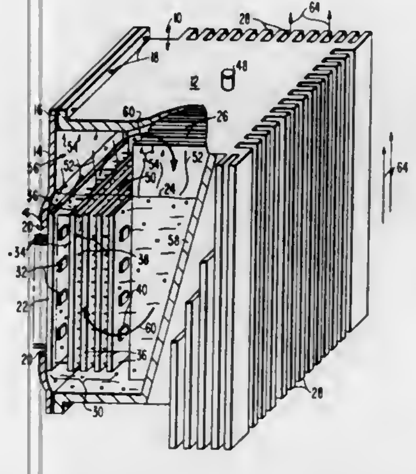


1. A telephone station protector comprising the combination of an arrester module comprising at least two electrode pairs with the two electrodes in each pair spaced apart by a gas-filled discharge chamber, one electrode of each pair being connected to different ones of a pair of substantially rigid line conductors adapted for connection to a corresponding pair of conductors comprising a telephone line, the other electrode of each pair being connected to a common grounding conductor whereby a voltage surge on either of said line conductors within the discharge capability of the electrode pair connected thereto renders the discharge chamber between that electrode pair temporarily conductive to connect the respective conductor to ground, and fail-safe means within the discharge chamber of each electrode pair shunting the respective line conductors to ground in response to a voltage surge on either of said line conductors in excess of the discharge capability of the electrode pair connected thereto, said electrodes and the end portions of the conductors connected to said electrodes being embedded in a solid unitary mass; an insulating terminal block forming areas for receiving at least two of said arrester modules and having two pairs of electrical terminals adjacent said areas for connecting said pair of line conductors from each module to the corresponding conductors of a telephone service line, and a ground terminal for connecting said grounding conductors from said modules to grounding means, said arrester modules being positioned flush against the terminal block and the relative height of said arrester modules and the connection of said line conductors to said electrical terminals providing a loop in said line conductors to maintain the arrester modules in position; and a cover adapted to fit over said base member to enclose said terminals and said modules.

3,851,221
INTEGRATED CIRCUIT PACKAGE

Philip Edward Beaulieu, South Burlington, and Joseph John Zabursky, Shelburne, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1972, Ser. No. 310,751
Int. Cl. H05k *1/04*
U.S. Cl. 317—100 **7 Claims**



1. A package for integrated circuits comprising:

A. a closed container formed by a plurality of sides,

B. interconnection pins disposed outside said container and supported at one of said sides,

C. a plurality of spaced-apart, horizontally stacked substrates, having first and second major surfaces disposed in vertical planes, carrying integrated logic and memory circuits at one of said surfaces, a first of said substrates being disposed within said container adjacent said one side carrying said logic circuits at the first surface thereof.

D. means for connecting said interconnection pins to said logic circuits carried on said first substrate,

E. a plurality of electrical conductors disposed at the periphery of said substrates,

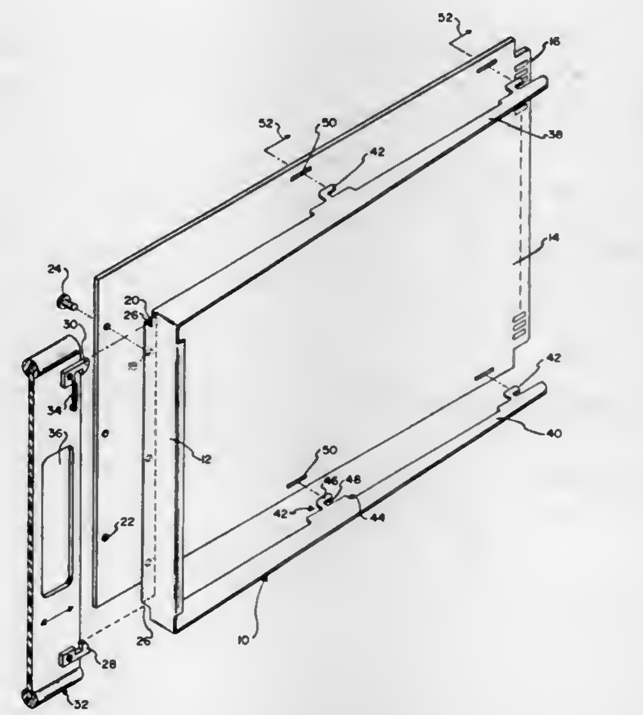
F. means for interconnecting said logic circuits on said first substrate with said memory circuits carried on other of said plurality of substrates through said plurality of electrical conductors and

G. cooling means having a fluid coolant in said container in contact with said first and second surfaces.

3,851,222
PRINTED WIRING CARD STIFFENER BRACKET

Bogumil M. Michalak, Melrose Park, and Ansano Bertellotti, Addison, both of Ill., assignors to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed Dec. 17, 1973, Ser. No. 425,440
Int. Cl. H02b *1/02*
U.S. Cl. 317—101 R **11 Claims**



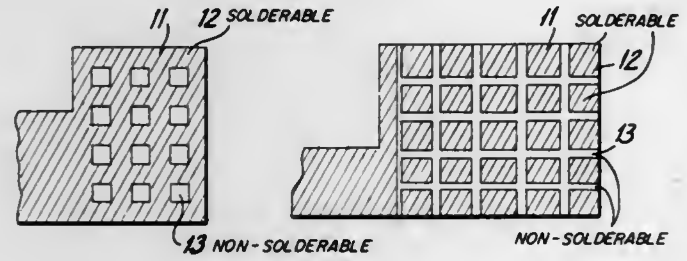
1. A printed wiring card stiffener bracket, comprising:

a handle portion extending along the edge of the printed circuit card to be stiffened that is exposed when the card is inserted into a card file, said handle portion including means for mounting the handle portion to the printed wiring card, the printed wiring card including appropriate apertures formed therein in alignment with said mounting means; and

blade arm portions extending substantially perpendicular from each end of said handle portion and along the edges of the printed circuit card that adjoins the handle portion edge, said blade arm portions including tab means for engaging said printed wiring card being disposed along said blade arm portions at intervals suitable to stiffen said printed circuit card and prevent warpage and linear distortion, said engaging tab means including a rectangular portion extending from said blade arm edge being adjacent the printed wiring card and an L-shaped portion extending from said rectangular tab portion so as to form a slot between said rectangular and L-shaped tab portions, said L-shaped portion adapted to extend through slots in the printed wiring card being of larger dimension that said L-shaped portions with said stiffener bracket being moved in a direction such that the printed wiring board is engaged by said engaging tab means with the printed wiring card portion adjacent the slot moving into said slot formed between said tab portions, said handle portion being mounted to said printed wiring board after said tab engaging means are in engagement with said printed wiring card surfaces.

3,851,223
MICROCIRCUIT BOARD

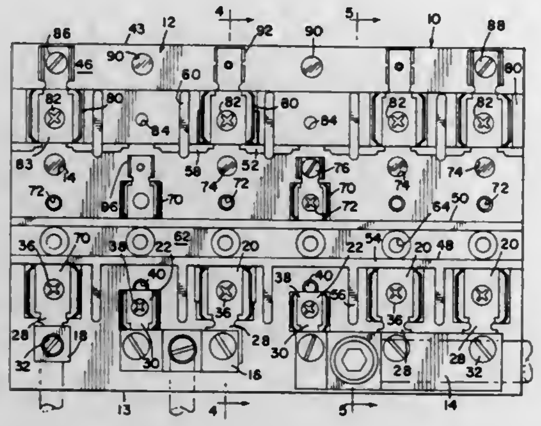
Masayasu Yonezuka, and Hiroshi Murata, both of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan
Filed Nov. 21, 1972, Ser. No. 308,465
Claims priority, application Japan, Dec. 6, 1971, 46-98883
Int. Cl. H05k *3/34*
U.S. Cl. 317—101 CC **3 Claims**



1. A microcircuit board comprising a substrate and at least one thin film land formed on said substrate, said thin film land being divided into a plurality of solderable and non-solderable areas, a layer of solder formed on said solderable areas and at least one component, said component including at least one terminal having a substantially planar surface, said substantially planar surface being connected to said layer of solder on at least two of said solderable areas of said at least one land.

3,851,224
FUSE PANEL ASSEMBLY FOR MOUNTING VARYING SIZE FUSES

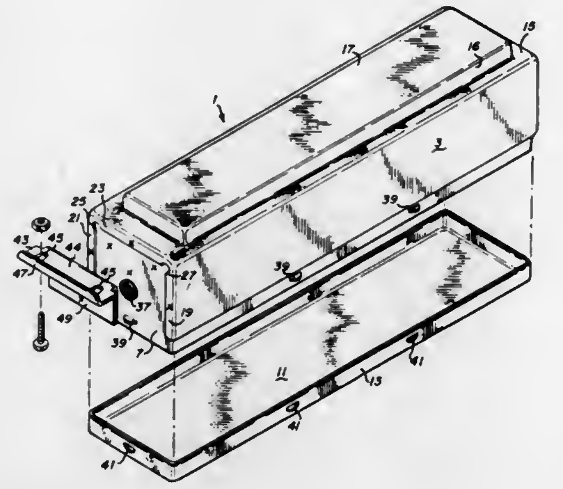
Hans Ege, Des Plaines, Ill., assignor to Underwriters Safety Device Co., Chicago, Ill.
Filed Sept. 27, 1973, Ser. No. 401,412
Int. Cl. H02b *9/00*
U.S. Cl. 317—116 **5 Claims**



1. A mounting block for a fuse mounting panel assembly adapted to retain pluralities of varying size fuses in parallel side-by-side relation in file thereon and adapted to mount varying input electrical connections thereon, said mounting block comprising: a mounting surface adapted to receive fuse clips for fastening to the ends of fuses, terminal connectors, buss bars, and fasteners in varying numbers and orientations, said mounting surface including means adapted for fastening said panel to an external member, a plurality of fuse clip mounting means located in ranks parallel to one side of said surface and also located in files perpendicular to said one side, a primary rank of said mounting means adapted to receive mountings for input fuse clips for fastening to one end of either of short and long fuses, a plurality of secondary ranks of mounting means, one of said secondary ranks adapted to receive mountings for output fuse clips for fastening the other end of short fuses, another of said secondary ranks adapted to receive mountings for output fuse clips for fastening to the other end of long fuses, said secondary ranks located in spaced apart relation from said primary rank, said secondary rank for receiving output fuse clips of short fuses being located between said primary rank and said secondary rank for receiving output fuse clips of long fuses, first raised transverse barrier means for increasing the surface path of any electrical arc between any input and output fuse clips which may be mounted on said surface, said first transverse barrier means located between said primary rank of mounting means and said one secondary rank of mounting means for output fuse clips of short fuses, second raised transverse barrier means for increasing the surface path of any electrical arc between any output fuse clips for short fuses and any output fuse clips for long fuses which may be mounted on said block, said second transverse barrier means located between said secondary ranks of mounting means for output fuse clips, a plurality of in-line raised barrier means between portions of said files of said mounting means for increasing the surface path of an electrical arc between fuse clips mounted in separate files, segments of said in-line barrier means located between said input fuse clip mounting means and extending from said first raised transverse barrier means toward said one side of said surface, a substantially flat area across said mounting surface between the ends of said segments of in-line barrier means and said one side whereby said block is adapted to mount a plurality of combinations of either of input buss bars and terminal connectors connectible to any input fuse clips mounted on said block.

3,851,225
WATER RESISTANT BALLAST CONSTRUCTION

Julius Frank Luchetta, Elmhurst, Ill., assignor to Limited Systems, Inc., Bellwood, Ill.
Filed June 7, 1973, Ser. No. 367,925
Int. Cl. H02b *1/12*
U.S. Cl. 317—120 **2 Claims**



1. In combination:

a shell-type transformer of the type having an elongated rectangular magnetic iron core, said core including first and second outer legs and a center leg, said legs being spaced from one another with said center leg between them, and a pair of side legs for completing a magnetic path between said outer and centerlegs at each of the ends thereof, a primary winding and at least one secondary winding mounted side-by-side on said center core leg, said transformer having a given height defined by the distance between upper and lower peripheral portions of said primary and said secondary windings and a width defined by the distance between the outer edges of said outer legs and a predetermined length defined by the distance between said side legs;

an elongated generally rectangularly shaped container of sheet metal material for confining said transformer, said container having elongated front and rear walls, opposed right and left end walls adjoining said front and rear walls on opposite ends thereof, a bottom wall, and a top wall, said top wall comprising a detachable lid;

a plurality of flaps integral with the ends of each of said bottom, front and rear walls, said flaps being folded over and into the plane of the adjoining end walls to thereby define seams between said flaps and said end walls;

said bottom wall having an embossed portion protruding by a predetermined distance from the remainder of said bottom wall, said embossed portion with the remainder of said bottom wall defining a rim bordering said embossed portion, said embossed portion having a generally flat outer surface, and said embossed portion comprising a major portion of said bottom wall surface for spacing said seams from the bottommost surface of said embossed portion, said embossed portion further defining an interior well portion bordered by the remaining internal bottom wall surface internally of said container for receiving a portion of said primary and said secondary windings, said well portion having a width less than the width of the transformer and greater than the width of said coils, and said well portion having a length greater than the length of said transformer and said well portion having a depth less than one-half the height of said transformer, and where in the said container the distance between the inner surface of said top wall and the bottom of said well portion is only slightly larger than the height of said transformer;

said transformer being located in said container with the outer periphery of said windings in contact with the bottom surface of said well portion to provide a heat conducting path therebetween;

first and second lead exits in said respective right and left end walls;

electrical circuitry means, including capacitor means, located in said container;

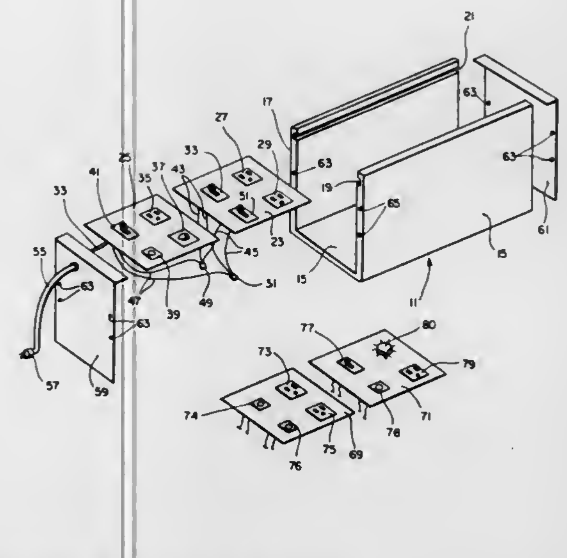
electrical lead means extending into said container through said exit means for connection to said transformer and said electrical circuitry;

electrically insulative potting material filling substantially all remaining voids inside said container; and

mounting means on said container for mounting said container with the embossed portion adapted for contact with a supporting surface.

3,851,226
ELECTRICAL TERMINAL BOX WITH REMOVABLE TERMINAL PLATES

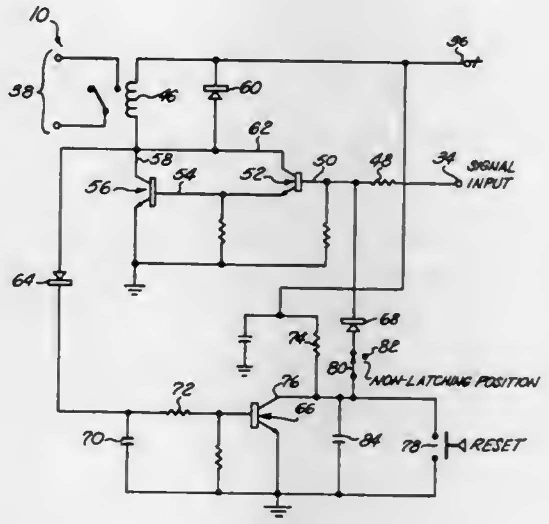
Tung Chang Chen, 138 Wooded Ln., Villanova, Pa. 19085
Filed Aug. 29, 1973, Ser. No. 392,414
Int. Cl. H02b *1/04*
U.S. Cl. 317—120 **3 Claims**



1. A modular electrical terminal box comprising in combination: a housing means having a base wall and two upright walls, each of said two upright walls having a receiving channel, forming a pair of receiving channels, disposed horizontally along the length thereof and disposed a substantial distance from said base wall; a plurality of terminal plates, each having an upper side and a lower side and each of which has edges formed to readily slide into and along said pair of receiving channels, each of said terminal plates having its said edges disposed within said receiving channels with its upper side facing away from said base; a plurality of electrical devices mounted on the upper side of each of said terminal plates and having connecting wires protruding from said lower side of each of said terminal plates; first and second end pieces each having at least one section formed to fit into said pair of receiving channels and further formed to be removably secured to said housing, and each having its said section disposed within said receiving channels.

3,851,227
SECURITY APPARATUS INCLUDING A TAMPER DETECTION DEVICE

Robert A. Hedin, Novi, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Mar. 16, 1973, Ser. No. 341,941
Int. Cl. E05b *49/00;* **H01h** *47/32*
U.S. Cl. 317—134 **9 Claims**

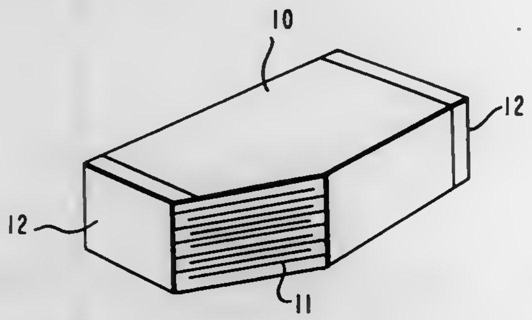


1. An improved key-actuated electronic security apparatus of the type wherein a lock and decoding logic circuit are provided with the decoding logic circuit having a plurality of input conductors to which a proper combination of binary signals must be applied by a key to identify a valid key, wherein the improvement comprises an improved tamper-detection device including input circuit means having an input junction communicating with said plurality of input conductors for receiving signal current therefrom indicative of an attempt to actuate the apparatus without a valid key, a semiconductor amplifier having an input electrode receiving the signal current for amplifying it above a predetermined level, output means connected with said semiconductor amplifier for producing alarm indicia when the amplified signal exceeds the predetermined level, said semiconductor amplifier having sufficient gain that said alarm indicia are produced by values of said signal current at said input conductors substantially lower than a current produced at a proper one of said input conductors by a proper one of said binary signals, latching means, connected to the input electrode of said amplifier, to provide a control signal to said amplifier sufficient to produce the alarm indicia from said output means, and first switching means connected to said latching means to actuate said latching means whenever said output means initially produces the alarm indicia.

3,851,228

CAPACITOR WITH COPPER OXIDE CONTAINING ELECTRODE

John Leo Sheard, Williamsville, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 245,903, April 20, 1972, Pat. No. 3,763,409. This application Apr. 23, 1973, Ser. No. 354,182The portion of the term of this patent subsequent to Oct. 2, 1990, has been disclaimed.
Int. Cl. H01g *1/01*
U.S. Cl. 317—258 **17 Claims**

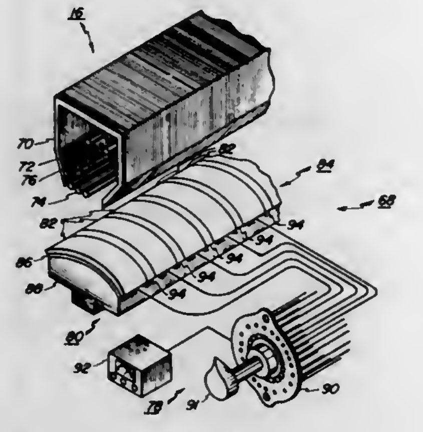


1. In metallizations of finely divided noble metal(s) useful for conductor formation, improved essentially glass-free metallizations of particles of (a) one or more members selected from the group of palladium, palladium oxide, and mixtures thereof and (b) one or more members from the group consisting of copper oxides and precursors thereof; the ratio of copper in (a), calculated as the element, to palladium in (b), calculated as the element, being up to 2.5/1, by weight; the particles of said metallization being of a size such that at least 90 percent by weight of said particles are not greater than 5 microns.

3,851,229

CURRENT MEASURING DEVICE

Thomas F. Hayne, Fairport, and Ross E. Schroll, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed June 21, 1973, Ser. No. 372,436
Int. Cl. H01t *19/00*
U.S. Cl. 317—262 A **18 Claims**

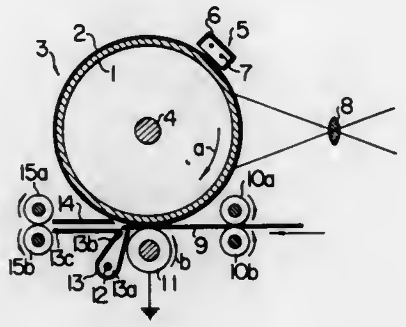


1. A current measuring device, including:
corona generating means arranged to form a spray of ions; means, closely spaced to said corona generating means, for accumulating the ions formed by said corona generating means to produce a current flow, said accumulating means comprising a plurality of substantially equally spaced electrically conductive portions insulated from one another; and
means, in electrical communication with said accumulating means, for sensing the current flow on each portion of said accumulating means to detect the spatial distribution of the current flow produced by said corona generating means.

3,851,230

ELECTROSTATIC TRANSFER-PRINTING SHEET STRIPPING DEVICE

Toyoo Okamoto, Tokyo, and Toshio Watanabe, Yokohama, both of Japan, assignors to Ricoh Co. Ltd., Tokyo, Japan
Filed May 18, 1973, Ser. No. 361,646
Claims priority, application Japan, June 9, 1972, 47-68643
Int. Cl. G03g *13/18*
U.S. Cl. 317—262 A **10 Claims**



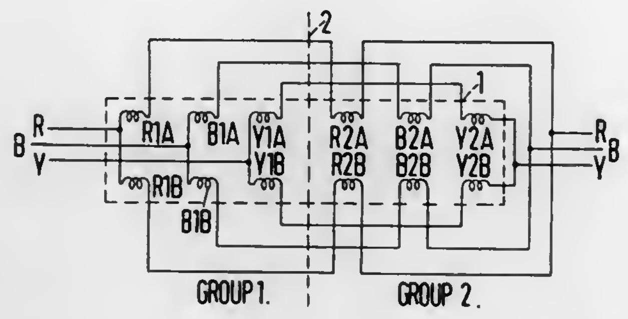
1. An electrostatic transfer-printing device of the type comprising:
- a. a photoreceptor having a photosensitive surface on which an electrostatic latent image is formed for transfer to a transfer-printing sheet;

wherein the improvement comprises:
- b. means for bringing one surface of a transfer-printing sheet into pressing engagement with the photosensitive surface at a transfer-printing position and for applying a voltage to the other surface of said sheet, of opposite polarity from that of the electrostatic latent image charge, to transfer said image onto said transfer-printing sheet by transfer-printing from the photosensitive surface; and
- c. illumination means for throwing visible light rays onto the photosenitive surface adjacent the transfer-printing position after the transfer-printing sheet is brought into pressing contact with the photosensitive surface of the photoreceptor to illuminate the transfer-printing sheet on which the electrostatic latent image has been formed and the photosensitive surface of the photoreceptor on which there is a residual charge so as to remove said residual charge sufficiently to release said transfer-printing sheet from said photosensitive surface.

3,851,231

SHORT STATOR INDUCTION MOTOR

John Frederick Eastham, Long Ditton; Christopher Durrant English, Burwell, and Geoffrey Edward Brown, Sawston, all of England, assignors to Tracked Hovercraft Limited, London, England
Filed June 19, 1973, Ser. No. 371,380
Claims priority, application Great Britain, June 20, 1972, 28784/72
Int. Cl. H02k *41/02*
U.S. Cl. 318—135 **8 Claims**

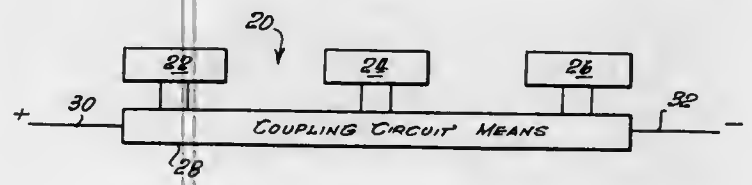


1. A stator for a plural phase alternating current short stator electric induction machine, comprising a plurality of sets of coils, each set containing the same number of coils and all coils of each set being disposed closely adjacent to one another and so connected as to provide poles of the same polarity, a plurality of phase bands for each phase, each phase band comprising at least one coil, a series of groups of windings successively displaced along the length of the stator, each group comprising the same number of phase bands for each phase as the number of coils in each set, a plurality of circuit branches for each phase equal in number to the number of coils in each set, each circuit branch containing one phase band from each group of windings, and a parallel circuit for each phase formed by connecting said circuit branches in parallel one with another.

3,851,232

ELECTRIC VEHICLE PROPULSION SYSTEM

Keith M. Chirgwin, Palos Verdes Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.
Continuation of Ser. No. 89,678, Nov. 11, 1970, abandoned. This application Apr. 4, 1973, Ser. No. 347,719
Int. Cl. H02p *7/16*
U.S. Cl. 318—150 **99 Claims**

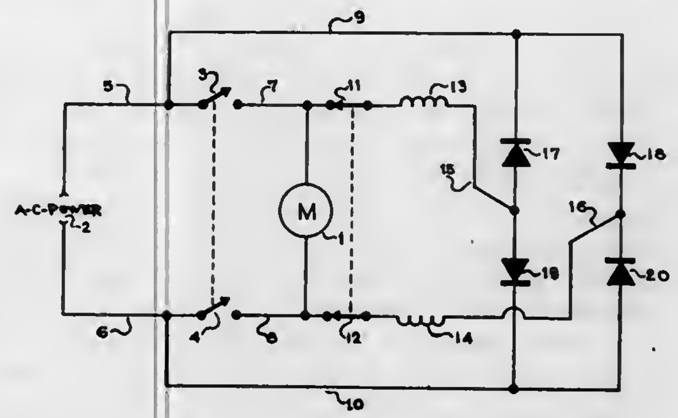


1. In an electrical propulsion system for a vehicle adapted to operational modes from stationary-poised mode through running modes, said vehicle being provided with at least one traction dynamoelectric machine for motive power and conductors providing a source of electrical power:
- a. an energy pack on said vehicle, said pack including an auxiliary dynamoelectric machine adapted selectively to transform electrical power into mechanical power and mechanical power into electrical power,
  said pack further including rotatable means coupled to said auxiliary machine for selectively absorbing power from or restoring power to said auxiliary machine; and
- b. control circuit means coupling said auxiliary machine to said conductors during said stationary-poised mode for maintaining an idling speed of said energy pack and an idling energy storage in said rotatable means.

3,851,233

ELECTRO-KINETIC, PARALLEL-SERIES, DYNAMIC BRAKE FOR ALTERNATING CURRENT MOTORS

Lawrence V. Sherman, 12925 N.E. 131 Pl., Kirkland, Wash. 98033
Filed June 22, 1972, Ser. No. 265,233
Int. Cl. H02p *3/24*
U.S. Cl. 318—212 **7 Claims**

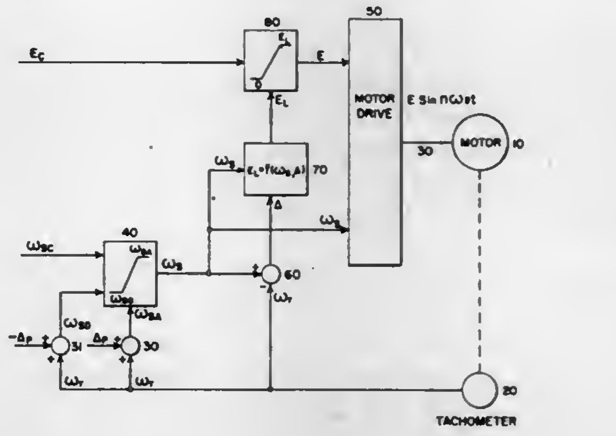


1. A dynamic brake to create, from an alternating current power source direct current power employed in stopping an alternating current induction motor, wherein the brake and the motor are always connected together in circuitry referred to as parallel-series circuitry as the brake is always inherently self protected from destruction by operation of the A.C. motor and the A.C. motor is always inherently protected from destruction by operation of the dynamic brake, the dynamic brake circuitry being in parallel pre-operational status during the running of the A.C. motor and being in a series operational status during the braking of the otherwise coasting A.C. motor, comprising
- a. leads adaptable for conducting alternating current power through inductive reactors to bridge arranged silicon-controlled-rectifiers;
- b. inductive reactors positioned in the alternating current leads serving a surge current protective function and a smoothing flow current modifying function;
- c. silicon-controlled-rectifiers arranged in a bridge circuit to create pulsing direct current power, when triggered, from the alternating current power coming from the inductive reactors;
- d. leads for conducting the pulsing direct current power through other inductive reactors to an alternating current induction motor supplying the stopping power to the otherwise coasting A.C. motor;
- e. other inductive reactors positioned in the pulsing direct current leads serving a surge current protective function and a smoothing flow current modifying function; and
- f. a triggering control circuit means with components and leads thereof for triggering the silicon-controlled-rectifiers.

3,851,234

CONTROL SYSTEM FOR OBTAINING AND USING THE OPTIMUM SPEED TORQUE CHARACTERISTIC FOR A SQUIRREL CAGE INDUCTION MOTOR WHICH GUARANTEES A NON-SATURATING MAGNETIZING CURRENT

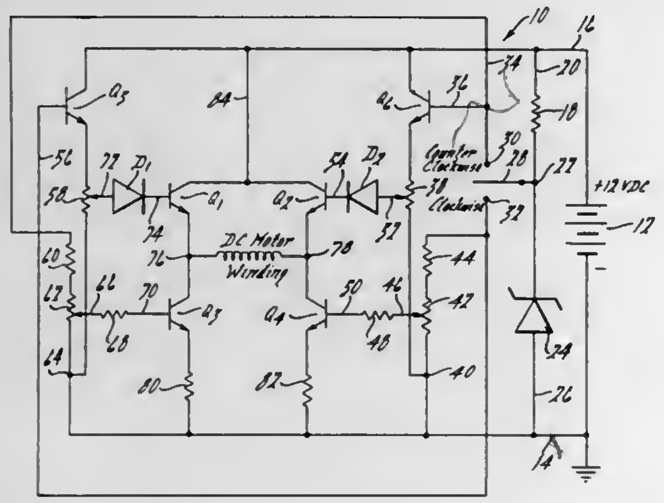
Robert E. Hoffman, Erie, Pa.; John A. Cline, Pittsfield, Mass.; Christopher S. Fuselier, Pittsfield, Mass., and John D. D'Atre, Pittsfield, Mass., assignors to General Electric Company
Filed May 9, 1973, Ser. No. 358,509
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 **4 Claims**



1. Limiting apparatus for use in systems for control of rotating electrical machines wherein said system includes motor drive circuitry, means for producing and conducting a command voltage signal E_C, a command synchronous frequency signal ω_{sC}, and a machine speed signal ω_r, said apparatus comprising:
- a. a source of a programmable machine slip frequency limit signal Δ_p;
- b. summing means responsive to the machine speed signal and to the slip frequency limit signal for producing the sum and difference of said signals ($\omega_r \pm \Delta_p$) to form respectively upper and lower synchronous frequency limit signals;

- c. electronic limiter circuitry responsive to said command synchronous frequency signal ω_{sC} and to said upper and lower synchronous frequency limit signals for producing a limited synchronous frequency signal ω_s;
- d. a second summing means responsive to said machine speed signal ω_r and to said limited synchronous frequency signal ω_s for producing a signal representative of actual machine slip frequency Δ;
- e. a voltage function generator responsive to said actual machine slip frequency Δ and to said limited synchronous frequency signal ω_s for producing a voltage limit signal E_L;
- f. additional electronic limiter circuitry responsive to said command voltage signal E_C and to said voltage limit signal E_L for producing a limited voltage signal E; and
- g. conducting means for supplying said limited synchronous frequency signal ω_s and said limited voltage signal E to said motor drive circuitry.

3,851,235
BRIDGE CIRCUIT FOR CONTROLLING A DIRECT CURRENT MOTOR
Clarence E. Harrison, Jr., Madison Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 26, 1973, Ser. No. 428,526
Int. Cl. H02p *5/16*
U.S. Cl. 318—257 **9 Claims**

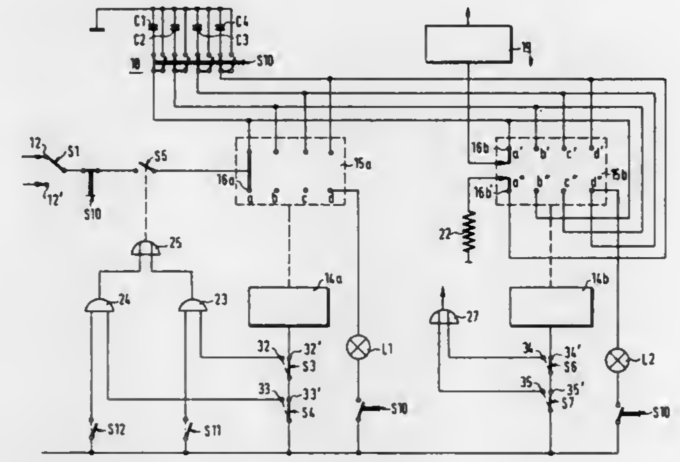


1. A bridge circuit for the control of a direct current motor, said bridge circuit having first, second, third and fourth terminals, said first and third terminals being voltage supply terminals for connection to a direct current source of electrical energy and said motor having a winding connecting across said second and fourth terminals, said bridge circuit comprising:

- a. a first transistor having a control electrode and an output circuit, said first transistor output circuit being connected between said first and second terminals;
- b. a second transistor having a control electrode and an output circuit, said second transistor output circuit being connected between said first and fourth terminals;
- c. a third transistor having a control electrode and an output circuit, said third transistor output circuit being coupled to said second and third terminals;
- d. a fourth transistor having a control electrode and an output circuit, said fourth transistor output circuit being coupled to said third and fourth terminals;
- e. first circuit means for controlling the magnitude of voltage to be applied to said first transistor control electrode and to be applied at said second terminal;
- f. second circuit means for controlling the magnitude of voltage to be applied to said second transistor control electrode and to be applied at said fourth terminal;
- g. third circuit means for limiting the current which can flow through said third transistor output circuit to a maximum value, said third circuit means being coupled to said third transistor control electrode;
- h. fourth circuit means for limiting the current which can flow through said fourth transistor output circuit to a maximum value, said fourth circuit means being coupled to said fourth transistor control electrode;
- i. first switching circuit means for controlling the simultaneous application of a control voltage to said first and fourth circuit means; and
- j. second switching circuit means for controlling the simultaneous application of a control voltage to said second and third circuit means;

whereby the direction of the current flowing through said motor winding may be controlled, the voltage applied across said motor winding may be controlled to control motor speed and the current flowing through said motor winding may be limited to a maximum value.

3,851,236
APPARATUS FOR AUTOMATICALLY CONTROLLING THE SPEED OF TRAVEL OF AN ORIGINAL AND OF COPYING MATERIAL IN A COPYING MACHINE
Werner Dennhardt, and Herbert Schroter, Hahn/Taunus, both of Germany, assignors to Kalle Aktiengesellschaft, Weisbaden-Biebrich, Germany
Filed Feb. 27, 1973, Ser. No. 336,361
Claims priority, application Germany, Mar. 1, 1972, 2209725
Int. Cl. H02p *5/16;* G03g *15/00*
U.S. Cl. 318—313 **12 Claims**

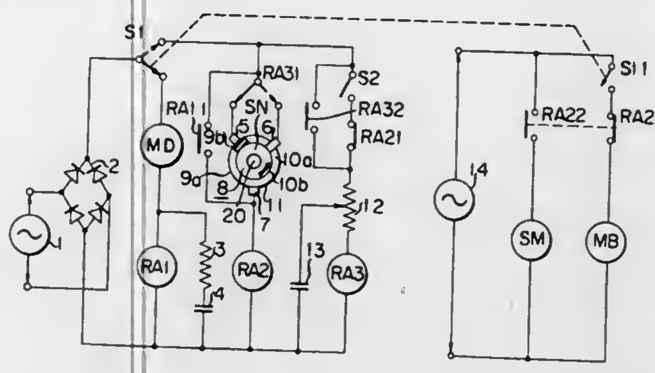


1. Apparatus for automatically controlling the speed of travel of an original and of copying material in dependence upon the transparency of the original and upon the photosensitivity of the copying material, for use in a copying machine that contains at least two kinds of copying materials selectible by the original and which includes at least one photosensitive measuring unit for measuring the transparency of the original and a driving motor the speed of which is controlled by the output signal from said photosensitive measuring unit, which apparatus comprises at least two amplifier means,

a preselector switch means associated with each kind of copying material whereby one of said amplifier means is preselected for the kind of copying material which is associated with said switch,

and a sensing means in the path of travel of the original associated with each kind of copying material which is effective, upon actuation by the original, to switch the preselector switch means associated with the selected kind of copying material, and the amplifier means preselected by the switch, into the control circuit.

3,851,237
FIXED POINT STOP MECHANISM FOR SEWING NEEDLE IN SEWING MACHINE
Masahiro Yokoyama, and Takanori Kobayashi, both of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 86,692, Nov. 4, 1970. This application Apr. 18, 1973, Ser. No. 352,300
Claims priority, application Japan, Nov. 10, 1969, 44-089900
Int. Cl. G05d *3/00*
U.S. Cl. 318—467 **5 Claims**

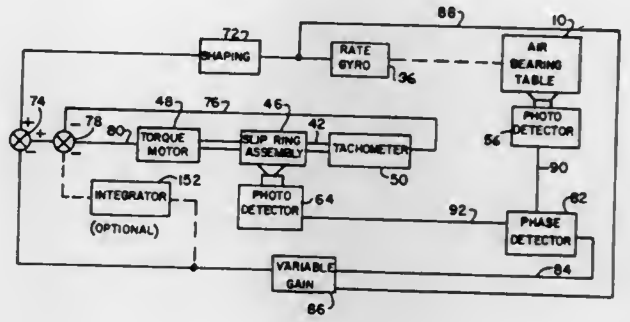


1. A fixed point stop mechanism for selectively stopping an output member in one of a plurality of predetermined stop positions comprising: a movable output member; drive means for driving said output member at a first speed; auxiliary drive means for driving said output member at a second speed which is substantially less than said first speed; selecting means for alternatively selecting one of said drive means and auxiliary drive means to drive said output member; position sensing means operative when said output member is driven at said second speed for sensing one of a plurality of predetermined stop positions wherein said output member is to be selectively stopped and developing a corresponding output signal and including means for selectively a predetermined one of said stop positions; and braking means responsive to the output signal for braking said output member and stopping same at the selected predetermined stop position, wherein said position sensing means comprises a switch having two switching states, a relay connected to said switch deenergized when said switch is in one switching state and energized when said switch is in another switching state, said relay operative when energized to render said position sensing means effective to sense the selected position of said output member and operative when deenergized to render said position sensing means ineffective to sense the selected position of said output member, and delay circuit means connected to said relay for delaying the deenergization of said relay for a predetermined relay time after said switch is in said one switching state to enable said output member to be driven at said second speed before said position sensing means is rendered effective.

3,851,238
PHASE-LOCKED SERVO SYSTEM
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by, and Clifford Burdin, Omaha, Nebr.
Filed Oct. 26, 1973, Ser. No. 409,991
Int. Cl. H02p *5/46*
U.S. Cl. 318—649 **6 Claims**

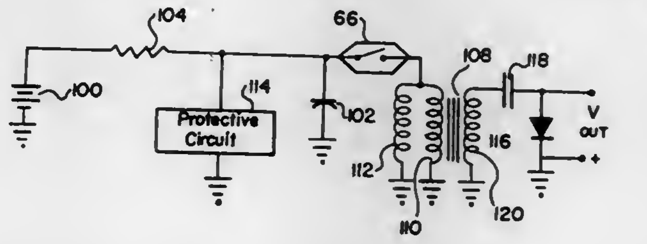
1. A system for synchronizing the rotation of a pair of rotating bodies comprising:

- a. a first rotating member,
- b. a second rotatable member,
- c. a rate gyroscope carried by said first rotating member generating a first electrical signal indicative of the rate of rotation of said first rotating member,
- d. a torque motor coupled to said second rotatable member for rotating said second rotatable member,
- e. means coupled to said second rotatable member for generating a second electrical signal indicative of the rate of rotation of said second rotatable member,
- f. a voltage producing means provided for receiving said first and second electrical signals and feeding a corrected voltage to said torque motor causing said torque motor to rotate said second rotabable member at substantially the same rate of rotation as said first rotating member,
- g. a first photo detection means for generating a pulse each time said first rotating member rotates past a reference point,



- h. a second photo detection means for generating a pulse each time said second rotatable member rotates past a reference point,
- i. a phase detector means coupled to said first and second photo detection means generating an analog signal corresponding to the phase difference between said pulses from said first and second photo detection means, and
- j. means for coupling said analog signal to said voltage producing means for varying said corrective signal so as to more accurately synchronize the rotation of said second rotatable member with said first rotating member.

3,851,239
HIGH VOLTAGE D.C. SUPPLY CIRCUIT
Masanari Suzuki, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Continuation-in-part of Ser. No. 821,701, May 5, 1969, which is a Continuation-in-part of Ser. No. 115,038, Feb. 12, 1971.
Filed July 19, 1972, Ser. No. 273,153
Int. Cl. H02m *1/18*
U.S. Cl. 321—11 **17 Claims**



1. An improvement for use in a high voltage supply of the type wherein a high output voltage is applied to a load connected to a secondary winding of a step-up transformer by repetitively actuating a switching element connected between a primary of the transformer and a lower voltage power source, said improvements comprising

a main primary winding having a first resistance to inductance ratio wound about a magnetic core, and

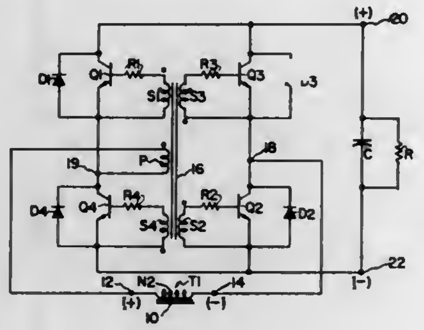
an auxiliary primary winding having a second resistance to inductance ratio different from said first resistance to inductance ratio also wound about said core,

said main and auxiliary windings being connected together in parallel to form said primary of the transformer whereby transient counter emf currents in said main and auxiliary windings tend to cancel each other within the transformer thus preventing transient spurious switch operations otherwise caused by counter emf voltages.

3,851,240
RECTIFIER CIRCUITS USING AT LEAST ONE MULTI-INDING TRANSFORMER IN COMBINATION WITH TRANSISTORS CONNECTED IN AN INVERTER MODE AND ARRANGED IN A BRIDGE CONFIGURATION

John N. Park, Rexford; Robert L. Steigerwald, Scotia, and Loren H. Walker, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 15, 1973, Ser. No. 416,116
Int. Cl. H02m *7/20*
U.S. Cl. 321—45 **25 Claims**



1. A full-wave bridge rectifier circuit, suitable for being electrically connected between an a.c. source across which an alternating voltage exists and load across which a unipolar voltage is establishable by the rectifier circuit, comprising: four transistors, each including an emitter, a base, a collector and a collector-base junction, said four transistors being electrically connected in a bridge circuit configuration such that one pair of transistors have their collectors electrically connected and define a first terminal of the rectifier circuit and the other pair of transistors have their emitters electrically connected and define a second terminal of the rectifier circuit, the emitters of the one pair of transistors being electrically connected to the collectors, respectively, of the other pair of transistors, the electrically connected emitter and collector of a first transistor of the one pair of transistors and of a first transistor of the other pair of transistors, respectively, defining a third terminal of the rectifier circuit; a primary winding including one end, defining a fourth terminal of the rectifier circuit, and another end electrically connected to the emitter and collector, respectively, of a second transistor of the one pair of transistors and a second transistor of the other pair of transistors; and, four secondary windings magnetically coupled with said primary winding, each transistor having a different one of the secondary windings electrically connected between the emitter and base thereof, said secondary windings having winding polarities such that the bases of the one pair of transistors having opposite polarities established thereat and the bases of the other pair of transistors have opposite polarities established thereat, and such that the base of said first transistor of said one pair of transistors has an opposite winding polarity to the base of the first transistor of said other pair of transistors; the load being electrically connectable between said first and second terminals of the rectifier circuit and the a.c. source being electrically connectable between said third and fourth terminals of the rectifier circuit so that voltage blocking is performable by the collector-base junctions of the transistors.

3,851,241
TEMPERATURE DEPENDENT VOLTAGE REFERENCE CIRCUIT

Carl Franklin Wheatley, Jr., Somerset, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 27, 1973, Ser. No. 391,664
Int. Cl. G01k *7/00*
U.S. Cl. 323—8 **13 Claims**

1. In combination:

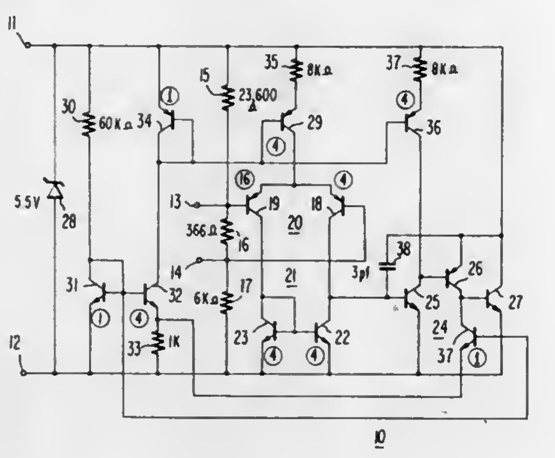
a first and a second input terminal between which a temperature-dependent reference voltage is produced;

a first and a second transistor of the same conductivity type, each operated at substantially the same temperature upon which temperature said reference voltage depends, each of said first and said second transistors having a base and an emitter electrode and a base-emitter junction therebetween and each having a collector electrode;

a potential divider having an input circuit connected between said first and said second input terminals and having an output circuit connected between the base electrodes of said first and said second transistors;

means for supplying an operating current flow between said first and said second input terminals;

means for conducting a portion of said operating current from said first input terminal to the joined emitter electrodes of said first and said second transistors;



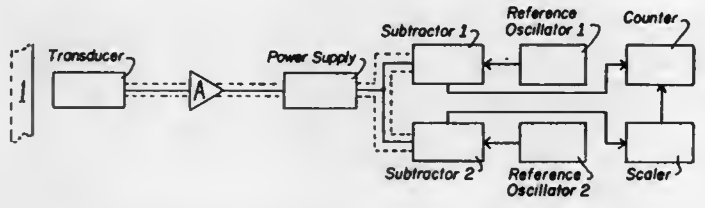
a first current amplifier having an input terminal connected to said first transistor collector electrode, having a common terminal connected to said second input terminal, having an output terminal connected to said second transistor collector electrode, and having an inverting or negative current gain between its said input and output terminals; and

a second current amplifier having an input terminal connected to said first current amplifier output terminal and having a common and an output terminal connected to separate ones of said first and said second input terminals; a degenerative feedback loop being formed by the aforesaid connections, which operates to maintain the densities of current flow through the base-emitter junctions of said first and said second transistors in a predetermined ratio other than unity.

3,851,242
FREQUENCY-MODULATED EDDY-CURRENT PROXIMITY GAGE

James F. Ellis, R.F.D. 2, Box 248, Powell, Tenn. 37849

Filed June 27, 1972, Ser. No. 266,670
Int. Cl. G01r *33/00*
U.S. Cl. 324—40 **4 Claims**



1. A system for making dimensional measurements by means of induced eddy-currents, comprising in combination

a transducer comprising a sensing coil, at least one capacitor connected with said sensing coil forming a resonant circuit, at least one active component connected with said resonant circuit forming a variable oscillator whose frequency is determined by said resonant circuit and varied in response to the proximity of said sensing coil to an electrically conducting object; said transducer producing a frequency-varying output;

a first reference oscillator producing a first reference frequency approximately equal to the frequency of said frequency-varying output when said sensing coil is at its closest proximity to an electrically conducting object;

a first frequency subtracting means receiving said frequency-varying output and said first reference frequency, and producing therefrom a first difference frequency;

a second reference oscillator producing a second reference frequency approximately equal to the frequency of said frequency-varying output when said sensing coil is remote from any electrically conducting object;

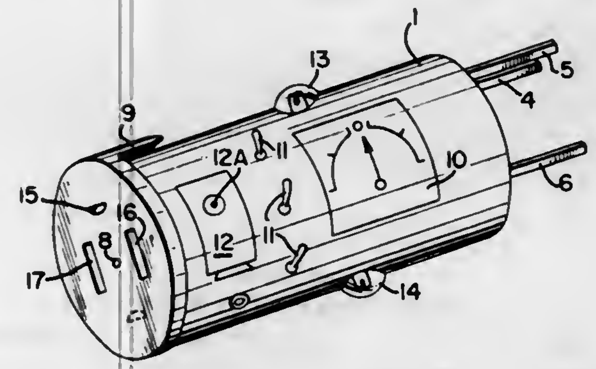
a second frequency subtracting means receiving said frequency-varying output and said second reference frequency and producing therefrom a second difference frequency;

a scaler receiving said second difference frequency and producing therefrom an output frequency proportional thereto; and

a digital counting means receiving the output frequency of said scaler and gating on in proportion to the period thereof; said digital counting means also receiving said first difference frequency and counting directly in proportion thereto.

3,851,243
POLARITY TESTING ADAPTOR MEANS

Philip M. Banner, 28 Oxford Rd., Massapequa, N.Y. 11758
Continuation-in-part of Ser. No. 16,477, March 4, 1970, Pat. No. 3,626,354. This application Dec. 6, 1971, Ser. No. 204,826
Int. Cl. H01r *27/00, 13/44;* **G01r** *31/02*
U.S. Cl. 324—51 **12 Claims**



1. A polarity testing adapter means for single phase three wire electrical systems having a hot wire, a ground carrying wire and an equipment grounding wire, comprising in combination,

a three wire plug having first and second current carrying prongs, and a third prong connected to the third equipment grounding wire, fuse protected,

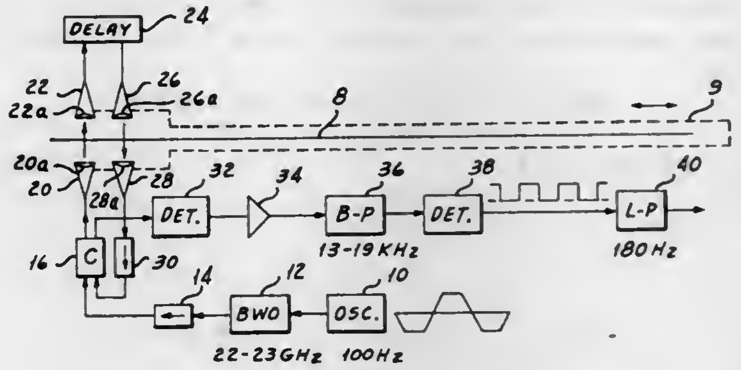
a socket having first and second current carrying recessed contacts connected to said first and second prongs, and a third recessed contact connected to said third prong and the equipment grounding wire, a fourth recessed contact connected to said third recessed contact for connecting the grounding equipment wire so that a standard three wire plug may be connected to said socket in first and second positions for reversing polarity,

a rotatable disc rotatably mounted on the socket having slotted holes to receive a standard three wire plug in one position when a plug engages the socket said rotatable disc being disposed to counterclockwise or clockwise rotation and settable to a position **180** degrees away for a second position entry for said plug, said rotating disc serviing as a mask to block one entry position, an arrow pointer attached to said rotatable disc for indicating one or more reference positions of the rotating disc, and circuit wires connected to said plug and said socket for testing or correcting said circuit.

3,851,244
MICROWAVE MOISTURE MEASURING APPARATUS

George R. Mounce, Willowdale, Ontario, Canada, assignor to Electronic Associates of Canada, Ltd., Downsview, Ontario, Canada

Filed Dec. 18, 1973, Ser. No. 425,937
Int. Cl. G01r *27/04*
U.S. Cl. 324—58.5 A **28 Claims**

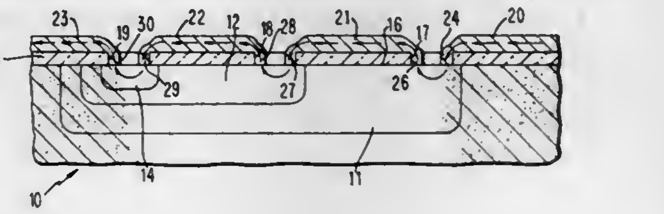


1. Microwave moisture measuring apparatus including in combination a variable frequency source of microwave energy, control means for cyclically varying the frequency of the source, means including a lens-corrected horn for radiating energy from the source through a moisture containing material, said material attenuating the energy passing therethrough as a function of its moisture content, a first detector, and means coupling both the source and the attenuated energy to the first detector.

3,851,245
METHOD FOR DETERMINING WHETHER HOLES IN INSULATED LAYER OF SEMICONDUCTOR SUBSTRATE ARE FULLY OPEN

Theodore H. Baker, Wappingers Falls; Richard C. Stevens, Poughkeepsie, and Albert J. Tzou, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1973, Ser. No. 427,972
Int. Cl. G01r *27/02*
U.S. Cl. 324—65 R **8 Claims**



1. A method of determining whether each of the holes in an insulated layer on a surface of a semiconductor wafer is fully open to communicate with the surface of the wafer including: forming conductors on the insulated layer from one hole to another with one end of each of the conductors being disposed to extend to the region of the surface of the wafer with which the one hole is to communicate to make ohmic contact therewith and the other end of the conductor being disposed to extend to the region of the surface of the wafer with which the other hole is to communicate to make ohmic contact therewith so that each of the holes has the ends of two conductors extending therethrough to a region of the wafer and spaced from each other;

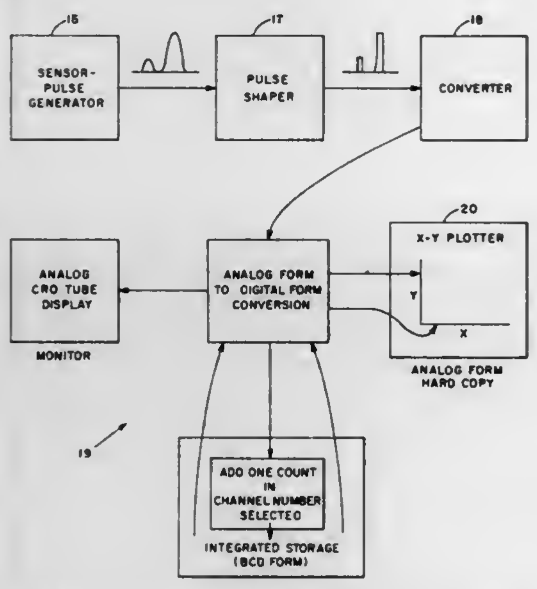
applying a voltage across a plurality of series connected conductors;

and ascertaining the total resistance of the current path by the current that flows through all the series connected conductors to determine that all of the holes in the insulated layer having the ends of the conductors extending thereinto communicate with the surface of the wafer at the various regions.

3,851,246
METHOD OF PREDICTING THE POST TRANSFUSION VIABILITY OF PRESERVED ERYTHROCYTES AND OTHER SIMILAR CELLS

William A. Curby, West Newton, and Fabian J. Lionetti, Milton, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 26, 1973, Ser. No. 419,179
Int. Cl. G01n *27/00, 21/22*
U.S. Cl. 324—71 CP **5 Claims**



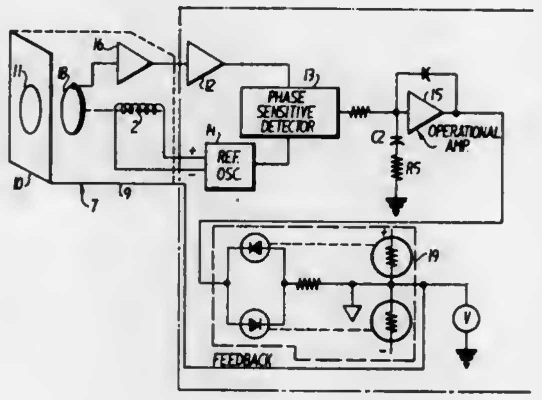
1. A method of determining the viability of preserved and then restored whole blood and marrow cells from a minute sample of a volume of said cells comprising:
- stressing said cells to determine whether they can maintain size and shape integrity in the stressed state by suspending the cells in a salt solution that is other than isotonic;
- obtaining the distribution of said cells in an electronic particle size analyzer;
- comparing sample cell volume distribution and cell volume distribution of unpreserved freshly obtained normal cells; and
- determining viability by ascertaining whether the sample cells have substantially maintained size and shape.

3,851,247
ELECTROMETER ARRANGEMENT WITH AMPLITUDE STABILIZED OSCILLATOR DRIVE MEANS FOR DETECTOR ELEMENT

Robert E. Vosteen, 315 W. Center St., and Alan L. Werner, Jr., 304 W. Center St., both of Medina, N.Y. 14103

Division of Ser. No. 269,454, July 6, 1972, Pat. No. 3,784,930. This application Dec. 13, 1973, Ser. No. 424,222
Int. Cl. G01r *29/12, 5/28*
U.S. Cl. 324—72 **3 Claims**

1. In an electrometer apparatus to measure unknowns such as the electrostatic potential of a surface in noncontacting manner or an electrostatic field, having a capacitive detector positionable in electrostatic coupling relationship with the surface or in the electrostatic field to produce a detector signal representative of the magnitude and polarity of the unknown being measured for long-term static measurement, the improvement comprising:
- an electromechanical resonant transducer having first and second terminals, operative to vibrate the capacitive detector at a predetermined frequency to vary the coupling relationship and produce modulated detector signals having a carrier frequency equal to the predetermined frequency,
- an amplitude stabilized reference oscillator circuit to produce reference signals at the predetermined frequency, a detector connected to receive the reference signals and modulated detector signals at a fixed phase relationship to demodulate the latter and produce an output signal indicative of the magnitude and polarity of the unknown being measured,

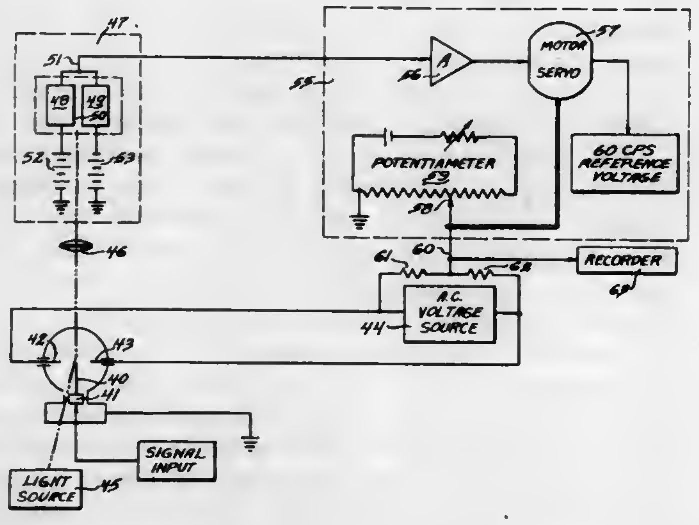


- said amplitude stabilized reference oscillator circuit including, a differentially connected operational amplifier having plus and minus inputs, the first terminal of the electromechanical resonant transducer being connected to the plus terminal of the operational amplifier, the second terminal being connected to ground,
- a light emitting source connected between the output of the operational amplifier and ground, and responsive to the output of the operational amplifier to supply a corresponding amount of energy to a light responsive element connected to the output of the operational amplifier, and a negative feedback connection connected between the light responsive element and the minus terminal of the operational amplifier.

3,851,248
VIBRATING FIBER ELECTROMETER

John J. Spokas, Lisle, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Aug. 17, 1973, Ser. No. 389,288
Int. Cl. G01r *5/28*
U.S. Cl. 324—109 **3 Claims**

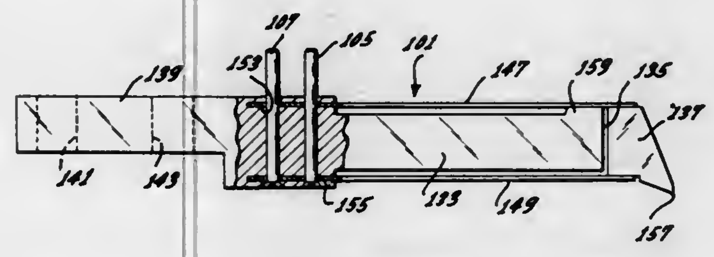


1. A method of operating a vibrating fiber electrometer having a pair of electrodes and a conductive flexible fiber having a charge applied thereto, said fiber being positioned between said electrodes being free to vibrate therebetween and having a particular natural mechanical resonance frequency, including the steps of:
- a. maintaining the pressure of the atmosphere surrounding said fiber at a value wherein the ratio of the amplitude of vibration of said fiber at the natural mechanical resonance frequency to the amplitude of vibration of said fiber at twice the natural mechanical resonance frequency is equal to or greater than 5, and
- b. applying a first alternating voltage to said electrodes with the frequency of said first alternating voltage being equal to said natural mechanical resonance frequency of said fiber.

3,851,249
MICROCIRCUIT TEST DEVICE WITH MULTI-AXES PROBE CONTROL AND PROBE STOP MEANS

Jacques Leon Roch, San Jose, Calif., assignor to Electroglass, Inc., Menlo Park, Calif.

Filed June 4, 1973, Ser. No. 366,421
Int. Cl. G01r *1/06, 31/02*
U.S. Cl. 324—158 P **13 Claims**



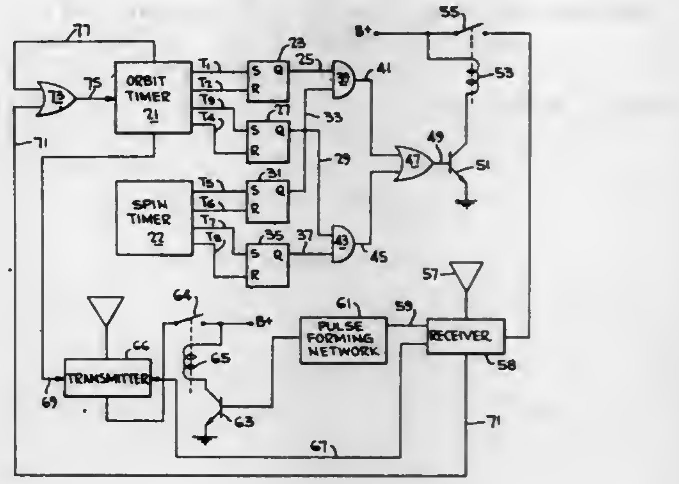
1. Apparatus including electrical control circuitry for testing microcircuitry comprising support means and
- a test probe supported by the support means and comprising a body of dielectric material, the body being fixed to the support means,
- a pair of flexible electrically conducting parallel beams fixed to said support means for flexible movement relative to said body and disposed on opposite sides of said body for limited movement relative to said body, and
- an electrically conductive blade member electrically connected to and positioned between said beams and having means for contacting the microcircuitry to be tested, and a pair of electrically conductive means supported by the support means for individually connecting said beams to the electrical control circuitry.

3,851,250
REMOTE PLATFORM POWER CONSERVING SYSTEM

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Charles W. Kurvin, Beiserstr. 10, Ottobrunn, Germany

Filed Aug. 31, 1973, Ser. No. 393,527
Int. Cl. H04b *7/14*
U.S. Cl. 325—4 **9 Claims**

1. A lightweight remote data collection device confined to a region on a spinning planetary body and adapted to be interrogated by a substantially polar orbiting satellite comprising:
- a. a receiver for receiving commands from the satellite;
- b. a transmitter for transmitting the data to the satellite;
- c. orbit timer means for generating first time windows substantially synchronized in time with the orbit of the satellite;
- d. spin timer means for generating second time windows substantially synchronized in time with the spin of the planetary body;

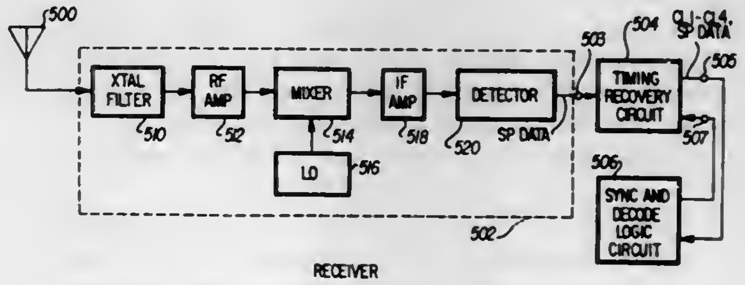


- e. means for generating a first signal at a time which is within both first and second time windows; and
- f. means for turning on the receiver in response to the first signal.

3,851,251
RECEIVER METHOD AND APPARATUS

William K. Wigner, Kissimmee, and Albert S. Sabin, Jr., Orlando, both of Fla., assignors to Martin Marietta Corporation, New York, N.Y.

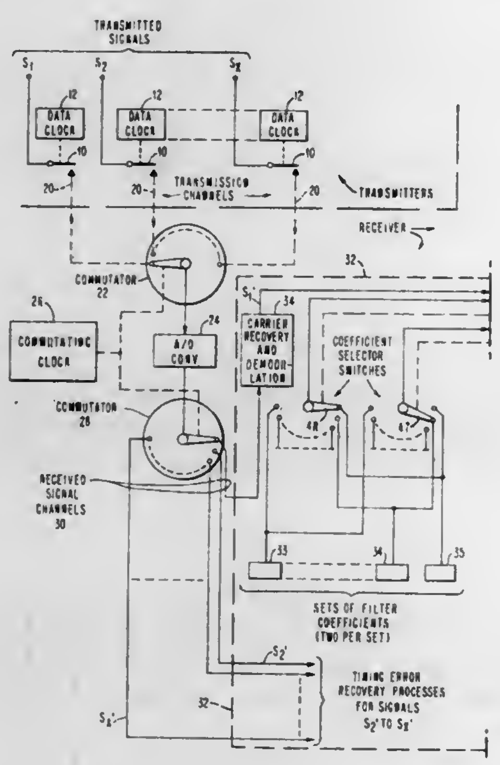
Filed Oct. 25, 1971, Ser. No. 191,726
Int. Cl. H04b *5/04, 1/10*
U.S. Cl. 325—55 **40 Claims**



1. A radio receiver for use in a discrete address communication system comprising:
- means for receiving a modulated carrier signal, the modulation of said carrier representing a digital signal having a predetermined bit rate and including an address portion and a synchronizing portion;
- discriminator means for detecting the modulation of said carrier signal;
- means for generating a digital clock signal synchronized in phase and bit rate with said digital signal responsively to the detected modulation;
- means for generating an enabling signal responsively to the synchronizing portion of said digital signal;
- means for generating a digital address signal unique to the receiver;
- means for detecting differences in binary signal levels between corresponding bits of said generated address signal and the address portion of said digital signal responsively to said clock signal and for generating an error signal in response to each detected difference;
- means for counting the number of error signals generated responsively to said enabling signal; and,
- indicator means responsive to said counting means for providing an indication related to the number of error signals counted.

3,851,252
TIMING RECOVERY IN A DIGITALLY IMPLEMENTED DATA RECEIVER

Maurice Karnaugh, Yorktown Heights, N.Y., and Gerald Kevin McAuliffe, Dublin, Ireland, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 29, 1972, Ser. No. 319,129
Int. Cl. H04b *1/16*
U.S. Cl. 325—321 11 Claims

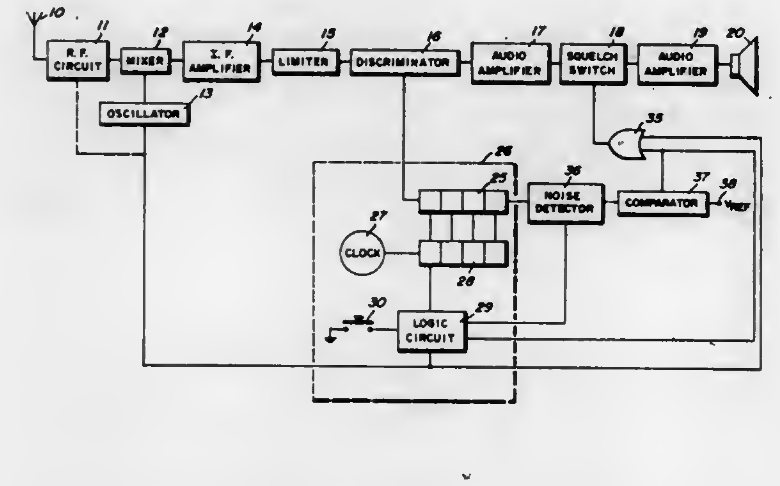

TRANSMITTED SIGNALS
S1
S2
Sx
DATA CLOCK
TRANSMISSION CHANNELS
TRANSMITTERS
RECEIVER
COMMUTATOR 22
COMMUTATING CLOCK
A/D CONV
CARRIER RECOVERY AND DEMODULATION
COEFFICIENT SELECTOR SWITCHES
COMMUTATOR 28
RECEIVED SIGNAL CHANNELS 30
SETS OF FILTER COEFFICIENTS (TWO PER SET)
TIMING ERROR RECOVERY PROCESSES FOR SIGNALS S1' TO Sx'

1. An improved method of operating a pulse amplitude modulated data receiver which is implemented at least in part by a digital data processor whereby said receiver is able to receive pulse amplitude modulated data signals from a plurality of channels through a common path including an autonomously timed sampling commutator and an analog-to-digital converter, said method comprising the steps of:

a. operating said commutator at a frequency such that it samples the signals in each channel at a rate which is multiple of the nominal rate at which amplitude modulated data pulses are sent through that channel; b. establishing for each sampled pulse a repetitive sequence of regularly timed counting intervals, each having a duration T, the number of such intervals in each repetition of said sequence corresponding to the number of times that each pulse is sampled by said commutator;
c. from the set of digital codes produced by said converter in response to the sampling of each pulse by said commutator, determining the timing error, if any, between the instant when said pulse reaches its peak and the time at which a predetermined count in said sequence is reached;
d. in response to the determined value of said timing error and the digital codes representing the sampled pulse values, operating said processor in a manner such as to provide at least one digital filter for sequentially generating digital codes to represent the magnitude-versus-time function of each sampled pulse, said filter being so constituted that it causes the production of the digital code representing the peak value of each pulse to occur
a selected number of counting intervals in said sequence subsequent to said predetermined count therein;
e. establishing a second repetitive sequence of regularly timed counting intervals corresponding in general to the first-mentioned sequence of counting intervals;
f. making available at the output of said receiver the digital code produced by said filter each time a particular count in said second sequence is attained; and
g. effecting a coincidence between the time at which said particular count is attained and the time at which said filter produces a peak-value-representing code by optionally adjusting the number of intervals in said second sequence at which said particular count will occur and/or adjusting the whole or fractional number of intervals in said first sequence which will elapse between the actual occurrence of said pulse peak and the subsequent production of a peak-value-representing code by said filter.

3,851,253
AUTOMATICALLY ADJUSTABLE FM RECEIVER SQUELCH

Bruce C. Eastmond, Darien, Ill., assignor to Motorola, Inc., Chicago, Ill.
Filed May 25, 1973, Ser. No. 363,906
Int. Cl. H09b *1/10*
U.S. Cl. 325—348 16 Claims



1. An automatically adjustable squelch circuit responsive to detected noise and modulation signals from a receiver discriminator to actuate a switch, said squelch including in combination;

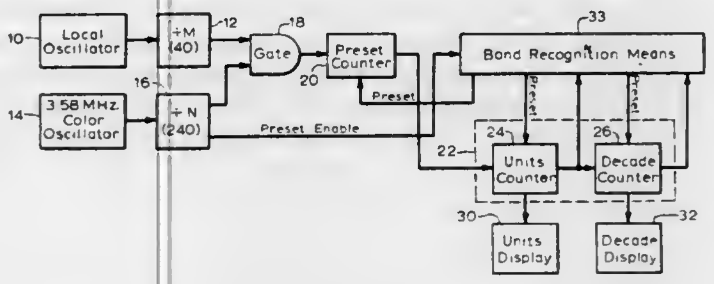
control means responsive to receipt of a command signal to initialize sequential development of control signals,
variable attenuation means coupled to said discriminator and to said control means, said attenuator means being responsive to each of said control signals in said sequence to attenuate signals coupled therethrough from said discriminator by a predetermined amount,
detector means coupled to said attenuator means for receiving said attenuated signals, said detector means being responsive to said signals exceeding a predetermined level to develop a detection signal,
means coupling said detector means to said switch means, said switch being operative in response to said detection signal to actuate,
said control means further being responsive to receipt of said detection signal to terminate said sequence and maintain said last developed control signal in said sequence.

3,851,254
DIGITAL SYSTEM AND METHOD FOR DETERMINING AND DISPLAYING A TELEVISION CHANNEL NUMBER

Richard G. Merrell, Darien, and Akio Tanaka, Evanston, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.
Filed Jan. 26, 1973, Ser. No. 326,724
Int. Cl. H04b *1/06*
U.S. Cl. 325—455 32 Claims

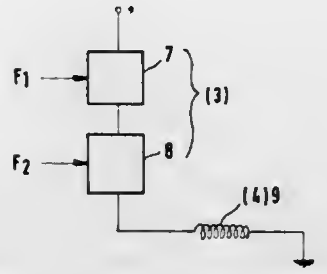
1. For use in an all-electronic-continuous tuning television receiver having a tuner and a local oscillator and adapted to receive television signals which may lie in any of four separated frequency bands, each band including television channels separated in frequency from their adjacent channels by 6 MHz, a channel number display system producing the channel number of any signal in any of said bands based upon the frequency of said local oscillator comprising:

clock means for establishing a periodic clock interval which provides a time base reference for the channel display system;
dividing means coupled to the local oscillator for converting the local oscillator signal to a scaled local oscillator signal whose frequency is lower than the frequency of the local oscillator signal by a factor M;
first counting means receiving said scaled local oscillator signal, conditioned to generate one additional output pulse for each 6 MHz increment in the frequency of the received television signal and responsive to said clock means for counting the number of cycles of said scaled local oscillator signal which occur during each clock interval and for generating output pulses related in number to the channel number of the received television signal; and
display means receiving said output pulses and responsive to said clock means for converting the number of output pulses received per clock interval to a displayed channel number which corresponds to the channel number of the received television signal.



3,851,255
PULSE GENERATING CIRCUIT

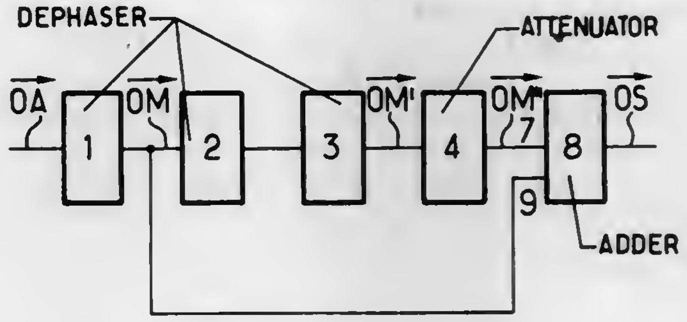
Alfred Kreidler, Zurich, Switzerland, assignor to Metall-Invent S.A., Baarerstrasse, Switzerland
Filed May 22, 1973, Ser. No. 362,704
Int. Cl. H03k *21/00*
U.S. Cl. 328—39 6 Claims



1. A pulse generating circuit comprising first and second individual quartz crystal oscillators operative to produce first and second separate trains of output pulses having first and second different repetition rates respectively, said first and second oscillators having substantially the same temperature response characteristics, means in at least one of said oscillators for adjusting the repetition rate of said oscillator, a gate circuit comprising first and second switches connected in series with one another, means coupling the output of said first oscillator to said first switch to cause said first train of pulses to open said first switch repetitively at said first repetition rate, means coupling the output of said second oscillator to said second switch to cause said second train of pulses to open said second switch repetitively at said second repetition rate, a power source, and an electromechanical converter comprising coil means connected in series with said power source and with said series-connected first and second switches, whereby said coil means is repetitively energized from said power source during successive time intervals when said first and second switches are both opened by pulses from said first and second trains of pulses respectively.

3,851,256
DEPHASING CIRCUIT

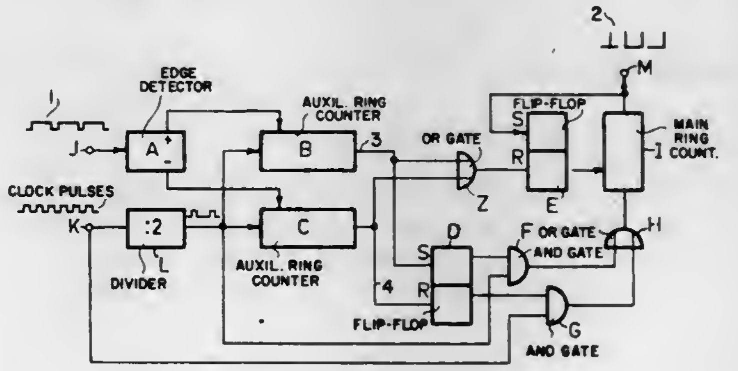
Georges Levasseur, Goussainville, and Michel Garconnat, Ris Organis, both of France, assignors to Compagnie Industrial Des Telecommunications CIT-ALCATEL, Paris, France
Filed Dec. 20, 1973, Ser. No. 426,542
Claims priority, application France, Dec. 20, 1972, 72.45391
Int. Cl. H03b *3/04*
U.S. Cl. 328—55 6 Claims



1. A device for dephasing an input signal by 90° comprising a chain of $2n + 1$ elementary dephaser means (n being a positive integer), each elementary dephaser means providing at its output a signal whose amplitude is equal to the amplitude of a signal applied to its input and whose dephasing in relation to said signal applied to its input depends on the frequency of that signal, means for supplying to the input of the first elementary dephaser means of said chain an input signal whose frequency F varies in a frequency band having a central frequency F_o, an attenuator connected to the output of said chain, and a summing circuit having a first input connected to the output of the first dephasing means of said chain and a second input connected to the output of said attenuator.

3,851,257
CIRCUIT FOR DETERMINING INTERROGATION INSTANTS FOR A BIVALENT SIGNAL

Lieuwe Boersma, Beekbergen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 15, 1973, Ser. No. 388,396
Claims priority, application Netherlands, Sept. 19, 1972, 7212653
Int. Cl. H03k *1/00*
U.S. Cl. 328—63 5 Claims



1. A circuit for determining interrogation instants for a bivalent signal, comprising means for producing a first trigger pulse in response to a negative going portion and, subsequently, a second trigger pulse in response to a positive going portion of the signal, two delay units operable for delaying

each trigger pulse for a predetermined time interval, a source of clock pulses, a dividing unit for reducing the frequency of said clock pulses by a predetermined number, main integrating unit triggered by one delayed trigger pulse and operable for producing an interrogation output pulse upon attaining a predetermined integration level, and switching means controlled by the delayed trigger pulses for supplying said integrating unit with pulses from said dividing unit in response to said one delayed trigger pulse and, subsequently, with pulses from said source in response to the other delayed trigger pulse.

3,851,258

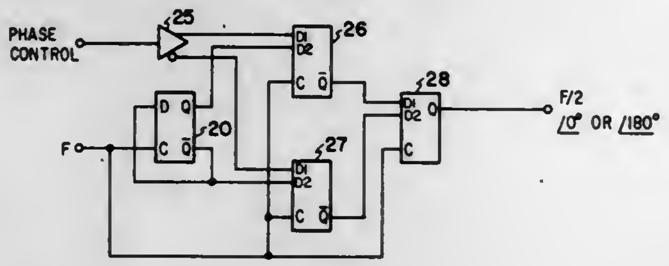
GATELESS LOGIC FOR PRODUCING SELECTABLE PHASE CLOCK PULSES

David Daniel Freedman, Cinnaminson, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 13, 1973, Ser. No. 424,419

Int. Cl. H03k *1/00, 3/04*

U.S. Cl. 328—63 **3 Claims**



1. The combination comprising:

input means for pulses to be divided;

first flip-flop means coupled to said input means for producing true and complement signals that change state in response to each input pulse;

control means for producing true and complement control signals in response to a signal indicating selected phase;

second and third flip-flop means coupled to be responsive to said input pulses, to the output signals of said first flip-flop means, and to said control signals for producing an output signal in response to a pulse depending on the states of the control signals and said first flip-flop means; and

fourth flip-flop means coupled to the input pulse means for producing an output signal in response to the states of said second and third flip-flop means.

3,851,259

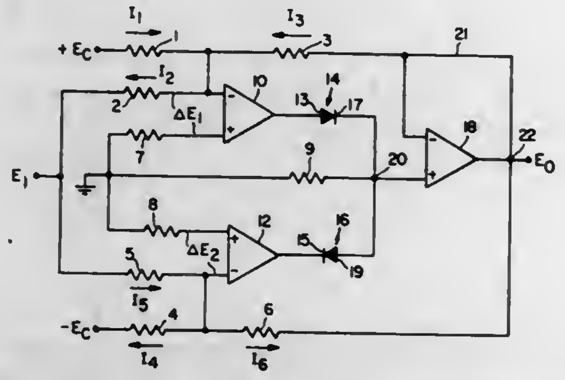
DEADZONE CIRCUIT

Donald John Porawski, Bayonne, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Mar. 30, 1973, Ser. No. 347,244

Int. Cl. G06g *7/12*

U.S. Cl. 328—143 **7 Claims**



1. A deadzone circuit comprising:

means for providing an input signal;

means for providing a biasing signal;

amplifier means connected to the input signal means and to the biasing signal means and responsive to the signal therefrom for providing a saturated output when the input signal is within a predetermined deadzone, and for providing an unsaturated output when the input signal is outside the deadzone;

output means connected to the amplifier means and responsive to the saturated output therefrom for providing a null output, and responsive to the unsaturated output for providing an output which follows said unsaturated output; and

the amplifier means including a first amplifier connected at its input to the biasing means and biased by the signal therefrom to provide a saturated output in one sense and a second amplifier connected at its input to the biasing means and biased by the signal therefrom to provide a saturated output in an opposite sense when the input signal is within the predetermined deadzone.

3,851,260

SIGNAL SAMPLING CIRCUITS

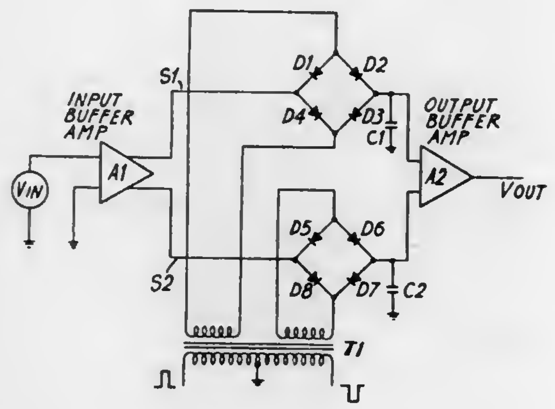
Michael Peter Colin, Newbury, England, assignor to Micro Consultants Limited, Newbury, England

Filed Aug. 7, 1973, Ser. No. 386,342

Claims priority, application Great Britain, Aug. 10, 1972, 37391/72

Int. Cl. H03k *5/20, 17/16, 4/02*

U.S. Cl. 328—151 **10 Claims**



1. A signal sampling circuit comprising

a. a first line for receiving an analogue signal,

b. a second line for receiving an inverted replica of the analogue signal,

c. switch means in each line for simultaneous sampling of the analogue signal and the inverted replica signal,

d. storage means in said first and second lines, and

e. means for triggering said switch means to permit passage of the analogue and the inverted replica signals during the sampling period to charge said storage means, whereby on receipt of stored signals by a differential buffer amplifier substantially interference-free signals are produced.

3,851,261

MULTIPLE PULSE REPETITION FREQUENCY DECODER

Timothy F. Geiger, Kensington, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 21, 1973, Ser. No. 372,139

Int. Cl. H03k *1/00*

U.S. Cl. 328—165 **2 Claims**

1. A system for decoding known components of an input signal having multiple pulse repetition frequencies, the system comprising:

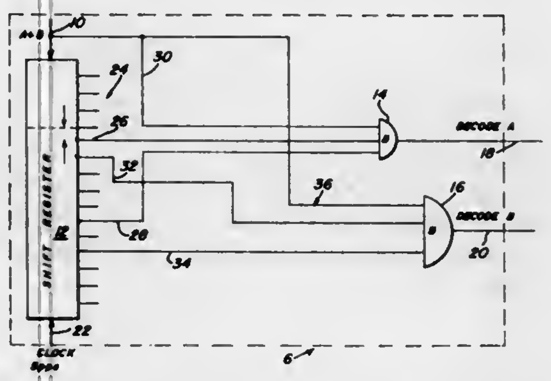
shift register means having its input connected to the signal for shifting the input signal therethrough, the pulses of respective components being stored in different stages of the shift register means at the end of a plurality of cycles of a clock connected to the shift register means;

coincidence means respectively connected to a plurality of preselected stages of the shift register means for becoming enabled at the end of a plurality of cycles, said enablement causing the generation of signals indicative of respective components;

wherein the shift register means comprises a first shift register connected to the input signal and having a number of stages equal to the quantity

period of highest frequency signal/period of clock − 1;

a second shift register having its input connected to the last stage of the first shift register, the stage capacity of the second shift register equal to the number of frequency components, the second shift register further being clocked with additional pulses for circulation;



a third shift register having the same stage capacity as the first shift register and being clocked at the same rate as the first shift register;

a jumper lead for connecting the last stage of the first shift register to the input of the third shift register;

a fourth shift register having its input connected to the last stage of the third shift register and a stage capacity equal to twice the number of frequency components, the fourth shift register being circulated at a rate equal to twice the circulation rate of the second shift register; and

further wherein said coincidence means comprises a plurality of coincidence gates equal in number to the components; and

means for connecting preselected stages of the second and fourth shift registers to the gates for enabling the gates in response to the presence of the frequency components in the input signal.

3,851,262

IMPROVED CONTROL CIRCUITRY HAVING REDUCED JITTER, ESPECIALLY FOR OSCILLOSCOPES

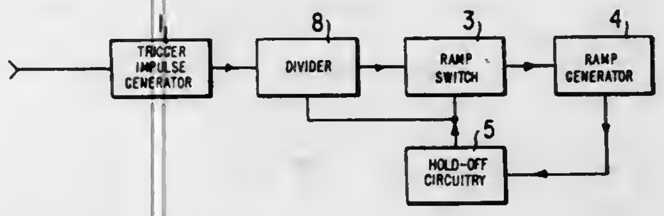
Hans-Gunter Hohmann, Holzgerlingen, and Frank Rochlitzer, Sindelfingen, both of Germany, assignors to Hewlett-Packard GmbH, Boblingen, Germany

Filed May 3, 1973, Ser. No. 356,872

Claims priority, application Germany, May 16, 1972, 2223672

Int. Cl. H03k *4/10, 4/86*

U.S. Cl. 328—185 **4 Claims**



1. A trigger circuit for repeatedly initiating a signal function in response to periodic input signals attaining a predetermined level, comprising:

trigger means connected to receive input signals and to produce trigger signals in response to the input signals attaining a predetermined level;

generator means for producing a selected signal function from a predetermined start condition in response to an initiating signal applied thereto;

initiating means including a divider circuit connected between the trigger means and the function generator for applying initiating signals thereto;

inhibiting means connected to the generator means and to the initiating means for supplying thereto inhibiting signals of sufficient duration for preventing delivery of an initiating signal to the generator means until the signal function supplied thereby is in said predetermined start condition;

said divider circuit having a predetermined division ratio and having an input connected to receive trigger signals and an input connected to the inhibiting means, for operating the iniating means to supply an initiating signal to the generator means only upon receipt of a selected number of subsequent trigger signals from said trigger means, said number corresponding to the division ratio of the divider circuit, and said trigger signals being received by the divider circuit in the absence of an inhibiting signal at the divider input from the inhibiting means, said initiating means not delivering an initiating signal during the presence of an inhibiting signal from the inhibiting means at the respective divider input.

3,851,263

DEMODULATOR FOR FREQUENCY-MODULATED SIGNAL

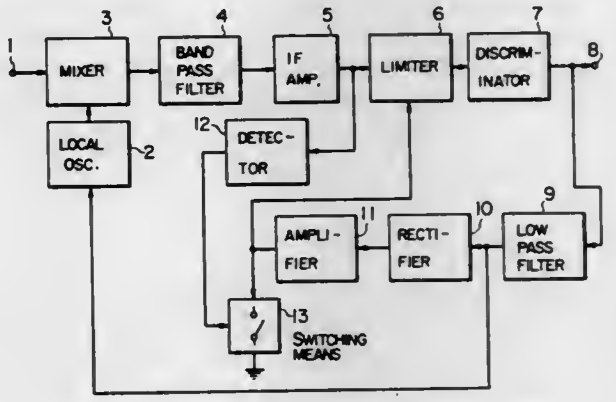
Isao Fukushima, and Shin-ichi Ohashi, both of Toyokawa, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 12, 1973, Ser. No. 415,004

Claims priority, application Japan, Nov. 13, 1972, 47.112935

Int. Cl. H03c *3/28*

U.S. Cl. 329—110 **6 Claims**



1. A demodulator for demodulating a received frequency-modulated signal, comprising:

local oscillating means for producing a local oscillation signal;

means for converting a received frequency-modulated signal into an intermediate frequency signal by mixing it with said local oscillation signal;

amplitude limiting means for limiting the amplitude of said intermediate frequency signal;

frequency discriminating means supplied with said amplitude limited intermediate frequency signal for demodulating a modulated signal;

means for outputting a demodulated signal from said frequency discriminating means;

a low-pass filter capable of passing therethrough a DC signal;

means for supplying a signal divided from said outputted demodulated signal to said low-pass filter;

means for full-wave rectifying the output of said low-pass filter and for producing a control signal which is maximum or minimum when the central frequency of said intermediate frequency signal is in agreement with the central frequency of the frequency characteristic of said frequency discriminating means and which decreases or increases depending on the amount of the discrepancy between said two frequencies;

means for controlling the amplitude limiting level of said amplitude limiting means by said control signal supplied thereto; means for detecting the magnitude of said converted intermediate frequency signal; and

means for blocking the output signal of said frequency discriminating means when the intermediate frequency signal detected by said detecting means is smaller than a predetermined magnitude.

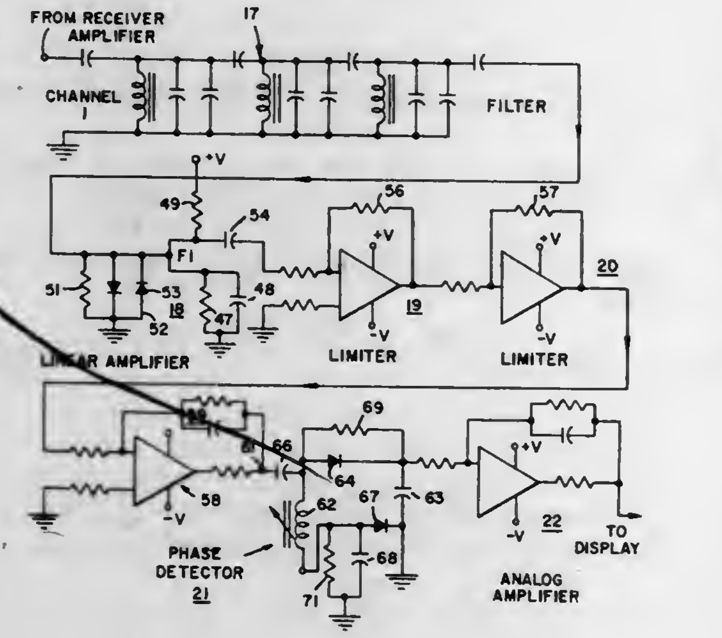
3,851,264
TELEMETERING SYSTEM FOR MULTI-CHANNEL DATA

John R. Pori, Navato, Calif., assignor to Parallel Data Systems, San Francisco, Calif.

Division of Ser. No. 211,221, Dec. 23, 1971, Pat. No. 3,786,190. This application Oct. 12, 1973, Ser. No. 405,827

Int. Cl. H03d *3/08*

U.S. Cl. 329—119 **1 Claim**



1. A phase detector circuit comprising: a load capacitor across which a demodulated signal is developed, a low output impedance amplifier responsive to a frequency modulated signal, a coupling capacitor connected to the output of said amplifier, first diode means coupling one side of said load capacitor to said coupling capacitor, second diode means coupling the other side of said load capacitor to said coupling capacitor through a series connected inductor and balancing capacitor means forming a resonant series circuit with said inductor and coupling capacitor at the carrier frequency of said frequency modulated signal.

3,851,265
TONE GENERATING SYSTEM

Leroy Daniel Young, Jr., 8801 Fontainebleau Blvd., Apt. 308, Miami, Fla. 33126

Filed Feb. 5, 1973, Ser. No. 329,534

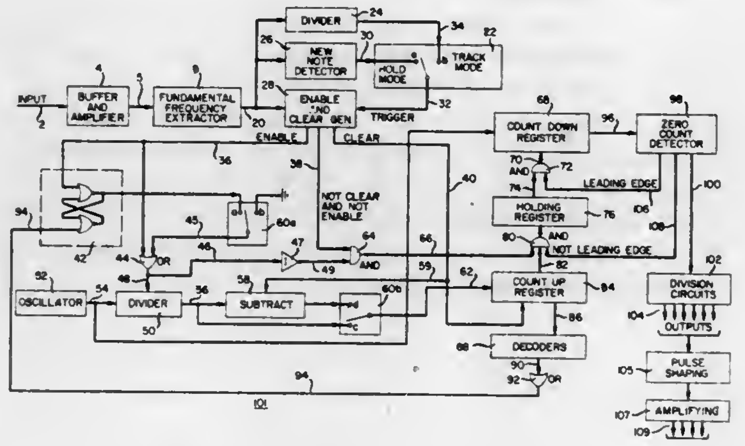
Int. Cl. H03b *3/08*

U.S. Cl. 328—140 **40 Claims**

1. A system for repeatedly generating and sustaining output signals having frequencies related to the fundamental frequency of a controlling input signal having a complex waveform and a varying amplitude level comprising, in combination:

first means including a fundamental frequency extractor for determining said fundamental frequency of said input signal and producing a square wave output having said fundamental frequency;

second means responsive to said first means for storing a signal related to said fundamental frequency; and



output means responsive to said second means for producing in a repetitive e sequence output signals having frequencies determined by said signal stored in said second means whereby said output signals have frequencies related to said fundamental frequency of said input signal.

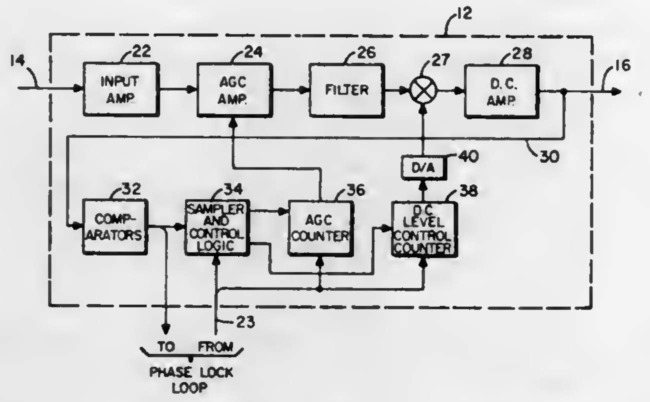
3,851,266
SIGNAL CONDITIONER AND BIT SYNCHRONIZER

Patrick H. Conway, Univac Pk., Minneapolis, Minn. 55116

Division of Ser. No. 660,159, July 27, 1967, Pat. No. 3,467,991, which is a continuation-in-part of Ser. No. 606,882, Jan. 3, 1967, abandoned. This application Feb. 16, 1970, Ser. No. 14,846

Int. Cl. H03b *1/00*

U.S. Cl. 328—162 **5 Claims**



1. A signal conditioner for receiving an input pulse code modulated signal and for producing at an output terminal a demodulated output signal having a known DC baseline and a known amplitude over a wide dynamic range of the input signal variations, said signal conditioner comprising:

a. comparator means for establishing first and second voltage reference levels corresponding to the desired upper and lower levels of the output signal, the DC baseline being established at a point midway between said reference levels;

b. a variable gain amplifier circuit coupled to said comparator means and said output terminal for receiving said input signal and controlling one of the levels of said output signal in accordance with said first reference voltage level; and

c. a DC baseline control circuit coupled to said comparator means and said output terminal for controlling the other level of said output signal in accordance with said second reference voltage level, whereby the amplitude and DC baseline of said output signal is controlled.

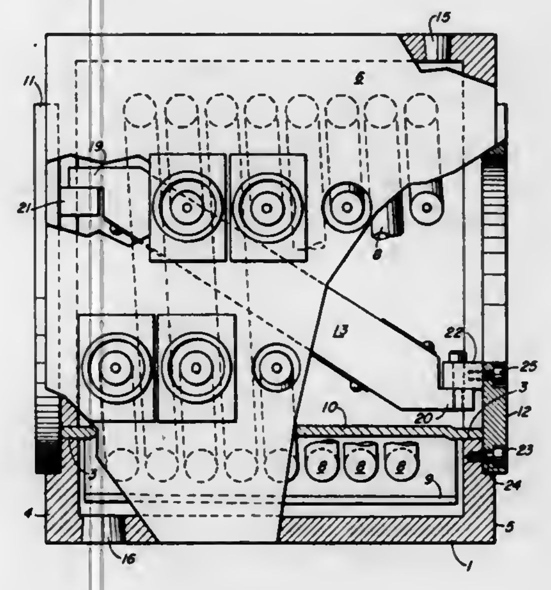
3,851,267
MODULAR DISC LASER

Robert L. Tanner, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 18, 1972, Ser. No. 298,738

Int. Cl. H01s *3/02*

U.S. Cl. 330—4.3 **9 Claims**



1. In a module for a modular disc laser amplifier system comprising (a) a housing having aligned openings in opposing end walls for admitting and emitting a beam of laser light, (b) a disc of laser material, (c) means for holding said disc centered at a desired angle on an axis of said aligned openings, (d) means for optically pumping said disc, (e) means for cooling said optical pumping means, and (f) reflector means between said housing and said optical pumping means for directing light inwardly toward the axis of said aligned openings, the improvement consisting of mounting said means for holding said disc centered at a desired angle on the axis of said aligned openings to the end plates of said housing having aligned openings therein.

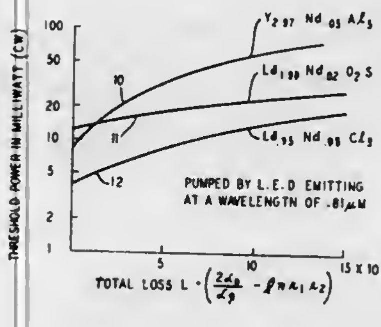
3,851,268
MINI-LASER

Shobha Singh, Summit, and Legrand Gerard Van Uitert, Morris Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 359,231, May 11, 1973, abandoned. This application Aug. 13, 1973, Ser. No. 388,027

Int. Cl. H01s *3/06, 3/14*

U.S. Cl. 330—4.3 **13 Claims**



1. Laser apparatus including an optically pumped solid state laser containing trivalent neodymium as the active ion, together with a light source emitting in the 7,000 to 9,000 Angstrom region in such direction as to be made incident on the said laser, the said radiation constituting the pump energy necessary for operation of the said laser, characterized in that the laser consists essentially of a single crystal consisting essentially of a composition which may be represented by the atom formula $M_{1-x}Nd_xZ_3$, where M consists essentially of at least one rare earth element selected from the group consisting of lanthanum, gadolinium and cerium and Z is at least one halogen selected from the group consisting of chlorine, bromine, iodine, and in which x is a value within the range of from 0.005 to 1.0.

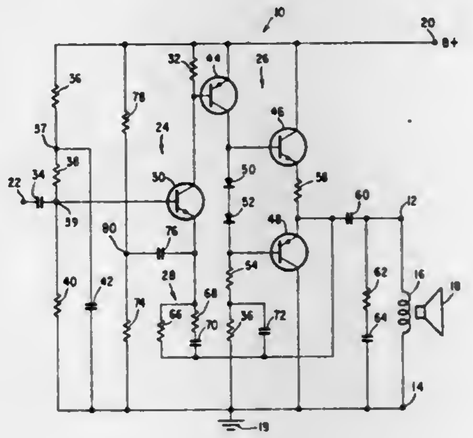
3,851,269
HUM REDUCTION IN TRANSISTOR AMPLIFIERS

Jan Szorc, Watertown, Mass., assignor to KHL Research and Development Corp., Cambridge, Mass.

Filed Mar. 1, 1972, Ser. No. 230,674

Int. Cl. H03f *3/18*

U.S. Cl. 330—13 **4 Claims**



1. A signal translating system comprising:

a. a transistor input stage of amplification including a transistor having emitter, base and collector electrodes, said base electrode being adapted to be coupled to a signal voltage source;

b. a power supply having first and second terminals and providing between said terminals a DC voltage having a ripple voltage superimposed thereon;

c. a transistor output stage including at least a pair of transistors having emitter, base and collector electrodes, said emitter and collector electrodes of said output stage being serially connected between the first and second terminals of said power supply, said base electrodes of said output stage being coupled to said input stage collector electrode, said serially connected output stage electrodes being coupled to said input stage emitter electrode and to an output terminal;

d. DC bias means coupled from said power supply terminals to the base electrodes of said input and said output stages for biasing said stages to their respective operating points;

e. voltage divider means having a tap thereon, connected between the first and second terminals of said power supply for obtaining a portion of said ripple voltage, and

f. a capacitor connected between said voltage divider tap and the emitter electrode of said input transistor to produce a ripple compensating voltage in said output stage to substantially cancel the ripple appearing at said output terminal, said tap being not coupled to any other electrode of said input transistor.

3,851,270
TRANSISTORIZED OPERATIONAL AMPLIFIER

Robert E. Vosteen, 315 W. Center St., Medina, N.Y. 14103

Continuation of Ser. No. 710,986, March 6, 1968, abandoned. This application Apr. 20, 1971, Ser. No. 135,752

Int. Cl. H03f *3/68*

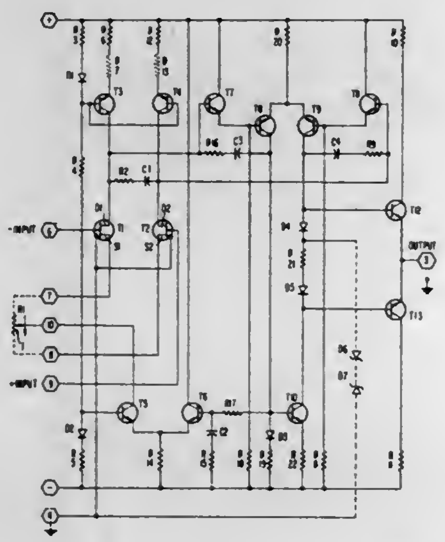
U.S. Cl. 330—30 D **12 Claims**

1. An operational amplifier comprising:

a first amplifier stage having first (T1) and second (T2) transistors arranged in differential amplifier manner, each of the first and second transistors having a first electrode operative to provide a current flow, a second electrode operative to control the current flow, and a third electrode operative to accept the current flow connected as the output electrode,

means to apply opposite polarity inputs to the respective second electrodes of the first and second transistors,

load means including third and fourth transistors (T3,T4), each having emitter, collector and base electrodes, the third and collector electrodes of the first and third transistors, respectively, being connected in common as a first common connection, and the third and collector electrodes of the second and fourth transistors, respectively, being connected in common as a second common connection, the base electrodes of the third and fourth transistors being connected together, the third and fourth transistors providing first and second constant current loads for the first and second transistors, respectively,



at least one additional amplifier stage (T7, T8, T9, T10, T11) having first and second inputs respectively connected to the first and second common connections of the first stage and its output connected as the amplifier output,

positive (+) and negative (−) supply terminals for connection to a suitable source of DC voltage, and means connecting the electrodes of the transistors to the supply terminals to operatively bias the transistors,

a source of reference potential, and

common mode feedback means (T5, T6, R15, R17, R19, C2) connected between said at least one additional stage and the first amplifier stage including means connected to the source of reference potential and responsive to differences between the actual voltages present at the outputs of the first and second transistors and the reference potential to correct the actual voltages present at the outputs of the first and second transistors and maintain the preset common mode output voltages from the first and second transistors at a constant value.

3,851,271

BROAD BAND INJECTION-TUNED GUNN DIODE MICROWAVE OSCILLATOR

Roger Ernest Cooke, Bishop Stortford, and Rodney Frederick Barker Conlon, Sawbridgeworth, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 23, 1973, Ser. No. 391,169

Claims priority, application Great Britain, Nov. 28, 1972, 54881/72

Int. Cl. H03b *7/14*

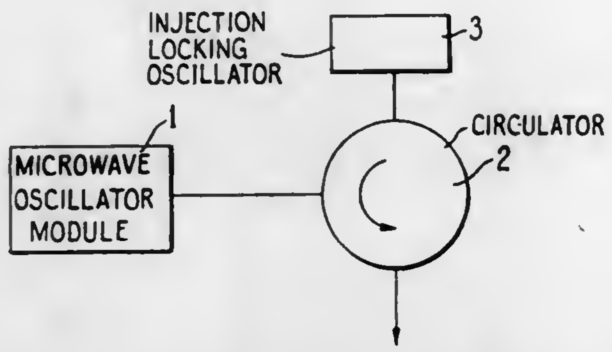
U.S. Cl. 331—47 **4 Claims**

1. A microwave oscillator arrangement with wideband frequency control comprising:

a multituned microwave resonant circuit;

a two terminal solid state microwave oscillator device disposed in said resonant circuit; and

a frequency controlling injection locking oscillator coupled to said resonant circuit, said locking oscillator having an injection locking output signal which modifies the impedance of said resonant circuit so that over a required frequency band said oscillator device is presented with the negative of its impedance;



said resonant circuit having a given resonant frequency and a counter-clockwise Smith chart admittance locus with increasing frequency approximating the Smith chart admittance locus of said oscillator device; and

said injection locking output signal modifies the admittance of said resonant circuit to add capacitance to said resonant circuit below said resonant frequency of said resonant circuit and to add inductance to said resonant circuit above said resonant frequency of said resonant circuit to enable achievement of said wideband frequency control.

3,851,272

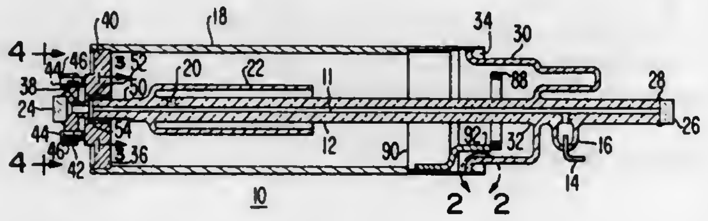
GASEOUS LASER WITH CATHODE FORMING OPTICAL RESONATOR SUPPORT AND PLASMA TUBE ENVELOPE

William A. Shull, Portola Valley, and Gerald C. Barker, Palo Alto, both of Calif., assignors to Coherent Radiation, Palo Alto, Calif.

Filed Jan. 2, 1973, Ser. No. 320,093

Int. Cl. H01s *3/02, 3/22*

U.S. Cl. 331—94.5 **22 Claims**



1. A gaseous laser comprising:

a. a bore tube;

b. optical resonator means axially aligned with at least a part of said bore tube to form the optical beam path of the laser and for stimulating the emission of radiation along said path;

c. at least one anode near an end of said bore tube;

d. a gaseous laser medium;

e. an elongated cylindrical cold cathode coaxially aligned with and surrounding a substantial part of said bore tube, said cathode and anode forming an electrical discharge path therebetween through said bore tube;

f. means for forming a population inversion in said gaseous laser medium by means of an electrical discharge between said anode and said cathode; and

g. means for utilizing said cathode to form a substantially air-tight envelope enclosing said gaseous laser medium, with said cathode forming the major portion of said envelope, including

first means for terminating one end of said cathode to form an air-tight seal with said bore tube, and

second means for terminating the opposite end of said cylindrical cathode, said terminating means including means for permitting the passage therethrough of light reflected within said optical resonator.

3,851,273

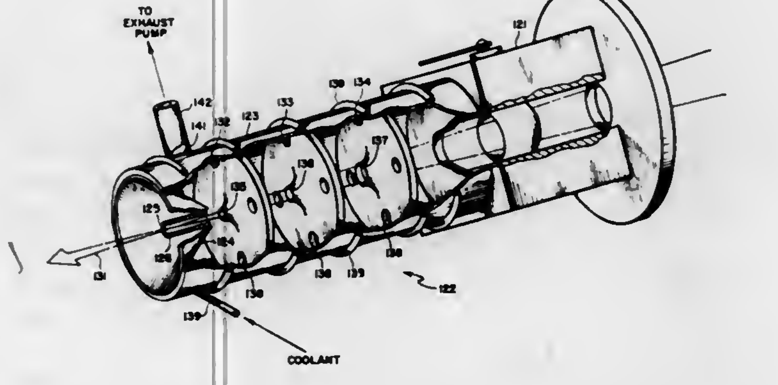
AERODYNAMIC LASER WINDOW

Ethan D. Hoag, Boston; Richard M. Patrick, Winchester; Edward V. Locke, Rockport, and Richard A. Hella, Brookline, all of Mass., assignors to Avco Corporation, Cincinnati, Ohio

Filed May 2, 1972, Ser. No. 249,607

Int. Cl. H01s *3/02*

U.S. Cl. 331—94.5 D **19 Claims**



1. In a gaseous laser system comprising a cavity containing an active gaseous medium capable of being excited to provide stimulated emission of radiation and additionally including means defining an optical cavity and exciting means for exciting said gaseous medium to provide in said optical cavity said stimulated emission of radiation, aerodynamic window apparatus comprising:

a. means defining a first laser beam aperture for providing optical communication between the environment exterior of said cavity and stimulated emission of radiation produced in said cavity;

b. enclosure means sealably surrounding and extending outwardly from said first laser beam aperture, said enclosure means having a gas port and having a second laser beam aperture spaced from and in optical alignment with said first laser beam aperture, said gas port being arranged and adapted to be coupled to means for providing a gas flow through said gas port and the interior of said enclosure means intermediate said first and second laser beam apertures at subsonic velocity;

c. a plurality of vane members having centrally disposed apertures, said vane members being spaced one from another and disposed within said enclosure means intermediate said first and second laser beam apertures, said vane member apertures being in optical alignment with said first and second laser beam apertures and the portion of said vane members surrounding said apertures having a substantially aerodynamic configuration substantially effective to intercept a gaseous jet formed at one of said laser beam apertures and dissipate said jet prior to its reaching the other of said laser beam apertures, the portions of the interior of said enclosure intermediate said vane members each being in communication with said gas port; and

d. optical means in optical communication with stimulated emission of radiation in said cavity and with the environment exterior of said cavity through said laser beam apertures, said optical means having a focal region having a finite depth of field located within said enclosure, said vane members being located within said depth of field.

3,851,274

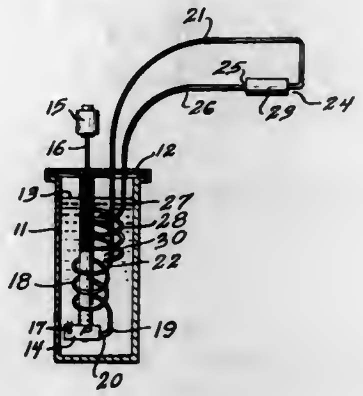
RECIRCULATING LIQUID-NITROGEN-COOLANT SYSTEM FOR SOLID-STATE LASERS

Stuart A. Solin, and Joseph Doehler, both of Chicago, Ill., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed June 29, 1973, Ser. No. 375,205

Int. Cl. H01s *3/00*

U.S. Cl. 331—94.5 P **12 Claims**



1. A recirculating liquid-coolant system for solid-state lasers comprising:

a. a Dewar vessel containing liquid-coolant;

b. a liquid-coolant pump, including an intake and an exhaust, submerged beneath said coolant in said Dewar vessel, the intake of said liquid-coolant pump being exposed to the liquid-coolant within said Dewar vessel;

c. a first heat exchanger, including an inlet and an outlet, submerged beneath the liquid-coolant in said Dewar vessel, the exhaust of said liquid-coolant pump connected to the inlet of said first heat exchanger;

d. a solid laser rod;

e. a laser head supporting said solid laser rod therein and including a liquid-coolant inlet and a liquid-coolant outlet disposed to provide coolant access to said laser rod;

f. a liquid-coolant feeder conduit interconnecting the outlet of said first heat exchanger and the inlet of said laser head;

g. a second heat exchanger, including an inlet and an outlet, submerged beneath the surface of the liquid-coolant within said Dewar vessel, the outlet of said second heat exchanger opening to the interior of said Dewar vessel; and

h. a liquid-coolant return conduit interconnecting the outlet of said laser head and the inlet of said second heat exchanger.

3,851,275

MIRROR SUPPORT STRUCTURE FOR AN INTERNAL MIRROR-TYPE GAS LASER TUBE

Takao Furuse; Tohru Matsuoka, and Kiyohisa Kato, all of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo-to, Japan

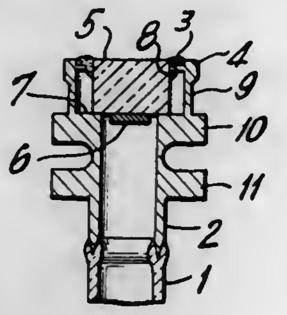
Filed Aug. 31, 1973, Ser. No. 393,491

Claims priority, application Japan, Sept. 7, 1972, 47-89730

Int. Cl. H01s *3/22*

U.S. Cl. 331—94.5 D **7 Claims**

1. A mirror mounting structure for an internal-mirror type gas laser tube having a pair of mirrors within an envelope, said mounting structure comprising a hollow cylindrical plastic metal member hermetically sealed at one end to said envelope, the other end of said metal member having a section of a greater internal diameter and a thinner wall, and a mirror arranged within said section of said metal member having the greater diameter, the outer peripheral end of said mirror being bonded to said other end of said metal member by a low melting-point glass, said cylindrical metal member having a flange-like portion to permit deformation thereof, whereby

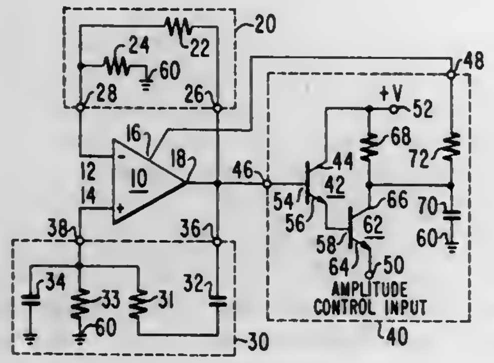


said mirror can be brought into alignment with the axis of the laser tube.

3,851,276
OSCILLATOR USING CONTROLLABLE GAIN DIFFERENTIAL AMPLIFIER WITH THREE FEEDBACK CIRCUITS

Leonard Abraham Kaplan, Fords, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 15, 1974, Ser. No. 461,269
Int. Cl. H03b *3/02, 5/26;* **H03c** *1/36*
U.S. Cl. 331—108 D **9 Claims**



1. In combination:

controllable gain differential amplifier means having two input terminals for receiving separate input signals, a gain control terminal and an output terminal, said amplifier producing an output signal having a sense dependent on the sense of the difference between the two input signals, said amplifier having a gain proportional to the value of a gain control signal supplied to said gain control terminal when said gain control signal is of one sense, and said amplifier having a gain less than unity when said gain control signal is of opposite sense;

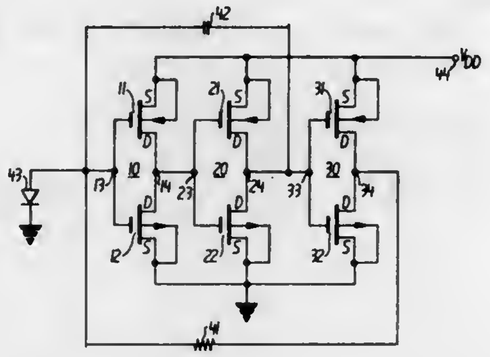
first and second feedback paths, each being connected between said output terminal and a separate one of said two input terminals, one path having a frequency selective attenuation characteristic, the other path having a frequency independent attenuation characteristic, said paths providing feedback signals in a sense for causing the amplifier output signal to oscillate; and

a further feedback path connected between said output terminal and said gain control terminal for controlling the amplitude of said output signal, said further path including means for comparing said output signal with a reference signal and producing a difference signal, filter means for smoothing said difference signal, and means coupling the smoothed difference signal to said gain control terminal.

3,851,277
ASTABLE MULTIVIBRATOR USING INSULATED-GATE FIELD EFFECT TRANSISTORS

Yasoji Suzuki, Kawasaki, and Eiichi Yamaga, Minami Hatogaya, both of Japan, assignors to Tokyo Shibaura Electric Company, Ltd., Kawasaki-shi, Kanagawa-ken, Japan

Filed Dec. 27, 1972, Ser. No. 318,712
Int. Cl. H03k *3/282*
U.S. Cl. 331—113 R **9 Claims**



1. An astable multivibrator comprising:

a first inverter having a first transistor and a second transistor, said first transistor having a gate, a source and a drain, said second transistor having a gate, a source and a drain, a second inverter having a third transistor and a fourth transistor, said third transistor having a gate, a source, and a drain, said fourth transistor having a gate, a source and a drain,

a third inverter having a fifth transistor and a sixth transistor, said fifth transistor having a gate, a source and a drain, said sixth transistor having a gate, a source and a drain,

means connecting the gate of said first transistor to the gate of said second transistor,

means connecting the gate of said third transistor to the gate of said fourth transistor,

means connecting the gate of said fifth transistor to the gate of said sixth transistor,

means connecting the drain of said first transistor to the drain of said second transistor,

means connecting the drain of said third transistor to the drain of said fourth transistor,

means connecting the drain of said fifth transistor to the drain of said sixth transistor,

means connecting the sources of said first, third and fifth transistors to a voltage source,

means for connecting the sources of said second, fourth and sixth transistors to ground,

means connecting the drains of said first and second transistors to the gates of said third and fourth transistors,

means connecting the drains of said third and fourth transistors to the gates of said fifth and sixth transistors,

a resistor connected between the gates of said first and second transistors and the drains of said fifth and sixth transistors, and

a capacitor connected between the gates of said first and second transistors and the gates of said fifth and sixth transistors.

3,851,278
INVERTER CIRCUIT

Tadao Isono, Tokyo, Japan, assignor to Nikon Beru-Haueru Kabushiki Kaisha (Bell & Howell Japan, Ltd.), Tokyo-to, Japan

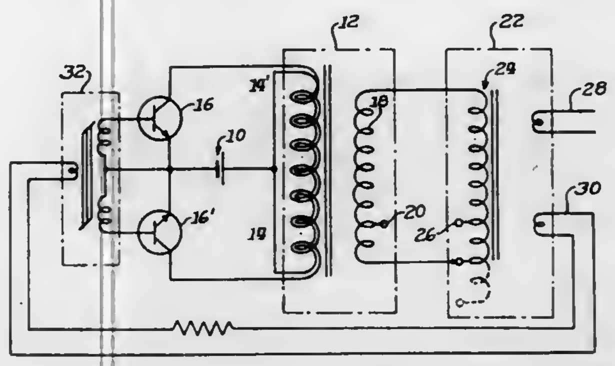
Filed June 12, 1973, Ser. No. 369,344
Claims priority, application Japan, June 12, 1972, 47-69179
Int. Cl. H02m *7/52*
U.S. Cl. 331—113 A **2 Claims**

1. An inverter circiut for converting variable voltage inputs of direct current to alternating current at a constant output voltage comprising:

a saturable transformer;

a pair of switching transistors in operative connection with said saturable transformer;

an output transformer having a bifilar coiled primary consisting of two coils with one of said coils connected to one



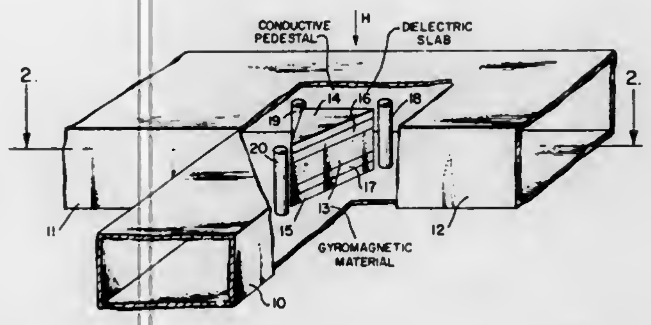
of said transistors and the other of said coils connected to the other of said transistors for converting said direct current to alternating current for application to the secondary of said output transformer; and

a second output transformer having the primary thereof connected to the secondary of said first output transformer and having the secondary thereof include a load output coil and a feedback output coil for regulating the saturating frequency applied to said saturable transformer.

3,851,279
TEE JUNCTION WAVEGUIDE CIRCULATOR HAVING DIELECTRIC MATCHING POSTS AT JUNCTION

Charles P. Andrikian, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 17, 1973, Ser. No. 407,374
Int. Cl. H01p *1/32*
U.S. Cl. 333—1.1 **6 Claims**

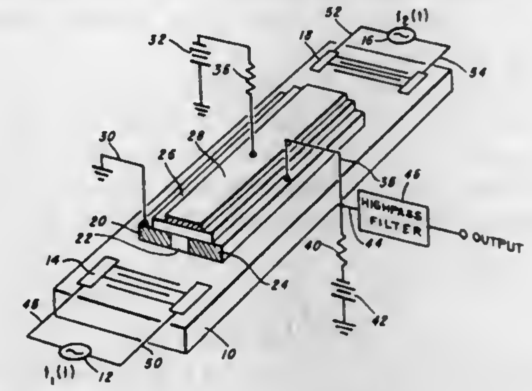


3. In a microwave circulator structure of the type having three sections of rectangular conductively-bounded waveguide sections abutting to form an H-plane tee junction, at least one triangular shaped element of gyromagnetic material disposed within said junction, means for biasing said element with an external magnetic field, and impedance matching members disposed within said junction; the improvement comprising a completely dielectric post extending across the interior of said junction adjacent each apex of said element of gyromagnetic material.

3,851,280
NON-LINEAR SIGNAL PROCESSING DEVICE USING SQUARE LAW DETECTION OF SURFACE ELASTIC WAVES WITH INSULATED GATE FIELD EFFECT TRANSISTOR

Edward Jerome Staples, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 1, 1973, Ser. No. 384,855
Int. Cl. H03h *9/26, 9/30;* **H01l** *19/00*
U.S. Cl. 333—30 R **4 Claims**



1. A system for the non-linear mixing of acoustic waves comprising:

a. a substrate,

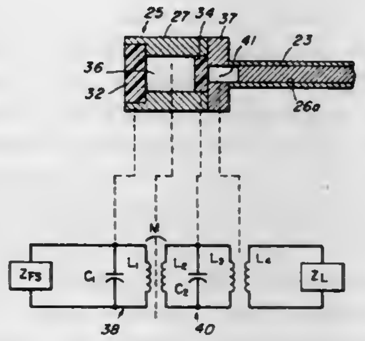
b. means for launching said acoustic waves in said substrate, so that said acoustic waves propagate through a defined region of said substrate simultaneously, and

c. an IGFET formed at the surface of said substrate so that at each point along the channel of said IGFET, a component of the incremental channel current is proportional to the square of the sum of the strains induced by said acoustic waves in said substrate and the total channel current of said IGFET is the sum of said incremental channel currents.

3,851,281
IMPEDANCE MATCHED WAVEGUIDE DEVICE

Jerome D. Hanfling, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed June 11, 1973, Ser. No. 369,028
Int. Cl. H03h *7/38;* **H01p** *1/16*
U.S. Cl. 333—33 **3 Claims**



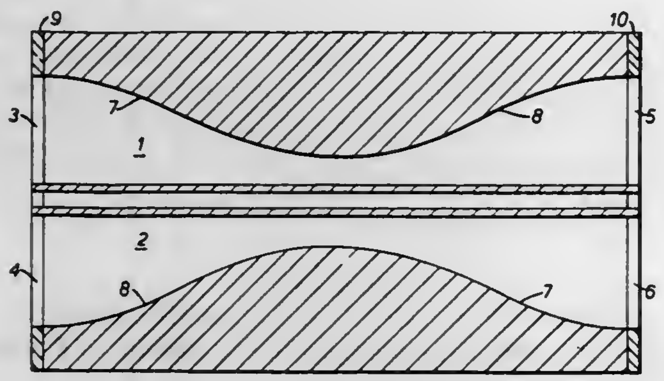
1. In a system for transmission of radio frequency energy within a band of frequencies from a source of such energy to a load, the impedance of the source being different from the impedance of the load, apparatus for matching the impedance of such source and such load and for preventing modes higher than the dominant mode of such energy from passing between such source and such load, such apparatus comprising:

a. a section of waveguide dimensioned so that its cutoff frequency is higher than the highest frequency of any radio frequency energy passing through such apparatus; and

b. a pair of dielectric mediums partially separated by such section of waveguide to form a pair of inductively coupled resonant circuits:
   i. a first one of such circuits including the source, one of the dielectric mediums, and a portion of such waveguide; and
   ii. a second one of such circuits including the load, a separate one of the dielectric mediums and a portion of such waveguide, the center frequency of each one of such resonant circuits corresponding to the frequency of the dominant mode and the bandwidth of said resonant circuits corresponding to the band of frequencies of radio frequency energy to be passed between such source and such load; and,
   iii. wherein the dielectric medium in the first one of such circuits provides a different propagation time delay to the passed radio frequency energy from the propagation time delay provided to such passed energy by the dielectric medium in the second one of such circuits.

3,851,282
WAVEGUIDE FILTERS

Barry Kenneth Watson, Witham, England, assignor to The Marconi Company Limited, Chelmsford, Essex, England
Filed Nov. 2, 1973, Ser. No. 412,504
Claims priority, application Great Britain, Nov. 11, 1972, 52189/72
Int. Cl. H01p *5/12, 1/20*
U.S. Cl. 333—73 W **8 Claims**

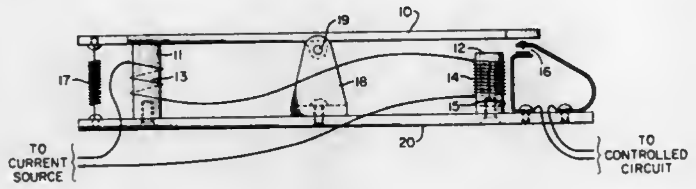


1. A microwave reflection filter including two waveguide channels, an input port and an output port for each said channel, tapers between said input and output ports such that the channel dimension reduces from said input ports to a region between said ports, down to dimensions corresponding to a predetermined upper cut-off frequency such that signals with frequencies above said cut-off frequency pass through the output ports and signals with frequencies below said upper cut-off frequency are reflected through the input ports, the taper from the input port of one of said channels being dimensioned in accordance with a predetermined law and the taper from the input port of said other channel being dimensioned such that the distance from the input port to the point of cut-off for any frequency in the reflected band is substantially a quarter waveguide wavelength, at that frequency, greater than the distance from the input port of said one channel to the corresponding cut-off point in said one channel.

3,851,283
RING SUPERVISORY CIRCUIT

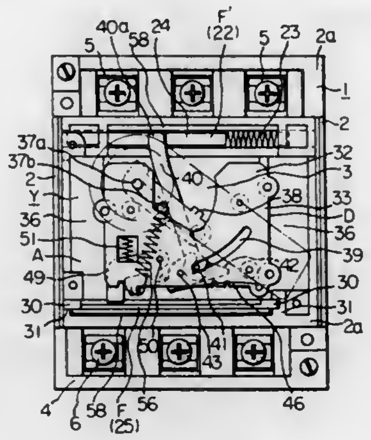
Cyrus Frank Ault, Wheaton, Ill., assignor to Bell Telephone Laboratories, Inc., Murray Hill, N.J.
Filed Mar. 22, 1974, Ser. No. 453,990
Int. Cl. H01h
U.S. Cl. 335—178 **7 Claims**

1. An electrical switch adapted for use in a circuit having alternating and direct current therein, said switch comprising a substantially centrally pivoted armature adapted to control electrical contacts,
   a first and a second pole piece associated respectively with opposite ends of said armature,
   a first winding connected in said circuit and coupled to said first pole piece,
   a second winding serially connected to said first winding and coupled to said second pole piece, said first winding having more turns than said second winding whereby the associated end of said armature is operated towards said first pole piece when said first winding is energized, and means for cancelling the effects of alternating current in said circuit comprising a single turn third winding on said first pole piece for generating counter fields to oppose a field generated by said first winding responsive to alternating current whereby said field generated in said first pole piece is reduced to be substantially equal to a field generated in said second pole poiece responsive to said alternating current.



3,851,284
CIRCUIT BREAKER

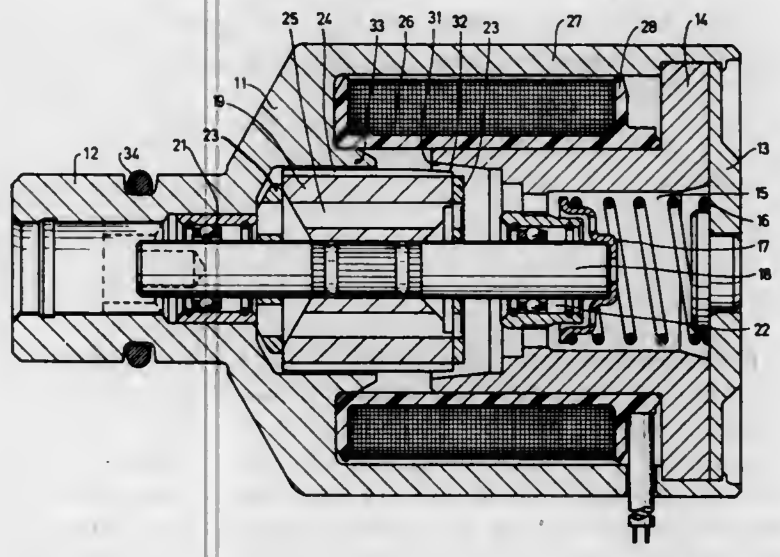
Akira Yoshino, and Hitoshi Imanishi, both of Seto, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Apr. 3, 1974, Ser. No. 457,418
Claims priority, application Japan, Apr. 6, 1973, 48/39934; Apr. 6, 1973, 48/39935; Apr. 6, 1973, 48/39938
Int. Cl. H01h *77/06*
U.S. Cl. 335—6 **5 Claims**



1. An operating mechanism for driving switching mechanism in circuit breaker having trip-indicating means comprising
   two ground plates connected as spaced with each other and respectively having an arcuate groove opposing one another,
   an operating plate provided with vertical plates parallel with each other and with two fulcrum means set between said vertical plates, said operating plate being rotatably pivoted between said two ground plates by means of a shaft penetrating through the vertical plates at one end thereof,
   a turning arm having at one end a shaft fitted movably in said opposing arcuate grooves of the ground plates and at the side part a cam lobe, said turning arm being loosely fitted in the middle part between said two fulcra of the operating plate and contacted in the other with a carrier communicating the operating mechanism with the switching mechanism for driving contacts in the latter so that the side part of the arm will be pressed against one of the fulcra of the operating plate by a returning force of said carrier,
   a hanging frame rotatably pivoted between said two ground plates so as to engage and restrain said shaft of the turning arm at one end within said arcuate grooves in response to situations of the circuit and
   a responding piece rotatably pivoted between said two ground plates so as to release the engagement of the shaft of turning arm with the hanging frame upon rotation due to a force transmitted to the responding piece from an electromagnetic device in the switching mechanism actuated when the circuit is in abnormal state,
   the arrangement being in such that, when the contacts are in ON state, the shaft of the turning arm will be engaged with the hanging frame, the cam lobe of the turning arm will engage the fulcrum of the operating plate and thereby the other end of the turning arm will be pushed toward the ON state of the contacts against the returning force of the carrier,
   when the contact is in the trip state, the turning arm will be disengaged from the hanging frame and will be stably held in the trip position by the twisting force between the two fulcra of the operating plate and,
   when the contacts are in OFF state, the shaft of the turning arm will be engaged with the hanging frame, the side of the turning arm will contact the fulcrum of the operating plate and the carrier will remain in the OFF position of the contact.

3,851,285
CONTROL MAGNET FOR HYDRAULIC CONTROL SYSTEM VALVES

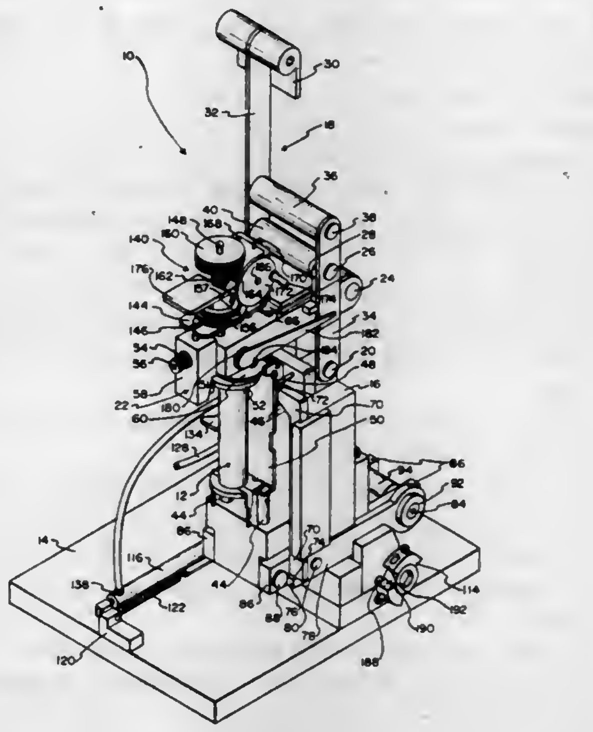
Georg Rothfuss, Ditzingen; Heinz Gand, Stuttgart; Wolfgang Bredenbrock, Schwieberdingen, and Wilfried Paul Bohringer, Flein, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Oct. 10, 1973, Ser. No. 405,101
Claims priority, application Germany, Nov. 11, 1972, 2255272
Int. Cl. H01f *7/08*
U.S. Cl. 335—261 **14 Claims**



1. A control magnet suitable for magnetic valves comprising:
   a casing (**11**);
   an annular magnet winding (**26**) inside said casing;
   an armature (**19**) movable within said casing affixed on a rod (**18**) provided with bearings mounted in said casing for guiding and permitting axial movement of said armature in and out of said winding coaxially therewith, said armature being affixed to said rod at a position on said rod which is between said bearings and being provided with axially extending cavities, (**24, 25**), said rod having one extremity protruding into said winding and the other extremity wholly outside of said winding; and
   a compression spring held between said casing and the extremity of said rod which protrudes into said winding and arranged to urge said rod out of the space enclosed by said winding.

3,851,286
RELAY ADJUSTING APPARATUS AND METHOD

Dale C. McClurg, Schaumburg, and Stanley J. Nocek, Northlake, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Dec. 3, 1973, Ser. No. 421,453
Int. Cl. H01f *7/13*
U.S. Cl. 335—273 **5 Claims**

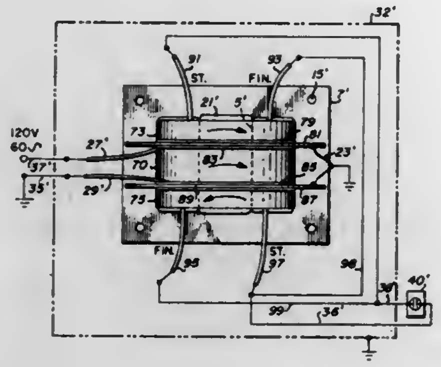


1. A relay adjusting apparatus for setting a consistent air gap between the heel piece and armature of a relay and for setting a consistent residual gap between the core and armature of a relay, said relay including a yoke piece carried by the heel piece that supports the armature, said yoke piece further including a yoke screw, said armature including a residual screw to adjust the residual gap, said relay adjusting apparatus comprising:
   relay support means for retaining and clamping said relay to be adjusted;
   relay compensating means contacting said relay and carried by said support means for establishing a reference point of said relay components with all clearances removed, said reference point being independent of all tolerances and irregularities of said parts;
   cam actuated means carried by said support means and engaging said relay compensating means for adjusting said air gap to a predetermined design setting relative to said established reference point; and
   residual adjusting means carried by said support means for adjusting said residual gap.

3,851,287
LOW LEAKAGE CURRENT ELECTRICAL ISOLATION SYSTEM

Charles Edward Miller, Melrose Park, and James Andrew Nuding, Elmwood Park, both of Ill., assignors to Litton Systems, Inc., Bellwood, Ill.

Continuation-in-part of Ser. No. 224,878, Feb. 9, 1972, abandoned. This application June 6, 1973, Ser. No. 367,584
Int. Cl. H01f *15/04*
U.S. Cl. 336—84 **2 Claims**



1. An isolated hospital electrical supply system with very low leakage current to electrical ground potential and low noise for transforming AC voltage from an electrically grounded source and providing ungrounded AC voltage so as to minimize the possibility of electrical shock of a patient who is in contact with said electrical ground of said grounded source and to minimize audible noise generation in the system comprising:

at least a first pair of lines for providing low frequency alternating voltage from an electrical utility line, one of said lines being electrically connected to ground potential;

an electrical outlet receptacle adapted for connection to electrical equipment;

at least a second pair of lines connected in circuit with said electrical outlet receptacle for conducting alternating voltage to said outlet receptacle, neither one of said second pair of lines being connected to said ground potential;

an isolation transformer located spaced from said outlet receptacle, said isolation transformer including:

a core of magnetic material;

a first coil of wire containing a first predetermined number of turns, N_p, comprising a primary winding;

a second separate coil of wire containing a second predetermined number of turns, N_{s1}, comprising a first secondary winding;

a third separate coil of wire containing a third predetermined number of turns, N_{s2}, comprising a second secondary winding, said third coil of wire being substantially identical with said second coil of wire and said second and third predetermined number of turns of wire being the same;

first and second nonmagnetic metal shields having a passage therethrough and a slot between said passage and an outer edge thereof;

said first, second and third coil being electrically insulated from said core and mounted on said core side by side and closely adjacent one another with said second coil located adjacent one side of said first coil and with said third coil located adjacent the remaining side of said first coil;

said second coil having the turns of wire therein wound in a clockwise direction as mounted on said core and said third coil having the turns of wire therein wound in a counterclockwise direction as mounted on said core;

and wherein the ratio, $N_{s1}1N_p$, is equal to a number less than 3 and at least 1, and wherein the ratio, N_{s2}/N_p, is equal to a number less than 3 and at least 1;

said first shield mounted on said core sandwiched between one side of said first coil and said second coil and said second shield mounted on said core sandwiched between the remaining side of said first coil and said third coil;

means electrically connecting the start end of one of said secondary windings to the finish end of the other and the finish end of said one secondary winding to the start end of said other secondary winding to place said secondary windings in parallel;

means connecting each of said shield members and said magnetic core electrically in common and to said ground potential;

means connecting said first pair of lines in circuit with said primary winding for supplying alternating voltage thereto; and

means connecting said second pair of lines in circuit across said secondary windings for coupling alternating voltages from said secondary windings to said outlet receptacle;

whereby low frequency AC leakage current between said first and second pair of lines and between said second pair of lines and ground potential is minimized;

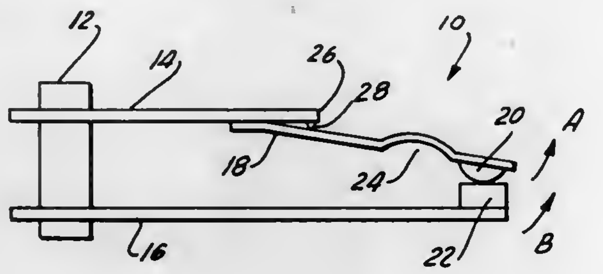
a steel walled enclosure for housing electrical components, including said transformer, said enclosure being connected to electrical ground potential;

said transformer being located in said enclosure; and

means for extending said pair of lines through an enclosure wall into said enclosure.

3,851,288
THERMOSTATIC SWITCH

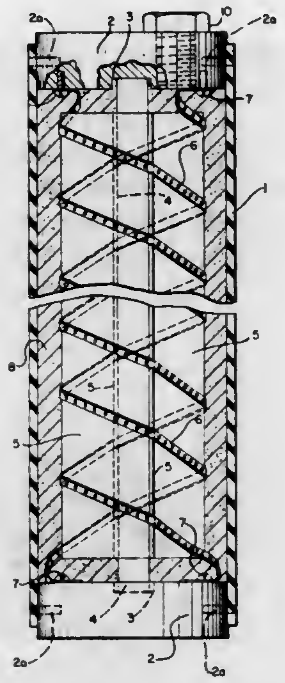
James E. Stoll, Canton, Ohio, assignor to Portage Electric Products, Inc., North Canton, Ohio
Filed May 17, 1973, Ser. No. 361,053
Int. Cl. H01h *61/00*
U.S. Cl. 337—89 **3 Claims**



1. In a thermostatic snap switch of the type comprising: a mounting member; first and second terminal arms supported by said mounting member extending out therefrom in spaced relationship with each other; an elongated bimetal blade adapted to deflect in response to a temperature change having one end coupled to the first arm and the other end free extending along the side of the first arm directed toward the second arm, said blade having a part thereof dished to provide a snap-acting portion; and fulcrum means carried by the first arm and bearing on the strip; the improvement wherein said second arm is formed of a bimetal positioned to deflect in response to temperature change in the same direction as that which the bimetal blade deflects in response to the same temperature change.

3,851,289
HIGH-VOLTAGE FUSE HAVING HELICALLY WOUND FUSIBLE ELEMENT AND SUPPORT FOR HELICALLY WOUND FUSIBLE ELEMENT

Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.
Filed Nov. 9, 1973, Ser. No. 414,349
Int. Cl. H01h *85/04*
U.S. Cl. 337—161 **4 Claims**



1. A support for helically wound fusible elements of high-voltage fuses including

a. a pair of coaxially arranged axially spaced terminal plugs;

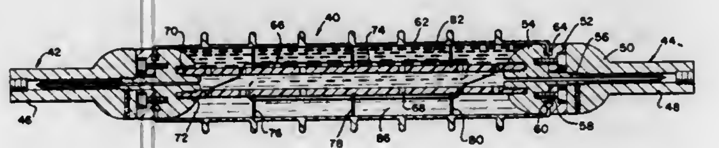
b. a center post of electric insulating material extending from one of said pair of terminal plugs to the other of said pair of terminal plugs fixedly spacing said pair of terminal plugs;

c. a plurality of angularly displaced plates of electric insulating material having radially outer ends and having radially inner ends, said radially inner ends of said plurality of plates bounding a prismatic space wherein said center post is housed; and

d. fastener means affixing said radially inner ends of said plurality of plates to said center post.

3,851,290
FUSE

Joe V. Stover, Fullerton, and Byron P. Meyers, Yorba, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Aug. 6, 1973, Ser. No. 385,941
Int. Cl. H01h *85/04*
U.S. Cl. 337—166 **3 Claims**



1. A fuse comprising:

first and second spaced electrodes, said first and second spaced electrodes each being metallic and configured for connection into an electric circuit;

a housing interconnecting said first and second electrodes, said housing being made of resilient dielectric material in the form of a tubing having first and second ends, said first and second electrodes being clamped on said tubing at said first and second ends to close the otherwise open ends of said tubing so that said tubing forms a tubular housing;

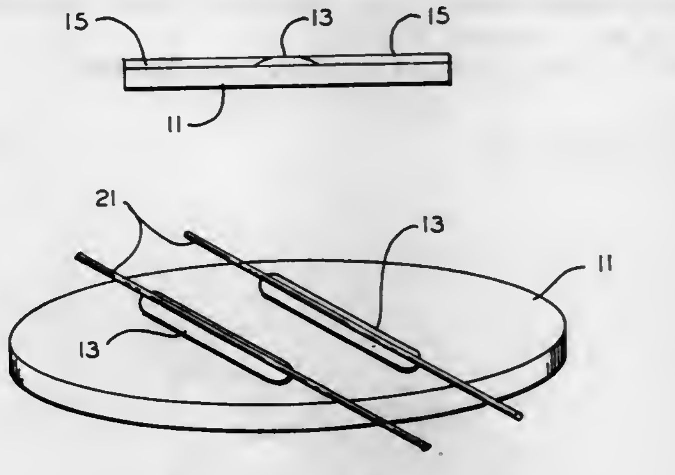
a dielectric link holder having first and second ends respectively secured to said first and second electrodes, said link holder being of substantially rigid material to hold said first and second electrodes in spaced position, said link holder being positioned within said tubular housing;

a fuse link having first and second ends respectively secured to said first and second electrodes, said fuse link being of electrically conductive material and being supported by said link holder away from said tubular housing, said fuse link being made of electrically conductive material which is solid at ambient temperature and which melts above ambient temperature, and which has electrical resistance so that, when electric current passes therethrough, heat is generated within said fuse link with more heat being generated when more current passes therethrough;

dielectric fuse link cooling liquid around said fuse link for carrying heat electrically generated in said fuse link away from said fuse link, said liquid being in direct contact with said fuse link when rated current passes through said fuse link and heat is carried away by said liquid by nucleate boiling at rated current and heat is carried away from said fuse link by means of film boiling when above-rated current passes through said fuse link so that said fuse link rises in temperature above the melting point thereof when the current through said fuse link exceeds the rated current, said dielectric fuse link cooling liquid being retained by said tubular housing.

3,851,291
THIN FILM THERMISTOR

Alfred Sommer, Teaneck, N.J., assignor to Ceramic Magnetics, Inc., Fairfield, N.J.
Filed Jan. 17, 1974, Ser. No. 434,067
Int. Cl. H01c *7/04*
U.S. Cl. 338—22 R **2 Claims**



1. A thin thermistor comprising:

a. a thin polymide film;

b. a thermistor material consistsing of lead telluride plus approximately 5 percent cerium deposited on a central portion of said film; and

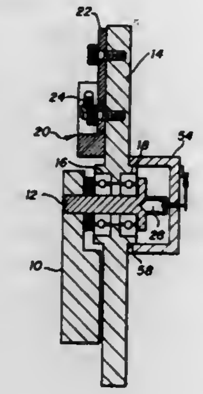
c. a pair of electrodes deposited on said film so as to contact said thermistor material at two sides.

3,851,292
MOTION TRANSDUCER

William K. Seitz, 5342 Windswept, Houston, Tex. 77027
Filed Mar. 14, 1973, Ser. No. 341,084
Int. Cl. H01c *13/00*
U.S. Cl. 338—114 **15 Claims**

1. A motion transducer having an electrical output provided by a strain responsive element, comprising in combination:

an actuator housing having end plates with an opening through each end plate, the strain responsive element mounted to said housing to extend over the opening of one end plate,



a first internally threaded aperture in the opening of one end plate of said housing;

a second internally threaded aperture in the opening of the one end plate of said housing and spaced from said first aperture;

a threaded shaft mounted through said first and second apertures and having one end in contact with the strain responsive element;

means for converting a mechanical motion into a rotational movement; and

a drive shaft rotatably mounted through the second end plate of said housing to couple the rotational movement to said threaded shaft.

3,851,293

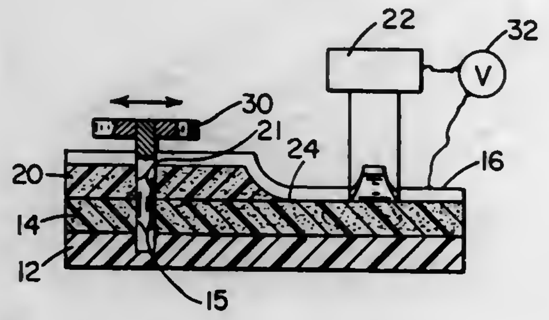
ELECTRICAL RESISTANCE ELEMENT AND METHOD OF MANUFACTURE

John Clayton, Stowe, Mass., assignor to Waters Manufacturing, Inc., Wayland, Mass.

Filed Aug. 15, 1972, Ser. No. 280,809

Int. Cl. H01c *9/02*

U.S. Cl. 338—195 **8 Claims**



1. A potentiometer having a predetermined function comprising

a longitudinally extended conductive plastic high resistance film element having end terminations on opposite ends thereof,

said high resistance film element providing a path of wiper travel between said end terminations

a wiper movable along said path

a longitudinally extended conductive plastic low resistance film element superimposed on said high resistance film element in continuous electrical contact therewith extending between said end terminations in continuous parallel electrical connection with said high resistance film element,

said low resistance film element being spaced from said path of wiper travel and having an edge remote from said path of wiper travel of varying dimension from its opposed edge to provide a varying transverse dimension thereof

said high and low resistance film elements together providing a voltage value at said wiper varying as a function of distance between said end terminations.

3,851,294

CONNECTOR FOR SEALINGLY INTERCONNECTING A MULTIPLE CORE ELECTRIC CABLE AND A PRINTED CIRCUIT

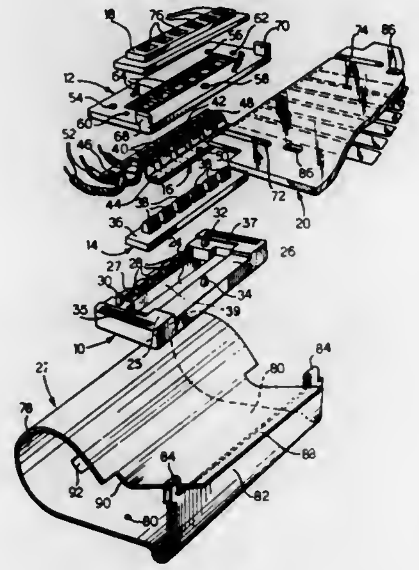
Mario Palazzetti, Avigliana, and Franco Grisotto, Turin, both of Italy, assignors to Fiat Societa per Azioni, Turin, Italy

Filed Oct. 26, 1973, Ser. No. 410,060

Claims priority, application Italy, Oct. 31, 1972, 70430/72

Int. Cl. H05k *1/02*

U.S. Cl. 339—17 F **5 Claims**



1. A connector for sealingly and detachably connecting the leads of a multi-core electric cable to zones of contact of a printed circuit board, comprising, in combination:

a. a first rigid insulating body having an elongate depression in one face;

b. a second rigid insulating body having a row of openings therein;

c. means fixing said second body to said one face of said first body with the elongate depression of the first body aligned with said row of openings;

d. an elastically deformable insulating sealing member stuck on to the second body and having openings therein aligned with and corresponding to said openings of the second body;

e. an insulating support of elastically deformable material housed in the depression in said first body and having curved projections protruding through the openings in the second body and through the openings in the sealing member at least as far as the level of the surface of the sealing member facing away from said second body;

f. a number of deformable contact strips placed transversely to the support and each resting upon a respective said projection of the support;

g. means for connecting each said contact strip electrically, sealingly and permanently to a respective conductor of the multi-core cable; and

h. pressure means adapted to press the printed circuit board against said sealing member so as to effect electrical contact between the contact zones of said board and the contact strips as a result of elastic deformation of the said sealing member.

3,851,295

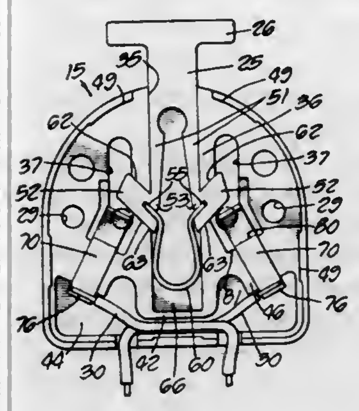
SELF-LOCKING LAMPHOLDER

B. Wayne Geier, Torrance, Calif., assignor to Bruce Industries, Inc., Gardena, Calif.

Filed Mar. 12, 1973, Ser. No. 340,026

Int. Cl. H01r *13/54*

U.S. Cl. 339—54 **10 Claims**



1. A self-locking bipin lampholder comprising

means defining a housing, said housing including contact receiving chambers and a slide lock receiving guideway, pin receiving slots formed in said housing and so arranged as to communicate with said contact receiving chambers, slide lock means slidably received in said guideway and including a pair of spaced locking arms movable with respect to said slide lock means, each of said locking arms being received within said contact chamber, contact means received within said contact receiving chamber and including resilient leg means spaced from said locking arms,

said locking arms in the locked position urging the lamp pins into electrical contact with said contact means,

means urging said locking arms into locking position for engagement with lamp pins present in said contact chambers.

3,851,296

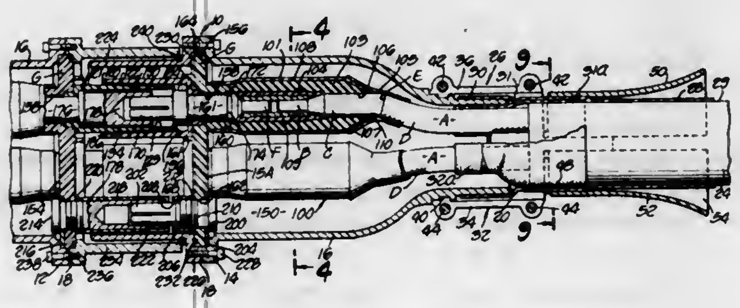
CABLE COUPLING

Richard W. Muchmore; Judson Douglas Wetmor, both of Redwood City, and John R. Hughes, Atherton, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Sept. 1, 1972, Ser. No. 285,568

Int. Cl. H01r *13/52*

U.S. Cl. 339—60 M **4 Claims**



1. A cable coupler for portable high-voltage cable lengths, comprising:

first and second housings, one of said housings including a female end and said other housing including a male end adapted to co-axially coupled with said female end;

a seal member interposed between said male and female ends;

each said housing including an insulated support member and being adapted to sealably receive at said other end a length of cable with the individual conductors thereof extending inwardly into said housing;

plug terminals supported by said insulated support member in one of said housings and socket terminals supported by said insulated support member in said other housing, said plug terminals interconnecting co-axially with said socket terminals when said female and male ends are coupled together with said insulated support members having means for encapsulating said interconnecting terminals comprising mating insulating male and female caps concentric about said terminals with said male caps having an exterior surface and said female caps having an interior surface, each interior surface being adapted to mate with one of said exterior surfaces to provide an additional seal means at the coupling ends of said housings;

means in each said housing connecting each end of said individual connectors in one said housing to a plug terminal in said housing and each end of said individual conductors in said other housing to a socket terminal in said housing, comprising a sleeve for covering an electrical conductor splice which provides electrical insulation and means for relief of electrical stress, said sleeve comprising a heat recoverable member sleeve having an inner layer of elastomeric material bonded thereto;

connecting means operably attached to said first and second housings to axially move said female and male ends together for the coupling thereof and to compress said seal member there between.

3,851,297

SUBSTRATE CONNECTOR

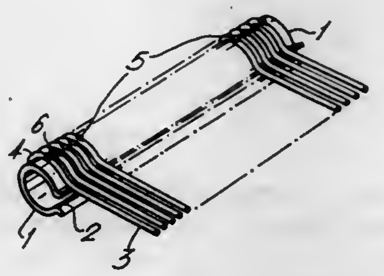
Geoffrey Hector James Munro, St. Pierre Du Bois, Guernsey (Channel Is.), assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 29, 1973, Ser. No. 364,851

Claims priority, application Great Britain, June 17, 1972, 28483/72

Int. Cl. H05k *1/07*

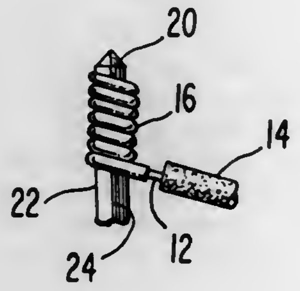
U.S. Cl. 339—61 M **7 Claims**



1. An electrical connector comprising an elongate spring body having a generally uniform cross-section, which is resiliently deformable transversely of its length and which has discrete conductive paths disposed in insulating spaced relationship around the body, said conductive paths comprising a conductor wire coil wound around said spring body and being disposed in closely uniformly spaced turns along said body, said conductor wire being bonded to said body and having a portion removed from each said turn thereby forming said discrete conductive paths, each path being of generally C-shaped turn form extending around part only of the circumferential periphery of the spring body, each path further comprising a lead portion extending freely away from said spring body, said lead portion being an integral part of the coil wound conductor wire, and exposed surface portions of the wire on each said turn defining at least a row of contact points distal from and extending along the spring body.

3,851,298
WRAPPED WIRE CONNECTION

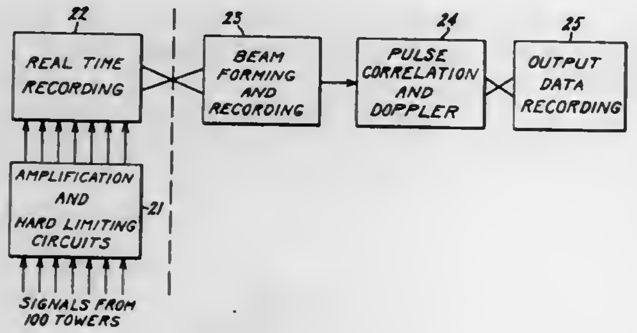
Harold Sokolov, Moorestown, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Apr. 6, 1973, Ser. No. 348,763
Int. Cl. H01r *5/08*
U.S. Cl. 339—276 A **3 Claims**



1. A solderless wrapped wire connection, comprising:
a length of stranded wire,
a conductive annular member surrounding said length, and a wire wrapping post wrapped with said surrounded length of wire forming an electrical connection therewith.

3,851,299
DATA PROCESSING SYSTEMS

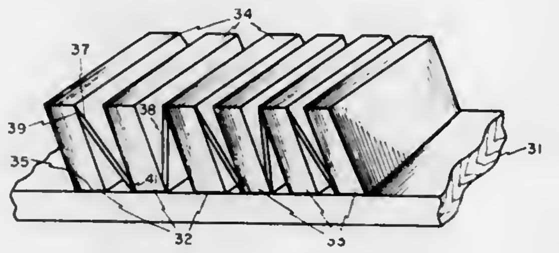
David E. Wood, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Dec. 15, 1961, Ser. No. 160,700
Int. Cl. G01s *7/54, 9/66*
U.S. Cl. 340—3 R **18 Claims**


22
REAL TIME RECORDING
23
BEAM FORMING AND RECORDING
24
PULSE CORRELATION AND DOPPLER
25
OUTPUT DATA RECORDING
AMPLIFICATION AND HARD LIMITING CIRCUITS
21
SIGNALS FROM 100 TOWERS

1. A data processing system including in combination:
1. first recording means for receiving and recording on a recording medium the signal inputs from an array of signal input devices, said recording medium being adapted to have its light modifying characteristics changed by said recording means in accordance with the signal inputs to said recording means whereby a plurality of tracks of light modifying marks are recorded on the recording medium with each track of marks representing the signal supplied from one signal input device of the array,
2. a first light source positioned adjacent the recording medium for imaging a light beam through the tracks on the medium,
3. beam forming mask means positioned over said recording medium for disposing over the recorded tracks in a selected sequence masks representing optimum signal output from each elemental point of a selected range of view of the array of signal pick-up devices,
4. first electro-optical conversion means for converting the light passing through both the record track and the mask into an electric output signal representative of coincidence between the mask and the track record at points where such coincidence occurs,
5. second recording means operatively coupled to said first electro-optical conversion means for recording on a recording medium a plurality of tracks of light modifying marks representative of the output signals generated by the beam forming process from each elemental point examined,
6. a second light source positioned to direct light through the last mentioned recording medium at least in the portion where said light modifying tracks are formed,
7. a mask having a coded series of light modifying marks formed thereon representing the signal with which correlation is sought,
8. optical means for optically imaging the light passing through all of the tracks of light modifying marks in the recording medium upon the mask,
9. light separating means having the light images that have passed through both said recording medium and said mask impinging thereon for separating the light images from each of the individual tracks, and
10. second electro-optical converting means for each of the individual tracks having said separated light beams imaged thereon for converting the light image into output electric signals representative of correlation between the mask and individual tracks on the recording medium.

3,851,300
TRANSDUCER

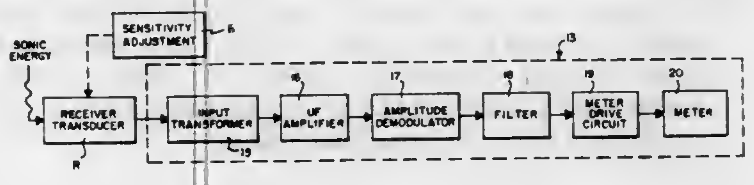
Rufus L. Cook, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 3, 1971, Ser. No. 196,848
Int. Cl. H04b *13/00*
U.S. Cl. 340—8 R **16 Claims**



1. In a reversible electroacoustical transducer:
a plurality of electroacoustical energy converters, each of which has an active-response surface and a mounting surface in opposite disposition therewith, and each of which is spatially disposed from the others;
a plurality of electrodes respectively connected to the active-response surfaces and the mounting surfaces of said plurality of electroacoustical energy converters;
base means connected to the mounting surface electrode ends of each of said plurality of electroacoustical energy converters for the supporting thereof in a predetermined array within said electroacoustical transducer; and
substantially rigid, impedance mismatching, bracing means respectively angularly connected only between the sides contiguous with the active-responsive surfaces of predetermined ones of said plurality of electroacoustical energy converters and the sides contiguous with the base mounting surfaces of predetermined adjacent others thereof for effecting the lateral mechanical and pressure energy decoupling between predetermined ones of said plurality of electroacoustical energy converters, without further contact with the remainder of the sides thereof.

3,851,301
METHOD AND APPARATUS FOR BALANCING AN ULTRASONIC DETECTION SYSTEM

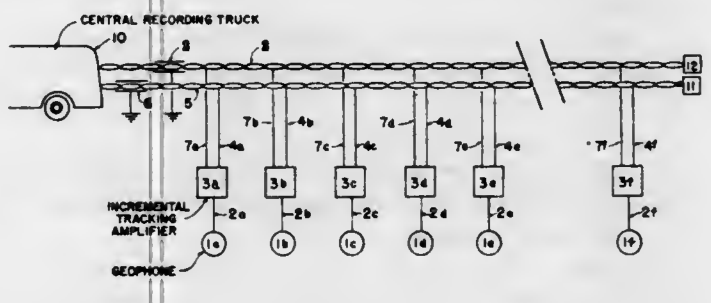
Edward A. Demers, Singac; George V. Hectus, Verona, and Ronald C. Fester, Rutherford, all of N.J., assignors to Walter Kidde & Company Inc., Belleville, N.J.
Filed Sept. 15, 1972, Ser. No. 289,424
Int. Cl. H04b *11/00*
U.S. Cl. 340—15 **16 Claims**



1. Apparatus for adjusting the sensitivity of a receiver transducer of an intruder detection system for protecting a given space, said system being of the type including means for producing a base frequency signal f_c which is transmitted into said space and from which a range of doppler frequency signals are generated in the space as a function of physical events occurring in the space, alarm means, and first means responsive to the base frequency signal f_c and a range of doppler frequency signals received from said space to actuate said alarm means; the improvement comprising at least one receiver transducer means in said space whose sensitivity is to be adjusted, means for transmitting into said space for receipt by said receiver transducer a test signal independent of said base frequency signal, said test signal having a spectrum of components of energy of different frequencies including those which would normally include at least a portion of the doppler frequencies generated in said space as a function of said base frequency signal, means coupled to said receiver transducer means for producing an output signal in response to and representative of the amplitudes of spectral components of the test signal received by said receiver transducer means, and means for adjusting the sensitivity of said receiver transducer means.

3,851,302
METHOD AND APPARATUS FOR SEISMIC DATA ACQUISITION BY SEQUENTIAL SAMPLING OF DATA

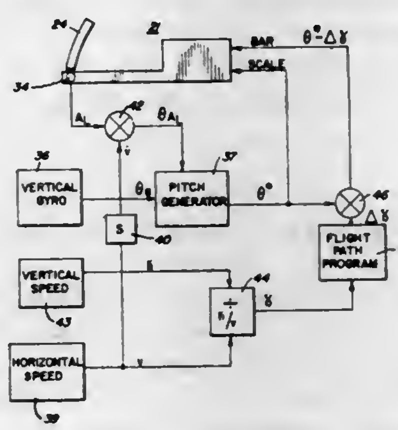
Arthur N. Schmitt, Tulsa, Okla., assignor to Seismograph Service Corporation, Tulsa, Okla.
Filed Mar. 9, 1973, Ser. No. 339,808
Int. Cl. G01v *1/24;* **H04j** *3/06;* **G08c** *15/06*
U.S. Cl. 340—15.5 TS **11 Claims**



1. A seismic data acquisition system for transmission to a central recording truck of the electrical signals from different geophone stations disposed along the ground in a linear array of geophones where the seismic data acquisition system comprises:
transmission line means having one end at the central recording truck and disposed along the linear array of geophones for transmission of pulses between the central recording truck and the geophone array;
a pulse generator connected to the transmission line means at the central recording truck for generating strobing pulses at a predetermined rate, each strobing pulse being propagated on the transmission line means along the array of geophones for sequentially interrogating each geophone station from the geophone station nearest to the central recording truck to the fartherest geophone station along the array; and
a plurality of incremental tracking amplifiers each characterized by having an output gate activated by a strobing pulse to provide a single output binary digit data pulse indicative of a change of the tracking amplifier input signal during a time interval defined by succeeding strobing pulses, each tracking amplifier being connected between a corresponding geophone station of the geophone array and the transmission line means whereby each tracking amplifier, starting with the tracking amplifier nearest to the recording truck and proceeding sequentially along the geophone array, transmits a data pulse to the transmission line means so that a series of data pulses is transmitted to the recording truck in an order corresponding to the distance of each tracking amplifier from the recording truck along the transmission line means.

3,851,303
HEAD UP DISPLAY AND PITCH GENERATOR

Hans Rudolf Muller, Kirkland, Wash., assignor to Sundstrand Date Control, Inc., Redmond, Wash.
Filed Nov. 17, 1972, Ser. No. 307,726
Int. Cl. G08g *5/00*
U.S. Cl. 340—27 NA **25 Claims**



1. A head up display for the operation of an aircraft including:
a partially reflective combiner screen in the line of sight of the operator through which the outside world may be viewed;
means for displaying pitch related information on said combiner screen against the background of the outside world; and
means for compensating the display of pitch related information for the angular position of the combiner screen with respect to the aircraft.

3,851,304
AIRCRAFT FLIGHT DATA DISPLAY INSTRUMENT

Bernard Picardat, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Apr. 24, 1973, Ser. No. 354,126
Claims priority, application France, Apr. 28, 1972, 72.15391
Int. Cl. G08g *5/02*
U.S. Cl. 340—27 NA **2 Claims**

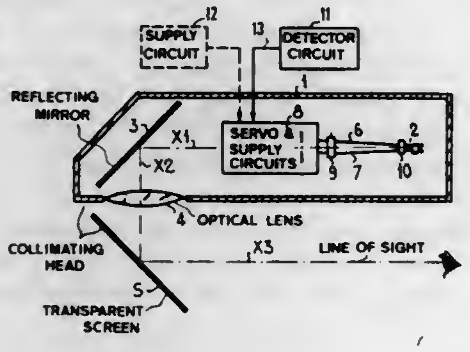
1. A display instrument for projecting aircraft flight data into the pilot's normal line of sight, said instrument comprising:
a transparent combining glass positioned in the said line of

sight and having a surface for reflecting projected images into the said line of sight;

a housing fixed with respect to the aircraft;

an optical objective supported by said housing for projecting images of luminous objects focused at infinity onto the said surface;

a plurality of light emitting elements mounted in said housing and having respective areas for providing light by conversion of electrical power applied thereto, said elements being arranged to serve as said luminous objects



and to represent flight data as a function of the positioning of the elements;

a supply circuit for supplying electrical power to said light emitting elements;

means for supporting said light emitting elements;

servo control means responsive to signals corresponding to flight data measurements for actuating said supporting means to position said areas of the light emitting elements within the focal zone of the optical objective; and

detector means connected to said servo control means for measuring flight data and developing said signals.

3,851,305
COLLISION DETECTING SYSTEM FOR A MOTOR VEHICLE

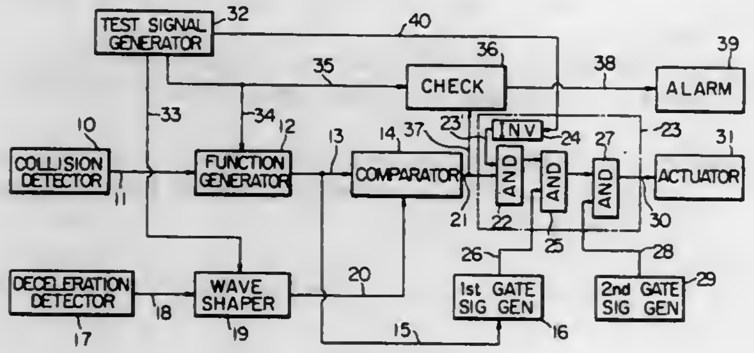
Kosaku Baba; Akio Hosaka, and Hiromichi Nakamura, all of Yokohama, Japan, assignors to Nissan Motor Company Limited, Yokohama City, Japan

Filed May 22, 1972, Ser. No. 255,823

Claims priority, application Japan, May 28, 1971, 46-36269; Aug. 14, 1971, 46-61431

Int. Cl. B60r ***21/08***

U.S. Cl. 340—52 H **9 Claims**



1. An electric collision detecting system for use with a safety device mounted on a motor vehicle, which comprises:

a collision detector for producing a collision signal when an object contacts the motor vehicle;

a deceleration detector for producing a real deceleration signal having a magnitude proportional to the magnitude of a deceleration subjected to the motor vehicle;

a function generator connected to said collision detector and producing a reference deceleration signal upon receiving said collision signal;

a comparator connected to said function generator and to said deceleration detector and producing a drive signal when said real deceleration signal exceeds said reference deceleration signal; and an

actuator connected to said comparator and actuating the safety device upon receiving said drive signal, further comprising:

a gate signal generator producing a gate signal when said reference deceleration signal is lower than a predetermined value;

a gate for passing therethrough said drive signal from said comparator to said actuator when receiving said gate signal, and said gate includes an AND gate having one input terminal connected to an output terminal of said csmparator and the other terminal connected to an output terminal of said gate signal generator.

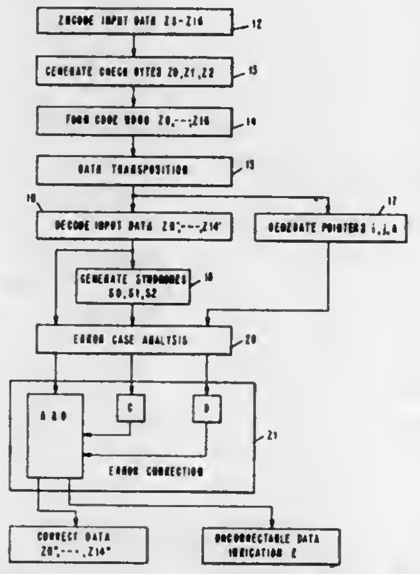
3,851,306
TRIPLE TRACK ERROR CORRECTION

Arvind M. Patel, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 24, 1972, Ser. No. 309,388

Int. Cl. G06f ***11/12***

U.S. Cl. 340—146.1 AL **8 Claims**


ENCODE INPUT DATA Z3–Z14
12
GENERATE CHECK BYTES Z0,Z1,Z2
13
FORM CODE WORD Z0,---,Z14
14
DATA TRANSPOSITION
15
16
DECODE INPUT DATA Z0',---,Z14'
GENERATE POINTERS i,j,k
17
GENERATE SYNDROMES S0,S1,S2
18
ERROR CASE ANALYSIS
20
A & B
C
D
21
ERROR CORRECTION
CORRECT DATA Z0',---,Z14'
UNCORRECTABLE DATA INDICATION E

1. The method of processing data which method is performed automatically in a data processing system, and comprises the steps of:

a. providing information bytes $Z3-Z(K-1)$;

b. serially processing said bytes, beginning with byte $Z(K-1)$, into the next step;

c. generating check bytes $Z0$, $Z1$ and $Z2$ by the sub-steps comprising

1. initially matrix multiplying the first byte received from stæp (b) in accordance with matrices of T^3 , T (I T T^2), and (I T T^2) to form, the first of a series of respective products $P1$, $P2$ and $P3$;
2. subsequently modulo two adding each byte with each product $P3$ that existed prior to such addition, to form a series of sums S;
3. matrix multiplying each sum S by the matrices of step $C1$ to form three results said first result forming a new $P1$;
4. modulo two adding said second result with the old $P1$ to form a new $P2$;
5. modulo two adding said third result with the old $P2$ to form a new $P3$;

whereby, when byte $Z3$ has been processed in accordance with steps (2–5), products $P1$, $P2$ and $P3$ respectively form check bytes $Z0$, $Z1$ and $Z2$;

d. and combining said check bytes with said information bytes to form a codeword, said matrices and bytes being related whereby each byte contains f bits, where $f=bm$, f, b and m being integers, K is an integer $3 < K < 2^b$, T is

a companion matrix of degree f, $\lambda = r(2^F-1)/(2^b-1)$, r is a positive integer prime to 2^b-l, and I is an indentity matrix.

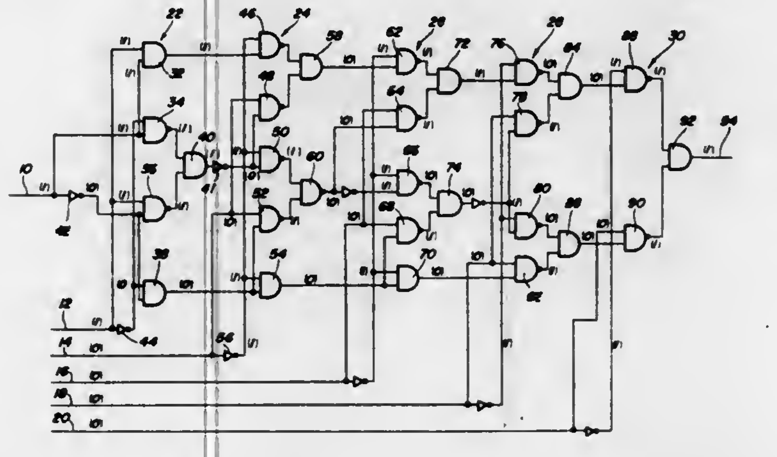
3,851,307
TWO (AND ONLY TWO) OUT OF SIX CHECK CIRCUIT

John M. Rivas, Bloomingdale, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed June 25, 1973, Ser. No. 373,044

Int. Cl. G06f ***11/08***

U.S. Cl. 340—146.1 AB **7 Claims**



1. A five stage logic circuit for determining the presence of an input signal on two and only two of six input lines, said logic circuit comprising:

a first stage logic circuit having inputs coupled respectively to two of said six lines;

a second stage logic circuit having inputs coupled respectively to the output of said first stage logic circuit and to a third of said input lines;

a third stage logic circuit having inputs coupled respectively to the output of said second stage logic circuit and to a fourth of said input lines;

a fourth stage logic circuit having inputs coupled respectively to the output of said third stage logic circuit and to a fifth of said input lines;

a fifth stage logic circuit having inputs coupled respectively to the output of said fourth stage logic circuit and to a sixth of said input lines; and

said first through fifth logic circuits including means responsive to the presence of two and only two input signals on said six input lines to provide an output.

3,851,308
PATTERN IDENTIFICATION SYSTEM UTILIZING COHERENT LIGHT

Harumi Kawasaki; Hizashi Sonezaki, and Norihiko Yoshimura, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

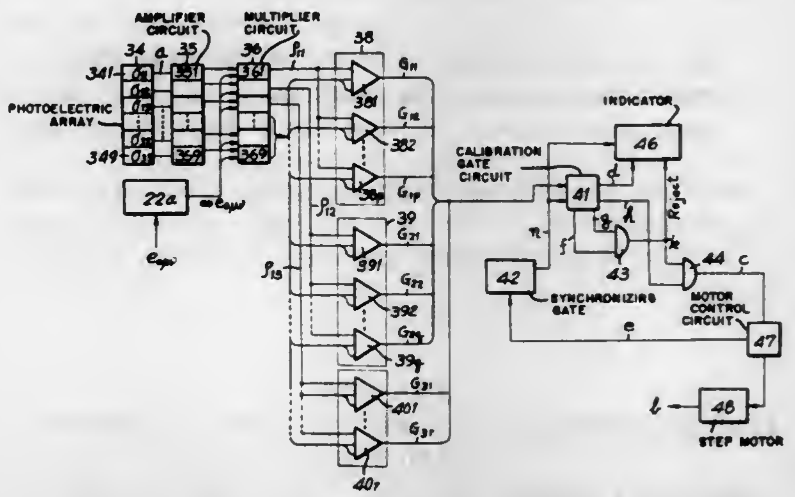
Filed Feb. 12, 1973, Ser. No. 332,017

Claims priority, application Japan, Feb. 14, 1972, 47-15477

Int. Cl. G06k ***9/08***

U.S. Cl. 340—146.3 P **5 Claims**

1. In a system for identifying patterns of a given group of patterns, matched filter means for storing a group of identifying patterns distributed in a lattice arrangement and respectively having configurations most of which conform to parts of the patterns to be identified with one or a combined limited number of said stored identifying patterns being capable of identifying a pattern without necessarily conforming to the configuration of the entire pattern which is to be identified, optical means coacting with said matched filter means for transmitting thereto an image of a pattern which is to be identified and for forming in an output plane from the stored identifying patterns of said matched filter means and from the pattern image transmitted thereto one or a limited number of correlative images capable of identifying the pattern transmitted by said optical means to said matched filter means, photosensitive means situated in the region of said output plane for responding to the correlative images and for creating electrical signals respectively corresponding to said correlative images, and identifying circuit means electrically connected with said photosensitive means for receiving said signals therefrom and for processing said signals to derive therefrom an indication of the identified pattern, said optical means having an optical axis along which said matched filter means is located, said optical axis having an input location and said matched filter means being situated between said input location, said



carrier means carrying patterns which are to be identified, said identifying circuit means including a calibration gate circuit means for receiving the processed signals and performing an identifying operation thereon, a recording means electrically connected with said calibration gate circuit means for receiving an identification signal therefrom and indicating the identified pattern, and transporting means electrically connected on the one hand with said calibration gate circuit means and on the other hand with said carrier means for receiving from said calibration gate circuit means an operation completion signal and for responding to the latter signal for transporting said carrier means to situate the next pattern to be identified at the input location.

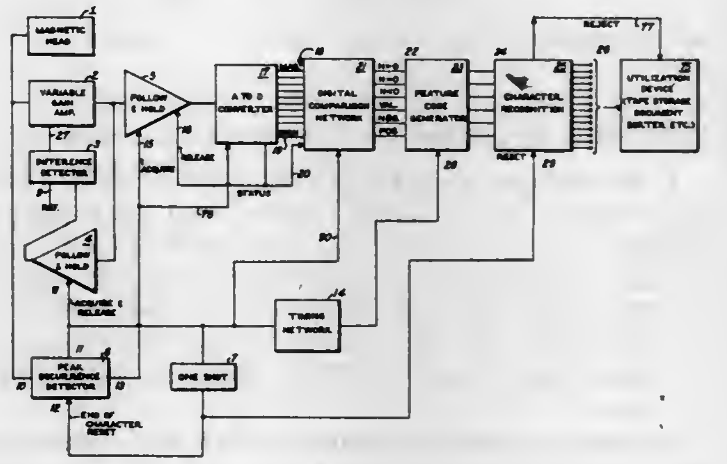
3,851,309
CHARACTER RECOGNITION APPARATUS

Joseph R. Kenney, Woodbridge; Rolland Ernst Welch; William H. Reading, III, both of Fairfax, all of Va., and Alfred H. Carson, Melbourne, Fla., assignors to Optical Recognition Systems, Reston, Va.

Filed Jan. 11, 1973, Ser. No. 322,809

Int. Cl. G06k ***9/18***

U.S. Cl. 340—146.3 C **10 Claims**



1. In a character reading system wherein an analog voltage having a waveform unique to each character to be read is

generated, said unique waveform including a permutated sequence of varying peak amplitudes and times of occurrence of same corresponding to the shape of the character being read, means for analyzing said waveform by comparing signals corresponding to the amplitudes of adjacent peaks to each other and for deriving feature signals in binary form from said analysis, and means responsive to said feature signals for deriving further binary electrical signals corresponding to the character recognized, the improvement comprising,

means for detecting each analog peak amplitude

analog to digital conversion means for converting each detected peak amplitude to a permutated binary number representative thereof

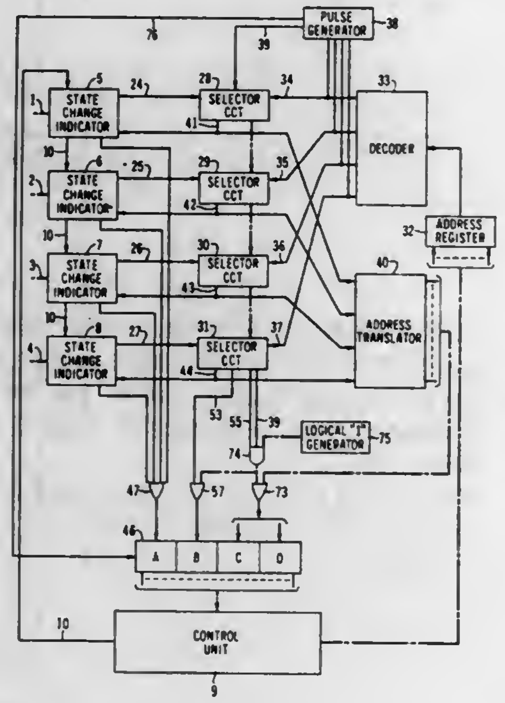
means for storing each said binary number

means for comparing each stored binary number with the next succeeding binary number corresponding to the next peak in said sequence to determine if said next peak is larger, smaller, or of the same size as the peak preceding it

means for storing a signal indicative of each of said comparisons until the occurrence of the end of said analog waveform, said stored signals constituting said feature signals.

3,851,310
LINE SEARCHING ARRANGEMENT HAVING PRIORITY SEQUENCE

Frank Finley Taylor, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 3, 1973, Ser. No. 356,709
Int. Cl. H04q *9/00*
U.S. Cl. 340—147 L P **7 Claims**



1. An arrangement for determining when any of a plurality of conductors are exhibiting a preselected signal comprising:

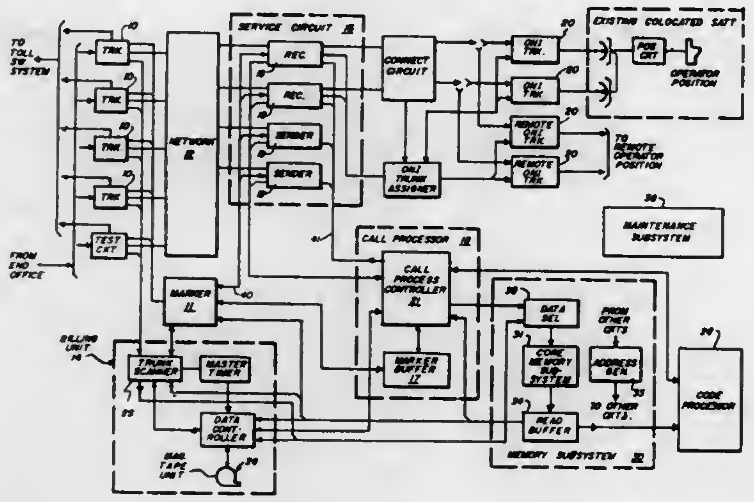
a control unit for transmitting information request signals;

means responsive to said information request signals and the signals on said conductors for transmitting coded signals defining the location of one of said conductors which exhibits said preselected signal to said control unit; and

indicating means responsive to said information request signals and signals on said conductors for transmitting a common reaccess signal to said control unit when more than one of said conductors is exhibiting said preselected signal.

3,851,311
ARRANGEMENT AND METHOD FOR PROTECTING A COMMON HIGHWAY FROM FALSE SIGNALS

Truman R. Mila, Batavia, Ill., assignor to GTE Automatic Electric Laboration Incorporated, Northlake, Ill.
Filed Sept. 17, 1973, Ser. No. 398,299
Int. Cl. H04m *3/22*; **H04q** *9/00*
U.S. Cl. 340—147 R **4 Claims**



1. In a common control communication switching system including a plurality of trunks connectable through a switching network to any one of a number of service circuits under the control of a marker, the marker during its cycle time and upon establishing a connection between a trunk and a service circuit coupling an interrogate signal to the latter to interrogate it for its identification number, the identification number being coupled to a common highway for transmission to a call processor within the system, the marker upon failing to properly receive an identification number re-interrogating the service circuit during its next cycle of operation, an arrangement for overcoming a permanent identification signal on said common highway as a result of a permanent fault signal corresponding to said interrogate signal on the connection between said switching network and a service circuit comprising a timer within each of said service circuits having a preestablished time cycle which is less than the cycle time of said marker and activated when said marker couples said interrogate signal to said service circuit to cause the identification number of said service circuit to be provided on said common highway during its time cycle, said permanent fault signal activating a timer within one of said service circuits and thereby causing said identification number of said service circuit to be coupled onto said common highway during said timer's time cycle until said timer times out, said timer upon timing out being prevented from being re-activated until said permanent fault signal is removed; whereby a permanent fault signal will cause the identification number of a service circuit to appear on the common highway only for a time period less than the cycle time of the marker.

3,851,312
MODULAR PROGRAM CONTROL APPARATUS FOR A MODULAR DATA PROCESSING SYSTEM

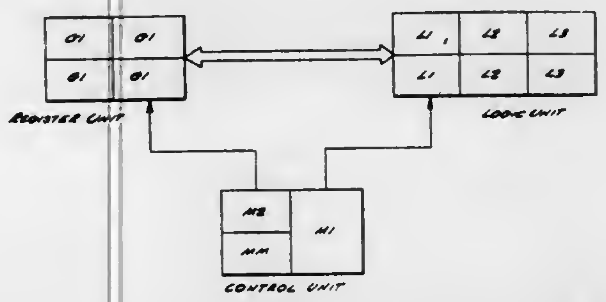
Floyd Dennis Erwin, La Habra, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Division of Ser. No. 41,040, May 27, 1970, Pat. No. 3,745,532. This application Feb. 22, 1973, Ser. No. 334,801
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **8 Claims**

1. A modular micro-program control apparatus for a modular data processing system comprising:

a modular logic unit for processing data including a plurality of data modules including a data storage module having a data bus input for receiving words of data parallel by bit and also having a plurality of data bus outputs for concurrently supplying words of data; each of said plurality of data modules including at least a data bus input, a data bus output, and control bus inputs;

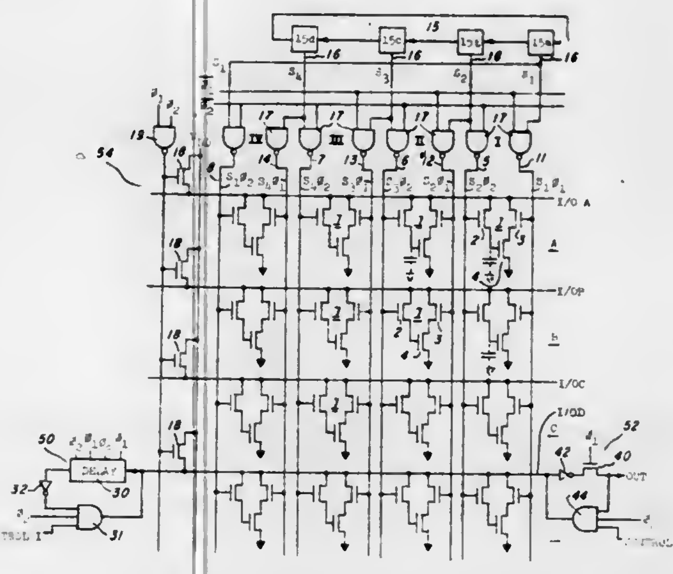
a modular control unit for micro-programming control of the logic unit, said control unit comprising a control word sequencer module including means for generating a sequence of addresses of micro-control words of a command, a plurality of micromemory modules receiving the sequence of addresses supplied by said sequencer module for concurrently outputting a plurality of micro-control words from storage in the plurality of micromemory modules according to each address of the sequence to provide parallel groups of control signals, each group being determined by the respective one of the concurrently outputted micro-control words; and

a plurality of control busses for supplying the groups of control signals in parallel to respective control bus inputs of predetermined ones of said data modules according to respective ones of the plurality of micro-control words concurrently accessed to provide parallel processing of data by the data modules.



3,851,313
MEMORY CELL FOR SEQUENTIALLY ADDRESSED MEMORY ARRAY

Kisuk Chang, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Feb. 21, 1973, Ser. No. 334,493
Int. Cl. G11c *7/00, 19/00, 11/40*
U.S. Cl. 340—173 R **19 Claims**

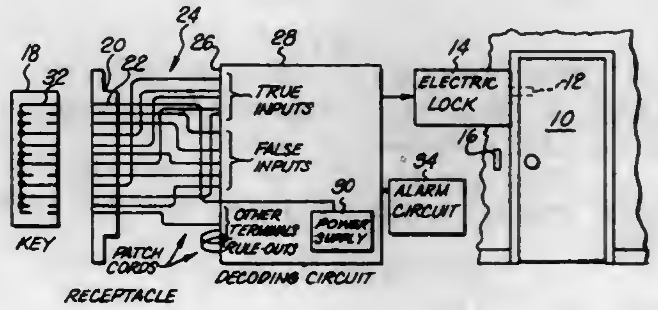


1. The method of addressing an array of selectively addressable memory cells arranged in rows and columns with all cells in a respective column having common write enable terminals and common read enable terminals and all cells in respective rows having common read input terminals and common write output terminals commonly coupled by a read/write means, comprising the steps of:

a. addressing one column of read enable terminals for reading information from the cells of said one column onto the respective read/write means;
b. addressing the write enable terminals of the right adjacent column to thereby write into said right adjacent column from said read/write means;
c. addressing the read enable terminals of the left adjacent column to thereby read onto the read/write means the contents of the cells of said other column; and
d. addressing the write enable terminals of said one column to thereby write into each cell of said each column from the respective read/write means.

3,851,314
ELECTRONIC IDENTIFYING SECURITY SYSTEM

Robert A. Hedin, Novi, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed May 14, 1973, Ser. No. 359,714
Int. Cl. G06k *7/06*; **H04q** *3/00*
U.S. Cl. 340—147 MD **11 Claims**



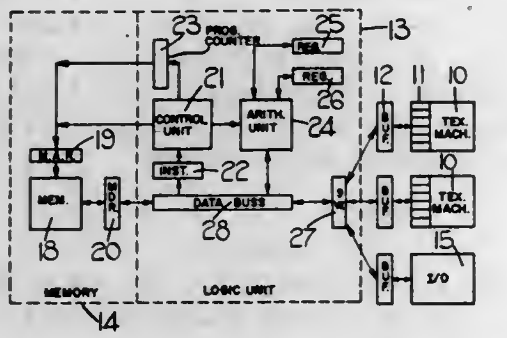
5. An electronic identifying apparatus for use with valid binary code unlocking devices which establish a first binary code and a second binary code or codes comprising, input circuit means having a plurality of input means on which said binary codes are to be established, first decoding means connected to said input means responsive to said first binary code on said input means for actuating a lock mechanism, second decoding means responsive to said second binary code for overriding the first decoding means to prevent actuation of said mechanism thereby, switching means for selectively enabling and disabling said second decoding means to provide selective actuation of said mechanism by unlocking devices having a particular second binary code.

3,851,315
TEXTILE MACHINES

John Ernest Anderson, Wednesfield, England, assignor to Midland Industrial Computing Limited, Birmingham, England
Filed June 28, 1972, Ser. No. 267,257
Claims priority, application Great Britain, June 29, 1971, 30322/71; Oct. 20, 1971, 48758/71
Int. Cl. G06f *15/46*
U.S. Cl. 340—172.5 **66 Claims**

1. The combination comprising a textile material producing machine having at least one electromechanically operated actuating element and means for producing information representative of the status of the machine, and a stored program digital computer, the computer including random access storage means in which is stored information representative of at least one repeated area of the material to be produced, the information relating to a respective repeated area being stored only once in said storage means, said computer also including logic unit means disposed between said storage means and the machine and a control program means, said logic unit means

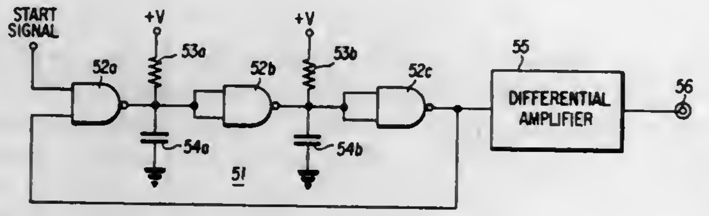
receiving said status information from the machine and acting to produce control information according to said repeated area information and to supply said control information to each said actuating element of the machine as instructed by



the control program means in the time available during the operation of the machine, the information representative of each repeated area being stored in said storage means in an order other than that in which the control information is produced for supply to each said actuating element.

3,851,316
SEMICONDUCTOR MEMORY DEVICE

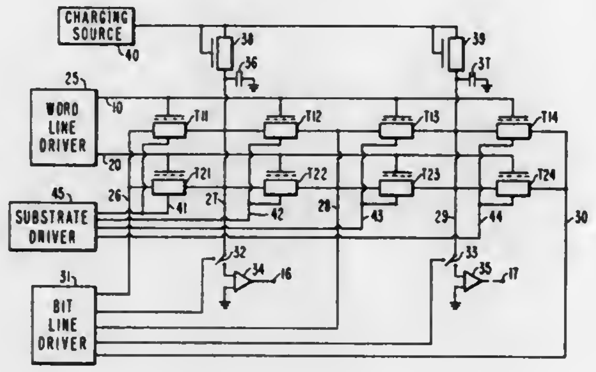
Koji Kodama, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kanagawa-ken, Japan
Filed Apr. 13, 1973, Ser. No. 350,720
Claims priority, application Japan, Apr. 14, 1972, 47-037569
Int. Cl. G11c *11/40, 11/24*
U.S. Cl. 340—173 DR **6 Claims**



1. A refresh signal generator comprising:
a first NAND gate,
a second NAND gate,
a third NAND gate,
a first thermistor,
a second thermistor,
a first capacitor,
a second capacitor,
said first NAND gate having a first input and a second input and an output,
said second NAND gate having a first input and a second input and an output,
said third NAND gate having a first input and a second input and an output,
means connecting a start signal to the said first input of said first NAND gate,
means connecting the output of said first NAND gate to the said first and second inputs of said second NAND gate,
means connecting the output of said second NAND gate to the said first and second inputs of said third NAND gate, means connecting the output of said third NAND gate to the said second input of said first NAND gate,
means connecting said first thermistor between a voltage source and the said output of said first NAND gate,
means connecting said first capacitor between said output of said first NAND gate and ground,
means connecting said second thermistor between a voltage source and the output of said second NAND gate,
means connecting said second capacitor between the output of said second NAND gate and ground.

3,851,317
DOUBLE DENSITY NON-VOLATILE MEMORY ARRAY

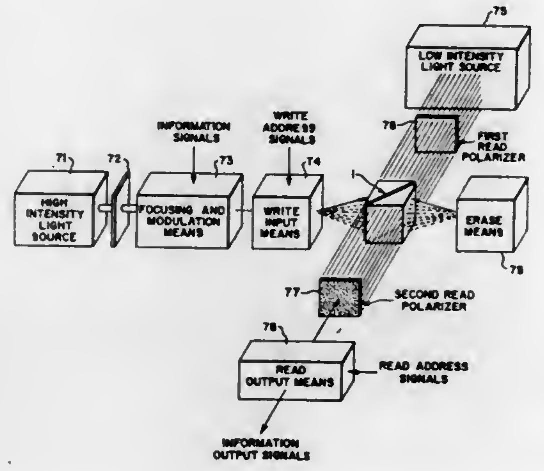
Richard Arthur Kenyon, Underhill, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 4, 1973, Ser. No. 357,439
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **11 Claims**



1. A memory array comprising
a pair of voltage driven devices serially coupled together at a common point, each of said pair of devices exhibiting above a first drive voltage level a stable low impedance and at a second drive voltage level can alternately exhibit a stable high impedance and a stable low impedance,
means coupled to said common point for setting a selected voltage on said common point,
means for impressing said selected voltage across a first one of said pair of devices,
means for applying said second drive voltage to both of said devices, and
means coupled to said common point for sensing the impedance state of said first one of said pair of devices.

3,851,318
LIQUID CRYSTAL INFORMATION STORAGE AND READ-OUT SYSTEM

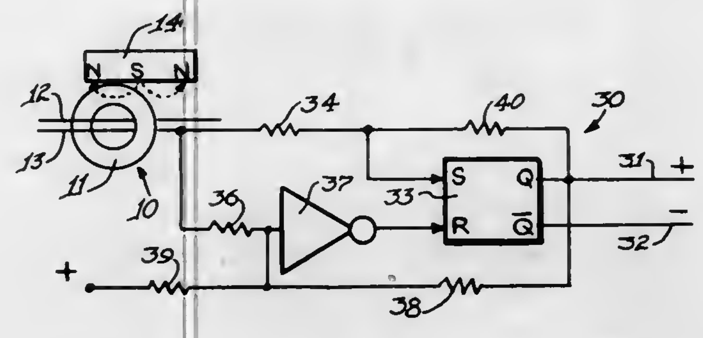
Ted R. Taylor, Florianopolis S.C., Brazil, and James L. Fergason, Kent, Ohio, assignors to International Liquid Xtal Company, Cleveland, Ohio
Division of Ser. No. 199,599, Nov. 17, 1971, Pat. No. 3,775,757. This application Oct. 11, 1973, Ser. No. 405,431
Int. Cl. G11c *13/04*
U.S. Cl. 340—173 LS **10 Claims**



1. An information storage and read-out system comprising a liquid crystal memory element selected to have first and second stable molecular axis orientations, means for producing a high intensity beam of electromagnetic wave energy and for directing said beam to selected molecular groups comprising storage elements in said liquid crystal memory element, said high intensity beam of electromagnetic wave energy acting to change the molecular orientation of the liquid crystal molecules in said selected molecular groups from a first stable orientation to a second stable orientation, and means for establishing a low intensity electromagnetic wave energy reading source polarized so as to cause birefringent rotation through said selected molecular groups whereby electromagnetic wave energy will pass through only those selected molecular groups in said first molecular orientation.

3,851,319
DIAGNOSTIC SOLID STATE SWITCH STRUCTURE

Victor M. Bernin, Mount Prospect, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Mar. 26, 1973, Ser. No. 345,210
Int. Cl. G11c *17/00*
U.S. Cl. 340—174 SP **1 Claim**

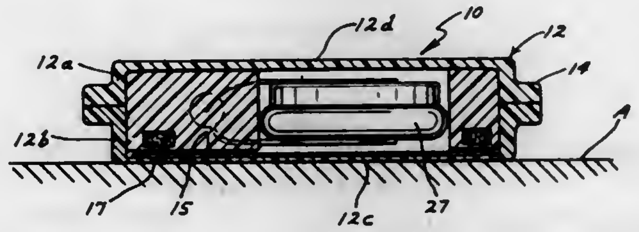


1. In a switching system including at least one closed loop magnetic core, a drive winding passing through said core for receiving bipolar signals, a sense winding passing through said core in such a manner that electrical signals of a given polarity will be inductively coupled from said drive winding to said sense winding only when said core is magnetically unsaturated for signals of said given polarity and a selectively positionable magnetic field-producing magnetic means capable of saturating said core, a diagnostic means comprising control means for selectively controlling the coupling of the magnetic field of said magnetic means so that saturating magnetic flux through said core is selectively provided in a first direction, and in a second direction which is opposite to said first direction, so that electrical signals of opposite polarity are selectively coupled between said drive and sense windings, bistable means having a set input terminal and a reset input terminal constructed so as to switch to its set state from its reset state when a signal of a given polarity is supplied to said set input terminal or to its reset state from its set state when a signal of said given polarity is supplied to said reset terminal and signal inversion means having an input terminal coupled to said sense line and an inverted signal output terminal coupled so as to supply an inverted signal from said sense line to said reset input terminal, said set input terminal of said bistable means being coupled to said sense line so as to receive an uninverted signal from said sense line.

3,851,320
EXTERNAL TEMPERATURE AND PULSE RATE SENSING AND TRANSMITTING DEVICE

Joseph D. Dahl, Minneapolis, Minn., assignor to Bio Data, Inc., South Minneapolis, Minn.
Filed Nov. 8, 1973, Ser. No. 413,891
Int. Cl. G08c *19/06, 19/26*
U.S. Cl. 340—189 M **4 Claims**

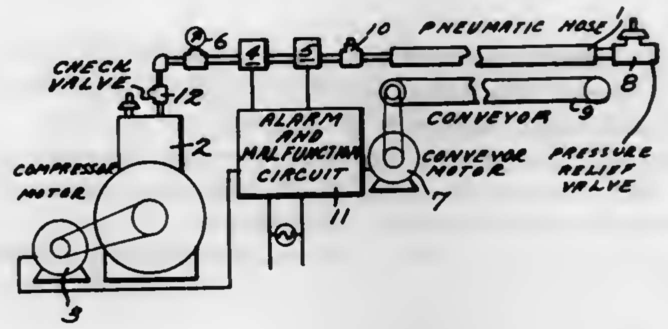
1. A temperature and pulse rate sensing and transmitting device having in combination
a housing of small thickness for attachment at one side thereof to the chest wall of a patient,
a transistorized R.F. transmission circuit encapsulated within said housing,
said circuit comprising a blocking oscillator circuit including an inductance coil and a variable capacitor,
said coil and said capacitor being calibrated to transmit a specific carrier frequency to indicate a normal pulse rate, a metal plate member carried at the inner side of said one side of said housing in close proximity to said coil and vibrating in response to the pressure of the heartbeat of said patient varying the inductance of said coil responsive to changes in the rate of said heartbeat shifting said carrier frequency accordingly,



said circuit including a blocking capacitor and a variable resistor, said capacitor and resistor being calibrated to have said circuit transmit a specific blocking rate to indicate a normal body temperature,
a thermal resistance element in circuit with said variable resistor and blocking capacitor shifting said blocking rate in accordance with and in response to changes in body temperature,
whereby shifts in said carrier frequency and in said blocking rate of the signals transmitted by said circuit indicate changes of pulse rate and body temperature.

3,851,321
CONVEYOR FIRE ALARM SYSTEM

Thomas C. Stitt, Proctorville, Ohio
Filed Sept. 25, 1972, Ser. No. 291,546
Int. Cl. G08b *17/04*
U.S. Cl. 340—229 **17 Claims**



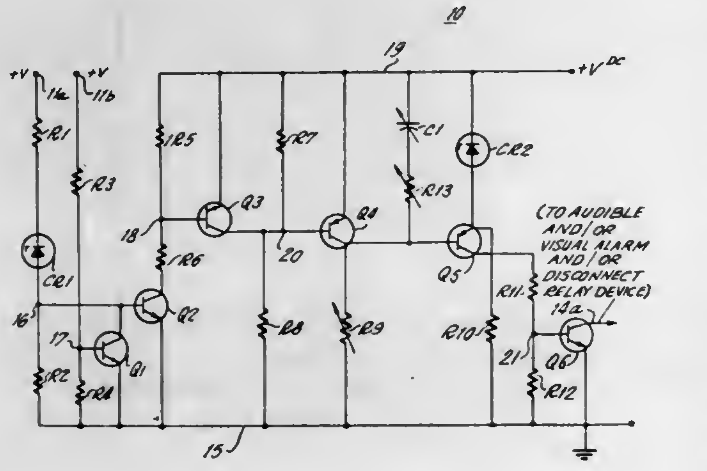
1. A fire detection and alarm device comprising:
1. a fire destructible conduit means for disposition in a space where fire is to be detected;
2. fluid pressure means operably connected to a first end of the said conduit means for supplying pressurized fluid to said conduit means;
3. fluid release means operably connected to the opposite end of the said conduit means and responsive to the fluid pressure therein for releasing fluid from the said conduit means when the fluid pressure exceeds a preset value;
4. low pressure detection means operably connected to the said conduit means for detecting and signalling fluid pressures in said conduit means below a preset value;
5. a first low pressure alarm means operably connected and responsive to said low pressure detection means for giving an alarm when the fluid pressure in said conduit means falls below the said preset low value;
6. fluid pressure control means operably connected to said fluid pressure means for intermittently causing a flow of

pressurized fluid to said conduit means, the operation of the said fluid pressure control means being independent of the pressure in the said conduit means;

7. high pressure detection means operably connected to the said conduit means for detecting and signalling fluid pressures in said conduit means above a preset high value; and
8. a high pressure alarm means operably connected and responsive to said high pressure detection means for giving an alarm when the fluid pressure in said conduit rises above the said preset high value.

3,851,322
SHORT CIRCUIT MONITOR FOR STATIC INVERTERS AND THE LIKE

Albert William Compoly, Belmar, and Alfred Charles Temple, Manasquan, both of N.J., assignors to Avionic Instruments Inc., Rahway, N.J.
Filed Nov. 23, 1973, Ser. No. 418,391
Int. Cl. G08b *21/00*
U.S. Cl. 340—253 A **9 Claims**



1. Apparatus for monitoring the output of an inverter utilized to generate a regulated a.c. signal of a predetermined frequency, said apparatus comprising:

first and second input terminals for receiving signals respectively representing the value of line current and line voltage at the output of the inverter;

first normally non-conductive means coupled to said first input terminal and being turned on when said line current reaches a first threshold level;

second means coupled to said second input terminal for maintaining said first means in the non-conductive state when said line voltage is above a second predetermined threshold level, said second means being adapted to enable said first means to be turned on only when said line voltage falls below said second threshold level;

a source of electrical energy;

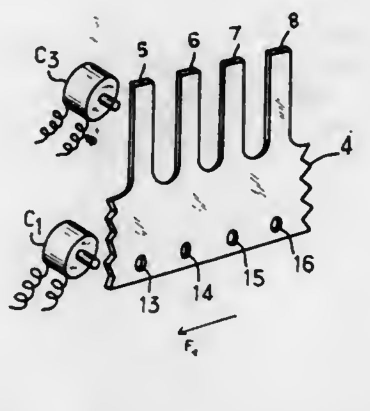
a timing circuit coupled to said energy source and adapted to charge toward a predetermined value;

switch means coupled across said timing circuit for normally providing a by-pass path to prevent charging from said energy source to be applied to said timing circuit, said switch means having an input coupled to said first means for disabling said by-pass path and enabling charging of said timing circuit when said first means is turned on;

means coupled to said timing circuit for generating an alarm signal when said timing circuit reaches a third predetermined threshold level whereby said alarm signal is generated only when circuit condition persists for a predetermined time interval.

3,851,323
DEVICE FOR DETECTING THE ABSENCE OF A FINGER IN A TYPE CARRIER OF A PRINTER

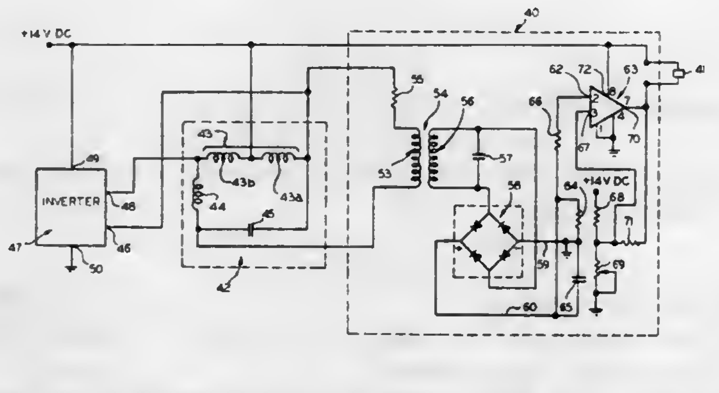
Jean-Jacques Pierre Eltgen, Danjoutin, France, assignor to Societe Honeywell Bull (Societe Anonyme), Paris, France
Filed May 22, 1973, Ser. No. 362,726
Claims priority, application France, May 25, 1972, 72.18665
Int. Cl. G08b *21/00*
U.S. Cl. 340—267 R **6 Claims**



1. A device for the detection of the displacement of a finger for a printer comprising a movable support in the form of an endless band carrying print-type-carrying fingers subject to deformation relative thereto and synchronization marks in equal number, each mark being associated with one finger, and a first fixed detector for the synchronization marks positioned close to the path followed by said synchronization marks; said first detector having means for sending a synchronization pulse whenever a synchronization mark passes before it; a second fixed detector positioned close to the path followed by the fingers and on the level of the finger associated with the mark that passes before the first detector, said second detector having means for emitting a pulse indicative of the presence of a finger whenever a finger passes before it, and a recognition circuit having two inputs for receiving the pulses emitted by the first and the second detector, respectively, said circuit having an output and means for verifying the correspondence between the pulses emitted by the two detectors and generating at said output a signal indicating the displacement of a finger whenever the correspondence is not established.

3,851,324
NAVIGATIONAL REFERENCE INSTRUMENT

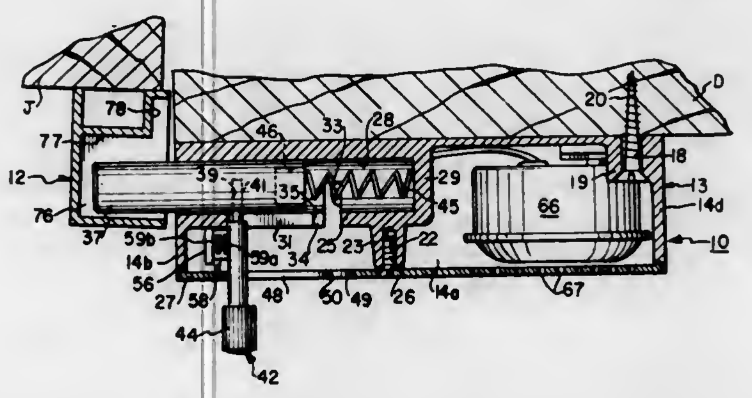
Albert De Boer, and David I. Gleason, both of Grand Rapids, Mich., assignors to R. C. Allen, Inc., Grand Rapids, Mich.
Filed June 18, 1973, Ser. No. 371,268
Int. Cl. G08b *21/00*
U.S. Cl. 340—267 R **8 Claims**



1. A marine navigational reference instrument comprising a rate gyro, a meter responsive to said gyro indicating rate of turn, and detector means sensing the speed of the gyro and producing a warning signal when the speed is below a given point, wherein the gyro includes a squirrel cage induction motor having primary and secondary windings, said primary winding being center-tapped, means supplying a D.C. potential alternately across each half thereof, and a phase-splitting capacitor connected in series with the secondary winding, and wherein the detector means includes means producing a reference voltage, and a comparator amplifier receiving as one input a signal produced from the voltage across the phase-splitting capacitor and as another input a signal produced by said reference voltage, said amplifier producing an output when the input voltage from the phase-splitting capacitor is less than the reference voltage.

3,851,325
LOCK AND ALARM

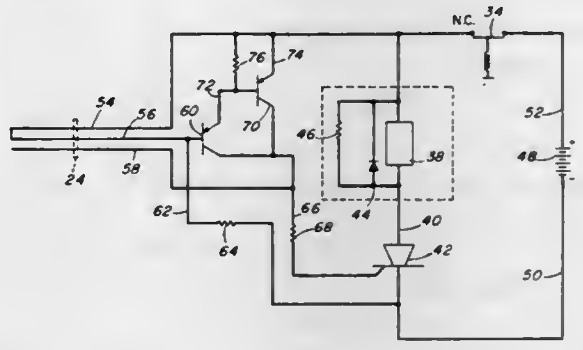
Mitchell Maged, 123 Berkshire Rd., Rockville Centre, N.Y. 11570
Filed Mar. 21, 1973, Ser. No. 343,357
Int. Cl. G08b *13/08*
U.S. Cl. 340—274 **6 Claims**



1. A lock and alarm device comprising in combination a receiver means including an opening; a housing including a first upstanding wall defining an opening, an elongated guide bolt casing formed on the interior of the housing and having a central bore which terminates at one end in an opening at said first housing wall and at the other end at a wall of said casing, said casing also formed with an elongated through slot into said bore having a first portion generally parallel to the longitudinal axis of the bore along at least a part of the length thereof and a second portion which is at an angle to said first portion, an elongated bolt in said casing bore and a spring between one end of said bolt and said casing wall at said other end of said bore, a cover plate attached to said housing and having a slot formed therein with an elongated generally straight first portion corresponding to said first portion of the casing slot, and a curved second portion including at least a part corresponding to said second portion of said casing slot and defining a projection on the plate, a latch pin attached to and generally transverse of said bolt and movable in said casing slot and having a portion extending through said cover plate slot and movable therein; audible alarm means located in said housing, switch means in said housing connected in electrical circuit with said alarm means and having an actuating means in the path of travel of said latch pin, said pin when moved around said projection in said cover plate and resting in a first position against the wall forming said second portion of said slot to hold said bolt in a retracted position with said spring compressed in said bore, said pin being movable in said first portion of said cover slot from said first position around said projection of said cover plate into an intermediate position when one end of said bolt remote from the end engaged by the spring engages a fixed part adjacent said opening of said receiver means, said one end of said bolt being carried into said receiver opening to a second position by said compressed spring being released as said one end is moved off said fixed part, said pin carried by said bolt as it is moved to said second position engaging the switch actuating means to complete the electric circuit with the alarm means.

3,851,326
PURSE ALARM

Vincent J. Costa, 59 Park Ave., Arlington, Mass. 02174
Filed Apr. 17, 1972, Ser. No. 244,468
Int. Cl. G08b *13/14*
U.S. Cl. 340—280 **3 Claims**



1. An alarm for purses and the like, comprising
a. a transferable housing,
b. detachable connecting means attached to said housing for securing said housing to said purse,
c. an electrically conductive flexible cord having at least three leads connected at one end to said housing and at the other end being formed with a fixed closed loop.
d. at least a portion of said core being detachable from said housing,
e. an alarm, a battery and a normally armed switching circuit including a transistor mounted in said housing and electrically connected to said cord and normally providing a small and continuous flow of current through said cord,
f. current control means including a silicon controlled rectifier connected to said alarm, said battery, and to said transistor in said circuit whereby disconnection of said cord will actuate said circuit to thereby cause said rectifier to conduct current through said alarm,
g. said housing being formed with a restricted opening therein and a normally closed reset switch mounted recessed within said housing in registration with said opening,
h. a pair of said leads in said cord normally completing a circuit between one side of said battery, the base of said transistor and the cathode of said rectifier, a third lead in said cord being connected to the collector of said transistor and the gate of said rectifier whereby a short circuit between said third lead and one of said leads in said pair of leads will bias said rectifier into a conducting state.

3,851,327
LIGHT PEN DETECTION FOR PLASMA DISPLAY SYSTEM USING SPECIALLY-TIMED ERASE PULSE

Peter Dinh-Tuan Ngo, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 29, 1973, Ser. No. 345,893
Int. Cl. H05b *41/34*
U.S. Cl. 340—324 M **15 Claims**

1. In a display system comprising

a plurality of display cells, each cell being capable of remaining in a first state for a period of at least T_0 seconds, absent any external factors,

means for applying erase signals selectively to said plurality of display cells to restore selected ones of said cells in said first state to a second state before the expiration of said T_0-second period of time has elapsed, the effect of said erase signals being operative over a period of duration $T_1<T_0$ seconds to effect said restoration to said second state, said restoration being accompanied by a characteristic light signal,

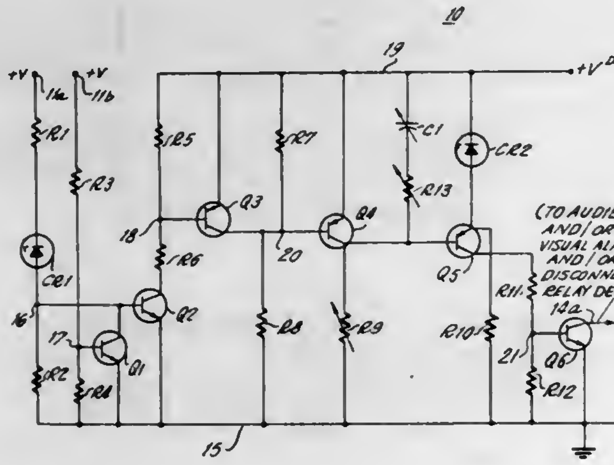
pressurized fluid to said conduit means, the operation of the said fluid pressure control means being independent of the pressure in the said conduit means;

7. high pressure detection means operably connected to the said conduit means for detecting and signalling fluid pressures in said conduit means above a preset high value; and

8. a high pressure alarm means operably connected and responsive to said high pressure detection means for giving an alarm when the fluid pressure in said conduit rises above the said preset high value.

3,851,322
SHORT CIRCUIT MONITOR FOR STATIC INVERTERS AND THE LIKE

Albert William Compoly, Belmar, and Alfred Charles Temple, Manasquan, both of N.J., assignors to Avionic Instruments Inc., Rahway, N.J.
Filed Nov. 23, 1973, Ser. No. 418,391
Int. Cl. G08b *21/00*
U.S. Cl. 340—253 A **9 Claims**



1. Apparatus for monitoring the output of an inverter utilized to generate a regulated a.c. signal of a predetermined frequency, said apparatus comprising:

first and second input terminals for receiving signals respectively representing the value of line current and line voltage at the output of the inverter;

first normally non-conductive means coupled to said first input terminal and being turned on when said line current reaches a first threshold level;

second means coupled to said second input terminal for maintaining said first means in the non-conductive state when said line voltage is above a second predetermined threshold level, said second means being adapted to enable said first means to be turned on only when said line voltage falls below said second threshold level;

a source of electrical energy;

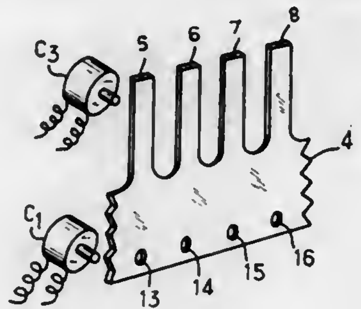
a timing circuit coupled to said energy source and adapted to charge toward a predetermined value;

switch means coupled across said timing circuit for normally providing a by-pass path to prevent charging from said energy source to be applied to said timing circuit, said switch means having an input coupled to said first means for disabling said by-pass path and enabling charging of said timing circuit when said first means is turned on;

means coupled to said timing circuit for generating an alarm signal when said timing circuit reaches a third predetermined threshold level whereby said alarm signal is generated only when circuit condition persists for a predetermined time interval.

3,851,323
DEVICE FOR DETECTING THE ABSENCE OF A FINGER IN A TYPE CARRIER OF A PRINTER

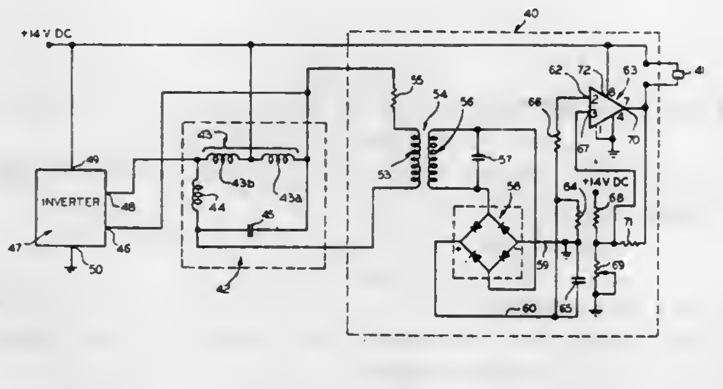
Jean-Jacques Pierre Eltgen, Danjoutin, France, assignor to Societe Honeywell Bull (Societe Anonyme), Paris, France
Filed May 22, 1973, Ser. No. 362,726
Claims priority, application France, May 25, 1972, 72.18665
Int. Cl. G08b *21/00*
U.S. Cl. 340—267 R **6 Claims**



1. A device for the detection of the displacement of a finger for a printer comprising a movable support in the form of an endless band carrying print-type-carrying fingers subject to deformation relative thereto and synchronization marks in equal number, each mark being associated with one finger, and a first fixed detector for the synchronization marks positioned close to the path followed by said synchronization marks; said first detector having means for sending a synchronization pulse whenever a synchronization mark passes before it; a second fixed detector positioned close to the path followed by the fingers and on the level of the finger associated with the mark that passes before the first detector, said second detector having means for emitting a pulse indicative of the presence of a finger whenever a finger passes before it, and a recognition circuit having two inputs for receiving the pulses emitted by the first and the second detector, respectively, said circuit having an output and means for verifying the correspondence between the pulses emitted by the two detectors and generating at said output a signal indicating the displacement of a finger whenever the correspondence is not established.

3,851,324
NAVIGATIONAL REFERENCE INSTRUMENT

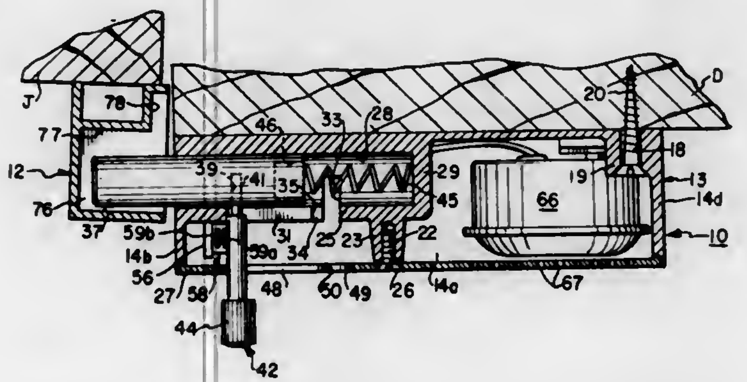
Albert De Boer, and David I. Gleason, both of Grand Rapids, Mich., assignors to R. C. Allen, Inc., Grand Rapids, Mich.
Filed June 18, 1973, Ser. No. 371,268
Int. Cl. G08b *21/00*
U.S. Cl. 340—267 R **8 Claims**



1. A marine navigational reference instrument comprising a rate gyro, a meter responsive to said gyro indicating rate of turn, and detector means sensing the speed of the gyro and producing a warning signal when the speed is below a given point, wherein the gyro includes a squirrel cage induction motor having primary and secondary windings, said primary winding being center-tapped, means supplying a D.C. potential alternately across each half thereof, and a phase-splitting capacitor connected in series with the secondary winding, and wherein the detector means includes means producing a reference voltage, and a comparator amplifier receiving as one input a signal produced from the voltage across the phase-splitting capacitor and as another input a signal produced by said reference voltage, said amplifier producing an output when the input voltage from the phase-splitting capacitor is less than the reference voltage.

3,851,325
LOCK AND ALARM

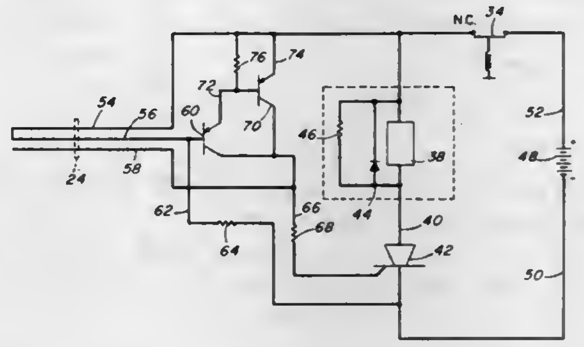
Mitchell Maged, 123 Berkshire Rd., Rockville Centre, N.Y. 11570
Filed Mar. 21, 1973, Ser. No. 343,357
Int. Cl. G08b *13/08*
U.S. Cl. 340—274 **6 Claims**



1. A lock and alarm device comprising in combination a receiver means including an opening; a housing including a first upstanding wall defining an opening, an elongated guide bolt casing formed on the interior of the housing and having a central bore which terminates at one end in an opening at said first housing wall and at the other end at a wall of said casing, said casing also formed with an elongated through slot into said bore having a first portion generally parallel to the longitudinal axis of the bore along at least a part of the length thereof and a second portion which is at an angle to said first portion, an elongated bolt in said casing bore and a spring between one end of said bolt and said casing wall at said other end of said bore, a cover plate attached to said housing and having a slot formed therein with an elongated generally straight first portion corresponding to said first portion of the casing slot, and a curved second portion including at least a part corresponding to said second portion of said casing slot and defining a projection on the plate, a latch pin attached to and generally transverse of said bolt and movable in said casing slot and having a portion extending through said cover plate slot and movable therein; audible alarm means located in said housing, switch means in said housing connected in electrical circuit with said alarm means and having an actuating means in the path of travel of said latch pin, said pin when moved around said projection in said cover plate and resting in a first position against the wall forming said second portion of said slot to hold said bolt in a retracted position with said spring compressed in said bore, said pin being movable in said first portion of said cover slot from said first position around said projection of said cover plate into an intermediate position when one end of said bolt remote from the end engaged by the spring engages a fixed part adjacent said opening of said receiver means, said one end of said bolt being carried into said receiver opening to a second position by said compressed spring being released as said one end is moved off said fixed part, said pin carried by said bolt as it is moved to said second position engaging the switch actuating means to complete the electric circuit with the alarm means.

3,851,326
PURSE ALARM

Vincent J. Costa, 59 Park Ave., Arlington, Mass. 02174
Filed Apr. 17, 1972, Ser. No. 244,468
Int. Cl. G08b *13/14*
U.S. Cl. 340—280 **3 Claims**



1. An alarm for purses and the like, comprising
- a. a transferable housing,
- b. detachable connecting means attached to said housing for securing said housing to said purse,
- c. an electrically conductive flexible cord having at least three leads connected at one end to said housing and at the other end being formed with a fixed closed loop.
- d. at least a portion of said core being detachable from said housing,
- e. an alarm, a battery and a normally armed switching circuit including a transistor mounted in said housing and electrically connected to said cord and normally providing a small and continuous flow of current through said cord,
- f. current control means including a silicon controlled rectifier connected to said alarm, said battery, and to said transistor in said circuit whereby disconnection of said cord will actuate said circuit to thereby cause said rectifier to conduct current through said alarm,
- g. said housing being formed with a restricted opening therein and a normally closed reset switch mounted recessed within said housing in registration with said opening,
- h. a pair of said leads in said cord normally completing a circuit between one side of said battery, the base of said transistor and the cathode of said rectifier, a third lead in said cord being connected to the collector of said transistor and the gate of said rectifier whereby a short circuit between said third lead and one of said leads in said pair of leads will bias said rectifier into a conducting state.

3,851,327
LIGHT PEN DETECTION FOR PLASMA DISPLAY SYSTEM USING SPECIALLY-TIMED ERASE PULSE

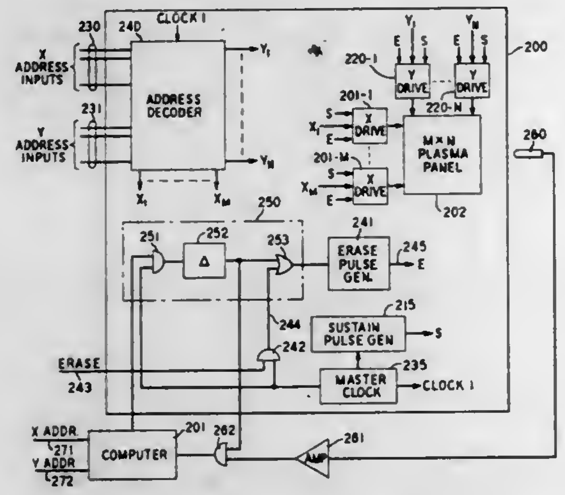
Peter Dinh-Tuan Ngo, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 29, 1973, Ser. No. 345,893
Int. Cl. H05b *41/34*
U.S. Cl. 340—324 M **15 Claims**

1. In a display system comprising

a plurality of display cells, each cell being capable of remaining in a first state for a period of at least T_0 seconds, absent any external factors,

means for applying erase signals selectively to said plurality of display cells to restore selected ones of said cells in said first state to a second state before the expiration of said T_0-second period of time has elapsed, the effect of said erase signals being operative over a period of duration $T_1<T_0$ seconds to effect said restoration to said second state, said restoration being accompanied by a characteristic light signal,

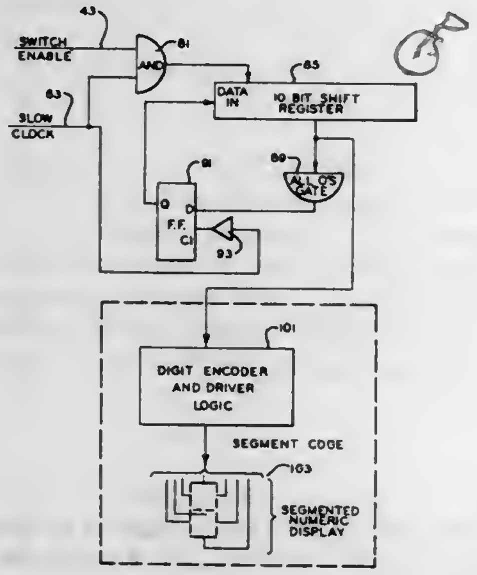
means for applying sustain signals to sustain those of said plurality of cells which are in said first state for an additional T_0-second interval, the improvement comprising:
means for generating delayed replicas of said erase signals, means for sequentially applying said delayed erase signals to those of said plurality of display cells which are in said first state, thereby to give rise to respective characteristic light signals at a time associated with the application of said delayed erase signals, and
means for detecting said characteristic light signals resulting from the application of said delayed erase signals.



3,851,328
OPTICAL SOLID STATE SWITCHES

Michael R. Sottile, Pine Brook, and Anthony F. Sanducci, Oakland, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Jan. 17, 1973, Ser. No. 324,366
Int. Cl. G08b *5/36*
U.S. Cl. 340—337 **14 Claims**

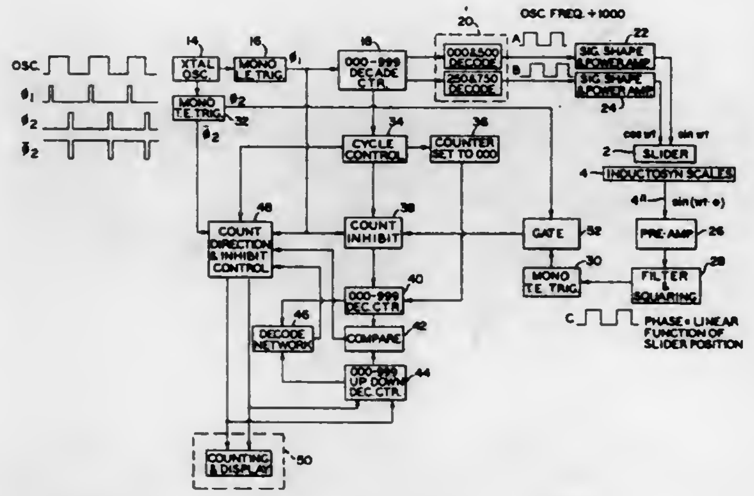


1. Control panel switching apparatus comprising:
a. a control panel base constructed of a thin sheet of rigid material having at least one hole therein of a size large enough to insert a human finger therethrough;
b. a light source at an edge of said hole and aimed to project across said hole;
c. light detecting means across from said light source and positioned to intersect the light therefrom, said detecting means providing an output at a first level when light is imaged thereon and at a second level when no light is imaged thereon;
d. a transistor switch obtaining its input from the output of said detecting means and providing its output as the output of the switching apparatus said transistor adapted to provide a ground output in response to said first level and a high output in response to said second level whereby inserting a finger in said hole momentary switching action may be obtained;
e. a plurality of n indicators mounted in said panel adjacent said hole and arranged in contiguous relationship;
f. an n bit shift register having its n outputs coupled to said n indicators;
g. means to load and shift, at a slow rate, a plurality of ones into said shift register in response to a high output from said transistor; and
h. means to reset said shift register upon all bits in said register becoming ones whereby action equivalent to that of a potentiometer may be obtained by inserting a finger in said hole until the desired percentage of indicators are lighted.

3,851,329
DIGITAL ANGLE CONVERTER

Ronald G. Kraus, Akron, Ohio, assignor to Kraus Instruments, Inc., Akron, Ohio

Filed Nov. 3, 1972, Ser. No. 303,627
Int. Cl. H03k *13/20*
U.S. Cl. 340—347 AD **13 Claims**



1. A resolver to digital angle converter, comprising:
a resolver type transducer comprising a stationary scales having inductive coils precisely spaced thereon and a slider moveably mounted on the scales, the slider being characterized by the presence of inductive coils positioned thereon;
a first means connected to the slider for electrically exciting the coils thereof with sine and cosine waves of fixed amplitude and frequency;
a second means connected to the scales for sensing the sinusoidal signal induced therein by the inductive coupling between the coils of the slider and the coils of the scales, the sinusoidal signal having a phase shift with respect to the sine and cosine waves a degree characteristic of the positional relationship existing between the slider and the scales, the second means including a squaring amplifier circuit and a hysterisis feedback network for transforming the sinusoidal signal into an unsymetrical square wave; and
a third means interconnected between the first and second means for determining the positional relationship between the slider and the scales by sensing said phase shift, the third means being responsive to voltage level transitions of the unsymetrical square wave.

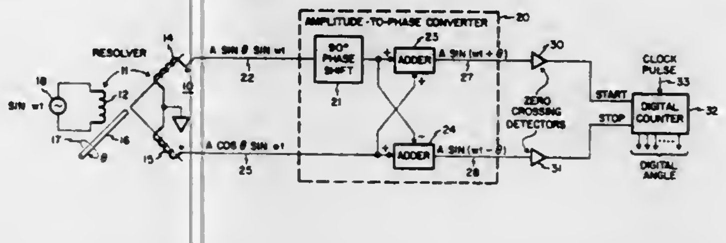
3,851,330
AMPLITUDE-TO-PHASE CONVERSION CIRCUIT

William H. Huber, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Feb. 20, 1973, Ser. No. 333,749
Int. Cl. H03k *13/20*
U.S. Cl. 340—347 SY **10 Claims**

1. An amplitude-to-phase conversion circuit comprising:
a carrier frequency source;

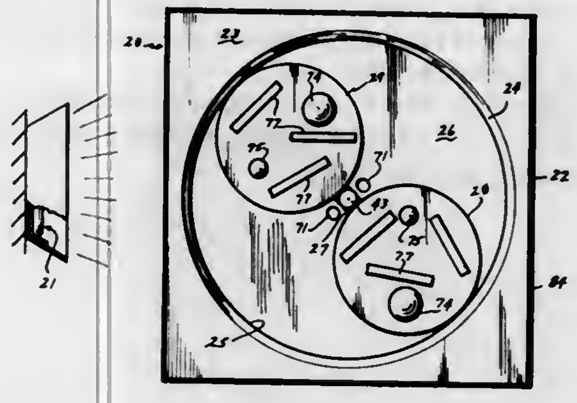
a resolver having an analog input shaft and a transformer having input and output terminals, said input terminals being coupled to said carrier source, a first output terminal producing a first output signal having an amplitude proportional to the sine of the angle of said analog shaft, and a second output terminal producing a second output signal having an amplitude proportional to the cosine of said shaft angle;
a first adder having two input terminals;
a second adder having two input terminals;
a purely resistive network interconnecting each of said resolver outputs with each of said input terminals of said adders; and
a single phase shifting network connected between said first output terminal of said resolver and one input terminal of each of said adders, said phase shifting network including one resistor and a single reactive impedance element for shifting the phase of said first output signal substantially by 45°; said networks being so connected as to apply said second signal to said first adder, to apply said first signal shifted in phase by said phase shifting network to said first adder, and means including said adder to apply the negative of said first signal to said first adder, said networks being further so connected as to apply said second signal to said second adder, said first signal to said second adder, and means including said second adder to apply the negative of said phase-shifted first signal to said second adder, said networks and said adders being so arranged that said first adder generates a first resultant signal having a phase shifted in one sense with respect to the phase of said carrier source while said second adder generates a second resultant signal having a phase shifted in the opposite sense, said phase shifts corresponding to the angle of said input shaft, whereby undesired variations of the resultant signals due to variations of said reactive impedance element are substantially compensated.



3,851,331
ROTATING ILLUMINATED DISPLAY DEVICE HAVING ULTRAVIOLET RESPONSIVE MEMBERS

Morris D. Jaffe, Jr., 300 Alameda Cir., San Antonio, Tex. 78212

Continuation-in-part of Ser. No. 201,479, Nov. 23, 1971, abandoned. This application Jan. 26, 1973, Ser. No. 327,074
Int. Cl. H04q *1/45*
U.S. Cl. 340—366 B **44 Claims**

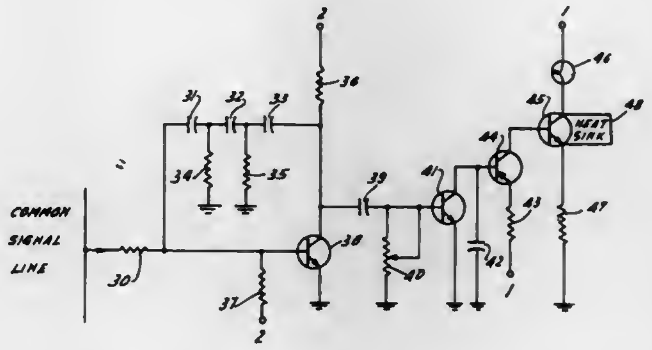


1. A rotating illuminated device adapted to be bathed in an ultraviolet light source comprising
a rotatably driven member,
a plurality of plates mounted on said driven member,
means to rotate each of said plurality of plates, and
ultraviolet light responsive means adapted to be applied to at least selected parts of each of said plates whereby varying background designs and changing color combinations are created upon rotation of said driven member and said plates on their respective axes and illumination of said ultraviolet light responsive means by said ultraviolet light source.

3,851,332
OSCILLATOR CONTROLLED COLOR ORGAN DISPLAY

Robert J. Dougherty, Jr., 2306 Curcar Dr., Mississippi City Station, Gulfport, Miss. 39501

Filed July 26, 1973, Ser. No. 382,748
Int. Cl. G08b *5/36*
U.S. Cl. 340—366 B **9 Claims**

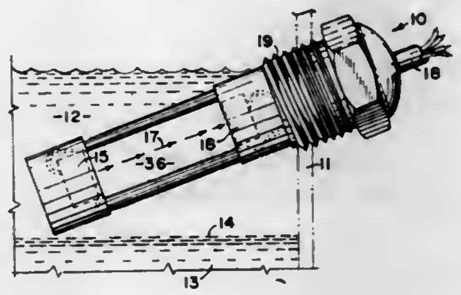


1. An RC Phase Shift Audio Sine Wave Oscillator device which is readily intergratable for use in connection with a color organ display system wherein musical notes are electronically separated and modified to generate impulses for actuating a series of colored lamps, said device comprised of:
a. a transistor having a base, collector and emitter;
b. phase shifting network combination of capacitors and resistors connected between the collector and the base of said transistor, the base being connected to a common signal line for receiving signal sources; and
c. a multi-stage amplifier connected across the collector and a source of electricity for powering a lamp.

3,851,333
SPRAY INJECTION FOR TESTING AN ULTRASONIC LIQUID LEVEL DETECTOR

Sherman S. Fishman, P.O. Box 312, San Francisco, Calif. 94101

Filed July 31, 1969, Ser. No. 855,445
Int. Cl. G08b *29/00*
U.S. Cl. 340—410 **2 Claims**

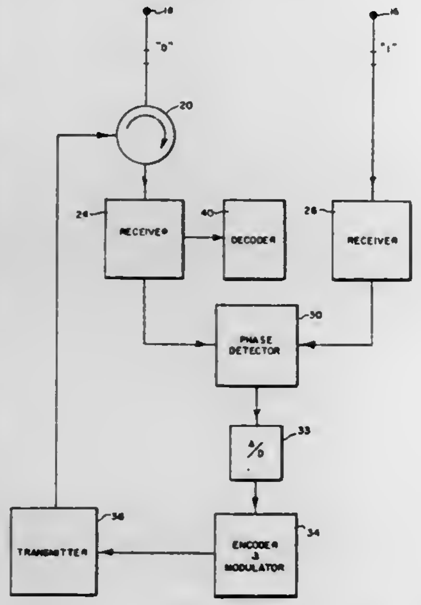


1. An ultrasonic liquid level detector comprising a glass tube open at both ends, an emitting ultrasonic transducer mounted on the side of the tube having its emitting surface facing the tube interior; a receiving ultrasonic transducer mounted on the side of the tube opposite the emitting transducer and having its receiving surface generally parallel to the

emitting surface of the emitting transducer, means for activating the emitting transducer to cause emission of an ultrasonic beam, a liquid spray injector mounted in the tube arranged to direct a liquid spray into the gap between the emitting transducer and the receiving transducer so as to provide a conducting sound path and means for injecting such a spray following any substantial drop in the energy received by the receiving transducer.

3,851,334
COLLISION AVOIDANCE AND STATION KEEPING ANTENNA SYSTEM

H. Paris Coleman, Alexandria, Va., and Walton B. Bishop, Oxon Hill, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sept. 19, 1972, Ser. No. 290,427
Int. Cl. G01s *9/56*
U.S. Cl. 343—6.5 R **5 Claims**



1. A method of determining the direction and bearing between a first and a second vehicle comprising:
- interrogating said first vehicle by transmitting a first signal from said second vehicle; said first vehicle
- receiving said first signal and then
- determining the bearing of said second vehicle; encoding the bearing of said second vehicle to form a second signal and
- transmitting said second signal;
- receiving said second signal by said second vehicle;
- determining the bearing of the first vehicle; and
- decoding said second signal to obtain the bearing information from the second signal.

ERRATUM

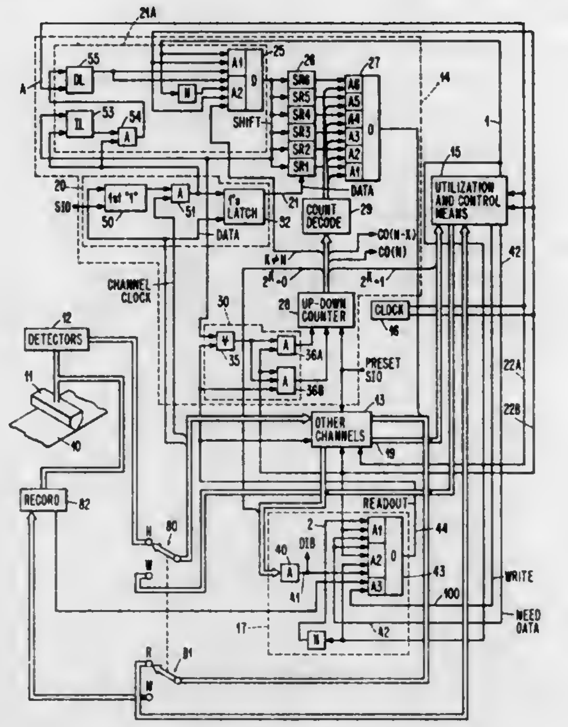
For Class 358—67 see:
Patent No. 3,851,093

ERRATUM

For Class 358—10 see:
Patent No. 3,850,412

3,851,335
BUFFER SYSTEMS

Joseph E. Elliott, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed July 30, 1973, Ser. No. 383,648
Int. Cl. G11b *5/02;* G06k *7/016*
U.S. Cl. 360—26 **30 Claims**



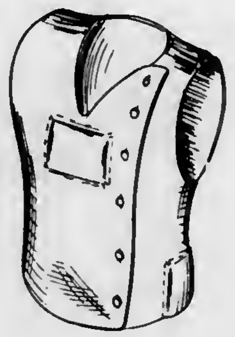
1. A digital signal buffer unit comprising:
- a data signal shift register having a given number of shift stages interconnected to transfer digital signals one stage at a time from an input stage toward a last stage, each stage having output gating means, OR circuit means for receiving signals from all said gating means to pass signals from any shift stage as buffer output signals;
- an up/down counter having said given number, plus one, stable count indicating signal states, one of said states being a reference state with the remaining given number of said signal states indicating one of said shift stages, means connecting said up/down counter to said output gating means such that the respective output gating means is enabled by a one of said given number of indicating signal states;
- input data means for supplying data signals to said input stage and having input control means for supplying input control signals to simultaneously actuate said shift register to shift the signal content of said shift register one stage at a time toward said last stage and actuate said counter to count up;
- output data means for receiving said buffer output signals and having output control means supplying output control signals to said counter for actuating said counter to count down and said output control means simultaneously supplying one of said output control signals to said output gating means whereby the signal content of a given shift stage indicated by the signal state of said counter is read out from said given shift stage as a buffer output signal; and
- means responsive to simultaneous occurrence of said input and output control signals to inhibit said counter from changing signal states.

DESIGNS

NOVEMBER 26, 1974

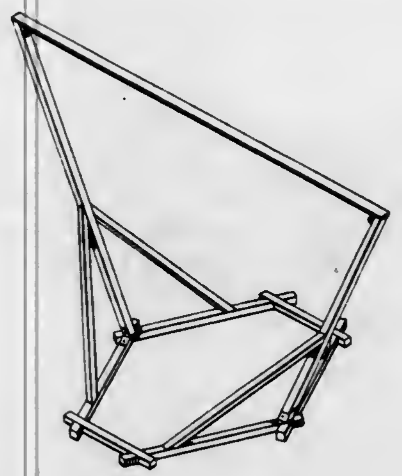
233,707
PROTECTIVE JACKET

Levi D. Jaramillo, 730 W. Cool Drive,
Tucson, Ariz. 85704
Filed Mar. 12, 1973, Ser. No. 340,313
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—190



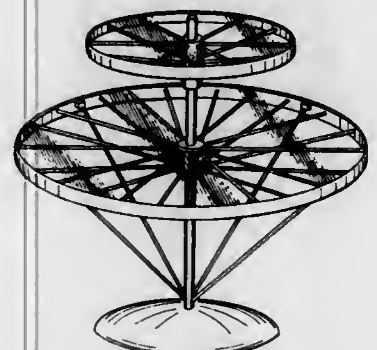
233,708
HAMMOCK STAND

Kenneth P. Gresk, 78 Plains Apts.
Windham, Conn. 06280
Filed Mar. 12, 1973, Ser. No. 340,530
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



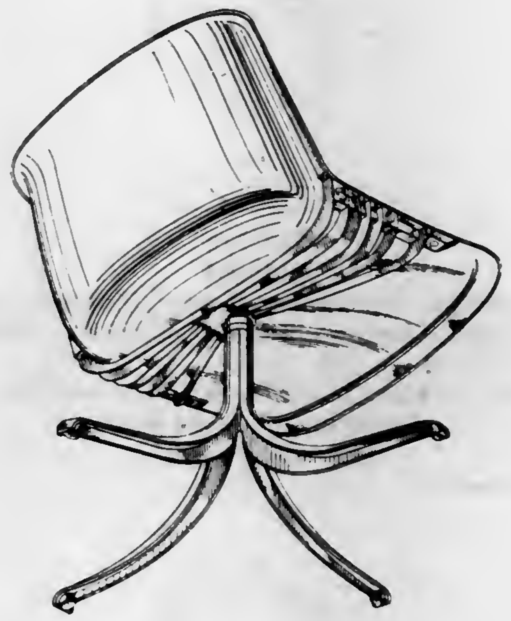
233,709
PATIO TABLE

Betty J. Williams, Box 243, Walsenburg, Colo. 81089
Filed Dec. 13, 1972, Ser. No. 314,843
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—24



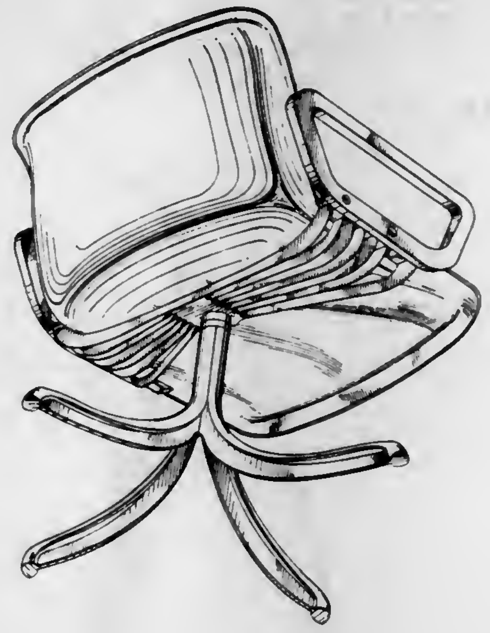
233,710
CHAIR

Marco Fantoni, Milan, Italy, assignor to TECNO S.p.A. Mobili e forniture per arredamento, Milan, Italy
Filed July 10, 1972, Ser. No. 270,474
Claims priority, application Italy Jan. 13, 1972
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—30



233,711
CHAIR

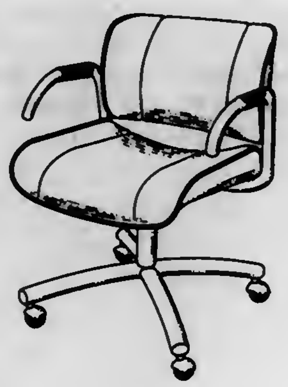
Marco Fantoni, Milan, Italy, assignor to TECNO S.p.A., Mobili e forniture per arredamento, Milan, Italy
Filed July 10, 1972, Ser. No. 270,475
Claims priority, application Italy Jan. 13, 1972
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31



233,712
ARM CHAIR

Earl H. Koepke, Sturgis, Mich., assignor to Harter Corporation, Sturgis, Mich.
Filed Dec. 13, 1972, Ser. No. 314,591
Term of patent 14 years
Int. Cl. D6—*01*

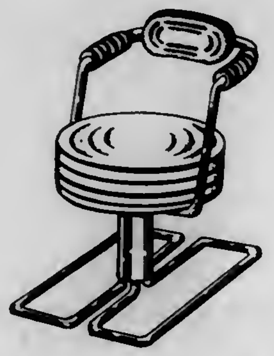
U.S. Cl. D6—31



233,713
CHAIR

Maija Ruoslahti, Frisbacka, Espoo, Finland, assignor to Kalustekiila Kommandiitiyhtio Mitikka, Moisionkatu, Lahti, Finland
Filed Mar. 26, 1973, Ser. No. 344,560
Term of patent 14 years
Int. Cl. D6—*01*

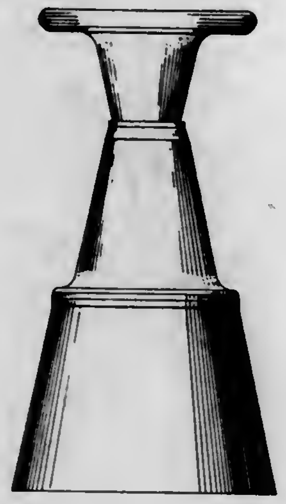
U.S. Cl. D6—31



233,714
BAR STOOL

Lloyd D. Everard, 11020 Kent-Kangley Road, Apt. B53, and Douglas T. Mergenthaler, Kent-Kangley Road, Apt. B54, both of Kent, Wash. 98031, and John E. Pettit, 15260 14th S., Seattle, Wash. 99202
Filed Feb. 20, 1973, Ser. No. 334,101
Term of patent 14 years
Int. Cl. D6—*01*

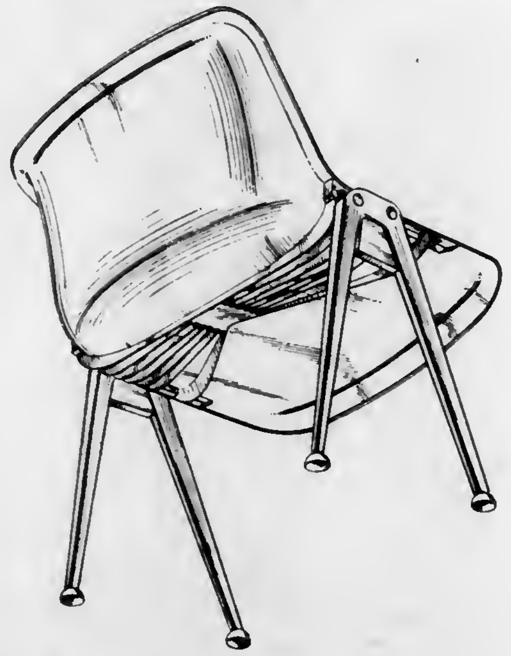
U.S. Cl. D6—32



233,715
CHAIR

Marco Fantoni, Milan, Italy, assignor to TECNO S.p.A. Mobili e forniture per arredamento, Milan, Italy
Filed July 10, 1972, Ser. No. 270,476
Claims priority, application Italy Jan. 13, 1972
Term of patent 14 years
Int. Cl. D6—*01*

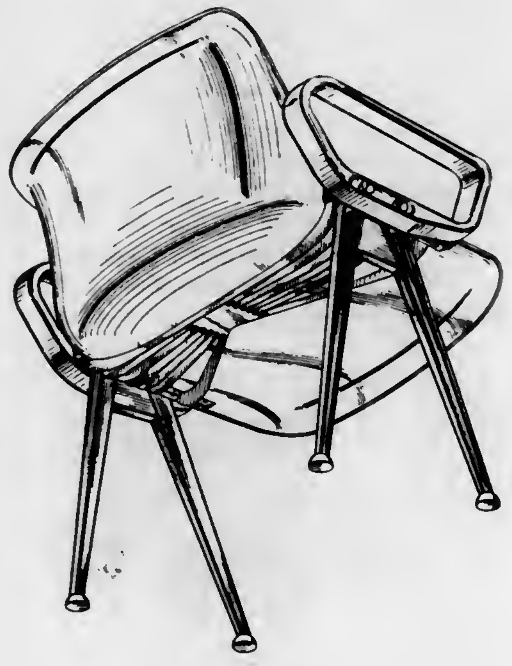
U.S. Cl. D6—66



233,716
CHAIR

Marco Fantoni, Milan, Italy, assignor to TECNO S.p.A. Mobili e forniture per arredamento, Milan, Italy
Filed July 10, 1972, Ser. No. 270,477
Claims priority, application Italy Jan. 13, 1972
Term of patent 14 years
Int. Cl. D6—*01*

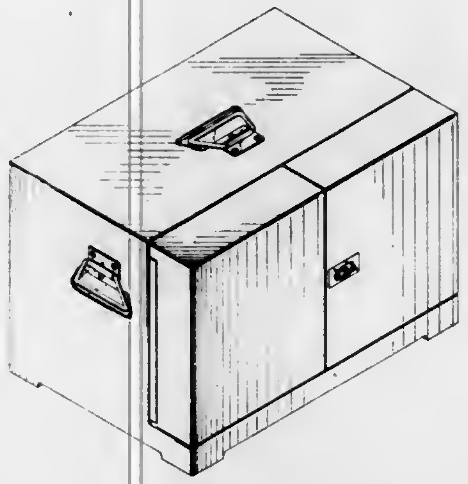
U.S. Cl. D6—66

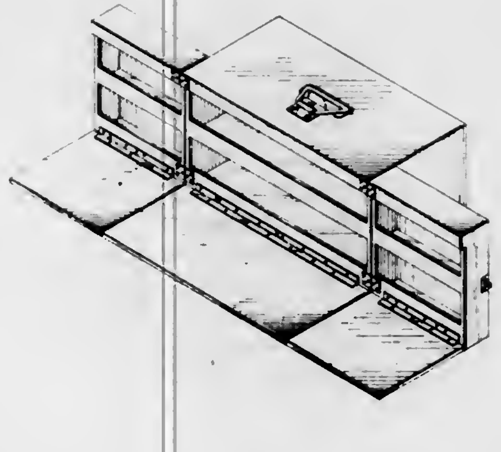


233,717
COMBINED STORAGE CONTAINER AND TABLE

James F. Stewart, 10320 Claudia, Boise, Idaho 83702
Filed Feb. 9, 1973, Ser. No. 331,162
Term of patent 14 years
Int. Cl. D6—*04*

U.S. Cl. D6—170

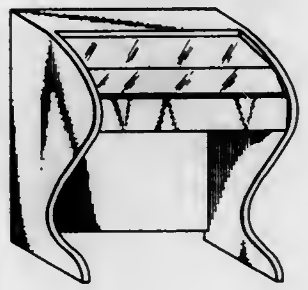




233,718
CABINET FOR A TELEPRINTER

Gary T. Panzica, 145 Metropolitan Drive Rochester, N.Y. 14620
Filed Feb. 9, 1973, Ser. No. 331,015
Term of patent 14 years
Int. Cls. D6—*04;* D14—*03*

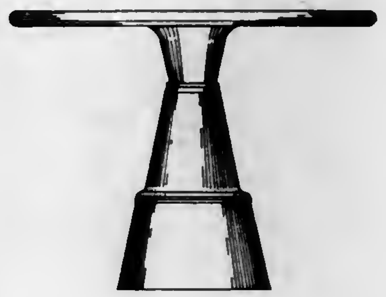
U.S. Cl. D6—173



233,719
TABLE

Lloyd D. Everard, 11020 Kent-Kangley Road, Apt. B53, and Douglas T. Mergenthaler, Kent-Kangley Road, Apt. B54, both of Kent, Wash. 98031, and John E. Petit, 15260 14th S., Seattle, Wash. 99202
Filed Feb. 20, 1973, Ser. No. 333,949
Term of patent 14 years
Int. Cl. D6—*03*

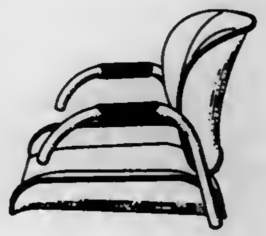
U.S. Cl. D6—177



233,720
COMBINED SEAT AND BACK REST UNIT

Earl H. Koepke, Sturgis, Mich., assignor to Harter Corporation, Sturgis, Mich.
Filed Dec. 13, 1972, Ser. No. 314,606
Term of patent 14 years
Int. Cl. D6—*06*

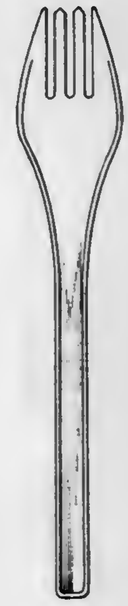
U.S. Cl. D6—197



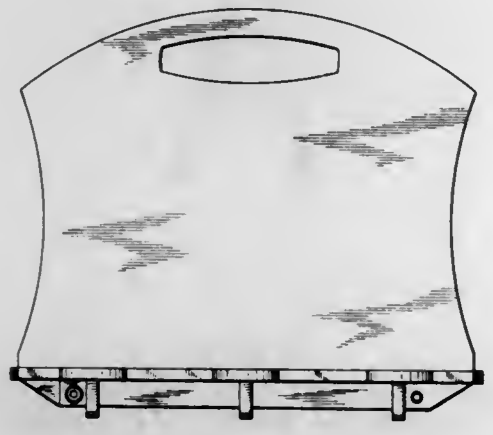
233,721
PLASTIC FORK

Hubert E. Christian, and David W. Lee, Phoenix, Ariz., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed May 21, 1973, Ser. No. 362,355
Term of patent 14 years
Int. Cl. D7—*03*

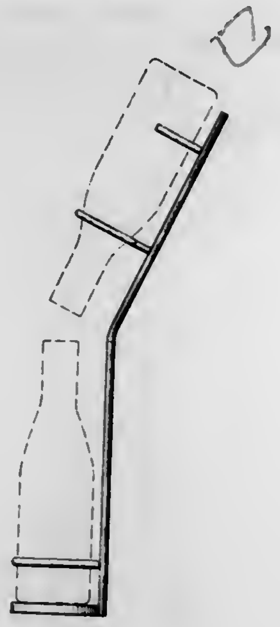
U.S. Cl. D7—138



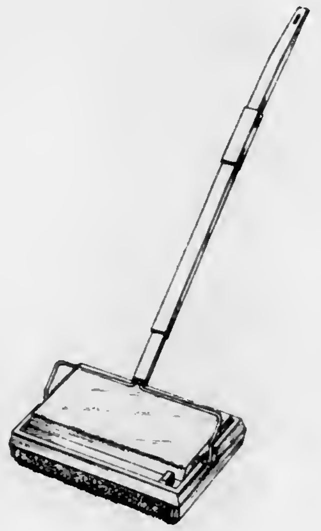
233,722
CARRIER RACK FOR TUMBLERS
Morton Ocuin, 2736 Independence Ave.,
New York, N.Y. 10463
Filed Sept. 18, 1972, Ser. No. 290,254
Term of patent 14 years
Int. Cls. D9—*03*; D7—*99*
U.S. Cl. D7—71



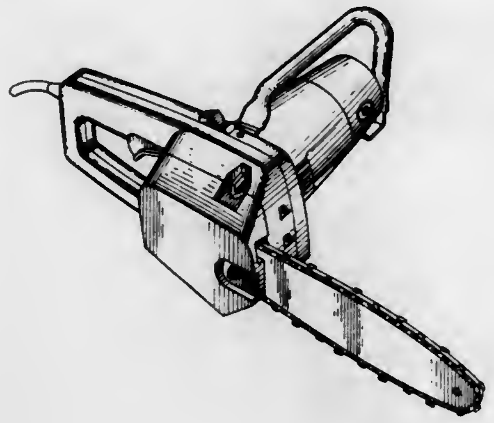
233,723
BOTTLE DRAINER RACK
Frank P. Gutierrez, Van Nuys, Calif. (8332 Sedan Ave.,
Canoga Park, Calif. 91304)
Filed May 24, 1973, Ser. No. 363,341
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—71



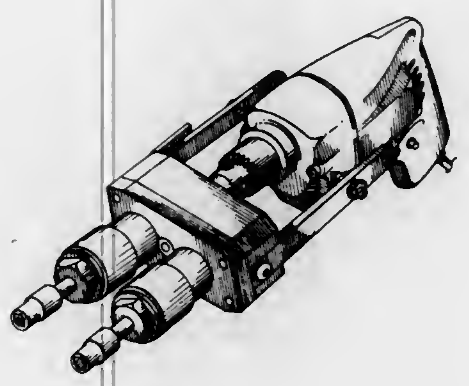
233,724
FLOOR AND CARPET SWEEPER
Carl Arne Breger, Lilla Molleberga, S-230,
Kvarnby 31, Sweden
Filed Jan. 10, 1972, Ser. No. 216,897
Claims priority, application Sweden June 30, 1971
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—176



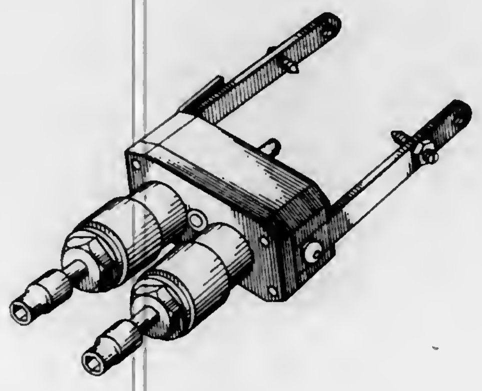
233,725
CHAIN SAW
Rodney L. Guthrie, Saint Anne; Charles E. La Belle,
Kankakee; and Milton W. Kennedy, Bourbonnais, Ill.,
assignors to Roper Corporation, Kankakee, Ill.
Filed Feb. 5, 1973, Ser. No. 329,749
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—65



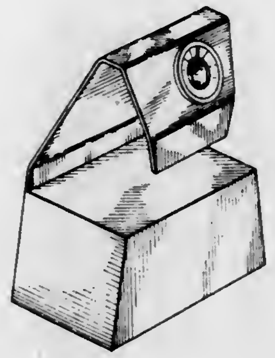
233,726
WRENCH AND DRILL UNIT
Ronald L. Jenny, 3556 Stoner Ave.,
Los Angeles, Calif. 90066
Filed May 29, 1973, Ser. No. 364,376
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—68



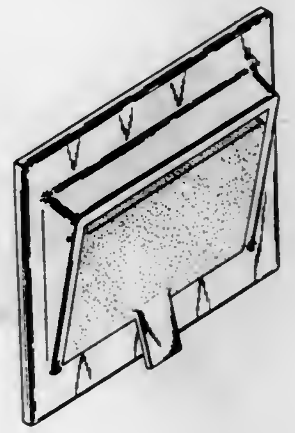
233,727
WRENCH
Ronald L. Jenny, 3556 Stoner Ave.,
Los Angeles, Calif. 90066
Filed May 29, 1973, Ser. No. 364,377
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—70



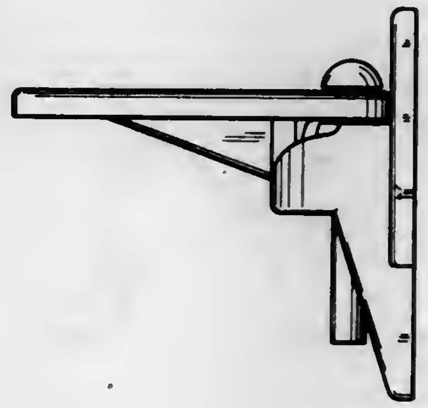
233,728
PROTECTIVE SHIELD
Brian Edgar Royston, Doncaster, Victoria, Australia, assignor to Royston Electronics Pty. Limited, Doncaster, Victoria, Australia
Filed May 3, 1972, Ser. No. 250,112
Claims priority, application Australia Feb. 8, 1972
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—71



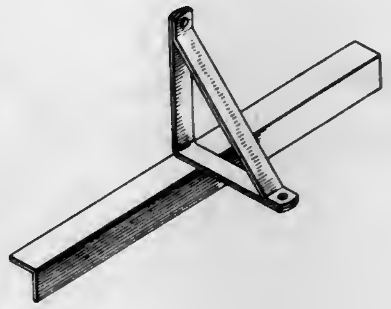
233,729
ELECTRICAL CONNECTION BOX COVER
Henri De Forrest, 5517 Cleon St.,
North Hollywood, Calif. 91601
Filed Jan. 17, 1974, Ser. No. 434,353
Term of patent 7 years
Int. Cl. D8—*09*
U.S. Cl. D8—179



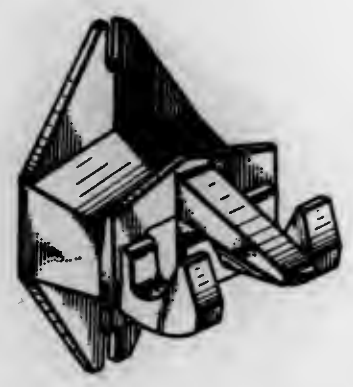
233,730
CAFE DOOR HINGE
John C. Burton, Seville, and Eugene P. Hayton, Medina,
Ohio, assignors to Questor Corporation, Toledo, Ohio
Filed Sept. 28, 1973, Ser. No. 401,712
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—191



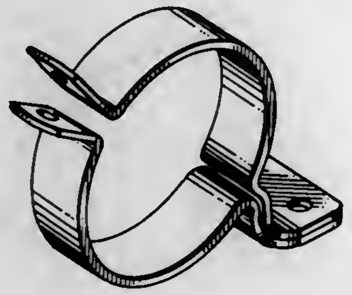
233,731
CORNER MOUNTING BRACKET FOR A MOBILE HOME TIE DOWN SYSTEM
Milton J. Miller, 39 Greenway Drive,
Goshen, Ind. 46526
Filed Sept. 17, 1973, Ser. No. 397,858
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—229



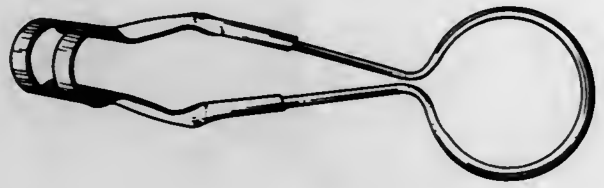
233,732
ELECTRIC FENCE INSULATOR
Howard Langlie, and Albert T. Berg, Jr., Ellendale, Minn. 56026
Filed Aug. 29, 1973, Ser. No. 392,797
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D8—230



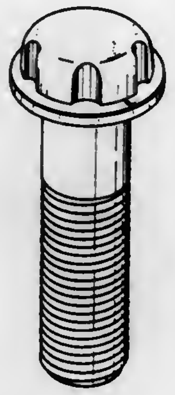
233,733
CLAMP FOR SUPPORTING PIPES OR THE LIKE
Robert M. Byerly, 1720 Riverside Drive, Burbank, Calif. 91506
Filed Mar. 5, 1974, Ser. No. 448,405
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—235



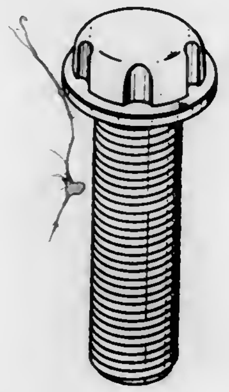
233,734
BRACKET ATTACHABLE TO A RECEPTACLE AND TO A WATER CONDUIT
Francis M. Moore, 11 Patricia Road, Danvers, Mass. 01923
Filed Nov. 19, 1973, Ser. No. 417,149
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—246



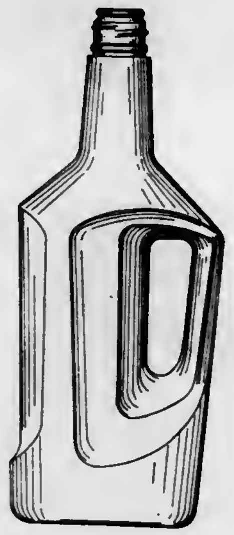
233,735
BOLT
Keiichi Yamamoto and Kozo Yamamoto, Tokyo, Japan, assignors to Yamamoto Byora Co., Ltd., Tokyo, Japan
Filed Sept. 11, 1973, Ser. No. 396,211
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—267



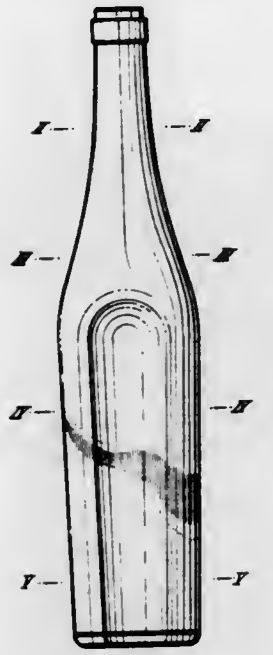
233,736
BOLT
Keiichi Yamamoto and Kozo Yamamoto, Tokyo, Japan, assignors to Yamamoto Byora Co., Ltd., Tokyo, Japan
Filed Sept. 11, 1973, Ser. No. 396,212
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—267



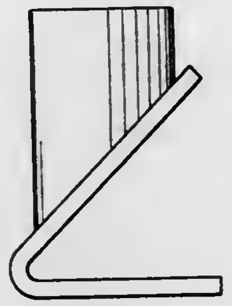
233,737
BOTTLE
Ted L. Beaver, Roselle, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Mar. 16, 1973, Ser. No. 341,833
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—40



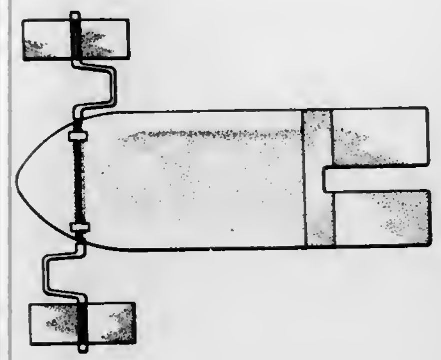
233,738
BOTTLE
Emiliano P. Latorre, Logrono, Spain, assignor to A.G.E. Bodegas Unidas S.A.
Filed May 15, 1972, Ser. No. 253,683
Claims priority, application Spain Dec. 31, 1971
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—146



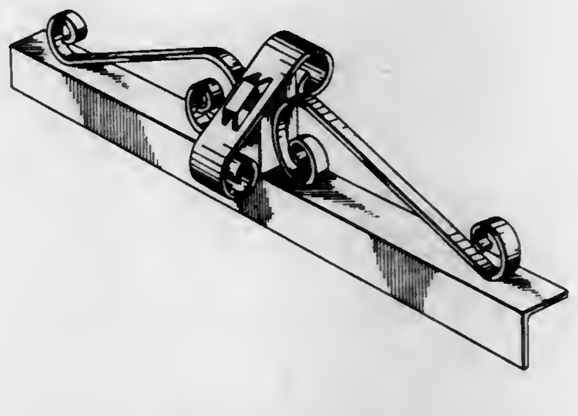
233,739
TOY-SIZE TESTING GAUGE
Jack G. McAllister, 2701 N. Douglass Drive, Minneapolis, Minn. 55422
Filed June 4, 1973, Ser. No. 366,658
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—64



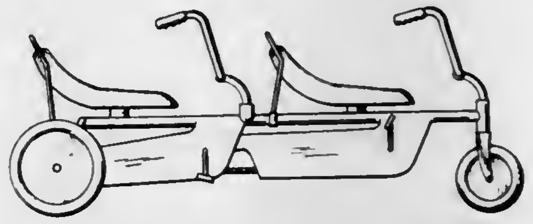
233,740
MANUALLY PROPELLED WATER CRAFT
Gerald Martin, 595 NW. 91st St., Miami Beach, Fla.
Filed Apr. 11, 1973, Ser. No. 350,069
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—68



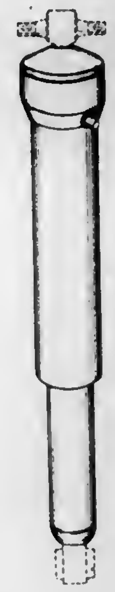
233,741
ANCHOR LINE CORNER BUFFER FOR MOBILE HOMES
Joseph J. Lahargoue, 2209 Torrey Pines Circle, Tucson, Ariz. 85710
Filed Nov. 10, 1972, Ser. No. 305,265
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—106



233,742
TANDEM TRICYCLE
Lloyd G. Boursaw, Box 233, Rte. 2, Rainier, Oreg. 97048
Filed Sept. 25, 1972, Ser. No. 291,986
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—112

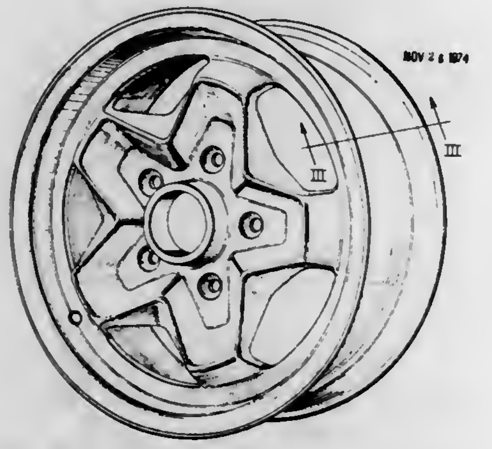


233,743
AUTOMOTIVE SHOCK ABSORBER
James F. Hobbins, Philadelphia, and Howard P. McJunkin, Jr., Feasterville, Pa., assignors to Hurst Performance, Inc., Warminster, Pa.
Filed Aug. 29, 1973, Ser. No. 392,461
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—159



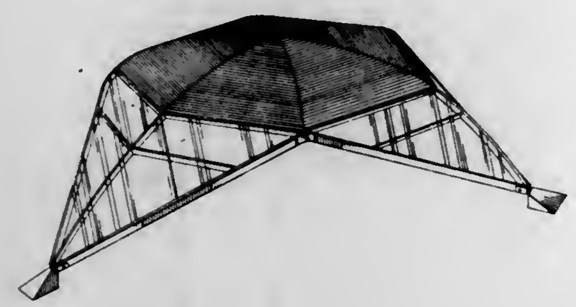
233,744
WHEEL FOR VEHICLES

Rolf Wiener, 43 Richard-Wagner-Strasse,
Gaertringen, Germany
Filed July 31, 1972, Ser. No. 276,304
Claims priority, application Germany Jan. 29, 1972
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—209



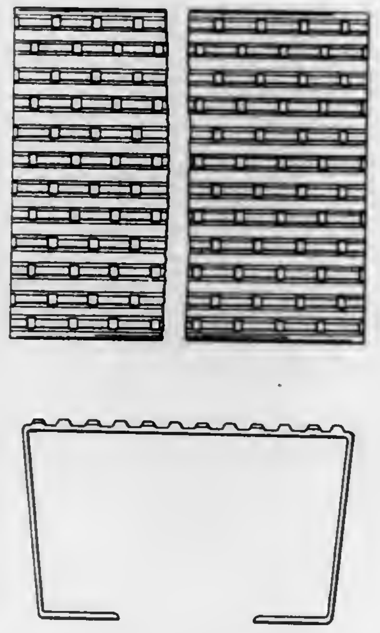
233,745
THREE-LEGGED DOMICAL SHELTER STRUCTURE

John S. Sumner, 728 N. Sawtelle Ave.,
Tucson, Ariz. 85716
Filed Sept. 25, 1972, Ser. No. 291,988
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 D



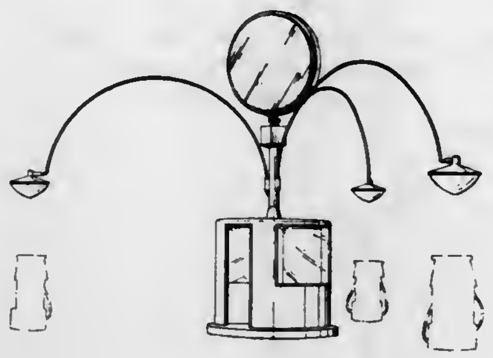
233,746
FLOOR BEAM

John O. Bowser, New Kensington, Pa., assignor to
Aluminum Company of America, Pittsburgh, Pa.
Filed Dec. 11, 1972, Ser. No. 314,118
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1 J



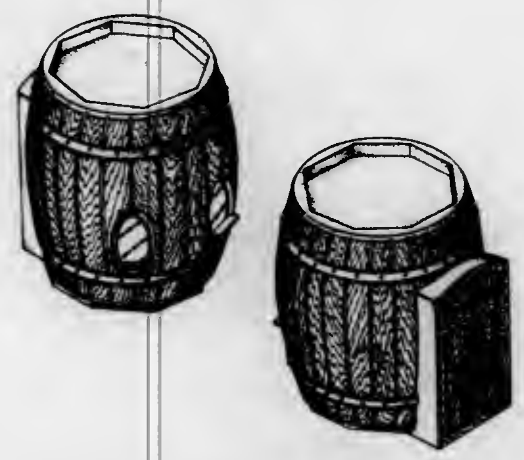
233,747
KIOSK FOR SERVICE STATIONS OR THE LIKE

Alfred Leonard Martin, 545 The West Mall,
Etobicoke, Ontario, Canada
Filed Dec. 13, 1972, Ser. No. 314,662
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 E



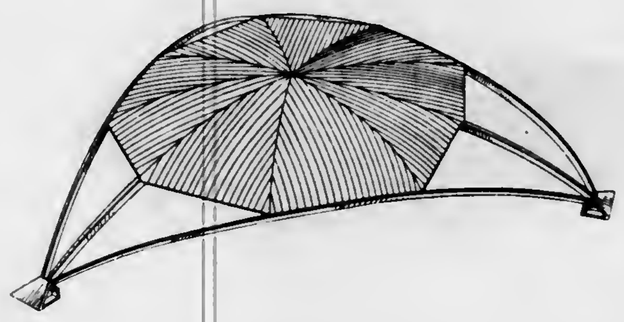
233,748
BUILDING

Maurice Gordon, Cincinnati, Ohio, assignor to
Barrel-N-Bun, Inc., Cincinnati, Ohio
Filed Feb. 23, 1973, Ser. No. 335,292
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 L



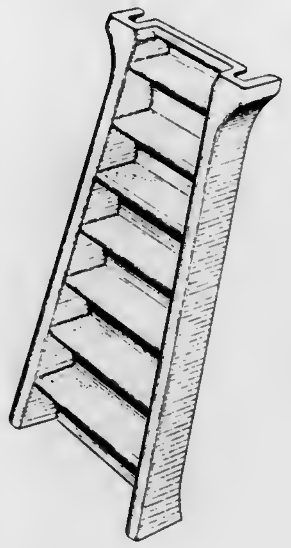
233,749
THREE-LEGGED DOMICAL SHELTER

John S. Sumner, 728 N. Sawtelle Ave.,
Tucson, Ariz. 85716
Filed June 12, 1973, Ser. No. 369,188
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 D



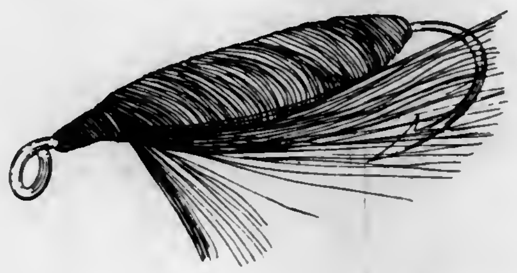
233,750
STAIRCASE

Gladstone Neville Bryan, 22 Fairchild Ave.,
Willowdale, Ontario, Canada
Filed Apr. 28, 1972, Ser. No. 248,779
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—7 R



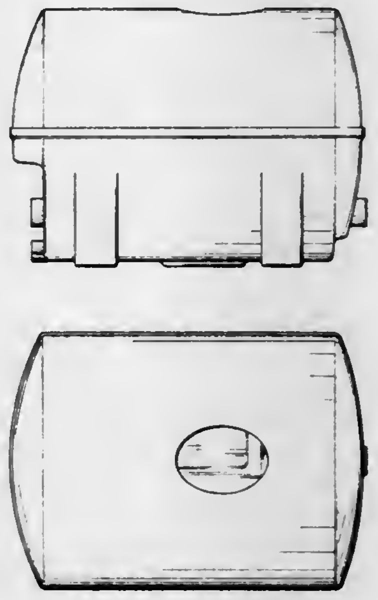
233,751
FLY

Jim A. Teeny, 915 NE. 108th
Portland, Oreg. 97220
Filed June 20, 1972, Ser. No. 264,628
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



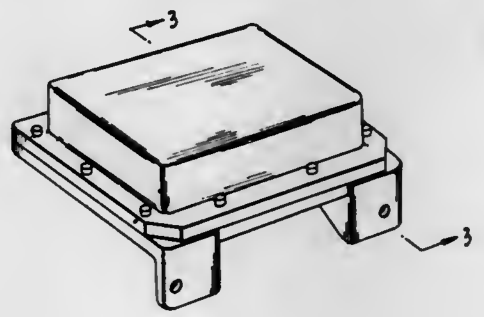
233,752
LIQUID STORAGE TANK

Edward D. Scheffler, Jr., Rte. 1, Riverside Road,
Coloma, Mich. 49038
Filed Feb. 22, 1973, Ser. No. 334,618
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—2



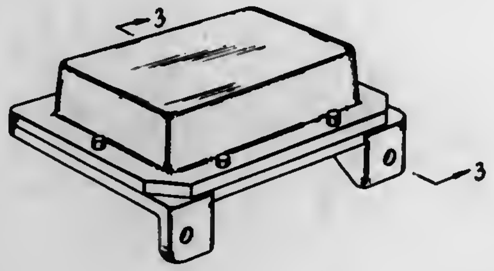
233,753
VALVE BOX

Albert Herbert Goyen, 17 Marie Dodd Crescent,
Blakehurst, New South Wales, Australia
Filed Dec. 27, 1972, Ser. No. 318,732
Claims priority, application Australia June 30, 1972
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



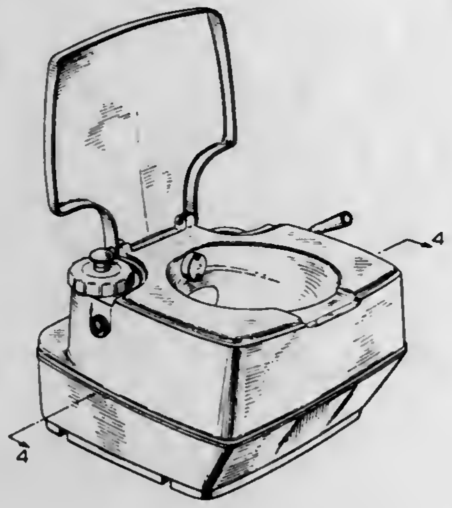
233,754
VALVE BOX

**Albert Herbert Goyen, 17 Marie Dodd Crescent,
Blakehurst, New South Wales, Australia
Filed Dec. 27, 1972, Ser. No. 318,733
Claims priority, application Australia June 30, 1972
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19**



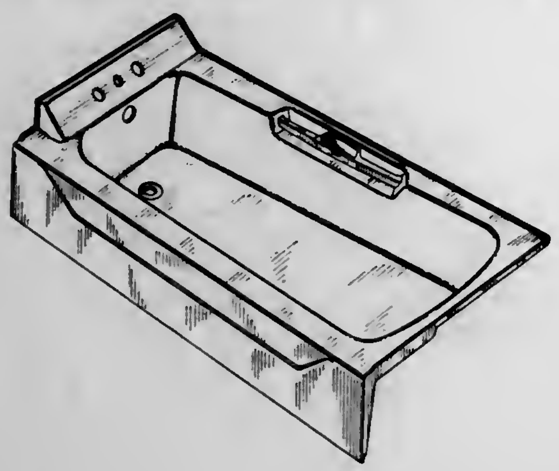
233,755
TOILET

**Clifford Bruce Hewson, Toronto, Ontario, Canada, assignor to Sanitation Equipment Limited, Toronto, Ontario, Canada
Filed Feb. 3, 1972, Ser. No. 223,396
Term of patent 7 years
Int. Cl. D23—*02*
U.S. Cl. D23—48**



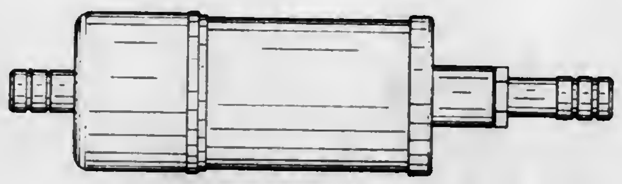
233,756
COMBINED BATHTUB AND GRAB RAIL

**Donald C. Schrock, Nevada, Mo., assignor to
Crane Co., New York, N.Y.
Filed Apr. 16, 1973, Ser. No. 351,698
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55**



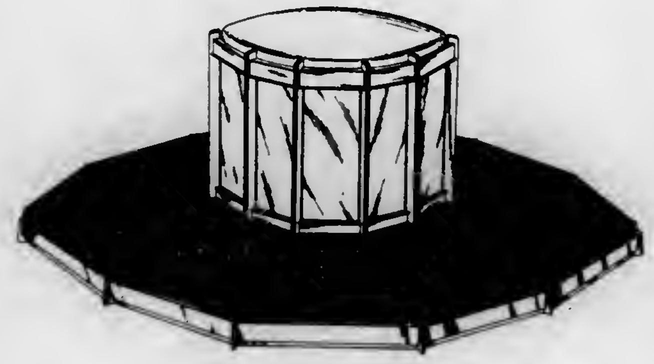
233,757
WATER LINE HEATER FOR VEHICLES OR THE LIKE

**John H. Klancke, Richfield, Minn., assignor to
Cambridge Corporation, Minneapolis, Minn.
Filed Mar. 29, 1973, Ser. No. 345,996
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—86**



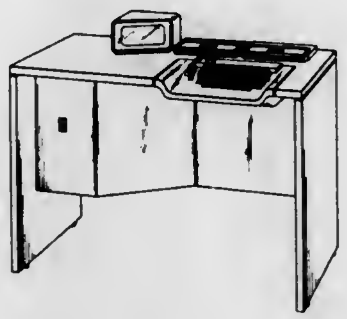
233,758
COMPUTER MAINFRAME CONSOLE

**Seymour R. Cray, Lester T. Davis, and Maurice D. Roush, Chippewa Falls, Wis., assignors to Control Data Corporation, Minneapolis, Minn.
Filed Mar. 15, 1973, Ser. No. 341,429
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C**



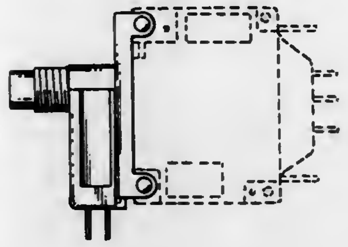
233,759
DATA ENTRY STATION FOR AUTOMATIC DATA PROCESSING

**Charles A. Pycha and Frank Wilkey, Jr., Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 27, 1973, Ser. No. 345,405
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C**



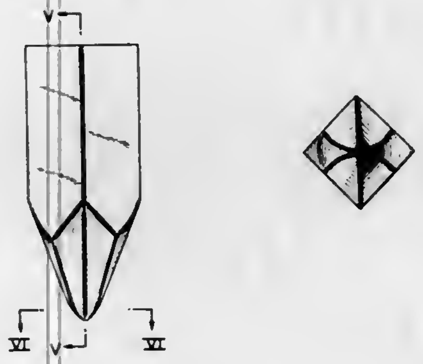
233,760
HANDLE ADAPTER FOR A CIRCUIT BREAKER

**Ronald Nicol, 316 McAdoo Ave.,
Trenton, N.J. 08619
Original design application July 1, 1971, Ser. No. 159,104, now Design Patent No. 227,903. Divided and this application Apr. 19, 1973, Ser. No. 352,712
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R**



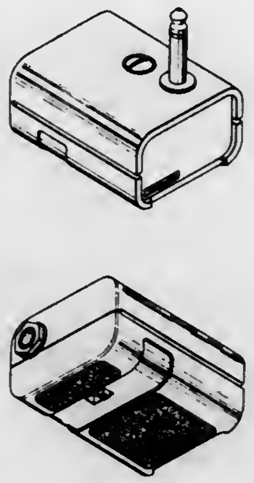
233,761
STYLUS FOR PHONOGRAPH

**Yoshitomo Ichikawa, 4-29-9, Kami-Ikebukuro, Tokyo, Japan, assignor to Ichikawa Hoseki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 14, 1972, Ser. No. 280,509
Claims priority, application Japan Mar. 17, 1972
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 D**



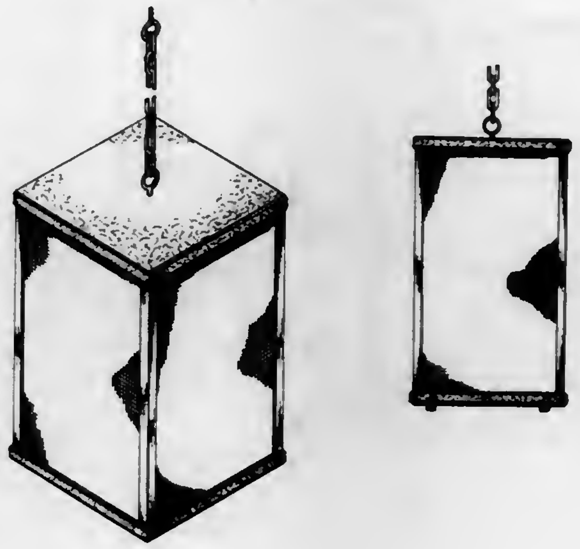
233,762
BOOSTER FOR GUITAR

**Kichiro Suyama, Matsumoto, Japan, assignor to Nisshin Onpa Seisakujo Company Limited, Matsumoto, Japan
Filed May 24, 1973, Ser. No. 363,546
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 L**



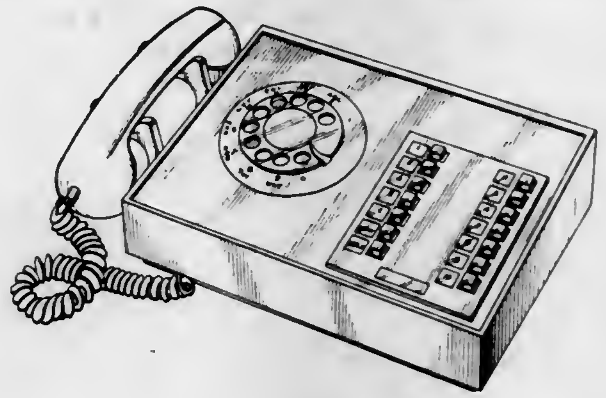
233,763
SPEAKER CABINET

**Ronald J. Crum, 10208 28th Ave. SW.,
Seattle, Wash. 98146
Filed Mar. 5, 1973, Ser. No. 338,150
Term of patent 14 years
Int. Cl. D14—*01*; D26—*05*
U.S. Cl. D26—14 G**



233,764
TELEPHONE COMMUNICATIONS UNIT

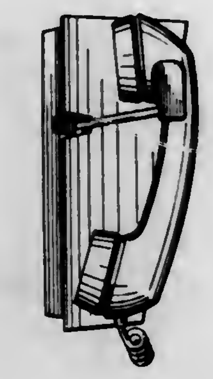
**Paul Marchese, Greenwich, Conn., assignor to
TIE Communications, Inc., Stamford, Conn.
Continuation of design applications Ser. No. 267,432, and Ser. No. 267,462, both dated June 29, 1972. This application Jan. 28, 1974, Ser. No. 437,397
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A**

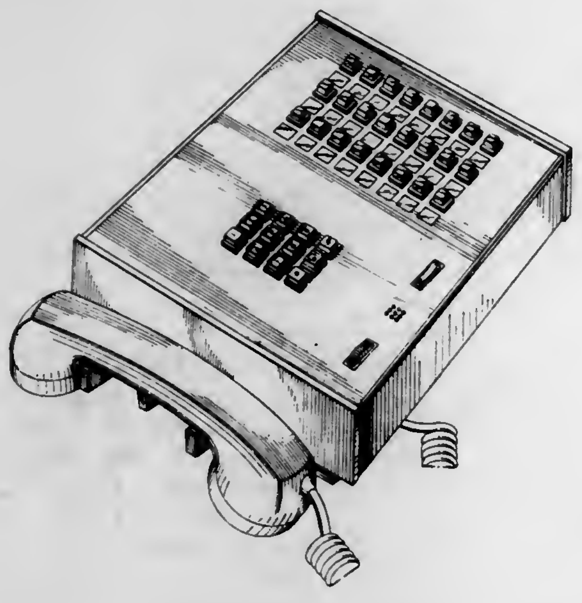


233,765
TELEPHONE SET
Paul Marchese, 2A Weavers' Hill,
Greenwich, Conn. 06830

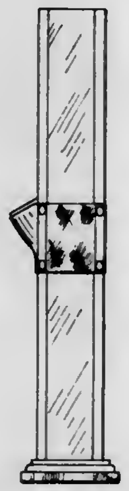
Continuation-in-part of design application Ser. No. 380,278, July 18, 1973, which is a continuation-in-part of application Ser. No. 380,490, July 18, 1973, which is a continuation-in-part of application Ser. No. 380,466, July 18, 1973, which in turn is a continuation-in-part of application Ser. No. 380,465, July 18, 1973, all now abandoned. This application Jan. 28, 1974, Ser. No. 437,398

Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

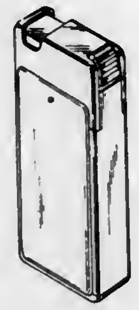




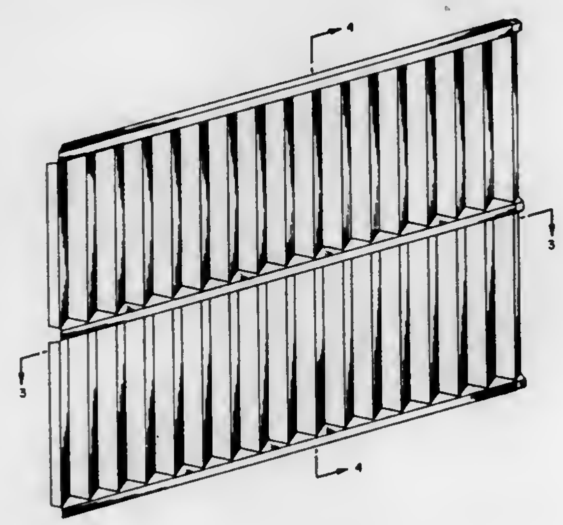
233,766
WATER PIPE
William John Lobnitz, 9922 Pillsbury Ave. S.,
Bloomington, Minn. 55420
Filed May 21, 1973, Ser. No. 362,513
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—3



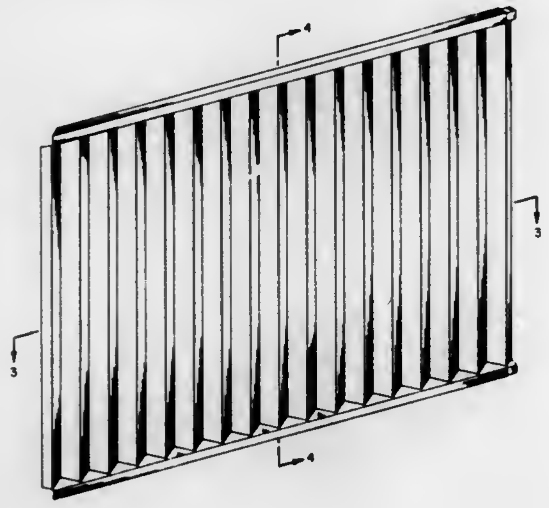
233,767
CIGARETTE LIGHTER
Hermann Schlamp, Ehrenstrasse 25–27, 5000
Cologne 1, Germany
Filed Feb. 26, 1974, Ser. No. 445,884
Claims priority, application Germany Sept. 3, 1973
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42 R



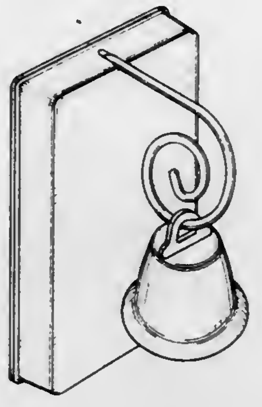
233,768
FENCE PANEL OR THE LIKE
Wayne L. Wilder, 3005 Oradell,
Dallas, Tex. 75220
Filed Jan. 22, 1973, Ser. No. 325,332
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D28—1 A



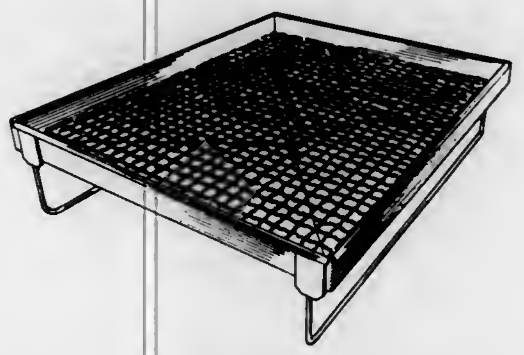
233,769
FENCE PANEL OR THE LIKE
Wayne L. Wilder, 3005 Oradell,
Dallas, Tex. 75220
Filed Jan. 22, 1973, Ser. No. 325,379
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D28—1 A



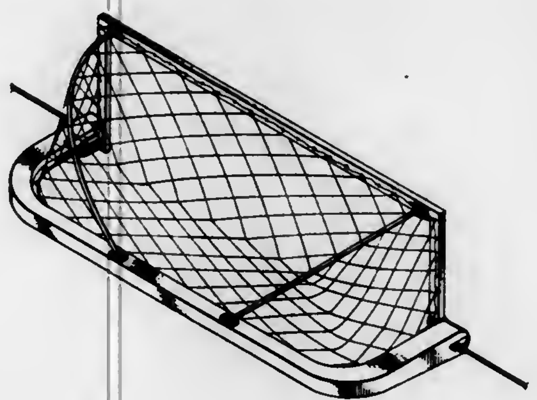
233,770
ANIMAL TRAINING DEVICE
Melvin Phillip Clark, and Sandra Kay Clark, R.R. 3,
Box 5, Rema, Edwardsburg, Mich.
Filed Mar. 14, 1973, Ser. No. 341,163
Term of patent 3½ years
Int. Cl. D30—*99*
U.S. Cl. D30—42



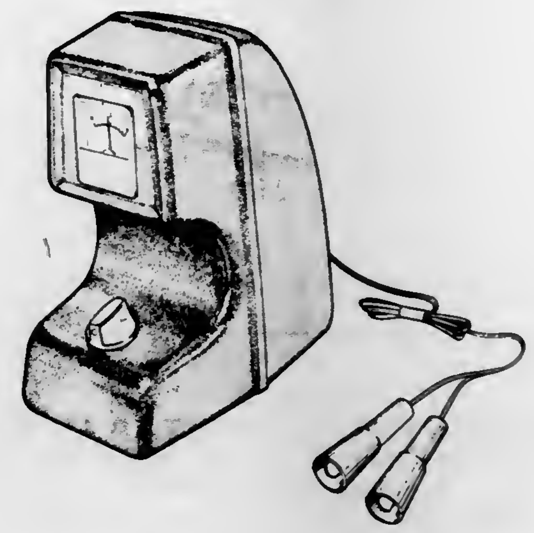
233,771
ANIMAL FLUID COLLECTION PAN
Ronald L. Dirck, Warsaw, Ind., assignor to
Dirck Manufacturing Company, Warsaw, Ind.
Filed May 7, 1973, Ser. No. 357,522
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99



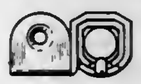
233,772
WATER POLO GOAL OR THE LIKE
Anton J. Kajlich, 30 Crystal Cove,
Laguna Beach, Calif. 92651
Filed Aug. 16, 1972, Ser. No. 280,979
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 VV

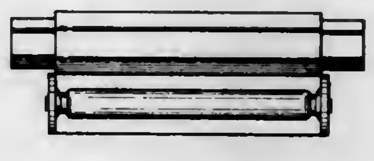


233,773
TOY LIE DETECTOR OR SIMILAR ARTICLE
Philip J. Breno, Oregon, Don N, Gray, Sylvania, and
Richard K. Heyne, and Richard W. Meyer, Toledo,
Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Jan. 31, 1973, Ser. No. 328,452
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 A

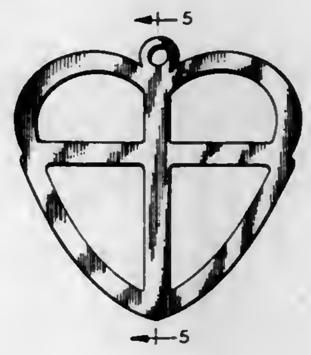


233,774
END ATTACHMENT FOR LEATHER WATCH STRAPS
Paul Friedman, Pawtucket, and Maurice Udelson, Riverside, R.I., assignors to Brite Industries Inc., Providence, R.I.
Filed Dec. 11, 1972, Ser. No. 314,243
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D45—4 E

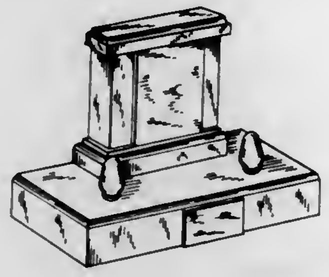




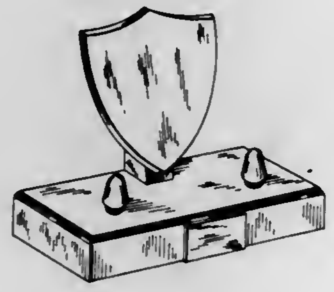
233,775
JEWELRY FINDING
Mario A. Caputo, 9 Cornerwood Court, Gaithersburg,
Md. 20760 and Hilda A. Valenta, 4601 Alcon Drive,
Camp Springs, Md. 20031
Filed June 18, 1973, Ser. No. 370,638
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—19 S



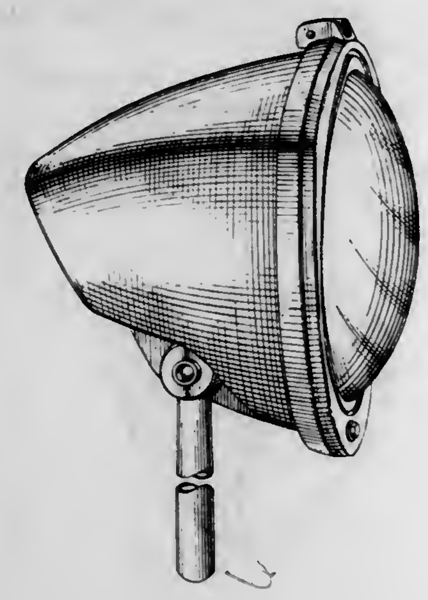
233,776
TELEVISION LIGHT OR SIMILAR ARTICLE
Earnest J. Labell, 1215 S. Oneida St.
Appleton, Wis. 54911
Filed Apr. 4, 1973, Ser. No. 347,909
Term of patent 14 years
Int. Cl. D26—*05*; D11—*02*
U.S. Cl. D48—20 R



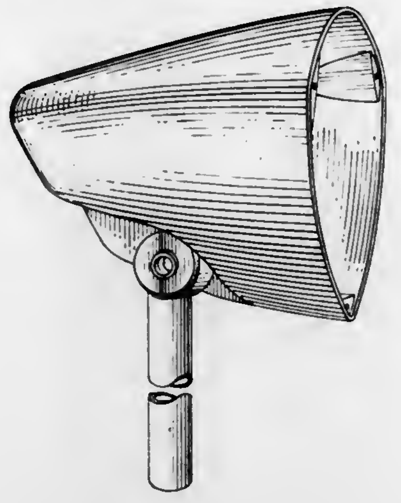
233,777
TELEVISION LIGHT OR SIMILAR ARTICLE
Earnest J. Labell, 1215 S. Oneida St.,
Appleton, Wis. 54911
Filed Apr. 4, 1973, Ser. No. 347,910
Term of patent 14 years
Int. Cl. D26—*05*; D11—*02*
U.S. Cl. D48—20 R



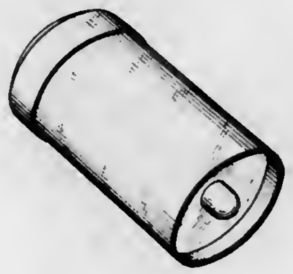
233,778
HOLDER FOR A SEAL BEAM LAMP
Richard T. Kennedy, Oak Lawn, and James L. Hvale, Chicago, Ill., assignors to Bell Electric Company, Chicago, Ill.
Filed Oct. 29, 1973, Ser. No. 410,737
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—20 K



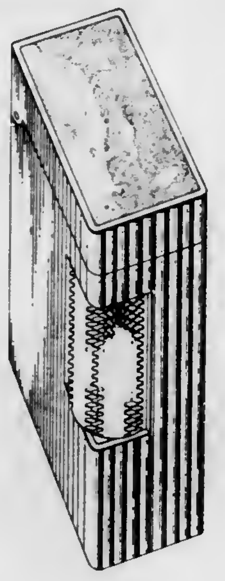
233,779
ELECTRIC LAMP HOLDER
Richard T. Kennedy, Oak Lawn, and James L. Hvale, Chicago, Ill., assignors to Bell Electric Company, Chicago, Ill.
Filed Oct. 29, 1973, Ser. No. 410,739
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—20 K



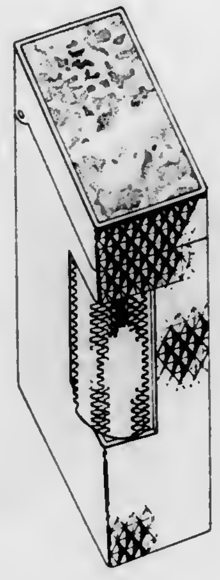
233,780
FLASHLIGHT
Wilfred S. Stone, Box 4, Wayne, Ill. 60184
Filed Sept. 14, 1973, Ser. No. 397,413
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 A



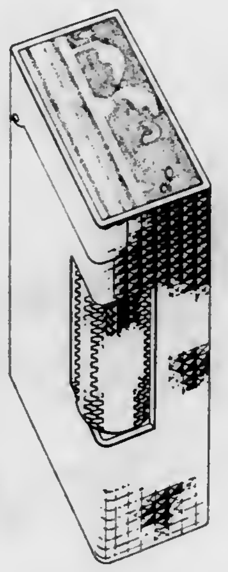
233,781
CIGARETTE LIGHTER
Stanley F. Gomersall, Stanmore, England, assignor to Alfred Dunhill Limited, London, England
Filed Nov. 30, 1970, Ser. No. 26,208
Claims priority, application Great Britain June 2, 1970
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R



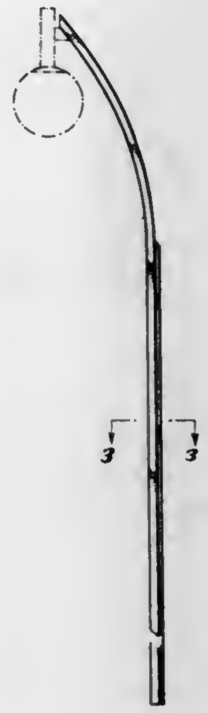
233,782
CIGARETTE LIGHTER
Stanley F. Gomersall, Stanmore, England, assignor to Alfred Dunhill Limited, London, England
Filed Nov. 30, 1970, Ser. No. 26,209
Claims priority, application Great Britain June 2, 1970
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R



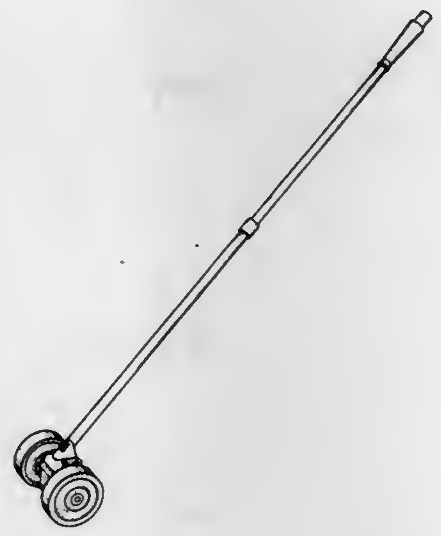
233,783
CIGARETTE LIGHTER
Stanley F. Gomersall, Stanmore, England, assignor to Alfred Dunhill Limited, London, England
Filed Nov. 30, 1970, Ser. No. 26,210
Claims priority, application Great Britain June 2, 1970
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R



233,784
LIGHT STANDARD OR SIMILAR ARTICLE
Robert W. Selden, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Mar. 14, 1973, Ser. No. 341,214
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31

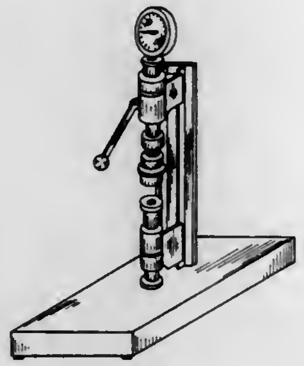


233,785
DISTANCE MEASURING INSTRUMENT
Wallace D. Evans, Jr., Los Angeles, Calif., assignor to Rolatape Corporation, Santa Monica, Calif.
Filed Jan. 22, 1973, Ser. No. 325,324
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R



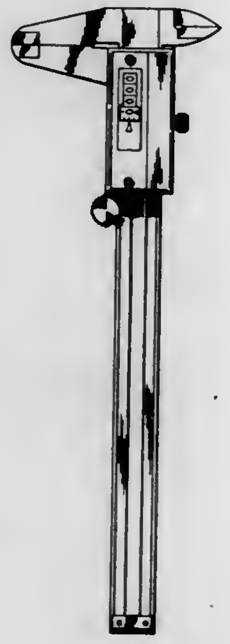
233,786
RADIUS OF CURVATURE MEASURING INSTRUMENT
Donald L. Woodford, 1114 S. 98th St.,
Omaha, Nebr. 68124
Filed Feb. 7, 1973, Ser. No. 330,425
Term of patent 14 years
Int. Cl. D10—*04*

U.S. Cl. D52—6 R



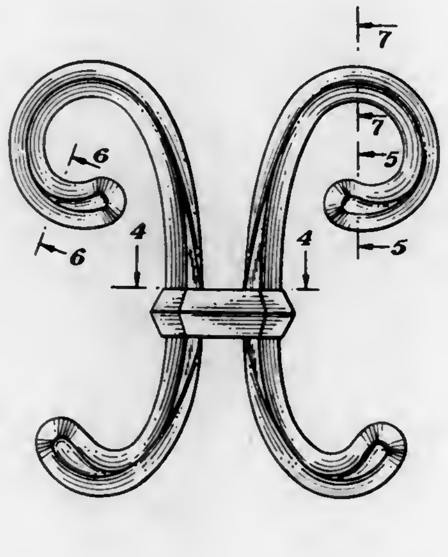
233,787
DIGITAL READOUT SLIDE CALIPER
Kenju Uchino, Utsunomiya, Japan, assignor to Yehan Numata, Yokohama City, Kanagawa Prefecture, Japan
Filed Mar. 29, 1973, Ser. No. 346,189
Term of patent 14 years
Int. Cl. D10—*04*

U.S. Cl. D52—6 B



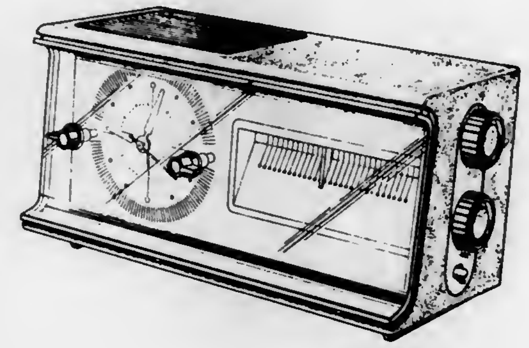
233,788
GRILLEWORK FOR TREILLAGES, ROOM DIVIDERS OR THE LIKE
Robert F. Seery, Oak Brook, Ill., assignor to Julius Blum & Co., Inc., Carlstadt, N.J.
Filed Dec. 30, 1971, Ser. No. 214,504
Term of patent 14 years
Int. Cl. D25—*02*

U.S. Cl. D54—2 T



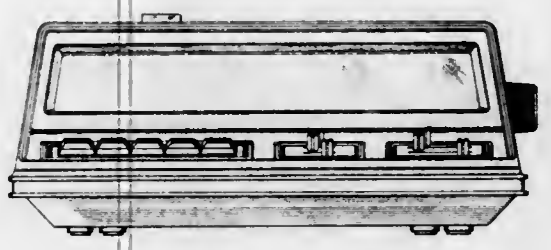
233,789
CLOCK RADIO
Ken Kawamura, Katano, and Takao Okada and Hironosuke Koda, Kyoto, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 20, 1973, Ser. No. 353,172
Claims priority, application Japan Oct. 20, 1972
Term of patent 14 years
Int. Cl. D14—*03*

U.S. Cl. D56—4 B



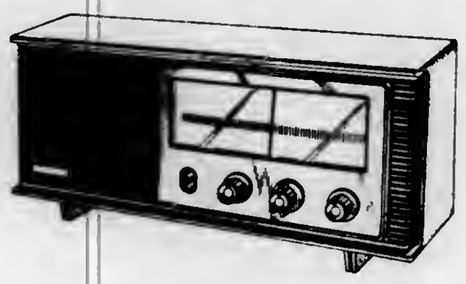
233,790
HOUSING FOR A CLOCK RADIO
John T. Houlihan, Fayetteville, N.Y., assignor to General Electric Company
Filed May 11, 1973, Ser. No. 359,547
Term of patent 14 years
Int. Cl. D14—*03*

U.S. Cl. D56—4 B



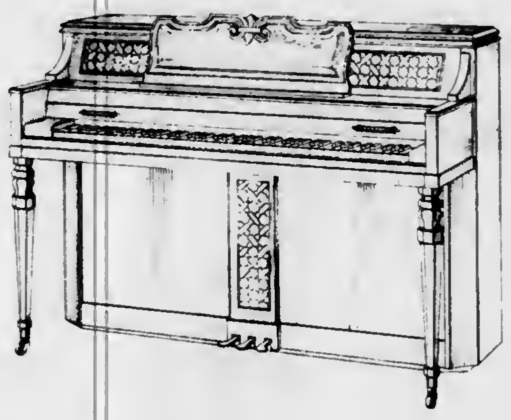
233,791
RADIO RECEIVER
Masaaki Miyamoto, Moriguchi, and Katsuhiko Makino, Neyagawa, Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan
Filed June 18, 1973, Ser. No. 371,238
Claims priority, application Japan Dec. 21, 1972
Term of patent 14 years
Int. Cl. D14—*03*

U.S. Cl. D56—4 B



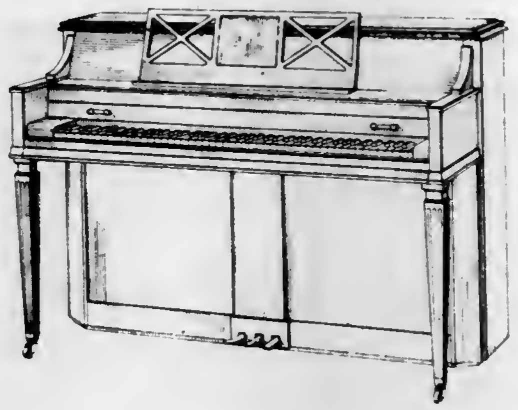
233,792
PIANO
Winsor D. White, Jr., Chicago, Ill., and Dennis Barket, Cincinnati, Ohio, assignors to D. H. Baldwin Company, Cincinnati, Ohio
Filed Sept. 1, 1972, Ser. No. 285,602
Term of patent 14 years
Int. Cl. D17—*01*

U.S. Cl. D56—9



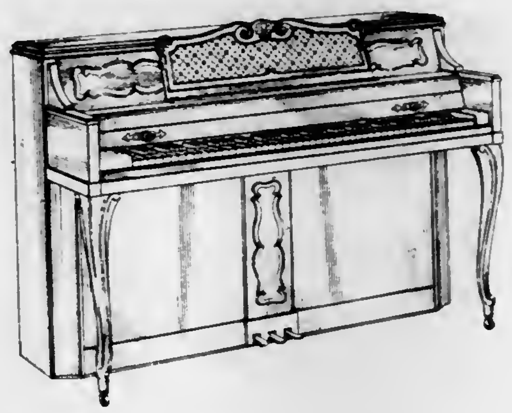
233,793
PIANO
Winsor D. White, Jr., Chicago, Ill., and Dennis Barket, Cincinnati, Ohio, assignors to D. H. Baldwin Company, Cincinnati, Ohio
Filed Sept. 1, 1972, Ser. No. 285,603
Term of patent 14 years
Int. Cl. D17—*01*

U.S. Cl. D56—9



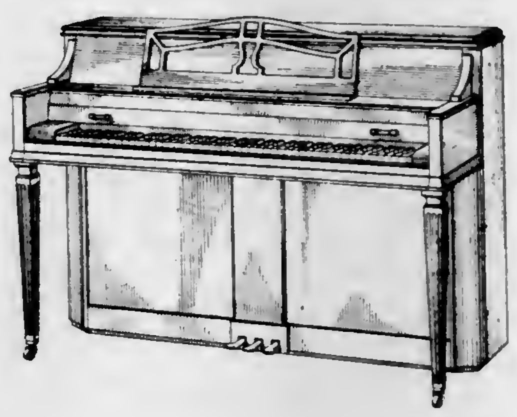
233,794
PIANO
Winsor D. White, Jr., Chicago, Ill., and Dennis Barket, Cincinnati, Ohio, assignors to D. H. Baldwin Company, Cincinnati, Ohio
Filed Sept. 1, 1972, Ser. No. 285,604
Term of patent 14 years
Int. Cl. D17—*01*

U.S. Cl. D56—9



233,795
PIANO
Winsor D. White, Jr., Chicago, Ill., and Dennis Barket, Cincinnati, Ohio, assignors to D. H. Baldwin Company, Cincinnati, Ohio
Filed Sept. 5, 1972, Ser. No. 286,414
Term of patent 14 years
Int. Cl. D17—*01*

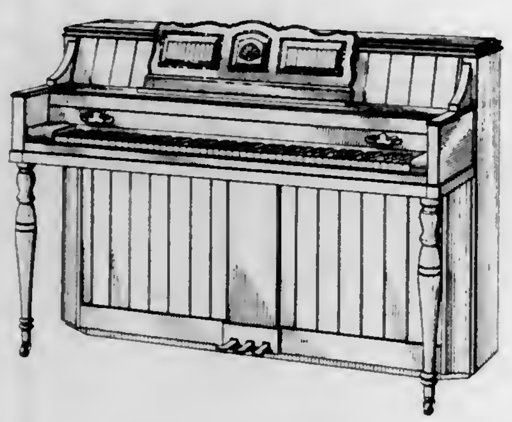
U.S. Cl. D56—9



233,796
PIANO

Winsor D. White, Jr. Chicago, Ill., and Dennis Barket, Cincinnati, Ohio, assignors to D. H. Baldwin Company, Cincinnati, Ohio

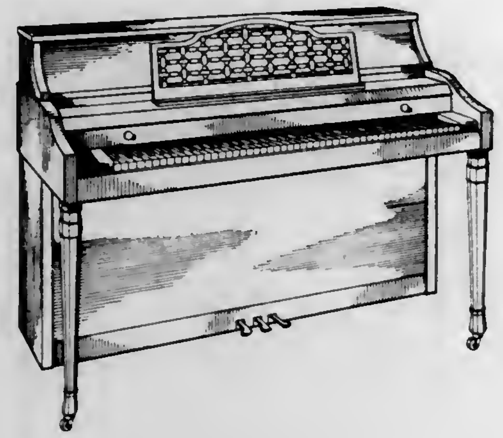
Filed Sept. 5, 1972, Ser. No. 286,474
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—9



233,797
PIANO

Dennis J. Barket, Greenwood, Miss., assignor to D. H. Baldwin Company, Cincinnati, Ohio

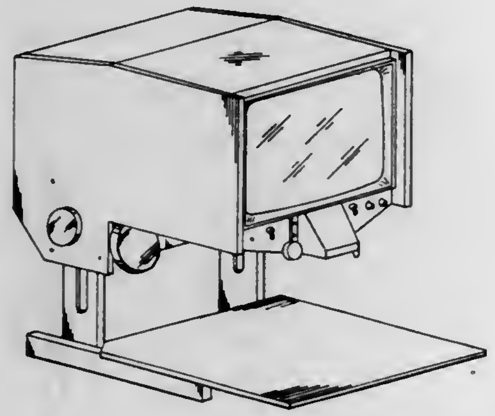
Filed Nov. 24, 1972, Ser. No. 309,461
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—9



233,798
TELEVISION ENLARGEMENT-DISPLAY UNIT

Alphonse P. Cinque, 65 Earle Ave., Lynbrook, N.Y. 11563

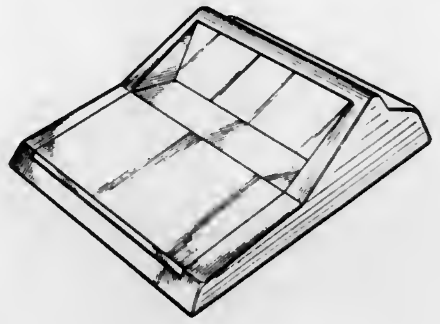
Filed Jan. 2, 1973, Ser. No. 320,131
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



233,799
CALCULATOR HOUSING

Henry Finkel, Montreal, Quebec, Canada, assignor to The T. Eaton Company Limited

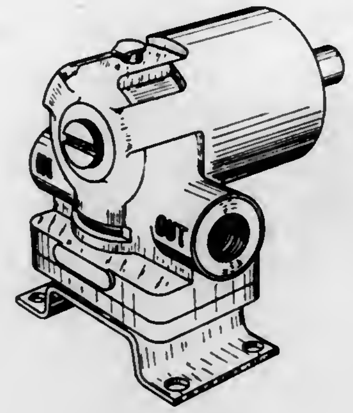
Filed Feb. 5, 1973, Ser. No. 329,864
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 R



233,800
PUMP

Harry J. Sadler, 20 Red Fox Road, North Oaks, Saint Paul, Minn. 55110; and Ramon Pareja, 6013 Ewing Ave., S. 55410, and John Leschisin, 1919 NE. St. Anthony Blvd. 55418, both of Minneapolis, Minn.

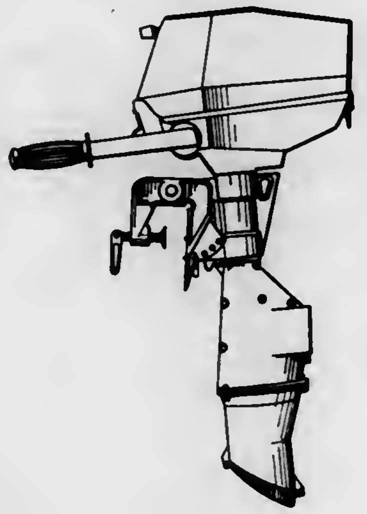
Original design application May 24, 1972, Ser. No. 256,633 which is a continuation-in-part of Ser. No. 195,064, Nov. 2, 1971, now abandoned. Divided and this application Dec. 26, 1973, Ser. No. 428,132
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1 R



233,801
HYDROJET PROPELLING UNIT FOR WATERCRAFT

Dante Giacosa, Turin, Italy, assignor to Sira Societa Industriale Ricerche Automotoristiche Turin, Italy

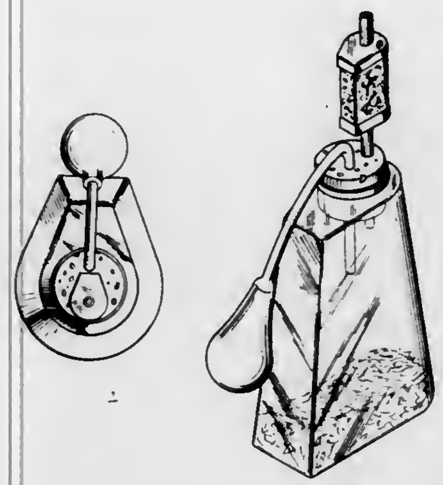
Filed May 29, 1973, Ser. No. 364,477
Claims priority, application Italy Dec. 14, 1972
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D77—1 R



233,802
OLFACTORY TESTING DEVICE

Charles M. Saffer, Jr., Levittown, Pa., and Oscar W. Felcan, Brooklyn, N.Y., assignors to Witco Chemical Corporation, New York, N.Y.

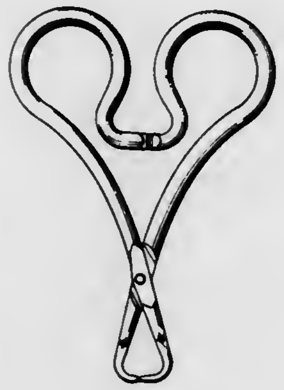
Filed Oct. 2, 1972, Ser. No. 294,144
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 N



233,803
SURGICAL INSTRUMENT

Clinton M. Cummings, Southbury, Conn., assignor to Acme United Corporation, Bridgeport, Conn.

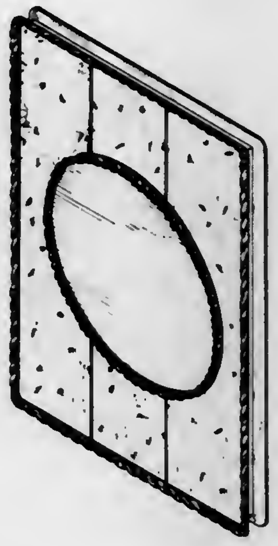
Filed Dec. 6, 1971, Ser. No. 205,469
Term of patent 14 years
Int. Cl. D24—*02;* D8—*03*
U.S. Cl. D83—12 R

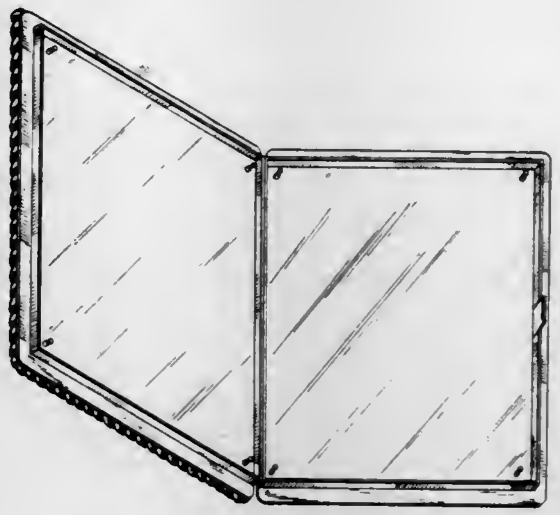


233,804
MENU HOLDER

Robert A. Summers, Freehold, and Henry Leong, Kendall Park, N.J., assignors to Unique Menus, Freehold, N.J.

Filed Aug. 29, 1972, Ser. No. 284,570
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D97—1





LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF NOVEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A & M Cousin et Cie. Etablissements Cousin Freres, Le Bois de Flers: *See—*
  - Cousin, Maurice Claude, 3,850,484.
- AB Bofors: *See—*
  - Bjornson, Bjorn Ove; and Stradalen, Yngve Bertil, 3,850,387.
  - Simmons, Bjorn Herman Olof, 3,850,104.
- AB Vabyma, mesne: *See—*
  - Joelson, Karl Evert Anders, 3,850,081.
- Abbott Laboratories: *See—*
  - Ashkar, Fuad Salameh, 3,850,577.
  - Cavanaugh, John Herbert, 3,851,055.
- Abdallah, Nessib: *See—*
  - Cull, Alan Sidney; and Abdallah, Nessib, 3,851,024.
- Abe, Yoshiharu; and Ito, Kenzo, to Copyer Co., Ltd. Roll type copying paper supply device. 3,850,356, Cl. 226-110.000.
- Accra-Point Arrays Corporation: *See—*
  - Conley, Larry R., 3,850,711.
- Ackerman, Robert A.: *See—*
  - Johnson, Benjamin A.; Royal, Stephen L.; and Ackerman, Robert A., 3,850,643.
- Ackermann, Walter Thomas, to Indevco Corporation. Automatically feeding lead pencil. 3,850,531, Cl. 401-65.000.
- Ackley, Richard H., to PPG Industries, Inc. Method of making a stampable reinforced sheet. 3,850,723, Cl. 156-180.000.
- Acme General Corporation: *See—*
  - Jerila, Torsti T. T., 3,849,835.
- Acme-Cleveland Corporation: *See—*
  - Rebish, Edward J., 3,850,413.
- Acorn Engineering Company: *See—*
  - Morris, Earl L.; and Sally, Theodore J., 3,849,809.
- Acosta, Evelio, to Hydraulic Equipment Systems & Fabricating, Inc. Counterbalance apparatus for a refuse container lid. 3,850,336, Cl. 220-335.000.
- Acurex Corporation: *See—*
  - Adler, Alan J., 3,850,030.
- Adachi, Kazuma, to Kabushiki Kaisha Daiken Seisakusho. Clutch assembly. 3,850,277, Cl. 192-107.000.
- Adams, Don, III; and Smith, Robert J., to Chrysler Corporation. Energy absorbing steering column. 3,850,049, Cl. 74-492.000.
- Adams, J. Henry. Plant starting apparatus. 3,849,932, Cl. 47-37.000.
- Adams, Renard P. Atmospheric pressure filter. 3,850,803, Cl. 210-142.000.
- Adams, Roger William, to English Clays Lovering Pochin & Company, Limited. Drying and subsequent redispersion of materials. 3,850,655, Cl. 106-309.000.
- Adamson, Gerald James; and O'Grady, James Kenneth, to Filter Queen Corporation, Limited, The. Apparatus for scrubbing rugs, floors and the like. 3,849,823, Cl. 15-50.00r.
- Adeola AG: *See—*
  - Nussbaumer, Thomas, 3,850,082.
- Adler, Alan J., to Acurex Corporation. Apparatus for measuring the torsion of a rotating shaft. 3,850,030, Cl. 73-136.00a.
- Adler, Norman; and Camin, Leopoldo Lazaro, to New England Nuclear Corporation. Bone seeking technetium 99m stannous phosphate complex. 3,851,044, Cl. 423-249.000.
- Adorjan, Alexander S., to General Electric Company. Thermal insulation structure. 3,850,714, Cl. 156-77.000.
- AER Corporation: *See—*
  - Villalobos, Joseph A., 3,849,904.
- Agence Nationale de Valorisation de la Recherche: *See—*
  - Lewiner, Jacques; and Legros, Danielle, 3,851,183.
- Agency of Industrial Science & Technology: *See—*
  - Ikeda, Kiichi; Taguchi, Kintaro; Nozaki, Taketoshi; and Matsumoto, Shuntetsu, 3,850,259.
- Agfa-Gevaert Aktiengesellschaft: *See—*
  - Saleck, Wilhelm; Himmelmann, Wolfgang; Balle, Gerhard; and Schnalke, Karl-Erwin, 3,850,644.
- Agouri, Elias; Mornet, Philippe; Parlant, Claude; and Rideau, Jacques, to Societe Nationale des Petroles d'Aquitaine. Method for copolymerizing monomers of different types. 3,851,015, Cl. 260-878.00b.
- Ahlstone, Arthur G.; and Bartos, Josef A., to Vetco Offshore Industries, Inc. Mudline emergency shutoff for offshore wells. 3,850,237, Cl. 166-.500.
- Aircraft Mechanics, Inc.: *See—*
  - Nordstrom, Arnold B., 3,850,283.
- Airflex Containers Limited: *See—*
  - Hickey, Christopher Daniel Dowling, 3,850,214.
- Aisin Seiki Kabushiki Kaisha: *See—*
  - Murakami, Noboru, 3,850,273.
- Aizawa, Tatsuo: *See—*
  - Washio, Takaji; and Aizawa, Tatsuo, 3,850,520.
- Ajinomoto Co., Inc.: *See—*
  - Toyoshima, Shigeshi; Kanao, Seizo; Toyoda, Takeshi; and Suyama, Tadashi, 3,850,968.
- Akers, R. M.: *See—*
  - Robson, Bruce H., 3,850,875.
- Akita, Sigeyuki, to Nippon Soken, Inc. Fault detecting device for multiplex signal transmission system. 3,851,107, Cl. 179-15.0bf.
- Aktiebolaget Atomenergi: *See—*
  - Margen, Peter Heinrich Erwin, 3,850,230.
- Aktiebolaget Bofors: *See—*
  - Hakanson, Christer Lennart, 3,850,880.
- Aktiebolaget Leo: *See—*
  - Hogberg, Bertil; Fex, Hans; Perklev, Torsten; Veige, Sten; and Fredholm, Bo, 3,851,019.
- Aktiebolaget Platmanufaktur: *See—*
  - Granseus, Folke Evert; and Borgstrom, Klas Ingvar Helmer, 3,849,971.
- Aktieselskabet Thomas Ths. Sabroe & Co.: *See—*
  - Villadsen, Vagn Hovgaard, 3,850,009.
- Akzo N.V.: *See—*
  - Havinga, Reginoldus; and Swaters, Pieter Dirk, 3,850,989.
- Akzona Incorporated: *See—*
  - Greven, Hendrick Marie, 3,850,904.
  - Lichtenwalter, Glen D.; and Hammerberg, Edgar S., 3,850,974.
- Akzona Incorporated, mesne: *See—*
  - Schuurs, Antonius Hermanus Wilhelmus; and van Weemen, Bauke Klass, 3,850,752.
  - van der Burg, Willem Jacob, 3,850,956.
- Alan Pond Equipment Limited: *See—*
  - Armstrong, Allan, 3,850,805.
- Alberti, Giulio; and Assucci, Maria Antoniette. Method of purifying and concentrating lithium ions. 3,851,040, Cl. 423-181.000.
- Alberts, Herbert. Slide fastener. 3,849,843, Cl. 24-205.120.
- Albinson, Don C.; Stephens, William I.; Cawley, Charles R., Jr.; and Hopkins, Richard Baier, to Knoll International, Inc. Functional and decorative trim and support bracket structures. 3,849,950, Cl. 52-27.000.
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- Albrecht, Robert J.; and Stanley, Alexander J., to Nabisco, Inc. Method for laminating sheet dough. 3,851,088, Cl. 426-502.000.
- Albright, James A.: *See—*
  - Dorschner, Kenneth P.; and Albright, James A., 3,849,934.
- Aldrich, Robert G.; Keller, Douglas V., Jr.; and Sawyer, Richard G., to Syracuse University Research Corporation. Chemical comminution and mining of coal. 3,850,477, Cl. 299-5.000.
- Aldridge, Clyde L.; and Kalina, Theodore. Water gas shift process. 3,850,840, Cl. 252-373.000.
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- Alers, George A.: *See—*
  - Thompson, Robert B.; Alers, George A.; and Tennison, Marion A., 3,850,028.
- Alexander, Neil A.: *See—*
  - Bentley, David R.; and Alexander, Neil A., 3,850,453.
- Alexandrovich, Vladislav: *See—*
  - Apsit, Voldemar Voldemarovich; Schukin, Mikhail Ivanovich; Alexandrovich, Vladislav; Yablunovsky, Dementievich; Androvsky, Grigory Grigorievich Alex; Zimichev, Jury Ivanovich; and Borovik, Ivan Arkhipovich, 3,851,199.
- Allais, Andre; Meier, Jean; and Dube, Jacques, to Roussel- UCLAF. Substituted aldehydes. 3,850,959, Cl. 260-327.0th.
- Allegheny Ludlum Industries, Inc.: *See—*
  - Kalita, Wesley, 3,850,703.
- Allen, Gerald F. Driver tool. 3,850,056, Cl. 81-71.000.
- Allen, John E., to Ferro-Carb Agglomeration Ltd., Inc. Treatment of steel mill waste dusts containing zinc. 3,850,613, Cl. 75-4.000.
- Allen, Joseph C.; and Tate, Jack F., to Texaco Inc. Vertical downward gas-driven miscible blanket flooding oil recovery process. 3,850,243, Cl. 166-267.000.
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- Allen, R. C., Inc.: *See—*
  - De Boer, Albert; and Gleason, David I., 3,851,324.
- Alliance Manufacturing Company, Inc., The: *See—*
  - Deming, Andrew F.; and Carli, Alvin J., 3,851,125.
- Allied Chemical Corporation: *See—*
  - Gomez, Climaco Alberto; Braswell, William Dorne; and Marshall, Robert Moore, 3,850,658.
  - Smith, Addison M.; and Recla, Eugene B., 3,850,758.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
Danieli, Stan Henrik; and Sundstrand, Arne, 3,850,557.
Folgero. Kare; and Fredrikson, Bengt, 3,851,090.
Alpura Koreco: *See—*
Loliger, Willi; and Schmied, Rudolf, 3,850,207.
Alquist, Henry E., to Phillips Petroleum Company. Process for reducing nitric oxide emissions from burners. 3,850,569, Cl. 431-4.000.
Aluminum Company of America: *See—*
Furney, Charles P., Jr.; and Couchman, Richard, 3,850,705.
Amchem Products, Inc.: *See—*
Binns, Robert Eric, 3,850,732.
Heller, Ferdinand P., 3,850,700.
Amemiya, Koji: *See—*
Tanaka, Michio; Ohtsuka, Katsuyuki; Obata, Masayoshi; Amemiya, Koji; Saga, Katsumasa; Kano, Sadaaki; and Kumada, Teru, 3,850,944.
American Can Company: *See—*
Borzner, Andrew C., Jr., 3,849,841.
Kinkel, Christian Frederick, 3,850,339.
Parks, Kenneth Jay, 3,850,337.
American Cyanamid Company: *See—*
Parekh, Girish Girdhar; and Blank, Werner Josef, 3,850,734.
Parekh, Girish Girdhar; and Blank, Werner Josef, 3,850,735.
American Home Products Corporation: *See—*
Bruce, William F., 3,850,915.
Dash, Barry H., 3,850,173.
Herbst, David R.; and Smith, Herchel, 3,850,936.
Kim, Dong H.; and Santilli, Arthur A., 3,850,928.
Kim, Dong H.; and Santilli, Arthur A., 3,850,931.
McCaully, Ronald J., 3,850,979.
Nudelman, Abraham; and McCaully, Ronald J., 3,850,933.
American Optical Corporation: *See—*
Metcalfe, Richard T.; Ramirez, Peter R.; and Slyk, Chester M., 3,850,902.
Winthrop, John Talley; Van Ligten, Raoul Fredrik; and Lawton, Kenneth Charles, 3,850,527.
American Pollution, Prevention Co., Inc.: *See—*
McGehee, Wallace L., 3,849,903.
American Standard Inc.: *See—*
Tompkins, Melvin W., 3,850,223.
American Sterilized Company: *See—*
Gunther, Donald A., 3,851,043.
American Telecommunications Corporation: *See—*
Tucker, Council A., 3,851,119.
Amerock Corporation: *See—*
Bildahl, Richard L., 3,849,832.
Amoco Production Company: *See—*
Jones, Loyd W., 3,850,807.
AMP Incorporated: *See—*
Blair, Bryce Wilson, 3,850,426.
Cobaugh, Robert Franklin; and Parmer, Kenneth Ronald, 3,849,870.
Cobaugh, Robert Franklin; and Heisey, Jay Marlin, 3,850,500.
Glover, Douglas Wade, 3,850,495.
Munro, Geoffrey Hector James, 3,851,297.
Schor, Ferdinand William, 3,850,498.
Ampex Corporation: *See—*
Herzog, William F., 3,851,100.
Amsler, Joachim; and Otto, Walther, to Sprecher & Schuh AG. Voltage surge arrester. 3,851,217, Cl. 317-16.000.
AMSTED Industries Incorporated: *See—*
Baker, William Frederick, Sr., 3,850,312.
Kaufhold, Horst Thomas, 3,850,311.
Anaconda American Brass Co.: *See—*
Bray, Robert S.; and Tapley, Claude D., 3,850,019.
Anchor Hocking Corporation: *See—*
Koontz, Carl E.; and Faber, Josef, 3,850,330.
Roberts, Cecil P., 3,850,284.
Andeen, Gerry B.: *See—*
Keur, Robert L.; and Andeen, Gerry B., 3,850,717.
Anders, Edward O., to Global Marine Inc. Icebraking. 3,850,125, Cl. 114-40.000.
Andersen Company, The: *See—*
Wubbe, Leo J., 3,849,829.
Anderson, Arnold L., to Michigan Chemical Corporation. Poly(phenylene oxide) plastic compositions containing halogenated aryl flame retardants. 3,850,879, Cl. 260-45.90r.
Anderson, Elizabeth L. Simulated tree. 3,850,781, Cl. 161-23.000.
Anderson, John Ernest, to Midland Industrial Computing Limited. Textile machines. 3,851,315, Cl. 340-172.500.
Andis, Mathew, Sr. Stride and knead massager. 3,850,163, Cl. 128-57.000.
Ando, Masao; and Takeda, Yukiyasu, to Sumitomo Light Metal Industries, Ltd. Method and apparatus for sensing flatness of metal sheet. 3,850,024, Cl. 73-37.700.
Ando, Tomohiko, to Ricoh Co., Ltd. Device for adjusting and fixing parts requiring fine adjustments, particularly parts of an optical system. 3,850,402, Cl. 248-476.000.
Andresen, Karl-Heinz, to Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung. Roll gap detection. 3,850,015, Cl. 72-31.000.
Andrews, Roderic Stafford; Barlow, Christopher George; and Livingstone, John Lewis, to Sterling Drug Inc. Process of preparing a solid fine crystalline paracetamol polymer complex composition. 3,851,032, Cl. 264-109.000.
Andrikian, Charles P., to Hughes Aircraft Company. Tee junction waveguide circulator having dielectric matching posts at junction. 3,851,279, Cl. 333-1.100.
Androvsky, Grigory Grigorievich Alex: *See—*
Apsit, Voldemar Voldemarovich; Schukin, Mikhail Ivanovich; Alexandrovich, Vladislav; Yablunovsky, Dementievich; Androvsky, Grigory Grigorievich Alex; Zimichev, Jury Ivanovich; and Borovik, Ivan Arkhipovich, 3,851,199.
Andrus, Everett Howard. Gravity flow discrete article gas for isolated thermal treatment device and method. 3,850,572, Cl. 432-11.000.
ANF Frangeco S.A.: *See—*
Pelabon, Andre E., 3,850,229.
Angelo Guala di Piergiacomo e Roberto Guala & C. S. A.S.: *See—*
Guala, Piergiacomo, 3,850,328.
Angermeier, William R.; and Wofford, Benjamin Gary, to Industrial Design Inc. Method for packing and handling material. 3,849,967, Cl. 53-35.000.
Anne Company, Ltd.: *See—*
Asaka, Kunitami; and Ishihara, Masanori, 3,850,652.
Antal, Michael J.: *See—*
Peiser, Alfred M.; Antal, Michael J.; and Weiss, Gustave J., 3,850,743.
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Horigome, Koichi; Aoki, Kazuyoshi; Yamaguchi, Hisashi; Horiuchi, Hiroshi; Wada, Tsuneo; and Inokuma, Hiroyuki, 3,850,641.
Apsit, Voldemar Voldemarovich; Schukin, Mikhail Ivanovich; Alexandrovich, Vladislav; Yablunovsky, Dementievich; Androvsky, Grigory Grigorievich Alex; Zimichev, Jury Ivanovich; and Borovik, Ivan Arkhipovich. Inductor generator. 3,851,199, Cl. 310-168.000.
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Kunugi, Taiseki; Fujimoto, Kaoru; Arai, Hiromichi; and Watanabe, Yoshihisa, 3,850,843.
Araki, Hideo: *See—*
Yoshino, Tsutomu; Nanba, Shinichi; Fujimoto, Norihiro; and Araki, Hideo, 3,849,940.
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Arff, Uwe F., to Outboard Marine Corporation. Chain saw torque limiting centrifugal clutch assembly. 3,849,884, Cl. 30-383.000.
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Armco Steel Corporation: *See—*
Cruse, Clyde L., Jr., 3,850,616.
Armstrong, Allan, to Sutcliffe, Speakman & Co., Ltd. and Alan Pond Equipment Limited. Filter systems. 3,850,805, Cl. 210-167.000.
Armstrong Cork Company: *See—*
Snyder, Robert W., 3,850,095.
Young, John H., 3,850,556.
Arneson, Edwin L.: *See—*
Manizza, Guelfo A.; and Arneson, Edwin L., 3,850,292.
Arons, Gilbert N.: *See—*
McQuade, Allan J.; and Arons, Gilbert N., 3,850,785.
Aronstein, Jesse; Leoff, Arkady; Murphy, John J.; and Ruder, Winfield S., to International Business Machines Corporation. Apparatus for transferring articles through various processing sectors of a manufacturing system. 3,850,105, Cl. 104-1.00r.
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Kawasaki, Harumi; Sonezaki, Hizashi; and Yoshimura, Norihiko, 3,851,308.
Uno, Naoyuki; Nomura, Katsuhiko; Sakazaki, Tadazumi; Watanabe, Koichiro; Miyata, Katsuhiko; and Urano, Fumio, 3,850,530.
Asaka, Kunitami; and Ishihara, Masanori, to Anne Company, Ltd. Multi-purpose membrane. 3,850,652, Cl. 106-197.00r.
Asakam, John Fairburn: *See—*
Hogg, Derek; Wilson, Anthony; and Asakam, John Fairburn, 3,850,423.
Asano, Kiro: *See—*
Araki, Tadashi; Asano, Kiro; Yamada, Jun; Imaizami, Hisao; and Awao, Takao, 3,851,048.
Ashfrield, Robert Andrew: *See—*
Pratt, Alan; and Ashfrield, Robert Andrew, 3,849,891.
Ashkar, Fuad Salameh, to Abbott Laboratories. Rapid extraction method for serum thyroxine. 3,850,577, Cl. 23-230.00b.
Ashland Oil, Inc.: *See—*
Grimm, Robert A.; and Sedor, Edward A., 3,850,969.
Ashmead, Albert S.: *See—*
Shepard, Richard W.; and Ashmead, Albert S., 3,850,011.
Assucci, Maria Antoniette: *See—*
Alberti, Giulio; and Assucci, Maria Antoniette, 3,851,040.
Atchisson, Maxwell G. Firearm apparatus. 3,850,076, Cl. 89-196.000.
Atkins, Thomas M., to Kelsey-Hayes Company. Proportional skid control system. 3,850,480, Cl. 303-21.0cg.
Atkinson, Louis D.: *See—*
Thoma, Paul E.; and Atkinson, Louis D., 3,850,038.
Atlantic Richfield Company: *See—*
Kjonaas, Manley, 3,850,823.
Wunderlich, Donald K.; and Skinner, James L., 3,850,739.

Atomenergikommissionen: *See—*
Lund, Svend Aage; Hansen, Hans Nielsen; Holst, Heige Alfred; and Northeved, Allan, 3,850,026.
Audronics, Inc.: *See—*
Heule, James E., 3,851,181.
Ault, Cyrus Frank, to Bell Telephone Laboratories, Inc. Ring supervisory circuit. 3,851,283, Cl. 335-178.000.
Aumuller, Walter; Weyer, Rudi; Hitzel, Volker; and Hubner, Manfred, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Benzenesulfonyl ureas and process for their manufacture. 3,850,950, Cl. 260-307.00d.
Automatisme & Technique: *See—*
Goutard, Rene Michel, 3,849,850.
Automobiles Peugeot: *See—*
Sigwald, Jacques, 3,850,153.
Avar, Lajos; and Hofer, Kurt, to Sandoz Ltd. Derivatives of alphacyanacrylic acid. 3,850,960, Cl. 260-329.300.
Avco Corporation: *See—*
Hoag, Ethan D.; Patrick, Richard M.; Locke, Edward V.; and Hella, Richard A., 3,851,273.
Avionic Instruments Inc.: *See—*
Compoly, Albert William; and Temple, Alfred Charles, 3,851,322.
Awao, Takao: *See—*
Araki, Tadashi; Asano, Kiro; Yamada, Jun; Imaizami, Hisao; and Awao, Takao, 3,851,048.
Ayres, Waldemar A., to Bector, Dickinson and Company. Plasma separator assembly. 3,850,174, Cl. 128-272.000.
B & J Machinery Company, Inc.: *See—*
Jackson, Obie R., 3,850,120.
Baba, Kosaku; Hosaka, Akio; and Nakamura, Hiromichi, to Nissan Motor Company, Limited. Collision detecting system for a motor vehicle. 3,851,305, Cl. 340-52.00h.
Baba, Nobuyuki; and Sato, Shozo, to Mitsubishi Kasei Kogyo Kabushiki Kaisha (also as Mitsubishi Chemical Industries, Limited). Packing material for use in gel premeation chromatography and method of manufacturing the same. 3,850,848, Cl. 252-463.000.
Baba, Paul D.: *See—*
United States of America, National Aeronautics and Space Administration, 3,849,877.
Babbitt, John M.; and Houle, James F., to Eastman Kodak Company. Coating quality and reducing static simultaneously. 3,850,640, Cl. 96-67.000.
Babchinitser, Tatyana Mikhailovna: *See—*
Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Chumaevskaya, Alla Nikolaevna; Mgeladze, Boris Mikhailovich; Bekasova, Nina Ivanovna; Komarova, Ljudmila Grigorievna; Vinogradova, Svetlana Vasilievna; Valetsky, Petr Maximilianovich; Kalachev, Alxandr Ivanovich; Lyamenkova, Evgenia Kuzminichna; Glivka, Ljudmila Alexandrovna; Burtseva, Tamara Andreevna; and Babchinitser, Tatyana Mikhailovna, 3,850,820.
Babcock & Wilcox Company, The: *See—*
Piaskowski, Edward J., 3,850,149.
Babcock-Atlantique, S.A.: *See—*
Thome, Paul, 3,850,795.
Thome, Paul, 3,850,796.
Bachman, John A.: *See—*
Sanctuary, Clifford; Woods, Donald C.; and Bachman, John A., 3,850,036.
Bachmann, George. Pipe cutting equipment. 3,850,058, Cl. 82-101.000.
Bachofner, Peter: *See—*
Schmidt-Hatting, Wolfgang; Chaudhuri, Kiranendu; and Bachofner, Peter, 3,850,768.
Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Eilingsfeld, Heinz; and Patsch, Manfred, 3,850,998.
Riedel, Guenther; and Waechter, Rudolf, 3,850,648.
Wurmb, Rolf; Schuette, Wilhelm; Werther, Heinz-Ulrich; and Schmidt, Franz, 3,850,873.
Baile, Clifton A.; McLaughlin, Carol Lynn; and Webb, Robert Lee, to Smith Kline Corporation. Methods for improving the feed intake of healthy reminants employing certain benzodiazepines. 3,851,058, Cl. 424-244.000.
Bailey, Derek W., to Brunswick Corporation. Method for continuously processing waste nitric acid solutions. 3,851,047, Cl. 423-390.000.
Bailey, William J., Jr.; Houle, James F.; and Van Norman, Gilden R., to Eastman Kodak Company. Multilayer radiation sensitive element having controlled triboelectric charging characteristics. 3,850,642, Cl. 96-87.00a.
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Bajka, Lech: *See—*
Gierek, Adam; and Bajka, Lech, 3,850,699.
Baker, Fred E., to General Electric Company. Hair detangler. 3,850,181, Cl. 132-11.00a.
Baker Oil Tools, Inc.: *See—*
Crowe, Talmadge L., 3,850,242.
Baker, Philip G., to Polaroid Corporation. Novel prismatic element. 3,850,510, Cl. 350-286.000.
Baker, Theodore H.; Stevens, Richard C.; and Tzou, Albert J., to International Business Machines Corporation. Method for determining whether holes in insulated layer of semiconductor substrate are fully open. 3,851,245, Cl. 324-65.00r.
Baker, William Frederick, Sr., to AMSTED Industries Incorporated. Lockset seat extension on type E coupler. 3,850,312, Cl. 213-147.000.
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Balco, Inc.: *See—*
Balzer, Claude P.; Corman, Edward M.; Reiff, Almer A.; and Henry, Michael D., 3,849,958.
Balde, Daniel; and Nagy, Georges, to Produits Chimiques Ugine Kuhlmann. Bis(haloalkyl)methoxymethane phosphonates. 3,851,020, Cl. 260-950.000.
Balevski, Anguel Tonchev; Nikolov, Ivan Dimov; Dimova, Vasilka Petrova; and Zadgorski, Stoyan Nedkov, to Institute Po Metaloznanie i Techno Logia Na Metalite. Zinc alloy containing nitrogen. 3,850,625, Cl. 75-178.00r.
Ball Corporation: *See—*
Steele, Fred W.; and Sannella, Joseph L., 3,850,634.
Ball, Graham John; and Fehr, Ivor John Martin, to Vickers Limited. Medical face masks. 3,850,171, Cl. 128-203.000.
Balle, Gerhard: *See—*
Saleck, Wilhelm; Himmelmann, Wolfgang; Balle, Gerhard; and Schnalke, Karl-Erwin, 3,850,644.
Balliett, Robert Wayne, to St. Joe Minerals Corporation. High strength zinc alloys. 3,850,622, Cl. 75-175.0am.
Balmer, Oskar: *See—*
Focke, Heinz; and Balmer, Oskar, 3,850,281.
Balzer, Claude P.; Corman, Edward M.; Reiff, Almer A.; and Henry, Michael D., to Balco, Inc. Expansion joint cover assembly. 3,849,958, Cl. 52-396.000.
Banner, Philip M. Polarity testing adaptor means. 3,851,243, Cl. 324-51.000.
Baratto, Eugene L.: *See—*
Steinhauser, Armin H.; and Baratto, Eugene L., 3,849,949.
Barker, Gerald C.: *See—*
Shull, William A.; and Barker, Gerald C., 3,851,272.
Barlow, Christopher George: *See—*
Andrews, Roderic Stafford; Barlow, Christopher George; and Livingstone, John Lewis, 3,851,032.
Barnard, Mark Cary Sedgwick, to Leyland Gas Turbines Limited. Thermal regenerators. 3,850,228, Cl. 165-8.000.
Barnard, Robert D.; and Meyer, Robert H., to Dow Chemical Company, The. Treatment of clorine-contaminated sulfuryl fluoride with unsaturated compounds. 3,850,542, Cl. 413-468.000.
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Barnes, Tracy W., to Laidlaw Corporation. Method of flocking metal articles. 3,850,659, Cl. 117-17.000.
Barnett, Allan E.: *See—*
Sinfelt, John H.; and Barnett, Allan E., 3,850,747.
Barrett, Fred O.: *See—*
Sturwold, Robert J.; and Barrett, Fred O., 3,850,682.
Bart, Philip D. Closure for a plurality of different sized openings. 3,850,341, Cl. 220-212.000.
Bartha, Zoltan; Fodor, Vince; and Subotics, Gyula, to Orszagos Gumiipari Vallalat. Extrusion die with adjustable profile. 3,850,568, Cl. 425-466.000.
Barthel, Horst, to Verwaltungsgesellschaft m.b.H. Drilling fluid. 3,850,817, Cl. 252-8.50b.
Bartholomew, Frederick. Children's or infants furniture. 3,849,812, Cl. 5-108.000.
Bartos, Josef A.: *See—*
Ahlstone, Arthur G.; and Bartos, Josef A., 3,850,237.
Basche, Malcolm; and Fanti, Roy, to United Aircraft Corporation. Procedures for coatings substrates with silicon carbide. 3,850,689, Cl. 117-229.000.
Basic Incorporated: *See—*
Vickery, Glenn C., 3,850,845.
Bass, Oscar, Jr.; Jenkins, Robert Bain, Sr.; and Horvat, Ivan, to Jenkins Metal Shops, Inc. Air control system for carding machines. 3,849,837, Cl. 19-107.000.
Bastgen, Aloys. Reinforced concrete ribbed ceiling. 3,849,957, Cl. 52-327.000.
Batchelor, Floyd O., to Lee, Raymond, Organization, Inc., The. Sewing caddy. 3,850,487, Cl. 312-252.000.
Bates, William G.: *See—*
Marceau, William E.; Bates, William G.; and Mroczek, Thomas J., 3,850,420.
Bauch, Ernst; and Beitz, Juergen, to Neumunstersche Maschinen- und Apparatebau Gesellschaft mbH. Apparatus for crimping of filamentary material. 3,849,844, Cl. 28-1.300.
Bauer, James J., to Clark Equipment Company. Control lever friction clutch. 3,850,258, Cl. 180-6.480.
Bauerle, Gerhard; and Hubner, Oswald, to Bunker Ramo Corporation. Contact strip. 3,850,499, Cl. 339-156.00r.
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Baugh, Raymond Ernest: *See—*
Plaister, John Edward; and Baugh, Raymond Ernest, 3,850,315.
Baum, John W.; and Diekman, John D., to Zoecon Corporation. Novel products. 3,950,992, Cl. 260-612.00d.
Baumann, Arthur N., to International Minerals & Chemical Corporation. Defluorinated phosphate feed supplement production. 3,851,086, Cl. 426-381.000.

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  - Hagemann, Hermann, 3,850,985.
  - Perrey, Hermann; Rosenkranz, Hans Jurgen; Walter, Oskar; and Rudolph, Hans, 3,851,013.
  - Psaar, Hubertus, 3,850,913.
  - Sasse, Klaus; Hammann, Ingeborg; Unterstenhofer, Gunter; and Frohberger, Paul-Ernst, 3,850,925.
  - Von Bonin, Wulf; Nehen, Ulrich; and Von Gizycki, Ulrich, 3,850,650.
  - Werle, Eugen; Hochstrasser, Karl; and Feuth, Herbert, 3,850,907.
  - Widdig, Arno; Kuhle, Engelbert; Grewe, Ferdinand; and Helmut, Kaspers, 3,850,954.
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  - Eiter, Karl, 3,851,007.
- Beacon, Robert G., to Ellcon-National, Inc. Slack adjuster. 3,850,269, Cl. 188-202.000.
- Beale, Harry A.: *See—*
  - Woollam, John A.; Beale, Harry A.; and Spain, Ian L., 3,849,875.
- Beatrice Foods: *See—*
  - Epstein, Edward, 3,851,081.
- Beaujean, Holger; and Laser, Manfred, to Kernforschungsanlage Julich G.m.b.H. Apparatus and process for the separation of inert gases from gas mixture containing carbon dioxide. 3,850,593, Cl. 55-66.000.
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  - Stewart, A. Theodore Jar.; and Dyer, Gene H., 3,850,738.
- Beck, James C.; Hartzler, Earnest D.; and Nielsen, Harrie W., to Singer Company, The. Directional signal beacon. 3,851,165, Cl. 240-41.300.
- Beck, Ronald A.; and Breu, Dennis L., to Sperry Rand Corporation. Core patch stringing apparatus. 3,849,861, Cl. 29-203.0mm.
- Beck, Russell R.: *See—*
  - Themelis, Nickolas John; Beck, Russell R.; and Wagner, John V., 3,850,620.
- Becker & van Hullen, Niederrheinische Maschinenfabrik: *See—*
  - Hutter, Wilhelm, 3,850,564.
- Beckman Instruments, Inc.: *See—*
  - Kaye, Wilbur I., 3,850,525.
- Beckmann, Georg; Fritz, Kurt; and Lippitsch, Josef, to Waagner-Biro Aktiengesellschaft. Heat exchanger. 3,850,235, Cl. 165-162.000.
- Beckwith, Sterling; and Johnston, William C., to Kysor Industrial Corporation. Air defrost air curtain display case. 3,850,003, Cl. 62-82.000.
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  - Ayres, Waldemar A., 3,850,174.
- Beecham, David, to Bell Telephone Laboratories, Incorporated. Output preview arrangement for shift registers. 3,851,154, Cl. 235-92.0sh.
- Beecham Group Limited: *See—*
  - Mamalis, Patrick; La Croix, Arther Stuart; and Mhasalker, Solomon Ezekiel, 3,850,953.
- Behr, R. Douglas; and Hearns, Harold L., to Dow Chemical Company, The. Conveyor system for cylindrical objects. 3,850,289, Cl. 198-270.000.
- Behrens, Joh. Friedrich: *See—*
  - Fehrs, Hellmuth, 3,850,079.
- Beitz, Juergen: *See—*
  - Baueh, Ernst; and Beitz, Juergen, 3,849,844.
- Bekasova, Nina Ivanovna: *See—*
  - Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Chumaevskaya, Alla Nikolaevna; Mgeladze, Boris Mikhailovieh; Bekasova, Nina Ivanovna; Komarova, Ljudmila Grigorievna; Vinogradova, Svetlana Vasilievna; Valetsky, Petr Maximilianovich; Kalachev, Alxandr Ivanovich; Lyamenkova, Evgenia Kuzminichna; Glivka, Ljudmila Alexandrovna; Burtseva, Tamara Andreevna; and Babchinitser, Tatyana Mikhailovna, 3,850,820.
- Bekku, Fujio: *See—*
  - Umehara, Ryo; and Bekku, Fujio, 3,849,848.
- Bell & Howell Co.: *See—*
  - Jeffers, Frederick J., 3,849,874.
- Bell Telephone Laboratories, Inc.: *See—*
  - Ault, Cyrus Frank, 3,851,283.
- Bell Telephone Laboratories, Incorporated: *See—*
  - Beecham, David, 3,851,154.
  - Bush, Stanley Edward; Lewis, Charles William; McKelvey, William John; Merwede, Donald Leiman; Roberge, Kenneth Joseph; and Saltus, George Edwin, 3,851,114.
  - Dinh-Tuan Ngo, Peter, 3,851,327.
  - Freimanis, Laimons, 3,851,108.
  - Koo, James Teh-Zen, 3,851,186.
  - Krumreich, Charles Louis; Mulbarger, Albert Eugene, Jr.; and Walden, Stephen William, 3,850,497.
  - Singh, Shobha; and Van Uitert, Legrand Gerard, 3,851,268.
  - Taylor, Frank Finley, 3,851,310.
- Beloit Corporation: *See—*
  - Moore, Lawrence A., 3,850,566.
- Belue, James C.: *See—*
  - Philipps, Thomas E.; and Belue, James C., 3,850,294.
- Bemus, Richard D.: *See—*
  - Paulson, William T.; Davidson, David M.; Gilbert, L. Eldean; Gabbard, Henry; and Bemus, Richard D., 3,850,729.
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  - Jeunehomme, Michel L.; and Johnson, Malcolm C., 3,851,176.
  - Porawski, Donald John, 3,851,259.
- Benjamin, Robert N. Method of assembling multiple gear differential. 3,849,862, Cl. 29-407.000.
- Bennett, Foster C., to Dow Chemical Company, The. Apparatus for vapor generation. 3,851,146, Cl. 219-300.000.
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  - Bensdorp, Josef Ernst Marie, 3,850,561.
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- Bentley, David R.; and Alexander, Neil A., to Questor Corporation. Method and apparatus for connecting insulating conduits. 3,850,453, Cl. 285-47.000.
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- Berger, Dieter: *See—*
  - Rittersdorf, Walter; Berger, Dieter; Rey, Hans-Georg; and Rieckmann, Peter, 3,850,576.
- Bergh Bros. Co., Inc.: *See—*
  - Bergh, George G.; and Bergh, Robert G., 3,849,917.
- Bergh, George G.; and Bergh, Robert G., to Bergh Bros. Co., Inc. Display component. 3,849,917, Cl. 40-16.000.
- Bergh, Robert G.: *See—*
  - Bergh, George G.; and Bergh, Robert G., 3,849,917.
- Bermaid Irrigation Controls: *See—*
  - Berger, Benjamin, 3,850,802.
- Bernard, Vincent E.; and MacGregor, Duane F., to Container Corporation. Rib cutting apparatus. 3,849,836, Cl. 17-1.00r.
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  - Gehrmann, Klaus; Ohorodnik, Alexander; Dettmeier, Udo; and Berns, Heinz-Josef, 3,850,999.
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- Berry, Walter V.; and Hunziker, Paul J., to Pullman Incorporated. Aerial rope tramway. 3,850,110, Cl. 104-223.000.
- Berryfast, Inc.: *See—*
  - Hayes, Kenneth L., 3,850,073.
- Berstorff, Hermann, Maschinenbau, GmbH: *See—*
  - Gersbeck, Rolf, 3,850,093.
- Bertele, Giovanni Marco, to F.B. S.A.S. di Bertele' Giovanni Marco. . 3,849,914, Cl. 36-2.5al.
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  - Michalak, Bogumil M.; and Bertellotti, Ansano, 3,851,222.
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  - Flack, Max L., 3,850,014.
- Bestland, Roy J., to Honeywell Inc. Semiconductors. 3,850,707, Cl. 148-175.000.
- Beta Aluminium Products Limited: *See—*
  - Thompson, Norman, 3,849,938.
- Betke, Erich: *See—*
  - Spielau, Paul; Betke, Erich; and Simon, Manfred, 3,850,725.
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  - Reinecke, Udo; Jurgensmann, Helmut; Riedhammer, Josef; Stangl, Helmut; and Beutler, Gerhard, 3,850,272.
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  - United States of America, National Aeronautics and Space Administration, 3,849,877.
- Bierworth, David P.; and Hynes, Frank R., to Xerox Corporation. Fusing apparatus. 3,849,905, Cl. 34-155.000.
- Bigelow-Sanford, Inc.: *See—*
  - Peters, Robert I.; and Parlin, David B., 3,850,783.
- Bigotte, Claude; and Viazzi, Pierre, to I.C.O.F.I. Inspection hole base for underground pipes. 3,850,457, Cl. 285-121.000.
- Bildahl, Richard L., to Amerock Corporation. Cabinet drawer rollers and method of mounting same. 3,849,832, Cl. 16-18.000.
- Billups, James Otis. Method and cutting edge arrangement for material removal. 3,849,852, Cl. 29-95.100.
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- Binns, Robert Eric, to Amchem Products, Inc. Zirconium rinse for phosphate coated metal surfaces. 3,850,732, Cl. 204-181.000.
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  - Dahl, Joseph D., 3,851,320.
- Biocel Corporation: *See—*
  - Penque, Ronald A., 3,850,771.
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  - Shen, Mitchel; Mandell, Robert B.; and Stark, Lawrence, 3,850,892.

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- Bishel, Robert A., to International Nickel Company, Inc., The. Weld rod containing manganese. 3,851,142, Cl. 219-146.000.
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  - Coleman, H. Paris; and Bishop, Walton B., 3,851,334.
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- Bjorklund, Carolyn M.: *See—*
  - Dahlin, Erik B.; and Bjorklund, Carolyn M., 3,851,175.
- Bjornson, Bjorn Ove; and Stradalen, Yngve Bertil, to AB Bofors. Deflection device for rocket motor propelled projectiles. 3,850,387, Cl. 244-3.220.
- Black, Billy B. Tire shipping and storage structure. 3,850,295, Cl. 206-304.000.
- Black, Robin Michael: *See—*
  - White, Alan Charman; and Black, Robin Michael, 3,850,957.
- Blackmon, Charles E., Jr., to GTE Automatic Electric Laboratories Incorporated. Finger stop for a movable finger stop-type rotary dial. 3,851,113, Cl. 179-90.0fw.
- Blackwelder, Maurice W., to Owens-Illinois, Inc. Method for the treatment of a crazed surface of a web expanded polystyrene. 3,851,039, Cl. 264-321.000.
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  - Kralowetz, Bruno; and Blaimschein, Gottfried, 3,850,022.
- Blair, Bryce Wilson, to AMP Incorporated. Card reader having automatic card positioning means. 3,850,426, Cl. 271-238.000.
- Blair, Lesley W. Anti-polluting incinerator. 3,850,118, Cl. 110-8.00r.
- Blank, Werner Josef: *See—*
  - Parekh, Girish Girdhar; and Blank, Werner Josef, 3,850,734.
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  - Rubi, Horst, 3,850,385.
- Bleecker, William H., to Carmet Company. Production of tungsten and carbide powder. 3,850,614, Cl. 75-.5bb.
- Bleh, Otto: *See—*
  - Termin, Erich; Lenz, Arnold; and Bleh, Otto, 3,850,971.
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  - Klinkhammer, Karl; and Bley, Siegfried, 3,850,107.
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  - Watkins, William L., 3,851,031.
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- Blumenthal, Ernesto. Overhead door. 3,849,937, Cl. 49-205.000.
- Blyth, James: *See—*
  - Day, Robert H.; and Blyth, James, 3,850,361.
- Boccalari, Mario, to Comitato Nazionale per l'Energie Nucleare-CNEN. Method for producing bimetallic and polymetallic bodies wherein the metals are joined together by metallurgical bond. 3,849,869, Cl. 29-481.000.
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- Boehm, Hans-Georg, to Braun Aktiengesellschaft. Portable ventilating appliances. 3,850,598, Cl. 55-387.000.
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  - Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Wick, Helmut, 3,850,926.
- Boehringer Mannheim GmbH: *See—*
  - Rittersdorf, Walter; Berger, Dieter; Rey, Hans-Georg; and Rieckmann, Peter, 3,850,576.
  - Stork, Harold; Schmidt, Felix Helmut; Thiel, Max; Fauland, Erich; and Kampe, Wolfgang, 3,851,056.
- Boeing Company, The: *See—*
  - De Vogel, Nicolaas, 3,850,129.
  - Smith, Alan W., 3,850,762.
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- Bohringer, Wilfried Paul: *See—*
  - Rothfuss, Georg; Gand, Heinz; Bredenbrock, Wolfgang; and Bohringer, Wilfried Paul, 3,851,285.
- Borden Chemical Company (France): *See—*
  - Payraudeau, Hubert Michel Henri, 3,850,558.
- Borden, John V. Contour dental X-ray film. 3,851,178, Cl. 250-478.000.
- Borg-Warner Corporation: *See—*
  - Zimmer, George A.; and Struttman, Hilarius S., 3,850,485.
- Borgstadt, Hans Ulrich: *See—*
  - Bohm, Horst; Borgstadt, Hans Ulrich; Ruhle, Manfred; and Wincierz, Peter, 3,850,584.
- Borgstrom, Klas Ingvar Helmer: *See—*
  - Granseus, Folke Evert; and Borgstrom, Klas Ingvar Helmer, 3,849,971.
- Borns, David R.; and Pierce, William C., to Lear Siegler, Inc. Combined air spring and leaf spring suspension. 3,850,445, Cl. 280-124.00f.
- Borom, Lisle K.: *See—*
  - Springer, Mary Lou; and Borom, Lisle K., 3,850,144.
- Borovik, Ivan Arkhipovich: *See—*
  - Apsit, Voldemar Voldemarovich; Schukin, Mikhail Ivanovich; Alexandrovich, Vladislav; Yablunovsky, Dementievich; Androvsky, Grigory Grigorievich Alex; Zimichev, Jury Ivanovich; and Borovik, Ivan Arkhipovich, 3,851,199.
- Borzner, Andrew C., Jr., to American Can Company. Seam type zipper with adjustable bottom stop. 3,849,841, Cl. 24-205.11r.
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  - Keller, Helmut; Bregler, Jurgen; Rhein, Helmut; and Jahnke, Horst, 3,850,695.
  - Rothfuss, Georg; Gand, Heinz; Bredenbrock, Wolfgang; and Bohringer, Wilfried Paul, 3,851,285.
- Boullon, Jose R.: *See—*
  - Garcia, Luis A.; Boullon, Jose R.; and Mandarious, Samia S., 3,850,903.
- Bourgeois, Norbert Paul, to Etudes et Bonneterie S.A. Circular knitting machine comprising a fabric draw off device. 3,850,012, Cl. 66-151.000.
- Bourgery, Guy B.: *See—*
  - Fauran, Claude P.; Eberle, Jeannine A.; Raynaud, Guy M.; Pourrias, Bernard M.; and Bourgery, Guy B., 3,850,937.
- Bovenkerk, Harold Paul, to General Electric Company. Cutting tool and method of making same. 3,850,053, Cl. 76-101.00r.
- Bowden, Roy Dennis; Slater, John Walter; and White, Brian Graham, to Imperial Chemical Industries, Limited. Certain tetrohalo-4-pyridinols and derivatives. 3,850,943, Cl. 260-297.00r.
- Bowler, Arthur A.: *See—*
  - Berrill, William H.; Halford, David W.; and Bowler, Arthur A., 3,849,817.
- Bowles, Oscar Pierce: *See—*
  - Gregory, Milton Wesley; Olszyk, Bernard John; and Bowles, Oscar Pierce, 3,850,670.
- Bowman, Thomas C.; and Watson, Stewart C., to Watson-Bowman Associates, Inc. Gap-sealing device. 3,850,539, Cl. 404-69.000.
- Boy, Mario Baccaredda: *See—*
  - Priola, Aldo; Cesca, Sebastiano; Ferraris, Giuseppe; Boy, Mario Baccaredda; and Giusti, Paolo, 3,850,896.
- Boy, Mario Bassaredda: *See—*
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- Boyhont, Donald S.; Souders, Marvyn L.; and Matweecha, David M., to Fuller Company. Flow gate for a fludizing gravity conveyor. 3,850,479, Cl. 302-29.000.
- Bozer, Keith B.; Brown, Lloyd H.; and Fox, Robert H., to Quaker Oats Company, The. Method of fabrication of furan resin bonded, fiber reinforced articles. 3,850,727, Cl. 156-335.000.
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  - Mackes, Ronald C., 3,850,115.
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- Bradam, William R., to NCR Corporation. Record material cutting mechanism. 3,850,068, Cl. 83-529.000.
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- Brainin, Herbert, to Vitredent-Corporation. Dental implant. 3,849,887, Cl. 32-10.00a.
- Brakebill, Harold G., to Robertshaw Controls Company. Temperature compensated pressure sensor and mounting means therefor. 3,850,039, Cl. 73-420.000.
- Bramley, Frank: *See—*
  - Brailsford, Brian H.; Bramley, Frank; and Hartshorn, Frank, 3,849,818.
- Brandtzaeg, Anton: *See—*
  - Arild, Arnulf; Creed, John; Folkestad, Olav; Odegard, Erik; Brandtzaeg, Anton; and Selberg, Arne Brigt Bru., 3,849,821.
- Braswell, William Dorne: *See—*
  - Gomez, Climaco Alberto; Braswell, William Dorne; and Marshall, Robert Moore, 3,850,658.
- Braucksiek, Henry C.: *See—*
  - Katchka, Jay R.; and Braucksiek, Henry C., 3,850,370.
- Braukmann Armaturen AG: *See—*
  - Braukmann, Bernhard, 3,850,198.
- Braukmann, Bernhard, to Braukmann Armaturen AG. Valve housing. 3,850,198, Cl. 137-613.000.
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  - Boehm, Hans-Georg, 3,850,598.
- Braun, C. F., & Company: *See—*

Wright, Lee E.; and Pickford, Allan E., 3,851,046.

Bray, Robert S.; and Tapley, Claude D., to Anaconda American Brass Co. Method of producing a metal strip including a longitudinal channel by roll-form reduction of a multi-gage strip. 3,850,019, Cl. 72-199.000.

Bredenbrock, Wolfgang: *See—*
Rothfuss, Georg; Gand, Heinz; Bredenbrock, Wolfgang; and Bohringer, Wilfried Paul, 3,851,285.

Bregler, Jurgen: *See—*
Keller, Helmut; Bregler, Jurgen; Rhein, Helmut; and Jahnke, Horst, 3,850,695.

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Bretschneider, Hermann; Fliri, Hans; and Klotzer, Wilhelm, to Hoffmann-La Roche Inc., mesne. N1- (1,2-dihydro-2-oxo-4-pyrimidinyl)-sulfanilamides. 3,850,912, Cl. 260-239.750.

Breu, Dennis L.: *See—*
Beck, Ronald A.; and Breu, Dennis L., 3,849,861.

Brey, Wilhelm, to Lod; Division of Intercole Automation, Inc. Radially expanding rotatable apparatus for supporting tires. 3,850,212, Cl. 144-288.00a.

Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, to Firestone Tire & Rubber Company, The. Drum indexing mechanism. 3,850,730, Cl. 156-394.000.

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Bridgestone Tire Company Limited: *See—*
Takahashi, Shoji, 3,850,728.

Briles, Franklin S. Corrosion blocking fastener. 3,849,964, Cl. 52-758.00f.

Brindisi, Anthony Thomas: *See—*
Towns, Edward J.; and Brindisi, Anthony Thomas, 3,850,350.

Brinly-Hardy Co., Inc.: *See—*
Doering, Charles W., 3,849,824.

Brio Scanditoy AB: *See—*
Osthall, Rolf Peter, 3,850,310.

Briscoe, James A.: *See—*
Coropolis, John P.; and Briscoe, James A., 3,849,827.

Bristol-Myers Company: *See—*
Crast, Leonard Bruce, Jr., 3,850,916.

Brite Star Manufacturing Company, Inc.: *See—*
Kinderman, John, 3,850,291.

British Hovercraft Corporation, Limited: *See—*
Leonard, John Charles, 3,850,126.

British Petroleum Company, Limited, The: *See—*
Dodson, Stanley Charles; and Newman, Robert Henry, 3,850,828.

British Ropes Limited: *See—*
Paddington, Arthur Loftus, 3,850,454.

British Steel Corporation: *See—*
Laws, William Robert, 3,851,091.

British Uralite Limited: *See—*
Kingsbury, Herbert William, 3,850,789.

Brooking, Betty L.; and Wright, William F., to Pillsbury Company, The. Process for forming stable food pieces. 3,851,083, Cl. 426-363.000.

Brossi, Arnold; Focella, Antonino; and Teitel, Sidney, to Hoffmann-La Roche Inc. 2-Chloro-5-N-pentylresorinol. 3,850,997, Cl. 260-623.00r.

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Broughton, Trevor; and Forman, Brian William, to Rolls-Royce (1971) Limited. Method of etching a titanium or titanium alloy part. 3,850,712, Cl. 156-18.000.

Brown Boveri & Company Limited: *See—*
Bodmer, Maurice; Hartinger, Edmund; and Huber, Albert, 3,850,657.
Sittig, Roland; and Zimmerman, Wolfgang, 3,850,508.

Brown, Cicero C., to Brown Oil Tools, Inc. Check valve assembly. 3,850,191, Cl. 137-271.000.

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Brown, Daniel P.: *See—*
En,John; and Brown, Daniel P., 3,851,101.

Brown, Geoffrey Edward: *See—*
Eastham, John Frederick; English, Christopher Durrant; and Brown, Geoffrey Edward, 3,851,231.

Brown, Lloyd H.: *See—*
Bozer, Keith B.; Brown, Lloyd H.; and Fox, Robert H., 3,850,727.

Brown, Merle S.: *See—*
Gardner, John A., Jr.; and Brown, Merle S., 3,851,127.

Brown Oil Tools, Inc.: *See—*
Brown, Cicero C., 3,850,191.
Brown, Cicero C., 3,850,194.

Brown, Omar L., to Fraze, Ermal Co., mesne. Easy opening container wall. 3,850,124, Cl. 113-121.00c.

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Brown, William E. Typing error correction system. 3,850,656, Cl. 117-2.0tc.

Bruce Industries, Inc.: *See—*
Geier, B. Wayne, 3,851,295.

Bruce, William F., to American Home Products Corporation. 2,6-Dichlorobenzaldehyde hydrazones. 3,850,915, Cl. 260-240.00g.

Brueninghaus Hydraulik GmbH: *See—*
Reinecke, Udo; Jurgensmann, Helmut; Riedhammer, Josef; Stangl, Helmut; and Beutler, Gerhard, 3,850,272.

Brugger, Richard D. Device for calibrating a transmissometer. 3,850,529, Cl. 356-207.000.

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Bruning, Rolf, to Heraeus-Schott Quarzschmelze GmbH. Salt vapor atmosphere treatment of quartz crystal granules. 3,850,602, Cl. 65-18.000.

Brunswick Corporation: *See—*
Bailey, Derek W., 3,851,047.
Brown, Perry H.; and Tremblay, Maurice H., 3,850,697.

Bryan, Don S. Prepared citrus fruit halves and method of making the same. 3,851,067, Cl. 426-90.000.

Bryzinsky, Frank M.: *See—*
Grazen, Frank S.; Buike, Melvin L.; and Bryzinsky, Frank M., 3,850,874.

Bublitz, Donald E., to Dow Chemical Company, The. N-(Trifluoromethyl- and trifluoromethylahalophenyl) maleimides. 3,850,955, Cl. 260-326.5fm.

Bublitz, Robert F.: *See—*
Siemonsen, Frederik A.; and Bublitz, Robert F., 3,850,340.

Buchanan, Edward R., to General Electric Corporation. Method of making superalloy bodies. 3,850,702, Cl. 148-11.50f.

Budnick, Thomas W.: *See—*
Hill, Charles O., 3,850,347.

Buerkley, Donald D.; and Lange, Heinz E., to Minnesota Mining and Manufacturing Company. Latent image printing. 3,850,649, Cl. 106-21.000.

Buike, Melvin L.: *See—*
Grazen, Frank S.; Buike, Melvin L.; and Bryzinsky, Frank M., 3,850,874.

Bull, Brian S.; Proni, Oscar; and Melnick, Loran V., to Coulter Electronics, Inc. Centrifuge for preparing platelet rich plasma. 3,850,369, Cl. 233-26.000.

Bunker Ramo Corporation: *See—*
Bauerle, Gerhard; and Hubner, Oswald, 3,850,499.
Bunkoczy, Bela, 3,849,947.

Bunkoczy, Bela, to Bunker Ramo Corporation. Methods of squaring elements with a surface in which they are mounted. 3,849,947, Cl. 51-281.00r.

Burch, Jack J., to Texas Instruments Incorporated. Coherent light array for use in image projection systems. 3,850,515, Cl. 353-102.000.

Burdin, Clifford: *See—*
United States of America, National Aeronautics and Space Administration, 3,851,238.

Burge, Richard Lee; and Wilson, Charles Peter, to Calgon Corporation. Inverted drum feeder for powdered detergent. 3,850,344, Cl. 222-67.000.

Burkin, Jury Alexandrovich; and Seleznev, Jury Emelyanovich. Device for piece-by-piece feeding and locking of cores strung in columns on wires. 3,849,859, Cl. 29-203.0mm.

Burroughs Corporation: *See—*
Downie, James; and Prakash, Vijai, 3,850,355.
Sloop, Andrew P., 3,851,161.

Burroughs Wellcome Co.: *See—*
Burrows, Robert Deck; and Phillips, Arthur Page, 3,851,060.
Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., 3,850,927.

Burrows, Robert Deck; and Phillips, Arthur Page, to Burroughs Wellcome Co. Composition and methods for treating nematode infections. 3,851,060, Cl. 424-270.000.

Burtseva, Tamara Andreevna: *See—*
Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Chumaevskaya, Alla Nikolaevna; Mgeladze, Boris Mikhailovich; Bekasova, Nina Ivanovna; Komarova, Ljudmila Grigorievna; Vinogradova, Svetlana Vasilievna; Valetsky, Petr Maximilianovich; Kalachev, Alxandr Ivanovich; Lyamenkova, Evgenia Kuzminichna; Glivka, Ljudmila Alexandrovna; Burtseva, Tamara Andreevna; and Babchinitser, Tatyana Mikhailovna, 3,850,820.

Busby, Donald W.: *See—*
Lupton, Homer B.; and Busby, Donald W., 3,850,253.

Bush, Stanley Edward; Lewis, Charles William; McKelvey, William John; Merwede, Donald Leiman; Roberge, Kenneth Joseph; and Saltus, George Edwin, to Bell Telephone Laboratories, Incorporated. Telephone distribution panel. 3,851,114, Cl. 179-98.000.

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Buxton, Daniel W., 25% to Sutton, George A. Liquid fill assembly. 3,850,210, Cl. 141-312.000.

Buzzolini, Mario G., to Sandoz-Wander, Inc. Diphenylsulfides as hypolipidemics. 3,851,064, Cl. 424-337.000.

Bynum, Douglas, Jr. Pavement construction. 3,850,537, Cl. 404-17.000.

Cadden, Jerry L.; Hackett, Donald W.; and Harris, Fred A., to United States of America, Atomic Energy Commission. Method of casting a consumable electrode. 3,850,226, Cl. 164-108.000.

Caldwell, Robert J.: *See—*

Katz, Alex J.; Caldwell, Robert J.; and Cycowicz, Izchak, 3,850,475.

Calgon Corporation: *See—*
Burge, Richard Lee; and Wilson, Charles Peter, 3,850,344.

Calkin, Billy C.; and Lowrie, Neely E., to Combustion Engineering, Inc. Means for separating entrained liquid. 3,850,599, Cl. 55-440.000.

Callahan, Joseph W.; and Laningham, Gene R., to Cesco, Inc. Method of cleaning heat exchangers. 3,850,741, Cl. 208-48.00r.

Calvert, Rodney K.; and Johnson, Roy A., to Mead Corporation, The. Article stacking mechanism. 3,850,282, Cl. 198-35.000.

Cambridge Research and Development Group: *See—*
Richardson, James E.; and Grover, Harvey H., 3,850,346.

Camin, Leopoldo Lazaro: *See—*
Adler, Norman; and Camin, Leopoldo Lazaro, 3,851,044.

Camp, Ronnie W.: *See—*
Orr, Clyde, Jr.; Hendrix, Warren P.; and Camp, Ronnie W., 3,850,040.

Canadian Patents and Development Limited: *See—*
Johnston, Donald A.; and Voss, Walter A., 3,851,131.
Szabo, Erwin I., 3,850,733.
Vankoughnett, Allan L., 3,851,132.

Canevari, Gerard P.; and Cooper, William M., Jr., to Exxon Research and Engineering Company. Foamed vapor barrier. 3,850,206, Cl. 141-1.000.

Cannon, Max R., to International Business Machines Corporation. Automatic magnetic tape information retrieval system with speed and position tape drive control. 3,851,116, Cl. 279-100.20s.

Canova, Fred; Krouse, Leroy M.; Hornschuch, Hanns; Hermann, Paul; and Dopkin, Joseph A., to Ingersoll-Rand Company. Rotor blade mounting arrangement. 3,850,547, Cl. 416-215.000.

Cardarelli, Nothan F., to Goodrich, B. F., Company, The. Biocidal elastomeric composition and method for dispersing biocides therewith. 3,851,053, Cl. 424-78.000.

Carli, Alvin J.: *See—*
Deming, Andrew F.; and Carli, Alvin J., 3,851,125.

Carlson, Donald E., to Mark Controls Corporation. Backflow preventer. 3,850,190, Cl. 137-218.000.

Carmet Company: *See—*
Bleecker, William H., 3,850,614.

Carmichael, Thomas F.; and Maier, Richard J., to Syncro Corporation. Lighting system. 3,851,208, Cl. 315-79.000.

Carnation Company: *See—*
Roehrig, Paul G.; Pappas, Nicholas C.; and Durbin, Robert E., 3,851,071.

Carney, Leroy L., to Halliburton Company. Method of using a spacer fluid for spacing drilling muds and cement. 3,850,248, Cl. 166-291.000.

Carpenter Technology Corporation: *See—*
van der Arend, Peter C., 3,850,004.

Carson, Alfred H.: *See—*
Kenny, Joseph R.; Welch, Rolland Ernst; Reading, William H., III; and Carson, Alfred H., 3,851,309.

Case, J. I., Company: *See—*
Huber, Mortimer J., 3,850,473.

Casparro, John J.: *See—*
Gravelle, Elmer; and Casparro, John J., 3,849,919.

Casper, Clarence, Jr.: *See—*
Games, John E.; and Casper, Clarence, Jr., 3,851,159.

Caterpillar Tractor Company: *See—*
Barnes, Dwaine Ralph, 3,849,941.
Stafford, Warren J., 3,850,455.

Cavanaugh, John Herbert, to Abbott Laboratories. Method of treating tardive dyskinesia using L-prolyl L-leucyl glycine amide. 3,851,055, Cl. 424-177.000.

Cawley, Charles R., Jr.: *See—*
Albinson, Don C.; Stephens, William I.; Cawley, Charles R., Jr.; and Hopkins, Richard Baier, 3,849,950.
Albinson, Don C.; Stephens, William I.; Cawley, Charles R., Jr.; and Hopkins, Richard Baierp, 3,849,962.

Cazalis, Jean-Pierre. Gas-tight enclosures for surgical operations. 3,850,172, Cl. 128-204.000.

CCI Life Systems, Inc., mesne: *See—*
Marantz, Laurence B.; and Moran, Clifford M., 3,850,835.

Celanese Corporation: *See—*
Di Edwardo, Andrew H.; Dix, Robert; and Riggs, John, 3,850,876.
Horlenko, Theodore; and George, James Henry, 3,850,995.
Ram, Michael J., 3,851,025.
Trebellas, John C.; Thigpen, Hubert H.; and Mays, Wallace M., 3,850,981.

Center for Management Services and Applied Research, Inc.: *See—*
Hornbostel, Lloyd H.; and Knutsen, Clarence R., 3,850,793.

Ceramic Coating Company, The: *See—*
Bhat, Vasanth Kumar; and Shapter, Alan Richard, 3,850,647.

Ceramic Magnetics, Inc.: *See—*
Sommer, Alfred, 3,851,291.

Cesca, Sebastiano: *See—*
Priola, Aldo; Cesca, Sebastiano; Ferraris, Giuseppe; Boy, Mario Bassaredda; and Giusti, Paolo, 3,850,894.
Priola, Aldo; Cesca, Sebastiano; and Ferraris, Giuseppe, 3,850,895.
Priola, Aldo; Cesca, Sebastiano; Ferraris, Giuseppe; Boy, Mario Baccaredda; and Giusti, Paolo, 3,850,896.
Priola, Aldo; Cesca, Sebastiano; and Ferraris, Giuseppe, 3,850,897.

Cesco, Inc.: *See—*
Callahan, Joseph W.; and Laningham, Gene R., 3,850,741.

Ceske Vysoke Uceni Technicke, Stavebni Ustav: *See—*
Pfeffermann, Jan Zaruba, 3,851,158.

Ceskoslovenska akademie ved: *See—*
Dubsky, Hanniel, 3,850,579.

Chabardes, Pierre; Julia, Marc; and Menet, Albert, to Rhone-Poulenc S.A. Sulphones with a 1,6-dimethyl-hexa-1,5-dienylene chain. 3,850,991, Cl. 260-607.00a.

Chaiet, Louis; and Mata, Justo, to Merck & Co., Inc. Antibiotic 234A and process for preparation. 3,851,054, Cl. 424-122.000.

Chalkley, Jack Rigler; and Thomas, David Meirion, to Impregnated Diamond Products Limited. Abrasive tool comprising a continuous porous matrix of sintered metal infiltrated by a continuous synthetic resin. 3,850,590, Cl. 51-298.000.

Chandler Evans Inc.: *See—*
White, Albert H., 3,850,405.

Chang, Kisuk, to Texas Instruments Incorporated. Memory cell for sequentially addressed memory array. 3,851,313, Cl. 340-173.00r.

Chappell, Ronald George: *See—*
Duncan, Frederick James; and Chappell, Ronald George, 3,850,651.

Charest, Francis G.: *See—*
Summers, Warren S.; and Charest, Francis G., 3,850,696.

Charles, Joseph T. Modular fail-safe telephone station protector. 3,851,220, Cl. 317-61.500.

Charvat, Vernon K., to Osborn Manufacturing Company, The. Grinding tool having a rigid and dimensionally stable resin binder. 3,850,589, Cl. 51-296.000.

Chase-Shawmut Company, The: *See—*
Kozacka, Frederick J., 3,851,289.

Chattopadhayay, Asoke; and Muller, Hans-Jurgen, to Deutsche Vergaser GmbH & Co. K.G. Fuel control for externally ignited internal combustion engines. 3,850,154, Cl. 123-140.0cc.

Chaudhuri, Kiranendu: *See—*
Schmidt-Hatting, Wolfgang; Chaudhuri, Kiranendu; and Bachofner, Peter, 3,850,768.

Cheetham, John Norman; and Shah, Ratilal Lalji, to Yarsley Research Laboratories, Limited. Stripping of thin films. 3,850,462, Cl. 242-65.000.

ChemPar Corporation: *See—*
Kang, Pierson S., 3,850,059.

Chen, Tung Chang. Electrical terminal box with removable terminal plates. 3,851,226, Cl. 317-120.000.

Cherry, Charles C., to Rockwell International Corporation. Propellant liner for active cooling. 3,849,983, Cl. 60-255.000.

Chevron Research Company: *See—*
De Vries, Louis, 3,850,826.
Frost, Kenneth A., Jr., 3,850,587.
Hess, Patrick H., 3,850,249.
Hutchinson, Stanley O., 3,850,241.
White, Robert J., 3,850,588.

Chibata, Ichiro; Yamada, Shigeki; Wada, Mitsuru; Izuo, Nobuhiko; and Yamaguchi, Totaro, to Tanabe Seiyaku Co., Ltd. Cultivation of aerobic microorganisms. 3,850,753, Cl. 195-109.000.

Chicago Bridge & Iron Company: *See—*
Locke, Stephen A., 3,850,001.

Chicago Pneumatic Tool Company: *See—*
Wallace, William K., 3,850,553.

Chicago Show Printing Company: *See—*
Snediker, Robert R., 3,850,401.

Chin, Shi-Chi, to Johnson Enterprise Co., Ltd. Apparatus for fire escaping from high building. 3,850,263, Cl. 182-73.000.

Chirash, William: *See—*
Koceich, Mark J.; and Chirash, William, 3,850,833.

Chirgwin, Keith M., to Garrett Corporation, The. Electric vehicle propulsion system. 3,851,232, Cl. 318-150.000.

Chrysler Corporation: *See—*
Adams, Don, III; and Smith, Robert J., 3,850,049.
Hassan, Morris, 3,850,443.
Hesskamp, Arthur W.; Hellens, Paul B.; and Di Matteo, Albert J., 3,850,266.

Chumaevskaya, Alla Nikolaevna: *See—*
Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Chumaevskaya, Alla Nikolaevna; Mgeladze, Boris Mikhailovich; Bekasova, Nina Ivanovna; Komarova, Ljudmila Grigorievna; Vinogradova, Svetlana Vasilievna; Valetsky, Petr Maximilianovich; Kalachev, Alxandr Ivanovich; Lyamenkova, Evgenia Kuzminichna; Glivka, Ljudmila Alexandrovna; Burtseva, Tamara Andreevna; and Babchinitser, Tatyana Mikhailovna, 3,850,820.

Ciaperoni, Aldemaro, to Montecatini Edison S.p.A. Process for the anionic polymerization of pyrrolidone with fluoro- or chlorofluoro olefin as activator. 3,850,890, Cl. 260-78.00p.

Ciba-Geigy AG: *See—*
Dreher, Bernd; and Schneider, Wolfgang, 3,850,661.
Luthi, Christian, 3,850,914.

Ciba-Geigy Corporation: *See—*
Muller, Helmut; Rosenberger, Siegfried; and Schwarzenbach, Kurt, 3,850,918.

Cibia-Geigy Corporation: *See—*
Cook, Barry, 3,850,877.

Cichowski, Robert S., to Phillips Petroleum Company. Oxidative dehydrogenation processes. 3,851,009, Cl. 260-680.00e.

Ciokajlo, John J., to General Electric Company. Mounting arrangement for a bearing of axial flow turbomachinery having variable pitch stationary blades. 3,850,544, Cl. 415-149.000.
Cities Service Oil Company: *See—*
  Rosewald, Gary W., 3,850,239.
Claes, Jan Cyrille Martin: *See—*
  Verhagen, Johannes Gerardus; De Keyser, Edmond Joannes Jozef; Claes, Jan Cyrille Martin; and Willems, Gerardus Antonius Maria, 3,851,137.
Clark, David H., Jr. Dental floss or tape holder for use on a toothbrush. 3,850,182, Cl. 132-92.00r.
Clark, Duncan; Walsh, William Derek; and Jones, Walter Edward, to Imperial Chemical Industries, Limited. Production of esters. 3,850,980, Cl. 260-497.00a.
Clark Equipment Company: *See—*
  Bauer, James J., 3,850,258.
  Hansen, Howard C., 3,850,111.
Clark, Joseph H., Jr.; and Harmon, Donald K., to General Electric Company. Collapsible hair dryer. 3,849,902, Cl. 34-99.000.
Clarke, Gail H., Jr.; and Colafati, Ralph A., III, to Olin Corporation. Method of coating a fiberglass laminate and the coated laminate. 3,850,674, Cl. 117-76.00t.
Clarke, Greffrey; and Harris, Geoffrey John, to Square D Company. Over-current protective apparatus for a power circuit. 3,851,216, Cl. 317-13.00r.
Clayton, John, to Waters Manufacturing, Inc. Electrical resistance element and method of manufacture. 3,851,293, Cl. 338-195.000.
Clendinning, Robert A.; Potts, James E.; and Niegisch, Walter D., to Union Carbide Corporation. Blends of a biodegradable thermoplastic dialkanoyl polymer and a naturally occurring biodegradable product. 3,850,862, Cl. 260-7.500.
Clendinning, Robert A.; Potts, James E.; and Niegisch, Walter D., to Union Carbide Corporation. Blends of a biodegradable thermoplastic oxyalkanoyl polymer and a naturally occurring biodegradable product. 3,850,863, Cl. 260-7.500.
Clewes, Antony Brasher; and Tuckwood, Denis William, to TRW Inc. Multiway connector for a printed circuit board. 3,850,493, Cl. 339-89.00m.
Clifford, Daisy E. Infants exercise and amusement device. 3,850,429, Cl. 272-80.000.
Cline, John A.: *See—*
  Hoffman, Robert E.; Cline, John A.; Fuselier, Christopher S.; and D'Atre, John D., 3,851,234.
Clingerman, Richard Grant; and McAllister, O. Roger, to Honeywell Information Systems, Inc. Semiautomatic file reel hub. 3,850,382, Cl. 242-68.300.
Cobaugh, Robert Franklin; and Parmer, Kenneth Ronald, to AMP Incorporated. Method of fabricating selectively applied flowable solder joints. 3,849,870, Cl. 29-482.000.
Cobaugh, Robert Franklin; and Heisey, Jay Marlin, to AMP Incorporated. Stamped and formed post and miniature spring receptacle. 3,850,500, Cl. 339-258.00r.
Coffen, David Llewellyn; and Katonak, David Allen, to Hoffmann-La Roche Inc. 6,7,8,9-Tetrahydro-7α,11α-ethanooxyindolo [1,2-H][1,7]naphthyridin-10(11H)-ones. 3,850,934, Cl. 260-293.530.
Coffen, David Llewellyn; and Fryer, Rodney I., to Hoffmann-La Roche Inc. Certain 3a,4 dihydro-8-chloro-6-phenylthiozolo (3,2H)-1,4-benzodeazepin-1 (2H0-ones). 3,850,948, Cl. 260-306.70r.
Coffey, Eugene R. Trailer type mole unit. 3,849,999, Cl. 61-72.600.
Coffin, Harry S., to Computer Peripherals, Inc. Method of assembling semiconductor devices. 3,849,873, Cl. 29-576.000.
Cogan, Michael S.: *See—*
  Willard, David G.; Cogan, Michael S.; Vacherot, Maurice G.; and Shay, John W., 3,851,104.
Cogas Development Company, mesne: *See—*
  Seglin, Leonard; and Eddinger, Ralph Tracy, 3,850,839.
Cohen, Edwin J. Arched building assembly formed of resilently, flexible members. 3,849,953, Cl. 52-86.000.
Cohen, Harvey K. Filter and water recirculation system. 3,850,806, Cl. 210-169.000.
Cohen, Marvin P.; Von Strandtmann, Max; and Shavel, John, Jr., to Warner-Lambert Company. 2-Methyl-3-methylsulfonyl chromones. 3,850,966, Cl. 260-345.200.
Cohen, Melvin. Magazine display rack. 3,850,302, Cl. 211-88.000.
Coherent Radiation: *See—*
  Shull, William A.; and Barker, Gerald C., 3,851,272.
Colafati, Ralph A., III: *See—*
  Clarke, Gail H., Jr.; and Colafati, Ralph A., III, 3,850,674.
Colasuono, Vincent J. Tallying device. 3,850,134, Cl. 116-133.000.
Cole, Clyde C. High strength structural connector. 3,850,460, Cl. 285-321.000.
Cole, Edward L.: *See—*
  Kravitz, Stanley; Coone, Joseph H., Jr.; and Cole, Edward L., 3,850,846.
Coleman, H. Paris; and Bishop, Walton B., to United States of America, Navy. Collision avoidance and station keeping antenna system. 3,851,334, Cl. 343-6.50r.
Coleman, William P.: *See—*
  Redfern, Howard W.; and Coleman, William P., 3,850,006.
Colgate-Palmolive Company: *See—*
  Koceich, Mark J.; and Chirash, William, 3,850,833.
  Suh, John T., 3,850,961.
Collins, Bruce Moffatt, to Imperial Chemical Industries Limited. Method of making a methanol synthesis catalyst. 3,850,850, Cl. 252-465.000.
Collins, Burl T., Sr. Anti-snag fish lure. 3,849,928, Cl. 43-37.000.
Collins, Dean R.; and Holmes, Jerry D., to Texas Instruments Incorporated. Surveillance system. 3,851,096, Cl. 178-6.880.
Collins, Howard W. Floating roof deck construction. 3,849,956, Cl. 52-376.000.
Collins, John J.: *See—*
  Zrostlik, Francis L.; and Collins, John J., 3,850,221.
Collins, Michael Henry, to Searle, G. D., & Co., Ltd. Method of bonding a balloon sleeve to a catheter lumen tube. 3,850,720, Cl. 156-155.000.
Colombo, Luigi: *See—*
  Montino, Franco; and Colombo, Luigi, 3,850,612.
Columbia Machine, Inc.: *See—*
  Schmitt, Robert A., 3,850,316.
Combustion Engineering, Inc.: *See—*
  Calkin, Billy C.; and Lowrie, Neely E., 3,850,599.
  Creek, Ronald Boyd, 3,850,231.
Comitato Nazionale per l'Energie Nucleare-CNEN: *See—*
  Boccalari, Mario, 3,849,869.
Commerce Bank and Trust Bank: *See—*
  McDonald, Ralph R., 3,850,023.
Commercial Wire and Display Prod. Corporation: *See—*.
  Orlandi, Arthur A., 3,850,396.
Communications Satellite Corporation: *See—*
  Dunlop, James D.; Earl, Martin William; and Van Ommering, Gerrit, 3,850,694.
  Haynos, Joseph Gabrial, 3,849,880.
Compagnie Generale des Etablissements Michelin raison Sociale Michelin & Cie: *See—*
  Lejuene, Daniel, 3,850,222.
Compagnie Industrielle des Telecommunications CIT-ALCATEL: *See—*
  Levasseur, Georges; and Garconnat, Michel, 3,851,256.
Compoly, Albert William; and Temple, Alfred Charles, to Avionic Instruments Inc. Short circuit monitor for static inverters and the like. 3,851,322, Cl. 340-253.00a.
Computer Peripherals, Inc.: *See—*
  Coffin, Harry S., 3,849,873.
Cone, Irwin C., to Gates Rubber Company, The. Retainer clip for windshield wiper blades. 3,849,828, Cl. 15-250.420.
Conley, Larry R., to Accra-Point Arrays Corporation. Method of forming printed circuit. 3,850,711, Cl. 156-11.000.
Conlon, Rodney Frederick Barker: *See—*
  Cooke, Roger Ernest; and Conlon, Rodney Frederick Barker, 3,851,271.
Connor, Edward C.: *See—*
  Miskel, John J.; Kindt, Warren W.; and Connor, Edward C., 3,851,051.
Connors, Donald J. Expendable raincoat and hood. 3,849,803, Cl. 2-84.000.
Conover, George E., to Lynes, Inc. Tool for running on a drill string in a well bore. 3,850,240, Cl. 166-162.000.
Consolidated Business Products: *See—*
  Curren, Richard, 3,850,565.
Consolidated Coal Company: *See—*
  Jamison, Will B., 3,849,995.
Container Corporation: *See—*
  Bernard, Vincent E.; and MacGregor, Duane F., 3,849,836.
Continental Can Company, Inc.: *See—*
  LaRocca, James J.; McGrail, John G.; and Mazur, Richard A., 3,850,123.
Continental Oil Company: *See—*
  Smith, John H., 3,851,049.
Conway, Patrick H. Signal conditioner and bit synchronizer. 3,851,266, Cl. 328-162.000.
Cook, Barry, to Cibia-Geigy Corporation. Piperidine stabilizers for polymers. 3,850,877, Cl. 260-45.80n.
Cook, John E., to Owens-Illinois, Inc. Self-aligning shear blade holders. 3,850,607, Cl. 65-334.000.
Cook. Marvin K., to MacAndrews & Forbes Company. Sweetening agent. 3,851,073, Cl. 426-217.000.
Cook, Roland A.; and Counter, Frederick T., to Lilly, Eli, and Company. Method of producing animal cells in suspension culture. 3,850,748, Cl. 195-1.800.
Cook, Rufus L., to United States of America, Navy. Transducer. 3,851,300, Cl. 340-8.00r.
Cooke, Roger Ernest; and Conlon, Rodney Frederick Barker, to International Standard Electric Corporation. Broadband injection-tuned gunn diode microwave oscillator. 3,851,271, Cl. 331-47.000.
Cookson Company: *See—*
  Hill, Martin Arthur; and Wardlaw, Russell, 3,850,465.
Coone, Joseph H., Jr.: *See—*
  Kravitz, Stanley; Coone, Joseph H., Jr.; and Cole, Edward L., 3,850,846.
Cooper, Peter J., to Cooperheat Mountain View. Work piece heating and welding control system. 3,851,141, Cl. 219-132.000.
Cooper, Ronald Charles, to Ilford Limited. Device for holding a stub end a spindle. 3,850,400, Cl. 248-251.000.
Cooper, William M., Jr.: *See—*
  Canevari, Gerard P.; and Cooper, William M., Jr., 3,850,206.
Cooperheat Mountain View: *See—*
  Cooper, Peter J., 3,851,141.
Cooperloy Corporation, The: *See—*
  Miles, Ray P.; and Szucs, Andrew E., 3,850,322.

Copes, Joseph P., to GAF Corporation. Herbicidal method. 3,850,610, Cl. 71s103.000.
Copyer Co., Ltd.: *See—*
  Abe, Yoshiharu; and Ito, Kenzo, 3,850,356.
Cor Tech Research Limited: *See—*
  Vasishth, Ramesh C., 3,850,677.
Corbiere, Claude. Process for storing textile filaments in knitted form. 3,849,847, Cl. 28-72.160.
Corey, Harry S., III, to United States of America, Atomic Energy Commission. Optical method and system for measuring surface finish. 3,850,526, Cl. 356-109.000.
Corman, Edward M.: *See—*
  Balzer, Claude P.; Corman, Edward M.; Reiff, Almer A.; and Henry, Michael D., 3,849,958.
Cornett, Walter G., III; and Gaspar, Donald G., to Respiratory Care, Inc. Method for molding and sealing thermoplastic containers. 3,851,029, Cl. 264-89.000.
Corning Glass Works: *See—*
  Herczog, Andrew; Power, Joseph M.; and Smith, James W., 3,850,764.
  Messing, Ralph A., 3,850,751.
  Noll, Burton A., 3,849,944.
Coropolis, John P.; and Briscoe, James A., to Goodrich, B. F., Company, The. Window washer seal assembly. 3,849,827, Cl. 15-250.010.
Costa, Vincent J. Purse alarm. 3,851,326, Cl. 340-280.000.
Coucher, Robert G., to Kearns-Tribune Corporation. Plasma spray gun and method for applying coatings on a substrate. 3,851,140, Cl. 219-121.00p.
Couchman, Richard: *See—*
  Furney, Charles P., Jr.; and Couchman, Richard, 3,850,705.
Coulter Electronics, Inc.: *See—*
  Bull, Brian S.; Proni, Oscar; and Melnick, Loran V., 3,850,369.
Coulter, Geoffrey Lionel: *See—*
  Edwards, Reginald Harold; Coulter, Geoffrey Lionel; and Dodd, Alan Michael, 3,850,217.
Coulter, Kenneth E.: *See—*
  Stowe, Robert A.; Coulter, Kenneth E.; and Winegardner, David K., 3,851,008.
Counter, Frederick T.: *See—*
  Cook, Roland A.; and Counter, Frederick T., 3,850,748.
Countryman, Albert J., to Ty-Lok Assembly Systems, Inc. Binding machine. 3,849,816, Cl. 11-1.00a.
Courtney, George W.: *See—*
  Khayat, Ali; Courtney, George W.; and Dunn, Howard J., 3,851,078.
Cousin, Maurice Claude, to A & M Cousin et Cie. Etablissements Cousin Freres, Le Bois de Flers. Slide-guide for motor car seats. 3,850,484, Cl. 308-6.00r.
Cowan, George R.: *See—*
  Balchan, Anthony S.; and Cowan, George R., 3,851,027.
Cox, Lyndon S., to United States of America, Army. Oxygen powered volume cycled respirator with oxygen air mix. 3,850,170, Cl. 128-145.800.
Craig, Gerald. Tractor splitter. 3,850,419, Cl. 269-17.000.
Crast, Leonard Bruce, Jr., to Bristol-Myers Company. 7-Amino-3-[S-(1,2,3-triazole-5-yl)thiomethyl]-3-cephem-4-carboxylic acid and salts thereof. 3,850,916, Cl. 260-243.00c.
Crawford, Donald C.; and Nack, Michael R., to FMC Corporation. Extended dwell heat sealer. 3,850,780, Cl. 156-583.000.
Crawford, James E., to Owens-Illinois Inc. Process for the preparation of multifunctional peroxydiesters. 3,850,891, Cl. 260-78.0st.
Creed, John: *See—*
  Arild, Arnulf; Creed, John; Folkestad, Olav; Odegard, Erik; Brandtzaeg, Anton; and Selberg, Arne Brigt Bru., 3,849,821.
Creek, Ronald Boyd, to Combustion Engineering, Inc. IMFBR intermediate heat exchanger. 3,850,231, Cl. 165-83.000.
Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., to Burroughs Wellcome Co. 5-Benzyl pyrimidines intermediates therefore, and method. 3,850,927, Cl. 260-256.40n.
Crocker, Clifford G. Dart and roulette board. 3,850,432, Cl. 273-105.200.
Croisier, Paul, to VCB, Societe Anonyme. Thieno [3,4-d pyrimidines. 3,850,919, Cl. 260-247.101.
Crosley, Thomas W., to GTE Automatic Electric Laboratories, Incorporated. Combined timing-outpulsing-scanning circuit. 3,851,120, Cl. 279-175.204.
Crowe, Talmadge L., to Baker Oil Tools, Inc. Subsurface safety valve. 3,850,242, Cl. 166-224.00a.
Crown Zellerbach Corporation: *See—*
  Stollberg, Ray H.; and Leakey, Joseph W., 3,850,362.
Cruse, Clyde L., Jr., to Armco Steel Corporation. Inert gas seal for product discharge from a shaft furnace. 3,850,616, Cl. 75-34.000.
Cull, Alan Sidney; and Abdallah, Nessib, to International Property Investments Limited, mesne. Reinforced concrete construction method. 3,851,024, Cl. 264-34.000.
Culligan International Company: *See—*
  Lyall, Charles E., 3,850,797.
Cummings, Roy W. Cutting means employing eccentric rotational cutting action. 3,849,975, Cl. 56-295.000.
Curby, William A.; and Lionetti, Fabian J., to United States of America, Navy. Method of predicting the post transfusion viability of preserved erythrocytes and other similar cells. 3,851,246, Cl. 324-71.0cp.
Curren, Richard, to Consolidated Business Products. Apparatus for manufacturing pre-linked stamps. 3,850,565, Cl. 425-385.000.
Cutler-Hammer, Inc.: *See—*
  Leavitt, Minard A., 3,850,635.
Cycowicz, Izchak: *See—*
  Katz, Alex J.; Caldwell, Robert J.; and Cycowicz, Izchak, 3,850,475.
Cyll, Michael P., 1/2 to Lakatos, George C. Waste disposal apparatus for hospital beds and the like. 3,849,811, Cl. 5-91.000.
Daeli, Daniele, to Metalmeccanica S.p.A. Broken threads detecting device in embroidery machines. 3,850,122, Cl. 112-218.00r.
Dahl, Joseph D., to Bio Data, Inc. External temperature and pulse rate sensing and transmitting device. 3,851,320, Cl. 340-189.00m.
Dahlin, Erik B.; and Bjorklund, Carolyn M., to Measurex Corporation. Moisture gauge with opacity type compensation. 3,851,175, Cl. 250-339.000.
Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See—*
  Iwama, Akira; Toyoguchi, Mitsuru; Takehara, Kikuo; and Hamuro, Yasumasa, 3,850,586.
Daicel Ltd.: *See—*
  Toba; Hirotaka; Tanaka, Kazunobu; Kusumoto, Masahiko; Watanabe, Shoji; and Tsukane, Nagayoshi, 3,850,855.
Dainippon Screen Seizo Kabushiki-Kaisha: *See—*
  Kitai, Makoto, 3,851,170.
Dale, Robert F.; Rhodes, Thomas P.; and DeNucci, Joseph M., to Universal Foods Corporation. Fluid bed air distribution apparatus and drying method. 3,849,900, Cl. 34-10.000.
Daley, William Carmen, to Smith-Gates Corporation. Electrical heating cable with indicator light and manual test. 3,851,149, Cl. 219-528.000.
Dallen, John A., to Standard Products Company, The. Strand of integral clip members. 3,849,855, Cl. 29-193.500.
Dallon, Dale S.; and De Seyn, Mary K., to Eastman Kodak Company. Hydrophilic colloid silver halide emulsion hardened with a bis(vinylsulfonylmethyl) ether and an acrylic compound. 3,850,639, Cl. 96-67.000.
Dalton, Francis B.: *See—*
  Fossati, Charles G.; and Dalton, Francis B., 3,850,184.
Dalton, William O., to Monsanto Company. Method for making rubber modified resins. 3,851,014, Cl. 260-876.00r.
Danfoss A/S: *See—*
  Hansen, Gunnar Lyshoj; and Rono-Clausen, Jorgen, 3,850,549.
Danieli, Stan Henrik; and Sundstrand, Arne, to Allmanna Svenska Elektriska Aktiebolaget. Container for manufacturing sintered products. 3,850,557, Cl. 425-78.000.
Danneels, Guy Emile: *See—*
  Leblond, Jean Rene; Danneels, Guy Emile; and Lambert, Maurice Avrelien, 3,850,719.
Dany, Franz-Josef: *See—*
  Wortmann, Joachim; Dany, Franz-Josef: and Kamdler, Joachim, 3,850,859.
Dash, Barry H., to American Home Products Corporation. Flushable vaginal applicator. 3,850,173, Cl. 128-261.000.
D'Atre, John D.: *See—*
  Hoffman, Robert E.; Cline, John A.; Fuselier, Christopher S.; and D'Atre, John D., 3,851,234.
Davey, Sidney George. Notching machines. 3,850,067, Cl. 83-524.000.
David Brown Gear Industries Limited: *See—*
  Pratt, Alan; and Ashfrield, Robert Andrew, 3,849,891.
Davidson, Clara A.: *See—*
  Paulson, William T.; Davidson, David M.; Gilbert, L. Eldean; Gabbard, Henry; and Bemus, Richard D., 3,850,729.
Davidson, David M.: *See—*
  Paulson, William T.; Davidson, David M.; Gilbert, L. Eldean; Gabbard, Henry; and Bemus, Richard D., 3,850,729.
Davidson, William E.; and Toft, Kaj, to General Electric Company. Self-cleaning steam iron. 3,849,916, Cl. 38-77.830.
Davidson, William E.; and Toft, Kaj, to General Electric Company. Self-cleaning steam iron. 3,940,016, Cl. 38-77.830.
Davis, Alan R., to Eaton Corporation. O-ring gear shift lever isolator. 3,850,047, Cl. 74-473.00p.
Davis, Edward W. Time indicating means. 3,849,978, Cl. 58-50.00r.
Davis, Oliver Thurston; and Jones, Norman R. Dual hydraulic jack and holding device. 3,850,409, Cl. 254-89.00h.
Dawson, Samuel G.: *See—*
  Fowler, Charles F.; and Dawson, Samuel G., 3,850,084.
Day, Frank A.; and Repella, James A., to Federal-Mogul Corporation. Method for molding dual-tip shaft seals with a garter spring molded into the auxiliary lip. 3,851,037, Cl. 264-229.000.
Day, Robert H.; and Blyth, James, to ITW Limited and Mars Limited. Containers. 3,850,361, Cl. 229-1.50b.
Day, Robin, to Hille International Limited. Tip-up seating. 3,850,476, Cl. 297-335.000.
De Bellis, Anthony B. Refractometer gauge. 3,850,528, Cl. 356-133.000.
De Boer, Albert; and Gleason, David I., to Allen, R. C., Inc. Navigational reference instrument. 3,851,324, Cl. 340-267.00r.
De Keyser, Edmond Joannes Jozef: *See—*
  Verhagen, Johannes Gerardus; De Keyser, Edmond Joannes Jozef; Claes, Jan Cyrille Martin; and Willems, Gerardus Antonius Maria, 3,851,137.
de Rosset, Armand J.; and Neuzil, Richard W., to Universal Oil Products Company. Process for the separation of pinene isomers. 3,851,006, Cl. 260-675.500.
De Seyn, Mary K.: *See—*

  - Dallon, Dale S.; and De Seyn, Mary K., 3,850,639.
- De Vogel, Nicolaas, to Boeing Company, The. Continuous bow closure for hydrofoil boat. 3,850,129, Cl. 114-66.50h.
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  - DeVerter, Walton; and Lamberty, John M., 3,849,831.
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  - Shortte, Willard H., Jr., 3,849,825.
- Degen, Felix, to Marpal Aktiengesellschaft. Pillow. 3,849,810, Cl. 5-341.000.
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  - Wanka, Oskar; Gutlhuber, Friedrich; and Graf, Hermann, 3,850,232.
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  - Wanka, Oskar; and Mihalyi, Jeno, 3,850,233.
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  - Sanctuary, Clifford; Woods, Donald C.; and Bachman, John A., 3,850,036.
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  - Bessot, Michel; Delacote, Claude; Lion, Jean-Jacques; and Valentin, Francois, 3,850,348.
- Delalande S. A.: *See—*
  - Fauran, Claude P.; Eberle, Jeannine A.; Raynaud, Guy M.; Pourrias, Bernard M.; and Bourgery, Guy B., 3,850,937.
- Delanair Limited: *See—*
  - Fowler, Gordon, 3,850,234.
- DeLancey, Warren H. Oil burner pump. 3,850,548, Cl. 417-220.000.
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  - Huffman, Lowell E., 3,850,592.
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  - Denerbaud, Marcel, 3,850,790.
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  - Kawada, Takehiko, 3,851,194.
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  - Merser, Francis G., 3,850,297.
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  - Dale, Robert F.; Rhodes, Thomas P.; and DeNucci, Joseph M., 3,849,900.
- Denzel, Theodor; and Hoehn, Hans, to Squibb, E. R., & Sons, Inc. Intermediate pyrazolopyridine carbonitriles. 3,850,940, Cl. 260-294.900.
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  - Sekmakas, Kazys, 3,850,772.
- Despujols, Jack Bruno, to Gulf Research & Development Company. Gravel packing method and apparatus. 3,850,246, Cl. 166-278.000.
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- Deumens, Johannes J. M.: *See—*
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  - Haberling, Edmund; Kiesheyer, Heinrich; and Weigand, Hanshermann, 3,850,621.
- Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
  - Koberstein, Edgar; and Muller, Klaus-Peter, 3,850,851.
  - Sibuya, Chisei; Ouchi, Shunji; and Hayashi, Shigeyoshi, 3,850,976.
- Deutsche Vergaser GmbH & Co. K.G.: *See—*
  - Chattopadhayay, Asoke; and Muller, Hans-Jurgen, 3,850,154.
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  - Rackman, Michael I.; and Devol, George C., 3,850,313.
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- Di Frank, Frank J.; and Greiwe, Daniel L., to Owens-Illinois, Inc. Corrugated board bundle stacker. 3,850,319, Cl. 214-152.000.
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  - Hesskamp, Arthur W.; Hellens, Paul B.; and Di Matteo, Albert J., 3,850,266.
- Diagnostic Instruments Inc.: *See—*
  - Jvirblis, Alex E.; and Roth, Walter, 3,850,142.
- Dick, A. B., Company: *See—*
  - Keur, Robert L.; and Andeen, Gerry B., 3,850,717.
  - Laben, Wallace J., 3,850,099.
- Diekman, John D.: *See—*
  - Baum, John W.; and Diekman, John D., 3,850,992.
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- Dietrich, Werner, to Kalle Aktiengesellschaft. Portable case. 3,850,365, Cl. 229-52.00b.
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  - Woltjen, Duane W.; Dillard, Donald E.; and Kilwin, Thomas C., 3,850,051.
- Dimgli, Paul: *See—*
  - Labbe, Francis A. M.; Preston, Edward George; Dimgli, Paul; and Hirsh, Ivan Yehudi, 3,850,065.
- Dimova, Vasilka Petrova: *See—*
  - Balevski, Anguel Tonchev; Nikolov, Ivan Dimov; Dimova, Vasilka Petrova; and Zadgorski, Stoyan Nedkov, 3,850,625.
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  - Underwood, John H.; Dix, James S.; and Reed, Jerry O., 3,850,882.
- Dix, Robert: *See—*
  - Di Edwardo, Andrew H.; Dix, Robert; and Riggs, John, 3,850,876.
- Dixon, Donald R. Landing gear wheel device for aircraft. 3,850,389, Cl. 244-103.00s.
- Dodd, Alan Michael: *See—*
  - Edwards, Reginald Harold; Coulter, Geoffrey Lionel; and Dodd, Alan Michael, 3,850,217.
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  - Deebel, George F.; Doden, Bernard M.; and Morris, Myron J., 3,851,191.
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- Doehler, Joseph: *See—*
  - Solin, Stuart A.; and Doehler, Joseph, 3,851,274.
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  - Gravelle, Elmer; and Casparro, John J., 3,849,919.
- Donnerstein, Richard L.: *See—*
  - Pao, Henry C.; Donnerstein, Richard L.; and Steiner, Stephen A., 3,851,187.
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  - Canova, Fred; Krouse, Leroy M.; Hornschuch, Hanns; Hermann, Paul; and Dopkin, Joseph A., 3,850,547.
- Doris, C. G., (Compagnie General pour les Developpements Operationnels des Eichesses Sous Marines): *See—*
  - Lamy, Jacques Edouard, 3,849,990.
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- Douglas, Robert John: *See—*
  - Mattioli, Harold Philip; and Douglas, Robert John, 3,849,854.
- Douros, John D., Jr.; and Warder, Ira T., Jr., to Gates Rubber Company, The. Method of obtaining uric acid from natural products. 3,850,930, Cl. 260-255.000.
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  - Tzentis, L. S., 3,851,036.
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  - Barnard, Robert D.; and Meyer, Robert H., 3,850,542.
  - Behr, R. Douglas; and Hearns, Harold L., 3,850,289.
  - Bennett, Foster C., 3,851,146.
  - Bublitz, Donald E., 3,850,955.
  - Goralski, Christian T., 3,850,972.
  - Kuchek, Henry A., 3,849,879.
  - Schmidt, Donald L., 3,850,709.

  - Schmitt, John A., 3,850,033.
  - Stowe, Robert A.; Coulter, Kenneth E.; and Winegardner, David K., 3,851,008.
  - Tong, Yulan C., 3,850,929.
  - Walles, Wilhelm E., 3,850,920.
  - Watson, William David, 3,850,678.
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- Drake, Cyril F.; and Scanlan, Ian F., to International Telephone and Telegraph Corporation. Transient electric potential difference in glass by electric field cooling. 3,850,603, Cl. 65-30.000.
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  - McQueen, Robert William, 3,850,256.
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  - Balchan, Anthony S.; and Cowan, George R., 3,851,027.
  - Brethauer, Dale Merrill; and Pripeaux, Jean Paul, 3,851,023.
  - Doerner, William A., 3,850,147.
  - Donohue, Paul Christopher, 3,851,045.
  - Fitzgerald, James Allen; and Likhyani, Kewal Krishan, 3,850,888.
  - Flippen, Richard B.; and Hogan, Edward M., 3,851,192.
  - Fuchs, Julius Jakob; and Wommack, Joel Benjamin, Jr., 3,850,924.
  - Haglid, Frank R., 3,850,987.
  - Hoeschele, Guenther Kurt, 3,850,881.
  - Jaffe, Edward E., 3,850,654.
  - Johnson, Robert C.; and Merrifield, Richard E., 3,850,506.
  - Kelly, Thomas James, 3,851,018.
  - Mouissie, Bob, 3,850,491.
  - Petty, Eugene D., Jr.; and Sberna, Samuel R., 3,850,671.
  - Platz, James Bernard, 3,850,986.
  - Reeves, James W., 3,850,615.
  - Seidel, William C.; and Tolman, Chadwick A., 3,850,973.
  - Sheard, John Leo, 3,851,228.
  - Walus, Aloysius N., 3,850,871.
- Du Von, Richard H., Jr.: *See—*
  - Kylander , Robert L.; and Du Von, Richard H., Jr., 3,850,993.
- Dube, Jacques: *See—*
  - Allais, Andre; Meier, Jean; and Dube, Jacques, 3,850,959.
- Dubsky, Hanniel, to Ceskoslovenska akademie ved. Ionization current detector for chromatographic analysis. 3,850,579, Cl. 23-254.0ef.
- Dudley, Robert H., to Prab Conveyors, Inc. Scraper conveyor for a centrifugal separator. 3,850,814, Cl. 210-298.000.
- Dugan, John J.; Higgins, James P.; and Salva, Juan M., to Exxon Research and Engineering Company. Hydrocarbon cracking in a regenerable molten media. 3,850,742, Cl. 208-114.000.
- Duncan Electric Company, Inc.: *See—*
  - Graefnitz, Russell F., 3,849,876.
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- Dunlop, James D.; Earl, Martin William; and Van Ommering, Gerrit, to Communications Satellite Corporation. Low pressure nickel hydrogen cell. 3,850,694, Cl. 136-86.00a.
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  - Edwards, Reginald Harold; Coulter, Geoffrey Lionel; and Dodd, Alan Michael, 3,850,217.
  - Hogg, Derek; Wilson, Anthony; and Asakam, John Fairburn, 3,850,423.
  - Mitchell, William Eric, 3,850,220.
- Dunn, Howard J.: *See—*
  - Khayat, Ali; Courtney, George W.; and Dunn, Howard J., 3,851,078.
- Durbin, Robert E.: *See—*
  - Roehrig, Paul G.; Pappas, Nicholas C.; and Durbin, Robert E., 3,851,071.
- Durning, Paul J.: *See—*
  - Robinson, Joel P.; and Durning, Paul J., 3,849,993.
- Dwyer, Ralph J., to Independent Die and Supply Company. Die for cutting stacked sheet material. 3,850,064, Cl. 83-124.000.
- Dyer, Gene H.: *See—*
  - Stewart, A. Theodore Jar.; and Dyer, Gene H., 3,850,738.
- Dygve, Hans G. E.; and Risman, Per Olov G., to Husgvarna Vapenfabriks Aktiebolag. Microwave oven with antenna chamber, antenna, and radiation slots. 3,851,133, Cl. 219-10.550.
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  - Spielau, Paul; Betke, Erich; and Simon, Manfred, 3,850,725.
  - Zoche, Gunter; Richtzenhain, Hermann; and Ismail, Roshdy, 3,850,994.
- Dynamit Nobel Aktiengesellschaft: *See—*
  - Termin, Erich; Lenz, Arnold; and Bleh, Otto, 3,850,971.
- Earl, Martin William: *See—*
  - Dunlop, James D.; Earl, Martin William; and Van Ommering, Gerrit, 3,850,694.
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- Eastman Kodak Company: *See—*
  - Babbitt, John M.; and Houle, James F., 3,850,640.
  - Bailey, William J., Jr.; Houle, James F.; and Van Norman, Gilden R., 3,850,642.
  - Dallon, Dale S.; and De Seyn, Mary K., 3,850,639.
  - Evans, Francis John, 3,850,637.
  - Gnage, Oliver W., 3,850,778.
  - Herz, Arthur Herman; and O'Brien, David Frank, 3,850,645.
  - Johnson, Benjamin A.; Royal, Stephen L.; and Ackerman, Robert A., 3,850,643.
  - Park, Vernon K., 3,850,858.
  - Willis, Roland George; and Schleigh, William Robert, 3,850,638.
- Eastmond, Bruce C., to Motorola, Inc. Automatically adjustable FM receiver squelch. 3,851,253, Cl. 325-348.000.
- Eaton Corporation: *See—*
  - Davis, Alan R., 3,850,047.
  - Ekstrom, George A., 3,850,080.
  - Ekstrom, George A., 3,850,323.
  - Frailly, Nicholas D., 3,850,205.
  - Hedin, Robert A., 3,851,227.
  - Hedin, Robert A., 3,851,314.
  - Patel, Kiritkumar R., 3,850,276.
- Ebauches S.A.: *See—*
  - Laesser, Jean, 3,849,980.
- Eberle, Jeannine A.: *See—*
  - Fauran, Claude P.; Eberle, Jeannine A.; Raynaud, Guy M.; Pourrias, Bernard M.; and Bourgery, Guy B., 3,850,937.
- Ecodyne Corporation, mesne: *See—*
  - Forchini, James F.; and Garcia, Ronald M., 3,850,595.
- Eddinger, Ralph Tracy: *See—*
  - Seglin, Leonard; and Eddinger, Ralph Tracy, 3,850,839.
- Edo-Aire Mitchell Industries, Inc.: *See—*
  - Younkin, James R., 3,849,896.
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- Ege, Hans. Fuse panel assembly for mounting varying size fuses. 3,851,224, Cl. 317-116.000.
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- Eickmann, Karl. Thrust member for fluid-operated rotary aggregates. 3,850,201, Cl. 137-625.210.
- Eickmeyer, Allen G. Method for removing acid gases from gaseous mixtures. 3,851,041, Cl. 423-223.000.
- Eilingsfeld, Heinz; and Patsch, Manfred, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Separation of monochloro-o-xylenes. 3,850,998, Cl. 260-650.00r.
- Eiter, Karl, to Bayter Aktiengesellschaft. Process for the preparation of 9-cis-tricosene. 3,851,007, Cl. 260-677.00r.
- Ejectoret S.A.: *See—*
  - Gruska, Ralph, 3,850,183.
- Ekstrom, George A., to Eaton Corporation. Seal for non-bottoming piston cyclinder assembly. 3,850,080, Cl. 91-395.000.
- Ekstrom, George A., to Eaton Corporation. Overload protection device with differential pressure sensing. 3,850,323, Cl. 214-673.000.
- Elder, Fred Grove: *See—*
  - Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,850,730.
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- Elderton, Peter: *See—*
  - Lawford, Victor Nicholas; Granada, Richard Paul; and Elderton, Peter, 3,850,037.
- Electro-Coatings, Inc.: *See—*
  - Paulson, Peter C., 3,851,130.
- Electroacustic GmbH: *See—*
  - Kuhn, Hans-Robert, 3,851,117.
- Electroglas Inc.: *See—*
  - Roch, Jacques Leon, 3,851,249.
- Electrohome Limited: *See—*
  - Kreutzweiser, Charles E., 3,850,335.
- Electronic Associates of Canada Ltd.: *See—*
  - Mounce, George R., 3,851,244.
- Electroprint, Inc.: *See—*
  - Pressman, Gerald L., 3,850,628.
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- Elias, Peter G.: *See—*
  - Elias, Abram G.; and Elias, Peter G., 3,850,488.
- Elias, Youssef George: *See—*
  - Elias, Elias George; and Elias, Youssef George, 3,850,158.
- Ellcon-National, Inc.: *See—*
  - Beacon, Robert G., 3,850,269.
- Ellender, Robert D., Jr. Process for removing sulfur from crude oil. 3,850,745, Cl. 208-226.000.
- Elliott, Joseph E., to International Business Machines Corporation. Buffer systems. 3,851,335, Cl. 360-26.000.
- Ellis, David R.: *See—*
  - Olcott, John W.; Seckel, Edward; and Ellis, David R., 3,850,388.
- Ellis, James F. Frequency-modulated eddy-current proximity gage. 3,851,242, Cl. 324-40.000.
- Ellis, Myron P.; and Kaake, Karl H., to Micromatic Industries, Inc. Honing apparatus and method embodying bore gauging means. 3,849,939, Cl. 51-34.00j.
- Ellis, Stanley H., to United Aircraft Corporation. Self-correcting feedback control system. 3,851,157, Cl. 235-150.100.
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- Eltgen, Jean-Jacques Pierre, to Societe Honeywell Bull (Societe Anonyme). Device for detecting the absence of a finger in a type carrier of a printer. 3,851,323, Cl. 340-267.00r.
- Emerson, David U. Compound to make products per SE and to cast other materials. 3,850,864, Cl. 260-17.200.
- Emery Industries, Inc.: *See—*
  - Sturwold, Robert J.; and Barrett, Fred O., 3,850,682.
- Emhart Corporation: *See—*
  - Mattioli, Harold Philip; and Douglas, Robert John, 3,849,854.
- Engelhard Minerals and Chemicals Corporation: *See—*
  - Zentz, William E., Jr., 3,850,653.
- Engelhardt, Dietmar: *See—*
  - Raasch, Hans; Engelhardt, Dietmar; and Maassen, Wilhelm, 3,850,394.
- English, Christopher Durrant: *See—*
  - Eastham, John Frederick; English, Christopher Durrant; and Brown, Geoffrey Edward, 3,851,231.
- English Clays Lovering Pochin & Company, Limited: *See—*
  - Adams, Roger William, 3,850,655.
- En,John; and Brown, Daniel P., to Motorola, Inc. Adaptive phase synchronizer. 3,851,101, Cl. 178-69.50r.
- Epstein, Edward, to Beatrice Foods. Preparation of puffed snack food. 3,851,081, Cl. 426-343.000.
- Erbstein, Robert S., to Leesona Corporation. Object sensing apparatus. 3,851,168, Cl. 250-221.000.
- Erico Rail Products Company, mesne: *See—*
  - Geiger, Willard L., 3,850,390.
- Ernest, Michael V.: *See—*
  - Graham, James Richar; Ernest, Michael V.; and Maselli, James Michael, 3,850,847.
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- Erwin, Floyd Dennis, to Hughes Aircraft Company. Modular program control apparatus for a modular data processing system. 3,851,312, Cl. 340-172.00s.
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  - Robson, Harry E., 3,850,746.
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  - Bessot, Michel; Delacote, Claude; Lion, Jean-Jacques; and Valentin, Francois, 3,850,348.
- Etat Francais: *See—*
  - Melchior, Jean, 3,849,988.
- Ethridge, Fredrick A., to Fiber Industries, Inc. Apparatus for fluid treatment of yarn. 3,849,846, Cl. 28-1.400.
- Etna Products, Inc.: *See—*
  - Stofey, William D.; and Judd, H. Edward, 3,850,016.
- Etudes et Bonneterie S.A.: *See—*
  - Bourgeois, Norbert Paul, 3,850,012.
- European Atomic Energy Community (Euratom): *See—*
  - Lumier, Jacques, 3,850,317.
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- Evans, James Preston, to Johnson, Paul H. Combination torqueing and ratcheting wrench. 3,850,057, Cl. 81-119.000.
- Evans, Thomas Ernest: *See—*
  - Skedgell, Anthony Northcott; Smith, Victor Albert; and Evans, Thomas Ernest, 3,850,767.
- ExCel Engineering, Incorporated: *See—*
  - Paules, Eugene H., 3,849,969.
- Exchem Holdings Limited: *See—*
  - Murphy, John Michael, 3,849,992.
- Expando Products Company: *See—*
  - Triplett, Lee, 3,850,055.
- Exxon Production Research Company: *See—*
  - Hill, Tom H., 3,850,238.
- Exxon Research and Engineering Company: *See—*
  - Aldridge, Clyde L.; and Kalina, Theodore, 3,850,841.
  - Canevari, Gerard P.; and Cooper, William M., Jr., 3,850,206.
  - Dugan, John J.; Higgins, James P.; and Salva, Juan M., 3,850,742.
  - Gudelis, David A.; and Shaw, David H., 3,850,740.
  - Jenkinson, Ronald James, 3,849,899.
  - Luckenbach, Edward C., 3,850,582.
  - Sinfelt, John H.; and Barnett, Allan E., 3,850,747.
  - Steere, David E.; and Younghouse, Edwin C., 3,850,822.
  - Sullivan, Arthur J.; and Lewis, Oliver G., 3,849,819.
- Faber, Josef: *See—*
  - Koontz, Carl E.; and Faber, Josef, 3,850,330.
- Fabish, Edward Francis; Tookey, James Robert; and Thompson, Richard Telman, to Illinois Tool Works Inc. Gear checking machine. 3,849,892, Cl. 33-179.50r.
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- Fairand, Barry P.: *See—*
  - Mallozzi, Philip J.; and Fairand, Barry P., 3,850,698.
- Falcon, Floyd B. Method of making receipts folder. 3,850,083, Cl. 93-35.0pc.
- Fales, Douglas I., to General Motors Corporation. Metering rod with position indicating means. 3,850,196, Cl. 137-554.000.
- Fanti, Roy: *See—*
  - Basche, Malcolm; and Fanti, Roy, 3,850,689.
- Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
  - Aumuller, Walter; Weyer, Rudi; Hitzel, Volker; and Hubner, Manfred, 3,850,950.
- Farrell, John J., to Farrell Patent Company. Mold opening control. 3,850,560, Cl. 425-150.000.
- Farrell Patent Company: *See—*
  - Farrell, John J., 3,850,560.
- Fastener Corporation: *See—*
  - Obergfell, Allen R., 3,850,359.
- Fattore, Vittorio; and Notari, Bruno, to Snam Progetti S.p.A. Catalytic composition and its application to the production of unsaturated nitriles and to the oxidation of olefines. 3,850,975, Cl. 260-465.300.
- Fauland, Erich: *See—*
  - Stork, Harold; Schmidt, Felix Helmut; Thiel, Max; Fauland, Erich; and Kampe, Wolfgang, 3,851,056.
- Fauran, Claude P.; Eberle, Jeannine A.; Raynaud, Guy M.; Pourrias, Bernard M.; and Bourgery, Guy B., to Delalande S. A. Derivatives of 6-(gamma-dialkylamino) alkoxy 4,7-dimethoxy benzofuran. 3,850,937, Cl. 260-293.580.
- Faxvog, Frederick R., to General Motors Corporation. Apparatus for measuring aerosol particles. 3,851,169, Cl. 250-222.0pc.
- F.B. S.A.S. di Bertele' Giovanni Marco: *See—*
  - Bertele, Giovanni Marco, 3,849,914.
- Featherstone, William: *See—*
  - Lenel, Paul Otto; and Featherstone, William, 3,850,760.
- Fedders Corporation: *See—*
  - Gamache, Ernest A.; and Kosfeld, Milton M., 3,850,551.
- Federal Paper Board Company, Inc.: *See—*
  - Manizza, Guelfo A.; and Arneson, Edwin L., 3,850,292.
- Federal-Mogul Corporation: *See—*
  - Day, Frank A.; and Repella, James A., 3,851,037.
- Fehr, Ivor John Martin: *See—*
  - Ball, Graham John; and Fehr, Ivor John Martin, 3,850,171.
- Fehrer, Ernst, Dr. Gesellschaft mbH & Co.: *See—*
  - Obenaus, Helmut, 3,849,845.
- Fehrs, Hellmuth, to Behrens, Joh. Friedrich. Compressed air-operated drive-in apparatus. 3,850,079, Cl. 91-308.000.
- Fencl, Vernon; and Roze, Alberts, to Grotnes Machine Works, Inc. Truck rim edge deburring apparatus. 3,850,017, Cl. 72-70.000.
- Fergason, James L.: *See—*
  - Taylor, Ted R.; and Fergason, James L., 3,851,318.
- Ferguson, James F.; and Wissmueller, William C., to Puritan-Bennett Corporation. Oxygen mask apparatus. 3,850,168, Cl. 128-146.700.
- Ferner, Jack C.: *See—*
  - Zinnbauer, Fredrick W.; and Ferner, Jack C., 3,850,763.
- Ferodo Limited: *See—*
  - Guittard, Michael R., 3,850,791.
- Ferraris, Giuseppe: *See—*
  - Priola, Aldo; Cesca, Sebastiano; Ferraris, Giuseppe; Boy, Mario Bassaredda; and Giusti, Paolo, 3,850,894.
  - Priola, Aldo; Cesca, Sebastiano; and Ferraris, Giuseppe, 3,850,895.
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- Ferraro, Frank A., to Warner-Lambert Company. Shaving unit for safety razor. 3,849,882, Cl. 30-346.580.
- Ferro-Carb Agglomeration Ltd., Inc.: *See—*
  - Allen, John E., 3,850,613.
- Fester, Ronald C.: *See—*
  - Demers, Edward A.; Hectus, George V.; and Fester, Ronald C., 3,851,301.
- Feuth, Herbert: *See—*
  - Werle, Eugen; Hochstrasser, Karl; and Feuth, Herbert, 3,850,907.
- Fex, Hans: *See—*
  - Hogberg, Bertil; Fex, Hans; Perklev, Torsten; Veige, Sten; and Fredholm, Bo, 3,851,019.
- Fiat-Societa per Azioni: *See—*
  - Palazzetti, Mario; and Grisotto, Franco, 3,851,294.
- Fiber Industries, Inc.: *See—*
  - Ethridge, Fredrick A., 3,849,846.

- Field, Crosby. System for handling fragmented ice. 3,850,002, Cl. 62-67.000.
- Filter Queen Corporation, Limited, The: *See—*
  - Adamson, Gerald James; and O'Grady, James Kenneth, 3,849,823.
- Finkbeiner, Rudolf. Guide rod for feeding curtain suspenders into position. 3,849,856, Cl. 29-200.00d.
- Finnstrand, Harald, to International Telephone and Telegraph Corporation. Stove and burner assembly. 3,850,372, Cl. 239-123.000.
- Firestone Tire & Rubber Company: *See—*
  - Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,850,731.
- Firestone Tire & Rubber Company, The: *See—*
  - Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,850,730.
- Fisher, Ervin; and Olson, Frederick O., to Fuller Company. Gas-solids separator with access platform. 3,850,596, Cl. 55-341.000.
- Fishman, Sherman S. Spray injection for testing an ultrasonic liquid level detector. 3,851,333, Cl. 340-410.000.
- Fitzgerald, James Allen; and Likhyani, Kewal Krishan, to Du Pont de Nemours, E. I., and Company. Process for producing poly-p-phenylene terephthalamide from solution of p-phenylene diamine and molten terephthaloyl chloride. 3,850,888, Cl. 260-78.00r.
- Flack, Max L., to Best Lock Corporation. Anti-shatter padlock shackle, and process. 3,850,014, Cl. 70-53.000.
- Flebu, Rolf Johan. Valve arrangement for introducing back wash air in filters for air or gas cleaning. 3,850,200, Cl. 137-625.500.
- Flenige, Ralph E., to McDonnell Douglas Corporation. Mount for electrical junction blocks. 3,850,301, Cl. 211-26.000.
- Fletcher-Terry Company, The: *See—*
  - Insolio, Thomas A., 3,850,062.
  - Witkoski, Edward Joseph, 3,850,063.
- Flight Systems, Inc.: *See—*
  - York, Robert A., 3,851,218.
- Flip-On Packaging Inc.: *See—*
  - Mare, Peter D.; and Ross, Albert L., 3,850,777.
- Flippen, Richard B.; and Hogan, Edward M., to Du Pont de Nemours, E. I., and Company. Electromechanical transducers using coupled ferroelectric-ferroelastic crystals. 3,851,192, Cl. 310-8.000.
- Fliri, Hans: *See—*
  - Bretschneider, Hermann; Fliri, Hans; and Klotzer, Wilhelm, 3,850,912.
- Flowers, Dervin L., to Teledyne Semiconductor; a division of Teledyne, Inc. Passivating method. 3,850,686, Cl. 117-201.000.
- FMC Corporation: *See—*
  - Crawford, Donald C.; and Nack, Michael R., 3,850,780.
  - Merritt, Robert D., 3,850,345.
  - Pepmeier, Carl R.; and Lowe, Edward G., 3,849,972.
- Focella, Antonino: *See—*
  - Brossi, Arnold; Focella, Antonino; and Teitel, Sidney, 3,850,997.
- Focke & Pfuhl: *See—*
  - Focke, Heinz; and Balmer, Oskar, 3,850,281.
- Focke, Heinz; and Balmer, Oskar, to Focke & Pfuhl. Device for bringing together objects being delivered in two lines. 3,850,281, Cl. 198-32.000.
- Fodor, Vince: *See—*
  - Bartha, Zoltan; Fodor, Vince; and Subotics, Gyula, 3,850,568.
- Folgero. Kare; and Fredrikson, Bengt, to Allmanna Svenska Elektriska Aktiebolaget. Means for melting, holding and tapping metals or metal alloys. 3,851,090, Cl. 13-26.000.
- Folkestad, Olav: *See—*
  - Arild, Arnulf; Creed, John; Folkestad, Olav; Odegard, Erik; Brandtzaeg, Anton; and Selberg, Arne Brigt Bru., 3,849,821.
- Follett, John L., to Follett Valves, Inc. Safety valve having sealed reset means. 3,850,189, Cl. 137-39.000.
- Follett Valves, Inc.: *See—*
  - Follett, John L., 3,850,189.
- Fonio, Mario. Fabric folding device for laying-up machines in the ready-made garment industry. 3,850,424, Cl. 270-31.000.
- Forchini, James F.; and Garcia, Ronald M., to Ecodyne Corporation, mesne. Drift eliminator assembly. 3,850,595, Cl. 55-257.000.
- Ford, Fred Avery. Mobile shredder. 3,850,375, Cl. 241-101.700.
- Ford, James A., to Olin Corporation. Process for improving heat transfer efficiency and improved heat transfer system. 3,850,227, Cl. 165-1.000.
- Ford Motor Company: *See—*
  - Harrison, Clarence E., Jr., 3,851,235.
  - Jackson, Paul L., 3,850,416.
  - McLean, Douglas H., 3,850,274.
- Forest, Edward: *See—*
  - Wells, John B.; Swanton, Paul C.; Weigl, John W.; and Forest, Edward, 3,850,627.
- Forman, Brian William: *See—*
  - Broughton, Trevor; and Forman, Brian William, 3,850,712.
- Fortriede, Charles J., to McGraw-Edison Company. Laundry sling bag. 3,850,367, Cl. 232-1.00b.
- Fossati, Charles G.; and Dalton, Francis B., to Service Tectonics, Inc. Parts treating apparatus. 3,850,184, Cl. 134-56.00r.
- Foster Grant Co., Inc.: *See—*
  - Smith, Stuart B., 3,850,860.
- Foster Wheeler Corporation, mesne: *See—*
  - Minnick, Leonard John, 3,851,042.
- Fouard, Jean-Claude: *See—*
  - Baillet, Paulin; Simonin, Rene; and Fouard, Jean-Claude, 3,850,541.
- Foulds, Jerry W. Backrest and luggage carrier assembly for motorcycles. 3,850,353, Cl. 224-31.000.
- Fowler, Charles F.; and Dawson, Samuel G. Method of making a temperature probe cover. 3,850,084, Cl. 93-35.00r.
- Fowler, Gordon, to Delanair Limited. Heat exchangers. 3,850,234, Cl. 165-153.000.
- Fox, Edward J.: *See—*
  - McNitt, Ralph R.; and Fox, Edward J., 3,850,225.
- Fox, Robert H.: *See—*
  - Bozer, Keith B.; Brown, Lloyd H.; and Fox, Robert H., 3,850,727.
- Fox, Sam. Dip net. 3,849,926, Cl. 43-11.000.
- Frailly, Nicholas D., to Eaton Corporation. Method and apparatus for manufacturing split retaining rings and the like. 3,850,205, Cl. 140-88.000.
- Frame, Douglas J.: *See—*
  - Graham, Robert G.; and Frame, Douglas J., 3,850,146.
- Franke, Edward L., Jr.; Hyde, William J.; and Schneider, Randy G., to Western Electric Company. Apparatus for manufacturing waterproof cable. 3,850,139, Cl. 118-50.000.
- Franklin, Allen R. Adjustable storage rack. 3,850,303, Cl. 211-134.000.
- Frauendorf, Manfred, to Normbau GmbH, Maschinen-Apparate-Werkzeuge & Co. Method/and apparatus/for steaming and smoothing of clothing in a closed chamber. 3,849,815, Cl. 8-149.100.
- Fraze, Ermal Co., mesne: *See—*
  - Brown, Omar L., 3,850,124.
- Frazier, Lauren L., to General Electric Company. Ice maker. 3,850,008, Cl. 62-353.000.
- Frederiksen, Erling Knud: *See—*
  - von Daehne, Welf; Frederiksen, Erling Knud; Godtfredsen, Wagn Ole; and Rachlin, Schneur, 3,850,908.
- Fredholm, Bo: *See—*
  - Hogberg, Bertil; Fex, Hans; Perklev, Torsten; Veige, Sten; and Fredholm, Bo, 3,851,019.
- Fredrikson, Bengt: *See—*
  - Folgero. Kare; and Fredrikson, Bengt, 3,851,090.
- Freedman, David Daniel, to RCA Corporation. Gateless logic for producing selectable phase clock pulses. 3,851,258, Cl. 328-63.000.
- Freimanis, Laimons, to Bell Telephone Laboratories, Incorporated. Comminication line supervisory circuit. 3,851,108, Cl. 179-18.00f.
- Fried. Krupp Huttenwerke AG, mesne: *See—*
  - Kralowetz, Bruno; and Blaimschein, Gottfried, 3,850,022.
- Frito-Lay, Inc.: *See—*
  - Wisdom, Lawrence W., 3,851,075.
- Fritz, Kurt: *See—*
  - Beckmann, Georg; Fritz, Kurt; and Lippitsch, Josef, 3,850,235.
- Frohberger, Paul-Ernst: *See—*
  - Sasse, Klaus; Hammann, Ingeborg; Unterstenhofer, Gunter; and Frohberger, Paul-Ernst, 3,850,925.
- Frost, Kenneth A., Jr., to Chevron Research Company. Low-temperature flow improves in fuels. 3,850,587, Cl. 44-62.000.
- Fryer, Rodney I.: *See—*
  - Coffen, David Llewellyn; and Fryer, Rodney I., 3,850,948.
- Fuchs, Julius Jakob; and Wommack, Joel Benjamin, Jr., to Du Pont de Nemours, E. I., and Company. Process for preparing herbicidal triazines. 3,850,924, Cl. 260-249.500.
- Fugleberg, Sigmund Peder, to Outokumpu Oy. Process for producing cadmium. 3,850,619, Cl. 75-71.000.
- Fuji Photo Film Co., Ltd.: *See—*
  - Ono, Hisatake; Watarai, Syu; and Katsuyama, Harumi, 3,850,949.
  - Shimamura, Isao; Imai, Kiyoshi; Nakajima, Jyunya; and Iwano, Haruhiko, 3,850,636.
- Fujimoto, Kaoru: *See—*
  - Kunugi, Taiseki; Fujimoto, Kaoru; Arai, Hiromichi; and Watanabe, Yoshihisa, 3,850,843.
- Fujimoto, Keimei: *See—*
  - Itaya, Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Kameda, Nobuyuki; Fujimoto, Keimei; and Okuno, Yositosi, 3,850,977.
- Fujimoto, Norihiro: *See—*
  - Yoshino, Tsutomu; Nanba, Shinichi; Fujimoto, Norihiro; and Araki, Hideo, 3,849,940.
- Fujimura, Takeo; Nakamura, Koji; and Hayakawa, Kazuhiko, to Mitsubishi Denki Kabushiki Kaisha. Process of forming mosaic phosphor screen of color picture tube. 3,850,666, Cl. 117-33.5cm.
- Fujioka, Yasuhide; Ryujin, Takeshi; Yoshida, Shuji; and Inagaki, Mitami, to Kainan Steel Tube Co., Ltd. and Sumitomo Metal Industries, Limited. Threaded tube joint structure for a casing. 3,850,461, Cl. 285-332.200.
- Fujisawa Pharmaceutical Co. Ltd.: *See—*
  - Nakanishi, Kazuo; Kagi, Hideo; Iwata, Takashi; Haruta, Hisae; Yoshida, Kazuhiko; and Matui, Akira, 3,850,611.
- Fujitsu Limited: *See—*
  - Umeda, Shozo; Furuta, Hiroshi; Toba, Teruo; and Hiroyuki, Ishizaki, 3,851,212.
- Fukanaga, Akio. Micro-miniature solder iron. 3,851,145, Cl. 219-236.000.
- Fukuda, Yoshihiro: *See—*
  - Yamada, Fukuo; Fukuda, Yoshihiro; and Uraya, Toru, 3,849,840.
- Fukushima, Isao; and Ohashi, Shin-Ichi, to Hitachi, Ltd. Demodulator for frequency-modulated signal. 3,851,263, Cl. 329-110.000.

Fukushima, Osamu; Sato, Masamichi; and Tamai, Yasuo. Liquid developer containing extender body particles. 3,850,830, Cl. 252-62.100.
Fuller Company: *See—*
  Boyhont, Donald S.; Souders, Marvyn L.; and Matweecha, David M., 3,850,479.
  Fisher, Ervin; and Olson, Frederick O., 3,850,596.
  Mertz, Edwin C., 3,850,376.
Fuller, Dudley Kilburn Maurice. Improvements in or relating to instructional apparatus for use in learning the construction of musical chords. 3,850,072, Cl. 84-471.000.
Fullinwider, James H.: *See—*
  Rhudy, John S.; Gogarty, William B.; Knight, Bruce L.; and Fullinwider, James H., 3,850,244.
Furney, Charles P., Jr.; and Couchman, Richard, to Aluminum Company of America. Low oil-canning aluminum alloy forgings. 3,850,705, Cl. 148-13.100.
Furuichi, Minoru: *See—*
  Kawakami, Masato; Ono, Ryotaro; Furuichi, Minoru; and Kato, Shigeru, 3,850,870.
Furukawa, David H., to Universal Oil Products Company. Portable reverse osmosis unit. 3,850,815, Cl. 210-321.000.
Furuse, Takao; Matsuoka, Tohru; and Kato, Kiyohisa, to Nippon Electric Company, Limited. Mirror support structure for an internal mirror-type gas laser tube. 3,851,275, Cl. 331-94.50d.
Furuta, Hiroshi: *See—*
  Umeda, Shozo; Furuta, Hiroshi; Toba, Teruo; and Hiroyuki, Ishizaki, 3,851,212.
Fuselier, Christopher S.: *See—*
  Hoffman, Robert E.; Cline, John A.; Fuselier, Christopher S.; and D'Atre, John D., 3,851,234.
Fushino, Yukio: *See—*
  Tani, Kaneyasu; Fushino, Yukio; Nakajima, Taiji; Noguchi, Hiroaki; Kurita, Yutaka; Murakoshi, Satoshi; and Wakayama, Hiroo, 3,850,672.
Futami, Yoshinori: *See—*
  Tarusawa, Yasutaka; and Futami, Yoshinori, 3,849,981.
Gabbard, Henry: *See—*
  Paulson, William T.; Davidson, David M.; Gilbert, L. Eldean; Gabbard, Henry; and Bemus, Richard D., 3,850,729.
Gachot, Jean; and Lekarski, Simeon. Leak-tight connector for hydraulic or pneumatic integrated circuit module. 3,850,458, Cl. 285-137.00r.
GAF Corporation: *See—*
  Copes, Joseph P., 3,850,610.
  Ruby, William R., 3,850,988.
Galle, Edward M., to Hughes Tool Company. Acoustical vibration generation control apparatus. 3,850,135, Cl. 116-137.00a.
Gamache, Ernest A.; and Kosfeld, Milton M., to Fedders Corporation. Compressor housing. 3,850,551, Cl. 417-410.000.
Gamble, Elton S., to Olin Corporation. Protective coating for materials exposed to molten aluminum and its alloys. 3,850,684, Cl. 117-169.00r.
Games, John E.; and Casper, Clarence, Jr., to United Aircraft Corporation. Electronic waypoint bearing converter. 3,851,159, Cl. 235-150.270.
Gand, Heinz: *See—*
  Rothfuss, Georg; Gand, Heinz; Bredenbrock, Wolfgang; and Bohringer, Wilfried Paul, 3,851,285.
Ganier, Mark. Mortise tool. 3,850,211, Cl. 144-27.000.
Ganteaume, Harry. Portable article containing table construction. 3,850,114, Cl. 108-38.000.
Garavalia, Ronald C. J., to GTE Automatic Electric Laboratories, Incorporated. Crosspoint matrix arrangement for space-division communication switching network. 3,851,124, Cl. 179-186.00r.
Garcia, Luis A.; Boullon, Jose R.; and Mandarious, Samia S. Plasma volume expander prepared from Cohn IV Precipitate using block copolymers of ethylene oxide and polyoxypropylene. 3,850,903, Cl. 260-112.00b.
Garcia, Ronald M.: *See—*
  Forchini, James F.; and Garcia, Ronald M., 3,850,595.
Garconnat, Michel: *See—*
  Levasseur, Georges; and Garconnat, Michel, 3,851,256.
Gardner, John A., Jr.; and Brown, Merle S., to Jet Spray Cooler, Inc. Hot liquid dispenser reverse flow sensor with check valve slider and magnetically operated switch. 3,851,127, Cl. 200-61.860.
Garnier, Roger; Hogenmuller, Roger; and Massebeuf, Jacques, to Rhone-Poulenc S.A. Vinyl polymer coating compositions. 3,850,865, Cl. 260-28.5av.
Garrett Corporation, The: *See—*
  Chirgwin, Keith M., 3,851,232.
Garrett, Wayne O., to Hansco, Inc. Threader attachemnt. 3,850,077, Cl. 90-11.620.
Gaspar, Donald G.: *See—*
  Cornett, Walter G., III; and Gaspar, Donald G., 3,851,029.
Gassaway, James Scott. Equipment security device. 3,850,392, Cl. 248-19.000.
Gates Rubber Company, The: *See—*
  Cone, Irwin C., 3,849,828.
  Douros, John D., Jr.; and Warder, Ira T., Jr., 3,850,930.
Gebben, Vernon D.; and Webb, John A., Jr., to United States of America, National Aeronautics and Space Administration. Circuit for detecting initial systole and dicrotic notch. 3,850,169, Cl. 128-2.05p.
Gebr. Hilgeland: *See—*
  Nebendorf, Heinrich, 3,850,494.
Gebr. Hofmann KG: *See—*
  Heimprecht, Ulrich Stefan, 3,851,160.
Gedwill, Michael A.; and Grisaffe, Salvatore J., to United States of America, National Aeronautics and Space Administration. Method of protecting the surface of a substrate. 3,849,865, Cl. 29-460.000.
Gehrmann, Klaus; Ohorodnik, Alexander; Dettmeier, Udo; and Berns, Heinz-Josef, to Knapsack Aktiengesellschaft. Process for the manufacture of 3,4-dichlorobutene-1. 3,850,999, Cl. 260-654.00r.
Geier, B. Wayne, to Bruce Industries, Inc. Self-locking lampholder. 3,851,295, Cl. 339-54.000.
Geiger, Timothy F., to United States of America, Army. Multiple pulse repetition frequency decoder. 3,851,261, Cl. 328-165.000.
Geiger, Willard L., to Erico Rail Products Company, mesne. Railway signal system with speed determined movement detector. 3,850,390, Cl. 246-128.000.
Gellman, Gary: *See—*
  Rossen, Jack L.; Miller, Robert C.; and Gellman, Gary, 3,851,084.
General Electric Company: *See—*
  Adorjan, Alexander S., 3,850,714.
  Baker, Fred E., 3,850,181.
  Bovenkerk, Harold Paul, 3,850,053.
  Butterfield, John L.; and Wenzel, James L., 3,850,501.
  Ciokajlo, John J., 3,850,544.
  Clark, Joseph H., Jr.; and Harmon, Donald K., 3,849,902.
  Davidson, William E.; and Toft, Kaj, 3,849,916.
  Davidson, William E.; and Toft, Kaj, 3,940,016.
  Frazier, Lauren L., 3,850,008.
  Guth, Lauren W., 3,850,185.
  Hague, Joe T., 3,850,496.
  Halt, Ira E., 3,850,688.
  Harris, Lawson P., 3,851,203.
  Hehmann, Horst W. W.; and Smith, Edwin B., 3,850,261.
  Hoffman, Robert E.; Cline, John A.; Fuselier, Christopher S.; and D'Atre, John D., 3,851,234.
  Jarc, Robert A.; and Ritzinger, Frederick, 3,850,489.
  Lupinski, John H.; and McQuade, James M., 3,850,773.
  McVey, Charles L., 3,851,207.
  Nath, Dilip K., 3,850,837.
  Park, John N.; Steigerwald, Robert L.; and Walker, Loren H., 3,851,240.
  Rollfinke, Fred J., 3,851,204.
  Ruzzo, Joseph G., 3,850,136.
  Ryckman, William D., Jr.; and Meeks, Fredrick T., 3,850,180.
  Takekoshi, Tohru; and Kochanowski, John E., 3,850,885.
  Thomasson, Gene I., 3,851,200.
  Wentorf, Robert H., Jr., 3,850,591.
  William, Frank J., III, 3,850,964.
  Williams, Frank J., III, 3,850,965.
  Wood, David E., 3,851,299.
General Electric Corporation: *See—*
  Buchanan, Edward R., 3,850,702.
General Motors Corporation: *See—*
  Bleil, Carl E.; and Gifford, Fay E., 3,850,691.
  Fales, Douglas I., 3,850,196.
  Faxvog, Frederick R., 3,851,169.
  Mason, George W., 3,850,546.
  McNitt, Ralph R.; and Fox, Edward J., 3,850,225.
  Moulds, John W., 3,851,021.
  Owen, Robert E., 3,850,437.
General Staple Company, Inc.: *See—*
  Zahn, Erwin; Meisinger, Wilhelm R.; and Magnifico, George, 3,849,860.
General Telephone Company of California: *See—*
  Marvin, Howard Arthur, 3,851,121.
General Tire & Rubber Company, The: *See—*
  Fabris, Hubert J.; Herold, Robert J.; and Maxey, Edwin M., 3,850,861.
  Hipsher, Gary L.; and Vosburgh, Robert D., 3,850,418.
  Monajjem, Freydoun, 3,849,942.
George, James Henry: *See—*
  Horlenko, Theodore; and George, James Henry, 3,850,995.
Georgia-Pacific Corporation: *See—*
  Ludwig, Charles H., 3,850,799.
Geraci, Vincent M. Parking stall barrier. 3,849,936, Cl. 49-35.000.
Gersbeck, Rolf, to Berstorff, Hermann, Maschinenbau, GmbH. Steel belt for a rotary press. 3,850,093, Cl. 100-93.0rp.
Gesellschaft fur Kernforschung, mbH: *See—*
  Bohm, Horst; Borgstadt, Hans Ulrich; Ruhle, Manfred; and Wincierz, Peter, 3,850,584.
Gesellschaft zur forderung der forschung and der Eidg. Techn. Hochschule: *See—*
  Von Holzen, Gerhard, 3,851,150.
Gfrerer, Manfred: *See—*
  Schwenzfeier, Werner; Gfrerer, Manfred; and Herzog, August, 3,850,031.
Giannini, Umberto: *See—*
  Longi, Paolo; Giannini, Umberto; and Mazzocchi, Romano, 3,850,842.
Gibson, John C., to GTE Automatic Electric Laboratories, Incorporated. Path verification arrangement for automatically testing conditions. 3,851,122, Cl. 179-175.230.
Gidlaw, Rolf Gunnar: *See—*
  Rogers, Nelson E.; and Gidlaw, Rolf Gunnar, 3,851,085.

Gierek, Adam; and Bajka, Lech, to Politechnika Slaska Im.W. Pstrowskiego. Process for manufacturing hot-dip aluminized pearlitic malleable cast iron and black heart malleable cast iron products. 3,850,699, Cl. 148-6.110.
Gifford, Fay E.: *See—*
  Bleil, Carl E.; and Gifford, Fay E., 3,850,691.
Gilbert, L. Eldean: *See—*
  Paulson, William T.; Davidson, David M.; Gilbert, L. Eldean; Gabbard, Henry; and Bemus, Richard D., 3,850,729.
Gillespie, Robert M., to Sortex Company of North America, Inc. Meat processing. 3,851,074, Cl. 426-231.000.
Gillette Company, The: *See—*
  Petrillo, Richard J., 3,850,343.
Gilligan, William H.; and Kamblet, Mortimer J., to United States of America, Navy. Synthesis of N,N-bis(2-fluoro-2,2-dinitroethyl) carbamates. 3,850,978, Cl. 260-482.00c.
Ginnasi, Alessandro: *See—*
  Rescalli, Carlo; Ginnasi, Alessandro; and Rebora, Pierluigi, 3,851,010.
Girling Limited: *See—*
  Roberts, Maurice; and Peasley, David, 3,850,483.
Giusti, Paolo: *See—*
  Priola, Aldo; Cesca, Sebastiano; Ferraris, Giuseppe; Boy, Mario Bassaredda; and Giusti, Paolo, 3,850,894.
  Priola, Aldo; Cesca, Sebastiano; Ferraris, Giuseppe; Boy, Mario Baccaredda; and Giusti, Paolo, 3,850,896.
Glassman, Wayne Charles: *See—*
  Prust, Michael Ward; and Glassman, Wayne Charles, 3,850,137.
Glaverbel: *See—*
  Plumat, Emile; and Posset, Robert, 3,850,665.
Gleason, David I.: *See—*
  De Boer, Albert; and Gleason, David I., 3,851,324.
Glivka, Ljudmila Alexandrovna: *See—*
  Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Chumaevskaya, Alla Nikolaevna; Mgeladze, Boris Mikhailovich; Bekasova, Nina Ivanovna; Komarova, Ljudmila Grigorievna; Vinogradova, Svetlana Vasilievna; Valetsky, Petr Maximilianovich; Kalachev, Alxandr Ivanovich; Lyamenkova, Evgenia Kuzminichna; Glivka, Ljudmila Alexandrovna; Burtseva, Tamara Andreevna; and Babchinitser, Tatyana Mikhailovna, 3,850,820.
Global Marine Inc.: *See—*
  Anders, Edward O., 3,850,125.
Glover, Douglas Wade, to AMP Incorporated. Multi-pin shielded high voltage connector. 3,850,495, Cl. 339-60.00m.
Gnage, Oliver W., to Eastman Kodak Company. Filmstrip handling device. 3,850,778, Cl. 156-502.000.
Godtfredsen, Wagn Ole: *See—*
  von Daehne, Welf; Frederiksen, Erling Knud; Godtfredsen, Wagn Ole; and Rachlin, Schneur, 3,850,908.
Goettsch, Reijer; and Vos, Herman M. A., to Stamicarbon N.V. Process for the recovery of pure ζ-caprolactam. 3,850,910, Cl. 260-239.30a.
Gogarty, William B.: *See—*
  Rhudy, John S.; Gogarty, William B.; Knight, Bruce L.; and Fullinwider, James H., 3,850,244.
Goller, Manfred: *See—*
  Bauernfeind, Herbert; and Goller, Manfred, 3,851,102.
Gomez, Climaco Alberto; Braswell, William Dorne; and Marshall, Robert Moore, to Allied Chemical Corporation. Multifilament polyethylene terephthalate yarn. 3,850,658, Cl. 117-7.000.
Gonsalves, John T. Device and method for preventing entrapment of sea mammals. 3,849,927, Cl. 43-14.000.
Goodrich, B. F., Company, The: *See—*
  Cardarelli, Nothan F., 3,851,053.
  Coropolis, John P.; and Briscoe, James A., 3,849,827.
  Dreyfuss, Max Peter, 3,850,856.
  Dreyfuss, Max Peter, 3,850,857.
  Parker, Richard G., 3,850,884.
Goodwin, Vernon, Jr.: *See—*
  Olson, Carl O. L.; and Goodwin, Vernon, Jr., 3,849,808.
Goralski, Christian T., to Dow Chemical Company, The. Phenyl esters of bromomethanesulfonic acid. 3,850,972, Cl. 260-456.00r.
Gottlieb, Michael M., to Liberty Fabrics of New York, Inc. Method of identifying yarns. 3,849,849, Cl. 28-72.500.
Gottschalk, George H. Nasal tampon. 3,850,176, Cl. 128-325.000.
Goutard, Rene Michel, to Automatisme & Technique. System for automated production of spark plugs. 3,849,850, Cl. 29-25.190.
Govaars, Gustaaf Frederik, to Scientific Enterprises, Inc. Temperature protection suit. 3,849,802, Cl. 2-81.000.
Gower, Gordon Shields, to Nabalco Engineering Pty. Limited. Submarine pipelines. 3,849,997, Cl. 61-72.300.
Grace, W. R., & Co.: *See—*
  Graham, James Richar; Ernest, Michael V.; and Maselli, James Michael, 3,850,847.
Graefnitz, Russell F., to Duncan Electric Company, Inc. Manufacture of watt-hour meters with welded precise torquing. 3,849,876, Cl. 29-596.000.
Graf, Hermann: *See—*
  Wanka, Oskar; Gutlhuber, Friedrich; and Graf, Hermann, 3,850,232.
Graham, James Richar; Ernest, Michael V.; and Maselli, James Michael, to Grace, W. R., & Co. Process for preparing ultra stable exhaust catalyst of improved activity. 3,850,847, Cl. 252-462.000.
Graham, Robert G.; and Frame, Douglas J. Boiler tube shielding wall. 3,850,146, Cl. 122-6.00a.
Granada, Richard Paul: *See—*
  Lawford, Victor Nicholas; Granada, Richard Paul; and Elderton, Peter, 3,850,037.
Granseus, Folke Evert; and Borgstrom, Klas Ingvar Helmer, to Aktiebolaget Platmanufaktur. Tool for sealing a container, such as a cup, bottle, jar or the like. 3,849,971, Cl. 53-329.000.
Gravelle, Elmer; and Casparro, John J., to Don Fedderson Productions. Dynamic advertising display system. 3,849,919, Cl. 40-32.000.
Gray, Roy A.: *See—*
  Murtha, Timothy P.; Zuech, Ernest A.; and Gray, Roy A., 3,850,878.
Grazen, Frank S.; Buike, Melvin L.; and Bryzinsky, Frank M., to Hooker Chemicals & Plastic Corporation. Friction element composition. 3,850,874, Cl. 260-38.000.
Green, James E. Analysis method and apparatus utilizing color algegra and image processing techniques. 3,851,156, Cl. 235-151.300.
Greenly, Robert B., to Singer Company, The. Training apparatus for firearms use. 3,849,910, Cl. 35-25.000.
Greeson, James C., Jr., to International Business Machines Corporation. Sustain sequence circuitry for gas panel display devices. 3,851,211, Cl. 315-169.0tv.
Gregory, Milton Wesley; Olszyk, Bernard John; and Bowles, Oscar Pierce, to Johns-Manville Corporation. Pipeline covering with protective soil slip coatings and method for making same. 3,850,670, Cl. 117-64.00r.
Greig, Ian Robert Kennedy; and Jackson, John MacKenzie, to Pilkington Brothers Limited. Glass-reinforced composite materials. 3,850,788, Cl. 161-168.000.
Greiwe, Daniel L.: *See—*
  Di Frank, Frank J.; and Greiwe, Daniel L., 3,850,319.
Greppi, Pierluigi. Pivotally collapsible motorcar. 3,850,472, Cl. 296-27.000.
Greven, Hendrick Marie, to Akzona Incorporated. Psychopharmacologically active D-Glu or D-His containing peptides. 3,850,904, Cl. 260-112.500.
Grewe, Ferdinand: *See—*
  Widdig, Arno; Kuhle, Engelbert; Grewe, Ferdinand; and Helmut, Kaspers, 3,850,954.
Gribova, Irina Alexandrovna: *See—*
  Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Chumaevskaya, Alla Nikolaevna; Mgeladze, Boris Mikhailovich; Bekasova, Nina Ivanovna; Komarova, Ljudmila Grigorievna; Vinogradova, Svetlana Vasilievna; Valetsky, Petr Maximilianovich; Kalachev, Alxandr Ivanovich; Lyamenkova, Evgenia Kuzminichna; Glivka, Ljudmila Alexandrovna; Burtseva, Tamara Andreevna; and Babchinitser, Tatyana Mikhailovna, 3,850,820.
Grimm, Robert A.; and Sedor, Edward A., to Ashland Oil, Inc. Process for the preparation of hydroxy substituted aminimides. 3,850,969, Cl. 260-404.500.
Grisaffe, Salvatore J.: *See—*
  Gedwill, Michael A.; and Grisaffe, Salvatore J., 3,849,865.
Grisotto, Franco: *See—*
  Palazzetti, Mario; and Grisotto, Franco, 3,851,294.
Groenendaal, Willem; Lenz, Walter M.; and Loof, Philippus, to Shell Oil Company. Recovery of sulfur from SO_2-containing regeneration off-gases. 3,851,050, Cl. 423-574.000.
Grolitsch, Erhard. Atomising device. 3,850,373, Cl. 239-499.000.
Grotnes Machine Works, Inc.: *See—*
  Fencl, Vernon; and Roze, Alberts, 3,850,017.
Grover, Harvey H.: *See—*
  Richardson, James E.; and Grover, Harvey H., 3,850,346.
Grover, Martin M.: *See—*
  Jeffries, Robert; and Grover, Martin M., 3,850,786.
Grunberg, Emanuel; and Hoffer, Max, to Hoffmann-La Roche, Inc. 2,4-Diamino-5 -(3-alkoxy-4-5-methylenedioxybenzyl) pyrimidine. 3,850,962, Cl. 260-340.500.
Gruska, Ralph, to Ejectoret S.A. Lipstick and similar holder. 3,850,183, Cl. 132-88.700.
GTE Automatic Electric Laboratories Incorporated: *See—*
  Blackmon, Charles E., Jr., 3,851,113.
  Crosley, Thomas W., 3,851,120.
  Elgindy, Ibrahim Y.; and 430008, 3,851,128.
  Garavalia, Ronald C. J., 3,851,124.
  Gibson, John C., 3,851,122.
  Kelly, Michael J.; and Simon, Charles J., 3,851,110.
  Kusan, Lawrence J., 3,851,112.
  McClurg, Dale C.; and Nocek, Stanley J., 3,851,286.
  Michalak, Bogumil M.; and Bertellotti, Ansano, 3,851,222.
  Mila, Truman R., 3,851,103.
  Mila, Truman R., 3,851,311.
  Rivas, John M., 3,851,307.
  Young, John, 3,851,111.
  Zimmermann, Joseph J., 3,850,386.
GTE Laboratories Incorporated: *See—*
  Klein, Richard M., 3,850,604.
GTE Sylvania Incorporated: *See—*
  Stacy, John C., 3,851,163.
Guala, Piergiacomo, to Angelo Guala di Piergiacomo e Roberto Guala & C. S. A.S. Bottle closure arrangement. 3,850,328, Cl. 215-252.000.
Gubitz, Franklyn W., to Sterling Drug Inc. Aromatic substituted amidines. 3,850,909, Cl. 260-239.00b.

Guckenberger, John D.; Titus, Dudley S.; and Toft, Knut, to Mallinckrodt, Inc. Dispersibility of water-soluble gums. 3,850,838, Cl. 252-363.500.
Gudelis, David A.; and Shaw, David H., to Exxon Research and Engineering Company. Partial predilution dilution chilling. 3,850,740, Cl. 208-33.000.
Guettier, Michel, to Regie Nationale des Usines Renault. Self locking disc brake mechanism. 3,850,268, Cl. 188-72.200.
Gugler, Victor F. Method for continuously panning dough. 3,851,089, Cl. 426-503.000.
Guinea Hermanos Ingenieros, S.A.: *See—*
Elorza, Salvador Guinea, 3,850,417.
Guittard, Michael R., to Ferodo Limited. Asbestos-based friction material. 3,850,791, Cl. 162-145.000.
Gulbrandsen, Richard: *See—*
Bruneau, Louis O.; and Gulbrandsen, Richard, 3,850,775.
Guldenfels, Dieter: *See—*
Reufer, Christian; and Guldenfels, Dieter, 3,850,025.
Gulf Research & Development Company: *See—*
Despujols, Jack Bruno, 3,850,246.
Plundo, Robert A.; Readal, Thomas C.; and Strom, James R., 3,850,744.
Selwitz, Charles M., 3,850,984.
Suatoni, Joseph C., 3,850,967.
Gulley, Jesse, Jr. Direction seeking toy vehicle. 3,849,931, Cl. 46-244.000.
Gunther, Donald A., to American Sterilized Company. Disposing of exhaust gas from an ethylene oxide sterilizer. 3,851,043, Cl. 423-245.000.
Guth, Jules H.: *See—*
Tumerman, Leon; and Guth, Jules H., 3,850,905.
Guth, Lauren W., to General Electric Company. Means in a dishwashing machine for starting the operational cycle thereof. 3,850,185, Cl. 134-58.0dl.
Gutlhuber, Friedrich: *See—*
Wanka, Oskar; Gutlhuber, Friedrich; and Graf, Hermann, 3,850,232.
Gutmann, Walter: *See—*
Nicolet, Rene; and Gutmann, Walter, 3,851,016.
Gutner, Kenneth H. Method of installing drawer guide, and structure. 3,850,482, Cl. 308-3.600.
Guttulsrud, Odd. Ski-bindings. 3,850,439, Cl. 280-11.35b.
Guzzo, Ralph F. Expansion joint and drain conduit for foundation walls. 3,850,193, Cl. 137-362.000.
Gwynne, Jacob M. T-clip truss and rafter system of roof construction. 3,849,961, Cl. 52-639.000.
Haberling, Edmund; Kiesheyer, Heinrich; and Weigand, Hanshermann, to Deutsche Edelstahlwerke Gesellschaft mit beschrankter Haftung. High-speed tool steels. 3,850,621, Cl. 75-126.00a.
Hachmeister, Ernest G., to Industrial Engineering & Equipment Company. Blast coil heater. 3,851,147, Cl. 219-375.000.
Hachtman, Samuel J. Tobacco flavored candy. 3,851,069, Cl. 426-175.000.
Hachtmann, Otto. Clamp coupling. 3,850,538, Cl. 403-350.000.
Hackett, Donald W.: *See—*
Cadden, Jerry L.; Hackett, Donald W.; and Harris, Fred A., 3,850,226.
Hadskey, Glynn E., to Rowe, James M. Top link apparatus. 3,850,450, Cl. 280-479.00r.
HAG Aktiengesellschaft: *See—*
Iyimen, Siddik; Lehmann, Gunter; Neunhoeffer, Otto; and Vitzthum, Otto, 3,850,958.
Hagemann, Hermann, to Bayer Aktiengesellschaft. Process for the production of acylisocyanates. 3,850,985, Cl. 260-545.00r.
Hagen, Donald H. Bicycle transmission. 3,850,044, Cl. 74-230.230.
Hagen, Donald H. Expansible sprocket for bicycles. 3,850,045, Cl. 74-244.000.
Hagenbach, Robert J.: *See—*
Madrid, Robert W.; and Hagenbach, Robert J., 3,850,676.
Hagenbach, Robert Joseph, to Xerox Corporation. Cellulose coated carriers. 3,850,663, Cl. 117-17.500.
Haglid, Frank R., to Du Pont de Nemours, E. I., and Company. Compounds useful as feed supplements. 3,850,987, Cl. 260-561.00s.
Hagood, Raymond E.: *See—*
Lipinski, Richard D.; and Hagood, Raymond E., 3,851,123.
Hague, Joe T., to General Electric Company. Connector block for hermetic motor compressor. 3,850,496, Cl. 339-64.00m.
Haisler, Melvin Roger. Dyna-shade. 3,850,187, Cl. 135-20.00r.
Hakanson, Christer Lennart, to Aktiebolaget Bofors. Process for the preparation of granular polyurethanes and product obtained thereby. 3,850,880, Cl. 260-75.0ne.
Halas, Francis R.; and Rossitto, Conrad, to USM Corporation. Lactam copolyamides for adhesive use. 3,850,887, Cl. 260-78.00l.
Hale, Creighton J., to Little League Baseball Inc. Impact-absorbing boundary structure for sports arenas. 3,849,935, Cl. 49-34.000.
Halford, David W.: *See—*
Berrill, William H.; Halford, David W.; and Bowler, Arthur A., 3,849,817.
Hall, Kimball P., to Hall Marine Corporation. Marine jet propulsion apparatus. 3,849,982, Cl. 60-221.000.
Hall Marine Corporation: *See—*
Hall, Kimball P., 3,849,982.
Halliburton Company: *See—*
Carney, Leroy L., 3,850,248.
Holden, John C.; and Wray, Gary Q., 3,850,250.
Tinsley, John M., 3,850,247.
Halt, Ira E., to General Electric Company. Ohmic contact for p-type Group III-V semiconductors. 3,850,688, Cl. 117-217.000.
Hamilton, Chester C. Positive displacement vapor control apparatus for fluid transfer. 3,850,208, Cl. 141-59.000.
Hamilton Digital Controls, Inc.: *See—*
Zacaroli, Edward C., 3,851,115.
Hamilton, Richard A. Exercise device. 3,850,430, Cl. 272-81.000.
Hamm, Philip C., to Monsanto Company. Method of plant growth regulation. 3,850,608, Cl. 71-76.000.
Hammann, Ingeborg: *See—*
Sasse, Klaus; Hammann, Ingeborg; Unterstenhofer, Gunter; and Frohberger, Paul-Ernst, 3,850,925.
Hammerberg, Edgar S.: *See—*
Lichtenwalter, Glen D.; and Hammerberg, Edgar S., 3,850,974.
Hamuro, Yasumasa: *See—*
Iwama, Akira; Toyoguchi, Mitsuru; Takehara, Kikuo; and Hamuro, Yasumasa, 3,850,586.
Hanaoka, Tadashi, to Misawa Homes Co. Ltd. Capsule-unit house. 3,849,952, Cl. 52-79.000.
Hanback, Francis J.; and Robinson, Norman F., to McDonnell Douglas Corporation. Lip seal fittings. 3,850,456, Cl. 285-114.000.
Hane, Toshihide: *See—*
Sasabe, Kaoro; Kotera, Hiroaki; Misaki, Takashi; and Hane, Toshihide, 3,851,094.
Hanfling, Jerome D., to Raytheon Company. Impedance matched waveguide device. 3,851,281, Cl. 333-33.000.
Hanneman, Adriaan: *See—*
Kleis, Derk; Hanneman, Adriaan; Penning, Cornelis; and Schenkel, Gerrit, 3,851,118.
Hansco, Inc.: *See—*
Garrett, Wayne O., 3,850,077.
Hansen, Gerhard. Screw extruder for synthetic plastics material. 3,850,415, Cl. 259-191.000.
Hansen, Gunnar Lyshoj; and Rono-Clausen, Jorgen, to Danfoss A/S. Oil pump for heating installations. 3,850,549, Cl. 417-310.000.
Hansen, Hans Nielsen: *See—*
Lund, Svend Aage; Hansen, Hans Nielsen; Holst, Heige Alfred; and Northeved, Allan, 3,850,026.
Hansen, Howard C., to Clark Equipment Company. Vehicle mounted plate having guide rollers. 3,850,111, Cl. 104-245.000.
Hansen, Howard Eugene; Straub, Robert Joseph; and Tuczynski, Edward Martin, to International Business Machines Corporation. Rotary fluid applicator. 3,849,906, Cl. 34-229.000.
Hansen, Jay M., to Hughes Aircraft Company. Hansen, Jay M. 3,851,206, Cl. 315-30.000.
Harada, Masanori: *See—*
Mawatari, Toshihiro; Kunugi, Takashi; Harada, Masanori; and Sasaki, Kenichi, 3,850,151.
Hardies, Donald E.: *See—*
Bissinger, William E.; Hardies, Donald E.; and Lavanish, Jerome M., 3,850,609.
Hardy, Michael E.: *See—*
Sessoms, Frank E.; and Hardy, Michael E., 3,851,070.
Hare, Glenn F. Cervical collar. 3,850,164, Cl. 128-75.000.
Harmon, Carlyle; and Sibbach, William, to Johnson & Johnson. Method of making sheet material. 3,851,034, Cl. 264-147.000.
Harmon, Donald K.: *See—*
Clark, Joseph H., Jr.; and Harmon, Donald K., 3,849,902.
Harmon, Harold J. Beam construction. 3,849,963, Cl. 52-729.000.
Harper-Wyman Company: *See—*
Sekera, George F., Jr., 3,850,407.
Harris, Fred A.: *See—*
Cadden, Jerry L.; Hackett, Donald W.; and Harris, Fred A., 3,850,226.
Harris, Geoffrey John: *See—*
Clarke, Greffrey; and Harris, Geoffrey John, 3,851,216.
Harris, Lawson P., to General Electric Company. Vacuum arc devices with improved arcing shields. 3,851,203, Cl. 313-233.000.
Harrison, Clarence E., Jr., to Ford Motor Company. Bridge circuit for controlling a direct current motor. 3,851,235, Cl. 318-257.000.
Harrison, Paul W.: *See—*
Vane, Rodney D.; and Harrison, Paul W., 3,850,522.
Harsco Corporation: *See—*
Lang, David, 3,849,820.
Hartenstein, Johannes Herrmann, to Warner-Lambert Company. Novel Δ^4/Δ^5-dehydrocardenolides as well as process for their preparation. 3,850,906, Cl. 260-210.500.
Hartinger, Edmund: *See—*
Bodmer, Maurice; Hartinger, Edmund; and Huber, Albert, 3,850,657.
Hartmann, Louis, to S.A. Tefal. Non-stick coating compositions of fluorocarbon resin particles and aqueous slip of sintered glaze particles. 3,850,867, Cl. 260-29.06f.
Hartshorn, Frank: *See—*
Brailsford, Brian H.; Bramley, Frank; and Hartshorn, Frank, 3,849,818.
Hartzler, Earnest D.: *See—*
Beck, James C.; Hartzler, Earnest D.; and Nielsen, Harrie W., 3,851,165.
Haruta, Hisae: *See—*
Nakanishi, Kazuo; Kagi, Hideo; Iwata, Takashi; Haruta, Hisae; Yoshida, Kazuhiko; and Matui, Akira, 3,850,611.
Hassan, Morris, to Chrysler Corporation. Ball joint. 3,850,443, Cl. 280-96.20r.

Hastwell, Peter John: *See—*
Smith, Ian Edward; Hastwell, Peter John; and Vermeulen, Marinus Cornelus, 3,850,829.
Hatada, Michio. Can capable of being folded into a definite form by hand. 3,850,338, Cl. 220-6.000.
Hatayama, Junji: *See—*
Irikura, Tsutomu; Hayashi, Masayuki; Koshirae, Kikuo; Kudo, Yoshitaka; Hatayama, Junji; and Hetsugi, Etsuko, 3,850,941.
Hatsukano, Yoshikazu; Nomiya, Kosei; and Kawagoe, Hiroto, to Hitachi, Ltd. Blanking circuit. 3,851,185, Cl. 307-205.000.
Hauck, Albert. Product handling apparatus. 3,850,204, Cl. 140-2.000.
Havinga, Reginoldus; and Swaters, Pieter Dirk, to Akzo N.V. 2,2,2-Trichloro-4'-tert butylacetophenone. 3,850,989, Cl. 260-592.000.
Hawkins, Donald B. Latch assembly. 3,850,463, Cl. 292-67.000.
Hawkins, Edward J. Desiccating cartridge for firearm barrels. 3,849,923, Cl. 42-1.00n.
Hayakawa, Kazuhiko: *See—*
Fujimura, Takeo; Nakamura, Koji; and Hayakawa, Kazuhiko, 3,850,666.
Hayasaka, Akio: *See—*
Imaizumi, Ichiro; Kaji, Tadao; Hayasaka, Akio; and Uehara, Keijiro, 3,850,708.
Hayashi, Masayuki: *See—*
Irikura, Tsutomu; Hayashi, Masayuki; Koshirae, Kikuo; Kudo, Yoshitaka; Hatayama, Junji; and Hetsugi, Etsuko, 3,850,941.
Hayashi, Shigeyoshi: *See—*
Sibuya, Chisei; Ouchi, Shunji; and Hayashi, Shigeyoshi, 3,850,976.
Hayashi, Yoshiki: *See—*
Ogo, Shinichi; and Hayashi, Yoshiki, 3,850,629.
Hayes, Kenneth L., to Berryfast, Inc. Fastener. 3,850,073, Cl. 85-20.000.
Hayes-Albion Corporation: *See—*
Weir, Thomas J., 3,850,545.
Hayne, Thomas F.; and Schroll, Ross E., to Xerox Corporation. Current measuring device. 3,851,229, Cl. 317-262.00a.
Haynos, Joseph Gabrial, to Communications Satellite Corporation. Solar cell array. 3,849,880, Cl. 29-626.000.
Hch. Bertrams Aktiengesellschaft: *See—*
Kuhnlein, Hans, 3,851,035.
Hearns, Harold L.: *See—*
Behr, R. Douglas; and Hearns, Harold L., 3,850,289.
Heckler, Clarence H., Jr.: *See—*
United States of America, National Aeronautics and Space Administration, 3,849,877.
Hectus, George V.: *See—*
Demers, Edward A.; Hectus, George V.; and Fester, Ronald C., 3,851,301.
Hedin, Robert A., to Eaton Corporation. Security apparatus including a tamper detection device. 3,851,227, Cl. 317-134.000.
Hedin, Robert A., to Eaton Corporation. Electronic identifying security system. 3,851,314, Cl. 340-147.0md.
Heffer, John Philip, to Johnson, Matthey & Co. Limited. Impregnation of graphite with ruthenium compounds. 3,850,668, Cl. 117-47.00r.
Hehmann, Horst W. W.; and Smith, Edwin B., to General Electric Company. Wide band width single layer sound suppressing panel. 3,850,261, Cl. 181-33.00g.
Heier, Wilbur C., to United States of America, National Aeronautics and Space Administration. Evacuated, displacement compression mold. 3,850,567, Cl. 425-405.00r.
Heimprecht, Ulrich Stefan, to Gebr. Hofmann KG. Measure value method and apparatus. 3,851,160, Cl. 235-151.300.
Heisey, Jay Marlin: *See—*
Cobaugh, Robert Franklin; and Heisey, Jay Marlin, 3,850,500.
Helander, Elton L., to Helander Products, Inc. Spring clutch with automatic disconnect feature. 3,850,275, Cl. 192-26.000.
Helander Products, Inc.: *See—*
Helander, Elton L., 3,850,275.
Held, Edward C., Jr., to Phillips Petroleum Company. Trimming articles from integrally attached web. 3,850,354, Cl. 225-1.000.
Hella, Richard A.: *See—*
Hoag, Ethan D.; Patrick, Richard M.; Locke, Edward V.; and Hella, Richard A., 3,851,273.
Hellens, Paul B.: *See—*
Hesskamp, Arthur W.; Hellens, Paul B.; and Di Matteo, Albert J., 3,850,266.
Heller, Carl A.: *See—*
Richter, Herbert P.; Heller, Carl A.; Norris, William P.; and McEwan, William S., 3,850,836.
Heller, Ferdinand P., to Amchem Products, Inc. Method and materials for coating metals for coating metal surfaces. 3,850,700, Cl. 148-6.15z.
Hellsten, Karl Martin Edvin; and Santamaki, Seppo Olavi, to Mo Och Domsjo Aktiebolag. Liquid detergent compositions containing surfactants and peroxide bleaching agents. 3,850,831, Cl. 252-99.000.
Hellsten, Karl Martin Edvin; and Klingberg, Anderson William, to Mo Och Domsjo Aktiebolag. Soap compositions capable of dispersing lime soaps. 3,850,834, Cl. 252-117.000.
Helmut, Kaspers: *See—*
Widdig, Arno; Kuhle, Engelbert; Grewe, Ferdinand; and Helmut, Kaspers, 3,850,954.
Hendrix, Warren P.: *See—*
Orr, Clyde, Jr.; Hendrix, Warren P.; and Camp, Ronnie W., 3,850,040.
Henkel & Cie GmbH: *See—*
Wagemund, Bernd; Lehmann, Hans-Jurgen; and Schmadel, Edmund, 3,850,832.
Henry, David A.; and Larimer, Myron J., said Henry assor. to said Larimer, Myron J. Modular building construction. 3,849,960, Cl. 52-569.000.
Henry, Michael D.: *See—*
Balzer, Claude P.; Corman, Edward M.; Reiff, Almer A.; and Henry, Michael D., 3,849,958.
Heraeus-Schott Quarzschmelze GmbH: *See—*
Bruning, Rolf, 3,850,602.
Herbst, David R.; and Smith, Herchel, to American Home Products Corporation. Indole fused heterocyclic analgesic compounds. 3,850,936, Cl. 260-293.530.
Hercules Incorporated: *See—*
Nixon, Joseph R., Jr., 3,850,996.
Herczog, Andrew; Power, Joseph M.; and Smith, James W., to Corning Glass Works. Method of forming a solid tantalum capacitor. 3,850,764, Cl. 204-38.00a.
Hermann, Paul: *See—*
Canova, Fred; Krouse, Leroy M.; Hornschuch, Hanns; Hermann, Paul; and Dopkin, Joseph A., 3,850,547.
Herold, Robert J.: *See—*
Fabris, Hubert J.; Herold, Robert J.; and Maxey, Edwin M., 3,850,861.
Herz, Arthur Herman; and O'Brien, David Frank, to Eastman Kodak Company. Non-polymeric peptizers for silver halide suspensions. 3,850,645, Cl. 96-114.700.
Herzog, August: *See—*
Schwenzfeier, Werner; Gfrerer, Manfred; and Herzog, August, 3,850,031.
Herzog, William F., to Ampex Corporation. Time-base error correction system. 3,851,100, Cl. 178-69.50r.
Heskett, Donald E.; and Heskett, John S., to Norton-Norwich Products, Inc., mesne. Method of making fluid purification device. 3,851,026, Cl. 264-54.000.
Heskett, John S.: *See—*
Heskett, Donald E.; and Heskett, John S., 3,851,026.
Hess, Patrick H., to Chevron Research Company. Method for delaying the setting of an acid-settable liquid in a terrestrial zone. 3,850,249, Cl. 166-295.000.
Hesskamp, Arthur W.; Hellens, Paul B.; and Di Matteo, Albert J., to Chrysler Corporation. Parking brake. 3,850,266, Cl. 188-70.00r.
Hester, Jackson B., Jr.; and Szmuszkovicz, Jacob, to Upjohn Company, The. 3-Pyridyl-9H-dibenzo[c,f]-S-triazolo[4,3-a] azepine. 3,850,942, Cl. 260-296.00p.
Hetsugi, Etsuko: *See—*
Irikura, Tsutomu; Hayashi, Masayuki; Koshirae, Kikuo; Kudo, Yoshitaka; Hatayama, Junji; and Hetsugi, Etsuko, 3,850,941.
Heule, James E., to Audronics, Inc. Blood level detector. 3,851,181, Cl. 250-577.000.
Heuschober, Ernest E. Water ski towing device. 3,850,130, Cl. 115-6.100.
Hewgley, Robert E., Jr.; and Tuckman, Michael S., to United States of America, Atomic Energy Commission. Phase displacement detection system. 3,851,155, Cl. 235-92.0ps.
Hewlett Machines Works: *See—*
Howlett, George H.; and Howlett, James W., 3,850,535.
Hewlett-Packard Company: *See—*
Suzuki, Kazu; and Shimo, Kazuo, 3,850,518.
Hewiett-Packard GmbH: *See—*
Hohmann, Hans-Gunter; and Rochlitzer, Frank, 3,851,262.
Hickey, Christopher Daniel Dowling, to Airflex Containers Limited. Containers. 3,850,214, Cl. 150-.500.
Higgins, Frank, to Summit Filter Corporation. Filtering method utilizing a double-wall filter bag construction. 3,850,594, Cl. 55-97.000.
Higgins, James P.: *See—*
Dugan, John J.; Higgins, James P.; and Salva, Juan M., 3,850,742.
Hill, Charles O., 37% to Hill, Gayle Pate and 25% to Budnick, Thomas W. Combination dispenser package with portion measuring means for dispensing controlled amounts of fluent materials. 3,850,347, Cl. 222-368.000.
Hill, Gayle Pate: *See—*
Hill, Charles O., 3,850,347.
Hill, Martin Arthur; and Wardlaw, Russell, to Cookson Company. Self-acting lock for articulated, rolling grilles. 3,850,465, Cl. 292-231.000.
Hill, Robert E., to Koppers Company, Inc. Iron stain inhibitors. 3,850,683, Cl. 117-147.000.
Hill, Tom H., to Exxon Production Research Company. Method of operating a surface controlled surface safety valve. 3,850,238, Cl. 166-314.000.
Hille International Limited: *See—*
Day, Robin, 3,850,476.
Hillmann, Willi, to Vahle, Paul, KG. Live rail and shoe construction. 3,850,270, Cl. 191-29.00r.
Hillmann, Willi, to Vahle, Paul, KG. Third rail for current consumers with large current requirement and high speed. 3,850,271, Cl. 191-29.0dm.
Hills, Richard E.; and Patterson, Walter H. Smoke consumer. 3,850,581, Cl. 23-277.00c.
Hilti Aktiengesellschaft: *See—*
Taggart, James, 3,850,704.
Himmelmann, Wolfgang: *See—*
Saleck, Wilhelm; Himmelmann, Wolfgang; Balle, Gerhard; and Schnalke, Karl-Erwin, 3,850,644.

Hinds, Walter Edwin, to Xynetics, Inc. Plural axis linear motor structure. 3,851,196, Cl. 310-12.000.
Hipsher, Gary L.; and Vosburgh, Robert D., to General Tire & Rubber Company, The. High elongation voided elastomeric bushings and method and means for their assembling. 3,850,418, Cl. 267-57.10a.
Hirata, Teruhito; Ohga, Shoichiro; and Kaya, Tomoji, to Shin-Etsu Handotai Co., Ltd. Device and method for accommodating semiconductor wafers. 3,850,296, Cl. 206-334.000.
Hirdes, Rudiger. Suction device for extracting drill chippings. 3,850,254, Cl. 173-75.000.
Hirono, Yosuke, to Ralston Rurina Company. Method of handling shrimp. 3,850,143, Cl. 119-2.000.
Hirose, Yoshiyuki; and Kawamura, Yosukazu, to Kabushiki Kaisha Daini Seikosha. Device for regulating the hands of a timepiece. 3,849,977, Cl. 58-23.0tf.
Hiroyuki, Ishizaki: *See—*
  Umeda, Shozo; Furuta, Hiroshi; Toba, Teruo; and Hiroyuki, Ishizaki, 3,851,212.
Hirsh, Ivan Yehudi: *See—*
  Labbe, Francis A. M.; Preston, Edward George; Dimgli, Paul; and Hirsh, Ivan Yehudi, 3,850,065.
Hishiki, Yoshio: *See—*
  Hongu, Masayuki; and Hishiki, Yoshio, 3,851,190.
Hitachi, Ltd.: *See—*
  Fukushima, Isao; and Ohashi, Shin-Ichi, 3,851,263.
  Hatsukano, Yoshikazu; Nomiya, Kosei; and Kawagoe, Hiroto, 3,851,185.
  Imaizumi, Ichiro; Kaji, Tadao; Hayasaka, Akio; and Uehara, Keijiro, 3,850,708.
  Ozasa, Susumu; and Kasai, Shozo, 3,851,172.
Hitzel, Volker: *See—*
  Aumuller, Walter; Weyer, Rudi; Hitzel, Volker; and Hubner, Manfred, 3,850,950.
Hoag, Ethan D.; Patrick, Richard M.; Locke, Edward V.; and Hella, Richard A., to Avco Corporation. Aerodynamic laser window. 3,851,273, Cl. 331-94.50d.
Hochstrasser, Karl: *See—*
  Werle, Eugen; Hochstrasser, Karl; and Feuth, Herbert, 3,850,907.
Hoechst Aktiengesellschaft, mesne: *See—*
  Wortmann, Joachim; Dany, Franz-Josef; and Kamdler, Joachim, 3,850,859.
Hoehn, Hans: *See—*
  Denzel, Theodor; and Hoehn, Hans, 3,850,940.
Hoermann, Werner. Wastewater treatment system. 3,850,808, Cl. 210-195.000.
Hoeschele, Guenther Kurt, to Du Pont de Nemours, E. I., and Company. Stabilization of polymers containing ester linkages. 3,850,881, Cl. 260-45.75n.
Hofer, Kurt: *See—*
  Avar, Lajos; and Hofer, Kurt, 3,850,960.
Hoffer, Max: *See—*
  Grunberg, Emanuel; and Hoffer, Max, 3,850,962.
Hofferbert, William L., Jr.: *See—*
  McKinney, Ray, Jr.; and Hofferbert, William L., Jr., 3,850,889.
Hoffman, Robert E.; Cline, John A.; Fuselier, Christopher S.; and D'Atre, John D., to General Electric Company. Control system for obtaining and using the optimum speed torque characteristic for a squirrel cage induction motor which guarantees a non-saturaing magnetizing current. 3,851,234, Cl. 318-227.000.
Hoffmann-La Roche Inc.: *See—*
  Brossi, Arnold; Focella, Antonino; and Teitel, Sidney, 3,850,997.
  Coffen, David Llewellyn; and Katonak, David Allen, 3,850,934.
  Coffen, David Llewellyn; and Fryer, Rodney I., 3,850,948.
  Grunberg, Emanuel; and Hoffer, Max, 3,850,962.
Hoffmann-La Roche Inc., mesne: *See—*
  Bretschneider, Hermann; Fliri, Hans; and Klotzer, Wilhelm, 3,850,912.
  Ernst, Heini, 3,850,197.
Hogan, Edward M.: *See—*
  Flippen, Richard B.; and Hogan, Edward M., 3,851,192.
Hogberg, Bertil; Fex, Hans; Perklev, Torsten; Veige, Sten; and Fredholm, Bo, to Aktiebolaget Leo. Secondary phosphoric acid esters and salts thereof. 3,851,019, Cl. 260-946.000.
Hogenmuller, Roger: *See—*
  Garnier, Roger; Hogenmuller, Roger; and Massebeuf, Jacques, 3,850,865.
Hogensen, Emory N. Motor vehicle seat belt apparatus. 3,850,446, Cl. 280-150.0sb.
Hogg, Derek; Wilson, Anthony; and Asakam, John Fairburn, to Dunlop Limited. Tire repair device. 3,850,423, Cl. 269-238.000.
Hohmann, Hans-Gunter; and Rochlitzer, Frank, to Hewlett-Packard GmbH. Improved control circuitry having reduced jitter, especially for oscilloscopes. 3,851,262, Cl. 328-185.000.
Holden, John C.; and Wray, Gary Q., to Halliburton Company. Wellbore circulating valve. 3,850,250, Cl. 166-315.000.
Hollins, Jesse R. Dual control hydraulic brake system for motor vehicles. 3,849,987, Cl. 60-547.000.
Hollins, Jesse R. Vehicle internal combustion engine air intake heating. 3,850,152, Cl. 123-122.00h.
Holmes, Jerry D.: *See—*
  Collins, Dean R.; and Holmes, Jerry D., 3,851,096.
Holst, Heige Alfred: *See—*
  Lund, Svend Aage; Hansen, Hans Nielsen; Holst, Heige Alfred; and Northeved, Allan, 3,850,026.
Holt, M. C.; and Tomczak, Walter F., to Medalist Industries, Inc. Protective gear with hydraulic liner. 3,849,801, Cl. 2-3.00r.
Honeywell Inc.: *See—*
  Bestland, Roy J., 3,850,707.
  Merchant, John, 3,850,511.
Honeywell Information Systems, Inc.: *See—*
  Clingerman, Richard Grant; and McAllister, O. Roger, 3,850,382.
Hongu, Masayuki; and Hishiki, Yoshio, to Sony Corporation. Level shifting circuit. 3,851,190, Cl. 307-310.000.
Honnert, Quentin E.: *See—*
  Runyan, Kenneth R.; Honnert, Quentin E.; and Porter, Ronald H., 3,850,314.
Hood, John W.: *See—*
  Tobey, Hubert E.; Hood, John W.; and Twiford, Richard L., 3,850,088.
Hooker Chemicals & Plastic Corporation: *See—*
  Grazen, Frank S.; Buike, Melvin L.; and Bryzinsky, Frank M., 3,850,874.
Hoover Company, The: *See—*
  Oxel, Berton R., 3,850,331.
Hopkins, Richard Baier: *See—*
  Albinson, Don C.; Stephens, William I.; Cawley, Charles R., Jr.; and Hopkins, Richard Baier, 3,849,950.
Hopkins, Richard Baierp: *See—*
  Albinson, Don C.; Stephens, William I.; Cawley, Charles R., Jr.; and Hopkins, Richard Baierp, 3,849,962.
Horigome, Koichi; Aoki, Kazuyoshi; Yamaguchi, Hisashi; Horiuchi, Hiroshi; Wada, Tsuneo; and Inokuma, Hiroyuki, to Konishiroku Photo Industry Co., Ltd. Antistatic light-sensitive photographic material. 3,850,641, Cl. 96-87.00a.
Horikawa, Masayuki, to Oiles Kogyo Kabushiki Kaisha. Bearings. 3,850,821, Cl. 252-12.200.
Horiuchi, Hiroshi: *See—*
  Horigome, Koichi; Aoki, Kazuyoshi; Yamaguchi, Hisashi; Horiuchi, Hiroshi; Wada, Tsuneo; and Inokuma, Hiroyuki, 3,850,641.
Horlenko, Theodore; and George, James Henry, to Celanese Corporation. Conversion of aromatic aldehydes to phenolic compounds. 3,850,995, Cl. 260-621.00g.
Hornbostel, Lloyd H.; and Knutsen, Clarence R., to Center for Management Services and Applied Research, Inc. Molding machine for producing uniform density pulp products. 3,850,793, Cl. 162-391.000.
Hornschuch, Hanns: *See—*
  Canova, Fred; Krouse, Leroy M.; Hornschuch, Hanns; Hermann, Paul; and Dopkin, Joseph A., 3,850,547.
Horvat, Ivan: *See—*
  Bass, Oscar, Jr.; Jenkins, Robert Bain, Sr.; and Horvat, Ivan, 3,849,837.
Hosaka, Akio: *See—*
  Baba, Kosaku; Hosaka, Akio; and Nakamura, Hiromichi, 3,851,305.
Hostetler, William: *See—*
  Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,850,730.
  Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,850,731.
Hotch & Merryweather Machinery Company, The: *See—*
  Hurd, Stanely E., 3,850,478.
Houle, James F.: *See—*
  Babbitt, John M.; and Houle, James F., 3,850,640.
  Bailey, William J., Jr.; Houle, James F.; and Van Norman, Gilden R., 3,850,642.
Howard, Colin Robert: *See—*
  Maltman, William Ramsey; and Howard, Colin Robert, 3,850,605.
Howell, Willard M. Radio controlled skyline skidder. 3,850,304, Cl. 212-7.000.
Howle, Emory A. Storm door. 3,849,951, Cl. 52-19.000.
Howlett, George H.; and Howlett, James W., to Hewlett Machines Works. Connecting means and method for forming reinforcing rod connection. 3,850,535, Cl. 403-305.000.
Howlett, James W.: *See—*
  Howlett, George H.; and Howlett, James W., 3,850,535.
Howmet Corporation: *See—*
  Hulit, Gerald W.; and Subelka, John C., 3,850,624.
Hsieh, Henry L.: *See—*
  Selman, Charles M.; and Hsieh, Henry L., 3,851,000.
Hubacher, Eric M., to International Business Machines Corporation. Contacting integrated circuit chip terminal through the wafer kerf. 3,849,872, Cl. 29-574.000.
Huber, Albert: *See—*
  Bodmer, Maurice; Hartinger, Edmund; and Huber, Albert, 3,850,657.
Huber, Mortimer J., to Case, J. I., Company. Frame structure for loader. 3,850,473, Cl. 296-28.00r.
Huber, William H., to TRW Inc. Amplitude-to-phase conversion circuit. 3,851,330, Cl. 340-347.0sy.
Hubner, Manfred: *See—*
  Aumuller, Walter; Weyer, Rudi; Hitzel, Volker; and Hubner, Manfred, 3,850,950.
Hubner, Oswald: *See—*
  Bauerle, Gerhard; and Hubner, Oswald, 3,850,499.
Huessy, Eric G., to Peavey Company. Food flavor pellets with meat texture. 3,851,072, Cl. 426-199.000.

Huffman, Lowell E., to Deltech Engineering, Inc. Heat pump dryer. 3,850,592, Cl. 55-33.000.
Hughes Aircraft Company: *See—*
  Andrikian, Charles P., 3,851,279.
  Erwin, Floyd Dennis, 3,851,312.
  Hansen, Jay M., 3,851,206.
  Moyer, Norman E., 3,851,189.
  Ritter, George E., 3,851,193.
  Stover, Joe V.; and Meyers, Byron P., 3,851,290.
Hughes, Gordon; and Smith, Herchel, said Hughes assor. to Smith, Herchel. Steroid synthesis. 3,850,911, Cl. 260-239.500.
Hughes, John R.: *See—*
  Muchmore, Richard W.; Wetmor, Judson Douglas; and Hughes, John R., 3,851,296.
Hughes Tool Company: *See—*
  Galle, Edward M., 3,850,135.
Hukase, Masahiro; Tomono, Makoto; and Inowa, Sigeru, to Konishiroku Photo Industry Cc., Ltd. Electrophotographic photosensitive plate. 3,850,632, Cl. 96-1.800.
Hulit, Gerald W.; and Subelka, John C., to Howmet Corporation. Method of making superalloys. 3,850,624, Cl. 75-171.000.
Hultin, Stefan K., to Nicrometal Marine Hardware Co., Inc. Snap shackle. 3,850,468, Cl. 294-83.00r.
Humphrey, Jerry J.: *See—*
  Downs, Robert F.; and Humphrey, Jerry J., 3,851,109.
Hunter, Edward E. Weir type fabric saturator. 3,850,140, Cl. 118-405.000.
Hunziker, Paul J.: *See—*
  Berry, Walter V.; and Hunziker, Paul J., 3,850,110.
Hurd, Stanely E., to Hotch & Merryweather Machinery Company, The. Accumulator apparatus and method. 3,850,478, Cl. 302-2.00r.
Hurtes, Walter. Device for manufacturing articles having a non-woven pile. 3,850,713, Cl. 156-72.000.
Husgvarna Vapenfabriks Aktiebolag: *See—*
  Dygve, Hans G. E.; and Risman, Per Olov G., 3,851,133.
Hutchinson, Stanley O., to Chevron Research Company. High pressure jet well cleaning. 3,850,241, Cl. 166-722.000.
Hutchinson, William M. Purification of partially fluorinated cyclobutanes. 3,850,759, Cl. 203-58.000.
Hutner, Mark A., to Xerox Corporation. Feedback fuser for 730S. 3,851,144, Cl. 219-216.000.
Hutter, Wilhelm, to Becker & van Hullen, Niederrheinische Maschinenfabrik. Asymetrically loadable press for producing panels. 3,850,564, Cl. 425-338.000.
Hyde, William J.: *See—*
  Franke, Edward L., Jr.; Hyde, William J.; and Schneider, Randy G., 3,850,139.
Hydr-O-Matic Pump Company: *See—*
  Kaessen, Donald A., 3,850,550.
Hydraulic Equipment Systems & Fabricating, Inc.: *See—*
  Acosta, Evelio, 3,850,336.
Hynes, Frank R.: *See—*
  Bierworth, David P.; and Hynes, Frank R., 3,849,905.
I. W. S. Nominee Company Limited: *See—*
  Umehara, Ryo; and Bekku, Fujio, 3,849,848.
Ibe, Nobukuni: *See—*
  Takeuchi, Setsuyuki; Ibe, Nobukuni; Iriko, Fumio; and Yuzawa, Yoshihiko, 3,850,562.
Ichihara, Wachio: *See—*
  Tani, Kaneyasu; Imoto, Shozo; Kawazoe, Shiro; Ichihara, Wachio; Nagai, Tatsuhiko; and Yamada, Bunkichi, 3,850,667.
ICI America Inc.: *See—*
  Langhans, Roy Kenneth, 3,851,066.
ICI United States, Inc.: *See—*
  Shay, Barry Michael, 3,850,819.
I.C.O.F.I.: *See—*
  Bigotte, Claude; and Viazzi, Pierre, 3,850,457.
Ide, Fumio; Kotake, Yahide; and Korenaga, Satoshi, to Mitsubishi Rayon Co., Ltd. Anionic high molecular flocculants. 3,850,898, Cl. 260-86.10r.
Iffland, Roger L., to Torrington Company, The. Method for producing a bearing cage. 3,849,853, Cl. 29-148.40c.
Iglesias, Jose J. Endoscope with continuous irrigation. 3,850,162, Cl. 128-6.000.
Iglesias, Jose J. Resectoscope with continuous irrigation. 3,850,175, Cl. 128-303.150.
Ikeda, Kiichi; Taguchi, Kintaro; Nozaki, Taketoshi; and Matsumoto, Shuntetsu, to Agency of Industrial Science & Technology. Walking vehicle. 3,850,259, Cl. 180-8.00e.
Ilford Limited: *See—*
  Cooper, Ronald Charles, 3,850,400.
Illinois Tool Works Inc.: *See—*
  Bernin, Victor M., 3,851,319.
  Fabish, Edward Francis; Tookey, James Robert; and Thompson, Richard Telman, 3,849,892.
Imai, Kiyoshi: *See—*
  Shimamura, Isao; Imai, Kiyoshi; Nakajima, Jyunya; and Iwano, Haruhiko, 3,850,636.
Imai, Takeo: *See—*
  Juna, Kiyoshi; Imai, Takeo; Nakayama, Hiroyuki; Nobuyuki, Kita; Kiyohiko, Asada; and Tetsud, Aihara, 3,850,770.
Imaizami, Hisao: *See—*
  Araki, Tadashi; Asano, Kiro; Yamada, Jun; Imaizami, Hisao; and Awao, Takao, 3,851,048.
Imaizumi, Ichiro; Kaji, Tadao; Hayasaka, Akio; and Uehara, Keijiro, to Hitachi, Ltd. Method of fabricating semiconductor device using at least two sorts of insulating films different from each other. 3,850,708, Cl. 148-187.000.
Imanishi, Hitoshi: *See—*
  Yoshino, Akira; and Imanishi, Hitoshi, 3,851,284.
Imoto, Shozo: *See—*
  Tani, Kaneyasu; Imoto, Shozo; Kawazoe, Shiro; Ichihara, Wachio; Nagai, Tatsuhiko; and Yamada, Bunkichi, 3,850,667.
Imperial Chemical Industries, Limited: *See—*
  Bowden, Roy Dennis; Slater, John Walter; and White, Brian Graham, 3,850,943.
  Clark, Duncan; Walsh, William Derek; and Jones, Walter Edward, 3,850,980.
  Collins, Bruce Moffatt, 3,850,850.
  Duncan, Frederick James; and Chappell, Ronald George, 3,850,651.
  Kenyon, Derek, 3,849,976.
  Lenel, Paul Otto; and Featherstone, William, 3,850,760.
Imperial-Eastman Corporation: *See—*
  Strybel, Richard V., 3,850,452.
  Styrbel, Richard V., 3,849,881.
Impregnated Diamond Products Limited: *See—*
  Chalkley, Jack Rigler; and Thomas, David Meirion, 3,850,590.
Inaba, Shigeho: *See—*
  Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; Takayama, Masaharu; Katayama, Shigenari; Ono, Keiichi; Yanagihara, Izumi; Tanaka, Yoshihiro; Katsube, Jinki; Inaba, Shigeho; and Yamamoto, Hisao, 3,850,935.
Inagaki, Mitami: *See—*
  Fujioka, Yasuhide; Ryujin, Takeshi; Yoshida, Shuji, and Inagaki, Mitami, 3,850,461.
Inamura, Keizo; Tatsuno, Tadayoshi; and Okoshi, Toshio, to Kansai Paint Company, Limited. Method for coating the inner surface of metal pipes. 3,850,660, Cl. 117-17.000.
Independent Die and Supply Company: *See—*
  Dwyer, Ralph J., 3,850,064.
Indevco Corporation: *See—*
  Ackermann, Walter Thomas, 3,850,531.
Industrial Design Inc.: *See—*
  Angermeier, William R.; and Wofford, Benjamin Gary, 3,849,967.
Industrial Engineering & Equipment Company: *See—*
  Hachmeister, Ernest G., 3,851,147.
Industrial Materials Limited, mesne: *See—*
  Mallozzi, Philip J.; and Fairand, Barry P., 3,850,698.
Industrie Pirelli, S.p.A.: *See—*
  Bertelli, Italo; and Tangorra, Giorgio, 3,850,218.
  Madonini, Mino, 3,851,033.
Information Design, Inc.: *See—*
  Priest, Lyle Gilbert, 3,850,384.
Ing, Samuel W., Jr.: *See—*
  Stephany, Joseph F.; and Ing, Samuel W., Jr., 3,850,517.
Ingalls, James A. Plow mold board. 3,850,252, Cl. 172-760.000.
Ingersoll-Rand Company: *See—*
  Canova, Fred; Krouse, Leroy M.; Hornschuch, Hanns; Hermann, Paul; and Dopkin, Joseph A., 3,850,547.
Inohara, Masanobu, to Onitsuka Co., Ltd. Sport shoe. 3,849,915, Cl. 36-67.00b.
Inokuma, Hiroyuki: *See—*
  Horigome, Koichi; Aoki, Kazuyoshi; Yamaguchi, Hisashi; Horiuchi, Hiroshi; Wada, Tsuneo; and Inokuma, Hiroyuki, 3,850,641.
Inowa, Sigeru: *See—*
  Hukase, Masahiro; Tomono, Makoto; and Inowa, Sigeru, 3,850,632.
Insolio, Thomas A., to Fletcher-Terry Company, The. Glass cutter. 3,850,062, Cl. 83-12.000.
Institutal de Proiectari Pentru Industria Chimica Anorganica si a Ingrasamintelor (Ipran): *See—*
  Teodoroiu, Paul B., 3,850,810.
Institute Po Metaloznanie i Techno Logia Na Metalite: *See—*
  Balevski, Anguel Tonchev; Nikolov, Ivan Dimov; Dimova, Vasilka Petrova; and Zadgorski, Stoyan Nedkov, 3,850,625.
Inter-Elec: *See—*
  Marie, Gabriel Yves, 3,850,391.
International Business Machines Corporation: *See—*
  Aronstein, Jesse; Leoff, Arkady; Murphy, John J.; and Ruder, Winfield S., 3,850,105.
  Baker, Theodore H.; Stevens, Richard C.; and Tzou, Albert J., 3,851,245.
  Beaulieu, Philip Edward; and Zabursky, Joseph John, 3,851,221.
  Cannon, Max R., 3,851,116.
  Elliott, Joseph E., 3,851,335.
  Greeson, James C., Jr., 3,851,211.
  Hansen, Howard Eugene; Straub, Robert Joseph; and Tuczynski, Edward Martin, 3,849,906.
  Hubacher, Eric M., 3,849,872.
  Karnaugh, Maurice; and McAuliffe, Gerald Kevin, 3,851,252.
  Kenyon, Richard Arthur, 3,851,317.
  Kolpek, Robert A., 3,850,279.
  Lee, Kenneth; and Suits, James Carr, 3,850,690.
  Nettles, Michael L., 3,850,358.
  Patel, Arvind M., 3,851,306.
  Street, George Bryan, 3,850,706.
  Tynan, Eugene Edward; and Von Gutfeld, Robert J., 3,851,174.

International Harvester Company: *See—*

Metcalfe, Arthur G.; and Rose, Fred K., 3,851,138.

International Liquid Xtal Company: *See—*

Taylor, Ted R.; and Fergason, James L., 3,851,318.

International Minerals & Chemical Corporation: *See—*

Baumann, Arthur N., 3,851,086.

International Nickel Company, Inc., The: *See—*

Bishel, Robert A., 3,851,142.

Skedgell, Anthony Northcott; Smith, Victor Albert; and Evans, Thomas Ernest, 3,850,767.

International Nickel Company, The: *See—*

Bishel, Robert A., 3,851,143.

International Property Investments Limited, mesne: *See—*

Cull, Alan Sidney; and Abdallah, Nessib, 3,851,024.

International Standard Electric Corporation: *See—*

Cooke, Roger Ernest; and Conlon, Rodney Frederick Barker, 3,851,271.

Pingault, Benoit A. M., 3,851,098.

Regnier, Albert; Kevorkian, Devork; and Lager, Jean Paul, 3,851,105.

International Telephone and Telegraph Corporation: *See—*

Drake, Cyril F.; and Scanlan, Ian F., 3,850,603.

Finnstrand, Harald, 3,850,372.

Lawford, Victor Nicholas; Granada, Richard Paul; and Elderton, Peter, 3,850,037.

Levine, Arnold M., 3,851,167.

Tobey, Hubert E.; Hood, John W.; and Twiford, Richard L., 3,850,088.

Intrator, Charles. Umbrella light. 3,851,164, Cl. 240-1.300.

Iowa Mold Tooling Co., Inc.: *See—*

Zrostlik, Francis L.; and Collins, John J., 3,850,221.

Iriko, Fumio: *See—*

Takeuchi, Setsuyuki; Ibe, Nobukuni; Iriko, Fumio; and Yuzawa, Yoshihiko, 3,850,562.

Irikura, Tsutomu; Hayashi, Masayuki; Koshirae, Kikuo; Kudo, Yoshitaka; Hatayama, Junji; and Hetsugi, Etsuko, to Kyorin Seiyaku Kabushiki Kaisha. 2-Alkyl-3-acyl-pyrazolo [1,5-A]pyridines. 3,850,941, Cl. 260-295.00f.

Irvine, Alvin R., to United States of America, Atomic Energy Commission. Shipping cask neutron and heat shield. 3,851,179, Cl. 250-506.000.

ISE Electronics Corporation: *See—*

Tanji, Mikiharu, 3,849,979.

Ishibashi, Akichika: *See—*

Okada, Katsuto; Yamanami, Shoichi; Ishibashi, Akichika; and Watanabe, Hirotaka, 3,850,406.

Ishihara, Masanori: *See—*

Asaka, Kunitami; and Ishihara, Masanori, 3,850,652.

Ismail, Roshdy: *See—*

Zoche, Gunter; Richtzenhain, Hermann; and Ismail, Roshdy, 3,850,994.

Isono, Tadao, to Nihon Beru-Haueru Kabushiki Kaisha; (Bell & Howell Japan, Ltd.). Inverter circuit. 3,851,278, Cl. 331-113.00a.

Itai, Reiichi; and Kanai, Hideo, to Japan Carlit Co., Ltd., The. Anode coated with magnetite and the manufacture thereof. 3,850,701, Cl. 148-6.350.

Itaya, Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Kameda, Nobuyuki; Fujimoto, Keimei; and Okuno, Yositosi, to Sumitomo Chemical Company, Ltd. 3-Substituted-benzyl cyclopropanecarboxylates. 3,850,977, Cl. 260-468.00h.

Itek Corporation: *See—*

Bisbee, John, 3,850,504.

Ito, Kenzo: *See—*

Abe, Yoshiharu; and Ito, Kenzo, 3,850,356.

ITW Limited: *See—*

Day, Robert H.; and Blyth, James, 3,850,361.

ITW-Ateca GmbH. Devices for fastening the casting of a semiconductor component to a mounting plate. 3,849,838, Cl. 24-73.00c.

Iwama, Akira; Toyoguchi, Mitsuru; Takehara, Kikuo; and Hamuro, Yasumasa, to Dai-Ichi Kogyo Seiyaku Co., Ltd. and Mitsubishi Oil Company. Gelled hydrocarbon composition. 3,850,586, Cl. 44-7.00a.

Iwano, Haruhiko: *See—*

Shimamura, Isao; Imai, Kiyoshi; Nakajima, Jyunya; and Iwano, Haruhiko, 3,850,636.

Iwata, Takashi: *See—*

Nakanishi, Kazuo; Kagi, Hideo; Iwata, Takashi; Haruta, Hisae; Yoshida, Kazuhiko; and Matui, Akira, 3,850,611.

Iyimen, Siddik; Lehmann, Gunter; Neunhoeffer, Otto; and Vitzthum, Otto, to HAG Aktiengesellschaft. Method for the production of serotonin from coffee wax. 3,850,958, Cl. 260-326.150.

Izuo, Nobuhiko: *See—*

Chibata, Ichiro; Yamada, Shigeki; Wada, Mitsuru; Izuo, Nobuhiko; and Yamaguchi, Totaro, 3,850,753.

Jackson, John MacKenzie: *See—*

Greig, Ian Robert Kennedy; and Jackson, John MacKenzie, 3,850,788.

Jackson, Obie R., to B & J Machinery Company, Inc. Narrow gauge tufting machine. 3,850,120, Cl. 112-79.00r.

Jackson, Paul L., to Ford Motor Company. Slag depth indicator. 3,850,416, Cl. 266-1.00r.

Jackson, William M. Steering unit for marine craft. 3,850,132, Cl. 115-12.00r.

Jacobaeus, Anton Christian, to Telefonaktiebolaget L M Ericsson. Method for increasing in a signal with a given band width the amount of information transferred per time unit. 3,851,106, Cl. 179-15.0ap.

Jacobs, Lester G. Carton. 3,850,363, Cl. 229-51.00r.

Jaffe, Edward E., to Du Pont de Nemours, E. I., and Company. Alpha-2,9-difluoroquinacridone. 3,850,654, Cl. 106-288.00q.

Jaffe, Morris D., Jr. Rotating illuminated display device having ultraviolet responsive members. 3,851,331, Cl. 340-366.00b.

Jahn, Helmut, to Kalle Aktiengesellschaft. Electrophotographic developing process and apparatus. 3,850,662, Cl. 117-17.500.

Jahnke, Horst: *See—*

Keller, Helmut; Bregler, Jurgen; Rhein, Helmut; and Jahnke, Horst, 3,850,695.

Jakubowski, James J.: *See—*

Regensburger, Paul J.; and Jakubowski, James J., 3,850,630.

James, David, Corporation: *See—*

Kantor, Frank J., 3,850,398.

James, William E. Materials handling devices. 3,849,974, Cl. 56-226.000.

Jamison, Will B., to Consolidated Coal Company. Method and apparatus for drilling and bolting a mine roof. 3,849,995, Cl. 61-63.000.

Japan Carlit Co., Ltd., The: *See—*

Itai, Reiichi; and Kanai, Hideo, 3,850,701.

Japan Exlan Company Limited: *See—*

Takeya, Kenji; Shimizu, Jiro; and Minami, Shinsaku, 3,850,179.

Japan Synthetic Rubber Company: *See—*

Kawakami, Masato; Ono, Ryotaro; Furuichi, Minoru; and Kato, Shigeru, 3,850,870.

Jarc, Robert A.; and Ritzinger, Frederick, to General Electric Company. Method of manufacture of an incandescent lamp. 3,850,489, Cl. 316-20.000.

Jaski, Ray. Filler device. 3,850,112, Cl. 105-369.00b.

Jeannet, Jean-Pierre; Leuba, Jean-Pierre; and Vadi, Gildo, to Tesa S.A. Micrometer with digital reading. 3,849,890, Cl. 33-166.000.

Jebens, Aksel; and Westergaard, Richard Hoegh, to Sentralinstitutt for industriell forskning. Method for cooling heat bloated inorganic articles. 3,850,715, Cl. 156-78.000.

Jeffers, Frederick J., to Bell & Howell Co. Method for making a semiconductor strain transducer. 3,849,874, Cl. 29-590.000.

Jeffries, Robert; and Grover, Martin M., to National Starch and Chemical Corporation, mesne. Adhesive products. 3,850,786, Cl. 161-164.000.

Jenkins Metal Shops, Inc.: *See—*

Bass, Oscar, Jr.; Jenkins, Robert Bain, Sr.; and Horvat, Ivan, 3,849,837.

Jenkins, Robert Bain, Sr.: *See—*

Bass, Oscar, Jr.; Jenkins, Robert Bain, Sr.; and Horvat, Ivan, 3,849,837.

Jenkinson, Ronald James, to Exxon Research and Engineering Company. Regulating fluidized beds. 3,849,899, Cl. 34-10.000.

Jerila, Torsti T. T., to Acme General Corporation. Spring hinge for bifold doors. 3,849,835, Cl. 16-182.000.

Jet Spray Cooler, Inc.: *See—*

Gardner, John A., Jr.; and Brown, Merle S., 3,851,127.

Jetru, Inc.: *See—*

Ratliff, Harvey L., Jr., 3,850,505.

Jeunehomme, Michel L.; and Johnson, Malcolm C., to Bendix Corporation, The. Plural gas non-dispersive infrared analyzer. 3,851,176, Cl. 250-343.000.

Joelson, Karl Evert Anders, to AB Vabyma, mesne. Device for diving a fluid flow into predetermined proportions. 3,850,081, Cl. 91-413.000.

John-Manville Corporation: *See—*

Mohr, John Gilbert, 3,850,869.

Johns-Manville Corporation: *See—*

Gregory, Milton Wesley; Olszyk, Bernard John; and Bowles, Oscar Pierce, 3,850,670.

Johnson & Johnson: *See—*

Harmon, Carlyle; and Sibbach, William, 3,851,034.

Johnson, Benjamin A.; Royal, Stephen L.; and Ackerman, Robert A., to Eastman Kodak Company. Process for making coupler dispersions. 3,850,643, Cl. 96-100.000.

Johnson, Edward A.; Miedaner, Wendelin H.; and Larson, Warren E., to Swift & Company. Food processing system. 3,850,089, Cl. 99-483.000.

Johnson Enterprise Co., Ltd.: *See—*

Chin, Shi-Chi, 3,850,263.

Johnson, Gail Vernon. Weather protective skirt. 3,850,471, Cl. 296-23.0mc.

Johnson, John R., to Owens-Illinois, Inc. Article transport apparatus. 3,850,285, Cl. 198-179.000.

Johnson, Leonard Gregory, to Safe-T-All Corporation. Soil clean up device. 3,850,467, Cl. 294-1.00r.

Johnson, Malcolm C.: *See—*

Jeunehomme, Michel L.; and Johnson, Malcolm C., 3,851,176.

Johnson, Matthey & Co. Limited: *See—*

Heffer, John Philip, 3,850,668.

Johnson, Paul H.: *See—*

Evans, James Preston, 3,850,057.

Johnson, Robert C.; and Merrifield, Richard E., to Du Pont de Nemours, E. I., and Company. Modulation by a magnetic field of electromagnetic radiation produced by the decay of triplet states. 3,850,506, Cl. 350-160.00p.

Johnson, Robert Carol, to Modulus Corporation. Strain indicator and method. 3,850,133, Cl. 116-114.00r.

Johnson, Roy A.: *See—*

Calvert, Rodney K.; and Johnson, Roy A., 3,850,282.

Johnson Service Company: *See—*

Thoma, Paul E.; and Atkinson, Louis D., 3,850,038.

Johnston, Donald A.; and Voss, Walter A., to Canadian Patents and Development Limited. Multimode microwave cavities for microwave heating systems. 3,851,131, Cl. 219-10.550.

Johnston, William C.: *See—*

Beckwith, Sterling; and Johnston, William C., 3,850,003.

Jolly, James D. Carrying and storage case for liquid applicator. 3,850,298, Cl. 206-349.000.

Jones & Laughlin Steel Corporation: *See—*

Webster, Richard Roy; and Mueller, Norman Paul, 3,850,020.

Jones, Howard: *See—*

Shen, Tsung-Ying; Jones, Howard; and Witzel, Bruce E., 3,851,063.

Jones, Howard W.: *See—*

Whitmore, Rboert A.; and Jones, Howard W., 3,851,082.

Jones, James H. Mobile liquid-aerating pump. 3,850,131, Cl. 115-11.000.

Jones, Loyd W., to Amoco Production Company. System for removing floating oil from water. 3,850,807, Cl. 210-170.000.

Jones, Norman R.: *See—*

Davis, Oliver Thurston; and Jones, Norman R., 3,850,409.

Jones, Robert H.: *See—*

Schonert, Heinz E.; and Jones, Robert H., 3,851,148.

Jones, Walter Edward: *See—*

Clark, Duncan; Walsh, William Derek; and Jones, Walter Edward, 3,850,980.

Jost, Ernest M., to Texas Instruments Incorporated. Method of making magnesium anode battery. 3,849,868, Cl. 29-480.000.

Judd, H. Edward: *See—*

Stofey, William D.; and Judd, H. Edward, 3,850,016.

Julia, Marc: *See—*

Chabardes, Pierre; Julia, Marc; and Menet, Albert, 3,850,991.

Juna, Kiyoshi; Imai, Takeo; Nakayama, Hiroyuki; Nobuyuki, Kita; Kiyohiko, Asada; and Tetsud, Aihara, to Kansai Paint Co., Ltd. Radiation curable compositions from acrylurethane resins. 3,850,770, Cl. 204-159.190.

Jurgensmann, Helmut: *See—*

Reinecke, Udo; Jurgensmann, Helmut; Riedhammer, Josef; Stangl, Helmut; and Beutler, Gerhard, 3,850,272.

Jvirblis, Alex E.; and Roth, Walter, to Diagnostic Instruments Inc. Image development amplification. 3,850,142, Cl. 118-637.000.

Kaake, Karl H.: *See—*

Ellis, Myron P.; and Kaake, Karl H., 3,849,939.

Kabushiki Kaisha Daiken Seisakusho: *See—*

Adachi, Kazuma, 3,850,277.

Kabushiki Kaisha Daini Seikosha: *See—*

Hirose, Yoshiyuki; and Kawamura, Yosukazu, 3,849,977.

Kabushiki Kaisha Morita Seisakucho: *See—*

Watanabe, Yoshiaki, 3,851,197.

Kabushiki Kaisha Ricoh: *See—*

Suzuki, Masanari, 3,851,239.

Kabushiki Kaisha Suwa Seikosha: *See—*

Tarusawa, Yasutaka; and Futami, Yoshinori, 3,849,981.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*

Tsuchiya, Kazuo; and Usami, Susumu, 3,850,034.

Kaelin, Joseph Richard. Surface ventilation rotor. 3,850,543, Cl. 415-121.00b.

Kaessen, Donald A., to Hydr-O-Matic Pump Company. Centrifugal pump and motor. 3,850,550, Cl. 417-372.000.

Kagi, Hideo: *See—*

Nakanishi, Kazuo; Kagi, Hideo; Iwata, Takashi; Haruta, Hisae; Yoshida, Kazuhiko; and Matui, Akira, 3,850,611.

Kainan Steel Tube Co., Ltd.: *See—*

Fujioka, Yasuhide; Ryujin, Takeshi; Yoshida, Shuji; and Inagaki, Mitami, 3,850,461.

Kaiser, Henry R. Dripless roller painter. 3,850,532, Cl. 401-219.000.

Kaji, Tadao: *See—*

Imaizumi, Ichiro; Kaji, Tadao; Hayasaka, Akio; and Uehara, Keijiro, 3,850,708.

Kaken Chemical Co., Ltd.: *See—*

Tanaka, Michio; Ohtsuka, Katsuyuki; Obata,. Masayoshi; Amemiya, Koji; Saga, Katsumasa; Kano, Sadaaki; and Kumada, Teru, 3,850,944.

Kalachev, Alexandr Ivanovich: *See—*

Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Chumaevskaya, Alla Nikolaevna; Mgeladze, Boris Mikhailovich; Bekasova, Nina Ivanovna; Komarova, Ljudmila Grigorievna; Vinogradova, Svetlana Vasilievna; Valetsky, Petr Maximilianovich; Kalachev, Alxandr Ivanovich; Lyamenkova, Evgenia Kuzminichna; Glivka, Ljudmila Alexandrovna; Burtseva, Tamara Andreevna; and Babchinitser, Tatyana Mikhailovna, 3,850,820.

Kalina, Theodore: *See—*

Aldridge, Clyde L.; and Kalina, Theodore, 3,850,840.

Aldridge, Clyde L.; and Kalina, Theodore, 3,850,841.

Kalita, Wesley, to Allegheny Ludlum Industries, Inc. Stainless steel of improved ductility. 3,850,703, Cl. 148-12.0ea.

Kalle Aktiengesellschaft: *See—*

Dennhardt, Werner; and Schroter, Herbert, 3,851,236.

Dietrich, Werner, 3,850,365.

Jahn, Helmut, 3,850,662.

Moraw, Roland; Schadlich, Gunther; and Schadlich, Renate, 3,850,633.

Saupe, Wolfram, 3,850,521.

Kaltz, Kenneth L., to Tranter Manufacturing, Inc. Method of treating welded heat transfer members to eliminate weld scale. 3,849,851, Cl. 29-494.000.

Kamblet, Mortimer J.: *See—*

Gilligan, William H.; and Kamblet, Mortimer J., 3,850,978.

Kamdler, Joachim: *See—*

Wortmann, Joachim; Dany, Franz-Josef; and Kamdler, Joachim, 3,850,859.

Kameda, Nobuyuki: *See—*

Itaya, Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Kameda, Nobuyuki; Fujimoto, Keimei; and Okuno, Yositosi, 3,850,977.

Kamke, Edward H., Jr.: *See—*

Mintz, Nathan H.; and Kamke, Edward H., Jr., 3,850,559.

Kampe, Wolfgang: *See—*

Stork, Harold; Schmidt, Felix Helmut; Thiel, Max; Fauland, Erich; and Kampe, Wolfgang, 3,851,056.

Kamsky, Dmitry Stepanovich: *See—*

Vavilov, Felix Fedorovich; Leonov, Jury Leonidovich; Sedov, Alexei Maximovich; and Kamsky, Dmitry Stepanovich, 3,850,411.

Kanai, Hideo: *See—*

Itai, Reiichi; and Kanai, Hideo, 3,850,701.

Kanao, Seizo: *See—*

Toyoshima, Shigeshi; Kanao, Seizo; Toyoda, Takeshi; and Suyama, Tadashi, 3,850,968.

Kanebo Limited: *See—*

Yamada, Fukuo; Fukuda, Yoshihiro; and Uraya, Toru, 3,849,840.

Kang, Pierson S., to ChemPar Corporation. Die and method for cutting labels and the like. 3,850,059, Cl. 83-7.000.

Kano, Sadaaki: *See—*

Tanaka, Michio; Ohtsuka, Katsuyuki; Obata, Masayoshi; Amemiya, Koji; Saga, Katsumasa; Kano, Sadaaki; and Kumada, Teru, 3,850,944.

Kansai Paint Co., Ltd.: *See—*

Juna, Kiyoshi; Imai, Takeo; Nakayama, Hiroyuki; Nobuyuki, Kita; Kiyohiko, Asada; and Tetsud, Aihara, 3,850,770.

Kansai Paint Company, Limited: *See—*

Inamura, Keizo; Tatsuno, Tadayoshi; and Okoshi, Toshio, 3,850,660.

Kanter, Hans Joachim, to Max-Planck-Gesellschaft zur Forderund der. Counter for condensation nuclei in air. 3,850,524, Cl. 356-37.000.

Kantor, Frank J., to James, David, Corporation. Adjustable tray. 3,850,398, Cl. 248-225.000.

Kao Soap Co., Ltd.: *See—*

Katsumi, Mamoru; and Sato, Toshio, 3,850,818.

Kaplan, Leonard Abraham, to RCA Corporation. Oscillator using controllable gain differential amplifier with three feedback circuits. 3,851,276, Cl. 331-108.00d.

Karnaugh, Maurice; and McAuliffe, Gerald Kevin, to International Business Machines Corporation. Timing recovery in a digitally implemented data receiver. 3,851,252, Cl. 325-321.000.

Karobath, Ernst; Rippel, Leopold; Schmidinger, Hans; and Pulitzer, Wolfgang. Apparatus for joining a tubular thermoplastic container jacket, by means of ultrasonics to a thermoplastic end cap to form a liquid-tight seal. 3,850,776, Cl. 156-475.000.

Karustis, George A., Jr.; and Leahy, Elizabeth P., to Oxy Metal Finishing Corporation. Bright solder plating. 3,850,765, Cl. 204-43.00s.

Kasai, Shozo: *See—*

Ozasa, Susumu; and Kasai, Shozo, 3,851,172.

Katayama, Shigenari: *See—*

Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; Takayama, Masaharu; Katayama, Shigenari; Ono, Keiichi; Yanagihara, Izumi; Tanaka, Yoshihiro; Katsube, Jinki; Inaba, Shigeho; and Yamamoto, Hisao, 3,850,935.

Katchka, Jay R.; and Braucksiek, Henry C., to Robertshaw Controls Company. Gaseous fuel burner system. 3,850,370, Cl. 236-15.00a.

Kathawala, Faizulla G., to Sandoz-Wander, Inc. 5-(2-Carboxy and 2-carboalkoxy-phenylammo) -1,2,4-triazolo-quinazolines. 3,850,932, Cl. 260-256.40f.

Kato, Kazuhiro; Murata, Noboru; and Kobayashi, Goro, to Oki Electric Industry Co., Ltd. Apparatus for measuring the diameter of fine wires. 3,851,180, Cl. 250-550.000.

Kato, Kiyohisa: *See—*

Furuse, Takao; Matsuoka, Tohru; and Kato, Kiyohisa, 3,851,275.

Kato, Shigeru: *See—*

Kawakami, Masato; Ono, Ryotaro; Furuichi, Minoru; and Kato, Shigeru, 3,850,870.

Kato, Takashi: *See—*

Toda, Tadahide; Nagano, Tetsuro; and Kato, Takashi, 3,849,984.

Katonak, David Allen: *See—*

Coffen, David Llewellyn; and Katonak, David Allen, 3,850,934.

Katsube, Jinki: *See—*

Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; Takayama, Masaharu; Katayama, Shigenari; Ono, Keiichi; Yanagihara, Izumi; Tanaka, Yoshihiro; Katsube, Jinki; Inaba, Shigeho; and Yamamoto, Hisao, 3,850,935.

Katsumi, Mamoru; and Sato, Toshio, to Kao Soap Co., Ltd. Antistatic softening composition containing a quaternary ammonium salt and a ethenoxy quaternary ammonium salt. 3,850,818, Cl. 252-8.800.

Katsuyama, Harumi: *See—*

Ono, Hisatake; Watarai, Syu; and Katsuyama, Harumi, 3,850,949.

Katz, Alex J.; Caldwell, Robert J.; and Cycowicz, Izchak, to Mohasco Industries, Inc. Lounger recliner with backrest up and down and hardware therefor. 3,850,475, Cl. 297-85.000.

Kaufhold, Horst Thomas, to AMSTED Industries Incorporated. Lock guide structure for a railway vehicle coupler. 3,850,311, Cl. 213-146.000.

Kaufmann, Gabriel; and Littauer, Uriel Z., to Yeda Research and Development Co., Ltd. Preparation of oligoribonucleotides. 3,850,749, Cl. 195-28.00n.

Kaunitz, Clyde F., 1/2 interest to Neander, Herbert B. Method for welding pipes. 3,849,871, Cl. 29-483.000.

Kavick, Edward M.: *See—*
Whitledge, Jon K.; and Kavick, Edward M., 3,849,858.

Kawada, Takehiko, to Denki Onkyo Company, Ltd. Anti resonant electrodes for a piezoelectric transformer. 3,851,194, Cl. 310-9.700.

Kawagoe, Hiroto: *See—*
Hatsukano, Yoshikazu; Nomiya, Kosei; and Kawagoe, Hiroto, 3,851,185.

Kawakami, Masato; Ono, Ryotaro; Furuichi, Minoru; and Kato, Shigeru, to Japan Synthetic Rubber Company. Polymeric impression molding materials having food dimensional stability. 3,850,870, Cl. 260-29.7pt.

Kawamura, Yosukazu: *See—*
Hirose, Yoshiyuki; and Kawamura, Yosukazu, 3,849,977.

Kawasaki, Harumi; Sonezaki, Hizashi; and Yoshimura, Norihiko, to Asahi Kogaku Kogyo Kabushiki Kaisha. Pattern identification system utilizing coherent light. 3,851,308, Cl. 340-146.30p.

Kawazoe, Shiro: *See—*
Tani, Kaneyasu; Imoto, Shozo; Kawazoe, Shiro; Ichihara, Wachio; Nagai, Tatsuhiko; and Yamada, Bunkichi, 3,850,667.

Kaya, Tomoji: *See—*
Hirata, Teruhito; Ohga, Shoichiro; and Kaya, Tomoji, 3,850,296.

Kaye, Wilbur I., to Beckman Instruments, Inc. Simultaneous multiple measurements in laser photometers. 3,850,525, Cl. 356-73.000.

Kearns-Tribune Corporation: *See—*
Coucher, Robert G., 3,851,140.

Keaton, Clyde D. Continuous press. 3,850,213, Cl. 144-281.00b.

Keeler Brass Company: *See—*
Watt, William Doyle, Jr., 3,849,833.

Keese, Larry S.: *See—*
Sietmann, Vernon H.; Smith, Raymond L.; and Keese, Larry S., 3,849,901.

Keller, Donald A., to Pro-Light Inc. Flashlight switch. 3,851,126, Cl. 200-60.000.

Keller, Douglas V., Jr.: *See—*
Aldrich, Robert G.; Keller, Douglas V., Jr.; and Sawyer, Richard G., 3,850,477.

Keller, Helmut; Bregler, Jurgen; Rhein, Helmut; and Jahnke, Horst, to Bosch, Robert, G.m.b.H. Voltage regulator system for use with fuel cell battery. 3,850,695, Cl. 136-86.00b.

Kelly, Michael J.; and Simon, Charles J., to GTE Automatic Electric Laboratories Incorporated. Digital dial pulse receiver. 3,851,110, Cl. 179-18.0eb.

Kelly, Thomas James, to Du Pont de Nemours, E. I., and Company. Crosslinked fluoroelastomer and composition containing same. 3,851,018, Cl. 260-900.000.

Kelsey-Hayes Company: *See—*
Atkins, Thomas M., 3,850,480.

Kemnitzer, Ronald. Educational toy. 3,849,912, Cl. 35-28.300.

Kemp, Joe H. Portable hand operated winch. 3,850,410, Cl. 254-186.0hc.

Kennametal Inc.: *See—*
Boeckeler, Benjamin Clark, 3,850,368.

Kennecott Copper Corporation: *See—*
Themelis, Nickolas John; Beck, Russell R.; and Wagner, John V., 3,850,620.

Kenny, Joseph R.; Welch, Rolland Ernst; Reading, William H., III; and Carson, Alfred H., to Optical Recognition Systems. Character recognition apparatus. 3,851,309, Cl. 340-146.30c.

Kenyon, Derek, to Imperial Chemical Industries Limited. High modulus tire cord. 3,849,976, Cl. 57-140.00r.

Kenyon, Richard Arthur, to International Business Machines Corporation. Double density non-volatile memory array. 3,851,317, Cl. 340-173.00r.

Kern, Werner, to RCA Corporation. Method of densifying silicate glasses. 3,850,687, Cl. 117-217.000.

Kernforschungsanlage Julich G.m.b.H.: *See—*
Beaujean, Holger; and Laser, Manfred, 3,850,593.

Keur, Robert L.; and Andeen, Gerry B., to Dick, A. B., Company. Prestressing and damping of piezo ceramic type nozzles. 3,850,717, Cl. 156-86.000.

Kevorkian, Devork: *See—*
Regnier, Albert; Kevorkian, Devork; and Lager, Jean Paul, 3,851,105.

K.G. Textilmaschinenfabrik und Stahlbau: *See—*
Obenaus, Helmut, 3,849,845.

Khayat, Ali; Courtney, George W.; and Dunn, Howard J., to Ralston Purina Company. Treatment of animal flesh. 3,851,078, Cl. 426-268.000.

KHL Research and Development Corporation: *See—*
Szorc, Jan, 3,851,269.

Kidde, Walter, & Company, Inc.: *See—*
Demers, Edward A.; Hectus, George V.; and Fester, Ronald C., 3,851,301.

Kiesheyer, Heinrich: *See—*
Haberling, Edmund; Kiesheyer, Heinrich; and Weigand, Hanshermann, 3,850,621.

Kikkoman Shoyu Co., Ltd.: *See—*
Okuhara, Akira; Saiki, Masatoshi; and Saito, Nobuo, 3,851,076.

Kilwin, Thomas C.: *See—*
Woltjen, Duane W.; Dillard, Donald E.; and Kilwin, Thomas C., 3,850,051.

Kim, Dong H.; and Santilli, Arthur A., to American Home Products Corporation. Substituted 6-alkylamino-2-phenyl-5-pyrimidine carboxylic acids. 3,850,928, Cl. 260-256.40c.

Kim, Dong H.; and Santilli, Arthur A., to American Home Products Corporation. 4-(Substituted anilino) 2-phenyl-5-pyrinidine-carboxylic acid esters. 3,850,931, Cl. 260-256.40n.

Kimura, Toshio: *See—*
Tanaka, Shoichi; Kousaka, Susumu; and Kimura, Toshio, 3,850,901.

Kinderman, John, to Brite Star Manufacturing Company, Inc. Combined shipping and display means. 3,850,291, Cl. 206-44.110.

Kindt, Warren W.: *See—*
Miskel, John J.; Kindt, Warren W.; and Connor, Edward C., 3,851,051.

Kingsbury, Herbert William, to British Uralite Limited. Asbestos fiber-filled bitumen sound deadening laminates. 3,850,789, Cl. 161-205.000.

Kinkel, Christian Frederick, to American Can Company. Triple score pressure relief system for an aerosol container. 3,850,339, Cl. 220-89.00a.

Kinnear Moddie (Concrete) Limited: *See—*
McBean, Rupert John Sidney, 3,850,000.

Kinney, Alfred W., to Phillips Petroleum Company. Worm-type dispenser for rimmed containers. 3,849,970, Cl. 53-282.000.

Kiovsky, Joseph R.; and Meacham, Jeffrey W., to Norton Company. Formed alumina bodies for catalytic uses. 3,850,849, Cl. 252-463.000.

Kirton, Lionel A.: *See—*
Youmans, Albert P.; and Kirton, Lionel A., 3,849,948.

Kitai, Makoto, to Dainippon Screen Seizo Kabushiki-Kaisha. Device for simultaneously displaying the densities of basic colors of a color original. 3,851,170, Cl. 250-226.000.

Kitamura, Shigeyoshi: *See—*
Itaya, Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Kameda, Nobuyuki; Fujimoto, Keimei; and Okuno, Yositosi, 3,850,977.

Kiyohiko, Asada: *See—*
Juna, Kiyoshi; Imai, Takeo; Nakayama, Hiroyuki; Nobuyuki, Kita; Kiyohiko, Asada; and Tetsud, Aihara, 3,850,770.

Kjonaas, Manley, to Atlantic Richfield Company. Method for producing corrosion inhibiting compositions. 3,850,823, Cl. 252-40.700.

Klein, Richard M., to GTE Laboratories Incorporated. Preparation of chalcogenide glass sputtering targets. 3,850,604, Cl. 65-32.000.

Kleinerman, Ben, to Telescan Communications Systems, Inc. Communication system for transmitting video information through media of restricted bandwidth. 3,851,095, Cl. 178-6.800.

Kleis, Derk; Hanneman, Adriaan; Penning, Cornelis; and Schenkel, Gerrit, to U.S. Philips Corporation. Device for converting acoustical vibrations into electrical oscillations and conversely which is provided with a magnet system and a non-magnetic centerin member. 3,851,118, Cl. 179-115.5pc.

Klemm, Lee E. Method and apparatus for fabricating an elongated carton. 3,850,085, Cl. 93-49.00m.

Klingberg, Anderson William: *See—*
Hellsten, Karl Martin Edvin; and Klingberg, Anderson William, 3,850,834.

Klingf, Rolf: *See—*
Meyer, Siegfried; and Klingf, Rolf, 3,850,308.

Klinkhammer, Karl; and Bley, Siegfried. Apparatus for securing and transporting heavy loads. 3,850,107, Cl. 104-134.000.

Klohs, Murle W.; Petracek, Francis J.; and Sugisaka, Nobuyuki. Method of supressing weight gain. 3,851,062, Cl. 424-283.000.

Klotzer, Wilhelm: *See—*
Bretschneider, Hermann; Fliri, Hans; and Klotzer, Wilhelm, 3,850,912.

Knapsack Aktiengesellschaft: *See—*
Gehrmann, Klaus; Ohorodnik, Alexander; Dettmeier, Udo; and Berns, Heinz-Josef, 3,850,999.

Knight, Bruce L.: *See—*
Rhudy, John S.; Gogarty, William B.; Knight, Bruce L.; and Fullinwider, James H., 3,850,244.

Knight, Robert K.: *See—*
Saniford, Burton B.; and Knight, Robert K., 3,851,171.

Knoll International, Inc.: *See—*
Albinson, Don C.; Stephens, William I.; Cawley, Charles R., Jr.; and Hopkins, Richard Baier, 3,849,950.
Albinson, Don C.; Stephens, William I.; Cawley, Charles R., Jr.; and Hopkins, Richard Baierp, 3,849,962.

Knorr-Bremse GmbH: *See—*
Wurth, Hans-Jorg, 3,850,481.

Knutsen, Clarence R.: *See—*
Hornbostel, Lloyd H.; and Knutsen, Clarence R., 3,850,793.

Kobayashi, Goro: *See—*
Kato, Kazuhiro; Murata, Noboru; and Kobayashi, Goro, 3,851,180.

Kobayashi, Takanori: *See—*
Yokoyama, Masahiro; and Kobayashi, Takanori, 3,851,237.

Koberstein, Edgar; and Muller, Klaus-Peter, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of a catalyst for oxidation of ammonia. 3,850,851, Cl. 252-474.000.

Koceich, Mark J.; and Chirash, William, to Colgate-Palmolive Company. Scouring cleanser composition. 3,850,833, Cl. 252-99.000.

Koch, Christian, to Siemens Aktiengesellschaft. Cyclone. 3,850,816, Cl. 210-512.000.

Kochanowski, John E.: *See—*
Takekoshi, Tohru; and Kochanowski, John E., 3,850,885.

Kodama, Koji, to Tokyo Shibaura Electric Co., Ltd. Semiconductor memory device. 3,851,316, Cl. 340-173.0dr.

Koehler, Heinrich P., to Rockwell International Corporation. Power driven hammer or the like. 3,850,255, Cl. 173-110.000.

Koehring GmbH-Bomag Division: *See—*
Vural, Gulertan, 3,849,986.

Kohler, Theodore D. Boat utility light apparatus. 3,851,166, Cl. 240-57.000.

Kohner Bros., Inc.: *See—*
Stubbmann, Albert, 3,849,930.

Kokankikai Kogyo Kabushiki Kaisha: *See—*
Yoshihara, Tetsuya, 3,850,351.

Kolm, Hubert Ernest: *See—*
Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,850,730.
Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,850,731.

Kolorz, Bruno, to Outboard Marine Corporation. Chain saw. 3,849,883, Cl. 30-381.000.

Kolpek, Robert A., to International Business Machines Corporation. Print point positioning control for a character-by-character printer. 3,850,279, Cl. 197-19.000.

Komarova, Ljudmila Grigorievna: *See—*
Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Chumaevskaya, Alla Nikolaevna; Mgeladze, Boris Mikhailovich; Bekasova, Nina Ivanovna; Komarova, Ljudmila Grigorievna; Vinogradova, Svetlana Vasilievna; Valetsky, Petr Maximilianovich; Kalachev, Alxandr Ivanovich; Lyamenkova, Evgenia Kuzminichna; Glivka, Ljudmila Alexandrovna; Burtseva, Tamara Andreevna; and Babchinitser, Tatyana Mikhailovna, 3,850,820.

Kone, Elliott H., to Traffic Standard Incorporated. Light-reflective road marker. 3,850,536, Cl. 404-11.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Horigome, Koichi; Aoki, Kazuyoshi; Yamaguchi, Hisashi; Horiuchi, Hiroshi; Wada, Tsuneo; and Inokuma, Hiroyuki, 3,850,641.
Hukase, Masahiro; Tomono, Makoto; and Inowa, Sigeru, 3,850,632.

Koo, James Teh-Zen, to Bell Telephone Laboratories, Incorporated. Decoder circuit. 3,851,186, Cl. 307-205.000.

Koontz, Carl E.; and Faber, Josef, to Anchor Hocking Corporation. Composite closure cap. 3,850,330, Cl. 215-262.000.

Koppe, Herbert: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Wick, Helmut, 3,850,926.

Koppers Company, Inc.: *See—*
Hill, Robert E., 3,850,683.

Kordesch, Karl V., to Union Carbide Corporation. Corrosion inhibitor for alkaline aluminum cells. 3,850,693, Cl. 136-86.000.

Korenaga, Satoshi: *See—*
Ide, Fumio; Kotake, Yahide; and Korenaga, Satoshi, 3,850,898.

Kornylak Corporation: *See—*
Kornylak, Edward T., 3,851,129.

Kornylak, Edward T., to Kornylak Corporation. Fork truck operated switch. 3,851,129, Cl. 200-86.00r.

Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Chumaevskaya, Alla Nikolaevna; Mgeladze, Boris Mikhailovich; Bekasova, Nina Ivanovna; Komarova, Ljudmila Grigorievna; Vinogradova, Svetlana Vasilievna; Valetsky, Petr Maximilianovich; Kalachev, Alxandr Ivanovich; Lyamenkova, Evgenia Kuzminichna; Glivka, Ljudmila Alexandrovna; Burtseva, Tamara Andreevna; and Babchinitser, Tatyana Mikhailovna. Antifriction structural material produced from composition comprising carborane-containing polymer binders ad solid lubricant. 3,850,820, Cl. 252-12.000.

Kosfeld, Milton M.: *See—*
Gamache, Ernest A.; and Kosfeld, Milton M., 3,850,551.

Koshirae, Kikuo: *See—*
Irikura, Tsutomu; Hayashi, Masayuki; Koshirae, Kikuo; Kudo, Yoshitaka; Hatayama, Junji; and Hetsugi, Etsuko, 3,850,941.

Kosmos, John C., to Sterwin Chemicals, Inc., mesne. Electroplating brightener compositions and process. 3,850,766, Cl. 204-50.00y.

Kotake, Yahide: *See—*
Ide, Fumio; Kotake, Yahide; and Korenaga, Satoshi, 3,850,898.

Kotera, Hiroaki: *See—*
Sasabe, Kaoro; Kotera, Hiroaki; Misaki, Takashi; and Hane, Toshihide, 3,851,094.

Kousaka, Susumu: *See—*
Tanaka, Shoichi; Kousaka, Susumu; and Kimura, Toshio, 3,850,901.

Kozacka, Frederick J., to Chase-Shawmut Company, The. High-voltage fuse having helically wound fusible element and support for helically wound fusible element. 3,851,289, Cl. 337-161.000.

Kozorezov, Konstantin Isaakovich; Semchenko, Vitaly Vasilievich; and Mikhailu, Georgy Ivanovich. Circuit-opening device for interrupting heavy currents by means of an explosive charge. 3,851,219, Cl. 317-40.00a.

Kraft, George Howard, to Kraftco Corporation. Cheese package. 3,851,068, Cl. 426-130.000.

Kraftco Corporation: *See—*
Kraft, George Howard, 3,851,068.
Tumerman, Leon; and Guth, Jules H., 3,850,905.

Krakauer, Sidney: *See—*
Pall, David B.; and Krakauer, Sidney, 3,850,813.

Kralowetz, Bruno; and Blaimschein, Gottfried, to Fried. Krupp Huttenwerke AG, mesne. Swaging machine for a continuous swaging of elongated workpieces. 3,850,022, Cl. 72-426.000.

Kranefeld. Wilhelm, to Orenstein & Koppel Aktiengesellschaft. Safety device for cable winch drum. 3,850,380, Cl. 242-54.00r.

Kraus Instruments, Inc.: *See—*
Kraus, Ronald G., 3,851,329.

Kraus, Ronald G., to Kraus Instruments, Inc. Digital angle converter. 3,851,329, Cl. 340-347.0ad.

Krauss-Maffei Aktiengesellschaft: *See—*
Winkle, Gunther, 3,850,108.

Kravitz, Stanley; Coone, Joseph H., Jr.; and Cole, Edward L., to Texaco Inc. Catalyst sulfiding procedure. 3,850,846, Cl. 252-439.000.

Kreft, Holger, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Component for transmitting forces. 3,850,722, Cl. 156-172.000.

Kreidler, Alfred, to Metall-Invent S.A. Pulse generating circuit. 3,851,255, Cl. 328-39.000.

Kreitzer, Carl E., to NCR Corporation. Card transport and capture mechanism. 3,850,299, Cl. 209-73.000.

Kreutzweiser, Charles E., to Electrohome Limited. Container and lid construction. 3,850,335, Cl. 220-31.000.

Krivec, Bert, to Rexnord Inc. Elevator apparatus. 3,850,106, Cl. 104-127.000.

Krouse, Leroy M.: *See—*
Canova, Fred; Krouse, Leroy M.; Hornschuch, Hanns; Hermann, Paul; and Dopkin, Joseph A., 3,850,547.

Krumreich, Charles Louis; Mulbarger, Albert Eugene, Jr.; and Walden, Stephen William, to Bell Telephone Laboratories, Incorporated. Connector. 3,850,497, Cl. 339-126.00r.

Krupen, Philip, to United States of America, Army. Computer interceptor proximity fuze. 3,850,103, Cl. 102-70.20p.

Kuchek, Henry A., to Dow Chemical Company, The. Method of making a composite magnesium-titanium conductor. 3,849,879, Cl. 29-624.000.

Kudo, Yoshitaka: *See—*
Irikura, Tsutomu; Hayashi, Masayuki; Koshirae, Kikuo; Kudo, Yoshitaka; Hatayama, Junji; and Hetsugi, Etsuko, 3,850,941.

Kueny, Kenneth E., to Sealed Power Corporation. Sintered metal containing titanium carbide particles and method for making same. 3,850,583, Cl. 29-187.700.

Kuhle, Engelbert: *See—*
Widdig, Arno; Kuhle, Engelbert; Grewe, Ferdinand; and Helmut, Kaspers, 3,850,954.

Kuhn, Hans-Robert, to Electroacustic GmbH. Electromagnetic sound pickup for the reproduction of quadrophonic sound recordings and the like. 3,851,117, Cl. 179-100.41k.

Kuhnlein, Hans, to Hch. Bertrams Aktiengesellschaft. Method and apparatus for the production of blocks from sodium hydroxide solution. 3,851,035, Cl. 264-148.000.

Kuiper, Albert Jan: *See—*
Dekeijser, Jacky Charles; and Kuiper, Albert Jan, 3,851,215.

Kulberg, Gerardus Huibrecht: *See—*
Van Dijk, Nicolaas; and Kulberg, Gerardus Huibrecht, 3,851,177.

Kulbida, Ihor: *See—*
Orrvick, Richard A.; and Kulbida, Ihor, 3,851,201.

Kumada, Teru: *See—*
Tanaka, Michio; Ohtsuka, Katsuyuki; Obata, Masayoshi; Amemiya, Koji; Saga, Katsumasa; Kano, Sadaaki; and Kumada, Teru, 3,850,944.

Kummer, Werner: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Wick, Helmut, 3,850,926.

Kuntz, Donald J. Device with unbalanced rotatable members. 3,849,933, Cl. 46-52.000.

Kunugi, Taiseki; Fujimoto, Kaoru; Arai, Hiromichi; and Watanabe, Yoshihisa, to Mitsubishi Petrochemical Company Limited. Process for preparing carbonyl catalyst. 3,850,843, Cl. 252-429.00r.

Kunugi, Takashi: *See—*
Mawatari, Toshihiro; Kunugi, Takashi; Harada, Masanori; and Sasaki, Kenichi, 3,850,151.

Kuo, Chan-Hwa; Taub, David; and Wendler, Norman L., to Merck & Co., Inc. 5-Oxo-1b-cyclopentane heptanoic acid derivatives. 3,850,952, Cl. 260-309.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Araki, Tadashi; Asano, Kiro; Yamada, Jun; Imaizami, Hisao; and Awao, Takao, 3,851,048.
Segawa, Masahiro, 3,850,900.
Yoshikawr, Shinsuke; and Sawa, Yuji, 3,850,573.

Kurita, Yutaka: *See—*
Tani, Kaneyasu; Fushino, Yukio; Nakajima, Taiji; Noguchi, Hiroaki; Kurita, Yutaka; Murakoshi, Satoshi; and Wakayama, Hiroo, 3,850,672.

Kurvin, Charles W.: *See—*
United States of America, National Aeronautics and Space Administration, 3,851,250.

- Kusan, Lawrence J., to GTE Automatic Electric Laboratories Incorporated. Data detector with voice signal discrimination. 3,851,112, Cl. 179-84.0vf.
- Kusumoto, Masahiko: *See—*
  - Toba, Hirotaka; Tanaka, Kazunobu; Kusumoto, Masahiko; Watanabe, Shoji; and Tsukane, Nagayoshi, 3,850,855.
- Kutchai, Jacob H. Shoring jack. 3,850,397, Cl. 248-354.00s.
- Kuwada, Yotaka: *See—*
  - Meguro, Kanji; and Kuwada, Yotaka, 3,850,951.
- Kuzuya, Fumio, to Meito Sangyo Kabushiki Kaisha. Dextran derivatives for the reduction of blood lipids. 3,851,057, Cl. 424-180.000.
- Kwas, Edward. Quick-acting vise. 3,850,422, Cl. 269-196.000.
- Kylander , Robert L.; and Du Von, Richard H., Jr., to National Distillers and Chemical Corporation. Recovery of ether in the production of ethanol by ethylene hydration. 3,850,993, Cl. 260-614.00a.
- Kyorin Seiyaku Kabushiki Kaisha: *See—*
  - Irikura, Tsutomu; Hayashi, Masayuki; Koshirae, Kikuo; Kudo, Yoshitaka; Hatayama, Junji; and Hetsugi, Etsuko, 3,850,941.
- Kysor Industrial Corporation: *See—*
  - Beckwith, Sterling; and Johnston, William C., 3,850,003.
- La Croix, Arther Stuart: *See—*
  - Mamalis, Patrick; La Croix, Arther Stuart; and Mhasalker, Solomon Ezekiel, 3,850,953.
- La Fond, Maurice H.: *See—*
  - McClymont, Terence I.; and La Fond, Maurice H., 3,850,399.
- Labbe, Francis A. M.; Preston, Edward George; Dimgli, Paul; and Hirsh, Ivan Yehudi, to Molins Limited. Rod making machines. 3,850,065, Cl. 83-310.000.
- Labbe, Francis A. M., to Molins Limited. Cigarette making machines. 3,850,177, Cl. 131-66.000.
- Laben, Wallace J., to Dick, A. B., Company. Washing roller and wiper blade mechanism for duplicating machines. 3,850,099, Cl. 101-425.000.
- Lace, Melvin A., to Motorola, Inc. Fast-forward tape drive means for cartridge tape player. 3,850,357, Cl. 226-178.000.
- Lador S.A.: *See—*
  - Laurent, Adolphe R., 3,850,070.
- Laesser, Jean, to Ebauches S.A. Jumping-dial wrist-watch with date indicator. 3,849,980, Cl. 58-58.000.
- Lager, Jean Paul: *See—*
  - Regnier, Albert; Kevorkian, Devork; and Lager, Jean Paul, 3,851,105.
- Lagnley, John Arthur, to National Research Development Corporation. Device for collecting animal urine. 3,850,159, Cl. 128-2.00f.
- Laidlaw Corporation: *See—*
  - Barnes, Tracy W., 3,850,659.
- Lakatos, George C.: *See—*
  - Cyll, Michael P., 3,849,811.
- Lambert, Maurice Avrelien: *See—*
  - Leblond, Jean Rene; Danneels, Guy Emile; and Lambert, Maurice Avrelien, 3,850,719.
- Lamberty, John M.: *See—*
  - DeVerter, Walton; and Lamberty, John M., 3,849,831.
- Lamprecht, Adolf: *See—*
  - Remy, Hermann; and Lamprecht, Adolf, 3,850,570.
- Lamy, Jacques Edouard, to Doris, C. G., (Compagnie General pour les Developpements Operationnels des Eichesses Sous Marines). Antiheave protective system. 3,849,990, Cl. 61-3.000.
- Land, Edwin H., to Polaroid Corporation. Motion picture system. 3,850,514, Cl. 352-130.000.
- Landblom, John A.; and Mecklenburg, Arthur W. Crepe griddle for making thin uniform crepes. 3,850,087, Cl. 99-422.000.
- Lang, David, to Harsco Corporation. Pallet cleaner. 3,849,820, Cl. 15-21.00c.
- Lange, Heinz E.: *See—*
  - Buerkley, Donald D.; and Lange, Heinz E., 3,850,649.
- Langhans, Roy Kenneth, to ICI America Inc. Method for preparing protein enriched yeast-raised baked products. 3,851,066, Cl. 426-21.000.
- Laningham, Gene R.: *See—*
  - Callahan, Joseph W.; and Laningham, Gene R., 3,850,741.
- Lanzilotta, Raymond P., to Syntex Corporation. Preparation of D-(-) pantoic acid and/or D-(-) pantoyl lactone. 3,850,750, Cl. 195-30.000.
- Lapp, Daniel Alvin: *See—*
  - Yoder, David Alfred; and Lapp, Daniel Alvin, 3,850,145.
- Larimer, Myron J.: *See—*
  - Henry, David A.; and Larimer, Myron J., 3,849,960.
- LaRocca, James J.; McGrail, John G.; and Mazur, Richard A., to Continental Can Company, Inc. Can registration position system. 3,850,123, Cl. 113-113.00c.
- Larsen, Reid S. Tanning composition and process. 3,850,575, Cl. 8-94.19r.
- Larson, Warren E.: *See—*
  - Johnson, Edward A.; Miedaner, Wendelin H.; and Larson, Warren E., 3,850,089.
- Laser, Manfred: *See—*
  - Beaujean, Holger; and Laser, Manfred, 3,850,593.
- Laubli, Fritz, to Sulzer Brothers Ltd. Forced through-flow steam generator having a superimposed forced circulation. 3,850,148, Cl. 122-479.00s.
- Laurent, Adolphe R., to Lador S.A. Music box. 3,850,070, Cl. 84-95.000.
- Laurer, Erwin; and Schabert, Hans-Peter, to Siemens Aktiengesellschaft. Gas-cooled nuclear reactor. 3,850,794, Cl. 176-30.000.
- Lavanish, Jerome M.: *See—*
  - Bissinger, William E.; Hardies, Donald E.; and Lavanish, Jerome M., 3,850,609.
- Lavaux, Jean-Paul: *See—*
  - Derible, Pierre Henri; and Lavaux, Jean-Paul, 3,850,938.
- Lavender, Ardis R., to Lavender, Ardis R., mesne. Release liner for pressure sensitive adhesive. 3,850,784, Cl. 161-88.000.
- Lavender, Ardis R., mesne: *See—*
  - Lavender, Ardis R., 3,850,784.
- Lawford, Victor Nicholas; Granada, Richard Paul; and Elderton, Peter, to International Telephone and Telegraph Corporation. Flow meter and function generator therefor. 3,850,037, Cl. 73-205.00r.
- Lawrenson, Jack: *See—*
  - Robinson, Albert Sidney; Loukes, David Gordon; and Lawrenson, Jack, 3,850,787.
- Laws, William Robert, to British Steel Corporation. Furnace for reheating slabs of billets. 3,851,091, Cl. 13-26.000.
- Lawton, Kenneth Charles: *See—*
  - Winthrop, John Talley; Van Ligten, Raoul Fredrik; and Lawton, Kenneth Charles, 3,850,527.
- Leahy, Elizabeth P.: *See—*
  - Karustis, George A., Jr.; and Leahy, Elizabeth P., 3,850,765.
- Leake, Donald L.; Rappoport, Morris; and Rappoport, Morris; deceased (by Rappoport, Susan; administratrix), to Los Angeles County Harbor General Hospital, The Attending Staff Association of the. Bone induction in an alloplastic tray. 3,849,805, Cl. 3-1.000
- Leakey, Joseph W.: *See—*
  - Stollberg, Ray H.; and Leakey, Joseph W., 3,850,362.
- Lear Siegler, Inc.: *See—*
  - Borns, David R.; and Pierce, William C., 3,850,445.
- Leavitt, Minard A., to Cutler-Hammer, Inc. Method and apparatus for developing heat processable photographic film. 3,850,635, Cl. 96-48.0hd.
- Leblond, Jean Rene; Danneels, Guy Emile; and Lambert, Maurice Avrelien, to Uniroyal S.A. Apparatus for and method of tire stitching. 3,850,719, Cl. 156-128.000.
- Lee, Hwalin; Pallos, Ferenc M.; and Menn, Julius J., to Stauffer Chemical Company. Certain geranyl ethers used in control insects. 3,851,061, Cl. 424-277.000.
- Lee, Kenneth; and Suits, James Carr, to International Business Machines Corporation. Method of making MnGaGe films. 3,850,690, Cl. 117-240.000.
- Lee, Raymond, Organization, Inc., The: *See—*
  - Batchelor, Floyd O., 3,850,487.
  - Reiner, Lawrence, 3,850,352.
- Leesona Corporation: *See—*
  - Erbstein, Robert S., 3,851,168.
  - Pitts, Thomas Edgar; and Stoppard, William Emil, 3,850,377.
- Legros, Danielle: *See—*
  - Lewiner, Jacques; and Legros, Danielle, 3,851,183.
- Lehmacher, Hans; and Troisdorf, Mondorf Uber. Apparatus and method for fabrication of carrying bags. 3,850,724, Cl. 156-201.000.
- Lehmann, Gunter: *See—*
  - Iyimen, Siddik; Lehmann, Gunter; Neunhoeffer, Otto; and Vitzthum, Otto, 3,850,958.
- Lehmann, Hans-Jurgen: *See—*
  - Wagemund, Bernd; Lehmann, Hans-Jurgen; and Schmadel, Edmund, 3,850,832.
- Lejuene, Daniel, to Compagnie Generale des Etablissements Michelin raison Sociale Michelin & Cie. Recapping large tires. 3,850,222, Cl. 157-13.000.
- Lekarski, Simeon: *See—*
  - Gachot, Jean; and Lekarski, Simeon, 3,850,458.
- Lemmens, Joseph. Continuously variable automatic transmission. 3,850,050, Cl. 74-689.000.
- Lenel, Paul Otto; and Featherstone, William, to Imperial Chemical Industries Limited. Separation of isopropyl-amines by plural stage distillation. 3,850,760, Cl. 203-84.000.
- Lenz, Arnold: *See—*
  - Termin, Erich; Lenz, Arnold; and Bleh, Otto, 3,850,971.
- Lenz, Walter M.: *See—*
  - Groenendaal, Willem; Lenz, Walter M.; and Loof, Philippus, 3,851,050.
- Leoff, Arkady: *See—*
  - Aronstein, Jesse; Leoff, Arkady; Murphy, John J.; and Ruder, Winfield S., 3,850,105.
- Leonard, John Charles, to British Hovercraft Corporation, Limited. Fluid cushion supported vehicles. 3,850,126, Cl. 114-67.00a.
- Leonov, Jury Leonidovich: *See—*
  - Vavilov, Felix Fedorovich; Leonov, Jury Leonidovich; Sedov, Alexei Maximovich; and Kamsky, Dmitry Stepanovich, 3,850,411.
- Leuba, Jean-Pierre: *See—*
  - Jeannet, Jean-Pierre; Leuba, Jean-Pierre; and Vadi, Gildo, 3,849,890.
- Levasseur, Georges; and Garconnat, Michel, to Compagnie Industrielle des Telecommunications CIT-ALCATEL. Dephasing circuit. 3,851,256, Cl. 328-55.000.
- Lever Brothers Company: *See—*
  - Neillie, William Frederick Soutar; and Tune, John Barry, 3,850,852.
  - Weil, Ira, 3,850,854.
- Levine, Arnold M., to International Telephone and Telegraph Corporation. Light-guide communication system with image intensifier repeater elements. 3,851,167, Cl. 250-199.000.

- Lewiner, Jacques; and Legros, Danielle, to Agence Nationale de Valorisation de la Recherche. Electrets to methods and devices for manufacturing them and to assemblies comprising electrets. 3,851,183, Cl. 307-88.0et.
- Lewis, Charles William: *See—*
  - Bush, Stanley Edward; Lewis, Charles William; McKelvey, William John; Merwede, Donald Leiman; Roberge, Kenneth Joseph; and Saltus, George Edwin, 3,851,114.
- Lewis, Gerald F. Seal belt retractor apparatus. 3,850,383, Cl. 242-107.400.
- Lewis, Oliver G.: *See—*
  - Sullivan, Arthur J.; and Lewis, Oliver G., 3,849,819.
- Leyland Gas Turbines Limited: *See—*
  - Barnard, Mark Cary Sedgwick, 3,850,228.
- Liberty Fabrics of New York, Inc.: *See—*
  - Gottlieb, Michael M., 3,849,849.
- Lichtenwalter, Glen D.; and Hammerberg, Edgar S., to Akzona Incorporated. Production of nitriles. 3,850,974, Cl. 260-465.00b.
- Lifferth, Henry R. Drive means. 3,850,042, Cl. 74-84.000.
- Likhyani, Kewal Krishan: *See—*
  - Fitzgerald, James Allen; and Likhyani, Kewal Krishan, 3,850,888.
- Lilly, Eli, and Company: *See—*
  - Cook, Roland A.; and Counter, Frederick T., 3,850,748.
  - Ludwig, Nelson H., 3,851,065.
- Lindner, Robert G., to Robertson, H. H., Company. Building panel and laterally adjustable joint produced thereby. 3,849,959, Cl. 52-403.000.
- Lindzy, Leo K. Precision tool for cabochons and jewelry. 3,849,945, Cl. 51-229.000.
- Link, James H.; and Watts, Jess L. Antijacknifing device. 3,850,449, Cl. 280-432.000.
- Linkow, Leonard I., to Oratronics, Incorporated. Bone adapting tissue packing post system. 3,849,888, Cl. 32-10.00a.
- Lion, Jean-Jacques: *See—*
  - Bessot, Michel; Delacote, Claude; Lion, Jean-Jacques; and Valentin, Francois, 3,850,348.
- Lionetti, Fabian J.: *See—*
  - Curby, William A.; and Lionetti, Fabian J., 3,851,246.
- Lipinski, Richard D.; and Hagood, Raymond E., to Motorola, Inc. Mechanical audio coupling device. 3,851,123, Cl. 179-182.00r.
- Lippitsch, Josef: *See—*
  - Beckmann, Georg; Fritz, Kurt; and Lippitsch, Josef, 3,850,235.
- Liss, Saul. Method and apparatus for monitoring and counter-acting excess brain electrical energy to prevent epileptic seizures and the like. 3,850,161, Cl. 128-2.10r.
- Littauer, Uriel Z.: *See—*
  - Kaufmann, Gabriel; and Littauer, Uriel Z., 3,850,749.
- Little League Baseball Inc.: *See—*
  - Hale, Creighton J., 3,849,935.
- Litton Industrial Products, Inc.: *See—*
  - Orlomoski, Roger W., 3,850,215.
- Litton Systems, Inc.: *See—*
  - Luchetta, Julius Frank, 3,851,225.
  - Miller, Charles Edward; and Nuding, James Andrew, 3,851,287.
- Livingstone, John Lewis: *See—*
  - Andrews, Roderic Stafford; Barlow, Christopher George; and Livingstone, John Lewis, 3,851,032.
- Locke, Edward V.: *See—*
  - Hoag, Ethan D.; Patrick, Richard M.; Locke, Edward V.; and Hella, Richard A., 3,851,273.
- Locke, Stephen A., to Chicago Bridge & Iron Company. LNG ship tank inert gas generation system. 3,850,001, Cl. 62-50.000.
- Loctite Corporation: *See—*
  - Werber, Gerhardt P., 3,851,017.
- Lod; Division of Intercole Automation, Inc.: *See—*
  - Brey, Wilhelm, 3,850,212.
- Loeffler, Earl Ferdnand: *See—*
  - Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,850,730.
  - Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,850,731.
- Loliger, Willi; and Schmied, Rudolf, to Alpura Koreco. Apparatus for sterilising the outside of the filling pipe in an aseptic packaging machine. 3,850,207, Cl. 141-90.000.
- Longenecker, Lineaus W. Painting guide kit. 3,849,911, Cl. 35-26.000.
- Longi, Paolo; Giannini, Umberto; and Mazzocchi, Romano, to Montecatini Edison S.p.A. Polymerization catalysts. 3,850,842, Cl. 252-429.00c.
- Lonza Ltd.: *See—*
  - Nicolet, Rene; and Gutmann, Walter, 3,851,016.
- Loof, Philippus: *See—*
  - Groenendaal, Willem; Lenz, Walter M.; and Loof, Philippus, 3,851,050.
- Looney, Jesse M. Distillation of diacetylenically unsaturated aromatic hydrocarbons. 3,850,757, Cl. 203-9.000.
- Los Angeles County Harbor General Hospital, The Attending Staff Association of the: *See—*
  - Leake, Donald L.; Rappoport, Morris; and Rappoport, Morris, 3,849,805.
- Loukes, David Gordon: *See—*
  - Robinson, Albert Sidney; Loukes, David Gordon; and Lawrenson, Jack, 3,850,787.
- Lovell, Jack, to Ocean Science & Engineering, Inc. Vibratory anchor. 3,850,128, Cl. 114-206.00r.
- Lovens Kemiske Fabrik Produktionsaktieselskab: *See—*
  - von Daehne, Welf; Frederiksen, Erling Knud; Godtfredsen, Wagn Ole; and Rachlin, Schneur, 3,850,908.
- Lowe, Edward G.: *See—*
  - Pepmeier, Carl R.; and Lowe, Edward G., 3,849,972.
- Lowe, Edward G. Wave suppressing device for swimming pools. 3,849,807, Cl. 4-172.000.
- Lowrie, Neely E.: *See—*
  - Calkin, Billy C.; and Lowrie, Neely E., 3,850,599.
- Luchetta, Julius Frank, to Litton Systems, Inc. Water resistant ballast construction. 3,851,225, Cl. 317-120.000.
- Luckenbach, Edward C., to Exxon Research and Engineering Company. Apparatus for controlled addition of fluidized particles to a processing unit. 3,850,582, Cl. 23-288.00s.
- Ludwig, Charles H., to Georgia-Pacific Corporation. Process for flocculation of solids from aqueous suspensions. 3,850,799, Cl. 210-54.000.
- Ludwig, Nelson H., to Lilly, Eli, and Company. Method of and composition for stabilizing transdiethylstilbestrol in animal feed rations. 3,851,065, Cl. 424-346.000.
- Luebbe, Ray H., Jr., to Xerox Corporation. Imaging member and method. 3,850,626, Cl. 96-1.00m.
- Lugg, James R.; and Shite, Ralph L., to Transfresh Corporation. Fresh meat in a predominately carbon dioxide environment. 3,851,080, Cl. 426-312.000.
- Lui, Kenneth, to TRW Inc. Electroplating barrel with internal anode and cathode. 3,850,737, Cl. 204-213.000.
- Lukens Steel Company: *See—*
  - Walters, Joseph J.; and McGibbon, Verdun R., 3,850,086.
- Lumier, Jacques, to European Atomic Energy Community (Euratom). Device for storing and handling material and rod form. 3,850,317, Cl. 214-16.40r.
- Lund, Svend Aage; Hansen, Hans Nielsen; Holst, Heige Alfred; and Northeved, Allan, to Atomenergikommissionen. Method and a device, for determining the cross-sectional dimensions of the inner space of elongated, tubular bodies. 3,850,026, Cl. 73-67.50r.
- Lupinski, John H.; and McQuade, James M., to General Electric Company. Method for making polyimide coated conductors in a continuous manner. 3,850,773, Cl. 204-181.000.
- Lupton, Homer B.; and Busby, Donald W., to Subterranean Tools Inc. Excavating machine. 3,850,253, Cl. 173-23.000.
- Luthi, Christian, to Ciba-Geigy AG. Novel alkyl-benzoxazolyl-p-phenyl stilbenes. 3,850,914, Cl. 260-240.0ca.
- Lyall, Charles E., to Culligan International Company. Method of sterilizing reverse osmosis water treatment units. 3,850,797, Cl. 210-23.000.
- Lyamenkova, Evgenia Kuzminichna: *See—*
  - Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Chumaevskaya, Alla Nikolaevna; Mgeladze, Boris Mikhailovich; Bekasova, Nina Ivanovna; Komarova, Ljudmila Grigorievna; Vinogradova, Svetlana Vasilievna; Valetsky, Petr Maximilianovich; Kalachev, Alxandr Ivanovich; Lyamenkova, Evgenia Kuzminichna; Glivka, Ljudmila Alexandrovna; Burtseva, Tamara Andreevna; and Babchinitser, Tatyana Mikhailovna, 3,850,820.
- Lynch, Thomas, to Xerox Corporation. Fusing apparatus. 3,849,907, Cl. 34-242.000.
- Lynes, Inc.: *See—*
  - Conover, George E., 3,850,240.
- Maassen, Wilhelm: *See—*
  - Raasch, Hans; Engelhardt, Dietmar; and Maassen, Wilhelm, 3,850,394.
- MacAndrews & Forbes Company: *See—*
  - Cook. Marvin K., 3,851,073.
- MacGregor, Duane F.: *See—*
  - Bernard, Vincent E.; and MacGregor, Duane F., 3,849,836.
- MacKenzie, George D.: *See—*
  - Rudd, Floyd R.; and MacKenzie, George D., 3,849,878.
- Mackes, Ronald C., to BQP Industries, Inc. Slip pallet of expanded foam material. 3,850,115, Cl. 108-51.000.
- Mackes, Ronald C., to BQP Industries, Inc. Slip pallet reinforced with fillers. 3,850,116, Cl. 108-51.000.
- MacLeod, Richard Eugene. Child proof medicine bottle cap. 3,850,325, Cl. 215-218.000.
- Madonini, Mino, to Industrie Pirelli S.p.A. Method of forming reinforced flat sheet by extrusion of a tube, slitting and opening tube to a flat shaped while supporting same. 3,851,033, Cl. 264-146.000.
- Madrid, Robert W.; and Hagenbach, Robert J. Coated carrier particles for electrostatographic development. 3,850,676, Cl. 117-100.00a.
- Maeda, Kazuo, to Mitsui Shipbuilding and Engineering Co., Ltd. Apparatus for assembling hull modules. 3,850,309, Cl. 212-145.000.
- Maged, Mitchell. Lock and alarm. 3,851,325, Cl. 340-274.000.
- Magnavox Company, The: *See—*
  - Deebel, George F.; Doden, Bernard M.; and Morris, Myron J., 3,851,191.
  - Dsjuba, Mykola, 3,850,342.
- Magnifico, George: *See—*
  - Zahn, Erwin; Meisinger, Wilhelm R.; and Magnifico, George, 3,849,860.
- Maier, Richard J.: *See—*
  - Carmichael, Thomas F ; and Maier, Richard J., 3,851,208.
- Makin, J. & J., Limited: *See—*
  - Nelson, Stanley, 3,850,673.
- Mallinckrodt, Inc.: *See—*
  - Guckenberger, John D.; Titus, Dudley S.; and Toft, Knut, 3,850,838.

Mallinson, Richard B.; and Mecklenborg, Richard A., to Singer Company, The, mesne. Point light source system. 3,850,516, Cl. 353-122.000.

Mallozzi, Philip J.; and Fairand, Barry P., to Industrial Materials Limited, mesne. Altering material properties. 3,850,698, Cl. 148-4.000.

Maltman, William Ramsey; and Howard, Colin Robert, to Pilkington Brothers Limited. Manufacture of patterned glass. 3,850,605, Cl. 65-99.00a.

Mamalis, Patrick; La Croix, Arther Stuart; and Mhasalker, Solomon Ezekiel, to Beecham Group Limited. Imidazole insectisides. 3,850,953, Cl. 260-309.000.

Mandarious, Samia S.: *See—*

Garcia, Luis A.; Boullon, Jose R.; and Mandarious, Samia S., 3,850,903.

Mandell, Robert B.: *See—*

Shen, Mitchel; Mandell, Robert B.; and Stark, Lawrence, 3,850,892.

Manizza, Guelfo A.; and Arneson, Edwin L., to Federal Paper Board Company, Inc. Bottle carrier. 3,850,292, Cl. 206-181.000.

Mann, Ralph W.: *See—*

Mounce, Whitman D.; and Mann, Ralph W., 3,850,100.

Mannonen, Pentti, to Oy Strombert AB. Fault detector for paper webs. 3,850,809, Cl. 250-206.000.

Mansouri, Hosein: *See—*

Taylor, Robert F.; Strow, Donald A.; and Mansouri, Hosein, 3,850,804.

Marantz, Laurence B.; and Moran, Clifford M., to CCI Life Systems, Inc., mesne. Method of making granular zirconium hydrous oxide ion exchangers, such as zirconium phosphate and hydrous zirconium oxide, particularly for column use. 3,850,835, Cl. 252-182.00.

Marathon Oil Company: *See—*

Rhudy, John S.; Gogarty, William B.; Knight, Bruce L.; and Fullinwider, James H., 3,850,244.

Marcal Paper Mills, Inc.: *See—*

Marcalus, Nicholas; and Smaw, Jesse B., 3,850,425.

Marcalus, Nicholas; and Smaw, Jesse B., to Marcal Paper Mills, Inc. Interfolding machine. 3,850,425, Cl. 270-40.000.

Marceau, William E.; Bates, William G.; and Mroczek, Thomas J., to Selas Corporation of America. Glass sheet carrier. 3,850,420, Cl. 269-46.000.

Marcel, Jean Pierre. Rotary pressurised-fluid device with coaxial annular units having reciprocating partitions. 3,850,552, Cl. 418-6.000.

Marconi Company Limited, The: *See—*

Watson, Barry Kenneth, 3,851,282.

Mare, Peter D.; and Ross, Albert L., to Flip-On Packaging Inc. Container banding apparatus. 3,850,777, Cl. 156-494.000.

Margen, Peter Heinrich Erwin, to Aktiebolaget Atomenergi. Heat-exchanger. 3,850,230, Cl. 165-66.000.

Marie, Gabriel Yves, to Regie Autonome des Transports and Inter-Elec. Safety devices for a system for automatically driving a vehicle. 3,850,391, Cl. 246-182.00r.

Marietta, Martin, Corporation: *See—*

Wigner, William K.; and Sabin, Albert S., Jr., 3,851,251.

Mark Controls Corporation: *See—*

Carlson, Donald E., 3,850,190.

Markakis, Costas E.; and Vamvakoussis, George N. Fluidic clinometer control apparatus. 3,849,897, Cl. 33-365.000.

Marko, Ortho S. Portable cargo bulkhead. 3,850,332, Cl. 220-22.000.

Marpal Aktiengesellschaft: *See—*

Degen, Felix, 3,849,810.

Marquard, Harold J. Baby bottle holder. 3,850,393, Cl. 248-102.000.

Mars Limited: *See—*

Day, Robert H.; and Blyth, James, 3,850,361.

Marshall, Robert Moore: *See—*

Gomez, Climaco Alberto; Braswell, William Dorne; and Marshall, Robert Moore, 3,850,658.

Martin, Francis J.: *See—*

Stone, Allan V.; and Martin, Francis J., 3,850,199.

Martin, Paul S.: *See—*

Rackman, Michael I.; and Devol, George C., 3,850,313.

Martinelli, Arnold C. Knock-down furniture. 3,850,117, Cl. 108-150.000.

Martuch, Leon L., to Scientific Anglers, Inc. Buoyant fishing line. 3,849,929, Cl. 43-44.980.

Marumo, Hideo. Detergent composition. 3,850,853, Cl. 252-548.000.

Maruyama, Isamu: *See—*

Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; Takayama, Masaharu; Katayama, Shigenari; Ono, Keiichi; Yanagihara, Izumi; Tanaka, Yoshihiro; Katsube, Jinki; Inaba, Shigeho; and Yamamoto, Hisao, 3,850,935.

Marvin, Howard Arthur, to General Telephone Company of California. Automatic remote service monitoring system. 3,851,121, Cl. 179-175.20c.

Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Glass fiber reinforced elastomers. 3,850,681, Cl. 117-126.0gs.

Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Glass fiber reinforced elastomers. 3,850,872, Cl. 260-37.0ep.

Masaki, Mitsuo; Matsunami, Satoshi; and Yoshikawa, Toshio, to Ube Industries, Ltd. Polyolefin composition stabilized against metal- induced oxidation. 3,850,883, Cl. 260-45.75k.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*

Kreft, Holger, 3,850,722.

Maselli, James Michael: *See—*

Graham, James Richar; Ernest, Michael V.; and Maselli, James Michael, 3,850,847.

Mason, George W., to General Motors Corporation. Turbomachine rotor. 3,850,546, Cl. 416-212.000.

Massachusetts Institute of Technology: *See—*

Thornton, Richard D., 3,850,109.

Massebeuf, Jacques: *See—*

Garnier, Roger; Hogenmuller, Roger; and Massebeuf, Jacques, 3,850,865.

Mata, Justo: *See—*

Chaiet, Louis; and Mata, Justo, 3,851,054.

Matsumoto, Eiji: *See—*

Matsumoto, Shigeharu; and Matsumoto, Eiji, 3,851,153.

Matsumoto, Shigeharu; and Matsumoto, Eiji. Magnetic card. 3,851,153, Cl. 235-61.12m.

Matsumoto, Shuntetsu: *See—*

Ikeda, Kiichi; Taguchi, Kintaro; Nozaki, Taketoshi; and Matsumoto, Shuntetsu, 3,850,259.

Matsunami, Satoshi: *See—*

Masaki, Mitsuo; Matsunami, Satoshi; and Yoshikawa, Toshio, 3,850,883.

Matsuoka, Tohru: *See—*

Furuse, Takao; Matsuoka, Tohru; and Kato, Kiyohisa, 3,851,275.

Matsushita Electric Industrial Co., Ltd.: *See—*

Murakami, Toyoharu; Niguchi, Yutaka; Nishimura, Kazutaka; and Yukio, Shimizu, 3,851,209.

Ogo, Shinichi; and Hayashi, Yoshiki, 3,850,629.

Matsushita Electric Industrial Company, Limited: *See—*

Sasabe, Kaoro; Kotera, Hiroaki; Misaki, Takashi; and Hane, Toshihide, 3,851,094.

Matsushita Electric Works, Ltd.: *See—*

Yoshino, Akira; and Imanishi, Hitoshi, 3,851,284.

Matsuzawa, Norio: *See—*

Wada, Shigeru; Oi, Hidesaburo; Matsuzawa, Norio; Nishimura, Hiroshi; and Sasaki, Juntaro, 3,850,899.

Matthiessen, Roy A. Safety shield for flanged pipe coupling. 3,850,451, Cl. 285-13.000.

Mattioli, Harold Philip; and Douglas, Robert John, to Emhart Corporation. Method for making evaporator or condenser unit. 3,849,854, Cl. 29-157.30b.

Matui, Akira: *See—*

Nakanishi, Kazuo; Kagi, Hideo; Iwata, Takashi; Haruta, Hisae; Yoshida, Kazuhiko; and Matui, Akira, 3,850,611.

Matuo, Ichiro; and Ohki, Sadao, said Matuo assor. to said Ohki, Sadao. Derivatives of 2,3 norbornanedicarboximide. 3,850,921, Cl. 260-247.20a.

Matuo, Ichiro; and Ohki, Sadao, said Matuo assor. to said Ohki, Sadao. 5-Endo-benzoyloxy-N-[amino(lower)alkyl]bicyclo [2.2.1]heptane-2,3-di-endo-carboxylic acid imides. 3,850,922, Cl. 260-247.20a.

Matweecha, David M.: *See—*

Boyhont, Donald S.; Souders, Marvyn L.; and Matweecha, David M., 3,850,479.

Mawatari, Toshihiro; Kunugi, Takashi; Harada, Masanori; and Sasaki, Kenichi, to Nissan Motor Company, Limited. Failure warning device for exhaust gas recirculation system. 3,850,151, Cl. 123-119.00a.

Max-Planck-Gesellschaft zur Forderund der: *See—*

Kanter, Hans Joachim, 3,850,524.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See—*

Venus, Gerhart; and Meyer, Erwin, 3,851,136.

Maxey, Edwin M.: *See—*

Fabris, Hubert J.; Herold, Robert J.; and Maxey, Edwin M., 3,850,861.

Mayer, Klaus K. Repeater gun, especially rifle. 3,849,925, Cl. 42-75.00b.

Mayer, Otto. Lockable hinge joint. 3,849,834, Cl. 16-145.000.

Mays, Wallace M.: *See—*

Trebellas, John C.; Thigpen, Hubert H.; and Mays, Wallace M., 3,850,981.

Mazur, Richard A.: *See—*

LaRocca, James J.; McGrail, John G.; and Mazur, Richard A., 3,850,123.

Mazzocchi, Romano: *See—*

Longi, Paolo; Giannini, Umberto; and Mazzocchi, Romano, 3,850,842.

Mazzocco, Dante V., Sr. Continuous display device. 3,849,918, Cl. 40-32.000.

McAllister, O. Roger: *See—*

Clingerman, Richard Grant; and McAllister, O. Roger, 3,850,382.

McAuliffe, Gerald Kevin: *See—*

Karnaugh, Maurice; and McAuliffe, Gerald Kevin, 3,851,252.

McBean, Rupert John Sidney, to Kinnear Moddie (Concrete) Limited. Tunnelling shields. 3,850,000, Cl. 61-85.000.

McBurnett, James R.: *See—*

Ratliff, Frank W.; and McBurnett, James R., 3,849,985.

McCaully, Ronald J.: *See—*

Nudelman, Abraham; and McCaully, Ronald J., 3,850,933.

McCaully, Ronald J., to American Home Products Corporation. Intermediates for the preparation of 1,3-dihydro-2H-1,4 benzodiazepin-2-ones. 3,850,979, Cl. 260-490.000.

McClurg, Dale C.; and Nocek, Stanley J., to GTE Automatic Electric Laboratories, Incorporated. Relay adjusting apparatus and method. 3,851,286, Cl. 335-273.000.

McClymont, Terence I.; and La Fond, Maurice H., to Plessey, Incorporated. Hanger clamp for splicing head. 3,850,399, Cl. 248-229.000.

McConnell, Harden M. Process for assaying for biologically active molecules. 3,850,578, Cl. 23-230.00b.

McDonald, Ralph R., to Commerce Bank and Trust Bank and Small Business Administration, The. Scale calibration monitoring device. 3,850,023, Cl. 73-1.00b.

McDonnell Douglas Corporation: *See—*

Flenige, Ralph E., 3,850,301.

Hanback, Francis J.; and Robinson, Norman F., 3,850,456.

McEwan, William S.: *See—*

Richter, Herbert P.; Heller, Carl A.; Norris, William P.; and McEwan, William S., 3,850,836.

McFarlan, Alden Irving. Air conditioning system and method. 3,850,007, Cl. 62-305.000.

McGehee, Wallace L., to American Pollution, Prevention Co., Inc. Rotary dehydrator having anti-discharge structure for moisture-laden materials. 3,849,903, Cl. 34-132.000.

McGibbon, Verdun R.: *See—*

Walters, Joseph J.; and McGibbon, Verdun R., 3,850,086.

McGrail, John G.: *See—*

LaRocca, James J.; McGrail, John G.; and Mazur, Richard A., 3,850,123.

McGraw-Edison Company: *See—*

Fortriede, Charles J., 3,850,367.

McIlwain, Erwin D.; and Moody, Thomas B., to Sperry Rand Corporation. Needle slot baffles for balers employing automatic tying devices. 3,850,091, Cl. 100-19.00r.

McKelvey, William John: *See—*

Bush, Stanley Edward; Lewis, Charles William; McKelvey, William John; Merwede, Donald Leiman; Roberge, Kenneth Joseph; and Saltus, George Edwin, 3,851,114.

McKinney, Ray, Jr.; and Hofferbert, William L., Jr., to Monsanto Company. Ordered polymeric amides. 3,850,889, Cl. 260-78.00r.

McKinney, William S.: *See—*

Rief, Dean J.; and McKinney, William S., 3,850,782.

McKinnon, William L. Method of making coated gypsum board. 3,850,680, Cl. 117-123.00d.

McLaughlin, Carol Lynn: *See—*

Baile, Clifton A.; McLaughlin, Carol Lynn; and Webb, Robert Lee, 3,851,058.

McLean, Douglas H., to Ford Motor Company. Differential lock-up responsive to brake malfunction. 3,850,274, Cl. 192-4.00a.

McNitt, Ralph R.; and Fox, Edward J., to General Motors Corporation. Start-up method and apparatus for continuous casting. 3,850,225, Cl. 164-82.000.

McQuade, Allan J.; and Arons, Gilbert N., to United States of America, Army. Reinforced carbon fabrics. 3,850,785, Cl. 161-88.000.

McQuade, James M.: *See—*

Lupinski, John H.; and McQuade, James M., 3,850,773.

McQuay-Perfex Inc.: *See—*

Pearson, Philip J., 3,850,801.

McQueen, Robert William, to Dresser Industries, Inc. Rock bit with one piece body and depending arms. 3,850,256, Cl. 175-228.000.

McVey, Charles L., to General Electric Company. Stabilized high intensity sodium vapor lamp. 3,851,207, Cl. 315-49.000.

Meacham, Jeffrey W.: *See—*

Kiovsky, Joseph R.; and Meacham, Jeffrey W., 3,850,849.

Mead Corporation, The: *See—*

Calvert, Rodney K.; and Johnson, Roy A., 3,850,282.

Measurex Corporation: *See—*

Dahlin, Erik B.; and Bjorklund, Carolyn M., 3,851,175.

Swanson, S. Keith, 3,850,029.

Mecklenborg, Richard A.: *See—*

Mallinson, Richard B.; and Mecklenborg, Richard A., 3,850,516.

Mecklenburg, Arthur W.: *See—*

Landblom, John A.; and Mecklenburg, Arthur W., 3,850,087.

Medalist Industries, Inc.: *See—*

Holt, M. C.; and Tomczak, Walter F., 3,849,801.

Medical Plastics Pty., Limited: *See—*

Ryles, Louis, 3,850,326.

Meeks, Fredrick T.: *See—*

Ryckman, William D., Jr.; and Meeks, Fredrick T., 3,850,180.

Meguro, Kanji; and Kuwada, Yotaka, to Takeda Chemical Industries, Ltd. Triazolobenzodiazepine 5N-oxide derivatives. 3,850,951, Cl. 260-308.00c.

Meier, Jean: *See—*

Allais, Andre; Meier, Jean; and Dube, Jacques, 3,850,959.

Meisinger, Wilhelm R.: *See—*

Zahn, Erwin; Meisinger, Wilhelm R.; and Magnifico, George, 3,849,860.

Meito Sangyo Kabushiki Kaisha: *See—*

Kuzuya, Fumio, 3,851,057.

Melchior, Jean, to Etat Francais. Combustion chambers for internal combustion engines equipped with a turbo-compressor unit with reheating upstream of the turbine. 3,849,988, Cl. 60-606.000.

Melnick, Loran V.: *See—*

Bull, Brian S.; Proni, Oscar; and Melnick, Loran V., 3,850,369.

Menet, Albert: *See—*

Chabardes, Pierre; Julia, Marc; and Menet, Albert, 3,850,991.

Mengeringhausen, Max, to Mero AG. Apparatus for the production of connectors for space frameworks or the like. 3,850,540, Cl. 408-50.000.

Menn, Julius J.: *See—*

Lee, Hwalin; Pallos, Ferenc M.; and Menn, Julius J., 3,851,061.

Mentha, John W.: *See—*

Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., 3,850,927.

Merchant, John, to Honeywell Inc. Oculometry system employing sonic determination of the position and the direction of the observers head. 3,850,511, Cl. 351-7.000.

Merck & Co., Inc.: *See—*

Chaiet, Louis; and Mata, Justo, 3,851,054.

Kuo, Chan-Hwa; Taub, David; and Wendler, Norman L., 3,850,952.

Prugh, John D., 3,851,059.

Shen, Tsung-Ying; Jones, Howard; and Witzel, Bruce E., 3,851,063.

Mero AG: *See—*

Mengeringhausen, Max, 3,850,540.

Merrell, Richard G.; and Tanaka, Akio, to Zenith Radio Corporation. Digital system and method for determining and displaying a television channel number. 3,851,254, Cl. 325-455.000.

Merrifield, Richard E.: *See—*

Johnson, Robert C.; and Merrifield, Richard E., 3,850,506.

Merritt, Robert D., to FMC Corporation. Filling valve. 3,850,345, Cl. 222-168.500.

Merser, Francis G., to Dennison Manufacturing Company. Assembly of attachments. 3,850,297, Cl. 206-346.000.

Mertz, Edwin C., to Fuller Company. Mantle for a gyratory crusher. 3,850,376, Cl. 241-207.000.

Merwede, Donald Leiman: *See—*

Bush, Stanley Edward; Lewis, Charles William; McKelvey, William John; Merwede, Donald Leiman; Roberge, Kenneth Joseph; and Saltus, George Edwin, 3,851,114.

Messina, Gianmario. Apparatus for automatic and controlled positioning of anodes in electrolytic cells for producing ferrous and nonferrous metals. 3,850,305, Cl. 212-21.000.

Messing, Ralph A., to Corning Glass Works. Enzymes immobilized on porous inorganic support materials. 3,850,751, Cl. 195-63.000.

Mesta Machine Company: *See—*

Petros, Andrew J., 3,850,287.

Metall-Invent S.A.: *See—*

Kreidler, Alfred, 3,851,255.

Metallgesellschaft Aktiengesellschaft: *See—*

Bohm, Horst; Borgstadt, Hans Ulrich; Ruhle, Manfred; and Wincierz, Peter, 3,850,584.

Metalmeccanica S.p.A.: *See—*

Daeli, Daniele, 3,850,122.

Metcalfe, Arthur G.; and Rose, Fred K., to International Harvester Company. Diffusion bonding of butt joints. 3,851,138, Cl. 219-83.000.

Metcalfe, Richard T.; Ramirez, Peter R.; and Slyk, Chester M., to American Optical Corporation. Process for casting eyeglass frames. 3,850,902, Cl. 264-102.000.

Meyer, Erwin: *See—*

Venus, Gerhart; and Meyer, Erwin, 3,851,136.

Meyer, Karl A. Threaded combination lock safety cap. 3,850,324, Cl. 215-206.000.

Meyer, Leonard S., to Sybron Corporation. Method of depositing a stack of reinforcing members in a mold and molding. 3,851,038, Cl. 264-261.000.

Meyer, Robert H.: *See—*

Barnard, Robert D.; and Meyer, Robert H., 3,850,542.

Meyer, Siegfried; and Klingf, Rolf, to Siemens Aktiengesellschaft. Apparatus for accommodating the pendulum action of a load carried by a rope from a traveller. 3,850,308, Cl. 212-132.000.

Meyers, Byron P.: *See—*

Stover, Joe V.; and Meyers, Byron P., 3,851,290.

Mgeladze, Boris Mikhailovich: *See—*

Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Chumaevskaya, Alla Nikolaevna; Mgeladze, Boris Mikhailovich; Bekasova, Nina Ivanovna; Komarova, Ljudmila Grigorievna; Vinogradova, Svetlana Vasilievna; Valetsky, Petr Maximilianovich; Kalachev, Alxandr Ivanovich; Lyamenkova, Evgenia Kuzminichna; Glivka, Ljudmila Alexandrovna; Burtseva, Tamara Andreevna; and Babchinitser, Tatyana Mikhailovna, 3,850,820.

Mhasalker, Solomon Ezekiel: *See—*

Mamalis, Patrick; La Croix, Arther Stuart; and Mhasalker, Solomon Ezekiel, 3,850,953.

Michael, Peter Colin, to Micro Consultants Limited. Signal sampling circuits. 3,851,260, Cl. 328-151.000.

Michalak, Bogumil M.; and Bertellotti, Ansano, to GTE Automatic Electric Laboratories, Incorporated. Printed wiring card stiffener bracket. 3,851,222, Cl. 317-101.00r.

Michigan Chemical Corporation: *See—*

Anderson, Arnold L., 3,850,879.

Micro Consultants Limited: *See—*

Michael, Peter Colin, 3,851,260.

Micromatic Industries, Inc.: *See—*

Ellis, Myron P.; and Kaake, Karl H., 3,849,939.

Micromeritics Instrument Corporation, mesne: *See—*

Orr, Clyde, Jr.; Hendrix, Warren P.; and Camp, Ronnie W., 3,850,040.

Midland Industrial Computing Limited: *See—*

Anderson, John Ernest, 3,851,315.

Miedaner, Wendelin H.: *See—*

Johnson, Edward A.; Miedaner, Wendelin H.; and Larson, Warren E., 3,850,089.

Mihalyi, Jeno: *See—*
Wanka, Oskar; and Mihalyi, Jeno, 3,850,233.

Mihm, Hans-Peter; and Moser, Erich, to RENA Buromaschinenfabrik GmbH & Co. Printing needle for a needle printing mechanism. 3,850,278, Cl. 197-1.00r.

Mikhailu, Georgy Ivanovich: *See—*
Kozorezov, Konstantin Isaakovich; Semchenko, Vitaly Vasilievich; and Mikhailu, Georgy Ivanovich, 3,851,219.

Mila, Truman R., to GTE Automatic Electric Laboratories Incorporated. Comminication system blocked calls metering latch arrangement. 3,851,103, Cl. 179-9.000.

Mila, Truman R., to GTE Automatic Electric Laboratories Incorporated. Arrangement and method for protecting a common highway from false signals. 3,851,311, Cl. 340-147.00r.

Miles, Ray P.; and Szucs, Andrew E., to Cooperloy Corporation, The. Side loading device for fork lift trucks. 3,850,322, Cl. 214-620.000.

Miller, Charles Edward; and Nuding, James Andrew, to Litton Systems, Inc. Low leakage current electrical isolation system. 3,851,287, Cl. 336-84.000.

Miller, Lewis S., to Weyerhaeuser Company. Use of ultraviolet light to cure uncured surface layer resulting from air inhibition in preceding high energy ionizing radiation curing process. 3,850,675, Cl. 117-93.310.

Miller, Robert C.: *See—*
Rossen, Jack L.; Miller, Robert C.; and Gellman, Gary, 3,851,084.

Mills, Stacey M.: *See—*
Wilkins, Judd R.; and Mills, Stacey M., 3,850,754.

Milonas, Janet O.: *See—*
Milonas, Timothy S.; and Milonas, Janet O., 3,850,563.

Milonas, Timothy S.; and Milonas, Janet O. System and method for confectionary molding. 3,850,563, Cl. 425-275.000.

Minami, Shinsaku: *See—*
Takeya, Kenji; Shimizu, Jiro; and Minami, Shinsaku, 3,850,179.

Mine Safety Appliances Company: *See—*
Monsted, John W., Jr., 3,850,600.
Temple, Robert, 3,850,075.

Minks, Floyd A.: *See—*
Minks, Floyd M.; and Minks, Floyd A., 3,851,198.

Minks, Floyd M.; and Minks, Floyd A. Electrical discharge advance system and method. 3,851,198, Cl. 310-70.00r.

Minnesota Mining & Manufacturing Company: *See—*
Steinhauser, Armin H.; and Baratto, Eugene L., 3,849,949.

Minnesota Mining and Manufacturing Company: *See—*
Buerkley, Donald D.; and Lange, Heinz E., 3,850,649.
Pearson, Walter C., 3,850,779.
Skavnak, James Edward, 3,850,523.
Thielen, James E., 3,850,533.

Minnick, Leonard John, to Foster Wheeler Corporation, mesne. Method for controlling air pollution. 3,851,042, Cl. 423-244.000.

Mino, Hiroshi; and Miyanishi, Shozo, to Toyo Kogyo Co., Ltd. Metal spraying process. 3,850,669, Cl. 117-48.000.

Minolta Camera Kabushiki Kaisha: *See—*
Uesugi, Kyozo, 3,850,507.

Mintz, Nathan H.; and Kamke, Edward H., Jr., to Unisil Molds, Inc. Apparatus for vulcanizing rubber molds. 3,850,559, Cl. 425-144.000.

Misaki, Takashi: *See—*
Sasabe, Kaoro; Kotera, Hiroaki; Misaki, Takashi; and Hane, Toshihide, 3,851,094.

Misawa Homes Co. Ltd.: *See—*
Hanaoka, Tadashi, 3,849,952.

Miskel, John J.; Kindt, Warren W.; and Connor, Edward C., to Scherer, R. P., Corporation, mesne. Soft gelatin capsule containing high water content fill. 3,851,051, Cl. 424-37.000.

Mita Industrial Company Limited: *See—*
Washio, Takaji; and Aizawa, Tatsuo, 3,850,520.

Mitchell, William Eric, to Dunlop Limited. Divided rim and tire assemblies. 3,850,220, Cl. 152-400.000.

Mitre Corporation, The: *See—*
Willard, David G.; Cogan, Michael S.; Vacherot, Maurice G.; and Shay, John W., 3,851,104.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Fujimura, Takeo; Nakamura, Koji; and Hayakawa, Kazuhiko, 3,850,666.
Yokoyama, Masahiro; and Kobayashi, Takanori, 3,851,237.

Mitsubishi Kasei Kogyo Kabushiki Kaisha (also as Mitsubishi Chemical Industries, Limited): *See—*
Baba, Nobuyuki; and Sato, Shozo, 3,850,848.

Mitsubishi Oil Company: *See—*
Iwama, Akira; Toyoguchi, Mitsuru; Takehara, Kikuo; and Hamuro, Yasumasa, 3,850,586.

Mitsubishi Petrochemical Company Limited: *See—*
Kunugi, Taiseki; Fujimoto, Kaoru; Arai, Hiromichi; and Watanabe, Yoshihisa, 3,850,843.

Mitsubishi Rayon Co., Ltd.: *See—*
Ide, Fumio; Kotake, Yahide; and Korenaga, Satoshi, 3,850,898.

Mitsui Petrochemical Industries, Ltd.: *See—*
Wada, Shigeru; Oi, Hidesaburo; Matsuzawa, Norio; Nishimura, Hiroshi; and Sasaki, Juntaro, 3,850,899.

Mitsui Shipbuilding and Engineering Co., Ltd.: *See—*
Maeda, Kazuo, 3,850,309.

Mitsui Toatsu Chemicals, Inc.: *See—*
Yoshikawr, Shinsuke; and Sawa, Yuji, 3,850,573.

Mittleman, John R., to United States of America, Navy. Method and apparatus for positioning a cofferdam. 3,849,996, Cl. 61-68.000.

Miyanishi, Shozo: *See—*
Mino, Hiroshi; and Miyanishi, Shozo, 3,850,669.

Miyata, Katsuhiko: *See—*
Uno, Naoyuki; Nomura, Katsuhiko; Sakazaki, Tadazumi; Watanabe, Koichiro; Miyata, Katsuhiko; and Urano, Fumio, 3,850,530.

Mizutani, Toshio: *See—*
Itaya, Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Kameda, Nobuyuki; Fujimoto, Keimei; and Okuno, Yositosi, 3,850,977.

Mo Och Domsjo Aktiebolag: *See—*
Hellsten, Karl Martin Edvin; and Santamaki, Seppo Olavi, 3,850,831.
Hellsten, Karl Martin Edvin; and Klingberg, Anderson William, 3,850,834.

Mobil Oil Corporation: *See—*
Peiser, Alfred M.; Antal, Michael J.; and Weiss, Gustave J., 3,850,743.

Modulus Corporation: *See—*
Johnson, Robert Carol, 3,850,133.

Mohasco Industries, Inc.: *See—*
Katz, Alex J.; Caldwell, Robert J.; and Cycowicz, Izchak, 3,850,475.

Mohawk Data Sciences Corporation, mesne: *See—*
Sweeney, David F., 3,850,097.

Mohr, John Gilbert, to John-Manville Corporation. Glass fiber sixing composition and resultant product with high resistance to abrasion. 3,850,869, Cl. 260-29.6mn.

Mol, Jacob C., to Wal Vac, Inc. Method of installing a wall mounted vacuum cleaning unit. 3,849,866, Cl. 29-469.000.

Molins Limited: *See—*
Labbe, Francis A. M.; Preston, Edward George; Dimgli, Paul; and Hirsh, Ivan Yehudi, 3,850,065.
Labbe, Francis A. M., 3,850,177.

Monajjem, Freydoun, to General Tire & Rubber Company, The. Harmonic composite grind. 3,849,942, Cl. 51-165.00r.

Monkhouse, Donald C., to Pfizer Inc. Stabilized E-series prostaglandins. 3,851,052, Cl. 424-45.000.

Monsanto Company: *See—*
Dalton, William O., 3,851,014.
Hamm, Philip C., 3,850,608.
McKinney, Ray, Jr.; and Hofferbert, William L., Jr., 3,850,889.

Monsted, John W., Jr., to Mine Safety Appliances Company. Filter media. 3,850,600, Cl. 55-524.000.

Montecatini Edison S.p.A.: *See—*
Ciaperoni, Aldemaro, 3,850,890.
Longi, Paolo; Giannini, Umberto; and Mazzocchi, Romano, 3,850,842.
Montino, Franco; and Colombo, Luigi, 3,850,612.

Montgomery, Jerome J., to Montgomery, Rodney Earl and Montgomery, Margaret Worthman. Stacking and bundling device for newspapers, magazines, and other rectangular sheet materials. 3,850,092, Cl. 100-34.000.

Montgomery, Margaret Worthman: *See—*
Montgomery, Jerome J., 3,850,092.

Montgomery, Rodney Earl: *See—*
Montgomery, Jerome J., 3,850,092.

Montino, Franco; and Colombo, Luigi, to Montecatini Edison S.p.A. Process for preparing finely particled nickel powders having a spheroidal form. 3,850,612, Cl. 75-.5aa.

Moody, Thomas B.: *See—*
McIlwain, Erwin D.; and Moody, Thomas B., 3,850,091.

Moore, Arthur Ronald. Device for rolling sections of carpet. 3,850,381, Cl. 242-66.000.

Moore, Darrlle DeForest; and Walsh, William Joseph, to Sybron Corporation. Laboratory mixer. 3,850,580, Cl. 23-259.000.

Moore, Lawrence A., to Beloit Corporation. Parison oven having improved discharge station. 3,850,566, Cl. 425-387.00b.

Moore, Pearl K. Hand operated actuating device for a vehicle brake pedal. 3,850,048, Cl. 74-491.000.

Moore, Robert P., to Sperry Rand Corporation. Inter-module connector system. 3,850,492, Cl. 339-18.00r.

Moracz, Donald J.; and Stachura, Edward J., to TRW Inc. Electrical discharge machining process employing brass electrode, silicone oil dielectric, and controlled voltage pulses. 3,851,135, Cl. 219-69.00m.

Moran, Clifford M.: *See—*
Marantz, Laurence B.; and Moran, Clifford M., 3,850,835.

Moraw, Roland; Schadlich, Gunther; and Schadlich, Renate, to Kalle Aktiengesellschaft. Process for the production of holograms. 3,850,633, Cl. 96-27.00h.

Morgan, Brian E. Injection site for a flow conduit. 3,850,202, Cl. 138-103.000.

Mori, Kenichi: *See—*
Nagazumi, Yasuo; and Mori, Kenichi, 3,850,447.

Morinaga Milk Industry Co., Ltd.: *See—*
Okada, Katsuto; Yamanami, Shoichi; Ishibashi, Akichika; and Watanabe, Hirotaka, 3,850,406.

Mornet, Philippe: *See—*
Agouri, Elias; Mornet, Philippe; Parlant, Claude; and Rideau, Jacques, 3,851,015.

Morohashi, Tadao, to NCR Corporation. Plural high-speed printing apparatus. 3,850,098, Cl. 101-93.00c.

Morris, Earl L.; and Sally, Theodore J., to Acorn Engineering Company. Drain with captive vandal-proof stopper. 3,849,809, Cl. 4-295.000.

Morris, Myron J.: *See—*
Deebel, George F.; Doden, Bernard M.; and Morris, Myron J., 3,851,191.

Morrow, Warren P., to United States of America, Army. Piezoelectric multi-purpose device for projectiles (U). 3,850,102, Cl. 102-70.2ga.

Moser, Erich: *See—*
Mihm, Hans-Peter; and Moser, Erich, 3,850,278.

Motoda Electronics Co., Ltd.: *See—*
Motoda, Kenro, 3,850,307.

Motoda, Kenro, to Motoda Electronics Co., Ltd. Article handling apparatus. 3,850,307, Cl. 212-59.00r.

Motorola, Inc.: *See—*
Eastmond, Bruce C., 3,851,253.
En John; and Brown, Daniel P., 3,851,101.
Lace, Melvin A., 3,850,357.
Lipinski, Richard D.; and Hagood, Raymond E., 3,851,123.

Mouissie, Bob, to Du Pont de Nemours, E. I., and Company. Circuit board socket. 3,850,491, Cl. 339-17.00c.

Moulds, John W., to General Motors Corporation. Carburator. 3,851,021, Cl. 261-50.00a.

Mounce, George R., to Electronic Associates of Canada Ltd. Microwave moisture measuring apparatus. 3,851,244, Cl. 324-58.50a.

Mounce, Whitman D.; and Mann, Ralph W. Mine firing control system. 3,850,100, Cl. 102-18.000.

Moyer, Norman E., to Hughes Aircraft Company. Bistable digital circuitry. 3,851,189, Cl. 307-279.000.

Mroczek, Thomas J.: *See—*
Marceau, William E.; Bates, William G.; and Mroczek, Thomas J., 3,850,420.

Muchmore, Richard W.; Wetmor, Judson Douglas; and Hughes, John R., to Raychem Corporation. Cable coupling. 3,851,296, Cl. 339-60.00m.

Mueller, Norman Paul: *See—*
Webster, Richard Roy; and Mueller, Norman Paul, 3,850,020.

Mulbarger, Albert Eugene, Jr.: *See—*
Krumreich, Charles Louis; Mulbarger, Albert Eugene, Jr.; and Walden, Stephen William, 3,850,497.

Muller, Erich; Nickl, Josef; Roch, Josef; and Narr, Berthold. 5,7-Diamino-substituted thiazolo(5,4-D)pyraimidines and salts thereof. 3,850,917, Cl. 260-243.00b.

Muller, Hans Rudolf, to Sundstrand Date Control, Inc. Head up display and pitch generator. 3,851,303, Cl. 340-27.0na.

Muller, Hans-Jurgen: *See—*
Chattopadhayay, Asoke; and Muller, Hans-Jurgen, 3,850,154.

Muller, Helmut; Rosenberger, Siegfried; and Schwarzenbach, Kurt, to Ciba-Geigy Corporation. 2-Amino-4,6-disalicyloyl-hydrazino-s-triazines. 3,850,918, Cl. 260-247.20a.

Muller, Klaus-Peter: *See—*
Koberstein, Edgar; and Muller, Klaus-Peter, 3,850,851.

Mullins, John W. Line tapping service valve clamp. 3,850,192, Cl. 137-318.000.

Multifold-International, Inc.: *See—*
Runyan, Kenneth R.; Honnert, Quentin E.; and Porter, Ronald H., 3,850,314.

Mundy, Charles S., to United States of America, Navy. Crane attachment for dampening swinging motion. 3,850,306, Cl. 212-58.00r.

Munoz, Robert M., to United States of America, National Aeronautics and Space Administration. Continuous fourier transform method and apparatus. 3,851,162, Cl. 235-156.000.

Munro, Geoffrey Hector James, to AMP Incorporated. Substrate connector. 3,851,297, Cl. 339-61.00m.

Murakami, Noboru, to Aisin Seiki Kabushiki Kaisha. Brake controlled pressure modulating clutch valve. 3,850,273, Cl. 192-4.00a.

Murakami, Toyoharu; Niguchi, Yutaka; Nishimura, Kazutaka; and Yukio, Shimizu, to Matsushita Electric Industrial Co., Ltd. Discharge lamp starting apparatus. 3,851,209, Cl. 315-99.000.

Murakoshi, Satoshi: *See—*
Tani, Kaneyasu; Fushino, Yukio; Nakajima, Taiji; Noguchi, Hiroaki; Kurita, Yutaka; Murakoshi, Satoshi; and Wakayama, Hiroo, 3,850,672.

Murata, Hiroshi: *See—*
Yonezuka, Masayasu; and Murata, Hiroshi, 3,851,223.

Murata, Noboru: *See—*
Kato, Kazuhiro; Murata, Noboru; and Kobayashi, Goro, 3,851,180.

Murley, Roger Wayne: *See—*
Thomas, Robert A.; Sellers, Jerry Wayne; and Murley, Roger Wayne, 3,849,943.

Murphy, John J.: *See—*
Aronstein, Jesse; Leoff, Arkady; Murphy, John J.; and Ruder, Winfield S., 3,850,105.

Murphy, John Michael, to Exchem Holdings Limited. Reinforcing elements for stabilization of rocks. 3,849,992, Cl. 61-45.00b.

Murphy, Thomas Vincent. Display bin. 3,850,290, Cl. 206-44.00r.

Murray, Malcolm G., Jr. Machine element alignment positioner. 3,849,857, Cl. 29-200.00p.

Murtha, Timothy P.; Zuech, Ernest A.; and Gray, Roy A., to Phillips Petroleum Company. Tris(haloalky) N-hydrocarbylcarbamates as flame retardant agents. 3,850,878, Cl. 260-45.90r.

Musschoot, Albert. Vertical lift conveyor. 3,850,288, Cl. 198-220.0ba.

Nabalco Engineering Pty. Limited: *See—*
Gower, Gordon Shields, 3,849,997.

Nabisco, Inc.: *See—*
Albrecht, Robert J.; and Stanley, Alexander J., 3,851,088.

Nack, Michael R.: *See—*
Crawford, Donald C.; and Nack, Michael R., 3,850,780.

Nagai, Tatsuhiko: *See—*
Tani, Kaneyasu; Imoto, Shozo; Kawazoe, Shiro; Ichihara, Wachio; Nagai, Tatsuhiko; and Yamada, Bunkichi, 3,850,667.

Nagano, Tetsuro: *See—*
Toda, Tadahide; Nagano, Tetsuro; and Kato, Takashi, 3,849,984.

Nagazumi, Yasuo; and Mori, Kenichi, to Nissan Motor Company, Limited. Vehicle occupant restraint device. 3,850,447, Cl. 280-150.00b.

Naguro, Kazutaka: *See—*
Seya, Takao; and Naguro, Kazutaka, 3,850,618.

Nagy, Georges: *See—*
Balde, Daniel; and Nagy, Georges, 3,851,020.

Nakagawa, Jihei, to Olympus Optical Co., Ltd. Fisheye lens system. 3,850,509, Cl. 350-214.000.

Nakajima, Jyunya: *See—*
Shimamura, Isao; Imai, Kiyoshi; Nakajima, Jyunya; and Iwano, Haruhiko, 3,850,636.

Nakajima, Taiji: *See—*
Tani, Kaneyasu; Fushino, Yukio; Nakajima, Taiji; Noguchi, Hiroaki; Kurita, Yutaka; Murakoshi, Satoshi; and Wakayama, Hiroo, 3,850,672.

Nakamura, Hiromichi: *See—*
Baba, Kosaku; Hosaka, Akio; and Nakamura, Hiromichi, 3,851,305.

Nakamura, Koji: *See—*
Fujimura, Takeo; Nakamura, Koji; and Hayakawa, Kazuhiko, 3,850,666.

Nakanishi, Akito; Nakazawa, Hisashi; Yamashima, Kazuyoshi; Shiraiwa, Toshio; and Yamaguchi, Hisao, to Sumitomo Metal Industries, Ltd. Immersion ultrasonic inspection system of the whole surface of rolled flat bar. 3,850,027, Cl. 73-67.80s.

Nakanishi, Kazuo; Kagi, Hideo; Iwata, Takashi; Haruta, Hisae; Yoshida, Kazuhiko; and Matui, Akira, to Fujisawa Pharmaceutical Co. Ltd. Method for inhibiting plant growth with quaternary ammonium salts. 3,850,611, Cl. 71-121.000.

Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; Takayama, Masaharu; Katayama, Shigenari;. Ono, Keiichi; Yanagihara, Izumi; Tanaka, Yoshihiro; Katsube, Jinki; Inaba, Shigeho; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. Process for producing iperidine derivatives by degrading quaternary piperidinium salts. 3,850,935, Cl. 260-293.520.

Nakayama, Hiroyuki: *See—*
Juna, Kiyoshi; Imai, Takeo; Nakayama, Hiroyuki; Nobuyuki, Kita; Kiyohiko, Asada; and Tetsud, Aihara, 3,850,770.

Nakazawa, Hisashi: *See—*
Nakanishi, Akito; Nakazawa, Hisashi; Yamashima, Kazuyoshi; Shiraiwa, Toshio; and Yamaguchi, Hisao, 3,850,027.

Namba, Keishichi, to Tokyo Netsushori Kogyo Kabushiki Kaisha. Atmospheric furnace apparatus. 3,850,574, Cl. 432-203.000.

Nanba, Shinichi: *See—*
Yoshino, Tsutomu; Nanba, Shinichi; Fujimoto, Norihiro; and Araki, Hideo, 3,849,940.

Napko Corporation: *See—*
Siegmund, Alfred J., Jr., 3,850,664.

Narr, Berthold: *See—*
Muller, Erich; Nickl, Josef; Roch, Josef; and Narr, Berthold, 3,850,917.

Nath, Dilip K., to General Electric Company. Preparation of rare-earth oxysulfide luminescent material. 3,850,837, Cl. 252-301.40s.

National Distillers and Chemical Corporation: *See—*
Kylander , Robert L.; and Du Von, Richard H., Jr., 3,850,993.

National Research Development Corporation: *See—*
Lagnley, John Arthur, 3,850,159.

National Starch and Chemical Corporation, mesne: *See—*
Jeffries, Robert; and Grover, Martin M., 3,850,786.

NCR Corporation: *See—*
Bradam, William R., 3,850,068.
Kreitzer, Carl E., 3,850,299.
Morohashi, Tadao, 3,850,098.

Neander, Herbert B.: *See—*
Kaunitz, Clyde F., 3,849,871.

Nebendorf, Heinrich, to Gebr. Hilgeland. Rotary press. 3,850,494, Cl. 72-339.000.

Nebzydoski, John W.; Patmore, Edwin L.; and Rubin, Isaac D., to Texaco Inc. Synthetic aircraft turbine oil. 3,850,824, Cl. 252-46.700.

Nehen, Ulrich: *See—*
Von Bonin, Wulf; Nehen, Ulrich; and Von Gizycki, Ulrich, 3,850,650.

Neillie, William Frederick Soutar; and Tune, John Barry, to Lever Brothers Company. Detergent compositions containing an alkali metal carbonate. 3,850,852, Cl. 252-536.000.

Neilson, Marion H. Drawsheet enabling user to easily slide thereon. 3,849,813, Cl. 5-334.00r.

Nelson, Gerald P. Airplane-mounted sign. 3,849,921, Cl. 40-212.000.

Nelson, Stanley, to Makin, J. & J., Limited. Flexible sheet material. 3,850,673, Cl. 117-76.00a.

Nettles, Michael L., to International Business Machines Corporation. Continuous compliant guide for moving web. 3,850,358, Cl. 226-198.000.

Neumunstersche Maschinen- und Apparatebau Gesellschaft mbH: *See—*
  Bauch, Ernst; and Beitz, Juergen, 3,849,844.
Neunhoeffer, Otto: *See—*
  Iyimen, Siddik; Lehmann, Gunter; Neunhoeffer, Otto; and Vitzthum, Otto, 3,850,958.
Neuzil, Richard W.: *See—*
  de Rosset, Armand J.; and Neuzil, Richard W., 3,851,006.
New, Easton D.: *See—*
  Peters, Jack; and New, Easton D., 3,850,441.
New England Nuclear Corporation: *See—*
  Adler, Norman; and Camin, Leopoldo Lazaro, 3,851,044.
Newman, Robert Henry: *See—*
  Dodson, Stanley Charles; and Newman, Robert Henry, 3,850,828.
Nibisco, Inc.: *See—*
  Rossen, Jack L.; Miller, Robert C.; and Gellman, Gary, 3,851,084.
Nickl, Josef: *See—*
  Muller, Erich; Nickl, Josef; Roch, Josef; and Narr, Berthold, 3,850,917.
Nicolet, Rene; and Gutmann, Walter, to Lonza Ltd. Process for the production of transparent, impact-resistant polymers of vinyl chloride. 3,851,016, Cl. 260-884.000.
Nicrometal Marine Hardware Co., Inc.: *See—*
  Hultin, Stefan K., 3,850,468.
Niederwemmer, Paul. Irrigation system. 3,849,991, Cl. 61-13.000.
Niegisch, Walter D.: *See—*
  Clendinning, Robert A.; Potts, James E.; and Niegisch, Walter D., 3,850,862.
  Clendinning, Robert A.; Potts, James E.; and Niegisch, Walter D., 3,850,863.
Nielsen, Harrie W.: *See—*
  Beck, James C.; Hartzler, Earnest D.; and Nielsen, Harrie W., 3,851,165.
Niguchi, Yutaka: *See—*
  Murakami, Toyoharu; Niguchi, Yutaka; Nishimura, Kazutaka; and Yukio, Shimizu, 3,851,209.
Nihon Beru-Haueru Kabushiki Kaisha; (Bell & Howell Japan, Ltd.): *See—*
  Isono, Tadao, 3,851,278.
Nii, Kazukuni, to Sumitomo Electric Industries, Ltd. Read-out data entry system for a plurality of super-imposed data entry cards. 3,851,152, Cl. 235-61.11c.
Nikolov, Ivan Dimov: *See—*
  Balevski, Anguel Tonchev; Nikolov, Ivan Dimov; Dimova, Vasilka Petrova; and Zadgorski, Stoyan Nedkov, 3,850,625.
Nilsson, Sven Walter, to SKF Industrial Trading and Development Company B.V. Ball nut screw. 3,850,046, Cl. 74-459.000.
Nippon Electric Company, Limited: *See—*
  Furuse, Takao; Matsuoka, Tohru; and Kato, Kiyohisa, 3,851,275.
  Yonezuka, Masayasu; and Murata, Hiroshi, 3,851,223.
Nippon Kakoh Seishi Kabushiki Kaisha: *See—*
  Tani, Kaneyasu; Fushino, Yukio; Nakajima, Taiji; Noguchi, Hiroaki; Kurita, Yutaka; Murakoshi, Satoshi; and Wakayama, Hiroo, 3,850,672.
Nippon Kokan Kabushiki Kaisha: *See—*
  Yoshihara, Tetsuya, 3,850,351.
Nippon Kokoh Seishi Kabushiki Kaisha: *See—*
  Tani, Kaneyasu; Imoto, Shozo; Kawazoe, Shiro; Ichihara, Wachio; Nagai, Tatsuhiko; and Yamada, Bunkichi, 3,850,667.
Nippon Soken, Inc.: *See—*
  Akita, Sigeyuki, 3,851,107.
Nishimura, Hiroshi: *See—*
  Wada, Shigeru; Oi, Hidesaburo; Matsuzawa, Norio; Nishimura, Hiroshi; and Sasaki, Juntaro, 3,850,899.
Nishimura, Kazutaka: *See—*
  Murakami, Toyoharu; Niguchi, Yutaka; Nishimura, Kazutaka; and Yukio, Shimizu, 3,851,209.
Nissan Motor Company, Limited: *See—*
  Baba, Kosaku; Hosaka, Akio; and Nakamura, Hiromichi, 3,851,305.
  Mawatari, Toshihiro; Kunugi, Takashi; Harada, Masanori; and Sasaki, Kenichi, 3,850,151.
  Nagazumi, Yasuo; and Mori, Kenichi, 3,850,447.
Nissei Plastics Industrial Co., Ltd.: *See—*
  Takeuchi, Setsuyuki; Ibe, Nobukuni; Iriko, Fumio; and Yuzawa, Yoshihiko, 3,850,562.
Nisshin Oil Mills, Ltd.: *See—*
  Sakita, Takashi, 3,851,079.
Nixon, Joseph R., Jr., to Hercules Incorporated. Treatment of the heavy ends fraction of cumene hydroperoxide cleavage reaction mixture. 3,850,996, Cl. 260-621.00a.
NL Industries, Inc.: *See—*
  Simons, Leon, 3,850,074.
Nobuyuki, Kita: *See—*
  Juna, Kiyoshi; Imai, Takeo; Nakayama, Hiroyuki; Nobuyuki, Kita; Kiyohiko, Asada; and Tetsud, Aihara, 3,850,770.
Nocek, Stanley J.: *See—*
  McClurg, Dale C.; and Nocek, Stanley J., 3,851,286.
Noel, Eugene M. Electric-powered griddle-loading mechanism. 3,850,320, Cl. 214-314.000.
Noguchi, Hiroaki: *See—*
  Tani, Kaneyasu; Fushino, Yukio; Nakajima, Taiji; Noguchi, Hiroaki; Kurita, Yutaka; Murakoshi, Satoshi; and Wakayama, Hiroo, 3,850,672.
Noll, Burton A., to Corning Glass Works. Transfer and grinding apparatus. 3,849,944, Cl. 51-215.0cp.
Nomiya, Kosei: *See—*
  Hatsukano, Yoshikazu; Nomiya, Kosei; and Kawagoe, Hiroto, 3,851,185.
Nomura, Katsuhiko: *See—*
  Uno, Naoyuki; Nomura, Katsuhiko; Sakazaki, Tadazumi; Watanabe, Koichiro; Miyata, Katsuhiko; and Urano, Fumio, 3,850,530.
Norconsult A.S.: *See—*
  Arild, Arnulf; Creed, John; Folkestad, Olav; Odegard, Erik; Brandtzaeg, Anton; and Selberg, Arne Brigt Bru., 3,849,821.
Nordstrom, Arnold B., to Aircraft Mechanics, Inc. Air cargo container loader. 3,850,283, Cl. 198-88.000.
Normbau GmbH, Maschinen-Apparate-Werkzeuge & Co.: *See—*
  Frauendorf, Manfred, 3,849,815.
Norris, William P.: *See—*
  Richter, Herbert P.; Heller, Carl A.; Norris, William P.; and McEwan, William S., 3,850,836.
North Electric Company: *See—*
  Wallace, Kenneth Andrew, 3,851,182.
Northeved, Allan: *See—*
  Lund, Svend Aage; Hansen, Hans Nielsen; Holst, Heige Alfred; and Northeved, Allan, 3,850,026.
Norton Company: *See—*
  Kiovsky, Joseph R.; and Meacham, Jeffrey W., 3,850,849.
Norton, Richard V., to Sun Research and Development Co. Dicarboxylic acid purification process. 3,850,982, Cl. 260-525.000.
Norton-Norwich Products, Inc., mesne: *See—*
  Heskett, Donald E.; and Heskett, John S., 3,851,026.
Notari, Bruno: *See—*
  Fattore, Vittorio; and Notari, Bruno, 3,850,975.
Noto, Joseph C. Adjustable accessory for attaching a brooch to a band. 3,850,010, Cl. 63-2.000.
Nowlin, Radford L. Process for counter current pomace washing. 3,851,087, Cl. 426-425.000.
Nozaki, Taketoshi: *See—*
  Ikeda, Kiichi; Taguchi, Kintaro; Nozaki, Taketoshi; and Matsumoto, Shuntetsu, 3,850,259.
Nudelman, Abraham; and McCaully, Ronald J., to American Home Products Corporation. 2,3,6,7-Tetra hydro-2,2-dimethyl-5,7-dioxo-8-hydronitrogeno-5H-T hiazolo-[3,2-c]pyrimidine, 3-carboxylic acids, esters and alkali metal salts and the preparation thereof. 3,50,933, Cl. 260-256.50r.
Nuding, James Andrew: *See—*
  Miller, Charles Edward; and Nuding, James Andrew, 3,851,287.
Nussbaumer, Thomas, to Adeola AG. Fluid flow control elements. 3,850,082, Cl. 91-461.000.
Nutter, Charles E.: *See—*
  Stapleford, Stuart H.; and Nutter, Charles E., 3,850,601.
N.V. Hollandse Signaalapparaten: *See—*
  Bos, Johannes, 3,849,895.
Obata, Masayoshi: *See—*
  Tanaka, Michio; Ohtsuka, Katsuyuki; Obata, Masayoshi; Amemiya, Koji; Saga, Katsumasa; Kano, Sadaaki; and Kumada, Teru, 3,850,944.
Obenaus, Helmut, to Fehrer, Ernst, Dr. Gesellschaft mbH & Co. and K.G. Textilmaschinenfabrik und Stahlbau. Apparatus for needle-punching a web. 3,849,845, Cl. 28-4.00r.
Obergfell, Allen R., to Fastener Corporation. Fastener driving tool. 3,850,359, Cl. 227-10.000.
Obermeit, Gerhard E. Auto warm-up theft preventing apparatus. 3,850,260, Cl. 180-114.000.
O'Brien, David Frank: *See—*
  Herz, Arthur Herman; and O'Brien, David Frank, 3,850,645.
Ocean Science & Engineering, Inc.: *See—*
  Lovell, Jack, 3,850,128.
Ockenfels, Laurence R. Outrageous game. 3,850,434, Cl. 273-135.0ac.
O'Connor, Chadwell. Actuator controlled instrument support stand. 3,850,395, Cl. 248-171.000.
O'Connor, Joseph M.; and Pasternak, Stephen F., to Peerless of America, Incorporated. Heat exchangers. 3,850,236, Cl. 165-181.000.
Odegard, Erik: *See—*
  Arild, Arnulf; Creed, John; Folkestad, Olav; Odegard, Erik; Brandtzaeg, Anton; and Selberg, Arne Brigt Bru., 3,849,821.
Odier, Jean, to Societe Anonyme Francais du Ferodo. Heat collector and support for disc brakes. 3,850,267, Cl. 188-71.600.
Officine Savio S.p.A.: *See—*
  Savio, Luciano, 3,850,378.
Ogasawara, Makoto: *See—*
  Oka, Isao; Shima, Takeo; Urasaki, Takanori; and Ogasawara, Makoto, 3,851,002.
Ogo, Shinichi; and Hayashi, Yoshiki, to Matsushita Electric Industrial Co., Ltd. Photosensitive materials in electrophotography. 3,850 629, Cl. 96-1.500.
O'Grady, James Kenneth: *See—*
  Adamson, Gerald James; and O'Grady, James Kenneth, 3,849,823.
Ogura, Taketoshi, to Sanwa Kiko Kabushiki Kaisha. Commutator grinder. 3,849,946, Cl. 51-244.000.
O'Halloran, Robert W. Chair connector. 3,850,534, Cl. 403-190.000.
Ohashi, Shin-Ichi: *See—*
  Fukushima, Isao; and Ohashi, Shin-Ichi, 3,851,263.
Ohga, Shoichiro: *See—*
  Hirata, Teruhito; Ohga, Shoichiro; and Kaya, Tomoji, 3,850,296.

Ohki, Sadao: *See—*
  Matuo, Ichiro; and Ohki, Sadao, 3,850,921.
  Matuo, Ichiro; and Ohki, Sadao, 3,850,922.
Ohorodnik, Alexander: *See—*
  Gehrmann, Klaus; Ohorodnik, Alexander; Dettmeier, Udo; and Berns, Heinz-Josef, 3,850,999.
Ohrnell, Olof. Suspension yoke for the conveyance of goods. 3,850,280, Cl. 198-1.000.
Ohtsuka, Katsuyuki: *See—*
  Tanaka, Michio; Ohtsuka, Katsuyuki; Obata, Masayoshi; Amemiya, Koji; Saga, Katsumasa; Kano, Sadaaki; and Kumada, Teru, 3,850,944.
Oi, Hidesaburo: *See—*
  Wada, Shigeru; Oi, Hidesaburo; Matsuzawa, Norio; Nishimura, Hiroshi; and Sasaki, Juntaro, 3,850,899.
Oiles Kogyo Kabushiki Kaisha: *See—*
  Horikawa, Masayuki, 3,850,821.
Oka, Isao; Shima, Takeo; Urasaki, Takanori; and Ogasawara, Makoto, to Teijin Limited. Isomerization of dimethylnaphthalenes. 3,851,002, Cl. 260-668.00a.
Okada, Katsuto; Yamanami, Shoichi; Ishibashi, Akichika; and Watanabe, Hirotaka, to Morinaga Milk Industry Co., Ltd. Double sealing valve. 3,850,406, Cl. 251-210.000.
Okamoto, Toyoo; and Watanabe, Toshio, to Ricoh Co., Ltd. Electrostatic transfer-printing sheet stripping device. 3,851,230, Cl. 317-262.00a.
Oki Electric Industry Co., Ltd.: *See—*
  Kato, Kazuhiro; Murata, Noboru; and Kobayashi, Goro, 3,851,180.
Okoshi, Toshio: *See—*
  Inamura, Keizo; Tatsuno, Tadayoshi; and Okoshi, Toshio, 3,850,660.
Okuhara, Akira; Saiki, Masatoshi; and Saito, Nobuo, to Kikkoman Shoyu Co., Ltd. Liquid food preservation. 3,851,076, Cl. 426-262.000.
Okuno, Yositosi: *See—*
  Itaya, Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Kameda, Nobuyuki; Fujimoto, Keimei; and Okuno, Yositosi, 3,850,977.
Olcott, John W.; Seckel, Edward; and Ellis, David R., to United States of America, National Aeronautics and Space Administration, mesne. Integrated lift/drag controller for aircraft. 3,850,388, Cl. 244-75.00r.
Olin Corporation: *See—*
  Clarke, Gail H., Jr.; and Colafati, Ralph A., III, 3,850,674.
  Ford, James A., 3,850,227.
  Gamble, Elton S., 3,850,684.
  Van Allman, Don T.; and Voss, Robert C., 3,850,692.
Olson, Carl O. L.; and Goodwin, Vernon, Jr. Toilet exhaust means. 3,849,808, Cl. 4-213.000.
Olson, Frederick O.: *See—*
  Fisher, Ervin; and Olson, Frederick O., 3,850,596.
Olson, Ronald A., to Tektronix, Inc. Frequency and phase acquisition in a color subcarrier regenerator. 3,850,412, Cl. 358-10.000.
Olsson, Eskil A. I. Fluid pressure valve. 3,850,195, Cl. 137-503.000.
Olszyk, Bernard John: *See—*
  Gregory, Milton Wesley; Olszyk, Bernard John; and Bowles, Oscar Pierce, 3,850,670.
Olympus Optical Co., Ltd.: *See—*
  Nakagawa, Jihei, 3,850,509.
Omron Tateisi Electronics Co.: *See—*
  Tateisi, Kazuma, 3,849,968.
Onitsuka Co., Ltd.: *See—*
  Inohara, Masanobu, 3,849,915.
Ono, Hisatake; Watarai, Syu; and Katsuyama, Harumi, to Fuji Photo Film Co., Ltd. Photosensitive material for electrophotography including indoline derivatives. 3,850,949, Cl. 260-307.00f.
Ono, Keiichi: *See—*
  Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; Takayama, Masaharu; Katayama, Shigenari; Ono, Keiichi; Yanagihara, Izumi; Tanaka, Yoshihiro; Katsube, Jinki; Inaba, Shigeho; and Yamamoto, Hisao, 3,850,935.
Ono, Ryotaro: *See—*
  Kawakami, Masato; Ono, Ryotaro; Furuichi, Minoru; and Kato, Shigeru, 3,850,870.
Optical Recognition Systems: *See—*
  Kenny, Joseph R.; Welch, Rolland Ernst; Reading, William H., III; and Carson, Alfred H., 3,851,309.
Oratronics, Incorporated: *See—*
  Linkow, Leonard I., 3,849,888.
Orenstein & Koppel Aktiengesellschaft: *See—*
  Kranefeld, Wilhelm, 3,850,380.
  Reinecke, Udo; Jurgensmann, Helmut; Riedhammer, Josef; Stangl, Helmut; and Beutler, Gerhard, 3,850,272.
Orion Research Incorporated: *See—*
  Ross, James W., 3,850,761.
Orlandi, Arthur A., to Commercial Wire and Display Prod. Corporation. Article support. 3,850,396, Cl. 248-223.000.
Orlomoski, Roger W., to Litton Industrial Products, Inc. Self-locking fasteners. 3,850,215, Cl. 151-22.000.
Ormsby, George S., to Pioneer Centrifuging Company. Rotating machine wear gauging means and method. 3,849,893, Cl. 33-181.00r.
Orr, Clyde, Jr.; Hendrix, Warren P.; and Camp, Ronnie W., to Micromeritics Instrument Corporation, mesne. Sorption analysis apparatus and method. 3,850,040, Cl. 73-432.0ps.
Orris, Robert M. Clamp apparatus. 3,850,421, Cl. 269-91.000.
Orrvick, Richard A.; and Kulbida, Ihor, to Xerox Corporation. Lamp assembly. 3,851,201, Cl. 313-113.000.
Orszagos Gumiipari Vallalat: *See—*
  Bartha, Zoltan; Fodor, Vince; and Subotics, Gyula, 3,850,568.
Osaka Yogyo Kabushiki Kaisha: *See—*
  Ao, Takeo, 3,850,844.
Osborn Manufacturing Company, The: *See—*
  Charvat, Vernon K., 3,850,589.
Oshima, Kiyoshi: *See—*
  Ukai, Takeshi; and Oshima, Kiyoshi, 3,851,184.
Osthall, Rolf Peter, to Brio Scanditoy AB. Coupling devices for toy vehicles. 3,850,310, Cl. 213-75.0tc.
Otto, Dr. C., & Comp., G.m.b.H.: *See—*
  Rossow, Rolf, 3,850,756.
Otto, Walther: *See—*
  Amsler, Joachim; and Otto, Walther, 3,851,217.
Ouchi, Shunji: *See—*
  Sibuya, Chisei; Ouchi, Shunji; and Hayashi, Shigeyoshi, 3,850,976.
Outboard Marine Corporation: *See—*
  Arff, Uwe F., 3,849,884.
  Kolorz, Bruno, 3,849,883.
  Thomas, Edward E., 3,850,155.
Outokumpu Oy: *See—*
  Fugleberg, Sigmund Peder, 3,850,619.
Owen, Robert E., to General Motors Corporation. Leveling system with a single offset mounted air spring. 3,850,437, Cl. 280-6.00r.
Owens-Corning Fiberglas Corporation: *See—*
  Marzocchi, Alfred, 3,850,681.
  Marzocchi, Alfred, 3,850,872.
  Philipps, Thomas E.; and Belue, James C., 3,850,294.
  Stapleford, Stuart H.; and Nutter, Charles E., 3,850,601.
  Uffner, William E., 3,850,866.
Owens-Illinois, Inc.: *See—*
  Blackwelder, Maurice W., 3,851,039.
  Cook, John E., 3,850,607.
  Crawford, James E., 3,850,891.
  Di Frank, Frank J.; and Greiwe, Daniel L., 3,850,319.
  Johnson, John R., 3,850,285.
  Rough, Robert R., 3,850,606.
  Schermerhorn, Jerry D.; and Shimizu, Yukio, 3,851,210.
Oxel, Berton R., to Hoover Company, The. Broiler lid for frypans and the like. 3,850,331, Cl. 220-335.000.
Oxy Metal Finishing Corporation: *See—*
  Karustis, George A., Jr.; and Leahy, Elizabeth P., 3,850,765.
Oy Strombert AB.: *See—*
  Mannonen, Pentti, 3,850,809.
Ozasa, Susumu; and Kasai, Shozo, to Hitachi, Ltd. Compound electron lens for electron microscope and the like. 3,851,172, Cl. 250-311.000.
Paddington, Arthur Loftus, to British Ropes Limited. Pipe couplings. 3,850,454, Cl. 285-98.000.
Paladino, Dick. Oboe fingering system and mouthpiece. 3,850,071, Cl. 84-380.000.
Palazzetti, Mario; and Grisotto, Franco, to Fiat-Societa per Azioni. Connector for sealingly interconnecting a multiple core electric cable and a printed circuit. 3,851,294, Cl. 339-17.00f.
Pall Corporation: *See—*
  Pall, David B.; and Krakauer, Sidney, 3,850,813.
Pall, David B.; and Krakauer, Sidney, to Pall Corporation. End caps with peripheral grooves for tubular filter elements and process for making the same. 3,850,813, Cl. 210-232.000.
Pallos, Ferenc M.: *See—*
  Lee, Hwalin; Pallos, Ferenc M.; and Menn, Julius J., 3,851,061.
Panokraft Corporation of Canada Limited: *See—*
  Yates, Herbert G., 3,849,955.
Pao, Henry C.; Donnerstein, Richard L.; and Steiner, Stephen A. High speed shift register with T-T-L compatibility. 3,851,187, Cl. 307-221.00r.
Pappas, Nicholas C.: *See—*
  Roehrig, Paul G.; Pappas, Nicholas C.; and Durbin, Robert E., 3,851,071.
Parallel Data Systems: *See—*
  Pori, John R., 3,851,264.
Parekh, Girish Girdhar; and Blank, Werner Josef, to American Cyanamid Company. Process for depositing a film. 3,850,734, Cl. 204-181.000.
Parekh, Girish Girdhar; and Blank, Werner Josef, to American Cyanamid Company. Process for depositing a film. 3,850,735, Cl. 204-181.000.
Park, Chang Man, to Standard Oil Company. Separation of terephthalic from para-toluic acid from solutions thereof in water and/or acetic acid. 3,850,983, Cl. 260-525.000.
Park, John N.; Steigerwald, Robert L.; and Walker, Loren H., to General Electric Company. Rectifier circuits using at least one multi-winding transformer in combination with transistors connected in an inverter mode and arranged in a bridge configuration. ,851,240, Cl. 321-45.000.
Park, Vernon K., to Eastman Kodak Company. Hot melt pressure sensitive adhesives. 3,850,858, Cl. 260-2.fbb.
Parke, Davis & Company: *See—*
  Elslager, Eward F.; and Worth, Donald F., 3,850,939.
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  - Agouri, Elias; Mornet, Philippe; Parlant, Claude; and Rideau, Jacques, 3,851,015.
- Parlin, David B.: *See—*
  - Peters, Robert I.; and Parlin, David B., 3,850,783.
- Parmer, Kenneth Ronald: *See—*
  - Cobaugh, Robert Franklin; and Parmer, Kenneth Ronald, 3,849,870.
- Parsons Brothers Limited: *See—*
  - Robinson, Peter G., 3,850,329.
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- Passarelli, Frank J. Plastic forming method. 3,851,022, Cl. 264-51.000.
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  - O'Connor, Joseph M.; and Pasternak, Stephen F., 3,850,236.
- Patel, Arvind M., to International Business Machines Corporation. Triple track error correction. 3,851,306, Cl. 340-146.1al.
- Patel, Kiritkumar R., to Eaton Corporation. Delayed action torque controlled centrifugal clutch. 3,850,276, Cl. 192-105.0ba.
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  - Nebzydoski, John W.; Patmore, Edwin L.; and Rubin, Isaac D., 3,850,824.
- Patono, Carlo Luigi, to Varian S.p.A. Substrate carrying apparatus for use in coating equipment. 3,850,138, Cl. 118-49.000.
- Patrick, Richard M.: *See—*
  - Hoag, Ethan D.; Patrick, Richard M.; Locke, Edward V.; and Hella, Richard A., 3,851,273.
- Patsch, Manfred: *See—*
  - Eilingsfeld, Heinz; and Patsch, Manfred, 3,850,998.
- Patterson, Walter H.: *See—*
  - Hills, Richard E.; and Patterson, Walter H., 3,850,581.
- Pattullo, George R.: *See—*
  - Reedy, Donald G.; and Pattullo, George R., 3,850,440.
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- Pearson, Walter C., to Minnesota Mining and Manufacturing Company. Tape applicator. 3,850,779, Cl. 156-523.000.
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  - Roberts, Maurice; and Peasley, David, 3,850,483.
- Peavey Company: *See—*
  - Huessy, Eric G., 3,851,072.
- Peerless of America, Incorporated: *See—*
  - O'Connor, Joseph M.; and Pasternak, Stephen F., 3,850,236.
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- Pelabon, Andre E., to ANF Frangeco S.A. Air intake system. 3,850,229, Cl. 165-44.000.
- Penning, Cornelis: *See—*
  - Kleis, Derk; Hanneman, Adriaan; Penning, Cornelis; and Schenkel, Gerrit, 3,851,118.
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  - Schmitt, Eugene W., 3,850,141.
- Pepmeier, Carl R.; and Lowe, Edward G., to FMC Corporation. Wrapping apparatus. 3,849,972, Cl. 53-329.000.
- Perklev, Torsten: *See—*
  - Hogberg, Bertil; Fex, Hans; Perklev, Torsten; Veige, Sten; and Fredholm, Bo, 3,851,019.
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  - Smith, David R.; and Peterson, Howard, 3,850,726.
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  - Klohs, Murle W.; Petracek, Francis J.; and Sugisaka, Nobuyuki, 3,851,062.
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  - Monkhouse, Donald C., 3,851,052.
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- Phillips, Arthur Page: *See—*
  - Burrows, Robert Deck; and Phillips, Arthur Page, 3,851,060.
- Phillips Petroleum Company: *See—*
  - Alquist, Henry E., 3,850,569.
  - Cichowski, Robert S., 3,851,009.
  - Doss, Richard C., 3,850,800.
  - Doss, Richard C., 3,850,886.
  - Held, Edward C., Jr., 3,850,354.
  - Kinney, Alfred W., 3,849,970.
  - Murtha, Timothy P.; Zuech, Ernest A.; and Gray, Roy A., 3,850,878.
  - Seabourn, Ed O., 3,849,994.
  - Selman, Charles M.; and Hsieh, Henry L., 3,851,000.
  - Underwood, John H.; Dix, James S.; and Reed, Jerry O., 3,850,882.
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- Picker, Amos, to Raytheon Company. Junciton target monoscope. 3,851,205, Cl. 315-11.000.
- Pickford, Allan E.: *See—*
  - Wright, Lee E.; and Pickford, Allan E., 3,851,046.
- Pierce, William C.: *See—*
  - Borns, David R.; and Pierce, William C., 3,850,445.
- Pilkington Brothers Limited: *See—*
  - Greig, Ian Robert Kennedy; and Jackson, John MacKenzie, 3,850,788.
  - Maltman, William Ramsey; and Howard, Colin Robert, 3,850,605.
  - Robinson, Albert Sidney; Loukes, David Gordon; and Lawrenson, Jack, 3,850,787.
- Pillbury Company, The: *See—*
  - Rogers, Nelson E.; and Gidlaw, Rolf Gunnar, 3,851,085.
- Pillsbury Company, The: *See—*
  - Brooking, Betty L.; and Wright, William F., 3,851,083.
- Pingault, Benoit A. M., to International Standard Electric Corporation. Pulse transmitter for transmission line. 3,851,098, Cl. 178-68.000.
- Pioneer Centrifuging Company: *See—*
  - Ormsby, George S., 3,849,893.
- Pioneer Electronic Corporation: *See—*
  - Sakai, Yoshio, 3,850,685.
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  - McClymont, Terence I.; and La Fond, Maurice H., 3,850,399.
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- Polaroid Corporation: *See—*
  - Baker, Philip G., 3,850,510.
  - Bloom, Stanley M., 3,850,502.
  - Bruneau, Louis O.; and Gulbrandsen, Richard, 3,850,775.
  - Land, Edwin H., 3,850,514.
  - Scholz, Donald T., 3,850,512.
  - Wray, William R., 3,850,513.
- Politechnika Slaska Im.W. Pstrowskiego: *See—*
  - Gierek, Adam; and Bajka, Lech, 3,850,699.
- Polizzi, Daniel D. System for automatic periodic irrigation. 3,850,078, Cl. 91-38.000.
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- Polyband Gesellschaft fur Tontrager mbH & Co. KG: *See—*
  - Rabe, Erich, 3,850,436.

- Pope, Victor James: *See—*
  - Preston, Leslie Raymond; Pope, Victor James; and Stagg, John, 3,849,966.
- Porawski, Donald John, to Bendix Corporation, The. Deadzone circuit. 3,851,259, Cl. 328-143.000.
- Pori, John R., to Parallel Data Systems. Telemetering system for multichannel data. 3,851,264, Cl. 329-119.000.
- Portage Electric Products, Inc.: *See—*
  - Stoll, James E., 3,851,288.
- Porter Equipment Company: *See—*
  - Zuber, Richard H., 3,850,428.
- Porter, Ronald H.: *See—*
  - Runyan, Kenneth R.; Honnert, Quentin E.; and Porter, Ronald H., 3,850,314.
- Posset, Robert: *See—*
  - Plumat, Emile; and Posset, Robert, 3,850,665.
- Potts, James E.: *See—*
  - Clendinning, Robert A.; Potts, James E.; and Niegisch, Walter D., 3,850,862.
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- Pourrias, Bernard M.: *See—*
  - Fauran, Claude P.; Eberle, Jeannine A.; Raynaud, Guy M.; Pourrias, Bernard M.; and Bourgery, Guy B., 3,850,937.
- Power, Joseph M.: *See—*
  - Herczog, Andrew; Power, Joseph M.; and Smith, James W., 3,850,764.
- PPG Industries, Inc.: *See—*
  - Ackley, Richard H., 3,850,723.
  - Bissinger, William E.; Hardies, Donald E.; and Lavanish, Jerome M., 3,850,609.
  - Sopko, John F.; and Simhan, Krishna, 3,850,679.
  - Wismer, Marco; Schimmel, Karl F.; and Temple, Rodger G., 3,850,868.
- Prab Conveyors, Inc.: *See—*
  - Dudley, Robert H., 3,850,814.
- Prakash, Vijai: *See—*
  - Downie, James; and Prakash, Vijai, 3,850,355.
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- Preston, Edward George: *See—*
  - Labbe, Francis A. M.; Preston, Edward George; Dimgli, Paul; and Hirsh, Ivan Yehudi, 3,850,065.
- Preston, Leslie Raymond; Pope, Victor James; and Stagg, John. Packing method and apparatus. 3,849,966, Cl. 53-29.000.
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  - Brethauer, Dale Merrill; and Pripeaux, Jean Paul, 3,851,023.
- Pro-Light Inc.: *See—*
  - Keller, Donald A., 3,851,126.
- Procter & Gamble Company, The: *See—*
  - Peterson, Donald J.; and Ward, James F., 3,850,970.
  - Sessoms, Frank E.; and Hardy, Michael E., 3,851,070.
- Produits Chimiques Ugine Kuhlmann: *See—*
  - Balde, Daniel; and Nagy, Georges, 3,851,020.
- Proentice, E. V., Co.: *See—*
  - Shaughnessy, Ernest P., 3,850,066.
- Prokupek, Alvin. Spring type ball projecting device. 3,850,157, Cl. 124-27.000.
- Proni, Oscar: *See—*
  - Bull, Brian S.; Proni, Oscar; and Melnick, Loran V., 3,850,369.
- Protectoseal Company, The: *See—*
  - Zehr, William J., 3,850,490.
- Prugh, John D., to Merck & Co., Inc. Method for the stimulation of appetite in patients. 3,851,059, Cl. 424-267.000.
- Prust, Michael Ward; and Glassman, Wayne Charles. Apparatus for use in processes for producing coatings on surfaces. 3,850,137, Cl. 118-8.000.
- Przezdziecki, Wojciech Maria: *See—*
  - Wagner, Hans Max; and Przezdziecki, Wojciech Maria, 3,850,646.
- Psaar, Hubertus, to Bayer Aktiengesellschaft. Novel basic indoling dyestuffs. 3,850,913, Cl. 260-240.800.
- Pulitzer, Wolfgang: *See—*
  - Karobath, Ernst; Rippel, Leopold; Schmidinger, Hans; and Pulitzer, Wolfgang, 3,850,776.
- Pullman Incorporated: *See—*
  - Berry, Walter V.; and Hunziker, Paul J., 3,850,110.
  - Sichak, George, 3,850,113.
- Puritan-Bennett Corporation: *See—*
  - Ferguson, James F.; and Wissmueller, William C., 3,850,168.
- Purlia, John Michael. Board game involving patent transactions. 3,850,433, Cl. 273-134.0ad.
- Putzier, Charles W.: *See—*
  - Blumenkranz, James J.; and Putzier, Charles W., 3,850,459.
- Quaker Oats Company, The: *See—*
  - Bozer, Keith B.; Brown, Lloyd H.; and Fox, Robert H., 3,850,727.
- Quellette, Gerard. Footwear wiping machine. 3,849,822, Cl. 15-36.000.
- Quepor S.A.: *See—*
  - Dominici, Antonio, 3,849,965.
- Questor Corporation: *See—*
  - Bentley, David R.; and Alexander, Neil A., 3,850,453.
- Raasch, Hans; Engelhardt, Dietmar; and Maassen, Wilhelm, to Schlafhorst, W., & Co. Bobbin holder. 3,850,394, Cl. 242-129.700.
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- Rachlin, Schneur: *See—*
  - von Daehne, Welf; Frederiksen, Erling Knud; Godtfredsen, Wagn Ole; and Rachlin, Schneur, 3,850,908.
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- Rakow, Richard. Light reflective safety wearing apparel. 3,849,804, Cl. 2-98.000.
- Ralston Purina Company: *See—*
  - Khayat, Ali; Courtney, George W.; and Dunn, Howard J., 3,851,078.
  - Walters, Roger E.; and Reinke, William C., 3,850,090.
- Ralston Rurina Company: *See—*
  - Hirono, Yosuke, 3,850,143.
- Ram, Michael J., to Celanese Corporation. Process for forming hollow polybenzimidazole filaments for reverse osmosis applications. 3,851,025, Cl. 264-41.000.
- Ramirez, Peter R.: *See—*
  - Metcalfe, Richard T.; Ramirez, Peter R.; and Slyk, Chester M., 3,850,902.
- Rank Xerox, Ltd., mesne: *See—*
  - Tamai, Yasuo, 3,850,631.
- Rappoport, Morris: *See—*
  - Leake, Donald L.; Rappoport, Morris; and Rappoport, Morris, 3,849,805.
- Rappoport, Susan: *See—*
  - Leake, Donald L.; Rappoport, Morris; and Rappoport, Morris, 3,849,805.
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- Raychem Corporation: *See—*
  - Muchmore, Richard W.; Wetmor, Judson Douglas; and Hughes, John R., 3,851,296.
- Raynaud, Guy M.: *See—*
  - Fauran, Claude P.; Eberle, Jeannine A.; Raynaud, Guy M.; Pourrias, Bernard M.; and Bourgery, Guy B., 3,850,937.
- Raytheon Company: *See—*
  - Hanfling, Jerome D., 3,851,281.
  - Picker, Amos, 3,851,205.
- RCA Corporation: *See—*
  - Freedman, David Daniel, 3,851,258.
  - Kaplan, Leonard Abraham, 3,851,276.
  - Kern, Werner, 3,850,687.
  - Sokolov, Harold, 3,851,298.
  - Wen, Cheng Paul, 3,850,710.
  - Wheatley, Carl Franklin, Jr., 3,851,241.
- Readal, Thomas C.: *See—*
  - Plundo, Robert A.; Readal, Thomas C.; and Strom, James R., 3,850,744.
- Reading, William H., III: *See—*
  - Kenny, Joseph R.; Welch, Rolland Ernst; Reading, William H., III; and Carson, Alfred H., 3,851,309.
- Rebish, Edward J., to Acme-Cleveland Corporation. Foundry mixing machine. 3,850,413, Cl. 259-4.000.
- Rebora, Pierluigi: *See—*
  - Rescalli, Carlo; Ginnasi, Alessandro; and Rebora, Pierluigi, 3,851,010.
- Recla, Eugene B.: *See—*
  - Smith, Addison M.; and Recla, Eugene B., 3,850,758.
- Redfern, Howard W.; and Coleman, William P. Portable cooling unit for connection with automobile air conditioner. 3,850,006, Cl. 62-216.000.

Reed, Jerry O.: *See—*
Underwood, John H.; Dix, James S.; and Reed, Jerry O., 3,850,882.

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Zink, John S.; and Reed, Robert D., 3,850,571.

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Marie, Gabriel Yves, 3,850,391.

Regie Nationale des Usines Renault: *See—*
Guettier, Michel, 3,850,268.
Sigwald, Jacques, 3,850,153.

Regnier, Albert; Kevorkian, Devork; and Lager, Jean Paul, to International Standard Electric Corporation. Time division switching network employing space division stages. 3,851,105, Cl. 179-15.0at.

Reichert, Donald E. Disposable food tray and closure member. 3,850,333, Cl. 220-20.000.

Reiff, Almer A.: *See—*
Balzer, Claude P.; Corman, Edward M.; Reiff, Almer A.; and Henry, Michael D., 3,849,958.

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Reinke, William C.: *See—*
Walters, Roger E.; and Reinke, William C., 3,850,090.

Reisinger, Konrad, to Siemens Aktiengesellschaft. Time-division multiplex system. 3,851,099, Cl. 178-50.000.

Remy, Hermann; and Lamprecht, Adolf, to Rowenta-Werke, GmbH. Lighters. 3,850,570, Cl. 431-255.000.

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Mihm, Hans-Peter; and Moser, Erich, 3,850,278.

Repella, James A.: *See—*
Day, Frank A.; and Repella, James A., 3,851,037.

Rescalli, Carlo; Ginnasi, Alessandro; and Rebora, Pierluigi, to Snam Progetti S.p.A. Process for the separation of isoprene. 3,851,010, Cl. 260-681.500.

Respiratory Care, Inc.: *See—*
Cornett, Walter G., III; and Gaspar, Donald G., 3,851,029.

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Taylor, Robert F.; Strow, Donald A.; and Mansouri, Hosein, 3,850,804.

Rexnord Inc.: *See—*
Krivec, Bert, 3,850,106.

Rey, Hans-Georg: *See—*
Rittersdorf, Walter; Berger, Dieter; Rey, Hans-Georg; and Rieckmann, Peter, 3,850,576.

Reynolds Metals Company: *See—*
Siemonsen, Frederik A.; and Bublitz, Robert F., 3,850,340.
Webb, Thomas E., 3,850,585.
Zinnbauer, Fredrick W.; and Ferner, Jack C., 3,850,763.

RFL Industries, Inc.: *See—*
Seabury, Richard W., Jr., 3,850,035.

Rhein, Helmut: *See—*
Keller, Helmut; Bregler, Jurgen; Rhein, Helmut; and Jahnke, Horst, 3,850,695.

Rhodes, Thomas P.: *See—*
Dale, Robert F.; Rhodes, Thomas P.; and DeNucci, Joseph M., 3,849,900.

Rhone-Poulenc S.A.: *See—*
Chabardes, Pierre; Julia, Marc; and Menet, Albert, 3,850,991.
Garnier, Roger; Hogenmuller, Roger; and Massebeuf, Jacques, 3,850,865.

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Richardson, Stanley H.: *See—*
Wertz, William I.; and Richardson, Stanley H., 3,851,012.

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Thorpe, David C., 3,850,127.

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Richtzenhain, Hermann: *See—*
Zoche, Gunter; Richtzenhain, Hermann; and Ismail, Roshdy, 3,850,994.

Ricoh Co. Limited: *See—*
Ukai, Takeshi; and Oshima, Kiyoshi, 3,851,184.

Ricoh Co., Ltd.: *See—*
Ando, Tomohiko, 3,850,402.
Okamoto, Toyoo; and Watanabe, Toshio, 3,851,230.

Rideau, Jacques: *See—*
Agouri, Elias; Mornet, Philippe; Parlant, Claude; and Rideau, Jacques, 3,851,015.

Rieckmann, Peter: *See—*
Rittersdorf, Walter; Berger, Dieter; Rey, Hans-Georg; and Rieckmann, Peter, 3,850,576.

Riedel, Guenther; and Waechter, Rudolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Flowable hectographic compositions. 3,850,648, Cl. 106-14.500.

Riedhammer, Josef: *See—*
Reinecke, Udo; Jurgensmann, Helmut; Riedhammer, Josef; Stangl, Helmut; and Beutler, Gerhard, 3,850,272.

Rief, Dean J.; and McKinney, William S., to Rief Enterprises, Inc. Decorative separator. 3,850,782, Cl. 161-25.000.

Rief Enterprises, Inc.: *See—*
Rief, Dean J.; and McKinney, William S., 3,850,782.

Rieter Machine Works Ltd.: *See—*
Reufer, Christian; and Guldenfels, Dieter, 3,850,025.

Riggs, John: *See—*
Di Edwardo, Andrew H.; Dix, Robert; and Riggs, John, 3,850,876.

Rippel, Leopold: *See—*
Karobath, Ernst; Rippel, Leopold; Schmidinger, Hans; and Pulitzer, Wolfgang, 3,850,776.

Riseberg, Leslie Allen; and Scott, Warner Curtis, to Texas Instruments, Incorporated. Asymmetric waveguide pair acoustic surface wave switch. 3,850,503, Cl. 350-96.0wg.

Risman, Per Olov G.: *See—*
Dygve, Hans G. E.; and Risman, Per Olov G., 3,851,133.

Ritchey, Eugene B. Tag applying tool. 3,850,360, Cl. 227-67.000.

Ritter, George E., to Hughes Aircraft Company. Horizontal crystal mounting assembly. 3,851,193, Cl. 310-9.400.

Rittersdorf, Walter; Berger, Dieter; Rey, Hans-Georg; and Rieckmann, Peter, to Boehringer Mannheim GmbH. Diagnostic composition for the detection of urobilinogen. 3,850,576, Cl. 23-230.00b.

Ritzinger, Frederick: *See—*
Jarc, Robert A.; and Ritzinger, Frederick, 3,850,489.

Rivas, John M., to GTE Automatic Electric Laboratories Incorporated. Two (and only two) out of six check circuit. 3,851,307, Cl. 340-146.1ab.

Robbins, Raymond E. Portable compost grinding apparatus. 3,850,364, Cl. 241-51.000.

Roberge, Kenneth Joseph: *See—*
Bush, Stanley Edward; Lewis, Charles William; McKelvey, William John; Merwede, Donald Leiman; Roberge, Kenneth Joseph; and Saltus, George Edwin, 3,851,114.

Roberts, Cecil P., to Anchor Hocking Corporation. Container sealing machine side belt system. 3,850,284, Cl. 198-165.000.

Roberts, Maurice; and Peasley, David, to Girling Limited. Permanent assemblies including thermoplastic components and method of assembly. 3,850,483, Cl. 308-4.00r.

Robertshaw Controls Company: *See—*
Brakebill, Harold G., 3,850,039.
Katchka, Jay R.; and Braucksiek, Henry C., 3,850,370.

Robertson, H. H., Company: *See—*
Lindner, Robert G., 3,849,959.

Robins, Lenford L. Tooth aligner. 3,849,885, Cl. 32-14.00b.

Robinson, Albert Sidney; Loukes, David Gordon; and Lawrenson, Jack, to Pilkington Brothers Limited. Manufacture of flat glass utilizing a reaction to traction across the width of the molten glass. 3,850,787, Cl. 161-165.000.

Robinson, Earl. Child-proof container closure. 3,850,327, Cl. 215-225.000.

Robinson, Joel P.; and Durning, Paul J., to Union Oil Company of California. Method for constructing sea ice islands in cold regions. 3,849,993, Cl. 61-46.000.

Robinson, Norman F.: *See—*
Hanback, Francis J.; and Robinson, Norman F., 3,850,456.

Robinson, Peter G., to Parsons Brothers Limited. Tamperproof closures for containers. 3,850,329, Cl. 215-254.000.

Robson, Bruce H., to Akers, R. M. Method of coating particles and manufacturing of tire tread rubber formulations and the like. 3,850,875, Cl. 260-42.140.

Robson, Harry E., to Esso Research and Engineering Company. Hydrodenitrogenation of hydrocarbon feedstocks with a catalyst composite of chrysotile and hydrogenation metal. 3,850,746, Cl. 208-254.00h.

Roch, Jacques Leon, to Electroglas Inc. Microcircuit test device with multi-axes probe control and probe stop means. 3,851,249, Cl. 324-158.00p.

Roch, Josef: *See—*
Muller, Erich; Nickl, Josef; Roch, Josef; and Narr, Berthold, 3,850,917.

Rochlitzer, Frank: *See—*
Hohmann, Hans-Gunter; and Rochlitzer, Frank, 3,851,262.

Rockwell International Corporation: *See—*
Cherry, Charles C., 3,849,983.
Koehler, Heinrich P., 3,850,255.
Thomas, Robert A.; Sellers, Jerry Wayne; and Murley, Roger Wayne, 3,849,943.
Thompson, Robert B.; Alers, George A.; and Tennison, Marion A., 3,850,028.

Rodach, Alexander; and Weber, Hans, to Ungeree, Irma, Frau. Roller assembly for deflecting a strip and for measuring the tension of said strip at different points space across the width of said strip. 3,850,032, Cl. 73-144.000.

Rodgers, James L., to Talos Systems, Inc. Method and apparatus for conveying graphic information over a telephone quality communications link. 3,851,097, Cl. 178-19.000.

Roehrig, Paul G.; Pappas, Nicholas C.; and Durbin, Robert E., to Carnation Company. Sterile effervescent beverage and process for preparing same. 3,851,071, Cl. 426-190.000.

Rogers, Nelson E.; and Gidlaw, Rolf Gunnar, to Pillbury Company, The. Hydroprocessing of wheat. 3,851,085, Cl. 426-373.000.

Rollfinke, Fred J., to General Electric Company. Rotatable anode for X-ray tubes. 3,851,204, Cl. 313-330.000.

Rolls-Royce (1971) Limited: *See—*
Broughton, Trevor; and Forman, Brian William, 3,850,712.

Rono-Clausen, Jorgen: *See—*
Hansen, Gunnar Lyshoj; and Rono-Clausen, Jorgen, 3,850,549.

Rosander, Jan, to Whaladent, Inc. Dental mouth mirror. 3,849,889, Cl. 32-22.000.

Rose, Fred K.: *See—*
Metcalfe, Arthur G.; and Rose, Fred K., 3,851,138.

Rosenberger, Siegfried: *See—*
Muller, Helmut; Rosenberger, Siegfried; and Schwarzenbach, Kurt, 3,850,918.

Rosenkranz, Hans Jurgen: *See—*
Perrey, Hermann; Rosenkranz, Hans Jurgen; Walter, Oskar; and Rudolph, Hans, 3,851,013.

Rosewald, Gary W., to Cities Service Oil Company. Storm choke. 3,850,239, Cl. 166-72.000.

Ross, Albert L.: *See—*
Mare, Peter D.; and Ross, Albert L., 3,850,777.

Ross, Benjamin. Fluid-containing structure. 3,849,814, Cl. 5-348.0wb.

Ross, James W., to Orion Research Incorporated. Cyanide decomplexing. 3,850,761, Cl. 204-1.00t.

Rossen, Jack L.; Miller, Robert C.; and Gellman, Gary, to Nibisco, Inc. Method of producing laminated comestible products. 3,851,084, Cl. 426-343.000.

Rossitto, Conrad: *See—*
Halas, Francis R.; and Rossitto, Conrad, 3,850,887.

Rossow, Rolf, to Otto, Dr. C., & Comp., G.m.b.H. Coal charging apparatus for a battery of horizontal coke ovens. 3,850,756, Cl. 202-262.000.

Roth, Walter: *See—*
Jvirblis, Alex E.; and Roth, Walter, 3,850,142.

Rothfuss, Georg; Gand, Heinz; Bredenbrock, Wolfgang; and Bohringer, Wilfried Paul, to Bosch, Robert, G.m.b.H. Control magnet for hydraulic control system valves. 3,851,285, Cl. 335-262.000.

Rough, Robert R., to Owens-Illinois, Inc. Method for melting glass-making materials. 3,850,606, Cl. 65-178.000.

Roussel- UCLAF: *See—*
Allais, Andre; Meier, Jean; and Dube, Jacques, 3,850,959.

Roussel-UCLAF: *See—*
Derible, Pierre Henri; and Lavaux, Jean-Paul, 3,850,938.

Rowe, James M.: *See—*
Hadskey, Glynn E., 3,850,450.

Rowenta-Werke, GmbH: *See—*
Remy, Hermann; and Lamprecht, Adolf, 3,850,570.

Royal, Stephen L.: *See—*
Johnson, Benjamin A.; Royal, Stephen L.; and Ackerman, Robert A., 3,850,643.

Roze, Alberts: *See—*
Fencl, Vernon; and Roze, Alberts, 3,850,017.

RPR Industries, Inc.: *See—*
Podvin, Richard T., 3,850,716.

Rubi, Horst, to Blaupunkt-Werke GmbH. Cassette type tape recorder. 3,850,385, Cl. 242-198.000.

Rubin, Isaac D.: *See—*
Nebzydoski, John W.; Patmore, Edwin L.; and Rubin, Isaac D., 3,850,824.

Ruby, William R., to GAF Corporation. Purification of benzophenones. 3,850,988, Cl. 260-591.000.

Rudd, Floyd R.; and MacKenzie, George D., to TRW, Inc. Method of making resistance element. 3,849,878, Cl. 29-610.000.

Rudd, Wallace C., to Thermatool Corporation. Magnetic pulse welding using spaced proximity conductor. 3,851,139, Cl. 219-101.000.

Ruder, Winfield S.: *See—*
Aronstein, Jesse; Leoff, Arkady; Murphy, John J.; and Ruder, Winfield S., 3,850,105.

Rudolph, Hans: *See—*
Perrey, Hermann; Rosenkranz, Hans Jurgen; Walter, Oskar; and Rudolph, Hans, 3,851,013.

Ruhle, Manfred: *See—*
Bohm, Horst; Borgstadt, Hans Ulrich; Ruhle, Manfred; and Wincierz, Peter, 3,850,584.

Runyan, Kenneth R.; Honnert, Quentin E.; and Porter, Ronald H., to Multifold-International, Inc. Machine for cooling and stacking flat printed articles. 3,850,314, Cl. 214-6.00p.

Ruzzo, Joseph G., to General Electric Company. Positive pressure coating device. 3,850,136, Cl. 118-5.000.

Ryckman, William D., Jr.; and Meeks, Fredrick T., to General Electric Company. Hair detangler. 3,850,180, Cl. 132-11.00a.

Ryles, Louis, to Medical Plastics Pty., Limited. Safety closure. 3,850,326, Cl. 215-224.000.

Ryujin, Takeshi: *See—*
Fujioka, Yasuhide; Ryujin, Takeshi; Yoshida, Shuji; and Inagaki, Mitami, 3,850,461.

S & S Corrugated Paper Machinery Co., Inc.: *See—*
Saunders, Lawrence J., 3,850,069.

S.A. Tefal: *See—*
Hartmann, Louis, 3,850,867.

Sabin, Albert S., Jr.: *See—*
Wigner, William K.; and Sabin, Albert S., Jr., 3,851,251.

Safe-T-All Corporation: *See—*
Johnson, Leonard Gregory, 3,850,467.

Saga, Katsumasa: *See—*
Tanaka, Michio; Ohtsuka, Katsuyuki; Obata, Masayoshi; Amemiya, Koji; Saga, Katsumasa; Kano, Sadaaki; and Kumada, Teru, 3,850,944.

Sahlin, John Carl Erik. Guide-sheet such as a guide-leaf, a guide-card, or the like having a detachable stub. 3,849,922, Cl. 40-360.000.

Saiki, Masatoshi: *See—*
Okuhara, Akira; Saiki, Masatoshi; and Saito, Nobuo, 3,851,076.

Saito, Akio, to Showa Seitai Kogyo Kabushiki Kaisha. Multi-layer bags. 3,850,366, Cl. 229-55.000.

Saito, Kazo. Folding umbrella. 3,850,188, Cl. 135-25.00r.

Saito, Nobuo: *See—*
Okuhara, Akira; Saiki, Masatoshi; and Saito, Nobuo, 3,851,076.

Sakai, Yoshio, to Pioneer Electronic Corporation. Thin layer semiconductor device. 3,850,685, Cl. 117-201.000.

Sakazaki, Tadazumi: *See—*
Uno, Naoyuki; Nomura, Katsuhiko; Sakazaki, Tadazumi; Watanabe, Koichiro; Miyata, Katsuhiko; and Urano, Fumio, 3,850,530.

Sakita, Takashi, to Nisshin Oil Mills, Ltd. Process for preparing edible protein fibers. 3,851,079, Cl. 426-276.000.

Saleck, Wilhelm; Himmelmann, Wolfgang; Balle, Gerhard; and Schnalke, Karl-Erwin, to Agfa-Gevaert Aktiengesellschaft. Silver halide grains precipitated in the presence of a phosphoric acid amide sensitizer. 3,850,644, Cl. 96-107.000.

Salinas, Ralph C. Ground supported scaffolding. 3,850,264, Cl. 182-178.000.

Sally, Theodore J.: *See—*
Morris, Earl L.; and Sally, Theodore J., 3,849,809.

Saltus, George Edwin: *See—*
Bush, Stanley Edward; Lewis, Charles William; McKelvey, William John; Merwede, Donald Leiman; Roberge, Kenneth Joseph; and Saltus, George Edwin, 3,851,114.

Salva, Juan M.: *See—*
Dugan, John J.; Higgins, James P.; and Salva, Juan M., 3,850,742.

Samuel Moore & Company: *See—*
Whitledge, Jon K.; and Kavick, Edward M., 3,849,858.

Sanctuary, Clifford; Woods, Donald C.; and Bachman, John A., to Del Mar Engineering Laboratories. Respiratory gas sampler. 3,850,036, Cl. 73-198.000.

Sandoz Ltd.: *See—*
Avar, Lajos; and Hofer, Kurt, 3,850,960.

Sandoz-Wander, Inc.: *See—*
Buzzolini, Mario G., 3,851,064.
Kathawala, Faizulla G., 3,850,932.

Sanducci, Anthony F.: *See—*
Sottile, Michael R.; and Sanducci, Anthony F., 3,851,328.

Saniford, Burton B.; and Knight, Robert K., to Union Oil Company of California. Method for tracing the flow of water in subterranean formations. 3,851,171, Cl. 250-259.000.

Sannella, Joseph L.: *See—*
Steele, Fred W.; and Sannella, Joseph L., 3,850,634.

Santamaki, Seppo Olavi: *See—*
Hellsten, Karl Martin Edvin; and Santamaki, Seppo Olavi, 3,850,831.

Santilli, Arthur A.: *See—*
Kim, Dong H.; and Santilli, Arthur A., 3,850,928.
Kim, Dong H.; and Santilli, Arthur A., 3,850,931.

Sanvitale, Salvatore. Tire attachment for traction on ice or snow. 3,850,216, Cl. 152-225.000.

Sanwa Kiko Kabushiki Kaisha: *See—*
Ogura, Taketoshi, 3,849,946.

Sasabe, Kaoro; Kotera, Hiroaki; Misaki, Takashi; and Hane, Toshihide, to Matsushita Electric Industrial Company, Limited. Image pick-up-display system. 3,851,094, Cl. 178-6.800.

Sasajima, Kikuo: *See—*
Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; Takayama, Masaharu; Katayama, Shigenari; Ono, Keiichi; Yanagihara, Izumi; Tanaka, Yoshihiro; Katsube, Jinki; Inaba, Shigeho; and Yamamoto, Hisao, 3,850,935.

Sasaki, Juntaro: *See—*
Wada, Shigeru; Oi, Hidesaburo; Matsuzawa, Norio; Nishimura, Hiroshi; and Sasaki, Juntaro, 3,850,899.

Sasaki, Kenichi: *See—*
Mawatari, Toshihiro; Kunugi, Takashi; Harada, Masanori; and Sasaki, Kenichi, 3,850,151.

Sasse, Klaus; Hammann, Ingeborg; Unterstenhofer, Gunter; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. 2-Mono-and 2-dialkylaminoquinoxalines. 3,850,925, Cl. 260-250.00q.

Sato, Masamichi: *See—*
Fukushima, Osamu; Sato, Masamichi; and Tamai, Yasuo, 3,850,830.

Sato, Shozo: *See—*
Baba, Nobuyuki; and Sato, Shozo, 3,850,848.

Sato, Toshio: *See—*

  - Katsumi, Mamoru; and Sato, Toshio, 3,850,818.
- Saunders, Lawrence J., to S & S Corrugated Paper Machinery Co., Inc. Mounting of rotary split slitting knives. 3,850,069, Cl. 83-665.000.
- Saupe, Wolfram, to Kalle Aktiengesellschaft. Electrophotographic copying apparatus. 3,850,521, Cl. 355-15.000.
- Savin Business Machines Corporation: *See—*
  - Smith, Ian Edward; Hastwell, Peter John; and Vermeulen, Marinus Cornelus, 3,850,829.
- Savio, Luciano, to Officine Savio S.p.A. Method and apparatus for placing a cop with its thread drawn out in a movable storage point. 3,850,378, Cl. 242-35.50r.
- Sawa, Yuji: *See—*
  - Yoshikawr, Shinsuke; and Sawa, Yuji, 3,850,573.
- Sawyer, Richard G.: *See—*
  - Aldrich, Robert G.; Keller, Douglas V., Jr.; and Sawyer, Richard G., 3,850,477.
- Saxe, Leo C. Cooled counter display case for packaged edible products. 3,850,486, Cl. 312-116.000.
- Sayles, William F. Ice cube making machine. 3,850,005, Cl. 62-135.000.
- Sberna, Samuel R.: *See—*
  - Petty, Eugene D., Jr.; and Sberna, Samuel R., 3,850,671.
- Scanlan, Ian F.: *See—*
  - Drake, Cyril F.; and Scanlan, Ian F., 3,850,603.
- Scaringi, Josephine J. Bow making kit. 3,850,293, Cl. 206-223.000.
- Schabert, Hans-Peter: *See—*
  - Laurer, Erwin; and Schabert, Hans-Peter, 3,850,794.
- Schadlich, Gunther: *See—*
  - Moraw, Roland; Schadlich, Gunther; and Schadlich, Renate, 3,850,633.
- Schadlich, Renate: *See—*
  - Moraw, Roland; Schadlich, Gunther; and Schadlich, Renate, 3,850,633.
- Scharer, Hans R., to USM Corporation. Homogenizing extruders. 3,850,414, Cl. 259-191.000.
- Schenkel, Gerrit: *See—*
  - Kleis, Derk; Hanneman, Adriaan; Penning, Cornelis; and Schenkel, Gerrit, 3,851,118.
- Scherer, R. P., Corporation, mesne: *See—*
  - Miskel, John J.; Kindt, Warren W.; and Connor, Edward C., 3,851,051.
- Schermerhorn, Jerry D.; and Shimizu, Yukio, to Owens-Illinois, Inc. Method of driving and addressing gas discharge panels by inversion techniques. 3,851,210, Cl. 315-169.00r.
- Schimmel, Karl F.: *See—*
  - Wismer, Marco; Schimmel, Karl F.; and Temple, Rodger G., 3,850,868.
- Schlacht, Ernst: *See—*
  - Schonig, Bruno; and Schlacht, Ernst, 3,850,774.
- Schlafhorst, W., & Co.: *See—*
  - Raasch, Hans; Engelhardt, Dietmar; and Maassen, Wilhelm, 3,850,394.
- Schleigh, William Robert: *See—*
  - Willis, Roland George; and Schleigh, William Robert, 3,850,638.
- Schmadel, Edmund: *See—*
  - Wagemund, Bernd; Lehmann, Hans-Jurgen; and Schmadel, Edmund, 3,850,832.
- Schmid, Eberhard: *See—*
  - Stambera, Adolf; and Schmid, Eberhard, 3,851,151.
- Schmidinger, Hans: *See—*
  - Karobath, Ernst; Rippel, Leopold; Schmidinger, Hans; and Pulitzer, Wolfgang, 3,850,776.
- Schmidt, Donald L., to Dow Chemical Company, The. Non-solvated particulate aluminum hydride coated with a cyano-containing compound useful in solid propellants. 3,850,709, Cl. 149-6.000.
- Schmidt, Felix Helmut: *See—*
  - Stork, Harold; Schmidt, Felix Helmut; Thiel, Max; Fauland, Erich; and Kampe, Wolfgang, 3,851,056.
- Schmidt, Franz: *See—*
  - Wurmb, Rolf; Schuette, Wilhelm; Werther, Heinz-Ulrich; and Schmidt, Franz, 3,850,873.
- Schmidt, Otto: *See—*
  - Diepers, Heinrich; and Schmidt, Otto, 3,850,769.
- Schmidt-Hatting, Wolfgang; Chaudhuri, Kiranendu; and Bachofner, Peter, to Swiss Aluminium Ltd. Method of controlling the supply of AL203 during the operation of a cell for electrolytic recovery of aluminum. 3,850,768, Cl. 204-67.000.
- Schmied, Rudolf: *See—*
  - Loliger, Willi; and Schmied, Rudolf, 3,850,207.
- Schmitt, Arthur N., to Seismograph Service Corporation. Method and apparatus for seismic data aquisition by sequential sampling of data. 3,851,302, Cl. 340-15.5ts.
- Schmitt, Eugene W., to P.E.P. Inventions, Inc. Bag type cover arrangement for shielding brake adjusters during manufacture of railroad cars. 3,850,141, Cl. 118-505.000.
- Schmitt, John A., to Dow Chemical Company, The. Glueability tester. 3,850,033, Cl. 73-150.00a.
- Schmitt, Robert A., to Columbia Machine, Inc. Apparatus for loading and unloading vertically stacked racks. 3,850,316, Cl. 214-16.40c.
- Schnalke, Karl-Erwin: *See—*
  - Saleck, Wilhelm; Himmelmann, Wolfgang; Balle, Gerhard; and Schnalke, Karl-Erwin, 3,850,644.
- Schneider, John Russell. Plate and frame type filtering apparatus. 3,850,812, Cl. 210-231.000.
- Schneider, Randy G.: *See—*
  - Franke, Edward L., Jr.; Hyde, William J.; and Schneider, Randy G., 3,850,139.
- Schneider, Wolfgang: *See—*
  - Dreher, Bernd; and Schneider, Wolfgang, 3,850,661.
- Schoenholz, Daniel, to Sperry Rand Corporation, mesne. Hair setting composition and method of use. 3,850,178, Cl. 132-7.000.
- Scholz, Donald T., to Polaroid Corporation. Multipurpose audio-visual cassette with isolation loop. 3,850,512, Cl. 352-14.000.
- Schonert, Heinz E.; and Jones, Robert H., to Western Stress Relieving Services. Power control method and apparatus. 3,851,148, Cl. 219-503.000.
- Schonig, Bruno; and Schlacht, Ernst, to Weiss, Johann, Maschinenfabrik und Apparatebau GmbH. Apparatus for labelling containers such as bottles. 3,850,774, Cl. 156-455.000.
- Schor, Ferdinand William, to AMP Incorporated. Filter assembly for printed circuit board connectors. 3,850,498, Cl. 339-147.00r.
- Schroll, Ross E.: *See—*
  - Hayne, Thomas F.; and Schroll, Ross E., 3,851,229.
- Schroter, Herbert: *See—*
  - Dennhardt, Werner; and Schroter, Herbert, 3,851,236.
- Schubert, Egon: *See—*
  - Plasser, Erna; Theurer, Josef; and Schubert, Egon, 3,850,251.
- Schubert, Wolfgang. Method of cleaning and transferring semiconductors. 3,850,721, Cl. 156-155.000.
- Schuette, Wilhelm: *See—*
  - Wurmb, Rolf; Schuette, Wilhelm; Werther, Heinz-Ulrich; and Schmidt, Franz, 3,850,873.
- Schukin, Mikhail Ivanovich: *See—*
  - Apsit, Voldemar Voldemarovich; Schukin, Mikhail Ivanovich; Alexandrovich, Vladislav; Yablunovsky, Dementievich; Androvsky, Grigory Grigorievich Alex; Zimichev, Jury Ivanovich; and Borovik, Ivan Arkhipovich, 3,851,199.
- Schuurs, Antonius Hermanus Wilhelmus; and van Weemen, Bauke Klass, to Akzona Incorporated, mesne. Process for the demonstration and determination of low molecular compounds and of proteins capable of binding these compounds specifically. 3,850,752, Cl. 195103.50r.
- Schwab, A. H., Co.: *See—*
  - Schwab, Arnold H., 3,850,427.
- Schwab, Arnold H., to Schwab, A. H., Co. Sandbox with sheet member bottom and end wall portions and groove structure therefor. 3,850,427, Cl. 272-1.00a.
- Schwartzman, Gilbert. Process of making tube mounted applicator. 3,849,863, Cl. 29-436.000.
- Schwarzenbach, Kurt: *See—*
  - Muller, Helmut; Rosenberger, Siegfried; and Schwarzenbach, Kurt, 3,850,918.
- Schwenzfeier, Werner; Gfrerer, Manfred; and Herzog, August, to Vereinigte Osterreichische Eisen-und Stahlwerke Alpine Montan Aktiengessellschaft. Process and apparatus for determining the variation of tensile stresses in cold-rolled strip over the width threof. 3,850,031, Cl. 73-143.000.
- Scientific Anglers, Inc.: *See—*
  - Martuch, Leon L., 3,849,929.
- Scientific Enterprises, Inc.: *See—*
  - Govaars, Gustaaf Frederik, 3,849,802.
- SCM Corporation: *See—*
  - Dorschner, Kenneth P.; and Albright, James A., 3,849,934.
- Scott, Allen R.: *See—*
  - Blower, Warren A.; and Scott, Allen R., 3,850,265.
- Scott, Warner Curtis: *See—*
  - Riseberg, Leslie Allen; and Scott, Warner Curtis, 3,850,503.
- Seabourn, Ed O., to Phillips Petroleum Company. Guide base and method for setting same. 3,849,994, Cl. 61-46.500.
- Seabury, Richard W., Jr., to RFL Industries, Inc. Load measuring apparatus. 3,850,035, Cl. 73-143.000.
- Sealed Power Corporation: *See—*
  - Kueny, Kenneth E., 3,850,583.
- Seaman, Herbert S. Total stopping distance indicator. 3,850,041, Cl. 73-495.000.
- Seaman, Russell L.: *See—*
  - Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., 3,850,927.
- Searle, G. D., & Co., Ltd.: *See—*
  - Collins, Michael Henry, 3,850,720.
- Searle, H. D. & Co.: *See—*
  - Van Dijk, Nicolaas; and Kulberg, Gerardus Huibrecht, 3,851,177.
- Seckel, Edward: *See—*
  - Olcott, John W.; Seckel, Edward; and Ellis, David R., 3,850,388.
- Sedor, Edward A.: *See—*
  - Grimm, Robert A.; and Sedor, Edward A., 3,850,969.
- Sedov, Alexei Maximovich: *See—*
  - Vavilov, Felix Fedorovich; Leonov, Jury Leonidovich; Sedov, Alexei Maximovich; and Kamsky, Dmitry Stepanovich, 3,850,411.
- Seeley, Wayne C. Splint. 3,850,167, Cl. 128-87.00r.
- Segawa, Masahiro, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for micro-crystallization of polyvinylidene fluoride articles. 3,850,900, Cl. 260-92.10s.
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  - Schmitt, Arthur N., 3,851,302.
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  - Marceau, William E.; Bates, William G.; and Mroczek, Thomas J., 3,850,420.
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  - Arild, Arnulf; Creed, John; Folkestad, Olav; Odegard, Erik; Brandtzaeg, Anton; and Selberg, Arne Brigt Bru., 3,849,821.
- Seleznev, Jury Emelyanovich: *See—*
  - Burkin, Jury Alexandrovich; and Seleznev, Jury Emelyanovich, 3,849,859.
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  - Thomas, Robert A.; Sellers, Jerry Wayne; and Murley, Roger Wayne, 3,849,943.
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  - Kozorezov, Konstantin Isaakovich; Semchenko, Vitaly Vasilievich; and Mikhailu, Georgy Ivanovich, 3,851,219.
- Sentralinstitutt for industriell forskning: *See—*
  - Jebens, Aksel; and Westergaard, Richard Hoegh, 3,850,715.
- Service Tectonics, Inc.: *See—*
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  - Cohen, Marvin P.; Von Strandtmann, Max; and Shavel, John, Jr., 3,850,966.
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  - Willard, David G.; Cogan, Michael S.; Vacherot, Maurice G.; and Shay, John W., 3,851,104.
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  - Shelnick, Thomas, 3,850,408.
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  - Blower, Warren A.; and Scott, Allen R., 3,850,265.
- Sherwood Refractories, Inc.: *See—*
  - Vidmar, Albert J.; and Webb, John M., 3,850,224.
- Shima, Takeo: *See—*
  - Oka, Isao; Shima, Takeo; Urasaki, Takanori; and Ogasawara, Makoto, 3,851,002.
- Shimamura, Isao; Imai, Kiyoshi; Nakajima, Jyunya; and Iwano, Haruhiko, to Fuji Photo Film Co., Ltd. Treatment of silver halide photographic material. 3,850,636, Cl. 96-50.00r.
- Shimizu, Jiro: *See—*
  - Takeya, Kenji; Shimizu, Jiro; and Minami, Shinsaku, 3,850,179.
- Shimizu, Yukio: *See—*
  - Schermerhorn, Jerry D.; and Shimizu, Yukio, 3,851,210.
- Shimo, Kazuo: *See—*
  - Suzuki, Kazu; and Shimo, Kazuo, 3,850,518.
- Shin-Etsu Handotai Co., Ltd.: *See—*
  - Hirata, Teruhito; Ohga, Shoichiro; and Kaya, Tomoji, 3,850,296.
- Shiraiwa, Toshio: *See—*
  - Nakanishi, Akito; Nakazawa, Hisashi; Yamashima, Kazuyoshi; Shiraiwa, Toshio; and Yamaguchi, Hisao, 3,850,027.
- Shite, Ralph L.: *See—*
  - Lugg, James R.; and Shite, Ralph L., 3,851,080.
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- Shontz, Harry W. Trash compressor and receptacle. 3,850,094, Cl. 100-219.000.
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  - Takeuchi, Setsuyuki; Ibe, Nobukuni; Iriko, Fumio; and Yuzawa, Yoshihiko, 3,850,562.
- Showa Seitai Kogyo Kabushiki Kaisha: *See—*
  - Saito, Akio, 3,850,366.
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  - Harmon, Carlyle; and Sibbach, William, 3,851,034.
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  - Diepers, Heinrich; and Schmidt, Otto, 3,850,769.
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  - Laurer, Erwin; and Schabert, Hans-Peter, 3,850,794.
  - Meyer, Siegfried; and Klingf, Rolf, 3,850,308.
  - Reisinger, Konrad, 3,851,099.
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- Signetics Corporation: *See—*
  - Youmans, Albert P.; and Kirton, Lionel A., 3,849,948.
- Sigwald, Jacques, to Automobiles Peugeot and Regie Nationale des Usines Renault. Carburetor device for an engine. 3,850,153, Cl. 123-127.000.
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  - Sopko, John F.; and Simhan, Krishna, 3,850,679.
- Simizu, Sigeiti. Escape machine. 3,850,262, Cl. 182-5.000.
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- Simon, Charles J.: *See—*
  - Kelly, Michael J.; and Simon, Charles J., 3,851,110.
- Simon, Manfred: *See—*
  - Spielau, Paul; Betke, Erich; and Simon, Manfred, 3,850,725.
- Simonin, Rene: *See—*
  - Baillet, Paulin; Simonin, Rene; and Fouard, Jean-Claude, 3,850,541.
- Simons, Leon, to NL Industries, Inc. Vibration-resistant thread-forming screw. 3,850,074, Cl. 85-46.000.
- Simpson, Doyle E.: *See—*
  - Strickland, Bobby L.; and Simpson, Doyle E., 3,849,806.
- Sinfelt, John H.; and Barnett, Allan E., to Exxon Research and Engineering Company. Hydrocarbon conversion using an iridium-gold catalyst. 3,850,747, Cl. 208-139.000.
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  - Beck, James C.; Hartzler, Earnest D.; and Nielsen, Harrie W., 3,851,165.
  - Greenly, Robert B., 3,849,910.
  - Sottile, Michael R.; and Sanducci, Anthony F., 3,851,328.
- Singer Company, The, mesne: *See—*
  - Mallinson, Richard B.; and Mecklenborg, Richard A., 3,850,516.
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- SKF Industrial Trading and Development Company B.V.: *See—*

Nilsson, Sven Walter, 3,850,046.
Skinner, James L.: *See—*
    Wunderlich, Donald K.; and Skinner, James L., 3,850,739.
Slater, John Walter: *See—*
    Bowden, Roy Dennis; Slater, John Walter; and White, Brian Graham, 3,850,943.
Sloane, R & G, Manufacturing Company, Inc.: *See—*
    Blumenkranz, James J.; and Putzier, Charles W., 3,850,459.
Sloop, Andrew P., to Burroughs Corporation. Continuity network testing and fault isolating. 3,851,161, Cl. 235-151.300.
Slyk, Chester M.: *See—*
    Metcalfe, Richard T.; Ramirez, Peter R.; and Slyk, Chester M., 3,850,902.
Small Business Administration, The: *See—*
    McDonald, Ralph R., 3,850,023.
Smaw, Jesse B.: *See—*
    Marcalus, Nicholas; and Smaw, Jesse B., 3,850,425.
Smith, Addison M.; and Recla, Eugene B., to Allied Chemical Corporation. Purification of crude maleic anhydride by treatment with dimethylbenzophenone. 3,850,758, Cl. 203-38.000.
Smith, Alan W., to Boeing Company, The. Process for producing an anodic aluminum oxide membrane. 3,850,762, Cl. 204-11.000.
Smith, David R.; and Peterson, Howard, to Staley, A. E., Manufacturing Company. Vinylidene chloride copolymer. 3,850,726, Cl. 156-306.000.
Smith, Edwin B.: *See—*
    Hehmann, Horst W. W.; and Smith, Edwin B., 3,850,261.
Smith, Herchel: *See—*
    Herbst, David R.; and Smith, Herchel, 3,850,936.
    Hughes, Gordon; and Smith, Herchel, 3,850,911.
Smith, Ian Edward; Hastwell, Peter John; and Vermeulen, Marinus Cornelus, to Savin Business Machines Corporation. Developing liquid for electrostatic images. 3,850,829, Cl. 252-62.100.
Smith, James W.: *See—*
    Herczog, Andrew; Power, Joseph M.; and Smith, James W., 3,850,764.
Smith, John H., to Continental Oil Company. Method for preparing hydrogen sulfide. 3,851,049, Cl. 423-564.000.
Smith Kline Corporation: *See—*
    Baile, Clifton A.; McLaughlin, Carol Lynn; and Webb, Robert Lee, 3,851,058.
Smith, Raymond L.: *See—*
    Sietmann, Vernon H.; Smith, Raymond L.; and Keese, Larry S., 3,849,901.
Smith, Robert J.: *See—*
    Adams, Don, III; and Smith, Robert J., 3,850,049.
Smith, Stuart B., to Foster Grant Co., Inc. Process for dyeing expandable thermoplastic polymers. 3,850,860, Cl. 260-2.50b.
Smith, Victor Albert: *See—*
    Skedgell, Anthony Northcott; Smith, Victor Albert; and Evans, Thomas Ernest, 3,850,767.
Smith, Werner G., Inc.: *See—*
    Zipt, Robert L., 3,850,827.
Smith-Gates Corporation: *See—*
    Daley, William Carmen, 3,851,149.
Snam Progetti S.p.A.: *See—*
    Fattore, Vittorio; and Notari, Bruno, 3,850,975.
    Priola, Aldo; Cesca, Sebastiano; Ferraris, Giuseppe; Boy, Mario Bassaredda; and Giusti, Paolo, 3,850,894.
    Priola, Aldo; Cesca, Sebastiano; and Ferraris, Giuseppe, 3,850,895.
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    Rescalli, Carlo; Ginnasi, Alessandro; and Rebora, Pierluigi, 3,851,010.
Snediker, Robert R., to Chicago Show Printing Company. Pivotal support device. 3,850,401, Cl. 248-291.000.
Snoddy, Sam. Campfire starting device. 3,850,374, Cl. 239-530.000.
Snyder, Robert H., to Uniroyal, Inc. Steel-belted radial ply tires with 0 textile cap band. 3,850,219, Cl. 152-361.0dm.
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Soc, Aza di Pirovano & C.S. A.S.: *See—*
    Pirovano, Camillo, 3,850,349.
Societe Anonyme Francais du Ferodo: *See—*
    Odier, Jean, 3,850,267.
Societe Chimique, Routiere et d'Entreprise: *See—*
    Baillet, Paulin; Simonin, Rene; and Fouard, Jean-Claude, 3,850,541.
Societe de la Viscose Suisse: *See—*
    Reufer, Christian; and Guldenfels, Dieter, 3,850,025.
Societe Honeywell Bull (Societe Anonyme): *See—*
    Eltgen, Jean-Jacques Pierre, 3,851,323.
Societe Nationale des Petroles d'Aquitaine: *See—*
    Agouri, Elias; Mornet, Philippe; Parlant, Claude; and Rideau, Jacques, 3,851,015.
Sokolov, Harold, to RCA Corporation. Wrapped wire connection. 3,851,298, Cl. 339-276.00a.
Sola Basic Industries, Inc.: *See—*
    Wentworth, Hobert L., 3,850,318.
Solin, Stuart A.; and Doehler, Joseph, to United States of America, Atomic Energy Commission. Recirculating liquid-nitrogen-coolant system for solid-state lasers. 3,851,274, Cl. 331-94.50p.
Sommer, Alfred, to Ceramic Magnetics, Inc. Thin film thermistor. 3,851,291, Cl. 338-22.00r.
Son, Pyong-Nae. Secondary accelerators for vulcanication of rubber. 3,850,893, Cl. 260-80.780.
Sonezaki, Hizashi: *See—*
    Kawasaki, Harumi; Sonezaki, Hizashi; and Yoshimura, Norihiko, 3,851,308.
Sony Corporation: *See—*
    Hongu, Masayuki; and Hishiki, Yoshio, 3,851,190.
Sopko, John F.; and Simhan, Krishna, to PPG Industries, Inc. Chemical vapor deposition of coatings. 3,850,679, Cl. 117-106.00r.
Sortex Company of North America, Inc.: *See—*
    Gillespie, Robert M., 3,851,074.
Sottile, Michael R.; and Sanducci, Anthony F., to Singer Company, The. Optical solid state switches. 3,851,328, Cl. 340-337.000.
Souders, Marvyn L.: *See—*
    Boyhont, Donald S.; Souders, Marvyn L.; and Matweecha, David M., 3,850,479.
Sower, Vernon K. Electrical primer. 3,850,101, Cl. 102-46.000.
Spain, Ian L.: *See—*
    Woollam, John A.; Beale, Harry A.; and Spain, Ian L., 3,849,875.
Spear Systems, Inc.: *See—*
    Speer, Billy Logan, 3,850,121.
Speer, Billy Logan, to Spear Systems, Inc. Hemming machine. 3,850,121, Cl. 112-121.290.
Sperry Rand Corporation: *See—*
    Beck, Ronald A.; and Breu, Dennis L., 3,849,861.
    McIlwain, Erwin D.; and Moody, Thomas B., 3,850,091.
    Moore, Robert P., 3,850,492.
Sperry Rand Corporation, mesne: *See—*
    Schoenholz, Daniel, 3,850,178.
Spielau, Paul; Betke, Erich; and Simon, Manfred, to Dynamit Nobel AG. Adhesion of materials coated with activatable fusible adhesive. 3,850,725, Cl. 156-291.000.
Spokas, John J., to United States of America, Atomic Energy Commission. Vibrating fiber electrometer. 3,851,248, Cl. 324-109.000.
Sprecher & Schuh AG: *See—*
    Amsler, Joachim; and Otto, Walther, 3,851,217.
Springer, Mary Lou; and Borom, Lisle K. Pet carrier. 3,850,144, Cl. 119-19.000.
Sprowl, John D.: *See—*
    Ray, William E.; and Sprowl, John D., 3,849,867.
Square D Company: *See—*
    Clarke, Greffrey; and Harris, Geoffrey John, 3,851,216.
Squibb, E. R., & Sons, Inc.: *See—*
    Denzel, Theodor; and Hoehn, Hans, 3,850,940.
St. Joe Minerals Corporation: *See—*
    Balliett, Robert Wayne, 3,850,622.
Stachura, Edward J.: *See—*
    Moracz, Donald J.; and Stachura, Edward J., 3,851,135.
Stacy, John C., to GTE Sylvania Incorporated. Photoflash assembly with serially advancing percussive lamps. 3,851,163, Cl. 240-1.300.
Stafford, Warren J., to Caterpillar Tractor Company. Strain-limiting connector. 3,850,455, Cl. 285-114.000.
Stagg, John: *See—*
    Preston, Leslie Raymond; Pope, Victor James; and Stagg, John, 3,849,966.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Wick, Helmut, to Boehringer Ingelheim G.m.b.H. 2-(N-substituted-phenylamino)-imidazolines-(2). 3,850,926, Cl. 260-253.000.
Staley, A. E., Manufacturing Company: *See—*
    Smith, David R.; and Peterson, Howard, 3,850,726.
Stambera, Adolf; and Schmid, Eberhard. Weighing and price calculating device. 3,851,151, Cl. 235-61.90r.
Stamicarbon B.V.: *See—*
    Thoma, Jozef A.; Deumens, Johannes J. M.; and Verheijen, Egidius J. M., 3,850,963.
Stamicarbon N.V.: *See—*
    Goettsch, Reijer; and Vos, Herman M. A., 3,850,910.
Standard Oil Company: *See—*
    Park, Chang Man, 3,850,983.
    Vienna, Paul C.; and Den Herder, Marvin J., 3,850,825.
Standard Products Company, The: *See—*
    Dallen, John A., 3,849,855.
Standard Register Company, The: *See—*
    Paulson, William T.; Davidson, David M.; Gilbert, L. Eldean; Gabbard, Henry; and Bemus, Richard D., 3,850,729.
Stangl, Helmut: *See—*
    Reinecke, Udo; Jurgensmann, Helmut; Riedhammer, Josef; Stangl, Helmut; and Beutler, Gerhard, 3,850,272.
Stanley, Alexander J.: *See—*
    Albrecht, Robert J.; and Stanley, Alexander J., 3,851,088.
Stapleford, Stuart H.; and Nutter, Charles E., to Owens-Corning Fiberglas Corporation. Method of producing a board of fibrous glass. 3,850,601, Cl. 65-3.000.
Staples, Edward Jerome, to Texas Instruments, Incorporated. Nonlinear signal processing device using square law detection of surface elastic waves with insulated gate field effect transistor. 3,851,280, Cl. 333-30.00r.
Stark, Lawrence: *See—*
    Shen, Mitchel; Mandell, Robert B.; and Stark, Lawrence, 3,850,892.
Stauffer Chemical Company: *See—*
    Lee, Hwalin; Pallos, Ferenc M.; and Menn, Julius J., 3,851,061.

Steele, Fred W.; and Sannella, Joseph L., to Ball Corporation. Method of forming a photoresist with acrylamide photopolymers. 3,850,634, Cl. 96-35.100.
Steere, David E.; and Younghouse, Edwin C., to Exxon Research and Engineering Company. Ashless oil additive combination composed of nitrogen-containing ashless dispersant, phosphosulfurized olefin and phosphorothionyl disulfide. 3,850,822, Cl. 252-34.00f.
Stegmeier, William J. Tile-setting and mold form apparatus. 3,850,403, Cl. 249-27.000.
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Steigerwald, Robert L.: *See—*
    Park, John N.; Steigerwald, Robert L.; and Walker, Loren H., 3,851,240.
Steiner, Stephen A.: *See—*
    Pao, Henry C.; Donnerstein, Richard L.; and Steiner, Stephen A., 3,851,187.
Steinhauser, Armin H.; and Baratto, Eugene L., to Minnesota Mining & Manufacturing Company. Roll of pressure sensitive adhesive, adhesive coated abrasive discs and dispenser. 3,849,949, Cl. 51-406.000.
Stemmler, Heinz: *See—*
    Stemmler, Mathias; and Stemmler, Heinz, 3,851,077.
Stemmler, Mathias; and Stemmler, Heinz. Method for preserving freshly slaughtered meat. 3,851,077, Cl. 426-265.000.
Stephany, Joseph F.; and Ing, Samuel W., Jr., to Xerox Corporation. High speed printout system. 3,850,517, Cl. 354-12.000.
Stephens, William I.: *See—*
    Albinson, Don C.; Stephens, William I.; Cawley, Charles R., Jr.; and Hopkins, Richard Baier, 3,849,950.
    Albinson, Don C.; Stephens, William I.; Cawley, Charles R., Jr.; and Hopkins, Richard Baierp, 3,849,962.
Sterling Drug Inc.: *See—*
    Andrews, Roderic Stafford; Barlow, Christopher George; and Livingstone, John Lewis, 3,851,032.
    Gubitz, Franklyn W., 3,850,909.
Stern, Mitchel. Brake accessory for rolls of toilet paper and the like. 3,850,379, Cl. 242-55.200.
Sterwin Chemicals, Inc., mesne: *See—*
    Kosmos, John C., 3,850,766.
Stevens, Richard C.: *See—*
    Baker, Theodore H.; Stevens, Richard C.; and Tzou, Albert J., 3,851,245.
Stewart, A. Theodore Jar.; and Dyer, Gene H., to Bechtel International Corporation. Bituminous coal liquefaction process. 3,850,738, Cl. 208-8.000.
Stewart, George A. Pressurized driving mechanism. 3,850,448, Cl. 280-216.000.
Stier, Otto, to Vollmer Werke Maschinenfabrik GmbH. Device for adjusting the end feed position of Oscillating feed mechanism. 3,850,052, Cl. 76-77.000.
Stitt, Thomas C. Conveyor tire alarm system. 3,851,321, Cl. 340-229.000.
Stofey, William D.; and Judd, H. Edward, to Etna Products, Inc. Method and apparatus for controlled lubrication during metal drawing. 3,850,016, Cl. 72-45.000.
Stoll, James E., to Portage Electric Products, Inc. Thermostatic switch. 3,851,288, Cl. 337-89.000.
Stollberg, Ray H.; and Leakey, Joseph W., to Crown Zellerbach Corporation. Container construction and method therefor. 3,850,362, Cl. 229-41.00r.
Stone, Allan V.; and Martin, Francis J. Shut off device. 3,850,199, Cl. 137-624.110.
Stoppard, William Emil: *See—*
    Pitts, Thomas Edgar; and Stoppard, William Emil, 3,850,377.
Stork, Harold; Schmidt, Felix Helmut; Thiel, Max; Fauland, Erich; and Kampe, Wolfgang, to Boehringer Mannheim GmbH. Method of depressing fatty acids and triglycerides. 3,851,056, Cl. 424-180.000.
Stover, Joe V.; and Meyers, Byron P., to Hughes Aircraft Company. Fuse. 3,851,290, Cl. 337-166.000.
Stowe, Robert A.; Coulter, Kenneth E.; and Winegardner, David K., to Dow Chemical Company, The. Oxydehydrogenation of mixed C_4 stream. 3,851,008, Cl. 260-680.00e.
Stradalen, Yngve Bertil: *See—*
    Bjornson, Bjorn Ove; and Stradalen, Yngve Bertil, 3,850,387.
Straub, Robert Joseph: *See—*
    Hansen, Howard Eugene; Straub, Robert Joseph; and Tuczynski, Edward Martin, 3,849,906.
Street, George Bryan, to International Business Machines Corporation. $Mn_{1-x}M_x$ Ga Ge Ferromagnetic materials where M comprises transition metals. 3,850,706, Cl. 148-31.550.
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Strom, James R.: *See—*
    Plundo, Robert A.; Readal, Thomas C.; and Strom, James R., 3,850,744.
Strow, Donald A.: *See—*
    Taylor, Robert F.; Strow, Donald A.; and Mansouri, Hosein, 3,850,804.
Struttman, Hilarius S.: *See—*
    Zimmer, George A.; and Struttman, Hilarius S., 3,850,485.
Strybel, Richard V., to Imperial-Eastman Corporation. One-piece can tapper connector. 3,850,452, Cl. 285-38.000.
Stubbmann, Albert, to Kohner Bros., Inc. Toy playhouse and accessories. 3,849,930, Cl. 46-12.000.
Sturgeon, James L. Method and means for training drivers to operate automobiles. 3,849,908, Cl. 35-11.000.
Sturwold, Robert J.; and Barrett, Fred O., to Emery Industries, Inc. Esters of polyoxyalkylene glycols and mixed dibasic acids as fiber finishes. 3,850,682, Cl. 117-138.80f.
Styrbel, Richard V., to Imperial-Eastman Corporation. Tool construction. 3,849,881, Cl. 30-102.000.
Suatoni, Joseph C., to Gulf Research & Development Company. Purification of benzophenone-tetracarboxylic dianhydride using a silica containing absorbent. 3,850,967, Cl. 260-346.300.
Subelka, John C.: *See—*
    Hulit, Gerald W.; and Subelka, John C., 3,850,624.
Subotics, Gyula: *See—*
    Bartha, Zoltan; Fodor, Vince; and Subotics, Gyula, 3,850,568.
Subterranean Tools Inc.: *See—*
    Lupton, Homer B.; and Busby, Donald W., 3,850,253.
Suggitt, Robert M., to Texaco Inc. Hydrogenation of aromatic hydrocarbons to the corresponding saturated hydrocarbon. 3,851,001, Cl. 260-667.000.
Sugisaka, Nobuyuki: *See—*
    Klohs, Murle W.; Petracek, Francis J.; and Sugisaka, Nobuyuki, 3,851,062.
Sugita, Toshio. Easily replaceable wall panel structure. 3,849,954, Cl. 52-235.000.
Suh, John T., to Colgate-Palmolive Company. 1H-3-Amino derivatives of cyclopenta (beta) thianaphthene. 3,850,961, Cl. 260-330.500.
Suits, James Carr: *See—*
    Lee, Kenneth; and Suits, James Carr, 3,850,690.
Sullivan, Arthur J.; and Lewis, Oliver G., to Exxon Research and Engineering Company. Renovating apparatus for tire inner liners. 3,849,819, Cl. 15-21.00d.
Sulzer Brothers Ltd.: *See—*
    Laubli, Fritz, 3,850,148.
Sumitomo Chemical Company, Limited: *See—*
    Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; Takayama, Masaharu; Katayama, Shigenari; Ono, Keiichi; Yanagihara, Izumi; Tanaka, Yoshihiro; Katsube, Jinki; Inaba, Shigeho; and Yamamoto, Hisao, 3,850,935.
Sumitomo Chemical Company, Ltd.: *See—*
    Itaya, Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Kameda, Nobuyuki; Fujimoto, Keimei; and Okuno, Yositosi, 3,850,977.
Sumitomo Electric Industries, Ltd.: *See—*
    Nii, Kazukuni, 3,851,152.
Sumitomo Light Metal Industries, Ltd.: *See—*
    Ando, Masao; and Takeda, Yukiyasu, 3,850,024.
Sumitomo Metal Industries, Limited: *See—*
    Fujioka, Yasuhide; Ryujin, Takeshi; Yoshida, Shuji; and Inagaki, Mitami, 3,850,461.
Sumitomo Metal Industries, Ltd.: *See—*
    Nakanishi, Akito; Nakazawa, Hisashi; Yamashima, Kazuyoshi; Shiraiwa, Toshio; and Yamaguchi, Hisao, 3,850,027.
Summers, Warren S.; and Charest, Francis G., to United Aircraft Corporation. Purge timer for a fuel cell. 3,850,696, Cl. 136-86.00b.
Summit Filter Corporation: *See—*
    Higgins, Frank, 3,850,594.
Sun Research and Development Co.: *See—*
    Norton, Richard V., 3,850,982.
Sun Studs, Inc.: *See—*
    Wilcox, William H., 3,850,060.
Sundstrand, Arne: *See—*
    Danieli, Stan Henrik; and Sundstrand, Arne, 3,850,557.
Sundstrand Date Control, Inc.: *See—*
    Muller, Hans Rudolf, 3,851,303.
Sunstein, David E. Color television display system and method for reducing visibility of geometric pattern of colored-light sources, and method for fabrication thereof. 3,851,093, Cl. 358-67.000.
Sutcliffe, Speakman & Co., Ltd.: *See—*
    Armstrong, Allan, 3,850,805.
Sutton, George A.: *See—*
    Buxton, Daniel W., 3,850,210.
Suyama, Tadashi: *See—*
    Toyoshima, Shigeshi; Kanao, Seizo; Toyoda, Takeshi; and Suyama, Tadashi, 3,850,968.
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Swanson, S. Keith, to Measurex Corporation. Apparatus for measuring the compressibility of cigarettes and the like. 3,850,029, Cl. 73-81.000.
Swanton, Paul C.: *See—*
    Wells, John B.; Swanton, Paul C.; Weigl, John W.; and Forest, Edward, 3,850,627.
Swaters, Pieter Dirk: *See—*
    Havinga, Reginoldus; and Swaters, Pieter Dirk, 3,850,989.
Sweeney, David F., to Mohawk Data Sciences Corporation, mesne. High speed printers with staggered fonts. 3,850,097, Cl. 101-93.00c.
Swift & Company: *See—*
    Johnson, Edward A.; Miedaner, Wendelin H.; and Larson, Warren E., 3,850,089.
Swiss Aluminium Ltd.: *See—*

  - Schmidt-Hatting, Wolfgang; Chaudhuri, Kiranendu; and Bachofner, Peter, 3,850,768.
- Sybron Corporation: *See—*
  - Meyer, Leonard S., 3,851,038.
  - Moore, Darrlle DeForest; and Walsh, William Joseph, 3,850,580.
- Syncro Corporation: *See—*
  - Carmichael, Thomas F.; and Maier, Richard J., 3,851,208.
- Syntex (USA) Inc.: *See—*
  - Edwards, John A., 3,850,945.
- Syntex (U.S.A.) Inc., mesne: *See—*
  - Edwards, John A., 3,850,946.
  - Edwards, John A., 3,850,947.
- Syntex Corporation: *See—*
  - Lanzilotta, Raymond P., 3,850,750.
- Syracuse University Research Corporation: *See—*
  - Aldrich, Robert G.; Keller, Douglas V., Jr.; and Sawyer, Richard G., 3,850,477.
- Szabo, Erwin I., to Canadian Patents and Development Limited. Method of forming foundry moulds. 3,850,733, Cl. 204-181.000.
- Szmuszkovicz, Jacob: *See—*
  - Hester, Jackson B., Jr.; and Szmuszkovicz, Jacob, 3,850,942.
- Szorc, Jan, to KHL Research and Development Corporation. Hum reduction in transistor amplifiers. 3,851,269, Cl. 330-13.000.
- Szucs, Andrew E.: *See—*
  - Miles, Ray P.; and Szucs, Andrew E., 3,850,322.
- Taggart, James, to Hilti Aktiengesellschaft. Scarfing. 3,850,704, Cl. 148-9.500.
- Taguchi, Kintaro: *See—*
  - Ikeda, Kiichi; Taguchi, Kintaro; Nozaki, Taketoshi; and Matsumoto, Shuntetsu, 3,850,259.
- Takahashi, Shoji, to Bridgestone Tire Company Limited. Stitching apparatus. 3,850,728, Cl. 156-358.000.
- Takarada, Eiichi. Electrical discharge machining power switch short circuit detection. 3,851,134, Cl. 219-69.00s.
- Takayama, Masaharu: *See—*
  - Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; Takayama, Masaharu; Katayama, Shigenari; Ono, Keiichi; Yanagihara, Izumi; Tanaka, Yoshihiro; Katsube, Jinki; Inaba, Shigeho; and Yamamoto, Hisao, 3,850,935.
- Takeda Chemical Industries, Ltd.: *See—*
  - Meguro, Kanji; and Kuwada, Yotaka, 3,850,951.
  - Taniguchi, Shin-Ichi, 3,850,096.
- Takeda, Yukiyasu: *See—*
  - Ando, Masao; and Takeda, Yukiyasu, 3,850,024.
- Takehara, Kikuo: *See—*
  - Iwama, Akira; Toyoguchi, Mitsuru; Takehara, Kikuo; and Hamuro, Yasumasa, 3,850,586.
- Takekoshi, Tohru; and Kochanowski, John E., to General Electric Company. Method for making polyetherimides. 3,850,885, Cl. 260-47.0cz.
- Takeuchi, Setsuyuki; Ibe, Nobukuni; Iriko, Fumio; and Yuzawa, Yoshihiko, to Showa Denko Kabushiki Kaisha and Nissei Plastics Industrial Co., Ltd. Apparatus for producing hollow molded articles. 3,850,562, Cl. 425-242.00b.
- Takeuchi, Shigeo, to Takeuchi Takko Kabushiki Kaisha. Vehicle polishing apparatus. 3,849,826, Cl. 15-230.140.
- Takeuchi Takko Kabushiki Kaisha: *See—*
  - Takeuchi, Shigeo, 3,849,826.
- Takeya, Kenji; Shimizu, Jiro; and Minami, Shinsaku, to Japan Exlan Company Limited. Method of making wigs or the like. 3,850,179, Cl. 132-5.000.
- Talley, Lawrence M., to Watteredge-Uniflex, Inc. Hose retaining device for liquid cooled flexible electrical cable. 3,851,092, Cl. 174-19.000.
- Talos Systems, Inc.: *See—*
  - Rodgers, James L., 3,851,097.
- Tamai, Yasuo: *See—*
  - Fukushima, Osamu; Sato, Masamichi; and Tamai, Yasuo, 3,850,830.
- Tamai, Yasuo, to Rank Xerox, Ltd., mesne. Photoconductive element with a polyvinylidene fluoride binder. 3,850,631, Cl. 96-1.500.
- Tamny, Sandi R.: *See—*
  - Tamny, Simon; and Tamny, Sandi R., 3,850,166.
- Tamny, Simon; and Tamny, Sandi R. Fracture reduction system. 3,850,166, Cl. 128-84.00c.
- Tanabe Seiyaku Co., Ltd.: *See—*
  - Chibata, Ichiro; Yamada, Shigeki; Wada, Mitsuru; Izuo, Nobuhiko; and Yamaguchi, Totaro, 3,850,753.
- Tanaka, Akio: *See—*
  - Merrell, Richard G.; and Tanaka, Akio, 3,851,254.
- Tanaka, Kazunobu: *See—*
  - Toba, Hirotaka; Tanaka, Kazunobu; Kusumoto, Masahiko; Watanabe, Shoji; and Tsukane, Nagayoshi, 3,850,855.
- Tanaka, Michio; Ohtsuka, Katsuyuki; Obata, Masayoshi; Amemiya, Koji; Saga, Katsumasa; Kano, Sadaaki; and Kumada, Teru, to Kaken Chemical Co., Ltd. 5-(3-Pyridyl)-2-mercaptoimidazole and derivatives thereof. 3,850,944, Cl. 260-294.80g.
- Tanaka, Shoichi; Kousaka, Susumu; and Kimura, Toshio. Polyvinyl alcohol fibers. 3,850,901, Cl. 260-91.300.
- Tanaka, Yoshihiro: *See—*
  - Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; Takayama, Masaharu; Katayama, Shigenari; Ono, Keiichi; Yanagihara, Izumi; Tanaka, Yoshihiro; Katsube, Jinki; Inaba, Shigeho; and Yamamoto, Hisao, 3,850,935.
- Tangorra, Giorgio: *See—*
  - Bertelli, Italo; and Tangorra, Giorgio, 3,850,218.
- Tani, Kaneyasu; Imoto, Shozo; Kawazoe, Shiro; Ichihara, Wachio; Nagai, Tatsuhiko; and Yamada, Bunkichi; deceased (by Yamada, Fumiko; legal representative), to Nippon Kokoh Seishi Kabushiki Kaisha. Synthetic paper and process. 3,850,667, Cl. 117-36.700.
- Tani, Kaneyasu; Fushino, Yukio; Nakajima, Taiji; Noguchi, Hiroaki; Kurita, Yutaka; Murakoshi, Satoshi; and Wakayama, Hiroo, to Nippon Kakoh Seishi Kabushiki Kaisha. Coated synthetic paper and a method of producing the same. 3,850,672, Cl. 117-76.00r.
- Taniguchi, Shin-Ichi, to Takeda Chemical Industries, Ltd. Apparatus for printing and drying rotatable objects. 3,850,096, Cl. 101-40.000.
- Tanji, Mikiharu, to ISE Electronics Corporation. Electronic digital clocks. 3,849,979, Cl. 58-50.00r.
- Tanner, Robert L., to United States of America, Atomic Energy Commission. Modular disc laser. 3,851,267, Cl. 330-4.300.
- Tapley, Claude D.: *See—*
  - Bray, Robert S.; and Tapley, Claude D., 3,850,019.
- Tarbox, John W. Roller band apparatus. 3,850,043, Cl. 74-89.200.
- Tarusawa, Yasutaka; and Futami, Yoshinori, to Kabushiki Kaisha Suwa Seikosha. Watertight watch case. 3,849,981, Cl. 58-90.00r.
- Tate, Jack F.: *See—*
  - Allen, Joseph C.; and Tate, Jack F., 3,850,243.
  - Allen, Joseph C.; and Tate, Jack F., 3,850,245.
- Tateisi, Kazuma, to Omron Tateisi Electronics Co. Apparatus for packing and dispensing thin objects. 3,849,968, Cl. 53-54.000.
- Tatsuno, Tadayoshi: *See—*
  - Inamura, Keizo; Tatsuno, Tadayoshi; and Okoshi, Toshio, 3,850,660.
- Taub, David: *See—*
  - Kuo, Chan-Hwa; Taub, David; and Wendler, Norman L., 3,850,952.
- Taylor & Challen Limited: *See—*
  - Plaister, John Edward; and Baugh, Raymond Ernest, 3,850,315.
- Taylor, Carol O.; and Whicker, Stephen L., to Texas Instruments Incorporated. Thermal energy receiver. 3,851,173, Cl. 250-332.000.
- Taylor, Frank Finley, to Bell Telephone Laboratories, Incorporated. Line searching arrangement having priority sequence. 3,851,310, Cl. 340-147.0lp.
- Taylor, Robert F.; Strow, Donald A.; and Mansouri, Hosein, to Rex Chainbelt Inc. Screens for water intake systems. 3,850,804, Cl. 210-155.000.
- Taylor, Ted R.; and Fergason, James L., to International Liquid Xtal Company. Liquid crystal information storage and read-out system. 3,851,318, Cl. 340-173.0ls.
- Technab: *See—*
  - Payraudeau, Hubert Michel Henri, 3,850,558.
- Teijin Limited: *See—*
  - Oka, Isao; Shima, Takeo; Urasaki, Takanori; and Ogasawara, Makoto, 3,851,002.
- Teitel, Sidney: *See—*
  - Brossi, Arnold; Focella, Antonino; and Teitel, Sidney, 3,850,997.
- Tektronix, Inc.: *See—*
  - Olson, Ronald A., 3,850,412.
- Teledyne Semiconductor; a division of Teledyne, Inc.: *See—*
  - Flowers, Dervin L., 3,850,686.
- Telefonaktiebolaget L M Ericsson: *See—*
  - Jacobaeus, Anton Christian, 3,851,106.
- Telefonbau und Normalzeit G.m.b.H.: *See—*
  - Bauernfeind, Herbert; and Goller, Manfred, 3,851,102.
- Telescan Communications Systems, Inc.: *See—*
  - Kleinerman, Ben, 3,851,095.
- Telesco Brophey Limited: *See—*
  - Weber, Heinz; and Thur, Klaus, 3,850,186.
- Temple, Alfred Charles: *See—*
  - Compoly, Albert William; and Temple, Alfred Charles, 3,851,322.
- Temple, Robert, to Mine Safety Appliances Company. Mine anchorline cutter with flare. 3,850,075, Cl. 89-113.000.
- Temple, Rodger G.: *See—*
  - Wismer, Marco; Schimmel, Karl F.; and Temple, Rodger G., 3,850,868.
- Tennison, Marion A.: *See—*
  - Thompson, Robert B.; Alers, George A.; and Tennison, Marion A., 3,850,028.
- Teodoroiu, Paul B., to Institutal de Proiectari Pentru Industria Chimica Anorganica si a Ingrasamintelor (Ipran). Apparatus for the treatment and the clarification of raw or waste water. 3,850,810, Cl. 210-208.000.
- Teraoka, Takeharu. System for prevention of errors in scale measurement due to temperature variations. 3,850,257, Cl. 177-226.000.
- Termin, Erich; Lenz, Arnold; and Bleh, Otto, to Dynamit Nobel Aktiengesellschaft. Porous silicic acid and its production. 3,850,971, Cl. 260-448.80r.
- Tesa S.A.: *See—*
  - Jeannet, Jean-Pierre; Leuba, Jean-Pierre; and Vadi, Gildo, 3,849,890.
- Tetsud, Aihara: *See—*
  - Juna, Kiyoshi; Imai, Takeo; Nakayama, Hiroyuki; Nobuyuki, Kita; Kiyohiko, Asada; and Tetsud, Aihara, 3,850,770.
- Texaco Inc.: *See—*
  - Allen, Joseph C.; and Tate, Jack F., 3,850,243.
  - Allen, Joseph C.; and Tate, Jack F., 3,850,245.
  - Kravitz, Stanley; Coone, Joseph H., Jr.; and Cole, Edward L., 3,850,846.
  - Nebzydoski, John W.; Patmore, Edwin L.; and Rubin, Isaac D., 3,850,824.

  - Suggitt, Robert M., 3,851,001.
  - Van Cleave, Robert A., Jr., 3,851,188.
- Texas Instruments Incorporated: *See—*
  - Burch, Jack J., 3,850,515.
  - Chang, Kisuk, 3,851,313.
  - Collins, Dean R.; and Holmes, Jerry D., 3,851,096.
  - Jost, Ernest M., 3,849,868.
  - Riseberg, Leslie Allen; and Scott, Warner Curtis, 3,850,503.
  - Staples, Edward Jerome, 3,851,280.
  - Taylor, Carol O.; and Whicker, Stephen L., 3,851,173.
- Thacker, Melvin E. Tile embedding machine. 3,849,998, Cl. 61-72.500.
- Themelis, Nickolas John; Beck, Russell R.; and Wagner, John V., to Kennecott Copper Corporation. Pyrometallurgical process for producing metallic copper from copper sulfide concentrates. 3,850,620, Cl. 75-74.000.
- Thermatool Corporation: *See—*
  - Rudd, Wallace C., 3,851,139.
- Theurer, Josef: *See—*
  - Plasser, Erna; Theurer, Josef; and Schubert, Egon, 3,850,251.
- Thiel, Max: *See—*
  - Stork, Harold; Schmidt, Felix Helmut; Thiel, Max; Fauland, Erich; and Kampe, Wolfgang, 3,851,056.
- Thielen, James E., to Minnesota Mining and Manufacturing Company. Positional universal joint. 3,850,533, Cl. 403-58.000.
- Thigpen, Hubert H.: *See—*
  - Trebellas, John C.; Thigpen, Hubert H.; and Mays, Wallace M., 3,850,981.
- Thoma, Jozef A.; Deumens, Johannes J. M.; and Verheijen, Egidius J. M., to Stamicarbon B.V. Preparation of dihydrocoumarin and of alkyl derivatives thereof. 3,850,963, Cl. 260-343.20r.
- Thoma, Paul E.; and Atkinson, Louis D., to Johnson Service Company. Bi-meterial condition sensors. 3,850,038, Cl. 73-363.500.
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  - Chalkley, Jack Rigler; and Thomas, David Meirion, 3,850,590.
- Thomas, Edward E., to Outboard Marine Corporation. Engine rotational direction control. 3,850,155, Cl. 123-198.00r.
- Thomas, Robert A.; Sellers, Jerry Wayne; and Murley, Roger Wayne, to Rockwell International Corporation. Power operated sanding machine. 3,849,943, Cl. 51-170.0mt.
- Thomasson, Gene I., to General Electric Company. Heat and light reflective coating on quartz lamp. 3,851,200, Cl. 313-113.000.
- Thome, Paul, to Babcock-Atlantique, S.A. Means for adjustable clamping skirt between pressure vessel and core. 3,850,795, Cl. 176-50.000.
- Thome, Paul, to Babcock-Atlantique, S.A. Leakproof connection means between hoop and nozzle of pressure vessel. 3,850,796, Cl. 176-50.000.
- Thompson, Norman, to Beta Aluminium Products Limited. Window frame. 3,849,938, Cl. 49-471.000.
- Thompson, Richard Telman: *See—*
  - Fabish, Edward Francis; Tookey, James Robert; and Thompson, Richard Telman, 3,849,892.
- Thompson, Robert B.; Alers, George A.; and Tennison, Marion A., to Rockwell International Corporation. Method for ultrasonic inspection. 3,850,028, Cl. 73-71.50u.
- Thomson-CSF: *See—*
  - Picardat, Bernard, 3,851,304.
- Thornton, Richard D., to Massachusetts Institute of Technology. Transportation system employing magnetic levitation, guidance and propulsion. 3,850,109, Cl. 104-148.0ss.
- Thorpe, David C., to Richmond Marine Limited. Centreboard casing constructions for sailing boats. 3,850,127, Cl. 114-138.000.
- Throner, Guy C. Portable tractor system. 3,850,165, Cl. 128-84.00c.
- Thur, Klaus: *See—*
  - Weber, Heinz; and Thur, Klaus, 3,850,186.
- Tinsley, John M., to Halliburton Company. Placing zones of solids in a subterranean fracture. 3,850,247, Cl. 166-280.000.
- Titus, Dudley S.: *See—*
  - Guckenberger, John D.; Titus, Dudley S.; and Toft, Knut, 3,850,838.
- Toba, Hirotaka; Tanaka, Kazunobu; Kusumoto, Masahiko; Watanabe, Shoji; and Tsukane, Nagayoshi, to Daicel Ltd. Photolytic polyisobutylene oxide resin molded products of vanishing type. 3,850,855, Cl. 260-2.00a.
- Toba, Teruo: *See—*
  - Umeda, Shozo; Furuta, Hiroshi; Toba, Teruo; and Hiroyuki, Ishizaki, 3,851,212.
- Tobey, Hubert E.; Hood, John W.; and Twiford, Richard L., to International Telephone and Telegraph Corporation. Slicing and filling apparatus. 3,850,088, Cl. 99-450.200.
- Tobin, Carlton D., Jr., to Union Carbide Corporation. Seed selector. 3,850,286, Cl. 198-210.000.
- Toda, Tadahide; Nagano, Tetsuro; and Kato, Takashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Member for controlling exhaust gas purifying device. 3,849,984, Cl. 60-290.000.
- Toft, Kaj: *See—*
  - Davidson, William E.; and Toft, Kaj, 3,849,916.
  - Davidson, William E.; and Toft, Kaj, 3,940,016.
- Toft, Knut: *See—*
  - Guckenberger, John D.; Titus, Dudley S.; and Toft, Knut, 3,850,838.
- Tokyo Netsushori Kogyo Kabushiki Kaisha: *See—*
  - Namba, Keishichi, 3,850,574.
- Tokyo Shibaura Electric Co., Ltd.: *See—*
  - Kodama, Koji, 3,851,316.
- Tokyo Shibaura Electric Company, Ltd.: *See—*
  - Suzuki, Yasoji; and Yamaga, Eiichi, 3,851,277.
- Tokyo Yogyo Kabushiki Kaisha: *See—*
  - Yoshihara, Tetsuya, 3,850,351.
- Tolman, Chadwick A.: *See—*
  - Seidel, William C.; and Tolman, Chadwick A., 3,850,973.
- Tomczak, Walter F.: *See—*
  - Holt, M. C.; and Tomczak, Walter F., 3,849,801.
- Tomono, Makoto: *See—*
  - Hukase, Masahiro; Tomono, Makoto; and Inowa, Sigeru, 3,850,632.
- Tompkins, Melvin W., to American Standard Inc. Folding space divider. 3,850,223, Cl. 160-84.00r.
- Tong, Yulan C., to Dow Chemical Company, The. (1,2,5) Thiadiazolo(3,4-beta) pyrazines. 3,850,929, Cl. 260-250.0bc.
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  - Fabish, Edward Francis; Tookey, James Robert; and Thompson, Richard Telman, 3,849,892.
- Torrington Company, The: *See—*
  - Iffland, Roger L., 3,849,853.
  - Shepard, Richard W.; and Ashmead, Albert S., 3,850,011.
- Towns, Edward J.; and Brindisi, Anthony Thomas. Safety Packaging Corporation Shaker cap. 3,850,350, Cl. 222-556.000.
- Toyo Kogyo Co., Ltd.: *See—*
  - Mino, Hiroshi; and Miyanishi, Shozo, 3,850,669.
  - Yoshino, Tsutomu; Nanba, Shinichi; Fujimoto, Norihiro; and Araki, Hideo, 3,849,940.
- Toyoda, Takeshi: *See—*
  - Toyoshima, Shigeshi; Kanao, Seizo; Toyoda, Takeshi; and Suyama, Tadashi, 3,850,968.
- Toyoguchi, Mitsuru: *See—*
  - Iwama, Akira; Toyoguchi, Mitsuru; Takehara, Kikuo; and Hamuro, Yasumasa, 3,850,586.
- Toyoshima, Shigeshi; Kanao, Seizo; Toyoda, Takeshi; and Suyama, Tadashi, to Ajinomoto Co., Inc. N-Furfurylphenylalanine. 3,850,968, Cl. 260-347.300.
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  - Toda, Tadahide; Nagano, Tetsuro; and Kato, Takashi, 3,849,984.
- Tracked Hovercraft Limited: *See—*
  - Eastham, John Frederick; English, Christopher Durrant; and Brown, Geoffrey Edward, 3,851,231.
- Traffic Standard Incorporated: *See—*
  - Kone, Elliott H., 3,850,536.
- Transfresh Corporation: *See—*
  - Lugg, James R.; and Shite, Ralph L., 3,851,080.
- Tranter Manufacturing, Inc.: *See—*
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  - Masaki, Mitsuo; Matsunami, Satoshi; and Yoshikawa, Toshio, 3,850,883.
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  - Clendinning, Robert A.; Potts, James E.; and Niegisch, Walter D., 3,850,862.
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  - Wertz, William I.; and Richardson, Stanley H., 3,851,012.
  - Yang, Chang-Lee, 3,851,004.
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  - Robinson, Joel P.; and Durning, Paul J., 3,849,993.
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  - Pasch, Lambert, 3,850,555.
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  - Leblond, Jean Rene; Danneels, Guy Emile; and Lambert, Maurice Avrelien, 3,850,719.
- Unisil Molds, Inc.: *See—*
  - Mintz, Nathan H.; and Kamke, Edward H., Jr., 3,850,559.
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  - Basche, Malcolm; and Fanti, Roy, 3,850,689.
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  - Summers, Warren S.; and Charest, Francis G., 3,850,696.
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    - Whitmore, Rboert A.; and Jones, Howard W., 3,851,082.
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    - Krupen, Philip, 3,850,103.
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    - Morrow, Warren P., 3,850,102.
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    - Irvine, Alvin R., 3,851,179.
    - Ray, William E.; and Sprowl, John D., 3,849,867.
    - Sheller, Otto P., 3,850,623.
    - Solin, Stuart A.; and Doehler, Joseph, 3,851,274.
    - Spokas, John J., 3,851,248.
    - Tanner, Robert L., 3,851,267.
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    - Gebben, Vernon D.; and Webb, John A., Jr., 3,850,169.
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  - Dale, Robert F.; Rhodes, Thomas P.; and DeNucci, Joseph M., 3,849,900.
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  - de Rosset, Armand J.; and Neuzil, Richard W., 3,851,006.
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  - Wilhelm, Frederick C., 3,851,003.
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  - Sasse, Klaus; Hammann, Ingeborg; Unterstenhofer, Gunter; and Frohberger, Paul-Ernst, 3,850,925.
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  - Hester, Jackson B., Jr.; and Szmuszkovicz, Jacob, 3,850,942.
- Urano, Fumio: *See—*
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  - Oka, Isao; Shima, Takeo; Urasaki, Takanori; and Ogasawara, Makoto, 3,851,002.
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  - Yamada, Fukuo; Fukuda, Yoshihiro; and Uraya, Toru, 3,849,840.
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  - Boersma, Lieuwe, 3,851,257.
  - Dekeijser, Jacky Charles; and Kuiper, Albert Jan, 3,851,215.
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  - Wheelock, Barrie Neil, 3,850,811.
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  - Tsuchiya, Kazuo; and Usami, Susumu, 3,850,034.
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  - Halas, Francis R.; and Rossitto, Conrad, 3,850,887.
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- Vacherot, Maurice G.: *See—*
  - Willard, David G.; Cogan, Michael S.; Vacherot, Maurice G.; and Shay, John W., 3,851,104.
- Vadi, Gildo: *See—*
  - Jeannet, Jean-Pierre; Leuba, Jean-Pierre; and Vadi, Gildo, 3,849,890.
- Vahle, Paul, KG: *See—*
  - Hillmann, Willi, 3,850,270.
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- Valentin, Francois: *See—*
  - Bessot, Michel; Delacote, Claude; Lion, Jean-Jacques; and Valentin, Francois, 3,850,348.
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  - Winthrop, John Talley; Van Ligten, Raoul Fredrik; and Lawton, Kenneth Charles, 3,850,527.
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  - Bailey, William J., Jr.; Houle, James F.; and Van Norman, Gilden R., 3,850,642.
- Van Ommering, Gerrit: *See—*
  - Dunlop, James D.; Earl, Martin William; and Van Ommering, Gerrit, 3,850,694.
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  - Singh, Shobha; and Van Uitert, Legrand Gerard, 3,851,268.
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  - Schuurs, Antonius Hermanus Wilhelmus; and van Weemen, Bauke Klass, 3,850,752.
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  - Patono, Carlo Luigi, 3,850,138.
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  - Andresen, Karl-Heinz, 3,850,015.
- Vereinigte Osterreichische Eisen-und Stahlwerke Alpine Montan Aktiengesellschaft: *See—*
  - Schwenzfeier, Werner; Gfrerer, Manfred; and Herzog, August, 3,850,031.
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  - Thoma, Jozef A.; Deumens, Johannes J. M.; and Verheijen, Egidius J. M., 3,850,963.
- Vermeulen, Marinus Cornelus: *See—*
  - Smith, Ian Edward; Hastwell, Peter John; and Vermeulen, Marinus Cornelus, 3,850,829.
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  - Barthel, Horst, 3,850,817.
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  - Ahlstone, Arthur G.; and Bartos, Josef A., 3,850,237.
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  - Bigotte, Claude; and Viazzi, Pierre, 3,850,457.
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  - Brainin, Herbert, 3,849,887.
- Vitzthum, Otto: *See—*
  - Iyimen, Siddik; Lehmann, Gunter; Neunhoeffer, Otto; and Vitzthum, Otto, 3,850,958.
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  - Cohen, Marvin P.; Von Strandtmann, Max; and Shavel, John, Jr., 3,850,966.
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  - Goettsch, Reijer; and Vos, Herman M. A., 3,850,910.
- Vosburgh, Robert D.: *See—*
  - Hipsher, Gary L.; and Vosburgh, Robert D., 3,850,418.
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  - Van Allman, Don T.; and Voss, Robert C., 3,850,692.
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  - Beckmann, Georg; Fritz, Kurt; and Lippitsch, Josef, 3,850,235.
- Wada, Mitsuru: *See—*
  - Chibata, Ichiro; Yamada, Shigeki; Wada, Mitsuru; Izuo, Nobuhiko; and Yamaguchi, Totaro, 3,850,753.
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- Waechter, Rudolf: *See—*
  - Riedel, Guenther; and Waechter, Rudolf, 3,850,648.
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  - Themelis, Nickolas John; Beck, Russell R.; and Wagner, John V., 3,850,620.
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  - Tani, Kaneyasu; Fushino, Yukio; Nakajima, Taiji; Noguchi, Hiroaki; Kurita, Yutaka; Murakoshi, Satoshi; and Wakayama, Hiroo, 3,850,672.
- Wal Vac, Inc.: *See—*
  - Mol, Jacob C., 3,849,866.
- Walden, Stephen William: *See—*
  - Krumreich, Charles Louis; Mulbarger, Albert Eugene, Jr.; and Walden, Stephen William, 3,850,497.

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  - Park, John N.; Steigerwald, Robert L.; and Walker, Loren H., 3,851,240.
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- Ward, Dennis J., to Universal Oil Products Company. Process for producing para-diethylbenzene. 3,851,005, Cl. 260-672.00t.
- Ward, James F.: *See—*
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- Wardlaw, Russell: *See—*
  - Hill, Martin Arthur; and Wardlaw, Russell, 3,850,465.
- Warner-Lambert Company: *See—*
  - Cohen, Marvin P.; Von Strandtmann, Max; and Shavel, John, Jr., 3,850,966.
  - Ferraro, Frank A., 3,849,882.
  - Hartenstein, Johannes Herrmann, 3,850,906.
- Washio, Takaji; and Aizawa, Tatsuo, to Mita Industrial Company Limited. Electrophotographic copying machine of optical system-moving type. 3,850,520, Cl. 355-13.000.
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  - Okada, Katsuto; Yamanami, Shoichi; Ishibashi, Akichika; and Watanabe, Hirotaka, 3,850,406.
- Watanabe, Koichiro: *See—*
  - Uno, Naoyuki; Nomura, Katsuhiko; Sakazaki, Tadazumi; Watanabe, Koichiro; Miyata, Katsuhiko; and Urano, Fumio, 3,850,530.
- Watanabe, Shoji: *See—*
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- Watanabe, Toshio: *See—*
  - Okamoto, Toyoo; and Watanabe, Toshio, 3,851,230.
- Watanabe, Yoshiaki, to Kabushiki Kaisha Morita Seisakucho. Cartridge type brush holder. 3,851,197, Cl. 310-40.0mm.
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  - Kunugi, Taiseki; Fujimoto, Kaoru; Arai, Hiromichi; and Watanabe, Yoshihisa, 3,850,843.
- Watarai, Syu: *See—*
  - Ono, Hisatake; Watarai, Syu; and Katsuyama, Harumi, 3,850,949.
- Waters Manufacturing, Inc.: *See—*
  - Clayton, John, 3,851,293.
- Watkins, William L., to Bloedel, MacMillan, Research Limited. Method for felting wafers in waferboard productions. 3,851,031, Cl. 264-109.000.
- Watson, Barry Kenneth, to Marconi Company Limited, The. Waveguide filters. 3,851,282, Cl. 333-73.00w.
- Watson, Stewart C.: *See—*
  - Bowman, Thomas C.; and Watson, Stewart C., 3,850,539.
- Watson, William David, to Dow Chemical Company, The. Pentachlorophenol coated with a polyglycol. 3,850,678, Cl. 117-100.00a.
- Watson-Bowman Associates, Inc.: *See—*
  - Bowman, Thomas C.; and Watson, Stewart C., 3,850,539.
- Watt, William Doyle, Jr., to Keeler Brass Company. Composite drawer handle. 3,849,833, Cl. 16-125.000.
- Watteredge-Uniflex, Inc.: *See—*
  - Talley, Lawrence M., 3,851,092.
- Watts, Jess L.: *See—*
  - Link, James H.; and Watts, Jess L., 3,850,449.
- Wayrick, Thora: *See—*
  - Weyrick, Nola D.; and Wayrick, Thora, 3,849,886.
- Webb, John A., Jr.: *See—*
  - Gebben, Vernon D.; and Webb, John A., Jr., 3,850,169.
- Webb, John M.: *See—*
  - Vidmar, Albert J.; and Webb, John M., 3,850,224.
- Webb, Robert Lee: *See—*
  - Baile, Clifton A.; McLaughlin, Carol Lynn; and Webb, Robert Lee, 3,851,058.
- Webb, Thomas E., to Reynolds Metals Company. Composite article. 3,850,585, Cl. 29-197.500.
- Weber, Hans: *See—*
  - Rodach, Alexander; and Weber, Hans, 3,850,032.
- Weber, Heinz; and Thur, Klaus, to Telesco Brophey Limited. Garden umbrella. 3,850,186, Cl. 135-20.00m.
- Webster, Richard Roy; and Mueller, Norman Paul, to Jones & Laughlin Steel Corporation. Rolled strip shape control using work roll screwdown changes. 3,850,020, Cl. 72-199.000.
- Wehner, Frank. Bowling bag cart. 3,850,442, Cl. 280-47.370.
- Weigand, Hanshermann: *See—*
  - Haberling, Edmund; Kiesheyer, Heinrich; and Weigand, Hanshermann, 3,850,621.
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  - Wells, John B.; Swanton, Paul C.; Weigl, John W.; and Forest, Edward, 3,850,627.
- Weikel, Donald J., Jr., to Xerox Corporation. Xerographic image transfer apparatus. 3,850,519, Cl. 355-3.00r.
- Weil, Ira, to Lever Brothers Company. Novel detergent composition. 3,850,854, Cl. 252-551.000.
- Weir, Thomas J., to Hayes-Albion Corporation. Flex fan. 3,850,545, Cl. 416-132.000.
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  - Peiser, Alfred M.; Antal, Michael J.; and Weiss, Gustave J., 3,850,743.
- Weiss, Johann, Maschinenfabrik und Apparatebau GmbH: *See—*
  - Schonig, Bruno; and Schlacht, Ernst, 3,850,774.
- Welch, Ralph A. Automotive body components. 3,850,474, Cl. 296-31.00p.
- Welch, Rolland Ernst: *See—*
  - Kenny, Joseph R.; Welch, Rolland Ernst; Reading, William H., III; and Carson, Alfred H., 3,851,309.
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- Wen, Cheng Paul, to RCA Corporation. Method of making a quasi-monolithic integrated circuit structure. 3,850,710, Cl. 156-3.000.
- Wendler, Norman L.: *See—*
  - Kuo, Chan-Hwa; Taub, David; and Wendler, Norman L., 3,850,952.
- Wentorf, Robert H., Jr., to General Electric Company. Process for preparation of high pressure apparatus reaction vessel construction. 3,850,591, Cl. 51-307.000.
- Wentworth, Hobert L., to Sola Basic Industries, Inc. Multiple tray pusher furnace. 3,850,318, Cl. 214-24.000.
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  - Butterfield, John L.; and Wenzel, James L., 3,850,501.
- Werber, Gerhardt P., to Loctite Corporation. Thixotrapic anaerobic composition. 3,851,017, Cl. 260-897.00b.
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  - Vosteen, Robert E.; and Werner, Alan L., Jr., 3,851,247.
- Werther, Heinz-Ulrich: *See—*
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- Wertz, William I.; and Richardson, Stanley H., to Union Carbide Corporation. Rubber compositions containing a heat hardenable phenolic rasin based on a mixture of a dihydroxy diphenyl alkane and a para-substituted alkyl phenol. 3,851,012, Cl. 260-845.000.
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  - Jebens, Aksel; and Westergaard, Richard Hoegh, 3,850,715.
- Western Electric Company: *See—*
  - Franke, Edward L., Jr.; Hyde, William J.; and Schneider, Randy G., 3,850,139.
- Western Stress Relieving Services: *See—*
  - Schonert, Heinz E.; and Jones, Robert H., 3,851,148.
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  - Muchmore, Richard W.; Wetmor, Judson Douglas; and Hughes, John R., 3,851,296.
- Weyer, Rudi: *See—*
  - Aumuller, Walter; Weyer, Rudi; Hitzel, Volker; and Hubner, Manfred, 3,850,950.
- Weyerhaeuser Company: *See—*
  - Miller, Lewis S., 3,850,675.
- Weyrick, Nola D.; and Wayrick, Thora. Tape measure. 3,849,886, Cl. 33-2.00r.
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  - Rosander, Jan, 3,849,889.
- Wharton, Franklin Eugene. Container closure. 3,850,334, Cl. 220-243.000.
- Wheatley, Carl Franklin, Jr., to RCA Corporation. Temperature dependent voltage reference circuit. 3,851,241, Cl. 323-8.000.
- Wheelock, Barrie Neil, to U.S. Philips Corporation. Magnetic filter. 3,850,811, Cl. 210-223.000.
- Whicker, Stephen L.: *See—*
  - Taylor, Carol O.; and Whicker, Stephen L., 3,851,173.

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- White, Albert H., to Chandler Evans Inc. Contaminant resistant valve. 3,850,405, Cl. 251-61.500.
- White, Brian Graham: *See—*
  - Bowden, Roy Dennis; Slater, John Walter; and White, Brian Graham, 3,850,943.
- White, Robert J., to Chevron Research Company. Production of synthesis gas rich in carbon monoxide. 3,850,588, Cl. 48-209.000.
- Whitledge, Jon K.; and Kavick, Edward M., to Samuel Moore & Company. Swaging apparatus. 3,849,858, Cl. 29-200.00b.
- Whitlinger, Frank Truxal. Muzzle-loading-pistol. 3,849,924, Cl. 42-51.000.
- Whitmore, Rboert A.; and Jones, Howard W., to United States of America, Agriculture. Collagen dispersions. 3,851,082, Cl. 426-350.000.
- Wick, Helmut: *See—*
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- Widdig, Arno; Kuhle, Engelbert; Grewe, Ferdinand; and Helmut, Kaspers, to Bayer Aktiengesellschaft. 1-Acyl-3-aminosulfonyl-2-imino-benzimidazolines. 3,850,954, Cl. 260-309.200.
- Wigner, William K.; and Sabin, Albert S., Jr., to Marietta, Martin, Corporation. Receiver method and apparatus. 3,851,251, Cl. 325-55.000.
- Wilcox, Elizabeth: *See—*
  - Wilcox, William H., 3,850,060.
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- Wilhelm, Frederick C., to Universal Oil Products Company. Dehydrogenation method and multicomponent catalytic composite for use therein. 3,851,003, Cl. 260-668.00d.
- Wilkins, Judd R.; and Mills, Stacey M., to United States of America, National Aeronautics and Space Administration. Automatic inoculating apparatus. 3,850,754, Cl. 195-127.000.
- Willard, David G.; Cogan, Michael S.; Vacherot, Maurice G.; and Shay, John W., to Mitre Corporation, The. Digital communications system. 3,851,104, Cl. 179-15.0by.
- Willems, Gerardus Antonius Maria: *See—*
  - Verhagen, Johannes Gerardus; De Keyser, Edmond Joannes Jozef; Claes, Jan Cyrille Martin; and Willems, Gerardus Antonius Maria, 3,851,137.
- William, Frank J., III, to General Electric Company. Method for making aromatic bis (ether anhydride)s. 3,850,964, Cl. 260-345.200.
- Williams, Bradford A., Sr. Display map device for indicating the extent of the travels of a motorist. 3,849,913, Cl. 35-42.000.
- Williams, Frank J., III, to General Electric Company. Method for making aromatic ether anhydrides and products made thereby. 3,850,965, Cl. 260-345.200.
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- Wilson, Anthony: *See—*
  - Hogg, Derek; Wilson, Anthony; and Asakam, John Fairburn, 3,850,423.
- Wilson, Charles Peter: *See—*
  - Burge, Richard Lee; and Wilson, Charles Peter, 3,850,344.
- Winans, Louis A. Multiple use exercising device. 3,850,431, Cl. 272-81.000.
- Wincierz, Peter: *See—*
  - Bohm, Horst; Borgstadt, Hans Ulrich; Ruhle, Manfred; and Wincierz, Peter, 3,850,584.
- Winegardner, David K.: *See—*
  - Stowe, Robert A.; Coulter, Kenneth E.; and Winegardner, David K., 3,851,008.
- Winkle, Gunther, to Krauss-Maffei Aktiengesellschaft. Armature assembly and magnetically suspended vehicle. 3,850,108, Cl. 104-148.0ms.
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- Wirstrom, Roland T. Cuting apparatus. 3,850,061, Cl. 83-4.000.
- Wisdom, Lawrence W., to Frito-Lay, Inc. Process for imparting design on surfaces of food material. 3,851,075, Cl. 426-250.000.
- Wismer, Marco; Schimmel, Karl F.; and Temple, Rodger G., to PPG Industries, Inc. Organic flatting agents and method of preparation. 3,850,868, Cl. 260-29.300.
- Wissman, Bernard. Composite drill. 3,850,054, Cl. 76-108.00r.
- Wissmueller, William C.: *See—*
  - Ferguson, James F.; and Wissmueller, William C., 3,850,168.
- Witkoski, Edward Joseph, to Fletcher-Terry Company, The. Valved pillar post for glass cutting wheel. 3,850,063, Cl. 83-12.000.
- Witzel, Bruce E.: *See—*
  - Shen, Tsung-Ying; Jones, Howard; and Witzel, Bruce E., 3,851,063.
- Wofford, Benjamin Gary: *See—*
  - Angermeier, William R.; and Wofford, Benjamin Gary, 3,849,967.
- Wolsky, Gene V. Cover crop planter. 3,850,119, Cl. 111-85.000.
- Woltjen, Duane W.; Dillard, Donald E.; and Kilwin, Thomas C., to UMC Industries, Inc. Precision functioning variable speed indexing apparatus. 3,850,051, Cl. 74-821.000.
- Wommack, Joel Benjamin, Jr.: *See—*
  - Fuchs, Julius Jakob; and Wommack, Joel Benjamin, Jr., 3,850,924.
- Wood, David E., to General Electric Company. Data processing systems. 3,851,299, Cl. 340-3.00r.
- Woods, Donald C.: *See—*
  - Sanctuary, Clifford; Woods, Donald C.; and Bachman, John A., 3,850,036.
- Woollam, John A.; Beale, Harry A.; and Spain, Ian L., to United States of America, National Aeronautics and Space Administration. Hall effect magnetometer. 3,849,875, Cl. 29-592.000.
- Worth, Donald F.: *See—*
  - Elslager, Eward F.; and Worth, Donald F., 3,850,939.
- Wortmann, Joachim; Dany, Franz-Josef; and Kamdler, Joachim, to Hoechst Aktiengesellschaft, mesne. Difficultly inflammable polyurethanes and process for making them. 3,850,859, Cl. 260-2.5aj.
- Wray, Gary Q.: *See—*
  - Holden, John C.; and Wray, Gary Q., 3,850,250.
- Wray, William R., to Polaroid Corporation. Analog information storage and retrieval system. 3,850,513, Cl. 352-25.000.
- Wright, Lee E.; and Pickford, Allan E., to Braun, C. F., & Company. Ammonia synthesis process. 3,851,046, Cl. 423-359.000.
- Wright, Oliver L.; and Wright, Wilbur D. Overload springs for automotive vehicles. 3,850,444, Cl. 280-124.00r.
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  - Wright, Oliver L.; and Wright, Wilbur D., 3,850,444.
- Wright, William F.: *See—*
  - Brooking, Betty L.; and Wright, William F., 3,851,083.
- Wubbe, Leo J., to Andersen Company, The. Straight end arm connector. 3,849,829, Cl. 15-250.320.
- Wunderlich, Donald K.; and Skinner, James L., to Atlantic Richfield Company. Retorting oil shale with special pellets and precoking stage. 3,850,739, Cl. 208-11.000.
- Wurmb, Rolf; Schuette, Wilhelm; Werther, Heinz-Ulrich; and Schmidt, Franz, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Molding compositions of polyoxymethylenes and glass fibers. 3,850,873, Cl. 260-37.0al.
- Wurth, Hans-Jorg, to Knorr-Bremse GmbH. Brake control device for vehicles. 3,850,481, Cl. 303-25.000.
- Wyeth, John, & Brother Limited: *See—*
  - White, Alan Charman; and Black, Robin Michael, 3,850,957.
- Xerox Corporation: *See—*
  - Bierworth, David P.; and Hynes, Frank R., 3,849,905.
  - Hagenbach, Robert Joseph, 3,850,663.
  - Hayne, Thomas F.; and Schroll, Ross E., 3,851,229.
  - Hutner, Mark A., 3,851,144.
  - Luebbe, Ray H., Jr., 3,850,626.
  - Lynch, Thomas, 3,849,907.
  - Orrvick, Richard A.; and Kulbida, Ihor, 3,851,201.
  - Regensburger, Paul J.; and Jakubowski, James J., 3,850,630.
  - Stephany, Joseph F.; and Ing, Samuel W., Jr., 3,850,517.
  - Weikel, Donald J., Jr., 3,850,519.
  - Wells, John B.; Swanton, Paul C.; Weigl, John W.; and Forest, Edward, 3,850,627.
- Xynetics, Inc.: *See—*
  - Hinds, Walter Edwin, 3,851,196.
- Yablunovsky, Dementievich: *See—*
  - Apsit, Voldemar Voldemarovich; Schukin, Mikhail Ivanovich; Alexandrovich, Vladislav; Yablunovsky, Dementievich; Androvsky, Grigory Grigorievich Alex; Zimichev, Jury Ivanovich; and Borovik, Ivan Arkhipovich, 3,851,199.
- Yamada, Bunkichi: *See—*
  - Tani, Kaneyasu; Imoto, Shozo; Kawazoe, Shiro; Ichihara, Wachio; Nagai, Tatsuhiko; and Yamada, Bunkichi, 3,850,667.
- Yamada, Fukuo; Fukuda, Yoshihiro; and Uraya, Toru, to Kanebo Limited. Method for imparting pressure sensitive adhesion to velvet type fasteners. 3,849,840, Cl. 24-204.000.
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  - Tani, Kaneyasu; Imoto; Shozo; Kawazoe, Shiro; Ichihara, Wachio; Nagai, Tatsuhiko; and Yamada, Bunkichi, 3,850,667.
- Yamada, Jun: *See—*
  - Araki, Tadashi; Asano, Kiro; Yamada, Jun; Imaizami, Hisao; and Awao, Takao, 3,851,048.
- Yamada, Shigeki: *See—*
  - Chibata, Ichiro; Yamada, Shigeki; Wada, Mitsuru; Izuo, Nobuhiko; and Yamaguchi, Totaro, 3,850,753.
- Yamaga, Eiichi: *See—*
  - Suzuki, Yasoji; and Yamaga, Eiichi, 3,851,277.
- Yamaguchi, Hisao: *See—*
  - Nakanishi, Akito; Nakazawa, Hisashi; Yamashima, Kazuyoshi; Shiraiwa, Toshio; and Yamaguchi, Hisao, 3,850,027.
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  - Horigome, Koichi; Aoki, Kazuyoshi; Yamaguchi, Hisashi; Horiuchi, Hiroshi; Wada, Tsuneo; and Inokuma, Hiroyuki, 3,850,641.
- Yamaguchi, Totaro: *See—*
  - Chibata, Ichiro; Yamada, Shigeki; Wada, Mitsuru; Izuo, Nobuhiko; and Yamaguchi, Totaro, 3,850,753.
- Yamamoto, Hisao: *See—*
  - Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; Takayama, Masaharu; Katayama, Shigenari; Ono, Keiichi; Yanagihara, Izumi; Tanaka, Yoshihiro; Katsube, Jinki; Inaba, Shigeho; and Yamamoto, Hisao, 3,850,935.
- Yamanami, Shoichi: *See—*
  - Okada, Katsuto; Yamanami, Shoichi; Ishibashi, Akichika; and Watanabe, Hirotaka, 3,850,406.

- Yamashima, Kazuyoshi: *See—*
  - Nakanishi, Akito; Nakazawa, Hisashi; Yamashima, Kazuyoshi; Shiraiwa, Toshio; and Yamaguchi, Hisao, 3,850,027.
- Yanagihara, Izumi: *See—*
  - Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; Takayama, Masaharu; Katayama, Shigenari; Ono, Keiichi; Yanagihara, Izumi; Tanaka, Yoshihiro; Katsube, Jinki; Inaba, Shigeho; and Yamamoto, Hisao, 3,850,935.
- Yang, Chang-Lee, to Union Carbide Corporation. Hydrocarbon alkylation process using catalyst regeneration. 3,851,004, Cl. 260-671.00c.
- Yarsley Research Laboratories, Limited: *See—*
  - Cheetham, John Norman; and Shah, Ratilal Lalji, 3,850,462.
- Yates, Herbert G., to Panokraft Corporation of Canada Limited. Building panel connectors. 3,849,955, Cl. 52-285.000.
- Yeda Research and Development Co., Ltd.: *See—*
  - Kaufmann, Gabriel; and Littauer, Uriel Z., 3,850,749.
- Yepis, Alfonso F. Vehicle bumper and frame mounting. 3,850,466, Cl. 293-89.000.
- Yoder, David Alfred; and Lapp, Daniel Alvin. Supplemental feeder. 3,850,145, Cl. 119-51.00r.
- Yokoyama, Masahiro; and Kobayashi, Takanori, to Mitsubishi Denki Kabushiki Kaisha. Fixed point stop mechanism for sewing needle in sewing machine. 3,851,237, Cl. 318-467.000.
- Yonezuka, Masayasu; and Murata, Hiroshi, to Nippon Electric Company, Limited. Microcircuit board. 3,851,223, Cl. 317-101.0cc.
- York, Robert A., to Flight Systems, Inc. Direct current solid state circuit breaker. 3,851,218, Cl. 317-33.00r.
- Yoshida, Kazuhiko: *See—*
  - Nakanishi, Kazuo; Kagi, Hideo; Iwata, Takashi; Haruta, Hisae; Yoshida, Kazuhiko; and Matui, Akira, 3,850,611.
- Yoshida Kogyo Kabushiki Kaisha: *See—*
  - Yoshida, Tadhiro, 3,849,842.
- Yoshida, Shuji: *See—*
  - Fujioka, Yasuhide; Ryujin, Takeshi; Yoshida, Shuji; and Inagaki, Mitami, 3,850,461.
- Yoshida, Tadhiro, to Yoshida Kogyo Kabushiki Kaisha. Slide fastener. 3,849,842, Cl. 24-205.10c.
- Yoshihara, Tetsuya, to Nippon Kokan Kabushiki Kaisha, Kokankikai Kogyo Kabushiki Kaisha and Tokyo Yogyo Kabushiki Kaisha. Sliding nozzle assembly. 3,850,351, Cl. 222-566.000.
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  - Masaki, Mitsuo; Matsunami, Satoshi; and Yoshikawa, Toshio, 3,850,883.
- Yoshikawr, Shinsuke; and Sawa, Yuji, to Kureha Kagaku Kogyo Kabushiki Kaisha and Mitsui Toatsu Chemicals, Inc. Parison feeding and delivering apparatus. 3,850,573, Cl. 432-124.000.
- Yoshimura, Norihiko: *See—*
  - Kawasaki, Harumi; Sonezaki, Hizashi; and Yoshimura, Norihiko, 3,851,308.
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- Youmans, Albert P.; and Kirton, Lionel A., to Signetics Corporation. Method for making a dielectrically isolated semiconductor structure. 3,849,948, Cl. 51-310.000.
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- Young, Ira Bruce, Jr. Anti-theft display rack. 3,850,300, Cl. 211-4.
- Young, John, to GTE Automatic Electric Laboratories Incorporated. TSPS-headphone plug messages. 3,851,111, Cl. 179-51.00r.
- Young, John H., to Armstrong Cork Company. Cooling slide. 3,850,556, Cl. 425-71.000.
- Young, Leroy Daniel, Jr. Tone generating system. 3,851,265, Cl. 328-140.000.
- Young, Robert A. Low power sealed optically thin resonance lamp. 3,851,214, Cl. 315-267.000.
- Younghouse, Edwin C.: *See—*
  - Steere, David E.; and Younghouse, Edwin C., 3,850,822.
- Younkin, James R., to Edo-Aire Mitchell Industries, Inc. Directional gyro indicator system. 3,849,896, Cl. 33-318.000.
- Yukio, Shimizu: *See—*
  - Murakami, Toyoharu; Niguchi, Yutaka; Nishimura, Kazutaka; and Yukio, Shimizu, 3,851,209.
- Yuzawa, Yoshihiko: *See—*
  - Takeuchi, Setsuyuki; Ibe, Nobukuni; Iriko, Fumio; and Yuzawa, Yoshihiko, 3,850,562.
- Zabursky, Joseph John: *See—*
  - Beaulieu, Philip Edward; and Zabursky, Joseph John, 3,851,221.
- Zacaroli, Edward C., to Hamilton Digital Controls, Inc. Self-contained low crossfeed tape cassette assembly. 3,851,115, Cl. 179-100.20c.
- Zadgorski, Stoyan Nedkov: *See—*
  - Balevski, Anguel Tonchev; Nikolov, Ivan Dimov; Dimova, Vasilka Petrova; and Zadgorski, Stoyan Nedkov, 3,850,625.
- Zahn, Erwin; Meisinger, Wilhelm R.; and Magnifico, George, to General Staple Company, Inc. Apparatus for forming and applying a strain relief splice from a continuous supply strip. 3,849,860, Cl. 29-203.0ds.
- Zauderer, Bert, to United States of America, Navy. Boundary layer control as a means of increasing power output of supersonic MHD generators. 3,851,195, Cl. 310-11.000.
- Zehr, William J., to Protectoseal Company, The. Grounding clamping lever. 3,850,490, Cl. 339-14.00r.
- Zenith Radio Corporation: *See—*
  - Merrell, Richard G.; and Tanaka, Akio, 3,851,254.
- Zentz, William E., Jr., to Engelhard Minerals and Chemicals Corporation. Method for processing kaolin clay pigment and improved product thereof. 3,850,653, Cl. 106-288.00b.
- Zetterberg, Einar. Apparatus for closing jars or other containers with caps. 3,849,973, Cl. 53-331.500.
- Zimber, Eric. Easily attachable fastener. 3,849,839, Cl. 24-109.000.
- Zimichev, Jury Ivanovich: *See—*
  - Apsit, Voldemar Voldemarovich; Schukin, Mikhail Ivanovich; Alexandrovich, Vladislav; Yablunovsky, Dementievich; Androvsky, Grigory Grigorievich Alex; Zimichev, Jury Ivanovich; and Borovik, Ivan Arkhipovich, 3,851,199.
- Zimmer, George A.; and Struttman, Hilarius S., to Borg-Warner Corporation. Bearing assembly. 3,850,485, Cl. 308-194.000.
- Zimmerman, Wolfgang: *See—*
  - Sittig, Roland; and Zimmerman, Wolfgang, 3,850,508.
- Zimmermann, Joseph J., to GTE Automatic Electric Laboratories, Incorporated. Tape transport arrangement. 3,850,386, Cl. 242-203.000.
- Zimmern, Bernard. Rotary compressors with injection of liquid. 3,850,554, Cl. 418-84.000.
- Zink, John, Company: *See—*
  - Zink, John S.; and Reed, Robert D., 3,850,571.
- Zink, John S.; and Reed, Robert D., to Zink, John, Company. High energy flame burner. 3,850,571, Cl. 431-349.000.
- Zinnbauer, Fredrick W.; and Ferner, Jack C., to Reynolds Metals Company. Method of producing a vehicle bumper. 3,850,763, Cl. 204-33.000.
- Zipt, Robert L., to Smith, Werner G., Inc. Sperm oil substitute from blend of carboxylic acid esters of glycols. 3,850,827, Cl. 252-56.00s.
- Zoche, Gunter; Richtzenhain, Hermann; and Ismail, Roshdy, to Dynamit Nobel AG. Process for the preparation of 2,2-bis(4-hydroxy-3,5-dichlorophenyl)-propane and 2,2-bis-(4-hydroxy-3-chlorophenyl)-propane. 3,850,994, Cl. 260-619.00a.
- Zoecon Corporation: *See—*
  - Baum, John W.; and Diekman, John D., 3,850,992.
- Zrostlik, Francis L.; and Collins, John J., to Iowa Mold Tooling Co., Inc. Tire changing tool. 3,850,221, Cl. 157-1.330.
- Zuber, Richard H., to Porter Equipment Company. Gymnastic apparatus. 3,850,428, Cl. 272-58.000.
- Zuech, Ernest A.: *See—*
  - Murtha, Timothy P.; Zuech, Ernest A.; and Gray, Roy A., 3,850,878.
- Zweigardt, Herbert. Filling device for electric storage batteries. 3,850,209, Cl. 141-198.000.
- 430008: *See—*
  - Elgindy, Ibrahim Y.; and 430008, 3,851,128.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF NOVEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Aughton, John E., to Crosfield Electronics Ltd. Rotating loop half-tone reproduction. Re. 28,255, 11–26–74, Cl. 355—48.
- Barr, Dennis A., and J. B. Rose, to Imperial Chemical Industries Ltd. Aromatic polymers from dihalogenobenzenoid compounds and alkali metal hydroxide. Re. 28,252, 11–26–74, Cl. 260—49.
- Bell & Howell Co.: *See—*
  - Spencer, William H., and Curtis. Re. 28,257.
- Bell, Lon E., to Technar Inc. Crash sensing switch. Re. 28,251, 11–26–74. Cl. 200—61.53.
- Buzano, Michel, to Rhone-Poulenc-Textile. Fluid texturizing apparatus and method of use. Re. 28,254, 11–26–74, Cl. 57—77.3.
- Crosfield Electronics Ltd.: *See—*
  - Aughton, John E. Re. 28,255.
- Curtis, Brian K.: *See—*
  - Spencer, William H., and Curtis. Re. 28,257.
- Imperial Chemical Industries Ltd.: *See—*
  - Barr, Dennis A., and Rose. Re. 28,252.
- Kelsey Hayes Co.: *See—*
  - Stelzer, William. Re. 28,253.
- Rhone-Poulenc-Textile: *See—*
  - Buzano, Michel. Re. 28,254.
- Rose, John B.: *See—*
  - Barr, Dennis A., and Rose. Re. 28,252.
- Senderoff, Seymour, to Union Carbide Corp. Rechargeable electro-chemical cell having complex metal fluoride electrolyte. Re. 28,250, 11–26–74. Cl. 136—6.01.
- Spencer, William H., and B. K. Curtis, to Bell & Howell Co. Methods and apparatus for removing parity bits from binary words. Re. 28,257, 11–26–74. Cl. 340—172.5.
- Stelzer, William, to Kelsey Hayes Co. Pressure metering valve. Re. 28,253, 11–26–74, Cl. 303—6.
- Technar Inc.: *See—*
  - Bell, Lon E. Re. 28,251.
- Union Carbide Corp.: *See—*
  - Senderoff, Seymour. Re. 28,250.
- Zamotin, Rodvinon I. Wheel chair. Re. 28,256, 11–26–74, Cl. 280—5.22.

LIST OF PLANT PATENTEES

- Duffett, William E.: *See—*
  - Jessel, Walter H., Jr., and Duffett. 3,655.
  - Jessel, Walter H., Jr., and Duffett. 3,656.
  - Jessel, Walter H., Jr., and Duffett. 3,657.
  - Jessel, Walter H., Jr., and Duffett. 3,658.
  - Jessel, Walter H., Jr., and Duffett. 3,659.
- Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,655, 11–26–74, Cl. 74.
- Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,656, 11–26–74, Cl. 77.
- Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,657, 11–26–74, Cl. 78.
- Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,658, 11–26–74, Cl. 77.
- Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,659, 11–26–74, Cl. 77.
- Yoder Brothers, Inc.: *See—*
  - Jessel, Walter H., Jr., and Duffett. 3,655.
  - Jessel, Walter H., Jr., and Duffett. 3,656.
  - Jessel, Walter H., Jr., and Duffett. 3,657.
  - Jessel, Walter H., Jr., and Duffett. 3,658.
  - Jessel, Walter H., Jr., and Duffett. 3,659.

LIST OF DESIGN PATENTEES

- A.G.E. Bodegas Unidas S.A.: *See—*
  - Lotorre, Emiliano P. 233,738.
- Acme United Corp.: *See—*
  - Cummings, Clinton M. 233,803.
- Aluminum Co. of America: *See—*
  - Bowser, John O. 233,746.
- Baldwin, D. H., Co.: *See—*
  - Barket, Dennis J. 233,797.
  - White, Winsor D., Jr., and Barket. 233,792.
  - White, Winsor D., Jr., and Barket. 233,793.
  - White, Winsor D., Jr., and Barket. 233,794.
  - White, Winsor D., Jr., and Barket. 233,795.
  - White, Winsor D., Jr., and Barket. 233,796.
- Barket, Dennis: *See—*
  - White, Winsor D., Jr., and Barket. 233,792.
  - White, Winsor D., Jr., and Barket. 233,793.
  - White, Winsor D., Jr., and Barket. 233,794.
  - White, Winsor D., Jr., and Barket. 233,795.
  - White, Winsor D., Jr., and Barket. 233,796.
- Barket, Dennis J., to D. H. Baldwin Co. Piano. 233,797, 11–26–74, Cl. D56—9.
- Barrel-N-Bun, Inc.: *See—*
  - Gordon, Maurice. 233,748.
- Beaver, Ted L., to Continental Can Co., Inc. Bottle. 233,737, 11–26–74, Cl. D9—40.
- Bell Electric Co.: *See—*
  - Kennedy, Richard T., and Hvale. 233,778.
  - Kennedy, Richard T., and Hvale. 233,779.
- Berg, Albert T., Jr.: *See—*
  - Langlie, Howard, and Berg. 233,732.
- Blum, Julius, & Co., Inc.: *See—*
  - Seery, Robert F. 233,788.
- Boursaw, Lloyd G. Tandem tricycle. 233,742, 11–26–74, Cl. D12—112.
- Bowser, John O., to Aluminum Co. of America. Floor beam. 233,746, 11–26–74, Cl. D13—1.
- Breger, Carl A. Floor and carpet sweeper. 233,724, 11–26–74, Cl. D7—176.
- Breno, Philip J., D. N. Gray, R. K. Heyne, and R. W. Meyer, to Owens-Illinois, Inc. Toy lie detector or similar article. 233,773, 11–26–74, Cl. D34—15.
- Brite Industries Inc.: *See—*
  - Friedman, Paul, and Udelson. 233,774.
- Bryan, Gladstone N. Staircase. 233,750, 11–26–74, Cl. D13—7.
- Burton, John C., and E. P. Hayton, to Questor Corp. Cafe door hinge. 233,730, 11–26–74, Cl. D8—191.
- Byerly, Robert M. Clamp for supporting pipes or the like. 233,733, 11–26–74, Cl. D8—235.
- Cambridge Corp.: *See—*
  - Klancke, John H. 233,757
- Caputo, Mario A., and H. A. Valenta. Jewelry finding. 233,775, 11–26–74, Cl. D45—19.
- Christian, Hubert E., and D. W. Lee, to Dart Industries, Inc. Plastic fork. 233,721, 11–26–74, Cl. D7—138.
- Cinque, Alphone P. Television enlargement-display unit. 233,798, 11–26–74, Cl. D61—1.
- Clark, Sandra K.: *See—*
  - Clark, Melvin P., and S. K. 233,770.
- Clark, Melvin P., and S. K. Animal training device. 233,770, 11–26–74, Cl. D30—42.
- Continental Can Co., Inc.: *See—*
  - Beaver, Ted L. 238,737.
- Control Data Corp.: *See—*
  - Cray, Seymour R., Davis, and Roush. 233,758.
- Crane Co.: *See—*
  - Schrock, Donald C. 233,756.
- Cray, Seymour R., L. T. Davis, and M. D. Roush, to Control Data Corp. Computer mainframe console. 233,758, 11–26–74, Cl. D26—5.
- Crum, Ronald J. Speaker cabinet. 233,763, 11–26–74, Cl. D26—14.
- Cummings, Clinton M., to Acme United Corp. Surgical instrument. 233,803, 11–26–74, Cl. D83—12.
- Dart Industries, Inc.: *See—*
  - Christian, Hubert E., and Lee. 233,721.
- Davis, Lester T.: *See—*
  - Cray, Seymour R., Davis, and Roush. 233,758.
- De Forrest, Henri. Electrical connection box cover. 233,729, 11–26–74, Cl. D8—179.
- Dirck Mfg. Co.: *See—*
  - Dirck, Ronald L. 233,771.
- Dirck, Ronald L., to Dirck Mfg. Co. Animal fluid collection pan. 233,771, 11–26–74, Cl. D30—99.
- Dunhill, Alfred, Ltd.: *See—*
  - Gomersall, Stanley F. 233,781.
  - Gomersall, Stanley F. 233,782.
  - Gomersall, Stanley F. 233,783.
- Eaton, T., Co. Ltd., The: *See—*
  - Finkel, Henry. 233,799.
- Evans, Wallace D., Jr., to Rolatape Corp. Distance measuring instrument. 233,785, 11–26–74, Cl. D52—6.
- Everard, Lloyd D., D. T. Mergenthaler, and J. E. Pettit. Bar stool. 233,714, 11–26–74, Cl. D6—32.

Everard, Lloyd D., D. T. Mergenthaler, and J. E. Pettit. Table. 233,719, 11–26–74, Cl. D6—177.
Fantoni, Marco, to TECNO S.p.A. Mobili e forniture per arredamento. Chair. 233,710, 11–26–74, Cl. D6—30.
Fantoni, Marco, to TECNO S.p.A. Mobili e forniture per arredamento. Chair. 233,711, 11–26–74, Cl. D6—31.
Fantoni, Marco, to TECNO S.p.A. Mobili e forniture per arredamento. Chair. 233,715, 11–26–74, Cl. D6—66.
Fantoni, Marco, to TECNO S.p.A. Mobili e forniture per arredamento. Chair. 233,716, 11–26–74, Cl. D6—66.
Felcan, Oscar W.: *See—*
Saffer, Charles M., Jr., and Felcan. 233,802.
Finkel, Henry, to The T. Eaton Co. Ltd. Calculator housing. 233,799, 11–26–74, Cl. D26—5.
Friedman, Paul, and M. Udelson, to Brite Industries Inc. End attachment for leather watch straps. 233,774, 11–26–74, Cl. D45—4.
General Electric Co.: *See—*
Houlihan, John T. 233,790.
Gomersall, Stanley F., to Alfred Dunhill Ltd. Cigarette lighter. 233,781, 11–26–74, Cl. D48–-27.
Gomersall, Stanley F., to Alfred Dunhill Ltd. Cigarette lighter. 233,782, 11–26–74, Cl. D48—27.
Gomersall, Stanley F., to Alfred Dunhill Ltd. Cigarette lighter. 233,783, 11–26–74, Cl. D48—27.
Gordon, Maurice, to Barrel-N-Bun, Inc. Building. 233,748, 11–26–74, Cl. D13—1.
Goyen, Albert H. Valve box. 233,753, 11–26–74. Cl. D23—19.
Goyen, Albert H. Valve box. 233,754, 11–26–74, Cl. D23—19.
Gray, Don N.: *See—*
Breno, Philip J., Gray, Heyne, and Meyer. 233,773.
Gresk, Kenneth P. Hammock stand. 233,708, 11–26–74, Cl. D6—191.
Guthrie, Rodney L., C. E. La Belle, and M. W. Kennedy, to Roper Corp. Chain saw. 233,725, 11–26–74, Cl. D8—65.
Gutierrez, Frank P. Bottle drainer rack. 233,723, 11–26–74, Cl. D7—71.
Harter Corp.: *See—*
Koepke, Earl H. 233,712.
Koepke, Earl H. 233,720.
Hayton, Eugene P.: *See—*
Burton, John C., and Hayton. 233,730.
Hewson, Clifford B., to Sanitation Equipment Ltd. Toilet. 233,755. 11–26–74, Cl. D23—48.
Heyne, Richard K.: *See—*
Breno, Philip J., Gray, Heyne, and Meyer. 233,773.
Hobbins, James F., and H. P. McJunkin, Jr., to Hurst Performance, Inc. Automotive shock absorber. 233,743, 11–26–74. Cl. D12—159.
Houlihan, John T., to General Electric Co. Housing for a clock radio. 233,790, 11–26–74, Cl. D56—4.
Hurst Performance, Inc.: *See—*
Hobbins, James F., and McJunkin, Jr. 233,743.
Hvale, James L.: *See—*
Kennedy, Richard T., and Hvale. 233,778.
Kennedy, Richard T., and Hvale. 233,779.
Ichikawa Hoseki Kabushiki Kaisha: *See—*
Ichikawa, Yoshitomo. 233,761.
Ichikawa, Yoshitomo, to Ichikawa Hoseki Kabushiki Kaisha. Stylus for phonograph. 233,761, 11–26–74, Cl. D26—14.
International Business Machines Corp.: *See—*
Pycha, Charles A., and Wilkey, Jr. 233,759.
Jaramillo, Levi D. Protective jacket. 233,707, 11–26–74, Cl. D2—190.
Jenny, Ronald L. Wrench and drill unit. 233,726, 11–26–74, Cl. D8—68.
Jenny, Ronald L. Wrench. 233,727, 11–26–74. Cl. D8—70.
Kajlich, Anton J. Water polo goal. 233,772, 11–26–74, Cl. D34—5.
Kalustekula Kommandutiyhtio Mitikka: *See—*
Ruosilahti, Maija. 233,713.
Kawamura, Ken, T. Okada, and H. Koda, to Matsushita Electric Industrial Co., Ltd. Clock radio. 233,789, 11–26–74, Cl. D56—4.
Kennedy, Milton W.: *See—*
Guthrie, Rodney L., La Belle, and Kennedy. 233,725.
Kennedy, Richard T., and J. L. Hvale, to Bell Electric Co. Holder for a seal beam lamp. 233,778, 11–26–74, Cl. D48—20.
Kennedy, Richard T., and J. L. Hvale, to Bell Electric Co. Electric lamp holder. 233,779, 11–26–74, Cl. D48—20.
Klancke, John H., to Cambridge Corp. Water line heater for vehicles or the like. 233,757, 11–26–74, Cl. D23—86.
Koda, Hironosuke: *See—*
Kawamura, Ken, Okada, and Koda. 233,789.
Koepke, Earl H., to Harter Corp. Arm chair. 233,712, 11–26–74. Cl. D6—31.
Koepke, Earl H., to Harter Corp. Combined seat and back rest unit. 233,720, 11–26–74, Cl. D6—197.
La Belle, Charles E.: *See—*
Guthrie, Rodney L., La Belle, and Kennedy. 233,725.
Labell, Earnest J. Television light or similar article. 233,776. 11–26–74, Cl. D48—20.
Labell, Earnest J. Television light or similar article. 223,777, 11–26–74, Cl. D48—20.
Lahargoue, Joseph J. Anchor line corner buffer for mobile homes. 233,741, 11–26–74, Cl. D12—106.
Langlie, Howard, and A. T. Berg, Jr. Electric fence insulator. 233,732, 11–26–74, Cl. D8—230.
Latorre, Emiliano P., to A.G.E. Bodegas Unidas S.A. Bottle. 233,738, 11–26–74, Cl. D9—146.
Lee, David W.: *See—*
Christian, Hubert E., and Lee. 233,721.
Leong, Henry: *See—*
Summers, Robert A., and Leong. 233,804.
Leschisin, John: *See—*
Sadler, Harry J., Pareja, and Leschisin. 233,800.
Lobnitz, William J. Water pipe. 233,766, 11–26–74, Cl. D27—3.
Makino, Katsuhiko: *See—*
Miyamoto, Masaaki, and Makino. 233,791.
Marchese, Paul, to Tie Communications, Inc. Telephone communications unit. 233,764, 11–26–74, Cl. D26—14.
Marchese, Paul. Telephone set. 233,765, 11–26–74, Cl. D26—14.
Martin, Alfred L. Kiosk for service stations or the like. 233,747, 11–26–74, Cl. D13—1.
Martin, Gerald. Manually propelled water craft. 233,740, 11–26–74, Cl. D12—68.
Matsushita Electric Industrial Co., Ltd.: *See—*
Kawamura, Ken, Okada, and Koda. 233,789.
Miyamoto, Masaaki, and Makino. 233,791.
McAllister, Jack G. Toy-size testing gauge. 233,739, 11–26–74, Cl. D10—64.
McJunkin, Howard P., Jr.: *See—*
Hobbins, James F., and McJunkin, Jr. 233,743.
Mergenthaler, Douglas T.: *See—*
Everard, Lloyd D., Mergenthaler, and Pettit. 233,714.
Everard, Lloyd D., Mergenthaler, and Pettit. 233,719.
Meyer, Richard W.: *See—*
Breno, Philip J., Gray, Heyne, and Meyer. 233,773.
Miller, Milton J. Corner mounting bracket for a mobile home tie down system. 233,731, 11–26–74, Cl. D8—229.
Miyamoto, Masaaki, and K. Makino, to Matsushita Electric Industrial Co., Ltd. Radio receiver. 233,791, 11–26–74, Cl. D56—4.
Morre, Francis M. Bracket attachable to a receptacle and to a water conduit. 233,734, 11–26–74, Cl. D8—246.
Nicol, Ronald. Handle adapter for a circuit breaker. 233,760, 11–26–74, Cl. D26—13.
Nisshin Onpa Seisakujo Co. Ltd.: *See—*
Suyama, Kichiro. 233,762.
Ocuin, Morton. Carrier rack for tumblers. 233,722, 11–26–74, Cl. D7—71.
Okada, Takao: *See—*
Kawamura, Ken, Okada, and Koda. 233,789.
Owens-Illinois, Inc.: *See—*
Breno, Philip J., Gray, Heyne, and Meyer. 233,773.
Panzica, Gary T. Cabinet for a teleprinter. 233,718, 11–26–74, Cl. D6—173.
Pareja, Ramon: *See—*
Sadler, Harry J., Pareja, and Leschisin. 233,800.
Pettit, John E.: *See—*
Everard, Lloyd D., Mergenthaler, and Pettit. 233,714.
Everard, Lloyd D., Mergenthaler, and Pettit. 233,719.
Pycha, Charles A., and F. Wilkey, Jr., to International Business Machines Corp. Data entry station for automatic data processing. 233,759, 11–26–74, Cl. D26—5.
Questor Corp.: *See—*
Burton, John C., and Hayton. 233,730.
Rolatape Corp.: *See—*
Evans, Wallace D., Jr. 233,785.
Roper Corp.: *See—*
Guthrie, Rodney L., La Belle, and Kennedy. 233,725.
Roush, Maurice D.: *See—*
Cray, Seymour R., Davis, and Roush. 233,758.
Royston, Brian E., to Royston Electronics Pty. Ltd. Protective shield. 233,728, 11–26–74, Cl. D8—71.
Royston Electronics Pty. Ltd.: *See—*
Royston, Brian E. 233,728.
Ruosilahti, Maija, to Kalustekula Kommandutiyhtio Mitikka. Chair. 233,713, 11–26–74, Cl. D6—31.
Sadler, Harry J., R. Pareja, and J. Leschisin. Pump. 233,800, 11–26–74, Cl. D65—1.
Saffer, Charles M., Jr., and O. W. Felcan, to Witco Chemical Corp. Olfactory testing device. 233,802, 11–26–74, Cl. D83—1.
Sanitation Equipment Ltd.: *See—*
Hewson, Clifford B. 233,755.
Scheffler, Edward D., Jr. Liquid storage tank. 233,752, 11–26–74, Cl. D23—2.
Schlamp, Hermann. Cigarette lighter. 233,767, 11–26–74, Cl. D27—42.
Schrock, Donald C., to Crane Co. Combined bathtub and grab rail. 233,756, 11–26–74, Cl. D23–-55.
Seery, Robert F., to Julius Blum & Co., Inc. Grillework for treillages, room dividers or the like. 233,788, 11–26–74, Cl. D54—2.
Selden, Robert W., to Weyerhaeuser Co. Light standard or similar article. 233,784, 11–26–74, Cl. D48—31.
Stewart, James F. Combined storage container and table. 233,717, 11–26–74, Cl. D6—170.
Stone, Wilfred S. Flashlight. 233,780, 11–26–74, Cl. D48—24.
Summers, Robert A., and H. Leong, to Unique Menus. Menu holder. 233,804, 11–26–74, Cl. D97—1.
Sumner, John S. Three-legged domical shelter structure. 233,745, 11–26–74, Cl. D13—1.
Sumner, John S. Three-legged domical shelter. 233,749, 11–26–74, Cl. D13—1.
Suyama, Kichiro, to Nisshin Onpa Seisakujo Co. Ltd. Booster for guitar. 233,762, 11–26–74, Cl. D26—14.
TECNO S.p.A. Mobili e forniture per arredamento: *See—*
Fantoni, Marco. 233,710.
Fantoni, Marco. 233,711.
Fantoni, Marco. 233,715.
Fantoni, Marco. 233,716.
Teeny, Jim A. Fly. 233,751, 11–26–74, Cl. D22—27.
Tie Communications, Inc.: *See—*
Marchese, Paul. 233,764.
Uchino, Kenju, to Yehan Numata. Digital readout slide caliper. 233,787, 11–26–74, Cl. D52—6.
Udelson, Maurice: *See—*
Friedman, Paul, and Udelson. 233,774.
Unique Menus: *See—*
Summers, Robert A., and Leong. 233,804.
Valenta, Hilda A.: *See—*
Caputo, Mario A., and Valenta. 233,775.
Weyerhaeuser Co.: *See—*
Selden, Robert W. 233,784.

White, Winsor D., Jr., and D. Barket, to D. H. Baldwin Co. Piano. 233,792, 11–26–74, Cl. D56—9.
White, Winsor D., Jr., and D. Barket, to D. H. Baldwin Co. Piano. 233,793, 11–26–74, Cl. D56—9.
White, Winsor D., Jr., and D. Barket, to D. H. Baldwin Co. Piano. 233,794, 11–26–74, Cl. D56—9.
White, Winsor D., Jr., and D. Barket, to D. H. Baldwin Co. Piano. 233,795, 11–26–74, Cl. D56—9.
White, Winsor D., Jr., and D. Barket, to D. H. Baldwin Co. Piano. 233,796, 11–26–74, Cl. D56—9.
Wiener, Rolf. Wheel for vehicles. 233,744, 11–26–74, Cl. D12—209.
Wilder, Wayne L. Fence panel or the like. 233,768, 11–26–74, Cl. D28—1.
Wilder, Wayne L. Fence panel or the like. 233,769, 11–26–74, Cl. D28—1.
Wilkey, Frank, Jr.: *See—*
Pycha, Charles A., and Wilkey, Jr. 233,759.
Williams, Betty J. Patio table. 233,709, 11–26–74, Cl. D6—24.
Witco Chemical Corp.: *See—*
Saffer, Charles M., Jr., and Felcan. 233,802.
Woodford, Donald L. Radius of curvature measuring instrument. 233,786, 11–26–74, Cl. D52—6.
Yamamoto, Byora, Co., Ltd.: *See—*
Yamamoto, Keiichi, and K. 233,735.
Yamamoto, Keiichi, and K. 233,736.
Yamamoto, Keiichi, and K., to Byora Yamamoto Co., Ltd. Bolt. 233,735, 11–26–74, Cl. D8—267.
Yamamoto, Keiichi, and K., to Byora Yamamoto Co., Ltd. Bolt. 233,736, 11–26–74, Cl. D8—267.
Yamamoto, Kozo: *See—*
Yamamoto, Keiichi, and K. 233,735.
Yamamoto, Keiichi, and K. 233,736.
Yehan Numata: *See—*
Uchino, Kenju. 233,787.

CLASSIFICATION OF PATENTS

ISSUED NOVEMBER 26, 1974

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	
3R	3,849,801
81	3,849,802
84	3,849,803
98	3,849,804
CLASS 3	
1	3,849,805
CLASS 4	
159	3,849,806
172	3,849,807
213	3,849,808
295	3,849,809
CLASS 5	
91	3,849,811
108	3,849,812
334R	3,849,813
341	3,849,810
348WB	3,849,814
CLASS 8	
94.19R	3,850,575
149.1	3,849,815
CLASS 11	
1A	3,849,816
CLASS 12	
8.3	3,849,817
	3,849,818
CLASS 13	
26	3,851,090
	3,851,091
CLASS 14	
27	3;849,821
CLASS 15	
21C	3,849,820
21D	3,849,819
36	3,849,822
50R	3,849,823
83	3,849,824
152	3,849,825
230.14	3,849,826
250.01	3,849,827
250.32	3,849,829
250.42	3,849,828
302	3,849,830
	3,849,831
CLASS 16	
18	3,849,832
125	3,849,833
145	3,849,834
182	3,849,835
CLASS 17	
1R	3,849,836
CLASS 19	
107	3,849,837
CLASS 23	
230B	3,850,576
	3,850,577
	3,850,578
254EF	3,850,579
259	3,850,580
277C	3,850,581
288S	3,850,582
CLASS 24	
73C	3,849,838
109	3,849,839
204	3,849,840
205.1C	3,849,842
205.11R	3,849,841
205.12	3,849,843
CLASS 28	
1.3	3,849,844
1.4	3,849,846
4R	3,849,845
72.16	3,849,847
72.17	3,849,848
72.5	3,849,849
CLASS 29	
25.19	3,849,850
95.1	3,849,852
148.4C	3,849,853
157.3B	3,849,854
182.7	3,850,583
193.5	3,849,855
194	3,850,584
197.5	3,850,585
200B	3,849,858
200D	3,849,856
200P	3,849,857
203DS	3,849,860
203MM	3,849,859
	3,849,861
407	3,849,862
436	3,849,863
454	3,849,864
460	3,849,865
469	3,849,866
474.4	3,849,867
480	3,849,868
481	3,849,869
482	3,849,870
483	3,849,871
494	3,849,851
574	3,849,872
576	3,849,873
590	3,849,874
592	3,849,875
596	3,849,876
604	3,849,877
610	3,849,878
624	3,849,879
626	3,849,880
CLASS 30	
102	3,849,881
346.58	3,849,882
381	3,849,883
383	3,849,884
CLASS 32	
10A	3,849,887
	3,849,888
14B	3,849,885
22	3,849,889
CLASS 33	
2R	3,849,886
166	3,849,890
179.5D	3,849,891
179.5R	3,849,892
181R	3,849,893
265	3,849,894
317D	3,849,895
318	3,849,896
365	3,849,897
367	3,849,898
CLASS 34	
10	3,849,899
	3,849,900
44	3,849,901
99	3,849,902
132	3,849,903
155	3,849,904
	3,849,905
229	3,849,906
242	3,849,907
CLASS 35	
11	3,849,908
17	3,849,909
25	3,849,910
26	3,849,911
28.3	3,849,912
42	3,849,913
CLASS 36	
2.5AL	3,849,914
67B	3,849,915
CLASS 38	
77.83	3,849,916
CLASS 40	
16	3,849,917
32	3,849,918
	3,849,919
155	3,849,920
212	3,849,921
360	3,849,922
CLASS 42	
1N	3,849,923
51	3,849,924
75B	3,849,925
CLASS 43	
11	3,849,926
14	3,849,927
37	3,849,928
44.98	3,849,929
CLASS 44	
7A	3,850,586
62	3,850,587
CLASS 46	
12	3,849,930
52	3,849,933
244	3,849,931
CLASS 47	
37	3,849,932
57.6	3,849,934
CLASS 48	
209	3,850,588
CLASS 49	
34	3,849,935
35	3,849,936
205	3,849,937
471	3,849,938
CLASS 51	
34C	3,849,940
34J	3,849,939
165R	3,849,942
168	3,849,941
170MT	3,849,943
215CP	3,849,944
229	3,849,945
244	3,849,946
281R	3,849,947
296	3,850,589
298	3,850,590
307	3,850,591
310	3,849,948
406	3,849,949
CLASS 52	
19	3,849,951
27	3,849,950
79	3,849,952
86	3,849,953
235	3,849,954
285	3,849,955
327	3,849,957
376	3,849,956
396	3,849,958
403	3,849,959
569	3,849,960
639	3,849,961
717	3,849,962
729	3,849,963
758F	3,849,964
CLASS 53	
28	3,849,965
29	3,849,966
35	3,849,967
54	3,849,968
74	3,849,969
282	3,849,970
329	3,849,971
	3,849,972
331.5	3,849,973
CLASS 55	
33	3,850,592
66	3,850,593
97	3,850,594
257	3,850,595
341	3,850,596
378	3,850,597
387	3,850,598
440	3,850,599
524	3,850,600
CLASS 56	
226	3,849,974
295	3,849,975
CLASS 57	
77.3	Re.28,254
140R	3,849,976
CLASS 58	
23TF	3,849,977
50R	3,849,978
	3,849,979
58	3,849,980
90R	3,849,981
CLASS 60	
221	3,849,982
255	3,849,983
290	3,849,984
483	3,849,985
537	3,849,986
547	3,849,987
606	3,849,988
CLASS 61	
1F	3,849,989
3	3,849,990
13	3,849,991
45B	3,849,992
46	3,849,993
46.5	3,849,994
63	3,849,995
68	3,849,996
72.3	3,849,997
72.5	3,849,998
72.6	3,849,999
85	3,850,000
CLASS 62	
50	3,850,001
67	3,850,002
82	3,850,003
115	3,850,004
135	3,850,005
216	3,850,006
305	3,850,007
353	3,850,008
473	3,850,009
CLASS 63	
2	3,850,010
CLASS 65	
3	3,850,601
18	3,850,602
30	3,850,603
32	3,850,604
99A	3,850,605
178	3,850,606
334	3,850,607
CLASS 66	
122	3,850,011
151	3,850,012
CLASS 69	
1	3,850,013
CLASS 70	
53	3,850,014
CLASS 71	
76	3,850,608
98	3,850,609
103	3,850,610
121	3,850,611
CLASS 72	
31	3,850,015
45	3,850,016
70	3,850,017
186	3,850,018
199	3,850,019
	3,850,020
391	3,850,021
426	3,850,022
CLASS 73	
1B	3,850,023
37.7	3,850,024
	3,850,025
67.5R	3,850,026
67.8S	3,850,027
71.5US	3,850,028
81	3,850,029
136A	3,850,030
143	3,850,031
	3,850,035
144	3,850,032
150A	3,850,033
172	3,850,034
198	3,850,036
205R	3,850,037
363.5	3,850,038
420	3,850,039
432PS	3,850,040
495	3,850,041
CLASS 74	
84	3,850,042
89.2	3,850,043
230.23	3,850,044
244	3,850,045
459	3,850,046
473P	3,850,047
491	3,850,048
492	3,850,049
689	3,850,050
821	3,850,051
CLASS 75	
.5AA	3,850,612
.5BB	3,850,614
4	3,850,613
26	3,850,615
34	3,850,616
49	3,850,617
51	3,850,618
71	3,850,619
74	3,850,620
84.1R	3,850,623
126A	3,850,621
171	3,850,624
178AM	3,850,622
178R	3,850,625
CLASS 76	
77	3,850,052
101R	3,850,053
108R	3,850,054
CLASS 81	
52.4A	3,850,055
71	3,850,056
119	3,850,057
CLASS 82	
101	3,850,058
CLASS 83	
4	3,850,061
7	3,850,059
12	3,850,062
	3,850,063
13	3,850,060
124	3,850,064
310	3,850,065
356.2	3,850,066
524	3,850,067
529	3,850,068
665	3,850,069
CLASS 84	
95	3,850,070
380	3,850,071
471	3,850,072
CLASS 85	
20	3,850,073
46	3,850,074
CLASS 89	
1B	3,850,075
196	3,850,076
CLASS 90	
11.62	3,850,077
CLASS 91	
38	3,850,078
308	3,850,079
395	3,850,080
413	3,850,081
461	3,850,082
CLASS 93	
35PC	3,850,083
35R	3,850,084
49M	3,850,085
CLASS 96	
1M	3,850,626
1.3	3,850,627
1.5	3,850,628
	3,850,629
	3,850,630
	3,850,631
1.8	3,850,632
27H	3,850,633
35.1	3,850,634
48HD	3,850,635
50R	3,850,636
64	3,850,637
	3,850,638
67	3,850,639
	3,850,640
87A	3,850,641
	3,850,642
100	3,850,643
107	3,850,644
114.7	3,850,645
115R	3,850,646
CLASS 98	
115LH	3,850,086
CLASS 99	
422	3,850,087
450.2	3,850,088
483	3,850,089
533	3,850,090
CLASS 100	
19R	3,850,091
34	3,850,092
93RP	3,850,093
219	3,850,094
CLASS 101	
32	3,850,095
40	3,850,096
93C	3,850,097
	3,850,098
425	3,850,099
CLASS 102	
18	3,850,100
46	3,850,101
70.2GA	3,850,102
70.2P	3,850,103
85.2	3,850,104
CLASS 104	
1R	3,850,105
127	3,850,106
134	3,850,107
148MS	3,850,108
148SS	3,850,109
223	3,850,110
245	3,850,111
CLASS 105	
482	3,850,113
489	3,850,112
CLASS 106	
1	3,850,647
14.5	3,850,648
21	3,850,649
75	3,850,650
90	3,850,651
197R	3,850,652
288B	3,850,653
288Q	3,850,654
309	3,850,655
CLASS 108	
38	3,850,114
51	3,850,115
	3,850,116
150	3,850,117
CLASS 110	
8R	3,850,118
CLASS 111	
85	3,850,119
CLASS 112	
79R	3,850,120
121.29	3,850,121
218R	3,850,122
CLASS 113	
113C	3,850,123
121C	3,850,124
CLASS 114	
40	3,850,125
66.5H	3,850,129
67A	3,850,126
138	3,850,127
206R	3,850,128
CLASS 115	
6.1	3,850,130
11	3,850,131
12R	3,850,132
CLASS 116	
114R	3,850,133
133	3,850,134
137A	3,850,135
CLASS 117	
2TC	3,850,656
2R	3,850,657
7	3,850,658
17	3,850,659
	3,850,660
17.5	3,850,662
	3,850,663
18	3,850,664
33.3	3,850,665
33.5CM	3,850,666
36.7	3,850,667

47R	3,850,668
48	3,850,669
64C	3,850,671
64R	3,850,670
76A	3,850,673
76R	3,850,672
76T	3,850,674
93.31	3,850,675
100A	3,850,676
	3,850,677
	3,850,678
106R	3,850,679
123D	3,850,661
	3,850,680
126GS	3,850,681
138.8F	3,850,682
147	3,850,683
169R	3,850,684
201	3,850,685
	3,850,686
217	3,850,687
	3,850,688
229	3,850,689
240	3,850,690
CLASS 118	
5	3,850,136
8	3,850,137
49	3,850,138
50	3,850,139
405	3,850,140
505	3,850,141
637	3,850,142
CLASS 119	
2	3,850,143
19	3,850,144
51R	3,850,145
CLASS 122	
6A	3,850,146
11	3,850,147
479S	3,850,148
494	3,850,149
CLASS 123	
8.35	3,850,150
119A	3,850,151
122H	3,850,152
127	3,850,153
140CC	3,850,154
198R	3,850,155
CLASS 124	
23R	3,850,156
27	3,850,157
CLASS 128	
2B	3,850,158
	3,850,160
2F	3,850,159
2.1R	3,850,161
2.5P	3,850,169
6	3,850,162
57	3,850,163
75	3,850,164
84C	3,850,165
	3,850,166
87R	3,850,167
145.8	3,850,170
146.7	3,850,168
203	3,850,171
204	3,850,172
261	3,850,173
272	3,850,174
303.15	3,850,175
325	3,850,176
CLASS 131	
66	3,850,177
CLASS 132	
5	3,850,179
7	3,850,178
11A	3,850,180
	3,850,181
88.7	3,850,183
92R	3,850,182
CLASS 134	
4	3,850,691
8	3,850,692
56R	3,850,184
58DL	3,850,185
CLASS 135	
20M	3,850,186
20R	3,850,187
25R	3,850,188
CLASS 136	
6LF	Re.28,250
86A	3,850,694
86B	3,850,695
	3,850,696
86	3,850,693
120FC	3,850,697
CLASS 137	
39	3,850,189
218	3,850,190
271	3,850,191
318	3,850,192
362	3,850,193
496	3,850,194
503	3,850,195
554	3,850,196
561R	3,850,197
613	3,850,198
624.11	3,850,199
625.21	3,850,201
625.5	3,850,200
CLASS 138	
103	3,850,202
125	3,850,203
CLASS 140	
2	3,850,204
88	3,850,205
CLASS 141	
1	3,850,206
59	3,850,208
90	3,850,207
198	3,850,209
312	3,850,210
CLASS 144	
27	3,850,211
281B	3,850,213
288A	3,850,212
CLASS 148	
4	3,850,698
6.11	3,850,699
6.15Z	3,850,700
6.35	3,850,701
9.5	3,850,704
11.5F	3,850,702
12EA	3,850,703
13.1	3,850,705
31.55	3,850,706
175	3,850,707
187	3,850,708
CLASS 149	
6	3,850,709
CLASS 150	
.5	3,850,214
CLASS 151	
22	3,850,215
CLASS 152	
225	3,850,216
330RF	3,850,217
353C	3,850,218
361DM	3,850,219
400	3,850,220
CLASS 156	
3	3,850,710
11	3,850,711
18	3,850,712
72	3,850,713
77	3,850,714
78	3,850,715
82	3,850,716
86	3,850,717
94	3,850,718
128R	3,850,719
155	3,850,720
	3,850,721
172	3,850,722
180	3,850,723
201	3,850,724
291	3,850,725
306	3,850,726
335	3,850,727
358	3,850,728
390	3,850,729
394	3,850,730
414	3,850,731
455	3,850,774
463	3,850,775
475	3,850,776
494	3,850,777
502	3,850,778
523	3,850,779
583	3,850,780
CLASS 157	
1.33	3,850,221
13	3,850,222
CLASS 160	
84R	3,850,223
CLASS 161	
23	3,850,781
25	3,850,782
63	3,850,783
88	3,850,784
	3,850,785
164	3,850,786
165	3,850,787
168	3,850,788
205	3,850,789
253	3,850,790
CLASS 162	
145	3,850,791
290	3,850,792
391	3,850,793
CLASS 164	
4	3,850,224
82	3,850,225
108	3,850,226
CLASS 165	
1	3,850,227
8	3,850,228
44	3,850,229
66	3,850,230
83	3,850,231
107	3,850,232
	3,850,233
153	3,850,234
162	3,850,235
181	3,850,236
CLASS 166	
.5	3,850,237
72	3,850,239
162	3,850,240
222	3,850,241
224A	3,850,242
267	3,850,243
273	3,850,244
274	3,850,245
278	3,850,246
280	3,850,247
291	3,850,248
295	3,850,249
314	3,850,238
315	3,850,250
CLASS 171	
16	3,850,251
CLASS 172	
760	3,850,252
CLASS 173	
23	3,850,253
75	3,850,254
110	3,850,255
CLASS 174	
19	3,851,092
CLASS 175	
228	3,850,256
CLASS 176	
30	3,850,794
50	3,850,795
	3,850,796
CLASS 177	
226	3,850,257
CLASS 178	
6.8	3,851,094
	3,851,095
	3,851,096
19	3,851,097
50	3,851,099
68	3,851,098
69.5R	3,851,100
	3,851,101
CLASS 179	
7.1TP	3,851,102
9	3,851,103
15AP	3,851,106
15AT	3,851,105
15BF	3,851,107
15BY	3,851,104
18DA	3,851,109
18EB	3,851,110
18F	3,851,108
51R	3,851,111
84VF	3,851,112
90FW	3,851,113
98	3,851,114
100.2C	3,851,115
100.2S	3,851,116
100.41K	3,851,117
115.5PC	3,851,118
146R	3,851,119
175.2C	3,851,121
175.2R	3,851,120
175.23	3,851,122
182R	3,851,123
186F	3,851,124
CLASS 180	
6.48	3,850,258
8E	3,850,259
114	3,850,260
CLASS 181	
33G	3,850,261
CLASS 182	
5	3,850,262
73	3,850,263
178	3,850,264
CLASS 184	
7D	3,850,265
CLASS 188	
70R	3,850,266
71.6	3,850,267
72.2	3,850,268
202	3,850,269
CLASS 191	
29DM	3,850,271
29R	3,850,270
CLASS 192	
4A	3,850,273
	3,850,274
4B	3,850,272
26	3,850,275
105BA	3,850,276
107	3,850,277
CLASS 195	
1.8	3,850,748
28N	3,850,749
30	3,850,750
63	3,850,751
103.5R	3,850,752
109	3,850,753
127	3,850,754
CLASS 197	
1R	3,850,278
19	3,850,279
CLASS 198	
1	3,850,280
32	3,850,281
35	3,850,282
88	3,850,283
165	3,850,284
179	3,850,285
210	3,850,286
219	3,850,287
220BA	3,850,288
270	3,850,289
CLASS 200	
47	3,851,125
60	3,851,126
61.53	Re.28,251
61.86	3,851,127
81.9R	3,851,128
86R	3,851,129
153R	3,851,130
CLASS 202	
119	3,850,755
262	3,850,756
CLASS 203	
9	3,850,757
38	3,850,758
58	3,850,759
84	3,850,760
CLASS 204	
1T	3,850,761
11	3,850,762
33	3,850,763
38A	3,850,764
43S	3,850,765
50Y	3,850,766
56R	3,850,767
67	3,850,768
129.43	3,850,769
159.19	3,850,770
181	3,850,732
	3,850,733
	3,850,734
	3,850,735
	3,850,772
	3,850,773
195C	3,850,736
213	3,850,737
CLASS 206	
44R	3,850,290
44.11	3,850,291
181	3,850,292
205	3,850,294
223	3,850,293
304	3,850,295
334	3,850,296
346	3,850,297
349	3,850,298
CLASS 208	
8	3,850,738
11	3,850,739
33	3,850,740
48R	3,850,741
114	3,850,742
139	3,850,747
209	3,850,743
210	3,850,744
226	3,850,745
254H	3,850,746
CLASS 209	
73	3,850,299
CLASS 210	
23	3,850,797
31C	3,850,798
47	3,850,799
84	3,850,800
86	3,850,801
106	3,850,802
142	3,850,803
155	3,850,804
167	3,850,805
169	3,850,806
170	3,850,807
195	3,850,808
208	3,850,810
223	3,850,811
231	3,850,812
232	3,850,813
298	3,850,814
321	3,850,815
512	3,850,816
CLASS 211	
4	3,850,300
26	3,850,301
88	3,850,302
134	3,850,303
CLASS 212	
7	3,850,304
21	3,850,305
58R	3,850,306
59R	3,850,307
132	3,850,308
145	3,850,309
CLASS 213	
75TC	3,850,310
146	3,850,311
147	3,850,312
CLASS 214	
1BB	3,850,313
6P	3,850,314
8.5C	3,850,315
16.04C	3,850,316
16.4R	3,850,317
24	3,850,318
152	3,850,319
314	3,850,320
331	3,850,321
620	3,850,322
673	3,850,323
CLASS 215	
206	3,850,324
218	3,850,325
224	3,850,326
225	3,850,327
252	3,850,328
254	3,850,329
262	3,850,330
CLASS 219	
10.55	3,851,131
	3,851,132
	3,851,133
69M	3,851,135
69S	3,851,134
83	3,851,138
101	3,851,139
121P	3,851,136
	3,851,140
131F	3,851,137
132	3,851,141
146	3,851,142
	3,851,143
216	3,851,144
236	3,851,145
300	3,851,146
375	3,851,147
503	3,851,148
528	3,851,149
553	3,851,150
CLASS 220	
6	3,850,338
20	3,850,333
22	3,850,332
74	3,850,340
89A	3,850,339
212	3,850,341
243	3,850,334
331	3,850,342
335	3,850,331
	3,850,336
337	3,850,335
355	3,850,337
CLASS 221	
102	3,850,343
CLASS 222	
67	3,850,344
145	3,850,346
168.5	3,850,345
368	3,850,347
386.5	3,850,348
529	3,850,349
556	3,850,350
566	3,850,351
CLASS 224	
26B	3,850,352
31	3,850,353
CLASS 225	
1	3,850,354
CLASS 226	
110	3,850,355
	3,850,356
178	3,850,357
198	3,850,358
CLASS 227	
10	3,850,359
67	3,850,360
CLASS 229	
1.5B	3,850,361
41R	3,850,362
51R	3,850,363
52B	3,850,365
55	3,850,366
CLASS 232	
1B	3,850,367
CLASS 233	
25	3,850,368
26	3,850,369
CLASS 235	
61.11C	3,851,152
61.12M	3,851,153
61.9R	3,851,151
92PS	3,851,155
92SH	3,851,154
150.1	3,851,156
150.27	3,851,159
150.52	3,851,158
151.3	3,851,157
	3,851,160
	3,851,161
156	3,851,162
CLASS 236	
15A	3,850,370
CLASS 239	
113	3,850,371
123	3,850,372
499	3,850,373
530	3,850,374
CLASS 240	
1.3	3,851,163
	3,851,164
41.3	3,851,165
57	3,851,166
CLASS 241	
51	3,850,364
101.7	3,850,375
207	3,850,376
CLASS 242	
18R	3,850,377
35.5R	3,850,378
54R	3,850,380
55.2	3,850,379
65	3,850,462
66	3,850,381
68.3	3,850,382
107.4	3,850,383
129.7	3,850,394
191	3,850,384
198	3,850,385
203	3,850,386
CLASS 244	
3.22	3,850,387
75R	3,850,388
103S	3,850,389
CLASS 246	
128	3,850,390
182R	3,850,391
CLASS 248	
19	3,850,392
102	3,850,393
171	3,850,395
223	3,850,396
225	3,850,398
229	3,850,399
251	3,850,400
291	3,850,401
354S	3,850,397
476	3,850,402
CLASS 249	
27	3,850,403
	3,850,404
CLASS 250	
199	3,851,167
206	3,850,809
221	3,851,168
222PC	3,851,169
226	3,851,170
259	3,851,171
311	3,851,172
332	3,851,173
336	3,851,174
339	3,851,175
343	3,851,176
366	3,851,177
478	3,851,178
506	3,851,179
550	3,851,180
577	3,851,181
CLASS 251	
61.5	3,850,405
210	3,850,406
242	3,850,407
251	3,850,408
CLASS 252	
8.5B	3,850,817
8.75	3,850,819
8.8	3,850,818
12	3,850,820
12.2	3,850,821
34F	3,850,822
40.7	3,850,823
46.7	3,850,824
48.6	3,850,825
51.5A	3,850,826
56S	3,850,827

59	3,850,828
62.1	3,850,829
	3,850,830
99	3,850,831
	3,850,832
	3,850,833
117	3,850,834
182	3,850,835
188.3CL	3,850,836
301.4S	3,850,837
363.5	3,850,838
373	3,850,839
	3,850,840
	3,850,841
429C	3,850,842
429R	3,850,843
	3,850,844
430	3,850,845
439	3,850,846
462	3,850,847
463	3,850,848
	3,850,849
465	3,850,850
474	3,850,851
536	3,850,852
548	3,850,853
551	3,850,854
CLASS 254	
89H	3,850,409
186HC	3,850,410
186R	3,850,411
CLASS 259	
4	3,850,413
191	3,850,414
	3,850,415
CLASS 260	
2A	3,850,855
	3,850,856
	3,850,857
2.5AJ	3,850,859
2.5BE	3,850,861
2.5B	3,850,860
7.5	3,850,862
	3,850,863
17.2	3,850,864
27BB	3,850,858
28.5AV	3,850,865
28.5B	3,850,866
29.06F	3,850,867
29.3	3,850,868
29.6MN	3,850,869
29.7PT	3,850,870
31.6	3,850,871
37AL	3,850,873
37EP	3,850,872
38	3,850,874
42.14	3,850,875
45.7S	3,850,876
45.75K	3,850,883
45.75N	3,850,881
45.75R	3,850,882
45.8N	3,850,877
45.85N	3,850,884
45.9R	3,850,878
	3,850,879
47CZ	3,850,885
49	Re.28,252
75NE	3,850,880
76	3,850,886
78L	3,850,887
78P	3,850,890
78R	3,850,888
	3,850,889
78.05T	3,850,891
80.72	3,850,892
80.78	3,850,893
85.3R	3,850,894
	3,850,895
	3,850,896
	3,850,897
86.1R	3,850,898
88.2R	3,850,899
91.3	3,850,901
92.1	3,850,900
112B	3,850,903
112.5	3,850,904
209R	3,850,905
210.5	3,850,906
236.5	3,850,907
239B	3,850,909
239.1	3,850,908
239.3A	3,850,910
239.5	3,850,911
239.75	3,850,912
240CA	3,850,914
240G	3,850,915
240.8	3,850,913
243B	3,850,917
243C	3,850,916
247.02A	3,850,922
247.1L	3,850,919
247.2A	3,850,918
	3,850,921
247.7J	3,850,920
248NS	3,850,923
249.5	3,850,924
250BC	3,850,929
250Q	3,850,925
253	3,850,926
255	3,850,930
256.4C	3,850,928
256.4F	3,850,932
256.4N	3,850,927
	3,850,931
256.5R	3,850,933
293.52	3,850,935
293.53	3,850,934
	3,850,936
293.58	3,850,937
293.61	3,850,938
294.8D	3,850,939
294.8G	3,850,944
294.9	3,850,940
295F	3,850,941
296P	3,850,942
297R	3,850,943
302R	3,850,945
	3,850,946
	3,850,947
306.7R	3,850,948
307D	3,850,950
307F	3,850,949
308C	3,850,951
309	3,850,952
	3,850,953
309.2	3,850,954
309.6	3,850,957
309.7	3,850,956
326.15	3,850,958
326.5FM	3,850,955
327TH	3,850,959
329.3	3,850,960
330.5	3,850,961
340.5	3,850,962
343.2R	3,850,963
345.2	3,850,964
	3,850,965
	3,850,966
346.3	3,850,967
347.3	3,850,968
404.5	3,850,969
429.7	3,850,970
448.8R	3,850,971
456R	3,850,972
464	3,850,973
465B	3,850,974
465.3	3,850,975
465.6	3,850,976
468H	3,850,977
482C	3,850,978
490	3,850,979
497A	3,850,980
524R	3,850,981
525	3,850,982
	3,850,983
534E	3,850,984
545R	3,850,985
553A	3,850,986
561S	3,850,987
591	3,850,988
592	3,850,989
604AC	3,850,990
607A	3,850,991
612D	3,850,992
614A	3,850,993
619R	3,850,994
621A	3,850,996
621G	3,850,995
623R	3,850,997
650R	3,850,998
654R	3,850,999
665R	3,851,000
667	3,851,001
668A	3,851,002
668D	3,851,003
671C	3,851,004
672T	3,851,005
675.5	3,851,006
677R	3,851,007
680E	3,851,008
	3,851,009
681.5	3,851,010
683.15D	3,851,011
845	3,851,012
870	3,851,013
876R	3,851,014
878B	3,851,015
884	3,851,016
897B	3,851,017
900	3,851,018
946	3,851,019
950	3,851,020
CLASS 261	
50A	3,851,021
CLASS 264	
24	3,851,023
34	3,851,024
41	3,851,025
51	3,851,022
54	3,851,026
84	3,851,027
89	3,851,028
	3,851,029
97	3,851,030
102	3,850,902
109	3,851,031
	3,851,032
146	3,851,033
147	3,851,034
148	3,851,035
176	3,850,771
182	3,851,036
229	3,851,037
261	3,851,038
321	3,851,039
CLASS 266	
1R	3,850,416
5C	3,850,417
CLASS 267	
57.1A	3,850,418
CLASS 269	
17	3,850,419
46	3,850,420
91	3,850,421
196	3,850,422
238	3,850,423
CLASS 270	
31	3,850,424
40	3,850,425
CLASS 271	
238	3,850,426
CLASS 272	
1A	3,850,427
58	3,850,428
80	3,850,429
81	3,850,430
	3,850,431
CLASS 273	
105.2	3,850,432
134AD	3,850,433
135AC	3,850,434
CLASS 274	
23A	3,850,435
42R	3,850,436
CLASS 280	
5.22	Re.28,256
6R	3,850,437
11.35B	3,850,439
11.35T	3,850,438
28	3,850,440
47.2	3,850,441
47.37	3,850,442
96.2R	3,850,443
124F	3,850,445
124R	3,850,444
150SB	3,850,446
150B	3,850,447
216	3,850,448
432	3,850,449
479R	3,850,450
CLASS 285	
13	3,850,451
38	3,850,452
47	3,850,453
98	3,850,454
114	3,850,455
	3,850,456
121	3,850,457
137R	3,850,458
156	3,850,459
321	3,850,460
332.2	3,850,461
CLASS 292	
67	3,850,463
175	3,850,464
231	3,850,465
CLASS 293	
89	3,850,466
CLASS 294	
1R	3,850,467
83R	3,850,468
88	3,850,469
CLASS 296	
23MC	3,850,471
23C	3,850,470
27	3,850,472
28R	3,850,473
31P	3,850,474
CLASS 297	
85	3,850,475
335	3,850,476
CLASS 299	
5	3,850,477
CLASS 302	
2R	3,850,478
29	3,850,479
CLASS 303	
6C	Re.28,253
21CG	3,850,480
25	3,850,481
CLASS 307	
23	3,851,182
88ET	3,851,183
141	3,851,184
205	3,851,185
	3,851,186
221R	3,851,187
255	3,851,188
279	3,851,189
310	3,851,190
	3,851,191
CLASS 308	
3.6	3,850,482
4R	3,850,483
6R	3,850,484
194	3,850,485
CLASS 310	
8	3,851,192
9.4	3,851,193
9.7	3,851,194
11	3,851,195
12	3,851,196
40MM	3,851,197
70R	3,851,198
168	3,851,199
CLASS 312	
116	3,850,486
184	3,850,488
252	3,850,487
CLASS 313	
113	3,851,200
	3,851,201
221	3,851,202
233	3,851,203
330	3,851,204
CLASS 315	
11	3,851,205
30	3,851,206
49	3,851,207
79	3,851,208
99	3,851,209
169TV	3,851,211
	3,851,212
169R	3,851,210
174	3,851,213
267	3,851,214
391	3,851,215
CLASS 316	
20	3,850,489
CLASS 317	
13R	3,851,216
16	3,851,217
33R	3,851,218
40A	3,851,219
61.5	3,851,220
100	3,851,221
101CC	3,851,223
101R	3,851,222
116	3,851,224
120	3,851,225
	3,851,226
134	3,851,227
258	3,851,228
262A	3,851,229
	3,851,230
CLASS 318	
135	3,851,231
150	3,851,232
212	3,851,233
227	3,851,234
257	3,851,235
313	3,851,236
467	3,851,237
649	3,851,238
CLASS 321	
11	3,851,239
45	3,851,240
CLASS 323	
8	3,851,241
CLASS 324	
40	3,851,242
51	3,851,243
58.5A	3,851,244
65R	3,851,245
71CP	3,851,246
72	3,851,247
109	3,851,248
158P	3,851,249
CLASS 325	
4	3,851,250
55	3,851,251
321	3,851,252
348	3,851,253
455	3,851,254
CLASS 328	
39	3,851,255
55	3,851,256
63	3,851,257
	3,851,258
140	3,851,265
143	3,851,259
151	3,851,260
162	3,851,266
165	3,851,261
185	3,851,262
CLASS 329	
110	3,851,263
119	3,851,264
CLASS 330	
4.3	3,851,267
	3,851,268
13	3,851,269
30D	3,851,270
CLASS 331	
47	3,851,271
94.5D	3,851,273
	3,851,275
94.5P	3,851,274
94.5	3,851,272
108D	3,851,276
113A	3,851,278
113R	3,851,277
CLASS 333	
1.1	3,851,279
30R	3,851,280
33	3,851,281
73W	3,851,282
CLASS 335	
6	3,851,284
178	3,851,283
262	3,851,285
273	3,851,286
CLASS 336	
84	3,851,287
CLASS 337	
89	3,851,288
161	3,851,289
166	3,851,290
CLASS 338	
22R	3,851,291
114	3,851,292
195	3,851,293
CLASS 339	
14R	3,850,490
17C	3,850,491
17F	3,851,294
18R	3,850,492
54	3,851,295
59M	3,850,494
60M	3,850,495
	3,851,296
61M	3,851,297
64M	3,850,496
89M	3,850,493
126R	3,850,497
147R	3,850,498
156R	3,850,499
258R	3,850,500
263R	3,850,501
276A	3,851,298
CLASS 340	
3R	3,851,299
8R	3,851,300
15	3,851,301
15.5TS	3,851,302
27NA	3,851,303
	3,851,304
52H	3,851,305
146.1AB	3,851,307
146.1AL	3,851,306
146.3C	3,851,309
146.3P	3,851,308
147LP	3,851,310
147MD	3,851,314
147R	3,851,311
172.5	Re.28,257
	3,851,312
	3,851,315
173DR	3,851,316
173LS	3,851,318
173R	3,851,313
	3,851,317
174SP	3,851,319
189M	3,851,320
229	3,851,321
253A	3,851,322
267R	3,851,323
	3,851,324
274	3,851,325
280	3,851,326
324M	3,851,327
336.006	3,851,332
337	3,851,328
347AD	3,851,329
347SY	3,851,330
366B	3,851,331
410	3,851,333
CLASS 343	
6.5R	3,851,334
CLASS 350	
2	3,850,502
65	3,850,504
96WG	3,850,503
133	3,850,505
160P	3,850,506
187	3,850,507
214	3,850,509
286	3,850,510
CLASS 351	
7	3,850,511
CLASS 352	
14	3,850,512
25	3,850,513
130	3,850,514
CLASS 353	
102	3,850,515
122	3,850,516
CLASS 354	
12	3,850,517
76	3,850,518
CLASS 355	
3R	3,850,519
13	3,850,520
15	3,850,521
48	Re.28,255
54	3,850,522
70	3,850,523
CLASS 356	
37	3,850,524
73	3,850,525
109	3,850,526
129	3,850,527
133	3,850,528
207	3,850,529
209	3,850,508
226	3,850,530
CLASS 358	
10	3,850,412
67	3,851,093
CLASS 360	
26	3,851,335
CLASS 401	
65	3,850,531
219	3,850,532
CLASS 403	
58	3,850,533
190	3,850,534
305	3,850,535
350	3,850,538
CLASS 404	
11	3,850,536
17	3,850,537
69	3,850,539
114	3,850,541
CLASS 408	
50	3,850,540
CLASS 415	
121B	3,850,543
149	3,850,544
CLASS 416	
132	3,850,545
212	3,850,546
215	3,850,547
CLASS 417	
220	3,850,548
310	3,850,549
372	3,850,550
410	3,850,551
CLASS 418	
6	3,850,552
43	3,850,553
84	3,850,554
CLASS 423	
181	3,851,040
223	3,851,041
244	3,851,042
245	3,851,043
249	3,851,044
263	3,851,045
359	3,851,046
390	3,851,047
458	3,851,048
468	3,850,542
564	3,851,049
574	3,851,050
CLASS 424	
37	3,851,051
45	3,851,052
78	3,851,053
122	3,851,054
177	3,851,055
180	3,851,056
	3,851,057
244	3,851,058
267	3,851,059
270	3,851,060
277	3,851,061
283	3,851,062
303	3,851,063
337	3,851,064
346	3,851,065
CLASS 425	
46	3,850,555

CLASSIFICATION OF PATENTS

71	3,850,556
78	3,850,557
101	3,850,558
144	3,850,559
150	3,850,560
223	3,850,561
242B	3,850,562
275	3,850,563
338	3,850,564
385	3,850,565
387B	3,850,566
405R	3,850,567
466	3,850,568
CLASS 426	
21	3,851,066
90	3,851,067
130	3,851,068
175	3,851,069
177	3,851,070
190	3,851,071
199	3,851,072
217	3,851,073
231	3,851,074
250	3,851,075
262	3,851,076
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CLASS 431	
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CLASS 432	
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CLASSIFICATION OF DESIGNS

D2—	190	233,707
D6—	24	233,709
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	177	233,719
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D7—	71	233,722
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	138	233,721
	176	233,724
D8—	65	233,725
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	71	233,728
	179	233,729
	191	233,730
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	230	233,732
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D9—	40	233,737
	146	233,738
D10—	64	233,739
D12—	68	233,740
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D13—	1D	233,745
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	7R	233,750
D22—	27	233,751
D23—	2	233,752
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D26—	5C	233,758
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D28—	1A	233,768
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D30—	42	233,770
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D34—	5VV	233,772
	15A	233,773
D45—	4E	233,774
	19S	233,775
D48—	20K	233,778
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D54—	2T	233,788
D56—	4B	233,789
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D61—	1Q	233,798
D65—	R	233,800
D77—		233,801
D83—	N	233,802
	12R	233,803
D97—	1	233,804

CLASSIFICATION OF PLANTS

P. —	74	3,655
P. —	77	3,656
P. —		3,658
P. —		3,659
P. —	78	3,657

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1
Alaska	2
American Samoa	3
Arizona	4
Arkansas	5
California	6
Canal Zone	7
Colorado	8
Connecticut	9
Delaware	10
District of Columbia	11
Florida	12
Georgia	13
Guam	14
Hawaii	15
Idaho	16
Illinois	17
Indiana	18
Iowa	19
Kansas	20
Kentucky	21
Louisiana	22
Maine	23
Maryland	24
Massachusetts	25
Michigan	26
Minnesota	27
Mississippi	28
Missouri	29
Montana	30
Nebraska	31
Nevada	32
New Hampshire	33
New Jersey	34
New Mexico	35
New York	36
North Carolina	37
North Dakota	38
Ohio	39
Oklahoma	40
Oregon	41
Pennsylvania	42
Puerto Rico	43
Rhode Island	44
South Carolina	45
South Dakota	46
Tennessee	47
Texas	48
Utah	49
Vermont	50
Virginia	51
Virgin Islands	52
Washington	53
West Virginia	54
Wisconsin	55
Wyoming	56
U.S. Air Force	57
U.S. Army	58
U.S. Navy	59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	3,850,090
	3,851,113
4 :	3,849,945
	3,850,325
	3,850,434
	3,850,686
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	Re.28,257
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3,850,189
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DESIGN PATENTS

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